NTN465GF   **323-1059-320**

Nortel Networks

OPTera Metro 3500 Multiservice Platform
Bandwidth Management

Standard   Release 12.0   Issue 1   November 2003

What's inside...

End-to-end connection management
Nodal cross-connect provisioning of linear networks
Nodal cross-connect provisioning of UPSR networks
Nodal cross-connect provisioning of BLSR networks
Bandwidth management for OPE networks
Nodal cross-connect and BLSR configuration management

NORTEL
NETWORKS™

Contents

Nodal cross-connect provisioning of BLSR networks   4-1

Bandwidth management for OPE networks   5-1

Nodal cross-connect and BLSR configuration management   6-1

About this document

This document describes how to

- provision end-to-end connections
- provision cross-connects
- perform in-service traffic rollovers
- configure networks
- provision SONET bandwidth for Resilient Packet Rings
- provision and manage BLSR configurations

Supported software

This document supports the software releases for Nortel Networks OPTera Metro 3500 Multiservice Platform Release 12.0.

Supported hardware

This document supports the OPTera Metro 3500 shelf and Universal OPTera Metro 3500 shelf.

Hardware naming conventions

The following naming conventions are used throughout this document to identify the OPTera Metro 3500 hardware:

- The extended shelf processor (SPx) is referred to as the shelf processor.
- The extended network processor (NPx) is referred to as the network processor.

Audience

The following members of your company are the intended audience of this Nortel Networks technical publication (NTP):

- planners
- provisioners
- network administrators
- transmission standards engineer

Standards

The Telecommunications Industry Association (TIA) and the Electronics Industries Alliance (EIA) accepted RS-232 as a standard in 1997 and renumbered this standard as TIA/EIA-232. In this document, RS-232 is used to reflect current labels on the hardware and in the software for the OPTera Metro 3500 Multiservice Platform.

OPTera Metro 3500 NTP library

EX1478p

Guides and Shelf Setup	TL1 Reference	Operations, Administration and Provisioning	Maintenance	Supporting documentation for the OPTera Metro 3500 Library
About the OPTera Metro 3500 NTP Library (323-1059-090)	TL1 Reference (323-1059-190)	System Reconfiguration (323-1059-224)	Performance Monitoring (323-1059-510)	Change Application Procedures (CAPs)
Planning and Ordering Guide (NTRN10AM)		Security and Administration (323-1059-302)	Network Surveillance (323-1059-520)	Data Communications Network Planning Guide (NTR710AM)
OPTera Connect DX/HDX, OM3000 and OC-48/TN-16X Interworking Application Guide (NTRN15AA)		Provisioning Synchronization (323-1059-310)	Alarm and Trouble Clearing (323-1059-543)	OPTera Metro 3000 series DWDM Application Guide (NTRN12AA)
OPTera Metro 3500 Network InteroperabilityGuide (NTRN16AA)		Protection Switching (323-1059-311)		OPTera Packet Edge System Planning Guide (NTRN10YK)
Installation (323-1059-201)		Bandwidth Management (323-1059-320)		OPTera Packet Edge System Network Applications and Management (NTRN11YK)
Commissioning (323-1059-210)		Provisioning Equipment and Facilities (323-1059-350)		OPTera Packet Edge System User Guide (NTN465YG)
System Testing (323-1059-222)				Site Manager Planning and Installation Guide, Rel 6.0 (NTNM35FA)

Technical support and information

For technical support and information from Nortel Networks, refer to the following table.

Technical Assistance Service	
For service-affecting problems: For 24-hour emergency recovery or software upgrade support, that is, for: • restoration of service for equipment that has been carrying traffic and is out of service • issues that prevent traffic protection switching • issues that prevent completion of software upgrades	**North America:** 1-800-4NORTEL (1-800-466-7835) **International:** 001-919-992-8300
For non-service-affecting problems: For 24-hour support on issues requiring immediate support or for 14-hour support (8 a.m. to 10 p.m. EST) on upgrade notification and non-urgent issues.	**North America:** 1-800-4NORTEL (1-800-466-7835) *Note:* You require an express routing code (ERC). To determine the ERC, see our corporate Web site at www.nortelnetworks.com. Click on the Express Routing Codes link. **International:** Varies according to country. For a list of telephone numbers, see our corporate Web site at www.nortelnetworks.com. Click on the Contact Us link.
Global software upgrade support:	**North America:** 1-800-4NORTEL (1-800-466-7835) **International:** Varies according to country. For a list of telephone numbers, see our corporate Web site at www.nortelnetworks.com. Click on the Contact Us link.

End-to-end connection management

Procedures for end-to-end connection management

These procedures describe viewing, adding, editing, deleting, and saving end-to-end connections within a network. The connections, built segment by segment, apply to all configurations.

The supported configurations for end-to-end connection management are UPSRs, 1+1 linear, hairpinning, TSA, BLSRs, and the possible combinations of these (for example, UPSR with linear spur).

Note: OPE end-to-end connections are not supported.

Note: If you have made protection provisioning or equipment and facility provisioning changes, you must click Refresh in Map Topology before you proceed with end-to-end connection management (EECM). If Map Topology was not already opened, launch it from the Configuration drop-down menu, and click Refresh. This is to ensure that the provisioning changes are updated in Site Manager and to ensure that EECM works with the latest data.

Procedure 1-1
Retrieving end-to-end connections

Use this procedure to start or view end-to-end connections.

For examples of end-to-end connections, see:

- Generalized end-to-end connection example (UPSR with linear spur) on page 1-4
- Generalized end-to-end connection example (BLSR) on page 1-5

Requirements

To perform this procedure, you must ensure you have all the documentation referenced in this procedure.

Step	Action
1	Ensure you are logged in to the network processor (NPx). See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	In the Navigation tree, log in to all network elements listed under the NPx.
3	Select the NPx in the navigation tree.
4	Select End to End Connections from the Configuration drop-down menu.
5	**If** ... **Then** go to

	If	**Then** go to
	this is the first launch of the End to End Connections window for this Site Manager session	step 6
	this is not the first launch of the End to End Connections window for this Site Manager session, but data is not available in the Connection list	step 8
	this is not the first launch of the End to End Connections window for this Site Manager session, and data is available in the Connection list	step 10

Step	Action
6	In the No Data Has Been Retrieved dialog box, click Yes.
7	Go to step 10.
8	In the progress window, click OK.
9	In the No Data Has Been Retrieved dialog box, click Yes.

—continued—

Procedure 1-1 (continued)
Retrieving end-to-end connections

Step	Action
10	In the End to End Connections window, click Refresh.
11	In the Refresh End to End Connections dialog box, click Refresh or Refresh All as required.
12	Click Yes in the confirmation dialog box.

—**end**—

Generalized end-to-end connection example (UPSR with linear spur)

EX0820p

Near-end network element

Pass-through connection

Far-end network element

Legend

▯ = network element

A to Z = the complete end-to-end path

a1 to z1 = the end-to-end path for the UPSR configuration

a2 to z2 = the end-to-end path for the linear configuration

Note: w and x represent line slot numbers (slots 11 and 12) in the UPSR portion. a and b represent optical interface tributary slots (slots 3 to 10).
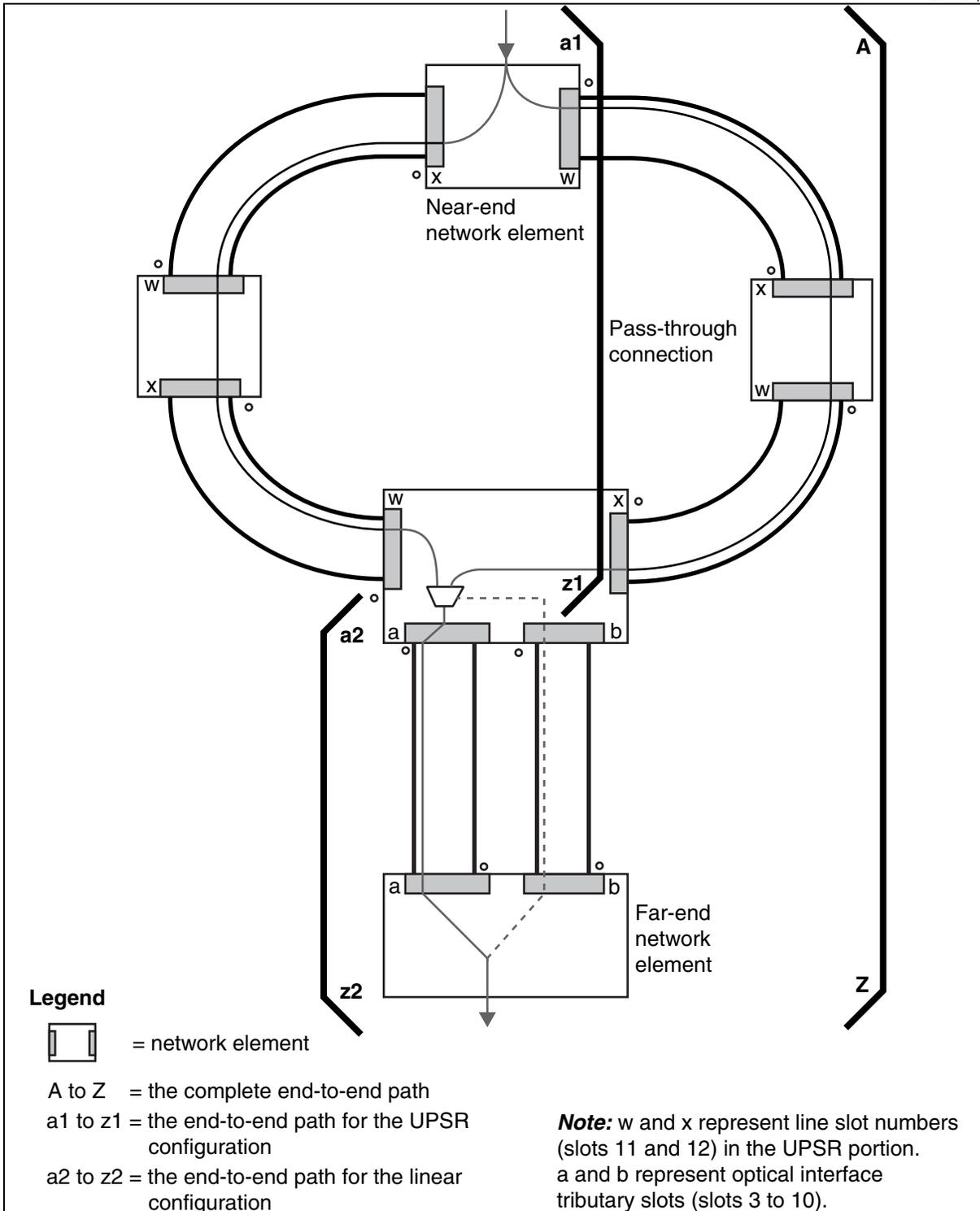
Generalized end-to-end connection example (BLSR)

EX1172p
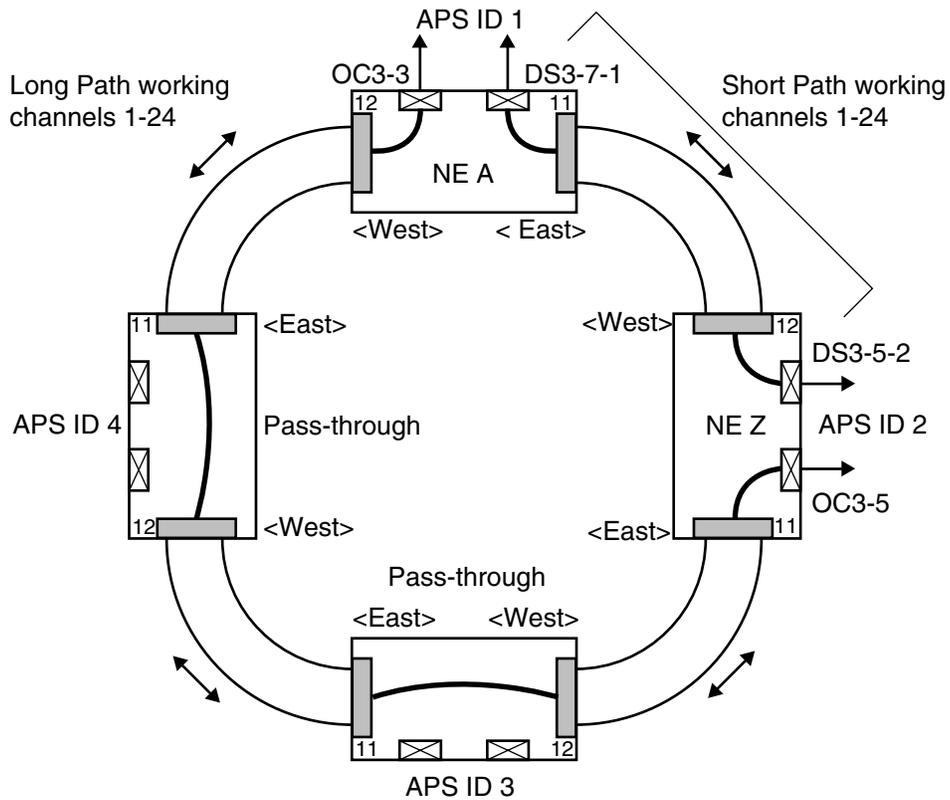
Legend

▭ = BLSR protected optical interfaces

⊠ = Tributary

══ = Fiber

⟶ = Signal path

⟷ = Bidirectional traffic flow

Procedure 1-2
Filtering end-to-end connections

Use this procedure to filter the Connection list in the End to End Connections window.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure.

Step	Action
1	Ensure the End to End Connections window is open and all connections have been retrieved. See Retrieving end-to-end connections on page 1-2.
2	Select the starting point of the segment from the End to End Connections dialog box.
	Note: The starting point is the From network element in the End to End Connections dialog box.
3	Click Show.
4	In the Show End to End Connections dialog box, select Bidirectional or Unidirectional as required.
5	Select the configurations to display as Linear, UPSR protected, UPSR unprotected, BLSR, Unknown, or Single node/Hairpin.
6	Select the Rate from the Rate list.
	Note: If you select All, go to step 8.
7	Select the required bandwidth values from the lists.
	Note: See OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for rates and bandwidth values.
8	Select the terminating network elements from the Terminating Network Elements list.
	Note: You can select some or all network elements in the End-to-End Connection Manager (EECM) span of control. The selection displays as the To network element in the End to End Connections dialog box. After your first selection, hold down the Ctrl key while clicking each of the remaining selections, to select more than one.
9	Select terminating network facilities from the Terminating Network Facilities list.
10	Click Filter.

—end—

Procedure 1-3
Adding an end-to-end connection for a 1+1 linear network

Use this procedure to provision an end-to-end connection for a 1+1 linear configuration. See the configuration diagram that most closely resembles your your network:

- 1+1 linear point-to-point network on page 2-4
- Drop-and-continue connections in a linear ADM network on page 2-7

    Note: The linear drop-and-continue configuration only supports unidirectional cross-connects.

Requirements

To perform this procedure, you must

- comply with provisioning rules governing cross-connect types.
  See Allowable cross-connect types between network configurations on page 6-71.

    Note 1: Mixed configurations, where a linear or UPSR system is connected to a BLSR system requires that only bidirectional cross-connects are used in the end-to-end connection.

    Note 2: For a mixed configuration you must set up the path according to the protection scheme provisioned on the network element. For example, if you are adding an end-to-end path in the BLSR portion of a BLSR/Linear mixed configuration use Adding an end-to-end connection for a BLSR network. When you start to provision the linear portion use Adding an end-to-end connection for a 1+1 linear network.

- ensure virtual concatenation is enabled on the WAN port if virtual concatenation is required. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- ensure the Subrate and Extreach attributes are set to Enable, if a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode). See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure.

Procedure 1-3 (continued)
Adding an end-to-end connection for a 1+1 linear network

Step	Action
1	Ensure the End to End Connections window is open. See Retrieving end-to-end connections on page 1-2. **Note:** The Map Topology window must be refreshed if changes have been made to protection provisioning or equipment and facility provisioning before you proceed with this procedure.
2	Click Add.

Defining connection endpoints

Step	Action
3	In the Add an End to End Connection dialog box, under the Step 1 - Start Path tab, select the initial and end network elements.
4	Select the signal rate from the Rate list.
5	Select Linear from the Protection list.
6	Under Direction, select the Bidirectional radio button or the Unidirectional radio button as required. **Note:** Select Bidirectional to enter 2WAY cross-connects or Unidirectional to enter 1WAY cross-connects. The cross-connects must be the same at both ends of the linear configuration.

7	**If** you	**Then** go to
	wish to provision a Connection ID	step 8
	do not wish to provision a Connection ID	step 10

Step	Action
8	Click once in the Connection ID text field
9	Type the Connection ID. **Note:** Up to forty (40) characters are allowed in the Connection ID text field.
10	In the End NE A list, select the network element that is the starting point for the path.
11	Select the required equipment from the Equipment list.
12	Select the required facility from the Facility list. **Note 1:** If the rate is VT1.5 and equipment type is an optical interface, select the STS#, VTG#, and VT#. **Note 2:** If the available rate is STS only, select STS#.
13	In the End NE Z list, select the network element that is the ending point for the path.
14	Select the required equipment from the Equipment list.
15	Select the required facility from the Facility list.

—**continued**—

Procedure 1-3 (continued)
Adding an end-to-end connection for a 1+1 linear network

Step	Action
16	Select the bandwidth values required for the network from the lists.
	Note: Select STS#, VTG#, and VT# for both End NE A and End NE Z.
17	Click Next to launch the Step 2 - Select Route tab.
	Note: If the entered data is not valid, the Next button is not enabled. If the Next button is not enabled, you must set the rate and modify the equipment, facility, bandwidth, or type of protection.

Defining a connection route

18	In the Add an End to End Connection dialog box, under the Step 2 - Select Route tab, select the Working path radio button.
19	If you wish to graphically display the route between the network elements, select the Show Path on Map checkbox.
20	Click Show Map.
21	In the Map Topology dialog box, select the next segment in the path, in the Available Next Path Segment table.
	Note: The Available Next Path Segment list displays the next path segment and is based on the last segment available from the Current Working Path table at the bottom of the dialog box.
22	Click Add Segment.
23	Continue to add segments as required.
24	Click Next to launch the Step 3 - Validate and apply path.
	Note 1: If a route was not selected in Step 2-Select route, a hairpin cross-connect or single node connection is created.
	Note 2: If the entered data is not valid and you click the Next button, an error message is displayed. You must return to Step 1-Start path to modify NE A to the appropriate equipment, facility, bandwidth, rate, or type of protection.

Validating / applying the connection to the network

25	**If** this is	**Then** go to
	not the only end-to-end linear connection you will be provisioning	step 26
	the only end-to-end linear connection you will be provisioning	step 28

26	In the Add an End to End Connection dialog box, under the Step 3 - Validate and Apply Path tab, click Apply.
	Note: Error dialogs are raised that list errors and request that you undo the path connection or retry the connection. Proceed as necessary to correct any errors.

—**continued**—

Procedure 1-3 (continued)
Adding an end-to-end connection for a 1+1 linear network

Step	Action
27	Go to step 3
28	In the Add an End to End Connection dialog box, under the Step 3 - Validate and Apply Path tab, click OK.

Note: Error dialogs are raised that list errors and request that you undo the path connection or retry the connection. Proceed as necessary to correct any errors.

—end—

Procedure 1-4
Adding an end-to-end connection for a UPSR network

Use this procedure to provision an end-to-end connection for a UPSR network and UPSR network variants.

See Generalized end-to-end connection example (UPSR with linear spur) on page 1-4 for a generalized end-to-end connection example.

See the configuration diagram that most closely resembles your network:

- Bidirectional UPSR network (example) on page 3-5

- Unidirectional UPSR network (example) on page 3-8

- Drop-and-continue connections in a unidirectional UPSR (example) on page 3-12

- Bidirectional UPSR network with linear spur (example) on page 3-16

- Unidirectional UPSR network with linear spur (example) on page 3-20

- Bidirectional network of single-homed subtending UPSR rings (example) on page 3-23

- Unidirectional network of single-homed subtending UPSR rings (example) on page 3-26

Requirements

To perform this procedure, you must

- comply with provisioning rules governing cross-connect types. See Allowable cross-connect types between network configurations on page 6-71

   Note 1: Mixed configurations, where a linear or UPSR system is connected to a BLSR system requires that only bidirectional cross-connects are used in the end-to-end connection.

   Note 2: For a mixed configuration you must set up the path according to the protection scheme provisioned on the network element. For example, if you are adding an end-to-end path in the BLSR portion of a BLSR, UPSR mixed configuration use Adding an end-to-end connection for a BLSR network. When you start to provision the UPSR portion use Adding an end-to-end connection for a UPSR network.

- ensure you have at least a level 3 user privilege code (UPC)

Procedure 1-4 (continued)
Adding an end-to-end connection for a UPSR network

- ensure you have all the documentation referenced in this procedure

- ensure virtual concatenation is enabled on the WAN port if virtual concatenation is required. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- ensure the Subrate and Extreach attributes are set to Enable, if a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode). See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

Step	Action
1	Ensure the End to End Connections window is open. See Retrieving end-to-end connections on page 1-2.
	Note: The Map Topology window must be refreshed if changes have been made to protection provisioning or equipment and facility provisioning before you proceed with this procedure.
2	Click Add.

Defining connection endpoints

Step	Action
3	In the Add an End to End Connection dialog box, under the Step - Start Path tab, select the initial and end network elements.
4	Select the signal rate from the Rate list.
5	Select UPSR Protected or UPSR unprotected from the Protection list, as required.
6	Under Direction, select the Bidirectional radio button or the Unidirectional radio button as required.

7	**If** you	**Then** go to
	wish to provision a Connection ID	step 8
	do not wish to provision a Connection ID	step 10

Step	Action
8	Click once in the Connection ID text field
9	Type the Connection ID.
	Note: Up to forty (40) characters are allowed in the Connection ID text field.
10	In the End NE A list, select the network element that is the starting point for the path.
11	Select the required equipment from the Equipment list.

—continued—

Procedure 1-4 (continued)
Adding an end-to-end connection for a UPSR network

Step	Action
12	Select the required facility from the Facility list.
	Note 1: If the rate is VT1.5 and equipment type is an optical interface, select the STS#, VTG#, and VT#.
	Note 2: If the available rate is STS only, select STS#.
13	In the End NE Z list, select the network element that is the ending point for the path.
14	Select the required equipment from the Equipment list.
15	Select the required facility from the Facility list.
16	Select the bandwidth values required for the network from the lists.
	Note: Select STS#, VTG#, and VT# for both End NE A and End NE Z.
17	Click Next to launch the Step 2 - Select Route tab.
	Note: If the entered data is not valid, the Next button is not enabled. If the Next button is not enabled, you must set the rate and modify the equipment, facility, bandwidth, or type of protection.

Defining a connection route

Step	Action
18	In the Add an End to End Connection dialog box, under the Step 2 - Select Route tab, select the Working path radio button.

19	**If**	**Then** go to
	you wish to graphically display your network map	step 20
	you do not wish to graphically display your network map	step 22

Step	Action
20	If you wish to graphically display the route between network elements, select the Show Path on Map checkbox.
21	Click Show Map.
22	In the Add an End to End Connection dialog box, under the Step 2 - Select Route tab, click Add Segment.
23	Continue to add segments as required.

24	**If** , in step 5, you defined the connection as	**Then** go to
	a UPSR protected connection	step 25
	a UPSR unprotected connection	step 22

Step	Action
25	If the connection is a UPSR protected connection (defined in step 5), select the Protection path radio button.
	Note: When you select Protection path, the Available Next Path Segment list displays the next path segment and is based on the last segment available from the Current Protection Path table at the bottom of the dialog box.

—continued—

Procedure 1-4 (continued)
Adding an end-to-end connection for a UPSR network

Step	Action
26	Select the next segment in the path from the Available Next Path Segment table.
	Note: The From NE in the Next Path Segment table is the To NE in the Current Protection Path table.
27	Continue to add segments as required.
28	Click Next to launch the Step 3 - Validate and Apply path.
	Note: If the entered data is not valid and you click the Next button, an error message is displayed. You must return to Step 1-Start path to modify NE A to the appropriate equipment, facility, bandwidth, rate, or type of protection.

Validating / applying the connection to the network

29	**If** this is	**Then** go to
	not the only end-to-end UPSR connection you will be provisioning	step 30
	the only end-to-end UPSR connection you will be provisioning	step 32

30	In the Add an End to End Connection dialog box, under the Step 3 - Validate and Apply Path tab, click Apply.
	Note 1: Error dialogs are raised that list errors and request you undo the path connection or retry the connection.
	Note 2: If you have not entered a working and protection path for a UPSR protected path, the connection details for the path window will be empty. You must return to the Step 2-Select route tab (step 18 in this procedure) and enter the missing data.
31	Go to step 3
32	In the Add an End to End Connection dialog box, under the Step 3 - Validate and Apply Path tab, click OK.
	Note 1: Error dialogs are raised that list errors and request you undo the path connection or retry the connection.
	Note 2: If you have not entered a working and protection path for a UPSR protected path, the connection details for the path window will be empty. You must return to the Step 2-Select route tab (step 18 in this procedure) and enter the missing data.

—**end**—

Procedure 1-5
Adding an end-to-end connection for a BLSR network

Use this procedure to provision an end-to-end connection for a bidirectional line switched ring (BLSR).

You can specify the direction the traffic will take around the ring. Configure your traffic to use either a short path or a long path. Site Manager's End-to-end connections application determines the path according to your selection of End NE A and End NE Z. The short path is considered the least expensive path from source to destination in any direction. The long path often introduces more pass-through connections in the path from source to destination in any direction. The long path is advantageous for adding more diverse routes to the BLSR. Provision cross-connects at the add node to leave the node in the direction of the path you want to take. For example, westbound traffic leaves the node through the slot 11 optical interface and eastbound traffic leaves the node through the slot 12 optical interface.

Refer to the following diagrams for configurations:

- Simple BLSR network (example) on page 4-6
- Bidirectional network of BLSR with linear spur (example) on page 4-10
- Bidirectional network of BLSR with subtending UPSR (example) on page 4-16

Requirements

To perform this procedure, you must

- comply with provisioning rules governing cross-connect types.
  See Allowable cross-connect types between network configurations on page 6-71

  Note 1: Mixed configurations, where a linear or UPSR system is connected to a BLSR system require that only bidirectional cross-connects are used in the end-to-end connection.

  Note 2: For a mixed configuration you must set up the path according to the protection scheme provisioned on the network element. For example, if you are adding an end-to-end path in the BLSR portion of a BLSR/UPSR mixed configuration use Adding an end-to-end connection for a BLSR network. When you start to provision the UPSR portion use Adding an end-to-end connection for a UPSR network.

  —continued—

Procedure 1-5 (continued)
Adding an end-to-end connection for a BLSR network

- • ensure all the optical interface circuit packs in the line slots of the network elements for the proposed BLSR are BLSR protected

- • ensure the network elements are present in the Ring Map

- • ensure you have at least a level 3 user privilege code (UPC)

- • ensure you have all the documentation referenced in this procedure

- • ensure you have a fully provisioned BLSR configuration with all the required network elements. See Provisioning a BLSR configuration on page 6-34.

- • ensure virtual concatenation is enabled on the WAN port if virtual concatenation is required. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- • ensure the Subrate and Extreach attributes are set to Enable, if a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode). See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

Step	Action
1	Ensure the End to End Connections window is open. See Retrieving end-to-end connections on page 1-2. *Note:* The Map Topology window must be refreshed if changes have been made to protection provisioning or equipment and facility provisioning before you proceed with this procedure.
2	Click Add.

Defining connection endpoints

Step	Action
3	In the Add and End to End Connection dialog box, under the Step 1 - Start Path tab, select the initial and end network elements.
4	Select the signal rate from the Rate list.
5	Select BLSR from the Protection list.
6	Under Direction, select the Bidirectional radio button.
7	**If** you

If you	**Then** go to
wish to provision a Connection ID	step 8
do not wish to provision a Connection ID	step 10

—continued—

Procedure 1-5 (continued)
Adding an end-to-end connection for a BLSR network

Step	Action
8	Click once in the Connection ID text field.
9	Type the Connection ID.

Note: Up to forty (40) characters are allowed in the Connection ID text field.

10	In the End NE A list, select the network element that is the starting point for the path.
11	Select the required equipment from the Equipment list.
12	Select the required facility from the Facility list.

Note 1: If the rate is VT1.5 and equipment type is an optical interface, select the STS#, VTG#, and VT#. If the available rate is STS only, select STS#.

Note 2: In STS-managed connections (VT Assigned) where the signal being added and dropped is a VT1.5, the following provisioning rules apply:

    — VT1.5 signals must be groomed into STS signals

    — STS signals must be entirely added or dropped at a single node

For complete BLSR provisioning rules, see 'Operations, administration, and maintenance (OAM) features', *Planning and Ordering Guide*, NTRN10AM.

13	In the End NE Z list, select the network element that is the ending point for the path.
14	Select the required equipment from the Equipment list.
15	Select the required facility from the Facility list.
16	Select, from the lists, the same STS#, VTG#, and VT# for End NE Z as you did for End NE A (in step 12).
17	Select the bandwidth values required for the network from the lists.

Note: Select STS#, VTG#, and VT# for both End NE A and End NE Z.

18	**If** the desired signal rate is	**Then** go to
	VT1.5	step 19
	not VT1.5	step 22

19	**If** the desired signal rate is VT1.5 and you want this end-to-end connection to be	**Then** go to
	VT-managed	step 20
	STS-managed (VT Assigned)	step 21

20	Select the VT Managed radio button in the Management area.
	Go to step 22.
21	Select the STS Managed radio button in the Management area

—continued—

Procedure 1-5 (continued)
Adding an end-to-end connection for a BLSR network

Step	Action
22	Click Next to launch the Step 2 - Select Route tab.

Note: If the entered data is not valid, the Next button is not enabled. If the Next button is not enabled, you must set the rate and modify the equipment, facility, bandwidth, or type of protection.

Defining a connection route

Step	Action
23	In the Add an End to End Connection dialog box, under the Step 2 - Select Route tab, select the Working path radio button.

Note: East traffic leaves the node through the slot 12 optical interface. West traffic leaves the node through the slot 11 optical interface.

24	**If**	**Then** go to
	you wish to graphically display your network map	step 25
	you do not wish to graphically display your network map	step 27

Step	Action
25	If you wish to graphically display the route between network elements, select the Show Path on Map checkbox.
26	Click Show Map.
27	In the Add an End to End Connection dialog box, under the Step 2 - Select Route tab, select the Short Path radio button or the Long Path radio button as required.

Note 1: The Current Short Path list of the dialog box displays the path determined from your selection of End NE A and End NE Z.

Note 2: When you select the Long Path radio button, the Available long path segment list displays the path determined from your selection of End NE A and End NE Z.

| 28 | Select the available STS, VTG, and VT bandwidth from the Available bandwidth lists. |

Note: In STS-managed connections (VT Assigned) where the signal being added and dropped is a VT1.5, the following provisioning rules apply:

— VT1.5 signals must be groomed into STS signals

— STS signals must be entirely added or dropped at a single node

For complete BLSR provisioning rules, see 'Operations, administration, and maintenance (OAM) features', *Planning and Ordering Guide*, NTRN10AM.

| 29 | Click Next to launch the Step 3 - Validate and Apply path tab. |

Procedure 1-5 (continued)
Adding an end-to-end connection for a BLSR network

Step	Action

Validating / applying the connection to the network

30

If this is	**Then** go to
not the only end-to-end BLSR connection you will be provisioning	step 31
the only end-to-end BLSR connection you will be provisioning	step 33

31   In the Add an End to End Connection dialog box, under the Step 3 - Validate and Apply Path tab, click Apply.

Note 1: Error dialogs are raised that list errors and request you undo the path connection or retry the connection.

Note 2: If the connection details for the path window is empty, return to step 23 and enter any missing data entered for the working paths.

32   Go to step 3

33   In the Add an End to End Connection dialog box, under the Step 3 - Validate and Apply Path tab, click OK.

Note 1: Error dialogs are raised that list errors and request you undo the path connection or retry the connection.

Note 2: If the connection details for the path window is empty, return to step 23 and enter any missing data entered for the working paths.

—**end**—

Procedure 1-6
Editing an end-to-end connection

Use this procedure to edit an end-to-end connection.

Note: You cannot edit a connection if a facility in the path of an end-to-end connection is not provisioned, out of the network processor span of control, or has no association.

Requirements

To perform this procedure, you must

- ensure you know the protection scheme for your network

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure.

Step	Action
1	Ensure the End to End Connections window is open. See Retrieving end-to-end connections on page 1-2. *Note:* The Map Topology window must be refreshed if changes have been made to protection provisioning or equipment and facility provisioning before you proceed with this procedure.
2	Select the cross-connect you wish to edit from the End to End Connection dialog box.
3	Click Edit to open the Edit an End to End Connection dialog box.

> ⚠ **CAUTION**
> **Risk of affecting other cross-connects in network**
> There is the risk that you can adversely affect other cross-connects in the network that are not shown in the selected end-to-end connection.

Step	Action
4	Select a connection from the Connection details for the path list.

Procedure 1-6 (continued)
Editing an end-to-end connection

Step	Action
5	Click Add Cross-Connect, Edit Cross-Connect, or Delete Cross-Connect as required.

Note: If you click Add Cross-Connect or Edit Cross-Connect, the Nodal Cross-Connect application of the function is launched. If you click the Delete Cross-Connect button the Delete End-to-End Connection application is launched. Help for the nodal cross-connects applications and the Delete End-to-End Connection application are available as follows:

If you are	**Then** go to
adding a connection	step 6
editing a connection	step 9
deleting a connection	step 12

6   Add the connection.

Depending on your cross-connect and network type, perform one of the following procedures:

- Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9
- Adding a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-17
- Adding a 2WAY cross-connect (BLSR networks) on page 6-13

7   Click OK.

8   Click Yes in the confirmation dialog box.

Note: If you click Add on a deleted connection (status of the connection shows as deleted), the connection is set up again automatically.

You have completed this procedure.

9   Edit the connection.

Depending on your cross-connect and network type, perform one of the following procedures:

- Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27
- Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30
- Editing a 2WAY cross-connect (BLSR networks) on page 6-29

10   Click OK.

11   Click Yes in the confirmation dialog box.

Note: If major and service affecting alarms appear after editing the connection, you must clear the alarms. For alarm clearing procedures, see 323-1059-543, Detailed procedures for active alarms on page 4-1.

You have completed this procedure.

—continued—

Procedure 1-6 (continued)
Editing an end-to-end connection

Step	Action
12	Delete the end-to-end connection. See Deleting an end-to-end connection on page 1-23.
13	Click Close to close the Edit End to End Connection dialog box.
	Note: If you click Add on a deleted connection (status of the connection shows as deleted), the connection is set up again automatically.
	You have completed this procedure.
	—end—

Procedure 1-7
Deleting an end-to-end connection

Step	Action
1	Ensure the End to End Connections window is open. See Retrieving end-to-end connections on page 1-2.
	Note: The Map Topology window must be refreshed if changes have been made to protection provisioning or equipment and facility provisioning before you proceed with this procedure.
2	Select the connection to delete from the list of connections.

> ⚠ **CAUTION**
> **Risk of affecting other cross-connects in network**
> There is the risk that you can adversely affect other cross-connects in the network that are not shown in the selected end-to-end connection.

Step	Action
3	Click Delete.
4	Click Yes in the confirmation dialog box.

—**end**—

Procedure 1-8
Saving end-to-end connection data to file

Use this procedure to save all end-to-end connection data to file.

Step	Action
1	Ensure the End to End Connections window is open. See Retrieving end-to-end connections on page 1-2. ***Note:*** The Map Topology window must be refreshed if changes have been made to protection provisioning or equipment and facility provisioning before you proceed with this procedure.
2	Click Save. ***Note:*** You have the option to decline data retrieval. If the retrieval time is considered to be long, you will be prompted with a warning dialog box that asks if you want to continue retrieving protection and activity data. Click Yes to save the data. Click No to cancel the update and the save.
3	Select a directory from the Look in drop-down box.
4	Select a folder under that directory from the list window.
5	Select the file type from the Files of type drop-down box.
6	Name or select the file name from the File name window.
7	Click Save.
8	Click Yes in the confirmation dialog box.

<div align="center">—**end**—</div>

Nodal cross-connect provisioning of linear networks

Procedures for the nodal provisioning of linear configurations

Procedures for in-service traffic rollovers in a linear configuration

Procedure 2-1
Provisioning a linear point-to-point network

Use this procedure to provision both bidirectional and unidirectional linear point-to-point configurations on a nodal basis. For bidirectional configurations use 2WAY cross-connect types and for unidirectional configurations select 1WAY cross-connect types.

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

- see Allowable cross-connect types between network configurations on page 6-71
- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service
- to provision protected linear point-to-point connections, ensure 1+1 Linear protection, bidirectional or unidirectional, is provisioned on the optical facilities for any protected 1+1 connection, see 323-1059-311, Changing the protection scheme on an optical facility from UPSR to 1+1 linear on page 1-8

> **CAUTION**
> **Risk of traffic loss**
> To provision unprotected linear point-to-point connections, ensure the 1+1 Linear protection on the optical facilities at both ends of the link have been de-provisioned by changing to them to UPSR. See 323-1059-311, Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6. This ensures that cross-connects can be provisioned at both the odd and the even slot facilities.
>
> This configuration does not provide traffic protection, and will result in a traffic loss in the event of a fiber cut or circuit pack failure.

- obtain a traffic map for the linear system that requires cross-connect provisioning
- use an account with a level 3 or higher user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure

Procedure 2-1 (continued)
Provisioning a linear point-to-point network

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See 1+1 linear point-to-point network on page 2-4. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the navigation tree.
4	At the near-end network element, add a 1WAY or 2WAY cross-connect, as required, from the tributary facility to the slot a optical interface. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9. • 1WAY for unidirectional configurations • 2WAY for bidirectional configurations
5	At the far-end network element, add a 1WAY or 2WAY cross-connect (as required) from the slot a optical interface to the tributary facility. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9. • 1WAY for unidirectional configurations • 2WAY for bidirectional configurations

—**end**—

1+1 linear point-to-point network

EX0050

Near-end
network element

a   b

Far-end
network element

Legend

= optical interface circuit pack

= bidirectional traffic

= protection traffic

Procedure 2-2
Provisioning drop-and-continue in a linear ADM network

Note 1: Drop-and-continue cross-connect functionality is only supported in unidirectional configurations.

Note 2: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the optical facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Note 3: Drop-and-continue cross-connect functionality is only supported in unidirectional configurations.

If you are provisioning a 1+1 protected connection, ensure an FFP is provisioned for the optical interfaces. When an FFP is provisioned and you provision the STS-1 or VT1.5 connection on the working optical interface, the connection is automatically set up on the mate optical interface.

The order of the FromAID and the ToAID is important for a unidirectional connection. The FromAID identifies the circuit pack from which the signal originates. The ToAID identifies the circuit pack to which the signal is going.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure 1+1 Linear protection, bidirectional or unidirectional, are provisioned on the optical facilities for any protected 1+1 connection, see 323-1059-311, Changing the protection scheme on an optical facility from UPSR to 1+1 linear on page 1-8

- obtain a traffic map for the linear system that requires cross-connect provisioning

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

Procedure 2-2 (continued)
Provisioning drop-and-continue in a linear ADM network

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Drop-and-continue connections in a linear ADM network on page 2-7. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	For the network element in your system represented in the diagram as Near-end network element, add a 1WAY cross-connect from the tributary facility to the slot a optical facility. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
5	For each network element in your system represented in the diagram as Pass-through network element, add a 1WAY cross-connect from the slot a optical facility to the slot c optical facility. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
6	For each network element in your system represented in the diagram as Far-end 1 network element, add:

- a 1WAY cross-connect from the slot a optical facility to the tributary facility for the dropping signal

- a 1WAY cross-connect from the slot a optical facility to the slot c optical facility for the continuing signal

See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.

| **7** | For the network element in your system represented in the diagram as Far-end 2 network element, add a 1WAY cross-connect from the slot a optical facility to the tributary facility. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9. |

—end—

Drop-and-continue connections in a linear ADM network

EX0370

Near-end
network element

Pass-through
network element

Far-end 1
network element

Far-end 2
network element

Legend

▭ = Optical interface

⟶ = Signal

Note: a, b, c and d represent slot numbers for the optical interfaces. The slot numbers represented by these variables can vary from network element to network element.

Procedure 2-3
Performing a traffic rollover in a linear point-to-point network

See 1+1 linear point-to-point network on page 2-4 for an example of a linear system with bidirectional traffic.

Note: A pair of SONET lines carry traffic on 1+1 line protected connections (with facility fault protection (FFP)). Protection is provided on the matching path of the mate transport circuit pack and is not user defined. When endpoints resident on the 1+1 protected transport circuit packs are rolled over, the protection path is rolled over automatically. The original cross-connect of the protection circuit pack rolls to the same destination as its mate, but on the other transport circuit pack.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system

- ensure you have a cross-connect list for the services on your system

- log in to the network element using an account with a level 3 or higher user privilege code (UPC)

  Note: You can retrieve the status of an in-service traffic rollover with a level 1 UPC.

- ensure you have all the documentation referenced in this procedure.

- ensure the switch modes of the 1+1 protected lines are either unidirectional or bidirectional to enable facility fault protection

Step	Action
1	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See: • 323-1059-520, Enabling or disabling path trace messages on page 2-7. • 323-1059-520, Retrieving path trace messages on page 2-6.
2	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

—continued—

Procedure 2-3 (continued)
Performing a traffic rollover in a linear point-to-point network

Step	Action
3	Perform a manual switch on each network element, as required, to switch traffic from the path to be rolled to the protection path. See 323-1059-311, Operating a manual optical line switch in a 1+1 linear system on page 1-26.
4	Select the near-end network element in the Navigation tree.
5	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
6	Click Refresh to display the nodal cross-connects.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
7	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
8	Select Show in-service roll over to display the in-service traffic roll over area.
9	Roll over the 1WAY cross-connect endpoints in slot a of the near-end and the 1WAY cross-connect endpoint in slot a of the far-end network element that goes from slot a to the tributary. See Rolling endpoints in a network on page 6-52.
	Note: If you select the From endpoint in the near-end network element, you must select the From endpoint in the far-end network element. If you select the To endpoint in the near-end network element, you must select the To endpoint in the far-end network element.
10	Perform a manual switch on each network element to switch traffic back to the proper working path. See 323-1059-311, Operating a manual optical line switch in a 1+1 linear system on page 1-26.

—**end**—

Procedure 2-4
Performing a traffic rollover in a linear ADM drop-and-continue configuration

See Drop-and-continue connections in a linear ADM network on page 2-7 for an example of an ADM linear system.

Note: A pair of SONET lines carry traffic on 1+1 line protected connections (with facility fault protection (FFP)). Protection is provided on the matching path of the mate transport circuit pack and is not user defined. When endpoints resident on the 1+1 protected transport circuit packs are rolled over, the protection path is rolled over automatically. The original cross-connect of the protection circuit pack rolls to the same destination as its mate, but on the other transport circuit pack.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system
- log in to the network element using an account with a level 3 or higher user privilege code (UPC)

  Note: You can retrieve the status of an in-service traffic rollover with a level 1 UPC.

- ensure you have all the documentation referenced in this procedure
- ensure the switch modes of the 1+1 protected lines are either unidirectional or bidirectional to enable facility fault protection

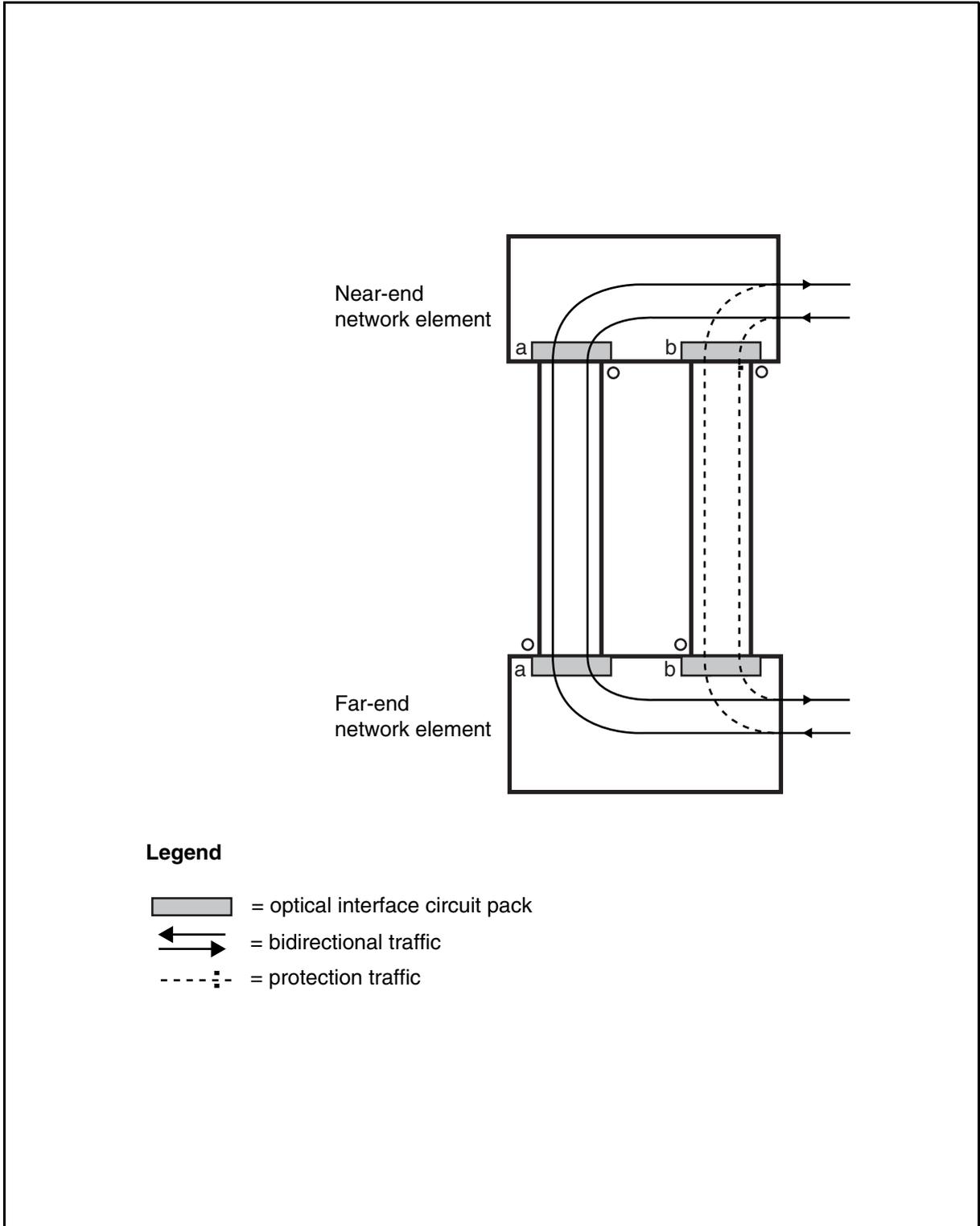| Step	Action
1	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
2	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
3	Perform a manual switch on each network element, as required, to switch traffic from the path to be rolled to the protection path. See 323-1059-311, Operating a manual optical line switch in a 1+1 linear system on page 1-26.

—continued—

Procedure 2-4 (continued)
Performing a traffic rollover in a linear ADM drop-and-continue configuration

Step	Action
4	Provision a new 1WAY cross-connect from slot a to slot c in each pass-through network element and at each far-end network element where the signal is being continued or passed-though to the next network element. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9
5	Select the near-end network element in the Navigation tree.
6	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
7	Click Refresh to display the nodal cross-connects.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
8	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
9	Select Show in-service roll over to display the in-service traffic roll over area.
10	Roll over the 1WAY cross-connect endpoints in slot a of the near-end and the 1WAY cross-connect endpoint in slot a of the far-end 1 network element that goes from slot a to the tributary. See Rolling endpoints in a network on page 6-52.
	Note: If you select the From endpoint in the near-end network element, you must select the From endpoint in the far-end network element. If you select the To endpoint in the near-end network element, you must select the To endpoint in the far-end network element.
11	Roll over the 1WAY cross-connect endpoints in slot c of the far-end 1 network element and the 1WAY cross-connect endpoint in slot a of the far-end 2 network element that goes from slot a to the tributary. See Rolling endpoints in a network on page 6-52.
12	Perform a manual switch on each network element to switch traffic back to the proper working path. See 323-1059-311, Operating a manual optical line switch in a 1+1 linear system on page 1-26.

—**end**—

Nodal cross-connect provisioning of UPSR networks

Procedures for the nodal provisioning of UPSR networks

Procedures for in-service traffic rollovers in UPSR networks

Simple UPSRs

UPSRs with linear spurs

Subtending UPSRs

Matched node UPSRs

Procedure 3-1
Provisioning a UPSR (bidirectional)

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure.
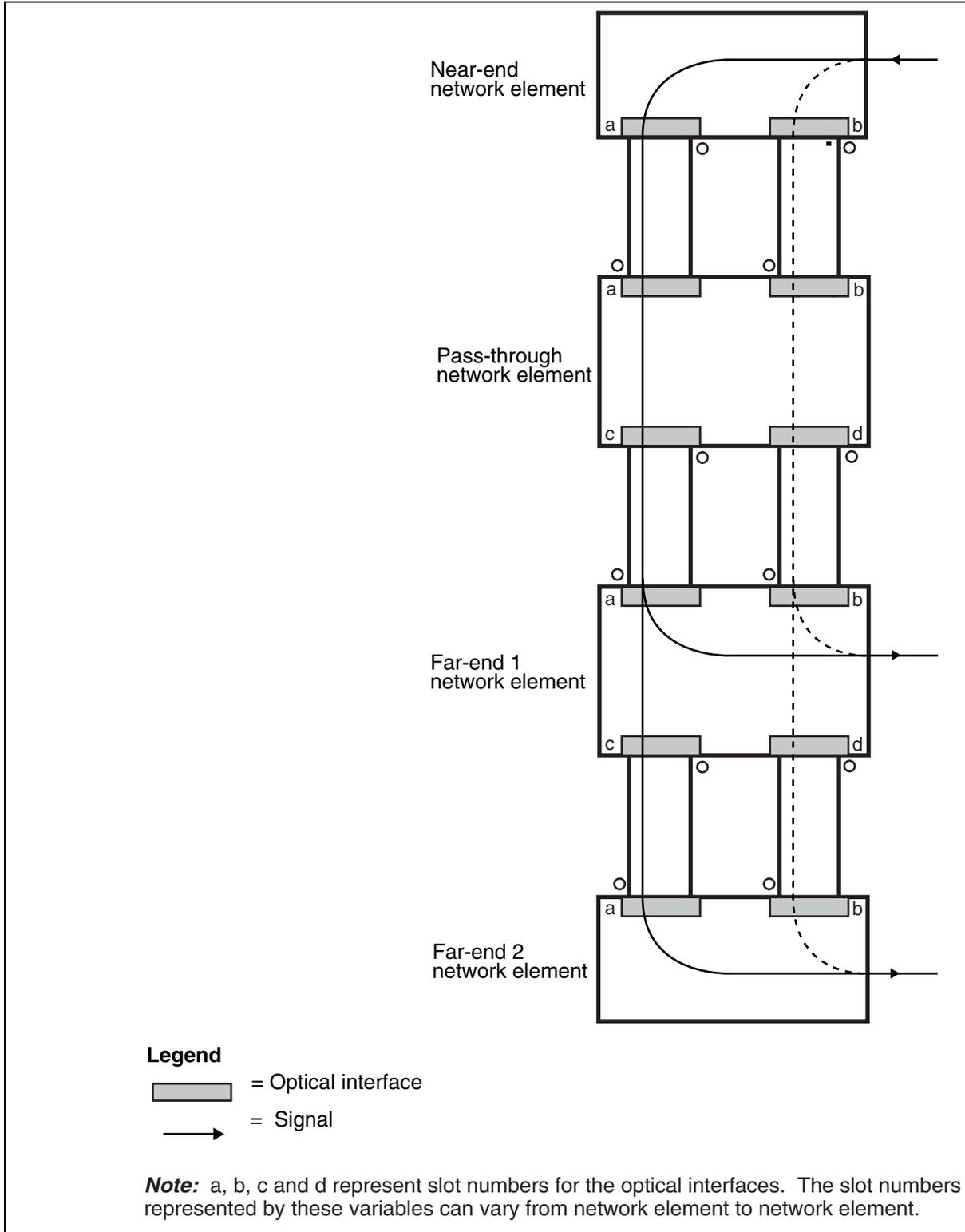
Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in your system, find the corresponding network element in the provisioning diagram. See Bidirectional UPSR network (example) on page 3-5.
3	Record the slot numbers for the circuit packs on your diagram so you can refer to them throughout the procedure.

Procedure 3-1 (continued)
Provisioning a UPSR (bidirectional)

Step	Action
4	Select the network element in which you want to configure cross-connects from the Navigation tree.
5	Add the following cross-connects. See .

Network element	Cross-connect	From	To	Switch Mate
Near-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Pass-through 1	2WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through 2	2WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility

—**end**—

Bidirectional UPSR network (example)

EX0138
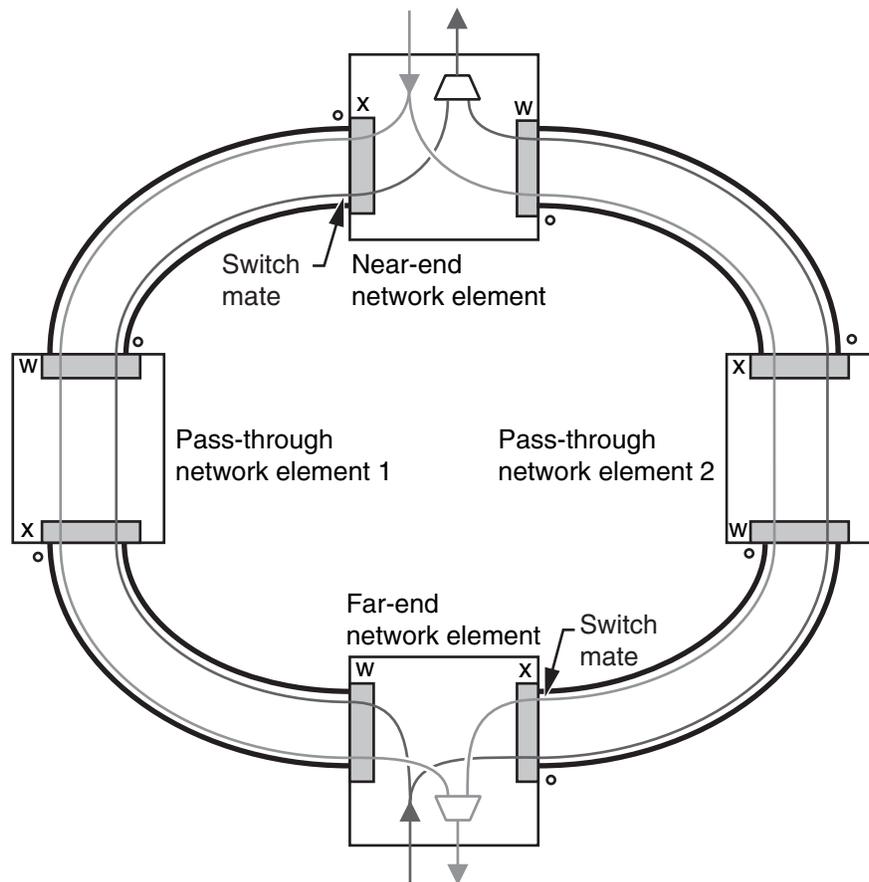
Legend

= Optical interface

= Signal

= Path selector

Note: w and x represent line slot numbers (slots 11 and 12) for the optical interfaces.
The slot numbers represented by these variables can vary
from network element to network element.

Procedure 3-2
Provisioning a UPSR (unidirectional)

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Unidirectional UPSR network (example) on page 3-8. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.

Procedure 3-2 (continued)
Provisioning a UPSR (unidirectional)

Step	Action
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot x optical facility	n/a
Near-end	1WAY	Tributary facility	Slot w optical facility	n/a
Pass-through 1	1WAY	Slot w optical facility	Slot x optical facility	n/a
Pass-through 2	1WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	1WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Note: Connection ID can also be provisioned.				

—**end**—

Unidirectional UPSR network (example)

EX0139
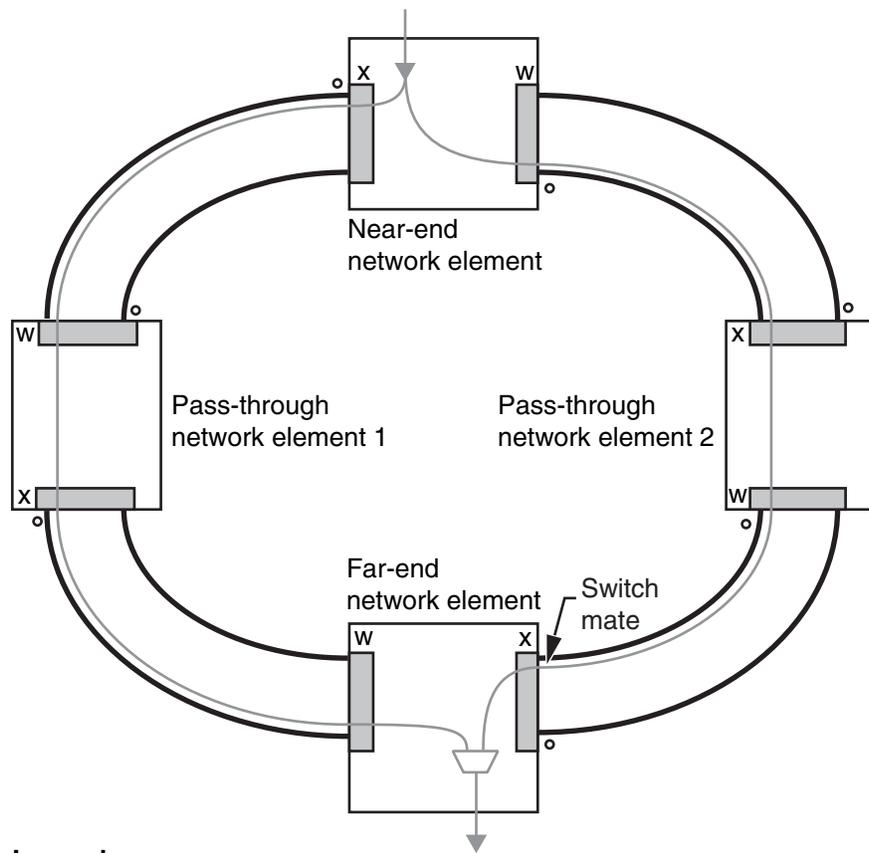
Near-end
network element

Pass-through
network element 1

Pass-through
network element 2

Far-end
network element

Switch
mate

Legend

▭ = Optical interface

→ = Signal

▽ = Path selector

Note: w and x represent line slot numbers (slots 11 and 12) for the optical
interfaces. The slot numbers represented by these variables
can vary from network element to network element.

Procedure 3-3
Provisioning drop-and-continue in a unidirectional UPSR

Note 1: You can add a new cross-connect and keep the old cross-connect if the connection is unidirectional. The same source end point can be connected to many different destination end points.

Note 2: To provision drops to multiple tributaries at any one far-end network element, overlay multiple unidirectional protected cross-connects with the To AIDs configured for each tributary AID.

Note 3: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

—continued—

Procedure 3-3 (continued)
Provisioning drop-and-continue in a unidirectional UPSR

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Drop-and-continue connections in a unidirectional UPSR (example) on page 3-12. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

<div align="center">—end—</div>

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot w optical facility	n/a
Near-end	1WAY	Tributary facility	Slot x optical facility	n/a
Pass-through 1	1WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end 1 (dropping signal)	1WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Far-end 1 (continuing signal)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end 2 (dropping signal)	1WAYPR	Slot x optical facility	Tributary facility	Slot w optical facility
Far-end 2 (continuing signal)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through 2 (continuing signal)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through 2 (continuing signal)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end 3 (dropping signal)	1WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Far-end 3 (continuing signal)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end 3 (continuing signal)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through 3	1WAY	Slot x optical facility	Slot w optical facility	n/a

Drop-and-continue connections in a unidirectional UPSR (example)

EX0373

Near-end
network element

Pass-through 3
network element

Pass-through 3
network element

Far-end 2
network element

Far-end 1
network element
multi drop

Pass-through 2
network element

Far-end 3
network element

Legend

= Optical interface

= Signal

= Path selector

Note: w and x represent line slot numbers (slots 11 and 12) for the optical interfaces.
The slot numbers represented by these variables can vary from network element
to network element.

Procedure 3-4
Provisioning a UPSR with linear spur (bidirectional)

Use this procedure to provision cross-connects for a bidirectional end-to-end service that has one end point in a UPSR and the other end point in a linear point-to-point spur. You can use this procedure to connect an OPTera Metro 3500 Multiservice Platform UPSR to an OC-12 TBM, and to an OC-48 or OC-192 bidirectional line switched ring (BLSR). In this case, you provision both hub network elements as spurs in linear point-to-point mode between the two rings using the OC-3, OC-12, or OC-48 tributaries in each network element.

Note 1: If the hub network element is equipped with VTX-48 or VTX-48e circuit packs, only two of the optical interfaces at this network element can be OC-48 circuit packs. The linear portion of this configuration is supported at OC-3 and OC-12 line rates through the tributary optical interfaces.

Note 2: If the hub network element is equipped with STX-192 circuit packs, only two of the optical interfaces at this network element can be OC-192 circuit packs. The linear portion of this configuration is supported at OC-3, OC-12, and OC-48 line rates through the tributary optical interfaces.

Requirements

- see Allowable cross-connect types between network configurations on page 6-71
- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

Procedure 3-4 (continued)
Provisioning a UPSR with linear spur (bidirectional)

- to provision protected cross-connects for a spur network, ensure 1+1 linear bidirectional protection, is provisioned on the optical facilities for any protected 1+1 connection, see 323-1059-320, Changing the protection scheme on an optical facility from UPSR to 1+1 linear on page 1-8

> ⚠ **CAUTION**
> **Risk of traffic loss**
> To provision unprotected cross-connects for a spur network element, ensure the 1+1 linear bidirectional protection on the optical facilities at both ends of the link have been de-provisioned by changing them to UPSR. See 323-1059-320, Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6. This ensures that cross-connects can be provisioned on both the odd and the even slot facilities.
>
> This configuration does not provide traffic protection, and will result in a traffic loss in the event of a fiber cut or circuit pack failure.

- obtain or create an optical interface traffic map for the system
- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot
- use an account with a level 3 or higher user privilege code (UPC)
- ensure the signal degrade threshold (SDTH) is provisioned
- ensure you have all the documentation referenced in this procedure
- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional UPSR network with linear spur (example) on page 3-16. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.

—continued—

Procedure 3-4 (continued)
Provisioning a UPSR with linear spur (bidirectional)

Step	Action
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Pass-through A	2WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through B	2WAY	Slot w optical facility	Slot x optical facility	n/a
Hub	2WAYPR	Slot w optical facility	Slot a optical facility	Slot x optical facility
Far-end	2WAY	Slot a optical facility	Tributary facility	n/a

—**end**—

Bidirectional UPSR network with linear spur (example)

EX0755p

OPTera Metro 3500   Multiservice Platform   323-1059-320   Standard   Rel 12.0   Iss 1   Nov 2003
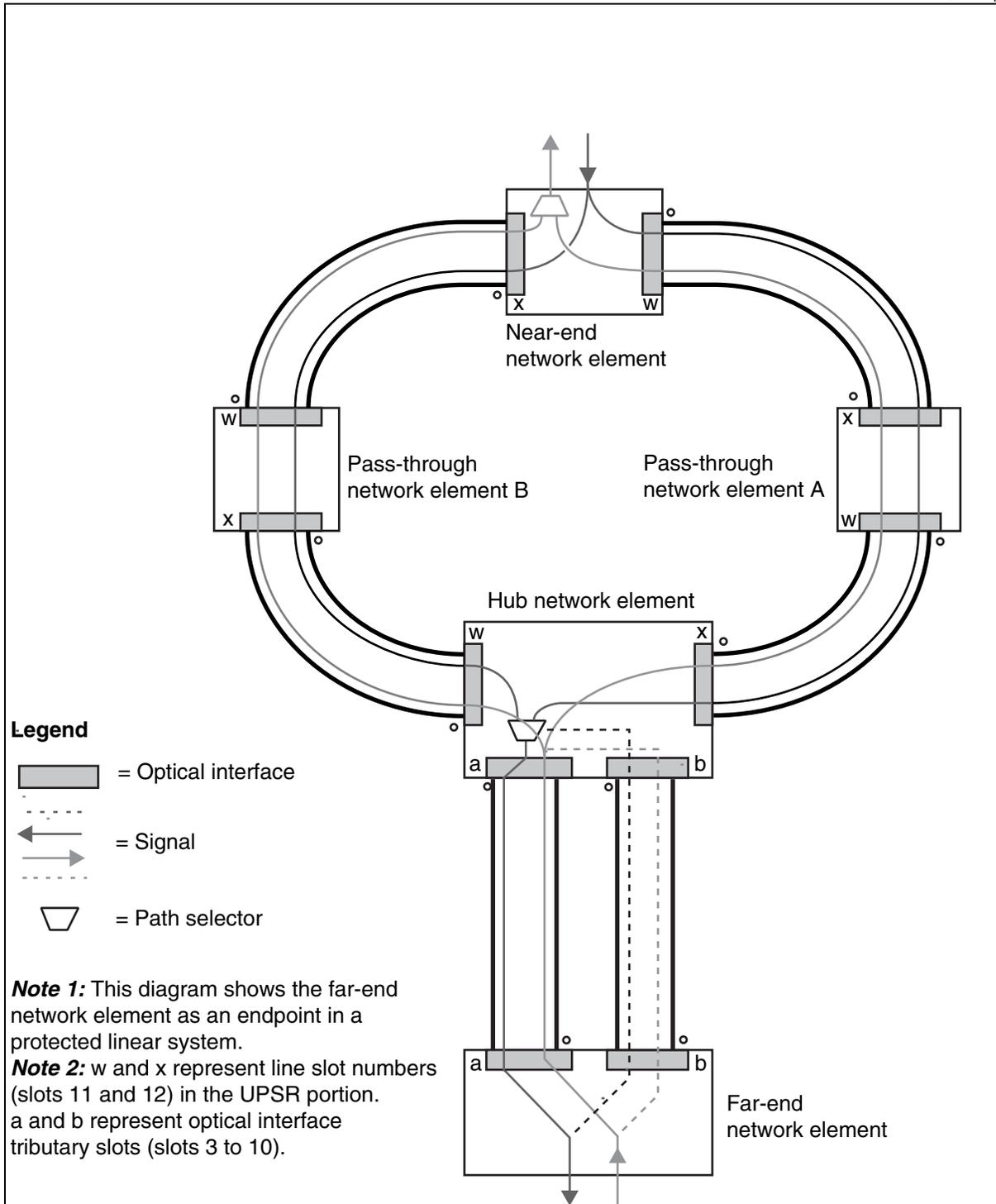
Procedure 3-5
Provisioning a UPSR with linear spur (unidirectional)

Use this procedure to provision cross-connects for a new unidirectional end-to-end service that has one end point in a UPSR and the other end point in a linear spur. You can use this procedure to connect an OPTera Metro 3500 Multiservice Platform UPSR to an OC-12 TBM, and to an OC-48 or OC-192 bidirectional line switched ring (BLSR). In this case, you provision both hub network elements as spurs in linear point-to-point mode between the two rings using OC-3, OC-12, or OC-48 tributaries in each network element.

Note 1: If the hub network element is equipped with VTX-48 or VTX-48e circuit packs, only two of the optical interfaces at this network element can be OC-48 circuit packs. The linear portion of this configuration is supported at OC-3 and OC-12 line rates through the tributary optical interfaces.

Note 2: If the hub network element is equipped with STX-192 circuit packs, only two of the optical interfaces at this network element can be OC-192 circuit packs. The linear portion of this configuration is supported at OC-3, OC-12, and OC-48 line rates through the tributary optical interfaces.

Note 3: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

- see Allowable cross-connect types between network configurations on page 6-71
- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service
- to provision protected cross-connects for a spur network, ensure 1+1 linear unidirectional protection, is provisioned on the optical facilities for any protected 1+1 connection, see 323-1059-320, Changing the protection scheme on an optical facility from UPSR to 1+1 linear on page 1-8

—**continued**—

Procedure 3-5 (continued)
Provisioning a UPSR with linear spur (unidirectional)

> **CAUTION**
> **Risk of traffic loss**
> To provision unprotected cross-connects for a spur network element, ensure the 1+1 linear unidirectional protection on the optical facilities at both ends of the link have been de-provisioned by changing to them to UPSR. See 323-1059-320, Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6. This ensures that cross-connects can be provisioned on both the odd and the even slot facilities.
>
> This configuration does not provide traffic protection, and will result in a traffic loss in the event of a fiber cut or circuit pack failure.

- obtain or create an optical interface traffic map for the system

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Unidirectional UPSR network with linear spur (example) on page 3-20. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree. *Note:* The signal originates in the UPSR.

Procedure 3-5 (continued)
Provisioning a UPSR with linear spur (unidirectional)

	Step	**Action**

4   Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot x optical facility	n/a
Near-end	1WAY	Tributary facility	Slot w optical facility	n/a
Pass-through A	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through B	1WAY	Slot w optical facility	Slot x optical facility	n/a
Hub	1WAYPR	Slot w optical facility	Slot a optical facility	Slot x optical facility
Far-end	1WAY	Slot a optical facility	Tributary facility	n/a

—**end**—

Unidirectional UPSR network with linear spur (example)

EX0800p

Near-end
network element

Pass-through
network element B

Pass-through
network element A

Hub network element

Legend

= Optical interface

= Signal

= Path selector

Note 1: This diagram shows the far-end
network element as an endpoint in a
protected linear system.
Note 2: w and x represent line slot numbers
(slots 11 and 12) in the UPSR portion.
a and b represent optical interface
tributary slots (slots 3 to 10).

Far-end
network element
(Spur)

Procedure 3-6
Provisioning single-homed subtending UPSRs (bidirectional)

Use this procedure to provision cross-connects for a new bidirectional end-to-end service with end points in two different subtending rings of a single-homed, multiple subtending ring network.

Note 1: If the single-homed network element is a shelf equipped with VTX-48 or VTX-48e circuit packs, then only two of the optical interfaces can be OC-48 optical interface circuit packs. This configuration is supported at OC-3 and OC-12 line rates through the tributary optical interfaces.

Note 2: If the single-homed network element is a shelf equipped with STX-192 circuit packs, then only two of the optical interfaces can be OC-192 optical interface circuit packs. This configuration is supported at OC-3, OC-12, and OC-48 line rates through the tributary optical interfaces.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Procedure 3-6 (continued)
Provisioning single-homed subtending UPSRs (bidirectional)

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional network of single-homed subtending UPSR rings (example) on page 3-23. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Pass-through 1 (UPSR A)	2WAY	Slot w optical facility	Slot x optical facility	n/a
Pass-through 2 (UPSR A)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Single-homed	1WAYPR	Slot w optical facility	Slot y optical facility	Slot x optical facility
	1WAYPR	Slot w optical facility	Slot z optical facility	Slot x optical facility
	1WAYPR	Slot y optical facility	Slot w optical facility	Slot z optical facility
	1WAYPR	Slot y optical facility	Slot x optical facility	Slot z optical facility
Pass-through 3 (UPSR B)	2WAY	Slot w optical facility	Slot x optical facility	n/a
Pass-through 4 (UPSR B)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility

—end—

Bidirectional network of single-homed subtending UPSR rings (example)

EX0145

Legend

= Optical interface

= Signal

= Path selector

Note 1: w and x represent line (slots 11 and 12) optical interface slot numbers. The slot numbers represented by these variables can vary from network element to network element.

Note 2: y and z represent tributary optical interface slot numbers (slots 3 to 10).

Procedure 3-7
Provisioning single-homed subtending UPSRs (unidirectional)

Use this procedure to provision cross-connects for a unidirectional end-to-end service with end points in two different subtending rings of a single-homed, multiple subtending ring network.

Note 1: If the single-homed network element is a shelf equipped with VTX-48 or VTX-48e circuit packs, then only two of the optical interfaces can be OC-48 optical interface circuit packs. This configuration is supported at OC-3 and OC-12 line rates through the tributary optical interfaces.

Note 2: If the single-homed network element is a shelf equipped with STX-192 circuit packs, then only two of the optical interfaces can be OC-192 optical interface circuit packs. This configuration is supported at OC-3, OC-12, and OC-48 line rates through the tributary optical interfaces.

Note 3: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

—**continued**—

Procedure 3-7 (continued)
Provisioning single-homed subtending UPSRs (unidirectional)

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Unidirectional network of single-homed subtending UPSR rings (example) on page 3-26. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot x optical facility	n/a
	1WAY	Tributary facility	Slot w optical facility	n/a
Pass-through 1 (UPSR A)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through 2 (UPSR A)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Single-homed	1WAYPR	Slot w optical facility	Slot y optical facility	Slot x optical facility
	1WAYPR	Slot x optical facility	Slot z optical facility	Slot w optical facility
Pass-through 3 (UPSR B)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Pass-through 4 (UPSR B)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	1WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility

—end—

Unidirectional network of single-homed subtending UPSR rings (example)

EX0146

Legend

= Optical interface

= Signal

= Path selector

Note 1: w and x represent line (slots 11 and 12) optical interface slot numbers. The slot numbers represented by these variables can vary from network element to network element.
Note 2: y and z represent tributary optical interface slot numbers (slots 3 to 10).

Procedure 3-8
Provisioning dual-homed subtending UPSRs (dual link) (bidirectional)

Use this procedure to provision cross-connects for a new bidirectional end-to-end service with end points in different subtending rings of a dual-homed UPSR network. This procedure is valid only for a dual-homed UPSR network in which the home nodes are connected with four fibers.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

- ensure the signal degrade threshold (SDTH) is provisioned

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

—continued—

Procedure 3-8 (continued)
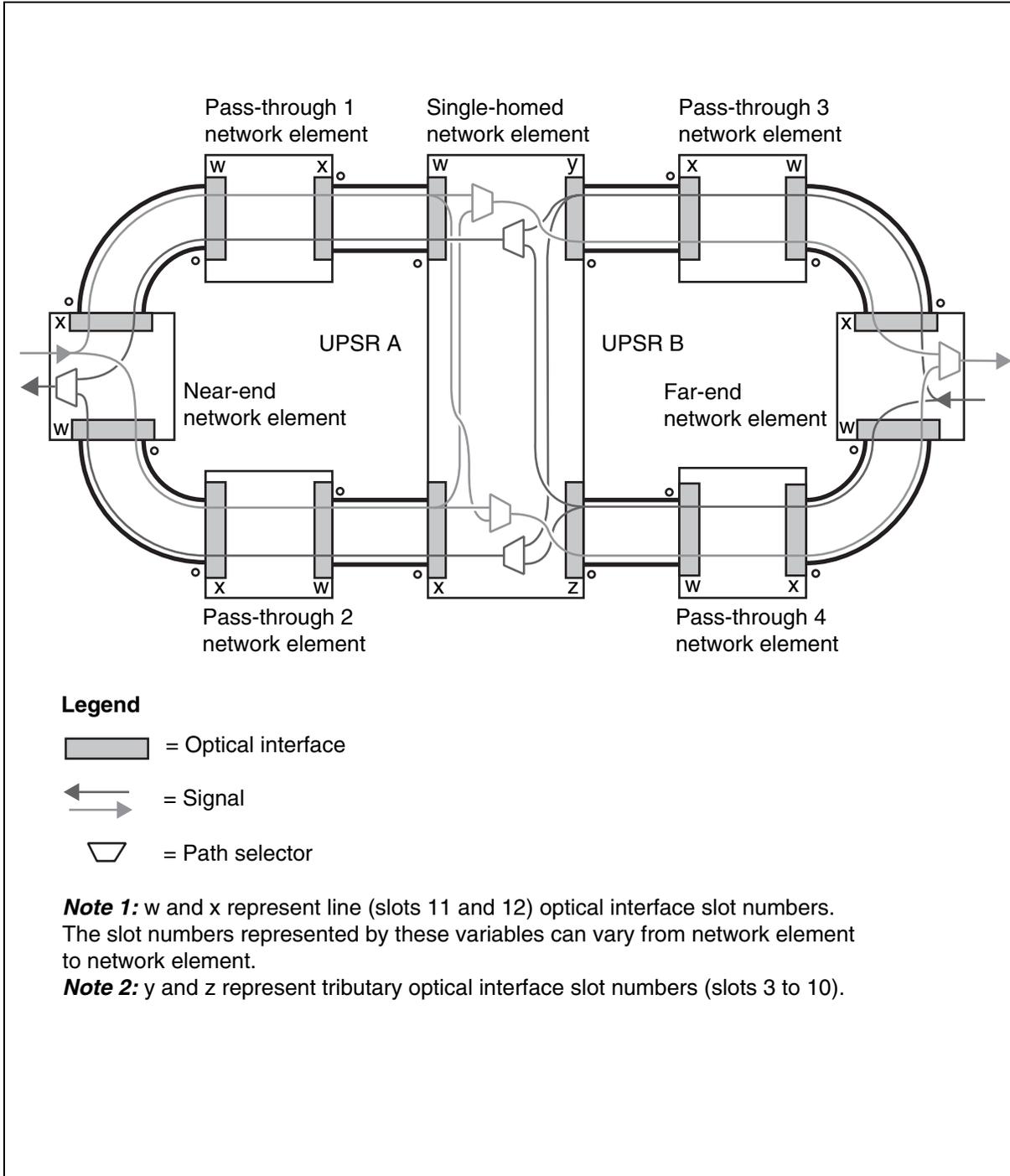**Provisioning dual-homed subtending UPSRs (dual link) (bidirectional)**

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional network of dual-homed subtending rings: dual link (example) on page 3-29. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Pass-through 1 (UPSR A)	2WAY	Slot w optical facility	Slot x optical facility	n/a
Homed network element A	1WAY	Slot x optical facility	Slot a optical facility	n/a
	1WAYPR	Slot x optical facility	Slot w optical facility	Slot a optical facility
	1WAY	Slot w optical facility	Slot c optical facility	n/a
	1WAYPR	Slot w optical facility	Slot x optical facility	Slot c optical facility
Homed network element B	1WAY	Slot w optical facility	Slot b optical facility	n/a
	1WAYPR	Slot w optical facility	Slot x optical facility	Slot b optical facility
	1WAY	Slot x optical facility	Slot d optical facility	n/a
	1WAYPR	Slot x optical facility	Slot w optical facility	Slot d optical facility
Pass-through (UPSR B)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	2WAYPR	Slot x optical facility	Tributary facility	Slot w optical facility

—**end**—

Bidirectional network of dual-homed subtending rings: dual link (example)

EX0153

Homed
network element A

Pass-through
network element

UPSR B

Near-end
network element

Far-end
network element

UPSR A

Pass-through
network element

Homed
network element B

Legend

= Optical interface

= Signal

= Path selector

Note 1: w and x represent line optical interface slot numbers (slots 11 and 12).
Note 2: a, b, c, and d represent tributary optical interface slot numbers (slots 3 to 10).

Procedure 3-9
Provisioning dual-homed subtending UPSRs (dual link) (unidirectional)

Use this procedure to provision cross-connects for a unidirectional end-to-end service with end points in different subtending rings of a dual-homed UPSR network. This procedure is valid only for a dual-homed UPSR network in which the home nodes are connected with four fibers.

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Procedure 3-9 (continued)
Provisioning dual-homed subtending UPSRs (dual link) (unidirectional)

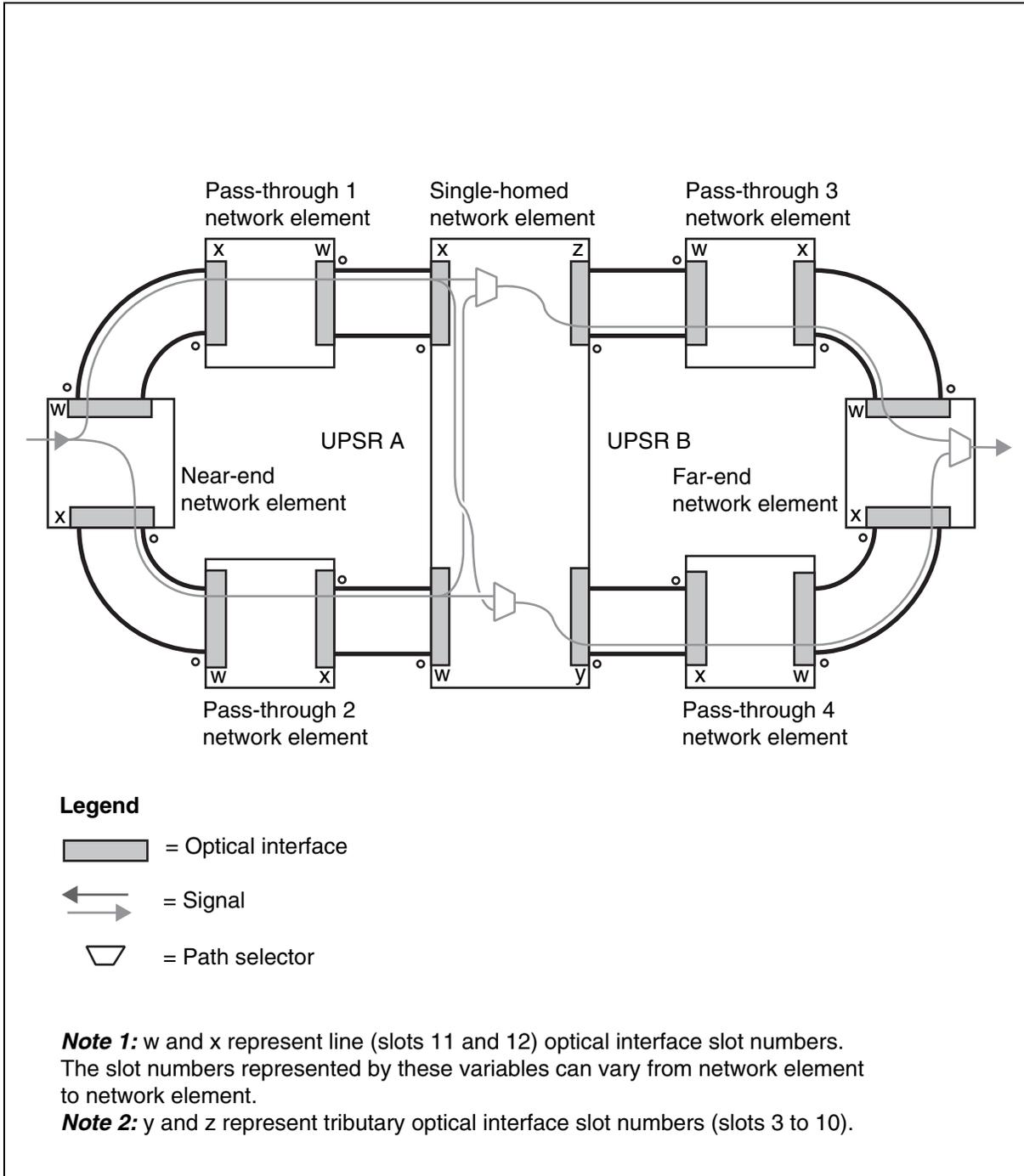| Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Unidirectional network of dual-homed subtending rings: dual link (example) on page 3-32. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot w optical facility	n/a
	1WAY	Tributary facility	Slot x optical facility	n/a
Pass-through 1 (UPSR A)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Homed network element A	1WAY	Slot x optical facility	Slot a optical facility	n/a
	1WAYPR	Slot x optical facility	Slot w optical facility	Slot a optical facility
Homed network element B	1WAY	Slot w optical facility	Slot b optical facility	n/a
	1WAYPR	Slot w optical facility	Slot x optical facility	Slot b optical facility
Pass-through (UPSR B)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	1WAYPR	Slot x optical facility	Tributary facility	Slot w optical facility

—end—

Unidirectional network of dual-homed subtending rings: dual link (example)

EX0154

Homed
network element A

Pass-through
network element

UPSR B

Near-end
network element

Far-end
network element

UPSR A

Pass-through
network element

Homed
network element B

Legend

= Optical interface

= Signal

= Path selector

Note 1: w and x represent line optical interface slot numbers (slots 11 and 12).
Note 2: a, b, c, and d represent tributary optical interface slot numbers (slots 3 to 10).

Procedure 3-10
Provisioning dual-homed subtending UPSRs (single link) (bidirectional)

Use this procedure to provision cross-connects for a new bidirectional end-to-end service with end points in different subtending rings of a dual-homed UPSR network. This procedure is valid only for a dual-homed UPSR network in which the home nodes are connected with two fibers.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the system

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

- ensure the signal degrade threshold (SDTH) is provisioned

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters
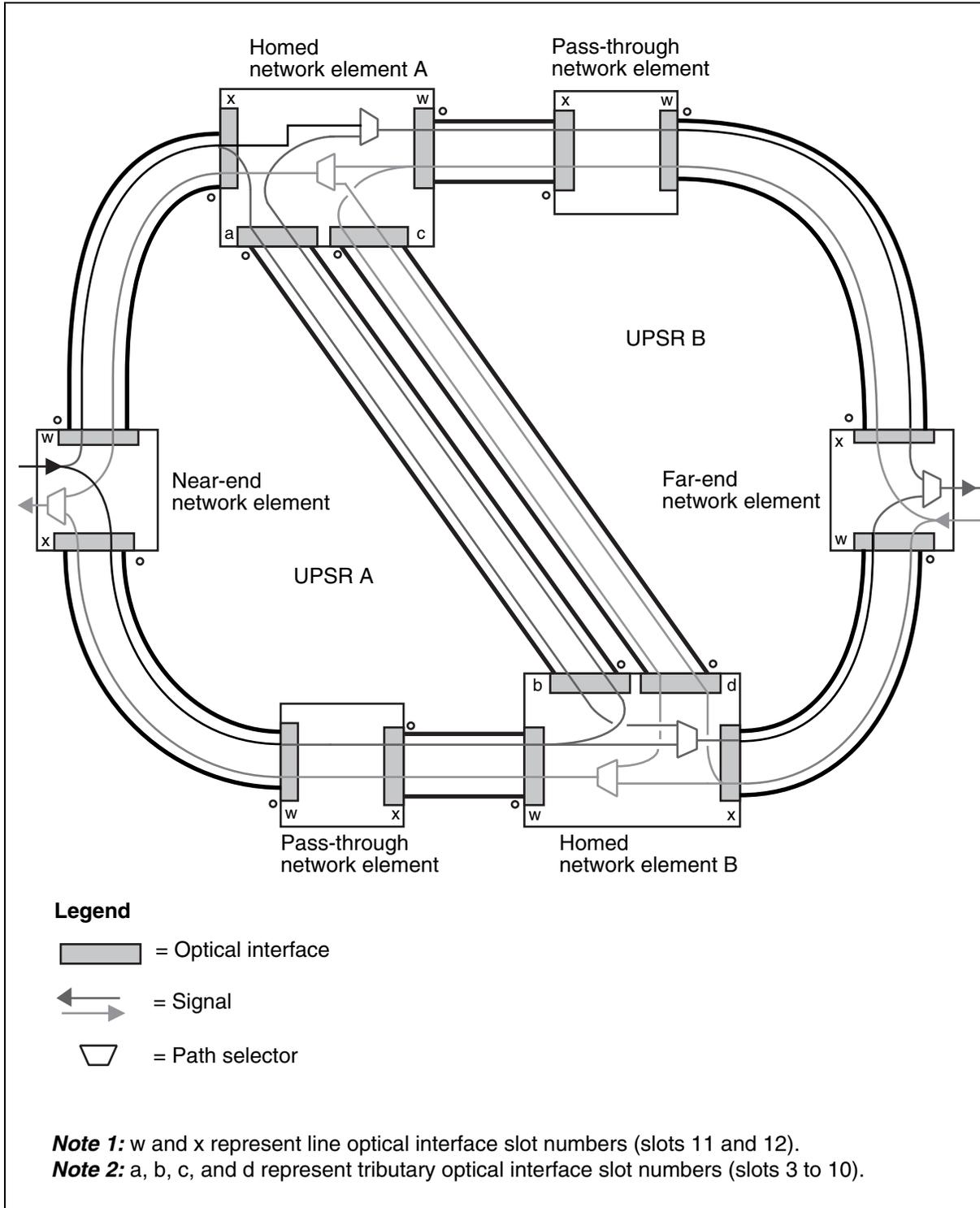
Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional network of dual-homed subtending rings: single link (example) on page 3-35. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.

—**continued**—

Procedure 3-10 (continued)
Provisioning dual-homed subtending UPSRs (single link) (bidirectional)

Step	Action
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See .

Network element	Cross-connect	From	To	Switch Mate
Near-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Pass-through (UPSR A)	2WAY	Slot w optical facility	Slot x optical facility	n/a
Homed network element A	1WAY	Slot x optical facility	Slot a optical facility	n/a
	1WAYPR	Slot x optical facility	Slot w optical facility	Slot a optical facility
	1WAY	Slot w optical facility	Slot a optical facility	n/a
	1WAYPR	Slot w optical facility	Slot x optical facility	Slot a optical facility
Homed network element B	1WAY	Slot w optical facility	Slot b optical facility	n/a
	1WAYPR	Slot w optical facility	Slot x optical facility	Slot b optical facility
	1WAY	Slot x optical facility	Slot b optical facility	n/a
	1WAYPR	Slot x optical facility	Slot w optical facility	Slot b optical facility
Pass-through (UPSR B)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	2WAYPR	Slot x optical facility	Tributary facility	Slot w optical facility

—end—

Bidirectional network of dual-homed subtending rings: single link (example)

EX0155

Legend

[grey bar] = Optical interface

[arrows] = Signal

[trapezoid] = Path selector

Note 1: w and x represent line optical interface slot numbers (slots 11 and 12).
Note 2: a and b represent tributary optical interface slot numbers (slots 3 to 10).

Procedure 3-11
Provisioning dual-homed subtending UPSRs (single link) (unidirectional)

Use this procedure to provision cross-connects for a unidirectional end-to-end service with end points in different subtending rings of a dual-homed UPSR network. This procedure is valid only for a dual-homed UPSR network in which the home nodes are connected with two fibers.

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service
- see Allowable cross-connect types between network configurations on page 6-71
- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6
- obtain or create an optical interface traffic map for the UPSR
- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot
- use an account with a level 3 or higher user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure
- ensure the signal degrade threshold (SDTH) is provisioned
- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Procedure 3-11 (continued)
Provisioning dual-homed subtending UPSRs (single link) (unidirectional)
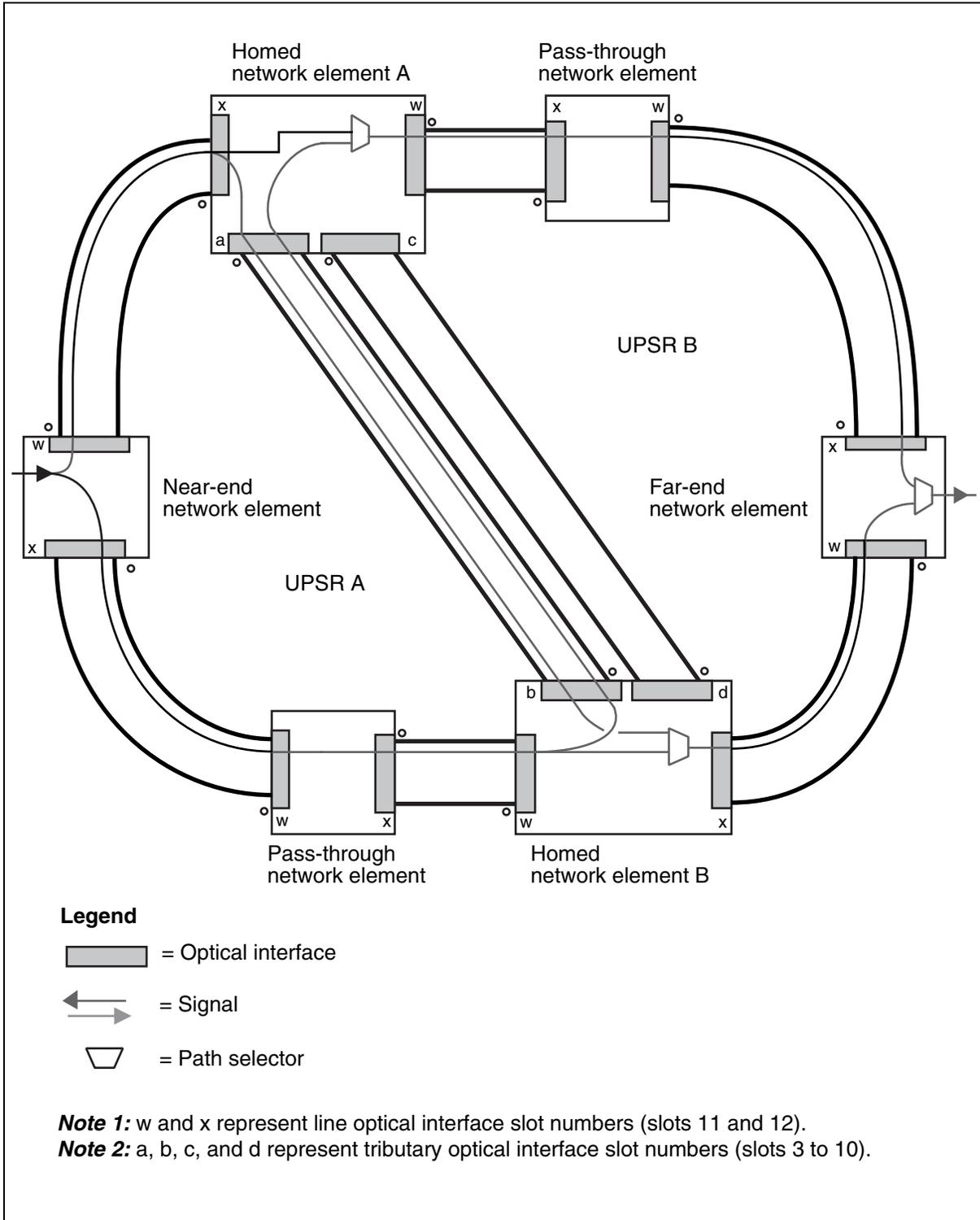
Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Unidirectional network of dual-homed subtending rings: single link (example) on page 3-38. Record the slot numbers for the circuit packs for reference throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot w optical facility	n/a
	1WAY	Tributary facility	Slot x optical facility	n/a
Pass-through (UPSR A)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Homed network element A	1WAY	Slot x optical facility	Slot a optical facility	n/a
	1WAYPR	Slot x optical facility	Slot w optical facility	Slot a optical facility
Homed network element B	1WAY	Slot w optical facility	Slot b optical facility	n/a
	1WAYPR	Slot w optical facility	Slot x optical facility	Slot b optical facility
Pass-through (UPSR B)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Far-end	1WAYPR	Slot x optical facility	Tributary facility	Slot w optical facility

—end—

Unidirectional network of dual-homed subtending rings: single link (example)

EX0156

Legend

▬▬▬ = Optical interface

⟵——⟶ = Signal

▽ = Path selector

Note 1: w and x represent line optical interface slot numbers (slots 11 and 12).
Note 2: a and b represent tributary optical interface slot numbers (slots 3 to 10).

Procedure 3-12
Provisioning matched-node UPSRs (bidirectional)

Use this procedure to provision cross-connects for a new bidirectional end-to-end service between UPSRs in a matched-node networks.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

- ensure the signal degrade threshold (SDTH) is provisioned

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional network of matched-node UPSRs on page 3-41. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.

Procedure 3-12 (continued)
Provisioning matched-node UPSRs (bidirectional)
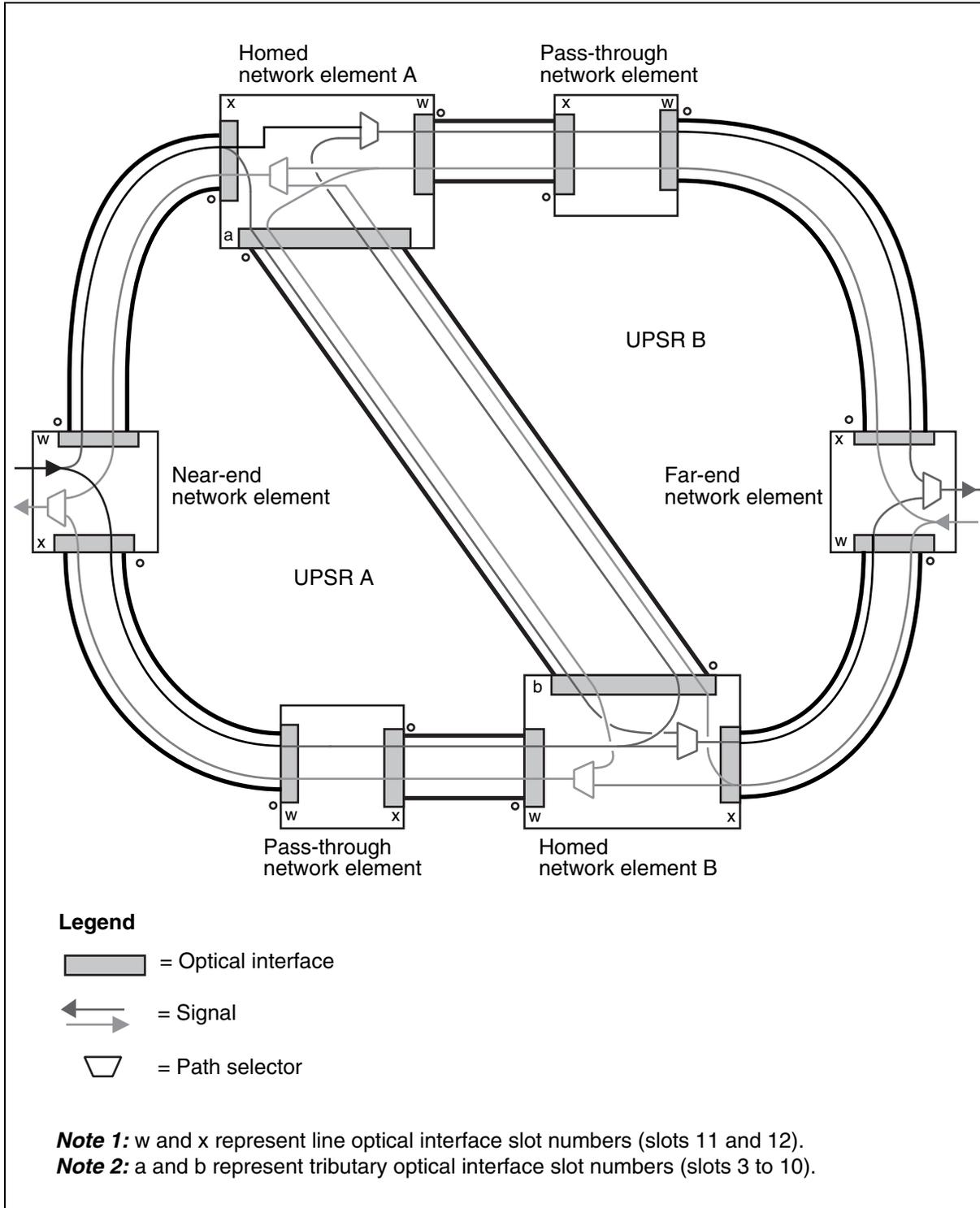
Step	Action
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See .

Network element	Cross-connect	From	To	Switch Mate
Near-end	2WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility
Pass-through G (UPSR A)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through F (UPSR A)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through E (UPSR A)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Network element A	2WAYBR	Slot x optical facility	Slot a optical	Slot w optical facility
Network element B	2WAYBR	Slot w optical facility	Slot a optical facility	Slot x optical facility
Network element C	2WAYBR	Slot x optical facility	Slot a optical facility	Slot w optical facility
Network element D	2WAYBR	Slot w optical facility	Slot a optical facility	Slot x optical facility
Pass-through J (UPSR B)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through I (UPSR B)	2WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through H (UPSR B)	2WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end	2WAYPR	Slot x optical facility	Tributary facility	Slot w optical facility

—**end**—

Bidirectional network of matched-node UPSRs

EX0157

Legend

= Optical interface

= traffic

= path selector

Note 1: w and x represent line optical interface slot numbers (slots 11 and 12). The slot numbers represented by these variables can vary from network element to network element.

Note 2: The letter a represents tributary slot numbers in a linear protected configuration.

Note 3: Matched-node connections can also be implemented with EC-1 or EC-1x3 circuit packs connected by copper cables, if the nodes are co-located.

Procedure 3-13
Provisioning matched-node UPSRs (unidirectional)

Use this procedure to provision cross-connects for a new unidirectional end-to-end service between UPSRs in a matched-node networks.

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- see Allowable cross-connect types between network configurations on page 6-71

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure the UPSR protected or UPSR unprotected protection scheme, depending on your requirements, is provisioned on the optical facilities for any UPSR. See 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12 or Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

- obtain or create an optical interface traffic map for the UPSR

- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

- ensure the signal degrade threshold (SDTH) is provisioned

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Procedure 3-13 (continued)
Provisioning matched-node UPSRs (unidirectional)

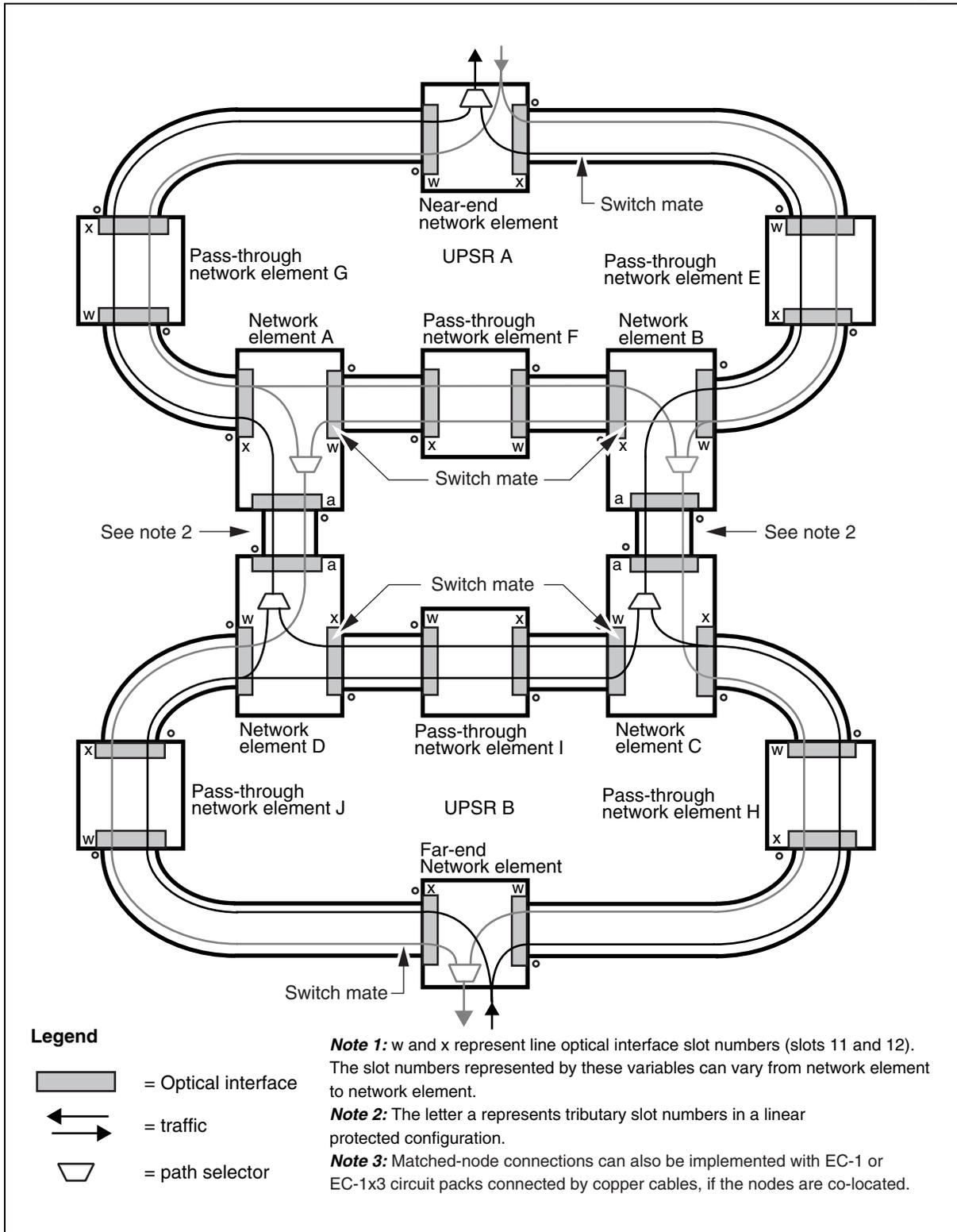| Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Unidirectional network of matched-node UPSRs on page 3-45. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select the network element in which you want to configure cross-connects from the Navigation tree.
4	Add the following cross-connects. See Procedures for nodal cross-connect management on page 6-1.

<p align="center">—end—</p>

Network element	Cross-connect	From	To	Switch Mate
Near-end	1WAY	Tributary facility	Slot w optical facility	n/a
	1WAY	Tributary facility	Slot x optical facility	n/a
Pass-through G (UPSR A)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through F (UPSR A)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through F (UPSR A)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Pass-through E (UPSR A)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Network element A	1WAY	Slot x optical facility	Slot w optical facility	n/a
	1WAYPR	Slot x optical facility	Slot a optical facility	Slot w optical facility
Network element B	1WAY	Slot w optical facility	Slot x optical facility	n/a
	1WAYPR	Slot w optical facility	Slot a optical facility	Slot x optical facility
Network element C	1WAY	Slot a optical facility	Slot x optical facility	n/a
Network element D	1WAY	Slot a optical facility	Slot w optical facility	n/a
Pass-through J (UPSR B)	1WAY	Slot x optical facility	Slot w optical facility	n/a
Pass-through H (UPSR B)	1WAY	Slot w optical facility	Slot x optical facility	n/a
Far-end	1WAYPR	Slot w optical facility	Tributary facility	Slot x optical facility

Unidirectional network of matched-node UPSRs

EX0158

Legend

▭ = Optical interface

→ = traffic

▽ = path selector

Note 1: w and x represent line optical interface slot numbers (slots 11 and 12). The slot numbers represented by these variables can vary from network element to network element.

Note 2: The letter a represents tributary slot numbers in a linear protected configuration.
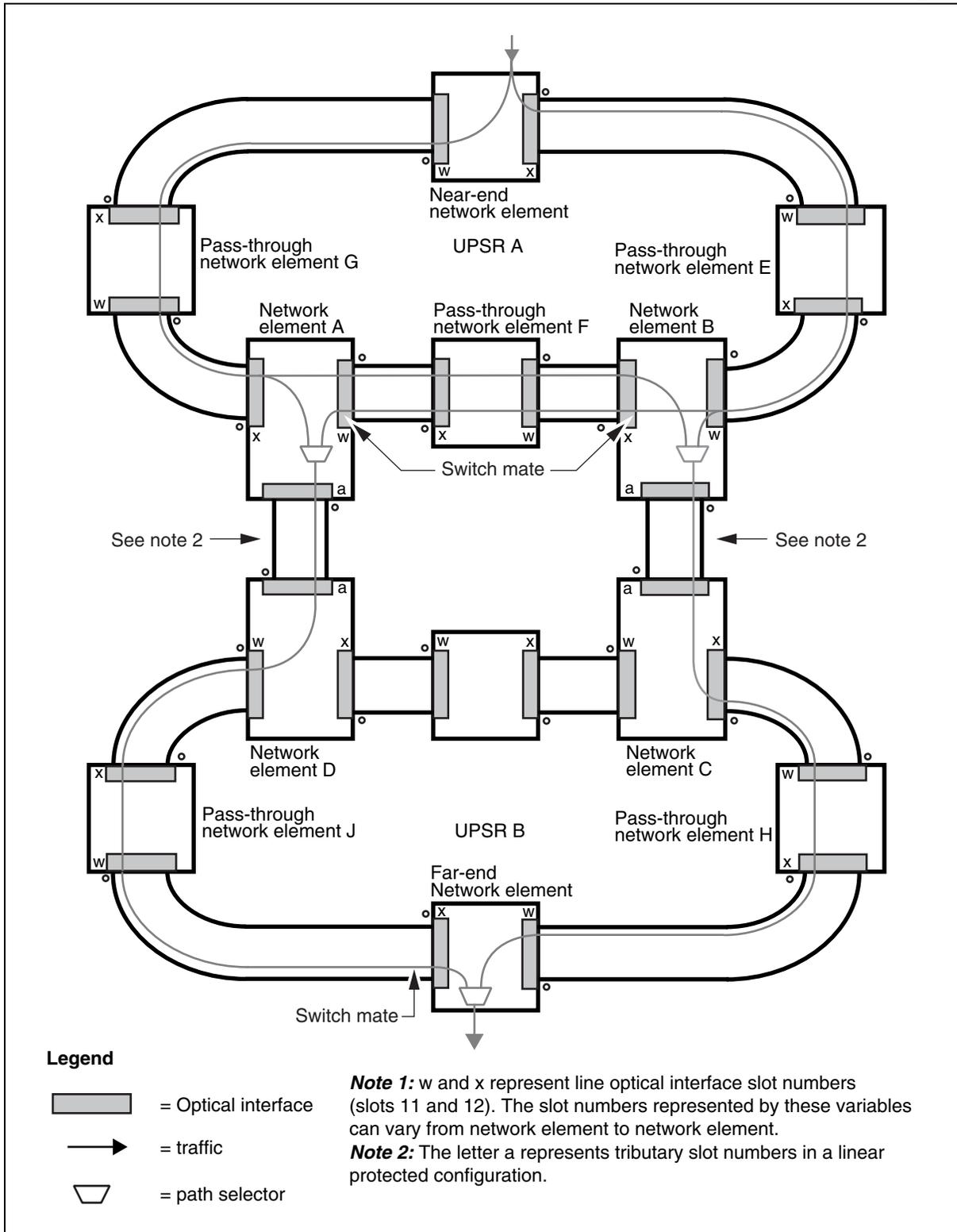
Procedure 3-14
Rolling over traffic in a UPSR (unidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The rollover of the switch mate in a UPSR is optional.

When traffic is force-switched to the protection path before you roll over the working path, the forced switch releases after the in-service traffic rollover is switched. The forced switch clears if a forced switch is active on the path you are rolling over.

The UPSR configuration supports the OC-3, OC-12, OC-48, and OC-192 line rates.

Requirements

To perform this procedure, you must

- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)

Step	Action
1	See Unidirectional UPSR network (example) on page 3-8 for an example of a unidirectional UPSR.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
4	Provision each pass-through network element with a new cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
5	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 1WAYPR at one endpoint on page 3-70.
6	Delete the old cross-connects at each pass-through network element (the original, pass-through cross-connects from step 4). See Deleting a cross-connect on page 6-4.

—*end*—

Procedure 3-15
Rolling over traffic in a UPSR (bidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The rollover of the switch mate in a UPSR is optional.

When traffic is force-switched to the protection path before you roll over the working path, the forced switch releases after the in-service traffic rollover is switched. The forced switch clears if a forced switch is active on the path you are rolling over.

The UPSR configuration supports the OC-3, OC-12, OC-48, and OC-192 line rates.

Requirements

To perform this procedure, you must

- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)

Step	Action
1	See Bidirectional UPSR network (example) on page 3-5 for an example of a bidirectional UPSR.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
4	Provision each pass-through network element with a new cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
5	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 2WAYPR at each endpoint on page 3-66.
6	Delete the old cross-connects at each pass-through network element (the original, pass-through cross-connects from step 4). See Deleting a cross-connect on page 6-4.

—*end*—

Procedure 3-16
Rolling over traffic in a UPSR with linear spur

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The rollover of the switch mate in a UPSR is optional.

When traffic is force-switched to the protection path before you roll over the working path, the forced switch releases after the in-service traffic rollover is switched. The forced switch clears if a forced switch is active on the path you are rolling over.

Note: The protected spur configuration supports the OC-48 line rate only if the hub network element is a shelf equipped with STX-192 circuit packs.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)
- ensure the switch modes of the 1+1 protected lines are either unidirectional or bidirectional to enable facility fault protection (FFP)

Step	Action
1	For an example of a UPSR with protected spur, see: • Bidirectional UPSR network with linear spur (example) on page 3-16, or • Unidirectional UPSR network with linear spur (example) on page 3-20
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

—continued—

Procedure 3-16 (continued)
Rolling over traffic in a UPSR with linear spur

Step	Action
4	Provision each pass-through network element with a new cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
5	Select Show in-service roll over in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.

6   **If** this network is   **Then** go to

bidirectional   step 7

unidirectional   step 8

7	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 2WAYPR at each endpoint on page 3-66. Go to step 9.
8	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 1WAYPR at one endpoint on page 3-70.
9	Roll over the endpoint of slot a in the hub network element and the endpoint in slot a of the far-end network element. See Rolling over traffic in the linear section of the UPSR protected spur on page 3-65.
10	Delete the old cross-connects at each pass-through network element (the original, pass-through cross-connects from step 4). See Deleting a cross-connect on page 6-4.

—**end**—

Procedure 3-17
Rolling over traffic in single-homed subtending UPSRs (bidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The in-service traffic rollover of the switch mate in a UPSR is optional.

When traffic is force-switched to the protection path before you roll over the working path, the forced switch releases after the in-service traffic rollover is switched. The forced switch clears if a forced switch is active on the path you are rolling over.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system

    Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)

Step	Action
1	See Bidirectional network of single-homed subtending UPSR rings (example) on page 3-23 for an example of a single-homed UPSR with bidirectional traffic.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Display the in-service rollover area in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.

—continued—

Procedure 3-17 (continued)
Rolling over traffic in single-homed subtending UPSRs (bidirectional)

Step	Action

6   Convert each 1WAYPR cross-connect in the homed network element to a 1WAY cross-connect, with the following considerations:

- the 1WAYPR that travels from slot w to slot y becomes a 1WAY from slot w to slot y

- the 1WAYPR that travels from slot y to slot w becomes a 1WAY from slot y to slot w

- the 1WAYPR that travels from slot x to slot z becomes a 1WAY from slot x to slot z

- the 1WAYPR that travels from slot z to slot x becomes a 1WAY from slot z to slot x

See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.

Note: A dialog box stating "Status, Requested Operation Failed. Retry with validation disabled?" can appear during an in-service traffic rollover after you click Switch in the Nodal Cross-Connects Rollover dialog box. To continue with the rollover operation, click Retry.

7   Provision each pass-through network element (including the four new 1WAY connections in the homed network element) with a new cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.

8   Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 2WAYPR at each endpoint on page 3-66.

9   Convert the 1WAY cross-connects in the homed network element back to 1WAYPR cross-connects, with the following considerations:

- the switchmate AID is in slot x, for the connection with a fromAID in slot w and toAID in slot y

- the switchmate AID is in slot z, for the connection with a fromAID in slot y and toAID in slot w

- the switchmate AID is in slot w, for the connection with a fromAID in slot x and toAID in slot z

- the switchmate AID is in slot y, for the connection with a fromAID in slot z and toAID in slot x

See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.

10   Delete the old cross-connects at each pass-through network element (the original pass-through cross-connects from step 7). See Deleting a cross-connect on page 6-4.

—**end**—

Procedure 3-18
Rolling over traffic in single-homed subtending UPSRs (unidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The in-service traffic rollover of the switch mate in a UPSR is optional.

If traffic is force-switched to the protection path before the working path is rolled over, the forced switch is released after the rollover is switched. If a forced switch is active on the path you are rolling over, the rollover will cause the forced switch to clear.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)

Step	Action
1	See Unidirectional network of single-homed subtending UPSR rings (example) on page 3-26 for an example of a single-homed UPSR with unidirectional traffic.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Display the in-service rollover area in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.

Procedure 3-18 (continued)
Rolling over traffic in single-homed subtending UPSRs (unidirectional)

Step	Action
6	Convert the 1WAYPR cross-connect that travels from slot w to slot y in the homed network element to a 1WAY cross-connect from slot w to slot y. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
7	Convert the 1WAYPR cross-connect that travels from slot x to slot z in the homed network element to a 1WAY cross-connect from slot x to slot z. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
8	Provision new cross-connects for each pass-through network element in both UPSRs. Make the slot w optical interface facility the From AID and the slot x optical interface facility the To AID for the pass-through network elements. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
9	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 1WAYPR at one endpoint on page 3-70.
10	Convert the 1WAY cross-connects in the homed network element back to 1WAYPR cross-connects, with the following considerations: • the switchmate AID is in slot w, for the connection with a fromAID in slot x and toAID in slot z • the switchmate AID is in slot x, for the connection with a fromAID in slot w and toAID in slot y See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.
11	Delete the old cross-connects at each pass-through network element (the original pass-through cross-connects from step 8). See Deleting a cross-connect on page 6-4. —**end**—

Procedure 3-19
Rolling over traffic in dual-homed subtending UPSRs (bidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The in-service traffic rollover of the switch mate in a UPSR is optional.

If traffic is force-switched to the protection path before the working path is rolled over, the forced switch is released after the rollover is switched. If a forced switch is active on the path you are rolling over, the rollover will cause the forced switch to clear.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure

Step	Action
1	See Bidirectional network of dual-homed subtending rings: single link (example) on page 3-35 for an example of a dual-homed UPSR with bidirectional traffic.
2	Perform a manual switch on each network element, as required, to switch traffic from the path to be rolled to the protection path. See 323-1059-311, Operating a manual path switch in a UPSR on page 1-22.
3	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
4	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

<div align="center">—continued—</div>

Procedure 3-19 (continued)
Rolling over traffic in dual-homed subtending UPSRs (bidirectional)

Step	Action
5	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
6	Display the in-service rollover area in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.
7	In Homed Network Element A, convert the 1WAYPR cross-connects to 1WAY cross-connects, with the following considerations: • the 1WAYPR with fromAID in slot x and toAID in slot w will become a 1WAY with fromAID in slot x and toAID in slot w • the 1WAYPR with fromAID in slot w and toAID in slot x will become a 1WAY with fromAID in slot w and toAID in slot x See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
8	In Homed Network Element B, convert the 1WAYPR cross-connects to 1WAY cross-connects, with the following considerations: • the 1WAYPR with fromAID in slot x and toAID in slot w will become a 1WAY with fromAID in slot x and toAID in slot w • the 1WAYPR with fromAID in slot w and toAID in slot x will become a 1WAY with fromAID in slot w and toAID in slot x See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
9	Provision each pass-through network element (including the four new 1WAY connections in the homed network elements) with a new cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9. *Note:* These new cross-connects are the desired, final time slot assignments.
10	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 2WAYPR at each endpoint on page 3-66.
11	In Homed Network Element A, convert the 1WAY cross-connects back to 1WAYPR cross-connects, with the following considerations: • the 1WAY with fromAID in slot x and toAID in slot w will become a 1WAYPR with fromAID in slot x, toAID in slot w, and switchmate in slot a. • the 1WAY with fromAID in slot w and toAID in slot x will become a 1WAYPR with fromAID in slot w, toAID in slot x, and switchmate in slot c. See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.

—continued—

Procedure 3-19 (continued)
Rolling over traffic in dual-homed subtending UPSRs (bidirectional)

Step	Action
12	In Homed Network Element B, convert the 1WAY cross-connects back to 1WAYPR cross-connects, with the following considerations:
	• the 1WAY with fromAID in slot x and toAID in slot w will become a 1WAYPR with fromAID in slot x, toAID in slot w, and switchmate in slot d.
	• the 1WAY with fromAID in slot w and toAID in slot x will become a 1WAYPR with fromAID in slot w, toAID in slot x, and switchmate in slot b.
	See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.
13	Provision a 1WAY cross-connect on Homed Network Element A with the following considerations:
	• the fromAID is the same as the new slot x fromAID of the 1WAYPR provisioned in step 11
	• the toAID is in slot a with the desired time slot assignment
14	Provision a 1WAY cross-connect on Homed Network Element A with the following considerations:
	• the fromAID is the same as the new slot w fromAID of the 1WAYPR provisioned in step 11
	• the toAID is in slot c with the desired time slot assignment
15	Provision a 1WAY cross-connect on Homed Network Element B with the following considerations:
	• the fromAID is the same as the new slot w fromAID of the 1WAYPR provisioned in step 12
	• the toAID is in slot b with the same time slot assignment as the toAID provisioned in step 13
16	Provision a 1WAY cross-connect on Homed Network Element B with the following considerations:
	• the fromAID is the same as the new slot x fromAID of the 1WAYPR provisioned in step 12
	• the toAID is in slot d with the same time slot assignment as the toAID provisioned in step 14
17	Delete the original 2WAY cross-connects in each pass-through network element. See Deleting a cross-connect on page 6-4.
18	Delete the original 1WAY cross-connect with fromAID in slot x and toAID in slot a on Homed Network Element A. See Deleting a cross-connect on page 6-4.

—**continued**—

Procedure 3-19 (continued)
Rolling over traffic in dual-homed subtending UPSRs (bidirectional)

Step	Action
19	Delete the original 1WAY cross-connect with fromAID in slot w and toAID in slot c on Homed Network Element A. See Deleting a cross-connect on page 6-4.
20	Delete the original 1WAY cross-connect with fromAID in slot w and toAID in slot b on Homed Network Element B. See Deleting a cross-connect on page 6-4.
21	Delete the original 1WAY cross-connect with fromAID in slot x and toAID in slot d on Homed Network Element B. See Deleting a cross-connect on page 6-4.

<div align="center">—end—</div>

Procedure 3-20
Rolling over traffic in dual-homed subtending UPSRs (unidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The in-service traffic rollover of the switch mate in a UPSR is optional.

If traffic is force-switched to the protection path before the working path is rolled over, the forced switch is released after the rollover is switched. If a forced switch is active on the path you are rolling over, the rollover will cause the forced switch to clear.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure

Step	Action
1	See Unidirectional network of dual-homed subtending rings: single link (example) on page 3-38 for an example of a dual-homed UPSR with unidirectional traffic.
2	Perform a manual switch on each network element, as required, to switch traffic from the path to be rolled to the protection path. See 323-1059-311, Operating a manual path switch in a UPSR on page 1-22.
3	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
4	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

—continued—

Procedure 3-20 (continued)
Rolling over traffic in dual-homed subtending UPSRs (unidirectional)

Step	Action
5	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
6	Display the in-service rollover area in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.
7	In Homed Network Element A, convert the 1WAYPR cross-connect to a 1WAY cross-connect. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30. *Note:* The fromAID and toAID of the new 1WAY must be the same as the fromAID and toAID of the original 1WAYPR
8	In Homed Network Element B, convert the 1WAYPR cross-connect to a 1WAY cross-connect. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30. *Note:* The fromAID and toAID of the new 1WAY must be the same as the fromAID and toAID of the original 1WAYPR
9	Provision each pass-through network element (including the two new 1WAY connections in the homed network elements) in the network with a new 1WAY cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
10	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 1WAYPR at one endpoint on page 3-70.
11	In Homed Network Element A, convert the 1WAY (with fromAID in slot x and toAID in slot w) to a 1WAYPR (with fromAID in slot x, toAID in slot w, and switchmate in slot a). See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27. *Note:* The fromAID and toAID of the new 1WAY must be the same as the fromAID and toAID of the original 1WAYPR
12	In Homed Network Element A, convert the 1WAY (with fromAID in slot w and toAID in slot x) to a 1WAYPR (with fromAID in slot w, toAID in slot x, and switchmate in slot b). See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.
13	Delete the original 1WAY cross-connects in each pass-through network element. Deleting a cross-connect on page 6-4.

—*end*—

Procedure 3-21
Rolling over traffic in matched-node UPSRs (bidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The in-service traffic rollover of the switch mate in a UPSR is optional.

If traffic is force-switched to the protection path before the working path is rolled over, the forced switch is released after the rollover is switched. If a forced switch is active on the path you are rolling over, the rollover will cause the forced switch to clear.

Note: This procedure rolls traffic from one channel to another from the Near-end network element in UPSR A to the Far-end network element in UPSR B, but does not roll traffic in the inter-ring links. See Bidirectional network of matched-node UPSRs on page 3-41.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system

- ensure you have a cross-connect list for the services on your system

    Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

Step	Action
1	See Bidirectional network of matched-node UPSRs on page 3-41 for an example of a match-node UPSR with bidirectional traffic.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

—continued—

Procedure 3-21 (continued)
Rolling over traffic in matched-node UPSRs (bidirectional)

Step	Action
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Perform a manual switch on each network element, as required, to switch traffic from the path to be rolled to the protection path. See 323-1059-311, Operating a manual path switch in a UPSR on page 1-22.
6	Provision each pass-through network element in the network (both UPSRs) with a new 2WAY cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
	Note: Do not delete the original cross-connects until instructed to do so.
7	Display the in-service rollover area in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.
8	Roll the traffic in the left and right paths of UPSR A. See Rolling traffic in a ring: 2WAYBR at one endpoint on page 3-74.
9	Roll the traffic in the left and right paths of UPSR B. See Rolling traffic in a ring: 2WAYBR at one endpoint on page 3-74.
10	Delete the original passthrough cross-connects throughout the network. See Deleting a cross-connect on page 6-4.

—end—

Procedure 3-22
Rolling over traffic in matched-node UPSRs (unidirectional)

Note: In a UPSR, a switch mate can be defined on any transport endpoint and does not need to be on the same ring. The in-service traffic rollover of the switch mate in a UPSR is optional.

If traffic is force-switched to the protection path before the working path is rolled over, the forced switch is released after the rollover is switched. If a forced switch is active on the path you are rolling over, the rollover will cause the forced switch to clear.

Note: This procedure rolls traffic from one channel to another from the Near-end network element in UPSR A to the Far-end network element in UPSR B, including the inter-ring links. See Bidirectional network of matched-node UPSRs on page 3-41.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system
- ensure you have a cross-connect list for the services on your system

    Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure

Step	Action
1	See Unidirectional network of matched-node UPSRs on page 3-45 for an example of a match-node UPSR with unidirectional traffic.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

—continued—

Procedure 3-22 (continued)
Rolling over traffic in matched-node UPSRs (unidirectional)

Step	Action
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Display the in-service rollover area in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.
6	Perform a manual switch on each network element, as required, to switch traffic from the path to be rolled to the protection path. See 323-1059-311, Operating a manual path switch in a UPSR on page 1-22.
7	In Network Element A, convert the 1WAYPR cross-connect that travels from slot x to slot a to a 1WAY cross-connect from slot x to slot a. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
8	In Network Element B, convert the 1WAYPR cross-connect that travels from slot w to slot a to a 1WAY cross-connect from slot w to slot a. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
9	Provision each pass-through network element in the network (including the new 1WAY cross-connects in the matched nodes) with a new 1WAY cross-connect. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9.
	Note: At Network Element F, you can reprovision the pass-through cross-connect as a 2WAY. See Unidirectional network of matched-node UPSRs on page 3-45.
10	Roll the traffic in the left and right paths of the network. See Rolling traffic in a ring: 2WAYPR at each endpoint on page 3-66.
	Note: At this point, UPSR A and UPSR B are one larger UPSR.
11	In Network Element A, convert the 1WAY cross-connect with fromAID in slot x and toAID in slot a, back to a 1WAYPR cross-connect, with the following considerations:
	• the 1WAYPR fromAID is in slot x
	• the 1WAYPR toAID is in slot a
	• the 1WAYPR Switchmate is in slot w
	See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.

—**continued**—

Procedure 3-22 (continued)
Rolling over traffic in matched-node UPSRs (unidirectional)

Step	Action
12	In Network Element B, convert the 1WAY cross-connect with fromAID in slot w and toAID in slot a, back to a 1WAYPR cross-connect, with the following considerations:
	• the 1WAYPR fromAID is in slot w
	• the 1WAYPR toAID is in slot a
	• the 1WAYPR Switchmate is in slot x
	See Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27.
13	Delete the original passthrough cross-connects throughout the network. See Deleting a cross-connect on page 6-4.

<p align="center">—end—</p>

Procedure 3-23
Rolling over traffic in the linear section of the UPSR protected spur

> *Note:* This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

Step	Action
1	Select the hub network element in the Navigation tree. See the hub network element in Bidirectional UPSR network with linear spur (example) on page 3-16, or Unidirectional UPSR network with linear spur (example) on page 3-20.
2	Select the slot a endpoint to roll over under the To column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
3	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
4	Click Bridge.
5	Select the far-end network element from the navigation tree.
6	Click Refresh.
7	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
8	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
9	Click Bridge.
10	Click Switch.
11	Click Yes in the warning dialog box.
12	Select the hub network element in the Navigation tree.
13	Click Switch.
14	Click Yes in the warning dialog box.
15	Click Commit.
16	Click Yes in the warning dialog box.
17	Select the far-end network element in the Navigation tree.
18	Click Commit.
19	Click Yes in the warning dialog box.
20	Perform a manual switch on the network element in the linear portion of the spur to switch traffic back to the proper working path. See 323-1059-311, Operating a manual optical line switch in a 1+1 linear system on page 1-26.

—*end*—

Procedure 3-24
Rolling traffic in a ring: 2WAYPR at each endpoint

Note: This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

Step	Action
1	Select the near-end network element from the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
3	Click Refresh to display the nodal cross-connects. *Note:* If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Select Show in-service roll over to display the in-service traffic roll over area.
6	Repeat step 2 through step 5 for each network element to be rolled over in the right-hand path.
7	Select the cross-connect.
8	Click Edit.
9	Ensure 2WAYPR is selected from the Type drop-down list.
10	Click Swap in the Nodal cross-connect window, to swap the From AID and the Switch Mate AID, so that From AID faces From AID on the right hand path. See Rolling over in UPSR: 2WAYPR cross-connect on page 3-69.

Rolling in the right hand path

> *Note:* The right hand path includes:
>
> — slot x optical interface in the near-end network element
>
> — pass-through network element 2
>
> — slot w (switch mate) in the far-end network element

11	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point. See Rolling over in UPSR: 2WAYPR cross-connect on page 3-69.

Procedure 3-24 (continued)
Rolling traffic in a ring: 2WAYPR at each endpoint

Step	Action
12	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note 1: If you want the system to validate all in-service traffic rollover commands, you can select the Use Validation radio button. When Use Validation is enabled, the rollover will not happen if there is an alarm present on the endpoint to be rolled to.
	Note 2: Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
13	Click Bridge.
14	Select the far-end network element from the Navigation tree.
15	Click Refresh.
16	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. See Rolling over in UPSR: 2WAYPR cross-connect on page 3-69. The selected endpoint is the Initial end point.
17	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
18	Click Bridge.
19	Click Switch.
20	Click Yes in the warning dialog box.
21	Select the near-end network element from the Navigation tree.
22	Click Switch.
23	Click Yes in the warning dialog box.
24	Click Commit.
25	Click Yes in the warning dialog box.
26	Select the far-end network element from the Navigation tree.
27	Click Commit.
28	Click Yes in the warning dialog box.

Rolling in the left hand path

> ***Note:*** The left hand path includes:
> — slot w optical interface in the near-end network element
> — pass-through network element 1
> — slot x (switch mate) in the far-end network element

29	Select the near-end network element from the Navigation tree.

<center>**—continued—**</center>

Procedure 3-24 (continued)
Rolling traffic in a ring: 2WAYPR at each endpoint

Step	Action
30	Click Refresh.
31	Select the cross-connect.
32	Click Edit.
33	Ensure 2WAYPR is selected from the Type drop-down list.
34	Click Swap in the Nodal cross-connect window to swap the From AID and the Switch Mate AID.
35	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. See Rolling over in UPSR: 2WAYPR cross-connect on page 3-69. The selected endpoint is the Initial end point.
36	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
37	Click Bridge.
38	Select the far-end network element from the Navigation tree.
39	Click Refresh.
40	Select the cross-connect.
41	Click Edit.
42	Ensure 2WAYPR is selected from the Type drop-down list.
43	Click Swap in the Nodal cross-connect window to swap the From AID and the Switch Mate AID.
44	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. See Rolling over in UPSR: 2WAYPR cross-connect on page 3-69.
45	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
46	Click Bridge.
47	Click Switch.
48	Click Yes in the warning dialog box.
49	Select the near-end network element from the Navigation tree.
50	Click Switch.
51	Click Yes in the warning dialog box.
52	Click Commit.
53	Click Yes in the warning dialog box.
54	Select the far-end network element from the Navigation tree.

—**continued**—

Procedure 3-24 (continued)
Rolling traffic in a ring: 2WAYPR at each endpoint

Step	Action
55	Click Commit.
56	Click Yes in the warning dialog box.

—end—

Rolling over in UPSR: 2WAYPR cross-connect

EX1306p

Legend

▭	= Optical interface
→	= Signal
▽	= Path selector
LH	= Left hand
RH	= Right hand

Note: w and x represent line slot numbers (slots 11 and 12) for the optical interfaces. The slot numbers represented by these variables can vary from network element to network element.
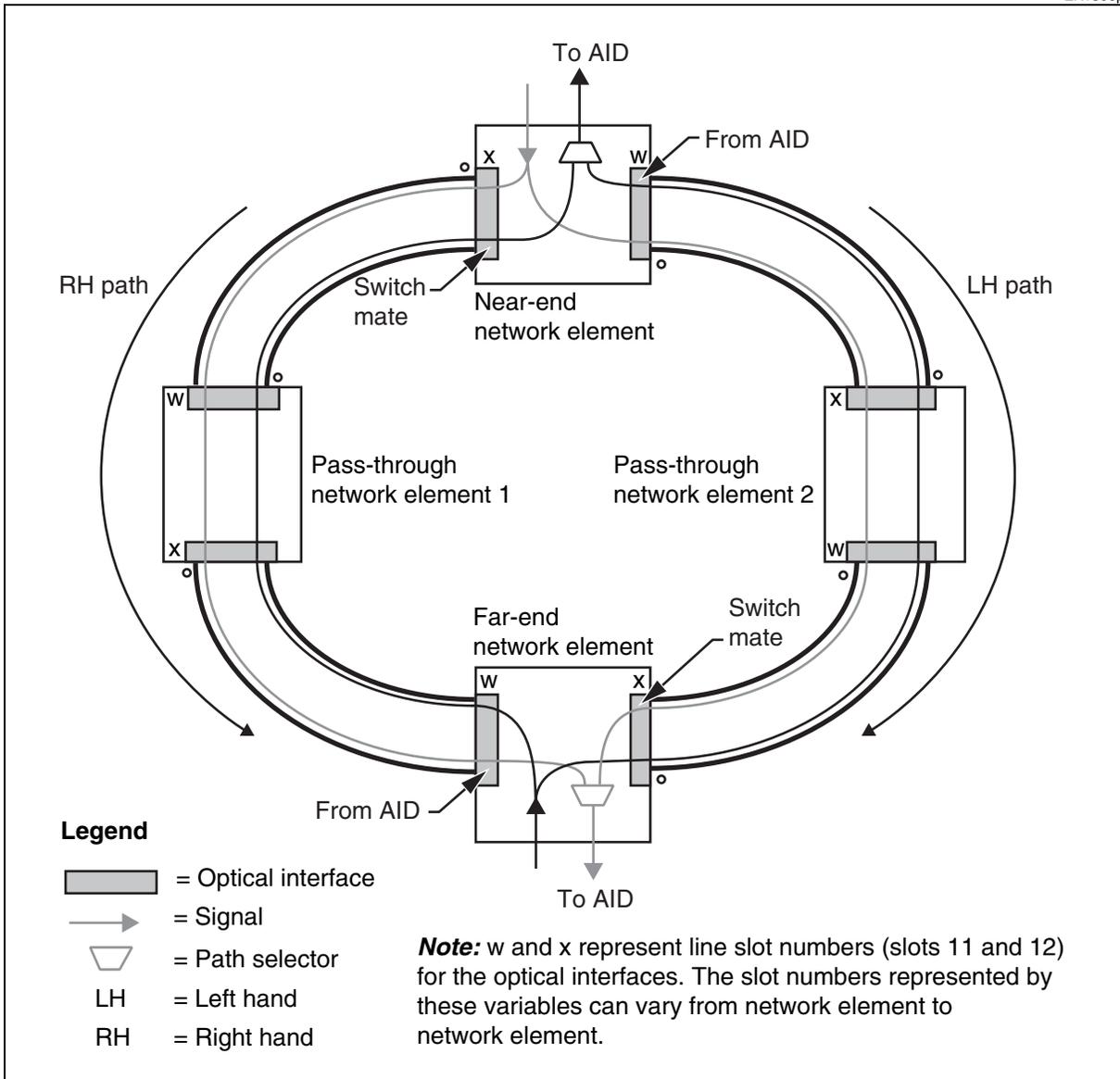
Procedure 3-25
Rolling traffic in a ring: 1WAYPR at one endpoint

Note: This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

Step	Action
1	Select the near-end network element from the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
3	Click Refresh to display the nodal cross-connects. *Note:* If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Select Show in-service roll over to display the in-service traffic roll over area.
6	Repeat step 2 through step 5 for each network element to be rolled over in the right-hand path, then go to step 7.

Rolling in the right hand path

Note: The right hand path includes:

— slot x optical interface in the near-end network element

— pass-through network element 1

— slot w (switch mate) in the far-end network element

Step	Action
7	Select the endpoint to roll over under the From or To column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
8	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65. *Note 1:* If you want the system to validate all in-service traffic rollover commands, you can select the Use Validation radio button. When Use Validation is enabled, the rollover will not happen if there is an alarm present on the endpoint to be rolled to. *Note 2:* Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
9	Click Bridge.
10	Select the far-end network element from the Navigation tree.
11	Click Refresh.

—continued—

Procedure 3-25 (continued)
Rolling traffic in a ring: 1WAYPR at one endpoint

Step	Action
12	Select the endpoint to roll over under the Switch Mate column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
13	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
14	Click Bridge.
15	Click Switch.
16	Click Yes in the warning dialog box.
17	Select the near-end network element from the Navigation tree.
18	Click Switch.
19	Click Yes in the warning dialog box.
20	Click Commit.
21	Click Yes in the warning dialog box.
22	Select the far-end network element from the Navigation tree.
23	Click Commit.
24	Click Yes in the warning dialog box.

Rolling in the left hand path

> *Note:* The left hand path includes:
>
> — slot w optical interface in the near-end network element
>
> — pass-through network element 2
>
> — slot x (switch mate) in the far-end network element

25	Select the near-end network element from the Navigation tree.
26	Click Refresh.
27	Select the other endpoint to roll over under the From or To column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
28	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
29	Click Bridge.
30	Select the far-end network element from the Navigation tree.
31	Click Refresh.
32	Select the cross-connect.
33	Click Edit.
34	Ensure 1WAYPR is selected from the Type drop-down list.

Procedure 3-25 (continued)
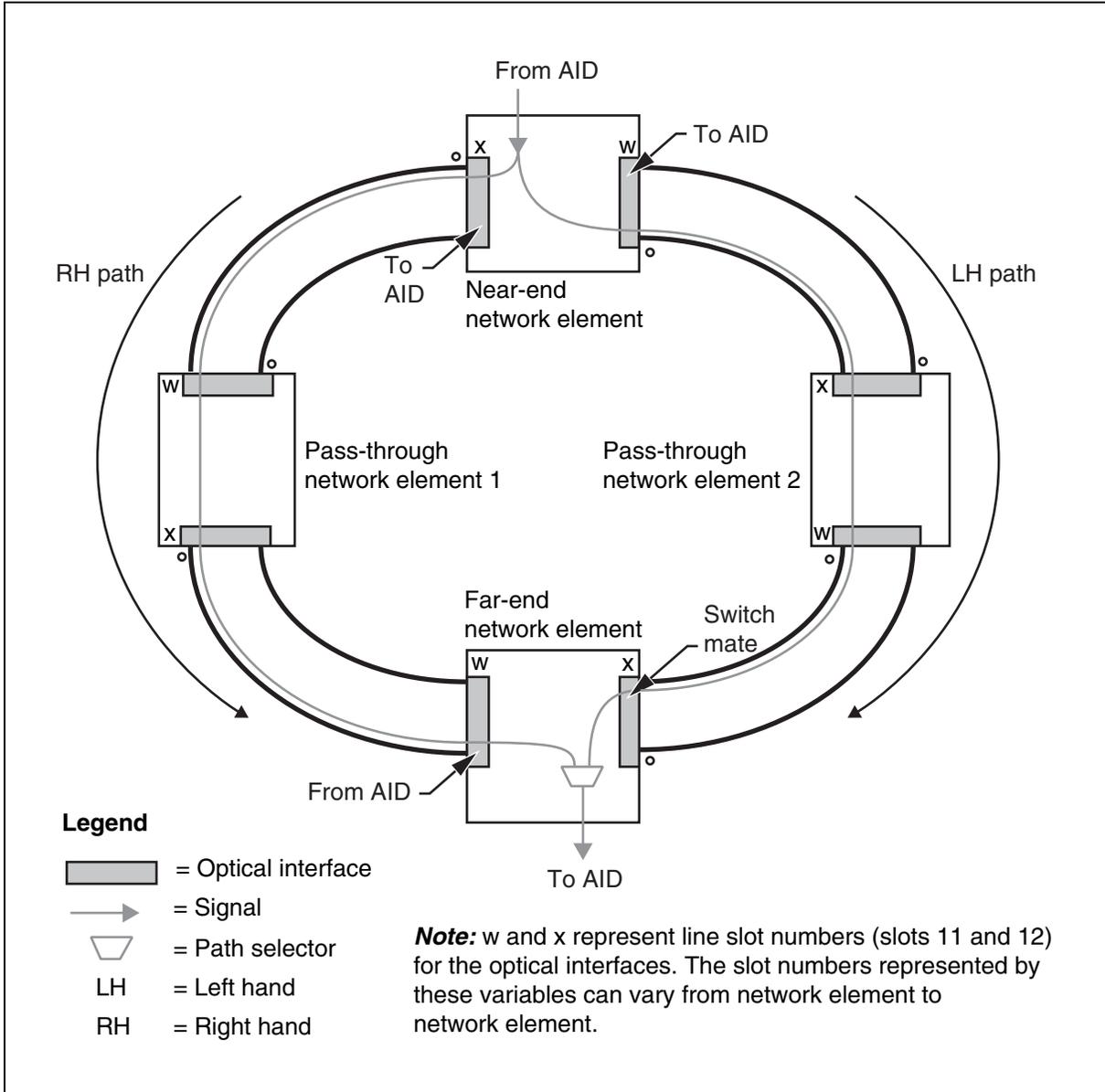**Rolling traffic in a ring: 1WAYPR at one endpoint**

Step	Action
35	Click Swap in the Nodal cross-connect window to swap the From AID and the Switch Mate AID.
36	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. See Rolling over in UPSR: 1WAYPR cross-connect on page 3-73. The selected endpoint is the Initial end point.
37	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
38	Click Bridge.
39	Click Switch.
40	Click Yes in the warning dialog box.
41	Select the near-end network element from the Navigation tree.
42	Click Switch.
43	Click Yes in the warning dialog box.
44	Click Commit.
45	Click Yes in the warning dialog box.
46	Select the far-end network element from the Navigation tree.
47	Click Commit.
48	Click Yes in the warning dialog box.

—**end**—

Rolling over in UPSR: 1WAYPR cross-connect

EX1305p

Legend

= Optical interface

= Signal

= Path selector

LH   = Left hand

RH   = Right hand

Note: w and x represent line slot numbers (slots 11 and 12) for the optical interfaces. The slot numbers represented by these variables can vary from network element to network element.

Procedure 3-26
Rolling traffic in a ring: 2WAYBR at one endpoint

Note: This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

Step	Action
1	Select the near-end network element from the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
3	Click Refresh to display the nodal cross-connects. *Note:* If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Select Show in-service roll over to display the in-service traffic roll over area.
6	Repeat step 2 through step 5 for each network element to be rolled over in the right-hand path.

Rolling in the right hand path

Note: The right hand path includes:

— slot w optical interface in the Near-end network element

— Pass-through network element 1

— slot x (From AID) in the Network Element A

7	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. See Rolling over in UPSR: 2WAYBR cross-connect on page 3-79. The selected endpoint is the Initial end point.
8	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65. *Note 1:* If you want the system to validate all in-service traffic rollover commands, you can select the Use Validation radio button. When Use Validation is enabled, the rollover will not happen if there is an alarm present on the endpoint to be rolled to. *Note 2:* Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
9	Click Bridge.

Procedure 3-26 (continued)
Rolling traffic in a ring: 2WAYBR at one endpoint

Step	Action
10	Select Network Element A from the Navigation tree.
11	Click Refresh.
12	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. See Rolling over in UPSR: 2WAYBR cross-connect on page 3-79. The selected endpoint is the Initial end point.
13	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
14	Click Bridge.
15	Click Switch.
16	Click Yes in the warning dialog box.
17	Select the Near-end network element from the Navigation tree.
18	Click Switch.
19	Click Yes in the warning dialog box.
20	Click Commit.
21	Click Yes in the warning dialog box.
22	Select Network Element A from the Navigation tree.
23	Click Commit.
24	Click Yes in the warning dialog box.

Rolling in the left hand path

> *Note:* The left hand path includes:
> — slot x optical interface in the Near-end network element
> — pass-through network element 2
> — slot w (From AID) in the Network Element B

25	Select the near-end network element from the Navigation tree.
26	Click Refresh.
27	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window.
28	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
29	Click Bridge.
30	Select Network Element B under the From column of the Nodal Cross-Connects window.

—continued—

Procedure 3-26 (continued)
Rolling traffic in a ring: 2WAYBR at one endpoint

Step	Action
31	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
32	Click Bridge.
33	Click Switch.
34	Click Yes in the warning dialog box.
35	Select the Near-end network element from the Navigation tree.
36	Click Switch.
37	Click Yes in the warning dialog box.
38	Click Commit.
39	Click Yes in the warning dialog box.
40	Select Select Network Element B from the Navigation tree.
41	Click Commit.
42	Click Yes in the warning dialog box.

Swapping the FromAID and Switchmate AID in Network Elements A and B

43	For both Network Element A and Network Element B, edit the 2WAYBR cross-connect to 1WAYPR. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.
44	Perform step 45 to step 49 for both Network Element A and Network Element B.
45	Select the network element in the Navigation tree.
46	Click Refresh.
47	Select the 1WAYPR cross-connect.
48	Click Edit.
49	Click Swap in the Nodal cross-connect window to swap the From AID and the Switch Mate AID.

Rolling the endpoints on 1WAY cross-connects

50	For both Network Element A and Network Element B, perform step 51 to step 59.
51	On the From AID-Switch mate 1WAY cross-connect, select the endpoint to roll over under the To AID column of the Nodal Cross-Connects window. See Rolling over in UPSR: 2WAYBR cross-connect on page 3-79.

Procedure 3-26 (continued)
Rolling traffic in a ring: 2WAYBR at one endpoint

Step	Action
52	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65. *Note:* Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
53	Click Bridge.
54	Click Switch.
55	Click Yes in the warning dialog box.
56	Click Commit.
57	Click Yes in the warning dialog box.
58	Select the network element from the Navigation tree.
59	Click Refresh.

Rolling the endpoints on 1WAYPR cross-connects

Step	Action
60	For both Network Element A and Network Element B, perform step 61 to step 68.
61	Select the endpoint to roll over under the From column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
62	Select the new endpoint under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65. *Note:* Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
63	Click Bridge.
64	Click Switch.
65	Click Yes in the warning dialog box.
66	Click Commit.
67	Click Yes in the warning dialog box.
68	Click Refresh.

Swapping the From AID and the Switch mate AID in far-end network elements A and B

Step	Action
69	For both Network Element A and Network Element B, perform step 70 to step 73.
70	Click Refresh.
71	Select the 1WAYPR cross-connect.
72	Click Edit.
73	Click Swap in the Nodal cross-connect window to swap the From AID and the Switch Mate AID.

—**continued**—

Procedure 3-26 (continued)
**Rolling traffic in a ring: 2WAYBR at one endpoint**

Step	Action

Editing the cross-connects back to 2WAYBR

74	For both Network Element A and Network Element B, perform step 75 to step 76.
75	Click Refresh.
76	Edit the 1WAYPR and 1WAY cross-connects to 2WAYBR. See Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30.

—end—

Rolling over in UPSR: 2WAYBR cross-connect

EX1307p
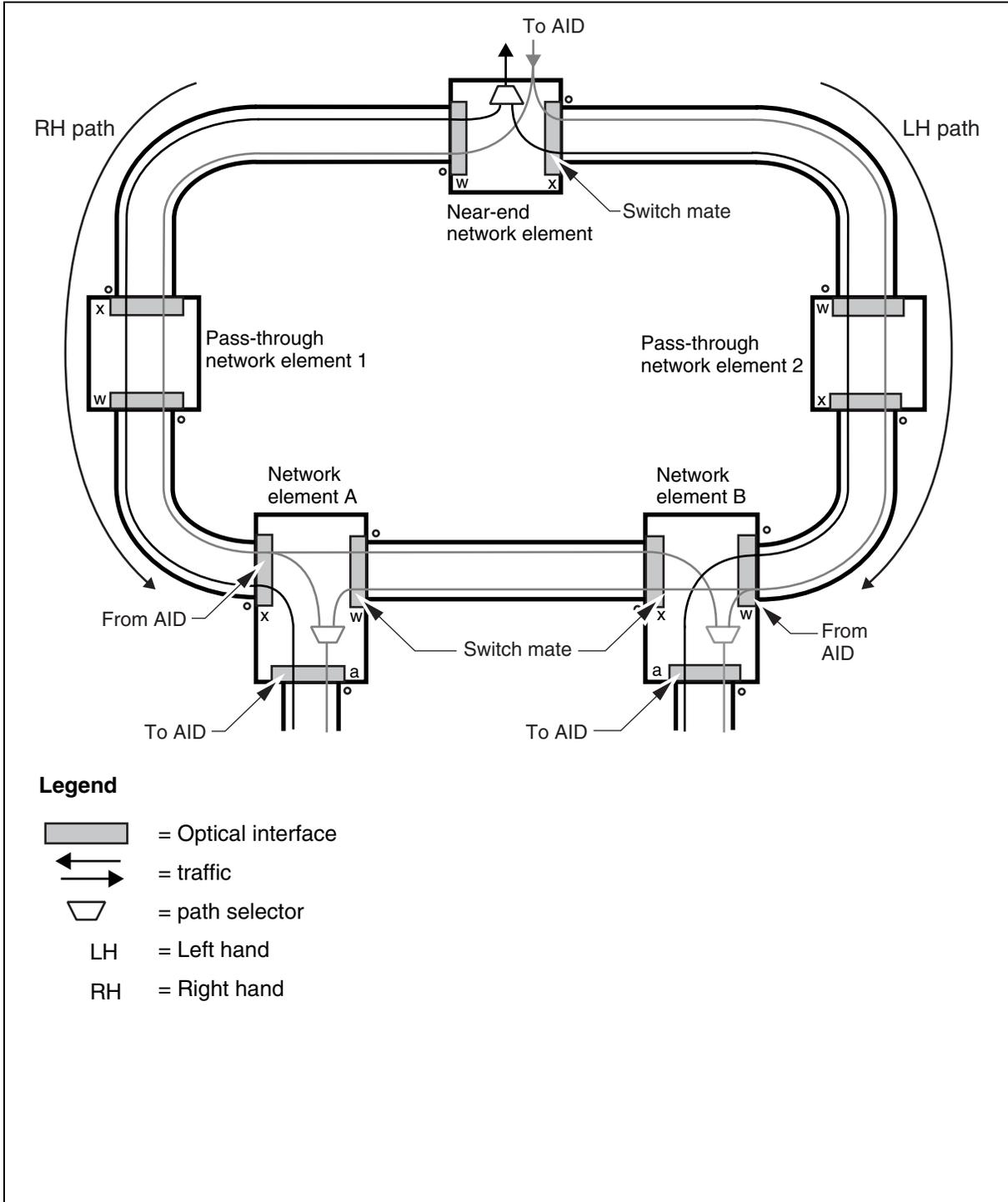
Legend

- = Optical interface
- = traffic
- = path selector
- LH = Left hand
- RH = Right hand

Nodal cross-connect provisioning of BLSR networks

Procedures for the nodal provisioning of BLSR networks

Procedures for in-service traffic rollovers in a BLSR

Procedure 4-1
Provisioning a BLSR (bidirectional)

Follow precisely the steps in this procedure only if your network is identical to the one portrayed in this example. If your network is not identical, consider the procedure as an example, and make the necessary adjustments to suit your network conditions.

Note: If you want to provision a Resilient Packet Ring over a BLSR, perform Provisioning an RPR over a simple ring (UPSR or BLSR) on page 5-2.

Requirements

To perform this procedure, you must

- comply with provisioning rules governing cross-connect types. See Allowable cross-connect types between network configurations on page 6-71

- ensure all the optical interface circuit packs in the line slots of the proposed BLSR are BLSR protected, see 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10

- ensure the network elements are present in the Ring Map

- ensure the equipment and facilities are provisioned and in service

- obtain or create a traffic map for the BLSR system

- ensure all planned cross-connects in the BLSR are 2WAY or iPTRing as required

- ensure there is no Node ID mismatch alarm

- ensure that either the NE A end or NE Z end is the local APS ID

- use an account with a level 3 or higher user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Procedure 4-1 (continued)
Provisioning a BLSR (bidirectional)

CAUTION
Risk of traffic loss
Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.

For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Add the required network elements to the Ring Map. See Provisioning a BLSR configuration on page 6-34.
3	For each network element in your system, find the corresponding network element in the provisioning diagram. See Simple BLSR network (example) on page 4-6. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
4	Select either the NE A or NE Z network elements from the navigation tree. *Note:* When provisioning the path either NE A or NE Z must be the local node.
5	Provision the BLSR as indicated in the table, Cross-connect provisioning example for a BLSR on page 4-4, and shown in the example diagram Simple BLSR network (example) on page 4-6. See: • Adding a 2WAY cross-connect (BLSR networks) on page 6-13 • Adding an RPR cross-connect on page 6-21

—*end*—

Cross-connect provisioning example for a BLSR

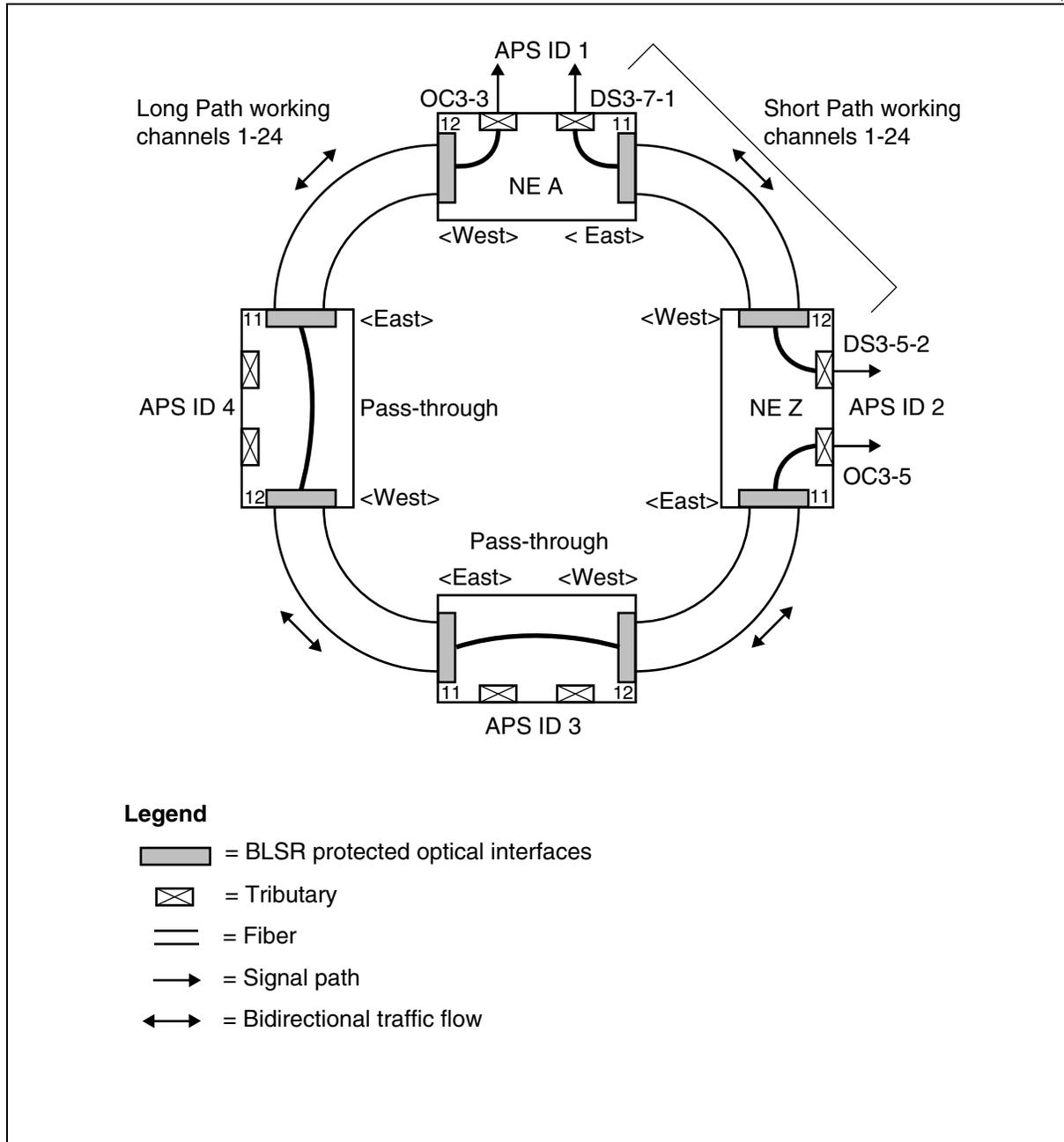*Note:* The BLSR Configuration APSID# columns of this table are for use when performing the BLSR configuration. See .

BLSR Configuration 1 APSID # NE/EastAPSID/WestAPSID			Path (optional Short/Long)	Cross-connect	TSA		From	To
1	2	4	Short NE A	2WAY	STS#1		Tributary facility : DS3-7-1 for example	Slot 12, west optical facility
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							FROMAEND=1, BLSR protected FROMZEND=2, BLSR protected	
2	3	1	Short NE Z	2WAY	STS#1		Slot 11, east optical facility	Tributary facility: DS3-5-2 for example
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							FROMAEND=1, BLSR protected FROMZEND=2, BLSR protected	
1	2	4	Long NE A	2WAY	STS#1 VTG#1 VT#2		Tributary facility: OC3-3 for example	Slot 11, east optical facility
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							FROMAEND=1, BLSR protected FROMZEND=2, BLSR protected	
4	1	3	Long pass-through connection	2WAY	STS#1 VTG#1 VT#2 (Full VT)	STS#1 (VT Assigned)	Slot 12, west optical facility	Slot 11, east optical facility
Site Manager automatically populates these parameters from your choice of NE A and NE Z at each network element where the APS ID does not match the NE A or NE Z APS IDs.							FROMAEND=1, BLSR protected FROMZEND=2, BLSR protected TOAEND=1, BLSR protected TOZEND=2, BLSR protected	

BLSR Configuration 1 APSID # NE/EastAPSID/WestAPSID			Path (optional Short/Long)	Cross-connect	TSA		From	To
3	4	2	Long pass-through connection	2WAY	STS#1 VTG#1 VT#2 (Full VT)	STS#1 (VT Assigned)	Slot 12, west optical facility	Slot 11, east optical facility
Site Manager automatically populates these parameters from your choice of NE A and NE Z at each network element where the APS ID does not match the NE A or NE Z APS IDs.							FROMAEND=1, BLSR protected FROMZEND=2, BLSR protected TOAEND=1, BLSR protected TOZEND=2, BLSR protected	
2	3	1	Long NE Z	2WAY	STS#1 VTG#1 VT#2		Slot 12, west optical facility	Tributary facility: OC3-5 for example
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							FROMAEND=1, BLSR protected FROMZEND=2, BLSR protected	

Simple BLSR network (example)

Ex 1172p

APS ID 1

Long Path working
channels 1-24

OC3-3   DS3-7-1

Short Path working
channels 1-24

12   11

NE A

<West>   < East>

11   <East>

<West>   12   DS3-5-2

APS ID 4

Pass-through

NE Z   APS ID 2

12   <West>

<East>   11   OC3-5

Pass-through

<East>   <West>

11   12

APS ID 3

Legend

  = BLSR protected optical interfaces

⊠   = Tributary

═══   = Fiber

⟶   = Signal path

⟷   = Bidirectional traffic flow

OPTera Metro 3500   Multiservice Platform   323-1059-320   Standard   Rel 12.0   Iss 1   Nov 2003

Procedure 4-2
Provisioning a BLSR and linear spur (bidirectional)

Use this procedure to provision nodal connections in a BLSR with a bidirectional linear point-to-point spur. The linear point to point spur connects endpoints in a BLSR to other network elements that are included in other BLSRs, UPSRs, linear ADMs, or services not included in the scope of this document.

Note: The linear portion of this configuration is connected through the OC-3, OC-12, OC-12x4 STS (only if shelf equipped with STX-192 circuit packs), OC-48 STS (only if shelf equipped with STX-192 circuit packs), EC-1x3, EC-1x12 circuit packs available as tributaries.

Requirements

To perform this procedure, you must

- ensure all the optical interface circuit packs in the line slots of the proposed BLSR are BLSR protected, see 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10

- ensure the network elements are present in the Ring Map, see Provisioning a BLSR configuration on page 6-34

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- ensure 1+1 Linear protection, bidirectional is provisioned on both ends of the facilities for any protected linear 1+1 connection

- see Allowable cross-connect types between network configurations on page 6-71

- obtain or create a traffic map for the BLSR system

- ensure all planned cross-connects in the BLSR are 2WAY

- ensure there are no Node ID mismatch or Invalid Neighbor alarms

- ensure that either the NE A end or NE Z end is the local APS ID

- use an account with a level 3 or higher user privilege code (UPC)

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

- ensure you have all the documentation referenced in this procedure

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Procedure 4-2 (continued)
Provisioning a BLSR and linear spur (bidirectional)

> **CAUTION**
> **Risk of traffic loss**
> Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.
>
> For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Add the required network elements to the Ring Map. See Provisioning a BLSR configuration on page 6-34.
3	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional network of BLSR with linear spur (example) on page 4-10. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
4	Select either the NE A or NE Z network elements from the navigation tree.
	Note: When provisioning the path, either NE A or NE Z must be the local node.
5	Provision the BLSR and linear spur as indicated in the table, Provisioning example for a BLSR with linear spur on page 4-9, to provision the path shown in the example diagram Bidirectional network of BLSR with linear spur (example) on page 4-10.
	Note: The example shows how you would provision a working path in the BLSR through to the far-end of a linear spur. You do not provision a protection path in either the BLSR or the linear portion of the configuration. The direction of the working path is determined from the path provisioned and your choice of NE A and NE Z in the BLSR.
	See Procedures for nodal cross-connect management on page 6-1.

<div align="center">—end—</div>

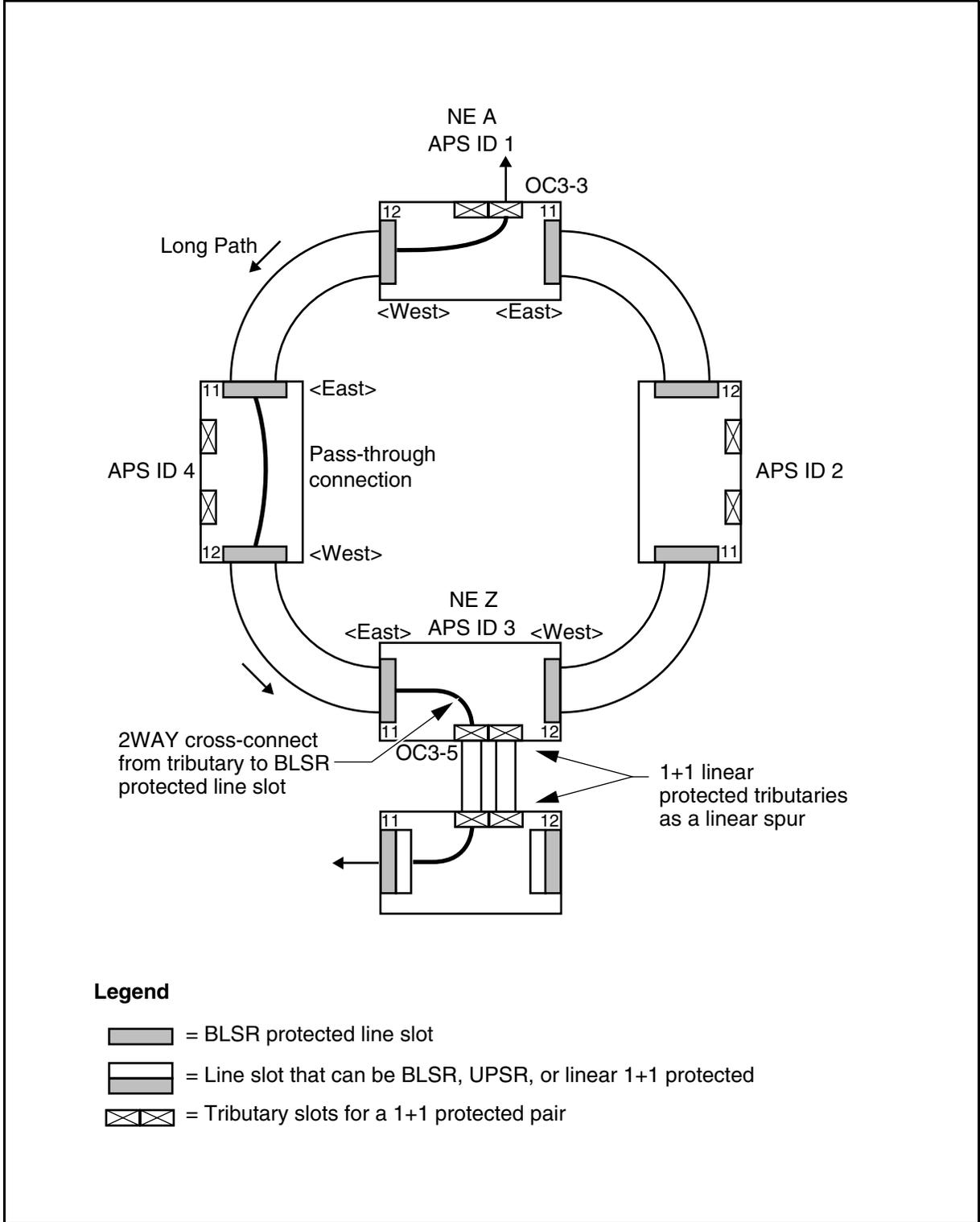### Provisioning example for a BLSR with linear spur

Note: The BLSR Configuration APSID# columns of this table are for use when performing the BLSR configuration. See Provisioning a BLSR configuration on page 6-34.

BLSR Configuration 1 APSID # NE/EastAPSID/WestAPSID			Path (optional Long /Short)	Cross-connect	TSA		From	To
1	2	4	Long NE A	2WAY	STS#1 VTG#1 VT#2		Tributary facility: OC3-3 for example	Slot 12, west optical facility
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							FROMAEND=1, BLSR protected FROMZEND=3, BLSR protected	
4	1	3	Long pass-through connection	2WAY	STS#1 VTG#1 VT#2 (Full VT)	STS#1 (VT Assigned)	Slot 11, east optical facility	Slot 12, west optical facility
Site Manager automatically populates these parameters from your choice of NE A and NE Z at each network element where the APS ID does not match the NE A or NE Z APS IDs.							FROMAEND=1, not BLSR protected FROMZEND=3, not BLSR protected TOAEND=1, BLSR protected TOZEND=3, BLSR protected	
3	4	2	Long NE Z	2WAY	STS#1 VTG#1 VT#2		Tributary facility: OC3-5 for example	Slot 11, east optical facility
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							TOAEND=1,BLSR protected TOZEND=3, BLSR protected	
2	3	1	Spur	None	STS#1 VTG#1 VT#2		Tributary facility: OC3-5 for example	Slot 11, optical facility

Bidirectional network of BLSR with linear spur (example)

EX1173p

Legend

= BLSR protected line slot

= Line slot that can be BLSR, UPSR, or linear 1+1 protected

= Tributary slots for a 1+1 protected pair

Procedure 4-3
Provisioning a BLSR with subtending UPSR (bidirectional)

Note: Follow precisely the steps in this procedure only if your network is identical to the one portrayed in this example. If your network is not identical, consider the procedure as an example, and make the necessary adjustments to suit your network conditions.

Use this procedure as an example to provision nodal cross-connects for a new bidirectional end-to-end service that has end points in two different subtending rings of a network. Up to four UPSRs can be connected to the tributaries of a single network element.

Note: The inter-connection of the subtending rings is supported through the OC-3, OC-12, OC-12x4 STS (only if shelf equipped with STX-192 circuit packs), OC-48 STS (only if shelf equipped with STX-192 circuit packs), EC-1x3, EC-1x12 circuit packs available as tributaries.

Requirements

To perform this procedure, you must

- comply with provisioning rules governing cross-connect types. See Allowable cross-connect types between network configurations on page 6-71
- ensure all the optical interface circuit packs in the line slots of the proposed BLSR are BLSR protected, see 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10
- ensure the network elements are present in the Ring Map, see Provisioning a BLSR configuration on page 6-34
- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service
- obtain or create a traffic map for the BLSR system
- ensure all planned cross-connects in the BLSR are 2WAY
- ensure there are no Node ID mismatch or Invalid neighbor alarms
- ensure that either the End NE A or End NE Z is the local APS ID
- ensure all previous equipment and facilities are deleted if you are provisioning cross-connects for an empty equipment slot

Procedure 4-3 (continued)
Provisioning a BLSR with subtending UPSR (bidirectional)

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

> **CAUTION**
> **Risk of traffic loss**
> Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.
>
> For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	For each network element in the system, find the corresponding network element in the provisioning diagram. See Bidirectional network of BLSR with subtending UPSR (example) on page 4-16. Record the slot numbers for the circuit packs so you can refer to them throughout the procedure.
3	Select either the NE A or NE Z network elements from the navigation tree. ***Note:*** When provisioning the path either NE A or NE Z must be the local node.

—continued—

Procedure 4-3 (continued)
Provisioning a BLSR with subtending UPSR (bidirectional)

Step	Action
4	Provision the BLSR and subtending UPSR as indicated in the table, Provisioning example for a BLSR with subtending UPSR on page 4-14, to provision the path shown in the example diagram Bidirectional network of BLSR with subtending UPSR (example) on page 4-16.

Note: The example shows how you would provision a working path in the BLSR through to the far-end of a subtending UPSR. You must provision a protection path in the UPSR portion of the configuration. The direction of the working path in the BLSR portion is determined from the path provisioned and your choice of NE A and NE Z in the BLSR.

See:

- Provisioning a BLSR (bidirectional) on page 4-2
- Provisioning a UPSR (bidirectional) on page 3-3

—**end**—

Provisioning example for a BLSR with subtending UPSR

Note: The BLSR Configuration APSID# columns of this table are for use when performing the BLSR configuration. See .

BLSR Configuration 1 APSID # NE/EastAPSID/WestAPSID			**Path (optional) See Note 1**	**Cross-connect**	**TSA**		**From**	**To**
1	2	4	Long NE A	2WAY	STS#1 VTG#1 VT#2		Tributary facility: OC3-3 for example	Slot 11, east optical facility
Site Manager automatically populates these parameters depending on your choice of FROM AID or TO AID, NE A, and NE Z at each add/drop network element.							FROMAEND=1, BLSR protected FROMZEND=3, BLSR protected	
2	3	1	Long pass-through connection	2WAY	STS#1 VTG#1 VT#2 (Full VT)	STS#1 (VT Assigned)	Slot 12, west optical facility	Slot 11, east optical facility
Site Manager automatically populates these parameters from your choice of NE A and NE Z at each network element where the APS ID does not match the NE A or NE Z APS IDs.							FROMAEND=1, BLSR protected FROMZEND=3, BLSR protected TOAEND=1, BLSR protected TOZEND=3, BLSR protected	
UPSR			Long NE Z	2WAYPR	STS#1 VTG#1 VT#2		Slot x optical facility with slot w as the switch mate	Slot 12, optical facility
UPSR			Pass-through 1	2WAY	STS#1 VTG#1 VT#2		Slot x optical facility	Slot w optical facility

BLSR Configuration 1 **APSID #** NE/EastAPSID/WestAPSID	**Path (optional) See Note 1**	**Cross- connect**	**TSA**	**From**	**To**
UPSR	Pass-through 2	2WAY	STS#1 VTG#1 VT#2	Slot w optical facility	Slot x optical facility
Far-end	NE Z	2WAYPR	STS#1 VTG#1 VT#2	Slot x optical facility with slot w as the switch mate	Tributary facility
Note 1: The path in the BLSR is optional depending on the direction you choose to provision the cross-connects, however, the UPSR portion of the end-to-end path sends the same signal in both directions, working and protection, therefore, you must provision a protection path.					
Note 2: The UPSR portion of this configuration does not require Ring map provisioning, therefore no values for APS IDs are given.					

Bidirectional network of BLSR with subtending UPSR (example)

EX1176p
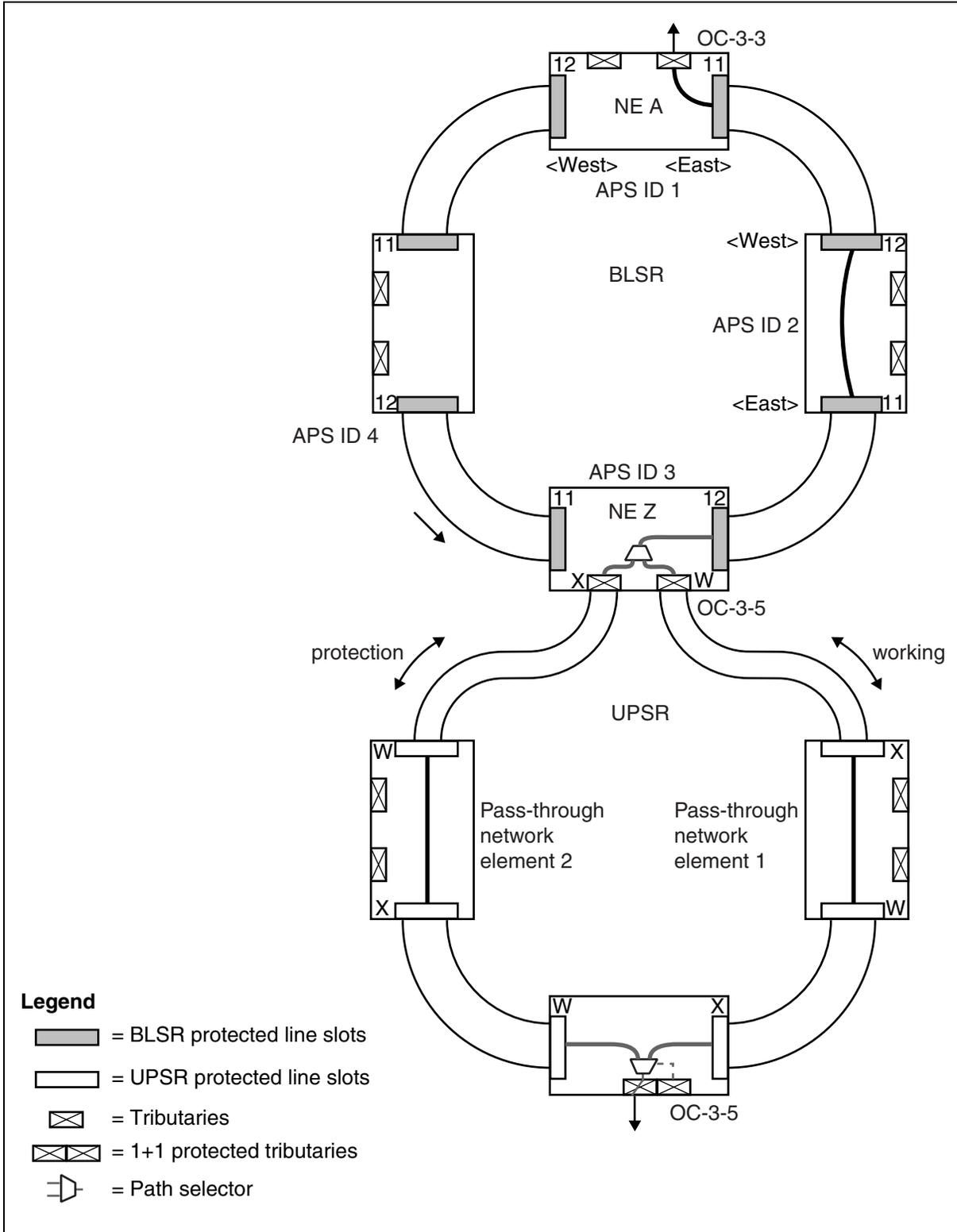
Procedure 4-4
Performing a channel rollover in a BLSR

Bidirectional line switched ring (BLSR) networks allow you to perform
In-service channel rollovers (ISCR) and Inservice route rollovers (ISRR).
ISCR allows you to re-assign VT or STS channels within the same span. For
example, if you wanted to move the STS#1 channel shown in the short path of
Simple BLSR network (example) on page 4-6 to channel STS#2 in the same
direction. ISRR allows you to re-assign VT or STS channels onto alternate
spans. For example, if you want to move an STS#1 channel from the short path
to the long path.

Note: STS level rollovers are supported for BLSR connections. For VT
Assigned STS rollovers you can roll the entire STS, or roll the VTs from
one STS to another STS, or roll a VT within an STS. However, you cannot
roll VT-assigned VTs with different add/drop points into the same STS-1
channel on pass-through nodes (this is blocked).

Requirements

To perform this procedure, you must

- ensure all the optical interface circuit packs in the line slots of the BLSR
  are BLSR protected, see 323-1059-311, Changing the protection scheme
  from UPSR to BLSR on page 1-10

- ensure the network elements are present in the Ring Map, see Provisioning
  a BLSR configuration on page 6-34

- ensure that all VT-assigned STSs have the same add/drop points

- ensure the equipment and facilities used by the planned cross-connects are
  provisioned and in service

- obtain or create an optical interface traffic map for the BLSR

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on
  page 6-65 for cross-connect parameters

- ensure you have read and understand 'BLSR networks (2-fiber)' in the
  Planning and Ordering Guide, NTRN10AM.

—continued—

Procedure 4-4 (continued)
Performing a channel rollover in a BLSR

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.
>
> For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Step	Action
1	See Simple BLSR network (example) on page 4-6 for an example of a BLSR.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and 323-1059-520, Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
4	Provision any pass-through network elements in the path with a new cross-connect. See Adding a 2WAY cross-connect (BLSR networks) on page 6-13.
5	Select Show in-service roll over in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.
6	Roll the traffic in the path of the provisioned connections. See Rolling over a channel in a BLSR on page 4-24.
7	Delete the original pass-through connections on the original path. See Deleting a cross-connect on page 6-4.

—*end*—

Procedure 4-5
Performing a route rollover in a BLSR

Bidirectional line switched ring (BLSR) networks allow you to perform In-service channel rollovers (ISCR) and Inservice route rollovers (ISRR). ISRR allows you to re-assign VT or STS channels onto alternate spans. For example, if you want to move an STS#1 channel from the short path to the long path. ISCR allows you to re-assign VT or STS channels within the same span. For example, if you wanted to move the STS#1 channel shown in the short path of Simple BLSR network (example) on page 4-6 to channel STS#2 in the same direction.

Note: STS level rollovers are supported for BLSR connections. For VT Assigned STS rollovers you can roll the entire STS, or roll the VTs from one STS to another STS, or roll a VT within an STS. However, you cannot roll VT-assigned VTs with different add/drop points into the same STS-1 channel on pass-through nodes (this is blocked).

Requirements

To perform this procedure, you must

- ensure all the OC-48 optical interface circuit packs in the line slots of the BLSR are BLSR protected, see 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10

- ensure the network elements are present in the Ring Map, see Provisioning a BLSR configuration on page 6-34

- ensure that all VT-assigned STSs have the same add/drop points

- ensure the bandwidth is available on the other route

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- obtain or create an optical interface traffic map for the BLSR

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

—continued—

Procedure 4-5 (continued)
Performing a route rollover in a BLSR

⚠ **CAUTION**
Risk of traffic loss
Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.

For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Step	Action
1	See Simple BLSR network (example) on page 4-6 for an example of a BLSR.
2	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See 323-1059-520, Enabling or disabling path trace messages on page 2-7 and 323-1059-520, Retrieving path trace messages on page 2-6.
3	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
4	Provision any pass-through network elements in the path with new 2WAY cross-connects as required. See Adding a 2WAY cross-connect (BLSR networks) on page 6-13.
5	Select Show in-service roll over in the Nodal Cross-Connects window. See Selecting Show in-service traffic rollover on page 6-51.
6	Roll the traffic in the path of the provisioned connections. See Rolling over a route in a BLSR on page 4-26.
7	Delete the original pass-through connections on the original path. See Deleting a cross-connect on page 6-4.

—**end**—

Procedure 4-6
Rolling over a VT1.5 within an STS of a BLSR

Bidirectional line switched ring (BLSR) networks allow you to perform Inservice channel rollovers (ISCR) and Inservice route rollovers (ISRR). ISRR allows you to re-assign VT or STS channels onto alternate spans. For example, if you want to move an STS#1 channel from the short path to the long path. ISCR allows you to re-assign VT or STS channels within the same span. For example, if you wanted to move the STS#1 channel shown in the short path of Simple BLSR network (example) on page 4-6 to channel STS#2 in the same direction.

Requirements

To perform this procedure, you must

- ensure all the OC-48 optical interface circuit packs in the line slots of the BLSR are BLSR protected, see 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10

- ensure the network elements are present in the Ring Map, see Provisioning a BLSR configuration on page 6-34

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- obtain or create an optical interface traffic map for the BLSR

- ensure cross-connects to be rolled to exist on the pass-through nodes

- use an account with a level 3 or higher user privilege code (UPC)

- ensure the signal degrade threshold (SDTH) is provisioned

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Procedure 4-6 (continued)
Rolling over a VT1.5 within an STS of a BLSR

> ⚠️ **CAUTION**
> **Risk of traffic loss**
> Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.
>
> For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Step	Action
1	Select the add/drop network element (NE A) of the path from the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
3	Click Refresh to display the nodal cross-connects.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Select the VT1.5 to be rolled.
6	**If** the 'Details' tabs **Then** go to

If the 'Details' tabs	**Then** go to
are not showing	step 7
are showing	step 8

Step	Action
7	Click on Details.
8	Click on the 'In-service Roll Over' tab.
9	Select the Access Identifier (AID) to roll over under the From or To column of the Nodal Cross-Connects window. The selected AID is the Initial end point.

—**continued**—

Procedure 4-6 (continued)
Rolling over a VT1.5 within an STS of a BLSR

Step	Action
10	Select the AID with the same STS# but different VT# under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note: Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
11	Click Bridge. Click Yes in the warning dialog box.
12	Select the add/drop network element (NE Z) of the path (or the hub network element if this ISCR is for a protected spur configuration) in the Navigation tree.
13	Click Refresh.
14	Select the AID to roll over under the From or To column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
	Note: Rollovers are performed in pairs. If you chose from the From column for NE A, choose the From column AID for NE Z. If you chose the To column AID in NE A, choose the To column AID in NE Z.
15	Select the AID with the same STS# but different VT# under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note: Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
16	Click Bridge. Click Yes in the warning dialog box.
17	Select the NE A network element in the Navigation tree.
18	Select the Bridged endpoint from the Nodal Cross-Connects window.
19	Click Switch. Click Yes in the warning dialog box.
20	Select the NE Z network element in the Navigation tree.
21	Select the Bridged endpoint from the Nodal Cross-Connects window.
22	Click Switch. Click Yes in the warning dialog box.
23	Select the switched endpoint from the Nodal Cross-Connects window.
24	Click Commit. Click Yes in the warning dialog box.
25	Select the NE A network element in the Navigation tree.
26	Select the switched endpoint from the Nodal Cross-Connects window.
27	Click Commit. Click Yes in the warning dialog box.

—**end**—

Procedure 4-7
Rolling over a channel in a BLSR

Note: This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

Step	Action
1	Select the add/drop network element (NE A) of the path from the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
3	Click Refresh to display the nodal cross-connects. ***Note:*** If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Select Show in-service roll over to display the in-service traffic roll over area.
6	Select the Access Identifier (AID) to roll over under the From or To column of the Nodal Cross-Connects window. The selected AID is the Initial end point.
7	Select the new AID under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65. ***Note 1:*** Remember to use the same time slot assignment number for each rolled endpoint across the entire network. ***Note 2:*** If you cannot roll to an end point that is involved in a 2WAYPR connection, see Rolling over 1WAYPR and 2WAYPR cross-connects combined with 1WAY cross-connects on page 6-61.
8	Click Bridge. Click Yes in the warning dialog box.
9	Select the add/drop network element (NE Z) of the path (or the hub network element if this ISCR is for a protected spur configuration) in the Navigation tree.
10	Click Refresh.
11	Select the AID to roll over under the From or To column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point. ***Note:*** Rollovers are performed in pairs. If you chose from the From column for NE A, choose the From column AID for NE Z. If you chose the To column AID in NE A, choose the To column AID in NE Z.
12	Click Bridge. Click Yes in the warning dialog box.
13	Select the NE A network element in the Navigation tree.
14	Select the Bridged endpoint from the Nodal Cross-Connects window.

Procedure 4-7 (continued)
Rolling over a channel in a BLSR

Step	Action
15	Click Switch. Click Yes in the warning dialog box.
16	Select the NE Z network element in the Navigation tree.
17	Select the Bridged endpoint from the Nodal Cross-Connects window.
18	Click Switch. Click Yes in the warning dialog box.
19	Select the switched endpoint from the Nodal Cross-Connects window.
20	Click Commit. Click Yes in the warning dialog box.
21	Select the NE A network element in the Navigation tree.
22	Select the switched endpoint from the Nodal Cross-Connects window.
23	Click Commit. Click Yes in the warning dialog box.
24	Delete the original pass-through connections on the original path. See Deleting a cross-connect on page 6-4.

—**end**—

Procedure 4-8
Rolling over a route in a BLSR

Note: This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

Step	Action
1	Select the add/drop network element (NE A) of the path from the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu to display the Nodal Cross-Connects window.
3	Click Refresh to display the nodal cross-connects.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
5	Select Show in-service roll over to display the in-service traffic roll over area.
6	Select the Access Identifier (AID) to roll over under the From or To column of the Nodal Cross-Connects window. The selected AID is the Initial end point.
7	Select the mate OC-48 AID under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note 1: Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
	Note 2: If you cannot roll to an end point that is involved in a 1WAYPR or 2WAYPR connection, see Rolling over 1WAYPR and 2WAYPR cross-connects combined with 1WAY cross-connects on page 6-61.
8	Click Bridge. Click Yes in the warning dialog box.
	The "Rx Unequipped" alarm is raised.
9	Select the add/drop network element (NE Z) of the path (or the hub network element if this ISCR is for a protected spur configuration) in the Navigation tree.
10	Click Refresh.
11	Select the AID to roll over under the From or To column of the Nodal Cross-Connects window. The selected endpoint is the Initial end point.
	Note: Rollovers are performed in pairs. If you chose from the From column for NE A, choose the From column AID for NE Z. If you chose the To column AID in NE A, choose the To column AID in NE Z.

Procedure 4-8 (continued)
Rolling over a route in a BLSR

Step	Action
12	Select the mate OC-48 AID under Rolled end point. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note 1: Remember to use the same time slot assignment number for each rolled endpoint across the entire network.
	Note 2: If you cannot roll to an end point that is involved in a 1WAYPR or 2WAYPR connection, see Rolling over 1WAYPR and 2WAYPR cross-connects combined with 1WAY cross-connects on page 6-61.
13	Click Bridge. Click Yes in the warning dialog box.
	The "Rx Unequipped" alarm clears automatically.
14	Select the NE A network element in the Navigation tree.
15	Select the Bridged endpoint from the Nodal Cross-Connects window.
16	Click Switch. Click Yes in the warning dialog box.

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Ensure the "Rx Unequipped" alarm was raised (at step 8) and cleared automatically (at step 13) before performing step 17. If you perform step 17 before this alarm clears, there is a risk of traffic loss.

Step	Action
17	Select the NE Z network element in the Navigation tree.
18	Select the Bridged endpoint from the Nodal Cross-Connects window.
19	Click Switch. Click Yes in the warning dialog box.
20	Select the switched endpoint from the Nodal Cross-Connects window.
21	Click Commit. Click Yes in the warning dialog box.
22	Select the NE A network element in the Navigation tree.
23	Select the switched endpoint from the Nodal Cross-Connects window.
24	Click Commit. Click Yes in the warning dialog box.
25	Delete the original pass-through connections on the original path. See Deleting a cross-connect on page 6-4.

<div align="center">—end—</div>

Bandwidth management for OPE networks

Procedures for provisioning resilient packet rings over SONET networks

Procedure 5-1
Provisioning an RPR over a simple ring (UPSR or BLSR)

Follow precisely the steps in this procedure only if your network is identical to the one portrayed in this example. If your network is not identical, consider the procedure as an example, and make the necessary adjustments to suit your network conditions.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)

- ensure the protection provisioning for the optical interfaces throughout the ring is set to either BLSR or UPSR, as required.

- ensure you have all the documentation referenced in this procedure

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM, if your Layer 1 network is a BLSR

> **CAUTION**
> **Risk of traffic loss**
> Blocking of provisioning within a BLSR occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After using the provisioning rules to determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the BLSR's far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.
>
> For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

—continued—

Procedure 5-1 (continued)
Provisioning an RPR over a simple ring (UPSR or BLSR)

Step	Action
1	Ensure you are logged in to all the network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Make a copy of the network diagram and customize it so it matches your ring. See RPR over a simple ring (UPSR or BLSR) on page 5-6.

2 (continued)

Note: On your network diagram, assign the labels Network Element A and Network Element C to the two nodes that add / drop the Ethernet stream.

3

If at Network Element A or Network Element C,	**Then** go to
you first need to attach OPE circuit packs to the RPR ring object before you provision cross-connects	step 4
your OPE circuit packs are already attached to the RPR ring object	step 5

4   For Network Element A and Network Element C, attach the OPE circuit pack (the OPE circuit pack associated with this RPR), to the RPR ring object, as required. See Attaching an OPTera Packet Edge circuit pack to an RPR on page 5-22.

Note 1: If you want to provision a single resilient ring with daisy-chained OPE circuit packs, select an available ring (IPTR-#) and provision the first OPE circuit pack using that ring. Attach the second and subsequent circuit packs to the same ring for the daisy chain. See Attaching an OPTera Packet Edge circuit pack to an RPR on page 5-22.

Note 2: If you want to provision multiple resilient packet rings (up to a maximum of eight rings), select an available ring (IPTR-#) (for example, ring m) and provision that ring with one OPE circuit pack. Repeat the entire procedure to provision the next ring. Select another available ring (IPTR-#) (for example, ring n) and provision that ring with another OPE circuit pack.

Procedure 5-1 (continued)
Provisioning an RPR over a simple ring (UPSR or BLSR)

Step	Action
5	Add an RPR cross-connect at the network element represented in your network diagram as Network Element A, with the following considerations:

    •   The slot w optical facility for Network Element A in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

    •   The slot x optical facility for Network Element A in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

    •   'To' is the RPR ring object to which you will add this RPR cross-connect, and its equipment parameter is the OPE circuit pack terminating the Ethernet signal.

Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

| **6** | Add an RPR cross-connect at the network element represented in your network diagram as Network Element C, with the following considerations: |

    •   The slot w optical facility for Network Element C in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

    •   The slot x optical facility for Network Element C in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

    •   'To' is the RPR ring object to which you will add this RPR cross-connect, and its equipment parameter is the OPE circuit pack terminating the Ethernet signal.

Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

Procedure 5-1 (continued)
Provisioning an RPR over a simple ring (UPSR or BLSR)

Step	Action
7	Add a pass-through RPR cross-connect at each network element represented in your network diagram as Network Element B (that is, for each pass-through node), with the following considerations:

- The slot w optical facility for Network Element B in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot x optical facility for Network Element B in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the RPR ring object to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 6), and its equipment parameter is 'Pass-through'.

Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

| **8** | Click OK. |

—**end**—

RPR over a simple ring (UPSR or BLSR)

EX1007p

Slot y
Packet edge
circuit packs

Network element A
Ethernet tributaries

Slot z
Packet edge
circuit packs

n

Resilient packet ring

w

x

<West>   (see note 2)   <East>

<West> w

Network element B
(pass-through with
resilient packet ring)

n Resilient
packet ring

(see note 2)

<East> x

Network element C
<East>   (see note 2)   <West>

x

w

Resilient packet ring

n

Slot z
Packet edge
circuit packs

Ethernet tributaries

Slot y
Packet edge
circuit packs

Legend

= Optical interface

= Signal

= Resilient packet ring

Note 1: The 2xGigE circuit packs have two LAN ports.
Note 2: The 'East' and 'West' designation apply only if this is a BLSR network.

Procedure 5-2
Provisioning an RPR over SONET subtending rings (at least one OPE circuit pack in each ring)

Follow precisely the steps in this procedure only if your network is identical to the one portrayed in this example. If your network is not identical, consider the procedure as an example, and make the necessary adjustments to suit your network conditions.

This procedure describes how to provision an RPR over a layer 1 network of subtending rings, wherein each ring has at least one OPE circuit pack in one of their respective network elements.

Note: This procedure takes as example the case of a UPSR subtended from a BLSR. The BLSR and the UPSR each have at least one OPE circuit pack in one of their respective network elements.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure
- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

> **CAUTION**
> **Risk of traffic loss**
> Blocking of provisioning within a BLSR occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After using the provisioning rules to determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the BLSR's far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.
>
> For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

—continued—

Procedure 5-2 (continued)
Provisioning an RPR over SONET subtending rings (at least one OPE circuit pack in each ring)

Step	Action
1	Ensure you are logged in to all the network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Make a copy of the network diagram and customize it so it matches your ring. See RPR over a BLSR and subtending UPSR (example) on page 5-12.

Note: On your network diagram:

- Assign the label Network Element A to any node that adds / drops this Ethernet stream from the BLSR to an OPE circuit pack.
- Assign the label Network Element C to the node acting as a hub between the BLSR and the UPSR.
- Assign the label Network Element E to any node that adds / drops this Ethernet stream from the UPSR to an OPE circuit pack.
- Assign the label Network Element B to any node in the BLSR ring that acts as a pass-through node.
- Assign the label Network Element D to any node in the UPSR that acts as a pass-through node.

Step		
3	**If** at Network Element A or Network Element E,	**Then** go to
	you first need to attach OPE circuit packs to the RPR ring object before you provision cross-connects	step 4
	your OPE circuit packs are already attached to the RPR ring object	step 5

4 For Network Element A and Network Element E, attach the OPE circuit pack (the OPE circuit pack associated with this RPR), to the RPR ring object, as required. See Attaching an OPTera Packet Edge circuit pack to an RPR on page 5-22.

Note 1: If you want to provision a single resilient ring with daisy-chained OPE circuit packs, select an available ring (IPTR-#) and provision the first OPE circuit pack using that ring. Attach the second and subsequent circuit packs to the same ring for the daisy chain. See Attaching an OPTera Packet Edge circuit pack to an RPR on page 5-22.

Note 2: If you want to provision multiple resilient packet rings, select an available ring (IPTR-#) (for example, ring m) and provision that ring with one OPE circuit pack. Repeat the entire procedure to provision the next ring. Select another available ring (IPTR-#) (for example, ring n) and provision that ring with another OPE circuit pack.

—**continued**—

Procedure 5-2 (continued)
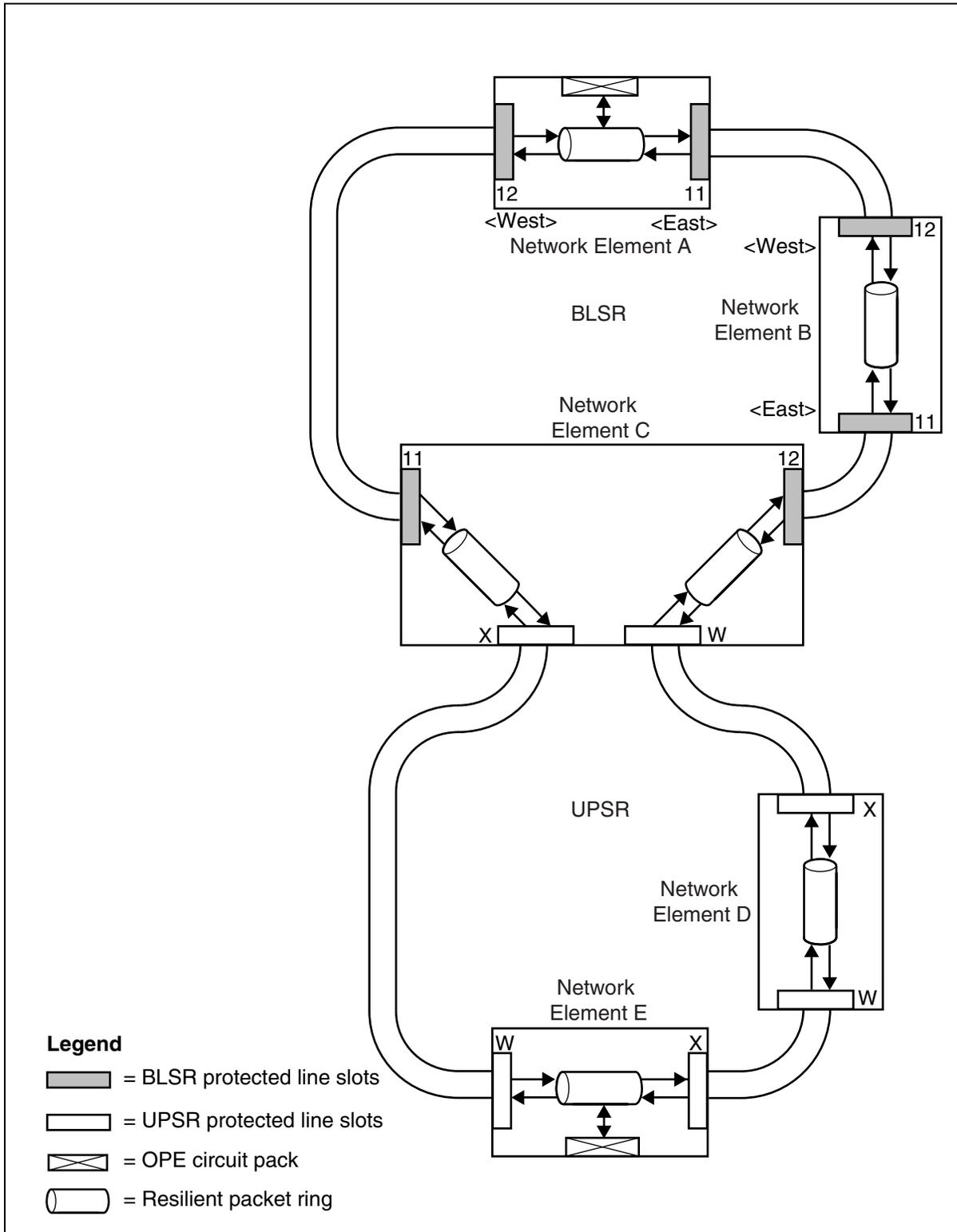**Provisioning an RPR over SONET subtending rings (at least one OPE circuit pack in each ring)**

Step	Action
5	Add an RPR cross-connect for each network element represented in your network diagram as Network Element A, with the following considerations:

- The slot 11 optical facility for Network Element A in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot 12 optical facility for Network Element A in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the IPTR ring name to which you will add this RPR cross-connect, and its equipment parameter is the OPE circuit pack terminating the Ethernet signal in the BLSR.

Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding a 2WAY cross-connect (BLSR networks) on page 6-13.

Step	Action
6	Add an RPR cross-connect for each network element represented in your network diagram as Network Element E, with the following considerations:

- The slot w optical facility for Network Element E in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot x optical facility for Network Element E in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the IPTR ring name to which you will add this RPR cross-connect, and its equipment parameter is the OPE circuit pack terminating the Ethernet signal in the UPSR.

Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

Procedure 5-2 (continued)
Provisioning an RPR over SONET subtending rings (at least one OPE circuit pack in each ring)

Step	Action
7	Add the first pass-through RPR cross-connect at the network element represented in your network diagram as Network Element C, with the following considerations:

If , on Network Element C,	**Then** provision this pass-through cross-connect following values in
RPRs are already provisioned	Scenario 1 for hub node: there are already RPRs provisioned on page 5-13, in the row represented by "IPTR-1".
no RPRs are provisioned	Scenario 2 for hub node: there are no prior RPRs provisioned on page 5-13, in the row represented by "IPTR-1".

Note 1: 'To' is the IPTR ring name to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 5), and its equipment parameter is 'Pass-through'.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

Step	Action
8	Add the second pass-through RPR cross-connect at the network element represented in your network diagram as Network Element C, with the following considerations:

If , on Network Element C,	**Then** provision this pass-through cross-connect following values in
RPRs are already provisioned	Scenario 1 for hub node: there are already RPRs provisioned on page 5-13, in the row represented by "IPTR-2".
no RPRs are provisioned	Scenario 2 for hub node: there are no prior RPRs provisioned on page 5-13, in the row represented by "IPTR-2".

Note 1: 'To' is any available IPTR ring name except the one you selected in step 5, and its equipment parameter is 'Pass-through'.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

—continued—

Procedure 5-2 (continued)
Provisioning an RPR over SONET subtending rings (at least one OPE circuit pack in each ring)

Step	Action
9	Add an RPR cross-connect for each network element represented in your network diagram as Network Element B, with the following considerations:

9   Add an RPR cross-connect for each network element represented in your network diagram as Network Element B, with the following considerations:

- The slot 11 optical facility for Network Element B in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot 12 optical facility for Network Element B in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the RPR ring object to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 5), and its equipment parameter is 'Pass-through'.

Note: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

10   Add an RPR cross-connect for each network element represented in your network diagram as Network Element D, with the following considerations:

- The slot x optical facility for Network Element D in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot w optical facility for Network Element D in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the RPR ring object to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 5), and its equipment parameter is 'Pass-through'.

Note: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

11   Click OK.

—**end**—

RPR over a BLSR and subtending UPSR (example)

EX1300p

Legend

▨ = BLSR protected line slots

▢ = UPSR protected line slots

⊠ = OPE circuit pack

⬭ = Resilient packet ring

Scenario 1 for hub node: there are already RPRs provisioned

Nodal IPTR ring name (example names)	Side 1 Optic	Side 2 Optic
IPTR-1 (see Note)	slot 11 optical facility	slot x optical facility
IPTR-2	slot 12 optical facility	slot w optical facility
Note: 'first RPR' and 'IPTR-1' represent the next RPR you provision on the hub node.		

Scenario 2 for hub node: there are no prior RPRs provisioned

Nodal IPTR ring name (example names)	Side 1 Optic	Side 2 Optic
IPTR-1	slot 11 optical facility	slot x optical facility
IPTR-2	slot w optical facility	slot 12 optical facility

Procedure 5-3
Provisioning a virtual RPR (no OPE circuit packs in core ring)

Follow precisely the steps in this procedure only if your network is identical to the one portrayed in this example. If your network is not identical, consider the procedure as an example, and make the necessary adjustments to suit your network conditions.

This procedure describes how to provision a virtual RPR over a Layer 1 network.

Note: This procedure takes as example the case of a near-end UPSR and far-end UPSR, both subtended from a core BLSR. The BLSR does not have any OPE circuit packs in any of its network elements.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

- ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

CAUTION
Risk of traffic loss
Blocking of provisioning within a BLSR occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After using the provisioning rules to determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the BLSR's far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.

For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

—continued—

Procedure 5-3 (continued)
Provisioning a virtual RPR (no OPE circuit packs in core ring)

Step	Action

1   Ensure you are logged in to all the network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

2   Make a copy of the network diagram and customize it so it matches your ring. See Virtual RPR: no OPE circuit packs in core BLSR (example) on page 5-21 for a detail of a virtual RPR (no OPE circuit packs in core ring).

3   On your network diagram, assign the label:

- 'Network Element A' to any node that adds / drops this Ethernet stream from UPSR#1 to an OPE circuit pack.

- 'Network Element C' to the node acting as a hub between your core BLSR and UPSR#1.

- 'Network Element E' to the node acting as a hub between your core BLSR and UPSR#2.

- 'Network Element G' to any node that adds / drops this Ethernet stream from UPSR#2.

- 'Network Element B' to any node in UPSR#1 that acts as a pass-through node.

- 'Network Element F' to any node in UPSR#2 that acts as a pass-through node.

- 'Network Element D' to any node in your core BLSR that acts as a pass-through node.

4   **If** at Network Element A or Network Element G,   **Then** go to

you first need to attach OPE circuit packs to the RPR ring object before you provision cross-connects	step 4
your OPE circuit packs are already attached to the RPR ring object	step 5

—continued—

Procedure 5-3 (continued)
Provisioning a virtual RPR (no OPE circuit packs in core ring)

Step	Action
5	For Network Element A and Network Element G, attach the OPE circuit pack (the OPE circuit pack associated with this RPR), to the RPR, as required. See Attaching an OPTera Packet Edge circuit pack to an RPR on page 5-22.
	Note 1: If you want to provision a single resilient ring with daisy-chained OPE circuit packs, select an available ring (IPTR-#) and provision the first OPE circuit pack using that ring. Attach the second and subsequent circuit packs to the same ring for the daisy chain. See Attaching an OPTera Packet Edge circuit pack to an RPR on page 5-22.
	Note 2: If you want to provision multiple resilient packet rings, select an available ring (IPTR-#) (for example, ring m) and provision that ring with one OPE circuit pack. Repeat the entire procedure to provision the next ring. Select another available ring (IPTR-#) (for example, ring n) and provision that ring with another OPE circuit pack.
6	Add an RPR cross-connect for each network element represented in your network diagram as Network Element A, with the following considerations:
	• The slot x optical facility for Network Element A in your network diagram will define the 'From - Side 1 Optics' facility and equipment.
	• The slot w optical facility for Network Element A in your network diagram will define the 'From - Side 2 Optics' facility and equipment.
	• 'To' is the IPTR ring name to which you will add this RPR cross-connect, and its equipment parameter is the OPE circuit pack terminating the Ethernet signal in UPSR#1.
	Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.
	Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.
	See Adding an RPR cross-connect on page 6-21.

<div align="center">—continued—</div>

Procedure 5-3 (continued)
Provisioning a virtual RPR (no OPE circuit packs in core ring)

Step	Action
7	Add an RPR cross-connect for each network element represented in your network diagram as Network Element G, with the following considerations:

- The slot x optical facility for Network Element G in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot w optical facility for Network Element G in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the IPTR ring name to which you will add this RPR cross-connect, and its equipment parameter is the OPE circuit pack terminating the Ethernet signal in UPSR#2.

Note 1: Ensure the circuit packs used for the Side 1 and Side 2 optics are in different slots.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

Step	Action
8	Add the first pass-through RPR cross-connect at the network element represented in your network diagram as Network Element C, with the following considerations:

If , on Network Element C,	**Then** provision this pass-through cross-connect following values in
RPRs are already provisioned	Scenario 1 for hub node: there are already RPRs provisioned on page 5-13, in the row represented by "IPTR-1".
no RPRs are provisioned	Scenario 2 for hub node: there are no prior RPRs provisioned on page 5-13, in the row represented by "IPTR-1".

Note 1: 'To' is the IPTR ring name to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 5), and its equipment parameter is 'Pass-through'.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

—continued—

Procedure 5-3 (continued)
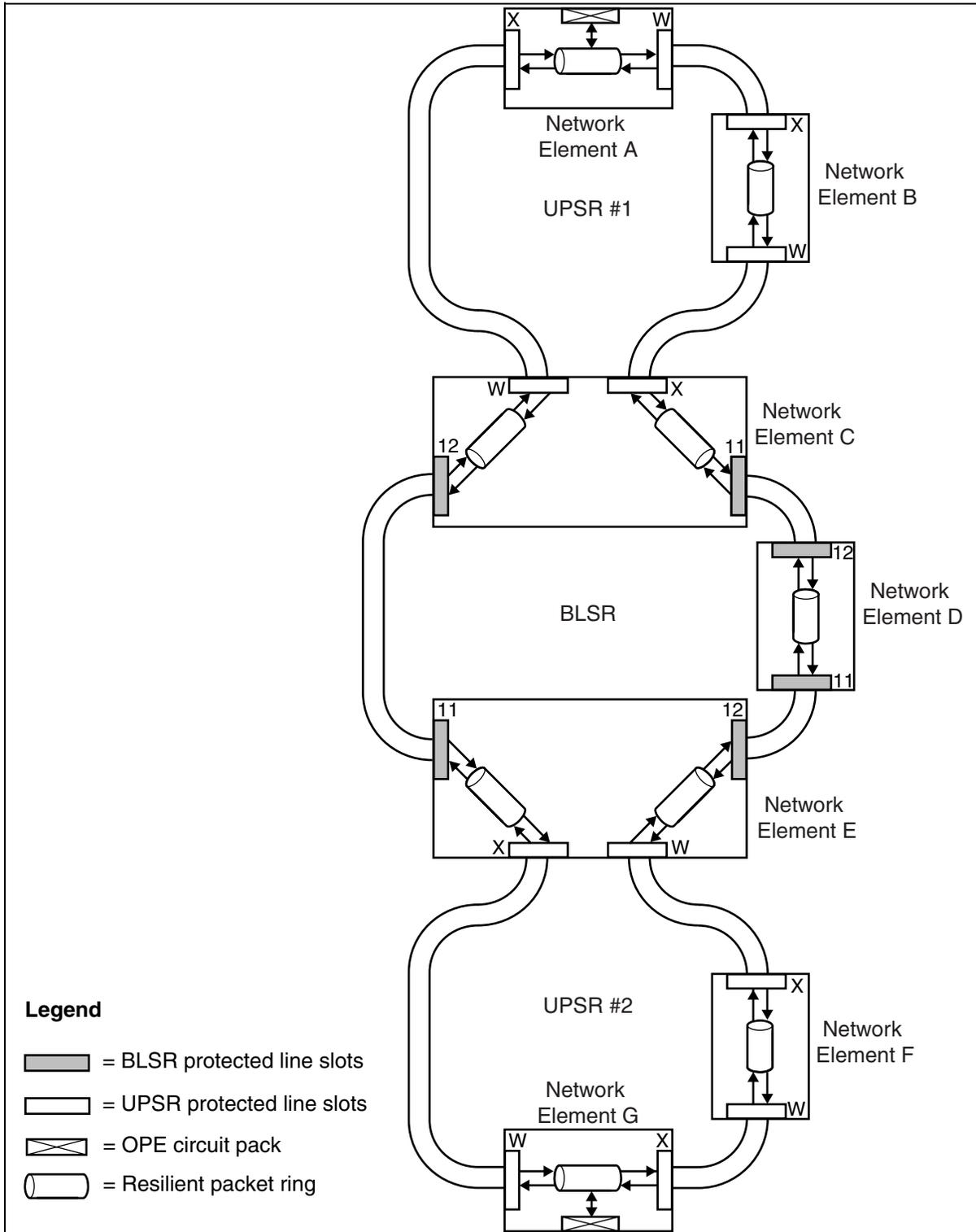**Provisioning a virtual RPR (no OPE circuit packs in core ring)**

Step	Action
9	Add the second pass-through RPR cross-connect at the network element represented in your network diagram as Network Element C, with the following considerations:

If , on Network Element C,	**Then** provision this pass-through cross-connect following values in
RPRs are already provisioned	Scenario 1 for hub node: there are already RPRs provisioned on page 5-13, in the row represented by "IPTR-2".
no RPRs are provisioned	Scenario 2 for hub node: there are no prior RPRs provisioned on page 5-13, in the row represented by "IPTR-2".

Note 1: 'To' is any available IPTR ring name except the one you selected in step 5, and its equipment parameter is 'Pass-through'.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

Step	Action
10	Add the first pass-through RPR cross-connect at the network element represented in your network diagram as Network Element E, with the following considerations:

If , on Network Element E,	**Then** provision this pass-through cross-connect following values in
RPRs are already provisioned	Scenario 1 for hub node: there are already RPRs provisioned on page 5-13, in the row represented by "IPTR-1".
no RPRs are provisioned	Scenario 2 for hub node: there are no prior RPRs provisioned on page 5-13, in the row represented by "IPTR-1".

Note 1: 'To' is the IPTR ring name to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 5), and its equipment parameter is 'Pass-through'.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

—continued—

Procedure 5-3 (continued)
Provisioning a virtual RPR (no OPE circuit packs in core ring)

Step	Action
11	Add the second pass-through RPR cross-connect at the network element represented in your network diagram as Network Element E, with the following considerations:

If , on Network Element E,	**Then** provision this pass-through cross-connect following values in
RPRs are already provisioned	Scenario 1 for hub node: there are already RPRs provisioned on page 5-13, in the row represented by "IPTR-2".
no RPRs are provisioned	Scenario 2 for hub node: there are no prior RPRs provisioned on page 5-13, in the row represented by "IPTR-2".

Note 1: 'To' is any available IPTR ring name except the one you selected in step 5, and its equipment parameter is 'Pass-through'.

Note 2: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

| **12** | Add an RPR cross-connect for each network element represented in your network diagram as Network Element B, with the following considerations: |

- The slot x optical facility for Network Element B in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot w optical facility for Network Element B in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the RPR ring object to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 6), and its equipment parameter is 'Pass-through'.

Note: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

Procedure 5-3 (continued)
Provisioning a virtual RPR (no OPE circuit packs in core ring)

Step	Action
13	Add an RPR cross-connect for each network element represented in your network diagram as Network Element F, with the following considerations:

- The slot x optical facility for Network Element F in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot w optical facility for Network Element F in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the RPR ring object to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 6), and its equipment parameter is 'Pass-through'.

Note: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

| **14** | Add an RPR cross-connect for each network element represented in your network diagram as Network Element D, with the following considerations: |

- The slot 11 optical facility for Network Element D in your network diagram will define the 'From - Side 1 Optics' facility and equipment.

- The slot 12 optical facility for Network Element D in your network diagram will define the 'From - Side 2 Optics' facility and equipment.

- 'To' is the RPR ring object to which you will add this RPR cross-connect (it must be the same RPR ring object as the one selected in step 6), and its equipment parameter is 'Pass-through'.

Note: Ensure the bandwidth is available and not in use on the network element before completing the cross-connect.

See Adding an RPR cross-connect on page 6-21.

| **15** | Click OK. |

—**end**—

Virtual RPR: no OPE circuit packs in core BLSR (example)

EX1302p

Legend

= BLSR protected line slots

= UPSR protected line slots

= OPE circuit pack

= Resilient packet ring

Procedure 5-4
Attaching an OPTera Packet Edge circuit pack to an RPR

At least one resilient packet ring must be provisioned on the network element, with less than the maximum number of OPE circuit packs attached to it. A maximum of 12 OPE circuit packs can be attached to a resilient packet ring when at least one of the OPE circuit packs is either a 4x100BT or 4x100FX circuit pack. A maximum of 16 OPE circuit packs can be attached to a resilient packet ring when all of the OPE circuit packs are 2xGigE.

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)
- ensure you have all the documentation referenced in this procedure

Step	Action
1	Ensure that you log in to all network elements in this configuration. See .
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration drop-down menu.
	Note 1: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
	Note 2: Each RPR cross-connect displayed in the Nodal cross-connect window consists of two rows, selecting one automatically selects both.
	Note 3: If you are provisioning an RPR on a BLSR, you do not need to choose the End NE A or End NE Z values.
4	Click Refresh.
5	Select the existing iPT ring connection from the Nodal Cross-Connects window.

—continued—

Procedure 5-4 (continued)
Attaching an OPTera Packet Edge circuit pack to an RPR

Step	Action
6	Click Edit to open the Edit Cross-Connect dialog box for the network element.
	Note 1: The TO group box contains information about the existing resilient packet ring (RPR) only, that is, two radio buttons labelled Attach and Detach, and all available OPE circuit packs. If the circuit pack is already attached, then the Detach radio button is selected by default. If the circuit pack is not already attached, the Attach radio button is selected by default.
	Note 2: If the maximum number of OPE circuit packs have been attached to the resilient packet ring, the Attach radio button is disabled. You cannot attach any more OPE circuit packs.
7	Select an OPE circuit pack from the Equipment drop down list under the To panel.
	Note: Ensure that the existing RPR has the capacity to accommodate the extra data traffic the new circuit pack brings to the ring.

—**end**—

Procedure 5-5
Detaching an OPTera Packet Edge circuit pack from an RPR

Perform this procedure to detach an OPE circuit pack from a resilient packet ring.

Note: If you provisioned 1WAY STS-1 cross-connects on a two-node system using DS3x12 circuit packs, the STS Rx RFI alarm is raised and UAS-PFE counts increase on the OC-48 facility at the far-end network element. This alarm is not raised when 2WAY cross-connects are provisioned.

Requirement
- Ensure you have at least a level 3 user privilege code (UPC).
- To perform this procedure, ensure you have all the documentation referenced in this procedure.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration drop-down menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Select an iPT Ring cross-connect from the Nodal Cross-Connects table.
6	Click Edit to open the Edit Cross-Connect dialog box for the network element.
	Note 1: The TO group box contains information about the existing resilient packet ring only, that is, two radio buttons labelled Attach and Detach, and all available OPE circuit packs.
	Note 2: If all OPE circuit packs have been detached from the resilient packet ring, the Detach radio button is disabled. You cannot detach any more OPE circuit packs. At this point, the connection acts as a pass-through. To delete this final passthrough and completely deprovision the resilient packet ring see Deleting an RPR cross-connect on page 6-6.

—*continued*—

Procedure 5-5 (continued)
Detaching an OPTera Packet Edge circuit pack from an RPR

Step	Action
7	Select the Detach radio button.
	Note: The TO group box changes to contain the circuit pack that will be detached from the resilient packet ring. The Equipment component will change from a list to a label containing the circuit pack that will be detached from the ring.
8	Click OK.
9	Click Yes in the confirmation dialog box.

<p align="center">—**end**—</p>

Procedure 5-6
Deprovisioning an RPR

Use this procedure to deprovision a resilient packet ring (RPR). This procedure describes the steps involved in deprovisioning bandwidth from a resilient packet ring, removing OPE equipment from a resilient packet ring, and deprovisioning an RPR. You will raise Rx AIS alarms on optical interfaces throughout the course of this procedure. These alarms clear upon completion of the procedure.

> **CAUTION**
> **Risk of traffic loss**
> Ensure cross-connects are not carrying traffic before you delete them. Traffic loss results when a traffic carrying cross-connect is deleted.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration drop-down menu. *Note:* If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Identify all the OPE circuit packs attached to the RPR.
6	Detach all OPE circuit packs from the resilient packet ring except the pass-through. See Detaching an OPTera Packet Edge circuit pack from an RPR on page 5-24.
7	Select the pass-through cross-connect on the iPTRing you want to delete from the Nodal Cross-Connects window.
8	Click Delete. Click Yes in the confirmation dialog box.
9	Click Refresh.

—end—

Nodal cross-connect and BLSR configuration management

Procedures for nodal cross-connect management

Procedures for BLSR configuration management

Procedures for in-service traffic rollover management

Procedure 6-1
Retrieving cross-connects

Requirement

To perform this procedure, ensure you have all the documentation referenced in this procedure.

Note: If you need to add or edit cross-connects after retrieving them, ensure you know the type of configuration in which they take part.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See .
2	Select the network element in the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note 1: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
	Note 2: The information in the columns of the Nodal cross-connect window is dependant on the protection scheme of the specific slots in the selected network element.
4	Click Refresh.

—end—

Procedure 6-2
Deleting a cross-connect

Note: If you are deleting a resilient packet ring cross-connect, refer to
Deleting an RPR cross-connect on page 6-6.

Requirement

To perform this procedure, ensure you have all the documentation referenced
in this procedure.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.

5	**If** you wish to delete	**Then** go to
	only one cross-connect	step 6
	some but not all cross-connects	step 10
	all cross-connects	step 15

6	Select the cross-connect you wish to delete from the list of cross-connects.

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Ensure cross-connects are not carrying traffic before
> you delete them. Deleting a cross-connect that is
> carrying traffic causes traffic loss.

7	Click Delete.
8	Click Yes in the Warning dialog box.
9	Click Refresh.
	You have completed this procedure.

—continued—

Procedure 6-2 (continued)
Deleting a cross-connect

Step	Action
10	Select the first cross-connect in the list you wish to delete.

CAUTION
Risk of traffic loss
Ensure cross-connects are not carrying traffic before
you delete them. Deleting a cross-connect that is
carrying traffic causes traffic loss.

11	Hold down the CTRL key while individually clicking once each on the remaining cross-connects in the list you wish to delete.
12	Click Delete.
13	Click Yes in the Warning dialog box.
14	Click Refresh.
	You have completed this procedure.
15	Select the first cross-connect in the list.

CAUTION
Risk of traffic loss
Ensure cross-connects are not carrying traffic before
you delete them. Deleting a cross-connect that is
carrying traffic causes traffic loss.

16	Hold down the SHIFT key while clicking once on the last cross-connect in the list.
17	Click Delete.
18	Click Yes in the Warning dialog box.
19	Click Refresh.

—**end**—

Procedure 6-3
Deleting an RPR cross-connect

Use this procedure to delete an RPR pass-through cross-connect or a cross-connect that has only one side of its bandwidth allocated. If you want to delete a Packet Edge cross-connect that has bandwidth properly allocated to two optics, see Detaching an OPTera Packet Edge circuit pack from an RPR on page 5-24. This procedure also deprovisions the resilient packet ring.

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Ensure cross-connects are not carrying traffic before you delete them. Traffic loss results when a traffic carrying cross-connect is deleted.

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	**If** you wish to delete **Then** go to

If you wish to delete	**Then** go to
only one cross-connect	step 6
some but not all cross-connects	step 10
all cross-connects	step 15

—continued—

Procedure 6-3 (continued)
Deleting an RPR cross-connect

Step	Action
6	Select the RPR cross-connect you wish to delete from the Nodal Cross-Connects table.

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Ensure cross-connects are not carrying traffic before you delete them. Deleting a cross-connect that is carrying traffic causes traffic loss.

Step	Action
7	Click Delete.
8	Click Yes in the Warning dialog box.

Note: The bandwidth allocated to the ring is removed, and the ring is deleted at the network element.

Step	Action
9	Click Refresh.

You have completed this procedure.

Step	Action
10	Select the first RPR cross-connect in the list you wish to delete.

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Ensure cross-connects are not carrying traffic before you delete them. Deleting a cross-connect that is carrying traffic causes traffic loss.

Step	Action
11	Hold down the CTRL key while individually clicking once each on the remaining RPR cross-connects in the list you wish to delete.
12	Click Delete.
13	Click Yes in the Warning dialog box.

Note: The bandwidth allocated to the ring is removed, and the ring is deleted at the network element.

Step	Action
14	Click Refresh.

You have completed this procedure.

Step	Action
15	Select the first RPR cross-connect in the list.

> ⚠ **CAUTION**
> **Risk of traffic loss**
> Ensure cross-connects are not carrying traffic before you delete them. Deleting a cross-connect that is carrying traffic causes traffic loss.

—continued—

Procedure 6-3 (continued)
Deleting an RPR cross-connect

Step	Action
16	Hold down the SHIFT key while clicking once on the last RPR cross-connect in the list.
17	Click Delete.
18	Click Yes in the Warning dialog box.
	Note: The bandwidth allocated to the ring is removed, and the ring is deleted at the network element.
19	Click Refresh.

—**end**—

Procedure 6-4
Adding a 2WAY or 1WAY cross-connect
(linear or UPSR networks)

You can enter cross-connect parameter values using the OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for the From and To AIDs, or you can accept the values that Site Manager provides automatically.

Note 1: When adding a 2WAY cross-connect between optical and tributary circuit packs, the optical circuit pack in the line slot is the From endpoint. Otherwise, you need to do a Refresh on the Nodal Cross-Connects window before the added cross-connect can be edited or rolled.

Note 2: If you are adding DS1 bulk cross-connects, use the ENT-CRS-VT1 command. See 323-1059-190, TL1 Reference - Part 4 of 4 for valid command parameters. See 323-1059-302, Procedures for using the TL1 Command Builder on page 7-1, for information about running TL1 commands or saving them to a script.

Note 3: If there is a 2xGigE/FC-P2P circuit pack terminating unidirectional traffic (1WAY, 1WAYPR) at the near-end and far-end of a network, then ensure another unidirectional channel in the opposite direction is also provisioned, to create a bidirectional end-to-end connection.

Note 4: On STS-1, STS-3c, STS-12c, STS-24c, and STS-48c connections you can use the Multi-Channel Selector dialog box to bulk-provision multiple connections simultaneously. In the Add Cross-Connect dialog box, click Select to open the Multi-Channel Selector dialog box.

Requirement

To perform this procedure, you must:

- ensure you have all the documentation referenced in this procedure

- ensure virtual concatenation is enabled on the WAN port if virtual concatenation is required. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- ensure the Subrate and Extreach attributes are set to Enable, if a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode). See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

Procedure 6-4 (continued)
Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks)

Step	Action
1	Ensure that you are logged in to the network element to which you will add a cross-connect. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.

Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.

4	Click Refresh.
5	Click Add.

Note: If you are adding a hairpin cross-connect, see Supported hairpin cross-connects on page 6-70 for a description.

6	**If** you	**Then** go to
	wish to provision a Connection ID	step 7
	do not wish to provision a Connection ID	step 9

7	In the Add Cross-Connect dialog box, click once in the Connection ID text field
8	Type the Connection ID.

Note: Up to forty (40) characters are allowed in the Connection ID text field.

9	Select a signal rate from the Rate list. See Parameters available for selection on page 6-64.
10	Select 1WAY or 2WAY, as required, from the Type list.

11	**If**	**Then** go to
	none of the AIDs in the cross-connect you are provisioning requires virtual concatenation	step 12
	one of the AIDs in the cross-connect you are provisioning requires virtual concatenation	step 13

Procedure 6-4 (continued)
Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks)

Step	Action
12	Enter the required equipment and facility parameters for the From and To AIDs in the configuration.
	Note 1: Site Manager automatically populates the available STS parameter fields after you select the Rate and Type.
	Note 2: If you wish to bulk provision all VTs in a VTG, select ALL in the VT menu.
	Note 3: If you wish to bulk provision all VTs in an STS, select ALL in the VTG menu.
	Go to step 26.
13	Enter the required equipment and facility parameters for the AID of this cross-connect that is not on a 2xGigE/FC-P2P circuit pack.
14	In the AID area not associated with the 2xGigE/FC-P2P circuit pack, under STS, click Select.
15	In the Multi-Channel Selector dialog box, under Available, click the first STS you require to be virtually concatenated in this connection.
16	Click the arrow pointing to the right (->).
17	Perform step 15 to step 16 for each remaining required STS to be virtually concatenated in this connection.
18	When all of the STS's you require to be virtually concatenated (on this side of the connection) are under the Selected column, click OK.
19	In the AID area associated with the 2xGigE/FC-P2P circuit pack, select the required SFP module in the Equipment box.
20	Select the required WAN facility in the Facility box.
21	Under STS, click Select.
22	In the Multi-Channel Selector dialog box, under Available, click the first STS you require to be virtually concatenated in this connection.
23	Click the arrow pointing to the right (->).
24	Perform step 22 to step 23 for each remaining required STS to be virtually concatenated in this connection.
25	When all of the STS's you require to be virtually concatenated (on this side of the connection) are under the Selected column, click OK.

—**continued**—

Procedure 6-4 (continued)
Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks)

Step	Action

26	**If** this is	**Then** go to
	not the only 2WAY or 1WAY connection you will be provisioning for this network element	step 27
	the only 2WAY or 1WAY connection you will be provisioning for this network element	step 29

27	Click Apply.
28	Go to step 6
29	Click OK.

<div align="center">—end—</div>

Procedure 6-5
Adding a 2WAY cross-connect (BLSR networks)

You can enter cross-connect parameter values using the OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for the From and To AIDs, or you can accept the values that Site Manager provides automatically.

Note 1: If you have a mixed configuration that has subtending UPSR connections from a BLSR, the direction of the connection in the hub network element must be from the tributary to the BLSR protected OC-48 optical interface.

Note 2: On STS-1, STS-3c, STS-12c, STS-24c, and STS-48c connections you can use the Multi-Channel Selector dialog box to bulk-provision multiple connections simultaneously. In the Add Cross-Connect dialog box, click Select to open the Multi-Channel Selector dialog box.

Requirements

To perform this procedure

- see Allowable cross-connect types between network configurations on page 6-71

- ensure you have all the documentation referenced in this procedure

- ensure you have fulfilled all specific requirements for bandwidth management in a BLSR, if your Layer 1 network is a BLSR
  See Specific requirements for bandwidth management in a BLSR on page 6-24

- ensure virtual concatenation is enabled on the WAN port if virtual concatenation is required. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- ensure the Subrate and Extreach attributes are set to Enable, if a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode). See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

Procedure 6-5 (continued)
Adding a 2WAY cross-connect (BLSR networks)

Step	Action

Step   **Action**

1   Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

2   Select the network element in the Navigation tree.

3   Select Nodal Cross-Connects from the Configuration menu.

     Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.

4   Click Refresh.

5   Click Add.

6
If you	**Then** go to
wish to provision a Connection ID	step 7
do not wish to provision a Connection ID	step 9

7   In the Add Cross-Connect dialog box, click once in the Connection ID field.

8   Type the Connection ID.

     Note: Up to forty (40) characters are allowed in the Connection ID text field.

9   In the Add Cross-Connect dialog box, select a signal rate from the Rate list. See Parameters available for selection on page 6-64.

     Note: OPTera Metro 3500 supports Full VT (VT managed) and VT Assigned (STS-managed) connections. By provisioning a VT1.5 signal rate at a pass-through node, you are provisioning that node to be Full VT. For a signal that terminates at NE A and NE Z as a VT1.5, if you provision an STS signal rate (or higher) at a pass-through node, you are provisioning that node to be VT Assigned.

10   Select 2WAY from the Type list.

11
If	**Then** go to
none of the AIDs in the cross-connect you are provisioning requires virtual concatenation	step 12
one of the AIDs in the cross-connect you are provisioning requires virtual concatenation	step 13

—**continued**—

Procedure 6-5 (continued)
Adding a 2WAY cross-connect (BLSR networks)

Step	Action
12	Select the required equipment, and facility parameters for the From and To AIDs in the configuration.
	Note 1: Site Manager automatically populates the available STS parameter fields after you select the Rate and Type.
	Note 2: If you wish to bulk provision all VTs in a VTG, select ALL in the VT menu.
	Note 3: If you wish to bulk provision all VTs in an STS, select ALL in the VTG menu.
	Go to step 28.
13	Enter the required equipment and facility parameters for the AID of this cross-connect that is not on a 2xGigE/FC-P2P circuit pack.
14	In the AID area not associated with the 2xGigE/FC-P2P circuit pack, click Select.
15	In the Multi-Channel Selector dialog box, under Available, click the first STS you require to be virtually concatenated in this connection.
16	Click the arrow pointing to the right (->).
17	Perform step 15 to step 16 for each remaining required STS to be virtually concatenated in this connection.
18	When all of the STSs you require to be virtually concatenated (on this side of the connection) are under the Selected column, click OK.
19	In the AID area associated with the 2xGigE/FC-P2P circuit pack, select the required SFP module in the Equipment box.
20	Select the required WAN facility in the Facility box.
21	Under STS, click Select.
22	In the Multi-Channel Selector dialog box, under Available, click the first STS you require to be virtually concatenated in this connection.
23	Click the arrow pointing right (->).
24	Perform step 22 to step 23 for each remaining required STS to be virtually concatenated in this connection.
25	When all of the STSs you require to be virtually concatenated (on this side of the connection) are under the Selected column, click OK.
26	Select the End NE A node from the list in the BLSR endpoint panel.
27	Select the End NE Z node from the list in the BLSR endpoint panel.

—continued—

Procedure 6-5 (continued)
Adding a 2WAY cross-connect (BLSR networks)

Step	Action
28	**If** this is

	If this is	**Then** go to
	not the only 2WAY BLSR connection you will be provisioning for this network element	step 29
	the only 2WAY BLSR connection you will be provisioning for this network element	step 31

Step	Action
29	Click Apply.
30	Go to step 6
31	Click OK.

—**end**—

Procedure 6-6
Adding a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect

You can enter cross-connect parameter values using the OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for the From and To AIDs, or you can accept the values that Site Manager provides automatically.

Note 1: If you are adding DS1 bulk cross-connects, use the ENT-CRS-VT1 command. See 323-1059-190, TL1 Reference - Part 3 of 3 for valid command parameters. See 323-1059-302, Procedures for using the TL1 Command Builder on page 7-1, for information about running TL1 commands or saving them to a script.

Note 2: If you provision a 1WAYPR cross-connect on a 2xGigE/FC-P2P circuit pack, ensure there is another connection provisioned in the opposite direction.

Note 3: If there is a 2xGigE/FC-P2P circuit pack terminating unidirectional traffic (1WAY, 1WAYPR) at the near-end and far-end of a network, then ensure another unidirectional channel in the opposite direction is also provisioned, to create a bidirectional end-to-end connection.

Note 4: On STS-1, STS-3c, STS-12c, STS-24c, and STS-48c connections you can use the Multi-Channel Selector dialog box to bulk-provision multiple connections simultaneously. In the Add Cross-Connect dialog box, click Select to open the Multi-Channel Selector dialog box.

Procedure 6-6 (continued)
Adding a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect

Requirement

To perform this procedure, you must:

- ensure you have all the documentation referenced in this procedure

- ensure virtual concatenation is enabled on the WAN port if virtual concatenation is required. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

- ensure the Subrate and Extreach attributes are set to Enable, if a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode). See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu. **Note:** If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Click Add to open the Add Cross-Connect dialog box for the network element.

6	**If** you	**Then** go to
	wish to provision a Connection ID	step 7
	do not wish to provision a Connection ID	step 9

Step	Action
7	In the Add Cross-Connect dialog box, click once in the Connection ID field.
8	Type the Connection ID. **Note:** Up to forty (40) characters are allowed in the Connection ID text field.
9	Select a signal rate from the Rate list. See Parameters available for selection on page 6-64.
10	Select the required cross-connect type from the Type list.

—continued—

Procedure 6-6 (continued)
Adding a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect

Step	Action	
11	**If**	**Then** go to
	none of the AIDs in the cross-connect you are provisioning requires virtual concatenation	step 12
	one of the AIDs in the cross-connect you are provisioning requires virtual concatenation	step 14
12	Enter the required equipment and facility parameters for the From and To AIDs in the configuration.	
	Note 1: Site Manager automatically populates the available STS parameter fields after you select the Rate and Type.	
	Note 2: If you wish to bulk provision all VTs in a VTG, select ALL in the VT menu.	
	Note 3: If you wish to bulk provision all VTs in an STS, select ALL in the VTG menu.	
13	For all 1WAYPR, 2WAYPR, or 2WAYBR connection types, enter the equipment and facility parameters for the Switch Mate as well.	
	Go to step 23.	
14	Perform the following sub-steps for both the FromAID and SwitchMateAID.	
	a. In the AID area, select the required equipment and facility parameters.	
	b. Under STS, click Select.	
	c. In the Multi-Channel Selector dialog box, under Available, click the first STS you require to be virtually concatenated in this connection.	
	d. Click the arrow pointing to the right (->).	
	e. Perform substep c. to substep d. for each remaining required STS to be virtually concatenated on this side of the connection.	
	f. When all of the STSs you require to be virtually concatenated (on this side of the connection) are under the Selected column, click OK.	
15	In the Add Cross-Connect dialog box, in the ToAID area, select the required SFP module in the Equipment box.	
16	Select the required WAN facility in the Facility box.	
17	Select all the required channels to be virtually concatenated on the 2xGigE/FC-P2P end of the connection.	
18	In the ToAID area, under STS, click Select.	

—**continued**—

Procedure 6-6 (continued)
Adding a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect

Step	Action
19	In the Multi-Channel Selector dialog box, under Available, click the first STS you require to be virtually concatenated on this end of the connection.
20	Click the arrow pointing to the right (->).
21	Perform step 19 to step 20 for each remaining required STS to be virtually concatenated on this side of the connection.
22	When all of the STSs you require to be virtually concatenated (on this side of the connection) are under the Selected column, click OK.

Step	If this is	Then go to
23	not the only 1WAYPR, 2WAYPR, or 2WAYBR connection you will be provisioning for this network element	step 24
	the only 1WAYPR, 2WAYPR, or 2WAYBR connection you will be provisioning for this network element	step 26

Step	Action
24	Click Apply.
25	Go to step 6
26	Click OK.

—end—

Procedure 6-7
Adding an RPR cross-connect

You can enter cross-connect parameter values using the OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for the From and To AIDs, or you can accept the values that Site Manager provides automatically.

Note: If you have a mixed configuration that has subtending UPSR connections from a BLSR, the direction of the connection in the hub network element must be from the tributary to the BLSR protected OC-48 optical interface.

Requirement

To perform this procedure

- see Allowable cross-connect types between network configurations on page 6-71

- ensure you have all the documentation referenced in this procedure

- ensure you have fulfilled all specific requirements for RPR over BLSR, if your Layer 1 network is a BLSR. See Specific requirements for bandwidth management in a BLSR on page 6-24.

- ensure you have fulfilled all specific requirements for RPR over UPSR, if your Layer 1 network is a UPSR. See Specific requirements for bandwidth management in a UPSR on page 6-24.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Click Add to open the Add Cross-Connect dialog box for the network element.

6

If you	**Then** go to
wish to provision a Connection ID	step 7
do not wish to provision a Connection ID	step 9

7 In the Add Cross-Connect dialog box, click once in the Connection ID field.

—continued—

Procedure 6-7 (continued)
Adding an RPR cross-connect

Step	Action
8	Type the Connection ID.
	Note 1: Up to forty (40) characters are allowed in the Connection ID text field.
	Note 2: Connection ID is applied for the initial provisioning of the cross-connect only. Once applied the Connection ID cannot be edited. Up to forty (40) characters are allowed in the Connection ID text field.
9	Select the desired signal type (STS1, STS3c, or STS12c) from the Rate list.
10	Select iPT Ring from the Type list.
11	In the From - Side 1 Optics panel, select the Equipment, Facility, and STS required for Side 1 optics, with the following considerations:
	• The circuit packs used for the Side 1 and Side 2 optics must be in different slots.
	• The bandwidth mustbe available and not in use on the network element before completing the cross-connect

12	**If** this is	**Then** go to
	an 'add / drop' RPR connection	step 13
	a 'pass-through' RPR connection	step 16

Step	Action
13	In the To panel, select the required ring in the Ring list.
14	Select the required OPE circuit pack in the Equipment list.
15	Go to step 18.
16	In the To panel, select the required ring in the Ring list.
17	Select Pass-through in the Equipment list.
18	In the From - Side 2 Optics panel, select the Equipment, Facility, and STS required for Side 2 optics, with the following considerations:
	• The circuit packs used for the Side 1 and Side 2 optics are in different slots.
	• The bandwidth must be available and not in use on the network element before completing the cross-connect

<div align="center">—continued—</div>

Procedure 6-7 (continued)
Adding an RPR cross-connect

Step	Action

19	**If** this is	**Then** go to
	not the only RPR connection you will be provisioning for this network element	step 20
	the only RPR connection you will be provisioning for this network element	step 22

20	Click Apply.
21	Go to step 6
22	Click OK.

—**end**—

Specific requirements for bandwidth management in a UPSR

To perform this procedure, ensure all the optical interface circuit packs in the Layer 1 ring are UPSR protected.

See:

• 323-1059-311, Changing the protection scheme from BLSR to UPSR on page 1-12

• 323-1059-311, Changing the protection scheme on an optical facility from 1+1 linear to UPSR on page 1-6

Specific requirements for bandwidth management in a BLSR

To perform this procedure

• ensure all the OC-48 circuit packs in the line slots of the BLSR are BLSR protected. See 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10

• ensure the network elements are present in the BLSR configuration. See Provisioning a BLSR configuration on page 6-34

• ensure you have read and understand 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

⚠ **CAUTION**
Risk of traffic loss
Blocking of provisioning occurs only at a nodal level. Channel reserving / blocking does not span more than one section. After the provisioning rules determine which channels are reserved / blocked on the east and west fiber sections adjacent to an add / drop node, users should ensure they respect the 'reserved' and 'blocked' time slot assignments in all downstream fiber sections until the far-end add / drop node. Provisioning over these time slot assignments downstream may result in dropped traffic if a protection switch occurs.

For BLSR provisioning rules, see 'BLSR networks (2-fiber)' in the *Planning and Ordering Guide*, NTRN10AM.

Procedure 6-8
Adding a hairpin cross-connect

Use this procedure to provision a tributary hairpin cross-connect.

Note: Signals that are picked up and dropped at the same network element on tributaries do not use any of the transport bandwidth within the network processor span of control.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities involved in the planned cross-connect are provisioned and in service

- ensure you are logged in to the network element using an account with a level 3 user privilege code (UPC) or higher

- refer to Supported hairpin cross-connects on page 6-70 for a list of hairpin cross-connect types

- ensure you have all the documentation referenced in this procedure

Step	Action
1	In the Navigation tree, select the network element where you will provision a hairpin cross-connect.
2	Select Nodal Cross-Connects from the Configuration menu. *Note:* If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
3	Click Refresh.
4	Add the required cross-connect from the first tributary facility to the second tributary facility. See Adding a 2WAY or 1WAY cross-connect (linear or UPSR networks) on page 6-9. *Note:* If this is a unidirectional hairpin cross-connect, make the incoming tributary facility the From facility, and make the outgoing tributary facility the To facility. See Hairpin cross-connect on page 6-26. *Note 1:* Site Manager automatically populates the available STS parameter fields after you select the Rate and Type. *Note 2:* If you wish to bulk provision all VTs in a VTG, select ALL in the VT menu. *Note 3:* If you wish to bulk provision all VTs in an STS, select ALL in the VTG menu.

—continued—

Procedure 6-8 (continued)
Adding a hairpin cross-connect

Step	Action
5	**If** this is **Then** go to
	not the only hairpin connection you will be provisioning for this network element step 6
	the only hairpin connection you will be provisioning for this network element step 8
6	Click Apply.
7	Go to step 3
8	Click OK.

—**end**—

Hairpin cross-connect

EX0469
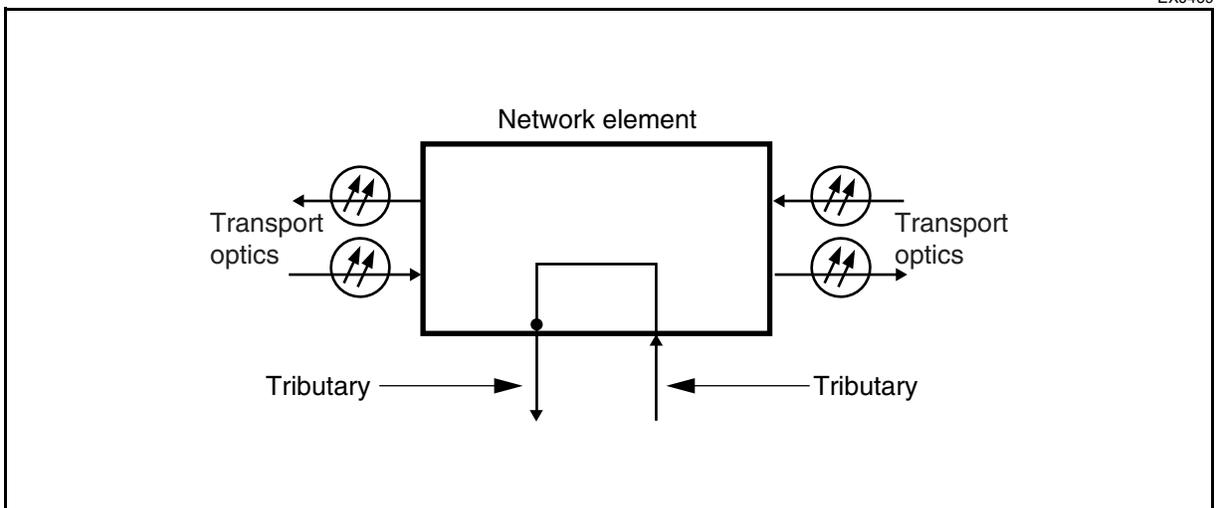
Procedure 6-9
Editing 2WAY and 1WAY cross-connects (linear or UPSR networks)

If you are editing DS1 bulk cross-connects, use the ED-CRS-VT1 command. See 323-1059-190, TL1 Reference - Part 4 of 4 for valid command parameters. See 323-1059-302, Procedures for using the TL1 Command Builder, for information about running TL1 commands or saving them to a script.

Requirement

To perform this procedure, ensure you have all the documentation referenced in the procedure.

Step	Action
1	Ensure that you are logged in to the network element whose cross-connect you wish to edit. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Select the cross-connect to be edited from the list of cross-connects.

6

If you want to	**Then** go to
edit the Connection ID	step 7
edit the cross-connect type	step 8

7   To edit the Connection ID, see Adding or changing a Connection ID on an existing connection on page 6-32.

You have completed this procedure.

8   Click Edit.

—**continued**—

Procedure 6-9 (continued)
Editing 2WAY and 1WAY cross-connects (linear or UPSR networks)

Step	Action
9	Select the required cross-connect type from the Type list. See Allowable cross-connect type edits in UPSR and linear 1+1 configurations on page 6-70.
	Note 1: If you are editing the cross-connect type from 2WAY to 1WAY, you are not adding or removing a component of the original cross-connect. For example, a 2WAY cross-connect edited to a 1WAY cross-connect produces two 1WAY cross-connects in opposite directions, so that traffic in both directions is unaffected.
	Note 2: If you are editing the cross-connect type from 1WAY to 2WAY, you must use two 1WAY cross-connects with traffic in both directions.
10	Click OK. Click Yes in the warning dialog box.
11	Click Refresh in the Nodal Cross-Connects dialog box.

<div align="center">—**end**—</div>

Procedure 6-10
Editing a 2WAY cross-connect (BLSR networks)

Only the Connection ID is editable for a BLSR protected connection. The Endpoint swap button is enabled to swap the From and Switch mate endpoints of path protected cross-connects, only.

Requirement

To perform this procedure, you must

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service
- log in to the network element using an account with a level 3 user privilege code (UPC)
- ensure you have fulfilled all specific requirements for bandwidth management in a BLSR. See Specific requirements for bandwidth management in a BLSR on page 6-24.
- ensure you have all the documentation referenced in this procedure

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Select the cross-connect to be edited from the list of cross-connects.
6	Click Edit.
7	Click in the Connection ID field and highlight the Connection ID.
8	Type the new Connection ID into the field.
9	Click OK. Click Yes in the warning dialog box.
10	Click Refresh in the Nodal Cross-Connects dialog box.

—end—

Procedure 6-11
Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect

If you are editing DS1 bulk cross-connects, use the ED-CRS-VT1 command. See 323-1059-190, TL1 Reference - Part 4 of 4 for valid command parameters. See 323-1059-302, Procedures for using the TL1 Command Builder on page 7-1, for information about running TL1 commands or saving them to a script.

Requirement

To perform this procedure, ensure you have all the documentation referenced in this procedure.

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
4	Click Refresh.
5	Select the cross-connect to be edited from the list of cross-connects.
6	Click Edit.

7	**If** you are	**Then**
	editing the cross-connect type	go to step 8
	swapping the From AID and the switch mate	go to step 9
	adding path protection	go to step 10

—continued—

Procedure 6-11 (continued)
Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect

Step	Action
8	To edit the cross-connect type from unprotected to protected, protected to unprotected, unidirectional to bidirectional, or bidirectional to unidirectional

Note 1: If you are editing the cross-connect type from bidirectional to unidirectional, you are not adding or removing a component of the original cross-connect. For example, a bidirectional cross-connect edited to a unidirectional cross-connect produces two unidirectional cross-connects in opposite directions, so that traffic in both directions is unaffected.

Note 2: To edit the cross-connect type from unidirectional to bidirectional, you must use two 1WAY cross-connects with traffic in both directions.

- Select the required cross-connect type from the Type list. See Allowable cross-connect type edits in UPSR and linear 1+1 configurations on page 6-70.

- Click OK. Click Yes in the warning dialog box.

- Click Refresh in the Nodal Cross-Connects dialog box.

9

> ⚠️ **CAUTION**
> **Risk of loss of path protection**
> If you delete the Switch Mate, you are deleting path protection at the cross-connect. If you add the Switch Mate, you are adding path protection at a cross-connect.

> ⚠️ **CAUTION**
> **Risk of traffic loss**
> A small traffic loss (of less than 0.3 milliseconds) occurs after you swap the FromAid with the SwitchMate in a 2WAYPR UPSR connection. To avoid the traffic loss, operate a manual path protection switch before the swap so that the SwitchMate path is active. For details on operating a manual path protection switch in a UPSR, see 323-1059-311, *Protection Switching*.

To swap the From AID with the Switch Mate, click Swap. Click Yes.

Note: When you swap the From and Switch Mate end points, you also swap all other protected cross-connects in the path of the same rate that use the same From and Switch Mate AIDs.

| 10 | To add path protection, select the Equipment and Facility for the switch mate from the switch mate panel of the Edit Cross-connect dialog box. |

—**end**—

Procedure 6-12
Adding or changing a Connection ID on an existing connection

Use this procedure to add or change a Connection ID on an existing connection.

Note: Once a Connection ID is assigned to a Resilient Packet Ring (RPR), it cannot be changed. Only the Attach and Detach options are available for an RPR.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities used by the planned cross-connects are provisioned and in service

- log in to the network element using an account with a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network element in the navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
4	Click Refresh.
5	Select the required cross-connect.
6	Click Edit in the Nodal Cross-Connects window.
7	Click once in the Connection ID text field.
8	Type in a new Connection ID.
9	Click OK.

—end—

Procedure 6-13
Retrieving a BLSR configuration

Perform this procedure to retrieve BLSR configuration data for a BLSR from an NPx or from a shelf processor (SPx).

Requirement

To perform this procedure, ensure you have all the documentation referenced in this procedure.

Step	Action
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select BLSR Ring Management from the Configuration menu.
3	In the BLSR Ring Configuration Information window, click on the Rings Configuration tab.
4	Select the network element or NPx in the NE list.
5	Select a BLSR from the Rings list.
6	Click the Temporary Configuration radio button or the Working Configuration radio button as required.

<div align="center">—end—</div>

Procedure 6-14
Provisioning a BLSR configuration

Use this procedure to provision a BLSR configuration.

Note 1: If you make a mistake during the provisioning steps, you can back out of the provisioning steps by clicking Cancel. However, once the provisioning is committed, you cannot backout.

Note 2: If this is the first time provisioning a new BLSR configuration, clicking cancel any time before committing will clear all provisioning information entered up to that point.

Requirements

To perform this procedure, you must

- ensure the equipment and facilities on the OC-48 circuit packs in the line slots of each node used by the planned BLSR are BLSR protected, provisioned, and in service, see 323-1059-311, Changing the protection scheme from UPSR to BLSR on page 1-10

- obtain or create a map of all the network elements for the BLSR. See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

- see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65 for cross-connect parameters

Step	Action	
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.	
2	Select BLSR Ring Management from the Configuration menu.	
3	**If**	**Then** go to
	you must first create a new BLSR, then add a node to the BLSR	step 4
	you need to add a node to an existing BLSR	step 17
	you only need to commission an existing BLSR, without adding a node to the ring	step 29

—continued—

Procedure 6-14 (continued)
Provisioning a BLSR configuration

Step	Action

Creating an empty BLSR ring in the Rings List

4   In the BLSR Ring Configuration Information window, click on the Rings List tab.

5   Select the NPx from the NE list.

6   Click Add.

7   Type the name of the new ring into the Add Ring dialog box.

8   Click OK.

Adding a node to the BLSR ring

9   In the Navigation tree, select the NPx.

10   From the Configuration menu, select Map Topology.

11   In the Map Topology window, click the Options menu and select Show slot numbers.

12   In the Show area, ensure only the BLSR checkbox is checked.

13   Click Refresh.

14   Assign an APS ID for each node in the BLSR topology and separately make a note of these assignments.

15   Determine the East and West directions around your BLSR ring according to the carrier's internal conventions.

          Note: The direction assignments (East or West) are arbitrary but must be consistent throughout the BLSR configuration.

16   Using the convention adopted in step 15, assign the east and west facility and APS ID for each BLSR network element.

17   In the BLSR Rings Configuration Information window, click on the Rings Configuration tab.

18   Select the NPx from the NE list.

19   Select the name of the new ring (the ring name you entered in step 7) in the Rings list.

20   Click Add.

21   In the Add Node dialog box, select the network element you will add to the BLSR ring in the NE list.

22   Select the APS ID of the network element you selected in step 21, in the NE APS ID list.

23   Select the east optical facility (Site Manager default is slot 12) in the East Facility list.

—**continued**—

Procedure 6-14 (continued)
Provisioning a BLSR configuration

Step	Action
24	In the East APS ID list, select the APS ID of the network element adjacent to the new network element's east optical facility (selected in step 23).
25	Select the west optical facility (Site Manager default is slot 11) in the West Facility list.
26	In the West APS ID list, select the APS ID of the network element adjacent to the new network element's west optical facility (selected in step 25).
27	Click OK.
28	Repeat step 18 through step 27 for each network element you will add to the BLSR.

Commissioning the BLSR ring

Step	Action
29	In the BLSR Ring Configuration Information window, select the Rings Commissioning tab.
30	Select the NPx from the NE list box.
31	Select the Temporary Configuration radio button.
32	Click Check. *Note:* Allow enough time for the check to run.
33	Click Load [NP->SP]. *Note:* Allow enough time for the load to run.
34	Click Invoke. Click Yes in the warning dialog box. *Note:* Allow enough time for the invoke to run.
35	Click Commit. Click OK in the confirmation dialog box.

—end—

Procedure 6-15
Editing a BLSR configuration name

Use this procedure to edit a BLSR configuration name.

Note: BLSR names are up to 40 character alphanumeric strings that can contain underscores, but cannot contain quotation marks.

Requirements

To perform this procedure, you must

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select BLSR Ring Management from the Configuration menu.
3	In the BLSR Ring Configuration Information window, click on the Rings List tab.
4	Select the NPx from the NE list.
5	Select a BLSR configuration in the display table.
6	Click Edit.
7	In the Edit Ring dialog box, type the new name of the ring in the New Name field.
8	Click OK.

Note: Once the BLSR configuration name is changed, the change is propagated throughout the ring.

—**end**—

Procedure 6-16
Deleting a BLSR configuration from the NPx

Use this procedure to delete a BLSR configuration from the NPx only, or from the NPx and all the SPx circuit packs in the BLSR.

Requirements

To perform this procedure, you must

- obtain or create a map of all the network elements in the BLSR. See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

- ensure any BLSR ring to be deleted is not carrying traffic

- ensure any node to be deleted from a BLSR configuration is not carrying any traffic

Step	Action
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select the network processor in the Navigation tree.
3	Select BLSR Ring Management from the Configuration menu.
4	In the BLSR Ring Configuration Information window, click on the Rings Configuration tab.
5	Select the BLSR configuration you wish to delete in the display table.
6	Record the network elements in the BLSR configuration that you wish to delete.

7	**If** you want to delete the BLSR configuration from	**Then** go to
	the NPx only	step 9
	the NPx and all the SPx circuit packs in the BLSR	step 8

8	Delete all TDM and OPE cross-connects associated with the BLSR configuration. See Deleting a cross-connect on page 6-4. Go to step 10.
9	Remove all nodes involved in this BLSR configuration from the NPx span of control. See 323-1059-520, Removing a network element from the span of control of a network processor on page 4-6.

<p align="center">—continued—</p>

Procedure 6-16 (continued)
Deleting a BLSR configuration from the NPx

Step	Action
10	In the BLSR Ring Configuration Information window, click on the Rings List tab.
11	Select the BLSR configuration you wish to delete in the display table.
12	Click Delete.
13	In the confirmation dialog box, click Yes.
14	In the BLSR Ring Configuration Information window, click on the Rings Commissioning tab.
15	Click Load [NP->SP]. *Note:* Allow enough time for the load to run.
16	Click Invoke. Click Yes in the warning dialog box. *Note:* Allow enough time for the invoke to run.
17	Click Commit. Click OK in the confirmation dialog box.

18	**If** you deleted the BLSR configuration from	**Then** go to
	the NPx only	step 19
	the NPx and all the SPx circuit packs in the BLSR	you have completed this procedure

19	Add all nodes involved in this BLSR configuration (originally removed in step 8) back into the NPx span of control. See 323-1059-520, Adding a network element to the span of control of a network processor on page 4-3.

<p align="center">—end—</p>

Procedure 6-17
Deleting a BLSR configuration from an SPx (when this BLSR configuration is not on NPx)

Use this procedure to delete a BLSR configuration from an SPx when the NPx does not also have this BLSR configuration.

Requirements

To perform this procedure, you must

- obtain or create a map of all the network elements in the BLSR. See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

- ensure the network element with the BLSR configuration to be deleted, is connected by fiber to the network and has SDCC enabled

Step	Action
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Log in to the network element whose SPx stores the BLSR configuration you wish to delete.
3	Select this network element in the Navigation tree.
4	Retrieve all cross-connects on this network element.
5	Delete all cross-connects associated with the BLSR configuration you will delete.
6	Select the network processor in the Navigation tree.
7	Select BLSR Ring Management from the Configuration menu.
8	In the BLSR Ring Configuration Information window, click on the Rings Configuration tab.
9	In the NE list, select the network element whose SPx stores the BLSR configuration you wish to delete.
10	Record the following BLSR configuration data: • NE name • NE APS ID
11	In the BLSR Ring Configuration Information window, click on the Rings List tab.

—continued—

Procedure 6-17 (continued)
Deleting a BLSR configuration from an SPx (when this BLSR configuration is not on NPx)

Step	Action	
12	Select the NPx in the NE list.	
13	**If**	**Then** go to
	there is a BLSR configuration listed with the same name as the BLSR configuration you wish to delete from the SPx	step 14
	there is no BLSR configuration listed with the name of the BLSR configuration you wish to delete from the SPx	step 15
14	Edit the name of the NPx version of this BLSR configuration to another name. Editing a BLSR configuration name on page 6-37.	
15	Create a BLSR configuration on the NPx with the same name as the BLSR configuration you wish to delete from the SPx.	
16	Add the SPx (with the BLSR configuration you wish to delete) to the BLSR configuration created in step 15, with the following considerations:	
	• the SPx must have the same APS ID as its APS ID in the BLSR configuration to be deleted, recorded in step 10	
	• if, in the BLSR configuration to be deleted, the SPx was not originally included, assign any APS ID (between 0 and 15) to the SPx	
	See Provisioning a BLSR configuration on page 6-34.	
17	Add a second node to the new BLSR configuration created in step 15, ensuring the second node is not in your network. See Provisioning a BLSR configuration on page 6-34.	
18	In the BLSR Ring Configuration Information window, select the Rings Commissioning tab.	
19	Click Load [NP -> SP].	
	Note: Allow enough time for the load to run. You will be notified of the result.	
20	Click Invoke. Click Yes in the warning dialog box.	
	Note: Allow enough time for the invoke to run.	
21	Click Commit. Click OK in the confirmation dialog box.	
22	In the BLSR Ring Configuration Information window, click on the Rings List tab.	
23	Select the NPx in the NE list.	
24	Select the BLSR configuration in the display table.	
25	Click Delete.	
26	In the confirmation dialog box, click Yes.	

—**continued**—

Procedure 6-17 (continued)
Deleting a BLSR configuration from an SPx (when this BLSR configuration is not on NPx)

Step	Action
27	Click Load [NP->SP].
	Note: Allow enough time for the load to run.
28	Click Invoke. Click Yes in the warning dialog box.
	Note: Allow enough time for the invoke to run.
29	Click Commit. Click OK in the confirmation dialog box.

—**end**—

Procedure 6-18
Deleting a node from a BLSR configuration

Use this procedure to delete a node from a BLSR configuration.

Note: If you make a mistake during the provisioning steps, you can back out of the provisioning steps by pressing Cancel. However, once the provisioning is committed, you cannot backout.

Requirements

To perform this procedure, you must

- obtain or create a map of all the network elements for the BLSR. See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

- ensure any BLSR ring to be deleted is not carrying traffic

- ensure any node to be deleted from a BLSR configuration is not carrying any traffic

Step	Action
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select BLSR Ring Management from the Configuration menu.
3	In the BLSR Ring Configuration Information window, click on the Rings Configuration tab.

Deleting the node(s) from the temporary BLSR configuration

Step	Action
4	Select the NPx in the NE list.
5	Select the Temporary Configuration radio button.
6	**If** you are deleting	**Then** go to

If you are deleting	Then go to
one node from a BLSR configuration	step 7
some but not all nodes from a BLSR configuration	step 9
all nodes from a BLSR configuration	step 12

Step	Action
7	Select the network element you wish to delete in the display table.

—continued—

Procedure 6-18 (continued)
Deleting a node from a BLSR configuration

Step	Action
8	Click Delete.
	Go to step 16.
9	Select a node you wish to delete in the display table.
10	On your keyboard, hold down the CTRL key while selecting (left-clicking your mouse) each of the remaining nodes to be deleted in the display table.
11	After you have selected all the nodes to be deleted, click Delete.
	Go to step 16.
12	In the display table, select the first node at the top of the list.
13	Scroll down to the bottom of the list.
14	On your keyboard, hold down the SHIFT key while selecting (left-clicking your mouse) the bottom node on the list.
15	Click Delete.

Commissioning the BLSR configuration

16	In the BLSR Ring Configuration Information window, select the Rings Commissioning tab.
17	Select the NPx in the NE list.
18	Select the Temporary Configuration radio button.
19	Select a Deleted table entry from the list of temporary configurations.
20	Select all the nodes of your BLSR in the display table.
	• Select one node in your BLSR in the display table.
	• On your keyboard, hold down the CTRL key while left-clicking your mouse over each of the remaining nodes in your BLSR.
21	Click Check.
	Note: Allow enough time for the check to run.
22	Click Load [NP->SP].
	Note: Allow enough time for the load to run.
23	Click Invoke. Click Yes in the warning dialog box.
	Note: Allow enough time for the invoke to run.
24	Click Commit. Click OK in the confirmation dialog box.

—**end**—

Procedure 6-19
Performing a BLSR audit and retrieving diagnostics

Use this procedure to force or schedule a BLSR configuration and connection audit.

Note 1: Any configuration mismatches found during the audit will raise a BLSR Configuration Audit fail alarm. The mismatches are listed in the Rings Diagnostics tab. To clear alarms, see 323-1059-543, *Alarm and trouble clearing*.

Note 2: Any connection mismatches found during the audit will raise a BLSR Connection Audit Fail alarm. The mismatches are listed in the Rings Diagnostics tab. To clear alarms, see 323-1059-543, *Alarm and trouble clearing*.

Requirements

To perform this procedure, you must

- obtain or create a map of all the network elements for the BLSR. See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Log in to the network processor that manages your BLSR configurations. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select BLSR Ring Management from the Configuration menu.
3	**If** you want to **Then** go to

If you want to	Then go to
schedule an audit	step 4
perform a forced audit	step 9
retrieve audit diagnostics	step 14

Procedure 6-19 (continued)
Performing a BLSR audit and retrieving diagnostics

Step	Action

Scheduling an Audit

4	In the BLSR Ring Configuration Information window, click on the Rings Audit tab.
5	Click Edit.
6	In the Edit Audit Parameters dialog box, select the BLSR configuration in the Ring list.
7	Type the Audit interval in the Audit interval field.
	Note: You can enter any audit interval in the range of 15 minutes to 10080 minutes (in 15 minute increments).
8	Click OK.
	You have completed this procedure.

Performing a forced audit

9	In the BLSR Ring Configuration Information window, click on the Rings Audit tab.
10	Select the BLSR configuration you wish to audit in the Ring list.
11	Click Force Audit.
12	In the Force Audit Parameters dialog box, select the BLSR configuration you wish to audit in the Ring list.
13	Click OK.

Retrieving audit diagnostics

14	In the BLSR Ring Configuration Information window, click on the Rings Diagnostics tab.
15	Select the BLSR in the Ring list.
16	Click Refresh.

—**end**—

Procedure 6-20
Setting up a backup NPx for a BLSR

Use this procedure to set up a backup NPx for a given BLSR configuration.

Requirements

To perform this procedure, you must

- obtain or create a map of all the network elements of the BLSR.
  See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to
  perform any provisioning task, users with less than level 3 UPC have
  read-only access

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Log in to the secondary NPx for this BLSR. See 323-1059-302, Procedures for interface login and logout on page 2-1.
	Note: The primary NPx is the NPx that begins this procedure already having the BLSR configuration on it. The secondary NPx is the backup NPx.
2	Remove all nodes involved in this BLSR configuration from the secondary NPx span of control. See 323-1059-520, Removing a network element from the span of control of a network processor on page 4-6.
3	Select BLSR Ring Management from the Configuration menu.
4	In the BLSR Ring Configuration Information window, click Rings Commissioning.
5	Select the secondary NPx in the NE list.
6	Click Remote Load [NE -> NP].
7	In the Remote Load of Ring Map to NP dialog box, select the BLSR in the Ring list.
8	Select the primary NPx in the Remote Source list.
9	Click OK.
10	In the Rings Commissioning tab of the BLSR Ring Configuration Information window, click Load [NP -> SP].
	Note: Allow enough time for the load to run.
11	Click Invoke. Click Yes in the warning dialog box.
	Note: Allow enough time for the invoke to run.

—**continued**—

Procedure 6-20 (continued)
Setting up a backup NPx for a BLSR

Step	Action
12	Click Commit. Click OK in the confirmation dialog box.
13	Add the nodes in this BLSR configuration to the secondary NPx span of control. See 323-1059-520, Adding a network element to the span of control of a network processor on page 4-3.

—**end**—

Procedure 6-21
Moving a BLSR configuration from one NPx to another NPx

Use this procedure to move a BLSR configuration from one NPx to another NPx. After the procedure is completed, the BLSR configuration will be on the target NPx only.

Requirements

To perform this procedure, you must

- obtain or create a map of all the network elements for the BLSR. See 323-1059-520, Retrieving a new map on page 5-3.

- use an account with a level 3 or higher user privilege code (UPC) to perform any provisioning task, users with less than level 3 UPC have read-only access

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Perform Setting up a backup NPx for a BLSR on page 6-47.
2	Remove all nodes involved in the BLSR configuration from the primary NPx span of control. See 323-1059-520, Removing a network element from the span of control of a network processor on page 4-6. ***Note:*** The primary NPx is the source NPx from which you first copied the BLSR configuration. The secondary NPx is the NPx where you moved the BLSR configuration.
3	Select BLSR Ring Management from the Configuration menu.
4	In the BLSR Ring Configuration Information window, click on the Rings List tab.
5	Select the primary NPx in the NE list.
6	Select the BLSR configuration in the display table.
7	Click Delete.
8	In the confirmation dialog box, click Yes.
9	In the BLSR Ring Configuration Information window, click on the Rings Commissioning tab.
10	Click Load [NP -> SP]. ***Note:*** Allow enough time for the load to run.

—*continued*—

Procedure 6-21 (continued)
Moving a BLSR configuration from one NPx to another NPx

Step	Action
11	Click Invoke. Click Yes in the warning dialog box.
	Note: Allow enough time for the invoke to run.
12	Click Commit. Click OK in the confirmation dialog box.

—**end**—

Procedure 6-22
Selecting Show in-service traffic rollover

> **CAUTION**
> **Switch mates for path switched connections do not roll over automatically**
> In UPSR network variants, switch mates in 1WAYPR, 2WAYPR, or 2WAYBR connections do not roll over automatically. Roll the switch mate in the same way as a working endpoint. The protection for 1+1 linear protected traffic rolls over automatically

Requirements

To perform this procedure, you must

- ensure you have at least a level 3 user privilege code (UPC)

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.
2	Select a network element to roll over from the Navigation tree.
3	Select Nodal Cross-Connects from the Configuration menu.
4	Click Refresh.
5	Select the cross-connect you wish to roll over.
6	Under Details, select the In-service Roll Over tab.
7	Repeat step 2 through step 6 for each network element to be rolled over.

—end—

Procedure 6-23
Rolling endpoints in a network

> ⚠ **CAUTION**
> **Switch mates for path switched connections do not roll over automatically**
> In UPSR network variants, switch mates in 1WAYPR, 2WAYPR, or 2WAYBR connections do not roll over automatically. Roll the switch mate in the same way as a working endpoint. The protection for 1+1 linear protected traffic rolls over automatically

This procedure rolls over endpoints in a configuration. The cross-connect and slot are identified in the originating procedural step. The originating procedural step is the link that brought you to this procedure. The network elements in this procedure are identified as the first network element and the second network element. There are always at least two endpoints involved in every step. After you have selected and performed a Bridge action on the first network element and endpoints, you must select the second network element identified in the originating step and perform the necessary tasks.

Step	Action
1	Select the network element identified first in the originating step from the Navigation tree.
	Note: In this procedure, the network element chosen in this step is referred to as the first network element.
2	Click Refresh in the Nodal Cross-Connects window.
3	Select the cross-connect and appropriate slot as identified in the originating step from the Nodal Cross-Connects window.
4	Under Details, select the In-service Roll Over tab.
5	Under Rolled Endpoint, select the equipment and facility to which you will roll the endpoint. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note: Remember to use the same time slot assignment number for each rolled endpoint across the network.

—**continued**—

Procedure 6-23 (continued)
Rolling endpoints in a network

Step	Action
6	Click Bridge.
7	Select the second network element identified in the originating step from the Navigation tree.
	Note: In this procedure, the network element chosen in this step is referred to as the second network element.
8	Select the cross-connect and appropriate slot as identified in the originating step from the Nodal Cross-Connects window.
9	Under Details, select the In-service Roll Over tab.
10	Under Rolled Endpoint, select the equipment and facility to which you will roll the endpoint. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.
	Note: Remember to use the same time slot assignment number for each rolled endpoint across the network.
11	Click Bridge.
12	Select the Bridged endpoint from the Nodal Cross-Connects window.
13	Click Switch. Click OK in the confirmation dialog box.
14	Select the first network element from the Navigation tree.
15	Select the Bridged endpoint in the first network element from the Nodal Cross-Connects window.
16	Click Switch. Click Yes in the warning dialog box.
17	Select the switched endpoint from the Nodal Cross-Connects window.
18	Click Commit. Click Yes in the warning dialog box.
19	Select second network element in the Navigation tree.
20	Select the switched endpoint in the second network element from the Nodal Cross-Connects window.
21	Click Commit. Click Yes in the warning dialog box.

—**end**—

Procedure 6-24
Backing out of a traffic rollover

Use this procedure to back out of an in-service traffic rollover that is in the bridged or switched state.

Requirements

To perform this procedure, you must

- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- use an account with a level 3 or higher user privilege code (UPC)

  Note: You can retrieve the status of an in-service traffic rollover with a level 1 UPC.

- ensure the equipment and facilities are provisioned and in service

Step	Action
1	Select the network element that contains the bridged or switched endpoint in the Navigation tree.
2	Select Nodal Cross-Connects from the Configuration menu.
3	Click Refresh.
4	Select the cross-connect and appropriate slot as identified in the originating step from the Nodal Cross-Connects window.
5	Under Details, select the In-service Roll Over tab.
6	Click Backout. Click OK in the confirmation dialog box.
7	If the endpoint was first in the switched state, click Backout a second time.

—*end*—

Procedure 6-25
Retrieving the status of a traffic rollover

Use this procedure to retrieve the status of cross-connects that are in the process of an in-service traffic rollover.

Requirement

To perform this procedure, you must log in to the network elements using an account with a level 1 or higher user privilege code (UPC).

Step	Action
1	Select the network element that contains the cross-connects.
2	Select Nodal Cross-Connects from the Configuration menu.
3	Click Refresh.

—**end**—

Procedure 6-26
Rolling over traffic between tributary circuit packs

Use this procedure to move sparsely used facilities on several tributary circuit packs onto a smaller number of circuit packs. The circuit pack slots left empty are available for other services.

See:

- Endpoint roll over between circuit packs - rolling over path segment on page 6-58

- Endpoint roll over between circuit packs - rolling over complete path on page 6-58.

Requirements

To perform this procedure you must

- ensure the correct traffic is available on the destination facility of the endpoint being rolled

- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- ensure that you first deprovision STS path trace before the rollover if you are rolling a DS3 to an optical endpoint

- log in to the network element using an account with a level 3 or higher user privilege code (UPC)

  Note: You can retrieve the status of an in-service traffic rollover with a level 1 UPC.

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See: • 323-1059-520, Enabling or disabling path trace messages on page 2-7 • 323-1059-520, Retrieving path trace messages on page 2-6.
2	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

Procedure 6-26 (continued)
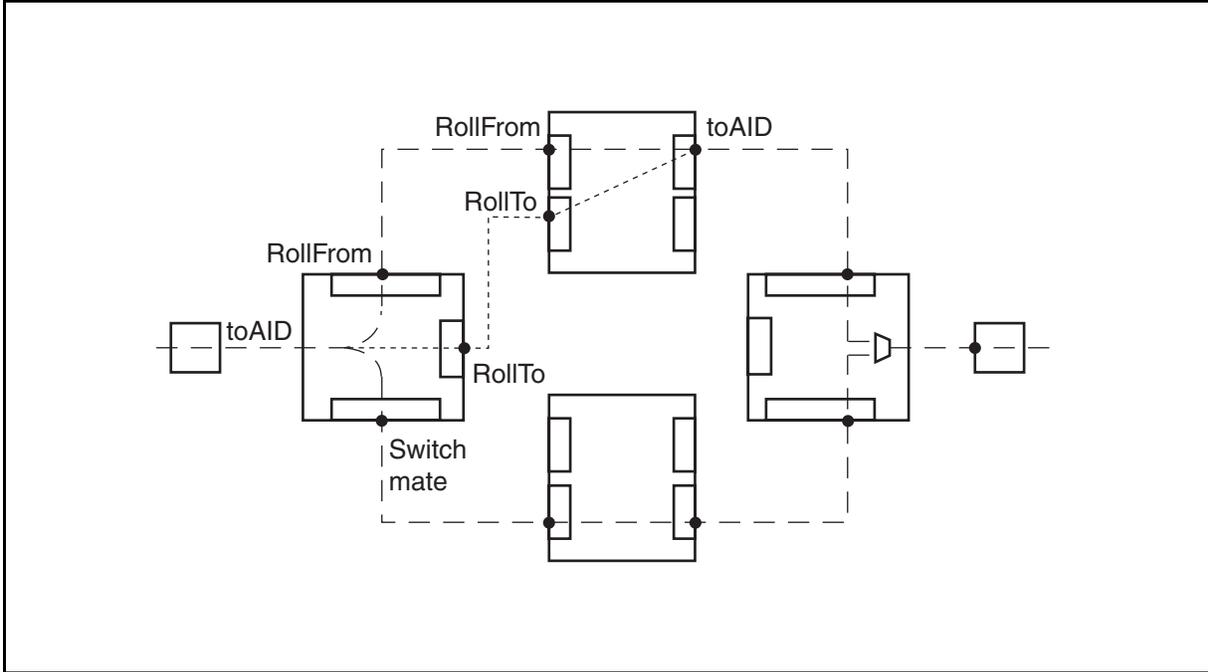**Rolling over traffic between tributary circuit packs**

| Step	Action
3	Select Nodal Cross-Connects from the Configuration menu.
4	Click Refresh. ***Note:*** If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
5	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
6	Select the cross-connect and appropriate slot as identified in the originating step from the Nodal Cross-Connects window.
7	Under Details, select the In-service Roll Over tab.
8	Under Rolled Endpoint, select the equipment and facility to which you will roll the endpoint. For AID parameters see OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65. ***Note 1:*** Remember to use the same time slot assignment number for each rolled endpoint across the network. ***Note 2:*** To back out of a BRIDGED state to an IDLE state, or from a SWITCHED state to a BRIDGED state, click Backout. ***Note 3:*** If you cannot roll to an end point that is involved in a 1WAYPR or 2WAYPR connection, see Rolling over 1WAYPR and 2WAYPR cross-connects combined with 1WAY cross-connects on page 6-61.
9	Click Bridge. ***Note:*** If there is more than one cross-connect on the same tributary facility, you must select the newly bridged cross-connect from the Nodal Cross-Connects window.
10	Click Switch. Click Yes in the warning dialog box.
11	Click Commit. Click Yes in the warning dialog box.
12	Ensure the equipment and facilities, where the traffic was rolled from, are put out of service (OOS). See 323-1059-350, Changing a facility state to Out of Service (OOS) on page 2-25.

—end—

Endpoint roll over between circuit packs - rolling over path segment

EX0396

Endpoint roll over between circuit packs - rolling over complete path

EX0397
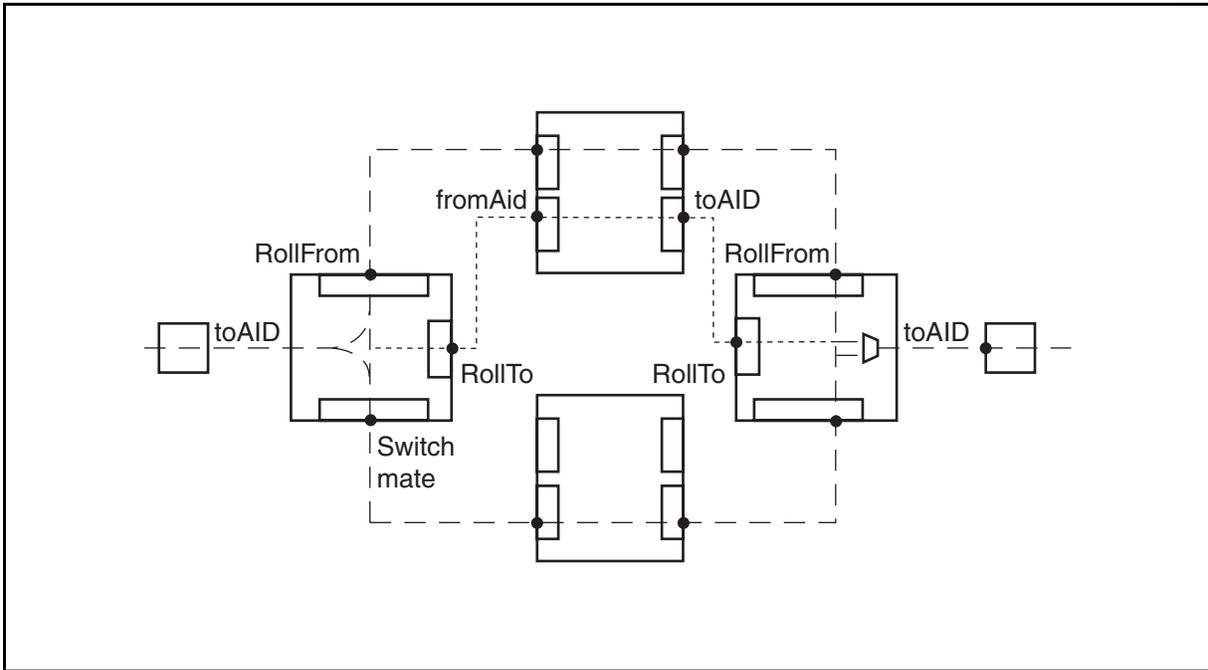
Procedure 6-27
Rolling over traffic on hairpin cross-connects

A hairpin cross-connect is one that has its two endpoints on tributary circuit packs. The two endpoints can be on the same tributary circuit pack or on different tributary circuit packs.

See Hairpin cross-connect on page 6-26 for an example of a hairpin cross-connect. See Supported hairpin cross-connects on page 6-70 for a list of hairpin types.

Note 1: A hairpin cross-connect on the same tributary facility must be 1WAY.

Note 2: You cannot roll over a hairpin cross-connect that has its two endpoints on the same facility of a tributary circuit pack because the endpoints are in use.

Requirements

To perform this procedure, you must

- obtain or create a traffic map for the system

- ensure you have a cross-connect list for the services on your system

  Note: The list must indicate which cross-connects are in end network elements and which are in pass-through network elements.

- log in to the network element using an account with a level 3 or higher user privilege code (UPC)

  Note: You can retrieve the status of an in-service traffic rollover with a level 1 UPC.

- ensure you have all the documentation referenced in this procedure

Step	Action
1	Enable and retrieve path trace messages to verify that the correct circuit is being used whenever you perform an in-service traffic rollover. See: • 323-1059-520, Enabling or disabling path trace messages on page 2-7 • 323-1059-520, Retrieving path trace messages on page 2-6.
2	Ensure that you log in to all network elements in this configuration. See 323-1059-302, Procedures for interface login and logout on page 2-1.

Procedure 6-27 (continued)
Rolling over traffic on hairpin cross-connects

Step	Action
3	Select Nodal Cross-Connects from the Configuration menu.
4	Click Refresh.
	Note: If this is the initial launch of the Nodal Cross-Connects window, click Yes in the Retrieve Nodal Cross-Connects dialog box.
5	Ensure the equipment and facilities are provisioned and in service. See 323-1059-350, Retrieving equipment and facility details on page 2-2.
6	Select the cross-connect and appropriate slot as identified in the originating step from the Nodal Cross-Connects window.
7	Under Details, select the In-service Roll Over tab.
8	Under Rolled Endpoint, select the equipment and facility to which you will roll the endpoint. For AID parameters see Supported hairpin cross-connects on page 6-70.
	Note: To back out of a BRIDGED state to an IDLE state, or from a SWITCHED state to a BRIDGED state, click Backout.
9	Click Bridge.
	Note: If there is more than one cross-connect on the same tributary facility, you must select the newly bridged cross-connect from the Nodal Cross-Connects window.
10	Click Switch. Click Yes in the warning dialog box.
11	Click Commit. Click Yes in the warning dialog box.
12	Ensure the equipment and facilities, where the traffic was rolled from, are put out of service (OOS). See 323-1059-350, Changing a facility state to Out of Service (OOS) on page 2-25.

<div align="center">—end—</div>

Procedure 6-28
Rolling over 1WAYPR and 2WAYPR cross-connects combined with 1WAY cross-connects

Note: This is not a stand-alone procedure. Use this procedure only if you are referenced to it from another procedure.

On occasion, you cannot roll to endpoints that involve 1WAYPR or 2WAYPR connections with 1WAY connections in the opposite direction. Often in this case you will not be able to select, bridge, or switch the end point.

Step	Action
1	Identify the scenario that represents your problem.

- Scenario 1, see 1WAYPR cross-connect with 1WAY cross-connects that use the same two end points on page 6-63
- Scenario 2, see 1WAYPR cross-connect with one 1WAY cross-connect that has been rolled away from the end point on page 6-63

2   If Scenario 1 is the problem, convert the 1WAYPR and two 1WAY cross-connects into one 2WAYPR cross-connect and start the rollover again.

See the appropriate editing procedure:

- Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27
- Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30
- Editing a 2WAY cross-connect (BLSR networks) on page 6-29

Note: If you are partially through an in-service traffic rollover and cannot roll to an endpoint that involves a 1WAYPR or 2WAYPR connection with 1WAY connections in the opposite direction, back out of the rollover and edit the cross-connects as required.

3   Go to step 5.

Procedure 6-28 (continued)
Rolling over 1WAYPR and 2WAYPR cross-connects combined with 1WAY cross-connects

Step	Action

4

> ⚠ **CAUTION**
> **Risk of a loss of protection**
> When editing 1WAYPR cross-connects to 1WAY cross-connects, you are deleting protection.

If Scenario 2 is the problem, convert the working side (slot w) optical facility of the 1WAYPR cross-connect into a 1WAY cross-connect.

See the appropriate editing procedure:

- Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27
- Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30
- Editing a 2WAY cross-connect (BLSR networks) on page 6-29

5 Select the end point that has been rolled away and roll it back to where it should be.

6 Edit all the 1WAY cross-connects for that connection into a 2WAYPR cross-connect.

7 Perform the rollover again.

Note: If you are partially through an in-service traffic rollover and cannot roll to an endpoint that involves a 1WAYPR or 2WAYPR connection with 1WAY connections in the opposite direction, back out of the rollover and edit the cross-connects as required.

8 After you complete the in-service traffic rollover, edit the cross-connect back to its original type. See the appropriate editing procedure:

- Editing 2WAY and 1WAY cross-connects (linear or UPSR networks) on page 6-27
- Editing a 1WAYPR, 2WAYPR, or 2WAYBR cross-connect on page 6-30
- Editing a 2WAY cross-connect (BLSR networks) on page 6-29

—**end**—

1WAYPR cross-connect with 1WAY cross-connects that use the same two end points

EX0894t
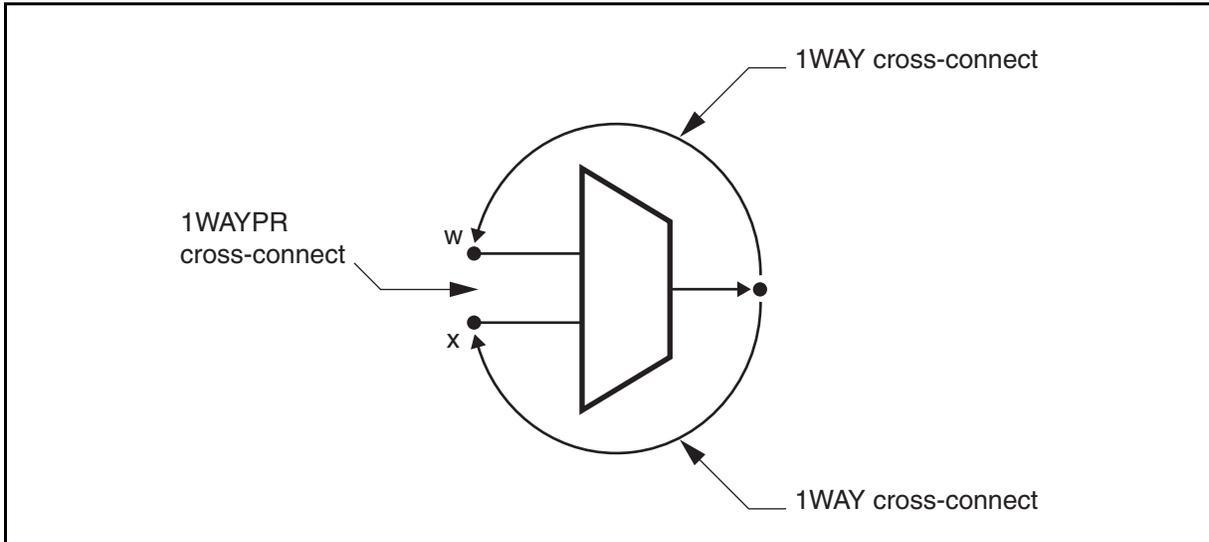
1WAYPR cross-connect with one 1WAY cross-connect that has been rolled away from the end point

EX0895t

Parameters available for selection

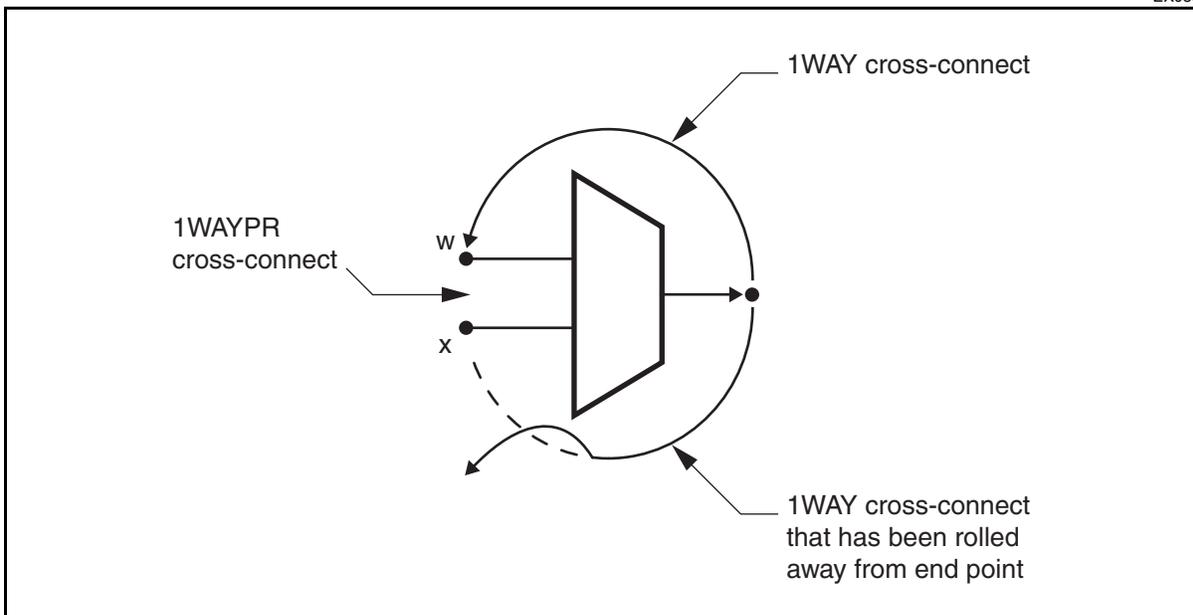| Equipment	You must select the Equipment for the From or To AID as required.
Type	You must select the type as 1WAY, 2WAY, 1WAYPR, 2WAYPR, or 2WAYBR. Select iPT Ring to provision SONET bandwidth to an RPR. If you are adding an RPR pass-through cross-connect, select pass-through.
NE A	You must select the starting endpoint of the path for BLSR connections.
NE Z	You must select the finishing endpoint of the path for BLSR connections.
Rate	You must select the rate as VT1.5, STS-1, STS-3c, STS-12c, STS-24c, or STS-48c.
Time slot assignment (TSA) numbers	Each signal type requires that a TSA number is assigned to each of the parameters in that signal type. For VT1.5: you must enter a TSA number for STS, VT Group, and VT. For STS-1: you must enter a TSA number for STS. For STS-3c: you must enter a TSA number for STS. For STS-12c: you must enter a TSA number for STS. For STS-24c: you must enter a TSA number for STS. For STS-48c: you must enter a TSA number for STS. *Note:* Site Manager automatically populates the available STS parameter fields after you select the Rate and Type.

OPTera Metro 3000 Multiservice Platform series AID parameters

AID type	AID	Parameter values
DS1		
VT1.5	DS1-slot#-port#	slot# = 4 to 10, port# = 1 to 12
DSM DS1x84 termination module		
VT1.5	DS1-1-port# (OC3-Hslot#-Hport#)	port# = 1 to 84 Hslot# = 3, 5, 7, 9 (protected) or 3 to 10 (unprotected), Hport# = 1 to 4
STS-1	OC-3-1-port# (OC3-Hslot#-Hport#)	port# = 1 to 84 Hslot# = 3, 5, 7, 9 (protected) or 3 to 10 (unprotected), Hport# = 1 to 4
DS3x3, DS3x12, DS3x12e		
STS-1	DS3-slot#-port#	slot# = 3, 5, 7, or 9, port#= 1 to 12
DS3VTx12		
VT1.5	DS1-slot#-port#-t1#	slot# = 3, 5, 7, or 9, port# = 1 to 12, t1# = 1 to 28
EC-1x3, EC-1x12		
VT1.5	EC1-slot#-port#-vtg#-vt#	slot# = 3, 5, 7, or 9, port# = 1 to 12 vtg# = 1 to 7, vt# = 1 to 4
STS-1	EC1-slot#-port#	slot# = 3, 5, 7, or 9, port# = 1 to 12
2x100BT-P2P		
STS-1	WAN-slot#-port#-sts#	slot# = 3 to 10, port# = 1 or 2, sts# = 1
STS-3c	WAN-slot#-port#-sts#	slot# = 3 to 10, port# = 1 or 2, sts# = 1
2xGigE/FC		
STS-1	WAN-slot#-port#-sts#	slot# = 3 to 10, port# = 1 or 2, sts# = 1 to 21
STS-3c	WAN-slot#-port#-sts#	slot# = 3 to 10, port# = 1 or 2, sts# = 1, 4, 7, 10, 13, 16, 19
STS-12c	WAN-slot#-port#-sts#	slot# = 3 to 10, port# = 1 or 2, sts# = 1
STS-24c	WAN-slot#-port#-sts#	slot# = 3 to 10, port# = 1 or 2, sts# = 1

AID type	AID	Parameter values
Note 1: If a 2xGigE/FC-P2P LAN port is in Fibre Channel mode, and the connection is less than the full rate of the Fibre Channel port (in either virtual concatenation or contiguous concatenation mode), ensure the Subrate and Extreach attributes are set to Enable. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.		
Note 2: If virtual concatenation is disabled, then an STS-1 cross-connect on one of the WAN ports cannot co-exist with STS-3c or higher connections on the other WAN port of the same circuit pack.		
Note 3: If virtual concatenation is enabled, then both WAN ports must be provisioned with the same rate connection.		
Note 4: To provision virtual concatenation connections on the 2xGigE/FC-P2P circuit pack, virtual concatenation must be enabled. See 323-1059-350, Editing DS1, DS3, EC-1, 2x100BT-P2P or GE/FC SFP facility signal attributes on page 2-28.		

AID type	AID	Parameter values
OC-3, OC-3x4		
VT1.5	OC3-slot#-port#-sts#-vtg#-vt#	slot# = 3 to 10, port# = 1 to 4 sts# = 1 to 3, vtg# = 1 to 7, vt# = 1 to 4
STS-1	OC3-slot#-port#-sts#	slot# = 3 to 10, port# = 1 to 4 sts# = 1 to 3
STS-3c	OC3-slot#-port# -sts#	slot# = 3 to 10, port# = 1 to 4 sts# = 1
OC-12		
VT1.5	OC12-slot#-port#-sts#-vtg#-vt#	slot# = 3 to 12 port# = 1 for OC-12 sts# = 1 to 12 vtg# = 1 to 7, vt# = 1 to 4
STS-1	OC12-slot#-port#-sts#	slot# = 3 to 12 port# = 1 for OC-12 sts# = 1 to 12
STS-3c	OC12-slot#-port#-sts#	slot# = 3 to 12 port# = 1 for OC-12 sts# = 1, 4, 7, 10
STS-12c	OC12-slot#-port#-sts#	slot# = 3 to 12 port# = 1 for OC-12 sts# = 1
OC-12x4 STS		
STS-1	OC12-slot#-port#-sts#	slot# = 3 to 10 port# = 1 to 4 sts# = 1 to 12
STS-3c	OC12-slot#-port#-sts#	slot# = 3 to 10 port# = 1 to 4 sts# = 1, 4, 7, 10
STS-12c	OC12-slot#-port#-sts#	slot# = 3 to 10 port# = 1 to 4 sts# = 1

AID type	AID	Parameter values
OC-48		
VT1.5 (See Notes)	OC48-slot#-sts#-vtg#-vt#	slot# = 11, 12 sts# = 1 to 48 vtg# = 1 to 7, vt# = 1 to 4
STS-1 (See Notes)	OC48-slot#-sts#	slot# = 11, 12 sts# = 1 to 48
STS-3c (See Notes)	OC48-slot#-sts#	slot# = 11, 12 sts# = 1, 4, 7, 10, ... 46
STS-12c (See Notes)	OC48-slot#-sts#	slot# = 11, 12 sts# = 1, 13, 25, ... 37
STS-24c (See Notes)	OC48-slot#-sts#	slot# = 11, 12 sts# = 1, 25
STS-48c (See Notes)	OC48-slot#-sts#	slot# = 11, 12 sts# = 1
Note 1: For BLSR configurations in Site Manager, you must select the NE A APS ID and the NE Z APS ID at each node which automatically populates the FROMAEND, FROMZEND, TOAEND, and TOZEND parameters as required. *Note 2:* For BLSR, you can provision channels (sts#) 1 to 24 only as working channels. Channels 25 to 48 are protection channels for channels 1 to 24. *Note 3:* For Resilient packet rings (RPR) on BLSRs, you can use channels 1 to 48 because protection is provided at the Network Layer (Layer 2).		
OC-48 STS		
STS-1 (See Notes)	OC48-slot#-sts#	slot# = 3 to 12 sts# = 1 to 48
STS-3c (See Notes)	OC48-slot#-sts#	slot# = 3 to 12 sts# = 1, 4, 7, 10, ... 46
STS-12c (See Notes)	OC48-slot#-sts#	slot# = 3 to 12 sts# = 1, 13, 25, ... 37
STS-24c (See Notes)	OC48-slot#-sts#	slot# = 3 to 12 sts# = 1, 25
STS-48c (See Notes)	OC48-slot#-sts#	slot# = 3 to 12 sts# = 1

AID type	AID	Parameter values
OC-192		
STS-1 (See Notes)	OC192-slot#-sts#	slot# = 11, 12 sts# = 1 to 192
STS-3c (See Notes)	OC192-slot#-sts#	slot# = 11, 12 sts# = 1, 4, 7, 10, ... 190
STS-12c (See Notes)	OC192-slot#-sts#	slot# = 11, 12 sts# = 1, 13, 25, ... 181
STS-24c (See Notes)	OC192-slot#-sts#	slot# = 11, 12 sts# = 1, 25, 49, ... 169
STS-48c (See Notes)	OC192-slot#-sts#	slot# = 11, 12 sts# = 1, 49, 97, ... 145
Note 1: For BLSR configurations in Site Manager, you must select the NE A APS ID and the NE Z APS ID at each node which automatically populates the FROMAEND, FROMZEND, TOAEND, and TOZEND parameters as required. *Note 2:* For BLSR, you can provision channels (sts#) 1 to 96 only as working channels. Channels 97 to 192 are protection channels for channels 1 to 96. *Note 3:* For Resilient packet rings (RPR) on BLSRs, you can use channels 1 to 192 because protection is provided at the Network Layer (Layer 2).		
4x100BT		
STS-1	IPTR-#,iPT100-slot#-sts#	IPTR-# = 1-8, slot# = 3 to 10
STS-3c	IPTR-#,iPT100-slot#-sts#	IPTR-# = 1-8, slot# = 3 to 10
STS-12c	IPTR-#,iPT100-slot#-sts#	IPTR-# = 1-8, slot# = 3 to 10
4x100FX (4x100FX-MM, 4x100FX-SM)		
STS-1	IPTR-#,100FX-slot#-sts#	IPTR-# = 1-8, slot# = 3 to 10
STS-3c	IPTR-#,100FX-slot#-sts#	IPTR-# = 1-8, slot# = 3 to 10
STS-12c	IPTR-#,100FX-slot#-sts#	IPTR-# = 1-8, slot# = 3 to 10
2xGigE (2x1000SX, 2x1000LX)		
STS-1	IPTR-#,1GE-slot#	IPTR-# = 1-8, slot# = 3, 5, 7, or 9
STS-3c	IPTR-#,1GE-slot#	IPTR-# = 1-8, slot# = 3, 5, 7, or 9
STS-12c	IPTR-#,1GE-slot#	IPTR-# = 1-8, slot# = 3, 5, 7, or 9

Supported hairpin cross-connects

Types of supported hairpin cross-connects	Possible directions
1. Cross-connects hairpin from one facility (Tx) to the same facility (Rx) on the same circuit pack.	1WAY only
2. Cross-connects hairpin from one facility to another facility on the same circuit pack.	1WAY / 2WAY
3. Cross-connects hairpin from one facility to another facility on different circuit packs.	1WAY / 2WAY
Note 1: Refer to OPTera Metro 3000 Multiservice Platform series AID parameters on page 6-65.	
Note 2: Hairpin cross-connects must be of the same rate on both facilities.	
Note 3: An optical cross-connect is considered a hairpin when both of the other ends of the spans are outside the NP span of control.	

Allowable cross-connect type edits in UPSR and linear 1+1 configurations

From / To	1WAY	1WAYPR	2WAY	2WAYPR	2WAYBR
1WAY	no	yes	yes (Note 1)	no	no
1WAYPR	yes	no	no	yes (Note 2)	yes (Note 3)
2WAY	yes (Note 4)	no	no	yes	no
2WAYPR	no	yes (Note 4)	yes	no	no
2WAYBR	no	yes	no	no	no

Note 1: Requires a second 1WAY cross-connect in the opposite direction.

Note 2: Requires two 1WAY cross-connects in the opposite directions.

Note 3: Requires the two 1WAY cross-connects that complete the 2WAYBR pattern.

Note 4: The extra unidirectional cross-connects are not deleted automatically.

Note 5: Editing OPE cross-connects is not supported.

Allowable cross-connect types between network configurations

FROM Endpoint Protected Facility	TO Endpoint Protected Facility	Cross-Connect Type	Connection path FROM	Connection path TO
BLSR	UPSR	2WAY	FROM BLSR endpoint	TO UPSR endpoint
BLSR	UPSR	2WAYPR	not supported	not supported
UPSR	BLSR	2WAYPR	FROM and Switch Mate from UPSR tributary	TO BLSR Endpoint l
UPSR	BLSR	2WAYBR	not supported	not supported
UPSR	BLSR	2WAY	FROM UPSR endpoint	TO BLSR endpoint
BLSR	BLSR (pass-through cross-connect in the same ring)	2WAY	FROM BLSR endpoint	TO BLSR endpoint
1+1 Linear	BLSR	2WAY	FROM 1+1 Linear endpoint	TO BLSR endpoint
BLSR	1+1 Linear	2WAY	FROM BLSR endpoint	TO tributary endpoint
1+1 Linear	1+1 Linear	1WAY / 2WAY	FROM 1+1 Linear endpoint	TO 1+1 Linear endpoint
1+1 Linear	UPSR	1WAY / 2WAY	FROM 1+1 Linear endpoint	TO UPSR endpoint
UPSR	1+1 Linear	1WAY / 2WAY	FROM UPSR endpoint	TO 1+1 Linear endpoint
UPSR	1+1 Linear	1WAYPR / 2WAYPR / 2WAYBR	FROM and Switch Mate from UPSR tributary	TO 1+1 Linear endpoint
UPSR	UPSR	1WAY / 2WAY	FROM UPSR endpoint	TO UPSR endpoint
UPSR	UPSR	1WAYPR / 2WAYPR / 2WAYBR	FROM and Switch Mate from UPSR line and tributary slots	TO UPSR line or tributary slot endpoint

Nortel Networks

OPTera Metro 3500
Multiservice Platform

Bandwidth Management

NORTEL
NETWORKS™