



## Turn Up a Network

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This chapter explains how to turn up and test Cisco ONS 15600 SDHs in point-to-point networks, multiplex section-shared protection rings (MS-SPRing), subnetwork connection protection (SNCP) rings, and dual-ring interconnects (DRIs).

### Before You Begin

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

1. [NTP-F144 Verify Node Turn-Up, page 5-2](#)—Complete this procedure before beginning network turn-up.
2. [NTP-F145 Provision a Point-to-Point Connection, page 5-3](#)—Complete this procedure as needed to connect two ONS 15600 SDHs in a point-to-point network.
3. [NTP-F146 Point-to-Point Network Acceptance Test, page 5-4](#)—Complete this procedure after you provision the point-to-point network.
4. [NTP-F147 Provision MS-SPRing Nodes, page 5-6](#)—Complete this procedure to provision ONS 15600 SDH nodes for a two-fiber MS-SPRing.
5. [NTP-F148 Create an MS-SPRing, page 5-8](#)—Complete this procedure after provisioning the MS-SPRing nodes.
6. [NTP-F149 Two-Fiber MS-SPRing Acceptance Test, page 5-8](#)—Complete this procedure after you provision a two-fiber MS-SPRing.
7. [NTP-F150 Provision a Traditional MS-SPRing Dual-Ring Interconnect, page 5-10](#)—As needed, complete this procedure after you provision an MS-SPRing.
8. [NTP-F151 Provision an Integrated MS-SPRing Dual-Ring Interconnect, page 5-12](#)—As needed, complete this procedure after you provision an MS-SPRing.
9. [NTP-F152 Provision SNCP Nodes, page 5-13](#)—Complete this procedure as needed to create an SNCP.
10. [NTP-F153 SNCP Acceptance Test, page 5-15](#)—Complete this procedure after you provision the SNCP.
11. [NTP-F154 Provision a Traditional SNCP Dual-Ring Interconnect, page 5-17](#)—As needed, complete this procedure after you provision an SNCP.
12. [NTP-F155 Provision an Integrated SNCP Dual-Ring Interconnect, page 5-19](#)—As needed, complete this procedure after you provision an SNCP.

13. [NTP-F156 Provision a Traditional MS-SPRing/SNCP Dual-Ring Interconnect, page 5-20](#)—As needed, complete this procedure after you provision an SNCP and MS-SPRing.
14. [NTP-F157 Provision an Integrated MS-SPRing/SNCP Dual-Ring Interconnect, page 5-23](#)—As needed, complete this procedure after you provision an SNCP and MS-SPRing.
15. [NTP-F158 Provision an Open-Ended SNCP, page 5-24](#)—As needed, complete this procedure after you provision an SNCP.
16. [NTP-F159 Open-Ended SNCP Acceptance Test, page 5-26](#)—As needed, complete this procedure after you provision an open-ended SNCP.
17. [NTP-F160 Provision an ONS 15600 SDH Node as a Protection Domain Hub, page 5-28](#)—As needed, complete this procedure to configure the ONS 15600 SDH as a hub node in a mixed protection domain for low-order traffic routing.
18. [NTP-F161 Mixed Protection Domain Hub Acceptance Test, page 5-30](#)—As needed, complete this procedure after you provision an ONS 15600 SDH node as a hub node for mixed protection domains.
19. [NTP-F162 Create a Logical Network Map, page 5-33](#)—Complete as needed.

## NTP-F144 Verify Node Turn-Up

<b>Purpose</b>	This procedure verifies that each ONS 15600 SDH is ready for network turn-up.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">Chapter 4, “Turn Up a Node”</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

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- Step 1** Complete the [“DLP-F181 Log into CTC” task on page 16-34](#). If you are already logged in, continue with Step 2.
  - Step 2** Complete the [“DLP-F292 Single Shelf Control Card Switch Test” task on page 17-80](#).
  - Step 3** From the View menu, choose **Go To Network View**.
  - Step 4** Click the **Alarms** tab. Complete the following steps:
    - a. Verify that the alarm filter is not on. See the [“DLP-F288 Disable Alarm Filtering” task on page 17-78](#) for instructions.
    - b. Verify that no critical or major alarms appear on the network. If alarms appear, investigate and resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide* for procedures.
  - Step 5** From the View menu, choose **Go To Previous View** to return to node view.
  - Step 6** Verify that the SW Version and Defaults that appear in the node view status area match the software version and NE defaults shown in your site plan. If either is not correct, complete the following procedures as needed:
    - If the software is not the correct version, install the correct version from the ONS 15600 SDH software CD. Upgrade procedures are located on the CD. Follow the upgrade procedures appropriate to the software currently installed on the node.

- If the node defaults are not correct, refer to the “Network Element Defaults” appendix in the *Cisco ONS 15600 SDH Reference Manual*.
- Step 7** Click the **Provisioning > General** tabs. Verify that all general node information settings match the settings of your site plan. If not, see the “[NTP-F133 Set Up Date, Time, and Contact Information](#)” procedure on page 4-4.
- Step 8** Click the **Provisioning > Timing** tabs. Verify that timing settings match the settings of your site plan. If not, see the “[NTP-F200 Change Node Management Information](#)” procedure on page 11-2.
- Step 9** Click the **Provisioning > Network** tabs. Ensure that the IP settings and other CTC network access information is correct. If not, see the “[NTP-F201 Change CTC Network Access](#)” procedure on page 11-2.
- Step 10** Click the **Provisioning > Protection** tabs. Verify that all protection groups have been created according to your site plan. If not, see the “[NTP-F138 Create a 1+1 Protection Group](#)” procedure on page 4-9 or the “[NTP-F204 Modify or Delete Optical 1+1 Port Protection Settings](#)” procedure on page 11-4.
- Step 11** Click the **Provisioning > Security** tabs. Verify that all users have been created and their security levels match the settings indicated by your site plan. If not, see the “[NTP-F206 Modify Users and Change Security](#)” procedure on page 11-6.
- Step 12** If Simple Network Management Protocol (SNMP) is provisioned on the shelf, click the **Provisioning > SNMP** tabs. Verify that all SNMP settings match the settings of your site plan. If not, see the “[NTP-F207 Change SNMP Settings](#)” procedure on page 11-6.
- Step 13** Provision the network using the applicable procedure shown in the “[Before You Begin](#)” section on page 5-1.
- Stop. You have completed this procedure.**
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## NTP-F145 Provision a Point-to-Point Connection

<b>Purpose</b>	This procedure provisions 1+1 protected spans between two ONS 15600 SDH nodes, or between an ONS 15600 SDH and an ONS 15454 SDH node.
<b>Tools/Equipment</b>	PC or UNIX workstation set up for ONS 15600 SDH access
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up</a> , page 5-2
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

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- Step 1** Attach fiber from working port to working port and from protect port to protect port on the two nodes that you will provision for a point-to-point configuration.
- Step 2** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at either node. The node view appears. If you are already logged in, continue with [Step 3](#).
- Step 3** Click the **Provisioning > Protection** tabs. Verify that 1+1 protection is created for the STM-N ports. Complete the “[NTP-F138 Create a 1+1 Protection Group](#)” procedure on page 4-9 if protection has not been created.




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**Note** The switching direction (unidirectional versus bidirectional) and the revertive setting (nonrevertive versus revertive) must be the same at each end.

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- Step 4** Repeat Steps 2 and 3 for the second node.
- Step 5** Verify that the working and protect ports in the 1+1 protection groups correspond to the physical fiber connections between the nodes; that is, verify that the working port in one node connects to the working port in the other node and that the protect port in one node connects to the protect port in the other node.
- Step 6** Complete the “[DLP-F253 Provision RS-DCC Terminations](#)” task on page 17-45 for the working STM-N port on both point-to-point nodes. Alternatively, if additional bandwidth is needed for CTC management, complete the “[DLP-F314 Provision MS-DCC Terminations](#)” task on page 18-14.




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**Note** Data communications channel (DCC) terminations are not provisioned on the protect port.

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**Note** If point-to-point nodes are not connected to a LAN, you will need to create the DCC terminations using a direct (craft) connection to the node. Remote provisioning is possible only after all nodes in the network have DCC terminations provisioned to in-service STM-N ports.

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- Step 7** As needed, complete the “[DLP-F315 Provision a Proxy Tunnel](#)” task on page 18-16.
- Step 8** As needed, complete the “[DLP-F316 Provision a Firewall Tunnel](#)” task on page 18-17.
- Step 9** Verify that timing is set up at both point-to-point nodes. If not, complete the “[NTP-F137 Set Up Timing](#)” procedure on page 4-8. If a node uses line timing, set the working STM-N as the timing source.
- Step 10** Complete the “[DLP-F254 Change the Service State for a Port](#)” task on page 17-47 to put the protect STM-N ports in service at both nodes.
- Step 11** Complete the “[NTP-F146 Point-to-Point Network Acceptance Test](#)” procedure on page 5-4.
- Stop. You have completed this procedure.**
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## NTP-F146 Point-to-Point Network Acceptance Test

<b>Purpose</b>	This procedure tests a point-to-point ONS 15600 SDH network.
<b>Tools/Equipment</b>	Optical power meter and fiber jumpers STM-N SONET/SDH test set Fiber cables An additional STM-N port depending on the span bandwidth at each node. These ports are required for test set connectivity. These are the ports you use as the circuit source and destination.
<b>Prerequisite Procedures</b>	<a href="#">NTP-F145 Provision a Point-to-Point Connection</a> , page 5-3
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- Step 1** Complete the “DLP-F181 Log into CTC” task on page 16-34 at one of the point-to-point nodes. The node view appears. 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 **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “DLP-F288 Disable Alarm Filtering” task on page 17-78 for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “DLP-F379 Export CTC Data” task on page 18-88 to export alarm information.
- Step 4** Click the **Conditions** tab. Complete the following steps:
- Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “DLP-F379 Export CTC Data” task on page 18-88 to export condition data.
- Step 5** On the network map, double-click the node that you logged into in [Step 1](#).
- Step 6** Create a test circuit from the login node to the other point-to-point node. Complete the “DLP-F291 Verify MS-SPRing Extension Byte Mapping” task on page 17-79. When you set the circuit state, choose **Unlocked** and check the **Apply to drop ports** check box. Choose one of the following options:
- For an STM-1 span, create a VC4 test circuit.
  - For an STM-4 span, create a VC4-4c test circuit.
  - For an STM-16 span, create a VC4-16c test circuit.
  - For an STM-64 span, create a VC4-64c test circuit. If an STM-64 test set is not available, create a VC4-16c test circuit across an STM-64 span.
- Step 7** Configure the test set for the test circuit type you created. If you are testing a VC4 circuit or a VC4-nc circuit on an STM-N card or port, you must have a direct optical interface to the ONS 15600 SDH. Set the test set for STM-N. For information about configuring your test set, consult your test set user guide.
- Step 8** Verify the integrity of all patch cables that will be used in this test by connecting one end to the test set transmit (Tx) connector the other to the test set receive (Rx) connector. Use appropriate attenuation on the test set receive connector; 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 before going to [Step 9](#).
- Step 9** Create a physical loopback at the circuit destination port. To do so, attach one end of a patch cable to the destination port’s Tx connector; attach the other end to the port’s Rx connector.
-  **Note** Use an appropriately sized attenuator when connecting transmit ports to receive ports. On the long-haul optical cards such as OC48/STM16 LR/LH 16 Port 1550 and the OC192/STM64 LR/LH 4 Port 1550, use a 15-dBm attenuator; on the short-haul optical cards such as OC48/STM16 SR/SH 16 Port 1310 and OC192/STM64 SR/SH 4 Port 1310, use a 3-dBm attenuator.
- Step 10** At the circuit source port:
- Connect the Tx connector of the test set to the Rx connector on the circuit source port.
  - Connect the test set Rx connector to the circuit Tx connector on the circuit source port.



**Note** Use appropriate attenuation on the test set receive connector; for more information, refer to the test set manual.

- Step 11** Verify that the test set displays a clean signal. If a clean signal is not present, repeat Steps 7 through 10 to make sure the test set and cabling are configured correctly. If the problem persists, refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
- Step 12** Inject bit errors from the test set. Verify that the errors display at the test sets, indicating a complete end-to-end circuit.
- Step 13** Complete the “[DLP-F192 Optical 1+1 Manual Protection Switch Test](#)” task on page 16-49.
- Step 14** Set up and complete a long-term bit error rate (BER) test on the working and the protect spans. Use the existing configuration and follow your site requirements for the specified length of time. Record the test results and configuration.
- Step 15** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 16** From the View menu, choose **Go To Network View**.
- Step 17** Click the **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on page 17-78 for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export alarm data.
- Step 18** If a node fails any test, repeat the test to verify correct setup and configuration. If the test fails again, refer to the next level of support.
- Step 19** Complete the “[DLP-F293 Delete Circuits](#)” task on page 17-81 to delete the test circuit.
- After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.

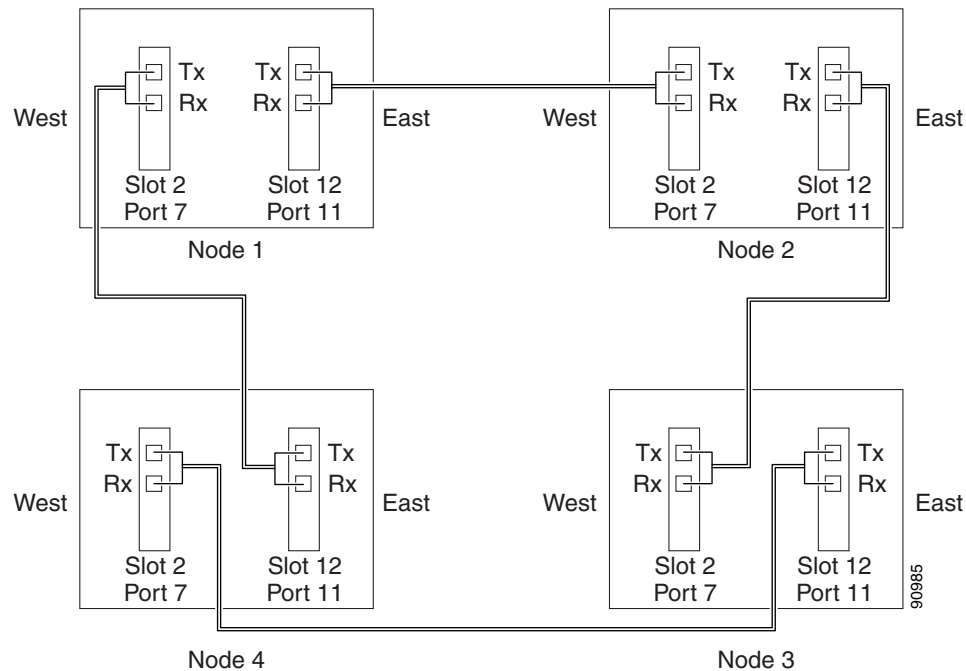
**Stop. You have completed this procedure.**

## NTP-F147 Provision MS-SPRing Nodes

<b>Purpose</b>	This procedure provisions ONS 15600 SDH nodes for an MS-SPRing.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up</a> , page 5-2
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- Step 1** Complete the “[DLP-F349 Install Fiber-Optic Cables for MS-SPRing Configurations](#)” task on [page 18-54](#), verifying that the east port at one node is connected to the west port on an adjacent node, and that this east-to-west port connection is used at all MS-SPRing nodes, similar to [Figure 5-1](#). In the figure, the STM-N drop card on the left side of the shelf is the west port, and the drop card on the right side of the shelf is considered the east port.

**Figure 5-1 Four-Node, Two-Fiber MS-SPRing Fiber Connection Example**



- Step 2** Complete the “[DLP-F181 Log into CTC](#)” task on [page 16-34](#) at the node that you want to configure in the MS-SPRing. If you are already logged in, continue with Step 3.
- Step 3** Complete the “[DLP-F253 Provision RS-DCC Terminations](#)” task on [page 17-45](#). Provision the two cards/ports that will serve as the MS-SPRing ports at the node.



**Note** If an ONS 15600 SDH is not connected to a corporate LAN, DCC provisioning must be performed through a direct (craft) connection to the node. Remote provisioning is possible only after all nodes in the network have DCCs provisioned to in-service STM-N ports.

- Step 4** As needed, complete the “[DLP-F315 Provision a Proxy Tunnel](#)” task on [page 18-16](#).
- Step 5** As needed, complete the “[DLP-F316 Provision a Firewall Tunnel](#)” task on [page 18-17](#).
- Step 6** If an MS-SPRing span passes through third-party equipment that cannot transparently transport the K3 byte, complete the “[DLP-F255 Remap the K3 Byte](#)” task on [page 17-48](#). This task is not necessary for most users.
- Step 7** Repeat Steps 2 through 6 at each node that will be in the MS-SPRing. Verify that the DCC Termination Failure (EOC) and Loss of Signal (LOS) alarms are cleared after DCCs are provisioned on all nodes in the ring.
- Step 8** Complete the “[NTP-F148 Create an MS-SPRing](#)” procedure on [page 5-8](#).

**Stop. You have completed this procedure.**

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## NTP-F148 Create an MS-SPRing

<b>Purpose</b>	This procedure creates an MS-SPRing at each MS-SPRing-provisioned node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F147 Provision MS-SPRing Nodes, page 5-6</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

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- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at a node on the network where you will create the MS-SPRing. If you are already logged in, continue with Step 2.
- Step 2** Complete one of the following tasks:
- “[DLP-F338 Create a Two-Fiber MS-SPRing Using the MS-SPRing Wizard](#)” task on page 18-38—Use this task to create a two-fiber MS-SPRing using the CTC MS-SPRing wizard. The MS-SPRing wizard checks to see that each node is ready for MS-SPRing provisioning, then provisions all of the nodes at once. Using the MS-SPRing wizard is recommended.
  - “[DLP-F339 Create a Two-Fiber MS-SPRing Manually](#)” task on page 18-40—Use this task to provision a two-fiber MS-SPRing manually at each node that will be in the MS-SPRing.
- Step 3** Complete the “[NTP-F149 Two-Fiber MS-SPRing Acceptance Test](#)” procedure on page 5-8.

**Stop. You have completed this procedure.**

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## NTP-F149 Two-Fiber MS-SPRing Acceptance Test

<b>Purpose</b>	This procedure tests a two-fiber MS-SPRing.
<b>Tools/Equipment</b>	Test set and cables appropriate for the test circuit
<b>Prerequisite Procedures</b>	<a href="#">NTP-F147 Provision MS-SPRing Nodes, page 5-6</a> <a href="#">NTP-F148 Create an MS-SPRing, page 5-8</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



**Note**

This procedure requires that you create test circuits and perform span switches around the ring. For clarity, “Node 1” refers to the login node where you begin the procedure. “Node 2” refers to the node connected to the East STM-N trunk (span) port of Node 1. “Node 3” refers to the node connected to the East STM-N trunk port of Node 2, etc.

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- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at one of the nodes on the MS-SPRing that you are testing. (This node will be called Node 1.) 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 **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on page 17-78 for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export alarm data.
- Step 4** Click the **Conditions** tab. Complete the following steps:
- Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export condition data.
- Step 5** In network view, double-click Node 1.
- Step 6** Complete the “[DLP-F341 MS-SPRing Exercise Ring Test](#)” task on page 18-42.
- Step 7** Create a test circuit from Node 1 to the node connected to the east STM-N trunk port of Node 1. (This node will be called Node 2.) Complete the “[DLP-F291 Verify MS-SPRing Extension Byte Mapping](#)” task on page 17-79. When you set the circuit state, choose **Unlocked** and check the **Apply to drop ports** check box.
- Step 8** Configure the test set for the test circuit type you created. If you are testing a VC4 circuit or a VC4-nc circuit on an STM-N card or port, you must have a direct optical interface to the ONS 15600 SDH. Set the test set for STM-N. For information about configuring your test set, consult your test set user guide.
- Step 9** Verify the integrity of all patch cables that will be used in this test by connecting the test set Tx connector to the test set Rx connector. 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 before going to the next step.
- Step 10** Create a physical loopback at the circuit destination port: attach one end of a patch cable to the destination port’s Tx connector; attach the other end to the port’s Rx connector.



**Note** Use an appropriately sized attenuator when connecting transmit ports to receive ports. On the long-haul optical cards such as OC48/STM16 LR/LH 16 Port 1550 and the OC192/STM64 LR/LH 4 Port 1550, use a 15-dB attenuator; on the short-haul optical cards such as OC48/STM16 SR/SH 16 Port 1310 and OC192/STM64 SR/SH 4 Port 1310, use a 3-dB attenuator.

- Step 11** At the circuit source port:
- Connect the test set Tx connector, using appropriate attenuation, to the circuit Rx connector.
  - Connect the test set Rx connector, using appropriate attenuation, to the circuit Tx connector.



**Note** For information about the appropriate level of attenuation, refer to the test set manual.

- Step 12** Verify that the test set displays a clean signal. If a clean signal is not present, repeat Steps 7 through 11 to make sure the test set and cabling are configured correctly.

- Step 13** Inject BIT errors from the test set. Verify that the errors display at the test set, verifying a complete end-to-end circuit.
- Step 14** Complete the “[DLP-F342 MS-SPRing Switch Test](#)” task on page 18-43 at Node 1.
- Step 15** Set up and complete a BER test on the test circuit. Use the existing configuration and follow your site requirements for length of time. Record the test results and configuration.
- Step 16** Complete the “[DLP-F293 Delete Circuits](#)” task on page 17-81 for the test circuit.
- Step 17** Repeat Steps 5 through 16 for Nodes 2 and higher, working your way around the MS-SPRing, testing each node and span in the ring. Work your way around the MS-SPRing creating test circuits between every two consecutive nodes.
- Step 18** After you test the entire ring, remove any loopbacks and test sets from the nodes.
- Step 19** If a node fails any test, repeat the test while verifying correct setup and configuration. If the test fails again, refer to the next level of support.

After all tests are successfully completed and no alarms exist in the network, the network is ready for service application. Continue with [Chapter 6, “Create Circuits.”](#)

**Stop. You have completed this procedure.**

## NTP-F150 Provision a Traditional MS-SPRing Dual-Ring Interconnect

<b>Purpose</b>	This procedure provisions MS-SPRings in a traditional DRI topology. DRIs interconnect two or more MS-SPRings to provide an additional level of protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up</a> , page 5-2
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

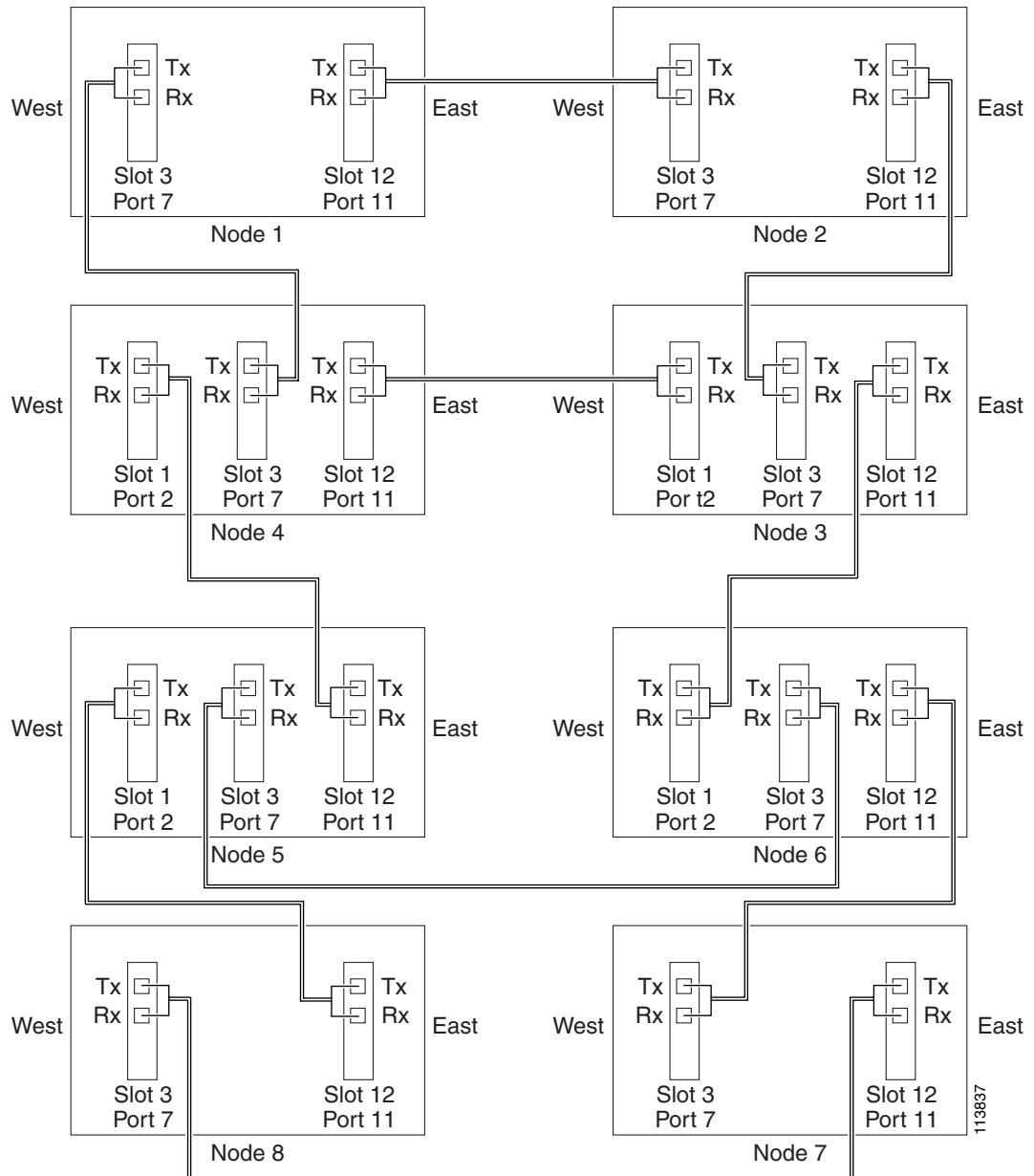


**Note** To route circuits on the DRI, you must check the Dual Ring Interconnect check box during circuit creation.

- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34. If you are already logged in, continue with Step 2.
- Step 2** Complete the following steps if you have not provisioned the MS-SPRings that you will interconnect in an MS-SPRing DRI. If the MS-SPRings are created, go to Step 3.
- Complete the “[NTP-F147 Provision MS-SPRing Nodes](#)” procedure on page 5-6 to provision the MS-SPRings.
  - Complete the “[NTP-F148 Create an MS-SPRing](#)” procedure on page 5-8 to create the MS-SPRings.
  - Complete the “[NTP-F149 Two-Fiber MS-SPRing Acceptance Test](#)” procedure on page 5-8 to test two-fiber MS-SPRings.

- Step 3** Verify that the MS-SPRing DRI interconnect nodes have STM-N cards installed and have fiber connections to the other interconnect nodes. The following rules apply:
- The STM-N cards that will connect the MS-SPRings must be installed at the interconnect nodes.
  - The interconnect nodes must have fiber connections. [Figure 5-2](#) shows an example of fiber connections for a traditional two-fiber MS-SPRing DRI.

**Figure 5-2** Traditional Two-Fiber MS-SPRing DRI Fiber Connection Example



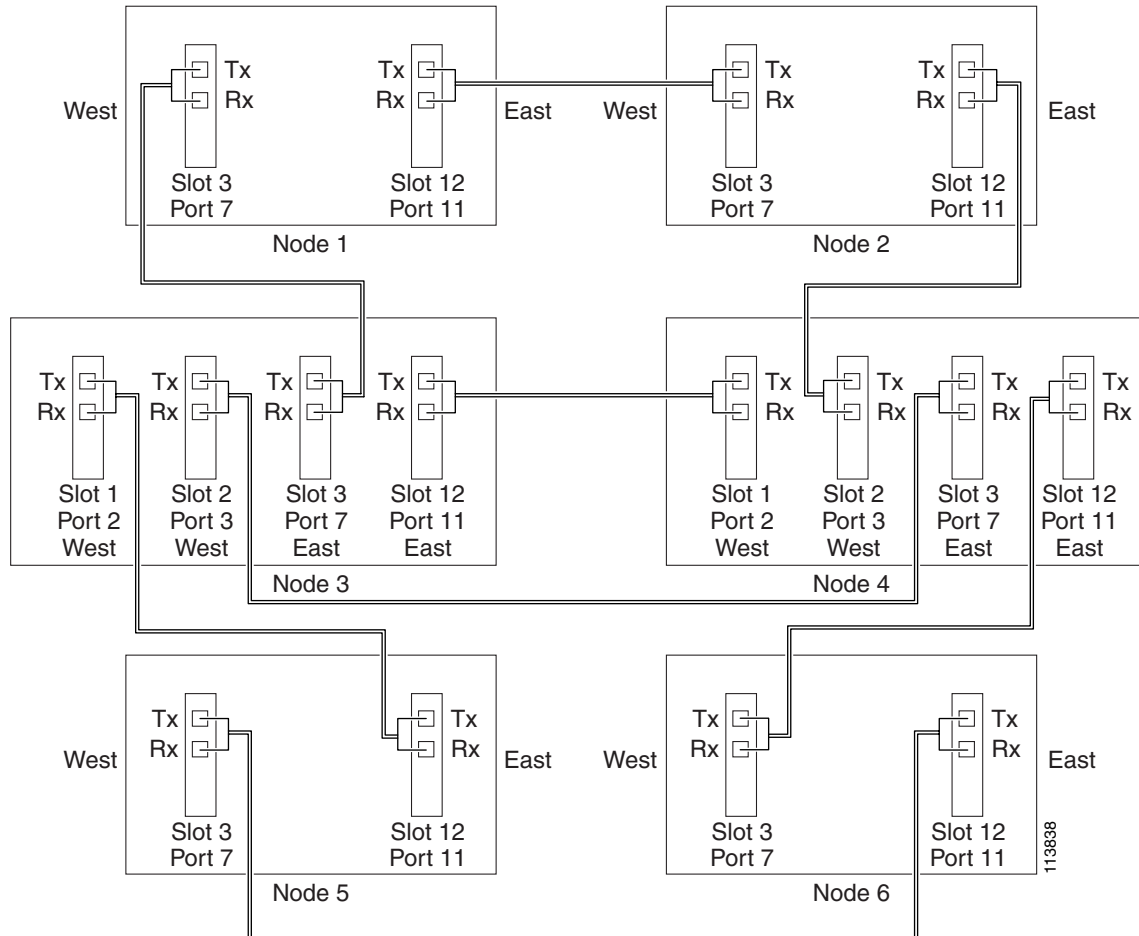
**Stop. You have completed this procedure.**

# NTP-F151 Provision an Integrated MS-SPRing Dual-Ring Interconnect

<b>Purpose</b>	This procedure provisions MS-SPRings in an integrated DRI topology.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

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- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at a node in the MS-SPRing DRI network. If you are already logged in, continue with Step 2.
- Step 2** Complete the following steps if you have not provisioned the MS-SPRings that you will interconnect in a MS-SPRing DRI. If the MS-SPRings are created, go to Step 3.
- a. Complete the “[NTP-F147 Provision MS-SPRing Nodes](#)” procedure on page 5-6 to provision the MS-SPRings.
  - b. Complete the “[NTP-F148 Create an MS-SPRing](#)” procedure on page 5-8 to create the MS-SPRings.
  - c. Complete the “[NTP-F149 Two-Fiber MS-SPRing Acceptance Test](#)” procedure on page 5-8 to test two-fiber MS-SPRings.
- Step 3** Verify that the MS-SPRing DRI interconnect node has STM-N cards installed and has fiber connections to the other interconnect node. The following rules apply:
- The STM-N cards that will connect the MS-SPRings must be installed at the two interconnect nodes.
  - The two interconnect nodes must have the correct fiber connections. [Figure 5-3](#) shows an example of an integrated two-fiber MS-SPRing DRI configuration.

Figure 5-3 Integrated Two-Fiber MS-SPRing DRI Example

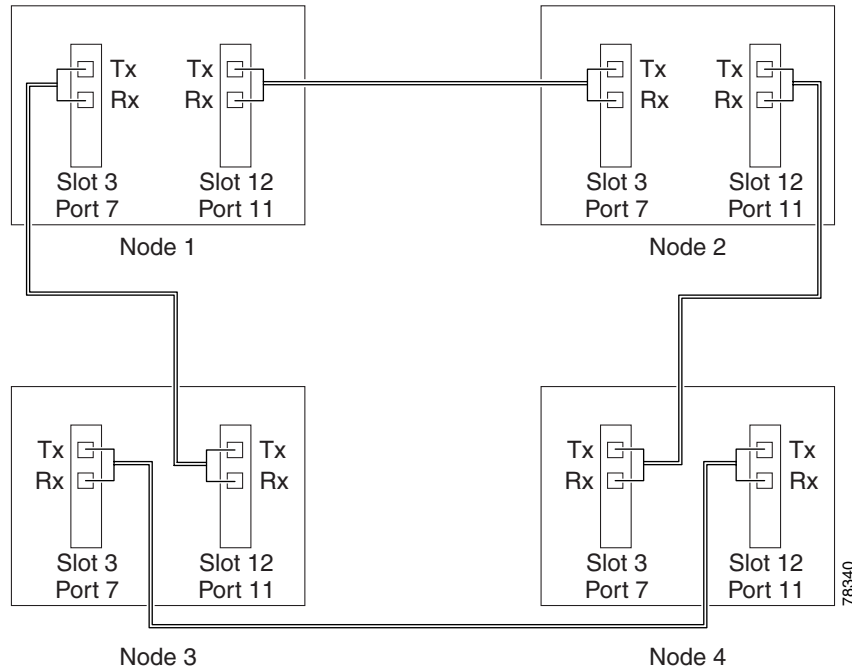


**Stop. You have completed this procedure.**

## NTP-F152 Provision SNCP Nodes

<b>Purpose</b>	This procedure provisions ONS 15600 SDH nodes for an SNCP.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- Step 1** Verify that the fiber is correctly connected to the ports on the SNCP trunk (span) STM-N card. Fiber connected to an east port at one node should be connected to the west port on an adjacent node using an appropriately sized attenuator, fibered similarly to the example in [Figure 5-4](#).

**Figure 5-4** SNCP Fiber Connection Example

- Step 2** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at a node on the SNCP that you are turning up. If you are already logged in, continue with [Step 3](#).
- Step 3** Complete the “[DLP-F253 Provision RS-DCC Terminations](#)” task on page 17-45 or the “[DLP-F314 Provision MS-DCC Terminations](#)” task on page 18-14 for the cards/ports that will host the SNCP on the node, for example, Slot 3 (STM-16)/Port 7 and Slot 12 (STM-16)/ Port 11.



**Note** If an ONS 15600 SDH is not connected to a corporate LAN, you must perform regenerator-section DCC (RS-DCC) or multiplex-section DCC (MS-DCC) provisioning through a local craft connection. Remote provisioning is possible only after all nodes in the network have RS-DCC or MS-DCC terminations provisioned to unlocked STM-N ports.

- Step 4** Repeat Steps 2 and 3 for each node in the SNCP.
- Step 5** As needed, complete the “[DLP-F315 Provision a Proxy Tunnel](#)” task on page 18-16.
- Step 6** As needed, complete the “[DLP-F316 Provision a Firewall Tunnel](#)” task on page 18-17.
- Step 7** If necessary, complete the “[DLP-F254 Change the Service State for a Port](#)” task on page 17-47 for all ports that you configured as RS-DCC or MS-DCC terminations. (CTC usually puts ports in service by default when you complete the DCC terminations.) Repeat this step at each node that will be in the SNCP.
- Step 8** Complete the “[NTP-F153 SNCP Acceptance Test](#)” procedure on page 5-15.

**Stop. You have completed this procedure.**

# NTP-F153 SNCP Acceptance Test

<b>Purpose</b>	This procedure creates drop ports at two of the nodes in the SNCP to support test set connections (source and destination ports).
<b>Tools/Equipment</b>	Test set and cables appropriate to the test circuit you will create.
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a> <a href="#">NTP-F152 Provision SNCP Nodes, page 5-13</a>
<b>Required/As Needed</b>	Required if you provisioned an SNCP
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at one of the nodes on the SNCP that you are testing. 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 **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on page 17-78 for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export alarm data.
- Step 4** Click the **Conditions** tab. Complete the following steps:
- Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export condition data.
- Step 5** On the network map, double-click the node that you logged into in [Step 1](#).
- Step 6** Create a fully protected circuit as appropriate for the SNCP spans. If an STM-64 test set is not available, create an STM-16 test circuit across an STM-64 span. See the “[DLP-F291 Verify MS-SPRing Extension Byte Mapping](#)” task on page 17-79 for instructions. When you set the circuit state, choose **Unlocked** and check the **Apply to drop ports** check box.
- Step 7** Configure the test set for the test circuit type you created. For information about configuring your test set, consult your test set user guide.
- Step 8** Verify the integrity of all patch cables that will be used in this test by connecting one end to the test set Tx connector and the other to the test set Rx connector. Use appropriate attenuation on the test set receive connector; 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 before going to [Step 9](#).
- Step 9** Create a physical loopback at the circuit destination port:
- Attach one end of a patch cable to the destination port’s Tx connector.
  - Attach the other end to the port’s Rx connector.




---

**Note** Use an appropriately sized attenuator when connecting transmit ports to receive ports. On the long-haul optical cards such as OC48/STM16 LR/LH 16 Port 1550 and the OC192/STM64 LR/LH 4 Port 1550, use a 15-dBm attenuator; on the short-haul optical cards such as OC48/STM16 SR/SH 16 Port 1310 and OC192/STM64 SR/SH 4 Port 1310, use a 3-dBm attenuator.

---

- Step 10** At the circuit source port:
- a. Connect the Tx connector of the test set to the circuit Rx connector.
  - b. Connect the test set Rx connector to the circuit Tx connector.




---

**Note** Use appropriate attenuation on the test set receive connector; for more information, refer to the test set manual.

---

- Step 11** Verify that the test set has a clean signal. If a clean signal is not present, repeat Steps 6 through 10 to verify that the test set and cabling are configured correctly.
- Step 12** Inject BIT errors from the test set. Verify that the errors display at the test set, indicating a complete end-to-end circuit.
- Step 13** From the View menu, choose **Go To Network View**.
- Step 14** Click one of the two spans coming from the circuit source node.
- Step 15** Complete the [“DLP-F193 SNCP Protection Switching Test” task on page 16-50](#).  
Although a service interruption under 60 ms might occur, the test circuit should continue to work before, during, and after the switches. If the circuit stops working, do not continue. Contact your next level of support.
- Step 16** In network view, click the other circuit source span and repeat [Step 15](#).
- Step 17** Set up and complete a long-term BER test. Use the existing configuration and follow your site requirements for length of time. Record the test results and configuration.
- Step 18** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 19** From the View menu, choose **Go To Network View**.
- Step 20** Click the **Alarms** tab. Complete the following steps:
- a. Verify that the alarm filter is not on. See the [“DLP-F288 Disable Alarm Filtering” task on page 17-78](#) for instructions.
  - b. Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - c. Complete the [“DLP-F379 Export CTC Data” task on page 18-88](#) to export alarm data.
- Step 21** Click the **Conditions** tab. Complete the following steps:
- a. Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - b. Complete the [“DLP-F379 Export CTC Data” task on page 18-88](#) to export condition data.
- Step 22** If a node fails any test, repeat the test verifying correct setup and configuration. If the test fails again, refer to the next level of support.

After all tests are successfully completed and no alarms exist in the network, the network is ready for service application.



**Stop. You have completed this procedure.**

---

## NTP-F154 Provision a Traditional SNCP Dual-Ring Interconnect

<b>Purpose</b>	This procedure provisions SNCPs in a traditional DRI topology. DRIs interconnect two or more SNCPs to provide an additional level of protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Note**

To route circuits on the DRI, you must check the Dual Ring Interconnect check box during circuit creation.

---

- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34. If you are already logged in, continue with Step 2.
- Step 2** Complete the following steps if you have not provisioned the SNCPs that you will interconnect in an SNCP DRI. If the SNCPs are created, go to Step 3.
- Complete the “[NTP-F152 Provision SNCP Nodes](#)” procedure on page 5-13 to provision the SNCPs.
  - Complete the “[NTP-F153 SNCP Acceptance Test](#)” procedure on page 5-15 to test the SNCPs.

**Note**

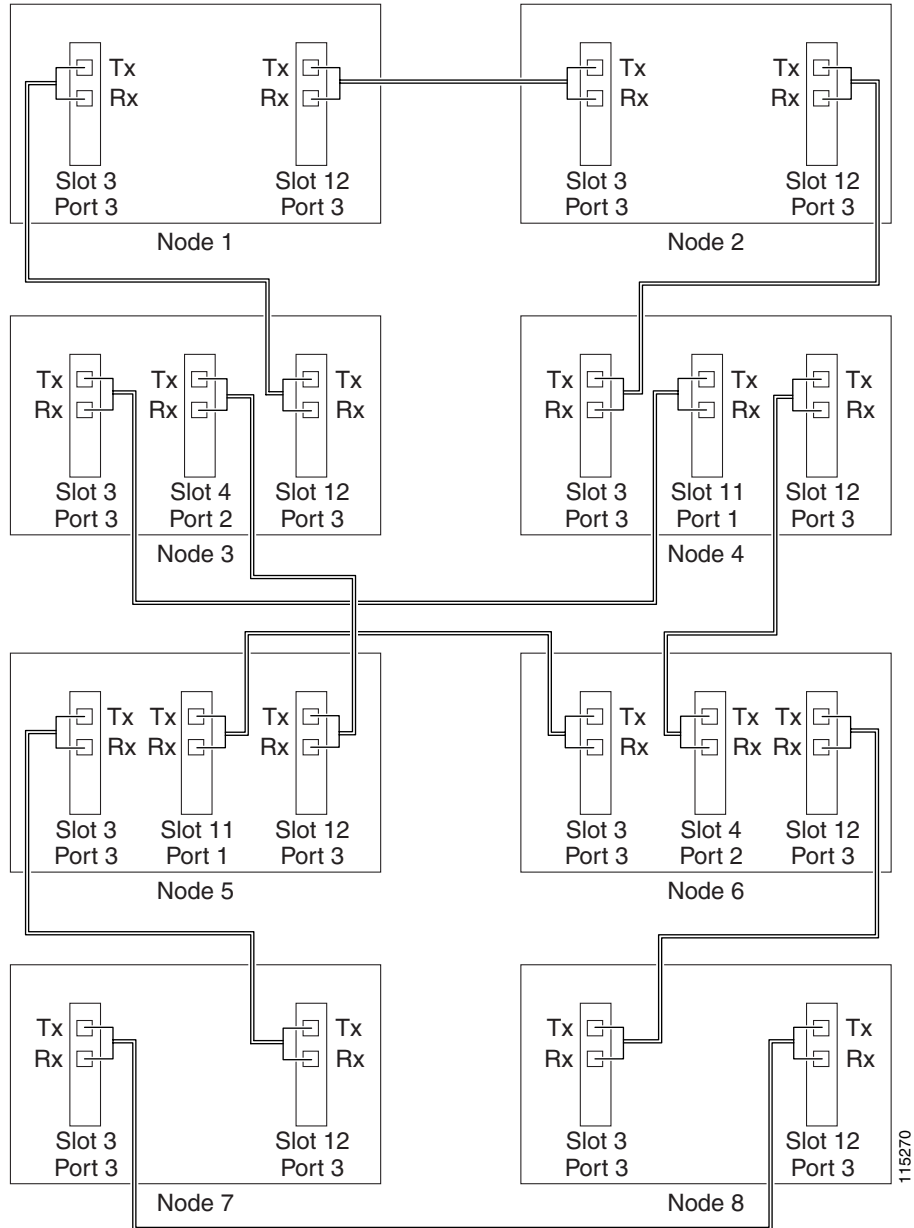
All SNCPs that will be interconnected must have the same STM-N rate.

---

- Step 3** Verify that the SNCP DRI interconnect nodes have STM-N cards installed and have fiber connections to the other interconnect node. Note that:
- The STM-N cards that will connect the SNCPs must be installed at the interconnect nodes. The STM-N cards in the SNCP nodes and the interconnect nodes must be the same type.
  - The interconnect nodes must have fiber connections.

An example is shown in [Figure 5-5](#). This example shows an SNCP DRI with two rings, Nodes 1 through 4 and 5 through 8. In the example, an additional STM-N is installed in Slot 12, Port 3 at Node 4 and connected to an STM-N in Slot 4, Port 2 at Node 6. Nodes 3 and 5 are interconnected with STM-N cards in Slot 4, Port 2 (Node 3) and Slot 12, Port 3 (Node 5).

Figure 5-5 Traditional SNCP DRI Fiber Connection Example



**Stop. You have completed this procedure.**

# NTP-F155 Provision an Integrated SNCP Dual-Ring Interconnect

<b>Purpose</b>	This procedure provisions SNCPs in an integrated DRI topology.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at a node in the SNCP DRI network. If you are already logged in, continue with Step 2.
- Step 2** Complete the following steps if you have not provisioned the SNCPs that you will interconnect in an SNCP DRI. If the SNCPs are created, continue with Step 3.
- Complete the “[NTP-F152 Provision SNCP Nodes](#)” procedure on page 5-13 to provision the SNCPs.
  - Complete the “[NTP-F153 SNCP Acceptance Test](#)” procedure on page 5-15 to test the SNCPs.



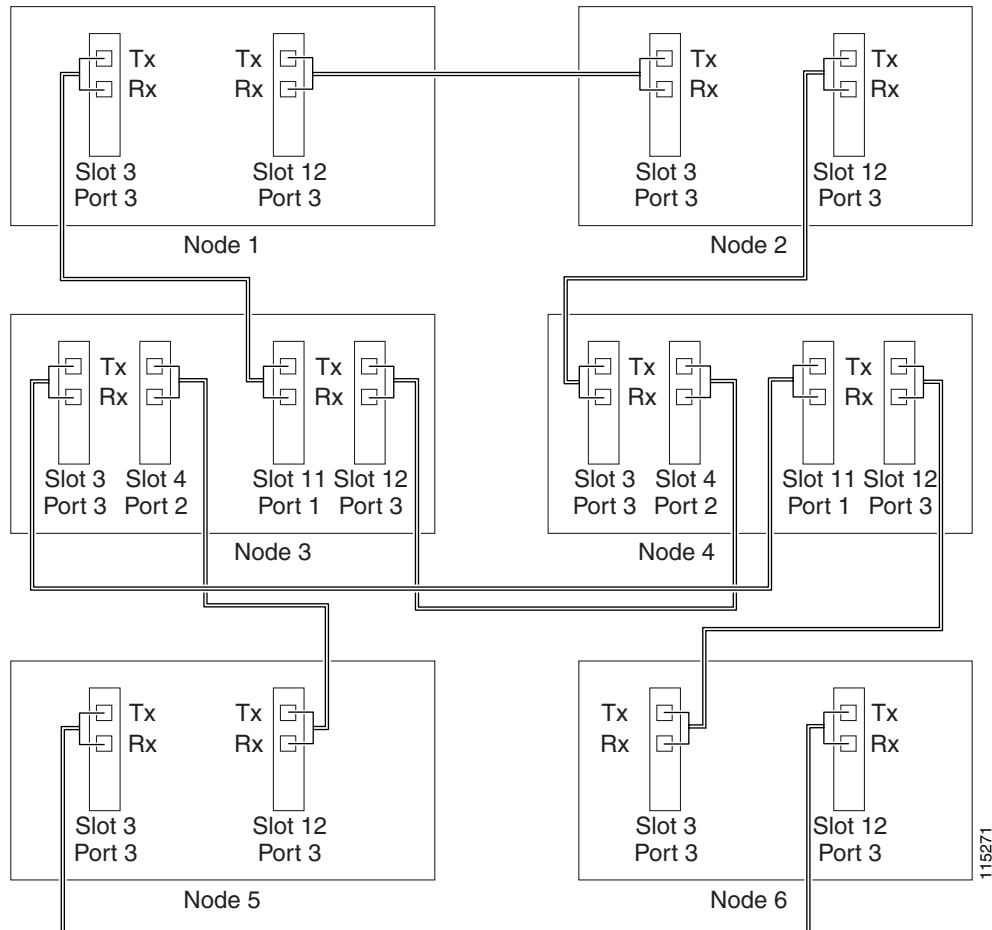
---

**Note** All SNCPs that will be interconnected must have the same STM-N rate.

---

- Step 3** Verify that the SNCP DRI interconnect nodes have STM-N cards installed and have fiber connections to the other interconnect node. Note that:
- The STM-N cards that will connect the SNCPs must be installed at the interconnect nodes. The STM-N cards in the SNCP nodes and the interconnect nodes must be the same type.
  - The interconnect nodes must have the correct fiber connections.
- An example is shown in [Figure 5-6](#). This example shows an SNCP DRI with two rings.

Figure 5-6 Integrated SNCP DRI Example



Stop. You have completed this procedure.

## NTP-F156 Provision a Traditional MS-SPRing/SNCP Dual-Ring Interconnect

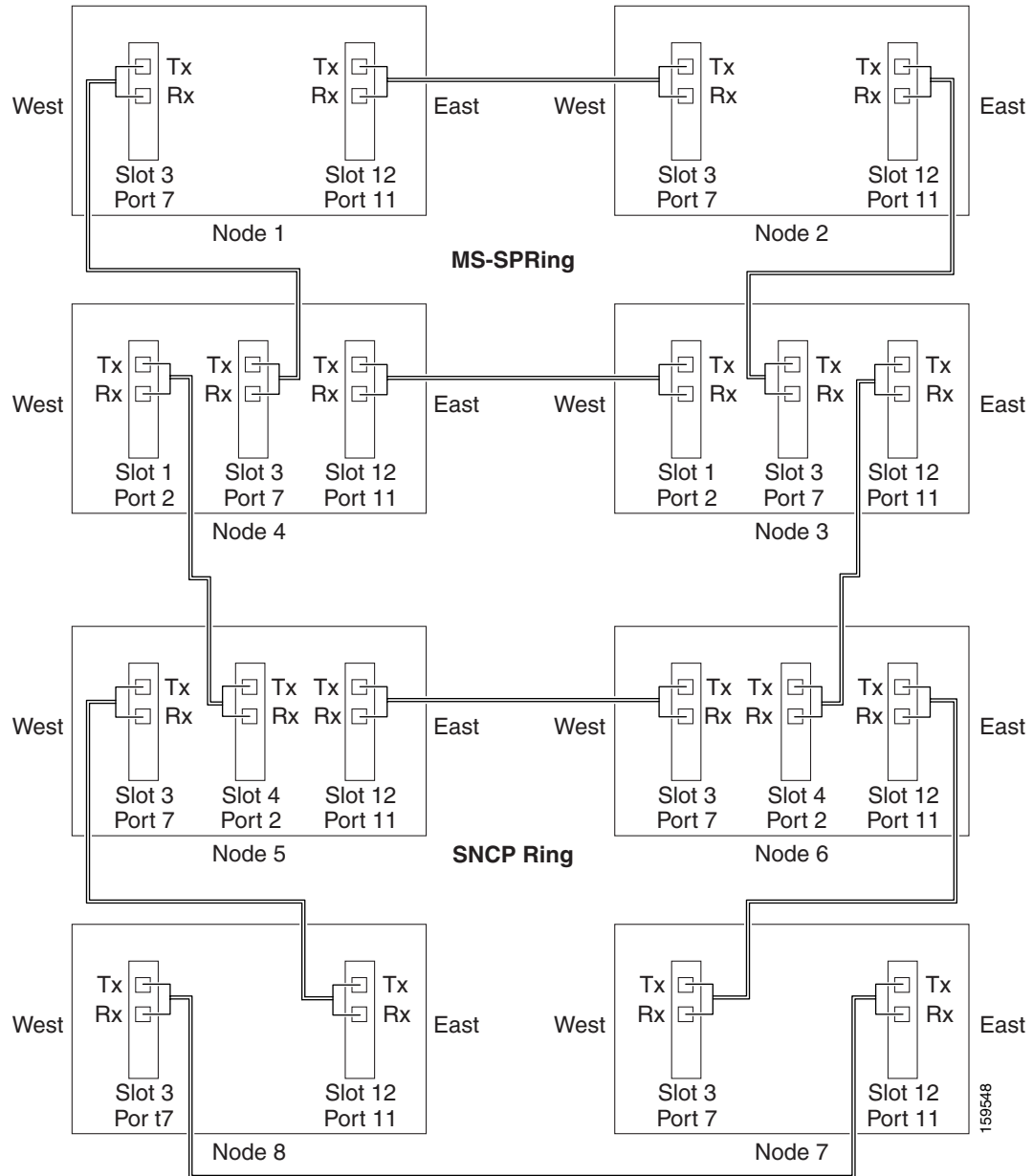
<b>Purpose</b>	This procedure provisions an MS-SPRing and an SNCP in a traditional DRI topology. DRIs interconnect ring topologies to provide an additional level of protection.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Note**

To route circuits on the DRI, you must check the Dual Ring Interconnect check box during circuit creation.

- 
- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34. If you are already logged in, continue with Step 2.
- Step 2** Complete the following steps if you have not provisioned the MS-SPRing and SNCP that you will interconnect in a traditional DRI. If the MS-SPRing and SNCP are created, go to Step 3.
- a. To provision and test the MS-SPRing, complete the following procedures:
    - [NTP-F147 Provision MS-SPRing Nodes, page 5-6](#)
    - [NTP-F148 Create an MS-SPRing, page 5-8](#)
    - [NTP-F149 Two-Fiber MS-SPRing Acceptance Test, page 5-8](#)
  - b. To provision and test the SNCP, complete the following procedures:
    - [NTP-F152 Provision SNCP Nodes, page 5-13](#)
    - [NTP-F153 SNCP Acceptance Test, page 5-15](#)
- Step 3** Verify that the DRI interconnect nodes have STM-N cards installed and have fiber connections to the other interconnect node. Note that:
- The STM-N cards that will connect the MS-SPRing and SNCP must be installed at the interconnect nodes. The STM-N ports in the SNCP nodes and the interconnect nodes must be the same rate.
  - The interconnect nodes must have fiber connections. An example is shown in [Figure 5-7](#).

**Figure 5-7** Traditional MS-SPRING to SNCP DRI Fiber Connection Example



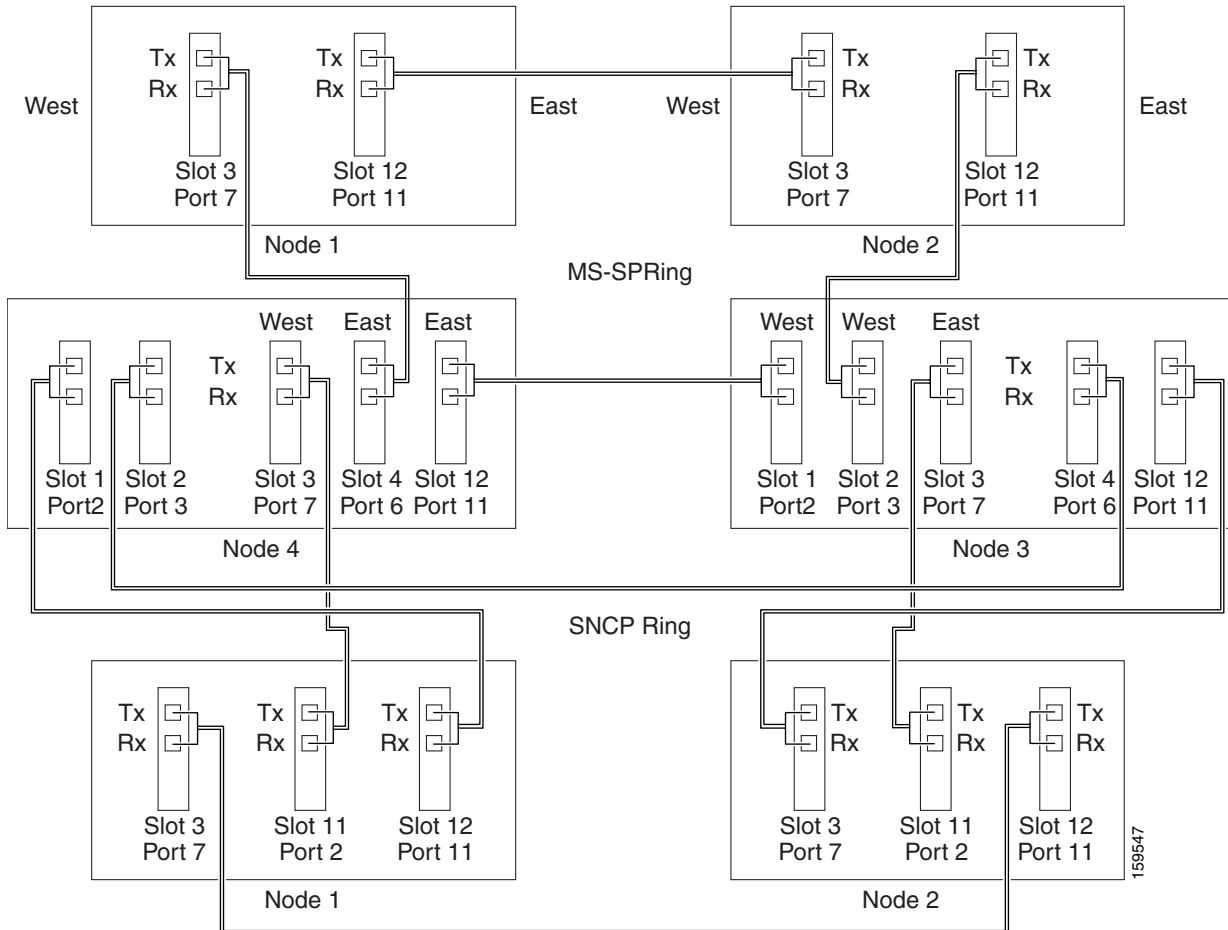
**Stop. You have completed this procedure.**

# NTP-F157 Provision an Integrated MS-SPRing/SNCP Dual-Ring Interconnect

<b>Purpose</b>	This procedure provisions an MS-SPRing and an SNCP in an integrated DRI topology.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on [page 16-34](#) at a node in the MS-SPRing and SNCP DRI network. If you are already logged in, continue with Step 2.
- Step 2** Complete the following steps if you have not provisioned the MS-SPRing and SNCP that you will interconnect in an integrated DRI. If the MS-SPRing and SNCP are created, continue with Step 3.
- a. To provision and test the MS-SPRing, complete the following procedures:
    - [NTP-F147 Provision MS-SPRing Nodes, page 5-6](#)
    - [NTP-F148 Create an MS-SPRing, page 5-8](#)
    - [NTP-F149 Two-Fiber MS-SPRing Acceptance Test, page 5-8](#)
  - b. To provision and test the SNCP, complete the following procedures:
    - [NTP-F152 Provision SNCP Nodes, page 5-13](#)
    - [NTP-F153 SNCP Acceptance Test, page 5-15](#)
- Step 3** Verify that the MS-SPRing and SNCP DRI interconnect nodes have STM-N cards installed and have fiber connections to the other interconnect node. Note that:
- The STM-N cards that will connect the MS-SPRing and SNCP must be installed at the interconnect nodes. The STM-N ports in the SNCP nodes and the interconnect nodes must be the same rate.
  - The interconnect nodes must have the correct fiber connections. An example is shown in [Figure 5-8](#).

Figure 5-8 Integrated MS-SPRing to SNCP DRI Example



Stop. You have completed this procedure.

## NTP-F158 Provision an Open-Ended SNCP

### Purpose

This procedure provisions ONS 15600 SDHs in an open-ended SNCP connected to a third-party vendor network. This topology allows you to route a circuit from one ONS 15600 SDH network to another ONS 15600 SDH network through the third-party network.

Also see the “[NTP-F174 Create a Server Trail](#)” procedure on page 6-28, which provides an alternative way to create a connection between ONS nodes through a third-party network.

### Tools/Equipment

None

**Prerequisite Procedures** [NTP-F144 Verify Node Turn-Up](#), page 5-2

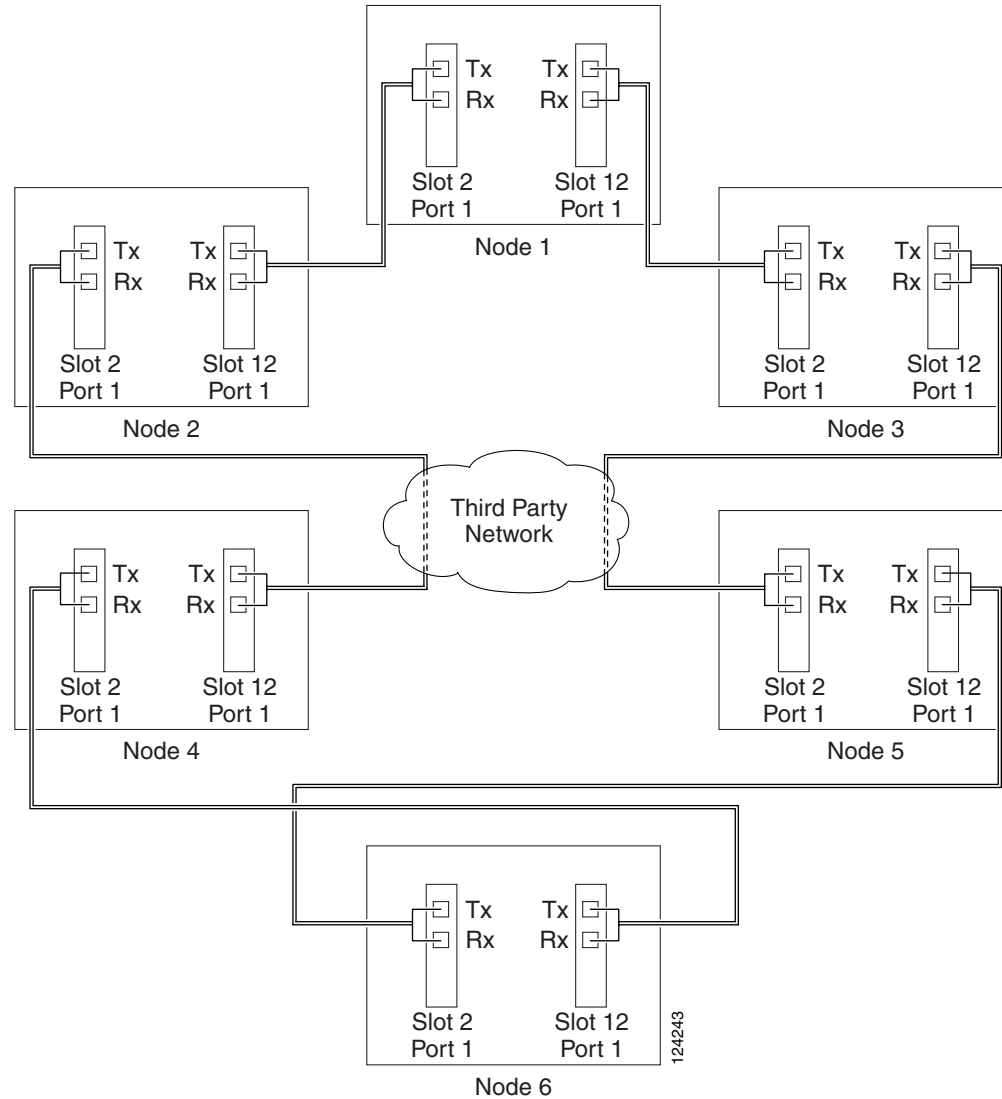
**Required/As Needed** As needed



<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- Step 1** Verify that the fiber is correctly connected to the SNCP trunk (span) STM-N cards at each open-ended SNCP node. [Figure 5-9](#) shows an example. Node 1 is connected to ONS 15600 SDH Nodes 2 and 3 through Slots 12 and 2. Trunk cards at Nodes 2 and 3 are connected to the third-party vendor equipment.

**Figure 5-9** ONS 15600 SDH Open-Ended SNCPs Fiber Connection Example



- Step 2** Verify that the third-party cards or units to which the ONS 15600 SDH trunk cards are connected are the same STM-N rate as the ONS 15600 SDH trunk cards. The third-party time slots must match the ONS 15600 SDH card time slots to which they are connected. For example, if your trunk card is an STM-16, the third-party vendor card or unit must have VC4s 1 to 8 available.
- Step 3** Log into an ONS 15600 SDH in the SNCP you are turning up. See the “[DLP-F181 Log into CTC](#)” task on [page 16-34](#). If you are already logged in, continue with [Step 4](#).

**Step 4** Complete the “[DLP-F253 Provision RS-DCC Terminations](#)” task on page 17-45 or the “[DLP-F314 Provision MS-DCC Terminations](#)” task on page 18-14 for the ONS 15600 SDH cards and ports that are connected to another ONS 15600 SDH. Do not create RS-DCC or MS-DCC terminations for the card and port that connects to the third-party equipment. For example in [Figure 5-9](#), DCC terminations are created at the following cards and ports:

- Nodes 1 and 6: Slot 2, Port 1 and Slot 12, Port 1
- Node 2 and 5: Slot 12, Port 1
- Node 3 and 4: Slot 2, Port 1



**Note** If an ONS 15600 SDH is not connected to a corporate LAN, RS-DCC, or MS-DCC provisioning must be performed through a direct (craft) connection. Remote provisioning is possible only after all nodes in the network have RS-DCC or MS-DCC terminations provisioned to in-service STM-N ports.

**Step 5** Repeat Steps 3 and 4 for each node in the SNCP.

**Step 6** As needed, complete the “[DLP-F315 Provision a Proxy Tunnel](#)” task on page 18-16.

**Step 7** As needed, complete the “[DLP-F316 Provision a Firewall Tunnel](#)” task on page 18-17.

**Step 8** Following the documentation provided by the third-party vendor, provision the optical loop leading from the ONS 15600 SDH connection at one end to the ONS 15600 SDH connection at the other end. In other words, you will create an open-ended SNCP using procedures for the third-party equipment.

**Step 9** Complete the “[NTP-F159 Open-Ended SNCP Acceptance Test](#)” procedure on page 5-26.

**Stop. You have completed this procedure.**

## NTP-F159 Open-Ended SNCP Acceptance Test

<b>Purpose</b>	This procedure tests an open-ended SNCP.
<b>Tools/Equipment</b>	Test set and cables appropriate to the test circuit you will create.
<b>Prerequisite Procedures</b>	<a href="#">NTP-F158 Provision an Open-Ended SNCP</a> , page 5-24
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Caution

This procedure might be service-affecting if performed on a node carrying traffic.



### Note

Although a service interruption under 60 ms might occur, the test circuit should continue to work before, during, and after the switches. If the circuit stops working, do not continue. Contact your next level of support.

**Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at the node that will be the source node for traffic traversing the third-party network. 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 **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on [page 17-78](#) for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on [page 18-88](#) to export alarm information.
- Step 4** Click the **Conditions** tab. Complete the following steps:
- Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on [page 18-88](#) to export condition data.
- Step 5** On the network map, double-click the node that you logged into in [Step 1](#).
- Step 6** Create a test circuit from that node to the STM-N trunk (span) cards on the nodes that connect to the third-party network. For example, in [Figure 5-9 on page 5-25](#), a circuit is created from Node 1 to the Slot 12 STM-N card at Node 2, and a secondary circuit destination is created on the Slot 2 STM-N card at Node 3. See the “[DLP-F291 Verify MS-SPRing Extension Byte Mapping](#)” task on [page 17-79](#) for instructions. When you set the circuit state, choose **Unlocked** and check the **Apply to drop ports** check box.
- Step 7** Create a circuit within the third-party network from ONS 15600 SDH connection ports to the second set of ONS 15600 SDH connection ports on both SNCP spans. Refer to the third-party equipment documentation for circuit creation procedures.
- Step 8** Repeat [Step 6](#) to create a second circuit at the terminating node on the other side of the third-party network. In [Figure 5-9](#), this is Node 6. However, this circuit will have two sources, one at Node 4/Slot 2, and one at Node 5/Slot 12. The destination will be a drop card on Node 6.
- Step 9** Configure the test set for the test circuit type you created. For information about configuring your test set, consult your test set user guide.
- Step 10** Verify the integrity of all patch cables that will be used in this test by connecting the test set Tx connector to the test set Rx connector. 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 before going to the next step.
- Step 11** Create a physical loopback at the circuit destination card:
- Attach one end of a patch cable to the destination port’s Tx connector.
  - Attach the other end to the port’s Rx connector.
- Step 12** At the circuit source card:
- Connect the Tx connector of the test set to the circuit Rx connector.
  - Connect the test set Rx connector to the circuit Tx connector.
- Step 13** Verify that the test set shows a clean signal. If a clean signal does not appear, repeat [Steps 6 through 12](#) to make sure the test set and cabling are configured correctly.
- Step 14** Inject BIT errors from the test set. To verify that you have a complete end-to-end circuit, verify that the errors appear at the test set.
- Step 15** From the View menu, choose **Go to Network View**.
- Step 16** Click one of the two spans leaving the circuit source node.

- Step 17** Complete the “[DLP-F193 SNCP Protection Switching Test](#)” task on page 16-50 to test the SNCP protection switching function on this span.
- Step 18** In network view, click the other circuit source span and repeat [Step 17](#).
- Step 19** Set up and complete a BER test. Use the existing configuration and follow your site requirements for the length of time. Record the test results and configuration.
- Step 20** Complete the “[DLP-F293 Delete Circuits](#)” task on page 17-81 for the test circuit.
- Step 21** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 22** Click the **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on page 17-78 for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export alarm information.
- Step 23** Click the **Conditions** tab. Complete the following steps:
- Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export condition data.
- Step 24** Repeat Steps 5 through 23 for each node that will be a source or destination for circuits traversing the third-party network.
- Step 25** If a node fails any test, repeat the test while verifying correct setup and configuration. If the test fails again, refer to the next level of support.
- After all tests are successfully completed and no alarms exist in the network, the network is ready for service application. Continue with [Chapter 6, “Create Circuits.”](#)
- Stop. You have completed this procedure.**
- 

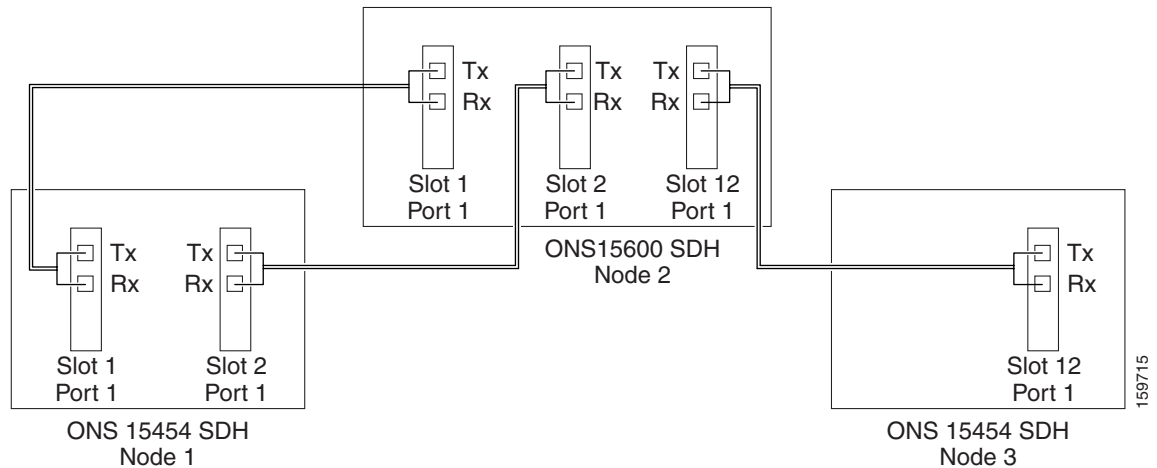
## NTP-F160 Provision an ONS 15600 SDH Node as a Protection Domain Hub

<b>Purpose</b>	This procedure creates a network topology where the ONS 15600 SDH bridges traffic between different protection domains on ONS 15454 SDH nodes: 1+1, MS-SPRing, and SNCP.  This configuration must be used when you want to create an end-to-end low-order circuit from an ONS 15454 SDH SNCP network over an ONS 15600 SDH hub node to an ONS 15454 SDH line-protected destination. For more information about routing low-order traffic over an ONS 15600 SDH hub node, refer to the “Circuits and Tunnels” chapter in the <i>Cisco ONS 15600 SDH Reference Manual</i> .
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed

<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- Step 1** Verify that the fiber is correctly connected to the SNCP trunk (span) STM-N cards at each open-ended SNCP node. [Figure 5-10](#) shows a simplified example of the connections required when the ONS 15600 SDH node is set up to bridge traffic between SNCP and line-protected domains. ONS 15454 SDH Node 1 is connected to ONS 15600 SDH Node 2 through Slots 1 and 2; the fiber is set up for SNCP protection. The ONS 15600 SDH Node 2 is connected to ONS 15454 SDH Node 3 through Slots 12; the fiber is set up for 1+1 or MS-SPRing protection.

**Figure 5-10** Bridging Traffic over SNCP and Line-Protected Domains Fiber Connection Example




- Step 2** Log into an ONS 15600 SDH in the network you are turning up. See the “[DLP-F181 Log into CTC](#)” task on page 16-34. If you are already logged in, continue with Step 4.
- Step 3** Complete the “[DLP-F253 Provision RS-DCC Terminations](#)” task on page 17-45 or the “[DLP-F314 Provision MS-DCC Terminations](#)” task on page 18-14 for the ONS 15600 SDH cards and ports that are connected to an ONS 15454 SDH node. For example in [Figure 5-10](#), terminations are created at the following cards and ports:
- Node 1 (SNCP): Slot 1, Port 1 and Slot 2, Port 1
  - Node 2 (SNCP): Slot 1, Port 1; Slot 2, Port 1; and Slot 12, Port 1
  - Node 3 (Line-protected): Slot 12, Port 1



**Note** If an ONS 15600 SDH is not connected to a corporate LAN, RS-DCC, or MS-DCC provisioning must be performed through a direct (craft) connection. Remote provisioning is possible only after all nodes in the network have RS-DCC or MS-DCC terminations provisioned to in-service STM-N ports.

- Step 4** As needed, complete the “[DLP-F315 Provision a Proxy Tunnel](#)” task on page 18-16.
- Step 5** As needed, complete the “[DLP-F316 Provision a Firewall Tunnel](#)” task on page 18-17.

- Step 6** For each ONS 15600 SDH STM port in the SNCP and MS-SPRing domains and the working STM port in the 1+1 domain, complete the “[DLP-F253 Provision RS-DCC Terminations](#)” task on page 17-45. Alternatively, if additional bandwidth is needed for CTC management, complete the “[DLP-F314 Provision MS-DCC Terminations](#)” task on page 18-14.
- Step 7** Complete the following steps if you have not provisioned the point-to-point network or MS-SPRing that will interconnect to the ONS 15600 SDH hub node:
- a. To provision and test the point-to-point network, complete the following procedures:
    - [NTP-F145 Provision a Point-to-Point Connection](#), page 5-3
    - [NTP-F146 Point-to-Point Network Acceptance Test](#), page 5-4
  - b. To provision and test the BLSR, complete the following:
    - [NTP-F147 Provision MS-SPRing Nodes](#), page 5-6
    - [NTP-F148 Create an MS-SPRing](#), page 5-8
    - [NTP-F149 Two-Fiber MS-SPRing Acceptance Test](#), page 5-8
- Step 8** Complete the following to create the three circuits necessary. This step results in two circuits, a high-order open-ended circuit with a low-order circuit routed through it from the ONS 15454 SDH source to the ONS 15454 SDH destination; CTC merges the two low-order circuits created into a single circuit. Cisco recommends that you name all circuits with the same name to indicate their relationship. The circuits must be physically aligned for CTC to create the end-to-end circuit.
- a. Complete the “[NTP-F175 Create an Automatically Routed Open-Ended SNCP High-Order Circuit](#)” procedure on page 6-29. You must create a TL1-like circuit.
  - b. Create a low-order open-ended SNCP circuit on the ONS 15454 SDH nodes that connect the ONS 15454 SDH SNCP to the ONS 15600 SDH node. You must create a TL1-like circuit. Refer to the “Create Circuits and Low-Order Tunnels” chapter in the *Cisco ONS 15454 SDH Procedure Guide*.
  - c. Create a two-way low-order circuit on the ONS 15454 SDH node that connects the line-protected domain to the ONS 15600 SDH node. You must create a TL1-like circuit. Refer to the “Create Circuits and Low-Order Tunnels” chapter in the *Cisco ONS 15454 SDH Procedure Guide*.
-  **Note** The open-ended high-order circuit created in this step cannot be deleted if a low-order circuit traverses it.
- Step 9** Complete the “[NTP-F161 Mixed Protection Domain Hub Acceptance Test](#)” procedure on page 5-30.
- Stop. You have completed this procedure.**

## NTP-F161 Mixed Protection Domain Hub Acceptance Test

<b>Purpose</b>	This procedure tests whether an ONS 15600 SDH node can carry traffic across a mixed protection domain (SNCP and line-protection).
<b>Tools/Equipment</b>	Test set and cables appropriate to the test circuit you will create.
<b>Prerequisite Procedures</b>	<a href="#">NTP-F160 Provision an ONS 15600 SDH Node as a Protection Domain Hub</a> , page 5-28

<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Caution**

This procedure might be service-affecting if performed on a node carrying traffic.

**Note**

Although a service interruption under 60 ms might occur, the test circuit should continue to work before, during, and after the switches. If the circuit stops working, do not continue. Contact your next level of support.

- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34 at the node that will be the source node for the traffic traversing the mixed protection domains. 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 **Alarms** tab. Complete the following steps:
- Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on page 17-78 for instructions.
  - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export alarm information.
- Step 4** Click the **Conditions** tab. Complete the following steps:
- Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export condition data.
- Step 5** Create a high-order test circuit from the node in the 1+1 domain to the MS-SPRing domain. For more information, see [Chapter 6, “Create Circuits.”](#) Complete the following:
- Set up two test sets or a test set and a physical loopback to verify that traffic is error free. Configure the test set for the test circuit type you created. For information about configuring your test set, consult your test set user guide.
  - Complete the “[DLP-F192 Optical 1+1 Manual Protection Switch Test](#)” task on page 16-49 to test the protection switching function on this span.
  - Complete the “[DLP-F342 MS-SPRing Switch Test](#)” task on page 18-43 to test the protection switching function on this span.
  - Complete the “[DLP-F293 Delete Circuits](#)” task on page 17-81 for the test circuit.
- Step 6** Create a low-order test circuit from the node in the 1+1 domain to the MS-SPRing domain and repeat [Step 5](#). For more information on creating low-order circuits, refer to the “Create Circuits and Low-Order Tunnels” chapter in the *Cisco ONS 15454 SDH Procedure Guide*.
- Step 7** Create a high-order test circuit from the node in the SNCP domain to the node in the 1+1 domain. For more information, see [Chapter 6, “Create Circuits.”](#) Complete the following:
- Set up two test sets or a test set and a physical loopback to verify that traffic is error free. Configure the test set for the test circuit type you created. For information about configuring your test set, consult your test set user guide.

- b. Complete the “[DLP-F192 Optical 1+1 Manual Protection Switch Test](#)” task on page 16-49 to test the protection switching function on this span.
  - c. Complete the “[DLP-F193 SNCP Protection Switching Test](#)” task on page 16-50 to test the UPSR protection switching function on this span.
  - d. Complete the “[DLP-F293 Delete Circuits](#)” task on page 17-81 for the test circuit.
- Step 8** Create a low-order test bidirectional circuit from the node in the SNCP domain to the to the node in the 1+1 domain and repeat [Step 7](#). For more information about creating low-order circuits, refer to the “Create Circuits and Low-Order Tunnels” chapter in the *Cisco ONS 15454 SDH Procedure Guide*.
- Step 9** Create a high-order test circuit from the node in the SNCP domain to the node in the MS-SPRing domain. For more information, see [Chapter 6, “Create Circuits.”](#) Complete the following:
- a. Set up two test sets or a test set and a physical loopback to verify that traffic is error free. Configure the test set for the test circuit type you created. For information about configuring your test set, consult your test set user guide.
  - b. Complete the “[DLP-F342 MS-SPRing Switch Test](#)” task on page 18-43 to test the protection switching function on this span.
  - c. Complete the “[DLP-F193 SNCP Protection Switching Test](#)” task on page 16-50 to test the UPSR protection switching function on this span.
  - d. Complete the “[DLP-F293 Delete Circuits](#)” task on page 17-81 for the test circuit.
- Step 10** Create a low-order test bidirectional circuit from the node in the SNCP domain to the to the node in the MS-SPRing domain and repeat [Step 9](#). For more information about creating low-order circuits, refer to the “Create Circuits and Low-Order Tunnels” chapter in the *Cisco ONS 15454 SDH Procedure Guide*.
- Step 11** Remove any loopbacks, switches, or test sets from the nodes after all testing is complete.
- Step 12** Click the **Alarms** tab. Complete the following steps:
- a. Verify that the alarm filter is not on. See the “[DLP-F288 Disable Alarm Filtering](#)” task on [page 17-78](#) for instructions.
  - b. Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - c. Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export alarm information.
- Step 13** Click the **Conditions** tab. Complete the following steps:
- a. Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15600 SDH Troubleshooting Guide*.
  - b. Complete the “[DLP-F379 Export CTC Data](#)” task on page 18-88 to export condition data.

After all tests are successfully completed and no alarms exist in the network, the network is ready for service application. Continue with [Chapter 6, “Create Circuits.”](#)

**Stop. You have completed this procedure.**

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# NTP-F162 Create a Logical Network Map

<b>Purpose</b>	This procedure positions nodes in the network view. This procedure allows a Superuser to create a consistent network view for all nodes on the network.
<b>Tools</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-F144 Verify Node Turn-Up, page 5-2</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser

- 
- Step 1** Complete the “[DLP-F181 Log into CTC](#)” task on page 16-34. If you are already logged in, continue with [Step 2](#).
- Step 2** From the View menu, choose **Go To Network View**.
- Step 3** Change the position of the nodes in the network view according to your site plan. To do this:
- Press the **Ctrl** key while you drag and drop a node icon to a new location.
  - Deselect the previously selected node.
  - Repeat [Step a](#) for each node you need to position.
- Step 4** On the network view map, right-click and choose **Save Node Position**.
- Step 5** Click **Yes** in the **Save Node Position** dialog box.
- CTC displays a progress bar and saves the new node positions.



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**Note** Nodes on the network map can be moved by users with Retrieve, Provisioning, and Maintenance security levels, but new network views can only be saved by a Superuser. To restore the view to a previously saved version of the network map, right-click on the network view map and choose **Reset Node Position**.

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**Stop. You have completed this procedure.**

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