

This chapter explains how to manage Cisco ONS 15454 SDH electrical, STM-N, Ethernet, and virtual concatenated (VCAT) circuits.

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Before You Begin

To create circuits, see [Create Circuits and Low-Order Tunnels](#).

To clear any alarm or trouble conditions, refer to the *Cisco ONS 15454 SDH Troubleshooting Guide*.

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

1. [NTP-D199 Locate and View Circuits](#)-Complete as needed.
2. [NTP-D200 View Cross-Connect Card Resource Usage](#)-Complete as needed.
3. [NTP-D287 Modify and Delete Circuits](#)-Complete as needed to edit a circuit name; change the active and standby colors of spans; change signal fail (SF), signal degrade (SD), reversion time, and payload defect indication-path (PDI-P) settings for subnetwork connection protection (SNCP) ring circuits; delete a circuit; or add or delete a VCAT member.
4. [NTP-D288 Modify and Delete Overhead Circuits and Server Trails](#)-Complete as needed to change a tunnel type, repair an IP circuit, or delete an overhead circuit.
5. [NTP-D78 Create a Monitor Circuit](#)-Complete as needed to monitor traffic on primary bidirectional circuits.
6. [NTP-D329 Create a J0 Section Trace](#)-Complete as needed to monitor interruptions or changes to circuit traffic.
7. [NTP-D79 Create a J1 or J2 Path Trace](#)-Complete as needed to monitor interruptions or changes to circuit traffic.
8. [NTP-D332 Bridge and Roll Traffic](#)-Complete as needed to bridge and roll traffic.
9. [NTP-D309 Reconfigure Circuits](#)-Complete as needed to reconfigure circuits.
10. [NTP-D310 Merge Circuits](#)-Complete as needed to merge circuits.
11. [NTP-D352 Manage VLANs](#)-Complete as needed to view, create, or delete virtual local area networks (VLANs).
12. [NTP-D356 Display IEEE 802.17 RPR Circuits](#)-Complete as needed to view a map or list of IEEE 802.17 Resilient Packet Ring (RPR) circuits between ML-Series cards.

NTP-D199 Locate and View Circuits

Purpose	This procedure allows you to locate and view circuits and E-Series Ethernet card spanning tree information. You can also export circuit data from the Circuits and Edit Circuits windows.
Tools/Equipment	None
Prerequisite Procedures	Circuit creation procedures in Create Circuits and Low-Order Tunnels .
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

1. Complete the "[DLP-D60 Log into CTC](#)" task at a node on the network where you want to view the circuits. If you are already logged in, continue with Step 2.

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

2. As needed, complete the "[DLP-D370 View Circuit Information](#)" task.
3. As needed, complete the "[DLP-D131 Search for Circuits](#)" task.
4. As needed, complete the "[DLP-D262 Filter the Display of Circuits](#)" task.
5. As needed, complete the "[DLP-D229 View Circuits on a Span](#)" task.
6. As needed, complete the "[DLP-D371 View the MS-SPRing Squelch Table](#)" task.
7. As needed, complete the "[DLP-D23 View Spanning Tree Information](#)" task.
8. As needed, complete the "[DLP-D147 Export CTC Data](#)" task.

Stop. You have completed this procedure.

NTP-D200 View Cross-Connect Card Resource Usage

Purpose	This procedure provides the percentage of cross-connect card resources used by circuits that traverse or terminate at an ONS 15454 SDH.
Tools/Equipment	XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G cards must be installed.
Prerequisite Procedures	DLP-D333 Install the XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G Cards
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

1. Complete the "[DLP-D60 Log into CTC](#)" task at the node where you want to view the cross-connect card resource usage. If you are already logged in, continue with Step 2.
2. Click the **Maintenance > Cross-Connect > Resource Usage** tabs.
3. In the Summary area of the Resource Usage tab, view the following information:
 - ◆ VC4 Matrix-Provides the percent of VC4 paths and VC4s dropped to lower order paths that are in use. 384 VC4s are available with XC-VXL-10G and XC-VXC-10G cross-connect cards; 192 VC4s are available with XC-VXL-2.5G cards.
 - ◆ TUG3 Matrix Ports-Provides the percent of cross-connect card TUG3 matrix ports that are in use. TUG3 matrix ports are the number of VC4s that are dropped to lower order paths (using TUG3s to hold VC3s and TUG2s) shown in VC4 size. 384 TUG3 matrix ports are available.
 - ◆ TUG3 Matrix-Provides the percent of TUG3 matrix resources that are in use. 384 TUG3 paths are available.

- ◆ VC12 Matrix Ports-Provides the percent of VC12 matrix ports that are in use. VC12 matrix ports are the number of TUG3s used to support TUG2s (that is, VC11s and VC12s). 96 VC12 matrix ports are available.
 - ◆ VC12 Matrix-Provides the percent of VC12 matrix resources that are in use. 2016 VC12 paths are available.
 - ◆ VC11 Matrix Ports-(XC-VXC-10G card only) Provides the percent of VC11 matrix ports that are in use. VC11 matrix ports are the number of TUG3s used to support TUG2s (that is, VC11s and VC12s). 96 VC11 matrix ports are available.
 - ◆ VC11 Matrix-(XC-VXC-10G card only) Provides the percent of VC11 matrix resources that are in use. 2688 VC11 paths are available.
4. In the TUG3 Matrix Port Detail section, click **VC11**, **VC12**, **VC3**, or **Unused** to view the matrix port details:
- ◆ Drop-Identifies the source slot and port.
 - ◆ Tunnel Name-If the port is used by a tunnel, the tunnel name appears here.
 - ◆ % Used-Shows the percent of the matrix port that is used.
 - ◆ Usage-Shows the port usage.
5. As needed, you can perform the following actions:
- ◆ Click **Refresh** to update the view. For example, if other users create circuits while you view the Resource Usage tab, click **Refresh** to see the effect that those circuits have on matrix usage.
 - ◆ Click **Delete** to delete VC12s, VC11s, or VC3s that use matrix resources but no longer carry circuits. This occasionally occurs when many circuits are added and deleted over a period of time. Stranded VC12s, VC11s, or VC3s appear with 0 percent usage in the TUG3 Matrix Port Detail area. If stranded VC12s, VC11s, or VC3s appear, click the VC, then click **Delete** to free matrix capacity.
- Note:** The Delete button requires a Superuser security level.
Stop. You have completed this procedure.

NTP-D287 Modify and Delete Circuits

Purpose	This procedure edits or changes the properties of ONS 15454 SDH circuits and deletes circuits.
Tools/Equipment	None
Prerequisite Procedures	Circuits must exist on the network. See Create Circuits and Low-Order Tunnels .
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "[DLP-D60 Log into CTC](#)" task at a node containing the circuit that you want to modify. If you are already logged in, continue with Step 2.
2. As needed, complete the "[DLP-D230 Change a Circuit State](#)" task.
3. As needed, complete the "[DLP-D231 Edit a Circuit Name](#)" task.
4. As needed, complete the "[DLP-D232 Change Active and Standby Span Color](#)" task.
5. As needed, complete the "[DLP-D233 Edit SNCP Circuit Path Selectors](#)" task.
6. As needed, complete the "[DLP-D263 Edit SNCP Dual-Ring Interconnect Circuit Hold-Off Timer](#)" task.
7. As needed, complete the "[DLP-D27 Delete Circuits](#)" task.
8. As needed, complete the "[DLP-D80 Change a VCAT Member Service State](#)" task.
9. As needed, complete the "[DLP-D76 Add a Member to a VCAT Circuit](#)" task.
10. As needed, complete the "[DLP-D77 Delete a Member from a VCAT Circuit](#)" task.

Stop. You have completed this procedure.

NTP-D288 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 Create Circuits and Low-Order 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.

1. Complete the "[DLP-D60 Log into CTC](#)" task for a node on the network where you want to delete the circuit. If you are already logged in, continue with Step 2.
2. As needed, complete the "[DLP-D29 Change Tunnel Type](#)" task.
3. As needed, complete the "[DLP-D30 Repair an IP Tunnel](#)" task.
4. As needed, complete the "[DLP-D31 Delete Overhead Circuits](#)" task.
5. As needed, complete the "[DLP-D207 Delete a Server Trail](#)" task.

Stop. You have completed this procedure.

NTP-D78 Create a Monitor Circuit

Purpose	This procedure creates a monitor circuit that monitors traffic on primary, bidirectional circuits on E1 or STM-1 cards.
Tools/Equipment	None
Prerequisite Procedures	Bidirectional (two-way) circuits must exist on the network. See Create Circuits and Low-Order 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.

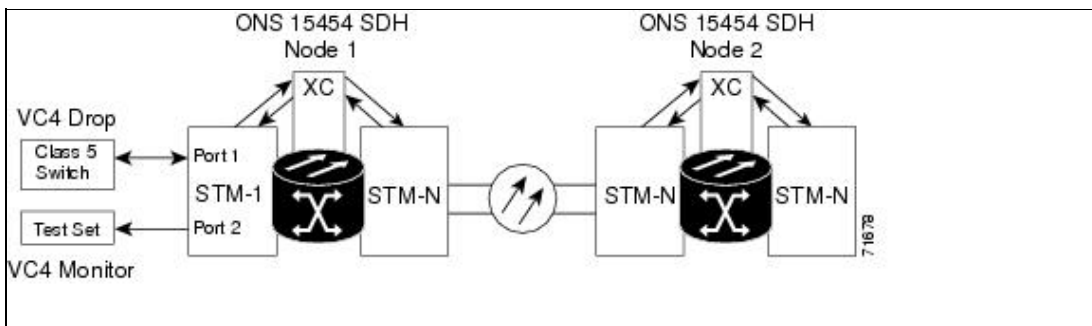
Note: For unidirectional circuits, create a drop to the port where the test equipment is attached.

1. Complete the "[DLP-D60 Log into CTC](#)" task at a node on the network where you will create the monitor circuit. If you are already logged in, continue with Step 2.
2. From the View menu, choose **Go to Network View**.
3. Click the **Circuits** tab.
4. Choose the bidirectional (two-way) circuit that you want to monitor and double-click it (or click **Edit**).
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**.
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.
7. In the Monitors tab, choose the monitor source port. The monitor circuit will show traffic coming into the node at the port you choose.

8. Click **Create Monitor Circuit**.
9. In the Circuit Destination section of the Circuit Creation wizard, choose the destination node, slot, port, and if applicable, VC for the monitored circuit.
Note: In [Figure 7-1](#), the monitor circuit destination is Port 2 on the STM-1 card.
10. Click **Next**.
11. In the Circuit Routing Preferences area, review the monitor circuit information. If you want the monitor circuit routed on a MS-SPRing protection channel, click **Protection Channel Access**.
12. Click **Finish**.
13. From the File menu in the Edit Circuit window, click **Close**. The new monitor circuit appears on the Circuits tab.

[Figure 7-1](#) shows an example of a monitor circuit. At Node 1, a VC4 is dropped from Port 1 of an STM-1 card. To monitor the VC4 traffic, test equipment is plugged into Port 2 of the STM-1 card and a monitor circuit to Port 2 is provisioned in Cisco Transport Controller (CTC). Circuit monitors are one-way. The monitor circuit in [Figure 7-1](#) is used to monitor VC4 traffic received by Port 1 of the STM-1 card.

Figure 7-1: VC4 Monitor Circuit Received at an STM-1 Port



Stop. You have completed this procedure.

NTP-D329 Create a J0 Section Trace

Purpose	This procedure creates a repeated, fixed-length string of characters used to monitor interruptions or changes to traffic between nodes.
Tools/Equipment	At least one card of the following cards must be installed: MRC-2.5G-12, MRC-12 or STM64-XFP.
Prerequisite Procedures	None
Required/As Needed	As needed (optional if path trace is set)
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "[DLP-D60 Log into CTC](#)" task at a node on the network where you will create the section trace. If you are already logged in, continue with Step 2.
2. In node view, double-click the MRC-2.5G-12, MRC-12 or STM64-XFP card.
3. Click the **Provisioning > Line > Section Trace** tabs.
4. From the Port drop-down list, choose the port for the section trace.
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.
- 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.
- 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.
- 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 15454 SDH Troubleshooting Guide* for descriptions of alarms and conditions.
- 9. Click **Apply**.
- 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-D79 Create a J1 or J2 Path Trace

Purpose	This procedure creates a repeated, fixed-length string of characters used to monitor changes to circuit traffic.
Tools/Equipment	ONS 15454 SDH cards capable of transmitting and/or receiving path trace must be installed. See Table 19-5 for a list of J1 path trace cards. See Table 20-26 for a list of J2 path trace cards.
Prerequisite Procedures	J1 path trace can be provisioned on VC3 and VC4 circuits. J2 path trace can be provisioned on VC12 circuits. See Create Circuits and Low-Order Tunnels , for circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Note: There are two types of J1 bytes, high-order (HO-J1) and low-order (LO-J1). The electrical cards support LO-J1 (VC3). The optical cards support HO-J1 (VC4) and cannot monitor the LO-J1 byte. In addition, the E1-42 card supports HO-J1 when the card is provisioned as an HO circuit endpoint.

Note: J1 path trace is available for VC3 and VC4 circuits. In ONS 15454 SDH Software R3.4 and earlier, you can set the VC3 J1 transmit string on E3 and DS3i-N-12 cards, but VC3 is not monitored by STM-N cards. J2 path trace is available for VC12 circuits.

1. Complete the "[DLP-D60 Log into CTC](#)" task at a node on the network where you will create the path trace. If you are already logged in, continue with Step 2.
 2. Complete the following tasks as needed:
 - ◆ As needed, complete the "[DLP-D264 Provision a J1 Path Trace on Circuit Source and Destination Ports](#)" task.
 - ◆ As needed, complete the "[DLP-D137 Provision a J1 Path Trace on STM-N Ports](#)" task.
 - ◆ As needed, complete the "[DLP-D367 Provision a J2 Path Trace on Circuit Source and Destination Ports](#)" task.
- Stop. You have completed this procedure.**

NTP-D332 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, one or more destination facilities, and intermediate facilities (path).
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • Circuits must exist on the network. See Create Circuits and Low-Order Tunnels for circuit creation procedures. • To route circuits on protected ports, you must create a protection group using the "DLP-D73 Create a 1+1 Protection Group" task or the NTP-D41 Create the MS-SPRing. • When a roll involves two circuits, a data communications channel (DCC) connection must exist. See the "DLP-D363 Provision Regenerator-Section DCC Terminations" task. • Use the NTP-D199 Locate and View Circuits 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 <i>Cisco ONS 15454 SDH Troubleshooting Guide</i> to clear any alarms.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or 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.

Caution! Performing bridge and roll on an STM64C might cause a traffic hit of 50 ms.

1. Complete the "[DLP-D60 Log into CTC](#)" task at the ONS 15454 SDH circuit source node. If you are already logged in, continue with Step 2.
2. As needed, complete the "[DLP-D234 Roll the Source or Destination of One Optical Circuit](#)" task.
3. As needed, complete the "[DLP-D235 Roll One Cross-Connect from an Optical Circuit to a Second Optical Circuit](#)" task.
4. As needed, complete the "[DLP-D236 Roll Two Cross-Connects on One Optical Circuit Using Automatic Routing](#)" task or the "[DLP-D237 Roll Two Cross-Connects on One Optical Circuit Using Manual Routing](#)" task.
5. As needed, complete the "[DLP-D238 Roll Two Cross-Connects from One Optical Circuit to a Second Optical Circuit](#)" task.
6. As needed, complete the "[DLP-D240 Cancel a Roll](#)" task.

7. As needed, complete the "DLP-D239 Delete a Roll" task. Use caution when selecting this option. Delete a roll only if it cannot be completed or canceled. Circuits might have a PARTIAL status when this option is selected.

Stop. You have completed this procedure.

NTP-D309 Reconfigure Circuits

Purpose	This procedure rebuilds circuits, which might be necessary when a large number of circuits are in the PARTIAL status.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "DLP-D60 Log into CTC" task. If you are already logged in, continue with Step 2.
2. From the View menu, choose **Go to Network View**.
3. Click the **Circuits** tab.
4. Choose the circuits that you want to reconfigure.
5. From the Tools menu, choose **Circuits > Reconfigure Circuits**.
6. In the confirmation dialog box, click **Yes** to continue.
7. In the notification box, view the reconfiguration result. Click **Ok**.

Stop. You have completed this procedure.

NTP-D310 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	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "DLP-D60 Log into CTC" task. If you are already logged in, continue with Step 2.
2. Click the **Circuits** tab.
3. Click the circuit that you want to use as the master circuit for a merge.
4. Click **Edit**.
5. In the Edit Circuits window, click the **Merge** tab.
6. Choose the circuits that you want to merge with the master circuit.
7. Click **Merge**.
8. In the confirmation dialog box, click **Yes** to continue.
9. In the notification box, view the merge result. Click **Ok**.

Stop. You have completed this procedure.

NTP-D352 Manage VLANs

Purpose	This procedure allows you to view, create, or delete VLANs.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "[DLP-D60 Log into CTC](#)" task. If you are already logged in, continue with Step 2.
2. From the Tools menu, choose **Manage VLANs**. The All VLANs dialog box appears listing all of the VLAN topologies in the network.
3. Complete the following as necessary:
 - ◆ To add a VLAN, complete the "[DLP-D243 Create a VLAN](#)" task.
 - ◆ To delete a VLAN, complete the "[DLP-D248 Delete VLANs](#)" task.

Stop. You have completed this procedure.

NTP-D356 Display IEEE 802.17 RPR Circuits

Purpose	This procedure displays a map of and provides information about IEEE 802.17 Resilient Packet Ring (RPR) circuits between ML-Series cards. For more information about IEEE 802.17 RPR, refer to the <i>Cisco ONS 15454 and Cisco ONS 15454 SDH Ethernet Card Software Feature and Configuration Guide</i> .
Tools/Equipment	None
Prerequisite Procedures	NTP-D213 Provision the Card Mode for ML-Series Ethernet Cards
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Note: CTC does not support the display of Cisco proprietary RPR circuit topology.

Note: In Software Release 8.0 and earlier, CTC does not support provisioning or maintenance of IEEE RPR rings. You must use Cisco IOS.

1. Complete the "[DLP-D60 Log into CTC](#)" task at the node where you will create the circuit. If you are already logged in, continue with Step 2.
2. From network, shelf, or ML-Series card view, click the **Circuits** tab and select the circuit where you want to display information.

Note: If you are viewing the circuits list from network or shelf view, you must look at the Source and Destination fields to determine which circuits are RPR circuits.
3. Click **Tools > Circuits > Show RPR Circuit Ring**.

The map displays the following information about each IEEE 802.17 RPR circuit:

 - ◆ Circuit name
 - ◆ Type
 - ◆ Size
 - ◆ OCHNC Wlen
 - ◆ Direction
 - ◆ Protection
 - ◆ Status

- ◆ Source
- ◆ Destination
- ◆ # of VLANs
- ◆ # of Spans
- ◆ State
- ◆ Loopback

4. Repeat this procedure as necessary for additional 802.17 RPR circuits you want to display.

Stop. You have completed this procedure.