



# **ONset Network Administrator's Guide**

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19 Alpha Road  
Chelmsford, MA 01824

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# Contents

<b>Preface</b> .....	1
Who should use this manual .....	1
How this manual is organized .....	1
Related manuals .....	2
Format conventions .....	2
Contacting Astral Point .....	4
 <b>Chapter 1</b>	
<b>Introduction to the ONset ONMS software</b> .....	5
Purpose .....	5
Layout of main window .....	6
Management functions .....	7
Topology Management .....	7
Provisioning Services .....	8
Fault Management .....	8
Network Monitoring .....	9
Accounting System .....	9
Optical Planning .....	9
Setting up your user account and preferences .....	10
On-line help .....	12
Setting up a domain .....	13
Monitoring and managing a domain .....	14
Other options for managing the optical network .....	14
Updating the node software .....	15
 <b>Chapter 2</b>	
<b>Topology Management</b> .....	17
Discovering the domain .....	18
Using the Topology view .....	20

Managing the domain .....	22
Viewing domain details .....	23
Creating a node .....	24
Deleting a domain .....	24
Managing nodes .....	25
Displaying node details .....	26
Synchronizing ONset chassis from the node .....	27
Synchronizing the ONset configuration from the node .....	28
Loading the ONset configuration to the node .....	28
Managing the node software .....	28
Resetting a node .....	29
Deleting the node .....	29
Managing cards .....	29
Creating a card .....	30
Using the Chassis View .....	31
Managing the chassis front .....	32
Managing the chassis back .....	36
Managing disks .....	39
Managing the chassis internal .....	41
Managing ports .....	43
Viewing port details .....	44
Managing port interfaces .....	45
Managing endpoints .....	62
Managing IP interfaces .....	63
Running the BERT test for a DS1 or DS3 port .....	65
Viewing cross connects .....	66
Using the Graph View .....	67
Creating links .....	71
Creating a network link .....	71
Creating a virtual link .....	72
Changing the link state .....	72
Viewing link details .....	74
Managing fault regions .....	75

---

## Chapter 3

<b>Provisioning Services .....</b>	<b>77</b>
Viewing circuit information .....	78
Viewing circuit details .....	79
Getting details about a service .....	80
Filtering the list of circuits .....	81
Displaying the Circuit Path View .....	82
Creating a circuit .....	83
Selecting a service for a circuit .....	84
Entering circuit information .....	84
Selecting ports for a circuit .....	84
Selecting ports for ATM, ATM Virtual, or DS3 Private Line circuit .....	85
Selecting ports for DS1 Private Line for DS 310 or DS1 Bundled Private Line circuit .....	86
Selecting ports for DS0 Private Line circuit .....	88
Modifying interface properties .....	92
Modifying endpoint properties .....	93
Selecting the IP interface for an ATM Virtual Private Line circuit .....	94
Selecting the hops .....	95
Saving and loading a circuit .....	97
Managing service types .....	97
Viewing available service types .....	98
Viewing service type details .....	98
Adding service types .....	99
Modifying service types .....	100
Deleting service types .....	101
Modifying a circuit .....	102
Modifying the circuit details .....	102
Selecting ports for the circuit .....	103
Changing the circuit status .....	105
Activating a circuit .....	105
Deactivating a circuit .....	105
Loading a circuit .....	106
Deleting a circuit .....	106
Forcing a circuit to use its primary path .....	106

Forcing a circuit to use its protected path .....	106
Recalculating a circuit path .....	107
Getting cross-connect information .....	107

## **Chapter 4**

<b>Fault Management</b> .....	109
Monitoring events .....	110
Viewing events .....	110
Viewing details for an event .....	112
Filtering the list of domain events .....	113
Printing event information .....	114
Monitoring and managing alarms .....	115
Alarm Status field .....	116
Audible and visual alarms .....	116
Selecting which alarms are reported (ATM ports only) .....	116
Viewing alarms .....	117
Viewing details for an alarm .....	120
Filtering the list of domain alarms .....	121
Acknowledging alarms .....	123
Clearing alarms .....	123
Printing alarm information .....	124

## **Chapter 5**

<b>Network Monitoring</b> .....	125
Working with charts .....	126
Selecting the chart type .....	127
Using tool tips to get data values in a chart .....	127
Zooming in .....	128
Reloading data for a chart .....	129
Printing a chart .....	129
Getting node statistics .....	130
Printing the node connection statistics .....	130
Using the Statistics Manager .....	131
Uploading statistics from a node .....	132
Displaying node statistics .....	133
Getting bandwidth usage for all ports .....	135

---

Getting cell rates for all ports .....	136
Getting cell rates for a specific port .....	136
Getting error rates for all ports .....	138
Getting error rates for a specific port .....	138
Selecting the port error counts for statistical charts .....	140
Getting alarms for all ports .....	141
Getting link statistics .....	142
Printing the link statistics .....	143
Displaying statistics for source or destination ports .....	144
Archived and real-time port statistics .....	144
Getting port cell rate statistics for a link .....	145
Getting port error rate statistics for a link .....	146
Selecting the port error counts for statistical charts .....	147
Getting circuit statistics .....	148
Displaying port performance counters .....	149
<b>Chapter 6</b>	
<b>Accounting System .....</b>	<b>153</b>
Defining subscribers and their customers .....	153
Adding a subscriber and customers .....	154
Modifying a customer name .....	156
Deleting a customer from a subscriber .....	156
Modifying a subscriber name .....	157
Deleting a subscriber .....	157
<b>Appendix A</b>	
<b>DWDM 15nn.nn wavelengths .....</b>	<b>159</b>
<b>Appendix B</b>	
<b>Card position reference .....</b>	<b>161</b>
Slot designations .....	162
Quarter-high cards .....	163
Half-high cards .....	164
<b>Glossary .....</b>	<b>165</b>
<b>Index .....</b>	<b>173</b>





This reference guide describes the Astral Point™ ONset Optical Network Management System for monitoring and managing a metropolitan optical network through a management workstation. This guide covers the ONset application on both Microsoft® Windows® and Sun® Solaris™ platforms.

## Who should use this manual

This guide is intended for optical network administrators who use the ONset application to set up and manage an Astral Point domain.

If you are using this application for the first time, be sure to read *Getting Started with the ONset Optical Network Management System*, which describes the basic features of the ONset user interface.

## How this manual is organized

This manual consists of the following sections:

Chapter 1	Provides an overview of the ONset application, and describes the basic operations used in managing an optical network.
Chapter 2	Describes the Topology Management functions used to define the components of the optical network.
Chapter 3	Describes the Provisioning Services functions used to define service types and circuits.
Chapter 4	Describes the Fault Management functions used to monitor the network for events and alarms.
Chapter 5	Describes the Network Monitoring functions used to get statistics for node, link, and circuit activity.
Chapter 6	Describes the Accounting functions used to define service subscribers and their customers.

Appendix A	Lists the 15nn.nn wavelengths available for DWDM channels.
Appendix B	Describes the conventions used to identify cards within chassis slots.
Glossary	Lists and defines terms that you might encounter in this manual or while managing an optical network.

## Related manuals

In addition to this manual, you might find it helpful to refer to the following Astral Point technical publications:

Part No.	Title
101078	<i>Introducing the Astral Point Optical Services Architecture</i>
102873	<i>Getting Started with the ONset Optical Network Management System</i>
101080	<i>Installing and Maintaining the ON 5000 Optical Services Node</i>
101081	<i>Installing and Maintaining the OA 1000 Optical Access Shelf</i>
101082	<i>Command Line Interface User's Guide</i>

## Format conventions

This guide uses the following format conventions:

<b>bold typeface</b>	Used for filenames, text that you type verbatim, and for names of menus, commands, options, buttons and tabs.
<i>italic typeface</i>	Used for new terms, document titles, and variables for which you supply a value.
<code>this type</code>	Used to show system messages or prompts in a command line interface, the contents of a text file, or program code.
SMALL CAPS	Used for key labels (for example, Esc).
◆	Marks the beginning of a procedure or series of steps.
☆☆☆	Marks the end of the preface, chapters, appendices, and glossary.

In addition, this document can include the following types of notices:



**Important:** This type of notice provides information that can help you complete a task or operation successfully.

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**Caution:** This type of notice indicates the risk of damage to data or equipment.

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**Warning:** This type of notice alerts you to a hazardous situation, which could result in personal harm or injury.

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**Danger:** This type of notice identifies a potentially life-threatening situation.

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# Chapter 1

## Introduction to the ONset ONMS software

This chapter provides an overview of the Astral Point™ ONset Optical Network Management System (ONMS) for Microsoft® Windows® and Sun® Solaris™ environments.

Before using this guide, be sure the ONset software is installed on your workstation (refer to the product Release Notes). You should also read *Getting Started with the ONset Optical Network Management System*, which introduces the software and describes its user interface.

**Note:** Although the ONset software runs on Windows and Sun Solaris platforms, it presents a common user interface. This guide points out any differences that pertain to a specific platform, but otherwise refers to functions and interface elements in a common, generic way. In most cases, screen illustrations show the Windows platform, so Sun Solaris users might see differences in window controls or other characteristics. The ONset functions, however, are not affected by these differences.

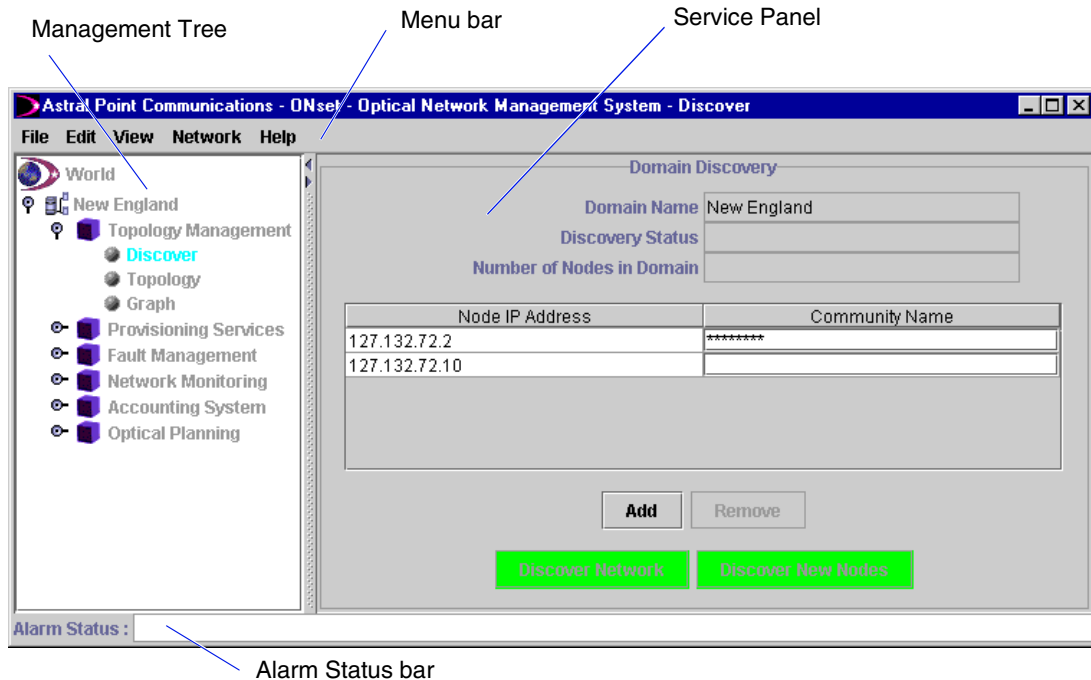
For details on the user interface, refer to *Getting Started with the ONset Optical Network Management System*.

### Purpose

With the ONset software, you can monitor and manage a domain of Astral Point optical nodes from a single management workstation through a point-and-click graphical user interface. You can view the entire domain from the node level down to individual ports and circuits. Integrated management and monitoring functions enable you to easily provision new services, check the status of any node or circuit, and gather statistics about network traffic and performance.

## Layout of main window

The following illustration shows the basic elements that make up the *ONset* window.



The Management Tree provides an expandable list of management functions. In general, you select a function from the Management Tree to obtain relevant information, which then appears in the Service Panel to the right. You can use pop-up menus to work with specific items shown in the Service Panel.

The Alarm Status bar displays a message when a problem has been detected within the network.

For certain functions, information is displayed in a separate window with its own controls. For example, if you request statistics for a link listed in the Service Panel, the chart of statistical data appears in a new window, allowing you to manipulate that display independently.

You can use options on the **View** menu to show or hide individual parts of the main window.

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## Management functions

The *ONset* management functions are accessible either through the Management Tree on the left side of the main window, or through pop-up menus for individual items in the Service Panel.

The following sections summarize the functions presented through the Management Tree.

### Topology Management

Topology Management provides the following tools to help you define the components that make up the optical network domain. For detailed information, refer to Chapter 2.



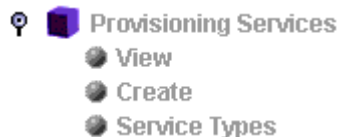
**Discover** — Gather information about a domain and its components so that they can be managed through *ONset*.

**Topology** — View the entire domain as a hierarchical tree including nodes, slots, cards, and ports, and perform management functions at each level.

**Graph** — View a graphical depiction of the domain nodes and links, showing node and link status with color coding, and link wavelength or fault region values.

## Provisioning Services

Use this group of functions to define and create circuits between ports. For detailed information, refer to Chapter 3.



**View** — View circuit information, including status and path details, service type, and subscriber and customer information. Perform circuit management functions (load, activate, cross-connect, and so on).

**Create** — Provision new circuits by specifying the source and destination ports, service type, interface and endpath properties, and subscriber and customer information.

**Service Types** — View available service types, or define new service types for circuits within the domain.

## Fault Management

The Fault Management functions help you monitor significant events and problem conditions within the domain. For detailed information, refer to Chapter 4.



**Event View** — Get a list of events that have occurred within the entire domain.

**Alarm View** — Get information about alarm conditions within the domain, and acknowledge or clear an alarm.



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## Network Monitoring

Use this set of functions to monitor activity within the domain. You can get real-time or archived statistical data. For detailed information, refer to Chapter 5.



**Node Statistics** — Get information about primary and protected path circuits for a node. Display charts showing bandwidth usage, and cell rates, error rates, and alarms for all ports on a node. Control how much statistical data is stored on a node, and how long that data is retained.

**Link Statistics** — Get information about the links within the domain, their circuits, and bandwidth usage. Display charts showing cell rates and error rates for the source and destination ports of a circuit.

**Circuit Statistics** — Get information about the number of active and inactive circuits on each node, including counts for preemptible, nonpreemptible, and protected circuits.

## Accounting System

Currently this category provides a single function. For information, refer to Chapter 6.



**Subscribers** — Define the subscribers (such as Local Exchange Carriers) for optical services within the domain, and the customers supported by each subscriber.

## Optical Planning

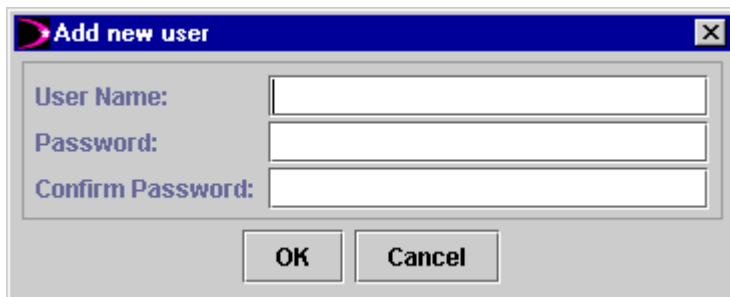
These functions, available in a later ONset software release, will help you plan for network build-out and enhancements.

## Setting up your user account and preferences

Use this procedure if you do not have an *ONset* user account.

### ◆ To define a user account

1. Log in using the default username/password created during installation.  
(If you do not know the default username and password, refer to the *ONset* Release Notes, or check with your optical network administrator.)
2. From the **File** menu, choose **Security**.  
The User Security window lists the existing *ONset* user accounts.
3. In the User Security window, click **Add**.



4. In the Add new user window, enter a username and password (at least six characters), and then retype the password to confirm it. When you are finished, click **OK**.
5. To define additional user accounts, repeat steps 3 and 4 for each.
6. When you are finished, click **Accept** in the User Security window.

If you just defined a new account for yourself, log out, and then log in under your new username and password.

Use the following procedures to tailor the interface to your preferences.

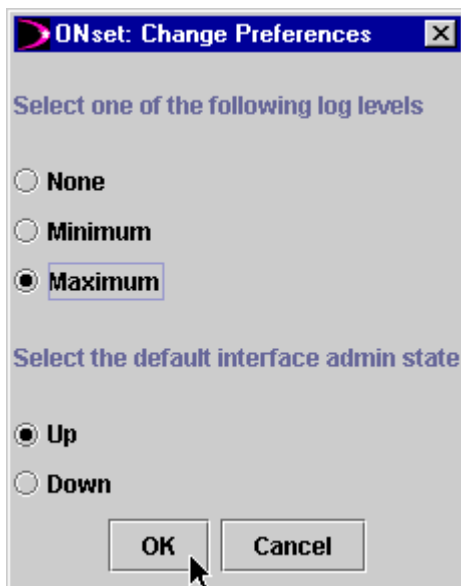
◆ **To set your user preferences**

1. Start *ONset*, and log in using your own *ONset* username and password.
2. From the **Edit** menu, choose **Preferences**.
3. In the Change Preferences windows, select the logging level you want for the *ONset* client, CORBA, and trap daemon information.

These daily log files are stored in the **onms/Logs** directory on the management workstation.

4. Choose the default administrative state for new port interfaces.

For information about managing port interfaces, see Chapter 2.



Maximum level log entries are useful when debugging software problems.

You can find the daily log files in the **onms/Logs** directory on the management workstation.

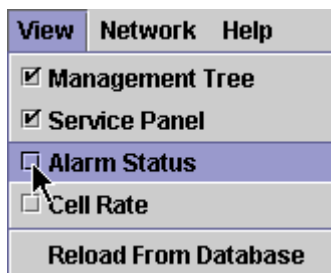
Select the default administrative state for newly managed port interfaces.

5. When you are finished, click OK.

Next, you can set your viewing preferences.

**◆ To set your viewing preferences**

1. Display the **View** menu, and be sure the **Management Tree**, **Service Panel**, and **Alarm Status** options are checked. (If any of these items is not checked, select it.)



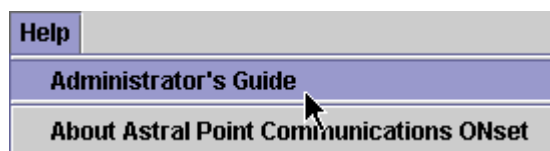
To dismiss the **View** menu without changing the selections, click anywhere outside the menu.

2. If you want port and link statistics to be shown in cells per second, check the **Cell Rate** option. Otherwise these statistics are given in megabits per second.

These settings remain in effect until you change them, which you can do at any time.

## On-line help

This *ONset Network Administrator's Guide* is available on-line through the **Help** menu. The on-line reference is provided in Adobe® Acrobat® PDF format. To view this reference, you need the free Acrobat Reader software for your platform.



This option on the **Help** menu opens the on-line *ONset Network Administrator's Guide*.

The on-line document includes the latest available product information, and always supersedes the printed manual you received from Astral Point. If you want, you can print all or parts of the on-line reference.

Now you can begin using *ONset* to monitor and manage an optical network domain. The following sections explain the basic steps you take to define a domain and its components, and to monitor and manage the domain. The chapters that follow take you step-by-step through each management task.

## Setting up a domain

This section presents the basic steps to follow in order to set up a domain through *ONset*.

1. Define the domain:
  - a. Assign a domain name.
  - b. Run discovery to gather information about the nodes in the domain.
2. Complete the node definitions:
  - a. Use the Topology function to examine the chassis of each node.
  - b. Make any necessary adjustments to settings on the internal chassis.
  - c. Examine the cards installed in the chassis.
  - d. Check the details for each card to ensure that all settings are appropriate for your network.
3. Manage the ports:
  - a. Manage the interface for each primary port, assigning an alias to the interface, and making any adjustments to the property values.
  - b. Define any bundles or cross-connects.
4. Load the configuration information to each node.
5. Verify the discovered link information.
  - a. Define any additional nondiverse network links.
  - b. Define any additional management virtual links.
6. Provision circuits:
  - a. Define subscribers and customers.
  - b. Define any new service types to be used.
  - c. Define circuits and parameters.
  - d. Set the primary and protected paths for each circuit.
  - e. Activate and load the circuits.

## Monitoring and managing a domain

This section presents the basic steps to follow in order to monitor and manage a domain through *ONset*.

1. Use Fault Management functions to monitor events and alarms within the domain.

The Alarm Status bar displays newly received alarm messages. The Topology tree uses color coding to call attention to nodes and their components that currently have an alarm condition.

2. Use the Network Monitoring functions to measure and evaluate network performance.
3. As needed, use the Topology tree to update or adjust information about network components.
4. As needed, use the Provisioning Services functions to update information about circuits.

## Other options for managing the optical network

*ONset* offers a comprehensive and user-friendly method for managing an optical network. In certain cases, however, you might find it helpful to use other means to perform management functions.

The following alternative management options are available:

- Command Line Interface (CLI)
- SNMP (Simple Network Management Protocol)

With the CLI, you can perform management functions by issuing commands through a console connection or from a LAN-connected computer. The CLI is typically used by technicians who need to monitor, upgrade, or troubleshoot optical equipment. Certain management functions are available only through the CLI (such as configuring an SNMP community or trusted host). You can enable or disable CLI Telnet access for a given node through the Node Details function described in Chapter 2.

For information about using the CLI, refer to the *Command Line Interface User's Guide*.

The SNMP interface, a standard protocol for managing network elements, provides the foundation for the high-level management functions presented through the *ONset* interface. You can use SNMP directly by issuing **Get** and **Set** commands.

## Updating the node software

When necessary, you can easily update the software on a given node through the *ONset* management workstation. For instructions, refer to the node-level operations described in Chapter 2.







---

## Chapter 2

# Topology Management

With the ONset Topology Management functions, you can:

**Discover** — Gather information about a domain from the node level down to individual ports and circuits.

**Topology** — View and manage the domain from a hierarchical tree including nodes, slots, cards, and ports.

**Graph** — View and manage the domain from a graphical depiction of the network, showing node and link status with color coding, and link wavelength or fault region values.



## Discovering the domain

ONset enables you to monitor and manage an entire domain of optical nodes, from the node level down to individual ports and circuits when the ONset software is first installed, no domain exists. After the physical domain is installed, ONset can automatically discover the nodes, ports, and circuits of the domain.

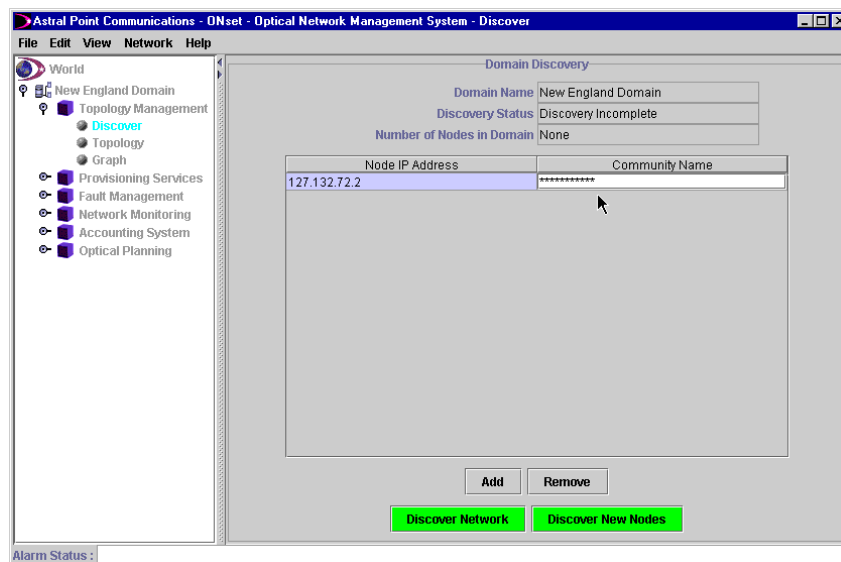
**Note:** For this release, only one domain is available. Multi-domain support will be available in future releases.

The Discovery process performs the following functions:

- Identifies nodes on the network and determines their link information
- Retrieves chassis information for each node
- Retrieves detailed configuration information for each node

### ◆ To discover a domain

1. In the Management Tree, expand Topology Management and click **Discover**.



The Domain Discovery form includes these fields and options:

**Domain Name** — Shows the name of the domain.

**Discovery Status** — Shows the current status of the Discovery process.

**Number of Nodes in domain** — Shows the number of nodes detected in the domain.

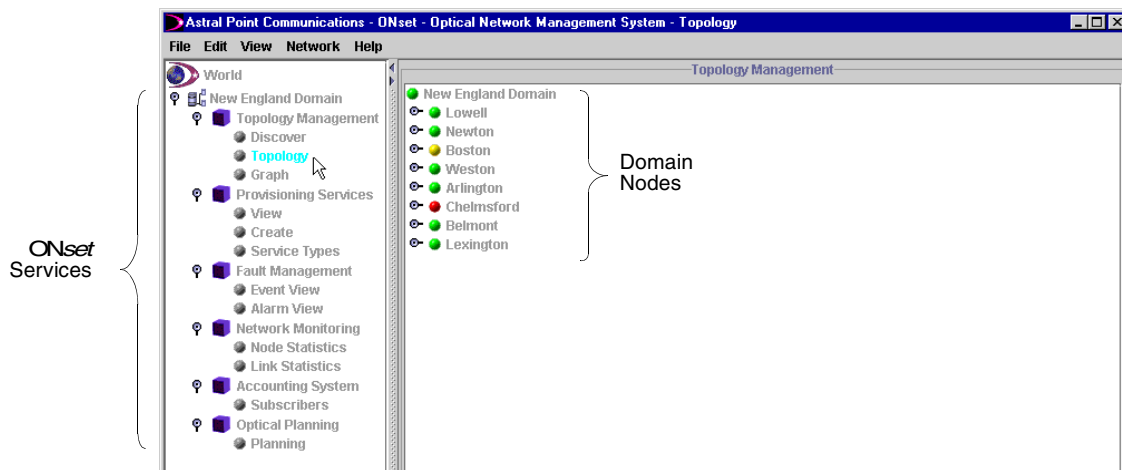
**Node IP Address** — Shows the IP address of the node.

**Community Name** — The community name for the selected node, which is a designation used to authenticate member nodes within an SNMP group. For security reasons, the actual entry is not displayed.

2. Click **Add**. An empty line appears for the node IP address.
3. Enter the IP address of one of the nodes in the domain.
4. In the Community Name field, type the community name.
5. Click **Discover Network**.

**Note:** If you add new nodes to the network, click **Discover New Nodes**.

After discovery, the Service Panel shows the nodes within the domain.



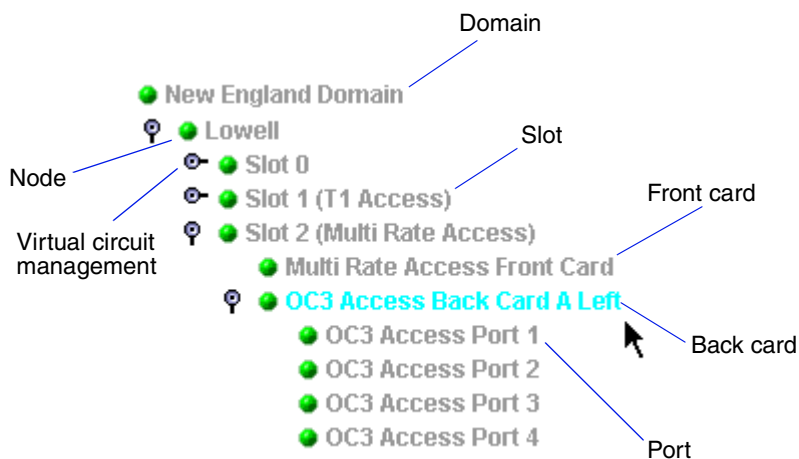
## Using the Topology view

The Topology options enable you to manage the network from the domain level all the way down to the port level.

### ◆ To display domain topology

In the Management Tree, expand **Topology Management** and click **Topology**.

The topology view appears in the Service Panel.



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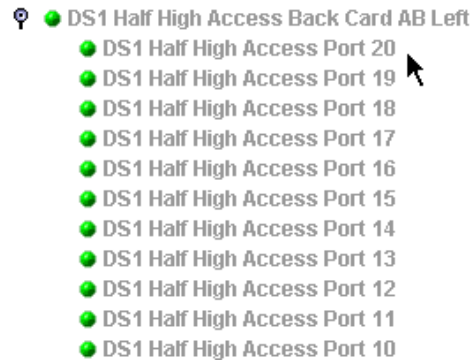
**◆ To view ports in descending order**

1. Open the `/onms/data/onms.conf` file in Notepad or vi.
2. Change the `PORT_ORDER_BY` line from the default of ascending (ASC) to:

**PORT\_ORDER\_BY=DESC**

3. Save the `onms.conf` file, and log back into *ONset*.

The ports appear as follows:



## Managing the domain

To access the domain-level options, point to the domain, and display its pop-up menu.



Status is indicated by the following colors:

**Green** — The node, card, port, or link is operational.

**Yellow** — The node, card, port, or link is operational, but a minor or warning level alarm condition exists.

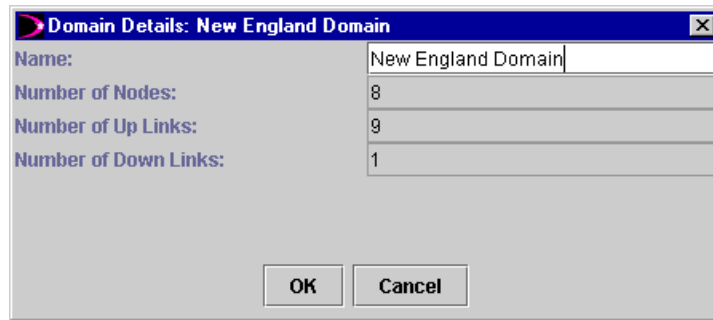
**Red** — The node, card, port, or link is under a critical or major alarm condition.

**Blue** — The node, card, port, or link has not yet been contacted by *ONset*.

## Viewing domain details

### ◆ To view domain details

Point to the domain, display its pop-up menu, and choose **Details**.



The Domain Details window includes these fields and options:

**Name** — Type or modify the domain name.

**Number of Nodes** — Shows the number of nodes detected in the domain.

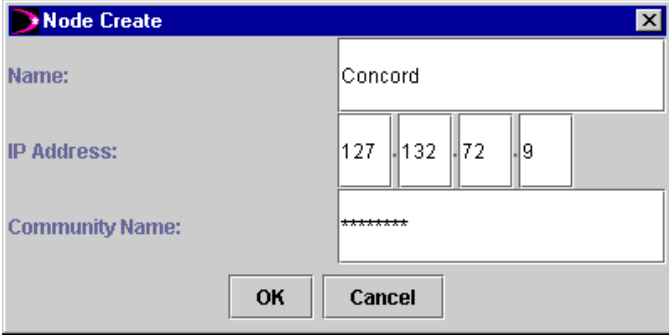
**Number of Up Links** — Shows the number of links in the domain that are functioning properly.

**Number of Down Links** — Shows the number of links in the domain that are not functioning properly.

## Creating a node

### ◆ To create a new node

1. Point to the domain, display its pop-up menu, and choose **Create Node**.

A screenshot of a 'Node Create' dialog box. The dialog has a title bar with a red 'X' icon and the text 'Node Create'. It contains three input fields: 'Name:' with the text 'Concord', 'IP Address:' with the text '127 . 132 . 72 . 9', and 'Community Name:' with the text '\*\*\*\*\*'. At the bottom are 'OK' and 'Cancel' buttons.

**Name:** Concord

**IP Address:** 127 . 132 . 72 . 9

**Community Name:** \*\*\*\*\*

OK Cancel

2. Type the following information:

**Name** — Type the name of the node.

**IP Address** — Type the IP address of the node.

**Community Name** — Type the SNMP community name of the node.

3. Click **OK**.

Once a new node is created, it appears in the Topology Management window with a blue marker to the left of its title. The blue marker indicates that the node has been added but has not been discovered by *ONset*.

## Deleting a domain

### ◆ To delete a domain

1. Point to the domain, display its pop-up menu, and click **Delete**.



**Caution:** Clicking **Yes** deletes the domain and all related data, including all node, card, port, and circuit information.

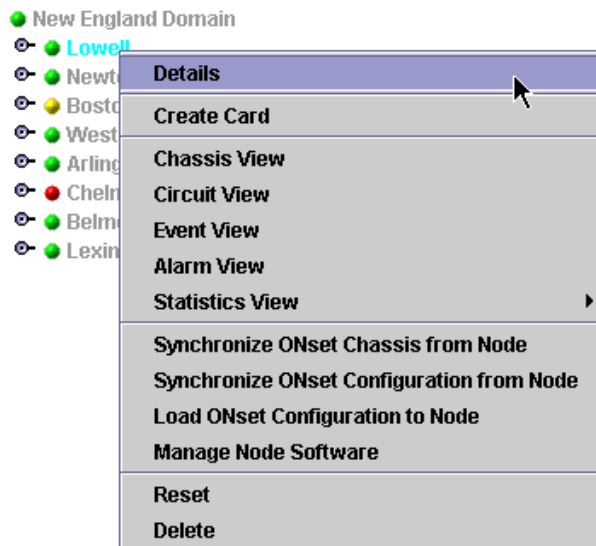
---

2. Click **Yes** to delete the domain.



## Managing nodes

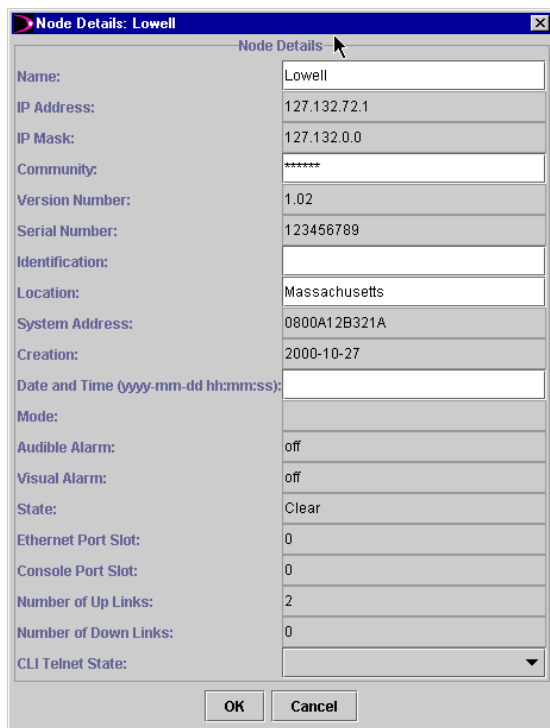
To access node options, point to a node, and display its pop-up menu.



## Displaying node details

### ◆ To display node details

Point to the node, display its pop-up menu, and choose **Details**.



The image shows a dialog box titled "Node Details: Lowell". It contains a list of fields for node information, each with a label on the left and a text input field on the right. The fields are: Name (Lowell), IP Address (127.132.72.1), IP Mask (127.132.0.0), Community (\*\*\*\*\*), Version Number (1.02), Serial Number (123456789), Identification (empty), Location (Massachusetts), System Address (0800A12B321A), Creation (2000-10-27), Date and Time (empty), Mode (empty), Audible Alarm (off), Visual Alarm (off), State (Clear), Ethernet Port Slot (0), Console Port Slot (0), Number of Up Links (2), Number of Down Links (0), and CLI Telnet State (empty). At the bottom are "OK" and "Cancel" buttons.

Field	Value
Name:	Lowell
IP Address:	127.132.72.1
IP Mask:	127.132.0.0
Community:	*****
Version Number:	1.02
Serial Number:	123456789
Identification:	
Location:	Massachusetts
System Address:	0800A12B321A
Creation:	2000-10-27
Date and Time (yyy-mm-dd hh:mm:ss):	
Mode:	
Audible Alarm:	off
Visual Alarm:	off
State:	Clear
Ethernet Port Slot:	0
Console Port Slot:	0
Number of Up Links:	2
Number of Down Links:	0
CLI Telnet State:	

The Node Details window includes the following fields:

**Name** — Shows the node name assigned in the Create Node window. You can modify the name.

**IP Address** — Shows the IP address of the node.

**IP Mask** — Shows the IP mask in use.

**Community** — The SNMP Community Name (not displayed).

**Version Number** — Shows the version of the node in use.

**Serial Number** — Shows the serial number of the node.

**Identification** — Shows the administrator-assigned identification for the managed node, but you can modify it. This field is used when performing loopback tests between nodes.

**Location** — Shows the physical location of the managed node, but you can modify it.

**System Address** — Shows the ethernet (MAC) address of the system.

**Creation** — Shows the date and time the node was created.

**Date and Time** — Edit the current date and time in local time.

**Mode** — Shows the present node mode.

**Audible Alarm** — Shows the current state of any audible alarm.

**Visual Alarm** — Shows the current state of any visual alarm.

**State** — Shows the state of the node based on all present alarms.

**Ethernet Port Slot** — Shows the slot number of the ethernet port being used.

**Console Port Slot** — Shows the slot number of the console port being used.

**Number of Up Links** — Shows the number of operating links for the node.

**Number of Down Links** — Shows the number of non-operating links for the node.

**CLI Telnet State** — Choose enable or disable to control the use of the Command Line Interface.

## **Synchronizing ONset chassis from the node**

This function retrieves all the chassis information and all its configuration information.

### **◆ To synchronize the chassis**

1. Point to the node, display its pop-up menu, and choose **Synchronize ONset Chassis from Node**.
2. Click **Yes** to confirm.

## Synchronizing the ONset configuration from the node

This retrieves only the configuration information for a node.

### ◆ To synchronize the configuration

1. Point to the node, display its pop-up menu, and choose **Synchronize ONset Configuration from Node**.
2. Click **Yes** to confirm.

## Loading the ONset configuration to the node

Load Configuration takes the configuration for a node from the ONset database and loads it onto the node. This overwrites the configuration presently on that node.

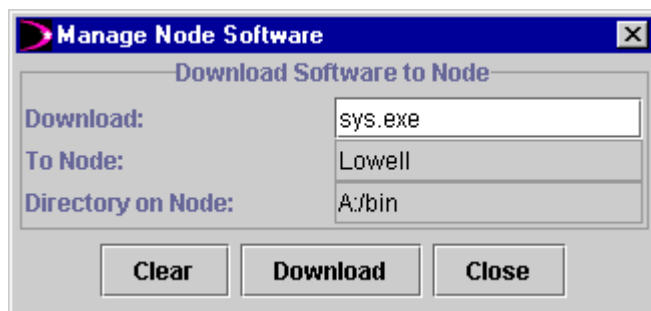
### ◆ To load a configuration to a node

1. Point to the node, display its pop-up menu, and choose **Load ONset Configuration to Node**.
2. Click **Yes** to confirm.

## Managing the node software

The Manage Node Software function downloads image and diagnostic files to the node disks.

1. Point to the node, display its pop-up menu, and choose **Manage Node Software**.



2. In the Download field, type the path (if any, relative to your **ftpboot** directory) and filename of the image or diagnostic file you are downloading.

3. Click **Download**.
4. Repeat the download for each image or diagnostic file.
5. Make sure that the Front Card Details window for each of your front cards matches the **Image to Use** (for example, **A:/bin/sys.exe**) and **Diagnostics to Use** (for example, **A:/bin/sys\_diag.exe**) that you downloaded.
6. Reset the node.

### Resetting a node

This function reboots the node.

#### ◆ To reset a node

1. Point to the node, display its pop-up menu, and choose **Reset**.
2. Click **Yes** to confirm.

### Deleting the node

This function deletes the node from the *ONset* database.

#### ◆ To delete a node

1. Point to the node, display its pop-up menu, and choose **Delete**.
2. Click **Yes** to confirm.

## Managing cards

This section describes how to

- Create a card
- Use the Chassis View
- Manage the Chassis Front
- Manage the Chassis Back
- Manage Disks
- Manage the Chassis Internal

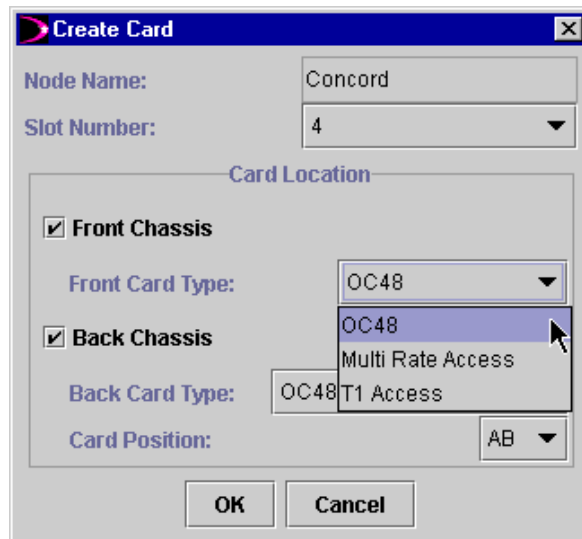
## Creating a card

This section describes how to create new card. Cards include:

- Interface cards (OC48, Multi Rate Access, or T1 Access)
- Transponder cards (OC48 or OC3 to OC48)
- System Control cards
- Fabric Cards (10G or 20G)
- EDFA-1R Amplifier

### ◆ To create a new card

1. Point to the node, display its pop-up menu, and choose **Create Card**.



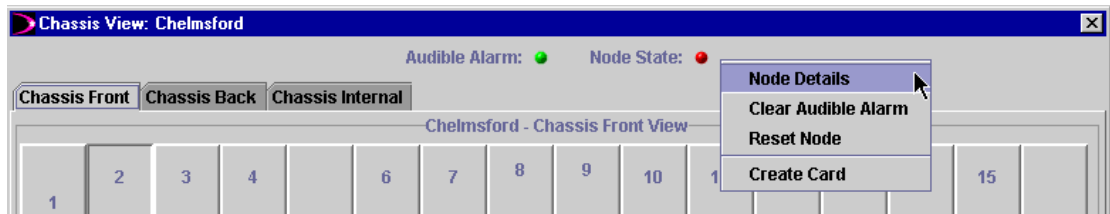
2. In the Slot Number list, choose the slot in which the card is located.
3. In the Card Location box, select **Front Chassis** and choose a front card type.
4. Select **Back Chassis** and choose a back card type.
5. In the Card Position list, choose the card position.
6. Click **OK**.

**Note:** For information about specifying a card position in the slot, refer to Appendix B.

## Using the Chassis View

The Chassis View has three tabs:

- Chassis Front
- Chassis Back
- Chassis Internal



The top of the Chassis View displays the following options:

**Audible Alarm** — Indicates the status of the audible alarm.

**Node State** — Indicates the status of the node.

In this top area, you can use the pop-up menu to view the node details, clear audible alarms, reset (reboot) the node, and create a card.

### ◆ To clear audible alarms

1. In the Chassis View, point to the Audible Alarm indicator, display its pop-up menu, and choose **Clear Audible Alarms**.
2. Click **Yes** to confirm.

### ◆ To reset the node

1. In the Chassis View, point to the Node State indicator, display its pop-up menu, and choose **Reset the Node**.
2. Click **Yes** to confirm.

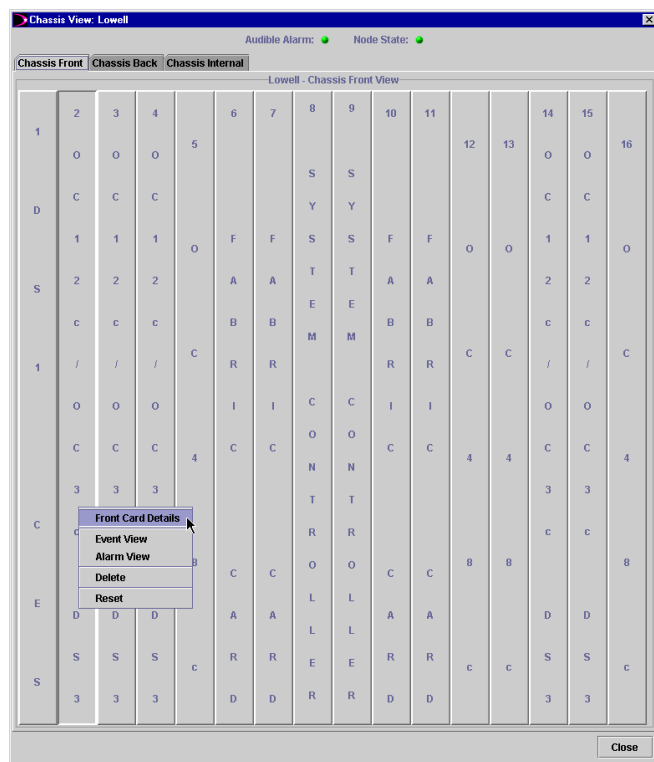
## Managing the chassis front

The Chassis Front is used to manage the cards installed on the front side of the chassis. Options include:

- Viewing front card details
- Tracking events and alarms
- Deleting a front card
- Assigning primary status to a front card
- Resetting a front card operations

### ◆ To display properties of the chassis front

From the Chassis View window, click the **Chassis Front** tab.



When viewing the chassis, you can get information about any item by pointing to it. After a brief pause, a tool tip appears with a description of that item.



## Viewing front card details

### ◆ To view front card details

Point to the card, display its pop-up menu, and choose **Front Card Details**.

Front Card Details	
Slot Number:	5
Card Type:	OC48
Administering Type:	OC48
Alarm State:	Clear
Backed Up Slot:	1
Backed Up By Slot:	0
Hardware Serial Number:	5414323
Hardware Version:	1.0
Software Version:	1.1
Image To Use:	c:\image
Diagnostics To Use:	c:\diag
Dump Mode:	Limited
Action:	No Action
Revert:	Automatic
Revert Time:	300
Clock Tree:	Tree A
Bus A Status:	Ok
Bus B Status:	Ok
Memory(MB):	0
Status:	active

OK Cancel

The Front Card Details window includes the following fields:

**Slot Number** — Shows the slot number where the card resides.

**Card Type** — Shows the card type.

**Administering Type** — Allows you to choose the type of card that the slot will accept. This can be set only when the type is previously unknown.

**Alarm State** — Shows the current alarm state of the card.

**Backed Up Slot** — Shows the number of the slot containing the card that has a backup, as listed in the Backed Up By Slot field.

**Backed Up By Slot** — Shows the number of the slot that contains a card of the same type, which serves as a backup.

**Hardware Serial Number** — Shows the serial number of the card.

**Hardware Version** — Shows the hardware version of the card.

**Software Version** — Shows the version of the ONset software operating the system.

**Image To Use** — Shows the filename and path for the location of the runtime image file for this card.

**Diagnostics To Use** — Type the directory path for the software diagnostics.

**Dump Mode** — Choose the mode and type of dump a card performs when a dump inducing error occurs.

None — Nothing is dumped.

Limited — Preset by ONset.

All — Everything in card memory is dumped.

**Action** — Set the status of the card, as follows:

No Action.

Reset — Resets the card to its original status.

Make Primary — Makes the backup card function as the primary card.

**Revert** — Determine how the card reverts to being secondary after being set to Primary. Choices include:

Automatic — Reverts after the time specified in Revert Time.

Manual — Must be reset using the Action field, or by choosing **Reset** from the card's pop-up menu.

**Revert Time** — Choose the Automatic Revert time in milliseconds.

**Clock Tree** — Shows the Clock Tree designated for use.

**Bus A Status/Bus B Status** — Shows the status of the message bus.

**Memory** — Shows the amount of memory (MB) on this card.

**Status** — Shows the card status based on all alarms. ("In post" indicates that the Power On Self Test is in process.)

**Note:** If a card fails, you can check alarms to determine the source of the failure.

### ***Viewing front card events***

#### **◆ To view front card events**

1. Point to the front card, display its pop-up menu, and choose **Event View**.
2. Point to the event, display its pop-up menu, and choose **View Event**.

**Note:** Refer to Chapter 4 for more information about Event and Alarm Views and details.

### ***Viewing front card alarms***

#### **◆ To view front card alarms**

1. Point to the front card, display its pop-up menu, and choose **Alarm View**.
2. Point to the alarm, display its pop-up menu, and choose **View Alarm Details**.

#### **◆ To acknowledge an alarm**

Point to the alarm, display its pop-up menu, and choose **Acknowledge Alarm**.

#### **◆ To print an alarm**

Point to the alarm, display its pop-up menu, and choose **Print Alarm**.

### ***Resetting a front card***

#### **◆ To reset a front card**

1. Point to the front card, display its pop-up menu, and choose **Reset**.
2. Click **Yes** to confirm.

### ***Deleting a front card***

This function deletes the front card from the ONset database.

#### **◆ To delete a front card**

1. Point to the front card, display its pop-up menu, and choose **Delete**.
2. Click **Yes** to confirm.

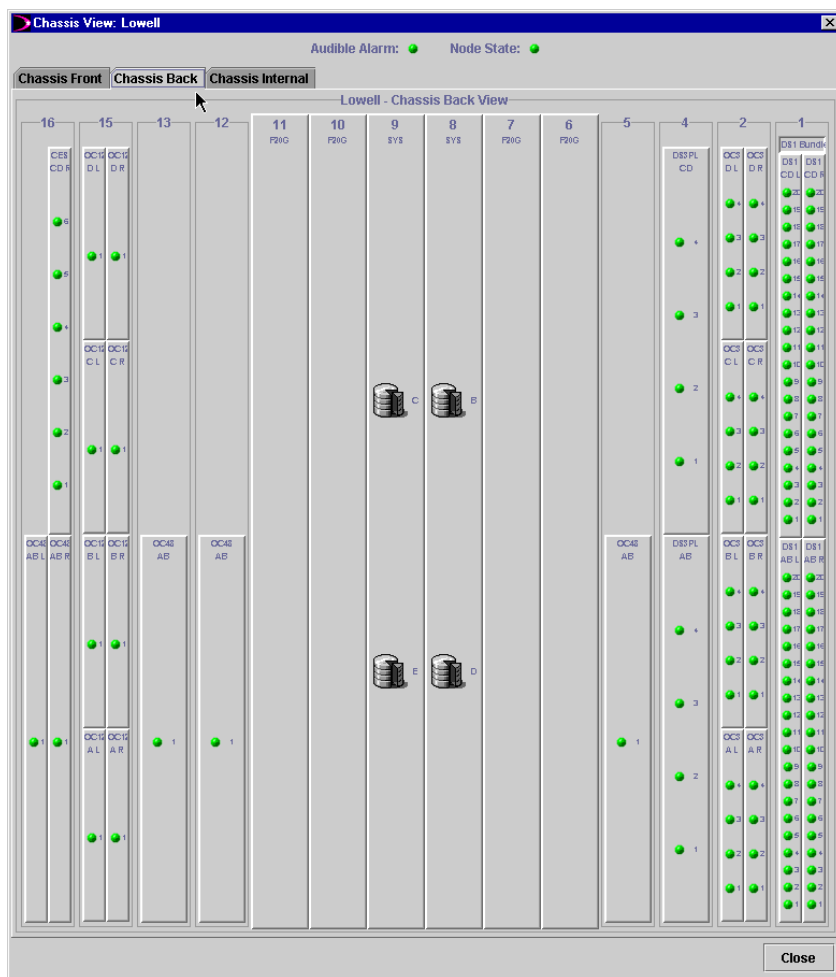
## Managing the chassis back

The Chassis Back tab shows the following information:

- The cards installed in the chassis
- The ports (color-coded to show status)
- The disks on the system resource cards

### ◆ To display properties of the chassis back

From the Chassis View window, click the **Chassis Back** tab.



The Chassis Back view provides the following options:

**Back Card Details** — Shows the type of card, position, and status.

**Circuit View** — Shows circuit data for the selected card or port.

**Event View** — Shows event data for the selected card or port.

**Alarm View** — Shows alarm data for the selected card or port.

**Delete** — Removes a card from the Chassis View.

**Note:** For information about specifying a card position in the slot, refer to Appendix B.

### ***Viewing back card details***

#### **◆ To view back card details**

Point to the card, display its pop-up menu, and choose **Details**.

The screenshot shows a dialog box titled "Back Card Details: OC12 Access Back Card D Right, Lowell". The dialog has a tab labeled "Back Card Details". It contains the following fields and values:

Slot Number:	15
Card Position:	D Right
Card Type:	OC12 Access
Administering Type:	OC12 Access
Status:	
Alarm State:	Clear
Hardware Serial Number:	5414323
Hardware Version:	1.0

At the bottom of the dialog are "OK" and "Cancel" buttons.

The Back Card Details window includes the following fields:

**Slot Number** — Shows the slot number where the card resides.

**Card Position** — Shows the card position within the slot.

**Card Type** — Shows the card type.

**Administering Type** — Choose the type of card that the slot will accept. Items that appear on this list depend on the slot you are configuring. This can be set only when the type is previously unknown.

**Status** — Shows the current status of the card.

**Alarm State** — Shows the current alarm state of the card.

**Hardware Serial** — Shows the serial number of the card.

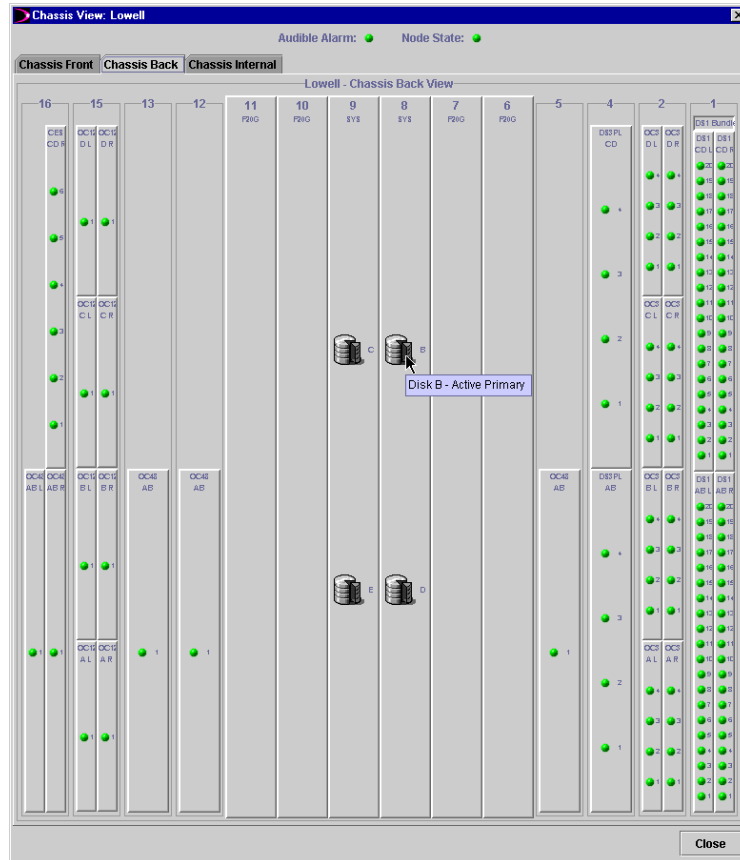
**Hardware Version** — Shows the firmware version in use by the card.

◆ **To delete a back card**

1. Point to the back card, display its pop-up menu, and choose **Delete**.
2. Click **Yes** to confirm.

## Managing disks

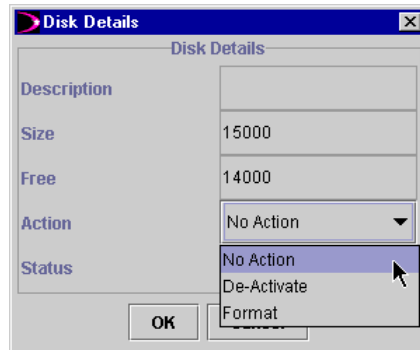
Each System Resource card has two disks, which appear graphically on the Chassis Back. When you pause the cursor over a disk, its system name and status are displayed. For example: Disk B-Active Primary, Disk C-Active Primary, Disk D-Not Active, or Disk E-Not Active.



## ***Viewing disk details***

### ◆ **To view disk details**

1. Point to the disk, display its pop-up menu, and choose **Disk Details**.



The Disk Details window includes these fields and options:

**Description** — Shows the description of the disk.

**Size** — Shows the disk size in bytes.

**Free** — Shows the available space on the disk in bytes.

**Action** — Choose one of the following actions:

No Action — Default.

De-Activate — Takes the disk off-line. The second disk becomes the primary disk

Format — Reformats the disk if it is off-line.

**Status** — Shows the current status of the disk, which can be:

- Not Present
- Not Active
- Active Primary
- Active Secondary

2. Click **OK** to save any changes.



## Managing the chassis internal

### ◆ To display properties of the chassis internal and set bit and port timing

1. From the Chassis View window, click the **Chassis Internal** tab.

**Chassis View: Lowell**

Audible Alarm: ● Node State: ●

**Chassis Front** **Chassis Back** **Chassis Internal**

Lowell - Chassis Internal Details

Bus		Clock	
Bus A Status:	Ok	Clock A Status:	Active
Bus B Status:	Ok	Clock B Status:	Active

Fan		Power	
Serial Number:	AB659GF32	Power Source 1 Status:	Ok
Version:	1.0	Power Source 2 Status:	Ok
Status:	Ok		

**BITS Timing**

Primary Input: External Bits A

Secondary Input: External Bits B

Line A Input: 1 AB Left 1 S:BC:P

Line B Input: 15 A Left 1 S:BC:P

Current Source Card: 8

Current Source: External Bits A

**Port Timing**

Slot 8 Port 1			Slot 9 Port 1		
Line Type:	ESF		Line Type:	D4	
Line Coding:	B8Z8		Line Coding:	AMI	
Line Length:	133		Line Length:	266	

Slot 8 Port 2			Slot 9 Port 2		
Line Type:	ESF		Line Type:	D4	
Line Coding:	B8Z8		Line Coding:	AMI	
Line Length:	266		Line Length:	266	

**System Resource**

Slot 8		Slot 9	
External A Status:	Los Defect	External A Status:	Los Defect
External B Status:	Off Frequency	External B Status:	Off Frequency
Line A Status:	Loss Defect	Line A Status:	Loss Defect
Line B Status:	Off Frequency	Line B Status:	Off Frequency

**Apply** **Close**

The Chassis Internal view includes these fields and options:

**Bus A Status / Bus B Status** — Shows the status of the message bus.

**Fan Serial Number** — Shows the serial number of the fan.

**Fan Version** — Shows the version of the fan.

**Fan Status** — Shows the operational status of the fan: either Broken or Ok.

**Clock A Status / Clock B Status** — Shows the status of the clock oscillator on the System Resource card.

**Power Source 1 Status / Power Source 2 Status** — Shows the status of the power sources in the chassis power distribution unit.

BITS Timing fields:

**Primary Input / Secondary Input** — Choose a source for BITS (Building Integrated Timing Supply) timing, as follows:

External Bits A — BITS Clock Port A on the System Resource card.

External Bits B — BITS Clock Port B on the System Resource card.

Line A — The port specified in Line A Input.

Line B — The port specified in Line B Input.

**Line A Input / Line B Input** — Specifies the port to be used as the Line A or Line B BITS timing source. The port is designated by slot, card position, and port number.

**Current Source Card** — Shows which System Resource card (slot) is acting as the BITS timing source.

**Current Source** — Shows the source of BITS timing on the current card (External Port A, External Port B, Line A, Line B, or Internal).

Port Timing fields (for System Resource cards in Slots 8 and 9):

**Line Type** — For each port, choose the framing format:

ESF — Extended Super Frame

D4 — D4 framing

**Line Coding** — For each port, choose the signal coding:

B8ZS — (Bipolar 8 Zero Substitution) Substitutes two intentional bipolar pulse code violations for each sequence of eight consecutive zero bits. ANSI Clear Channels may use apcDsx1ZBTSI, or Zero Byte Time Slot Interchange. E1 links, with or without CRC, use apcDsx1HDB3 or apcDsx1AMI.

AMI — (Alternate Mark Inversion) A line coding format that represents ones by alternating positive and negative pulses.

**Line Length** — For each port, choose the length of the line expressed in ranges of meters or dB loss. This object provides information for the line build out circuitry, if it exists, to make adjustments.

System Resource fields (for System Resource cards in Slots 8 and 9):

**External A Status / External B Status** — For each SR card, shows the status of external ports A and B. This includes whether the card is currently under alarm or some other condition.

**Line A Status / Line B Status** — For each SR card, shows the status of the internal loop timing sources.

2. To save any changes, click **Apply**.
3. To dismiss the window, click **Close**.

## Managing ports

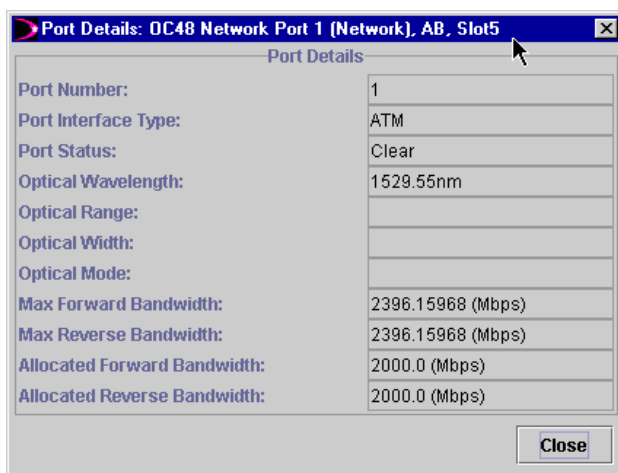
This section describes how to:

- View port details
- Manage port interfaces
- Manage endpoints
- Manage IP interfaces
- Run the BERT test on a DS1 or DS3 port
- View cross connects

## Viewing port details

### ◆ To view port details

Point to the port, display its pop-up menu, and choose **Details**.



The Port Details window includes the following fields:

**Port Number** — Shows the port number of the interface card.

**Port Interface Type** — Shows the port interface type as configured using Managing the Interface or CLI (Command Line Interface).

**Port Status** — Shows the port alarm status (Critical, Major, Minor, Warning, or Clear)

**Optical Wavelength** — Shows the port wavelength.

**Max Forward Bandwidth** — Shows the maximum allowable outgoing bandwidth for the port, when applicable for the port type.

**Max Reverse Bandwidth** — Shows the maximum allowable incoming bandwidth for the port, when applicable for the port type.

**Allocated Forward Bandwidth** — Shows the configured outgoing bandwidth for the port, when applicable for the port type.

**Allocated Reverse Bandwidth** — Shows the configured incoming bandwidth for the port, when applicable for the port type.

## Managing port interfaces

This section describes how to:

- Configure port interfaces.
- Delete port interfaces.
- Enable and disable the port state.

The front cards contain the following port interfaces:

Front Card	Interfaces
DS1 Half High	DS1 or DS1 bundle
DS3 Private Line	CES/DS3
Network	Network/SONET
OCx	Network/SONET
CES 310 Half High	DS3/CES
DS1 (CES 310)	DS1/CES
DS0 bundle (CES 310)	DS0 bundle/CES

## Configuring a port interface

### ◆ To create and configure an interface associated with a port

1. Point to the port, display its pop-up menu, and choose **Manage Interface**.
 

**Note:** If you try to manage the interface of a port that is designated as the *protection* port for a *primary* port, a dialog box appears, allowing you to manage the interface of the associated primary port instead.
2. Click **Create** to set the interface options for this port.
3. In the Interface Options box of the Manage Interface window, click **Create**.
4. Type an alias for the interface.
5. Choose the interface card type, if applicable.
6. Click the tab and configure the interface using the information in the following sections.
7. Click **OK**.

## DS3 options

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	
Line Type	CBIT Parity
Line Coding	B3ZS
Send Code	No Code
Circuit ID	
Loopback Configuration	No Loop
Transmit Clock Source Timing	Through Timing
Line Length (in Meters) (long is 69m or greater)	0
Line Status Trap	Enabled
DS1 for Remote Loop	0
LIU Circuit ID	
LIU Loopback Configuration	No Loop
LIU Line Length	0
LIU ifIndex	

The DS3 tab includes the following options:

**Admin State** — Choose the state of the interface, as follows:

Up — Full functionality of the interface is available.

Down — The interface is inactive.

Testing — The interface is in testing mode.

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

Silent — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**Line Type** — Choose the line type, as follows:

**M23** — C-bits are used for bit stuffing in combining DS1s into synchronous DS2 streams and in combining DS2s into a synchronous DS3 stream.

**CBIT Parity** — Once the M13 chip has multiplexed 28 DS1s into 7 DS2s, the DS2s are synchronous to each other, and synchronizing the DS2s into the DS3 would be redundant. This line type uses some of the C-bits for purposes other than bit stuffing of DS2s into the DS3. Specifically, it uses some C-bits for path performance monitoring and in-band data links. These additional C-bit parity channels include the FEAC channel, FEBE channel, and PMDL channel.

**Line Coding** — The B3ZS (Bipolar 3 Zero Substitution) type of zero code suppression is a technique of replacing a sequence of zeros with specific patterns of normal bits and bipolar violations.

**Send Code** — Choose the type of code sent across the DS3/E3 interface by the device (optional for E3 interfaces). Setting this variable causes the interface to begin sending the code requested. Choices include:

**No Code** — Indicates you are sending looped or normal data.

**Line** — Indicates you are sending a request for a line loopback.

**Payload** — Indicates you are sending a request for a payload loopback.

**DS1** — Indicates you are sending a request for a DS1 loopback.

**Test Pattern** — Indicates you are sending a test pattern.

**Circuit ID** — Type the transmission vendor's circuit identifier. This aids in troubleshooting.

**Loopback Configuration** — Choose a loopback method for the DS3/E3 interface, as follows:

**No Loop** — Indicates that the interface is not in the loopback state. A device that is not capable of performing a loopback on the interface shall always return this as its value.

**Payload Loop** — Indicates that the received signal at this interface is looped through the device. Typically the received signal is looped back for retransmission after it has passed through the device's framing function.

**Line Loop** — Indicates that the received signal at this interface does not go through the device (minimum penetration) but is looped back out.

**Inward Loop** — Indicates that the signal sent at this interface is looped back through the device.

**Transmit Clock Source Timing** — Through Timing indicates that the transmit clock is derived from the recovered receive clock of another DS3/DS1 interface.

**Line Length** — Choose the length of the line expressed in ranges of meters or dB loss. This object provides information for the line build-out circuitry to make adjustments, if it exists. The range is 0 to 64,000.

**Line Status Trap** — Choose whether the trap is Enabled or Disabled

**Channelization** — Choose the channelization for the DS3 or DS310 in use, as follows:

Channel DS1 Enabled — Indicates a channelization of DS1 channels.

Channel Disabled — Indicates that a channel cannot be decomposed.

**DS1 for Remote Loop** — Choose the numeric value of the DS1 channel to be looped back from the remote end of the line in a DS3 stream originating from an M13 chip. The range is 0 to 29. A value of 0 means that no DS1 will be looped. A value of 29 means all DS1/E1 channels will be looped.

**LIU Circuit ID** — Displays the Line Interface Unit (LIU) circuit id (reserved).

**LIU Loopback Configuration** — Choose No Loop, Line Loop, Payload Loop, or Inward Loop for diagnostic testing of the card.

**LIU Line Length** — Displays the LIU line length (reserved).



## ATM and Network options

For the OCx and Network cards, the SONET characteristics are configured by default, and they appear on three separate tabs:

- SONET Path
- SONET Line
- SONET Channel

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	
Subscriber Address	
Network Type	NNI
Threshold Low Hex Error	4,294,967,295
Threshold High Hex Error	50,000
Threshold Low OCD	4,294,967,295
Threshold High OCD	1,000

The Manage Interface window for ATM or Network cards include the following options:

**Admin State** — Choose the state of the interface, as follows:

Up — Full functionality of the interface is available.

Down — The interface is inactive.

Testing — The interface is in testing mode (not supported for SONET).

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

Silent — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with ONset for troubleshooting.

**Subscriber Address** — Type an octet string for the subscriber identifier.

**Network Type** — Choose the network type, as follows:

**UNI (User Network Interface)** — Designates where the node connects to user equipment or the end system.

**NNI (Network to Network Interface)** — Designates that two network nodes are connected.

**Threshold Low HEC Error** — Type the interface's low threshold before a Header Error Control (HEC) error threshold-crossing alert is sent.

**Threshold High HEC Error** — Type the interfaces's high threshold before a HEC error threshold-crossing alert is sent.

**Threshold Low OCD** — Type the interface's low threshold for Out of Cell Delineation (OCD) before a threshold-crossing alert is sent.

**Threshold High OCD** — Type the interface's high threshold for OCD before a threshold-crossing alert is sent.

### ***SONET Path options***

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	
Signal Label	19
Transmit Trace Message	
Expected Trace Message	
APS Revert Enable	Enable

The SONET Path options include:

**Admin State** — Choose the state of the interface, as follows:

**Up** — Full functionality of the interface is available.

**Down** — The interface is inactive.

**Testing** — The interface is in testing mode (not supported for SONET).

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

**Verbose (default)** — Enables the alarm for normal error reporting.

**Silent** — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**Signal Label** — Type the contents of the Path Signal Label (C2 byte) in the SONET Path overhead. The range is 0 to 255.

**Transmit Trace Message** — Type the contents of the Path Trace Identifier (J1 byte) transmitted on the SONET Path. A zero-length string disables this feature.

**Expected Trace Message** — Type the contents of the trace message you expect to receive. A zero-length string disables this feature.

**APS Revert** — Choose **Enable** or **Disable**. In revert mode, the node reverts back to the primary fiber when the primary fiber has no higher priority errors than the secondary.

### ***SONET Line options***

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	0
Channel	Network
Transmit Clock Source Timing	<input checked="" type="checkbox"/>
Medium Type	SONET

The SONET Line options include:

**Admin State** — Choose the state of the interface, as follows:

**Up** — Full functionality of the interface is available.

**Down** — The interface is inactive.

**Testing** — The interface is in testing mode (not supported for SONET).

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

Silent — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**Channel** — Choose the APS line to use as the working channel.

**Transmit Clock Source Timing**— Takes the clock signal from the network server.

**ATM Scramble** — Use the checkbox to select and deselect scrambling.

**Medium Type** — Choose the medium type.

**Circuit ID** — Type the transmission vendor's circuit identifier, which aids in troubleshooting.

**Loopback Configuration** — Choose the loopback method for the SONET/SDH interface, as follows:

No Loop — Indicates that the system is not in the loopback state. A device that is not capable of performing a loopback on this interface always returns this value.

Facility — Indicates that the received signal at this interface is looped back through the corresponding transmitter in the return direction.

Terminal — Indicates that the signal that is about to be transmitted is connected to the associated incoming receiver.

Other — Indicates that the loopback is defined elsewhere.

Near End — Specifies the near end port.

Far End — Specifies the far end port.

## SONET Channel options

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	
APS Mode	Unidirectional
APS SD Threshold	5
APS SF Threshold	3
APS Revert	<input type="checkbox"/>
APS Revert Time	300
TCA Threshold: Sec Coding Violation	16,383
TCA Threshold: Sec Error Seconds	900
TCA Threshold: Sec Severely Errored Seconds	900
TCA Threshold: Sec Severely Error Framing Seconds	900
TCA Threshold: Line Coding Violation	16,383
TCA Threshold: Line Error Seconds	900
TCA Threshold: Line Severely Error Seconds	900
TCA Threshold: Line Unavailable Seconds	900
TCA Threshold: Far End Line Coding Violation	16,383
TCA Threshold: Far End Line Error Seconds	900
TCA Threshold: Far End Line Severely Error Seconds	900
TCA Threshold: Far End Line Unavailable Seconds	900
TCA Threshold: Path Coding Violation	16,383
TCA Threshold: Path Error Seconds	900
TCA Threshold: Path Severely Error Seconds	900
TCA Threshold: Path Unavailable Seconds	900
TCA Threshold: Far End Path Coding Violation	16,383
TCA Threshold: Far End Path Error Seconds	900
TCA Threshold: Far End Path Server Error Seconds	900
TCA Threshold: Far End Path Unavailable Seconds	900
Alarm: Report Signal Degrade	<input checked="" type="checkbox"/>
Alarm: Report Signal Failures	<input checked="" type="checkbox"/>
Alarm: Report Loss of Signal	<input checked="" type="checkbox"/>
Alarm: Report Loss of Framing	<input checked="" type="checkbox"/>
Alarm: Report Loss of Pointer	<input checked="" type="checkbox"/>
Alarm: Report Loss of Cell Delineation	<input checked="" type="checkbox"/>
Alarm: Report Line AIS (Alarm Indication Signal)	<input type="checkbox"/>
Alarm: Report Line RDI (Remote Defect Indication)	<input type="checkbox"/>
Alarm: Report Path AIS (Alarm Indication Signal)	<input type="checkbox"/>
Alarm: Report Path RDI (Remote Defect Indication)	<input type="checkbox"/>
Alarm: Report Path Monitor TCA (Threshold Crossing Alert)	<input type="checkbox"/>

The SONET Channel options include:

**Admin State** — Choose the state of the interface, as follows:

Up — Full functionality of the interface is available.

Down — The interface is inactive.

Testing — The interface is in testing mode (not supported for SONET).

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

**Silent** — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**APS Mode** — Choose whether to use a 1+1 unidirectional (default) or a 1+1 bidirectional mode, as follows:

**Unidirectional** — Sends signals only in one direction. This is easier to implement because there is no messaging involved; however, when the wire is taken apart, there will be a second node over for the other direction.

**Bidirectional** — Sends signals in both directions. This is the norm, because both directions node to the other side.

**APS SD Threshold** — Choose the BER threshold that triggers the APS Signal Degrade as defined in Bellcore GR-253-CORE. The value is represented as  $10^{-x}$  where  $x$  is this attribute. The range is 5 to 9.

**APS SF Threshold** — Choose the BER threshold that triggers the APS Signal Failure as defined in Bellcore GR-253-CORE. The value is represented as  $10^{-x}$  where  $x$  is this attribute. The range is 3 to 5.

**APS Revert** — Use the checkbox to enable or disable the revert mode for APS. In revert mode the node reverts back to the primary fiber when the primary fiber has no higher priority errors than the secondary.

**APS Revert Time** — Configure the time for the APS revert timer. The revert timer tells the node how long wait before reverting back to the primary fiber. This of course is useful only if APS Revert is enabled. The range is 300 to 720.

**TCA Threshold** — Type the Threshold Crossing Alert value for a particular threshold counter. When a particular counter passes its configured threshold an alarm is raised on that interface. The alarm is known as a Threshold Crossing Alert and can be disabled by disabling the Report Path Monitor TCA field in the Alarm field. For instance, if the TCA for Section Crossing Alert value is set to 16000 and the counter passes this value, an alarm occurs.

For each performance counter that SONET supports there is an equivalent TCA threshold. The alarm is cleared automatically (per G.253) when the current 15 minute interval ends.

**Alarm** — Use the checkboxes to select or deselect that alarm condition.

## DS1 options

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	
Line Type	ESF
Line Coding	B8ZS
Send Code	No Code
Circuit ID	
Loopback Configuration	No Loop
Transmit Clock Source Timing	Through Timing
FDL Type	FDL None
FDL Time Fill	Idle
Line Length	LBO 133
DS1 Bundle	None
DS1 Bundle Channel Number	0
DS1 Threshold Line Code Violations	100
DS1 Low Threshold Line Code Violations	100
DS1 Threshold Path Coding Violations	100
DS1 Low Threshold Path Coding Violations	100
DS1 Threshold Path Errored Seconds	100
DS1 Low Threshold Path Errored Seconds	100
DS1 Threshold Path Severely Errored Seconds	100
DS1 Low Threshold Path Severely Errored Seconds	100
DS1 Threshold Path SEF or AIS defects	100
DS1 Low Threshold Path SEF or AIS defects	100
DS1 Threshold Path Controlled Slip Seconds	100
DS1 Low Threshold Path Controlled Slip Seconds	100
DS1 Threshold Path Unavailable Seconds	100
DS1 Low Threshold Path Unavailable Seconds	100

The DS1 tab includes the following options:

**Admin State** — Choose the state of the interface, as follows:

Up — Full functionality of the interface is available.

Down — The interface is inactive.

Testing — The interface is in testing mode.

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

Silent — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**Line Type** — Choose the framing format:

ESF — Extended Super Frame

D4 — D4 framing

**Line Coding** — Choose the signal coding used on this interface. This in turn affects a number of its characteristics. Choices include:

B8ZS — (Bipolar 8 Zero Substitution) Substitutes two intentional bipolar pulse code violations for each sequence of eight consecutive zero bits. ANSI Clear Channels may use apcDsx1ZBTISI, or Zero Byte Time Slot Interchange. E1 links, with or without CRC, use apcDsx1HDB3 or apcDsx1AMI.

AMI — (Alternate Mark Inversion) A line coding format that represents ones by alternating positive and negative pulses.

**Send Code** — Choose the type of code sent across the DS1 interface by the device (optional for E3 interfaces). Setting this variable causes the interface to begin sending the code requested. Choices include:

No Code — Indicates you are sending looped or normal data.

Line — Indicates you are sending a request for a line loopback.

Payload — Indicates you are sending a request for a payload loopback on this DS1 line.

Reset — Indicates you are sending a loopback termination request.

**Circuit ID** — Type the transmission vendor's circuit identifier. This aids in troubleshooting.

**Loopback Configuration** — Choose a loopback method, as follows:

No Loop — Indicates that the interface is not in the loopback state. A device that is not capable of performing a loopback on the interface always returns this as its value.

Payload Loop — Indicates that the received signal at this interface is looped through the device. Typically the received signal is looped back for retransmission after it has passed through the device's framing function. Supported by DS2152 derivations for D4 as well as ESF.

Line Loop — Indicates that the received signal at this interface does not go through the device (minimum penetration) but is looped back out. Supported by SF(D4) and ESF.

Inward Loop — Indicates that the signal sent at this interface is looped back through the device. Also called Diagnostic Loop.



**Transmit Clock Source Timing** — Through Timing indicates that the transmit clock is derived from the recovered receive clock of another DS1 interface.

**FDL Type** — Choose the use of the Facilities Data Link and the sum of its capabilities. You can set any bits that are appropriate. This field is only valid for an ESF line type; D4 and SF do not support FDL. Choices include:

ANSI T1403 — Indicates the ANSI FDL exchange protocol is in use.

ATT 54016 — Indicates the ESF FDL exchanges protocol is in use.

FDL None — Indicates the device does not use FDL.

**FDL Time Fill** — Choose the filler character in use on the Facilities Data Link. Choices include:

Idle — Indicates that the FDL filler character is an HDLC idle (for example, xFF).

Flag — Indicates that the FDL filler character is an HDLC flag (for example, x7E).

**Line Length** — Choose the length of the line expressed in ranges of meters or dB loss. This object provides information for the line build out circuitry, if it exists, to make adjustments.

**DS1 Bundle** — Shows None, Stream 1, Stream 2, or Stream 3.

**DS1 Bundle Channel Number** — Shows the number of the DS1 channel in to which the DS1 (310) half-high stream is embedded. There are 28 channels.

**Thresholds** — Type the values for each particular threshold counter. For each threshold value is a corresponding low threshold value.

## M13 options

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	999999938
Line Type	M23
Send Code	No Code
Circuit ID	
Loopback Configuration	No Loop
Transmit Clock Source Timing	Through Timing
FDL Type	FDL None
DS1 for Remote Loop	0

OK Cancel

The M13 tab includes the following options:

**Admin State** — Choose the state of the interface, as follows:

Up — Full functionality of the interface is available.

Down — The interface is inactive.

Testing — The interface is in testing mode.

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

Silent — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**Line Type** — Choose the line type, including:

M23 — C-bits are used for bit stuffing in combining DS1s into synchronous DS2 streams and in combining DS2s into a synchronous DS3 stream.

**CBIT Parity** — Once the M13 chip has multiplexed 28 DS1s into 7 DS2s, the DS2s are synchronous to each other, and synchronizing the DS2s into the DS3 would be redundant. This line type uses some of the C-bits for purposes other than bit stuffing of DS2s into the DS3. Specifically, it uses some C-bits for path performance monitoring and in-band data links. These additional C-bit parity channels include the FEAC channel, FEBE channel, and PMDL channel.

**Send Code** — Choose the type of code sent across the DS1 interface by the device (optional for E3 interfaces). Setting this variable causes the interface to begin sending the code requested. Choices include:

**No Code** — Indicates you are sending looped or normal data.

**Line Code** — Indicates you are sending a request for a line loopback.

**Payload Code** — Indicates you are sending a request for a payload loopback.

**Reset Code** — Indicates you are sending a loopback termination request.

**DS1 Loop Code** — Indicates you are requesting to loopback a particular DS1/E1 within a DS3/E3 frame. The DS1/E1 is indicated in `dsx3Ds1ForRemoteLoop`.

**Test Pattern** — Indicates you are sending a test pattern.

**Circuit ID** — Enter the transmission vendor's circuit identifier. This aids in troubleshooting.

**Loopback Configuration** — Choose a loopback method, as follows:

**No Loop** — Indicates that the interface is not in the loopback state. A device that is not capable of performing a loopback on the interface always returns this as its value.

**Line Loop** — Indicates that the received signal at this interface does not go through the device (minimum penetration) but is looped back out.

**Inward Loop** — indicates that the signal sent at this interface is looped back through the device.

**Transmit Clock Source Timing** — Through Timing indicates that transmit clock is derived from the recovered receive clock of another DS1 interface.

**FDL Type** — Choose the facilities data link and the sum of the capabilities. You can set any bits that are appropriate.

**DS1 for Remote Loop** — Enter the number of one of the 28 (DS1) channels within the DS3 stream. This channel is then looped back at the far end. Looping a channel is a way of testing a DS3 line comprised of 28 channels, without affecting the traffic of 27 of the channels. It is also a way of testing a specific channel which is suspected of having problems.

If the DS3 is not comprised of DS1 streams, i.e., is an unstructured interface, then it is not possible to loop one of the channels, because there aren't any channels.

### ***CES 310 options***

Property	Value
Admin State	Up
Alarm Mode	Verbose
ifIndex	
Clock Mode	Synchronous
Loop Back	Disable
Reassembly Buffer Size	256
Cell Arrival Jitter	128

The CES tab includes the following options:

**Admin State** — Choose the state of the interface, as follows:

Up — Full functionality of the interface is available.

Down — The interface is inactive.

Testing — The interface is in testing mode.

**Alarm Mode** — Choose the alarm mode for this interface, as follows:

Verbose (default) — Enables the alarm for normal error reporting.

Silent — Suppresses the alarm; normally for maintenance.

**ifIndex** — Shows the internal index number (for example, 999999982) of this interface to correlate the node with *ONset* for troubleshooting.

**Clock Mode** — Choose the clock mode of Synchronous, SRTS, or Adaptive.

**Loop Back** — Choose Enable or Disable.

**Reassembly Buffer Size** — Type the reassembly buffer size.

**Cell Arrival Jitter** — Type the cell arrival jitter.

### *Deleting a port interface*

#### ◆ To delete an interface

1. Click the port containing the interface for deletion.
2. Click **Delete**.

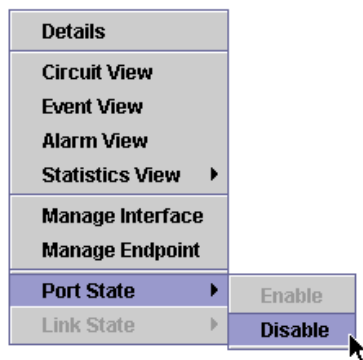
The tab containing the interface data becomes inactive.

**Note:** You cannot delete an interface if it is used in a circuit. Also, you cannot delete DS1 bundles if any DS1 bundle is used in a circuit.

### *Changing the port state*

#### ◆ To enable or disable the state of a managed port interface

Point to the port, display its pop-up menu, point to **Port State** and choose **Enable** or **Disable**.



If you enabled the port, the following message appears:

Port State has been set to Up

If you disabled the port, the following message appears:

Port State has been set to Down

## Managing endpoints

This operation assigns endpoints with the following requirements:

Card	Endpoint Requirements
DS1 Half High	No endpoint management
DS1 Bundle Port (x)CES ABCD, Slot (n)	Endpoint automatically determined when interface is created; VPI Value, VCI Value, Address Family cesPvc; only Close button available
ATM	AtmPvc — VPI: VCI used AtmPvp — VPI only All buttons appear, as values are editable
Network	No endpoint management
CES 310	DS3 Port DS1 Port DS0 Bundle Port

**Note:** When an endpoint is assigned automatically or not required, the options to manage endpoints are not displayed.

### ◆ To manage the endpoint for a port

Point to the port, display its pop-up menu, and click **Manage EndPoint**.

Assigned	VPI Value	VCI Value	Address Family
<input type="checkbox"/>	0	32	atmPvc

Add Auto Endpoint Delete

OK Cancel

**Note:** Some ports have a single possible endpoint. The endpoint is assigned automatically and you cannot delete or modify it.

The Manage Endpoint window includes these fields and options:

**Assigned** — Shows a checkbox that is checked when the endpoint is in use by a circuit.

**VPI (Virtual Path Identifier) Value** — Type a numerical value that identifies the Virtual Path through which the cells should be routed.

**VCI (Virtual Channel Identifier) Value** — Type a numerical value that identifies the Virtual Channel through which cells should be routed.

**Address Family** — Shows the type of address associated with the interface.

**Add** — Adds a new endpoint to the EndPoint ID list. This item is then configured.

**Auto Endpoint** — Performs automatic endpoint assignments (ATM only).

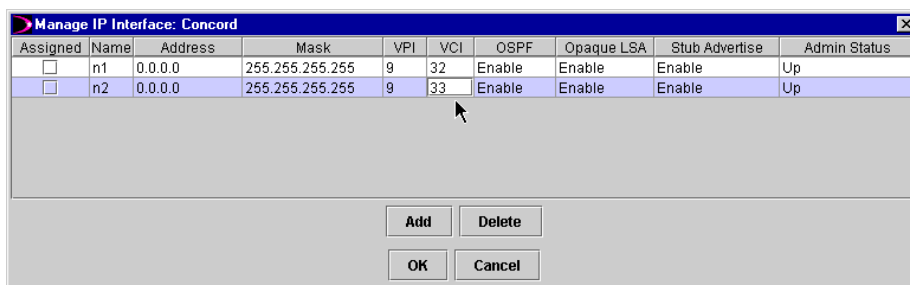
**Delete** — Deletes a selected item from the list.

## Managing IP interfaces

The Manage IP Interface option is available only for configuring an ATM Virtual Private Line circuit. Virtual circuits are set up to provide a higher bandwidth management pipe between two nodes. Once configured, virtual links can be used in much the same way as a Network link.

### ◆ To manage an IP Interface for a virtual circuit

Point to the Virtual System Resources Port in Slot 0 of the node, display its pop-up menu, and click **Manage IP Interface**.



The Manage IP Interface window includes these fields and options:

**Assigned** — Shows a checkmark when the interface is in use by a virtual circuit.

**Name** — Assign a name for the interface.

**Address** — Type the IP address of the node.

**Mask** — Type the IP address of the mask.

**VPI (Virtual Path Identifier) Value** — Enter a numerical value that identifies the Virtual Path through which the cells should be routed.

**VCI (Virtual Channel Identifier) Value** — Enter a numerical value that identifies the Virtual Channel through which cells should be routed.

**OSPF** — Enables or disables OSPF (Open Shortest Path First) routing.

**Opaque LSA** — (Link-state advertisement) Choose Enable or Disable.

**Stub Advertise** — Choose Enable or Disable.

**Add** — Adds a new IP interface.

**Delete** — Deletes the selected IP interface.



## Running the BERT test for a DS1 or DS3 port

You can perform a Bit Error Rate test on any managed DS1 or DS3 port.

### ◆ To run the BERT test

1. In the Topology tree or Chassis View, point to the DS1 or DS3 port, display its pop-up menu, and choose **BERT Test**.

**BERT Test**

Test Parameters

Target Node: Lowell

Target BackCard: DS3 Private Line Access AB

Target Port: 1

Test Environment

BERT Pattern: Pseudorandom: 2\*\*3-1

Error Insertion: Error insertion bit rate at 10\*\*(-1)

Loopback Mode: Line

BERT Test Status: Inserting errors...

Test Results

Bit Count: 0

Bit Error Count: 0

Received Pattern: 0

Status Register

- No status information
- Received 32 consecutive 1s
- Received 32 consecutive 0s
- Received Loss Of Synch
- Bit errors detected
- Bit counter overflow
- Error counter overflow
- Synchronized

Legend

- INDETERMINATE/OFF
- CLEAR/ON
- ACTIVE/FAILURE

Start BERT

Stop BERT

Clear Counter(s)

Start Error

Stop Error

Resend Pattern

Close

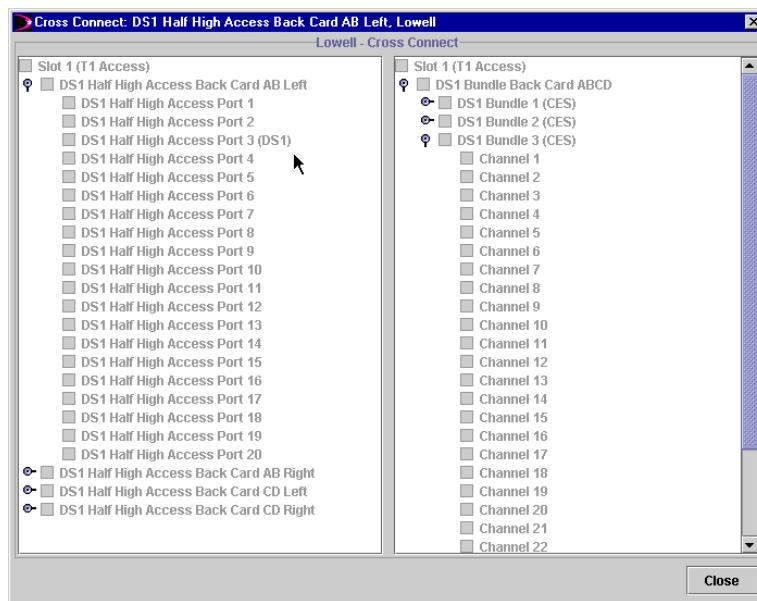
2. In the BERT Pattern field, choose a pseudorandom or repetitive pattern.
3. In the Error Insertion field, choose No error insertion, Insert a single bit error, or an Error insertion bit rate.
4. Click **Start BERT Test**.

The BERT Test Status field shows the operating status during the test.

The Test Results box displays the Bit Count, Bit Error Count, and Received Pattern. The Status Register legend shows the state of each test result.

## Viewing cross connects

The Cross Connect window shows the current cross connection for the selected slot (DS1 Half High and DS1 Bundle Only). This read-only window has two panes that show the selected access port and its associated (if any) DS3 Bundle Port with mapped channel checked. You cannot make modifications from the Cross Connect window.



### ◆ To view cross connect information for a DS1 Bundle

In the Topology tree or Chassis View, point to the DS1 Bundle (not its ports), display the pop-up menu, and choose **Cross Connect**.

### ◆ To view cross connect information for a DS1 half high access port

In the Topology tree or Chassis View, point to the DS1 port, display its pop-up menu, and choose **Cross Connect DS1 Bundle**.

## Using the Graph View

These views show the node links in graphical format. Color coding indicates the operational status of each node and link.

**Green** — Status is normal.

**Yellow** — A warning condition or minor fault has occurred.

**Red** — A critical condition or major fault has occurred.

**Blue** — Status is unknown.

The following views are available:

**Trunk State** — Shows the state of the fiber connections and the nodes.

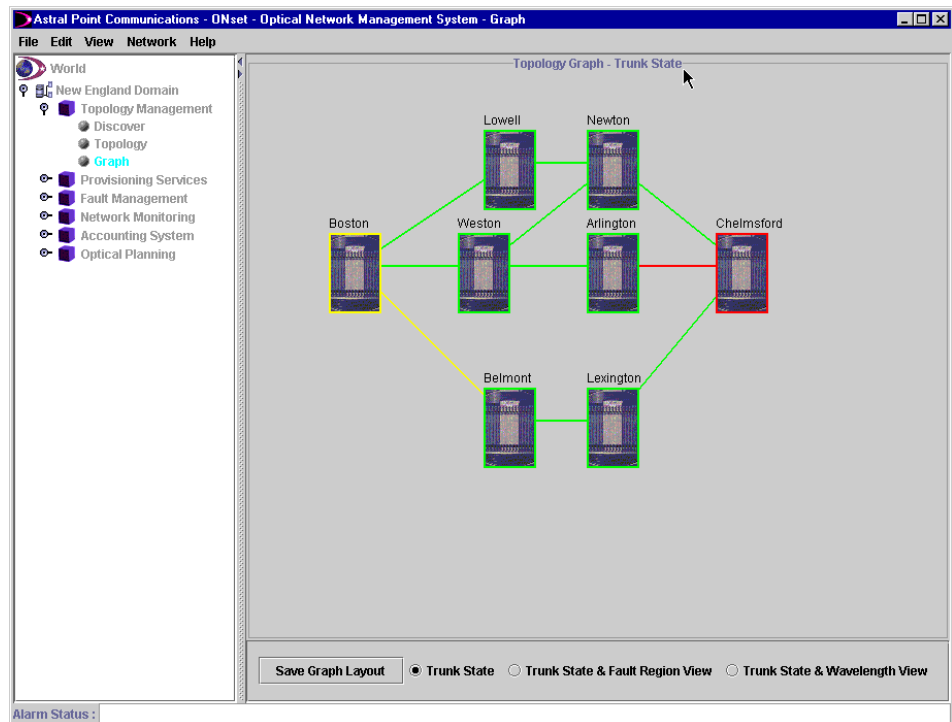
**Trunk State and Fault Region View** — Shows the state of the fiber connections and the nodes, as well as the fiber number in use for that connection.

**Trunk State & Wavelength View** — Shows the state of the fiber connections and the nodes, as well as the wavelength in use along each direction of flow.

Node and Link Level pop-up menus are available in all views. The options are the same as those available in the Topology view.

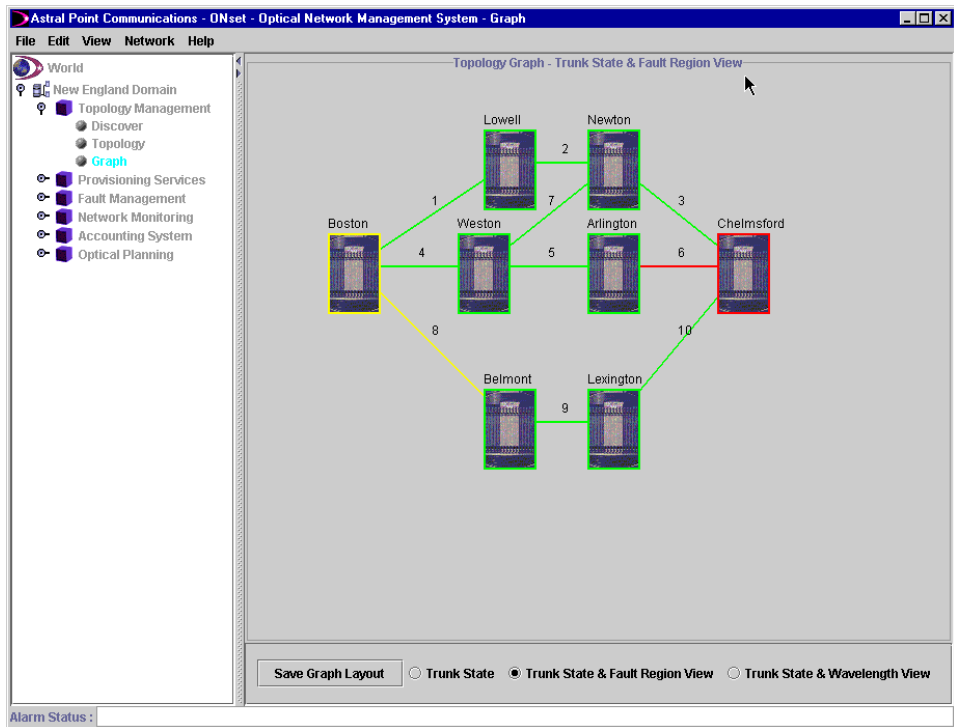
### ◆ To display the Graph View

From the Management Tree, choose **Graph** to view all the nodes and links.



◆ To display fiber numbers

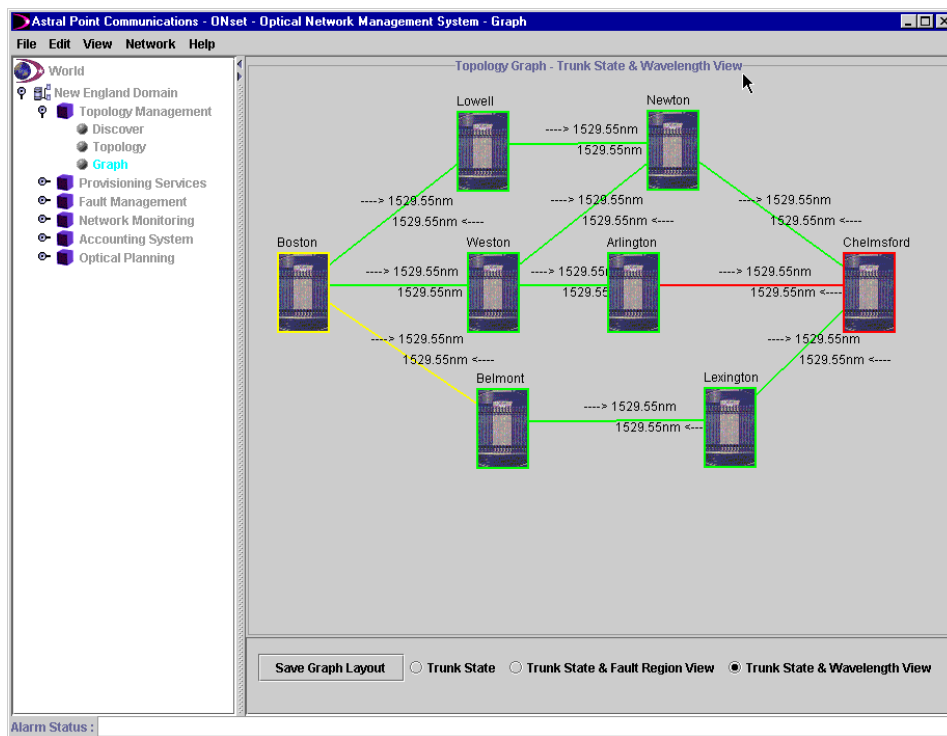
Click **Trunk State & Fault Region View**.



**Note:** If a link line represents multiple links, an ellipsis appears after the fiber number (for example, 10...).

◆ To display the wavelength and direction of flow

Click **Trunk State & Wavelength View**.



## Creating links

There are three types of network links:

**Nondiverse links** — Discovered by ONset and uses OC48 Network cards on both ends.

**Diverse links** — You specify two ports of the same type at each end of the fault region. Diverse links can be created through the following cards:

- DS3
- DS3 Access
- OC MultiRate Access
- OC48 Access

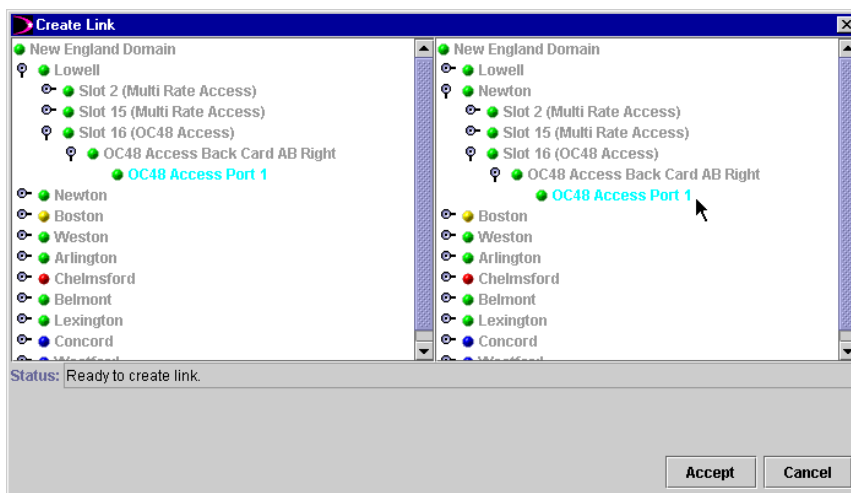
**Virtual links** — For managing virtual circuits (Slot 0).

**Note:** When creating protected circuits, you should assign fault regions on the links.

### Creating a network link

#### ◆ To create a network link

1. From the **Network** menu, point to **Link**, point to **Create**, and choose **Diverse Network Link**.



2. Navigate to the port required in the left pane.
3. Navigate to the port required in the right pane.

The Status field shows information about configuring the link, for example:

- Port is valid.
  - Cannot create a link between different types of cards.
  - Port is in use. Please select another port.
4. When you see the message “Ready to create link,” click **Accept**.

## Creating a virtual link

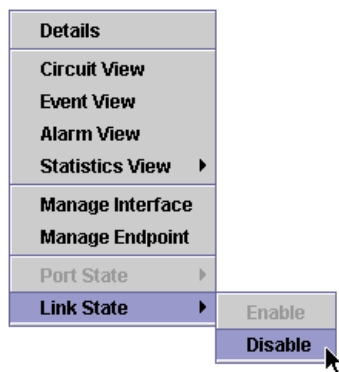
### ◆ To create a virtual link

1. From the **Network** menu, point to **Link**, point to **Create**, and choose **Mgmt Link**.
2. In the Create Virtual Link window, navigate to a Virtual Systems Resources port in Slot 0 in the left pane.
3. Navigate to a Virtual Systems Resources port in Slot 0 in the right pane.
4. Click **Accept**.

## Changing the link state

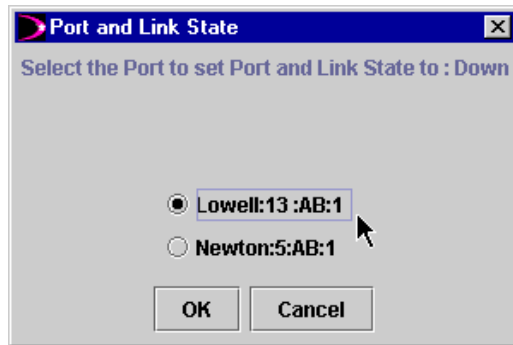
### ◆ To enable or disable the link state

1. Point to one of the ports in the link, display its pop-up menu, point to **Link State** and choose **Enable** or **Disable**.





2. In the Port and Link State window, choose the port you want to enable or disable.



3. Click **OK**.

If you enabled the port, a message appears similar to:

The port and link state for port Lowell:13:AB:1  
has been set to Up.

If you disabled the port, a message appears similar to:

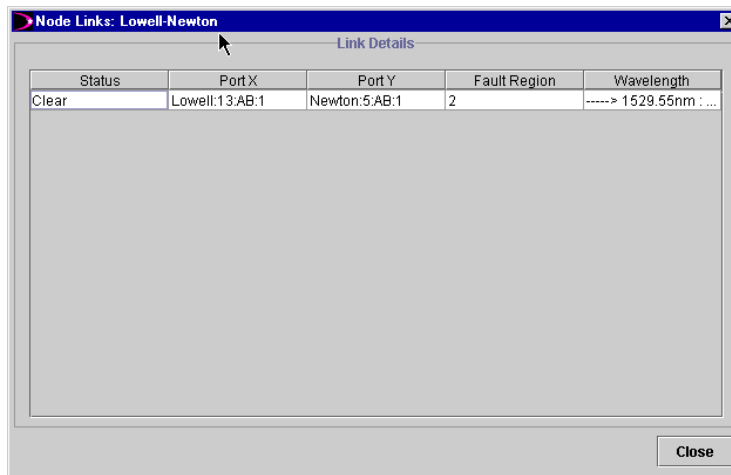
The port and link state for port Lowell:13:AB:1  
has been set to Down.

## Viewing link details

The Link Details window shows the link between two nodes and the maximum, allocated, and available bandwidth.

### ◆ To access link details

1. In the Graph View, point to the link, display its pop-up menu, and choose **Details**.



2. In the Node Links window, select the link, display its pop-up menu, and choose **Details**.

The Link Details window shows information about the selected link.

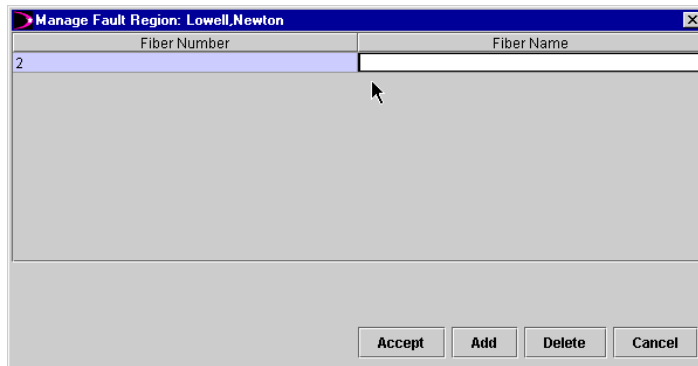


## Managing fault regions

When the ONset topology discover option creates a nondiverse network link, it automatically creates a Fault Region. It assigns paths for circuit allocations. This ensures that redundancy remains in place. For example, it prevents the assignment of a protection path to a primary path. Fault regions are fiber numbers used for managing the addition and deletion of circuit fault regions and their port assignments.

### ◆ To manage the fault region for a link

1. In the Graph View or Circuit Path View, point to a link, display its pop-up menu, and choose **Details**.
2. In the Node Links window, point to the link, display its pop-up menu, and choose **Manage Fault Region**.



The Manage Fault Region window includes these fields and options:

**Fiber Number** — Shows the user-determined fault region ID.

**Fiber Name** — Shows the user-determined fault region name.

**Accept** — Closes the window and saves any changes you have made.

**Add** — Opens an additional line in the window for the assignment of a new fiber number and fiber name.

**Delete** — Removes the selected fault region.



---

## Chapter 3

# Provisioning Services

With the Provisioning Services functions, you can monitor and control the status of the circuits. A filter lets you find circuits based on selected parameters. Options include:

**View** — View circuit paths and status; activate and modify circuits; and delete circuits.

**Create** — Create a circuit; assign a service type, subscriber, and customer; and select both end ports.

**Service Types** — Add service types, set traffic parameters, and delete services.



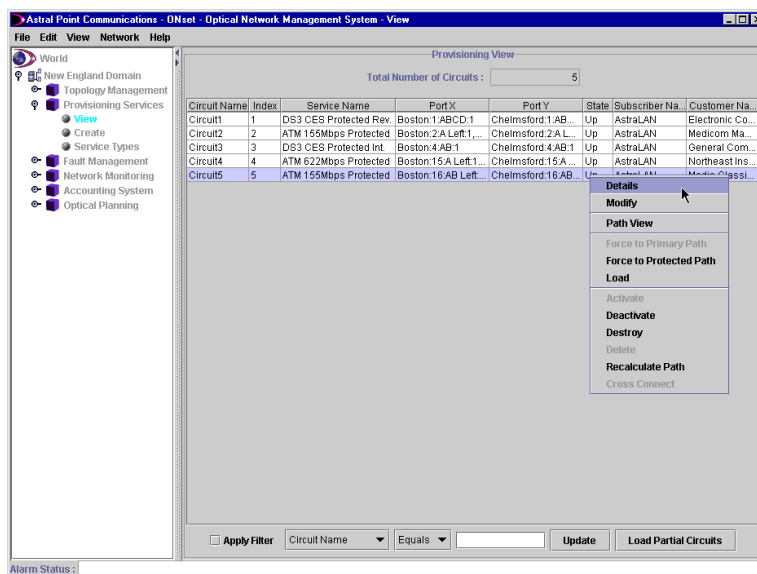
## Viewing circuit information

This section describes how to:

- View circuit details
- Filter the list of circuits
- Display the Circuit Path View

### ◆ To view the list of circuits

In the Management Tree, expand Provisioning Services, and click **View**.



## Viewing circuit details

### ◆ To view details for a circuit

In the Provisioning View, point to the circuit, display its pop-up menu, and choose **Details**.

The screenshot shows a 'Circuit Details' window with the following sections:

- Service:** Name: ATM 155Mbps Protected, Details...
- Port X:**
  - Node: Boston
  - Slot: Slot 16 (OC48 Access)
  - Back Card: OC48 Access Back Card AB Left
  - Port: OC48 Access Port 1 (None)
  - Interface Type: None
  - Endpoint: 1.32.atmPvc
- Port Y:**
  - Node: Chelmsford
  - Slot: Slot 16 (OC48 Access)
  - Back Card: OC48 Access Back Card AB Left
  - Port: OC48 Access Port 1 (None)
  - Interface Type: None
  - Endpoint: 1.32.atmPvc
- Circuit:**
  - Name: Circuit5
  - Index: 5
  - Active Path: Primary
  - Subscriber: AstraLAN
  - Customer: Media Classics
  - RDI Alarm Level: Disabled
  - AIS Alarm Level: Disabled
- Primary Hop Table:**

Node	SBC:P In	SBC:P Out
Boston	16:AB Left:1	13:AB:1
Lowell	5:AB:1	13:AB:1
Newton	5:AB:1	13:AB:1
Chelmsford	5:AB:1	16:AB Left:1
- Protected Hop Table:**

Node	SBC:P In	SBC:P Out
Boston	16:AB Left:1	13:AB:1
Belmont	5:AB:1	13:AB:1
Lexington	5:AB:1	13:AB:1
Chelmsford	5:AB:1	16:AB Left:1

A 'Close' button is located at the bottom right.

The Circuit Details window displays the following information:

**Service Name** — Shows the type of service that is provisioned for this circuit.

**Service Details** — Shows the Service Details window.

**Port X/Port Y** — Shows the location of the ports (node, slot, card, and port number), the interface type, and endpoints, if applicable.

**Circuit Name** — Shows the name assigned to this circuit.

**Index** — Shows the unique number assigned to the circuit (usually assigned by Astral Point).

**Active Path** — Shows which path — primary or protected — is currently in use.

**Subscriber** — Shows the name of the subscriber to which the circuit is assigned.

**Customer** — Shows the name of the customer to which the circuit is assigned.

**RDI Alarm Level** — Shows the activation status of the Remote Defect Indication. This is the far-end alarm indication.

**AIS Alarm Level** — Shows the activation status of the Alarm Indication Signal. This is the upstream alarm indication.

## Getting details about a service

The Service Details window shows the service type, class, and priority; and recovery mode and time. It shows the traffic parameters for the Port X to Port Y and Port Y to Port X paths

### ◆ To display service details

In the Service Details window, click **Details**.

The screenshot shows a window titled "Service Details" with a close button in the top right corner. The window is divided into two main sections: "Circuit Information" and "Circuit Traffic Parameters".

**Circuit Information**

Service Type:	ATM 155Mbps Protected
Circuit Class:	Protected
Circuit Priority:	Medium
Recovery Mode:	Revert
Recovery Time (sec):	0 (Immediately)

**Circuit Traffic Parameters**

Port X -> Port Y		Port Y -> Port X	
Primary QOS:	CBR	Primary QOS:	CBR
Primary PCR:	353207	Primary PCR:	353207
Primary SCR:	0	Primary SCR:	0
Primary MBS:	0	Primary MBS:	0
Primary MDCR:	0	Primary MDCR:	0
Protected QOS:	CBR	Protected QOS:	CBR
Protected PCR:	353207	Protected PCR:	353207
Protected SCR:	0	Protected SCR:	0
Protected MBS:	0	Protected MBS:	0
Protected MDCR:	0	Protected MDCR:	0

A "Close" button is located at the bottom right of the window.



---

## Filtering the list of circuits

You can use the filtering option in the Provisioning View to generate a subset of circuits. In other words, you specify a condition, and only the circuits that match it will be displayed.

### ◆ To filter the Provisioning View

1. At the bottom of the Provisioning View, click the **Apply Filter** option.
2. From the menu, choose the circuit attribute (column heading) on which to base the filter.
3. Enter the specific value on which to base the filtering (such as circuit name, port, or subscriber name)

Text values are not case-sensitive. You can use the asterisk ( \* ) as a wildcard to represent zero or more characters.

4. Click **Update**. The window displays only the circuits that match the criteria you specified.

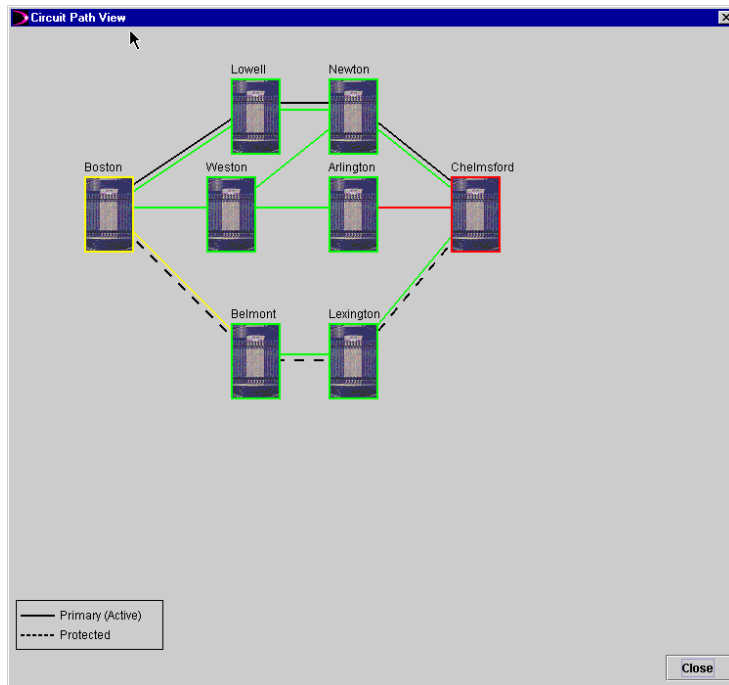
### ◆ To restore the complete, unfiltered circuit list

1. Uncheck the **Apply Filter** option.
2. Click **Update**.

## Displaying the Circuit Path View

### ◆ To view the circuit path

In the Provisioning View, point to the circuit, display its pop-up menu, and choose **Path View**.



The Circuit Path View shows the node links in graphical format. Color coding indicates the operational status of each node and link.

**Green** — Status is normal.

**Yellow** — A warning condition or minor fault has occurred.

**Red** — A critical condition or major fault has occurred.

**Blue** — Status is unknown.

A solid black line shows the circuit's primary path; a dotted line shows the circuit's protected path.

## Creating a circuit

Use the Provisioning Create window to create a new circuit. After you create the primary circuit path for a protected circuit, the screen reappears for you to create the backup path.

You can create a circuit in two ways:

**Automatic** — ONset assigns the hops (input and output ports for each node) for the primary and backup (if protected) circuit paths.

**Manual** — You specify each hop for the primary and backup (if protected) circuit paths.

### ◆ To access the Provisioning Create window

In the Management Tree, expand Provisioning Services, and click **Create**.

The screenshot shows the 'Astral Point Communications - ONset - Optical Network Management System - Create' window. On the left is a 'Management Tree' with nodes: World, New England Domain, Topology Management, Provisioning Services (expanded), Service Types, Fault Management, Network Monitoring, Accounting System, and Optical Planning. The 'Provisioning Services' node is selected, and the 'Create' option is highlighted. The main area is titled 'Provisioning Create' and contains the following fields and controls:

- Service:** Type: ATM Private Line (dropdown), Name: ATM 10Mbps Non PreEmptible (dropdown), Details... button.
- Port X:** Node, Slot, Back Card, Port, Interface Type, Endpoint (all empty text boxes).
- Port Y:** Node, Slot, Back Card, Port, Interface Type, Endpoint (all empty text boxes).
- Buttons:** Select Port, Interface Properties, EndPoint Properties, Comment.
- Hop Selection:** Automatic (selected radio button), Manual (radio button), Hop Selection button.
- Circuit:** Name: (empty text box), Subscriber: AstraLAN (dropdown), Customer: Electronic Commerce (dropdown).
- Bottom:** Save and Load, Clear buttons.

An 'Alarm Status:' field is visible at the bottom left of the window.



**Important:** Before you can complete a circuit definition, the subscriber and customer information for the circuit must be available. For information about managing subscribers and customers, refer to Chapter 6.

## Selecting a service for a circuit

### ◆ To select a service for a circuit

1. In the Service Box of the Provisioning Create window, choose the Service type and name.

Each service has different transmission qualities. If you want details about any service, click **Details**.

2. Click **Select Port**.

## Entering circuit information

You enter circuit information in the Circuit section of the Provisioning Create window.

### ◆ To enter circuit information

1. Type a name to identify this circuit.
2. Choose the Subscriber.
3. Choose the Customer.

For information on defining subscribers and customers, refer to Chapter 6.

## Selecting ports for a circuit

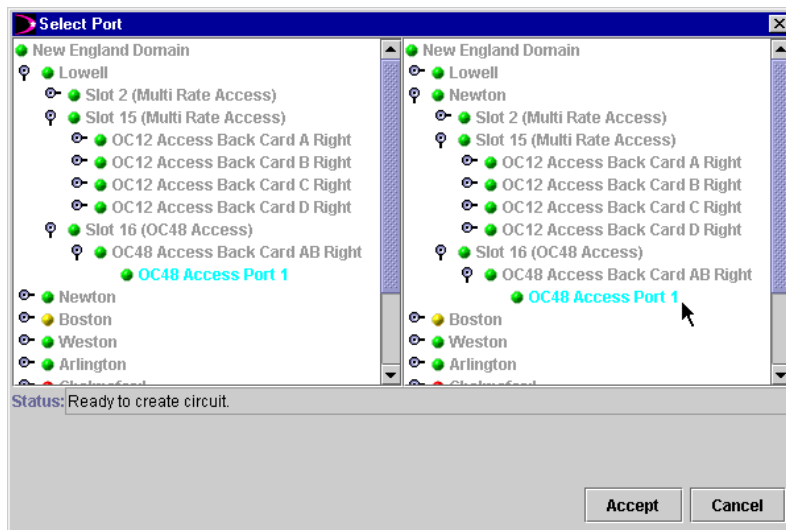
The procedure for selecting ports depends on the type of service that you are provisioning, as follows:

- ATM, ATM Virtual, or DS3 Private Line
- DS1 Private Line for DS310 or DS1 Bundled Private Line
- DS0 Private Line

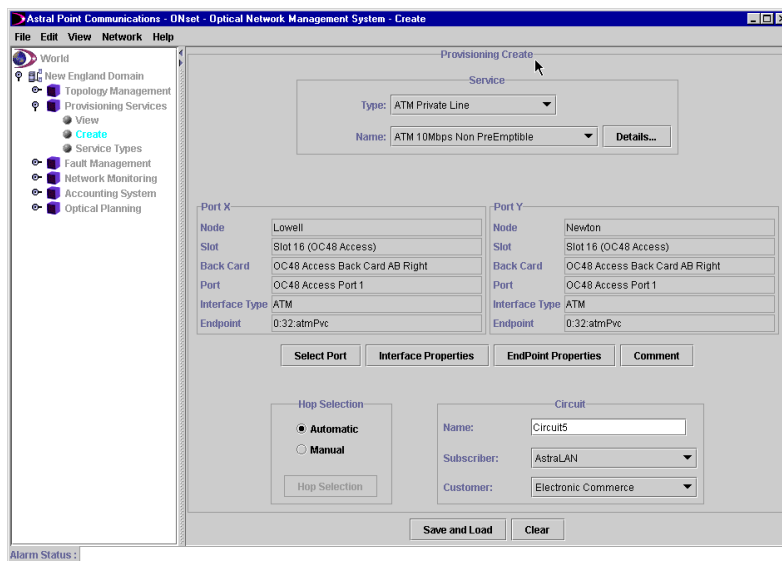
## Selecting ports for ATM, ATM Virtual, or DS3 Private Line circuit

### ◆ To select the ports

1. In the Provisioning Create window, click **Select Port**.
2. In the left pane of the Select Port window, expand the tree and choose the port for Port X.



3. In the right pane, expand the tree and choose the port for Port Y.
4. With both ports selected, click **Accept**.

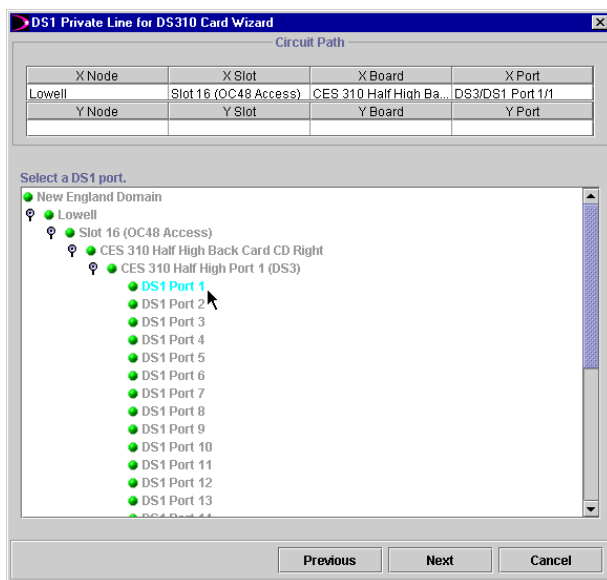


ONset provides automatic selection and calculation of the Interface and Endpoint properties.

### Selecting ports for DS1 Private Line for DS 310 or DS1 Bundled Private Line circuit

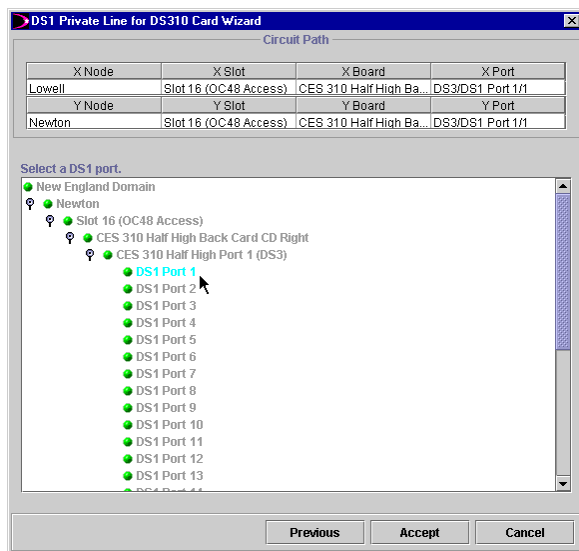
#### ◆ To select the ports

1. In the Provisioning Create window, click **Select Port**.
2. Expand the tree, choose a port to create the interface for Port X, and click **Next**.



- Choose a port, and click **Next**.

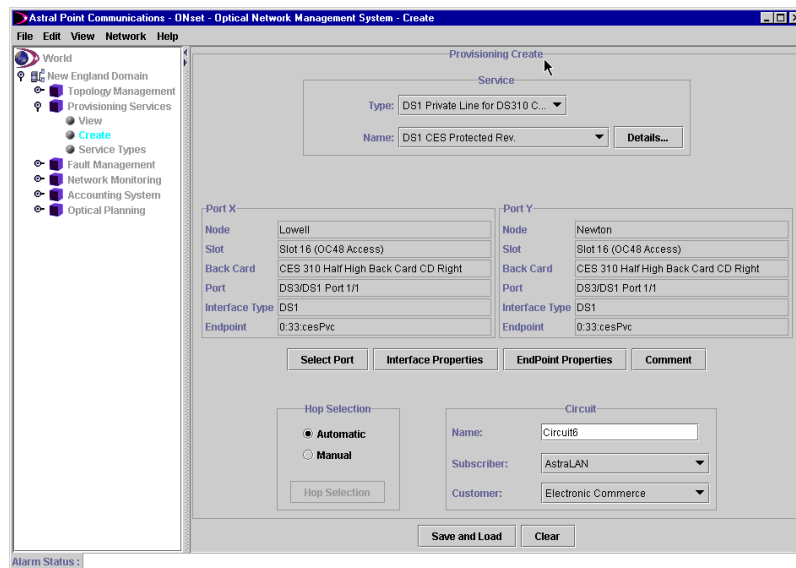
The X Node and X Slot parameters appear in the Circuit Path area.



- Expand the tree and follow the prompts to choose a port for Port Y.

The Y Node and Y Slot parameters appear in the Circuit Path area.

5. Click **Accept**.



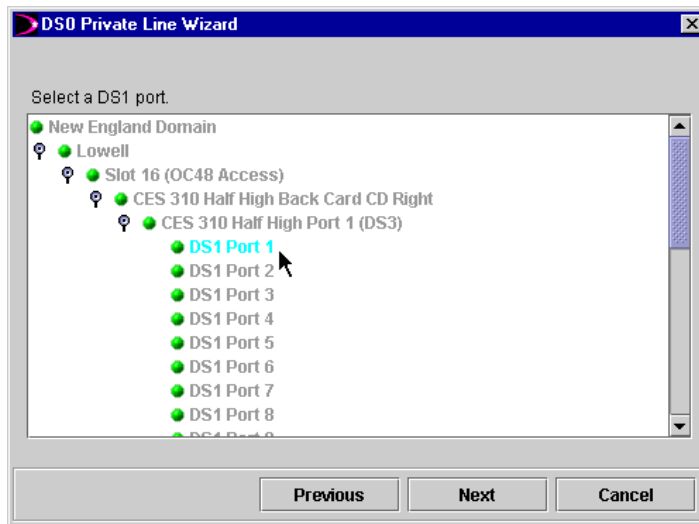
ONset provides automatic selection and calculation of the Interface and Endpoint properties.

## Selecting ports for DS0 Private Line circuit

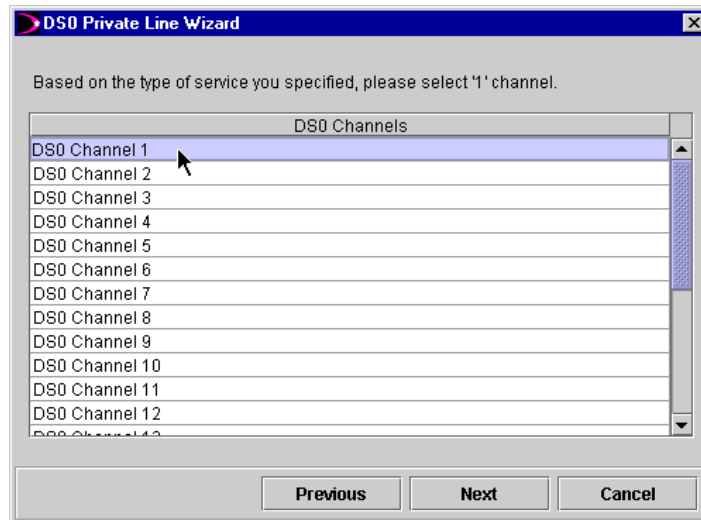
### ◆ To select the ports

1. In the Provisioning Create window, click **Select Port**.
2. Click **Next**.
3. Expand the tree, choose the port for Port X, and click **Next**.

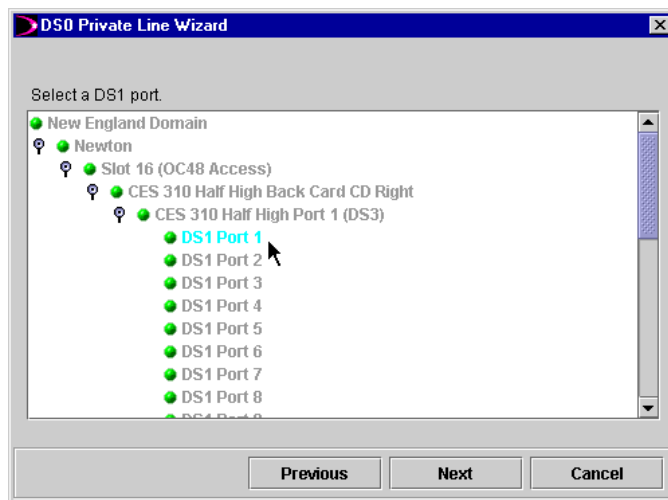




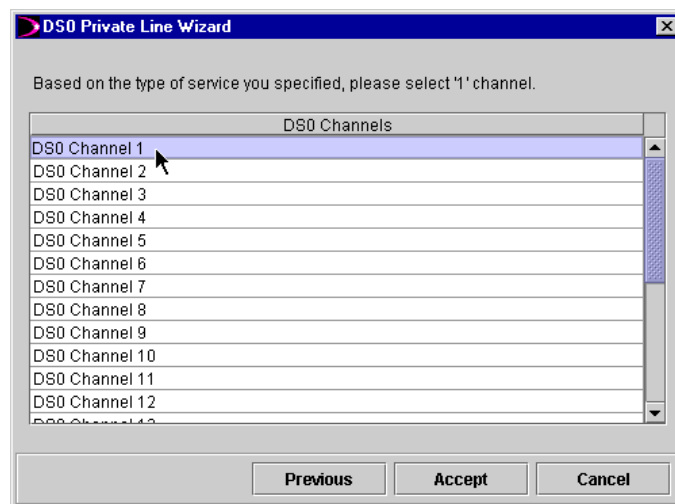
4. Choose a port, and click **Next**.



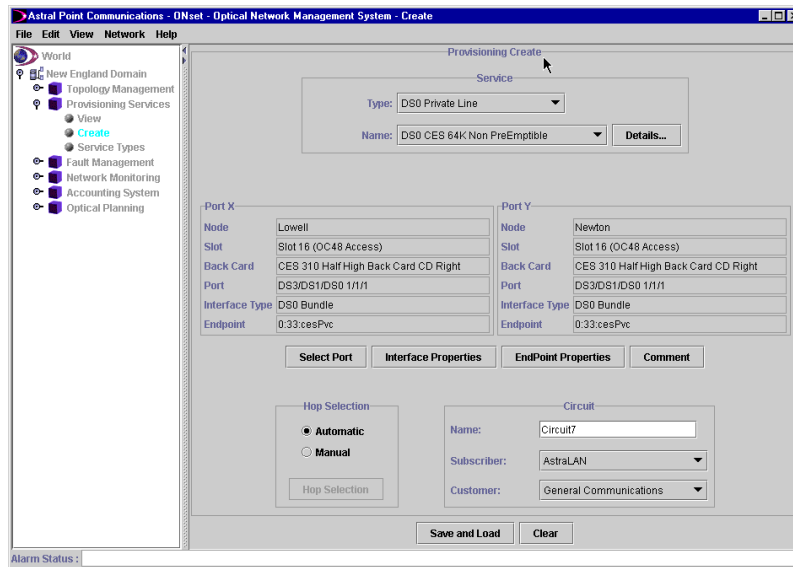
5. Choose a channel, and click **Next**.
6. Expand the tree and choose a port for Port Y.



7. Choose a port, and click **Next**.



8. Choose a channel, and click **Accept**.



ONset provides automatic selection and calculation of the Interface and Endpoint properties.

## Modifying interface properties

ONset provides automatic selection and calculation of the Interface properties, however you can modify them.

### ◆ To modify interface properties

1. In the Provisioning Create window, click **Interface Properties**.

The screenshot shows two side-by-side 'Interface Properties' windows. The left window is for 'Port X: DS1 Port 2' and the right is for 'Port Y: DS1 Port 2'. Both windows have an 'Alias' text field and an 'Interface Type' dropdown menu set to 'DS1'. Below these are two tables of properties and values for 'DS1 CES'.

Property	Value
Admin State	Up
Clock Mode	Synchronous
Loop Back	Disable
Reassembly Buffer Size	256
Cell Arrival Jitter	128

Property	Value
Admin State	Up
Operational Status	Down
Line Type	ESF
Line Coding	B8ZS
Send Code	No Code
Circuit ID	
Loopback Configuration	No Loop
Signal Mode	None
Transmit Clock Source Timing	Through Timing
FDL Type	FDL None
FDL Time Fill	Idle
Line Length	LBO 133
Channelization	Disabled

At the bottom of each window are 'Ok' and 'Cancel' buttons.

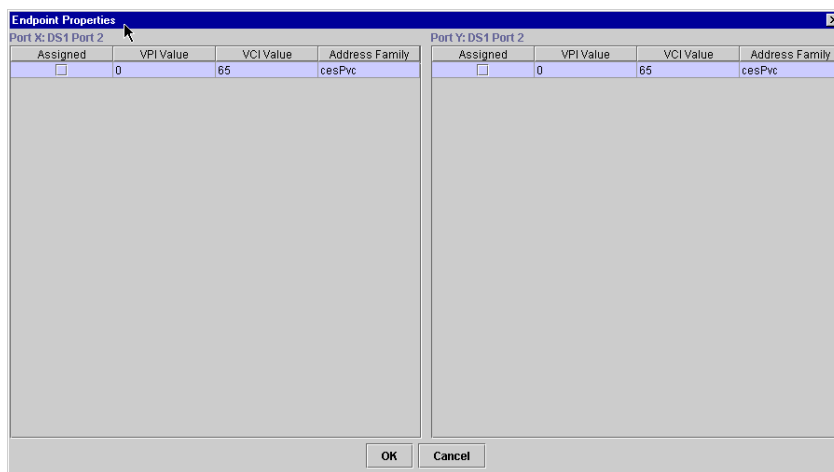
2. You can type alias names and modify any properties as necessary.
3. Click **OK**.

## Modifying endpoint properties

ONset provides automatic selection and calculation of the endpoint properties, however you can modify them. You can modify some endpoint properties using the Endpoint Properties window.

### ◆ To modify endpoint properties

1. In the Provisioning Create window, click **EndPoint Properties**.



2. You can modify some endpoint properties, if required.
3. Click **OK**.

## Selecting the IP interface for an ATM Virtual Private Line circuit

After you select the ports for an ATM Virtual Private Line circuit, the IP Interface window appears for you to select the IP Interface.

### ◆ To select the IP Interface

1. Select the ports for an ATM Virtual Private Line circuit, and click **Accept**.  
You can also click **Select IP Interface** to access the IP Interface window.

**IP Interface**

Node X: Concord

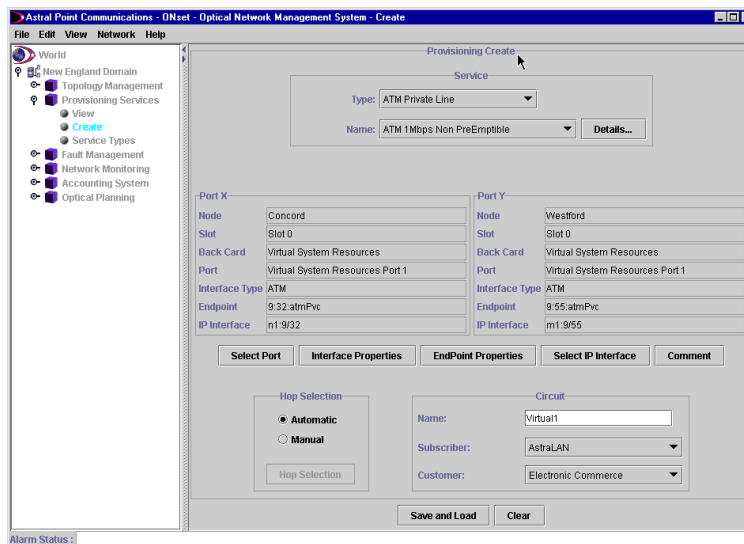
Assigned	Name	Address	Mask	VPI	VCI	OSPF	Opaque LSA	Stub Advertise	Admin Status
<input type="checkbox"/>	n1	0.0.0.0	255.255.255.255	9	32	Enable	Enable	Enable	Up
<input type="checkbox"/>	n2	0.0.0.0	255.255.255.255	9	33	Enable	Enable	Enable	Up

Node Y: Westford

Assigned	Name	Address	Mask	VPI	VCI	OSPF	Opaque LSA	Stub Advertise	Admin Status
<input type="checkbox"/>	m1	0.0.0.0	255.255.255.255	9	55	Enable	Enable	Enable	Up

OK Cancel

2. Choose the interface for both X and Y, and click **OK**.



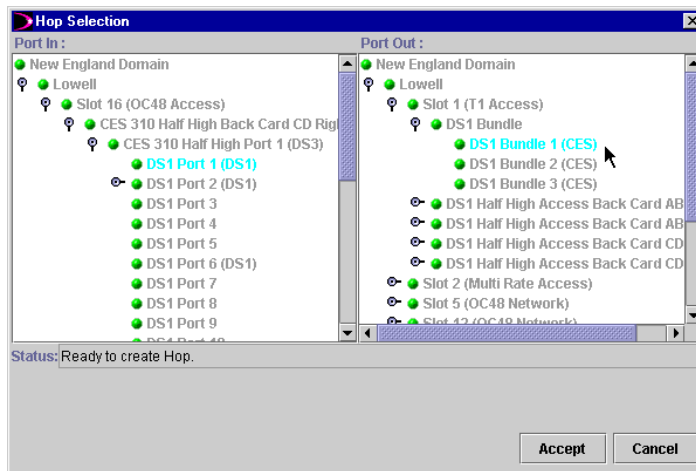
## Selecting the hops

The hops are the input and output ports for each node that create the primary and backup (if protected) circuit paths. ONset automatically assigns the hops, or you can choose them manually.

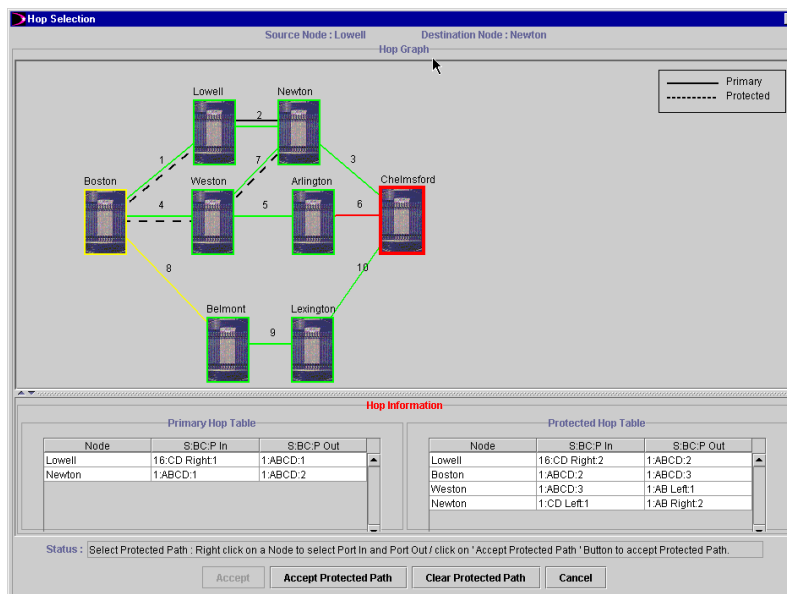
**Note:** If you want ONset to automatically assign the hops, accept the default of **Automatic** and proceed to the next section.

### ◆ To select the hops manually

1. In the Hop selection box of the Provisioning Create window, choose **Manual**.
2. In the Hop Selection window, point to a node, display its pop-up menu, and choose **Select Hop**.



3. Select the hops for the node, and click **Accept**.
4. After defining the hops for the primary path, click **Accept Primary Path**.
5. If you have selected a protected circuit, define the hops for the protected path, and click **Accept Protected Path**.



6. Click **Accept**.



## Saving and loading a circuit

Saving and loading a circuit saves the circuit information to the database and loads it to the node.

### ◆ To save and load the circuit configuration

In the Provisioning Create window, click **Save and Load**.

## Managing service types

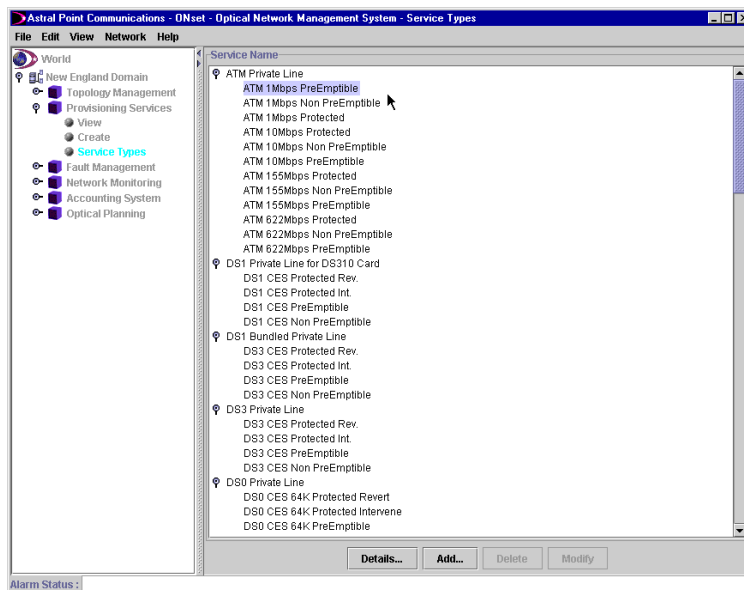
Using the Service Types functions, you can

- View service type details
- Add new service types
- Modify existing service types
- Delete service types

## Viewing available service types

### ◆ To display the defined service types

In the Management Tree, expand Provisioning Services and click **Service Types**.



The services are displayed as an expandable list by service type.

## Viewing service type details

### ◆ To view service type details

In the Service Name window, choose a service type and click **Details**.

## Adding service types

You can add an ATM service type. It appears in the Service Name window and becomes ready for use in the Provisioning Create and Modify options.

### ◆ To add a service type

1. In the list of service types, click **Add**.

2. The Service Create window has the following options:

**Service Name** — Type a name for the new service. This name usually reflects the type of transfer mode or multiplexing, as well as the transfer rate and the path characteristics, such as protected or nonpreemptible. For example, you might name the service ATM 10 Mbps nonpreemptible.

**Circuit Class** — Choose the circuit class (Nonpreemptible, Preemptible, or Protected).

**Circuit Priority** — Select the circuit priority of Low, Medium, or High.

**Recovery Mode** — Select the option that determines how the circuit recovers after a failure (Intervene or Revert).

**Recovery Time (sec)**— For Revert recovery mode, enter the number of seconds the slot should wait after the backed up slot has recovered before reverting control to the backed up slot.

**Traffic Parameters** — Lists the traffic parameters for Port X to Port Y and Port Y to Port X, as follows:

QOS — Choose the Quality of Service for the primary and protected circuit. CBR (Constant Bit Rate), RtVbr (Real-Time Variable Bit Rate), NrtVbr (Non-Real-Time Variable Bit Rate), and UBR (Unspecified Bit Rate).

PCR — Type the Peak Cell Rate, which is the percentage above the bandwidth allowed for a burst of cell traffic. The node software calculates the PCR, but you can edit the value.

SCR — If you chose the NrtVbr QOS, type the Sustainable Cell Rate for the primary and protected circuit.

MBS — If you chose the NrtVbr QOS, type the Max Burst Size for the primary and protected circuit.

MDCR — If you chose the UBR QOS, type the Minimum Desired Cell Rate for the primary and protected circuit.

3. Click **Accept**.

## Modifying service types

### ◆ To modify a service type

1. In the list of service types, select the service type you want to change.
2. Click **Modify**.
3. In the Service Modify window, make the necessary changes.
4. Click **Accept**.

**Note:** You can only modify newly created ATM services. You cannot change an existing service.

## Deleting service types

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**Important:** You cannot delete a service type if it is used in a circuit.

---

### ◆ To delete a service type

1. In the list of service types, select the service type you want to delete.
2. Click **Delete**.
3. Click **Yes** to confirm.

**Note:** You can only delete newly created ATM services. You cannot delete an existing service.

## Modifying a circuit

Modifying a circuit can involve the following tasks:

- Modifying circuit details
- Selecting ports

### Modifying the circuit details

#### ◆ To modify a circuit

1. In the Provisioning View, point to the circuit, display its pop-up menu, and choose **Modify**.

**Modify Circuit**

Provisioning Modify

Service

Type: ATM Private Line

Name: ATM 155Mbps Protected Details...

Port X

Node	Boston
Slot	Slot 16 (OC48 Access)
Back Card	OC48 Access Back Card AB Left
Port	OC48 Access Port 1 (None)
Interface Type	None
Endpoint	1.32.atmPvc

Port Y

Node	Chelmsford
Slot	Slot 16 (OC48 Access)
Back Card	OC48 Access Back Card AB Left
Port	OC48 Access Port 1 (None)
Interface Type	None
Endpoint	1.32.atmPvc

Select Port Interface Properties EndPoint Properties

Hop Selection

☒ Automatic  
☐ Manual

Hop Selection

Circuit

Name: Circuit5

Subscriber: AstraLAN

Customer: Media Classics

RDI Alarm Level: Disabled

AIS Alarm Level: Disabled

Save and Load Close

2. In the Modify Circuit window, make any necessary changes.
3. Click **Save and Load**.

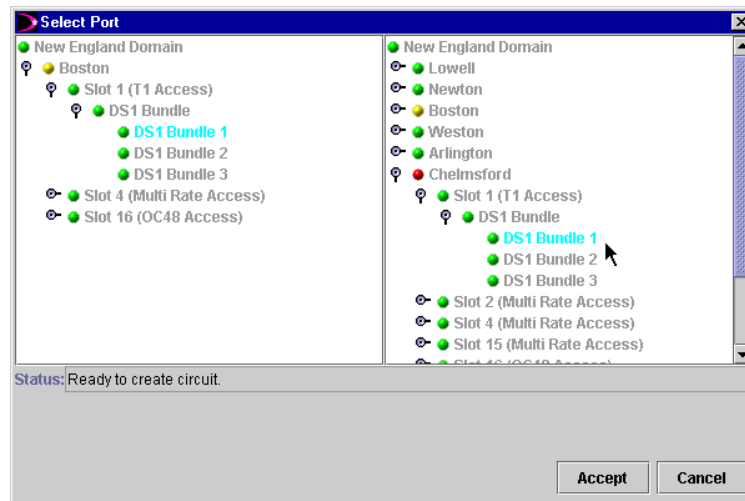
## Selecting ports for the circuit

The Select Port window is a hierarchical representation of the nodes in the domain. The left pane shows a single source node for Port X; the right pane shows all the potential destination nodes for Port Y. Click down until you reach the port you need.

**Note:** ONset can automatically configure the endpoints for the selected ports.

### ◆ To select ports for a circuit

1. In the Modify Circuit window, click **Select Port**.
2. In the left pane, expand the tree to locate and select the port for Port X.
3. In the right pane, expand the tree to locate and select the port for Port Y.



4. With the X and Y ports selected, click **Accept**.

5. In the Modify Circuit window, click **Interface Properties**.

The screenshot shows two side-by-side 'Interface Properties' windows. The left window is for 'Port X: DS1 Bundle 1' and the right is for 'Port Y: DS1 Bundle 1'. Both windows have an 'Interface Properties' tab selected. In the left window, the 'Alias' field is empty and the 'Interface Type' is set to 'CES'. Below these fields is a table with the following data:

Property	Value
Admin State	Up
Line Type	M23
Send Code	No Code
Circuit ID	
Loopback Configuration	No Loop
Transmit Clock Source Timing	Through Timing
FDL Type	FDL None
DS1 for Remote Loop	0

The right window is identical but has the 'Admin State' set to 'Up'.

6. In the Interface Properties window, enter the Alias name and update properties as necessary.
7. When you are finished, click **OK**.
8. In the Modify Circuit window, click **EndPoint Properties** to view the automatically assigned endpoints.

The screenshot shows two side-by-side 'Endpoint Properties' windows. The left window is for 'Port X: DS1 Bundle 1' and the right is for 'Port Y: DS1 Bundle 1'. Both windows have an 'Endpoint Properties' tab selected. Each window contains a table with the following data:

Assigned	VPI Value	VCI Value	Address Family
<input checked="" type="checkbox"/>	0	32	cesPvc

The right window is identical to the left one.



## Changing the circuit status

From the Provisioning View, you can perform the following operations on a circuit:

- Activate the circuit
- Deactivate the circuit
- Load the circuit
- Delete the circuit
- Force the circuit to use its primary path
- Force the circuit to use its protected path
- Recalculate the circuit path
- Get cross connect information

### Activating a circuit

Activating a circuit makes it available for message passing.

#### ◆ To activate a circuit

1. Point to the circuit, display its pop-up menu, and choose **Activate**.
2. Click **Yes** to confirm.

### Deactivating a circuit

Deactivating a circuit makes it unavailable for message passing.

#### ◆ To deactivate a circuit

1. Point to the circuit, display its pop-up menu, and choose **Deactivate**.
2. Click **Yes** to confirm.

## Loading a circuit

Loading a circuit copies the circuit information to the node and overwrites any circuit information currently on that node.

### ◆ To load a circuit

1. Point to the circuit, display its pop-up menu, and choose **Load**.
2. Click **Yes** to confirm.

## Deleting a circuit

### ◆ To delete a circuit

1. Point to the circuit, display its pop-up menu, and choose **Delete**.
2. Click **Yes** to confirm.

## Forcing a circuit to use its primary path

### ◆ To force a circuit to use its primary path

1. Point to the circuit, display its pop-up menu, and choose **Force to Primary Path**.
2. Click **Yes** to confirm.

## Forcing a circuit to use its protected path

### ◆ To force a circuit to use its protected path

1. Point to the circuit, display its pop-up menu, and choose **Force to Protected Path**.
2. Click **Yes** to confirm.

## Recalculating a circuit path

### ◆ To recalculate the path for a circuit

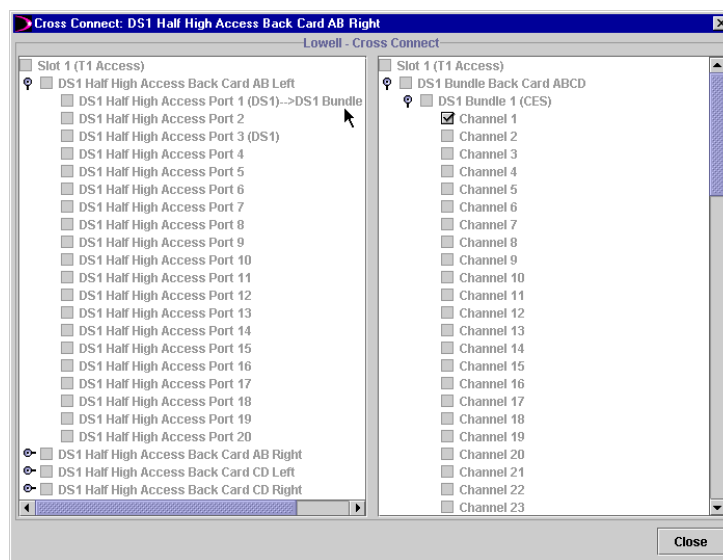
1. Point to the circuit, display its pop-up menu, and choose **Recalculate Path**.
2. Click **Yes** to confirm.

You can view the recalculated path by viewing the circuit details.

## Getting cross-connect information

### ◆ To examine the DS1 Cross Connect Table

In the Provisioning View, point to a circuit, display its pop-up menu, and choose **Cross Connect**.



The Circuit Cross Connect window shows port, bundle, and channel details for the DS1 Cross Connect.





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## Chapter 4

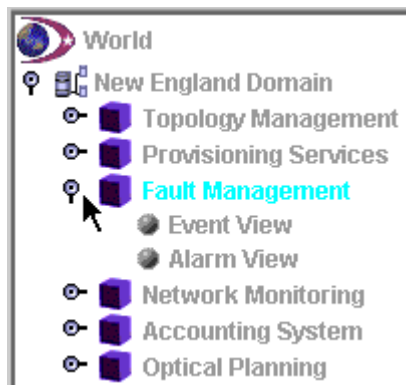
# Fault Management

With the *ONset* Fault Management functions, you can monitor the status of the domain, and get fault notification and debugging information for network incidents. These incidents are characterized as either

**Events** — any significant state change in the domain, such as a user logging on or off, the addition of equipment, or the completion of a diagnostic test.

**Alarms** — a problem condition that requires attention and possible correction, such as an equipment failure or loss of a connection. Alarms are designated as Critical, Major, Minor, or Warning.

The Fault Management functions provide domain-wide information about events and alarms. For access to these functions, expand the Fault Management branch in the Management Tree.



You can also get event and alarm information throughout the *ONset* application. For example, when working with the Topology functions described in Chapter 2, you can get event and alarm information at any level through the pop-up menus for specific network elements (such as nodes, cards, ports, and links).

## Monitoring events

Events are recorded and presented for informational purposes only — no associated management actions are necessary.

Typical event conditions include

- Node, card, port, or link is up
- Change to the topology
- Card inserted or removed
- Circuit created, enabled, disabled, or deleted
- Test completed successfully

## Viewing events

Event information is available at all levels of the network hierarchy. Events are presented in a table format, as shown in this sample Event View for a domain.

Event View			
Source	IP Address	Date	Message
Lowell	127.132.72.1	2001-02-13 11:27:01	The switch is up
Lowell	127.132.72.1	2001-02-13 11:27:01	Dcarlson Logged In
Boston	127.132.72.3	2001-02-13 11:27:01	Board Passed Loopback
Arlington	127.132.72.5	2001-02-13 11:27:01	M13 Board Added
Arlington	127.132.72.5	2001-02-13 11:27:01	Switch has been reset
Arlington	127.132.72.5	2001-02-13 11:27:01	Board is Primary
Chelmsford	127.132.72.6	2001-02-13 11:27:01	Link Passed Diagnostics

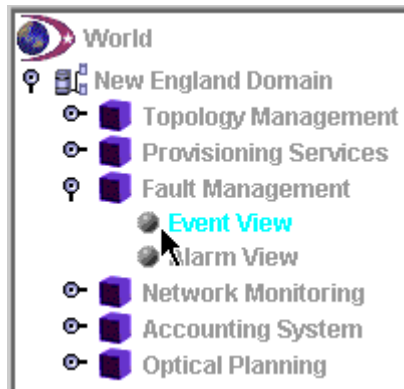
☐ Apply Filter    Source ▼    Equals

Each entry in the Event View shows

- the source (node where the event occurred)
- the IP address of the node
- the date and time of the event
- the event message

### ◆ To get a domain-wide Event View

In the Management Tree, expand **Fault Management**, and click **Event View**.



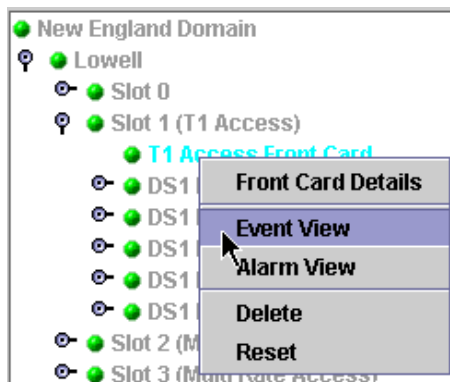
The domain Event View appears to the right, in the Service Panel.

With the filtering option, you can display a subset of the domain events by specifying selection criteria. For example, you could filter the Event View to show only events that occurred after a specific date and time, or on a particular node.

For more information, refer to “Filtering the list of domain events,” later in this chapter.

### ◆ To get the Event View for a specific node, card, or port

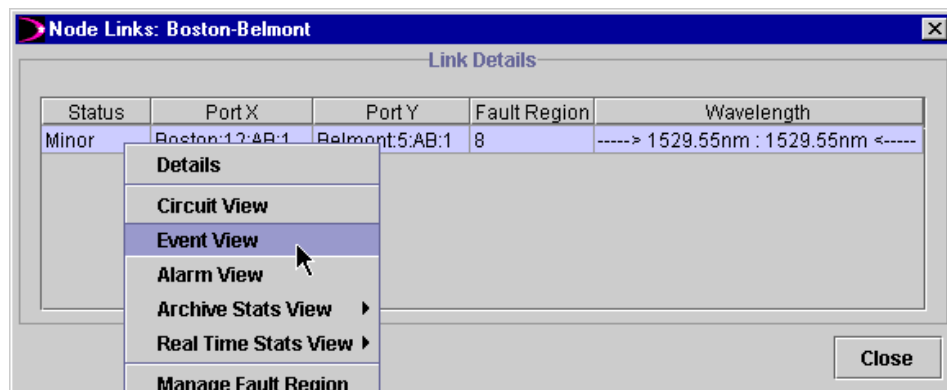
In the domain topology tree or Chassis View, point to the item, display its pop-up menu, and choose **Event View**.



The element's Event View appears in a separate window.

◆ **To get the Event View for a specific link**

1. In the Graph View or Circuit Path View, select the link, display its pop-up menu, and choose **Details**.
2. In the Link Details table, select the link, display its pop-up menu, and choose **Event View**.



The link's Event View appears in a separate window.

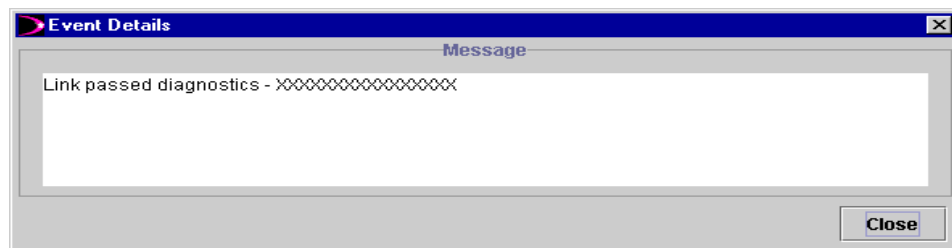
**Viewing details for an event**

When viewing a list of events, you can get the full text associated with any event.

◆ **To get the full message for an event**

In the Event View, point to the event entry, display its pop-up menu, and choose **View Event Details**.

The full message for the event appears in a separate window.



To dismiss the Event Details window, click **Close**.



## Filtering the list of domain events

The domain-wide Event View provides a filtering option that you can use to generate a subset of events. In other words, you specify a condition, and only the events that match it will be displayed.

For example, you could filter the list to show only events that occurred on a selected node.

### ◆ To filter the Event View

1. At the bottom of the Event View, check the **Apply Filter** option.
2. From the menu, choose the event attribute (column heading) on which to base the filter.
3. In the field following “Equals,” type the specific value on which to base the filter (such as the node name, IP address, date/time, or message text).

For dates and times, use the format *yyyy-mm-dd hh:mm:ss*

**Note:** To get events for a period beginning on a specified date, use the **Properties** button, described next.

Text values are not case-sensitive. You can use the asterisk ( \* ) as a wildcard to represent zero or more characters.

4. Click **Update**.

For example, to view events only on the node named Arlington, you would enter the following filtering condition:



**Note:** If you apply a subsequent filter, the new filter applies to the original list of events, not to the results of the previous filter.

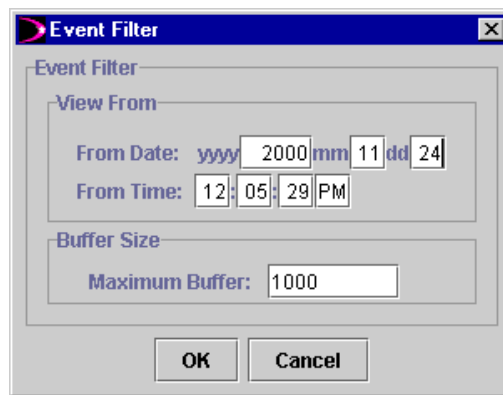
The event list displays events from the specified date and time to the present.

To restore the complete, unfiltered event list use the Properties button, as described next.

You can also specify how much historical event data to display.

◆ **To load events for a specific period or to restore an unfiltered event list**

1. In the Event View, uncheck the Apply Filter option.
2. Click **Properties**.
3. Type the date and time for the beginning of the event data you want.  
The default starting point is one week ago.
4. In the Maximum Buffer field, type the maximum number of events you want displayed.
5. Click **OK**.



## Printing event information

You can print the entire list of events, or the details for a specific event.

◆ **To print the current Event View**

1. Click the **Print** button below the list.
2. Complete the print dialog box, and then click **OK**.

◆ **To print event details (the full event message)**

1. In the Event View, point to the event entry, display its pop-up menu, and choose **Print Event**.
2. Complete the print dialog box, and then click **OK**.

The full text of the selected message is printed.

## Monitoring and managing alarms

An alarm is generated when a significant problem has been detected in the domain, requiring administrative attention and/or technical resolution. Alarms are designated with different levels of severity:

**Critical** — A fault that severely affects service, requiring immediate corrective action.

**Major** — A fault that significantly degrades service, requiring urgent attention.

**Minor** — A potential or impending condition that may not affect service, but that requires corrective action to avert a more serious problem.

**Warning** — A condition that could lead to service problems if not corrected.

In the Alarm View, critical and major alarms appear as red alerts; minor and warning alarms appear as yellow alerts.

**Note:** The Topology Management functions (described in Chapter 2) use the same color coding in the topology views and in the chassis Node State indicator to flag a problem with a node or its elements: a yellow indicator signals a minor or warning alarm; a red indicator signals a critical or major alarm. (A green indicator signifies normal operations or a “clear” state, while blue indicates that *ONset* cannot determine the element’s state.)

Examples of alarm conditions include

- Node, board, port, or link is down
- Broken fiber
- Failed test
- Topology, chassis, or configuration information in the *ONset* database does not match data received from the domain

Once an alarm has been noted, and appropriate actions are underway to resolve the problem, you can acknowledge the alarm. An acknowledged alarm remains in the list for tracking purposes, but the alarm is flagged in order to distinguish it from those that still require attention.

After resolution of the issue, you can clear the associated alarm, removing it from the list.

## Alarm Status field

The Alarm Status field at the bottom of the ONset window displays each new alarm message upon receipt. The alarm message remains on display for up to 60 seconds, unless a newer alarm replaces it. You can use the **View** menu to show or hide the Alarm Status field.



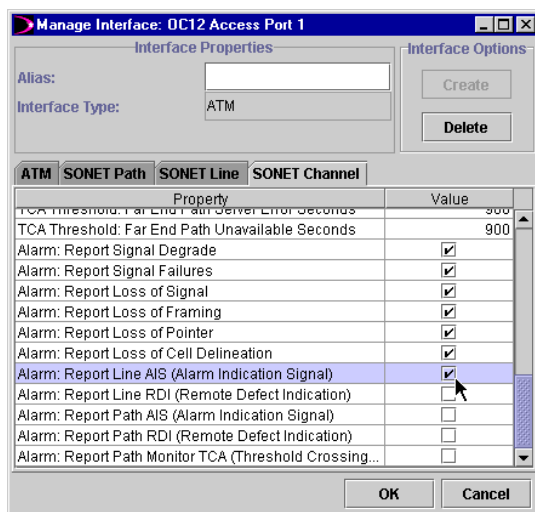
## Audible and visual alarms

Each node provides hardware connectors for both audible and visual alarms. Refer to your hardware manual for details about the connectors and their location.

As shown in Chapter 2, the Chassis View provides a color-coded indicator for the node's audible alarm. You can use the Chassis View pop-up menu to clear the audible alarm indicator.

## Selecting which alarms are reported (ATM ports only)

For ATM ports, you can specify which alarm conditions to report. When managing an ATM port interface (as described in Chapter 2), you can use the **SONET Channel** tab to list alarm options. Check the alarms you want reported.



When managing an ATM port interface, you can select the alarm conditions to be reported for that port.

## Viewing alarms

Alarm information is available at all levels of the network hierarchy. Alarms are presented in a table format, as shown in the following sample Alarm View for a domain.

**Alarm View**

Warning: 2   Minor: 1   Major: 2   Critical: 14

Class	Source	IP Address	Date	Alarm	Acknowledge
Critical	Newton	127.132.72.2	2001-02-26 14:59:45	The switch is down	<input type="checkbox"/>
Critical	Newton	127.132.72.2	2001-02-26 14:59:45	Fiber is Broken	<input type="checkbox"/>
Warning	Boston	127.132.72.3	2001-02-26 14:59:45	Warning: DS1 Path...	<input type="checkbox"/>
Critical	Boston	127.132.72.3	2001-02-26 14:59:45	Port is Down	<input type="checkbox"/>
Critical	Boston	127.132.72.3	2001-02-26 14:59:45	Port is Down	<input type="checkbox"/>
Critical	Boston	127.132.72.3	2001-02-26 14:59:45	Port is Down	<input type="checkbox"/>
Critical	Boston	127.132.72.3	2001-02-26 14:59:45	Port is Down	<input type="checkbox"/>
Major	Boston	127.132.72.3	2001-02-26 14:59:45	Board Failed Loopback	<input type="checkbox"/>
Major	Weston	127.132.72.4	2001-02-26 14:59:45	Loss Of Signal detected	<input checked="" type="checkbox"/>
Critical	Weston	127.132.72.4	2001-02-26 14:59:45	Internal Switch Fault	<input type="checkbox"/>
Minor	Chelmsford	127.132.72.6	2001-02-26 14:59:45	The internal network ...	<input type="checkbox"/>
Critical	Chelmsford	127.132.72.6	2001-02-26 14:59:45	Port is Down	<input type="checkbox"/>
Warning	Boston	127.132.72.3	2001-02-26 14:59:45	Warning: DS1 Path...	<input type="checkbox"/>
Critical	Chelmsford	127.132.72.6	2001-02-26 14:59:45	Port is Down	<input type="checkbox"/>

**Alarm Filter**

☐ Apply Filter   Class ▼ Equals     Update   Print   Properties...

The Alarm View includes counts at each severity level for the alarms shown in the table. Each entry in the table shows

- the class (severity level) — critical and major alarms are coded red; minor and warning alarms are coded yellow.
- source (node where the problem occurred)
- the node's IP address
- the date and time of the alarm
- the alarm message

In addition, you can flag an alarm to acknowledge it.

◆ **To get a domain-wide Alarm View**

In the Management Tree, expand **Fault Management**, and click **Alarm View**.



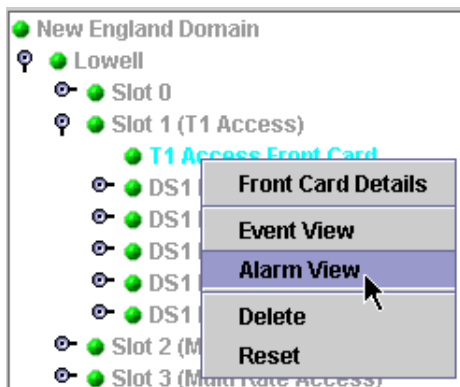
The domain Alarm View appears to the right, in the Service Panel.

With the filtering option, you can display a subset of the domain alarms by specifying selection criteria. For example, you could filter the Alarm View to show only alarms that occurred after a specific date and time, or on a selected node.

For more information, refer to “Filtering the list of domain alarms,” later in this chapter.

◆ **To get the Alarm View for a specific node, card, or port**

In the domain topology tree or Chassis View, point to the item, display its pop-up menu, and choose **Alarm View**.

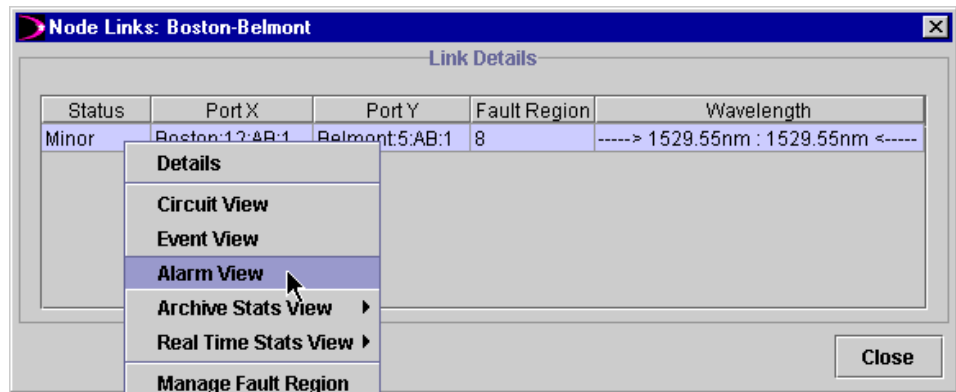


The element's Alarm View appears in a separate window.

**Note:** For information on getting a statistical chart of alarms for all ports on a node, refer to Chapter 5.

◆ **To get the Alarm View for a specific link**

1. In the Graph View or Circuit Path view, select the link, display its pop-up menu, and choose **Details**.
2. In the Link Details table, select the link, display its pop-up menu, and choose **Alarm View**.



The link's Alarm View appears in a separate window.


## Viewing details for an alarm

When viewing a list of alarms, you can get additional information about any entry. The detailed information includes the alarm message, probable cause, and diagnostic information.

### ◆ To get more information about an alarm

In the Alarm View, point to the alarm entry, display its pop-up menu, and choose **View Alarm Details**.

The information for this alarm appears in a separate window, as shown in the following sample Alarm Detail window.



The screenshot shows a window titled "Alarm Details" with a blue header bar. The window is divided into four main sections, each with a title bar: "Message", "Probable Cause", "Diagnostic Information", and "Resolution". The "Message" section contains the text "Node Lowell is not reachable." The "Probable Cause" section contains the text "The power supply is not available for the node, or the node is not on the network." The "Diagnostic Information" section contains the text "Check the power supply and the network connection to the node." The "Resolution" section is a large empty text area. At the bottom of the window, there is a "Save Comments" button and a "Close" button.

In the Resolution field at the bottom of the Alarm Detail window, you can type any comments about the resolution of the problem. After entering the text, click **Save Comments** to keep the comments as part of the alarm details.

To dismiss the Alarm Detail window, click **Close**.



## Filtering the list of domain alarms

The domain-wide Alarm View provides a filtering option that you can use to generate a subset of alarms. In other words, you specify a condition, and only the alarms that match it will be displayed.

For example, you could filter the list to show only alarms that occurred on a selected node.

### ◆ To filter the Alarm View

1. At the bottom of the Alarm View, check the **Apply Filter** option.
2. From the menu, choose the alarm attribute (column heading) on which you want to base the filter.
3. In the field following “Equals,” type the specific value on which to base the filter (such as the alarm severity class, node name, IP address, date/time, or alarm text).

For dates and times, use the format *yyyy-mm-dd hh:mm:ss*

**Note:** To get alarms for a period beginning on a specified date, use the **Properties** button, described next.

Text values are not case-sensitive. You can use the asterisk ( \* ) as a wildcard to represent zero or more characters.

4. Click **Update**.

For example, to view only critical alarms, you would enter this filtering condition:



After you apply a filter, the alarm counts reflect the alarms in the filtered list.

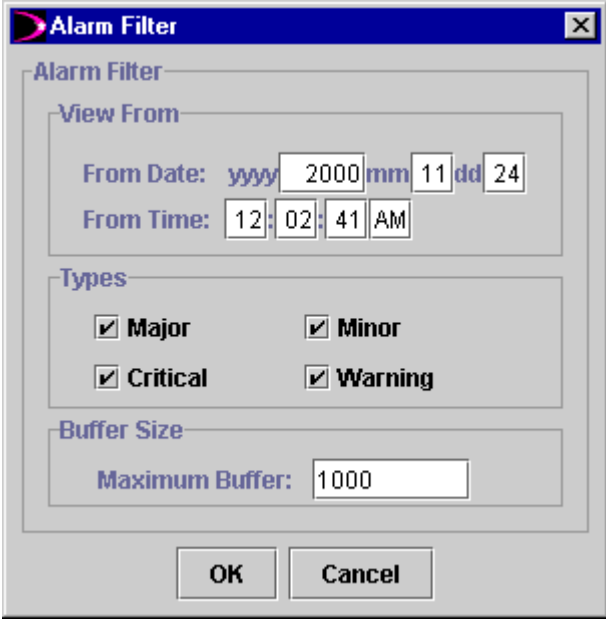
**Note:** If you apply a subsequent filter, the new filter applies to the original list of alarms, not to the results of the previous filter.

To restore the complete, unfiltered alarm list, use the Properties button, as described next.

You can also specify how much historical alarm data to display.

◆ **To load alarms for a specific period or to restore an unfiltered alarm list**

1. In the Alarm View, be sure the Apply Filter option is unchecked.
2. Click **Properties**
3. Type the date and time for the beginning of the alarm data you want.  
The default starting point is one week ago.
4. Check the alarm severity types to include.
5. In the Maximum Buffer field, type the maximum number of alarms you want displayed.
6. Click **OK**.



The screenshot shows a dialog box titled "Alarm Filter" with a close button (X) in the top right corner. The dialog is divided into three main sections: "View From", "Types", and "Buffer Size".

- View From:** This section contains two rows of input fields. The first row is labeled "From Date:" and has four fields for "yyyy", "mm", "dd", and "24", with the value "2000" entered in the "yyyy" field. The second row is labeled "From Time:" and has four fields for "12", "02", "41", and "AM", with the value "12" entered in the first field.
- Types:** This section contains four checkboxes arranged in a 2x2 grid. All four checkboxes are checked: "Major", "Minor", "Critical", and "Warning".
- Buffer Size:** This section contains a single input field labeled "Maximum Buffer:" with the value "1000" entered.

At the bottom of the dialog, there are two buttons: "OK" and "Cancel".

The Alarm View displays alarms from the specified date and time through the present.

## Acknowledging alarms

You can acknowledge an alarm to indicate that the associated problem has been noted, and that appropriate action is underway to resolve the issue. An acknowledged alarm remains in the list for tracking purposes, and does not affect the alarm counts.

### ◆ To acknowledge an alarm

In the Alarm View, point to the alarm, display its pop-up menu, and choose **Acknowledge Alarm**.

A check mark appears for the selected item under the Acknowledge column.

Class	Source	IP Address	Date	Alarm	Acknowledge
Critical	Chelmsford	127.132.72.6	2001-02-29 11:38...	Port is Down	<input checked="" type="checkbox"/>
Critical	Newton	127.132.72.2	2001-02-29 11:38...	Fiber is Broken	<input type="checkbox"/>

**Note:** Once acknowledged, an alarm cannot be “unacknowledged.”

## Clearing alarms

Following problem resolution, you can clear the associated alarm and remove it from the list.



**Important:** Once you clear an alarm entry, you cannot recover it. If you want to retain the entry, acknowledge the alarm (as described in the previous section) without clearing it.

### ◆ To clear an alarm

In the Alarm View, point to the alarm, display its pop-up menu, and choose **Clear Alarm**.

The selected alarm is deleted.

## Printing alarm information

### ◆ To print the current Alarm View

1. Click the **Print** button below the list.
2. Complete the print dialog box, and then click **OK**.

This operation prints a copy of the Alarm View as currently displayed (with any applied filtering).

### ◆ To print alarm details

1. In the Alarm View, point to the alarm entry, display its pop-up menu, and choose **Print Alarm**.
2. Complete the print dialog box, and then click **OK**.

The printed information includes the alarm entry fields (class, source, IP address, date/time, message, and acknowledge setting), as well as the alarm details information (full message, probable cause, diagnostic information, and resolution comments).



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## Chapter 5

# Network Monitoring

With the *ONset* Network Monitoring functions, you can get statistical information for node, link, and circuit activity within the domain. For access to these functions, expand the Network Monitoring branch in the Management Tree.



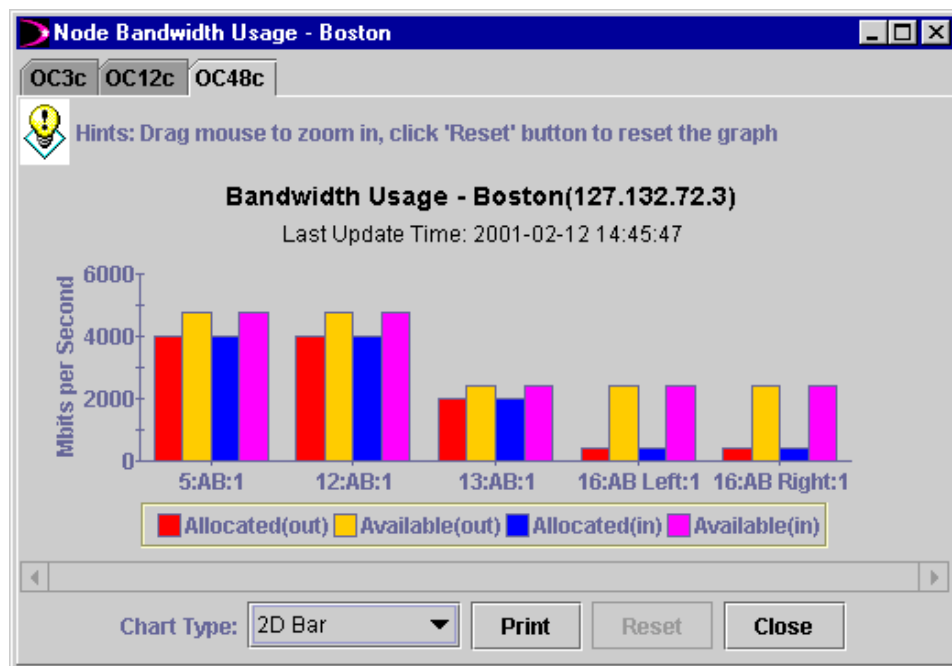
For each of the Network Monitoring functions, a table of statistics for the domain appears in the Service Panel to the right. The table data is automatically refreshed from the database every 15 minutes.

For any entry in the node or link table, you can get additional real-time or archived statistics displayed in chart format in a separate window.

Because charts are available for all types of statistics, the following section provides an overview of working with charts. Afterward, this chapter describes the Node Statistics, Link Statistics, and Circuit Statistics functions.

## Working with charts

The following illustration shows a sample chart of statistics. Charts appear in a separate window (since they are related to information shown in the Service Panel).



Each chart's title identifies the type of statistics presented. The chart also indicates either the date and time when the information was last updated, or the time period covered by the data shown.

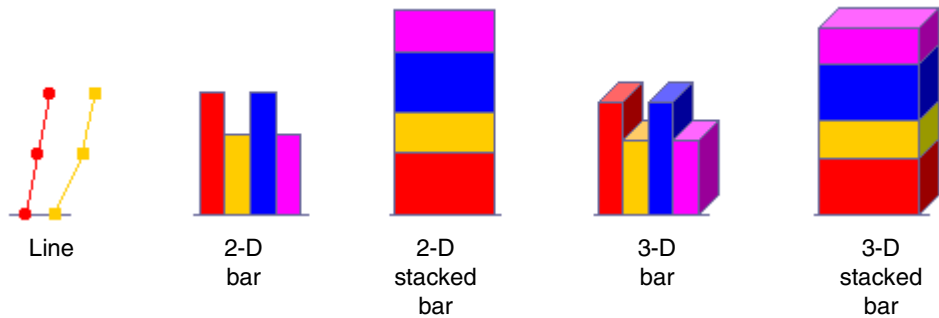
To distinguish data items, bar charts use color coding, and line charts use color coding with unique symbols. Each chart includes a legend to explain the colors and symbols in use.

Some charts, as in the example above, include multiple tabs for grouping related statistical data.

To dismiss a chart, click its **Close** button.

## Selecting the chart type

When viewing statistics, you can choose from a menu of chart types:



The standard bar charts show data items side by side; the stacked bar charts combine related items into a single column.

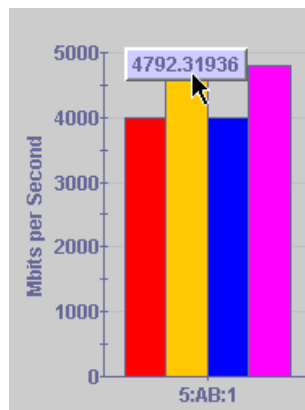
### ◆ To select the chart type

In the chart window, choose an option from the Chart Type menu.

**Note:** The selected chart type applies to the current display only. If the chart provides multiple tabs, you can choose a different chart type on each tab.

## Using tool tips to get data values in a chart

When viewing a chart, you can get the value for any item by pointing to it. After a brief pause, a tool tip appears with the specific value for that item.



To get the value for a chart item, point to the item and a tool tip will display its value.

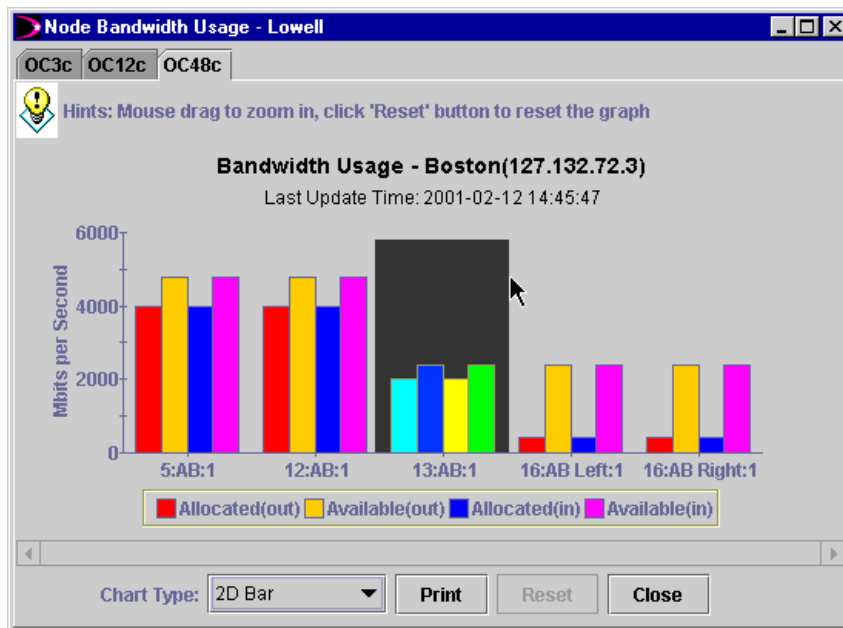
## Zooming in

When you first open a chart, all data is fitted to the available window area. You can, however, zoom in to focus on a selected part of the data and view those details.

### ◆ To zoom into a chart

Drag the mouse to highlight the area you want to view in detail, and then release the mouse button.

In the following example, data values for a single port (13:AB:1) have been selected.



The chart view expands to show the selected data. All of the data originally displayed is still available. You can use the scroll bar to view to either side of the data you selected.

If you want, you can continue to zoom in by selecting another section of the chart.

### ◆ To restore the chart to its original appearance

Click **Reset**.



## Reloading data for a chart

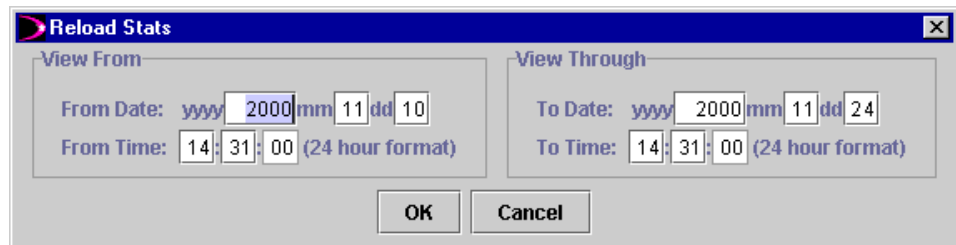
When viewing archived statistics, you can reload data for a specific time period, subject to availability.

### ◆ To load archived data for a specific period

1. Click **Reload**.
2. In the Reload Stats window, enter the beginning and ending dates and times for the data you want.

Generally, the default period is the last 24 hours.

3. Click **OK**.



The chart is redrawn with the data for the period you specified.

## Printing a chart

You can get a printed copy of any chart.

### ◆ To print a chart

1. Display the chart with the desired chart type and zoom.
2. Click **Print**.
3. Complete the print dialog box, and then click **OK**.

## Getting node statistics

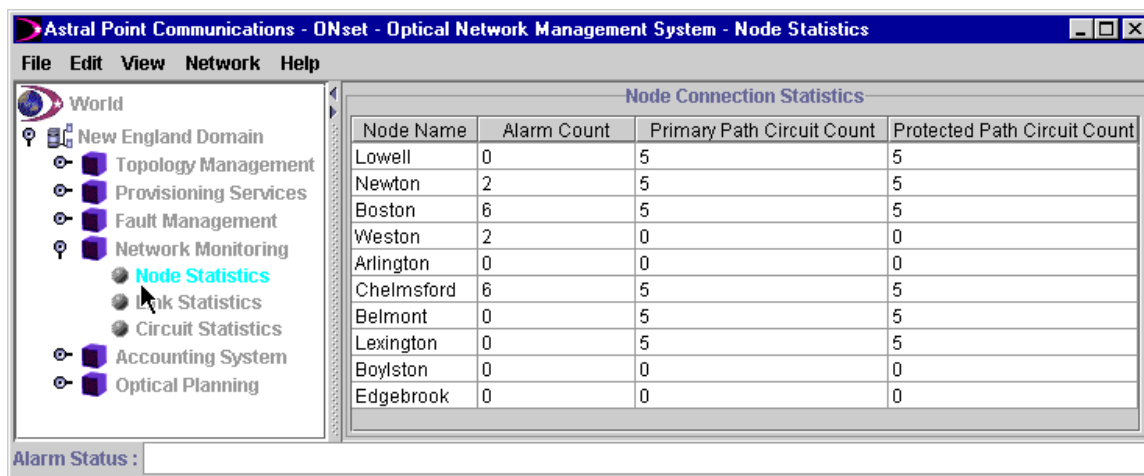
The Node Statistics function displays connection statistics for the domain. For each node, the statistics show the number of

- alarms
- circuits using the primary path
- circuits using the protected path

### ◆ To get node statistics

1. In the Management Tree, expand the **Network Monitoring** branch.
2. Click **Node Statistics**.

The Node Connection Statistics table appears to the right in the Service Panel, as shown in this example. The data is refreshed from the database every 15 minutes.



Node Connection Statistics			
Node Name	Alarm Count	Primary Path Circuit Count	Protected Path Circuit Count
Lowell	0	5	5
Newton	2	5	5
Boston	6	5	5
Weston	2	0	0
Arlington	0	0	0
Chelmsford	6	5	5
Belmont	0	5	5
Lexington	0	5	5
Boylston	0	0	0
Edgebrook	0	0	0

## Printing the node connection statistics

### ◆ To get a printed copy of the Node Connection Statistics table

1. Point anywhere within the table, display the pop-up menu, and choose **Print**.
2. Complete the print dialog box, and then click **OK**.

## Using the Statistics Manager

You can use the Statistics Manager to control the amount of statistical information that is archived on a node. When enabled, the Statistics Manager collects statistics for the each managed interface on the node, and stores that information on node Disk B.

In addition to enabling or disabling the Statistics Manager, you can specify

- The time span for a statistics file—that is, the number of minutes of data that each file holds.
- The archival period—that is, the number of days the node will retain each statistics file on disk. Afterward, that statistics file is discarded.



**Important:** A node does not collect statistical data during periods in which its Statistics Manager is disabled. At any time, a request for archived statistics will be limited to whatever data is available on the node.

Statistics Manager settings do not affect requests for real-time statistics on the node.

### ◆ To manage statistics for a node

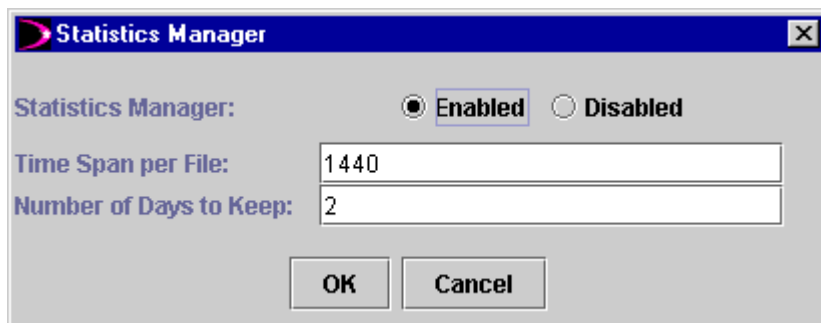
1. In the Node Connection Statistics table, point to the node, display its pop-up menu, and choose **Statistics Manager**.  
(As an alternative, you can begin in either the Topology tree or Graph View, display the node's pop-up menu, point to **Statistics View**, and choose **Statistics Manager** from the submenu.)
2. Click the option to enable or disable the Statistics Manager on the node.
3. In the Time Span field, type the number of minutes of data to be stored in each file.

The default time span is 1440 minutes (24 hours).

4. Specify the number of days to retain each statistics file.

This number determines the maximum number of files (days) saved on this node, and consequently, how far back statistical data goes before it is discarded.

5. When you are finished, click **OK**.



## Uploading statistics from a node

This operation retrieves the statistical data that is archived on a node, and updates the ONset database with that information. As a result, you can display updated node statistics, as well as the latest port cell rate and port error rate data for a node.



**Important:** The Statistics Manager settings, described in the previous section, determine the availability of archived statistics on the node.

---

### ◆ To upload statistics from a node

In the Node Connection Statistics table, point to the node, display its pop-up menu, and choose **Upload Statistics from Node**.

**Note:** As an alternative, you can perform the same function in either the Topology tree or Graph View by displaying the node's pop-up menu, pointing to **Statistics View**, and then choosing **Upload Statistics from Node** from the submenu.

The Node Connection Statistics table is updated with the latest available data for the selected node. Available data for port cell rate and port error rate charts, described in the sections that follow, is also uploaded to the ONset database.

# Displaying node statistics

From the Node Connection Statistics table, you can get the following statistical charts for any node:

- Bandwidth usage for all ports on the node
- Cell rate for all ports on the node
- Error rate for all ports on the node
- Alarms for all ports on the node

Each chart appears in a separate window. For information on displaying and manipulating charts, refer to “Working with charts,” earlier in this chapter.

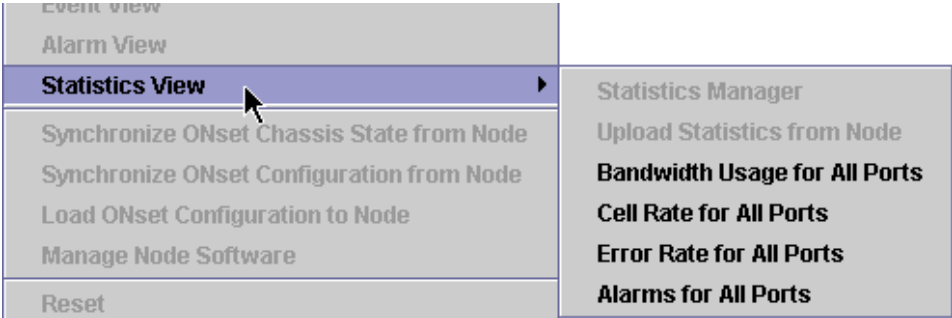
In these charts, ports on the node are identified with the following notation:

*slot:card:port*

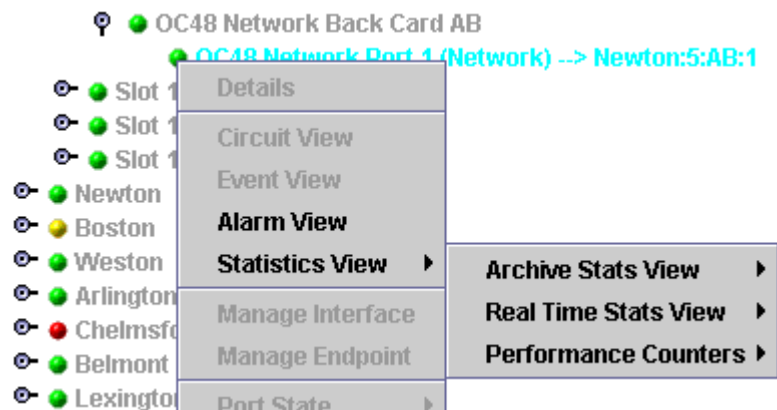
such as **15:AB:1** (slot 15, card position AB, port 1).

For information on specifying card position, refer to Appendix B.

The sections that follow describe how to display the statistics charts via the Node Connection Statistics table. As an alternative, you can obtain the same node statistics through the Topology and Graph Views described in Chapter 2. In these views, display the node’s pop-up menu, point to **Statistics View**, and then choose the option you want from the submenu, as shown in the following example.



In addition, cell rate, error rate, alarm, and port performance counter information is available for individual ports through their pop-up menus in the Topology and Chassis Views.



You can get alarm information, and real time or archived cell rate and error rate statistics, and performance counter statistics for a specific port through the port's pop-up menu in the Topology tree or Chassis View.

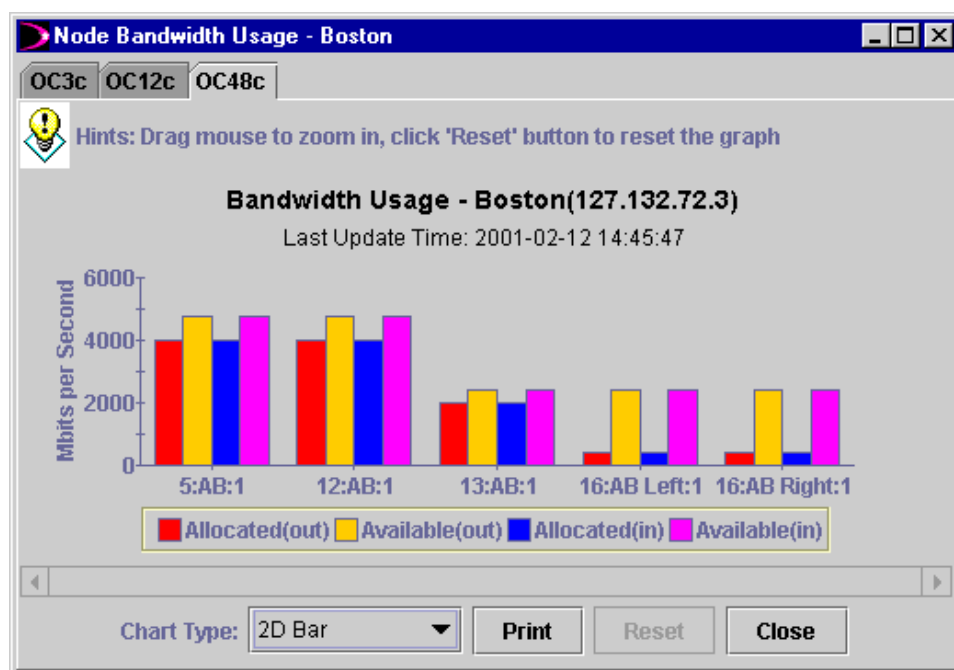
## Getting bandwidth usage for all ports

### ◆ To display the bandwidth usage for all ports on a node

In the Node Connection Statistics table, point to the node, display its pop-up menu, and choose **Bandwidth Usage for All Ports**.

(As an alternative, you can begin in either the Topology tree or Graph View, display the node's pop-up menu, point to **Statistics View**, and choose **Bandwidth Usage for All Ports** from the submenu.)

The Node Bandwidth Usage window appears, as shown in this example.



Separate tabs provide statistics for each type of interface. The bandwidth usage chart shows (in megabits per second)

- Allocated (maximum configured) Mbps for incoming (reverse) traffic
- Available Mbps for incoming (reverse) traffic
- Allocated (maximum configured) Mbps for outgoing (forward) traffic
- Available Mbps for outgoing (forward) traffic

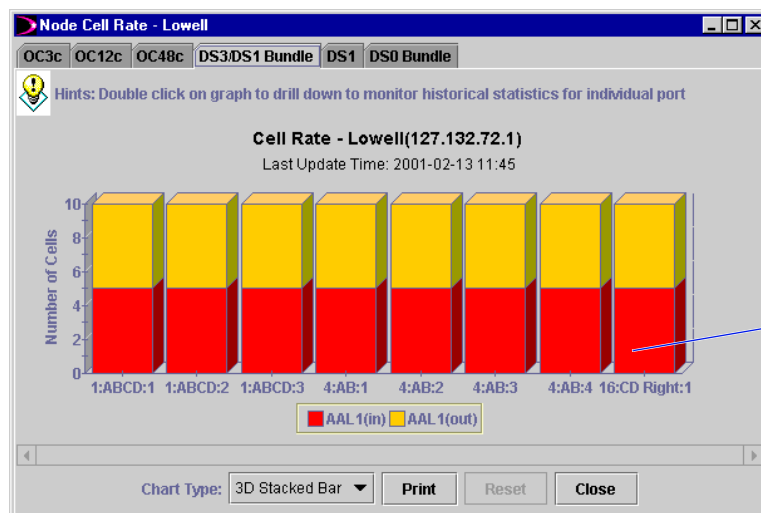
## Getting cell rates for all ports

### ◆ To display the cell rate for all ports on a node

In the Node Connection Statistics table, point to the node, display its pop-up menu, and choose **Cell Rate for All Ports**.

(As an alternative, you can begin in either the Topology tree or Graph View, display the node's pop-up menu, point to **Statistics View**, and choose **Cell Rate for All Ports** from the submenu.)

The Node Cell Rate window displays a chart with cell rates for each port, as shown in this example.



Double-click the data for any port to open a cell rate chart for that port in a new window.

Separate tabs provide statistics for each type of port interface.

## Getting cell rates for a specific port

If a port has a managed interface, you can get cell rate statistics for that port either through the Node Cell Rate chart (as shown in the previous section), or through the Topology tree (described in Chapter 2).

### ◆ To get port cell rate statistics through the Node Cell Rate chart

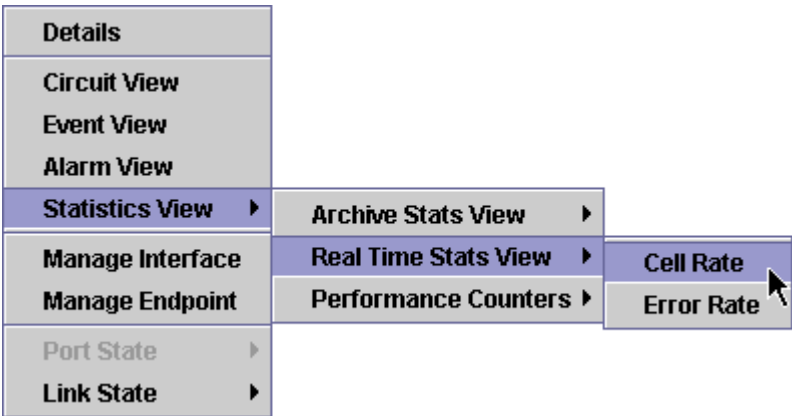
1. Select the appropriate tab for the port type.
2. Double-click the data shown for the port.



The port-specific cell rate statistics appear in a new window.

◆ **To get port cell rate statistics through the Topology tree**

- 1. Expand the domain topology tree to display the port you want.
- 2. Point to the port, display its pop-up menu, point to **Statistics View**, then point to either **Archive Stats View** or **Real Time Stats View**, and choose **Cell Rate** from the submenu.



Cell rate statistics for that port appear in a new window.

If you choose real-time statistics, the chart retrieves current information for the port and updates it every minute.

If you choose archived statistics, the chart displays the data for the last 24 hours. To get data for another period, click the **Reload** button in the chart window, and specify the beginning and ending dates.

**Note:** The Statistics Manager settings on a node govern the availability of archived statistical data.

**Note:** In the Link Connection Statistics table (described in the section, “Getting link statistics,” later in this chapter), you can get cell rate statistics for a link’s source or destination port via the link’s pop-up menu.

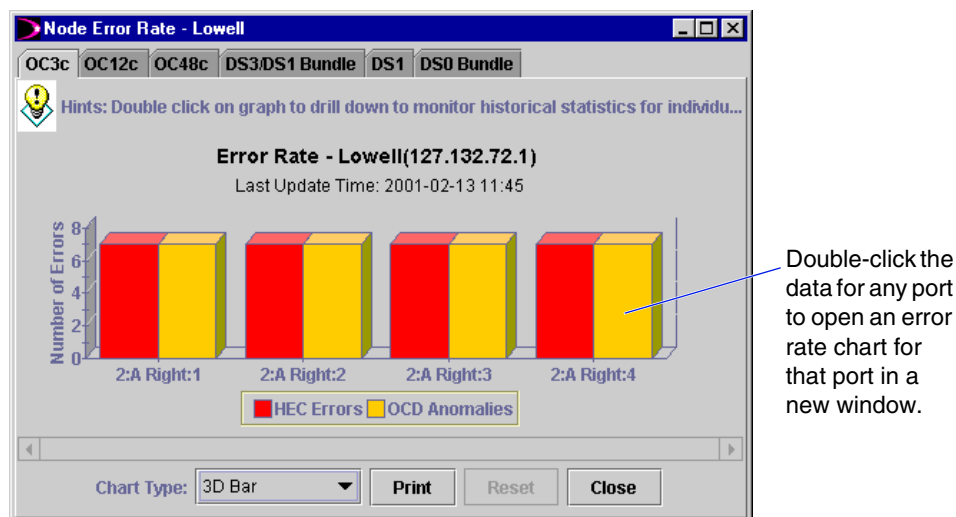
## Getting error rates for all ports

### ◆ To display the error rates for all ports on a node

In the Node Connection Statistics table, point to the node, display its pop-up menu, and choose **Error Rate for All Ports**.

(As an alternative, you can begin in either the Topology tree or Graph View, display the node's pop-up menu, point to **Statistics View**, and choose **Error Rate for All Ports** from the submenu.)

The Node Error Rate window displays a chart with the error counts for each port on the node, as shown in this example. Each type of port appears on a separate tab with appropriate error counts for that interface.



## Getting error rates for a specific port

The port-specific statistics provide a wider range of error counts, and you can select which error counts you want to include in the chart.

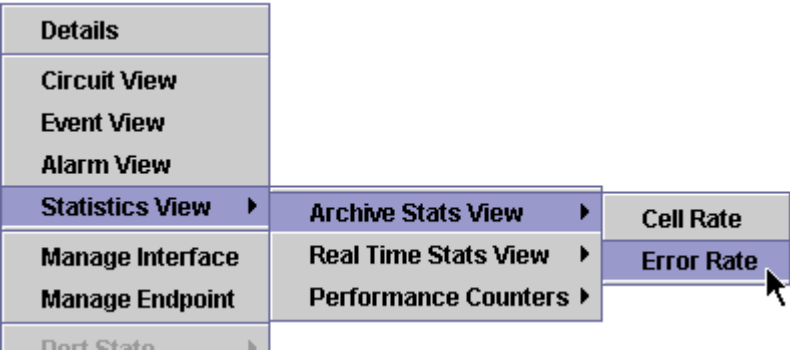
### ◆ To get port error rate statistics through the Node Error Rate chart

1. Select the appropriate tab for the port type.
2. Double-click the data shown for the port.

The port-specific error statistics appear in a new window.

◆ **To get port error rate statistics through the Topology tree**

- 1. Expand the domain topology tree to display the port you want.
- 2. Point to the port, display its pop-up menu, point to **Statistics View**, then point to either **Archive Stats View** or **Real Time Stats View**, and choose **Error Rate** from the submenu.



Error rate statistics for that port appear in a new window.

If you choose real-time statistics, the chart retrieves current information for the port and updates it every minute.

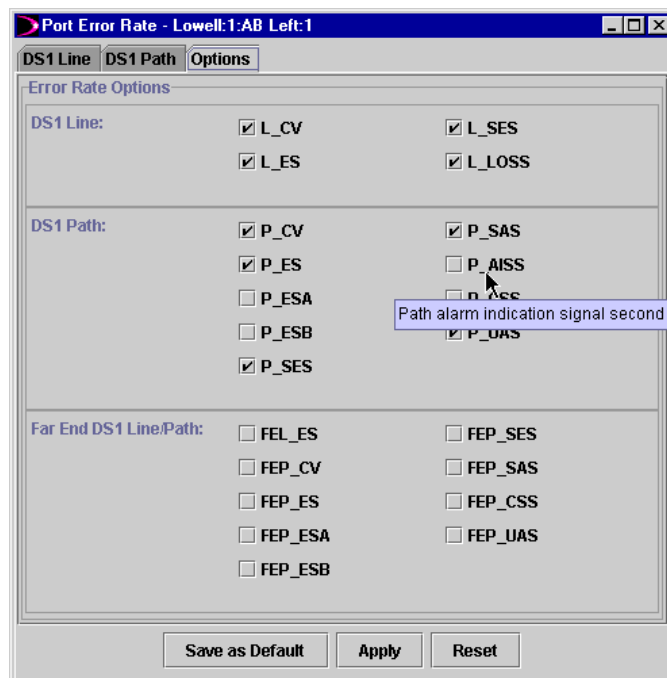
If you choose archived statistics, the chart displays the data for the last 24 hours. To get data for another period, click the **Reload** button in the chart window, and specify the beginning and ending dates.

**Note:** The Statistics Manager settings on a node govern the availability of archived statistical data.

**Note:** In the Link Connection Statistics table (described in the section “Getting link statistics,” later in this chapter), you can get error rate statistics for a link’s source or destination port via the link’s pop-up menu.

## Selecting the port error counts for statistical charts

The Port Error Rate window includes an **Options** tab, which lists appropriate error counts for the type of port, as shown in the following example.



To get a description of any item, point to it and a tool tip will spell out the abbreviation.

You can use the **Options** tab to select which error counters you want included in the port error rate statistics charts.

### ◆ To set error rate options for port statistics

1. In the Port Error Rate window, click the **Options** tab.
2. In each category, check the types of errors to include in the statistics chart, and uncheck the items that you want to exclude.
3. Click **Apply** to include the selected counts in the port error statistics.

If you want to use these selected counts in all subsequent port error statistics, click **Save as Default**. Or, to reinstate the previously saved set of error counts, click **Reset**.

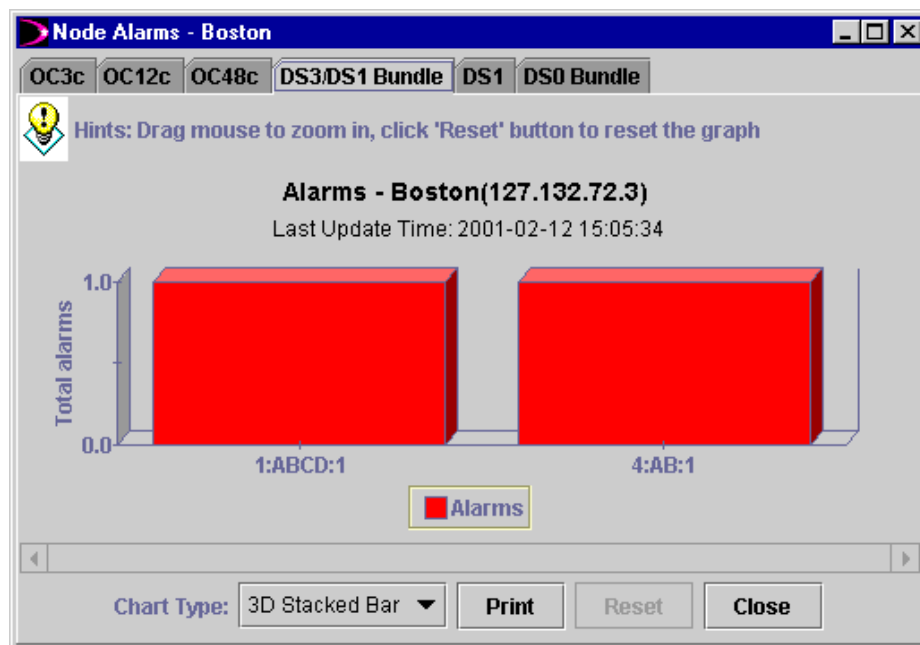
## Getting alarms for all ports

### ◆ To display the alarms for all ports on a node

In the Node Connection Statistics table, point to the node, display its pop-up menu, and choose **Alarms for All Ports**.

(As an alternative, you can begin in either the Topology tree or Graph View, display the node's pop-up menu, point to **Statistics View**, and choose **Alarms for All Ports** from the submenu.)

The Node Alarms window displays a chart with alarm counts for the selected node, as shown in the following example. Separate tabs show the ports of a given interface type with their associated alarm counts.



**Note:** For additional alarm information, you can use the Alarm View function under Fault Management (refer to Chapter 4), or the **Alarm View** command on pop-up menus in the topology tree (refer to Chapter 2).

**Note:** When managing the interface for an ATM port, you can set error-related TCA (threshold crossing alert) values that trigger alarms for that port. In addition, you can select specific types of alarms (AIS or RDI, for example) to be reported. For more information, refer to Chapter 2.

## Getting link statistics

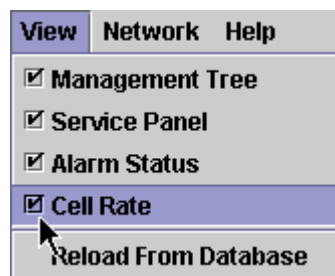
The Link Statistics function displays network and virtual link connection statistics for the domain. For each link, the statistics show the

- number of circuits
- forward (outgoing) maximum bandwidth
- forward allocated bandwidth
- forward available bandwidth
- forward current bandwidth
- reverse (incoming) maximum bandwidth
- reverse allocated bandwidth
- reverse available bandwidth
- reverse current bandwidth

By default, these link bandwidth statistics are given in megabits per second (Mbps). You can optionally view the bandwidth statistics as a cell rate measurement shown in thousands of cells per second (Kcps).

### ◆ To display link bandwidth statistics as a cell rate

On the **View** menu, check the **Cell Rate** option.



When the **Cell Rate** option is checked, link statistics (and port details) are given in thousands of cells per second.

When the **Cell Rate** option is unchecked, the statistics are shown in megabits per second.



**Important:** If you change the **Cell Rate** setting while viewing link statistics, you must exit from the view and then redisplay it in order to see the change.

---

### ◆ To get link statistics for the domain

1. In the Management Tree, expand the **Network Monitoring** branch.
2. Click **Link Statistics**.

The Link Connection Statistics for the domain appear in the Service Panel, as shown in this example. The data is refreshed from the database every 15 minutes.

Link Name	Cir...	Fwd. Ma...	Fwd. All...	Fwd. Av...	Fwd. Cu...	Rev. Ma...	Rev. All...	Rev. Ava...	Rev. Cu...
Boston:5:AB:1-->Lowell:13:AB:1	5	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...
Lowell:13:AB:1-->Newton:13:AB:1	5	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...
Newton:13:AB:1-->Boston:13:AB:1	5	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...
Boston:13:AB:1-->Weston:13:AB:1	5	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...
Weston:13:AB:1-->Arlington:12:AB:1	0	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...
Arlington:12:AB:1-->Weston:12:AB:1	0	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...
Weston:12:AB:1-->Boston:12:AB:1	0	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...
Boston:12:AB:1-->Belmont:13:AB:1	5	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...	4792.3...	4000.0...
Belmont:13:AB:1-->Lexington:13:AB:1	5	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...
Lexington:13:AB:1-->Lexington:2:AR:1	5	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...	2396.1...	2000.0...
Lexington:2:AR:1-->Boston:5:AB:1	0	149.75...	100.0...	149.75...	100.0...	149.75...	100.0...	149.75...	100.0...

In the table, each link is designated with the following notation:

*source-node:slot:card:port --> destination-node:slot:card:port*

such as **Boston:5:AB:1 --> Newton:12:AB:1**

where the link source is on node Boston, slot 5, card position AB, port 1, and the destination is on node Newton, slot 12, card position AB, port 1. For information on specifying card position, refer to Appendix B.

**Note:** To choose whether bandwidth statistics are shown in megabits per second or thousands of cells per second, use the **Cell Rate** option on the **View** menu, as described earlier.

## Printing the link statistics

### ◆ To get a printed copy of the Link Connection Statistics table

1. Point anywhere within the table, display the pop-up menu, and choose **Print**.
2. Complete the print dialog box, and then click **OK**.

## Displaying statistics for source or destination ports

From the Link Connection Statistics table, you can get statistics charts for the link ports, including

- cell rate for the source or destination port
- error rate for the source or destination port

Each chart appears in a separate window. For information on displaying and manipulating charts, refer to the section “Working with charts,” earlier in this chapter.



**Important:** Cell and error rate information is available for a port only after its interface has been managed. For information on managing a port interface, refer to Chapter 2.

---

### Archived and real-time port statistics

Through a port’s pop-up menu, you can request either archived or real-time statistics for the port. For archived statistics, *ONset* displays port data for the last 24 hours.

**Note:** The Statistics Manager settings on a node govern the availability of archived statistical data.

For real-time statistics, *ONset* collects current data from the node and updates it every minute.

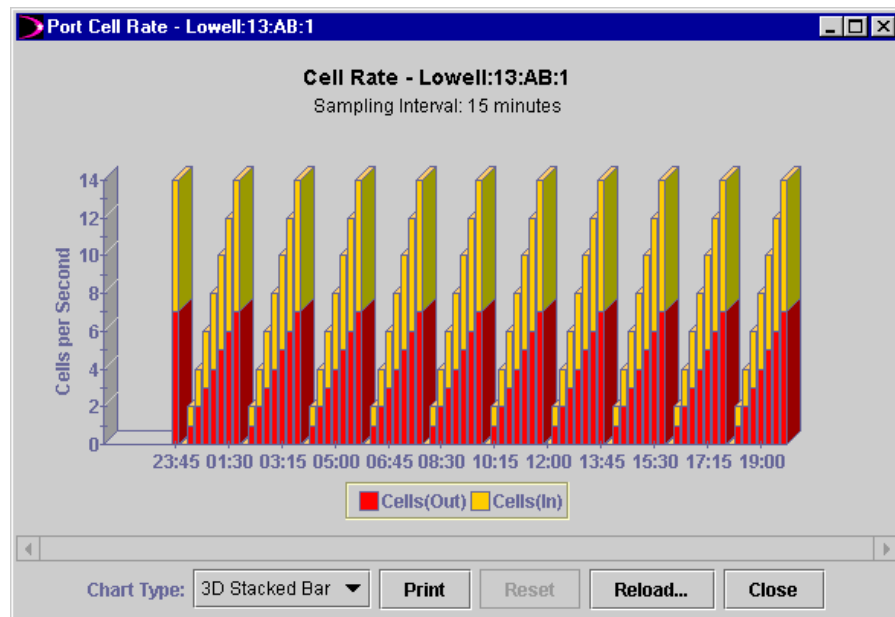


## Getting port cell rate statistics for a link

### ◆ To display the cell rate statistics for a link

1. In the Link Statistics table, point to the link, display its pop-up menu.
2. For archived statistics, point to **Archive Stats View**, or for current statistics, point to **Real Time Stats View**, and then choose either of the following from the submenu:
  - **Source Port Cell Rate**
  - **Destination Port Cell Rate**

The Port Cell Rate window opens for the selected port (as shown in the following example). The chart displays cell rate data for 15-minute samplings taken at the times shown within a period of up to 24 hours. (For port cell rate charts, the **Reload** function allows a maximum range of 24 hours.)



The port interface type determines which cell rate values are displayed.

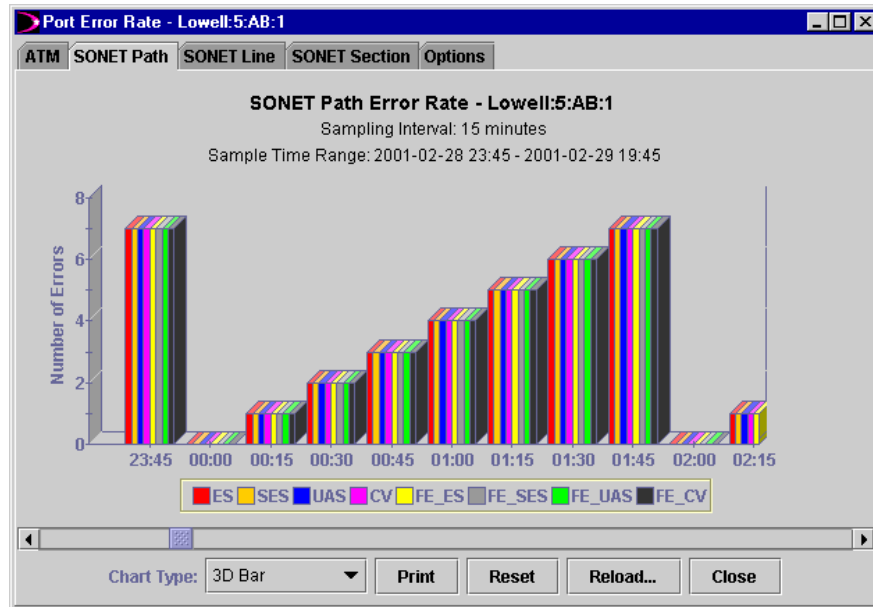
**Note:** You can get the same port cell rate statistics through the port's pop-up menu in either the Topology tree (described in Chapter 2), or in the Node Connection Statistics table (described in the section “Getting node statistics,” earlier in this chapter).

## Getting port error rate statistics for a link

### ◆ To display the error rate statistics for a link

1. In the Link Statistics table, point to the link, display its pop-up menu.
2. For archived statistics, point to **Archive Stats View**, or for current statistics, point to **Real Time Stats View**, and then choose either of the following from the submenu:
  - **Source Port Error Rate**
  - **Destination Port Error Rate**

The Port Error Rate window opens for the selected port (as shown in the following example). The chart displays error counts for 15-minute samplings taken at the times shown within a period of up to 24 hours. (For port error rate charts, the Reload function allows a maximum range of 24 hours.) The tabs that appear depend on the port interface type.



When managing the interface for an ATM port, you can set error-related TCA (threshold crossing alert) values that trigger alarms for that port. For more information, refer to Chapter 2.

**Note:** You can get the same port error rate statistics through the port's pop-up menu in either the Topology tree (described in Chapter 2), or in the Node Connection Statistics table (described in the section, "Getting node statistics," earlier in this chapter).

## Selecting the port error counts for statistical charts

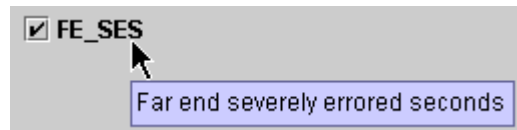
The Port Error Rate window includes an **Options** tab, which lists appropriate error counts for the type of port. You can use the **Options** tab to select which error counters you want included in the port error rate statistics charts.



### ◆ To set error rate options for port statistics

1. In the Port Error Rate window, click the **Options** tab.

The **Options** tab lists available error counters in appropriate categories.



To get a description of any item, point to it and a tool tip will spell out the abbreviation.

2. In each category, check the types of errors to include in the statistics chart, and uncheck the items that you want to exclude.
3. If you want to use these selected counts in all subsequent charts for this type of port interface, click **Save as Default**.

Or, to reinstate the previously saved set of error counts, click **Reset**.

4. When you are finished setting options in this window, click **Apply** to update the charts using the selected error counts.

## Getting circuit statistics

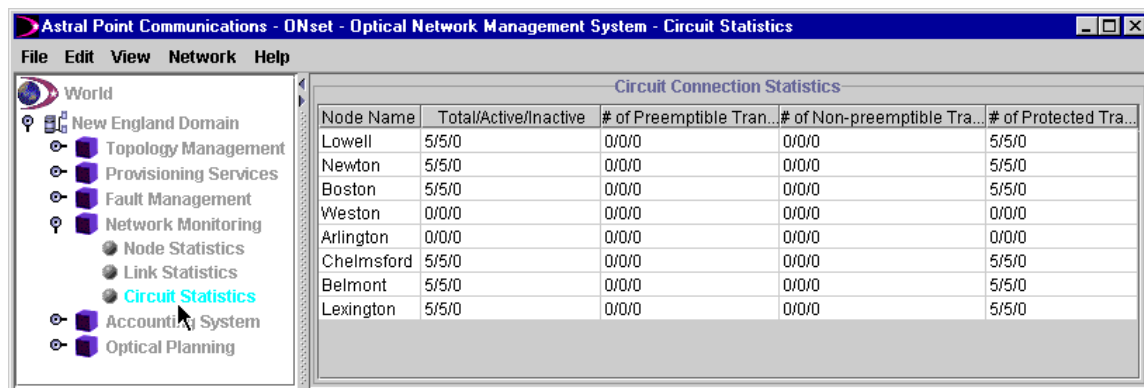
The Circuit Statistics function provides circuit connection statistics for the domain, including, for each node, the number of

- circuits (total, active, and inactive)
- preemptible transit circuits (total, active, and inactive)
- nonpreemptible transit circuits (total, active, and inactive)
- protected transit circuits (total, active, and inactive)

### ◆ To get circuit statistics

1. In the Management Tree, expand the Network Monitoring branch.
2. Click **Circuit Statistics**.

The Circuit Connection Statistics appear in the Service Panel, as shown in this example. The data is refreshed from the database every 15 minutes.



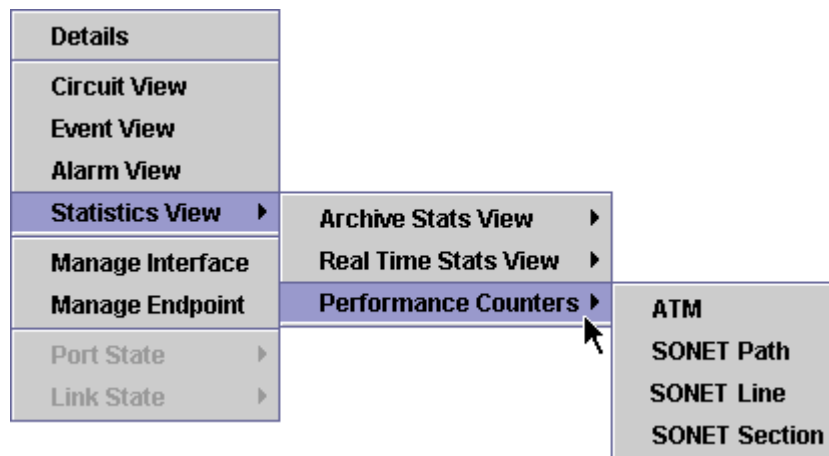
Node Name	Total/Active/Inactive	# of Preemptible Tran...	# of Non-preemptible Tra...	# of Protected Tra...
Lowell	5/5/0	0/0/0	0/0/0	5/5/0
Newton	5/5/0	0/0/0	0/0/0	5/5/0
Boston	5/5/0	0/0/0	0/0/0	5/5/0
Weston	0/0/0	0/0/0	0/0/0	0/0/0
Arlington	0/0/0	0/0/0	0/0/0	0/0/0
Chelmsford	5/5/0	0/0/0	0/0/0	5/5/0
Belmont	5/5/0	0/0/0	0/0/0	5/5/0
Lexington	5/5/0	0/0/0	0/0/0	5/5/0

## Displaying port performance counters

Cell rate and error count statistics are available for any operational port. When requesting performance counter information, you can set the polling interval, and display either single or multiple samples.

### ◆ To view performance counters for a port

In the Topology tree or Chassis View, point to the port, display its pop-up menu, point to **Statistics View**, then **Performance Counters**, and choose the port interface type.



The port performance counts appear in a new window, which also shows

- Node name
- IP address
- Selected port name
- Port interface type
- Last sample time
- Current polling interval (1 second to 15 minutes — selectable)
- Current display type (single or multiple samples — selectable)

The type of port interface determines which performance counters are available. For example, for OCx ports you can get ATM, SONET Path, SONET Line, and SONET Section information (as in the sample menu shown above). For a DS3 Private Line port, however, you can get CES and DS3 data.

The selected poll interval determines how often samples are taken.

When you select the Single Sample display, as shown in the following example, the performance statistics show appropriate cumulative counters for the latest sample, as well as the change in each count since the previous sample.

The screenshot shows the 'ATM Performance Counters' window. The configuration fields are: Node Name: Lowell, IP Address: 127.132.72.1, Port Name: Lowell:2:A Left:1, Interface Type: ATM, Last Sample Time: (empty), Poll Interval: 5 Seconds, and Display: Single Sample. The 'Performance Parameters' section shows cumulative counters and change since last poll for Received cells, Transmitted cells, Received cells dropped due to HEC error, and OCD events. All values are currently empty.

	Cumulative Counters	Change Since Last Poll
Received cells:		
Transmitted cells:		
Received cells dropped due to HEC error:		
OCD events:		

Start Stop Close

If you select the Multiple Sample display, the performance counters appear in table format. Data for each sample appears in a separate row, as in this example.

The screenshot shows the 'ATM Performance Counters' window with the Display mode set to 'Multiple Samples'. The configuration fields are the same as in the previous screenshot. The 'Performance Parameters' section displays a table of performance data for multiple samples.

Sample Time	Received Cells	Transmitted C...	HEC Err Disca...	OCD Events
2001-01-13 11:27:32	0	0	0	0
2001-01-13 11:27:27	0	0	0	0
2001-01-13 11:27:22	0	0	0	0
2001-01-13 11:27:17	0	0	0	0
2001-01-13 11:27:11	0	0	0	0
2001-01-13 11:27:06	0	0	0	0

Start Stop Close

**◆ To begin polling and the display of performance statistics**

1. From the Poll Interval menu, choose the frequency of samples.
2. From the Display menu, choose either **Single Sample** or **Multiple Samples**.
3. Click **Start**.

The performance counters are collected at the selected polling interval, and displayed in the window.

To end the collection of data samples, click **Stop**.

To close the Performance Counters window, click **Close**.







---

## Chapter 6

# Accounting System

With the Accounting System functions, you can manage the information about users of network services within the domain.

For access to these functions, expand the Accounting System branch in the Management Tree.



## Defining subscribers and their customers

Subscribers, such as Local Exchange Carriers, provide access to optical network services for their customers.

You use information about subscribers and customers when you provision circuits, as described in Chapter 3. For each circuit, you specify the subscriber of the circuit, and the customer who will use it.

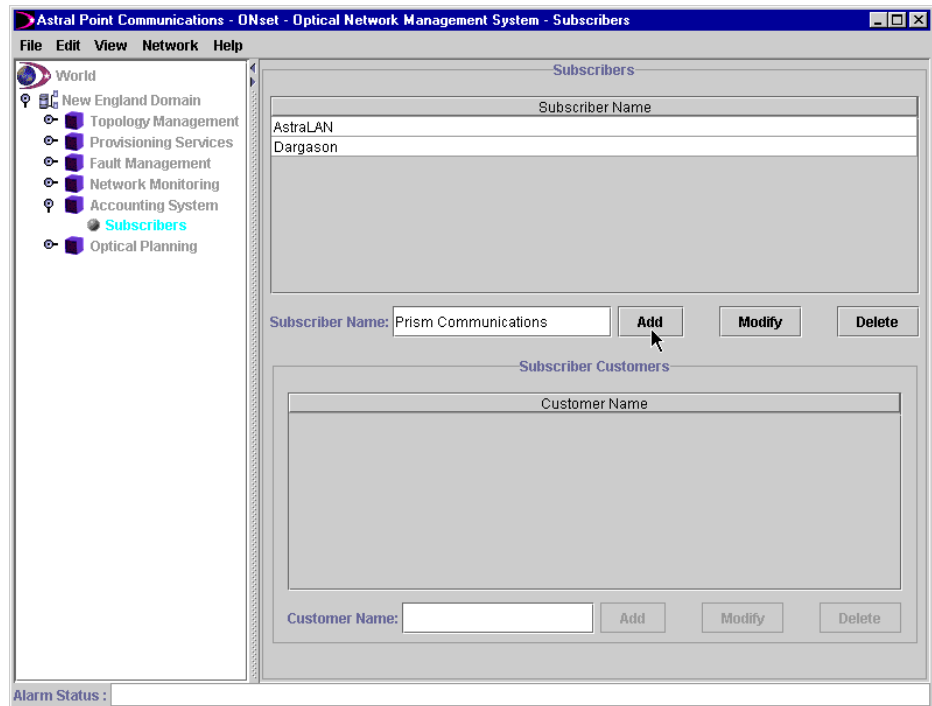
## Adding a subscriber and customers

This procedure records subscriber and customer information in the *ONset* database where it is available to other management functions.

### ◆ To define a new subscriber

1. In the Management Tree, expand the Accounting Systems branch, and click **Subscribers**.

The form to define subscribers and customers appears in the Service Panel.



2. In the Subscriber Name field, type the name of the new subscriber.



**Important:** Subscriber names cannot include apostrophes.

---

3. Click the **Add** button to the right of your entry.

The new subscriber name is added to the list of subscribers.

**◆ To add one or more customers to a subscriber**

1. In the Subscriber Name list, select the subscriber.
2. In the Customer Name field, type the name of the new customer.



**Important:** Customer names cannot include apostrophes.

3. Click the **Add** button to the right of your entry.

The new customer name is added to the customer list for the selected subscriber. Repeat this process for each new customer you want to add to this subscriber.

The screenshot shows a web application interface with two main sections. The top section, titled "Subscribers", contains a list box labeled "Subscriber Name" with three entries: "AstraLAN", "Dargason", and "Prism Communications". The "Prism Communications" entry is highlighted in blue. Below this list box are three buttons: "Add", "Modify", and "Delete". The bottom section, titled "Subscriber Customers", contains a large empty text area labeled "Customer Name". Below this area are three buttons: "Add", "Modify", and "Delete". A mouse cursor is pointing at the "Add" button in the bottom section. The "Customer Name" field is pre-filled with the text "OrbitalEscape.com".

## Modifying a customer name

### ◆ To change a customer name

1. In the Subscriber Name list, select the subscriber whose customer you want to change.
2. In the Customer Name list, click the customer you want to change.
3. In the Customer Name field, type the new name for this customer.
4. Click the **Modify** button to the right of your entry.

The customer name is changed here, as well as in any existing circuits for this customer (as shown in the Provisioning View and Circuit Details, described in Chapter 3).

## Deleting a customer from a subscriber



**Important:** Before deleting a customer, ensure that no circuits are assigned to that customer. You cannot delete a customer if it has existing circuits.

---

To see if a customer has assigned circuits, use the **View** function under Provisioning Services (as described in Chapter 3), and then filter the table to show all entries for that customer name. Reassign or remove the circuits, as appropriate.

### ◆ To remove a customer from a subscriber

1. In the Subscriber Name list, select the subscriber whose customer you want to remove.
2. In the Customer Name list, click the entry you want to remove.
3. Click the **Delete** button in the Subscriber Customers section.

## Modifying a subscriber name

### ◆ To change a subscriber name

1. In the Subscriber Name list, select the subscriber you want to change.
2. In the Subscriber Name field, type the new name for this subscriber.
3. Click the **Modify** button to the right of your entry.

The subscriber name is changed here, as well as in all existing circuits assigned to this subscriber (as shown in the Provisioning View and Circuit Details, described in Chapter 3).

## Deleting a subscriber



**Important:** Before you can delete a subscriber, you must delete all its customers.

---

### ◆ To delete a subscriber

1. Delete all customers for this subscriber (as described earlier).
2. In the Subscriber Name list, click the entry you want to remove.
3. Click the **Delete** button in the Subscriber section.





# Appendix A

## DWDM 15nm wavelengths

Recommendation G.692 of the International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) defines the 15nm wavelengths for the C-band. The following table shows the 32 frequencies available for Dense Wavelength Division Multiplexing (DWDM) metro channels.

### Available 15nm wavelengths (at 100 GHz spacing)

Band	Wavelength (nm)	Channel	Band	Wavelength (nm)	Channel
A3	1529.55	60	E4	1548.51	36
A1	1530.33	59	E3	1549.32	35
A2	1531.12	58	E1	1550.12	34
A4	1531.90	57	E2	1550.92	33
B3	1534.25	54	F4	1553.33	30
B1	1535.04	53	F3	1554.13	29
B2	1535.82	52	F1	1554.94	28
B4	1536.61	51	F2	1555.75	27
C3	1538.98	48	G4	1558.17	24
C1	1539.77	47	G3	1558.98	23
C2	1540.56	46	G1	1559.79	22
C4	1541.35	45	G2	1560.61	21
D3	1543.73	42	H4	1563.05	18
D1	1544.53	41	H3	1563.86	17
D2	1545.32	40	H1	1564.68	16
D4	1546.12	39	H2	1565.50	15







---

## Appendix B

### Card position reference

Depending on their function, slots in a chassis can accommodate cards of different types and sizes in various positions. This appendix explains how to specify a given card's position within its slot.

The card's slot position identifies the card within references to the card or its ports (including the X and Y ports in a circuit). For example, each port is designated with the following notation:

*slot:card-position:port*

such as **13:AB:2** (that is, port number 2 on the card in position AB in slot 13).

When using the **Create Card** function under Topology Management (as described in Chapter 2), the Create Card window includes a menu for selecting the appropriate card position, as illustrated in the following example.

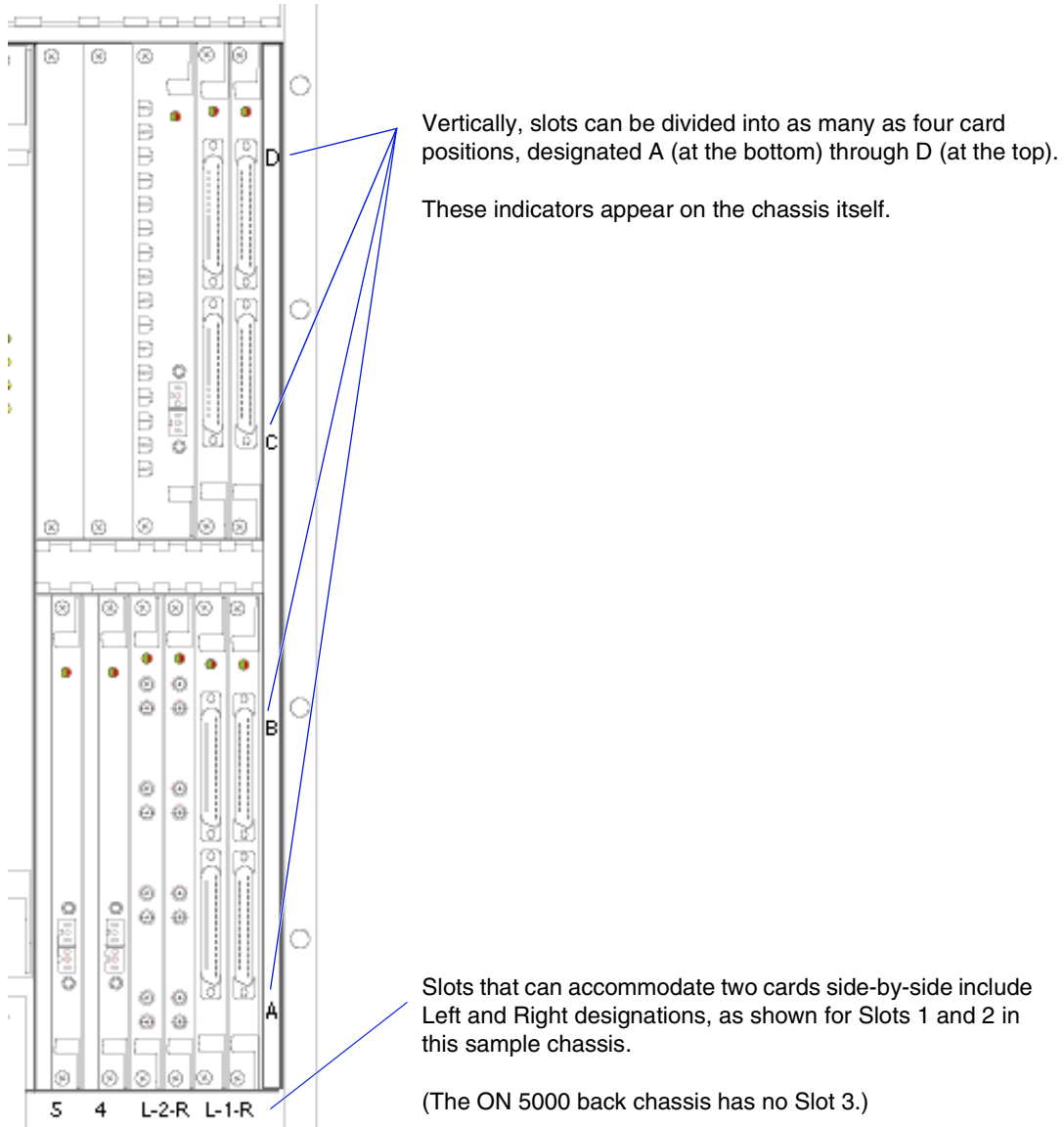
The screenshot shows a 'Create Card' dialog box with the following fields and options:

- Node Name:** Boylston
- Slot Number:** 15
- Card Location:**
  - ☐ Front Chassis
  - ☒ Back Chassis
- Front Card Type:** Multi Rate Access
- Back Card Type:** CES 310 Half High
- Card Position:** CD Left
- Buttons:** OK, Cancel

When creating a card, you specify its position within the slot.

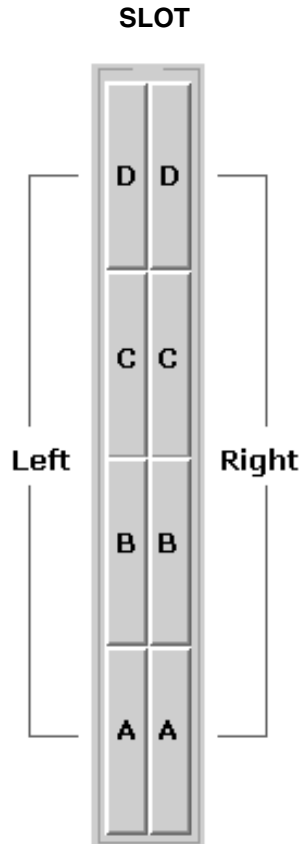
## Slot designations

Slot numbers are marked on the chassis at the base of each slot. The following illustration shows part of the ON 5000 chassis (right rear card cage).



## Quarter-high cards

Slots that can accommodate quarter-high cards are generally divided horizontally into Left and Right positions (which are marked on the chassis), and vertically into four positions marked A (at the bottom) to D (at the top).



A quarter-high card can fit into any of the eight positions shown here.

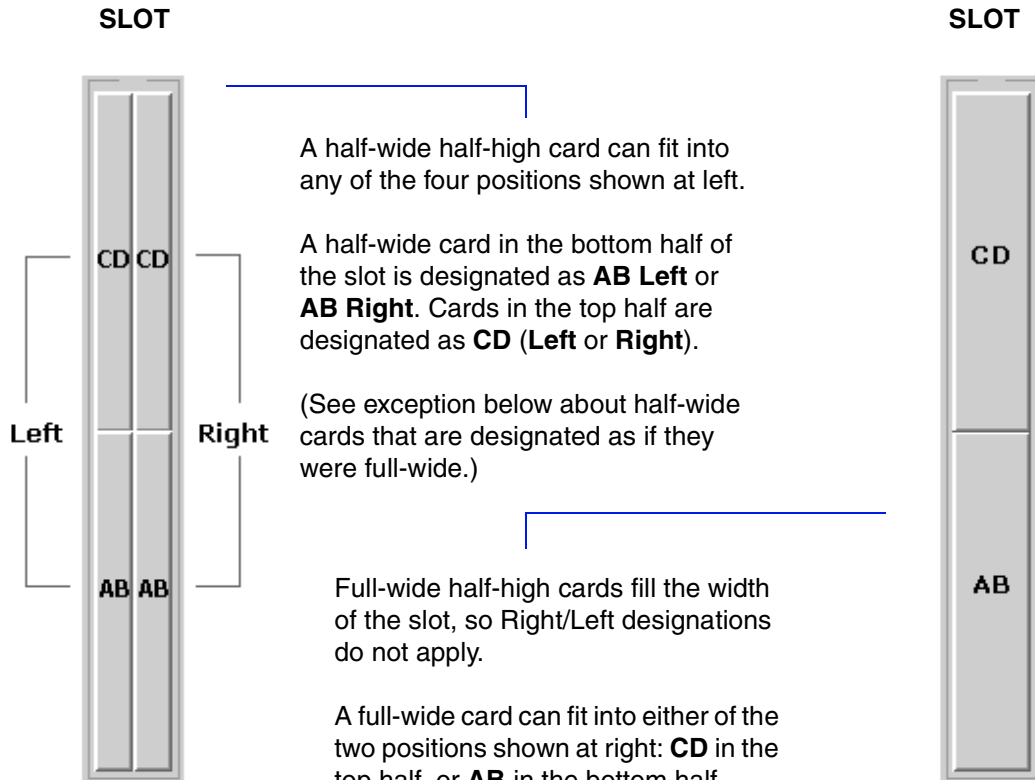
The top-left position is designated as **D Left**; the bottom-right position is designated as **A Right**.

Examples of quarter-high cards are:

- OC3c Access card
- OC12c Access card

## Half-high cards

A full-height slot can accommodate as many as four half-wide or two full-wide half-high cards.



Examples of half-wide half-high cards:

- DS1 Access card
- DS3 Private Line card
- OC48c Access card

\* Some slots do not accommodate two half-wide cards side by side. In that case, the top and bottom positions accept one half-wide card each, designated as either **AB** or **CD**.

Example of full-wide half-high card:

- OC48c Network card

**Note:** DS3 Bundles associated with DS1 half-high cards are designated as card position **ABCD** (full slot) within the same slot as the DS1 cards.



<b>3:1:0 DCS</b>	<i>Digital Cross-connect Service</i> — DCS digitally connects one DS <sub>n</sub> port to another of equal or greater capacity over the optical network. DS0 ports can be connected to other DS0 ports, or groomed to DS1, which in turn can be groomed into a DS3 channel.
<b>AAL1</b>	<i>ATM Adaptation Layer 1</i> — The ATM Adaptation Layer translates between large data units and the fixed-size ATM cell. Layer 1 prepares cells for transmission, and validates cells at reception.
<b>ABR</b>	<i>Available Bit Rate</i> — An ATM quality-of-service (QoS) category that guarantees a base level of throughput, but allows for bursted traffic when the network permits.
<b>alarm</b>	An indication of a problem either in the network or with a specific hardware device. Alarms can include information about probable cause, diagnostics, and problem resolution. In the topology views, color coding indicates an alarm: red for a critical/major alarm, and yellow for a minor/warning alarm. Alarm information is available at the node, card, port, and circuit levels. The Alarm Status bar displays newly received alarm messages. Using <i>ONset</i> , you can enable/disable audible alarms on an optical node.
<b>AMI</b>	<i>Alternate Mark Inversion</i> — A T1 line coding format in which ones are transmitted as alternating positive and negative pulses.
<b>APS</b>	<i>Automatic Protection Switching</i> — The automated transfer of traffic to a backup (protection) circuit if the associated working circuit fails or degrades past a selected threshold.
<b>ATM</b>	<i>Asynchronous Transfer Mode</i> — A cell-relay technique for transmitting fixed-size packets (53 octets) over a virtual circuit at rates of 10 to 622 Mbps using a fixed channel between two points.
<b>B8ZS</b>	<i>Bipolar 8 Zero Substitution</i> — A T1 line coding technique in which each string of consecutive zeros is replaced with an eight-bit code representing two intentional bipolar pulse code violations. B8ZS provides a standard for clear channel capability.

<b>band</b>	Adjacent optical channels that are multiplexed or demultiplexed as a group. Also called a <i>banded set</i> .
<b>bandwidth</b>	A measurement of port activity or capacity (generally in megabits or gigabits per second) for outgoing (forward) or incoming (reverse) traffic.
<b>BERT</b>	<i>Bit Error Rate Test</i> — A test of bit error rate, which is the ratio of received bits that contain errors to the total number received.
<b>BITS</b>	<i>Building Integrated Timing Supply</i> — A master timing supply for a building, used to synchronize clocks and time references on a network.
<b>bundle</b>	An aggregation of signals into a higher-capacity connection, such as combining DS1 circuits into a DS1 bundle.
<b>card</b>	One of several types of hardware devices installed in slots within a chassis, including system control or resource cards, network or access line cards, fabric cards, and physical interface cards.
<b>CBR</b>	<i>Constant Bit Rate</i> — An ATM quality-of-service (QoS) category that specifies a fixed bit rate for transmitting data in a steady stream.
<b>cell rate</b>	A measure of the number of ATM cells transmitted or received through a given port during a specified sampling period (typically 15 minutes).
<b>CES</b>	<i>Circuit Emulation Service</i> — Enables communication between non-ATM circuits (such as DS1) and ATM devices over virtual circuits that provide a constant bit rate (CBR). CES builds the 48-octet ATM cells from the incoming stream, and adds the 5-octet ATM header.
<b>channel</b>	<p>In the most generic sense, a communication path. The term is also used to refer to one of several combined signals, such as a DS1 channel within a channelized DS3.</p> <p>An optical channel is a DWDM carrier frequency or lightpath.</p>
<b>chart</b>	A graphical depiction of statistical information such as bandwidth usage, port cell rates, or port error rates.
<b>chassis</b>	The physical hardware that makes up a node. In <i>ONset</i> , the chassis view is a graphical depiction of a node, showing the physical arrangement of its slots, installed cards, and their ports.

<b>circuit</b>	A logical connection between two ports with a specific type of service. A circuit is assigned to a subscriber and customer. The circuit path can be defined as protected (where a secondary circuit takes over if the primary fails), nonpreemptible (which cannot be interrupted by traffic from another circuit), or preemptible (which can lose network access if another circuit requires its bandwidth).
<b>CLI</b>	<i>Command Line Interface</i> – a direct method for managing a node by issuing commands through a local console or a LAN-connected computer. (The System Resource card on a node includes an RJ-11 console connector as well as an RJ-45 Ethernet connector.) Technicians typically use the CLI to maintain and troubleshoot individual nodes.
<b>community name</b>	A designation used to authenticate member nodes within an SNMP group.
<b>CORBA</b>	<i>Common Object Request Broker Architecture</i> — An open architecture and infrastructure that enables computer applications to interoperate even when using different operating systems, programming languages, or computer types.
<b>customer</b>	A business or other organization that obtains access to optical network services through a subscribing service provider.
<b>CV</b>	<i>Code Violation</i> — A parity error, bipolar violation, or an excess of zeros.
<b>discovery</b>	The process where you direct ONset to gather information about the nodes and devices within a domain to be managed.
<b>domain</b>	Within the Astral Point Optical Services Architecture, a contiguous optical network of Astral Point nodes connected by OC48c or OC192c links.
<b>DS0, DS1, DS3, ...</b>	<i>Digital Signal (Level 0, 1, 3, ...)</i> — DS0 is a basic digitized voice signal transmitted at 64 Kbps. A DS1 circuit multiplexes 24 DS0 channels at a rate of 1.544 Mbps. A DS3 circuit is equivalent to 28 DS1 channels or 672 DS0 channels transmitted at 44.736 Mbps.
<b>DWDM</b>	<i>Dense Wavelength Division Multiplexing</i> — A high-capacity multiplexing technique for optical frequencies in the 15nn.nn band, supporting as many as 40 wavelengths (colors) simultaneously on a single optical fiber. These wavelengths are separated by 100 GHz (0.8 nm) or less. DWDM was developed to address fiber exhaust by increasing the bandwidth capacity of existing fibers. Using optical modules in an Optical Access Shelf, you can add/drop the 1310 nm wavelength, 15nn.nn bands, or specific 15nn.nn wavelengths/channels to/from the network.
<b>EDFA</b>	<i>Erbium-Doped Fiber Amplifier</i> — A laser device that amplifies optical signals without any electro-optical conversion.

<b>ES</b>	<i>Errored Second</i> — A performance measure for a port, counting seconds in which at least one error occurred, but not more than the threshold set for the Severely Errored Second (SES) count.
<b>event</b>	An incident reported for informational purposes. Event information is available at the node, card, port, circuit, and link levels.
<b>fabric</b>	An intelligent interconnection and switching scheme for ATM cells on a node.
<b>far end</b>	From the point of view of a given port, the other end (port) of a circuit.
<b>filtering</b>	A method of limiting the display of items in a tabular view to those that match criteria that you specify. For example, you could filter a list of circuits to show only the circuits that use a specific type of service. When filtering is available, the <b>Apply Filter</b> option appears at the bottom of the table, allowing you to specify the filter condition with a field, operator, and value.
<b>Gbps</b>	<i>Gigabits per second</i> — Billions of bits per second, used to specify transmission speed or capacity. Also expressed as Gbits/s.
<b>grooming</b>	Combining slower speed data streams into a larger capacity, high-speed connection.
<b>ITU-T</b>	<i>International Telecommunication Union -Telecommunication Standardization Sector</i> — an international standards organization, which took over the functions of the CCITT.
<b>link</b>	A connection between nodes in the optical network. A network link connects OC48c or OC192c network line cards between nodes. A nondiverse link connects two ports of the same type (DS1, OC3c, OC12c, and so on).
<b>management tree</b>	In the ONset application window, the left-hand pane, which displays the tree of management services and operations (Topology Management, Provisioning Services, Fault Management, Network Monitoring, and so on).
<b>Mbps</b>	<i>Megabits per second</i> — Millions of bits per second, used to specify transmission speed or capacity. Also expressed as Mbits/s.
<b>MBS</b>	<i>Maximum Burst Size</i> — The maximum number of cells allowed in excess of the average cell rate.
<b>MDCR</b>	<i>Minimum Desired Cell Rate</i> — For the UBR service class, the lowest acceptable cell rate.
<b>multimode fiber</b>	A wide-core optical fiber that supports transmission of more than one light signal, but at relatively short distances and less bandwidth compared with single-mode fiber.



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<b>nm</b>	<i>Nanometer</i> — one billionth ( $10^{-9}$ ) of a meter, used in specifying optical wavelengths.								
<b>node</b>	A member of a domain. Each node in the network has a unique IP address.								
<b>nonrevertive circuit</b>	A protected circuit that does not automatically switch back to the primary path when that path becomes available.								
<b>NRT-VBR</b>	<i>Non-Real-Time Variable Bit Rate</i> — See VBR.								
<b>OA 1000</b>	<i>Optical Access Shelf</i> – an Astral Point chassis in which you can install optical modules for adding/dropping 1310 nm paths, 15nn.nn bands, or specific 15nn.nn channels for local nodes, while passing other lightpaths through to the network.								
<b>OC3c, OC12c, ...</b>	<p><i>Optical Carrier (Level 3, 12, 48, 192)</i> — A designation for transmission speeds over optical networks. The lowercase c indicates concatenated format</p> <table> <tr> <td>OC3c</td><td>155.52 Mbps</td></tr> <tr> <td>OC12c</td><td>622.08 Mbps</td></tr> <tr> <td>OC48c</td><td>2.488 Gbps</td></tr> <tr> <td>OC192c</td><td>9.953 Gbps</td></tr> </table>	OC3c	155.52 Mbps	OC12c	622.08 Mbps	OC48c	2.488 Gbps	OC192c	9.953 Gbps
OC3c	155.52 Mbps								
OC12c	622.08 Mbps								
OC48c	2.488 Gbps								
OC192c	9.953 Gbps								
<b>ON 5000</b>	<i>Optical Services Node</i> – an Astral Point integrated, multiservice platform that lets you combine common network elements, such as SONET ADM, Optical ADM, leased line DCS services, and ATM switching, into a single, compact low-power chassis. The 9U chassis, which is mounted in a standard 23-inch telco rack, contains system control and resource cards, fabric cards, network and access line cards, various communications interface cards, as well as a power distribution unit and fan assembly.								
<b>ONMS</b>	<i>Optical Network Management System</i> – A generic term for Astral Point's ONset network management application, with which you can easily monitor and manage domains and provision services in an optical network using a graphical user interface.								
<b>PCR</b>	<i>Peak Cell Rate</i> — The maximum rate at which data can be transmitted under any circumstances.								
<b>Phy card</b>	Physical interface card — A card installed in a node's chassis to allow for the physical attachment of a communications cable to the node.								
<b>port</b>	The network connection on a physical interface (Phy) card. Each port in the domain is designated with the syntax <i>slot:card:port</i> , such as <b>15:AB:1</b> .								
<b>primary path</b>	The sequence of hops normally used by a circuit to connect two endpoints (nodes).								

<b>protection path</b>	The secondary path used by a protected circuit when the primary path is unavailable due to node or link failure or signal degradation. (In addition, the network administrator can force a circuit to use its protection path.)
<b>provisioning</b>	Defining, creating, deploying, and activating broadband services and circuits.
<b>PVC</b>	<i>Permanent Virtual Circuit</i> — A link with a static, predefined route.
<b>QoS</b>	<i>Quality of Service</i> — A level of throughput supported for ATM connections. For information on specific types, see <i>ABR</i> , <i>CBR</i> , <i>UBR</i> , and <i>VBR</i> .
<b>revertive circuit</b>	A protected circuit designed to automatically switch back to the primary path when that path returns to service.
<b>RT-VBR</b>	<i>Real-Time Variable Bit Rate</i> — See <i>VBR</i> .
<b>SCR</b>	<i>Sustainable Cell Rate</i> — For the <i>NRT-VBR</i> service class, the expected long term average cell rate.
<b>SDH</b>	<i>Synchronous Digital Hierarchy</i> — an international frame-based fiberoptic transmission standard that defines a multiplexing hierarchy built on a base signal rate of 155.52 Mbps (STM-1).
<b>SEFS</b>	<i>Severely Errored Framing Second</i> — A performance measure for a port, counting seconds with one or more defects consisting of four or more contiguous frames containing framing defects (A1, A2 bytes).
<b>Service Panel</b>	In the <i>ONset</i> application window, the right-hand pane, which displays information for the function selected in the Management Tree pane to the left.
<b>service type</b>	A set of circuit parameters defining the class, priority, recovery mode, recovery time, quality of service, and peak cell rate in each direction between ports.
<b>SES</b>	<i>Severely Errored Second</i> — A performance measure for a port, counting seconds in which coding violations exceed a specified threshold or a signal failure occurs.
<b>single-mode fiber</b>	A narrow-core optical fiber that allows transmission of only one light signal, but at longer distances and greater bandwidth than multimode fiber.
<b>slot</b>	The place within a chassis where one or more cards can be installed. Rules govern which type of card can be installed in a given slot, and in what position within the slot.
<b>SNMP</b>	<i>Simple Network Management Protocol</i> – a TCP/IP protocol used by <i>ONset</i> to communicate with each node in the domain. SNMP can be used directly to control the network via <b>Set</b> and <b>Get</b> commands.

<b>SONET</b>	<i>Synchronous Optical Network</i> — an international frame-based fiberoptic transmission standard that defines a multiplexing hierarchy built on a base signal rate of 51.84 Mbps (STS-1, which is equivalent to OC1).
<b>STM</b>	<i>Synchronous Transfer Module</i> — The SDH standard for transmission over optical networks. The Level 1 (STM-1) rate of 155.52 Mbps is equivalent to OC3.
<b>structured port</b>	A channelized port that monitors a signal, and raises an alarm when a framing error occurs.
<b>STS</b>	<i>Synchronous Transport Signal</i> — The SONET standard for transmission over optical networks. The Level 1 (STS-1) rate of 51.84 Mbps is equivalent to OC1.
<b>subscriber</b>	A service provider, such as a Local Exchange Carrier, who sells access to the optical network to customers.
<b>T1, T3</b>	An external, shielded cable used to carry digital signals.
<b>TCA</b>	<i>Threshold Crossing Alert</i> — For ATM ports, a threshold value associated with an error or exception condition. If the error count exceeds the specified threshold value, an alarm occurs.
<b>tool tip</b>	A small text field that appears when you point to an item in a graphical user interface. ONset uses tool tips to provide descriptions of items in chassis views, and the value of data items in charts.
<b>topology</b>	A view of a domain and its component parts, including nodes, slots, cards, ports, and links.
<b>transponder</b>	A device that shifts a 1310 or 1550 wavelength to a 15nn.nn wavelength in preparation for DWDM transmission. The transponder also reamplifies, reshapes, and reclocks (3R regeneration) the optical signal without changing its payload or user data content.
<b>UAS</b>	<i>Unavailable Second</i> — A performance measure for a port, counting the seconds in which a signal fails, or in which ten or more errored seconds occur.
<b>UBR</b>	<i>Unspecified Bit Rate</i> — An ATM quality-of-service (QoS) category that offers a “best effort” service with no guarantee of throughput.
<b>unstructured port</b>	An unchannelized port that monitors a signal, but does not raise an alarm when a framing error occurs.

<b>VBR</b>	<i>Variable Bit Rate</i> — An ATM quality-of-service (QoS) category that specifies an overall throughput capacity without requiring a steady stream of data. Two types of VBR are available: real-time (RT-VBR), which requires minimal delays for time-sensitive applications, and nonreal-time (NRT-VBR), which allows for bursty traffic.
<b>VC</b>	<i>Virtual Circuit</i> — A unidirectional communications path between two ports that is identified by label rather than by a fixed physical path.
<b>VCI</b>	<i>Virtual Circuit Identifier</i> — A numeric value representing a virtual circuit, used when specifying a circuit endpoint.
<b>VP</b>	<i>Virtual Path</i> — A unidirectional logical association or bundle of virtual circuits.
<b>VPI</b>	<i>Virtual Path Identifier</i> — A numeric value representing a virtual path, used when specifying a circuit endpoint.



## A

- Accounting System branch 9, 153
- acknowledging alarms 115, 123
- activating a circuit 105
- adding
  - card 30
  - customers 155
  - node 24
  - service types 99
  - subscribers 154
- administrative state for port, default 11
- Alarm Status field 6, 116
  - view or hide 12
- Alarm View 117
  - domain 118
  - filtering 121
  - function 8, 118
  - link 119
  - loading range of dates 122
  - node, card, or port 118
  - printing 124
  - reloading 122
- alarms 109
  - acknowledging 115, 123
  - all ports 141
  - audible 31, 116
  - card 35
  - clearing 123
  - color coding 115, 117
  - deleting 123
  - details 120
  - diagnostic information 120
  - filtering 121
  - list of 117
  - message 120
  - monitoring and managing 115
  - printing 124
  - probable cause 120
  - removing 123
  - resolution 120
  - selecting for ATM ports 116
  - severity level 117
  - viewing 117
  - visible 116
- alternative management options 14
- Apply Filter option
  - alarms 121
  - circuits 81
  - events 113
- archived statistics 125, 137, 139, 144
  - reloading 129
  - setting archival period 131
- Astral Point, contacting 4
- ATM alarms to report 116
- audible alarms 31, 116

## B

- back chassis 36
- bandwidth
  - link 142
  - port 44, 135
- BERT test 65
- BITS timing 42

**C**

## cards

- alarms 35
- creating 30
- deleting 35
- details 33, 37
- events 35
- half-high 164
- managing 29
- position designation 161
- quarter-high 163
- resetting 35

## cell rates

- port 136, 145
- shown for port and link statistics 12, 142

## changing

- link state 72
- port state 61

## charts

- printing 129
- reloading data 129
- resetting zoom 128
- selecting type 127
- working with 126
- zooming in 128

## chassis

- managing 32, 36, 41
- synchronizing from node 27
- view 31

## Circuit Statistics function 9

## circuits

- activating 105
- changing status 105
- creating 83
- creating and viewing 8
- deactivating 105
- defining
  - circuit class 99
  - Peak Cell Rate (PCR) 100
  - priority 99
  - recovery mode 99
  - recovery time 100

## traffic parameters 100

- deleting 106
- details 79
- endpoint properties 93
- entering information 84
- filtering 81
- hops 95
- interface properites 92
- IP interface 94
- list 78
- loading 106
- modifying 102
- path 82
  - force to primary 106
  - force to protected 106
  - recalculating 107
  - selecting hops 95
- quality of service (QoS) 100
- reloading view 81
- saving and loading 97
- selecting a service 84
- selecting ports 84
- statistics 148
- viewing 78
- virtual
  - selecting ports 85

## class

- alarm 117
- circuit 99

## clearing alarms 123

- audible 31

## CLI 14, 27, 44

## color coding

- alarms 115, 117
- elements in topology view 22
- node and link state 67, 82
- port status in chassis view 36

## Command Line Interface 14, 27, 44

## community name 19, 24, 26

## configuration

- loading to node 28
- synchronizing from node 28

- configuring
  - port interface 45
- contacting Astral Point 4
- conventions, format 2
- counters, port performance 149
- Create (circuit) function 8, 83
- creating
  - card 30
  - circuit 83
  - customers 155
  - link 71
  - node 24
  - subscribers 154
- cross-connect information 66, 107
- customers
  - assigning to circuit 84
  - defining 153, 155
  - deleting 156
  - modifying 156

## D

- deactivating a circuit 105
- defining
  - customers 153, 155
  - subscribers 153, 154
- deleting
  - card 35
  - circuit 106
  - customers 156
  - domain 24
  - node 29
  - port interface 61
  - service types 101
  - subscribers 157
- destination port
  - cell rate 145
  - error rate 146
- diagnostic information for alarm 120
- disabling
  - CLI Telnet state 27

- link state 72
- port state 61
- Statistics Manager 131
- Discover function 7, 18
- discovering a domain 18
- disks
  - details 40
  - formatting 40
  - managing 39
- domain
  - alarm view 118
  - deleting 24
  - details 23
  - discovering 18
  - graphical view 67
  - managing 22
  - monitoring and managing 14
  - setting up 13
  - viewing 20

## E

- e-mail to Astral Point 4
- enabling
  - CLI Telnet state 27
  - link state 72
  - port state 61
  - Statistics Manager 131
- endpoints
  - managing 62
  - properties of circuit 93
- error counts, selecting in statistics charts 140, 147
- error rates, port 138, 146
- Event View 110
  - domain 111
  - filtering 113
  - function 8, 111
  - link 112
  - loading range of dates 114
  - node, card, or port 111
  - printing 114
  - restoring 114

- events 109
  - card 35
  - details 112
  - full message 112
  - list of 110
  - monitoring 110
  - printing 114
  - viewing 110

## F

- Fault Management branch 8, 109
- fault regions 71
  - managing 75
  - viewing 69
- fiber numbers 69
- filtering
  - alarm view 121
  - circuit view 81
  - event view 113
- force circuit
  - to primary path 106
  - to protected path 106
- format conventions 2
- formatting disks 40
- front chassis 32
- full-wide half-high cards 164

## G

- Graph function 7, 67
- Graph View of domain 67

## H

- half-high card 164
- half-wide half-high cards 164
- help, on-line 12
- hops in circuit path, selecting 95

## I

- interfaces
  - circuit
    - properties 92
    - virtual circuit IP 63
  - port 11, 45
- internal chassis 41
- introduction to ONset 5
- IP interface
  - managing 63
  - selecting for ATM private line 94

## L

- layout of ONset window 6
- link statistics
  - cell and error rates 144
- Link Statistics function 9, 143
- links
  - alarm view 119
  - creating 71
  - event view 112
  - notation 143
  - state, changing 72
  - statistics 142
    - printing 143
  - virtual 72

- loading
  - circuit 106
  - circuit configuration 97
  - node configuration 28
  - statistics 129
- log files 11
- logging level 11

## M

- management functions 7
  - alternative options 14
- Management Tree 6
  - view or hide 12



- managing
  - alarms 115
  - cards 29
  - chassis 32, 36, 41
  - disks 39
  - domain 14, 22
  - endpoints 62
  - fault regions 75
  - IP interfaces 63
  - node software 28
  - nodes 25
  - port interfaces 45
  - ports 43
  - service types 97
  - statistics 131
- manuals, related 2
- menu bar 6
- modifying
  - circuit 102
  - customers 156
  - service types 100
  - subscribers 157
- monitoring
  - alarms 115
  - domain 14
  - events 110
  - network 109
- N**
- Network Monitoring branch 9, 125
- Node Statistics function 9
- nodes
  - collecting statistics 131
  - creating 24
  - deleting 29
  - details 26
  - loading configuration 28
  - managing 25
  - managing software 28
  - resetting 29, 31
  - statistics 130
    - displaying 133
    - printing 130
    - synchronizing configuration 28
    - updating software 15
    - uploading connection statistics 132
- notation
  - for link 143
  - for port 133
- numbering of ports 21
- O**
- on-line reference 12
- ONset
  - introduction 5
  - window layout 6
- Optical Planning branch 9
- P**
- password for ONset 10
- path, circuit
  - force to primary 106
  - force to protected 106
  - recalculating 107
  - selecting hops 95
  - viewing 82
- Peak Cell Rate (PCR) of circuit 100
- performance counters, port 149
- planning, optical network 9
- platforms for ONset 5
- ports
  - alarms 141
  - bandwidth 44, 135
  - cell rates 136, 145
  - details 44
  - error rates 138, 146
  - interfaces
    - configuring 45
    - default admin state 11
    - deleting 61
    - managing 45
    - managing 43

- notation 133
- numbering order 21
- performance counters 149
- selecting for circuit 84
- selecting for virtual circuit 85
- state, changing 61
- preferences 10, 11, 12
- primary path
  - forcing circuit to 106
  - selecting hops 96
  - viewing 82
- printing
  - alarms 124
  - chart 129
  - events 114
  - link statistics 143
  - node connection statistics 130
- priority of circuit 99
- probable cause of alarm 120
- protected path
  - forcing circuit to 106
  - selecting hops 96
  - viewing 82
- Provisioning Services branch 8, 77
- provisioning view, filtering 81

## Q

- Quality of Service (QoS) for circuit 100
- quarter-high card 163

## R

- real-time statistics 125, 137, 139, 144
- recalculating circuit path 107
- recovery
  - mode, circuit service 99
  - time, circuit service 100
- red alerts 115, 117
- reference, on-line 12

- reloading
  - alarm view 122
  - circuit view 81
  - data in chart 129
  - event view 114
- resetting
  - card 35
  - node 29, 31
  - zoom in chart 128
- resolution for alarm 120
- restoring
  - alarm view 122
  - circuit view 81
  - event view 114

## S

- saving circuit 97
- selecting
  - ATM alarms 116
  - chart type 127
  - error counts in statistics charts 140, 147
  - hops for a circuit 95
  - ports for a circuit 84
- Service Panel 6
  - view or hide 12
- service types
  - adding 99
  - deleting 101
  - list of 98
  - managing 97
  - modifying 100
  - viewing 98
- Service Types function 8, 97
- services
  - details 80
  - selecting for a circuit 84
- setting up
  - domain 13
  - user account 10
- severity of alarm 117
- SNMP 14

software update on node 15

source port

- cell rate 145
- error rate 146

statistics

- archived 125, 129, 137, 139, 144
  - setting archival period 131
- bandwidth usage 135
- circuit 148
- displaying 133
- link 142
- link ports 144
- loading range of dates 129
- managing 131
- node 130
- port alarms 141
- port cell rates 136, 145
- port error rates 138, 146
- real-time 125, 137, 139, 144
- selecting error counts in charts 140, 147
- uploading from node 132
- working with charts 126

Statistics Manager 131

subscribers 9

- assigning to circuit 84
- defining 153, 154
- deleting 157
- modifying 157

synchronizing

- chassis from node 27
- node configuration 28

## T

TCA 50, 54, 57, 141, 146

technical support 4

Telnet state, CLI 27

testing bit error rate 65

threshold crossing alert 50, 54, 57, 141, 146

timing, BITS 42

tool tip

- chassis elements 32
- data values in chart 127
- disk name and status 39
- error count explanations 140

Topology function 7, 20

Topology Management branch 7, 17

topology view 20

traffic parameters of circuit 100

tree of management functions 6

trunk state 67

## U

updating node software 15

uploading node statistics 132

user account 10

## V

View (circuits) function 8, 78

View menu 6, 12

viewing

- alarms 117
- chassis 31
- circuit details 79
- circuit information 78
- circuit statistics 148
- cross-connects 107
- data value through tool tip 127
- elements of the window 6
- events 110
- fiber numbers 69
- link statistics 142
- node statistics 130
- primary path 82
- protected path 82
- service details 80
- service types 98
- trunk state 67
- wavelength of trunk 70

virtual circuits, ports 85

virtual link, creating 72

visible alarms 116

## **W**

wavelength view 70

## **Y**

yellow alerts 115, 117

## **Z**

zooming a chart 128



