CHAPTER 7

Manage Circuits

This chapter explains how to manage Cisco ONS 15310-CL and ONS 15310-MA electrical, optical, and Ethernet circuits. To create circuits, see Chapter 6, "Create Circuits and VT Tunnels."

Before You Begin

To clear any alarm or trouble conditions, refer to the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Troubleshooting Guide*.

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

1. NTP-C69 Locate and View Circuits, page 7-2—Complete as needed.
2. NTP-C70 View Cross-Connect Resource Usage, page 7-2—Complete as needed.
3. NTP-C71 Modify and Delete Circuits, page 7-3—Complete as needed to edit a circuit name; change the active and standby colors of spans; change signal fail thresholds, signal degrade thresholds, reversion time, and payload defect indication path (PDI-P) settings for path protection circuits; or add or delete a virtual concatenated (VCAT) member.
4. NTP-C72 Modify and Delete Overhead Circuits and Server Trails, page 7-4—Complete as needed to change a tunnel type, repair an IP circuit, or delete overhead circuits and server trails.
5. NTP-C73 Create a Monitor Circuit, page 7-4—Complete as needed to monitor traffic on primary bidirectional circuits.
6. NTP-C144 Create a J0 Section Trace, page 7-5—Complete as needed to monitor interruptions or changes to circuit traffic.
7. NTP-C74 Create a J1 Path Trace, page 7-7—Complete as needed to monitor interruptions or changes to circuit traffic.
8. NTP-C75 Create a J2 Path Trace, page 7-7—Complete as needed to monitor interruptions or changes to circuit traffic on the CE-100T-8 card.
9. NTP-C129 Bridge and Roll Traffic, page 7-10—Complete as needed to reroute live traffic without interrupting service.
10. NTP-C76 Reconfigure Circuits, page 7-11—Complete as needed to reconfigure (rebuild) circuits.
11. NTP-C77 Merge Circuits, page 7-11—Complete as needed to merge two circuits into a master circuit.

NTP-C69 Locate and View Circuits

Purpose	This procedure allows you to locate and view ONS 15310-CL and ONS 15310-MA circuits. You can also export circuit data from the Circuits and Edit Circuits windows.
Tools/Equipment	None
Prerequisite Procedures	Circuit creation procedures in Chapter 6, "Create Circuits and VT Tunnels."
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 on a node in the network where you want to view the circuits. If you are already logged in, continue with Step 2.

Step 2 As needed, complete the "DLP-C107 View Circuit Information" task on page 18-12.

Step 3 As needed, complete the "DLP-C78 Search for Circuits" task on page 17-97.

Step 4 As needed, complete the "DLP-C109 Filter the Display of Circuits" task on page 18-14.

Step 5 As needed, complete the "DLP-C110 View Circuits on a Span" task on page 18-16.

Step 6 As needed, complete the "DLP-C223 Export CTC Data" task on page 19-20.

Stop. You have completed this procedure.

NTP-C70 View Cross-Connect Resource Usage

Purpose	This procedure displays the percentage of cross-connect resources used by circuits that traverse or terminate at an ONS 15310-CL or ONS 15310-MA.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 at the node where you want to view the cross-connect card resource usage. If you are already logged in, continue with Step 2.

Step 2 Click the **Maintenance > Cross-Connect > Resource Usage** tabs.

Step 3 In the Summary section of the Resources Usage tab, view the following information:

- STS-1 Matrix—Provides the percent of the cross-connect synchronous transport signal (STS) resources that are used. For the 15310-CL-CTX, 48 STS-1 paths are available. For the CTX2500, 216 STS-1 paths are available.

- VT1.5 Matrix Ports—Provides the percent of the cross-connect virtual tributary (VT) matrix ports that are used. Each port is one STS in size, and each can transport 28 VT1.5s. For the 15310-CL-CTX, 24 VT matrix ports are available. For the CTX2500, 96 VT matrix ports are available.
- VT1.5 Matrix—Provides the percent of the VT matrix resources that are used. For the 15310-CL-CTX, there are 672 available, which is the number of VT matrix ports (24) multiplied by the number of VT1.5s in an STS (28). For the CTX2500, there are 2128 available.

Step 4 In the VT Matrix Port Detail section, you can view details of the VT Matrix Port usage:

- Drop—Identifies the source slot, port, and STS.
- Tunnel Name—Displays the VT tunnel name if the VT port is on a VT tunnel origination or termination port.
- % Used—Shows the percent of the matrix port that is used. Each matrix port can carry 28 VT1.5s, so for example, if one STS carries seven VT1.5 circuits, the matrix port will be 25% used.
- Usage—Shows the port usage. For example, if one STS carries seven VT1.5 circuits, the matrix port will show 7 of 28 are used.

Stop. You have completed this procedure.

NTP-C71 Modify and Delete Circuits

Purpose	This procedure modifies and deletes ONS 15310-CL and ONS 15310-MA circuits.
Tools/Equipment	None
Prerequisite Procedures	Circuits must exist on the network. See Chapter 6, "Create Circuits and VT Tunnels." for circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 at a node on the network containing the circuit you want to modify. If you are already logged in, continue with Step 2.

Step 2 As needed, complete the "DLP-C111 Change a Circuit Service State" task on page 18-17.

Step 3 As needed, complete the "DLP-C112 Edit a Circuit Name" task on page 18-18.

Step 4 As needed, complete the "DLP-C113 Change Active and Standby Span Color" task on page 18-19.

Step 5 As needed, complete the "DLP-C115 Delete Circuits" task on page 18-21.

Step 6 As needed, complete the "DLP-C241 Edit Path Protection Dual-Ring Interconnect Circuit Hold-Off Timer" task on page 19-53.

Step 7 As needed, complete the "DLP-C115 Delete Circuits" task on page 18-21.

Step 8 As needed, complete the "DLP-C180 Change a VCAT Member Service State" task on page 18-73.

Step 9 As needed, complete the "DLP-C116 Add a Member to a VCAT Circuit" task on page 18-22.

Step 10 As needed, complete the "DLP-C117 Delete a Member from a VCAT Circuit" task on page 18-26.

Stop. You have completed this procedure.

NTP-C72 Modify and Delete Overhead Circuits and Server Trails

Purpose	This procedure changes the tunnel type, repairs IP circuits, and deletes overhead circuits and server trails.
Tools/Equipment	None
Prerequisite Procedures	Circuits must exist on the network. See Chapter 6, "Create Circuits and VT Tunnels."
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 at a node on the network containing the circuit you want to modify. If you are already logged in, continue with Step 2.

Step 2 As needed, complete the "DLP-C118 Change Tunnel Type" task on page 18-27.

Step 3 As needed, complete the "DLP-C119 Repair an IP Tunnel" task on page 18-28.

Step 4 As needed, complete the "DLP-C120 Delete Overhead Circuits" task on page 18-28.

Step 5 As needed, complete the "DLP-C232 Delete a Server Trail" task on page 19-31.

Stop. You have completed this procedure.

NTP-C73 Create a Monitor Circuit

Purpose	This procedure creates a monitor circuit that monitors traffic on primary, bidirectional circuits.
Tools/Equipment	None
Prerequisite Procedures	Bidirectional (two-way) circuits must exist on the network. See Chapter 6, "Create Circuits and VT Tunnels." for circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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.

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 on an ONS 15310-CL or ONS 15310-MA node on the network where you want to create the monitor circuit. If you are already logged in, continue with Step 2.

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

Step 3 Click the **Circuits** tab.

Step 4 Choose the bidirectional (two-way) circuit that you want to monitor and click **Edit**.

Step 5 Verify that the circuit name is no longer than 44 characters. Monitor circuits append a "_MON" to the circuit name. If the name is longer than 44 characters, edit the name in the Name field, then click **Apply**.

Note If the circuit name is longer than 44 characters, it appends "_MON" after truncating the circuit name to 40 characters.

Step 6 In the Edit Circuit window, click the **Monitors** tab.

The Monitors tab provides ports that you can use to monitor the circuit. The Monitor tab is only available when the circuit has a DISCOVERED status.

Step 7 In the Monitors tab, choose the monitor source port. The monitor circuit displays traffic coming into the node at the port you choose.

Step 8 Click **Create Monitor Circuit**.

Step 9 In the Circuit Destination section of the Circuit Creation wizard, choose the destination node, slot, port, STS, VT, or DS1 for the monitored circuit.

Step 10 Click **Next**.

Step 11 In the Circuit Routing Preferences area, review the monitor circuit information.

Step 12 Click **Finish**.

Step 13 In the Edit Circuit window, click **Close**. The new monitor circuit appears on the Circuits tab.

Stop. You have completed this procedure.

NTP-C144 Create a J0 Section Trace

Purpose	This procedure creates a repeated, fixed-length string of characters used to monitor interruptions or changes to traffic between nodes.
Tools/Equipment	An ONS 15310-MA CTX2500, DS1-84/DS3-3, or DS1-28/DS3-EC1-3 card must be installed. J0 section trace applies to optical and EC-1 ports.
Prerequisite Procedures	None
Required/As Needed	As needed (optional if path trace is set)
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 at a node on the network where you will create the section trace. If you are already logged in, continue with Step 2.

Step 2 In node view, double-click the CTX2500, DS1-84/DS3-3, or DS1-28/DS3-EC1-3 card.

Step 3 Click the **Provisioning > EC1** or **Optical > Section Trace** tabs.

Step 4 From the Port drop-down list, choose the port for the section trace.

Step 5 From the Trace Mode drop-down list, enable the section trace expected string by choosing **Auto** or **Manual**:

- Auto—The first string received from the source port is automatically provisioned as the current expected string. An alarm is raised when a string that differs from the baseline is received.
- Manual—The string entered in the Current Expected String field is the baseline. An alarm is raised when a string that differs from the Current Expected String is received.

Step 6 In the Section Trace String Size area, click **1 byte**, **16 byte,** or **64 byte**. In the New Transmit String field, enter the string that you want to transmit. Enter a string that makes the destination port easy to identify, such as the node IP address, node name, or another string. If the New Transmit String field is left blank, the J0 transmits a string of null characters.

Step 7 If you set the Section Trace Mode field to Manual, enter the string that the destination port should receive from the source port in the New Expected String field. If you set Section Trace Mode to Auto, skip this step.

Step 8 Click the **Disable AIS and RDI if TIM-P is detected** check box if you want to suppress the alarm indication signal (AIS) and remote defect indication (RDI) when the STS Section Trace Identifier Mismatch Path (TIM-P) alarm appears. Refer to the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Troubleshooting Guide* for descriptions of alarms and conditions.

Step 9 Click **Apply**.

Step 10 After you set up the section trace, the received string appears in the Received field. The following options are available:

- Click **Hex Mode** to display section trace in hexadecimal format. The button name changes to ASCII Mode. Click it to return the section trace to ASCII format.
- Click the **Reset** button to reread values from the port.
- Click **Default** to return to the section trace default settings (Section Trace Mode is set to Off and the New Transmit and New Expected Strings are null).

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

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

Stop. You have completed this procedure.

NTP-C74 Create a J1 Path Trace

Purpose	This procedure creates a repeated, fixed-length string of characters used to monitor interruptions or changes to circuit traffic.
Tools/Equipment	ONS 15310-CL and ONS 15310-MA cards capable of transmitting and/or receiving path trace must be installed. See Table 18-6 on page 18-29 for a list of cards.
Prerequisite Procedures	Path trace can only be provisioned on OC-N (STS) circuits. See Chapter 6, "Create Circuits and VT Tunnels." for OC-N circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 on an ONS 15310-CL or ONS 15310-MA node on the network where you will create the path trace. If you are already logged in, continue with Step 2.

Step 2 As needed, complete the "DLP-C121 Provision Path Trace on Circuit Source and Destination Ports" task on page 18-29.

Step 3 As needed, complete the "DLP-C122 Provision Path Trace on OC-N Ports" task on page 18-32.

Stop. You have completed this procedure.

NTP-C75 Create a J2 Path Trace

Purpose	This procedure creates a repeated, fixed-length string of characters used to monitor interruptions or changes to circuit traffic.
Tools/Equipment	ONS 15310-CL and ONS 15310-MA cards capable of transmitting and/or receiving path trace must be installed. See Table 18-6 on page 18-29 for a list of cards.
Prerequisite Procedures	See Chapter 6, "Create Circuits and VT Tunnels." for circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Note You cannot create a J2 path trace on a TL1-like circuit.

Note This procedure assumes you are setting up path trace on a bidirectional circuit and setting up transmit strings at the circuit source and destination.

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 at a node on the network where you will create the path trace. If you are already logged in, continue with Step 2.

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

Step 3 Click the **Circuits** tab.

Step 4 For the VT 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.

Note 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 is 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 5 Choose the VT circuit you want to trace, then click **Edit**.

Step 6 In the Edit Circuit window, click the **Show Detailed Map** check box at the bottom of the window. A detailed map of the source and destination ports appears.

Step 7 Provision the circuit source transmit string:

a. On the detailed circuit map, right-click the circuit source port (the square on the left or right of the source node icon) and choose **Edit J2 Path Trace (port)** from the shortcut menu.

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 the node IP address, node name, circuit name, or another string. If the New Transmit String field is left blank, the J2 transmits a string of null characters.

c. Click **Apply**, then click **Close**.

Step 8 Provision the circuit destination transmit string:

a. On the detailed circuit map, right-click the circuit destination port and choose **Edit Path Trace** 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 the node IP address, node name, circuit name, or another string. If the New Transmit String field is left blank, the J2 transmits a string of null characters.

c. Click **Apply**.

Step 9 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 list:

- Auto—The first string received from the source port is automatically provisioned as the current expected string. An alarm is raised when a string that differs from the baseline is received.
- Manual—The string entered in the Current Expected String field is the baseline. An alarm is raised when a string that differs from the Current Expected String is received.

b. If you set the Path Trace Mode field 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. (Check box visibility depends on card selection) Click the **Disable AIS on C2 Mis-Match** check box if you want to suppress the Alarm Indication Signal when a C2 mismatch occurs.

d. Click **Apply**, then click **Close**.

Note It is not necessary to set the format (16 or 64 bytes) for the circuit destination expected string; the path trace process automatically determines the format.

Step 10 Provision the circuit source expected string:

a. In the Edit Circuit window (with Show Detailed Map chosen), right-click the circuit source port and choose **Edit Path Trace** from the shortcut menu.

b. In the Circuit Path Trace window, enable the path trace expected string by choosing **Auto** or **Manual** from the Path Trace Mode drop-down list:

- Auto—Uses the first string received from the port at the other path trace 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 the Path Trace Mode field 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. (Check box visibility depends on card selection) Click the **Disable AIS on C2 Mis-Match** check box if you want to suppress the Alarm Indication Signal when a C2 mismatch occurs.

e. Click **Apply**.

Note It is not necessary to set the format (16 or 64 bytes) for the circuit source expected string; the path trace process automatically determines the format.

Step 11 After you set up the path trace, the received string appears in the Received field on the path trace setup window. The following options are available:

- Click **Hex Mode** to display path trace in hexadecimal format. The button name changes to ASCII Mode. Click it to return the path trace to ASCII format.
- 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 if the Path Trace Mode field is set to Auto or Manual.

Step 12 Click **Close**.

The detailed circuit window indicates path trace with an M (manual path trace) or an A (automatic path trace) at the circuit source and destination ports.

Stop. You have completed this procedure.

NTP-C129 Bridge and Roll Traffic

Purpose	This procedure reroutes live traffic without interrupting service. You can use the Bridge and Roll wizard for maintenance functions such as card replacement or load balancing. A circuit consists of a source facility, destination facility(s), and intermediate facilities (path).
Tools/Equipment	None
Prerequisite Procedures	• Circuits must exist on the network. See Chapter 6, "Create Circuits and VT Tunnels." for circuit creation procedures. • To route circuits on protected ports, you must create a protection group using the "NTP-C141 Create Optical Protection Groups for the ONS 15310-CL" procedure on page 4-12. • When a roll involves two circuits, a data communications channel (DCC) connection must exist. See the "DLP-C52 Provision Section DCC Terminations" task on page 17-69. • Use the "NTP-C69 Locate and View Circuits" procedure on page 7-2 to verify that the planned Roll To paths are in service. Verify that the planned Roll To and Roll From paths are not in the Roll Pending status, used in test access, or used in a loopback. Refer to the *Cisco ONS 15310-CL and Cisco ONS 15310-MA Troubleshooting Guide* to clear any alarms.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning and higher

Note Using the bridge and roll feature, you can upgrade an unprotected circuit to a fully protected circuit or downgrade a fully protected circuit to an unprotected circuit.

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43 at the ONS 15310-CL or ONS 15310-MA circuit source node. If you are already logged in, continue with Step 2.

Step 2 As needed, complete the "DLP-C183 Roll the Source or Destination of One Optical Circuit" task on page 18-75.

Step 3 As needed, complete the "DLP-C184 Roll One Cross-Connect from an Optical Circuit to a Second Optical Circuit" task on page 18-79.

Step 4 As needed, complete the "DLP-C185 Roll Two Cross-Connects on One Optical Circuit Using Automatic Routing" task on page 18-81 or the "DLP-C186 Roll Two Cross-Connects on One Optical Circuit Using Manual Routing" task on page 18-84.

Step 5 As needed, complete the "DLP-C187 Roll Two Cross-Connects from One Optical Circuit to a Second Optical Circuit" task on page 18-86.

Step 6 As needed, complete the "DLP-C189 Cancel a Roll" task on page 18-89.

Step 7 As needed, complete the "DLP-C188 Delete a Roll" task on page 18-88. Use caution when selecting this option. Delete a roll only if it cannot be completed or cancelled. Circuits may have a PARTIAL status when this option is selected.

Stop. You have completed this procedure.

NTP-C76 Reconfigure Circuits

Purpose	This procedure rebuilds circuits, which may be necessary when a large number of circuits are in the PARTIAL status.
Tools/Equipment	None
Prerequisite Procedures	Circuits must exist on the network. See Chapter 6, "Create Circuits and VT Tunnels." for circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43. If you are already logged in, continue with Step 2.

Step 2 Click the **Circuits** tab.

Step 3 Choose the circuits that you want to reconfigure.

Step 4 From the Tools menu, choose **Circuits > Reconfigure Circuits**.

Step 5 In the confirmation dialog box, click **Yes** to continue.

Step 6 In the notification box, view the reconfiguration result. Click **Ok**.

Stop. You have completed this procedure.

NTP-C77 Merge Circuits

Purpose	This procedure merges two circuits that create a single, contiguous path but are separate circuits because of different circuit IDs or conflicting parameters. A merge combines a single master circuit with one or more circuits.
Tools/Equipment	Circuits must exist on the network. See Chapter 6, "Create Circuits and VT Tunnels." for circuit creation procedures.
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Step 1 Complete the "DLP-C29 Log into CTC" task on page 17-43. If you are already logged in, continue with Step 2.

Step 2 Click the **Circuits** tab.

Step 3 Click the circuit that you want to use as the master circuit for a merge.

Step 4 Click **Edit.**

Step 5 In the Edit Circuits window, click the **Merge** tab.

Step 6 Choose the circuits that you want to merge with the master circuit.

Step 7 Click **Merge**.

Step 8 In the confirmation dialog box, click **Yes** to continue.

Step 9 In the notification box, view the merge result. Click **Ok**.

Stop. You have completed this procedure.