



Create Circuits



Note

The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

This chapter explains how to create Cisco ONS 15600 circuits and tunnels. For additional information, refer to the "Circuits and Tunnels" chapter in the *Cisco ONS 15600 Reference Manual*.

Before You Begin

Before performing any of the following procedures, investigate all alarms and clear any trouble conditions. Refer to the *Cisco ONS 15600 Troubleshooting Guide* as necessary.

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

1. [NTP-E167 Verify Network Turn-Up, page 6-2](#)—Complete this procedure before you create any circuits.
2. [NTP-E160 Create an Automatically Routed Optical Circuit, page 6-4](#)—Complete as needed.
3. [NTP-E161 Create a Manually Routed Optical Circuit, page 6-10](#)—Complete as needed.
4. [NTP-E40 Create a Unidirectional Optical Circuit with Multiple Drops, page 6-13](#)—Complete as needed.
5. [NTP-E85 Test Optical Circuits, page 6-16](#)—Complete this procedure after you create circuits.
6. [NTP-E82 Create a Half Circuit on a BLSR or 1+1 Node, page 6-18](#)—Complete as needed to create a half circuit using an OC-N as a destination in a bidirectional line switched ring (BLSR) or 1+1 topology.
7. [NTP-E83 Create a Half Circuit on a Path Protection Node, page 6-20](#)—Complete as needed to create a half circuit using an OC-N as a destination in a path protection.
8. [NTP-E129 Create Overhead Circuits, page 6-22](#)—Complete as needed.
9. [NTP-E130 Create an ASAP Ethernet Circuit, page 6-22](#)—Complete as needed.
10. [NTP-E131 Test ASAP Ethernet Circuits, page 6-24](#)—Complete as needed.
11. [NTP-E154 Create an STS Test Circuit around the Ring, page 6-25](#)—Complete as needed.

12. [NTP-E156 Create a Server Trail, page 6-28](#)—Complete as needed.

**Note**

You cannot set up virtual tributary (VT) circuits to terminate on an ONS 15600 node. However, you can create both synchronous transport signal (STS) and VT circuits that have an ONS 15454 or ONS 15327 source and destination with an ONS 15600 as a pass-through node. For information on ONS 15327 and ONS 15454 VT circuit creation and tunneling, refer to the circuit chapters in the *Cisco ONS 15327 Procedure Guide* and the *Cisco ONS 15454 Procedure Guide*. If your network includes Release 4.1 or earlier ONS 15454 or ONS 15327 nodes, you must launch Cisco Transport Controller (CTC) from an ONS 15600 node before provisioning circuits.

**Note**

During circuit provisioning in a network that includes ONS 15600s, ONS 15454s, and ONS 15327s, the ONS 15600 raises a temporary unequipped path (UNEQ-P) alarm. The alarm clears when the circuit is complete.

[Table 6-1](#) defines key ONS 15600 circuit creation terms and options.

Table 6-1 ONS 15600 Circuit Options

Circuit Option	Description
Source	The circuit source is where the circuit enters the ONS 15600 network.
Destination	The circuit destination is where the circuit exits an ONS 15600 network.
Automatic circuit routing	CTC routes the circuit automatically on the shortest available path based on routing parameters and bandwidth availability.
Manual circuit routing	Manual 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 create circuits from work orders prepared by an operations support system (OSS) like the Telcordia Trunk Information Record Keeping System (TIRKS).

NTP-E167 Verify Network Turn-Up

Purpose	This procedure verifies that the ONS 15600 network is ready for circuit provisioning.
Tools/Equipment	None
Prerequisite Procedures	Chapter 5, “Turn Up a Network”
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** Complete the [“DLP-E26 Log into CTC” task on page 16-39](#) at a node on the network where you will create circuits. If you are already logged in, continue with [Step 2](#).
- Step 2** From the View menu, choose **Go To Network View**. Wait for all the nodes that are part of the network to appear on the network map. (Large networks might take several minutes to display all the nodes.)

**Note**

If this is the first time your computer has connected to this ONS 15600 network, the node icons are stacked on the left side of the graphic area, possibly out of view. Use the scroll bar below the network map to display the icons. To separate the icons, press **Ctrl** and drag and drop the icon to the new location. Repeat until all the nodes are visible on the graphic area.

- Step 3** Verify node accessibility. In the network view, all node icons must be either green, yellow, orange, or red. If all network nodes do not appear after a few minutes, or if a node icon is gray with an IP address under it, do not continue. Look at the NET box in the lower right corner of the window. If it is gray, log in again, making sure not to check the Disable Network Discovery check box on the CTC Login dialog box. If problems persist, see [Chapter 5, “Turn Up a Network”](#) to review the network turn-up procedure appropriate for your network topology, or refer to the *Cisco ONS 15600 Troubleshooting Guide* for troubleshooting procedures.
- Step 4** Verify data communications channel (DCC) connectivity. All nodes must be connected by green lines. If lines are missing or gray, do not continue. See [Chapter 5, “Turn Up a Network”](#) and follow the network turn-up procedure appropriate for your network topology. Verify that all nodes have DCC connectivity before continuing.
- Step 5** Click the **Alarms** tab to view alarm descriptions. Investigate and resolve, if necessary, all critical (red node icon) or major (orange node icon) alarms. Refer to the *Cisco ONS 15600 Troubleshooting Guide* to resolve alarms before continuing.
- Step 6** From the View menu, choose **Go To Home View**. Verify that the node is provisioned according to your site or engineering plan:
- View the cards in the shelf map. Verify that the ONS 15600 cards appear in the specified slots.
 - Click the **Provisioning > General** tabs. Verify that the node name, contacts, date, time, and Network Time Protocol/Simple Network Time Protocol (NTP/SNTP) server IP address (if used) are correctly provisioned. If needed, make corrections using the [“NTP-E22 Set Up Date, Time, and Contact Information” procedure on page 4-4](#).
 - Click the **Network** tab. Verify that the IP address, Subnet Mask, Default Router, and Gateway Settings are correctly provisioned. If not, make corrections using the [“NTP-E23 Set Up CTC Network Access” procedure 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, complete the [“NTP-E25 Create a 1+1 Protection Group” procedure on page 4-7](#).
 - If the node is in a BLSR, click the **BLSR** tab. (If the node is not in a BLSR, continue with 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 port assignmentsIf you need to make corrections, see the [“NTP-E163 Provision BLSR Nodes” procedure on page 5-6](#) for instructions.
 - Click the **Security** tab. Verify that the users and access levels are provisioned as specified. If not, see the [“NTP-E26 Create Users and Assign Security” procedure on page 4-3](#) to correct the information.

- g. If Simple Network Management Protocol (SNMP) is used, click the **SNMP** tab and verify the trap and destination information. If the information is not correct, see the “[NTP-E27 Set Up SNMP](#)” procedure on page 4-9 to correct the information.
- h. Click the **Comm Channels** tab. Verify that Section DCCs (SDCCs) or Line DCCs (LDCCs) were created to the applicable OC-N ports. If not, go to the “[DLP-E114 Provision Section DCC Terminations](#)” task on page 17-14 or “[DLP-E189 Provision Line DCC Terminations](#)” task on page 17-69.
- i. Click the **Timing** tab. Verify that timing is provisioned as specified. If not, go to the “[NTP-E62 Change Node Timing](#)” procedure on page 11-5 to make the changes.
- j. Click the **Alarm Profiles** tab. If you provisioned optional alarm profiles, verify that the alarms are provisioned as specified. If not, see the “[NTP-E46 Create, Assign, and Delete Alarm Severity Profiles](#)” procedure on page 9-7 to change the information.
- k. Verify that the network element defaults listed in the status area of the node view window are correct.

Step 7 Repeat [Step 6](#) for each node in the network.

Step 8 Complete the appropriate circuit creation procedure from the NTP list in the “[Before You Begin](#)” section on page 6-1.

Stop. You have completed this procedure.

NTP-E160 Create an Automatically Routed Optical Circuit

Purpose	This procedure creates an automatically routed optical circuit, including STS-1 and concatenated STS-3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, or STS-192c speeds. CTC automatically routes the circuit based on the entries that you make at circuit creation and the system load.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up , page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note

This procedure requires the use of automatic routing. Automatic routing is not available if both the Automatic Circuit Routing NE default and the Network Circuit Automatic Routing Overridable NE default are set to FALSE. For a full description of these defaults, see the “Network Element Defaults” appendix in the *Cisco ONS 15600 Reference Manual*.



Note

To create an STS-24c circuit on an OC-48 card port or an ASAP card with port type set to OC-48, the STS-1 through STS-24 or the STS-25 through STS-48 sub-pool must be available.

Step 1 Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at a node on the network where you will create the STS circuit. The default (node) view appears. If you are already logged in, continue with [Step 2](#).

- Step 2** If you want to assign a name to the tunnel source and destination ports before you create the circuit, complete the “[DLP-E110 Assign a Name to a Port](#)” task on page 17-11. If not, continue with [Step 3](#).
- Step 3** If the optical ports at the source and/or destination nodes are Any Service Any Port (ASAP) pluggable port module (PPM) ports, complete the “[NTP-E155 Manage Pluggable Port Modules on the ASAP Card](#)” procedure on page 10-2 and set the port type to OC3, OC12, or OC48, as necessary.
- Step 4** From the View menu, choose **Go To Network View**.
- Step 5** Click the **Circuits** tab, then click **Create**. In the Circuit Creation dialog box, complete the following:
- Circuit Type—Choose **STS**.
 - Number of Circuits—Enter the number of OC-N circuits you want to create. The default is 1. If you are creating multiple circuits with the same source and destination, you can use autoranging to create the circuits automatically.
 - Auto-ranged—This check box is automatically checked when you enter more than 1 in the Number of Circuits field. Leave checked if you are creating multiple OC-N circuits with the same source and destination and you want CTC to create the circuits automatically. Uncheck this check box if you do not want CTC to create the circuits automatically.
- Step 6** Click **Next**.
- Step 7** Define the circuit attributes ([Figure 6-1 on page 6-6](#)):
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
 - Size—Choose the circuit size: STS-1, STS-3c, STS-12c, STS-24c, STS-48c, or STS-192c. ASAP optical ports also allow circuit sizes of STS-6c and STS-9c.
 - Bidirectional—When checked (default), creates a two-way circuit. Leave checked for this circuit.
 - Create cross-connects only (TL1-like)—Check this check box if you want to create one or more cross-connects to complete a signal path for TL1-generated circuits. Also, VT tunnels and Ethergroup sources and destinations are unavailable.
 - Diagnostic—Leave unchecked.
 - State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the In-Service and Normal (IS-NR) service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the Out-of-Service and Management, Disabled (OOS-MA,DSBLD) service state. Traffic is not passed on the circuit.
 - IS,AINS—Puts the circuit cross-connects in the Out-of-Service and Autonomous, Automatic In-Service (OOS-AU,AINS) service state and suppresses alarms and conditions. When the connections receive a valid signal, the service state automatically changes to IS-NR.
 - OOS,MT—Puts the circuit cross-connects in the Out-of-Service and Management, Maintenance (OOS-MA,MT) service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
 - Apply to drop ports—Check this check box if you want to apply the administrative state chosen in the State field to the circuit source and destination ports. CTC applies the administrative state to the ports only if the circuit bandwidth is the same as the port bandwidth or, if the port bandwidth is

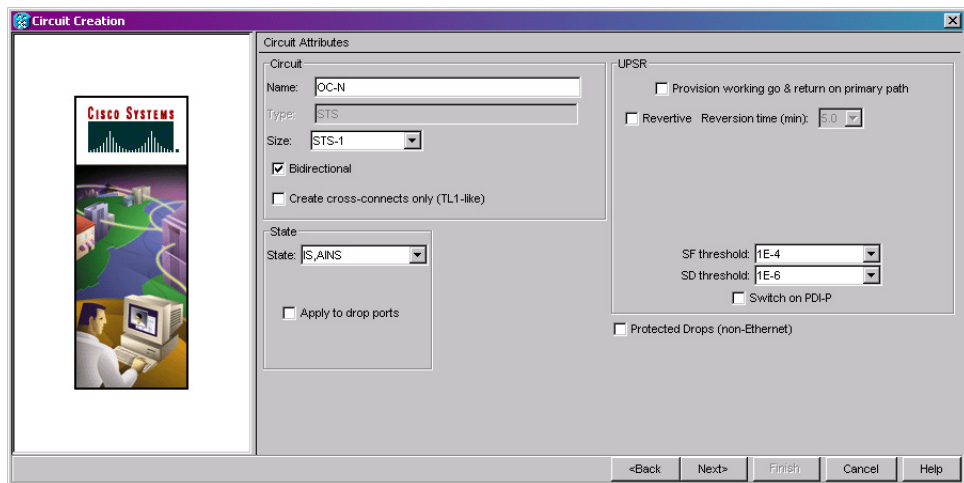
larger than the circuit, the circuit must be the first circuit to use the port. If not, a Warning dialog box displays the ports where the administrative state could not be applied. If the check box is unchecked, CTC does not apply the administrative state of the source and destination ports.



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—Check this check box if you want CTC to display only protected cards and ports (1+1 protection) as choices for the circuit source and destination.

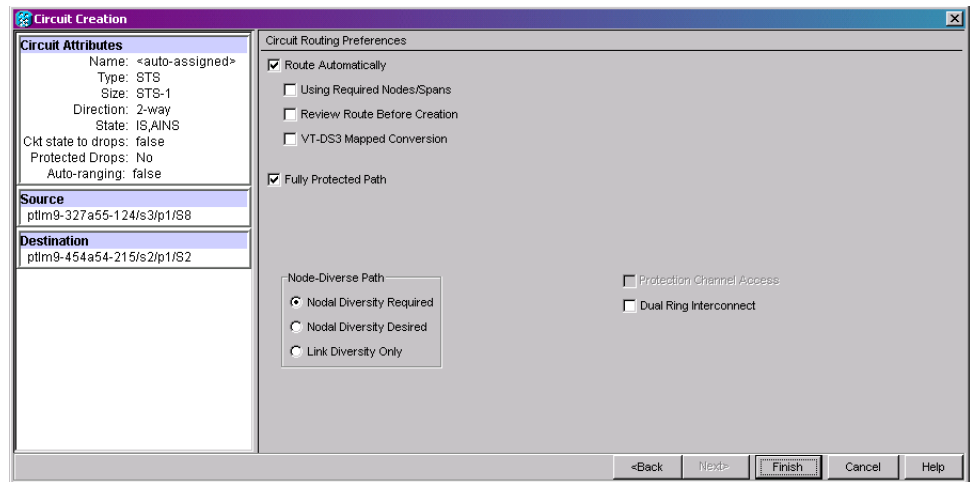
Figure 6-1 Creating a Circuit



- Step 8** If the circuit will be routed on a path protection, complete the “[DLP-E111 Provision Path Protection Selectors During Circuit Creation](#)” task on page 17-11.
- Step 9** Click **Next**.
- Step 10** Complete the “[DLP-E41 Provision an Optical Circuit Source and Destination](#)” task on page 16-57 for the optical circuit that you are creating.
- Step 11** In the Circuit Routing Preferences area ([Figure 6-2](#)), check **Route Automatically**. Two options are available; choose either, both, or none based on your preferences.
- Using Required Nodes/Spans—Check this box to specify nodes and spans to include or exclude in the CTC-generated circuit route.

Including nodes and spans for a circuit ensures that those nodes and spans are in the working path of the circuit (but not the protect path). Excluding nodes and spans ensures that the nodes and spans are not in the working or protect path of the circuit.
 - Review Route Before Creation—Check this box to review and edit the circuit route before the circuit is created.

Figure 6-2 Setting Circuit Routing Preferences



Step 12 Set the circuit path protection:

- To route the circuit on a protected path, leave **Fully Protected Path** checked and continue with [Step 13](#). CTC creates a fully protected circuit route based on the path diversity option you choose. Fully protected paths might or might not have path protection path segments (with primary and alternate paths), and the path diversity options apply only to path protection path segments, if any exist.
- To create an unprotected circuit, uncheck **Fully Protected Path** and continue with [Step 17](#).
- To route the circuit on a BLSR protection channel, if available, uncheck **Fully Protected Path**, check **Protection Channel Access**, click **Yes** in the Warning dialog box, and then continue with [Step 17](#).

Step 13 If you selected Fully Protected Path in [Step 12](#) and the circuit will be routed on a path protection, choose one of the following:

- **Nodal Diversity Required**—Ensures that the primary and alternate paths within path protection portions of the complete circuit path are nodally diverse.
- **Nodal Diversity Desired**—Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates fiber-diverse paths for the path protection portion of the complete circuit path.
- **Link Diversity Only**—Specifies that only fiber-diverse primary and alternate paths for path protection portions of the complete circuit path are needed. The paths might be node-diverse, but CTC does not check for node diversity.

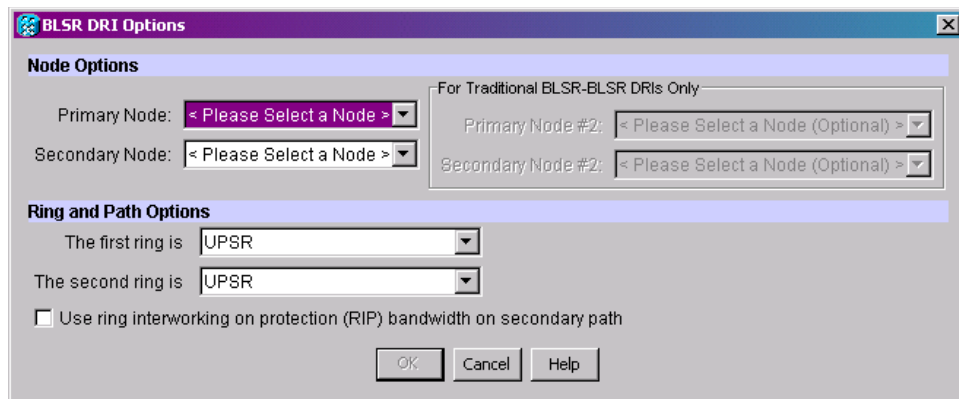
Step 14 If you selected Fully Protected Path in [Step 12](#) and the circuit will be routed on a BLSR DRI or path protection DRI, check the **Dual Ring Interconnect** check box. If not, continue with [Step 17](#).

Step 15 If you checked Dual Ring Interconnect for a path protection in [Step 14](#), complete the following substeps. If you checked Dual Ring Interconnect for a BLSR, skip this step and continue with [Step 16](#).

- Click **Next**.
- In the Circuit Route Constraints area, 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/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.

- e. Review the circuit route. To change the circuit routing order, select a node beneath the Required Nodes/Lines or Excluded Nodes Links lists, then click the **Up** or **Down** buttons to change the circuit routing order. Click **Remove** to remove a node or span.
- Step 16** If you checked Dual Ring Interconnect for a BLSR in [Step 14](#), complete the following substeps to assign primary and secondary nodes and ring type:
- In the Circuit Constraints for Automatic Routing area, click **Add BLSR DRI**.
 - At the confirmation window, click **OK**.
 - In the Node options area of the BLSR DRI Options dialog box, complete the following (for an example of a traditional and integrated route on primary and secondary nodes, see [Figure 6-3](#)):
 - Primary Node—For a traditional or integrated BLSR-DRI, choose the node where the circuit interconnects the rings.
 - Secondary Node—For a traditional or integrated BLSR-DRI, choose the secondary node for the circuit to interconnect the rings. This route is used if the route on the primary node fails.
 - Primary Node #2—For a traditional BLSR-DRI where two primary nodes are required to interconnect rings, choose the second primary node.
 - Secondary Node #2—For a traditional BLSR-DRI where two secondary nodes are required, choose the second secondary node.

Figure 6-3 Selecting BLSR DRI Primary and Secondary Node Assignments



- In the Ring and Path Options area, complete the following:
 - The first ring is—Choose UPSR or BLSR from the drop-down list.
 - The second ring is—Choose UPSR or BLSR from the drop-down list.
 - Use ring interworking protection (RIP) on secondary path—Check this box to carry the secondary spans on the protection channels. These spans will be preempted during a ring/span switch.
- Click **OK**. The node information appears in the Required Nodes/Lines list, and the map graphic indicates which nodes are primary and secondary.
- In the Circuit Constraints for Automatic Routing area, 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 choose included nodes and spans is the order in which the circuit will be routed. Click spans twice to change the circuit direction. If you are creating a path

protection to BLSR traditional handoff, exclude the unprotected links from the primary node towards the secondary node. If you are creating a path protection to BLSR integrated handoff, exclude unnecessary DRIs on the path protection segments.

- h. Review the circuit constraints. To change the circuit routing order, choose a node in the Required Nodes/Lines lists and click the **Up** or **Down** buttons to change the circuit routing order. Click **Remove** to remove a node or span.

Step 17 If you selected Review Route Before Creation in [Step 11](#), complete the following substeps; otherwise, continue with [Step 18](#):

- 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-E161 Create a Manually Routed Optical Circuit” procedure on page 6-10](#) to assign the circuit route yourself.

Step 18 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 checked Auto-ranged, CTC automatically creates the number of circuits entered in Number of Circuits. If autoranging cannot complete all the circuits (for example, not enough bandwidth is available on the source or destination), a dialog box appears. Set the new source or destination for the remaining circuits, then click **Finish** to continue autoranging. After completing the circuit(s), the Circuits window appears.
- If you entered more than 1 in Number of Circuits and did not check Auto-ranged, the Circuit Creation dialog box appears for you to create the remaining circuits. Repeat Steps [7](#) through [17](#) for each additional circuit. After completing the circuit(s), the Circuits window appears.

Step 19 In the Circuits window, verify that the circuit(s) you created appear in the circuits list.

Step 20 Complete the [“NTP-E85 Test Optical Circuits” procedure on page 6-16](#). Skip this step if you built a test circuit.

Stop. You have completed this procedure.

NTP-E161 Create a Manually Routed Optical Circuit

Purpose	This procedure creates a manually routed, bidirectional or unidirectional OC-N circuit, including STS-1 and concatenated STS-3c, STS6c, STS9c, STS-12c, STS-24c, STS-48c, or STS-192c speeds.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up, page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note To create an STS-24c circuit on an OC-48 card port or an ASAP card with port type set to OC-48, the STS-1 through STS-24 or the STS-25 through STS-48 sub-pool must be available.

- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at a node on the network where you want to create an optical circuit. If you are already logged in, continue with [Step 2](#).
- Step 2** If you want to assign a name to the tunnel source and destination ports before you create the circuit, complete the “[DLP-E110 Assign a Name to a Port](#)” task on page 17-11. If not, continue with [Step 3](#).
- Step 3** If the optical ports at the source and/or destination nodes are ASAP PPM ports, complete the “[NTP-E155 Manage Pluggable Port Modules on the ASAP Card](#)” procedure on page 10-2 and set the port type to OC3, OC12, or OC48, as necessary.
- Step 4** From the View menu, choose **Go To Network View**.
- Step 5** Click the **Circuits** tab, then click **Create**.
- Step 6** In the Circuit Creation dialog box, complete the following fields:
- Circuit Type—Choose **STS**.
 - Number of Circuits—Enter the number of OC-N circuits you want to create. The default is 1.
 - Auto-ranged—Applies to automatically routed circuits only. If you entered more than 1 in the Number of Circuits field, uncheck this box. (The box is unavailable if only one circuit is entered in Number of Circuits.)
- Step 7** Click **Next**.
- Step 8** Define the circuit attributes ([Figure 6-1 on page 6-6](#)):
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
 - Size—Choose the circuit size: STS-1, STS-3c, STS-12c, STS-24c, STS-48c, or STS-192c. ASAP optical ports also allow circuit sizes of STS-6c and STS-9c.
 - Bidirectional—Leave checked (default) for this circuit. When checked, CTC creates a two-way circuit.
 - Create cross-connects only (TL1-like)—Check this check box if you want to create one or more cross-connects to complete a signal path for TL1-generated circuits. Also, VT tunnels and Ethergroup sources and destinations are unavailable.
 - Diagnostic—Leave unchecked.

- State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the IS-NR service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the OOS-MA,DSBLD service state. Traffic is not passed on the circuit.
 - IS,AINS—Puts the circuit cross-connects in the OOS-AU,AINS service state and suppresses alarms and conditions. When the connections receive a valid signal, the service state automatically changes to IS-NR.
 - OOS,MT—Puts the circuit cross-connects in the OOS-MA,MT service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
- Apply to drop ports—Check this check box if you want to apply the administrative state chosen in the State field to the circuit source and destination ports. CTC applies the administrative state to the ports only if the circuit bandwidth is the same as the port bandwidth or, if the port bandwidth is larger than the circuit, the circuit must be the first circuit to use the port. If not, a Warning dialog box displays the ports where the administrative state could not be applied. If the check box is unchecked, CTC does not apply the administrative state of the source and destination ports.



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—If selected, CTC displays only protected cards and ports (1+1 protection) as choices for the circuit source and destination.

- Step 9** If the circuit will be routed on a path protection, complete the “[DLP-E111 Provision Path Protection Selectors During Circuit Creation](#)” task on page 17-11.
- Step 10** Click **Next**.
- Step 11** Complete the “[DLP-E41 Provision an Optical Circuit Source and Destination](#)” task on page 16-57 for the OC-N circuit you are creating.
- Step 12** In the Circuit Routing Preferences area ([Figure 6-2 on page 6-7](#)), uncheck **Route Automatically**.
- Step 13** Set the circuit path protection:
- To route the circuit on a protected path, leave **Fully Protected Path** checked and continue with [Step 14](#).
 - To create an unprotected circuit, uncheck **Fully Protected Path** and continue with [Step 18](#).
 - To route the circuit on a BLSR protection channel, if available, uncheck **Fully Protected Path**, check **Protection Channel Access**, click **Yes** in the Warning dialog box, and then continue with [Step 18](#).



Caution Circuits routed on BLSR protection channels are not protected and are preempted during BLSR switches.

- Step 14** If you selected Fully Protected Path in [Step 13](#) and the circuit will be routed on a path protection, choose one of the following:

- **Nodal Diversity Required**—Ensures that the primary and alternate paths within the path protection portions of the complete circuit path are nodally diverse.
- **Nodal Diversity Desired**—Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates fiber-diverse paths for the path protection portion of the complete circuit path.
- **Link Diversity Only**—Specifies that only fiber-diverse primary and alternate paths for path protection portions of the complete circuit path are needed. The paths might be node-diverse, but CTC does not check for node diversity.

- Step 15** If you selected Fully Protected Path in [Step 13](#) and the circuit will be routed on a BLSR DRI or path protection DRI, check the **Dual Ring Interconnect** check box.
- Step 16** Click **Next**. In the Route Review/Edit area, node icons appear for you to route the circuit manually. The green arrows pointing from the source node to other network nodes indicate spans that are available for routing the circuit. If you checked Dual Ring Interconnect for BLSR, continue with [Step 17](#). If you did not check Dual Ring Interconnect, continue with [Step 18](#).
- Step 17** If you checked Dual Ring Interconnect in [Step 15](#) for a BLSR DRI, complete the following substeps to assign primary and secondary nodes and ring type.
- In the Route/Review Edit area, click the **BLSR-DRI Nodes** tab.
 - Click **Add BLSR DRI**.
 - In the Node options area of the BLSR DRI Options dialog box, complete the following:
 - **Primary Node**—For a traditional or integrated BLSR-DRI, choose the node where the circuit interconnects the rings.
 - **Secondary Node**—For a traditional or integrated BLSR-DRI, choose the secondary node for the circuit to interconnect the rings. This route is used if the route on the primary node fails.
 - **Primary Node #2**—For a traditional BLSR-DRI where two primary nodes are required to interconnect rings, choose the second primary node.
 - **Secondary Node #2**—For a traditional BLSR-DRI where two secondary nodes are required, choose the second secondary node.
 - Click **OK**.
 - Review the circuit constraints. To change the circuit routing order, choose a node in the Required Nodes/Lines lists and click the **Up** or **Down** buttons to change the circuit routing order. Click **Remove** to remove a node or span.
 - Click the **Included Spans** tab, and continue with [Step 19](#).
- Step 18** Complete the “[DLP-E228 Provision an OC-N Circuit Route](#)” task on page 18-35.
- Step 19** Click **Finish**. If the path does not meet the specified path diversity requirement, an error message appears and allows you to change the circuit path. If you entered more than 1 in the Number of circuits field, the Circuit Creation dialog box appears after the circuit is created so you can create the remaining circuits. Repeat Steps 8 through 18 for each additional circuit.
- When provisioning a protected circuit, you only need to select one path of 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 20** When all the circuits are created, the main Circuits window appears. Verify that the circuit(s) you created appear in the window.
- Step 21** Complete the “[NTP-E85 Test Optical Circuits](#)” procedure on page 6-16.

Stop. You have completed this procedure.

NTP-E40 Create a Unidirectional Optical Circuit with Multiple Drops

Purpose	This procedure creates a unidirectional OC-N circuit with multiple traffic drops (circuit destinations). The ONS 15600 supports up to 2048 1:2 nonblocking broadcast connections or up to 682 1:n (where n is less than or equal to 8) nonblocking broadcast connections.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up, page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

-
- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at a node on the network where you will create the optical circuit. If you are already logged in, continue with [Step 2](#).
- Step 2** If you want to assign a name to the tunnel source and destination ports before you create the circuit, complete the “[DLP-E110 Assign a Name to a Port](#)” task on page 17-11. If not, continue with [Step 3](#).
- Step 3** If the optical ports at the source and/or destination nodes are ASAP PPM ports, complete the “[NTP-E155 Manage Pluggable Port Modules on the ASAP Card](#)” procedure on page 10-2 and set the port type to OC3, OC12, or OC48, as necessary.
- Step 4** From the View menu, choose **Go To Network View**.
- Step 5** Click the **Circuits** tab, then click **Create**.
- Step 6** In the Circuit Creation dialog box, complete the following fields:
- Circuit Type—Choose **STS**.
 - Number of Circuits—Leave the default unchanged (1).
 - Auto-ranged—Unavailable when the Number of Circuits field is 1.
- Step 7** Click **Next**.
- Step 8** Define the circuit attributes:
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
 - Size—Choose the circuit size: STS-1, STS-3c, STS-12c, STS-24c, STS-48c, or STS-192c. ASAP optical ports also allow circuit sizes of STS-6c and STS-9c.
 - Bidirectional—Uncheck this box for this circuit.
 - Create cross-connects only (TL1-like)—Check this check box if you want to create one or more cross-connects to complete a signal path for TL1-generated circuits. Also, VT tunnels and Ethergroup sources and destinations are unavailable.
 - Diagnostic—Leave unchecked.

- State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the IS-NR service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the OOS-MA,DSBLD service state. Traffic is not passed on the circuit.
 - IS,AINS—Puts the circuit cross-connects in the OOS-AU,AINS service state and suppresses alarms and conditions. When the connections receive a valid signal, the service state automatically changes to IS-NR.
 - OOS,MT—Puts the circuit cross-connects in the OOS-MA,MT service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
- Apply to drop ports—Check this check box if you want to apply the administrative state chosen in the State field to the circuit source and destination ports. CTC applies the administrative state to the ports only if the circuit bandwidth is the same as the port bandwidth or, if the port bandwidth is larger than the circuit, the circuit must be the first circuit to use the port. If not, a Warning dialog box displays the ports where the administrative state could not be applied. If the check box is unchecked, CTC does not apply the administrative state of the source and destination ports.



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—Check this box if you want the circuit routed to only protect drops. If you check this box, CTC displays only protected cards as source and destination choices.

- Step 9** If the circuit will be routed on a path protection, complete the “[DLP-E111 Provision Path Protection Selectors During Circuit Creation](#)” task on page 17-11.
- Step 10** Click **Next**.
- Step 11** Complete the “[DLP-E41 Provision an Optical Circuit Source and Destination](#)” task on page 16-57 for the circuit you are creating.
- Step 12** In the Circuit Routing Preferences area, uncheck **Route Automatically**. When unchecked, the Using Required Nodes/Spans and Review Route Before Circuit Creation check boxes are not available.
- Step 13** Set the circuit path protection:
- To route the circuit on a protected path, leave **Fully Protected Path** checked and continue with [Step 14](#). Fully protected paths might or might not have path protection path segments (with primary and alternate paths), and the path diversity options apply only to path protection path segments, if any exist.
 - To create an unprotected circuit, uncheck **Fully Protected Path** and continue with [Step 16](#).
 - To route the circuit on a BLSR protection channel, if available, uncheck **Fully Protected Path**, check **Protection Channel Access**, click **Yes** in the Warning dialog box, and then continue with [Step 16](#).

**Caution**

Circuits routed on BLSR protection channels are not protected and are preempted during BLSR switches.

Step 14 If you selected Fully Protected Path in [Step 13](#), choose one of the following:

- **Nodal Diversity Required**—Ensures that the primary and alternate paths within the path protection portions of the complete circuit path are nodally diverse.
- **Nodal Diversity Desired**—Specifies that node diversity is preferred, but if node diversity is not possible, CTC creates fiber-diverse paths for the path protection portion of the complete circuit path.
- **Link Diversity Only**—Specifies that only fiber-diverse primary and alternate paths for path protection portions of the complete circuit path are needed. The paths might be node-diverse, but CTC does not check for node diversity.



Note 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.

Step 15 If you selected Fully Protected Path in [Step 13](#) and the circuit will be routed on a path protection DRI, check the **Dual Ring Interconnect** check box.

Step 16 Click **Next**. In the Route Review and Edit area, node icons appear 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 17 Complete the “[DLP-E228 Provision an OC-N Circuit Route](#)” task on page 18-35.



Note When provisioning a protected circuit, you only need to select one 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 18 Click **Finish**. After completing the circuit, the Circuits window appears.

Step 19 In the Circuits window, click the circuit that you want to route to multiple drops. The Delete, Edit, and Search radio buttons become active.

Step 20 Click **Edit**. The Edit Circuit window appears with the General tab selected. All nodes in the DCC network appear 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 21 In the Edit Circuit dialog box, click the **Drops** tab. A list of existing drops appears.

Step 22 Click **Create**.

Step 23 In 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**—Choose the port and/or STS from the Port and STS drop-down lists. The choice in these lists depends on the card selected in Step b.
- d. The routing preferences for the new drop will match those of the original circuit. However, you can modify the following:
 - If the original circuit was routed on a protected path, you can change the nodal diversity options: Nodal Diversity Required, Nodal Diversity Desired, or Link Diversity Only. See [Step 14](#) for options descriptions.

- If the original circuit was not routed on a protected path, the Protection Channel Access option is available. See [Step 13](#) for a description of the PCA option.
 - e. Click **OK**. The new drop appears in the Drops list.
- Step 24** If you need to create additional drops on the circuit, repeat Steps [21](#) through [23](#).
- Step 25** Click **Close**. The Circuits window appears.
- Step 26** Verify that the new drops appear under the Destination column for the circuit you edited. If they do not appear, repeat Steps [22](#) through [25](#) while verifying that all options are provisioned correctly.
- Step 27** Complete the “[NTP-E85 Test Optical Circuits](#)” procedure on page 6-16.
- Stop. You have completed this procedure.**
-

NTP-E85 Test Optical Circuits

Purpose	This procedure tests the first optical circuit created on the source or destination port.
Tools/Equipment	Test set capable of optical speeds, appropriate fibers, and attenuators
Prerequisite Procedures	This procedure assumes you completed facility loopback tests to test the fibers and cables from the source and destination ONS 15600s to the fiber distribution panel or the DSX. If this has not been done, do so now. In addition, you must complete one of the following procedures: <ul style="list-style-type: none"> • NTP-E160 Create an Automatically Routed Optical Circuit, page 6-4 • NTP-E161 Create a Manually Routed Optical Circuit, page 6-10
Required/As Needed	Required
Onsite/Remote	Onsite
Security Level	Provisioning or higher



Caution

You cannot disconnect fibers and connect test sets if the circuit is carrying traffic.

- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at the source node. If you are already logged in, continue with Step 2.
- Step 2** Complete the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68 to set the circuit and circuit ports to the OOS-MA,MT service state.
- Step 3** Set up the loopback cable at the destination node:
- a. 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. Use appropriate attenuation; for information on attenuation, refer to the test set manual. 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.
 - b. Install the loopback cable on the port you are testing. Connect the Tx connector to the Rx connector of the port being tested.

**Note**

Use an appropriately sized attenuator when connecting transmit ports to receive ports. On the long-reach optical cards (OC48 LR 16 Port 1550 and the OC192 LR 4 Port 1550), use a 15 dB attenuator; on the short-reach optical cards (OC48 SR 16 Port 1310 and OC192 SR4 Port 1310), use a 3 dB attenuator.

Step 4 Set up the loopback cable at the source node:

- a. Test the loopback cable by connecting one end to the test set Tx port and the other end to the test Rx port. Use appropriate attenuation; for more information, refer to the test set manual. 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.
- b. At the source node, attach the loopback cable to the port you are testing. Connect the Tx port of the test set to the circuit Rx port, and the test set Rx port to the circuit Tx port.

**Note**

Use an appropriately sized attenuator when connecting transmit ports to receive ports. On the long-reach optical cards (OC48 LR 16 Port 1550 and the OC192 LR 4 Port 1550), use a 15 dB attenuator; on the short-reach optical cards (OC48 SR 16 Port 1310 and OC192 SR4 Port 1310), use a 3 dB attenuator.

Step 5 Configure the test set for the source OC-48c or OC-192c ONS 15600 card. For information about configuring your test set, consult your test set user guide.

Step 6 Verify that the test set displays a clean signal. If a clean signal is not present, repeat Steps 2 through 5 to make sure you have configured the test set and cabling correctly.

Step 7 Inject errors from the test set. Verify that the errors appear at the source and destination nodes.

Step 8 Clear the performance monitoring (PM) parameters for the ports that you tested. See the “[DLP-E63 Clear Selected PM Counts](#)” task on page 16-78 for instructions.

Step 9 Perform protection switch testing appropriate to the SONET topology:

- For BLSRs, see the “[DLP-E227 BLSR Switch Test](#)” task on page 18-31.
- For path protection configurations, see the “[DLP-E40 Path Protection Protection Switching Test](#)” task on page 16-56.

Step 10 Perform a bit error rate (BER) test for 12 hours or according to site specification. For information about configuring your test set for BER testing, see your test set user guide.

Step 11 After the BER 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 12 Complete the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68 to change the circuit and circuit ports from the OOS-MA,MT service state to their previous service states.

Stop. You have completed this procedure.

NTP-E82 Create a Half Circuit on a BLSR or 1+1 Node

Purpose	This procedure creates an OC-N circuit from a drop card to an OC-N trunk card on the same node in a BLSR or 1+1 topology.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up, page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

-
- Step 1** Complete the [“DLP-E26 Log into CTC” task on page 16-39](#) at a node on the network where you will create the half circuit. If you are already logged in, continue with [Step 2](#).
- Step 2** If you want to assign a name to the circuit source and destination ports before you create the circuit, complete the [“DLP-E110 Assign a Name to a Port” task on page 17-11](#). If not, continue with [Step 3](#).
- Step 3** If the ports at the source and/or destination nodes are ASAP PPM ports, complete the [“NTP-E155 Manage Pluggable Port Modules on the ASAP Card” procedure on page 10-2](#).
- Step 4** From the View menu, choose **Go To Network View**.
- Step 5** Click the **Circuits** tab, then click **Create**.
- Step 6** In the Circuit Creation dialog box, complete the following fields:
- Circuit Type—Choose **STS**.
 - Number of circuits—Enter the number of circuits you want to create. The default is 1.
 - Auto-ranged—Uncheck this check box; it is automatically selected if you enter more than 1 in the Number of Circuits field.
- Step 7** Click **Next**.
- Step 8** Define the circuit attributes:
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
 - Size—Choose **STS-1**.
 - Bidirectional—Leave checked for this circuit (default).
 - Create cross-connects only (TL1-like)—Check this box if you want to create one or more cross-connects to complete a signal path for TL1-generated circuits. Also, VT tunnels and Ethergroup sources and destinations are unavailable.
 - Diagnostic—Leave unchecked.
 - State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the IS-NR service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the OOS-MA,DSBLD service state. Traffic is not passed on the circuit.
 - IS,AINS—Puts the circuit cross-connects in the OOS-AU,AINS service state and suppresses alarms and conditions. When the connections receive a valid signal, the service state automatically changes to IS-NR.

- OOS,MT—Puts the circuit cross-connects in the OOS-MA,MT service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
- Apply to drop ports—Check this check box if you want to apply the administrative state chosen in the State field to the circuit source and destination ports. CTC applies the administrative state to the ports only if the circuit bandwidth is the same as the port bandwidth or, if the port bandwidth is larger than the circuit, the circuit must be the first circuit to use the port. If not, a Warning dialog box displays the ports where the administrative state could not be applied. If the check box is unchecked, CTC does not apply the administrative state of the source and destination ports.



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—Uncheck this box.

Step 9 Click **Next**.

Step 10 Complete the “[DLP-E112 Provision a Half Circuit Source and Destination on a BLSR or 1+1](#)” task on page 17-12.

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 the Number of circuits field and checked Auto-ranged, CTC automatically creates the number of circuits entered in Number of circuits. If autoranging cannot complete all the circuits, for example, because sequential ports are unavailable at the source or destination, a dialog box appears. Set the new source or destination for the remaining circuits, then click **Finish** to continue autoranging. After completing the circuit(s), the Circuits window appears.
- If you entered more than 1 in the Number of circuits field and did not check Auto-ranged, the Circuit Creation dialog box appears so you can create the remaining circuits. Repeat Steps 6 through 10 for each additional circuit. After completing the circuit(s), the Circuits window appears.

Step 12 In the Circuits window, verify that the new circuits appear in the circuits list.

Step 13 Complete the “[NTP-E85 Test Optical Circuits](#)” procedure on page 6-16. Skip this step if you built a test circuit.

Stop. You have completed this procedure.

NTP-E83 Create a Half Circuit on a Path Protection Node

Purpose	This procedure creates an OC-N circuit from a drop card to an OC-N line card on the same path protection node.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up, page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

-
- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at a node on the network where you will create the circuit. If you are already logged in, continue with [Step 2](#).
- Step 2** If you want to assign a name to the circuit source and destination ports before you create the circuit, complete the “[DLP-E110 Assign a Name to a Port](#)” task on page 17-11. If not, continue with [Step 3](#).
- Step 3** If the ports at the source and/or destination nodes are ASAP PPM ports, complete the “[NTP-E155 Manage Pluggable Port Modules on the ASAP Card](#)” procedure on page 10-2.
- Step 4** From the View menu, choose **Go To Network View**.
- Step 5** Click the **Circuits** tab, then click **Create**.
- Step 6** In the Circuit Creation dialog box, complete the following fields:
- Circuit Type—Choose **STS**.
 - Number of Circuits—Enter the number of circuits you want to create. The default is 1.
 - Auto-ranged—Uncheck this check box; it is automatically selected if you enter more than 1 in the Number of Circuits field.
- Step 7** Click **Next**.
- Step 8** Define the circuit attributes:
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
 - Size—Choose **STS-1**.
 - Bidirectional—Leave checked for this circuit (default).
 - Create cross-connects only (TL1-like)—Check this box if you want to create one or more cross-connects to complete a signal path for TL1-generated circuits.
 - Diagnostic—Leave unchecked.
 - State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the IS-NR service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the OOS-MA,DSBLD service state. Traffic is not passed on the circuit.
 - IS,AINS—Puts the circuit cross-connects in the OOS-AU,AINS service state and suppresses alarms and conditions. When the connections receive a valid signal, the service state automatically changes to IS-NR.

- OOS,MT—Puts the circuit cross-connects in the OOS-MA,MT service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
- Apply to drop ports—Check this box if you want to apply the state chosen in the State field to the circuit source and destination ports. CTC will apply the circuit state to the ports only if the circuit bandwidth is the same as the port bandwidth or, if the port bandwidth is larger than the circuit, the circuit must be the first circuit to use the drop port. If not, a Warning dialog box displays the ports where the circuit state could not be applied. If the box is unchecked, CTC will not change the state of the source and destination ports.



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—Leave this box unchecked.

- Step 9** Complete the “[DLP-E111 Provision Path Protection Selectors During Circuit Creation](#)” task on page 17-11.
- Step 10** Click **Next**.
- Step 11** Complete the “[DLP-E113 Provision a Half Circuit Source and Destination on a Path Protection](#)” task on page 17-13.
- Step 12** 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 the Number of circuits field and checked Auto-ranged, CTC automatically creates the number of circuits entered in Number of circuits. If autoranging cannot complete all the circuits, for example, because sequential ports are unavailable at the source or destination, a dialog box appears. Set the new source or destination for the remaining circuits, then click Finish to continue autoranging. After completing the circuit(s), the Circuits window appears.
 - If you entered more than 1 in the Number of circuits field and did not check Auto-ranged, the Circuit Creation dialog box appears so you can create the remaining circuits. Repeat Steps 6 through 11 for each additional circuit. After completing the circuit(s), the Circuits window appears.
- Step 13** In the Circuits window, verify that the new circuits appear in the circuits list.
- Step 14** Complete the “[NTP-E85 Test Optical Circuits](#)” procedure on page 6-16. Skip this step if you built a test circuit.

Stop. You have completed this procedure.

NTP-E129 Create Overhead Circuits

Purpose	This procedure creates overhead circuits on an ONS 15600 network. ONS 15600 overhead circuits include DCC tunnels and IP-encapsulated tunnels.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up, page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

-
- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at the node where you will create the overhead circuit. If you are already logged in, continue with Step 2.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** As needed, complete the “[DLP-E105 Create a DCC Tunnel](#)” task on page 17-5.
- Step 4** As needed, complete the “[DLP-E6 Create an IP-Encapsulated Tunnel](#)” task on page 16-9.
- Stop. You have completed this procedure.**
-

NTP-E130 Create an ASAP Ethernet Circuit

Purpose	This procedure creates an Ethernet circuit using ASAP PPM ports.
Tools/Equipment	An ASAP card must be installed.
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up, page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note

This procedure requires the use of automatic routing. Automatic routing is not available if both the Automatic Circuit Routing NE default and the Network Circuit Automatic Routing Overridable NE default are set to FALSE. For a full description of these defaults see Appendix C, “Network Element Defaults,” in the *Cisco ONS 15600 Reference Manual*.

-
- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at the node where you will create the circuit. If you are already logged in, continue with Step 2.
- Step 2** Complete the “[NTP-E155 Manage Pluggable Port Modules on the ASAP Card](#)” procedure on page 10-2 and set the port type to **ETHR**.
- Step 3** From the View menu, choose **Go to Network View**.
- Step 4** Click the **Circuits** tab and click **Create**.
- Step 5** In the Create Circuits dialog box, complete the following fields:

- Circuit Type—Choose **STS**.
- Number of Circuits—Leave the default unchanged (1).
- Auto-ranged—Unavailable.

Step 6 Click **Next**.

Step 7 Define the circuit attributes:

- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
- Size—Choose the circuit size. Valid circuit sizes for an ASAP circuit are STS-1, STS-3c, STS6c, STS-9c, STS-12c, and STS-24c.
- Bidirectional—Leave the default unchanged (checked).
- Create cross-connects only (TL1-like)—Uncheck this box.
- Diagnostic—Leave unchecked.
- State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the IS-NR service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the OOS-MA,DSBLD service state. Traffic is not passed on the circuit.
 - OOS,MT—Puts the circuit cross-connects in the OOS-MA,MT service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
- Apply to drop ports—Leave this box at the default (unchecked).



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—Leave the default unchanged (unchecked).

Step 8 If the circuit will be routed on a path protection, complete the “[DLP-E111 Provision Path Protection Selectors During Circuit Creation](#)” task on page 17-11.

Step 9 Click **Next**.

Step 10 Provision the circuit source:

- From the Node drop-down list, choose the circuit source node. Either end node can be the point-to-point circuit source.
- From the Slot drop-down list, choose the slot containing the ASAP card that you will use for one end of the point-to-point circuit.
- From the Port drop-down list, choose a port.

Step 11 Click **Next**.

Step 12 Provision the circuit destination:

- From the Node drop-down list, choose the circuit destination node.

- b. From the Slot drop-down list, choose the slot containing the card that you will use for other end of the point-to-point circuit.
- c. From the Port drop-down list, choose a port, if applicable.

Step 13 Click **Next**.

Step 14 In the left pane of the Circuit Routing Preferences panel, confirm that the following information is correct:

- Circuit name
- Circuit type
- Circuit size
- ONS nodes

Step 15 If the information is not correct, click the **Back** button and repeat Steps 5 through 14 with the correct information. If the information is correct, check **Route Automatically**.

Step 16 Click **Finish**.



Note To change the capacity of an ASAP circuit, you must delete the original circuit and reprovision a new larger circuit.

Step 17 Complete the [“DLP-E201 Provision ASAP Ethernet Ports” task on page 18-3](#), as necessary.

Step 18 Complete the [“DLP-E202 Provision ASAP POS Ports” task on page 18-3](#), as necessary.

Step 19 Complete the [“NTP-E131 Test ASAP Ethernet Circuits” procedure on page 6-24](#).

Stop. You have completed this procedure.

NTP-E131 Test ASAP Ethernet Circuits


Purpose	This procedure tests circuits created on ASAP Ethernet ports.
Tools/Equipment	Ethernet test set and appropriate fibers
Prerequisite Procedures	This procedure assumes you completed facility loopback tests to test the fibers and cables from the source and destination ONS 15600s to the fiber distribution panel or the DSX, and “NTP-E130 Create an ASAP Ethernet Circuit” procedure on page 6-22 .
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Step 1 Complete the [“DLP-E26 Log into CTC” task on page 16-39](#) at the node where you will create the circuit.

Step 2 Complete the [“DLP-E188 Change a Circuit Service State” task on page 17-68](#) to change the circuit and circuit ports to the OOS-MA,MT service state.

Step 3 On the shelf graphic, double-click the circuit source card.

Step 4 Click the **Provisioning > Ethernet > Port** tabs.

- Step 5** Verify the following settings:
- Admin State—OOS,MT
 - Flow Control Neg—Checked or unchecked as indicated by the circuit or site plan
 - Max Size—Checked or unchecked as indicated by the circuit or site plan
- Step 6** Repeat Steps 1 through 5 for the destination node.
- Step 7** 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 are not able to send and receive Ethernet traffic.
- Step 8** 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 9** Transmit Ethernet frames between both test sets. If you cannot transmit and receive Ethernet traffic between the nodes, repeat Steps 1 through 8 to make sure you configured the Ethernet ports and test set correctly.
- Step 10** Perform protection switch testing appropriate to the SONET topology:
- For path protection configurations, complete the “[DLP-E40 Path Protection Protection Switching Test](#)” task on page 16-56.
 - For BLSRs, complete the “[DLP-E227 BLSR Switch Test](#)” task on page 18-31.
- Configure your test set according to local site practice. For information about configuring your test set, see your test set user guide.
- Step 11** Complete the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68 to change the circuit and circuit ports to the IS-NR service state.
- Step 12** After the circuit 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.
- Stop. You have completed this procedure.**

NTP-E154 Create an STS Test Circuit around the Ring

Purpose	This procedure creates an STS test circuit that routes traffic around a ring with the source and destination located on different ports of the same node.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up , page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at a node on the network where you want to create an optical circuit. If you are already logged in, continue with [Step 2](#).

- Step 2** If you want to assign a name to the circuit source and destination ports before you create the circuit, complete the “[DLP-E110 Assign a Name to a Port](#)” task on page 17-11. If not, continue with [Step 3](#).
- Step 3** If the optical ports at the source and/or destination nodes are ASAP PPM ports, complete the “[NTP-E155 Manage Pluggable Port Modules on the ASAP Card](#)” procedure on page 10-2 and set the port type to OC3, OC12, or OC48, as necessary.
- Step 4** From the View menu, choose **Go To Network View**.
- Step 5** Click the **Circuits** tab, then click **Create**.
- Step 6** In the Circuit Creation dialog box, complete the following fields:
- Circuit Type—Choose **STS**.
 - Number of Circuits—Enter the number of OC-N circuits you want to create. The default is 1.
 - Auto-ranged—Applies to automatically routed circuits only. If you entered more than 1 in the Number of Circuits field, uncheck this box. (The box is unavailable if only one circuit is entered in Number of Circuits.)
- Step 7** Click **Next**.
- Step 8** Define the circuit attributes ([Figure 6-1 on page 6-6](#)):
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.
 - Size—Choose the circuit size: STS-1, STS-3c, STS-12c, STS-24c, STS-48c, or STS-192c. ASAP optical ports also allow circuit sizes of STS-6c and STS-9c.
 - Bidirectional—Leave checked (default) for this circuit. When checked, CTC creates a two-way circuit.
 - Create cross-connects only (TL1-like)—Check this check box if you want to create one or more cross-connects to complete a signal path for TL1-generated circuits. Also, VT tunnels and Ethergroup sources and destinations are unavailable.
 - Diagnostic—Leave unchecked.
 - State—Choose the administrative state to apply to all of the cross-connects in a circuit:
 - IS—Puts the circuit cross-connects in the IS-NR service state.
 - OOS,DSBLD—Puts the circuit cross-connects in the OOS-MA,DSBLD service state. Traffic is not passed on the circuit.
 - IS,AINS—Puts the circuit cross-connects in the OOS-AU,AINS service state and suppresses alarms and conditions. When the connections receive a valid signal, the service state automatically changes to IS-NR.
 - OOS,MT—Puts the circuit cross-connects in the OOS-MA,MT service state. The maintenance state does not interrupt traffic flow; it suppresses alarms and conditions and allows loopbacks to be performed on the circuit. Use OOS,MT for circuit testing or to suppress circuit alarms temporarily. Change the administrative state to IS; IS,AINS; or OOS,DSBLD when testing is complete. See the “[DLP-E188 Change a Circuit Service State](#)” task on page 17-68. For additional information about circuit service states, refer to the “Circuits and Tunnels” chapter in the *Cisco ONS 15600 Reference Manual*.
 - Apply to drop ports—Check this check box if you want to apply the administrative state chosen in the State field to the circuit source and destination ports. CTC applies the administrative state to the ports only if the circuit bandwidth is the same as the port bandwidth or, if the port bandwidth is

larger than the circuit, the circuit must be the first circuit to use the port. If not, a Warning dialog box displays the ports where the administrative state could not be applied. If the check box is unchecked, CTC does not apply the administrative state of the source and destination ports.



Note If ports managed into the IS administrative state are not receiving signals, loss of signal alarms are generated and the port service state transitions to OOS-AU,FLT.

- Protected Drops—If selected, CTC displays only protected cards and ports (1+1 protection) as choices for the circuit source and destination.

Step 9 Click **Next**.

Step 10 Choose the circuit source:

- From the Node drop-down list, choose the node where the circuit will originate.
- From the Slot drop-down list, choose the slot containing the card where the circuit originates. (If card capacity is fully utilized, it does not appear in the menu.)
- Depending on the circuit origination card, choose the source port and/or STS from the Port and STS menus. The Port menu is only available if the card has multiple ports. STSs do not appear if they are already in use by other circuits.



Note The STSs that appear depend on the card, circuit size, and protection scheme.

Step 11 Click **Next**.

Step 12 Choose the circuit destination:



Note The destination port must be located on the same node as the circuit source port.

- From the Node drop-down list, choose the node selected in [Step 10a](#).
- From the Slot drop-down list, choose the slot containing the card where the circuit will terminate (destination card). (If a card's capacity is fully utilized, the card does not appear in the menu.)
- Depending on the card selected in [Step b](#), choose the destination port and/or STS from the Port and STS drop-down lists. The Port drop-down list is available only if the card has multiple ports. The STSs that appear depend on the card, circuit size, and protection scheme.

Step 13 Click **Next**.

Step 14 In the Circuit Routing Preferences area ([Figure 6-2 on page 6-7](#)), uncheck **Route Automatically**.

Step 15 When routing a test circuit with source and destination ports on the same node, the Fully Protected Path check box is automatically disabled. Choose one of the following options:

- To leave the test circuit unprotected, skip this step and continue with [Step 16](#).
- To route the test circuit on a BLSR protection channel, check **Protection Channel Access**, click **Yes** in the Warning dialog box, then continue with [Step 16](#).



Caution

Circuits routed on BLSR protection channels are not protected and are preempted during BLSR switches.

- Step 16** Click **Next**. In the Route Review/Edit area, node icons appear for you to route the circuit manually. The green arrows pointing from the source node to other network nodes indicate spans that are available for routing the circuit.
- Step 17** Complete the “[DLP-E228 Provision an OC-N Circuit Route](#)” task on page 18-35.
- Step 18** Click **Finish**. If the path does not meet the specified path diversity requirement, an error message appears and allows you to change the circuit path. If you entered more than 1 in the Number of circuits field, the Circuit Creation dialog box appears after the circuit is created so you can create the remaining circuits. Repeat Steps 8 through 17 for each additional circuit.
- Step 19** When all the circuits are created, the main Circuits window appears. Verify that the circuit(s) you created appear in the window.
- Stop. You have completed this procedure.**
-

NTP-E156 Create a Server Trail

Purpose	This procedure creates a server trail, which provides a connection between ONS nodes through a third-party network. You can create server trails between any two optical.
Tools/Equipment	None
Prerequisite Procedures	NTP-E167 Verify Network Turn-Up , page 6-2
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note You cannot create server trails on ports with DCC links.

- Step 1** Complete the “[DLP-E26 Log into CTC](#)” task on page 16-39 at the node where you will create the 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 **Provisioning > Server Trails** tabs.
- Step 4** Click **Create**.
- Step 5** In the Server Trail Creation dialog box, complete the following fields:
- **Type**—Choose **STS**.
 - **Size**—Depending on the type selected, choose the server trail size. For VTs, choose VT1.5 or VT2; for STSs, choose STS1, STS-3c, or STS-12c.
 - **Protection Type**—Choose one of the following protection types: Preemptible, Unprotected, or Fully Protected. The server trail protection sets the protection type for any circuit that traverses it.
 - **Number of Trails**—Enter the number of server trails. You can create multiple server trails from the same port. The maximum number is determined by how many circuits of a particular server trail size can be supported on the port (for example, you can create 12 STS-1 server trails from one OC-12 port).

- **SRLG**—Enter a value for the Shared Resource Link Group (SRLG). SRLG is used by Cisco Transport Manager (CTM) to specify link diversity. The SRLG field has no restrictions. If you create multiple server trails from one port, you can assign the same SRLG value to all the links to indicate that they originate from the same port.

Step 6 Click **Next**.

Step 7 In the Source area, complete the following:

- From the Node drop-down list, choose the node where the server trail will originate.
- From the Slot drop-down list, choose the slot containing the card where the server trail originates. (If a card's capacity is fully utilized, the card does not appear in the list.)
- Depending on the origination card, choose the source port and/or STS from the Port and STS lists. The Port list is only available if the card has multiple ports. STSs do not appear if they are already in use by other circuits.

Step 8 Click **Next**.

Step 9 In the Destination area, complete the following:

- From the Node drop-down list, choose the destination node.
- From the Slot drop-down list, choose the slot containing the card where the server trail will terminate (destination card). (If a card's capacity is fully utilized, the card does not appear in the list.)
- Depending on the card selected, choose the destination port and/or STS from the Port and STS drop-down lists. The Port drop-down list is available only if the card has multiple ports. The STSs that appear depend on the card, circuit size, and protection scheme.

Step 10 Click **Finish**.

Stop. You have completed this procedure.
