OSIRIS-VUE™ /
OSIRIS-VUE PLUS!™

User's Guide

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POSITRON
Networks

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This OSIRIS-VUE™/OSIRIS-VUE PLUS!™ User's Guide was written for OSIRIS-VUE/OSIRIS-VUE PLUS! version 14.01 for SONET and OSIRIS-VUE/OSIRIS-VUE PLUS! version 10.0 for SDH.

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Preface

This user's guide describes OSIRIS-VUE™/OSIRIS-VUE PLUS!™ release 14.01 software for the SONET version and release 10.0 for the SDH version.

The OSIRIS-VUE/OSIRIS-VUE PLUS! Network Element Management System provides a flexible working environment in which you can provision, test, and maintain fiber optic networks and network elements.

OSIRIS® products can be controlled with OSIRIS-VUE/OSIRIS-VUE PLUS! software.

This document is geared toward fiber optic network administrators who are familiar with Microsoft Windows. For information about OSIRIS applications, see the *OSIRIS® Network User's Guide (206-002)*.

System Requirements

OSIRIS-VUE PLUS! software supports up to 128 online sessions, while OSIRIS-VUE software supports only one online session. Attention Request and Pager Calling Sessions are available only in the OSIRIS-VUE PLUS! software version, and the SNMP Trap Forwarder is an optional added-value application, also available with OSIRIS-VUE PLUS! software.

The following hardware and memory requirements apply to OSIRIS-VUE/ OSIRIS-VUE PLUS! software running on a Windows 95, Windows 98, Windows NT, Windows 2000 or Windows XP platform.

Software	Circuits[1]	Minimum	Recommended
OSIRIS-VUE	less than 25	Pentium 133Mhz 32 Meg RAM	Pentium 166Mhz 32 Meg RAM
	25 or more	Pentium 133Mhz 64 Meg RAM	Pentium 166Mhz 64 Meg RAM
OSIRIS-VUE PLUS!	less than 25	Pentium 166Mhz 64 Meg RAM	Pentium 266Mhz 96 Meg RAM
	25 or more	Pentium 166Mhz 128 Meg RAM	Pentium 266Mhz 256 Meg RAM

1. A circuit is established by cross-connecting at least 2 facilities on the same time slot on 2 different NEs

From this point forward, the term OSIRIS-VUE/OSIRIS-VUE PLUS! refers to both OSIRIS-VUE software and OSIRIS-VUE PLUS! software unless otherwise noted. Any differences between SONET and SDH versions are also noted.

Contacting Customer Service

Should a problem arise, please contact us:

Toll Free: 1-866-331-3003 (North America only)
International Line: +1-514-345-2202
Fax: +1-514-345-2304
E-mail: service@positronnetworks.com

Returned Material Department

If equipment needs to be repaired or exchanged, please contact us. A representative will give you a Return Material Authorization (**RMA**) number. You must have an **RMA** number before you ship equipment to Positron for repair.

RMA Toll Free: 1-866-331-3003 (North America only)
RMA International Line: +1-514-345-2202
Fax: +1-514-345-2304
E-mail: service@positronnetworks.com

Pack all equipment in antistatic material with sufficient protection against shipping damage and ship the equipment back to Positron. It is highly recommended that you insure your package.

Make sure that the RMA number is clearly marked on the packaging.

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c/o Freeport Forwarding
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12919

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Positron Networks Inc.
18107 Trans-Canada Highway
Kirkland, Quebec
Canada H9J 3K1

Order Entry Department

If you wish to place an order for new equipment or to inquire about the status of an already placed order, please call the Order Entry department at 1-866-331-3003 or +1-514 345-2296.

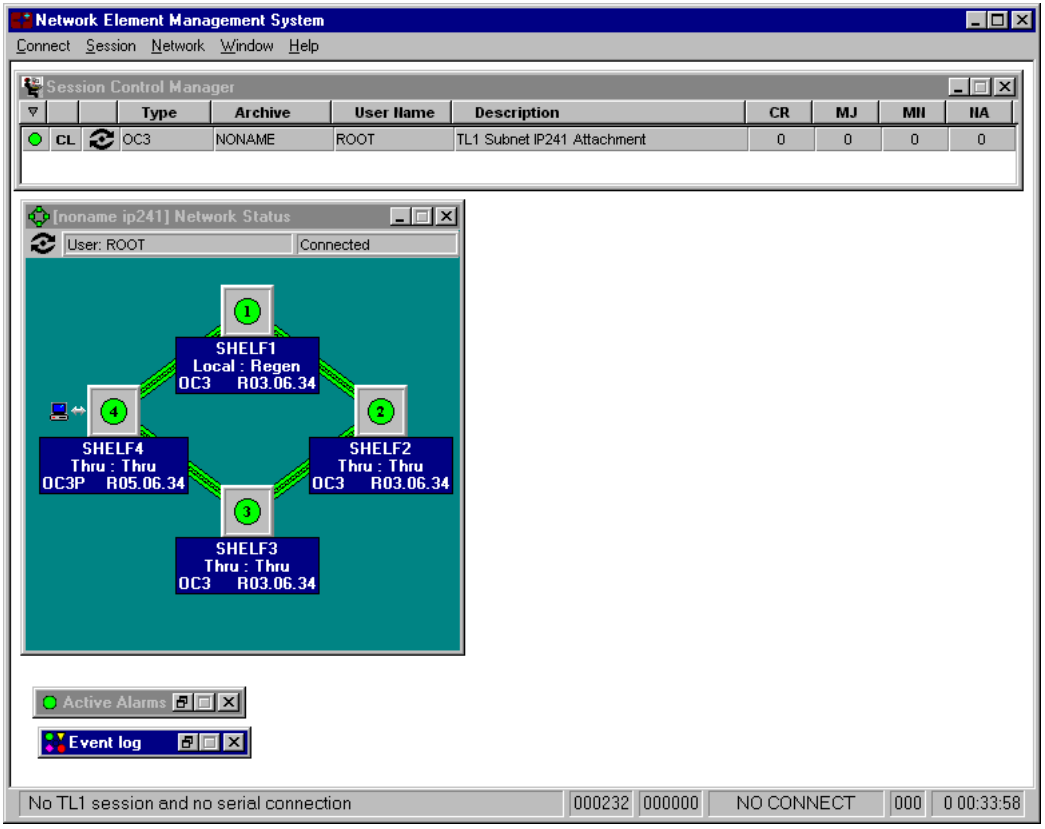
Introduction

OSIRIS-VUE/OSIRIS-VUE PLUS! software lets you provision and monitor OSIRIS networks. In most cases, your computer will be connected to a shelf and you will be working in an *online session*. Occasionally, you may want to provision or configure a network when your PC is not connected to an OSIRIS network. In this case, you can work in an *offline session*.

OSIRIS-VUE PLUS! software supports up to 128 online sessions, while OSIRIS-VUE software supports only one online session.

Attention Request and Pager Calling Sessions are also available in OSIRIS-VUE PLUS! software. SNMP Trap Forwarder is an optional added-value application also available with OSIRIS-VUE PLUS! software. See "OSIRIS-VUE PLUS! Sessions" on page 249 for details.

The OSIRIS-VUE/OSIRIS-VUE PLUS! main window is shown below.



A Network Status window controls one online session. This window is called *Network Map* in offline sessions.

Several other windows appear minimized. The Active Alarms window lists all alarms that are currently active on a network. The Event Log window lists all alarms that have ever occurred on a network, up to a certain maximum, and the Session Control window lists all open sessions.

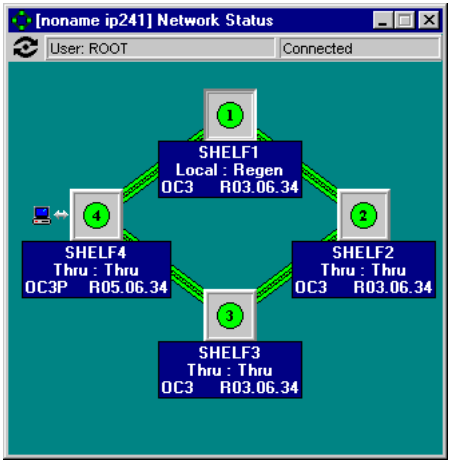
The main window status bar displays the state of the connection, the number of TL1 commands processed by OSIRIS-VUE/OSIRIS-VUE PLUS! software, the number of alarms that have ever occurred, the local node date and time, and the time that has elapsed since the OSIRIS-VUE/OSIRIS-VUE PLUS! application was launched.

The main menu lets you access global settings. You can also right-click to access configuration dialog boxes. Right-click a node in the Network Status window to access provisioning settings.

Help is available in all dialog boxes. Click the Help button for descriptions of available settings. Help is also accessible from the main menu.

Network Status Window

All network configuration can be accessed through the Network Status window. When you log in, the Network Status window appears.



Each node represents a physical network element. Provisioning settings are accessible when you right-click a node in this window.

Normal Idle

No alarms are present on this network element unless Alarm Filtering is enabled. See “Defining Alarm Filters” on page 278 for details. The node icon is green.

Factory Default (offline session)

The network element is not yet provisioned.

Factory Default (online session)

The network element is not yet provisioned.

Updating

The software is retrieving network information. This condition is temporary.

Disconnected

You are no longer connected to the network because you logged off. Log in again.

Command Operation Failed

Command request to NE has timeout, or the NE software on the node may be incompatible with this version of OSIRIS-VUE/OSIRIS-VUE PLUS! software.

Wait a few minutes then try to log in again.

Offline

You are working in an offline session and are not connected to a network element.

Alarm

At least one alarm is present on this network element.

In this example, the large triangle indicates that a minor alarm is active. The small triangle indicates that the previous alarm level on this node was also minor.

Non-Alarm

At least one non-alarm condition is present on this network element; or an equipment or path switch is pending.

Non-alarm conditions indicate that the network may not be configured to its optimal level.

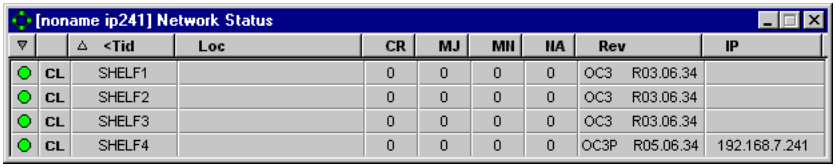
See the *OSIRIS® Troubleshooting Guide (203-008)* for information about equipment and path switching.

To change Network Status display properties, on the **Connect** menu, click **Preferences**. You can also change the layout of the Network Status window. The default layout which is used throughout this guide is the Full-View. Two alternate views are presented below.

Spreadsheet

The Spreadsheet view displays node information in a table format. To use Spreadsheet view, right-click the background of the **Network Status** window, click **Layout**, then click **Spreadsheet**.

The Spreadsheet window appears as follows.



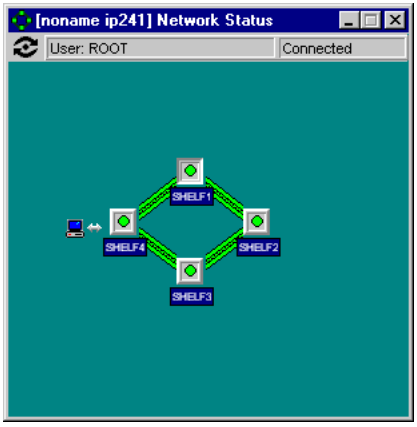
		<Tid	Loc	CR	MJ	MI	NA	Rev	IP
	CL	SHELF1		0	0	0	0	OC3 R03.06.34	
	CL	SHELF2		0	0	0	0	OC3 R03.06.34	
	CL	SHELF3		0	0	0	0	OC3 R03.06.34	
	CL	SHELF4		0	0	0	0	OC3P R05.06.34	192.168.7.241

Note: To customize the Spreadsheet view, right-click the header and add or remove fields such as Shelf Mode or OAU Mode.

Quick View

Quick View uses smaller node icons and displays only the node name so that you can see more nodes in less space. To use Quick View, right-click the background of the **Network Status** window, click **Layout**, then click **Quick View**.

The Quick View Network Status window appears as follows.



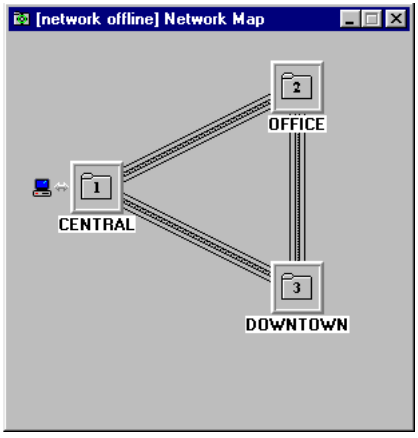
Procedures in the chapters that follow begin from the **Network Status** window.

Offline Sessions

Offline sessions let you provision and configure a network when your PC is not connected to an OSIRIS network. You can save your configuration to a file that can later be applied to a live network.

Offline sessions are typically used for training purposes or for provisioning networks from remote locations. With offline sessions, you can make major changes to your network without affecting traffic.

When you launch an offline session, the Network Map window appears. All offline network configuration can be accessed through the Network Map window.



Starting an Offline Session

You can start an offline session with or without an existing archive.

To start a session without an archive:

1. Start OSIRIS-VUE/OSIRIS-VUE PLUS! software.

   The **Welcome Screen** appears.

2. Click **Work Off-line**.

   The Session Control dialog box appears.

3. Click **OK**.

   The **Select Archive Version** dialog box appears.

4. Select the version of NE software that this offline session will support.

   In most cases, you should select the most recent software version.

5. Click **OK**.

   The **Select Shelf Type** dialog box appears.

6. Select the shelf type for the local node, then click **OK**.

   The **Network Map** window appears.

7. Right-click the node, then click **Provision** to assign a name and number to the shelf.

8. If you want to add more nodes to the network, right-click the node again, then click **Insert Node**.

To start a session with an archive:

1. Start OSIRIS-VUE/OSIRIS-VUE PLUS! software.

   The **Welcome Screen** appears.

2. Click **Work Off-line**.

   The Session Control dialog box appears.

3. Click **Select Archive File**.

4. Select the file, then click **Open**.

   The **Session Control** dialog box reappears.

5. Click **OK**.

   The **Network Map** window appears.

Chapter 1
Connecting to a Shelf

This chapter describes how to connect and log on to OSIRIS shelves via serial, modem, dataprobe, and telnet connections.

Connecting your PC to a Shelf

To configure and monitor your OSIRIS shelf, you must first connect to the shelf and then log in with OSIRIS-VUE/OSIRIS-VUE PLUS! software. Follow the procedure below to connect your PC to a OSIRIS shelf.

OSIRIS Shelf

You can connect your PC to a OSIRIS shelf through a direct serial connection, a modem, a dataprobe or a telnet session. Follow the instructions in this section to physically connect to your shelf with one of these methods, then proceed to "Logging on" on page 22.

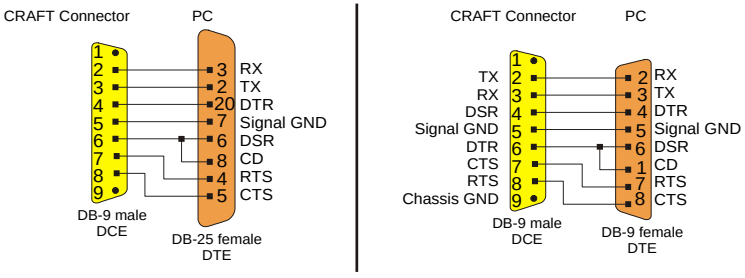
Direct Serial Connection

With a direct serial connection, one of your PC's serial ports is connected to the shelf's Craft port. The shelf that you are connected to is the *local* network element.

The Craft connector is located on the ACIU of each shelf. To connect to the Craft port, you need an RS-232C cable with a minimum gauge of 26 AWG and a maximum length of 60 feet (18.28 m).

Follow this procedure to establish a serial connection between your PC and the OSIRIS shelf.

1. Prepare or acquire the RS-232C cable. For the preparation of the cable, refer to the diagram below.



2. Connect the male end of the cable to the connector labelled **CRAFT** on the ACIU of your OSIRIS shelf.
3. Connect the female end of the cable to one of your PC's serial ports.

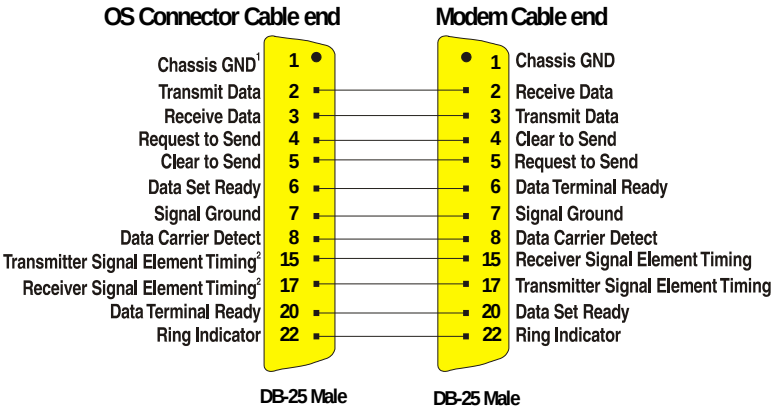
Modem Connection

With a modem connection, the shelf is connected to a modem through the OS port. Your PC communicates with the shelf through a standard telephone connection. The shelf that is connected to the modem that you are calling becomes the *local* network element.

The OS connector is located on the ACIU of OSIRIS STD, OSIRIS XTD, and OSIRIS Micro DS1/E1 shelves. To connect a modem to the OS port, you need an RS-232C cable with a minimum gauge of 26 AWG and a maximum length of 60 feet (18.28 m).

Follow this procedure to establish a modem connection between your PC and the OSIRIS shelf.

1. Prepare or acquire the RS232C cable. For the preparation of the cable, refer to the diagram below.



[1] Connect pin one of connector to chassis ground. Do not connect pin 7 of modem.
[2] Pins 15 and 17 need to be connected only if a synchronous modem is used.

2. Route the modem cable from an available modem to the OS connector on the OSIRIS shelf.
3. Connect the modem to an available telephone line.
4. Plug the modem in to an available power source.
5. Turn on the modem.

Dataprobe

A dataprobe connection is similar to a modem connection, except that with a dataprobe you can connect to four different shelves or rings. The dataprobe acts as an electronic switch.

To connect a dataprobe to the OS or Craft port of a shelf, you need a straight modem cable with a minimum gauge of 26 AWG and a maximum length of 60 feet. You need one straight modem cable for each ring that you are connecting to.

Follow this procedure to establish a dataprobe connection between your PC and an OSIRIS shelf.

1. Prepare or acquire the straight modem cables.
2. Route the cable from the dataprobe to the OS or Craft connector on the OSIRIS shelf.

   Repeat this step for each ring that will be accessible through the dataprobe. Up to four rings can be accessed with the dataprobe.
3. Connect the dataprobe to an available telephone line.
4. Plug the dataprobe in to an available power source.
5. Turn on the dataprobe.

Telnet

With a telnet session to the shelf, your PC connects to the shelf over a network. To support telnet, the shelf must either have a Network MCU (NMCU) installed, or be directly connected to a terminal server that has a valid IP address.

The NMCU activates an MDI RJ45 connector on the ACIU of an OSIRIS STD or OSIRIS XTD Shelf; this connector is active only when an NMCU is installed. The OSIRIS Micro Shelf does not support LAN access via an NMCU.

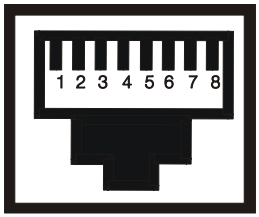
> Note: OSIRIS STD shelves that use an ACIU revision that is **earlier** than 800360/4 do not have an RJ45 connector. A cable converter kit (800777) is available. The cable converts the 9-pin TBOS connector to an MDI RJ45 connector.

Follow this procedure to establish a telnet connection between your PC and an OSIRIS shelf with an NMCU. If you are using a terminal server, you must follow the vendor's instructions to assign an IP address to that device.

1. Assign an IP address to the shelf. To assign an IP address you must first connect to the shelf with a serial cable or a modem. See "Assigning an IP Address" on page 33.
2. Ensure that your PC is on a network that can access the shelf.
3. Ensure that the shelf is connected to a network via the RJ45 connector on the ACIU. See below for connector definitions.

Cabling and Pinouts

1. The Ethernet connectors adhere to the EIA/TIA T568B wiring standard. The socket definition is shown looking into the socket.



Pin	Color
1	white/orange
2	orange
3	white/green
4	blue
5	white/blue
6	green
7	white/brown
8	brown

Ethernet Port

To connect the ACIU LAN port or the TBOS cable Ethernet port to networking equipment (hub, switch, etc.), use a straight cable. To connect to a computer or NIC (network interface card), use a cross-over cable.

The MDI connectors are defined as follows:

Pin	Signal
1	Tx+
2	Tx-
3	Rx+
6	Rx-

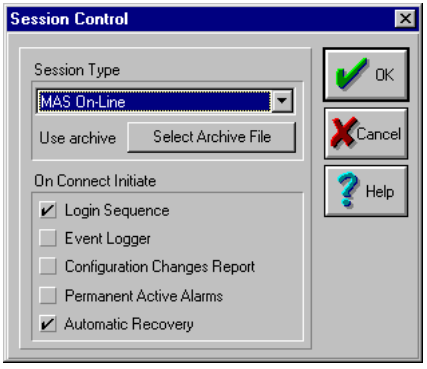
Logging on

Follow this procedure to create a login definition and then log in to an OSIRIS or MST shelf.

Note: If you are logging in to a shelf via a modem or a dataprobe, you must first define a modem pool. See "Modem Pools" on page 31. If you are logging in to a shelf via telnet, then that shelf must already have an IP address. See "Assigning an IP Address" on page 33.

1. Start the OSIRIS-VUE/OSIRIS-VUE PLUS! software. The **Welcome** screen appears.
2. Click the **Login** button.

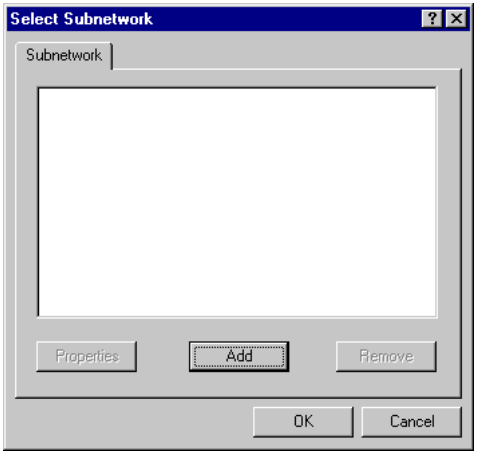
   The **Session Control** dialog box appears.



3. Change connection settings if required.

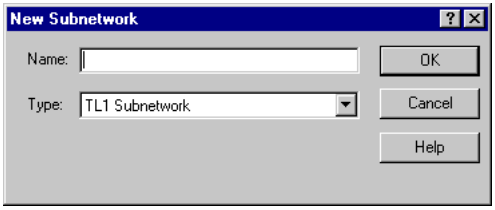
   For details on any of these setting, consult the Help.
4. Click **OK** to start an **On-Line** session.

The **Select Subnetwork** dialog box appears.



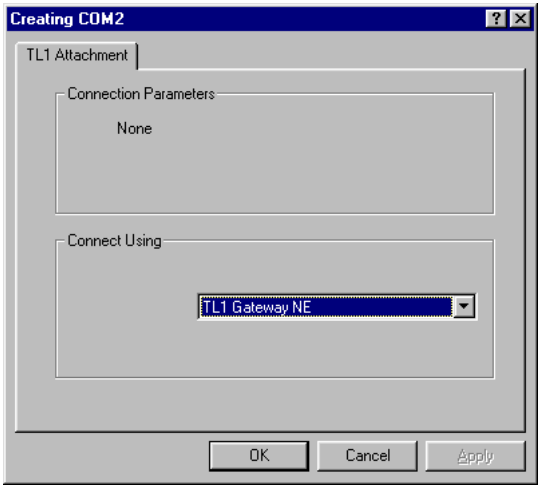
5. Click the **Add** button.

   The **New Subnetwork** dialog box appears.



6. Enter a **Name** for this set of connection parameters, then click **OK**.

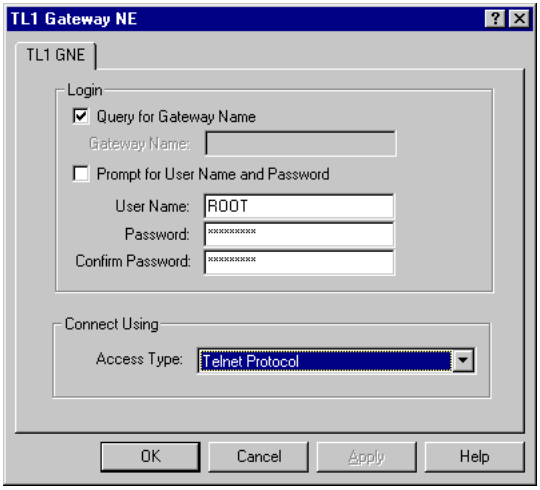
The **Creating** dialog box appears.



Note: The **TL1 Gateway Server** option is for future use.

7. Click **OK**.

   The **TL1 Gateway** dialog box appears.



8. Set **Access Type** to **Modem Pool**, **Serial Port**, **Dataprobe**, or **Telnet Protocol**, depending on how you want to connect.

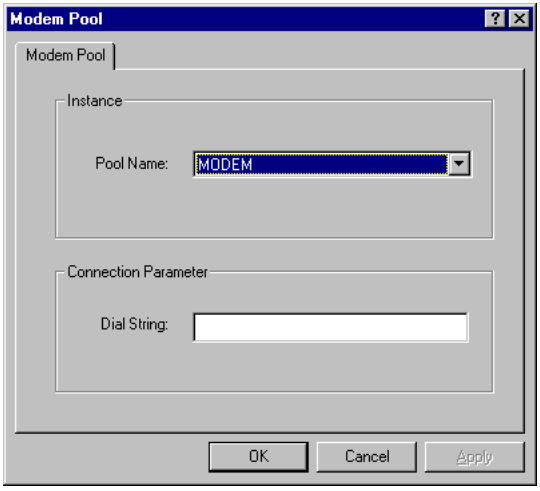
   Modem Line is also available for backward compatibility.

9. Click **OK**, then proceed to the section that corresponds to your connection type.

"Modem Pool" on page 25
"Modem Line" on page 26
"Serial Port" on page 27
"Dataprobe" on page 28
"Telnet" on page 29

Modem Pool

The **Modem Pool** dialog box appears.



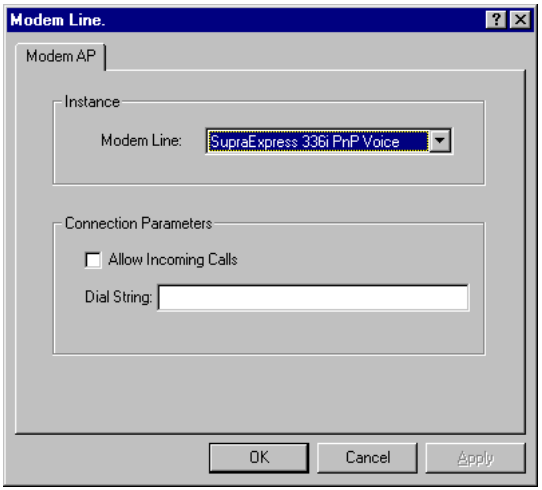
1. Select a **Pool Name**.
2. Enter the **Dial String** to be dialed.

   Include any extra numbers required to access external locations. You can also add commas (pauses) if needed.
3. Click **OK**.

   The **Select Subnetwork** dialog box reappears.
4. Select the connection definition that you configured, then click **OK**.
5. The **Network Status** window appears when you are connected to the network element.

Modem Line

The **Modem Line** dialog box appears.



1. Select a **Modem Line**.
2. Enter the **Dial String** to be dialed.

   Include any extra numbers required to access external locations. You can also add commas (pauses) if needed.
3. Click **OK**.

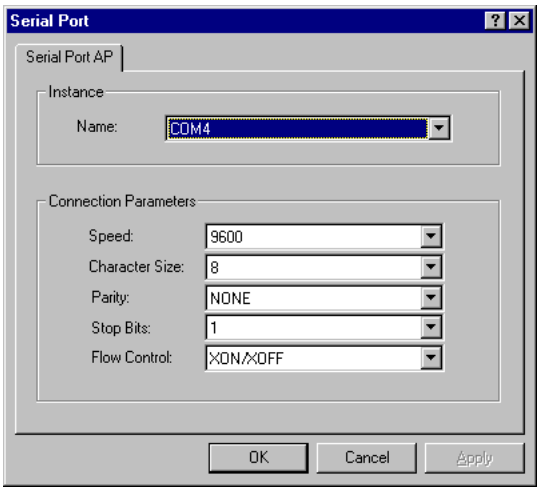
Note: **Modem Line** lists all modems that are auto-discovered by OSIRIS-VUE/OSIRIS-VUE PLUS! software.

The **Select Subnetwork** dialog box reappears.

4. Select the connection definition that you configured, then click **OK**.
5. The **Network Status** window appears when you are connected to the network element.

Serial Port

The Serial Port dialog box appears.

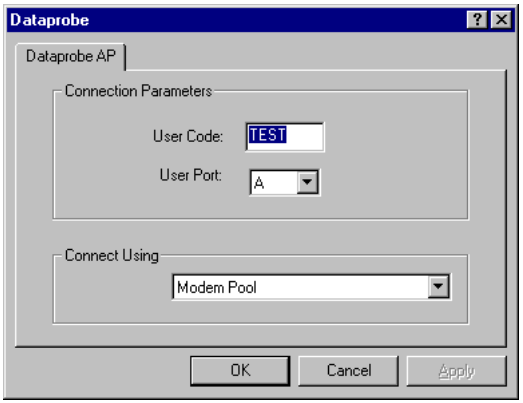


1. Set the serial port and other communication parameters. The default settings on a shelf are 8N1 (character size=8 bits, parity=none, stop bits=1).
2. Click **OK**.

   The **Select Subnetwork** dialog box reappears.
3. Select the connection definition that you configured, then click **OK**.
4. The **Network Status** window appears when you are connected to the network element.

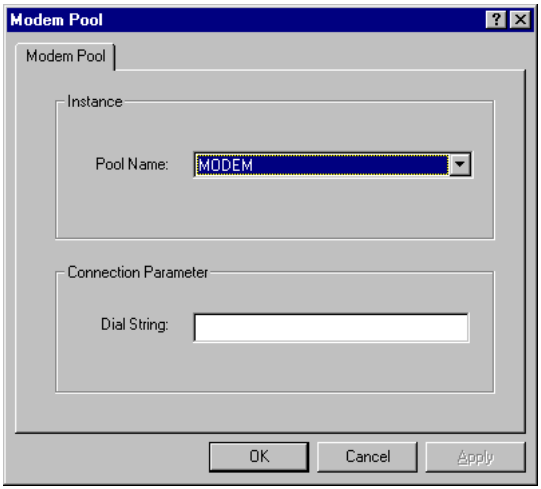
Dataprobe

The **Dataprobe** dialog box appears.



1. Enter the **User Code**. The default User Code is **TEST**.
2. Enter the **Dataprobe Port**, then click **OK**.

   The **Modem Pool** dialog box appears.



3. Select a **Pool Name**.
4. Enter a **Dial String**.

   Include any extra numbers required to access external locations. You can also add commas (pauses) if needed.

5. Click **OK**.

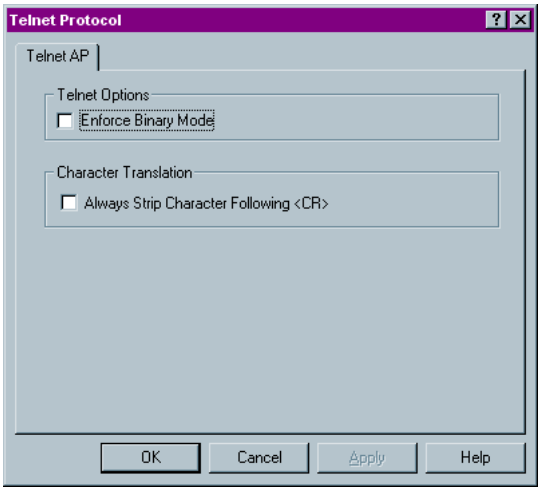
   The **Select Subnetwork** dialog box reappears.

6. Select the connection definition that you configured, then click **OK**.

7. The **Network Status** window appears when you are connected to the network element.

Telnet

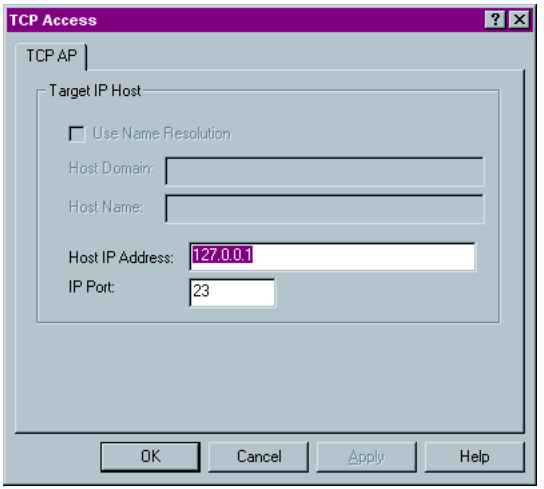
The **Telnet Protocol** dialog box appears.



1. Click **OK** if you are connected directly to an Ethernet port.

   If you are using a RadLinX device, enable **Always Strip Characters**, then click **OK**. You should not need to enable this option in all other cases.

The **TCP Access** dialog box appears.



2. Set the **Host IP Address** to the network element's IP address.

   You should not have to change the default **IP Port** setting if you are connected via an NMCU.

3. Click **OK**.

   The **Select Subnetwork** dialog box reappears.

4. Select the connection definition that you configured, then click **OK**.

5. The **Network Status** window appears when you are connected to the network element.

Deleting a Login Definition

To delete a subnetwork login definition, follow these steps.

1. On the **Connect** menu, click **DCN Configuration**.

   The **DCN Configuration** dialog box appears.

2. Select the subnetwork definition that you want to delete.

3. Click **Remove**.

   A confirmation dialog box appears.

4. Click **Yes**.

   The subnetwork definition has been deleted.

Modem Pools

A modem pool is a definition of several modems that are grouped together. Instead of defining a specific modem to connect to the OSIRIS-VUE/ OSIRIS-VUE PLUS! software, you can define a pool of modems. Modem pools are dynamic and reflect the type of modems available.

You can use modem pools to dial out to rings, pagers, and switch boxes. You can also use modem pools to receive attention requests.

Follow the procedure below to set up a modem pool definition, then see "Logging on" on page 22 to establish a connection.

Creating a Modem Pool Definition

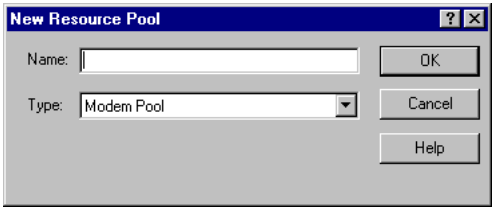
1. On the **Connect** menu, click **DCN Configuration**.

   The **DCN Configuration** dialog box appears.

2. Click the **Resource Pool** tab.

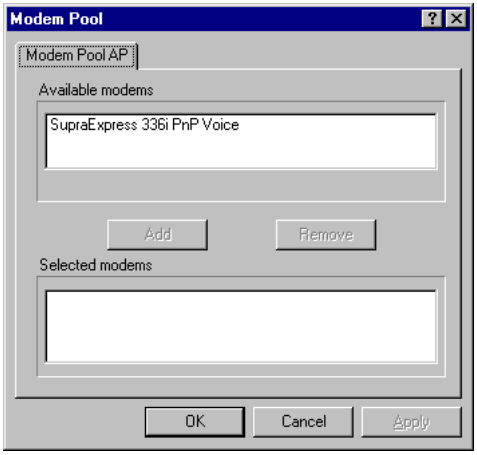
3. Click the **Add** button.

   The **New Resource Pool** dialog box appears.



4. Enter a **Name** for this modem pool, then click **OK**.

   The **Modem Pool** dialog box appears.



5. Select an available modem, then click the **Add** button to add it to the pool.

   Repeat this step for all modems that you want to add.

   Note: You must exit OSIRIS-VUE/OSIRIS-VUE PLUS! software and then start it again for available modems to be detected if changes have occurred. OSIRIS-VUE/OSIRIS-VUE PLUS! software does not detect modems that are configured after OSIRIS-VUE/OSIRIS-VUE PLUS! software is launched. Likewise, OSIRIS-VUE/OSIRIS-VUE PLUS! software does not dynamically detect that a modem has been un-configured.

6. Click **OK** to define the pool.
7. Click **OK** to exit the **DCN Configuration** dialog box.

Using Modem Pools

Once a modem pool has been defined, you can use it to configure a dataprobe switch definition, a pager calling session, or an attention request.

- Modem pool definitions are invalid if any modem in the pool is unavailable. Connections that attempt to use an invalid pool will fail. When OSIRIS-VUE/OSIRIS-VUE PLUS! software is started, any modems that cannot be detected are automatically removed from a pool. However, if a modem becomes unreachable when OSIRIS-VUE/OSIRIS-VUE PLUS! software is already running, you must manually remove the modem from the pool.
- Modems that are configured for modem pools can be used by applications other than the OSIRIS-VUE/OSIRIS-VUE PLUS! application, unless the modem pool accepts incoming calls. In this case, the modems are busy listening for calls and cannot be used by other applications.
- Subnetwork login definitions and pager calling sessions use the first available modem. If no modems are available for a subnetwork connection, the connection will fail. If no modems are available for a pager call, the call is made as soon as a modem in the pool becomes available.

Assigning an IP Address

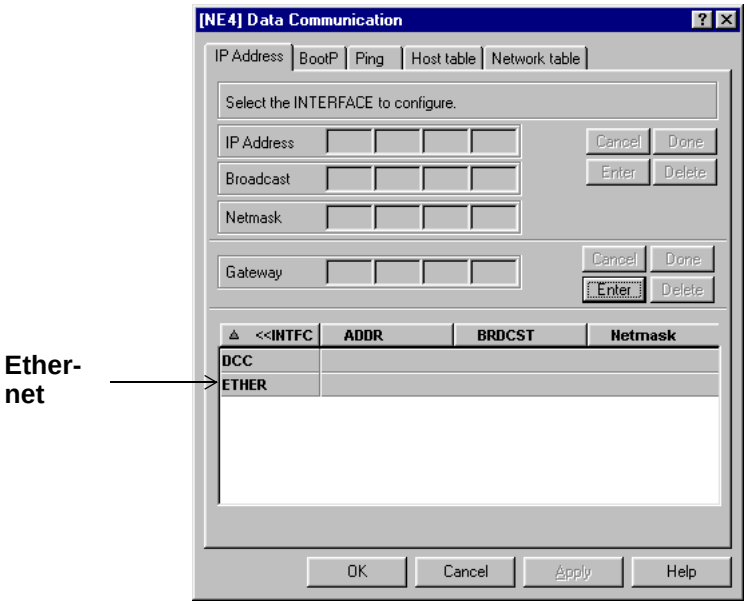
Before you establish a telnet session with a network element, you must assign an IP address to that element. Use a serial cable or a modem connection to assign the IP address.

Note: Only NMCUs support direct telnet connections. Regular MCUs cannot be assigned an IP address; but you can connect a terminal server directly to a shelf and then establish a telnet session via the terminal server.

Follow these steps to assign an IP address to a shelf with an NMCU.

1. Connect your PC to an OSIRIS shelf via a direct serial connection or a modem.
2. Log in to your OSIRIS network.
3. In the **Network Status** window, right-click the node that will be assigned an IP address, then click **Data Communication**.

   The **Data Communication** dialog box appears.



4. Select the Ethernet interface to activate Ethernet IP address parameters.
5. Enter the **Gateway** IP address, then click the **Done** button.

   This IP address is the address of the router or gateway.
6. Click the **Enter** button near the top of the dialog box to access the **IP address**, **Broadcast** address, and **Netmask** settings.

7. Set the **IP address**, **Broadcast** address, and **Netmask** for the network element.

   IP Address IP address that you want to assign to the Ethernet interface of the network element.

   Example: 192.168.1.1

   Broadcast IP address used in conjunction with Netmask when sending out broadcast packets. Addresses all packets in the subnet.

   Example: 192.168.1.255

   Netmask Mask used to identify the subnetwork.

   Example: 255.255.255.0

8. Click the **Done** button, then click **OK** to exit the dialog.

Chapter 2
Customizing the Environment

This chapter describes how to set global user preferences, establish network security as well as manage multiple sessions. Log files generated by OSIRIS-VUE/OSIRIS-VUE PLUS! software are also described in this chapter.

Communicating with other nodes via a chat session or by sending messages is detailed at the end of this chapter, as is setting the network clock source.

Information in this chapter applies to the OSIRIS network, except when noted otherwise.

Managing Multiple Sessions

OSIRIS-VUE PLUS! software can support up to 32 online sessions at once. An additional window, the **Session Control Manager**, lets you monitor multiple sessions. Opening, closing, saving, and switching between sessions is described in this section.

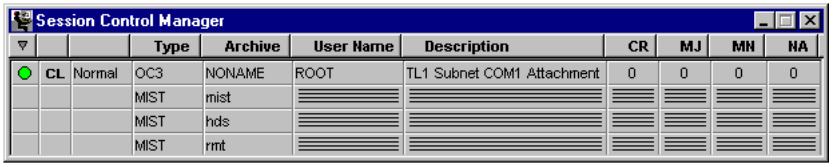
Session Control Manager

The Session Control Manager lists all active OSIRIS sessions.

Displaying the Session Control Manager

1. On the **Window** menu, click **Session Control Manager**.

   The **Session Control Manager** window appears.



You can sort sessions by clicking a column header.

Switching between Sessions

1. From the **Session Control Manager**, double-click a session row.

   The session's **Network Status** window appears.

Saving Sessions

You can save your network configuration to a file and then upload it to the network later on. You can save either online or offline sessions.

1. On the **Session** menu, click **Archive Network**.

   A standard **Save As** dialog box appears.

2. Name and save the file.

Closing Sessions

1. From the **Session Control Manager**, right-click a session, then click **Close Session**.

Network Inventory and Configuration Changes

You can display a list of all shelves, mapper cards, and software on your network with the **Network Inventory** window. You can also display a list of all configuration and provisioning changes that have been made to a shelf with the **Configuration Changes** Report.

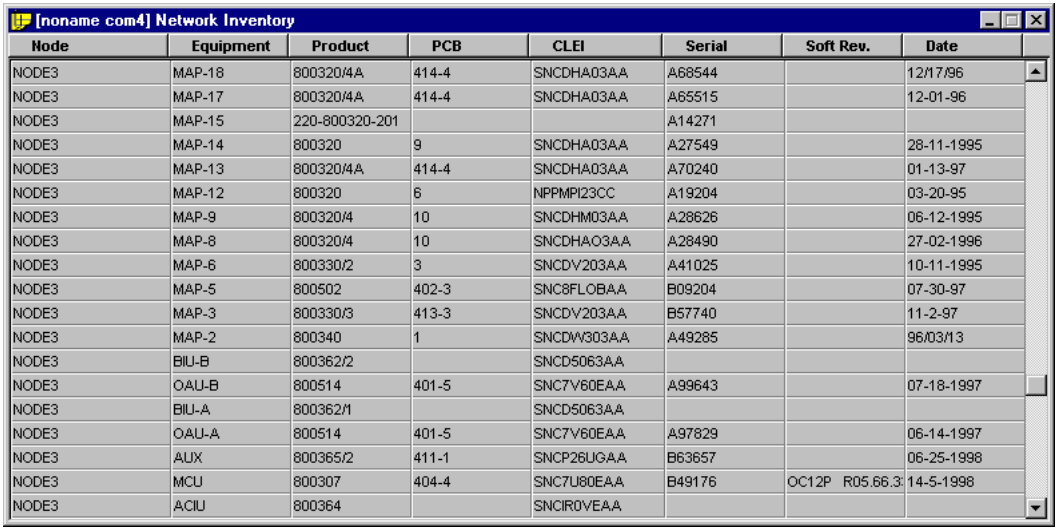
Network Inventory

The Network Inventory is a list of all hardware and software components on your OSIRIS network.

To Display the Network Inventory window

1. On the **Network** menu, click **Network Inventory**.

   The **Network Inventory** window appears.



Node	Equipment	Product	PCB	CLEI	Serial	Soft Rev.	Date
NODE3	MAP-18	800320/4A	414-4	SNCDHA03AA	A68544		12/17/96
NODE3	MAP-17	800320/4A	414-4	SNCDHA03AA	A65515		12-01-96
NODE3	MAP-15	220-800320-201			A14271		
NODE3	MAP-14	800320	9	SNCDHA03AA	A27549		28-11-1995
NODE3	MAP-13	800320/4A	414-4	SNCDHA03AA	A70240		01-13-97
NODE3	MAP-12	800320	6	NPPMPI23CC	A19204		03-20-95
NODE3	MAP-9	800320/4	10	SNCDHM03AA	A28626		06-12-1995
NODE3	MAP-8	800320/4	10	SNCDHA03AA	A28490		27-02-1996
NODE3	MAP-6	800330/2	3	SNCDV203AA	A41025		10-11-1995
NODE3	MAP-5	800502	402-3	SNC8FLOBAA	B09204		07-30-97
NODE3	MAP-3	800330/3	413-3	SNCDV203AA	B57740		11-2-97
NODE3	MAP-2	800340	1	SNCDW303AA	A49285		96/03/13
NODE3	BIU-B	800362/2		SNCD5063AA			
NODE3	OAU-B	800514	401-5	SNC7V60EAA	A99643		07-18-1997
NODE3	BIU-A	800362/1		SNCD5063AA			
NODE3	OAU-A	800514	401-5	SNC7V60EAA	A97829		06-14-1997
NODE3	AUX	800365/2	411-1	SNCP26UGAA	B63657		06-25-1998
NODE3	MCU	800307	404-4	SNC7U80EAA	B49176	OC12P R05.66.3	14-5-1998
NODE3	ACIU	800364		SNCIR0VEAA			

2. Right-click the background of the **Network Inventory** window, then click **Customize**, **Select Columns**.
3. Select the columns to appear in the inventory, then click **Close**.

To Save Column Size and Sorting Preference

1. Right-click the background of the **Network Inventory** window, then click **Customize**, **Save Configuration**.

To Save Network Inventory Information to a File

1. Right-click the background of the **Network Inventory** window, then click **Save** or **Save As**.

   The default filename is `NONAME.INV`, and the file is saved in the OSIRIS-VUE/OSIRIS-VUE PLUS! software directory.

Archiving a Network

You can save your network configuration to a file. Likewise, you can upload a configuration file to a network. Both of these features can be useful for diagnostic or backup purposes.

To Save Configuration to a File

1. On the **Session** menu, click **Archive Network** As.
2. Enter a filename and save the file.

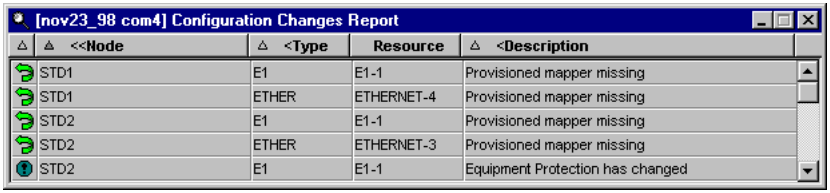
To Upload a Configuration File to the Network

You may want to upload a configuration file to the network if you need to rebuild the system after a crash, or if configuration was somehow lost.

1. Log in to the OSIRIS network.
2. In the **Network Status** window, right-click the background, then click **Restart Session** and then **Restart Using**.

   The **Please Confirm** window appears.
3. Click **No**. Select the configuration file, then click **OK**.
4. In the **Network Status** window, right-click the background again, then click **Open Module**, **Configuration Changes**.

   The **Configuration Changes Report** appears.



5. Right-click the first configuration row, then click **Preferences**, **Remove Confirm Action**.
6. Right-click the first row again, then click **Restore All**.

To Edit a Configuration File Offline

1. Start the OSIRIS-VUE/OSIRIS-VUE PLUS! software.

   The **Welcome Screen** appears.
2. Click **Work Off-line**.

   The **Session Control** dialog box appears.
3. Click **Select Archive File**.
4. Select the file, then click **Open**.

   The **Session Control** dialog box reappears.
5. Click **OK**.

To Undo Changes

You may want to undo a configuration change that you made to the network. In most cases, you can deprovision/reprovision a cross-connect or reverse the change by returning to the dialog box that the change was made in.

You can also undo changes in the **Configuration Changes** window. This window displays changes between the most recently archived session and the current on-line session.

1. In the **Network Status** window of your online session, right-click the background, then click **Open Module**, **Configuration Changes**.

   The **Configuration Changes** Report appears.
2. In the **Configuration Change**s window, right-click the change that you want to undo, then click **More Info**.
3. Determine whether you do indeed want to undo the change. If so, proceed to the next step.
4. Right-click the change to undo, then click **Restore**.
5. Click **Undo**.

Preferences

You can modify user preferences such as Timeouts, Notification and Event Log attributes, the Working Language, and the Network Status Display.

1. On the **Connect** menu click **Preferences**.

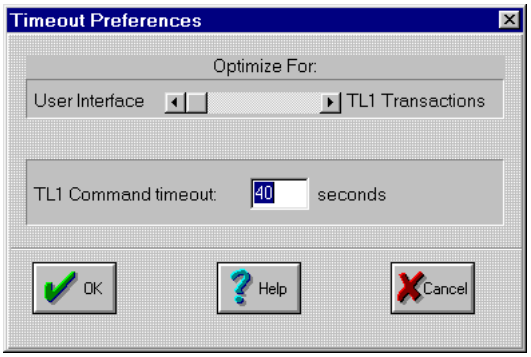
   The **Preferences** submenu appears.

Timeouts

You can set the user interface and TL1 transaction screen refresh rates, as well as the maximum timeout period.

1. On the **Connect** menu, click **Preferences**, then click **Timeouts**.

   The **Timeouts Preferences** dialog box appears.



2. Set the **Optimize For** bar and the **Timeouts and Logs** option.

   The **Optimize For** scroll bar lets you control the screen refresh rate and TL1 commands rate.

   Optimize for **User Interface** during system monitoring, as this allows a faster display of events affecting the OSIRIS hardware.

   Optimize for **TL1 Transactions** when you are creating or modifying OSIRIS-VUE/OSIRIS-VUE PLUS! sessions, as these actions use the most TL1 commands.

   You can change the maximum time that OSIRIS-VUE/OSIRIS-VUE PLUS! software takes to process a TL1 command. If the command is not processed within the specified number of seconds, an Error Message is displayed. The default value is 60 seconds.

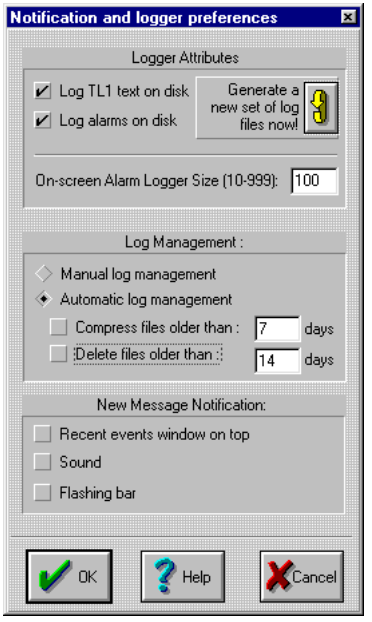
3. Click **OK**.

Notification and Event Log

You can define the way OSIRIS-VUE/OSIRIS-VUE PLUS! sessions log alarms, manage alarm files, and notify you when alarms occur.

1. On the **Connect** menu, click **Preferences**, then click **Notification and Event Log**.

   The **Notification and logger preferences** dialog box appears.



2. Referring to the information below, select the **Notification and Event Log** options of your choice and then click **OK**.

Options	Description
Log TL1 text on Disk	This option is enabled by default. Disable this option if you do not want the software to save all TL1 command inputs and outputs to a file. See "Log Files" on page 44.
Log Alarms on Disk	This option is enabled by default. Disable this option if you do not want the software to log alarm messages. See "Log Files" on page 44.
Generate a New Set of Log Files Now!	Click this button to create a new set of alarm messages and TL1 commands. Log files are saved on the PC hard disk. See"Log Files" on page 44.
On-Screen Alarm Logger Size (10-999)	If you anticipate a large number of incoming alarms, set the counter to a high number. A maximum of 999 alarms can be displayed in the Alarm Logger.
Manual Log Management	If you select this option, you must compress and delete TL1 and Alarm log files yourself. See "Managing Log Files" on page 45.

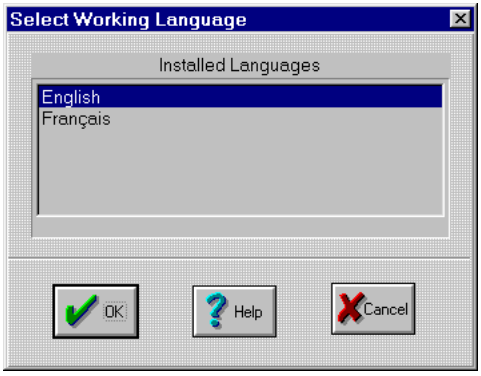
Options	Description
Automatic Log Management	If you select this option, the software automatically compresses and deletes TL1 and Alarm log files. See "Managing Log Files" on page 45.
Compress Files Older Than	You should enable this option if you want to save disk space. Enter the number of days after which TL1 and Alarm log files will be compressed.
Delete Files Older Than	You should enable this option if you want to save disk space. Enter the number of days after which TL1 and Alarm log files will be deleted.
Recent events window on top	Displays the most recent events affecting the OSIRIS or MST shelf on your PC screen. See "Recent Events Log" on page 276.
Sound	If you want an audible notification that a shelf has generated an alarm or status message, enable this option.
Flashing Bar	If you want a visual notification that a shelf has generated an alarm or status message, enable this option.

Working Language

You can set the OSIRIS-VUE/OSIRIS-VUE PLUS! software **Working Language** to English or French.

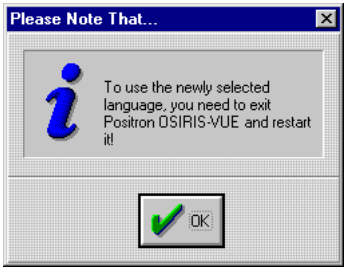
1. On the **Connect** menu, click **Preferences**, then click **Working Language**.

   The **Select Working Language** dialog box appears.



2. Select a language.
3. Click **OK**.

The **Please Note** information box appears.



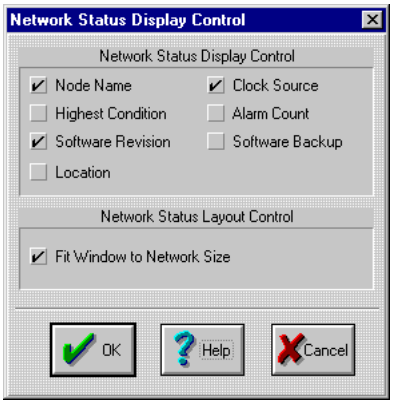
4. Save all your OSIRIS-VUE/OSIRIS-VUE PLUS! configuration files that are currently in use and exit the software.

Network Status Display

You can define which information appears in the Network Status window.

1. On the **Connect** menu, click **Preferences**, then click **Network Status Display**.

   The **Network Status Display Control** dialog box appears.



2. Enable the display options and then click **OK**.

   Note: Consult the online help for explanations of each option.

Log Files

Two different types of log files are generated regularly by OSIRIS-VUE/OSIRIS-VUE PLUS! software: alarm log files, and TL1 log files. By default, these files are automatically generated, but if you do not use them you can turn off the automatic generation. See "Notification and Event Log" on page 41.

These log files are stored in the same directory that the OSIRIS-VUE/OSIRIS-VUE PLUS! executable resides in. You can view the contents of these files in any text editor. Both types of log files are global, so information from different sessions and different networks will be in the same file.

TL1 log files are a trace of all TL1 commands and responses that are exchanged between OSIRIS-VUE/OSIRIS-VUE PLUS! sessions and a network element. This trace can be helpful for TL1-literate personnel who are diagnosing a communications problem. TL1 logs have the extension *TL1*.

Alarm log files contain alarm information similar to what is displayed in the Event Log window. These types of log files can also be useful when diagnosing a problem. Alarm log files have the extension *ALM*.

The OSIRIS-VUE/OSIRIS-VUE PLUS! software creates both types of log files on start-up. Each log file name consists of the date, followed by a single letter, for example:

```
980915a.TL1
```

In most cases, the single letter following the date is an *a*. However, if the OSIRIS-VUE/OSIRIS-VUE PLUS! application is closed and then re-opened on the same day, a new file is created, and the letter will be *b*, and so on. If the application is opened and closed several times on the same day, several log files will be created. You can also generate a new log file at any time by clicking the Generate a New Set of Log Files Now! button in the Notification and Logger Preferences dialog box. See "Notification and Event Log" on page 41. At midnight each day, the OSIRIS-VUE/OSIRIS-VUE PLUS! application closes these log files and then creates new ones with the new date.

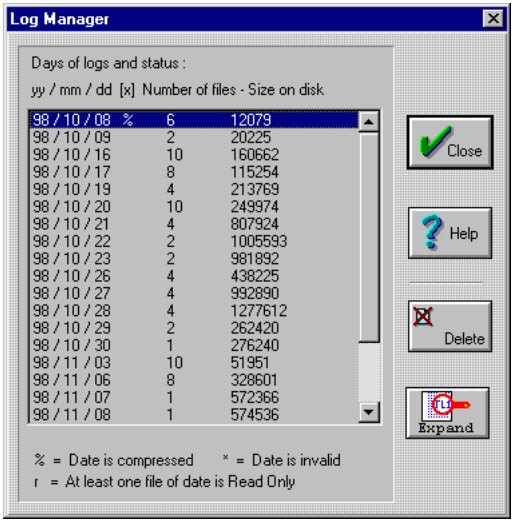
Viewing Log Files

You can view log files in any text editor, such as Microsoft Notepad. If you have enabled log file compression (see "Notification and Event Log" on page 41), you must decompress the files within the OSIRIS-VUE/OSIRIS-VUE PLUS! application before you can view them.

To decompress log files:

1. On the **Connect** menu, click **Log Manager**.

The **Log Manager** dialog box appears.



2. Select the files to be uncompressed, then click **Expand**.
3. Click **Close**.
4. Use a text editor to view the log files.

Managing Log Files

TL1 and Alarm log files can increase by several megabytes each day, depending on your network activity. You can let OSIRIS-VUE/OSIRIS-VUE PLUS! software automatically compress and delete these files by enabling Automatic Log Management. See "Notification and Event Log" on page 41 for details.

If you choose to disable Automatic Log Management, then you should compress and delete these files yourself, either in Windows Explorer, or through the **Log Manager** dialog box.

Network Security

At ring start-up, the only user defined is *ROOT*. You can add more users and assign various access permissions on a per node or network-wide basis. Adding users with limited rights can be useful if you want to give technicians access to certain nodes or limit their access rights.

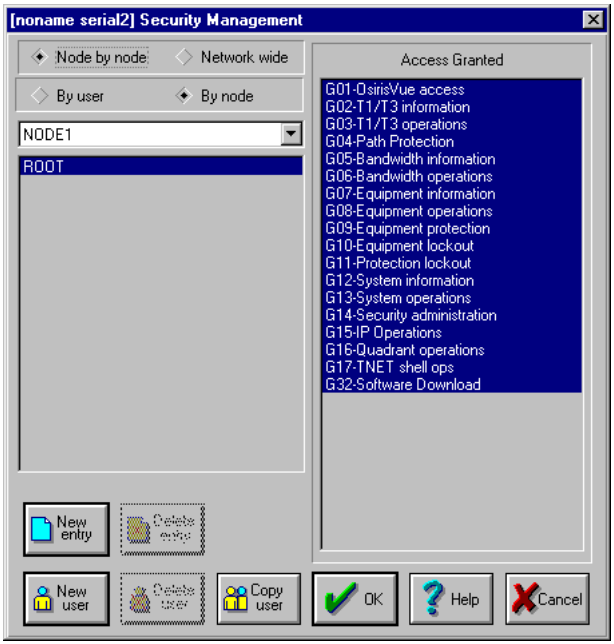
Viewing Network Security

To view current security settings, follow this procedure.

1. On the **Network** menu, click **Security Management**.

   The **Security Management** dialog box appears.

OSIRIS



OSIRIS

1. Select **Node-by-node management** to view security settings on a particular node, or select **Network-wide management** to view global network security settings.

Adding a User

Follow the procedures to add a user and define permission levels on an OSIRIS node.

OSIRIS Nodes

1. On the **Network** menu, click **Security Management**.

   The **Security Management** dialog box appears.

2. Decide whether you want to assign access permissions to all nodes at once (**Network-wide**) or to each node individually (**Node-by-node**).

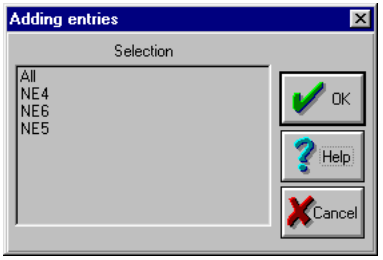
3. Click the **New User** button.

   The **Creating New User** dialog box appears.

4. Enter the user name, password, and confirm the password, then click **OK**.

   Note: Passwords must contain at least six letters, one number, and one symbol.

5. If you are adding a user on a node-by-node basis, the **Adding Entries** dialog box appears.



   Select one or more nodes that the new user will have access to, then click **OK**.

6. The new user name appears on the left side of the **Security Management** dialog box. Select this user name.

7. In the **Access Granted** box, select the permissions that you want to assign to this user.

   Note: If you assign Security Administration access to a user, this user has the right to change access permissions for all other users. In most cases, only *ROOT* should have this access right.

8. Click **OK** to assign these permissions to the user.

   Note: You can later change permissions by adding or removing items in the **Access Granted** box. Click **OK** to apply changes.

Deleting a User

Follow these steps to remove a user definition.

1. Select the user name.
2. Click the **Delete User** button.

Changing Passwords

When you first connect to a node, the default name and password are *ROOT* and *FACTORY1%* respectively. You should change the password as soon as possible for security purposes.

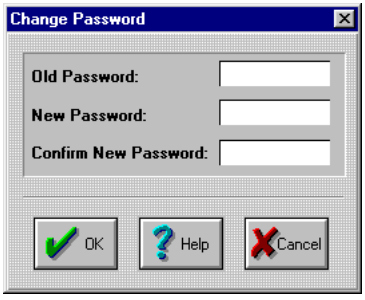
Note: You can only change your own password.

Follow this procedure to change the password.

1. On the **Session** menu, click **Change Password**.

   The **Change Password/Password normalization** dialog box appears.

OSIRIS



2. Enter the **Old Password**, **New Password**, and then **Confirm the New Password**.

   Passwords must contain at least six letters, one number, and one symbol.

Communicating with Other Nodes

You may wish to send messages to a co-worker stationed at another node when you are diagnosing a problem or setting up the ring. OSIRIS-VUE/OSIRIS-VUE PLUS! lets you send and exchange messages via the *Send Message* and *Chat* dialog boxes.

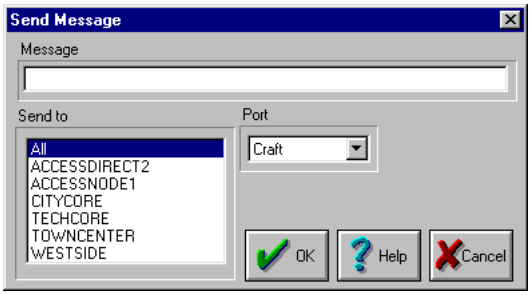
For quick, one-way communication, you can send a message to another node by following the procedure below. To establish a chat session with another node, see "Chatting" on page 50.

Sending a Message

Follow this procedure to send a message to someone stationed at another node in the ring. A computer running OSIRIS-VUE/OSIRIS-VUE PLUS! must be directly connected to the nodes that will receive this message; otherwise, the message is ignored.

1. On the **Session** menu, click **Send Message**.

   The **Send Message** dialog box appears.



2. Enter the message to send.
3. Select nodes to send this message to. Use CTRL or SHIFT to select more than one node.
4. Set **Port** to the network element port that the far-end computer is connected to.

   Note: The far-end computer cannot be connected via a telnet session.

5. Click **OK**.

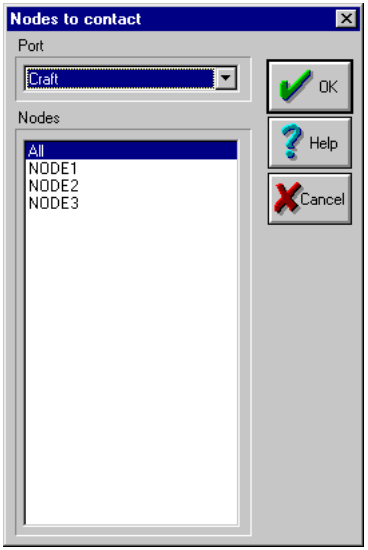
6. The nodes that receive the message display a dialog box. In this example, the message is *HELLO* and the sending node is *CITYCORE*.

Chatting

Follow this procedure to establish a chat session with someone stationed at another node in the ring. A computer running OSIRIS-VUE/OSIRIS-VUE PLUS! must be directly connected to the nodes that will participate in the chat session. You cannot chat with nodes that are connected via telnet sessions.

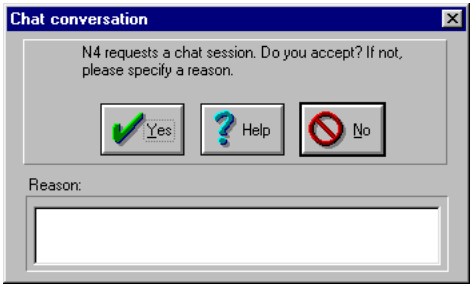
1. On the **Session** menu, click **Chat**.

   The **Nodes to Contact** dialog box appears.

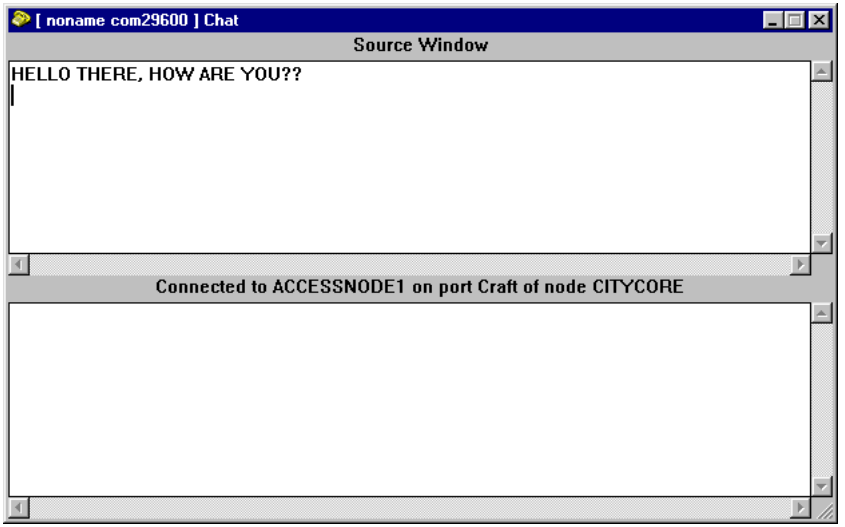


2. Set **Port** to the network element port that the far-end computer is connected to.
3. Select nodes to send this message to. Use CTRL or SHIFT to select more than one node.
4. Click **OK**.

5. The nodes that receive the chat request display the **Chat Conversation** dialog box.



6. The person stationed at this far-end node must click **Yes** to establish the chat session.
7. The **Chat** window appears.



8. Close the window at any time to end the chat session.

Provisioning the Clock Source

The clock source is usually provisioned during ring start-up. See the *OSIRIS® Network User's Guide (206-002)*. Clock provisioning procedures for OSIRIS shelves are provided here in case you need to modify clock sources after start-up.

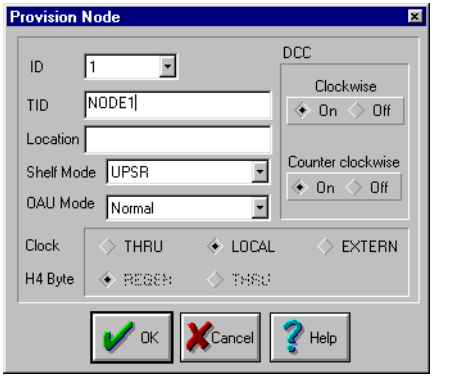
One node in the ring must control timing (LOCAL or EXTERN Clock) and H4 Byte information (REGEN) for the whole ring. All other nodes on the ring must be assigned with THRU line timing so that nodes are synchronized.

Provisioning an Internal Clock Source

Follow the procedure in this section to set the Internal Clock Source.

1. On the node that will provide clocking, right-click the **Network Status** window, then click **Set Shelf Information**.

   The **Provision Node** dialog box appears.



2. Set the Clock as follows:

   Set **Clock** to **LOCAL** if you want the internal clock of this node to generate timing for the ring

   Set **Clock** to **THRU** on all other nodes in the ring.

3. Set the **H4 Byte** to **REGEN**.

4. Click **OK**.

   The **Network Status** window reappears.

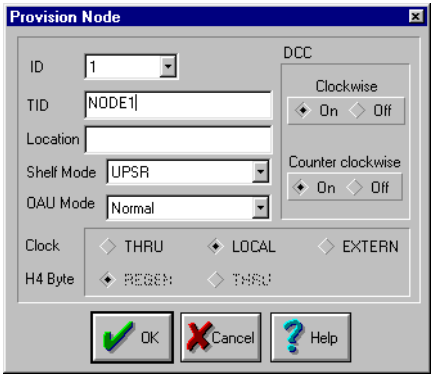
5. Verify that all other nodes have **Clock** and **H4 Byte** set to **THRU**.

Provisioning an External Clock Source

Follow the procedure in this section to set the External Clock Source for an external timing device to supply timing to the network.

1. On the node that will provide clocking, right-click the **Network Status** window, then click **Set Shelf Information.**

   The **Provision Node** dialog box appears.



2. Set the **Clock** to **EXTERN** for this node to supply timing to the network.
3. Click **OK**.

   The **Network Status** window reappears.

   A **Clock Missing** alarm appears in the Active Alarms report. This alarm occurs because no Network Clock channel has been provisioned yet.

4. Verify that all other nodes have **Clock** set to **THRU**.
5. In the **Network Status** window, double-click the node provisioned as **EXTERN**.

   The **Shelf-level** window appears.

Note: The DS1/E1 mapper on which you will provision the clocking signal(s) must be in one of mapper slots indicated in the table below. The clocking signal can only be provisioned on the first channel of that mapper.

TIU for **OSIRIS**; or on a per card or per shelf basis for **MST**	**Slot # for Primary External Clock**	**Slot # for Secondary External Clock**
MAS STD (800361/6)	1	2
MAS XTD Top Right (800361/6)	1	2
MAS XTD Bottom Left (800366/6)	14	15
MAS XTD Bottom Right (800361/6)	16	17

6. Right-click a slot that contains a DS1/E1 mapper.
7. Click **Provision As**, then click **DS1/E1**.

   The **Mapper-level** dialog box appears.
8. Double-click the **first** channel.

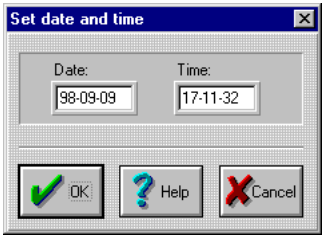
   The **Channel-level** dialog box appears.
9. Select the **Clock** tab.
10. Select **Primary Clock** or **Secondary Clock**.
11. Click **OK** and then **Yes** to confirm.
12. Click **OK** to exit the dialog box.

Setting the Date and Time

When you power up a new node, the date and time are set to default values. You must change these values for the times associated with alarms and log files to be correct.

1. Right-click the node icon and click **Download Real Time Clock**.

   The **Set Date and Time** dialog box appears.



2. Enter the current date (yy-mm-dd) and time (hh-mm-ss).
3. Click **OK**. The **Network Status** window reappears.

Chapter 3
Provisioning Point-to-Point Cross-connections

This chapter describes how to provision basic point-to-point connections for your OSIRIS network. Both SONET and SDH versions are covered.

Before you provision cross-connections, you must complete ring start-up procedures as described in the *OSIRIS® Network User's Guide (206-002)*.

Provisioning Network Bandwidth

Once you have installed a mapper in a slot, you can assign bandwidth to it. You should plan global network-wide bandwidth assignments before you assign bandwidth to individual mappers.

Specific instructions on how to provision basic Add/Drop cross-connects for each type of mapper are included in the sections that follow. These instructions differ only slightly for other types of point-to-point cross-connections.

See your *Shelf's Installation Guide* for instructions on how to install a particular mapper.

Follow this procedure to provision and view network-wide bandwidth assignments.

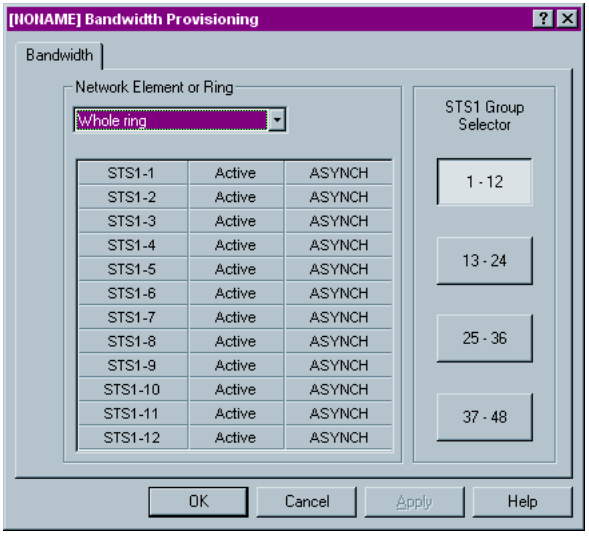
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears. Decide if you want to provision bandwidth for the whole ring or for a specific network element.

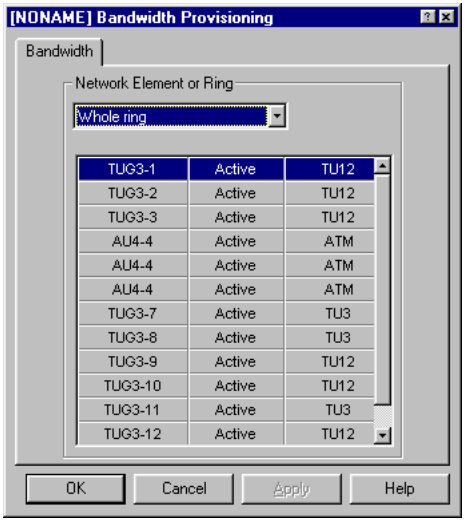
2. Select a Whole Ring or one Network Element on which you will provision STS1/TUG3.

3. **SONET only**: Select the STS1 Group on which you want to provision the STS1s. Then go to step 4.

SONET



SDH



4. Decide which STS1 or TUG3 channel(s) you will use for each type of traffic. The following traffic types are available:

   ATM allows STS3c and AU-4 cross-connections.

   ASYNCH allows STS1 and DS-3 cross-connections.

   VTFLOAT allows VT1.5 cross-connections.

   TU3 allows E3 and DS3 SDH cross-connections.

   TU12 allows TU12 cross-connections.

   NONSPEC allows STM-1 TU12 and PacketPath cross-connections.

The default traffic type for SONET is set to ASYNCH, and for SDH it is set to TU12.

Note: Traffic format must correspond to the type of mappers you have installed in your shelves.

5. Right-click an STS1/TUG3 and select the type of traffic you want it to carry. You can Deactivate, Normalize, or Activate the selected STS1/TUG3. See the on-line help for details about each of these options.

6. Click **OK** to exit the dialog box.

Note: You can also provision bandwidth by right-clicking the blue background in the **Select Path For This Channel** dialog box and assigning STS1 Groups and then STS1 path assignments for SONET OR TUG3 path assignments for SDH.

Provisioning a DS1 Cross-connection

The SONET DS1 mapper can be used to transport traffic over a SONET network, and the SDH DS1 mapper is used to interface a SONET DS1 signal with an SDH network.

DS1 mapper can be used to transport low capacity traffic. The SONET DS1 mapper can take up to 4 or 7 VT1.5s, and the SDH DS1 mapper can take up to 4 TU12s. The SONET DS1 mapper may operate in OC-3, OC-12 and OC-48 systems, and the SDH DS1 mapper may operate in both STM-1 and STM-4 systems.

Note: Use the procedure below to provision a DS1PM mapper (800324 and 800327). DS1PM-mapper specific information are indicated throughout.

You can install DS1 mappers in the following slots:

Shelf	Slots
OSIRIS STD	1-7
OSIRIS XTD	1-7, 9-22
OSIRIS XTS	6-12
OSIRIS Micro DS1/E1	1
OSIRIS Micro EHD & OSIRIS Micro WMU DS1/E1	1, 2

- The 4-channel SONET DS1 mapper can be installed in the OSIRIS STD, OSIRIS XTD, OSIRIS XTS, OSIRIS Micro DS1/E1, and OSIRIS Micro WMU DS1/E1 Shelves.
- The 7-channel SONET DS1 mapper should be installed in the OSIRIS Micro EHD Shelf so that all 7-channels can be used. If you install this mapper in an OSIRIS STD, OSIRIS XTD, OSIRIS XTS, or OSIRIS Micro and OSIRIS Micro WMU DS1/E1 Shelves, only up to 4 channels can be used.
- The SDH DS1 mapper is available in a 4-channel format and can be installed in all shelves.

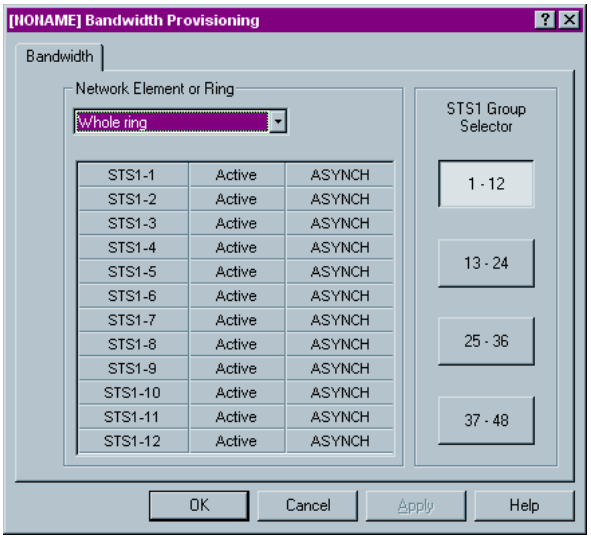
For more installation instructions and equipping rules, see your *Shelf's Installation Guide*.

To Provision the Mapper

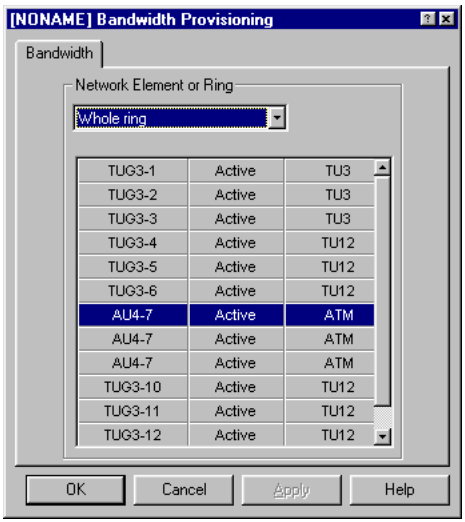
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET (DS1)



SDH (DS1)



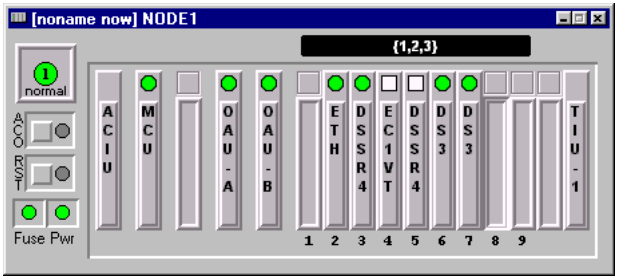
2. Decide if you will provision bandwidth for the DS1 mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. **SONET only**: Select the STS1 Group on which you want to provision the STS1s.
4. Decide which STS1/TUG3 that you will use and right-click it.
5. Set the type of traffic of the STS1 to **VTFLOAT**. For SDH version, ensure that the bandwidth is set to **TU12.**

   A confirmation dialog box appears.
6. Click **Yes**.

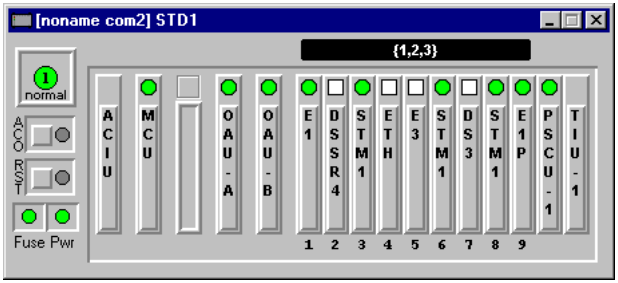
   The **Bandwidth Provisioning** dialog box reappears with **VTFLOAT/TU12** setting.
7. Click **OK** to exit the dialog box.
8. In the **Network Status** window, double-click the node with the DS1 mapper.

   The **Shelf-level** window appears.

SONET (DS1)



SDH (DS1)



9. If this card will be protected, right-click the protection mapper slot, click **Provision As**, then click **DS1P**.

   Note: For STD, XTD and XTS shelves, ensure that you have a PSCU(s) installed in the appropriate slot(s).

10. Right-click the mapper slot and click **Provision As**, then click:

- **DS1** then **Protected**

  A blue square appears on the protected mapper.

  or

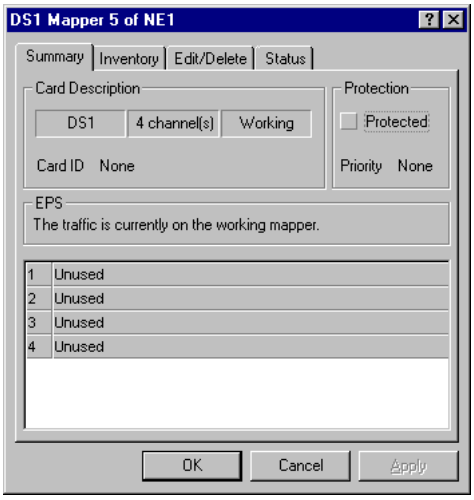
- **DS1** then **Unprotected**

11. From the **Shelf-level** window, double-click the DS1 mapper slot.

    The **Mapper-level** dialog box appears.

SONET (DS1)

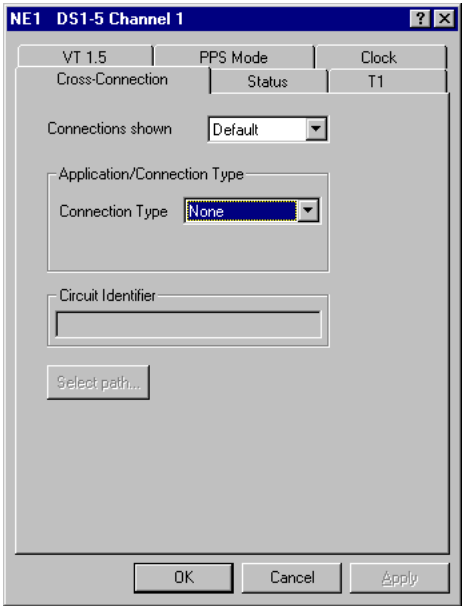
SDH (DS1)



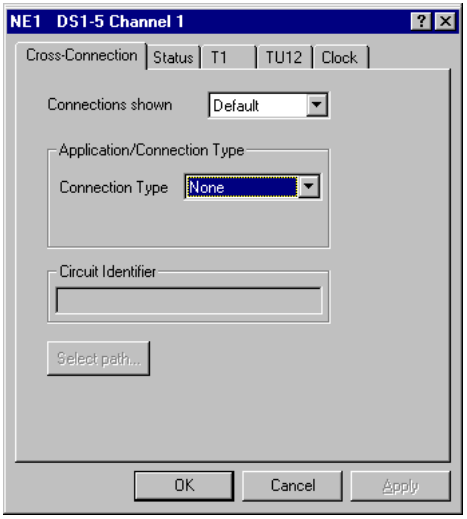
12. Double-click an unused **Channel**.

    The **Channel-level** dialog box appears.

SONET (DS1)



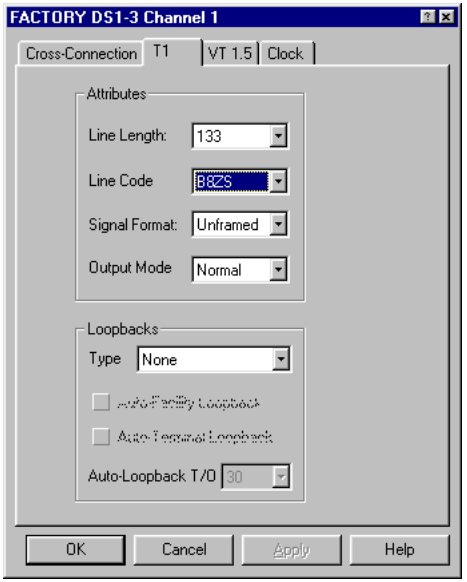
SDH (DS1)



13. Click the **T1** tab if this is a DS1 or DS1PM mapper.

    The **T1** dialog box appears.

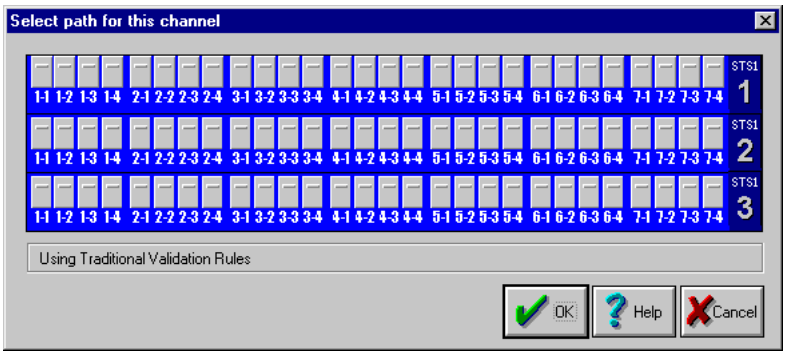
SONET



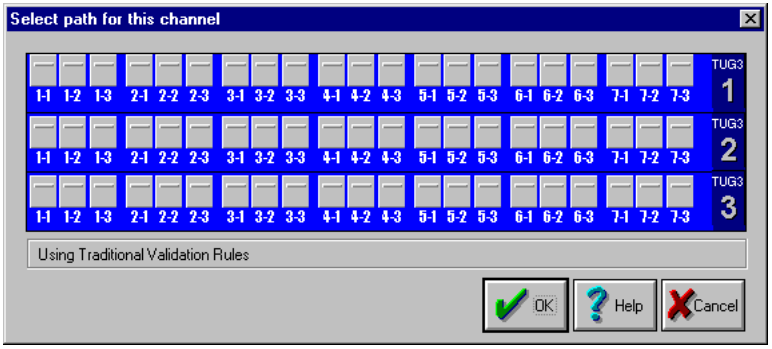
14. Set **Signal Format** to **UNFRAMED** if you are provisioning a **DS1** mapper.
    OR

    Set **Signal Format** to **SF/ESF/Unframed** if you are provisioning a **DS1PM** or **DS1PM+** mapper.
15. Click the **Cross-Connection** tab.
16. Set **Connection Type** to **Add/Drop**.
17. Enter a **Circuit Identifier** to assign a name to this cross-connection.
18. Click **Select Path**. The **Select Path For This Channel** dialog box appears.

SONET (DS1)



SDH (DS1)



19. Select the VT1.5/TU12 on which you want to provision traffic.

    Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

    However, if you are provisioning an OC-12/STM-4 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1/TUG3 channel number, then click **STS1/TUG3 Path Assignments**. Select the channel that you want to view.

20. Click **OK**. The **Channel-level** dialog box reappears.

21. Click **OK**. The **Create Cross-connection** dialog box appears.

22. Click **Yes**.

23. Repeat this procedure to provision the other side of the cross-connection.

Provisioning a DS1PM+ Cross-connection

The DS1PM+ Mapper offers enhanced in-service performance monitoring for anomaly and defect detection, line and path-level performance monitoring, failure detection, and events detection for test and loopback purposes.

The DS1PM+ mapper is currently available for SONET only. It can take up 4 and 8 VT1.5s and may operate in both OC-3 and OC-12 systems.

You can install DS1PM+ mapper in the following slots:

Shelf	Slots
OSIRIS STD	1-7
OSIRIS XTD	1-7, 9-22
OSIRIS XTS	6-12
OSIRIS Micro DS1/E1	1
OSIRIS Micro EHD & OSIRIS Micro WMU DS1/E1	1, 2

- To use all 8 channels of the 8-channel DS1PM+ mapper, install the mapper in a OSIRIS Micro EHD DS1/E1 shelf.
- When populating the OSIRIS XTD Shelf with the DS1PM+ mappers, leave one slot on the top level and two slots on the bottom level of the shelf empty.

The DS1PM+ performance monitoring mapper analyzes the incoming T1 frame format for quality, T1 alarm flags, and performance. This mapper is capable of monitoring up to eight DS1 channels for the following events:

- Frame errors (SF)
- CRC errors (ESF)
- Remote alarm indications (RAI)
- Alarm indication signals (AIS)
- Loss of frame (LOF)
- Loss of signal (LOS)

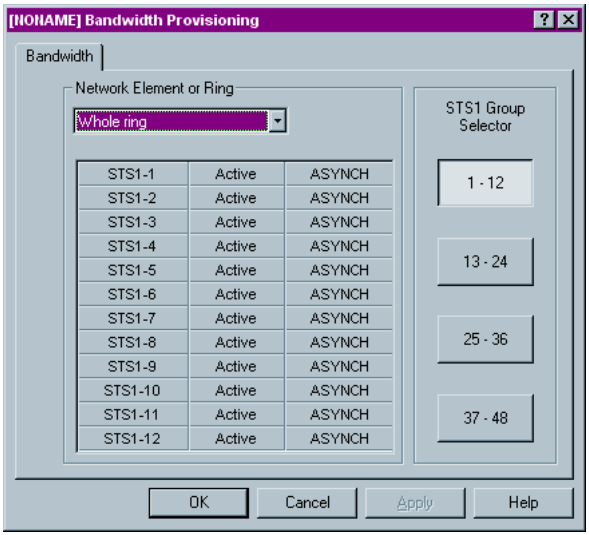
For more installation instructions and equipping rules, see the *Shelf Installation Guide* for your shelf.

Note: You will need to install NE software version 3.7, 3.77, or higher to use the DS1PM+ mapper.

To Provision the Mapper

1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

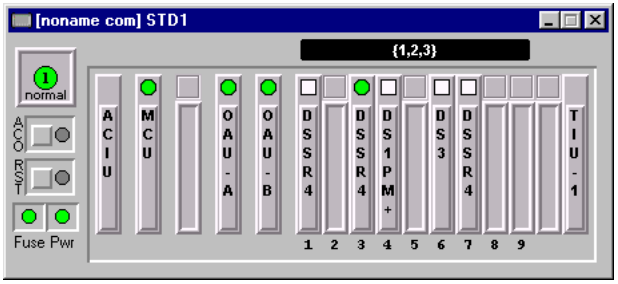


2. Decide if you will provision bandwidth for the DS1PM+ mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. Select the **STS1 Group** on which you want to provision the STS1s.
4. Decide which **STS1** that you will use and right-click it.
5. Set the type of traffic of the STS1 to **VTFLOAT**.

   A confirmation dialog box appears.
6. Click **Yes**. The **Bandwidth Provisioning** dialog box reappears.

   The **VTFLOAT** setting appears.
7. Click **OK** to exit the dialog box.
8. In the **Network Status** window, double-click the node with the DS1PM+ mapper.

The **Shelf-level** window appears.



9. If this card will be protected, right-click the protection mapper slot, click **Provision As**, then click **DS1P**.

   Note: You can protect a 4-channel DS1PM+ mapper with a regular DS1 mapper. If the mapper fails, traffic will continue on the protection mapper, but performance monitoring statistics will not be monitored.

10. Right-click the mapper slot and click **Provision As**, then click **DS1PM**.

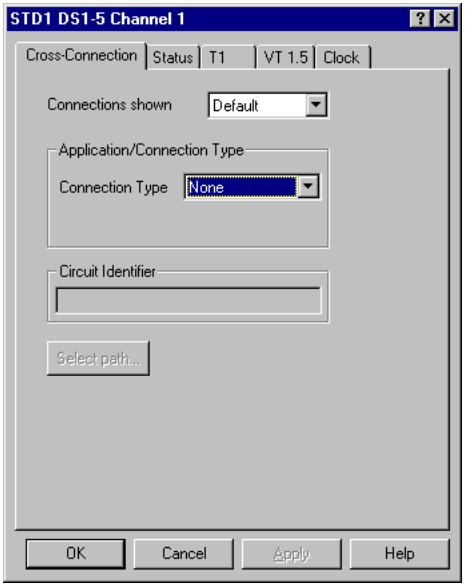
11. From the **Shelf-level** window, double-click the DS1PM+ mapper slot.

    The **Mapper-level** dialog box appears.

12. Double-click an unused **Channel**.

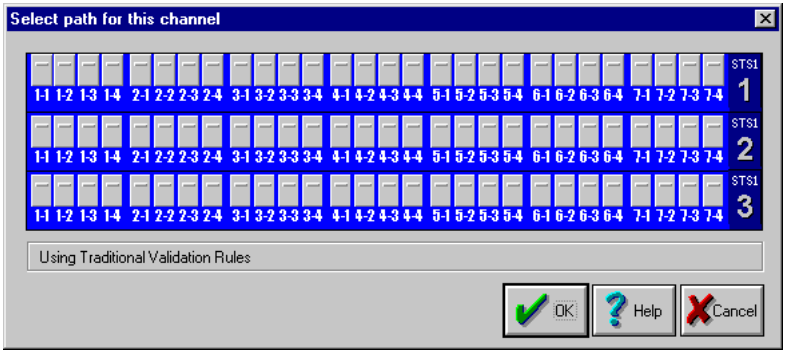
    The **Channel-level** dialog box appears.

13. Click the **Cross-Connection** tab.



14. Set **Connection Type** to **Add/Drop**.
15. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
16. Click **Select Path**.

    The **Select Path For This Channel** dialog box appears.



17. Select the VT1.5 on which you want to provision traffic.

    Only three STS1 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three STS1 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

    However, if you are provisioning an OC-12/STM-4 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1/TUG3 channel number, then click **STS1/TUG3 Path Assignments**. Select the channel that you want to view.

18. Click **OK**.

    The **Channel-level** dialog box reappears.

19. Click **OK**.

    The **Create Cross-connection** dialog box appears.

20. Click **Yes**.

21. Repeat this procedure on another node to provision the other side of the cross-connection.

Provisioning an E1 Cross-connection

E1 mapper can be used to transport low capacity traffic. The E1 mapper can take up 4 TU12s. The E1 mapper may operate in both STM-1 and STM-4 systems.

You can install E1 mapper in the following slots:

Shelf	Slots
OSIRIS STD	1-7
OSIRIS XTD	1-7, 9-22
OSIRIS XTS	6-12
OSIRIS Micro DS1/E1	1
OSIRIS Micro EHD & OSIRIS Micro WMU DS1/E1	1, 2

Note: The E1 mapper is available in a 4-channel format and can be installed in all shelves.

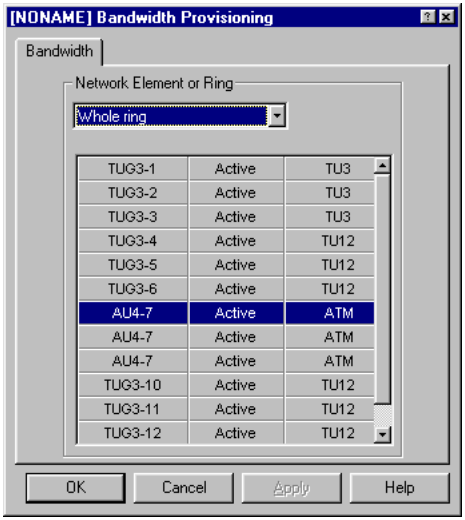
For more installation instructions and equipping rules, see your *Shelf's Installation Guide*.

To Provision the Mapper

1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SDH (E1)



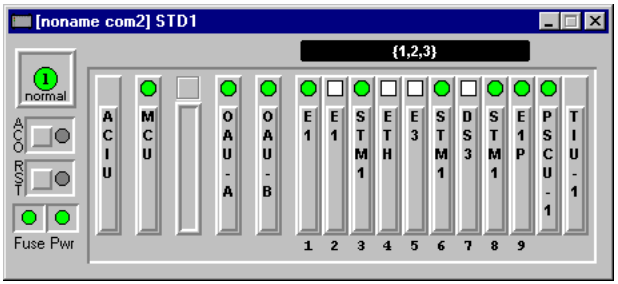
2. Decide if you will provision bandwidth for the E1 mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. Decide which TUG3 that you will use and right-click it.
4. Set the type of traffic of the TUG3 to **TU12.**

   A confirmation dialog box appears.
5. Click **Yes**.

   The **Bandwidth Provisioning** dialog box reappears with **TU12** setting.
6. Click **OK** to exit the dialog box.
7. In the **Network Status** window, double-click the node with the E1 mapper.

   The **Shelf-level** window appears.

SDH (E1)



8. If this card will be protected, right-click the protection mapper slot, click **Provision As**, then click **E1P**.

   Note: For STD, XTD and XTS shelves, ensure that you have a PSCU(s) installed in the appropriate slot(s).
9. Right-click the mapper slot and click **Provision As**, then click:
   - **E1** and then **Protected**

     A blue square appears on the protected mapper.

     or
   - **E1** and then **Unprotected**
10. From the **Shelf-level** window, double-click the E1 mapper slot.

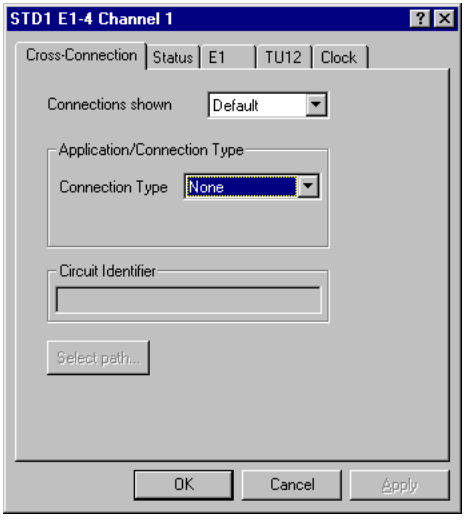
The **Mapper-level** dialog box appears.

SDH (E1)

11. Double-click an unused **Channel**.

    The **Channel-level** dialog box appears.

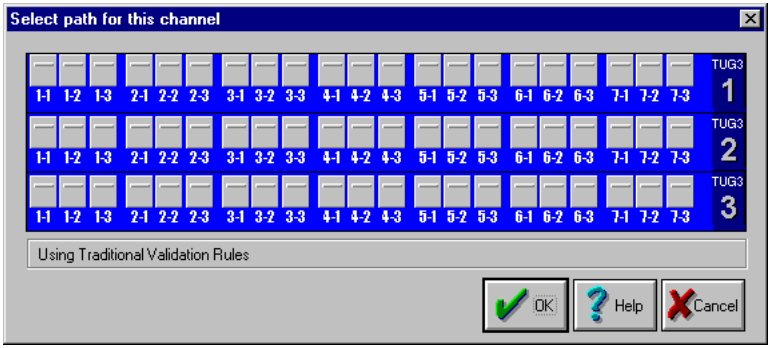
SDH (E1)



12. Click the **Cross-Connection** tab.
13. Set **Connection Type** to **Add/Drop**.
14. Enter a **Circuit Identifier** to assign a name to this cross-connection.

15. Click **Select Path**. The **Select Path For This Channel** dialog box appears.

SDH (E1)



16. Select the TU12 on which you want to provision traffic.

    Only three TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

    However, if you are provisioning an STM-4 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click an TUG3 channel number, then click **TUG3 Path Assignments**. Select the channel that you want to view.

17. Click **OK**. The **Channel-level** dialog box reappears.
18. Click **OK**. The **Create Cross-connection** dialog box appears.
19. Click **Yes**.

Repeat this procedure to provision the other side of the cross-connection.

Provisioning a DS3 Cross-connection

The SONET DS3 mapper can be used to transport traffic over a SONET network, and the SDH DS3 mapper is used to interface an DS3 signal with an SDH network.

The DS3 mapper uses one STS1 or TUG3 and may operate in both OC-3/STM-1 and OC-12/STM-4 systems.

You can install DS3 mappers in the following slots:

Shelf	Slots
OSIRIS STD	5,6,7
OSIRIS XTD	1-3, 5-7, 9-11, 19-21
OSIRIS XTS	1-7
OSIRIS Micro & OSIRIS Micro WMU DS3/E3	1

For more installation instructions and equipping rules, see the *Installation Guide* for your shelf.

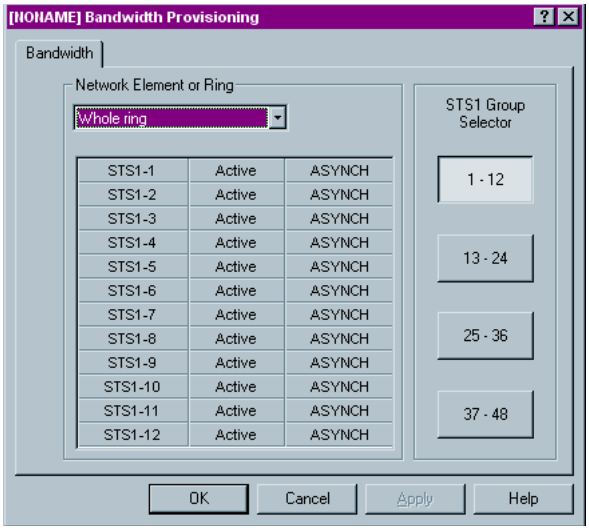
An E3 mapper is also available for SDH networks. See "Provisioning an E3 Cross-connection" on page 83 for details.

To Provision the Mapper

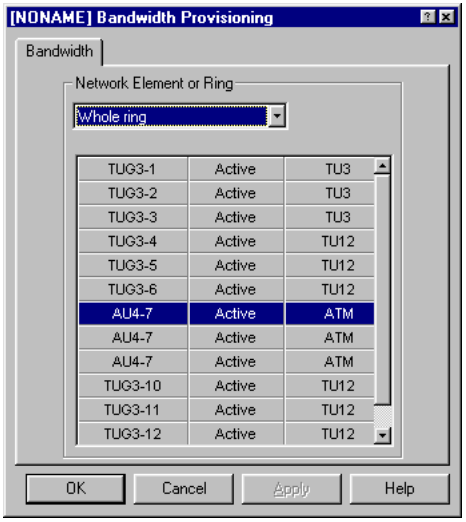
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET (DS3)



SDH (DS3)



2. Decide if you will provision bandwidth for the DS3 mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.

   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.

- If this traffic will be carried on a specific network element, select a specific **Network Element**.

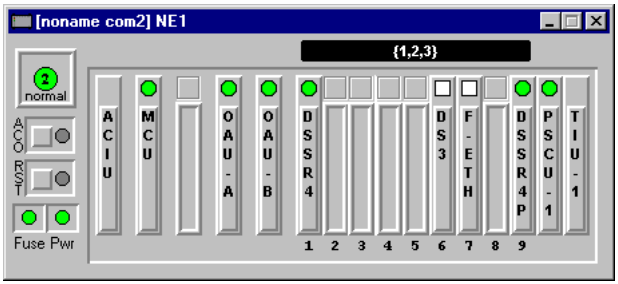
3. **SONET only**: Select the **STS1 Group** on which you want to provision the STS1s.
4. Decide which STS1/TUG3 that you will use and right-click it.
5. Set the type of traffic for the STS1 to **ASYNCH** and to **TU3** for the TUG3.

   A confirmation dialog box appears.
6. Click **Yes to confirm**.

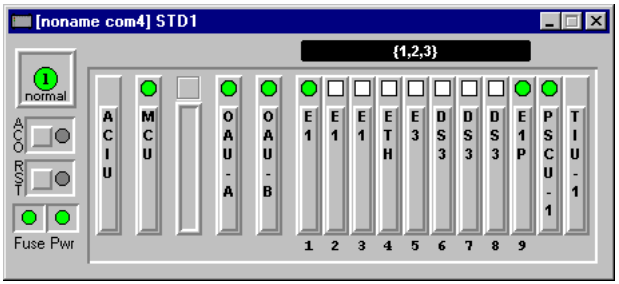
   The **Bandwidth Provisioning** dialog box reappears. The **ASYNCH/TU3** setting appears for the STS1/TUG3.
7. Click **OK** to exit the dialog box.
8. In the **Network Status** window, double-click the node with the DS3 mapper.

   The **Shelf-level** window appears.

SONET (DS3)



SDH (DS3)



9. If this card will be protected, right-click the protection mapper slot. Click **Provision As**, then click **DS3P**.

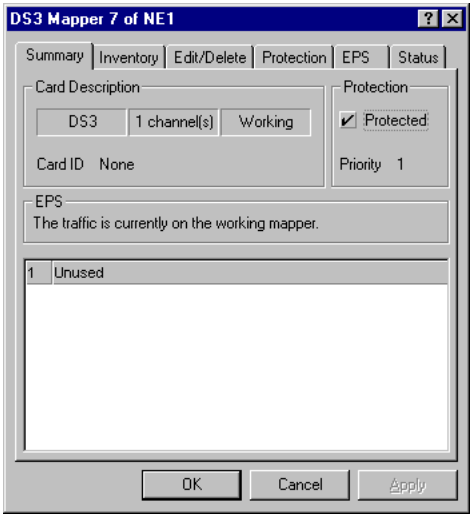
10. Right-click the mapper slot and click **Provision As**, then click:
    - **DS3** and then **Protected**

      A blue square appears on the protected mapper.

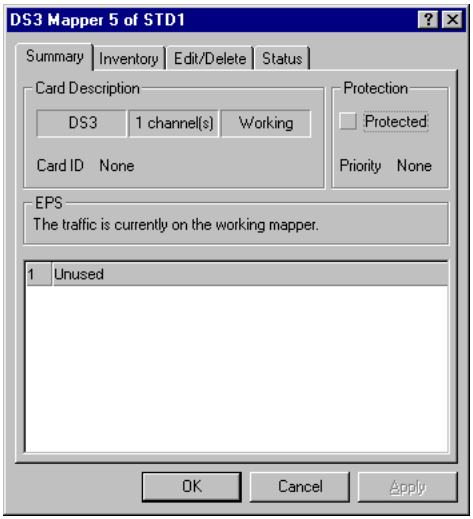
      or
    - **DS3** and then **Unprotected**
11. From the **Shelf-level** window, double-click the DS3 mapper slot.

    The **Mapper-level** dialog box appears.

SONET (DS3)



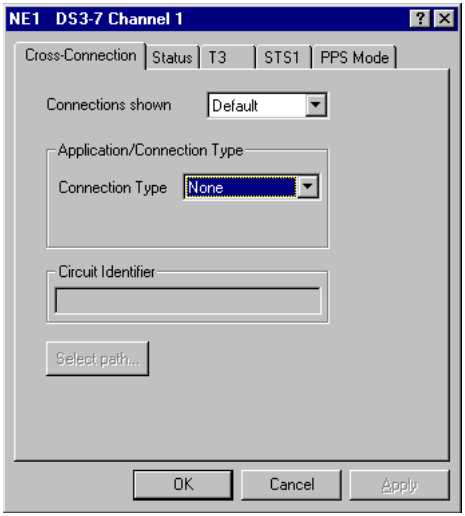
SDH (DS3)



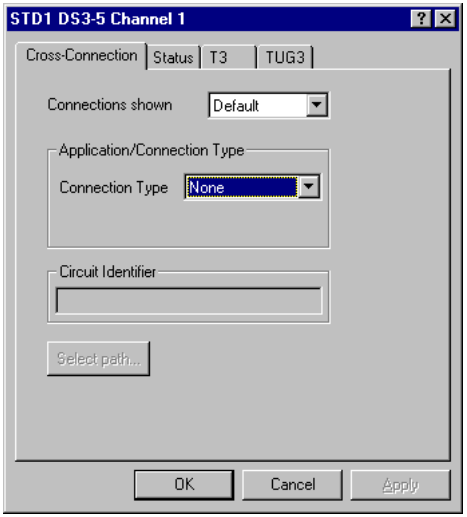
12. Double-click an unused **Channel**.

    The **Channel-level** dialog box appears.

SONET (DS3)



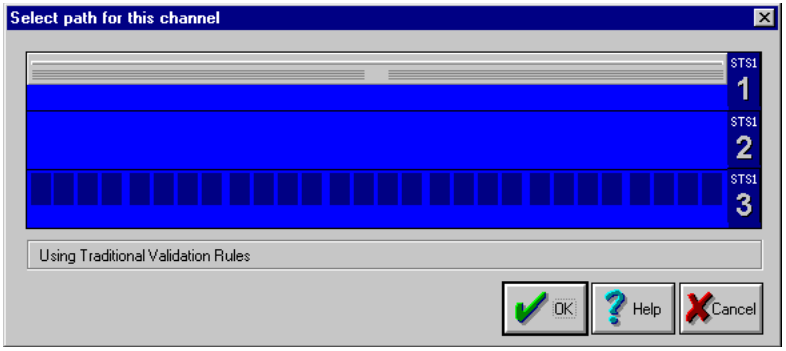
SDH (DS3)



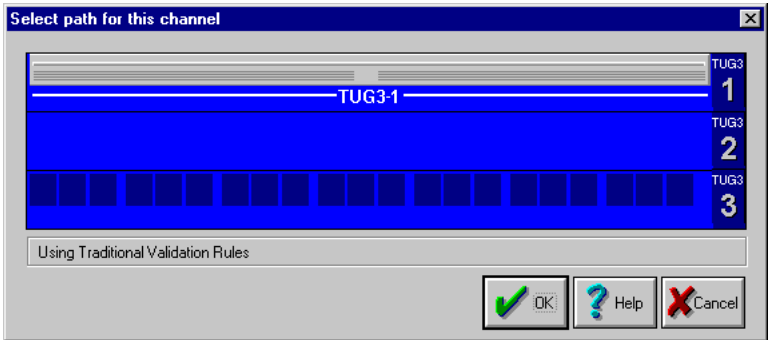
13. Set **Connection Type** to **Add/Drop**.
14. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
15. Click **Select Path**.

    The **Select Path For This Channel** dialog box appears.

SONET (DS3)



SDH (DS3)



16. Locate the STS1/TUG3 on which you want to provision traffic.

    Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

    However, if you are provisioning an OC-12/STM-4 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1/TUG3 channel number, then click **STS1/TUG3 Path Assignments**. Select the channel that you want to view.

17. Click the STS1/TUG3 on which you want to provision traffic.
18. Click **OK**. The **Channel-level** dialog box reappears.
19. Click **OK**. The **Create Cross-connection** dialog box appears.
20. Click **Yes** and repeat this procedure on another node to provision the other side of the cross-connection.

Provisioning an E3 Cross-connection

E3 mappers can be used to transport E3 traffic over a OSIRIS SDH network. An E3 mapper uses one TUG3 and may operate in both STM-1 and STM-4 systems.

You can install E3 mappers in the following slots:

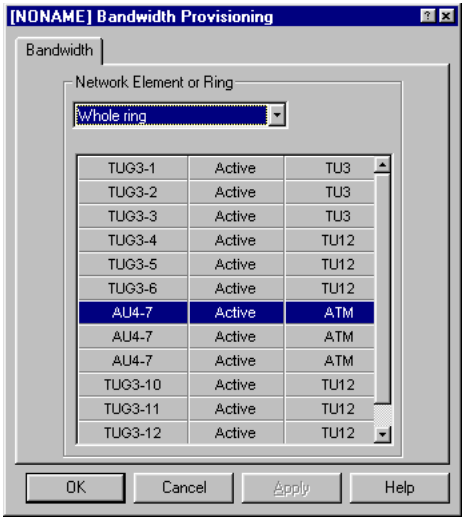
Shelf	Slots
OSIRIS STD	5,6,7
OSIRIS XTD	1-3, 5-7, 9-11, 19-21
OSIRIS XTS	1-7
OSIRIS Micro & OSIRIS Micro WMU DS3/E3	1

For more installation instructions and equipping rules, see your *Shelf's Installation Guide*.

To Provision the Mapper

1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

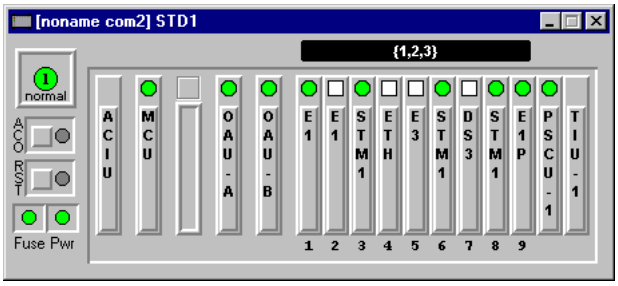


2. Decide if you will provision bandwidth for the E3 mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. Decide which TUG3 that you will use and right-click it.
4. Set the type of traffic for TUG3 to **TU3**.

   A confirmation dialog box appears.
5. Click **Yes**.

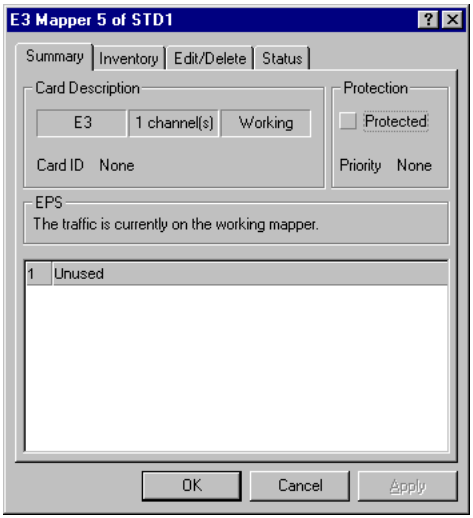
   The **Bandwidth Provisioning** dialog box reappears. The **TU3** setting appears for the selected TUG3.
6. Click **OK** to exit the dialog box.
7. In the **Network Status** window, double-click the node with the E3 mapper.

   The **Shelf-level** window appears.



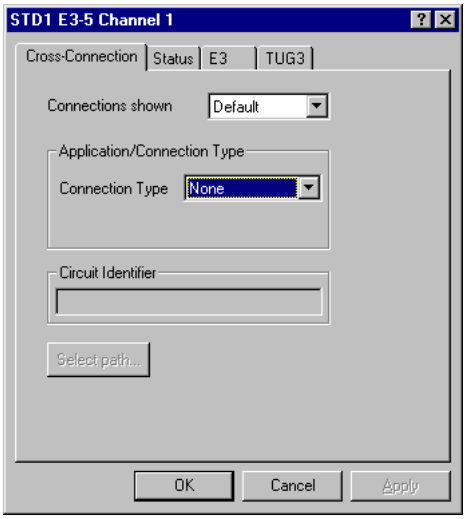
8. If this card will be protected, right-click the protection mapper slot. Click **Provision As**, then click **E3P**.
9. Right-click the mapper slot and click **Provision As**, then click **E3**.
10. From the **Shelf-level** window, double-click the E3 mapper slot.

The **Mapper-level** dialog box appears.



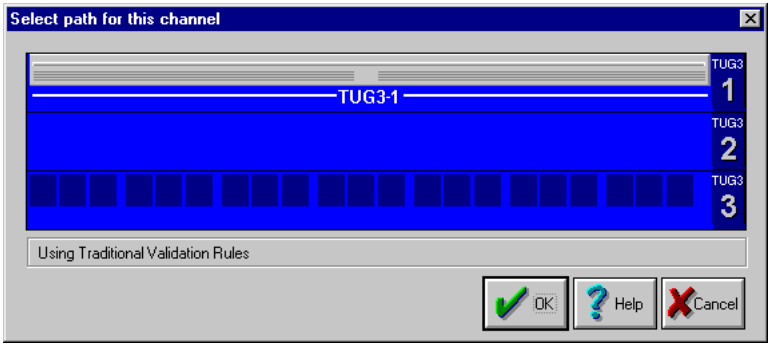
11. Double-click an unused **Channel**.

    The **Channel-level** dialog box appears.



12. Set **Connection Type** to **Add/Drop**.
13. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
14. Click **Select Path**.

The **Select Path For This Channel** dialog box appears.



15. Locate the TUG3 on which you want to provision traffic.

    Only three TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

    However, if you are provisioning an STM-4 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click a TUG3 channel number, then click **TUG3 Path Assignments**. Select the channel that you want to view.

16. Click the TUG3 on which you want to provision traffic.
17. Click **OK**.

    The **Channel-level** dialog box reappears.

18. Click **OK**.

    The **Create Cross-connection** dialog box appears.

19. Click **Yes**.
20. Repeat this procedure on another node to provision the other side of the cross-connection.

Provisioning an EC-1 Cross-connection

The EC-1 mapper provides an electrical SONET interface to a OSIRIS system to make synchronous connections with other vendors' equipment. This mapper provides an EC-1 electrical interface which carries bandwidth equivalent to that of a SONET STS1 payload.

Three different types of EC-1 mappers are available: a bulk mapper (BK), a VT mapper, and a TSA mapper. The bulk mapper does not terminate the STS1 path overhead, but instead passes the complete STS1 path along transparently. The VT mapper is usually deployed in head-end applications. Up to 28 VT Path Level signals can be accepted by the mapper prior to hand-off to a digital cross-connect or to other network elements. The EC-I TSA can drop VTs within the total bandwidth from any three STS1s.

You can install EC-1 mappers in the following slots:

Shelf	Slots
OSIRIS STD	5, 6, 7
OSIRIS XTD	1-3, 5-7, 9-11, 19-21
OSIRIS XTS	1-7
OSIRIS Micro & OSIRIS Micro WMU DS1/E1 & DS3/E3	1

EC-1 VT mapper provisioning procedure is described below. See "To Provision the EC-1 BK Mapper" on page 94 for EC-1 BK mapper provisioning, and "To Provision the EC-1 TSA Mapper" on page 98 for EC-1 TSA mapper provisioning.

For more installation instructions and equipping rules, see your *Shelf's Installation Guide*.

To Provision the EC-1 VT Mapper

You can use an EC-1 VT mapper to drop DS1 and Ethernet signals to single or multiple points in the ring. Refer to "Provisioning Network Bandwidth" on page 56 for more information.

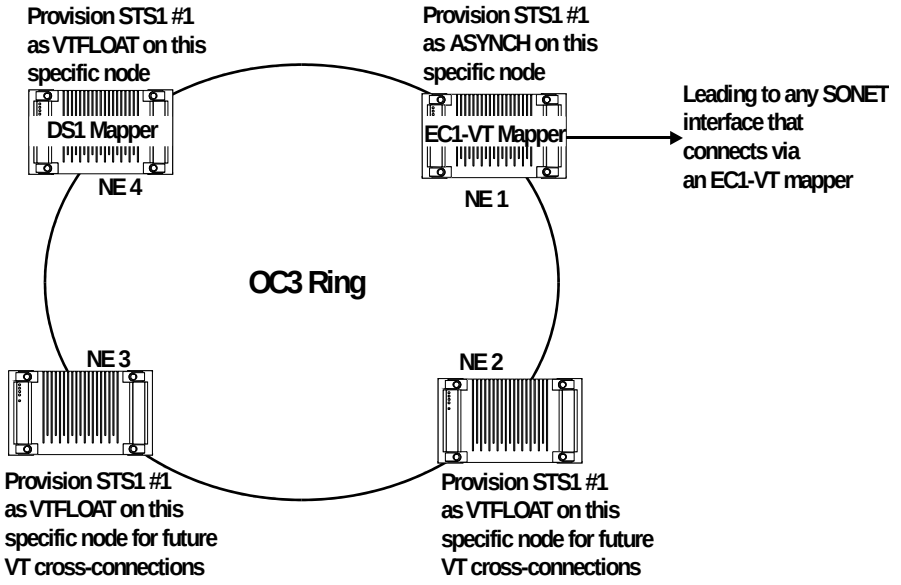
This procedure is divided into four sections:

- Provision bandwidth for a node containing an EC-1 VT mapper
- Provision the EC-1 VT mapper
- Provision bandwidth for nodes containing DS1 or Ethernet mappers
- Provision the DS1 or Ethernet mapper

You are cross-connecting the EC-1 VT mapper with DS1 mappers around the ring.

Note: For OAU OC3/STM-1, an EC-1 VT mapper requires OAU cards with these product codes: 8003xx/3 or higher to support Lock Mode.

Refer to the diagram below for a typical application that uses an EC-1 VT mapper.

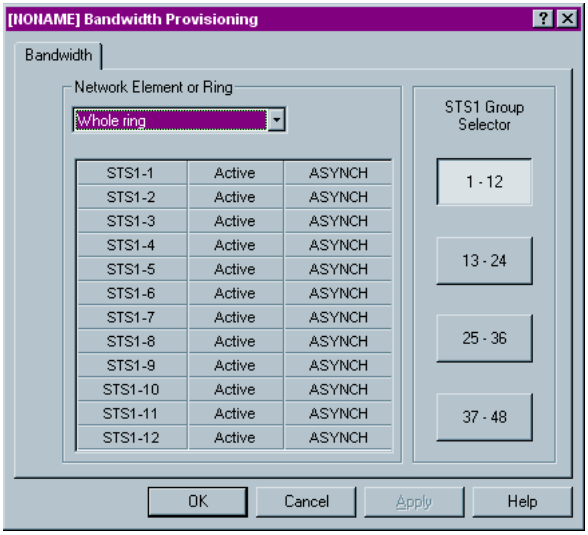


Provision Bandwidth for the EC-1 VT Mapper

Follow this procedure to provision bandwidth for the node containing an EC-1 VT mapper.

1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

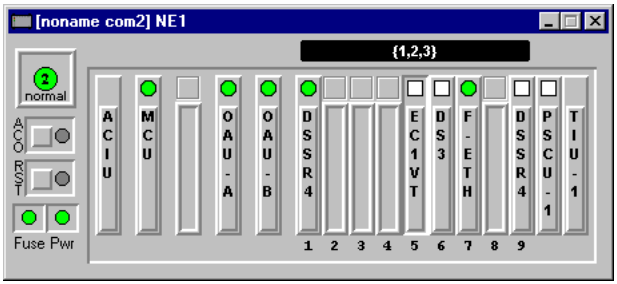


2. Select the name of the node containing the EC-1 VT mapper.
3. Select the **STS1 Group** on which you want to provision the STS1s.
4. Determine which STS1 that you will use and right-click it.
5. Ensure that traffic type is set to STS1 to **ASYNCH**.
6. Click **OK** to exit the dialog box.

Provisioning the EC-1 VT Mapper

1. In the **Network Status** window, double-click the node with the EC-1 VT mapper.

   The **Shelf-level** window appears.



2. If this card will be protected, make sure that a card has been installed in the protection slot. Right-click the protection mapper slot, click **Provision As**, then click **EC1VTP**.
3. Right-click the mapper slot and click **Provision As**, then click:

   - **EC-1VT** and then **Protected**

     A blue square appears on the protected mapper.

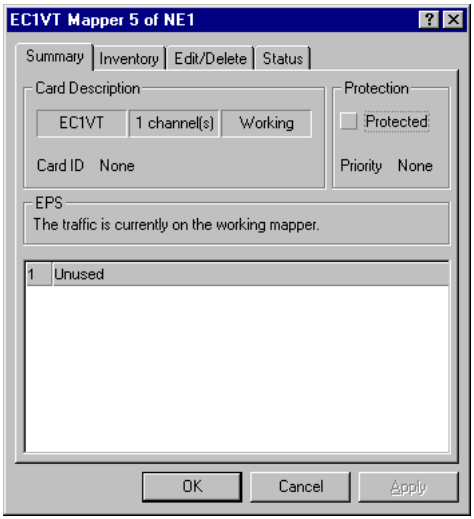
     or

   - **EC-1** and then **Unprotected**

4. From the **Shelf-level** window, double-click the EC-1 mapper slot.

The **Mapper-level** dialog box appears.

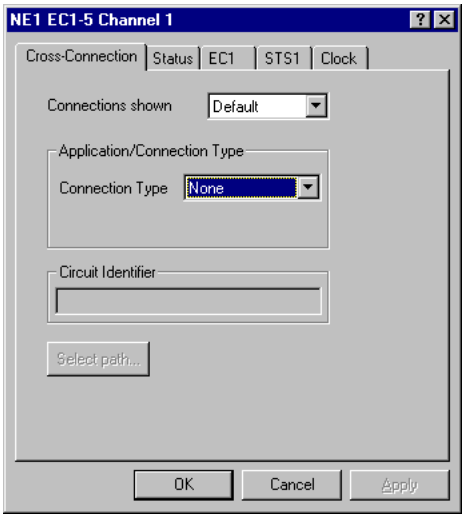
EC-1 VT



5. Double-click an unused **Channel**.

   The **Channel-level** dialog box appears.

EC-1 VT

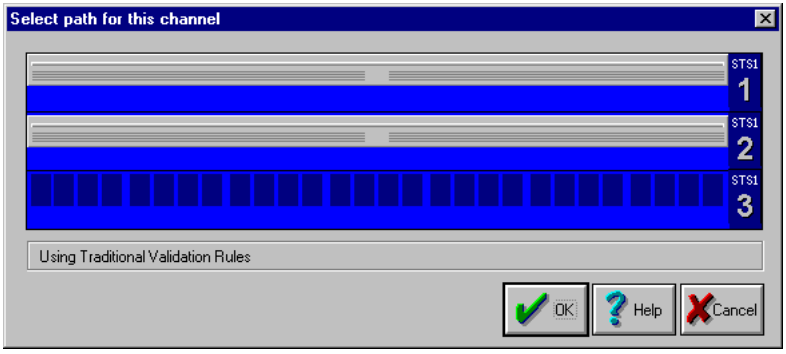


6. Set **Connection Type** to **Add/Drop**.
7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.

8. Click **Select Path**.

   The **Select Path For This Channel** dialog box appears.

EC-1 VT



9. Locate the STS1 on which you want to provision traffic. Select it.

   Only three STS1 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

   However, if you are provisioning an OC-12 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1 channel number, then click **STS1 Path Assignments**. Select the channel that you want to view.

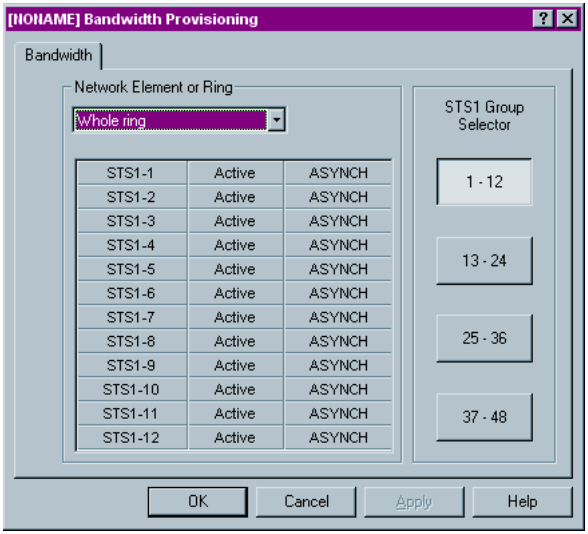
10. Click **OK**. The **Channel-level** dialog box reappears.
11. Click **OK**. The **Create Cross-connection** dialog box appears.
12. Click **Yes**.

Provision Bandwidth for a DS1 Mapper

Follow this procedure to provision bandwidth for the node containing a DS1 mapper.

1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.



2. Select the name of the node containing the DS1 mapper.
3. Select the same **STS1 Group** that you picked for EC-1 VT mapper.
4. Select the same STS1 as you picked for EC-1 VT mapper and right-click it.
5. Set the type of traffic of the STS1 to **VTFLOAT**.

   A confirmation dialog box appears.

6. Click **Yes** to confirm and then click **OK** to exit the dialog box.

   Note: You can also provision the same STS1 as VTFLOAT on other network elements on the ring. This will allow for future VTFLOAT cross-connections at these locations.

Provision a DS1 Mapper on Other Network Elements

See "Provisioning a DS1 Cross-connection" on page 58 to provision a DS1 mapper.

To Provision the EC-1 BK Mapper

You can use the EC-1 BK mapper to drop any mappers that carry traffic for STS1 or below (such as DS3, Ethernet, Fast Ethernet, PEC4, PAC155, PAC45, and DS1 signals) at a single point in the ring. Refer to the steps below to provision the EC-1 BK mapper.

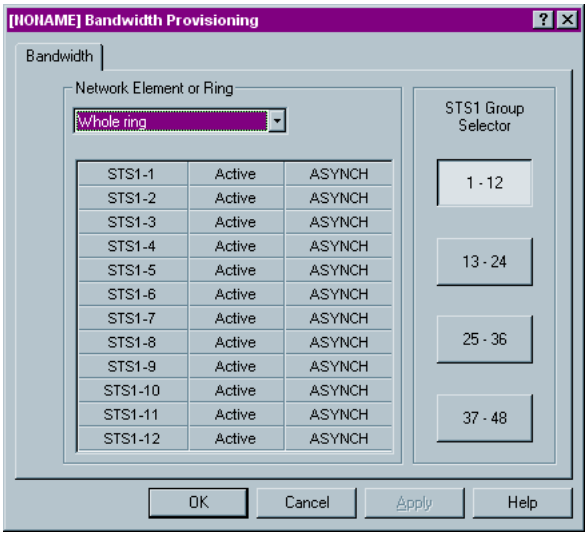
This procedure is divided into four sections:

- Provision bandwidth for a network element containing an EC-1 BK mapper
- Provision the EC-1 BK mapper
- Provision bandwidth for a network element containing a DS3 mapper
- Provision a DS3 mapper (or other mappers carry traffic for STS1 or below)

Provision Bandwidth for the EC-1 BK Mapper

1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.



2. Ensure **Whole Ring** is selected.
3. Select the **STS1 Group** on which you want to provision the STS1s.
4. Determine which STS1 that you will use and right-click it.
5. Set traffic type on the STS1 to **ASYNCH**.

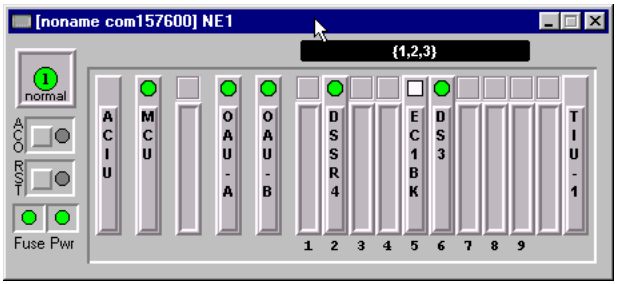
   This STS1 will be set to ASYNCH on all network elements in this ring, including the nodes containing STS1 mappers or below that will be dropped through the EC-1 BK mapper.
6. Click **OK**. A confirmation dialog box appears.

7. Click **Yes** to confirm, then click **OK** to exit the dialog box.

Provision the EC-1 BK Mapper

1. In the **Network Status** window, double-click the node with the EC-1 BK mapper.

   The **Shelf-level** window appears.



2. If this card will be protected, make sure that a card has been provisioned in the protection slot. Right-click the protection mapper slot, click **Provision As**, then click **EC1BKP**.
3. Right-click the mapper slot and click **Provision As**, then click:

- **EC1BK** and then **Protected**

  A blue square appears on the protected mapper.

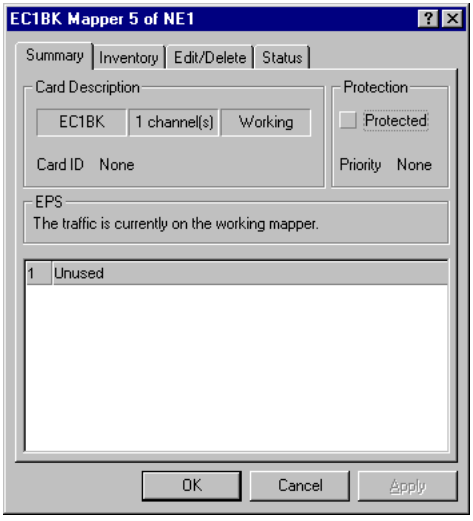
  or

- **EC1BK** and then **Unprotected**

4. From the **Shelf-level** window, double-click the EC-1 mapper slot.

The **Mapper-level** dialog box appears.

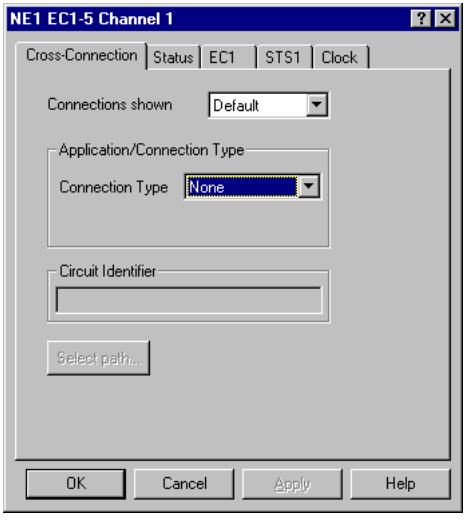
EC-1 Bulk



5. Double-click an unused **Channel**.

   The **Channel-level** dialog box appears.

EC-1 Bulk

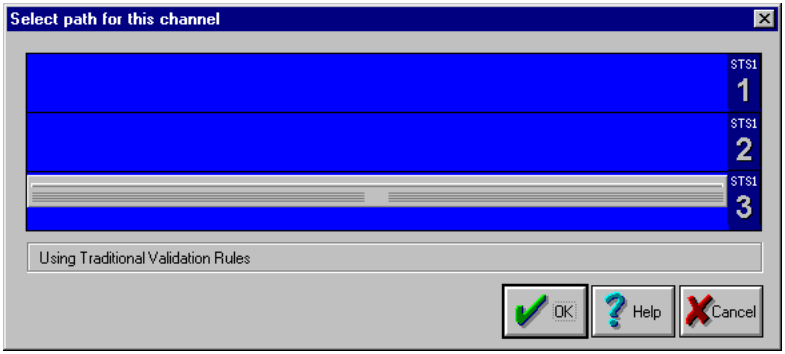


6. Set **Connection Type** to **Add/Drop**.
7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.

8. Click **Select Path**.

   The **Select Path For This Channel** dialog box appears.

EC-1 Bulk



9. Locate the STS1 on which you want to provision traffic.

   Only three STS1 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

   However, if you are provisioning an OC-12 OSIRIS STD or OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1 channel number, then click **STS1 Path Assignments**. Select the channel that you want to view.

10. Select the STS1 on which you want to provision traffic.
11. Click **OK**.

    The **Channel-level** dialog box reappears.

12. Click **OK**.

    The **Create Cross-connection** dialog box appears.

13. Click **Yes**.

Provision the Other End of the Cross-Connection (mappers for STS1 or below such as DS3 mapper)

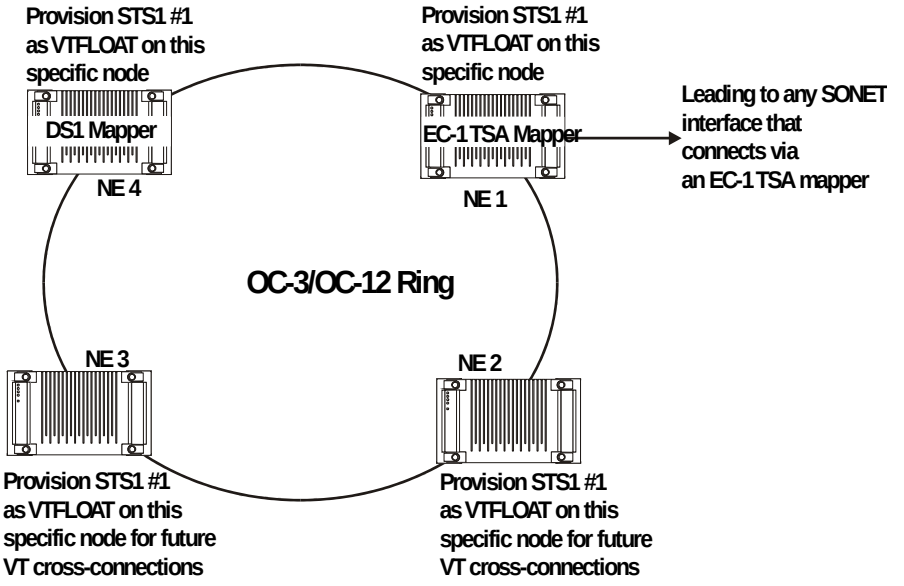
See the appropriate provisioning procedures for the mapper that you have on the other end of the cross-connection.

To Provision the EC-1 TSA Mapper

This procedure is divided into two sections:

- Provision bandwidth for a node containing an EC-1 TSA mapper
- Provision the EC-1 TSA mapper

Refer to the diagram below for a typical application that uses an EC-1 TSA mapper.

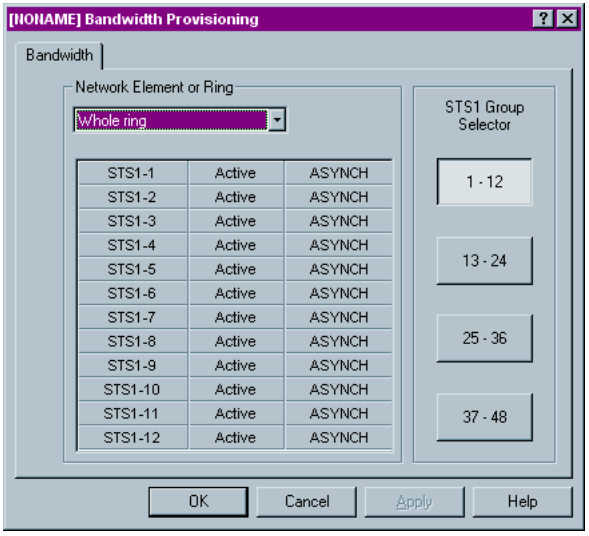


Provision Bandwidth for the EC-1 TSA Mapper

Follow this procedure to provision bandwidth for the node containing an EC-1 TSA mapper.

1. On the **Network** menu, click **Bandwidth Provisioning**.

The **Bandwidth Provisioning** dialog box appears.

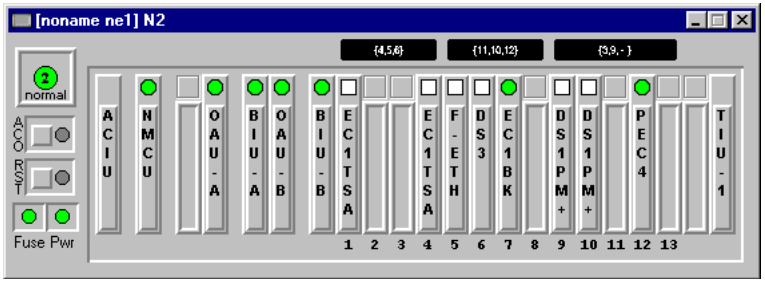


2. Select the name of the node containing the EC-1 TSA mapper.
3. Select the **STS1 Group** on which you want to provision the STS1s.
4. Determine which **STS1** that you will use and right-click it.
5. Ensure that traffic type is set to STS1 to **VTFLOAT**.
6. Click **OK** to exit the dialog box.

Provisioning the EC-1 TSA Mapper

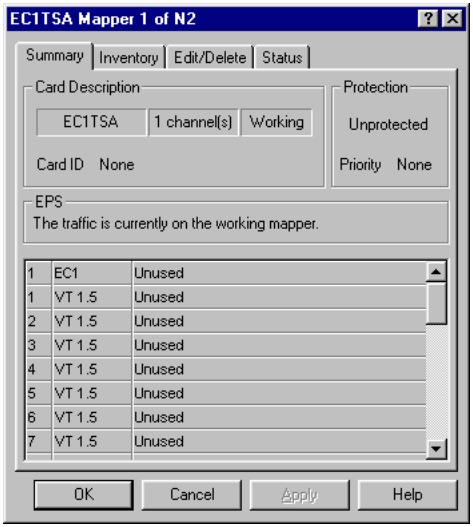
1. In the **Network Status** window, double-click the node with the EC-1 TSA mapper.

   The **Shelf-level** window appears.



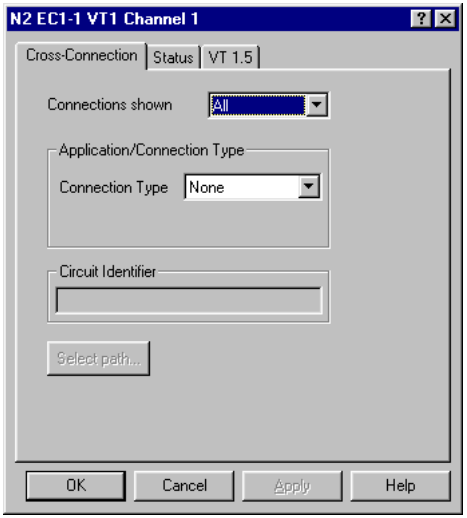
2. If this card will be protected, make sure that a card has been installed in the protection slot. Right-click the protection mapper slot, click **Provision As**, then click **EC-1 TSAP**.
3. Right-click the regular mapper slot and click **Provision As**, then click **EC-1 TSA** and then either **Protected** or **Unprotected.**
4. From the **Shelf-level** window, double-click the EC-1 TSA mapper slot.

   The **Mapper-level** dialog box appears.



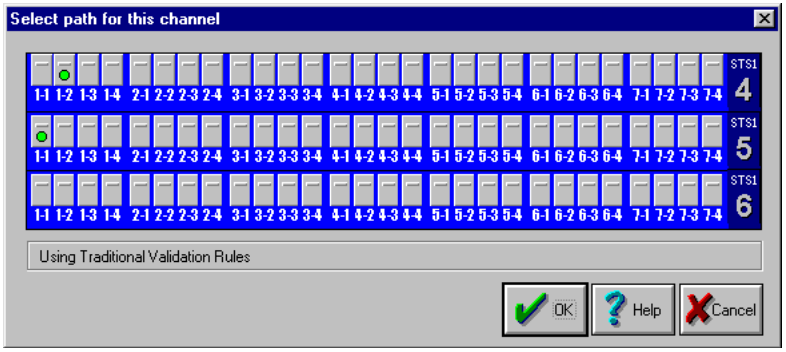
5. Double-click an unused **VT1.5 Channel**.

The **Channel-level** dialog box appears.



6. Set **Connections Shown** to **Default.**
7. Set **Connection Type** to **Add/Drop**.
8. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
9. Click **Select Path**.

   The **Select Path For This Channel** dialog box appears.



10. Locate the VT1 on which you want to provision traffic. Select it.

    Only three STS1 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

A maximum of three STS1 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

However, if you are provisioning an OC-12 OSIRIS STD or an OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1 channel number, then click **STS1/TUG3 Path Assignments**. Select the channel that you want to view.

11. Click **OK**. The **Channel-level** dialog box reappears.
12. Click **OK**. The **Create Cross-connection** dialog box appears.
13. Click **Yes**.
14. Repeat steps 5. through 13. for each of the 28 VT1.5s that will be included in the EC-1 TSA bandwidth.

Provisioning an OC-3c/STM-1 Cross-connection

OC-3c and STM-1 mappers can be used to transport high bandwidth capacity traffic such as video and ATM (Asynchronous Transfer Mode).

The OC-3c mapper uses 3 STS1s (STS3c), and the STM-1 mapper uses 3 TUG3s (AU4). The OC-3c mapper may operate in both OC-3 and OC-12 systems, and the STM-1 mapper may operate in both STM-1 and STM-4 systems.

You can install OC-3c/STM-1 mappers in the following slots:

Shelf	Slots
OSIRIS STD	even slots
OSIRIS XTD	odd slots
OSIRIS XTS, Micro EHD & Micro WMU	all slots
OSIRIS Micro	1

These mappers derive timing from the system clock, which can be set for external, line, or local timing. The mappers can also be used as primary or secondary clock sources for system timing.

For installation instructions and equipping rules, see your *Shelf's Installation Guide.*

Connecting Different Types of Interfaces

To send a SONET signal over an SDH interface or vice-versa, you must configure the signal so that it is compatible with the interface. See "Provision SS Bits for OC-3c/STM-1 Mappers" on page 108 for the procedure.

You can protect an OC-3c/STM-1 line in your ring, by a second mapper of the same type. One protection mapper can protect one working mapper. Refer to "Testing Automatic Protection Switching" on page 152 for more information.

Provisioning

Follow this series of procedures to provision an OC-3c/STM-1 mapper.

The series includes:

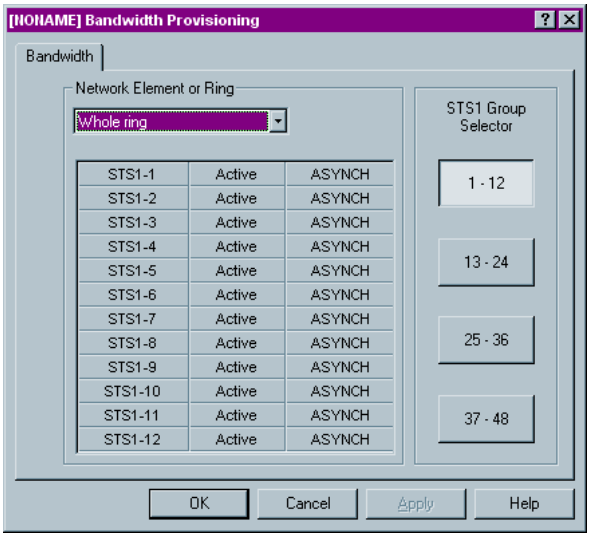
- "Set the bandwidth"
- "Provision the Mappers"
- "Provision SS Bits for OC-3c/STM-1 Mappers"
- "Provision Channels"
- "Protect the Mapper"

Set the bandwidth

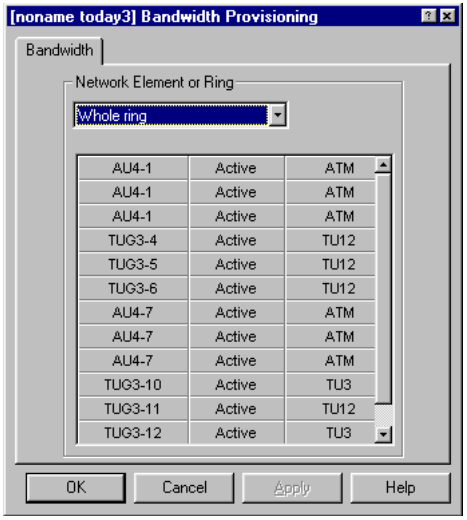
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET (OC-3c)



SDH (STM-1)



2. Decide if you will provision bandwidth for the OC3c/STM-1 mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. **SONET only**: Select the **STS1 Group** on which you want to provision the STS1s.
4. Determine which STS1s or TUG3s that you will use and right click the first STS1/TUG3.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

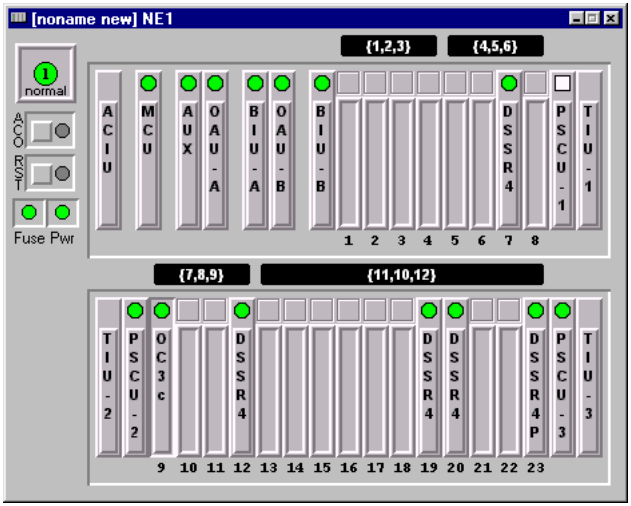
   However, if you are provisioning an OC-12 OSIRIS STD or an OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1 channel number, then click **STS1/TUG3 Path Assignments**. Select the channel that you want to view.
5. Set the STS1s/TUG3s to **STS3c/AU4**.
6. A confirmation window appears.
7. Click **Yes**.
8. The **Bandwidth Provisioning** dialog box appears with the ATM settings.
9. Click **OK** to exit the dialog box.

Provision the Mappers

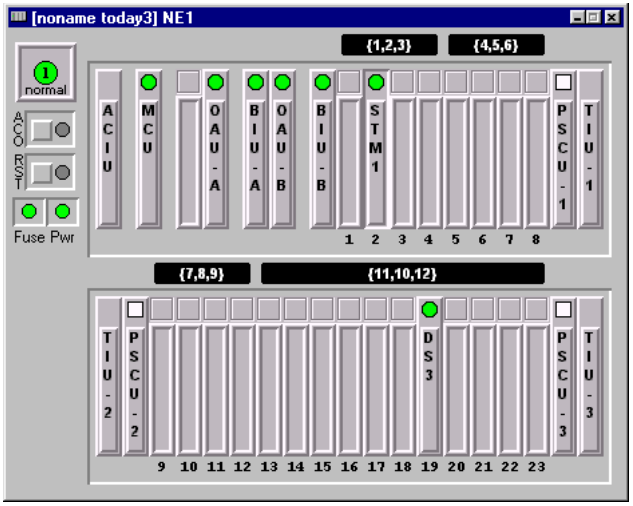
1. In the **Network Status** window, double-click the node with the OC-3c/STM-1 mapper.

   The **Shelf-level** window appears.

SONET (OC-3c)



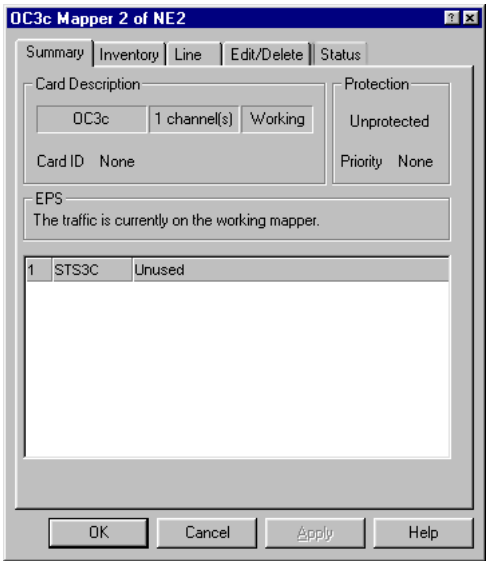
SDH (STM-1)



2. Right-click the mapper slot and click **Provision As**, then click **OC-3c/STM-1**.
3. Double-click the OC-3c/STM-1 mapper slot.

   The **Mapper-level** dialog box appears.

SONET (OC-3c)



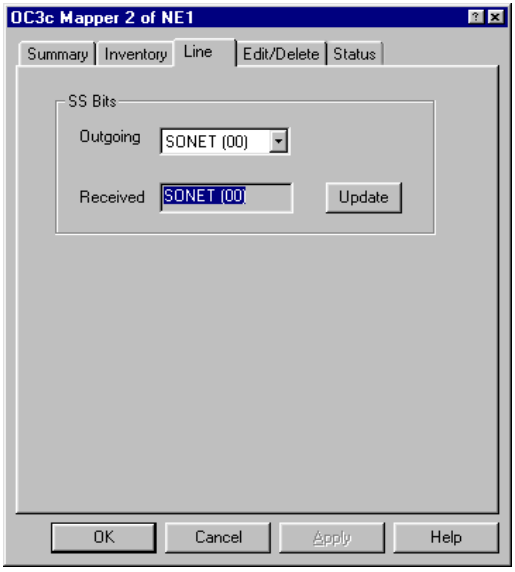
SDH (STM-1)

Provision SS Bits for OC-3c/STM-1 Mappers

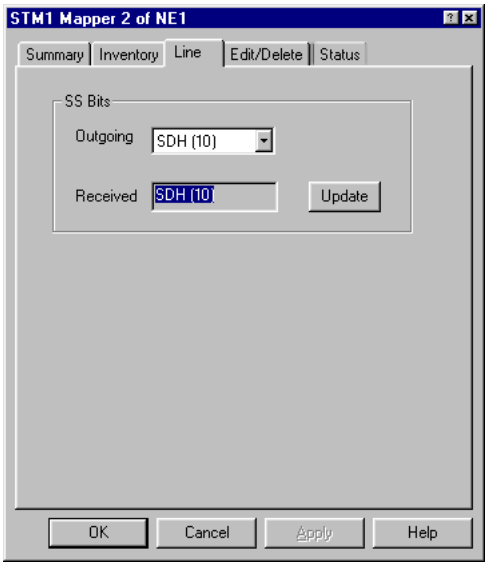
If you are interconnecting SONET and SDH rings, refer to this section, otherwise continue with "Provision Channels" on page 109.

1. Click the **Line** tab.

SONET (OC-3c)



SDH (STM-1)



2. Set **Outgoing** to:
   - SONET (00) if you are sending an SDH signal type to a SONET interface
   - SDH (10) if you are sending a SONET signal type to an SDH interface
3. Click **Update** to refresh Received.

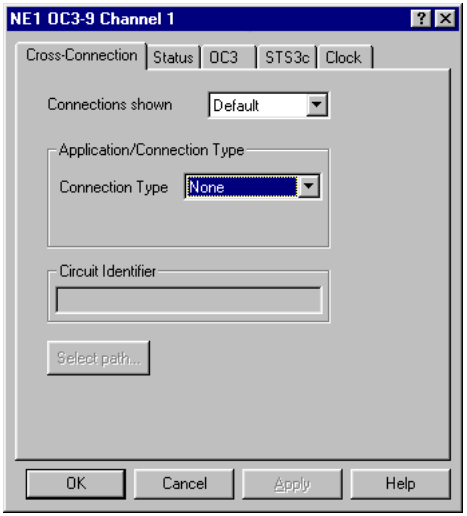
The Outgoing SS Bits has to match the interface it is being sent to. For example, if you want to send an SDH signal to a SONET ring, you must make the Outgoing SS Bit into a SONET bit.

Provision Channels

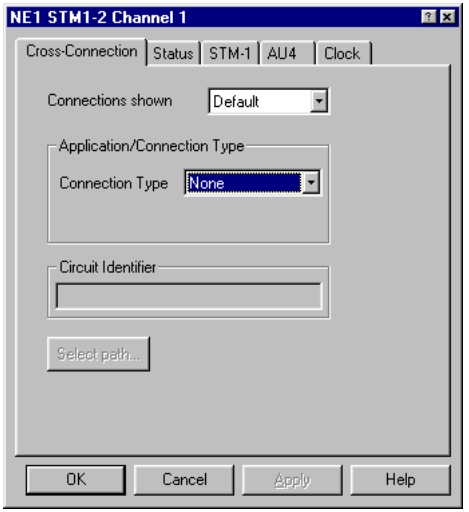
1. Double-click an unused **Channel**.

   The **Channel-level** dialog box appears.

SONET (OC-3c)



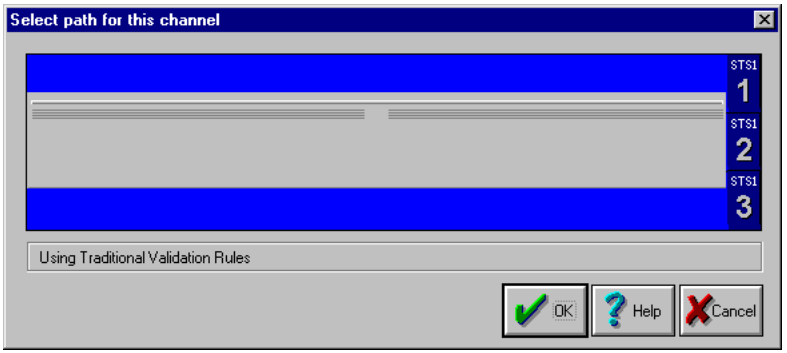
SDH (STM-1)



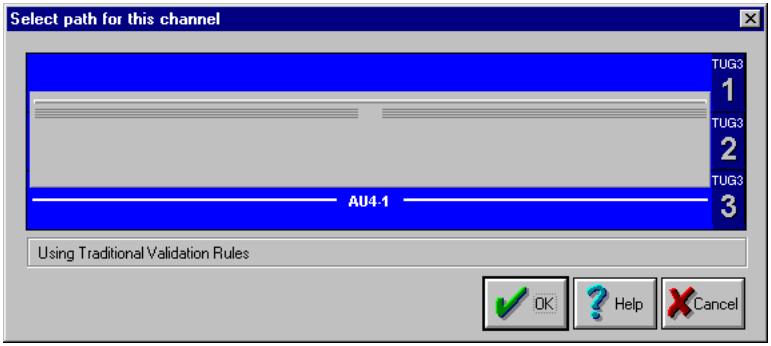
2. Set **Connection Type** to **Add/Drop**.
3. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
4. Click **Select Path**.

   The **Select Path For This Channel** dialog box appears.

SONET (OC-3c)



SDH (STM-1)



5. Locate the STS3c/AU4 on which you want to provision traffic.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

6. Select the STS3c/AU4 on which you want to provision traffic.
7. Click **OK**.

   The **Channel-level** dialog box reappears.

8. Click **OK**.

   The **Create Cross-connection** dialog box appears.

9. Click **Yes**.
10. Repeat this procedure on another node to provision the other side of the cross-connection.

Protect the Mapper

1. Right-click the mapper that you want to protect.

   The **APS Protect** (Automatic Protection Switching) pop-up menu appears with a list of mappers that can act as protection mappers.

2. Select the mapper you want to use as a protection mapper.

   The **Shelf-level** window reappears with the protection and protected icons on both mappers.

Provisioning an Ethernet 10BaseT Cross-connection

The 10BaseT Ethernet mapper provides a point-to-point half duplex Ethernet connection in SONET and SDH networks. The Ethernet 10BaseT mapper takes up 4 VT1.5s. This mapper cannot be protected.

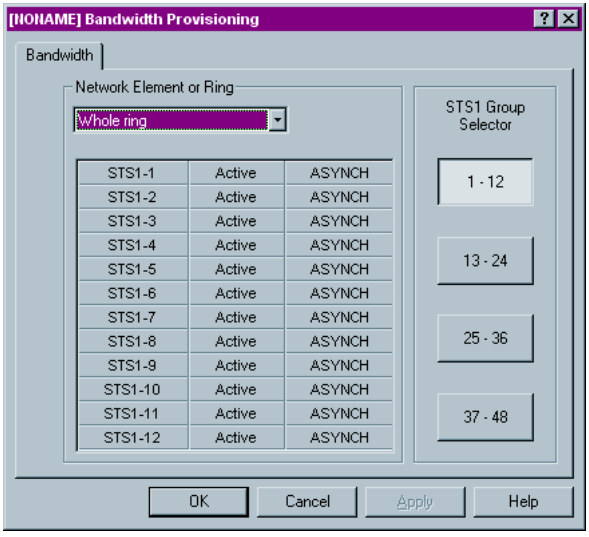
For installation instructions and equipping rules, see the *Installation Guide* for your shelf.

To Provision the Mapper

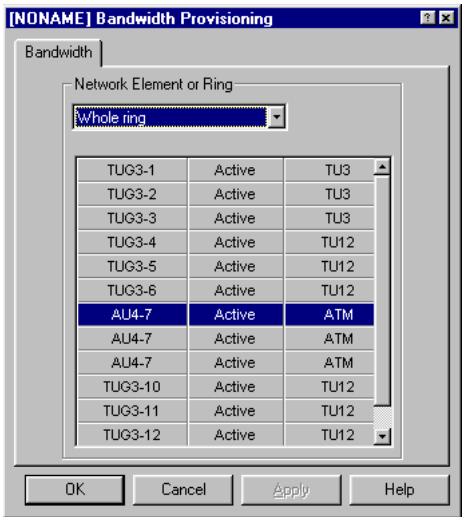
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET



SDH



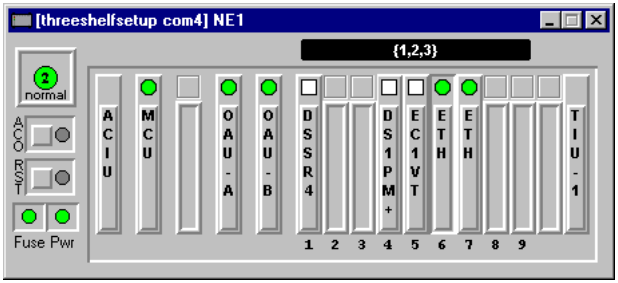
2. Decide if you will provision bandwidth for the Ethernet mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. **SONET only**: Select the **STS1 Group** on which you want to provision the STS1s.
4. Determine which STS1/TUG3 that you will use and right click it.
5. Set the type of traffic to **VTFLOAT** for SONET and **TU12** for SDH.

   A confirmation dialog box appears.
6. Click **Yes**. The **Bandwidth Provisioning** dialog box reappears.

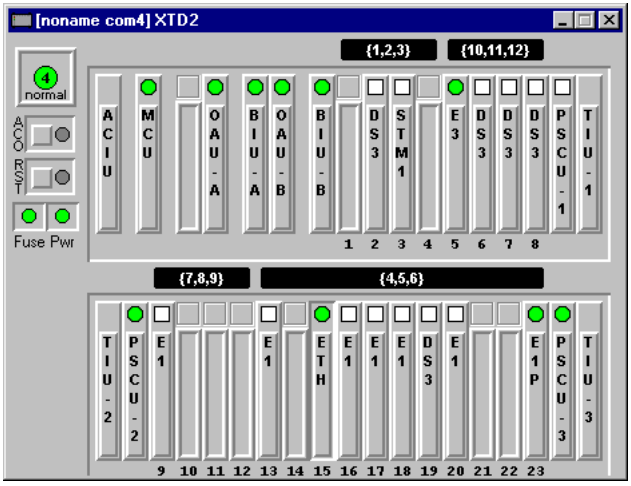
   The **VTFLOAT/TU12** setting appears.
7. Click **OK** to exit the dialog box.
8. In the **Network Status** window, double-click the node with the Ethernet mapper.

The **Shelf-level** window appears.

SONET



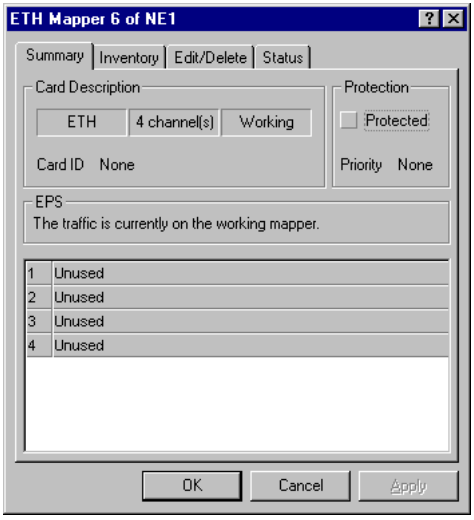
SDH



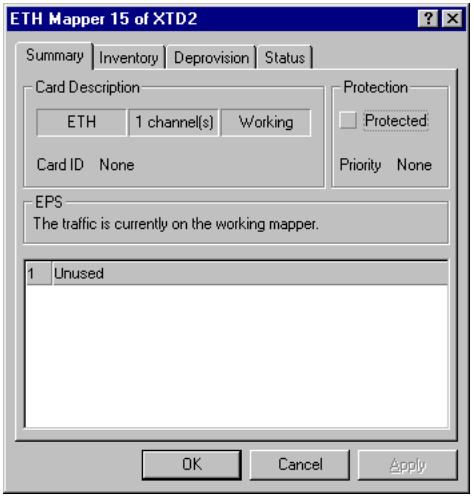
9. Right-click the mapper slot, click **Provision As**, then click **Ethernet**.
10. Double-click the Ethernet mapper slot.

The **Mapper-level** dialog box appears.

SONET



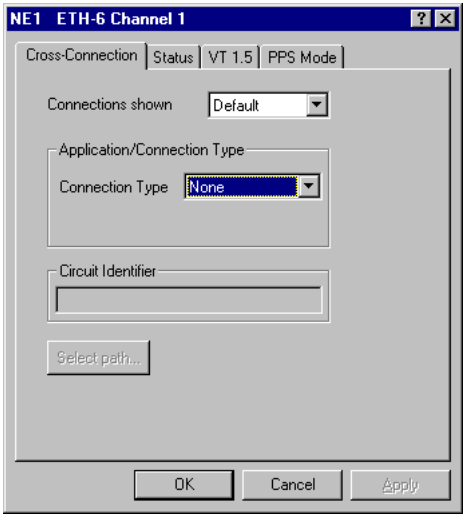
SDH



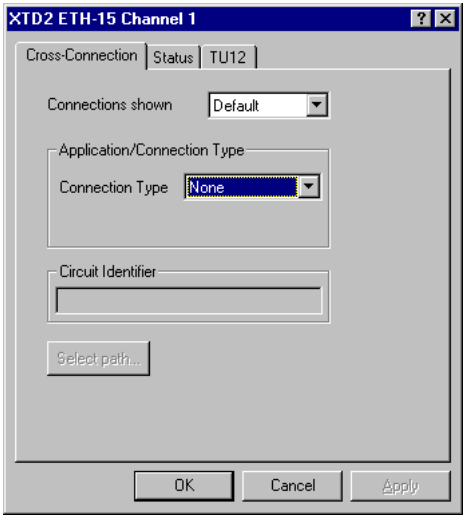
11. Double-click an unused **Channel**.

The **Channel-level** dialog box appears.

SONET



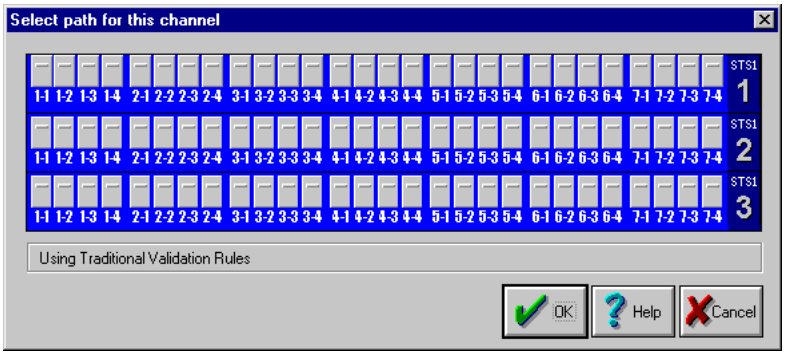
SDH



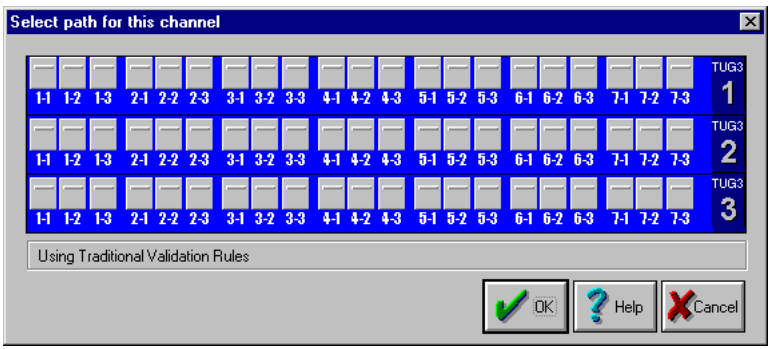
12. Set **Connection Type** to **Add/Drop**.
13. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
14. Click **Select Path**.

The **Select Path For This Channel** dialog box appears.

SONET



SDH



15. Select the VT1.5/TU12 on which you want to provision traffic.

    Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

16. Click **OK**. The **Channel-level** dialog box reappears.
17. Click **OK**. The **Create Cross-connection** dialog box appears.
18. Click **Yes**.
19. If this is an **SDH** connection, repeat this procedure to provision the other side of the cross-connection.

Provision the Other Side of the SONET Cross-Connection

In **SONET**, if you provision the first unused channel on the other side of the cross-connection, the remaining three channels are provisioned automatically.

1. Right-click the far-end mapper slot and click **Provision As**, then click **Ethernet**.
2. Double-click the Ethernet mapper slot.

   The **Mapper-level** dialog box appears.
3. Double-click the first unused Channel.

   The **Channel-level** dialog box appears.
4. Set the **Connection Type** to **Add/Drop**.
5. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
6. Click **Select Path**.

   The **Select Path For this Channel** dialog box appears.
7. Select the first VT1.5 for the cross-connection.
8. Click **OK**. The **Channel-level** dialog box reappears.
9. Click **OK**.

   The **Create Cross-connection** dialog box appears.
10. Click **Yes**.

    The **Automatic Cross-connection** dialog box appears.
11. Click **Yes**.

    The **Mapper-level** dialog box appears, and all four channels are automatically provisioned.
12. Click **OK**.

Provisioning a Fast Ethernet Cross-connection

A Fast Ethernet full duplex mapper can be used in several different modes which are described below. In Single Fiber Mode bandwidth (50 Mbps or 100 Mbps) is carried on one optical fiber pair with no protection path. Dual Channel Mode is used for standard UPSR setups, and Bandwidth Reuse Mode is used if the carried bandwidth does not require protection. In Single Channel Mode, half of the bandwidth (50 Mbps) is protected in the case of a fiber cut.

Decide which provisioning mode is appropriate for your network, then follow the procedure to provision the mapper.

You can install Fast Ethernet mappers in the following slots:

Shelf	Slots[1]
OSIRIS STD	all/even slots
OSIRIS XTD	all/odd slots
OSIRIS XTS	all slots
OSIRIS Micro DS1/E1	1 or 2

1. The Fast Ethernet FX mappers can be installed in all OSIRIS XTD shelf slots. However, it is recommended that you install them in even slots in the OSIRIS XTD, as only those slots have openings for patch cords.
   The number of Fast Ethernet mappers you can install
   depends on the amount of bandwidth used on the mapper: 50 or 100 Mbps.

For more installation instructions, see the *Installation Guide* for your shelf.

Note: You need NE software version 3.6/5.6 or higher for SONET and 4.7/6.7 or higher for SDH to use the Fast Ethernet mapper.

Single Fiber Mode

This mode provides a 100 Mbps or 50 Mbps Point-to-Point connection between two Fast Ethernet interfaces. Only one fiber optic cable is connected between the interfaces, therefore traffic carried on this path is unprotected. You can use two STS1s/TUG3s for 100 Mbps or 50 Mbps.

See "Bandwidth Usage" on page 120 for a summary of STS1 and TUG3 usage.

Single Channel Mode

This mode provides a 100 Mbps Point-to-Point connection between two Fast Ethernet interfaces. Both working and protection paths carry traffic, so only one STS1/TUG3 channel is used to provide 100 Mbps throughput. In the case of a fiber cut, throughput is reduced to 50 Mbps. Once the fiber cut is repaired, throughput automatically reverts back to the full 100 Mbps.

See "Bandwidth Usage" on page 120 for a summary of STS1 and TUG3 usage.

Dual Channel Mode

This mode provides a Point-to-Point connection between two Fast Ethernet interfaces. The provisioned bandwidth is redundantly path-protected in the case of a fiber cut. In the 50 Mbps Dual Channel mode, one STS1/TUG3 channel is used for 50 Mbps throughput, and in the 100 Mbps mode, two STS1/TUG3 channels are used for 100 Mbps throughput.

Note: The Fast Ethernet mapper can buffer 100 Mbps bursts of traffic without data loss in both 50 Mbps and 100 Mbps modes.

See "Bandwidth Usage" on page 120 for a summary of STS1 and TUG3 usage.

Bandwidth Reuse Mode

This mode provides a Point-to-Point connection to a Fast Ethernet device. The carried bandwidth is unprotected in the case of a fiber cut, and this mode relies on the attached LAN device (bridge, route, or switch) to re-route traffic.

Normal STS1/TUG3-level path switching protection is disabled to allow "reuse" of single or multiple unprotected STS1/TUG3 connections between pairs of adjacent OSIRIS nodes.

See "Bandwidth Usage" on page 120 for a summary of STS1 and TUG3 usage.

Bandwidth Usage

The following table summarizes STS1 and TUG3 usage for each Fast Ethernet mode.

Mode	Through-put	STS1/TUG3 Channels	Application
100 Mbps Single Fiber	100 Mbps	2	100 Mbps throughput in no failure conditions.
			No throughput if fiber cut.
50 Mbps Single Fiber	50 Mbps	1	50 Mbps throughput in no failure conditions.
			No throughput if fiber cut.
100 Mbps Single Channel	100 Mbps	1	100 Mbps throughput in no failure conditions
			50 Mbps throughput in single fiber cut mode
100 Mbps Dual Channel	100 Mbps	2	100 Mbps fully path protected
50 Mbps Dual Channel	50 Mbps	1	50 Mbps fully path protected
100 Mbps Bandwidth Reuse	100 Mbps	2 STS1/TUG3 (for whole ring)	100 Mbps unprotected, for use with an external Ethernet switch
50 Mbps Bandwidth Reuse	50 Mbps	1 STS1/TUG3 (for whole ring)	50 Mbps unprotected, for use with an external Ethernet switch

To Provision the Mapper

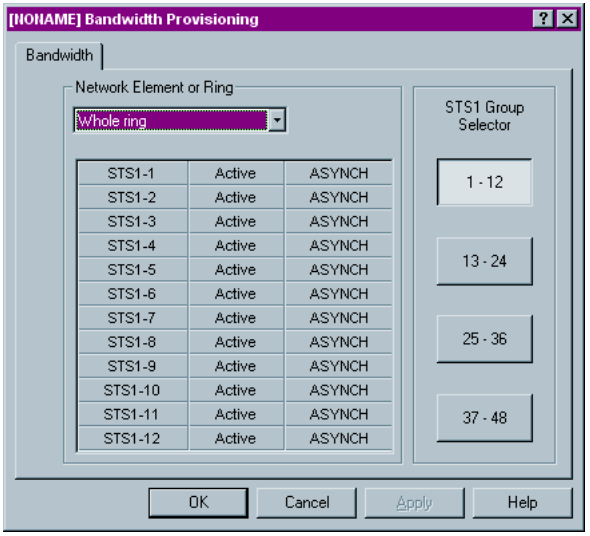
Follow this procedure to provision your Fast Ethernet mapper.

Note: If you configure a Fast Ethernet mapper for 100 Mbps and later decide to change this configuration to 50 Mbps, you must delete cross-connections on Channel 2. You can then set the mapper to the 50 Mbps mode.

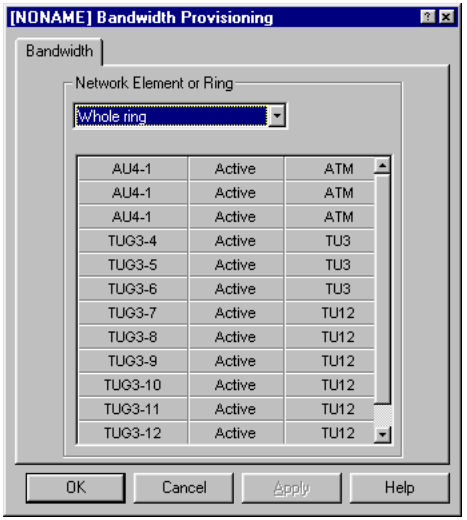
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET



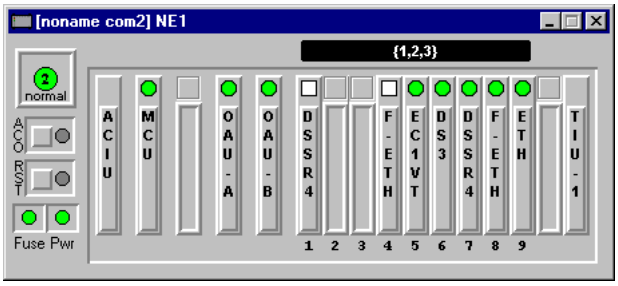
SDH



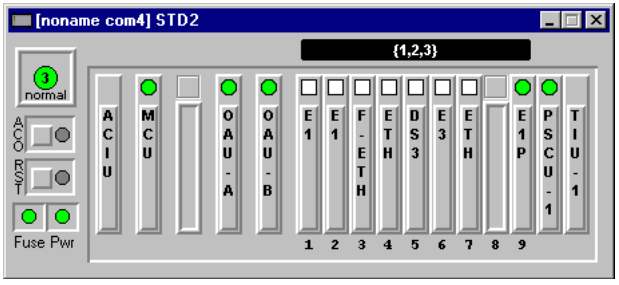
2. Decide if you will provision bandwidth for the Fast Ethernet mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. **SONET only**: Select the **STS1 Group** on which you want to provision the STS1s.
4. Determine which STS1/TUG3 that you will use and right click it.
5. Set the traffic type to **ASYNCH/TU3**.
6. The confirmation window appears.
7. Click **Yes**. The **Bandwidth Provisioning** dialog box appears with ASYNCH/TU3 settings.
8. Click **OK** to exit the dialog box.
9. In the **Network Status** dialog box, double-click the node with the Fast Ethernet mapper.

   The **Shelf-level** window appears.

SONET



SDH



10. Right-click the slot that contains the Fast Ethernet card.

11. Click **Provision As**, then click **Fast Ethernet**.
12. Double-click the Fast Ethernet mapper card.

    The **Mapper-level** dialog box appears.

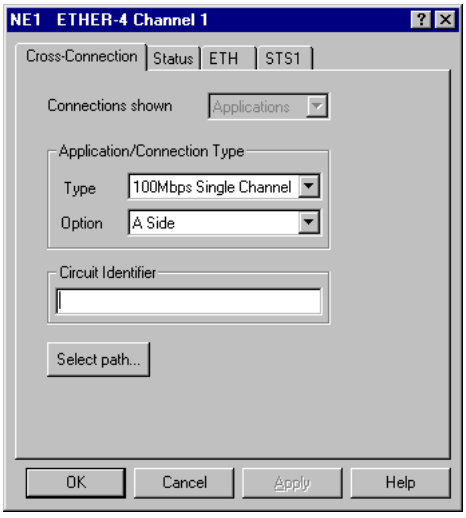
SONET

SDH

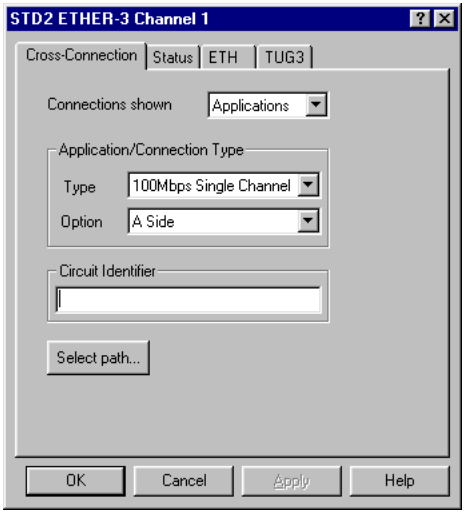
13. Double-click the first unused channel.

The **Channel-level** dialog box appears.

SONET



SDH



14. Set **Type** and **Option.**
15. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.

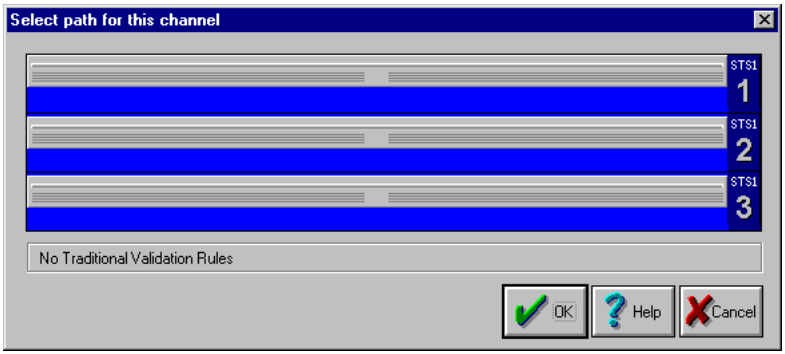
16. If only OSIRIS equipment is used throughout the network, click the **STS1/TUG3** tab and set **Capacity** to Turbo. Click **Apply**.

    Note: Turbo mode is a proprietary method that increases transmission speed. If the Fast Ethernet is configured for 50 Mbps, the speed will be increased by 1.152 Mbps. If the Fast Ethernet is configured for 100 Mbps, the speed will be increased by 2.304 Mbps. Use Normal mode for any applications that inter-operate with other vendors' equipment.

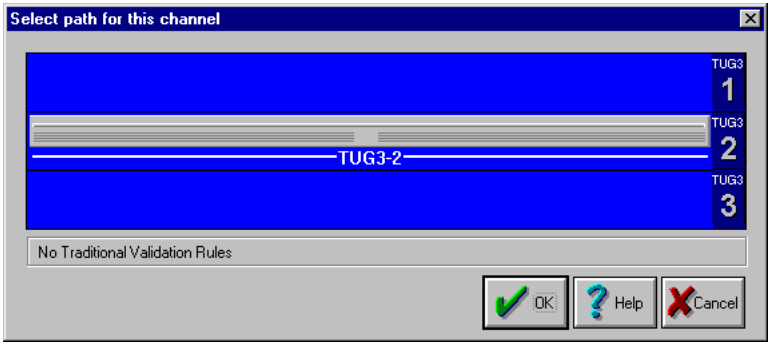
17. Return to the **Cross-Connection** tab, then click the **Select Path** button.

    The **Select Path for This Channel** dialog box appears.

SONET



SDH



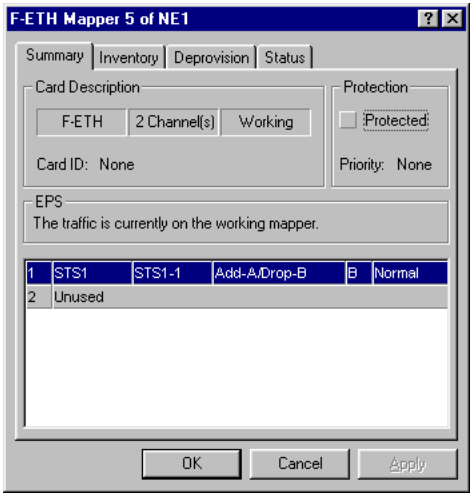
18. Select the STS1/TUG3 channel(s) that you want to use. You must use the same STS1/TUG3 channel(s) on both ends of the cross-connection.

Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

19. Click **OK** to return to the Channel-level dialog box.
20. Click **OK** and then click **Yes** to confirm the cross-connection and return to the Mapper-level dialog box. The newly-provisioned cross-connection appears.

SONET



SDH

21. Click **OK**.
22. Repeat steps 9 to 16 to provision the second channel of the mapper.
23. Repeat this procedure to provision the other side of the cross-connection.

Provisioning an MSE4 cross-connection

The MSE family of mappers can be used to transport Ethernet traffic over a SONET network in a cost-effective, dynamic, flexible and bandwidth efficient manner.The MSE mappers may operate in OC-3, OC-12 or OC-48 systems.

The Multi-Service Ethernet Mapper family consists of these 3 cards:

- Electrical Multi-Service Ethernet Card Point-to-Point (MSE4)
- Optical Multi-Service Ethernet Card Point-to-Point (MSE4FX)
- Electrical Multi-Service Ethernet Card with Layer 2 Switch (MSE4S)

The **MSE4** mapper (# 800850) offers four 10/100 Ethernet ports with an electrical, RJ-45 connector that dynamically map Ethernet (10/100 Mbps) signals onto virtual concatenation groups of VT1.5.

The **MSE4FX** mapper (# 800851) offers four 10/100 Ethernet ports with an optical, SFP duplex LC (100 Mbps only) interface that dynamically map Ethernet signals onto virtual concatenation groups of VT1.5. The optical interface can be selected according to specific optical reach requirements (i.e., Multi mode or Single mode).

The **MSE4S** mapper (# 800852) offers four 10/100 Ethernet ports with an electrical, RJ-45 connector that dynamically map Ethernet (10/100 Mbps) signals onto virtual concatenation groups of VT1.5 and has an Integrated Layer 2 switching functionality done using VLAN IDs.

Use the procedure below to provision an MSE mapper (800850, 800851 and 800852).

You can install MSE mappers in the following slots:

Shelf	Slots
OSIRIS STD	1-7
OSIRIS XTD	1-7, 9-22
OSIRIS XTS	1-13
OSIRIS Micro DS1 & DS3	1, 2
OSIRIS Micro EHD & OSIRIS Micro WMU DS1 & DS3	1, 2

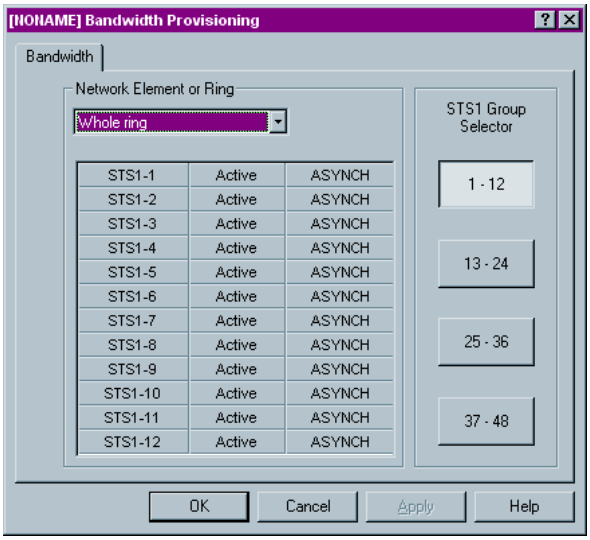
Note: The MSE4FX mapper is a 2-slot mapper card and can be installed in the OSIRIS STD, OSIRIS XTD, OSIRIS XTS, OSIRIS Micro DS1 / DS3 (Slot #1), and OSIRIS Micro WMU DS1 / DS3 (Slot #1) Shelves.

For more installation instructions and equipping rules, see your *Shelf's Installation Guide*.

To Provision the MSE Mapper

1. On the **Network** menu, click **Bandwidth Provisioning**.
2. The **Bandwidth Provisioning** dialog box appears.

(MSE)



3. Decide if you will provision bandwidth for the MSE mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" for more information.
    - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
    - If this traffic will be carried on a specific network element, select a specific **Network Element**.
4. Select the STS1 Group on which you want to provision the STS1s.
5. Decide which STS1 that you will use and right-click it.
6. Set the type of traffic of the STS1 to **VTFLOAT**.

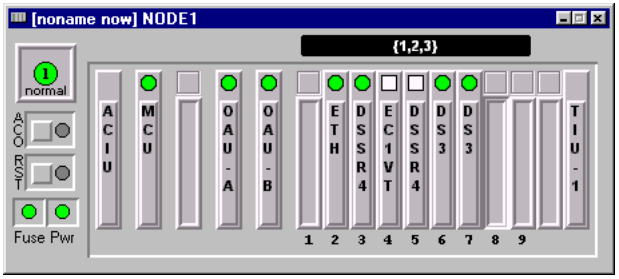
   A confirmation dialog box appears.
7. Click **Yes**.

   The **Bandwidth Provisioning** dialog box reappears with **VTFLOAT** setting.
8. Click **OK** to exit the dialog box.

9. In the **Network Status** window, double-click the node with the MSE mapper.

   The **Shelf-level** window appears.

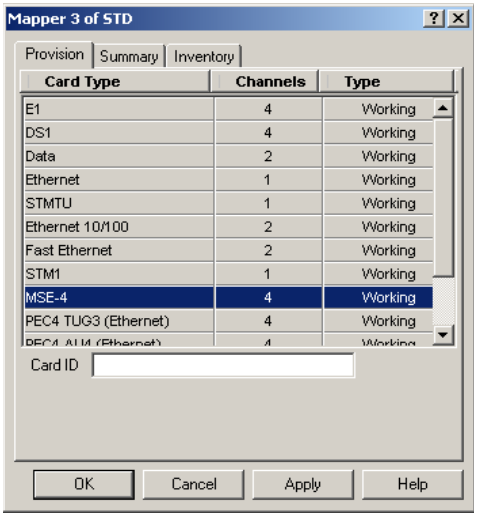
(MSE)



10. From the **Shelf-level** window, double-click the MSE mapper slot.

    The **Provision Mapper Card** dialog box appears.

(MSE)



11. Choose the appropriate MSE mapper card type and click **O.K.**.

    The MSE4 mapper (# 800850) offers four 10/100 Ethernet ports with an electrical, RJ-45 connector.

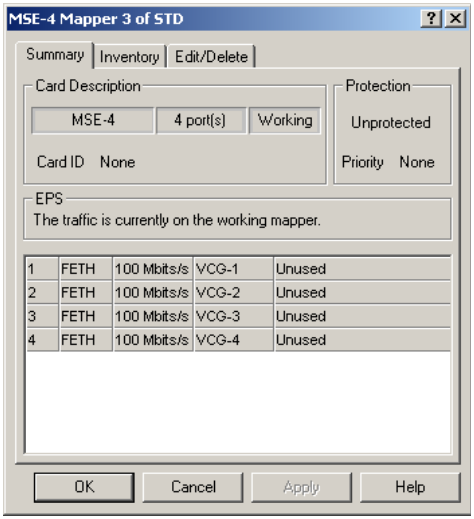
    The MSE4FX mapper (# 800851) offers four 10/100 Ethernet ports with an optical, SFP duplex LC (100 Mbps only) interface.

The MSE4S mapper (# 800852) offers four 10/100 Ethernet ports with an electrical, RJ-45 connector and has an Integrated Layer 2 switching functionality done using VLAN IDs.

12. From the **Shelf-level** window, double-click the MSE mapper card.

    The **Mapper-level** dialog box appears.

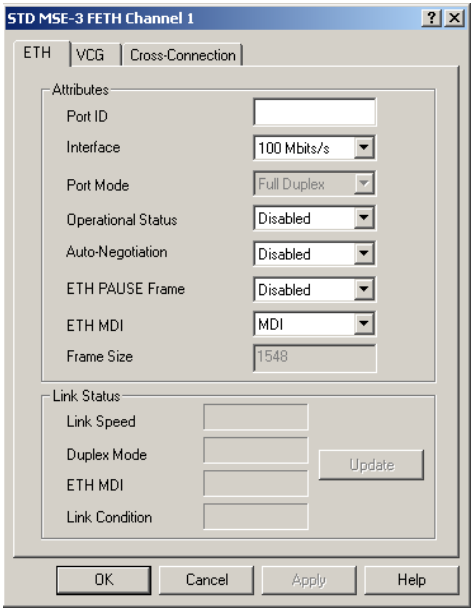
(MSE)



13. Double-click an unused **Port**.

The **Channel-Level** dialog box appears.

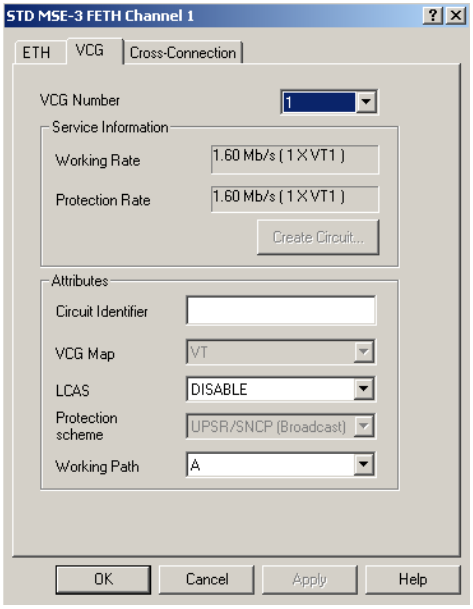
(MSE)



14. Assign a **Port ID**, configure the **Interface** (10 or 100 Mbits/s), **Operational Status** (Enabled), **Auto-Negotiation**, **ETH Pause Frame** and **ETH MDI** options.
15. Click on the **VCG** tab and click **YES** to proceed to the Ethernet attributes modification.

The **VCG-Level** dialog box appears.

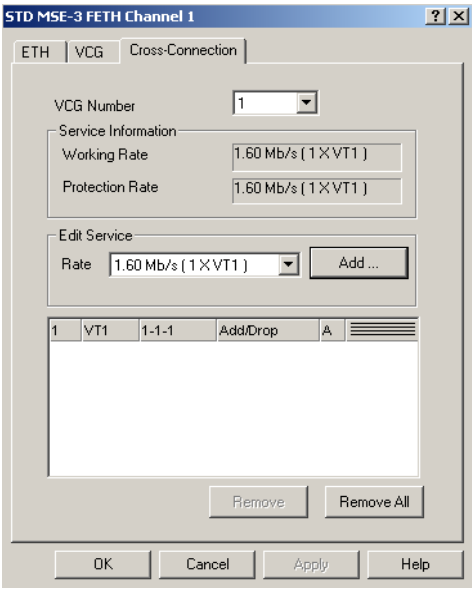
(MSE)



16. Enter a **Circuit Identifier** to assign a name to this cross-connection.
17. Click the **Cross-Connection** tab and click **YES** to proceed to the VCG attributes modification, for further details of the Ethernet service.

The **Cross-Connection** dialog box appears.

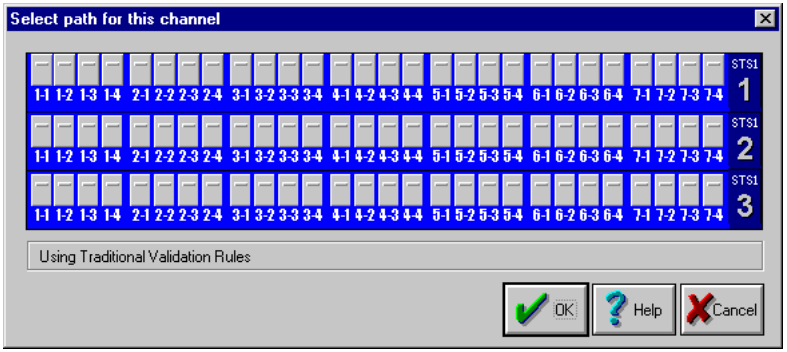
(MSE)



18. Choose the desired **Rate** for the Ethernet circuit from the drop down menu.
19. Click on **ADD**.

The **Select Path For This Channel** dialog box appears.

(MSE)



20. Select the first VT1.5 on which you want to provision traffic. If the desired rate of traffic is more than 1 VT 1.5, OSIRIS-VUE will automatically choose the next available VT 1.5's until the full requested rate is filled.

    Only three STS1 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three STS1 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning".

    However, if you are provisioning an OC-12/48 OSIRIS STD, XTS or XTD or an OC-12 OSIRIS Micro Shelf and you do not see the assignments you want, right-click an STS1 channel number, then click **STS1 Path Assignments**. Select the channel that you want to view.

21. Click **OK** and click **YES** to proceed to the establishment of the circuit.

    The **Channel-level** dialog box reappears.

22. Click **OK**.

    The **Mapper-Level** dialog box reappears.

23. Click **OK**.

Repeat this procedure to provision the other side of the cross-connection.

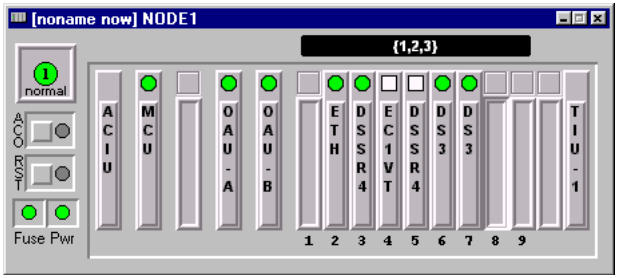
End to End Provision Feature

NE Release 12.02 and above provides support for **End to End Provisioning** on the MSE Card. This feature is demonstrated below.

1. In the **Network Status** window, double-click the node with the MSE mapper.

   The **Shelf-level** window appears.

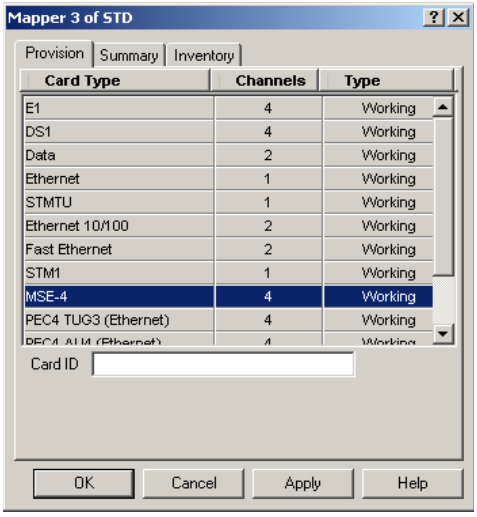
(MSE)



2. From the **Shelf-level** window, double-click the MSE mapper slot.

   The **Provision Mapper Card** dialog box appears.

(MSE)



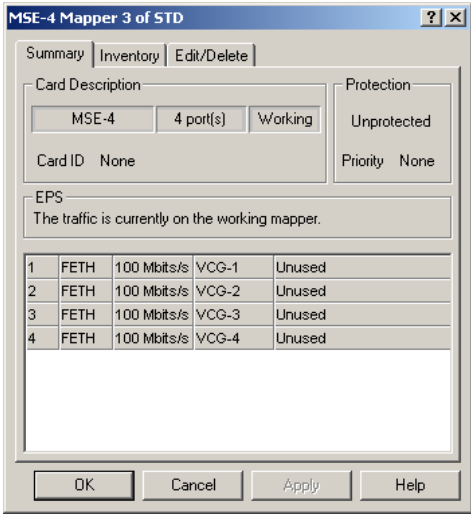
3. Choose the appropriate MSE mapper card type and click **O.K.**.

Note: **Both** MSE mapper cards of the intended cross-connection must be provisioned for this feature to function. Also, appropriate bandwidth must be provisioned to allow VT1.5 paths to be used for ring cross-connection. After both MSE mapper cards have been provisioned, proceed to the steps below.

4. From the **Shelf-level** window, double-click the MSE mapper card.

   The **Mapper-level** dialog box appears.

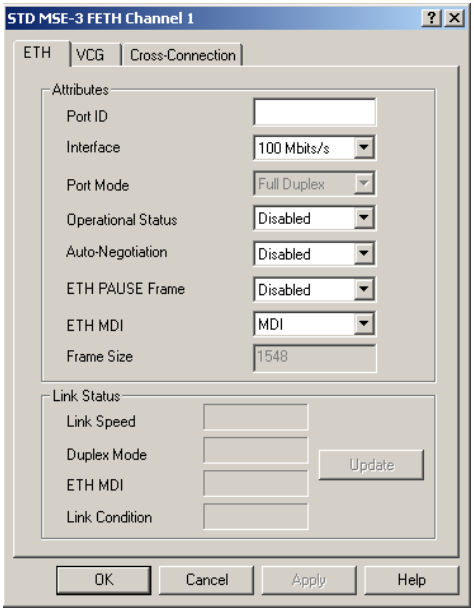
(MSE)



5. Double-click an unused **Port**.

The **Channel-Level** dialog box appears.

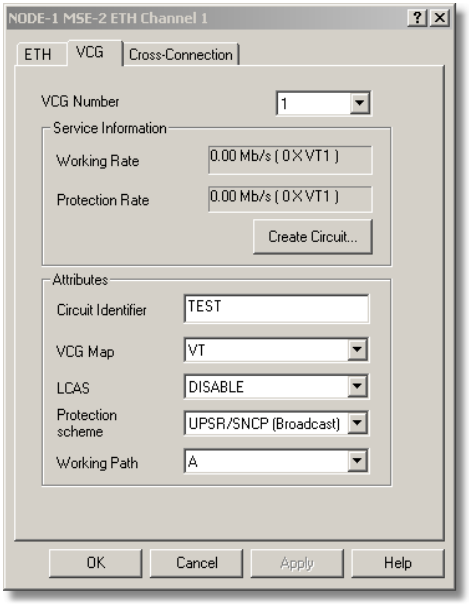
(MSE)



6. Assign a **Port ID**, configure the **Interface** (10 or 100 Mbits/s), **Operational Status** (Enabled), **Auto-Negotiation**, **ETH Pause Frame** and **ETH MDI** options.
7. Click on the **VCG** tab and click **YES** to proceed to the Ethernet attributes modification.

The **VCG-Level** dialog box appears.

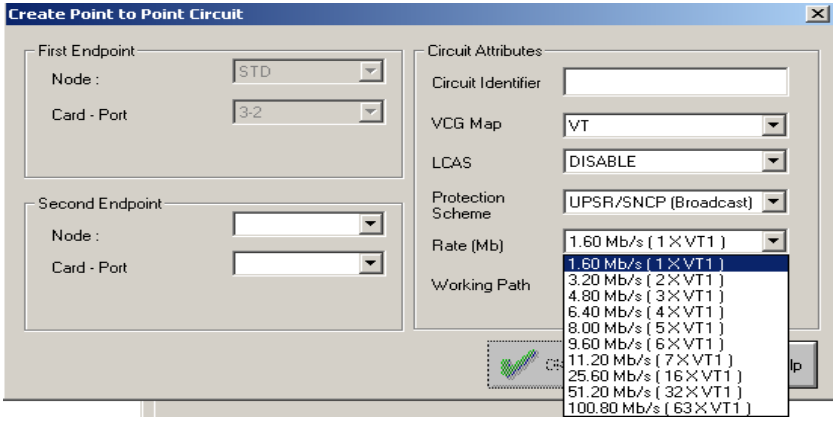
(MSE)



8. Click on **Create Circuit.** .

   The **Create Point to Point Circuit** dialog box will appear.

(MSE)



9. Choose the **Second Endpoint**, **Card** and **Port**.

10. Enter a **Circuit Identifier**.
11. Select the appropriate **Rate** from the drop down menu and click **OK**.

Your End-to-End Cross-Connection has been completed

Provisioning a V.35 Cross-Connection

The procedure below describes how to provision a V.35 mapper. The OSIRIS-VUE/OSIRIS-VUE PLUS! software uses the name DATA to refer to a V.35 mapper.

The 2-port V.35 mapper is used in SDH STM-1 and STM-4 systems to provide access to two TU12s.

You can install a V.35 mapper in the following slots:

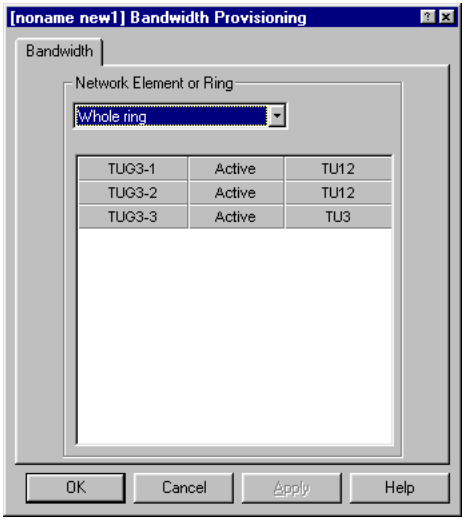
Shelf	Slots
OSIRIS STD	all slots
OSIRIS XTD	all slots
OSIRIS XTS	all slots
OSIRIS Micro DS1/E1 & DS3/E3	1, 2

For more installation instructions and equipping rules, see your shelf's *Installation Guide*.

To Provision the Mapper

1. On the **Network** menu, click **Bandwidth Provisioning**.

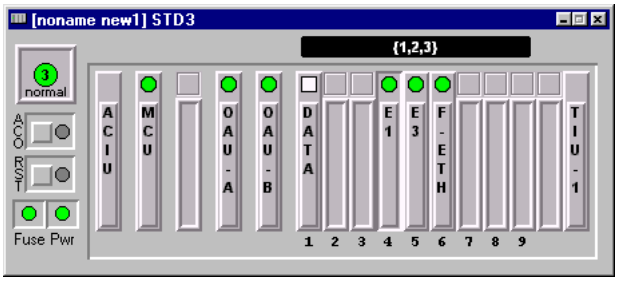
   The **Bandwidth Provisioning** dialog box appears.



2. Decide if you will provision bandwidth for the V.35 mapper for the whole ring or for a specific network element. Refer to "Provisioning Network Bandwidth" on page 56 for more information.
   - If this traffic will be carried on all nodes in the ring, select **Whole Ring**.
   - If this traffic will be carried on a specific network element, select a specific **Network Element**.
3. Determine which TUG3 that you will use and right click it.
4. Set the type of traffic to **TU12.**

   A confirmation dialog box appears.
5. Click **Yes**.

   The **Bandwidth Provisioning** dialog box reappears with **TU12** settings.
6. Click **OK** to exit the dialog box.
7. In the **Network Status** window, double-click the node with the V.35 mapper.
8. The **Shelf-level** dialog appears.

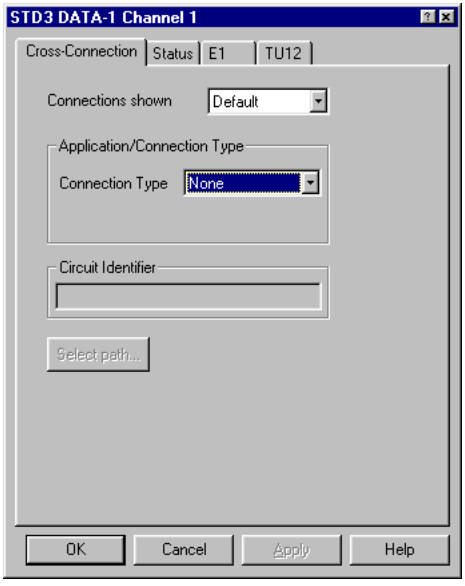


9. Right-click the slot that contains the DATA card.
10. Click **Provision As**, then click **DATA.**
11. Double-click the **DATA** mapper card.

The **Mapper-level** dialog box appears.

12. Double-click an unused **Channel**.

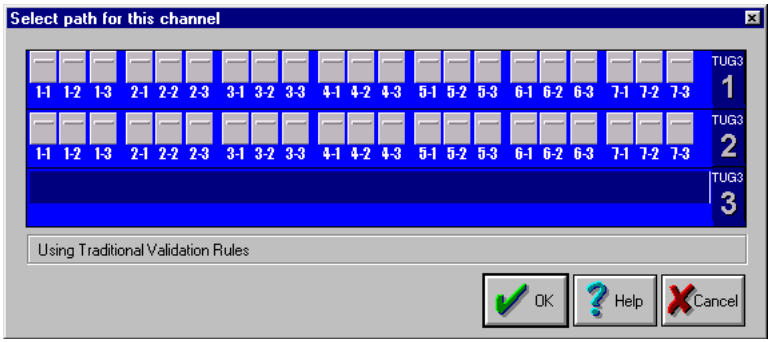
    The **Channel-level** dialog box appears.



13. Set **Connection Type** to **Add/Drop**.

14. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
15. Click **Select Path**.

    The **Select Path For This Channel** dialog box appears.



16. Select the TU12 on which you want to provision traffic.

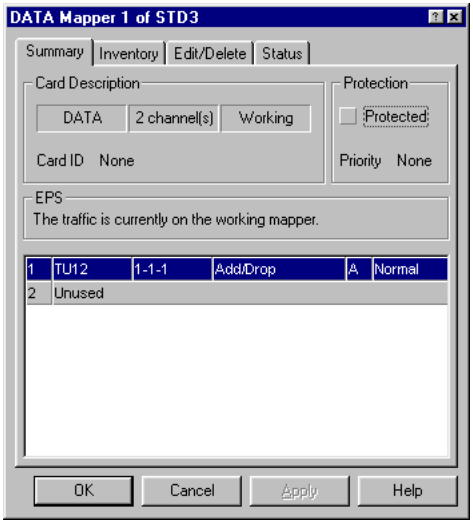
    Only three TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

    A maximum of three TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.
17. Click **OK**.

    The **Channel-level** dialog box reappears.
18. Click **OK**.

    The **Create Cross-connection** dialog box appears.
19. Click **Yes**.

20. The **Mapper-level** dialog box reappears.



21. Repeat this procedure on another node to provision the other side of the cross-connection.

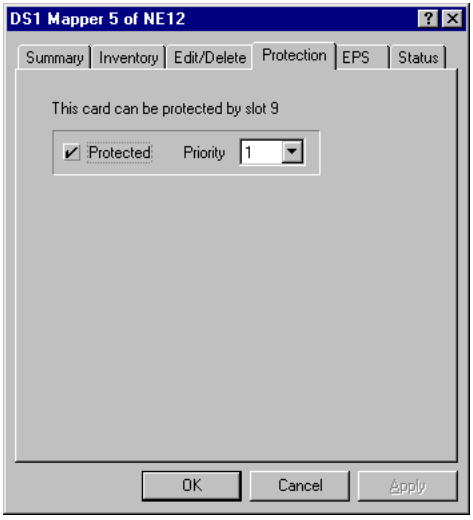
Assigning a Protection Level to a Mapper

All protected mappers can be assigned a protection priority. By default, all protected mappers are assigned the lowest priority of 1. If more than one protected mapper fails, traffic from the first mapper that fails will be switched to the protection mapper. If you assign different priorities to the mappers, the mapper with the highest priority (14) is always protected, even if another lower-priority mapper failed first.

Follow this procedure to assign a protection level to a mapper.

1. In the shelf-level window, double-click the protected mapper.
2. Click the **Protection** tab.

   The **Protection** dialog box appears.



3. Set the **Priority**.
4. Click **OK**.

Testing Equipment Protection Switching

Equipment protection is a precaution against mapper failure. You can install additional mapper cards in your OSIRIS shelf for backup. In the event of mapper failure, traffic switches to the backup equipment.

You should test equipment protection switching during or immediately after mechanical installation. The procedure is detailed below. For more information on equipment protection switching, see the *OSIRIS™ Shelf Testing Guide (203-007)*.

1. Use a test set to send a signal, as described in the *OSIRIS™ Shelf Testing Guide (203-007)*.
2. Provision all working and protection mappers.

   At least one cross-connection must be provisioned for you to be able to test equipment protection switching.
3. In the **Network Status** window, double-click the node to display the shelf-level window.
4. Double-click a working mapper that is protected.

   Click the EPS tab to display this dialog box.

5. Click **Force traffic on protection mapper**, then click **Yes** to confirm.
6. Click **OK** to exit the EPS dialog box.

7. Verify that traffic is operating properly on the protection mapper.

   Check the following items:

   - On the shelf, verify that no **major** alarms appear on the working mapper, protection mapper, or the PSCU. All LEDs on these cards should be solid green.
   - Verify that no **major** alarms appear in the Active Alarms report.

   Note: When you request a forced switch to protection, a minor alarm occurs that is not service-affecting.

8. Check that no errors are displayed on the test set.
9. Release the Forced Switch as described in the next section, then repeat this test for all cards that are provisioned for protection.

Releasing the Forced Switch

Once you have performed a forced switch to protection, you must verify that traffic switches back by removing the forced switch.

1. In the **Network Status** window, double-click the node to display the shelf-level window.
2. Double-click the working mapper that has switched to protection.

   Click the EPS tab to display this dialog box.

3. Click **Force traffic on protection mapper** to remove the forced switch, then click **Yes** to confirm the change.
4. Verify that traffic is transferred back to the working mapper card and that no major alarms appear.

Testing Path Protection Switching

Path protection is a precaution against a single fiber cut. Because OSIRIS networks are designed as Unidirectional Path Switching Rings (UPSR), a duplicate, or backup copy of traffic flowing on fiber A is also available on fiber B. This lets the OSIRIS network switch between fibers in the event of a single fiber failure.

In addition, a switch may be user-initiated when a maintenance procedure is being performed.

You should test path protection switching during or immediately after mechanical installation. The procedure is detailed below. For further information on path protection switching, see the *OSIRIS™ Shelf Testing Guide (203-007)*.

1. Use a test set to send a signal, as described in the *OSIRIS™ Shelf Testing Guide (203-007)*.
2. Make sure that Switching Reported is enabled. To enable Switching Reported:
   - In the **Network Status** window, right-click a node, then click **Maintenance Path Switching**, **Switching Reported**.
3. Double-click the node to display the Shelf-level window.
4. Double-click a mapper and provision a cross-connection.
5. Double-click the cross-connection.
6. Click the **PPS** tab to display this dialog box.

7. Click **Force traffic on B fiber**, then click **Yes** to confirm.
8. Verify that traffic is operating properly on the B path.

   Check the following items:

   - On the physical shelf, verify that no **major** alarms appear on the mapper. All LEDs on these cards should be solid green.
   - Verify that no **major** alarms have occurred in the Active Alarms report.

   Note: When you request a forced switch to protection, a minor alarm is active on the ACIU of the shelf. This alarm is not service-affecting.
9. Verify that no errors are displayed on the digital test set.

Releasing the Forced Switch

To release the Forced Switch, perform the following steps:

1. In the **Network Status** window, double-click the node to display the shelf-level window.
2. Double-click the mapper.
3. Double-click the cross-connection.
4. Click the **PPS** tab.
5. Click **Force traffic on B fiber**, then click **Yes** to confirm.

   The forced switch has been removed.

   At this point, traffic still flows on fiber B. By default, traffic is not switched from a fiber until the signal quality degrades below a certain level. When you release the forced switch, traffic will switch to fiber A only in the event of signal degradation on fiber B.

   Perform Step 6 to switch traffic back to fiber A.
6. Click **Manual traffic switch on A fiber**.

   Traffic is now travelling on the A fiber.

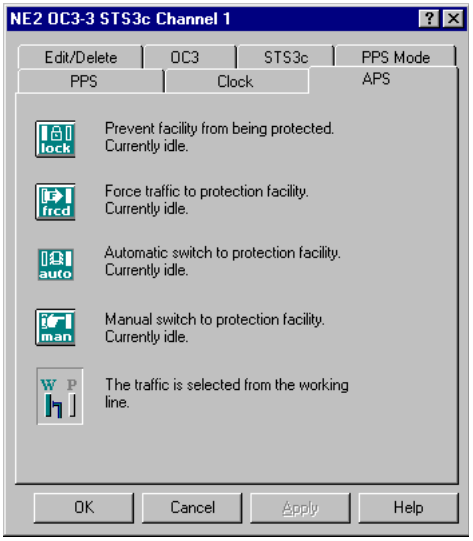
Testing Automatic Protection Switching

Automatic Protection Switching (APS) provides 1+1 protection at the facility level. It protects against line alarms such as Signal Fail and Signal Degrade. Installing an additional mapper per every working mapper for backup, allows traffic to switch to the backup equipment in the event of signal degrade or signal failure. APS provides automatic, manual, and forced non-revertive switching protection and lock mechanisms for OC-3, STM-1, and PAC155 links equipped on a OSIRIS Shelf.

You should test line protection switching during or immediately after mechanical installation. The procedure is detailed below. For further information on path protection switching, see the OSIRIS™ Shelf Testing Guide (203-007).

1. Use a test set to send a signal, as described in the *OSIRIS™ Shelf Testing Guide (203-007)*
2. Make sure that Switching Reported is enabled. To enable Switching Reported:

   Right-click the following button on APS page:
3. Double-click the node to display the **Shelf-level** window.
4. Double-click a mapper and provision a cross-connection for OC-3c/OC-3Trib/STM-1/STM-1 TU12 or ring for PAC155.
5. Double-click the cross-connection.
6. Click the **APS** tab to display this dialog box.



7. Click **Force traffic on protection facility**, then click **Yes** to confirm.
8. Verify that traffic is operating properly on the protection facility.

   Check the following items:

   - On the physical shelf, verify that no **major** alarms appear on the working mappers or protection mapper.
     All LEDs on these cards should be solid green.
   - Verify that no **major** alarms have occurred in the Active Alarms report.

   Note: When you request a forced switch to protection, a minor alarm is active on the ACIU of the shelf. This alarm is not service-affecting.
9. Verify that no errors are displayed on the digital test set.
10. Release the Forced Switch as described in the next section, then report this test for all cards that are provisioned for protection.

Releasing the Forced Switch

Once you have performed a forced switch to protection, you must verify that traffic switches back to removing the forced switch.

1. In the **Network Status** window, double-click the node to display the shelf-level window.
2. Double-click the working mapper that has switched protection.
3. Double-click the cross-connection.
4. Click the **APS** tab.
5. Click **Force traffic on protection facility** to remove the forced switch, then click **Yes** to confirm.

   The forced switch has been removed.

   At this point, traffic still flows on the protection facility. Traffic is not switched from a fiber until the signal quality degrades below a certain level. When you release the forced switch, traffic will switch to working facility only in the event of signal degrade and signal failure on protection facility.

   Perform Step 6 to switch traffic back to working facility.
6. Click **Manual traffic switch on working facility**.

   Traffic is now travelling on the working facility.

Signal Degrade Path Switching

Signal degrade path switching automatically switches traffic to the alternate path when the bit error rate on a channel exceeds a certain threshold. Follow the procedure in this section to enable signal degrade path switching.

Signal degrade path switching can be useful if an intermittent problem is present on the fiber.

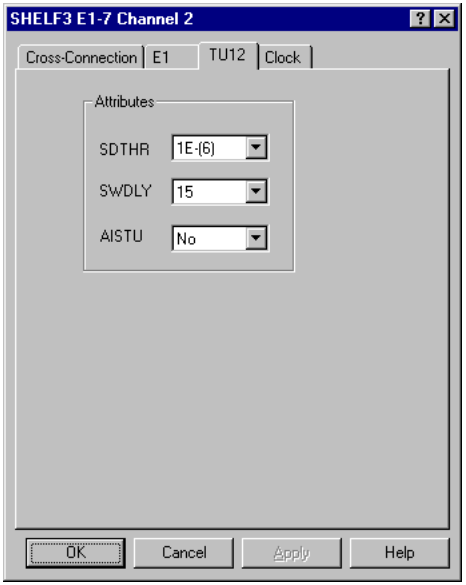
Note: Signal degrade path switching is not supported on Fast Ethernet channels.

Enabling Signal Degrade Path Switching

1. In the **Network Status** window, double-click the node to display the **Shelf-level** window.
2. Double-click the mapper.
3. Double-click the cross-connection.
4. Click the tab that corresponds to the signal capacity for this channel, as shown below.

	Channel Type	Tab
SONET	DS1, Ethernet	VT1.5
	DS3, EC1BLK	STS1
	OC3c	STS3c
SDH	E1, V.35, Ethernet	TU12
	E3, DS3	TUG3
	STM-1	AU4

The following dialog box appears.



5. Set **SDTHR** to the signal degrade threshold. Refer to the table below.

Signal Degrade Threshold	Maximum BER Before Switching
Disabled	Not monitored
1E-(5)	1 error per 100 000 bits
1E-(6)	1 error per 1 000 000 bits
1E-(7)	1 error per 10 000 000 bits
1E-(8)	1 error per 100 000 000 bits
1E-(9)[1]	1 error per 1 000 000 000 bits

1. This setting is available only on STM-1, OC3c, EC1BLK, E3, or DS3 mappers.

6. Consult the online help for details on any parameters in this dialog box.
7. Click **OK**.

Chapter 4
Advanced Network Applications

This chapter describes how to provision advanced network applications in your OSIRIS network. Both SONET and SDH versions are covered.

Cross-connections that are not point-to-point are described. Variations of the UPSR standard, such as broadcast mode, bandwidth reuse, single fiber ring, logical ring, and matched nodes can all be provisioned.

Data communications applications such as IP Tunneling and PacketPath are also detailed, as are procedures on how to set up loopbacks, end-to-end tests, and quadrants.

General OSI provisioning procedures for SONET are described in this chapter as well.

Note: This feature applies to OSIRIS-VUE/OSIRIS-VUE PLUS! release 5.0 or higher for SONET only.

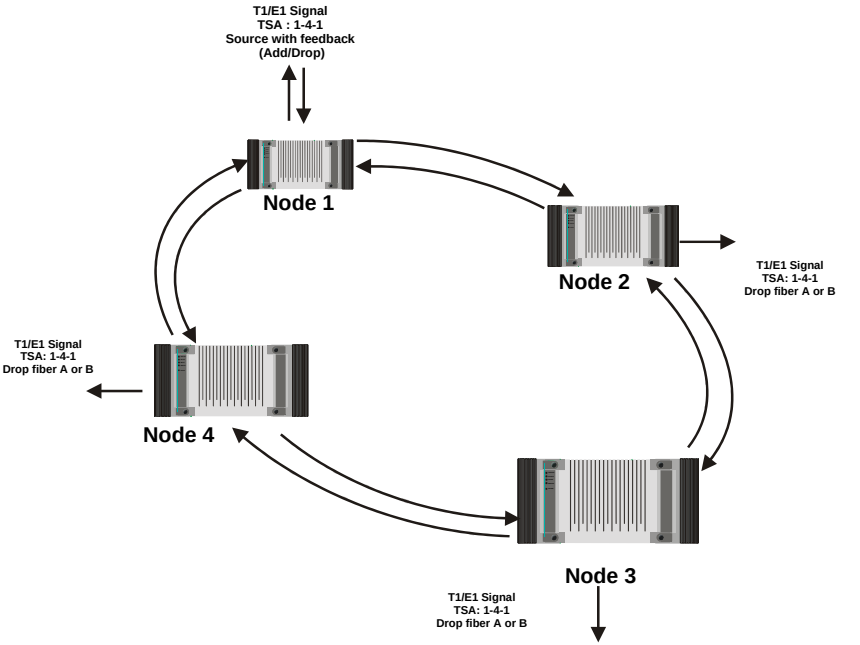
Before you start this chapter, make sure that you have completed the ring start-up procedures as described in the *OSIRIS® Network User's Guide (206-002)*. Also, you should plan global network-wide bandwidth assignments before you proceed. See "Provisioning Network Bandwidth" on page 56 for details.

Broadcast Mode

In Broadcast Mode, the network signal is configured to enter the network from a single location but to exit at many locations.

Any type of mapper can be used in broadcast mode.

The diagram below illustrates a sample broadcast mode application, and the procedure that follows describes how to provision a broadcast application. For more details on broadcast mode, see the *OSIRIS® Network User's Guide (206-002)*.

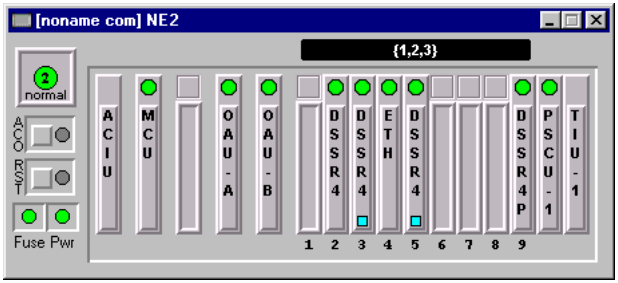


Provisioning

Follow this procedure to provision a broadcast cross-connection.

1. In the **Network Status** window, double-click the node that will support the broadcast application.

   The **Shelf-level** window appears.

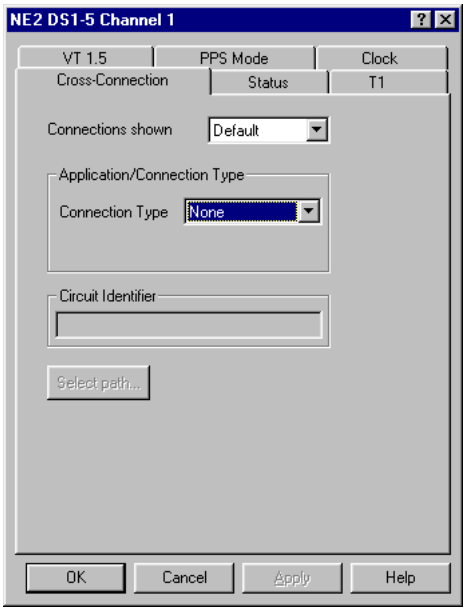


2. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

3. Double-click the channel on which you want to provision the cross-connection.

The **Channel-view** window appears.



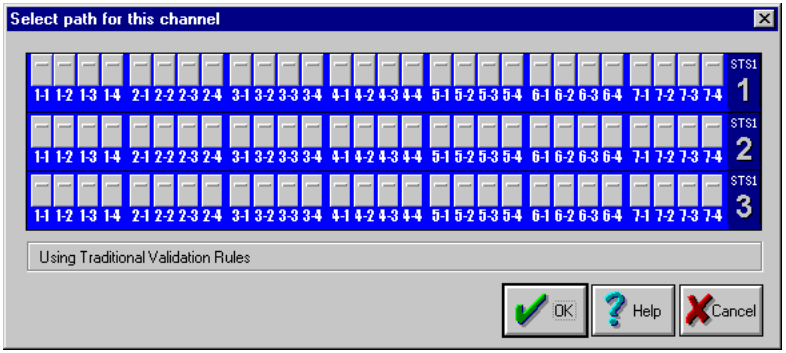
4. Set **Connections Shown** to **Applications**.
5. Set **Application Type** to **Broadcast**.
6. Set **Option** to one of the following.

Source with feedback	Add/Drop connection. This broadcast is sent and also received at this point.
Source with no feedback	Add connection. The broadcast is sent at this point.
Drop site	Drop connection. The broadcast is received at this point.

Note: For more details on any of this options, see the *OSIRIS® Network User's Guide (206-002).*

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
8. Click the **Select Path** button.

The **Select Path for This Channel** dialog box appears.



9. Select a channel.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Network Status** window reappears.

14. Repeat this procedure to provision other broadcast cross-connections.

    Note: For a broadcast application to work properly, only one node may be the source of the broadcast, and at least one recipient must accept the broadcast.

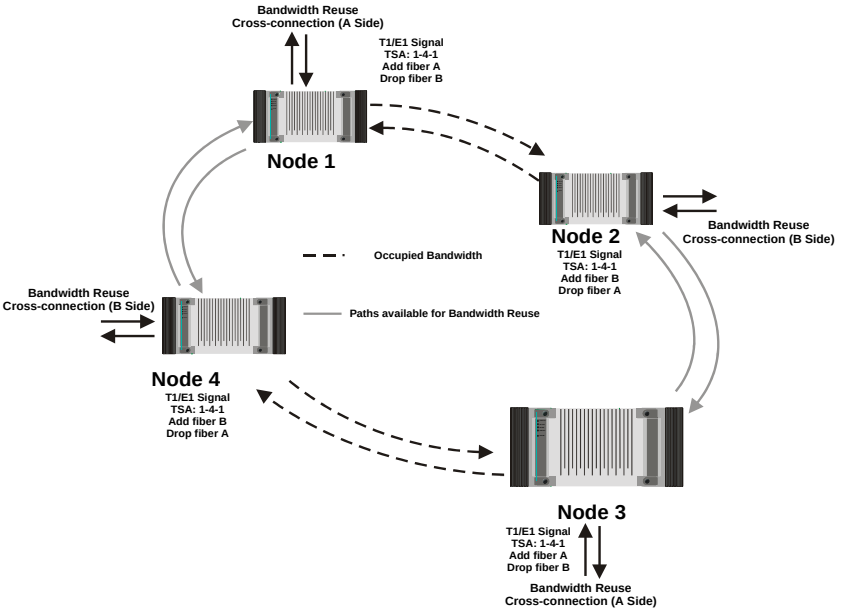
Bandwidth Reuse

Bandwidth Reuse mode can be used when fiber path protection is not required, or when protection is assured by other means than the UPSR ring. With bandwidth reuse, the same bandwidth is used on different segments around the ring.

Bandwidth used in bandwidth reuse mode is not protected against fiber cuts. Bandwidth reuse mode can be used on the whole bandwidth of the ring, or on specific timeslots only.

Any type of mapper can be used in bandwidth reuse mode.

The diagram below illustrates a sample bandwidth reuse mode application, and the procedure that follows describes how to provision a bandwidth reuse application. For more details on bandwidth reuse mode, see the *OSIRIS® Network User's Guide (206-002)*.

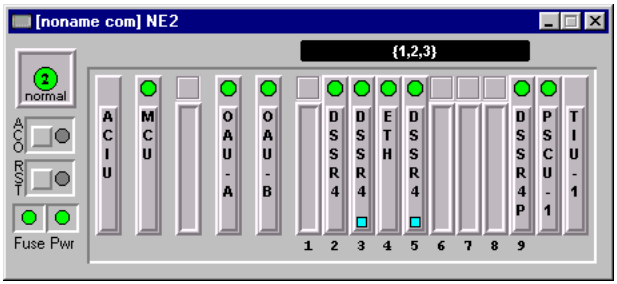


Provisioning

Follow this procedure to provision a bandwidth reuse cross-connection.

1. In the **Network Status** window, double-click the node that will support the bandwidth reuse application.

   The **Shelf-level** window appears.

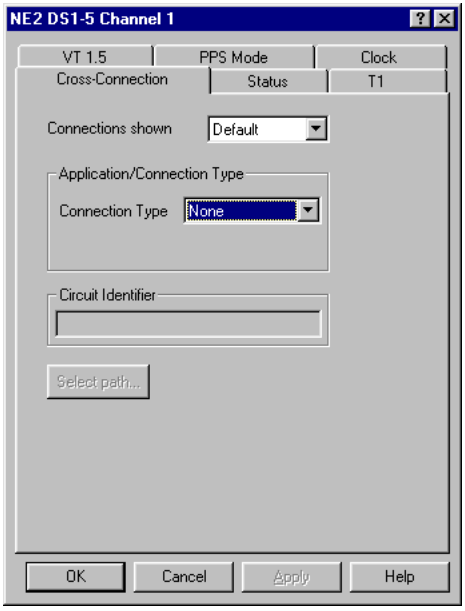


2. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

3. Double-click the channel on which you want to provision the cross-connection.

The **Channel-view** window appears.



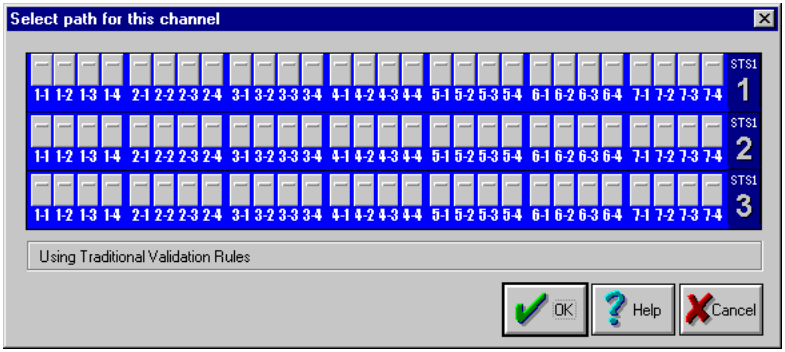
4. Set **Connections Shown** to **Applications**.
5. Set **Application Type** to **Bandwidth Reuse**.
6. Set **Option** to one of the following.

Side A	Add A/Drop B cross-connection. Traffic is added to fiber A.
Side B	Add B/Drop A cross-connection. Traffic is added to fiber B.

Note: For more details on any of this options, see the *OSIRIS® Network User's Guide (206-002).*

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
8. Click the **Select Path** button.

The **Select Path for This Channel** dialog box appears.



9. Select a channel.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Network Status** window reappears.

14. Repeat this procedure to provision other bandwidth reuse cross-connections.

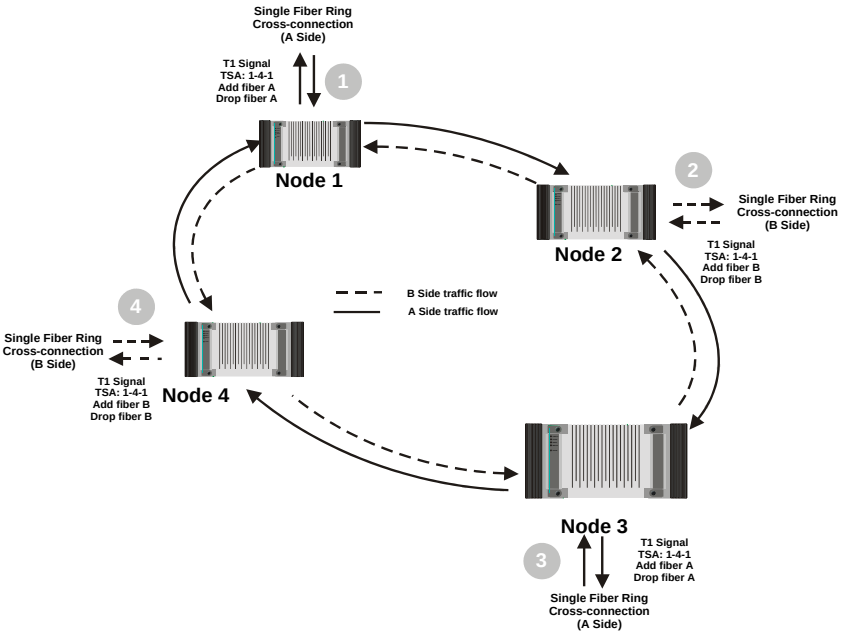
Single Fiber Ring

Single Fiber Ring mode is similar to Bandwidth Reuse mode, except that with Single Fiber Ring, bandwidth is reused around the complete ring. In Bandwidth Reuse mode, the same bandwidth is used in one or more parts of the ring.

Single Fiber Ring mode can be used when fiber path protection is not required, or when protection is assured by other means than the UPSR ring. With a single fiber ring set up, two fiber pairs are used around the ring, but each pair carries different traffic. Available bandwidth is therefore doubled, but traffic is not protected against fiber cuts.

Any type of mapper can be used in single fiber ring mode.

The diagram below illustrates a sample single fiber ring mode application, and the procedure that follows describes how to provision a single fiber ring. For more details on single fiber ring mode, see the *OSIRIS® Network User's Guide (206-002).*

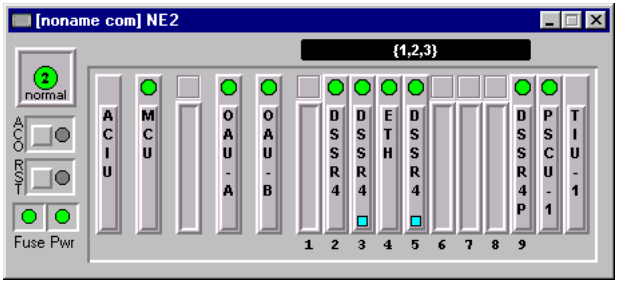


Provisioning

Follow this procedure to provision a single fiber ring cross-connection.

1. In the **Network Status** window, double-click the node that will support the single fiber ring application.

   The **Shelf-level** window appears.

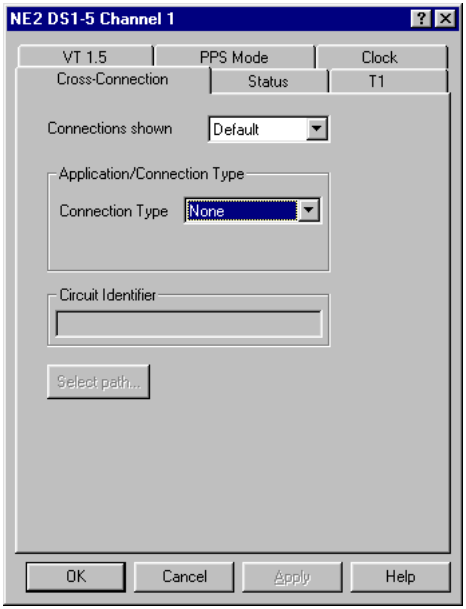


2. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

3. Double-click the channel on which you want to provision the cross-connection.

The **Channel-view** window appears.



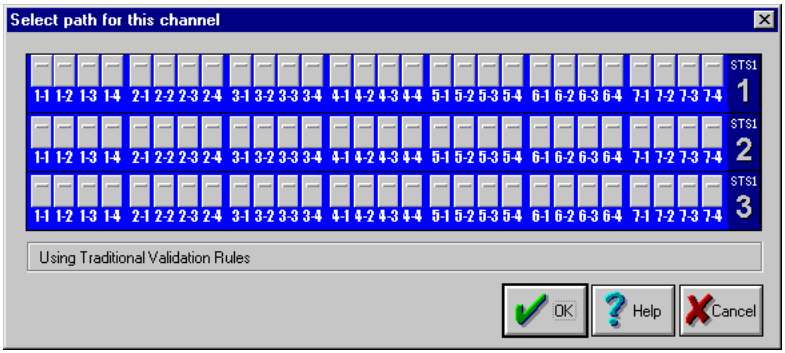
4. Set **Connections Shown** to **Applications**.
5. Set **Application Type** to **Single Fiber Ring**.
6. Set **Option** to one of the following.

Side A	Add A cross-connection. Traffic is added to fiber A only.
Side B	Add B cross-connection. Traffic is added to fiber B only.

Note: For more details on any of this options, see the *OSIRIS® Network User's Guide (206-002).*

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
8. Click the **Select Path** button.

The **Select Path for This Channel** dialog box appears.



9. Select a channel.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Network Status** window reappears.

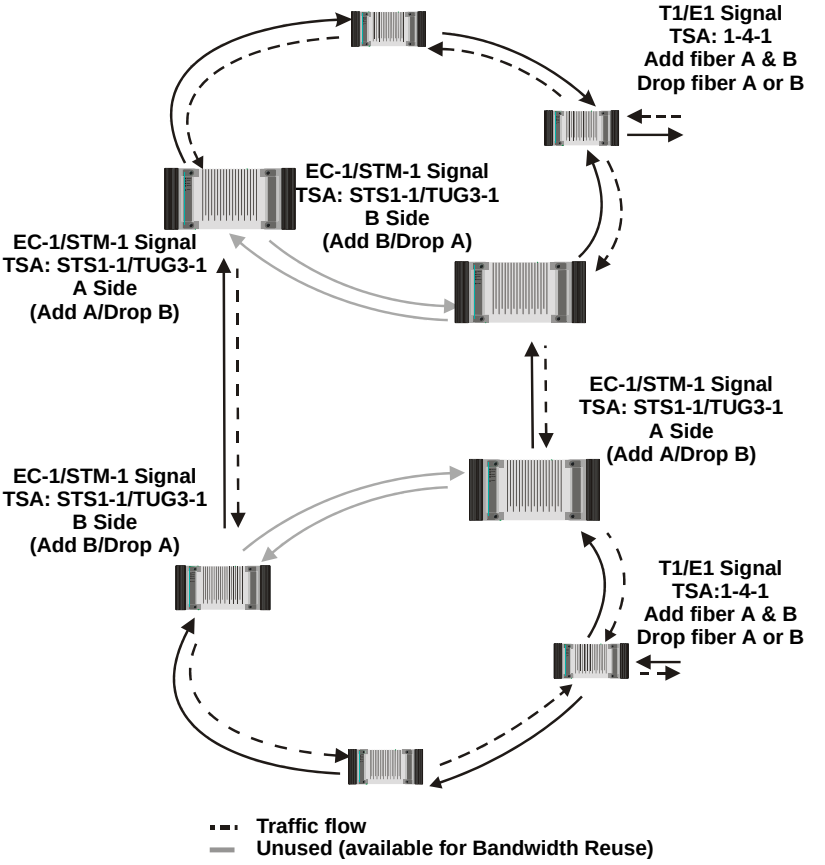
14. Repeat this procedure to provision other single fiber ring cross-connections.

Logical Ring

Logical Ring mode is designed specifically for ring interconnection scenarios. The logical ring configuration creates a virtual UPSR from two interconnected rings. This lets traffic provisioned on each virtual path flow from one ring to another as if it were contained in only one ring.

EC-1 Bulk, EC-1 VT, STM-1 and OC3-c mappers are typically used in logical ring configurations.

The diagram below illustrates a sample logical ring mode application, and the procedure that follows describes how to provision a logical ring application. For more details on logical ring mode, see the *OSIRIS® Network User's Guide (206-002)*.



Provisioning

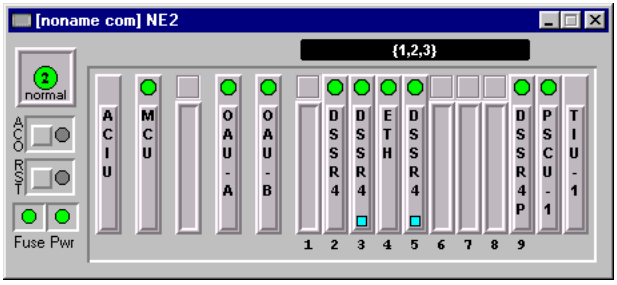
Follow the procedures in this section to provision a logical ring cross-connection. The first procedure establishes communication between the two rings, and the second procedure provisions traffic to travel across the rings.

Establish Communication Between the Rings

You must follow this procedure four times; once for each node that communicates with the other ring.

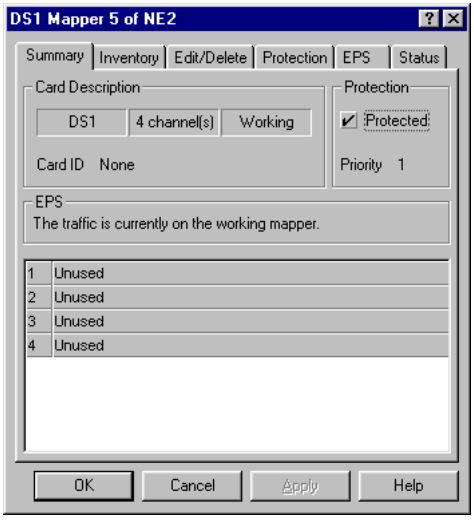
1. In the **Network Status** window, double-click the node that will support the logical ring application.

   The **Shelf-level** window appears.



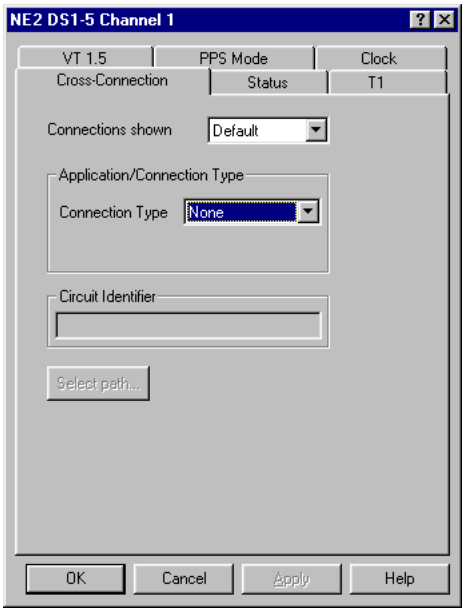
2. Double-click the mapper on which you want to provision the cross-connection.

   The **Mapper-level** window appears.



3. Double-click the channel on which you want to provision the cross-connection.

   The **Channel-view** window appears.



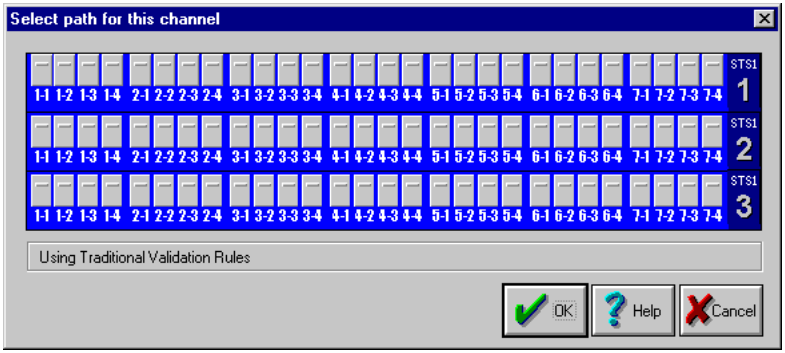
4. Set **Connections Shown** to **Applications**.
5. Set **Application Type** to **Logical Ring**.
6. Set **Option** to one of the following.

Side A	Add A cross-connection. Traffic is added to fiber A only.
Side B	Add B cross-connection. Traffic is added to fiber B only.

   Note: For more details on any of this options, see the *OSIRIS® Network User's Guide (206-002)*.

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
8. Click the **Select Path** button.

The **Select Path for This Channel** dialog box appears.



9. Select a channel.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Network Status** window reappears.

14. Repeat this procedure to provision the other end of the logical ring cross-connection.

Provision Traffic Across the Rings

You must follow this procedure four times; once for each node that communicates with the other ring.

1. Log on to both rings with OSIRIS-VUE/OSIRIS-VUE PLUS! software.

   A **Network Status** window appears for each ring.

2. In one of the **Network Status** windows, double-click the node that will exchange traffic with the other ring.

   The **Shelf-level** window appears.

3. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

4. Double-click the channel on which you want to provision the cross-connection.

   The **Channel-view** window appears.

5. Set **Connections Shown** to **Applications**.

6. Set **Application Type** to **Point to Point**.

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.

8. Click the **Select Path** button.

   The **Select Path for This Channel** dialog box appears.

9. Select a channel.

   Note: When you provision this same cross-connection on the second ring, the existing cross-connection is not visible in this dialog box.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Shelf-level** window reappears.

14. Repeat this procedure to provision the other end of the point-to-point cross-connection.

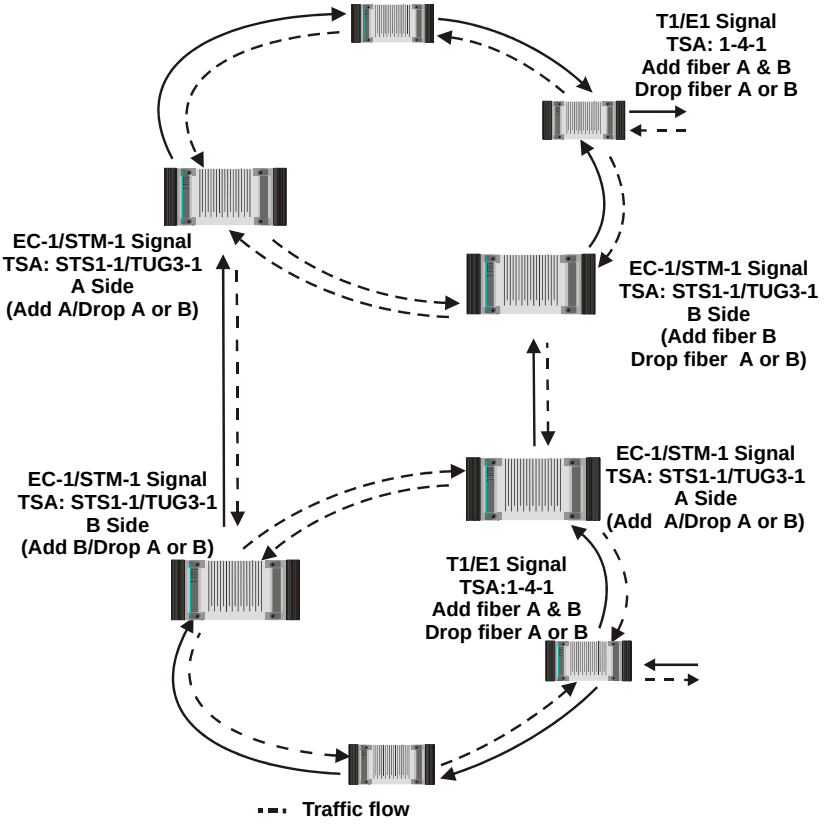
    Note: You must use the same timeslot when you provision the other end of this point-to-point connection.

Matched Nodes

Like the Logical Ring, the Matched Nodes setup is designed specifically for ring interconnection scenarios and adds a second level of redundancy to conventional UPSR architecture. The matched nodes application differs from the logical ring in that it provides a more robust protection level which can withstand one fiber cut in each interconnected ring. A logical ring can withstand only one fiber cut in either ring.

EC-1 Bulk, EC-1 VT, STM-1 and OC3-c mappers are typically used in matched nodes mode.

The diagram below illustrates a sample matched nodes application, and the procedure that follows describes how to provision this application. The four nodes that are directly connected to the other ring are called the *matched nodes*. For more details on matched nodes mode, see the *OSIRIS® Network User's Guide (206-002)*.



Provisioning

Follow the four procedures in this section to provision a matched nodes cross-connection. The first two procedures synchronize timing across the two rings. The third procedure establishes communication between the two rings, and the last procedure provisions traffic to travel across the rings.

Set the Clock Source

In a matched nodes application, the two matched nodes of each ring receive synchronization from a single external timing source. These nodes must be provisioned as **EXTERN**. The remaining nodes receive network timing from the fiber. These nodes must be provisioned as **THRU**.

Follow these steps to set the clock source on a node.

1. In the **Network Status** window, right-click the node, then click **Set Shelf Info**.

   The **Provision Node** dialog box appears.

2. Set **Clock** to **EXTERN** or **THRU**.
3. Click **OK**.
4. Provision a channel for the external clock on the nodes provisioned as **EXTER**N. The channel must be provisioned on a DS1 or E1 mapper.

   See "Provisioning an External Clock Source" on page 53.

Provision OAUs

In a matched nodes application, the OAUs seated in the two matched nodes of each ring must be set to LOCK mode. OAUs seated in the remaining nodes must retain the default setting of NORMAL.

Follow these steps to set an OAU to LOCK mode.

1. In the **Network Status** window, right-click the node, then click **Set Shelf Info**.

   The **Provision Node** dialog box appears.

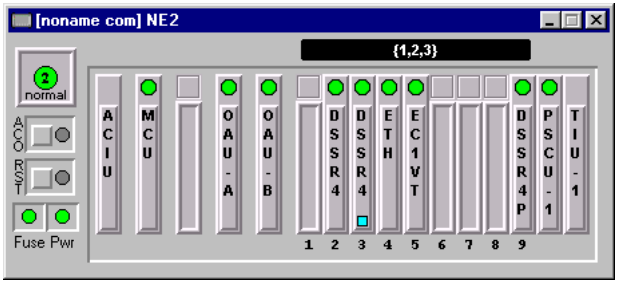
2. Set **OAU Mode** to **Lock**.
3. Click **OK**.

Establish Communication Between the Rings

You must follow this procedure four times; once for each node that communicates with the other ring.

1. In the **Network Status** window, double-click the node that will support the matched nodes application.

   The **Shelf-level** window appears.

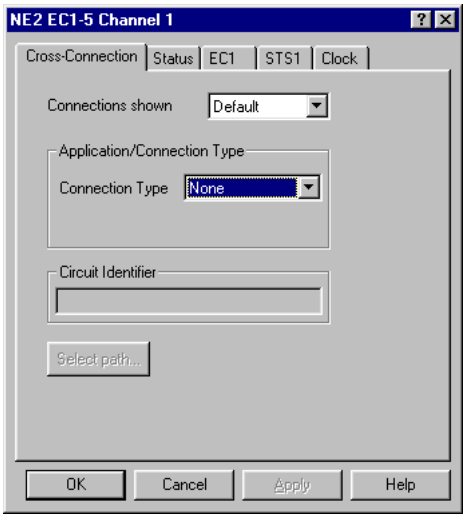


2. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

3. Double-click the channel on which you want to provision the cross-connection.

   The **Channel-view** window appears.



4. Set **Connections Shown** to **Applications**.
5. Set **Application Type** to **Matched Nodes**.
6. Set **Option** to one of the following.

   Side A — Add A cross-connection. Traffic is added to fiber A only.

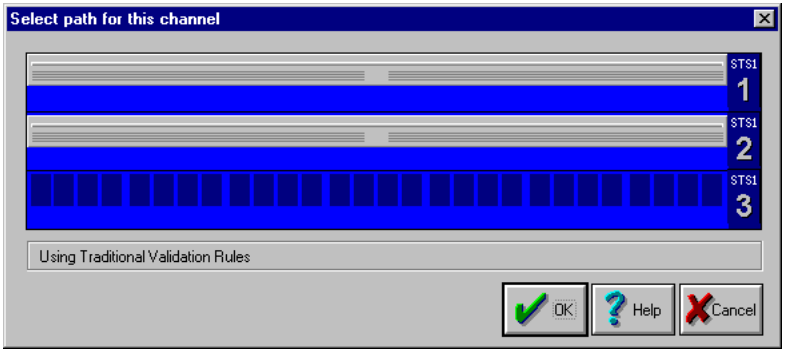
   Side B — Add B cross-connection. Traffic is added to fiber B only.

   Note: Four nodes must be provisioned in a matched nodes configuration. For more details on any of this options, see the *OSIRIS® Network User's Guide (206-002)*.

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.

8. Click the **Select Path** button.

   The **Select Path for This Channel** dialog box appears.



9. Select a channel.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Network Status** window reappears.

14. Repeat this procedure to provision the other end of the matched nodes cross-connection.

Provision Traffic Across the Rings

You must follow this procedure four times; once for each node that communicates with the other ring.

1. Log on to both rings with OSIRIS-VUE/OSIRIS-VUE PLUS! software.

   A **Network Status** window appears for each ring.

2. In one of the **Network Status** windows, double-click a node that will exchange traffic with the other ring.

   The **Shelf-level** window appears.

3. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

4. Double-click the channel on which you want to provision the cross-connection.

   The **Channel-view** window appears.

5. Set **Connections Shown** to **Applications**.

6. Set **Application Type** to **Point to Point**.

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.

8. Click the **Select Path** button.

   The **Select Path for This Channel** dialog box appears.

9. Select a channel.

   Note: When you provision this same cross-connection on the second ring, the existing cross-connection is not visible in this dialog box.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Shelf-level** window reappears.

14. Repeat this procedure to provision the other end of the point-to-point cross-connection.

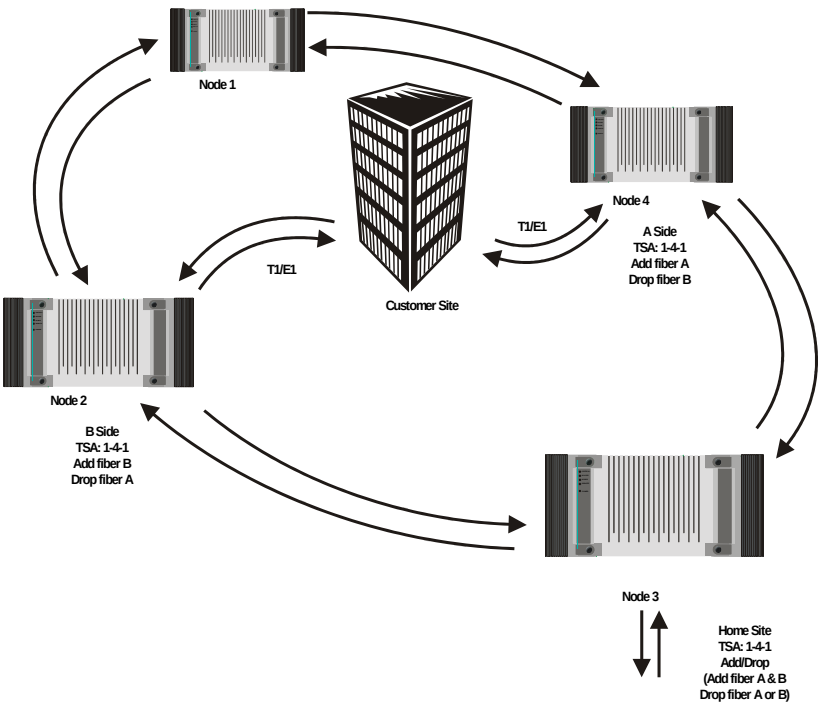
    Note: You must use the same timeslot when you provision the other end of this point-to-point connection.

Dual Homing

Dual Homing provides extended path protection for traffic entering a OSIRIS network through two T1/E1 lines. The two T1/E1 lines connect a customer site to two separate OSIRIS network elements, providing path redundancy. Should one T1/E1 connection fail, a separate T1/E1 connection is available as backup. Dual homing is a bi-directional application.

Only DS1 and E1 mappers can be used for dual homing applications. Switching for a dual homing cross-connection takes place on a DS1/E1 mapper, known as the homing site. The homing site is the cross-connection location from which this DS1/E1 traffic exits a OSIRIS network through a T1/E1 line destined for another location.

The diagram below illustrates a sample dual homing application, and the procedure that follows describes how to provision it. For more details on dual homing mode, see the *OSIRIS® Network User's Guide (206-002)*.

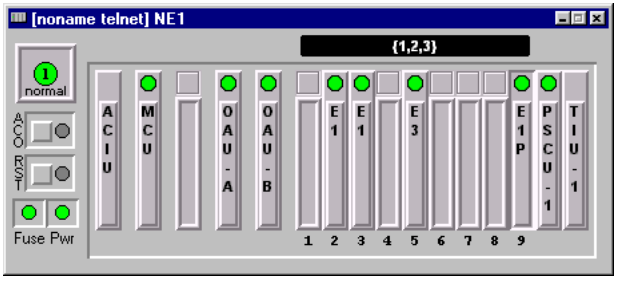


Provisioning

Follow the procedure in this section to provision a dual homing cross-connection. You must perform the procedure three times for the dual homing application to function correctly. One cross-connection must be provisioned as the A Side, another as the B Side, and the third as the homing site.

1. In the **Network Status** window, double-click one of the nodes that will support the dual homing application.

   The **Shelf-level** window appears.

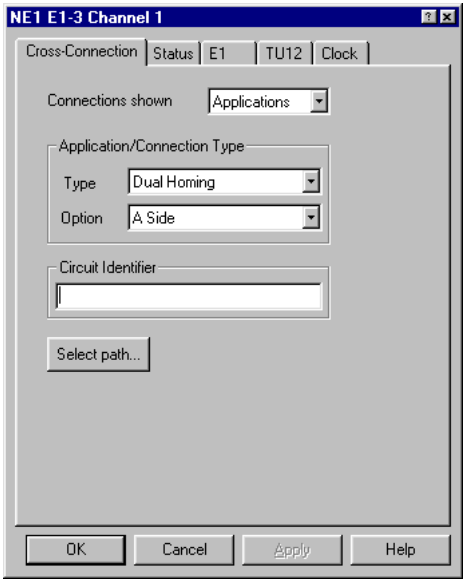


2. Double-click the mapper card on which you want to provision the cross-connection.

   The **Mapper-level** window appears.

3. Double-click the channel on which you want to provision the cross-connection.

The **Channel-level** window appears.

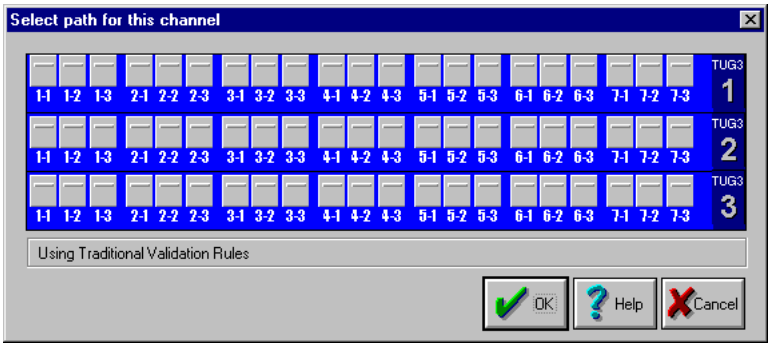


4. Set **Connections Shown** to **Applications**.
5. Set **Application Type** to **Dual Homing**.
6. Set **Option** to one of the following.

Side A	Adds the traffic received from the T1/E1 line to fiber A. The same portion of bandwidth is also provisioned as Drop B.
Side B	Adds the traffic received from the T1/E1 line to fiber B. The same portion of bandwidth is also provisioned as Drop A.
Homing Site	Transfers traffic from this portion of the bandwidth to a T1/E1 line. This cross-connection type performs switching if a path fails.

7. Enter a **Circuit Identifier** if you want to assign a name to this cross-connection.
8. Click the **Select Path** button.

The **Select Path for This Channel** dialog box appears.



9. Select a channel.

   Only three STS1/TUG3 channels are displayed in this dialog box at once. These three channels are assigned to timeslots in the quadrant that this mapper card resides in.

   A maximum of three STS1/TUG3 channels can be assigned to a quadrant. If you do not see the channel that you want, you should provision your quadrants properly before proceeding. See "Quadrant Provisioning" on page 226.

10. Click **OK**.

    The **Channel-level** dialog box reappears.

11. Click **OK**.

    The **Create Cross-connection** dialog box appears.

12. Click **Yes** to confirm.

    The **Mapper-level** dialog box reappears.

13. Click **OK**. The **Network Status** window reappears.

14. Repeat this procedure two more times so that three nodes are provisioned.

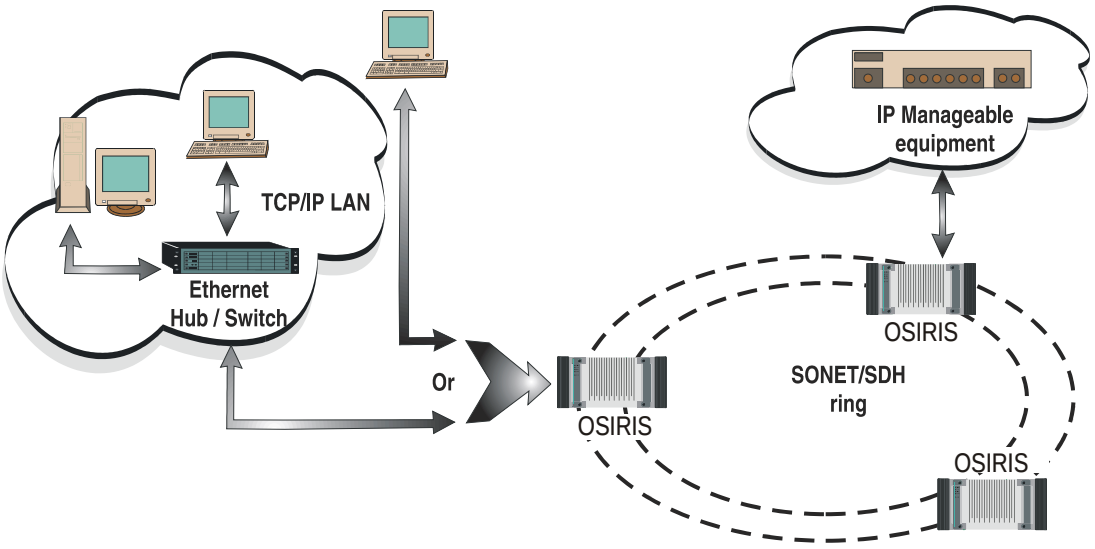
    One cross-connection must be provisioned as the A Side, another as the B Side, and the third as the homing site. You must use the same timeslot for all three cross-connections.

IP Tunneling

IP Tunneling routes IP datagrams from one network element to another using the section DCC (when OSI stack is enabled, D1, D2, D3 bytes are used) or using Line DCC (when non-OSI(proprietary DCC) is enabled, D5, D8, D11 bytes are used) within the SONET/SDH overhead. The DCC is a 192 Kbit/s communications channel that is shared by OSIRIS shelves for transferring autonomous messages, alarms, provisioning, and network discovery information.

With IP Tunneling enabled, you can manage a TCP/IP device that is external to the OSIRIS ring, and also manage other OSIRIS subnetworks. In addition, you can provision BOOTP or DHCP requests and replies to be forwarded across a ring. See "BOOTP" on page 190 for more information.

The diagram below illustrates a sample IP Tunneling application, and the procedure that follows describes how to provision it.



For further details on IP Tunneling applications, see the *OSIRIS® Network User's Guide (206-002)*.

Note: Only NMCUs support IP Tunneling and Ping. Regular MCUs cannot be assigned an IP address.

Provisioning

A network element with IP Tunneling enabled is actually connected to two separate networks: the physical Ethernet connection via the shelf's 10BaseT Ethernet port, and the virtual connection to the section DCC. Both interfaces require a unique IP address within two different subnetworks. As a result, the network element acts as a gateway.

Examine the following Special Considerations before you configure IP Tunneling.

Special Considerations

- Assign IP addresses that are not already used in your network.
- Confirm with your network manager that the IP addresses are valid. These addresses must be recognized by any existing routers or gateways on the network.
- Ensure that Ethernet and DCC IP addresses belong to separate subnetworks.
- Remember that DCC bandwidth is limited to 192 kbit/s. You should not use IP Tunneling for heavy traffic or continuous file transfers.

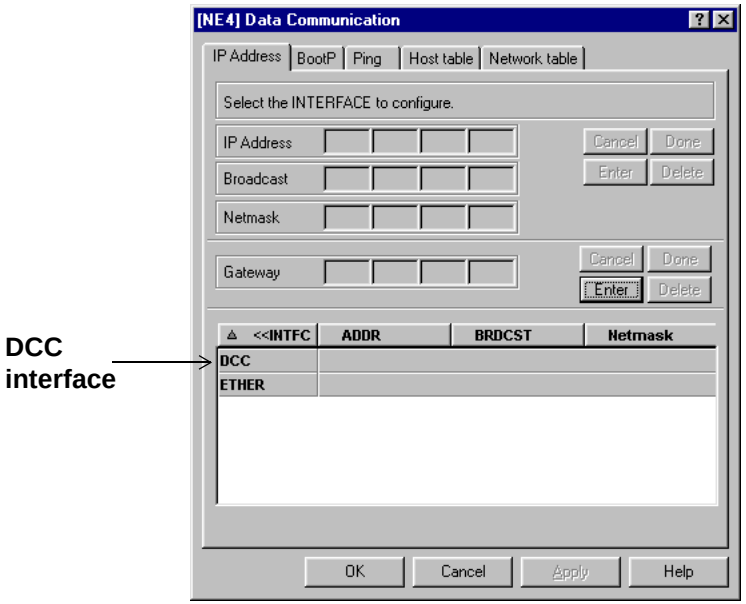
  Also keep in mind that the DCC bandwidth used by OSIRIS nodes increases with the number of nodes in the ring and the number of cards per shelf. A large ring with heavily populated shelves will not be able to support as much IP Tunneling traffic as a small ring.
- Use Ethernet switches or routers as much as possible to control network traffic and limit the extent of broadcast storms.

How to Provision

1. Assign an IP address to the Ethernet interface on the network element. To do so, see "Assigning an IP Address" on page 33.

   Once you have assigned an IP address to the Ethernet interface, you must assign an address to the DCC interface. Follow the steps below.
2. Connect your PC to a shelf via a direct serial connection or a modem.
3. Log in to your network.
4. In the **Network Status** window, right-click the node that will support IP Tunneling, then click **Data Communication**.

The **Data Communication** dialog box appears.



5. Select the **DCC interface** to activate IP Tunneling parameters.
6. Click the **Enter** button near the top of the dialog box to access the **IP address**, **Broadcast** address, and **Netmask** settings.
7. Set the **IP address**, **Broadcast** address and **Netmask** for the network element.

   IP Address IP address that you want to assign to the DCC interface of the network element.

   Example: 192.168.1.1

   Broadcast IP address used in conjunction with Netmask when sending out broadcast packets. Addresses all packets in the subnet.

   Example: 192.168.1.255

   Netmask Mask used to identify the subnetwork.

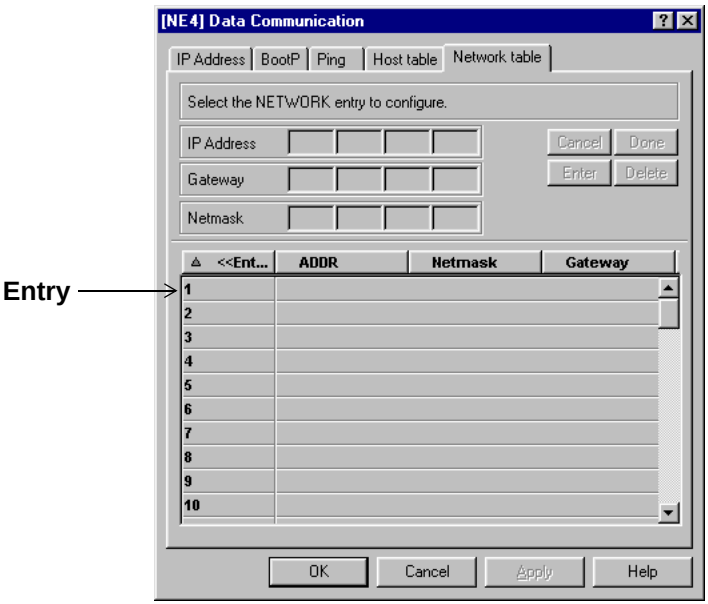
   Example: 255.255.255.0
8. Click **Done**.

Configure Routing Tables

RIP version 1 (Routing Information Protocol) is automatically enabled when both Ethernet and DCC interfaces are configured on the same node. However, you may want to configure static route entries if you are connecting to equipment that does not support RIP.

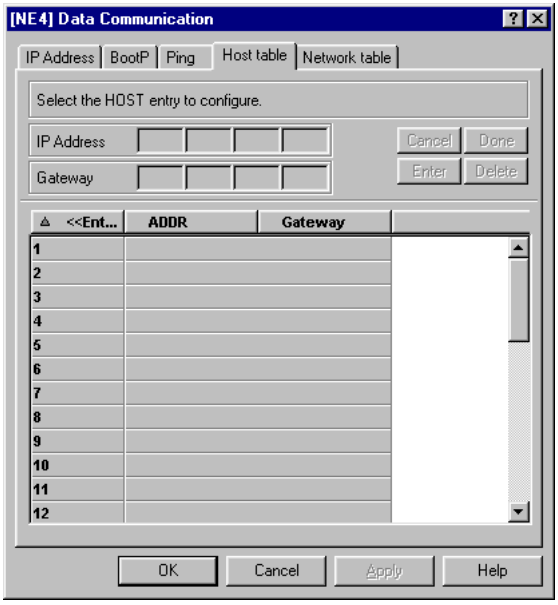
Follow this procedure to configure static routing tables.

1. Click the **Network table** tab.



2. Select an entry row, then click **Enter**.
3. Enter the Network **IP Address**, **Gateway**, and **Netmask** to be added to the static route table.
4. Click **Done**.
5. Repeat Step 2 to Step 4 for all network route entries.

6. Click the **Host table** tab.

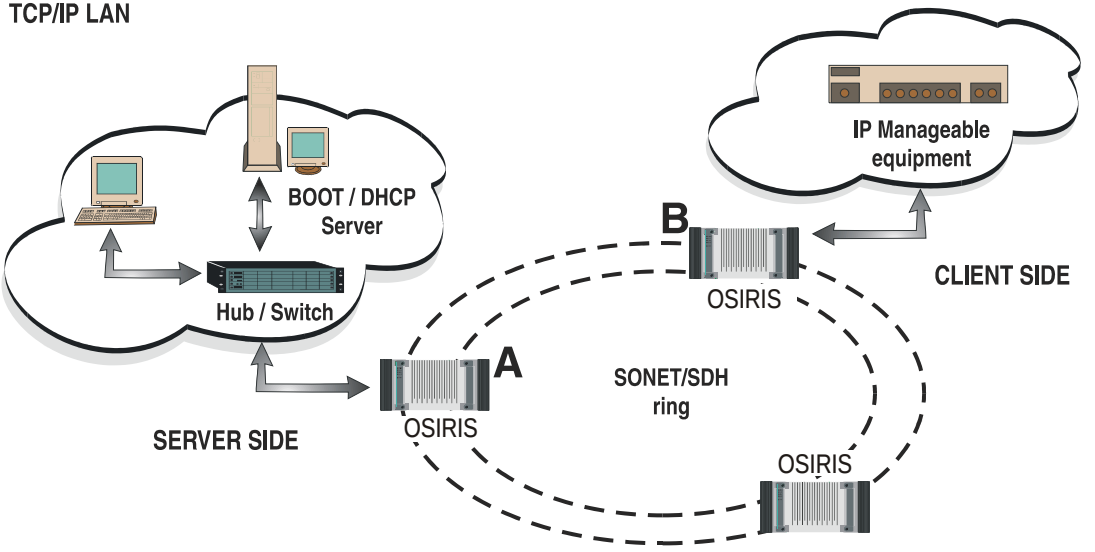


7. Select an entry row, then click **Enter**.
8. Enter a Host IP Address, then click **Done**.
9. Enter the Gateway Address, then click **Done**.
10. Repeat Step 7 to Step 9 for all individual static routing entries.

BOOTP

BOOTP (Bootstrap Protocol) is a protocol used by network devices at boot up for dynamic IP address assignment. DHCP (Dynamic Host Configuration Protocol) is similar to BOOTP with some additional functionality. Both protocols can forward requests and replies across a OSIRIS ring when IP Tunneling is enabled.

The diagram below illustrates a sample BOOTP application, and the procedure that follows describes how to provision it.



How to Provision

You must enable BOOTP on **two** nodes in the ring. As illustrated in the diagram above, node A has direct access to the BOOTP/DHCP server, and node B has access to the BOOTP/DHCP client.

Note: You must provision IP Tunneling on this node before you can access BootP settings.

1. In the **Network Status** window, right-click one of the nodes that will support BOOTP, then click **Data Communication**.

   The **Data Communication** dialog box appears.

2. Click the **BootP** tab.

3. Set **BootP type** to either Client or Server, depending on whether this node has direct access to the BOOTP server, or whether this node has access to the BOOTP client.
4. Enter the BOOTP or DHCP **Server address**.

   If this node is the Client, then this address must be the DCC IP address of the Server network element.

   If this node is the Server, then this address must be the IP address of the BOOTP/DHCP server.
5. Set **Hop threshold** to the maximum number of hops between this node and the second BootP/DHCP node in the ring.

   Each node counts as one hop.
6. Click **OK**.
7. Follow this procedure a second time to provision the other network element.

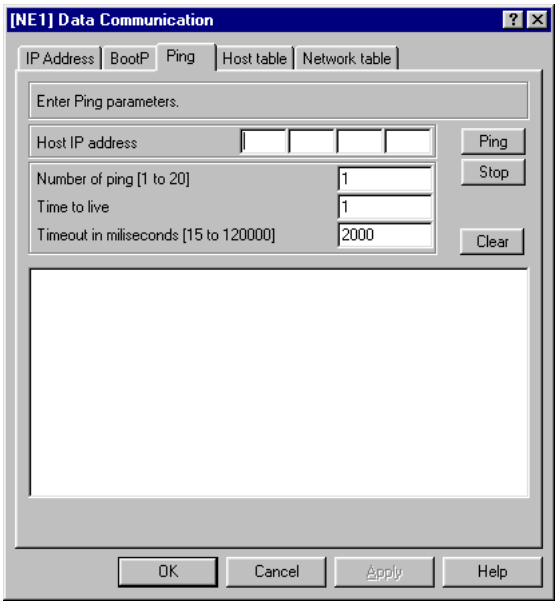
   Note: You must configure two nodes: one must be on the client side, and the other must be on the server side. See the previous application diagram for details.

Ping

A Ping utility on the network element can be accessed with OSIRIS-VUE/OSIRIS-VUE PLUS! software. Use Ping to send test packets to any IP device. Follow this procedure to use Ping.

Note: Ping test packets are sent from the network element, not from the computer running OSIRIS-VUE/OSIRIS-VUE PLUS! software.

1. In the **Network Status** window, right-click a node that has an IP address, then click **Data Communication**. The **Data Communication** dialog box appears.
2. Click the **Ping** tab.



3. Enter the address to be pinged, and modify any other parameters if necessary.

Number of pings Determines the number of test packets to be sent.
Range of Values: 1-20

Time to Live This parameter is not supported in this release.

Timeout Determines the number of milliseconds to wait for the host to respond to a ping. If no response is received within the timeout period, OSIRIS-VUE/OSIRIS-VUE PLUS! software either sends the next ping packet, or stops if this was the last packet.
Range of Values: 15-120000 milliseconds

4. Click **Ping**.

PacketPath

Three different PacketPath mappers are described in this section:

- Fractional Ethernet Access Card (PEC4) which terminates in four Ethernet connections
- ATM Concentrator Card (PAC155) which terminates in an ATM OC3c interface
- ATM Concentrator Card (PAC45) which terminates in an ATM DS3 UNI interface

Both ATM Concentrator cards (PAC155 and PAC45) work in conjunction with the PEC4 card, transporting and dropping packets in the desired format onto an ATM network.

Note: Information and procedures for PAC45 apply to OSIRIS-VUE/OSIRIS-VUE PLUS! release 5 for SONET only.

PacketPath card can provide both routed IP support and bridged Transparent LAN Services (TLS) in SONET and SDH optical rings. Transparent LAN Service is described below, while IP connectivity is detailed in "IP Routing Application".

Transparent LAN Services

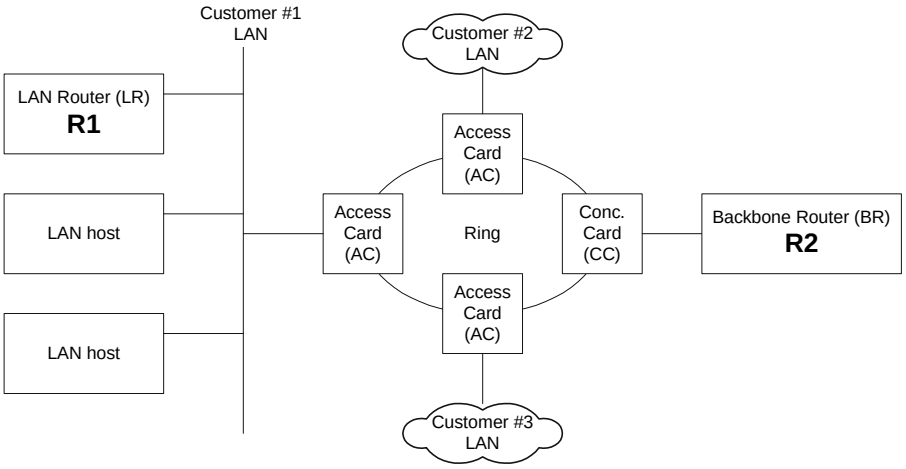
The PacketPath Access Card (PEC4) lets you establish point-to-point links among multiple subscribers. Each link, or virtual circuit, has its own bandwidth settings.

The PEC4 card has 4 ports which share either an STS1/TUG3 or an STS3c/AU4, depending on your preference. Each port in turn supports one virtual circuit. If more than four subscribers wish to connect from the same site, a second PacketPath PEC4 mapper is required. A second mapper carries traffic on a different STS1/TUG3 or STS3c/AU4.

IP Routing Application

In IP Routing applications, PEC4 cards are placed at customer premises within a SONET or SDH optical ring to offer connectivity to a head-end switch or router. PAC155 and PAC45 cards are also part of the optical ring, and act as gateways between the head-end ATM backbone router (R2 in diagram below) and a customer LAN router (R1).

The application described is a typical IP routing scenario For more details on PacketPath applications, see the *OSIRIS® Network User's Guide (206-002).*The diagram below illustrates an IP routed PacketPath application. See "Provision" to set up the application.



Protecting Mappers

You can protect PAC155 and PAC45 cards in your ring, by installing a second mapper of the same type. One protection mapper can protect one working mapper.

For more information on protecting PAC155 (1+1), refer to "Testing Automatic Protection Switching" on page 152 and "PAC155 Protection" on page 205.

For more information on protecting PAC45 (1:1), refer to "PAC45 Protection" on page 205.

Connecting Different Types of Interfaces

To send a SONET signal over an SDH interface or vice-versa, you must configure the signal so that it is compatible with the interface. See "Provision SS Bits for PAC155 card only" on page 201 for the procedure.

Provision

All three PacketPath mappers: Access PEC4, Concentrator PAC155 and PAC45 mappers can be provisioned for either STS1 or STS3c bandwidth. PAC155 and PEC4 cards can be provisioned for TUG3 and AU4 bandwidth. Make sure that sufficient bandwidth is available before you provision the mapper.

Note: PAC155 card illustrations are used in these procedures, but most procedures and illustrations also apply to PAC45 card, unless otherwise noted. Some screen captures may appear differently.

Follow this series of procedures to provision a PacketPath application:

- "Set the Bandwidth"
- "Provision the Mappers"
- "Provision SS Bits for PAC155 card only"
- "Provision a Virtual Ring"
- "Protect the Mapper"
- "Set up Priority Queues"
- "Provision Virtual Circuits"
- "Set CIR and BIR Thresholds"

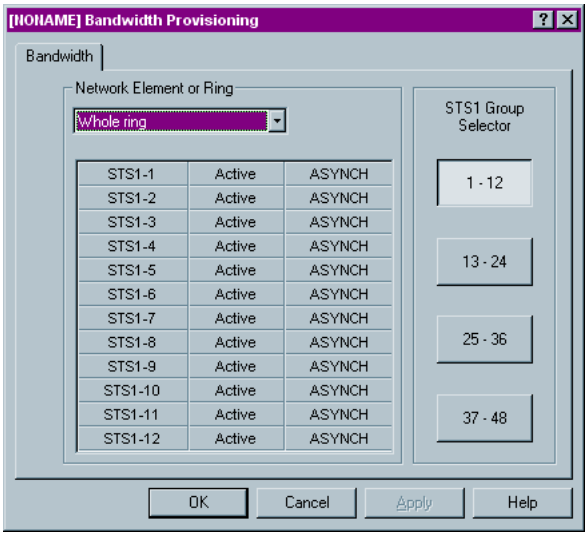
Set the Bandwidth

Follow this procedure to set network-wide bandwidth assignments before you provision PacketPath mappers.

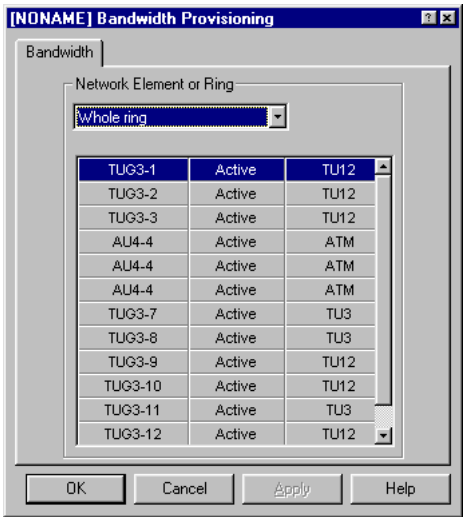
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET



SDH



2. **SONET only**: Select the **STS1 Group** on which you want to provision the STS1s.
3. Decide which STS1/TUG3 or STS3c/AU4 you will use.
4. For an STS1/TUG3, follow these steps.
   - Right-click an STS1/TUG3.
   - Click **Normalize STS1/TUG3 to PacketPath for whole ring**.

     A confirmation dialog box appears.
   - Click **Yes**.

     The **Bandwidth Provisioning** dialog box reappears with the PacketPath setting.
5. For an STS3c/AU4, follow these steps.
   - Right-click an STS1/TUG3.
   - Click **Normalize STS3c/AU4 to active for whole ring**.

     A confirmation dialog box appears.
   - Click **Yes**.
   - Right-click an STS3c/AU4.
   - Click **Normalize STS3c/AU4 to PacketPath for whole ring**.

     A confirmation dialog box appears.
   - Click **Yes**.

     The **Bandwidth Provisioning** dialog box reappears with the **PacketPath** setting.
6. Click **OK** to exit the dialog box.

Provision the Mappers

PacketPath mappers should be installed before you follow this procedure. The table below shows which slots the different PacketPath mappers can be installed:

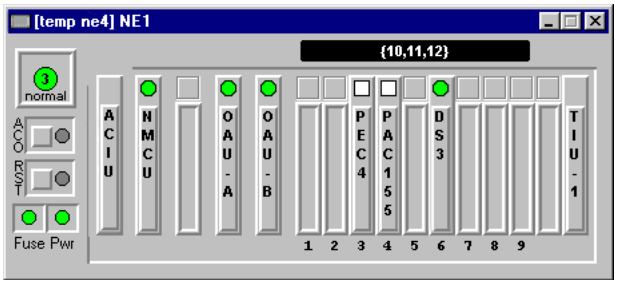
Shelf	PEC4	PAC155	PAC45
OSIRIS STD	2-9	2-9	5, 6, 7
OSIRIS XTD	2-23	2-23	2-3, 5-7, 9-11, 19-21
OSIRIS XTS	2-13	2-13	2-3, 5-7

Note: Each PacketPath card requires a free slot on its immediate right side when installed in a OSIRIS shelf.

1. In the **Network Status** window, double-click the node that contains the OSIRIS Shelf mapper.

The **Shelf-level** window appears.

PEC4 and PAC155

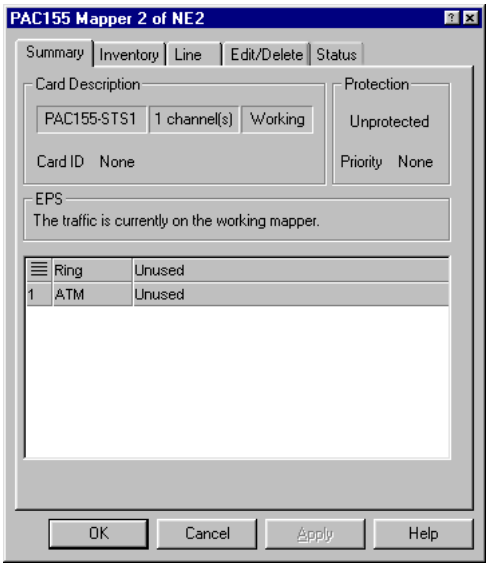


2. Right-click the mapper, click **Provision As**, then click **PEC4**, **PAC155** or **PAC45**, then **STS1/TUG3** or **STS3c/AU4**.
3. Repeat this procedure for each PacketPath mapper in the ring.
4. From the **Shelf-level** window, double-click the OSIRIS Shelf mapper slot.

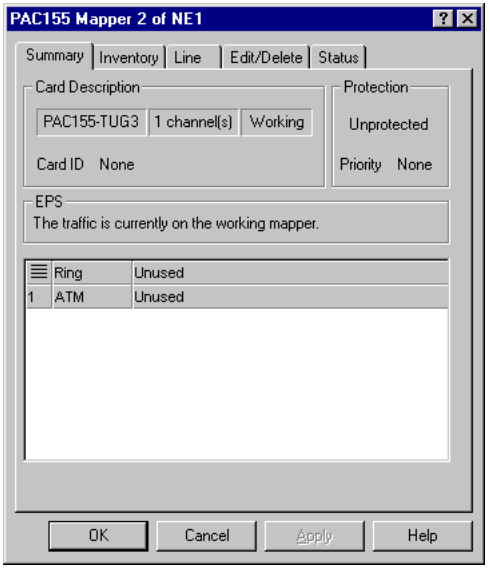
   The **Mapper-level** dialog box appears.

PAC155 mapper

SONET



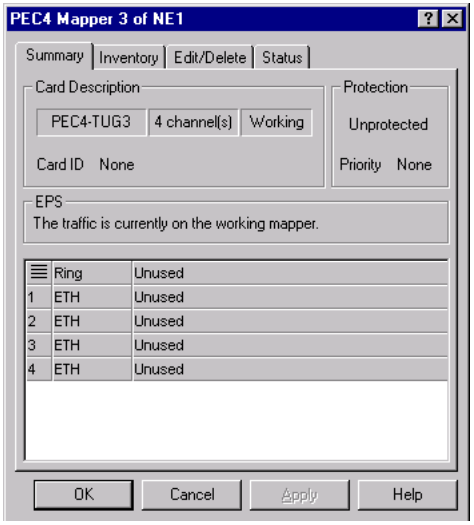
SDH



PEC4 mapper

SONET

SDH

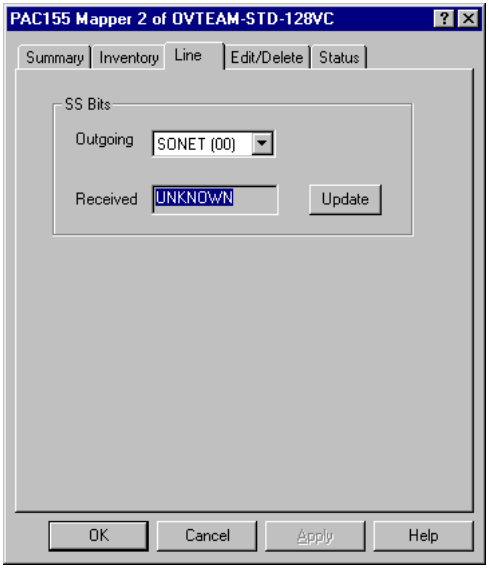


Provision SS Bits for PAC155 card only

To connect two different interfaces, follow the procedure below; otherwise, proceed to the next section.

Note: This procedure is applicable only to a PAC155 card.

1. Click the **Line** tab.



2. Set **Outgoing** to:
   - SONET (00) if you are sending an SDH signal over a SONET interface
   - SDH (10) if you are sending a SONET signal over an SDH interface
3. Click **Update** to refresh Received.

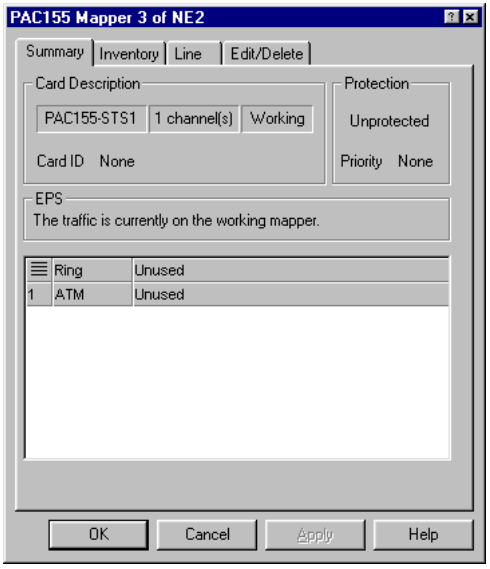
   Received field indicates whether the signal was received successfully (compatible for the interface).

Provision a Virtual Ring

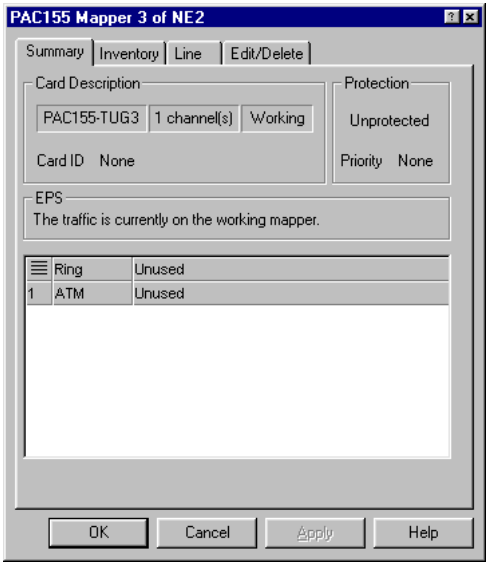
1. From the **Shelf-level** window, double-click the OSIRIS Shelf mapper slot.
2. The **Mapper-level** dialog box appears.

PAC155 mapper

SONET



SDH

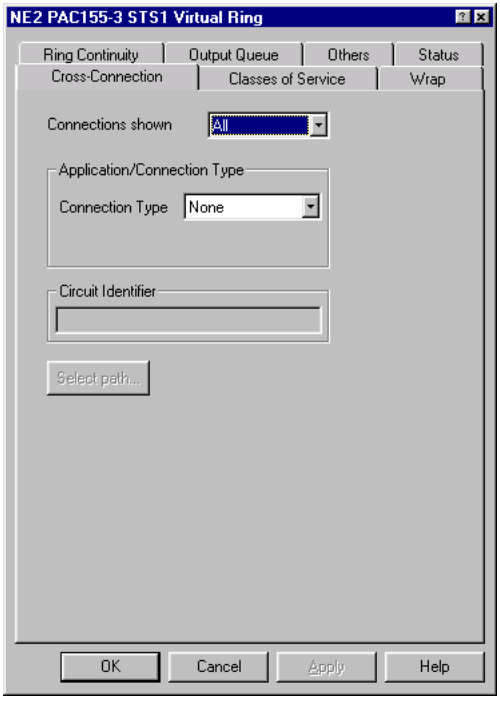


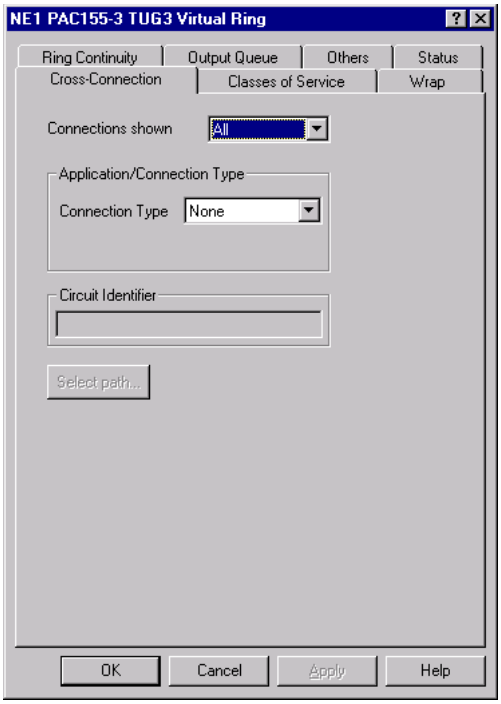
3. Double-click the **Ring** channel.

   The **Cross-Connection** tab appears.

PAC155 mapper

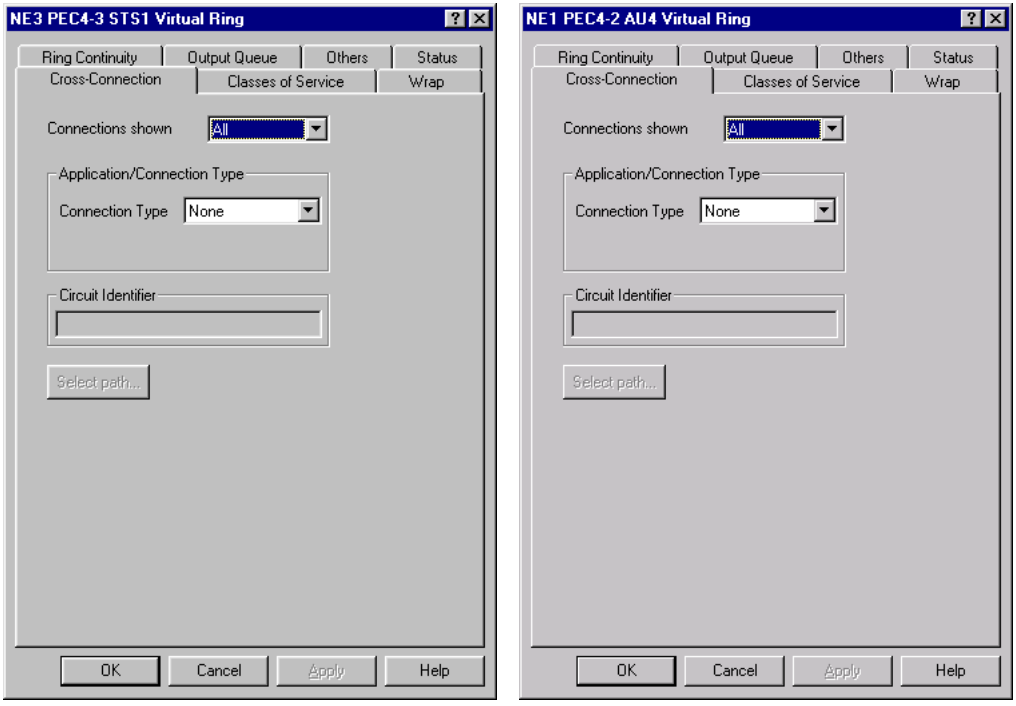
SONET **SDH**





PEC4 mapper

SONET **SDH**



4. Set **Connection Type** to **Add/Drop**.
5. Click **Select Path**.

   The **Select Path for this Channel** dialog box appears.
6. Select the STS1/STS3c or TUG3/AU4 that you provisioned for PacketPath.
7. Click **OK**.

   The **Cross-Connection** tab reappears.
8. Click **OK**.

   A confirmation dialog box appears.
9. Click **Yes**.

   The **Mapper-level** dialog box appears with the Virtual Ring settings.
10. Click **OK** again to close the Mapper-level dialog box.
11. Repeat this procedure for each PacketPath mapper in the ring.

Protect the Mapper

Follow the procedures below for PAC155 and PAC45 protection.

PAC155 Protection

Any mapper slot in the OSIRIS STD, OSIRIS XTD, and OSIRIS XTS shelves can function as a protection slot for PAC155 cards (1+1).

1. Right-click the mapper that you want to protect.

   The **APS Protect** (Automatic Protection Switching) pop-up menu appears with a list of mappers that can act as protection mappers.

2. Select the mapper you want to use as a protection mapper.

   The **Shelf-level** window reappears with the protection and protected icons on both mappers.

PAC45 Protection

To protect PAC45 card, you must install PAC45 cards in the designated protection slots of the OSIRIS shelves (1:1). The following table lists the protection slots:

Shelf	Protection Slots
OSIRIS STD	8
OSIRIS XTD	4, 8, 12, 22
OSIRIS XTS	4, 8

1. Right-click on the protection mapper that is installed in the appropriate slot.

   Provision As menu appears.

2. Choose **Provision As** and then **PAC45P (ATM-DS3).** Choose STS1 or STS3c, depending on what PAC45 card type you want to protect.

3. Right-click a PAC45 card you want to protect.

   Provision As menu appears.

4. Choose **PAC45 (ATM-DS3)**, then **STS1 or STS3c** (the same card type as the one you have installed in the protection slot), then **Protected**.

Set up Priority Queues

Seven queues are used to store packets before they are forwarded to the optical fiber. Queues can be used for different classes of service. Priority level is usually agreed to in service level agreements between the ring owner and end users.

You should provision the relative weight of queues before you provision any virtual circuits. Circuits can then be assigned to any queue.

For example, if the Weighted Fair Scheduling (WFS) weight is 40 for Class 1 and 20 for Class 2, when both queues are active, 50% more traffic will be forwarded from Class 1.

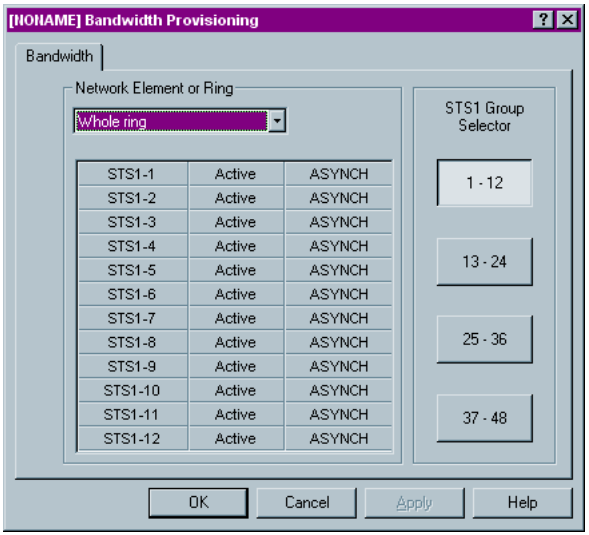
In most cases you should set priority queues globally for the whole ring, and not individually for each PacketPath card; however, both procedures are described here. See "Set Global Priority Queues for the Ring" on page 206 to provision priority queues for the ring, or see "Set Specific Priority Queues on a Card" on page 210 to provision priority queues per card.

Set Global Priority Queues for the Ring

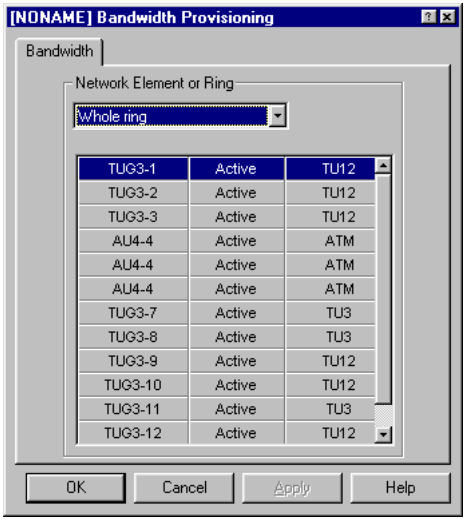
1. On the **Network** menu, click **Bandwidth Provisioning**.

   The **Bandwidth Provisioning** dialog box appears.

SONET



SDH



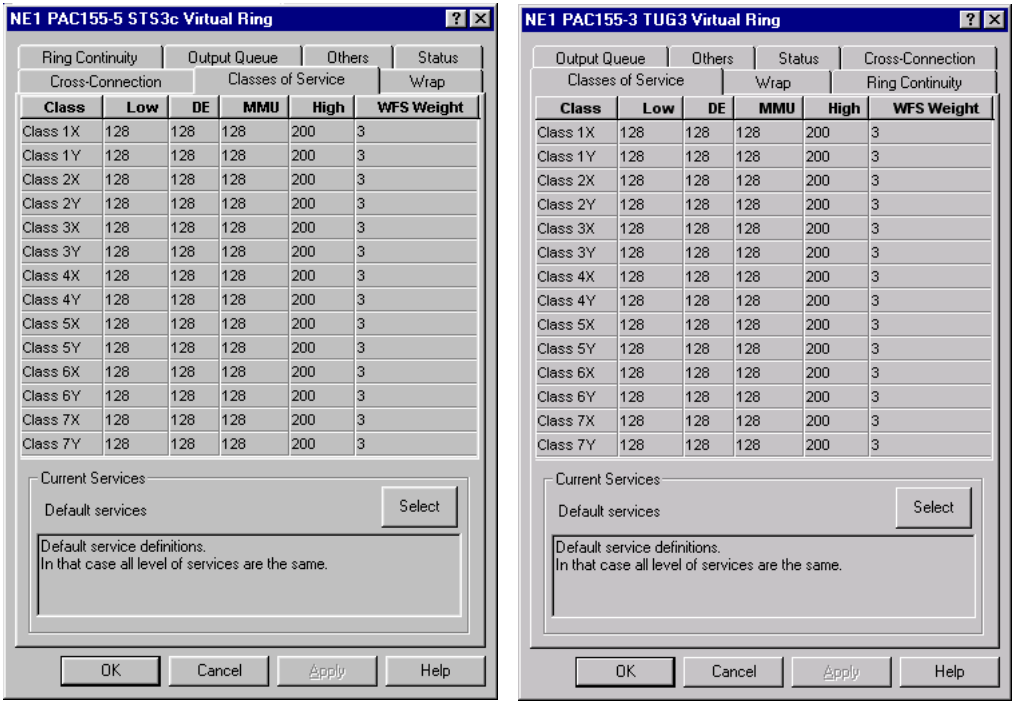
2. Double click the PacketPath **STS1/STS3c or TUG3/AU4** that you provisioned in "Set the Bandwidth" on page 197.

   Note: In this section images of PAC155 card provisioning are used; PAC45 card follows the same procedure.

The **Classes of Service** tab appears.

PAC155 mapper

SONET **SDH**

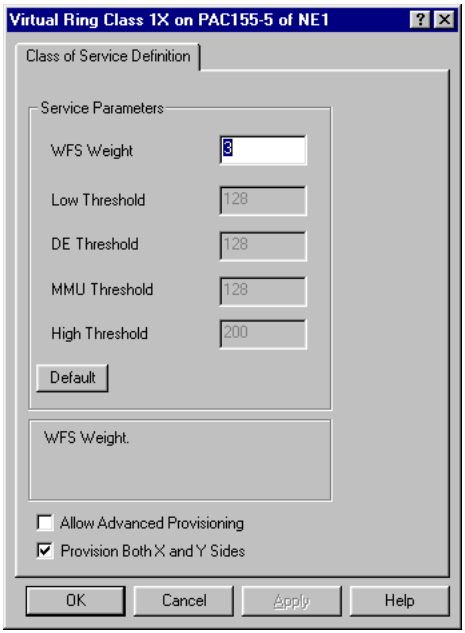


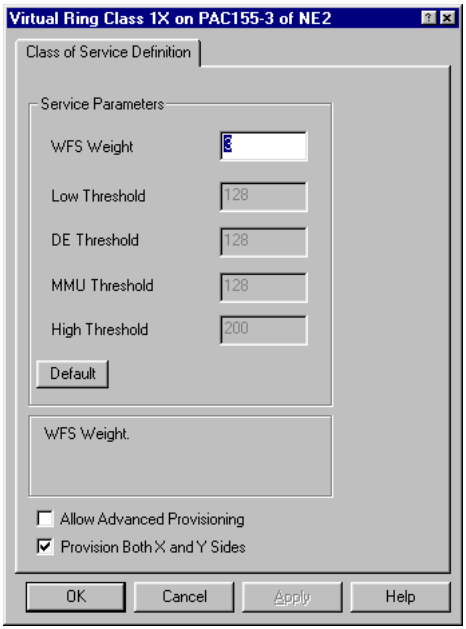
3. Double-click a **Queue** row.

   The **Class of Service Definition** dialog box appears.

PAC155 mapper

SONET **SDH**





4. Set the **WFS Weight**.

   The higher a WFS weight, the higher priority the queue has. Click **Help** for details.

5. Click **OK**.
6. Click **OK** in the **Classes of Service** dialog box.
7. Click **OK** again to close the mapper-level window.

Set Specific Priority Queues on a Card

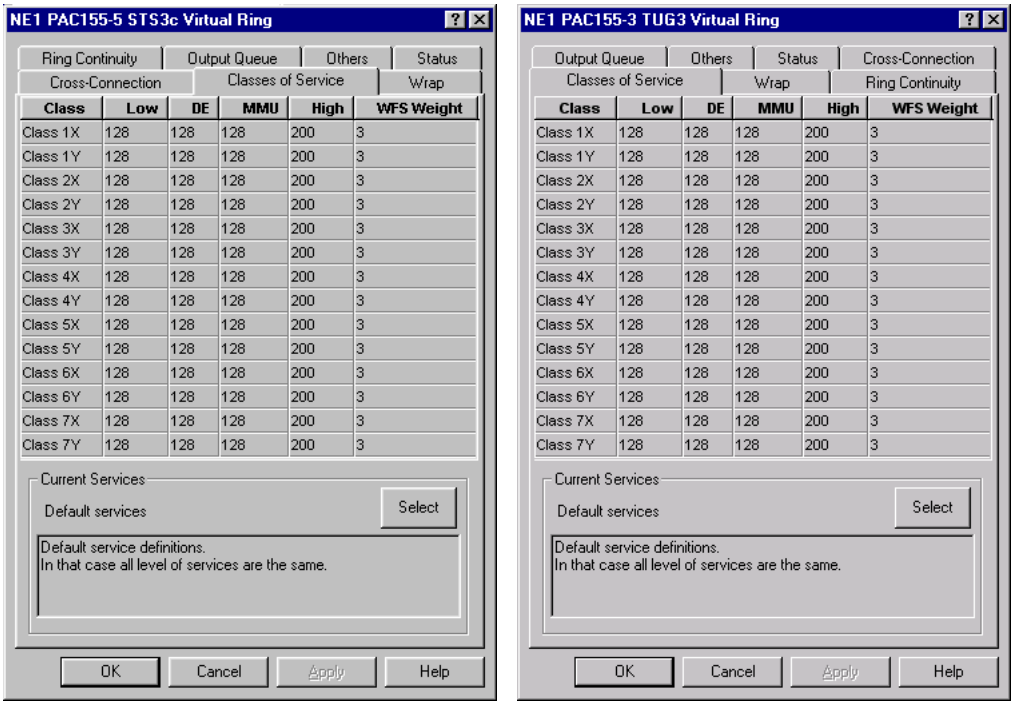
1. In the shelf-level window, double-click a PacketPath mapper.

   The Mapper-level dialog box appears.

2. Double-click the Ring, then click the Classes of Service tab.

PAC155 mapper

SONET **SDH**

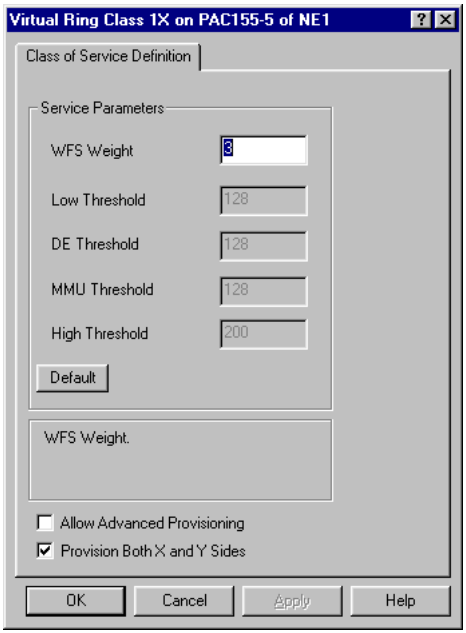


3. Double-click a **Queue** row.

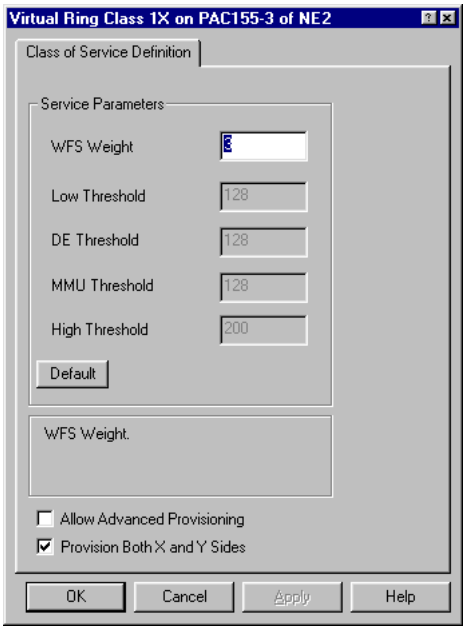
The **Class of Service Definition** dialog box appears.

PAC155 mapper

SONET



SDH



4. Set the **WFS Weight**.

   The higher a WFS weight, the higher priority the queue has. Click **Help** for details.

5. Click **OK**.
6. Click **OK** in the **Classes of Service** dialog box.
7. Click **OK** again to close the mapper-level window.

Provision Virtual Circuits

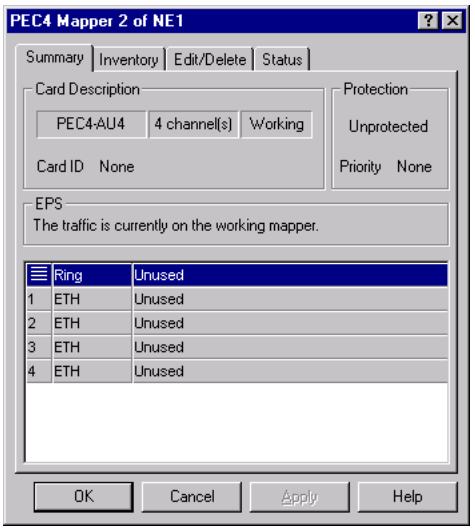
You need to provision virtual circuits on **PEC4 cards only**. Virtual circuits are automatically provisioned on PAC155 and PAC45 cards.

1. From the **Shelf-level** window, double-click the PEC4 OSIRIS Shelf mapper. The **Mapper-level** dialog box appears.

PEC4 mapper

SONET

SDH

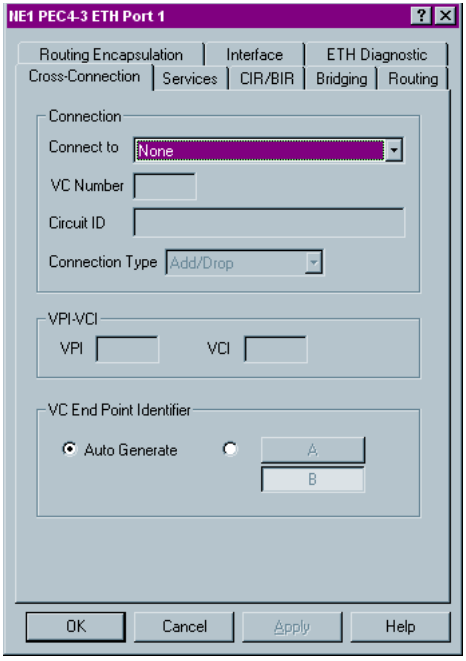


2. Double-click an **ETH** channel.

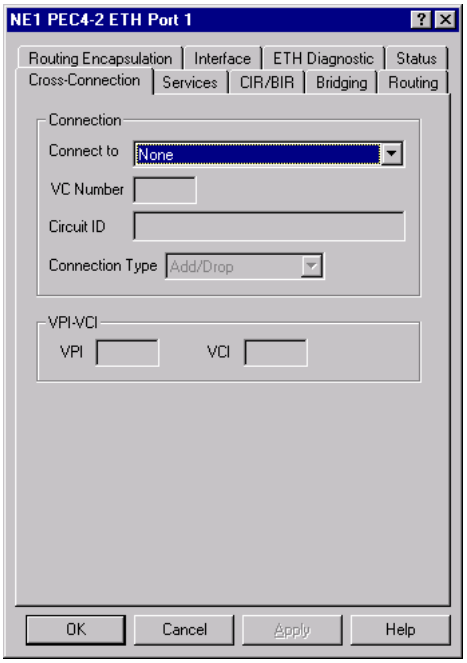
The **Cross-connection** tab appears.

PEC4 mapper

SONET



SDH



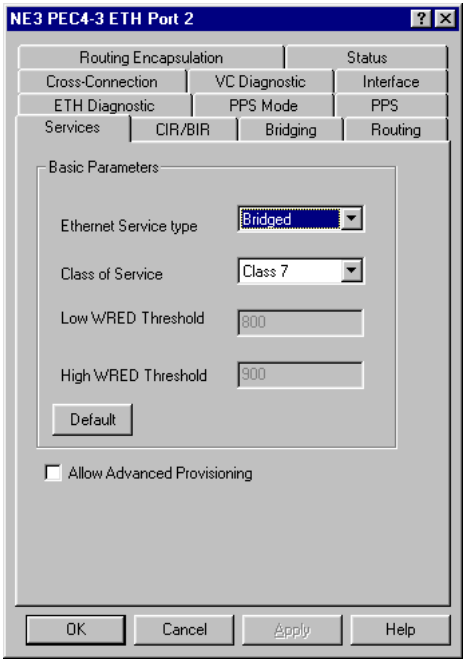
3. Set **Connect to** to the PAC155 or PAC45 card that will terminate the connection.
4. Set **VPI** and **VCI** to identify the ATM switch.
5. Click **Apply**.

   A confirmation dialog box appears.
6. Click **Yes** to confirm.

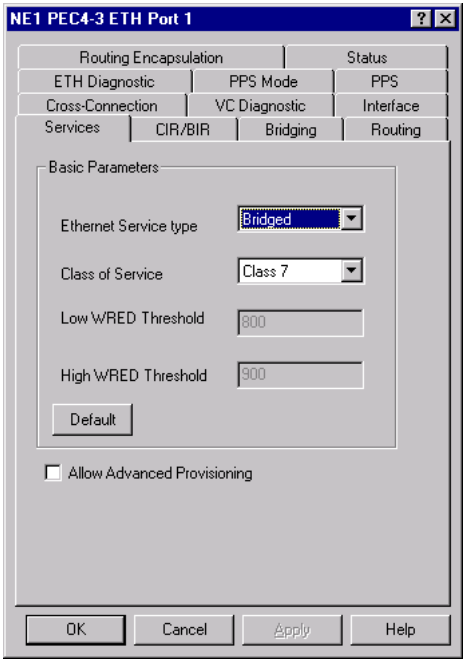
7. The **Services** tab appears.

PEC4 mapper

SONET



SDH

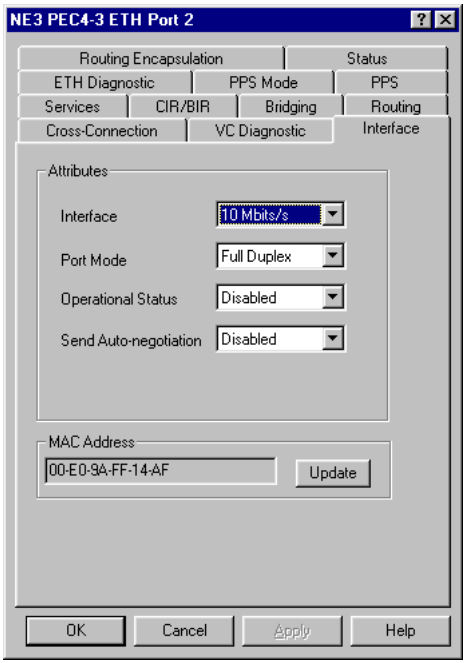


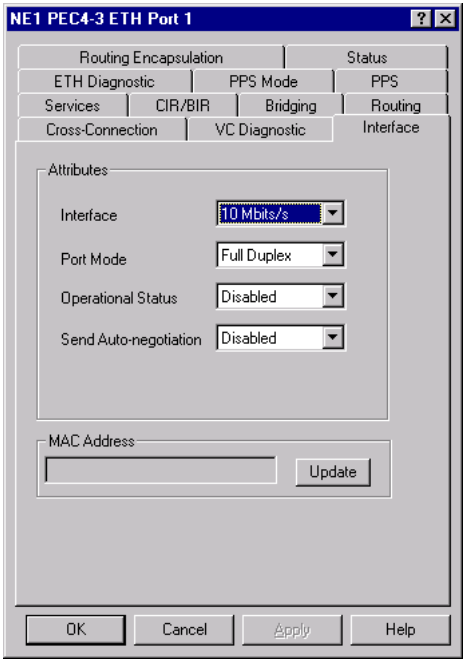
8. Set Ethernet Service Type to **Routed** for an IP Routing application, or to **Bridged** for a Transparent LAN Services application.
9. Set **Class of Service** to a priority queue. Queues were set for various priority levels in "Set up Priority Queues" on page 206.
10. Click **Apply** and then **Yes** to confirm.

11. Click the **Interface** tab.

PEC4 mapper

SONET **SDH**





12. Set **Interface** to the desired port speed.
13. Set **Operational Status** to **Enabled** so that this port can carry traffic.

    Ports are disabled by default so that unnecessary errors are not reported.
14. Click **OK** and then click **Yes** to confirm.

Set CIR and BIR Thresholds

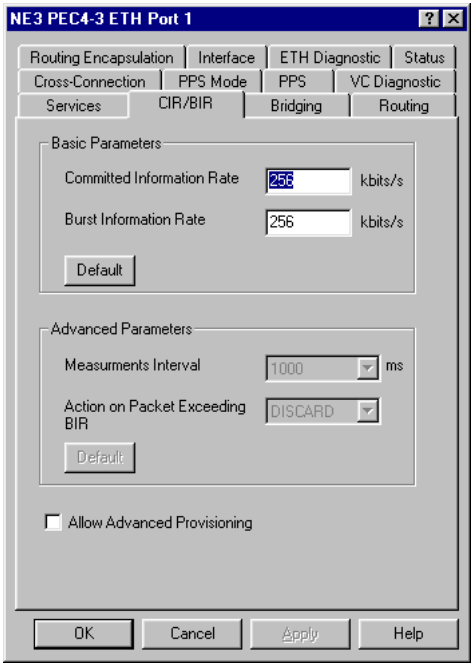
1. In the shelf-level window, double-click a PacketPath mapper.

   The mapper-level dialog box appears.
2. Double-click a virtual channel.

   The **Cross-connection** dialog box appears.

3. **PEC4:** Click the **CIR/BIR** tab.

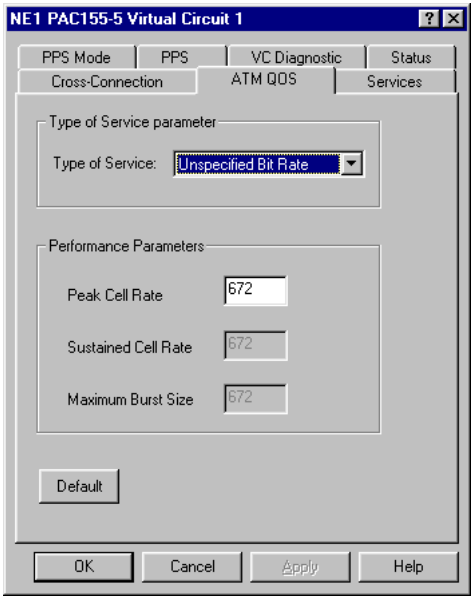
PEC4 mapper (SONET & SDH)



- Set the **Committed Information Rate** and **Burst Information Rate**.
- Click **Help** for details on these parameters.
- Click **OK** to save changes and exit the dialog box.

4. **PAC155 and PAC45:** Click the **ATM QOS** tab.

PAC155 mapper (SONET & SDH)



5. Set the **Peak Cell Rate**.
   - The **Peak Cell Rate** should correspond to the Burst Information Rate on the PEC4 end of the virtual circuit.
   - Click **Help** for details.
   - Click **OK** to save changes and exit the dialog box.

Provisioning Loopbacks

Loopbacks are used for testing signal quality over a particular cross-connection. You can set up a terminal (end-to-end) loopback or a facility loopback (local) on any mapper.

In addition to these types of loopbacks, the DS1PM+ mapper lets you provision automatic loopbacks. See "Automatic Loopbacks" on page 219.

If you are troubleshooting, ensure that a facility loopback works properly before setting up a terminal loopback.

For details on loopbacks, see the *OSIRIS® Network User's Guide (206-002)*.

Regular Loopbacks

Follow this procedure to provision a facility or terminal loopback.

1. In the **Network Status** window, double-click the node that the loopback will be provisioned on.

   The **Shelf-level** window appears.

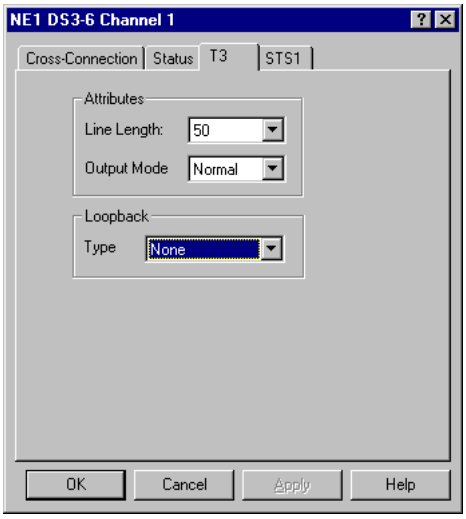
2. Double-click the mapper that the loopback will be provisioned on.

3. Double-click the channel.

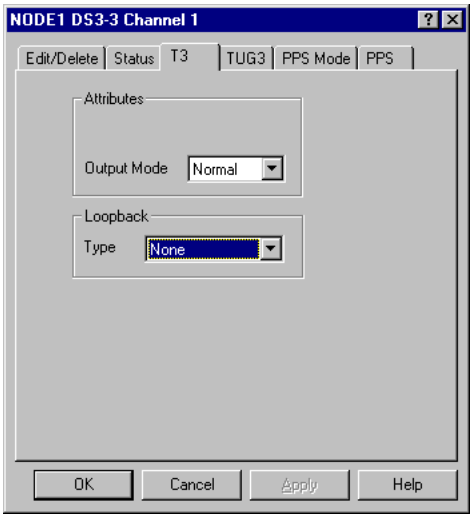
4. Click the tab that displays channel attributes, such as **T1**, **T3**, **E1**, **E3**, etc. The mapper type determines the name of this tab.

   The channel attribute dialog box appears.

SONET (DS3)



SDH (E3)



5. Set **Loopback** to **Facility** or **Terminal**.

   Note: You cannot provision a terminal loopback if a cross-connection is not provisioned on this channel.

6. Click **OK**.

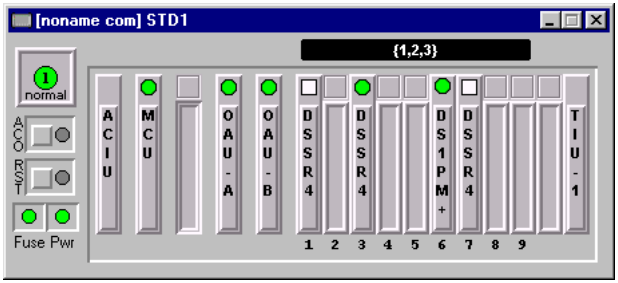
Automatic Loopbacks

Follow the procedures in this section to provision Auto-Facility or Auto-Terminal Loopbacks on the DS1PM+ Mapper. The first procedure lets a mapper accept a start loopback code, and the second procedure triggers the loopback.

Enabling Automatic Loopbacks

1. In the **Network Status** window, double-click the node that you are connected to.

   The **Shelf-Level** window appears.

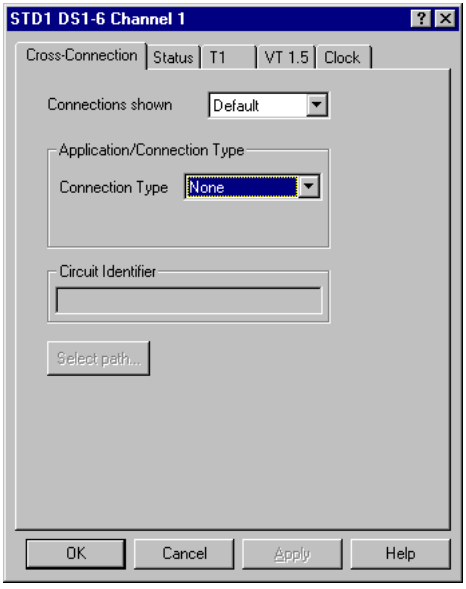


2. Double-click the DS1PM+ Mapper slot.

   The **Mapper-level** dialog box appears.

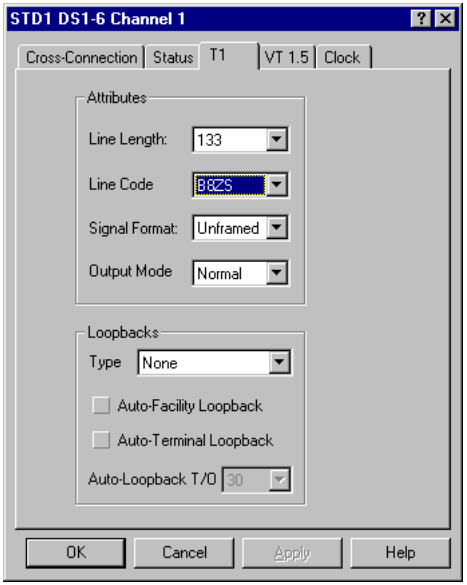
3. Double-click an unused **Channel.**

   The **Channel-level** dialog box appears.



4. Click the **T1** tab.

5. Enable Auto-Facility Loopback **or** enable Auto-Terminal Loopback.



6. Click **Apply**.
7. Set **Auto-Loopback T/O** to the number of minutes that the loopback will be active.
8. If this is a terminal loopback, repeat this procedure at the far-end node.

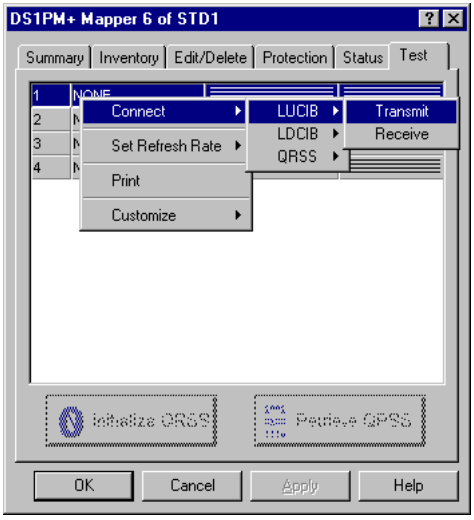
Starting an Automatic Loopback

1. In the **Network Status** window, double-click the node that you are connected to.

   The **Shelf-Level** window appears.
2. Double-click the DS1PM+ Mapper slot.

   The **Mapper-level** dialog box appears.
3. Click the **Test** tab.

4. Right-click the first channel, then click **LUCIB** (Loop-up code in-band), **Transmit**.



5. Click **OK**.

   A minor alarm appears in the Alarm Log to indicate that a loopback is enabled.

6. You can now send a test signal to verify signal quality.

End-to-End Testing

The DS1PM+ Mapper lets you send a test pattern from a local network element to a remote network element. The test pattern is then sent back to the local network element and a bit error count is calculated. You can send a test pattern to diagnose a problem on the network.

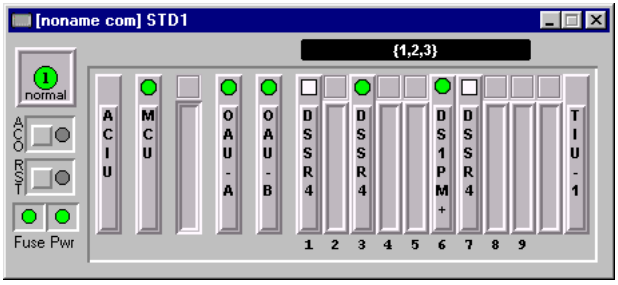
A QRSS (Quasi Random Signal) is the test pattern used.

Note: You must enable a regular terminal loopback on the remote node before you send a test signal. You cannot send a test pattern on a channel that is has automatic loopback enabled.

Follow these steps to send a QRSS test pattern to a remote node.

1. In the **Network Status** window, double-click the node that you are connected to.

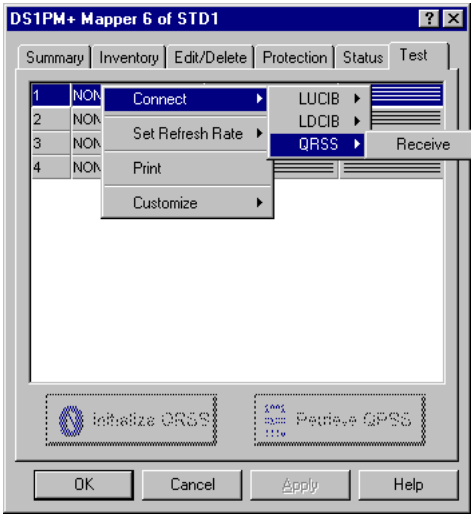
   The **Shelf-Level** window appears.



2. Double-click the DS1PM+ Mapper slot.

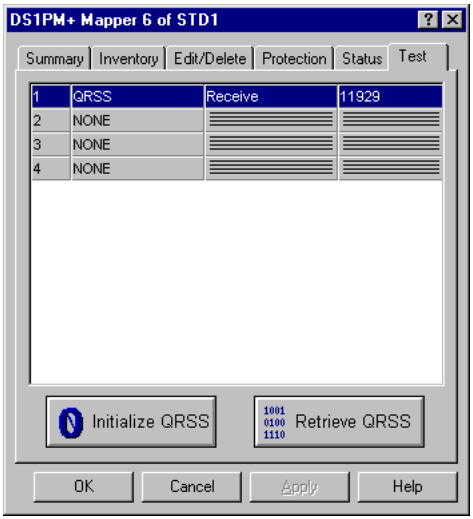
The **Mapper-level** dialog box appears.

3. Click the **Test** tab.
4. Right-click the first channel, then click **Connect**, **QRSS**, **Receive**.



5. Right-click the first channel again, then click **Set Refresh Rate**.

6. Click **Initialize QRSS** to reset the test pattern injection.



7. You can retrieve the test pattern by clicking QRSS.

   A non-alarm condition is present on the node to indicate that a test signal is present.

8. Click **OK**.

Quadrant Provisioning

The OSIRIS XTD and OSIRIS XTS Shelves are divided into four logical quadrants as shown in the illustrations below. You can provision quadrants in an OC-12 or STM-4 system. Up to three STS1 or TUG3 signals can be dropped from each quadrant in a shelf to provided a maximum of 12 STS1s or TUG3s.

Five quadrant link variations are available for the OSIRIS XTD and OSIRIS XTS Shelves. Linking quadrants protects cards in slots that are otherwise not protected. The number of STS1s or TUG3s that can be dropped is reduced when quadrants are linked. The five quadrant link variations let you manipulate shelf bandwidth to accommodate the types of traffic you carry.

In OSIRIS XTD shelves, quadrant linking is useful only for DS1/E1 mappers so it is best not to link quadrants that contain other mapper types. In OSIRIS XTS shelves, quadrant linking is useful for DS1/E1, DS3/E3 and EC1 mappers in the OSIRIS XTS Shelf.

The illustrations below show the OSIRIS XTD and OSIRIS XTS Shelf's quadrant divisions and mapper protection slots.

Figure 1 OSIRIS XTD Quadrants

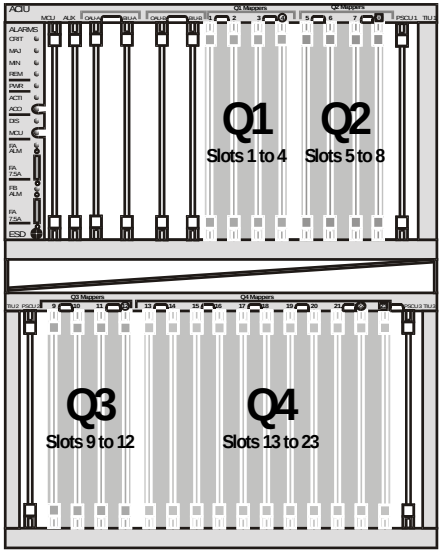
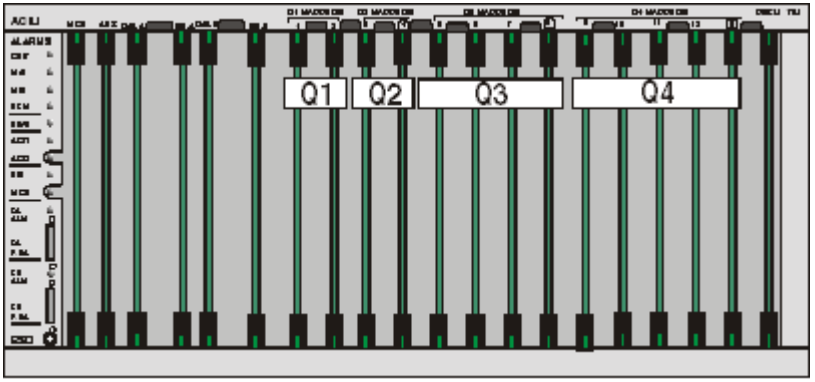


Figure 2 OSIRIS XTS Quadrants



To properly configure OSIRIS-VUE/OSIRIS-VUE PLUS! software, you must consider bandwidth and quadrant linking variations in relation to the bandwidth of the mappers that you want to install.

The table below describes the five possible quadrant link variations for OSIRIS XTD shelves.

Quadrants Linked	Available Bandwidth	Notes
None	12 STS1s/TUG3s	DS1/E1 protection on Q2 (slot 8) and Q4 (slot 23). No DS1/E1 protection on Q1 and Q3 Access to full OC-12/STM-4 bandwidth.
1 and 2	9 STS1s/TUG3s	DS1/E1 protection for Q1 and Q2 (slot 8). No DS1/E1 protection on Q3. DS1/E1 protection on Q4 (slot 23)
3 and 4	9 STS1/TUG3	DS1/E1 protection for Q3 and Q4 (slot 23). No DS1/E1 protection on Q1. DS1/E1 protection on Q2 (slot 8).
1 and 2, 3 and 4	6 STS1/TUG3s	DS1/E1 protection for Q1 and Q2 (slot 8) as well as for Q3 and Q4 (slot 23).
All[1]	3 STS1/TUG3	DS1/E1 protection for Q1 and A2 (slot 8) as well as for Q3 and Q4 (slot 23). Allows you to add/drop 84 DS1/63 E1s with all slots protected.

1. This is the default setting.

The table below describes the five possible quadrant link variations for OSIRIS XTS shelves.

Quadrants Linked	Available Band-width	Notes
None	12 STS1s/TUG3s	DS1/E1 protection on Q4 (slot 13). No DS1/E1 protection on Q3.
		DS3/E3/EC1[1] protection on Q2 (slot 4) and Q3 (slot 8). No DS3/E3/EC1 protection on Q1.
		Access to full OC-12/STM-4 bandwidth.
1 and 2	9 STS1s/TUG3s	DS1/E1 protection on Q4 (slot 13). No DS1/E1 protection on Q3.
		DS3/E3/EC1 protection on Q1 and Q2 (slot 4) as well as on Q3 (slot 8).
3 and 4	9 STS1/TUG3	DS1/E1 protection on Q3 and Q4 (slot 13).
		DS3/E3/EC1 protection on Q2 (slot 4) and Q3 (slot 8). No DS3/E3/EC1 protection on Q1.
1 and 2, 3 and 4	6 STS1/TUG3s	DS1/E1 protection on Q3 and Q4 (slot 13).
		DS3/E3/EC1 protection on Q1 and Q2 (slot 4) as well as on Q3 (slot 8).
All[2]	3 STS1/TUG3	Same as above. Not recommended because less bandwidth is available.

1. EC1 Bulk mappers must be protected with EC1 Bulk mappers. EC1 VT mappers must be protected with EC1 VT mappers.
2. This is the default setting.

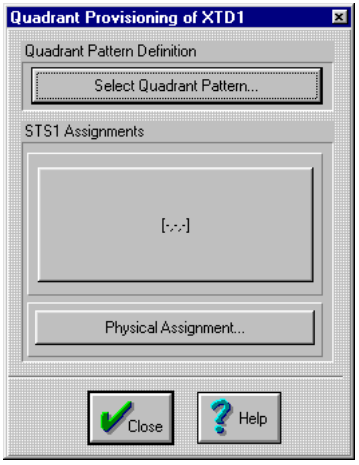
Quadrant Provisioning in SONET

See "Quadrant Provisioning in SDH" on page 235 to provision quadrants in an SDH system.

Note: An OSIRIS XTD Shelf is used in this example, but the procedure applies to both OSIRIS XTD and OSIRIS XTS shelves. Some screen captures may appear differently.

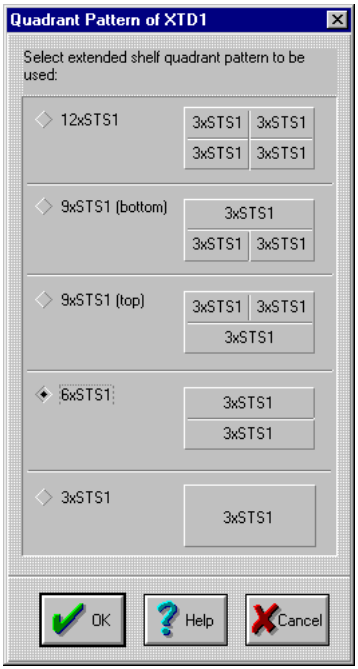
1. In the **Network Status** window, right-click the OSIRIS XTD node that you would like to provision, then click **Quadrant Provisioning**.

   The **Quadrant Provisioning** dialog box appears.



2. Click **Select Quadrant Pattern.**

The **Quadrant Pattern** dialog box appears.



3. Select the quadrant pattern that is most appropriate for your bandwidth and mapper combination.

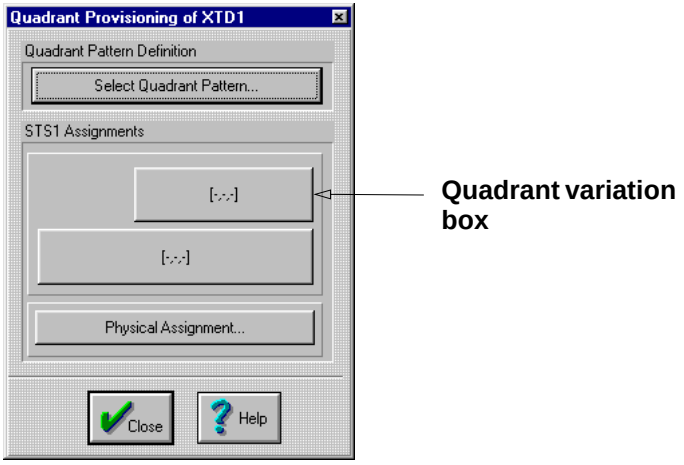
   See the previous table for details.

   Note: If the quadrants in your shelf have already been provisioned and the STS1s/TUG3s have already been assigned, you must unassign all STS1s/TUG3s before selecting a new quadrant configuration.

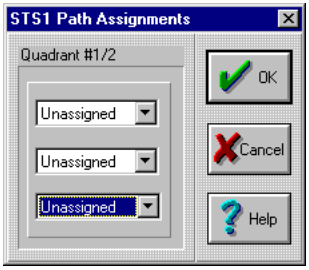
4. Click **OK** and then click **Yes** to confirm.

   The **Quadrant Provisioning** dialog box reappears.

5. Under **STS1 Assignments**, click the first quadrant variation box (there may be one, two, three, or four boxes, depending on how you linked quadrants).



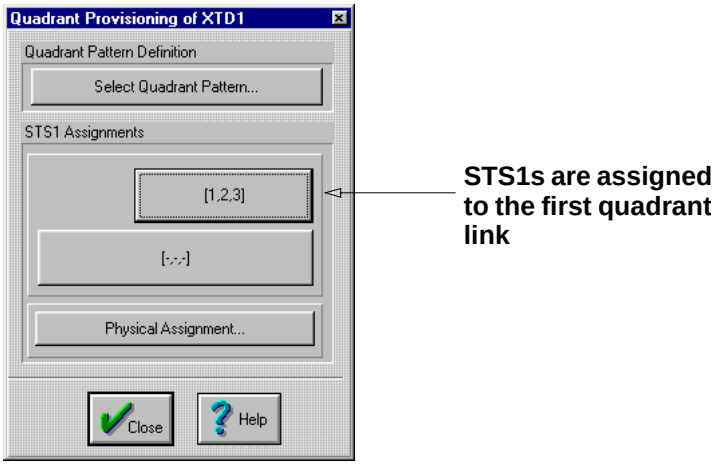
The **STS1 Path Assignments** dialog box appears.



6. Select an STS1 in each box. It is recommended that you assign sequential timeslots to the STS1s since this is easier to manage.
7. Click **OK** and then click **Yes** to confirm.

   The **Quadrant Provisioning** dialog box reappears.

STS1s are allocated to the first quadrant (or quadrant link).



8. If you have more than one quadrant variation box, click on the next quadrant variation box and follow steps 6 to 7.

Quadrant Physical View

It is useful to view the quadrant and assignment pattern of the entire shelf when you are considering relocating STS1 assignments. You can view the physical location of all the assignments with the **Quadrants's Physical View** option. The option is especially useful for troubleshooting purposes.

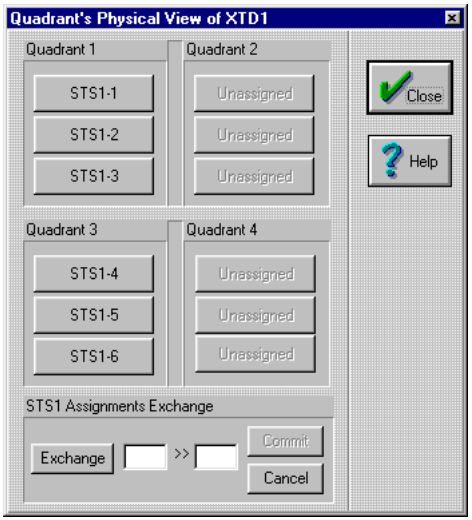
Note: You can relocate STS1s if quadrants are linked.

1. In the **Network Status** window, right-click the OSIRIS XTD node, then click **Quadrant Provisioning**.

   The **Quadrant Provisioning** dialog box appears.

2. Click **Physical Assignments**.

The **Quadrant's Physical View** dialog box appears.



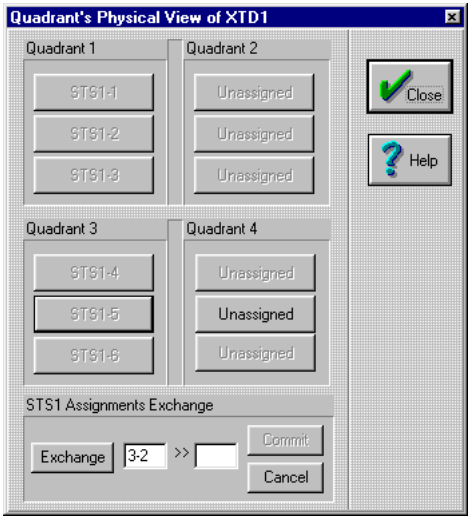
3. Click the **Exchange** button under **STS1 Assignments Exchange**.

   All the unassigned STS1 locations are highlighted.

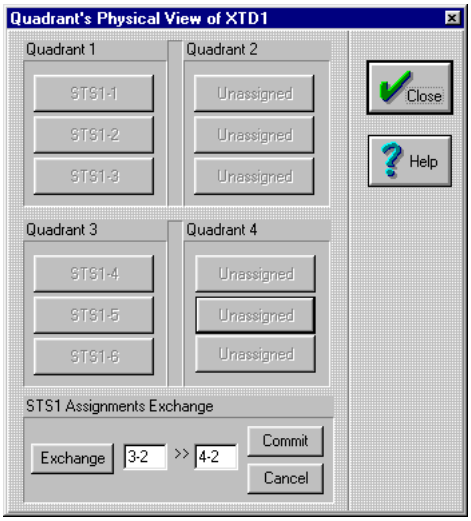
4. Click the STS1 that you want to reassign (STS1-5 in this example).

   The selected assignment appears in the first box in the **Exchange** area. The first digit represents the quadrant and the second digit represents the assignment number.

   You can move the STS1 to any enabled assignment location.



5. Click the unassigned box to which you want to move the STS1 assignment.
   The STS1 appears in the second box in the **Exchange** area.



6. Click **Commit**, and then click **Yes** to confirm.
   The assignment moves to the desired location.
7. Follow steps 2 to 6 to move other STS1 assignments.
8. Click **Close**.

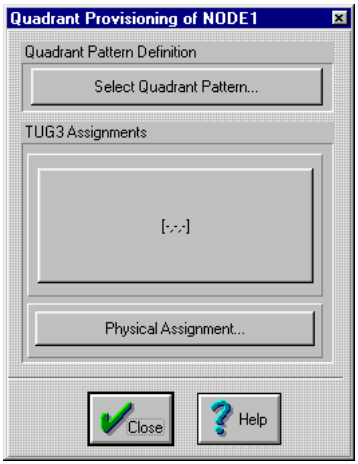
Quadrant Provisioning in SDH

See "Quadrant Provisioning in SONET" on page 229 to provision quadrants in a SONET system.

Note: An OSIRIS XTD Shelf is used in this example, but the procedure applies to both OSIRIS XTD and OSIRIS XTS shelves. Some screen captures may appear differently.

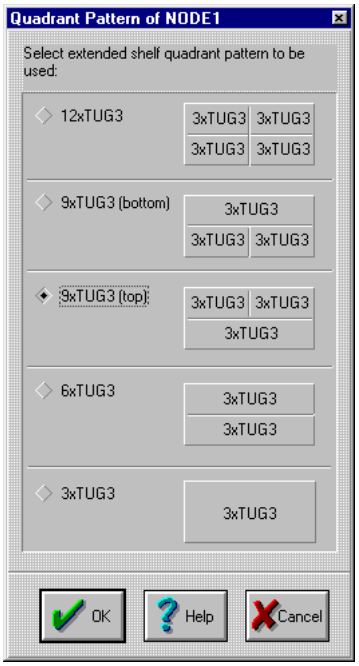
1. In the **Network Status** window, right-click an OSIRIS XTD node, then click **Quadrant Provisioning**.

   The **Quadrant Provisioning** dialog box appears.



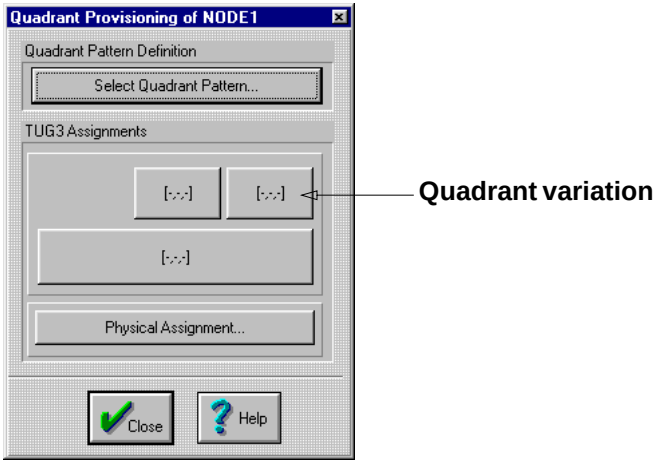
2. Click **Select Quadrant Pattern**.

The **Quadrant Pattern** dialog box appears.



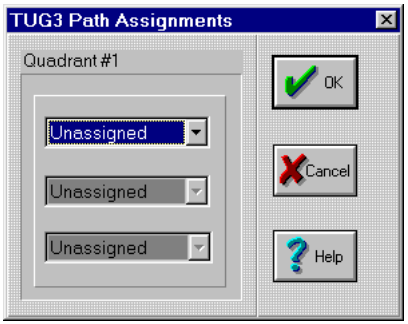
3. Select the quadrant pattern that is most appropriate for your bandwidth and mapper combination.
4. Click **OK** and then click **Yes** to confirm.

   The **Quadrant Provisioning** dialog box appears again.



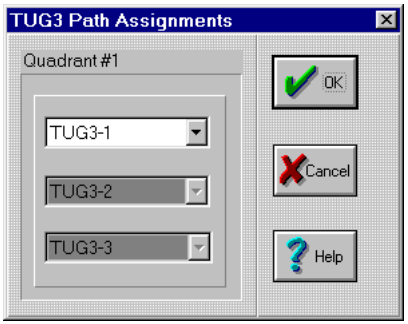
5. Under **TUG3 Assignments**, click the first quadrant variation box (there may be one, two, three, or four boxes, depending on how you linked quadrants on your shelf).

   The **TUG3 Path Assignments** dialog box appears.



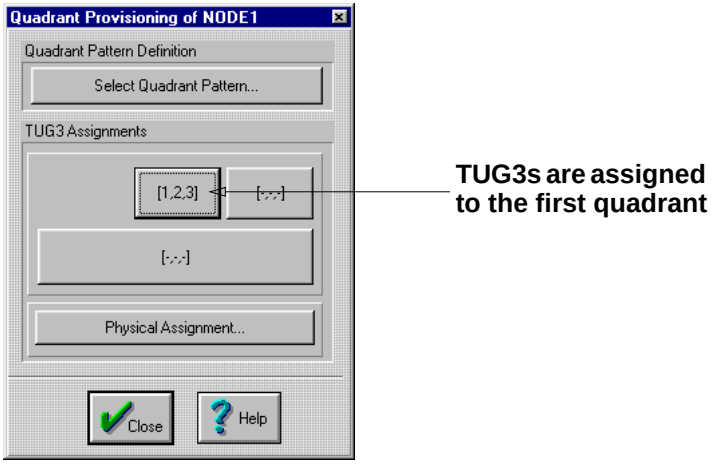
6. Select a TUG3 in the first box.

   The OSIRIS-VUE/OSIRIS-VUE PLUS! software automatically assigns sequential timeslots to the other two TUG3s.



7. Click **OK** and then click **Yes** to confirm.

The **Quadrant Provisioning** dialog box reappears. TUG3s are allocated to the first quadrant (or quadrant link).



8. If you have more than one quadrant variation box, click on the next quadrant variation box and follow steps 5 to 7.

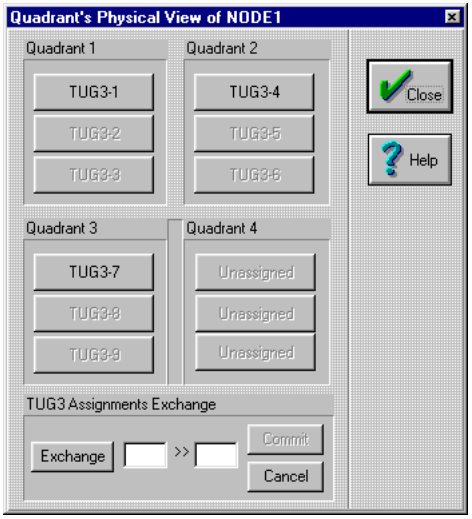
Quadrant Physical View

It is useful to view the quadrant and assignment pattern of the entire shelf when you are considering relocating TUG3s. You can view the physical location of all the assignments with the **Quadrants's Physical View** option. The option is especially useful for troubleshooting purposes.

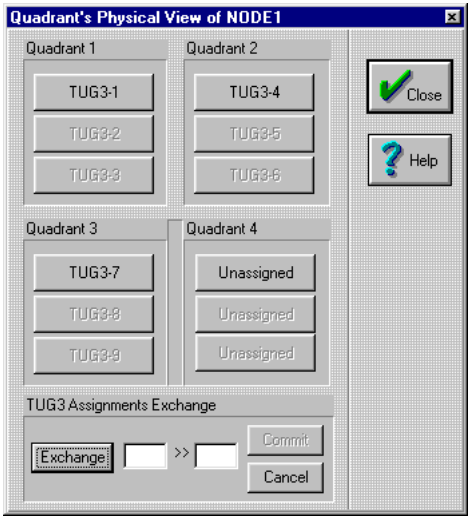
Note: You can relocate TUG3s if quadrants are linked.

1. In the **Network Status** window, right-click the OSIRIS XTD node, then click **Quadrant Provisioning**.
2. The **Quadrant Provisioning** dialog box appears.
3. Click **Physical Assignments**.

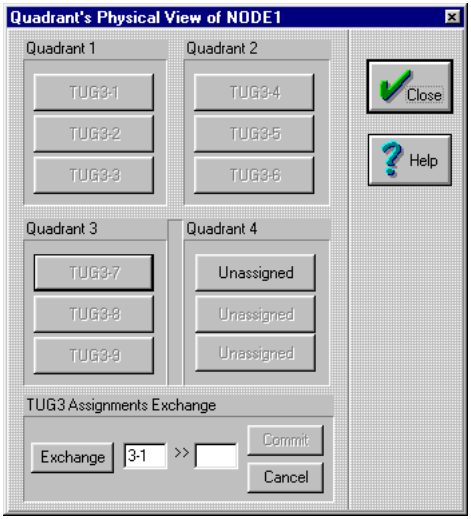
The **Quadrant's Physical View** dialog box appears.



4. Click the **Exchange** button under **TUG3 Assignments Exchange**. All unassigned TUG3 locations are highlighted.

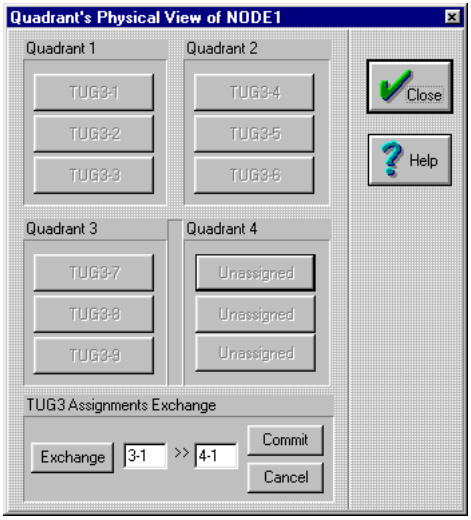


5. Click the TUG3 that you want to reassign (TUG3-7 in this example).



The selected assignment appears in the first box in the **Exchange** area. The first digit represents the quadrant and the second digit represents the assignment number. You can move the TUG3 to any enabled locations.

6. Click the unassigned box to which you want to move the selected TUG3. The TUG3 appears in the second box in the **Exchange** area.



7. Click **Commit,** and then click **Yes** to confirm. The assignment moves to the designated location.
8. Follow steps 3 to 6 to move other TUG3 assignments, then click **Close**.

OSI Provisioning

The OSI (Open System Interconnection) is a management standard that allows interoperability of multivendor equipment.

Through the OSI option, OSIRIS-VUE/OSIRIS-VUE PLUS! can discover the topology of the OSI management network such as rings from a single DCN connection.

To provision an OSI stack you must follow these steps:

- Ensure that there is an Ethernet connection to your network element.
- Assign an IP address to the network element. See "Assigning an IP Address" on page 33 for the procedure.
- "Create Subnetwork Definitions for OSI" on page 241. You must define OSI Route and OSI Attachment.
- "Provision OSI Stack Layers" on page 247
- Reboot the NMCU to apply the changes

Create Subnetwork Definitions for OSI

Establishing a route(s) to the Gateway Network Element(s) involves creating subnetwork definitions. These definitions contain the connection parameters for provisioning, testing and monitoring networks.

The creating of an OSI Subnetwork consists of two parts: configuring an OSI Route (by creating a TL1 Subnetwork) and configuring an OSI Attachment.

Creating an OSI ROUTE - TL1 Subnetwork

The OSI Route is the path that allows access to an OSI network element. The network element accessed by the OSI Route is considered to be the Gateway Network Element (GNE), which links the OSI DCN subnetwork and the TL1 Gateway Server.

Creating an OSI Attachment - OSI Subnetwork

The OSI Attachment is a grouping of OSI Routes that monitor an OSI area. Multiple OSI Routes exist in a large OSI area. An OSI Route can manage a maximum of 16 OSI nodes, and therefore, you need to create an OSI Route for every 16 nodes.

You may configure as many OSI Subnetworks as your PC's memory can support, however, you may only configure one subnetwork definition per OSIRIS Shelf. In most cases, you should configure only one OSI Route per OSI network. This ensures that network elements visible in the OSIRIS-VUE/OSIRIS-VUE PLUS! are communicating via the SONET/SDH DCC.

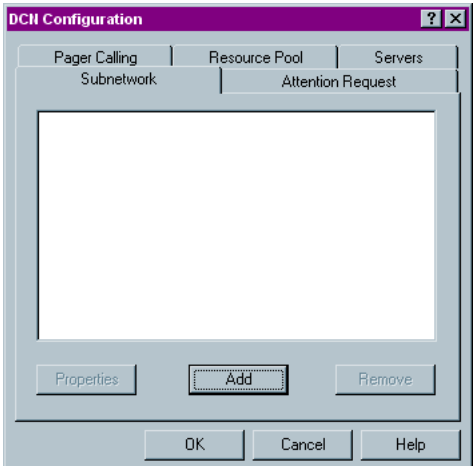
Avoid creating multiple OSI routes to the same OSI networks. If the server has direct connections to several OSI nodes, you will not know whether the OSI and the DCC are functioning properly.

Configuring the OSI Route - TL1 Subnetwork

Create an OSI Route before creating an OSI Attachment.

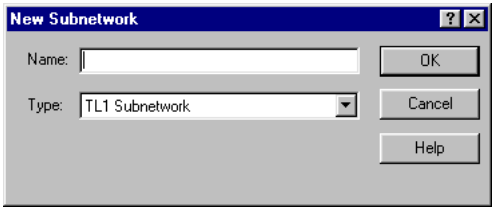
1. On the **Connect** menu click **DCN Configuration**.

   The DCN Configuration dialog box appears.



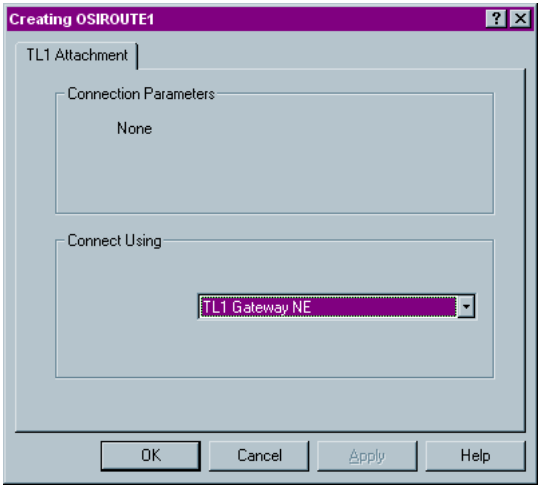
2. Click the **Add** button.

   The **New Subnetwork** dialog box appears.



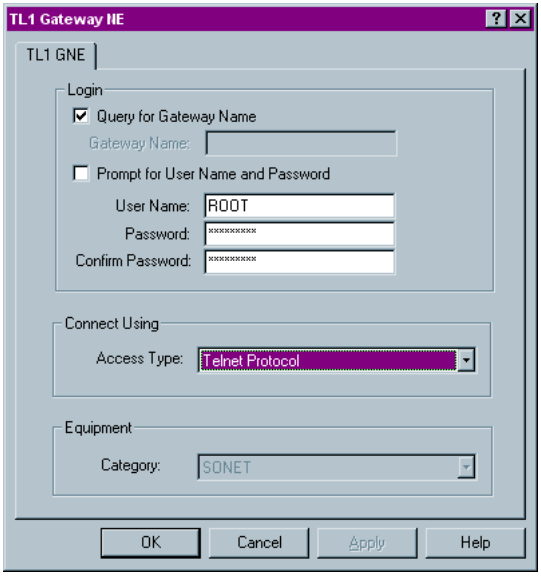
3. Enter the name **OSIROUTE** such as *OSIROUTE1* for the TL1 subnetwork and click **OK**.

The **Creating TL1 Attachment** dialog box appears.



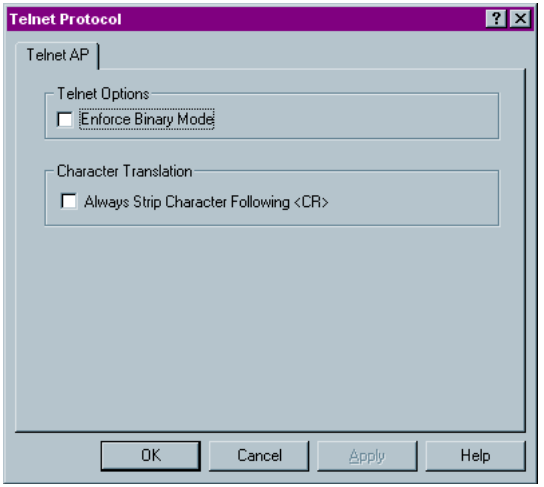
4. Ensure that the **TL1 Gateway NE** is chosen and click **OK**.

   The **TL1 GNE** dialog box appears.



5. Set **Access Type** to **Telnet Protocol**.

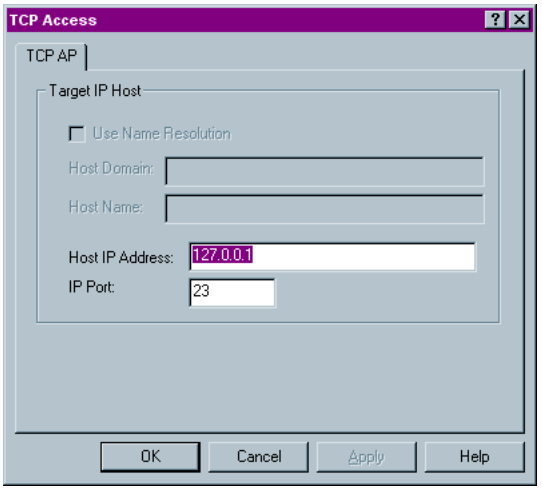
The **Telnet Protocol** dialog box appears.



1. Click **OK** if you are connected directly to an Ethernet port.

   If you are using a RadLinX device, enable **Always Strip Characters**, then click **OK**. You should not need to enable this option in all other cases.

   The **TCP Access** dialog box appears.



2. Set the **Host IP Address** to the network element's IP address.

   You should not have to change the default **IP Port** setting if you are connected via an NMCU.

3. Click **OK**.

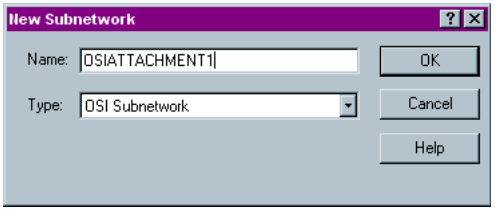
Configuring an OSI Attachment

After creating an OSI Route, you must create an OSI Attachment.

1. From the **DCN Configuration** dialog box, click the **Add** button.

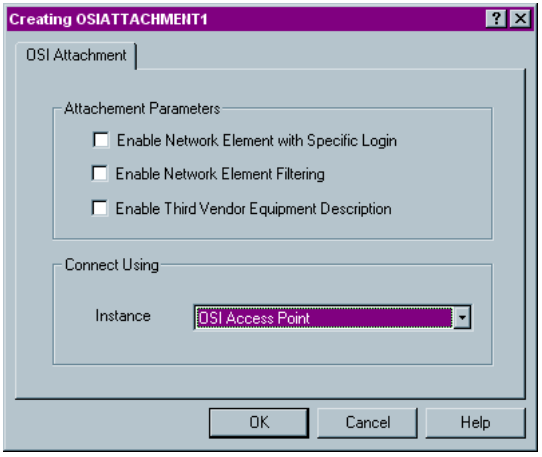
   The **New Subnetwork** dialog box appears.

2. Enter a name for your OSI Attachment such as *OSIATTACHMENT1*.
3. Set **Type** to **OSI Subnetwork.**



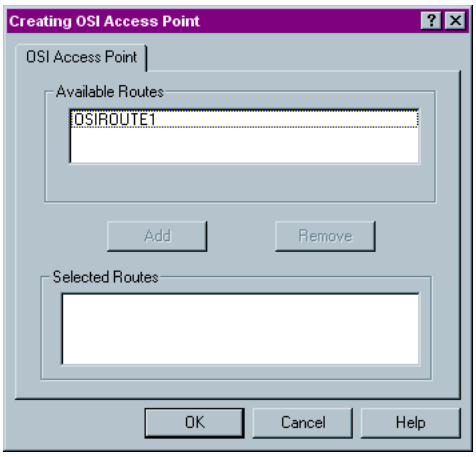
4. Click **OK.**

   The **Creating** dialog box appears.

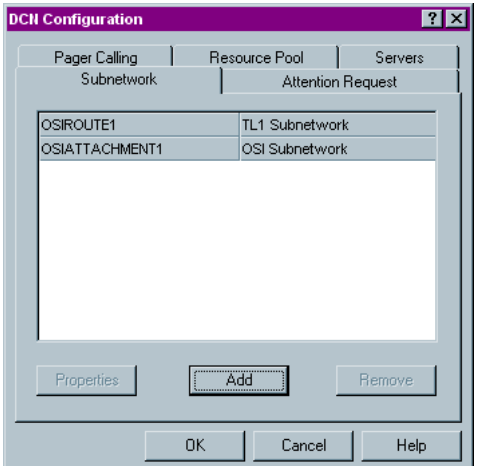


5. Set the desired **Attachment Parameters** and click **OK**.

The **Creating OSI Access Point** dialog box appears.



6. In the **Available Routes** section of the window, click the name of the OSI Route you have just created (e.g. OSIROUTE1).
7. Click the **Add** button to move your OSI Route into the **Selected Route** section of the window, then click **OK**.
8. The **DCN Configuration** dialog box appears with the OSI Route and OSI Attachment you just created for your OSI connection.



After creating the OSI Route and the OSI Attachment, you can configure the OSI stack.

Provision OSI Stack Layers

Follow the instructions below to provision an OSI stack layer.

You must provision all network elements in the OSI ring. It is recommended that you provision the Lower Layer DCC first and then provision other layers as needed.

A list of 11 windows that represent seven layers in the OSI stack and related features provisionable through the OSIRIS-VUE/OSIRIS-VUE PLUS! are shown below:

OSI Windows in OSIRIS-VUE/OSIRIS-VUE PLUS!

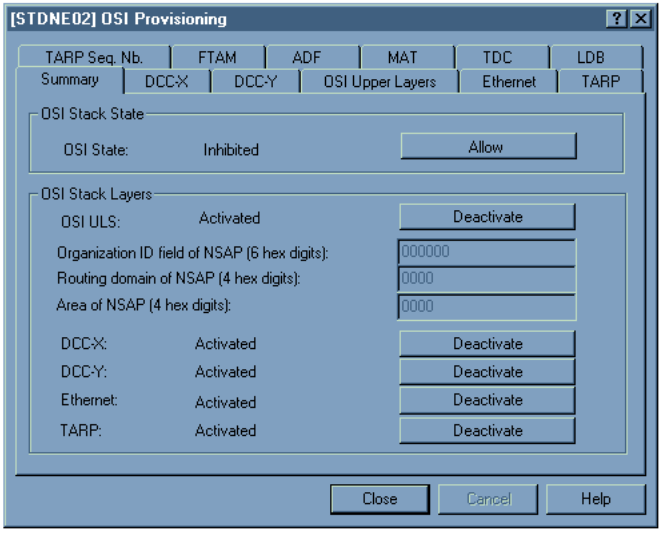
DCC-X	FTAM
DCC-Y	APT
OSI Upper Layers	MAT
Ethernet	DCT
TARP	LDB
TARP Seq. Nb.	

To provision parameters in these windows, the configuration of a network element must first be retrieved. Once you select the needed OSI window, you will determine its parameters.

To activate OSI stack with OSIRIS-VUE/OSIRIS-VUE PLUS!, follow these steps:

1. In the **Network Status** window, right-click the node, then click **OSI Provisioning**.

   The **Summary** window appears.



The Summary page lets you automatically provision the resource pages (such as Lower Layer DCC) with their default values. A list of conditions for every OSI stack layer for the current node also appears on the Summary page. For details regarding these parameters and their values, see the on-line help.

2. Provision other OSI stack layers as needed. Refer to the on-line help for details regarding each OSI window.

   Note: Once you have finished provisioning OSI Stack Layers, complete the procedure by rebooting the NMCUs on all network elements in the ring to allow the configuration changes to take place. Also, you must connect to the local network element using an OSI session over an Ethernet connection.

Chapter 5
OSIRIS-VUE PLUS! Sessions

This chapter introduces you to Attention Request, Pager Calling, and SNMP Trap Forwarder sessions.

Attention Requests let you monitor multiple sessions at a time, and Pager Calling sessions let you send pager messages from a PC connected to OSIRIS equipment. SNMP Trap Forwarder sessions send network events from the OSIRIS network to a remote SNMP management system.

Attention Request and Pager Calling sessions are available only in OSIRIS-VUE PLUS! software. The SNMP Trap Forwarder is an optional *added-value* application also available with OSIRIS-VUE PLUS! software.

Attention Request Sessions

Attention Requests are special sessions that monitor multiple remote rings or subnetworks for alarms. Once an alarm is detected on a network, the Attention Request session reports to the network operator with information on the node's current state, identity, and number of times that the node has requested attention. To clear alarms, you must connect to the OSIRIS network through a regular session.

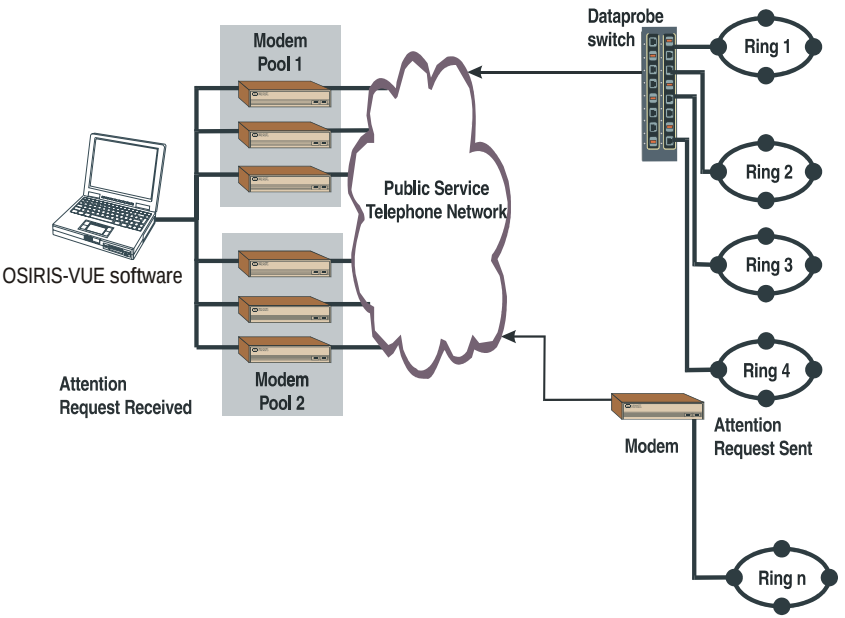
Only one Attention Request session may exist at any one time. More than one modem may be assigned for its use.

Typical Installation

Sending and receiving Attention Requests occurs in the setup explained and shown below.

When alarms occur on OSIRIS network elements, attention requests are dispatched. The requests are transmitted through modems or dataprobes, via telephone networks and are delivered to modems (modem pools) that are connected to OSIRIS-VUE PLUS! software. The attention requests can be retrieved using OSIRIS-VUE PLUS!.

You must provision remote network elements to generate Attention Requests and also provision the local node to receive these requests.



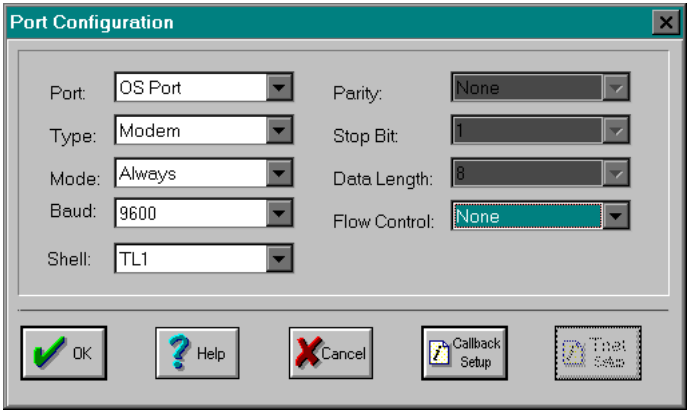
Provisioning Attention Requests

At least one network element must be provisioned to generate Attention Requests. Follow procedures in this section to provision a remote node to send Attention Requests.

Configuring Nodes to Send Attention Requests

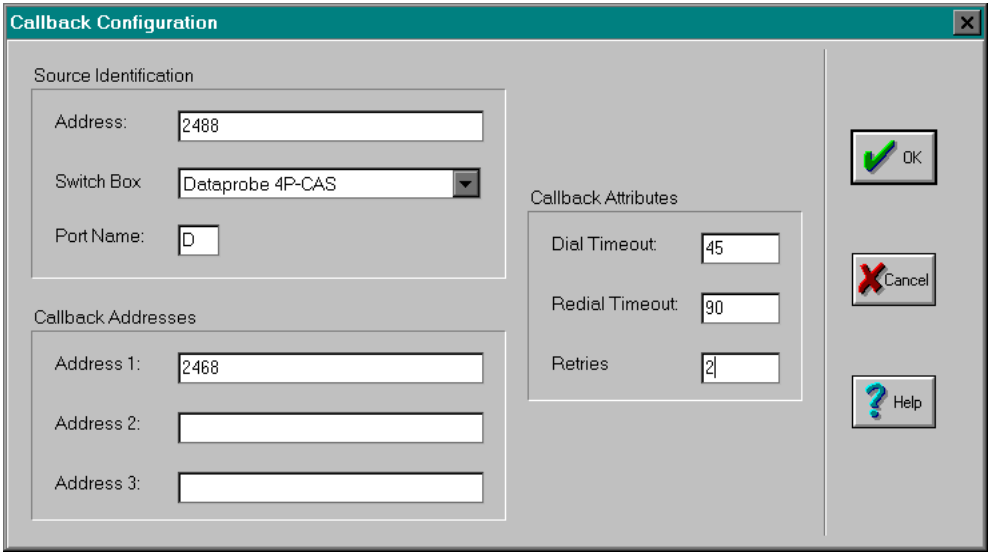
1. In the **Network Status** window right-click the node that will send Attention Requests and then click **Set Ports**.

   The **Port Configuration** dialog box appears.



2. Set **Port** to **OS Port**.
3. Set **Type** to **Modem** if you are using a modem connection, or set **Type** to **Modem + Switch** if you are using a modem connection through a Dataprobe switch box.
4. Set **Mode** to **On Connect**.
5. Click the **Callback Setup** button.

The **Callback Configuration** dialog box appears.



Provisioning callback attributes let OSIRIS-VUE PLUS! software monitor outgoing connections from the network element.

Source Identification parameters contain information required to call back a network element that has sent an Attention Request. This information is programmed on the network element and included when an Attention Request message is sent to OSIRIS-VUE PLUS! software.

6. In the **Address** box, enter the telephone number of this node.
7. Set **Switch Box** to the equipment that connects OSIRIS-VUE PLUS! software to this node, such as Dataprobe 4P-CAS. If you do not have such equipment connected, omit this step and go to step 9.
8. Enter one channel in the **Port Name** if you have a Dataprobe (i.e. **D**).
9. In **Address 1** of the **Callback Addresses** window, enter the telephone number of the node that will be the first to receive the Attention Request message. Enter other telephone numbers in **Address 2** and **Address 3**. The network element will try to connect to each address individually until a connection is established, or until the retry threshold is reached.

   Note: When you are configuring several nodes to generate Attention Requests, you should set your Callback Addresses in a different order of priority so that each node dials a different telephone as Address 1. For instance, For node 1, set telephone number 2468 as Address 1, telephone number 2777 as Address 2, and telephone number 2543 as Address 3.

For node 2 you should rearrange the telephone numbers, and set Address 1 to 2543, and so on. In this case, if alarms occur simultaneously on different nodes, the nodes will not attempt to dial the same number.

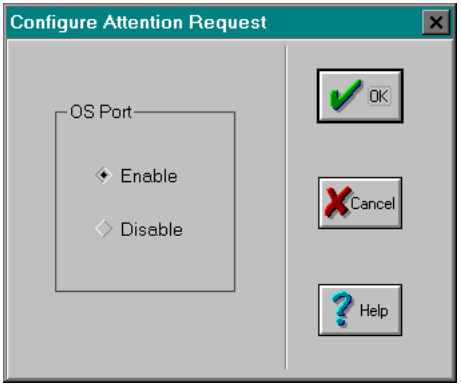
10. Click **OK**.

    The **Port Configuration** dialog box reappears.

11. Click **OK**.

12. Right-click the originally-selected network element and select **Set Attention Request**.

    The **Configure Attention Request** dialog-box appears.



13. Enable the **OS port**.

14. Click **OK**.

Repeat this procedure on each node that will be sending Attention Requests.

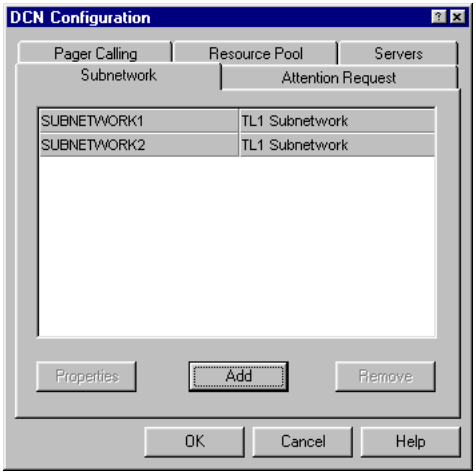
Receiving Attention Requests

Follow the procedure in this section to configure a station to receive Attention Requests.

You must define at least one modem pool before configuring an Attention Request session. See "Modem Pools" on page 31. Once you assign a modem pool to the Attention Request session, the pool will not be available for regular sessions. This is because the modems are always listening for calls.

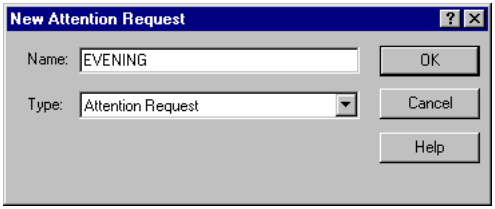
1. On the **Connect** menu, click **DCN Configuration**.

   The **DCN Configuration** dialog box appears.



2. Click the **Attention Request** tab.
3. Click the **Add** button.

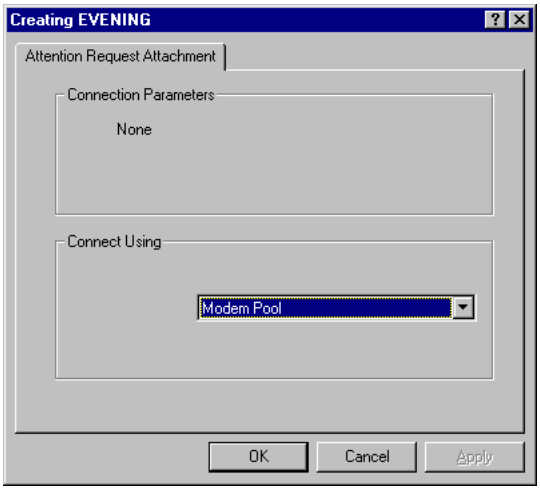
   The **New Attention Request** dialog box appears.



4. Enter a **Name** for this Attention Request, then click **OK**. Typical names could be "DIALING," "WEEKEND," or "NIGHT."

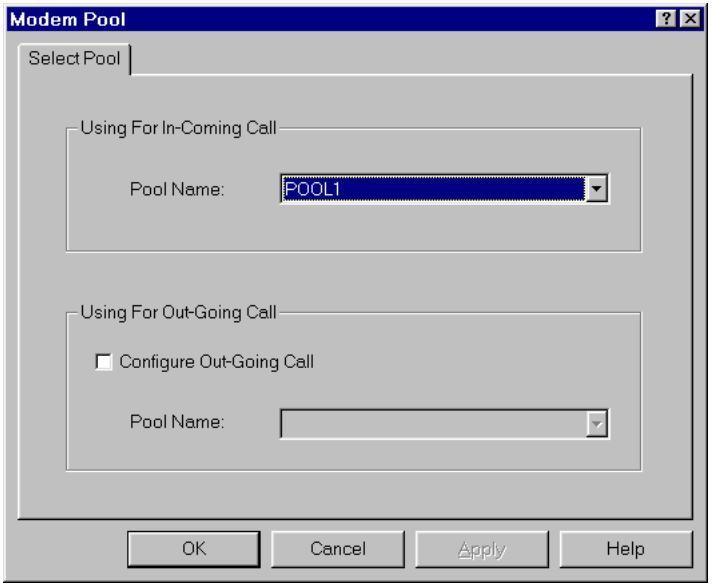
   Note: You can create more than one Attention Request entry with different settings. For instance, during the day you can assign one modem to an Attention Request and three to dial out to rings. At night you can assign all four modems to listen for Attention Requests messages.

   The **Creating** dialog box appears.



5. Set **Connect Using** to **Modem Pool**, then click **OK**.

The **Modem Pool** dialog box appears.



6. Select a modem pool, then click **OK**.
7. Click **OK** to exit the **DCN Configuration** dialog box.
8. To create more Attention Request entries, follow steps 1 to 7.

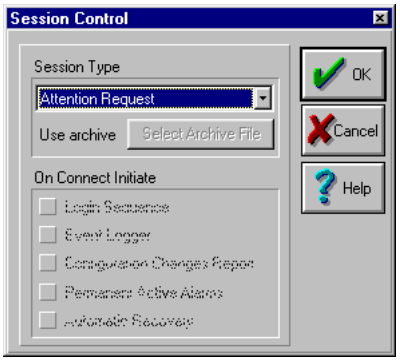
Launching an Attention Request

Once you have defined parameters for nodes sending and receiving Attention Request messages, you are ready to launch an Attention Request Session.

Perform this procedure on the computer that will receive Attention Requests.

1. On the **Connect** menu, click **New Session**.

   The **Session Control** dialog box appears.



2. Set **Session Type** to **Attention Request**, then click **OK**.

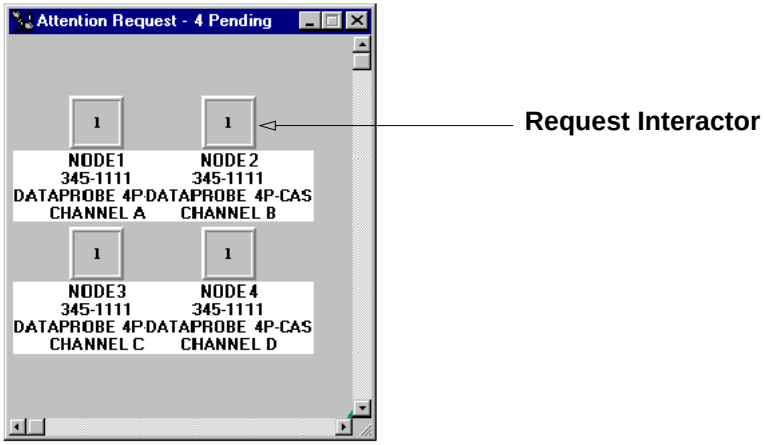
   The **Select Subnetwork** dialog box appears.

3. Select an Attention Request entry, then click **OK.**

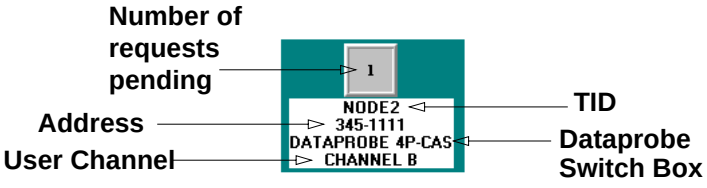
   The **Attention Request** window appears.

   If any nodes have sent Attention Requests, the window displays these nodes, their alarms, and the number of Attention Requests received since the last session on a node. This is what your Attention Request window might look like.

Note: In order for Attention Requests to be sent to this window, the Attention Request window must be opened prior to these messages being sent.



The Request Interactor appears when an Attention Request has been received, and disappears once the user either clears the pending requests or connects to the node that originated the Attention Request. The Request Interactor consists of the following elements.



Also, an icon is displayed in the Attention Request window title bar to help you identify Attention Request messages.

Icon	Meaning
	No ports have been assigned to an Attention Request.
	No Attention Requests are waiting to be processed.
	Requests are pending. The icon's background reflects the alarm condition reported. Blue - non-alarm condition Yellow - minor alarm Red - major alarm.

4. Right-click the **Request Interactor** if you want to connect to the node that has sent the Attention Request.

   A two-item menu appears with **Forget** and **Dial Network** options.

5. Select **Forget** if you want to clear the Attention Request.

6. Select **Dial Network** if you want to connect to the node with the reported Attention Request.

   Information displayed in the Request Interactor appears. Connection parameters are passed to the session dialog box, so you can verify the correct settings before dialing in to the node.

7. On the **Connect** menu select **New Session**.

   This starts a new regular session. You can now deal with the alarms on the remote node.

Pager Calling Sessions

Pager Calling sessions let you send pager messages over a OSIRIS ring to report alarm conditions that have occurred on network elements. When alarms occur, pager messages are sent to specific telephone numbers. These pager messages contain codes which pertain to earlier defined network element alarm conditions. To correct problems reported by the pager, you must connect to the OSIRIS network through a regular session.

You can open up to 32 OSIRIS on-line and off-line pager calling sessions at the same time. All pager calling sessions can be viewed in the Pager Calling Center window. You may find this feature useful during complex hardware configuration and management.

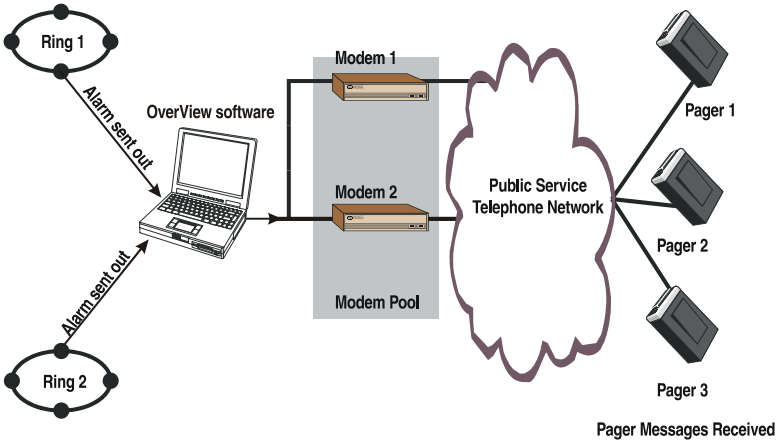
Pager Calling Sessions let you:

- Specify parameters for pager calling definitions
- Define alarm conditions that trigger pager messages
- Specify how an alarm message is sent, and the address to which it is sent

Typical Installation

A Pager Calling Installation has the following setup.

Rings with network elements evoke alarms and direct them to the OSIRIS-VUE PLUS! software workstation. The OSIRIS-VUE PLUS! station, connected to a telephone network via modems, sends out pager messages.



Creating a Pager Calling Definition

You must have at least one modem pool defined when you configure a Pager Calling session. See "Modem Pools" on page 31.

You must define at least one Pager Calling entry in the DCN configuration. You can define many entries with different settings.

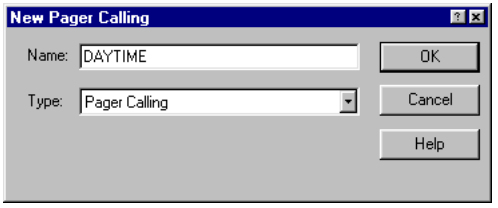
To create a new Pager Calling definition, follow the procedure below.

1. On the **Connect** menu, click **DCN Configuration**.

   The **DCN Configuration** dialog box appears.

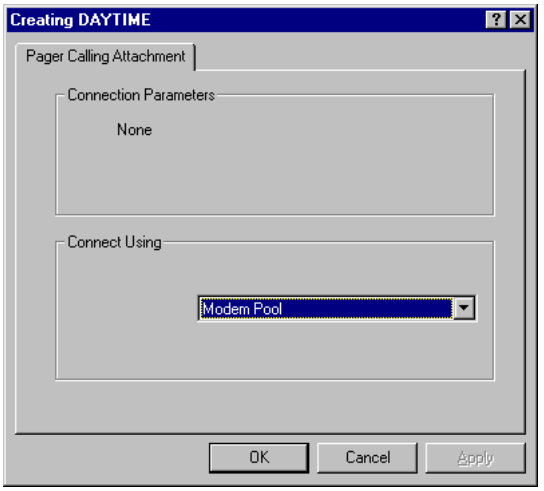
2. Click the **Pager Calling** tab.
3. Click the **Add** button.

   The **New Pager Calling** dialog box appears.



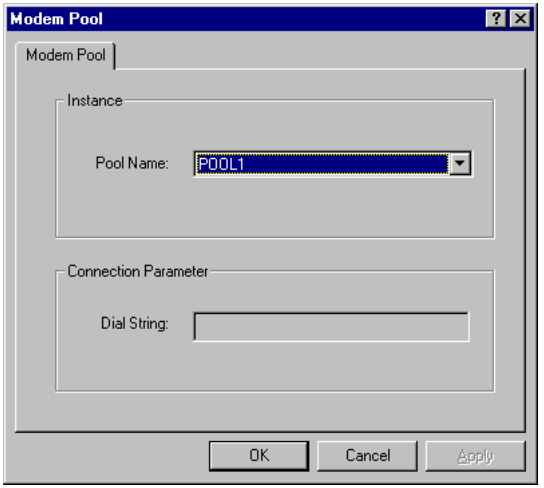
4. Enter a **Name** for this pager calling entry, then click **OK**.

The **Creating Pager Calling** dialog box appears.



5. Click **OK**.

   The **Modem Pool** dialog box appears.



6. Select a modem pool, then click **OK**.

   DCN Configuration dialog box reappears.

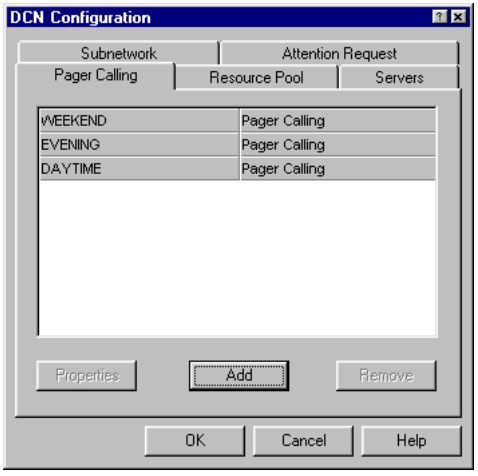
7. Click **OK** to exit.

Launching Pager Calling Sessions

Follow the procedure below to start a Pager Calling Session.

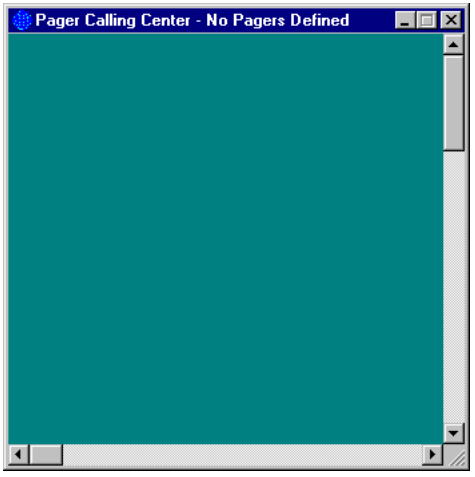
1. On **Connect** menu, click **New Session**.
2. Under **Session Type**, choose **Pager Calling**.

   The following dialog box appears.



3. Select a Pager Calling entry.

   The **Pager Calling Centre** window appears.

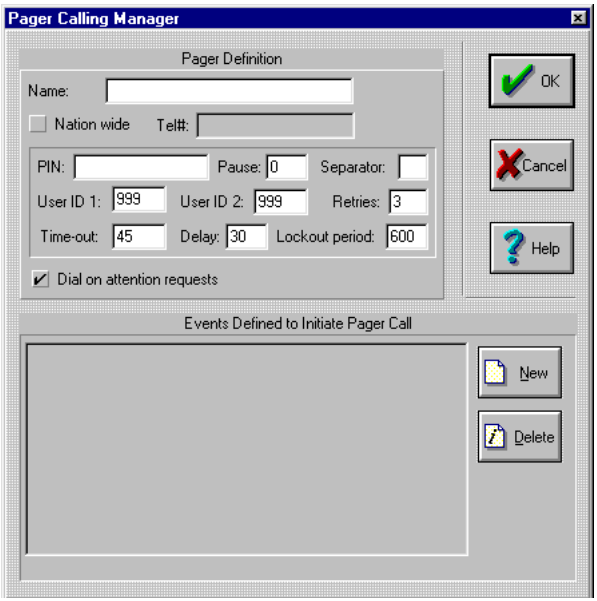


4. Right-click the window background.

   A two-item popup menu appears.

5. Select **Create New Pager**.

   The **Pager Calling Manager** dialog box appears.



6. Enter a name of a pager (i.e. Tom Collins) in **Name**.
7. Enable **Nation wide** field if your pager service is a nation-wide service. You will require an area code to dial. The **Tel #** will be automatically enabled.

   Enter the long distance area code of the telephone number in **Tel#** (i.e., **1-800**). If your phone system requires a second dial tone, prefix the phone number with the appropriate digit sequence (typically 9).

   OSIRIS-VUE PLUS! software dials the area code number and then dials the PIN number. See step 8 for PIN information.
8. Enter the telephone number of the pager in **PIN** (i.e., 888-9099).

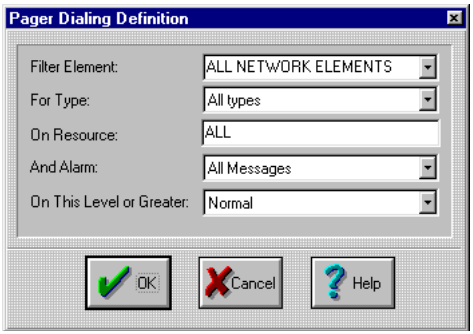
   If the pager uses local services, the telephone number entered in the PIN is the number that will be dialed. If your phone system requires a second dial tone, prefix the phone number with the appropriate digit sequence (typically 9).

9. To set up other parameters, refer to the table below or consult the online help.

Field	Description
Pause	Enter the number of seconds to wait before hanging up.
Separator	Enter a special key sequence (typically the # key) to separate each field in pager messages.
User ID 1	Enter a special 3-digit number that will be used as a message prefix. All OSIRIS-VUE PLUS! messages will begin with this sequence. If less than 3 digits are given, numbers will be replaced with zeros.
User ID 2 (optional)	Enter a special 3-digit number that will be used as a message suffix. All OSIRIS-VUE PLUS! messages will end with this sequence. If less than 3 digits are given, numbers will be replaced with zeros.
Retries	Enter the number of times OSIRIS-VUE PLUS! should attempt dialing the pager. If your pager service is very reliable, enter 2, otherwise enter 3 or higher.
Time-out	Enter the number of seconds before the software hangs up in case of a failure in the paging service. This is a fail-safe measure.
Delay	Enter the number of seconds for the software to wait between two retries.
Lockout period	Enter the number of seconds the software should wait before making another pager call. For instance, if an alarm causes the pager to activate, a second alarm will have to wait this number of seconds before the pager dials again. This will help avoid overloading technicians with pager calls.
Dial on Attention Request	Enable this option only if you want all Attention Requests to dial the pager.

10. Click the **New** button.

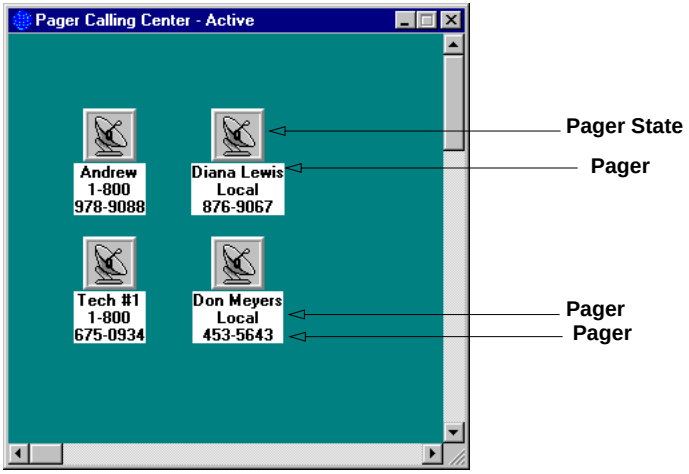
    The **Pager Dialing Definition** dialog box appears.



    The **Pager Dialing Definition** dialog box lets you specify alarms that will be sent to the pager.

11. Define your pager calling entry by specifying the **Filter Element**, **Type of Equipment**, **Type of Alarm**, and **Level of Alarm**.
12. Click **OK**.
13. Repeat steps 10 to 12 to define more alarm events.
14. To create more pager entries, right-click the Pager Calling Center window background and follow steps 1 to 13.

    The Pager Calling Center window appears with pager information.

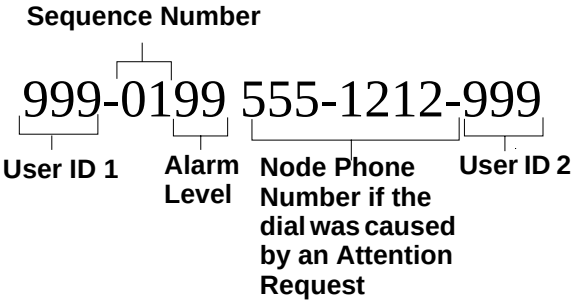


Each pager is represented by an icon that gives the pager state.

Icon	Definition
	The Pager Calling Center window is minimized.
	The pager definition is idle and is waiting for an alarm to trigger a pager call.
	The pager is ready to dial, but either no modems are assigned, or they are being used by another pager.
	The pager is currently dialing.
	The pager is waiting to redial.
	The pager is ready to dial but is waiting for the lockout period to expire.

Pager Alarm Messages

When an alarm occurs, a message is sent to the specified pager. The pager message appears as follows:



Field	Comment
User ID 1	The pager holder uses this three digit sequence to identify a call initiated by the OSIRIS-VUE PLUS! software. The default value is 999.
Sequence Number	Identifies the number of times this message has been sent. This number helps pagers recognize duplicate messages resulting from OSIRIS-VUE PLUS! retries.
Alarm Level	Identifies the status of the alarm being generated. Refer to the alarm codes definitions for identification: 00 - Cleared alarms 01 - Non-alarm 02 - Minor alarm 03 - Major alarm 04 - Critical alarms 99 - Attention Requests
Node phone number (variable)	If the dial was caused by an Attention Request, the calling node phone number will be included in the message (after the 99 Attention Request identifier).
User ID 2	The pager holder uses this three digit sequence to identify the end of a call initiated by OSIRIS-VUE PLUS! software. The default value is 999.

SNMP Trap Forwarder Sessions

The OSIRIS-VUE PLUS! SNMP Trap Forwarder provides a flexible up-stream alarm channel from the OSIRIS network to SNMP-based management systems. The SNMP Trap Forwarder automatically sends network events from OSIRIS rings to a remote SNMP management system.

The SNMP Trap Forwarder makes the OSIRIS network visible to SNMP-based management systems.

The SNMP Trap Forwarder is a separately ordered product that is available as an add-on for OSIRIS-VUE PLUS! software.

Installation

You must install SNMP Trap Forwarder software after OSIRIS-VUE PLUS! software has been installed on your PC.

Note: SNMP Trap Forwarder software must be installed in the same directory as OSIRIS-VUE PLUS! software.

Follow these steps to install SNMP Trap Forwarder software.

1. Insert the diskette labelled **SNMP Trap Forwarder** in the disk drive of your PC.
2. Start the file named **SETUP.EXE**.
3. Follow the installation instructions that appear on your screen.

Defining SNMP Traps

Follow these steps to define an SNMP trap.

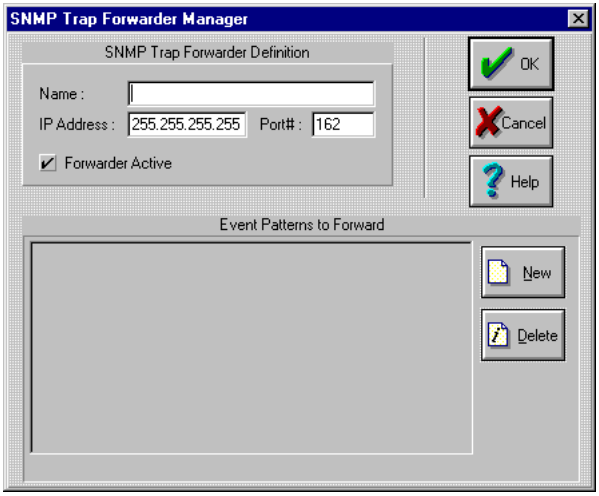
1. Start OSIRIS-VUE PLUS! software.

   The **Welcome Screen** appears.
2. Click **Login**.

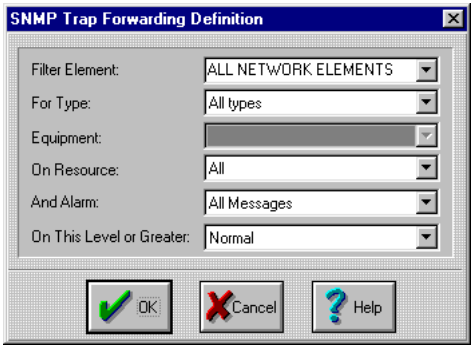
   The **Session Control** dialog box appears.
3. Set Session Type to **SNMP Trap Forwarder**.
4. Click **OK**.

   The **SNMP Trap Forwarder Center** window appears. If any previous SNMP traps have been defined, they appear in this window.
5. Right-click the window background and click **Add Remote OS**.

The **SNMP Trap Forwarder Manager** appears.

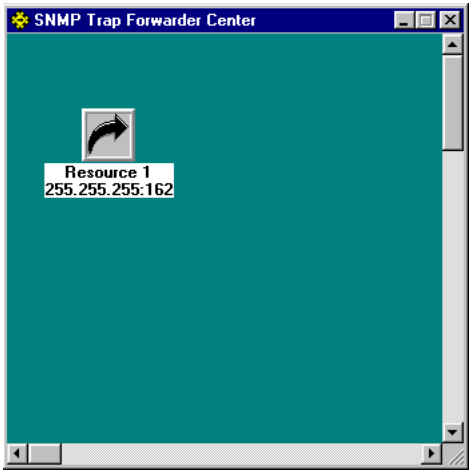


6. Specify a Name, IP address and Port number for the SNMP trap request.
   Consult the online help for details on any of these options.
7. Click **New** to define SNMP monitoring parameters.
   The **SNMP Trap Forwarding Definition** dialog box appears.



8. Select the alarm event to be trapped and forwarded.
9. Click **OK**.
   The **SNMP Trap Forwarder** dialog box reappears.
10. Click **OK**.

The **SNMP Trap Forwarder Center** dialog box reappears.



Chapter 6
Alarms and Performance Monitoring

This chapter describes how to interpret and customize OSIRIS-VUE/OSIRIS-VUE PLUS! alarms.

LEDs on the physical OSIRIS shelves represent the various alarm states (remote, minor, major, and critical). You can view alarms through an OSIRIS-VUE/OSIRIS-VUE PLUS! session. The Active Alarms window and the Event Log window are two ways of viewing alarms.

You can filter out alarms that you do not want to view, and you can customize and create alarm definitions.

Performance monitoring statistics also provide valuable diagnostics information. Instructions on how to access these statistics are included at the end of this chapter.

See the *OSIRIS® Troubleshooting Guide (203-008)* for detailed alarm descriptions.

Identifying Alarms

OSIRIS-VUE/OSIRIS-VUE PLUS! software lets you identify alarms quickly. Alarms are displayed in the shelf-level view, as well as in separate **Active Alarms** and **Event Log** windows.

Once you have identified an alarm, the next step is to clear it. See the *OSIRIS® Troubleshooting Guide (203-008)* for instructions on how to pinpoint the cause of a specific alarm.

Different methods of viewing alarms are described below. All of these methods are valid for SONET and SDH versions of OSIRIS shelves.

Shelf-level View

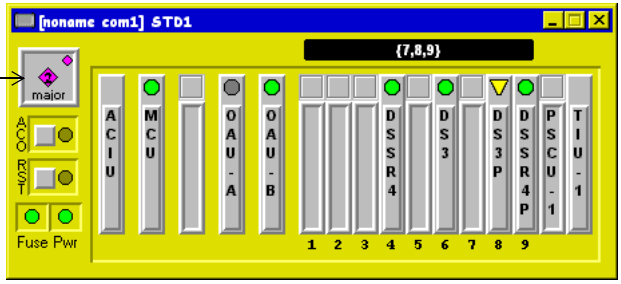
Follow these steps to display the shelf-level window alarms.

1. In the **Network Status** window, double-click a node.

   The **Shelf-level** window appears.

OSIRIS Shelf

The shelf-level Status button displays the ID, alarm status and a color to represent an



The following status buttons can appear.

Normal

There are no alarms on this network element.

The status button is green.

Non-Alarm or Warning

A non-alarm condition is currently active on the network element.

Non-alarms typically indicate that the network may not be configured at its optimal level.

Minor

A minor alarm is currently active on the network element.

Minor alarms typically do not affect network traffic.

The status button is yellow.

Major

A major alarm is currently active on the network element.

Major alarms usually affect network traffic.

The status button is magenta.

Critical

A critical alarm is currently active on the network element.

The status button is red.

Archive

This is an offline session. You are not connected to a live network.

Offline sessions never generate alarms.

Active Alarms Window

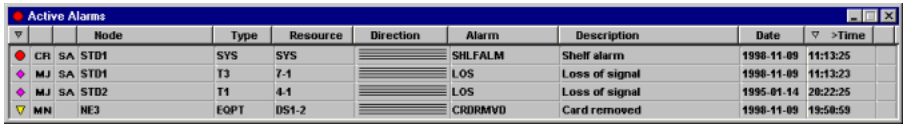
The **Active Alarms** window displays all active alarms on the network. The **Active Alarms** window displays alarms in order of priority. The highest priority alarms appear at the top of the list.

Follow these steps to display the **Active Alarms** window.

1. On the **Window** menu, click **Active Alarms**.

   The **Active Alarms** window appears.

OSIRIS Alarms



Note: When alarms are cleared, they disappear from the Active Alarms window.

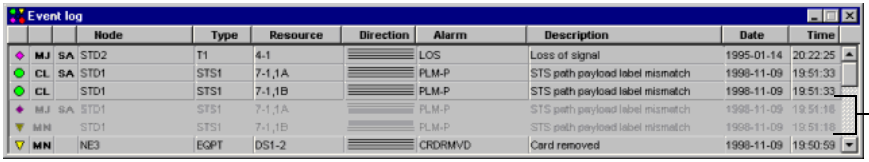
Event Log Window

The **Event Log** window displays alarms in order of occurrence. Follow these steps to display the **Event Log** window.

1. On the **Window** menu, click **Event Log**.

   The **Event Log** window appears.

OSIRIS Event Log



The **Event Log** window displays a history of all alarm conditions that have ever occurred on the network. All alarms are date and time-stamped. This information is also saved in Log Files. Refer to "Log Files" on page 44 for more information.

Right-click anywhere in the Event Log window to show/hide columns and to clear the window.

Note: Alarms that have been cleared do not disappear from this window. Instead, they are greyed out.

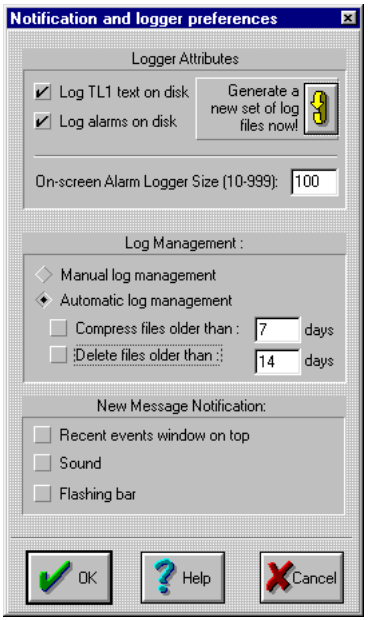
Recent Events Log

The **Recent Events** window displays the 16 most-recent alarms that have occurred on the network. The **Recent Events** window contains the same information as the **Event Log**, but is displayed as soon as an alarm occurs. Up to 16 alarms are displayed in this window. Use the **Recent Events** window as an additional visual cue for problems on the network.

Follow these steps to display the **Recent Events** window.

1. On the **Preferences** menu, click **Notification and Event Logs**.

The **Notification and logger preferences** dialog box appears.



2. Enable **Recent events window on top**.
3. Click **OK**.

For additional alarm notification, activate the following:

1. To activate sound, enable **Sound**.
2. To activate the flashing bar, enable **Flashing Bar.**
3. Click **OK.**

Defining Alarm Filters

OSIRIS-VUE/OSIRIS-VUE PLUS! software lets you filter out alarms. Depending on your network setup, certain alarms can appear regularly and you may not want to be constantly notified when they occur. You may also find it useful to apply alarm filters during testing, when unimportant alarms may result, or when you are removing or replacing a mapper.

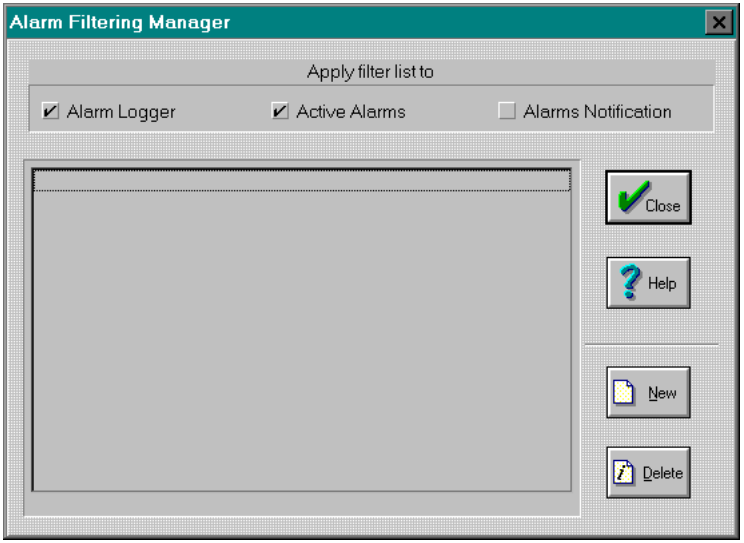
If this is the case, follow the procedure in this section to filter alarms. See the next section, "Defining Alarm Levels" on page 280 to alter default alarm levels and conditions.

All alarm filters are global. Any filters that you define apply to all sessions that you open in the OSIRIS-VUE/OSIRIS-VUE PLUS! software.

To Define an Alarm Filter

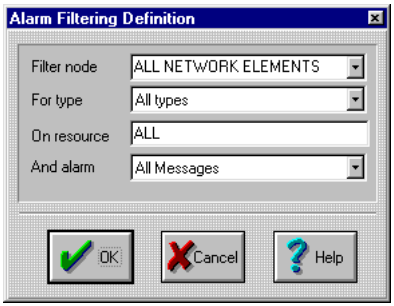
1. On the **Connect** menu, click **Preferences**, then click **Alarm Filters**.

   The **Alarm Filtering Manager** appears.



2. Click **New**.

   The **Alarm Filtering Definition** dialog appears.

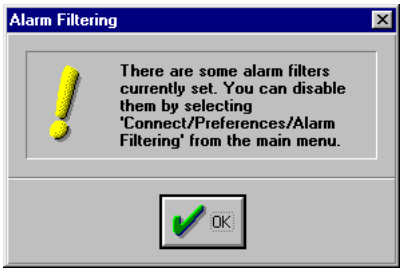


3. Select the alarm to be filtered, then click **OK**.

   The **Alarm Filtering Manager** dialog box reappears.

4. Click **New** to define another filter, or click **Close** to exit the dialog.

   When alarm filters are active, the OSIRIS-VUE/OSIRIS-VUE PLUS! software displays the following reminder at start-up.



Defining Alarm Levels

OSIRIS-VUE/OSIRIS-VUE PLUS! software lets you customize alarm definitions. For instance, you can redefine levels of alarms or restore removed alarms. You can also configure environmental alarm and external control definitions. These definitions are events that occur outside of the shelf.

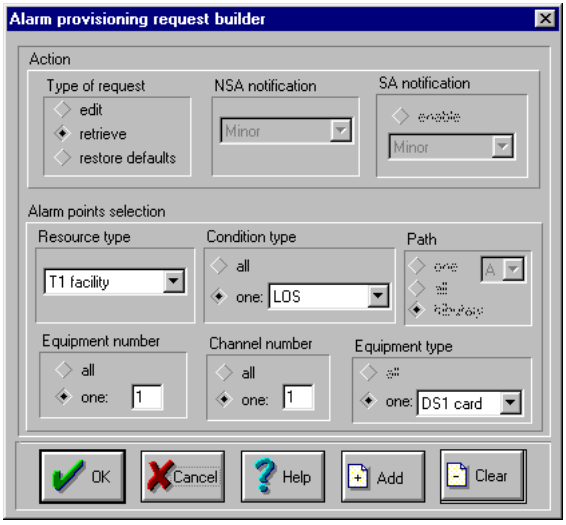
Provisioning Alarms

Follow this procedure to change the level of an alarm on a particular OSIRIS shelf.

OSIRIS Shelf

1. In the **Network Status** window, right-click the network element, then click **Full Alarm Provisioning**.

   The **Alarm Provisioning Request Builder** dialog box appears.



2. Set **Type of request** to **edit**.
3. Set **NSA notification** to the new alarm level.
4. Set **SA notification** to **enable** and to the new alarm level.
5. Set **Resource type** to the facility type of the alarm that you are changing.

6. Set **Condition type** to **one** and select the alarm to change.

   OR

   Set **Condition type** to **all** to change all alarms of this resource type.

7. Set **Equipment type** to **one** and select the equipment that this change applies to.

   OR

   Set **Equipment type** to **all** to change the alarm on all types of equipment on this node.

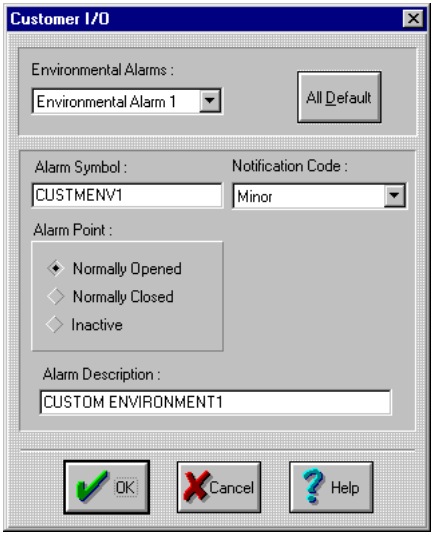
8. Set the **Path** and **Channel Number** if desired.
9. Click the **Add** button, then click **OK**.
10. Repeat Steps 1 to 9 for all other nodes.
11. In the **Network Status** window, right-click the background and then select **Update Network**.

Environmental Alarms

Before you perform this procedure, you must connect a cable between the User I/O port on the shelf and the external alarm equipment. See your *Shelf's Installation Guide* for details on how to connect the cable to the alarm equipment.

1. In the **Network Status** window, right-click the node that is connected to the alarm equipment, then click **Environmental Alarms**.

   The **Customer I/O** dialog box appears.



2. Select the environmental alarm that you want to define.

   Up to 11 alarms can be defined on OSIRIS STD, OSIRIS XTS and OSIRIS XTD shelves, and up to 8 alarms can be defined on OSIRIS Micro shelves. Each alarm corresponds to a pin on the User I/O connector. See your shelf's *Hardware Reference Guide* for details.

3. Configure the environmental alarm by setting the following parameters:

Parameter	Description
Alarm Symbol	The alarm symbol appears in the Alarm Logger when this alarm is active. You can change the default symbol to something more descriptive of the alarm, for example *Door Open*.
Notification Code	Sets the alarm level.
Alarm Point	Determines whether this alarm is raised when the relay contacts are open or closed. For example, you would set Alarm Point to normally closed for the *Door Open* alarm to activate when the door is opened. Set Alarm Point to Inactive to deactivate an environmental alarm without erasing its parameters.
Alarm Description	Enter an appropriate alarm description.

   Note: Click the **All Default** button to set all environmental alarm symbols to **CUSTMENV***n* and notification codes to **Minor**.

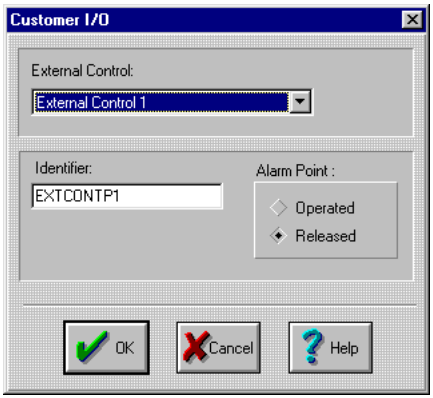
4. Click **OK**.

External Controls

Before you perform this procedure, you must connect a cable between the User I/O port on the shelf and the external alarm equipment. See your *Shelf's Installation Guide* for details on how to connect the cable to the alarm equipment.

1. In the **Network Status** window, right-click the node, then click **External Controls**.

The **Customer I/O** dialog box appears.



2. Select the external control that you want to define.

   Up to 4 external controls can be defined on OSIRIS STD, OSIRIS XTS and OSIRIS XTD shelves, and 1 control can be defined on an OSIRIS Micro shelf. Each alarm corresponds to a pin on the User I/O connector. See your shelf's *Hardware Reference Guide* for details.

3. Configure the external alarm by setting the following parameters:

Parameter	Description
Identifier	Identifies the external control. You can change the default symbol to something more descriptive, for example *Start Generator*.
Alarm Point	Operates or releases the external control.

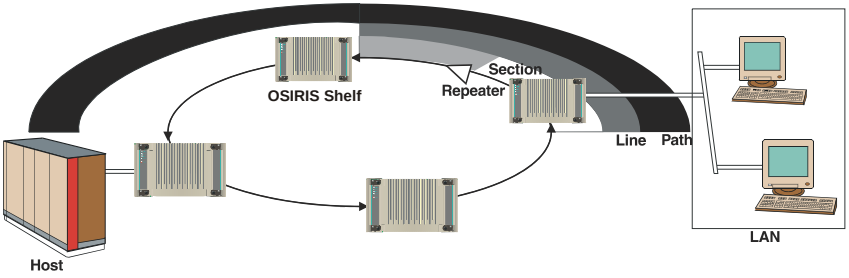
4. Click **OK**.

Performance Monitoring

You can monitor your ring's performance through the performance monitoring dialog boxes. Check performance statistics regularly to diagnose problem areas before alarm conditions occur. If any of these performance monitoring parameters start to increase quickly, it is likely that an equipment problem will soon occur.

Performance monitoring statistics are available for the section, line, and path on any node in the ring. Special Ethernet statistics are also available for the SONET version of the Ethernet 10BaseT mapper. To view these Ethernet statistics, see the procedure under "Ethernet Statistics" on page 285.

The path is the end-to-end link between the point at which a signal enters a SONET/SDH network, and the point at which it exits. The line is the link between two network elements, and the section is the link between any two pieces of equipment, including network elements, repeaters, etc. The illustration below shows section, line, and path divisions.

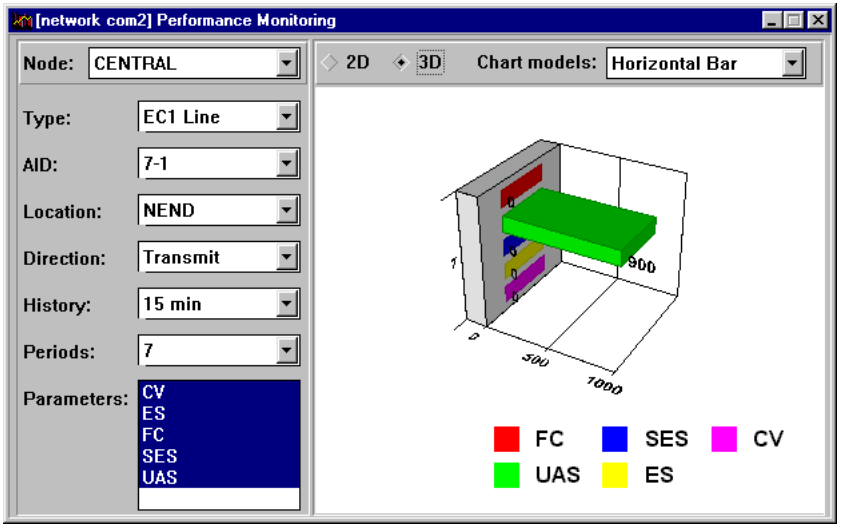


Follow the procedure below to view performance monitoring statistics.

Viewing Statistics

1. On the **Network** menu, click **Performance Monitoring**.

   The **Performance Monitoring** dialog box appears.



   Set performance monitoring parameters on the left of the dialog to update the chart on the right. Consult the online help for descriptions of these parameters.

2. Right-click the background of the dialog box to update statistics and change the refresh rate.

   You can also reset specific statistics by right-clicking the background.

Ethernet Statistics

Special Ethernet statistics are available for the enhanced Ethernet 10BaseT mapper (product code 800340/3). These statistics are helpful if you are diagnosing a problem with the Ethernet connection.

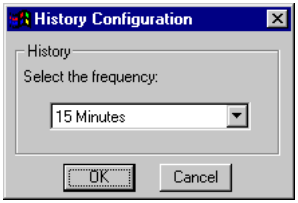
Follow these steps to view Ethernet statistics.

1. In the **Network Status** window, double-click the node with the Ethernet mapper.

   The shelf-level window appears.

2. Right-click the Ethernet mapper slot and then click **Statistics**.

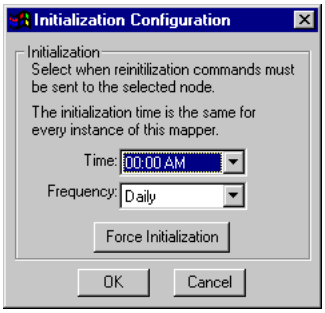
- If this is the first time that you have accessed statistics on this mapper, the **History Configuration** dialog box appears.



- If the History Configuration dialog box does not appear, go to Step 7.

3. Specify how often you want statistics to be refreshed, then click **OK**.

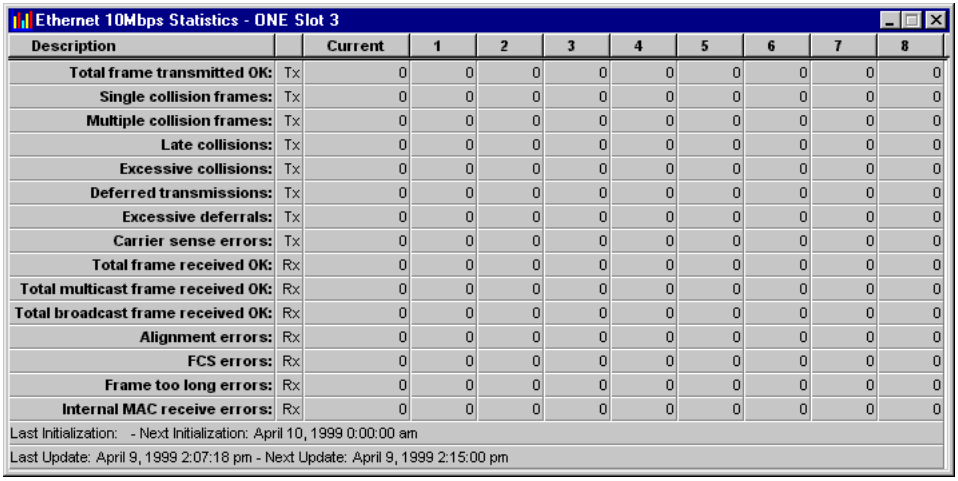
   The **Initialization Configuration** dialog box appears.



4. Set **Time** to the hour at which statistics will be reset.
5. Set **Frequency** to the frequency at which Ethernet statistics are reset.

   Note: Statistics automatically wrap to 0 when they reach 4 294 967 295. On average, it usually takes about 3 days for a statistic to wrap, so to ensure that statistics are meaningful, set this value to at least once every three days.

6. Click **OK**. The **Ethernet Statistics** window appears.



Ethernet 10Mbps Statistics - ONE Slot 3

Description		Current	1	2	3	4	5	6	7	8
Total frame transmitted OK:	Tx	0	0	0	0	0	0	0	0	0
Single collision frames:	Tx	0	0	0	0	0	0	0	0	0
Multiple collision frames:	Tx	0	0	0	0	0	0	0	0	0
Late collisions:	Tx	0	0	0	0	0	0	0	0	0
Excessive collisions:	Tx	0	0	0	0	0	0	0	0	0
Deferred transmissions:	Tx	0	0	0	0	0	0	0	0	0
Excessive deferrals:	Tx	0	0	0	0	0	0	0	0	0
Carrier sense errors:	Tx	0	0	0	0	0	0	0	0	0
Total frame received OK:	Rx	0	0	0	0	0	0	0	0	0
Total multicast frame received OK:	Rx	0	0	0	0	0	0	0	0	0
Total broadcast frame received OK:	Rx	0	0	0	0	0	0	0	0	0
Alignment errors:	Rx	0	0	0	0	0	0	0	0	0
FCS errors:	Rx	0	0	0	0	0	0	0	0	0
Frame too long errors:	Rx	0	0	0	0	0	0	0	0	0
Internal MAC receive errors:	Rx	0	0	0	0	0	0	0	0	0

Last Initialization: - Next Initialization: April 10, 1999 0:00:00 am

Last Update: April 9, 1999 2:07:18 pm - Next Update: April 9, 1999 2:15:00 pm

7. Right-click a statistic if you want to access the **History Configuration** or **Initialization Configuration** dialog boxes. You can consult help for any statistics by clicking the **Help** button in these dialog boxes.

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