



CHAPTER 6

Manage Circuits

This chapter explains how to manage Cisco ONS 15310-MA SDH electrical, optical, and Ethernet circuits. To create circuits, see [Chapter 5, “Create Circuits and VC Low-order Path Tunnels.”](#)

Before You Begin

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

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

1. [NTP-H69 Locate and View Circuits, page 6-2](#)—Complete as needed.
2. [NTP-H70 View Cross-Connect Resource Usage, page 6-2](#)—Complete as needed.
3. [NTP-H71 Modify and Delete Circuits, page 6-3](#)—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 settings for path protection circuits; or add or delete a virtual concatenated (VCAT) member.
4. [NTP-H72 Modify and Delete Overhead Circuits and Server Trails, page 6-4](#)—Complete as needed to change a tunnel type, repair an IP circuit, or delete overhead circuits and server trails.
5. [NTP-H73 Create a Monitor Circuit, page 6-4](#)—Complete as needed to monitor traffic on primary bidirectional circuits.
6. [NTP-H144 Create a J0 Section Trace, page 6-5](#)—Complete as needed to monitor interruptions or changes to circuit traffic.
7. [NTP-H74 Create a J1 Path Trace, page 6-7](#)—Complete as needed to monitor interruptions or changes to circuit traffic.
8. [NTP-H75 Create a J2 Path Trace, page 6-7](#)—Complete as needed to monitor interruptions or changes to circuit traffic on the CE-100T-8 card.
9. [NTP-H129 Bridge and Roll Traffic, page 6-10](#)—Complete as needed to reroute live traffic without interrupting service.
10. [NTP-H76 Reconfigure Circuits, page 6-11](#)—Complete as needed to reconfigure (rebuild) circuits.
11. [NTP-H77 Merge Circuits, page 6-11](#)—Complete as needed to merge two circuits into a master circuit.

NTP-H69 Locate and View Circuits

Purpose	This procedure allows you to locate and view ONS 15310-MA SDH circuits. You can also export circuit data from the Circuits and Edit Circuits windows.
Tools/Equipment	None
Prerequisite Procedures	Circuit creation procedures in Chapter 5, “Create Circuits and VC Low-order Path Tunnels.”
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

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- Step 1** Complete the [“DLP-H29 Log into CTC” task on page 16-43](#) 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-H107 View Circuit Information” task on page 17-9](#).
- Step 3** As needed, complete the [“DLP-H78 Search for Circuits” task on page 16-95](#).
- Step 4** As needed, complete the [“DLP-H109 Filter the Display of Circuits” task on page 17-12](#).
- Step 5** As needed, complete the [“DLP-H110 View Circuits on a Span” task on page 17-14](#).
- Step 6** As needed, complete the [“DLP-H223 Export CTC Data” task on page 18-20](#).

Stop. You have completed this procedure.

NTP-H70 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-MA SDH.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

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- Step 1** Complete the [“DLP-H29 Log into CTC” task on page 16-43](#) 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:
- VC4 Matrix—Provides the percent of the cross-connect synchronous transport signal (VC high-order path) resources that are used. For the 15310E-CTX-K9, 128 VC4 ports are available.
 - TUG3 Matrix—Provides the percent of the cross-connect synchronous transport signal (VC Low-order path) resources that are used. For the 15310E-CTX-K9, 96 VC3 ports are available.

- VC12 Matrix—Provides the percent of the cross-connect synchronous transport signal (VC low-order path) resources that are used. For the 15310E-CTX-K9, 128 VC4 ports are available.
- Step 4** In the VC low-order path Matrix Port Detail section, you can view details of the VC low-order path Matrix Port usage:
- Drop—Identifies the source slot, port, and VC high-order path.
 - Tunnel Name—Displays the VC low-order path tunnel name if the VC low-order path port is on a VC low-order path tunnel origination or termination port.
 - % Used—Shows the percent of the matrix port that is used. Each matrix port can carry 21 VC12s
 - Usage—Shows the port usage. For example, if one VC high-order path carries 21 VC12 circuits, the matrix port will show 21 of 21 are used.

Stop. You have completed this procedure.

NTP-H71 Modify and Delete Circuits

Purpose	This procedure modifies and deletes ONS 15310-MA SDH circuits.
Tools/Equipment	None
Prerequisite Procedures	Circuits must exist on the network. See Chapter 5, “Create Circuits and VC Low-order Path 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-H29 Log into CTC” task on page 16-43](#) 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-H111 Change a Circuit Service State” task on page 17-15](#).
- Step 3** As needed, complete the [“DLP-H112 Edit a Circuit Name” task on page 17-16](#).
- Step 4** As needed, complete the [“DLP-H113 Change Active and Standby Span Color” task on page 17-17](#).
- Step 5** As needed, complete the [“DLP-H115 Delete Circuits” task on page 17-19](#).
- Step 6** As needed, complete the [“DLP-H241 Edit Path Protection Dual-Ring Interconnect Circuit Hold-Off Timer” task on page 18-47](#).
- Step 7** As needed, complete the [“DLP-H115 Delete Circuits” task on page 17-19](#).
- Step 8** As needed, complete the [“DLP-H180 Change a VCAT Member Service State” task on page 17-70](#).
- Step 9** As needed, complete the [“DLP-H116 Add a Member to a VCAT Circuit” task on page 17-20](#).
- Step 10** As needed, complete the [“DLP-H117 Delete a Member from a VCAT Circuit” task on page 17-24](#).

Stop. You have completed this procedure.

NTP-H72 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 5, “Create Circuits and VC Low-order Path 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.

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- Step 1** Complete the “[DLP-H29 Log into CTC](#)” task on page 16-43 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-H118 Change Tunnel Type](#)” task on page 17-25.
- Step 3** As needed, complete the “[DLP-H119 Repair an IP Tunnel](#)” task on page 17-25.
- Step 4** As needed, complete the “[DLP-H120 Delete Overhead Circuits](#)” task on page 17-26.
- Step 5** As needed, complete the “[DLP-H232 Delete a Server Trail](#)” task on page 18-31.

Stop. You have completed this procedure.

NTP-H73 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 5, “Create Circuits and VC Low-order Path 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.

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- Step 1** Complete the “[DLP-H29 Log into CTC](#)” task on page 16-43 on an ONS 15310-MA SDH 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, VC high-order path, VC low-order path, or E1 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.**
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NTP-H144 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 SDH 15310E-CTX-K9, E1_63_E3_DS3_3, or E1_21_E3_DS3_3 card must be installed. J0 section trace applies to optical 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

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- Step 1** Complete the “DLP-H29 Log into CTC” task on page 16-43 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 15310E-CTX-K9, E1_63_E3_DS3_3, or E1_21_E3_DS3_3 card.
- Step 3** Click the **Provisioning > E3** 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 VC high-order path Section Trace Identifier Mismatch Path (TIM-P) alarm appears. Refer to the *Cisco ONS 15310-MA SDH 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-H74 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-MA SDH cards capable of transmitting and/or receiving path trace must be installed. See Table 17-6 on page 17-27 for a list of cards.
Prerequisite Procedures	Path trace can be provisioned on STM-M (VC high/low-order path) and Electrical circuits. See Chapter 5, “Create Circuits and VC Low-order Path Tunnels.” for STM-M and Electrical circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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- Step 1** Complete the [“DLP-H29 Log into CTC” task on page 16-43](#) on an ONS 15310-MA SDH 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-H121 Provision Path Trace on Circuit Source and Destination Ports” task on page 17-27](#).
- Step 3** As needed, complete the [“DLP-H122 Provision Path Trace on STM-M Ports” task on page 17-30](#).
- Stop. You have completed this procedure.**
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NTP-H75 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-MA SDH cards capable of transmitting and/or receiving path trace must be installed. See Table 17-6 on page 17-27 for a list of cards.
Prerequisite Procedures	See Chapter 5, “Create Circuits and VC Low-order Path 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.

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- Step 1** Complete the [“DLP-H29 Log into CTC” task on page 16-43](#) 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 VC low-order path 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 VC low-order path 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:
- 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.
 - 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.
 - Click **Apply**, then click **Close**.
- Step 8** Provision the circuit destination transmit string:
- On the detailed circuit map, right-click the circuit destination port and choose **Edit Path Trace** from the shortcut menu.
 - 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.
 - Click **Apply**.
- Step 9** Provision the circuit destination expected string:
- 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.
 - 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.
 - (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.
 - 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-H129 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	<ul style="list-style-type: none"> • Circuits must exist on the network. See Chapter 5, “Create Circuits and VC Low-order Path Tunnels.” for circuit creation procedures. • To route circuits on protected ports, you must create a protection group using the NTP-H142 Create Protection Groups for ONS 15310-MA SDH, page 3-10. • When a roll involves two circuits, a data communications channel (DCC) connection must exist. See the “DLP-H52 Provision Section DCC Terminations” task on page 16-69. • Use the “NTP-H69 Locate and View Circuits” procedure on page 6-2 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 <i>Cisco ONS 15310-MA SDH Troubleshooting Guide</i> to clear any alarms.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning and higher

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- Step 1** Complete the [“DLP-H29 Log into CTC”](#) task on page 16-43 at the ONS 15310-MA SDH circuit source node. If you are already logged in, continue with [Step 2](#).
- Step 2** As needed, complete the [“DLP-H183 Roll the Source or Destination of One Optical Circuit”](#) task on page 17-72.
- Step 3** As needed, complete the [“DLP-H184 Roll One Cross-Connect from an Optical Circuit to a Second Optical Circuit”](#) task on page 17-75.
- Step 4** As needed, complete the [“DLP-H185 Roll Two Cross-Connects on One Optical Circuit Using Automatic Routing”](#) task on page 17-77 or the [“DLP-H186 Roll Two Cross-Connects on One Optical Circuit Using Manual Routing”](#) task on page 17-80.
- Step 5** As needed, complete the [“DLP-H187 Roll Two Cross-Connects from One Optical Circuit to a Second Optical Circuit”](#) task on page 17-82.
- Step 6** As needed, complete the [“DLP-H189 Cancel a Roll”](#) task on page 17-84.
- Step 7** As needed, complete the [“DLP-H188 Delete a Roll”](#) task on page 17-84. 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-H76 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 5, “Create Circuits and VC Low-order Path Tunnels.” for circuit creation procedures.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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- Step 1** Complete the [“DLP-H29 Log into CTC” task on page 16-43](#). 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.**
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NTP-H77 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 5, “Create Circuits and VC Low-order Path Tunnels.” for circuit creation procedures.
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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- Step 1** Complete the [“DLP-H29 Log into CTC” task on page 16-43](#). 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.
