



## **Cisco ONS 15454 Procedure Guide**

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- Move the equipment to one side or the other of the television or radio.
- Move the equipment farther away from the television or radio.
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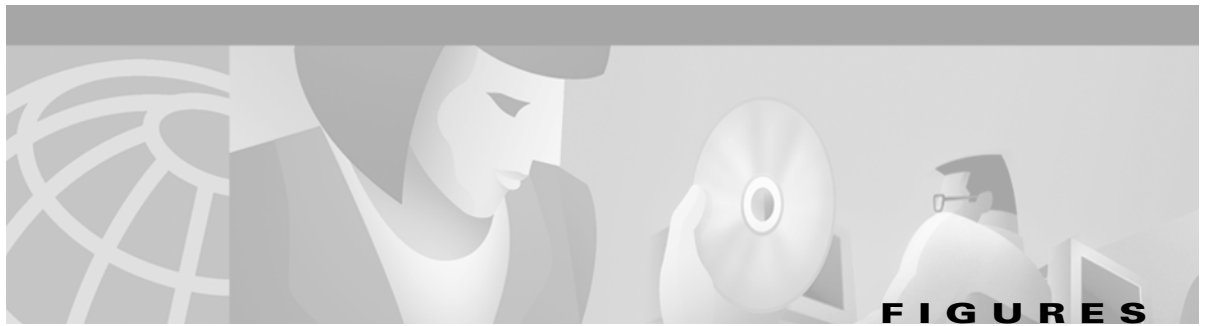
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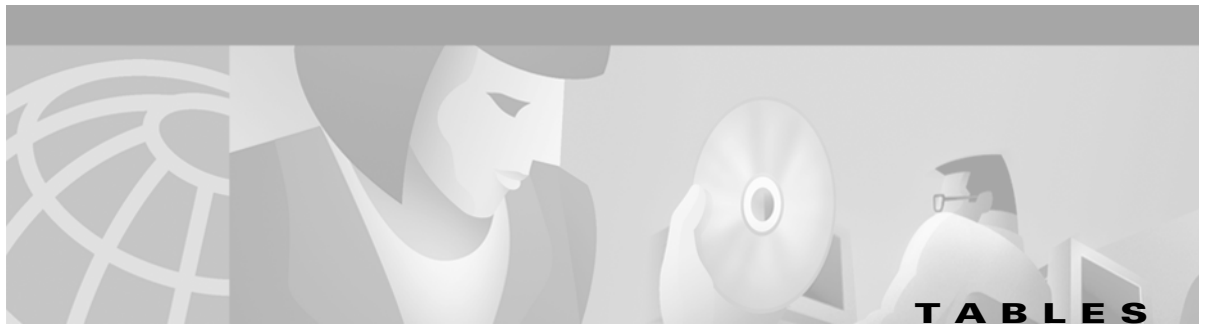
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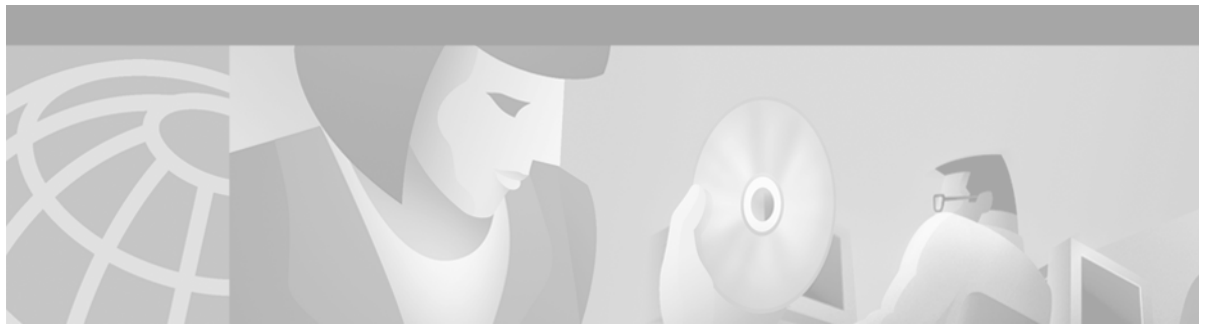
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## About this Manual

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This guide explains how to install, turn up, provision, and maintain a Cisco ONS 15454 node and network.

The *Cisco ONS 15454 Troubleshooting Guide, Release 3.3* provides alarm clearing, general troubleshooting, and hardware replacement procedures.

To understand the procedures in context, such as their detailed purpose and process, refer to the *Cisco ONS 15454 Reference Manual, Release 3.3*.

## Document Organization

This guide provides procedures for installation, turn up, provisioning and acceptance of ONS 15454 nodes and ONS 15454 designed networks. It is organized in a Cisco recommended work flow sequence for new installations, in addition to allowing easy access to procedures and tasks associated with adds, moves, and changes for existing installations.

Verification procedures are provided, where necessary, to allow contract vendors to complete the physical installation and then turn the site over to craft personnel for verification, provisioning, turn up and acceptance. The front matter of the book is present in the following sequence:

1. Title Page
2. Table of Contents
3. List of Figures
4. List of Tables
5. List of Procedures
6. List of Tasks

The information in the book follows a task oriented hierarchy using the elements described below.

## Chapter (Director Level)

The guide is divided into logical work groups (chapters) that serve as director entry into the procedures. For example, if you are arriving on site after a contractor has installed the shelf hardware, proceed to [Chapter 2, “Install Cards and Fiber-Optic Cable”](#) and begin verifying installation and installing cards. You may proceed sequentially (recommended), or locate the work you want to perform from the list of procedures on the first page of every chapter (or turn to the front matter or index).

## Non-Trouble Procedure (NTP)

Each NTP is a list of steps designed to accomplish a specific task. Follow the steps until the task is complete. For a crafts person requiring more detailed instructions, refer to the Detailed Level Procedure (DLP) specified in the procedure steps.

**Note**

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To ensure that users who are not familiar with NTP and DLP acronyms understand the hierarchy within the guide, Uncaps are termed “procedures” and Depths are termed “tasks.” Every reference to a procedure includes its NTP number, and every reference to a task includes its DLP number.

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## Detailed Level Procedure (DLP)

The DLP (task) supplies additional task details to support the NTP. The DLP lists numbered steps that lead the crafts person through completion of a task. Some steps require that equipment indications be checked for verification. When the proper response is not obtained, a trouble clearing reference is provided.

## Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

### World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

<http://www.cisco.com>

Translated documentation is available at the following URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

### Documentation CD-ROM

Optical networking-related documentation is available in a CD-ROM package that ships with your product. The Optical Networking Product Documentation CD-ROM is updated monthly and may be more current than printed documentation.

## Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:  
[http://www.cisco.com/cgi-bin/order/order\\_root.pl](http://www.cisco.com/cgi-bin/order/order_root.pl)
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

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San Jose, CA 95134-9883

We appreciate your comments.

## Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

### Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

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You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

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## Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

### Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

<http://www.cisco.com/register/>

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

### Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.



To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.





## Install the Shelf and Backplane Cable

This chapter provides procedures for installing the Cisco ONS 15454. To view a summary of the tools and equipment required for installation, see the [“Required Tools and Equipment”](#) section on page 1-2.

### Before You Begin

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

1. [NTP-1 Unpack and Inspect the ONS 15454 Shelf Assembly, page 1-4](#)—Complete this procedure before continuing with the [“NTP-2 Install the Shelf Assembly”](#) procedure on page 1-5.
2. [NTP-2 Install the Shelf Assembly, page 1-5](#)—Complete this procedure to install the shelf assembly in a rack.
3. [NTP-3 Open and Remove the Front Door, page 1-12](#)—Complete this procedure to access the equipment before continuing with other procedures in this chapter.
4. [NTP-4 Remove the Backplane Covers, page 1-15](#)—Complete this procedure to access the backplane before continuing with other procedures in this chapter.
5. [NTP-5 Install the Electrical Interface Assemblies, page 1-17](#)—Complete this procedure if you plan to install electrical cards. This procedure is a prerequisite to the [“NTP-9 Install the Electrical Card Cables on the Backplane”](#) procedure on page 1-36.
6. [NTP-6 Install the Power and Ground, page 1-23](#)—Complete this procedure before continuing with the [“NTP-7 Install the Fan-Tray Assembly”](#) procedure on page 1-29.
7. [NTP-7 Install the Fan-Tray Assembly, page 1-29](#)—Complete this procedure to install the fan-tray assembly in the shelf.
8. [NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections, page 1-31](#)—Complete this procedure to set up pin connections.
9. [NTP-9 Install the Electrical Card Cables on the Backplane, page 1-36](#)—Complete this procedure if you plan to install electrical cards.
10. [NTP-10 Route Electrical Cables, page 1-44](#)—Complete this procedure before continuing with the [“NTP-11 Install the Rear Cover”](#) procedure on page 1-46.
11. [NTP-11 Install the Rear Cover, page 1-46](#)—Complete this procedure to install the rear cover.
12. [NTP-12 Install Ferrites, page 1-48](#)—Complete this procedure to attach ferrites to power cables.
13. [NTP-13 Perform the Shelf Installation Acceptance Test, page 1-50](#)—Complete this procedure to determine if you have correctly completed all other procedures in the chapter.

## Included Materials



Warning

**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**



Warning

**The ONS 15454 is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock, key, or other means of security. A restricted access area is controlled by the authority responsible for the location.**



Warning

**The ONS 15454 is suitable for mounting on concrete or other non-combustible surfaces only.**

## Required Tools and Equipment

You will need the following tools and equipment to install and test the ONS 15454.

## Included Materials

The following materials are required and are shipped with the ONS 15454. The number in parentheses gives the quantity of the item included in the package.

- #12-24 x 3/4 pan head Phillips mounting screws (48-1004-XX, 48-1007-XX) (8)
- #12 -24 x 3/4 socket set screws (48-1003-XX) (2)
- T-handle #12-24 hex tool for set screws (1)
- ESD wrist strap with 1.8 m (6 ft) coil cable (1)
- Tie wraps (10)
- Pinned Allen key for front door (1)
- Spacers (50-1193-XX) (4)
- Spacer mounting brackets (2)
- Clear plastic rear cover (1)
- External (bottom) brackets for the fan-tray air filter
- Standoff kit (53-0795-XX):
  - Plastic fiber management guides (2)
  - Fan filter bracket screws (53-48-0003) (6)

## User-Supplied Materials

The following materials and tools are required but are not supplied with the ONS 15454.

- Equipment rack (22 inches total width for a 19-inch rack; 26 inches total width for a 23-inch rack)
- Fuse panel
- Power cable (from fuse and alarm panel to assembly), #10 AWG, copper conductors, 194°F (90°C)



---

**Note** If you are installing power on a 15454-SA-NEBS3E, 15454-SA-NEBS3, or 15454-SA-R1, P/N: 800-07149 shelf assembly, the #12 to #14 AWG power cable is required.

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- Ground cable #6 AWG stranded



---

**Note** If you are installing power on a 15454-SA-NEBS3E, 15454-SA-NEBS3 or 15454-SA-R1, P/N: 800-07149 shelf assembly, the #14 AWG ground cable is required.

---

- Alarm cable pairs for all alarm connections, #22 or #24 AWG, solid tinned
- Shielded Building Integrated Timing Supply (BITS) clock cable pair #22 or #24, solid tinned
- Single mode SC fiber jumpers with UPC polish (55 dB or better) for optical (OC-N) cards
- Shielded coaxial cable terminated with SMB or BNC connectors for DS-3 cards
- Shielded ABAM cable terminated with AMP Champ connectors or unterminated for DS-1 cards with #22 or #24 AWG ground wire (typically about two feet in length)
- Tie wraps and/or lacing cord
- Labels
- Listed pressure terminal connectors such as ring and fork types; connectors must be suitable for #10 AWG copper conductors

## Tools Needed

- #2 Phillips screw driver
- Medium slot head screw driver
- Small slot head screw driver
- Wire wrapper
- Wire cutters
- Wire strippers
- Crimp tool
- BNC insertion tool

## Test Equipment

- Voltmeter
- Power meter (for use with fiber optics only)
- Bit Error Rate (BER) tester, DS-1 and DS-3

## NTP-1 Unpack and Inspect the ONS 15454 Shelf Assembly

<b>Purpose</b>	This procedure describes how to unpack the ONS 15454 and verify the contents.
<b>Tools/Equipment</b>	Door tool (provided in the backplane standoff kit [53-0795-XX])
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Complete the “[DLP-1 Unpack and Verify the Shelf Assembly](#)” task on page 1-4.
- Step 2** Complete the “[DLP-2 Inspect the Shelf Assembly](#)” task on page 1-5.
- Step 3** Continue with the “[NTP-2 Install the Shelf Assembly](#)” procedure on page 1-5.
- 

## DLP-1 Unpack and Verify the Shelf Assembly

<b>Purpose</b>	This task removes the shelf assembly from the package.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** When you receive the ONS 15454 system equipment at the installation site, open the top of the box. The Cisco Systems logo designates the top of the box.
- Step 2** Remove the foam inserts and standoff kit from the box.
- Step 3** To remove the shelf, grasp both rings of the shelf removal strap and slowly lift the shelf out of the box.
- Step 4** Verify that you have received all of the contents (listed in the “[Included Materials](#)” section on page 1-2):
- ONS 15454 shelf (wrapped in plastic)
  - Backplane standoff kit (53-0795-XX)
  - Clear plastic rear cover




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**Note** The fan-tray assembly is shipped separately.

---

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

## DLP-2 Inspect the Shelf Assembly

<b>Purpose</b>	This task verifies that all parts of the shelf assembly are in good condition.
<b>Tools/Equipment</b>	Door tool (provided in the backplane standoff kit [53-0795-XX])
<b>Prerequisite Procedures</b>	<a href="#">DLP-1 Unpack and Verify the Shelf Assembly, page 1-4</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Open the shelf using the door tool.
- Step 2** Verify the following:
- Pins are not bent or broken
  - Frame is not bent
- Step 3** If the pins are bent or broken, or the frame is bent, call your Cisco sales engineer for a replacement.
- Step 4** Return to your originating procedure (NTP).
- 

## NTP-2 Install the Shelf Assembly

<b>Purpose</b>	This procedure describes how to reverse the mounting bracket and mount shelf assemblies in a rack.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• Pinned hex key that is provided in the backplane standoff kit (53-0795-XX)</li> <li>• Two set screws (48-1003-XX)</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-1 Unpack and Inspect the ONS 15454 Shelf Assembly, page 1-4</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



**Warning**

**To prevent the equipment from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 131°F (55°C). To prevent airflow restriction, allow at least 3 inches (7.6 cm) of clearance around the ventilation openings.**



**Note**

The 10 Gbps compatible shelf assembly (15454-SA-10G) and fan-tray assembly (15454-FTA3) are required with the ONS 15454 XC10G, OC-192, and OC-48 any slot (AS) cards.

## DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack

**Warning**

The ONS 15454 should be installed in the lower rack position or mounted above another ONS 15454 shelf assembly.

**Warning**

The ONS 15454 must have 1 inch of airspace below the installed shelf assembly to allow air flow to the fan intake. The air ramp (the angled piece of sheet metal on top of the shelf assembly) provides this spacing and should not be modified in any way.

- Step 1** Complete the “[DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack](#)” task on page 1-6 if you need to convert from a 23-inch to a 19-inch rack.
- Step 2** To install the air filter in an alternative location, complete the “[DLP-4 Install the External Brackets and Air Filter](#)” task on page 1-8.
- Step 3** Complete the necessary rack mount task:
- [DLP-5 Mount the Shelf Assembly in a Rack \(One Person\)](#), page 1-9
  - [DLP-6 Mount the Shelf Assembly in a Rack \(Two People\)](#), page 1-10
  - [DLP-7 Mount Multiple Shelf Assemblies in a Rack](#), page 1-11
- Step 4** Continue with the “[NTP-3 Open and Remove the Front Door](#)” procedure on page 1-12.

## DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack

<b>Purpose</b>	This task installs the mounting bracket to convert a 23-inch rack to a 19-inch rack.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Caution**

Use only the fastening hardware provided with the ONS 15454 to prevent loosening, deterioration, and electromechanical corrosion of the hardware and joined material.

**Caution**

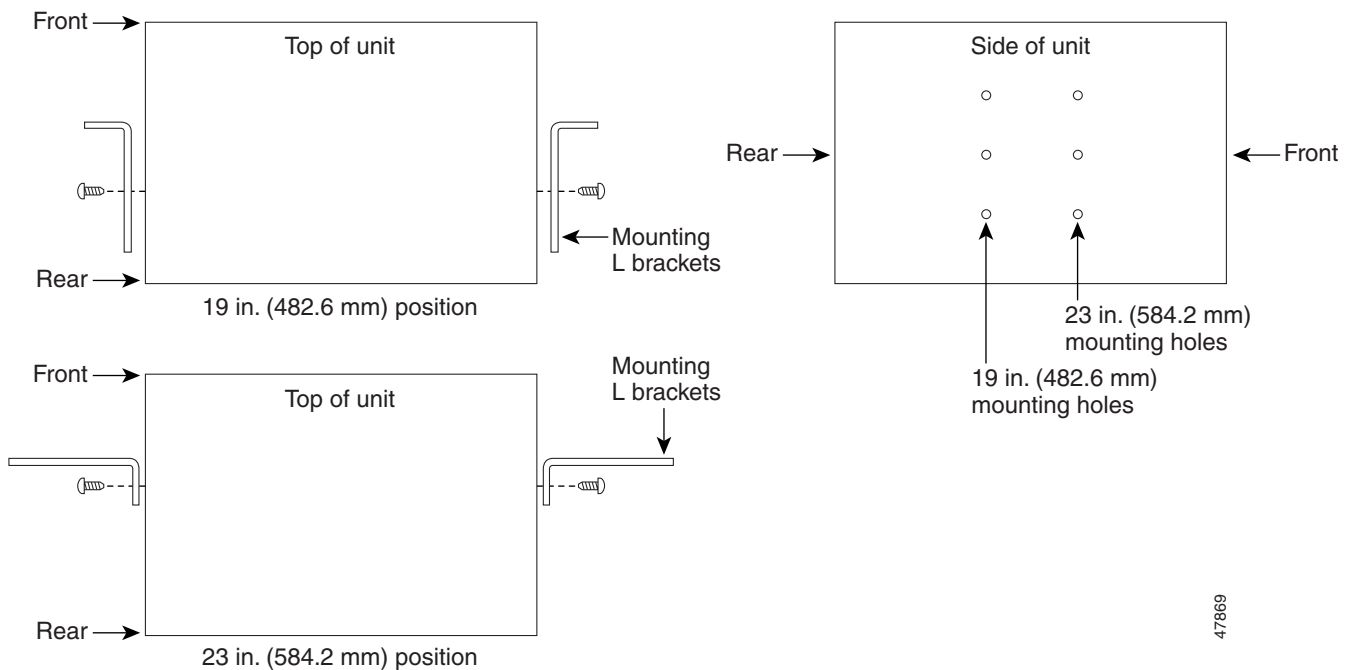
When mounting the ONS 15454 in a frame with a non-conductive coating (such as paint, lacquer, or enamel) either use the thread-forming screws provided with the ONS 15454 shipping kit, or remove the coating from the threads to ensure electrical continuity.

- Step 1** Remove the screws that attach the mounting bracket to the side of the shelf assembly.



- Step 2** Flip the detached mounting bracket upside down.  
Text imprinted on the mounting bracket will now also be upside down.
- Step 3** Place the widest side of the mounting bracket flush against the shelf assembly (see [Figure 1-1](#)).  
The narrow side of the mounting bracket should be towards the front of the shelf assembly. Text imprinted on the mounting bracket should be visible and upside down.
- Step 4** Align the mounting bracket screw holes against the shelf assembly screw holes.
- Step 5** Insert the screws that were removed in [Step 1](#) and tighten them.
- Step 6** Repeat the task for the mounting bracket on the opposite side.

**Figure 1-1** Reversing the mounting brackets (23-inch position to 19-inch position)



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

## DLP-4 Install the External Brackets and Air Filter

The shelf assembly ships with external (bottom) brackets that you can use to install the air filter on the bottom of the shelf rather than beneath the fan-tray assembly. The brackets consist of two grooved metal pieces that attach to the bottom of the shelf assembly using three screws each. When you use the brackets to install the fan-tray air filter, you do not need to remove the fan-tray assembly to access the air filter. Attach the brackets to the bottom of the shelf assembly before installing the rack.

Although the filter will work if it is installed with either side facing up, Cisco recommends that you install it with the metal bracing facing up to preserve the surface of the filter.

<b>Purpose</b>	This task installs the external brackets and air filter.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack, page 1-6</a> , if applicable
<b>Required/As Needed</b>	As needed; perform this task if you want to access the air filter without removing the fan-tray assembly.
<b>Onsite/Remote</b>	Onsite



### Note

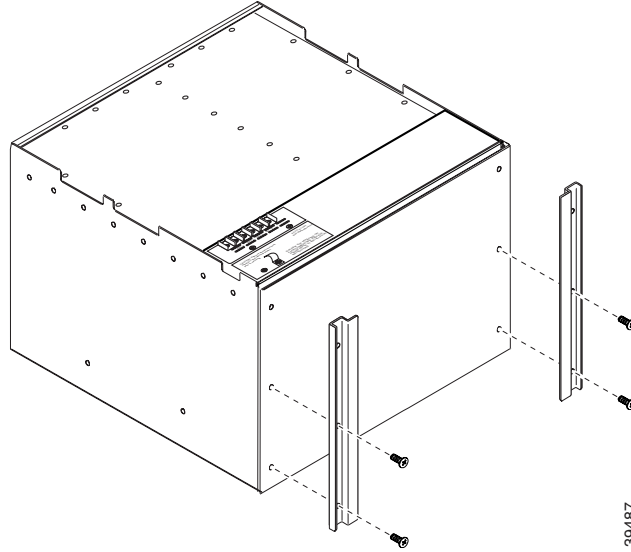
If you choose not to install the brackets, install the air filter by sliding it into the compartment at the bottom of the shelf assembly. Each time you remove and reinstall the air filter in the future, you must first remove the fan-tray assembly. Do not install an air filter in both filter locations on any shelf assembly.

- 
- Step 1** With the fan-tray assembly removed, place the ONS 15454 face down on a flat surface.
- Step 2** Locate the three screw holes that run along the left and right sides of the bottom of the shelf assembly.
- Step 3** Secure each bracket to the bottom of the shelf assembly using the screws (48-0003) provided in the backplane standoff kit (53-0795-XX).

Each bracket has a filter stopper and a flange on one end. Make sure to attach the brackets with the stoppers and flanges facing the rear of the shelf assembly (the top, if the ONS 15454 is face-down during installation).

[Figure 1-2 on page 1-9](#) illustrates bottom bracket installation. If you do not use the brackets, in the future you must remove the fan-tray assembly before removing the air filter. The brackets enable you to clean and replace the air filter without removing the fan-tray assembly.

Figure 1-2 Installing the external brackets



- Step 4** Slide the air filter into the shelf assembly.
- Step 5** Return to your originating procedure (NTP).

## DLP-5 Mount the Shelf Assembly in a Rack (One Person)

<b>Purpose</b>	This task allows one person to mount the shelf assembly in a rack.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Pinned hex key that is provided in the backplane standoff kit (53-0795-XX)</li> <li>• Two set screws (48-1003-XX)</li> <li>• # 2 Phillips screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<p><a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack</a>, page 1-6, if applicable</p> <p><a href="#">DLP-4 Install the External Brackets and Air Filter</a>, page 1-8, if applicable</p>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Verify that the proper fuse and alarm panel has been installed in the top mounting space. If a fuse and alarm panel has not been installed, you must install one according to manufacturer's instructions.
- If installing the 15454-ANSI shelf assembly, a 100 amp fuse panel (30 amp fuse per shelf minimum) is required.
  - If installing the 15454-NEBS3 shelf assembly, a standard 80 amp fuse panel (20 amp fuse per shelf minimum) is required.
- Step 2** Ensure that the shelf assembly is set for the desired rack size (either 19 or 23 inches).

## DLP-6 Mount the Shelf Assembly in a Rack (Two People)

- Step 3** Using the hex tool that shipped with the assembly, install the two set screws into the screw holes that will not be used to mount the shelf.
- Step 4** Lift the shelf assembly to the desired rack position and set it on the set screws.
- Step 5** Align the screw holes on the mounting ears with the mounting holes in the rack.
- Step 6** Using the Phillips screw driver, install one mounting screw in each side of the assembly.
- Step 7** When the shelf assembly is secured to the rack, install the remaining mounting screws.



**Note** Use at least one set of the horizontal screw slots on the ONS 15454 to prevent slippage.

- Step 8** Remove the temporary set screws.
- Step 9** Return to your originating procedure (NTP).

## DLP-6 Mount the Shelf Assembly in a Rack (Two People)

<b>Purpose</b>	This task allows two people to mount the shelf assembly in a rack.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Pinned hex key that is provided in the backplane standoff kit (53-0795-XX)</li> <li>• Two set screws (48-1003-XX)</li> <li>• # 2 Phillips screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<p><a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack, page 1-6</a>, if applicable</p> <p><a href="#">DLP-4 Install the External Brackets and Air Filter, page 1-8</a>, if applicable</p>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Verify that the proper fuse and alarm panel has been installed in the top mounting space. If a fuse and alarm panel is not present, you must install one according to manufacturer's instructions.
- If installing the 15454-ANSI shelf assembly, a 100 amp fuse panel (30 amp fuse per shelf minimum) is required.
  - If installing the 15454-NEBS3 shelf assembly, a standard 80 amp fuse panel (20 amp fuse per shelf minimum) is required.
- Step 2** Ensure that the shelf assembly is set for the desired rack size (either 19 or 23 inches).
- Step 3** Using the hex tool that shipped with the shelf assembly, install the two set screws (48-1003-XX) into the screw holes that will not be used to mount the shelf.
- Step 4** Lift the shelf assembly to the desired position in the rack.
- Step 5** Align the screw holes on the mounting ears with the mounting holes in the rack.
- Step 6** While one person holds the shelf assembly in place, the other person can install one mounting screw in each side of the assembly using the Phillips screw driver.
- Step 7** When the shelf assembly is secured to the rack, install the remaining mounting screws.




---

**Note** Use at least one set of the horizontal screw slots on the ONS 15454 to prevent slippage.

---

- Step 8** Remove the temporary set screws.
- Step 9** Return to your originating procedure (NTP).
- 

## DLP-7 Mount Multiple Shelf Assemblies in a Rack

<b>Purpose</b>	This task allows multiple shelves to be assembled in a rack.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<ul style="list-style-type: none"> <li>• <a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack, page 1-6</a>, if applicable</li> <li>• <a href="#">DLP-4 Install the External Brackets and Air Filter, page 1-8</a>, if applicable</li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite




---

**Note** The ONS 15454 must have one inch of airspace below the installed shelf assembly to allow air flow to the fan intake. If a second ONS 15454 is installed underneath a shelf assembly, the air ramp on top of the bottom shelf assembly provides the desired space. However, if the ONS 15454 is installed above third-party equipment, you must provide a minimum spacing of one inch between the third-party shelf assembly and the bottom of the ONS 15454. The third-party equipment must not vent heat upward into the ONS 15454.

---

- Step 1** Verify that the proper fuse and alarm panel has been installed in the top mounting space. If a fuse and alarm panel is not present, you must install one according to manufacturer's instructions.
- If installing the 15454-ANSI shelf assembly, a 100 amp fuse panel (30 amp fuse per shelf minimum) is required.
  - If installing the 15454-NEBS3 shelf assembly, a standard 80 amp fuse panel (20 amp fuse per shelf minimum) is required.
- Step 2** Mount the first ONS 15454 directly below the fuse and alarm panel using the [“DLP-5 Mount the Shelf Assembly in a Rack \(One Person\)”](#) section on page 1-9 or the [“DLP-6 Mount the Shelf Assembly in a Rack \(Two People\)”](#) section on page 1-10.
- Step 3** Repeat the task with the second and third (fourth if applicable) ONS 15454s.
- Step 4** Return to your originating procedure (NTP).
-

## NTP-3 Open and Remove the Front Door

<b>Purpose</b>	This procedure describes how to open and remove the front door to access the equipment.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Open end wrench</li> <li>• Pinned hex key that is provided in the backplane standoff kit (53-0795-XX)</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-2 Install the Shelf Assembly, page 1-5</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Complete the “[DLP-8 Open the Front Cabinet Compartment \(Door\)](#)” task on page 1-12.
- Step 2** Complete the “[DLP-9 Remove the Front Door](#)” task on page 1-13.
- Step 3** Continue with the “[NTP-4 Remove the Backplane Covers](#)” procedure on page 1-15.
- 

## DLP-8 Open the Front Cabinet Compartment (Door)

<b>Purpose</b>	This task opens the front cabinet compartment door.
<b>Tools/Equipment</b>	Pinned hex key that is provided in the backplane standoff kit (53-0795-XX)
<b>Prerequisite Procedures</b>	<p><a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack, page 1-6</a>, if applicable</p> <p><a href="#">DLP-4 Install the External Brackets and Air Filter, page 1-8</a>, if applicable</p> <p><a href="#">DLP-5 Mount the Shelf Assembly in a Rack (One Person), page 1-9</a> or <a href="#">DLP-6 Mount the Shelf Assembly in a Rack (Two People), page 1-10</a></p> <p><a href="#">DLP-7 Mount Multiple Shelf Assemblies in a Rack, page 1-11</a>, if applicable</p>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



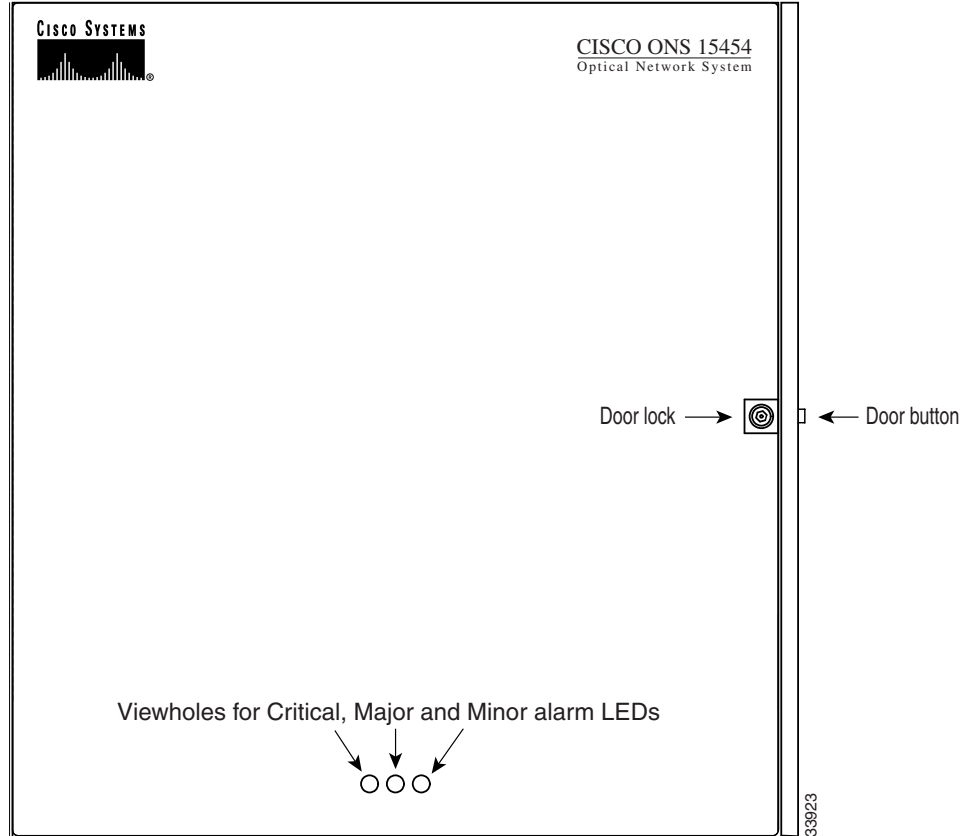
### Note

The ONS 15454 has an ESD plug input and is shipped with an ESD wrist strap. The ESD plug input is located on the outside edge of the shelf assembly on the right-hand side. It is labeled “ESD” on the top and bottom. Always wear an ESD wrist strap and connect the strap to the ESD plug when working on the ONS 15454.

---

- Step 1** Open the front door lock ([Figure 1-3 on page 1-13](#)).
- The ONS 15454 comes with a pinned hex key tool for locking and unlocking the front door. Turn the key counterclockwise to unlock the door and clockwise to lock it.
- Step 2** Press the door button to release the latch.
- Step 3** Swing the door open.

Figure 1-3 The ONS 15454 front door



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

## DLP-9 Remove the Front Door

<b>Purpose</b>	This task removes the front cabinet compartment door.
<b>Tools/Equipment</b>	Open end wrench
<b>Prerequisite Procedures</b>	<a href="#">DLP-8 Open the Front Cabinet Compartment (Door)</a> , page 1-12
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

**Step 1** Open the door.

**Step 2** To remove the door ground strap (available in Release 3.3 and later), perform the following:

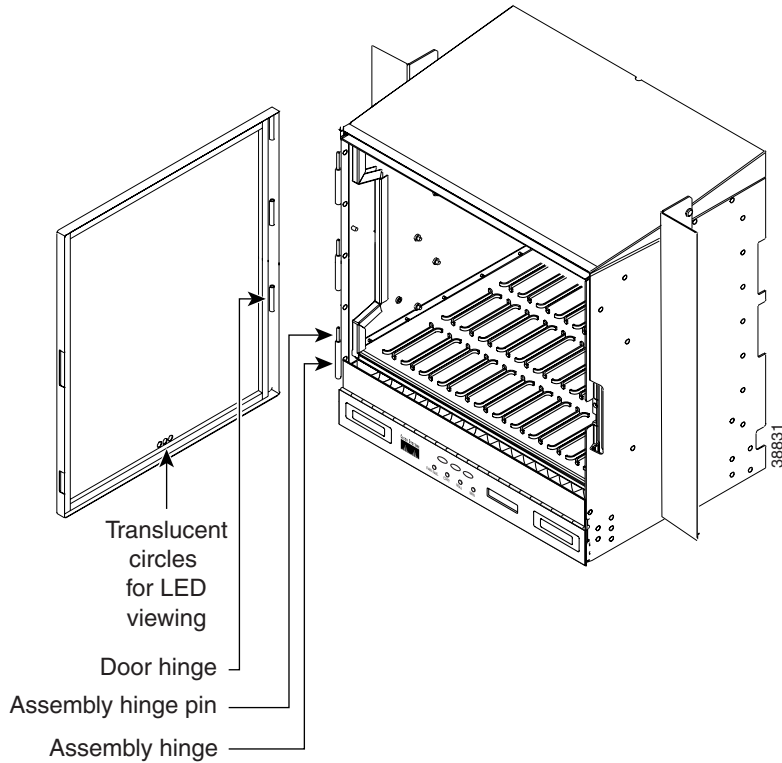
- a. To detach the ground strap from the front door, loosen the #6 Kepnut (49-0600-01) using the open end wrench. Detach the end of the ground strap terminal lug (72-3622-01) from the male stud on the inside of the door.

## DLP-9 Remove the Front Door

- b. To detach the other end of the ground strap from the longer screw on the fiber guide, loosen the #4 Kepnut (49-0337-01) on the terminal lug using the open end wrench. Remove the terminal lug and lock washer.

**Step 3** Lift the door from its hinges at the top left-hand corner of the door ([Figure 1-4](#)).

**Figure 1-4** Removing the ONS 15454 front door



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

---



## NTP-4 Remove the Backplane Covers

<b>Purpose</b>	This procedure describes how to access the backplane by removing the covers. The backplane has two sheet metal covers (one on either side), and a lower backplane cover at the bottom.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-2 Install the Shelf Assembly, page 1-5</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Complete the “[DLP-10 Remove the Lower Backplane Cover](#)” task on page 1-15.
- Step 2** Complete the “[DLP-11 Remove the Backplane Sheet Metal Cover](#)” task on page 1-16.
- Step 3** If you plan to install Electrical Interface Assemblies (EIAs), continue with the “[NTP-5 Install the Electrical Interface Assemblies](#)” procedure on page 1-17. If not, continue with the “[NTP-6 Install the Power and Ground](#)” procedure on page 1-23.
- 

## DLP-10 Remove the Lower Backplane Cover

<b>Purpose</b>	This task removes the lower backplane cover.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<ul style="list-style-type: none"> <li>• <a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack, page 1-6</a>, if applicable</li> <li>• <a href="#">DLP-4 Install the External Brackets and Air Filter, page 1-8</a>, if applicable</li> <li>• <a href="#">DLP-5 Mount the Shelf Assembly in a Rack (One Person), page 1-9</a> or <a href="#">DLP-6 Mount the Shelf Assembly in a Rack (Two People), page 1-10</a></li> <li>• <a href="#">DLP-7 Mount Multiple Shelf Assemblies in a Rack, page 1-11</a>, if applicable</li> </ul>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Unscrew the five retaining screws that hold the clear plastic cover in place.
- Step 2** Grasp the clear plastic cover on each side.
- Step 3** Gently pull the cover away from the backplane.

## ■ DLP-11 Remove the Backplane Sheet Metal Cover

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

---

## DLP-11 Remove the Backplane Sheet Metal Cover

<b>Purpose</b>	This task removes the backplane sheet cover that is installed on the backplane when EIAs are not installed.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<p><a href="#">DLP-3 Reverse the Mounting Bracket to Fit a 19-inch Rack</a>, page 1-6, if applicable</p> <p><a href="#">DLP-4 Install the External Brackets and Air Filter</a>, page 1-8, if applicable</p> <p><a href="#">DLP-5 Mount the Shelf Assembly in a Rack (One Person)</a>, page 1-9 or <a href="#">DLP-6 Mount the Shelf Assembly in a Rack (Two People)</a>, page 1-10</p> <p><a href="#">DLP-7 Mount Multiple Shelf Assemblies in a Rack</a>, page 1-11, if applicable</p>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** To remove the lower clear plastic backplane cover, loosen the five screws that secure it to the ONS 15454 and pull it away from the shelf assembly.
- Step 2** Loosen the nine perimeter screws that hold the backplane sheet metal cover(s) in place.
- Step 3** Lift the panel by the bottom to remove it from the shelf assembly.
- Step 4** Store the panel for later use. Attach the backplane cover(s) whenever EIA(s) are not installed.
- Step 5** Return to your originating procedure (NTP).
-

## NTP-5 Install the Electrical Interface Assemblies

<b>Purpose</b>	This procedure describes how to install electrical interface assemblies (EIAs). Typically an EIA panel is already installed on the backplane when the node is received, but EIA panels can be ordered separately. Refer to the <i>Cisco ONS 15454 Reference Manual, Release 3.3</i> , for descriptions of the EIAs.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• 9 perimeter screws</li> <li>• 12 inner screws</li> <li>• 5 backplane cover screws</li> <li>• EIA card (SMB, BNC, AMP Champ)</li> <li>• EIA panel</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	Required if the node will use electrical signals.
<b>Onsite/Remote</b>	Onsite



### Caution

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.



### Note

EIAs are normally factory installed. Verify that the correct EIA is installed on the shelf assembly. If not, install the correct EIA.

- Step 1** Complete the “[DLP-12 Install a BNC or High-Density BNC EIA](#)” task on page 1-18 as needed. BNCs are locking connectors; the high-density BNC also allows you to access every port on every card.
- Step 2** Complete the “[DLP-13 Install an SMB EIA](#)” task on page 1-20 as needed. SMBs allow you to access every port on every card using more space and efficient cabling.
- Step 3** Complete the “[DLP-14 Install the AMP Champ EIA](#)” task on page 1-21 as needed. AMP champs are exclusive to DS-1 cables.



### Note

To attach cables to the EIAs, see the “[NTP-9 Install the Electrical Card Cables on the Backplane](#)” section on page 1-36.

- Step 4** Continue with the “[NTP-6 Install the Power and Ground](#)” procedure on page 1-23.

## DLP-12 Install a BNC or High-Density BNC EIA

<b>Purpose</b>	This task installs a BNC or high-density BNC EIA.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• 9 perimeter screws</li> <li>• 12 inner screws</li> <li>• 5 backplane cover screws</li> <li>• BNC or high-density BNC card</li> <li>• EIA cover</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-10 Remove the Lower Backplane Cover, page 1-15</a>
<b>Required/As Needed</b>	Required if you are using DS-3, DS3XM-6, or EC-1 cards
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Remove the BNC or high-density BNC card from the packaging. Line up the connectors on the card with the mating connectors on the backplane. Gently push the card until both sets of connectors fit together snugly.
- Step 2** Place the metal EIA panel over the card.
- Step 3** Insert and tighten the nine perimeter screws (P/N 48-0358) at 8-10 lbs to secure the cover panel to the backplane.
- Step 4** Insert and tighten the twelve (BNC and SMB) or nine (high-density BNC) inner screws (P/N 48-0004) at 8-10 lbs to secure the cover panel to the card and backplane.
- Step 5** Replace the lower backplane cover, and insert and tighten the five screws to secure it.

[Figure 1-5 on page 1-19](#) shows a BNC EIA installation. [Figure 1-6 on page 1-19](#) shows high-density BNC EIA installation.

Figure 1-5 Installing the BNC EIA

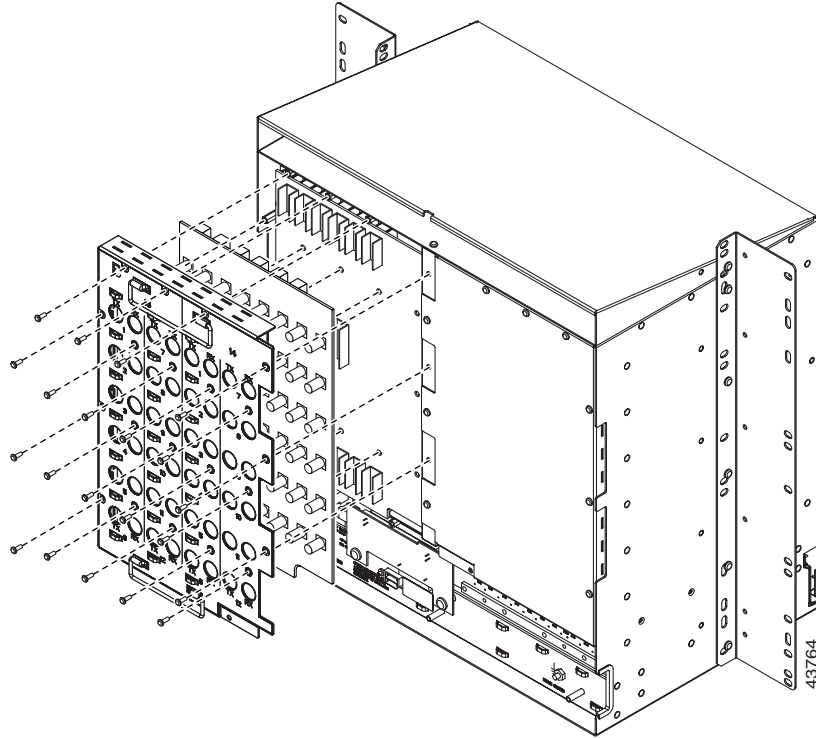
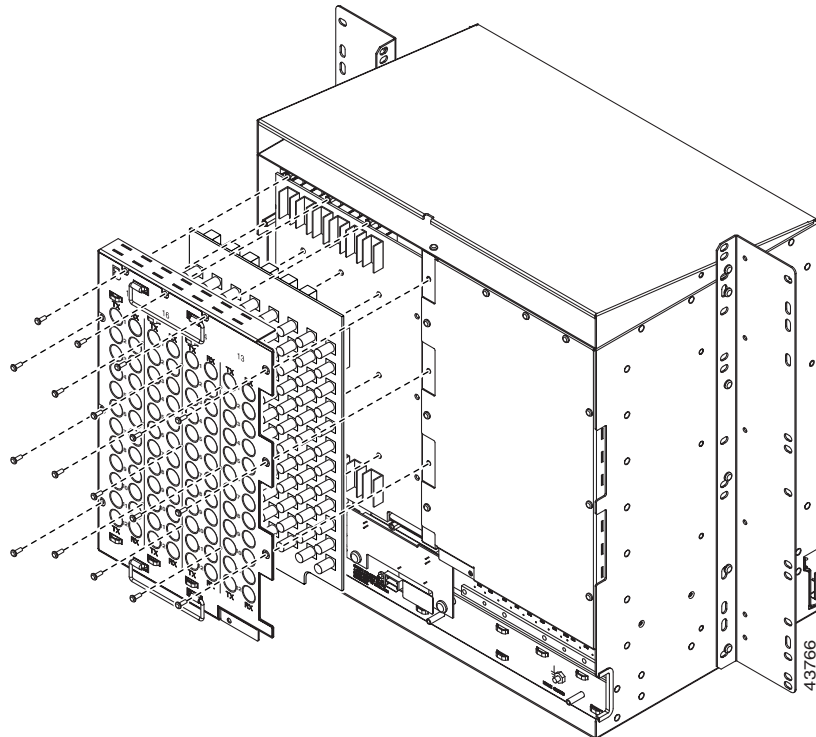


Figure 1-6 Installing the high-density BNC EIA



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

---

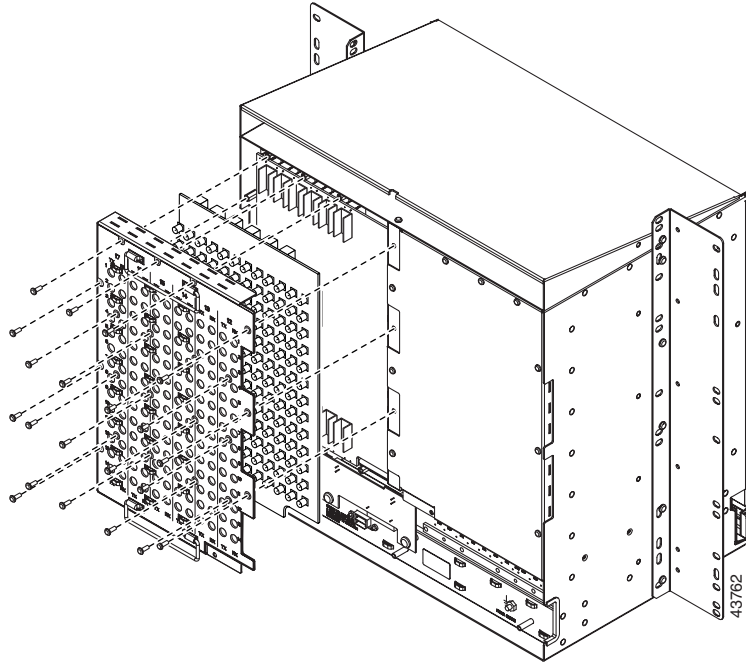
## DLP-13 Install an SMB EIA

<b>Purpose</b>	This task installs an SMB EIA.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• 9 perimeter screws</li> <li>• 12 inner screws</li> <li>• 5 backplane cover screws</li> <li>• SMB card</li> <li>• EIA panel</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-10 Remove the Lower Backplane Cover, page 1-15</a>
<b>Required/As Needed</b>	Required if you are using DS-1 cards
<b>Onsite/Remote</b>	Onsite

---

- Step 1** Remove the SMB card from the packaging. Line up the connectors on the card with the mating connectors on the backplane. Gently push the card until both sets of connectors fit together snugly.
- Step 2** Place the EIA panel over the card.
- Step 3** Insert and tighten the nine perimeter screws (P/N 48-0358) at 8-10 lbs to secure the cover panel to the backplane.
- Step 4** Insert and tighten the twelve (BNC and SMB) inner screws (P/N 48-0004) at 8-10 lbs to secure the cover panel to the card and backplane.
- Step 5** Replace the lower backplane cover, and insert and tighten the five screws to secure it.
- If you are using SMB EIAs to make DS-1 connections, you need the DS-1 electrical interface adapter, commonly referred to as a balun (P/N 15454-WW-14=).
- [Figure 1-7 on page 1-21](#) shows an SMB EIA installation.

Figure 1-7 Installing the SMB EIA (use a balun for DS-1 connections)



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

## DLP-14 Install the AMP Champ EIA

**Purpose** This task installs an AMP Champ EIA.

**Tools/Equipment**

- #2 Phillips screw driver
- Medium slot head screw driver
- Small slot head screw driver
- 9 perimeter screws
- 12 inner screws
- 5 backplane cover screws
- 6 AMP Champ cards
- EIA panel

**Prerequisite Procedures** [DLP-10 Remove the Lower Backplane Cover, page 1-15](#)

**Required/As Needed** As needed

**Onsite/Remote** Onsite

**Step 1** Align the AMP Champ panel with the backplane and insert and tighten the nine perimeter screws (P/N 48-0358) at 8-10 lbs.

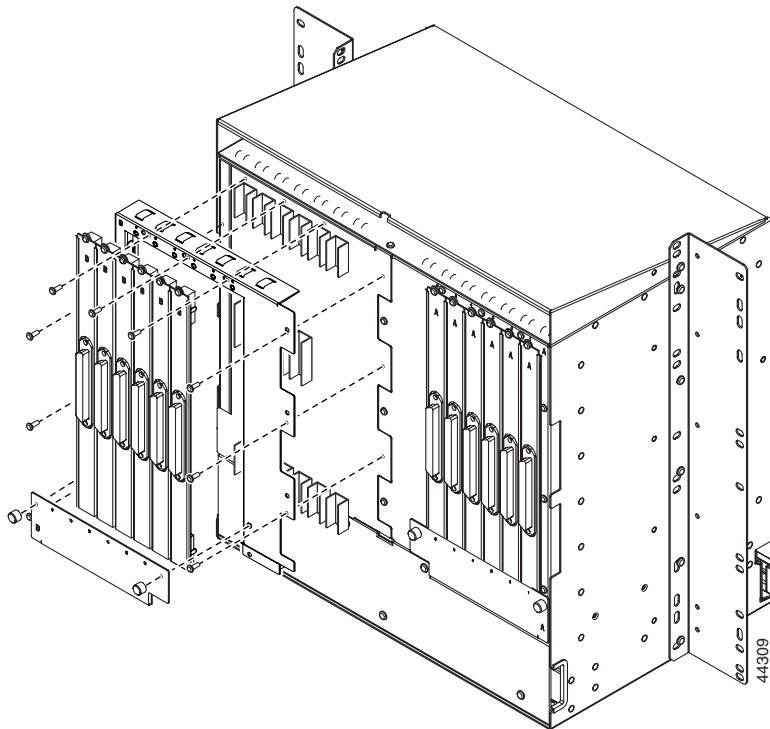
**Step 2** Align an AMP Champ card with the backplane connector and push until it fits snugly. Repeat until you have installed all six AMP Champ cards.

## ■ DLP-14 Install the AMP Champ EIA

- Step 3** To secure each AMP Champ card to the cover panel, insert and tighten a screw (P/N 48-0003) at the top of each card at 8-10 lbs.
- Step 4** Place the AMP Champ fastening plate along the bottom of the cover panel, and hand tighten the two thumbscrews.

Figure 1-8 shows an AMP Champ EIA installation.

**Figure 1-8** Installing the AMP Champ EIA



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



## NTP-6 Install the Power and Ground

<b>Purpose</b>	This procedure describes how to install power feeds and ground the ONS 15454.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• Screws</li> <li>• Power cable (from fuse and alarm panel to assembly), #10 AWG, copper conductors, 194°F [90°C])</li> <li>• Ground cable #6 AWG stranded</li> <li>• Listed pressure terminal connectors such as ring and fork types; connectors must be suitable for 10AWG copper conductors</li> <li>• Wire wrapper</li> <li>• Wire cutters</li> <li>• Wire strippers</li> <li>• Crimp tool</li> <li>• Fuse panel</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



Warning

---

**Shut off the power from the power source or turn off the breakers before beginning work.**

---



Warning

---

**This equipment is intended to be grounded. Ensure that the host is connected to earth ground during normal use.**

---



Caution

---

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

---



Warning

---

**Do not mix conductors of dissimilar metals in a terminal or splicing connector where physical contact occurs (such as copper and aluminum, or copper and copper-clad aluminum), unless the device is suited for the purpose and conditions of use.**

---



Warning

---

**Connect the ONS 15454 only to a DC power source that complies with the safety extra-low voltage (SELV) requirements in IEC 60950-based safety standards.**

---

## DLP-15 Verify that the Correct Fuse and Alarm Panel is Installed in the Equipment Rack

**Warning**

The ONS 15454 relies on the protective devices in the building installation to protect against short circuit, overcurrent, and grounding faults. Ensure that the protective devices are properly rated to protect the system, and that they comply with national and local codes.

**Warning**

A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.

**Warning**

When installing redundant power feeds, do not use aluminum conductors.

**Warning**

If you use redundant power leads to power the ONS 15454, disconnecting one lead will not remove power from the node.

- 
- Step 1** Complete the “[DLP-15 Verify that the Correct Fuse and Alarm Panel is Installed in the Equipment Rack](#)” task on page 1-24.
- Step 2** Complete the “[DLP-16 Connect the Office Ground to the ONS 15454](#)” task on page 1-25.
- Step 3** Complete the “[DLP-17 Connect Office Power to the ONS 15454 Shelf](#)” task on page 1-26.
- Step 4** Complete the “[DLP-18 Verify Office Power](#)” task on page 1-28.
- Step 5** Continue with the “[NTP-7 Install the Fan-Tray Assembly](#)” procedure on page 1-29.
- 

## DLP-15 Verify that the Correct Fuse and Alarm Panel is Installed in the Equipment Rack

<b>Purpose</b>	This task verifies that the proper fuse and alarm panel is installed in the equipment rack.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

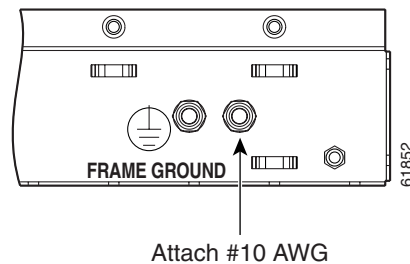
- 
- Step 1** Verify the following:
- If using the 15454-ANSI shelf, a 100 amp fuse panel (30 amp fuse per shelf minimum) is installed. If not, install one according to manufacturer’s instructions.
  - If using the 15454-NEBS3 shelf, a standard 80 amp fuse panel (20 amp fuse per shelf minimum) is installed. If not, install one according to manufacturer’s instructions.
- Step 2** Return to your originating procedure (NTP).
-

## DLP-16 Connect the Office Ground to the ONS 15454

<b>Purpose</b>	This task connects ground to the ONS 15454 shelf.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• Screws</li> <li>• Power cable (from fuse and alarm panel to assembly), #10 AWG, copper conductors, 194°F [90°C])</li> <li>• Ground cable #6 AWG stranded</li> <li>• Listed pressure terminal connectors such as ring and fork types; connectors must be suitable for #10 AWG copper conductors</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-10 Remove the Lower Backplane Cover, page 1-15</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Verify that the office ground cable (#6 AWG stranded) is connected to the top of the bay according to local site practice.
- Step 2** Attach one end of the shelf ground cable (#10 AWG) to the right side of the backplane ground nut. See [Figure 1-9](#) for the location of the ground on the backplane.

**Figure 1-9** Ground location on the backplane



- Step 3** Attach the other end of the shelf ground cable to the bay.
- Step 4** Return to your originating procedure (NTP).
-

## DLP-17 Connect Office Power to the ONS 15454 Shelf

<b>Purpose</b>	This task connects power to the ONS 15454 shelf.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> <li>• Wire wrapper</li> <li>• Wire cutters</li> <li>• Wire strippers</li> <li>• Crimp tool</li> <li>• Fuse panel</li> <li>• Power cable (from fuse and alarm panel to assembly), #10 AWG, copper conductors, 194°F [90°C])</li> <li>• Ground cable #6 AWG stranded</li> <li>• Listed pressure terminal connectors such as ring and fork types; connectors must be suitable for 10AWG copper conductors</li> </ul>
<b>Prerequisite Procedures</b>	<p><a href="#">DLP-15 Verify that the Correct Fuse and Alarm Panel is Installed in the Equipment Rack, page 1-24</a></p> <p><a href="#">DLP-16 Connect the Office Ground to the ONS 15454, page 1-25</a></p>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

**Note**

If the system loses power or both TCC+ cards are reset, you must reset the ONS 15454 clock. After powering down, the date defaults to January 1, 1970, 00:04:15. To reset the clock, see “[NTP-25 Set Up Name, Date, Time, and Contact Information](#)” section on page 4-3.

**Note**

If you encounter problems with the power supply, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

**Warning**

**Do not apply power to the ONS 15454 until you complete all installation steps and check the continuity of the -48 VDC and return.**

**Step 1** Connect the office power according to the fuse panel engineering specifications.

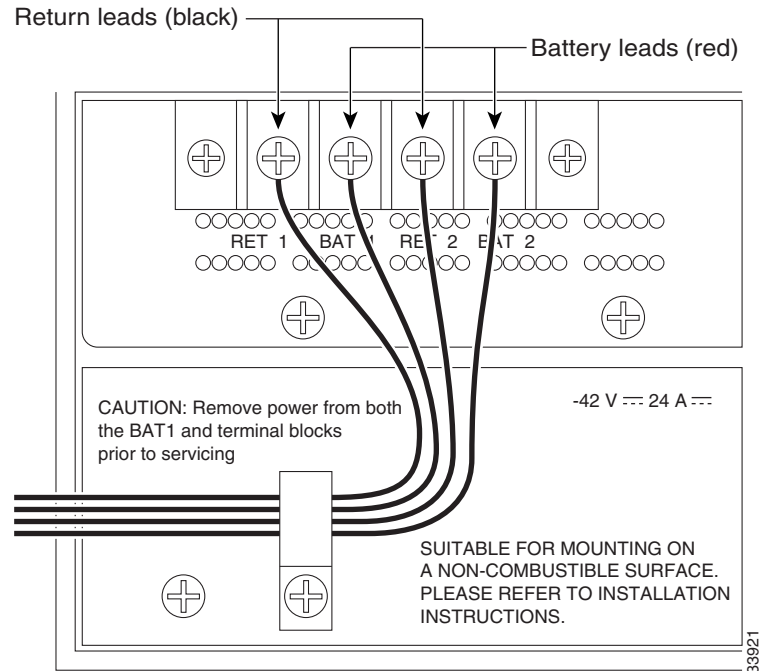
**Step 2** Measure and cut the cables as needed to reach the ONS 15454 from the fuse panel. [Figure 1-10 on page 1-27](#) shows the ONS 15454 power terminals.

**Step 3** Dress the power according to local site practice.

**Warning**

**When installing the ONS 15454, the ground connection must always be made first and disconnected last.**

Figure 1-10 ONS 15454 power terminals



- Step 4** Remove or loosen the #8 power terminal screws on the ONS 15454. To avoid confusion, label the cables connected to the BAT1/RET1 (A) power terminals as 1, and the cables connected to the BAT2/RET2 (B) power terminals as 2.



**Note** Use only pressure terminal connectors, such as ring and fork types, when terminating the battery, battery return, and frame ground conductors.



**Caution** Before you make any crimp connections, coat all bare conductors (battery, battery return, and frame ground) with an appropriate antioxidant compound. Bring all unplated connectors, braided strap, and bus bars to a bright finish, then coat with an antioxidant before you connect them. You do not need to prepare tinned, solder plated, or silver-plated connectors and other plated connection surfaces, but always keep them clean and free of contaminants.



**Caution** When terminating power, return, and frame ground, do not use soldering lug, screwless (push-in) connectors, quick-connect, or other friction-fit connectors.

- Step 5** Strip 1/2 inch of insulation from all power cables that you will use.
- Step 6** Crimp the lugs onto the ends of all power leads.

**Note**

When terminating battery and battery return connections as shown in [Figure 1-10 on page 1-27](#), follow a torque specification of 10 in-lbs. When terminating a frame ground, use the kep-nut provided with the ONS 15454 and tighten it to a torque specification of 31 in-lbs. The kep-nut provides a frame ground connection that minimizes the possibility of loosening caused by rotation during installation and maintenance activity. This type of prevention is inherently provided by the terminal block for battery and battery return connections.

- Step 7** Terminate the return 1 lead to the RET1 backplane terminal. Use oxidation-prevention grease to keep connections non-corrosive.

**Warning**

**Do not secure multiple connectors with the same bolt assembly.**

- Step 8** Terminate the negative 1 lead to the negative BAT1 backplane power terminal. Use oxidation prevention grease to keep connections non-corrosive.
- Step 9** If you use redundant power leads, terminate the return 2 lead to the positive RET2 terminal on the ONS 15454. Terminate the negative 2 lead to the negative BAT2 terminal on the ONS 15454. Use oxidation-preventative grease to keep connections non-corrosive.
- Step 10** Route the cables out below the power terminals using the plastic cable clamp, as shown in [Figure 1-10 on page 1-27](#).
- Step 11** To power up the node, insert the correct fuse in the correct fuse position according to site practice.
- Step 12** Return to your originating procedure (NTP).

## DLP-18 Verify Office Power

<b>Purpose</b>	This task measures the power to verify correct power and returns.
<b>Tools/Equipment</b>	Voltmeter
<b>Prerequisite Procedures</b>	<a href="#">DLP-15 Verify that the Correct Fuse and Alarm Panel is Installed in the Equipment Rack, page 1-24</a> <a href="#">DLP-16 Connect the Office Ground to the ONS 15454, page 1-25</a> <a href="#">DLP-17 Connect Office Power to the ONS 15454 Shelf, page 1-26</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Using a voltmeter, verify the office battery and ground at the following points on the fuse and alarm panel:
- To verify the power, place the black test lead of the voltmeter to the frame ground. Place the red test lead on the A-side connection and verify that it is between -42 VDC and -57 VDC. Place the red test lead on the B-side connection and verify that it is between -42 VDC and -57 VDC.
  - To verify the ground, place the black test lead of the voltmeter to the frame ground. Place the red test lead on the A-side return ground and verify that no voltage is present. Place the red test lead on the B-side return ground and verify that no voltage is present.

- Step 2** Complete one of the following:
- If you are using a 80 amp fuse panel, insert a 20 amp fuse into the fuse position according to site practice.
  - If you are using a 100 amp fuse panel, insert a 30 amp fuse into the fuse position according to site practice.
- Step 3** Using a voltmeter, verify the shelf for -48 VDC battery and ground:
- a. To verify the A-side of the shelf, place the black lead of the voltmeter to the frame ground. Place the red test lead to the BAT1 (A-side battery connection) red cable. Verify it reads between -42 VDC and -57 VDC. Then place the red test lead of the voltmeter to the RET1 (A-side return ground) black cable and verify that no voltage is present.
  - b. To verify the B-side of the shelf, place the black test lead of the voltmeter to the frame ground. Place the red test lead to the BAT2 (B-side battery connection) red cable. Verify it reads between -42 VDC and -57 VDC. Then place the red test lead of the voltmeter to the RET2 (B-side return ground) black cable and verify that no voltage is present.
- Step 4** Return to your originating procedure (NTP).
- 

## NTP-7 Install the Fan-Tray Assembly

<b>Purpose</b>	This procedure installs the fan-tray assembly.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-9 Remove the Front Door, page 1-13</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



### Caution

Do not operate an ONS 15454 without a fan-tray air filter. A fan-tray air filter is mandatory.

---



### Caution

The 15454-FTA3 fan-tray assembly can only be installed in ONS 15454 Release 3.1 or later shelf assemblies (15454-SA-ANSI, 800-19857). It includes a pin that does not allow it to be installed in ONS 15454 shelf assemblies released before ONS 15454 Release 3.1 (15454-SA-NEBS3E, 15454-SA-NEBS3, and 15454-SA-R1, P/N 800-0714915454). Installing the 15454-FTA3 in a non-compliant shelf assembly may result in failure of the alarm interface panel (AIP), which in turn, will result in power loss to the fan-tray assembly.

---



### Caution

You must place the edge of the air filter flush against the front of the fan-tray assembly compartment when installing the fan tray on top of the filter. Failure to do so could result in damage to the filter, the fan tray, or both.

---

**Caution**

Do not force a fan-tray assembly into place. Doing so can damage the connectors on the fan tray and/or the connectors on the back panel of the shelf assembly.

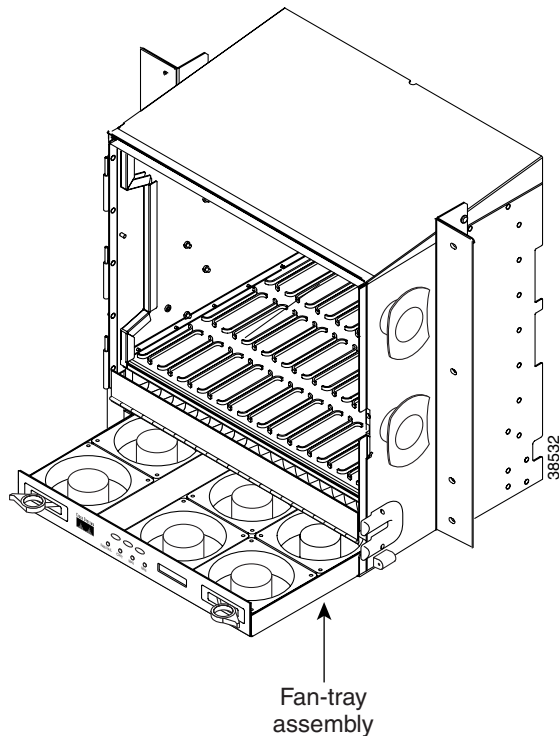
**Note**

To install the fan-tray assembly, it is not necessary to move any of the cable-management facilities.

- Step 1** Open the front door of the shelf assembly. Removing the front door is optional.
- Step 2** Slide the fan tray into the shelf assembly until the electrical plug at the rear of the tray plugs into the corresponding receptacle on the backplane.
- Step 3** To verify that the tray has plugged into the backplane, check that the LCD on the front of the fan tray is activated and displays data.

Figure 1-11 shows the location of the fan tray.

**Figure 1-11** Installing the fan-tray assembly



- Step 4** Continue with the “NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections” procedure on page 1-31.



## NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections

<b>Purpose</b>	This procedure describes how to install alarm, timing, LAN, and craft wires.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• #22 or #24 AWG alarm wires</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Complete the “[DLP-19 Install Alarm Wires on the Backplane](#)” task on page 1-31 as necessary. Alarm wires are necessary to create external alarms and controls.
- Step 2** Complete the “[DLP-20 Install Timing Wires on the Backplane](#)” task on page 1-33 as needed. Timing wires are necessary to provision external timing.
- Step 3** Complete the “[DLP-21 Install LAN Wires on the Backplane](#)” task on page 1-34 as needed. LAN wires (or the LAN port on the TCC+) are necessary to create an external LAN connection.
- Step 4** Complete the “[DLP-22 Install the TL1 Craft Interface](#)” task on page 1-35 as needed. Craft wires (or the RS-232 port on the TCC+) are required to access TL1.



### Caution

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

- 
- Step 5** If you plan to install electrical cards, continue with the “[NTP-9 Install the Electrical Card Cables on the Backplane](#)” procedure on page 1-36. If not, continue with the “[NTP-11 Install the Rear Cover](#)” procedure on page 1-46.
- 

## DLP-19 Install Alarm Wires on the Backplane

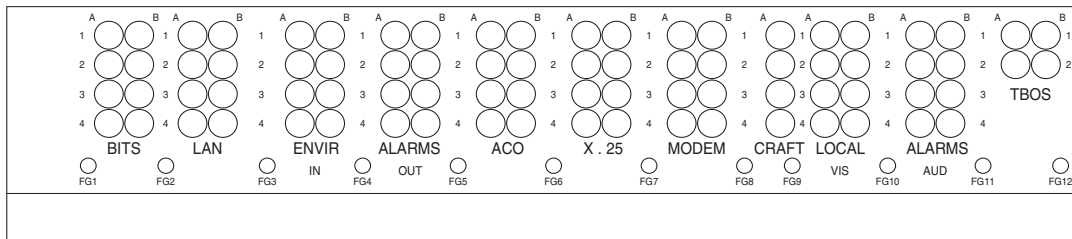
<b>Purpose</b>	This task installs the alarm wires on the backplane.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• #22 or #24 AWG wires</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	Required to create external alarms and controls
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Use #22 or #24 AWG wires.
- Step 2** Wrap the alarm wires on the appropriate wire-wrap pins according to local site practice. [Figure 1-12 on page 1-32](#) shows alarm pin assignments.



**Note** For information about attaching ferrites to wire-wrap pin fields, see the “NTP-12 Install Ferrites” section on page 1-48.

Figure 1-12 Pinouts



Field	Pin	Function	Field	Pin	Function
BITS	A1	BITS Output 2 negative (-)	ENVIR ALARMS OUT	A1	Normally open output pair number 1
	B1	BITS Output 2 positive (+)		B1	Normally open output pair number 2
	A2	BITS Input 2 negative (-)		A2	
	B2	BITS Input 2 positive (+)		B2	
	A3	BITS Output 1 negative (-)	A3	Normally open output pair number 3	
	B3	BITS Output 1 positive (+)	B3	Normally open output pair number 4	
	A4	BITS Input 1 negative (-)	A4		
	B4	BITS Input 1 positive (+)	B4		
LAN	Connecting to a hub, or switch		ACO	A1	Normally open ACO pair
	A1	RJ-45 pin 6 RX-		B1	
	B1	RJ-45 pin 3 RX+	CRAFT	A1	Receive (PC pin #2)
	A2	RJ-45 pin 2 TX-		A2	Transmit (PC pin #3)
	B2	RJ-45 pin 1 TX+		A3	Ground (PC pin #5)
	Connecting to a PC/Workstation or router			A4	DTR (PC pin #4)
	A1	RJ-45 pin 2 RX-	LOCAL ALARMS AUD (Audible)	A1	Alarm output pair number 1: Remote audible alarm.
	B1	RJ-45 pin 1 RX+		B1	Alarm output pair number 2: Critical audible alarm.
A2	RJ-45 pin 6 TX-	A2			
B2	RJ-45 pin 3 TX+	B2			
ENVIR ALARMS IN	A1	Alarm input pair number 1: Reports closure on connected wires.	N/O	A3	Alarm output pair number 3: Major audible alarm.
	B1			B3	Alarm output pair number 4: Minor audible alarm.
	A2	Alarm input pair number 2: Reports closure on connected wires.		A4	Alarm output pair number 4: Minor audible alarm.
	B2				
	A3	Alarm input pair number 3: Reports closure on connected wires.	LOCAL ALARMS VIS (Visual)	A1	Alarm output pair number 1: Remote visual alarm.
	B3			B1	Alarm output pair number 2: Critical visual alarm.
	A4	Alarm input pair number 4: Reports closure on connected wires.		A2	
	B4			B2	B2
N/O			N/O	A3	Alarm output pair number 3: Major visual alarm.
				B3	Alarm output pair number 4: Minor visual alarm.
				A4	
				B4	

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

## DLP-20 Install Timing Wires on the Backplane

<b>Purpose</b>	This task installs the timing wires on the backplane.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• #22 or #24 AWG wire</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	Required if the node is using external BITS timing
<b>Onsite/Remote</b>	Onsite

**Step 1** Use #22 or #24 AWG wire.

**Step 2** Wrap the clock wires on the appropriate wire-wrap pins according to local site practice.

The BITS pin field (FG1) has a frame ground pin beneath it. Wrap the ground shield of the alarm cable to the frame ground pin. [Table 1-1](#) lists the pin assignments for the BITS timing pin fields.

**Table 1-1 External Timing Pin Assignments for BITS**

External Device	Contact	Tip & Ring	Function
First external device	A3 (BITS 1 Out)	Primary ring (-)	Output to external device
	B3 (BITS 1 Out)	Primary tip (+)	Output to external device
	A4 (BITS 1 In)	Secondary ring (-)	Input from external device
	B4 (BITS 1 In)	Secondary tip (+)	Input from external device
Second external device	A1 (BITS 2 Out)	Primary ring (-)	Output to external device
	B1 (BITS 2 Out)	Primary tip (+)	Output to external device
	A2 (BITS 2 In)	Secondary ring (-)	Input from external device
	B2 (BITS 2 In)	Secondary tip (+)	Input from external device



**Note** For more detailed information about timing, refer to the *Cisco ONS 15454 Reference Manual*. To set up system timing, see the [“NTP-28 Set Up Timing” section on page 4-18](#).

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

## DLP-21 Install LAN Wires on the Backplane

<b>Purpose</b>	This task installs the LAN wires on the backplane.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• #22 or #24 AWG wire</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	Required if the node is using an external LAN connection
<b>Onsite/Remote</b>	Onsite


**Note**

Rather than using the LAN wires, you can use the LAN connection port on the TCC+ if preferred. Use either the backplane connection or the TCC+ front connection.

**Step 1**

Use #22 or #24 AWG wire.

**Step 2**

Wrap the wires on the appropriate wire-wrap pins according to local site practice.


**Caution**

Cross talk may result if both Rx and Tx pins connect on the same twisted pair of wires from the CAT 5 cable. The two Tx pins need to be on one twisted pair, and the two Rx pins need to be on another twisted pair.

A frame ground pin is located beneath each pin field (FG2 for the LAN pin field). Wrap the ground shield of the LAN interface cable to the frame ground pin. [Table 1-2](#) shows the LAN pin assignments.

**Table 1-2 LAN Pin Assignments**

Pin Field	Backplane Pins	RJ-45 Pins
LAN 1 Connecting to data circuit-terminating equipment (DCE*) (a hub or switch)	B2	1
	A2	2
	B1	3
	A1	6
LAN 1 Connecting to data terminal equipment (DTE) (a PC/workstation or router)	B1	1
	A1	2
	B2	3
	A2	6

**Step 3**

Return to your originating procedure (NTP).

## DLP-22 Install the TL1 Craft Interface

<b>Purpose</b>	This task installs the TL1 craft interface.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• #22 or #24 AWG alarm wires</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>
<b>Required/As Needed</b>	Required to access TL1 using the craft backplane pins
<b>Onsite/Remote</b>	Onsite

**Note**

Rather than using the craft pins, you can use a straight-through cable connected to the TCC+ RS-232 port to access a TL1 craft interface. You cannot use the craft backplane pins and the RS-232 port on the TCC+ card simultaneously.

**Step 1** Use #22 or #24 AWG wire.

**Step 2** Wrap the craft interface wires on the appropriate wire-wrap pins according to local site practice.

**Note**

For information about attaching ferrites to wire-wrap pin fields, see the “[DLP-31 Attach Ferrites to Wire-Wrap Pin Fields](#)” section on page 1-49.

**Step 3** Wrap the ground shield of the craft interface cable to the frame-ground pin.

Wrap the ground wire of your computer cable to pin A3 on the craft pin field. [Table 1-3](#) shows the pin assignments for the CRAFT pin field.

**Note**

You cannot use the craft backplane pins and the RS-232 port on the TCC+ card simultaneously.

**Table 1-3 Craft Interface Pin Assignments**

Pin Field	Contact	Function
Craft	A1	Receive
	A2	Transmit
	A3	Ground
	A4	DTR

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

## NTP-9 Install the Electrical Card Cables on the Backplane

<b>Purpose</b>	Optional EIA backplane covers are typically pre-installed when ordered with the ONS 15454. The following procedure describes how to install the electrical card cables to the backplane. If the shelf was not shipped with the correct EIA interface, you must order and install the correct EIA. Refer to the <i>Cisco ONS 15454 Reference Manual, Release 3.3</i> , for more information about EIAs.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• Twisted-pair cables</li> <li>• BNC insertion tool</li> <li>• SMB cable connector</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-5 Install the Electrical Interface Assemblies, page 1-17</a>
<b>Required/As Needed</b>	Required if you are using electrical cards
<b>Onsite/Remote</b>	Onsite


**Caution**

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

- 
- Step 1** Complete the “[DLP-23 Install DS-1 Cables Using Electrical Interface Adapters \(Balun\)](#)” task on [page 1-37](#) as needed. Baluns are used on SMB EIAs to properly terminate DS-1 signals.
- Step 2** To install DS-1 cables using AMP Champ cables, complete the “[DLP-24 Install DS-1 AMP Champ Cables on the AMP Champ EIA](#)” task on [page 1-38](#).
- Step 3** Complete the “[DLP-25 Install Coaxial Cable With BNC Connectors](#)” task on [page 1-41](#) as needed.
- Step 4** Complete the “[DLP-26 Install Coaxial Cable With High-Density BNC Connectors](#)” task on [page 1-42](#) as needed.
- Step 5** Complete the “[DLP-27 Install Coaxial Cable with SMB Connectors](#)” task on [page 1-43](#) as needed.
- Step 6** Continue with the “[NTP-10 Route Electrical Cables](#)” procedure on [page 1-44](#).
-

## DLP-23 Install DS-1 Cables Using Electrical Interface Adapters (Balun)

<b>Purpose</b>	This task installs the DS-1 cables using the electrical interface adapters.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• Twisted-pair cables</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-13 Install an SMB EIA, page 1-20</a>
<b>Required/As Needed</b>	Required if you are using an SMB EIA for DS-1 cards
<b>Onsite/Remote</b>	Onsite


**Note**

All DS-1 cables connected to the ONS 15454 DS-1 ports must terminate with twisted-pair cables to connect to the DS-1 electrical interface adapter. The DS-1 electrical interface adapters project 1.72 inches beyond the SMB EIA.

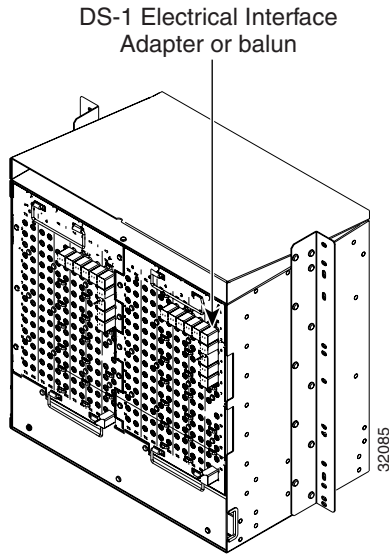
- 
- Step 1** Attach the SMB connector on an adapter to the SMB connector for the port's transmit pair on the backplane.
- Step 2** Attach the SMB connector on an adapter to the SMB connector for the port's receive pair on the backplane.
- Step 3** Terminate the DS-1 transmit and receive cables for the port to the wire-wrap posts on the adapter:
- Using a wire-wrap tool, connect the receive cables to the receive adapter pins on the backplane connector for the desired port.
  - Connect the transmit cables to the transmit adapter pins on the backplane connector for the desired port.
  - Terminate the shield ground wire on the DS-1 cable to ground according to local site practice.


**Note**

If you put DS1N-14 cards in Slots 3 and 15 to form 1:N protection groups, do not wire Slots 3 and 15 for DS-1 electrical interface adapters.

[Figure 1-13 on page 1-38](#) shows a ONS 15454 backplane with an SMB EIA with DS-1 electrical interface adapters attached on both sides of the shelf assembly to create DS-1 twisted-pair termination points.

**Figure 1-13** A backplane with an SMB EIA for DS-1 cables



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

## DLP-24 Install DS-1 AMP Champ Cables on the AMP Champ EIA

<b>Purpose</b>	This task installs the DS-1 AMP Champ cables on the AMP Champ EIA.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Wire wrapper</li> <li>• Twisted-pair cables</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-14 Install the AMP Champ EIA, page 1-21</a>
<b>Required/As Needed</b>	Required if you are using an AMP Champ EIA for DS-1 cards
<b>Onsite/Remote</b>	Onsite

- Step 1** Prepare a 56-wire cable for each DS-1 card you will install in the shelf assembly.
- Step 2** Connect the male AMP Champ connector on the cable to the female AMP Champ connector on the ONS 15454 backplane.
- Step 3** Use the clips on the male AMP Champ connector to secure the connection.

The female connector has grooves on the outside edge for snapping the clips into place.

[Table 1-4 on page 1-39](#) shows the pin assignments for the AMP Champ connectors on the ONS 15454 AMP Champ EIA. The shaded area corresponds to the white/orange binder group. A binder group is a set of 25 pairs of wires coded with an industry-standard color scheme.



**Table 1-4 Pin Assignments for AMP Champ Connectors (Shaded Area Corresponds to White/Orange Binder Group)**

Signal/Wire	Pin	Pin	Signal/Wire	Signal/Wire	Pin	Pin	Signal/Wire
Tx Tip 1 white/blue	1	33	Tx Ring 1 blue/white	Rx Tip 1 yellow/orange	17	49	Rx Ring 1 orange/yellow
Tx Tip 2 white/orange	2	34	Tx Ring 2 orange/white	Rx Tip 2 yellow/green	18	50	Rx Ring 2 green/yellow
Tx Tip 3 white/green	3	35	Tx Ring 3 green/white	Rx Tip 3 yellow/brown	19	51	Rx Ring 3 brown/yellow
Tx Tip 4 white/brown	4	36	Tx Ring 4 brown/white	Rx Tip 4 yellow/slate	20	52	Rx Ring 4 slate/yellow
Tx Tip 5 white/slate	5	37	Tx Ring 5 slate/white	Rx Tip 5 violet/blue	21	53	Rx Ring 5 blue/violet
Tx Tip 6 red/blue	6	38	Tx Ring 6 blue/red	Rx Tip 6 violet/orange	22	54	Rx Ring 6 orange/violet
Tx Tip 7 red/orange	7	39	Tx Ring 7 orange/red	Rx Tip 7 violet/green	23	55	Rx Ring 7 green/violet
Tx Tip 8 red/green	8	40	Tx Ring 8 green/red	Rx Tip 8 violet/brown	24	56	Rx Ring 8 brown/violet
Tx Tip 9 red/brown	9	41	Tx Ring 9 brown/red	Rx Tip 9 violet/slate	25	57	Rx Ring 9 slate/violet
Tx Tip 10 red/slate	10	42	Tx Ring 10 slate/red	Rx Tip 10 white/blue	26	58	Rx Ring 10 blue/white
Tx Tip 11 black/blue	11	43	Tx Ring 11 blue/black	Rx Tip 11 white/orange	27	59	Rx Ring 11 orange/white
Tx Tip 12 black/orange	12	44	Tx Ring 12 orange/black	Rx Tip 12 white/green	28	60	Rx Ring 12 green/white
Tx Tip 13 black/green	13	45	Tx Ring 13 green/black	Rx Tip 13 white/brown	29	61	Rx Ring 13 brown/white
Tx Tip 14 black/brown	14	46	Tx Ring 14 brown/black	Rx Tip 14 white/slate	30	62	Rx Ring 14 slate/white
Tx Spare0+ Not applicable	15	47	Tx Spare0- Not applicable	Rx Spare0+ Not applicable	31	63	Rx Spare0- Not applicable
Tx Spare1+ Not applicable	16	48	Tx Spare1- Not applicable	Rx Spare1+ Not applicable	32	64	Rx Spare1- Not applicable

Table 1-5 shows the pin assignments for the AMP Champ connectors on the ONS 15454 AMP Champ EIA for a shielded DS-1 cable.

**Table 1-5 Pin Assignments for AMP Champ Connectors (shielded DS1 cable)**

64-Pin Blue Bundle				64-Pin Orange Bundle			
Signal/Wire	Pin	Pin	Signal/Wire	Signal/Wire	Pin	Pin	Signal/Wire
Tx Tip 1 white/blue	1	33	Tx Ring 1 blue/white	Rx Tip 1 white/blue	17	49	Rx Ring 1 blue/white
Tx Tip 2 white/orange	2	34	Tx Ring 2 orange/white	Rx Tip 2 white/orange	18	50	Rx Ring 2 orange/white
Tx Tip 3 white/green	3	35	Tx Ring 3 green/white	Rx Tip 3 white/green	19	51	Rx Ring 3 green/white
Tx Tip 4 white/brown	4	36	Tx Ring 4 brown/white	Rx Tip 4 white/brown	20	52	Rx Ring 4 brown/white
Tx Tip 5 white/slate	5	37	Tx Ring 5 slate/white	Rx Tip 5 white/slate	21	53	Rx Ring 5 slate/white
Tx Tip 6 red/blue	6	38	Tx Ring 6 blue/red	Rx Tip 6 red/blue	22	54	Rx Ring 6 blue/red
Tx Tip 7 red/orange	7	39	Tx Ring 7 orange/red	Rx Tip 7 red/orange	23	55	Rx Ring 7 orange/red
Tx Tip 8 red/green	8	40	Tx Ring 8 green/red	Rx Tip 8 red/green	24	56	Rx Ring 8 green/red
Tx Tip 9 red/brown	9	41	Tx Ring 9 brown/red	Rx Tip 9 red/brown	25	57	Rx Ring 9 brown/red
Tx Tip 10 red/slate	10	42	Tx Ring 10 slate/red	Rx Tip 10 red/slate	26	58	Rx Ring 10 slate/red
Tx Tip 11 black/blue	11	43	Tx Ring 11 blue/black	Rx Tip 11 black/blue	27	59	Rx Ring 11 blue/black
Tx Tip 12 black/orange	12	44	Tx Ring 12 orange/black	Rx Tip 12 black/orange	28	60	Rx Ring 12 orange/black
Tx Tip 13 black/green	13	45	Tx Ring 13 green/black	Rx Tip 13 black/green	29	61	Rx Ring 13 green/black
Tx Tip 14 black/brown	14	46	Tx Ring 14 brown/black	Rx Tip 14 black/brown	30	62	Rx Ring 14 brown/black
Tx Tip 15 black/slate	15	47	Tx Tip 15 slate/black	Rx Tip 15 black/slate	31	63	Rx Tip 15 slate/black
Tx Tip 16 yellow/blue	16	48	Tx Tip 16 blue/yellow	Rx Tip 16 yellow/blue	32	64	Rx Tip 16 blue/yellow

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

## DLP-25 Install Coaxial Cable With BNC Connectors

<b>Purpose</b>	This task installs the coaxial cable with BNC connectors.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-12 Install a BNC or High-Density BNC EIA, page 1-18</a>
<b>Required/As Needed</b>	Required if you are using DS-3, DS3XM-6, or EC-1 cards
<b>Onsite/Remote</b>	Onsite

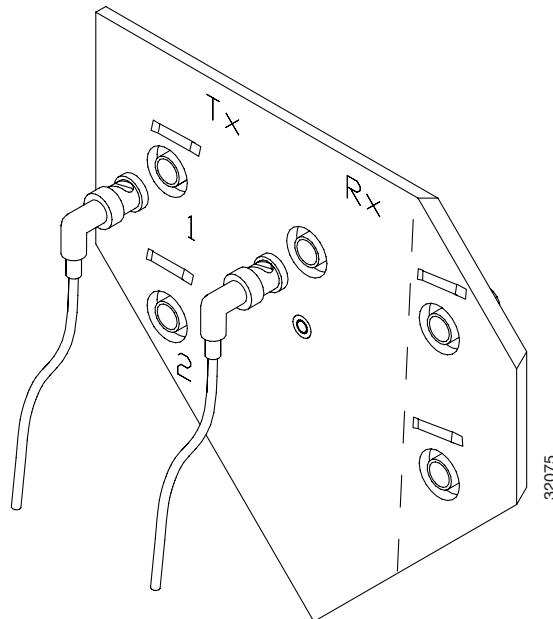
- 
- Step 1** Place the BNC cable connector over the desired connection point on the backplane.
- [Figure 1-14](#) shows how to connect a coaxial cable to the BNC EIA using a right-angle BNC cable connector.
- Step 2** Position the cable connector so that the slot in the connector is over the corresponding notch at the backplane connection point.
- Step 3** Gently push the connector down until the notch backplane connector slides into the slot on the cable connector.
- Step 4** Turn the cable connector clockwise to lock it into place.
- Step 5** Tie wrap or lace the cables to the EIA according to Telcordia standards (GR-1275-CORE) or local site practice.
- Step 6** Route the cables to the nearest side of the shelf assembly through the side cutouts according to local site practice. The rubber coated edges of the side cutouts prevent the cables from chafing.



**Warning**

**Metallic interfaces for connection to outside plant lines (such as T1/E1/T3/E3, etc.) must be connected through a registered or approved device such as CSU/DSU or NT1.**

**Figure 1-14** Using a right-angle connector to install coaxial cable with BNC connectors



## DLP-26 Install Coaxial Cable With High-Density BNC Connectors

- Step 7** Label all cables at each end of the connection to avoid confusion with cables that are similar in appearance.
- Step 8** Return to your originating procedure (NTP).
- 

## DLP-26 Install Coaxial Cable With High-Density BNC Connectors

<b>Purpose</b>	This task installs the coaxial cable with high-density BNC connectors.
<b>Tools/Equipment</b>	BNC insertion tool
<b>Prerequisite Procedures</b>	<a href="#">DLP-12 Install a BNC or High-Density BNC EIA, page 1-18</a>
<b>Required/As Needed</b>	Required if you are using DS-3, DS3XM-6, or EC-1 cards
<b>Onsite/Remote</b>	Onsite

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- Step 1** Place the cable connector over the desired connection point on the backplane.
- Step 2** Using the BNC insertion tool, position the cable connector so that the slot in the connector is over the corresponding notch at the backplane connection point.
- Step 3** Gently push the connector down until the notch backplane connector slides into the slot on the cable connector.
- Step 4** Turn the cable connector clockwise to lock it into place.
- Step 5** Tie wrap or lace the cables to the EIA according to Telcordia standards (GR-1275-CORE) or local site practice.
- Step 6** Route the cables to the nearest side of the shelf assembly through the side cutouts according to local site practice.



### Warning

**Metallic interfaces for connection to outside plant lines (such as T1/E1/T3/E3, etc.) must be connected through a registered or approved device such as CSU/DSU or NT1.**

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The rubber coated edges of the side cutouts prevent the cables from chafing.

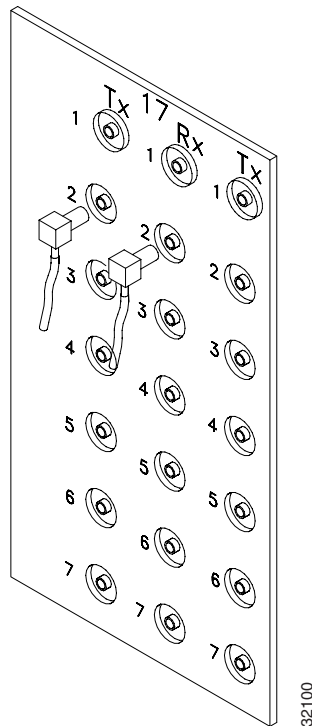
- Step 7** Return to your originating procedure (NTP).
-

## DLP-27 Install Coaxial Cable with SMB Connectors

<b>Purpose</b>	This task installs the coaxial cable with SMB connectors. Refer to <a href="#">Figure 1-15</a> when performing task.
<b>Tools/Equipment</b>	SMB cable connector
<b>Prerequisite Procedures</b>	<a href="#">DLP-13 Install an SMB EIA, page 1-20</a>
<b>Required/As Needed</b>	Required if using DS-1 cards
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Place the SMB cable connector over the desired connection point on the backplane.
- Step 2** Gently push the connector until it clicks into place.
- Step 3** Tie wrap or lace the cables to the EIA according to Telcordia standards (GR-1275-CORE) or local site practice.
- Step 4** Route the cables to the nearest side of the shelf assembly into rack runs according to local site practice.

**Figure 1-15** Installing coaxial cable with SMB connectors



**Warning**

**Metallic interfaces for connection to outside plant lines (such as T1/E1/T3/E3, etc.) must be connected through a registered or approved device such as CSU/DSU or NT1.**

- Step 5** Label the transmit, receive, working, and protect cables at each end of the connection to avoid confusion with cables that are similar in appearance.

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

---

## NTP-10 Route Electrical Cables

<b>Purpose</b>	The following procedure explains how to route and manage electrical (backplane) cables.
<b>Tools/Equipment</b>	RG179 or RG59 cable
<b>Prerequisite Procedures</b>	<a href="#">NTP-9 Install the Electrical Card Cables on the Backplane, page 1-36</a>
<b>Required/As Needed</b>	Required if using electrical cards
<b>Onsite/Remote</b>	Onsite

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**Step 1** To route coaxial cables, complete the “[DLP-28 Route Coaxial Cables](#)” task on page 1-44.

**Step 2** To route DS-1 twisted pair cables, complete the “[DLP-29 Route DS-1 Twisted-Pair Cables](#)” task on page 1-45.

**Step 3** Continue with the “[NTP-11 Install the Rear Cover](#)” procedure on page 1-46.

---

## DLP-28 Route Coaxial Cables

<b>Purpose</b>	This task routes the coaxial cables.
<b>Tools/Equipment</b>	RG179 or RG59 cable
<b>Prerequisite Procedures</b>	<a href="#">DLP-25 Install Coaxial Cable With BNC Connectors, page 1-41</a> <a href="#">DLP-26 Install Coaxial Cable With High-Density BNC Connectors, page 1-42</a> <a href="#">DLP-27 Install Coaxial Cable with SMB Connectors, page 1-43</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

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**Step 1** Tie wrap or lace the coaxial cables according to local site practice and route the cables through the side cutouts on either side of the ONS 15454. The rubber coated edges of the side cutouts prevent the cables from chafing.



**Note** When using the RG179 cable with SMB connectors, remember that the maximum distance available with the RG179 cable is less than the maximum distance available with standard RG59 cable. If you only use the RG179, the maximum available distance is 50 feet versus the 450 feet available with the larger RG59 cable.

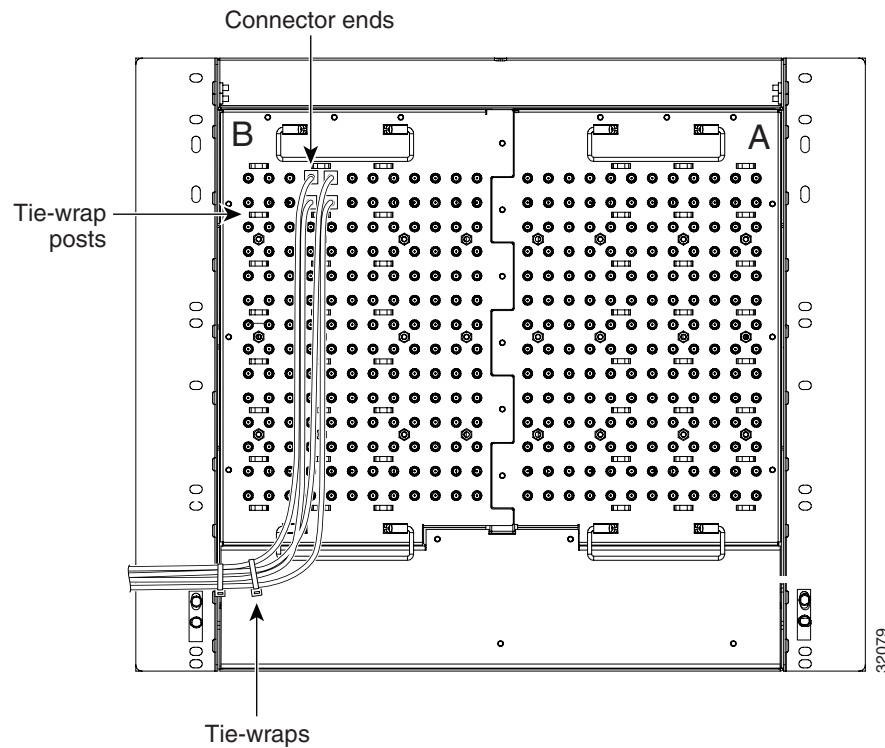
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**Step 2** Use short lengths of “pigtail” RG179 to terminate the shelf assembly.

- Step 3** Use standard RG59 connected to the RG179 for the remainder of the cable run. When using a 10-foot section of the RG179, you can attach a maximum length of 437 feet of RG59. When using a 30-foot section of RG179, you can attach a maximum length of 311 feet of RG59.

The shorter maximum distance available with the RG179 is due to a higher attenuation rate for the thinner cable. The attenuation rate for RG59 cable (based on testing with Belden 923, the equivalent of 328A cable) is ~1.0 dB/100 feet at 22 Mhz (DS-3 data rate). The attenuation rate of RG179 is 6.3 db/100 feet. Use a figure of 5.0 for total cable loss when making calculations. [Figure 1-16](#) shows an example of proper coaxial cable routing.

**Figure 1-16 Routing coaxial cable (SMB EIA backplane)**



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

## DLP-29 Route DS-1 Twisted-Pair Cables

<b>Purpose</b>	This task routes the DS-1 twisted-pair cables.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-23 Install DS-1 Cables Using Electrical Interface Adapters (Balun)</a> , page 1-37
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Install DS-1 electrical interface adapters on every transmit and receive connector for DS-1 ports.

**Step 2** Use wire-wrap posts on the DS-1 electrical interface adapters to connect the terminated incoming cables.

**Step 3** Tie-wrap or lace the twisted-pair cables according to local site practice and route the cables into the side cutouts on either side of the ONS 15454.



**Note** SMB EIAs feature cable-management eyelets for tie wrapping or lacing cables to the cover panel.

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

## NTP-11 Install the Rear Cover

**Purpose** The following procedure explains how to install the rear cover.

**Tools/Equipment**

- #2 Phillips screw driver
- Medium slot head screw driver
- Small slot head screw driver

**Prerequisite Procedures** None

**Required/As Needed** Required

**Onsite/Remote** Onsite

**Step 1** Locate the three screws that run vertically along both edges of the backplane ([Figure 1-17 on page 1-47](#)).



**Tip** Only six screws (three on each side) line up with the screw slots on the mounting brackets, making the screws easy to locate.

**Step 2** Loosen the top and bottom screws on one edge of the backplane to provide room to slide the mounting brackets into place using the u-shaped screw slots on each end.

**Step 3** Slide one of the mounting brackets into place and tighten the screws.

**Step 4** Repeat [Steps 2 and 3](#) for the second mounting bracket.

**Step 5** Attach the cover by hanging it from the mounting screws on the back of the mounting brackets and pulling it down until it fits snugly into place.



**Note** [Figure 1-18 on page 1-47](#) shows BIC installation using spacers.



Figure 1-17 Backplane attachment for the rear cover

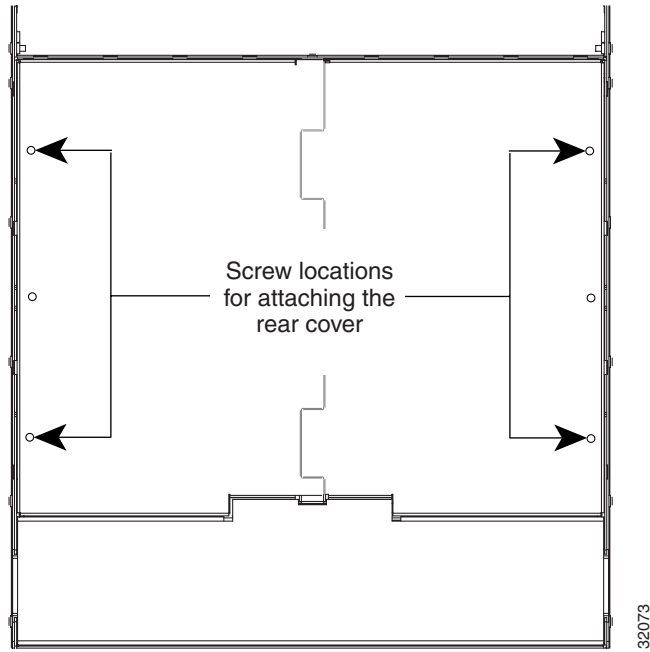
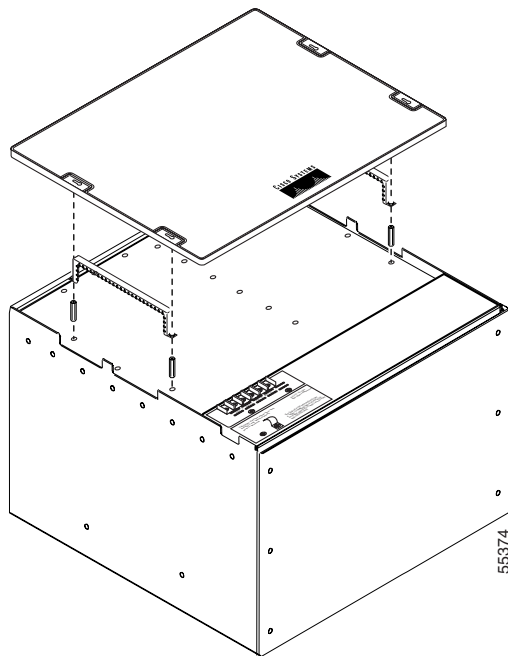


Figure 1-18 Installing the BIC rear cover with spacers



**Step 6** Continue with the “[NTP-12 Install Ferrites](#)” procedure on page 1-48.

## NTP-12 Install Ferrites

<b>Purpose</b>	This procedure describes how to attach ferrites.
<b>Tools/Equipment</b>	Oval and/or block ferrites
<b>Prerequisite Procedures</b>	<a href="#">NTP-6 Install the Power and Ground</a> , page 1-23 <a href="#">NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections</a> , page 1-31
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** To attach ferrites to power cabling, complete the “[DLP-30 Install Ferrites to Power Cabling](#)” task on [page 1-48](#).
- Step 2** To attach ferrites to wire-wrap pin fields, complete the “[DLP-31 Attach Ferrites to Wire-Wrap Pin Fields](#)” task on [page 1-49](#).
- Step 3** Continue with the “[NTP-13 Perform the Shelf Installation Acceptance Test](#)” procedure on [page 1-50](#).
- 

## DLP-30 Install Ferrites to Power Cabling

<b>Purpose</b>	This task attaches ferrites to power cabling. Use a single oval ferrite TDK ZCAT2035-0930 and/or one block ferrite Fair Rite 0443164151 for each pair of cables, depending on the EIA.
<b>Tools/Equipment</b>	Oval and/or block ferrites
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** If you are using block ferrites, wrap the cables once around and through the block ferrites.
- Step 2** If you are using oval ferrites, pull the cable straight through the oval ferrites.



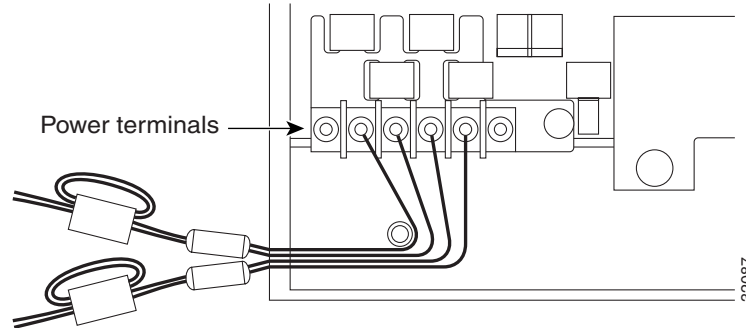
**Note** If you are using both block and oval ferrites, place the oval ferrite between the ONS 15454 and the block ferrite as shown in [Figure 1-19](#).



**Note** Place the oval ferrite as close to the power terminals as possible and place the block ferrite within 5 to 6 inches of the power terminals.

---

**Figure 1-19 Attaching block and oval ferrites to power cabling**



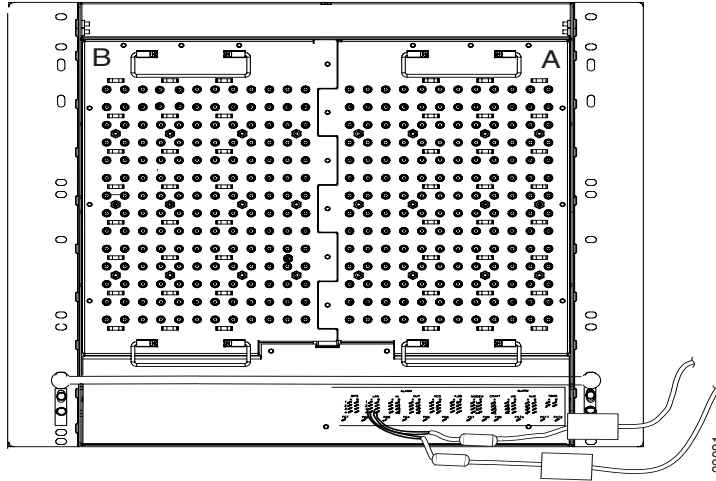
**Step 3** Return to your originating procedure (NTP).

## DLP-31 Attach Ferrites to Wire-Wrap Pin Fields

<b>Purpose</b>	This task attaches ferrites to wire-wrap pin fields. Use an oval ferrite TDK ZCAT1730-0730 and block ferrite Fair Rite 0443164151 for each pair of cables. <a href="#">Figure 1-20</a> shows the suggested method for attaching ferrites to wire-wrap pin fields.
<b>Tools/Equipment</b>	Oval and block ferrites
<b>Prerequisite Procedures</b>	<a href="#">NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections, page 1-31</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Wrap the cables once around and through the block ferrites and pull the cables straight through the oval ferrites.
- Step 2** Place the oval ferrite as close to the wire-wrap pin field as possible and between the ONS 15454 and the block ferrite as shown. The block ferrite should be within 5 to 6 inches of the wire-wrap pin field.

Figure 1-20 Attaching ferrites to wire-wrap pin fields



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

## NTP-13 Perform the Shelf Installation Acceptance Test

<b>Purpose</b>	Use this procedure to perform a shelf installation acceptance test.
<b>Tools/Equipment</b>	Voltmeter
<b>Tools/Equipment</b>	Oval and/or block ferrites
<b>Prerequisite Procedures</b>	Applicable procedures in Chapter 1
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

**Step 1** Complete [Table 1-6](#) by verifying that each procedure was completed.

**Table 1-6 ONS 15454 Shelf Installation Task Summary**

Description	Completed
<a href="#">NTP-2 Install the Shelf Assembly, page 1-5</a>	
<a href="#">NTP-3 Open and Remove the Front Door, page 1-12</a>	
<a href="#">NTP-4 Remove the Backplane Covers, page 1-15</a>	
<a href="#">NTP-5 Install the Electrical Interface Assemblies, page 1-17</a>	
<a href="#">NTP-6 Install the Power and Ground, page 1-23</a>	
<a href="#">NTP-7 Install the Fan-Tray Assembly, page 1-29</a>	
<a href="#">NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections, page 1-31</a>	
<a href="#">NTP-9 Install the Electrical Card Cables on the Backplane, page 1-36</a>	

**Table 1-6 ONS 15454 Shelf Installation Task Summary (continued)**

Description	Completed
<a href="#">NTP-10 Route Electrical Cables, page 1-44</a>	
<a href="#">NTP-11 Install the Rear Cover, page 1-46</a>	
<a href="#">NTP-12 Install Ferrites, page 1-48</a>	

- Step 2** Complete the “[DLP-32 Inspect the Shelf Installation and Connections](#)” task on page 1-51.
- Step 3** Complete the “[DLP-33 Measure Voltage](#)” task on page 1-51.
- Step 4** Continue with the “[NTP-15 Install the Common Control Cards](#)” procedure on page 2-3.

## DLP-32 Inspect the Shelf Installation and Connections

<b>Purpose</b>	This task inspects the shelf installation and connections to verify everything is installed and connected properly.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Complete <a href="#">Table 1-6 on page 1-50</a> .
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Check each wire and cable connection to make sure all cables are locked securely. If a wire or cable is loose, return to the appropriate procedure in this chapter to correct it.
- Step 2** To check that the backplane is seated correctly, verify that the screw holes and the backplane interface card holes align properly and that the A and B connectors interlock.
- Step 3** Return to your originating procedure (NTP).

## DLP-33 Measure Voltage

<b>Purpose</b>	This task measures the power to verify correct power and returns.
<b>Tools/Equipment</b>	Voltmeter
<b>Prerequisite Procedures</b>	Complete <a href="#">Table 1-6 on page 1-50</a> .
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Using a voltmeter, verify the office ground and power:
- Place the black lead (positive) on the frame ground on the bay. Hold it there while completing Step b.
  - Place the red lead (negative) on the fuse power points and alarm panel to verify that they read between -40V DC and -57V DC (power) and 0 (return ground).

- Step 2** Using a voltmeter, verify the shelf ground and power wiring:
- a. Place the black lead (positive) on the RET1 and the red lead on the BAT1 point. Verify a reading between -40 V DC and -57 V DC. If there is no voltage, check the following:
    - Battery and ground reversed to the shelf
    - Battery is open or missing
    - Return is open or missing
  - b. Repeat [Step 2](#) for the RET2 and BAT2 if the B power feed is provided.
- Step 3** Return to your originating procedure (NTP).
-



## Install Cards and Fiber-Optic Cable

---

This chapter explains how to install the Cisco ONS 15454 cards and fiber-optic cable (fiber).

### Before You Begin

Before beginning this chapter, complete [Chapter 1, “Install the Shelf and Backplane Cable.”](#)

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

1. [NTP-14 Verify the Shelf Installation, page 2-2](#)—Complete this procedure before beginning the remaining procedures in this chapter.
2. [NTP-15 Install the Common Control Cards, page 2-3](#)—Complete this procedure before continuing with the “[NTP-16 Install the Optical Cards](#)” task on [page 2-7](#).
3. [NTP-16 Install the Optical Cards, page 2-7](#)—Complete this procedure before continuing with the “[NTP-17 Install the Electrical Cards](#)” task on [page 2-9](#).
4. [NTP-17 Install the Electrical Cards, page 2-9](#)—Complete this procedure before continuing with the “[NTP-18 Install the Ethernet Cards](#)” task on [page 2-10](#).
5. [NTP-18 Install the Ethernet Cards, page 2-10](#)—Complete this procedure before continuing with the “[NTP-19 Install the Fiber-Optic Cables](#)” task on [page 2-13](#).
6. [NTP-19 Install the Fiber-Optic Cables, page 2-13](#)—Complete this procedure to install and route the fiber-optic cables.
7. [NTP-20 Replace the Front Door, page 2-20](#)—Complete this procedure to replace the front door and ground strap after installing cards, and installing and routing fiber-optic cables.



#### Warning

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**Only trained and qualified personnel should be allowed to install, replace, or service this equipment.**

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#### Caution

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Unused card slots should be filled with a blank faceplate (Cisco P/N 15454-BLANK). The blank faceplate ensures proper airflow when operating the ONS 15454 without the front door attached, although Cisco recommends that the front door remain attached.

---

## NTP-14 Verify the Shelf Installation

<b>Purpose</b>	This procedure describes how to verify the shelf installation.
<b>Tools/Equipment</b>	Voltmeter
<b>Prerequisite Procedures</b>	<a href="#">Chapter 1, “Install the Shelf and Backplane Cable”</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Complete the [“DLP-35 Measure Voltage”](#) task on page 2-2.
- Step 2** Continue with the [“NTP-15 Install the Common Control Cards”](#) procedure on page 2-3.
- 

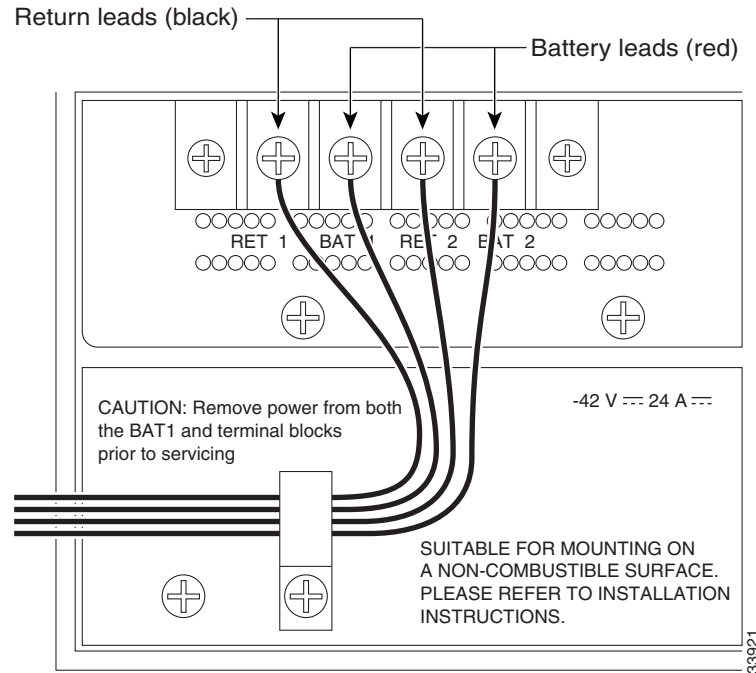
## DLP-35 Measure Voltage

<b>Purpose</b>	This task measures the power to verify correct power and returns.
<b>Tools/Equipment</b>	Voltmeter
<b>Prerequisite Procedures</b>	Complete Chapter 1.
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Using a voltmeter, verify the office ground and power:
- a. Place the black lead (positive) on the frame ground on the bay. Hold it there while completing Step b.
  - b. Place the red lead (negative) on the fuse power points and alarm panel to verify that they read between -40V DC and -57V DC (power) and 0 (return ground).
- Step 2** Using a voltmeter, verify the shelf ground and power wiring ([Figure 2-1 on page 2-3](#) shows the power terminals):
- a. Place the black lead (positive) on the RET1 and the red lead on the BAT1 point. Verify a reading between -40 V DC and -57 V DC. If there is no voltage, check the following:
    - Battery and ground reversed to the shelf
    - Battery is open or missing
    - Return is open or missing
  - b. Repeat [Step 2](#) for the RET2 and BAT2 if the B power feed is provided.



Figure 2-1 ONS 15454 power terminals



## NTP-15 Install the Common Control Cards

<b>Purpose</b>	This procedure describes how to install the common control cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-14 Verify the Shelf Installation, page 2-2</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

 **Warning**

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool due to electrical hazard.**

 **Caution**

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

- Step 1** Complete the [“DLP-36 Install the TCC+ XC/XCVT/XC10G Cards”](#) task on page 2-4.
- Step 2** Complete the [“DLP-37 Verify System Software on the LCD”](#) task on page 2-6.
- Step 3** Complete the [“DLP-38 Install the Alarm Interface Controller \(AIC\) Card”](#) task on page 2-6, if necessary.

- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-36 Install the TCC+ XC/XCVT/XC10G Cards

Although the installation procedure is the same for both TCC+ and XC/XCVT/XC10G (cross-connect) cards, you must install the TCC+ card and let it initialize before installing any cross-connect cards. The TCC+ card houses the ONS 15454 software. For a detailed explanation, refer to the *Cisco ONS 15454 Reference Manual*. Repeat this procedure to install redundant TCC+ and XC/XCVT/XC10G cards.

<b>Purpose</b>	This task installs the TCC+ and XC/XCVT/XC10G cards.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• TCC+ card</li> <li>• XC/XCVT/XC10G (cross-connect) cards</li> <li>• AIC card</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-35 Measure Voltage, page 2-2</a>
<b>Required/As Needed</b>	Redundant TCC+ cards and redundant cross-connect cards are required.
<b>Onsite/Remote</b>	Onsite



**Note**

This is not the procedure to use when upgrading from XC to XCVT cards or from XCVT to XC10G cards. If you are performing an XC to XCVT upgrade, an XCVT to a XC10G upgrade, or a TCC to TCC+ upgrade, see [Chapter 12, “Upgrade Cards and Spans.”](#)

---

- Step 1** Open the card ejectors.
- Step 2** Slide the card along the guide rails into the correct slot (Slot 8 or 10 for the XC/XCVT/XC10G and Slot 7 or 11 for the TCC+).
- Step 3** Close the ejectors.
- Step 4** Verify the LED activity as described in [Table 2-1 on page 2-5](#).

**Table 2-1 LED Activity during TCC+ and XC/XCVT/XC10G Card Installation**

Card Type	LED Activity
TCC+	<ol style="list-style-type: none"> <li>1. The red FAIL LED turns on and remains illuminated for 20 to 30 seconds.</li> <li>2. The red FAIL LED blinks for 35 to 45 seconds.</li> <li>3. The red FAIL LED remains illuminated for 5 to 10 seconds.</li> <li>4. All LEDs (including the CRIT, MAJ, MIN, REM, SYNC, and ACO LEDs) blink once and turn off for 5 to 10 seconds.</li> <li>5. The ACT/STBY LED turns on. (On the TCC+ card, the ACT/STBY LED may take several minutes to illuminate while the DCC processor boots.)</li> </ol>
XC/XCVT/XC10G	<ol style="list-style-type: none"> <li>1. The red LED turns on and remains illuminated for 20 to 30 seconds.</li> <li>2. The red LED blinks for 35 to 45 seconds.</li> <li>3. The red LED remains illuminated for 5 to 10 seconds.</li> <li>4. All LEDs blink once and turn on.</li> <li>5. The ACT/STBY LED turns on.</li> </ol>



**Note** If the FAIL LED is illuminated continuously on the TCC+ card, see the tip below about the TCC+ automatic upload.



**Note** If you insert a card into a slot provisioned for a different card, all LEDs turn off.



**Note** If the red FAIL LED does not illuminate, check the power.

**Step 5** Verify that the ACT/STBY LED is the correct color for the card (green for active and amber for standby). The IP address for the node, the temperature of the ONS 15454, and the time of day will be displayed on the LCD. The default time and date is 12:00 AM, January 1, 1970.

**Step 6** Repeat this task for each TCC+, XC, XCVT, or XC10G card you need to install.



**Tip**

When a newly installed TCC+ card has a different version of the ONS 15454 software installed than the version running on the active TCC+, the newly-installed TCC+ card automatically copies the software version running on the active TCC+. You do not need to do anything in this situation. However, the loading TCC+ card will not boot up in the normal manner. When the card is first inserted, the red FAIL LED stays on for a short period. The FAIL LED then blinks normally and all LEDs go dark. The FAIL LED and the ACT/STBY LED flash alternately every 30 to 45 seconds as the new software loads onto the new TCC+ card. After loading the new software for approximately 30 minutes, the TCC+ card becomes the standby card and the amber LED is illuminated.

## DLP-37 Verify System Software on the LCD

<b>Purpose</b>	This task verifies that the system software is the correct version.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-36 Install the TCC+ XC/XCVT/XC10G Cards, page 2-4</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** View the LCD on the front panel of the ONS 15454 to make sure it shows the correct software version.
- Step 2** If the LCD does not show the correct software version or displays XXXXXX, replace the TCC+ card.
- 

## DLP-38 Install the Alarm Interface Controller (AIC) Card

<b>Purpose</b>	This task installs the AIC card.
<b>Tools/Equipment</b>	AIC card
<b>Prerequisite Procedures</b>	<a href="#">DLP-35 Measure Voltage, page 2-2</a> <a href="#">DLP-36 Install the TCC+ XC/XCVT/XC10G Cards, page 2-4</a>
<b>Required/As Needed</b>	Required if you want to use the ENVIR ALARMS (external alarms and controls) or orderwire (see <a href="#">“NTP-90 Modify Alarm Interface Controller Settings” section on page 11-9</a> ).
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Open the card ejectors.
- Step 2** Slide the card along the guide rails into Slot 9.
- Step 3** Close the ejectors.
- Step 4** Verify the following:
- The red FAIL LED remains illuminated for 1 second, then blinks for 1 to 5 seconds.
  - After 1 to 5 seconds, all LEDs blink once and turn off.
  - The ACT LED turns on.




---

**Note** If the red FAIL LED does not illuminate, check the power.

---




---

**Note** If you insert a card into a slot provisioned for a different card, all LEDs turn off.

---

# NTP-16 Install the Optical Cards

<b>Purpose</b>	This procedure describes how to install the optical cards (OC-3, OC-12, OC-48, and OC-192).
<b>Tools/Equipment</b>	OC-3, OC-12, OC-48, and OC-192 cards (as applicable)
<b>Prerequisite Procedures</b>	<a href="#">NTP-14 Verify the Shelf Installation, page 2-2</a> <a href="#">NTP-15 Install the Common Control Cards, page 2-3</a>
<b>Required/As Needed</b>	Required if the node will carry optical traffic. Install according to site plan, if available.
<b>Onsite/Remote</b>	Onsite



## Note

To simplify UPSR to BLSR conversion and node addition, equip optical cards according to a high-speed east (Slots 12 and 13) and west (Slots 5 and 6) configuration. This configuration is not mandatory.



## Warning

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool due to electrical hazard.**



## Caution

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.



## Warning

**Class I (21 CFR 1040.10 and 1040.11) and Class 1M (IEC 60825-1 2001-01) laser products.**



## Warning

**Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam or view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.**



## Warning

**On the OC192LR 1550 card, the laser is active when the card is booted and the safety key is in the on position (labeled 1). The port does not have to be in service for the laser to be on. The laser is off when the safety key is off (labeled 0).**

**Step 1** Open the card ejectors.

**Step 2** Slide the card along the guide rails into the correct slot:

- Slots 1 – 4 and 14 – 17 are multispeed slots. They can host any ONS 15454 traffic card, except the OC48IR 1310, OC48LR 1550, OC48ELR 1550, and OC192LR 1550 cards.
- Slots 5, 6, 12 and 13 are high-speed slots. They can host any traffic ONS 15454 card, except the OC12/STM4-4 (four-port OC-12) card.

- You can install the OC48 IR/STM16 SH AS 1310 and the OC48 LR/STM16 LH AS 1550 cards in any multispeed or high-speed card slot.
- You must install the OC12/STM4-4 card in Slots 1 – 4 and 14 – 17.

**Warning**


---

**Before installing an OC-192 card, make sure the safety key on the faceplate is in off position (labeled 0). When in the on position (labeled 1), the laser is activated.**

---

**Step 3** Close the ejectors.

**Step 4** Verify the LED activity, as described below.

1. The red FAIL LED turns on and remains illuminated for 20 to 30 seconds.
2. The red FAIL LED blinks for 35 to 45 seconds.
3. All LEDs blink once and turn off for 5 to 10 seconds.
4. The ACT or ACT/STBY LED turns on. The signal fail (SF) LED can persist until all card ports connect to their far end counterparts and a signal is present.




---

**Note** If the red FAIL LED does not illuminate, check the power.

---




---

**Note** If you insert a card into a slot provisioned for a different card, all LEDs turn off.

---

**Step 5** Complete the [“DLP-42 Install Fiber-Optic Cables on OC-N Cards” task on page 2-14.](#)

**Step 6** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

---

# NTP-17 Install the Electrical Cards

<b>Purpose</b>	This procedure describes how to install the electrical cards (DS-1, DS-3, and EC1).
<b>Tools/Equipment</b>	Electrical cards
<b>Prerequisite Procedures</b>	<a href="#">NTP-14 Verify the Shelf Installation, page 2-2</a> <a href="#">NTP-15 Install the Common Control Cards, page 2-3</a> <a href="#">NTP-16 Install the Optical Cards, page 2-7</a>
<b>Required/As Needed</b>	Required if the node will carry any electrical traffic
<b>Onsite/Remote</b>	Onsite



## Warning

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool due to electrical hazard.**



## Caution

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

- Step 1** Open the card ejectors.
- Step 2** Slide the card along the guide rails into the correct slot.
- Step 3** Close the ejectors.
- Step 4** Verify the LED activity, as described below.
1. The red FAIL LED turns on and remains illuminated for 10 to 15 seconds.
  2. The red FAIL LED blinks for 30 to 40 seconds.
  3. All LEDs blink once and turn off for 1 to 5 seconds.
  4. The ACT or ACT/STBY LED turns on. The signal fail (SF) LED can persist until all card ports connect to their far end counterparts and a signal is present



**Note** If the red FAIL LED fails to turn on, check the power.



**Note** If you insert a card into a slot provisioned for a different card, all LEDs turn off.

- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

# NTP-18 Install the Ethernet Cards

<b>Purpose</b>	This procedure describes how to install the Ethernet cards.
<b>Tools/Equipment</b>	Ethernet cards
<b>Prerequisite Procedures</b>	<a href="#">NTP-14 Verify the Shelf Installation, page 2-2</a> <a href="#">NTP-15 Install the Common Control Cards, page 2-3</a> <a href="#">NTP-16 Install the Optical Cards, page 2-7</a> <a href="#">NTP-17 Install the Electrical Cards, page 2-9</a>
<b>Required/As Needed</b>	Required if the node will carry Ethernet traffic
<b>Onsite/Remote</b>	Onsite

**Warning**

**During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool due to electrical hazard.**

**Caution**

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.

**Warning**

**Class I (21 CFR 1040.10 and 1040.11) and Class 1M (IEC 60825-1 2001-01) laser products.**

**Warning**

**Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam or view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.**

- 
- Step 1** Complete the “[DLP-39 Install Ethernet Cards](#)” task on page 2-11.
- Step 2** Complete the “[DLP-40 Install Gigabit Interface Converters](#)” task on page 2-11 if you are using E1000-2, E1000-2G, or G1000-4 cards.
- Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-



## DLP-39 Install Ethernet Cards

<b>Purpose</b>	This task installs the Ethernet cards.
<b>Tools/Equipment</b>	Ethernet cards
<b>Prerequisite Procedures</b>	<a href="#">DLP-35 Measure Voltage, page 2-2</a> <a href="#">DLP-36 Install the TCC+ XC/XCVT/XC10G Cards, page 2-4</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Open the card ejectors.
- Step 2** Slide the card along the guide rails into the correct slot.
- Step 3** Close the ejectors.
- Step 4** Verify the LED activity, as described below.
1. The red FAIL LED turns on and remains illuminated for 20 to 30 seconds.
  2. The red FAIL LED blinks for 35 to 45 seconds.
  3. All LEDs blink once and turn off for 1 to 5 seconds.
  4. The ACT or ACT/STBY LED turns on. The signal fail (SF) LED can persist until all card ports connect to their far end counterparts and a signal is present.




---

**Note** If the red FAIL LED fails to turn on, check the power.

---




---

**Note** If you insert a card into a slot provisioned for a different card, all LEDs turn off.

---

## DLP-40 Install Gigabit Interface Converters

<b>Purpose</b>	This task installs the gigabit interface converters (GBICs) and attaches fiber.
<b>Tools/Equipment</b>	GBICs
<b>Prerequisite Procedures</b>	<a href="#">DLP-39 Install Ethernet Cards, page 2-11</a>
<b>Required/As Needed</b>	Required if you are using E1000-2, E1002-G, or G1000-4 cards.
<b>Onsite/Remote</b>	Onsite

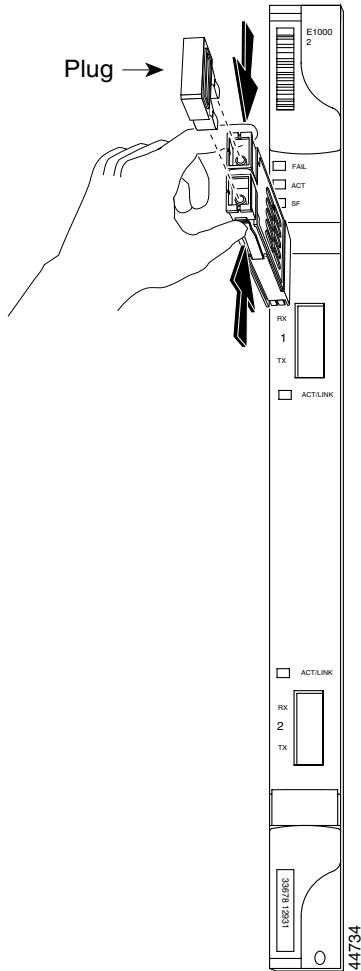
- 
- Step 1** Remove the GBIC from its protective packaging.
- Step 2** Check the part number (15454-GBIC-LX or 15454-GBIC-SX) to verify that the GBIC is the correct type for your network.
- Step 3** Grip the sides of the GBIC with your thumb and forefinger and insert it into the slot on the front panel of the Gigabit Ethernet card (shown in [Figure 2-2 on page 2-12](#)).

GBICs are hot-swappable and can therefore be installed/removed while the card/shelf assembly is powered and running.



**Note** GBICs are keyed to prevent incorrect installation.

**Figure 2-2** Installing a GBIC on an E1000-2 card



- Step 4** Slide the GBIC through the cover flap until you hear a click.  
The click indicates the GBIC is locked into the slot.



**Warning** GBICs are Class I laser products. These products have been tested and comply with Class I limits.



**Warning** Invisible laser radiation may be emitted from the aperture ports of the single-mode fiber optic modules when no cable is connected. Avoid exposure and do not stare into open apertures.

- Step 5** When you are ready to attach the fiber-optic cable, remove the plug from the GBIC and save the plug for future use.
- Step 6** Install and route the cable. See the “[DLP-46 Route Fiber-Optic Cables](#)” section on [page 2-19](#) for routing instructions.

## NTP-19 Install the Fiber-Optic Cables

<b>Purpose</b>	This procedure describes how to install fiber-optic cables.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>Fiber-optic cables</li> <li>Fiber boot</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-16 Install the Optical Cards, page 2-7</a> <a href="#">NTP-18 Install the Ethernet Cards, page 2-10</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



### Note

To install fiber-optic cables on an Ethernet card GBIC, see the “[DLP-40 Install Gigabit Interface Converters](#)” task on [page 2-11](#).



### Caution

Always use the supplied ESD wristband when working with a powered ONS 15454. Plug the wristband cable into the ESD jack located on the lower-right outside edge of the shelf assembly.



### Warning

**Class I (21 CFR 1040.10 and 1040.11) and Class 1M (IEC 60825-1 2001-01) laser products.**



### Warning

**Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam or view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.**



### Warning

**The laser is active when the card is booted and the safety key is in the on position (labeled 1). The port does not have to be in service for the laser to be on. The laser is off when the safety key is off (labeled 0).**



### Warning

**Follow all directions and warning labels when working with optical fibers. To prevent eye damage, never look directly into a fiber or connector.**

**Caution**

Do not use fiber loopbacks with the OC192 LR 1550 card unless you are using a 20 dB attenuator. Never connect a direct fiber loopback. Using fiber loopbacks causes irreparable damage to the OC-192 card.

**Note**

Fiber boots are not recommended for the OC192 or the OC48AS because of the downward angle of the optical ports.

- Step 1** Complete the “[DLP-42 Install Fiber-Optic Cables on OC-N Cards](#)” task on page 2-14.
- Step 2** As needed, complete the “[DLP-43 Install Fiber-Optic Cables for UPSR Configurations](#)” task on page 2-15.
- Step 3** As needed, complete the “[DLP-44 Install Fiber-Optic Cables for BLSR Configurations](#)” task on page 2-16.
- Step 4** Complete the “[DLP-45 Install the Fiber Boot](#)” task on page 2-18.
- Step 5** Complete the “[DLP-46 Route Fiber-Optic Cables](#)” task on page 2-19.
- Step 6** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-42 Install Fiber-Optic Cables on OC-N Cards

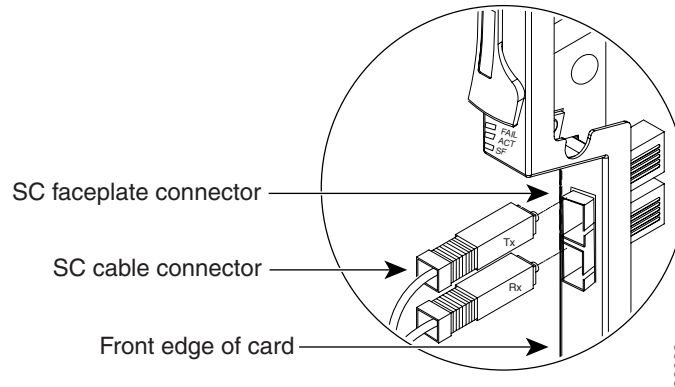
<b>Purpose</b>	This task installs fiber-optic cables on optical (OC-N) cards.
<b>Tools/Equipment</b>	Fiber-optic cables
<b>Prerequisite Procedures</b>	<a href="#">NTP-16 Install the Optical Cards</a> , page 2-7 <a href="#">NTP-112 Clean Fiber Connectors</a> , page 15-15
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



**Note** Inspect and clean all fiber connectors thoroughly. See the “[NTP-112 Clean Fiber Connectors](#)” section on page 15-15 for instructions. Dust particles can degrade performance. Put caps on any fiber connectors that are not used.

- Step 1** Align the keyed ridge of the cable connector with the receiving SC connector on the faceplate connection point. Each card supports at least one transmit and one receive connector to create an optical carrier port. [Figure 2-3 on page 2-15](#) shows the cable location.

Figure 2-3 Installing fiber-optic cables



**Note** The OC12/STM4-4 card faceplate has four ports.

- Step 2** Gently push the cable connector into the faceplate connection point until the connector snaps into place.
- Step 3** If you are installing fiber-optic cables on a OC12/STM4-4 card, repeat Steps 1 and 2 until all SC connectors are in place.

## DLP-43 Install Fiber-Optic Cables for UPSR Configurations

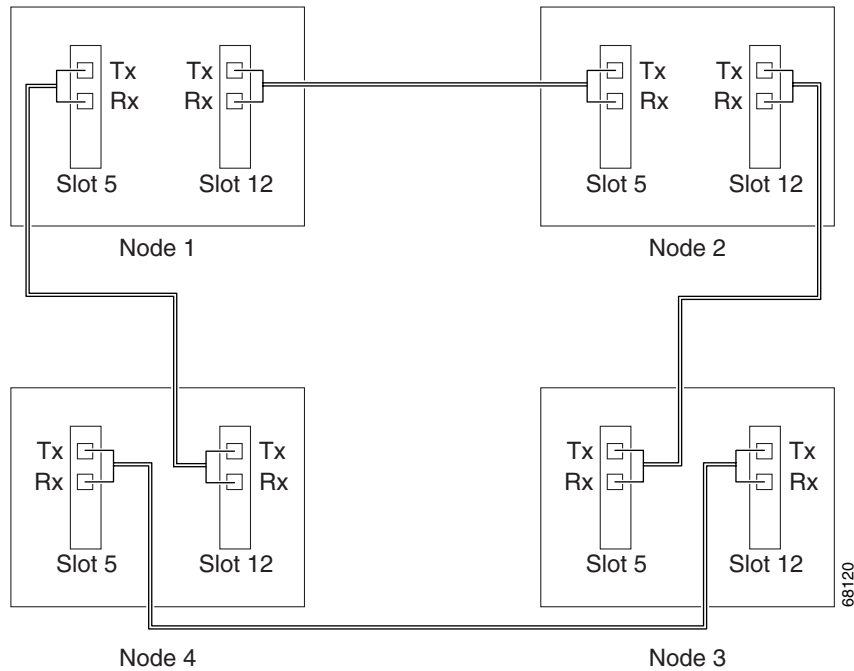
<b>Purpose</b>	This task installs the fiber-optic cables to the east and west UPSR ports at each node. See Chapter 4 to provision and test UPSR configurations.
<b>Tools/Equipment</b>	Fiber-optic cables
<b>Prerequisite Procedures</b>	<a href="#">NTP-16 Install the Optical Cards, page 2-7</a> <a href="#">NTP-112 Clean Fiber Connectors, page 15-15</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



**Note** To avoid error, connect fiber-optic cable so that the farthest slot to the right represents the east port, and the farthest slot to the left represents the west port. Fiber connected to an east port at one node must plug into the west port on an adjacent node.

- Step 1** Plug the fiber into the transmit (Tx) connector of an OC-N card at one node and plug the other end of the fiber into the receive (Rx) connector of an OC-N card at the adjacent node. The card will display a signal fail (SF) LED if the transmit and receive fibers are mismatched.
- Step 2** Repeat [Step 1](#) until you have configured the ring.
- [Figure 2-4 on page 2-16](#) shows fiber connections for a four-node UPSR with trunk cards in Slot 5 (west) and Slot 12 (east).

Figure 2-4 Connecting fiber to a four-node UPSR



## DLP-44 Install Fiber-Optic Cables for BLSR Configurations

<b>Purpose</b>	This task installs the fiber-optics for a BLSR configuration. See Chapter 4 to provision and test BLSR configurations.
<b>Tools/Equipment</b>	Fiber-optic cables
<b>Prerequisite Procedures</b>	<a href="#">NTP-16 Install the Optical Cards, page 2-7</a> <a href="#">NTP-112 Clean Fiber Connectors, page 15-15</a>
<b>Required/As Needed</b>	Required for a BLSR configuration
<b>Onsite/Remote</b>	Onsite



**Note** To avoid error, connect fiber-optic cable so that the farthest slot to the right represents the east port, and the farthest slot to the left represents the west port. Fiber connected to an east port at one node must plug into the west port on an adjacent node.

- Step 1** Plan your fiber connections. Use the same plan for all BLSR nodes.
- Step 2** Plug the fiber into the transmit (Tx) connector of an OC-N card at one node and plug the other end into the receive (Rx) connector of an OC-N card at the adjacent node. The card will display a signal fail (SF) LED if the transmit and receive fibers are mismatched.

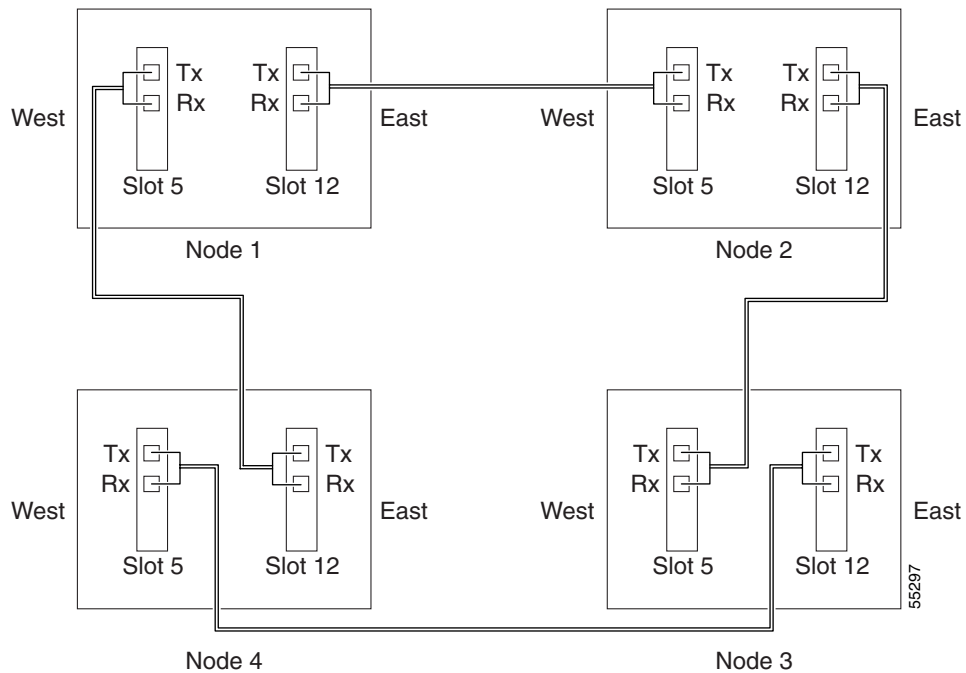
**Note**

Do not mix working and protect card connections (such as connect working cards to working cards and protect cards to protect cards). The BLSR will not function if working and protect cards are interconnected.

**Step 3** Repeat [Step 2](#) until you have configured the ring.

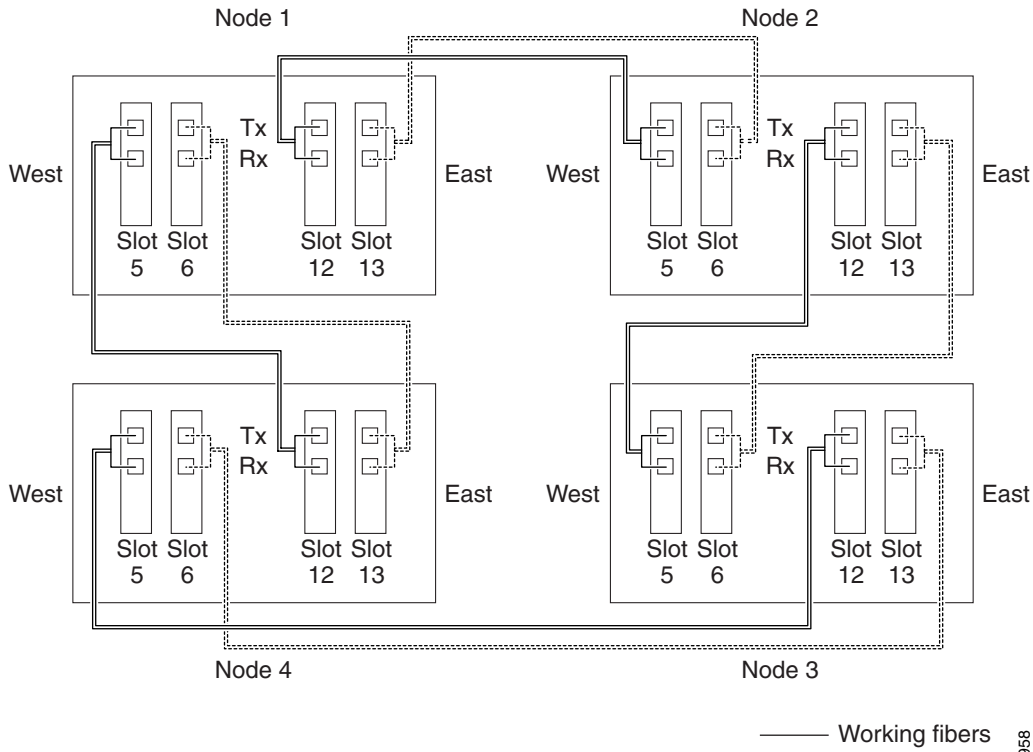
[Figure 2-5](#) shows fiber connections for a two-fiber BLSR with trunk cards in Slot 5 (west) and Slot 12 (east).

**Figure 2-5 Connecting fiber to a four-node, two-fiber BLSR**



[Figure 2-6 on page 2-18](#) shows fiber connections for a four-fiber BLSR. Slot 5 (west) and Slot 12 (east) carry the working traffic. Slot 6 (west) and Slot 13 (east) carry the protect traffic.

Figure 2-6 Connecting fiber to a four-node, four-fiber BLSR



## DLP-45 Install the Fiber Boot

<b>Purpose</b>	This task installs the fiber boot.
<b>Tools/Equipment</b>	Fiber boot
<b>Prerequisite Procedures</b>	<a href="#">NTP-16 Install the Optical Cards, page 2-7</a> <a href="#">NTP-112 Clean Fiber Connectors, page 15-15</a>
<b>Required/As Needed</b>	Required for all optical cards except the OC-192 and the OC-48 AS cards
<b>Onsite/Remote</b>	Onsite



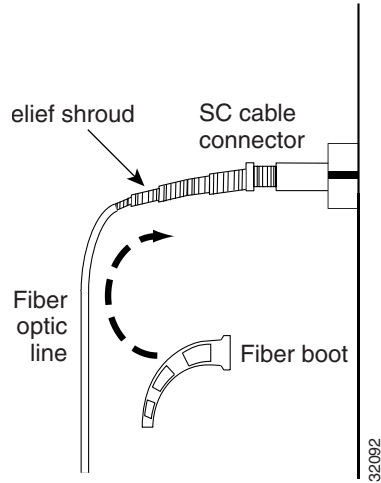
### Note

You can install the fiber boots on the fiber-optic cables before or after the fibers are attached to the optical card.

- Step 1** Position the open slot of the fiber boot underneath the fiber cable.  
Push the fiber cable down into the fiber boot. [Figure 2-7 on page 2-19](#) shows the fiber boot attachment.
- Step 2** Twist the fiber boot to lock the fiber cable into the tail end of the fiber boot.  
Slide the fiber boot forward along the fiber cable until the fiber boot fits snugly onto the end of the SC cable connector.



Figure 2-7 Attaching a fiber boot

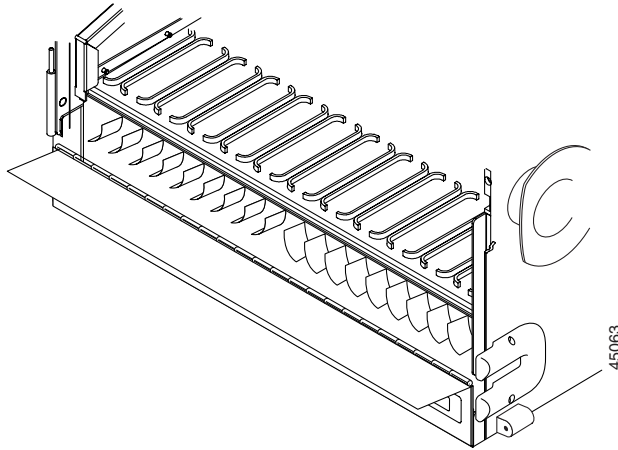


## DLP-46 Route Fiber-Optic Cables

<b>Purpose</b>	This task describes how to route fiber-optic cables.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-19 Install the Fiber-Optic Cables, page 2-13</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Open the fold-down front door on the cable-management tray.
- Step 2** Route the fiber cable on the card faceplate through the fiber clip on the faceplate. Fiber clips are factory-attached to the faceplate of the optical card.
- GBICs do not have fiber clips; therefore, if you are routing optical cable from an E1000-2-G, E1000-2, or G1000-4 card, skip to [Step 3](#).
- Step 3** Route the fiber cables into the cable-management tray.
- Step 4** Route the fiber cables out either side of the cable-management tray through the cutouts on each side of the shelf assembly. Use the reversible fiber guides to route cables out the desired side.
- Step 5** Close the fold-down front door when all fiber cables in the front compartment are properly routed.
- [Figure 2-8 on page 2-20](#) shows the fold-down front door of the shelf assembly open to display the cable routing channel.

**Figure 2-8** Fold-down front door of the cable-management tray (displaying the cable routing channel)

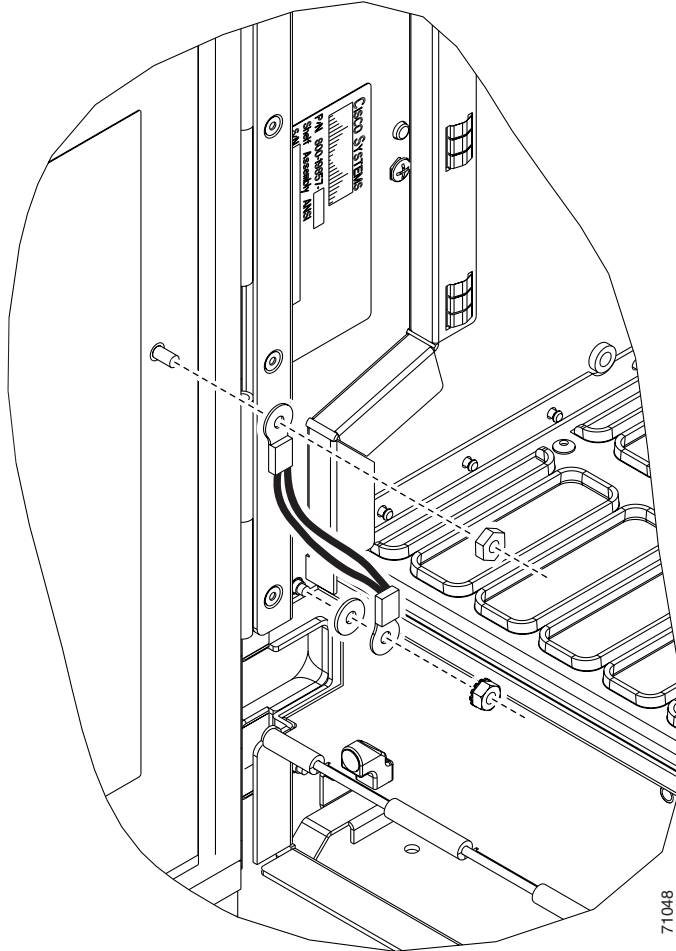


## NTP-20 Replace the Front Door

<b>Purpose</b>	The following procedure explains how to replace the front door and door ground strap after installing cards and fiber-optic cables.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• #2 Phillips screw driver</li> <li>• Medium slot head screw driver</li> <li>• Small slot head screw driver</li> </ul>
<b>Prerequisite Procedures</b>	Not applicable
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Insert the front door (removed in the “[DLP-9 Remove the Front Door](#)” task on page 1-13) into the hinges on the shelf assembly.
- Step 2** Attach one end of the ground strap terminal lug (72-3622-01) to the male stud on the inside of the door. Attach and tighten the #6 Kepnut (49-0600-01) using the open end wrench. See [Figure 2-9](#) on page 2-21.

Figure 2-9 Installing the Door Ground Strap Retrofit Kit



- Step 3** Attach the other end of the ground strap to the longer screw on the fiber guide.
- Attach the lock washer.
  - Attach the terminal lug.
  - Using the open end wrench, attach and tighten the #4 Kepnut (49-0337-01) on the terminal lug.

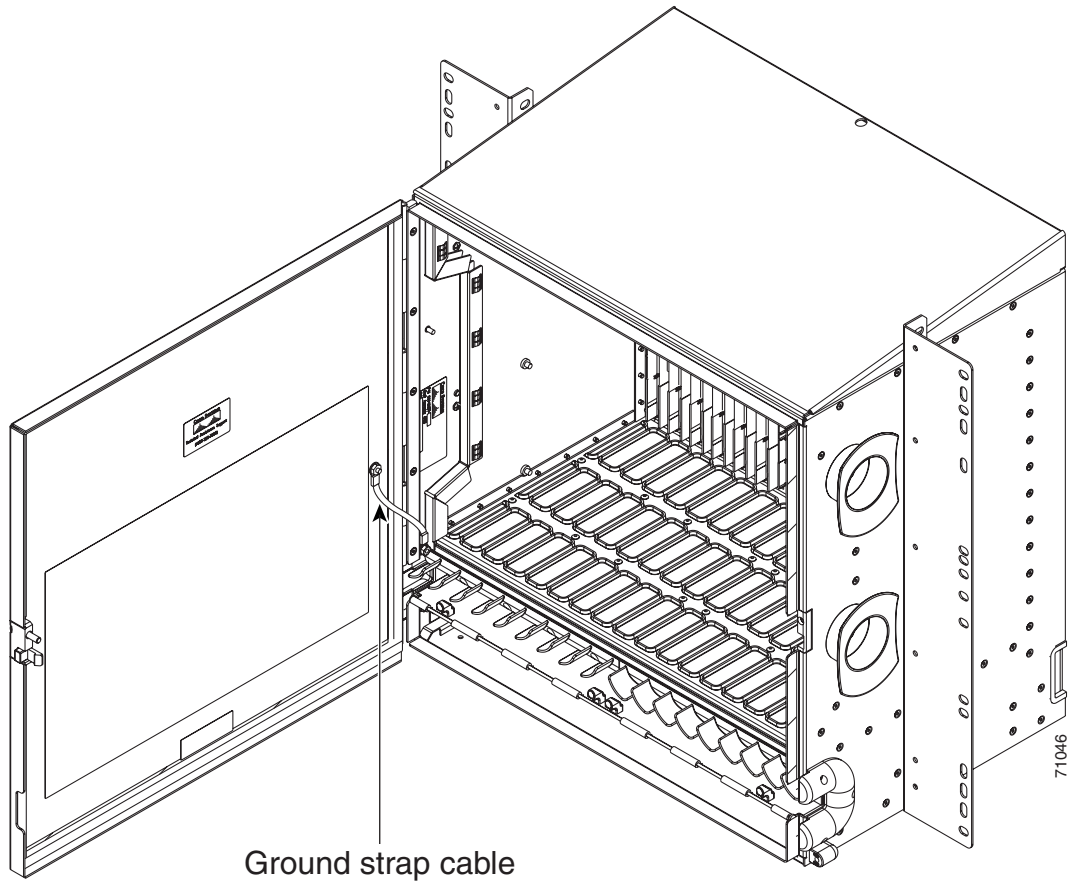


**Note** To avoid interference with the traffic (line) card, make sure the ground strap is in a flat position when the door is open. To move the ground strap into a flat position, rotate the terminal lug counterclockwise before tightening the Kepnut.

**Step 4** Replace the left cable-routing channel.

**Step 5** Using a Phillips screwdriver, insert and tighten the screws for the cable-routing channel.

[Figure 2-10 on page 2-22](#) shows the shelf assembly with the front door and ground strap installed.

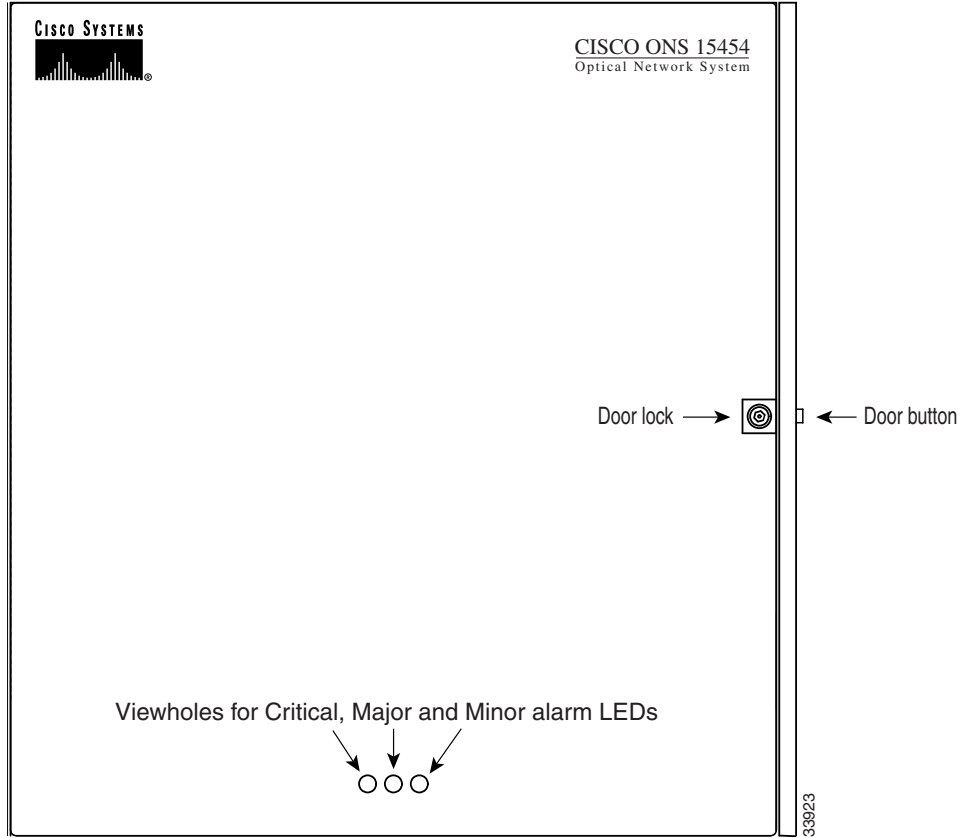
**Figure 2-10 Shelf assembly with Door Ground Strap Retrofit Kit installed**

**Step 6** Swing the door closed. [Figure 2-11 on page 2-23](#) shows the front door.

**Note**

The ONS 15454 comes with a pinned hex key tool for locking and unlocking the front door. Turn the key counterclockwise to unlock the door and clockwise to lock it.

Figure 2-11 The ONS 15454 front door



■ NTP-20 Replace the Front Door



## Connect the PC and Log into the GUI

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This chapter explains how to connect PCs and workstations to the Cisco ONS 15454 and how to log into Cisco Transport Controller (CTC) software, the Cisco ONS 15454 OAM&P user interface.

### Before You Begin

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

1. [NTP-21 Set Up Computer for CTC, page 3-1](#)—Complete this procedure if your PC or workstation has never been connected to an ONS 15454.
2. [NTP-22 Set Up CTC Computer to Connect to the ONS 15454, page 3-8](#)—After your PC or workstation is set up for CTC, complete this procedure to set up your computer to connect to the ONS 15454.
3. [NTP-23 Log into the ONS 15454 GUI, page 3-21](#)—Complete this procedure to log into CTC.

### NTP-21 Set Up Computer for CTC

<b>Purpose</b>	This procedure explains how to configure your PC or UNIX workstation to run Cisco Transport Controller (CTC).
<b>Tools/Equipment</b>	Cisco ONS 15454 Release 3.3 software or documentation CD.
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** If your computer is a Windows PC, complete the [“DLP-47 Run the CTC Installation Wizard for Windows” task on page 3-2](#), then go to [Step 4](#).
- Step 2** If your computer is a UNIX workstation, complete the [“DLP-48 Run the CTC Installation Wizard for UNIX” task on page 3-5](#).
- Step 3** If your computer is a UNIX workstation and you installed the JRE in Step 2, complete the [“DLP-49 Set Up the Java Runtime Environment for UNIX” task on page 3-7](#).

- Step 4** When your PC or workstation is set up, complete the “[NTP-22 Set Up CTC Computer to Connect to the ONS 15454](#)” procedure on page 3-8.
- 

## DLP-47 Run the CTC Installation Wizard for Windows

<b>Purpose</b>	This task installs programs required to run CTC on Windows PCs: Netscape 4.73, JRE 1.3.1_02, and CTC online help. It also modifies the Java Runtime Environment (JRE) policy file so CTC files can be downloaded to your computer when you connect to an ONS 15454.
<b>Tools/Equipment</b>	Cisco ONS 15454 Release 3.3 software or documentation CD
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	This task is required if any one of the following is true: <ul style="list-style-type: none"> <li>• Netscape Release 4.51 or later or Internet Explorer Release 4.0 (service pack 2) or later is not installed</li> <li>• JRE 1.3.1_02 is not installed</li> <li>• CTC online help is not installed</li> <li>• The JRE java.policy file has not been modified for CTC</li> </ul>
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Verify that your computer has the following:
- Processor—Pentium II, 300 Mhz or faster
  - RAM—128 MB
  - Hard drive—2 GB is recommended. 50 MB of space must be available.
  - Operating System—Windows 95, Windows 98, Windows NT 4.0, or Windows 2000



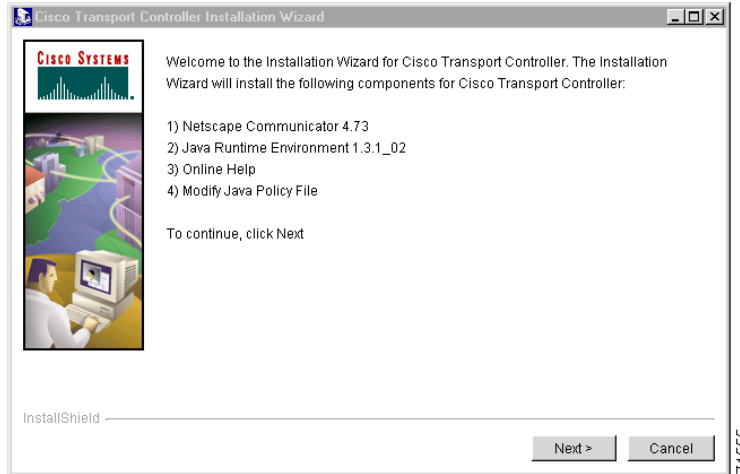
**Note** These requirements are guidelines. CTC performance will be faster if your computer has a faster processor and more RAM. Refer to the *Cisco ONS 15454 Reference Manual* for computer requirements needed for small, medium, and large ONS 15454 networks.

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- Step 2** Insert the Cisco ONS 15454 Release 3.3 software or documentation CD into your computer CD drive. The installation program begins running automatically. If it does not start, navigate to your computer’s CD directory and double-click **setup.exe**.

The Cisco Transport Controller Installation Wizard displays the components that will be installed on your computer ([Figure 3-1](#)).



**Figure 3-1** Starting the Cisco Transport Controller Installation Wizard

- Step 3** Click **Next**.
- Step 4** For installation type, choose **Typical** to install all the components shown in [Figure 3-1](#), or choose **Custom** if you only want to install some of the components.
- Step 5** Click **Next**.
- Step 6** If you selected the **Custom** in [Step 4](#), select the CTC components you want to install by checking or unchecking the boxes, then click **Next**. If you selected **Typical**, skip this step.
- Step 7** The directory where the installation wizard will install CTC online help is displayed. The default is C:\Program Files\Cisco\CTC\Documentation.
- Step 8** If you want to change the CTC online help directory, type the new directory path in the *Directory Name* field, or click **Browse** to navigate to the directory. If you do not want to change the directory, skip this step.
- Step 9** Click **Next**.
- Step 10** Review the components that will be installed. If you want to change them, click **Back**. If you have an active CTC session (for example, you are running the setup program to install additional components), close CTC before going to the next step.
- Step 11** Click **Next**.  
An Installation Issues dialog box is displayed.
- Step 12** Review the issues, then click **OK**. The InstallShield program begins the Netscape Communicator 4.73 Setup program.
- Step 13** Complete the Netscape installation:
- On the Netscape Communicator 4.73 Setup dialog box, click **Next**.
  - On the Software License Agreement dialog box, click **Yes**.
  - On the Setup Type dialog box, click **Typical**, then click **Next**.



**Note** If the Netscape installation hangs when installing RealPlayer G2, restart the CTC installation. When the Netscape installation begins, select **Custom** at [Step c.](#), then deselect RealPlayer, then continue.

- d. On the Netscape Desktop Preferences Options dialog box, check the boxes that apply, then click **Next**.
- e. On the Select Program Folder dialog box, click **Next**.
- f. On the Start Copying Files dialog box, click **Install**. The program begins the Netscape installation.
- g. On the Question dialog box, click **No**.
- h. On the Information dialog box, click **OK**.
- i. On the Restarting Windows dialog box, click **No, I will restart later**, then click **OK**.

**Step 14** Close the Netscape Communicator directory window to display the Cisco Transport Controller Installation Wizard dialog box.

**Step 15** On the CTC Installation Wizard dialog box, click **Next**. The Java 2 runtime environment installation begins.

**Step 16** Complete the JRE installation:

- a. On the Software License Agreement dialog box, click **Yes**.
- b. On the Choose Destination Location dialog box, click **Next**.
- c. On the Select Browser dialog box, click the Microsoft Internet Explorer and Netscape 6 checkboxes, then click **Next**.

When JRE installation is complete, the Cisco Transport Controller Installation Wizard dialog box is displayed.

**Step 17** Click **Next**. The CTC online help is installed. When installed, the policy file selection is displayed.

**Step 18** Choose the JRE policy file to modify:

- Choose **User Policy File** (default) to modify the policy file that applies only to your user profile. This file will not be overwritten if you upgrade or reinstall the JRE. If you are the only user who will access an ONS 15454 from the PC you are setting up, choose this option.
- Select **System Policy File** to modify the system JRE policy file. This policy file applies to all computer users. If more than one individual will use this computer to access the ONS 15454, choose this option. However, if you reinstall or upgrade the JRE, the system policy file is overwritten and you will need to run the CTC Installation Setup program again to modify it.

**Step 19** Click **Next**.

**Step 20** If you selected System Policy File in [Step 18](#), complete the following steps. If you selected User Policy File, go to [Step 21](#).

- a. The System Policy File Update dialog box displays the default policy file location (C:\Program Files\JavaSoft\jre). If you installed the JRE in a different location, enter the new path in the Directory Name field. After entering the path, or if the default path is correct, click **OK**.
- b. Click **OK** on the confirmation dialog box.

**Step 21** Click **Finish**.

**Step 22** To connect to the ONS 15454, restart your computer and complete the “[NTP-22 Set Up CTC Computer to Connect to the ONS 15454](#)” procedure on page 3-8.

## DLP-48 Run the CTC Installation Wizard for UNIX

<b>Purpose</b>	This task installs programs required to run CTC on Solaris workstations: Netscape 4.76, JRE 1.3.1_02, and CTC online help. It also modifies the Java Runtime Environment (JRE) policy file to allow CTC files to be downloaded to your computer after you connect to an ONS 15454.
<b>Tools/Equipment</b>	Cisco ONS 15454 Release 3.3 software or documentation CD
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required if any of the following are true: <ul style="list-style-type: none"> <li>• Netscape Release 4.76 is not installed</li> <li>• JRE 1.3.1_02 is not installed</li> <li>• CTC online help is not installed</li> <li>• The JRE java.policy file has not been modified for CTC</li> </ul>
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** Verify that your computer has the following:

- RAM—128 MB
- Hard drive—Verify that 50 MB of space is available.
- Operating System—Solaris 2.5.x or 2.6.x



**Note** These requirements are guidelines. CTC performance will be faster if your computer has a faster processor and more RAM. Refer to the *Cisco ONS 15454 Reference Manual* for computer requirements needed for small, medium, and large ONS 15454 networks.

**Step 2** Change the directory, type:

```
cd /cdrom/cdrom0/
```

**Step 3** From the techdoc454 CD directory, type:

```
./setup.bat
```

The Cisco Transport Controller Installation Wizard displays the components that will be installed on your computer ([Figure 3-1 on page 3-3](#)):

- Netscape Communicator 4.76
- Java Runtime Environment 1.3.1\_02
- CTC Online Help
- Modify Policy File—the JRE java.policy file is modified to enable CTC to download files needed to run the Cisco Transport Controller when you connect to an ONS 15454.

**Step 4** Click **Next**.

**Step 5** For installation type, choose **Typical** to install all components, or choose **Custom** if you do not want to install all the components.

**Step 6** Click **Next**.

**Step 7** If you selected the **Custom** in [Step 5](#), select the CTC components you want to install by checking or unchecking the boxes, then click **Next**. If you selected **Typical**, skip this step.

- Step 8** The directory where the installation wizard will install CTC online help is displayed. The default is C:\Program Files\Cisco\CTC\Documentation. If you want to change the CTC online help directory, type the new directory path in the *Directory Name* field, or click **Browse** to navigate to the directory.
- Step 9** Click **Next**.
- Step 10** Review the components that will be installed. If you want to change them, click **Back**. If CTC is running (for example, you are reinstalling components) close CTC before going to the next step.
- Step 11** Click **Next**. The InstallShield program begins the Netscape Communicator 4.76 Setup program.
- Step 12** Complete the Netscape installation:
- On the Netscape Communicator 4.76 Setup dialog box, click **Next**.
  - On the Software License Agreement dialog box, click **Yes**.
  - On the Setup Type dialog box, click **Typical**.
  - On the Netscape Desktop Preferences dialog box, check the boxes that apply, then click **Next**.
  - On the Program Folder, click **Next**.
  - On the Start Copying Files dialog box, click **Install**. The program begins the Netscape installation.
  - On the Question dialog box, click **No**.
- Step 13** On the Cisco Transport Controller Installation Wizard dialog box, click **Next**. The Java 2 runtime environment installation begins.
- Step 14** Complete the JRE installation:
- On the Software License Agreement dialog box, click **Yes**.
  - On the Choose Destination Location dialog box, click **Next**.
  - On the Select Browser dialog box, click the Microsoft Internet Explorer and Netscape 6 checkboxes, then click **Next**.
- The JRE is installed. When installation is complete, the Cisco Transport Controller Set Wizard dialog box is displayed.
- Step 15** Click **Next**. The CTC online help is installed. When installed, the policy file selection is displayed.
- Step 16** Choose the JRE policy file to modify:
- Choose **User Policy File** (default) to create a policy file that applies only to your user profile. This file will not be overwritten if you upgrade or reinstall the JRE. If you are the only computer user who will access an ONS 15454, choose this option.
  - Select **System Policy File** to modify the system JRE policy file. This policy file applies to all computer users. If more than one individual will use this computer to access the ONS 15454, choose this option. However, if you reinstall or upgrade the JRE, the system policy file is overwritten and you will need to run the CTC Installation Setup program again to modify it.
- Step 17** Click **Next**, then click **Finish**.




---

**Note** Be sure to record the names of the directories you choose for Netscape, JRE, and the online documentation.

---

- Step 18** If your installation included the JRE (that is, you chose the Typical installation or selected JRE from the custom installation), go to [“DLP-49 Set Up the Java Runtime Environment for UNIX” task on page 3-7](#).

**Note**

The Java Runtime Environment (JRE) may require certain patches to run properly. The patch tar file can be found in the JRE/Solaris directory on the CD. Please read the JRE/Solaris/Solaris.txt file for more information. In addition to installing any needed patches, follow the procedures below to set up JRE for use with Cisco Transport Controller on your UNIX system.

## DLP-49 Set Up the Java Runtime Environment for UNIX

<b>Purpose</b>	Use this task to set up the Java Runtime Environment for UNIX workstations.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-48 Run the CTC Installation Wizard for UNIX, page 3-5</a>
<b>Required/As Needed</b>	Required if you installed the JRE during the CTC installation
<b>Onsite/Remote</b>	Onsite or remote

**Note**

In this task, *[your JRE path]* represents the destination directory you chose for the Java Runtime Environment during JRE installation. For example, if your JRE destination directory is `/usr/bin/jre`, substitute `/usr/bin/jre`, wherever *[your JRE path]* occurs. Also, in the following procedures, *[your Netscape path]* refers to the destination directory you chose for Netscape, and must be substituted with your actual Netscape destination directory path.

**Note**

CTC requires that the location of **xterm** is also in your path. If you have, for some reason, moved **xterm** from its default location, `/usr/openwin/bin`, you must change all occurrences of `/usr/openwin/bin` in the procedures below to reflect the actual path where **xterm** exists on your system.

**Step 1** Set up the environment variable:

- a. If you are using the csh shell, edit the `.cshrc` file in your home directory by appending the file with the lines:
 

```
setenv JRE [JRE path]
setenv NETSCAPE [Netscape path]
setenv NPX_PLUGIN_PATH $JRE/j2re1_3_1_02/plugin/sparc/ns4
set path = ( /usr/openwin/bin $NETSCAPE $path )
```
- b. If you are using the ksh or bash shell, edit the `.profile` file in your home directory by appending the file with the lines:

```
JRE=[your JRE path]
NETSCAPE=[your Netscape path]
NPX_PLUGIN_PATH=$JRE/j2re1_3_1_02/plugin/sparc/ns4
PATH=/usr/openwin/bin:$NETSCAPE:$PATH
export JRE NPX_PLUGIN_PATH PATH
```

**Step 2** Set the JRE reference:

- a. Run the Control Panel by typing:

```
[JRE path]/j2re1_3_0_02/bin/ControlPanel
```

- b. Click the **Advanced** tab.

- c. From the combo box, select **[JRE path]/j2re1\_3\_1\_02**. If the JRE is not found, select **other** and enter the following in the Path text box:

```
[JRE path]/j2re1_3_1_02
```

- d. Click **Apply**. Go to the “[NTP-22 Set Up CTC Computer to Connect to the ONS 15454](#)” procedure on page 3-8.



**Note**

If you are running multiple shells, before your new environment variable will be set you may need to invoke the same shell for which you changed the initialization file (for example, if you added the environment variable to the .cshrc file, you must run your browser under the csh shell.

## NTP-22 Set Up CTC Computer to Connect to the ONS 15454

<b>Purpose</b>	This procedure tells you how to set up a PC running Windows or a Solaris workstation to connect to the ONS 15454.
<b>Tools/Equipment</b>	Depends on connection type
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** From [Table 3-1](#), select the ONS 15454 connection type that you want to set up for your computer.



**Note**

For initial shelf turn up, you must use a local craft connection to the ONS 15454.

**Table 3-1 ONS 15454 Connection Methods**

Method	Description	Requirements
Local craft	Refers to onsite network connections between the CTC computer and the ONS 15454 using: <ul style="list-style-type: none"> <li>The RJ-45 jack on the TCC+, or</li> <li>The LAN pins on the ONS 15454 backplane, or</li> <li>A hub or switch to which the ONS 15454 is connected.</li> </ul>	<ul style="list-style-type: none"> <li>If you do not use DHCP, you will need to change the computer IP address, subnet mask, and default router.</li> </ul>
Corporate LAN	Refers to a connection to the ONS 15454 through a corporate or NOC LAN.	<ul style="list-style-type: none"> <li>The ONS 15454 must be provisioned for LAN connectivity, including IP address, subnet mask, default gateway.</li> <li>The ONS 15454 must be physically connected to the corporate LAN.</li> <li>The CTC computer must be connected to the corporate LAN that has connectivity to the ONS 15454.</li> </ul>
TL1	Refers to a connection to the ONS 15454 using TL1 rather than CTC. TL1 sessions can be started from CTC, or you can use a TL1 terminal. The physical connection can be a craft connection, corporate LAN, or a TL1 terminal. <i>Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide.</i>	
Remote	Refers to a connection made to the ONS 15454 using a modem.	<ul style="list-style-type: none"> <li>A modem must be connected to the ONS 15454.</li> <li>The modem must be provisioned for ONS 15454. To run CTC, the modem must be provisioned for Ethernet access.</li> </ul>

**Step 2** If you need to set up your computer for corporate LAN access, complete the “[DLP-55 Set Up a Computer for a Corporate LAN Connection](#)” task on page 3-18. If not, proceed to the next step.

**Step 3** If you need to set up the computer for remote access, complete the “[DLP-58 Provision Remote Access to the ONS 15454](#)” task on page 3-20. If not, proceed to the next step.

**Step 4** If you need to set up your computer for TL1 access, refer to the *Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide*. If not, proceed to the next step.

**Step 5** If you need to set up your computer for local craft connections, choose a task from [Table 3-2](#).

**Table 3-2 ONS 15454 Craft Connection Options**

Local Craft Connection Task	Description
<ul style="list-style-type: none"> <li>• <a href="#">DLP-50 Set Up a Windows PC for Craft Connection to an ONS 15454 on the Same Subnet Using Static IP Addresses, page 3-11</a>, or</li> <li>• <a href="#">DLP-53 Set Up a Solaris Workstation for a Craft Connection to an ONS 15454, page 3-17</a></li> </ul>	Complete this task if: <ul style="list-style-type: none"> <li>• You will access nodes running CTC software releases before Release 3.3</li> <li>• You will connect to one ONS 15454; if you will connect to multiple ONS 15454s, you may need to reconfigure your computer's IP settings each time you connect to an ONS 15454</li> <li>• You need to access non-ONS 15454 applications such as ping and trace route</li> </ul>
<ul style="list-style-type: none"> <li>• <a href="#">DLP-51 Set Up a Windows PC for Craft Connection to an ONS 15454 Using DHCP, page 3-13</a></li> </ul>	Complete this task if: <ul style="list-style-type: none"> <li>• The CTC computer is provisioned for DHCP</li> <li>• The ONS 15454 has DHCP forwarding enabled and is connected to a DHCP server</li> </ul>
<ul style="list-style-type: none"> <li>• <a href="#">DLP-52 Set Up a Windows PC for Craft Connection to an ONS 15454 Using Automatic Host Detection, page 3-15</a></li> </ul>	Complete this task if: <ul style="list-style-type: none"> <li>• You are connecting to a node that resides in a secure network employing the ONS 15454 proxy server</li> <li>• All nodes that you will access are running software release Release 3.3</li> <li>• You will connect to ONS 15454s at different locations and times</li> <li>• You do not need to access a LAN or use non-ONS 15454 applications such as ping and gateway TL1</li> </ul>

**Step 6** After your computer is set up to connect to the ONS 15454, proceed to the “[NTP-23 Log into the ONS 15454 GUI](#)” procedure on page 3-21.



## DLP-50 Set Up a Windows PC for Craft Connection to an ONS 15454 on the Same Subnet Using Static IP Addresses

<b>Purpose</b>	Use this task to set up your computer for a local craft connection to the ONS 15454 when: <ul style="list-style-type: none"><li>• You will access nodes running software releases before Release 3.3</li><li>• You will connect to one ONS 15454; if you will connect to multiple ONS 15454s, you may need to reconfigure your computer's IP settings each time you connect to an ONS 15454</li><li>• You need to use non-ONS 15454 applications such as ping and trace route</li></ul>
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Verify the operating system that is installed on your computer:
- From the Windows Start menu, choose **Settings > Control Panel**.
  - On the Control Panel window, double-click the **System** icon.
  - On the General tab of the System Settings window, verify that the Windows operating system is one of the following: Windows 95, Windows 98, Windows 2000, or Windows NT 4.0
- Step 2** Complete the steps in [Table 3-3](#) for the operating system installed on your PC.

**Table 3-3 Set Up Windows PC for Craft ONS 15454 Connections on the Same Subnet Using Static IP Addresses**

For Windows 95/98:	For Windows NT:	For Windows 2000:
<ol style="list-style-type: none"> <li>1. From the Windows Start menu, choose <b>Settings &gt; Control Panel</b>.</li> <li>2. On the Control Panel dialog box, click the <b>Network</b> icon.</li> <li>3. In the Network dialog box select TCP/IP for your PC Ethernet card, then click <b>Properties</b>.</li> <li>4. On the TCP/IP Properties dialog box, click the <b>DNS Configuration</b> tab and choose <b>Disable DNS</b>.</li> <li>5. Click the <b>WINS Configuration</b> tab and choose <b>Disable WINS Resolution</b>.</li> <li>6. Click the <b>IP Address</b> tab.</li> <li>7. In the IP Address window, click <b>Specify an IP address</b>.</li> <li>8. In the IP Address field, enter an IP address that is identical to the ONS 15454 IP address shown on the ONS 15454 LCD except for the last three digits. The last three digits must be between 1 and 254.</li> <li>9. In the Subnet Mask field, type 255.255.255.0.</li> <li>10. Click <b>OK</b>.</li> <li>11. On the TCP/IP dialog box, click the <b>Gateway</b> tab.</li> <li>12. In the New Gateway field, type the ONS 15454 IP address. Click <b>Add</b>.</li> <li>13. Verify that the IP address displays in the Installed Gateways field, then click <b>OK</b>.</li> <li>14. When the prompt to restart your PC displays, click <b>Yes</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. From the Windows Start menu, choose <b>Settings &gt; Control Panel</b>.</li> <li>2. On the Control Panel dialog box, click the <b>Network</b> icon.</li> <li>3. In the Network dialog box click the <b>Protocols</b> tab, choose <b>TCP/IP Protocol</b>, then click <b>Properties</b>.</li> <li>4. Click the <b>IP Address</b> tab.</li> <li>5. In the IP Address window, click <b>Specify an IP address</b>.</li> <li>6. In the IP Address field, enter an IP address that is identical to the ONS 15454 IP address shown on the ONS 15454 LCD except for the last three digits. The last three digits must be between 1 and 254.</li> <li>7. In the Subnet Mask field, type 255.255.255.0.</li> <li>8. Click the <b>Advanced</b> button.</li> <li>9. Under the Gateways List, click <b>Add</b>. The TCP/IP Gateway Address dialog box is displayed.</li> <li>10. Type the ONS 15454 IP address in the Gateway Address field.</li> <li>11. Click <b>Add</b>.</li> <li>12. Click <b>OK</b>.</li> <li>13. Click <b>Apply</b>.</li> <li>14. In some cases, Windows NT will prompt you to reboot your PC. If you receive this prompt, click <b>Yes</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. From the Windows Start menu, choose <b>Settings &gt; Network and Dial-up Connections &gt; Local Area Connection</b>.</li> <li>2. On the Local Area Connection Status dialog box, click <b>Properties</b>.</li> <li>3. On the General tab, choose <b>Internet Protocol (TCP/IP)</b>, then click <b>Properties</b>.</li> <li>4. Click <b>Use the following IP address</b>.</li> <li>5. In the IP Address field, enter an IP address that is identical to the ONS 15454 IP address shown on the ONS 15454 LCD except for the last three digits. The last three digits must be between 1 and 254.</li> <li>6. In the Subnet Mask field, type 255.255.255.0.</li> <li>7. In the Default Gateway field, type the ONS 15454 IP address.</li> <li>8. Click <b>OK</b>.</li> <li>9. On the Local Area Connection Status dialog box, click <b>Close</b>.</li> <li>10. On the Local Area Connection Properties dialog box, click <b>OK</b>.</li> </ol>

**Step 3** After you set up your PC, proceed to the “[NTP-23 Log into the ONS 15454 GUI](#)” procedure on page 3-21 to log into the ONS 15454.

## DLP-51 Set Up a Windows PC for Craft Connection to an ONS 15454 Using DHCP

<b>Purpose</b>	Use this task to set up your computer for craft connection to the ONS 15454 using DHCP (dynamic host configuration protocol).
<b>Tools/Equipment</b>	CAT-5 cable
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a> <a href="#">NTP-26 Set Up Network Information, page 4-5</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Caution**

You will not be able to connect to the ONS 15454 if DHCP forwarding is not enabled on the ONS 15454 or the ONS 15454 is not connected to a DHCP server. By default, DHCP forwarding is not enabled. If you are connecting to an ONS 15454 to perform initial shelf turnup, complete the “[DLP-50 Set Up a Windows PC for Craft Connection to an ONS 15454 on the Same Subnet Using Static IP Addresses](#)” task on page 3-11 or the “[DLP-52 Set Up a Windows PC for Craft Connection to an ONS 15454 Using Automatic Host Detection](#)” task on page 3-15.

- 
- Step 1** Verify the operating system that is installed on your computer:
- From the Windows Start menu, choose **Settings > Control Panel**.
  - On the Control Panel window, double-click the **System** icon.
  - On the General tab of the System Settings window, verify that the Windows operating system is one of the following: Windows 95, Windows 98, Windows 2000, or Windows NT 4.0.
- Step 2** Complete the steps in [Table 3-4](#) for the operating system installed on your PC.

**Table 3-4 Set Up Windows PC for Craft ONS 15454 Connections Using DHCP**

For Windows 95/98:	For Windows NT:	For Windows 2000:
<ol style="list-style-type: none"> <li>1. From the Windows Start menu, choose <b>Settings &gt; Control Panel</b>.</li> <li>2. On the Control Panel dialog box, click the <b>Network</b> icon.</li> <li>3. In the Network dialog box select TCP/IP for your PC Ethernet card, then click <b>Properties</b>.</li> <li>4. On the TCP/IP Properties dialog box, click the <b>DNS Configuration</b> tab and choose <b>Disable DNS</b>.</li> <li>5. Click the <b>WINS Configuration</b> tab and choose <b>Disable WINS Resolution</b>.</li> <li>6. Click the <b>IP Address</b> tab.</li> <li>7. In the IP Address window, click <b>Obtain an IP address from a DHCP Server</b>.</li> <li>8. Click <b>OK</b>.</li> <li>9. When the prompt to restart your PC displays, click <b>Yes</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. From the Windows Start menu, choose <b>Settings &gt; Control Panel</b>.</li> <li>2. On the Control Panel dialog box, click the <b>Network</b> icon.</li> <li>3. In the Network dialog box click the <b>Protocols</b> tab, choose <b>TCP/IP Protocol</b>, then click <b>Properties</b>.</li> <li>4. Click the <b>IP Address</b> tab.</li> <li>5. In the IP Address window, click <b>Obtain an IP address from a DHCP Server</b>.</li> <li>6. Click <b>OK</b>.</li> <li>7. Click <b>Apply</b>.</li> <li>8. If Windows prompts you to restart your PC, click <b>Yes</b>.</li> </ol>	<ol style="list-style-type: none"> <li>1. From the Windows Start menu, choose <b>Settings &gt; Network and Dial-up Connections &gt; Local Area Connection</b>.</li> <li>2. On the Local Area Connection Status dialog box, click <b>Properties</b>.</li> <li>3. On the General tab, choose <b>Internet Protocol (TCP/IP)</b>, then click <b>Properties</b>.</li> <li>4. Click <b>Obtain an IP address from a DHCP Server</b>.</li> <li>5. Click <b>OK</b>.</li> <li>6. On the Local Area Connection Status dialog box, click <b>Close</b>.</li> <li>7. On the Local Area Connection Properties dialog box, click <b>OK</b>.</li> </ol>

**Step 3** After you set up your PC, go to the [“NTP-23 Log into the ONS 15454 GUI” procedure on page 3-21](#) to log into the ONS 15454.

## DLP-52 Set Up a Windows PC for Craft Connection to an ONS 15454 Using Automatic Host Detection

<b>Purpose</b>	Use this task to set up your computer for local craft connection to the ONS 15454 when: <ul style="list-style-type: none"> <li>You are connecting to a node that resides in a secure network employing the ONS 15454 proxy server.</li> <li>All nodes that you will access are running software release Release 3.3.</li> <li>You will connect to multiple ONS 15454s and do not want to reconfigure your IP address each time.</li> <li>You do not need to access a corporate LAN or use non-ONS 15454 applications such as ping and trace route.</li> </ul>
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Note

This procedure employs the ONS 15454 automatic host detection to allow you to directly connect to multiple ONS 15454s successively without reconfiguring your computer's IP address. However, if proxy server is not enabled on the ONS 15454, DCC-connected nodes on different subnets will not be visible. Refer to the "[NTP-26 Set Up Network Information](#)" procedure on page 4-5 and the IP Networking chapter in the Cisco ONS 15454 Reference Manual for more information about the proxy server.

- 
- Step 1** Verify the operating system that is installed on your computer:
- From the Windows Start menu, choose **Settings > Control Panel**.
  - On the Control Panel window, double-click the **System** icon.
  - On the General tab of the System Settings window, verify that the Windows operating system is one of the following: Windows 95, Windows 98, Windows 2000, or Windows NT 4.0
- Step 2** Complete the steps in [Table 3-5](#) for the operating system installed on your PC.

**Table 3-5 Set Up Windows PC for Craft ONS 15454 Connections Using Automatic Host Detection**

For Windows 95/98:	For Windows NT:	For Windows 2000:
<ol style="list-style-type: none"> <li>From the Windows Start menu, choose <b>Settings &gt; Control Panel</b>.</li> <li>On the Control Panel dialog box, click the <b>Network</b> icon.</li> <li>In the Network dialog box select TCP/IP for your PC Ethernet card, then click <b>Properties</b>.</li> <li>On the TCP/IP Properties dialog box, click the <b>DNS Configuration</b> tab and choose <b>Disable DNS</b>.</li> <li>Click the <b>WINS Configuration</b> tab and choose <b>Disable WINS Resolution</b>.</li> <li>Click the <b>IP Address</b> tab.</li> <li>In the IP Address window, click <b>Specify an IP address</b>.</li> <li>In the IP Address field, enter a legitimate IP address.</li> <li>In the Subnet Mask field, type 255.255.255.0.</li> <li>Click <b>OK</b>.</li> <li>On the TCP/IP dialog box, click the <b>Gateway</b> tab.</li> <li>In the New Gateway field, type your PC IP address (the address entered in Step 6.). Click <b>Add</b>.</li> <li>Verify that the IP address displays in the Installed Gateways field, then click <b>OK</b>.</li> <li>When the prompt to restart your PC displays, click <b>Yes</b>.</li> </ol>	<ol style="list-style-type: none"> <li>From the Windows Start menu, choose <b>Settings &gt; Control Panel</b>.</li> <li>On the Control Panel dialog box, click the <b>Network</b> icon.</li> <li>In the Network dialog box click the <b>Protocols</b> tab, choose <b>TCP/IP Protocol</b>, then click <b>Properties</b>.</li> <li>Click the <b>IP Address</b> tab.</li> <li>In the IP Address window, click <b>Specify an IP address</b>.</li> <li>In the IP Address field, enter a legitimate IP address.</li> <li>In the Subnet Mask field, type 255.255.255.0.</li> <li>Click the <b>Advanced</b> button.</li> <li>Under the Gateways List, click <b>Add</b>. The TCP/IP Gateway Address dialog box is displayed.</li> <li>Type the IP address entered in Step 6. in the Gateway Address field.</li> <li>Click <b>Add</b>.</li> <li>Click <b>OK</b>.</li> <li>Click <b>Apply</b>.</li> <li>In some cases, Windows NT will prompt you to reboot your PC. If you receive this prompt, click <b>Yes</b>.</li> </ol>	<ol style="list-style-type: none"> <li>From the Windows Start menu, choose <b>Settings &gt; Network and Dial-up Connections &gt; Local Area Connection</b>.</li> <li>On the Local Area Connection Status dialog box, click <b>Properties</b>.</li> <li>On the General tab, choose <b>Internet Protocol (TCP/IP)</b>, then click <b>Properties</b>.</li> <li>Click <b>Use the following IP address</b>.</li> <li>In the IP Address field, enter a legitimate IP address.</li> <li>In the Subnet Mask field, type 255.255.255.0.</li> <li>Type the IP address entered in Step 5. in the Gateway Address field.</li> <li>Click <b>OK</b>.</li> <li>On the Local Area Connection Status dialog box, click <b>Close</b>.</li> <li>On the Local Area Connection Properties dialog box, click <b>OK</b>.</li> </ol>

**Step 3** After you set up your PC, you can go to the [“NTP-23 Log into the ONS 15454 GUI” procedure on page 3-21](#) to log into the ONS 15454.

## DLP-53 Set Up a Solaris Workstation for a Craft Connection to an ONS 15454

<b>Purpose</b>	Use this task to set up a Solaris workstation for a craft connection to the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Step 1** Log into the workstation as the root user.

**Step 2** Check to see if the interface is plumbed by typing:

```
# ifconfig <device>
```

For example: # ifconfig hme1

- a. If the interface is plumbed, a message similar to the following appears:  
hme1:flags=1000842<BROADCAST,RUNNING,MULTICAST,IPv4>mtu 1500 index 2 inet 0.0.0.0 netmask 0. Go to Step 4.
- b. If the interface is not plumbed, a message similar to the following appears: ifconfig: status: SIOCGLIFFLAGS: hme1: no such interface. Plumb the interface by typing:

```
# if config <device> plumb
```

For example: ifconfig hme1 plumb

**Step 3** Configure the IP address on the interface by typing:

```
#ifconfig <interface> <ip address> netmask <netmask> up
```

For example: #ifconfig hme0 10.20.30.40 netmask 255.255.255.0 up



**Note** Enter an IP address that is identical to the ONS 15454 IP address except for the last three digits. The last three digits must be between 1 and 254. In the Subnet Mask field, type 255.255.255.0. Skip this step if “Craft Access Only” from **Provisioning > Network > General > Gateway Settings** is checked.

**Step 4** Test the connection:

- a. Start Netscape Navigator or Internet Explorer.
- b. Enter the Cisco ONS 15454 IP address in the web address (URL) field. If the connection is established, a Java Console window, CTC caching messages, and the Cisco Transport Controller Login dialog box display. If this occurs, go to Step 2 of the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) to complete the login. If the Login dialog box does not appear, complete Steps c–d.
- c. At the prompt, type:

```
ping [ONS 15454 IP address]
```

For example, you would type “ping 192.168.1.1” to connect to an ONS 15454 with default IP address 192.168.1.1. If your workstation is connected to the ONS 15454, an “[IP address] is alive” message displays.




---

**Note** Skip this step if “Craft Access Only” from **Provisioning > Network > General > Gateway Settings** is checked.

---

- d. If CTC is not responding, a “Request timed out” message displays. Verify IP and submask information. Check that the cables connecting the workstation to the ONS 15454 are securely attached. Check the Link Status by typing:

```
#nnd -set /dev/<device> instance 0
```

```
#nnd -get /dev/<device> link_status
```

For example:

```
#nnd -set /dev/hme instance 0
```

```
#nnd -get /dev/hme link_status
```

The result of 1 means the link is up. The result of 0 means the link is down.




---

**Note** Check the man page for nnd. For example: **#man nnd**

---

- Step 5** After you set up your workstation, proceed to the “[NTP-23 Log into the ONS 15454 GUI](#)” procedure on [page 3-21](#) to log into the ONS 15454.
- 

## DLP-55 Set Up a Computer for a Corporate LAN Connection

<b>Purpose</b>	Use this task to set up your computer to access the ONS 15454 through a corporate LAN.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** If your computer is connected to the corporate LAN, go to [Step 2](#). If you changed your computer’s network settings for craft access to the ONS 15454, change the settings back to the corporate LAN access settings. This generally means:
- Set the IP Address on the TCP/IP dialog box back to “Obtain an IP address automatically” (Windows 95/98) or “Obtain an IP address from a DHCP server” (Windows NT/2000).
  - If your LAN requires that DNS or WINS be enabled, change the setting on the DNS Configuration or WINS Configuration tab of the TCP/IP dialog box.



- Step 2** If your computer is connected to a proxy server, disable proxy service or add the ONS 15454 nodes as exceptions. To disable proxy service, complete the task for the web browser you use:
- [DLP-56 Disable Proxy Service Using Internet Explorer \(Windows\), page 3-19](#), or
  - [DLP-57 Disable Proxy Service Using Netscape \(Windows and UNIX\), page 3-19](#)
- 

## DLP-56 Disable Proxy Service Using Internet Explorer (Windows)

<b>Purpose</b>	This task disables proxy service for PCs running Internet Explorer.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required if your computer is connected to a proxy server and your browser is Internet Explorer.
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** From the Start menu, select **Settings > Control Panel**.
- Step 2** In the Control Panel window, choose **Internet Options**.
- Step 3** From the Internet Properties dialog box, click **Connections > LAN Settings**.
- Step 4** On the LAN Settings dialog box, either:
- Deselect **Use a proxy server** to disable the service, or
  - Leave **Use a proxy server** selected and click **Advanced**. On the Proxy Setting dialog box under Exceptions, enter the IP addresses of ONS 15454 nodes that you will access. Separate each address with a semicolon. You can insert an asterisk for the host number to include all the ONS 15454s on your network. Click **OK** to close each open dialog box.
- Step 5** Proceed to the “[NTP-23 Log into the ONS 15454 GUI](#)” procedure on page 3-21 to log into the ONS 15454.
- 

## DLP-57 Disable Proxy Service Using Netscape (Windows and UNIX)

<b>Purpose</b>	This task disables proxy service for PCs and UNIX workstations running Netscape.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required if your computer is connected to a proxy server and your browser is Netscape.
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Open Netscape.
- Step 2** From the Edit menu, choose **Preferences**.

- Step 3** In the Preferences dialog box under Category, choose **Advanced > Proxies**.
- Step 4** On the right side of the Preferences dialog box under Proxies, either:
- Choose **Direct connection to the Internet** to bypass the proxy server
- or
- Choose **Manual proxy configuration** to add exceptions to the proxy server, then click **View**. On the Manual Proxy Configuration dialog box under Exceptions, enter the IP addresses of the ONS 15454 nodes that you will access. Separate each address with a comma. Click **OK** to close each open dialog box.
- Step 5** Proceed to the [“NTP-23 Log into the ONS 15454 GUI” procedure on page 3-21](#) to log into the ONS 15454.
- 

## DLP-58 Provision Remote Access to the ONS 15454

<b>Purpose</b>	Use this task to connect an ONS 15454 using a LAN modem.
<b>Tools/Equipment</b>	Modem and modem documentation
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a>
<b>Required/As Needed</b>	Required to access the Cisco Transport Controller
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Connect the modem to the RJ-45 port on the TCC+ or to the LAN pins on the ONS 15454 backplane.
- Step 2** Refer to the modem documentation to provision the modem for the ONS 15454:
- For CTC access, set the modem for Ethernet access.
  - Assign an IP address to the modem that is on the same subnet as the ONS 15454.
  - The IP address the modem assigns to the CTC computer must be on the same subnet as the modem and the ONS 15454.



**Note** For assistance on provisioning specific modems, contact the Cisco Technical Assistance Center, at 1-877-323-7368.

---

- Step 3** Proceed to the [“NTP-23 Log into the ONS 15454 GUI” procedure on page 3-21](#) to log into the ONS 15454.
-

## NTP-23 Log into the ONS 15454 GUI

<b>Purpose</b>	Use this procedure to log into the Cisco Transport Controller, the graphical user interface software used to manage the ONS 15454. This procedure includes optional node login tasks.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a> <a href="#">NTP-22 Set Up CTC Computer to Connect to the ONS 15454, page 3-8</a>
<b>Required/As Needed</b>	Required to access the Cisco Transport Controller
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** If the computer is not connected to the ONS 15454, complete the “[DLP-59 Connect Computer to the ONS 15454](#)” task on page 3-21.

**Step 2** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.




---

**Note** For information about navigating in CTC, see Appendix A.

---

**Step 3** As needed, complete the “[DLP-61 Create Login Node Groups](#)” task on page 3-24. Login node groups display nodes that are not connected to the log-in node via DCC.

**Step 4** As needed, complete the “[DLP-62 Add a Node to the Current Session or Login Group](#)” task on page 3-25.

**Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

---

## DLP-59 Connect Computer to the ONS 15454

<b>Purpose</b>	Use this task to connect a CTC computer to the ONS 15454.
<b>Tools/Equipment</b>	CAT-5 cable
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a> <a href="#">NTP-22 Set Up CTC Computer to Connect to the ONS 15454, page 3-8</a>
<b>Required/As Needed</b>	Required to access the Cisco Transport Controller
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** If your computer is set up for a local craft connection, connect a CAT-5 cable from the PC or Solaris workstation NIC card to one of the following:

- The RJ-45 port on the TCC+
- The RJ-45 port on a hub or switch to which the ONS 15454 is physically connected



**Note** For instructions on crimping your own CAT-5 cables, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 2** If your computer is set up for a corporate LAN connection, connect a CAT-5 cable from the PC or Solaris workstation NIC card to a LAN port.
- Step 3** Continue to the “DLP-60 Log into CTC” task on page 3-22.

## DLP-60 Log into CTC

<b>Purpose</b>	Use this task to log into the Cisco Transport Controller, the graphical user interface software used to manage the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a> <a href="#">NTP-22 Set Up CTC Computer to Connect to the ONS 15454, page 3-8</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote



**Note** For information about CTC views and navigation, see Appendix A.

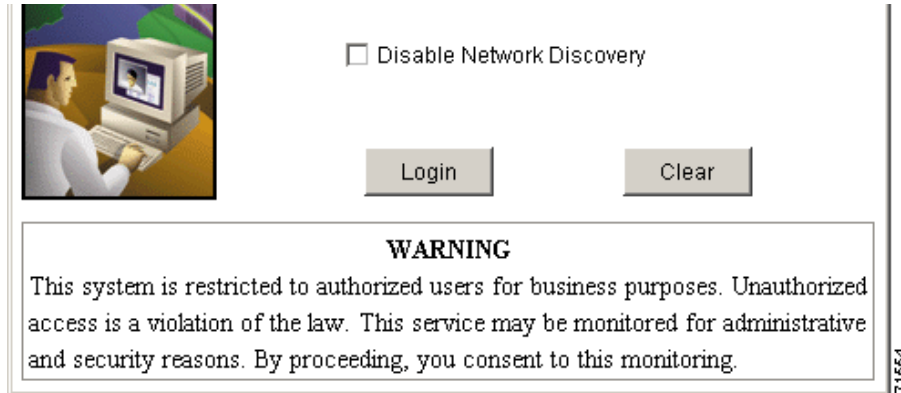
- Step 1** From the PC connected to the ONS 15454, start Netscape or Internet Explorer.
- Step 2** In the Netscape or Internet Explorer Web address (URL) field, enter the ONS 15454 IP address. For initial setup, this is the default address, 192.1.0.2. Press **Enter**.



**Note** If you are logging into ONS 15454 nodes running different releases of CTC software, log into the node running the most recent release. If you log into a node with an older release, you receive an INCOMPATIBLE-SW alarm and the IP address of the login node will display instead of the node name. To check the software version of a node, select **About CTC** from the CTC Help menu. To resolve an alarm, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

A Java Console window displays the CTC file download status. The web browser displays information about your Java and system environments. If this is the first login, CTC caching messages display while CTC files are downloaded to your computer. The first time you connect to an ONS 15454, this process can take several minutes. After the download, the CTC Login dialog box displays ([Figure 3-2](#)).

Figure 3-2 Logging into CTC



- Step 3** In the Login dialog box, type a user name and password (both are case sensitive). For initial setup, type the user name “CISCO15” if it is not already displayed.



**Note** The CISCO15 user is provided with every ONS 15454. CISCO15 has superuser privileges, so you can create other users. CISCO15 is delivered without a password. To create one, click the **Provisioning > Security** tabs after you log in and change the CISCO15 password. (You cannot delete the CISCO15 user.) To set up ONS 15454 users and assign security, go to the [“NTP-30 Create Users and Assign Security” procedure on page 4-27](#). Additional information is provided in the *Cisco ONS 15454 Reference Guide*.

- Step 4** Each time you log into an ONS 15454, you can make selections on the following login options:
- *Node Name*—Displays the IP address entered in the web browser and a pull-down menu of previously-entered ONS 15454 IP addresses. You can select any ONS 15454 on the list for the login, or you can enter the IP address (or node name) of any new node where you want to log in.
  - *Additional Nodes*—Displays a list of login node groups that were created. To create a login node group or add additional groups, see the [“DLP-61 Create Login Node Groups” task on page 3-24](#).)



**Note** Topology hosts that were created in previous ONS 15454 releases by modifying the ctc.ini file are displayed as a “Topology Host” group under Additional Nodes.

- *Exclude Dynamically Discovered Nodes*—Check this box to view only the ONS 15454 (and login node group members, if any) entered in the *Node Name* field. Nodes linked to the *Node Name* ONS 15454 through the DCC are not displayed. Using this option can decrease the CTC startup time in networks with many DCC-connected nodes.
- Step 5** Click **Login**.

If login is successful, the CTC window displays. From here, you can navigate to other CTC views to provision and manage the ONS 15454. If you need to perform the initial shelf turn up, go to [Chapter 4, “Turn Up Shelf.”](#) If login problems occur, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

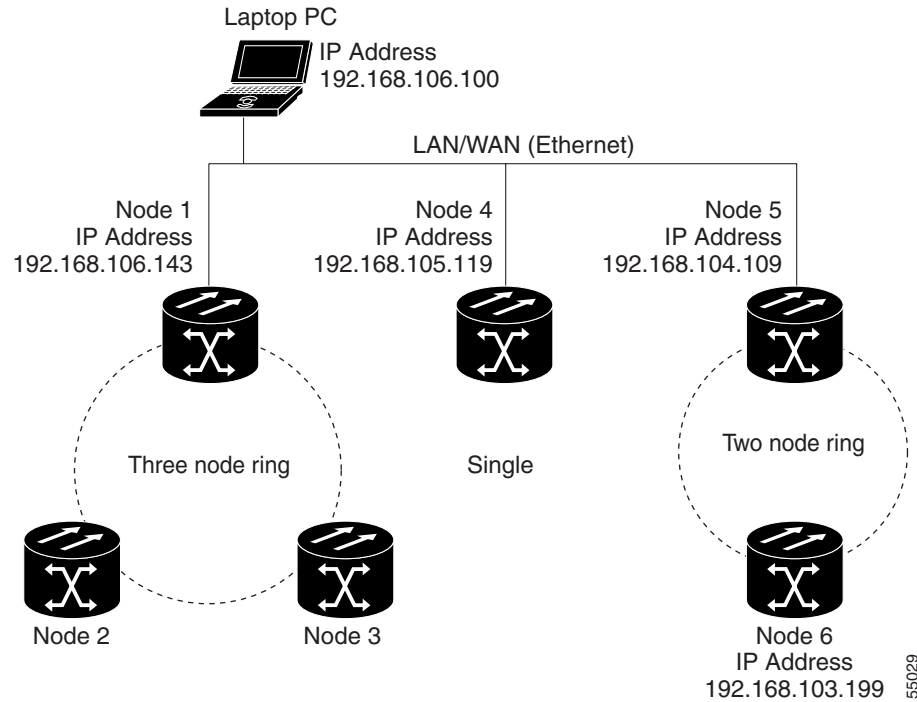
## DLP-61 Create Login Node Groups

<b>Purpose</b>	Create a login node group to display ONS 15454s that have an IP connection but not a DCC connection to the login node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a> <a href="#">NTP-22 Set Up CTC Computer to Connect to the ONS 15454, page 3-8</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into an ONS 15454 on the network. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** From the Edit menu, choose **Preferences**.
- Step 3** Click the **Login Node Group** tab and click **Create Group**.
- Step 4** Enter a name for the group in the Create Login Group Name dialog box. Click **OK**.
- Step 5** Under Members, type the IP address (or node name) of a node you want to add to the group. Click **Add**. Repeat this step for each node you want to add to the group.
- Step 6** Click **OK**.

The next time you log into an ONS 15454, the login node group will be available in the Additional Nodes list of the Login dialog box. For example, in [Figure 3-3](#), a login node group, “Test Group,” is created and the IP addresses for Nodes 1, 4, and 5. During login, if you select Test Group under *Additional Nodes*, all nodes in the figure are displayed. You can create as many login groups as you need. The groups are stored in the CTC preferences file and are not visible to other users.

Figure 3-3 A login node group



## DLP-62 Add a Node to the Current Session or Login Group

<b>Purpose</b>	Use this task to add a node to the current CTC session or login node group.
<b>Tools</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into an ONS 15454 on the network. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** From the CTC File menu, click **Add Node** (or click the Add Node button on the toolbar).
- Step 3** On the Add Node dialog box, enter the node name (or IP address).
- Step 4** If you want to add the node to the current login group, click **Add Node to Current Login Group**. Otherwise, leave it unchecked.



**Note** The Add Node to Current Login Group checkbox is active only if you selected a login group when you logged into CTC.

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

**■ DLP-62 Add a Node to the Current Session or Login Group**

After a few seconds, the new node will be displayed on the network view map.

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## Turn Up Shelf

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This chapter explains how to provision a single Cisco ONS 15454 node and turn it up for service.

### Before You Begin

Complete the procedures applicable to your site plan from the following chapters:

- [Chapter 1, “Install the Shelf and Backplane Cable”](#)
- [Chapter 2, “Install Cards and Fiber-Optic Cable”](#)
- [Chapter 3, “Connect the PC and Log into the GUI”](#)

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

1. [NTP-24 Verify Card Installation, page 4-2](#)—Complete this procedure first.
2. [NTP-25 Set Up Name, Date, Time, and Contact Information, page 4-3](#)—Continue with this procedure to set the node name, date, time, location, and contact information.
3. [NTP-26 Set Up Network Information, page 4-5](#)—Continue with this procedure to provision the IP address, default router, subnet mask, and network configuration settings.
4. [NTP-27 Set Up the ONS 15454 for Firewall Access, page 4-14](#)—Continue with this procedure if the ONS 15454 will be accessed behind firewalls.
5. [NTP-28 Set Up Timing, page 4-18](#)—Continue with this procedure to set up the node’s SONET timing references.
6. [NTP-30 Create Users and Assign Security, page 4-27](#)—Complete this procedure to create CTC users and assign their security levels.
7. [NTP-29 Create Protection Groups, page 4-22](#)—Complete this procedure, as needed, to set up 1:1, 1:N, and 1+1 protection groups for ONS 15454 electrical and optical cards.
8. [NTP-31 Provision Line Status and Thresholds, page 4-30](#)—Complete this procedure to provision transmission settings for electrical and optical (OC-N) cards.
9. [NTP-32 Provision the Alarm Interface Controller, page 4-51](#)—Complete this procedure if an AIC card is installed in Slot 9 and you want to set up external (environmental) alarms, controls, or orderwire.
10. [NTP-33 Set Up SNMP, page 4-55](#)—Complete this procedure if SNMP will be used for system monitoring.

# NTP-24 Verify Card Installation

<b>Purpose</b>	This procedure verifies that the ONS 15454 node is ready for turn up.
<b>Tools/Equipment</b>	An engineering work order, site plan, or other document specifying the ONS 15454 card installation.
<b>Prerequisite Procedures</b>	<a href="#">Chapter 1, “Install the Shelf and Backplane Cable”</a> <a href="#">Chapter 2, “Install Cards and Fiber-Optic Cable”</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

---

**Step 1** Verify that TCC+ cards are installed in Slots 7 and 11.

**Step 2** Verify that the green ACT (active) LED is illuminated on one TCC+ and the amber STBY (standby) LED is illuminated on the second TCC+.




---

**Note** If the TCC+s are not installed, or their LEDs are not illuminated as described, do not proceed. Repeat the [“DLP-36 Install the TCC+ XC/XCVT/XC10G Cards” task on page 2-4](#), or refer to the *Cisco ONS 15454 Troubleshooting Manual* to resolve installation problems before going to [Step 3](#).

---

**Step 3** Verify that cross-connect cards (XC, XCVT, or XC10G) are installed in Slots 8 and 10.




---

**Note** If OC-192, OC48 any-slot (AS), and four-port OC-12 cards require an XC10G.

---

**Step 4** Verify that the green ACT (active) LED is illuminated on one cross-connect card and the amber STBY (standby) LED is illuminated on the second cross-connect card.




---

**Note** If the cross-connect cards are not installed, or their LEDs are not illuminated as described, do not proceed. Repeat the [“DLP-36 Install the TCC+ XC/XCVT/XC10G Cards” task on page 2-4](#), or refer to the *Cisco ONS 15454 Troubleshooting Manual* to resolve installation problems before going to [Step 5](#).

---

**Step 5** If your site plan requires an AIC card, verify that the AIC card is installed in Slot 9 and its ACT (active) LED displays a solid green light.

**Step 6** Verify that electrical cards (DS-1, DS-3, EC-1, and DS3XM-6) are installed in the ONS 15454 multispeed or high-speed slots as designated by your installation plan.




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**Note** Multispeed slots are Slots 1–4 and 14–17; high-speed slots are Slots 5, 6, 12, and 13.

---

**Step 7** If your site plan requires an Ethernet card, verify that the Ethernet card is installed in the specified multispeed slot and its ACT (active) LED displays a solid green light.

**Step 8** If a E1000-2, E1000-2-G, or G1000-4 Ethernet card is installed, verify that it has a gigabit interface converter (GBIC) installed. If not, see the [“DLP-40 Install Gigabit Interface Converters” task on page 2-11](#).

- Step 9** Verify that OC-N cards (OC-3, OC-12, OC-12-4, OC-48, OC-48AS, and OC-192) are installed in the slots designated by your site plan. OC-3, OC-12, and OC-48AS cards can be installed in multispeed or high-speed slots. The OC-12-4 can only be installed in a multispeed slot, and the OC-48 and OC-192 can only be installed in high-speed slots.



**Note** Multispeed slots are Slots 1–4 and 14–17; high-speed slots are Slots 5, 6, 12, and 13.

- Step 10** Verify that all installed OC-N cards display a solid amber STBY LED.
- Step 11** Verify that fiber-optic cables are installed and connected to the locations indicated in the site plan.
- Step 12** Verify that fiber is routed correctly in the shelf assembly and fiber boots are installed properly.
- Step 13** Complete the “[DLP-37 Verify System Software on the LCD](#)” task on page 2-6 to ensure that the software release on the node matches the software release indicated in your site plan. If the release does not match, do one of the following:
- Perform a software upgrade procedure. Refer to the *Cisco ONS 15454 Software Upgrade Guide*.
  - Replace the TCC+ cards with cards containing the correct release (see the “[DLP-36 Install the TCC+ XC/XCVT/XC10G Cards](#)” task on page 2-4).
- Step 14** Continue with the “[NTP-25 Set Up Name, Date, Time, and Contact Information](#)” procedure on page 4-3.

## NTP-25 Set Up Name, Date, Time, and Contact Information

<b>Purpose</b>	This procedure provisions identification information for the node, including the node name, a contact name and phone number, the location of the node, and the date, time, and time zone.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22 for the node you will turn up.
- Step 2** Click the **Provisioning > General** tabs.
- Step 3** Enter the following information in the fields listed:
- *Node Name*—Type a name for the node. For TL1 compliance, names must begin with an alpha character and have no more than 20 alphanumeric characters.
  - *Contact*—Type the name of the node contact person and the phone number (optional).
  - *Location*—Type the node location, for example, city name or specific office location (optional).
  - *Latitude*—Enter the node latitude: N (North) or S (South), degrees, and minutes (optional).
  - *Longitude*—Enter the node longitude: E (East) or W (West), degrees, and minutes (optional).

CTC uses the latitude and longitude to position ONS 15454 icons on the network view map. To convert a coordinate in degrees to degrees and minutes, multiply the number after the decimal by 60. For example, the latitude 38.250739 converts to 38 degrees, 15 minutes (.250739 x 60 = 15.0443, rounded to the nearest whole number).

**Tip**

You can also position nodes manually on the network view map by pressing **Ctrl**, then clicking and dragging the node icon to the desired location with your mouse.

- *Use NTP/SNTP Server*—When checked, CTC uses a Network Time Protocol (NTP) or Simple Network Time Protocol (SNTP) server to set the date and time of the node.

If you do not use an SNTP or NTP server, complete the *Date* and *Time* fields. The ONS 15454 will use these fields for alarm dates and times. (CTC displays all alarms in the login node's time zone for cross network consistency.)

**Note**

Using an NTP or SNTP server ensures that all ONS 15454 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades.

If you check *Use NTP/SNTP Server*, type the IP address of either a) an NTP/SNTP server, or b) the IP address of an ONS 15454 with NTP/SNTP Server enabled. If you enable *Enable Firewall* for the ONS 15454 proxy server, external ONS 15454 NEs must reference the gateway ONS 15454 NE for NTP/SNTP timing.

**Caution**

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

- *Date*—If *Use NTP/SNTP Server* is not selected, type the current date in the format mm/dd/yyyy, for example, September 24, 2002 is 09/24/2002.
- *Time*—If *Use NTP/SNTP Server* is not selected, type the current time in the format hh:mm:ss, for example, 11:24:58. The ONS 15454 uses a 24-hour clock, so 10:00 PM is entered as 22:00:00.
- *Time Zone*—Click the field and choose the time zone from the popup menu.

**Step 4** Click **Apply**.

**Step 5** On the confirmation dialog box, click **Yes**.

**Step 6** Review the node information. If you need to make corrections, repeat Steps 3–5 to enter the corrections. If the information is correct, continue with the “[NTP-26 Set Up Network Information](#)” procedure on [page 4-5](#).

## NTP-26 Set Up Network Information

<b>Purpose</b>	Use this procedure to provision network information for a node, including its subnet mask, default router, Dynamic Host Configuration Protocol (DHCP) server, IOP listener port, proxy server settings, static routes and open shortest path first (OSPF) protocol.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22. If you are already logged in, from the View menu in node (default) view select **Go to Network View**.
- Step 2** Complete the “[DLP-63 Set Up Network Information Using CTC](#)” task on page 4-5 to provision the ONS 15454 IP address, subnet mask, default router, Dynamic Host Configuration Protocol (DHCP) server, IOP listener port, and proxy server settings.



**Tip**

If you cannot log into the node, you can still change its IP address, default router and network mask by using the LCD on the ONS 15454 front panel. See the “[DLP-64 Set the IP Address, Default Router, and Network Mask Using the LCD](#)” task on page 4-9 for instructions. However, you cannot use the LCD to provision any other network settings.

- 
- Step 3** If static routes are needed, complete the “[DLP-65 Create a Static Route](#)” task on page 4-11. Refer to the *Cisco ONS 15454 Reference Manual* for further information about static routes.
- Step 4** If the ONS 15454 is connected to a LAN or WAN that uses OSPF, complete the “[DLP-66 Set Up or Change Open Shortest Path First Protocol](#)” task on page 4-12.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-63 Set Up Network Information Using CTC

<b>Purpose</b>	This task provisions network access information for an ONS 15454 node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote



**Caution**

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

- 
- Step 1** Click the **Provisioning > Network** tabs ([Figure 4-1](#)).

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

- *IP Address*—Type the IP address assigned to the ONS 15454 node.
- *Prevent LCD IP Config*—Check this box if you want to disable IP configuration using the ONS 15454 LCD, that is, disable the “[DLP-64 Set the IP Address, Default Router, and Network Mask Using the LCD](#)” task on page 4-9. This box is unchecked by default.
- *Default Router*—If the ONS 15454 must communicate with a device on a network that the ONS 15454 is not connected to, the ONS 15454 forwards the packets to the default router. Type the IP address of the router in this field. If the ONS 15454 is not connected to a LAN, or if you will enable any of the *Gateway Settings* to implement the ONS 15454 proxy server features, leave this field blank.
- *Net/Subnet Mask Length*—If the ONS 15454 is part of a subnet, type the subnet mask length (decimal number representing the subnet mask length in bits) or click the arrows to adjust the subnet mask length. The subnet mask length is the same for all ONS 15454s in the same subnet.
- *MAC Address*—(read only) Displays the ONS 15454 IEEE 802 Media Access Control (MAC) address.
- *Forward DHCP Request To*—Check this box to enable Dynamic Host Configuration Protocol (DHCP). Also, enter the DHCP server IP address in the *Request To* field. The box is unchecked by default. If you will enable any of the *Gateway Settings* to implement the ONS 15454 proxy server features, leave this field blank.



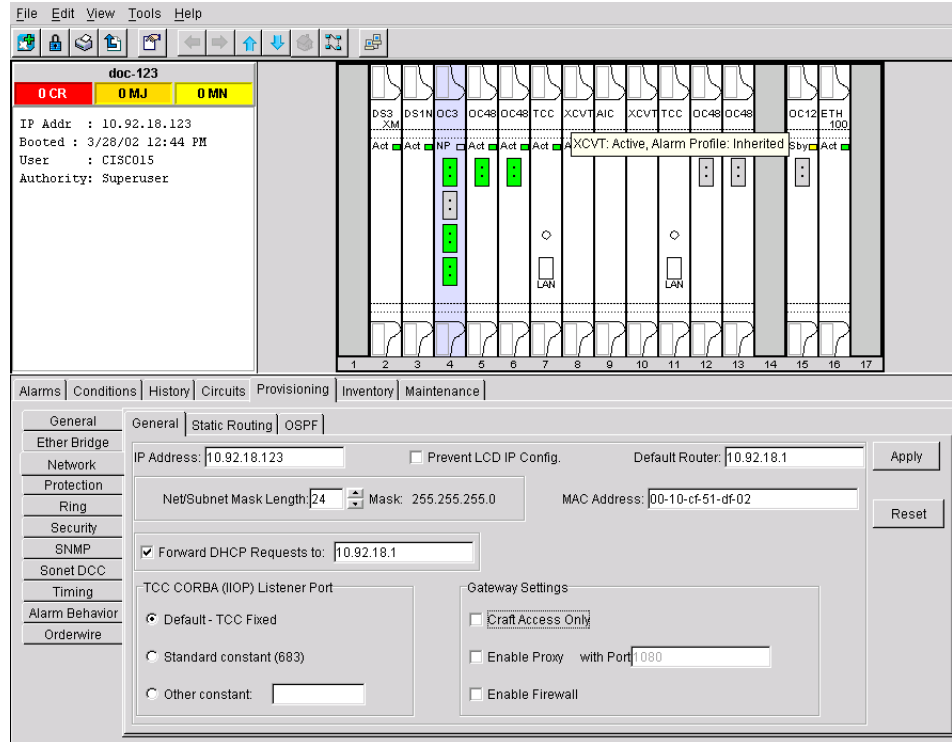

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**Note** If you enable DHCP, computers connected to an ONS 15454 node can obtain temporary IP addresses from an external DHCP server. The ONS 15454 only forwards DHCP requests; it does not act as a DHCP server.

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- *TCC CORBA (IIOP) Listener Port*—Check this box to set the ONS 15454 IIOP listener port. This listener port is used to allow communication with the ONS 15454 through firewalls. See the “[NTP-27 Set Up the ONS 15454 for Firewall Access](#)” procedure on page 4-14 to provision firewall access.
- *Gateway Settings*—Provides three checkboxes that enable the ONS 15454 proxy server features. Do not enable any of the checkboxes until you review the proxy server scenario in the *Cisco ONS 15454 Reference Manual*. In proxy server networks, the ONS 15454 will be either a gateway network element (GNE) or external NE (ENE). Provisioning must be consistent for each NE type.
  - *Craft Access Only*— If checked, the login ONS 15454 is only visible to the ONS 15454 that it is directly connected to; other non-DCC connected nodes will not be aware of the node provisioned for craft access only. This box is normally checked for external NEs; not checked for gateway NEs.
  - *Enable Proxy*—If checked, the ONS 15454 responds to CTC requests with a list of DCC-connected nodes for which it serves as a proxy. Both gateway and external NEs within a proxy server network should have this box checked.
  - *Enable Firewall*—If checked, the node restricts IP traffic from being routed between the DCC and the LAN port. Both gateway and external NEs within a proxy server network should have this box checked.

Figure 4-1 Setting up general network information



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

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

Both ONS 15454 TCC+ cards will reboot, one at a time. During this time (approximately 7–10 minutes), the active and standby TCC+ LEDs will go through the cycle shown in [Table 4-1 on page 4-8](#). Eventually, a “Lost node connection, switching to network view” message is displayed.

**Table 4-1 LED Behavior During TCC+ Reboot**

Active TCC+ LEDs	Standby TCC+ LEDs	Reboot Activity
ACT/STBY: flashing green	<ol style="list-style-type: none"> <li>1. ACT/STBY: flashing yellow</li> <li>2. FAIL LED: solid red</li> <li>3. FAIL LED: Flashing red</li> <li>4. Alarm LEDs: flash once</li> <li>5. ACT/STBY: flashing yellow</li> <li>6. All LEDs: turn off (1-2 minutes)</li> <li>7. ACT/STBY: solid yellow</li> <li>8. ACT/STBY: Solid green</li> </ol>	Standby TCC+ updated with new network information
<ol style="list-style-type: none"> <li>1. FAIL LED: solid red</li> <li>2. FAIL LED: flashing red</li> <li>3. Alarm LEDs: flash once</li> <li>4. ACT/STBY: flashing yellow</li> <li>5. All LEDs: turn off (1-2 minutes) CTC displays “Lost node connection, switching to network view” message</li> <li>6. ACT/STBY: solid yellow</li> </ol>	ACT/STBY: solid green	<p>Active TCC+ updated with new network information.</p> <p>If an AIC card is installed, AIC FAIL and alarm LEDs light up briefly when the AIC is updated.</p>
ACT/STBY: solid yellow	ACT/STBY: solid green	The backup TCC+ becomes the active TCC+.

- Step 5** Click **OK**. CTC displays the network view. The node icon is displayed in grey, during which time you cannot access the node.
- Step 6** Double-click the node icon when it changes to green. As necessary, complete the “[DLP-65 Create a Static Route](#)” task on page 4-11 or the “[DLP-66 Set Up or Change Open Shortest Path First Protocol](#)” task on page 4-12. If you do not need to create a static route or set up OSPF, go to the “[NTP-28 Set Up Timing](#)” procedure on page 4-18.



## DLP-64 Set the IP Address, Default Router, and Network Mask Using the LCD

<b>Purpose</b>	Use this task to change the ONS 15454 IP address, default router, and network mask using the front panel LCD. Use this task if you cannot log into CTC.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-36 Install the TCC+ XC/XCVT/XC10G Cards, page 2-4</a>
<b>Required/As Needed</b>	Optional
<b>Onsite/Remote</b>	Onsite

**Note**

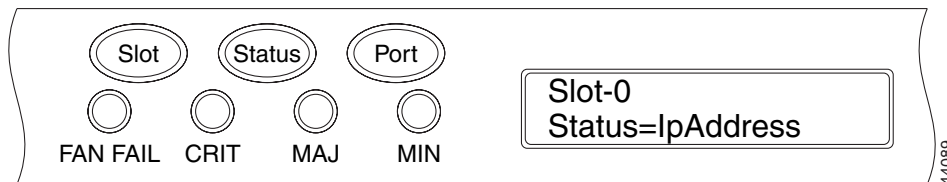
The LCD reverts to normal display mode after 5 seconds of button inactivity.

**Step 1** On the ONS 15454 front panel, repeatedly press the **Slot** button until Node appears on the LCD.

**Step 2** Repeatedly press the **Port** button until the following displays:

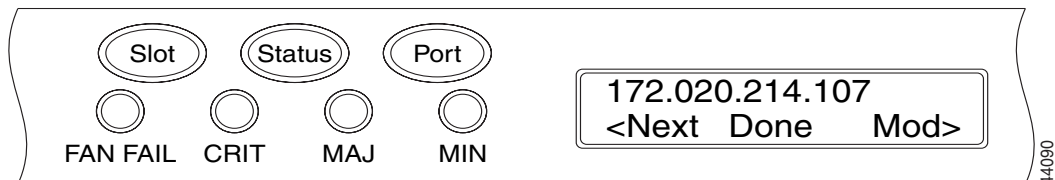
- To change the node IP address, Status=IpAddress ([Figure 4-2](#))
- To change the node network mask, Status=Net Mask
- To change the default router IP address, Status=Default Rtr

**Figure 4-2** Selecting the IP address option



**Step 3** Press the **Status** button to display the node IP address ([Figure 4-3](#)), the node subnet mask length, or the default router IP address.

**Figure 4-3** Changing the IP address



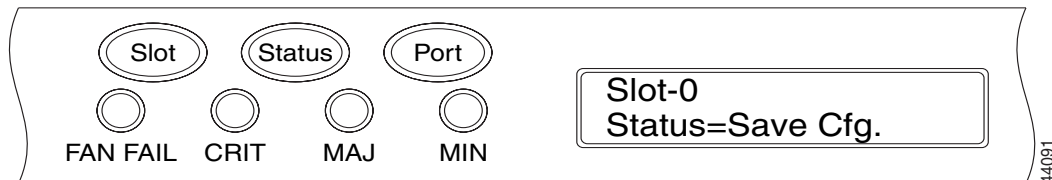
**Step 4** Push the **Slot** button to move to the IP address or subnet mask digit you need to change. The selected digit flashes.

**Tip**

The Slot, Status, and Port button positions correspond to the command position on the LCD. For example, in [Figure 4-3](#), you press the Slot button to invoke the Next command and the Port button to invoke the Done command.

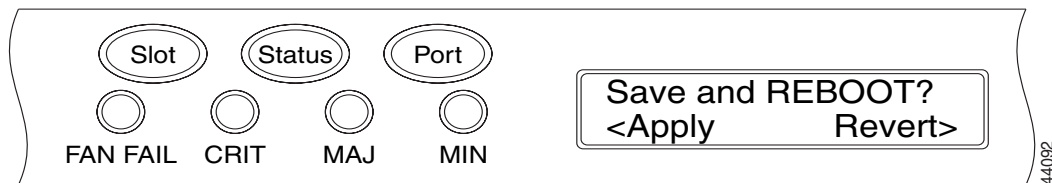
- Step 5** Press the **Port** button to cycle the IP address or subnet mask to the correct digit.
- Step 6** When the change is complete, press the **Status** button to return to the Node menu.
- Step 7** Repeatedly press the **Port** button until the Save Configuration option appears (Figure 4-4).

**Figure 4-4** Selecting the Save Configuration option



- Step 8** Press the **Status** button to choose the Save Configuration option. A Save and REBOOT message appears (Figure 4-5).

**Figure 4-5** Saving and rebooting the TCC+



- Step 9** Press the **Slot** button to save the new IP address configuration. (Or press **Port** to cancel the configuration.)
- Saving the new configuration causes the TCC+ cards to reboot. During the reboot, a "Saving Changes - TCC Reset" message displays on the LCD. The LCD returns to the normal alternating display after the TCC+ reboot is complete (see Table 4-1 on page 4-8 for reboot behavior).
- Step 10** Return to your originating procedure (NTP).

## DLP-65 Create a Static Route

<b>Purpose</b>	Use this task to create a static route on the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required if either of the following is true: <ul style="list-style-type: none"> <li>You need to connect ONS 15454s to CTC sessions on one subnet connected by a router to ONS 15454s residing on another subnet when OSPF is not enabled, and the Craft Access and Firewall proxy server boxes are not enabled.</li> <li>You need to enable multiple CTC sessions among ONS 15454s residing on the same subnet, when the Craft Access and Firewall proxy server features are not enabled.</li> </ul>
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Display the network view (from the View menu in node view click **Go to Network View**).
- Step 2** Click the **Provisioning > Network** tabs.
- Step 3** Click the **Static Routing** tab. Click **Create**.
- Step 4** In the Create Static Route dialog box enter the following:
- Destination*—Enter the IP address of the computer running CTC. To limit access to one computer, enter the full IP address and a subnet mask of 255.255.255.255. To allow access to all computers on the 192.168.1.0 subnet, enter 192.168.1.0 and a subnet mask of 255.255.255.0. You can enter a destination of 0.0.0.0 to allow access to all CTC computers that connect to the router.
  - Mask*—Enter a subnet mask. If *Destination* is a host route (i.e., one CTC computer), enter a 32-bit subnet mask (255.255.255.255). If *Destination* is a subnet, adjust the subnet mask accordingly, for example, 255.255.255.0. If *Destination* is 0.0.0.0, CTC automatically enters a subnet mask of 0.0.0.0 to provide access to all CTC computers. You cannot change this value.
  - Next Hop*—Enter the IP address of the router port or the node IP address if the CTC computer is connected to the node directly.
  - Cost*—Enter the number of hops between the ONS 15454 and the computer. In this example, the cost is two, one hop from the ONS 15454 to the router and a second hop from the router to the CTC workstation.
- Step 5** Click **OK**. Verify that the static route displays in the Static Route window.



**Note** Static route networking examples are provided in the IP networking section of the *Cisco ONS 15454 Reference Manual*.

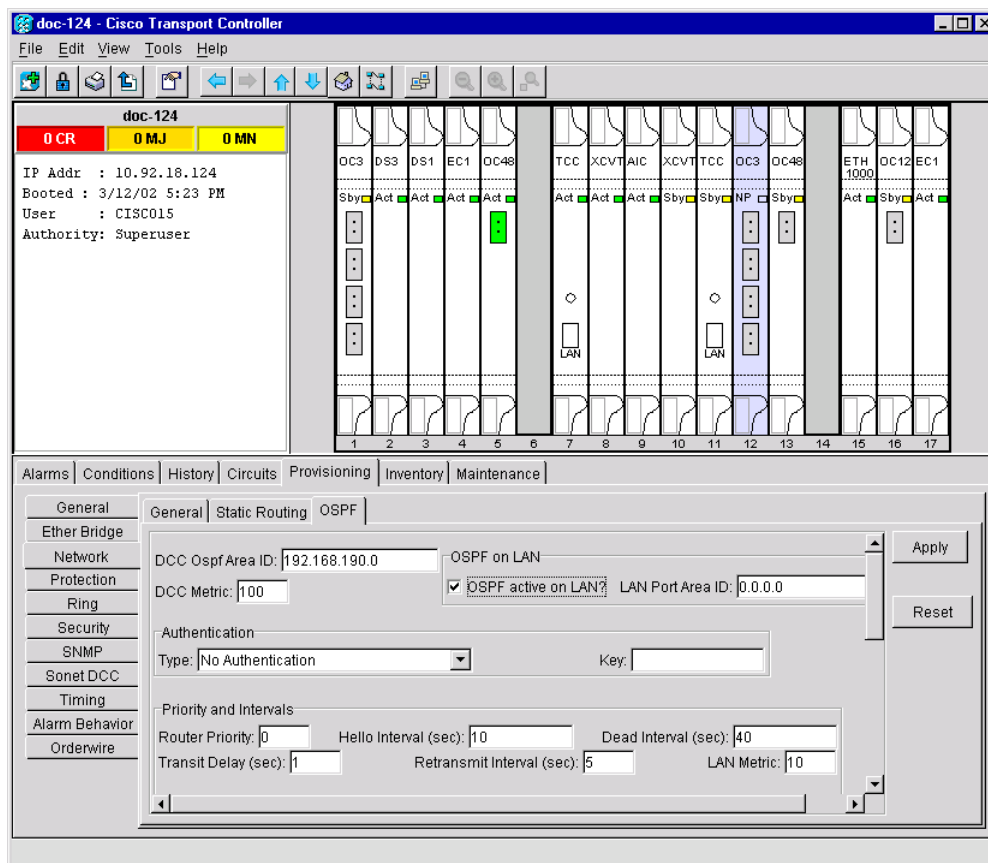
- Step 6** Return to your originating procedure (NTP).
-

## DLP-66 Set Up or Change Open Shortest Path First Protocol

<b>Purpose</b>	Use this task to enable the Open Shortest Path First (OSPF) routing protocol on the ONS 15454. Perform this task if you want to include the ONS 15454 in OSPF-enabled networks.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
	You will need the OSPF Area ID, Hello and Dead intervals, and authentication key (if OSPF authentication is enabled) provisioned on the router that the ONS 15454 is connected to.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Display the node view.
- Step 2** Click the **Provisioning > Network > OSPF** tabs (Figure 4-6).

**Figure 4-6 Enabling OSPF on the ONS 15454**



- Step 3** On the top left side of the OSPF pane, complete the following:
- *DCC OSPF Area ID*—Enter the number that identifies the ONS 15454s as a unique OSPF area ID entered in dotted decimal format. It can be any number between 000.000.000.000 and 255.255.255.255. The number must be unique to the LAN OSPF area.
  - *DCC Metric*—This value is normally unchanged. It sets a “cost” for sending packets across the DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The default DCC metric is 10. The metric changes to 100 if you check the *OSPF Active on LAN* checkbox in [Step 4](#).
- Step 4** Under OSPF on LAN, complete the following:
- *OSPF active on LAN*—When checked, enables the ONS 15454 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454s that directly connect to OSPF routers.
  - *Area ID for LAN Port*—Enter the OSPF area ID (dotted decimal format) for the router port where the ONS 15454 is connected. (This number is different from the DCC OSPF Area ID.)
- Step 5** Under Authentication, complete the following:
- *Type*—If the router where the ONS 15454 is connected requires authentication, choose **Simple Password**. Otherwise, choose **No Authentication**.
  - *Key*—If Simple Password is selected as the Authentication type, enter the password (OSPF key).
- Step 6** Under Priority and Intervals, complete the following:
- The OSPF priority and intervals default to values most commonly used by OSPF routers. In the Priority and Intervals area, verify that these values match those used by the OSPF router where the ONS 15454 is connected.
- *Router Priority*—Used to select the designated router for a subnet.
  - *Hello Interval (sec)*—Sets the number of seconds between OSPF “hello” packet advertisements sent by OSPF routers. Ten seconds is the default.
  - *Dead Interval*—Sets the number of seconds that will pass while an OSPF router’s packets are not visible before its neighbors declare the router down. Forty seconds is the default.
  - *Transit Delay (sec)*—Indicates the service speed. One second is the default.
  - *Retransmit Interval (sec)*—Sets the time that will elapse before a packet is resent. Five seconds is the default.
  - *LAN Metric*—Sets a “cost” for sending packets across the LAN. This value should always be lower than the DCC metric. Ten is the default.
- Step 7** Under OSPF Area Range Table, create an area range table if one is needed:



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

- a. Under OSPF Area Range Table, click **Create**.
- b. In the Create Area Range dialog box, enter the following:
  - *Range Address*—Enter the area IP address for the ONS 15454s that reside within the OSPF area. For example, if the ONS 15454 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.

- *Range Area ID*—Enter the OSPF area ID for the ONS 15454s. This is either the ID in the *DCC OSPF Area ID* field or the ID in the *Area ID for LAN Port* field.
- *Mask Length*—Enter the subnet mask length. In the Range Address example, this is 16.
- *Advertise*—Check if you want to advertise the OSPF range table.

c. Click **OK**.

**Step 8** All OSPF areas must be connected to Area 0. If the ONS 15454 OSPF area is not physically connected to Area 0, use the following steps to create a virtual link table that will provide the disconnected area with a logical path to Area 0:

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

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

*Neighbor*—The router ID of the Area 0 router.

*Transit Delay (sec)*—The service speed. One second is the default.

*Hello Int (sec)*—The number of seconds between OSPF “hello” packet advertisements sent by OSPF routers. Ten seconds is the default.

*Auth Type*—If the router where the ONS 15454 is connected uses authentication, choose **Simple Password**. Otherwise, choose **No Authentication**.

*Retransmit Int (sec)*—Sets the time that will elapse before a packet is resent. Five seconds is the default.

*Dead Int (sec)*—Sets the number of seconds that will pass while an OSPF router’s packets are not visible before its neighbors declare the router down. Forty seconds is the default.

c. Click **OK**.

**Step 9** After entering ONS 15454 OSPF area data, click **Apply**.

If you changed the Area ID, the TCC+ cards will reset, one at a time. The reset will take approximately 10-15 minutes. [Table 4-1 on page 4-8](#) shows the LED behavior during the TCC+ reset.

**Step 10** Return to your originating procedure (NTP).

---

## NTP-27 Set Up the ONS 15454 for Firewall Access

If an ONS 15454 or CTC computer resides behind a firewall that uses port filtering, you must enable an Internet Inter-ORB Protocol (IIOP) port on the ONS 15454 and/or CTC computer, depending on whether one or both devices reside behind a firewall.

[Figure 4-7](#) shows ONS 15454s in a protected network and the CTC computer in an external network. In order for the computer to access the ONS 15454s, you provision the IIOP listener port specified by your firewall administrator on the ONS 15454. The ONS 15454 sends the port number to the CTC computer during the initial contact between the devices using Hyper-Text Transfer Protocol (HTTP). After the CTC computer obtains the ONS 15454 IIOP port, the computer opens a direct session with the node using the specified IIOP port.

Figure 4-7 ONS 15454s residing behind a firewall

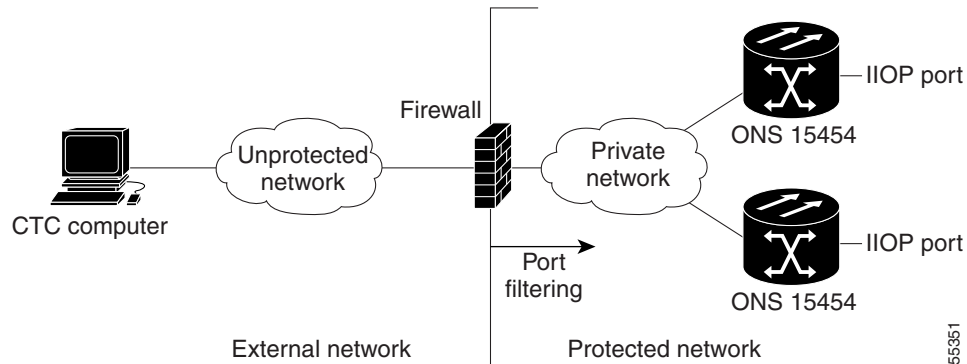
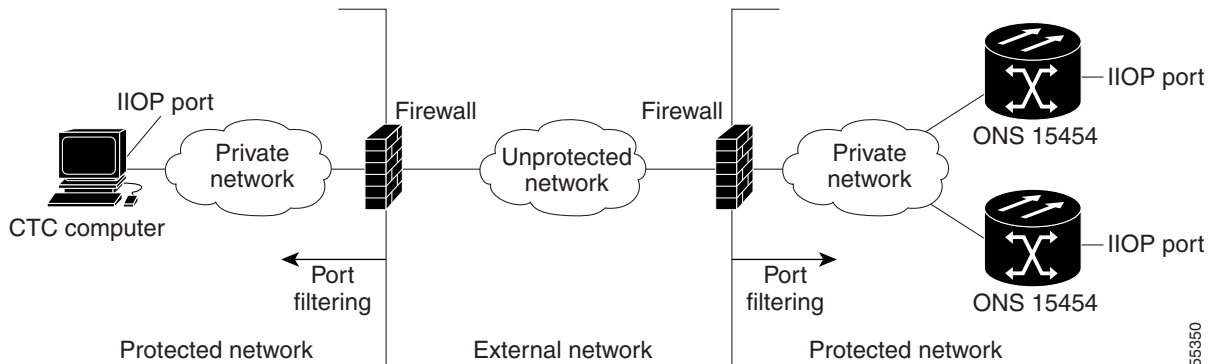


Figure 4-8 shows a CTC computer and ONS 15454 behind firewalls. In order for the computer to access the ONS 15454, you provision the IIO port on the CTC computer and on the ONS 15454. Each firewall can use a different IIO port. For example, if the CTC computer firewall uses IIO port 4000, and the ONS 15454 firewall uses IIO port 5000, 4000 is the IIO port set on the CTC computer and 5000 is the IIO port set on the ONS 15454.

Figure 4-8 A CTC computer and ONS 15454s residing behind firewalls



<b>Purpose</b>	This procedure provisions ONS 15454s and CTC computers for access through firewalls.
<b>Tools/Equipment</b>	IIO listener port number from LAN or firewall administrator
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation</a> , page 4-2
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into a node that is behind the firewall. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** If the ONS 15454 resides behind a firewall, complete the “[DLP-67 Provision the IIO Listener Port on the ONS 15454](#)” task on page 4-16.
- Step 3** If the CTC computer resides behind a firewall, complete the “[DLP-68 Provision the IIO Listener Port on the CTC Computer](#)” task on page 4-17.

- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-67 Provision the IIOP Listener Port on the ONS 15454

<b>Purpose</b>	Use this task to sets the IIOP listener port on the ONS 15454, which enables you to access ONS 15454s that reside behind a firewall.
<b>Tools/Equipment</b>	IIOP listener port number from LAN or firewall administrator
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Click the **Provisioning > Network** tabs.

- Step 2** On the **General** subtab under TCC+ CORBA (IIOP) Listener Port, choose a listener port option:

- *Default - TCC Fixed*—Uses Port 57790. Used to connect to ONS 15454s on the same side of the firewall or if no firewall is used (default). This can be used for access through a firewall if port 57790 is open.
- *Standard Constant*—Uses port 683, the CORBA default port number
- *Other Constant*—If port 683 is not used, type the IIOP port specified by your firewall administrator. The port cannot use any of the ports shown in [Table 4-2](#).

**Table 4-2 Ports Used by the TCC+**

Port	Function
0	Never used
21	FTP control
23	TELNET
80	HTTP
111	rpc (not used; but port is in use)
513	rlogin (not used; but port is in use)
=<1023	Default CTC listener ports
1080	Proxy server
2001-2017	I/O card telnet
2018	DCC processor on active TCC+
2361	TL1
3082	TL1
3083	TL1
5001	BLSR server port
5002	BLSR client port



**Table 4-2 Ports Used by the TCC+ (continued)**

Port	Function
7200	SNMP input port
9100	EQM port
9101	EQM port 2
9401	TCC boot port
9999	Flash manager
10240-12288	Proxy client
57790	Default TCC listener port

- Step 3** Click **Apply**.
- Step 4** When the Change Network Configuration? message displays, click **Yes**. Both ONS 15454 TCC+s will reboot, one at a time. The reboot will take approximately 15 minutes.
- Step 5** Return to your originating procedure (NTP).

## DLP-68 Provision the IIOP Listener Port on the CTC Computer

<b>Purpose</b>	Use this task to select the IIOP listener port on CTC.
<b>Tools/Equipment</b>	IIOP listener port number from LAN or firewall administrator
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a> ;
<b>Required/As Needed</b>	Required only if the computer running CTC resides behind a firewall
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** From the Edit menu, choose **Preferences**.
- Step 2** On the Preferences dialog box, click the **Firewall** tab.
- Step 3** Under CTC CORBA (IIOP) Listener Port, choose a listener port option:
- *Default - Variable*—Used to connect to ONS 15454s from within a firewall or if no firewall is used (default)
  - *Standard Constant*—Uses port 683, the CORBA default port number
  - *Other Constant*—If port 683 is not used, enter the IIOP port defined by your administrator
- Step 4** Click **Apply**. A warning is displayed telling you that the port change will apply during the next CTC login.
- Step 5** Click **OK**.
- Step 6** On the Preferences dialog box, click **OK**. A warning is displayed telling you that the port change will apply on the next CTC login.
- Step 7** Click **OK**.

## NTP-28 Set Up Timing

- Step 8** To access the ONS 15454 using the IIOP port, log out of CTC (from the File menu, select **Exit**), then log into the ONS 15454.
- Step 9** Return to your originating procedure (NTP).
- 

## NTP-28 Set Up Timing

<b>Purpose</b>	Use this procedure to provision the ONS 15454 timing.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Log into the ONS 15454 node where you want to set up timing. The node (default) view displays. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** Complete the [“DLP-69 Set Up External or Line Timing” task on page 4-18](#) if an external BITS source is available. This is the common SONET timing setup procedure.
- Step 3** Complete the [“DLP-70 Set Up Internal Timing” task on page 4-21](#) if you cannot complete [Step 2](#) (an external BITS source is not available). This task can only provide Stratum 3 timing.



**Note** For information about SONET timing, refer to the *Cisco ONS 15454 Reference Guide* or to Telcordia GR-253-CORE.

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- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

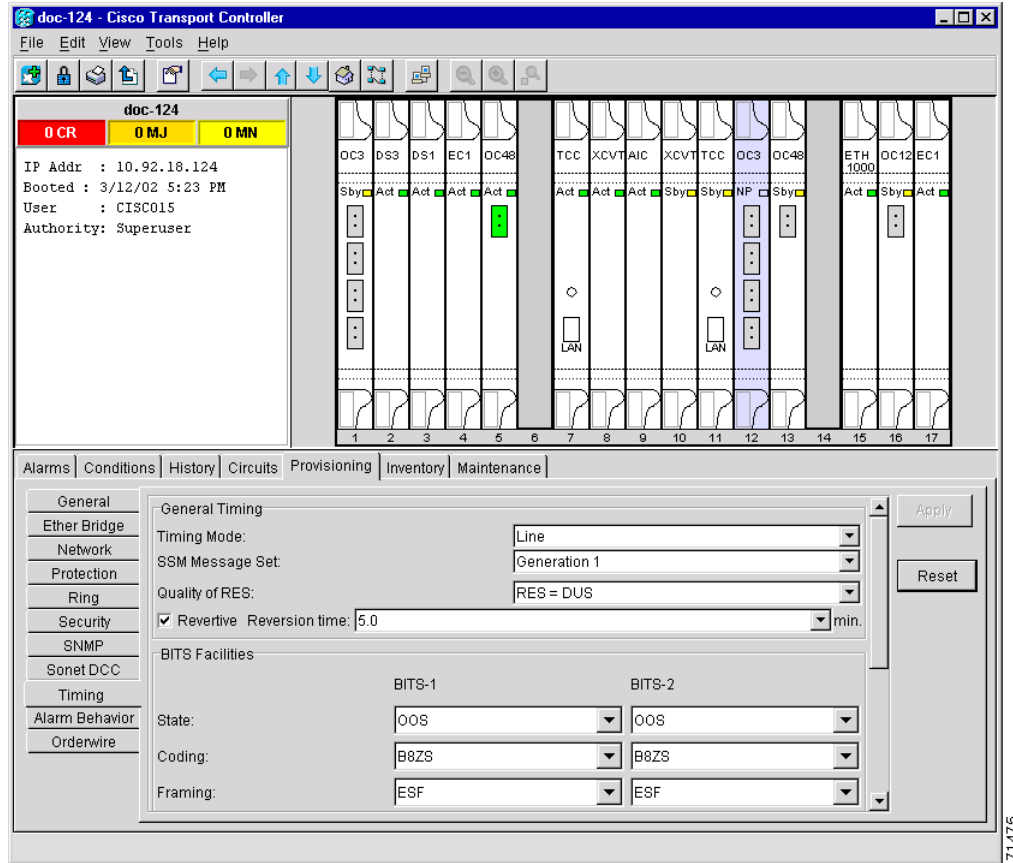
## DLP-69 Set Up External or Line Timing

<b>Purpose</b>	Use this task to define the SONET timing source (external or line) for the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** On the node view, click the **Provisioning > Timing** tabs ([Figure 4-9](#)).

Figure 4-9 Setting Up ONS 15454 timing



**Step 2** Under General Timing, complete the following information:

- **Timing Mode**—Choose **External** if the ONS 15454 derives its timing from a BITS source wired to the backplane pins; choose **Line** if timing is derived from an OC-N card that is optically connected to the timing node. A third option, **Mixed**, allows you to set external and line timing references. (Because **Mixed** timing may cause timing loops, Cisco does not recommend its use. Use this mode with care.)
- **SSM Message Set**—Choose the message set level supported by your network. If a Generation 1 node receives a Generation 2 message, the message will be mapped down to the next available Generation 1. For example, an ST3E message becomes an ST3.
- **Quality of RES**—If your timing source supports the reserved S1 byte, set the timing quality here. (Most timing sources do not use RES.) Qualities are displayed in descending quality order as ranges. For example, ST3<RES<ST2 means the timing reference is higher than a Stratum 3 and lower than a Stratum 2. Refer to the *Cisco ONS 15454 Reference Guide* for more information about SSM, including definitions of the SONET timing levels.
- **Revertive**—Check this box if you want the ONS 15454 to revert to a primary reference source after the conditions that caused it to switch to a secondary timing reference are corrected.
- **Revertive Time**—If **Revertive** is checked, choose the amount of time the ONS 15454 will wait before reverting back to its primary timing source. Five minutes is the default.

**Step 3** Under BITS Facilities, complete the following information:



**Note** The BITS Facilities section sets the parameters for your BITS1 and BITS2 timing references. Many of these settings are determined by the timing source manufacturer. If equipment is timed through BITS Out, you can set timing parameters to meet the requirements of the equipment.

- *State*—For nodes set to Line timing with no equipment timed through BITS Out, set *State* to OOS (Out of Service). For nodes using External timing or Line timing with equipment timed through BITS Out, set *State* to IS (In Service).
- *Coding*—Set to the coding used by your BITS reference, either B8ZS or AMI.
- *Framing*—Set to the framing used by your BITS reference, either ESF (Extended Super Frame, or SF (D4) (Super Frame).
- *Sync Messaging*—Check to enable SSM. SSM is not available if Framing is set to Super Frame.
- *AIS Threshold*—If SSM is disabled or Super Frame is used, set the quality level where a node sends an Alarm Indication Signal (AIS) from the BITS 1 Out and BITS 2 Out backplane pins. An AIS is sent when the optical source for the BITS reference falls to or below the SSM quality level defined in this field.
- *LBO*—If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15454. Options are: 0-133 ft. (default), 124-266 ft., 267-399 ft., 400-533 ft., and 534-655 ft.



**Note** LBO does not appear in releases before Release 3.3.

**Step 4** Under Reference Lists, complete the following information:



**Note** Reference Lists defines up to three timing references for the node and up to six BITS Out references. BITS Out references define the timing references used by equipment that can be attached to the node's BITS Out pins on the backplane. If you attach equipment to BITS Out pins, you normally attach it to a node with Line mode because equipment near the External timing reference can be directly wired to the reference.

- *NE Reference*—Allows you to define three timing references (Ref 1, Ref 2, Ref3). The node uses Reference 1 unless a failure occurs to that reference, in which case the node uses Reference 2. If that fails, the node uses Reference 3, which is typically set to Internal Clock. This is the Stratum 3 clock provided on the TCC+. The options displayed depend on the *Timing Mode* setting.
  - If the *Timing Mode* is set to External, your options are BITS1, BITS2, and Internal Clock.
  - If the *Timing Mode* is set to Line, your options are the node's working OC-N cards and Internal Clock. Choose the cards/ports that are directly or indirectly connected to the node wired to the BITS source, that is, the node's trunk cards. Set *Reference 1* to the trunk card that is closest to the BITS source. For example, if Slot 5 is connected to the node wired to the BITS source, choose Slot 5 as *Reference 1*.
  - If the *Timing Mode* is set to Mixed, both BITS and OC-N cards are available, allowing you to set a mixture of external BITS and OC-N trunk cards as timing references.

- *BITS 1 Out/BITS 2 Out*—Define the timing references for equipment wired to the BITS Out backplane pins. Normally, BITS Out is used with Line nodes, so the options displayed are the working OC-N cards. BITS 1 and BITS 2 Out are enabled when BITS-1 and BITS-2 facilities are placed in service.

**Step 5** Click **Apply**.



**Note** Refer to the *Cisco ONS 15454 Troubleshooting Guide* for timing-related alarms.

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

## DLP-70 Set Up Internal Timing

<b>Purpose</b>	Use this task to set up internal timing (Stratum 3) for an ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed (use only if a BITS source is not available)
<b>Onsite/Remote</b>	Onsite or remote



### Caution

Internal timing is Stratum 3 and not intended for permanent use. All ONS 15454s should be timed to a Stratum 2 or better primary reference source.

**Step 1** Click the **Provisioning > Timing** tabs.

**Step 2** Under General Timing, enter the following:

- *Timing Mode*—Set to External
- *SSM Message Set*—Set to Generation 1
- *Quality of RES*—Not applicable to internal timing.
- *Revertive*—Not relevant for internal timing; the default setting (checked) is sufficient
- *Revertive Time*—The default setting (5 minutes) is sufficient

**Step 3** Under BITS Facilities, enter the following information:

- *State*—Set BITS 1 and BITS 2 to OOS (Out of Service)
- *Coding*—Not relevant for internal timing; the default (B8ZS) is sufficient
- *Framing*—Not relevant for internal timing; the default (ESF) is sufficient
- *Sync Messaging*—Checked
- *AIS Threshold*—Not available
- *LBO*—If you are timing an external device connected to the BITS Out pins, set the distance between it and the ONS 15454. Options are: 0-133 ft. (default), 124-266 ft., 267-399 ft., 400-533 ft., and 534-655 ft.

- Step 4** Under Reference Lists, enter the following information:
- *NE Reference*
    - Ref1—Set to Internal Clock
    - Ref2—Set to Internal Clock
    - Ref3—Set to Internal Clock
  - *BITS 1 Out/BITS 2 Out*—Set to None
- Step 5** Click **Apply**.
- Step 6** Log into a node that will be timed from the node set up in Steps 1–5.
- Step 7** Click the **Provisioning > Timing** tabs.
- Step 8** In the General Timing section, enter the same information as entered in [Step 3](#) with the following exceptions:
- *Timing Mode*—Set to Line
- Reference Lists
- *NE Reference*
    - Ref1—Set to the OC-N trunk card with the closest connection to the node in [Step 3](#)
    - Ref2—Set to the OC-N trunk card with the next closest connection to the node in [Step 3](#)
    - Ref3—Set to Internal Clock
- Step 9** Click **Apply**.
- Step 10** Repeat Steps 6–9 at each node that will be timed by the node in [Step 3](#).
- Step 11** Return to your originating procedure (NTP).
- 

## NTP-29 Create Protection Groups

<b>Purpose</b>	Use this procedure to create ONS 15454 card protection groups.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	Required; some network information is optional, depending on your site plan
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Log into the ONS 15454 node where you want to create the protection group. The node (default) view displays. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.
- Step 2** Complete one or more of the following tasks depending on the protection group(s) you want to create:
- [DLP-71 Create a 1:1 Protection Group, page 4-24](#)
  - [DLP-72 Create a 1:N Protection Group, page 4-25](#)
  - [DLP-73 Create a 1+1 Protection Group, page 4-26](#)



**Note** Table 4-3 describes the protection types available on the ONS 15454.

**Table 4-3 Card Protection Types**

Type	Cards	Description and Installation Requirements
1:1	DS1-14 DS3-12 DS3-12E EC1-12 DS3XM-6	Pairs one working card with one protect card. The protect card should be installed in an odd-numbered slot and the working card in an even-numbered slot next to the protect slot towards the TCC+, for example: protect in Slot 1, working in Slot 2; protect in Slot 3, working in Slot 4; protect in Slot 15, working in Slot 14.
1:N	DS1N-14 DS3N-12 DS3N-12E	Assigns one protect card for several working cards. The maximum is 1:5. Protect cards (DS1N-14, DS3N-12, DS3N-12E) must be installed in Slots 3 or 15 and the cards they protect must be on the same side of the shelf. Protect cards must match the cards they protect. For example, a DS1N-14 can only protect DS1-14 or DS1N-14 cards. If a failure clears, traffic reverts to the working card after the reversion time has elapsed.
1+1	Any OC-N	Pairs a working OC-N card/port with a protect OC-N card/port. For multiport OC-N cards, the protect port must match the working port on the working card. For example, Port 1 of an OC-3 card can only be protected by Port 1 of another OC-3 card. The ports on multiport cards must be either working or protect. You cannot mix working and protect ports on the same card. Cards do not need to be in adjoining slots.
Unprotected	Any	Unprotected cards can cause signal loss if a card fails or incurs a signal error. However, because no card slots are reserved for protection, unprotected schemes maximize the service available for use on the ONS 15454. Unprotected is the default protection type.

**Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

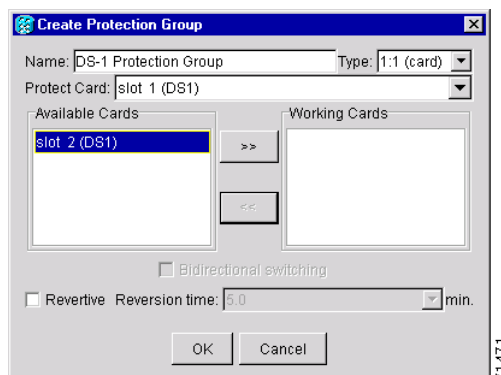
## DLP-71 Create a 1:1 Protection Group

<b>Purpose</b>	Use this task to create a 1:1 electrical card protection group.
<b>Tools/Equipment</b>	Redundant DS-1, DS-3, EC-1 or DS3XM-6 cards should be installed in the shelf, or the ONS 15454 slots must be provisioned for two of these cards.
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Verify that the cards required for 1:1 protection are installed according to requirements specified in [Table 4-3](#).
- Step 2** Click the **Provisioning > Protection** tabs.
- Step 3** Under Protection Groups, click **Create**.
- Step 4** In the Create Protection Group dialog box, enter the following:
- *Name*—Type a name for the protection group. The name can have up to 32 alphanumeric characters.
  - *Type*—Choose 1:1 from the pull-down menu.
  - *Protect Card*—Choose the protect card from the pull-down menu. The menu displays cards available for 1:1 protection. If no cards are available, no cards are displayed.

After you choose the protect card, a list of cards available for protection is displayed under Available Cards, as shown in [Figure 4-10](#). If no cards are available, no cards are displayed. If this occurs, you can not complete this task until you install the physical cards or provision the ONS 15454 slots.

**Figure 4-10** Creating a 1:1 protection group



- Step 5** From the Available Cards list, choose the card that will be protected by the card selected in *Protect Card*. Click the top arrow button to move each card to the Working Cards list.
- Step 6** Complete the remaining fields:
- *Bidirectional switching*—Not available for 1:1 protection
  - *Revertive*—Check this box if you want traffic to revert to the working card after failure conditions stay corrected for the amount of time entered in *Reversion Time*.



- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working card. Traffic can revert when conditions causing the switch are cleared.

**Step 7** Click **OK**, then click **Yes** on the confirmation dialog box.

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

---

## DLP-72 Create a 1:N Protection Group

<b>Purpose</b>	This task creates a DS-1 or DS-3 1:N protection group.
<b>Tools/Equipment</b>	A DS1N-14, DS3N-12, DS3N-12E must be installed in Slot 3 or Slot 15, and DS1-14, DS3-12, or DS3-12E cards must be installed on either side of the DS1N-1, DS3N-12, or DS3N-12E card, respectively.
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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**Step 1** Verify that the cards are installed according to 1:N requirements specified in [Table 4-3 on page 4-23](#).

**Step 2** Click the **Provisioning > Protection** tabs.

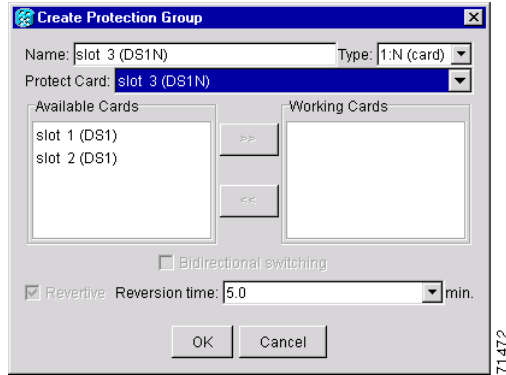
**Step 3** Under Protection Groups, click **Create**.

**Step 4** In the Create Protection Group dialog box, enter the following:

- *Name*—Type a name for the protection group. The name can have up to 32 alphanumeric characters.
- *Type*—Choose 1:N from the pull-down menu.
- *Protect Card*—Choose the protect card from the pull-down menu. The menu displays DS1N-14, DS3N-12, or DS3N-12E cards installed in Slots 3 or 15. If these cards are not installed, no cards display in the pull-down menu.

After you choose the protect card, a list of cards available for protection is displayed under Available Cards, as shown in [Figure 4-10](#). If no cards are available, no cards are displayed. If this occurs, you will not be able to complete this task until you install the physical cards or provision the ONS 15454 slots.

Figure 4-11 Creating a 1:N protection group



- Step 5** From the Available Cards list, choose the cards that will be protected by the card selected in the Protect Card pull-down menu. Click the top arrow button to move each card to the Working Cards list.
- Step 6** Complete the remaining fields:
- *Bidirectional switching*—Not available for 1:N protection
  - *Revertive*—Is always enabled for 1:N protection groups.
  - *Reversion time*—Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working card. Traffic can revert when conditions causing the switch are cleared.
- Step 7** Click **OK**, then click **Yes** on the confirmation dialog box.
- Step 8** Return to your originating procedure (NTP).

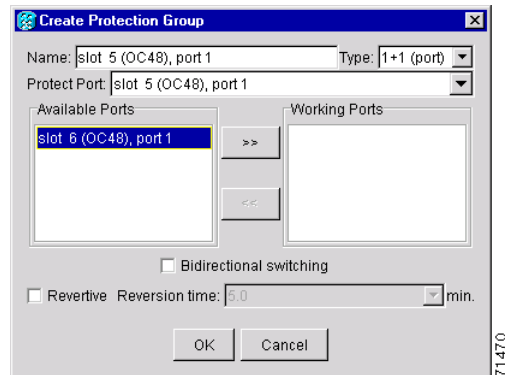
## DLP-73 Create a 1+1 Protection Group

<b>Purpose</b>	Use this task to create a 1+1 protection group for any OC-N card/port (OC-3, OC-12, OC-12-4, OC-48, OC-48AS, and OC-192).
<b>Tools/Equipment</b>	Installed OC-N cards or pre-provisioned slots
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Verify that the cards are installed according to 1+1 requirements specified in [Table 4-3 on page 4-23](#).
- Step 2** In node view, click the **Provisioning > Protection** tabs.
- Step 3** Under Protection Groups, click **Create**.
- Step 4** In the Create Protection Group dialog box, enter the following:
- *Name*—Type a name for the protection group. The name can have up to 32 alphanumeric characters.
  - *Type*—Choose 1+1 from the pull-down menu.

- *Protect Port*—Choose the protect port from the pull-down menu. The menu displays the available OC-N ports, as shown in Figure 4-12. If OC-N cards are not installed, no ports display in the pull-down menu.
- After you choose the protect port, a list of ports available for protection is displayed under Available Ports, as shown in Figure 4-12. If no cards are available, no ports are displayed. If this occurs, you will not be able to complete this task until you install the physical cards or provision the ONS 15454 slots.

**Figure 4-12** Creating a 1+1 protection group



- Step 5** From the Available Ports list, choose the port that will be protected by the port you selected in Protect Ports. Click the top arrow button to move each port to the Working Ports list.
- Step 6** Complete the remaining fields:
- *Bidirectional switching*—if this box is checked, both Tx and Rx signals switch to the protect port when a failure occurs to one signal. If not checked, only the failed signal switches to the protect port.
  - *Revertive*—Check this box if you want traffic to revert to the working card after failure conditions stay corrected for the amount of time entered in *Reversion Time*.
  - *Reversion time*—If *Revertive* is checked, click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. Reversion time is the amount of time that will elapse before the traffic reverts to the working card. Traffic can revert when conditions causing the switch are cleared.
- Step 7** Click **OK**.
- Step 8** Return to your originating procedure (NTP).

## NTP-30 Create Users and Assign Security

<b>Purpose</b>	Use this procedure to create ONS 15454 users and assigns their security levels.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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**Step 1** Log into the ONS 15454 node where you need to create users. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.




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

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**Step 2** Complete the “[DLP-74 Create a New User - Single Node](#)” task on [page 4-28](#) and/or the “[DLP-75 Create a New User - Multiple Nodes](#)” task on [page 4-29](#) as needed.




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

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**Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-74 Create a New User - Single Node

<b>Purpose</b>	Use this task to create a new user for one ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required to add users to a node, although users can be added using TL1.
<b>Onsite/Remote</b>	Onsite or remote

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

**Step 2** On the Security pane, click **Create**.

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

- *Name*—Type the user name. The name must be a minimum of six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) characters. For TL1 compatibility, the user name must be 6-10 characters, and the first character must be an alpha character.
- *Password*—Type the user password. The password must be a minimum of six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) and special characters (+, #, %), where at least two characters are non-alphabetic and at least one character is a special character. For TL1 compatibility, the password must be 6-10 characters, and the first character must be an alpha character. The password must not contain the user name.
- *Confirm Password*—Type the password again to confirm it.
- *Security Level*—Choose a security level for the user: RETRIEVE, MAINTENANCE, PROVISIONING, or SUPERUSER. Refer to the *Cisco ONS 15454 Reference Manual* for information about the capabilities provided with each level.



**Note** The idle time is the length of time that CTC can remain idle before it locks up and the password must be reentered. Each security level has a different idle time: Retrieve user = unlimited, Maintenance user = 60 minutes, Provisioning user = 30 minutes, and Superuser = 15 minutes.

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

## DLP-75 Create a New User - Multiple Nodes

<b>Purpose</b>	Add a new user to multiple ONS 15454s.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



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

- Step 6** From the View menu in node (default) view, choose **Go to Network View**.
- Step 7** Click the **Provisioning > Security** tabs.
- Step 8** On the Security pane, click **Create**.
- Step 9** In the Create User dialog box, enter the following:
- *Name*—Type the user name. The name must be a minimum of six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) characters. For TL1 compatibility, the user name must have no more than 10 characters, and the first character must be an alpha character.
  - *Password*—Type the user password. The password must be a minimum of six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) and special characters (+, #, %), where at least two characters are non-alphabetic and at least one character is a special character. For TL1 compatibility, the password must be 6-10 characters, and the first character must be an alpha character. The password must not contain the user name.
  - *Confirm Password*—Type the password again to confirm it.
  - *Security Level*—Choose a security level for the user: RETRIEVE, MAINTENANCE, PROVISIONING, or SUPERUSER. Refer to the *Cisco ONS 15454 Reference Manual* for information about the capabilities provided with each level.



**Note** The idle time is the length of time that CTC can remain idle before it locks up and the password must be reentered. Each security level has a different idle time: Retrieve user = unlimited, Maintenance user = 60 minutes, Provisioning user = 30 minutes, and Superuser = 15 minutes.

- Step 10** Under “Select applicable nodes,” deselect any nodes where you do not want to add the user (all network nodes are selected by default).

- Step 11** Click **OK**.
- Step 12** On the User Creation Results dialog box, click **OK**.
- Step 13** Return to your originating procedure (NTP).
- 

## NTP-31 Provision Line Status and Thresholds

<b>Purpose</b>	Use this procedure to provision transmission settings for electrical and OC-N cards, including line (drop) settings (line type, line coding, and line length) and performance monitoring thresholds.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	Required; some network information is optional, depending on your site plan
<b>Onsite/Remote</b>	Onsite or remote



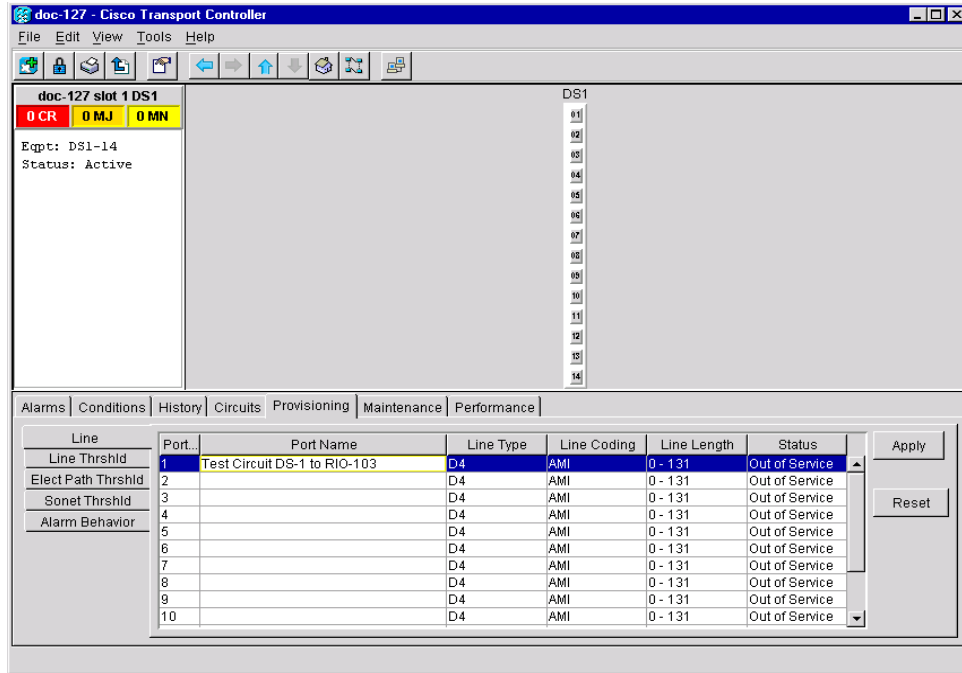
### Note

If a card's transmission settings have already been provisioned, use the "[NTP-88 Modify Line and Status Thresholds for Electrical Cards](#)" procedure on page 11-2 and/or the "[NTP-89 Modify Line and Status Thresholds for Optical Cards](#)" procedure on page 11-6 as needed.

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- Step 1** Log into the node where you want to provision transmission settings for a card or cards. The node (default) view displays. See the "[DLP-60 Log into CTC](#)" task on page 3-22 for instructions.
- Step 2** Double-click the card you want to provision.
- Step 3** Click the **Provisioning > Line** tabs.

Figure 4-13 Provisioning line parameters on the DS1-14 card



**Step 4** Depending on the card you chose, complete the following tasks:

- [DLP-76 Provision Line and Threshold Settings for the DS-1 Card, page 4-31.](#)
- [DLP-77 Provision Line and Threshold Settings for the DS-3 Card, page 4-34.](#)
- [DLP-78 Provision Line and Thresholds Settings for the DS3E Card, page 4-37.](#)
- [DLP-79 Provision Line Status and Thresholds for the DS3XM-6 Card, page 4-40.](#)
- [DLP-80 Provision Line Status and Thresholds for the EC1-12 Card, page 4-43.](#)
- [DLP-81 Provision OC-N Line Status and Thresholds, page 4-46.](#)

**Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-76 Provision Line and Threshold Settings for the DS-1 Card

<b>Purpose</b>	Provisions the line status and thresholds for the DS-1 card
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** As needed, provision the options in [Table 4-4](#) for each DS1-14 or DS1N-14 port.

**Table 4-4** Line Options for DS1-14 and DS1N-14 Cards

Parameter	Description	Options
Port #	Port number	1 - 14 (read-only)
Port	Port name	User-defined, up to 32 alphanumeric/ special characters. Blank by default  To enter a name for the port, click the cell and type the name. To change a name, double-click the cell, then edit the text.
Line Type	Defines the line framing type	<ul style="list-style-type: none"> <li>• D4 (default)</li> <li>• ESF - Extended Super Frame</li> <li>• Unframed</li> </ul>
Line Coding	Defines the DS-1 transmission coding type	<ul style="list-style-type: none"> <li>• AMI - Alternate Mark Inversion (default)</li> <li>• B8ZS - Bipolar 8 Zero Substitution</li> </ul>
Line Length	Defines the distance (in feet) from backplane connection to the next termination point	<ul style="list-style-type: none"> <li>• 0 - 131 (default)</li> <li>• 132 - 262</li> <li>• 263 - 393</li> <li>• 394 - 524</li> <li>• 525 - 655</li> </ul>
Status	Places port in or out of service	See the <a href="#">“DLP-86 Put Ports In or Out of Service” task on page 5-4</a>

**Step 2** Click **Apply**.

**Step 3** Click the **Line Threshold** subtab.

**Step 4** As needed, provision the options in [Table 4-5](#) for each DS1-14 or DS1N-14 port.

**Table 4-5** Line Threshold Options for DS1-14 and DS1N-14 Cards

Parameter	Description	Options
Port	Port number	1 - 14 (read-only)
CV	Coding violations	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 13340 (15 min)</li> <li>• 133400 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 65 (15 min)</li> <li>• 648 (1 day)</li> </ul>



**Table 4-5** Line Threshold Options for DS1-14 and DS1N-14 Cards (continued)

Parameter	Description	Options
SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 100 (1 day)</li> </ul>
LOSS	Number of one-second intervals containing one or more loss of signal defects	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 10/10</li> </ul>

**Step 5** Click **Apply**.

**Step 6** Click the **Elect Path Thrshld** subtab.

**Step 7** As needed, provision the [Table 4-6](#) options for each DS1-14 or DS1N-14 port.

**Table 4-6** Electrical Path Threshold Options for DS1-14 and DS1N-14 Cards

Parameter	Description	Options
Port	Port number	1 - 14 (read-only)
CV	Coding violations	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 13,296/132,960</li> </ul>
ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 65 (15 min)</li> <li>• 648 (1 day)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 100 (1 day)</li> </ul>
SAS	Severely errored frame/alarm indication signal	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 2 (15 minutes)</li> <li>• 17 (1 day)</li> </ul>
AIS	Alarm indication signal	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>
UAS	Unavailable seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 8** Click **Apply**.

**Step 9** Click the **SONET Threshold** subtab.

**Step 10** As needed, provision the options in [Table 4-7](#) for each DS1-14 or DS1N-14 port.

**Table 4-7** SONET threshold options for DS1-14 and DS1N-14 cards

Parameter	Description	Options
Port	SONET Port number	Line 1, STS 1
CV	Coding violations	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 15 (15 minutes)</li> <li>• 125 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 12 (15 minutes)</li> <li>• 100 (1 day)</li> </ul>
FC	Failure count	Numeric. Defaults (VT termination): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 3 (15 minutes)</li> <li>• 7 (1 day)</li> </ul>
UAS	Unavailable seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 11** Click **Apply**.



**Note**

See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab, including alarm profiles and alarm suppression.

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

## DLP-77 Provision Line and Threshold Settings for the DS-3 Card

<b>Purpose</b>	Use this task to provision transmission settings (line status and thresholds) for the DS3-12 and DS3N-12 cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** As needed, provision the [Table 4-8](#) options for each DS3-12 or DS3N-12 port.



**Note** To choose an item from a pull-down menu, click the table cell once. To type text in a field, double-click the cell.

**Table 4-8 Line Options for DS3-12 or DS3N-12 Cards**

Parameter	Description	Options
Port #	Port number	1 - 12
Port	Port name	User-defined, up to 32 alphanumeric/special characters. Blank by default To enter a name for the port, click the cell and type the name. To change a name, double-click the cell, then edit the text.
Line Length	Defines the distance (in feet) from backplane connection to the next termination point	<ul style="list-style-type: none"> <li>0 - 225 (default)</li> <li>226 - 450</li> </ul>
Status	Places port in or out of service	See the “ <a href="#">DLP-86 Put Ports In or Out of Service</a> ” task on page 5-4

**Step 2** Click **Apply**.

**Step 3** Click the **Line Threshold** subtab.

**Step 4** As needed, provision the options in [Table 4-9](#) for each DS3-12 or DS3N-12 port.

**Table 4-9 Line Threshold Options for DS3-12 or DS3N-12 Cards**

Parameter	Description	Options
Port #	Port number	1 - 12
CV	Coding violations	Numeric. Defaults: <ul style="list-style-type: none"> <li>387 (15 minutes)</li> <li>3865 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>25 (15 minutes)</li> <li>250 (1 day)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>4 (15 minutes)</li> <li>40 (1 day)</li> </ul>
LOSS	Loss of signal; number of one-second intervals containing one or more LOS defects	Numeric. Defaults: <ul style="list-style-type: none"> <li>10 (15 minutes)</li> <li>10 (1 day)</li> </ul>

**Step 5** Click **Apply**.

**Step 6** Click the **SONET Threshold** subtab.

**Step 7** As needed, provision the options in [Table 4-10](#) for each DS3-12 or DS3N-12 port.

**Table 4-10 SONET Threshold Options for DS3-12 or DS3N-12 Cards**

Parameter	Description	Options
Port #	DS-3 ports partitioned for STS	Read-only Line 1, STS 1, Line 2, STS 1 Line 3, STS 1, Line 4 STS 1
CV	Coding violations	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 15 (15 minutes)</li> <li>• 125 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 12 (15 minutes)</li> <li>• 100 (1 day)</li> </ul>
FC	Failure count	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 3 (15 minutes)</li> <li>• 7 (1 day)</li> </ul>
UAS	Unavailable seconds	Numeric. Default (Near End, STS termination): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 8** Click **Apply**.



**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab, including alarm profiles and alarm suppression.

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

## DLP-78 Provision Line and Thresholds Settings for the DS3E Card


**Note**

If the DS3E is installed in an ONS 15454 slot that is provisioned for a DS-3 card, the DS3E enhanced performance monitoring parameters are not available. If this occurs, remove the DS3E from the ONS 15454, delete the DS-3 card in CTC, and provision the slot for the DS3E (right-click the slot, choose DS3E from the popup menu)

<b>Purpose</b>	Use this task to provision transmission settings (line status and thresholds) for the DS3-12E or DS3N-12E card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** As needed, provision the options in [Table 4-11](#) for each DS3-12E or DS3N-12E port.

**Table 4-11** Line Options for the DS3-12E and DS3N-12E Cards

Parameter	Description	Options
Port #	Port number	1 - 12 (Read-only)
Port	Port name	User-defined, up to 32 alphanumeric/special characters. Blank by default To enter a name for the port, click the cell and type the name. To change a name, double-click the cell, then edit the text.
Line Type	Defines the line framing type	<ul style="list-style-type: none"> <li>M23</li> <li>C Bit</li> <li>Auto Provisioned</li> </ul>
Detected Line Type	Displays the detected line type	Read-only
Line Coding	Defines the DS3E transmission coding type	<ul style="list-style-type: none"> <li>B3ZS</li> </ul>
Line Length	Defines the distance (in feet) from backplane connection to the next termination point	<ul style="list-style-type: none"> <li>0 - 225 (default)</li> <li>226 - 450</li> </ul>
Status	Places port in or out of service	See the <a href="#">“DLP-86 Put Ports In or Out of Service”</a> task on page 5-4

**Step 2** Click **Apply**.

**Step 3** Click the **Line Threshold** subtab.

**Step 4** As needed, provision the options in [Table 4-13](#) for each DS3-12E or DS3N-12E port.

**Table 4-12** Line Threshold Options for the DS3-12E and DS3N-12E Cards

Subtab	Parameter	Description	Options
Line Thrshold	CV	Coding violations	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 387 (15 minutes)</li> <li>• 3865 (1 day)</li> </ul>
	ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 25 (15 minutes)</li> <li>• 250 (1 day)</li> </ul>
	SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 4 (15 minutes)</li> <li>• 40 (1 day)</li> </ul>
	LOSS	Loss of signal; number of one-second intervals containing one or more LOS defects	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 5** Click **Apply**.

**Step 6** Click the **Elect Path Thrshold** subtab.

**Step 7** As needed, provision the options in [Table 4-13](#) for each DS3-12E or DS3N-12E port.

**Table 4-13** Electrical Path Options for the DS3-12E and DS3N-12E Cards

Subtab	Parameter	Description	Options
Elect Path Thrshld	CV	Coding violations	Numeric. Defaults (DS3 Pbit, Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 382 (15 minutes)</li> <li>• 3820 (1 day)</li> </ul>
	ES	Errored seconds	Numeric. Defaults (DS3 Pbit, Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 25 (15 minutes)</li> <li>• 250 (1 day)</li> </ul>
	SES	Severely errored seconds	Numeric. Defaults (DS3 Pbit, Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 4 (15 minutes)</li> <li>• 40 (1 day)</li> </ul>
	SAS	Severely errored frame/alarm indication signal	Numeric. Defaults (DS3 Pbit, Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 2 (15 minutes)</li> <li>• 8 (1 day)</li> </ul>

**Table 4-13 Electrical Path Options for the DS3-12E and DS3N-12E Cards (continued)**

Subtab	Parameter	Description	Options
	AIS	Alarm indication signal	Numeric. Defaults (DS3 Pbit, Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>
	UAS	Unavailable seconds	Numeric. Defaults (DS3 Pbit, Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 8** Click **Apply**.

**Step 9** Click the **SONET Threshold** subtab.

**Step 10** As needed, provision the options in [Table 4-14](#) for each DS3-12E and DS3N-12E port.

**Table 4-14 SONET Threshold Options for DS3-12E and DS3N-12E Cards**

Parameter	Description	Options
Port #	DS-3 Ports partitioned for STS	Read-only Line 1, STS 1, Line 2, STS 1 Line 3, STS 1, Line 4 STS 1
CV	Coding violations	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 12 (15 minutes)</li> <li>• 125 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 12 (15 minutes)</li> <li>• 100 (1 day)</li> </ul>
FC	Failure count	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults (Near End, STS termination): <ul style="list-style-type: none"> <li>• 3 (15 minutes)</li> <li>• 7 (1 day)</li> </ul>
UAS	Unavailable seconds	Numeric. Default (Near End, STS termination): <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 11** Click **Apply**.



**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab, including alarm profiles and alarm suppression.

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

## DLP-79 Provision Line Status and Thresholds for the DS3XM-6 Card

<b>Purpose</b>	Use this task to provision transmission settings (line status and thresholds) for the DS3XM-6 card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** The DS3XM-6 transmux card can accept up to six channelized DS-3 signals and convert each signal to 28 VT1.5s. Conversely, the card can take 28 T-1s and multiplex them into a channeled C-bit or M23 framed DS-3. Unlike the DS3-12, DS3N-12, DS3-12E, and DS3N-12E cards, the DS3XM-6 allows circuit mapping at the VT level.

**Step 1** As needed, provision the options in [Table 4-15](#) for each DS3XM-6 port.

**Table 4-15 Line Options for the DS3XM-6 Parameters**

Parameter	Description	Options
Port #	Port number	1 - 6 (read-only)
Port	Port name	User-defined, up to 32 alphanumeric/special characters. Blank by default To enter a name for the port, click the cell and type the name. To change a name, double-click the cell, then edit the text.
Line Type	Defines the line framing type	<ul style="list-style-type: none"> <li>M23 - default</li> <li>C BIT</li> </ul>
Line Coding	Defines the DS-1 transmission coding type that is used	<ul style="list-style-type: none"> <li>B3ZS</li> </ul>
Line Length	Defines the distance (in feet) from backplane connection to the next termination point	<ul style="list-style-type: none"> <li>0 - 225 (default)</li> <li>226 - 450</li> </ul>
Status	Places port in or out of service	See the <a href="#">“DLP-86 Put Ports In or Out of Service”</a> task on page 5-4



**Step 2** Click **Apply**.

**Step 3** Click the **Line Threshold** subtab.

**Step 4** As needed, provision the options in [Table 4-16](#) for each DS3XM-6 port.

**Table 4-16 Line Threshold Options for the DS3XM-6 Card**

Parameter	Description	Options
Port #	Port number	1 - 6 (read-only)
CV	Coding violations	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 387 (15 minutes)</li> <li>• 3865 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 25 (15 minutes)</li> <li>• 250 (1 day)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 4 (15 minutes)</li> <li>• 40 (1 day)</li> </ul>
LOSS	Loss of signal	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>

**Step 5** Click **Apply**.

**Step 6** Click the **Elect Path Threshold** subtab.

**Step 7** As needed, provision the options in [Table 4-17](#) for each DS3XM-6 port.

**Table 4-17 Electrical Path Threshold Options for the DS3XM-6 Card**

Parameter	Description	Options
Port #	Port number	1 - 6 (read-only)
CV	Coding violations	Numeric. Defaults (DS3, Pbit Near End only; DS3 CPbit, Near and Far End): <ul style="list-style-type: none"> <li>• 382 (15 minutes)</li> <li>• 3820 (1 day)</li> </ul>
ES	Errored seconds	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 25/250 (DS3 Pbit Near End only; DS3 CPbit, Near and Far End)</li> <li>• 65/648 (DS1, Near End only)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 4/40 (DS3 Pbit Near End only; DS3 CPbit, Near and Far End)</li> <li>• 10/100 (DS1, Near End only)</li> </ul>

**Table 4-17 Electrical Path Threshold Options for the DS3XM-6 Card (continued)**

Parameter	Description	Options
SAS	Severely errored frame/alarm indication signal	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 2/8 (DS3 Pbit Near End only; DS3 CPbit, Near and Far End)</li> <li>• 2/17 (DS1, Near End only)</li> </ul>
AIS	Alarm indication signal	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 10/10 DS1, Near End; DS3, Near &amp; Far End</li> <li>• 0/0 DS1 Far End</li> </ul>
UAS	Unavailable seconds	Numeric. Defaults (15 min/1 day): <ul style="list-style-type: none"> <li>• 10/10 (DS3 Pbit Near End only; DS3 CPbit, Near and Far End)</li> <li>• 10/10 (DS1, Near End only)</li> </ul>

**Step 8** Click **Apply**.

**Step 9** Click the **SONET Threshold** subtab.

**Step 10** As needed, provision the options in [Table 4-17](#) for each DS3XM-6 port.

**Table 4-18 SONET Threshold Options for the DS3XM-6 Card**

Parameter	Description	Options
CV	Coding violations	Numeric. Defaults (Near/Far End): <ul style="list-style-type: none"> <li>• 15 (15 minutes, STS and VT Term)</li> <li>• 125 (1 day, STS and VT Term)</li> </ul>
ES	Errored seconds	Numeric. Defaults (Near/Far End): <ul style="list-style-type: none"> <li>• 12 (15 minutes, STS and VT Term)</li> <li>• 100 (1 day, STS and VT Term)</li> </ul>
FC	Failure count	Numeric. Defaults (Near/Far End): <ul style="list-style-type: none"> <li>• 10 (15 minutes, STS Term)</li> <li>• 10 (1 day, STS Term)</li> </ul>
SES	Severely errored seconds	Numeric. Defaults (Near/Far End): <ul style="list-style-type: none"> <li>• 3 (15 minutes, STS and VT Term)</li> <li>• 7 (1 day, STS and VT Term)</li> </ul>
UAS	Unavailable seconds	Numeric. Defaults (Near/Far End): <ul style="list-style-type: none"> <li>• 10 (15 minutes, STS and VT Term)</li> <li>• 10 (1 day, STS and VT Term)</li> </ul>

**Step 11** Click **Apply**.

**Note**

See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab, including alarm profiles and alarm suppression.

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

## DLP-80 Provision Line Status and Thresholds for the EC1-12 Card

<b>Purpose</b>	Use this task to provision transmission settings (line status and thresholds) for the EC1-12 card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Performed as needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** As needed, provision the options in [Table 4-19](#) for each EC1-12 port.

**Note**

The EC1-12 provides 12 STS-1 electrical ports. Each port operates at 51.840 Mbps.

**Note**

For more information about pointer justification parameters, see the “[DLP-121 Enable Pointer Justification Count Performance Monitoring](#)” task on [page 8-2](#).

**Table 4-19** Line options for the EC1-12 card

Parameter	Description	Options
Port #	EC-1 card port #	1 - 12
Port Name	Name assigned to the port (optional)	User-defined, up to 32 alphanumeric/special characters. Blank by default To enter a name for the port, click the cell and type the name. To change a name, double-click the cell, then edit the text.
PJStsMon#	Sets the STS that will be used for pointer justification. If set to zero, no STS is used.	<ul style="list-style-type: none"> <li>0 (default)</li> <li>1</li> </ul>
Line Length (feet)	Defines the distance (in feet) from backplane to next termination point	<ul style="list-style-type: none"> <li>0 - 225 (default)</li> <li>226 - 450</li> </ul>

**Table 4-19 Line options for the EC1-12 card**

Parameter	Description	Options
Rx Equalization	For early EC1-12 card versions, equalization can be turned off if the line length is short or the environment is extremely cold; Rx Equalization should normally be set to On	<ul style="list-style-type: none"> <li>• On (checked, default)</li> <li>• Off (unchecked)</li> </ul>
Status	Places the port in or out of service	See the <a href="#">“DLP-86 Put Ports In or Out of Service”</a> task on page 5-4

**Step 2** Click **Apply**.

**Step 3** Click the **Threshold** subtab.

**Step 4** As needed, provision the threshold options in [Table 4-20](#) for each EC1-12 port.

**Table 4-20 Threshold Options for the EC1-12 Card**

SONET Layer	Parameter	Description	Options
	Port #	EC-1 card port #	1 - 12
<b>Line</b>	CV	Coding violations	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 1312 (15 minutes)</li> <li>• 13120 (1 day)</li> </ul>
	ES	Errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 87 (15 minutes)</li> <li>• 864 (1 day)</li> </ul>
	SES	Severely errored seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 1 (15 minutes)</li> <li>• 4 (1 day)</li> </ul>
	FC	Failure count	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 10 (15 minutes)</li> <li>• 0 (1 day)</li> </ul>
	UAS	Unavailable seconds	Numeric. Defaults: <ul style="list-style-type: none"> <li>• 3 (15 minutes)</li> <li>• 10 (1 day)</li> </ul>
	PPJC-Pdet	Positive Pointer Justification Count, STS Path Detected.	Numeric. Defaults (near end): <ul style="list-style-type: none"> <li>• 60 (15 minutes)</li> <li>• 5760 (1 day)</li> </ul>
	NPJC-Pdet	Negative Pointer Justification Count, STS Path Detected.	Numeric. Defaults <ul style="list-style-type: none"> <li>• 0 (15 minutes)</li> <li>• 0 (1 day)</li> </ul>

Table 4-20 Threshold Options for the EC1-12 Card (continued)

SONET Layer	Parameter	Description	Options
	PPJC-Pgen	Positive Pointer Justification Count, STS Path Generated.	Numeric. Defaults: <ul style="list-style-type: none"> <li>0 (15 minutes)</li> <li>0 (1 day)</li> </ul>
	NPJC-Pgen	Negative Pointer Justification Count, STS Path Generated.	Numeric. Defaults: <ul style="list-style-type: none"> <li>0 (15 minutes)</li> <li>0 (1 day)</li> </ul>
	NPJC-Pgen	Negative Pointer Justification Count, STS Path Generated.	Numeric. Defaults: <ul style="list-style-type: none"> <li>0 (15 minutes)</li> <li>0 (1 day)</li> </ul>
	PSC-W	Protection Switching Count - Working	Threshold values do not apply to the EC1-12 card.
	PSD-W	Protection Switching Duration - Working	Threshold values do not apply to the EC1-12 card.
	PSC-S	Protection Switching Count - Span	Threshold values do not apply to the EC1-12 card.
	PSD-S	Protection Switching Duration - Span	Threshold values do not apply to the EC1-12 card.
	PSC-R	Protection Switching Count - Ring	Threshold values do not apply to the EC1-12 card.
	PSD-R	Protection Switching Duration - Ring	Threshold values do not apply to the EC1-12 card.
<b>Section</b>	CV	Coding violations	Numeric. Defaults (Near End only): <ul style="list-style-type: none"> <li>10000 (15 minutes)</li> <li>100000 (1 day)</li> </ul>
	ES	Errored seconds	500 (15 minutes) 5000 (1 day)
	SES	Severely errored seconds	500 (15 minutes) 5000 (1 day)
	SEFS	Severely errored framing seconds	500 (15 minutes) 5000 (1 day)

**Table 4-20 Threshold Options for the EC1-12 Card (continued)**

SONET Layer	Parameter	Description	Options
Path	CV	Coding violations	Numeric. Defaults (Near and Far End): 15 (15 minutes) 125 (1 day)
	ES	Errored seconds	12 (15 minutes) 100 (1 day)
	FC	Failure count	10 (15 minutes) 10 (1 day)
	SES	Severely errored seconds	3 (15 minutes) 7 (1 day)
	UAS	Unavailable seconds	10 (15 minutes) 10 (1 day)

**Step 5** Click **Apply**.



**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab, including alarm profiles and alarm suppression.



**Note** The STS subtab is used to provision intermediate path performance monitoring (IPPM). To provision IPPM, circuits must be provisioned on the EC1-12 card. For circuit creation procedures, go to [Chapter 6, “Create Circuits and VT Tunnels.”](#) To provision IPPM, go to [“DLP-121 Enable Pointer Justification Count Performance Monitoring” task on page 8-2.](#)

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

## DLP-81 Provision OC-N Line Status and Thresholds

<b>Purpose</b>	Use this task to provision transmission settings (line status and thresholds) for ONS 15454 OC-3, OC-12, OC-48, and OC-192 cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** As needed, provision the options in [Table 4-21](#) for each OC-N port. shows the provisionable options.

Table 4-21 OC-N Card Line Settings

Heading	Description	Options
Port #	Port number	<ul style="list-style-type: none"> <li>1 (OC-12, OC-48, OC-192)</li> <li>1-4 (OC-3, OC12-4)</li> </ul>
Port Name	Provides the ability to assign the specified port a name	User-defined. Name can be up to 32 alphanumeric/special characters. Blank by default
SF BER Level	Sets the signal fail bit error rate	<ul style="list-style-type: none"> <li>1E-3</li> <li>1E-4 (default)</li> <li>1E-5</li> </ul>
SD BER Level	Sets the signal degrade bit error rate	<ul style="list-style-type: none"> <li>1E-5</li> <li>1E-6</li> <li>1E-7 (default)</li> <li>1E-8</li> <li>1E-9</li> </ul>
Provides Synch	If checked, the card is provisioned as a network element timing reference on the Provisioning > Timing tabs	Read-only <ul style="list-style-type: none"> <li>Yes (checked)</li> <li>No (unchecked)</li> </ul>
Enable Synch Messages	Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source	<ul style="list-style-type: none"> <li>Yes (checked, default)</li> <li>No (unchecked)</li> </ul>
Send Do Not Use	When checked, sends a DUS (do not use) message on the S1 byte	<ul style="list-style-type: none"> <li>Yes (checked)</li> <li>No (unchecked; default)</li> </ul>
PJ Sts Mon #	Sets the STS that will be used for pointer justification. If set to 0, no STS is monitored. Only one STS can be monitored on each OC-N port.	<ul style="list-style-type: none"> <li>0 (default) - 3 (OC-3, per port)</li> <li>0 (default) - 12 (OC-12)</li> <li>0 (default) - 48 (OC-48)</li> <li>0 (default) - 192 (OC-192)</li> </ul>
Status	Places port in or out of service	<ul style="list-style-type: none"> <li>Out of Service (default)</li> <li>In Service</li> </ul>
Type	Defines the port as SONET or SDH. <i>Enable Sync Msg</i> and <i>Send Do Not Use</i> must be disabled before the port can be set to SDH.	<ul style="list-style-type: none"> <li>Sonet (default)</li> <li>SDH</li> </ul>

**Step 2** Click **Apply**.

**Step 3** Click the **Threshold** subtab.

**Step 4** As needed, provision the options in [Table 4-22](#) for each OC-N port.



**Note** For more information about pointer justification parameters, see [“DLP-121 Enable Pointer Justification Count Performance Monitoring” task on page 8-2,](#)

**Table 4-22 OC-N Threshold Options**

Heading	Description	Options
<b>Port</b>	Port number	<ul style="list-style-type: none"> <li>• 1 (OC-12, OC-48, OC-192)</li> <li>• 1-4 (OC-3, OC12-4)</li> </ul>
<b>CV</b>	Coding violations	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 1312/13,120 (OC-3 Near &amp; Far End)</li> <li>• 5315/53150 (OC-12 Near &amp; Far End)</li> <li>• 21260/212600 (OC-48 Near &amp; Far End)</li> <li>• 85040/850400 (OC-192 Near &amp; Far End)</li> </ul> Section <ul style="list-style-type: none"> <li>• 10000/100000 (Near End) 0/0 (Far End)</li> <li>• 10000/500 (OC-192 Near &amp; Far End)</li> </ul> Path <ul style="list-style-type: none"> <li>• 15/125 (OC-12, OC-48, OC-192 Near &amp; Far End)</li> </ul>
<b>ES</b>	Errored seconds	Numeric. Default (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 87/864 (Near &amp; Far End)</li> </ul> Section <ul style="list-style-type: none"> <li>• 500/5000 (Near End); 0/0 (Far End)</li> </ul> Path <ul style="list-style-type: none"> <li>• 12/100 (OC-48 &amp; OC-192 Near &amp; Far End)</li> </ul>
<b>SES</b>	Severely errored seconds	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 1/4 (Near and Far End)</li> </ul> Section <ul style="list-style-type: none"> <li>• 500/5000 (Near End); 0/0 (Far End)</li> </ul> Path <ul style="list-style-type: none"> <li>• 3/7 (OC-48 &amp; OC-192 Near &amp; Far End)</li> </ul>



Table 4-22 OC-N Threshold Options (continued)

Heading	Description	Options
<b>SEFS</b>	Severely errored framing seconds	Numeric. Defaults (15 min/1 day): Section <ul style="list-style-type: none"> <li>• 500/5000 (Near End); 0/0 (Far End)</li> </ul>
<b>FC</b>	Failure count	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 10/0 (OC-3, Near and Far End)</li> <li>• 10/40 (OC-12, OC-48, OC-192 Near and Far End)</li> </ul> Path <ul style="list-style-type: none"> <li>• 10/10 (OC-12, OC-48, OC-192 Near and Far End)</li> </ul>
<b>UAS</b>	Unavailable seconds	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 3/3 (OC-3, Near &amp; Far End)</li> <li>• 3/10 (OC-12, OC-48, OC-192 Near and Far End)</li> </ul> Path <ul style="list-style-type: none"> <li>• 10/10 (Near and Far End)</li> </ul>
<b>PPJC-Pdet</b>	Positive Pointer Justification Count, STS Path detected.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 60/5760 Near End</li> <li>• 0/0 Far End</li> </ul>
<b>NPJC-Pdet</b>	Negative Pointer Justification Count, STS Path detected.	Numeric. Defaults (Near and Far End): Line <ul style="list-style-type: none"> <li>• 0 (15 minutes)</li> <li>• 0 (1 day)</li> </ul>
<b>PPJC-Pgen</b>	Positive Pointer Justification Count, STS Path generated.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (Near and Far End)</li> </ul>
<b>NPJC-Pgen</b>	Negative Pointer Justification Count, STS Path generated.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (Near and Far End)</li> </ul>
<b>PSC</b>	Protection Switching Count (Line)	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 1/5 (Near End)</li> <li>• 0/0 (Far End)</li> </ul>

Table 4-22 OC-N Threshold Options (continued)

Heading	Description	Options
<b>PSD</b>	Protection Switch Duration (Line)	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 300/600 (Near End)</li> <li>• 0/0 (all OC-N cards, Far End)</li> </ul>
<b>PSC-W</b>	Protection Switching Count - Working line BLSR is not supported on the OC-3 card; therefore, the PSC-W, PSC-S, and PSC-R PMs do not increment.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (all OC-N cards except OC-3, Near and Far End)</li> </ul>
<b>PSD-W</b>	Protection Switching Duration - Working line BLSR is not supported on the OC-3 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (all OC-N cards except OC-3, Near and Far End)</li> </ul>
<b>PSC-S</b>	Protection Switching Duration - Span BLSR is not supported on the OC-3 card; therefore, the PSC-W, PSC-S, and PSC-R PMs do not increment.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (all OC-N cards except OC-3, Near and Far End)</li> </ul>
<b>PSD-S</b>	Protection Switching Duration - Span BLSR is not supported on the OC-3 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (all OC-N cards except OC-3, Near and Far End)</li> </ul>
<b>PSC-R</b>	Protection Switching Duration - Ring BLSR is not supported on the OC-3 card; therefore, the PSC-W, PSC-S, and PSC-R PMs do not increment.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (all OC-N cards except OC-3, Near and Far End)</li> </ul>
<b>PSD-R</b>	Protection Switching Duration - Ring BLSR is not supported on the OC-3 card; therefore, the PSD-W, PSD-S, and PSD-R PMs do not increment.	Numeric. Defaults (15 min/1 day): Line <ul style="list-style-type: none"> <li>• 0/0 (all OC-N cards except OC-3, Near and Far End)</li> </ul>

**Step 5** Click **Apply**.



**Note**

See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab, including alarm profiles and alarm suppression.



**Note**

The STS subtab is used to provision intermediate path performance monitoring (IPPM). To provision IPPM, circuits must be provisioned on the EC1-12 card.

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

---

## NTP-32 Provision the Alarm Interface Controller

<b>Purpose</b>	Use this procedure to create external (environmental) alarms, external controls, and orderwire tunnels for the AIC card.
<b>Tools/Equipment</b>	An AIC card installed in Slot 9
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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**Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22 at the node with the AIC card you want to provision.

**Step 2** As needed, complete the “[DLP-82 Provision External Alarms and Controls](#)” task on page 4-51.

**Step 3** As needed, complete the “[DLP-83 Provision the AIC Orderwire](#)” task on page 4-53.



**Tip**

Before you begin, make a list of the ONS 15454 slots and ports that require orderwire communication

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**Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-82 Provision External Alarms and Controls

<b>Purpose</b>	Use this task to provisions external alarms and controls on the AIC card.
<b>Tools/Equipment</b>	An AIC card must be installed in Slot 9.
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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**Note**

For information about the AIC external controls, virtual wire and orderwire, refer to the *Cisco ONS 15454 Reference Guide*.

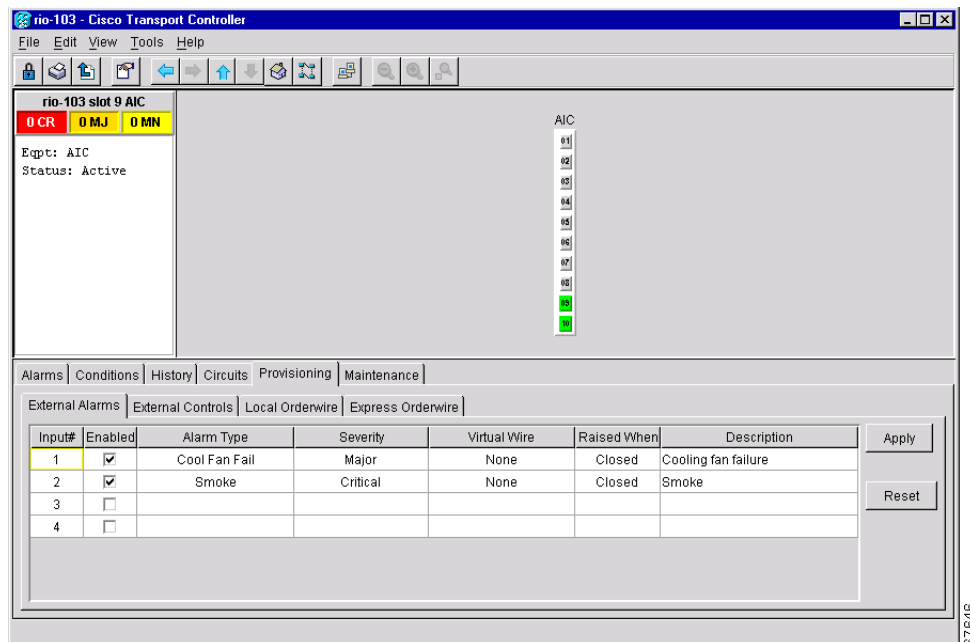
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**Step 1** Verify the backplane wiring. See the “[NTP-8 Install Wires to Alarm, Timing, LAN, and Craft Pin Connections](#)” procedure on page 1-31 for information about the ONS 15454 backplane pins.

- a. For external alarms, verify that the external-device relays are wired to the ENVIR ALARMS IN backplane pins.
- b. For external controls, verify the external relays are wired to the ENVIR ALARMS OUT backplane pins.

- Step 2** Double-click the AIC card on the CTC shelf graphic. The card view displays.
- Step 3** If you are provisioning external alarms, click the **Provisioning > External Alarms** tabs (Figure 4-14 on page 4-52). If you are not provisioning external alarms, skip Steps 5–7 and go to Step 8.
- Step 4** Complete the following fields for each external device wired to the ONS 15454 backplane:
- *Enabled*—Click to activate the fields for the alarm input number.
  - *Alarm Type*—Choose an alarm type from the provided list.
  - *Severity*—Choose a severity. The severity determines how the alarm is displayed in the CTC Alarms and History tabs and whether the LEDs are activated. Critical, Major, and Minor activate the appropriate LEDs. Not Alarmed and Not Reported do not activate LEDs, but do report the information in CTC.
  - *Virtual Wire*—To assign the external device to a virtual wire, choose the virtual wire. Otherwise, do not change the None default. For information about the AIC virtual wire, see the *Cisco ONS 15454 Reference Guide*.
  - *Raised When*—Choose the contact condition (open or closed) that will trigger the alarm in CTC.
  - *Description*—Default descriptions are provided for each alarm type; you can enter a different description if needed.

**Figure 4-14 Provisioning external alarms on the AIC card**



- Step 5** To provision additional devices, complete Step 4 for each additional device.
- Step 6** Click **Apply**.
- Step 7** If you are provisioning external controls, click the **External Controls** subtab, complete the following fields for each external control wired to the ONS 15454 backplane:
- *Enabled*—Click to activate the fields for the alarm input number.
  - *Control Type*—Choose the control type: air conditioner, engine, fan, generator, heat, light, sprinkler, or miscellaneous.

- *Trigger Type*—Choose a trigger type: a local minor, major, or critical alarm; a remote minor, major, or critical alarm; or a virtual wire activation.
  - *Description*—Enter a description.
- Step 8** To provision additional controls, complete [Step 7](#) for each additional device.
- Step 9** Click **Apply**.
- Step 10** Return to your originating procedure (NTP).
- 

## DLP-83 Provision the AIC Orderwire

<b>Purpose</b>	Use this task to provision orderwire on the AIC card.
<b>Tools/Equipment</b>	An AIC card must be installed in Slot 9.
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Double-click the AIC card on the shelf graphic. The card view displays.
- Step 2** Click the **Local Orderwire** or the **Express Orderwire** tab, appropriate to the orderwire path that you want to create. If regenerators are not used between ONS 15454 nodes, you can use either local or express AIC 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.
- The Local Orderwire subtab is shown in [Figure 4-15](#). Provisioning procedures are the same for both types of orderwire.

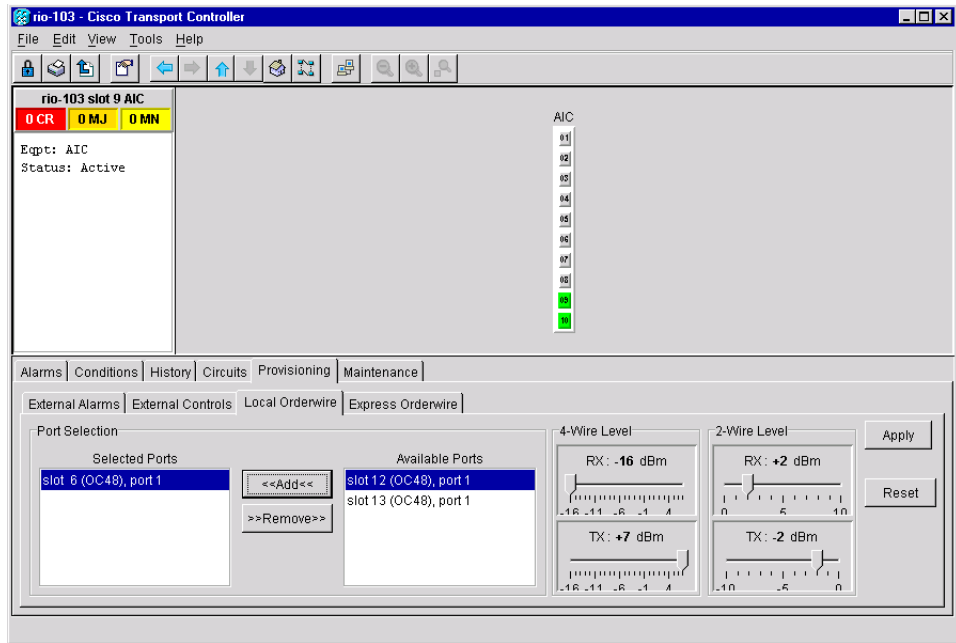


### Caution

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.

---

Figure 4-15 Provisioning local orderwire



- Step 3** In the Available Ports list, choose each port that you want to use for the orderwire channel and click **Add** to move them to the Selected Ports column.
- Step 4** If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the headset type (four-wire or two-wire) that you will use. In general, you should not need to adjust the dBm.
- Step 5** Click **Apply**.
- Step 6** Return to your originating procedure (NTP).

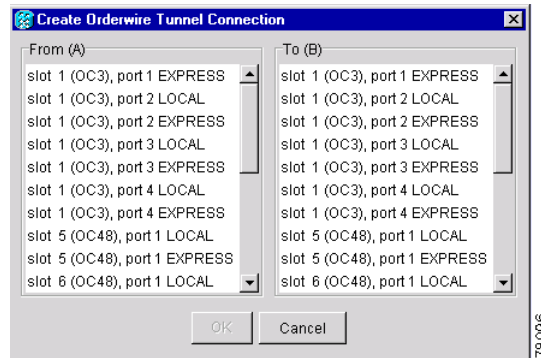
## DLP-84 Create an Orderwire Tunnel

<b>Purpose</b>	This task creates a tunnel to allow orderwire provisioned on ONS 15454s with AIC cards to be transported across ONS 15454s that do not have an AIC card installed.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Navigate to the node where you want to create the orderwire tunnel.
- Step 2** In node view, click the **Provisioning > Orderwire** tabs.

- Step 3** On the Create Orderwire Tunnel Connection (Figure 4-16), set the orderwire tunnel:
- Under From (A), select an OC-N port that is connected to an ONS 15454 with an AIC card installed, or to an ONS 15454 with an orderwire tunnel.
  - Under To (B), select an OC-N port that is connected to an ONS 15454 with an AIC card installed, or to an ONS 15454 with an orderwire tunnel.
- Step 4** Click **OK**.

**Figure 4-16 Provisioning local orderwire**



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

## NTP-33 Set Up SNMP

<b>Purpose</b>	Sets up SNMP for the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	Required if SNMP is used at your installation
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the ONS 15454 node where you want to set up SNMP. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.
- Step 2** Click the **Provisioning > SNMP** tabs.
- Step 3** Click the **Create** button.
- Step 4** On the Create SNMP Traps Destination dialog box, complete the following:
- IP Address*—Type the IP address of your network management system.
  - Community Name*—Type the SNMP community name. For a description of SNMP community names, refer to the SNMP information in the *Cisco ONS 15454 Reference Manual*.



**Note** The community name is a form of authentication and access control. The community name assigned to the ONS 15454 is case-sensitive and must match the community name of the NMS.

- *UDP Port*—The default UDP port for SNMP is 162.
- *Trap Version*—Choose either SNMPv1 or SNMPv2. Refer to your NMS documentation to determine whether to use SNMP v1 or v2.
- *Max Traps per Second*—Type the maximum traps per second. The default is 0.



**Note** The Max Traps per Second is the maximum number of traps per second that will be sent to the SNMP manager. If the field is set to 0, there is no maximum and all traps are sent.

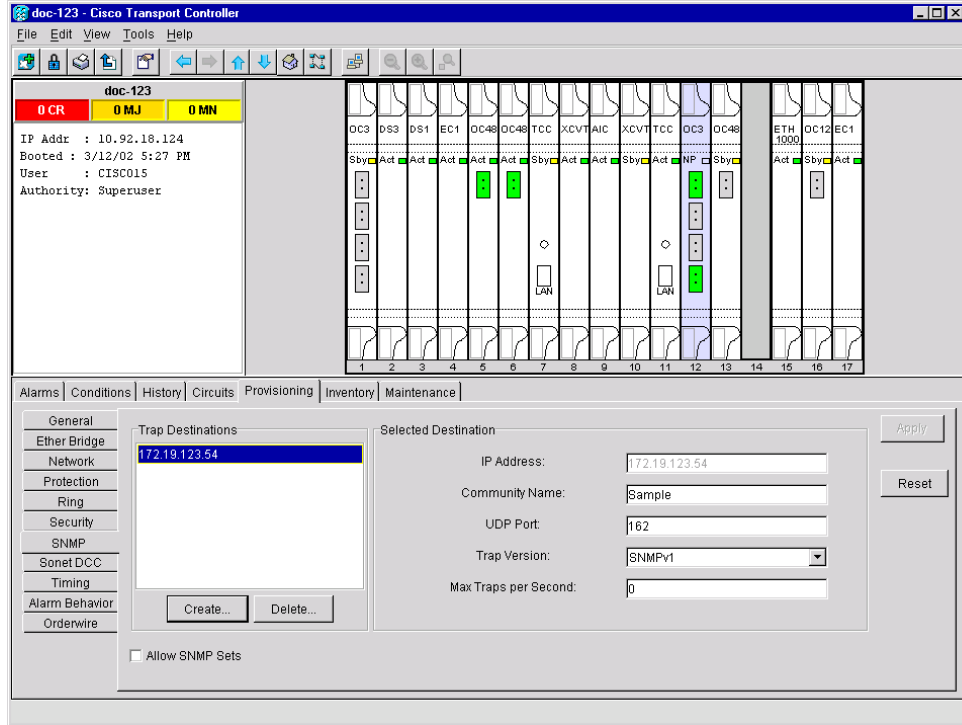
**Figure 4-17 Setting SNMP**

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

**Step 6** Click the node IP address under Trap Destinations. Verify the SNMP information that displays under Selected Destination.



Figure 4-18 SNMP Trap Destinations



- Step 7** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-34 Create Ethernet RMON Alarm Thresholds

<b>Purpose</b>	This procedure sets up remote monitoring (RMON) to allow network management systems to monitor Ethernet ports.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the ONS 15454 node where you want to set up SNMP. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.
- Step 2** Click the **Provisioning > Ether Bridge > Thresholds** tabs.
- Step 3** Click **Create**.  
The Create Ether Threshold dialog box (Figure 4-19) opens.

Figure 4-19 Creating RMON thresholds

- Step 4** From the Slot menu, choose the appropriate Ethernet card.
- Step 5** From the Port menu, choose the Port on the Ethernet card.
- Step 6** From the Variable menu, choose the variable. See [Table 4-23 on page 4-59](#) for a list of the Ethernet threshold variables available in this field.
- Step 7** From Alarm Type, indicate whether the event will be triggered by the rising threshold, falling threshold, or both the rising and falling thresholds.
- Step 8** From the Sample Type pull-down menu, choose either **Relative** or **Absolute**. **Relative** restricts the threshold to use the number of occurrences in the user-set sample period. **Absolute** sets the threshold to use the total number of occurrences, regardless of any time period.
- Step 9** Type in an appropriate number of seconds for the Sample Period.
- Step 10** Type in the appropriate number of occurrences for the Rising Threshold.



**Note** For a rising type of alarm to fire, the measured value must shoot from below the falling threshold to above the rising threshold. For example, if a network is running below a falling threshold of 400 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, these occurrences fire an alarm.

- Step 11** Type in the appropriate number of occurrences for the Falling Threshold. In most cases a falling threshold is set lower than the rising threshold.
- A falling threshold is the counterpart to a rising threshold. When the number of occurrences is above the rising threshold and then drops below a falling threshold, it resets the rising threshold. For example, when the network problem that caused 1001 collisions in 15 minutes subsides and creates only 799 collisions in 15 minutes, occurrences fall below a falling threshold of 800 collisions. This resets the rising threshold so that if network collisions again spike over a 1000 per 15 minute period, an event again triggers when the rising threshold is crossed. An event is triggered only the first time a rising threshold is exceeded (otherwise a single network problem might cause a rising threshold to be exceeded multiple times and cause a flood of events).
- Step 12** Click the **OK** button to complete the procedure.

**Table 4-23 Ethernet Threshold Variables (MIBs)**

<b>Variable</b>	<b>Definition</b>
ifInOctets	Total number of octets received on the interface, including framing octets
ifInUcastPkts	Total number of unicast packets delivered to an appropriate protocol
ifInMulticastPkts	Number of multicast frames received error free
ifInBroadcastPkts	The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were addressed to a broadcast address at this sub-layer.
ifInDiscards	The number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol.
ifInErrors	Number of inbound packets discarded because they contain errors
ifOutOctets	Total number of transmitted octets, including framing packets
ifOutUcastPkts	Total number of unicast packets requested to transmit to a single address
ifOutMulticastPkts	Number of multicast frames transmitted error free
ifOutBroadcastPkts	The total number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sub-layer, including those that were discarded or not sent
ifOutDiscards	The number of outbound packets which were chosen to be discarded even though no errors had been detected to prevent their being transmitted.
dot3statsAlignmentErrors	Number of frames with an alignment error, i.e., the length is not an integral number of octets and the frame cannot pass the Frame Check Sequence (FCS) test
dot3StatsFCSErrors	Number of frames with framecheck errors, i.e., there is an integral number of octets, but an incorrect Frame Check Sequence (FCS)
dot3StatsSingleCollisionFrames	Number of successfully transmitted frames that had exactly one collision
dot3StatsMutlipleCollisionFrame	Number of successfully transmitted frames that had multiple collisions
dot3StatsDeferredTransmissions	Number of times the first transmission was delayed because the medium was busy
dot3StatsLateCollision	Number of times that a collision was detected later than 64 octets into the transmission (also added into collision count)
dot3StatsExcessiveCollision	Number of frames where transmissions failed because of excessive collisions
dot3StatsCarrierSenseErrors	The number of transmission errors on a particular interface that are not otherwise counted.

**Table 4-23 Ethernet Threshold Variables (MIBs) (continued)**

Variable	Definition
dot3StatsSQETestErrors	A count of times that the SQE TEST ERROR message is generated by the PLS sublayer for a particular interface.
etherStatsJabbers	Total number of Octets of data (including bad packets) received on the network
etherStatsUndersizePkts	Number of packets received with a length less than 64 octets
etherStatsFragments	Total number of packets that are not an integral number of octets or have a bad FCS, and that are less than 64 octets long
etherStatsPkts64Octets	Total number of packets received (including error packets) that were 64 octets in length
etherStatsPkts65to127Octets	Total number of packets received (including error packets) that were 65 – 172 octets in length
etherStatsPkts128to255Octets	Total number of packets received (including error packets) that were 128 – 255 octets in length
etherStatsPkts256to511Octets	Total number of packets received (including error packets) that were 256 – 511 octets in length
etherStatsPkts512to1023Octets	Total number of packets received (including error packets) that were 512 – 1023 octets in length
etherStatsPkts1024to1518Octets	Total number of packets received (including error packets) that were 1024 – 1518 octets in length
etherStatsJabbers	Total number of packets longer than 1518 octets that were not an integral number of octets or had a bad FCS
etherStatsCollisions	Best estimate of the total number of collisions on this segment
etherStatsCollisionFrames	Best estimate of the total number of frame collisions on this segment
etherStatsCRCAlignErrors	Total number of packets with a length between 64 and 1518 octets, inclusive, that had a bad FCS or were not an integral number of octets in length
receivePauseFrames (G series only)	The number of received 802.x pause frames
transmitPauseFrames(G series only)	The number of transmitted 802.x pause frames
receivePktsDroppedInternalCongestion(G series only)	The number of received framed dropped due to frame buffer overflow as well as other reasons.
transmitPktsDroppedInternalCongestion(G series only)	The number of frames dropped in the transmit direction due to frame buffer overflow as well as other reasons.
txTotalPkts	Total number of transmit packets.
rxTotalPkts	Total number of receive packets

**Step 13** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.



## Turn Up Network

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This chapter explains how to turn up and test Cisco ONS 15454s networks, including point-to-point networks, linear add drop multiplexers (ADM), unidirectional path switched rings (UPSRs), and bidirectional line switched rings (BLSRs).

### Before You Begin

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

1. [NTP-35 Verify Shelf Installation, page 5-2](#)—Complete this procedure before beginning network turn up.
2. [NTP-36 Provision a Point-to-Point Network, page 5-3](#)—Complete as needed.
3. [NTP-37 Point-to-Point Network Acceptance Test, page 5-5](#)—Complete this procedure after you provision a point-to-point network.
4. [NTP-38 Provision a Linear ADM Network, page 5-10](#)—Complete as needed.
5. [NTP-39 Linear ADM Network Acceptance Test, page 5-11](#)—Complete this procedure after you provision a linear ADM.
6. [NTP-40 Provision the BLSR Nodes, page 5-13](#)—Complete this procedure to provision ONS 15454s in a BLSR.
7. [NTP-41 Create the BLSR, page 5-16](#)—Complete this procedure after provisioning the BLSR nodes.
8. [NTP-42 Two-Fiber BLSR Acceptance Test, page 5-18](#)—Complete this procedure after you provision a two-fiber BLSR.
9. [NTP-43 Four-Fiber BLSR Acceptance Test, page 5-22](#)—Complete this procedure after you provision a four-fiber BLSR.
10. [NTP-44 Provision the UPSR Nodes, page 5-26](#)—Complete as needed.
11. [NTP-45 UPSR Acceptance Test, page 5-27](#)—Complete this procedure after you provision a UPSR.
12. [NTP-46 Subtend a UPSR from a BLSR, page 5-30](#)—Complete as needed.
13. [NTP-47 Subtend a BLSR from a UPSR, page 5-31](#)—Complete as needed.
14. [NTP-48 Subtend a BLSR from a BLSR, page 5-31](#)—Complete as needed.
15. [NTP-49 Create a DCC Tunnel, page 5-34](#)—Complete as needed.

# NTP-35 Verify Shelf Installation

<b>Purpose</b>	Use this procedure to verify that each ONS 15454 is ready for network turn up.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">Chapter 4, “Turn Up Shelf”</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Log into an ONS 15454 on the network you will test. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions. The node (default) view displays.
- Step 2** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If alarms are displayed, investigate and resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for procedures.
- Step 3** Click the **Provisioning > General** tabs. Verify that all general node information settings match the settings of your site plan. If not, see the [“NTP-81 Change Node Management Information” procedure on page 10-4](#).
- Step 4** Click the **Provisioning > Timing** tabs. Verify that timing settings match the settings of your site plan. If not, see the [“NTP-85 Change Node Timing” procedure on page 10-24](#).
- Step 5** Click the **Provisioning > Network** tabs. Verify that all network settings match the settings of your site plan. If not, see the [“NTP-82 Change Network Information” procedure on page 10-6](#).
- Step 6** Click the **Provisioning > Protection** tabs. Verify that all protection groups have been created according to your site plan. If not, see the [“NTP-84 Change Card Protection Settings” procedure on page 10-16](#).
- Step 7** Click the **Provisioning > Security** tabs. Verify that all users have been created and their security levels match the settings indicated by your site plan. If not, see the [“NTP-86 Modify Users and Change Security” procedure on page 10-27](#).
- Step 8** If SNMP is provisioned on the shelf, click the **Provisioning > SNMP** tabs. Verify that all SNMP settings match the settings of your site plan. If not, see the [“NTP-87 Change SNMP Settings” procedure on page 10-31](#).
- Step 9** Provision the network using the applicable procedure on page 5-1.
-

# NTP-36 Provision a Point-to-Point Network

<b>Purpose</b>	This procedure provisions two ONS 15454s in a point-to-point (terminal) network
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-21 Set Up Computer for CTC, page 3-1</a> <a href="#">NTP-35 Verify Shelf Installation, page 5-2</a> <a href="#">NTP-24 Verify Card Installation, page 4-2</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Verify that the fiber is connected from working card to working card, and from protect card to protect card.
- Step 2** Log into an ONS 15454 on the network where you will create circuits. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions. The node (default) view displays.
- Step 3** Click the **Provisioning > Protection** tabs. Verify that 1+1 protection is created for the OC-N cards at each node. Complete the “[DLP-73 Create a 1+1 Protection Group](#)” task on [page 4-26](#) if protection has not been created.
- Step 4** Verify that the working and protect cards in the 1+1 protection groups correspond to the physical fiber connections between the nodes.
- Step 5** Complete the “[DLP-85 Provision SONET DCC Terminations](#)” task on [page 5-4](#) for the working OC-N card/port on both point-to-point nodes.




---

**Note** SDCC is not provisioned on the protect card/port.

---




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**Note** SDCC provisioning is performed by direct LAN connection to the node. Remote provisioning is possible only after all nodes in the network have DCC provisioned to in-service OC-N ports.

---

- Step 6** Verify that timing is set up at both point-to-point nodes. If not, complete the “[NTP-28 Set Up Timing](#)” procedure on [page 4-18](#) for one or both of the nodes. If a node uses line timing, make its working OC-N the timing source.
- Step 7** If you deselected Enable Ports when you created the DCC terminations in [Step 5](#), complete the “[DLP-86 Put Ports In or Out of Service](#)” task on [page 5-4](#) to put the protect OC-N ports in service.
- Step 8** From the View menu, choose **Go to Other Node**.




---

**Note** If the other node is not displayed, from the File menu, choose **Add Node**, then enter the node IP address or name in the Add Node dialog box.

---

- Step 9** In the Select Node dialog box, choose the other point-to-point node and click **OK**.
- Step 10** Repeat [Step 7](#) for the protect OC-N card.

**Step 11** Complete the “[NTP-37 Point-to-Point Network Acceptance Test](#)” procedure on page 5-5.

---

## DLP-85 Provision SONET DCC Terminations

<b>Purpose</b>	This task creates SONET DCC terminations.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** Display the node (login) view.

**Step 2** Click the **Provisioning > Sonet DCC** tabs.

**Step 3** Under SDCC Terminations, click **Create**.

**Step 4** In the Create SDCC Terminations dialog box click where you want to create the DCC termination.



**Note** The Set Port in Service checkbox is automatically selected when you select a port. If you do not want to set the port in service, deselect the box.

---

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



**Note** EOC (SDCC Termination Failure) and LOS (Loss of Signal) alarms will be displayed until you create DCC terminations and enable all network OC-N ports.

---

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

---

## DLP-86 Put Ports In or Out of Service

<b>Purpose</b>	Use this task to put a port in service or to remove a port from service.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** To provision Ethernet ports, see the “[DLP-105 Provision E Series Ethernet Ports](#)” task on page 6-54 or the “[DLP-109 Provision G1000-4 Ethernet Ports](#)” task on page 6-63.

---

**Step 1** Display the node (login) view.



- Step 2** On the shelf graphic, double-click the card with the port(s) you want to put in or out of service. The card view displays.
- Step 3** Click the **Provisioning > Line** tabs.
- Step 4** Under Status, choose **In Service** or **Out of Service**.
- Step 5** Click **Apply**.
- Step 6** As needed, repeat this task for each port.
- Step 7** Return to your originating procedure (NTP).
- 

## NTP-37 Point-to-Point Network Acceptance Test

<b>Purpose</b>	Use this procedure to test a point-to-point ONS 15454 network.
<b>Tools/Equipment</b>	Test set/cables appropriate to the test circuit you will create
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation, page 5-2</a> <a href="#">NTP-36 Provision a Point-to-Point Network, page 5-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

---

- Step 1** Log into one of the point-to-point nodes. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The node (default) view displays.
- Step 2** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 3** Export the alarm data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the “[DLP-139 Export CTC Data](#)” task on page 10-3 for additional information.
- Step 4** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 5** Export the conditions data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the “[DLP-139 Export CTC Data](#)” task on page 10-3 for additional information.
- Step 6** Click the **Inventory** tab. Export the shelf inventory data to a file.
- Step 7** Create a test circuit:
- For DS-1 circuits, complete the “[NTP-51 Create an Automatically Routed DS-1 Circuit](#)” procedure on page 6-5
  - For DS-3 circuits, complete the “[NTP-54 Create an Automatically Routed DS-3 Circuit](#)” procedure on page 6-12
- Step 8** Configure the test set for the test circuit type you created:
- DS-1—If you are testing an unmuxed DS-1, you must have a DSX-1 panel or a direct DS-1 interface into the ONS 15454. Set the test set for DS-1. For information about configuring your test set, consult your test set user guide.

- DS-3—If you are testing a clear channel DS-3, you must have a DSX-3 panel or a direct DS-3 interface into the ONS 15454. Set the test set for clear channel DS-3. For information about configuring your test set, consult your test set user guide.
- DS3XM-6—If you are testing a DS-1 circuit on a DS3XM-6 card you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for a muxed DS3. After you choose muxed DS-3, choose the DS-1 to test on the muxed DS-3. For information about configuring your test set, consult your test set user guide.

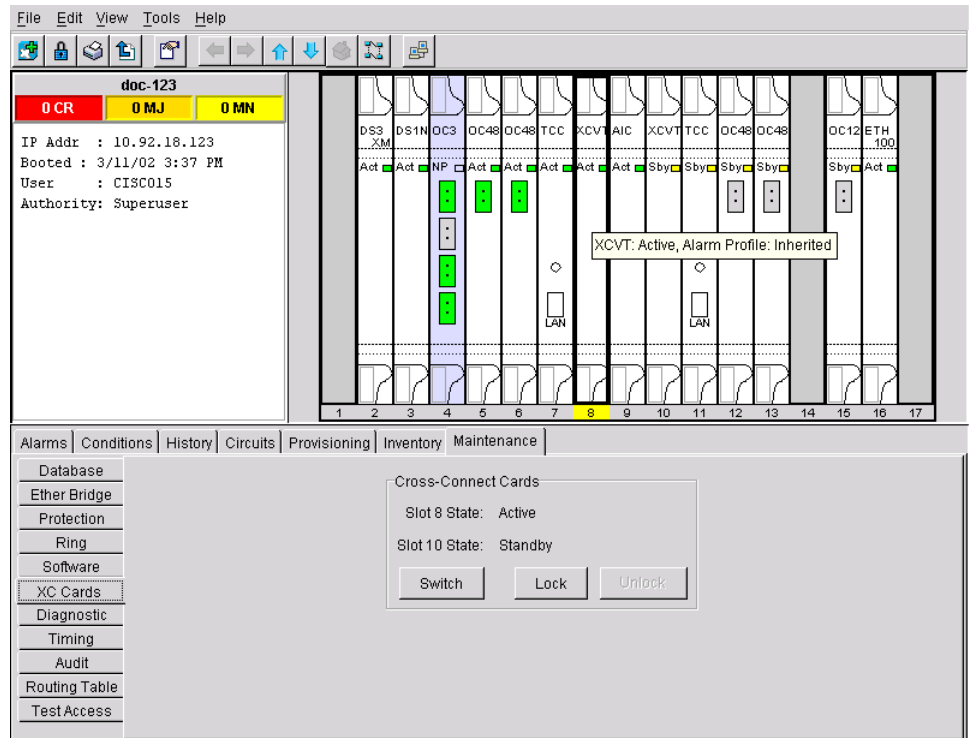
- Step 9** Verify the integrity of all patch cables that will be used in this test by connecting one end to the test set transmit (TX) connector the other to the test set receive (RX) connector. If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before going to [Step 10](#).
- Step 10** Create a physical loopback at the circuit destination card. To do so, attach one end of a patch cable to the destination port's transmit (TX); attach the other end to the port's receive (RX).
- Step 11** At the circuit source card:
- Connect the transmit (TX) connector of the test set to the receive (RX) connector on the circuit source card.
  - Connect the test set receive (RX) connector to the circuit transmit (TX) connector on the circuit source card.
- Step 12** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps [7–11](#) to make sure the test set and cabling is configured correctly.
- Step 13** Inject BIT errors from the test set. Verify that the errors display at the test set, indicating a complete end-to-end circuit.
- Step 14** Complete the [“DLP-87 Common Control Card Switch Test”](#) task on page [5-7](#) to perform hardware redundancy tests on the XC, XCVT, XC10G and TCC+ cards.
- Step 15** Complete the [“DLP-88 Optical 1+1 Protection Test”](#) task on page [5-9](#).
- Step 16** Set up and complete a BER Test. Use the existing configuration and follow your site requirements for the specified length of time. Record the test results and configuration
- Step 17** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 18** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 19** Export the Alarms data to a file.
- Step 20** Repeat Steps [12–16](#) for the other point-to-point node.
- Step 21** If a node fails any test, repeat the test verifying correct setup and configuration. If the test fails again, refer to the next level of support.
- Step 22** Delete the test circuit. See the [“NTP-77 Delete Circuits”](#) procedure on page [9-7](#) for instructions.
- After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.
-

# DLP-87 Common Control Card Switch Test

<b>Purpose</b>	This task verifies the switching functionality of the ONS 15454 TCC+, XC, XCVT, and XC10G cards.
<b>Tools/Equipment</b>	The test set specified by the acceptance test procedure, connected and configured as specified in the acceptance test procedure.
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 2** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 3** Test the cross connect card (XC, XCVT, or XC10G) switch functionality:
  - a. Click the **Maintenance > XC Cards** tabs ([Figure 5-1](#)).

**Figure 5-1 Performing a cross-connect card switch**



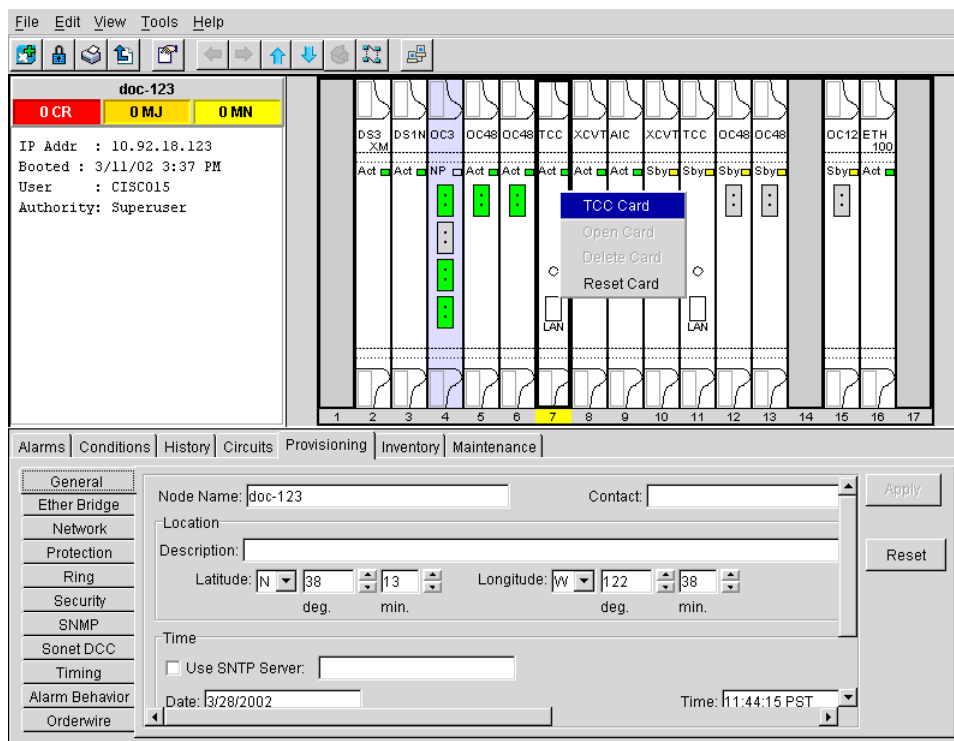
- b. Under Cross-Connect Cards, make a note of the active and standby slots.

- c. On the shelf graphic, verify that the active cross-connect card displays a green ACT LED and the standby cross-connect card displays an amber SBY LED. If these conditions are not present, review the “DLP-36 Install the TCC+ XC/XCVT/XC10G Cards” task on page 2-4, or contact your next level of support.
- d. Click the **Switch** button.
- e. On the Confirm Switch dialog box, click **Yes**.
- f. Verify that the active slot in Step 3 becomes the standby slot; the standby slot in Step b becomes the active slot. The switch should display within 1-2 seconds.
- g. Verify that traffic on the test set connected to the node is still running. Some bit errors are normal, but traffic flow should not be interrupted. If a traffic interruption occurs, do not continue, refer to your next level of support.
- h. Repeat Steps d–g to return the active/standby slots to their configuration at the start of the procedure.
- i. Verify that the cross-connect card display is the same as noted in Step b.

**Step 4** Test the TCC+ card switch functionality:

- a. Make a note of which TCC+ is active and which is standby by examining the LEDs on the shelf graphic. TCC+ cards are installed in Slot 7 and Slot 11. The active TCC+ has a green ACT LED, and the standby TCC+ has an amber SBY LED.
- b. On the shelf graphic, right-click the active TCC+ and choose **Reset** from the shortcut menu (Figure 5-2).

**Figure 5-2** Resetting the active TCC+



- c. On the Resetting Card dialog box, click **Yes**. After 20-40 seconds, a “lost node connection, changing to network view” message is displayed.

- d. Click **OK**. On the network view map, the node where you reset the TCC+ will be grey.
  - e. After the node icon turns green (within 1-2 minutes), double-click it. On the shelf graphic, observe the following:
    - The previous standby TCC+ displays a green ACT LED.
    - The previous active TCC+ LEDs will go through the following LED sequence: NP (card not present), Ldg (software is loading), amber SBY LED (TCC+ is in standby mode). The LEDs should complete this sequence within a few minutes.
  - f. Verify that traffic on the test set connected to the node is still running. If a traffic interruption occurs, do not continue, refer to your next level of support.
  - g. Repeat Steps b– f to return the active/standby TCC+s to their configuration at the start of the procedure.
  - h. Verify that the TCC+ cards display is the same as noted in Step a.
- Step 5** Return to your originating procedure (NTP).
- 

## DLP-88 Optical 1+1 Protection Test

<b>Purpose</b>	Verifies a 1+1 protection group will switch properly
<b>Tools/Equipment</b>	Optical test set and cables
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a> ; a test circuit created as part of the topology acceptance test.
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

---

- Step 1** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 2** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 3** Click the **Maintenance > Protection** tabs.
- Step 4** Under Protection Groups, click the 1+1 protection group.
- Step 5** Click the working port and click the **Force** Switch Command button.
- Step 6** At the Confirm Manual Operation dialog, click **Yes**.
- Step 7** Under Selected Group, verify that the following is displayed:  
Protect port - Protect/Active [FORCE\_SWITCH\_TO\_PROTECT]  
Working port - Working/Standby [FORCE\_SWITCH\_TO\_PROTECT]
- Step 8** Verify that traffic on the test set connected to the node is still running. Some bit errors are normal, but traffic flow should not be interrupted. If a traffic interruption occurs, complete Steps 9–10, then repeat Steps 4–7, monitoring traffic on your test set. If interruptions occur, review the provisioning procedure for the network topology (point-to-point, linear ADM, UPSR, BLSR). If the problem persists, refer to your next level of support.

- Step 9** Click the **Clear** Switch Command button.
- Step 10** At the Confirm Clear Operation confirmation, click **Yes**.
- Step 11** Under Selected Group, click the protect port then click the **Force** Switch Command button.
- Step 12** At the Confirm Force Operation popup window, click **Yes**.
- Step 13** Under Selected Group, verify that the following is displayed:  
Protect port - Protect/Active [FORCE\_SWITCH\_TO\_WORKING]  
Working port - Working/Standby [FORCE\_SWITCH\_TO\_WORKING]
- Step 14** Verify that traffic on the test set connected to the node is still running. If a traffic interruption occurs, complete Steps 9–13, monitoring traffic on your test set. If interruptions occur, review the provisioning procedure for the network topology (point-to-point, linear ADM, UPSR, BLSR). If the problem persists, refer to your next level of support.
- Step 15** Click the **Clear** Switch Command button.
- Step 16** At the Confirm Clear Operation dialog, click **Yes**.
- Step 17** Under Selected Group, verify the following states:
- Protect port - Protect/Standby
  - Working port - Working/Active
- Step 18** Return to your originating procedure (NTP).
- 

## NTP-38 Provision a Linear ADM Network

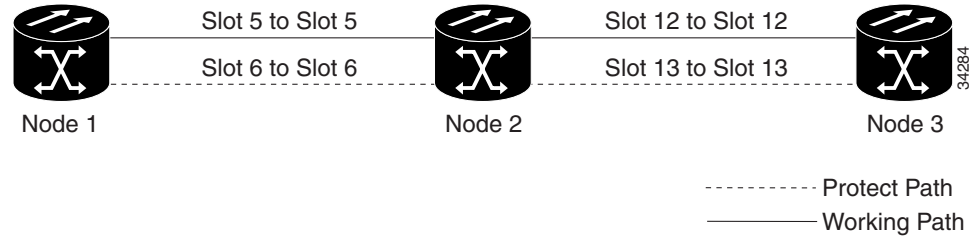
<b>Purpose</b>	This procedure provisions three or more ONS 15454s in a linear ADM.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

---

- Step 1** Log into an ONS 15454 on the linear ADM network you are testing. The node (default) view displays. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.
- Step 2** Verify that the fiber is connected from working card to working card, and from protect card to protect card.

[Figure 5-3](#) shows three ONS 15454s in a linear ADM configuration. In this example, working traffic flows from Slot 5/Node 1 to Slot 5/Node 2, and from Slot 12/Node 2 to Slot 12/Node 3. Slots 6 and 13 contain the protect OC-N cards. Slots 5 and 6 and Slots 12 and 13 are in 1+1 protection.

Figure 5-3 A linear ADM configuration



- Step 3** Click the **Provisioning > Protection** tabs. Verify that 1+1 protection is created for the OC-N cards at each linear node. If the protection group has not been created, go to “[DLP-73 Create a 1+1 Protection Group](#)” task on page 4-26, to create them.
- Step 4** Verify that cards set as working and protect in the 1+1 protection groups correspond to the physical fiber connections between the nodes.
- Step 5** Complete the “[DLP-85 Provision SONET DCC Terminations](#)” task on page 5-4 for the working OC-N ports on each linear ADM node.



**Note** SDCC provisioning is performed by direct LAN connection to the node. Remote provisioning is possible only after all nodes in the network have DCC provisioned to in-service OC-N ports.



**Note** Terminating nodes (Nodes 1 and 3 in [Figure 5-3](#)) will have one SDCC, and intermediate nodes (Node 2 in [Figure 5-3](#)) will have two SDCCs (Slots 5 and 12 in the example).

- Step 6** Verify that timing has been set up at each linear node. If not, complete the “[NTP-28 Set Up Timing](#)” procedure on page 4-18. If a node is using line timing, use its working OC-N card as the timing source.
- Step 7** If you deselected Place Ports In Service when you created the DCC terminations, complete the “[DLP-86 Put Ports In or Out of Service](#)” task on page 5-4 to put the OC-N ports in service for all OC-N cards connected to the linear ADM.
- Step 8** Complete the “[NTP-39 Linear ADM Network Acceptance Test](#)” procedure on page 5-11.

## NTP-39 Linear ADM Network Acceptance Test

<b>Purpose</b>	Use this procedure to test a linear ADM ONS 15454 network.
<b>Tools/Equipment</b>	Test set/cables appropriate to the test circuit you will create
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation</a> , page 5-2 <a href="#">NTP-38 Provision a Linear ADM Network</a> , page 5-10
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Log into an ONS 15454 on the linear ADM network you are testing. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The node (default) view displays.

- Step 2** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 3** Export the alarm data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. Complete the “[DLP-139 Export CTC Data](#)” task on page 10-3.
- Step 4** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 5** Export the conditions data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the “[DLP-139 Export CTC Data](#)” task on page 10-3 for additional information.
- Step 6** Click the **Inventory** tab. Export the shelf inventory data to a file.
- Step 7** Create a test circuit:
- For DS-1 circuits, complete the “[NTP-51 Create an Automatically Routed DS-1 Circuit](#)” task on page 6-5
  - For DS-3 circuits, complete the “[NTP-54 Create an Automatically Routed DS-3 Circuit](#)” task on page 6-12
- Step 8** Configure the test set for the test circuit type you created:
- DS-1 card—If you are testing an unmuxed DS-1, you must have a DSX-1 panel or a direct DS-1 interface into the ONS 15454. Set the test set for DS-1. For information about configuring your test set, consult your test set user guide.
  - DS-3—If you are testing a clear channel DS-3, you must have a DSX-3 panel or a direct DS-3 interface into the ONS 15454. Set the test set for clear channel DS-3. For information about configuring your test set, consult your test set user guide.
  - DS3XM-6—If you are testing a DS-1 circuit on a DS3XM-6 card you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for a muxed DS3. After you choose muxed DS-3, choose the DS-1 to test on the muxed DS-3. For information about configuring your test set, consult your test set user guide.
- Step 9** Verify the integrity of all patch cables that will be used in this test by connecting one end to the test set transmit (TX) connector, and the other to the test set receive (RX) connector. If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before going to [Step 10](#).
- Step 10** Create a physical loopback at the circuit destination card. To do so, attach one end of a patch cable to the destination port’s transmit (TX) connector; attach the other end to the destination port’s receive (RX) connector.
- Step 11** At the circuit source card:
- a. Connect the transmit (TX) connector of the test set to the circuit receive (RX) connector.
  - b. Connect the test set receive (RX) connector to the circuit transmit (TX) connector.
- Step 12** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps 1–9 to make sure the test set and cabling is configured correctly.
- Step 13** Inject BIT errors from the test set. Verify that the errors display at the test set, indicating a complete end-to-end circuit.
- Step 14** Complete the “[DLP-87 Common Control Card Switch Test](#)” task on page 5-7 to perform hardware redundancy tests on the XC, XCVT, XC10G, and TCC+ cards.



- Step 15** Complete the “[DLP-88 Optical 1+1 Protection Test](#)” task on page 5-9 to test the OC-N port protection group switching.
- Step 16** Set up and complete a BER Test. Use the existing configuration and follow your site requirements for length of time. Record the test results and configuration
- Step 17** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 18** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 19** Repeat this procedure for the other linear ADM nodes.
- Step 20** If a node fails any test, repeat the test verifying correct setup and configuration. If the test fails again, refer to the next level of support.
- Step 21** Delete the test circuit. See the “[NTP-77 Delete Circuits](#)” procedure on page 9-7 for instructions.
- After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.
- 

## NTP-40 Provision the BLSR Nodes

<b>Purpose</b>	This procedure provisions the ONS 15454 nodes for the BLSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation</a> , page 5-2
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

---

- Step 1** Verify that the fiber is correctly connected to the BLSR trunk cards:
- Verify that the east port at one node is connected to the west port on an adjacent node, and this east to west port connection is used at all BLSR nodes, similar to [Figure 5-4](#).
  - For four-fiber BLSRs, verify that the same east port to west port connection is used for the working and protect fibers, similar to [Figure 5-5](#). Verify that the working and protect card connections are not mixed.

Figure 5-4 Four-node, two-fiber BLSR fiber connection example

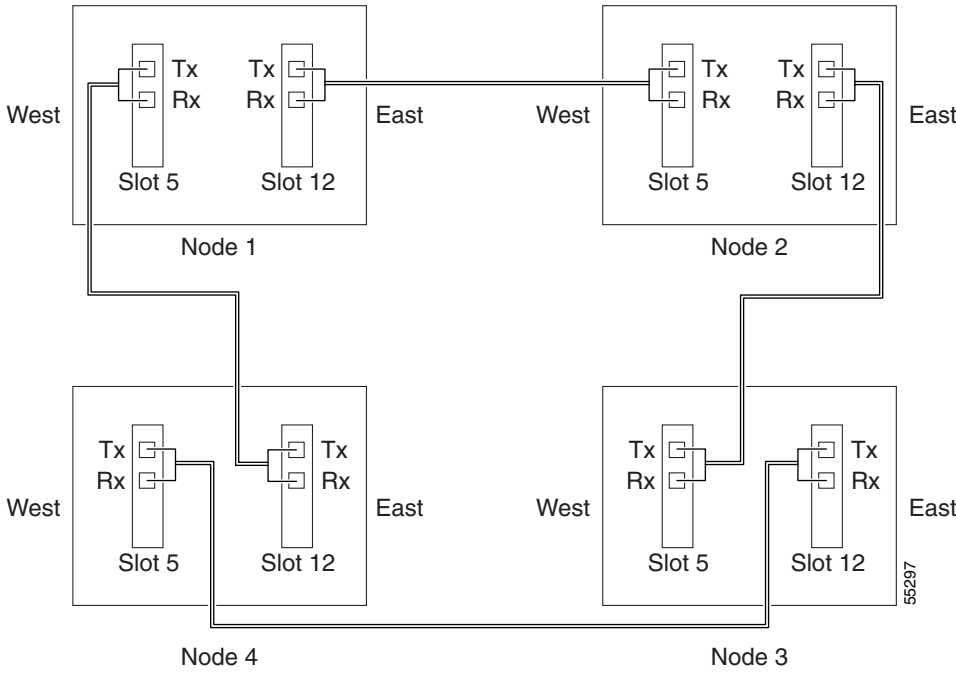
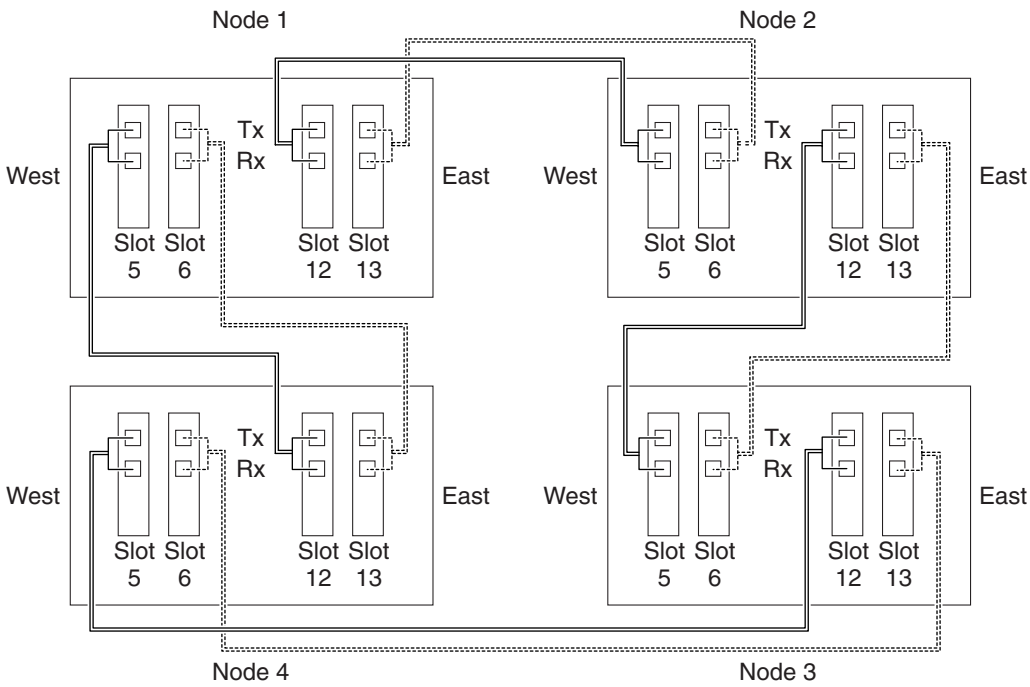



Figure 5-5 Four-node, four-fiber BLSR fiber connection example



— Working fibers

**Step 2** Log into an ONS 15454 in the BLSR you are turning up. See the “DLP-60 Log into CTC” task on page 3-22 for instructions. The node (default) view displays.

- Step 3** Complete the “[DLP-85 Provision SONET DCC Terminations](#)” task on page 5-4. Provision the two ports/cards that will serve as the BLSR ports at the node. For four-fiber BLSRs provision the working cards, but not the protect cards, as DCC terminations.
-  **Note** If an ONS 15454 is not connected to a corporate LAN, SDCC provisioning must be performed through a local craft connection to the node. Remote provisioning is possible only after all nodes in the network have DCC provisioned to in-service OC-N ports.
- Step 4** If Put Ports in Service was checked when you completed the DCC terminations in [Step 3](#), those OC-N ports are in service. However, if they were not placed in service, complete the “[DLP-86 Put Ports In or Out of Service](#)” task on page 5-4 for all ports that you configured as DCC terminations. Repeat this step at each node that will be in the BLSR.
- Step 5** For four-fiber BLSRs, complete the “[DLP-86 Put Ports In or Out of Service](#)” task on page 5-4 for the protect OC-N ports.
- Step 6** If a BLSR span passes through third-party equipment that cannot transparently transport the K3 byte, complete the “[DLP-89 Remap the K3 Byte](#)” task on page 5-15. This task is not necessary for most customers.
- Step 7** Repeat Steps 2–5 at each node that will be in the BLSR.
- Step 8** Complete the “[NTP-41 Create the BLSR](#)” procedure on page 5-16.

## DLP-89 Remap the K3 Byte



### Caution

Do not remap the K3 byte unless specifically required to run an ONS 15454 BLSR through third-party equipment. This task is unnecessary for most customers.

<b>Purpose</b>	Use this task to provision the K3 byte.
<b>Tools/Equipment</b>	OC48AS cards must be installed on the BLSR span that you will remap.
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation</a> , page 5-2 <a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Caution

If you remap the K3 byte, remap to the same extended byte (Z2, E2, or F1) on either side of the span.

- Step 1** At the node view, double-click the OC48AS card that connects to the third-party equipment.
- Step 2** Click the **Provisioning > Line** tabs.
- Step 3** Click **BLSR Ext Byte** and choose the alternate byte: Z2, E2, or F1.
- Step 4** Click **Apply**.
- Step 5** (Four-fiber BLSR only) Repeat Steps 2–4 for each protect card.
- Step 6** (Two-fiber BLSR only) Repeat Steps 2–4 at the node and card on the other end of the BLSR span.

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

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## NTP-41 Create the BLSR

<b>Purpose</b>	This procedure creates the BLSR at each BLSR node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-40 Provision the BLSR Nodes, page 5-13</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote

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**Step 1** Log into a BLSR node. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.

**Step 2** Click the **Provisioning > Ring** tabs.

**Step 3** Click **Create**.

**Step 4** On the Create BLSR dialog box ([Figure 5-6](#)), set the BLSR properties:

- *Ring Type*—Choose the BLSR ring type, either two-fiber or four-fiber.
- *Ring ID*—Assign a ring ID (a number between 0 and 9999). Nodes in the same BLSR must have the same Ring ID.
- *Node ID*—Assign a Node ID. The Node ID identifies the node to the BLSR. Nodes in the same BLSR must have unique Node IDs.
- *Reversion time*—Set the amount of time that will pass before the traffic reverts to the original working path. The default is 5 minutes. All nodes in a BLSR ring should have the same reversion time setting, particularly if “never” (i.e., non-revertive) is chosen.
- *West Line*—Assign the west BLSR port for the node from the pull-down menu. (In [Figure 5-4](#), this is Slot 5.)



**Note** The east and west ports must match the fiber connections and DCC terminations set up in the [“NTP-40 Provision the BLSR Nodes” procedure on page 5-13](#).

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- *East Line*—Assign the east BLSR port for the node from the pull-down menu. (In [Figure 5-4](#), this is Slot 12.)

For four-fiber BLSRs, complete the following:

- *Span Reversion*—Set the amount of time that will pass before the traffic reverts to the original working path following a span reversion. The default is 5 minutes. Span reversions can be set to Never. If you set a reversion time, the times must be the same for both ends of the span. That is, if Node A’s west fiber is connected to Node B’s east port, the Node A west span reversion time must be the same as the Node B east span reversion time. To avoid reversion time mismatches, Cisco recommends that you use the same span reversion time throughout the ring.
- *West Protect*—Assign the west BLSR port that will connect to the west protect fiber from the pull-down menu. (In [Figure 5-5](#), this is Slot 6.)
- *East Protect*—Assign the east BLSR port that will connect to the east protect fiber from the pull-down menu. (In [Figure 5-5](#), this is Slot 13.)

Figure 5-6 Setting BLSR properties

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



**Note** Some or all of the following alarms display during BLSR setup: E-W MISMATCH, RING MISMATCH, APSCIMP, APSDFLTK, BLSROSYNC. The alarms will clear after you configure all the nodes in the BLSR.

**Step 6** Complete Steps 2–5 at each node that you are adding to the BLSR.

**Step 7** After you configure the last BLSR node, wait for the BLSR Ring Map Change dialog box to display (this can take 10 – 30 seconds).



**Note** The dialog will not display if SDCC Termination alarms (e.g., EOC) or BLSR alarms (such as E-W MISMATCH and RING MISMATCH) are present. If an SDCC alarm is present, review the DCC provisioning at each node. If BLSR alarms have not cleared, repeat Steps 1–6 at each node, making sure each node is provisioned correctly. You can also following alarm troubleshooting procedures provided in the *Cisco ONS 15454 Troubleshooting Guide*.

**Step 8** On the BLSR Ring Map Change dialog, click **Yes**.

**Step 9** On the BLSR Ring Map dialog box, verify that the ring map contains all the nodes you provisioned in the expected order. If so, click **Accept**. If the nodes do not appear, or are not in the expected order, repeat Steps 1–9, making sure no errors are made.

**Step 10** From the View menu, choose **Go to Network View**. Verify the following:

- A green span line appears between all BLSR nodes
- All E-W MISMATCH, RING MISMATCH, APSCIMP, DFLTK, and BLSROSYNC alarms are cleared.

**Step 11** Complete the “[NTP-42 Two-Fiber BLSR Acceptance Test](#)” procedure on page 5-18 or the “[NTP-43 Four-Fiber BLSR Acceptance Test](#)” procedure on page 5-22.

# NTP-42 Two-Fiber BLSR Acceptance Test

<b>Purpose</b>	This procedure tests a two-fiber ONS 15454 BLSR.
<b>Tools/Equipment</b>	Test set and cables appropriate for the test circuit
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation, page 5-2</a> <a href="#">NTP-40 Provision the BLSR Nodes, page 5-13</a> <a href="#">NTP-41 Create the BLSR, page 5-16</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



## Note

This procedure requires that you create test circuits and perform span switches around the ring. For clarity, “Node 1” refers to the login node where you begin the procedure. “Node 2” refers to the node connected to the East OC-N trunk card of Node 1, “Node 3” refers to the node connected to the East OC-N trunk card of Node 2, and so on.

- 
- Step 1** Log into one of the ONS 15454s on the BLSR you are testing. (This node will be called Node 1.) See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Export the alarms data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the [“DLP-139 Export CTC Data” task on page 10-3](#) for additional information.
- Step 5** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 6** Export the conditions data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the [“DLP-139 Export CTC Data” task on page 10-3](#) for additional information.
- Step 7** Complete the [“DLP-139 Export CTC Data” task on page 10-3](#).
- Step 8** On the network view, double-click Node 1.
- Step 9** Click the **Inventory** tab. Export the Node 1 inventory data to a file.
- Step 10** Complete the [“DLP-90 BLSR Exercise Ring Test” task on page 5-20](#).
- Step 11** Create a test circuit from Node 1 to the node connected to the East OC-N trunk card of Node 1. (This node will be called Node 2.)
- For DS-1 circuits, complete the [“NTP-51 Create an Automatically Routed DS-1 Circuit” task on page 6-5](#).
  - For DS-3 circuits, complete the [“NTP-54 Create an Automatically Routed DS-3 Circuit” task on page 6-12](#).

- Step 12** Configure the test set for the test circuit type you created:
- DS-1—If you are testing an unmuxed DS-1, you must have a DSX-1 panel or a direct DS-1 interface into the ONS 15454. Set the test set for DS-1. For information about configuring your test set, consult your test set user guide.
  - DS-3—If you are testing a clear channel DS-3, you must have a DSX-3 panel or a direct DS-3 interface into the ONS 15454. Set the test set for clear channel DS-3. For information about configuring your test set, consult your test set user guide.
  - DS3XM-6—If you are testing a DS-1 circuit on a DS3XM-6 card you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for a muxed DS-3. After you choose muxed DS-3, choose the DS-1 to test on the muxed DS-3. For information about configuring your test set, consult your test set user guide.
- Step 13** Verify the integrity of all patch cables that will be used in this test by connecting the test set transmit (TX) the test set receive (RX). If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before going to [Step 14](#).
- Step 14** Create a physical loopback at the circuit destination card: attach one end of a patch cable to the destination port's transmit (TX); attach the other end to the port's receive (RX).
- Step 15** At the circuit source card:
- a. Connect the transmit (TX) connector of the test set to the circuit receive (RX) connector;
  - b. Connect the test set receive (RX) connector to the circuit transmit (TX) connector.
- Step 16** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps 1–15 to make sure the test set and cabling is configured correctly.
- Step 17** Inject BIT errors from the test set. Verify that the errors display at the test set, verifying a complete end-to-end circuit.
- Step 18** Complete the [“DLP-87 Common Control Card Switch Test” task on page 5-7](#) at Node 1.  
The text circuit should continue to work before, during, and after the switches. There may be a brief interruption. If the circuit stops working, do not continue. Contact your next level of support.
- Step 19** Complete the [“DLP-91 BLSR Ring Switch Test” task on page 5-21](#) at Node 1.  
The text circuit should continue to work before, during, and after the switches. There may be a brief interruption. If the circuit stops working, do not continue. Contact your next level of support.
- Step 20** Set up and complete a BER test on the test circuit. Use the existing configuration and follow your site requirements for length of time. Record the test results and configuration.
- Step 21** Complete the [“NTP-77 Delete Circuits” procedure on page 9-7](#) for the test circuit.
- Step 22** Repeat Steps 8–17 to set up a test circuit between Node 2 and the node connected to the East OC-N trunk card of Node 2. (This node will be Node 3.)
- Step 23** At Node 2, complete the [“DLP-87 Common Control Card Switch Test” task on page 5-7](#).  
The text circuit should continue to work before, during, and after the switches. There may be a brief interruption. If the circuit stops working, do not continue. Contact your next level of support.
- Step 24** At Node 2, complete the [“DLP-91 BLSR Ring Switch Test” task on page 5-21](#).  
The text circuit should continue to work before, during, and after the switches. There may be a brief interruption. If the circuit stops working, do not continue. Contact your next level of support.
- Step 25** Set up and complete a BER test on the test circuit between Node 2 and 3.
- Step 26** Complete the [“NTP-77 Delete Circuits” procedure on page 9-7](#) for the test circuit.
- Step 27** Repeating steps 8–23, work your way around the BLSR, testing each node and span in the ring.

- Step 28** After you test the entire ring, remove any loopbacks and test sets from the nodes.
- Step 29** View Alarms and conditions on each node and record the results (export to file).
- Step 30** If a node fails any test, repeat the test to verify correct setup and configuration. If the test fails again, refer to the next level of support.
- After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.
- 

## DLP-90 BLSR Exercise Ring Test

<b>Purpose</b>	This task tests the BLSR ring functionality without switching traffic.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-40 Provision the BLSR Nodes, page 5-13</a> <a href="#">NTP-41 Create the BLSR, page 5-16</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

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- Step 1** From node view, click the **Maintenance > Ring** tabs.
- Step 2** Under West Switch, choose **Exercise Ring** from the drop down menu. Click the **Apply** button, then click **Yes** on the confirmation.
- The West Switch will display Exercise Ring. After 10-15 seconds, it changes to Clear.
- Step 3** Click the **History** tab.
- Step 4** On the Session subtab, verify that the EXERCISE-RING-REQ (Exercising Ring Request) and EXERCISING-RING (Exercising Ring Successfully) conditions are reported against the slot for the west span. [Figure 5-7](#) shows an example.



Figure 5-7 Verifying the exercise ring conditions

Session	Date	Object	Eqpt Type	Slot	Port	Sev	ST	SA	Cond	Description
Node	01/25/70 12:42:53 PST	FAC-5-1	OC48	5	1	NA	C		EXERCISE-RING-REQ	Exercise Request on Ring
	01/25/70 12:42:43 PST	FAC-5-1	OC48	5	1	NA	C		EXERCISING-RING	Exercising Ring Successfully
	01/25/70 12:42:39 PST	FAC-5-1	OC48	5	1	NA	R		EXERCISE-RING-REQ	Exercise Request on Ring
	01/25/70 12:42:37 PST	FAC-5-1	OC48	5	1	NA	R		EXERCISING-RING	Exercising Ring Successfully
	01/25/70 12:40:54 PST	FAC-6-1	OC48	6	1	MN	C		APSCDFLTk	Default K Byte
	01/25/70 12:40:43 PST	FAC-6-1	OC48	6	1	MN	R		APSCDFLTk	Default K Byte
	01/25/70 12:40:34 PST	RING-1				NA	T		BLSR-RESYNC	BLSR Tables Resynchronized
	01/25/70 12:40:34 PST	RING-1				NA	T		BLSR-RESYNC	BLSR Tables Resynchronized
	01/25/70 12:40:34 PST	RING-1				NA	T		BLSR-RESYNC	BLSR Tables Resynchronized
	01/25/70 12:39:34 PST	RING-1				NA	T		BLSR-RESYNC	BLSR Tables Resynchronized
	01/25/70 12:39:34 PST	RING-1				NA	T		BLSR-RESYNC	BLSR Tables Resynchronized
	01/25/70 12:39:34 PST	RING-1				MJ	C		PRC-DUPID	Duplicate Node ID
	01/25/70 12:39:16 PST	FAC-6-1	OC48	6	1	MJ	C		CLW-MIGMTCU	Both Ends Of Fiber Provisioned

- Step 5** From the View menu, choose **Go to Network View**.
- Step 6** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 7** From the View menu, choose **Go to Other Node**.
- Step 8** In the Select Node dialog box, choose the next node in the BLSR.
- Step 9** Repeat this task for all nodes in the BLSR.
- Step 10** Return to your originating procedure (NTP).

## DLP-91 BLSR Ring Switch Test

<b>Purpose</b>	Use this task to verify that protection switching is working correctly in a BLSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Click the **Maintenance > Ring** tabs.
- Step 2** From the West Switch pull-down menu, choose **FORCE RING**, and click **Apply**. Click **Yes** on the confirmation dialog boxes (two confirmations are displayed).

- Step 3** Click the **Alarms** tab, then click the **Show Events** box at the bottom of the window.
- Step 4** Verify that WKSWPR (Switch to Protection) and RING-SW-EAST (Ring Switch Active on East) conditions are reported against the slot for the west span.
- Step 5** From the View menu, choose **Go to Network View**.
- Step 6** Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 7** On the network map, double-click the node where you invoked the FORCE RING.
- Step 8** Click the **Maintenance > Ring** tabs.
- Step 9** From the West Switch pull-down menu, choose **CLEAR**, and click **Apply**. Click **Yes** on the confirmation dialog box.
- Step 10** From the East Switch pull-down menu, choose **FORCE RING**, and click **Apply**. Click **Yes** on the confirmation dialog boxes (two confirmations are displayed).
- Step 11** Click the **Alarms** tab, then click the **Show Events** box at the bottom of the window.
- Step 12** Verify that WKSWPR (Switch to Protection) and RING-SW-WEST (Ring Switch Active on West) conditions are reported against the slot for the west span.
- Step 13** From the View menu, choose **Go to Network View**.
- Step 14** Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 15** On the network map, double-click the node where you invoked the FORCE RING.
- Step 16** Click the **Maintenance > Ring** tabs.
- Step 17** From the East Switch pull-down menu, choose **CLEAR**, and click **Apply**. Click **Yes** on the confirmation dialog box.
- Step 18** Return to your originating procedure (NTP).

## NTP-43 Four-Fiber BLSR Acceptance Test

<b>Purpose</b>	This procedure tests a four-fiber ONS 15454 BLSR
<b>Tools/Equipment</b>	Test set and cables appropriate to the test circuit you will create.
<b>Prerequisite Procedures</b>	<a href="#">NTP-40 Provision the BLSR Nodes, page 5-13</a> <a href="#">NTP-41 Create the BLSR, page 5-16</a> <a href="#">NTP-35 Verify Shelf Installation, page 5-2</a>
<b>Required/As Needed</b>	if you created a four-fiber BLSR
<b>Onsite/Remote</b>	Onsite



### Note

This procedure requires that you create test circuits and perform span switches around the ring. For clarity, “Node 1” refers to the login node where you begin the procedure. “Node 2” refers to the node connected to the East OC-N trunk card of Node 1, “Node 3” refers to the node connected to the East OC-N trunk card of Node 2, and so on.

- 
- Step 1** Log into one of the ONS 15454s on the BLSR you are testing. (This node will be called Node 1.) See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions. The node (default) view displays.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Export the alarms data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the [“DLP-139 Export CTC Data” task on page 10-3](#) for additional information.
- Step 5** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 6** Export the conditions data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the [“DLP-139 Export CTC Data” task on page 10-3](#) for additional information.
- Step 7** On the network map, double-click Node 1.
- Step 8** Click the **Inventory** tab. Export the shelf inventory data to file by choosing **Export** from the File menu.
- Step 9** Complete the [“DLP-92 Four-Fiber BLSR Exercise Span Test” task on page 5-24](#).
- Step 10** Complete the [“DLP-90 BLSR Exercise Ring Test” task on page 5-20](#).
- Step 11** Create a test circuit between Node 1 and Node 2.
- For DS-1 circuits, complete the [“NTP-51 Create an Automatically Routed DS-1 Circuit” task on page 6-5](#).
  - For DS-3 circuits, complete the [“NTP-54 Create an Automatically Routed DS-3 Circuit” task on page 6-12](#).
- Step 12** Configure the test set for the test circuit type you created:
- DS-1 card—If you are testing an unmuxed DS-1, you must have a DSX-1 panel or a direct DS-1 interface into the ONS 15454. Set the test set for DS-1. For information about configuring your test set, consult your test set user guide.
  - DS-3—If you are testing a clear channel DS-3, you must have a DSX-3 panel or a direct DS-3 interface into the ONS 15454. Set the test set for clear channel DS-3. For information about configuring your test set, consult your test set user guide.
  - DS3XM-6—If you are testing a DS-1 circuit on a DS3XM-6 card you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for a muxed DS3. After you choose muxed DS-3, choose the DS-1 to test on the muxed DS-3. For information about configuring your test set, consult your test set user guide.
- Step 13** Verify the integrity of all patch cables that will be used in this test by connecting one end of the cable to the test set transmit (TX) the other of the cable to the test set receive (RX). If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before continuing with [Step 14](#).
- Step 14** Create a physical loopback at the circuit destination card. To do so, attach one end of a patch cable to the destination port’s transmit (TX) connector; attach the other end to the port’s receive (RX) connector.
- Step 15** At the circuit source card:
- a. Connect the transmit (TX) connector of the test set to the circuit receive (RX) connector.
  - b. Connect the test set receive (RX) connector to the circuit transmit (TX) connector.

- Step 16** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps 1–9 to make sure the test set and cabling is configured correctly.
- Step 17** Inject BIT errors from the test set. Verify that the errors display at the test set, verifying a complete end-to-end circuit.
- Step 18** Complete the “[DLP-87 Common Control Card Switch Test](#)” task on page 5-7 to perform hardware redundancy tests on the Node 1 common cards (cross-connect and TCC+ cards).
- Step 19** Complete the “[DLP-91 BLSR Ring Switch Test](#)” task on page 5-21 to test the BLSR protection switching at Node 1.
- Step 20** Complete the “[DLP-93 Four-Fiber BLSR Span Switching Test](#)” task on page 5-25 at Node 1.
- Step 21** Set up and complete a BER test on the test circuit between Node 1 and 2. Use the existing configuration and follow your site requirements for length of time. Record the test results and configuration.
- Step 22** Delete the test circuit: click the Circuits tab, click the circuit and click the **Delete** button. Click **Yes** to confirm.
- Step 23** At Node 2, repeat Steps 7–17 to create a test circuit between Node 2 and the node connected to the East OC-N trunk card of Node 2 (Node 3) and then complete test procedures.
- Step 24** Set up and complete a BER test on the test circuit between Nodes 2 and 3.
- Step 25** Delete the test circuit.
- Step 26** Repeating Steps 7–23, work your way around the BLSR, testing each node and span in the ring.
- Step 27** After you test the entire ring, remove any loopbacks and test sets from the nodes.
- Step 28** View Alarms and conditions on each node and record the results by exporting to a file. See the “[DLP-139 Export CTC Data](#)” task on page 10-3 for instructions.
- Step 29** If a node fails any test, repeat the test verifying correct setup and configuration. If the test fails again, refer to the next level of support.
- After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.
- 

## DLP-92 Four-Fiber BLSR Exercise Span Test

<b>Purpose</b>	This task verifies the BLSR exercise span functionality.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-40 Provision the BLSR Nodes, page 5-13</a> <a href="#">NTP-41 Create the BLSR, page 5-16</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

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- Step 1** Click the **Maintenance > Ring** tabs.
- Step 2** Under West Switch, choose **EXERCISE SPAN** from the drop-down menu. Click the **Apply** button. After approximately 10 seconds, the EXERCISE SPAN command changes to CLEAR.
- Step 3** Click the **History** tab.

- Step 4** On the Session subtab, verify that the EXERCISING-SPAN and EXERCISE-SPAN-REQ conditions are reported against the working West span.
- Step 5** Repeat Steps 2–4 for the East Switch to exercise the east span.
- Step 6** Return to your originating procedure (NTP).
- 

## DLP-93 Four-Fiber BLSR Span Switching Test

<b>Purpose</b>	Verifies the Four-Fiber BLSR span switching.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-40 Provision the BLSR Nodes, page 5-13</a> <a href="#">NTP-41 Create the BLSR, page 5-16</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

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- Step 1** Click the **Maintenance > Ring** tabs.
- Step 2** From the West Switch pull-down menu, choose **FORCE SPAN**, and click **Apply**. Click **Yes** on the confirmation dialog boxes (two confirmations are displayed).
- Step 3** Click the **Alarms** tab, then click the **Show Events** checkbox at the bottom of the window.
- Step 4** Verify that WKSWPR (Switch to Protection) and SPAN-SW-WEST (Span Switch Active on West) conditions are reported against the slot for the west span.
- Step 5** From the View menu, choose **Go to Network View**.
- Step 6** Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 7** On the network map, double-click the node where you invoked the FORCE SPAN.
- Step 8** Click the **Maintenance > Ring** tabs.
- Step 9** From the West Switch pull-down menu, choose **CLEAR**, and click **Apply**. Click **Yes** on the confirmation dialog box.
- Step 10** From the East Switch pull-down menu, choose **FORCE SPAN**, and click **Apply**. Click **Yes** on the confirmation dialog boxes (two confirmations are displayed).
- Step 11** Click the **Alarms** tab, then click the **Show Events** box at the bottom of the window.
- Step 12** Verify that WKSWPR (Switch to Protection) and SPAN-SW-EAST (Span Switch Active on East) conditions are reported against the slot for the west span.
- Step 13** From the View menu, choose **Go to Network View**.
- Step 14** Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 15** On the network map, double-click the node where you invoked the FORCE SPAN.

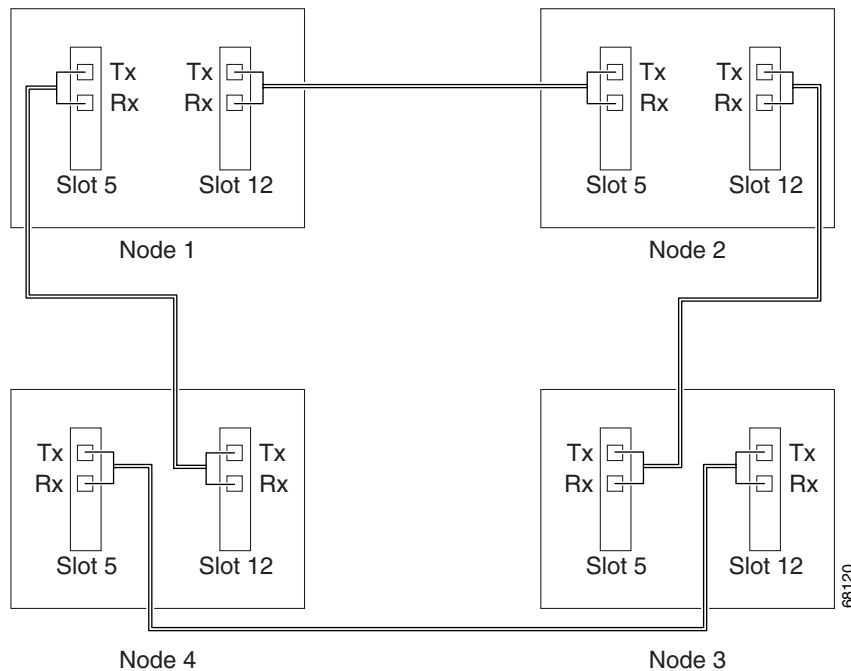
- Step 16** Click the **Maintenance > Ring** tabs.
- Step 17** From the East Switch pull-down menu, choose **CLEAR**, and click **Apply**. Click **Yes** on the confirmation dialog box.
- Step 18** Return to your originating procedure (NTP).

## NTP-44 Provision the UPSR Nodes

<b>Purpose</b>	Use this procedure to provision nodes for inclusion in a UPSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Verify that the fiber is correctly connected to the UPSR trunk OC-N cards similar to [Figure 5-8](#).

**Figure 5-8** UPSR fiber connection example



- Step 2** Log into an ONS 15454 in the UPSR you are turning up. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions. The node (default) view displays.
- Step 3** Complete the “[DLP-85 Provision SONET DCC Terminations](#)” task on [page 5-4](#) for the two cards/ports that will serve as the UPSR ports on the node. For example, Slot 5 (OC-48)/Node 1 and Slot 12 (OC-48)/Node 1. Complete this step for each node in the UPSR.



**Note** If an ONS 15454 is not connected to a corporate LAN, SDCC provisioning must be performed through a local craft connection. Remote provisioning is possible only after all nodes in the network have DCC terminations provisioned to in-service OC-N ports.

- Step 4** Ports are normally placed in service by default when you complete the DCC terminations. However, if they were not placed in service, complete the “[DLP-86 Put Ports In or Out of Service](#)” task on page 5-4 for all ports that you configured as DCC terminations. Repeat this step at each node that will be in the UPSR.
- Step 5** Complete the “[NTP-45 UPSR Acceptance Test](#)” procedure on page 5-27.

## NTP-45 UPSR Acceptance Test

<b>Purpose</b>	Tests an ONS 15454 UPSR
<b>Tools/Equipment</b>	Test set and cables appropriate to the test circuit you will create.
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation</a> , page 5-2 <a href="#">NTP-44 Provision the UPSR Nodes</a> , page 5-26
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Log into one of the ONS 15454s on the UPSR you are testing. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The node (default) view displays.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** Click the **Alarms** tab. Verify that no unexplained alarms are displayed on the network. If unexplained alarms are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Click the **Conditions** tab. Verify that no unexplained conditions are displayed on the network. If unexplained conditions are displayed, resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 5** Export the conditions data to a file by choosing **Export** from the File menu. Select an export format and save to your hard drive. See the “[DLP-139 Export CTC Data](#)” task on page 10-3 for additional information.
- Step 6** On the network map, double-click the node that you logged into in Step 1.
- Step 7** Click the **Inventory** tab. Complete the “[DLP-139 Export CTC Data](#)” task on page 10-3 to export the inventory data to a file for future reference.
- Step 8** Create a test circuit:
- For DS-1 circuits, complete the “[NTP-51 Create an Automatically Routed DS-1 Circuit](#)” task on page 6-5.
  - For DS-3 circuits, complete the “[NTP-54 Create an Automatically Routed DS-3 Circuit](#)” task on page 6-12.

- Step 9** Configure the test set for the test circuit type you created:
- DS-1 card—If you are testing an unmuxed DS-1, you must have a DSX-1 panel or a direct DS-1 interface into the ONS 15454. Set the test set for DS-1. For information about configuring your test set, consult your test set user guide.
  - DS-3—If you are testing a clear channel DS-3, you must have a DSX-3 panel or a direct DS-3 interface into the ONS 15454. Set the test set for clear channel DS-3. For information about configuring your test set, consult your test set user guide.
  - DS3XM-6—If you are testing a DS-1 circuit on a DS3XM-6 card you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for a muxed DS3. After you choose muxed DS-3, choose the DS-1 to test on the muxed DS-3. For information about configuring your test set, consult your test set user guide.
- Step 10** Verify the integrity of all patch cables that will be used in this test by connecting one end to the test set transmit (TX) the other to the test set receive (RX). If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before going to [Step 11](#).
- Step 11** Create a physical loopback at the circuit destination card: attach one end of a patch cable to the destination port's transmit (TX); attach the other end to the port's receive (RX).
- Step 12** At the circuit source card:
- a. Connect the transmit (TX) connector of the test set to the circuit receive (RX) connector;
  - b. Connect the test set receive (RX) connector to the circuit transmit (TX) connector.
- Step 13** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps 1–10 to make sure the test set and cabling is configured correctly.
- Step 14** Inject BIT errors from the test set. Verify that the errors display at the test set, verifying a complete end-to-end circuit.
- Step 15** Complete the [“DLP-87 Common Control Card Switch Test” task on page 5-7](#) to perform hardware redundancy tests on the cross-connect cards (XC, XCVT, or XC10G) and the TCC+.
- Step 16** From the View menu, choose Go to Network View.
- Step 17** Click one of the two spans leaving the node that is the source of the circuit.
- Step 18** Test the UPSR protection switching function on this span. Go to the [“DLP-94 UPSR Protection Switching Test” task on page 5-29](#) for instructions.
- The circuit should continue to work before, during, and after the switches, although there may be a brief interruption. If the circuit stops working, do not continue. Contact your next level of support.
- Step 19** In network view, click the other span that leaves the node that is the source of the circuit.
- Step 20** Test the UPSR protection switching function on this span. Go to the [“DLP-94 UPSR Protection Switching Test” task on page 5-29](#) for instructions.
- The circuit should continue to work before, during, and after the switches, although there may be a brief interruption. If the circuit stops working, do not continue. Contact your next level of support.
- Step 21** Set up and complete a BER Test. Use the existing configuration and follow your site requirements for length of time. Record the test results and configuration.
- Step 22** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 23** View the alarms and conditions on each node and record results by exporting to a file.
- Step 24** Repeat Steps 1–21 for each node on the network.
- Step 25** If a node fails any test, repeat the test verifying correct setup and configuration. If the test fails again, refer to the next level of support.



After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.

---

## DLP-94 UPSR Protection Switching Test

<b>Purpose</b>	Use this task to verify that a UPSR span is switching correctly.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-44 Provision the UPSR Nodes, page 5-26</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

---

**Step 1** From the View menu, choose **Go to the Network View**.

**Step 2** Right-click a network span and choose **Circuits**.

A dialog box displays the UPSR circuits, including circuit names, location, and a color code showing which circuits are active on the span.

**Step 3** Click the **Perform UPSR span switching** field and choose **FORCE** from the pull-down menu. Click **Apply**. Click **Yes** to confirm.

A confirmation message verifies that traffic was switched.



**Note** Unprotected circuits will not switch.

---

**Step 4** Click the **Perform UPSR span switching** field and choose **CLEAR** from the pull-down menu. Click **Apply**. Click **Yes** to confirm.



**Note** The colors of the circuits may not change.

---

A confirmation message verifies that the FORCE was cleared.

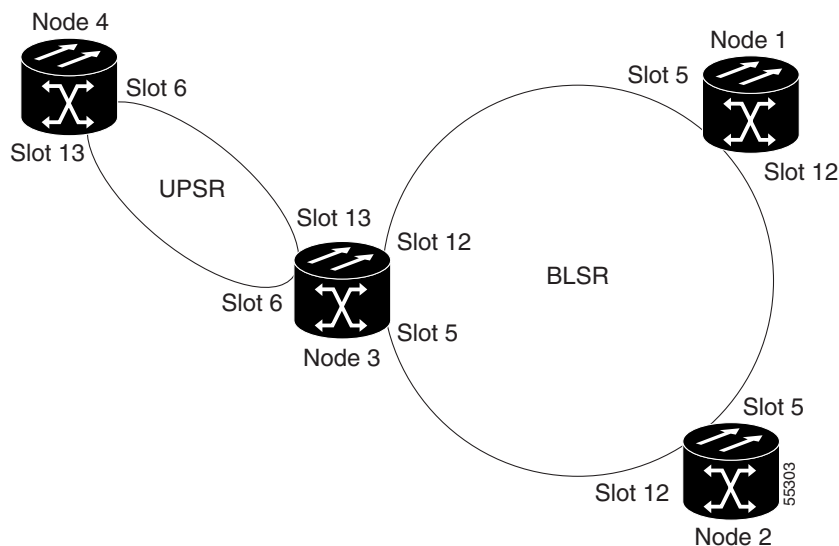
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## NTP-46 Subtend a UPSR from a BLSR

<b>Purpose</b>	Use this procedure to subtend a UPSR from existing BLSR
<b>Tools/Equipment</b>	One BLSR node must have OC-N cards and fibers to carry the UPSR.
<b>Prerequisite Procedures</b>	<a href="#">NTP-42 Two-Fiber BLSR Acceptance Test, page 5-18</a> or <a href="#">NTP-43 Four-Fiber BLSR Acceptance Test, page 5-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** In the node that will subtend the UPSR (Node 3 in [Figure 5-9](#)), install the OC-N cards that will serve as the UPSR trunk cards (Node 3, Slots 6 and 13).
- Step 2** Attach fibers from these cards to the UPSR trunk cards on the UPSR nodes. In [Figure 5-9](#), Slot 6/Node 3 connects to Slot 13/Node 5, and Slot 13/Node 5 connects to Slot 6/Node 6.
- Step 3** Log into one of the ONS 15454s that will subtend the UPSR. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions. The node (default) view displays.
- Step 4** Complete the “[DLP-85 Provision SONET DCC Terminations](#)” task on [page 5-4](#) for the OC-N card that will carry the UPSR.
- Step 5** Repeat [Step 4](#) for the second OC-N trunk card that will carry the UPSR.
- Step 6** Complete the “[DLP-86 Put Ports In or Out of Service](#)” task on [page 5-4](#) to put the ports in service that you will use for the UPSR.
- Step 7** Follow Steps 1–6 for the other nodes you will use for the UPSR.
- Step 8** From the View menu, choose **Go To Network View**.

**Figure 5-9** A UPSR subtending from a BLSR



- Step 9** Complete the “[NTP-45 UPSR Acceptance Test](#)” procedure on [page 5-27](#).

- Step 10** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## NTP-47 Subtend a BLSR from a UPSR

<b>Purpose</b>	Use this procedure to subtend a BLSR from an existing UPSR.
<b>Tools/Equipment</b>	One UPSR node must have OC-N cards and fibers to carry the BLSR.
<b>Prerequisite Procedures</b>	<a href="#">NTP-45 UPSR Acceptance Test, page 5-27</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

---

- Step 1** In the node that will subtend the BLSR, install the OC-N cards that will serve as the BLSR trunk cards (in [Figure 5-9](#), Node 3, Slots 6 and 13).
- Step 2** Attach fibers from these cards to the BLSR trunk cards on the BLSR nodes. In [Figure 5-9](#), Slot 6/Node 3 connects to Slot 13/Node 5, and Slot 13/Node 5 connects to Slot 6/Node 6.
- Step 3** Log into one of the ONS 15454s that will subtend the BLSR. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions. The node (default) view displays.
- Step 4** Create the DCCs on the first OC-N card that will carry the BLSR. See the “[DLP-85 Provision SONET DCC Terminations](#)” task on [page 5-4](#) for instructions.
- Step 5** Repeat [Step 4](#) for the second OC-N trunk card that will carry the BLSR.
- Step 6** Put the ports that you will use for the BLSR in service. See the “[DLP-86 Put Ports In or Out of Service](#)” task on [page 5-4](#) for instructions.
- Step 7** Follow [Steps 3–6](#) for the other nodes you will use for the BLSR.
- Step 8** Go to the network view to see the subtending ring.
- Step 9** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

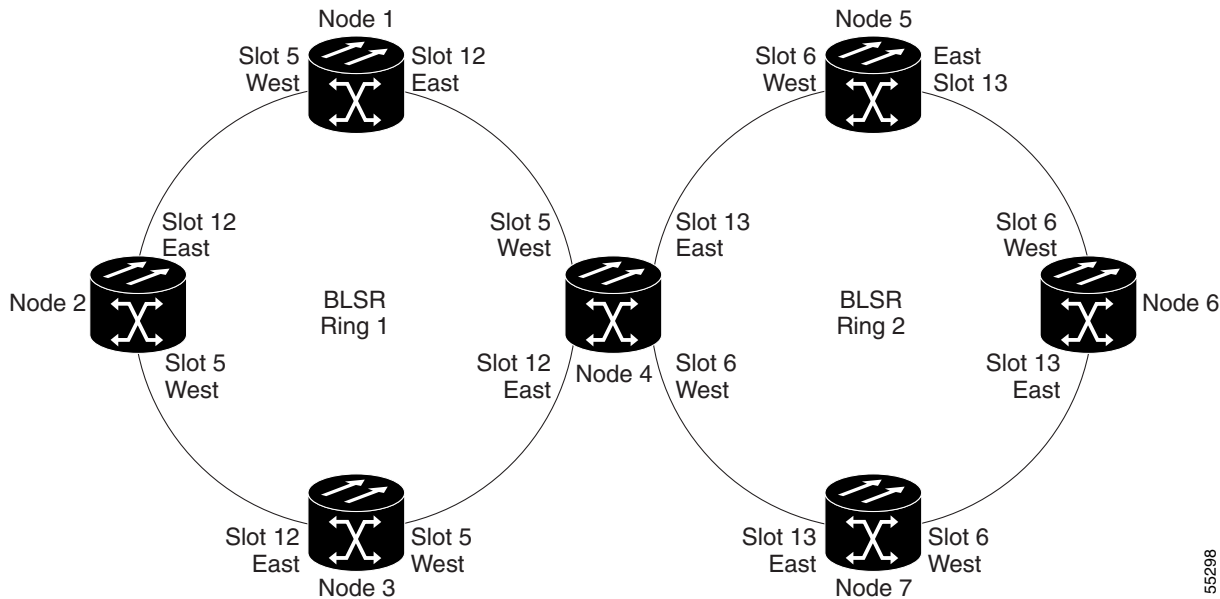
## NTP-48 Subtend a BLSR from a BLSR

<b>Purpose</b>	Use this procedure to subtend a BLSR from existing BLSR.
<b>Tools/Equipment</b>	One BLSR node must have OC-N cards and fibers to carry the second BLSR.
<b>Prerequisite Procedures</b>	One of following procedures is required for each BLSR: <a href="#">NTP-42 Two-Fiber BLSR Acceptance Test, page 5-18</a> <a href="#">NTP-43 Four-Fiber BLSR Acceptance Test, page 5-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Step 1** In the node that will subtend the BLSR install the OC-N cards that will serve as the BLSR trunk cards.

Figure 5-10 shows two BLSRs shared by one ONS 15454. Ring 1 runs on Nodes 1, 2, 3, and 4. Ring 2 runs on Nodes 4, 5, 6, and 7, and represents the subtending ring added by this procedure. Two BLSR rings, Ring 1 and Ring 2, are provisioned on Node 4. Ring 1 uses cards in Slots 5 and 12, and Ring 2 uses cards in Slots 6 and 13.

Figure 5-10 A BLSR subtending from a BLSR



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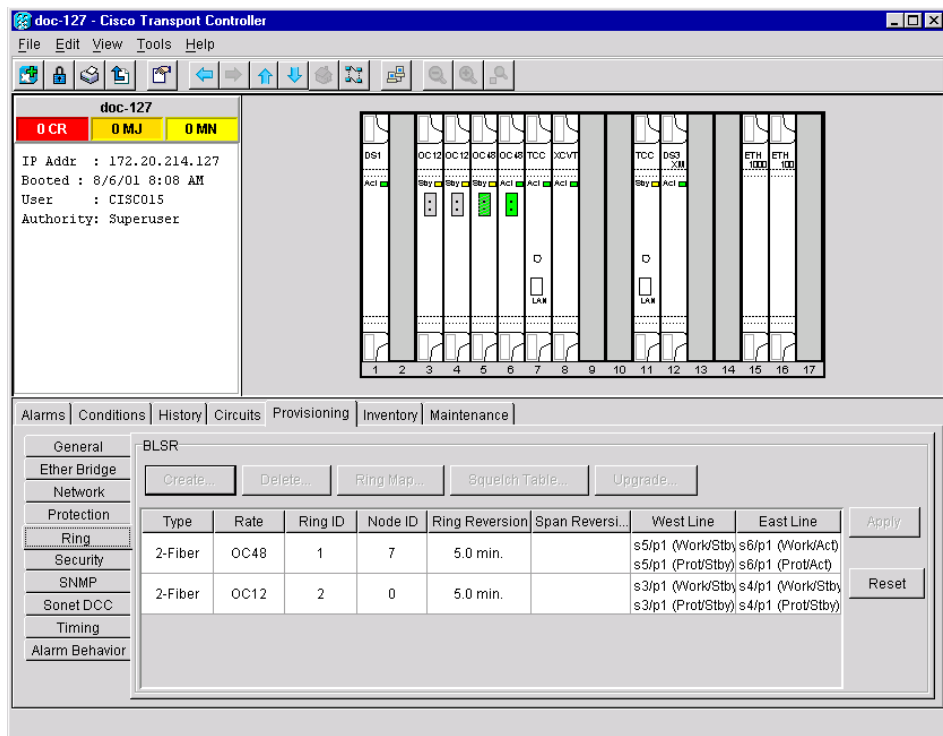
- Step 2** Attach fibers from these cards to the BLSR trunk cards on the BLSR nodes. In Figure 5-10, Node 4/Slot 6 connects to Node 7/Slot 13, and Node 4/Slot 13 connects to Node 5/Slot 6.
- Step 3** Log into one of the ONS 15454s that will subtend the BLSR. See the “DLP-60 Log into CTC” task on page 3-22 for instructions. The node (default) view displays.
- Step 4** Create the DCCs on the first OC-N card that will carry the BLSR. See the “DLP-85 Provision SONET DCC Terminations” task on page 5-4 for instructions.
- Step 5** Repeat Step 4 for the second OC-N trunk card that will carry the BLSR.
- Step 6** Put the ports that you will use for the BLSR in service. See the “DLP-86 Put Ports In or Out of Service” task on page 5-4 for instructions.
- Step 7** Complete the “NTP-41 Create the BLSR” procedure on page 5-16 to provision the new BLSR. The subtending BLSR must have a ring ID that differs from the ring ID of the first BLSR.
- Step 8** Follow Steps 1–7 for the other nodes that will be in the subtending BLSR.
- Step 9** Display the network view to see the subtending ring.

Figure 5-11 shows an example of two subtending BLSRs.

Figure 5-11 Viewing subtending BLSRs on the network map

Figure 5-12 shows the Ring subtab for Node 5, which is the node that carries the two rings.

Figure 5-12 Configuring two BLSRs on the same node



- Step 10** Complete the “NTP-42 Two-Fiber BLSR Acceptance Test” procedure on page 5-18 or the “NTP-43 Four-Fiber BLSR Acceptance Test” procedure on page 5-22 depending on the type of BLSR.
- Step 11** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

# NTP-49 Create a DCC Tunnel

<b>Purpose</b>	Use this procedure to create a DCC tunnel to transport traffic from third-party SONET equipment across ONS 15454 networks.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-35 Verify Shelf Installation, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote


**Note**

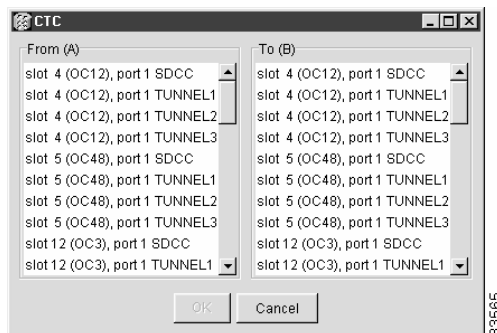
Each ONS 15454 can have up to 32 DCC tunnel connections. A terminated SDCC, that is a DCC used by the ONS 15454, cannot be used as a DCC tunnel end-point, and an SDCC that is used as an DCC tunnel end-point cannot be terminated. All DCC tunnel connections are bidirectional.

- Step 1** Log into an ONS 15454 that is connected to the non-ONS 15454 network.
- Step 2** Click the **Provisioning > Sonet DCC** tabs.
- Step 3** Beneath the DCC Tunnel Connections area (bottom right of the screen), click **Create**.
- Step 4** In the Create DCC Tunnel Connection dialog box ([Figure 5-13](#)), select the tunnel end points from the *From (A)* and *To (B)* lists.


**Note**

You cannot use the SDCC listed under SDCC Terminations (left side of the window) for tunnel connections. These are used for ONS 15454 optical connections.

**Figure 5-13** Selecting DCC tunnel end points



- Step 5** Click **OK**.
- Step 6** Put the ports hosting the DCC tunnel in service. See the [“DLP-86 Put Ports In or Out of Service” task on page 5-4](#) for instructions.
- Step 7** Repeat Steps 1-6 for all slots/ports that are part of the DCC tunnel, including any intermediate nodes that will pass traffic from third party equipment. The procedure is confirmed when the third-party network elements successfully communicate over the newly-established DCC tunnel.
- Step 8** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.



## Create Circuits and VT Tunnels

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This chapter explains how to create Cisco ONS 15454 electrical circuits and VT tunnels, optical circuits, and Ethernet circuits.

For additional information about ONS 15454 circuits, refer to the Circuits chapter and Circuit Routing appendix in the *Cisco ONS 15454 Reference Guide*.

### 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* as necessary.

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

1. [NTP-50 Verify System Acceptance, page 6-3](#)—Complete this procedure before you create any circuits.
2. [NTP-51 Create an Automatically Routed DS-1 Circuit, page 6-5](#)—Complete as needed.
3. [NTP-52 Create a Manually Routed DS-1 Circuit, page 6-8](#)—Complete as needed.
4. [NTP-53 Create a Unidirectional DS-1 Circuit with Multiple Drops, page 6-10](#)—Complete as needed.
5. [NTP-54 Create an Automatically Routed DS-3 Circuit, page 6-12](#)—Complete as needed.
6. [NTP-55 Create a Manually Routed DS-3 Circuit, page 6-15](#)—Complete as needed.
7. [NTP-56 Create a Unidirectional DS-3 Circuit with Multiple Drops, page 6-17](#)—Complete as needed.
8. [NTP-57 Create a VT Tunnel, page 6-21](#)—Complete as needed.
9. [NTP-58 Test Electrical Circuits, page 6-23](#)—Complete this procedure after you create an electrical circuit.
10. [NTP-59 Create an Automatically Routed Optical Circuit, page 6-25](#)—Complete as needed.
11. [NTP-60 Create a Manually Routed Optical Circuit, page 6-28](#)—Complete as needed.
12. [NTP-61 Create a Unidirectional Optical Circuit with Multiple Drops, page 6-30](#)—Complete as needed.
13. [NTP-62 Test Optical Circuits, page 6-34](#)—Complete this procedure after you create an optical circuit.
14. [NTP-63 Create E Series Ethernet Circuits, page 6-35](#)—Complete this procedure as needed to create EtherSwitch, shared packet ring, and point-to-point Ethernet circuits.

15. [NTP-64 Test E Series Ethernet Circuits, page 6-57](#)—Complete this procedure after creating E series Ethernet circuits.
16. [NTP-65 Create G Series Ethernet Circuits, page 6-59](#)—Complete this procedure to create circuits with the G1000-4 card.
17. [NTP-66 Test G Series Ethernet Circuits, page 6-64](#)—Complete this procedure after creating G series Ethernet circuits.

[Table 6-1](#) defines ONS 15454 circuit creation terms and options.

**Table 6-1 ONS 15454 Circuit Options**

Circuit Option	Description
Source	The point where the circuit enters the ONS 15454 network.
Destination	The point where the circuit exits an ONS 15454 network.
Automatic circuit routing	CTC routes the circuit automatically on the shortest available path based on the routing parameters that you define and on bandwidth availability.
Manual circuit routing	Allows you to choose a specific path, not just the shortest path chosen by automatic routing. You can choose a specific STS or VT for each circuit segment, and you can create circuits from work orders prepared by an operations support system (OSS) like the Telcordia TIRKS system
VT tunnel	VT tunnels allow VT1.5 circuits to pass through an ONS 15454 without utilizing cross connect card resources. One VT tunnel can carry 28 VT1.5 circuits.

ONS 15454 circuits are either a VT or a STS circuit. [Table 6-2](#) shows the circuit source and destination options that display for VT circuits. [Table 6-3](#) shows the options that display for STS circuits.

**Table 6-2 Source and Destination Options That Display For VT Circuits**

Card	Ports	STSs	VTs	DS1s
DS1-14, DS1N-14	–	–	–	14
DS3-12, DS3N-12, DS3-12E, DS3N-12E	–	–	–	–
DS3XM-6	6	–	–	28 per port
EC1-12	12	–	28 per port	–
OC3 IR 4/STM1	4	3 per port	28 per STS	–
OC12 IR/STM4 OC12 LR/STM4	–	12	28 per STS	–
OC12 IR 4/STM4 OC12 LR 4/STM4	4	12 per port	28 per STS	–
All OC48 cards	–	48	28 per STS	–
OC192	–	192	28 per STS	–



**Table 6-3 Source and Destination Options that Display for STS Circuits**

Card	Ports	STSs	Notes
DS1-14, DS1N-14	–	–	You can route one STS circuit on a DS-1 card if the card does not carry DS-1 traffic.
DS3-12, DS3N-12, DS3-12E, DS3N-12E	12	–	
DS3XM-6	6	–	
EC1-12	12	–	
OC3 IR 4/STM1	4	3 per port	
OC12 IR/STM4 OC12 LR/STM4	–	12	
OC12 IR 4/STM4 OC12 LR 4/STM4	4	12 per port	
All OC48 cards	–	48	
OC192	–	192	

## NTP-50 Verify System Acceptance

<b>Purpose</b>	This procedure verifies that the ONS 15454 network is ready for circuit provisioning.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">Turn Up Shelf, page 4-1</a> <a href="#">Turn Up Network, page 5-1</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** Log into an ONS 15454 on the network where you will create circuits. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.

**Step 2** From the View menu, select **Go to Network View**. Wait for all the nodes that are part of the network to display on the network map. (Large networks may take several minutes to display all the nodes.)



**Note** If this is the first time your computer has connected to this ONS 15454 network, the node icons will be stacked on the left side of your screen, possibly out of view. Use the scroll bar beneath the network map to display the icons. To separate the icons press **Ctrl**, click and drag the icon with your mouse to the new location. Repeat until all the nodes are visible on the screen.

**Step 3** Verify node accessibility. All node icons must be either green, yellow, orange, or red.

If all network nodes do not display after a few minutes, or if a node icon is grey with an IP address under it, do not continue. Go to [Chapter 5, “Turn Up Network,”](#) to review the network turn-up procedure appropriate for your network topology, or refer to the Cisco ONS 15454 Troubleshooting Guide for troubleshooting procedures.

- Step 4** Verify DCC connectivity. All nodes must be connected by green lines. If lines are missing or grey in color, do not continue. Go to [Chapter 5, “Turn Up Network,”](#) and follow the network turnip procedure appropriate for your network topology. Verify that all nodes have DCC connectivity before continuing.
- Step 5** Investigate and resolve, if necessary, all critical (red node icon) or major (orange node icon) alarms. Click the **Alarms** tab to view alarm descriptions. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for to resolve the alarm before continuing.
- Step 6** From the View menu, select **Go to Home View**. Verify that the node is provisioned according to your site or engineering plan:
- View the cards displayed in the shelf map. Verify that the ONS 15454 cards appear in the specified slots.
  - Click the **Provisioning > General** tabs. Verify that the node name, contacts, date, time and NTP/SNTP server IP address (if used) are correctly provisioned. If needed, make corrections using the [“DLP-64 Set the IP Address, Default Router, and Network Mask Using the LCD”](#) task on page 4-9.
  - Click the **Network** tab. Verify that the IP address, Subnet mask, Default Router, Prevent LCD IP Config, and Gateway Settings are correctly provisioned. If not, make corrections using the [“DLP-63 Set Up Network Information Using CTC”](#) task on page 4-5.
  - Click the **Protection** tab. Verify that protection groups are created as specified in your site plan. If the protection groups are not created, create them using [“NTP-29 Create Protection Groups”](#) procedure on page 4-22.
  - If the node is in a BLSR, click the **Ring** tab. (If the node is not in a BLSR, go to Step f.) Verify that the following items are provisioned as specified in your site plan:
    - BLSR type (2-Fiber or 4-Fiber)
    - BLSR ring ID and node IDs
    - Ring reversion time
    - East and west card assignments
    - 4-fiber BLSRs: span reversion and east/west protect card assignments

If corrections need to be made, go to [“NTP-40 Provision the BLSR Nodes”](#) procedure on page 5-13 for instructions.
  - Click the **Security** tab. Verify that the users and access levels are provisioned as specified. If not, see the [“NTP-30 Create Users and Assign Security”](#) procedure on page 4-27 to correct the information.
  - If SNMP is used, click the **SNMP** tab and verify the trap and destination information. If the information is not correct, see the [“NTP-33 Set Up SNMP”](#) procedure on page 4-55 to correct the information.
  - Click the **Sonet DCC** tab. Verify that DCC(s) were created to the applicable OC-N cards and ports. If DCCs were not created for the appropriate OC-N cards, go to [Chapter 5, “Turn Up Network,”](#) and complete the turnip procedure appropriate for your network topology.
  - Click the **Timing** tab. Verify that timing is provisioned as specified. If not, go to the [“NTP-28 Set Up Timing”](#) procedure on page 4-18 to make the changes.
  - Click the **Alarm Behavior** tab. If you provisioned optional alarm profiles, verify that the alarms are provisioned as specified. If not, see the [“NTP-71 Create and Assign Alarm Severity Profiles”](#) procedure on page 7-11 to change the information.
- Step 7** Select the next node in the network and Repeat Step 6 for that node. Repeat for each node in the network.

**Step 8** As appropriate, complete the circuit creation procedure listed on page 6-1.

---

## NTP-51 Create an Automatically Routed DS-1 Circuit

<b>Purpose</b>	This procedure creates an automatically routed DS-1 circuit, meaning CTC chooses the circuit route based on the parameters you set at circuit creation and on the system load.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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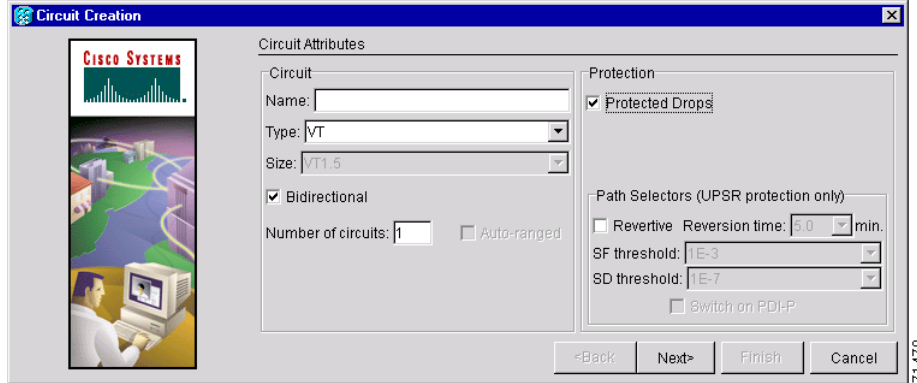
**Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.

**Step 2** Click the **Circuits** tab, then click **Create**.

**Step 3** In the Circuit Creation dialog box ([Figure 6-1](#)), complete the following fields:

- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
- *Type*—Select VT. VT cross connects will carry the DS-1 circuit across the ONS 15454 network.
- *Size*—VT1.5 is the default. You cannot change it.
- *Bidirectional*—Leave checked for this circuit (default).
- *Number of circuits*—Type the number of DS-1 circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use *Auto-Ranged* to create the circuits automatically.
- *Auto-ranged*—This checkbox is automatically selected if you enter more than 1 in the *Number of circuits* field. Auto-ranging creates identical (same source and destination) sequential circuits automatically. Deselect the box if you do not want CTC to create sequential circuits automatically.
- *Protected Drops*—Select this box if you want CTC to display only protected cards and ports as source and destination choices.

Figure 6-1 Setting circuit attributes for a DS-1 circuit



**Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:

- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
- *SF threshold*—Not available for VT circuits.
- *SD threshold*—Not available for VT circuits.
- *Switch on PDI-P*—Not available for VT circuits.

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

**Step 6** Complete the “[DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination](#)” task on page 6-20 for the DS-1 circuit you are creating.

**Step 7** Beneath Circuit Routing Preferences ([Figure 6-2 on page 6-7](#)), select **Route Automatically**. The following options are available.

- *Using Required Nodes/Spans*—Select this box if you want to specify nodes and spans to include or exclude in the CTC-generated circuit route.
- *Review Route Before Creation*—Select this box if you want to review and edit the circuit route before the circuit is created.

Select either, both, or none, based on your preferences.



**Note**

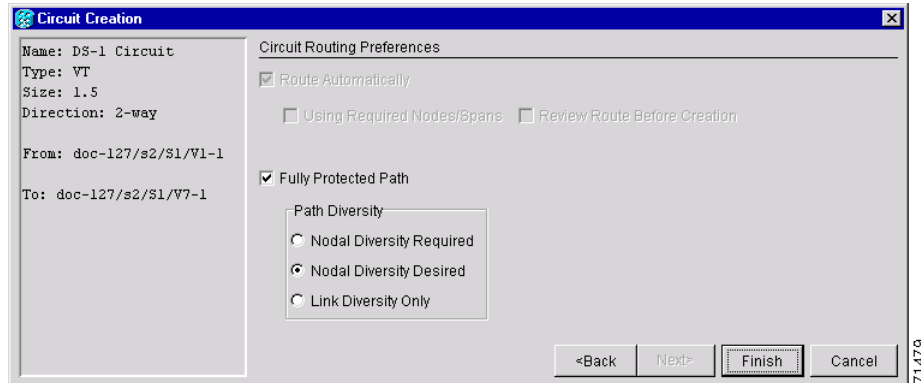
**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the **Fully Protected Path** checkbox and go to Step 9.) When checked, CTC creates a fully-protected circuit route based on the path diversity option you choose. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

**Step 8** If **Fully Protected Path** is selected, choose one of the following:

- *Nodal Diversity Required*—Ensures that the primary and alternate paths within PPMN portions of the complete circuit path are nodally diverse.

- *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
- *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

**Figure 6-2** Setting circuit routing preferences for a DS-1 circuit



- Step 9** If you selected Using Required Nodes/Spans, complete the following substeps. If not, proceed to the next step:
- Click **Next**.
  - Beneath Circuit Route Constraints, click a node or span on the circuit map.
  - Click **Include** to include the node or span in the circuit. Click **Exclude** to exclude the node/span from the circuit. The order in which you select included nodes and spans sets the circuit sequence. Click spans twice to change the circuit direction.
  - Repeat Step c for each node or span you wish to include or exclude.
  - Review the circuit route. To change the circuit routing order, select a node under the Required Nodes/Lines or Excluded Notes Links lists and click the **Up** or **Down** buttons to change the circuit routing order. Click **Remove** to remove a node or span.
- Step 10** If you selected Review Route Before Creation, complete the following substeps. If not, proceed to the next step.
- Click **Next**.
  - Review the circuit route. To add or delete a circuit span, select a node on the circuit route. Blue arrows show the circuit route. Green arrows indicate spans that you can add. Click a span arrowhead, then click **Include** to include the span or **Remove** to remove the span.
  - If the provisioned circuit does not reflect the routing and configuration you want, click **Back** to verify and change circuit information. If the circuit needs to be routed to a different path, see the [“NTP-52 Create a Manually Routed DS-1 Circuit” task on page 6-8](#).
- Step 11** Click **Finish**. One of the following results occurs, depending on the circuit properties you chose in the Circuit Creation dialog box:
- If you entered more than 1 in *Number of circuits* and selected *Auto-ranged*, CTC automatically creates the number of circuits entered in *Number of circuits*. If auto ranging cannot complete all the circuits, for example, because enough bandwidth is not available at the source or destination, a dialog box is displayed. Set the new source or destination for the remaining circuits, then click **Finish** to continue auto ranging.

## NTP-52 Create a Manually Routed DS-1 Circuit

- If you entered more than 1 in *Number of circuits* and did not select *Auto-ranged*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat this procedure for each additional circuit.
  - After completing the circuit(s), CTC displays the Circuits window.
- Step 12** On the Circuits window, verify that the circuit(s) just created appear in the circuits list.
- Step 13** Complete the “[NTP-58 Test Electrical Circuits](#)” procedure on page 6-23.
- 

# NTP-52 Create a Manually Routed DS-1 Circuit

<b>Purpose</b>	This procedure creates a DS-1 circuit and allows you to route the circuit path manually.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance</a> , page 6-3
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box (see [Figure 6-1 on page 6-6](#)), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select VT. VT cross connects will carry the DS-1 circuit across the ONS 15454 network.
  - *Size*—VT1.5 is the default. You cannot change it.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Type the number of DS-1 circuits you want to create. The default is 1.
  - *Auto-ranged*—Applies to automatically-routed circuits only. Leave this box unchecked (default).
  - *Protected Drops*—Select this box if you want CTC to display only protected cards and ports (cards and ports in 1:1, 1:N, 1+1, or BLSR protection) as source and destination choices.
- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Not available for VT circuits.
  - *SD threshold*—Not available for VT circuits.
  - *Switch on PDI-P*—Not available for VT circuits.

- Step 5** Click **Next**.
- Step 6** Complete the “[DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination](#)” task on page 6-20 for the DS-1 circuit.
- Step 7** Beneath Circuit Routing Preferences (see [Figure 6-2 on page 6-7](#)), deselect **Route Automatically**.

**Note**

---

**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to [Step 11](#).) When checked, CTC compares your manually-provisioned circuit route with the specified path diversity option. If the path does not meet the specified path diversity requirement, CTC displays an error message and allows you to change the circuit path. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

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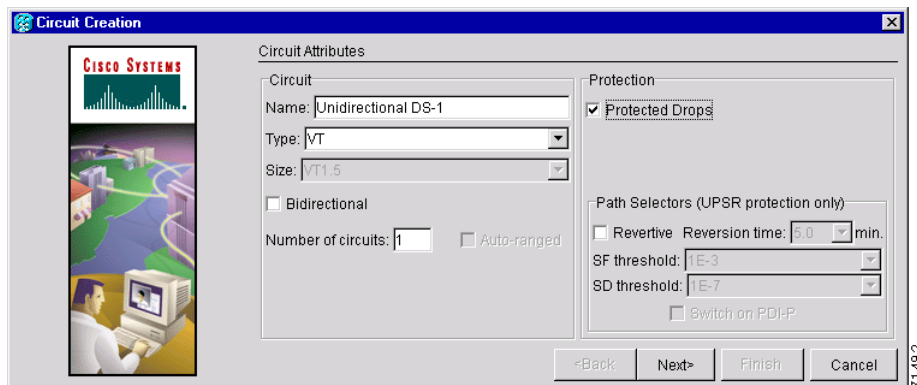
- Step 8** If **Fully Protected Path** is selected, choose one of the following:
- *Nodal Diversity Required*—Ensures that the primary and alternate paths within the PPMN portions of the complete circuit path are nodally diverse.
  - *Nodal Diversity Desired*— (default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
  - *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.
- Step 9** Click **Next**. Beneath Route Review and Edit, node icons are displayed so you can route the circuit manually. The green arrows pointing from the selected node to other network nodes indicate spans that are available for routing the circuit.
- Step 10** Complete the “[DLP-96 Provision a DS-1 or DS-3 Circuit Route](#)” task on page 6-21 for the DS-1 circuit you are creating.
- When provisioning a protected circuit, you only need to select one of the BLSR or 1+1 span paths from the source to the drop. If you select unprotected spans as part of the path, you must provision both the working and protect paths.
- Step 11** Click **Finish**. If you entered more than 1 in *Number of circuits*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat this procedure for each additional circuit.
- Step 12** When all the circuits are created, CTC displays the main Circuits window. Verify that the circuit(s) you created are correct.
- Step 13** Complete the “[NTP-58 Test Electrical Circuits](#)” procedure on page 6-23.
-

# NTP-53 Create a Unidirectional DS-1 Circuit with Multiple Drops

<b>Purpose</b>	This procedure creates a unidirectional DS-1 circuit with multiple drops.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box ([Figure 6-1](#)), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select VT.
  - *Size*—VT1.5 is the default. You cannot change it.
  - *Bidirectional*—Deselect for this circuit.
  - *Number of circuits*—Type the number of DS-1 circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use auto-ranging to create the circuits automatically.
  - *Auto-ranged*—Automatically selected if you enter more than 1 in the *Number of circuits* field. Leave selected if you are creating multiple DS-1 circuits with the same source and destination and you want CTC to create the circuits automatically. Deselect the box if you do not want CTC to create the circuits automatically.
  - *Protected Drops*—Select this box if you want the circuit routed to protect drops only, that is, to ONS 15454 cards that are in 1:1, 1:N, 1+1, or BLSR protection. If you select this box, CTC only displays protected cards as source and destination choices.

**Figure 6-3** Setting circuit attributes for a DS-1 circuit






- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Not available for VT circuits.
  - *SD threshold*—Not available for VT circuits.
  - *Switch on PDI-P*—Not available for VT circuits.
- Step 5** Click **Next**.
- Step 6** Complete the “[DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination](#)” task on page 6-20 for the DS-1 circuit you are creating.
- Step 7** Beneath Circuit Routing Preferences, deselect **Route Automatically**. When Route Automatically is not selected, Using Required Nodes/Spans and Review Route Before Circuit Creation are not available.

**Note**

**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to [Step 9](#).) When checked, CTC creates a fully-protected circuit route based on the path diversity option you choose. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

- Step 8** If Fully Protected Path is selected, choose one of the following:
- *Nodal Diversity Required*—Ensures that the primary and alternate paths within the PPMN portions of the complete circuit path are nodally diverse.
  - *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
  - *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.
- Step 9** Click **Next**. Beneath Route Review and Edit, node icons are displayed so you can route the circuit manually. The green arrows pointing from the selected node to other network nodes indicate spans that are available for routing the circuit.
- Step 10** Complete the “[DLP-96 Provision a DS-1 or DS-3 Circuit Route](#)” task on page 6-21 for the DS-1 circuit you are creating.
- When provisioning a protected circuit, you only need to select one path of BLSR or 1+1 spans from the source to the drop. If you select unprotected spans as part of the path, you must provision both the working and protect paths.
- Step 11** Click **Finish**. One of the following occurs, based on the circuit properties you chose:
- If you entered more than 1 in *Number of circuits* and selected *Auto-ranged*, CTC automatically creates the number of circuits entered in *Number of circuits*. If auto ranging cannot complete all the circuits, for example, because enough bandwidth is not available on the source or destination, a dialog box is displayed. Set the new source or destination for the remaining circuits, then click **Finish** to continue auto ranging.

## NTP-54 Create an Automatically Routed DS-3 Circuit

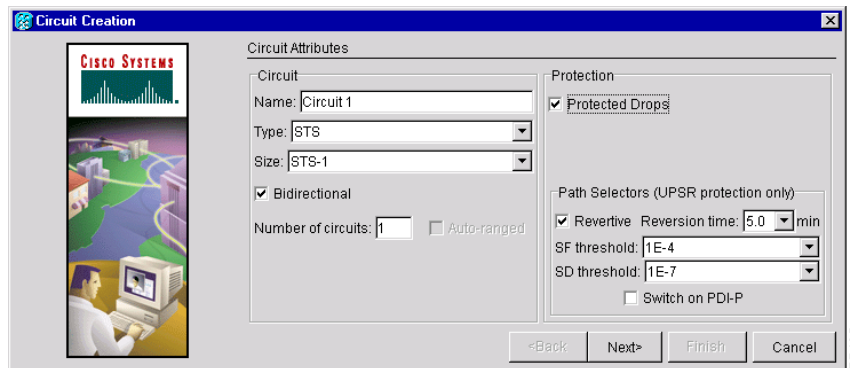
- If you entered more than 1 in *Number of circuits* and did not select *Auto-ranged*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat Steps 3–13 for each additional circuit.
  - After completing the circuit(s), CTC displays the Circuits window.
- Step 12** On the Circuits window, click the circuit that you want to route to multiple drops. The Delete Edit, and Search radio buttons become active.
- Step 13** Click **Edit**. The Edit Circuit window is displayed with the General tab selected.
- All nodes in the DCC network are displayed on the network. Circuit source and destination information appears under the source and destination nodes. To display a detailed view of the circuit, click **Show Detailed Map**. You can also rearrange a node icon by selecting the node with the left mouse button while simultaneously pressing **Ctrl**, then dragging the icon to the new location.
- Step 14** On the Edit Circuit dialog box, click the **Drops** tab. A list of existing drops is displayed.
- Step 15** Click **Create**.
- Step 16** On the Define New Drop dialog box, define the new drop:
- a. Node—Choose the target node for the circuit drop.
  - b. Slot—Choose the target card and slot.
  - c. Port, STS, VT, or DS1—Choose the port, STS, VT, or DS1 from the Port, STS, VT or DS1 pull-down menus. The card selected in Step b determines the fields that display. See [Table 6-2 on page 6-2](#) for a list of options.
  - d. Click **OK**. The new drop appears in the Drops list.
-  **Note** The routing preferences for the new drop will match those of the original drop. If the original circuit was created using a fully-protected path, any new drops will also have a fully-protected path from the circuit source.
- Step 17** If you need to create additional drops for the circuit, repeat Step 15–16 to create the additional drops.
- Step 18** Select **Close**. The Circuits window is displayed.
- Step 19** Verify that the new drops are displayed under the Destination column for the circuit you edited. If they do not appear repeat Steps 3–18, making sure all options are provisioned correctly.
- Step 20** Complete the “[NTP-58 Test Electrical Circuits](#)” procedure on page 6-23.

## NTP-54 Create an Automatically Routed DS-3 Circuit

<b>Purpose</b>	Creates an automatically routed DS-3 circuit. CTC routes the circuit automatically based on circuit creation parameters and the system load.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the node where you will create the circuit. See the “DLP-60 Log into CTC” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box (Figure 6-1 on page 6-6), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS. STS cross connects will carry the DS-3 circuit across the ONS 15454 network.
  - *Size*—Select STS-1.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Type the number of DS-3 circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use *Auto-Ranged* to create the circuits automatically.
  - *Auto-ranged*—This box is automatically selected if you enter more than 1 in the *Number of circuits* field. Leave selected if you are creating multiple DS-3 circuits with the same source and destination and you want CTC to create the circuits automatically. Deselect the box if you do not want CTC to create sequential circuits automatically.
  - *Protected Drops*—Select this box if you want CTC to display only protected cards and ports (cards and ports in 1:1, 1:N, 1+1, or BLSR protection) as source and destination choices.

**Figure 6-4** Setting circuit attributes for a DS-3 circuit



- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) threshold.
  - *SD threshold*—Set the UPSR path-level signal degrade bit error rate (BER) threshold.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

- Click **Next**.

**Step 5** Complete the “[DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination](#)” task on page 6-20.

**Step 6** Beneath Circuit Routing Preferences ([Figure 6-5 on page 6-14](#)), select **Route Automatically**. The following options are available:

- *Using Required Nodes/Spans*—Select this box to specify nodes and spans to include or exclude in the CTC-generated circuit route.
- *Review Route Before Creation*—Select this box to review and edit the circuit route before the circuit is created.



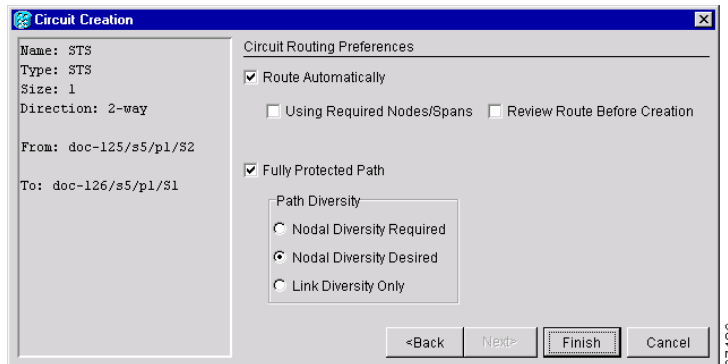
**Note**

**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to Step 8.) When checked, CTC creates a fully-protected circuit route based on the path diversity option you choose. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

**Step 7** If Fully Protected Path is selected, choose one of the following:

- *Nodal Diversity Required*—Ensures that the primary and alternate paths within PPMN portions of the complete circuit path are nodally diverse.
- *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
- *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

**Figure 6-5** Setting circuit routing preferences for a DS-3 circuit



**Step 8** If you selected Using Required Nodes/Spans complete the following substeps; otherwise, proceed to [Step 9](#):

- Click **Next**.
- Beneath Circuit Route Constraints, click a node or span on the circuit map.
- Click **Include** to include the node or span in the circuit. Click **Exclude** to exclude the node/span from the circuit. The order in which you select included nodes and spans determines the circuit sequence. Click spans twice to change the circuit direction.
- Repeat Step c for each node or span you wish to include or exclude.

- e. Review the circuit route. To change the circuit routing order, select a node from the Required Nodes/Lines or Excluded Notes Links lists, then click the **Up** or **Down** buttons to change the circuit routing order. Click **Remove** to remove a node or span.



**Note** If a node or span stays grey, that node or span is required.

- Step 9** If you selected Review Route Before Creation, complete the following substeps; otherwise, proceed to [Step 10](#):
- a. Click **Next**
  - b. Review the circuit route. To add or delete a circuit span, select a node on the circuit route. Blue arrows show the circuit route. Green arrows indicate spans that you can add. Click a span arrowhead, then click **Include** to include the span or **Remove** to remove the span.
  - c. If the provisioned circuit does not reflect the routing and configuration you want, click **Back** to verify and change circuit information. If the circuit needs to be routed to a different path, see the [“NTP-55 Create a Manually Routed DS-3 Circuit” task on page 6-15](#).
- Step 10** Click **Finish**. One of the following actions occurs based on the circuit properties you selected:
- If you entered more than 1 in *Number of circuits* and selected *Auto-ranged*, CTC automatically creates the number of circuits entered in *Number of circuits*. If auto ranging cannot complete all the circuits, for example, because enough bandwidth is not available at the source or destination, a dialog box is displayed. Set the new source or destination for the remaining circuits, then click **Finish** to continue auto ranging.
  - If you entered more than 1 in *Number of circuits* and did not select *Auto-ranged*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat Steps 3–11 for each additional circuit.
  - After completing the circuit(s), CTC displays the Circuits window.
- Step 11** On the Circuits window, verify that the circuit(s) you just created appear in the circuits list.
- Step 12** Complete the [“NTP-58 Test Electrical Circuits” procedure on page 6-23](#).

## NTP-55 Create a Manually Routed DS-3 Circuit

<b>Purpose</b>	This procedure creates a DS-3 circuit and allows you to choose the circuit route.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the node where you will create the circuit. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.

- Step 3** In the Circuit Creation dialog box (Figure 6-1 on page 6-6), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave this field blank, CTC will assign a default name to the circuit.
  - *Type*—Select STS. STS cross connects will carry the DS-3 circuit across the ONS 15454 network.
  - *Size*—Select STS-1.
  - *Bidirectional*—Leave this field checked (default).
  - *Number of circuits*—Type the number of DS-3 circuits you want to create. The default is 1.
  - *Auto-ranged*—Applies to automatically-routed circuits only. Leave this box unchecked (default).
  - *Protected Drops*—Select this box if you want the circuit routed to protect drops only, that is, to ONS 15454 cards that are in 1:1, 1:N, 1+1, or BLSR protection. If you select this box, CTC only displays protected cards as source and destination choices.
- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
  - *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.
- Step 5** Click **Next**.
- Step 6** Complete the “DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination” task on page 6-20 for the DS-3 circuit you are creating.
- Step 7** Beneath Circuit Routing Preferences (Figure 6-5 on page 6-14), deselect **Route Automatically**.

**Note**


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**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to Step 9.) When checked, CTC compares your manually-provisioned circuit route with the specified path diversity option. If the path does not meet the specified path diversity requirement, CTC displays an error message and allows you to change the circuit path. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

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- Step 8** If Fully Protected Path is selected, choose one of the following:
- *Nodal Diversity Required*—Ensures that the primary and alternate paths within the PPMN portions of the complete circuit path are nodally diverse.
  - *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
  - *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

- Step 9** Click **Next**. Beneath Route Review and Edit, node icons are displayed so you can route the circuit manually. The green arrows pointing from the selected node to other network nodes indicate spans that are available for routing the circuit.
- Step 10** Complete the “[DLP-96 Provision a DS-1 or DS-3 Circuit Route](#)” task on page 6-21 for the DS-3 you are creating.
- When provisioning a protected circuit, you only need to select one of the BLSR or 1+1 span paths from the source to the drop. If you are in a UPSR and PPMN, you must provision both the working and protect paths.
- Step 11** Click **Finish**. If you entered more than 1 in *Number of circuits*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat this procedure for each additional circuit.
- Step 12** When all the circuits are created, CTC displays the main Circuits window. Verify that the circuit(s) you created appear in the window.
- Step 13** Complete the “[NTP-58 Test Electrical Circuits](#)” procedure on page 6-23.

## NTP-56 Create a Unidirectional DS-3 Circuit with Multiple Drops

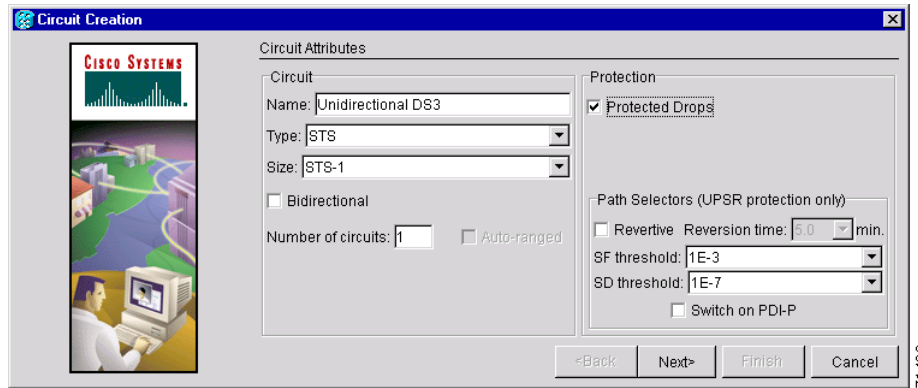
<b>Purpose</b>	This procedure creates a unidirectional DS-3 circuit with multiple drops.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance</a> , page 6-3 <a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box ([Figure 6-1 on page 6-6](#)), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select STS-1.
  - *Bidirectional*—Deselect for this circuit.
  - *Number of circuits*—Type the number of DS-1 circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use auto-ranging to create the circuits automatically.
  - *Auto-ranged*—This box is automatically selected when you enter more than 1 in the *Number of circuits* field. Leave selected if you are creating multiple DS-3 circuits with the same source and destination and you want CTC to create the circuits automatically. Deselect the box if you do not want CTC to create the circuits automatically.



- *Protected Drops*—Select this box if you want the circuit routed to protect drops only, that is, to ONS 15454 cards that are in 1:1, 1:N, 1+1, or BLSR protection. If you select this box, CTC only displays protected cards as source and destination choices.

**Figure 6-6** Setting circuit attributes for a unidirectional DS-3 circuit



**Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:

- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
- *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
- *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
- *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

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

**Step 6** Complete the “[DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination](#)” task on page 6-20 for the DS-3 circuit you are creating.

**Step 7** De-select **Route Automatically**. When Route Automatically is not selected, Using Required Nodes/Spans and Review Route Before Circuit Creation are not available.



**Note**

**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to [Step 9](#).) When checked, CTC creates a fully-protected circuit route based on the path diversity option you choose. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

**Step 8** If Fully Protected Path is selected, choose one of the following:

- *Nodal Diversity Required*—Ensures that the primary and alternate paths within the PPMN portions of the complete circuit path are nodally diverse.



- *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
- *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

**Step 9** Click **Next**. Beneath Route Review and Edit, node icons are displayed so you can route the circuit manually. The green arrows pointing from the selected node to other network nodes indicate spans that are available for routing the circuit.

**Step 10** Complete the “[DLP-96 Provision a DS-1 or DS-3 Circuit Route](#)” task on page 6-21 for the DS-3 you are creating.

When provisioning a protected circuit, you only need to select one path of BLSR or 1+1 span paths from the source to the drop. If you select unprotected spans as part of the path, you must select both the working and protect paths.

**Step 11** Click **Finish**. One of the following occurs, based on the circuit properties you selected:

- If you entered more than 1 in *Number of circuits* and selected *Auto-ranged*, CTC automatically creates the number of circuits entered in *Number of circuits*. If auto ranging cannot complete all the circuits, for example, because enough bandwidth is not available on the source or destination, a dialog box is displayed. Set the new source or destination for the remaining circuits, then click **Finish** to continue auto ranging.
- If you entered more than 1 in *Number of circuits* and did not select *Auto-ranged*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat Steps 3–11 for each additional circuit.
- After completing the circuit(s), CTC displays the Circuits window.

**Step 12** On the Circuits window, click the circuit that you want to route to multiple drops. The Delete, Edit, and Search radio buttons become active.

**Step 13** Click **Edit**. The Edit Circuit window is displayed with the General tab selected. All nodes in the DCC network are displayed on the network map. Circuit source and destination information appears under the source and destination nodes. To display a detailed view of the circuit, click **Show Detailed Map**. You can rearrange the node icons by selecting the node with the left mouse button while simultaneously pressing **Ctrl**, then dragging the icon to the new location.

**Step 14** On the Edit Circuit dialog box, click the **Drops** tab. A list of existing drops is displayed.

**Step 15** Click **Create**.

**Step 16** On the Define New Drop dialog box, define the new drop:

- a. *Node*—Select the target node for the circuit drop.
- b. *Slot*—Select the target card and slot
- c. *Port, STS*—Select the port and/or STS from the Port and STS pull-down menus. The card selected in Step b determines which of these fields display. See [Table 6-2 on page 6-2](#) for a list of options.
- d. Click **OK**. The new drop appears in the Drops list.



**Note** The routing preferences for the new drop will match those of the original drop. If the original circuit was created using a fully-protected path, any new drops will also have a fully-protected path from the circuit source.

**Step 17** If you need to create additional drops for the circuit, repeat Steps 15–16 to create the additional drops.

- Step 18** Click **Close**. The Circuits window displays.
- Step 19** Verify that the new drops are displayed under the Destination column for the circuit you edited. If they do not appear, repeat this procedure, making sure all options are provisioned correctly.
- Step 20** Complete the “[NTP-58 Test Electrical Circuits](#)” procedure on page 6-23.

## DLP-95 Provision a DS-1 or DS-3 Circuit Source and Destination

<b>Purpose</b>	This task provisions an electrical circuit source and destination for a DS-1 or DS-3 circuit.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Provision the circuit properties according to your specific circuit procedure
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** After you have selected the circuit properties in the Circuit Source dialog box according to the specific circuit creation procedure, you are ready to provision the circuit source.

- Step 1** From the Node pull-down menu, select the node where the source will originate.
- Step 2** From the Slot pull-down menu, select the slot containing the DS1-14, DS3XM-6, or DS-3 card where the circuit will originate.
- Step 3** From the Port pull-down menu, select the source DS-1, DS3XM-6, or DS-3 port.
- Step 4** If you chose DS3XM-6, select the source port and DS-1 from the Port and DS1 submenus.
- Step 5** If you need to create a secondary source, for example, a UPSR bridge/selector circuit entry point in a multivendor UPSR, click **Use Secondary Source** and repeat Steps 1–3 to define the secondary source. If you do not need to create a secondary source, go to [Step 6](#).
- Step 6** Click **Next**.
- Step 7** From the Node pull-down menu, select the destination (termination) node.
- Step 8** From the Slot pull-down menu, select the slot containing the destination card. The destination is typically a DS-1, DS3XM-6, or DS-3 card. You can also select an OC-N card to map the DS-1 to a VT1.5 for optical transport or to map the DS-3 circuit to an STS.
- Step 9** Depending on the destination card, select the destination port, STS, VT, or DS1 from the sub-menus that display based on the card selected in Step 3. See [Table 6-2 on page 6-2](#) for a list of valid options. CTC does not display ports, STSs, VTs, or DS1s if they are already in use by other circuits.
- Step 10** If you need to create a secondary destination, for example, a UPSR bridge/selector circuit exit point in a multivendor UPSR, click **Use Secondary Destination** and repeat Steps 7–9 to define the secondary destination.
- Step 11** Click **Next**.
- Step 12** Finish the circuit creation procedure that referred you to this task.

## DLP-96 Provision a DS-1 or DS-3 Circuit Route

<b>Purpose</b>	This task provisions the circuit route for DS-1 or DS-3 manually-routed circuits.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Provision the circuit properties according to your specific circuit procedure
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** Starting with a span on the source node, click the arrowhead of the span you want the circuit to travel. The arrow turns white. Beneath Selected Span, the *From* and *To* fields display span information. The source VT (DS-1) or source STS (DS-3) is displayed.

**Step 2** If you want to change the source VT, adjust the *Source VT* field; otherwise, proceed to the next step.



**Note** VT will be grey on a DS-3 circuit.

**Step 3** If you want to change the source STS, change it in the *Source STS* field; otherwise, proceed to the next step.

**Step 4** Click **Add Span**. The span is added to the Included Spans list and the span arrow turns blue.

**Step 5** Repeat Steps 2–4 until the circuit is provisioned from the source to the destination node through all intermediary nodes.

When provisioning a protected circuit, you only need to select one of the BLSR or 1+1 span paths from the source to the drop. If you select unprotected spans as part of the path, you must provision both the working and protect paths.

**Step 6** Finish the circuit creation procedure that referred you to this task.

## NTP-57 Create a VT Tunnel

<b>Purpose</b>	This procedure creates a VT tunnel from source to destination nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

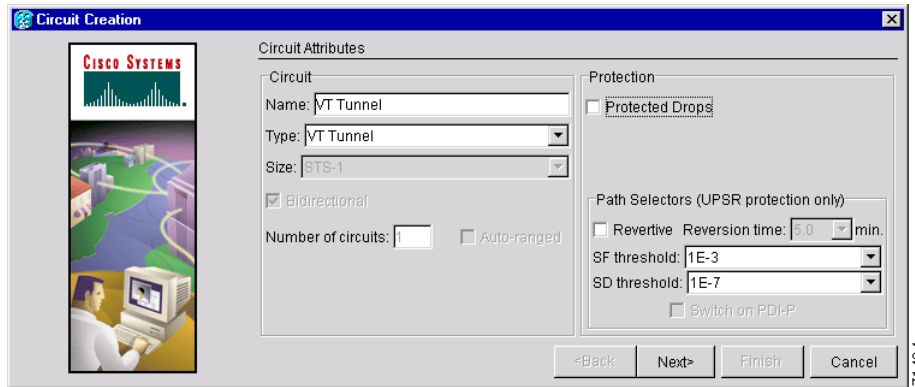
**Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.

**Step 2** Click the **Circuits** tab, then click **Create**.

**Step 3** In the Circuit Creation dialog box ([Figure 6-1](#)), complete the following fields:

- *Name*—Assign a name to the VT tunnel. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the tunnel.
- *Type*—Choose VT Tunnel. The other fields in the dialog box become invalid (greyed out).

**Figure 6-7** Setting attributes for a VT tunnel



- Step 4** Click **Next**.
- Step 5** Beneath Circuit Source, select the node where the VT tunnel will originate from the Node pull-down menu.
- Step 6** Click **Next**.
- Step 7** Beneath Circuit Destination, select the node where the VT tunnel will terminate from the Node pull-down menu.
- Step 8** Click **Next**.
- Step 9** Beneath Circuit Routing Preferences (Figure 6-5 on page 6-14), select **Route Automatically**. The following options are available:
- *Using Required Nodes/Spans*—Select this box to specify nodes and spans to include or exclude in the CTC-generated tunnel route. If you select this option, proceed to the next step.
  - *Review Route Before Creation*—Select this box to review and edit the VT tunnel route before the circuit is created. If you select this option, proceed to Step 11.



**Note** Even though Fully Protect Path is not selectable, if the circuit route is fully-protected through a 1+1 or BLSR, it is considered protected when used for routing VT circuits.

- Step 10** If you selected Using Required Nodes/Spans:
- Click **Next**.
  - Beneath Circuit Route Constraints, click a span on the VT tunnel map.
  - Click **Include** to include the node or span in the VT tunnel. Click **Exclude** to exclude the node/span from the VT tunnel. The order in which you select included nodes and spans sets the VT tunnel sequence. Click spans twice to change the circuit direction.
  - Repeat Step c for each node or span you wish to include or exclude.
  - Review the VT tunnel route. To change the tunnel routing order, select a node under the Required Nodes/Lines or Excluded Notes Links lists, then click the **Up** or **Down** buttons to change the tunnel routing order. Click **Remove** to remove a node or span.

- Step 11** If you selected Review Route Before Creation:
- Click **Next**.
  - Review the tunnel route. To add or delete a tunnel span, select a node on the tunnel route. Blue arrows show the tunnel route. Green arrows indicate spans that you can add. Click a span arrowhead, then click **Include** to include the span or **Remove** to remove the span.
  - If the provisioned tunnel does not reflect the routing and configuration you want, click **Back** to verify and change tunnel information.
- Step 12** Click **Finish**. The Circuits window displays.
- Step 13** Verify that the circuit(s) just created appear in the circuits list.
- Step 14** Complete the “[NTP-58 Test Electrical Circuits](#)” procedure on page 6-23.

## NTP-58 Test Electrical Circuits



### Note

This procedure assumes you completed facility loopback tests to test the fibers and cables from the source and destination ONS 15454s to the DSX. If this has not been completed, do so now before completing the electrical circuit test procedure.

<b>Purpose</b>	Use this procedure to test a DS-1 and DS-3 circuit.
<b>Tools/Equipment</b>	A test set and all appropriate cables
<b>Prerequisite Procedures</b>	One of the following: <a href="#">NTP-51 Create an Automatically Routed DS-1 Circuit, page 6-5</a> <a href="#">NTP-52 Create a Manually Routed DS-1 Circuit, page 6-8</a> <a href="#">NTP-53 Create a Unidirectional DS-1 Circuit with Multiple Drops, page 6-10</a> <a href="#">NTP-54 Create an Automatically Routed DS-3 Circuit, page 6-12</a> <a href="#">NTP-55 Create a Manually Routed DS-3 Circuit, page 6-15</a> <a href="#">NTP-56 Create a Unidirectional DS-3 Circuit with Multiple Drops, page 6-17</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Double-click the circuit source card that you want to test.
- Step 3** Select the **Provisioning > Line** tabs.
- Step 4** Perform the following steps for the source port of the circuit you are testing:
- From the port Line Length pull-down menu, select the line length for the distance (in feet) between the DSX (if used) or circuit termination point and the source ONS 15454.
  - From the Status pull-down menu, select **In Service**.
  - Click **Apply**.

- Step 5** From the View menu, select **Go to Network View**.
- Step 6** Double-click the circuit destination node icon.
- Step 7** Repeat Steps 2–4 for the circuit destination card and port.
- Step 8** Attach loopback cables to the circuit destination card.
- Verify the integrity of the loopback cable by looping the test set transmit (TX) to the test set receive (RX). If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before going to Step b.
  - Attach the loopback cable to the port you are testing. Connect the transmit (TX) to the receive (RX) of the port.
- Step 9** Attach loopback cables to the circuit source node.
- Verify the integrity of loopback cable by looping the test set transmit (TX) to the test set receive (RX). If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly before going to Step b.
  - Attach the loopback cable to the port you are testing. Connect the test set to the circuit source port: (transmit (TX) port of the test set to the circuit receive (RX) port; test set receive (RX) port to the circuit transmit (TX) port.
- Step 10** Configure the test set for the ONS 15454 card that is the source of the circuit you are testing:
- DS-1—If you are testing an unmuxed DS-1, you must have a DSX-1 panel or a direct DS-1 interface into the ONS 15454. Set the test set for DS-1. For information about configuring your test set, consult your test set user guide.
  - DS-3—If you are testing a clear channel DS-3, you must have a DSX-3 panel or a direct DS-3 interface into the ONS 15454. Set the test set for clear channel DS-3. For information about configuring your test set, consult your test set user guide.
  - DS3XM-6—If you are testing a DS-1 circuit on a DS3XM=6 card you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for a muxed DS3. After you select muxed DS-3, choose the DS-1 to test on the muxed DS-3. For information about configuring your test set, consult your test set user guide.
  - EC-1—If you are testing a DS-1 on an EC1 card, you must have a DSX-3 panel or a direct DS-3 interface to the ONS 15454. Set the test set for an STS-1. After you select STS-1, choose the DS1 to test the STS-1. For information about configuring your test set, consult your test set user guide.
- Step 11** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps 1–10 to make sure the test set and cabling is configured correctly.
- Step 12** Inject errors from the test set. Verify that the errors display at the source and destination nodes.
- Step 13** Clear the PMs for the ports that you tested. See the [“DLP-130 Clear Selected PM Counts” task on page 8-15](#) for instructions.
- Step 14** Perform protection switch testing appropriate to SONET topology:
- For UPSRs, see the [“DLP-94 UPSR Protection Switching Test” task on page 5-29](#)
  - For BLSRs see the [“DLP-91 BLSR Ring Switch Test” task on page 5-21](#).
- Step 15** Perform a Bit Error Rate Test (BERT) for 12 hours or a duration dictated by local testing custom. For information about configuring your test set for BERT, see your test set user guide.
- Step 16** After the BERT is complete, print the results or save them to a disk for future reference. For information about printing or saving test results see your test set user guide.

- Step 17** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

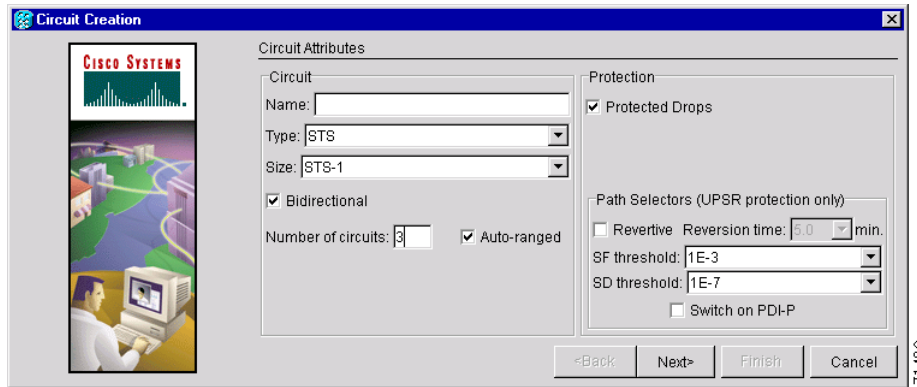
## NTP-59 Create an Automatically Routed Optical Circuit

<b>Purpose</b>	This procedure creates an automatically-routed bidirectional or unidirectional optical circuit, including STS-1 and concatenated STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, or STS-192c speeds.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box ([Figure 6-1](#)), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the optical circuit size: STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, or STS-192c.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Type the number of optical circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use auto-ranging to create the circuits automatically.
  - *Auto-ranged*—This checkbox is automatically selected when you enter more than 1 in the *Number of circuits* field. Leave selected if you are creating multiple optical circuits with the same source and destination and you want CTC to create the circuits automatically. Deselect the box if you do not want CTC to create the circuits automatically.
  - *Protected Drops*—Select this box if you want the circuit routed to protected drops only, that is, to ONS 15454 cards that are in 1:1, 1:N, 1+1, or BLSR protection. If you select this box, CTC only displays protected cards as source and destination choices.

Figure 6-8 Setting circuit attributes for an optical circuit

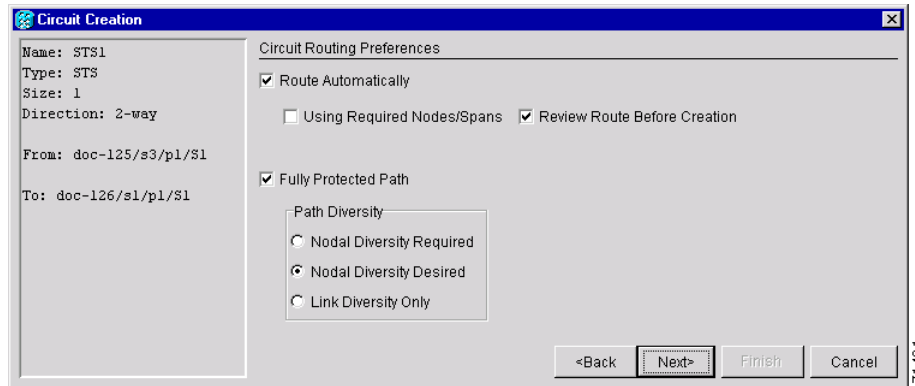


- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal fail bit error rate (BER) threshold.
  - *SD threshold*—Set the UPSR path-level signal degrade BER threshold.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.
- Step 5** Click **Next**.
- Step 6** Complete the “[DLP-97 Provision an Optical Circuit Source and Destination](#)” task on page 6-32 for the optical circuit you are creating.
- Step 7** Beneath Circuit Routing Preferences (Figure 6-9), select **Route Automatically**. The following options are available:
- *Using Required Nodes/Spans*—Select this checkbox to specify nodes and spans to include or exclude in the CTC-generated circuit route.
  - *Review Route Before Creation*—Select this checkbox to review and edit the circuit route before the circuit is created.
- Step 8** **Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to [Step 9](#).) When checked, CTC creates a fully-protected circuit route based on the path diversity option you choose. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist. Choose one of the following:
- *Nodal Diversity Required*—Ensures that the primary and alternate paths within PPMN portions of the complete circuit path are nodally diverse.
  - *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.



- *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

**Figure 6-9** Setting circuit routing preferences for an optical circuit



- Step 9** If you selected *Using Required Nodes/Spans* complete the following substeps; otherwise, proceed to the next step:
- Click **Next**.
  - Beneath *Circuit Route Constraints*, click a node or span on the circuit map.
  - Click **Include** to include the node or span in the circuit, or click **Exclude** to exclude the node or span from the circuit. The order in which you select included nodes and spans sets the circuit sequence. Click spans twice to change the circuit direction.
  - Repeat Step c. for each node or span you wish to include or exclude.
  - Review the circuit route. To change the circuit routing order, select a node under the *Required Nodes/Lines* or *Excluded Notes Links* lists, then click the **Up** or **Down** buttons to change the circuit routing order. Click **Remove** to remove a node or span.
- Step 10** If you selected *Review Route Before Creation*, complete the following substeps; otherwise, proceed to the next step:
- Click **Next**
  - Review the circuit route. To add or delete a circuit span, select a node on the circuit route. Blue arrows show the circuit route. Green arrows indicate spans that you can add. Click a span arrowhead, then click **Include** to include the span or **Remove** to remove the span.
  - If the provisioned circuit does not reflect the routing and configuration you want, click **Back** to verify and change circuit information. If the circuit needs to be routed to a different path, see the [“NTP-60 Create a Manually Routed Optical Circuit” task on page 6-28](#) to assign the circuit route yourself.
- Step 11** Click **Finish**. One of the following occurs, based on the circuit properties you provisioned in the *Circuit Creation* dialog box:
- If you entered more than 1 in *Number of circuits* and selected *Auto-ranged*, CTC automatically creates the number of circuits entered in *Number of circuits*. If auto ranging cannot complete all the circuits, for example, because enough bandwidth is not available on the source or destination, a dialog box is displayed. Set the new source or destination for the remaining circuits, then click **Finish** to continue auto ranging.

- If you entered more than 1 in *Number of circuits* and did not select *Auto-ranged*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat Steps [Step 3–11](#) for each additional circuit.
  - After completing the circuit(s), CTC displays the Circuits window.
- Step 12** On the Circuits window, verify that the circuit(s) you created appear in the circuits list.
- Step 13** Complete the “[NTP-62 Test Optical Circuits](#)” procedure on page 6-34.
- 

## NTP-60 Create a Manually Routed Optical Circuit

<b>Purpose</b>	This procedure creates a manually-routed, bidirectional or unidirectional optical circuit, including STS-1 and concatenated STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, or STS-192c speeds.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance</a> , page 6-3
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box, complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the optical circuit size. Choices are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, or STS-192c.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Type the number of optical circuits you want to create. The default is 1.
  - *Auto-ranged*—Applies to automatically-routed circuits only. Leave this box unchecked (default).
  - *Protected Drops*—Select this box if you want the circuit routed to protect drops only, that is, to ONS 15454 cards that are in 1:1, 1:N, 1+1, or BLSR protection. If you select this box, CTC only displays protected cards as source and destination choices.
- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.

- *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
- *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
- *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

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

**Step 6** Complete the “[DLP-97 Provision an Optical Circuit Source and Destination](#)” task on page 6-32 for the optical circuit you are creating.

**Step 7** Beneath Circuit Routing Preferences ([Figure 6-9 on page 6-27](#)), deselect **Route Automatically**.



**Note**

**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to [Step 9](#).) When checked, CTC compares your manually-provisioned circuit route with the specified path diversity option. If the path does not meet the specified path diversity requirement, CTC displays an error message and allows you to change the circuit path. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

**Step 8** If Fully Protected Path is selected, choose one of the following:

- *Nodal Diversity Required*—Ensures that the primary and alternate paths within the PPMN portions of the complete circuit path are nodally diverse.
- *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
- *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

**Step 9** Click **Next**. Beneath Route Review and Edit, node icons are displayed so you can route the circuit manually. The green arrows pointing from the selected node to other network nodes indicate spans that are available for routing the circuit.

**Step 10** Complete the “[DLP-98 Provision an Optical Circuit Route](#)” task on page 6-33.

When provisioning a protected circuit, you only need to select one path of BLSR or 1+1 spans from the source to the drop. If you select unprotected spans as part of the path, select two different paths for the unprotected segment of the path.

**Step 11** Click **Finish**. If you entered more than 1 in *Number of circuits*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat Steps 3–11 for each additional circuit.

**Step 12** When all the circuits are created, CTC displays the main Circuits window. Verify that the circuit(s) you created appear in the window.

**Step 13** Complete the “[NTP-62 Test Optical Circuits](#)” procedure on page 6-34.

# NTP-61 Create a Unidirectional Optical Circuit with Multiple Drops

<b>Purpose</b>	This procedure creates a unidirectional OC-N circuit with multiple traffic drops (circuit destinations)
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box, complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the circuit size: STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, or STS-192c.
  - *Bidirectional*—Deselect this checkbox for this circuit.
  - *Number of circuits*—Type the number of circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use auto-ranging to create the circuits automatically.
  - *Auto-ranged*—This checkbox is automatically selected when you enter more than 1 in the *Number of circuits* field. Leave selected if you are creating multiple circuits with the same source and destination and you want CTC to create the circuits automatically. Deselect the box if you do not want CTC to create the circuits automatically.
  - *Protected Drops*—Select this box if you want the circuit routed to protect drops only, that is, to ONS 15454 cards that are in 1:1, 1:N, 1+1, or BLSR protection. If you select this box, CTC only displays protected cards as source and destination choices.
- Step 4** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
  - *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

- Click **Next**.

- Step 5** Complete the “[DLP-97 Provision an Optical Circuit Source and Destination](#)” task on page 6-32 for the circuit you are creating.
- Step 6** Beneath Circuit Routing Preferences, deselect **Route Automatically**. When deselected, Using Required Nodes/Spans and Review Route Before Circuit Creation are not available.

**Note**

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**Fully Protected Path** is checked by default to route the circuit over a protected path. (If you do not want to route the circuit on a protected path, uncheck the *Fully Protected Path* checkbox and go to [Step 8](#).) When checked, CTC creates a fully-protected circuit route based on the path diversity option. Fully-protected paths may or may not have UPSR path segments (with primary and alternate paths), and the path diversity options only apply to UPSR path segments, if any exist.

---

- Step 7** If Fully Protected Path is selected, choose one of the following:
- *Nodal Diversity Required*—Ensures that the primary and alternate paths within the PPMN portions of the complete circuit path are nodally diverse.
  - *Nodal Diversity Desired*—(default) Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates link-diverse paths for the PPMN portion of the complete circuit path.
  - *Link Diversity Only*—Specifies that only link-diverse primary and alternate paths for PPMN portions of the complete circuit path are needed. The paths may be node-diverse, but CTC does not check for node diversity.

**Note**

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For manually-routed circuits, CTC checks your manually-provisioned path against the path diversity option you choose. If the path does not meet the path diversity requirement that is specified, CTC displays an error message.

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- Step 8** Click **Next**. Beneath Route Review and Edit, node icons are displayed so you can route the circuit manually. The green arrows pointing from the selected node to other network nodes indicate spans that are available for routing the circuit.
- Step 9** Complete the “[DLP-98 Provision an Optical Circuit Route](#)” task on page 6-33.

**Note**

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When provisioning a protected circuit, you only need to select one of the BLSR or 1+1 span paths from the source to the drop. If you select unprotected spans as part of the path, you must provision both the working and protect paths.

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- Step 10** Click **Finish**. One of the following results occurs, based on the circuit properties you provisioned:
- If you entered more than 1 in *Number of circuits* and selected *Auto-ranged*, CTC automatically creates the number of circuits entered in *Number of circuits*. If auto ranging cannot complete all the circuits, for example, because enough bandwidth is not available on the source or destination, a dialog box is displayed. Set the new source or destination for the remaining circuits, then click **Finish** to continue auto ranging.
  - If you entered more than 1 in *Number of circuits* and did not select *Auto-ranged*, the Circuit Creation dialog box is displayed so you can create the remaining circuits. Repeat Steps 3–10 for each additional circuit.
  - After completing the circuit(s), CTC displays the Circuits window.
- Step 11** On the Circuits window, click the circuit that you want to route to multiple drops. The Delete, Edit, and Search radio buttons become active.

- Step 12** Click **Edit**. The Edit Circuit window is displayed with the General tab selected. All nodes in the DCC network are displayed on the network. Circuit source and destination information appears under the source and destination nodes. To display a detailed view of the circuit, click **Show Detailed Map**. You can rearrange the node icons by selecting the node with the left mouse button, pressing **Ctrl** and dragging the icon to the new location.
- Step 13** On the Edit Circuit dialog box, click the **Drops** tab. A list of existing drops is displayed.
- Step 14** Click **Create**.
- Step 15** On the Define New Drop dialog box, define the new drop:
- Node—Select the target node for the circuit drop.
  - Slot—Select the target card and slot.
  - Port, STS—Select the port and/or STS from the Port and STS pull-down menus. The choice in these menus depends on the card selected in Step b. See [Table 6-2 on page 6-2](#) for a list of options.
  - Click **OK**. The new drop appears in the Drops list.
- Step 16** If you need to create additional drops on the circuit, repeat Steps 13–15.
- Step 17** Click **Close**. The Circuits window appears.
- Step 18** Verify that the new drops are displayed under the Destination column for the circuit you edited. If they do not appear, repeat Steps 14–17 making sure all options are provisioned correctly.
- Step 19** Complete the “[NTP-62 Test Optical Circuits](#)” procedure on page 6-34.
- 

## DLP-97 Provision an Optical Circuit Source and Destination

<b>Purpose</b>	This task provisions the source and destination cards for an optical circuit.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** From the Node pull-down menu, select the node where the circuit will originate.
- Step 2** From the Slot pull-down menu, select the slot containing the optical card where the circuit originates. (If a card’s capacity is fully utilized, it does not appear in the menu.)
- Step 3** Depending on the circuit origination card, select the source port and/or STS from the Port and STS sub-menus. The Port menu is only available if the card has multiple ports. STSs are not displayed if they are already in use by other circuits.



**Note** The STSs that display depend on the card, circuit size, and protection scheme. For example, if you create an STS-3c circuit on an OC-12 card in a UPSR, only four STSs are available. If you create an STS-3c circuit on an OC-12 card in a BLSR, two STSs are available because of the BLSR protection characteristics.

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- Step 4** If you need to create a secondary source, for example, a UPSR bridge/selector circuit entry point in a multivendor UPSR, click **Use Secondary Source** and repeat Steps 1–3 to define the secondary source.

- Step 5** Click **Next**.
- Step 6** From the Node pull-down menu, select the destination node.
- Step 7** From the Slot pull-down menu, select the slot containing the optical card where the circuit will terminate (destination card). (If a card's capacity is fully utilized, the card does not appear in the menu.)
- Step 8** Depending on the card selected in Step 2, select the destination port and/or STS from the Port and STS sub-menus. The Port menu is available only if the card has multiple ports. The STSs that display depend on the card, circuit size, and protection scheme.
- Step 9** If you need to create a secondary destination, for example, a UPSR bridge/selector circuit entry point in a multivendor UPSR, click **Use Secondary Destination** and repeat Steps 6–8 to define the secondary destination.
- Step 10** Click **Next**.
- Step 11** Return to your originating procedure (NTP).
- 

## DLP-98 Provision an Optical Circuit Route

<b>Purpose</b>	This task provisions an optical circuit route for manually-routed circuits.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-97 Provision an Optical Circuit Source and Destination, page 6-32</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Click the arrowhead of the span you want the circuit to travel. The arrow turns white. Beneath Selected Span, the *From* and *To* fields display span information. The source STS displays in the *Source STS* field.
- Step 2** If you want to change the source STS, adjust it in the *Source STS* field, otherwise go to [Step 3](#).
- Step 3** Click **Add Span**. The span is added to the Included Spans list and the span arrow turns blue.
- Step 4** Repeat this task until the circuit is provisioned from the source to the destination node.
- Step 5** Return to the circuit creation procedure that referred you to this task.
-

# NTP-62 Test Optical Circuits


**Note**

This procedure assumes you completed facility loopback tests to test the fibers and cables from the source and destination ONS 15454s to the fiber distribution panel or the DSX. If this has not been done, do so now before completing the optical circuit test procedure.

<b>Purpose</b>	Use this procedure to test an optical circuit.
<b>Tools/Equipment</b>	Test set capable of optical speeds, appropriate fibers and attenuators
<b>Prerequisite Procedures</b>	<a href="#">NTP-59 Create an Automatically Routed Optical Circuit, page 6-25</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

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- Step 1** Log into the node where you will create the circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions. The default (node) view displays.
- Step 2** Double-click the circuit source card.
- Step 3** Select the **Provisioning > Line** tabs.
- Step 4** From Status pull-down menu for the circuit source port, select **In Service**. (The menu displays when you click the Status field.) Click **Apply**.
- Step 5** From the View menu, select **Go to Network View**.
- Step 6** Double-click the circuit destination node icon.
- Step 7** On the ONS 15454 shelf graphic, double-click the circuit destination card.
- Step 8** Select the **Provisioning > Line** tabs.
- Step 9** From the Status pull-down menu for the circuit destination port, select **In Service**. (The menu displays when you click the Status field.) Click **Apply**.
- Step 10** Set up the loopback cable at the destination node:
- Test the loopback cable by connecting one end to the test set transmit (TX) port and the other end to the test receive (RX) port. If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly.
  - Install the loopback cable on the port you are testing. Connect the transmit (TX) to the receive (RX) of the port being tested.
- Step 11** Set up the loopback cable at the source node:
- Test the loopback cable by connecting one end to the test set transmit (TX) port and the other end to the test receive (RX) port. If the test set does not run error-free, check the cable for damage and check the test set to make sure it is set up correctly.
  - At the source node attach the loopback cable to the port you are testing. Connect the test set to the circuit source port: transmit (TX) port of the test set to the circuit receive (RX) port; test set receive (RX) port to the circuit transmit (TX) port.
- Step 12** Configure the test set for the source ONS 15454 card:



- *OC-3 cards*—You will test either an OC-3c (the “c” denotes concatenated) or a muxed OC-3. If you are testing an OC-3c, configure the test set for an OC-3c. If you are testing a muxed OC-3, configure the test set for a muxed OC-3 and choose the DS-3 and/or DS-1 you will test. For information about configuring your test set, consult your test set user guide.
  - *OC-12 cards*—You will test either an OC-12c or a muxed OC-12. If you are testing an OC-12c, configure the test set for an OC-12c. If you are testing a muxed OC-12, configure the test set for a muxed OC12 and choose the DS-3 and/or DS-1 you will test. For information about configuring your test set, consult your test set user guide.
  - *OC-48 cards*—You will test either an OC-48c or a muxed OC-48. If you are testing an OC-48c configure the test set for an OC-48c. If you are testing a muxed OC-48, configure the test set for a muxed OC-48 and choose the DS-3 and/or DS-1 you will test. For information about configuring your test set, consult your test set user guide.
  - *OC-192 cards*—You will test an OC-192c or a muxed OC-192. If you are testing an OC-192c configure the test set for an OC-192c. If you are testing a muxed OC-192, configure the test set for a muxed OC-192 and choose the DS-3 and/or DS-1 you will test. For information about configuring your test set, consult your test set user guide.
- Step 13** Verify that the test set displays a clean signal. If a clean signal is not displayed, repeat Steps 1–12 to make sure you have configured the test set and cabling.
- Step 14** Inject errors from the test set. Verify that the errors display at the source and destination nodes.
- Step 15** Clear the PMs for the ports that you tested. See the “[DLP-130 Clear Selected PM Counts](#)” task on page 8-15 for instructions.
- Step 16** Perform protection switch testing appropriate to SONET topology:
- For UPSRs, see the “[DLP-94 UPSR Protection Switching Test](#)” task on page 5-29.
  - For BLSRs see the “[DLP-91 BLSR Ring Switch Test](#)” task on page 5-21.
- Step 17** Perform a Bit Error Rate Test (BERT) for 12 hours or a duration dictated by local testing custom. For information about configuring your test set for BERT, see your test set user guide.
- Step 18** After the BERT is complete, print the results or save them to a disk for future reference. For information about printing or saving test results see your test set user guide.
- Step 19** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## NTP-63 Create E Series Ethernet Circuits

<b>Purpose</b>	This procedure creates an EtherSwitch, shared packet ring, or hub and spoke Ethernet circuit.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance</a> , page 6-3
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Log into an ONS 15454 on the network where you will create an Ethernet circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.

## DLP-99 Determine Available VLANs

- Step 2** Determine which Ethernet card(s) are installed at the circuit source and destination nodes. Circuit creation tasks are specific to the card series: E series cards include the E100T-12, E100T-G, E1000-2 and E1000-2-G cards and the G series cards include the G1000-4 card.
- Step 3** If a high number of VLANs is already used by the system, complete the “[DLP-99 Determine Available VLANs](#)” task on page 6-36 to verify that sufficient VLAN capacity is available (you will create a VLAN during each circuit creation task).
- Step 4** As needed, complete the “[DLP-100 Provision an E Series EtherSwitch Circuit \(Multicard or Single-Card\)](#)” task on page 6-37.
- Step 5** As needed, complete the “[NTP-64 Test E Series Ethernet Circuits](#)” task on page 6-57.
- Step 6** As needed, complete the “[DLP-102 Create an E Series Hub and Spoke Ethernet Circuit](#)” task on page 6-45.




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**Note** If your Ethernet circuit will pass through non-ONS, OSI/TARP-based equipment, you must create an Ethernet manual cross-connect circuit to connect the Ethernet circuit to an STS channel.

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- Step 7** If you need to create an Ethernet manual cross-connect circuit use one of the following tasks:
- [DLP-103 Provision an E Series Single-Card EtherSwitch Manual Cross-Connect](#), page 6-49
  - [DLP-104 Provision an E Series Multicard EtherSwitch Manual Cross-Connect](#), page 6-51
- Step 8** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-99 Determine Available VLANs

<b>Purpose</b>	This task verifies that the network has the capacity to support the additional new VLANs required for the creation E-Series circuits.
<b>Tools/Equipment</b>	E Series Ethernet cards (E100T-12/E100T-G, E1000-2/E1000-2-G) must be installed at each end of the Ethernet circuit.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance</a> , page 6-3 <a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

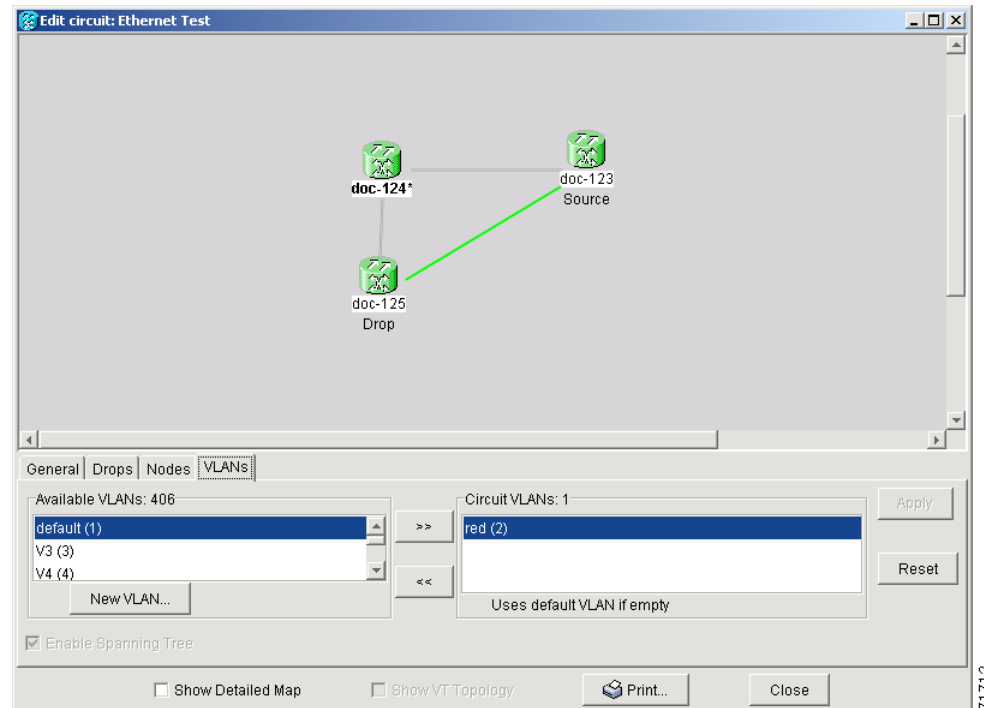
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- Step 1** At any CTC view, click the **Circuits** tab.
- Step 2** Click any existing Ethernet circuit to highlight that row.
- Step 3** Click **Edit**, then click the **VLANs** tab.
- The Edit Circuit dialog displays the number of VLANs used by circuits and the total number of VLANs available for use.
- Step 4** Determine that number of available VLANs listed is sufficient for the number of E-series Ethernet circuits that you will create.

**Caution**

Multiple E-series Ethernet circuits with spanning tree enabled will block each other if the circuits traverse the same E-series Ethernet card and use the same VLAN.

**Figure 6-10** Edit Circuit dialog with VLANs tab selected



**Step 5** Return to the “NTP-63 Create E Series Ethernet Circuits” procedure on page 6-35.

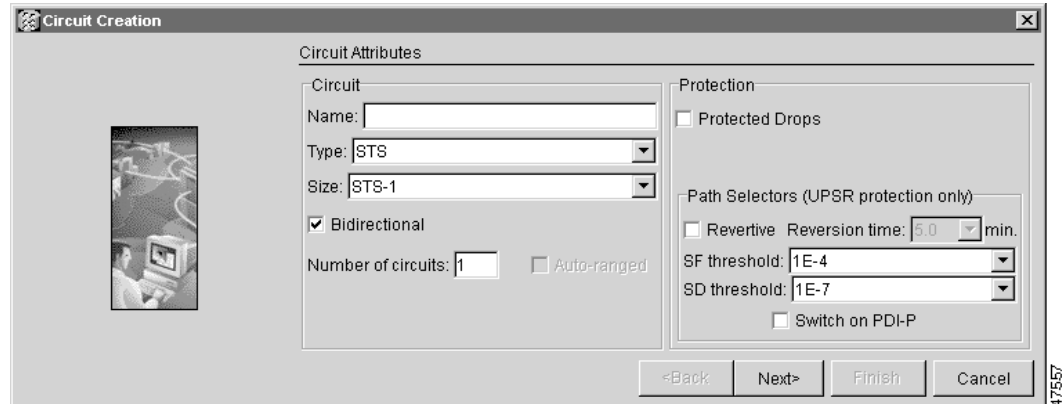
## DLP-100 Provision an E Series EtherSwitch Circuit (Multicard or Single-Card)

<b>Purpose</b>	This task creates a multicard or single-card EtherSwitch Circuit
<b>Tools/Equipment</b>	E Series Ethernet cards (E100T-12/E100T-G, E1000-2/E1000-2-G) must be installed at each end of the Ethernet circuit.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** On the node view, double-click one of the Ethernet cards that will carry the circuit.
- Step 2** Click the **Provisioning > Card** tabs.
- Step 3** Under Card Mode, choose one of the following:
- For Multicard EtherSwitch circuit groups, choose **Multicard EtherSwitch Group**. Click **Apply**.

- For Single-card EtherSwitch circuits, choose **Single-card EtherSwitch**. Click **Apply**.
- Step 4** Multicard EtherSwitch circuits only: repeat Steps 2–4 for all other Ethernet cards in the ONS 15454 that will carry the circuit.
- Step 5** From the View menu, choose Go to Other Node.
- Step 6** In the Select Node dialog box, select the other ONS 15454 Ethernet circuit endpoint node and repeat Steps 2–5.
- Step 7** Click the **Circuits** tab and click **Create**.
- Step 8** In the Create Circuits dialog box (Figure 6-11), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the circuit size. Valid circuit sizes for an Ethernet Multicard circuit are STS-1, STS-3c, and STS6c. Valid circuit sizes for an Ethernet Single-card circuit are STS-1, STS-3c, STS6c, and STS12c.
  - *Bidirectional*—Leave the default unchanged (checked).
  - *Number of circuits*—Leave the default unchanged (1).
  - *Auto-ranged*—Not available.
  - *Protected Drops*—Leave the default unchanged (unchecked).
- Step 9** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
  - *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

Figure 6-11 Provisioning an Ethernet circuit



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

**Step 11** Provision the circuit source:

- a. From the Node pull-down menu, select one of the EtherSwitch circuit endpoint nodes. (Either end node can be the EtherSwitch circuit source.)
- b. From the Slot pull-down menu, select one of the following:
  - If you are building a Multicard EtherSwitch circuit, choose **Ethergroup**.
  - If you are building a Single-card EtherSwitch circuit, choose the Ethernet card where you enabled the single-card EtherSwitch.

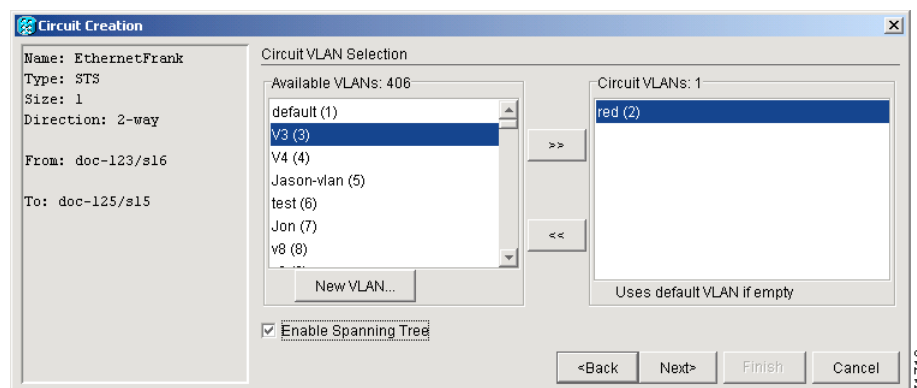
**Step 12** Click **Next**.

**Step 13** Provision the circuit destination:

- a. From the Node pull-down menu, select the second EtherSwitch circuit endpoint node.
- b. From the Slot pull-down menu, select one of the following:
  - If you are building a Multicard EtherSwitch circuit, choose **Ethergroup**.
  - If you are building a Single-card EtherSwitch circuit, choose the Ethernet card where you enabled the single-card EtherSwitch.

**Step 14** Click **Next**.

Figure 6-12 Circuit VLAN selection dialog with Enable Spanning Tree checkbox



**Step 15** Beneath Circuit VLAN Selection, click **New VLAN**. If the desired VLAN already exists, go to [Step 18](#).

**Step 16** In the New VLAN dialog box, complete the following:

- *VLAN Name*—Assign an easily-identifiable name to your VLAN.
- *VLAN ID*—Assign a VLAN ID. The VLAN ID should be the next available number between 2 and 4093 that is not already assigned to an existing VLAN. Each ONS 15454 network supports a maximum of 509 user-provisionable VLANs.

**Step 17** Click **OK**.

**Step 18** Beneath Circuit VLAN Selection, highlight the VLAN name and click the arrow >> button to move the available VLAN(s) to the Circuit VLANs column.

**Step 19** If you are building a Single-card EtherSwitch circuit and want to disable spanning tree protection on this circuit, uncheck the **Enable Spanning Tree** checkbox and click **OK** on the Disabling Spanning Tree dialog that appears.

**Caution**

Disabling spanning tree protection increases the likelihood of logic loops on an Ethernet network.

**Caution**

Turning off spanning tree on a circuit-by-circuit basis means that the ONS 15454 is no longer protecting the Ethernet circuit, and that the circuit must be protected by another mechanism in the Ethernet network.

**Caution**

Multiple circuits with spanning tree protection enabled will incur blocking if the circuits traverse the same E-series Ethernet card and use the same VLAN.

**Note**

The **Enable Spanning Tree** box is “sticky.” It will remain in the same state, checked or unchecked, for the creation of the next Single-card point-to-point Ethernet circuit.

**Note**

Users can disable or enable spanning tree protection on a circuit-by-circuit basis only for single-card point-to-point Ethernet circuits. Other E-series Ethernet configurations disable or enable spanning tree on a port-by-port basis at the card view of CTC under the **Provisioning** tab.

**Step 20** Click **Next**.

**Step 21** Confirm that the following information about the circuit is correct:

- Circuit name
- Circuit type
- Circuit size
- ONS 15454 circuit nodes

**Step 22** Click **Finish**.

**Step 23** Complete the “[DLP-105 Provision E Series Ethernet Ports](#)” task on page 6-54.

**Step 24** Complete the “[DLP-106 Provision E Series Ethernet Ports for VLAN Membership](#)” task on page 6-56.

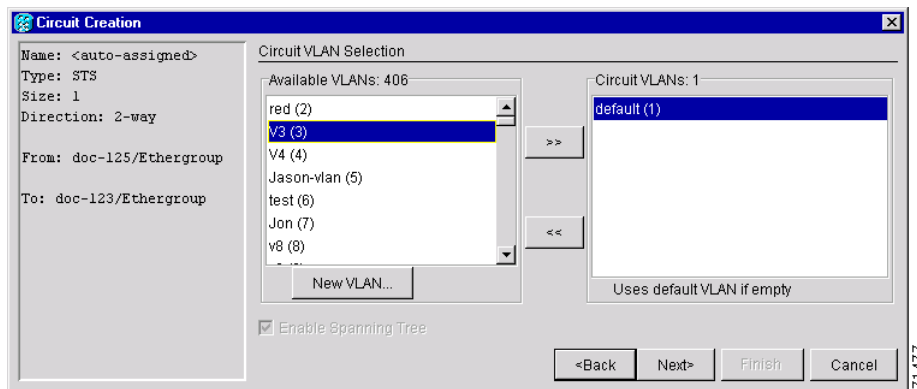
## DLP-101 Create an E Series Shared Packet Ring Ethernet Circuit

<b>Purpose</b>	This task creates a shared packet ring Ethernet circuit.
<b>Tools/Equipment</b>	E Series Ethernet cards (E100T-12/E100T-G, E1000-2/E1000-2-G) must be installed at both Ethernet circuit endpoint nodes.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** From node view, double-click one of the Ethernet cards that will carry the circuit.
- Step 2** Click the **Provisioning > Card** tabs.
- Step 3** Verify that Multi-card EtherSwitch Group is selected. If Multi-card EtherSwitch Group is not selected, select it and click **Apply**.
- Step 4** Return to node view (select **Go to Parent View** from the View menu), then repeat Steps 2–4 for all other Ethernet cards in the ONS 15454 that will carry the shared packet ring.
- Step 5** One at a time, repeat Steps 2–5 for all other ONS 15454 nodes that will be part of the shared packet ring.
- Step 6** Click the **Circuits** tab and click **Create**.
- Step 7** In the Create Circuits dialog box, complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the circuit size. Valid shared packet ring circuit sizes are STS-1, STS-3c, and STS6c.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Leave set at 1 (default).
  - *Auto-ranged*—Not available.
  - *Protected Drops*—Leave unchecked.
- Step 8** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
  - *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.
- Step 9** Click **Next**.

- Step 10** Provision the circuit source:
- From the Node pull-down menu, select one of the shared packet ring circuit endpoint nodes. (Either end node can be the shared packet ring circuit source.)
  - From the Slot pull-down menu, choose **Ethergroup**.
- Step 11** Click **Next**.
- Step 12** Provision the circuit destination:
- From the Node pull-down menu, select the second shared packet ring circuit endpoint node.
  - From the Slot pull-down menu, select **Ethergroup**.
- Step 13** Click **Next**.
- Step 14** Review the VLANs listed under Available VLANs (Figure 6-13). If the VLAN you want to use is displayed, go to Step 15. If you need to create a new VLAN, complete the following steps:
- Click the **New VLAN** button.
  - On the New VLAN dialog box, complete the following:
    - VLAN Name**—Assign an easily-identifiable name to your VLAN.
    - VLAN ID**—Assign a VLAN ID. The VLAN ID should be the next available number between 2 and 4093 that is not already assigned to an existing VLAN. Each ONS 15454 network supports a maximum of 509 user-provisionable VLANs.
  - Click **OK**.

**Figure 6-13** Selecting a VLAN



- Step 15** Click the VLAN you want to use on the Available VLANs column, then click the arrow >> button to move the VLAN to the Circuit VLANs column.



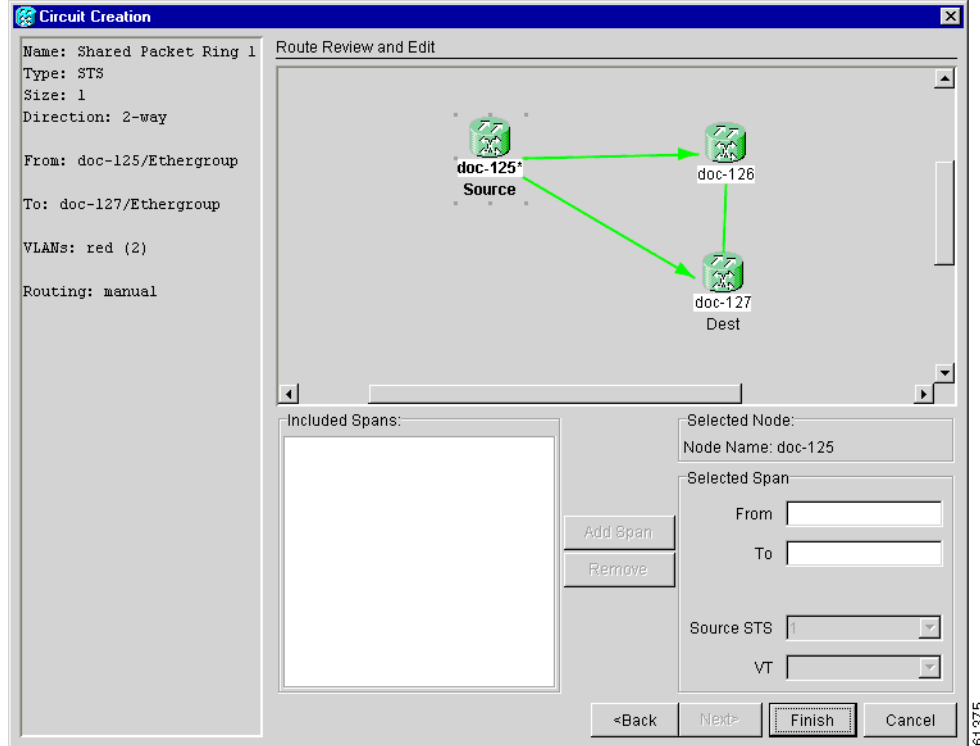
**Note** Moving the VLAN from Available VLANs to Circuit VLANs forces all the VLAN traffic to use the shared packet ring you are creating.

- Step 16** Click **Next**.
- Step 17** Under Circuit Routing Preferences, uncheck the **Route Automatically** checkbox and click **Next**.
- Step 18** Under Route Review and Edit panel (Figure 6-14), click the source node, then click either span (green arrow) leading from the source node.

The span turns white.



Figure 6-14 Adding a span

**Step 19** Click **Add Span**.

The span turns blue and adds the span to the Included Spans field.

**Step 20** Click the node at the end of the blue span.**Step 21** Click the green span beginning at the node in [Step 20](#).

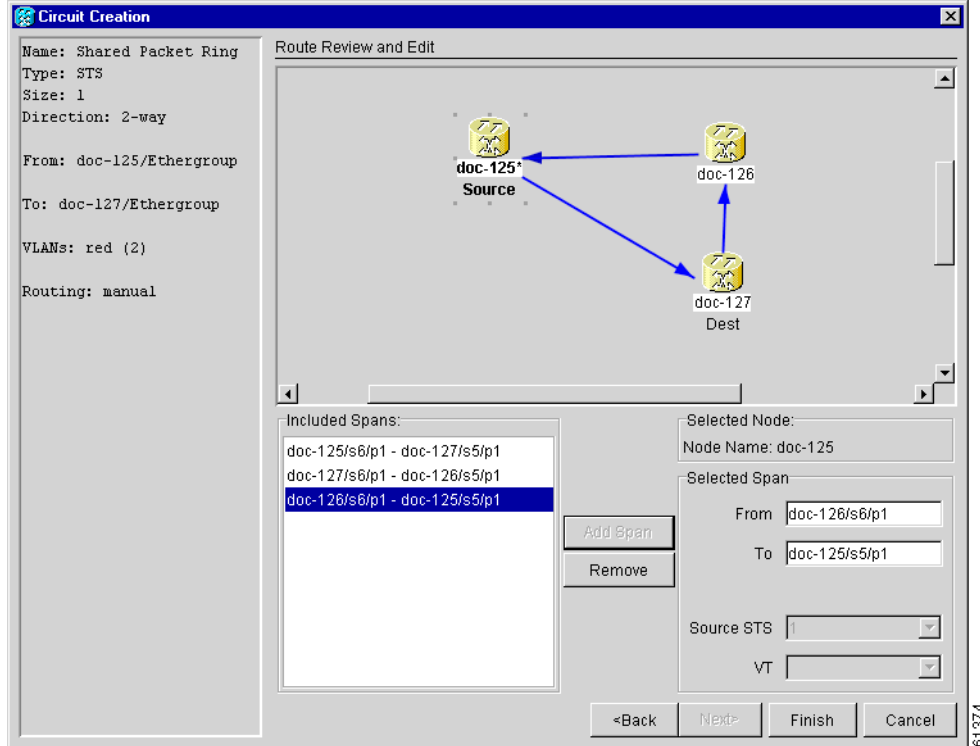
The span turns white.

**Step 22** Click **Add Span**.

The span turns blue.

**Step 23** Repeat Steps 19–22 for every node in the ring. [Figure 6-15](#) shows the Circuit Creation dialog box with all the circuit spans selected.

Figure 6-15 Viewing a span



- Step 24** Verify that the new circuit is correctly configured. If the circuit information is not correct, click the **Back** button and repeat the procedure with the correct information.



**Note** If the circuit is incorrect, you can also click **Finish**, delete the completed circuit, and begin the procedure again.

- Step 25** Click **Finish**.
- Step 26** Complete the “[DLP-105 Provision E Series Ethernet Ports](#)” task on page 6-54.
- Step 27** Complete the “[DLP-106 Provision E Series Ethernet Ports for VLAN Membership](#)” task on page 6-56.

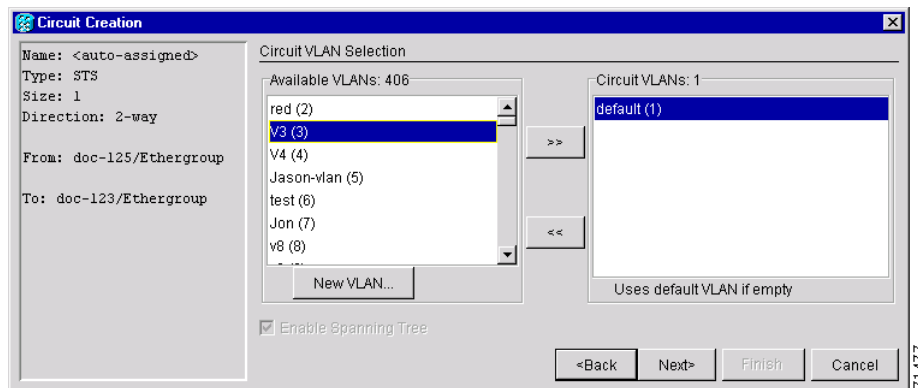
## DLP-102 Create an E Series Hub and Spoke Ethernet Circuit

<b>Purpose</b>	This task creates a hub and spoke Ethernet circuit
<b>Tools/Equipment</b>	E Series Ethernet cards (E100T-12/E100T-G, E1000-2/E1000-2-G) must be installed at both Ethernet circuit end point nodes.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Display the node view.
- Step 2** Double-click the Ethernet card that will carry the circuit.
- Step 3** Click the **Provisioning > Card** tabs.
- Step 4** Beneath Card Mode, choose **Single-card EtherSwitch** and click **Apply**.
- Step 5** Navigate to the other ONS 15454 endpoint node of the hub and spoke circuit and repeat Steps 2–4.
- Step 6** Click the **Circuits** tab and click **Create**.
- Step 7** In the Create Circuits dialog box, complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the circuit size.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Leave set at 1 (default).
  - *Auto-ranged*—Not available.
  - *Protected Drops*—Leave unchecked.
- Step 8** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
  - *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.
- Step 9** Click **Next**.

- Step 10** Provision the circuit source:
- From the Node pull-down menu, select one of the hub and spoke circuit endpoint nodes. (Either end node can be the circuit source.)
  - From the Slot pull-down menu, choose the Ethernet card where you enabled the single-card EtherSwitch in [Step 4](#).
- Step 11** Click **Next**.
- Step 12** Provision the circuit destination:
- From the Node pull-down menu, select the second EtherSwitch circuit endpoint node.
  - From the Slot pull-down menu, choose the Ethernet card where you enabled the single-card EtherSwitch in [Step 5](#).
- Step 13** Click **Next**.
- Step 14** Review the VLANs listed under Available VLANs ([Figure 6-16](#)). If the VLAN you want to use is displayed, go to [Step 15](#). If you need to create a new VLAN, complete the following steps:
- Click the **New VLAN** button.
  - On the New VLAN dialog box, complete the following:
    - VLAN Name*—Assign an easily-identifiable name to your VLAN.
    - VLAN ID*—Assign a VLAN ID. The VLAN ID should be the next available number between 2 and 4093 that is not already assigned to an existing VLAN. Each ONS 15454 network supports a maximum of 509 user-provisionable VLANs.
  - Click **OK**.

**Figure 6-16** Selecting a VLAN



- Step 15** Click the VLAN you want to use on the Available VLANs column, then click the arrow >> button to move the VLAN to the Circuit VLANs column.



**Note** Moving the VLAN from Available VLANs to Circuit VLANs forces all the VLAN traffic to use the shared packet ring you are creating.

- Step 16** Click **Next**.
- Step 17** Confirm that the following information about the hub and spoke circuit is correct:
- Circuit name

- Circuit type
- Circuit size
- VLAN names
- ONS 15454 circuit nodes

If the circuit information is not correct, click the **Back** button and repeat the procedure with the correct information.



---

**Note** You can also click **Finish**, delete the completed circuit, and start the procedure from the beginning.

---

- Step 18** Click **Finish**.
- Step 19** Navigate to an ONS 15454 that will be an endpoint for the second Ethernet circuit.
- Step 20** Double-click the Ethernet card that will carry the circuit.
- Step 21** Click the **Provisioning > Card** tabs.
- Step 22** Beneath Card Mode, choose **Single-card EtherSwitch** and click **Apply**.
- Step 23** From the View menu, choose **Go to Other Node**.
- Step 24** On the Select Node dialog box, choose the other endpoint node for the second circuit and repeat Steps [21–23](#) at that node.
- Step 25** Click the **Circuits** tab and click **Create**.
- Step 26** In the Create Circuits dialog box, complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the circuit size.
  - *Bidirectional*—Leave checked for this circuit.
  - *Number of circuits*—Leave set at 1 (default).
  - *Auto-ranged*—Not available.
  - *Protected Drops*—Leave unchecked.
- Step 27** If the circuit will be routed on a UPSR, set the UPSR path selectors:
- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
  - *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
  - *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
  - *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.
- Step 28** Click **Next**.

- Step 29** Provision the circuit source:
- From the Node pull-down menu, select one of the hub and spoke circuit endpoint nodes. (Either end node can be the circuit source.)
  - From the Slot pull-down menu, choose the Ethernet card where you enabled the single-card EtherSwitch in [Step 22](#).
- Step 30** Click **Next**.
- Step 31** Provision the circuit destination:
- From the Node pull-down menu, select the second EtherSwitch circuit endpoint node.
  - From the Slot pull-down menu, choose the Ethernet card where you enabled the single-card EtherSwitch in [Step 24](#).
- Step 32** Click **Next**.
- Step 33** Highlight the VLAN that you created for the first circuit and click the >> button to move the VLAN(s) from the Available VLANs column to the Selected VLANs column.
- Step 34** Click **Next**.
- Step 35** Confirm that the following information about the second hub and spoke circuit is correct:
- Circuit name
  - Circuit type
  - Circuit size
  - VLAN names
  - ONS 15454 circuit nodes
- If the circuit information is not correct, click the **Back** button and repeat the procedure with the correct information. You can also click **Finish**, delete the completed circuit, and start the procedure from the beginning.
- Step 36** Click **Finish**.
- Step 37** Complete the “[DLP-105 Provision E Series Ethernet Ports](#)” task on page 6-54.
- Step 38** Complete the “[DLP-106 Provision E Series Ethernet Ports for VLAN Membership](#)” task on page 6-56.
-

## DLP-103 Provision an E Series Single-Card EtherSwitch Manual Cross-Connect

<b>Purpose</b>	This task manually creates a Multicard EtherSwitch cross-connect between E Series Ethernet cards and an OC-N cards connected to non-ONS equipment.
<b>Tools/Equipment</b>	E Series Ethernet cards (E100T-12/E100T-G, E1000-2/E1000-2-G) must be installed at the circuit source node.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** On the node view, double-click the Ethernet card that will carry the cross-connect.



**Note** Cross-connect refers to a circuit connection created within the same node between the Ethernet card and an OC-N card connected to third-party equipment. You create cross-connects at the source and destination nodes so an Ethernet circuit can be routed from source to destination across third-party equipment.

**Step 2** Click the **Provisioning > Card** tabs.

**Step 3** Beneath Card Mode, choose **Single-card EtherSwitch** and click **Apply**.

**Step 4** Click the **Circuits** tab and click **Create**.

**Step 5** In the Create Circuits dialog box, complete the following fields:

- *Name*—Assign a name to the cross-connect. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the cross-connect.
- *Type*—Select STS.
- *Size*—Select the cross-connect size. For single-card EtherSwitch, the available sizes are STS-1, STS-3c, STS-6c, and STS-12c.
- *Bidirectional*—Leave checked for this cross-connect (default).
- *Number of circuits*—Leave set at 1 (default).
- *Auto-ranged*—Not available.
- *Protected Drops*—Leave unchecked.

**Step 6** If the circuit carried by the cross-connect will be routed on a UPSR, set the UPSR path selectors:

- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
- *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
- *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.

- *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

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

**Step 8** Provision the circuit source:

- From the Node pull-down menu, choose the cross-connect source node.
- From the Slot pull-down menu, choose the Ethernet card where you enabled the single-card EtherSwitch in [Step 4](#).

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

**Step 10** Provision the circuit destination:

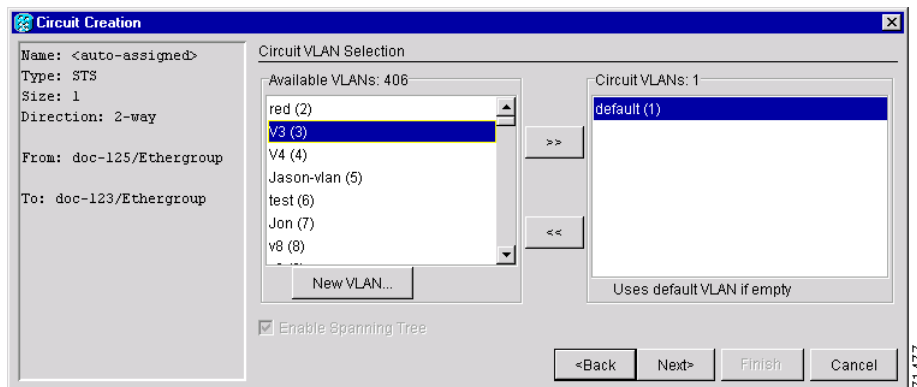
- From the Node pull-down menu, choose the cross-connect circuit source node selected in Step 8. (For Ethernet cross-connects, the source and destination nodes are the same.)
- From the Slot pull-down menu, choose the OC-N card that is connected to the non-ONS equipment.
- Depending on the OC-N card, choose the port and/or STS from the Port and STS pull-down menus.

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

**Step 12** Review the VLANs listed under Available VLANs ([Figure 6-17](#)). If the VLAN you want to use is displayed, go to [Step 13](#). If you need to create a new VLAN, complete the following steps:

- Click the **New VLAN** button.
- On the New VLAN dialog box, complete the following:
  - *VLAN Name*—Assign an easily-identifiable name to your VLAN.
  - *VLAN ID*—Assign a VLAN ID. The VLAN ID should be the next available number between 2 and 4093 that is not already assigned to an existing VLAN. Each ONS 15454 network supports a maximum of 509 user-provisionable VLANs.
- Click **OK**.

**Figure 6-17** Selecting a VLAN



**Step 13** Click the VLAN you want to use on the Available VLANs column, then click the arrow >> button to move the VLAN to the Circuit VLANs column.

**Step 14** Click **Next**. The Circuit Creation (Circuit Routing Preferences) dialog box opens.

**Step 15** Confirm that the following information about the single-card EtherSwitch manual cross-connect is correct (in this task, “circuit” refers to the Ethernet cross-connect):

- Circuit name



- Circuit type
- Circuit size
- VLAN names
- ONS 15454 nodes

If the information is not correct, click the **Back** button and repeat the procedure with the correct information.

- Step 16** Click **Finish**.
- Step 17** Complete the “[DLP-105 Provision E Series Ethernet Ports](#)” task on page 6-54.
- Step 18** Complete the “[DLP-106 Provision E Series Ethernet Ports for VLAN Membership](#)” task on page 6-56.

## DLP-104 Provision an E Series Multicard EtherSwitch Manual Cross-Connect

<b>Purpose</b>	This task manually creates a Multicard EtherSwitch cross-connect between E Series Ethernet cards and an OC-N cards connected to non-ONS equipment.
<b>Tools/Equipment</b>	E Series Ethernet cards (E100T-12/E100T-G, E1000-2/E1000-2-G) must be installed at the circuit source node.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** On the node view, double-click the Ethernet card where you want to create the cross-connect.



**Note** Cross-connect refers to a circuit connection created within the same node between the Ethernet card and an OC-N card connected to third-party equipment. You create cross-connects at the source and destination nodes so an Ethernet circuit can be routed from source to destination across third-party equipment.

- Step 2** Click the **Provisioning > Card** tabs.
- Step 3** Beneath Card Mode, choose **Multi-card EtherSwitch Group** and click **Apply**.
- Step 4** From the View menu, choose **Go to Parent View**.
- Step 5** Repeat Steps 2–4 for any other Ethernet cards in the ONS 15454 that will carry the circuit.
- Step 6** Click the **Circuits** tab and click **Create**.
- Step 7** In the Create Circuits dialog box, complete the following fields:
- *Name*—Assign a name to the source cross connect. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the source cross connect.
  - *Type*—Select STS.

- *Size*—Select the size of the circuit that will be carried by the cross-connect. For Multicard EtherSwitch circuits, the available sizes are STS-1, STS-3c, and STS-6c.
- *Bidirectional*—Leave checked (default).
- *Number of circuits*—Leave set at 1 (default).
- *Auto-ranged*—Not available.
- *Protected Drops*—Leave unchecked.

**Step 8** If the circuit carried by the cross-connect will be routed on a UPSR, set the UPSR path selectors:

- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
- *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
- *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
- *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

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

**Step 10** Provision the cross-connect source:

- a. From the *Node* pull-down menu, select the cross-connect source node.
- b. From the *Slot* pull-down menu, choose **Ethergroup**.

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

**Step 12** From the *Node* pull-down menu under *Destination*, choose the circuit source node selected in [Step 10](#). (For Ethernet cross-connects, the source and destination nodes are the same.)

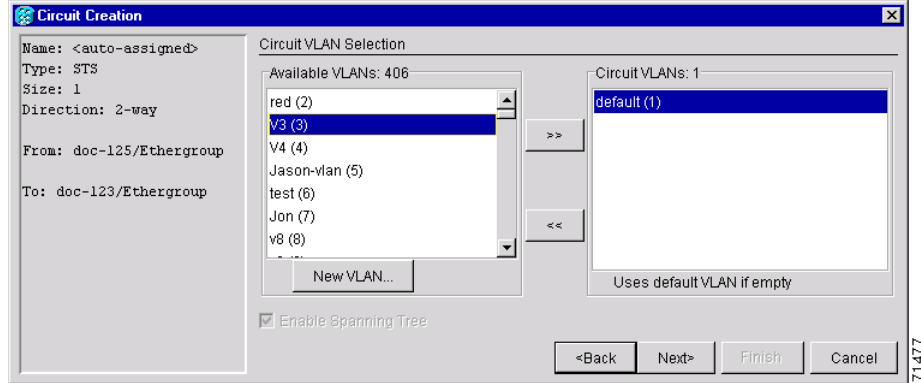
The *Slot* field automatically is provisioned for **Ethergroup**.

**Step 13** Click **Next**.

**Step 14** Review the VLANs listed under *Available VLANs* ([Figure 6-18](#)). If the VLAN you want to use is displayed, go to [Step 16](#). If you need to create a new VLAN, complete the following steps:

- a. Click the **New VLAN** button.
- b. On the **New VLAN** dialog box, complete the following:
  - *VLAN Name*—Assign an easily-identifiable name to your VLAN.
  - *VLAN ID*—Assign a VLAN ID. The VLAN ID should be the next available number between 2 and 4093 that is not already assigned to an existing VLAN. Each ONS 15454 network supports a maximum of 509 user-provisionable VLANs.
- c. Click **OK**.

Figure 6-18 Selecting a VLAN



**Step 15** Click the VLAN you want to use on the Available VLANs column, then click the arrow >> button to move the VLAN to the Circuit VLANs column.

**Step 16** Click **Next**.

The Circuit Creation (Circuit Routing Preferences) dialog box opens.

**Step 17** In the left pane, verify the cross-connect information (in this step, “circuit” refers to the Ethernet cross-connect):

- Circuit name
- Circuit type
- Circuit size
- VLANs
- ONS 15454 nodes

If the information is not correct, click the **Back** button and repeat the procedure with the correct information.

**Step 18** Click **Finish**.

**Step 19** Complete the “[DLP-105 Provision E Series Ethernet Ports](#)” task on page 6-54.

**Step 20** Complete the “[DLP-106 Provision E Series Ethernet Ports for VLAN Membership](#)” task on page 6-56.

**Step 21** From the View menu, choose **Go to Home View**.

**Step 22** Click the **Circuits** tab.

**Step 23** Highlight the circuit and click **Edit**.

The Edit Circuit dialog box opens.

**Step 24** Click **Drops** and click **Create**.

The Define New Drop dialog box opens.

**Step 25** From the Slot menu, choose the OC-N card that links the ONS 15454 to the non-ONS 15454 equipment.

**Step 26** From the Port menu, choose the appropriate port.

**Step 27** From the STS menu, choose the STS that matches the STS of the connecting non-ONS 15454 equipment.

**Step 28** Click **OK**.

**Step 29** Confirm the circuit information that displays in the Edit Circuit dialog box and click **Close**.

**Step 30** Repeat Steps 1–29 at the second ONS 15454 Ethernet manual cross-connect endpoint.




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**Note** The appropriate STS circuit must exist in the non-ONS 15454 equipment to connect the two ONS 15454 Ethernet manual cross-connect endpoints.

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**Caution**


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If a CARLOSS alarm repeatedly appears and clears on an Ethernet manual cross connect, the two Ethernet circuits may have a circuit-size mismatch. For example, a circuit size of STS-3c was configured on the first ONS 15454 and circuit size of STS-12c was configured on the second ONS 15454. To troubleshoot this occurrence of the CARLOSS alarm, refer to Step 9 of the CARLOSS alarm troubleshooting procedure in the Alarm Troubleshooting chapter of the *Cisco ONS 15454 Troubleshooting Guide*.

---

**Step 31** Return to your originating procedure (NTP).

---

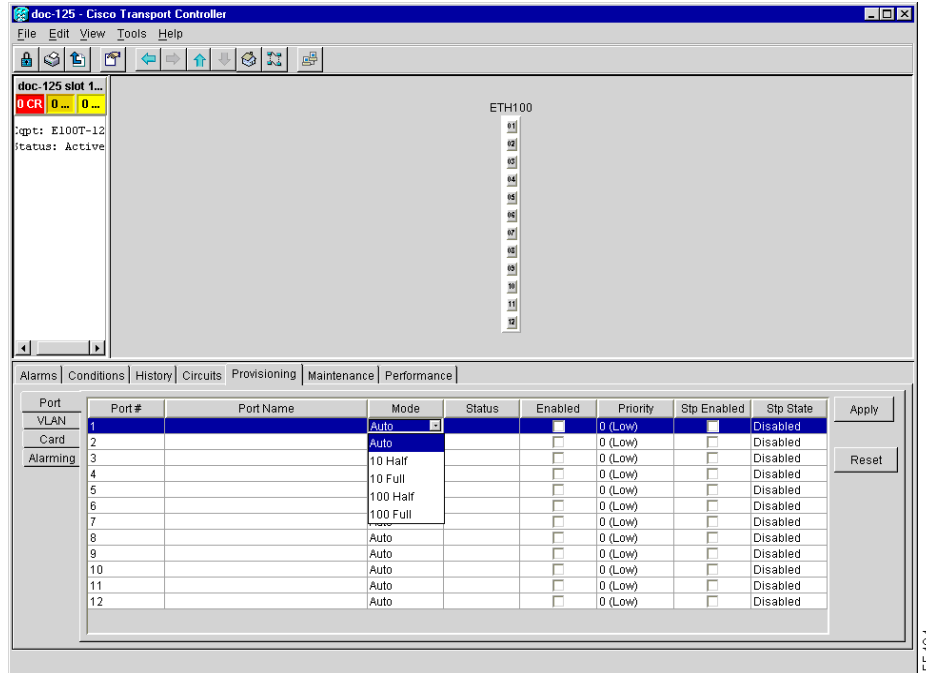
## DLP-105 Provision E Series Ethernet Ports

<b>Purpose</b>	This task enables ports for the E100T-12, E100T-G, E1000-2, and E1000-2-G cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required to enable Ethernet traffic
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Display the node view.
- Step 2** Double-click the Ethernet card that you want to provision.
- Step 3** Click the **Provisioning > Port** tabs ([Figure 6-19](#)).

Figure 6-19 Provisioning E-100 Series Ethernet ports



**Step 4** For each Ethernet port, provision the following parameters:

- *Port Name*—If you want to label the port, type a port name.
- *Mode*—Choose the appropriate mode for the Ethernet port:
  - Valid choices for the E100T-12/E100T-G card are Auto, 10 Half, 10 Full, 100 Half, or 100 Full.
  - Valid choices for the E1000-2/E1000-2-G card are 1000 Full or Auto.



**Note** Both 1000 Full and Auto mode set the E1000-2 port to the 1000 Mbps and Full duplex operating mode; however, flow control is disabled when 1000 Full is selected. Choosing Auto mode enables the E1000-2 card to auto-negotiate flow control. Flow control is a mechanism that prevents network congestion by ensuring that transmitting devices do not overwhelm receiving devices with data. The E1000-2 port handshakes with the connected network device to determine if that device supports flow control.

- *Enabled*—Click this checkbox to activate the corresponding Ethernet port.
- *Priority*—Choose a queuing priority for the port. Options range from 0 (Low) to 7 (High). Priority queuing (IEEE 802.1Q) reduces the impact of network congestion by mapping Ethernet traffic to different priority levels. Refer to the priority queuing information in the Cisco ONS 15454 Reference Manual.
- *Stp Enabled*—Click this checkbox to enable the spanning tree protocol (STP) on the port. Refer to the spanning tree information in the Cisco ONS 15454 Reference Manual.

**Step 5** Click **Apply**.

**Step 6** Repeat Steps 1–5 for all other cards that will be in the VLAN.

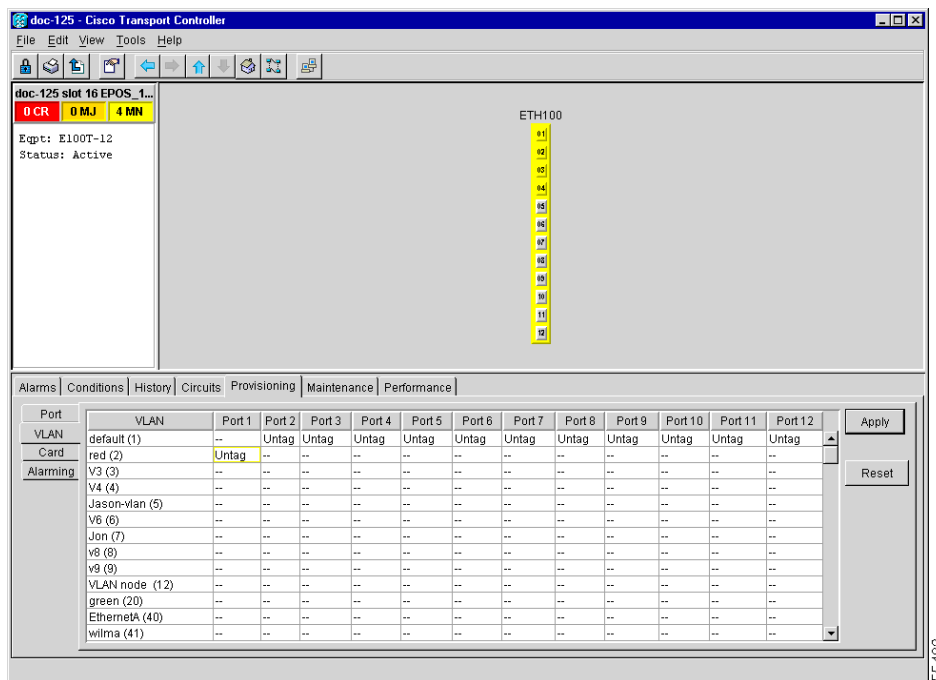
- Step 7** Your Ethernet ports are provisioned and ready to be configured for VLAN membership. Go to the “DLP-106 Provision E Series Ethernet Ports for VLAN Membership” task on page 6-56 for instructions.

## DLP-106 Provision E Series Ethernet Ports for VLAN Membership

<b>Purpose</b>	This task provisions E series Ethernet card ports for VLAN membership
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required to enable Ethernet traffic on E series Ethernet cards
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Display the node view.
- Step 2** Double-click the E series card graphic to open the card.
- Step 3** Click the **Provisioning > VLAN** tabs (Figure 6-20).

**Figure 6-20** Configuring VLAN membership for individual Ethernet ports



- Step 4** To put a port in a VLAN:
- Click the port and choose either Tagged or Untag. Figure 6-20 shows Port 1 in the red VLAN and Port 2 through Port 12 in the default VLAN. Table 6-4 shows valid port settings.
  - If a port is a member of only one VLAN, go to that VLAN’s row and choose **Untag** from the Port column. Choose -- for all the other VLAN rows in that Port column.



**Note** The VLAN with Untag selected can connect to the port, but other VLANs cannot access that port.

- c. Choose **Tagged** at all VLAN rows that need to be trunked. Choose **Untag** VLAN rows that do not need to be trunked, for example, the default VLAN.



**Note** Each Ethernet port must be attached to at least one untagged VLAN. If a port is a trunk port, it connects multiple VLANs to an external device, such as a switch, which also supports trunking. A trunk port must have tagging (802.1Q) enabled for all the VLANs that connect to that external device.

**Step 5** After each port is in the appropriate VLAN, click **Apply**.

**Table 6-4 VLAN Settings**

Setting	Description
--	A port marked with this symbol does not belong to the VLAN.
Untag	The ONS 15454 will tag ingress frames and strip tags from egress frames.
Tagged	The ONS 15454 will process ingress frames according to the VLAN ID; egress frames will not have their tags removed.



**Note** If Tagged is chosen, the attached external Ethernet devices must recognize IEEE 802.1Q VLANs.



**Note** Both ports on individual E1000-2/E1000-2-G cards cannot be members of the same VLAN.


**Step 6** Return to the circuit creation task that referred you to this task.

## NTP-64 Test E Series Ethernet Circuits



**Note** This procedure assumes you completed facility loopback tests to test the fibers and cables from the source and destination ONS 15454s to the fiber distribution panel or the DSX.

<b>Purpose</b>	This procedure tests circuits created on E series Ethernet cards
<b>Tools/Equipment</b>	Ethernet test set and appropriate fibers
<b>Prerequisite Procedures</b>	<a href="#">NTP-63 Create E Series Ethernet Circuits, page 6-35</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Log into the ONS 15454 source Ethernet node. See the [“NTP-23 Log into the ONS 15454 GUI” procedure on page 3-21](#) for instructions.
- Step 2** On the ONS 15454 shelf graphic, double-click the circuit source card.
- Step 3** Select the **Provisioning > Port** tabs.
- Step 4** Verify the following settings:
- Mode—Is set to one of the following: Auto, 10 Half, 10 Full, 100 Half, or 100 Full.
  - Enabled—Checked
  - Priority—Set to the priority level indicated by the circuit or site plan.
  - Stp—Checked if Spanning Tree Protocol is enabled for the circuit.
- Step 5** Click the **VLAN** tab.
- Step 6** Verify that the source port is on the same VLAN as the destination port.
- Step 7** Repeat Steps 1–6 for the destination node.
- Step 8** At the destination node connect the Ethernet test to the destination port and configure the test set to send and receive the appropriate Ethernet traffic.
-  **Note** At this point, you will not be able to send and receive Ethernet traffic.
- 
- Step 9** At the source node connect an Ethernet test set to the source port and configure the test set to send and receive the appropriate Ethernet traffic.
- Step 10** Transmit Ethernet frames between both test sets. If you cannot transmit and receive Ethernet traffic between the nodes, repeat Steps 1–9 to make sure you configured the Ethernet ports and test set correctly.
- Step 11** Perform protection switch testing appropriate to SONET topology:
- For UPSRs, see the [“DLP-94 UPSR Protection Switching Test” task on page 5-29](#)
  - For BLSRs see the [“DLP-91 BLSR Ring Switch Test” task on page 5-21](#).
- Configure your test set according to local site practice. For information about configuring your test set, see your test set user guide.
- Step 12** After the Ethernet test is complete, print the results or save them to a disk for future reference. For information about printing or saving test results see your test set user guide.
- Step 13** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-



## NTP-65 Create G Series Ethernet Circuits

<b>Purpose</b>	Use this procedure to create circuits with a source or destination G1000-4 card.
<b>Tools/Equipment</b>	A G1000-4 Ethernet card must be installed at each end of the Ethernet circuit.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the ONS 15454 that has the G1000-4 card where you want the circuit to originate. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Click the **Circuits** tab and the **Create** button.
- Step 3** Complete one of the following tasks:
- [DLP-107 Create a G1000-4 EtherSwitch Circuit, page 6-59](#)
  - [DLP-108 Provision a G1000-4 Manual Cross-Connect, page 6-61](#)
- Step 4** Complete the “[DLP-109 Provision G1000-4 Ethernet Ports](#)” task on page 6-63.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-107 Create a G1000-4 EtherSwitch Circuit

<b>Purpose</b>	This task creates an EtherSwitch circuit on the G1000-4 card.
<b>Tools/Equipment</b>	A G1000-4 Ethernet card must be installed at each end of the Ethernet circuit.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

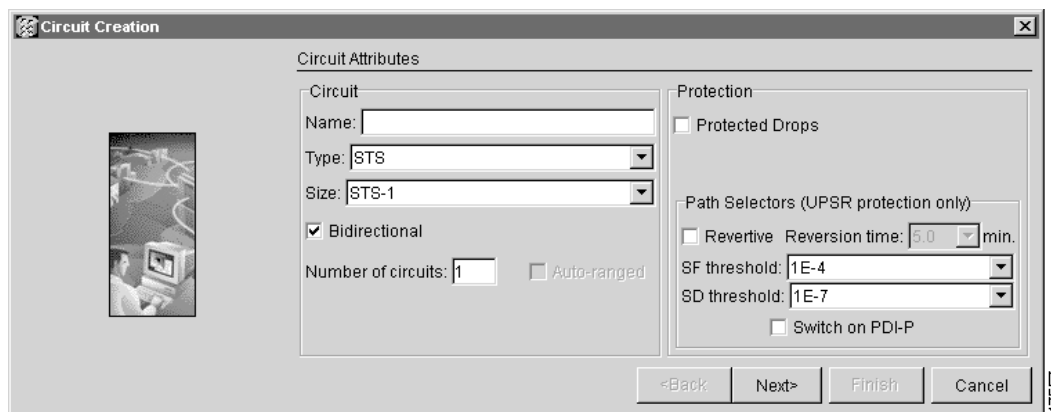
- 
- Step 1** In the Create Circuits dialog box ([Figure 6-21](#)), complete the following fields:
- *Name*—Assign a name to the circuit. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the circuit.
  - *Type*—Select STS.
  - *Size*—Select the circuit size. Valid circuit sizes for a G1000-4 circuit are STS-1, STS-3c, STS6c, STS-9c, STS-12c, STS-24c, and STS-48c.
  - *Bidirectional*—Leave checked for this circuit (default).
  - *Number of circuits*—Leave set at 1 (default).

- *Auto-ranged*—Not available.
- *Protected Drops*—Leave unchecked.

**Step 2** If the circuit will be routed on a UPSR, choose the UPSR path selectors (if not, go to Step 3):

- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
- *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
- *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
- *Switch on PDI-P*—Leave unchecked. Checking PDI-P may cause unnecessary UPSR protection switches.

**Figure 6-21** Provisioning a G1000-4 Ethernet circuit



**Step 3** Click **Next**.

**Step 4** Provision the circuit source:

- From the Node pull-down menu, choose the circuit source node. Either end node can be the point-to-point circuit source.
- From the Slot pull-down menu, choose the slot containing the G1000-4 card that you will use for one end of the point-to-point circuit.
- From the Port pull-down menu, choose a port.

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

**Step 6** Provision the circuit destination:

- From the Node pull-down menu, choose the circuit destination node.
- From the Slot pull-down menu, choose the slot containing the G1000-4 card that you will use for other end of the point-to-point circuit.
- From the Port pull-down menu, choose a port.

**Step 7** Click **Next**. The Circuits window appears.

**Step 8** Confirm that the following information about the point-to-point circuit is correct:

- Circuit name
- Circuit type
- Circuit size
- ONS 15454 circuit nodes

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



**Note** To change the capacity of a G1000-4 point-to-point circuit, you must delete the original circuit and reprovision a new larger circuit.

**Step 10** Return to your originating procedure (NTP).

## DLP-108 Provision a G1000-4 Manual Cross-Connect

<b>Purpose</b>	This task manually creates a manual cross-connect between a G1000-4 Ethernet card and an OC-N cards connected to non-ONS equipment.
<b>Tools/Equipment</b>	A G1000-4 card must be installed at the circuit source node.
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** Cross-connect refers to a circuit connection created within the same node between the Ethernet card and an OC-N card connected to third-party equipment. You create cross-connects at the source and destination nodes so an Ethernet circuit can be routed from source to destination across third-party equipment.

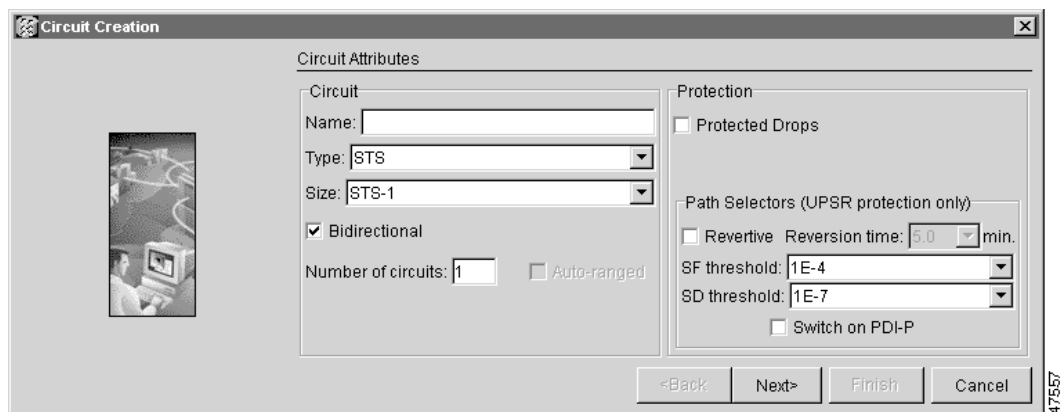
**Step 1** In the Create Circuits dialog box ([Figure 6-22](#)), complete the following fields:

- *Name*—Assign a name to the source cross-connect. The name can be alphanumeric and up to 32 characters (including spaces). If you leave the field blank, CTC assigns a default name to the source cross-connect.
- *Type*—Select STS.
- *Size*—Select the size of the circuit that will be carried by the cross-connect. Valid sizes for a G1000-4 circuit are STS-1, STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, and STS-48c.
- *Bidirectional*—Leave checked for this cross-connect (default).
- *Number of circuits*—Leave set at 1 (default).
- *Auto-ranged*—Not available.
- *Protected Drops*—Leave unchecked.

**Step 2** If the circuit that will be carried by the cross-connect will be routed on a UPSR, set the UPSR path selectors:

- *Revertive*—Check this box if you want traffic to revert to the working path when the conditions that diverted it to the protect path are repaired. If you do not choose *Revertive*, traffic remains on the protect path after the switch.
- *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working path. Traffic can revert when conditions causing the switch are cleared.
- *SF threshold*—Set the UPSR path-level signal failure bit error rate (BER) thresholds.
- *SD threshold*—Set the UPSR path-level signal degrade BER thresholds.
- *Switch on PDI-P*—Check this box if you want traffic to switch when an STS payload defect indicator is received.

Figure 6-22 Provisioning an Ethernet circuit



**Step 3** Click **Next**.

**Step 4** Provision the circuit source:

- From the Node pull-down menu, select the circuit source node.
- From the Slot pull-down menu, choose the G1000-4 that will be the cross-connect source.
- From the Port pull-down menu, select the cross-connect source port.

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

**Step 6** Provision the circuit destination:

- From the Node pull-down menu, select the cross-connect source node selected in Step 9. (For Ethernet cross connects, the source and destination nodes are the same.)
- From the Slot pull-down menu, choose the OC-N card that is connected to the non-ONS equipment.
- Depending on the OC-N card, choose the port and/or STS from the Port and STS pull-down menus.

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

**Step 8** Verify the cross-connection information (in this step, “circuit” refers to the cross-connect):

- Circuit name
- Circuit type
- Circuit size
- ONS 15454 circuit nodes

If the information is not correct, click the **Back** button and repeat the procedure with the correct information.

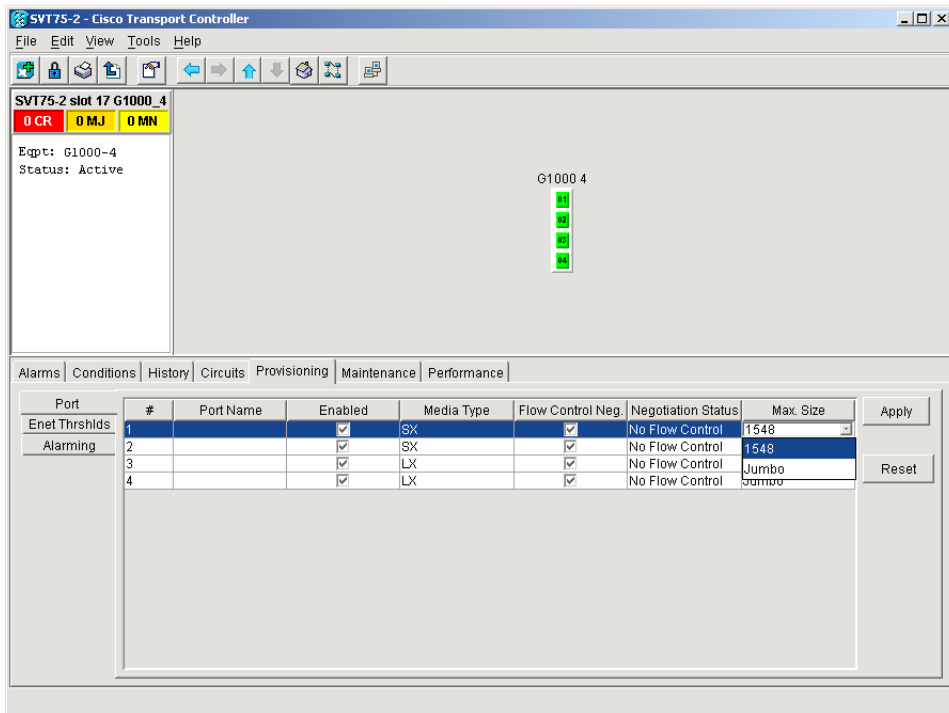
- Step 9** Click **Finish**.
- Step 10** Return to your originating procedure (NTP).

## DLP-109 Provision G1000-4 Ethernet Ports

<b>Purpose</b>	This task provisions the G1000-4 ports for Ethernet circuits
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-50 Verify System Acceptance, page 6-3</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	Required to enable Ethernet traffic on the G1000-4
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Display the node view.
- Step 2** Double-click the G1000-4 card graphic to open the card.
- Step 3** Click the **Provisioning > Port** tabs (Figure 6-23).

*Figure 6-23 Provisioning G1000-4 Ethernet ports*



- Step 4** For each G1000-4 port, provision the following parameters:

- *Port Name*—If you want to label the port, type the port name.
- *Enabled*—Click the checkbox to activate the corresponding G1000-4 Ethernet port.
- *Flow Control Neg*—Click this checkbox to enable flow control negotiation on the port (default). If you do not want to enable flow control, uncheck the box.



**Note** To activate flow control, the Ethernet device attached to the G1000-4 card must be set to auto-negotiation. If flow control is enabled but the negotiation status indicates no flow control, check the auto-negotiation settings on the attached Ethernet device.

- *Max Size*—To permit the acceptance of jumbo size Ethernet frames, select **Jumbo** (default). If you do not want to permit jumbo size Ethernet frames, select **1548**.



**Note** The maximum frame size of 1548 bytes, instead of the common maximum frame size of 1518 bytes, enables the port to accept valid Ethernet frames that use new protocols. New protocols, such as MPLS, add bytes and may cause the frame size to exceed the common 1518 byte maximum.

**Step 5** Click **Apply**.

**Step 6** Refresh the Ethernet statistics:

- Click the **Performance > Statistics** tabs.
- Click the **Refresh** button.



**Note** Reprovisioning an Ethernet port on the G1000-4 card does not reset the Ethernet statistics for that port. Reprovisioning an Ethernet port on the E-series Ethernet cards resets the Ethernet statistics for that port.

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

## NTP-66 Test G Series Ethernet Circuits



**Note** This procedure assumes you completed facility loopback tests to test the fibers and cables from the source and destination ONS 15454s to the fiber distribution panel or the DSX.

<b>Purpose</b>	This procedure tests circuits created on G series Ethernet cards
<b>Tools/Equipment</b>	Ethernet test set and appropriate fibers
<b>Prerequisite Procedures</b>	<a href="#">NTP-65 Create G Series Ethernet Circuits, page 6-59</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Step 1** Log into the ONS 15454 source Ethernet node. See the [“NTP-23 Log into the ONS 15454 GUI” procedure on page 3-21](#) for instructions.

- Step 2** On the ONS 15454 shelf graphic, double-click the circuit source card.
- Step 3** Select the **Provisioning > Port** tabs.
- Step 4** Verify the following settings:
- Enabled—Checked
  - Flow Control Neg—Checked or unchecked as indicated by the circuit or site plan.
  - Max Size—Check or unchecked as indicated by the circuit or site plan.
  - Media Type—Should indicate SX or LX.
- Step 5** Repeat Steps 1–4 for the destination node.
- Step 6** At the destination node connect the Ethernet test to the destination port and configure the test set to send and receive the appropriate Ethernet traffic.



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**Note** At this point, you will not be able to send and receive Ethernet traffic.

---

- Step 7** At the source node connect an Ethernet test set to the source port and configure the test set to send and receive the appropriate Ethernet traffic.
- Step 8** Transmit Ethernet frames between both test sets. If you cannot transmit and receive Ethernet traffic between the nodes, repeat Steps 1–7 to make sure you configured the Ethernet ports and test set correctly.
- Step 9** Perform protection switch testing appropriate to SONET topology:
- For UPSRs, see the [“DLP-94 UPSR Protection Switching Test” task on page 5-29](#)
  - For BLSRs see the [“DLP-91 BLSR Ring Switch Test” task on page 5-21](#).
- Configure your test set according to local site practice. For information about configuring your test set, see your test set user guide.
- Step 10** After the Ethernet test is complete, print the results or save them to a disk for future reference. For information about printing or saving test results see your test set user guide.
- Step 11** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-







## Manage Alarms

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This chapter explains how to view and manage the alarms and conditions on a Cisco ONS 15454.



**Note**

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CTC detects and reports SONET alarms generated by the Cisco ONS 15454 and the larger SONET network. You can use CTC to monitor and manage alarms at a card, node, or network level and view alarm counts on the LCD front panel. Default alarm severities conform to the Telcordia GR-253 standard, but you can reset severities to customized alarm profiles or suppress CTC alarm reporting. For alarm troubleshooting information, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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### 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* as necessary.

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

1. [NTP-67 View Alarms, History, Events, and Conditions, page 7-2](#)—Complete as needed.
2. [NTP-68 Delete Alarms, page 7-8](#)—Complete as needed.
3. [NTP-69 View Alarm-Affected Circuits, page 7-8](#)—Complete as needed.
4. [NTP-70 View Alarm Counts on the LCD for a Slot or Port, page 7-10](#)—Complete as needed.
5. [NTP-71 Create and Assign Alarm Severity Profiles, page 7-11](#)—As needed, complete these tasks to change the default severity for certain alarms, assign the new severities to a port, card, or node, and delete alarm profiles.
6. [NTP-72 Suppress and Raise Alarm Reporting, page 7-20](#)—As needed, use these tasks to suppress reported alarms at the port, card, or node level and disable the suppress command to resume normal alarm reporting.

# NTP-67 View Alarms, History, Events, and Conditions

<b>Purpose</b>	Use this procedure to view ONS 15454 alarms at the card, node, or network level; view the alarm history for cleared and uncleared alarms; and view events and conditions at the card, node, or network level.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the node that contains the alarms you wish to view. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.
- Step 2** At the card, node, or network-level CTC view, click the **Alarms** tab to display the alarms for that card, node, or network.
- Step 3** Troubleshoot the alarms using the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Complete the “DLP-110 View Alarm History” task on page 7-3, the “DLP-113 View Events and Synchronize Alarms” task on page 7-6, or the “DLP-114 View Conditions” task on page 7-7 as needed.

**Figure 7-1 Viewing alarms in the CTC node view**

Alarms tab

Num	Ref	Date	Object	Type	Slot	Port	Sev	ST	SA	Cond	Description
74	74	11/06/01 16:45:15 PDT	FAC-6-1	OC48	6	1	MN	R		EOC	SDCC Termination Failure
71	71	11/06/01 16:44:05 PDT	FAC-5-1	OC48	5	1	MN	R		EOC	SDCC Termination Failure
16	16	01/01/70 16:00:47 PDT	SYNC-NE				MN	R		SYNCSEC	Secondary Synchronization Reference Fail...

Buttons: Synchronize, Delete Cleared Alarms,  AutoDelete Cleared Alarms,  Show Events (NA)

78082

- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-110 View Alarm History

<b>Purpose</b>	Use this task to view past cleared and uncleared ONS 15454 alarms at the card, node, or network level
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

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- Step 1** Decide whether you want to view the alarm history at the node, network or card level.
- For the node level alarm history, go to [Step 2](#).
  - For the network level alarm history, go to [Step 3](#).
  - For the card level alarm history, go to [Step 4](#).
- Step 2** The node level view is the default view after you log into CTC ([Figure 7-2 on page 7-4](#)). To display the node level alarm history:
- Click the **History > Session** tabs if you want to see only the alarms and events that have occurred since you logged into the CTC.
  - Click the **History > Node** tabs if you want to retrieve all available alarms for the node.
  - Go to [Step 5](#).
- Step 3** From the node view ([Figure 7-2 on page 7-4](#)), click the blue up arrow tool on the CTC tool bar to display the network view.
- Click the **History** tab.  
Alarms and events that have occurred on the network since you logged into CTC are displayed.
  - Go to [Step 5](#).
- Step 4** Double-click a card on the shelf graphic to display the card view.
- Click the **History > Session** tabs if you want to see only the alarms and events that have occurred since you logged into CTC.
  - Click the **History > Card** tabs if you want to retrieve all available alarms for the card.
  - Go to [Step 5](#).



**Note** The ONS 15454 can store up to 640 critical alarms, 640 major alarms, 640 minor alarms, and 256 events. When the limit is reached, the ONS 15454 discards the oldest alarms and events.

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- Step 5** Verify that the **Alarms** checkbox is selected. Alarms are events with a severity of minor (MN), major (MJ) or critical (CR).
- Step 6** If you want to retrieve events, select the **Events** checkbox. Events include both alarms and conditions. Conditions are events with a severity of not alarmed (NA) or not reported (NR).

## DLP-111 Changing the Maximum Number of Session Entries for Alarm History

**Step 7** Click the **Retrieve** button.



**Tip**

Double click an alarm in the alarm table or an event in the history table to display the corresponding view. For example, double-clicking a card alarm takes you to card view. In network view, double-clicking a node alarm takes you to node view.

**Figure 7-2** Viewing all alarms reported for the current session

Blue up arrow

Num	Ref	New	Date	Object	Type	Slot	Port	Sev	ST	SA	Cond	Description
9420	9410	✓	01/20/70 13:49:36	FAC-6-1	OC48	6	1	MJ	C		EOC	SDCC termination failure
9407	9405	✓	01/20/70 13:48:47	SLOT-6	OC48	6		MN	C		IMPROPRMVL	Improper Removal
9403	9396	✓	01/20/70 13:48:24	FAC-6-1	OC48	6	1	MN	C		LOS	Loss of Signal
9399	9390	✓	01/20/70 13:48:08	SLOT-17	DS3	17		MN	C		IMPROPRMVL	Improper Removal
9388	9387	✓	01/20/70 13:47:44	SLOT-11	TCC	11		MN	C		IMPROPRMVL	Improper Removal
9265	9265		01/20/70 13:29:30	FAC-16-1	EPOS_100	16	1	MN	R		CARLOSS	Carrier Loss on the LAN

Synchronize Delete Cleared Alarms  AutoDelete Cleared Alarms  Show Events (NA)

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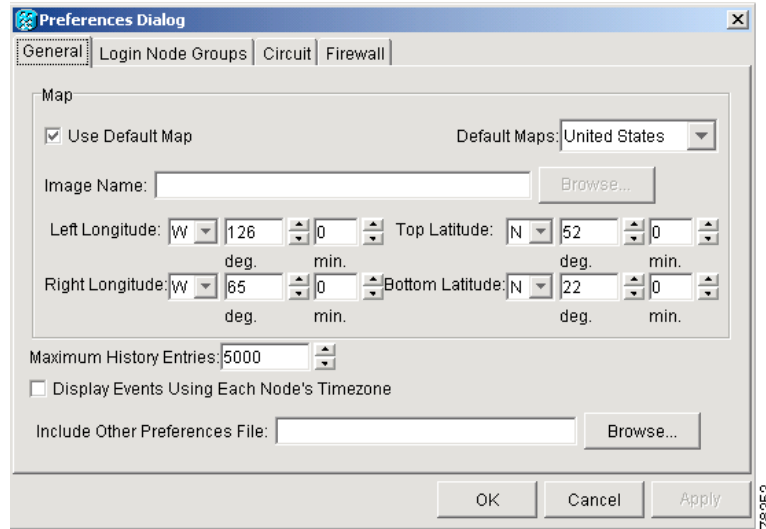
**Step 8** Return to your originating procedure (NTP).

## DLP-111 Changing the Maximum Number of Session Entries for Alarm History

<b>Purpose</b>	Use this task to change the maximum number of session entries displayed by the alarm history from the default of 5000.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** At the card, node, or network view, from the CTC menu bar click **Edit > Preferences**.  
The CTC Preferences Dialog appears.

**Figure 7-3** CTC Preferences Dialog featuring Maximum History Entries



- Step 2** Click the up or down arrow buttons next to the Maximum History Entries field to change the entry to the desired number. The permitted range of Maximum History Entries is 500 to 100,000.
- Step 3** Click **Apply** and **OK**.



**Note**

Setting the Maximum History Entries entry to the high end of the range uses more CTC memory and could impair CTC performance.



**Note**

This task changes the Maximum History Entries recorded for CTC sessions. It does not affect the maximum number of history entries viewable for a Network, Node or Card.

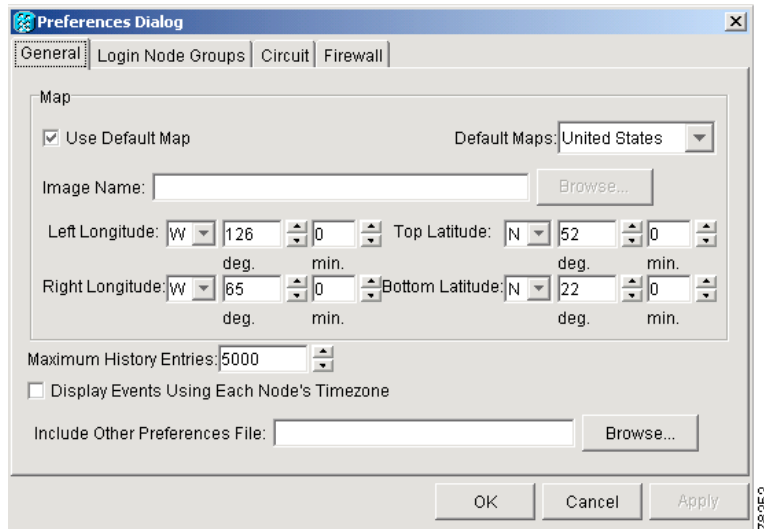
- Step 4** Return to your originating procedure (NTP).

## DLP-112 Display Events Using Each Node's Timezone

<b>Purpose</b>	This task changes the timestamp for events to the timezone of the ONS node reporting the alarm. By default, the events timestamp is set to the timezone for the CTC workstation.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** At the card, node, or network view, from the CTC menu bar click **Edit > Preferences**.  
The CTC Preferences Dialog appears.

**Figure 7-4** CTC Preferences Dialog featuring Maximum History Entries



- Step 2** Click the checkbox next to the Display Events Using Each Node's Timezone field.  
**Step 3** Click **Apply** and **OK**.  
**Step 4** Return to your originating procedure (NTP).

## DLP-113 View Events and Synchronize Alarms

<b>Purpose</b>	Use this task to view ONS 15454 events at the card, node, or network level and synchronize alarms
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** At the card, node, or network view, click the **Alarms** tab.  
**Step 2** Select the **Show Events (NA)** checkbox.  
**Step 3** Click the **Synchronize** button.  
Although CTC displays alarms and events in real time, the **Synchronize** button allows you to verify the alarm display. This is particularly useful during provisioning or troubleshooting.  
**Step 4** Return to your originating procedure (NTP).

# DLP-114 View Conditions

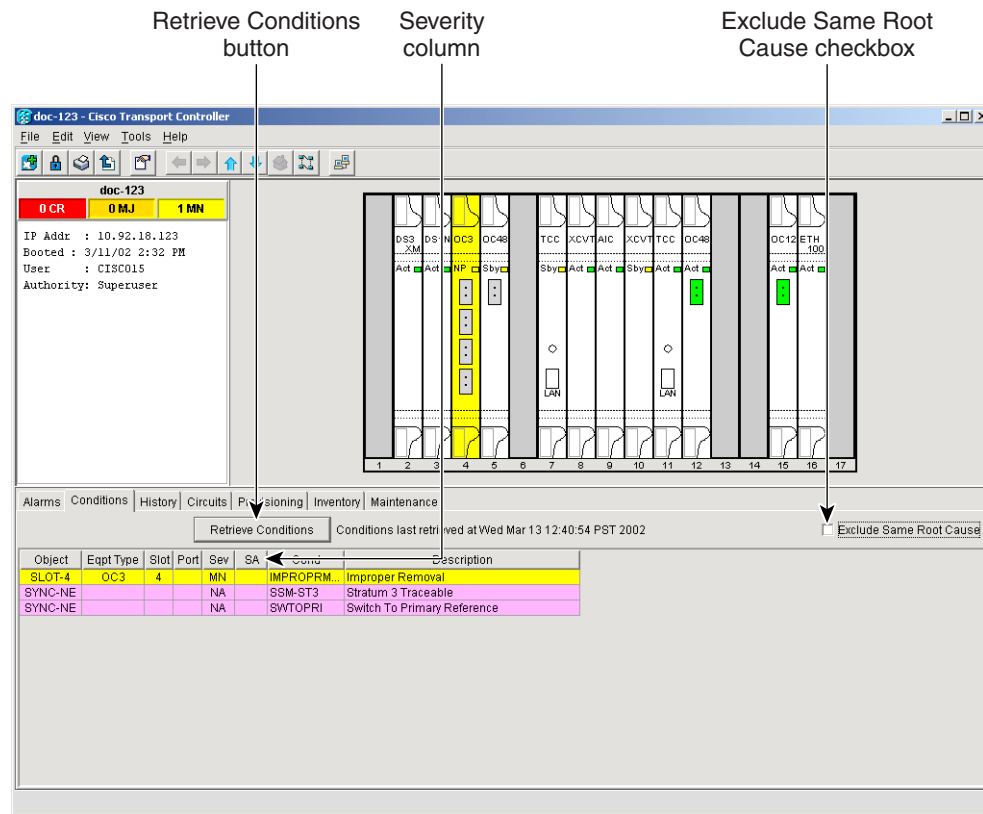
- Purpose** Use this task to view conditions at the card, node, or network level.
- Tools/Equipment** None
- Prerequisite Procedures** [DLP-60 Log into CTC, page 3-22](#)
- Required/As Needed** As needed
- Onsite/Remote** Onsite or remote

**Step 1** From the card, node, or network view, click the **Conditions** tab.

**Step 2** Click the **Retrieve Conditions** button.

Events include both alarms and conditions. Alarms are conditions with a severity of minor (MN), major (MJ) or critical (CR). Conditions are events with a severity of not alarmed (NA) or not reported (NR).

**Figure 7-5 Viewing fault conditions retrieved under the Conditions tabs**



**Step 3** If you want to apply exclusion rules, select the **Exclude Same Root Cause** checkbox at the node or network view.

According to Telcordia, exclusion rules apply to a query of “all conditions from a node” (the rules that apply in a "RTRV-ALM-ALL" TL1 command, but not in more specific TL1 RTRV-ALM commands). To match TL1 retrieval results, check this box on node view and network view and leave it unchecked on card view.

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

---

## NTP-68 Delete Alarms

<b>Purpose</b>	Use this procedure to delete ONS 15454 alarms that have been cleared.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** Log into a node where you want to delete alarms. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.

**Step 2** To delete node-level alarms:

- a. On the node (default) view click the **Alarms** tab.
- b. Click **Delete Cleared Alarms**.

This action will remove any cleared ONS 15454 alarms from the Alarms display. The rows of cleared alarms are colored white and have a C in their status (ST) column ([Figure 7-5 on page 7-8](#)).

**Step 3** To delete card-level alarms:

- a. In the node view, double-click the card graphic for the card you want to open.
- b. Click the **Alarms** tab and then the **Delete Cleared Alarms** button.

**Step 4** To delete network-level alarms:

- a. In the node view, click the blue up arrow tool on the toolbar at the top of the CTC screen.
- b. Click the **Alarms** tab and then the **Delete Cleared Alarms** button.

**Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

---

## NTP-69 View Alarm-Affected Circuits

<b>Purpose</b>	Use this procedure to view ONS 15454 circuits that are affected by a specific alarm.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** Log into the ONS 15454. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.



**Step 2** Click the **Alarms** tab and then right-click anywhere on the row of an active alarm.



**Note** The node view is the default, but you can also navigate to the Alarms tab in the network view and card view to perform Step 2.

The Select Affected Circuit dialog appears (Figure 7-6).

**Figure 7-6** Selecting the Affected Circuits option

The screenshot shows the Cisco Transport Controller interface. On the left, the 'Active Alarm row' is visible, showing details for alarm 'doc-124'. The main area displays a map of the United States with several nodes (doc-123, doc-124, doc-125) and their connections. A context menu is open over the map, with the 'Select Affected Circuits' option highlighted. Below the map is a table of alarms with columns for New, Date, Node, Object, Eqpt Type, Slot, Port, Sev, ST, SA, Cond, and Description. The table contains several rows of alarm data, with some rows highlighted in yellow.

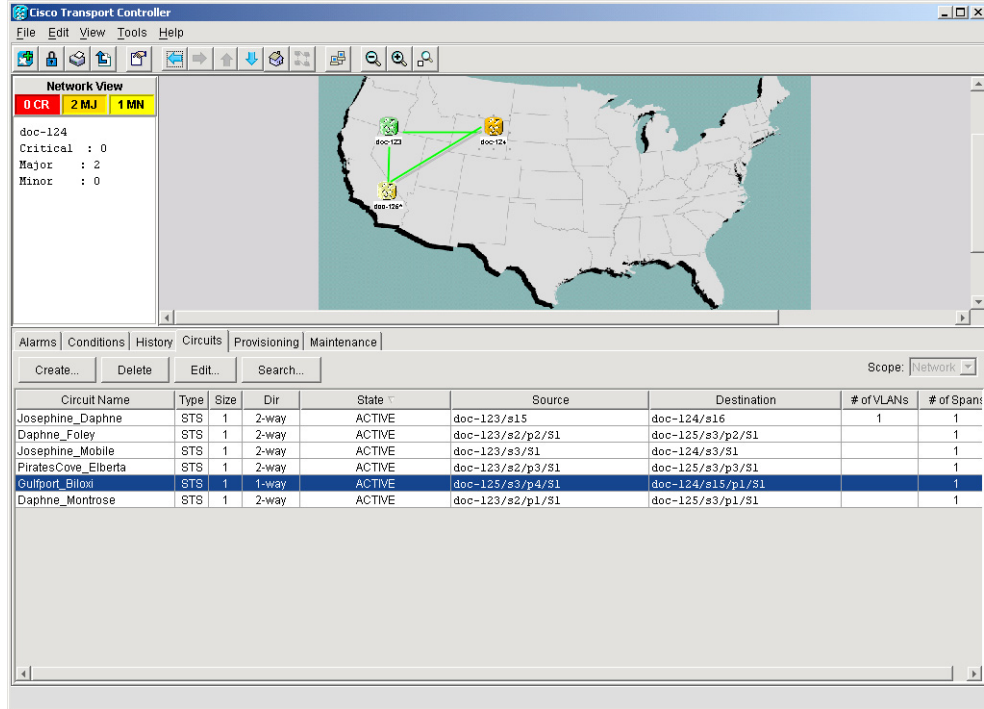
New	Date	Node	Object	Eqpt Type	Slot	Port	Sev	ST	SA	Cond	Description
<input checked="" type="checkbox"/>	03/13/02 17:17:51 PST	doc-124	STS-5-2	OC48	5	1	CR	C	<input checked="" type="checkbox"/>	UNEQ-P	Unequipped - Path
<input checked="" type="checkbox"/>	03/13/02 17:26:13 PST	doc-124	FAC-15-1	OC			MJ	R		EOC	SDCC Termination Failure
<input checked="" type="checkbox"/>	03/13/02 17:20:03 PST	doc-124	FAC-5-1	OC			MJ	C		EOC	SDCC Termination Failure
<input checked="" type="checkbox"/>	03/13/02 17:14:00 PST	doc-125	FAC-8-1	OC48	8	1	MJ	C		EOC	SDCC Termination Failure
<input checked="" type="checkbox"/>	03/13/02 17:09:31 PST	doc-124	FAC-16-1	EPOS_1...	16	1	MJ	R	<input checked="" type="checkbox"/>	CARLOSS	Carrier Loss On The LAN
<input checked="" type="checkbox"/>	01/03/70 16:44:09 PST	doc-123	FAC-5-1	OC48	5	1	MJ	C		EOC	SDCC Termination Failure
<input checked="" type="checkbox"/>	01/03/70 16:44:01 PST	doc-123	FAC-5-1	OC48	5	1	MJ	C		EOC	SDCC Termination Failure
<input checked="" type="checkbox"/>	03/13/02 17:20:29 PST	doc-125	FAC-13-1	OC12	13	1	MN	R		EOC	SDCC Termination Failure
<input checked="" type="checkbox"/>	03/13/02 17:17:51 PST	doc-124	VC4-16-5	EPOS_1...	16	1	MN	C		UNEQ-P	Unequipped - Path
<input checked="" type="checkbox"/>	03/13/02 17:12:51	doc-123	SYSTEM				MN	C		DISCONNECTED	Loss of connection between node and CTC
<input checked="" type="checkbox"/>	03/13/02 16:38:22	doc-125	SYSTEM				MN	C		DISCONNECTED	Loss of connection between node and CTC
<input checked="" type="checkbox"/>	01/03/70 16:43:43 PST	doc-123	SLOT-2	DS3	2		MN	C		AUTORESET	Automatic System Reset
<input checked="" type="checkbox"/>	01/03/70 16:43:32 PST	doc-123	SLOT-3	DS1	3		MN	C		AUTORESET	Automatic System Reset

**Step 3** Left-click or right-click **Select Affected Circuits**.

The Circuits screen appears with affected circuits highlighted (Figure 7-7).

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Figure 7-7 Highlighted circuit appears



- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

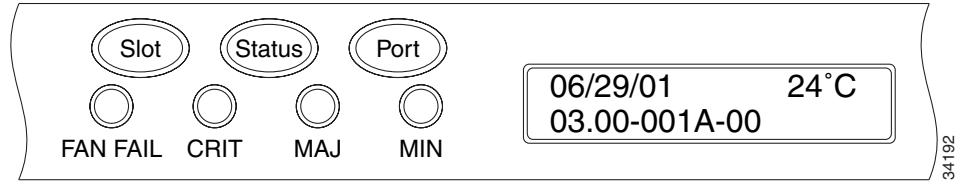
## NTP-70 View Alarm Counts on the LCD for a Slot or Port

<b>Purpose</b>	Use this procedure to view alarm counts using only the front panel LCD.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Use the Slot button on the LCD panel to toggle to the desired slot number on the ONS 15454.
- Step 2** If you want a card-level alarm count, press the **Status** button.
- Step 3** Use the Port button to toggle to a specific port.
- Step 4** If you want a port-level alarm count, press the **Status** button.

Figure 7-8 shows the LCD panel.

Figure 7-8 The LCD panel

**Note**

A blank LCD results when the fuse on the AIP board is blown. If this occurs, call Cisco TAC at 1-877-323-7368.

**Note**

Use the slot button to toggle to Node to see a summary of alarms for the entire node.

**Step 5**

Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-71 Create and Assign Alarm Severity Profiles

<b>Purpose</b>	Use this procedure to change the default severity for certain alarms (create an alarm profile).
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into a node where you want to create an alarm profile. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.
- Step 2** Complete the “DLP-115 Create Alarm Severity Profiles” task on page 7-12. This task clones a current alarm profile, renames the profile, and customizes the new profile.
- Step 3** As necessary, complete the “DLP-116 Apply Alarm Profiles to Ports and Cards” task on page 7-14 or the “DLP-117 Apply Alarm Profiles to Cards and Nodes” task on page 7-16.

**Note**

You can assign alarm profiles on a card basis using either of the tasks.

**Step 4**

Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

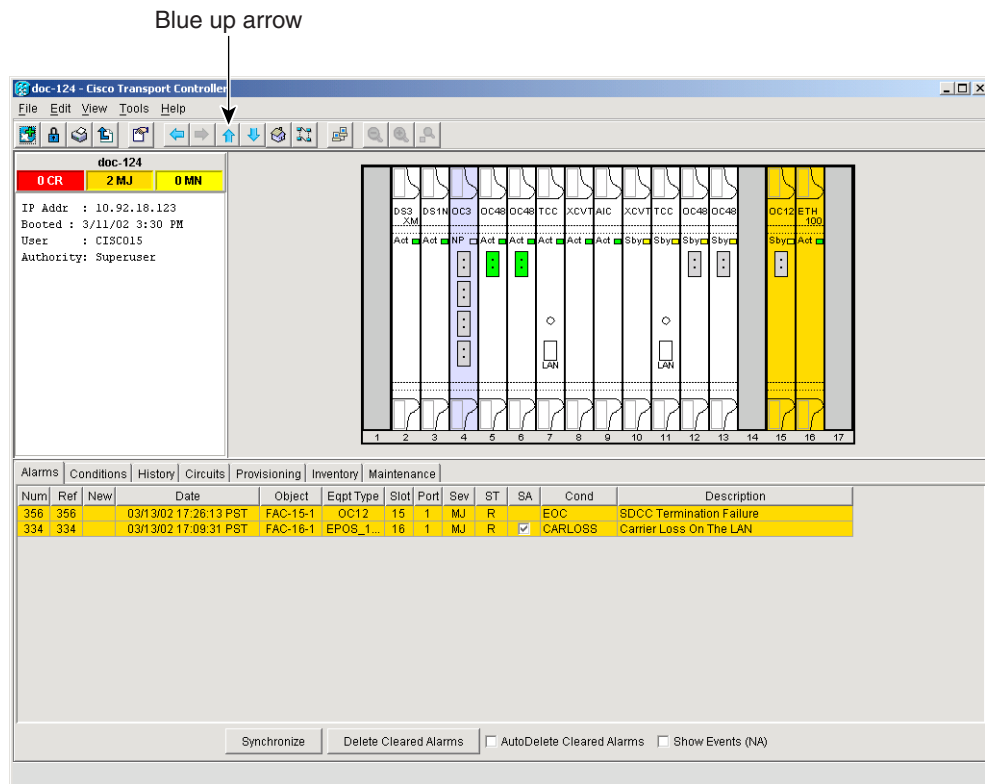
## DLP-115 Create Alarm Severity Profiles

<b>Purpose</b>	Use this task to create severity profiles for alarms.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** On the node view, click the blue up arrow tool to display the network view.

[Figure 7-9](#) shows the blue up arrow tool on the node view

**Figure 7-9 Blue up arrow tool on node view**



**Step 2** Click the **Provisioning > Alarm Profiles** tabs.

**Step 3** Click **Load**.

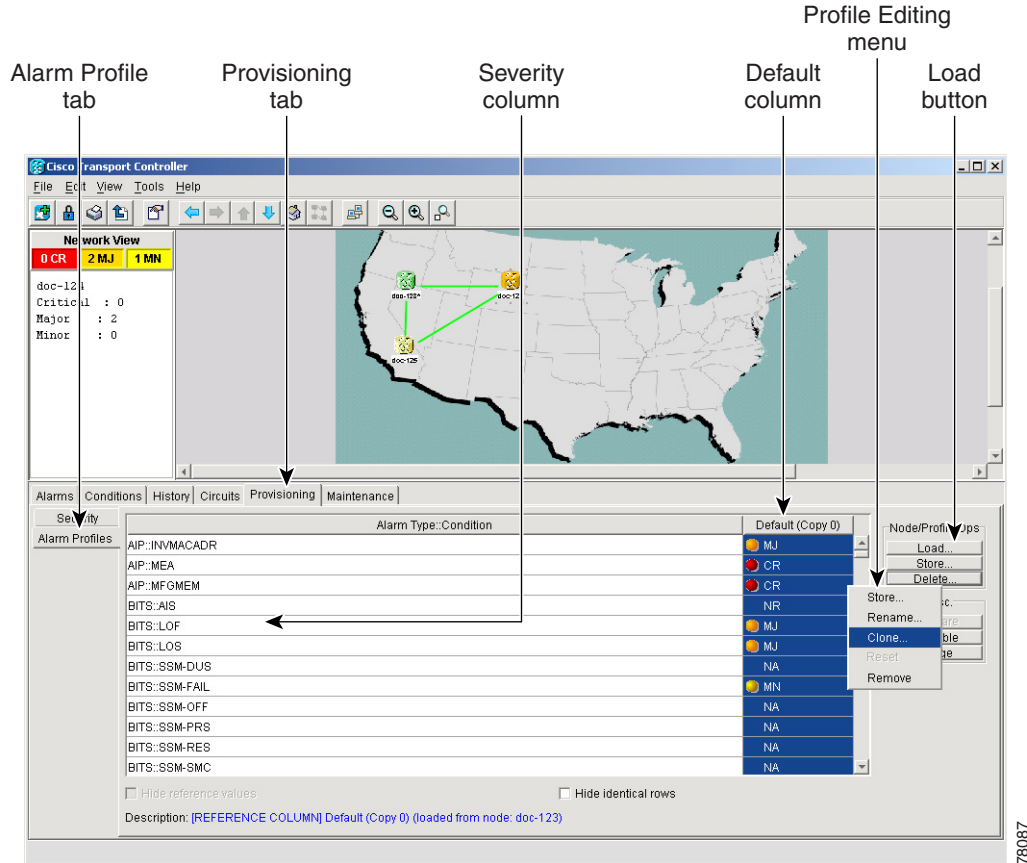
**Step 4** Highlight the node name you are logged into in the *Node Names* field and highlight **Default** in the *Profile Names* field.

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

**Step 6** Right-click anywhere in the Default column to display the Profile Editing menu.

**Step 7** Choose **Clone** from the menu. (You can also clone any other profiles that appear under the Available button, except Inherited.)

Figure 7-10 Alarm profiles screen showing the default profiles of the listed alarms



- Step 8** In the Clone Profile Default dialog box, enter a name in *New Profile Name*. Profile names must be unique. If you try to import or name a profile that has the same name as another profile, CTC adds a suffix to create a new name.
- Step 9** Click **OK**. A new alarm profile (named in Step 8) is created. This profile duplicates the severities of the default profile and is added as a new column on the far right-hand side.
- Step 10** Modify (customize) the alarm profile:
- In the new alarm profile column, click in a row that contains the alarm severity you want to change.
  - From the menu, select the desired severity.
  - Repeat Steps a and b for each alarm that needs to be changed.
  - After you have assigned the properties to your new alarm profile, click the new alarm profile to highlight it and click the **Store** button.
  - In the Store Profile(s) dialog box, select a node or nodes where the profile will be stored and/or specify a file on the workstation.
  - Click **OK**.
- Step 11** Return to your originating procedure (NTP).

**Note**


---

You can also clone alarm profiles shown under the Available tab.

---

**Note**


---

Checking the *Hide identical rows* checkbox configures the Alarm Profiles pane to display only the rows of the profile severities that do not match along with the row's specific alarm type and condition.

---

**Note**


---

Checking the *Hide values matching profile Default* checkbox configures the Alarm Profiles pane to display only the severities that do not match the severities of the Default profile.

---

## DLP-116 Apply Alarm Profiles to Ports and Cards

<b>Purpose</b>	Use this task to apply alarm severity profiles to a port or a card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-115 Create Alarm Severity Profiles, page 7-12</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** In node view, double-click a card to display the card view.

**Note**


---

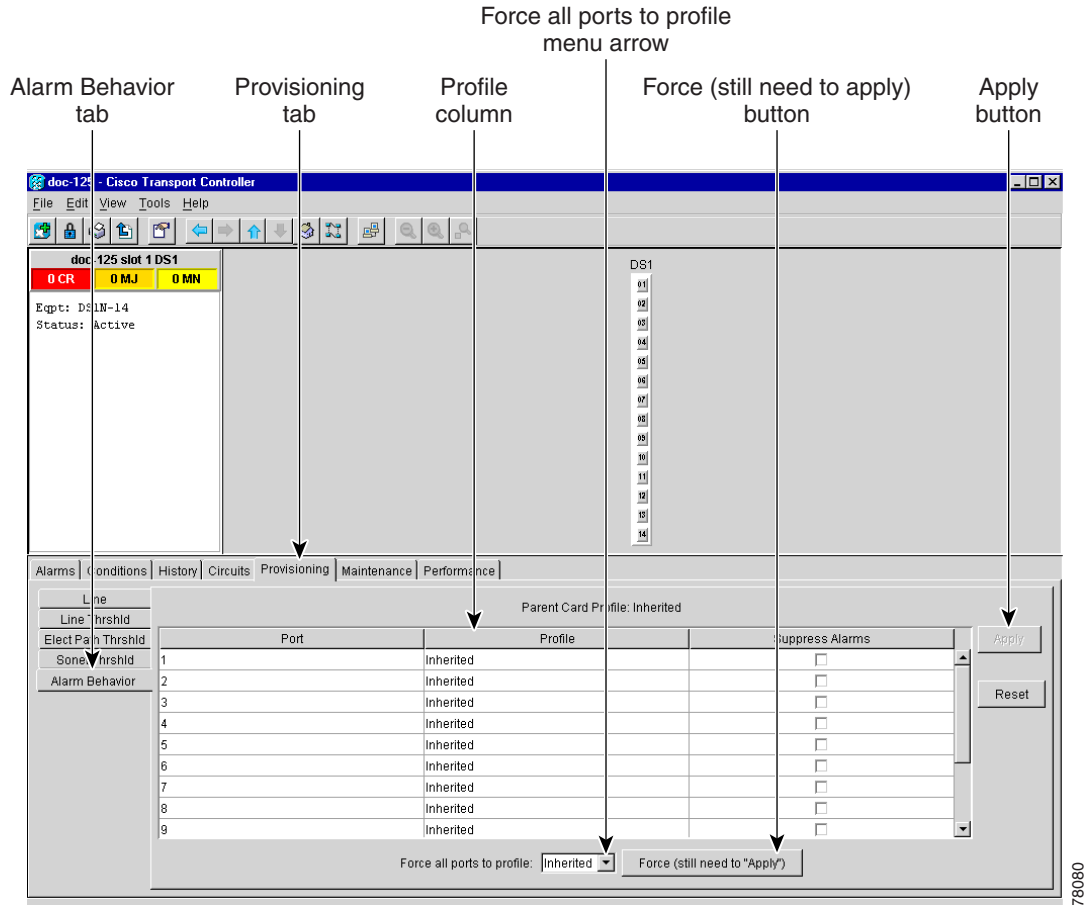
You can also apply alarm profiles to cards using the “[DLP-117 Apply Alarm Profiles to Cards and Nodes](#)” task on page 7-16.

---

**Step 2** Click the **Provisioning > Alarm Behavior** tabs.

[Figure 7-11](#) shows the affected DS-1 card; the CTC shows Parent Card Profile: Inherited.

Figure 7-11 Card view of a DS1 alarm profile



- Step 3** To apply profiles on a port basis:
- Click the appropriate row under the **Profile** column for the port desired.
  - Choose the appropriate Profile. (You can select more than one port profile.)
  - Click **Apply**.
- Step 4** To apply profiles to all ports on a card:
- Click the **Force all ports to profile** menu arrow at the bottom of the screen.
  - Choose the appropriate Profile.
  - Click **Force (still need to "Apply")**.
  - Click **Apply**.
- Step 5** Return to your originating procedure (NTP).



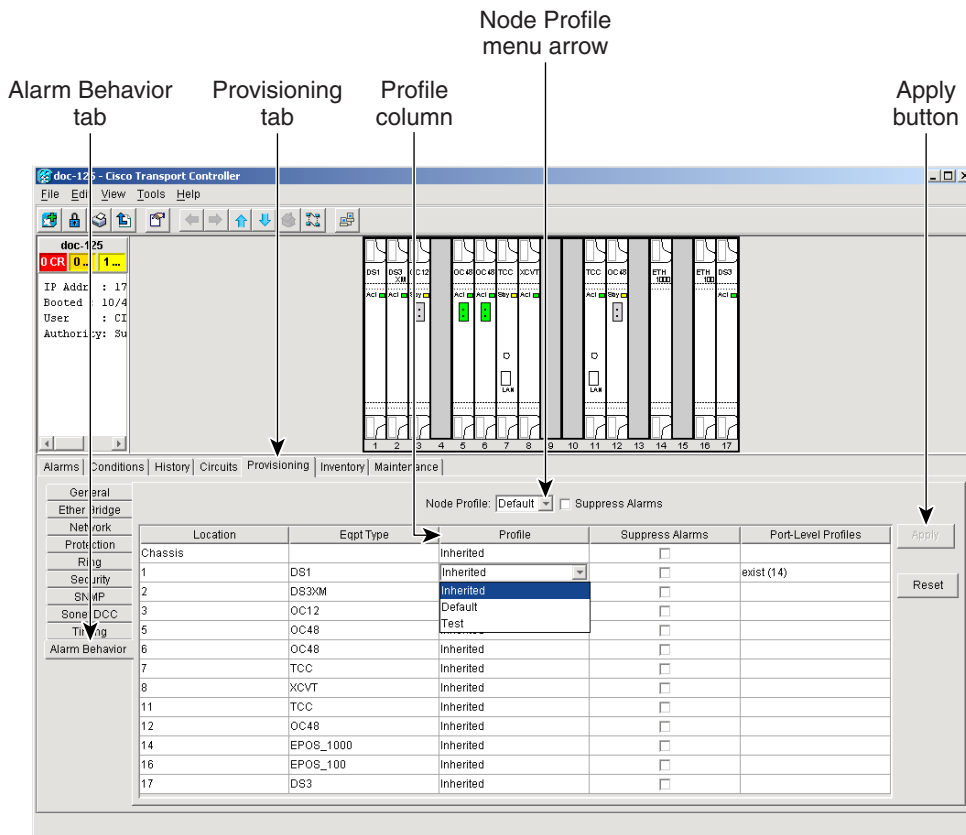
**Tip** If you choose the wrong profile, click **Reset** to return to the previous profile setting.

## DLP-117 Apply Alarm Profiles to Cards and Nodes

<b>Purpose</b>	Use this task to assign alarm profiles to cards or nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-115 Create Alarm Severity Profiles, page 7-12</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** In the node view, click the **Provisioning > Alarm Behavior** tabs.

**Figure 7-12** Node view of a DS1 alarm profile



- Step 2** To apply profiles on a card basis:
- Click the **Profile** column for the card desired.
  - Choose the appropriate Profile. (You can select more than one.)
  - Click **Apply**.

- Step 3** To apply the profile to an entire node:
- Click the **Node Profile** menu arrow.



- b. Choose the appropriate Profile.
- c. Click **Apply**.

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



**Tip**

---

If you choose the wrong profile, click **Reset** to return to the previous profile.

---

## DLP-118 Delete Alarm Severity Profiles

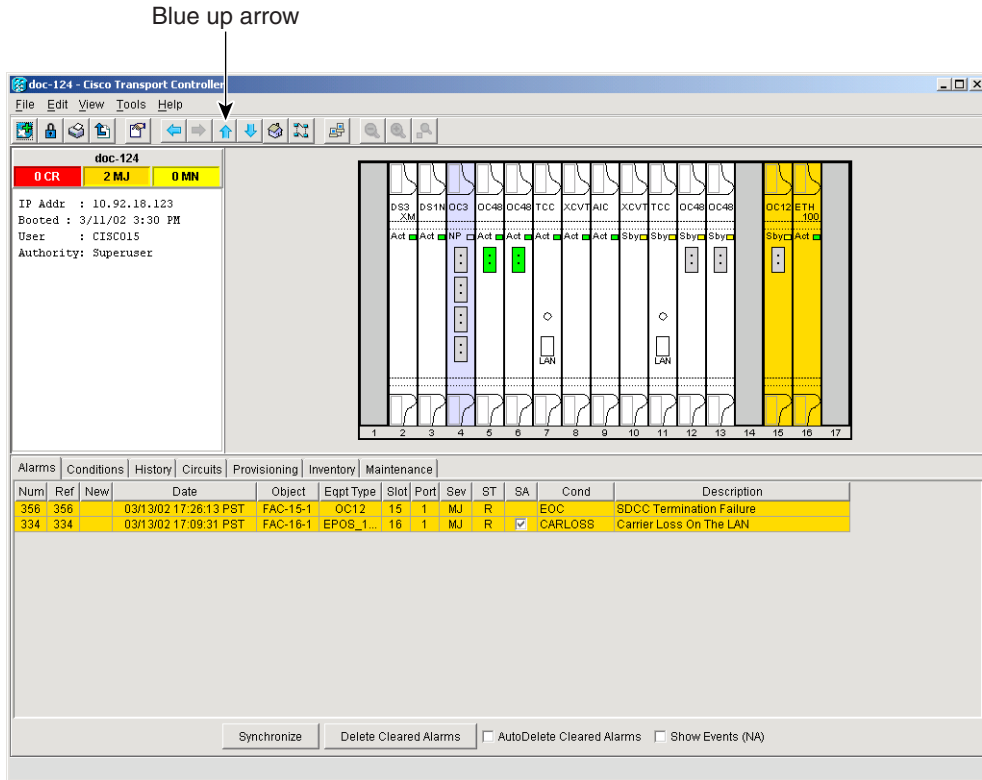
<b>Purpose</b>	Use this task to delete severity profiles for alarms.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** From the node view, click the blue up arrow tool to display the network view.

[Figure 7-13](#) shows the blue up arrow tool on the node view.

Figure 7-13 Blue up arrow tool on node view

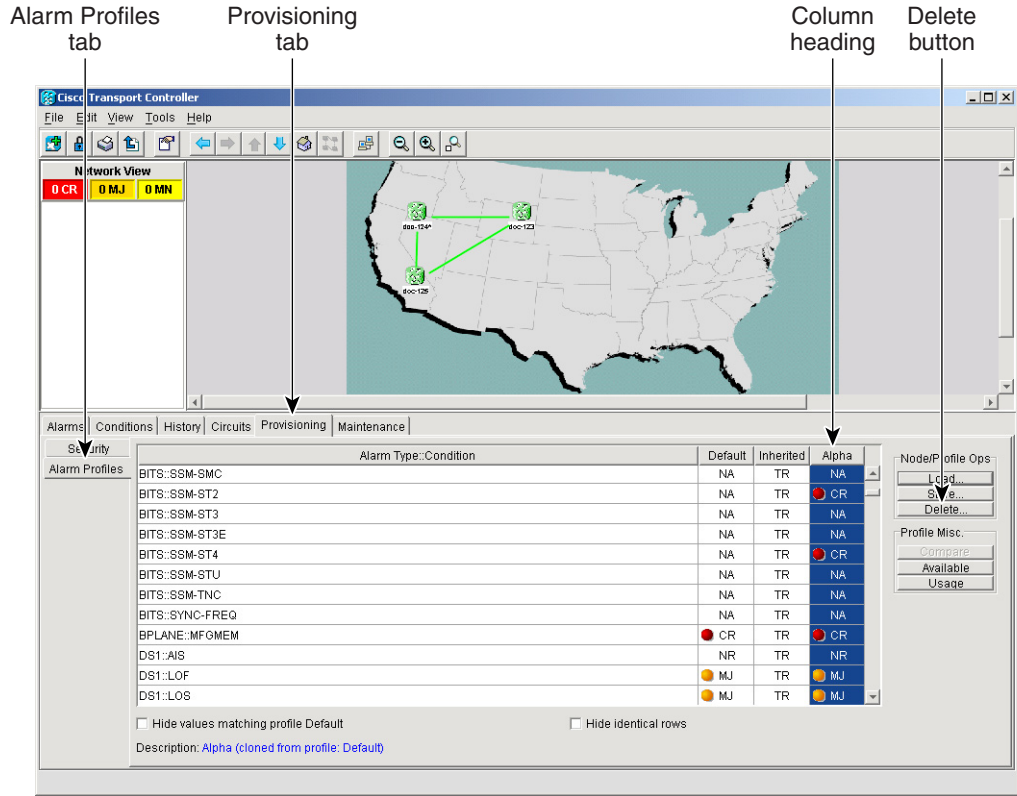


**Step 2** Click the **Provisioning > Alarm Profiles** tabs.

**Step 3** Click the column heading of the profile you want to delete, to highlight the profiles' column.

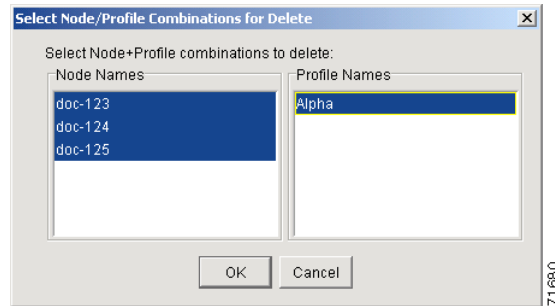
Figure 7-14 shows the highlighted profile column.

Figure 7-14 Highlighted Profile column



- Step 4** Click the **Delete** button.  
The Select Node/Profile Combination for Delete Window appears.

Figure 7-15 Select Node/Profile Combination for Delete Window



- Step 5** Click the node names to highlight the nodes you want to delete profiles from. Hold down the Shift key to select multiple node names.
- Step 6** Click the profile names to highlight the ones you want to delete from the highlighted node names.
- Step 7** Click **OK**.  
Delete Alarm Profile confirmation dialog(s) appear.
- Step 8** Click **Yes** for each Delete Alarm Profile confirmation dialog.  
The profiled are now deleted from the nodes selected.

**Step 9** If you want to also remove the profile from appearing on the **Provisioning > Alarm Profiles** screen, right click the column heading of the profile you deleted and click **Remove**.

**Step 10** Return to your originating procedure (NTP).

**Note**

If a combination of node and profile are selected that do not exist a warning appears “One or more of the profile(s) selected do not exist on one or more of the node(s) selected.” For example, if node A has only profile 1 and the user tries to delete from node A both profile 1 and profile 2, which exists only on nodes other than node A, this warning will appear. However, the operation still removes profile 1 from node A.

**Note**

Deleting profiles currently in use prompts the user for a confirmation.

**Note**

Default and Inherited profiles may not be deleted and don’t appear in the Select Node/Profile Combination for Delete Window.

## NTP-72 Suppress and Raise Alarm Reporting

<b>Purpose</b>	Use this procedure to manipulate alarm reporting for ONS 15454 ports, cards, or nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** Log into the ONS 15454. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.

**Step 2** Complete the “[DLP-119 Suppress Alarm Reporting](#)” task on page 7-21 to provision the node to send out autonomous messages to clear any raised alarms.

**Note**

Suppressing alarms prevents alarms from appearing on Alarm or History tabs or in any other clients. The suppressed alarms behave like conditions, which have their own non-reporting (NR) severities, and appear on the Conditions tab. The suppressed alarms appear with their alarm severity, color code, and service-affecting status.

**Step 3** Complete the “[DLP-120 Raise Alarm Reporting](#)” task on page 7-22 to remove the suppress-alarms command and provision the node to send out autonomous messages to raise any actively suppressed alarms.

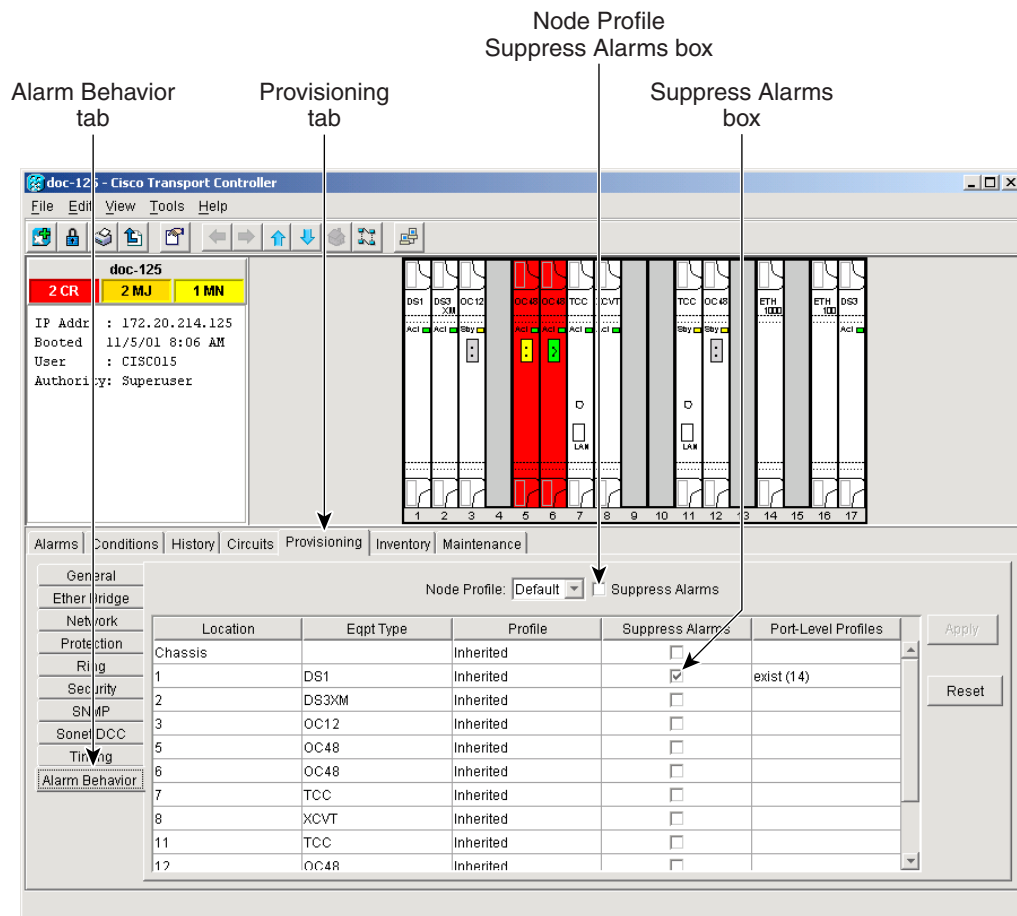
**Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

# DLP-119 Suppress Alarm Reporting

- Purpose** Use this task to suppress the reporting of ONS 15454 alarms at the port, card, or node level.
- Tools/Equipment** None
- Prerequisite Procedures** [DLP-60 Log into CTC, page 3-22](#)
- Required/As Needed** As needed
- Onsite/Remote** Onsite or remote

- Step 1** At either the node (default) or card view, click the **Provisioning > Alarm Behavior** tabs.
- At the card level, you can suppress alarms on a port-by-port basis. At the node level, you can suppress alarms on a card-by-card basis or on the entire node.
- Step 2** Check the **Suppress Alarms** box for the card or ports you want to suppress. If you want to suppress alarms for the entire node, check the **Suppress Alarms** box next to the Node Profile field.

**Figure 7-16** The suppress alarms checkbox



- Step 3** Click the **Apply** button.

The node sends out autonomous messages to clear any raised alarms.

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



**Caution**

If multiple CTC/TL1 sessions are open, suppressing alarms in one session will suppress the alarms in all other open sessions.

---

## DLP-120 Raise Alarm Reporting

<b>Purpose</b>	Use this task to remove the alarm suppression command on a port, card, or node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-119 Suppress Alarm Reporting, page 7-21</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** At either the node (default) or card view, depending on where the alarms were suppressed, click the **Provisioning > Alarm Behavior** tabs.
- Step 2** In card view, deselect the **Suppress Alarms** checkbox for the cards or ports you no longer wish to suppress. In node view, deselect the **Suppress Alarms** checkbox next to the Node Profile field.
- Step 3** Click the **Apply** button. The node sends out autonomous messages to raise any actively suppressed alarms.
- Step 4** Return to your originating procedure (NTP).
-



## Monitor Performance

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This chapter explains how to enable and view performance monitoring statistics for the Cisco ONS 15454.

### 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* as necessary.

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

1. [NTP-73 Enable Performance Monitoring, page 8-2](#)—Complete as needed.
2. [NTP-74 Monitor Performance, page 8-6](#)—Complete this procedure after enabling performance monitoring, as needed.



**Note**

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You can find additional PM information in the Digital transmission surveillance section in Telcordia's GR-1230-CORE, GR-820-CORE, and GR-253-CORE documents, and in the ANSI document entitled *Digital Hierarchy - Layer 1 In-Service Digital Transmission Performance Monitoring*.

---

## NTP-73 Enable Performance Monitoring

<b>Purpose</b>	This procedure describes how to enable performance monitoring.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As Needed
<b>Onsite/Remote</b>	Both

- 
- Step 1** Log into CTC at the node that you want to monitor. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Complete the “[DLP-121 Enable Pointer Justification Count Performance Monitoring](#)” task on page 8-2 if you need to monitor clock synchronization.
- Step 3** Complete the “[DLP-122 Enable Intermediate-Path Performance Monitoring](#)” task on page 8-4 if you need to monitor large amounts of STS traffic through intermediate nodes.
- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-121 Enable Pointer Justification Count Performance Monitoring

<b>Purpose</b>	This task enables pointer justification counts, which provide a way to align the phase variations in STS and VT payloads. A consistent pointer justification count indicates clock synchronization problems between nodes.  to align the phase variations in STS and VT payloads and to monitor the clock synchronization between nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view pointer justification PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, refer to <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

- 
- Step 1** From node view, double-click the card where the line terminates (drops), called a line terminated equipment (LTE) card. The card view displays.  
See [Table 8-1](#) for a list of Cisco ONS 15454 LTE cards.

**Table 8-1** *Traffic Cards that Terminate the Line, Called LTEs*

Line Terminating Equipment	
EC1-12	OC3 IR 4/STM1 SH 1310
OC12 IR/STM4 SH 1310	OC12 LR/STM4 LH 1310



**Table 8-1 Traffic Cards that Terminate the Line, Called LTEs (continued)**

Line Terminating Equipment	
OC12 LR/STM4 LH 1550	OC48 IR 1310
OC48 LR 1550	OC48 IR/STM16 SH AS 1310
OC48 LR/STM16 LH AS 1550	OC48 ELR/STM16 EH 100 GHz
OC48 ELR/STM16 EH 200 GHz	OC192 LR/STM64 LH 1550

**Step 2** Click the **Provisioning > Line** tabs.

**Step 3** Click the **PJStsMon#** menu and select a number based on the following rules: [Figure 8-1](#) shows the PJStsMon# menu on the Provisioning screen.

- The default value of 0 means pointer justification monitoring is disabled.
- The values 1-N are the number of STSs on the port. One STS per port can be enabled from the **PJStsMon#** card menu.

In the card view for the EC1 card, choose 0 or 1 on each of 12 ports.

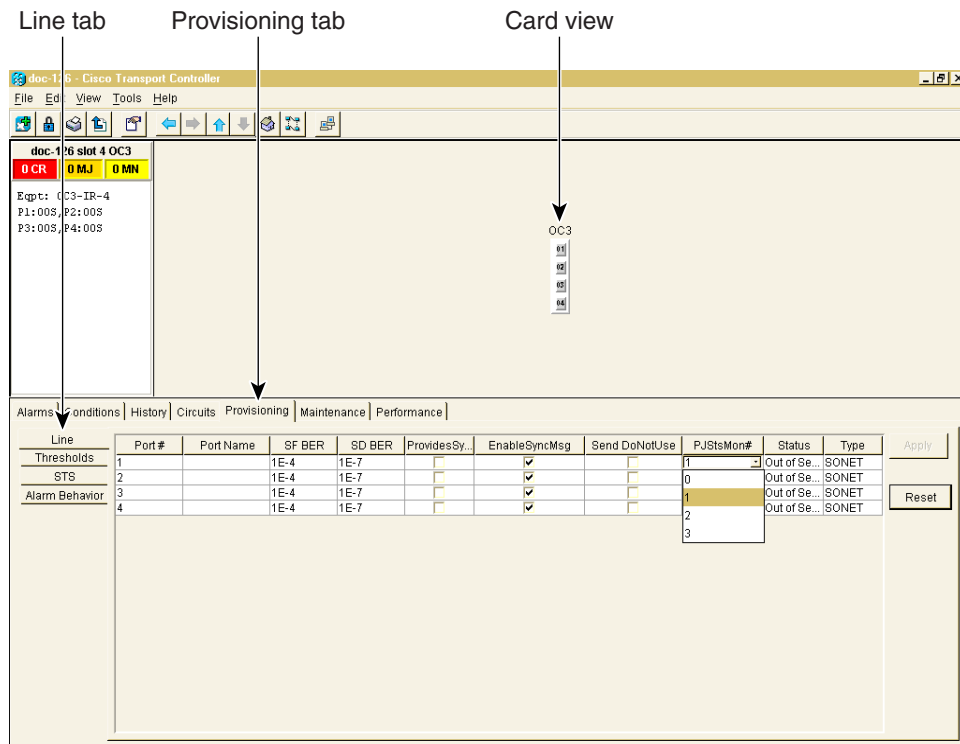
In the card view for the OC-3 card, choose 0, or any number 1 through 3 on each port.

In the card view for the OC-12 card, choose 0, or any number 1 through 12 on each port.

In the card view for the OC-48 card, choose 0, or any number 1 through 48 on each port.

In the card view for the OC-192 card, choose 0, or any number 1 through 192 on each port.

**Figure 8-1 Line tab for enabling pointer justification count parameters**



**Step 4** Confirm that the port is **In Service**.

## DLP-122 Enable Intermediate-Path Performance Monitoring

- Step 5** If the port is **In Service**, click **Apply** and go to [Step 7](#).
- Step 6** If the port is **Out of Service**, select **In Service** in the Status field and click **Apply**.
- Step 7** Click the **Performance** tab to view PM parameters. [Figure 8-2](#) shows pointer justification count. Refer to the *Cisco ONS 15454 Reference Manual* for more PM information, details, and definitions.



**Note** On CTC, the count fields for PPJC and NPJC PMs appear white and blank unless they are enabled on the Provisioning > Line tabs.

**Figure 8-2 Viewing Pointer Justification Counts.**

Pointer justification counts      Performance tab      Card view

15-minute, near-end registers for Port #1, STS #1, at 1/23/1970 19:12:07

Param	Curr	Prev	Prev-1	Prev-2	Prev-3	Prev-4	Prev-5	Prev-6	Prev-7	Prev-8	Prev-9	Prev-10
CV-L	0	0	0	0	0	0	0	0	0	0	0	0
ES-L	0	9	0	0	0	0	0	0	0	0	0	0
SES-L	0	0	0	0	0	0	0	0	0	0	0	0
UAS-L	0	14	0	0	0	0	0	0	0	0	0	0
FC-L	0	1	0	0	0	0	0	0	0	0	0	0
CV-S	0	177812	0	0	0	0	0	0	0	0	0	0
ES-S	0	18	0	0	0	0	0	0	0	0	0	0
SES-S	0	18	0	0	0	0	0	0	0	0	0	0
SEFS-S	0	14	0	0	0	0	0	0	0	0	0	0
PPJC-Pdet	0	0										
NPJC-Pdet	0	0										
PPJC-Pgen	0	0										
NPJC-Pgen	0	0										
PSC												
PRN												

61947

## DLP-122 Enable Intermediate-Path Performance Monitoring



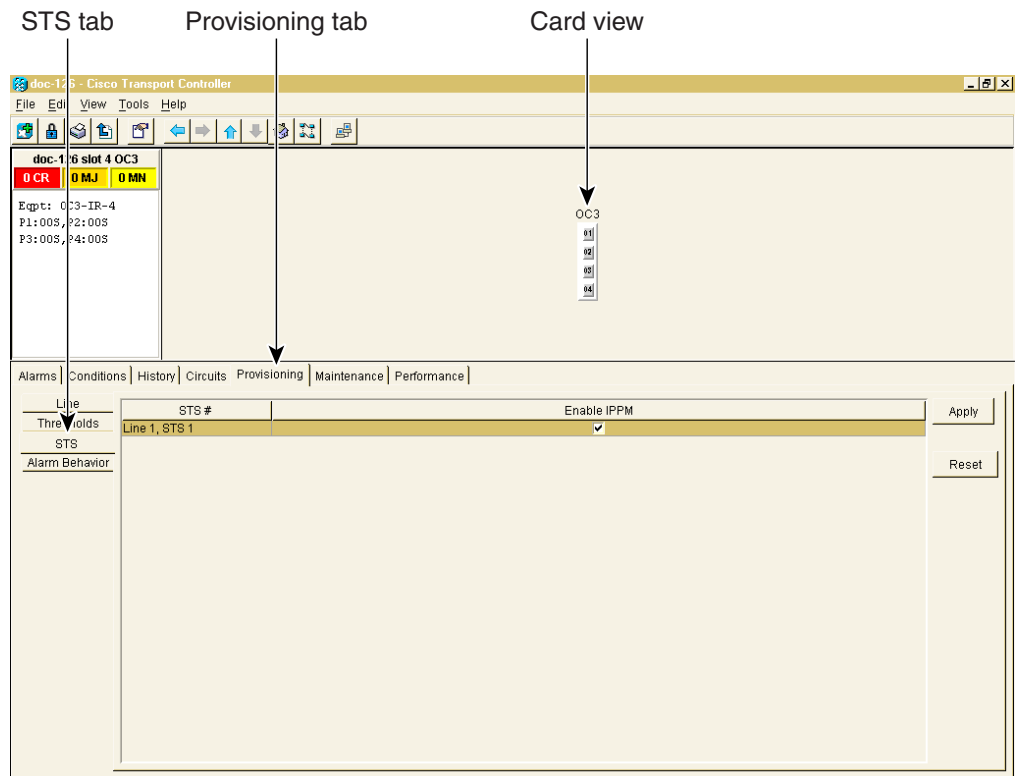
**Note** The monitored IPPMs are STS CV-P, STS ES-P, STS SES-P, STS UAS-P, and STS FC-P. For more information about IPPM, see the *Cisco ONS 15454 Reference Manual*.

<b>Purpose</b>	This task enables intermediate-path performance monitoring, which allows you to monitor large amounts of STS traffic through intermediate nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	If no STS circuit exists, use <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> to create an STS circuit.  The circuit must pass through the EC-1 or OC-N card before you can enable IPPM on the circuit.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

**Step 1** From node view, double-click the LTE card you want to monitor. The card view displays. See [Table 8-1 on page 8-2](#) for a list of Cisco ONS 15454 LTE cards.

**Step 2** Click the **Provisioning > STS** tab. [Figure 8-3](#) shows the STS tab on the Provisioning screen.

**Figure 8-3 STS tab for enabling IPPM**



**Step 3** Click **Enable IPPM** for the STS you want to monitor.

**Step 4** Click **Apply** and go to the **Performance** tab to view PM parameters. For IPPM definitions refer to the *Cisco ONS 15454 Reference Manual*.

# NTP-74 Monitor Performance

<b>Purpose</b>	The Performance Monitoring screen allows you to monitor node performance in 15-minute intervals or 24-hour periods and to monitor near-end PMs or far-end PMs.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you monitor performance, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Log into CTC at the node that you want to monitor. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Complete the “[DLP-123 View PMs](#)” task on page 8-6.
- Step 3** As needed, use the following tasks to change the display of PM counts:
- “[DLP-124 Refresh PM Counts at Fifteen-Minute Intervals](#)” task on page 8-7
  - “[DLP-125 Refresh PM Counts at Twenty-Four Hour Intervals](#)” task on page 8-9
  - “[DLP-126 Monitor Near-End PM Counts](#)” task on page 8-10
  - “[DLP-127 Monitor Far-End PM Counts](#)” task on page 8-11
  - “[DLP-128 Monitor PM Counts for Near-End or Far-End Signals](#)” task on page 8-12
  - “[DLP-129 Reset Current PM Counts](#)” task on page 8-14
  - “[DLP-130 Clear Selected PM Counts](#)” task on page 8-15
- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

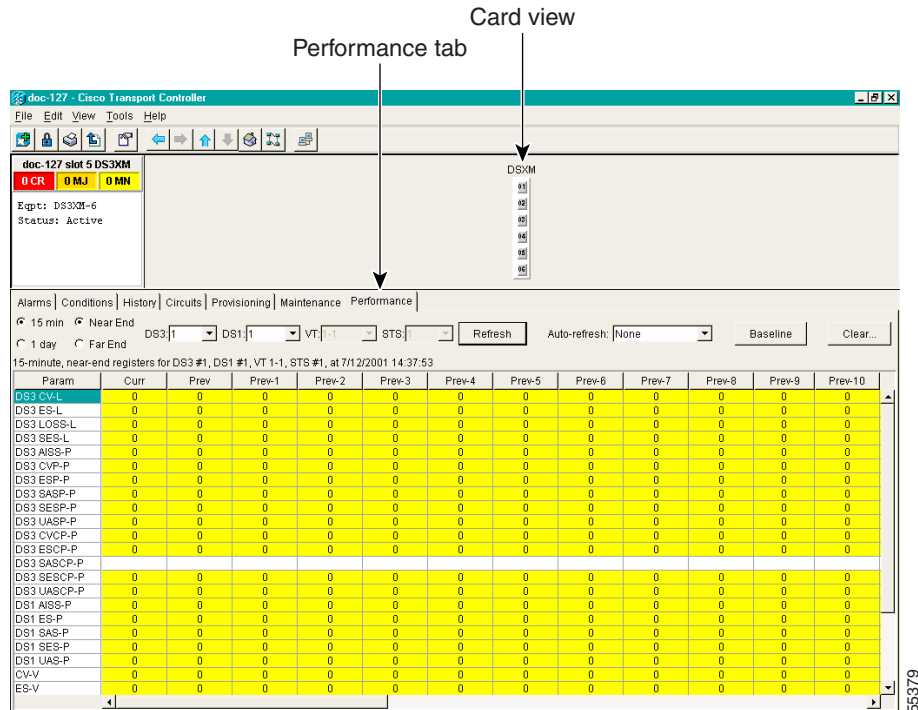
## DLP-123 View PMs

<b>Purpose</b>	This task enables you to view PM counts to detect performance problems early.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.

**Step 2** Click the **Performance** tab (Figure 8-4).

**Figure 8-4** Viewing performance monitoring information



**Step 3** View the PM parameter names that appear on the left portion of the screen in the Param column. The parameter numbers appear on the right portion of the screen in the Curr (current), and Prev (previous) columns. For PM definitions refer to the *Cisco ONS 15454 Reference Manual*.

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

## DLP-124 Refresh PM Counts at Fifteen-Minute Intervals

<b>Purpose</b>	This task changes the screen view to display PMs in 15-minute intervals.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or Remote

**Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.

**Step 2** Click the **Performance** tab.

- Step 3** Click the **15 min** button. [Figure 8-5](#) shows the time interval buttons on the Performance Monitoring screen.

**Figure 8-5** Time interval buttons on the card view Performance tab

Fifteen-minute and twenty-four hour intervals

The screenshot shows the Performance Monitoring screen for a Cisco Transport Controller. The interface includes a menu bar (File, Edit, View, Tools, Help) and a toolbar with navigation icons. The main area displays the card information: 'doc-127 slot 5 DS3XM', 'Exp't: DS3XM-6', and 'Status: Active'. Below this, there are tabs for Alarms, Conditions, History, Circuits, Provisioning, Maintenance, and Performance. The Performance tab is selected, showing a table of performance parameters. The table has columns for 'Param', 'Curr', 'Prev', 'Prev-1', 'Prev-2', 'Prev-3', 'Prev-4', 'Prev-5', 'Prev-6', 'Prev-7', 'Prev-8', 'Prev-9', and 'Prev-10'. The 'Curr' column is highlighted in yellow. The table contains data for various parameters, including DS3 CV-L, DS3 ES-L, DS3 LOSS-L, DS3 SES-L, DS3 AISS-P, DS3 CVP-P, DS3 ESP-P, DS3 SASP-P, DS3 SESS-P, DS3 UASP-P, DS3 CVCP-P, DS3 ESCP-P, DS3 SASCP-P, DS3 SESCP-P, DS3 UASCP-P, DS1 AISS-P, DS1 ES-P, DS1 SAS-P, DS1 SES-P, DS1 UAS-P, CV-V, and ES-V. The 'Curr' column for all parameters shows a value of 0. The 'Refresh' button is visible in the interface.

Param	Curr	Prev	Prev-1	Prev-2	Prev-3	Prev-4	Prev-5	Prev-6	Prev-7	Prev-8	Prev-9	Prev-10
DS3 CV-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 LOSS-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 ES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SAS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 UAS-P	0	0	0	0	0	0	0	0	0	0	0	0
CV-V	0	0	0	0	0	0	0	0	0	0	0	0
ES-V	0	0	0	0	0	0	0	0	0	0	0	0

- Step 4** Click the **Refresh** button. Performance monitoring parameters display in 15-minute intervals synchronized with the time of day.

- Step 5** View the Current column to find PM counts for the current 15-minute interval.

Each monitored performance parameter has corresponding threshold values for the current time period. If the value of the counter exceeds the threshold value for a particular 15-minute interval, a threshold crossing alert (TCA) will be raised. The number represents the counter value for each specific performance monitoring parameter.

- Step 6** View the Prev-N columns to find PM counts for the preceding 15-minute intervals.



**Note**

If a complete 15-minute interval count is not possible, the value displays with a yellow background. An incomplete or incorrect count can be caused by monitoring for less than 15 minutes after the counter started, changing node timing settings, changing the time zone settings, replacing a card, resetting a card, or by changing port states. When the problem is corrected, the subsequent 15-minute interval appears with a white background.

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

## DLP-125 Refresh PM Counts at Twenty-Four Hour Intervals

<b>Purpose</b>	This task changes the screen view to display PMs in 24-hour periods.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or Remote

- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.
- Step 2** Click the **Performance** tab.
- Step 3** Click the **1 day** button. [Figure 8-6](#) shows the time interval buttons on the Performance Monitoring screen.

**Figure 8-6 Time interval buttons on the card view Performance tab**

Fifteen-minute and twenty-four hour intervals

- Step 4** Click the **Refresh** button. Performance monitoring displays in 24-hour periods synchronized with the time of day.
- Step 5** View the Current column to find PM counts for the current 24-hour period.

Each monitored performance parameter has corresponding threshold values for the current time period. If the value of the counter exceeds the threshold value for a particular 24-hour period, a threshold crossing alert (TCA) will be raised. The number represents the counter value for each specific performance monitoring parameter.

**Step 6** View the Prev columns to find PM counts for the preceding 24-hour period.

**Note**

If a complete count over a 24-hour period is not possible, the value displays with a yellow background. An incomplete or incorrect count can be caused by monitoring for less than 24 hours after the counter started, changing node timing settings, changing the time zone settings, replacing a card, resetting a card, or by changing port states. When the problem is corrected, the subsequent 24-hour period appears with a white background.

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

## DLP-126 Monitor Near-End PM Counts

<b>Purpose</b>	Use this task to view PMs on the near end.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or Remote

- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.
- Step 2** Click the **Performance** tab.
- Step 3** Click the **Near End** button. [Figure 8-7](#) shows the Near End and Far End buttons on the Performance Monitoring screen.



Figure 8-7 Near End and Far End buttons on the card view Performance tab

Near End and Far End buttons

The screenshot shows the Performance tab in the Cisco Transport Controller interface. The 'Near End' button is highlighted with a red circle. Below the buttons, a table displays 15-minute near-end registers for DS3 #1, DS1 #1, VT 1-1, and STS #1, as of 7/12/2001 14:37:53. The table has 13 columns: Param, Curr, Prev, Prev-1, Prev-2, Prev-3, Prev-4, Prev-5, Prev-6, Prev-7, Prev-8, Prev-9, and Prev-10. All values in the table are 0.

Param	Curr	Prev	Prev-1	Prev-2	Prev-3	Prev-4	Prev-5	Prev-6	Prev-7	Prev-8	Prev-9	Prev-10
DS3 CV-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 LOS-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESE-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 ES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SAS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SESE-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 UASP-P	0	0	0	0	0	0	0	0	0	0	0	0
CV-V	0	0	0	0	0	0	0	0	0	0	0	0
ES-V	0	0	0	0	0	0	0	0	0	0	0	0

- Step 4** Click the **Refresh** button. All PMs occurring for the selected card on the incoming signal are displayed. For PM definitions refer to the *Cisco ONS 15454 Reference Manual*.
- Step 5** Return to your originating procedure (NTP).

## DLP-127 Monitor Far-End PM Counts

<b>Purpose</b>	Use this task to view PMs on the far end.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Only cards that allow far-end monitoring have this button as an option. Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or Remote

- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.
- Step 2** Click the **Performance** tab.
- Step 3** Click the **Far End** button. [Figure 8-8](#) shows the Near End and Far End buttons on the Performance Monitoring screen.

Figure 8-8 Near End and Far End buttons on the card view Performance tab

Near End and Far End buttons

15-minute, near-end registers for DS3 #1, DS1 #1, VT 1-1, STS #1, at 7/12/2001 14:37:53

Param	Curr	Prev	Prev-1	Prev-2	Prev-3	Prev-4	Prev-5	Prev-6	Prev-7	Prev-8	Prev-9	Prev-10
DS3 CVL	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 LOSS-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 ES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SAS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 UAS-P	0	0	0	0	0	0	0	0	0	0	0	0
CV-V	0	0	0	0	0	0	0	0	0	0	0	0
ES-V	0	0	0	0	0	0	0	0	0	0	0	0

- Step 4** Click the **Refresh** button. All PMs recorded by the far-end node for the selected card on the outgoing signal are displayed. For PM definitions refer to the *Cisco ONS 15454 Reference Manual*.
- Step 5** Return to your originating procedure (NTP).

## DLP-128 Monitor PM Counts for Near-End or Far-End Signals

<b>Purpose</b>	Use the signal-type menus to monitor PMs for near-end or far-end signals on a selected port.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Remote

- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.
- Step 2** Click the **Performance** tab.



**Note** Different signal-type menus appear depending on the card type and the circuit type. The appropriate types (DS1, DS3, VT path, STS path, OCn section, line) appear based on the card. For example, the DS3XM card lists DS3, DS1, VT path, and STS path PMs as signal-types.

**Step 3** Click one of the signal-type menus labeled in [Figure 8-9](#). Depending on the card, other options may be available (i.e. Port, STS, or VT).

For example, the DS3XM card allows a selection of both the DS-3 port and the DS-1 within the specified DS-3. [Figure 8-9](#) shows the signal-type menus on the Performance Monitoring screen for a DS3XM-6 card.

**Figure 8-9** Signal-type menus for a DS3XM-6 card

Signal-type menus

15-minute, near-end registers for DS3 #1, DS1 #1, VT 1-1, STS #1, at 7/12/2001 14:37:53

Param	Curr	Prev	Prev-1	Prev-2	Prev-3	Prev-4	Prev-5	Prev-6	Prev-7	Prev-8	Prev-9	Prev-10
DS3 CV-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 LOSS-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SESCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 AISS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 ESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SAS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 UAS-P	0	0	0	0	0	0	0	0	0	0	0	0
CV-V	0	0	0	0	0	0	0	0	0	0	0	0
ES-V	0	0	0	0	0	0	0	0	0	0	0	0

**Step 4** Click the **Refresh** button. All PMs recorded by the near-end or far-end node for the selected card on the outgoing signal on a selected port are displayed. For PM definitions refer to the *Cisco ONS 15454 Reference Manual*.

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

## DLP-129 Reset Current PM Counts

<b>Purpose</b>	The Baseline button clears the PM count displayed on the Current column, but it does not clear the cumulative PM count. This allows you to see how quickly PM counts rise.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or Remote

- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.
- Step 2** Click the **Performance** tab.
- Step 3** Click the **Baseline** button. [Figure 8-10](#) shows the Baseline button on the Performance Monitoring screen.



### Note

The Baseline button clears the PM count displayed in the Current column, but does not clear the PM count on the card. When the current 15-minute or 24-hour time interval expires or the screen view changes, the total number of PM counts on the card and on the screen appear in the appropriate column. The baseline values are discarded if you change views to a different screen and then return to the Performance Monitoring screen.

**Figure 8-10** Baseline button for clearing displayed PM counts

The screenshot shows the Performance Monitoring screen for a DS3M card. The 'Performance' tab is selected. The 'Baseline' button is located at the bottom right of the screen, next to the 'Refresh' button. An arrow points from the label 'Baseline button' to this button. The main area of the screen displays a table of PM counts for various parameters over time.

Param	Curr	Prev	Prev-1	Prev-2	Prev-3	Prev-4	Prev-5	Prev-6	Prev-7	Prev-8	Prev-9	Prev-10
DS3 CVL	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ES-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 LOSS-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SEB-L	0	0	0	0	0	0	0	0	0	0	0	0
DS3 AISB-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 ESP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASB-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SEBP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASB-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 CVCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SECP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 SEBSP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS3 UASCP-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 AISB-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 ES-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SAS-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 SEB-P	0	0	0	0	0	0	0	0	0	0	0	0
DS1 UAS-P	0	0	0	0	0	0	0	0	0	0	0	0
CVV	0	0	0	0	0	0	0	0	0	0	0	0
ES-V	0	0	0	0	0	0	0	0	0	0	0	0

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

# DLP-130 Clear Selected PM Counts

<b>Purpose</b>	Use the Clear button to clear certain PM counts depending on the option selected.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Before you view or clear PMs, be sure you have created the appropriate circuits and provisioned the card according to your specifications. For more information, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> and <a href="#">Chapter 11, “Change Card Settings.”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or Remote

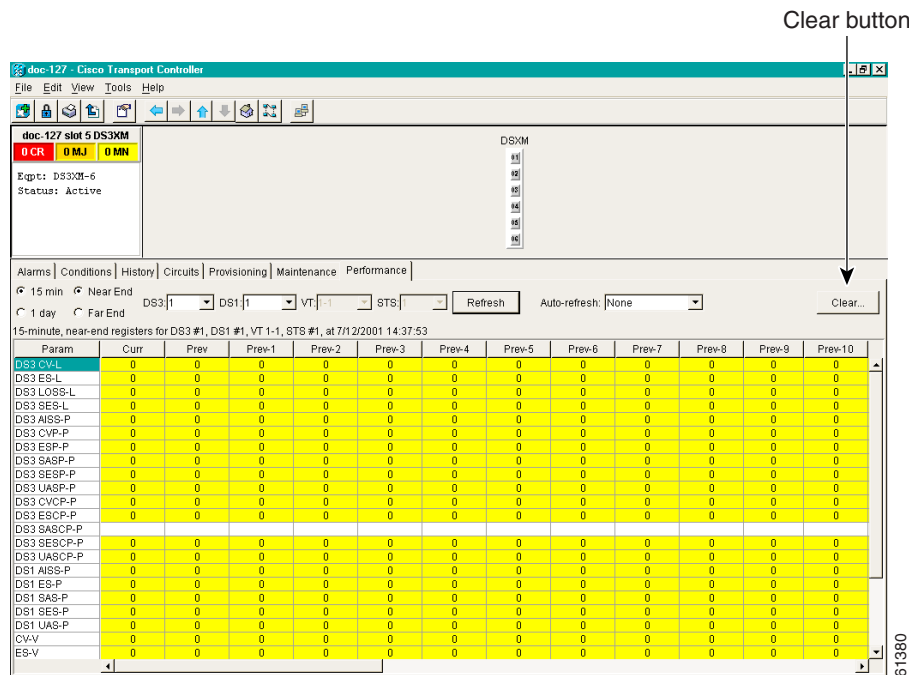


**Caution**

Pressing the Clear button can mask problems if used incorrectly. This button is commonly used for testing purposes.

- Step 1** From node view, double-click the electrical or optical (OC-N) card of choice. The card view displays.
- Step 2** Click the **Performance** tab.
- Step 3** Click the **Clear** button ([Figure 8-11](#)).

**Figure 8-11 Clear button for clearing PM counts**



- Step 4** From the Clear Statistics menu, choose one of three options:
  - **Selected Interfaces:** Clearing selected interfaces erases all PM counts associated with the selected radio buttons. For example, if the 15 min and the Near End buttons are selected and you click the Clear button, all near-end PM counts in the current 15-minute interval are erased from the card and the screen display.

- **All interfaces on port x:** Clearing all interfaces on port x erases from the card and the screen display all PM counts associated with all combinations of the radio buttons on the selected port. This means the 15-minute near-end and far-end counts are cleared, and 24-hour near-end and far-end counts are cleared from the card and the screen display.
- **All interfaces on card:** Clearing all interfaces on the card erases from the card and the screen display all PM counts for all ports.

**Step 5** From the Clear Statistics menu, click **Yes** to clear the selected statistics.

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

---



## Manage Circuits

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This chapter explains how to manage Cisco ONS 15454 electrical, optical and Ethernet circuits.

### Before You Begin

To create circuits, see [Chapter 6, “Create Circuits and VT Tunnels.”](#)

To clear any alarm or trouble conditions, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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

1. [NTP-75 Locate and View Circuits, page 9-1](#)—Complete as needed.
2. [NTP-76 Modify Circuit Characteristics, page 9-4](#)—Complete as needed to edit a circuit name, change the active and standby colors of spans, or change signal fail, signal degrade thresholds, reversion time, and PDI-P settings for UPSR circuits.
3. [NTP-77 Delete Circuits, page 9-7](#)—Complete as needed.
4. [NTP-78 Create a Monitor Circuit, page 9-8](#)—Complete as needed to monitor traffic on primary bidirectional circuits.
5. [NTP-79 Create a J1 Path Trace, page 9-10](#)—Complete as needed to monitor interruptions or changes to circuit traffic.

### NTP-75 Locate and View Circuits

<b>Purpose</b>	This procedure provides tasks that you can use to locate and view ONS 15454 circuits.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Circuit creation procedure(s) in <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the network where you want to view the circuits. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** To search for a circuit, go to the [“DLP-131 Search for Circuits” task on page 9-2](#).

- Step 3** To view circuits on a span, go to the “[DLP-132 View Circuits on a Span](#)” task on page 9-3.
- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-131 Search for Circuits

<b>Purpose</b>	Use this task to search for an ONS 15454 circuit at the network, node, or card level.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Switch to the appropriate CTC view:
- To search the entire network, from the View menu, choose **Go to Network View**.
  - To search for circuits that originate, terminate, or pass through a specific node, from the View menu, choose **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, switch to node view, then double-click the card on the shelf graphic to display 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 in the Scope drop-down menu.
- Step 4** Click **Search**.
- 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 box to instruct CTC to select circuits only if the entire word matches the text in the *Find What* field.
  - *Match Case*—Check this 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, click **Find Next** again to find the next circuit.
- Step 7** Repeat Steps 5–6 until you are finished, then click **Cancel**.
- Step 8** Return to your originating procedure (NTP).
-



## DLP-132 View Circuits on a Span

<b>Purpose</b>	View circuits on an ONS 15454 span.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into an ONS 15454 on the network whose circuits you want to view. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** Place your mouse cursor directly over a span (green line), press the right mouse button, and choose **Circuits** from the shortcut menu.

On the Circuits on Span dialog box, you can view the following information for all circuits provisioned on the span:

- *STS*—STTs used by the circuits
- *VT*—VTs used by the circuits (VT circuits)
- *UPSR*—Indicates whether the circuit is on a UPSR
- *Circuit*—Displays the circuit name
- *Switch State*—Displays the switch state of the circuit, that is, whether any span switches are active. For UPSR spans, switch types include: CLEAR (no spans are switched), MANUAL (a manual switch is active), FORCE (a force switch is active), and LOCKOUT OF PROTECTION (a span lockout is active).



**Note** You can perform other procedures from the Circuits on Span dialog box. If the span is in a UPSR, you can switch the span traffic. See “[DLP-94 UPSR Protection Switching Test](#)” task on [page 5-29](#) for instructions. If you want to edit a circuit on the span, double-click the circuit. See the “[DLP-133 Edit a Circuit Name](#)” task on [page 9-4](#) or the “[DLP-135 Edit a UPSR Circuit](#)” task on [page 9-6](#) for instructions.

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

## NTP-76 Modify Circuit Characteristics

<b>Purpose</b>	This procedure provides tasks that you can use to edit or change the properties of ONS 15454 circuits.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Circuits must exist on the network. See <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> for circuit creation procedures.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the network containing the circuit you want to modify. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.
- Step 2** To edit a circuit name, go to the “[DLP-133 Edit a Circuit Name](#)” task on [page 9-4](#).
- Step 3** To change the active and standby span colors of circuits displayed on the Edit Circuit window, go to the “[DLP-134 Change Active and Standby Span Color](#)” task on [page 9-5](#).
- Step 4** To edit a UPSR circuit, go to the “[DLP-135 Edit a UPSR Circuit](#)” task on [page 9-6](#).
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-133 Edit a Circuit Name

<b>Purpose</b>	Use this task to edit a circuit name.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , <a href="#">page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Click the **Circuits** tab.
- Step 2** Click the circuit you want to rename, then click **Edit**.
- Step 3** In the *Name* field, highlight the circuit name (click three times to highlight the complete name).
- Step 4** Edit or rename the circuit. Names can be up to 48 alphanumeric and/or special characters. However, if you will ever create a monitor circuit on this circuit, do not make the name longer than 44 characters because monitor circuits will add “\_MON” (four characters) to the circuit name.
- Step 5** Click the **Apply** button.
- Step 6** Click the **Close** button to close the Edit Circuit window.
- Step 7** On the Circuits window, verify that the circuit was correctly renamed.
- Step 8** Return to your originating procedure (NTP).
-

## DLP-134 Change Active and Standby Span Color

<b>Purpose</b>	Use this task to change the color of active and standby circuit spans as displayed on the Edit Circuits window.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** From the Edit menu, choose **Preferences**.
- Step 2** On the Preferences dialog box, click the **Circuits** tab.
- Step 3** To change the color of the active span:
- Next to Active Span Color, click the **Color** button.
  - On the Pick a Color dialog box, click the color for the active span, or click the **Reset** button if you want the active span to display the last applied (saved) color.
  - If you want to change the standby span color, go to [Step 4](#). If you do not want to change the standby color, click **Apply** and click **OK** to close the Preferences dialog box.
- Step 4** To change the color of the standby span:
- Next to Standby Span Color, click the **Color** button.
  - On the Pick a Color dialog box, click the color for the standby span, or click the **Reset** button if you want the standby span to display the last applied (saved) color.
  - Click **Apply** and click **OK** to close the Preferences dialog box.
- Step 5** If you want to return the active and standby spans to their default colors:
- From the Edit menu, choose **Preferences**.
  - On the Preferences dialog box, click the **Circuits** tab.
  - Click the **Reset to Defaults** button.
  - Click **Apply** and click **OK** to close the Preferences dialog box.
- Step 6** Return to your originating procedure (NTP).
-

## DLP-135 Edit a UPSR Circuit

<b>Purpose</b>	Use this task to change the UPSR signal fail and signal degrade thresholds, the reversion time and PDI-P settings. You also use the task to switch UPSR traffic.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-44 Provision the UPSR Nodes, page 5-26</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Click the **Circuits** tab.
- Step 2** Click the circuit you want to edit, then click the **Edit** button.
- Step 3** On the Edit Circuit window, click the **UPSR Selectors** tab.




---

**Note** The UPSR Selectors tab is only available when the circuit is in Active state.

---

- Step 4** Edit the following UPSR selectors, as needed:
- *Revert Time*—Controls whether traffic reverts to the working path when conditions that diverted it to the protect path are repaired. If you choose Never, traffic does not revert. Choosing a time sets the amount of time that will elapse before traffic reverts to the working path.
  - *SF Ber Level*—Sets the UPSR signal failure BER threshold (STS circuits only).
  - *SD Ber Level*—Sets the UPSR signal degrade BER threshold (STS circuits only).
  - *PDI-P*—When checked, traffic switches if an STS payload defect indication is received (STS circuits only).
  - *Switch State*—Switches circuit traffic between the working and protect paths. The color of the Working Path and Protect Path fields indicates the active path. Normally, the Working Path is green and the Protect Path is purple. If the Protect Path is green, working traffic has switched to the Protect Path.
- CLEAR*—Removes a previously-set switch command.
- LOCKOUT OF PROTECT*—Prevents traffic from switching to the protect circuit path under any circumstances. Of all switch states, LOCKOUT has the highest priority.
- FORCE TO WORKING*—Forces traffic to switch to the working circuit path, even if the path has signal degrade (SD) or signal failure (SF) conditions. FORCE switch states have a higher priority than MANUAL switch.
- FORCE TO PROTECT*—Forces traffic to switch to the protect circuit path, even if the path has signal degrade (SD) or signal failure (SF) conditions. FORCE switch states have a higher priority than MANUAL switch.
- MANUAL TO WORKING*—Switches traffic to the working circuit path if the path has an error rate less than the signal degrade.
- MANUAL TO PROTECT*—Switches traffic to the protect circuit path if the path has an error rate less than the signal degrade.

**Caution**

The FORCE and LOCKOUT commands override normal protection switching mechanisms. Applying these commands incorrectly can cause traffic outages.

**Step 5** Click **Apply**, then check that the selector switches are displayed as you expect.

*Figure 9-1 Editing UPSR selectors*

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

## NTP-77 Delete Circuits

<b>Purpose</b>	Use this task to delete circuits.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Circuits must exist on the network. See <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> for circuit creation procedures.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** Log into an ONS 15454 node on the network where you want to delete the circuit. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.

**Step 2** Complete the [“NTP-108 Back Up the Database” task on page 15-6](#) for instructions.

- Step 3** Investigate all network alarms and resolve any problems that may be affected by the circuit deletion. Refer to the Alarm Troubleshooting chapter in the Cisco ONS 15454 Troubleshooting Guide.
- Step 4** Verify that traffic is no longer carried on the circuit, and the circuit can be safely deleted.
- Step 5** Click the **Circuits** tab.
- Step 6** Choose the circuit you want to delete, then click **Delete**.
- Step 7** Click **Yes** to confirm the deletion.
- Step 8** On the Circuit Deletion Result window, click OK to acknowledge the circuit deletion.
- Step 9** Perform a database backup. See the “[NTP-108 Back Up the Database](#)” task on page 15-6 for instructions.
- Step 10** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-78 Create a Monitor Circuit



**Note** Monitor circuits cannot be used with EtherSwitch circuits.



**Note** For unidirectional circuits, create a drop to the port where the test equipment is attached.

<b>Purpose</b>	Use this task to create a monitor circuit that monitors traffic on primary, bidirectional circuits.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Circuits must exist on the network. See <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> for circuit creation procedures.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into an ONS 15454 node on the network where you will create the monitor circuit. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Click the **Circuits** tab.
- Step 3** Choose the bidirectional circuit that you want to monitor (this circuit is marked as 2-Way in the *Dir* column). If the circuit you want to monitor is not displayed, choose **Network** on the Scope drop-down menu.
- Step 4** Click **Edit**.
- Step 5** Verify that the circuit name is no more than 44 characters (monitor circuits append a “\_MON” to the circuit name). If the name is longer than 44 characters, perform Steps [a–c](#), and then proceed to [Step 6](#):
- In the name field, highlight the circuit name (click three times to highlight the complete name).
  - Edit the circuit name.
  - Click the **Apply** button
- Step 6** On the Edit Circuit dialog box, click the **Monitors** tab.

The Monitors tab displays ports that you can use to monitor the circuit selected in [Step 3](#).



**Note** The Monitor tab is only available when the circuit is in Active state.

- Step 7** On the Monitors tab, choose a port. The monitor circuit displays traffic coming into the node at the card/port you choose.



**Note** In [Figure 9-2](#), you would choose either the DS1-14 card (to test circuit traffic entering Node 2 on the DS1-14) or the OC-N card at Node 1 (to test circuit traffic entering Node 1 on the OC-N card).

- Step 8** Click **Create Monitor Circuit**.

- Step 9** On the Circuit Creation dialog box, choose the destination node, slot, port, STS, VT or DS1 for the monitored circuit.



**Note** In the [Figure 9-2](#) example, this is Port 2 on the EC1-12 card.

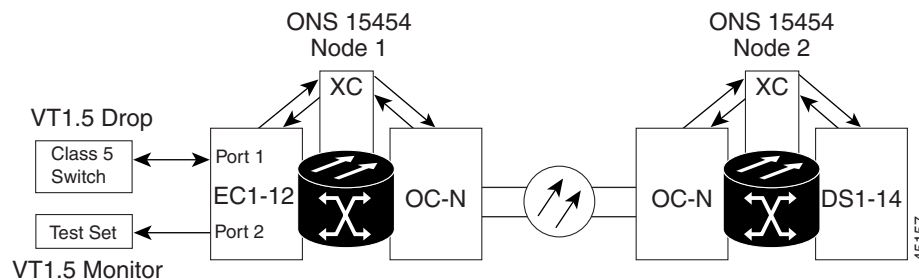
- Step 10** Click **Next**.

- Step 11** On the confirmation dialog box, review the monitor circuit information. Click **Finish**.

- Step 12** On the Edit Circuit dialog box, click **Close**. The new monitor circuit displays on the Circuits tab.

[Figure 9-2](#) shows a sample monitor circuit setup. VT1.5 traffic is received by Port 1 of the EC1-12 card at Node 1. To monitor the VT1.5 traffic, test equipment is plugged into Port 2 of the EC1-12 card and a monitor circuit to Port 2 is provisioned in CTC. (Circuit monitors are one-way.) This procedure assumes circuits have been created.

**Figure 9-2** A VT1.5 monitor circuit received at an EC1-12 port



- Step 13** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-79 Create a J1 Path Trace

<b>Purpose</b>	Use this procedure to create a repeated, fixed-length string of characters used to monitor interruptions or changes to circuit traffic.
<b>Tools/Equipment</b>	ONS 15454 cards capable of transmitting and/or receiving path trace must be installed. See <a href="#">Table 9-1 on page 9-11</a> for a list of cards.
<b>Prerequisite Procedures</b>	Path trace can only be provisioned on OC-N (STS) circuits. See <a href="#">Chapter 6, “Create Circuits and VT Tunnels”</a> for OC-N circuit creation procedures.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the node on the network where you will create the path trace. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** Complete the [“DLP-136 Provision Path Trace on Circuit Source and Destination Ports” task on page 9-10](#) for instructions.
- Step 3** Complete the [“DLP-137 Provision Path Trace on OC-N Ports” task on page 9-14](#).
- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-136 Provision Path Trace on Circuit Source and Destination Ports

<b>Purpose</b>	Use this task to create a path trace on an STS circuit source and destination ports.
<b>Tools/Equipment</b>	ONS 15454 cards capable of transmitting and receiving path trace must be installed at the circuit source and destination ports. See <a href="#">Table 9-1 on page 9-11</a> for a list of cards.
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** This procedure assumes you are setting up path trace on a bidirectional circuit, and you will set transmit strings at the circuit source and destination.

---

- Step 1** Click the **Circuits** tab.
- Step 2** For the STS circuit you want to monitor, verify that the source and destination ports are on a card that can transmit and receive the path trace string. See [Table 9-1](#) for a list of cards.

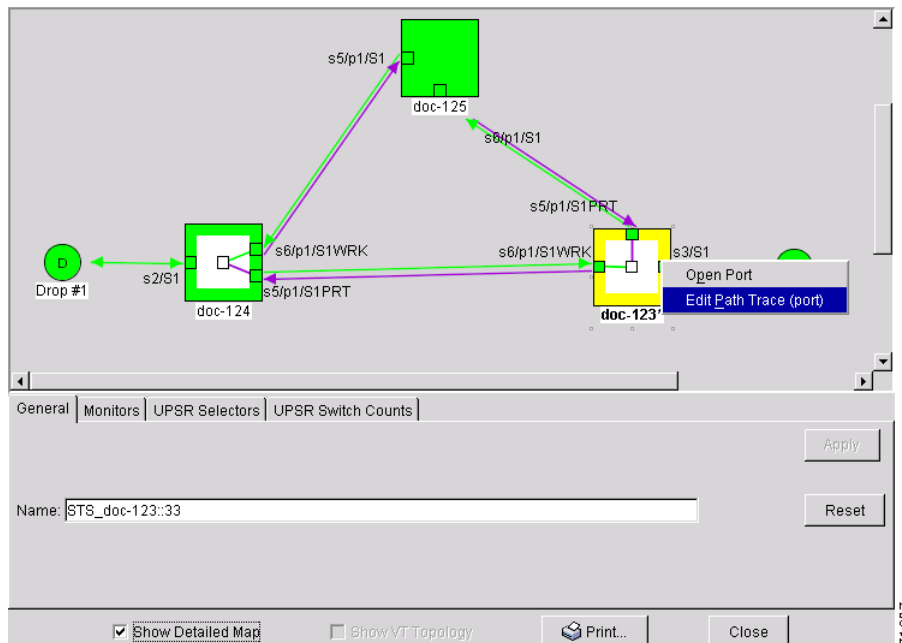


**Table 9-1 ONS 15454 Cards Capable of Path Trace**

J1 Function	Cards
Transmit and Receive	DS1-14, DS1N-14, DS3-12E, DS3N-12E, DS3XM-6, G1000-4
Receive Only	EC1-12 OC3 IR 4 1310 OC12/STM4-4 OC48 IR/STM16 SH AS 1310, OC48 LR/STM16 LH AS 1550 OC192 LR/STM64 LH 1550

If neither port is on a transmit/receive card, you will not be able to complete this procedure. If one port is on a transmit/receive card and the other on a receive-only card, you can set up the transmit string at the transmit/receive port and the receive string at the receive-only port, but you will not be able to transmit in both directions.

- Step 3** Choose the STS circuit you want to trace, then click **Edit**.
- Step 4** On the Edit Circuit window, click the *Show Detailed Map* box at the bottom of the window. A detailed map of the source and destination ports is displayed.
- Step 5** Provision the circuit source transmit string:
- On the detailed circuit map right-click the circuit source port (square on the left or right of the source node icon) and choose **Edit Path Trace (Port)** from the shortcut menu. [Figure 9-3](#) shows an example.

**Figure 9-3 Selecting the Edit Path Trace option**

- b. In the *New Transmit String* field, enter the circuit source transmit string. Enter a string that makes the source port easy to identify, such as node IP address, node name, circuit name, or another string. If the *New Transmit String* field is left blank, the J1 transmits a string of null characters.
- c. Click **Apply**, then click **Close**.

**Step 6** Provision the circuit destination transmit string:

- a. On the Edit Circuit window (with Show Detailed Map chosen, see [Figure 9-3](#)) right-click the circuit destination port and choose **Edit Path Trace (Port)** from the shortcut menu.
- b. In the *New Transmit String* field, enter the string that you want the circuit destination to transmit. Enter a string that makes the destination port easy to identify, such as node IP address, node name, circuit name, or another string. If the *New Transmit String* field is left blank, the J1 transmits a string of null characters.
- c. Click **Apply**.

**Step 7** Provision the circuit destination expected string:

- a. On the Circuit Path Trace window, enable the path trace expected string by choosing **Auto** or **Manual** from the Path Trace Mode drop-down menu:
  - *Auto*—the first string received from the source port is the baseline. An alarm is raised when a string that differs from the baseline is received.
  - *Manual*—the string entered in *Current Expected String* is the baseline. An alarm is raised when a string that differs from the *Current Expected String* is received.
- b. If you set *Path Trace Mode* to Manual, enter the string that the circuit destination should receive from the circuit source in the *New Expected String* field. If you set *Path Trace Mode* to Auto, skip this step.
- c. Click the **Disable AIS on TIM-P** checkbox if you want to suppress the Alarm Indication Signal when the STS Path Trace Identifier Mismatch Path (TIM-P) alarm is displayed. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for descriptions of alarms and conditions.




---

**Note** RDI (Remote Defect Indicator) conditions on TIM-P are not generated in this release.

---

- d. Click **Apply**, then click **Close**.

**Step 8** Provision the circuit source expected string:

- a. On the Edit Circuit window (with Show Detailed Map chosen, see [Figure 9-3](#)) right-click the circuit source port and choose **Edit Path Trace (Port)** from the shortcut menu.
- b. On the Circuit Path Trace window, enable the path trace expected string by choosing **Auto** or **Manual** from the Path Trace Mode drop-down menu:
  - *Auto*—Uses the first string received from port at the other end as the baseline string. An alarm is raised when a string that differs from the baseline is received.
  - *Manual*—Uses the *Current Expected String* field as the baseline string. An alarm is raised when a string that differs from the *Current Expected String* is received.
- c. If you set *Path Trace Mode* to Manual, enter the string that the circuit source should receive from the circuit destination in the *New Expected String* field. If you set *Path Trace Mode* to Auto, skip this step.
- d. Click the **Disable AIS on TIM-P** checkbox if you want to suppress the Alarm Indication Signal when the STS Path Trace Identifier Mismatch Path (TIM-P) alarm is displayed. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for descriptions of alarms and conditions.

e. Click **Apply**.

**Step 9** After you set up the path trace, the received string is displayed in the Received box on the path trace setup window. [Figure 9-4](#) shows an example. The following options are available:

- Click **Switch Mode** to toggle between ASCII and hexadecimal display.
- Click the **Reset** button to reread values from the port.
- Click **Default** to return to the path trace default settings (Path 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 as long as *Path Trace Mode* is set to Auto or Manual.

**Step 10** Click **Close**.

When you display the detailed circuit window, path trace is indicated by an M (manual path trace) or an A (automatic path trace) at the circuit source and destination ports. [Figure 9-5](#) shows an example.

**Figure 9-4** Setting up a path trace

Path Trace Mode: **Manual**  Disable AISIRDI on TIM-P? Received C2: 0x02 Apply

**Transmit**

Source

Current Transmit String:  Switch Mode

New Transmit String:  Reset

**Expected**

Destination

Current Expected String:  Switch Mode

New Expected String:  Default

**Received**

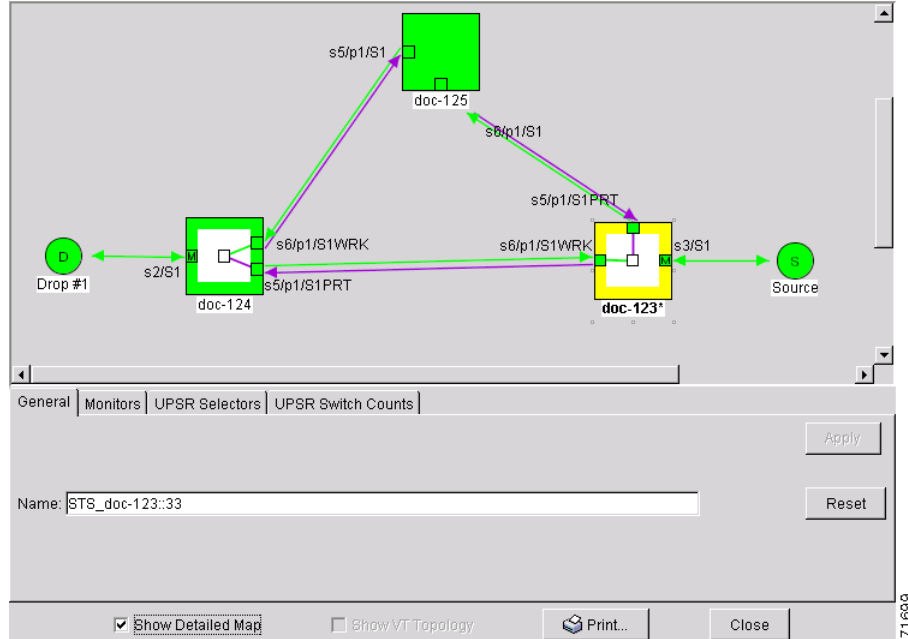
Destination

Current Received String:  Switch Mode

Close

71698

Figure 9-5 Detailed circuit window with Manual expected string enabled



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

## DLP-137 Provision Path Trace on OC-N Ports

<b>Purpose</b>	Use this task to monitor a path trace on OC-N ports within the circuit path.
<b>Tools/Equipment</b>	ONS 15454 cards capable of receiving path trace must be installed at the OC-N circuit ports. See <a href="#">Table 9-1</a> on <a href="#">page 9-11</a> .
<b>Prerequisite Procedures</b>	<a href="#">DLP-136 Provision Path Trace on Circuit Source and Destination Ports</a> , <a href="#">page 9-10</a> .
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the node on the network where path trace was provisioned on the circuit source and destination ports. See the “[DLP-60 Log into CTC](#)” task on [page 3-22](#) for instructions.
- Step 2** Click **Circuits**.
- Step 3** Choose the STS circuit that has path trace provisioned on the source and destination ports, then click **Edit**.
- Step 4** On the Edit Circuit window, click the *Show Detailed Map* box at the bottom of the window. A detailed circuit graphic showing source and destination ports is displayed.
- Step 5** On the detailed circuit map right-click the circuit OC-N port (square on the left or right of the source node icon) and choose **Edit Path Trace (Port)** from the shortcut menu.



---

**Note** The OC-N port must be on a receive-only card listed in [Table 9-1 on page 9-11](#). If not, the Edit Path Trace (Port) menu item will not display.

---

- Step 6** On the Circuit Path Trace window, enable the path trace expected string by choosing **Auto** or **Manual** from the Path Trace Mode drop-down menu:
- *Auto*—Uses the first string received from port at the other end as the baseline string. An alarm is raised when a string that differs from the baseline is received. For OC-N ports, Auto is recommended, since Manual mode requires you to trace the circuit on the Edit Circuit window to determine whether the port is the source or destination path.
  - *Manual*—Uses the *Current Expected String* field as the baseline string. An alarm is raised when a string that differs from the *Current Expected String* is received.
- Step 7** If you set *Path Trace Mode* to Manual, enter the string that the OC-N port should receive in the *New Expected String* field. To do this, trace the circuit path on the detailed circuit window to determine whether the port is in the circuit source or destination path, then set the *New Expected String* to the string transmitted by the circuit source or destination. If you set *Path Trace Mode* to Auto, skip this step.
- Step 8** Click the **Disable AIS on TIM-P** checkbox if you want to suppress the Alarm Indication Signal when the STS Path Trace Identifier Mismatch Path (TIM-P) alarm is displayed. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for descriptions of alarms and conditions.
- Step 9** Click **Apply**, then click **Close**.
- Step 10** Return to your originating procedure (NTP).
-





## Change Node Settings

---

This chapter explains how to modify provisioning that was made in [Chapter 4, “Turn Up Shelf.”](#)

### Before You Begin

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

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

1. [NTP-80 Document Existing Provisioning, page 10-2](#)--Complete this procedure before performing any other procedures in this chapter.
1. [NTP-81 Change Node Management Information, page 10-4](#)—As needed, complete this procedure to change node name, contact information, latitude, longitude, date, and time.
2. [NTP-82 Change Network Information, page 10-6](#)—As needed, complete these procedures to change the IP address, default router, subnet mask, and network configuration settings, and to modify static routes.
3. [NTP-83 Customize the CTC Network View, page 10-11](#)—As needed, complete this procedure to customize the appearance of the network map, including specifying a different default map, selecting your own map or image, and changing the background color.
4. [NTP-84 Change Card Protection Settings, page 10-16](#)—As needed, complete these procedures to modify and delete 1:1, 1:N, and 1+1 protection groups.
5. [NTP-85 Change Node Timing, page 10-24](#)—As needed, complete these procedures to make changes to the network timing parameters.
6. [NTP-86 Modify Users and Change Security, page 10-27](#)—As needed, complete these procedures to make changes to user settings and to delete users.
7. [NTP-87 Change SNMP Settings, page 10-31](#)—As needed, complete these procedures to modify or delete SNMP.

# NTP-80 Document Existing Provisioning

<b>Purpose</b>	Use this procedure to record CTC information.
<b>Tools/Equipment</b>	A printer must be connected to the CTC computer
<b>Prerequisite Procedures</b>	<a href="#">Chapter 4, “Turn Up Shelf”</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the ONS 15454 that has the information you want to record or save. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** As needed, manually record CTC information (typically to document existing provisioning before upgrading or troubleshooting).
- Step 3** As needed, you can copy and paste CTC text into other applications using the Windows Copy (Ctrl+C), Cut (Ctrl+X), and Paste (Ctrl+V) commands.
- Step 4** If you want to print information within a single tab, complete the [“DLP-138 Print CTC Data” task on page 10-2](#).
- Step 5** If you want to save information to a word processing application such as a spreadsheet, complete the [“DLP-139 Export CTC Data” task on page 10-3](#).
- Step 6** Return to your originating procedure (NTP).
- 

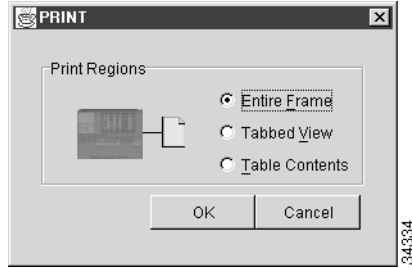
## DLP-138 Print CTC Data

<b>Purpose</b>	Use this task to print CTC windows and CTC table data such as alarms and inventory.
<b>Tools/Equipment</b>	A printer must be connected to the CTC computer
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Click the CTC tab containing the information you want to print (for example, the Alarms tab or the Circuits tab).
- Step 2** From the CTC File menu, click **Print**.
- Step 3** In the Print dialog choose an option ([Figure 10-1](#)):
- *Entire Frame*—Prints the entire CTC window
  - *Tabbed View*—Prints the lower half of the CTC window
  - *Table Contents*—Prints CTC data in table format; this option is only available for CTC table data (see the [“Table Display Options” task on page A-7](#)).



Figure 10-1 Selecting CTC data for print



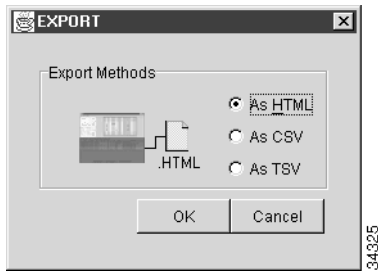
- Step 4** Click **OK**.
- Step 5** In the Windows Print dialog, choose a printer and click **Print**.
- Step 6** Repeat this task for each tab that you want to print.
- Step 7** Return to your originating procedure (NTP).

## DLP-139 Export CTC Data

<b>Purpose</b>	Use this task to export CTC table data for use by other applications such as spreadsheets, word processors, and database management applications.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Click the CTC tab containing the information you want to export (for example, the Alarms tab or the Circuits tab).
- Step 2** From the CTC File menu, click **Export**.
- Step 3** In the Export dialog ([Figure 10-2](#)) choose a format for the data:
- *As HTML*—Saves the data as an HTML file. The file can be viewed with a web browser (such as Netscape Navigator or Microsoft Internet Explorer) without running CTC. Use the browser's File/Open command to open the CTC data file.
  - *As CSV*—Saves the CTC table values as text, separated by commas. You can import CSV data into spreadsheets and database management programs.
  - *As TSV*—Saves the CTC table values as text, separated by tabs. You can import TSV data into spreadsheets and database management programs.

Figure 10-2 Selecting CTC data for export



- Step 4** Click **OK**.
- Step 5** In the Save dialog, enter a file name in one of the following formats:
- *[filename].htm* for HTML files
  - *[filename].csv* for CSV files
  - *[filename].tsv* for TSV files
- Step 6** Navigate to a directory where you want to store the file.
- Step 7** Click **OK**.
- Step 8** Repeat the task for each tab that you want to export.

**Note**

CTC data exported as comma separated values (CSV) or tab separated values (TSV) can be viewed in text editors, word processors, spreadsheets, and database management applications. Although procedures depend on the application, you typically can use File/Open to display the CTC data. Text editors and word processors display the data exactly as it is exported. Spreadsheet and database management applications display the data in cells. You can then format and manage the data using the spreadsheet or database management application tools.

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

## NTP-81 Change Node Management Information

<b>Purpose</b>	Use this procedure to change basic information about the node to facilitate node management.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the ONS 15454 node where you want to change the settings. See the [“DLP-60 Log into CTC” task on page 3-22](#).
- Step 2** Complete the [“NTP-108 Back Up the Database” procedure on page 15-6](#).
- Step 3** Return to node view and click the **Provisioning > General** tabs.

**Step 4** Complete the “[DLP-140 Change the Node Name, Date, Time, and Contact Information](#)” task on [page 10-5](#).



**Note** Changing the date, time, or time zone may invalidate the node’s performance monitoring counters.

**Step 5** When the changes appear, complete the “[NTP-108 Back Up the Database](#)” procedure on [page 15-6](#).

**Step 6** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-140 Change the Node Name, Date, Time, and Contact Information

<b>Purpose</b>	Use this procedure to change basic information such as node name, date, time, and contact information.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

**Step 1** From node view, click the **Provisioning > General** tabs.

**Step 2** Change any of the following:

- *Node Name*
- *Contact*
- *Location: Description*
- *Location: Latitude*
- *Location: Longitude*



**Note** To see changes to longitude or latitude reflected on the network map, you must go to network view and right-click on the specified node, then click Reset Node Position.

- *Use SNTP Server*
- *Date*
- *Time*
- *Time Zone*
- *Use Daylight Saving Time*

See the “[NTP-26 Set Up Network Information](#)” procedure on [page 4-5](#) for detailed field descriptions.




---

**Note** Changing the date, time, or time zone may invalidate the node's performance monitoring counters.

---

**Step 3** Click **Apply**. Confirm that the changes appear.




---

**Note** If the changes do not appear, repeat the task and refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

**Step 4** Return to the “[NTP-81 Change Node Management Information](#)” procedure on page 10-4.

---

## NTP-82 Change Network Information

The following procedures explain how to change essential ONS 15454 networking information. Additional ONS 15454 networking information and procedures, including IP addressing examples, static route scenarios, and Open Shortest Path First (OSPF) protocol options are provided in the IP Networking section of the *Cisco ONS 15454 Reference Manual*.

<b>Purpose</b>	Use this procedure to change essential network information, including IP settings, static routes, and OSPF options.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.

**Step 2** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.

**Step 3** Perform any of the following tasks as needed:

- [DLP-141 Change IP Address, Subnet Mask, Default Router, and Network Defaults](#), page 10-7
- [DLP-142 Modify a Static Route](#), page 10-8
- [DLP-143 Delete a Static Route](#), page 10-9
- [DLP-144 Disable OSPF](#), page 10-10
- [DLP-66 Set Up or Change Open Shortest Path First Protocol](#), page 4-12 to change any OSPF settings.

**Step 4** Complete the “[NTP-108 Back Up the Database](#)” task on page 15-6.

**Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

---

## DLP-141 Change IP Address, Subnet Mask, Default Router, and Network Defaults

<b>Purpose</b>	Use this task to change the IP address, subnet mask, default router, and network defaults for the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** From node view, click the **Provisioning > Network** tabs ([Figure 10-3](#)).

**Step 2** Change any of the following:

- *IP Address*
- *Prevent LCD IP Config*
- *Default Router*
- *Subnet Mask Length*
- *Forward DHCP Request To*
- *TCC CORBA (IIOP) Listener Port*
- *Gateway Settings*

See the “[DLP-64 Set the IP Address, Default Router, and Network Mask Using the LCD](#)” task on [page 4-9](#) for detailed field descriptions.

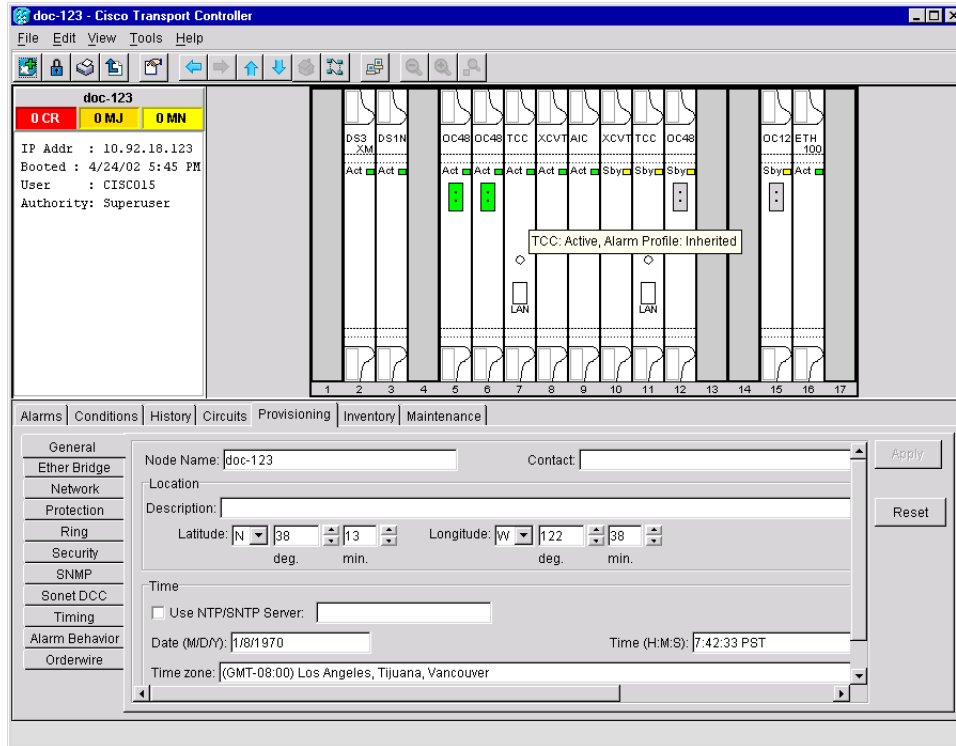



---

**Note** Modifying the IP address, default router, subnet mask length, or TCC CORBA (IIOP) Listener Port will cause the TCCs to reboot. This results in a temporary loss of connectivity to the node, but traffic is unaffected.

---

Figure 10-3 Changing general network information



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

**Step 4** Click **Yes** on the Change Network Configuration? dialog box.

Both ONS 15454 TCC+ cards will reboot, one at a time. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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

## DLP-142 Modify a Static Route

**Purpose** Use this task to modify a static route on the ONS 15454.

**Tools/Equipment** None

**Prerequisite Procedures** [DLP-60 Log into CTC, page 3-22](#)

**Required/As Needed** As needed

**Onsite/Remote** Onsite or remote

**Step 1** From node (default) view, click the **Provisioning > Network** tabs.

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

- Step 3** Click the static route you want to edit.
- Step 4** Click **Edit**.
- Step 5** In the Edit Selected Static Route dialog box, enter the following (see the “[DLP-65 Create a Static Route](#)” task on page 4-11 for detailed field descriptions):
- *Mask*
  - *Next Hop*
  - *Cost*
- Step 6** Click **OK**.




---

**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

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

## DLP-143 Delete a Static Route

<b>Purpose</b>	Use this task to delete an existing static route on the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

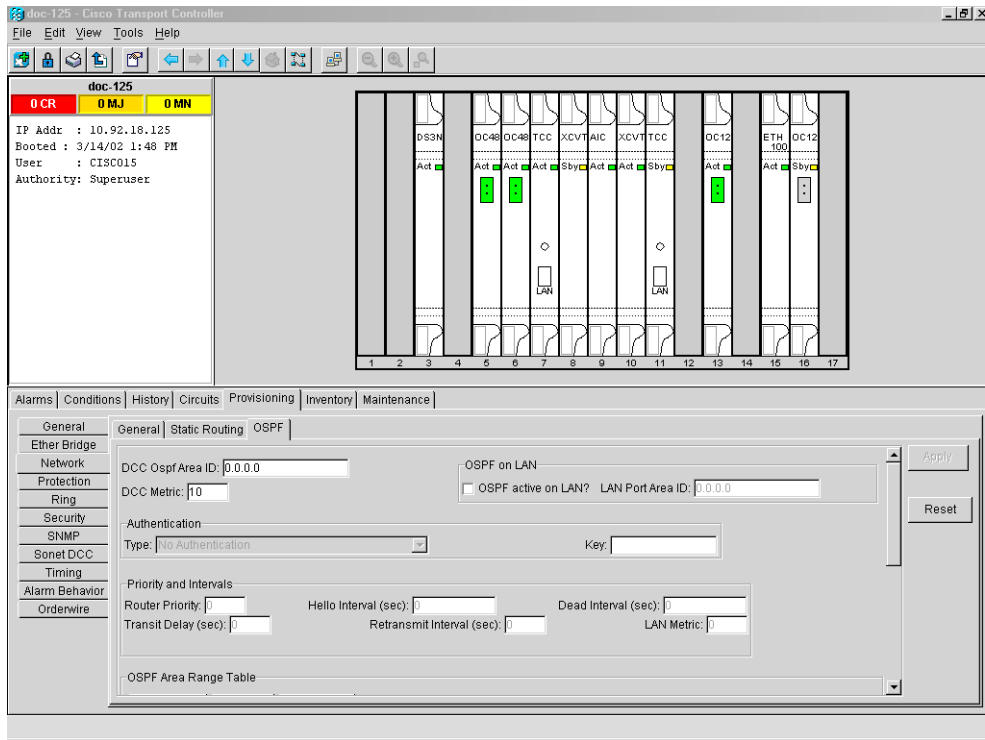
- Step 1** From node view, click the **Provisioning > Network** tabs.
- Step 2** Click the **Static Routing** tab.
- Step 3** Click the static route you want to delete.
- Step 4** Click **Delete**. A confirmation dialog box appears.
- Step 5** Click **Yes** to confirm deletion of the static route.
- Step 6** Return to your originating procedure (NTP).
-

## DLP-144 Disable OSPF

<b>Purpose</b>	Use this task to disable the Open Shortest Path First (OSPF) routing protocol process for the LAN on the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** From node view, select the **Provisioning > Network > OSPF** tabs. The OSPF subtab has several options ([Figure 10-4](#)).

**Figure 10-4** Disabling OSPF on the ONS 15454



- Step 2** In the OSPF on LAN area, uncheck the **OSPF active on LAN** checkbox.



**Note** If you disable OSPF, the DCC OSPF area ID appears as 192.168.190.0.

- Step 3** Click **Apply**. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.



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



**Note** Disabling OSPF can cause the TCCs to reboot. This results in a temporary loss of connectivity to the node, but traffic is unaffected.

---

## NTP-83 Customize the CTC Network View

<b>Purpose</b>	Use this procedure to modify the CTC network view, including grouping nodes into domains for a less-cluttered display, changing the network view background color, and using a custom image for the network view background.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">Chapter 4, “Turn Up Shelf”</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** Log into an ONS 15454. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.

**Step 2** Complete the following tasks, as needed:

- [DLP-145 Change the Network View Background Color, page 10-12](#)
- [DLP-146 Change the Default Network View Map, page 10-12](#)
- [DLP-147 Apply a Custom Network View Background Map, page 10-13](#)
- [DLP-148 Create Domain Icons, page 10-15](#)
- [DLP-149 Manage Domain Icons, page 10-15](#)

**Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

---

## DLP-145 Change the Network View Background Color

<b>Purpose</b>	Use this task to change the network view background color and the domain view background color (the area displayed when you open a domain).
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** If you modify background colors, the change is stored in your CTC user profile on the computer. The change does not affect other CTC users.

- 
- Step 1** If CTC is in card or node view, from the View menu, select **Go to Network View**.
  - Step 2** Right-click the network view or domain map area and choose **Set Background Color** from the shortcut menu.
  - Step 3** On the Choose Color dialog box, select a background color.
  - Step 4** Click **OK**.
  - Step 5** Return to your originating procedure (NTP).
- 

## DLP-146 Change the Default Network View Map

<b>Purpose</b>	Use this task to change the default map of the CTC network view.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** If CTC is in card or node view, from the View menu, choose **Go to Network View**.
  - Step 2** From the Edit menu, choose **Preferences**.
  - Step 3** On the **General** tab of the Preferences dialog box, click the Default Maps field and choose a default map from the pull-down menu. The default map choices include Germany, Japan, Netherlands, South Korea, United Kingdom, and the United States (default).
  - Step 4** Click **Apply**. The new default network map is displayed.
  - Step 5** Click **OK**.
  - Step 6** If the ONS 15454 icons are not visible, right-click the network view and choose **Zoom Out**. Repeat until the ONS 15454 icons are visible.
  - Step 7** Press **Ctrl**, click an ONS 15454 icon, and drag it to a new location.
  - Step 8** Repeat [Step 7](#) to position each ONS 15454 icon.

- Step 9** Right-click the network view and choose **Zoom In**. Repeat until the ONS 15454 icons are displayed at the magnification you want.
- Step 10** Return to your originating procedure (NTP).

## DLP-147 Apply a Custom Network View Background Map

<b>Purpose</b>	Use this task to change the background image or map of the CTC network view.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

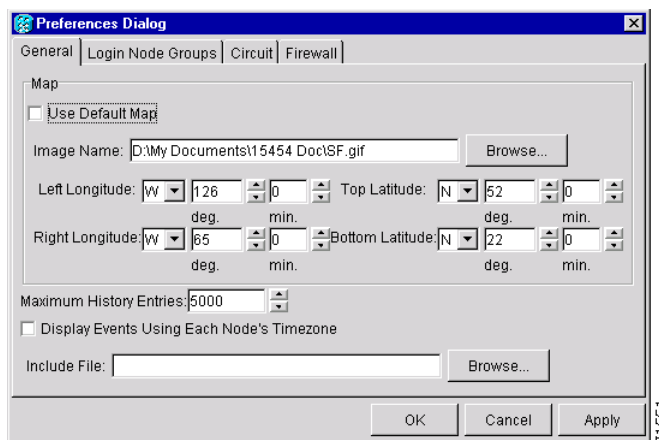


### Note

You can replace the network view background image with any JPEG or GIF image that is accessible on a local or network drive. If you want to position nodes on the map based on the node coordinates, you will need the longitudes and latitudes for the edges of the map. You can obtain the longitude and latitude for cities and Zip Codes from the U.S. Census Bureau U.S. Gazetteer website ([www.census.gov/cgi-bin/gazetteer](http://www.census.gov/cgi-bin/gazetteer)). If you will use your mouse to position nodes, coordinates for the image edges are not necessary. The change does not affect other CTC users.

- Step 1** If CTC is in card or node view, from the View menu, choose **Go to Network View**.
- Step 2** From the Edit menu, choose **Preferences**. (You also right-click the network or domain map and select **Set Background Image**.)
- Step 3** On the **General** tab of the Preferences dialog box ([Figure 10-5](#)), deselect **Use Default Map**.

**Figure 10-5** Changing the CTC background image



- Step 4** Click **Browse**. Navigate to the graphic file you want to use as a background.
- Step 5** Select the file. Click **Open**.

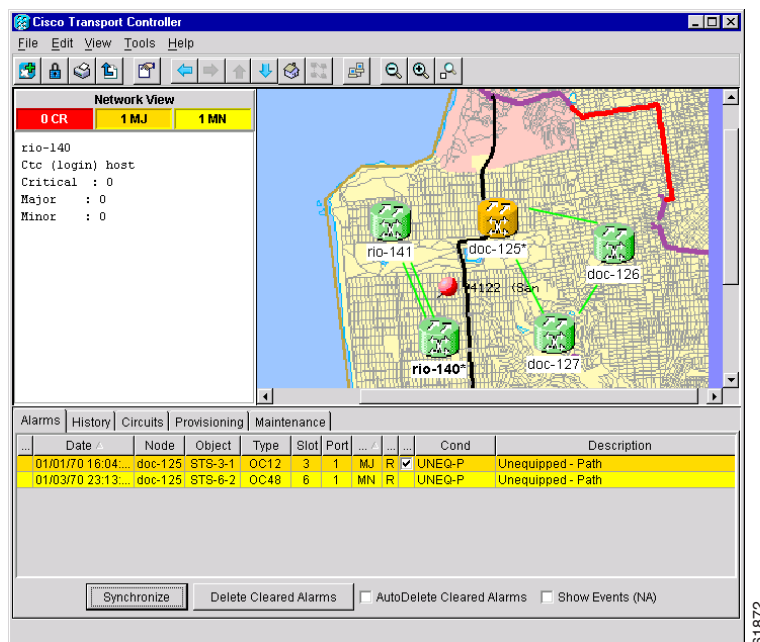
- Step 6** (Optional) Enter the coordinates for the map image edges in the longitude and latitude fields on the Preferences dialog box. CTC uses the map's longitude and latitude to position the node icons based on the node coordinates entered for each node on the Provisioning > General tabs. Coordinates only need to be precise enough to place ONS 15454 icons in approximate positions on the image.

**Tip**

You can also drag and drop nodes to position them on the network view map.

- Step 7** Click **Apply** and then click **OK**.
- Step 8** If the ONS 15454 icons are not visible, right-click the network view and choose **Zoom Out**. Repeat this step until the ONS 15454 icons are visible.
- Step 9** Press **Ctrl**, click an ONS 15454 icon, and drag it to a new location.
- Step 10** Repeat **Step 9** until all ONS 15454 icons are positioned where you want them.
- Step 11** Right-click the network view and choose **Zoom In**. Repeat until the ONS 15454 icons are displayed at the magnification you want.

**Figure 10-6 Network view with a custom map image**



- Step 12** At the network view, use the CTC toolbar Zoom buttons (or right-click the graphic area and select a Zoom command from the shortcut menu) to set the area of the image you can view.
- Step 13** Return to your originating procedure (NTP).

## DLP-148 Create Domain Icons

<b>Purpose</b>	Use this task to create a domain icon, which can be used to group ONS 15454 icons in CTC network view.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** Domains you create will be seen by all users who log into the network.

- Step 1** If CTC is in card or node view, from the View menu, choose **Go to Network View**.
- Step 2** Right-click the network map and choose **Create New Domain** from the shortcut menu.
- Step 3** When the domain icon appears on the map, click the map name and type the domain name.
- Step 4** Press **Enter**.
- Step 5** Return to your originating procedure (NTP).

## DLP-149 Manage Domain Icons

<b>Purpose</b>	Use this task to manage CTC network view domain icons.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a> <a href="#">DLP-148 Create Domain Icons, page 10-15</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** All domain actions, such as adding or removing node icons, will be seen by all users who log into the network.

- Step 1** If CTC is in card or node view, from the View menu, choose **Go to Network View**.
- Step 2** Locate the domain action you want in [Table 10-1](#) and complete the appropriate steps.

**Table 10-1 Managing Domains**

Domain action	Steps
Move a domain	Pressing <b>Ctrl</b> , drag the domain icon to the new location.
Rename a domain	Right-click the domain icon and choose <b>Rename Domain</b> from the shortcut menu. Type the new name in the domain name field.

**Table 10-1** *Managing Domains (continued)*

Domain action	Steps
Add a node to a domain	Drag a node icon to the domain icon. Release the mouse button when the node icon is over the domain icon.
Move a node from a domain to the network map	Open the domain and right-click a node. Select <b>Move Node Back to Parent View</b> .
Open a domain	<ul style="list-style-type: none"> <li>• Double-click the domain icon.</li> <li>• Right-click the domain and choose <b>Open Domain</b>.</li> </ul>
Return to network view	Right-click the domain view area and choose <b>Go to Parent View</b> from the shortcut menu.
Preview domain contents	Right-click the domain icon and choose <b>Show Domain Overview</b> . The domain icon shows a small preview of the nodes in the domain. To turn off the domain overview, right-click the overview and select <b>Show Domain Overview</b> .
Remove domain	Right-click the domain icon and choose <b>Remove Domain</b> . Any nodes residing in the domain are returned to the network map.

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

## NTP-84 Change Card Protection Settings

<b>Purpose</b>	Use this procedure to modify card protection settings.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



### Caution

Modifying and deleting protection groups can be service affecting.

**Step 1** Log into the ONS 15454 node where you want to change the settings. See the [“DLP-60 Log into CTC” task on page 3-22](#). If you are already logged into the correct node, display the node (default) view.

**Step 2** Complete the [“NTP-108 Back Up the Database” procedure on page 15-6](#).

**Step 3** Display the node (default) view. Perform any of the following tasks as needed:

- [DLP-150 Modify a 1:1 Protection Group, page 10-17](#)
- [DLP-151 Delete a 1:1 Protection Group, page 10-19](#)
- [DLP-152 Modify a 1:N Protection Group, page 10-19](#)
- [DLP-153 Delete a 1:N Protection Group, page 10-21](#)
- [DLP-154 Modify a 1+1 Protection Group, page 10-21](#)
- [DLP-155 Delete a Protection Group, page 10-23](#)

- Step 4** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

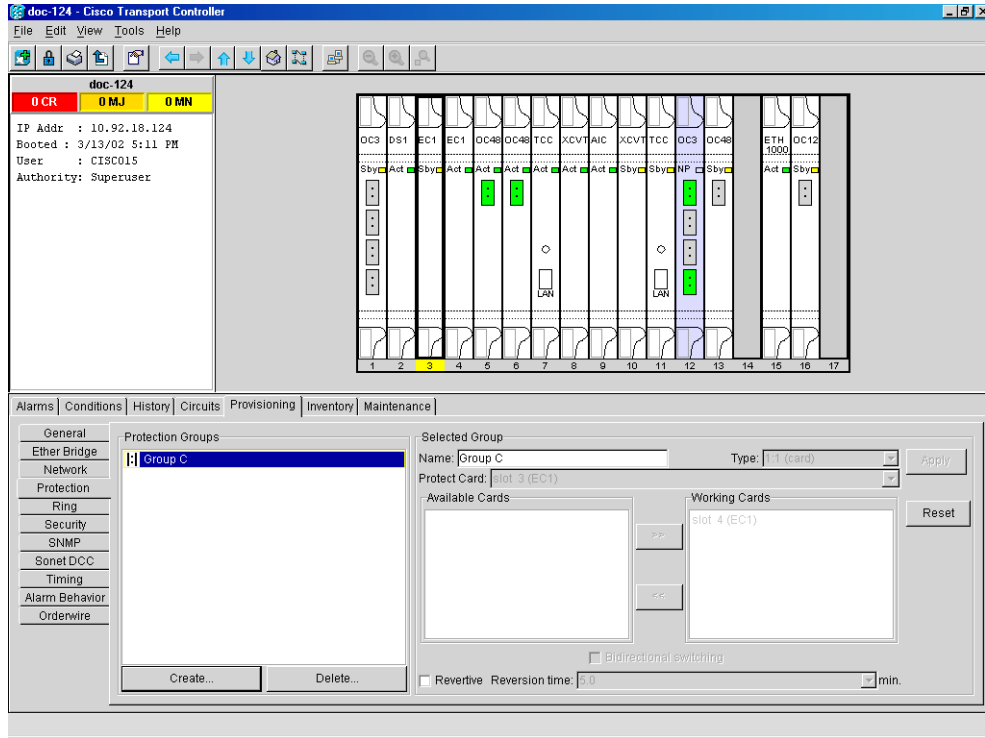
## DLP-150 Modify a 1:1 Protection Group

<b>Purpose</b>	Use this task to modify a 1:1 protection group for electrical (DS-1, DS-3, EC-1, and DS3XM-6) cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** From node view, click the **Provisioning** > **Protection** tabs.
- Step 2** Under Protection Groups, click the 1:1 protection group you want to modify.
- Step 3** Under Selected Group, you can modify the following:
- *Name*—Type a name for the protection group. The name can have up to 32 alphanumeric characters.
  - *Revertive*—Check this box if you want traffic to revert to the working card after failure conditions stay corrected for the amount of time entered in *Reversion Time*.
  - *Reversion time*—If *Revertive* is checked, choose the reversion time. Click the *Reversion time* field and select a reversion time from the pull-down menu. The range is 0.5 to 12.0 minutes. The default is 5.0 minutes. This is the amount of time that will elapse before the traffic reverts to the working card. Traffic can revert when conditions causing the switch are cleared.

Figure 10-7 Modifying a 1:1 protection group



**Step 4** Click **Apply**. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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



**Note** To convert protection groups, see the “[NTP-91 Convert DS-1 and DS-3 Cards From 1:1 to 1:N Protection](#)” procedure on page 11-14.



## DLP-151 Delete a 1:1 Protection Group

<b>Purpose</b>	Use this task to delete a 1:1 protection group for electrical cards (DS-1, DS-3, EC-1, and DS3XM-6).
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** From node view, click the **Provisioning > Protection** tabs.

**Step 2** Under Protection Groups, click the 1:1 protection group you want to delete.

**Step 3** Click **Delete**.

**Step 4** Click **Yes** in the Delete Protection Group window to confirm deletion. Confirm that the changes appear.




---

**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

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




---

**Note** The protect card is now available for new traffic.

---

## DLP-152 Modify a 1:N Protection Group

<b>Purpose</b>	Use this task to modify a 1:N protection group for DS-1 and DS-3 cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

**Step 1** Verify that the DS-1 and DS-3 cards are installed according to the 1:N specifications in the [“DLP-72 Create a 1:N Protection Group” task on page 4-25](#).

**Step 2** From node view, click the **Provisioning > Protection** tabs.

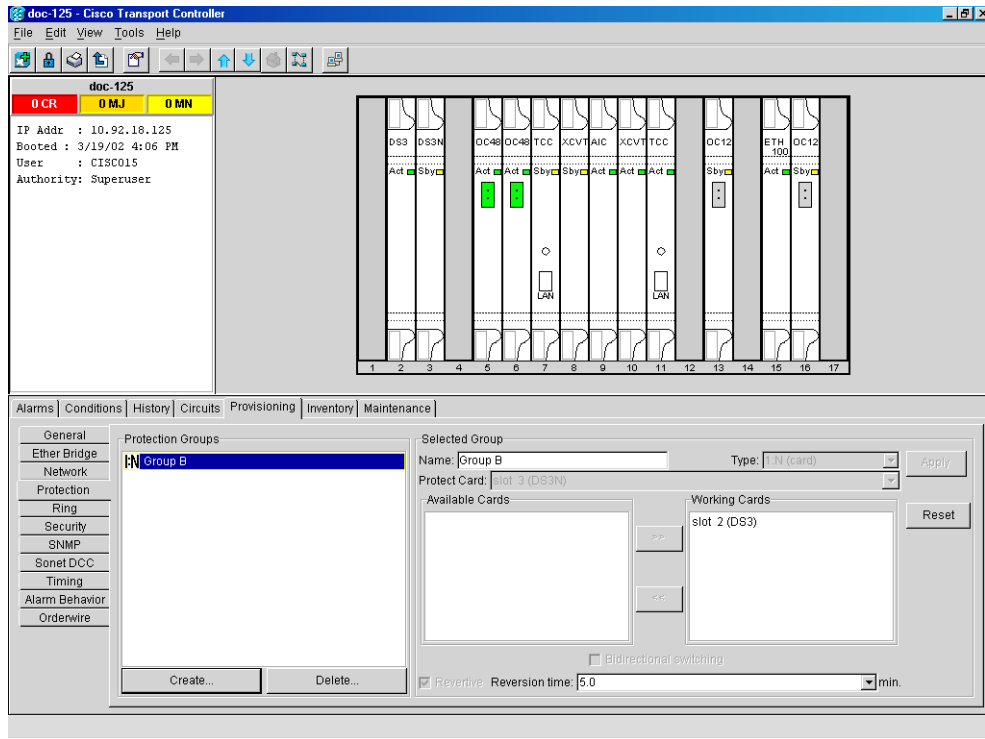
**Step 3** Under Protection Groups, click the 1:N protection group you want to modify.

**Step 4** Under Selected Group, enter the following:

- *Name*
- *Available Cards*
- *Working Cards*
- *Reversion Time*

See the “DLP-72 Create a 1:N Protection Group” task on page 4-25 for field descriptions.

**Figure 10-8** Modifying a 1:N protection group



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**Step 5** Click **Apply**. The changes are applied. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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



**Note** To convert protection groups, see the “NTP-91 Convert DS-1 and DS-3 Cards From 1:1 to 1:N Protection” procedure on page 11-14.

## DLP-153 Delete a 1:N Protection Group

<b>Purpose</b>	Use this task to delete a 1:N protection group for DS-1 and DS-3 cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** Deleting a 1:N protection group makes the protect card available for traffic.

- Step 1** From node view, click the **Provisioning** > **Protection** tabs.
- Step 2** Under Protection Groups, click the 1:N protection group you want to delete.
- Step 3** Click **Delete**.
- Step 4** Click **Yes** in the Delete Protection Group window to confirm deletion. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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

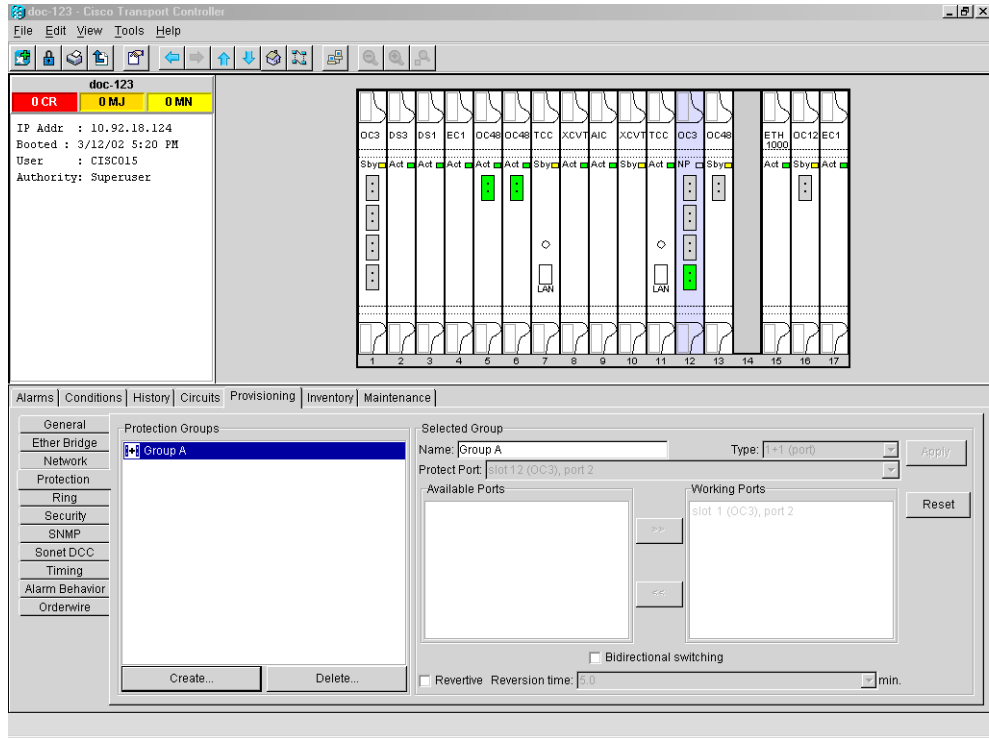
## DLP-154 Modify a 1+1 Protection Group

<b>Purpose</b>	Use this task to modify a 1+1 protection group for any optical port (OC-3, OC-12, OC-48, OC-48AS, OC-192, and OC-12 IR)
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** From node view, click the **Provisioning** > **Protection** tabs.
- Step 2** Under Protection Groups, click the 1+1 protection group you want to modify.
- Step 3** Under Selected Group, you can modify the following:
- *Name*
  - *Bidirectional switching*
  - *Revertive*
  - *Reversion time*

See the “[DLP-73 Create a 1+1 Protection Group](#)” task on page 4-26 for field descriptions.

Figure 10-9 Modifying a 1+1 protection group



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**Step 4** Click **Apply**. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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



**Note** To convert protection groups, see the “[NTP-91 Convert DS-1 and DS-3 Cards From 1:1 to 1:N Protection](#)” procedure on page 11-14.

## DLP-155 Delete a Protection Group

<b>Purpose</b>	Use this task to delete a protection group for any port or card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Display the node view.
- Step 2** Click the **Provisioning > Protection** tabs.
- Step 3** Under Protection Groups, click the protection group you want to delete.
- Step 4** Click **Delete**.
- Step 5** Click **Yes** in the Delete Protection Group window to confirm deletion. Confirm that the changes appear; if they do not, repeat Steps 1--4.
- Step 6** Return to your originating procedure (NTP).
- 

## DLP-156 Delete a SONET DCC Termination/Tunnel

<b>Purpose</b>	Use this task to delete a SONET DCC termination or tunnel in a ring on the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** Deleting a DCC termination or tunnel will cause you to lose visibility of other nodes in the network.

---

- Step 1** From node view, click the **Provisioning > Sonet DCC** tabs.
- Step 2** Click the DCC termination/tunnel to be deleted. The Delete SDCC Termination or Delete Tunnel window opens.
- Step 3** Click **Yes** to confirm. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

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




---

**Note** The ONS 15454 uses the SONET Section layer DCC (SDCC) for data communications. It does not use the Line DCCs; therefore, the Line DCCs are available to tunnel DCCs from third-party equipment across ONS 15454 networks.

---

## NTP-85 Change Node Timing

<b>Purpose</b>	Use this procedure to change the SONET timing settings for the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.
- Step 2** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 3** As needed, complete the “[DLP-157 Change the Node Timing Source](#)” task on page 10-25.
- Step 4** If you need to change any internal timing settings, follow the “[DLP-70 Set Up Internal Timing](#)” task on page 4-21 for the settings you need to modify.




---

**Caution** Internal timing is Stratum 3 and not intended for permanent use. All ONS 15454s should be timed to a Stratum 2 or better primary reference source.

---

- Step 5** If you need to verify timing, see the “[DLP-195 Verify Timing in a Reduced Ring](#)” task on page 14-7.
- Step 6** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 7** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-

## DLP-157 Change the Node Timing Source

<b>Purpose</b>	Use this task to change the SONET timing source for the ONS 15454
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



### Caution

The following procedure may be service affecting and should be performed during a scheduled maintenance window.

**Step 1** From node view, click the **Provisioning > Timing** tabs ([Figure 10-10](#)).

**Step 2** In the General Timing section, change any of the following information:

- *Timing Mode*



**Note** Because mixed timing may cause timing loops, Cisco does not recommend using the Mixed Timing option. Use this mode with care.

- *SSM Message Set*
- *Quality of RES*
- *Revertive*
- *Revertive Time*

See the [“DLP-69 Set Up External or Line Timing” task on page 4-18](#) for field descriptions.

**Step 3** In the BITS Facilities section, you can change the following information:



**Note** The BITS Facilities section sets the parameters for your BITS1 and BITS2 timing references. Many of these settings are determined by the timing source manufacturer. If equipment is timed through BITS Out, you can set timing parameters to meet the requirements of the equipment.

- *State*
- *Coding*
- *Framing*
- *Sync Messaging*
- *AIS Threshold*
- *LBO*

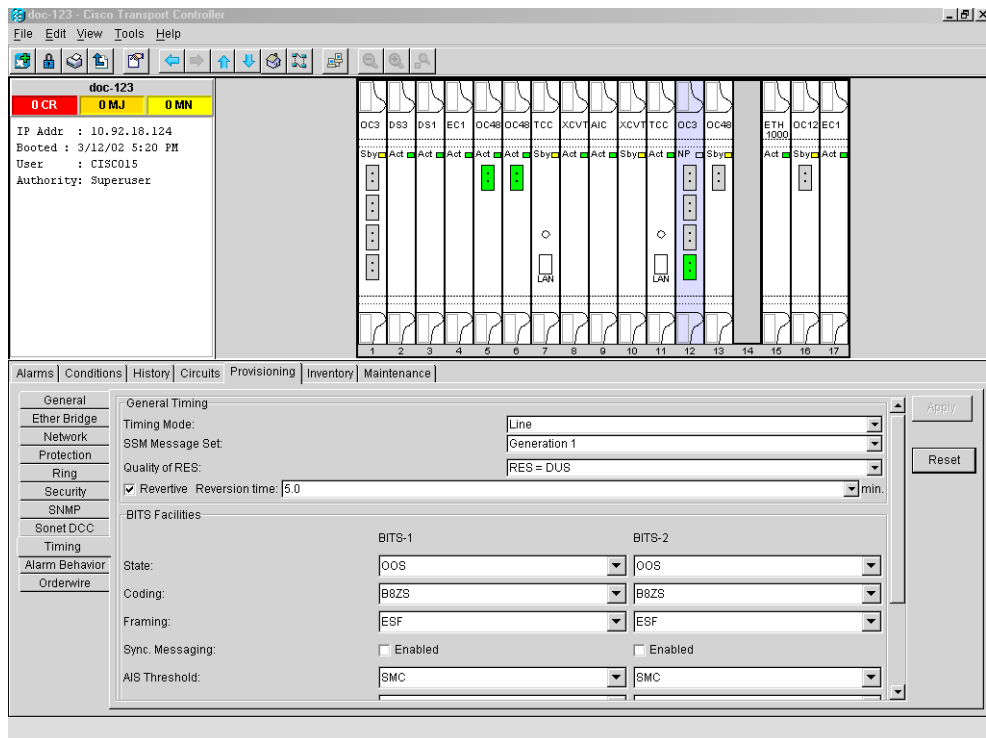
**Step 4** Under Reference Lists, you can change the following information:

**Note**

Reference lists define up to three timing references for the node and up to six BITS Out references. BITS Out references define the timing references used by equipment that can be attached to the node's BITS Out pins on the backplane. If you attach equipment to BITS Out pins, you normally attach it to a node with Line mode because equipment near the External timing reference can be directly wired to the reference.

- *NE Reference*
- *BITS 1 Out/BITS 2 Out*

**Figure 10-10** Modifying ONS 15454 timing



**Step 5** Click **Apply**. Confirm that the changes appear.

**Note**

If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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

**Note**

Refer to the *Cisco ONS 15454 Troubleshooting Guide* for timing-related alarms.



# NTP-86 Modify Users and Change Security

The CISCO15 user provided with each ONS 15454 can be used to set up other ONS 15454 users. You can add up to 500 users to one ONS 15454. You can perform ONS 15454 user management tasks from network or node view. In network view, you can add, edit, or delete users from multiple nodes at one time. If you perform user management tasks in node view, you can only add, edit, or delete users from that node.

See the “[NTP-30 Create Users and Assign Security](#)” procedure on page 4-27 for more information about adding users.

<b>Purpose</b>	Use this procedure to modify user and security properties for the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote


**Note**

To perform this procedure you must be assigned the superuser security level.

- 
- Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.
- Step 2** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 3** Perform any of the following tasks as needed:
- [DLP-158 Change User and Security Settings - Single Node](#), page 10-28
  - [DLP-159 Delete User - Single Node](#), page 10-28
  - [DLP-160 Change User and Security Settings - Multiple Nodes](#), page 10-29
  - [DLP-161 Delete User - Multiple Nodes](#), page 10-30
- Step 4** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-

## DLP-158 Change User and Security Settings - Single Node

<b>Purpose</b>	Use this task to change settings for an existing user at one node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** To perform this task you must be assigned the superuser security level.

**Step 1** In node view, select the **Provisioning > Security** tabs.

**Step 2** Click the user whose settings you want to modify.

**Step 3** Under Selected User, you can modify the following:

- *New Password*
- *Confirm Password*
- *Security Level*

See the “[NTP-30 Create Users and Assign Security](#)” procedure on page 4-27 for field descriptions.

**Step 4** Click **Apply**. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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



**Note** User settings that you changed during this task will not appear until that user logs off and logs back in again.

## DLP-159 Delete User - Single Node

<b>Purpose</b>	Use this task to delete an existing user from a single node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** To perform this task you must be assigned the superuser security level.

- 
- Step 1** In node view, select the **Provisioning > Security** tabs.
- Step 2** Choose the user you want to delete.
- Step 3** Click **Delete**.
- Step 4** Click **Yes** in the Delete User window to confirm deletion. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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

## DLP-160 Change User and Security Settings - Multiple Nodes

<b>Purpose</b>	Use this task to modify an existing user's settings for multiple nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed; use this procedure to add users to multiple nodes at one time
<b>Onsite/Remote</b>	Onsite or remote



**Note** To perform this task you must be assigned the superuser security level.



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

- 
- Step 1** From the View menu in node (default) view, choose **Go to Network View**. Verify that all the nodes where you want to add users are accessible in network view.
- Step 2** Click the **Provisioning > Security** tabs. Highlight the user's name whose settings you want to change.
- Step 3** Click **Change**. The Change User window appears.
- Step 4** In the Change User dialog box, enter the following:
- *New Password*
  - *Confirm New Password*
  - *Security Level*
- See the [“DLP-75 Create a New User - Multiple Nodes” task on page 4-29](#) for field descriptions.
- Step 5** Under “Select applicable nodes,” deselect any nodes where you do not want to change the user's settings (all network nodes are selected by default).
- Step 6** Click **OK**.
- Step 7** On the User Change Results dialog box, click **OK** to acknowledge the changes. Confirm that the changes appear.




---

**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

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

---

## DLP-161 Delete User - Multiple Nodes

<b>Purpose</b>	Use this task to delete an existing user from multiple nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote




---

**Note** To perform this task you must be assigned the superuser security level.

---

- Step 1** From the View menu in node (default) view, choose **Go to Network View**.
- Step 2** Click the **Provisioning > Security** tabs. Highlight the name of the user you want to delete.
- Step 3** Click **Delete**. The Delete User window appears.
- Step 4** Under Select Applicable Nodes, deselect any nodes where you do not want to delete this user.
- Step 5** Click **OK**. A User Deletion Results confirmation dialog box appears.
- Step 6** Click **OK** to confirm the deletion. Confirm that the changes appear.




---

**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

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

---

# NTP-87 Change SNMP Settings

<b>Purpose</b>	Use this procedure to modify user and security properties for the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required User Level</b>	Superuser
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** To perform this procedure you must be assigned the superuser security level.

- 
- Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.
- Step 2** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 3** Perform any of the following tasks as needed:
- [DLP-162 Modify SNMP Trap Destination, page 10-31](#)
  - [DLP-163 Delete SNMP Trap Destination, page 10-33](#)
  - [DLP-164 Delete Ethernet RMON Alarm Thresholds, page 10-34](#)
- Step 4** Complete the “[NTP-108 Back Up the Database](#)” procedure on page 15-6.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-162 Modify SNMP Trap Destination

<b>Purpose</b>	Use this task to modify SNMP settings on an ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** To perform this task you must be assigned the superuser security level.

- 
- Step 1** From node view, click the **Provisioning > SNMP** tabs.
- Step 2** Click the selected trap from Trap Destinations dialog.  
For a description of SNMP traps, see the *Cisco ONS 15454 Reference Guide*.
- Step 3** Type the SNMP community name in the Community Name field.



---

**Note** The community name is a form of authentication and access control. The community name assigned to the ONS 15454 is case-sensitive and must match the community name of the NMS.

---



---

**Note** The default UDP port for SNMP is 162.

---

**Step 4** Set the Trap Version field for either SNMPv1 or SNMPv2.  
Refer to your NMS documentation to determine whether to use SNMP v1 or v2.

**Step 5** Set your maximum traps per second in the Max Traps per Second field.



---

**Note** The Max Traps per Second is the maximum number of traps per second that will be sent to the SNMP manager. If the field is set to 0, there is no maximum and all traps are sent.

---

**Step 6** Click **Apply**.

**Step 7** SNMP settings are now configured. To view SNMP information for each node, highlight the node IP address in the Trap Destinations area of the Trap Destinations screen (Figure 10-11). Confirm that the changes appear.



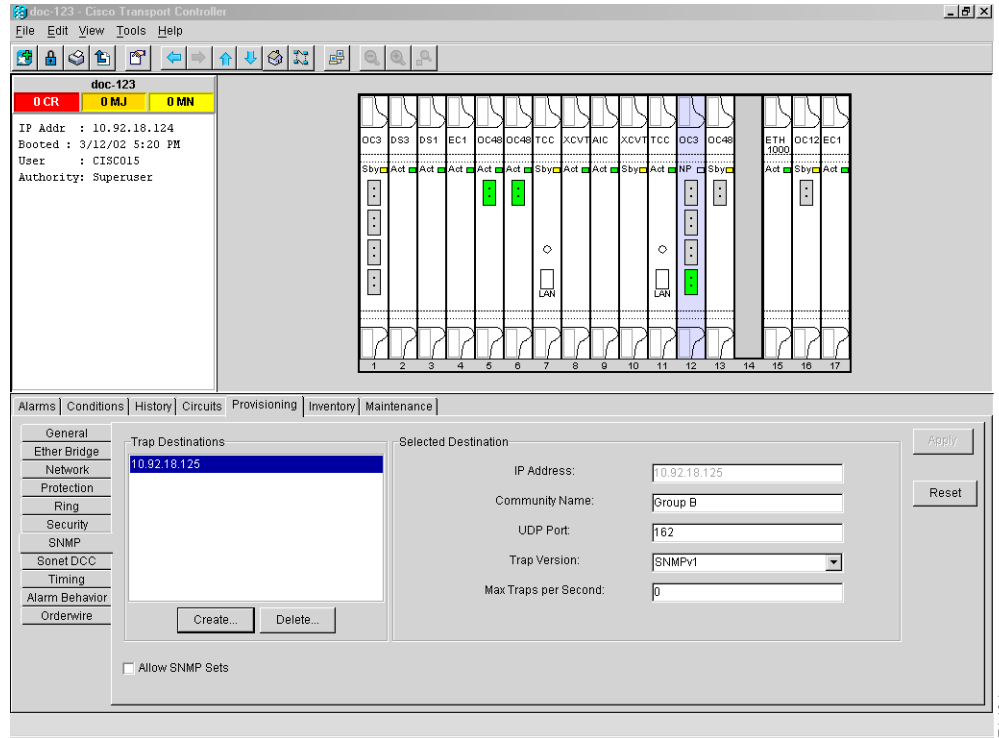
---

**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

---

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

Figure 10-11 Viewing trap destinations



71 464

## DLP-163 Delete SNMP Trap Destination

<b>Purpose</b>	Use this task to delete SNMP on an ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** To perform this task you must be assigned the superuser security level.

- Step 1** From node view, click the **Provisioning > SNMP** tabs.
- Step 2** Click the selected trap to delete from Trap Destination pane.
- Step 3** Click **Delete**. A confirmation dialog box appears.
- Step 4** Click **Yes** to confirm deletion of that trap. Confirm that the changes appear.



**Note** If the changes do not appear, repeat the task. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

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

---

## DLP-164 Delete Ethernet RMON Alarm Thresholds

<b>Purpose</b>	This procedure deletes remote monitoring (RMON) of Ethernet ports.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Log into the ONS 15454 node where you want to change SNMP. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Display the CTC node view.
- Step 3** Click the **Provisioning > Ether Bridge > Thresholds** tabs.
- Step 4** Click the RMON alarm threshold you want to delete.
- Step 5** Click **Delete**. The Delete Threshold dialog box opens.
- Step 6** Click **Yes** to delete that threshold.
- Step 7** Return to your originating procedure (NTP).
-





## Change Card Settings

---

This chapter explains how to change transmission settings on cards in a Cisco ONS 15454. If a card is being provisioned for the first time, complete the [“NTP-31 Provision Line Status and Thresholds” procedure on page 4-30](#) rather than the procedures in this chapter.

### Before You Begin

Before performing any of the following procedures, complete the [“NTP-80 Document Existing Provisioning” procedure on page 10-2](#).

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



#### Caution

---

Changing card settings can be service affecting. You should make all changes during a scheduled maintenance window.

---

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

1. [NTP-88 Modify Line and Status Thresholds for Electrical Cards, page 11-2](#)—As needed, complete this procedure to change transmission settings, including line (drop) and threshold settings, for the electrical cards (EC-1, DS-1, DS-3, and DS3MX-6).
2. [NTP-89 Modify Line and Status Thresholds for Optical Cards, page 11-6](#)—As needed, complete this procedure to change transmission settings, including line (drop) and threshold settings, for all optical (OC-N) cards.
3. [NTP-90 Modify Alarm Interface Controller Settings, page 11-9](#)—As needed, complete this procedure to change external alarms and controls and/or orderwire settings.
4. [NTP-91 Convert DS-1 and DS-3 Cards From 1:1 to 1:N Protection, page 11-14](#)—As needed, complete this procedure to change the type of protection on DS-1 and DS-3 cards.

# NTP-88 Modify Line and Status Thresholds for Electrical Cards

<b>Purpose</b>	Use this procedure to change the line and threshold settings for electrical cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-31 Provision Line Status and Thresholds, page 4-30</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

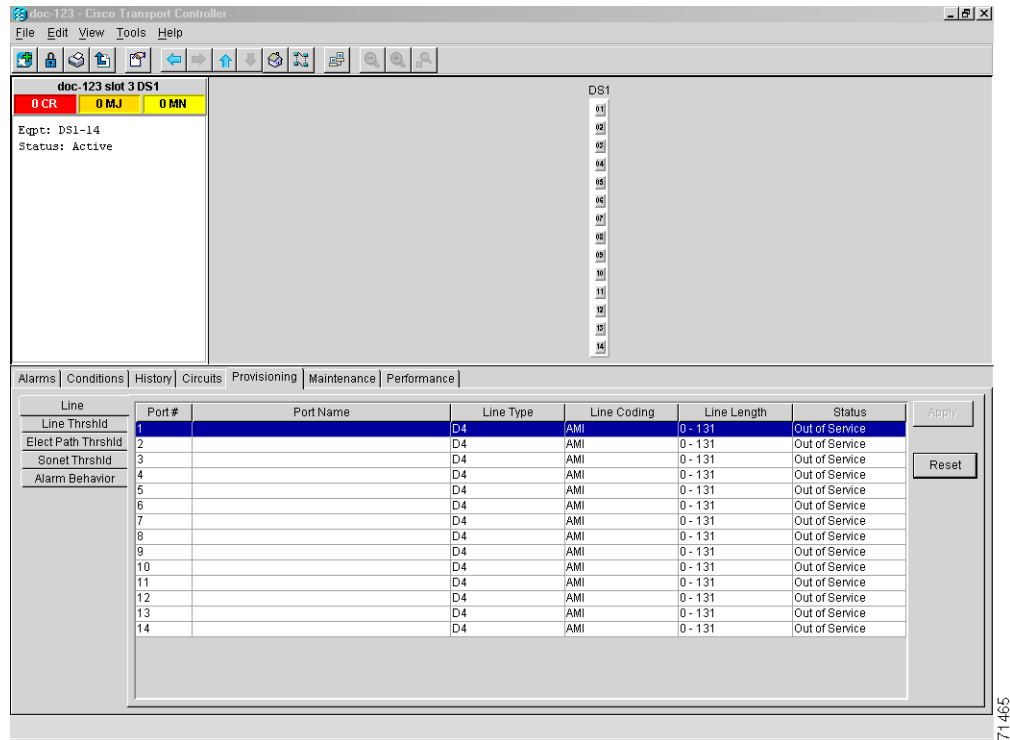
- 
- Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.
- Step 2** Perform a database backup to preserve the existing database. See the “[NTP-108 Back Up the Database](#)” task on page 15-6.
- Step 3** Perform any of the following tasks as needed:
- [DLP-165 Change Line and Threshold Settings for the DS-1 Card, page 11-2](#)
  - [DLP-166 Change Line and Threshold Settings for the DS-3 Card, page 11-4](#)
  - [DLP-167 Change Line and Threshold Settings for the DS3E Card, page 11-4](#)
  - [DLP-168 Change Line and Threshold Settings for the DS3XM-6 Card, page 11-5](#)
  - [DLP-169 Change Line and Threshold Settings for the EC-1 Card, page 11-5](#)
- Step 4** When you are finished changing the card settings, complete the “[NTP-108 Back Up the Database](#)” task on page 15-6.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-165 Change Line and Threshold Settings for the DS-1 Card

<b>Purpose</b>	Use this task to change the line and threshold settings for the DS-1 card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** In the node view, double-click the DS1-14 or DS1N-14 card where you want to change the line or threshold settings.
- Step 2** Click the **Provisioning** tab ([Figure 11-1](#)).

Figure 11-1 Provisioning line parameters on the DS1-14 card



**Step 3** Depending on the setting you need to modify, click the **Line**, **Line Threshld**, **Elect Path Threshld**, or **Sonet Threshld** subtab.



**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab.

**Step 4** Modify any of the settings found under these subtabs. For definitions of the settings, see the [“DLP-76 Provision Line and Threshold Settings for the DS-1 Card”](#) procedure on page 4-31.

**Step 5** Click **Apply**.

**Step 6** Repeat Steps 4 and 5 for each subtab that has parameters you want to provision.

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

## DLP-166 Change Line and Threshold Settings for the DS-3 Card

<b>Purpose</b>	Use this task to change the line and threshold settings for the DS-3 card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Double-click the DS3-12 or DS3N-12 card where you want to change the line or threshold settings.
- Step 2** Click the **Provisioning** tab.
- Step 3** Depending on the setting you need to modify, click the **Line**, **Line Thrshld**, **Elec Path Thrshld**, or **Sonet Thrshld** subtab.




---

**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab.

---

- Step 4** Modify any of the settings found under these subtabs. For definitions of the settings, see the [“DLP-77 Provision Line and Threshold Settings for the DS-3 Card”](#) procedure on page 4-34.
- Step 5** Click **Apply**.
- Step 6** Repeat Steps 4 and 5 for each subtab that has parameters you want to provision.
- Step 7** Return to your originating procedure (NTP).
- 

## DLP-167 Change Line and Threshold Settings for the DS3E Card

<b>Purpose</b>	Use this task to change the line and threshold settings for the DS3E card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Check the type of card installed in ONS 15454 slot. If the DS3E is installed in an ONS 15454 slot that is provisioned for a DS-3 card, the card will appear in CTC as a DS-3 and the DS3E enhanced performance monitoring parameters will not be available. To provision the slot for a DS3E card, see the [“NTP-93 Upgrade DS3 Cards to DS3E”](#) procedure on page 12-6.
- Step 2** Double-click the DS3E-12 or DS3EN-12 card where you want to change the line or threshold settings.
- Step 3** Click the **Provisioning** tab.
- Step 4** Depending on the setting you need to modify, click the **Line**, **Line Thrshld**, **Elect Path Thrshld**, or **Sonet Thrshld** subtab.




---

**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab.

---

- Step 5** Modify any of the settings found under these subtabs. For definitions of the settings, see the “[DLP-78 Provision Line and Thresholds Settings for the DS3E Card](#)” procedure on page 4-37.
- Step 6** Click **Apply**.
- Step 7** Repeat Steps 5 and 6 for each subtab that has parameters you want to provision.
- Step 8** Return to your originating procedure (NTP).
- 

## DLP-168 Change Line and Threshold Settings for the DS3XM-6 Card

<b>Purpose</b>	Use this task to change the line and threshold settings for the DS3XM-6 card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Double-click the DS3XM-6 card where you want to change the line or threshold settings.
- Step 2** Click the **Provisioning** tab.
- Step 3** Depending on the setting you need to modify, click the **Line**, **Line Thrshld**, **Elect Path Thrshld**, or **Sonet Thrshld** subtab.



**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab.

---

- Step 4** Modify any of the settings found under these subtabs. For definitions of the settings, see the “[DLP-79 Provision Line Status and Thresholds for the DS3XM-6 Card](#)” procedure on page 4-40.
- Step 5** Click **Apply**.
- Step 6** Repeat Steps 4 and 5 for each subtab that has parameters you want to provision.
- Step 7** Return to your originating procedure (NTP).
- 

## DLP-169 Change Line and Threshold Settings for the EC-1 Card

<b>Purpose</b>	Use this task to change the line and threshold settings for the EC-1 card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

---

- Step 1** Double-click the EC-1 card where you want to change the line or threshold settings.

## NTP-89 Modify Line and Status Thresholds for Optical Cards

- Step 2** Click the **Provisioning** tab.
- Step 3** Depending on the setting you need to modify, click the **Line**, **Thresholds**, or **STS** subtab.



**Note** See [Chapter 7, “Manage Alarms”](#) for information about the Alarm Behavior tab.

- Step 4** Modify any of the settings found under these subtabs. For definitions of the settings, see the “[DLP-80 Provision Line Status and Thresholds for the EC1-12 Card](#)” procedure on page 4-43.
- Step 5** Click **Apply**.
- Step 6** Repeat Steps 4 and 5 for each subtab that has parameters you want to provision.
- Step 7** Return to your originating procedure (NTP).

# NTP-89 Modify Line and Status Thresholds for Optical Cards

<b>Purpose</b>	Use this procedure to change the line and threshold settings for optical cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.
- Step 2** Perform a database backup. See the “[NTP-108 Back Up the Database](#)” task on page 15-6.
- Step 3** Perform any of the following tasks as needed:
- [DLP-170 Change Line Transmission Settings for OC-N Cards](#), page 11-7
  - [DLP-171 Change Threshold Settings for OC-N Cards](#), page 11-7
  - [DLP-172 Change an Optical Port to SDH](#), page 11-8
- Step 4** Perform a database backup. See the “[NTP-108 Back Up the Database](#)” task on page 15-6.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-170 Change Line Transmission Settings for OC-N Cards

<b>Purpose</b>	Use this task to change the line transmission settings for the OC-N card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

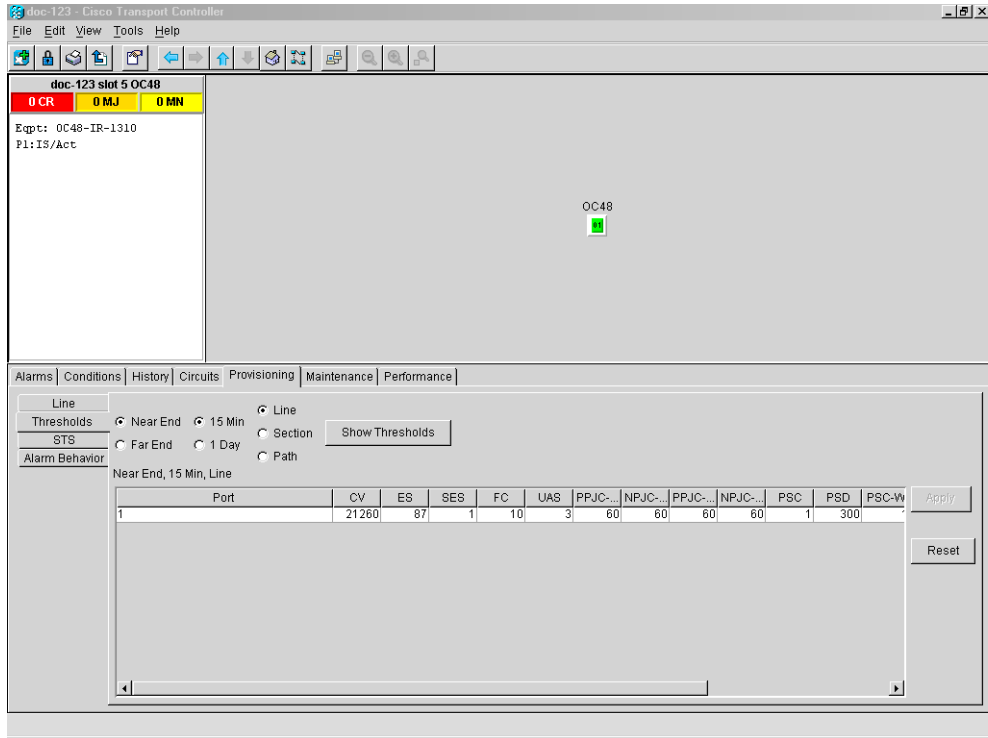
- 
- Step 1** Double-click the OC-N card where you want to change the line settings.
- Step 2** Click the **Provisioning > Line** tabs.
- Step 3** Modify any of the settings found under this subtab. For definitions of the settings, see the “[DLP-81 Provision OC-N Line Status and Thresholds](#)” task on page 4-46.
- Step 4** Click **Apply**.
- Step 5** Return to your originating procedure (NTP).
- 

## DLP-171 Change Threshold Settings for OC-N Cards

<b>Purpose</b>	Use this task to change threshold settings for OC-N cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** In the node view, double-click the OC-N card where you want to change the threshold settings ([Figure 11-2 on page 11-8](#)).
- Step 2** Click the **Provisioning > Thresholds** tabs.

Figure 11-2 Provisioning thresholds for the OC48 IR 1310 card



- Step 3** Modify any of the settings found under this subtab. For definitions of the settings, see the “[DLP-81 Provision OC-N Line Status and Thresholds](#)” task on page 4-46.
- Step 4** Click **Apply**.
- Step 5** Return to your originating procedure (NTP).

## DLP-172 Change an Optical Port to SDH

<b>Purpose</b>	Use this task to specify SDH for a port on an OC-N card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Double-click the OC-N card where you want to set a port to SDH.
- Step 2** Click the **Provisioning > Line** tabs.
- Step 3** Under **Type**, specify the port and choose SDH.





**Note** Before you can set *Type* to SDH, ensure the following: the EnableSyncMsg and SendDoNotUse fields are unchecked, the card is not part of a BLSR or 1+1 protection group, the card is not part of an orderwire, and the card is not a SONET DCC termination point.

- Step 4** Click **Apply**.
- Step 5** If the card is a multiport OC-N card, such as an OC12-4, you can repeat Steps 3 and 4 for any other ports on that card that you want to set to SDH.
- Step 6** Return to your originating procedure (NTP).

## NTP-90 Modify Alarm Interface Controller Settings

<b>Purpose</b>	Use this procedure to provision the AIC card to receive input from, or sent output to, external devices wired to the backplane (called external alarms and controls).
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



**Note** If the AIC card is being provisioned for the first time, see the [“NTP-32 Provision the Alarm Interface Controller” procedure on page 4-51](#).

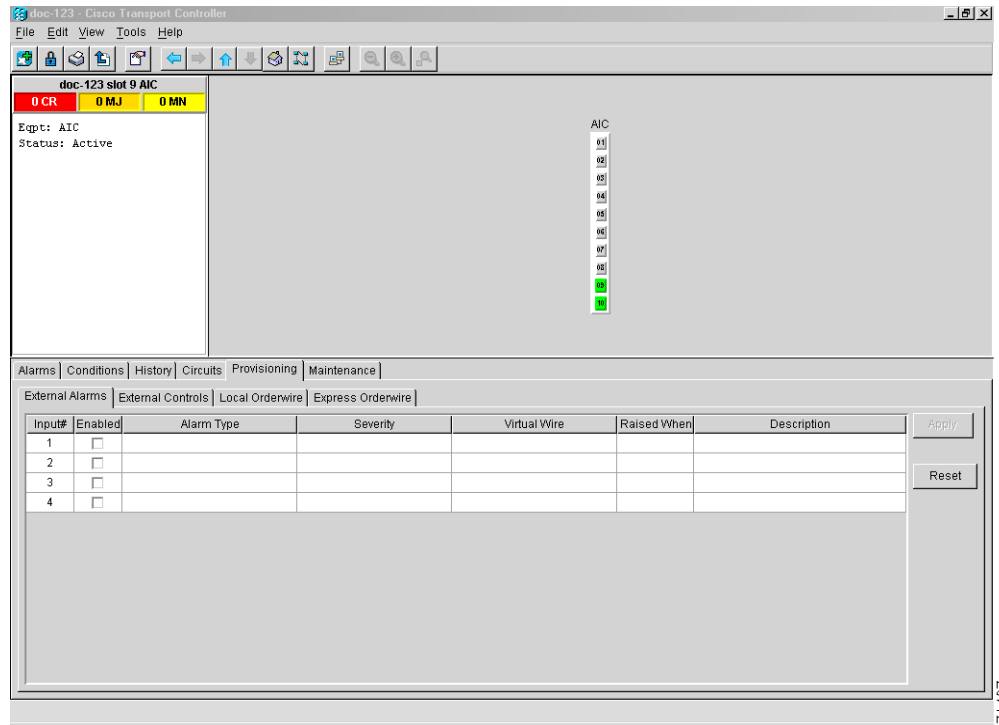
- Step 1** Log into the ONS 15454 node where you want to change the settings. See the [“DLP-60 Log into CTC” task on page 3-22](#).
- Step 2** Perform a database backup. See the [“NTP-108 Back Up the Database” task on page 15-6](#).
- Step 3** Perform any of the following tasks as needed:
- [DLP-173 Change External Alarms, page 11-10](#)
  - [DLP-174 Change External Controls, page 11-11](#)
  - [DLP-175 Change AIC Orderwire Settings, page 11-12](#)
- Step 4** Perform a database backup. See the [“NTP-108 Back Up the Database” task on page 15-6](#).
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-173 Change External Alarms

<b>Purpose</b>	Use this task to change external alarm settings on the AIC card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Confirm that external-device relays are wired to the ENVIR ALARMS IN backplane pins. See the “[DLP-19 Install Alarm Wires on the Backplane](#)” task on page 1-31 for more information.
- Step 2** Double-click the AIC to display it in card view.
- Step 3** Click the **Provisioning > External Alarms** tabs ([Figure 11-3 on page 11-11](#)).
- Step 4** Modify any of the following fields for each external device wired to the ONS 15454 backplane. For definitions of these fields, see the “[DLP-82 Provision External Alarms and Controls](#)” task on page 4-51.
- *Enabled*
  - *Alarm Type*
  - *Severity*
  - *Virtual Wire*
  - *Raised When*
  - *Description*

Figure 11-3 Provisioning external alarms on the AIC card



- Step 5** To provision additional devices, complete Step 4 for each additional device.
- Step 6** Click **Apply**.
- Step 7** Return to your originating procedure (NTP).

## DLP-174 Change External Controls

<b>Purpose</b>	Use this task to change external control settings on the AIC card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Verify the external control relays to the ENVIR ALARMS OUT backplane pins. See the “[DLP-19 Install Alarm Wires on the Backplane](#)” task on page 1-31 for more information.
- Step 2** Double-click the AIC to display it in card view.
- Step 3** On the **External Controls** subtab, modify any of the following fields for each external control wired to the ONS 15454 backplane. For definitions of these fields, see the “[DLP-82 Provision External Alarms and Controls](#)” task on page 4-51.
- *Enabled*

- *Trigger Type*
- *Control Type*
- *Description*

- Step 4** To provision additional controls, complete [Step 3](#) for each additional device.
- Step 5** Click **Apply**.
- Step 6** Return to your originating procedure (NTP).
- 

## DLP-175 Change AIC Orderwire Settings

<b>Purpose</b>	Use this task to change orderwire settings on the AIC card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote



### 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.

---



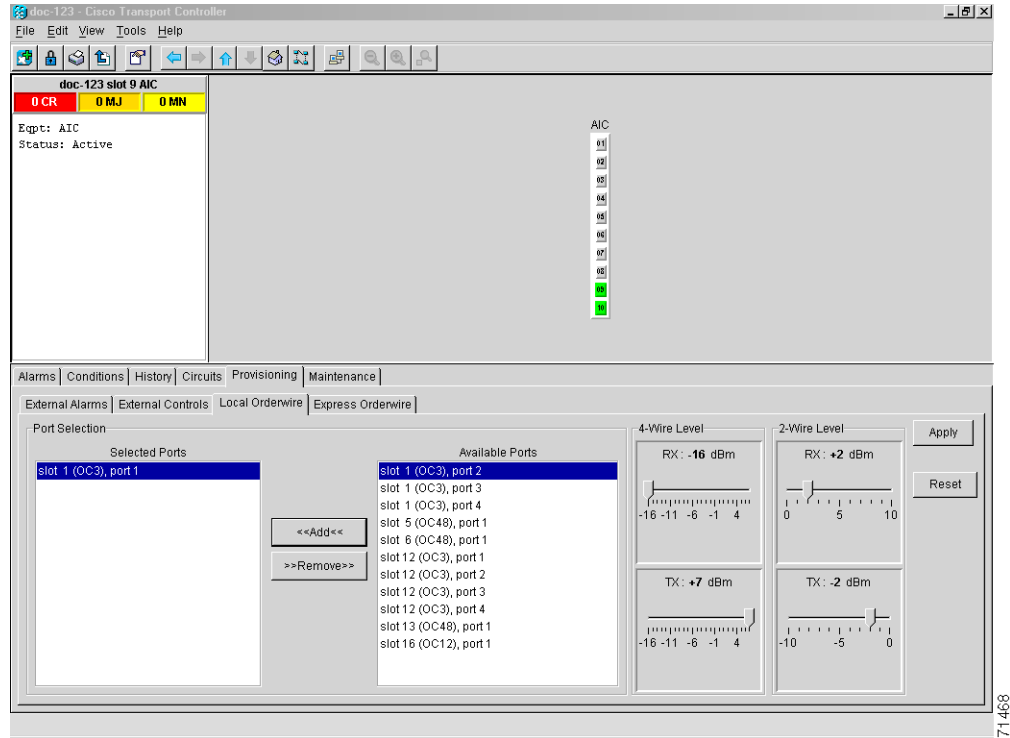
### Tip

Before you begin, make a list of the ONS 15454 slots and ports that require orderwire communication.

---

- Step 1** Double-click the AIC to display it in card view.
- Step 2** Select the **Local Orderwire** or **Express Orderwire** subtab, depending on the orderwire path that you want to create.
- The Local Orderwire subtab is shown in [Figure 11-4 on page 11-13](#). Provisioning steps are the same for both types of orderwire.

Figure 11-4 Provisioning local orderwire



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- Step 3** In the Available Ports list, select the ports that you want to use for the orderwire channel by clicking **Add** or **Remove** to move them to the appropriate column.
- Step 4** If needed, adjust the Tx and Rx dBm by moving the slider to the right or left for the headset type (four-wire or two-wire) that you will use. In general, you should not need to adjust the dBm.
- Step 5** Click **Apply**.
- Step 6** Return to your originating procedure (NTP).

## NTP-91 Convert DS-1 and DS-3 Cards From 1:1 to 1:N Protection

<b>Purpose</b>	Use this task to convert DS-1 and DS-3 cards from 1:1 to 1:N protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- 
- Step 1** Log into the ONS 15454 node where you want to change the settings. See the “[DLP-60 Log into CTC](#)” task on page 3-22.
- Step 2** Perform a database backup. See the “[NTP-108 Back Up the Database](#)” task on page 15-6.
- Step 3** Perform any of the following tasks as needed:
- [DLP-176 Convert DS1-14 Cards From 1:1 to 1:N Protection](#), page 11-14
  - [DLP-177 Convert DS3-12 Cards From 1:1 to 1:N Protection](#), page 11-16
- Step 4** Perform a database backup. See the “[NTP-108 Back Up the Database](#)” task on page 15-6.
- Step 5** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-176 Convert DS1-14 Cards From 1:1 to 1:N Protection

<b>Purpose</b>	Use this task to convert DS1-14 cards in a 1:1 protection scheme to 1:N protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



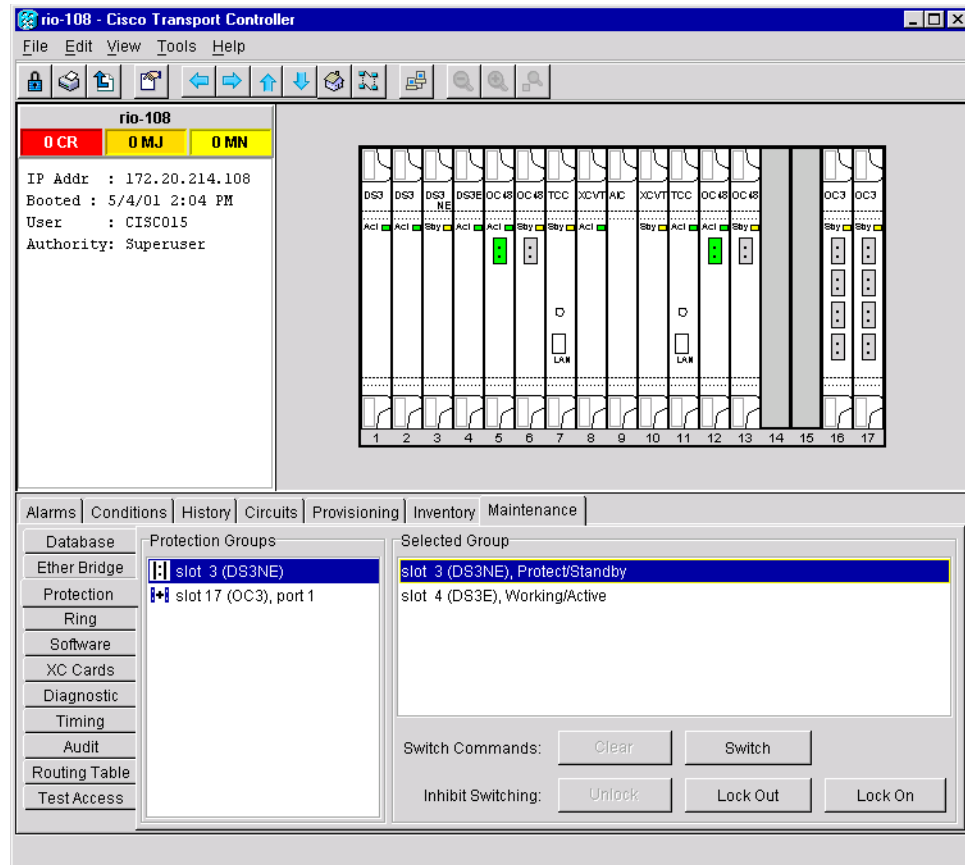
**Note** This procedure assumes DS1-14 cards are installed in Slots 1 through 6 and/or Slots 12 through 17. The DS1-14 cards in Slots 3 and 15, which are the protection slots, will be replaced with DS1N-14 cards. The ONS 15454 must run CTC Release 2.0 or later. The procedure also requires at least one DS1N-14 card and a protection group with DS1-14 cards.

---

- Step 1** In node view, click the **Maintenance > Protection** tabs.
- Step 2** Click the protection group that contains Slot 3 or Slot 15 (where you will install the DS1N-14 card).
- Step 3** Make sure the slot you are upgrading is not carrying working traffic. In the Selected Group list, the protect slot must say Protect/Standby (shown in [Figure 11-5 on page 11-15](#)) and not Protect/Active. If the protect slot status is Protect/Active, use the following steps to switch traffic to the working card:
- Under Selected Group, click the protect card.
  - Next to Switch Commands, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they do not change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.

**Figure 11-5 Viewing slot protection status**



- Step 4** Repeat Steps 1 – 3 for each protection group that you need to convert.
- Step 5** Verify that no standing alarms exist for any of the DS1-14 cards that you are converting. If alarms exist and you have difficulty clearing them, contact your next level of support.
- Step 6** Click the **Provisioning > Protection** tabs.
- Step 7** Click the 1:1 protection group that contains the cards that you will move into the new protection group.
- Step 8** Click **Delete**.
- Step 9** When the confirmation dialog displays, click **Yes**.



**Note** Deleting the 1:1 protection group does not disrupt service. However, no protection bandwidth exists for the working circuits until you complete the 1:N protection procedure. Therefore, complete this procedure as quickly as possible.

- Step 10** If needed, repeat Steps 7 – 9 for other protection groups.
- Step 11** Physically remove the DS1-14 card from Slot 3 or Slot 15. This raises an improper removal alarm.

## DLP-177 Convert DS3-12 Cards From 1:1 to 1:N Protection

- Step 12** In node view, right-click the slot that held the removed card and select delete from the pull-down menu. Wait for the card to disappear from node view.
- Step 13** Physically insert a DS1N-14 card into the same slot.
- Step 14** Verify that the card boots up properly.
- Step 15** Click the **Inventory** tab and verify that the new card appears as a DS1N-14.
- Step 16** Click the **Provisioning > Protection** tabs.
- Step 17** Click **Create**.
- Step 18** Type a name for the protection group in the Name field (optional).
- Step 19** From the Type pull-down menu, choose **1:N (card)**.
- Step 20** From the Protect Card pull-down menu, choose the DS1N-14 card. Verify that the correct DS1N-14 card appears in the Protect Card field.
- Step 21** Under Available Cards, highlight the cards that you want in the protection group. Click the arrow (>>) tab to move the cards to the Working Cards list.
- Step 22** If necessary, set a new reversion time in the Reversion time pull-down menu.



**Note** 1:N protection groups are always revertive.

- Step 23** Click **OK**. The protection group appears in the Protection Groups list on the Protection subtab.
- Step 24** Return to your originating procedure (NTP).

## DLP-177 Convert DS3-12 Cards From 1:1 to 1:N Protection

<b>Purpose</b>	Use this task to convert DS3-12 cards in a 1:1 protection scheme to 1:N protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



**Note** This procedure assumes that DS3-12 cards are installed in Slots 1 - 6 and/or Slots 12 - 17. The DS3-12 cards in Slots 3 and 15, which are the protection slots, will be replaced with DS3N-12 cards. The ONS 15454 must run CTC Release 2.0 or later. The procedure also requires at least one DS3N-12 card and a protection group with DS3-12 cards.

- Step 1** In node view, click the **Maintenance > Protection** tabs.
- Step 2** Click the protection group containing Slot 15 (where you will install the DS3N-12 card).
- Step 3** Make sure the slot you are upgrading is not carrying working traffic. In the Selected Group list, the protect slot must say Protect/Standby as shown in [Figure 11-5 on page 11-15](#), and not Protect/Active. If the protect slot status is Protect/Active, use the following steps to switch traffic to the working card:
- Under Selected Group, click the protect card.



- b. Next to Switch Commands, click **Switch**.

The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they fail to change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.

- Step 4** Repeat Steps 2 and 3 for each protection group that you need to convert.
- Step 5** Verify that no standing alarms exist for any of the DS3-12 cards you are converting. If alarms exist and you have difficulty clearing them, contact your next level of support.
- Step 6** Click the **Provisioning > Protection** tabs.
- Step 7** Click the 1:1 protection group that contains the cards that you will move into the new protection group.
- Step 8** Click **Delete**.
- Step 9** When the confirmation dialog displays, click **Yes**.



---

**Note** Deleting the 1:1 protection groups will not disrupt service. However, no protection bandwidth exists for the working circuits until the 1:N protection procedure is completed. Do not delay when completing this procedure.

---

- Step 10** If you are deleting more than one protection group, repeat Steps 7 – 9 for each group.
  - Step 11** Physically remove the DS3-12 card from Slot 3 or Slot 15. This raises an improper removal alarm.
  - Step 12** In node view, right-click the slot that held the removed card and choose **Delete** from the pull-down menu. Wait for the card to disappear from the node view.
  - Step 13** Physically insert a DS3N-12 card into the same slot.
  - Step 14** Verify that the card boots up properly.
  - Step 15** Click the **Inventory** tab and verify that the new card appears as a DS3N-12.
  - Step 16** Click the **Provisioning > Protection** tabs.
  - Step 17** Click **Create**.
  - Step 18** Type a name for the protection group in the Name field (optional).
  - Step 19** Click **Type** and choose **1:N (card)** from the pull-down menu.
  - Step 20** Verify that the DS3N-12 card appears in the Protect Card field.
  - Step 21** In the Available Cards list, highlight the cards that you want in the protection group. Click the arrow (>>) tab to move the cards to the Working Cards list.
  - Step 22** Click **OK**.  
The protection group should appear in the Protection Groups list on the Protection subtab.
  - Step 23** Return to your originating procedure (NTP).
-

## DLP-178 Convert DS3-12E Cards From 1:1 to 1:N Protection

<b>Purpose</b>	Use this task to convert DS3-12E cards in a 1:1 protection scheme to 1:N protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Note

This procedure assumes that DS3-12E cards are installed in Slots 1 - 6 and/or Slots 12 - 17. The DS3-12E cards in Slots 3 and 15, which are the protection slots, will be replaced with DS3N-12E cards. The procedure requires at least one DS3N-12E card and a protection group with DS3-12E cards.

- 
- Step 1** In node view, click the **Maintenance > Protection** tabs.
- Step 2** Click the protection group containing Slot 15 (where you will install the DS3N-12E card).
- Step 3** Make sure the slot you are upgrading is not carrying working traffic. In the Selected Group list, the protect slot must say Protect/Standby as shown in [Figure 11-5 on page 11-15](#), and not Protect/Active. If the protect slot status is Protect/Active, use the following steps to switch traffic to the working card:
- Under Selected Group, click the protect card.
  - Next to Switch Commands, click **Switch**.  
The working slot should change to Working/Active and the protect slot should change to Protect/Standby. If they fail to change, do not continue. Troubleshoot the working card and slot to determine why the card cannot carry working traffic.
- Step 4** Repeat Steps 2 and 3 for each protection group that you need to convert.
- Step 5** Verify that no standing alarms exist for any of the DS3-12E cards you are converting. If alarms exist and you have difficulty clearing them, contact your next level of support.
- Step 6** Click the **Provisioning > Protection** tabs.
- Step 7** Click the 1:1 protection group that contains the cards that you will move into the new protection group.
- Step 8** Click **Delete**.
- Step 9** When the confirmation dialog displays, click **Yes**.



### Note

Deleting the 1:1 protection groups will not disrupt service. However, no protection bandwidth exists for the working circuits until the 1:N protection procedure is completed. Do not delay when completing this procedure.

- 
- Step 10** If you are deleting more than one protection group, repeat Steps 7 – 9 for each group.
- Step 11** Physically remove the DS3-12E card from Slot 3 or Slot 15. This raises an improper removal alarm.
- Step 12** In node view, right-click the slot that held the removed card and choose **Delete** from the pull-down menu. Wait for the card to disappear from the node view.
- Step 13** Physically insert a DS3N-12E card into the same slot.
- Step 14** Verify that the card boots up properly.

- Step 15** Click the **Inventory** tab and verify that the new card appears as a DS3N-12E.
- Step 16** Click the **Provisioning > Protection** tabs.
- Step 17** Click **Create**.
- Step 18** Type a name for the protection group in the Name field (optional).
- Step 19** Click **Type** and choose **1:N (card)** from the pull-down menu.
- Step 20** Verify that the DS3N-12E card appears in the Protect Card field.
- Step 21** In the Available Cards list, highlight the cards that you want in the protection group. Click the arrow (>>) tab to move the cards to the Working Cards list.
- Step 22** Click **OK**.
- The protection group should appear in the Protection Groups list on the Protection subtab.
- Step 23** Return to your originating procedure (NTP).
-





## Upgrade Cards and Spans

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This chapter explains how to upgrade cross-connect (XC, XCVT, XC10G) cards, DS3 and DS3N cards, and optical spans within a ring or protection group.

### Before You Begin

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

1. [NTP-92 Upgrade Cross-Connect Cards, page 12-1](#)—Complete this procedure as needed to upgrade XC, XCVT, or XC10G cards.
2. [NTP-93 Upgrade DS3 Cards to DS3E, page 12-6](#)— Complete this procedure as needed to upgrade DS3 or DS3N cards to DS3E or DS3N-E cards.
3. [NTP-94 Upgrade Optical Spans Automatically, page 12-9](#)—Complete this procedure as needed to upgrade optical cards within UPSRs, BLSRs, and 1+1 protection groups.
4. [NTP-95 Upgrade Optical Spans Manually, page 12-12](#)—Complete this procedure as needed to perform error recovery for the Span Upgrade Wizard or back out of a span upgrade (downgrade).

### NTP-92 Upgrade Cross-Connect Cards

<b>Purpose</b>	This procedure describes how to upgrade XC, XCVT, and XC10G cards.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

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- Step 1** Log into the node where you will perform the XC/XCVT/XC10G upgrade. The node (default) view displays. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** Complete the [“DLP-179 Prevent a Protection Switch During Cross-Connect Upgrades” task on page 12-2](#).
- Step 3** Based on the card you are upgrading, complete the applicable task:
- [DLP-180 Upgrade the XC Card to the XCVT Card, page 12-3](#)
  - [DLP-181 Upgrade the XC/XCVT Card to the XC10G Card, page 12-4](#)

- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-179 Prevent a Protection Switch During Cross-Connect Upgrades

<b>Purpose</b>	This task prevents a linear 1+1 or BLSR protection switch from occurring during XC/XCVT/XC10G upgrades.
<b>Tools/Equipment</b>	Replacement cross-connect card
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

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- Step 1** Ensure the working span is active on both local and remote nodes:
- In node view, click the **Maintenance > Ring** tabs.
  - Locate the applicable span.
  - In the West Line and East Line columns, the working/active span is identified by (Work/Act).
- Step 2** Ensure the working span is carrying error-free traffic (no SD or SF alarms present):
- Display the network view and click the **Alarms** tab to display alarms.
  - If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 3** Lockout the protection span according to the specific protection scheme:
- Lockout the protection span in a BLSR protection scheme:
    - In node (default) view, click the **Maintenance > Ring** tabs.
    - Locate the applicable span.
    - In the West Line and East Line columns, the working/active span is identified by (Work/Act). Place a lockout on the East and West cards of the nodes adjacent to the XC switch node; for example, to switch the XC on Node B, place a lockout on the West card of Node A and on the East card of Node C, no lockout is necessary on Node B. Before the lockout is set, verify that the BLSR is not switched. If a lockout is set while the BLSR is switched, traffic can be lost.

```
<-----East [Node A] West-----East [Node B] West-----East [Node C] West----->
```
  - Lockout the protection span in a 1+1 protection scheme:
    - In node (default) view, click the **Maintenance > Protection** tabs.
    - Choose the affected 1+1 protection group from the Protection Groups window.
    - In the Selected Group window, the working and protect spans appear. Choose the **protect/standby card** and choose **Lockout** from the inhibit switching row.
    - Click **Yes** on the confirmation dialog box.
  - Lockout the protection span in a UPSR protection scheme:
    - Complete the “[DLP-197 Switch UPSR Traffic](#)” task on page 14-13 to apply a force switch on the span that will be upgraded.

- Step 4** The protection span is now locked out. Complete the “[DLP-180 Upgrade the XC Card to the XCVT Card](#)” task on [page 12-3](#) or the “[DLP-181 Upgrade the XC/XCVT Card to the XC10G Card](#)” task on [page 12-4](#) and release the protection lock out when indicated in either task.

## DLP-180 Upgrade the XC Card to the XCVT Card

<b>Purpose</b>	This task upgrades the XC card to the XCVT card
<b>Tools/Equipment</b>	Two XCVT cards
<b>Prerequisite Procedures</b>	<a href="#">DLP-179 Prevent a Protection Switch During Cross-Connect Upgrades</a> , <a href="#">page 12-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



**Note**

The UNEQ-P alarm can be raised during a cross-connect card upgrade if you have E100/E1000 cards in the system. The alarm will appear and clear within a few seconds.

- Step 1** Determine the standby XC card. The ACT/STBY LED of the standby XC card is amber, while the ACT/STBY LED of the active XC card is green.



**Note**

You can also place the cursor on the card graphic in CTC to display a dialog. This display identifies the card as XC: Active or XC: Standby.

- Step 2** Physically replace the standby XC card on the ONS 15454 with an XCVT card:
- Open the XC card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
  - Open the ejectors on the XCVT card.
  - Slide the XCVT card into the slot along the guide rails.
  - Close the ejectors.

On the XCVT card the fail LED above the ACT/STBY LED becomes red, blinks for several seconds, and turns off. The ACT/STBY LED turns amber and remains illuminated.

- Step 3** In node view, click the **Maintenance > XC Cards** tabs.
- Step 4** From the Cross Connect Cards menu, choose **Switch**.
- Step 5** Click **Yes** on the Confirm Switch dialog box. Traffic switches to the XCVT card you inserted in [Step 2](#). The ACT/STBY LED on this card changes from amber to green.



**Note**

The Interconnection Equipment Failure alarm will be displayed, but will clear when the upgrade procedure is complete and the node has matching cross-connect cards installed.

## DLP-181 Upgrade the XC/XCVT Card to the XC10G Card

- Step 6** Physically remove the now standby XC card from the ONS 15454 and insert the second XCVT card into the empty XC slot:
- Open the XC card ejectors.
  - Slide the XC card out of the slot.
  - Open the ejectors on the XCVT.
  - Slide the XCVT card into the slot along the guide rails.
  - Close the ejectors.
- The upgrade is complete when the second XCVT card boots up and becomes the standby XCVT.
- Step 7** Complete the “[DLP-203 Clear a Lock On or Lock Out](#)” task on page 15-13 to release the protection lockout(s) you applied in the “[DLP-179 Prevent a Protection Switch During Cross-Connect Upgrades](#)” task on page 12-2.

## DLP-181 Upgrade the XC/XCVT Card to the XC10G Card

<b>Purpose</b>	This task upgrades the XC/XCVT card to the XC10G card.
<b>Tools/Equipment</b>	Two XC10G cards
<b>Prerequisite Procedures</b>	<a href="#">DLP-179 Prevent a Protection Switch During Cross-Connect Upgrades</a> , page 12-2 <a href="#">“DLP-60 Log into CTC” task on page 3-22</a> <a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	Software release 3.1 and later and the 15454-SA-ANSI shelf are required for XC10G operation.
<b>Onsite/Remote</b>	Onsite



### Note

This procedure only applies to XC/XCVT cards that are installed in the 15454-SA-ANSI (Software R3.1 and later). You cannot perform this upgrade from shelves released prior to software R3.1. The XC10G requires the 15454-SA-ANSI.



### Note

The UNEQ-P alarm can be raised during a cross-connect card upgrade if you have E100T-12/E1000-2 cards in the node. The alarm will appear and clear within a few seconds.

- Step 1** Determine the standby XC/XCVT card. The ACT/STBY LED of the standby XC/XCVT card is amber, while the ACT/STBY LED of the active XC/XCVT card is green.



### Note

You can also place the cursor on the card graphic in CTC to display a dialog. This display identifies the card as XC/XCVT: Active or XC/XCVT: Standby.

- Step 2** Physically replace the standby XC/XCVT card on the ONS 15454 with an XC10G card:
- Open the XC/XCVT card ejectors.



- b. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
- c. Open the ejectors on the XC10G card.
- d. Slide the XC10G card into the slot along the guide rails.
- e. Close the ejectors.

On the XC10G card the fail LED above the ACT/STBY LED becomes red, blinks for several seconds, and turns off. The ACT/STBY LED turns amber and remains illuminated.

**Step 3** In node view, click the **Maintenance > XC Cards** tabs.

**Step 4** From the Cross Connect Cards menu, choose **Switch**.

**Step 5** Click **Yes** on the Confirm Switch dialog box. Traffic switches to the XC10G card you inserted in [Step 2](#). The ACT/STBY LED on this card changes from amber to green.



---

**Note** The Interconnection Equipment Failure alarm will be displayed, but will clear when the upgrade procedure is complete and the node has matching cross-connect cards installed.

---

**Step 6** Physically remove the now standby XC/XCVT card from the ONS 15454 and insert the second XC10G card into the empty XC/XCVT slot:

- a. Open the XC/XCVT card ejectors.
- b. Slide the XC/XCVT card out of the slot.
- c. Open the ejectors on the XC10G.
- d. Slide the XC10G card into the slot along the guide rails.
- e. Close the ejectors.

The upgrade is complete when the second XC10G card boots up and becomes the standby XC10G.

**Step 7** Complete the [“DLP-203 Clear a Lock On or Lock Out”](#) task on page 15-13 to release the protection lockout(s) you applied in the [“DLP-179 Prevent a Protection Switch During Cross-Connect Upgrades”](#) task on page 12-2.

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## NTP-93 Upgrade DS3 Cards to DS3E

<b>Purpose</b>	Use these tasks to upgrade DS3 cards to DS3E cards or to downgrade from DS3E cards to DS3 cards.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Note

Upgrading to DS3E or DS3EN cards requires that the ONS 15454 is running CTC Release 3.1 or later. Upgrades must be performed between two N-type cards or two non-N-type cards. You cannot upgrade between an N-type card and a non-N-type card. When physically replacing a card, the new card must be in the same slot as the old card. The DS3E card upgrade supports 1:1 and 1:N protection schemes. The procedure is non-service affecting, that is, the upgrade will cause a switch less than 50 ms in duration.

- Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22. The node (default) view displays.
- Step 2** If you need to upgrade a DS3 (DS3N) card to a DS3E (DS3EN) card, complete the “[DLP-182 Upgrade the DS3/DS3N Card to the DS3E/DS3EN Card](#)” task on page 12-6.



### Note

This procedure can also be used to enable the capabilities of a DS3E card that was installed in a shelf with Software R3.1 or earlier.

- Step 3** If you need to downgrade a DS3 or DS3E card, complete the “[DLP-183 Downgrade a DS3E/DS3NE Card to a DS3/DS3N Card](#)” task on page 12-8. The procedure for downgrading is the same as upgrading except you choose DS3 or DS3N from the Change Card pull-down menu.
- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-182 Upgrade the DS3/DS3N Card to the DS3E/DS3EN Card

<b>Purpose</b>	This task upgrades the DS3 card to the DS3E card or the DS3N card to the DS3EN card.
<b>Tools/Equipment</b>	DS3E or DS3EN card
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Caution

Protect cards must be upgraded before working cards because working cards cannot have more capabilities than their protect card.

**Note**

During the upgrade some minor alarms and conditions will be raised and will clear on their own; however, there should be no Service-Affecting (SA, Major, or Critical) alarms. If any Service-Affecting alarms occur, Cisco recommends backing out of the procedure.

- Step 1** Determine if the card you are upgrading is protected or unprotected:
- A protected card will be listed under Protection Groups in the **Maintenance > Protection** tabs. The slot, port and status (i.e., Protect/Standby, Working/Active) of each card will be listed under Selected Group.
  - An unprotected card will not be listed under Protection Groups/Selected Group in the **Maintenance > Protection** tabs.
- Step 2** If the card you are upgrading is unprotected, skip to [Step 3](#). If the card you are upgrading is protected, complete the “[DLP-202 Apply a Lock Out](#)” task on page 15-12 on the protect card.

**Note**

Traffic will be lost during an upgrade on an unprotected card.

- Step 3** Physically remove the protect DS3 or the protect DS3N card:
- Open the DS3/DS3N card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
- Step 4** Right-click the protect slot and choose **Change Card** from the pull-down menu.
- Step 5** Choose the new card (DS3E or DS3EN) from the Change to: pull-down menu.
- Step 6** Click **OK**.
- Step 7** Insert the new DS3E or DS3EN card into the protect slot:
- Open the ejectors on the DS3E/DS3EN card.
  - Slide the DS3E/DS3EN card into the slot along the guide rails.
- Step 8** Close the ejectors.
- Wait for the IMPROPRMVL alarm to clear and the card to become standby.
- Step 9** If you placed a lock out on the protect card in [Step 2](#), complete the “[DLP-203 Clear a Lock On or Lock Out](#)” task on page 15-13 to remove the lockout.
- Step 10** Repeat this task ([Step 1–9](#)) for the working card.

**Note**

After upgrading from a DS3 to DS3E card, check the DS3E line type is set to the framing type employed by your particular SONET network to take full advantage of the performance monitoring capabilities of the DS3E. At the CTC card level, click the **Provisioning > Line** tabs and check the Line Type column.

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

## DLP-183 Downgrade a DS3E/DS3NE Card to a DS3/DS3N Card

<b>Purpose</b>	This task downgrades a DS3E or DS3NE card. Downgrading can be performed to back out of an upgrade.
<b>Tools</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-182 Upgrade the DS3/DS3N Card to the DS3E/DS3EN Card, page 12-6</a> <a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Note**

All ports must be provisioned as UNFRAMED and not have the Path Trace enabled.

**Note**

Working cards must be downgraded before protect cards.

**Tip**

The procedure for downgrading is the same as upgrading except you choose DS3 or DS3N from the Change Card pull-down menu.

- 
- Step 1** Determine if the card you are downgrading is protected or unprotected:
- A protected card will be listed under Protection Groups in the **Maintenance > Protection** tabs. The slot, port and status (i.e., Protect/Standby, Working/Active) of each card will be listed under Selected Group.
  - An unprotected card will not be listed under Protection Groups/Selected Group in the **Maintenance > Protection** tabs.
- Step 2** If the card you are downgrading is unprotected, skip to [Step 3](#). If the card you are downgrading is protected, complete the [“DLP-202 Apply a Lock Out” task on page 15-12](#) for working card.
- Step 3** Physically remove the working DS3E or the working DS3EN card:
- Open the DS3E/DS3EN card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the downgrade is complete.
- Step 4** Right-click the slot to be downgraded and choose **Change Card** from the pull-down menu.
- Step 5** Choose **DS3** or **DS3N** from the Change to: pull-down menu.
- Step 6** Click **OK**.
- Step 7** Insert the DS3 or DS3N card into the working slot:
- Open the ejectors on the DS3/DS3N card.
  - Slide the DS3/DS3N card into the slot along the guide rails.
- Step 8** Close the ejectors. Wait for the IMPROPRMVL alarm to clear and the card to become active.
- Step 9** If you placed a lockout on the working card in [Step 2](#), complete the [“DLP-203 Clear a Lock On or Lock Out” task on page 15-13](#) to remove the lockout.

- Step 10** Click **Yes** on the confirmation dialog box.
- Step 11** Repeat this task (Steps 1–10) to downgrade the protect card if applicable.
- Step 12** Return to your originating procedure (NTP).

## NTP-94 Upgrade Optical Spans Automatically

<b>Purpose</b>	Use this procedure to upgrade OC-N speeds within BLSRs, UPSRs, and 1+1 protection groups using the Span Upgrade Wizard.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22. The node (default) view displays.
- Step 2** Complete the “[DLP-184 Perform a Span Upgrade Using the Span Upgrade Wizard](#)” task on page 12-10 to upgrade an optical span within a BLSR, UPSR, or 1+1 protection group. Valid span upgrades include OC-12 to four-port OC-12, OC-12 to OC-48, OC-12 to OC-192, or OC-48 to OC-192.
- Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.



**Note** The span upgrade process resets the line’s CV-L threshold to factory default. The CV-L threshold is reset because the threshold is dependent on line rate.



**Note** Span upgrades do not upgrade SONET topologies; for example, a 1+1 protection group to a two-fiber BLSR.



**Note** During the upgrade/downgrade some minor alarms and conditions will be raised and will clear automatically. No service-affecting alarms (SA, Major, or Critical) should occur other than BLSR Out of Sync, which will clear when the upgrade/downgrade of all nodes is complete. If any other service-affecting alarms occur, Cisco recommends backing out of the procedure. A four-node BLSR can take up to five minutes to clear all of the Out of Sync alarms. Allow extra time for a large BLSR to clear all of the Out of Sync alarms.

## DLP-184 Perform a Span Upgrade Using the Span Upgrade Wizard

<b>Purpose</b>	This task upgrades two-fiber BLSR spans, four-fiber BLSR spans, UPSR spans and 1+1 protection group spans.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Higher-rate cards</li> <li>• Compatible hardware necessary for the upgrade</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.



### Note

The Span Upgrade Wizard only supports OC-N span upgrades. It does not support electrical upgrades.



### Note

During the upgrade, the IMPROPRMVL alarm may be raised. It will clear automatically.



### Note

If any of the cross-connect cards reboot during the span upgrade, you must manually reset each one (perform a side switch) when the span upgrade procedure is complete for all the nodes in the ring.



### Note

An OC-12 to four-port OC-12 span upgrade can only be performed from multispeed slots (slots 1–4 and 14–17) because the four-port OC-12 card can only be installed in multispeed slots. Ensure the OC-12 cards are in multispeed slots before performing a span upgrade to the four-port OC-12. The OC-12 port will be mapped to port 1 on the four-port OC-12.



### Note

The Span Upgrade option will only be visible and available if the hardware and hardware compatibility necessary for the upgrade is present; for example, no upgrade is possible from an OC48 span unless XC10G cards are installed in the nodes at both ends of the span. In the case of an OC-12 to OC12-4 span upgrade, the OC12-4 option will not be visible or available if the OC12 cards are in high speed slots, even if XC10G cards are installed, because OC12-4 cards are only supported in multi-speed slots.

### Step 1

Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present:

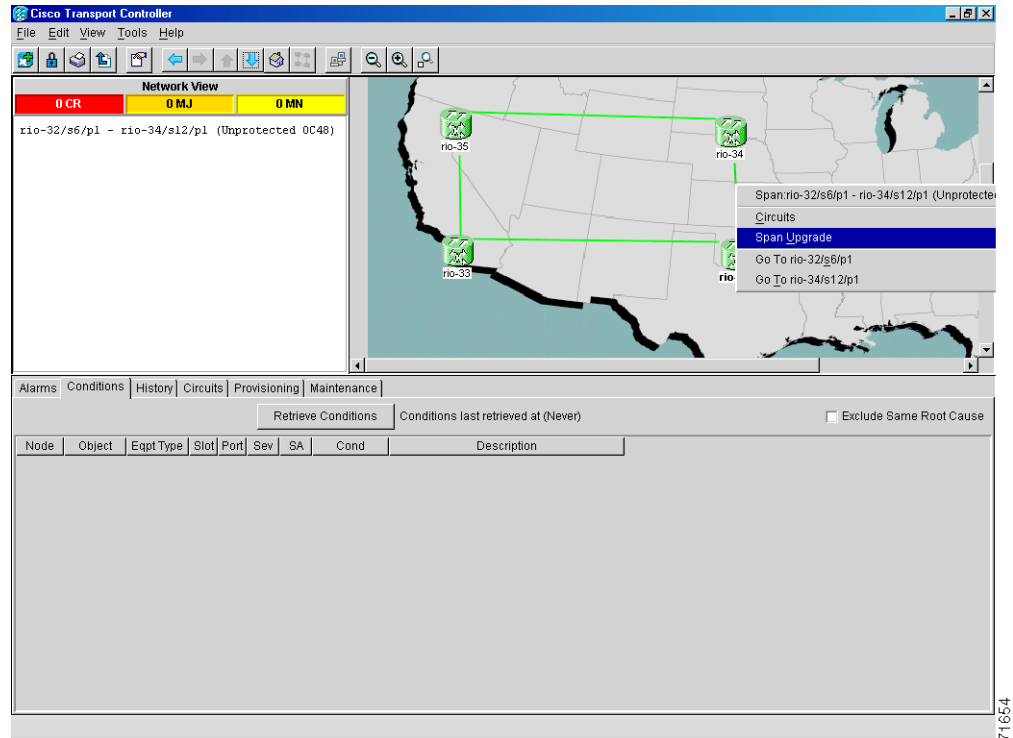
- Navigate from the default (node) view to the network view by clicking on the Go To Network View button in the tool bar.
- In network view, click on the **Alarms** tab to view a list of current alarms.

- c. In network view, click on the **Conditions** tab and click the **Retrieve Conditions** button to view a list of current conditions.

An unresolved alarm or abnormal condition (including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING) is the most probable reason for upgrade failure. If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 2** In network view, right-click the span you want to upgrade.
- Step 3** Choose **Span Upgrade** from the pull-down menu (Figure 12-1).

Figure 12-1 Span pull-down menu

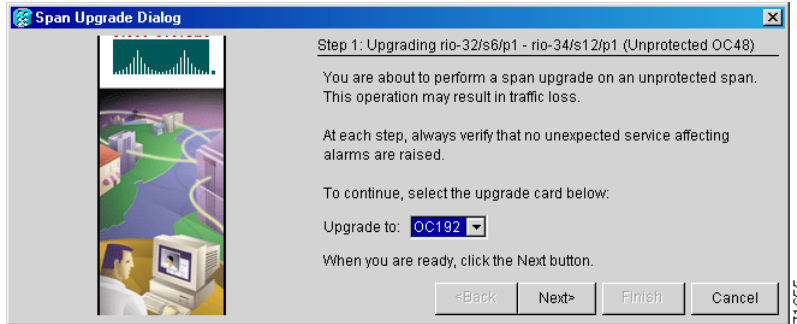


- Step 4** The first Span Upgrade dialog box appears (Figure 12-2). Follow the instructions on the dialog box and the wizard will lead you through the rest of the span upgrade.



**Note** The <Back button is only enabled on Step 2 of the wizard; because you cannot back out of an upgrade via the wizard, close the wizard and initiate the manual procedure if you need to back out of the upgrade at any point beyond Step 2.

Figure 12-2 Beginning the Span Upgrade Wizard

**Note**

If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

**Note**

Remember to attach the fiber after installing the OC-N cards.

**Step 5** Repeat [Step 2–4](#) for additional spans in the ring.

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

## NTP-95 Upgrade Optical Spans Manually

<b>Purpose</b>	Use this procedure to upgrade OC-N speeds within BLSRs, UPSRs, and 1+1 protection groups by upgrading OC-N cards.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22. The node (default) view displays.

**Step 2** Complete a manual upgrade task if you need to perform error recovery for the Span Upgrade Wizard or back out of a span upgrade (downgrade):

- Complete the “[DLP-185 Perform a Manual Span Upgrade on a Two-Fiber BLSR](#)” task on [page 12-13](#) to manually upgrade an optical span within a two-fiber BLSR. Valid span upgrades include OC-12 to OC-48, OC-12 to OC-192, or OC-48 to OC-192.
- Complete the “[DLP-186 Perform a Manual Span Upgrade on a Four-Fiber BLSR](#)” task on [page 12-15](#) to manually upgrade an optical span within a four-fiber BLSR. Valid span upgrades include OC-12 to OC-48, OC-12 to OC-192, or OC-48 to OC-192.



- Complete the “[DLP-187 Perform a Manual Span Upgrade on a UPSR](#)” task on page 12-17 to manually upgrade an optical span within a two-fiber UPSR. Valid span upgrades include OC-12 to OC-48, OC-12 to OC-192, or OC-48 to OC-192.
- Complete the “[DLP-188 Perform a Manual Span Upgrade on a 1+1 Protection Group](#)” task on page 12-18 to manually upgrade an optical span within a 1+1 protection group. Valid span upgrades include OC-12 to OC-48, OC-12 to OC-192, or OC-48 to OC-192.

**Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.



**Note** The span upgrade process resets the line’s CV-L threshold to factory default. The CV-L threshold is reset because the threshold is dependent on line rate.



**Note** Span upgrades do not upgrade SONET topologies; for example, a 1+1 protection group to a two-fiber BLSR.



**Note** During the upgrade/downgrade some minor alarms and conditions will be raised and will clear automatically. No service-affecting alarms (SA, Major, or Critical) should occur other than BLSR Out of Sync, which will clear when the upgrade/downgrade of all nodes is complete. If any other service-affecting alarms occur, Cisco recommends backing out of the procedure. A four-node BLSR can take up to five minutes to clear all of the Out of Sync alarms. Allow extra time for a large BLSR to clear all of the Out of Sync alarms.



**Note** The Span Upgrade option will only be visible and available if the hardware and hardware compatibility necessary for the upgrade is present; for example, no upgrade is possible from an OC48 span unless XC10G cards are installed in the nodes at both ends of the span. In the case of an OC12 to OC12-4 span upgrade, the OC12-4 option will not be visible or available if the OC12 cards are in high speed slots, even if XC10G cards are installed, because OC12-4 cards are only supported in multi-speed slots.

## DLP-185 Perform a Manual Span Upgrade on a Two-Fiber BLSR

<b>Purpose</b>	This task upgrades a two-fiber BLSR span to a higher optical rate.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Higher-rate cards</li> <li>• Compatible hardware necessary for the upgrade</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**

**Caution**


---

Do not perform any other maintenance operations or add any circuits during a span upgrade.

---

**Note**


---

If any of the cross-connect cards reboot during the span upgrade, you must manually reset each one once the span upgrade procedure is complete for all the nodes in the ring. See the “[NTP-113 Reset the TCC+ Using CTC](#)” procedure on page 15-18 for card reset procedures.

---

**Note**


---

All spans connecting the nodes in a BLSR must be upgraded before the added bandwidth is available.

---

**Step 1**

Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present on the BLSR that you will upgrade:

- a. Navigate from the default (node) view to the network view.
- b. In network view, click the **Alarms** tab to view a list of current alarms.
- c. In network view, click the **Conditions** tab and click the **Retrieve Conditions** button to view a list of current conditions.

An unresolved alarm or abnormal condition is the most probable reason for upgrade failure. If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

**Step 2**

Apply a force switch to both span endpoints (nodes) on the span that you will upgrade first:

- a. At the first endpoint, in node view, click the **Maintenance > Ring** tabs.
- b. Click the West Switch or the East Switch field and choose **FORCE RING** from the menu.
- c. Click **Apply**.
- d. At the second endpoint, in node view, click the **Maintenance > Ring** tabs.
- e. Click either the West Switch or the East Switch field and choose **FORCE RING** from the menu.
- f. Click **Apply**.

**Note**


---

A force switch request on a span or card causes CTC to raise a FORCED-REQ condition. It is informational only; the condition will clear when the force switch command is cleared.

---

**Step 3**

Remove the fiber from both endpoints and ensure that traffic is still running.

**Step 4**

Remove the OC-N cards from both endpoints.

**Step 5**

From both endpoints, in node view, right-click on each OC-N slot and choose **Change Card**.

**Step 6**

In the Change Card dialog box, choose the new OC-N type.

**Step 7**

Click **OK**.

**Step 8**

Install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.

**Note**


---

If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

---

- Step 9** When cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the forced switch from both endpoints on the upgraded span:
- At the first endpoint, in node view, click the **Maintenance > Ring** tabs.
  - Click the West Switch or the East Switch field and choose **CLEAR** from the menu.
  - Click **Apply**.
  - At the second endpoint, in node view, click the **Maintenance > Ring** tabs.
  - Click the West Switch or the East Switch field and choose **CLEAR** from the menu.
  - Click **Apply**.

The forced switch clears and traffic is running. If you have lost traffic, perform a downgrade. The procedure for downgrading is the same as upgrading except that you choose a lower-rate card.



**Note** You cannot downgrade if circuits exist on the STSs that you will remove (the higher STSs).

- Step 10** Repeat this task for each span in the BLSR. When you are done with each span, the upgrade is complete.
- Step 11** Return to your originating procedure (NTP).

## DLP-186 Perform a Manual Span Upgrade on a Four-Fiber BLSR

<b>Purpose</b>	This task upgrades a four-fiber BLSR span to a higher optical rate. Repeat the task to upgrade each span, and thus the whole ring, to the faster speed.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>Higher-rate cards</li> <li>Compatible hardware necessary for the upgrade</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.



### Note

If any of the cross-connect cards reboot during the span upgrade, you must manually reset each one once the span upgrade procedure is complete for all the nodes in the ring. See the “[NTP-113 Reset the TCC+ Using CTC](#)” procedure on page 15-18 for card reset procedures.



### Note

All spans connecting the nodes in a BLSR must be upgraded before the added bandwidth is available.

- Step 1** Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present on the BLSR that you will upgrade:
- Navigate from the default (node) view to the network view.
  - In network view, click on the **Alarms** tab to view a list of current alarms.
  - In network view, click on the **Conditions** tab and click the **Retrieve Conditions** button to view a list of current conditions.

An unresolved alarm or abnormal condition is the most probable reason for upgrade failure. If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 2** Apply a force switch to both span endpoints (nodes) on the span that you will upgrade first:
- At the first endpoint (node), in node view, click the **Maintenance > Ring** tabs.
  - Click either the West Switch or the East Switch field and choose **FORCE RING** from the menu.
  - Click **Apply**.
  - At the second endpoint (node), in node view, click the **Maintenance > Ring** tabs.
  - Click either the West Switch or the East Switch field and choose **FORCE RING** from the menu.
  - Click **Apply**.



**Note** A force switch request on a span or card causes CTC to raise a FORCED-REQ condition. It is informational only; the condition will clear when the force switch command is cleared.

- Step 3** Remove the fiber from both working and protect cards at both span endpoints (nodes) and ensure that traffic is still running.
- Step 4** Remove the OC-N cards from both end points.
- Step 5** For both ends of the span endpoints, in node view, right-click on each OC-N slot and choose **Change Card**.
- Step 6** In the Change Card dialog box, choose the new OC-N type.
- Step 7** Click **OK**.
- Step 8** When you have finished [Step 5–7](#) for both nodes, install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.



**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

- Step 9** When cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the forced switch from both endpoints (nodes) on the upgraded span:
- At the first endpoint (node), in node view, click the **Maintenance > Ring** tabs.
  - Click the West Switch or the East Switch field and choose **CLEAR** from the menu.
  - Click **Apply**.
  - At the second endpoint (node), in node view, click the **Maintenance > Ring** tabs.
  - Click the West Switch or the East Switch field and choose **CLEAR** from the menu.
  - Click **Apply**.

The forced switch clears and traffic is running. If you have lost traffic, perform a downgrade. The procedure for downgrading is the same as upgrading except that you choose a lower-rate card.



**Note** You cannot downgrade if circuits exist on the STSs that you will remove (the higher STSs).

- Step 10** Repeat these steps for each span in the BLSR. When all spans in the BLSR have been upgraded, the ring is upgrade.
- Step 11** Return to your originating procedure (NTP).

## DLP-187 Perform a Manual Span Upgrade on a UPSR

<b>Purpose</b>	This task upgrades UPSR spans to a higher optical speed. Repeat the task to upgrade each span, and thus the entire ring, to the faster speed.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>Higher-rate cards</li> <li>Compatible hardware necessary for the upgrade</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.



### Note

If any of the cross-connect cards reboot during the span upgrade, you must manually reset each one once the span upgrade procedure is complete for all the nodes in the ring. See the “[NTP-113 Reset the TCC+ Using CTC](#)” procedure on page 15-18 for card reset procedures.



### Note

An OC-12 to four-port OC-12 span upgrade can only be performed from multi-speed slots (slots 1–4 and 14–17) because the four-port OC-12 card can only be installed in multi-speed slots. Ensure the OC-12 cards are in multi-speed slots before performing a span upgrade to the four-port OC-12. The OC-12 port will be mapped to port 1 on the four-port OC12.

- Step 1** Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present on the span that you will upgrade:
- Navigate from the default (node) view to the network view.
  - In network view, click on the **Alarms** tab to view a list of current alarms.
  - In network view, click on the **Conditions** tab and click the **Retrieve Conditions** button to view a list of current conditions.

## DLP-188 Perform a Manual Span Upgrade on a 1+1 Protection Group

An unresolved alarm or abnormal condition is the most probable reason for upgrade failure. If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 2** Complete the “[DLP-197 Switch UPSR Traffic](#)” task on page 14-13 to apply a force switch on the span that you will upgrade
- Step 3** Remove the fiber from both endpoint nodes in the span and ensure that traffic is still running.
- Step 4** Remove the OC-N cards from both span endpoints.
- Step 5** For both ends of the span, in node view, right-click on each OC-N slot and choose **Change Card**.
- Step 6** In the Change Card dialog box, choose the new OC-N type.
- Step 7** Click **OK**.
- Step 8** When you have finished [Step 5–7](#) for both nodes, install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.



**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

- Step 9** Complete the “[DLP-198 Clear a UPSR Traffic Switch](#)” task on page 14-13 when cards on each side of the span have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared. The forced switch clears and traffic is running. If you have lost traffic, perform a downgrade. The procedure for downgrading is the same as upgrading except that you choose a lower-rate card.



**Note** You cannot downgrade if circuits exist on the STSs that you will remove (the higher STSs).

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

## DLP-188 Perform a Manual Span Upgrade on a 1+1 Protection Group

<b>Purpose</b>	This task upgrades a 1+1 protection group span.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>Higher-rate cards</li> <li>Compatible hardware necessary for the upgrade</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.

**Note**

If any of the cross-connect cards reboot during the span upgrade, you must manually reset each one once the span upgrade procedure is complete for all the nodes in the ring. See the “[NTP-113 Reset the TCC+ Using CTC](#)” procedure on page 15-18 for card reset procedures.

**Note**

If the switching mode is bidirectional in the 1+1 protection group, apply the Force command to only one end of the span, not both. If the Force command is applied to both ends when the switching mode is bidirectional, it will cause a switch of more than 50 ms in duration. Clear the force command at the same end it was applied.

**Note**

An OC-12 to four-port OC-12 span upgrade can only be performed from multi-speed slots (slots 1–4 and 14–17) because the four-port OC-12 card can only be installed in multi-speed slots. Ensure the OC-12 cards are in multi-speed slots before performing a span upgrade to the four-port OC-12. The OC-12 port will be mapped to port 1 on the four-port OC12.

**Step 1** Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present on the span that you will upgrade:

- a. Navigate from the default (node) view to the network view.
- b. In network view, click on the **Alarms** tab to view a list of current alarms.
- c. In network view, click on the **Conditions** tab and click the **Retrieve Conditions** button to view a list of current conditions.

An unresolved alarm or abnormal condition is the most probable reason for upgrade failure. If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

**Step 2** Apply a force switch on the ports that you will upgrade, beginning with the protect port:

- a. In node view, click the **Maintenance > Protection** tabs.
- b. Under Protection Groups, choose the 1+1 protection group.
- c. Under Selected Group, choose the protect port (regardless if it is active or standby).
- d. From Switch Commands, click **Force**.
- e. Click **Yes** on the confirmation dialog box.

**Note**

A force switch request on a span or card (port) causes CTC to raise a FORCED-REQ condition. It is informational only; the condition will clear when the force switch command is cleared.

**Step 3** Repeat [Step 2](#) for each port.

**Step 4** Remove the fiber from both ends of the span and ensure that traffic is still running.

**Step 5** Remove the OC-N cards from both span endpoints.

**Step 6** At both ends of the span, in node view, right-click the OC-N slot and choose **Change Card**.

**Step 7** In the Change Card dialog box, choose the new OC-N type.

**Step 8** Click **OK**.

**Step 9** Install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become standby.



---

**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

---

- Step 10** When cards on each end of the line have been successfully upgraded and all the facility alarms (LOS, SD, or SF) are cleared, remove the forced switch:
- In node view, click the **Maintenance > Protection** tabs.
  - Under Protection Groups, choose the 1+1 protection group.
  - Under Selected Group, choose the port with the force on it.
  - From Switch Commands, click **Clear**.
  - Click **Yes** on the confirmation dialog box.

The forced switch clears and traffic is running. If you have lost traffic, perform a downgrade. The procedure for downgrading is the same as upgrading except that you choose a lower-rate card.



---

**Note** You cannot downgrade if circuits exist on the STSs that you will remove (the higher STSs).

---

- Step 11** Repeat this task for the other line in the 1+1. When the other line in the 1+1 has been upgraded, the span upgrade is complete.
- Step 12** Return to your originating procedure (NTP).
-





## Upgrade Network Configurations

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This chapter explains how to upgrade from one SONET topology to another. For initial network turn up, see [Chapter 5, “Turn Up Network.”](#)

### 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* as necessary.

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

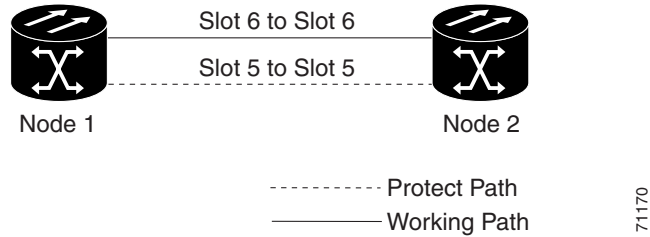
1. [NTP-96 Upgrade a Point-to-Point to a Linear ADM, page 13-1](#)—Complete as needed.
2. [NTP-97 Upgrade a Point-to-Point or a Linear ADM to a Two-Fiber BLSR, page 13-3](#)—Complete as needed.
3. [NTP-98 Upgrade a Point-to-Point or Linear ADM to a UPSR, page 13-7](#)—Complete as needed.
4. [NTP-99 Upgrade a USPR to a BLSR, page 13-9](#)—Complete as needed.
5. [NTP-100 Upgrade a Two-Fiber BLSR to a Four-Fiber BLSR, page 13-10](#)—Complete as needed.
6. [NTP-101 Modify BLSR Ring ID, Node ID, or Ring Reversion, page 13-12](#)—Complete as needed.

### NTP-96 Upgrade a Point-to-Point to a Linear ADM

<b>Purpose</b>	This procedure upgrades a point-to-point configuration (two nodes) to a linear ADM configuration (3 or more nodes).
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Complete the [“DLP-60 Log into CTC” task on page 3-22](#) at the node that will be added to the terminal configuration. The added node will be Node 3.

[Figure 13-1](#) shows a point-to-point terminal configuration. Working traffic flows from Node 1/Slot 6 to Node 2/Slot 6.

**Figure 13-1 A two node point-to-point terminal system configuration**

**Step 2** Complete the “[NTP-25 Set Up Name, Date, Time, and Contact Information](#)” procedure on page 4-3 for Node 3.

**Step 3** Complete the “[NTP-26 Set Up Network Information](#)” procedure on page 4-5 for Node 3.

**Step 4** Complete the “[DLP-73 Create a 1+1 Protection Group](#)” task on page 4-26 in Node 2 using Slots 12 (working) and 13 (protect) for the OC-N cards.

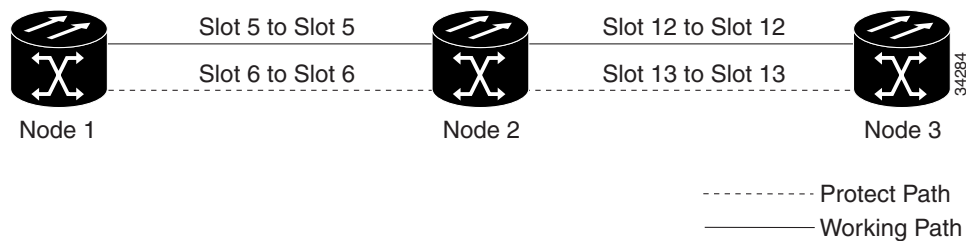
In [Figure 13-2](#), Slots 6 and 12 are the working ports and Slots 5 and 13 are the protect ports. In this example, you set up one protection group for Node 1 (Slots 5 and 6), two for Node 2 (Slots 5 and 6, and 12 and 13) and one for Node 3 (Slots 12 and 13).

**Step 5** Physically connect the fibers between Node 2 and Node 3; for example, connect the fiber from Node 2/Slot 12 to Node 3/Slot 12 or from Node 2/Slot 13 to Node 3/Slot 13.

Complete the “[DLP-86 Put Ports In or Out of Service](#)” task on page 5-4 for the four OC-N cards that connect Node 2 and Node 3.

**Step 6** Complete the “[DLP-85 Provision SONET DCC Terminations](#)” task on page 5-4 for the ports on the new working span. In the [Figure 13-2](#) example, these are the ports at Node 2/Slot 12 and Node 3/Slot 12.

[Figure 13-2](#) shows three ONS 15454s in a linear configuration. Working traffic flows from Node 1/Slot 6 to Node 2/Slot 6 and from Node 2/Slot 12 to Node 3/Slot 12.

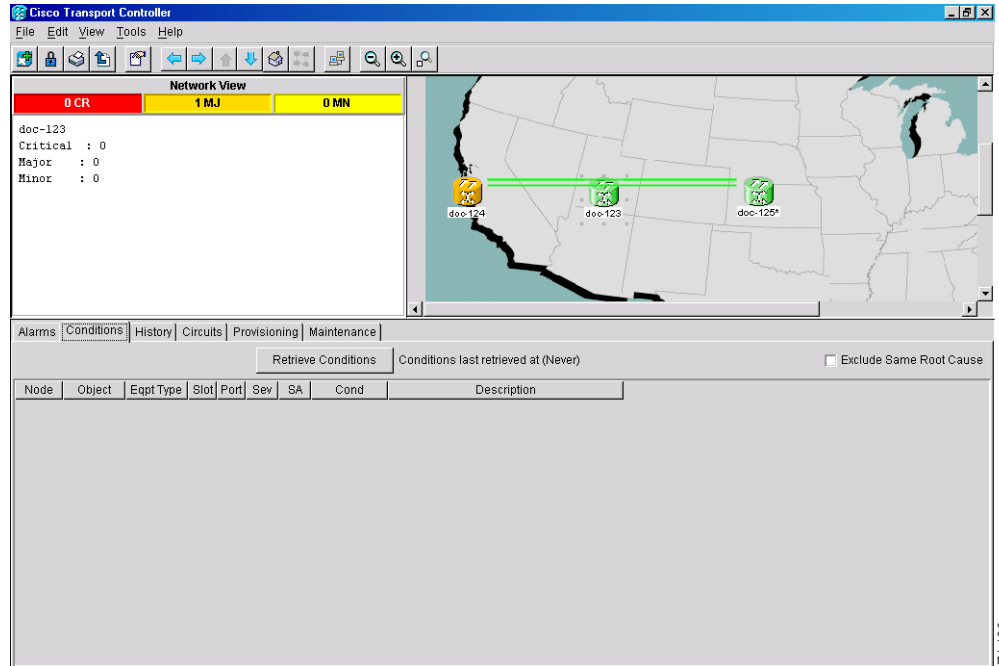
**Figure 13-2 Linear ADM**

**Note** Terminating nodes (Nodes 1 and 3 in [Figure 13-2](#)) will have one SDCC, and intermediate nodes (Node 2 in [Figure 13-2](#)) will have two SDCCs.

**Step 7** Complete the “[NTP-28 Set Up Timing](#)” procedure on page 4-18 for Node 3. If Node 3 is using line timing, set the working OC-N card as the timing source.

**Step 8** Display the network view to verify that the newly-created linear ADM configuration is correct ([Figure 13-3](#)).

Figure 13-3 A three node linear ADM system



- Step 9** Verify that there are no unexpected alarms by viewing the **Alarms** tab.
- Step 10** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-97 Upgrade a Point-to-Point or a Linear ADM to a Two-Fiber BLSR

<b>Purpose</b>	This procedure upgrades a point-to-point system or linear ADM to a two-fiber BLSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Caution

This procedure is service affecting.

- Step 1** Log into one of the nodes that you want to upgrade from a point-to-point terminal to a ring. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.
- Step 2** Click **View > Go to Network View**.
- Step 3** Right-click a span adjacent to the node you are logged into.

## NTP-97 Upgrade a Point-to-Point or a Linear ADM to a Two-Fiber BLSR

- Step 4** From the popup window click **Circuits**. The Circuits on Span window appears.
- Step 5** Verify that the total number of active STS circuits does not exceed 50% of the span bandwidth. In the Circuits column there is a block titled “Unused,” this number should not exceed 50% of the span bandwidth.



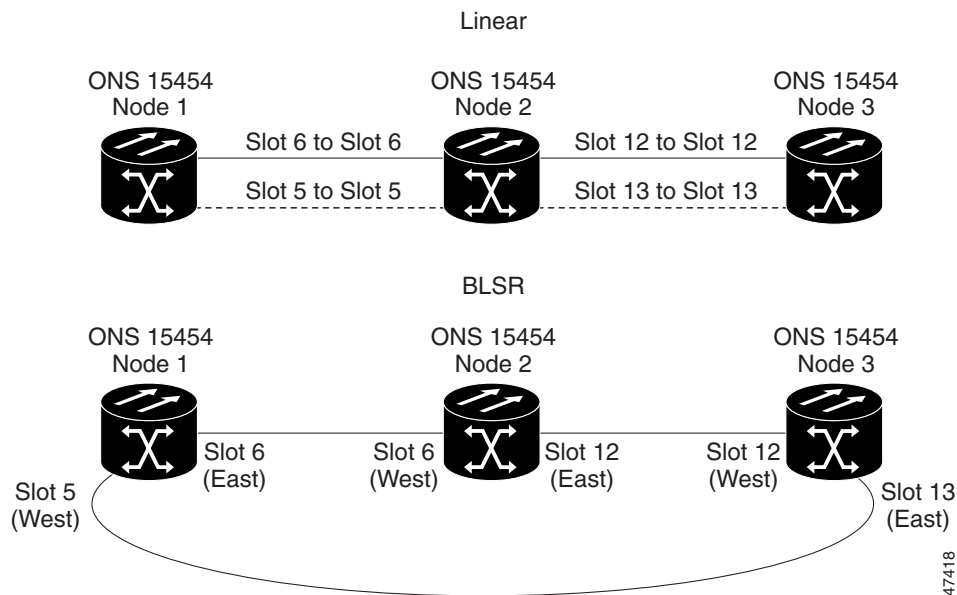
**Note** If the span is an OC-48, no more than 24 STSs can be provisioned on the span. If the span is an OC-192, no more than 96 STSs can be provisioned on the span. If the span is an OC-12, no more than 6 STSs can be provisioned on the span.



**Warning** If the 50% capacity is exceeded this procedure cannot be completed. Bandwidth must be 50% unassigned to convert to BLSR. Refer to local procedures for relocating circuits if these requirements are not met.

- Step 6** Repeat [Step 1–5](#) for each node in the point-to-point or linear ADM that you will convert to BLSR. If all nodes comply with [Step 5](#), proceed to [Step 7](#).
- Step 7** Complete the “[DLP-189 Verify that a 1+1 Working Slot is Active](#)” task on [page 13-5](#) for every 1+1 protection group that supports a span in the point-to-point or linear ADM network.
- Step 8** Complete the “[DLP-155 Delete a Protection Group](#)” task on [page 10-23](#) at each node that supports the point-to-point or linear ADM span.
- Step 9** Complete the “[DLP-86 Put Ports In or Out of Service](#)” task on [page 5-4](#) to put the protect ports out of service at each node that supports the linear ADM span.
- Step 10** (Linear ADM only) Physically remove the protect fibers from all nodes in the linear ADM; for example, the fiber running from Node 2/Slot 13 to Node 3/Slot 13 (as shown in [Figure 13-4](#)) can be removed.

**Figure 13-4 Linear ADM to BLSR upgrade**



- Step 11** Route the protect fiber from one end node to the other the end nodes; for example, the fiber between Node 1/Slot 5 and Node 2/Slot 5 (as shown in [Figure 13-4](#)) can be rerouted to connect Node 1/Slot 5 to Node 3/Slot 13.



**Note** If you need to physically remove any OC-N cards, do so now. In this example, cards in Node 2/Slots 5 and 13 can be removed. After removing cards, complete the [“DLP-191 Delete a Card from CTC” task on page 13-7](#).

- Step 12** From the network view, click the **Circuits** tabs and complete the [“DLP-139 Export CTC Data” task on page 10-3](#) to save the circuit data to a file on your hard drive.
- Step 13** Complete the [“DLP-85 Provision SONET DCC Terminations” task on page 5-4](#) at the end nodes (the slot in each node not already in the SDCC Terminations list; in this example, Port 1 of Node 1/Slot 5 and Port 1 of Node 3/Slot 13).
- Step 14** Place the end node ports in service:
- In card view, click the **Provisioning > Line** tabs.
  - In the Status column, click **In Service**.
- Step 15** For circuits provisioned on an STS that is now part of the protection bandwidth (STSs 7–12 for an OC-12 BLSR, STSs 25–48 for an OC-48 BLSR, and 97-192 for an OC-192), delete and recreate each circuit:
- Complete the [“NTP-77 Delete Circuits” procedure on page 9-7](#) for one circuit.
  - Create the circuit on STSs 1–6 for an OC-12 BLSR, 1–24 for an OC-48 BLSR, or 1–96 for an OC-192 BLSR on the fiber that served as the protect fiber in the linear ADM. See the [“NTP-59 Create an Automatically Routed Optical Circuit” procedure on page 6-25](#) for instructions.
  - Repeat Steps a–b for each circuit residing on a BLSR protect STS.



**Note** Deleting circuits is service affecting

- Step 16** Complete the [“NTP-41 Create the BLSR” procedure on page 5-16](#) for each node.
- Step 17** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-189 Verify that a 1+1 Working Slot is Active

<b>Purpose</b>	This task verifies that a 1+1 working slot is active.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

- Step 1** Click the **Maintenance > Protection** tabs.
- Step 2** Under Selected Group, verify that the working slot/port is shown as Working/Active. If so, this task is complete.

## DLP-189 Verify that a 1+1 Working Slot is Active

- Step 3** If the working slot says Working/Standby, manually switch traffic to the working slot:
- a. Under Selected Group choose the Protect/Active slot.
  - a. In Switch Commands, choose **Manual**.
  - b. Click **Yes** on the confirmation dialog box.
- Step 4** Verify that the working slot is carrying traffic (Working/Active).



**Note** If the slot is not active, clear the conditions that prevent the card from carrying working traffic. See [Chapter 7, “Manage Alarms”](#) to view alarms and conditions and if necessary refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 5** When the working slot is carrying traffic, clear the manual switch:
- a. In Switch Commands, choose **Clear**.
  - b. Click **Yes** on the confirmation dialog box.

**Figure 13-5** Verifying working slots in a protection group

The screenshot shows the Cisco Transport Controller interface for a device named 'doc-125'. The main display area shows a rack diagram with 17 slots. Slot 13 (OC12) is highlighted in green and labeled 'Act' (Active). Slot 16 (OC12) is labeled 'Sby' (Standby). The interface includes a menu bar (File, Edit, View, Tools, Help), a toolbar, and a sidebar with tabs for Database, Protection Groups, and Selected Group. The Selected Group tab shows 'slot 16 (OC12), port 1, Protect/Standby' and 'slot 13 (OC12), port 1, Working/Active'. Below the diagram are buttons for Switch Commands (Clear, Manual, Force) and Inhibit Switching (Unlock, Lock-Out, Lock On).

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

## DLP-191 Delete a Card from CTC

<b>Purpose</b>	This task deletes a card from CTC.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

**Step 1** From the node (default) view, right-click the card you want to delete on the shelf graphic. The pop up menu displays.

**Step 2** Choose **Delete Card** from the displayed menu and click **Yes** on the confirmation dialog box.

You cannot delete a card if any of the following conditions apply:

- The card is part of a protection group
- The card has any circuits
- The card is part of a bidirectional line switched ring (BLSR)
- The card is being used for timing
- The card has a SONET DCC termination

If you receive an error message indicating one of these conditions, resolve the condition before attempting to delete the card.



### Note

If the card that was deleted is still installed, it will reboot and re-appear in CTC.

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

## NTP-98 Upgrade a Point-to-Point or Linear ADM to a UPSR

<b>Purpose</b>	This procedure upgrades a point-to-point system to a UPSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	An needed
<b>Onsite/Remote</b>	Onsite



### Caution

This procedure is service affecting. All circuits will be deleted and reprovisioned.

**Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22 at a node on the point-to-point or linear ADM.

**Step 2** Complete the “[DLP-189 Verify that a 1+1 Working Slot is Active](#)” task on page 13-5 for each node.

**Step 3** Complete the “[DLP-155 Delete a Protection Group](#)” task on page 10-23 for each 1+1 protection group that supports the point-to-point or linear ADM span.

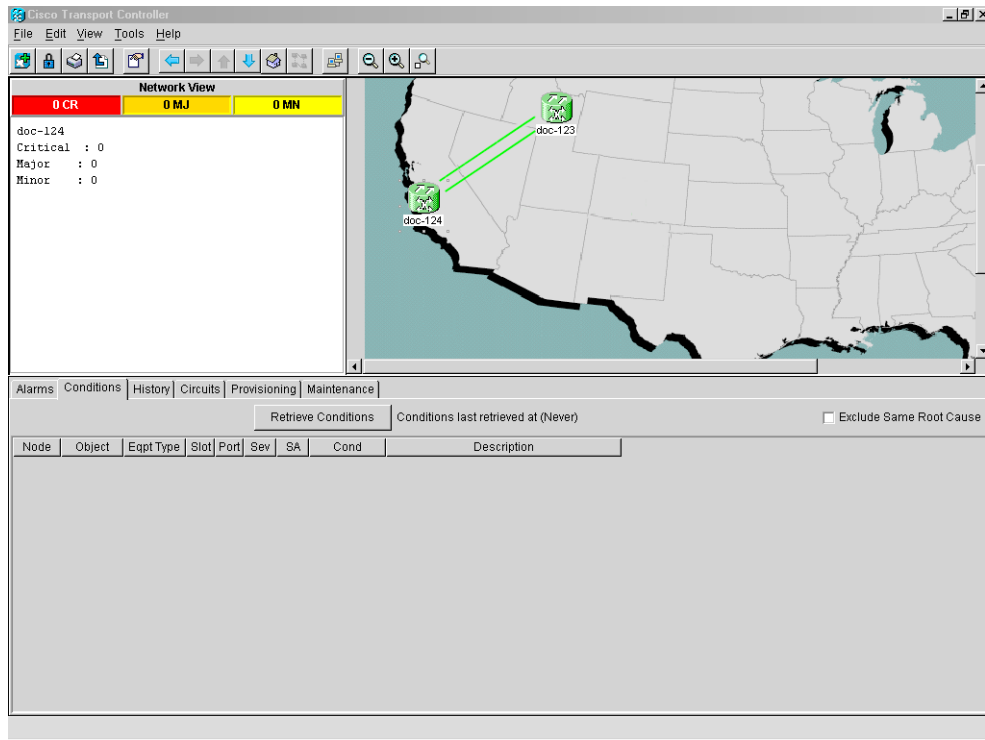
- Step 4** Complete the “DLP-85 Provision SONET DCC Terminations” task on page 5-4 at the protect cards in all nodes.
- Step 5** Complete the “NTP-77 Delete Circuits” procedure on page 9-7 and the “NTP-59 Create an Automatically Routed Optical Circuit” procedure on page 6-25 to delete and recreate the circuits one at a time.



**Note** Deleting circuits is service affecting.

- Step 6** At the network view verify that the newly-created ring is correct (Figure 13-6).

**Figure 13-6** CTC network view with a two-node UPSR



- Step 7** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.



# NTP-99 Upgrade a USPR to a BLSR

<b>Purpose</b>	This procedure upgrades a UPSR to a BLSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both



## Caution

This procedure is service affecting. All circuits on the ring will be deleted and re-provisioned.



## Note

Read through this procedure completely before beginning the upgrade.



## Note

Prior to beginning this procedure you should have a unique Ring ID number to identify the new BLSR and a unique Node ID number for each node on the ring.

- Step 1** Log into an ONS 15454 on the network where you will begin the ring conversion. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** Click **View > Go to Network View**.
- Step 3** Right-click a span adjacent to the node you are logged into.
- Step 4** From the popup window click **Circuits**. The Circuits on Span window appears.
- Step 5** Verify that the total number of active STS circuits does not exceed 50% of the span bandwidth. In the Circuits column there is a block titled “Unused,” this number should not exceed 50% of the span bandwidth.



## Note

If the span is an OC-48, no more than 24 STSs can be provisioned on the span. If the span is an OC-192, no more than 96 STSs can be provisioned on the span. If the span is an OC-12, no more than 6 STSs can be provisioned on the span.



## Warning

**If the 50% capacity is exceeded this procedure cannot be completed. Bandwidth must be 50% unassigned to convert to BLSR. Refer to local procedures for relocating circuits if these requirements are not met.**

- Step 6** Repeat [Step 1–5](#) for each node in the UPSR that you will convert to BLSR. If all nodes comply with [Step 5](#), proceed to [Step 7](#).
- Step 7** Save all circuit information:
- In network view, click the **Provisioning > Circuits** tab.
  - Record the circuit information using one of the following tasks:
    - From the File menu, click **Print** to print the circuits table, or
    - From the File menu, click **Export** to export the circuit data in HTML, CSV (comma separated values), or TSV (tab separated values). Click **Ok** and save the file in a temporary directory.

See the “[NTP-80 Document Existing Provisioning](#)” procedure on page 10-2 for more information.

**Step 8** Delete the circuits:



**Note** This method uses the network view; to delete circuits one at a time from each node, see the “[NTP-77 Delete Circuits](#)” procedure on page 9-7.

- a. From network view click the **Circuits** tab. All circuits on the ring will display.
- b. With the Ctrl key pressed, right-click each circuit in the display. Each line in the display will turn dark blue as it is selected.
- c. After all circuits have been selected click the **Delete** button. Allow several minutes for processing; the actual length of time will depend on the number of circuits in the network.

**Step 9** Complete the “[NTP-41 Create the BLSR](#)” procedure on page 5-16. Repeat the procedure for each node on the ring.

**Step 10** Complete the “[NTP-42 Two-Fiber BLSR Acceptance Test](#)” procedure on page 5-18.

**Step 11** Complete the “[NTP-59 Create an Automatically Routed Optical Circuit](#)” procedure on page 6-25 to recreate each circuit.

**Step 12** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-100 Upgrade a Two-Fiber BLSR to a Four-Fiber BLSR

<b>Purpose</b>	This procedure upgrades a two-fiber BLSR to a four-fiber BLSR
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



**Note** Two-fiber OC-48 or OC-192 BLSRs can be upgraded to four-fiber BLSRs. To upgrade, you install two additional OC-48 or OC-192 cards at each two-fiber BLSR node, then log into CTC and upgrade each node from two-fiber to four-fiber. The fibers that were divided into working and protect bandwidths for the two-fiber BLSR are now fully allocated for working BLSR traffic.

**Step 1** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22 to log into one of the two-fiber nodes that you want to upgrade.

**Step 2** In network view:

- a. Verify that all spans between BLSR nodes on the network map are green.
- b. Click the **Alarms** tab. Verify that no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-L, SF, and SD. In a BLSR, these facility conditions may be reported as minor alarms.
- c. Click the **Conditions** tab, then click **Retrieve Conditions**. Verify that no ring switches are active.

If trouble is indicated, for example, a major alarm exists, resolve the problem before proceeding to [Step 3](#). Refer to the *Cisco ONS 15454 Troubleshooting Guide* for more information about alarms.

- Step 3** Install two OC-48 or OC-192 cards at each BLSR node. You must install the same OC-N card rate as the two fiber.
- Step 4** Connect the fiber to the new cards. Use the same east – west connection scheme that was used to create the two-fiber connections.
- Step 5** Complete the “[DLP-86 Put Ports In or Out of Service](#)” task on page 5-4 to enable (put in service) the ports for each new OC-N card.
- Step 6** Test the new fiber connections using procedures standard for your site.
- Step 7** Perform a span lockout at each BLSR node:
- At one of the BLSR nodes, switch to node view. Click the **Maintenance > Ring** tabs.
  - Under West Switch for the two-fiber BLSR you will convert, choose **LOCKOUT SPAN**. Click **Apply**
  - Under East Switch, choose **LOCKOUT SPAN**. Click **Apply**.
  - Repeat Steps [a–c](#) at each node in the two-fiber BLSR.
- Step 8** Upgrade each node from two-fiber to four-fiber BLSR:
- At one of the BLSR nodes, switch to node view. Click the **Provisioning > Ring** tabs.
  - Choose the two-fiber BLSR. Click **Upgrade**.
  - On the Upgrade BLSR dialog box, complete the following:
    - *Span Reversion*—Set the amount of time that will pass before the traffic reverts to the original working path following a span reversion. The default is 5 minutes.
    - *West Protect*—Assign the east BLSR port that will connect to the east protect fiber from the pull-down menu.
    - *East Protect*—Assign the east BLSR port that will connect to the east protect fiber from the pull-down menu.
  - Click **Ok**.
  - Complete Steps [a–d](#) at each two-fiber BLSR node.
- Step 9** Clear the span lockout:
- Display a BLSR node in node view. Click the **Maintenance > Ring** tabs.
  - Under West Switch, choose **CLEAR**. Click **Apply**
  - Under East Switch, choose **CLEAR**. Click **Apply**.
  - Repeat Step [a–c](#) at each node in the new four-fiber BLSR.
  - Switch to network view. Verify that no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-L, SF, and SD. If an alarm is present, resolve the problem before proceeding to [Step 10](#). Refer to the *Cisco ONS 15454 Troubleshooting Guide* for more information about alarms.
- Step 10** Test the four-fiber BLSR using the “[NTP-43 Four-Fiber BLSR Acceptance Test](#)” task on page 5-22.
- Step 11** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-

# NTP-101 Modify BLSR Ring ID, Node ID, or Ring Reversion

<b>Purpose</b>	Use this procedure to change BLSR settings on the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote


**Note**

Some or all of the following alarms display during BLSR setup: E-W MISMATCH, RING MISMATCH, APSCIMP, APSDFLTK, BLSROSYNC. The alarms will clear after you configure all the nodes in the BLSR. For definitions of these alarms, see the *Cisco ONS 15454 Troubleshooting Guide*.

- 
- Step 1** Log into a node in the BLSR you want to modify. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Click the **Provisioning > Ring** tabs.
- Step 3** Click the appropriate ring.
- Step 4** Set BLSR properties in any of the following fields (see “[NTP-41 Create the BLSR](#)” procedure on page 5-16 for field descriptions):
- *Ring ID*
  - *Node ID*
  - *Ring Reversion*


**Note**

If you change the Ring ID or Ring Reversion parameter on one node, you must set it to the same value on every node in the ring.

- Step 5** Click **Apply**.
- Step 6** If you changed the Ring ID or Ring Reversion, complete Steps 1–5 at each node in the BLSR.
- Step 7** After you configure the last BLSR node, wait for the BLSR Ring Map Change dialog box to display (this can take 10–30 seconds).


**Note**

The BLSR Ring Map Change dialog box will not display if SDCC Termination alarms (e.g., EOC) or BLSR alarms (such as E-W MISMATCH and RING MISMATCH) are present. If an SDCC alarm is present, review the DCC provisioning at each node; use the “[DLP-85 Provision SONET DCC Terminations](#)” task on page 5-4. If BLSR alarms have not cleared, repeat [Step 4](#) at each node, making sure each node is provisioned correctly. Refer to the *Cisco ONS 15454 Troubleshooting Guide* if necessary.

- Step 8** On the BLSR Ring Map Change dialog, click **Yes**.
- Step 9** On the BLSR Ring Map dialog box, verify that the ring map contains all the nodes you provisioned in the expected sequence. If so, click **Accept**. If the nodes do not appear, or are not in the expected sequence, repeat Steps 1–8, making sure no errors are made.
- Step 10** Switch to network view and verify the following:

- A green span line appears between all BLSR nodes
- All E-W MISMATCH, RING MISMATCH, APSCIMP, DFLTK, and BLSROSYNC alarms are cleared.



**Note** For definitions of these alarms, see the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 11** Complete the “[DLP-192 Verify a Modified BLSR](#)” task on page 13-13.
- Step 12** Confirm that the changes appear.
- Step 13** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-192 Verify a Modified BLSR

<b>Purpose</b>	Use this task to verify a modified BLSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

- Step 1** Run test traffic through the ring.
- Step 2** Log into a node, click the **Maintenance > Ring** tabs, and choose **MANUAL RING** from the East Switch list. Click **Apply**.
- Step 3** Click **Yes** in the confirmation dialog box.
- Step 4** In network view, click the **Conditions** tab and click **Retrieve Conditions**. On the local node you should see that the Ring Switch is active on the West Side and on the far end node you should see that the Ring Switch is active on the East Side.
- Step 5** Verify that traffic switches normally.
- Step 6** Return to node view, click the **Maintenance > Ring** tab, and choose **Clear** from the East Switch list. Click **Apply**. Click **OK** in the confirmation dialog box.
- Step 7** Repeat Steps 2–6 for the West Switch.
- Step 8** Disconnect the fibers at one node and verify that traffic switches normally.
- Step 9** Complete the “[NTP-112 Clean Fiber Connectors](#)” procedure on page 15-15 and reconnect the fibers.
- Step 10** Return to your originating procedure (NTP).





## Add and Remove Nodes

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This chapter explains how to add and remove nodes by forcing a protection switch to route traffic away from the span where you will add or remove the node.

### Before You Begin

Before performing any of the following procedures, complete the [“NTP-80 Document Existing Provisioning” procedure on page 10-2](#). Also investigate all alarms and clear any trouble conditions. Refer to the *Cisco ONS 15454 Troubleshooting Guide* as necessary.

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

1. [NTP-102 Add a BLSR Node, page 14-1](#)—Complete as needed.
2. [NTP-103 Remove a BLSR Node, page 14-5](#)—Complete as needed.
3. [NTP-104 Move a BLSR Trunk Card to Another Slot, page 14-8](#)—Complete as needed.
4. [NTP-105 Add a UPSR Node, page 14-10](#)—Complete as needed.
5. [NTP-106 Remove a UPSR Node, page 14-12](#)—Complete as needed.

### NTP-102 Add a BLSR Node

<b>Purpose</b>	Use this procedure to expand a BLSR by adding a node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



**Caution**

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Adding a BLSR node can be service affecting and should be performed during a maintenance window.

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**Step 1**

Log into a node on the network where you will add the bidirectional line switched ring (BLSR) node. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions. If you are already logged into the proper node, make sure you are in node view.

- Step 2** Draw a diagram, similar to [Figure 14-1 on page 14-3](#), for the BLSR installation where you will add the node. In the diagram, identify the nodes, cards (slots) and spans (east or west) that will connect to the new node. This information is essential to complete this procedure without error. For example, in [Figure 14-1 on page 14-3](#), if you wanted to add a span between Nodes 1 and 2 you would circle Slot 5 (west) on Node 1, and Slot 12 (east) on Node 4.
- Step 3** From the View menu in node (login) view, choose **Go to Network View** to display the BLSR nodes. Verify the following:
- All BLSR spans on the network map are green.
  - On the Alarms tab, no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-L, AIS-P, SF, and SD. In a BLSR, these facility conditions may be reported as minor alarms.
  - On the Conditions tab click **Retrieve Conditions** and verify that no ring switches are active.
- If trouble is indicated (for example, a major alarm exists), resolve the problem before proceeding. See [Chapter 7, “Manage Alarms,”](#) or, if necessary, refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Complete the “[NTP-16 Install the Optical Cards](#)” procedure on page 2-7 for each OC-N card that you will add to the new node. Ensure fiber cables are available to connect to the cards.
- Step 5** Complete the “[DLP-60 Log into CTC](#)” task on page 3-22 to log into the new node.
- Step 6** Complete the “[NTP-40 Provision the BLSR Nodes](#)” procedure on page 5-13.




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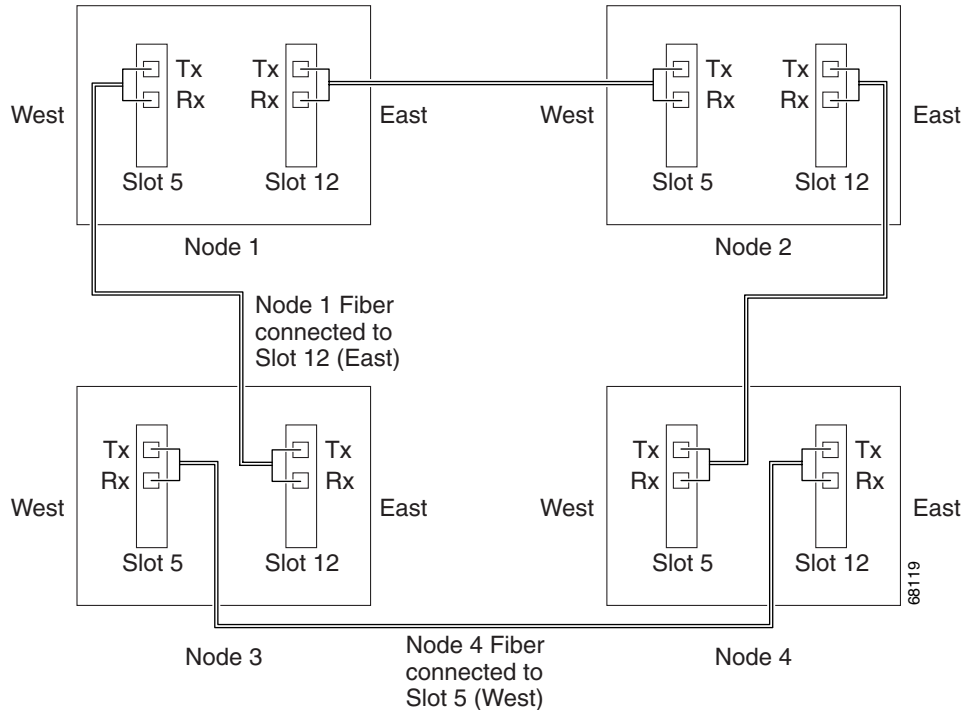
**Note** If you map the K3 byte to another byte (such as E2), you must remap the trunk cards on either side of the new node to the same byte. See the “[DLP-89 Remap the K3 Byte](#)” task on page 5-15.

---

- Step 7** Complete the “[NTP-41 Create the BLSR](#)” procedure on page 5-16.
- Step 8** Create test circuits, making sure they pass through the BLSR trunk card, and run test traffic through the node to ensure the cards are functioning properly. See the “[NTP-60 Create a Manually Routed Optical Circuit](#)” procedure on page 6-28 and the “[NTP-62 Test Optical Circuits](#)” procedure on page 6-34 for information.
- Step 9** Log into the node that will connect to the new node through its west port (Node 4 in the [Figure 14-1](#) example).
- Step 10** At the node with a west port that will connect to the new node, complete the “[DLP-193 Switch BLSR Traffic](#)” task on page 14-4 for the west port. This will route traffic away from the west port so that it is available to connect to the new node.
- Step 11** At the node with an east port that will connect to the new node, complete the “[DLP-193 Switch BLSR Traffic](#)” task on page 14-4 for the east port. This will route traffic away from the east port so that it is available to connect to the new node.
- Step 12** Following the diagram that you created in [Step 2](#), remove the fiber connections from the two nodes that will connect directly to the new node.
- a. Remove the east fiber from the node that will connect to the west port of the new node, i.e., the node where you switched traffic in [Step 10](#). In the [Figure 14-1](#) example, this is Node 4/Slot 12.
  - b. Remove the west fiber from the node that will connect to the east port of the new node, i.e., the node where you switched traffic in [Step 11](#). In the [Figure 14-1](#) example, this is Node 1/Slot 5.
- Step 13** Replace the removed fibers with fibers that are connected to the new node. Connect the west port to the east port and the east port to the west port. [Figure 14-1](#) shows the BLSR after the node is connected.



Figure 14-1 A BLSR with a newly-added fourth node



- Step 14** Check to see if your new node's IP address is on the same subnet as other nodes in the network. If two or more PCs are directly connected to different nodes that belong to the same subnet and the Craft Access Only feature is not checked under Gateway Settings in the Network > Provisioning tab, you need to add static routes on the gateway 15454 nodes, using the following settings:

Destination IP address: local PC IP address  
 Net Mask: 255.255.255.255  
 Next Hop: IP address of the Cisco ONS 15454  
 Cost: 1

See the [“DLP-65 Create a Static Route” task on page 4-11](#).

- Step 15** Log out of CTC and then log back into any node in the BLSR.
- Step 16** Click the **Provisioning > Ring** tabs and click **Ring Map**.
- Step 17** On the BLSR Map Ring Change dialog box, click **Yes**. (If the Ring Map Change dialog box does not appear, select the relevant BLSR and click **Map...**)
- Step 18** On the BLSR Ring Map dialog box, verify that the new node is added. If it is, click **Accept**. If it does not appear, log into the new node. Verify that the BLSR is provisioned correctly according to the [“NTP-41 Create the BLSR” procedure on page 5-16](#), then repeat Steps 12 through 17. If the node still does not appear, check for alarms or, if necessary, refer to the *Cisco ONS 15454 Troubleshooting Guide*.



**Note** If an SDCC alarm appears after the node is added into the BLSR ring map, the ring map will not be generated. Clear the SDCC alarm before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for information on this alarm.

- Step 19** From the View menu, choose **Go To Network View**.

- Step 20** Click the **Circuits** tab. Wait until all the circuits are discovered. The circuits that pass through the new node will be shown as incomplete.
- Step 21** In network view, right-click the new node and choose **Update Circuits With The New Node** from the shortcut menu. Verify that the number of updated circuits displayed in the dialog box is correct.
- Step 22** Click the **Circuits** tab and verify that no incomplete circuits are present. If incomplete circuits are present, see the “[NTP-59 Create an Automatically Routed Optical Circuit](#)” procedure on page 6-25 or refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 23** Complete the “[DLP-194 Clear a BLSR Switch](#)” task on page 14-5 for the two nodes that connect to the added node through their east/west ports.
- Step 24** (Optional) Complete the “[NTP-42 Two-Fiber BLSR Acceptance Test](#)” procedure on page 5-18.
- Step 25** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-193 Switch BLSR Traffic

<b>Purpose</b>	Use this task to switch traffic from one BLSR port to another.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



**Caution** Traffic is not protected during a force protection switch.

---

- Step 1** Display the node view.
- Step 2** Click the **Maintenance > Ring** tabs.
- Step 3** Click the box under the East Switch or West Switch parameter and choose **FORCE RING** from the pull-down list that appears.
- Step 4** Click **Apply**.  
(Performing a FORCE switch generates a FORCED-REQ-RING condition. This is normal.)
- Step 5** A Confirm BLSR Operation dialog box appears. Click **Yes** to continue.
- Step 6** Another Confirm BLSR Operation dialog box opens to ask you if you want to apply the FORCE RING. Click **Yes** to apply.
- Step 7** Return to your originating procedure (NTP).
-

## DLP-194 Clear a BLSR Switch

<b>Purpose</b>	Use this task to clear a switch previously set on a BLSR port.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Display the node view.
- Step 2** To clear the protection switch from an east or west port, display the **Maintenance > Ring** tabs.
- Step 3** Depending on whether you are clearing a switch from an east or west port, choose **CLEAR** from the East Switch or West Switch list.
- Step 4** Click **Apply**.
- Step 5** Return to your originating procedure (NTP).
- 

## NTP-103 Remove a BLSR Node

<b>Purpose</b>	Use this procedure to remove a node from a BLSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



### Caution

The following procedure minimizes traffic outages during node deletions. For circuits created with R2.X software, you will need to delete and recreate circuits that pass through the deleted node with different STS numbers on east and west spans. See the [“DLP-132 View Circuits on a Span” task on page 9-3](#) to view STS numbers for spans. Traffic will be lost when you delete and recreate circuits passed through the deleted node. See the [“NTP-77 Delete Circuits” procedure on page 9-7](#) for information on deleting circuits.



### Caution

If you remove a node that is the only BITS timing source for the ring, you will remove the only source of synchronization for all the nodes in that ring. Circuits that leave the ring to connect to other networks which are synchronized to Stratum 1 will experience a high level of pointer corrections, which may adversely affect customer service. See the [“DLP-195 Verify Timing in a Reduced Ring” task on page 14-7](#) for information.

- 
- Step 1** Before you start this procedure, make sure you record the following:
- Which node is connected through its east port to the node that will be deleted. For example if you are deleting Node 1 in [Figure 14-1](#), Node 3 is the node connected through its east port to Node 1.

- Which node is connected through its west port to the node that will be deleted. In [Figure 14-1](#), Node 2 is connected to Node 1 through its west port.
- Step 2** Log into a node on the same network as the node you will remove. (Do not log into the node that you will remove.) See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 3** From the View menu, choose **Go to Network View** to display the BLSR nodes. Verify the following:
- All BLSR spans on the network map are green.
  - On the Alarms tab, no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-L, SF, and SD. In a BLSR, these facility conditions may be reported as minor alarms.
  - On the Conditions tab click **Retrieve Conditions** and verify that no ring switches are active.
- If trouble is indicated (for example, a major alarm exists), resolve the problem before proceeding. See [Chapter 7, “Manage Alarms,”](#) or, if necessary, refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Log in to the node that you will remove. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 5** Complete the [“NTP-77 Delete Circuits” procedure on page 9-7](#) for all circuits that originate or terminate on the node.
- Step 6** Complete this step for any circuits that may have been created using CTC Software R 2.x and that pass through the node that will be deleted (circuits are displayed on the Circuits tab).
- a. On the Circuits tab of the node that will be deleted, select a circuit and click **Edit**.
  - b. On the Edit Circuits window, check **Show Detailed Map**.
  - c. Verify that the circuits enter and exit the node on the same STS. For example, if a circuit enters on s5/p1/S1 (Slot 5, Port 1, STS 1), verify that it exits on STS 1. If the circuit enters/exits on different STSs, write down the name of the circuit. You will delete and recreate it later in this procedure.
  - d. Repeat Steps a – c for each circuit displayed on the Circuits tab.
- Step 7** Use the information you recorded in [Step 2](#) to complete the [“DLP-193 Switch BLSR Traffic” task on page 14-4](#) for all nodes that must be disconnected from the deleted node.
- Step 8** Remove all fiber connections between the node being removed and the two neighboring nodes.
- Step 9** Reconnect the fiber of the two neighboring nodes directly, west port to east port.
- Step 10** If the removed node contains trunk OC48AS cards with K3 bytes mapped to an alternate byte, use the [“DLP-89 Remap the K3 Byte” task on page 5-15](#) to verify and remap, if needed, the BLSR extended bytes on the newly connected neighboring nodes.
- Step 11** Close CTC, then log into a node on the reduced ring. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 12** Click the **Provisioning > Ring** tabs and select the ring to be modified.
- Step 13** Click **Ring Map**. Verify that the ring is configured properly.
- Step 14** On the BLSR Ring Map dialog box, click **Close**.
- Step 15** Display network view, then click the **Circuits** tab.
- Step 16** Complete the [“NTP-77 Delete Circuits” procedure on page 9-7](#) for each incomplete circuit, then recreate each circuit one at a time according to the [“NTP-59 Create an Automatically Routed Optical Circuit” procedure on page 6-25](#). (Any circuits that you recorded in [Step 6](#) will be shown as incomplete.)
- Step 17** Complete the [“DLP-194 Clear a BLSR Switch” task on page 14-5](#) for both nodes that were disconnected from the deleted node.
- Step 18** Complete the [“DLP-195 Verify Timing in a Reduced Ring” task on page 14-7](#).

**Step 19** Return to your originating procedure (NTP).

---

## DLP-195 Verify Timing in a Reduced Ring

<b>Purpose</b>	Use this task to verify timing in a reduced ring.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite/remote

---

- Step 1** Log into the node that you removed from the ring. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** Click the **Provisioning > Timing** tabs.
- Step 3** Observe the Timing Mode field to see the type of timing (Line, External, Mixed) that has been set for that node.
- Step 4** Scroll down to the Reference Lists and observe the NE Reference fields to see the timing references provisioned for that node.
- Step 5** If the removed node was the BITS timing source, perform the following:
- Look for another node on the ring that can be used as a BITS source and set that node’s Timing Mode to External. Choose that node as the primary timing source for all other nodes in the ring. See the “[DLP-157 Change the Node Timing Source](#)” task on page 10-25.
  - If no node in the reduced ring can be used as a BITS source, choose one node to be your internal timing source. Set that node’s Timing Mode to External and set the BITS 1 and 2 State to OOS. Then choose line timing for all other nodes in the ring. This will force the first node to be their primary timing source. (See the “[DLP-157 Change the Node Timing Source](#)” task on page 10-25.)




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**Note** This type of timing conforms to Stratum 3 requirements and is not considered optimal.

---

- Step 6** If the removed node was not the BITS timing source, provision the adjacent nodes to line timing using SONET links (east and west) as timing sources, traceable to the node with external BITS timing.
- Step 7** Return to your originating procedure (NTP).
-

# NTP-104 Move a BLSR Trunk Card to Another Slot

<b>Purpose</b>	Use this procedure to move a single BLSR trunk card to a different slot.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite


**Note**

The ONS 15454 nodes cannot have active alarms for the OC-48 or OC-12 cards or the BLSR configuration.

Although the example in this procedure uses OC-48 BLSR trunk cards, you can use the same procedure for OC-12, OC-48AS, and OC-192 cards.

- 
- Step 1** Log into the node in the network where you will move a BLSR trunk card to another slot. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.
- Step 2** From the View menu choose **Go to Network View** to display the BLSR nodes. Verify the following:
- All BLSR spans on the network map are green.
  - On the Alarms tab, no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-L, SF, and SD. In a BLSR, these facility conditions may be reported as minor alarms.
  - On the Conditions tab under Retrieve Conditions, no ring switches are active. If any switches are active, see the [“DLP-194 Clear a BLSR Switch” task on page 14-5](#).
- If trouble is indicated (for example, a critical, major, or facility alarm exists), resolve the problem before proceeding. If necessary, refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 3** Complete the [“DLP-193 Switch BLSR Traffic” task on page 14-4](#) to switch traffic away from the node where the trunk card will be moved. Perform this task for the east and west ports.
- Step 4** Click the **Circuits** tab ([Figure 14-2](#)). Write down the circuit information or, from the File menu, choose **Print** or **Export** to print or export the information; you will need it to restore the circuits later. See the [“DLP-138 Print CTC Data” task on page 10-2](#) and the [“DLP-139 Export CTC Data” section on page 10-3](#) for more information.

Figure 14-2 Deleting circuits from a BLSR trunk card

Circuit Name	Type	Size	Dir	State	Source	Destination	# of VLANs	# of Spans
Daphne_Foley	STS	1	2-way	ACTIVE	doc-123/s2/p2/S1	doc-125/s3/p2/S1		1
Daphne_Montrose	STS	1	2-way	ACTIVE	doc-123/s2/p1/S1	doc-125/s3/p1/S1		1
Gulftort_Bloxi	STS	1	1-way	ACTIVE	doc-125/s3/p4/S1	doc-124/s15/p1/S1		1
PiratesCove_Elberta	STS	1	2-way	ACTIVE	doc-123/s2/p3/S1	doc-125/s3/p3/S1		1

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- Step 5** Complete the “NTP-77 Delete Circuits” procedure on page 9-7 for any circuits on the card you are removing.
- Step 6** Complete the “DLP-156 Delete a SONET DCC Termination/Tunnel” task on page 10-23 for the card you are removing.
- Step 7** Complete the “DLP-196 Disable a BLSR” task on page 14-10.
- Step 8** If the OC-N card you are removing is a timing source, click the **Provisioning > Timing** tabs and set timing to Internal.
- Step 9** Complete the “DLP-86 Put Ports In or Out of Service” task on page 5-4 to put ports on the card out of service.
- Step 10** Complete the “DLP-191 Delete a Card from CTC” task on page 13-7 to delete the card from its former slot.
- Step 11** Physically remove the card.
- Step 12** Complete the “NTP-16 Install the Optical Cards” procedure on page 2-7 to install the new card.
- Step 13** Complete the “DLP-86 Put Ports In or Out of Service” task on page 5-4 to put the port(s) in service.
- Step 14** Follow the steps described in the “NTP-40 Provision the BLSR Nodes” procedure on page 5-13 to reenable the ring using the same cards (in their new slots) and ports for east and west. Use the same BLSR Ring ID and Node ID that was used before the trunk card was moved.
- Step 15** Complete the “DLP-194 Clear a BLSR Switch” task on page 14-5 to clear the forced switch.
- Step 16** Complete the “NTP-59 Create an Automatically Routed Optical Circuit” task on page 6-25 to recreate the circuits that were deleted.

- Step 17** If you use line timing and the card you are moving is a timing reference, reenable the timing parameters on the card. See the “[NTP-28 Set Up Timing](#)” procedure on page 4-18 for instructions.
- Step 18** Return to your originating procedure (NTP).

## DLP-196 Disable a BLSR



### Caution

Use this task only when deleting a BLSR trunk card and traffic has been removed from the trunk card.

<b>Purpose</b>	Use this task to delete a ring after removing traffic from its trunk card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC</a> , page 3-22
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** From node view, click the **Provisioning > Ring** tabs.
- Step 2** Highlight the ring and click **Delete**.
- Step 3** On the confirmation message, confirm that this is the ring you want to delete. If so, click **Yes**.
- Step 4** Return to your originating procedure (NTP).

## NTP-105 Add a UPSR Node

<b>Purpose</b>	Use this procedure to add a node to a UPSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-23 Log into the ONS 15454 GUI</a> , page 3-21
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

- Step 1** Log into a node in the network where you want to add a UPSR node. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 2** From the view menu, choose **Go to Network View** to display the UPSR nodes. Verify the following:
- All UPSR spans on the network map are green.
  - On the Alarms tab, no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-P, AIS-L, SF, and SD. In a UPSR, these facility conditions may be reported as minor alarms.
  - On the Conditions tab click **Retrieve Conditions** and verify that no ring switches are active.



If trouble is indicated (for example, a major alarm exists), resolve the problem before proceeding. See [Chapter 7, “Manage Alarms,”](#) or, if necessary, refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 3** At the node that will be added to the UPSR:
- Verify that the OC-N cards are installed and fiber is available to connect to the other nodes.
  - Create test circuits and run test traffic through the node to ensure the cards are functioning properly. See [Chapter 6, “Create Circuits and VT Tunnels,”](#) for information.
  - Use the [“NTP-44 Provision the UPSR Nodes” procedure on page 5-26](#) to provision the new node.
- Step 4** Return to Network View.
- Step 5** Complete the [“DLP-197 Switch UPSR Traffic” task on page 14-13](#) to switch traffic away from the span that will be broken to connect to the new node.




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**Caution** Traffic is not protected during a protection switch.

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- Step 6** Two nodes will connect directly to the new node; remove their fiber connections:
- a. Remove the east fiber connection from the node that will connect to the west port of the new node.
  - b. Remove the west fiber connection from the node that will connect to the east port of the new node.
- Step 7** Replace the removed fibers with fibers connected to the new node.
- Step 8** Check to see if your new node’s IP address is on the same subnet as other nodes in the network. If two or more PCs are directly connected to different nodes that belong to the same subnet, you need to add static routes on the gateway 15454 nodes, following these rules:
- Destination IP address: local PC IP address  
 Net Mask: 255.255.255.255  
 Next Hop: IP address of the Cisco ONS 15454  
 Cost: 1
- See the [“DLP-65 Create a Static Route” task on page 4-11](#).
- Step 9** Log out of CTC and log back into a node in the network.
- Step 10** From the View menu choose **Go to Network View** to display the UPSR nodes. The new node should appear in the network map. Wait for a few minutes to allow all the nodes to appear.
- Step 11** Click the **Circuits** tab and wait for all the circuits to appear, including spans. Count the number of incomplete circuits.
- Step 12** 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 displayed in the dialog box is correct.
- Step 13** Click the **Circuits** tab and verify that no incomplete circuits are displayed. If incomplete circuits are displayed, repeat Step 9.
- Step 14** Use the [“DLP-198 Clear a UPSR Traffic Switch” task on page 14-13](#) to clear the protection switch.
- Step 15** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-

# NTP-106 Remove a UPSR Node

<b>Purpose</b>	Use this procedure to remove a node from a UPSR.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite


**Caution**

The following procedure is designed to minimize traffic outages while nodes are removed, but traffic will be lost when you delete and recreate circuits that passed through the removed node.

**Step 1** Log into a node in the network where you want to remove a UPSR node. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.

**Step 2** From the View menu choose **Go to Network View** to display the UPSR. Verify the following:

- All UPSR spans on the network map are green.
- No critical or major alarms (LOF, LOS, AIS-P, AIS-L) are displayed on the **Alarms** tab.
- On the Conditions tab, no UPSR switches are active. See the “[DLP-198 Clear a UPSR Traffic Switch](#)” task on page 14-13 to clear any active switches.
- At each UPSR node, all fibers are securely connected to the appropriate ports.

If trouble is indicated (for example, a critical or major alarm exists), resolve the problem before proceeding. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

**Step 3** Complete the “[DLP-197 Switch UPSR Traffic](#)” task on page 14-13 for all spans connected to the node you are removing.



**Caution** Traffic is not protected during a forced protection switch.

**Step 4** Complete the “[NTP-77 Delete Circuits](#)” procedure on page 9-7 for circuits that originate or terminate in the node you will remove. (If a circuit has multiple drops, delete only the drops that terminate on the node you are deleting.)

**Step 5** Remove all fiber connections between the node being removed and the two neighboring nodes.

**Step 6** Reconnect the fiber of the two neighboring nodes directly, west port to east port.

**Step 7** Exit CTC and log back in. (See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.) Be sure the IP address of the removed node is not in the login list. If the removed node appears in the list, all circuits will appear incomplete.

**Step 8** Log into the nodes and open the Alarms tab of each newly-connected node. Verify that the span cards are free of alarms. Resolve any alarms before proceeding. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

**Step 9** Use [Chapter 6, “Create Circuits and VT Tunnels,”](#) and the “[NTP-77 Delete Circuits](#)” procedure on page 9-7 to delete and recreate each circuit that passed through the deleted node on different STSs.



**Note** If the removed node was the BITS timing source, select a new node as the BITS source or select another node as the master timing node.

- Step 10** Use the “[DLP-198 Clear a UPSR Traffic Switch](#)” task on page 14-13 to clear the protection switch.
- Step 11** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-197 Switch UPSR Traffic

<b>Purpose</b>	Use this task to switch UPSR traffic to another span.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Display the network view. (From the View menu on node view, choose **Go to Network View**.)
- Step 2** Right-click the span where you want to switch UPSR traffic. Choose **Circuits** from the shortcut menu.
- Step 3** On the Circuits on Span dialog box, choose **FORCE**. Click **Apply**.



**Note** A force switch request on a span or card causes CTC to raise a FORCED-REQ condition. The condition will clear when you clear the force switch; it is informational only.



**Caution** The FORCE command overrides normal protective switching mechanisms. Applying this command incorrectly can cause traffic outages.

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

## DLP-198 Clear a UPSR Traffic Switch

<b>Purpose</b>	Use this task to clear a previously-issued UPSR traffic switch.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-60 Log into CTC, page 3-22</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote

- Step 1** Display the network view. (From the View menu on node view, choose **Go to Network View**.)
- Step 2** Right-click the span where you want to clear the switch. Choose **Circuits** from the shortcut menu.
- Step 3** On the Circuits on Span dialog box, choose **CLEAR** to remove a previously-set switch command. Click **Apply**.

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

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## Maintain the ONS 15454

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This chapter provides procedures for maintaining the Cisco ONS 15454.

### 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* as necessary.

This section lists the chapter procedures. Turn to a procedure to view its tasks.

1. [NTP-107 Inspect and Maintain the Air Filter, page 15-1](#)—Complete as needed.
2. [NTP-108 Back Up the Database, page 15-6](#)—Complete as needed.
3. [NTP-109 Restore the Database, page 15-8](#)—Complete as needed.
4. [NTP-110 Inhibit Protection Switching, page 15-10](#)—Complete as needed.
5. [NTP-111 Revert to an Earlier Software Load, page 15-13](#)—Complete as needed.
6. [NTP-112 Clean Fiber Connectors, page 15-15](#)—Complete as needed.
7. [NTP-113 Reset the TCC+ Using CTC, page 15-18](#)—Complete this procedure as needed to reset the TCC+ card and switch the node to the redundant TCC+.

### NTP-107 Inspect and Maintain the Air Filter

<b>Purpose</b>	This procedure explains how to inspect and maintain reusable and disposable air filters.
<b>Tools/Equipment</b>	Spare air filters
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



**Warning**

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**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**

---

**Note**

Although the filter will work if it is installed with either side facing up, Cisco recommends that you install it with the metal bracing facing up to preserve the surface of the filter.

- 
- Step 1** To maintain the reusable air filter, complete the [“DLP-199 Inspect, Clean, and Replace the Reusable Air Filter” task on page 15-2](#).
- Step 2** To maintain the disposable air filter, complete the [“DLP-200 Inspect and Replace the Disposable Air Filter” task on page 15-4](#).
- Step 3** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-199 Inspect, Clean, and Replace the Reusable Air Filter

<b>Purpose</b>	This task ensures that the air filter is free from dirt and dust, which allows optimum air flow and prevents dirt and dust from entering the shelf.
<b>Tools/Equipment</b>	Vacuum or detergent and water faucet, spare filter, pinned hex key
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Inspection required every 30 days. Clean as needed.
<b>Onsite/Remote</b>	Onsite

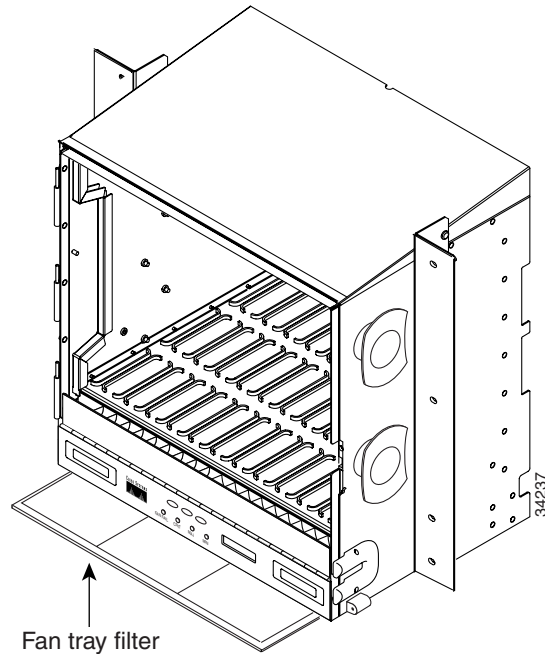
**Warning**

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**

---

- Step 1** Verify that you are replacing a reusable air filter. The reusable filter is made of a gray, open-cell, polyurethane foam that is specially coated to provide fire and fungi resistance. NEBS 3E and later versions of the ONS 15454 use a reusable air filter.
- Step 2** If the air filter is installed in the external filter brackets, slide the filter out of the brackets while being careful not to dislodge any dust that may have collected on the filter and proceed to [Step 9](#). [Figure 15-1](#) illustrates a reusable fan-tray air filter in an external filter bracket.
- Step 3** If the filter is installed beneath the fan tray and not in the external filter brackets, open the front door of the shelf assembly:
- Open the front door lock.  
The ONS 15454 comes with a pinned hex key for locking and unlocking the front door. Turn the key counterclockwise to unlock the door and clockwise to lock it.
  - Press the door button to release the latch.
  - Swing the door open.
- Step 4** Remove the front door (optional). If you do not want to remove the door, proceed to [Step 5](#):
- Detach the ground strap from either the door or the chassis by removing one of the Kepnuts.
  - Place the Kepnut back on the stud after the ground strap is removed to avoid misplacement.
  - Secure the dangling end of the ground strap to the door or chassis with tape.

**Figure 15-1** A reusable fan-tray air filter in an external filter bracket (front door removed)



- Step 5** Push the outer side of the handles on the fan-tray assembly to expose the handles.
- Step 6** Pull the handles and slide the fan-tray assembly one inch out of the shelf assembly and wait until the fans stop.
- Step 7** When the fans have stopped, pull the fan-tray assembly completely out of the shelf assembly.
- Step 8** Gently remove the air filter from the shelf assembly. Be careful not to dislodge any dust that may have collected on the filter.
- Step 9** Visually inspect the air filter material for dirt and dust.
- Step 10** If the reusable air filter contains a concentration of dirt and dust, replace the dirty air filter with a clean air filter (spare filters should be kept in stock) and re-insert the fan-tray assembly. Then, vacuum or wash the dirty air filter under a faucet with a light detergent.




---

**Note** Cleaning should take place outside the operating environment to avoid releasing dirt and dust near the equipment.

---

- Step 11** If you washed the filter, allow it to completely air dry for at least eight hours.




---

**Warning** Do not put a damp filter back in the ONS 15454.

---

- Step 12** Replace the filter:
- a. If the air filter is installed in the external filter brackets, slide the dry/clean air filter all the way to the back of the brackets to complete the procedure.
  - b. If the filter is installed beneath the fan-tray assembly, remove the fan-tray assembly if installed, slide the dry/clean air filter into the recessed compartment at the bottom of the shelf assembly. Put the front edge of the air filter flush against the front edge of the recessed compartment. Push the fan tray back into the shelf assembly.

**Caution**

If the fan tray does not slide all the way to the back of the shelf assembly, pull the fan tray out and readjust the position of the reusable filter until the fan tray fits correctly.

**Note**

On a powered-up ONS 15454, the fans start immediately after the fan-tray assembly is correctly inserted.

- Step 13** To verify that the tray is plugged into the backplane, ensure that the LCD on the front of the fan-tray assembly is activated and displays node information.
- Step 14** Rotate the retractable handles back into their compartments.
- Step 15** If you replace the door, also reattach the ground strap.
- Step 16** Close and lock the door.
- Step 17** If applicable, return to your originating procedure (NTP).

## DLP-200 Inspect and Replace the Disposable Air Filter

<b>Purpose</b>	This task ensures that the air filter is free from dirt and dust to allow optimum air flow and prevent dirt and dust from entering the ONS 15454.
<b>Tools/Equipment</b>	Extra filters, pinned hex key
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Inspection required every 30 days. Replace as needed.
<b>Onsite/Remote</b>	Onsite

**Note**

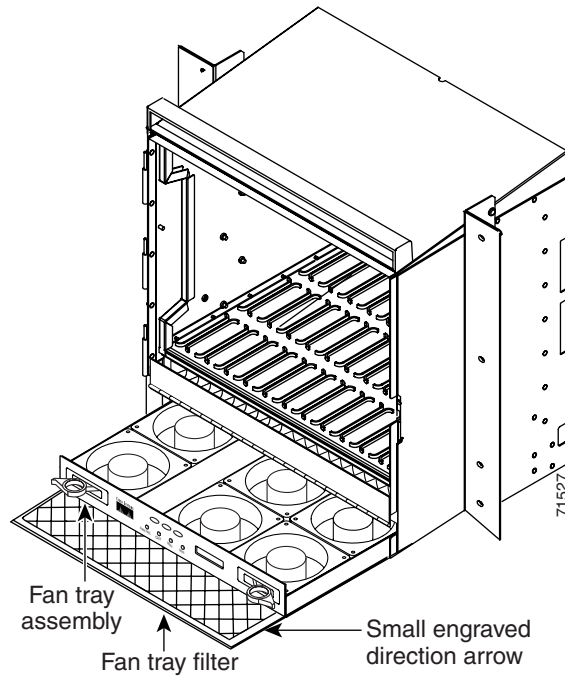
The disposable air filter is installed beneath the fan-tray assembly only, so you must remove the fan-tray assembly to inspect and replace the disposable air filter.

- Step 1** Verify that you are replacing a disposable air filter. The disposable filter is made of spun white polyester that is flame retardant. NEBS 3E and earlier versions of the ONS 15454 use a disposable air filter.
- Step 2** Open the front door of the shelf assembly.
- Open the front door lock.  
The ONS 15454 comes with a pinned hex key for locking and unlocking the front door. Turn the key counterclockwise to unlock the door and clockwise to lock it.
  - Press the door button to release the latch.
  - Swing the door open.
- Step 3** Remove the front door (optional). If you do not want to remove the door, proceed to [Step 4](#):
- Detach the ground strap from either the door or the chassis by removing one of the Kepnuts.
  - Place the Kepnut back on the stud after the ground strap is removed to avoid misplacement.
  - Secure the dangling end of the ground strap to the door or chassis with tape.

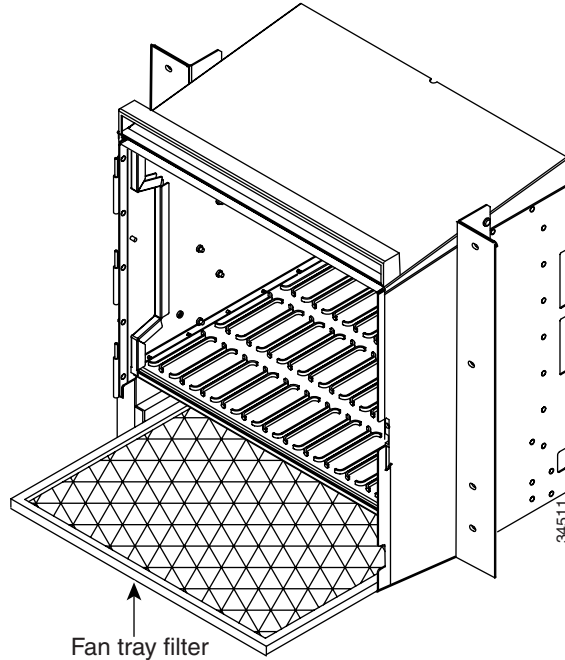


- Step 4** Push the outer side of the handles on the fan-tray assembly to expose the handles.
- Step 5** Pull the handles and slide the fan-tray assembly one inch out of the shelf assembly and wait until the fans stop.
- Step 6** When the fans have stopped, pull the fan-tray assembly completely out of the shelf assembly (Figure 15-2).

**Figure 15-2** Inserting or removing the fan-tray assembly (front door removed)



- Step 7** Gently remove the air filter from the shelf assembly (Figure 15-3). Be careful not to dislodge any dust that may have collected on the filter.
- Step 8** Visually inspect the white filter material for dirt and dust.
- Step 9** If the air filter shows a heavy concentration of dirt and dust, replace it with a new filter by sliding the new filter into the bottom of the shelf assembly. Make sure that the front of the filter is flush with the front of the shelf assembly and that the air flow indicators on the filter point upwards.

**Figure 15-3** Inserting or removing a disposable fan-tray air filter (front door removed)

- Step 10** Slide the fan-tray assembly into the shelf assembly until the electrical plug at the rear of the tray plugs into the corresponding receptacle on the backplane.
- Step 11** To verify that the tray is plugged into the backplane, ensure that the LCD on the front of the fan-tray assembly is activated and displays node information.
- Step 12** Rotate the retractable handles back into their compartments.
- Step 13** If you replace the door, also reattach the group strap.
- Step 14** Close and lock the door.
- Step 15** If applicable, return to your originating procedure (NTP).

## NTP-108 Back Up the Database

<b>Purpose</b>	This procedure stores a backup version of the TCC+ (software) database on the workstation running CTC or on a network server.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required. Cisco recommends performing a database backup at approximately weekly intervals and prior to and after configuration changes.
<b>Onsite/Remote</b>	Both

**Note**

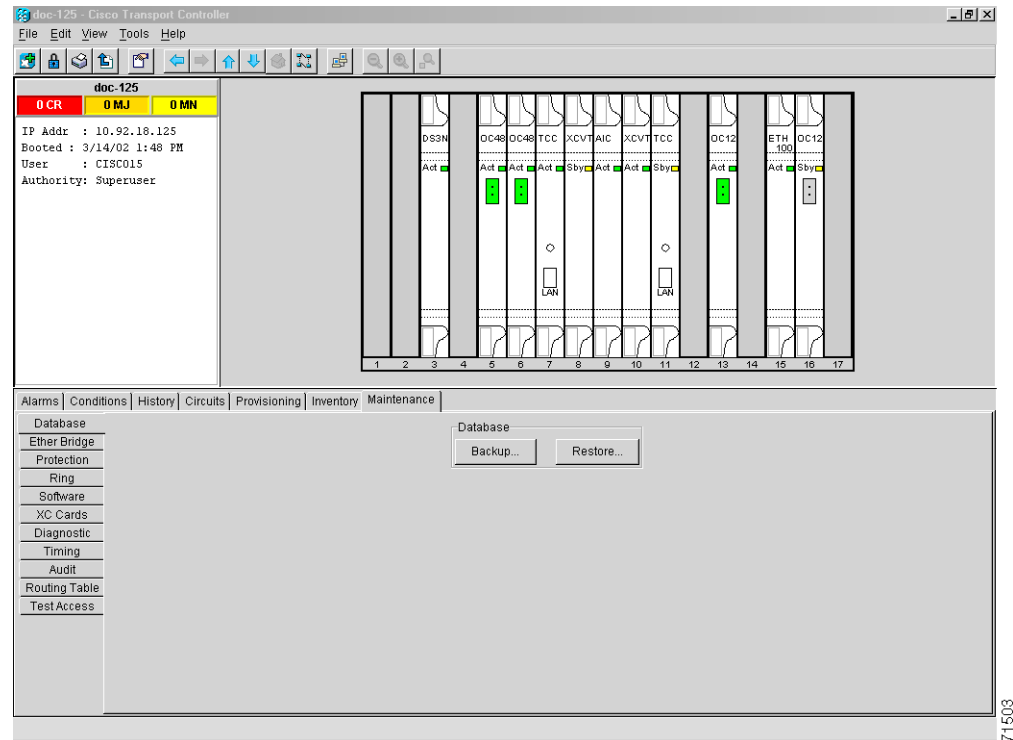
You must back up and restore the database for each node on a circuit path in order to maintain a complete circuit.

**Note**

The following parameters are not backed up and restored: node name, IP address, mask and gateway, and IIOF port. If you change the node name and then restore a backed up database with a different node name, the circuits will map to the new node name. Cisco recommends keeping a record of the old and new node names.

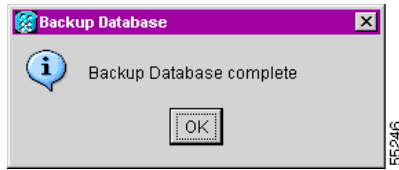
- Step 1** Log into the node where you will perform the database backup. For login procedures, see the “DLP-60 Log into CTC” task on page 3-22.
- Step 2** In node (default) view, click the **Maintenance > Database** tabs (Figure 15-4).

**Figure 15-4 Backing up the TCC+ database**



- Step 3** Click **Backup**.
- Step 4** Save the database on the workstation's hard drive or on network storage. Use an appropriate file name with the .db file extension; for example, database.db.
- Step 5** Click **Save**.
- Step 6** Click **OK** in the confirmation dialog box (Figure 15-5).

Figure 15-5 Confirming a database backup



- Step 7** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-109 Restore the Database

<b>Purpose</b>	This procedure restores the TCC+/software database.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-108 Back Up the Database, page 15-6</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both



### Note

The following parameters are not backed up and restored: node name, IP address, mask and gateway, and IIOP port. If you change the node name and then restore a backed up database with a different node name, the circuits will map to the new node name. Cisco recommends keeping a record of the old and new node names.



### Caution

E1000-2 cards lose traffic for approximately 90 seconds when an ONS 15454 database is restored. Traffic is lost during the period of spanning tree reconvergence. The CARLOSS alarm will appear and clear during this period.



### Caution

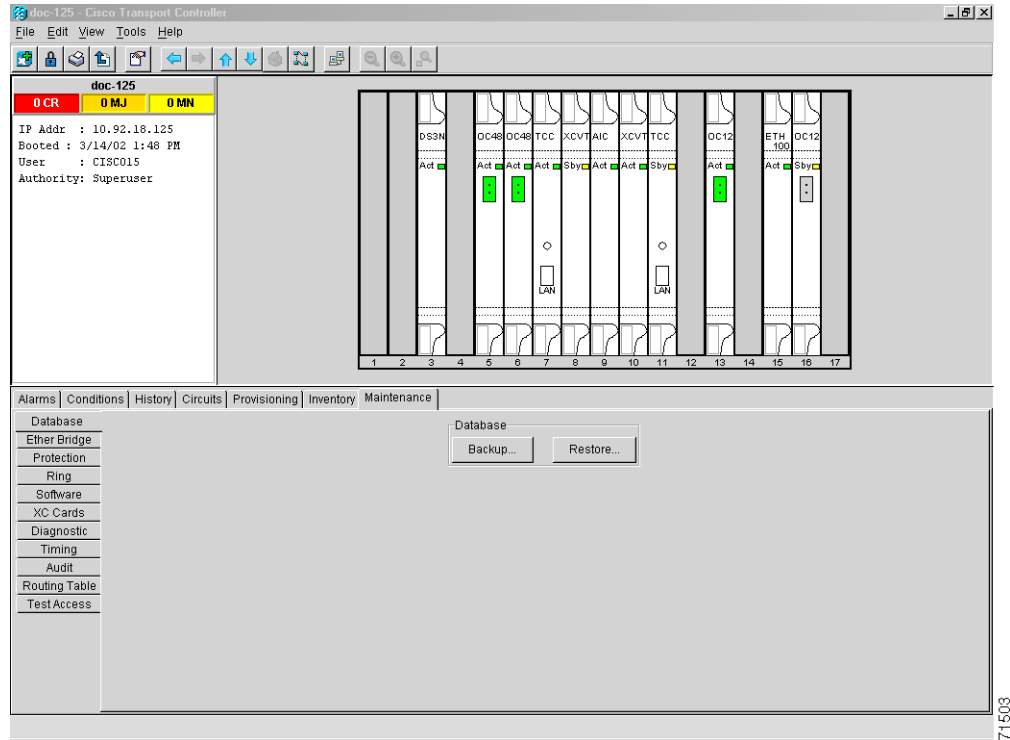
If you are restoring the database on multiple nodes, wait until the TCC+ reboot has completed on each node before proceeding to the next node.

- Step 1** Log into the node where you will restore the database. For login procedures, see the [“DLP-60 Log into CTC” task on page 3-22](#).
- Step 2** Ensure that there are no ring or span (four-fiber only) switch events; for example, ring-switch east or west, and span-switch east or west. In network view, click the **Conditions** tab and click **Retrieve Conditions** to view a list of conditions.
- Step 3** If there are switch events that need to be cleared, in node (default) view, click the **Maintenance > Ring** tabs and view the West Switch and East Switch columns.
- If there is a switch event (not caused by a line failure), clear the switch by choosing **CLEAR** from the pull-down menu and click **Apply**.

- b. If there is a switch event caused by the Wait to Restore (WTR) condition, choose **LOCKOUT SPAN** from the pull-down menu and click **Apply**. When the LOCKOUT SPAN is applied, choose **CLEAR** from the pull-down menu and click **Apply**.

**Step 4** In node view, click the **Maintenance > Database** tabs (Figure 15-6).

**Figure 15-6 Restoring the TCC+ database**



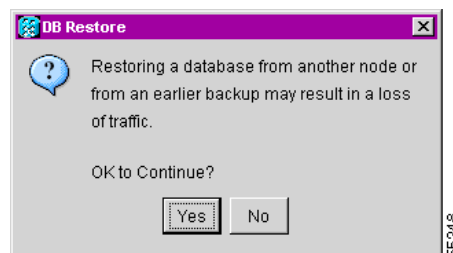
**Step 5** Click **Restore**.

**Step 6** Locate the database file stored on the workstation's hard drive or on network storage.

**Step 7** Click the database file to highlight it.

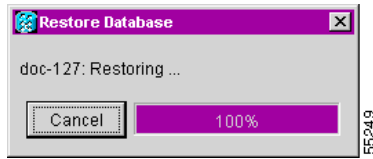
**Step 8** Click **Open**. The DB Restore dialog box appears. Opening a restore file from another node or from an earlier backup may affect traffic on the login node (Figure 15-7).

**Figure 15-7 Restoring the database—traffic loss warning**



**Step 9** Click **Yes**.

The Restore Database dialog box monitors the file transfer (Figure 15-8).

**Figure 15-8 Restoring the database – in-process notification**

- Step 10** Wait for the file to complete the transfer to the TCC+.
- Step 11** Click **OK** when the “Lost connection to node, changing to Network View” dialog box appears. Wait for the node to reconnect.
- Step 12** If you cleared a switch in [Step 3](#), reapply the switch as needed.
- Step 13** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## NTP-110 Inhibit Protection Switching

<b>Purpose</b>	This procedure describes how to apply a Lock On or Lock Out and how to remove a Lock On or Lock Out.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite

**Step 1** To prevent traffic on a working or protect card from switching to the other card in the pair, complete the “[DLP-201 Apply a Lock On](#)” task on page 15-11.

**Step 2** To switch traffic from a working or protect card to the other card in the pair to prevent revertive switching, complete the “[DLP-202 Apply a Lock Out](#)” task on page 15-12.



**Note** A combination of Lock On and Lock Out is allowed in 1:1 and 1:N protection; for example, a Lock On on the working card and a Lock Out on the protect card is permissible.

**Step 3** To remove a Lock On or Lock Out and return a protection group to its usual switching method, complete the “[DLP-203 Clear a Lock On or Lock Out](#)” task on page 15-13.



**Note** A non-alarmed event (INHSW) is raised when a card is placed in a Lock On or Lock Out state.



**Note** Refer to the *Cisco ONS 15454 Reference Guide* for a description of protection switching and switch state priorities.

- Step 4** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
- 

## DLP-201 Apply a Lock On

<b>Purpose</b>	This task prevents traffic from being switched from one card to another.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both



**Note** To apply a Lock On to a protect card in a 1:1 or 1:N protection group, the protect card must be active. If the protect card is in standby, the Lock On button is disabled. To make the protect card active, you must switch traffic from the working card to the protect card ([Step 5](#)). When the protect card is active, you can apply the Lock On.

---

- Step 1** Use the following rules to determine if you can put the intended card in a Lock On state:
- For a 1:1 electrical protection group, both the working and protect cards can be placed in the Lock On state.
  - For a 1:N electrical protection group, both the working and protect cards can be placed in the Lock On state.
  - For a 1+1 optical protection group, only the working card can be placed in the Lock On state.
- Step 2** Log into the node where you will apply the Lock On. See the “[DLP-60 Log into CTC](#)” task on page 3-22 for instructions.
- Step 3** In node (default) view, click the **Maintenance > Protection** tabs.
- Step 4** Under Protection Groups, click on the protection group where you want to apply a lock on.
- Step 5** If you determine that the protect card is in standby and you want to apply the lock on to the protect card, make the protect card active:
- a. Under Selected Group, click the protect card.
  - b. Under switch Commands, click **Switch**.
- Step 6** Under Selected Group, click the active card you want to lock traffic onto.
- Step 7** From Inhibit Switching, click on **Lock On**.
- Step 8** Click **Yes** on the confirmation dialog box.
- The Lock On has been applied and traffic cannot be switched to the working card. To clear the Lock On, see the “[DLP-203 Clear a Lock On or Lock Out](#)” task on page 15-13.
- Step 9** If applicable, return to your originating procedure (NTP).
-

## DLP-202 Apply a Lock Out

<b>Purpose</b>	This task switches traffic from one card to another using a lock out, which is a switching mechanism that overrides other manual switching connections (force, manual, and exercise).
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both



**Note** Multiple Lock Outs in the same protection group is not allowed.

- Step 1** Use the following rules to determine if you can put the intended card in a Lock Out state:
- For a 1:1 electrical protection group, both the working and protect cards can be placed in the Lock Out state.
  - For a 1:N electrical protection group, both the working and protect cards can be placed in the Lock Out state.
  - For a 1+1 optical protection group, only the protect card can be placed in the Lock Out state.
- Step 2** Log into the node where you will apply the Lock Out. For login procedures, see the [“DLP-60 Log into CTC” task on page 3-22](#).
- Step 3** In Node view, click the **Maintenance > Protection** tabs.
- Step 4** Under Protection Groups, click on the protection group that contains the card you want to lock out.
- Step 5** Under Selected Group, click the card you want to lock traffic out of.
- Step 6** From Inhibit Switching, click on **Lock Out**.
- Step 7** Click **Yes** on the confirmation dialog box.
- The lock out has been applied and traffic is switched to the opposite card. To clear the Lock Out, see the [“DLP-203 Clear a Lock On or Lock Out” task on page 15-13](#).



**Note** Provisioning a lock out causes a LOCKOUT-REQ or an FE-LOCKOUT condition to be raised on CTC. Clearing the lockout switch request clears these conditions; they are informational only.

- Step 8** If applicable, return to your originating procedure (NTP).



## DLP-203 Clear a Lock On or Lock Out

<b>Purpose</b>	This task clears a lock on or lock out.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-201 Apply a Lock On, page 15-11</a> or <a href="#">DLP-202 Apply a Lock Out, page 15-12</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

- 
- Step 1** Log into the node where you will clear the Lock Out or Lock On. For login procedures, see the [“DLP-60 Log into CTC” task on page 3-22](#).
- Step 2** In node (default) view, click the **Maintenance > Protection** tabs.
- Step 3** Under Protection Groups, click the protection group that contains the card you want to clear.
- Step 4** Under Selected Group, click the card you want to clear.
- Step 5** From Inhibit Switching, click **Unlock**.
- Step 6** Click **Yes** on the confirmation dialog box.  
The Lock On or Lock Out is cleared.
- Step 7** If applicable, return to your originating procedure (NTP).
- 

## NTP-111 Revert to an Earlier Software Load

Prior to Software Release 2.2.1, the ONS 15454 could not revert to an earlier software database without deleting the current database and losing both cross-connect and DCC connectivity. The revert would result in a loss of traffic until the user manually restored the previous database or recreated the existing circuits and provisioning.

Reverting to a 2.2.1 or later load will switch to the older software load and its attendant database without affecting traffic or DCC connectivity. This feature requires dual TCC+ cards and CTC Software R 2.2.1 or later as the protect version.

When you click the Activate button after a software upgrade, the TCC+ copies the current working database and saves it in a reserved location in the TCC+ flash memory. If you later need to revert to the original working software load from the protect software load, the saved database installs automatically. You do not need to restore the database manually or recreate circuits.

<b>Purpose</b>	This procedure reverts the ONS 15454 database to an earlier software load.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Both

**Tip**

The revert feature is useful if a maintenance window closes while you are upgrading CTC software. You can revert to the standby software load without losing traffic. When the next maintenance window opens, complete the upgrade and activate the new software load.

**Note**

A revert to a maintenance release software load will use the current active database; therefore, no provisioning is lost. All other reverts do restore the database. (A maintenance release has a three-digit release number, e.g. 2.2.2).

**Note**

Circuits created and provisioning performed after a software load is activated (upgraded to a higher software release) will not reinstate with a revert. The database configuration at the time of activation is reinstated after a revert. This note does not apply to maintenance reverts (e.g. 2.2.2 to 2.2.1), because maintenance releases use the same database.

- 
- Step 1** Log into the node where you will perform the revert. For login procedures, see the [“DLP-60 Log into CTC” task on page 3-22](#). The node (default) view appears.
- Step 2** Record the IP address of that node:
- a. The IP address is displayed on the left side in node view or,
  - b. In node (default) view, click the **Provisioning > Network > General** tabs.
- Step 3** If reverting to a previous software release (not a maintenance release) record any new circuits created since the previous software upgrade because these circuits will have to be manually recreated (if needed) once the software reversion has taken place.
- Step 4** Click the **Maintenance > Software** tabs.
- Step 5** Verify that the protect software is Software R2.2.0 or later. If the protect software is not Software R2.2.0 or later, do not revert.
- Step 6** Click **Revert**. The Revert button activates the protect software load.
- Step 7** Click **Yes** on the revert confirmation dialog box. The ONS 15454 reboots and loses the connection to CTC.
- Step 8** Wait until the software upgrade finishes. This may take as long as 30 minutes.
- Step 9** When the software upgrade is finished, click the **Delete CTC Cache** button in the browser window.
- Step 10** Completely close the browser.
- Step 11** Restart the browser and log back into the node using the IP address recorded in [Step 2](#). For login procedures, see the [“DLP-60 Log into CTC” task on page 3-22](#).  
The browser downloads the CTC applet for the standby software load.
- Step 12** If needed, recreate the circuits recorded in [Step 3](#). See [Chapter 6, “Create Circuits and VT Tunnels”](#) for specific circuit creation procedures.
- Step 13** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.
-

# NTP-112 Clean Fiber Connectors

<b>Purpose</b>	This procedure cleans the fiber connectors.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Inspection microscope</li> <li>• Compressed air/duster</li> <li>• “Type A” Fiber Optic Connector Cleaner (Cletop reel)</li> <li>• Isopropyl alcohol 70% or higher</li> <li>• Optical swab</li> <li>• Optical receiver cleaning stick</li> </ul>
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



## Warning

**Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam or view directly with optical instruments.**

**Step 1** Using an inspection microscope, inspect each fiber connector for dirt, cracks, or scratches.

**Step 2** Replace any damaged fiber connectors.



**Note** Replace all dust caps whenever the equipment will be unused for 30 minutes or more.

**Step 3** Complete the [“DLP-204 Scope and Clean Fiber Connectors and Adapters with Alcohol and Dry Wipes” task on page 15-16](#) as necessary.

**Step 4** Complete the [“DLP-205 Clean Fiber Connectors with Cletop” task on page 15-17](#) as necessary.

**Step 5** Complete the [“DLP-206 Clean the Fiber Adapters” task on page 15-17](#) as necessary.



**Caution** Do not reuse the optical swabs. Keep unused swabs off of work surfaces.

**Step 6** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

## DLP-204 Scope and Clean Fiber Connectors and Adapters with Alcohol and Dry Wipes

<b>Purpose</b>	This task cleans the fiber connectors and adapters with alcohol and dry wipes.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Compressed air/duster</li> <li>• Isopropyl alcohol 70% or higher</li> <li>• Optical swab</li> <li>• Optical receiver cleaning stick</li> </ul>
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite



### Warning

**Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam or view directly with optical instruments.**

- 
- Step 1** Remove the dust cap from the fiber connector.
- Step 2** Wipe the connector tip with the pre-moistened alcohol wipe.
- Step 3** Blow dry using filtered air.
- Step 4** Use an inspection microscope to inspect each fiber connector for dirt, cracks, or scratches. If the connector is not clean, repeat [Step 1–3](#).
- Step 5** Insert the fiber connector into the applicable adapter or attach a dust cap to the fiber connector.



**Note** If you must replace a dust cap on a connector, first verify that the dust cap is clean. To clean the dust cap, wipe the outside of the cap using a dry lint free wipe and the inside of the dust cap using a Cletop stick swab (14100400).

- Step 6** If applicable, return to your originating procedure (NTP).
-

## DLP-205 Clean Fiber Connectors with Cletop

<b>Purpose</b>	This task cleans the fiber connectors with Cletop.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• “Type A” Fiber Optic Connector Cleaner (Cletop reel)</li> <li>• Optical receiver cleaning stick</li> </ul>
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Remove the dust cap from the fiber connector.
- Step 2** Press the lever down to open the shutter door. Each time you press the lever, you expose a clean wiping surface.
- Step 3** Insert the connector into the Cletop cleaning cassette slot, rotate one quarter turn, and gently swipe downwards.
- Step 4** Use an inspection microscope to inspect each fiber connector for dirt, cracks, or scratches. If the connector is not clean, repeat [Step 1–3](#).
- Step 5** Insert the fiber connector into the applicable adapter or attach a dust cap to the fiber connector.




---

**Note** If you must replace a dust cap on a connector, first verify that the dust cap is clean. To clean the dust cap, wipe the outside of the cap using a dry lint free wipe and the inside of the dust cap using a Cletop stick swab (14100400).

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- Step 6** If applicable, return to your originating procedure (NTP).
- 

## DLP-206 Clean the Fiber Adapters

<b>Purpose</b>	This task cleans the fiber adapters.
<b>Tools/Equipment</b>	Cletop stick swab
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite

- 
- Step 1** Remove the dust plug from the fiber adapter.
- Step 2** Insert a Cletop stick swab (14100400) into the adapter opening and rotate the swab.
- Step 3** Place dust plugs on the fiber adapters when not in use.
- Step 4** If applicable, return to your originating procedure (NTP).
-

# NTP-113 Reset the TCC+ Using CTC

<b>Purpose</b>	This procedure resets the TCC+ card and switches the node to the redundant TCC+.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite



## Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**

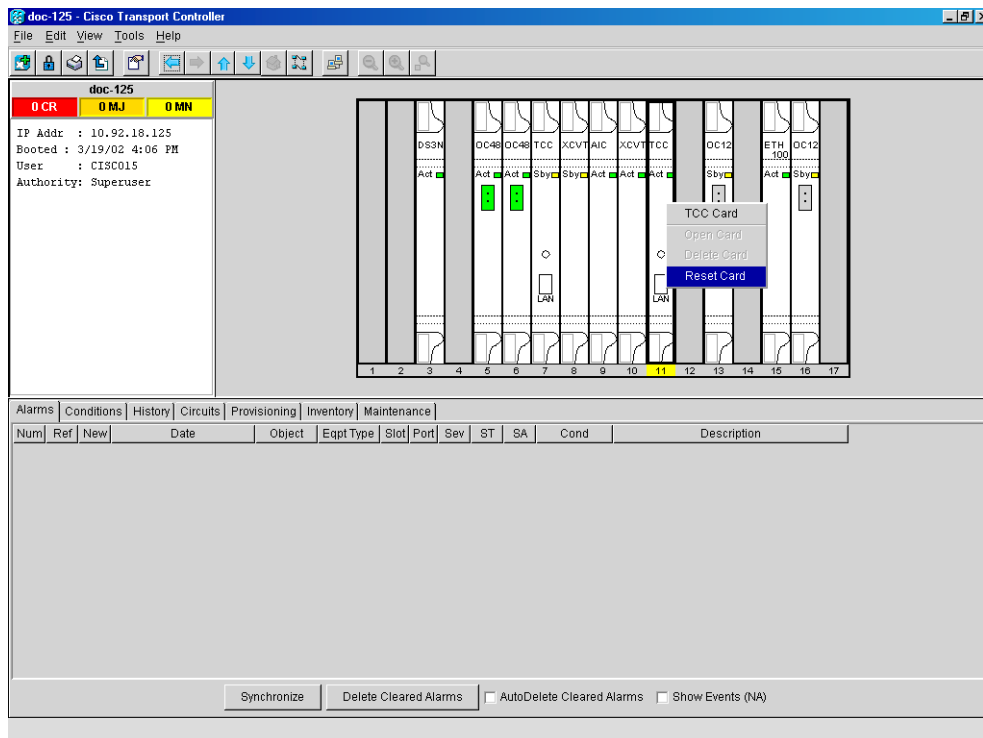


## Note

When a software reset is performed on an active TCC+, the AIC card goes through an initialization process and also resets. The AIC card reset is normal and will happen each time an active TCC+ card goes through a software-initiated reset.

- Step 1** Log into the node where you will perform the software reset. See the “DLP-60 Log into CTC” task on page 3-22 for instructions.
- Step 2** In node (default) view, right-click the TCC+ card to reveal a pull-down menu.
- Step 3** Click **Reset Card** (Figure 15-9).

**Figure 15-9 Performing a software- reset from the TCC+ card pull-down menu**



**Step 4** Click **Yes** when the “Are You Sure?” dialog box appears.

**Step 5** Click **OK** when the “Lost connection to node, changing to Network View” dialog box appears.



---

**Note** For LED behavior during a TCC+ reboot, see [Table 4-1 on page 4-8](#).

---

**Step 6** Confirm that the TCC+ you reset is in standby mode after the reset:

- a. The TCC+ card’s LED will be amber for standby or green for active, or
- b. In node view, run the mouse over the TCC+ card and a pop up box will display if the card is active or standby.

**Step 7** Turn to the table of contents, list of procedures, or index to locate any other procedures that you need to perform for your site.

---







## Power Down the ONS 15454

### Before You Begin

Complete the [“NTP-114 Power Down the ONS 15454” procedure on page 16-1](#) as needed.

### NTP-114 Power Down the ONS 15454

<b>Purpose</b>	This procedure stops all node activity.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As Needed
<b>Onsite/Remote</b>	Onsite



#### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



#### Caution

The following procedure is designed to minimize traffic outages when powering down nodes, but traffic will be lost if you delete and recreate circuits that passed through a working node.



#### Note

Always use the supplied ESD wristband when working with the Cisco ONS 15454. Plug the wristband into the ESD jack located on the fan-tray assembly or on the lower right outside edge of the shelf on the NEBS 3 shelf assembly. To access the ESD plug on the NEBS 3 shelf assembly, open the front door of the Cisco ONS 15454. The front door is grounded to prevent electrical shock.

**Step 1** Identify the node that you want to power down. If no cards are installed, go to [Step 12](#). If cards are installed, log into the node. See the [“DLP-60 Log into CTC” task on page 3-22](#) for instructions.

**Step 2** In network view, verify that the node is not connected to a network.

- a. If the node is part of a working network, log out of the node and as complete the [“NTP-103 Remove a BLSR Node” procedure on page 14-5](#) or the [“NTP-105 Add a UPSR Node” procedure on page 14-10](#). Continue with [Step 3](#).

- b. If the node is not connected to a working network and the current configurations are no longer required, proceed to [Step 3](#).




---

**Note** Current configurations will be saved if Steps 3–12 are skipped.

---

- Step 3** In node view, click the **Circuits** tab and verify that no circuits are displayed, then proceed to [Step 4](#). If circuits are displayed, delete all the circuits that originate or terminate in the node, as follows:
- a. Click the circuits that need to be deleted and click **Delete**.
  - b. Click **Yes**.
- Repeat until no circuits are displayed.
- Step 4** In node view, click the **Provisioning > Protection** tabs and delete all protection groups:
- a. Click the protection group that needs to be deleted and click **Delete**.
  - b. Click **Yes**.
- Repeat until no protection groups are displayed.
- Step 5** In node view, click the **Provisioning > SONET DCC** tabs and delete all SDCC terminations:
- a. Click the SDCC Termination that needs to be deleted and click **Delete**.
  - b. Click **Yes**.
- Repeat until no SDCC Terminations are displayed.
- Step 6** For each installed card, place all ports in Out of Service status:
- a. In card view, click the **Provisioning > Line** tabs.
  - b. Click under the Status column for each port and choose **Out of Service**.
- Step 7** Remove all fiber connections to the cards.
- Step 8** In node view, right-click an installed card and click **Delete**.
- Step 9** Click **Yes**.
- Step 10** After you have deleted the card, open the card ejectors and remove it from the node.
- Step 11** Repeat [Step 6–10](#) for each installed card.
- Step 12** Shut off the power from the power supply that feeds the node.
- Step 13** Disconnect the node from its external fuse source.
- Step 14** Store all the cards you removed and update inventory records according to local site practice.
-



## CTC Information and Shortcuts

This appendix describes how to navigate in the Cisco Transport Controller (CTC), change CTC table data display, and export and print data for the Cisco ONS 15454.

### Displaying Node, Card, and Network Views

The Cisco Transport Controller provides three views of the ONS 15454 and ONS network:

- Node view displays when you first log into an ONS 15454. This view shows a graphic of the ONS 15454 shelf and provides access to tabs and subtabs that you use to manage the node.
- Card view provides access to individual ONS 15454 cards. This view provides a graphic of the card and provides access to tabs and subtabs that you use to manage the card.
- Network view shows a map with the ONS 15454 network nodes. This view provides access to tabs and subtabs that you use to manage the network.

[Table A-1](#) lists different actions for changing CTC views.

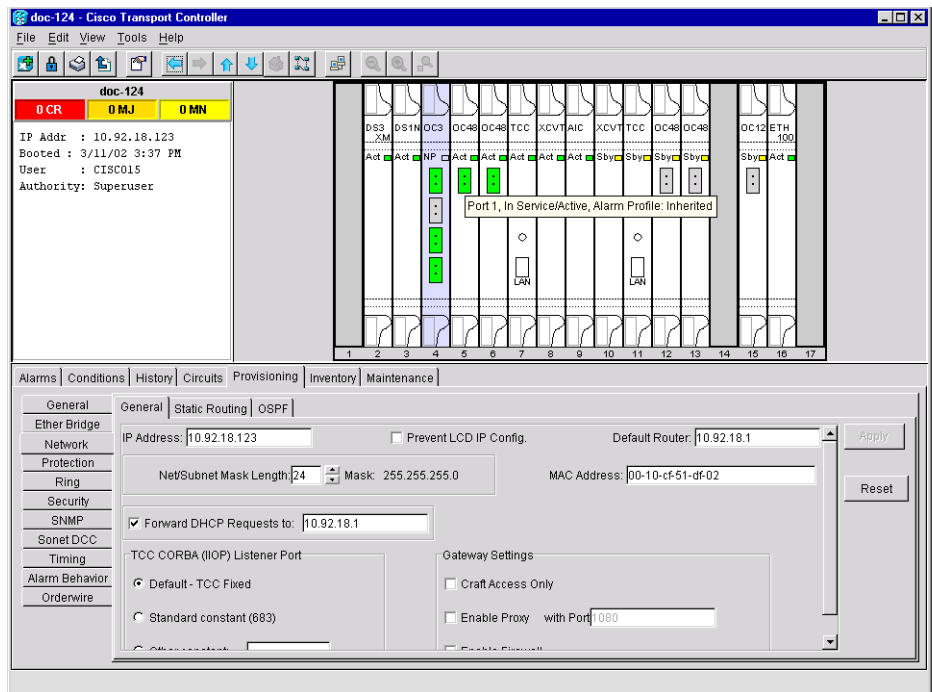
**Table A-1** Change CTC Views

To display	Perform one of the following:
Node view	<ul style="list-style-type: none"> <li>• Log into a node; node view is the default view.</li> <li>• In network view, double-click a node icon, or right-click the node and select <b>Open Node</b>.</li> <li>• From the CTC View menu, select <b>Go to Other Node</b>, then select the node you want from the shortcut menu.</li> <li>• Use the arrows on the CTC toolbar to navigate up or down views. For example, in network view, click a node, then click the down arrow.</li> </ul>
Network view	<ul style="list-style-type: none"> <li>• In node view, click the up arrow or the network view tool on the CTC toolbar.</li> <li>• From the View menu, select <b>Go To Network View</b>.</li> </ul>
Card view	<ul style="list-style-type: none"> <li>• In node view, double-click a card or right-click the card and select <b>Open Card</b>.</li> <li>• Use the arrows on the CTC toolbar to navigate up or down views. For example, in node view, click a card, then click the down arrow.</li> </ul>

# Manage the CTC Window

Different navigational methods are available within the CTC window to access views and perform management actions. You can double-click and right-click objects in the graphic area and move the mouse over nodes, cards, and ports to view popup status information (Figure A-1).

Figure A-1 CTC node view showing popup information



## CTC Menu and Toolbar Options

The CTC window menu bar and toolbar provide primary CTC functions. Table A-2 shows the actions that are available from the CTC menu and toolbar.

Table A-2 CTC Menu and Toolbar Options
















Menu	Menu Option	Toolbar	Description
File	Add Node		Adds a node to the current session. See the “DLP-62 Add a Node to the Current Session or Login Group” task on page 3-25.
	Lock Node		Locks CTC without closing the CTC session. A user name and password are required to open CTC.
	Print		Prints CTC data. See the “DLP-138 Print CTC Data” task on page 10-2.

Table A-2 CTC Menu and Toolbar Options (continued)

Menu	Menu Option	Toolbar	Description
	Export		Exports CTC data. See the <a href="#">“DLP-139 Export CTC Data” task on page 10-3</a> .
	Exit	n/a	Closes the CTC session
Edit	Preferences		Displays the Preferences dialog box: General tab—Allows you to customize the network view. See the <a href="#">“DLP-145 Change the Network View Background Color” task on page 10-12</a> and <a href="#">“DLP-147 Apply a Custom Network View Background Map” task on page 10-13</a> . Also allows you to change the alarm history and events defaults. Login Node Group tab— Allows you to create login node groups. See the <a href="#">“DLP-61 Create Login Node Groups” task on page 3-24</a> . Circuit—Allows you to change the color of circuit spans. See the <a href="#">“DLP-134 Change Active and Standby Span Color” task on page 9-5</a> . Firewall—Sets the IOP listener ports for access to the ONS 15454 through a firewall. See the <a href="#">“NTP-27 Set Up the ONS 15454 for Firewall Access” procedure on page 4-14</a> .
View	Go to Previous View		Displays the previous CTC view.
	Go to Next View		Displays the next CTC view. Available only after you navigate to a previous view. Go to Previous and Go to Next is similar to a web browser forward/backward navigation.
	Go to Parent View		References the CTC view hierarchy: network view, node view, and card view. In card view, this command displays the node view; in node view, the command displays network view. Not available in network view.
	Go to Selected Object View		Displays the object selected in the CTC window
	Go to Home View		Displays the login node in node view.
	Go to Network View		Displays the network view
	Show Status Bar	n/a	Click this item to display/hide the status bar at the bottom of the CTC window
	Show Tool Bar	n/a	Click this item to display/hide the CTC toolbar.
	Go to Other Node	n/a	Displays a dialog box allowing you to enter a network node that you want to view. You can enter the node name or its IP address.
n/a	n/a		Zooms out the network view area (toolbar only)
n/a	n/a		Zooms in network view area (toolbar only)

## ■ CTC Mouse Options

Table A-2 CTC Menu and Toolbar Options (continued)

Menu	Menu Option	Toolbar	Description
n/a	n/a		Zooms in a selected network view area (toolbar only)
Tools	Manage VLANs	n/a	Displays a list of VLANs that have been created and allows you to delete or create new VLANs. See the <a href="#">“NTP-53 Create a Unidirectional DS-1 Circuit with Multiple Drops”</a> procedure on page 6-10.
	Repair Circuits	n/a	Repairs incomplete circuits following replacement of the ONS 15454 AIP board. Refer to the <i>Cisco ONS 15454 Troubleshooting Guide</i> for more information.
	Open TL1 Connection		Displays the TL1 session dialog box so you can create a TL1 session to a specific node. Refer to the <i>Cisco ONS 15454 and Cisco ONS 15327 TL1 Command Guide</i> .
	Set Path Selector Attributes	n/a	Allows you to edit UPSR circuit path selector attributes. See the <a href="#">“DLP-135 Edit a UPSR Circuit”</a> task on page 9-6.

## CTC Mouse Options

In addition to the CTC menu bar and toolbar, you can invoke actions by double-clicking CTC window items with your mouse, or right-clicking an item and selecting actions from shortcut menus. [Table A-3](#) lists the CTC window mouse shortcuts.

Table A-3 CTC Window Mouse Shortcuts

Technique	Description
Double-Click	<ul style="list-style-type: none"> <li>• A node in network view to display the node view</li> <li>• A card in node view to display the card view</li> </ul>

Table A-3 CTC Window Mouse Shortcuts (continued)

Technique	Description
Right-Click	<ul style="list-style-type: none"> <li>Network view graphic area—Displays a menu where you can create a new domain, change the position and zoom level of the graphic image, and change the background image and color.</li> <li>Node in network view—Displays a menu where you can open the node, provision circuits, update circuits with a new node, and reset the node icon position to the longitude and latitude set on the Provisioning &gt; General tabs.</li> <li>Span in network view—Displays a menu where you can view information about the source and destination ports, the span's protection scheme, and the span's optical or electrical level. You can also display the Circuits on Span dialog box, which displays additional span information and allows you to perform UPSR protection switching.</li> <li>Card in node view—Displays a menu where you can open, delete, reset, and change cards. The card that is selected determines the commands that are displayed.</li> <li>Empty slot in node view—Displays a menu with cards that you can select to pre-provision the slot.</li> </ul>
Move Mouse Cursor	<ul style="list-style-type: none"> <li>Over node in network view—Displays a summary of node alarms and provides a warning if the node icon has been moved out of the map range.</li> <li>Over span in network view—Displays circuit (node, slot, port) bandwidth and protection information</li> <li>Over card in node view—Displays card type and card status</li> <li>Over card port in node view—Displays port number and port status</li> </ul>

## Node View Shortcuts

Table A-4 shows actions on ONS 15454 cards that you can perform by moving your mouse over the CTC window.

Table A-4 Performing Node View Card Shortcuts

Action	Shortcut
Display card information	<p>In node view, move your mouse over cards in the graphic to display tooltips with the card type, card status (active or standby), the highest level of alarm (if any), and the alarm profile used by the card.</p> <p>In card view, move your mouse over the card ports in the graphic to display tooltips with the port status (active or standby) and the alarm profile used by the port.</p>
Open, reset, or delete a card	In node view, right-click a card. Select <b>Open</b> to display the card in card view, <b>Reset</b> , to reset the card, or <b>Delete</b> to delete it.
Pre-provision a slot	In node view, right-click an empty slot. Select the card type that you want to provision the slot from the shortcut menu.
Change a card	In node view, right-click an OC-N card and select <b>Change Card</b> . On the Change Card dialog box, select the card type.

## Network View Tasks

Right-click the network view graphic area or a node, span, or domain to display shortcut menus. [Table A-5](#) lists the actions that are available from the network view.

**Table A-5 Performing Network Management Tasks in Network View**

Action	Task
Open a node	Any of the following: <ul style="list-style-type: none"> <li>• Double-click a node icon</li> <li>• Right-click a node icon, choose <b>Open Node</b> from the shortcut menu</li> <li>• Click a node and choose <b>Go to Selected Object View</b> from the CTC View menu</li> <li>• From the View menu, choose <b>Go To Other Node</b>. Select a node from the Select Node dialog box</li> <li>• Double-click a node alarm or event in the Alarms or History tabs</li> </ul>
Move a node icon	Press the <b>Ctrl</b> key and the left mouse button simultaneously and drag the node icon to a new location.
Reset node icon position	Right-click a node and choose <b>Reset Node Position</b> from the shortcut menu. The node icon moves to the position defined by the longitude and latitude fields on the Provisioning > General tabs in node view.
Provision a circuit	Right-click a node. From the shortcut menu, choose <b>Provision Circuit To</b> and select the node where you want to provision the circuit. For circuit creation procedures, see <a href="#">Chapter 6, “Create Circuits and VT Tunnels.”</a>
Update circuits with new node	Right-click a node and choose <b>Update Circuits With New Node</b> from the shortcut menu. Use this command when you add a new node and want to pass circuits through it.
Display a link end point	Right-click a span. On the shortcut menu, select <b>Go To [node/slot/port]</b> for the drop port you want to view. CTC displays the card in card view.
Display span properties	Any of the following: <ul style="list-style-type: none"> <li>• Move mouse over a span; properties near the span</li> <li>• Click a span; properties display in the upper left corner of the window</li> <li>• Right-click a span; properties display at the top of the shortcut menu</li> </ul>
Perform a UPSR protection switch for an entire span	Right-click a network span and click <b>Circuits</b> . On the Circuits on Span dialog box, switch options are displayed in the UPSR Span Switching field.
Upgrade a span	Right-click a span and choose <b>Upgrade Span</b> from the shortcut menu. <p><b>Note</b> For detailed span upgrade information and instructions, see <a href="#">Chapter 12, “Upgrade Cards and Spans.”</a></p>



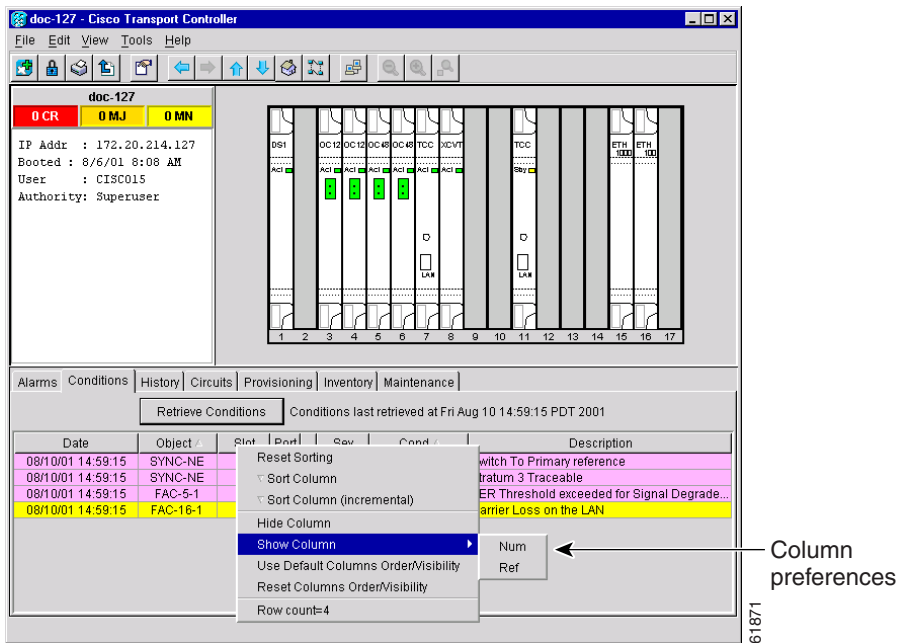
## Table Display Options

Table A-6 shows table display options, which include rearranging or hiding CTC table columns and sorting table columns by primary or secondary keys.

**Table A-6 Table Display Options**

<b>Task</b>	<b>Click</b>	<b>Right-Click Shortcut Menu</b>
Resize column	Left click while dragging the header separator to the right or left	N/A
Rearrange column order	Left click while dragging the column header to the right or left	N/A
Reset column order	N/A	Choose Reset Columns Order/Visibility
Hide column	N/A	Choose Hide Column
Display a hidden column	N/A	Choose Show Column>[column name]
Display all hidden columns	N/A	Choose Reset Columns Order/Visibility
Sort table (primary)	Click a column header; each click changes sort order (ascending or descending)	Choose Sort Column
Sort table (secondary sorting keys)	Press the Shift key and simultaneously click the column header	Choose Sort Column (incremental)
Reset sorting	N/A	Choose Reset Sorting
View table row count	N/A	View Row count; it is the last item on the shortcut menu

Figure A-2 The right-click table shortcut menu that customizes table appearance



## Equipment Inventory

In the Inventory tab of the node view, CTC stores equipment information, including:

- *Location*—Where the equipment is installed, either chassis or slot number
- *Eqpt Type*—The equipment type, for example, OC-12 or DS-1.
- *Actual Eqpt Type*—The actual equipment type, for example, OC48-IR-1
- *HW Part #*—Hardware part number; this number is printed on the top of the card or equipment piece.
- *HW Rev*—Hardware revision number
- *Serial #*—Equipment serial number; this number is unique to each card
- *CLEI Code*—Common Language Equipment Identifier code
- *Firmware Rev*—Revision number of the software used by the ASIC chip installed on the ONS 15454 cards

Figure A-3 Displaying ONS 15454 hardware information

Location	Eqpt Type	Actual Eqpt Type	HW Part #	HW Rev	Serial #	CLEI Code	Firmware Rev
Chassis	BACKPLANE_454	SA-NEBS3E	800-07149-01	C1	SCA0444034M	WMMMFM00DRA	
2	DS3XM	DS3XM-6	800-08720-01	A0	FAA04446789	SND1NT8GAA	76-99-00066-002a
3	DS1N	DS1N-14	800-06744-01	F0	FAA04389P8D	SNTUAAAAAB	76-99-00051-006a
4	OC3						
5	OC48	OC48-IR-1	87-32-00002	005C	012056	NOCLEI	76-99-00014-x02a
6	OC48	OC48-IR-1	87-32-00002	005C	007818	NOCLEI	76-99-00014-x02a
7	TCC	TCC+	800-07049-01	B0	FAA04489KNJ	WMC2703JAA	57-4327-02-A0
8	XCVT	XCVT	87-23-00002	003E	038056	NOCLEI	76-99-00068-004b
9	AIC	AIC	800-08706-01	B0	FAA04379PCC	263834	NOT APPLICABLE
10	XCVT	XCVT	800-06588-03	D0	FAA0442A1C5	SNUXZW0BAB	76-99-00068-004b
11	TCC	TCC+	800-07049-01	B0	FAA04519IBP	WMC2703JAA	57-4327-02-A0
12	OC48	OC48-LR-1550	800-08702-01	B1	FAA04460MMS	SNTUFCMBAA	76-99-00093-002a
13	OC48	OC48-ELR-1531.90	800-08725-01	B0	FAA04429GDL	WMT3XD0CAA	76-99-00093-002a
15	OC12	OC12-LR-1	800-08712-01	A1	FAA0447A8BD	SNTUFCNBAA	76-99-00011-004a
16	ETH100	E100T-12	800-08715-01	A0	FAA04489C57	SNP8EM9KAA	57-4504-01-A0
Chassis	FAN TRAY	FTA	RNN-07385-01	A0	FAA0441ARCK		

71553



## Shelf Assembly Specifications

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This section contains hardware and software specifications for the ONS 15454.

### Bandwidth

- Total bandwidth: 240 Gbps
- Data plane bandwidth: 160 Gbps
- SONET plane bandwidth: 80 Gbps

### Slot Assignments

- Total card slots: 17
- Multispeed slots (any traffic card except OC48 IR 1310, OC48 LR/ELR 1550, and OC192 LR 1550 cards): Slots 1–4, 14–17
- High-speed slots (any traffic card including OC48 IR 1310, OC48 LR/ELR 1550, and OC192 LR 1550 cards): Slots 5, 6, 12, 13
- TCC+ (Timing Communication and Control): Slots 7, 11
- XC/XCVT/XC10G (Cross Connect): Slots 8, 10
- AIC (Alarm Interface Card): Slot 9

### Cards

- TCC+
- XC
- XCVT
- XC10G
- AIC
- EC1-12
- DS1-14

- DS1N-14
- DS3-12
- DS3N-12
- DS3-12E
- DS3N-12E
- DS3XM-6
- OC3 IR 4 1310
- OC12 IR 1310
- OC12 LR 1310
- OC12 LR 1550
- Quad OC12
- OC48 IR 1310
- OC48 LR 1550
- OC48 IR/STM16 SH AS 1310
- OC48 LR/STM16 LH AS 1550
- OC192 LR 1550
- OC48 ELR 200 Ghz ITU
- OC48 ELR 100 Ghz ITU
- E100T-12
- E1000-2
- E100T-G
- E1000-2-G
- G1000-4

**Note**


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The OC-3, OC-12, OC-48, and E1000-2 cards are Class 1 laser products (IEC 60825-1 2001-01/Class I laser product (21CFR 1040.10 and 1040.11)).

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**Note**


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The OC-192 card is a Class 1M laser product ((IEC 60825-1 2001-01)/Class I laser product (21CFR 1040.10 and 1040.11)).

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## Configurations

- Two-fiber UPSR
- Path protected mesh network (PPMN)
- Two-fiber BLSR
- Four-fiber BLSR
- Add-drop multiplexer

- Terminal mode
- Regenerator mode

## Cisco Transport Controller

- 10 Base-T
- TCC+ access: RJ-45 connector
- Backplane access: LAN pin field

## External LAN Interface

- 10 Base-T Ethernet
- Backplane access: LAN pin field

## TL1 Craft Interface

- Speed: 9600 bps
- TCC+ access: RS-232 DB-9 type connector
- Backplane access: CRAFT pin field

## Modem Interface

- Hardware flow control
- TCC+: RS-232 DB-9 type connector

## Alarm Interface

- Visual: Critical, Major, Minor, Remote
- Audible: Critical, Major, Minor, Remote
- Alarm contacts: 0.045mm, -48V, 50 mA
- Backplane access: Alarm pin fields

## EIA Interface

- SMB: AMP #415504-3 75 Ohm 4 leg connectors
- BNC: Trompeter #UCBJ224 75 Ohm 4 leg connector (King or ITT are also compatible)
- AMP Champ: AMP#552246-1 with #552562-2 bail locks

# Nonvolatile Memory

64 MB, 3.0V FLASH memory

## BITS Interface

- 2 DS-1 BITS inputs
- 2 derived DS-1 outputs
- Backplane access: BITS pin field

## System Timing

- Stratum 3 per Telcordia GR-253-CORE
- Free running accuracy:  $\pm 4.6$  ppm
- Holdover stability:  $3.7 \times 10^{-7}$ /day, including temperature (< 255 slips in first 24 hours)
- Reference: External BITS, line, internal

## Power Specifications

- Input power: -48 VDC
- Power consumption: 55W (fan tray only); 650W (maximum draw w/cards)
- Power requirements: -42 to -57 VDC
- Power terminals: #6 Lug
- ANSI shelf: 100 Amp fuse panel (minimum 30 Amp fuse per shelf)  
NEBS3 shelf: 80 Amp fuse panel (minimum 20 Amp fuse per shelf)

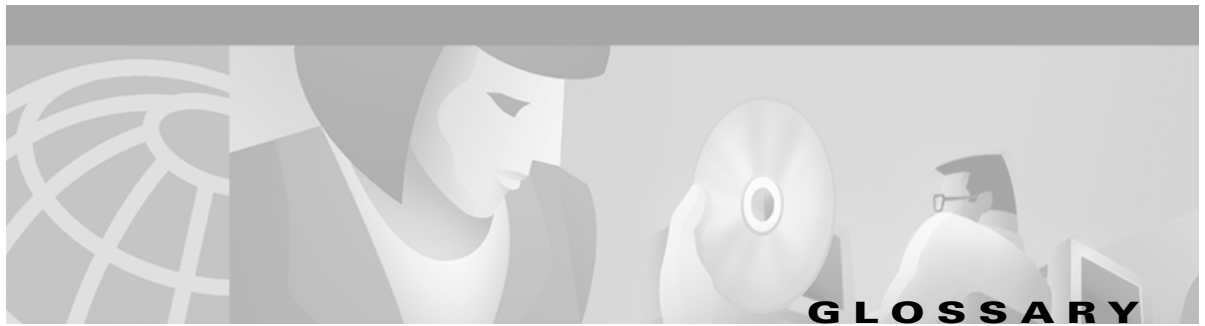
## Environmental Specifications

- Operating Temperature: 0 to +55 degrees Celsius; -40 to +65 degrees Celsius with industrial temperature rated cards
- Operating Humidity: 5 - 95%, non-condensing

## Dimensions

- Height: 18.5 inches (40.7 cm)
- Width: 19 or 23 inches (41.8 or 50.6 cm) with mounting ears attached
- Depth: 12 inches (26.4 cm) (5 inch projection from rack)
- Weight: 55 lbs. (empty)





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## Numerics

### 1:1 protection

An electrical card protection scheme that pairs a working card with a protect card of the same type in an adjacent slot (DS-1 and DS-3 speeds). If the working card fails, the traffic from the working card switches to the protect card. When the failure on the working card is resolved, traffic reverts to the working card.

### 1+1 protection

An optical (OC-N) card protection scheme that pairs a single working port/card with a single dedicated protect port/card. All OC-N cards can use this protection type (OC-3, OC-12, OC-48, and OC-192 speeds).

### 1:N protection

An electrical card protection scheme that allows a single protect card to provide protection for several working cards (DS-1 and DS-3 speeds). If a working card fails, the traffic from the working card switches to the protect card. When the failure on the working card is resolved, traffic reverts to the working card.

### 10BaseT

Standard 10 Mbps local area network over unshielded twisted pair copper wire.

### 100BaseT

Standard 100 Mbps local ethernet network.

### 100BaseTX

Specification of 100BaseT that supports full duplex operation.

---

## A

### Access drop

Points where network devices can access the network.

### ACO

Alarm cutoff.

### Active card

A card that is working or carrying traffic. A card provisioned as working can be an active card or, after a protection switch, a protect card can be an active card.

**ACT/STBY**

Active/Standby.

**Address mask**

Bit combination used to describe the portion of an IP address that refers to the network or subnet and the portion that refers to the host. Sometimes referred to as mask. See also *subnet mask*.

**ADM**

(Add/drop multiplexers). Linear ADMs allow signals to be added to a SONET span or dropped from a SONET span. An ADM has three or more nodes.

**Agent**

1. Generally, software that processes queries and returns replies on behalf of an application.
2. In a network management system, a process that resides in all managed devices and reports the values of specified variables to management stations.

**AIC**

Alarm Interface Controller.

**AID**

(Access Identifier). An access code used in TL1 messaging that identifies and addresses specific objects within the ONS 15454. These objects include individual pieces of equipment, transport spans, access tributaries, and others. See also *TID*.

**AIP**

Alarm Interface Panel.

**AIS**

Alarm Indication Signal.

**AIS-L**

Line Alarm Indication Signal.

**AMI**

(Alternate Mark Inversion). Line-code format used on T1 circuits that transmits ones by alternate positive and negative pulses. Zeroes are represented by 01 during each bit cell and ones are represented by 11 or 00, alternately, during each bit cell. AMI requires that the sending device maintain ones density. Ones density is not maintained independently of the data stream. Sometimes called binary-coded alternate mark inversion.

**ANSI**

American National Standards Institute.

**APS**

(Automatic Protection Switching). SONET switching mechanism that routes traffic from working lines to protect lines if a line card failure or fiber cut occurs.

**ARP**

Address Resolution Protocol.

**APSB**

Alarm Protection Switching Byte.

**ATAG**

(Autonomous Message Tag). ATAG is used for TL1 message sequencing. See also *CTAG*.

**ATM**

Asynchronous Transfer Mode.

**AWG**

American Wire Gauge

---

**B****B8ZS**

(Binary 8-zero Substitution). A line-code type, used on T1 circuits, that substitutes a special code whenever 8 consecutive zeros are sent over the link. This code is then interpreted at the remote end of the connection. This technique guarantees ones density independent of the data stream. Sometimes called bipolar 8-zero substitution.

**Backbone**

The part of the network that carries the heaviest traffic or joins LANs together.

**BER**

(Bit Error Rate). Ratio of received bits that contain errors.

**BIC**

Backplane Interface Connector.

**BIP**

Bit Interleaved Parity.

**Bit rate**

Speed at which bits are transmitted, usually expressed in bits per second.

**BITS**

(Building Integrated Timing Supply). A single building master timing supply that minimizes the number of synchronization links entering an office. Sometimes referred to as a Synchronization Supply Unit.

**BLSR**

(Bidirectional Line Switched Ring). SONET ring architecture that provides working and protection fibers between nodes. If the working fiber between nodes is cut, traffic is automatically routed onto the protection fiber. See also *UPSR*.

**Blue band**

Dense Wavelength Division Multiplexing (DWDM) wavelengths are broken into two distinct bands: red and blue. DWDM cards for the ONS 15454 SDH operate on wavelengths between 1530.33nm and 1542.94nm in the blue band. The blue band is the lower frequency band.

**BNC**

Bayonet Neill-Concelman (coaxial cable bayonet-locking connector).

**BPDU**

Bridge Protocol Data Unit.

**Bridge**

Device that connects and passes packets between two network segments that use the same communications protocol. In general, a bridge will filter, forward, or flood an incoming frame based on the MAC address of that frame. See also *MAC address*.

**Broadcast**

Data packet that will be sent to all nodes on a network. Broadcasts are identified by a broadcast address. Compare with *multicast* and *unicast*. See also *Broadcast address*.

**Broadcast address**

Special address reserved for sending a message to all stations. Generally, a broadcast address is a MAC destination address of all ones. See also *MAC address*.

**Broadcast storm**

Undesirable network event in which many broadcasts are sent simultaneously across all network segments. A broadcast storm uses substantial network bandwidth and, typically, causes network time-outs.

**Bus**

Common physical signal path composed of wires or other media across which signals can be sent from one part of a computer to another.

---

**C****C2 byte**

The C2 byte is the signal label byte in the STS path overhead. This byte tells the equipment what the SONET payload envelope contains and how it is constructed. See also *SONET*.

**CAT 5**

Category 5 (cabling).

**CCITT**

Comité Consultatif International Télégraphique et Téléphoniques. (Formerly ITU.)

**CEO**

Central Office Environment.

**CEV**

Controlled Environment Vaults.

**CLEI**

Common Language Equipment Identifier code.

**CLNP**

Correctionless Network Protocol.

**cm**

Centimeter.

**CMIP**

Common Management Information Protocol.

**COE**

Central Office Environment.

**Collision**

In Ethernet, the result of two nodes transmitting simultaneously. The frames from each device impact and are damaged when they meet on the physical media.

**Concatenation**

A mechanism for allocating contiguous bandwidth for payload transport. Through the use of Concatenation Pointers, multiple OC-1s can be linked together to provide contiguous bandwidth through the network, from end to end.

**CORBA**

Common Object Request Broker Architecture.

**CPE**

Customer Premise Environments.

**Crosspoint**

A set of physical or logical contacts that operate together to extend the speech and signal channels in a switching network.

**CTAG**

(Correlation Tag). A unique identifier given to each input command by the TL1 operator. When the ONS 15454 system responds to a specific command, it includes the command's CTAG in the reply. This eliminates discrepancies about which response corresponds to which command. See also *ATAG*.

**CTC**

(Cisco Transport Controller). A Java-based graphical user interface (GUI) that allows operations, administration, maintenance, and provisioning (OAM&P) of the ONS 15454 using an Internet browser.

**CTM**

(Cisco Transport Manager). A Java-based network management tool used to support large networks of Cisco 15000-class D

**DCC**

(Data Communications Channel). Used to transport information about operation, administration, maintenance, and provisioning (OAM&P) over a SONET interface. DCC can be located in SDCC or LDCC. See also *LDCC* and *SDCC*.

**DCN**

Data Communications Network.

**DCS**

Distributed Communications System.

**Default router**

If the ONS 15454 must communicate with a device on a network to which the ONS 15454 is not connected, packets are sent to this router to be distributed.

**Demultiplex**

To separate multiple multiplexed input streams from a common physical signal back into multiple output streams. Compare *Multiplexing*.

**Destination**

The endpoint where traffic exits an ONS 15454 network. Endpoints can be paths (STS or STS/VT for optical card endpoints), ports (for electrical circuits, such as DS1, VT, DS3, STS), or cards (for circuits on DS1 and Ethernet cards). See also STS, and VT.

**DRAM**

Dynamic Random-Access Memory.

**Drop**

See *Destination*.

**DS-1**

Digital Signal Level One.

**DS1-14**

Digital Signal Level One (14 ports).

**DS1N-14**

Digital Signal Level One (N-14 ports).

**DS-3**

Digital Signal Level Three.

**DS3-12**

Digital Signal Level Three (12 ports).

**DS3N-12**

Digital Signal Level Three (N-12 ports).

**DS3XM-6**

Digital Service, level 3 Trans-Multiplexer 6 ports.

**DSX**

(Digital Signal Cross-Connect Frame). A manual bay or panel where different electrical signals are wired. A DSX permits cross-connections by patch cords and plugs.

**DWDM**

(Dense Wave Division Multiplexing). A technology that increases the information carrying capacity of existing fiber optic infrastructure by transmitting and receiving data on different light wavelengths. Many of these wavelengths can be combined on a single strand of fiber.

---

**E****EDFA**

(Erbium Doped Fiber Amplifier). A type of fiber optical amplifier that transmits a light signal through a section of erbium-doped fiber and amplifies the signal with a laser pump diode. EDFA is used in transmitter booster amplifiers, in-line repeating amplifiers, and in receiver preamplifiers.

**EFCA**

Electrical Facility Connection Assembly.

**EFT**

Electrical Fast Transient/Burst.

**EIA**

(Electrical Interface Assemblies). Provides backplane connection points for the DS-1, DS-3, and EC-1 cards.

**ELR**

Extended Long Reach.

**EMC**

Electromagnetic compatibility.

**EMI**

(Electromagnetic Interference). Interference by electromagnetic signals that can cause reduced data integrity and increased error rates on transmission channels.

**EML**

Element Manager Layer.

**EMS**

Element Management System.

**Envelope**

The part of messaging that varies in composition from one transmittal step to another. It identifies the message originator and potential recipients, documents its past, directs its subsequent movement by the Message Transfer System (MTS), and characterizes its content.

**EOW**

(Engineered Orderwire). A permanently connected voice circuit between selected stations for technical control purposes.

**ERDI**

Enhanced Remote Defect Indicator.

**ES**

Errored Seconds.

**ESD**

Electrostatic Discharge.

**ESF**

Extended Super Frame.

**Ethernet switch**

A type of Ethernet LAN device that increases aggregate LAN bandwidth by allowing simultaneous switching of packets between switch ports. Ethernet switches subdivide previously shared LAN segments into multiple networks with fewer stations per network.

**ETSI**

European Telecommunications Standards Institute.

**Extended SNCP**

(Extended Subnetwork Connection Protection). Extended SNCP extends the protection scheme of a subnetwork connection protection ring (SNCP) beyond the basic ring configuration to the meshed architecture of several interconnecting rings. See *SNCP*.

**External timing reference**

A timing reference obtained from a source external to the communications system, such as one of the navigation systems. Many external timing references are referenced to Coordinated Universal Time (UTC).



---

**F****Falling threshold**

A falling threshold is the counterpart to a rising threshold. When the number of occurrences drops below a falling threshold, this triggers an event to reset the rising threshold. See also *rising threshold*.

**FC**

Failure count.

**FDDI**

(Fiber Distributed Data Interface). LAN standard, defined by ANSI X3T9.5, specifying a 100-Mbps token-passing network using fiber optic cable, with transmission distances of up to 2 km. FDDI uses a dual-ring architecture to provide redundancy.

**FE**

Frame Bit Errors.

**FG1**

Frame Ground #1 (pins are labeled “FG1,” “FG2,” etc.)

**FMEC**

Front Mount Electrical Connection.

**Frame**

Logical grouping of information sent as a data link layer unit over a transmission medium. Often refers to the header and trailer, used for synchronization and error control that surrounds the user data contained in the unit.

**FSB**

Field Service Bulletin.

---

**G****Gateway**

An electronic repeater device that intercepts and steers electrical signals from one network to another.

**GBIC**

(Gigabit Interface Converter). A hot-swappable input/output device that plugs into a Gigabit Ethernet port to link the port with the fiber optic network.

**Gbps**

Gigabits per second.

**GBps**

Gigabytes per second.

### **GR-153-CORE**

General Requirements #253 Council of Registrars.

### **GR-1089**

General Requirements #1089.

### **GUI**

Graphical User Interface.

---

## **H**

### **Hard reset**

The physical removal and insertion of a TCC+ card, also known as reseating a card or performing a card pull.

### **HDLC**

(High-Level Data Link Control). Bit-oriented, synchronous, data-link layer protocol developed by ISO. HDLC specifies a data encapsulation method on synchronous serial links using frame characters and checksums.

### **high-speed slots**

Slots 5, 6, 12 and 13 in the ONS 15454 shelf. High-speed slots can host all ONS 15454 traffic cards except the four-port OC-12 card (OC12/STM4-4 card). See also *multispeed slots*.

### **Host number**

Part of IP address used to address an individual host within the network or subnetwork.

### **Hot swap**

The process of replacing a failed component while the rest of the system continues to function normally.

---

## **I**

### **IEC**

1. InterExchange Carrier.
2. International Electrotechnical Commission.

### **IEEE**

Institute of Electrical and Electronics Engineers.

### **IETF**

Internet Engineering Task Force.

### **Input alarms**

Used for external sensors such as open doors, temperature sensors, flood sensors, and other environmental conditions.

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**I/O**

Input/Output.

**IP**

(Internet Protocol). Network layer protocol in the TCP/IP stack offering a connectionless internetwork service. IP provides features for addressing, type-of-service specification, fragmentation and reassembly, and security.

**IPPM**

Intermediate-Path Performance Monitoring.

**IP address**

32-bit address assigned to host using TCP/IP. An IP address belongs to one of five classes (A, B, C, D, or E) and is written as 4 octets separated by periods (dotted decimal format). Each address consists of a network number, an optional subnetwork number, and a host number.

**ITU-T**

International Telecommunication Union - Telecommunication Standards Sector.

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**J****JRE**

Java Runtime Environment.

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**K****K bytes**

Automatic protection-switching bytes located in the SONET line overhead and monitored by equipment for an indication to switch to protection.

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**L****LAN**

(Local Area Network). High-speed, low error data network covering a relatively small geographic area. LANs connect workstations, peripherals, terminals, and other devices in a single building or other geographically limited area. Ethernet, FDDI, and Token Ring are widely used LAN technologies.

**LCD**

(Liquid Crystal Display). An alphanumeric display using liquid crystal sealed between two pieces of glass. LCDs conserve electricity.

**LDCC**

Line Data Communication Channel.

**Line layer**

Refers to the segment between two SONET devices in the circuit. The line layer deals with SONET payload transport, and its functions include multiplexing and synchronization. Sometimes called a maintenance span.

**Line terminating equipment (LTE)**

Refers to line cards which terminate the line signal in the ONS 15454.

**Line timing mode**

A node that derives its clock from the SONET lines.

**Link budget**

The difference between the output power and receiver power of an optical signal expressed in dB. Link refers to an optical connection and all of its component parts (optical transmitters, repeaters, receivers, and cables).

**Link integrity**

The network communications channel has link integrity if it is intact.

**LOF**

Loss of Frame.

**Loopback test**

Test that sends signals then directs them back toward their source from some point along the communications path. Loopback tests are often used to test network interface usability.

**LOP**

Loss of Pointer.

**LOS**

Loss of Signal.

**LOW**

(Local Orderwire). A communications circuit between a technical control center and selected terminal or repeater locations.

**LTE**

Line Terminating Equipment.

**LVDS**

Low-Voltage Differential Signal.

---

**M****MAC**

Media Access Control.

**MAC address**

Standardized data link layer address that is required for every port or device that connects to a LAN. Other devices in the network use these addresses to locate specific ports in the network and to create and update routing tables and data structures. MAC addresses are six bytes long and are controlled by the IEEE. Also known as the hardware address, MAC-layer address, and physical address.

**Maintenance user**

A security level that limits user access to maintenance options only. See also *Superuser*, *Provisioning User*, and *Retrieve User*.

**Managed device**

A network node that contains an SNMP agent and resides on a managed network. Managed devices include routers, access servers, switches, bridges, hubs, computer hosts, and printers.

**Managed object**

In network management, a network device that can be managed by a network management protocol. Sometimes called an MIB object.

**Mapping**

A logical association between one set of values, such as addresses on one network, with quantities or values of another set, such as devices on another network.

**Mbps**

Megabits per second.

**MBps**

Megabytes per second.

**MHz**

Megahertz.

**MIB**

(Management Information Base). Database of network management information that is used and maintained by a network management protocol such as SNMP or CMIP. The value of a MIB object can be changed or retrieved using SNMP or CMIP commands, usually through a GUI network management system. MIB objects are organized in a tree structure that includes public (standard) and private (proprietary) branches.

**MIME**

Multipurpose Internet Mail Extensions.

**MS**

Multiplex Section.

**MS-FERF**

Multiplex Section Far-end Receive Failure.

**MSP**

Multiplex Section Protection.

**MS-SPRing**

(Multiplex Section Shared Protection Ring.) SDH ring architecture that provides working and protection fibers between nodes. If the working fiber between nodes is cut, traffic is automatically rerouted onto the protection fiber.

**Multicast**

Single packets copied by the network and sent to a specific subset of network addresses.

**Multiplex payload**

Generates section and line overhead, and converts electrical/optical signals when the electrical/optical card is transmitting.

**Multiplexing**

Scheme that allows multiple signals to be transmitted simultaneously across a single physical channel. Compare *Demultiplex*.

**Multispeed slots**

Slots 1 through 4 and 14 through 17 in the ONS 15454 shelf. Multispeed slots can host any ONS 15454 traffic card except the non-AS (any-slot) OC-48s and the OC-192 card. The OC-48 AS (any-slot) card can use a multispeed slot (the OC48IR 1310, OC48LR 1550, and OC48ELR 1550 cannot). See also *multispeed slots*.

**Mux/Demux**

Multiplexer/Demultiplexer.

**Muxed**

Multiplexed. See *Multiplexing*.

---

**N**

**NE**

(Network Element). In an Operations Support System, a single piece of telecommunications equipment used to perform a function or service integral to the underlying network.

**NEBS**

Network Equipment-Building Systems.

**NEL**

Network Element Layer.

**Network number**

Part of an IP address that specifies the network where the host belongs.

**NML**

Network Management Layer.

**NMS**

(Network Management System). System that executes applications that monitor and control managed devices. NMSs provide the bulk of the processing and memory resources required for network management.

**Node**

Endpoint of a network connection or a junction common to two or more lines in a network. Nodes can be processors, controllers, or workstations. Nodes, which vary in routing and other functional capabilities, can be interconnected by links, and serve as control points in the network. Node is sometimes used generically to refer to any entity that can access a network. In this manual the term “node” usually refers to an ONS 15454.

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**O****OAM&P**

(Operations, Administration, Maintenance, and Provisioning). Provides the facilities and personnel required to manage a network.

**OC**

Optical carrier.

**OOS AS**

Out of Service Assigned.

**Optical amplifier**

A device that amplifies an optical signal without converting the signal from optical to electrical and back again to optical energy.

**Optical receiver**

An opto-electric circuit that detects incoming lightwave signals and converts them to the appropriate signal for processing by the receiving device.

**Orderwire**

Equipment that establishes voice contact between a central office and carrier repeater locations. See *Local orderwire*.

**OSI**

Open Systems Interconnection.

**OSPF**

Open Shortest Path First.

**OSS**

Operations Support System.

**OSS/NMS**

Operations Support System/Network Management System.

### **Output contacts (controls)**

Triggers that drive visual or audible devices such as bells and lights. Output contacts can control other devices such as generators, heaters, and fans.

---

## **P**

### **Passive devices**

Components that do not require external power to manipulate or react to electronic output. Passive devices include capacitors, resistors, and coils.

### **Path Layer**

The segment between the originating equipment and the terminating equipment. This path segment may encompass several consecutive line segments or segments between two SONET devices.

### **Payload**

Portion of a cell, frame, or packet that contains upper-layer information (data).

### **PCM**

Pulse Code Modulation.

### **PCMCIA**

Personal Computer Memory Card International Association.

### **PCN**

Product Change Notice(s).

### **PDI-P**

STS Payload Defect Indication - Path.

### **Ping**

(Packet internet grouper). ICMP echo message and its reply. Often used in IP networks to test the reachability of a network device.

### **Pointer justification**

In SONET, the mechanism used to compensate for frequency and phase variations. Pointer justification counts indicate timing errors on SONET networks.

### **POP**

Point of Presence.

### **PM**

Performance Monitoring.



**PPMN**

(Path-Protected Mesh Network). PPMN extends the protection scheme of a unidirectional path switched ring (UPSR) beyond the basic ring configuration to the meshed architecture of several interconnecting rings.

**Priority queuing**

Routing feature that divides data packets into two queues: one low-priority and one high-priority.

**Protect card**

A card in a protection pair or scheme that is provisioned as a protect card to the working card. If the working card fails, the protect card becomes active. See also *working card*.

**Provisioning user**

A security level that allows the user to access only provisioning and maintenance options in CTC. See also *Superuser*, *Maintenance user*, and *Retrieve user*.

**PSC**

Protection-Switching Count.

**PSD**

Protection-Switching Duration.

**PTE**

Path-Terminating Equipment.

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**Q****Queue**

In routing, a backlog of packets waiting to be forwarded over a router interface.

---

**R****RAM**

Random Access Memory.

**RDI-L**

Remote Defect Indication - Line.

**Red band**

DWDM wavelengths are broken into two distinct bands: red and blue. The red band is the higher frequency band. The red band DWDM cards for the ONS 15454 SDH operate on wavelengths between 1547.72nm and 1560.61nm.

**RES**

Reserved.

**Retrieve user**

A security level that allows the user to retrieve and view CTC information but not set or modify parameters. See also *Superuser*, *Maintenance user*, and *Provisioning user*.

**Revertive switching**

A process that sends electrical interfaces (traffic) back to the original working card after the card comes back online.

**Rising threshold**

The number of occurrences (collisions) that must be exceeded to trigger an event.

**RJ-45**

Registered Jack #45 (8-pin).

**RMA**

Return Materials Authorization.

**RMON**

(Remote Network Monitoring). Allows network operators to monitor the health of the network with a Network Management System (NMS). RMON watches several variables, such as Ethernet collisions, and triggers an event when a variable crosses a threshold in the specified time interval.

**RS-232**

Recommended Standard #232 (ANSI Electrical Interface for Serial Communication).

**Rx**

Receive.

---

**S****SCI**

Serial Communication Interface.

**SCL**

System Communications Link.

**SDCC**

Section Data Communication Channel.

**SDH**

(Synchronous Digital Hierarchy). European standard that defines a set of rate and format standards that are transmitted using optical signals over fiber. SDH is similar to SONET, with a basic SDH rate of 155.52 Mbps. Compare *SONET*.

**SEF**

Severely Errored Frame.

**SELV**

Safety Extra-Low Voltage.

**SES**

Severely Errored Seconds.

**SF**

Super Frame.

**SML**

Service Management Layer.

**SMF**

Single Mode Fiber.

**SNCP**

(Subnetwork Connection Protection Ring). Path-switched SDH rings that employ redundant, fiber-optic transmission facilities in a pair configuration. One fiber transmits in one direction and the backup fiber transmits in the other. If the primary ring fails, the backup takes over.

**SNMP**

(Simple Network Management Protocol). Network management protocol used almost exclusively in TCP/IP networks. SNMP monitors and controls network devices and manages configurations, statistics collection, performance, and security.

**SNTP**

(Simple Network Time Protocol). Using an SNTP server ensures that all ONS 15454 network nodes use the same date and time reference. The server synchronizes alarm timing during power outages or software upgrades.

**Soft reset**

A soft reset reloads the operating system, application software, etc., and reboots the TCC+ card. It does not initialize the ONS 15454 ASIC hardware.

**SONET**

(Synchronous Optical Network). High-speed synchronous network specification developed by Telcordia Technologies, Inc. and designed to run on optical fiber. STS-1 is the basic building block of SONET. Approved as an international standard in 1988.

**Source**

The endpoint where traffic enters an ONS 15454 network. Endpoints can be a path (STS or STS/VT for optical card endpoints), port (for electrical circuits, such as DS1, VT, DS3, STS), or card (for circuits on DS1 and Ethernet cards). See also *STS* and *VT*.

**Span**

An optical path between two nodes.

**Spanning tree**

A loop-free subset of a network topology. See also *STA* and *STP*.

**SPE**

(Synchronous Payload Envelope). A SONET term describing the envelope that carries the user data or payload.

**SSM**

(Synchronous Status Messaging). A SONET protocol that communicates information about the quality of the timing source using the S1 byte of the line overhead.

**STA**

(Spanning-Tree Algorithm). An algorithm used by the spanning tree protocol to create a spanning tree. See also *Spanning tree* and *STP*.

**Standby card**

A card that is not active or carrying traffic. A standby card can be a protect card or, after a protection switch, a working card can be a standby card.

**Static route**

A route that is manually entered into a routing table. Static routes take precedence over routes chosen by all dynamic routing protocols.

**STP**

1. Shielded Twisted Pair.
2. Spanning Tree Protocol. Bridge protocol that uses the spanning-tree algorithm to enable a learning bridge to dynamically work around loops in a network topology by creating a spanning tree. See also *Spanning tree* and *STA*.

**STS**

(Synchronous Transport Signal, used generically when speaking of SONET signals.)

**STS-1**

(Synchronous Transport Signal Level 1). Basic building block signal of SONET, operating at 51.84 Mbps for transmission over OC-1 fiber. Faster SONET rates are defined as STS- $n$ , where  $n$  is a multiple of 51.84 Mbps. See also *SONET*.

**Subnet mask**

32-bit address mask used in IP to indicate the bits of an IP address that are used for the subnet address. Sometimes referred to simply as mask. See also *IP address mask* and *IP address*.

**Subnetwork**

In IP networks, a network confined to a particular subnet address. Subnetworks are networks segmented by a network administrator in order to provide a multilevel, hierarchical routing structure while shielding the subnetwork from the addressing complexity of attached networks. Sometimes called a subnet.

**Subtending rings**

SONET rings that incorporate nodes that are also part of an adjacent SONET ring.

**Superuser**

A security level that can perform all of the functions of the other security levels as well as set names, passwords, and security levels for other users. A superuser is usually the network element administrator. See also *Retrieve user*, *Maintenance user*, and *Provisioning user*.

**SWS**

SONET WAN switch.

**SXC**

SONET Cross Connect ASIC.

---

**T****T1**

T1 transmits DS-1-formatted data at 1.544 Mbps through the telephone-switching network using AMI or B8ZS coding. See also *AMI*, *B8ZS*, and *DS-1*.

**TAC**

Technical Assistance Center.

**Tag**

Identification information, including a number plus other information.

**TBOS**

Telemetry Byte-Oriented Serial protocol.

**TCA**

Threshold Crossing Alert.

**TCC+**

Timing Communications and Control + Card

**TCP/IP**

Transmission Control Protocol/Internet Protocol

**TDM**

(Time Division Multiplexing). Allocates bandwidth on a single wire for information from multiple channels based on preassigned time slots. Bandwidth is allocated to each channel regardless of whether the station has data to transmit.

**TDS**

Time-Division Switching.

**Telcordia**

(Telcordia Technologies, Inc., formerly named Bellcore). Eighty percent of the U.S. telecommunications network depends on software invented, developed, implemented, or maintained by Telcordia.

**TID**

(Target Identifier). Identifies the particular network element (in this case, the ONS 15454) where each TL1 command is directed. The TID is a unique name given to each system at installation. See also *AID*.

**TL1**

Transaction Language 1.

**TLS**

(Transparent LAN Service). Provides private network service across a SONET backbone.

**TMN**

Telecommunications Management Network.

**Transponder**

Optional devices of a DWDM system providing the conversion of one optical wavelength to a precision narrow band wavelength. See also *DWDM*.

**Trap**

Message sent by an SNMP agent to an NMS (CTM), console, or terminal to indicate the occurrence of a significant event, such as an exceeded threshold. See also *CTM*.

**Tributary**

The lower-rate signal directed into a multiplexer for combination (multiplexing) with other low rate signals to form an aggregate higher rate level.

**Trunk**

Network traffic travels across this physical and logical connection between two switches. A backbone is composed of a number of trunks. See also *Backbone*.

**TSA**

Time-Slot Assignment.

**TSI**

Time-Slot Interchange.

**Tunneling**

Architecture that is designed to provide the services necessary to implement any standard point-to-point encapsulation scheme.

**Tx**

Transmit.

---

**U****UAS**

Unavailable Seconds.

**UDP/IP**

User Datagram Protocol/Internet Protocol.

**UID**

User Identifier.

**Unicast**

The communication of a single source to a single destination.

**UPSR**

(Unidirectional Path Switched Ring). Path-switched SONET rings that employ redundant, fiber-optic transmission facilities in a pair configuration. One fiber transmits in one direction and the backup fiber transmits in the other. If the primary ring fails, the backup takes over. See also *BLSR*.

**Upstream**

Set of frequencies used to send data from a subscriber to the head end.

**UTC**

Universal-Time Coordinated.

**UTP**

Unshielded Twisted Pair.

---

**V****VDC**

Volts Direct Current.

**Virtual fiber**

A fiber that carries signals at different rates and uses the same fiber optic cable.

**Virtual ring**

Entity in a source-route bridging (SRB) network that logically connects two or more physical rings together either locally or remotely. The concept of virtual rings can be expanded across router boundaries.

**Virtual wires**

Virtual wires route external alarms to one or more alarm collection centers across the SONET transport network.

**VLAN**

(Virtual LAN). Group of devices located on a number of different LAN segments that are configured (using management software) to communicate as if they were attached to the same wire. Because VLANs are based on logical instead of physical connections, they are extremely flexible.

**VPN**

(Virtual Private Network). Enables IP traffic to travel securely over a public TCP/IP network by encrypting all traffic from one network to another. A VPN uses “tunneling” to encrypt all information at the IP level. See also *Tunneling*.

**VT**

(Virtual Tributary). A structure designed for the transport and switching of sub-DS3 payloads. See also *Tributary*.

**VT1.5**

Virtual Tributary that equals 1.544 Mbps.

**VT layer**

The VT layer or electrical layer occurs when the SONET signal is broken down into an electrical signal.

**VT tunnel**

VT tunnels allow electrical circuits to pass through ONS 15454 nodes without using ONS 15454 cross-connect card capacity.

---

**W****W**

Watts.

**WAN**

Wide Area Network.

**Working card**

A card that is provisioned as an active, primary card. Traffic cards in a protection pair are provisioned as working or protect. See also *Protect card*.

---

**X****XC**

Cross Connect

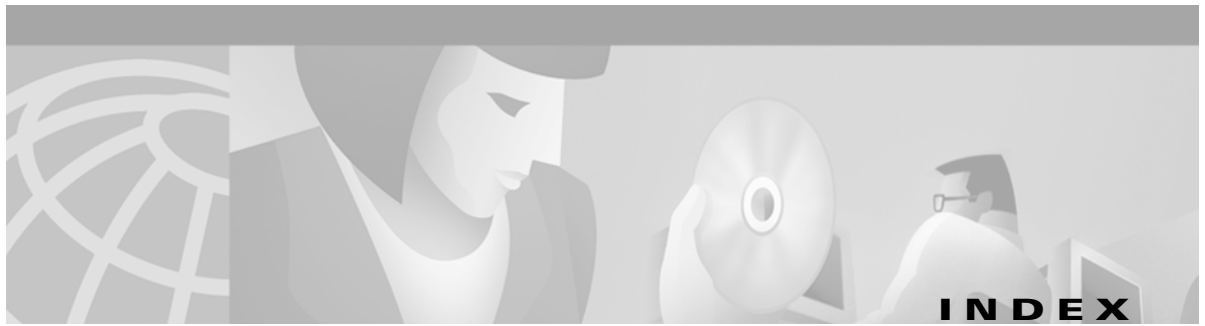
**XCVT**

Cross Connect Virtual Tributary.

**X.25**

Protocol providing devices with direct connections to a packet-switched network.





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