SA 100 Network Administrator's Guide

Ascend Communications, Inc.

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About This Guide

The *SA 100 Network Administrator's Guide* is a task-oriented manual that describes, step-by-step, how to configure, test, and monitor the SA 100 Broadband Service Unit (BSU) using WebXtend™, its built-in Web browser interface. The Guide is intended for the network administrator responsible for configuring and maintaining the network.

What You Need to Know

As a reader of this guide, you know how to:

- Use the operating system (Windows, Macintosh, UNIX, etc.) that is running on the computer system connected to the SA 100
- Use the Web browser software that is running on the computer system connected to the SA 100
- Surf Web pages on the Internet

This guide assumes that you have done the following:

- Installed the SA 100 hardware, as described in the *SA 100 Hardware Installation Guide* (product code 80053)
- Installed Java-enabled, Web browser software, such as Netscape Navigator Gold, Version 3.0.1, on the computer system connected to the SA 100

> *Read the* SA 100 Release Notes *for additional information about this product.*

Documentation Reading Path

The following Ascend manuals provide the complete SA 100 document set:

SA 100
Hardware Installation
Guide

Ascend Communications, Inc.

Product Code: 80053

This guide describes how to set up, install, and test the SA 100 hardware. It also provides basic troubleshooting solutions for potential hardware-related problems.

SA 100
Network Administrator's
Guide

Ascend Communications, Inc.

Product Code: 80054

This guide describes how to use WebXtend, the built-in Web browser interface, to configure, test and maintain the SA 100 BSU.

Ascend
Broadband Access
Enterprise MIB

Ascend Communications, Inc.

Product Code: 80055

This guide describes the Ascend Broadband Access Enterprise MIB (Management Information Base), the database containing SA 100 network configuration and performance information.

How to Use This Guide

This section briefly describes the chapters and appendices contained in this guide.

Read	To Learn About...
Chapter 1	The general functions and features of the SA 100 BSU and WebXtend, its Web browser interface.
Chapter 2	How to power up and shut down the SA 100, log on and off WebXtend and use the WebXtend conventions.
Chapter 3	Configuring the system-level parameters of the SA 100.
Chapter 4	Configuring SA 100 ports including Ethernet, DS1/E1, DS3/E3, and OC-3c/STM-1 ports.
Chapter 5	Configuring the SA 100 network services, including ATM User Network Interface (UNI), Native LAN Service (NLS), and Circuit Emulation Service (CES).
Chapter 6	Monitoring the status of the SA 100.
Chapter 7	Customizing the SA 100 event and alarm functions and generating event log files and traps.
Chapter 8	Testing SA 100 operations.
Chapter 9	Using WebXtend to save and restore the configuration of the SA 100 and to initialize and shut down the SA 100.
Chapter 10	How to troubleshoot the SA 100 and, if necessary, contact the Ascend Technical Assistance Center.
Appendix A	The general functions and features of the SA 100 craft interface and how to perform the functions that are only accessible through this interface.
Appendix B	The SA 100 operating system command set.
Appendix C	Downloading the Ascend Broadband Access Enterprise MIB.

Read	To Learn About...
Appendix D	Integrating an SA 100 into a CascadeView network management system.
Appendix E	Managing the SA 100 remotely.
Appendix F	Customizing the SA 100’s CAC Parameters.
Appendix G	Acronyms and abbreviations used in this guide.
Glossary	Technical terms used in this guide.

Related Documents

This section lists the related Ascend and third-party documentation that may be useful to reference.

Ascend

- *SA 100 Hardware Installation Guide* (Product code #80053)
- *Ascend Broadband Access Enterprise MIB* (Product code #80055)

Third Party

- The manual that accompanies your Web browser software

Conventions

This guide uses the following conventions to emphasize certain information, such as user input, screen options and output, and menu selections. For example:

Convention	Indicates	Example
`Courier Bold`	User input on a separate line.	**`eject cdrom`**
[*bold italics*]	Variable parameters to enter.	**[*your IP address*]**
`Courier Normal`	Output from a program to the screen.	`Please wait...`
Boldface	User input in text.	Type **cd install** and press Return.
Menu ⇒ Option	Select an option from the menu.	CascadeView ⇒ Logon
Blue border surrounding text	Notes and warnings.	Refer to examples below.
Italics	File names, path names, directories, book titles, new terms, and emphasized text.	*Network Management Station Installation Guide*

Provides helpful suggestions or reference to materials not contained in this manual.

Warns the reader to proceed carefully in order to avoid equipment damage or personal harm.

1

Overview

This chapter describes:

- The general functions and features of the SA 100 Broadband Service Unit (BSU)
- The general functions and features of WebXtend, the SA 100 Web browser interface

Product Description

The SA 100 Broadband Service Unit or *BSU* (see Figure 1-1) combines a high mix of applications with low-cost access to broadband wide area networks (WANs) and campus backbones. Unique interface modularity provides economical integration of data, voice, video and ATM cell traffic. High-performance *Cross-Flow Switching* supports 10/100-Mbps LANs at full wire speed, circuit switching, and high-speed ATM connections. Interchangeable modules called Protocol Option Devices (PODs) permit a scalable upgrade path to other members of the Ascend broadband access product family.

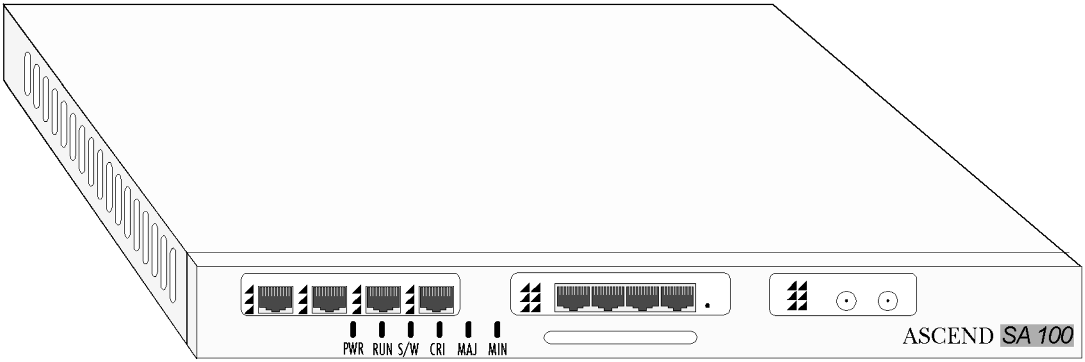

Figure 1-1. SA 100 Broadband Service Unit

Interchangeable PODs allow flexible configuration of packet, circuit, and cell interfaces.

The SA 100 is ideal for high-mix, low-cost access to broadband WANs. Figure 1-2 shows how the SA 100 consolidates wide-area ATM access for a combination of video, voice, and LAN-based data traffic. Its *Protocol Accelerator*™ provides wire-speed translation to and from ATM cells, while third-generation traffic management prevents bursty LAN traffic from degrading voice or video quality.

Figure 1-2. SA 100 Consolidating Traffic onto a WAN

Hardware Components

The SA 100 supports the following hardware in a single compact chassis suitable for rack-mount, wall-mount, or stand-alone configurations:

- one *Interface Control Module* (*ICM*)
- up to two *Interface Protocol Option Devices* (*IPODs*)
- one *Expansion Protocol Option Device* (*XPOD*)
- one *Cell Protocol Option Device* (*CPOD*)

Interface Control Module (ICM)

ICMs are the basic building block of every Ascend broadband access system. Each ICM includes a cell subsystem and a packet subsystem that switch cells and packets simultaneously. Traffic flows can be routed between I/O ports on the same ICM by way of parallel packet and cell interconnects or between ports.

The cell subsystem and associated I/O interfaces support ATM cell switching with an aggregate capacity of over one gigabit per second per ICM. A Protocol Accelerator on each ICM translates between flows at multiple levels – including ATM segmentation and reassembly, and protocol encapsulation – at speeds up to 200,000 packets per second. Because the Protocol Accelerator is based on a programmable microcode processor, it can “learn” new protocols through future software downloads.

An industry-standard RISC processor on the ICM supports system control and network management functions. A flash memory file system stores the operating system, all application software and configuration data. For cost-effective maintenance of remote Ascend broadband access systems, you can download over any network connection using standard protocols.

Protocol Option Devices (PODs)

PODs are mezzanine boards that attach to the ICM. IPODs support service interfaces including Ethernet, circuit switching, and ATM UNI/NNI. XPODs provide expansion capabilities including ATM wide-area connections and other future enhancements. CPODs provide switching of cells. The CPOD 150 used by the SA 100 is a full cell switch on a mezzanine card and is used to support circuit emulation or ATM UNI/NNI switching functions. Every IPOD and XPOD has equal access to both packet and cell subsystems. The PODs on an ICM are easily configured to meet your requirements. The flexible mix-and-match architecture of the ICM and PODs gives you complete control over both fan-out and interface mix.

Management and Configuration of the SA 100

The SA 100 may be managed using a variety of management access methods. Each SA 100 has a serial craft interface, enabling you to use a VT100 terminal or equivalent to fully configure and manage the device. In addition, each SA 100 can be configured with an IP address, enabling you to manage the device with a combination of SNMP, FTP, Telnet, and a flexible Java-based utility called WebXtend.

WebXtend Management Software

WebXtend network management software combines Java and World Wide Web technology to deliver secure, user-friendly access to sophisticated management tools.

Modern networks typically comprise an assortment of devices from a number of different vendors. Each vendor offers its own management system, and each management system requires one or more workstations. Consequently, a large wide-area network can require dozens of workstations, each configured to manage a particular version of a particular vendor’s product. Furthermore, each management system may present a unique user interface, so the network operator must invest considerable time and resources to master a new system.

World Wide Web browsers are gaining favor as a friendly, unifying interface to diverse systems. WebXtend is the first Web-based network management architecture to combine the power of Java-based computing with support for standard network management protocols. It provides a network management approach that emphasizes ease of use, cost-effective platform independence, unlimited access, and enhanced security.

Flexible Ease-of-Use

WebXtend provides secure real-time monitoring and control for the entire broadband access system. The WebXtend architecture is based on a standard World Wide Web client/server model (see Figure 1-3). A Web Server is embedded in every SA 100 broadband service unit. The recommended Web browser client is Netscape Navigator Gold version 3.0.1 or later.

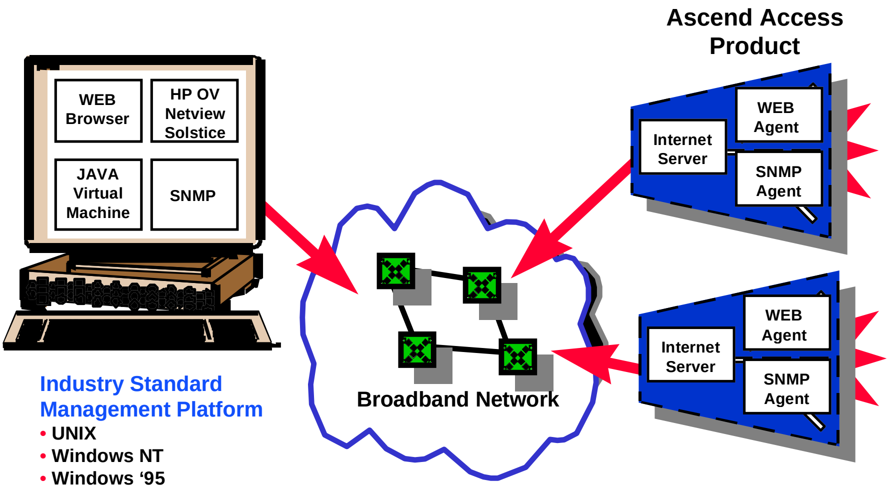

Figure 1-3. WebXtend Web-based Management

Network operators manage SA 100 broadband access systems using friendly point-and-click graphics. A Java *applet* is uploaded from the Web server to support management functions and display of real-time data such as traffic statistics. The management tools are grouped into functional areas such as Administration, Utilities, and Interface Management for simple access. In addition, a full complement of utilities supports file management, real-time software upgrades, and other functions necessary for proper system maintenance.

Cost-Effective Platform Independence

The use of Web browsers gives WebXtend a familiar and easy-to-learn user interface, minimizing training costs and maximizing user productivity. Moreover, in future software releases, you will be able to use a Java-enabled browser on any platform, eliminating the need to dedicate expensive workstations for managing broadband access products.

The SA 100 BSU also supports a *craft interface* for on-site configuration, provisioning, and testing. The ANSI-compliant VT100 interface provides simple, menu-driven commands that meet the needs of the installation technician, yet delivers the same rich management functionality as the WebXtend software.

The SA 100 supports standard protocols for management access and control. Support for telnet, FTP, IP addressing, and SNMP allows integration with generic MIB browsers and industry-standard management platforms like HP OpenView, NetView 6000, and SunNet Manager.

Secure, Ubiquitous Access

Adherence to standard protocols permits WebXtend to operate over any type of connection, including LANs, WANs, modems, and the Internet. Flexible, robust security mechanisms furnish both service providers and their subscribers with access control and authorization. All management traffic can be protected against unauthorized access by restricting it to secure IP connections.

2

Getting Started

This chapter describes how to:

- Power up the SA 100 (refer to page 2-2)
- Change the IP address of the SA 100 (refer to page 2-3)
- Shut down the SA 100 (refer to page 2-19)
- Access WebXtend (refer to page 2-5)
- Log off WebXtend (refer to page 2-18)
- Navigate the WebXtend user interface (refer to page 2-9)

Powering Up the SA 100

To power up the SA 100, toggle on the circuit breaker located on the rear panel of the unit (see Figure 2-1).

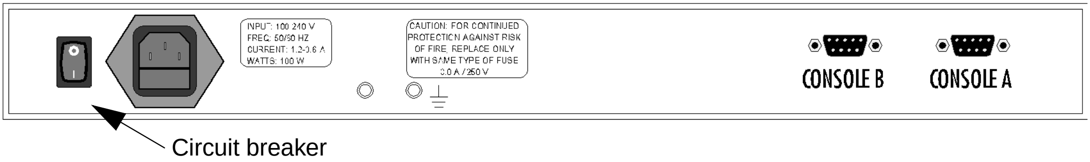

Figure 2-1. SA 100 Rear Panel (AC power shown)

After toggling on the circuit breaker, the SA 100 initializes. During initialization, the front panel indicators of the SA 100, shown in Figure 2-2, follow this sequence:

- PWR turns on and remains on as long as the SA 100 is powered.
- For approximately 15 seconds, the chassis front panel indicators turn on and off as they run through their power-up sequence.
- Then, for approximately one minute, RUN blinks once per second, while MIN is lit.
- Finally, the S/W LED is lit, and ST is lit *on the front panel of each IPOD and XPOD* indicating that the unit is ready for normal operation.

At this point, the SA 100 is ready for use or configuration.

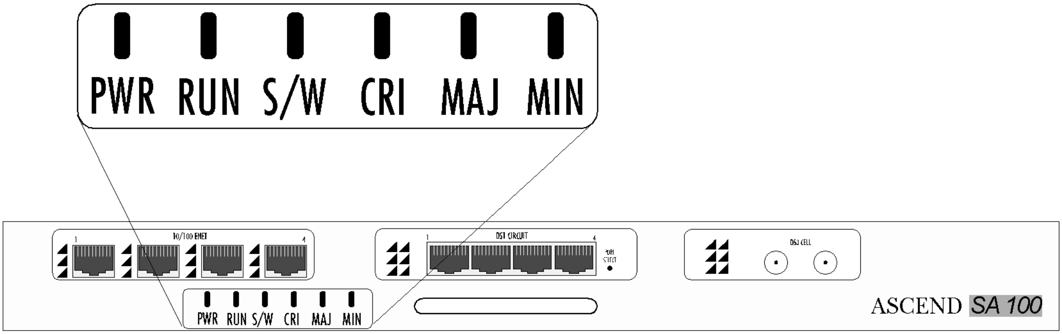

Figure 2-2. SA 100 Status Indicators

Changing the IP address

By default, the IP address of your SA 100 is 10.25.252.10. Before using the SA 100 in a network environment for the first time, you must change the IP address to conform with the network topology and the IP address assigned to the node where your SA 100 resides.

> Before performing this procedure, which uses the SA 100's craft interface, you may want to familiarize yourself with the "Craft Interface Conventions" on page A-10.

To change the SA 100's IP address:

1. Prepare your PC terminal emulation software or VT 100 terminal as described in "Setting up the VT-100 Terminal" on page A-2.
2. Make the physical connection from the PC or VT 100 terminal to the SA 100 serial port as described in "Making Craft Interface Connections" on page 4-18 of the SA 100 Hardware Installation Guide.
3. Power up the SA 100. The SA 100 boot sequence should appear on your terminal screen as described in "About the SA 100 Boot Sequence" on page A-3.
4. Enter your user name at the Login prompt ("root" is the default user name).
5. Enter your password at the Password prompt ("ascend" is the default password). After entering your password, the SA 100 displays the Main Menu of the craft interface.
6. Type **U** and press Enter.
7. When the Utilities window appears, type **X** and press Enter.
8. Type **sa_cfg** at the OASOS> prompt and press Enter.
9. When `Enter new IP address [xx.xx.xxx.xx]:` appears, type the new IP address (the current IP address appears in brackets) and press Enter.
(Note: The system refers its own IP address as the "fallback IP address".)
10. When `Enter new IP subnet mask [xx.xx.xxx.xx]:` appears, type the new IP address (the current IP subnet mask appears in brackets) and press Enter.

11. When the `Enter Console port baud rate [38400]:` appears press Enter to leave it unchanged.

12. After you press Enter at the console port baud rate prompt, OASOS displays a list of the parameters followed by:

    `Is this correct (y/n) [n] ?`

    Type **y** at this prompt and press Enter.

13. Type **Exit** at the OASOS prompt and press Enter to return to the Utilities window.

14. Choose the **Cancel** button in the Utilities window.

15. Choose the **Logoff** button in the Main menu.

16. When the Logoff window appears, tab to the Save Configuration box, then press the Space Bar to place an **X** in the Save Configuration box.

17. Select **Yes** at the Are You Sure? prompt.

18. Shut down and power up the SA 100.

After you change the SA 100's IP address, you can make an Ethernet connection to the SA 100 and use WebXtend to perform further configuration and management functions.

Accessing WebXtend

After you have changed the SA 100's IP address, make an Ethernet connection between your PC and the SA 100 as described in "Making the Ethernet Management Connection" on page 4-17 of the Hardware Installation Guide.

> *WebXtend permits remote management of units to which Ethernet connections cannot be made, either due to distance or lack of an Ethernet port. Refer to Appendix E, "Managing the SA 100 Remotely" for details.*

To access WebXtend, start up the Web browser software on the computer connected to the SA 100. When your Web browser is up and running, enter the IP address you assigned to the SA 100, using the **http://[*IP address*]/** format.

> *The Web browser you use must be Java-compatible and have Java enabled. To enable Java on Netscape Navigator Gold version 3.0.1, for example, select Options ⇒ Network Preferences... ⇒ Languages from the menu bar and place a check in the Enable Java check box.*

For example, to access WebXtend using Netscape Navigator Gold, Version 3.0.1, as your Web browser:

1. Select Open Location from Netscape Navigator's File menu.
2. Enter **http://[*IP address*]/** in the Open Location window. When your Web browser locates the SA 100, it displays the Ascend logo followed by the Log On window. (See Figure 2-3.)

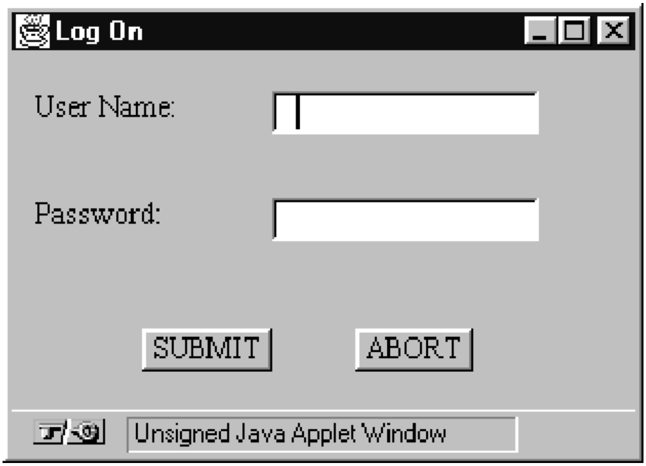

Figure 2-3. Log On Window

3. Enter your user name and password in the appropriate fields of the Log On window (“root” is the default user-name, “ascend” is the default password).

4. Choose the Submit button.

If you have logged on successfully, the Main menu of WebXtend appears (see Figure 2-3). If you entered an incorrect user name and/or password, an error message appears prompting you to try again.

> *After successfully logging on for the first time, you should immediately create an authorized user profile and delete the default user/password. See “System Security” on page 3-5 for details.*

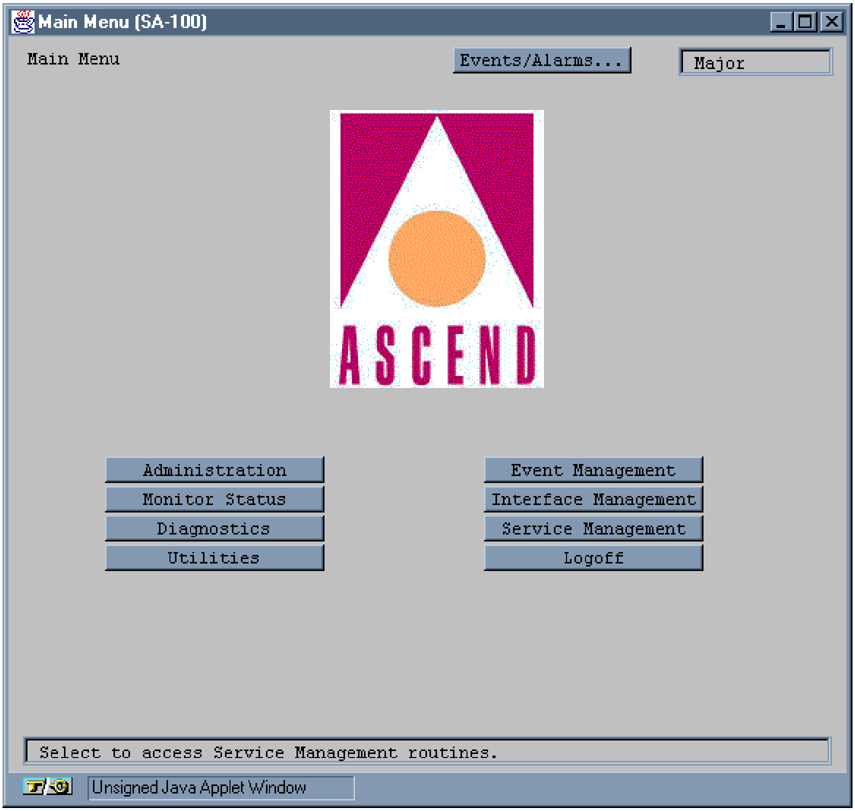

Figure 2-4. Main Menu

The Main menu is the starting point for accessing all the functions of WebXtend. You access each function by choosing the appropriate button. Table 2-1 briefly describes the buttons and functions you can access and lists the chapter that describes each function.

Table 2-1. Main Menu Buttons and Functions

Button	Choose this function to...	Refer to Chapter
Administration	Configure SA 100 system level parameters	3
Monitor Status	Monitor the state of the SA 100	6
Diagnostics	Test the operation of the SA 100	8
Utilities	Save and restore the SA 100 configuration and initialize and shut down the SA 100 system	9
Event Management	Customize the SA 100 event and alarms functions and generate event log files	7
Interface Management	Configure the SA 100 ports	4
Service Management	Configure the SA 100 network services	5
Logoff	Exit WebXtend	2

WebXtend Conventions

To use WebXtend efficiently, you should be familiar with its user interface conventions.

Navigating Buttons and Fields

There are two ways to navigate the buttons and user-selectable fields that appear in each WebXtend window:

- You can use a mouse connected to your computer.
  - To choose a button or user-selectable field, point and click on the desired button or field.
  - To select an option in a user-selectable field, point and click on the scroll arrow to the right of the desired field.
- You can use the Tab, Arrow, and Enter keys.
  - To move between buttons and user-selectable fields, use the Tab key.
  - To scroll through the options in user-selectable fields, use the Arrow keys.
  - To choose a highlighted button or highlighted option in a user-selectable field, use the Enter key.

> *A highlighted button has a dotted line bordering its perimeter.*
>
> *A highlighted field contains reverse text, i.e., white text on a dark background.*

Whether you use a mouse or keys to navigate buttons and fields, the cursor skips over the following buttons and fields because they are not user-selectable:

- Read-only fields, i.e., fields that display information only.
- Gray buttons and fields; gray indicates that your SA 100 does not support function. For example, if your SA 100 does not contain an Ethernet POD, all buttons and fields related to the Ethernet POD are gray.

Clicking vs. Double-Clicking

In most cases, you only have to click once to select an item in a WebXtend window. The main exception is on the windows displaying the SA 100 front panel. To select a system, slot, POD, or port (to monitor or configure), you must double-click (click twice) on the item to monitor or configure. This also holds when selecting an item from a list to obtain additional information (for example, to select an individual POD from the Select POD list in the Display Board Status window).

OK, Cancel, and Apply Buttons

OK, Cancel, and Apply buttons appear in various WebXtend windows. These buttons serve the following functions:

- **OK** — confirms all previous actions you have performed in a window, saves all current configuration additions or changes, and then closes that window.
- **Cancel** — closes the window without saving any configuration additions or changes made in this window.
- **Apply** — enters all previous actions you have performed, saves all current configuration additions or changes, and keeps the window open for further work.

Events/Alarms Field and Button

In the upper-right corner of each WebXtend full-size window is an Events/Alarms field and button, which do the following:

Events/Alarms field — displays the severity (Critical, Major, or Minor) of the most severe current alarm, if any, detected by the SA 100.

Events/Alarms button — enables you to display a summary of the current events and alarms, if any.

Window Buttons

Most other buttons on the WebXtend interface are window buttons, which invoke a pop-up window or prompt you to enter information in a daughter window. Enter the required information, then choose OK to return to the parent or previous window.

Command Buttons

Command buttons are available on some WebXtend screens. Command buttons enable you to issue a command which is immediately executed. A common command is Clear Fields, which clears any the values of fields on the current window.

Help Field

Near the bottom of each WebXtend window is a Help field. This field provides a brief, one-line description of the currently selected button or field. For example, in Figure 2-4, the Help field describes the function of the Administration button.

WebXtend Screen Hierarchy

To use WebXtend efficiently, you should understand the hierarchal layout of the screens and how to move between them.

Understanding the Program Flow

WebXtend is designed to provide a logical, flowing interface to the SA 100. Beginning at the broadest level (the SA 100 as a piece of hardware), the interface guides you through subsequently more detailed levels to the lowest level available (detailed communications parameters). Figure 2-5 shows an overview of this design.

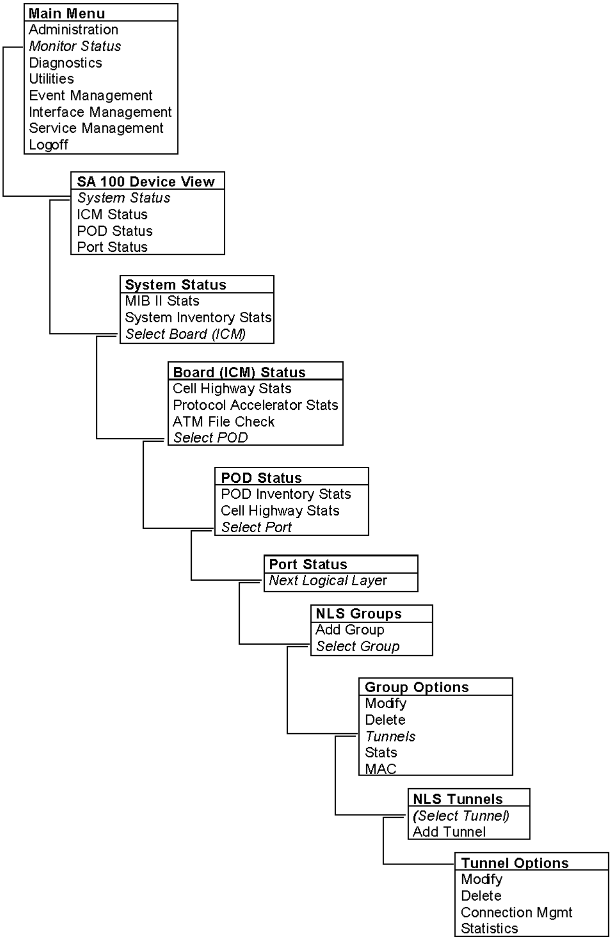

Figure 2-5. WebXtend Screen Hierarchy Example

WebXtend's main Menu provides access to various functions. For this example, we'll use the monitoring function. When you choose the Monitor Status button, you're presented with a view of the SA 100 front panel, representing the unit as a whole. From this point, you can select the next level to view, for example the ICM. From the ICM screen, you can select a POD to view. From the POD screen, you can select a single port to view. At the port screen, you can view various communications details at the port level, and you have the option to progress to the next logical layer, which in this case brings you to the Native LAN Services screen. From the NLS Groups screen, you can add groups or select groups, which brings you to the NLS Group Options screen, where you might select Tunnels and subsequently the Tunnels Options screen, reaching greater levels of detail with each window.

In addition to this depth of detail, WebXtend provides further breadth at many layers. Additional windows are often available to provide greater details on a given layer. For example, at the System Status window, you can choose to view MIB II Statistics or System Inventory Statistics, or you can continue drilling down to the board level.

Understanding the Screens

Each WebXtend window or screen is divided into ‘frames’ of related information. In general, frames are organized as shown in Figure 2-5, with status and information fields at the top, user-configured fields in the middle, and command buttons and where-to-next buttons at the bottom of the window.

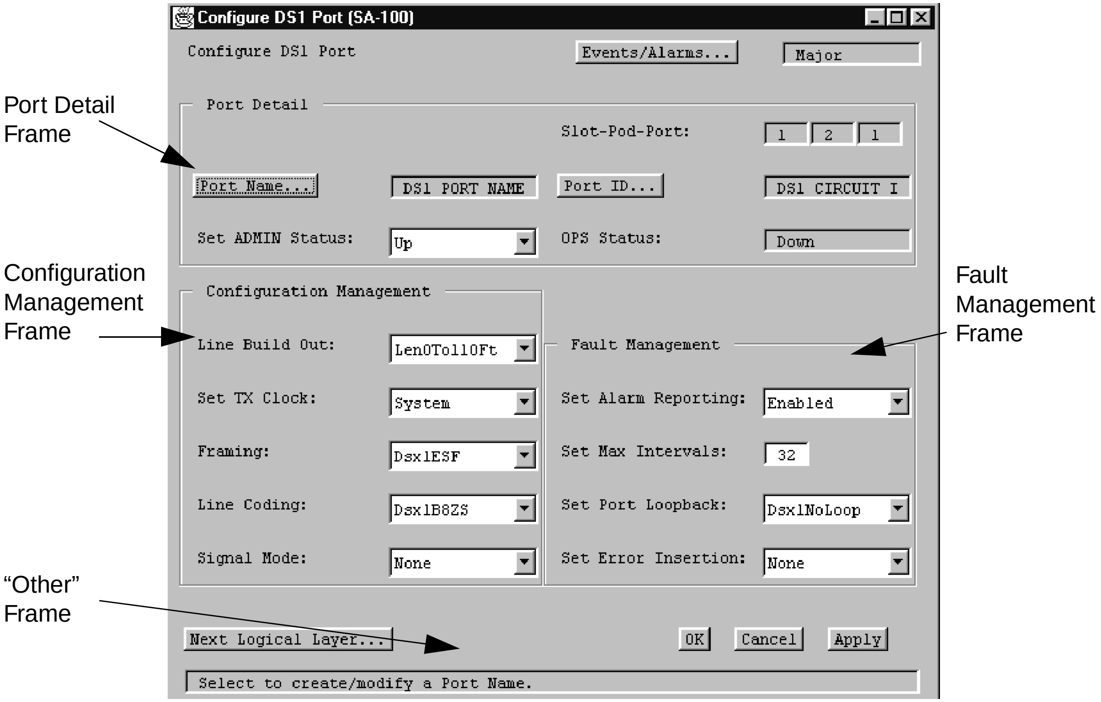

Figure 2-6. Typical WebXtend Window

In the example shown, the window contains several frames: Port Detail, Configuration Management, Fault Management, and an unlabeled area at the bottom containing several buttons (we'll refer to this area in the tables as the "Other" frame).

In general, the fields in a window are organized as follows. The frame at the top of the window usually contains reference information such as the Slot:Pod:Port fields. Frames in the middle of the window are usually user-configurable parameters. Frames near the bottom of the screen generally contain command buttons that open the next logical layer, or accept or cancel any changes you may have made.

Referencing the Table for a Screen

This manual discusses each screen available in WebXtend. In general, you will find a brief description of the window's purpose and contents, along with a screen shot of the window. Following the figure, you'll find a table detailing the contents of the window: its fields, and their meaning.

There are some fields which appear on nearly every WebXtend window, typically reference fields such as Slot/Pod/Port. Rather than repeat these fields in every table throughout the manual, common fields are explained in Table 2-2.

Table 2-2. Common Fields/Buttons

Field/Button	Type	Action/Description
Port Detail		
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Port Name	window button	Specify the port name (32 characters max).
Port ID	window button	Specify the port ID (32 characters max).

Table 2-2. Common Fields/Buttons (Continued)

Field/Button	Type	Action/Description
Set ADMIN Status	read/write	Set the administrative state of the port: up or down. Default is up (on-line). Set to Down (off-line) when you run diagnostics. The Testing option is not supported by the SA 100.
OPS Status	read-only	Displays the operational state of the port: up or down.
Events/Alarms	window button	Opens the Events/Alarms Log window.
Clear Fields	command button	Clears any changes you may have made in the current window. Remember that the Clear Fields button will not clear any changes that have been confirmed by pressing OK.
Clear Counters	command button	Resets any counters in the current window to zero. Keep in mind that the display may not be able to keep pace with the real-time counters, so you may never see zero itself appear in a particular field.

Table 2-2. Common Fields/Buttons (Continued)

Field/Button	Type	Action/Description
Connect Detail	read-only	Displays error codes if any failure is present on this connection, or blank if no failure exists. Possible error conditions include: • *VpvcUsed* — "Port / VPI / VCI" of either source or destination is already used. • *vpi-OOR* — VPI of either the source or destination is out of range. • *vci-OOR* — VCI of either the source or destination is out of range. • *vpi-Rsvd* — PVCs source or destination VPI within range reserved for PVPs. • *pvp-OOR* — PVPs source or destination VPI outside range reserved for PVPs. • *rate-OOR* — PCR/SCR in traffic descriptor out of range. Depending on service category: PCR is less than SCR, or rate descriptor is non-0 when it should be 0, or rate is 0 when it should be non-0. • *desc-OOR* — Traffic Descriptor out of range. One or more of these is not in the list of MIB enumerations: Service Category, Congestion Action, or Buffer Size. • *port-bad* — The results of the power-on self-test have disabled this port.

Logging Off WebXtend

To log off and exit WebXtend:

1. Choose the Logoff button from the Main menu.

2. When the Logoff window appears (see Figure 2-7), click in the Save Configuration box to preserve any configuration work you may have performed during this WebXtend session.

> *The SA 100 does not save configurations automatically. You must click in the Save Configuration box of the Logoff window to save a configuration. After clicking the Save Configuration box, select Yes, then wait to be prompted that it is safe to turn off the unit.*
>
> *WARNING: Turning off the SA 100 before it has finished saving configuration data can cause corruption of the configuration file and result in improper operation of the unit the next time it is booted up.*

Figure 2-7. Logoff Window

3. Choose the Yes button in the Logoff window.

4. Exit your Web browser, if desired.

Shutting Down the SA 100

To shut down the SA 100, toggle off the circuit breaker located on the rear panel of the unit (see Figure 2-1).

What’s Next?

After you are familiar with the basics of WebXtend, you can configure the system-level parameters of the SA 100 as described in Chapter 3, “Configuring the System”.

3

Configuring the System

This chapter describes how to configure the SA100 system-level parameters, including:

- System name (see page 3-2)
- System location (see page 3-2)
- System contact (see page 3-2)
- System date and time (see page 3-2)
- System security (see page 3-5)
- System timing (see page 3-10)
- IP Routing (See page 3-15)
- ILMI node prefixes (See page 3-19)

Accessing System Administration Functions

To access the System Administration functions:

1. Choose the Administration button from the Main menu. The System Administration window appears (see Figure 3-1).
2. Complete the fields described in Table 3-1. Refer to the sections on System Security, Specify Map, and System Timing as necessary, completing these procedures.
3. Choose OK to close the System Administration window and save your changes.

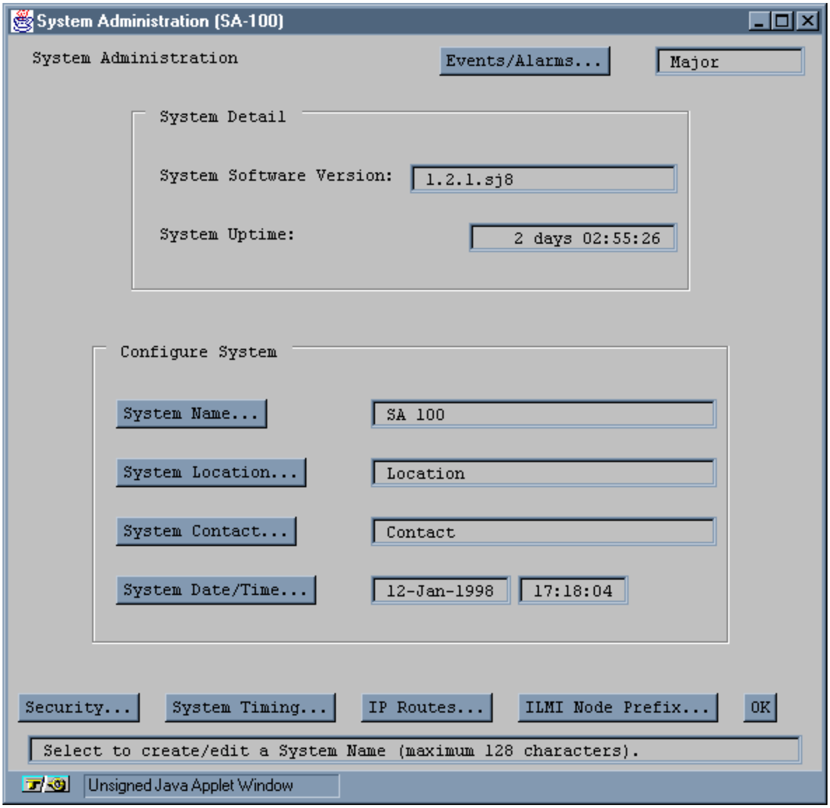

Figure 3-1. System Administration Window

Table 3-1. System Administration Fields and Buttons

Field/Button	Type	Action/Description
System Detail		
System Software Version	read-only	Display the level of the program code running in the SA 100.
System Uptime	read-only	Display the elapsed operating time since the SA 100's last power up.
Configure System		
System Name	read/write	Set/display the name of the SA 100 (128 characters max.).
System Location	read/write	Set/display the name of the SA 100's physical site (128 characters max.).
System Contact	read/write	Set/display a contact name, telephone number, e-mail address, etc., for the SA 100 (128 characters max.).

Table 3-1. System Administration Fields and Buttons (Continued)

Field/Button	Type	Action/Description
System Date/Time	read/write	Set/display the SA 100 system date and time. • *Date* — use DD-MMM-YYYY, where DD is the day of the month (01-31); MMM is the three letter abbreviation representing the month; and YYYY is the numeral representing the year. For example, to set the date to March 8, 1998, enter 08-Mar-1998. • *Time* — use HH:MM:SS, where HH, MM, and SS are the numerals representing hours, minutes, and seconds, respectively. The SA 100 internal clock marks time on a 24-hour basis, representing the hours 1 PM through 11 PM by the numerals 13 through 23; midnight is represented by 00. For example, to set the time to 8:30 PM, enter 20:30:00.
(Other Buttons)		
System Security	window button	Set operator names, passwords, security levels, and access to applications.
System Timing	window button	Set SA 100 clocking parameters.
I/P Routes	window button	Opens the I/P Routes window.
ILMI Node Prefix	window button	Opens the ILMI Node Prefix window.

System Security

SA 100 system security is controlled through the creation of operators, who are assigned passwords and security levels and given access to some or all of the SA 100 applications.

To configure System Security parameters by creating or modifying an operator:

1. Choose the System Security button from the System Administration window. The System Security window appears (see Figure 3-2). The System Security window lists the authorized operators, their security level and which applications they have access to. Figure 3-2, for example, lists the name of an operator (Hayley) who has been added to the system. For security, eight asterisks appear in the Password field instead of the actual password. Hayley has a security level of “Super” and access to all the SA 100 management applications.

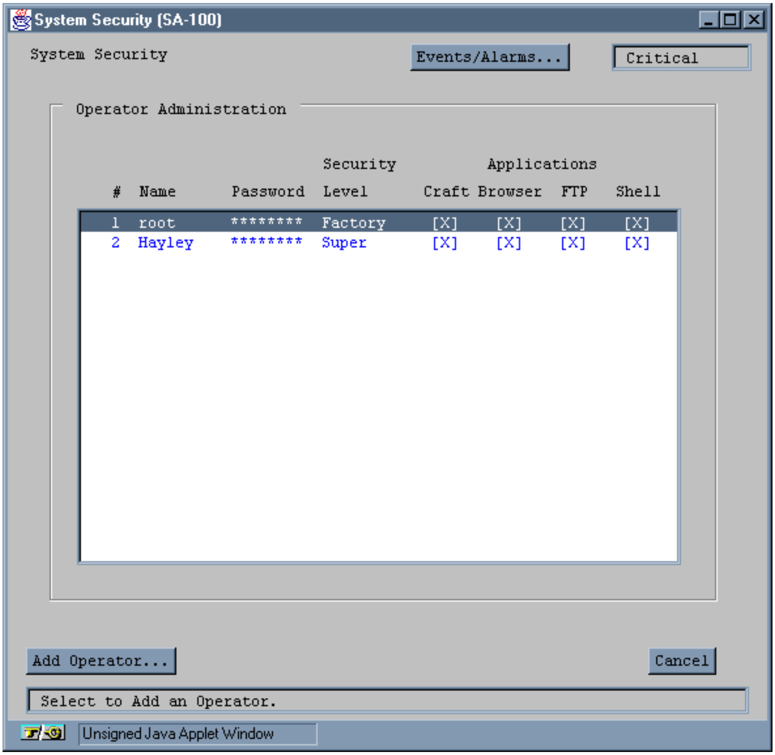

Figure 3-2. **System Security Window**

2. To create a new operator, click the Add Operator button. The Add Operator window appears. Complete the fields described in Table 3-2 and click OK.

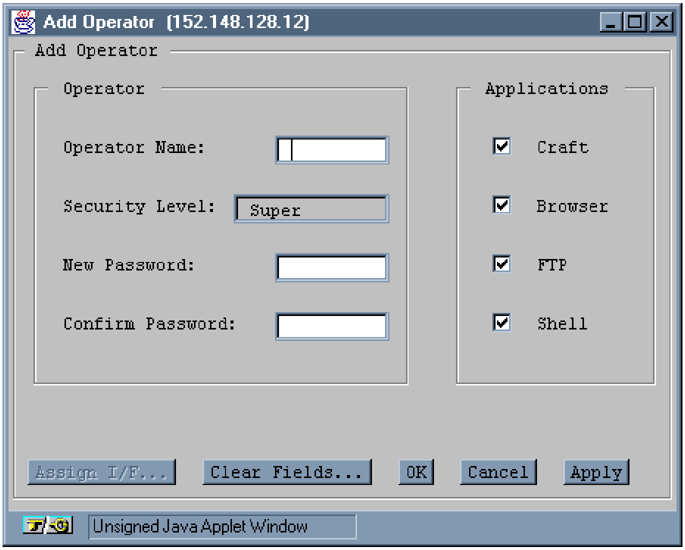

Figure 3-3. Add Operator Window

3. To modify or delete an existing operator, select the operator in the System Security window. The System Security Options window appears (Figure 3-4). Choose Modify to change the operator's attributes or Delete to delete the operator. Choosing Modify opens the Modify Operator window which enables you to change the user name and application access (see Table 3-2 for descriptions of these fields). Passwords and Security Level may not be changed once established. Choosing Delete prompts you for confirmation before deleting the selected operator. When you have finished modifying or deleting the operator click OK to return to the System Security window.

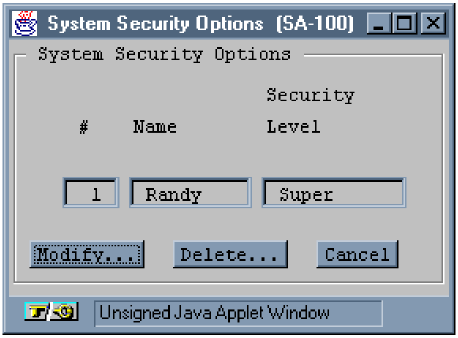

Figure 3-4. System Security Options Window

4. Choose OK to close the System Security window and save your changes.

Table 3-2. Adding an Operator

Field/Button	Type	Action/Description
Operator Name	read/write	Set/display the current operator’s name.
Security Level	read/write	Set/display the current operator’s security level. Currently, only the Super security level is supported. **Super —** enables the operator to view and modify all SA 100 parameters.
New Password	read/write	Set/display the password for the operator. A password may not be changed once it is authenticated in the Confirm Password field and the Add Operator window is closed.
Confirm Password	read/write	Re-enter the password for to confirm spelling.
Applications	read/write	Set/display the SA 100 applications which the operator can access: **Craft —** enables the operator to configure, monitor, and control the SA 100 locally or remotely using a series of menu-driven screens on a VT100 terminal or on a computer running VT100 terminal emulation software. **Browser —** enables the operator to configure, monitor and control the SA 100 using the SA 100 Web browser interface (WebXtend). **FTP —** enables the operator to use the File Transfer Protocol and Zmodem to transfer files to and from the SA 100. **Shell —** enables the operator to access the SA 100 operating system and to configure certain parameters within the SA 100, for example, the IP address and IP subnet mask.

Table 3-2. Adding an Operator (Continued)

Field/Button	Type	Action/Description
Assign I/F	window button	Select which interfaces the operator can access. This feature is not currently supported.
Clear Fields	button	Clear all the fields in the Add Operator screen.

System Timing

The System Timing parameters set the primary and secondary reference clocking options of the SA 100.

To access the System Timing parameters:

1. Choose the System Timing button from the System Administration window. The System Timing window appears (see Figure 3-5).
2. Complete the fields described in Table 3-3 and click OK to return to the System Administration window.

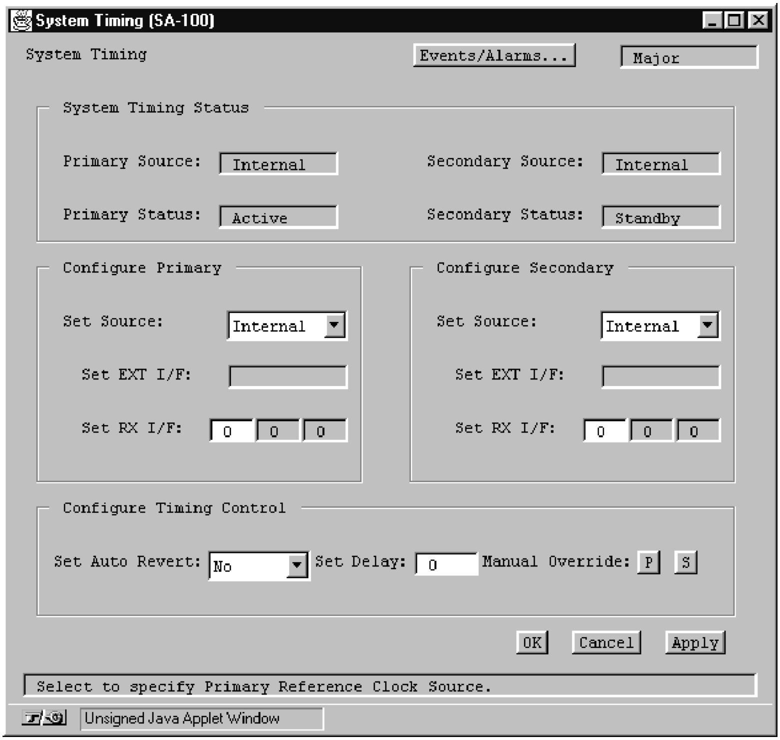

Figure 3-5. System Timing Window

Table 3-3. System Timing Fields and Buttons

Field/Button	Type	Action/Description
System Timing Status		
Primary/Secondary Source	read-only	Display how the primary and secondary timing is being supplied: internal clocking or recovered clocking.
Primary/Secondary Status	read-only	Display the state of the primary and secondary timing: active, standby, failed, or no configuration.
Configure Primary/Secondary		
Set Source	read/write	Set/display how primary and secondary reference timing is supplied. • *Internal* — (default) SA 100 uses its own internal reference oscillator as the primary reference clock source. • *Recovered (received)* — SA 100 uses the timing recovered from the interface you select in the Set RX I/F field as the primary reference clock source. (External clocking is not an SA 100 option.)
Set EXT I/F	not applicable	This is not an SA 100 parameter.
Set RX I/F	read/write	Set/display the slot, POD and port of the SA 100 that is the source of primary and secondary recovered (received) clocking.

Table 3-3. System Timing Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Configure Timing Control		
Set Auto Revert	read/write	Set/display whether the Auto Revert is enabled (yes) or disabled (no). • *Yes* — SA 100 automatically switches from secondary to primary reference clocking after the primary clock has recovered from a failure. If you select Yes, you must also complete the Set Delay field. • *No* — SA 100 will continue using the secondary reference clocking even after the primary clock recovers. With Auto Revert disabled, you must use the Manual Override command to return control to the primary clock.
Set Delay	read/write	Set/display the number of seconds (0 to 30) the SA 100 will wait after the primary clock has recovered from a failure before auto-reverting to the primary clock’s timing. Zero delay causes the clock to auto-revert immediately.
Manual Override	read/write	Select primary (P) or secondary (S) clocking as the system timing source, thus overriding all other system-timing parameters (subject to the link status).

Setting System Timing

Use the System Timing window to set the timing parameters of the SA 100, as follows:

1. Use the Configure Primary – Set Source field to select the timing source for the primary reference clock, either internal or recovered (received) timing.

   Internal (*default*) – The SA 100 uses the its own internal reference oscillator for the primary reference clock source.

   Recovered (received) – The SA 100 uses the timing recover from the interface you select for the primary reference clock source.

2. If you selected recovered (received) timing as the primary reference clock source, use the Configure Primary – Set RX I/F field to select the source (slot, POD and port of the SA 100) of that timing. (In an SA 100, there is only one slot, so the slot parameter is always 1.)

> *IMPORTANT: Never disable alarm reporting on any port used for primary or secondary recovered timing.*

3. Use the Configure Secondary – Set Source field to select the timing source for the secondary reference clock, either internal or recovered (received) timing.

   Internal (*default*) – The SA 100 uses the its own internal reference oscillator for the secondary reference clock source.

   Recovered (received) – The SA 100 uses the timing recover from the interface you select for the secondary reference clock source.

4. If you selected recovered (received) timing as the secondary reference clock source, use the Configure Secondary – Set RX I/F field to select the source (slot, POD and port of the SA 100) of that timing.

5. Use the Configure Timing Control – Set Auto Revert field to enable (Yes) or disable (No) the Auto Revert function as desired/required.

   If you enable Auto Revert, the system automatically switches from secondary to primary reference clocking after the primary clock has recovered from a failure.

6. If you enabled the Auto Revert function, use the Configure Timing Control – Set Delays field to set the delay between the time the primary clock has recovered from a failure and the time that the auto-revert function occurs. Zero delay causes the clock to auto-revert immediately.

7. When you are finished, choose the applicable button (OK, Cancel or Apply).

Specifying IP Routes

The IP Routes establish paths to NMS stations.

To access the IP Routes parameters:

1. Choose the IP Routes button from the System Administration window. The IP Routes window appears (see Figure 3-6).
2. To add a new IP Route, choose the Add I/P Route button. The Add IP Route window appears (see Figure 3-7).
3. Complete the fields described in Table 3-4 and click OK to return to the IP Routes window.

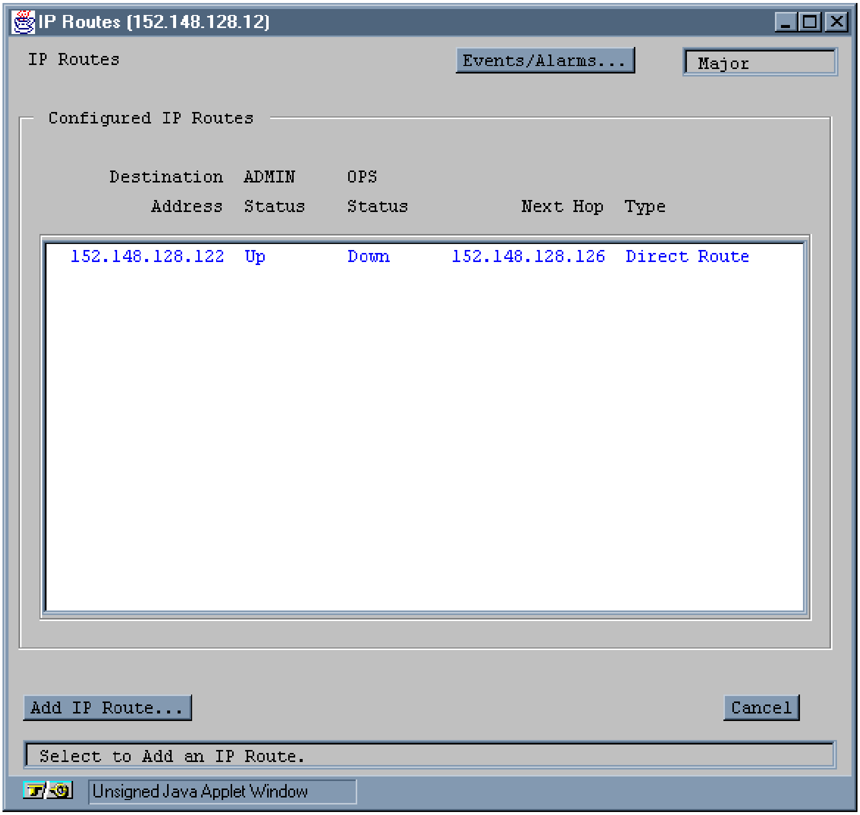

Figure 3-6. IP Routes Window

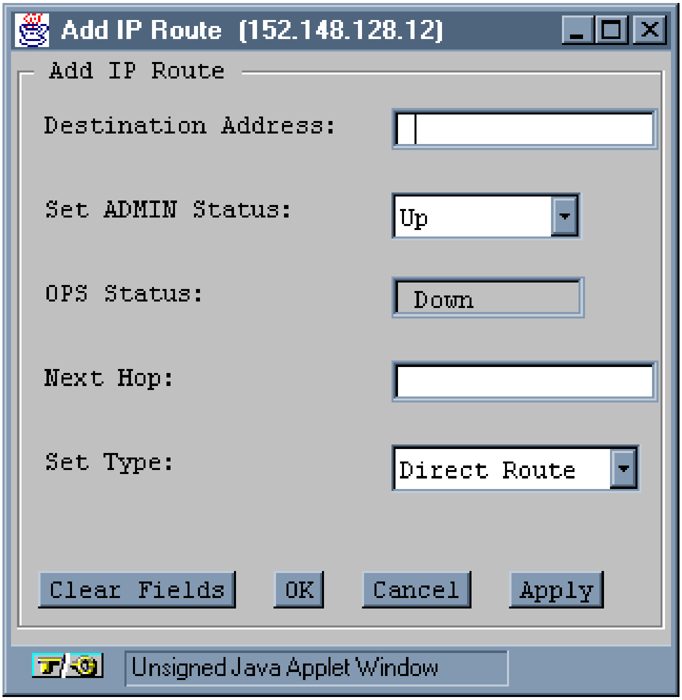

Figure 3-7. Add IP Route Window

Table 3-4. Adding an IP Route

Field/Button	Type	Action/Description
Destination Address	read/write	Set/display the destination IP address.
Set ADMIN Status	read/write	Set the administrative state of the IP Route: up or down.
OPS Status	read-only	Display the operational state of the IP Route: up or down.
Next Hop	read/write	Set/display the address of the next hop.
Set Type	read/write	Set/display the IP Route Type: Direct Route or Indirect Route.

Modifying, Deleting, or Connecting IP Routes

To modify, delete, or connect an IP route, double-click the IP route in the IP Routes window. The IP Route Options window appears (Figure 3-8), enabling you to modify, delete or connect an IP route.

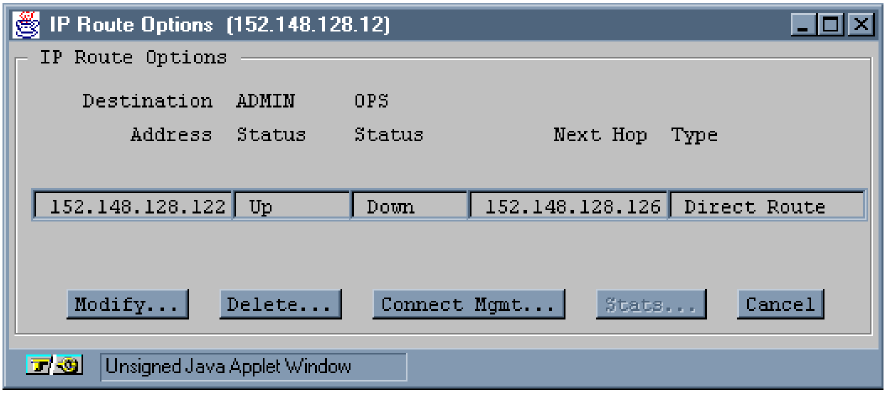

Figure 3-8. IP Route Options window

Selecting Modify presents a Modify dialog box similar to the Add IP Route dialog box. Make any desired changes, then choose OK.

Selecting Delete prompts you for confirmation before deleting the selected IP Route.

Selecting Connect Mgmt opens the Connection Management dialog box (Figure 3-9 on page 3-18), enabling you to set the Connect Status for the IP Route to Up or Down by choosing the Connect or Disconnect button.

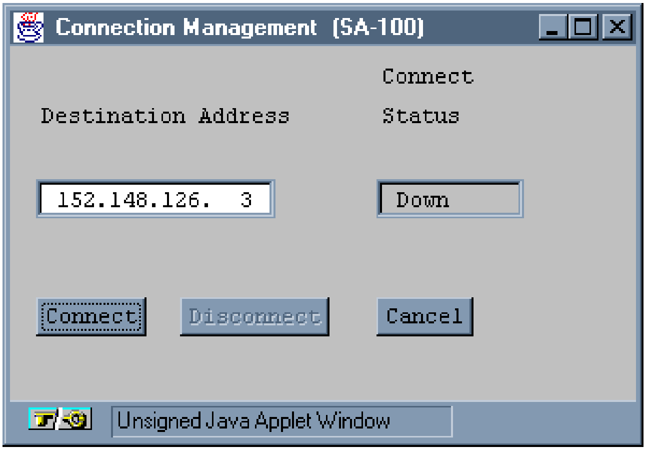

Figure 3-9. **Connection Management window**

Specifying ILMI Node Prefix

Interim Local Management Interface (ILMI) is a management information base (MIB) that provides status and communication information to ATM UNI devices and provides for a port keep-alive protocol. WebXtend currently implements ILMI's network side for UNI ports (DCE) to provide the following functions:

- address registration based on configured Network and Port Prefix tables
- rejection of duplicate ATM addresses from DTE devices
- to initiate link connectivity "keep-alive" messages
- to support ILMI "gets" for ATM and physical layer statistics.

A future release of WebXtend will add user-side ILMI support for UNI ports (DTE).

Address information in a switch is used both for determining the proper route for calls and for calling-party screening. When used for route determination, the switch advertises an appropriate subset of its configured node prefixes, port prefixes, and port addresses to all other switches in the network. When used for calling party screening, the switch uses the configured node prefixes, port prefixes, and/or port addresses to determine whether or not a call should be accepted by the network.

To perform these two functions at a UNI, both the user and the network need to know the ATM addresses that are valid at the UNI. Address registration provides a mechanism for address information to be dynamically exchanged between the user and the network, enabling them to determine the valid ATM addresses that are in effect at a UNI. Address registration applies only to UNI ports on which ILMI is enabled. Any ILMI-eligible node or port prefix will be transferred from all ILMI-enabled private UNI-DCE ports and all ILMI-enabled public end-system UNI-DCE ports to their peer DTE devices.

Node prefixes are not exchanged from "public switch" UNI-DCE ports. Only port prefixes are exchanged from these ports.

To access the ILMI Node Prefixes Table:

1. Choose the ILMI Node Prefixes button from the System Administration window. The ILMI Node Prefix Table window appears (see Figure 3-10).
2. To add a new ILMI Node Prefix, choose the Add Node Prefix button. The Add Node Prefix window appears (see Figure 3-11).
3. Complete the fields described in Table 3-5 and click OK to return to the ILMI Node Prefix Table window.

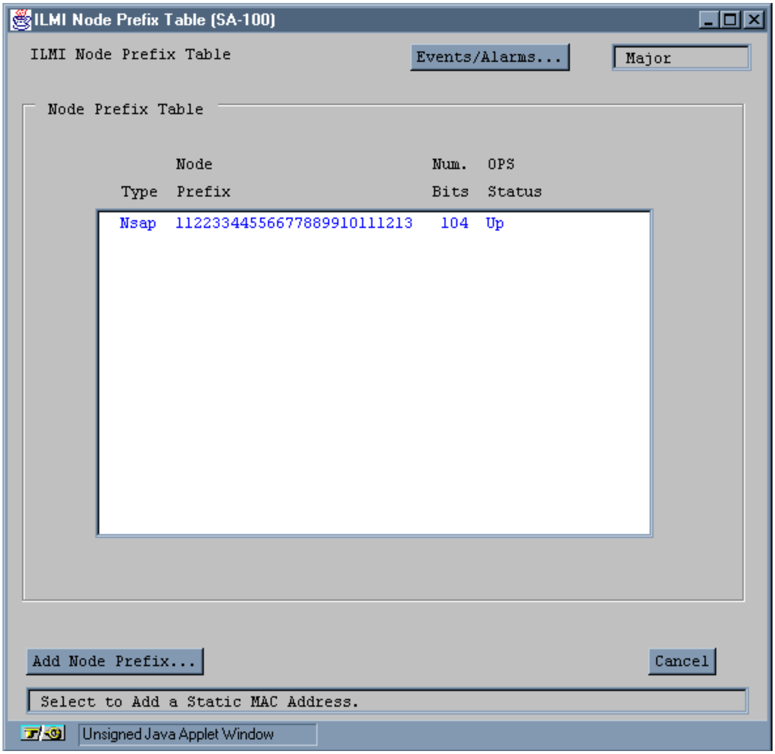

Figure 3-10. ILMI Node Prefix Table

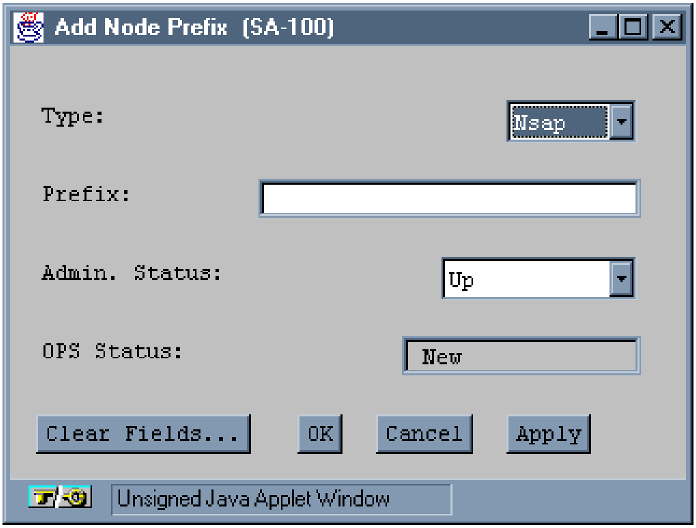

Figure 3-11. Add Node Prefix Window

Table 3-5. Add Node Prefix Fields and Buttons

Field/Button	Type	Action/Description
Type	read/write	Set/display the type of Node Prefix: E.164 - allows a prefix of up to 16 digits. Prefixes of less than 16 digits will be padded with leading zeros. (not currently supported) Nsap - prefix must be 26 digits. Unknown - (not currently supported)
Prefix	read/write	Set/display the node prefix itself. Enter a node prefix based on the Type selected above.
Admin. Status	read/write	Set the administrative state of the Node Prefix: up or down. (No op not supported.)
OPS Status	read-only	Display the operational state of the Node Prefix: up or down.

Modifying or Deleting ILMI Node Prefixes

To modify or delete an ILMI Node Prefix, double-click the Node Prefix in the ILMI Node Prefix Table window. The Node Prefix Options window appears (Figure 3-12), enabling you to modify or delete the selected node prefix.

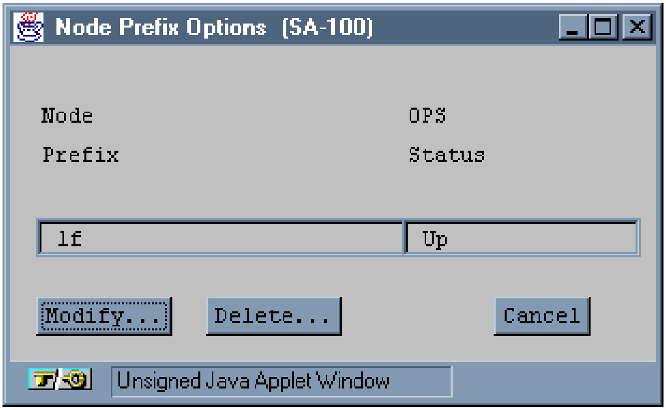

Figure 3-12. Node Prefix Options window

Selecting Modify presents a Modify dialog box similar to the Add Node Prefix dialog box. Make any desired changes, then choose OK.

Selecting Delete prompts you for confirmation before deleting the selected ILMI Node Prefix.

What’s Next

After you set the SA 100 system level parameters, you can configure the ports, as described in Chapter 4, “Configuring Ports”.

4

Configuring Ports

This chapter describes how to configure SA 100 ports including:

- Ethernet ports (refer to page 4-5)
- DS1/E1 ports (refer to page 4-8)
- DS3/E3 ports (refer to page 4-45)
- OC-3c/STM-1 ports (refer to page 4-59)

Accessing Interface Management Functions

To access the Interface Management functions, choose the Interface Management button from the Main menu.

The Interface Management window appears (see Figure 4-1), displaying a graphical representation of the front of the SA 100. When you move the mouse pointer over this graphic, callouts appear indicating when the pointer is located over the system, a slot, a POD, and/or a port. Double-click the mouse while a callout appears to select the indicated slot, POD, and/or port.

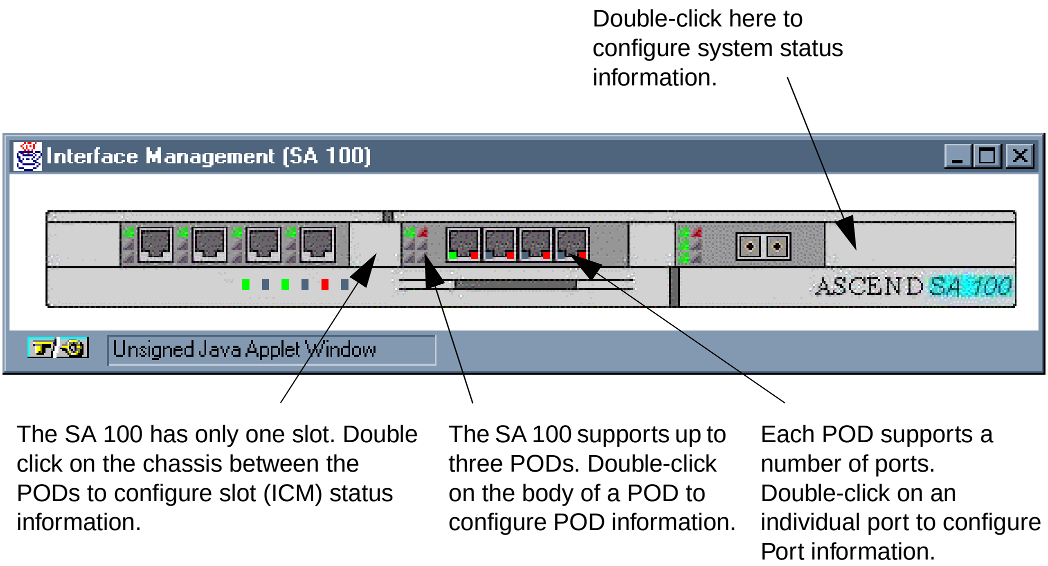

Figure 4-1. Interface Management Window

Selecting a Port

You can select a port in the following ways:

- Choose the *port* directly from the Interface Management window (the callout lists the slot, POD and port).
- Choose the *POD* containing the port to configure from the Interface Management window (the callout lists the slot and POD).

  When the Configure POD window appears, select the port from the list of ports.
- Choose the *slot* (ICM) from the Interface Management window (the callout only lists the slot).

  When the Configure ICM window appears, select the POD containing the port to configure.

  When the Configure POD window appears, select the port from the list of ports.
- Choose the *system* from the Interface Management window (the callout reads *system*).

  When the Configure System window appears, use the Select Slot (ICM) field to select the ICM containing the port to configure.

  When the Configure ICM window appears, select the POD containing the port to configure.

  When the Configure POD window appears, select the port from the list of ports.

The first method is the quickest and most direct way of selecting a port to configure. The other methods offer the advantage of providing more information concerning your selections. For example, using the other methods, you select a port to configure from the Configure POD window (see Figure 4-2). This window lists additional port information such as port type, operations status, and alarm condition.

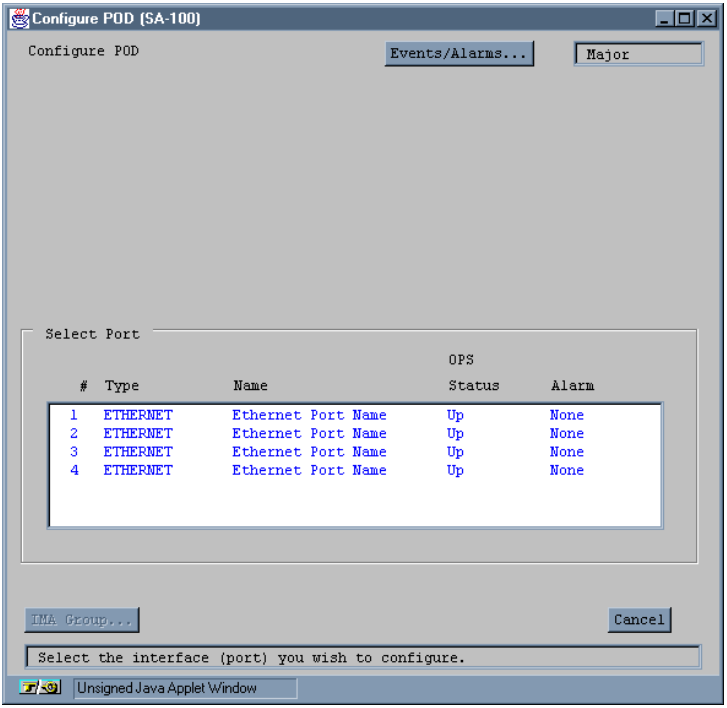

Figure 4-2. Configure POD Window

Configuring an Ethernet Port

To configure an Ethernet port:

1. Select the desired Ethernet port from the Interface Management window, as described in "Selecting a Port" on page 4-3. The Configure Ethernet Port window appears (see Figure 4-3).

2. Complete the fields described in Table 4-1.

3. When you are done configuring this port, choose the Service Management button to configure the NLS services as described in "Configuring Native LAN Services" on page 5-22.

4. Choose OK.

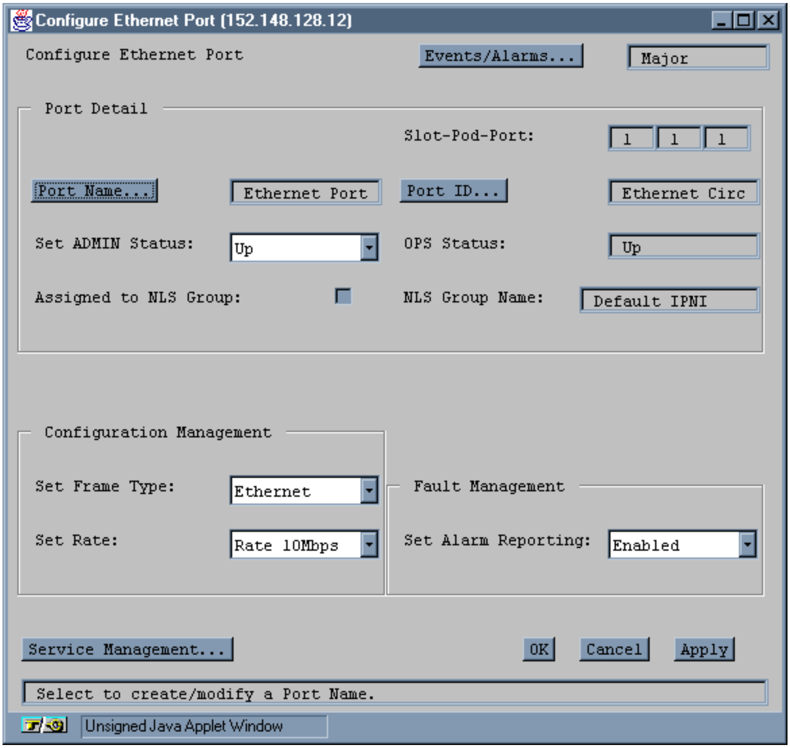

Figure 4-3. Configure Ethernet Port Window

Table 4-1. Configure Ethernet Port Fields and Buttons

Field/Button	Type	Action/Description
Port Detail		
Slot-POD-Port	read-only	Display the port’s slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always “1.”
Port Name	window button	Specify the port name (32 characters max).
Port ID	window button	Specify the port ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state of the port: up or down. Default is up (on-line). Set to Down (off-line) when you run diagnostics. The Testing option is not supported by the SA 100.
OPS Status	read-only	Display the operational state of the port: up or down.
Assigned to NLS Group	read-only	Display whether the port is assigned to an NLS Group.
NLS Group Name	read-only	Display the name of the NLS Group this port is assigned to.
Configuration Management		
Set Frame Type	read/write	Specify the type of framing (Ethernet framing) used on the port.
Set Rate	read/write	Set the port’s data rate: 10 or 100 Mbps, full- or half-duplex.

Table 4-1. Configure Ethernet Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Fault Management		
Set Alarm Reporting	read/write	Enable or disable alarm reporting on the port.
(Other Buttons)		
Service Management	window button	Opens a window for configuring NLS services.

Configuring a DS1/E1 Port

To configure a DS1 or E1 port:

1. Select the desired port from the Interface Management window, as described on page 4-3. The Configure DS1 (or E1) Port window appears (Figure 4-4 shows the Configure DS1 Port window, Figure 4-5 shows the Configure E1 Port window).

> *IMA DS1/E1 Ports cannot be selected directly from the Interface Management window due to the nature of the physical interface. Instead, select the IMA DS1/E1 POD to open the Configure POD window, and from list of ports in that window, select an individual IMA DS1/E1 port to configure.*

2. Complete the fields described in Table 4-2. If this is an IMA POD, remember to set the Tag as IMA Link field to True if you want to make this port available to IMA Groups.

3. When you are finished, the next step depends on the type of DS1/E1 POD the port resides on:

   - For ports on an IMA DS1/E1 POD, select the IMA Groups button from the Configure POD window to configure any IMA groups, as described in "Configuring an IMA Group" on page 4-21.

     When you are finished configuring IMA groups and links, select an individual port, then select the Next Logical Layer button to configure the ATM interface layer of this port, as described in "Configuring the ATM Interface" on page 4-75.

     When you are finished configuring the ATM interface layer, close the window and configure the other DS1/E1 ports, if any, using the preceding steps.

   - For ports on a DS1/E1 Cell POD, choose the Next Logical Layer button to configure the ATM interface layer of this port, as described in "Configuring the ATM Interface" on page 4-75.

     When you are finished configuring the ATM interface layer, close the window and configure the other DS1/E1 ports, if any, using the preceding steps.

- For ports on a DS1/E1 Circuit POD, choose the Next Logical Layer button to configure the circuit emulation service (CES) connection for this port, as described in "Configuring Circuit Emulation Services" on page 5-47.

  When you are finished configuring the circuit emulation connection, close the window and configure the other DS1/E1 ports, if any, using the preceding steps.

4. When you are finished configuring the other DS1/E1 ports, close the window and go to the applicable sections of this chapter to configure other types of ports, if any.

5. When finished, click OK.

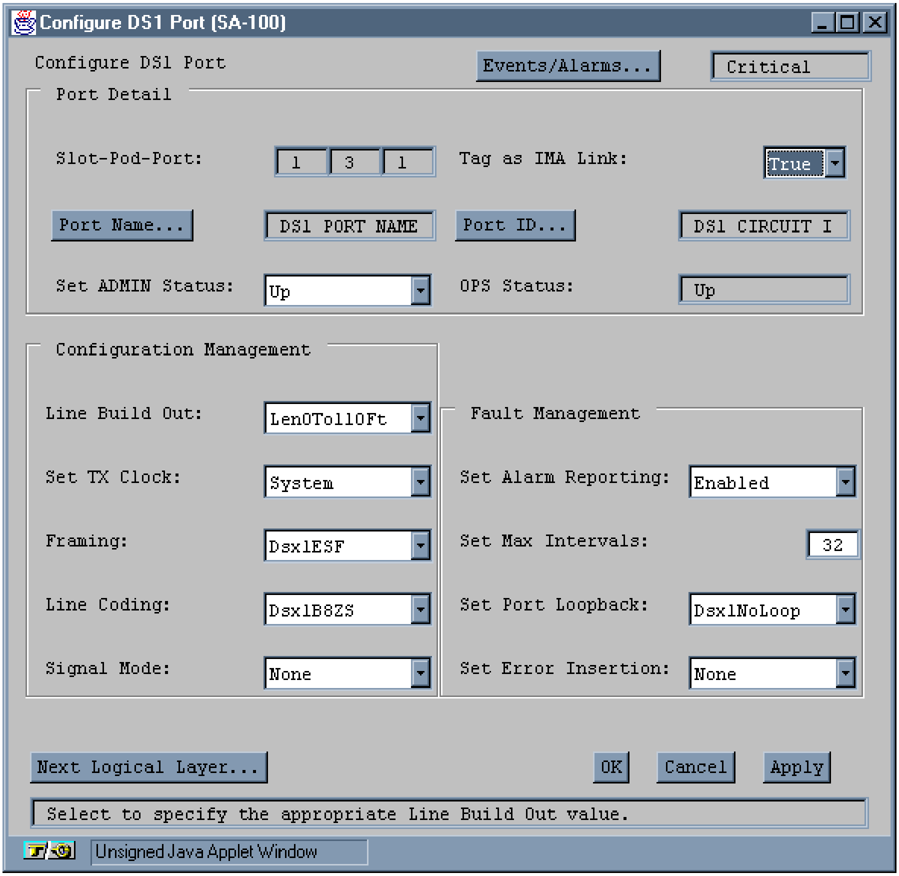

Figure 4-4. Configure DS1 Port Window

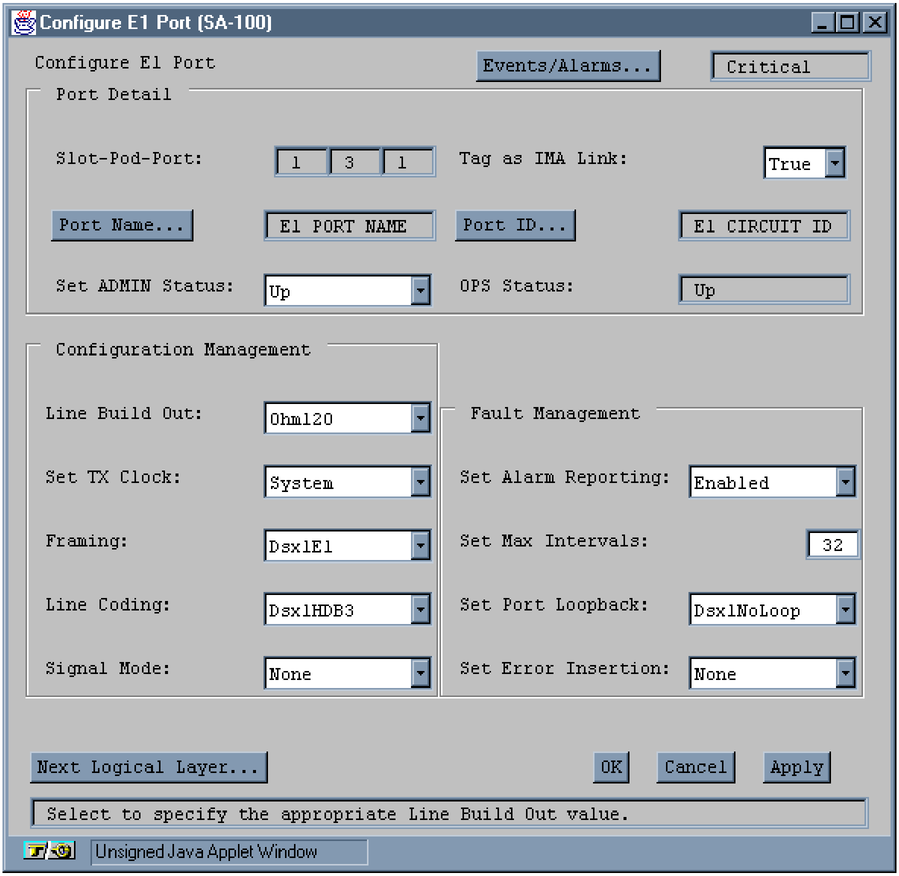

Figure 4-5. Configure E1 Port Window

Table 4-2. Configure DS1/E1 Port Buttons and Fields

Field/Button	Type	Action/Description
Port Detail		
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Tag as IMA Link	read/write	*IMA DS1/E1 PODs only.* IMA DS1/E1 PODs offer the ability to link multiple ports to create a single higher-speed aggregate called an IMA Group. Refer to "Configuring an IMA Group" on page 4-21 for more information. Select True to make the port available to add to an IMA group. Select False to prevent this port from being selectable by an IMA group.
Port Name	window button	Specify the port name (32 characters max).
Port ID	window button	Specify the port ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state of the port: up or down. Default is up (on-line). Set to Down (off-line) when you run diagnostics. Testing is not supported by the SA 100.
OPS Status	read-only	Display the operational state of the port: up or down.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Configuration Management		
Line Build Out	read/write	Set/display the required line build-out of the port. The line build-out is the length of cable that connects this port to other equipment (such as a router). The options are: 0 to 110 (default), 110 to 220, 220 to 330, 330 to 440, 440 to 550, or 550 to 660 feet.
Set TX Clock	read/write	Set/display the source of transmit timing on the port. The options are: • *Loop* – The port transmit timing source is derived from the timing signal coming into this port. • *System* (default) – System timing provides the transmit timing for this port. The configuration of System Timing in the System Administration window determines system timing (refer to page 3-10). • *Local* – The POD's internal timing source provides the transmit timing for this port.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Framing	read/write	Set/display the type of framing used on the port. Framing provides a method of distinguishing between individual channels by adding one additional bit to each frame. *Be sure to configure the port to use the same framing specifications as the customer premise equipment (CPE).* The options are: • *Other* – This option is for unframed formatting. • *Dsx1ESF* (DS1 default) – (DS1 only) The extended superframe format extends the D4 framing format from 12 to 24 frames and uses modified framing bits to provide a cyclic redundancy check (CRC), secondary channel and data link. • *Dsx1D4* – (DS1 only) The D4 framing format consists of twelve frames. It provides end-to-end synchronization and signaling associated with a particular channel. • *Dsx1E1* (E1 default) – (E1 only) The E1 framing format is the ITU-T Recommendation G.704 multiframe format.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Framing (continued)	read/write	• *Dsx1E1 CRC* – (E1 only) The E1-CRC framing format is the ITU-T Recommendation G.704 CRC4 multiframe format. • *Dsx1E1 MF* – (E1 only) The E1-MF framing format is the ITU-T Recommendation G.704 multiframe format with time slot 16 multiframing enabled. • *Dsx1E1 CRC MF* – (E1 only) The E1-CRC-MF framing format is the ITU-T Recommendation G.704 CRC4 multiframe format with time slot 16 multiframing enabled.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Line Coding	read/write	Set/display the type of line coding used on the port. Line coding is the data signal encoding method used on the DS1/E1 interface. *Refer to your facility service provider for more information about which line code method to use.* The options are: • *Dsx1B8ZS* (DS1 default) – (DS1 only) *Bipolar with 8 zero substitutions* is the ATM Forum standard for ATM cell transmission over a DS1 interface. “B8ZS” refers to the use of a specified pattern of normal bits and bipolar violation that is used to replace a sequence of eight zero bits. With B8ZS, a special code is placed in and then removed from the pulse stream in substitution for a 0 byte that has been transmitted by the user equipment. • *Dsx1HDB3* (E1 default) – (E1 only) This is the ATM Forum standard for ATM cell transmission over an E1 interface. Use this option for optimum E1 performance.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Line Coding (continued)	read/write	• *Dsx1AMI – Alternate Mark Inversion*, also known as Jammed Bit, is not supported by the ATM Forum. If you use this method on a DS1 interface, users may experience excessive zeroes alarms on transmission equipment. For an E1 interface, use AMI for physical path verification only, not cell transmission. • *Dsx1JBZS* – not supported by SA 100. • *Dsx1ZBTSI* – not supported by SA 100. • *Other* – not supported by SA 100.
Signal Mode	read/write	Set/display the signal mode used on the port. The options are: • *None* – This disables the signal mode option. • *Robbed bit* – (DS1 only) This option enables robbed bit signaling. • *Bit Oriented* – (E1 only) This option enables channel associated (CAS) signaling. • *Message Oriented* – The message-oriented option enables common channel signaling (CCS) on channel 24 in DS1 applications and on channel 16 in E1 applications.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Fault Management		
Set Alarm Reporting	read/write	Set/display whether alarm reporting is enabled or disabled on the port. *IMPORTANT: Never disable alarm reporting on any port used for primary or secondary recovered timing.*
Set Max Intervals	read/write	Set/display the maximum number of 15-minute intervals to store in the interval history table and display in the Monitor Status mode. Valid range is 1 to 96 intervals (15 minutes to 24 hours) of activity.

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Set Port Loopback	read/write	Set/display whether port loopback is disabled or enabled for testing purposes (see Figure 4-6). Select one of the following: • *Dsx1NoLoop* (default) – Disables the loopback function for normal operation. • *Dsx1PayloadLoop* – Payload loopback tests the internal circuitry of this port by routing received data through the port receiver and transmitter circuitry and back out of the port. • *Dsx1LineLoop* – Line loopback tests the port interface by routing received data back out of the port. • *Dsx1OtherLoop* – loops data back towards the CPOD. On an IMA POD, the data gets looped back toward the IMA chip.

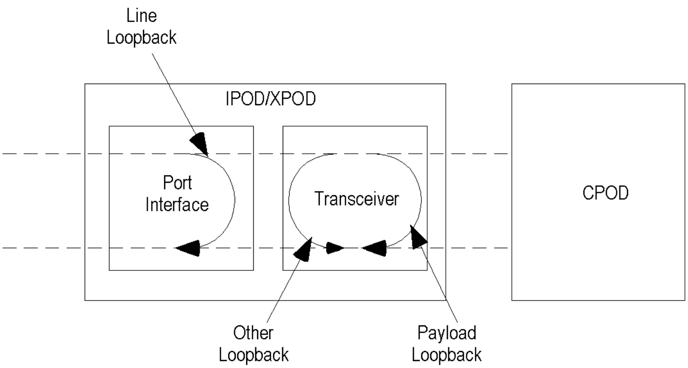

Figure 4-6. DS1/E1 POD Port Loopbacks

Table 4-2. Configure DS1/E1 Port Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Set Error Insertion	read/write	Set/display whether alarm/error insertion is enabled or disabled. The options are: • *None* (default) – This disables the error insertion function. • *TxYellow* – This enables the insertion of yellow alarms in the transmit path. • *TxAIS* – This enables the insertion of alarm indication signal (AIS) alarms in the transmit path. • *TxE1FasError* – (E1 only) This enables the insertion of frame alignment errors in the transmit path.- • *TxE1TS16AIS* – (E1 only) This enables the insertion of time-slot 16 alarm indication signal (AIS) alarms in the transmit path. • *TxE1MASerror* – (E1 only) This enables the insertion of multiframe alignment errors in the transmit path.
(Other Buttons)		
Next Logical Layer	window button	Specify the ATM interface layer (DS1/E1 Cell POD) as described in "Configuring the ATM Interface" on page 4-75, or CES connection layer (DS1/E1 Circuit POD) as described in "Configuring Circuit Emulation Services" on page 5-47.

Configuring an IMA Group

The four ports of an IMA DS1 or E1 POD may be grouped together to create a connection with an aggregate speed of approximately 6.0 Mbps for a DS1 POD or 7.6 Mbps for an E1 POD. This is accomplished by creating an IMA Group containing one or more ports which function together.

To create an IMA Group:

1. Select the IMA DS1 or E1 POD from the Interface Management window. The Configure POD window appears (Figure 4-7 on page 4-22).

The maximum aggregate speed of an IMA group can be calculated with the following formulas, where M is the frame size selected and N is the number of links in the IMA group.

For a DS1 POD IMA Group:

$$1.536M \times \frac{M-1}{M} \times \frac{2048}{2049} \times N$$

For an E1 POD IMA Group:

$$1.920M \times \frac{M-1}{M} \times \frac{2048}{2049} \times N$$

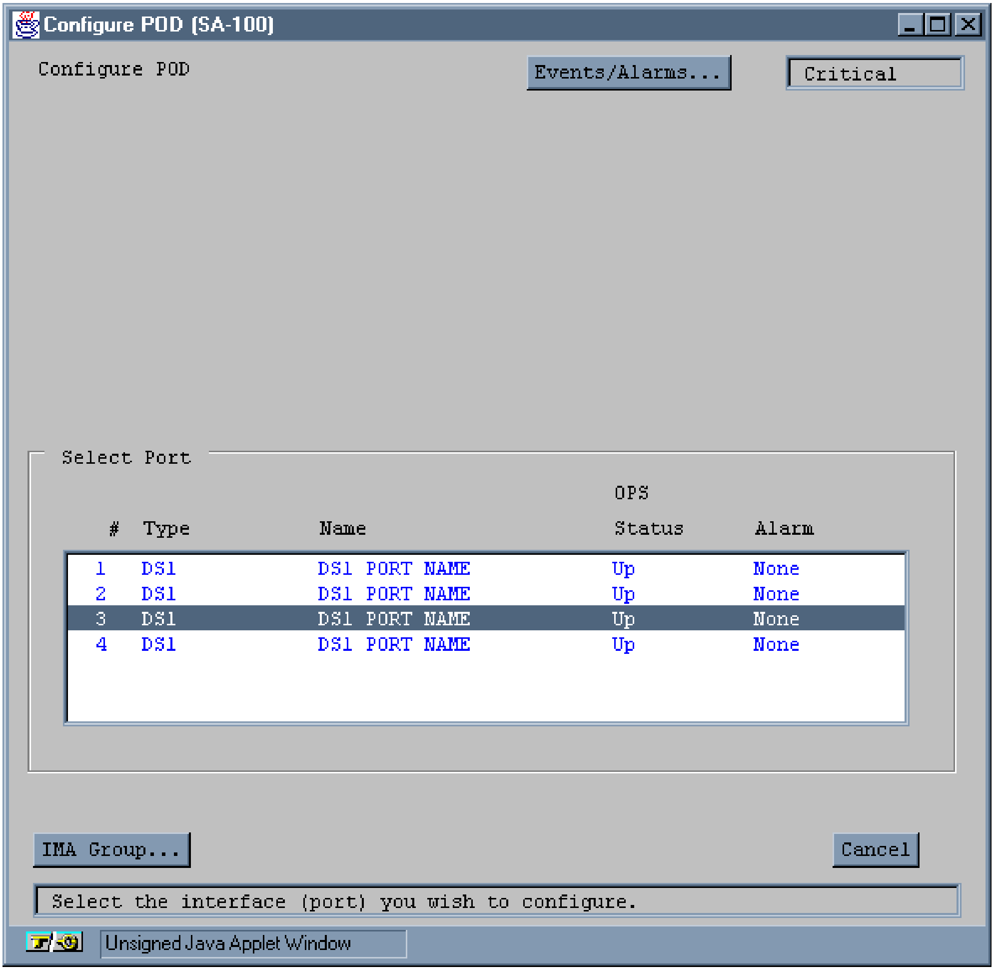

Figure 4-7. Configure POD Window

2. Select the IMA Group button. The Configure IMA Groups window appears (Figure 4-9 on page 4-24):

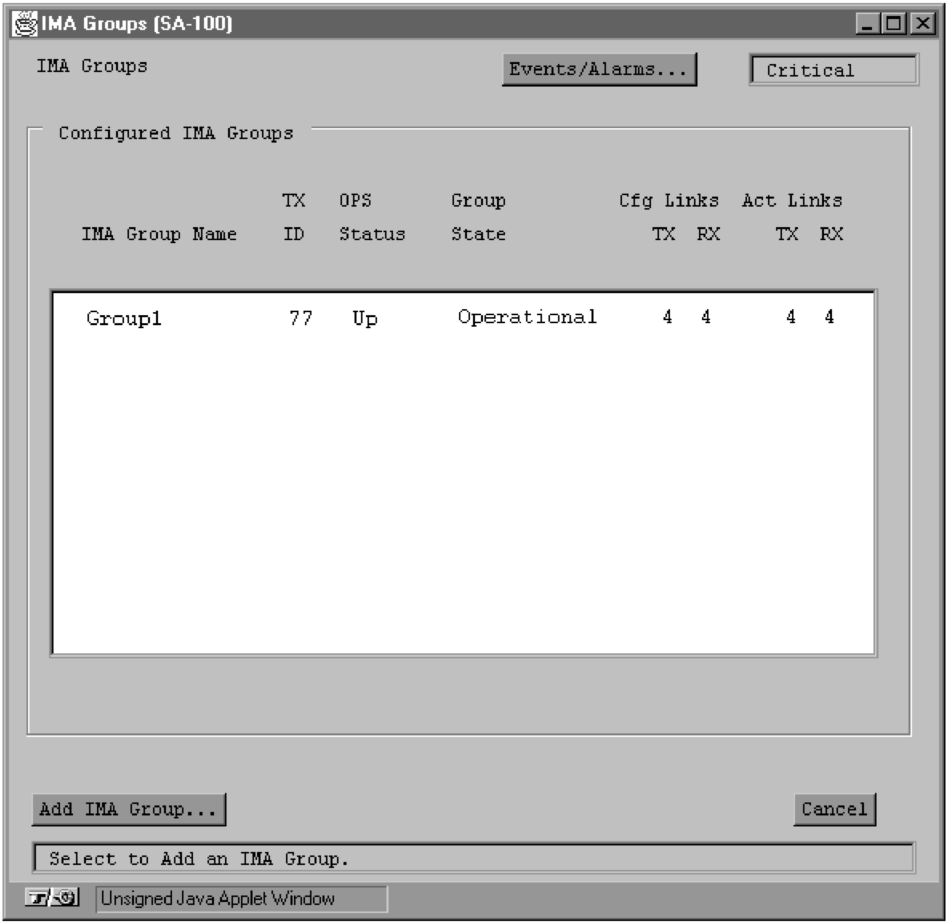

Figure 4-8. IMA Groups Window

3. Select the Add IMA Group button to create a new IMA group. The Add IMA Group window appears (Figure 4-9):

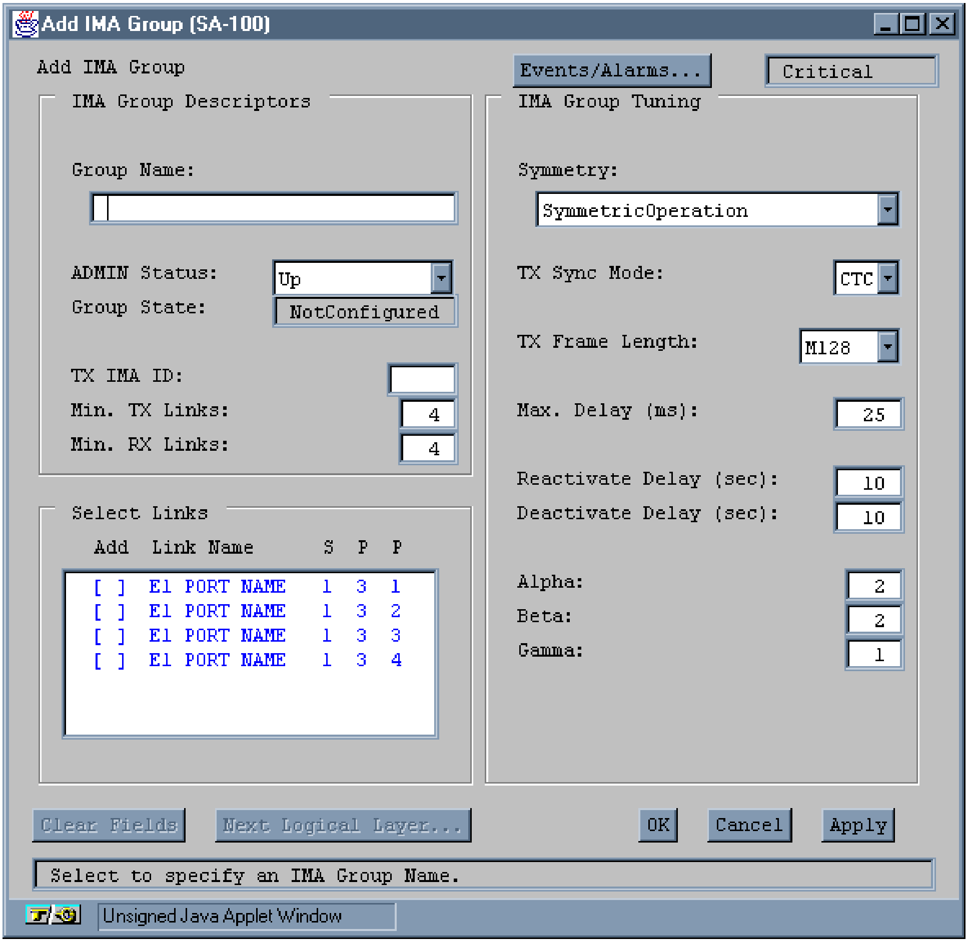

Figure 4-9. Add IMA Group Window

4. Complete the fields described in Table 4-3 to define the IMA group and assign one or more of the IMA DS1/E1 ports to the group.

Currently, only one IMA group is supported. From one to four IMA ports may be assigned to the group; however, it is recommended that you assign all four, as unassigned ports are unusable for any other function at this time.

Table 4-3. Add IMA Group Buttons and Fields

Field/Button	Type	Action/Description
IMA Group Descriptors		
Group Name	read/write	Specify the IMA Group name (32 characters max).
ADMIN Status	read/write	Set the administrative state of the IMA group: up or down. Default is up (on-line). Set to Down (off-line) when you run diagnostics. Testing mode is not currently supported.
Group State	read-only	Displays the operational state of the IMA Group: operational or non-operational.
TX IMA ID	read/write	Specify the transmission identification number to be assigned to this IMA Group (must be an integer from 0—255.)
Min. TX Links	read/write	Specify the minimum number of transmit links which must be active to move the IMA group into the Operational state.
Min. RX Links	read/write	Specify the minimum number of receive links which must be active to move the IMA group into the Operational state.

Table 4-3. Add IMA Group Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Add/Remove Links		
A/R	read/write	Select an IMA DS1/E1 port to add or remove from this group. Opens the Configure IMA Link window (Figure 4-11 on page 4-31). Links marked with an X are included in this group.
Link Name	read-only	Displays the link name.
S-P-P	read-only	Displays the Slot, POD, and Port numbers of each link.

Table 4-3. Add IMA Group Buttons and Fields (Continued)

Field/Button	Type	Action/Description
IMA Group Tuning		
Symmetry	read/write	Select the symmetry to be used by this IMA group. The options are: • SymmetricOperation (default) – The IMA interface is required to configure each IMA link in both transmit and receive directions; ATM cells may only be transmitted and received over links that are active in both directions. • AssymmetricOperation – The IMA interface is required to configure each IMA link in both transmit and receive directions. ATM cells may be transmitted over a link in the transmit direction while the link is not active in the receive direction. (not currently supported) • AssymmetricConfiguration – The IMA interface is not required to configure all IMA links in both transmit and receive directions. ATM cells may be transmitted over a link in the transmit direction while the link is not active in the receive direction. (not currently supported)

Table 4-3. Add IMA Group Buttons and Fields (Continued)

Field/Button	Type	Action/Description
TX Sync Mode	read/write	Set/display the transmission synchronization mode for this IMA Group. The options are: • CTC (default) – Common Transmit Clock. The same transmit clock is used for all IMA links. • ITC – Independent Transmit Clock. The transmit clock on at least one link is derived from a different clock source than another link. (not currently supported)
TX Frame Length	read/write	Set/display the transmission frame length for this IMA Group. The options are: • M32 – IMA frames of 32 ATM cells. • M64 – IMA frames of 64 ATM cells. • M128 (default) – IMA frames of 128 ATM cells. • M256 – IMA frames of 256 ATM cells. *Frames consist of M-1 data cells and one OAM cell.*
Max. Delay (ms)	read/write	Set/display the maximum delay differential in milliseconds that this IMA Group will tolerate among its links. Range 0—25 mSec.
Reactivate Delay (sec)	read/write	(not supported - this function superseded by alpha, beta, and gamma settings below.)

Table 4-3. Add IMA Group Buttons and Fields (Continued)

Field/Button	Type	Action/Description
Deactivate Delay (sec)	read/write	(not supported - this function superseded by alpha, beta, and gamma settings below.)
Alpha	read/write	Set/display the number of consecutive invalid ICP cells which must be detected before moving to the IMA HUNT state. The range is 1–2; the default value is two. See Figure 4-10 on page 4-30 for an illustration of the IMA frame synchronization mechanism. *Refer to the ATM Forum Technical Committe's Inverse Multiplexing for ATM (IMA) Specification for additional information on IMA state.*
Beta	read/write	Set/display the number of consecutive errored ICP cells which must be detected before moving to the IMA HUNT state. The range is 1–5; the default value is two.
Gamma	read/write	Set/display the number of consecutive valid ICP cells which must be detected before moving to the IMA SYNC state from the PRESYNC state. The range is 1–5; the default value is one.
(Other Buttons)		
Next Logical Layer	window button	Opens the Configure ATM Interface window. (See Figure 4-26 on page 4-75.)

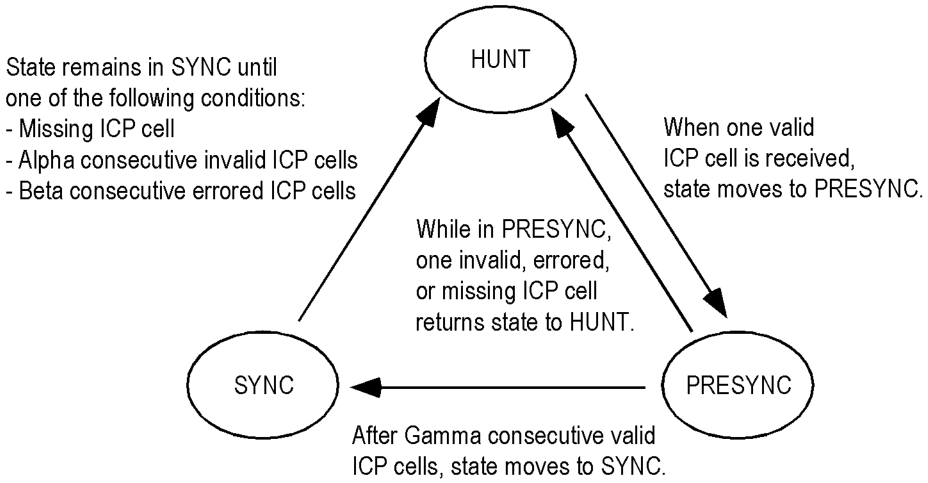

Figure 4-10. IMA Frame Synchronization Mechanism

Configuring IMA Links

To configure an individual IMA link (IMA DS1/E1 port):

1. Select the IMA DS1 or E1 from the Modify IMA Group window's Add/Remove Links field. The Configure IMA Link window appears (Figure 4-11):

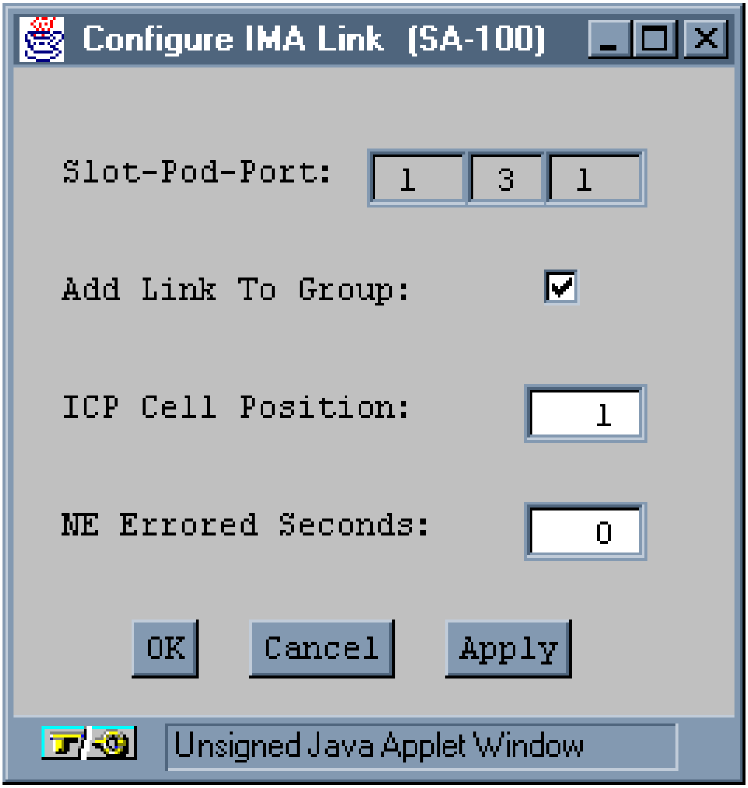

Figure 4-11. Configure IMA Link Window

2. Complete the fields described in Table 4-2.

Table 4-4. Configure IMA Link Buttons and Fields

Field/Button	Type	Action/Description
IMA Link Descriptors		
S-P-P	read-only	Display the link's slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Add Link to Group	read/write	Select this check-box to add this IMA link to the current IMA Group.
ICP Cell Position	read/write	This value indicates the desired position in the IMA frame to locate the ICP(OAM) cell during transmission. Note: this value must be between 0 and M, where M is the frame size. Default is 1.
NE Errored Seconds	read/write	Count of one second intervals containing one or more link defects during non-UAS-IMA condition. *IMPORTANT: Although this field is read/write capable, do not enter values. Use this field as read-only.*

Modifying an IMA Group

To modify an IMA group:

1. Select an IMA group from the list of Configured IMA Groups in the IMA Groups window (Figure 4-8). The IMA Group Options window appears (Figure 4-12):

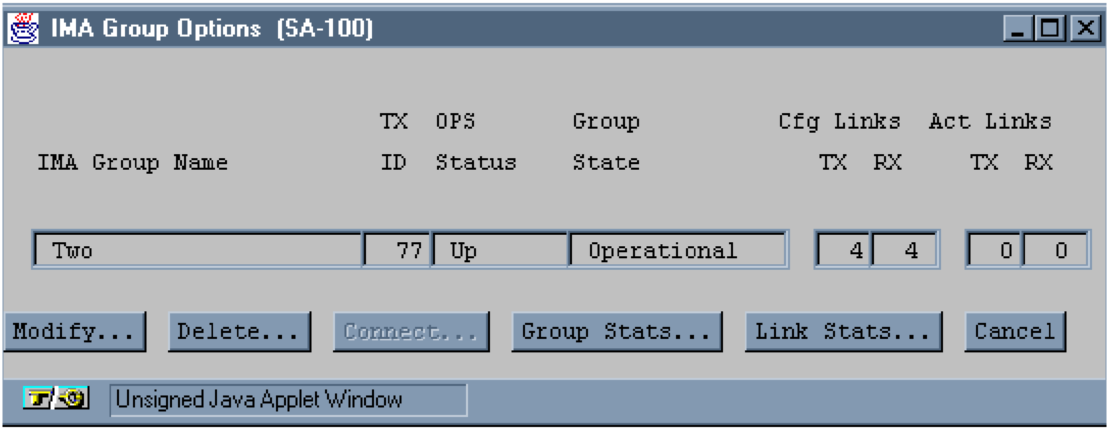

Figure 4-12. IMA Group Options Window

2. Select the Modify button. The Modify IMA Group window appears. This window is a modified version of the Add IMA Group window; make any changes desired, referring to the parameters listed in Table 4-3 on page 4-25.

Deleting an IMA Group

To delete an IMA Group:

1. Select the IMA group to delete from the list of Configured IMA Groups in the IMA Groups window (Figure 4-8). The IMA Group Options window appears (Figure 4-12).

2. Choose the Delete button. The Delete IMA Group window appears, asking you to confirm this action.

3. Choose OK to confirm the Delete command. The group is deleted and you are returned to the IMA Group Options window, with no group selected.

Viewing IMA Group Statistics

To view statistics regarding an IMA group or an individual link in an IMA group:

1. Select an IMA group from the list of Configured IMA Groups in the IMA Groups window (Figure 4-8). The IMA Group Options window appears (Figure 4-12):
2. Select the Group Stats button. The IMA Group Statistics window appears (Figure 4-13):

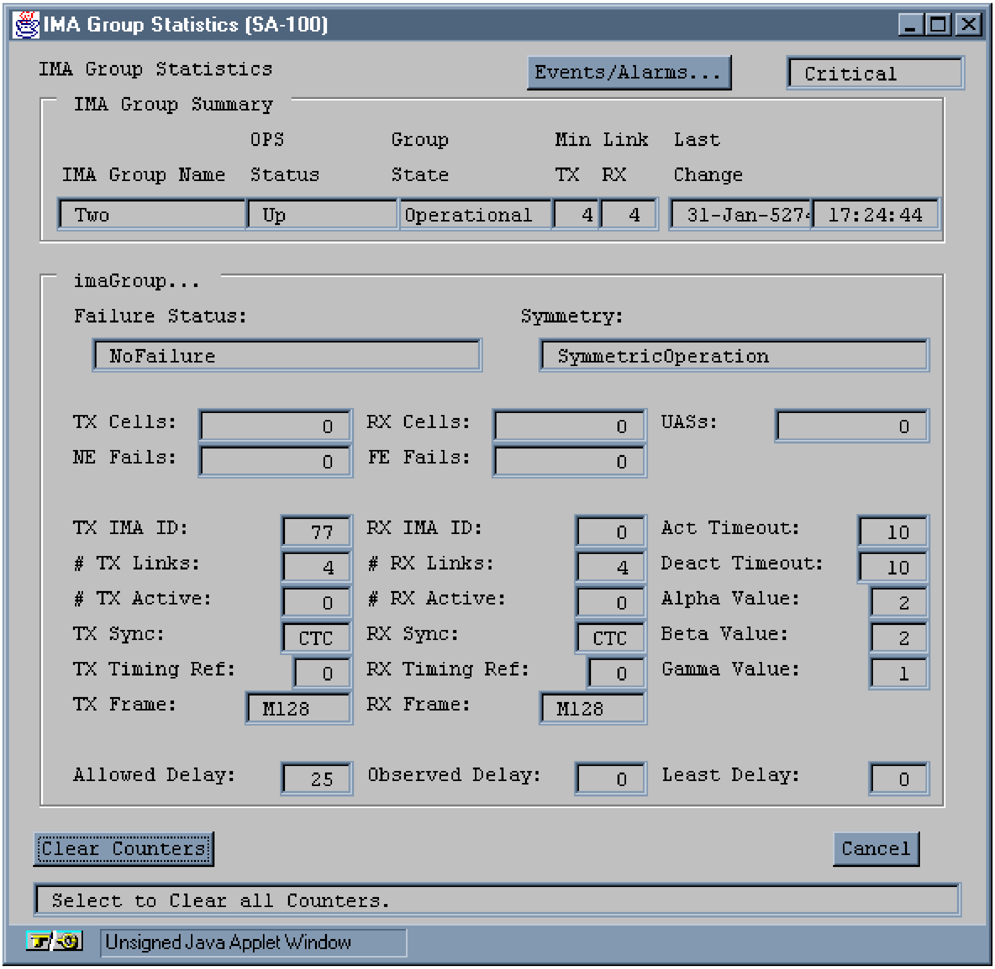

Figure 4-13. IMA Group Statistics Window

Table 4-5 describes the fields and buttons in the IMA Group Statistics window.

Table 4-5. IMA Group Statistics Fields and Buttons

Field/Button	Type	Description
IMA Group Summary		
IMA Group Name	read-only	Displays the name of the IMA group.
OPS Status	read-only	Displays the operational state of the IMA group: up or down.
Group State	read-only	Displays the state of this IMA group: • Operational - IMA group is operating properly at the near end. • Startup - Local end is in startup, waiting to see the far end in startup. • Startup Ack - A transitional state when both near and far ends are in startup. • Insufficient Links - The group does not have a sufficient number of links to operate. • Blocked - the group is blocked; a group can be blocked for maintenance purposes while sufficient links are active in both directions. • ConfigAborted - the far end has attempted to use unacceptable configuration parameters.
Min Link TX	read-only	Displays the minimum number of transmit links required to be active to move the IMA group into the operational state.
Min Link RX	read-only	Displays the minimum number of receive links required to be active to move the IMA group into the operational state.

Table 4-5. IMA Group Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Last Change	read-only	Displays the time and date of the last change to IMA group's state.
IMA group		
Failure Status	read-only	Displays the failure status for this IMA Group. • noFailure - IMA group is up • startUpNe - start up near-end failure • startUpFe - start up far-end failure • invalidMValueNe - invalid transmission frame length near-end • invalidMValueFe - invalid transmission frame length far-end • failedAssymetricNe - assymetric failure near-end • failedAssymetricFe - assymetric failure far-end • insufficientLinksNe - insufficient links near-end • insufficientLinksFe - insufficient links far-end • blockedNe - connection blocked at near-end • blockedFe - connection blocked at far-end • otherFailure - unreckognized failure

Table 4-5. IMA Group Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Symmetry	read-only	Displays the symmetry mode for this IMA Group: Symmetric Operation (default), Assymmetric Operation, or Assymmetric Configuration.
TX Cells	read-only	Displays the number of cells transmitted by this IMA Group.
RX Cells	read-only	Displays the number of cells received by the this IMA Group.
UASs	read-only	Displays the number of unavailable seconds recorded on this IMA Group.
NE Fails	read-only	Displays the number of near-end failures recorded on this IMA Group.
FE Fails	read-only	Displays the number of far-end group failures recorded on this IMA Group since the last power-up or reboot.
TX IMA ID	read-only	Displays the IMA ID currently in use by the local IMA group.
# TX Links	read-only	Displays the number of links configured to transmit in this IMA group.
# TX Active	read-only	Displays the number of configured transmit links which are also active.
TX Sync	read-only	Displays the synchronization mode being used by the local IMA group.
TX Timing Ref	read-only	Displays the LID of the transmit timing reference link being used by the near end for IMA cell clock recovery from the ATM layer.

Table 4-5. IMA Group Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
TX Frame	read-only	Displays the frame length being used by the IMA group in the transmit direction.
RX IMA ID	read-only	Displays the IMA ID currently in use by the remote IMA group.
# RX Links	read-only	Displays the number of links configured to receive in this IMA group.
# RX Active	read-only	Displays the number of configured receive links which are also active.
RX Sync	read-only	Displays the synchronization mode being used by the remote IMA group.
RX Timing Ref	read-only	Displays the LID of the receive timing reference link being used by the near end for IMA cell clock recovery toward the ATM layer.
RX Frame	read-only	Displays the frame length being used by the IMA group in the transmit direction.
Act Timeout	read-only	Displays the number of seconds that need to pass before a link is re-activated after a link failure. (not used)
Deact Timeout	read-only	Displays the number of seconds that need to pass before a link is de-activated due to the presence of a persistent defect leading to a failed or fault condition. (not used)
Alpha Value	read-only	Displays the number of consecutive invalid ICP cells which must be detected before moving from IMA SYNC to the IMA HUNT state. The default value is two.

Table 4-5. IMA Group Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Beta Value	read-only	Displays the number of consecutive errored ICP cells which must be detected before moving from IMA SYNC to the IMA HUNT state. The default value is two.
Gamma Value	read-only	Displays the number of consecutive valid ICP cells which must be detected before moving to the IMA SYNC state from the PRESYNC state. The default value is one.
Allowed Delay	read-only	Displays the maximum number of milliseconds of delay differential among the links that will be tolerated on this group.
Observed Delay	read-only	Displays the maximum differential delay in milliseconds that is observed among the recieve links currently available in the IMA group.
Least Delay	read-only	Displays the index of the link in this IMA group which has the smallest link propagation delay. (This value is valid only if there is at least one link included in the IMA group.)

Viewing IMA Link Statistics

To view statistics regarding an individual link within an IMA group:

1. Select an IMA group from the list of Configured IMA Groups in the IMA Groups window (Figure 4-8). The IMA Group Options window appears (Figure 4-12):
2. Select the Link Stats button. The Select IMA Link window appears (Figure 4-14):

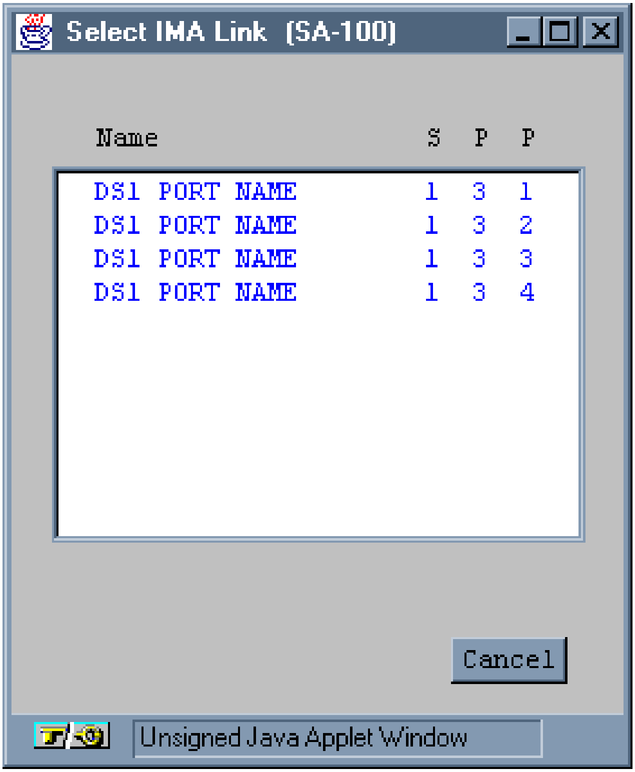

Figure 4-14. Select IMA Link Window

3. Select an individual link from the list in the Select IMA Link window. The IMA Link Statistics window appears (Figure 4-15):

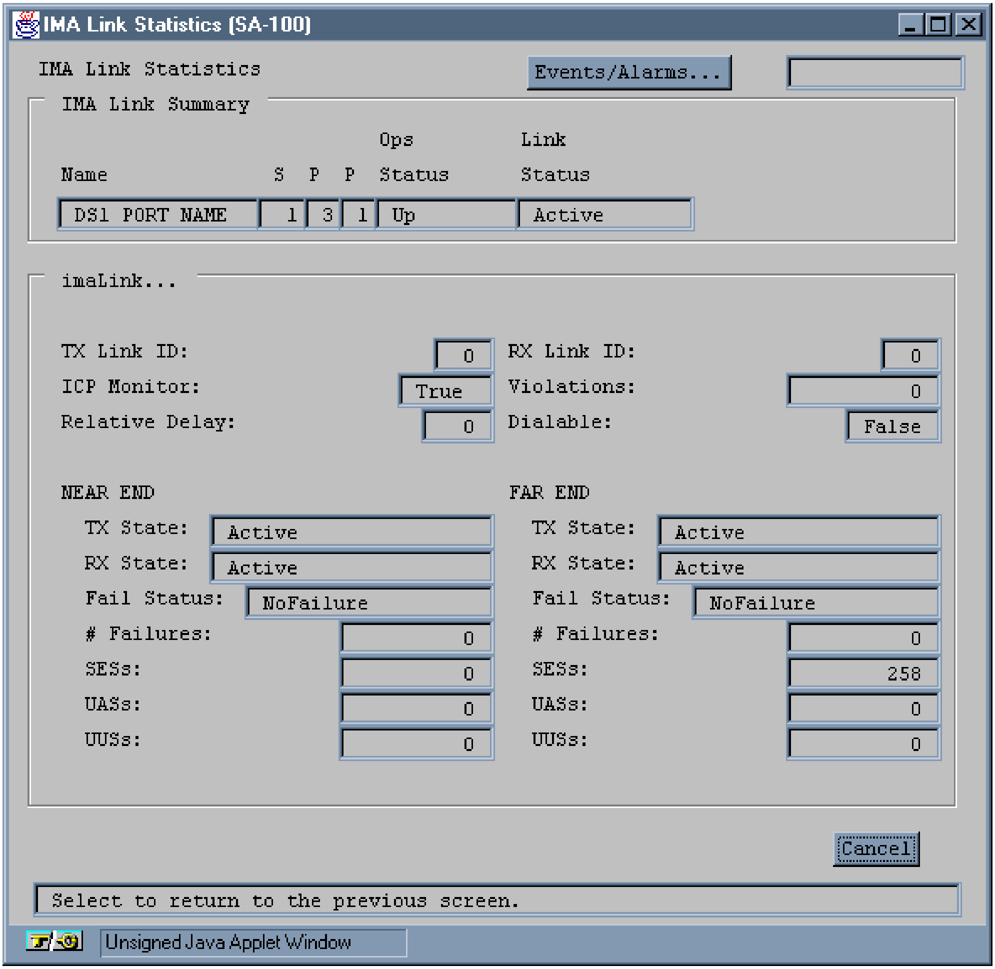

Figure 4-15. IMA Link Statistics Window

Table 4-6 describes the fields and buttons in the IMA Link Statistics window.

Table 4-6. IMA Link Statistics Fields and Buttons

Field/Button	Type	Description
IMA Link Summary		
Name	read-only	Displays the name of this IMA link.
S-P-P	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot# field is always “1.”
OPS Status	read-only	Displays the operational state of the IMA link: up or down.
Link Status	read-only	Displays the current link status: active or inactive.
imaLink		
TX Link ID	read-only	Displays the outgoing LID currently in use by the link on the local end. (This value has meaning only if the link belongs to an IMA group.)
ICP Monitor	read-only	Displays whether the link is selected for ICP Cell monitoring.
Relative Delay	read-only	Displays the latest measured delay on this link relative to the link in the same IMA group with the least delay. Value is displayed in milliseconds.
RX Link ID	read-only	Displays the incoming LID currently in use by the link on the remote end. (This value has meaning only if the link belongs to an IMA group.)

Table 4-6. IMA Link Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Violations	read-only	Displays the count of errored, invalid or missing ICP cells during non-SES-IMA condition.
Dialable	read-only	Displays whether the selected port is a dialable port (true) or not (false).
Near End:		
TX State	read-only	Displays the current state of the near-end transmit link.
RX State	read-only	Displays the current state of the near-end receive link.
Fail Status	read-only	Displays the current link failure status of the near-end receive link.
# Failures	read-only	Displays the number of times this link has gone down due to a failure condition.
SESs	read-only	Displays the count of one-second intervals containing several IV-IMA defects or one or more link defects (LOS, OOF/LOF, LCD), LIF, or LODS defects during a non-UAS-IMA condition.
UASs	read-only	Displays the count of unavailable seconds at the near-end. Unavailability begins at the onset of 10 contiguous SES-IMA and ends at the presence of 10 contiguous seconds with non-SES-IMA.
UUSs	read-only	Displays the count of unusable/fault seconds at the near-end LSM.

Table 4-6. IMA Link Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Far End:		
TX State	read-only	Displays the current state of the far-end transmit link as reported via ICP cells.
RX State	read-only	Displays the current state of the far-end receive link as reported via ICP cells.
Fail Status	read-only	Displays the current link failure status of the far-end receive link as reported via ICP cells.
# Failures	read-only	Displays the number of times this link has gone down due to a failure condition.
SESs	read-only	Displays the count of one-second intervals containing one or more IMA-RDI defects.
UASs	read-only	Displays the count of unavailable seconds at the far end. Unavailability begins at the onset of 10 contiguous SES-IMA-FE and ends at the presence of 10 contiguous seconds with non-SES-IMA-FE.
UUSs	read-only	Displays the count of unusable/fault seconds at the far-end LSM.

Configuring a DS3/E3 Port

To configure a DS3 port:

1. Select the desired port from the Interface Management window, as described on page 4-3. The Configure DS3/E3 Port window appears (see Figure 4-16 for DS3, Figure 4-17 for E3).
2. Complete the fields described in Table 4-7.
3. When finished, click OK.

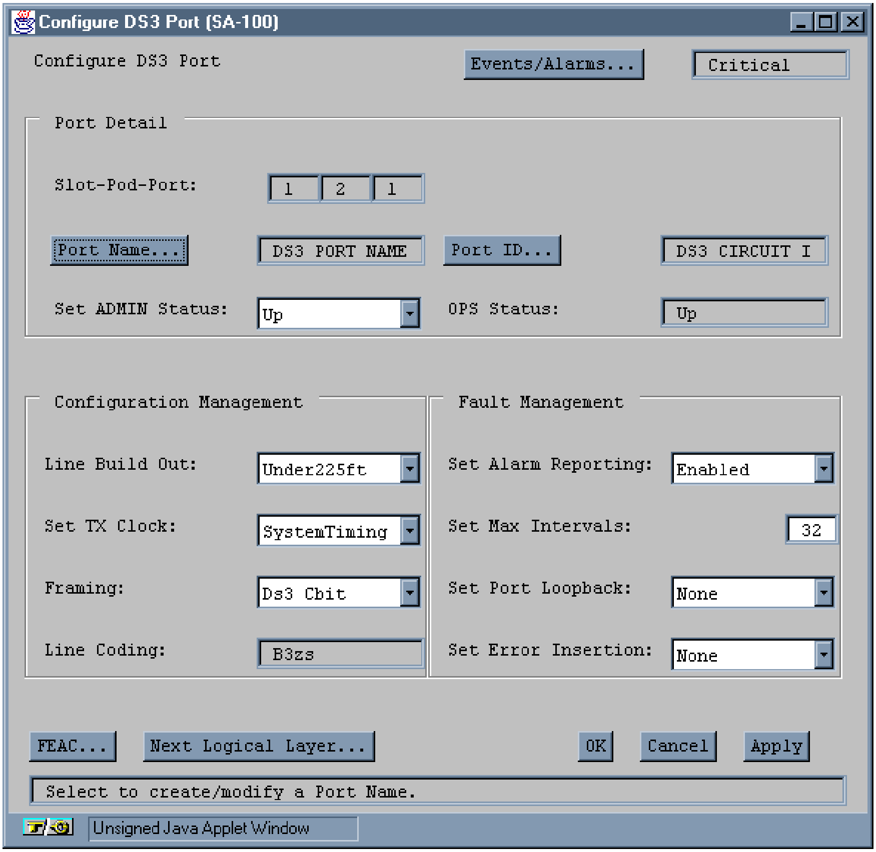

Figure 4-16. Configure DS3 Port Window

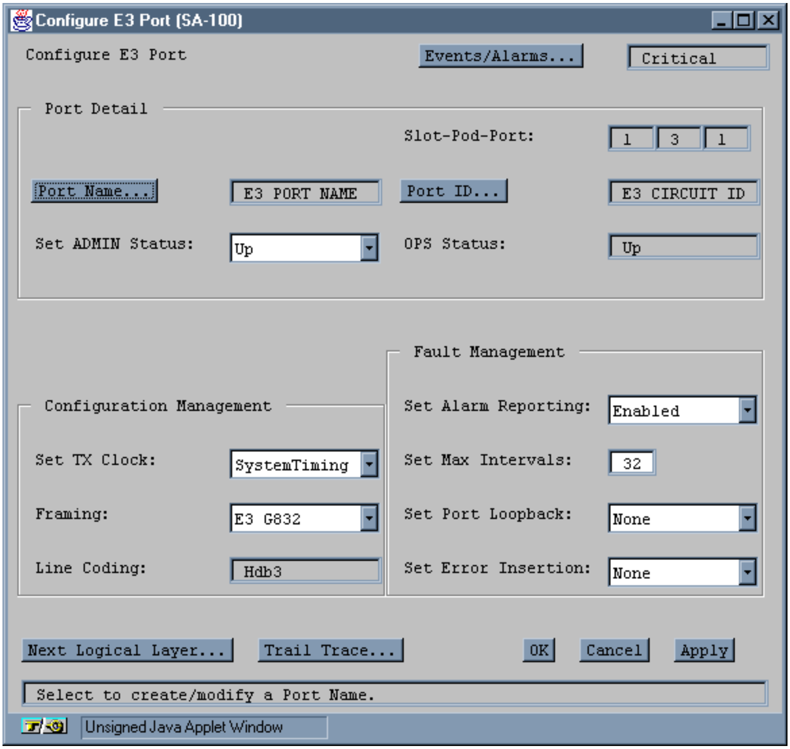

Figure 4-17. Configure E3 Port Window

Table 4-7. Configure DS3/E3 Port Fields and Buttons

Field/Button	Type	Action/Description
Port Detail		
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Port Name	window button	Specify the port name (32 characters max).
Port ID	window button	Specify the port ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state of the port: up or down. Default is up (on-line). Set to Down (off-line) to take the port offline.
OPS Status	read-only	Display the operational state of the port: up or down.
Configuration Management		
Line Build Out	read/write	(DS3 only) Set/display the required line build-out of the port. The line build-out is the length of cable that connects this port to other equipment (such as a router). The options are Under 225 feet (default) and Over 225 feet.

Table 4-7. Configure DS3/E3 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Set TX Clock	read/write	Set/display the source of transmit timing on the port. The options are: • *Loop* – The port transmit timing source is derived from the timing signal coming into this port. • *System* (default) – System timing provides the transmit timing for this port. The configuration of System Timing in the System Administration window determines system timing (refer to page 3-10).

Table 4-7. Configure DS3/E3 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Framing	read/write	Set/display the type of framing used on the port. Framing provides a method of distinguishing between individual channels by adding one additional bit to each frame. *Be sure to configure the port to use the same framing specifications as the external equipment connected to the port.* The options are: • *Ds3 Cbit* (DS3 default) – (DS3 only) This is the C-bit framing format. • *Ds3 M23* – (DS3 only) This is the M.23 framing format. • *E3 G751* (E3 default) – (E3 only) The G.751 framing format is the ITU-T Recommendation G.751 format. • *E3 G832* – (E3 only) The G.832 framing format is the ITU-T Recommendation G.832 format.
Line Coding	read-only	Display the type of line coding used on the port: B3zs (DS3) or Hdb3 (E3).

Table 4-7. Configure DS3/E3 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Fault Management		
Set Alarm Reporting	read/write	Set/display whether alarm reporting is enabled or disabled on the port. *IMPORTANT: Never disable alarm reporting on any port used for primary or secondary recovered timing.*
Set Max Intervals	read/write	Set/display the maximum number of 15-minute intervals to store in the interval history table and display in the Monitor Status mode. Valid range is 1 to 96 intervals (15 minutes to 24 hours) of activity.
Set Port Loopback	read/write	Set/display whether port loopback is disabled or enabled for testing purposes (see Figure 4-18). Select one of the following: • *None* (default) – Disables the loopback function for normal operation. • *Line* – Tests the port interface by routing received data back out the port. • *Diagnostic* – Tests the port's internal circuitry port by routing transmit data back through the port receiver. • *Payload* – Tests the port's internal circuitry by routing received data through the port receiver and transmitter circuitry and back out the port.

Table 4-7. Configure DS3/E3 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description

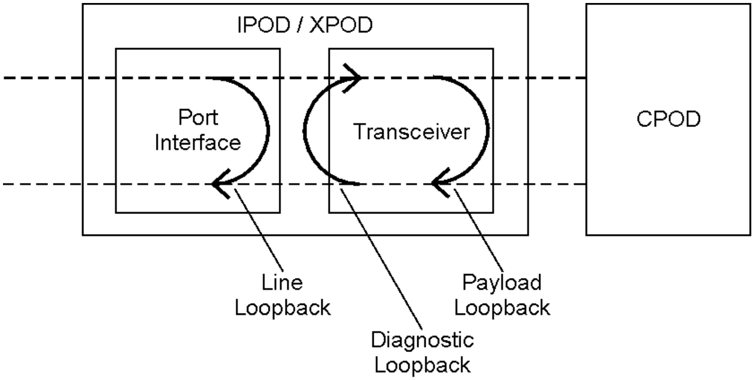

Figure 4-18. DS3/E3 POD Loopbacks

Table 4-7. Configure DS3/E3 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Set Error Insertion	read/write	Set/display whether alarm/error insertion is enabled or disabled. The options are: • *None* (default) – This disables the error insertion function. • *TxLOS* – This enables the insertion of loss of signal (LOS) alarms in the transmit path. • *TxAIS* – This enables the insertion of alarm indication signal (AIS) alarms in the transmit path. • *TxFERF* – This enables the insertion of far end receive failure (FERF) or yellow alarms in the transmit path. • *TxIdle* – (DS3 only) This enables the insertion of idle maintenance signals in the transmit path. • *TxLCV* – This enables the insertion of line code violations (LCV) in the transmit path. • *TxPbitErrs* – (DS3 only) This enables insertion of P-bit errors in DS3 stream. • *TxCbitErrs* – (DS3 using C-bit framing only) This enables the insertion of C-bit parity errors in the DS3 stream. • *TxMbitErrs* – (DS3 only) This enables insertion of M-bit errors in DS3 stream. • *TxFbitErrs* – This enables the insertion of F-bit errors in the DS3 stream. • *TxFEBE* – This enables insertion of Far End Block errors (FEBE) in DS3 stream.

Table 4-7. Configure DS3/E3 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
(Other Buttons)		
Trail Trace (E3 only)	window button	Trail Trace applies only to E3 ports using G 832 framing format. Selecting this button opens the Trail Trace window, described in "Trail Trace (E3 only)" on page 4-54.
FEAC (Far End Alarm and Control) (D3 with C-bit framing only)	window button	FEAC applies only to D3 ports using C-bit framing format. Selecting this button opens the Far End Alarm and Control window, described in "Far End Alarm and Control (D3 with C-bit framing only)" on page 4-56.
Next Logical Layer	window button	Specify the ATM interface layer of this port as described in "Configuring the ATM Interface" on page 4-75.

Trail Trace (E3 only)

When you configure an E3 port with G832 framing format, you can also configure a trail trace for troubleshooting purposes.

To enable or disable the trail trace, to specify the trace string, or to check the correct return of the trace string:

1. Select the Trail Trace button from the Configure E3 Port window. The Trail Trace window appears (Figure 4-19):

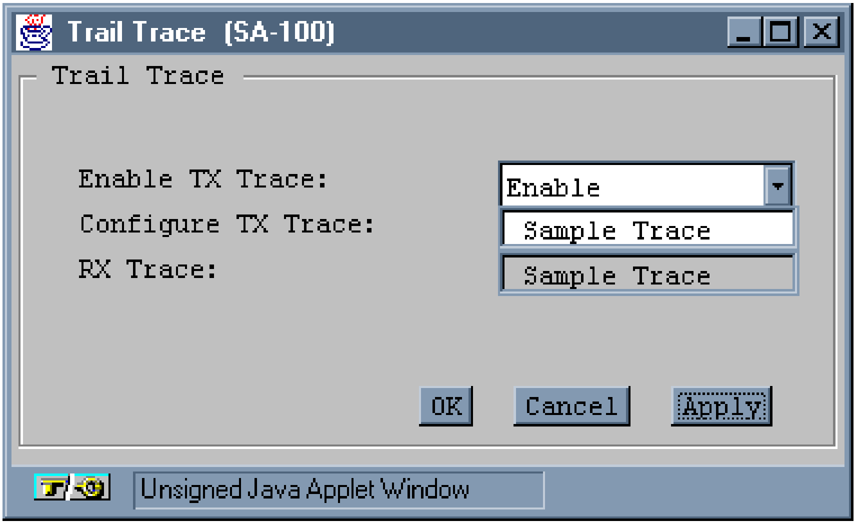

Figure 4-19. Trail Trace Window

2. Complete the fields described in Table 4-8.

3. When finished, click OK.

Table 4-8. Trail Trace Fields and Buttons

Field/Button	Type	Action/Description
Enable TX Trace	read-write	Set/display whether TX trace is enabled or disabled.
Configure TX Trace	read-write	Specify the trace string to be transmitted (16 characters max).
RX Trace	read-only	Displays the trace string received (should be identical to the trace string transmitted).

Far End Alarm and Control (D3 with C-bit framing only)

When you configure an D3 port with C-bit framing format, you can also configure far end alarm and control parameters. The FEAC parameters are used for two purposes:

- to send alarm or status information from the far-end terminal back to the near-end terminal; and
- to initiate D3 loopbacks at the far-end terminal from the near-end terminal.

To enable or disable loop processing or far-end loopback:

1. Select the FEAC button from the Configure D3 Port window. The Far End Alarm and Control window appears (Figure 4-20):

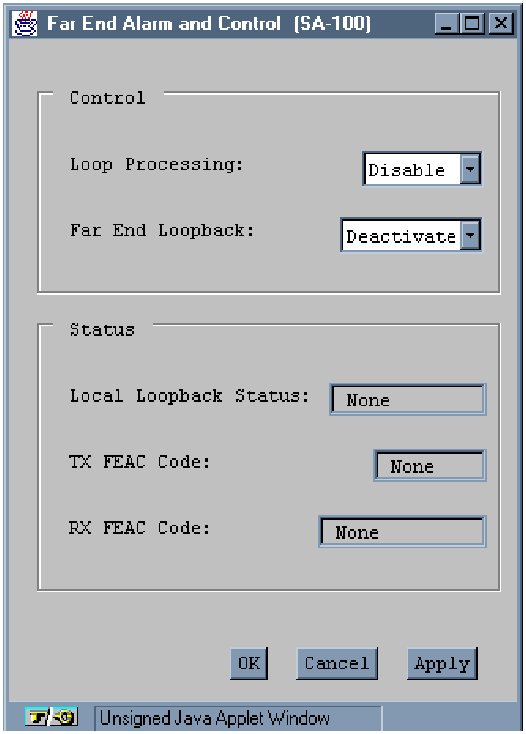

Figure 4-20. Far End Alarm and Control Window

2. Complete the fields described in Table 4-8.
3. When finished, click OK.

Table 4-9. Far End Alarm and Control Fields and Buttons

Field/Button	Type	Action/Description
Loop Processing	read/write	Set/display whether loop processing is enabled or disabled (default). If enabled, the far-end terminal is permitted to set a loopback condition at the near-end terminal.
Far End Loopback	read/write	Set/display whether far end loopback is activated or deactivated (default). When activated, the far-end terminal is instructed to set a loopback condition. The far-end terminal must support FEAC loopback and must be configured to allow far-end loopback control for the loopback condition to be established.
Local Loopback Status	read-only	Displays the current local loopback status: None or Ds3LineLoopó.
TX FEAC Code	read-only	Displays the FEAC code being transmitted: • *None* (default) – No FEAC code is being transmitted. • *DS3 LOS* – Loss of Signal error. • *DS3 OOF* – Out-of-Frame error. • *DS3 AIS Received* – Alarm Indication Signal.

Table 4-9. Far End Alarm and Control Fields and Buttons (Continued)

Field/Button	Type	Action/Description
RX FEAC Code	read-only	Displays the FEAC code being received. The following codes are considered valid: • *None* (default) – No FEAC code being received. This is the no alarm condition. • *DS3 Eqpt. Failure (SA)* – Equipment Failure (Service Affecting). Type I equipment failure, indicating an out-of-service state or defect requiring immediate attention. • *DS3 LOS* – Loss of Signal error. • *DS3 OOF* – Out-of-Frame error. • *DS3 AIS Received* – Alarm Indication Signal error. • *DS3 Idle Received* – Idle error. • *DS3 Eqpt. Failure (NSA)* – Equipment Failure (Non-Service Affecting). Type II equipment failure, indicating an equipment state such as suspended service, not activated, or not available for use. • *Common Eqpt. Failure (NSA)* – Equipment Failure (Non-Service Affecting). Type II equipment failure, indicating an equipment state such as suspended service, not activated, or not available for use.

Configuring an OC-3c/STM-1 Port

To configure an OC-3c/STM-1 port:

1. Select the desired port from the Interface Management window, as described on page 4-3. The Configure OC-3/STM-1 Port window appears (see Figure 4-21).
2. Complete the fields described in Table 4-10.
3. Complete any necessary path information or advanced options as described in "Configuring a Path for an OC-3c/STM-1 Port" on page 4-68 and "Configuring OC-3c/STM-1 Port Advanced Options" on page 4-65.
4. When finished, click OK.

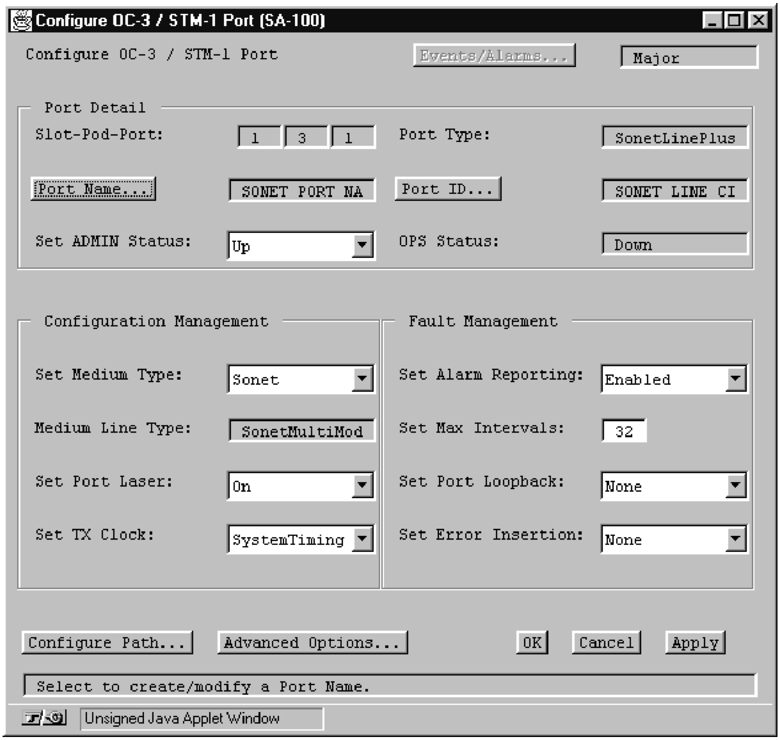

Figure 4-21. Configure OC-3/STM-1 Port Window

Table 4-10. Configure OC-3/STM-1 Port Fields and Buttons

Field/Button	Type	Action/Description
Port Detail Frame		
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Port Type	read-only	Displays the type of port.
Port Name	window button	Specify the port name (32 characters max).
Port ID	window button	Specify the port ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state of the port: up or down. Default is up (on-line). Set to Down to take the port offline.
OPS Status	read-only	Display the operational state of the port: up or down.
Configuration Management		
Set Medium Type	read/write	Sets/displays the type of medium used on the port: Sonet or Sdh. • *Sonet* (default) – *Synchronous Optical Network* configures the port for OC-3c (North American) applications. • *Sdh* – *Synchronous Digital Hierarchy* configures the port for STM-1 (international) applications.

Table 4-10. Configure OC-3/STM-1 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Medium Line Type	read-only	Displays the type of line medium on the port: SonetMultiMode (for SONET multimode PODs) or SonetLongSingleMode (for SONET long-reach, single-mode PODs).
Set Port Laser	read/write	Sets/displays whether the port laser is enabled or disabled (on or off). This parameter is a safety feature intended to prevent personal injury when you repair or replace the POD or its cables. You must set this option to “on” in order to transmit incoming traffic out of this port. ! *Before you remove optical cables, set this parameter to* ***off***. *If the optical connectors are exposed, the transmit laser beam can cause personal injury.* *When you disable the laser, the CPE or switch at the other end of the connection reports a red port alarm to indicate a loss of signal.*

Table 4-10. Configure OC-3/STM-1 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Set TX Clock	read/write	Set/display the source of transmit timing on the port. The options are: • *Loop* – The port transmit timing source is derived from the timing signal coming into this port. • *Local* – The POD's internal timing source provides the transmit timing for this port. • *System* (default) – System timing provides the transmit timing for this port. The configuration of System Timing in the System Administration window determines system timing (refer to page 3-10).
Fault Management		
Set Alarm Reporting	read/write	Set/display whether alarm reporting is enabled or disabled on the port. *IMPORTANT: Never disable alarm reporting on any port used for primary or secondary recovered timing.*
Set Max Intervals	read/write	Set/display the maximum number of 15-minute intervals to store in the interval history table and display in the Monitor Status mode. Valid range is 1 to 96 intervals (15 minutes to 24 hours) of activity.

Table 4-10. Configure OC-3/STM-1 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Set Port Loopback	read/write	Set/display whether port loopback is disabled or enabled for testing purposes (see Figure 4-22). Select one of the following: • *None* (default) – This disables the loopback function for normal operation. • *Line* – Line loopback tests the port interface by routing received data back out of the port. • *Internal Section* – Internal section loopback tests the internal circuitry of this port by routing received data through the port receiver and transmitter circuitry and back out of the port. • *Internal Path* – Internal path loopback tests the port interface by routing received data back out of the port.

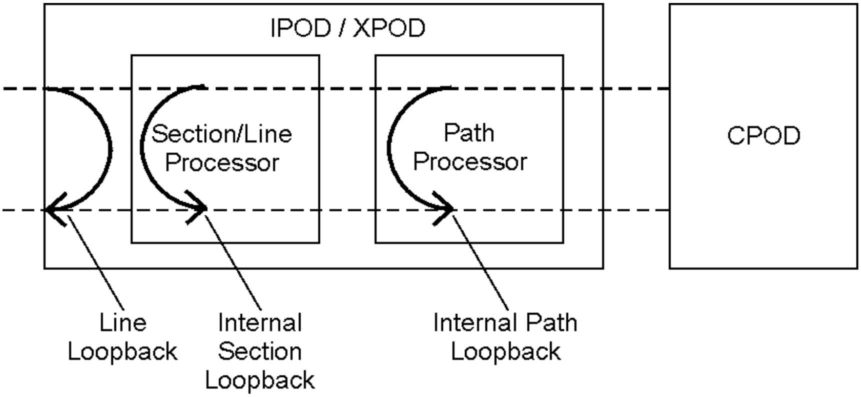

Figure 4-22. OC-3c/STM-1 POD Loopbacks

Table 4-10. Configure OC-3/STM-1 Port Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Set Error Insertion	read/write	Set/display whether alarm/error insertion is enabled or disabled. The options are: • *None* (default) – Disables the error insertion function. • *TxDigitalLOS* – Enables the insertion of digital loss of signal (LOS) alarms in the transmit path. • *TxLineAIS* – Enables the insertion of line alarm indication signal (AIS) alarms in the transmit path. • *TxLineRDI* – Enables the insertion of line remote defect indication (RDI) or line yellow alarms in the transmit path. • *TxFrameBitErr* – Enables the insertion of frame bit errors in the transmit path. • *TxSectBipErr* – Enables the insertion of section BIP errors in the transmit path. • *TxLineBipErr* – Enables the insertion of line BIP errors in the transmit path.
(Other Buttons)		
Configure Path	window button	Opens a window for configuring OC-3c/STM-1 path. See “Configuring a Path for an OC-3c/STM-1 Port” on page 4-68.
Advanced Options	window button	For ports on all OC-3c/STM-l PODs except dual port OC-3c/STM-1 IPODs, opens a window for configuring advanced options (e.g., section trace). See “Configuring OC-3c/STM-1 Port Advanced Options” on page 4-65.

Configuring OC-3c/STM-1 Port Advanced Options

You can configure additional features for OC-3/STM-1 POD ports through the Advanced Options function (exception: dual port OC-3c/STM-1 IPODs).

To access the advanced options:

1. Choose the Advanced Options in the Configure OC-3/STM-1 Port window. The Configure OC-3/STM-1 Port (Advanced) window appears (see Figure 4-23).
2. Complete the fields described in Table 4-11.
3. When finished, click OK to return to the Configure OC-3/STM-1 Port window.
4. Choose the Configure Path button in the Configure OC-3/STM-1 Port window to configure the paths of this OC-3c/STM-1 port as described in “Configuring a Path for an OC-3c/STM-1 Port” on page 4-68.

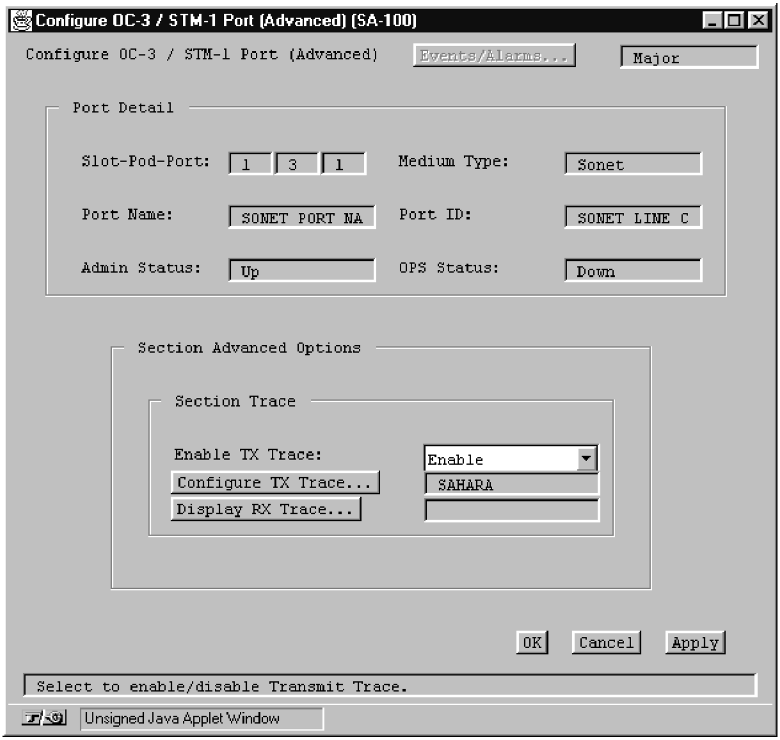

Figure 4-23. Configure OC-3/STM-1 Port (Advanced) Window

Table 4-11. Configure OC-3/STM-1 Port (Advanced) Fields and Buttons

Field/Button	Type	Action/Description
Path Detail		
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Medium Type	read-only	Displays the type of medium used: SONET or SDH.
Port Name	window button	Specify the port name (32 characters max).
Port ID	window button	Specify the port ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state of the port: up or down. Default is up (on-line). Set to Down to take the port offline.
OPS Status	read-only	Display the operational state of the port.
Section Advanced Options		
Section Trace Enable TX Trace	read/write	Set/display whether the transmit trace function is enabled or disabled for this port section.
Section Trace Configure TX Trace	window button	Opens a window to set and display the section transmit trace. Select the Configure TX Trace button. When the Configure Section TX Trace window appears, enter the message you wish to use for tracing, then click OK. SONET permits trace messages of up to 64 characters; SDH permits trace messages may be up to 16 characters in length.

Table 4-11. Configure OC-3/STM-1 Port (Advanced) Fields and Buttons

Field/Button	Type	Action/Description
Section Trace Display RX Trace	window button	Opens a window to display the section receive trace. Click Cancel when you are finished viewing the trace.

Configuring a Path for an OC-3c/STM-1 Port

To configure a path on an OC-3c/STM-1 port:

1. Choose Configure Path in the Configure OC-3/STM-1 Port window. The Configure OC-3/STM-1 Path window appears (see Figure 4-24).

2. Complete the fields described in Table 4-12.

3. When you are finished, choose the Next Logical Layer button to configure the ATM interface layer of this port, as described in section titled "Configuring the ATM Interface" on page 4-75.

4. When you are finished, the next step depends on the type of OC-3c/STM-1 POD the port resides on:

   - For ports on dual port OC-3c/STM-1 IPODs:

     When you are finished configuring the ATM interface layer, choose the applicable button (OK, Cancel or Apply) and configure the other OC-3c/STM-1 ports, if any, using the preceding steps.

     When you are finished configuring the other OC-3c/STM-1 ports, go to the applicable sections of this chapter to configure other types of ports, if any.

   - For ports on all other OC-3/STM-l PODs:

     When you are finished configuring the ATM interface layer, choose the Advanced Options button to configure the path of this OC-3c/STM-1 port on an advanced level, as described in the next section, "Configuring a Path for an OC-3c/STM-1 Port - Advanced Options" on page 4-73.

5. When finished, click OK to return to the Configure OC-3/STM-1 Port window.

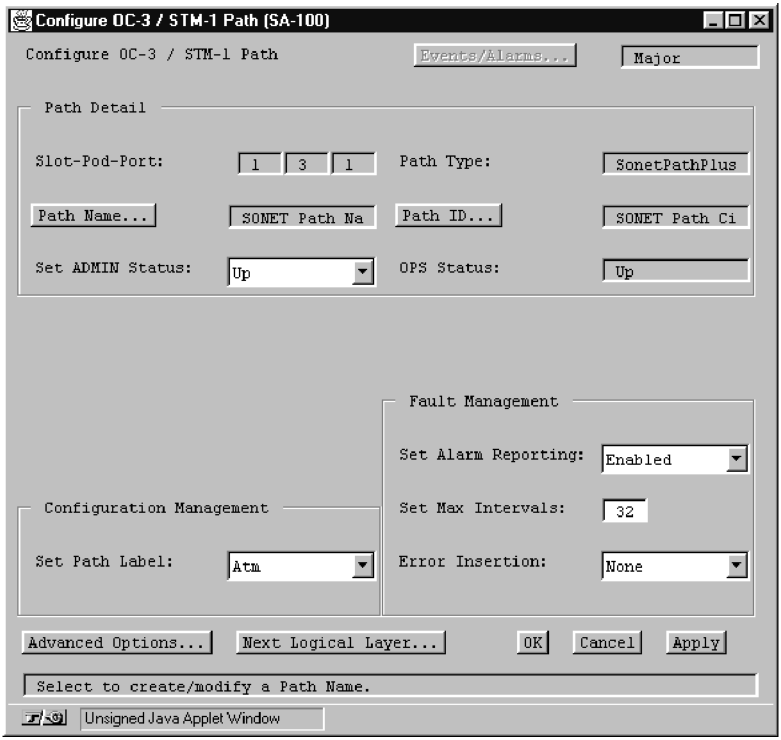

Figure 4-24. Configure OC-3/STM-1 Path Window

Table 4-12. Configure OC-3/STM-1 Path Fields and Buttons

Field/Button	Type	Action/Description
Path Detail		
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Path Type	read-only	Displays the type of path.
Path Name	window button	Specify the path name (32 characters max).
Path ID	window button	Specify the path ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state of this path upon powering up the SA 100. Default is up (on-line). Set to Down (off-line) when you run diagnostics. Testing is not supported by the SA 100.
OPS Status	read-only	Display the operational state of the port.
Configuration Management		
Set Path Label	read/write	Set/display the C2 path overhead byte: • *Unequipped* – sets the C2 path overhead byte to 0 hex. • *Atm* (default) – *Asynchronous Transmit Mode* sets the C2 path overhead byte to 13 hex.

Table 4-12. Configure OC-3/STM-1 Path Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Fault Management		
Set Alarm Reporting	read/write	Sets/displays whether alarm reporting is enabled or disabled on the port. *IMPORTANT: Never disable alarm reporting on any port used for primary or secondary recovered timing.*
Set Max Intervals	read/write	Set/display the maximum number of 15-minute intervals to store in the interval history table and display in the Monitor Status mode. Valid range is 1 to 96 intervals (15 minutes to 24 hours) of activity.

Table 4-12. Configure OC-3/STM-1 Path Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Set Error Insertion	read/write	Set/display whether alarm/error insertion is enabled or disabled. The options are: • *None* (default) – This disables the error insertion function. • *TxPathAIS* – This enables the insertion of line alarm indication signal (AIS) alarms in the transmit path. • *TxPathRDI* – This enables the insertion of line remote defect indication (RDI) or line yellow alarms in the transmit path. • *TxPathBipErr* – This enables the insertion of path BIP errors in the transmit path. • *TxHcsBitErr* – This enables the insertion of HCS bit errors in the transmit path.
(Other Buttons)		
Advanced Options	window button	For ports on all OC-3c/STM-1 PODs except dual port OC-3c/STM-1 IPODs, opens a window for configuring advanced options (e.g., path trace).
Next Logical Layer	window button	Opens a window for configuring the ATM interface layer.

Configuring a Path for an OC-3c/STM-1 Port - Advanced Options

You can configure advanced path information for an OC-3c/STM-1 Port through the Configure OC-3/STM-1 Path (Advanced) window. This applies to all OC-3c/STM-1 PODs except dual port OC-3c/STM-1 IPODs.

To configure advanced path options on an OC-3c/STM-1 port:

1. Choose the Advanced Options button in the Configure OC-3/STM-1 Path window. The Configure OC-3/STM-1 Path (Advanced) window appears (see Figure 4-25).
2. Complete the fields described in Table 4-13.
3. When finished, click OK to return to the Configure OC-3/STM-1 Port window.

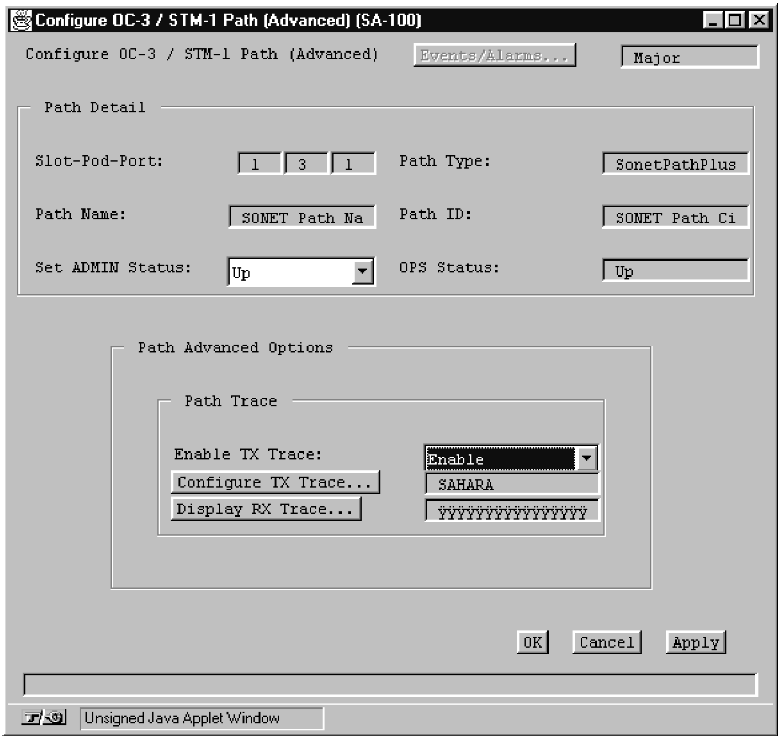

Figure 4-25. Configure OC-3/STM-1 Path (Advanced) Window

Table 4-13. Configure OC-3/STM-1 Path (Advanced) Fields and Buttons

Field/Button	Type	Action/Description
Path Detail		
Slot-POD-Port	read-only	Display the ports’ slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always “1.”
Path Type	read-only	Displays the type of path.
Path Name	read-only	Displays the path name.
Path ID	read-only	Display the path ID.
Set ADMIN Status	read/write	Set the administrative state of this path upon powering up the SA 100. Default is up (on-line). Set to Down to take the port offline.
OPS Status	read-only	Display the operational state of the port.
Path Advanced Options		
Path Trace Enable TX Trace	read/write	Sets/displays whether the transmit trace function is enabled or disabled.
Path Trace Configure TX Trace	window button	Opens a window to set and display the path transmit trace. Select the Configure TX Trace button. When the Configure Path TX Trace window appears, enter the message you wish to use for tracing, then click OK. SONET permits trace messages of up to 64 characters; SDH trace messages may be up to 16 characters in length.
Path Trace Display RX Trace	window button	Opens a window to display the path receive trace. Click Cancel when you are finished viewing the trace.

Configuring the ATM Interface

To configure the ATM interface:

1. Choose the Next Logical Layer button in the specific Configure Port or Configure Path window. The Configure ATM Interface window appears (see Figure 4-26).
2. Complete the fields described in Table 4-14.
3. When finished, click OK to return to the previous window.

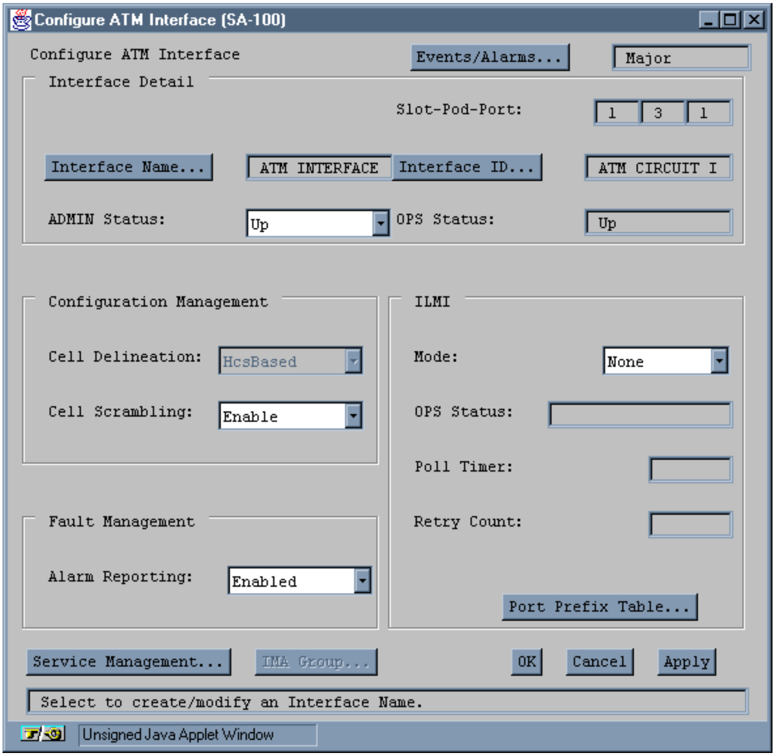

Figure 4-26. Configure ATM Interface Window

Table 4-14. Configure ATM Interface Fields and Buttons

Field/Button	Type	Action/Description
Interface Detail		
Slot-POD-Port	read-only	Display the interface's slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Interface Name	read/write	Specify the interface name (32 characters max).
Interface ID	read/write	Specify the interface ID (32 characters max).
Set ADMIN Status	read/write	Set the administrative state for this interface on power-up. Default is up (on-line). Set to Down (off-line) when you run diagnostics. Testing is not supported by the SA 100.
OPS Status	read-only	Display the operational state of the interface.
Configuration Management		
Cell Delineation	read/write read-only	DS3/E3 interfaces only: set/display the cell delineation or cell synchronization method for this interface. • *HcsBased* – This enables *HCS-based* cell delineation. • *PlcpFrame* – This enables *Physical Layer Convergence Protocol* cell delineation. All other interfaces: displays the type of cell delineation: HcsBased.
Cell Scrambling	read/write	Set/display whether cell scrambling is enabled, disabled, or not applicable.

Table 4-14. Configure ATM Interface Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Fault Management		
Set Alarm Reporting	read/write	Sets/displays whether alarm reporting is enabled or disabled on the interface. *IMPORTANT: Never disable alarm reporting on any port used for primary or secondary recovered timing.*
ILMI		
Mode	read/write	Sets/displays the ILMI mode for this port: • *None* – Disables ILMI for this port. • *DCE* – Sets the ILMI mode to broadcast the ILMI prefixes to other DCE.
OPS Status	read-only	Displays the operational state of ILMI on this port.
Poll Timer	read-only	Displays the ILMI poll timer for this port.
Retry Count	read-only	Displays the ILMI retry count for this port.
Port Prefix Table	window button	Opens a window for configuring the ILMI Port Prefix Table.
(Other Buttons)		
Service Management	window button	Opens a window for configuring ATM UNI connections. See “Configuring ATM UNI Connections” on page 5-8.
IMA Group	window button	Not currently supported.

Setting ILMI Port Prefixes

Interim Local Management Interface (ILMI) is a management information base (MIB) that provides status and communication information to ATM UNI devices and provides for a port keep-alive protocol. WebXtend currently implements ILMI’s network side for UNI ports (DCE) to provide the following functions:

- address registration based on configured Network and Port Prefix tables
- rejection of duplicate ATM addresses from DTE devices
- to initiate link connectivity “keep-alive” messages
- to support ILMI “gets” for ATM and physical layer statistics.

A future release of WebXtend will add user-side ILMI support for UNI ports (DTE).

Adress information in a switch is used both for determining the proper route for calls and for calling-party screening. When used for route determination, the switch advertises an appropriate subset of its configured node prefixes, port prefixes, and port addresses to all other switches in the network. When used for calling party screening, the switch uses the configured node prefixes, port prefixes, and/or port addresses to determine whether or not a call should be accepted by the network.

To perform these two functions at a UNI, both the user and the network need to know the ATM addresses that are valid at the UNI. Address registration provides a mechanism for address information to be dynamically exchanged between the user and the network, enabling them to determine the valid ATM addresses that are in effect at a UNI. Address registration applies only to UNI ports on which ILMI is enabled. Any ILMI-eligible node or port prefix will be transferred from all ILMI-enabled private UNI-DCE ports and all ILMI-enabled public end-system UNI-DCE ports to their peer DTE devices.

Node prefixes are not exchanged from “public switch” UNI-DCE ports. Only port prefixes are exchanged from these ports.

To configure ILMI Port Prefixes:

1. Choose the Port Prefix Table button from the Configure ATM Interface window. The ILMI Port Prefix Table window appears (see Figure 4-27).
2. To add a new ILMI Port Prefix, choose the Add Port Prefix button. The Add Port Prefix window appears (see Figure 4-27).
3. Complete the fields described in Table 4-15 and click OK to return to the ILMI Port Prefix Table window.

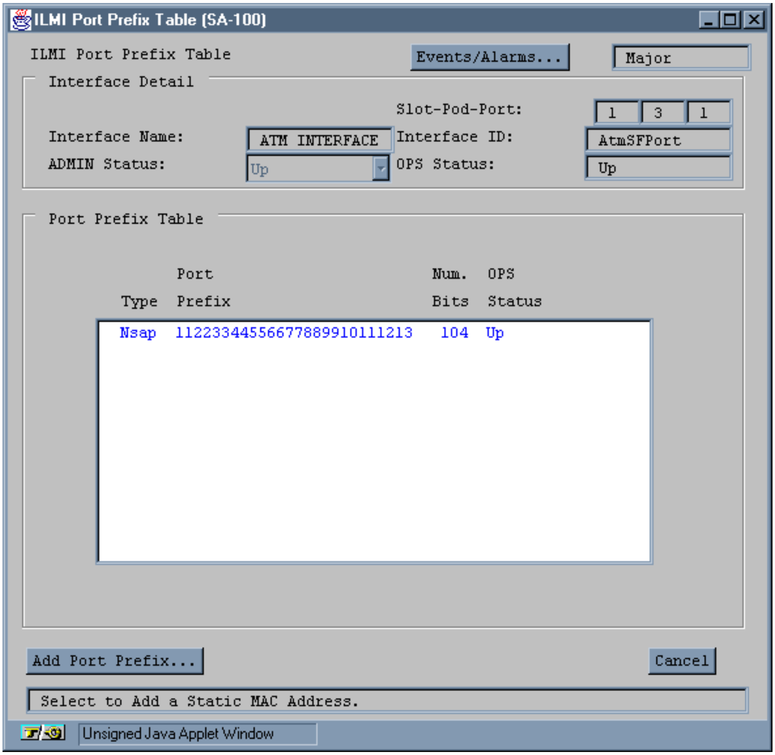

Figure 4-27. ILMI Port Prefix Table

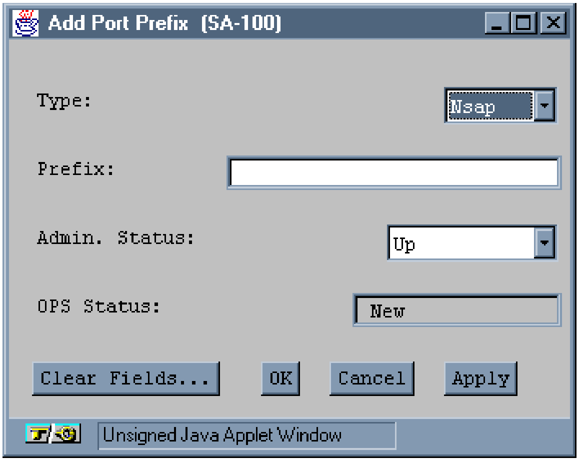

Figure 4-28. Add Port Prefix Window

Table 4-15. Add Port Prefix Fields and Buttons

Field/Button	Type	Action/Description
Type	read/write	Set/display the type of Port Prefix: E.164 - allows a prefix of up to 16 digits. Prefixes of less than 16 digits will be padded with leading zeros. (not currently supported) Nsap - prefix must be 26 digits. Unknown - (not currently supported)
Prefix	read/write	Set/display the port prefix itself. Enter a prefix based on the Type selected above.
Admin. Status	read/write	Set the administrative state of the Port Prefix: up, down or no operation. (No op is not currently supported.)
OPS Status	read-only	Display the operational state of the Port Prefix: up or down.

Modifying or Deleting ILMI Port Prefixes

To modify or delete an ILMI Port Prefix, double-click the Port Prefix in the ILMI Port Prefix Table window. The Port Prefix Options window appears (Figure 4-29), enabling you to modify or delete the selected prefix.

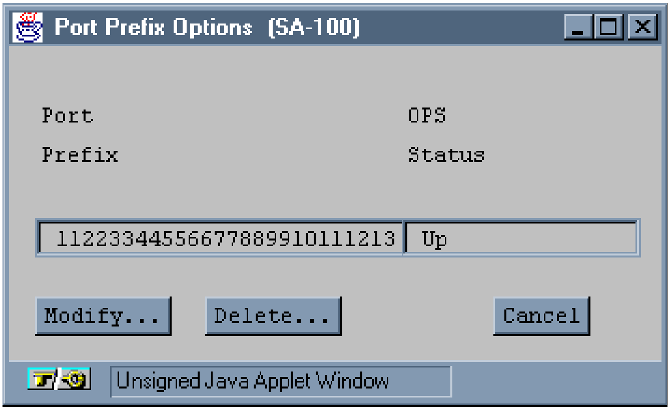

Figure 4-29. Port Prefix Options window

Selecting Modify presents a Modify dialog box similar to the Add Port Prefix dialog box. Make any desired changes, then choose OK.

Selecting Delete prompts you for confirmation before deleting the selected ILMI Port Prefix.

What’s Next

After you configure the SA 100 ports, you can configure network services through the Service Management functions, as described in Chapter 5, “Configuring Services”.

5

Configuring Network Services

This chapter describes how to configure the SA 100 network services including:

- ATM User Network Interface (UNI) service (refer to page 5-3)
- Native LAN Service (NLS) (refer to page 5-22)
- Circuit Emulation Service (CES) (refer to page 5-47)

Selecting a Network Service

You can select a network service by choosing the Service Management button from the Main menu. When the Select Service window appears (see Figure 5-1), select the service type.

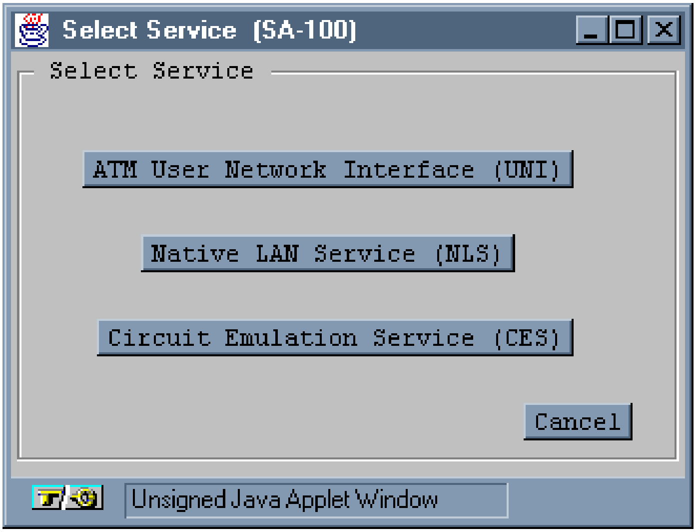

Figure 5-1. Select Service Window

You can also select a network service after configuring a port, as follows:

- ATM UNI — After configuring the ATM interface of a DS1/E1, DS3/E3 Cell, or OC-3c/STM-1 Cell port, (described in "Configuring the ATM Interface" on page 4-75), configure the ATM User Network Interface (UNI) service by choosing the Service Management button in the Configure ATM Interface window.
- Native LAN — After configuring the ports of a 10/100 Ethernet POD, (described in "Configuring an Ethernet Port" on page 4-5), configure the Native LAN Service (NLS) by choosing the Service Management button in the Configure ATM Interface window.
- CES — After configuring the ports of a DS1/E1 Circuit POD, (described in "Configuring a DS1/E1 Port" on page 4-8), configure the Circuit Emulation Service (CES) by choosing the Next Logical Layer button in the Configure DS1 Port window.

Configuring ATM UNI Services

To configure ATM User Network Interface (UNI) services:

From the Main menu:

1. Choose the Service Management button. The Select Service window appears (Figure 5-1 on page 5-2).

2. Choose the ATM User network Interface (UNI) button. The Select ATM UNI Port window appears (see Figure 5-2).

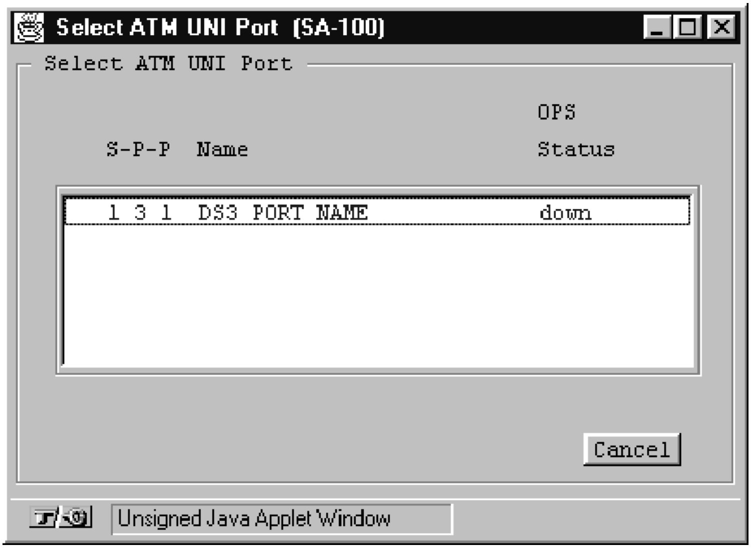

Figure 5-2. Select ATM UNI Port Window

3. Select the port you want to configure. The ATM UNI Connections window appears (see Figure 5-3).

From the Configure ATM Interface window:

4. After you configure the ATM interface of a DS1/E1, DS3/E3 Cell or OC-3c/STM-1 Cell port, as described in “Configuring the ATM Interface” on page 4-75, choose the Service Management button. The ATM UNI Connections window appears (see Figure 5-3).

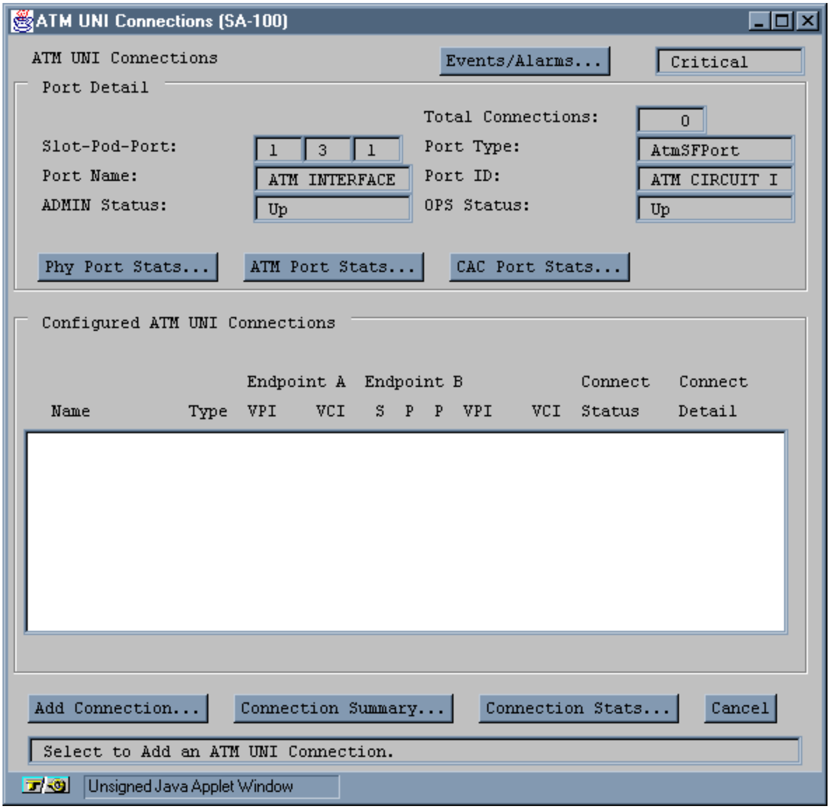

Figure 5-3. ATM UNI Connections Window

5. Complete the fields described in Table 5-1 to add, modify, make, or break an ATM UNI service connection.

Table 5-1. ATM UNI Connections Fields and Buttons

Field/Button	Type	Action/Description
Port Detail		
Total Connections	read-only	Displays the number of defined connections on the port.
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Port Type	read-only	Displays the type of port.
Port Name	read-only	Displays the port name (32 characters max).
Port ID	read-only	Displays the port ID (32 characters max).
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Phy Port Stats	window button	Enables you to view the physical port statistics.
ATM Port Stats	window button	Enables you to view the ATM port statistics.
CAC Port Stats	window button	Enables you to view the Connection Admission Control port statistics.
Configured ATM UNI Connections		
Name	read-only	Displays the user designation of each configured connection on this port.
Type	read-only	Displays the connection type: CES, NLS, or ATM.

Table 5-1. ATM UNI Connections Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Endpoint A VPI	read-only	Displays the virtual path identifier at endpoint A of each configured connection on this port.
Endpoint A VCI	read-only	Displays the virtual channel identifier at endpoint A of each configured connection on this port.
Endpoint B S-P-P	read-only	Displays the slot-POD-port numbers of endpoint B of each configured connection on this port.
Endpoint B VPI	read-only	Displays the virtual path identifier of endpoint B of each configured connection on this port.
Endpoint B VCI	read-only	Displays the virtual channel identifier of endpoint B of each configured connection on this port.
Connect Status	read-only	Displays the connection state of each configured connection on this port: up or down.
Connect Detail	read-only	Displays the reason it is down if the Connect Status field is not "up."
(Other Buttons)		
Add Connection	window button	Opens a window for adding an ATM UNI connection. See "Adding a Connection" on page 5-9.
Connection Summary	window button	Enables you to view a summary of the configuration data related to all the connections on this port (refer to Chapter 6, Monitoring the SA 100).

Table 5-1. ATM UNI Connections Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Connection Stats	window button	Enables you to view connection statistics for all the connections on this port (see Chapter 6, “Monitoring the SA 100”).

Configuring ATM UNI Connections

This section describes how to:

- Add an ATM UNI service connection (refer to page 5-9)
- Modify an ATM UNI service connection (refer to page 5-17)
- Delete an ATM UNI service connection (refer to page 5-19)
- Make an ATM UNI service connection (refer to page 5-20)
- Break an ATM UNI service connection (refer to page 5-20)

Adding a Connection

To add and configure a connection:

1. Choose the Add Connection button from the ATM UNI Connections window (see Figure 5-3 on page 5-4). The Add ATM UNI Connection window appears (see Figure 5-4).

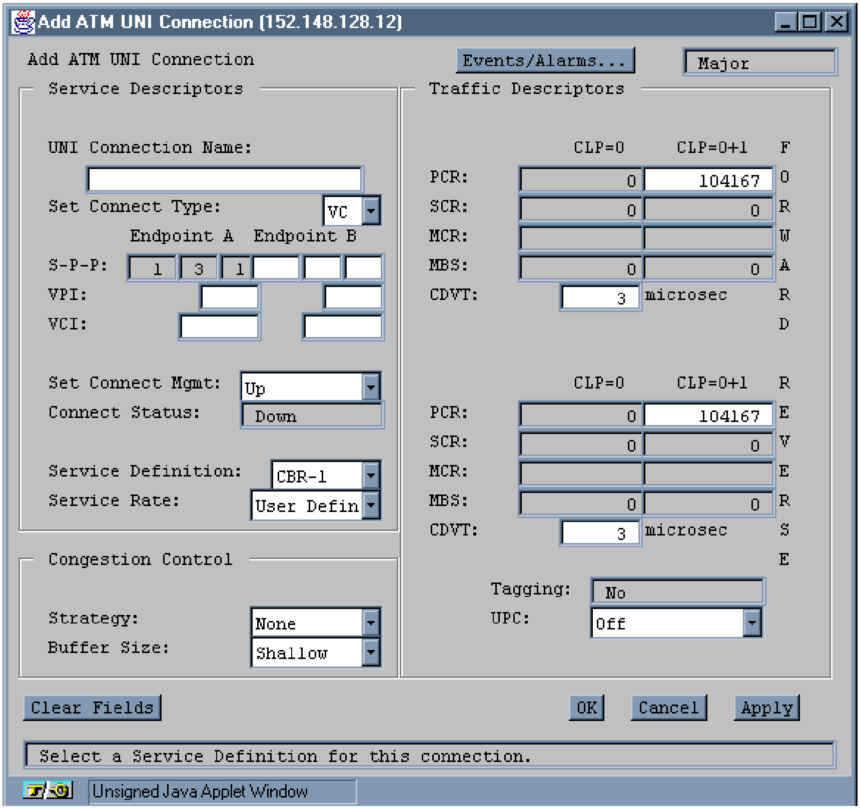

Figure 5-4. Add ATM UNI Connection Window

2. Complete the fields described in Table 5-2 to select the parameters for the new connection.

3. When you are finished defining this connection, choose OK.

Table 5-2. Add ATM UNI Connection Fields and Buttons

Field/Button	Type	Action/Description
Service Descriptors		
UNI Connection Name	read/write	Specify a name for this connection.
Set Connect Type	read/write	Select the type of ATM UNI connection: VC or VP.
Endpoint A S-P-P	read-only	Displays the location (slot, POD, port numbers) of endpoint A of the connection.
Endpoint B S-P-P	read/write	Specify the connection location (slot, POD, port numbers) of endpoint B.
Endpoint A VPI	read/write	Specify the virtual path identifier of endpoint A for this connection.
Endpoint B VPI	read/write	Specify the virtual path identifier of endpoint B for this connection.
Endpoint A VCI	read/write	Specify the virtual channel identifier of endpoint A for this connection.
Endpoint B VCI	read/write	Specify the virtual channel identifier of endpoint B for this connection.
Set Connect Mgmt	read/write	Specify the administrative state of the connection (up or down) after choosing the OK or Apply button. • *up* (default) – Activates the connection when you click the OK or Apply button. • *down* – Deactivates the connection when you click the OK or Apply button.

Table 5-2. Add ATM UNI Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Connect Status	read-only	Displays the operational state of the connection: up or down.
Service Definition	read/write	Select the type of service of the connection: • *CBR-1* (default) – This selects *constant bit rate* service for handling digital information, such as video and digitized voice and is represented by a continuous stream of bits. Constant bit rate service requires guaranteed throughput rates and service levels. • *RT-VBR1* – This selects *real time variable bit rate 1* service for packaging special delay-sensitive applications, such as packet video, that require low cell delay variation between endpoints. • *RT-VBR2* – This selects *real time variable bit rate 2* service. • *RT-VBR3* – This selects *real time variable bit rate 3* service. • *NRT-VBR1* – This selects *non-real time variable bit rate 1* service for packaging the transfer of long, bursty data streams over a pre-established ATM connection. This service is also used for short, bursty data, such as LAN traffic. CPE protocols adjust for any delay or loss incurred through the use of non-real time VBR. • *NRT-VBR2* – This selects *non-real time variable bit rate 2* service.

Table 5-2. Add ATM UNI Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Service Definition (continued)	read/write	• *NRT-VBR3* – This selects *non-real time variable bit rate 3* service. • *UBR1* – This selects *unspecified bit rate 1* service for LAN traffic applications primarily. The CPE should compensate for any delay or lost cell traffic. • *UBR2* – This selects *unspecified bit rate* 2 service.
Service Rate	read/write	Specify the data rate of the connection. • *Rate 64KB* (default) – This selects a service rate of 64 kbps. • *Rate 384KB* – This selects a service rate of 384 kbps. • *Rate 1536KB* – This selects a service rate of 1536 kbps/1.536 Mbps. • *Rate 1MB* – This selects a service rate of 1 Mbps. • *Rate 2MB* – This selects a service rate of 2 Mbps. • *Rate 5MB* – This selects a service rate of 5 Mbps. • *Rate 10MB* – This selects a service rate of 10 Mbps. • *Rate 40MB* – This selects a service rate of 40 Mbps. • *Rate 50MB* – This selects a service rate of 50 Mbps.

Table 5-2. Add ATM UNI Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Service Rate (continued)	read/write	• *Rate 100MB* – This selects a service rate of 100 Mbps. • *Rate 150MB* – This selects a service rate of 150 Mbps. • *User Defined* – This selects a user-defined service rate (not currently supported).

Table 5-2. Add ATM UNI Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Congestion Control		
Strategy	read/write	Specify the type of congestion control on this connection: • *None* (default) – This selects no strategy for dealing with congestion. • *SetEFCI* – The *Set EFCI* option uses the explicit forward congestion indicator to determine if congestion (or impending congestion) exists in a node. When selected, the congested node modifies the EFCI bit in the ATM cell header to indicate congestion. If the equipment connected to the SA 100 can use the EFCI bit to adjust its transmission rate, it may lower the connection cell rate to relieve the congestion. EFCI is only set in the UBR queue and affects all connections in the queue of the physical port, therefore, so not select this option if you do not want to use the EFCI strategy on this physical port. • *EarlyPacketDi* – The *Early Packet Discard* option drops a whole packet to relieve congestion under AAL5 adaptation. • *DropCLP1* – The *Drop CLP1* option drops low-priority cells (CLP=1) to relieve congestion.

Table 5-2. Add ATM UNI Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Buffer Size	read/write	Specify the buffer size allocated for controlling congestion on this connection: • *Shallow* (default) – This selection provides the smallest buffer for dealing with congestion on this connection. • *Medium* – This selection provides a moderately-sized buffer for dealing with congestion on this connection. • *High* – This selection provides the largest buffer for dealing with congestion on this connection.
Traffic Descriptors (Forward *or* Reverse)		
PCR (CLP=0)	read/write	Specify the forward/reverse peak cell rate, where the cell loss priority is 0.
SCR (CLP=0)	read/write	Specify the forward/reverse sustainable cell rate, where the cell loss priority is 0.
MCR (CLP=0)		Not supported.
MBS (CLP=0)	read/write	Specify the forward/reverse maximum burst size, where the cell loss priority is 0.
PCR (CLP=0+1)	read/write	Specify the forward/reverse peak cell rate, where the cell loss priority is 0+1.
SCR (CLP=0+1)	read/write	Specify the forward/reverse sustainable cell rate, where the cell loss priority is 0+1.
MCR (CLP=0+1)		Not supported.

Table 5-2. Add ATM UNI Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
MBS (CLP=0+1)	read/write	Specify the forward/reverse maximum burst size, where the cell loss priority is 0+1.
CDVT (microsec)	read/write	Specify the forward/reverse cell delay variation tolerance for this connection in microseconds.
Traffic Descriptors (Forward *and* Reverse)		
Tagging	read-only	Displays the method of changing a high-priority cell to a low-priority cell for this connection.
UPC	read/write	Specify whether usage parameter control is enabled or disabled on this connection.
Clear Fields	command button	Clears any data entered in this window.

Modifying a Connection

To modify a connection:

1. Select the connection from the defined connections list in the ATM UNI Connections window (Figure 5-3). The UNI Connection Options window appears (Figure 5-5):

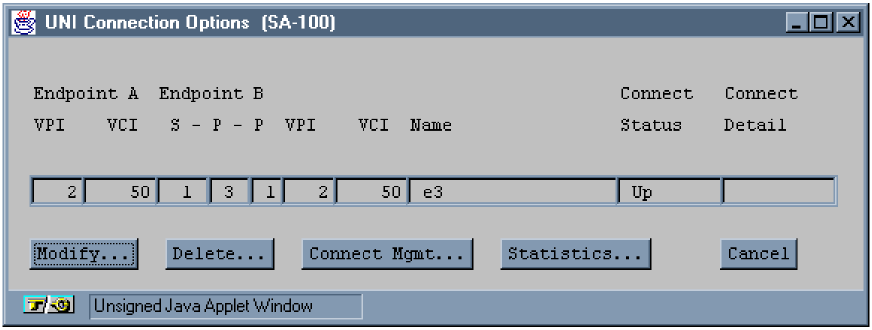

Figure 5-5. UNI Connection Options

2. Choose the Modify button. The Modify ATM UNI Connection window appears (see Figure 5-6).

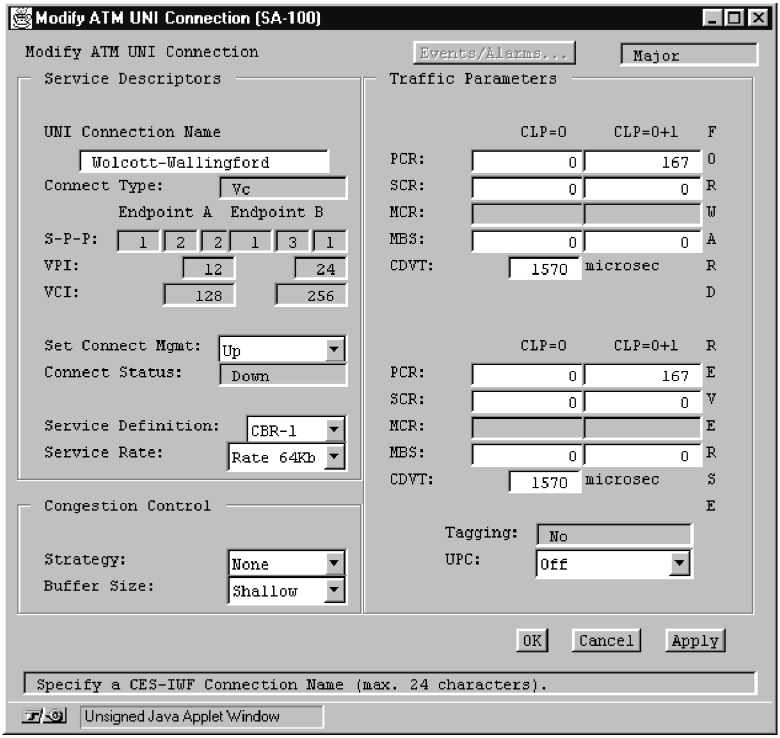

Figure 5-6. Modify ATM UNI Connection Window

3. Make any desired changes to the connection parameters. Refer to Table 5-2 for parameter details.

4. When you are finished modifying this connection, choose OK.

Deleting a Connection

> *Before deleting a connection, you must set the Connect Status to down. The SA 100 will not allow you to delete an active connection.*

To delete a connection:

1. Select the connection from the Configured ATM UNI Connections list in the ATM UNI Connections window. The UNI Connection Options window appears.
2. Choose the Connect Mgmt button. The Connection Management window appears (Figure 5-7).

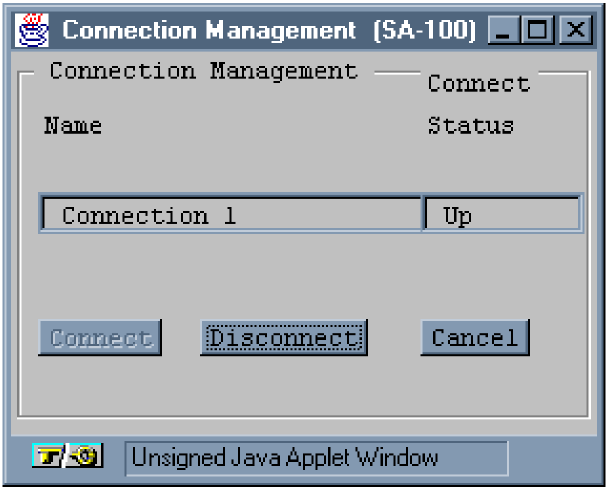

Figure 5-7. Connection Management Window

3. Choose the Disconnect button. The UNI Connection Options window appears.
4. Choose the Delete button to remove the connection from the port configuration. The Delete UNI Connection window appears, asking you to confirm this action.
5. Choose the Yes button. The connection is removed from the SA 100’s database.

Making a Connection

After you have configured an ATM UNI connection, you must enable it. You can do this from the Add or Modify ATM UNI Connection windows or from the ATM UNI Connections window.

From the Add or Modify ATM UNI Connection window

To make an ATM UNI connection from the Add ATM UNI Connection window (Figure 5-4 on page 5-9) or Modify ATM UNI Connection window (Figure 5-6 on page 5-18):

1. Set the Set Connect Mgmt parameter to “up.”
2. Choose OK.

From the ATM UNI Connections window

To make an ATM UNI connection from the ATM UNI Connections window (Figure 5-3 on page 5-4):

1. Select the connection from the Configured ATM UNI Connections list. The UNI Connection Options window appears (Figure 5-5).
2. Choose the Connect Mgmt button. The Connection Management window appears (Figure 5-7).
3. Choose the Connect button. The connection is now enabled.

Breaking a Connection

To break (disconnect) a connection:

1. Select the connection from the connections list in the ATM UNI Connections window (Figure 5-3). The UNI Connection Options window appears (Figure 5-5).
2. Choose the Connect Mgmt button. The Connection Management window appears (Figure 5-7).

3. Choose the Disconnect button. The connection is broken.

> *Disconnecting a connection does not remove the connection configuration from the SA 100 database. You can reconnect it at any time using the procedure described in* *"Making a Connection" on page 5-20**.*

Configuring Native LAN Services

To configure Native LAN service (NLS):

From the Main menu:

1. Choose the Service Management button in the Main menu of WebXtend. The Select Service window appears (Figure 5-1 on page 5-2).

2. Choose the Native LAN Service (NLS) button. The Native LAN Service (NLS) Groups window appears (see Figure 5-8).

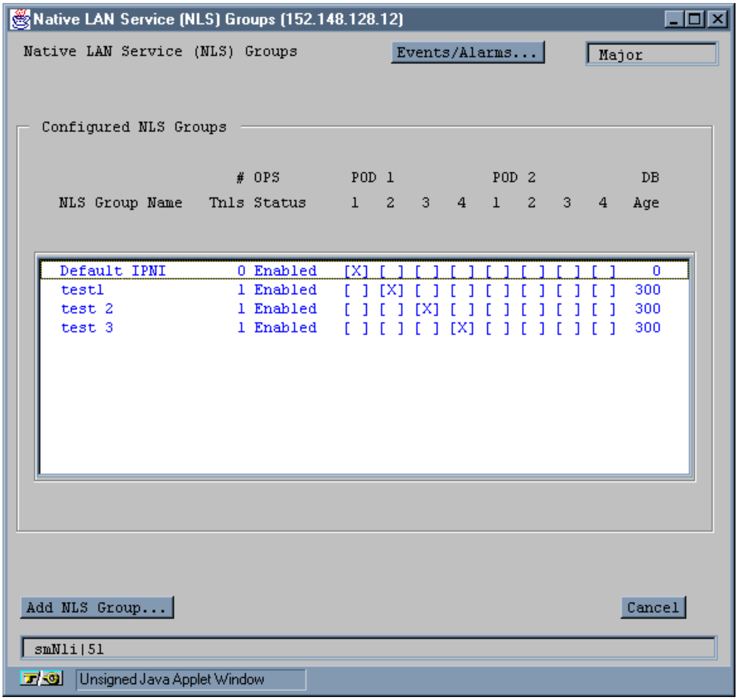

Figure 5-8. Native LAN Service (NLS) Groups Window

From the Configure Ethernet Port window:

3. After configuring the ports of a 10/100 Ethernet POD, as described in "Configuring an Ethernet Port" on page 4-5, you can configure the Native LAN Service (NLS) by choosing the Service Management button in the Configure Ethernet Port window. The Native LAN Service (NLS) Groups window appears (see Figure 5-8).

Adding an NLS Group

To add a Native LAN Services Group:

1. In the Native LAN Service (NLS) Groups window (Figure 5-8), choose the Add NLS Group button. The Add NLS Group window appears (Figure 5-9).

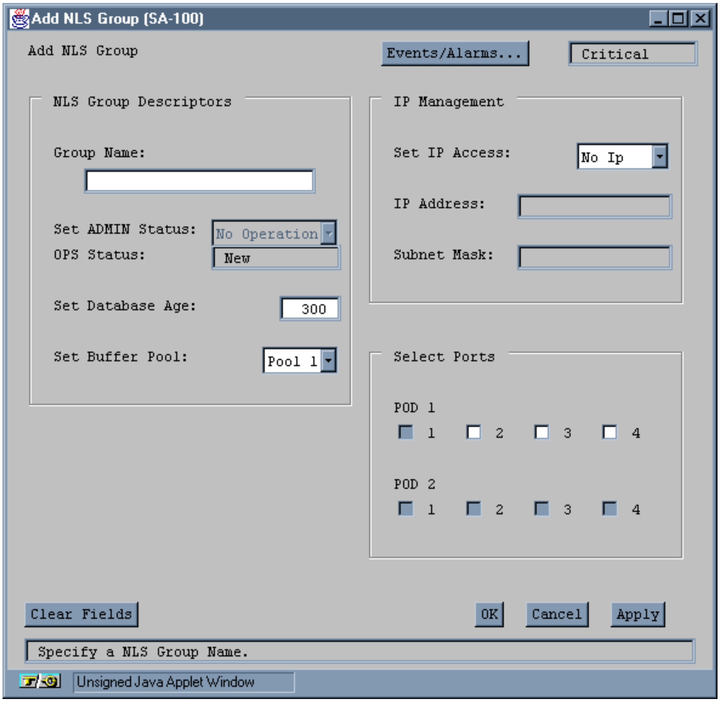

Figure 5-9. Add NLS Groups Window

2. Complete the fields described in Table 5-3.

Table 5-3. Add NLS Group Fields and Buttons

Field/Button	Type	Action/Description
NLS Group Descriptors		
Group Name	read/write	Specify a name for this group.
Set ADMIN Status	read/write	(This function not currently supported; NLS Groups are automatically set to UP Admin Status when created.) Specify the administrative state of the connection (up or down) after choosing the OK or Apply button. • *up* (default) – Activates the connection when you click the OK or Apply button. • *down* – Deactivates the connection when you click the OK or Apply button.
OPS Status	read-only	Displays the operational state of the connection: up or down.
Set Database Age	read/write	Specify the default age in seconds of MAC addresses in the forwarding table.
Set Buffer Pool	read/write	Specify the buffer pool for this NLS group: Mgmt, Comms, Pool 1, or Pool 2. By assigning Pool 1 and Pool 2 to different NLS groups, you can provide independent buffer pools for different customers. *The Mgmt and Comms pools are intended for internal device functions. Do not assign these to NLS Groups.*

Table 5-3. Add NLS Group Fields and Buttons (Continued)

Field/Button	Type	Action/Description
IP Management		
Set IP Access	read/write	Specify IP Access for this group: No IP (default) or IP.
IP Address	read/write	Specify the IP addresses for this group. This field is not available if No IP is selected in the Set IP Access field.
Subnet Mask	read/write	Specify the IP subnet mask for this group. This field is not available if No IP is selected in the Set IP Access field.
Select Ports		
POD 1 Ports 1—4	read/write	Assign POD1 ports to this group by placing a check mark in the box for each port.
POD 2 Ports 1—4	read/write	Assign POD2 ports to this group by placing a check mark in the box for each port.
Clear Fields	command button	Clears any data entered in this window.

Modifying an NLS Group

To modify an NLS group:

1. Select the group from the list of defined groups in the NLS Groups window (Figure 5-8). The NLS Group Options window appears (Figure 5-10):

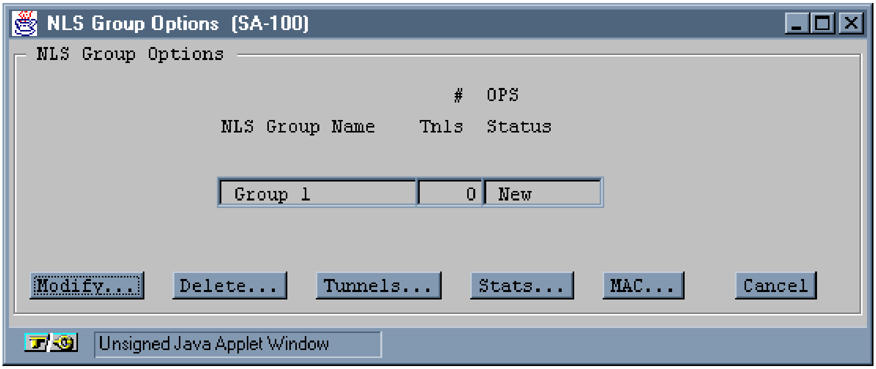

Figure 5-10. NLS Group Options Window

2. Choose the Modify button. The Modify NLS Group window appears, nearly identical to the Add NLS Group window (see Figure 5-9).

3. Make any desired modifications, referring to Table 5-3 for details on the fields and buttons.

4. When you have finished modifying the group, choose OK.

Deleting an NLS Group

To delete an NLS group:

1. Select the group from the list of defined Groups in the NLS Groups window (Figure 5-8). The NLS Group Options window appears (Figure 5-10):
2. Choose the Delete button. The Delete NLS Group window appears, asking you to confirm this action.
3. Choose OK to confirm the Delete command. The group is deleted and you are returned to the NLS Group Options window, with no group selected.

Creating Tunnels for an NLS Group

To define tunnels for an NLS group:

1. Select the group from the list of defined Groups in the NLS Groups window (Figure 5-8). The NLS Group Options window appears (Figure 5-10).
2. Choose the Tunnels button. The NLS Tunnels window appears (Figure 5-11).

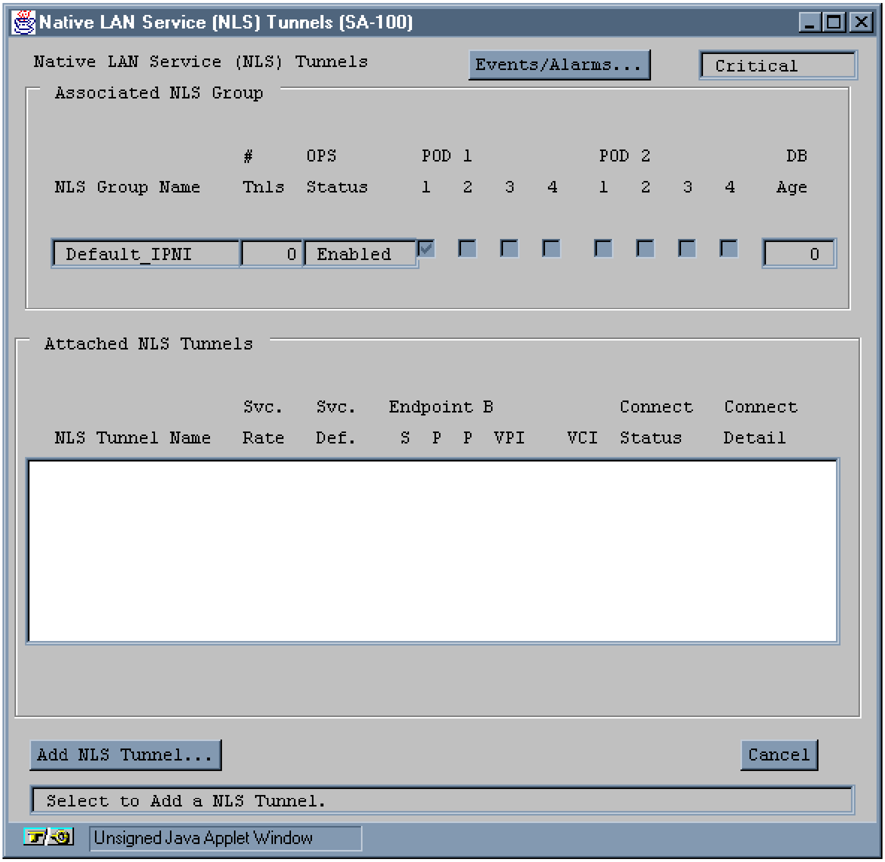

Figure 5-11. NLS Tunnels Window

3. Choose the Add NLS Tunnel button. The Add NLS Tunnel window appears (Figure 5-12):

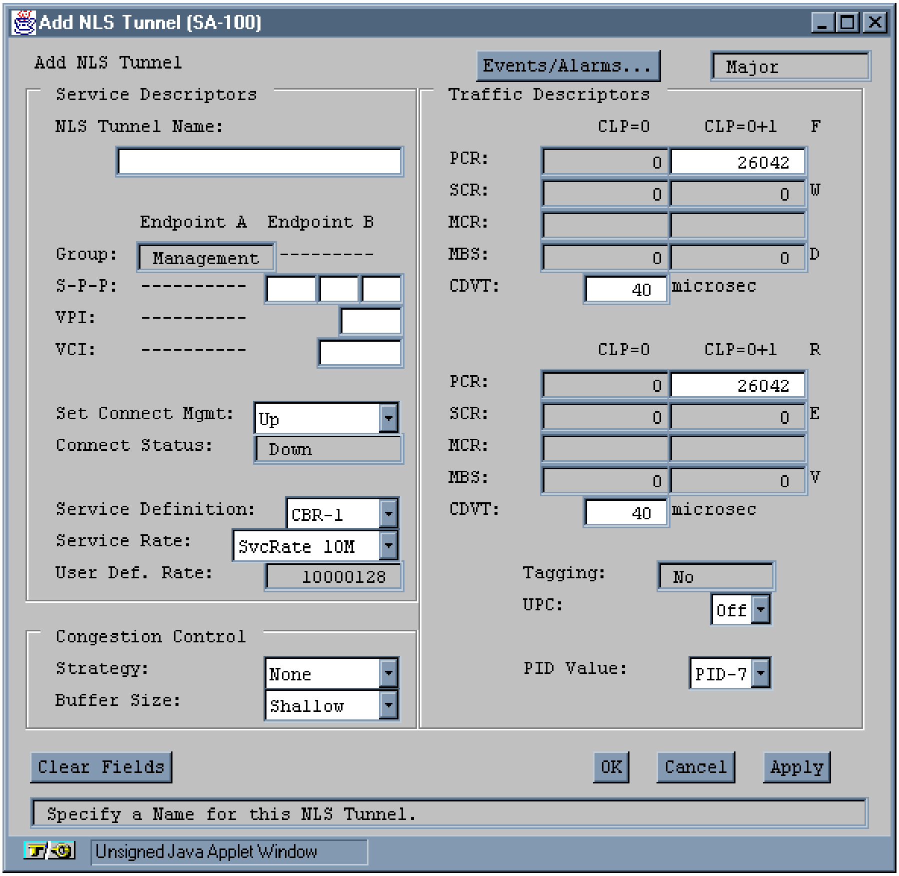

Figure 5-12. Add NLS Tunnel Window

4. Complete the fields described in Table 5-4, then choose OK.

Table 5-4. Add NLS Tunnel Fields and Buttons

Field/Button	Type	Action/Description
Service Descriptors		
NLS Tunnel Name	read/write	Specify a name for this tunnel (32 characters max.).
Group (Endpoint A)	read-only	Displays the name of the Group for Endpoint A.
Endpoint B S-P-P	read/write	Specify the connection location (slot, POD, port numbers) of endpoint B.
Endpoint B VPI	read/write	Specify the virtual path identifier of endpoint B for this connection.
Endpoint B VCI	read/write	Specify the virtual channel identifier of endpoint B for this connection.
Set Connect Mgmt	read/write	Specify the administrative state of the connection (up or down) after choosing the OK or Apply button. • *up* (default) – Activates the connection when you click the OK or Apply button. • *down* – Deactivates the connection when you click the OK or Apply button.
Connect Status	read-only	Displays the operational state of the connection: up or down.

Table 5-4. Add NLS Tunnel Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Service Definition	read/write	Select the type of service of the connection: • *CBR-1* (default) – This selects *constant bit rate* service for handling digital information, such as video and digitized voice and is represented by a continuous stream of bits. Constant bit rate service requires guaranteed throughput rates and service levels. • *RT-VBR1* – This selects *real time variable bit rate 1* service for packaging special delay-sensitive applications, such as packet video, that require low cell delay variation between endpoints. *RT-VBR and NRT-VBR service definitions apply to the ATM side of the connection only. The NLS-side shaping mechanism treats all RT- and NRT-VBR services as VBR.* • *RT-VBR2* – This selects *real time variable bit rate 2* service. • *RT-VBR3* – This selects *real time variable bit rate 3* service.

Table 5-4. Add NLS Tunnel Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Service Definition (continued)	read/write	• *NRT-VBR1* – This selects *non-real time variable bit rate 1* service for packaging the transfer of long, bursty data streams over a pre-established ATM connection. This service is also used for short, bursty data, such as LAN traffic. CPE protocols adjust for any delay or loss incurred through the use of non-real time VBR. • *NRT-VBR2* – This selects *non-real time variable bit rate 2* service. • *UBR1* – This selects *unspecified bit rate 1* service for LAN traffic applications primarily. The CPE should compensate for any delay or lost cell traffic. • *UBR*2 – This selects *unspecified bit rate 2* service for LAN traffic applications primarily. • *ABR* – This selects *automatic bit rate* service (not currently supported).

Table 5-4. Add NLS Tunnel Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Service Rate	read/write	Specify the data rate of the connection. • *User Defined* – This allows you to specify a custom service rate in the User Def Rate field. • *Rate 56KB* – This selects a service rate of 56 kbps. • *Rate 64KB* – This selects a service rate of 64 kbps. • *Rate 128KB* – This selects a service rate of 128 kbps. • *Rate 256KB* – This selects a service rate of 256 kbps. • *Rate 384KB* – This selects a service rate of 384 kbps. • *Rate 512KB* – This selects a service rate of 512 kbps. • *Rate 1544KB* – This selects a service rate of 1544 kbps/1.544 Mbps. • *Rate 2M* – This selects a service rate of 2 Mbps. • *Rate 10M* (default) – This selects a service rate of 10 Mbps. • *Rate 34M* – This selects a service rate of 34 Mbps. • *Rate 45M* – This selects a service rate of 45 Mbps. • *Rate 100M* – This selects a service rate of 100 Mbps.

Table 5-4. Add NLS Tunnel Fields and Buttons (Continued)

Field/Button	Type	Action/Description
User Def Rate	read/write	If User Defined is selected as the Service Rate, this field becomes available. Enter a custom service rate in Mbps.
Congestion Control		
Strategy	read/write	Specify the type of congestion control on this connection: • *None* (default) – This selects no strategy for dealing with congestion. • *SetEFCI* – The *Set EFCI* option uses the explicit forward congestion indicator to determine if congestion (or impending congestion) exists in a node. The congested node modifies the EFCI bit in the ATM cell header to indicate congestion. If the equipment connected to the SA 100 can use the EFCI bit to adjust its transmission rate, it may lower the connection cell rate to relieve the congestion. EFCI is only set in the UBR queue and affects all connections in the queue of the physical port. Don’t select this option unless you want to use the EFCI strategy on this physical port. • *EarlyPacketDi* – The *Early Packet Discard* option drops a whole packet to relieve congestion under AAL5 adaptation. • *DropCLP1* – The *Drop CLP1* option drops low-priority cells (CLP=1) to relieve congestion.

Table 5-4. Add NLS Tunnel Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Buffer Size	read/write	Specify the buffer size allocated for controlling congestion on this connection: • *Shallow* (default) – This selection provides the smallest buffer for dealing with congestion on this connection. • *Medium* – This selection provides a moderately-sized buffer for dealing with congestion on this connection. • *High* – This selection provides the largest buffer for dealing with congestion on this connection.
Traffic Descriptors (Forward and Reverse)		
PCR (CLP=0)	read/write	Specify the forward/reverse peak cell rate, where the cell loss priority is 0.
SCR (CLP=0)	read/write	Specify the forward/reverse sustainable cell rate, where the cell loss priority is 0.
MCR (CLP=0)		Not supported.
MBS (CLP=0)	read/write	Specify the forward/reverse maximum burst size, where the cell loss priority is 0.
PCR (CLP=0+1)	read/write	Specify the forward/reverse peak cell rate, where the cell loss priority is 0+1.
SCR (CLP=0+1)	read/write	Specify the forward/reverse sustainable cell rate, where the cell loss priority is 0+1.
MCR (CLP=0+1)		Not supported.

Table 5-4. Add NLS Tunnel Fields and Buttons (Continued)

Field/Button	Type	Action/Description
MBS (CLP=0+1)	read/write	Specify the forward/reverse maximum burst size, where the cell loss priority is 0+1.
CDVT (microsec)	read/write	Specify the forward/reverse cell delay variation tolerance for this connection in microseconds.
Tagging	read-only	Displays the method of changing a high-priority cell to a low-priority cell for this tunnel.
UPC	read/write	Specify whether usage parameter control is enabled or disabled on this tunnel.
PID Value	read/write	Specify PID-1 or PID-7 to enable/disable error checking. PID-1 preserves the Ethernet CRC across the network. PID-7 regenerates the CRC locally.
Clear Fields	command button	Clears any data entered in this window.

Modifying an NLS Tunnel

Once you have created one or more NLS tunnels, you can modify their attributes. To modify an NLS tunnel:

1. Select the tunnel from the list of defined tunnels in the NLS Tunnels window. The NLS Group Options window appears (Figure 5-13), showing the Tunnel Name, Endpoint B Slot-Pod-Port, VPI, VCI, Connection Status, and Connection Detail (error code if any).

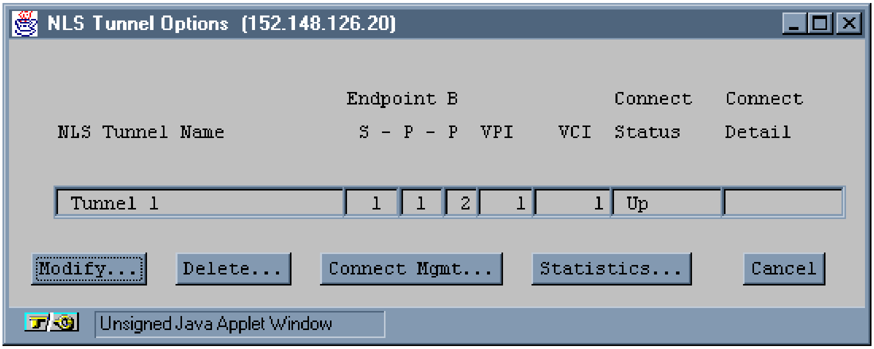

Figure 5-13. NLS Tunnel Options Window

2. Choose the Modify button. The Modify NLS Tunnel window appears, nearly identical to the Add NLS Tunnel window (see Figure 5-12).

3. Make any desired modifications, referring to Table 5-4 for details on the fields and buttons.

4. When you have finished modifying the group, choose OK.

Deleting an NLS Tunnel

> *Before deleting a tunnel, you must set the Connect Status to down. The SA 100 will not allow you to delete an active tunnel.*

To delete an NLS tunnel:

1. Select the tunnel from the list of defined tunnels in the NLS Tunnels window (Figure 5-11). The NLS Tunnel Options window appears (Figure 5-13):
2. Choose the Delete button. The Delete NLS Tunnel window appears, asking you to confirm this action.
3. Choose OK to confirm the Delete command. The tunnel is deleted and you are returned to the NLS Tunnel Options window, with no tunnel selected.

Making a Connection

After you have configured an NLS tunnel, you must enable it. You can do this from the Add or Modify NLS Tunnel windows or from the Connect Management button on the NLS Tunnel Options window.

From the Add or Modify NLS Tunnel window

To enable an NLS tunnel from the Add or Modify NLS Tunnel window (Figure 5-12 on page 5-29):

1. Set the Set Connect Mgmt parameter to “up.”
2. Choose OK.

From the NLS Tunnel window

To enable an NLS Tunnel from the NLS Tunnel window (Figure 5-11 on page 5-28):

1. Select the connection from the Attached NLS Tunnels list. The NLS Tunnel Options window appears (Figure 5-13).
2. Choose the Connect Mgmt button. The Connection Management window appears.

3. Choose the Connect button. The connection is now enabled.

Breaking a Connection

To break (disconnect) a connection:

1. Select the connection from the connections list in the Attached NLS Tunnels window (Figure 5-11 on page 5-28). The NLS Tunnel Options window appears (Figure 5-13).
2. Choose the Connect Mgmt button. The Connection Management window appears.
3. Choose the Disconnect button. The tunnel is disconnected.

> *Disconnecting a tunnel does not remove the tunnel configuration from the SA 100 database. You can reconnect it at any time using the procedure described in "Making a Connection" on page 5-38.*

Viewing MAC Address Cache Information

To view the MAC address cache information:

1. Select the group from the list of defined Groups in the NLS Groups window (Figure 5-8). The NLS Group Options window appears (Figure 5-10).

2. Choose the MAC button. The MAC Address Cache window appears (Figure 5-14):

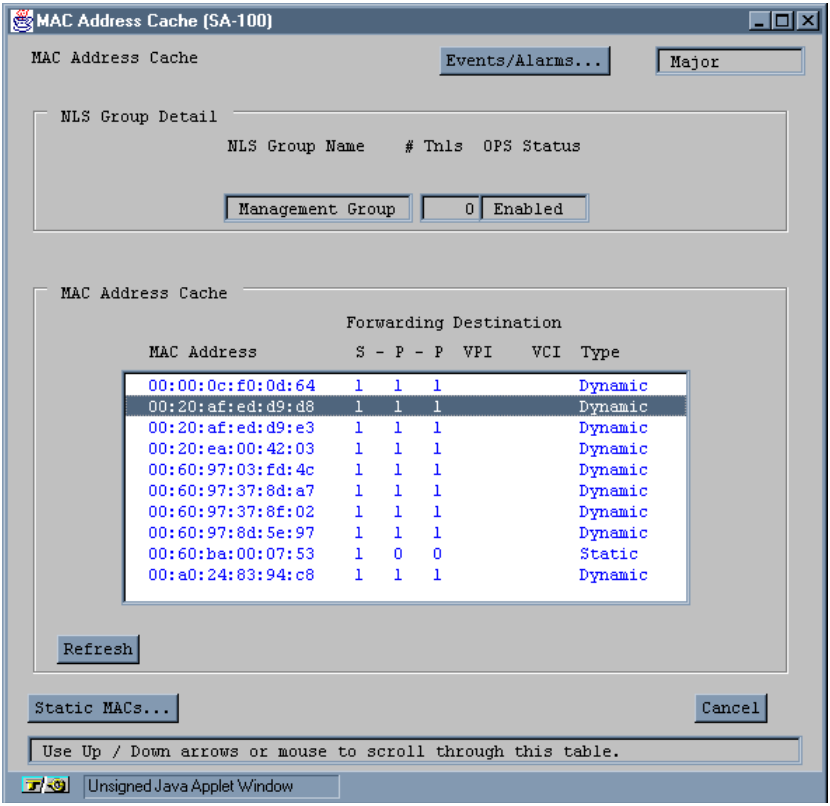

Figure 5-14. MAC Address Cache Window

3. Refer to Table 5-5 for details on the MAC Address Cache window.

Note that one MAC address has a Slot-POD-Port of 1-0-0, an exception to the usual Slot-POD-Port designation. Each Ethernet port is given a static MAC address at startup and designated S-P-P 1-0-0. This MAC address (like all static MAC addresses) never ages out from the MAC address table, nor may it be deleted by the user.

Table 5-5. MAC Address Cache Fields and Buttons

Field/Button	Type	Action/Description
NLS Group Detail		
NLS Group Name	read-only	Display NLS Group name.
# Tnls	read-only	Displays the number of tunnels established for this NLS group.
OPS Status	read-only	Displays the operational state of the group: up or down.
MAC Address Cache		
MAC Address	read-only	Displays MAC addresses in cache.
Forwarding Destination fields:		
S-P-P	read-only	Displays the forwarding destination (slot, POD, port numbers) of this MAC Address.
VPI	read-only	Displays forwarding destination VPI of this MAC address.
VCI	read-only	Displays forwarding destination VCI of this MAC address.
Type	read-only	Displays the MAC address type.
Refresh	command button	Refreshes the data displayed in this window.
Static MACs	command button	Displays the Static MAC addresses screen. See “Defining Static MAC Addresses” on page 5-43 for details.

Defining Static MAC Addresses

Static MAC addresses may be assigned within each NLS Group. To view assigned static MAC addresses, choose the Static MACs button from the MAC Address Cache window. The Static MAC Addresses window appears (Figure 5-15), showing the current NLS Group Name, number of tunnels and OPS status, along with a table of Static MAC Addresses, forwarding destinations, and connection types:

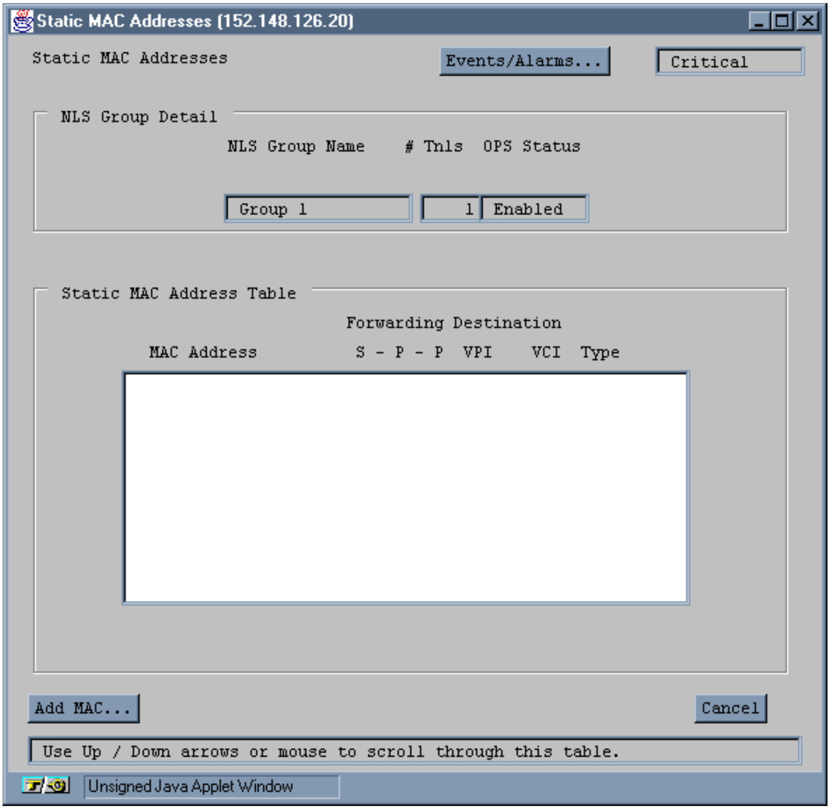

Figure 5-15. Static MAC Adresses Window

To add a static MAC address:

1. Choose the Add MAC button in the Static MAC Addresses window. The Add Static MAC Address window appears (Figure 5-16 on page 5-44):

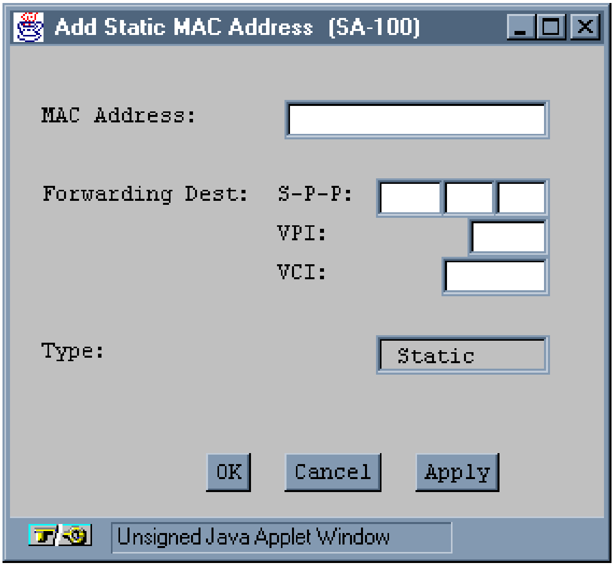

Figure 5-16. Add Static MAC Address Window

2. Complete the fields described in Table 5-6, then choose OK. The new static MAC address is added to the Static MAC Address Table in the Static MAC Addresses window.

Table 5-6. Add Static MAC Address Fields and Buttons

Field/Button	Type	Action/Description
Port Detail		
MAC Address	read-write	Specify the new Static MAC Address, six two-character hexadecimal numerals separated by colons.
Forwarding Destination fields:		
S-P-P	read-write	Specify the forwarding destination (slot, POD, port numbers) of this MAC Address.
VPI	read-write	Specify the forwarding destination VPI of this MAC address.
VCI	read-write	Specify the forwarding destination VCI of this MAC address.
Type	read-only	Always displays Static, the type of MAC address being added.

Deleting Static MAC Addresses

To remove a Static MAC Address from the database:

1. Select it from the Static MAC Addresses Table in the Static MAC Addresses window. The Static MAC Address Options window appears (Figure 5-17):

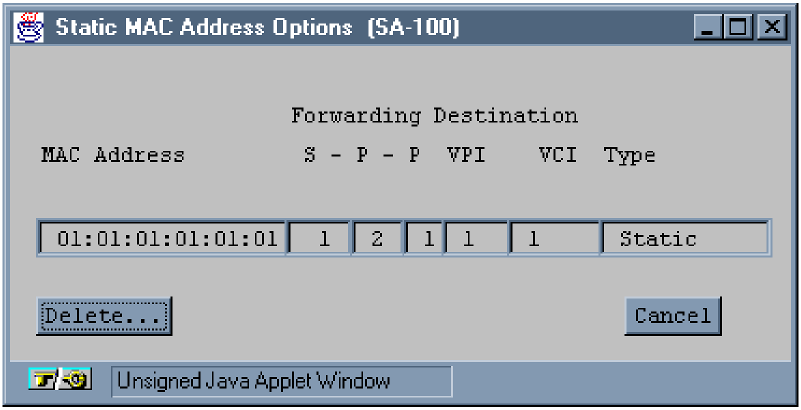

Figure 5-17. Static MAC Address Options Window

2. Choose the Delete button to delete the displayed MAC address from the table. A warning dialog box appears, prompting you for confirmation of this action. Choose Yes to confirm deletion of this static MAC address.

Configuring Circuit Emulation Services

To configure Circuit Emulation Services:

From the Main menu:

1. Choose the Service Management button. The Select Service window appears (Figure 5-1 on page 5-2).

2. Choose the Circuit Emulation (CES) button. The Select CES Port window appears (see Figure 5-18).

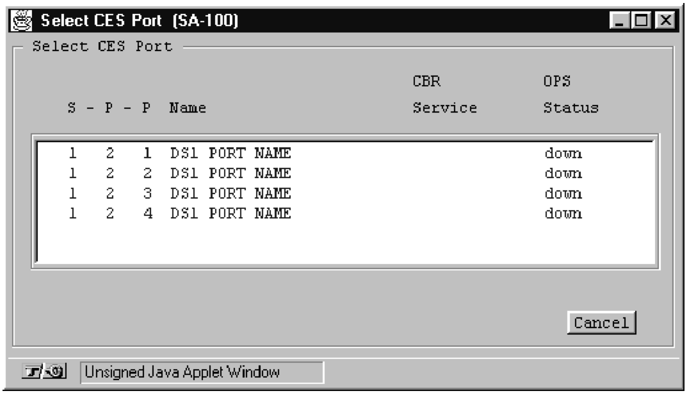

Figure 5-18. Select CES Port Window

3. Select the port you want to configure and the Configure CES Connections window appears (see Figure 5-19).

From the Configure DS1 or E1 Port window:

4. After you configure the ports of a DS1/E1 Circuit POD, as described in “Configuring a DS1/E1 Port” on page 4-8, choose the Next Logical Layer button in the Configure DS1/E1 Port window and the Configure CES Connections window appears (see Figure 5-19).

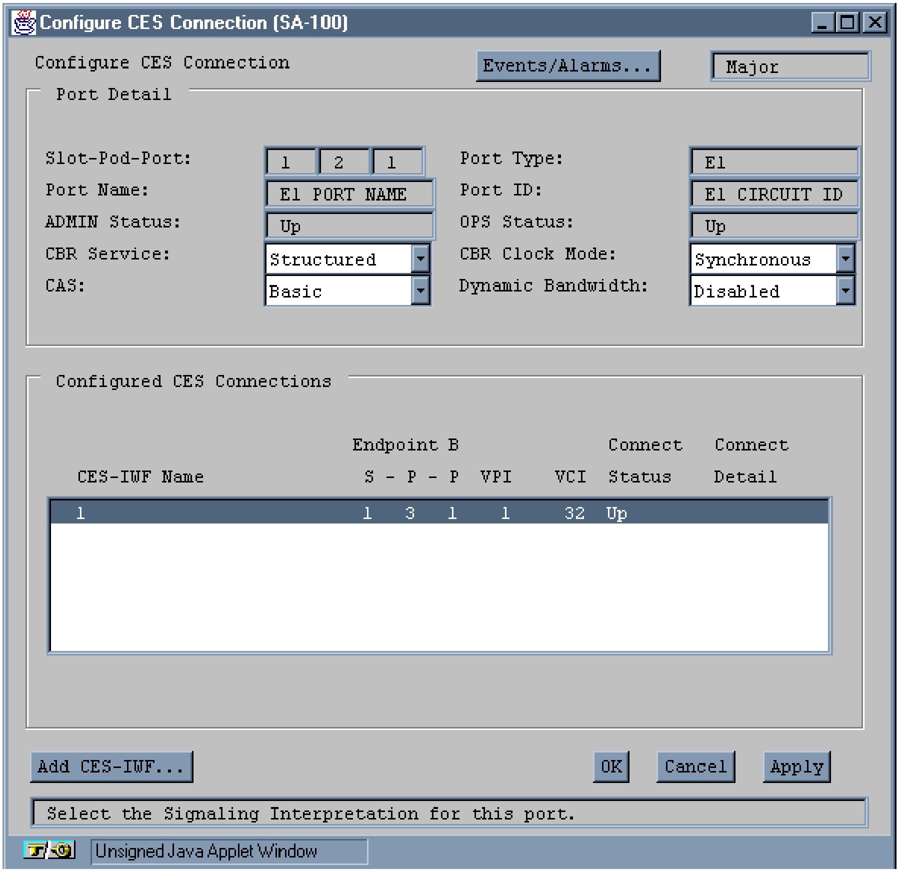

Figure 5-19. Configure CES Connection Window

5. Complete the fields described in Table 5-7 to configure the circuit emulation service.

Table 5-7. Configure CES Connection Fields and Buttons

Field/Button	Type	Action/Description
Port Detail		
Slot-POD-Port	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot field is always "1."
Port Type	read-only	Displays the type of port.
Port Name	read-only	Displays the user designation of the port.
Port ID	read-only	Displays the user identification of the port.
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
CBR Service	read/write	Select the constant bit rate service of the port: • *Unstructured* (default) – Specifies unstructured constant bit rate service, which permits only one CES-IWF per port. • *Structured* – Specifies structured constant bit rate service, which permits more than one CES-IWF per port.
CBR Clock Mode	read/write	Specify the clock mode of the constant bit rate service of the port. Synchronous is the only clock mode that the SA 100 supports at this time.

Table 5-7. Configure CES Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
CAS	read/write	Specify the channel associated signaling AAL1 format for this port: • *Basic* (default) – Selects the basic channel associated signalling format. • *E1Cas* – Selects the E1 channel associated signalling format. • *Ds1SFCas* – Selects the DS1 superframe channel associated signalling format. • *Ds1ESFCas* – Selects the DS1 extended superframe channel associated signalling format. • *J2jt2Cas* – Not supported.
Dynamic Bandwidth (Structured CBR Service only)	read/write	Set Dynamic Bandwidth Allocation to Enabled or Disabled on this port. • *Enabled* (default) – permits operation of the DBA function on any CES-IWF for which DBA is enabled. • *Disabled* – prevents the DBA function from operating; i.e., each CES-IWF function's transmitter will remain enabled at all times, never allowing free bandwidth to be utilized by the DBA function. This setting acts as a global DBA control mechanism for the entire port. To enable or disable DBA on individual IWFs, see "Configuring Dynamic Bandwidth Allocation" on page 5-63.

Table 5-7. Configure CES Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Configured CES Connections		
CES-IWF Name	read-only	Displays the user designation of each configured circuit emulation interworking function on this port. Choosing a CES-IWF from this list opens the window for "optioning" your selection. Optioning includes the ability to modify, delete, connect, disconnect and obtain statistics concerning the CES-IWF.
Endpoint B S-P-P	read-only	Displays the slot-POD-port numbers at endpoint B of each configured circuit emulation interworking function on this port.
Endpoint B VPI	read-only	Displays the virtual path identifier at endpoint B of each configured circuit emulation interworking function on this port.
Endpoint B VCI	read-only	Displays the virtual channel identifier at endpoint B of each configured circuit emulation interworking function on this port.
Connect Status	read-only	Displays the state of the connection of each configured circuit emulation interworking function on this port: up or down.

Table 5-7. Configure CES Connection Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Connect Detail	read-only	Displays error codes if any failure is present on this CES connection. Possible error conditions include: • *VpvcUsed* — "Port / VPI / VCI" of either source or destination is already used. • *vpi-OOR* — VPI of either the source or destination is out of range. • *vci-OOR* — VCI of either the source or destination is out of range. • *vpi-Rsvd* — PVCs source or destination VPI within range reserved for PVPs. • *pvp-OOR* — PVPs source or destination VPI outside range reserved for PVPs. • *rate-OOR* — PCR/SCR in traffic descriptor out of range. Depending on service category: PCR is less than SCR, or rate descriptor is non-0 when it should be 0, or rate is 0 when it should be non-0. • *desc-OOR* — Traffic Descriptor out of range. One or more of these is not in the list of MIB enumerations: Service Category, Congestion Action, or Buffer Size. • *port-bad* — The results of the power-on self-test have disabled this port.
Add CES-IWF	window button	Enables you to add circuit emulation interworking functions to the port.

Configuring CES Interworking Functions

The following sections describe how to:

- Add a CES interworking function to a port (page 5-54)
- Modify a CES interworking function (page 5-66)
- Delete a CES interworking function (page 5-72)
- Make a CES interworking function (page 5-73)
- Break a CES interworking function (page 5-74)

Adding a CES Interworking Function to a Port

To add and configure a CES interworking function to a port:

1. Choose the Add CES-IWF button on the Configure CES Connection window.

   Depending on how you configured the Set CBR Service parameter in the Configure CES Connection window, the following occurs:

   a. If you Set CBR Service to “Unstructured” (the default), the Add Unstructured DS1 CES-IWF window (see Figure 5-20) or the Add Unstructured E1 CES-IWF window (see Figure 5-21) appears.

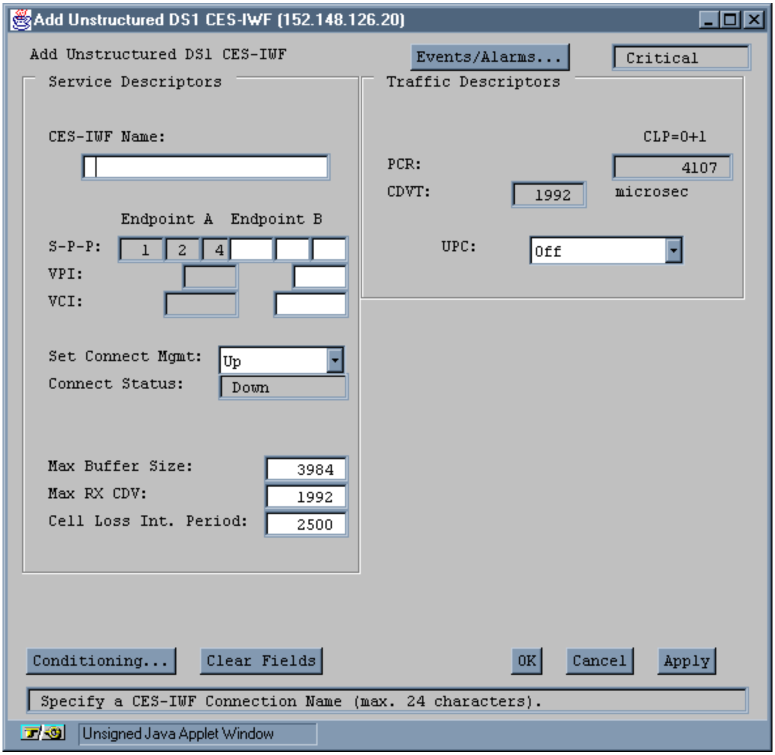

Figure 5-20. Add Unstructured DS1 CES-IWF Window

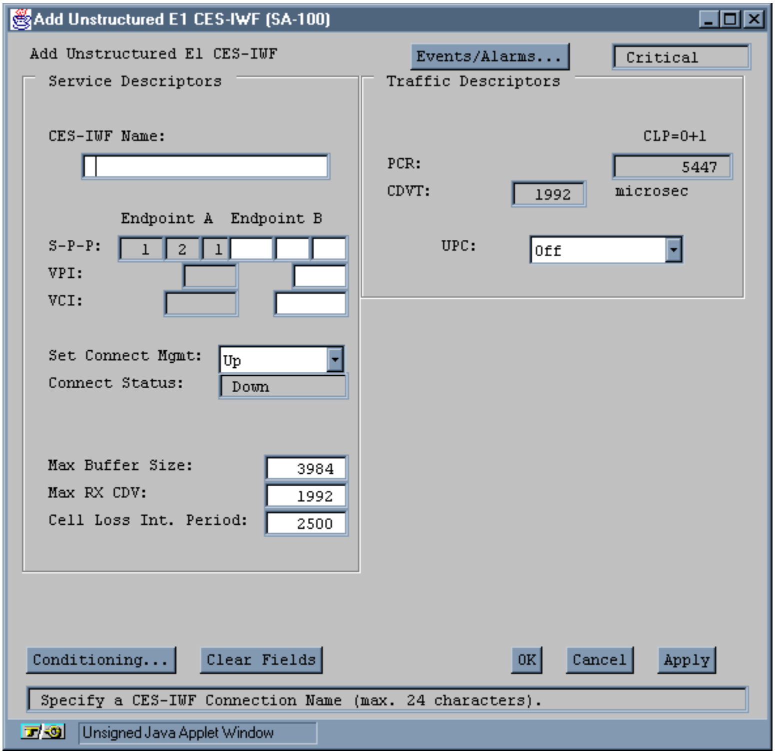

Figure 5-21. Add Unstructured E1 CES-IWF Window

b. If you Set CBR Service to “Structured”, the Add Structured DS1 CES-IWF window (see Figure 5-22) or the Add Structured E1 CES-IWF window appears (see Figure 5-23).

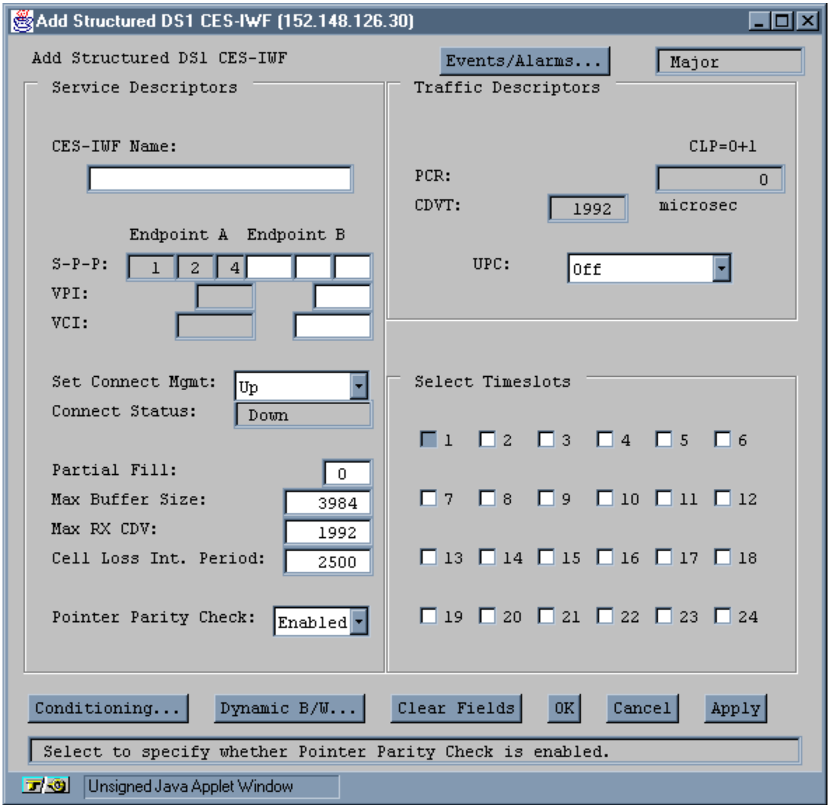

Figure 5-22. Add Structured DS1 CES-IWF Window

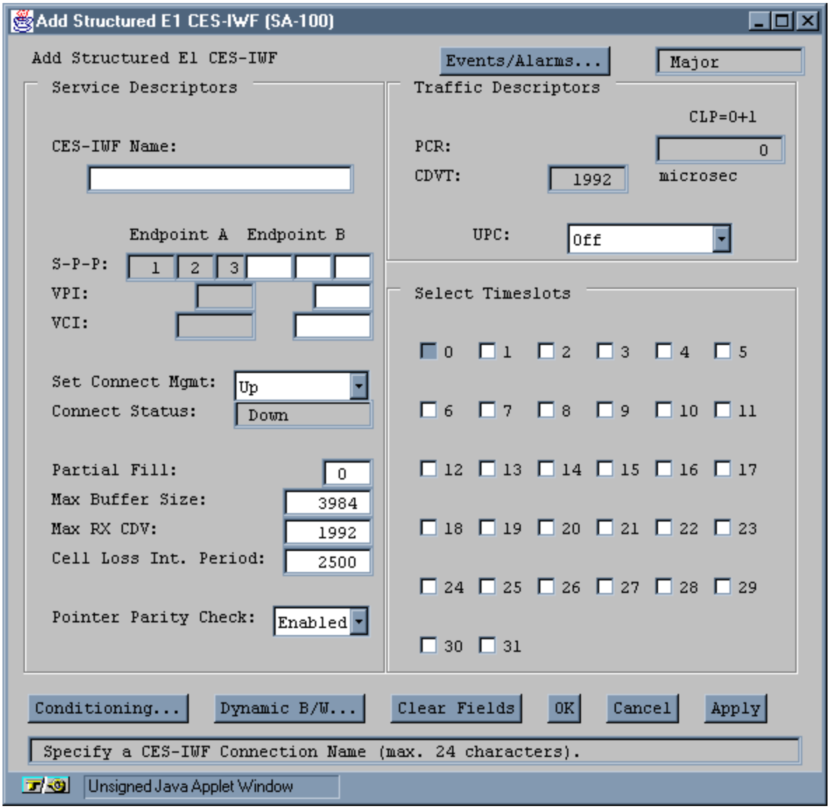

Figure 5-23. Add Structured E1 CES-IWF Window

2. Complete the fields described in Table 5-8, as appropriate.

3. When you finish setting parameters, choose the Conditioning button. The Conditioning window appears (Figure 5-24).

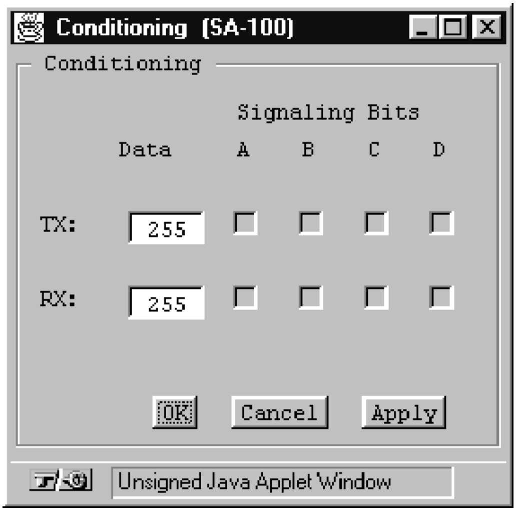

Figure 5-24. Conditioning Window

For unstructured CBR:

4. Enter the TX and RX Data parameters as required and choose OK. With unstructured constant bit rate service, signaling bit conditioning is not an option, therefore the TX and RX Signaling Bits parameters A-B-C-D are not selectable.

   Conditioning serves the following functions:

   - When the SA 100 discovers that the local DS1/E1 circuit is down (a loss of frame condition), it sends the contents of the TX Data conditioning parameter to the remote interworking function (to replace the lost live traffic).

   - When the SA 100 discovers that the remote end of the interworking function is down, it sends the contents of the RX Data conditioning parameter over the DS1/E1 circuit (to replace the lost live traffic). It also continues to send the same signaling (the signaling is “frozen”) that was present at the time the SA 100 discovered that the remote end was down.

5. When you are finished, choose OK to close the Conditioning window and return to the Add Unstructured DS1/E1 CES-IWF window.

For structured CBR:

6. Enter the TX and RX Data parameters as required.

7. Configure the signaling bit conditioning according to the type of channel associated signaling (CAS) that is associated with the structured constant bit rate service:

   - With basic CAS, signaling bit conditioning is not an option, therefore the TX and RX Signaling Bits parameters A-B-C-D are not selectable.
   - With D4 CAS, two-bit signaling bit conditioning is available, therefore you may enter the TX and RX Signaling Bits parameters A-B, but not the parameters C-D.
   - With ESF CAS, four-bit signaling bit conditioning is available, therefore you may enter TX and RX Signaling Bits parameters A-B-C-D.

   If signaling bit conditioning is an option (D4 and ESF CAS), the SA 100 sends the contents of the Signaling Bits parameter over the DS1/E1 circuit after the cell loss integration period has expired, which by default is 2.5 seconds after the SA 100 discovered that the remote end was down.

8. When you are finished, choose OK to close the Conditioning window and return to the Add Structured DS1/E1 CES-IWF window.

9. If desired, configure Dynamic Bandwidth Allocation by choosing the Dynamic B/W button from the Add Structured DS1/E1 CES-IWF window. See "Configuring Dynamic Bandwidth Allocation" on page 5-63 for details.

Table 5-8. Add Unstructured/Structured DS1/E1 CES-IWF Fields and Buttons

Field/Button	Type	Action/Description
Service Descriptors		
CES-IWF Name	read/write	Specify the user designation of this circuit emulation interworking function (24 characters max).
Endpoint A S-P-P	read only	Displays the location (slot-POD-port numbers) of endpoint A of this circuit emulation interworking function. Since there is only one slot in the SA 100, the S field is always “1.”
Endpoint B S-P-P	read/write	Specify the location (slot-POD-port numbers) of endpoint B of this circuit emulation interworking function.
Endpoint B VPI	read/write	Specify the virtual path identifier at endpoint B of this circuit emulation interworking function.
Endpoint B VCI	read/write	Specify the virtual channel identifier at endpoint B of this circuit emulation interworking function.
Set Connect Mgmt	read/write	Specify the administrative state of the connection of this circuit emulation interworking function. • *up* (default) – The connection comes up when you choose the OK or Apply button. • *down* – The connection is inoperative when you choose the OK or Apply button.

Table 5-8. Add Unstructured/Structured DS1/E1 CES-IWF Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Connect Status	read-only	Displays the operational state of the connection of this circuit emulation interworking function: up or down.
Partial Fill (Structured only)	read/write	Sets/displays the number of user octets per cell for this circuit emulation interworking function: 0 to 47 (0 disables this function). (The minimum number of user octets depends on the number of DS0s and the selected signalling type.)
Max Buffer Size	read/write	Specify the maximum size of the reassembly buffer in 10 microsecond increments. The default of 1250 equals 12500 microseconds. As a general rule, set this parameter to twice the value of the Max RX CDV parameter.
Max RX CDV	read/write	Specify the maximum received cell arrival jitter in microseconds. Default is 1992 microseconds.
Cell Loss Int. Period	read/write	Specify the cell loss integration period in milliseconds. Default is 2500 milliseconds.
Pointer Parity Check (Structured only)	read/write	Specify whether the pointer parity check is enabled or disabled (on or off). Default is enabled.
Traffic Descriptors		
PCR (CLP=0+1)	read-only	Displays the peak cell rate, where the cell loss priority is 0+1.
CDVT (microsec)	read-only	Displays the cell delay variation timing in microseconds.

Table 5-8. Add Unstructured/Structured DS1/E1 CES-IWF Fields and Buttons (Continued)

Field/Button	Type	Action/Description
UPC	read/write	Specify whether usage parameter control is enabled or disabled (on or off). Default is off.
Select Timeslots (Structured)		
1 - 24 (DS1 only) 0-31 (E1 only)	read/write	Sets/displays the timeslots for this circuit emulation interworking function: 1 to 24 for DS1 ports, 0 to 31 for E1 ports.
Conditioning	window button	Opens a window for configuring the transmit and received data conditioning.
Dynamic B/W (Structured only)	window button	Opens a window for configuring the dynamic bandwidth allocation for this CES-IWF.
Clear Fields	command button	Enables you to delete the data you have entered in the following fields: CES-IWF Name, Endpoint B S-P-P, VPI and VCI.

Configuring Dynamic Bandwidth Allocation

Structured CES interworking functions can take advantage of Dynamic Bandwidth Allocation to send idle cells out the trunk port when the selected CES-IWF is not in use. The Dynamic Bandwidth Allocation function monitors the selected IWF, and when it senses that the IWF is not in use, DBA disables the IWF’s transmitter and begins sending idle cells out the trunk port. If DBA senses the IWF returning to in-use, the IWF’s transmitter is re-enabled.

Dynamic Bandwidth Allocation of CES interworking functions is accomplished by allowing combinations of various control sources to control the transmitter of individual IWFs. Using the Dynamic Bandwidth dialog box, you can select the control sources which determine whether an IWF is in-use or not in-use. If multiple control sources are selected, *all* DS0’s within the CES-IWF must meet *all* selected criteria for the IWF to be considered not in-use and the Dynamic Bandwidth Allocation function to operate. Table 5-9 shows when a transmitter is enabled or disabled based on the selected control sources.

Table 5-9. Transmitter Control Sources

Control Source	Transmitter Enabled When...	Transmitter Disabled When...
Signalling codes	at least one channel is ‘off-hook’	NO channels are ‘off-hook’
LOS Alarm	LOS alarm is inactive	LOS alarm is active
Cell Loss Status	No cell loss is reported	Cell loss is reported

As Table 5-9 shows, a IWF’s transmitter may be enabled or disabled. When an interworking function is in-use, it’s transmitter is enabled, sending AAL1 cells toward the switch fabric and out the trunk port. When an IWF is not in-use, the transmitter is disabled, no cells are sent toward the switch fabric, and DBA sends idle cells out the trunk port. Bandwidth previously used for the IWF may be used for other lower-priority services.

There is no interaction with connection management system - all connections in the cross-connect table remain intact.

To configure Dynamic Bandwidth Allocation on a structured CES-IWF:

1. Select the Dynamic Bandwidth button from the Add Structured DS1/E1 CES-IWF window. The Dynamic Bandwidth window appears (Figure 5-25).

> *The CES-IWF must have been set to Dynamic Bandwidth: Enabled in the in the Configure CES Connection window, or the Dynamic Bandwidth button will be unavailable in the Add Structured DS1/E1 CES-IWF window. The DBA setting in the Configure CES Connection window acts as a global DBA control mechanism; if it is disabled, ALL DBA is disabled.*

2. Complete the fields described in Table 5-10, as appropriate, then choose the OK button to return to the Add Structured DS1/E1 CES-IWF window.

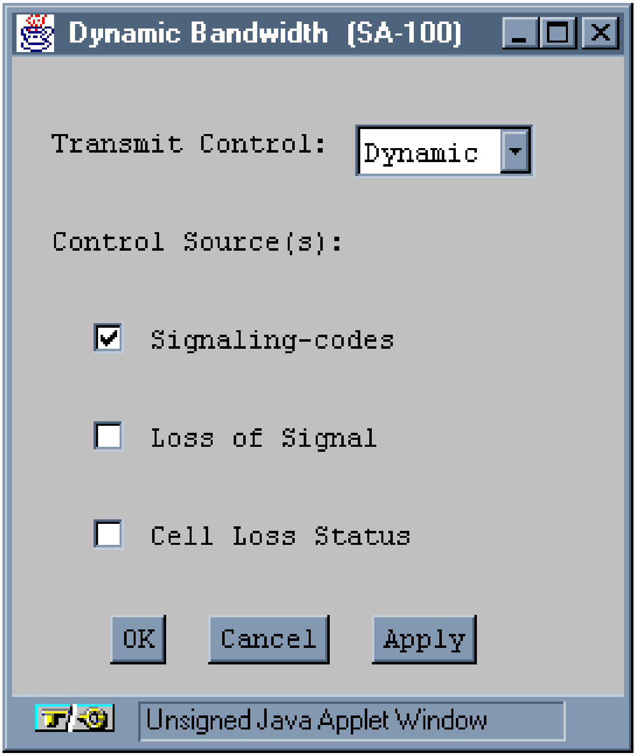

Figure 5-25. Dynamic Bandwidth Window (Structured DS1/E1 CES-IWF only)

Table 5-10. Dynamic Bandwidth Fields and Buttons

Field/Button	Type	Action/Description
Transmit Control	read/write	Specify the Dynamic Bandwidth Allocation transmit control: • *Enabled* (default) – The IWF transmitter is always enabled. • *Disabled* – The IWF transmitter is always disabled. • *Dynamic* –The IWF transmitter is controlled by the selected Control Source(s) (see below).
Control Sources	read/write	Control sources determine whether an IWF is in-use or not-in-use. The criteria of all selected control sources must be satisfied for a port to be considered not-in-use. Select one or more Control Source(s): • Signaling-codes (applies to structured IWF with CAS Super-Frame or Extended Super Frame framing formats only) – The IWF is considered in-use if one or more DS0 in the bundle has a signaling code of off-hook. • *Loss-of-Signal* – The IWF is considered in-use whenever the loss-of-signal alarm is not active. When the loss-of-signal alarm is active, the IWF is considered not-in-use. • *Cell Loss* –The IWF is considered in-use whenever the cell-loss status is ‘no loss’. When cell-loss status is ‘loss’, the IWF is considered not-in-use.

Modifying CES Interworking

To modify a CES-IWF:

1. Select the CES-IWF from the connections list in the Configure CES Connection window. The CES-IWF Options window appears.

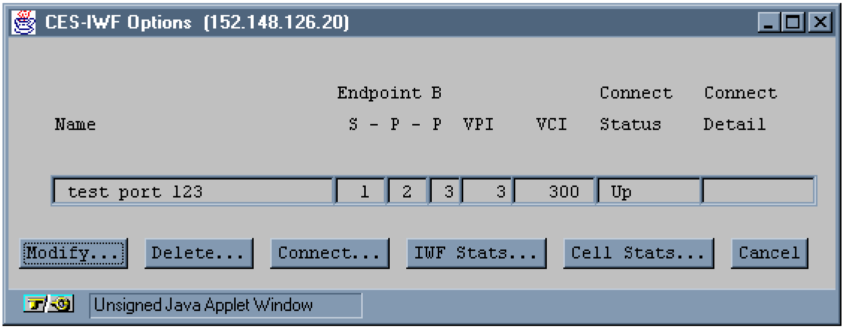

Figure 5-26. CES-IWF Options Window

2. Choose the Modify button to change the settings in the CES-IWF configuration.

   The window that appears depends on how you configured the Set CBR Service parameter in the Configure CES Connection window.

   – If you set CBR Service to Unstructured (the default selection), the Modify Unstructured DS1 CES-IWF window (see Figure 5-27) appears if you are working on a DS1 port; if you are working on an E1 port, the Modify Unstructured E1 CES-IWF window appears (see Figure 5-28).

   – If you set CBR Service to Structured, the Modify Structured DS1 CES-IWF window (see Figure 5-29) appears if you are working on a DS1 port; if you are working on an E1 port, the Modify Structured E1 CES-IWF window appears (see Figure 5-30).

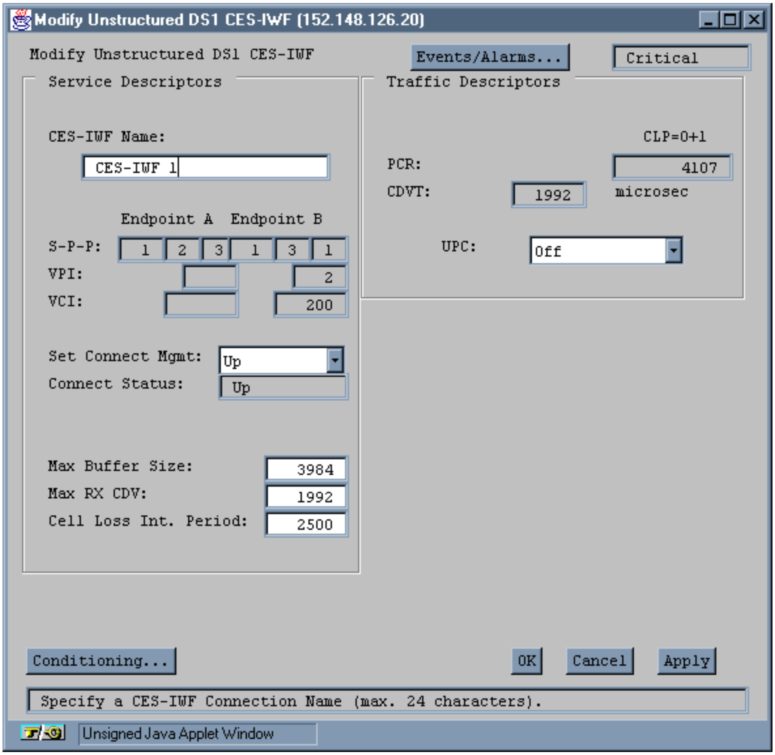

Figure 5-27. Modify Unstructured DS1 CES-IWF Window

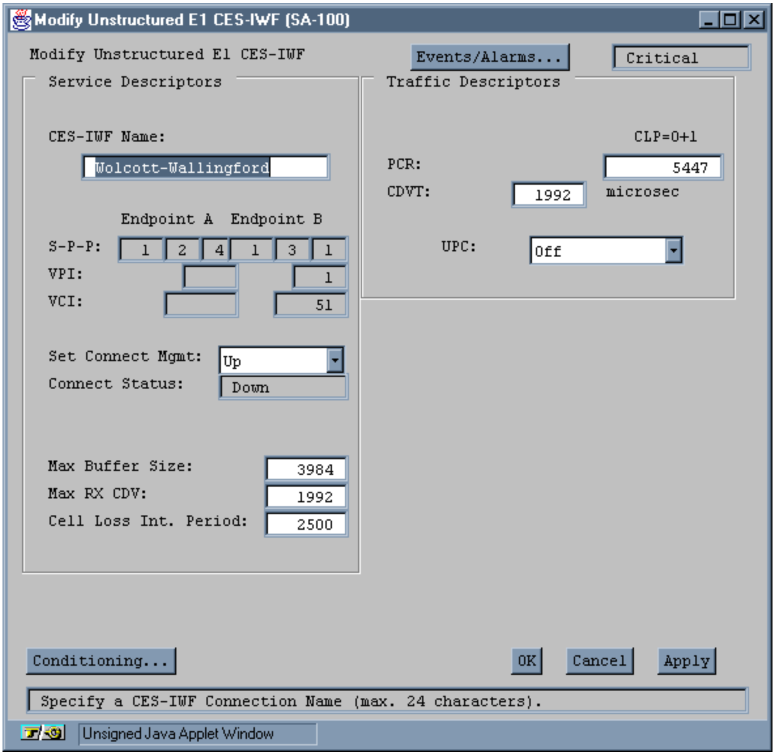

Figure 5-28. Modify Unstructured E1 CES-IWF Window

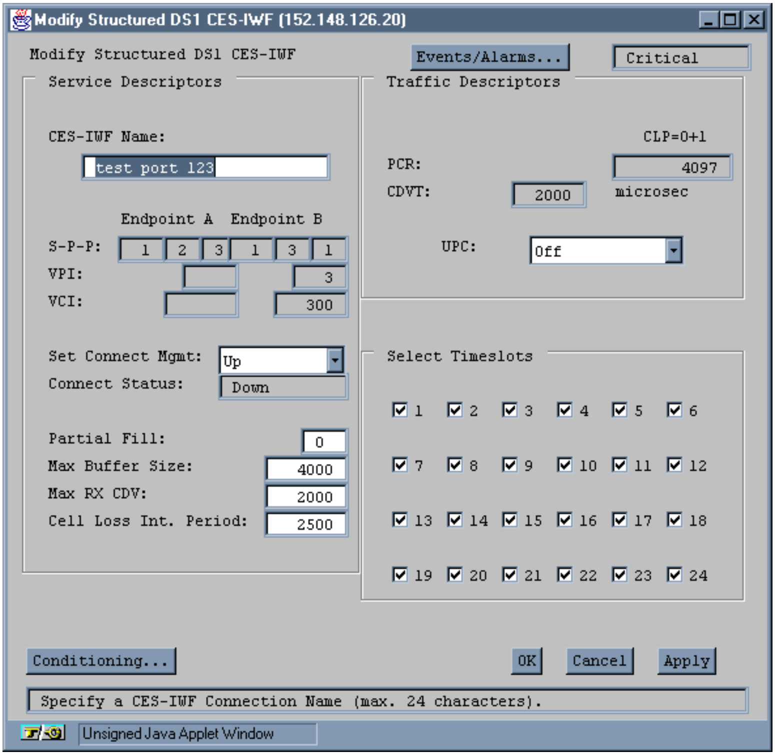

Figure 5-29. Modify Structured DS1 CES-IWF Window

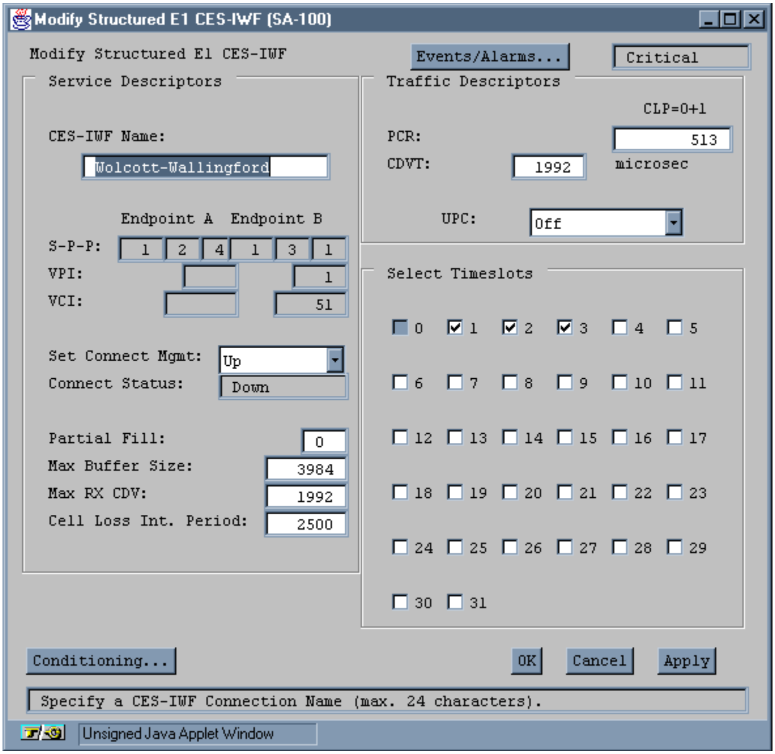

Figure 5-30. Modify Structured E1 CES-IWF Window

3. The following parameters may be modified. Refer to Table 5-8 for details of each parameter.

   - CES-IWF Name
   - Set Connect Mgmt
   - Partial Fill (Structured only)
   - Max Buffer Size
   - Max RX CDV
   - Cell Loss Int. Period
   - UPC

- Timeslots (Structured only)

4. Conditioning may also be modified. (See “Adding a CES Interworking Function to a Port” on page 5-54 and Figure 5-24 on page 5-58 for details on Conditioning.) Select the Conditioning button to open the Conditioning window. Make any necessary changes and click OK to return to the Modify window.

5. When you have finished making your changes, choose OK.

Deleting CES from a Port

To remove the configuration of a CES-IWF from the SA 100 data base:

1. Select the CES-IWF from the Configured CES Connections list in the Configure CES Connection window.
2. When the CES-IWF Options window appears, choose the Connect Mgmt button.
3. When the Connection Management window appears, choose the Disconnect button.
4. When the CES-IWF Options window appears, choose the Delete button.
5. When the Delete CES Connection window appears, choose the Yes button.

You must disconnect the CES-IWF prior to deleting it.

Making a Connection

After you have configured a CES-IWF, you must enable it. You can do this from the Add or Modify Unstructured or Structured DS1 CES-IWF window or from the Configure CES Connection window.

From the Configure CES Connection Window

1. Select the CES-IWF from the Configured CES Connections list in the Configure CES Connection window.
2. When the CES-IWF Options window appears, choose the Connect Mgmt button.
3. When the Connection Management window appears, choose the Connect button.

From the Add or Modify Unstructured or Structured DS1 CES-IWF Window

1. Set the Set Connect Mgmt parameter to "up."
2. Choose the OK or Apply button.

Breaking a Connection

To break (disconnect) a CES-IWF connection:

1. Select the CES-IWF from the connections list in the Configure CES Connection window. The CES-IWF Options window appears.
2. Choose the Connect Mgmt button. The Connection Management window appears.
3. Choose the Disconnect button. The connection is broken.

> *Disconnecting a CES-IWF does not remove the connection configuration from the SA 100 database. You can reconnect it at any time by using "Making a Connection" on page 5-73.*

What’s Next

After you have configured the SA 100 network services, you can use the SA 100 monitoring functions to check the system, as described in Chapter 6, “Monitoring the SA 100”.

6

Monitoring the SA 100

This chapter describes how to monitor the SA 100 at the following levels:

- System (refer to page 6-4)
- Slots (refer to page 6-10)
- Protocol Option Devices (PODs) (refer to page 6-29)
- Ports (refer to page 6-44)
- Logical layers
- Connections (refer to page 6-102 for ATM-UNI connections, page 6-123 for NLS connections and page 6-130 for CES-IWF connections)

Accessing Monitoring Functions

To access the SA 100 monitoring functions, choose the Monitor Status button from the Main menu.

The Monitor Status window appears (see Figure 6-1), displaying a graphical representation of the SA 100 front panel.

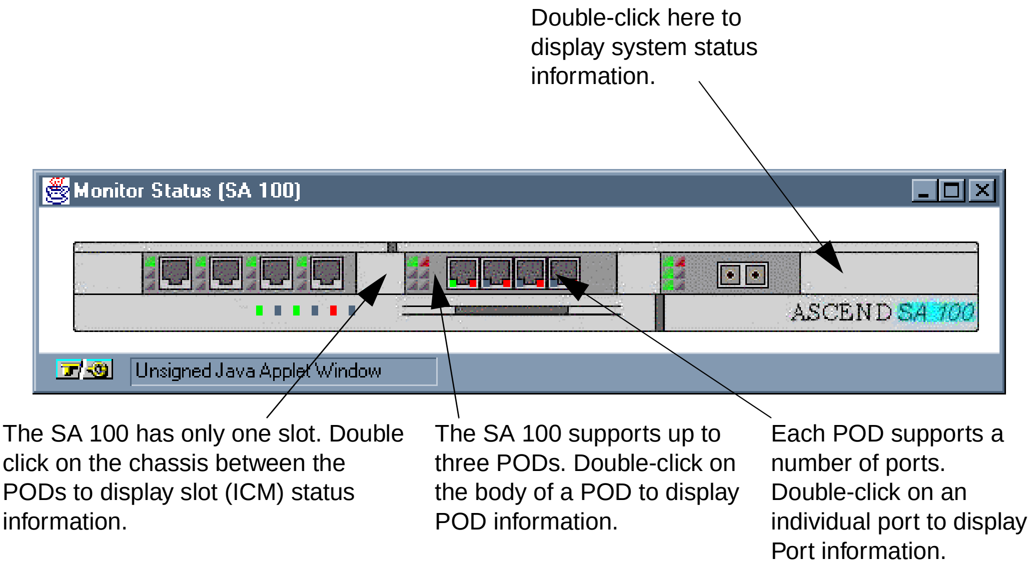

Figure 6-1. Monitor Status Window (Front Panel)

If you move the mouse pointer over this window, callouts appear when the pointer is located over a slot, POD and/or port, or the system as a whole. Double-clicking the mouse while a callout appears enables you to display status information for the indicated system, slot, POD, and/or port.

Front Panel Indicators

The Monitor Status window also displays the current state of each front panel indicator light. Table 6-1 describes the SA 100 front panel indicators. For descriptions of the POD front panel indicators, refer to “Monitoring PODs” on page 6-29.

Table 6-1. SA 100 Front Panel Indicators

Label	Name	Color	Description
PWR	Power	green	On when the SA 100 has power.
RUN	Running	green	Blinks when an SA 100 IPOD or XPOD sends or receives data.
S/W	Software	green	Blinks when the SA 100 ICM receives new software.
CRI	Critical Alarm	red	On when the SA 100 detects a critical alarm.
MAJ	Major Alarm	red	On when the SA 100 detects a major alarm.
MIN	Minor Alarm	yellow	On when the SA 100 detects a minor alarm.

Monitoring System Level Status

To monitor SA 100 at the system level, choose system from the Monitor Status window by double-clicking the blank panels below the PODs or the blank panels to the extreme left or right of the row of PODs (the System callout appears). The Display System Status window appears (see Figure 6-2).

> *Regarding the Select Board list: While some products support multiple boards, the SA 100 hardware has only one slot in its backplane. That slot accepts one board, which is always the interface control module (ICM). Therefore, the Select Board list for the SA 100 displays only the ICM.*

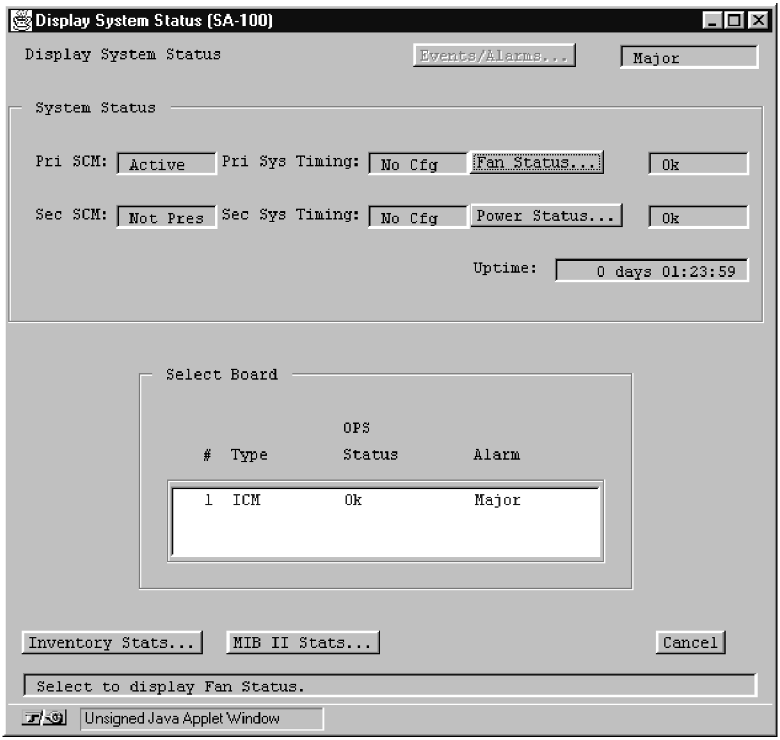

Figure 6-2. Display System Status Window

Table 6-2 describes the buttons and fields in the Display System Status window.

Table 6-2. Display System Status Fields and Buttons

Field/Button	Type	Description
System Status		
Pri SCM	read-only	Displays the state of the primary system control module: Active, No Cfg, or Failed. (There is only one SCM in the SA 100.)
Pri Sys Timing	read-only	Displays the state of primary system timing: Active, No Cfg, or Failed.
Fan Status	window button	Not supported.
Fan Status	read-only	Not supported.
Sec SCM	read-only	Displays the state of the secondary system control module. There is no secondary SCM in the SA 100, therefore, this field displays “Not Pres(ent)”.
Sec Sys Timing	read-only	Displays the state of secondary system timing: Active, No Cfg, or Failed.
Power Status	window button	Not supported.
Power Status	read-only	Not supported.
Uptime	read-only	Displays the amount of time (days, hours, minutes, seconds) that the SA 100 has been operating since it last powered up.
Select Board (see note on page 6-4)		
#	read-only	Since there is only one slot in the SA 100, this field displays “1”.

Table 6-2. Display System Status Fields and Buttons (Continued)

Field/Button	Type	Description
Type	read-only	Displays the type of the board installed in the SA 100. Since there is only one slot in the SA 100 and it contains the interface control module, this field displays "ICM."
OPS Status	read-only	Displays the operational status of the board installed in the SA 100.
Alarm	read-only	Displays the current highest-level alarm, if any, associated with the board installed in the SA 100, i.e., the ICM.
(Other Buttons)		
Inventory Status	window button	Enables you to display rack and backplane information. Since the SA 100 uses only one type of rack and backplane, these fields display "sa100" and "sa-1200-r3," respectively. See "Viewing System Inventory Information" on page 6-7.
MIB II Stats	window button	Opens the MIB II Statistics window, enabling you to view information on various Management Information Base groups. See "Viewing System MIB Statistics" on page 6-8.

Viewing System Inventory Information

To display "inventory" information about the system, choose the Inventory Stats button on the Display System Status window. The System Inventory Statistics window appears, providing the following system inventory information:

- **Rack Type –** This parameter indicates the type of rack used by the SA 100 (always "sa100").
- **Backplane Type –** This parameter indicates the type of backplane used by the SA 100 (always "sf-1200-r3").

Viewing System MIB Statistics

To display Management Interformation Base (MIB) statistics about the system, choose the MIB II Stats button on the Display System Status window. The MIB II Statistics window appears (Figure 6-3):

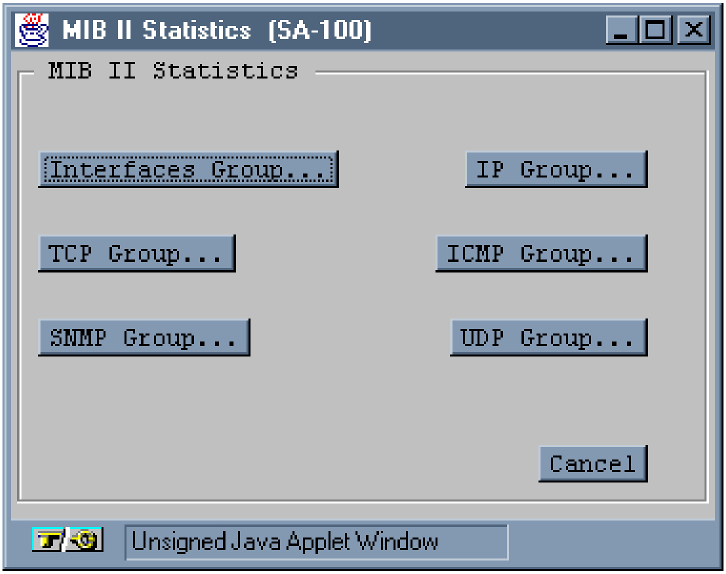

Figure 6-3. MIB II Statistics Window

Choose the button for the group of statistics you want to view. The groups are described in Table 6-3.

Table 6-3. MIB II Statistics Buttons

Button	Type	Description
Interfaces Group	command button	Displays statistics on the MIB II Interface Group.
TCP Group	command button	Displays statistics on the MIB II TCP Group.
SNMP Group	command button	Displays statistics on the MIB II SNMP Group.
IP Group	command button	Displays statistics on the MIB II IP Group.
ICMP Group	command button	Displays statistics on the MIB II ICMP Group.
UDP Group	command button	Displays statistics on the MIB II UDP Group.

The MIB is a database of information maintained by the agent that the management can query or set. For details of the MIB, refer to RFC-1213, which defines MIB II for use with network managment protocols in TCP/IP-based internets. SA 100-specific MIB parameters are covered in *Ascend Broadband Access Enterprise MIB* (product code #80055).

Monitoring the Slot

> *There is only one slot in the SA 100, which houses the interface control module (ICM).*
>
> *In this section, "slot," "board," and "ICM" are used interchangeably. For example, "monitoring the slot" is the same as monitoring the board or ICM.*

To monitor the SA 100 ICM, you first select the slot in one of two ways:

- Choose the slot from the Monitor Status window (the callout displays Slot: 1).
- Choose the system from the Monitor Status window (no callout appears).

  When the Display System Status window appears, select Slot 1 from the Select Board list.

The Display Board Status window appears (see Figure 6-4).

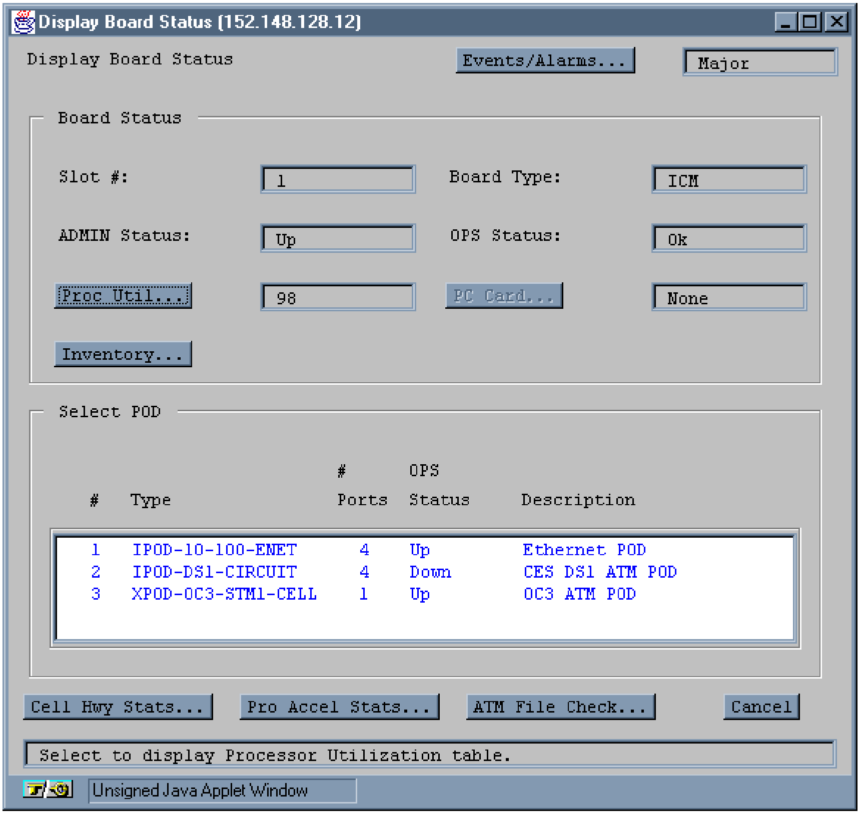

Figure 6-4. Display Board Status Window

Table 6-4 describes the fields and buttons in the Display Board Status window.

Table 6-4. Display Board Status Fields and Buttons

Field/Button	Type	Description
Board Status		
Slot #	read-only	Displays the slot number of the ICM installed in the SA 100. Since there is only one slot in the SA 100, this field is always "1."
Board Type	read-only	Displays the type of the board installed in the SA 100. Since there is only one slot in the SA 100 and it contains an interface control module, this field is always "ICM."
ADMIN Status	read-only	Displays the administrative state (up or down) of the ICM.
OPS Status	read-only	Displays the operational state (up or down) of the ICM.
Proc Util	window button	Opens a window that displays how the microprocessor on the ICM is being used. See "Viewing Microprocessor Utilization" on page 6-14.
Proc Util	read-only	Displays a percentage indicating how much of the SA 100 microprocessor's capacity is being used.
PC Card	window button	Not currently supported.
PC Card	read-only	Not currently supported.
Inventory	window button	Enables you to display a variety of "inventory" information concerning the ICM.

Table 6-4. Display Board Status Fields and Buttons (Continued)

Field/Button	Type	Description
Select POD		
#	read-only/ selectable item	Displays the POD number (1, 2 or 3) of each POD installed in the ICM. Choose a POD from the list to view its status information (refer to “Monitoring PODs” on page 6-29).
Type	read-only	Displays the type of each POD installed in the ICM.
# Ports	read-only	Displays the number of ports on each POD installed in the ICM.
OPS Status	read-only	Displays the operational state (up or down) of each POD installed in the ICM.
Description	read-only	Displays a brief description of each POD installed in the ICM.
(Command Buttons)		
Cell Hwy Stats	window button	Enables you to pick a cell highway to monitor. Cell highways are circuits in the SA 100 that are used to relay packets between the CPOD and the IPOD(s), XPOD and ICM.
Pro Accel Stats	window button	Enables you to display the status of the ICM Protocol Accelerator.
ATM File Check	window button	Enables you to display the status of ATM files.

Viewing Microprocessor Utilization

To display how the microprocessor capacity on the ICM is being used, choose the Proc Util button in the Display Board Status window. The Processor Utilization window (see Figure 6-5) shows how the microprocessor is being used by the system. Refer to Table 6-5 for field descriptions.

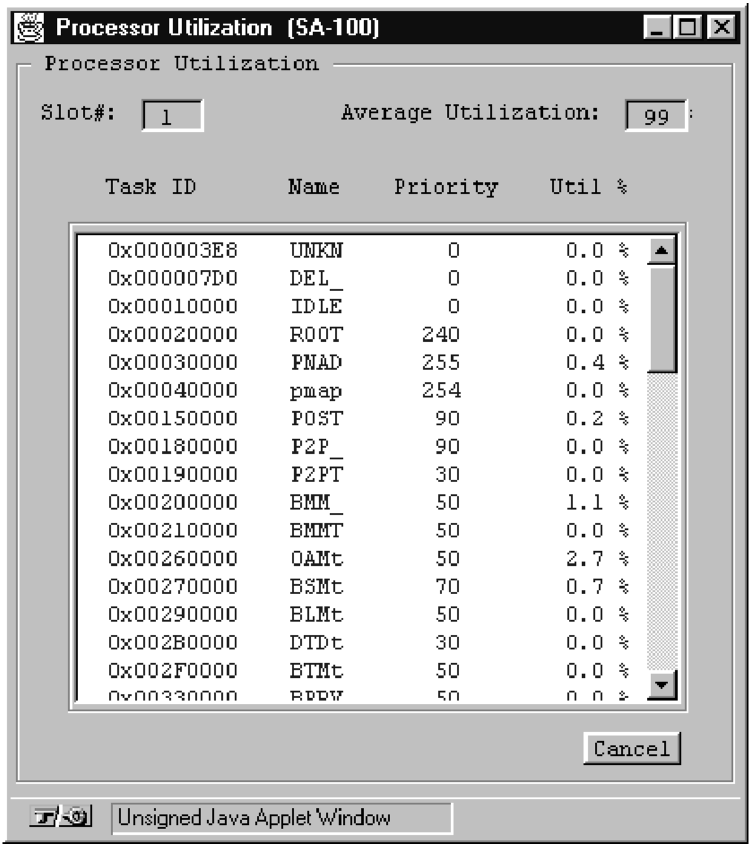

Figure 6-5. Processor Utilization Window

Table 6-5. Processor Utilization Fields

Field (read-only)	Description
Slot#	Displays the slot number of the board/ICM where the microprocessor is located. For the SA 100, this field is always “1.”
Average Utilization	Displays a percentage indicating how much of the microprocessor’s capacity is being used. This field assures the user that the microprocessor is functioning properly. Normally, this field is in the upper 90s. If the field is inordinately low, it may indicate a problem in the microprocessor or the SA 100 software. However, in such a case, it is likely that WebXtend will fail before you are able to view this screen.
Task ID	Displays the hexadecimal number assigned to each function performed by the microprocessor.
Name	Displays the acronym of the name assigned to each function performed by the microprocessor.
Priority	Displays the precedence assigned to each function, the highest number receiving the greatest precedence.
Util %	Displays the percentage of the microprocessor’s capacity being devoted to each function performed by the microprocessor. This field also assures the user that the microprocessor is functioning properly. The majority of functions performed by the microprocessor use less than 10% of the microprocessor’s capacity (most functions require less than 1%). The Util % field jumps to a high reading immediately after a task is performed (e.g., when you open a window, the Util % field for the MENU task may rise over 80%). When the Processor Utilization window is updated (every 5 seconds), the Util % for a performed task should settle down to a much lower reading. If the Util % field remains high for an extended period of time, it may indicate a problem in the SA 100.

Viewing Slot Inventory Information

Each ICM and CPOD (a daughter-board of the ICM) contains unique identity information, such as serial number, assembly number, and manufacture date. These statistics are grouped into a category called “inventory” information.

To display inventory information about the ICM, choose the Inventory button on the Display Board Status window. The Board Inventory Statistics window appears (see Figure 6-6) displaying ICM/CPOD inventory information. Table 6-6 describes the fields in this window. All fields in this window are read-only.

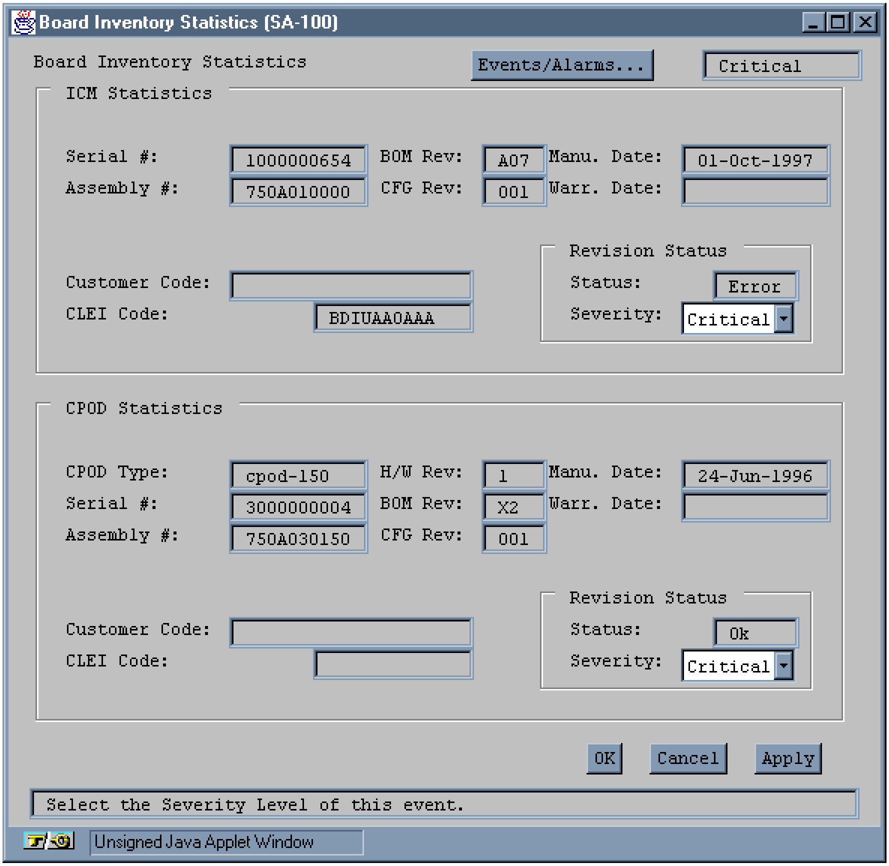

Figure 6-6. Board Inventory Statistics Window

Table 6-6. Board Inventory Statistics Fields

Field	Description
ICM Statistics	
Serial #	Displays ICM serial number.
BOM Rev	Displays bill of material (BOM) revision level of the ICM.
Manu. Date	Displays date that the ICM was manufactured.
Assembly #	Displays ICM assembly part number.
CFG Rev	Displays ICM software configuration revision level.
Warr. Date	Displays ICM warranty date (not supported).
Customer Code	Displays ICM customer code (not supported).
CLEI Code	Displays ICM's Common-Language Equipment Identification.
Revision Status: Status	Displays whether the ICM's revision level is valid to operate with the current software revision.
Revision Status: Severity	Selects the severity level of the alarm associated with an out-of-rev ICM: default, info, minor, major, or critical. The default setting (recommended) compares the revision level of the ICM against a database of component revision levels and reports an alarm based on the revision level of the ICM in relation to the installed software. For example, a recent ICM might elicit only an informational alarm, while a very old revision ICM might elicit a critical alarm.
CPOD Statistics	
CPOD Type	Displays the CPOD type installed on the ICM.
H/W Rev	Displays the CPOD hardware revision level.
Manu. Date	Displays date that the CPOD was manufactured.

Table 6-6. Board Inventory Statistics Fields (Continued)

Field	Description
Serial #	Displays CPOD serial number.
BOM Rev	Displays bill of material revision level of the CPOD.
Warr. Date	Displays CPOD warranty date (not supported).
Assembly #	Displays CPOD assembly part number.
CFG Rev	Displays CPOD software configuration revision level.
Customer Code	Displays customer code for the CPOD (not supported).
CLEI Code	Displays CPOD's Common-Language Equipment Identification.
Revision Status: Valid Rev	Displays whether the CPOD's revision level is valid to operate with the current software revision.
Revision Status: Severity	Selects the severity level of the alarm associated with an out-of-rev CPOD: default, info, minor, major, or critical. The default setting (recommended) compares the revision level of the CPOD against a database of component revision levels and reports an alarm based on the revision level of the CPOD in relation to the installed software. For example, a recent CPOD might elicit only an informational alarm, while a very old revision CPOD might elicit a critical alarm.

Viewing Slot Cell Highway Statistics

Cell highways are the circuits used to relay cells between the CPOD and the IPOD(s), XPOD and Protocol Accelerator in the SA 100.

To display cell highway statistics:

1. Choose the Cell Hwy Stats button in the Display Board Status window. The Select Cell Highway(s) window appears.

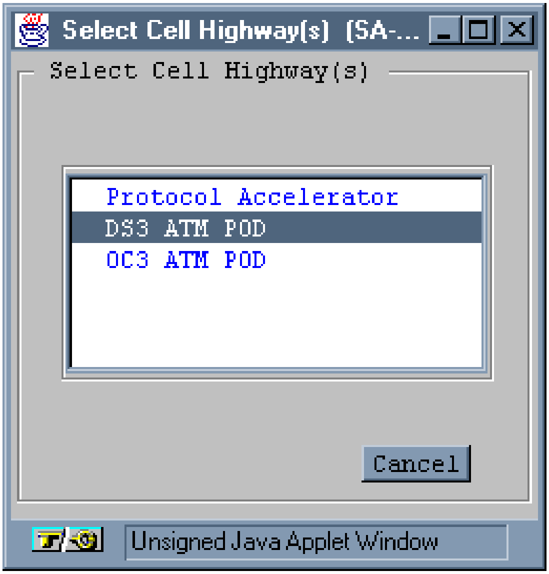

Figure 6-7. Select Cell Highway(s) Window

2. Choose (double-click) the cell highway you want to view. The items in the list represent one end of the cell highway with the SA 100's CPOD at the other end. For example, if "OC3 ATM POD" appears in the list, it represents the cell highway between an OC-3C/STM-1 ATM POD and the CPOD.

   The Cell Highway/Priority Queue Stats window appears (see Figure 6-8), displaying a variety of statistics about the selected cell highway. See Table 6-7 for descriptions of the fields and buttons in this window.

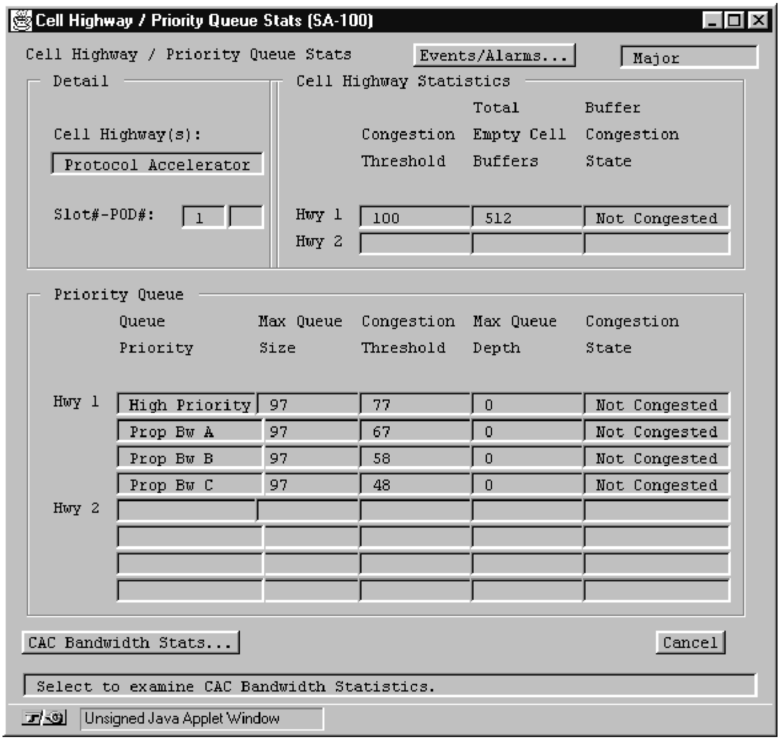

Figure 6-8. Cell Highway/Priority Queue Stats Window

Table 6-7. Cell Highway/Priority Queue Stats Fields and Buttons

Field/Button	Type	Description
Detail		
Cell Highway(s)	read-only	Displays the selected cell highway (with the CPOD at the other end).
Slot#-POD#	read-only	Displays the location (slot and POD number) of the opposite end of the cell highway (the CPOD is at the other end). Since there is only one slot in the SA 100, the Slot# is always "1."
Cell Highway Statistics		
Congestion Threshold (Hwy 1/Hwy 2)	read-only	Displays the congestion threshold of cell highways 1 and 2.
Total Empty Cell Buffers (Hwy 1/Hwy 2)	read-only	Displays the number of empty cell buffers on cell highways 1 and 2.
Buffer Congestion State (Hwy 1/Hwy 2)	read-only	Displays the status of buffer congestion on cell highways 1 and 2.
Priority Queue		
Queue Priority (Hwy 1/Hwy 2)	read-only	Displays the priority queue on cell highways 1 and 2.
Max Queue Size (Hwy 1/Hwy 2)	read-only	Displays the maximum queue size of the priority queue on cell highways 1 and 2.
Congestion Threshold (Hwy 1/Hwy 2)	read-only	Displays priority queue congestion threshold on cell highways 1 and 2.

Table 6-7. Cell Highway/Priority Queue Stats Fields and Buttons (Continued)

Field/Button	Type	Description
Max Queue Depth (Hwy 1/Hwy 2)	read-only	Displays the maximum priority queue depth on cell highways 1 and 2.
Congestion State (Hwy 1/Hwy 2)	read-only	Displays the state of priority queue congestion on cell highways 1 and 2.
(Other Buttons)		
CAC Bandwidth Stats	window button	Opens a window displaying connection admission control (CAC) bandwidth statistics (see Figure 6-9). Table 6-8 describes the fields in the CAC Bandwidth Stats window.

Viewing CAC Bandwidth Statistics

To display statistics concerning the Connection Admission Control bandwidth, choose the CAC Bandwidth Stats button in the Cell Highway/Priority Queue Stats window.

The CAC Bandwidth Statistics window appears (see Figure 6-9), displaying the relevant statistics. Table 6-8 describes the fields and buttons in this window.

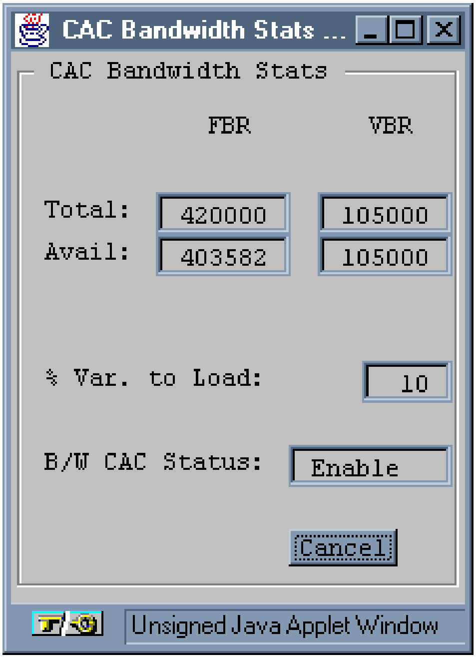

Figure 6-9. CAC Bandwidth Stats Window

Table 6-8. CAC Bandwidth Stats Fields

Field (read-only)	Description
Total FBR	Displays the amount of fixed bandwidth (fixed bit rate, FBR) that has been allocated for connections.
Avail FBR	Displays the remaining fixed bandwidth (fixed bit rate, FBR) available for connections.
Total VBR	Displays the amount of variable bandwidth (variable bit rate, VBR) that has been allocated for connections.
Avail VBR	Displays the remaining variable bandwidth (variable bit rate, VBR) available for connections.
% Var. to Load	Displays the percentage of variable bandwidth that is treated as fixed bandwidth (for the purpose of subtracting the fixed bandwidth that has been allocated for connections from the remaining fixed bandwidth available for connections).
B/W CAC Status	Displays whether bandwidth CAC is enabled or disabled.

Viewing Protocol Accelerator Statistics

To display statistics concerning a Protocol Accelerator on the ICM, choose the Pro Accel Stats button in the Display Board Status window. The Protocol Accelerator Statistics window appears (see Figure 6-10), displaying the status of the Protocol Accelerator. Table 6-9 describes the fields and buttons in this window.

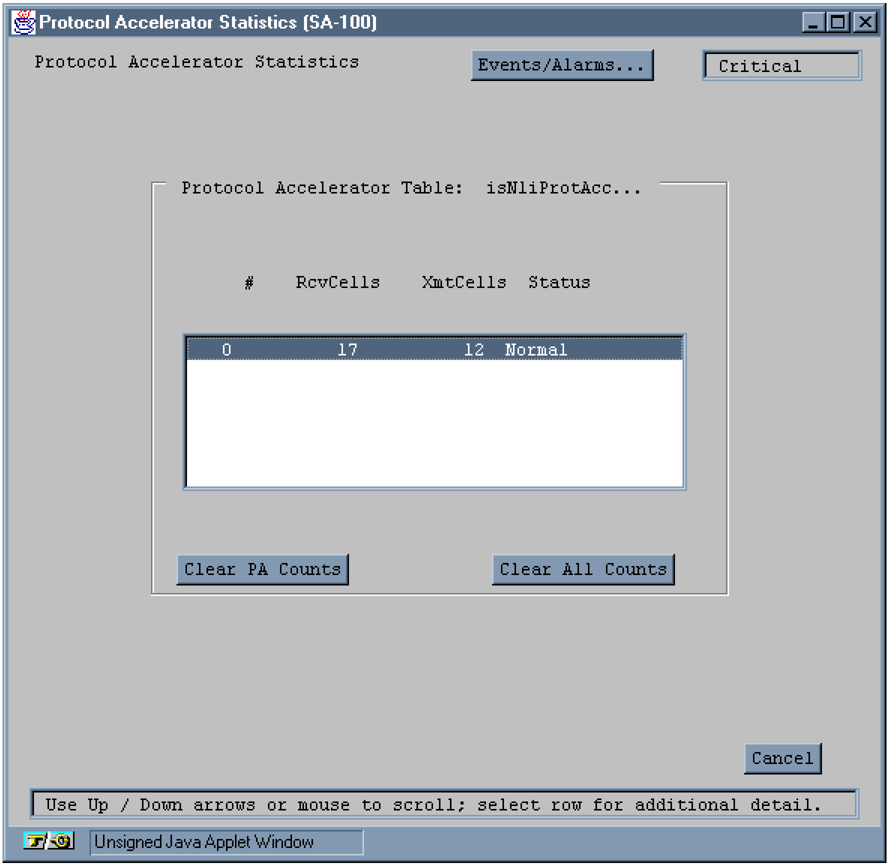

Figure 6-10. Protocol Accelerator Statistics Window

Table 6-9. Protocol Accelerator Statistics Fields and Buttons

Field/Button	Type	Description
#	read-only	Displays the slot number of the ICM where the Protocol Accelerator is located. Since there is only one slot in the SA 100, this field is always “0.”
RcvCells	read-only	Displays the number of cells received by the Protocol Accelerator.
XmtCells	read-only	Displays the number of cells transmitted by the Protocol Accelerator.
Status	read-only	Displays the Protocol Accelerator operational status.
Clear PA Counts	command button	Enables you to reset the Protocol Accelerator counts to zero (0).
Clear All Counters	command button	Enables you to reset the RcvCells and XmtCells counters to zero (0).

Viewing ATM File Check Information

To display the status of ATM files, choose the ATM File Check button in the Display Board Status window. The ATM File Check window appears (see Figure 6-11), displaying the status of the ATM Files. Table 6-10 describes the fields and buttons in this window.

By default, these files will be listed as 'Missing,' meaning that no modified file has been detected. When a file is listed as Missing, the SA 100 uses its default CAC values for that file's parameters. See Appendix F, "Customizing CAC Parameters" for details.

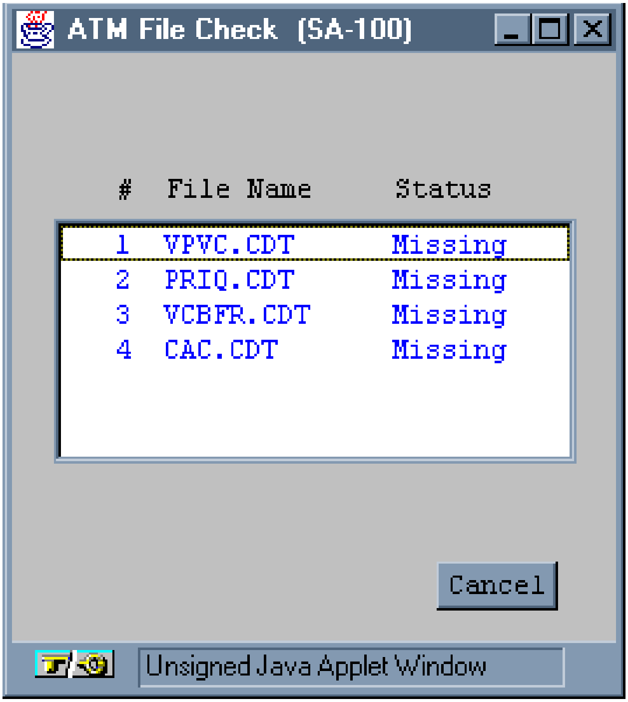

Figure 6-11. ATM File Check Window

Table 6-10. ATM File Check Fields and Buttons

Field/Button	Type	Description
#	read-only	Displays the number of the ATM file listed.
File Name	read-only	Displays the name of the ATM file listed. Four files should be listed: vpvc.cdt, priq.cdt, vcbfr.cdt, and cac.cdt.
Status	read-only	Displays the status of the ATM file listed: • *Missing* (default) - no modified version of the indicated file is present. The SA 100 will use its default values for the parameters of this file. • *OK* - a modified version of the indicated file is present and the modified values for the parameters of this file will be used. • *Error* - an error was detected in the indicated CAC file. Refer to Appendix F, “Customizing CAC Parameters” and repeat the steps given there to re-modify, parse, and load the file to the SA 100.

Monitoring PODs

This section describes how to monitor the different Protocol Option Devices (PODs) available for the SA 100.

You can monitor POD status information:

- On the Monitor Status window by viewing the POD front-panel indicators
- On individual POD status windows

POD Front Panel Indicators

The Monitor Status window mirrors the state of each front panel indicator of the PODs installed in the SA 100. You can use these indicators to monitor the state of the SA 100. Table 6-11 through Table 6-16 describe the front panel indicators of the following POD types:

- 10/100 Ethernet
- DS1
- E1
- DS3
- E3
- OC3/STM-1

Table 6-11. 10/100 Ethernet POD Front Panel Indicators

Desig.	Name	Color	Description
ST	POD Status	green	ON when the POD is programmed and in service. OFF when the POD is not configured.
TX	Data Transmitted	green	ON when the POD is sending data.
RX	Data Received	green	ON when the POD is receiving data.

Table 6-12. DS1 POD Front Panel Indicators

Desig.	Name	Color	Description
ST	POD Status	green	ON when the POD is programmed and in service. OFF when the POD is not configured.
TX	Cells Transmitted	green	ON when the POD sends ATM cells.
RX	Cells Received	green	ON when the POD receives ATM cells.
RED	Red Alarm	red	ON when the POD detects a red alarm condition in the received signal, perhaps due to loss of frame, delineation, or pointer.
YEL	Yellow Alarm	yellow	ON when the POD detects a yellow alarm condition in the received signal, i.e., a remote alarm indication exists in the incoming path, perhaps due to a remote defect condition (RDI) or yellow path layer indication on the incoming signal.
AIS	Alarm Indication Signal	yellow	ON when the POD detects an alarm indication signal (AIS) in the received signal, indicating a service interruption failure due to a loss of signal LOS), out-of-frame (OOF) condition, or internal equipment failure.

Table 6-12. DS1 POD Front Panel Indicators (Continued)

Desig.	Name	Color	Description
(lower left corner of multiport POD connectors)		green	ON when the front panel indicators are reporting the status of that port (as chosen via the PORT SELECT push-button or by a single-click on the desired port).
(lower right corner of multiport POD connectors)		yellow	ON when the link is down for that port.

Table 6-13. E1 POD Front Panel Indicators

Desig.	Name	Color	Description
ST	POD Status	green	ON when the POD is programmed and in service. OFF when the POD is not configured.
TX	Cells Transmitted	green	ON when the POD sends ATM cells.
RX	Cells Received	green	ON when the POD receives ATM cells.
SYN	Sync Alarm	red	ON when the POD detects a sync alarm condition, i.e., the POD is not receiving a signal, perhaps due to loss of frame or delineation.
REM	Remote Alarm Indication	yellow	ON when the POD detects a remote alarm indication in the received signal.
AIS	Alarm Indication Signal	yellow	ON when the POD detects an alarm indication signal (AIS) in the received signal, indicating a service interruption failure due to a loss of signal LOS), out-of-frame (OOF) condition, or internal equipment failure.
(lower left corner of multiport POD connectors)		green	ON when the front panel indicators are reporting the status of that port (as chosen via the PORT SELECT push-button or by a single-click on the desired port).

Table 6-13. E1 POD Front Panel Indicators (Continued)

Desig.	Name	Color	Description
(lower right corner of multiport POD connectors)		yellow	ON when the link is down for that port.

Table 6-14. DS3 POD Front Panel Indicators

Desig.	Name	Color	Description
ST	POD Status	green	ON when the POD is programmed and in service. OFF when the POD is not configured.
TX	Cells Transmitted	green	ON when the POD sends ATM cells.
RX	Cells Received	green	ON when the POD receives ATM cells.
RED	Red Alarm	red	ON when the POD detects a red alarm condition in the received signal, perhaps due to loss of frame, delineation, or pointer.
YEL	Yellow Alarm	yellow	ON when the POD detects a yellow alarm condition in the received signal, i.e., a remote alarm indication exists in the incoming path, perhaps due to a remote defect condition (RDI) or yellow path layer indication on the incoming signal.
AIS	Alarm Indication Signal	yellow	ON when the POD detects an alarm indication signal (AIS) in the received signal, which indicates a service interruption failure due to a loss of signal LOS), out-of-frame (OOF) condition, or internal equipment failure.

Table 6-15. E3 POD Front Panel Indicators

Desig.	Name	Color	Description
ST	POD Status	green	ON when the POD is programmed and in service. OFF when the POD is not configured.
TX	Cells Transmitted	green	ON when the POD sends ATM cells.
RX	Cells Received	green	ON when the POD receives ATM cells.
SYN	Sync Alarm	red	ON when the POD detects a sync alarm condition, i.e., the POD is not receiving a signal, perhaps due to loss of frame or delineation.
REM	Remote Alarm Indication	yellow	ON when the POD detects a remote alarm indication in the received signal.
AIS	Alarm Indication Signal	yellow	ON when the POD detects an alarm indication signal (AIS) in the received signal, which indicates a service interruption failure due to a loss of signal LOS), out-of-frame (OOF) condition, or internal equipment failure.

Table 6-16. OC-3c/STM-1 POD Front Panel Indicators

Desig.	Name	Color	Description
ST	POD Status	green	ON when the POD is programmed and in service. OFF when the POD is not configured.
TX	Cells Transmitted	green	ON when the POD sends ATM cells.
RX	Cells Received	green	ON when the POD receives ATM cells.
RED	Red Alarm	red	ON when the POD detects a red alarm condition in the received signal, i.e., the POD is receiving a signal that is not synchronized to the incoming SONET/SDH signal, perhaps due to loss of frame, delineation, or pointer.
YEL	Yellow Alarm	yellow	ON when the POD detects a yellow alarm condition in the received signal, i.e., a remote alarm indication exists in the incoming path, perhaps due to a remote defect condition (RDI) or yellow path layer indication on the incoming signal.
AIS	Alarm Indication Signal	yellow	ON when the POD detects an alarm indication signal (AIS) in the received signal, which indicates a service interruption failure due to a loss of signal LOS), out-of-frame (OOF) condition, or internal equipment failure.

POD Status Windows

To access the POD status windows, you first select the POD in one of three ways:

- Choose (double-click) the POD from the Monitor Status window (the callout names only the slot- POD).
- Choose (double-click) the slot from the Monitor Status window (the callout names only the slot).

  When the Display Board Status window appears, select the POD to monitor from the Select POD list.
- Choose the system from the Monitor Status window (no callout appears).

  When the Display System Status window appears, select Slot 1 from the Select Board list.

  When the Display Board Status window appears, select the POD to monitor from the Select POD list.

After selecting the POD, the Display POD Status window appears (see Figure 6-12), providing status information on the selected POD.

From the Display Pod Status window, you can easily jump to the next logical level (a port on this POD) by choosing a port from the Select Ports list. Choosing a port from this list opens the Display Port Status window for the selected port. Refer to "Monitoring Ports" on page 6-44 for details.

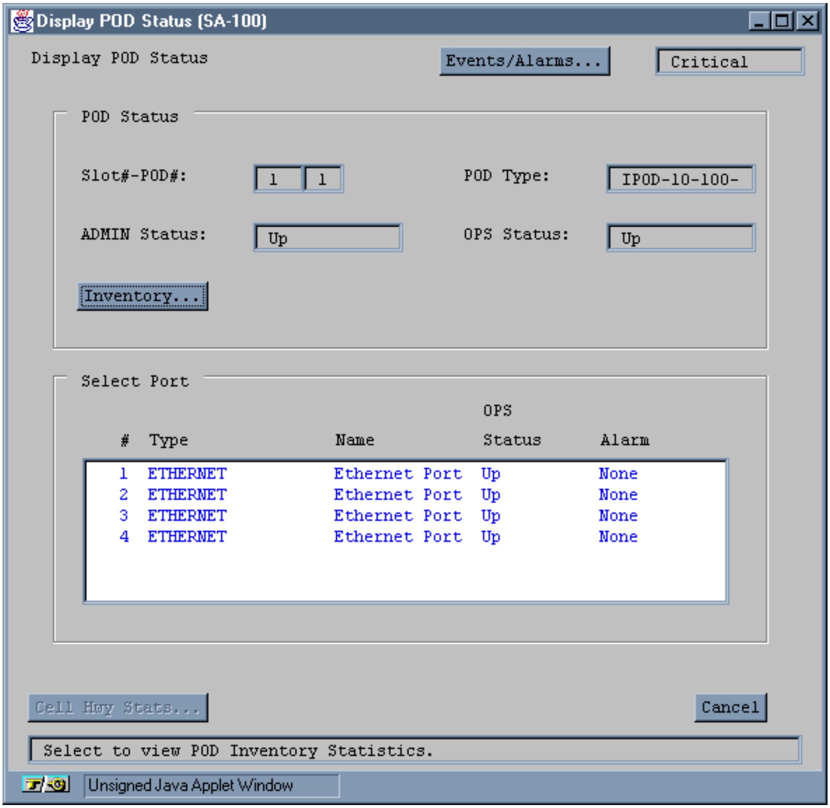

Figure 6-12. Display POD Status Window

Table 6-17 describes the fields and buttons in the Display POD Status window.

Table 6-17. Display POD Status Fields and Buttons

Field/Button	Type	Description
POD Status		
Slot#-POD#	read-only	Displays the location (slot and POD numbers) of the POD. Since there is only one slot in the SA 100, the Slot# field is always “1.”
POD Type	read-only	Displays the type of the POD.
ADMIN Status	read-only	Displays the administrative state of the POD: up or down.
OPS Status	read-only	Displays the operational state of the POD: up or down.
Inventory	window button	Enables you to display a variety of “inventory” information about the POD.
Select Port		
#	read-only	Displays the port number of each POD port. Choosing a port from this list opens the Display Port Status window for the selected port.
Type	read-only	Displays the type of each port on this POD.
Name	read-only	Displays the user designation of each port.
OPS Status	read-only	Displays the operational state (up or down) of each port on this POD.
Alarm	read-only	Displays the current highest-level alarm, if any, associated with each port.
(Other Buttons)		
Cell Hwy Stats	window button	Enables you to display statistics about the POD cell highway.

Viewing POD Inventory Information

To display “inventory” information concerning the POD, choose the Inventory button in the Display POD Status window. The POD Inventory Statistics window appears (see Figure 6-13), displaying POD inventory information. Table 6-18 describes the fields of this window. (All fields in this window are read-only.)

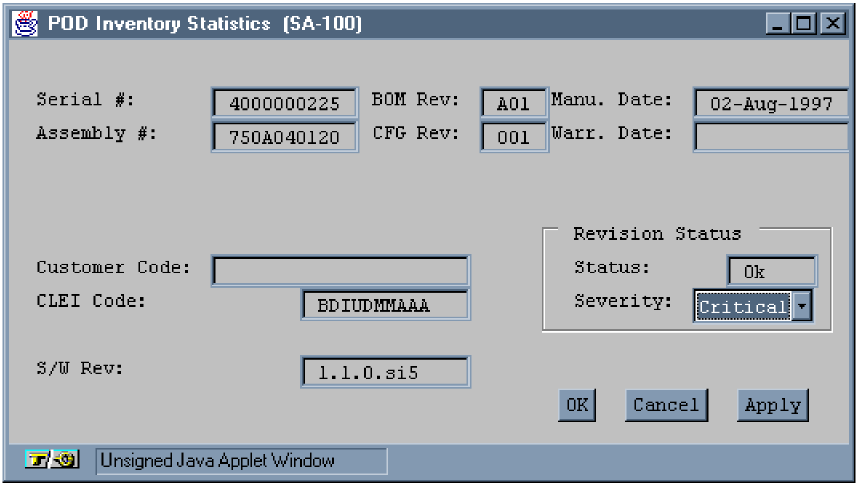

Figure 6-13. POD Inventory Statistics Window

Table 6-18. POD Inventory Statistics Fields

Field	Description (All Read-Only)
Serial #	Displays serial number of the POD.
BOM Rev	Displays bill of material revision level of the POD.
Manu. Date	Displays date that the POD was manufactured.
Assembly #	Displays assembly part number of the POD.
CFG Rev	Displays software configuration revision level of the POD.
Warr. Date	Displays warranty date of the POD.
Customer Code	Displays customer code for the POD (not supported).

Table 6-18. POD Inventory Statistics Fields (Continued)

Field	Description (All Read-Only)
CLEI Code	Displays Common-Language Equipment Identification code for the POD.
S/W Rev	Displays software revision level for the POD.
Revision Status: Status	Displays whether the POD's revision level is valid for operation with the currrent software revision.
Revision Status: Severity	Selects the severity level of the alarm associated with an out-of-rev POD: default, info, minor, major, or critical. The default setting (recommended) compares the revision level of the POD against a database of component revision levels and reports an alarm based on the revision level of the POD in relation to the installed software. For example, a recent POD might elicit only an informational alarm, while a very old revision POD might elicit a critical alarm.

Viewing POD Cell Highway Statistics

To display statistics concerning the cell highway between the POD and the CPOD, choose the Cell Hwy Stats button in the Display POD Status window.

The Cell Highway/Priority Queue Stats window appears (see Figure 6-8 on page 6-20), enabling you to view statistics about the selected cell highway. Table 6-7 on page 6-21 describes the fields and buttons in this window.

Monitoring Ports

To monitor a port in the SA 100, you first select the port in one of four ways:

- Choose the port from the Monitor Status window (the callout lists the slot, POD and port).
- Choose the POD containing the port to monitor from the Monitor Status window (the callout lists only the slot and POD).

  When the Display POD Status window appears, select the port to monitor from the Select Port list.
- Choose the slot from the Monitor Status window (the callout lists only the slot).

  When the Display Board Status window appears, select the POD containing the port to monitor from the Select POD list.

  When the Display POD Status window appears, select the port to monitor from the Select Port list.
- Choose the system from the Monitor Status window (no callout appears).

  When the Display System Status window appears, select the Slot 1 from the Select Board list.

  When the Display Board Status window appears, select the POD containing the port to monitor from the Select POD list.

  When the Display POD Status window appears, select the port to monitor from the Select Port list.

The Display Port Status window appears. The contents of this window varies depending on the type of port you are monitoring. The following sections describe each type of SA 100 port status window:

- Ethernet Ports
- DS1/E1 Ports
- DS3/E3 Ports
- OC-3/STM-1 Ports

Monitoring Ethernet Ports

To monitor an Ethernet port, select the port as described in “Accessing Monitoring Functions” on page 6-2. The Display Ethernet Port Status window appears (see Figure 6-14), enabling you to monitor the port.

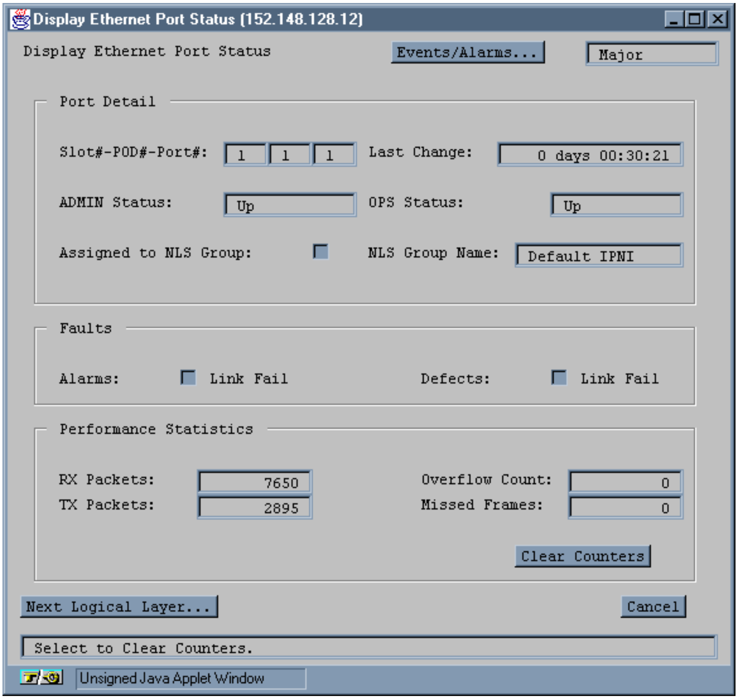

Figure 6-14. Display Ethernet Port Status Window

Table 6-19 describes the fields and buttons in the Display Ethernet Port Status window.

Table 6-19. Display Ethernet Port Status Fields and Buttons

Field/Button	Type	Description
Port Detail		
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot# field is always "1."
Last Change	read-only	Displays the amount of time (days, hours, minutes, seconds) that the port has been operating since it became active.
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Assigned to NLS Group	read-only	Displays whether the port has been assigned to an NLS Group.
NLS Group Name	read-only	Displays the NLS Group name.
Faults		
Alarms: Link Fail	read-only	A check mark indicates that a link failure alarm has been detected.
Defects: Link Fail	read-only	A check mark indicates that a link failure defect has been detected.
Performance Statistics		
RX Packets	read-only	Displays the number of Ethernet packets received.

Table 6-19. Display Ethernet Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
TX Packets	read-only	Displays the number of Ethernet packets transmitted.
Overflow Count	read-only	Displays the number of overflows that have occurred.
Missed Frames	read-only	Displays the number of Ethernet packet frames that have been missed.
Clear Counters	command button	Enables you to set all the counter (numeric) fields in the Performance Statistics frame to zero (0).
(Other Buttons)		
Next Logical Layer	window button	Displays the available NLS Groups for this POD, allowing you to drill further for additional statistics.

Monitoring DS1/E1 Ports

To monitor a DS1 port, select the port as described in “Accessing Monitoring Functions” on page 6-2, and use the window that appears, the Display DS1/E1 Status window (see Figure 6-15 or Figure 6-16), to monitor the port.

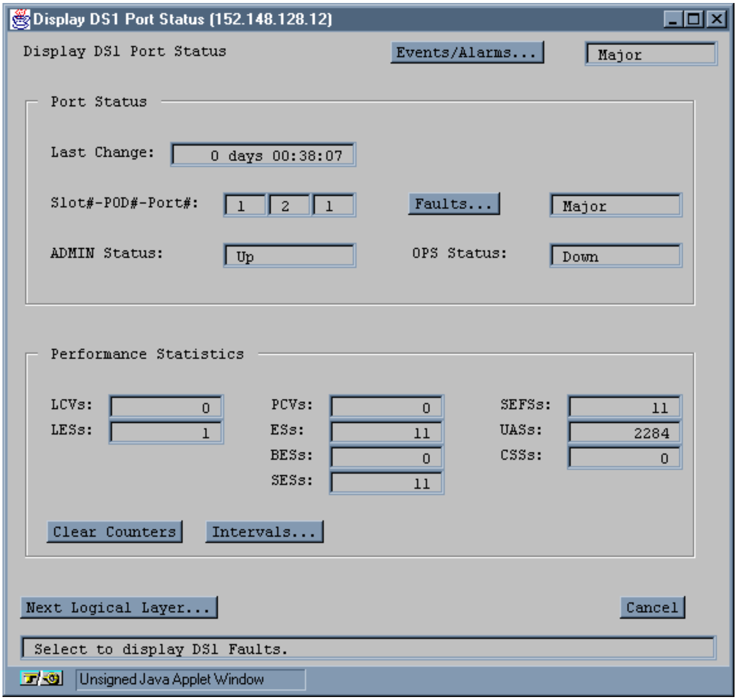

Figure 6-15. Display DS1 Port Status Window

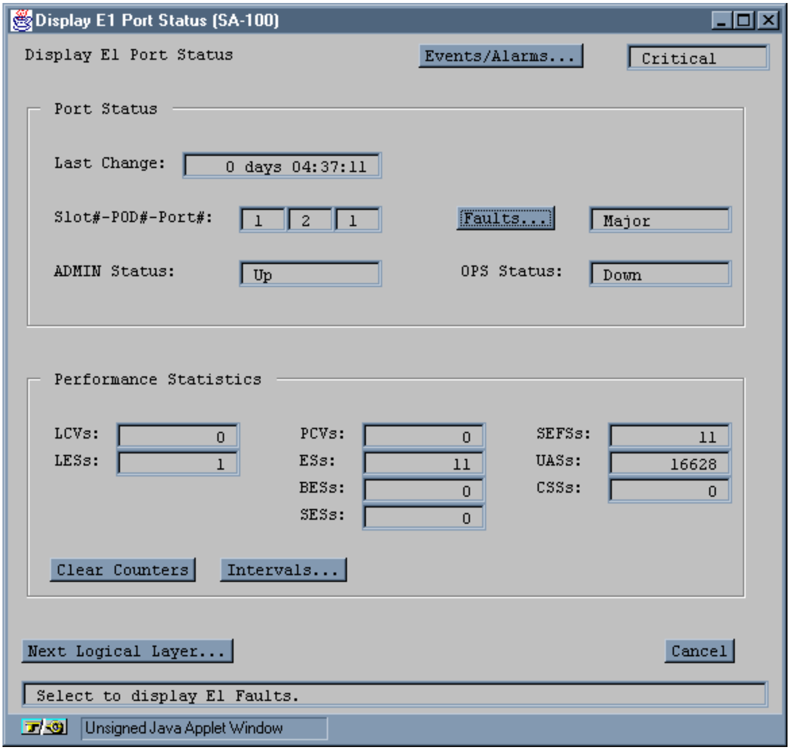

Figure 6-16. Display E1 Port Status Window

Table 6-20 describes the fields and buttons in the Display DS1/E1 Port Status window.

Table 6-20. Display DS1/E1 Port Status Fields and Buttons

Field/Button	Type	Description
Port Status		
Last Change	read-only	Displays the amount of time (days, hours, minutes, seconds) that the port has been operating.
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot# field is always “1.”
Faults	window button	Opens a window that indicates alarms and defects which have occurred.
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Performance Statistics		
LCVs	read-only	Displays the number of detected line coding violations (LCVs), i.e., the number of bipolar violations (BPVs) and excessive zeros (EXZs) occurring over the accumulation period.
LESs	read-only	Displays the number of line errored seconds (LESs), i.e., the number of seconds in which one or more coding violations (CVs) were detected, since the port came up or since the counters were reset to zero (0).
PCVs	read-only	Displays the number of detected path coding violations (PCVs) since the port came up or since the Clear Counters button was last used to set the field to zero (0). In D4 and E1 non-CRC (cyclic redundancy check) formats, PCVs are frame synchronization bit errors. In extended superframe (ESF) and E1-CRC formats, PCVs are CRC errors.

Table 6-20. Display DS1/E1 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
ESs	read-only	Displays the number of errored seconds (ESs), i.e., the number of one-second intervals with one or more path coding violations (PCVs), one or more out of frame (OOF) defects, one or more controlled slip events or an alarm indication signal (AIS) defect in extended superframe (ESF) and E1-CRC (cyclic redundancy check) formats or one or more line coding violations (LCVs) in D4 and E1 non-CRC formats, since the port came up or since the counters were reset to zero (0).
BESs	read-only	Displays the number of bursty errored seconds (BES or errored seconds type B) since the port came up or since the counters were reset to zero (0). BES is the number of one-second intervals with no less than two and not more than 319 path coding violation error events, no severely errored frame (SEF) defects, and no detected alarm indication signal (AIS) defects. Controlled slips are not included in this parameter.
SESs	read-only	Displays the number of severely errored seconds (SESs) since the port came up or since the counters were reset to zero (0). For extended superframe (ESF) signals, an SES is a second with 320 or more path coding violation (PCV) error events, one or more out of frame (OOF) defects or a detected Alarm Indication Signal (AIS) defect. For E1-CRC (cyclic redundancy check) signals, an SES is a second with 832 or more PCV error events or one or more OOF defects. For E1 non-CRC signals, an SES is 2048 LCVs or more. For D4 signals, an SES is a count of one-second intervals with framing error events, an OOF defect or 1544 or more LCVs. This parameter (1) does not include controlled slips and (2) is not incremented during an unavailable seconds.

Table 6-20. Display DS1/E1 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
SEFSs	read-only	Displays the number of severely errored framing seconds (SEFSs), i.e., the number of seconds with one or more out-of-frame defects, or a detected incoming alarm indication signal (AIS), since the port came up or since the counters were reset to zero (0).
UASs	read-only	Displays the number of unavailable seconds (UASs), i.e., the number of seconds the interface is unavailable due to ten consecutive severely errored seconds (SESs) or the onset of a condition leading to a failure, since the port came up or since the counters were reset to zero (0).
CSSs	read-only	Displays the number of controlled slip seconds (CSSs), i.e., the number of one-second intervals containing one or more controlled slips, since the port came up or since the counters were reset to zero (0). Counts of controlled slips can be made accurately only in the path terminating network element of the DS1 signal, where the controlled slip takes place.
Clear Counters	command button	Sets all the counter (numeric) fields in the Performance Statistics frame to zero (0).
Intervals	window button	Opens a window that permits you to view port statistics for the current 15-minute interval or a previous 15-minute interval. (The number of viewable previous intervals depends on the setting of the Set Max Intervals parameter, which you can configure to display the previous 1 to 96 intervals [15 minutes to 24 hours].) See “Viewing Performance Statistics for an Interval” on page 6-54 for details.

Table 6-20. Display DS1/E1 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
(Other Buttons)		
Next Logical Layer	window button	For ports on a DS1/E1 Cell POD, opens a window displaying statistics concerning the ATM UNI. For ports on a DS1/E1 Circuit POD, opens a window displaying statistics for a selected CES-IWF.

Viewing Performance Statistics for an Interval

Current Interval

To view performance statistics for the current 15-minute interval:

1. Choose the Intervals button in the Display DS1/E1 Port Status window. The Select Interval window appears (Figure 6-17).

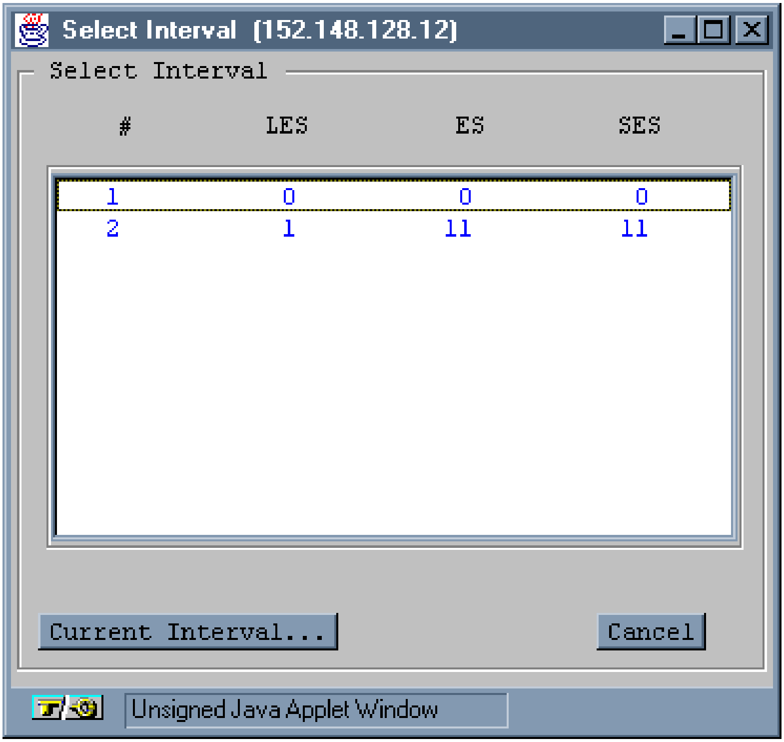

Figure 6-17. Select Interval Window

2. Choose the Current Interval button. The Display Current Interval window appears. Its fields are the same as those in the Display DS1/E1 Port Status window except that they represent statistics only for the current 15-minute interval. Refer to Table 6-20 on page 6-50 for field descriptions.

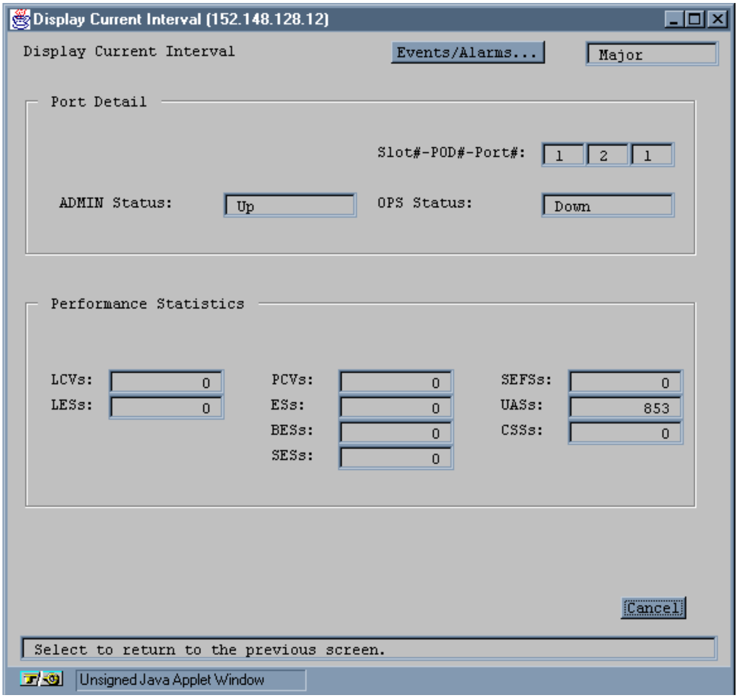

Figure 6-18. Display Current Interval Window

Previous Interval

To view performance statistics for a previous 15-minute interval:

1. Choose the Intervals button in the Display DS1/E1 Port Status window. The Select Interval window appears (Figure 6-17).

2. Choose the desired interval from the list using the following criteria:

   - **To view a specific interval** — Use the # column in the list to calculate which interval you wish to view (the interval numbered 1 is the most recent interval). For example, to view an interval that occurred 90 minutes ago, select the interval numbered 6 (90 minutes / 15 minutes = 6 intervals).

   - **To view an interval containing a specific event** — Use the LES, ES and SES columns to find the interval in which the event occurred, then choose that interval to view.

The Display Intervals window appears.

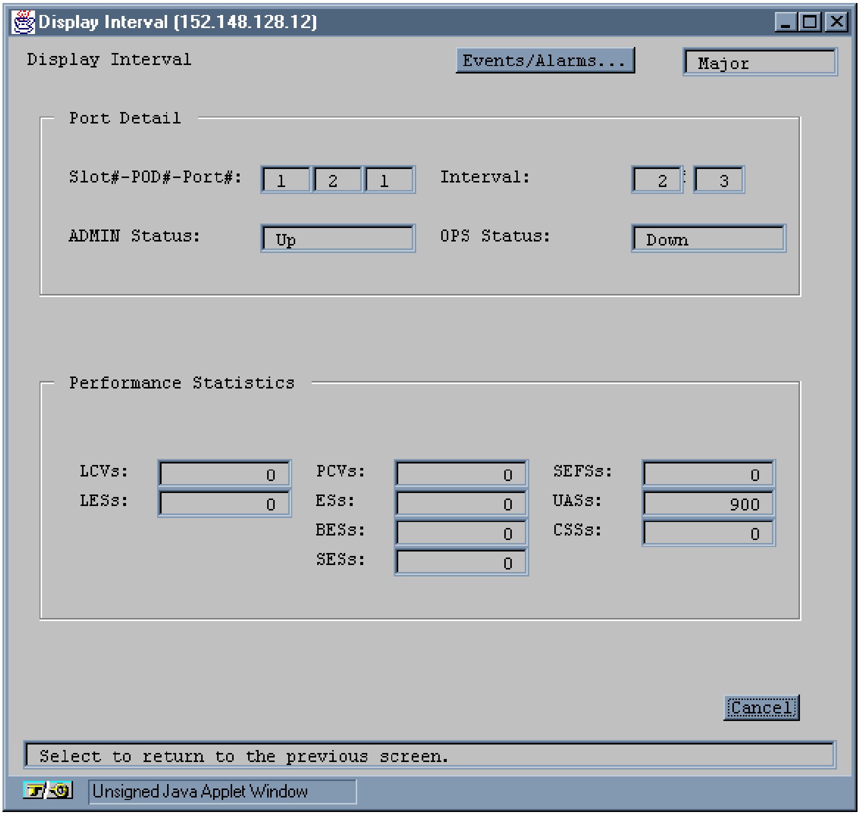

Figure 6-19. Display Intervals Window

Its fields are the same as those in the Display DS1/E1 Port Status window except:

- The fields represent statistics for the specified 15-minute interval.
- There is one additional field, the Interval field, which indicates the number of the interval you are viewing and the total number of intervals that are available for viewing (e.g., 2 7 indicates that you are viewing the second interval out of a total of seven intervals).

Table 6-20 on page 6-50 describes the Performance Statistics fields in the Display Current Interval window.

Viewing Alarms and Defects on DS1/E1 Ports

With the Display DS1/E1 Port Status window open (Figure 6-15), you may view which alarm or defect conditions, if any, have been detected on the DS1/E1 port. To view the alarms and defects, choose the Faults button. The DS1/E1 Faults window appears (see Figure 6-20 for the DS1 Faults window and Figure 6-21 for the E1 Faults window).

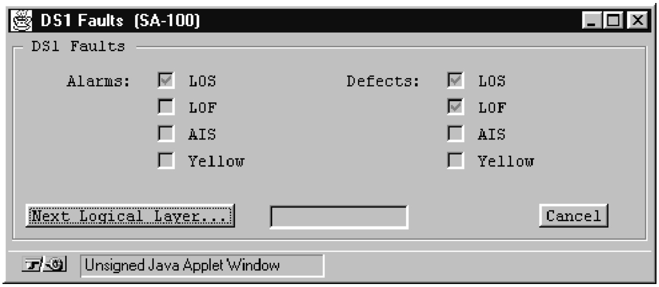

Figure 6-20. DS1 Faults Window

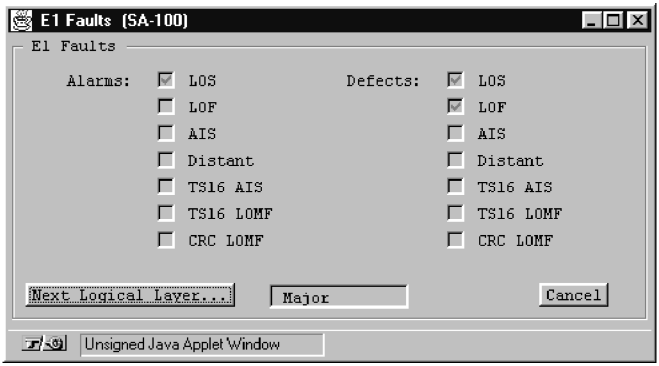

Figure 6-21. E1 Faults Window

Table 6-21 and Table 6-22 describe the fields and buttons in the DS1 Faults and E1 Faults windows respectively.

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Table 6-21. DS1 Faults Fields and Buttons

Field/Button	Type	Description
LOS Alarms/Defects	read-only	A check mark indicates that a loss of signal (LOS) alarm/defect has been detected.
LOF Alarms/Defects	read-only	A check mark indicates that a loss of frame (LOF) alarm/defect has been detected.
AIS Alarms/Defects	read-only	A check mark indicates that a alarm indication signal (AIS) alarm/defect has been detected.
Yellow Alarms/Defects	read-only	A check mark indicates that a yellow alarm/defect has been detected.
Next Logical Layer	window button	For ports on a DS1 cell POD, this button enables you to view the status of transmission convergence. For ports on a DS1 circuit POD, this button enables you select a CES-IWF to monitor.
Next Logical Layer	read-only	Displays the current highest-level alarm detected, if any, on the next logical layer.

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Table 6-22. E1 Faults Window Fields and Buttons

Field/Button	Type	Description
LOS Alarms/Defects	read-only	A check mark indicates that a loss of signal (LOS) alarm/defect has been detected.
LOF Alarms/Defects	read-only	A check mark indicates that a loss of frame (LOF) alarm/defect has been detected.
AIS Alarms/Defects	read-only	A check mark indicates that a alarm indication signal (AIS) alarm/defect has been detected.
Distant Alarms/Defects	read-only	A check mark indicates that a distant alarm/defect has been detected.
TS16 AIS Alarms/Defects	read-only	A check mark indicates that a time slot 16 alarm indication signal (TS16AIS) alarm/defect has been detected.
TS16 LOMF Alarms/Defects	read-only	A check mark indicates that a time slot 16 loss of multi-frame (TS16LOMF) alarm/defect has been detected.
CRC LOMF Alarms/Defects	read-only	A check mark indicates that a cyclic redundancy check loss of multi-frame (CRCLOMF) alarm/defect has been detected.
Next Logical Layer	window button	For ports on a E1 cell POD, this button enables you to view the status of transmission convergence. For ports on a E1 circuit POD, this button enables you to select a CES-IWF to monitor.
Next Logical Layer	read-only	Displays the current highest-level alarm detected, if any, on the next logical layer.

Viewing the Status of Transmission Convergence on DS1/E1 Cell Ports

From the Display DS1/E1 Port Status window, you can view the state of the transmission convergence on a DS1/E1 cell POD port. To access this information:

1. Choose the Faults button in the Display DS1/E1 Port Status window (see Figure 6-15).
2. Choose the Next Logical Layer button in the DS1/E1 Faults window. The Display Transmission Convergence Status window appears (see Figure 6-22).

   You can see if any loss of cell delineation alarms or defects have been detected, as indicated by check marks in the Alarms and Defects fields of the window.

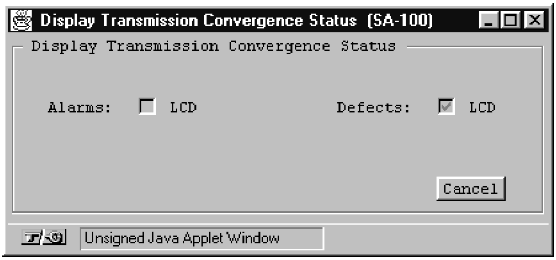

Figure 6-22. Display Transmission Convergence Status Window

Viewing ATM UNI Statistics on DS1/E1 Cell POD Ports

From the Display DS1/E1 Port Status window (Figure 6-15), you can view a variety of information about the state of the ATM UNI on a DS1/E1 cell POD port. To display this information, choose the Next Logical Layer button. The Display ATM Status window appears (see Figure 6-23), providing information on the status of ATM UNI on the port.

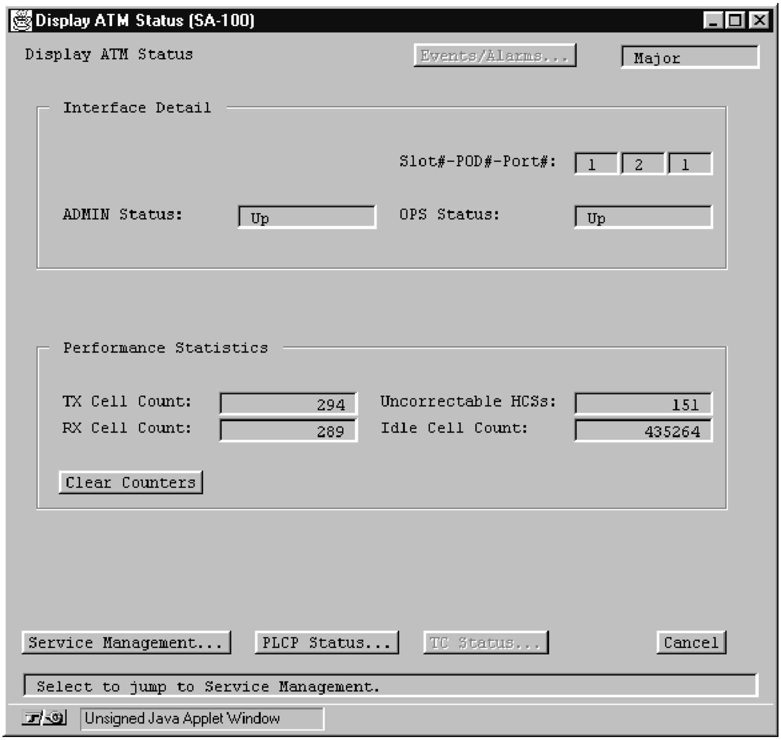

Figure 6-23. Display ATM Status Window

Table 6-23 describes the fields and buttons in the Display ATM Status window.

Table 6-23. Display ATM Status Fields and Buttons

Field/Button	Type	Description
Interface Detail		
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot field is always “1.”
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Performance Statistics		
TX Cell Count	read-only	Displays the number of ATM cells transmitted.
Uncorrectable HCSs	read-only	Displays the number of uncorrectable header checksum sequences (HCSs), that is, the number of errors that the SA 100 detected in the ATM cell header but was able to fix.
RX Cell Count	read-only	Displays the number of ATM cells received.
Idle Cell Count	read-only	Displays the number of idle cells generated.
Clear Counters	command button	Resets all the counter (numeric) fields in the Performance Statistics frame to zero (0).
(Other Buttons)		
Service Management	window button	Enables you to access ATM connection information.
PLCP Status	window button	DS1/E1 cell PODs do not support this option.

Table 6-23. Display ATM Status Fields and Buttons (Continued)

Field/Button	Type	Description
TC Status	window button	Enables you to view the status of transmission convergence. Refer to “Viewing the Status of Transmission Convergence on DS1/E1 Cell Ports” on page 6-60 for information about the Display Transmission Convergence Status window.

Viewing CES-IWF Statistics

From the Display DS1/E1 Port Status window, you can access information about the interworking functions and all statistics on a DS1/E1 circuit POD port. To access this information:

1. Choose the Next Logical Layer button in the Display DS1/E1 Port Status window or the DS1 Faults window. The Configure CES Connection window appears (Figure 5-19 on page 5-48).

2. Select the interworking function you wish to view from the Configured CES Connections list. The CES-IWF Options window appears (Figure 6-24).

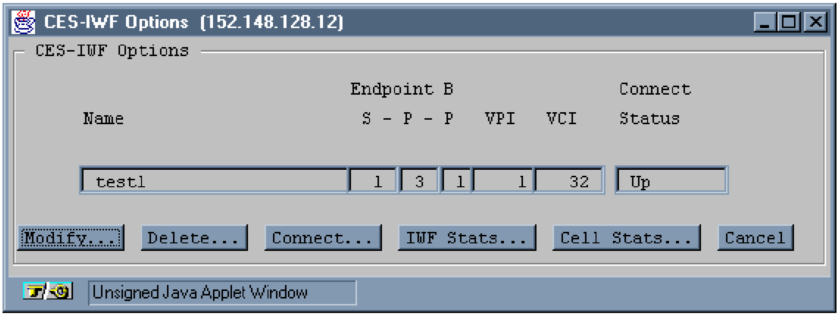

Figure 6-24. CES-IWF Options Window

3. Choose IWF Statistics. The CES-IWF Statistics window appears (Figure 6-25), displaying information about the selected interworking function. Table 6-24 describes the fields and buttons in the CES-IWF Statistics window.

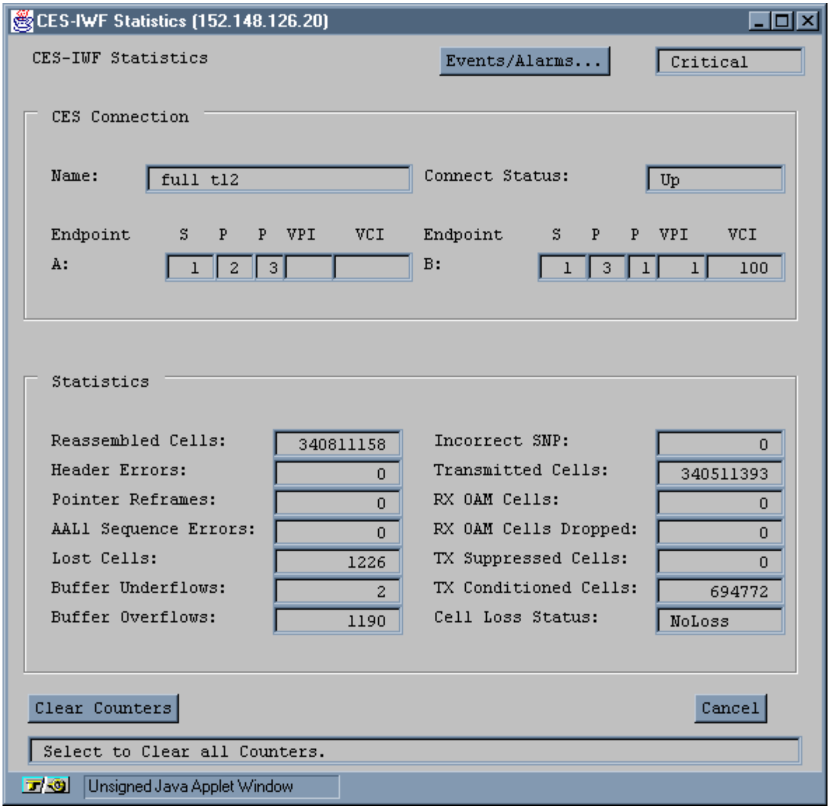

Figure 6-25. CES-IWF Statistics Window

Table 6-24. CES-IWF Statistics Fields and Buttons

Field/Button	Type	Description
CES Connection		
Name	read-only	Displays the name of the CES-IWF.
Connect Status	read-only	Displays the status of the CES-IWF connection: up or down.
Endpoint A S-P-P-VPI-VCI	read-only	Displays the location (slot, POD, port, VPI (virtual path identifier) and VCI (virtual channel identifier) numbers) of endpoint A of the CES-IWF.
Endpoint B S-P-P-VPI-VCI	read-only	Displays the location (slot, POD, port, VPI (virtual path identifier) and VCI (virtual channel identifier) numbers) of endpoint B of the CES-IWF.
Statistics		
Reassembled Cells	read-only	Displays the number of cells that have been reassembled on the CES-IWF.
Header Errors	read-only	Displays the number of detected header errors on the CES-IWF, i.e., a discrepancy between what the port expected in the header and what was received.
Pointer Reframes	read-only	Displays the number of loss of pointer (LOP) defects that have been corrected (reframed) on the CES-IWF.
AAL1 Sequence Errors	read-only	Displays the number of ATM adaptation layer type 1 (AAL1) errors that have been detected on the CES-IWF.
Lost Cells	read-only	Displays the number of cells that have been lost on the CES-IWF.

Table 6-24. CES-IWF Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Buffer Underflows	read-only	Displays the number of cells that represent an underflow in the reassembly buffer of the CES-IWF.
Buffer Overflows	read-only	Displays the number of cells that represent an overflow in the reassembly buffer.
Incorrect SNP	read-only	Displays the number of sequence number protection (SNP) defects that have been detected on the CES-IWF.
Transmitted Cells	read-only	Displays the number of cells that have been transmitted on the CES-IWF.
RX OAM Cells	read-only	Displays the number of operations administration and maintenance (OAM) cells that have been received on the CES-IWF.
RX OAM Cells Dropped	read-only	Displays the number of operations administration and maintenance (OAM) cells that have been dropped on the CES-IWF.
TX Suppressed Cells	read-only	Displays the number of transmitted cells that were suppressed on the CES-IWF.
TX Conditioned Cells	read-only	Displays the number of conditioned cells that were transmitted on the CES-IWF.
Cell Loss Status	read-only	Displays whether any cell loss has occurred (“loss” or “no loss”) on the CES-IWF.
(Other Button)		
Clear Counters	command button	Resets all the counter (numeric) fields in the Statistics frame to zero (0).

Viewing CES-IWF Cell Statistics

From the Display DS1/E1 Port Status window, you can access information about the interworking functions on a DS1/E1 circuit POD port. To access this information:

1. Choose the Next Logical Layer button in the Display DS1/E1 Port Status window or the DS1/E1 Faults window. The Configure CES Connection window appears (Figure 5-19 on page 5-48).

2. Select the interworking function you wish to view from the Configured CES Connections list. The CES-IWF Options window appears (Figure 6-24).

3. Choose Cell Stats. The Cell Statistics window appears (Figure 6-26), displaying information about the selected interworking function. The fields and buttons displayed in this window are described in Table 6-45 on page 6-135.

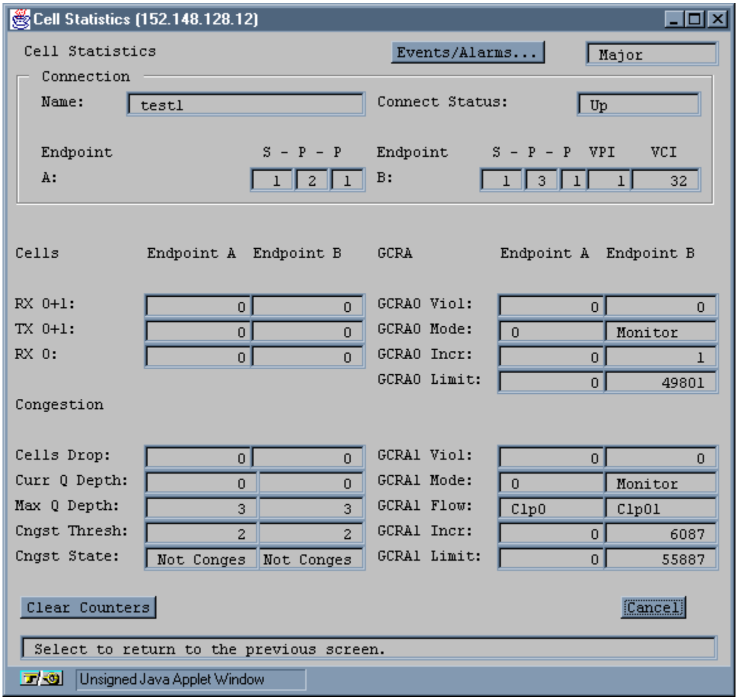

Figure 6-26. Cell Statistics Window

Viewing IMA Group and Link Statistics

IMA DS1/E1 PODs support multiple DS1/E1 ports which may be "grouped" together to provide a higher aggregate bandwidth. Refer to the following sections for information on configuring IMA links and groups, and viewing statistics on IMA links and groups.

– "Configuring an IMA Group" on page 4-21

– "Configuring IMA Links" on page 4-31

– "Viewing IMA Group Statistics" on page 4-34

– "Viewing IMA Link Statistics" on page 4-40

Monitoring DS3/E3 Ports

To monitor a DS3 or E3 port, select the port as described in “Accessing Monitoring Functions” on page 6-2, and use the Display DS3 Port Status window (Figure 6-27) or Display E3 Port Status window (Figure 6-28), to monitor the port.

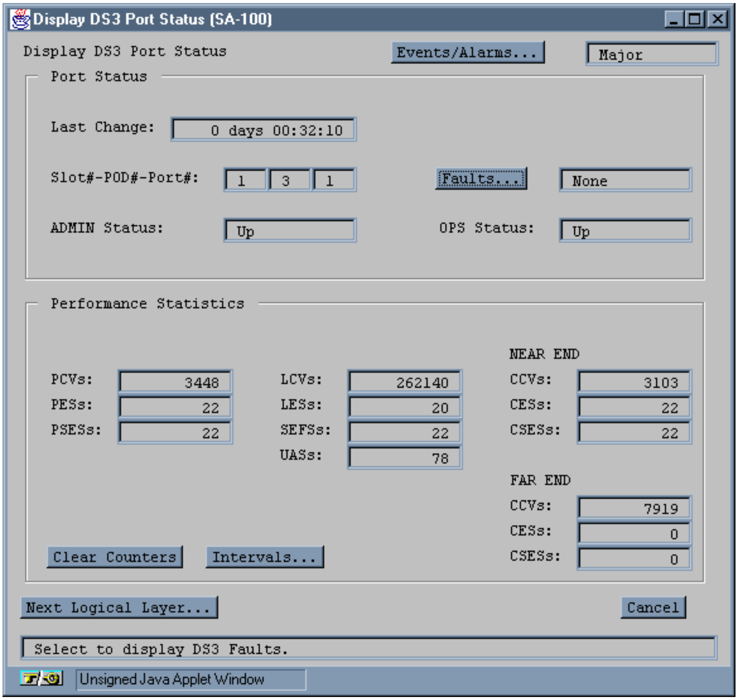

Figure 6-27. Display DS3 Port Status Window

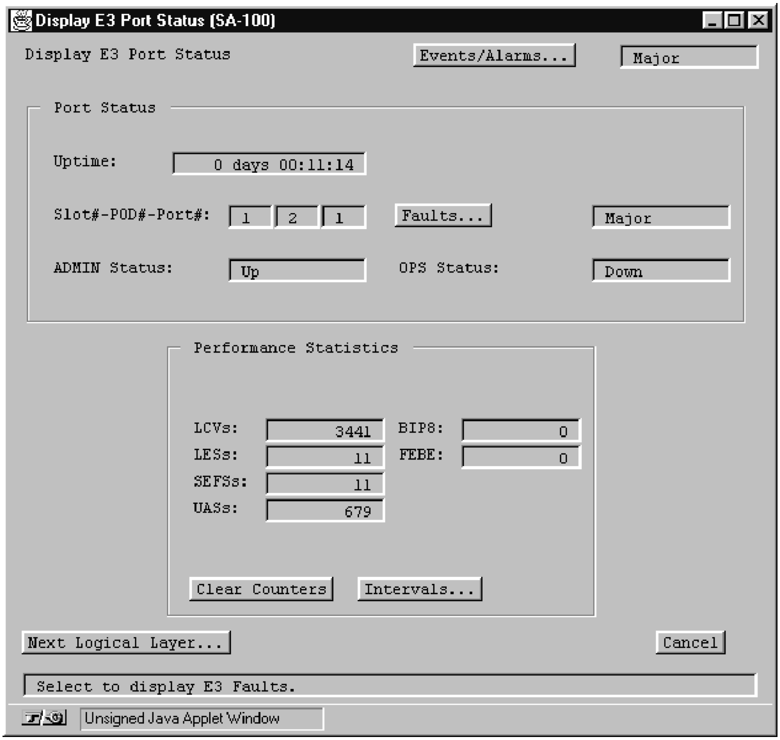

Figure 6-28. Display E3 Port Status Window

Table 6-25 and Table 6-26 describe the fields and buttons in the Display DS3 Port Status and Display E3 Port Status windows, respectively.

The fields in the Performance Statistics frame of the Display DS3/E3 Port Status window represent a running total that has been tallied since the port came up or since the Clear Counters button was last used to set the fields to zero (0).

Table 6-25. Display DS3 Port Status Fields and Buttons

Field/Button	Type	Description
Port Status		
Last Change	read-only	Displays the amount of time (days, hours, minutes, seconds) that the port has been operating.
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot# field is always "1."
Faults	window button	Opens a window that indicates which of the following alarms and defects have occurred: loss of signal (LOS), loss of frame (LOF), alarm indication signal (AIS) and yellow.
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Performance Statistics		
PCVs	read-only	Displays the number of detected P-bit coding violations (PCVs). PCVs occur when the received P-bit code on the DS3 M-frame does not match the locally calculated code.
PESs	read-only	Displays the number of detected near-end P-bit errored seconds (PESs), i.e., the number of seconds with one or more P-coding violations (PCVs), one or more out-of-frame (OOF) defects, or a detected incoming alarm indication signal (AIS).

Table 6-25. Display DS3 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
PSESs	read-only	Displays the number of detected P-bit severely errored seconds (PSESs), i.e., the number of seconds with 44 or more P-code violations (PCVs) or one or more out-of-frame (OOF) defects, or a detected incoming alarm indication signal (AIS).
LCVs	read-only	Displays the number of detected line coding violations (LCVs), i.e., the number of bipolar violations (BPVs) and excessive zeros (EXZs) occurring over the accumulation period.
LESs	read-only	Displays the number of line errored seconds (LESs), i.e., the number of seconds in which one or more coding violations (CVs) or one or more loss of signal (LOS) occurred.
SEFSs	read-only	Displays the number of detected severely errored framing seconds (SEFSs), i.e., the number of seconds with one or more out-of-frame (OOF) defects, or a detected incoming alarm indication signal (AIS).
UASs	read-only	Displays the number of detected unavailable seconds (UASs), i.e., the number of seconds the interface is unavailable (from the onset of 10 contiguous PSESs or the condition leading to a failure).
Near End CCVs	read-only	Displays the number of detected near-end C-bit coding violations (CCVs), i.e., the number of coding violations reported via the C-bits.

Table 6-25. Display DS3 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
Near End CESs	read-only	Displays the number of detected near-end C-bit errored seconds (CESs), i.e., the number of seconds with one or more C-code violations (CCVs) or one or more out-of-frame (OOF) defects, or a detected incoming alarm indication signal (AIS).
Near End CSESs	read-only	Displays the number of detected near-end C-bit severely errored seconds, i.e., the number of seconds with 44 or more C-code violations (CCVs) or one or more out-of-frame (OOF) defects, or detected incoming alarm indication signal (AIS).
Far End CCVs	read-only	Displays the number of detected far-end C-bit coding violations (CCVs), i.e., the number of coding violations reported via the C-bits.
Far End CESs	read-only	Displays the number of detected far-end C-bit errored seconds (CESs), i.e., the number of seconds with one or more C-code violations (CCVs).
Far End CSESs	read-only	Displays the number of detected far-end C-bit severely errored seconds, i.e., the number of seconds with 44 or more C-code violations (CCVs).
Clear Counters	command button	Resets all the counter (numeric) fields in the Performance Statistics frame to zero (0).

Table 6-25. Display DS3 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
Intervals	window button	Enables you to view port statistics for the current 15-minute interval or a previous 15-minute interval. (The number of viewable previous intervals depends on the value of the Set Max Intervals parameter.) See "Viewing Performance Statistics for an Interval" on page 6-54 for instructions on viewing interval statistics.
(Other Buttons)		
Next Logical Layer	window button	Enables you to view statistics concerning the ATM layer.

Table 6-26. Display E3 Port Status Fields and Buttons

Field/Button	Type	Description
Port Status		
Uptime	read-only	Displays the amount of time (days, hours, minutes, seconds) that the port has been operating.
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot# field is always "1."
Faults	window button	Opens a window that indicates which of the following alarms and defects have occurred: loss of signal (LOS), loss of frame (LOF), alarm indication signal (AIS) and yellow.
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Performance Statistics		
LCVs	read-only	Displays the number of detected line coding violations (LCVs), i.e., the number of bipolar violations (BPVs) and excessive zeros (EXZs) occurring over the accumulation period.
LESs	read-only	Displays the number of line errored seconds (LESs), i.e., the number of seconds in which one or more coding violations (CVs) or one or more loss of signal (LOS) occurred.

Table 6-26. Display E3 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
SEFSs	read-only	Displays the number of detected severely errored framing seconds (SEFSs), i.e., the number of seconds with one or more out-of-frame (OOF) defects, or a detected incoming alarm indication signal (AIS).
UASs	read-only	Displays the number of detected unavailable seconds (UASs), i.e., the number of seconds the interface is unavailable (from the onset of 10 contiguous PSESs or the condition leading to a failure).
BIP8	read-only	Displays the number of detected bit interleaved parity 8 errors (BIP8), i.e., the number of detected bit errors in the payload.
FEBE	read-only	Displays the number of detected far end block errors (FEBE), i.e., the number of bit errors in the payload detected at the far end.
Clear Counters	command button	Allows you to set all the counter fields in the Performance Statistics frame to zero (0).
Intervals	window button	Enables you to view port statistics for the current 15-minute interval or a previous 15-minute interval. (The number of viewable previous intervals depends on the setting of the Set Max Intervals parameter.) See “Viewing Performance Statistics for an Interval” on page 6-54 for instructions on viewing interval statistics.
(Other Buttons)		
Next Logical Layer	window button	Enables you to view statistics concerning the ATM layer.

Viewing Performance Statistics for an Interval on DS3/E3 Ports

See “Viewing Performance Statistics for an Interval” on page 6-54 for instructions on viewing interval statistics. Refer to Table 6-25 on page 6-72 for DS3 field descriptions or to Table 6-26 on page 6-76 for E3 field descriptions.

Viewing Alarms and Defects on DS3/E3 Ports

From the Display DS3 Port Status or Display E3 Port Status window, you can view any alarm or defect conditions which have been detected on the DS3 or E3 port. To view the alarms and defects:

1. Choose the Faults button. The DS3 Faults or E3 Faults window appears (Figure 6-29), displaying any faults detected on the port. See Table 6-27 for a description of each button and field in the DS3 Faults and E3 Faults windows.

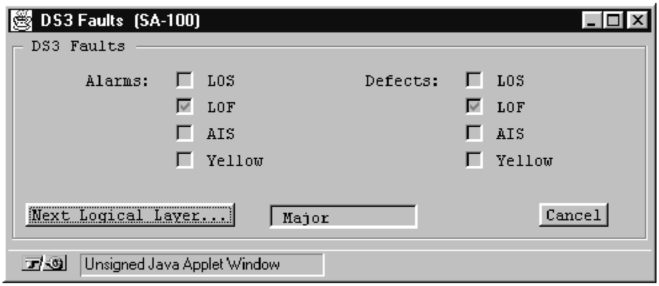

Figure 6-29. DS3/E3 Faults Window (DS3 shown)

2. Choose the Next Logical Layer button. The window that appears depends on whether PlcpFrame or HcsBased cell delineation is selected for the port.

   If PlcpFrame cell delineation is selected — The Display PLCP Status window appears (see Figure 6-30) and you may view statistics concerning near and far-end phase layer convergence protocol (PLCP) faults. Refer to Table 6-28 for descriptions of the fields and buttons in the Display PLCP Status window.

   If HcsBased cell delineation is selected — The Display Transmission Convergence Status window appears (see Figure 6-31) and you can see if any loss of cell delineation alarms or defects have been detected, as indicated by check marks in the Alarms and Defects fields.

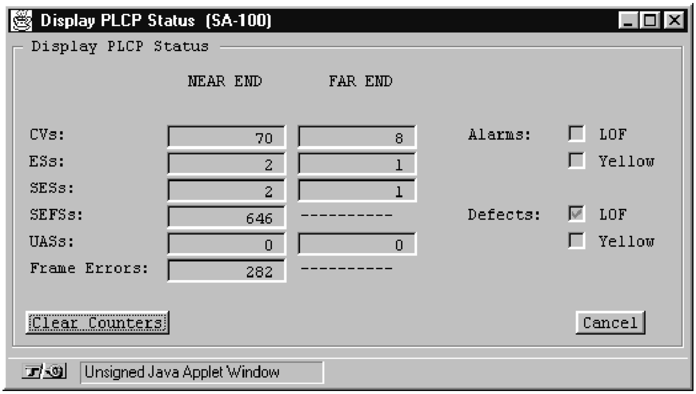

Figure 6-30. Display PLCP Status Window

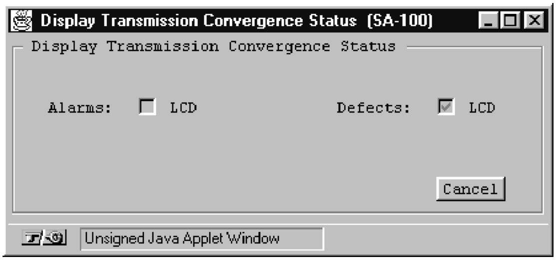

Figure 6-31. Display Transmission Convergence Status Window

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Table 6-27. DS3/E3 Faults Fields and Buttons

Field/Button	Type	Description
LOS Alarms/Defects	read-only	A check mark indicates that a loss of signal (LOS) alarm/defect has been detected.
LOF Alarms/Defects	read-only	A check mark indicates that a loss of frame (LOF) alarm/defect has been detected.
AIS Alarms/Defects	read-only	A check mark indicates that an alarm indication signal (AIS) alarm/defect has been detected.
Yellow Alarms/Defects	read-only	A check mark indicates that a yellow alarm/defect has been detected.
Next Logical Layer	window button	If PlcpFrame cell delineation is selected, enables you to view statistics concerning near and far-end phase layer convergence protocol (PLCP) faults. See "Viewing Alarms and Defects on DS3/E3 Ports" on page 6-78 for a description of the Display PLCP Status window. If HcsBased cell delineation is selected, enables you to view the status of transmission convergence. See "Viewing Alarms and Defects on DS3/E3 Ports" on page 6-78 for a description of the Display Transmission Convergence Status window.
Next Logical Layer	read-only	Displays the current highest-level alarm detected, if any, on the next logical layer.

Table 6-28. Display PLCP Status Fields and Buttons

Field/Button	Type	Description
Near End CVs	read-only	Displays the number of detected near-end code violations (CVs).
Near End ESs	read-only	Displays the number of detected near-end errored seconds (ESs), i.e., the number of one-second intervals with one or more bipolar violations (BPVs), excessive zeros (EXZs), or loss of signal (LOS) defects. For a B8ZS-coded signal, BPVs that are part of the zero substitution code, as defined in ANSI T1.102, are excluded.
Near End SESs	read-only	Displays the number of detected near-end severely errored seconds (SESs), i.e., the number of one-second intervals with 1544 or more bipolar violations (BPVs) plus excessive zeros (EXZs), or one or more loss of signal (LOS) defects. For a B8ZS-coded signal, BPVs that are part of the zero substitution code, as defined in ANSI T1.102, are excluded.
Near End SEFSs	read-only	Displays the number of detected near-end severely errored framing seconds (SEFSs), i.e., the number of seconds with one or more out-of-frame (OOF) defects, or a detected incoming alarm indication signal (AIS).
Near End UASs	read-only	Displays the number of detected near-end unavailable seconds (UASs), i.e., the number of seconds the interface is unavailable.
Near End Frame Errors	read-only	Displays the number of detected near-end frame errors.

Table 6-28. Display PLCP Status Fields and Buttons (Continued)

Field/Button	Type	Description
Far End CVs	read-only	Displays the number of detected far-end code violations (CVs).
Far End ESs	read-only	Displays the number of detected far-end errored seconds (ESs), i.e., the number of one-second intervals with one or more bipolar violations (BPVs), excessive zeros (EXZs), or loss of signal (LOS) defects. For a B8ZS-coded signal, BPVs that are part of the zero substitution code, as defined in ANSI T1.102, are excluded.
Far End SESs	read-only	Displays the number of detected far-end severely errored seconds (SESs), i.e., the number of one-second intervals with 1544 or more bipolar violations (BPVs) plus excessive zeros (EXZs), or one or more loss of signal (LOS) defects. For a B8ZS-coded signal, BPVs that are part of the zero substitution code, as defined in ANSI T1.102, are excluded.
Far End UASs	read-only	Displays the number of detected far-end unavailable seconds (UASs), i.e., number of seconds the interface is unavailable.
LOF Alarms/Defects	read-only	A check mark indicates that a loss of frame (LOF) alarm/defect has been detected.
Yellow Alarms/Defects	read-only	A check mark indicates that a yellow alarm/defect has been detected.
Clear Counters	command button	Resets the near and far end counter (numeric) fields to zero (0).

Viewing ATM Layer Statistics on DS3/E3 Ports

From the Display DS3/E3 Port Status window, you can view information about the state of the ATM layer on the port. To display this information, choose the Next Logical Layer button. The Display ATM Status window appears (see Figure 6-32).

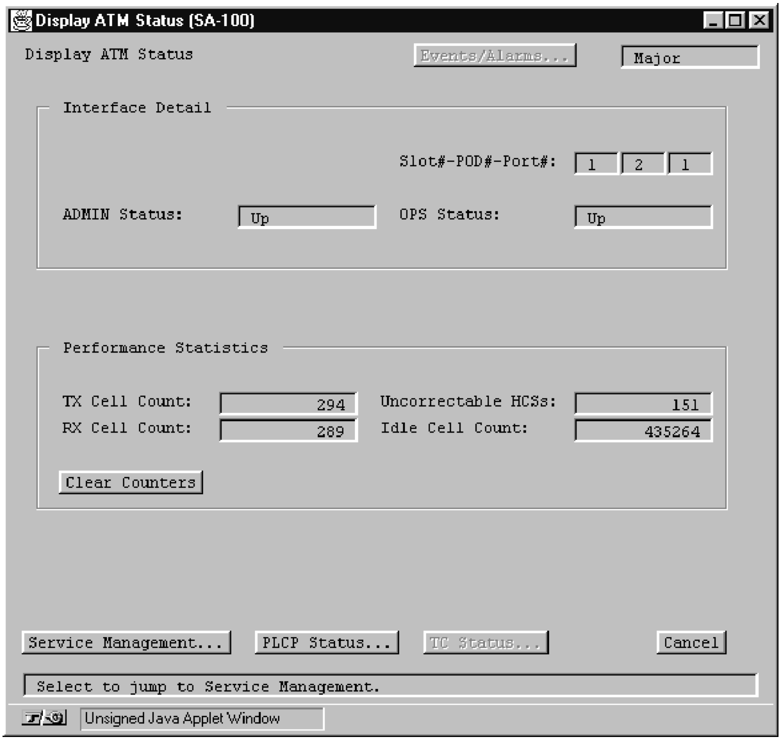

Figure 6-32. Display ATM Status Window

Table 6-29 describes the fields and buttons in the Display ATM Status window.

Table 6-29. Display ATM Status Fields and Buttons

Field/Button	Type	Description
Interface Detail		
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot field is always "1."
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Performance Statistics		
TX Cell Count	read-only	Displays number of ATM cells transmitted.
Uncorrectable HCSs	read-only	Displays number of uncorrectable header checksum sequences (HCSs), that is, the number of errors that the SA 100 detected in the ATM cell header, but was able to fix.
RX Cell Count	read-only	Displays number of ATM cells received.
Idle Cell Count	read-only	Displays number of idle cells generated.
Clear Counters	command button	Resets all the counter (numeric) fields in the Performance Statistics frame to zero (0).
(Other Buttons)		
Service Management	window button	Enables you to view status information concerning ATM connections. See "Viewing ATM-UNI Connection Information" on page 6-103.

Table 6-29. Display ATM Status Fields and Buttons (Continued)

Field/Button	Type	Description
PLCP Status	window button	If PlcpFrame cell delineation is selected, enables you to view statistics concerning near and far-end phase layer convergence protocol (PLCP) faults. Refer to “Viewing Alarms and Defects on DS3/E3 Ports” on page 6-78 for a description of the Display PLCP Status window.
TC Status	window button	If HcsBased cell delineation is selected, enables you to view the status of transmission convergence. Refer to “Viewing Alarms and Defects on DS3/E3 Ports” on page 6-78 for a description of the Display Transmission Convergence Status window.

Monitoring OC-3c/STM-1 Ports

To monitor a OC-3c/STM-1 port, select the port as described in “Accessing Monitoring Functions” on page 6-2. The Display OC-3/STM-1 Status window appears (see Figure 6-33).

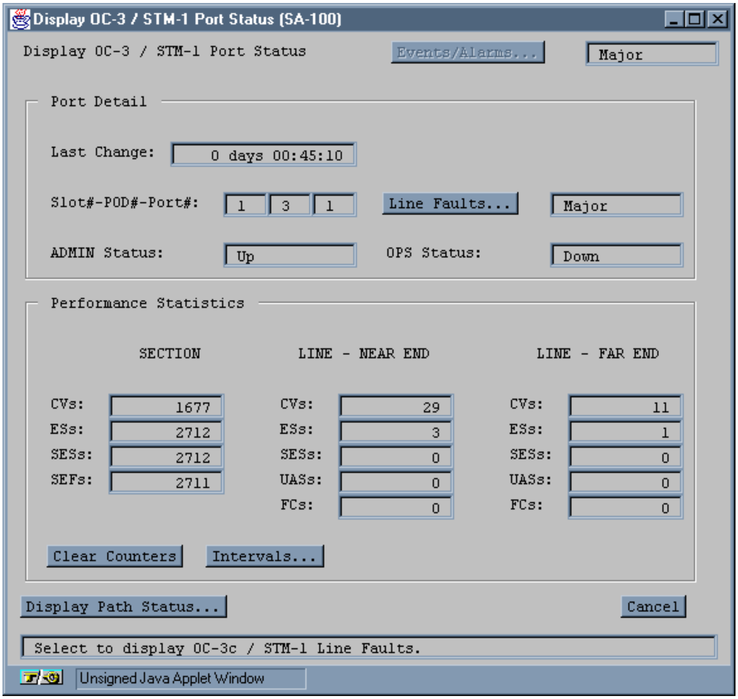

Figure 6-33. Display OC-3/STM-1 Port Status Window

Table 6-30 describes the fields and buttons in the Display OC-3/STM-1 Port Status window.

The fields in the Performance Statistics frame of the Display OC-3/STM-1 Port Status window represent a running total that has been tallied since the port came up or since the Clear Counters button was last used to set the fields to zero (0).

Table 6-30. Display OC-3/STM-1 Port Status Fields and Buttons

Field/Button	Type	Description
Port Detail		
Last Change	read-only	Displays the amount of time (days, hours, minutes, seconds) that the port has been operating since it came up.
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the port. Since there is only one slot in the SA 100, the Slot# field is always "1."
Line Faults	window button	Enables you to view line alarms and defects which may have occurred: loss of signal (LOS), loss of frame (LOF), alarm indication signal line (AIS-L), or remote defect indication line (RDI-L).
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Performance Statistics		
Section CVs	read-only	Displays the number of coding violations (CVs) detected in the section layer, i.e., the number of detected BIP-8 errors.
Section ESs	read-only	Displays the number errored seconds detected (ESs) in the section layer, i.e., the number of one-second intervals containing one or more bit interleaved parity (BIP) section errors, one or more loss of signal errors (LOS), or one or more severely errored frame (SEF) defects.

Table 6-30. Display OC-3/STM-1 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
Section SESs	read-only	Displays the number severely errored seconds (SESs) detected in the section layer, i.e., the number of one-second intervals containing 2500 or more bit interleaved parity (BIP) section errors, one or more loss of signal (LOS), or one or more severely errored frame (SEF) defects.
Section SEFs	read-only	Displays the number of severely errored frame (SEFs) defects detected in the section layer, i.e., the number of one-second intervals containing one or more SEF defects.
Line Near CVs	read-only	Displays the number of near-end coding violations (CVs) detected in the line layer, i.e., the number of detected bit interleaved parity (BIP) errors.
Line Near ESs	read-only	Displays the number of near-end errored seconds (ESs) detected in the line layer, i.e., the number of one-second intervals containing one or more bit interleaved parity (BIP) line errors or one or more alarm indication signal (AIS) defects.
Line Near SESs	read-only	Displays the number of near-end severely errored seconds (SESs) detected in the line layer, i.e., the number of 1 second intervals containing 2500 or more bit interleaved parity (BIP) line errors or one or more alarm indication signal line (AIS-L) defects.

Table 6-30. Display OC-3/STM-1 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
Line Near SEFs	read-only	Displays the number of near-end severely errored framing seconds (SEFs) defects detected in the line layer, i.e., the number of one-second intervals containing one or more SEF defects.
Line Near FCs	read-only	Displays the number of near-end failure counts (FCs) detected in the line layer, i.e., the number of alarm indication signal line (AIS-L) events.
Line Far CVs	read-only	Displays the number of far-end coding violations (CVs) detected in the line layer, i.e., the number of detected bit interleaved parity (BIP) errors.
Line Far ESs	read-only	Displays the number of far-end errored seconds (ESs) detected in the line layer, i.e., the number of one-second intervals containing one or more bit interleaved parity (BIP) line errors, one or more alarm indication signal (AIS) defects.
Line Far SESs	read-only	Displays the number of far-end severely errored seconds (SESs) detected in the line layer, i.e., the number of 1 second intervals containing 2500 or more bit interleaved parity (BIP) line errors, one or more alarm indication signal line (AIS-L) defects.
Line Far SEFs	read-only	Displays the number of far-end severely errored framing seconds (SEFs) defects detected in the line layer, i.e., the number of one-second intervals containing one or more SEF defects.

Table 6-30. Display OC-3/STM-1 Port Status Fields and Buttons (Continued)

Field/Button	Type	Description
Line Far FCs	read-only	Displays the number of far-end failure counts (FCs) detected in the line layer, i.e., the number of alarm indication signal line (AIS-L) events.
Clear Counters	command button	Resets all the counter (numeric) fields in the Performance Statistics frame to zero (0).
Intervals	window button	Enables you to view port statistics for the current 15-minute interval or a previous 15-minute interval. (The number of viewable previous intervals depends on the value of the Set Max Intervals parameter.) See "Viewing Performance Statistics for an Interval" on page 6-54 for instructions on viewing interval statistics.
(Other Buttons)		
Display Path Status	window button	Enables you to view statistics concerning the OC-3c/STM-1 path. See "Viewing Path Statistics on OC-3c/STM-1 Ports" on page 6-94 for details.

Viewing Interval Performance Statistics on OC-3c/STM-1 Ports

See “Viewing Performance Statistics for an Interval” on page 6-54 for instructions on viewing interval statistics. Refer to Table 6-30 on page 6-87 for field descriptions.

Viewing Alarms and Defects on OC-3c/STM-1 Ports

From the Display OC-3/STM-1 Port Status window, you can view any line-level alarm or defect conditions which have been detected on the OC-3c/STM-1 port. To view the alarms and defects:

1. Choose the Line Faults button. The OC-3c/STM-1 Line Faults window appears (see Figure 6-34), displaying any faults detected on the OC-3c/STM-1 line.

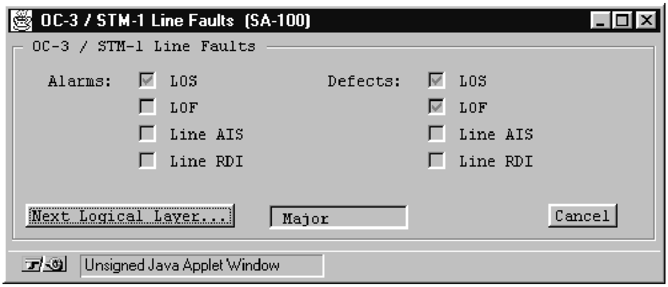

Figure 6-34. OC-3/STM-1 Line Faults Window

2. Choose the Next Logical Layer button. The OC-3/STM-1 Path Faults window appears (Figure 6-35), displaying any faults detected on the OC-3c/STM-1 path.

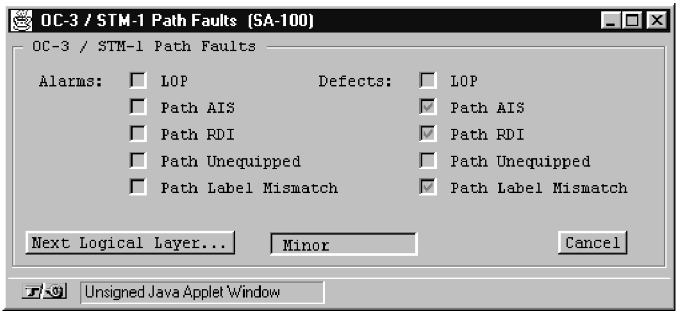

Figure 6-35. OC-3/STM-1 Path Faults Window

Table 6-31 and Table 6-32 describe the fields and buttons in the OC-3/STM-1 Line Faults and OC-3/STM-1 Path Faults windows, respectively.

Table 6-31. OC-3/STM-1 Line Faults Fields and Buttons

Field/Button	Type	Description
LOS Alarms/Defects	read-only	A check mark indicates that a loss of signal (LOS) alarm/defect has been detected.
LOF Alarms/Defects	read-only	A check mark indicates that a loss of frame (LOF) alarm/defect has been detected.
Line AIS Alarms/Defects	read-only	A check mark indicates that an alarm indication signal line (AIS-L) alarm/defect has been detected.
Line RDI Alarms/Defects	read-only	A check mark indicates that a remote defect indication line (RDI-L) alarm/defect has been detected.
Next Logical Layer	window button	Enables you to view OC-3c/STM-1 path alarms and defects.
Next Logical Layer	read-only	Displays the current highest-level alarm detected, if any, on the OC-3c/STM-1 path.

Table 6-32. OC-3/STM-1 Path Faults Fields and Buttons

Field/Button	Type	Description
LOP Alarms/Defects	read-only	A check mark indicates that a loss of pointer (LOP) alarm/defect has been detected.
Path AIS Alarms/Defects	read-only	A check mark indicates that an path alarm indication signal (AIS) alarm/defect has been detected.
Path RDI Alarms/Defects	read-only	A check mark indicates that a path remote defect indication (RDI) alarm/defect has been detected.
Path Unequipped Alarms/Defects	read-only	A check mark indicates that an path signal label unequipped alarm/defect has been detected.
Path Label Mismatch Alarms/Defects	read-only	A check mark indicates that an path signal label mismatch alarm/defect has been detected.
Next Logical Layer	window button	Enables you to view statistics concerning the ATM UNI layer.

Viewing Path Statistics on OC-3c/STM-1 Ports

From the Display OC-3/STM-1 Port Status window, you can access status information related to the OC-3c/STM-1 path. To view this information, choose the Display Path Status button. The Display OC-3/STM-1 Path Status window appears (Figure 6-36).

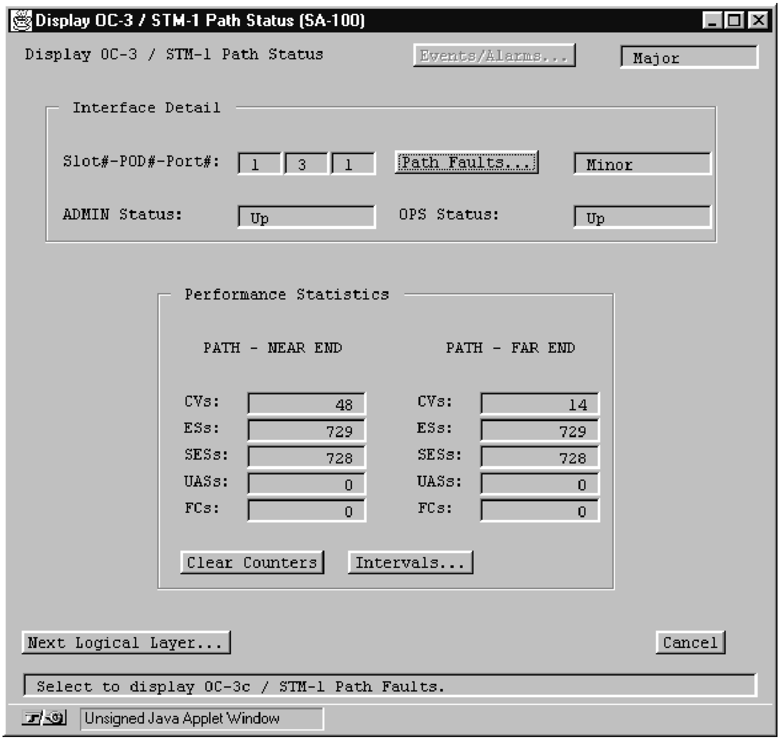

Figure 6-36. Display OC-3/STM-1 Path Status Window

Table 6-33 describes the fields and buttons in the Display OC-3/STM-1 Path Status window.

> *The fields in the Performance Statistics frame of the Display OC-3/STM-1 Path Status window represent a running total that has been tallied since the path came up or since the Clear Counters button was last used to set the fields to zero (0).*

Table 6-33. Display OC-3/STM-1 Path Status Fields and Buttons

Field/Button	Type	Description
Interface Detail		
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the path. Since there is only one slot in the SA 100, the Slot# field is always "1."
Path Faults	window button	Enables you to view any of the following alarms and defects which may have occurred: loss of pointer (LOP), path alarm indication signal (AIS), path remote defect indication (RDI), path signal label unequipped and path signal label mismatch. Refer to "Viewing Alarms and Defects on OC-3c/STM-1 Ports" on page 6-91 for a description of this window.
ADMIN Status	read-only	Displays the administrative state of the path: up or down.
OPS Status	read-only	Displays the operational state of the path: up or down.
Performance Statistics		
Path - Near End CVs	read-only	Displays the number of coding violations (CVs) detected in the near-end path layer, i.e., the number of detected BIP-8 errors.

Table 6-33. Display OC-3/STM-1 Path Status Fields and Buttons (Continued)

Field/Button	Type	Description
Path - Near End ESs	read-only	Displays the number errored seconds detected (ESs) in the near-end path layer, i.e., the number of one-second intervals containing one or more BIP-8 section errors, one or more loss of signal errors (LOS), or one or more severely errored frame (SEF) defects.
Path - Near End SESs	read-only	Displays the number severely errored seconds (SESs) detected in the near-end path layer, i.e., the number of one-second intervals containing 2400 or more BIP-8 section errors, one or more loss of signal (LOS), or one or more severely errored frame (SEF) defects.
Path - Near End UASs	read-only	Displays the number unavailable seconds (UASs) detected in the near-end path layer, i.e., the number of seconds the path is unavailable
Path - Near End FCs	read-only	Displays the number of near-end failure counts (FCs) detected in the path layer, i.e., the number of alarm indication signal line (AIS-L) events.
Path - Far End CVs	read-only	Displays the number of coding violations (CVs) detected in the far-end path layer, i.e., the number of detected BIP-8 errors.

Table 6-33. Display OC-3/STM-1 Path Status Fields and Buttons (Continued)

Field/Button	Type	Description
Path - Far End ESs	read-only	Displays the number errored seconds detected (ESs) in the far-end path layer, i.e., the number of one-second intervals containing one or more BIP-8 section errors, one or more loss of signal errors (LOS), or one or more severely errored frame (SEF) defects.
Path - Far End SESs	read-only	Displays the number severely errored seconds (SESs) detected in the far-end path layer, i.e., the number of one-second intervals containing 2400 or more BIP-8 section errors, one or more loss of signal (LOS), or one or more severely errored frame (SEF) defects.
Path - Far End UASs	read-only	Displays the number unavailable seconds (UASs) detected in the far-end path layer, i.e., the number of seconds the path is unavailable
Path - Far End FCs	read-only	Displays the number of far-end failure counts (FCs) detected in the path layer, i.e., the number of alarm indication signal line (AIS-L) events.
Clear Counters	command button	Resets all the counter (numeric) fields in the Performance Statistics frame to zero (0).

Table 6-33. Display OC-3/STM-1 Path Status Fields and Buttons (Continued)

Field/Button	Type	Description
Intervals	window button	Enables you to view port statistics for the current 15-minute interval or a previous 15-minute interval. (The number of viewable previous intervals depends on the setting of the Set Max Intervals parameter.) See “Viewing Performance Statistics for an Interval” on page 6-54 for instructions on viewing interval statistics.
(Other Buttons)		
Next Logical Layer	window button	Enables you to view statistics concerning the ATM layer. See “Viewing ATM Statistics on OC-3c/STM-1 Paths” on page 6-99.

Viewing Performance Statistics for an Interval on OC-3c/STM-1 Paths

See “Viewing Performance Statistics for an Interval” on page 6-54 for instructions on viewing interval statistics. Refer to Table 6-33 on page 6-95 for field descriptions.

Viewing ATM Statistics on OC-3c/STM-1 Paths

From the Display OC-3/STM-1 Path Status window, you can view information about the state of the ATM layer on the path. To display this information, choose the Next Logical Layer button. The Display ATM Status window appears (see Figure 6-37).

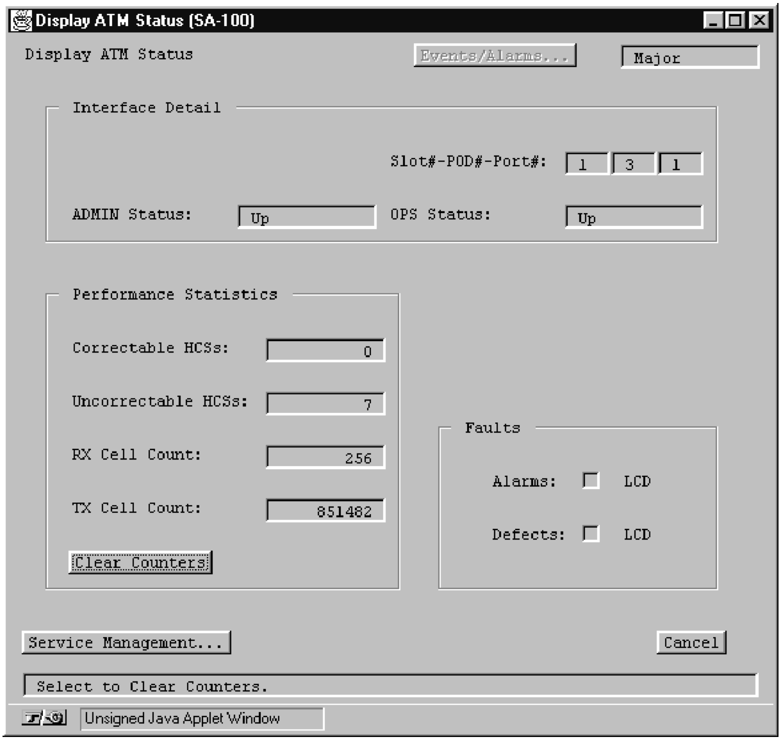

Figure 6-37. Display ATM Status Window

Table 6-34 describes the fields buttons in the Display ATM Status window.

Table 6-34. Display ATM Status Fields and Buttons

Field/Button	Type	Description
Interface Detail		
Slot#-POD#-Port#	read-only	Displays the location (slot, POD and port numbers) of the path. Since there is only one slot in the SA 100, the Slot field is always “1.”
ADMIN Status	read-only	Displays the administrative state of the path: up or down.
OPS Status	read-only	Displays the operational state of the path: up or down.
Performance Statistics		
Correctable HCSs	read-only	Displays number of correctable header checksum sequences (HCSs), the number of errors that the SA 100 detected in the ATM cell header and was able to fix.
Uncorrectable HCSs	read-only	Displays number of uncorrectable header checksum sequences (HCSs), the number of errors that the SA 100 detected in the ATM cell header but was unable to fix.
RX Cell Count	read-only	Displays number of ATM cells received.
TX Cell Count	read-only	Displays number of ATM cells transmitted.
Clear Counters	command button	Resets all the counter (numeric) fields in the Performance Statistics frame to zero (0).
Faults		
Alarms LCD	read-only	A check mark indicates that a loss of cell delineation (LCD) alarm was detected.

Table 6-34. Display ATM Status Fields and Buttons (Continued)

Field/Button	Type	Description
Defects LCD	read-only	A check mark indicates that a loss of cell delineation (LCD) defect was detected.
(Other Buttons)		
Service Management	window button	Enables you to access status information concerning ATM connections. See “Viewing ATM-UNI Connection Information” on page 6-103.

Monitoring ATM Connections

You can view status information about ATM connections by viewing the ATM UNI Connections window. You can access this window from the main menu or from a Display Port Status or Display Path Status window.

From the Main Menu:

1. Choose the Service Management button from the Main Menu.

2. When the Select Service window appears (see Figure 5-1 on page 5-2), choose the ATM User Network Interface (UNI) button.

3. When the Select ATM UNI Port window appears (see Figure 5-2 on page 5-3), select the desired port to view. The ATM UNI Connections window appears (see Figure 5-3 on page 5-4).

From a Display Port or Path Status Window:

4. From a Display Port Status window, choose the Display Path Status button to open the Display Path Status window.

5. From a Display Path window, choose the Next Logical Layer button to open the Display ATM Status window.

6. From the Display ATM Status window, choose the Service Management button. The ATM UNI Connections window appears (see Figure 5-3 on page 5-4).

Viewing ATM-UNI Connection Information

The ATM-UNI Connections window displays information on configured ATM-UNI connections. (This dialog box is the same one shown in Figure 5-3. For convenience, it is repeated here.)

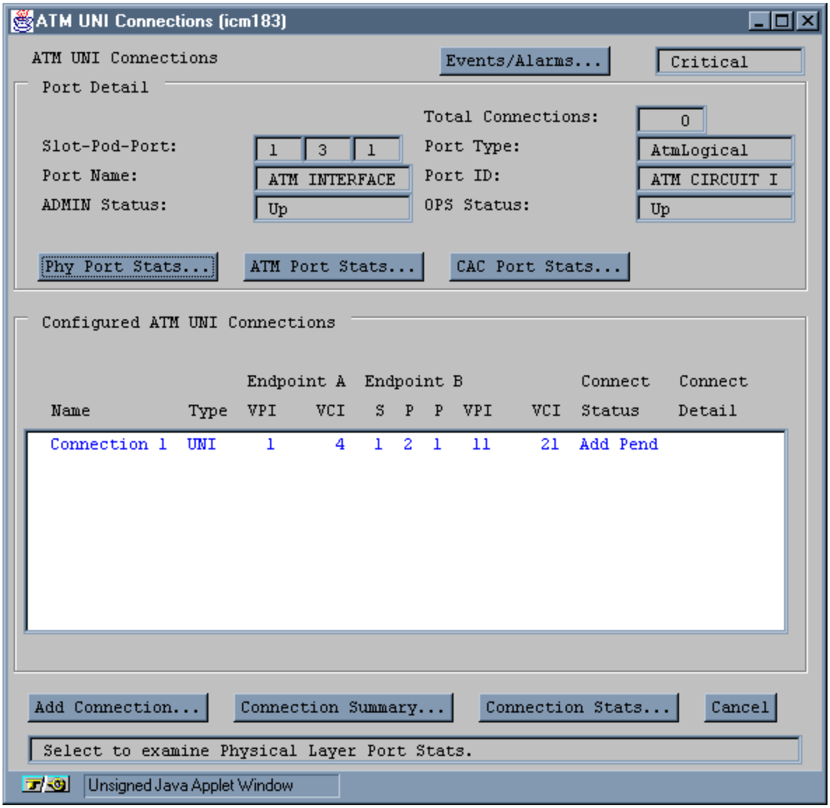

Figure 6-38. ATM UNI Connections Window

Unlike the CES and NLS connections dialog boxes, which show only the CES or NLS end of a connection, the ATM-UNI Connections dialog box allows you to see both ends of connections passing through the ATM port. This “mirroring” of connections makes this dialog box a valuable clearing-house of information.

Table 6-35. ATM UNI Connections Fields and Buttons

Field/Button	Type	Action/Description
Port Detail		
Total Connections	read-only	Displays the number of defined connections on the port.
Slot-POD-Port	read-only	Display the ports' slot, POD and port numbers. Since the SA 100 has only one slot, the Slot field is always "1."
Port Type	read-only	Displays the type of port.
Port Name	read-only	Displays the port name (32 characters max).
Port ID	read-only	Displays the port ID (32 characters max).
ADMIN Status	read-only	Displays the administrative state of the port: up or down.
OPS Status	read-only	Displays the operational state of the port: up or down.
Phy Port Stats	window button	Enables you to view physical port statistics by opening the Display Port Status window corresponding to the specific port type. Refer to the subsection on the specific port type earlier in this chapter.
ATM Port Stats	window button	Enables you to view ATM port statistics by opening the Display ATM Status window. Refer to the subsection on the specific port type earlier in this chapter.
CAC Port Stats	window button	Enables you to view the Connection Admission Control port statistics by opening the CAC Port Statistics window.

Table 6-35. ATM UNI Connections Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Configured ATM UNI Connections		
Name	read-only	Displays the user designation of each configured connection on this port.
Type	read-only	Displays the connection type: CES, NLS, or ATM.
Endpoint A VPI	read-only	Displays the virtual path identifier at endpoint A of each configured connection on this port.
Endpoint A VCI	read-only	Displays the virtual channel identifier at endpoint A of each configured connection on this port.
Endpoint B S-P-P	read-only	Displays the slot-POD-port numbers of endpoint B of each configured connection on this port.
Endpoint B VPI	read-only	Displays the virtual path identifier of endpoint B of each configured connection on this port. (Applies to ATM connections only; CES and NLS connections have no VPI.)
Endpoint B VCI	read-only	Displays the virtual channel identifier of endpoint B of each configured connection on this port. (Applies to ATM connections only; CES and NLS connections have no VCI.)
Connect Status	read-only	Displays the connection state of each configured connection on this port: up or down.
Connect Detail	read-only	Displays the reason it is down if the Connect Status field is not “up.”

Table 6-35. ATM UNI Connections Fields and Buttons (Continued)

Field/Button	Type	Action/Description
(Other Buttons)		
Add Connection	window button	Opens a window for adding an ATM UNI connection. See "Adding a Connection" on page 5-9.
Connection Summary	window button	Enables you to view a summary of the configuration data related to all the connections on this port.
Connection Stats	window button	Enables you to view connection statistics for all the connections on this port.

Viewing CAC Statistics

To view Connection Admission Control (CAC) statistics on the currently selected ATM-UNI port, select the CAC Port Stats button. The CAC Port Statistics window appears (Figure 6-39):

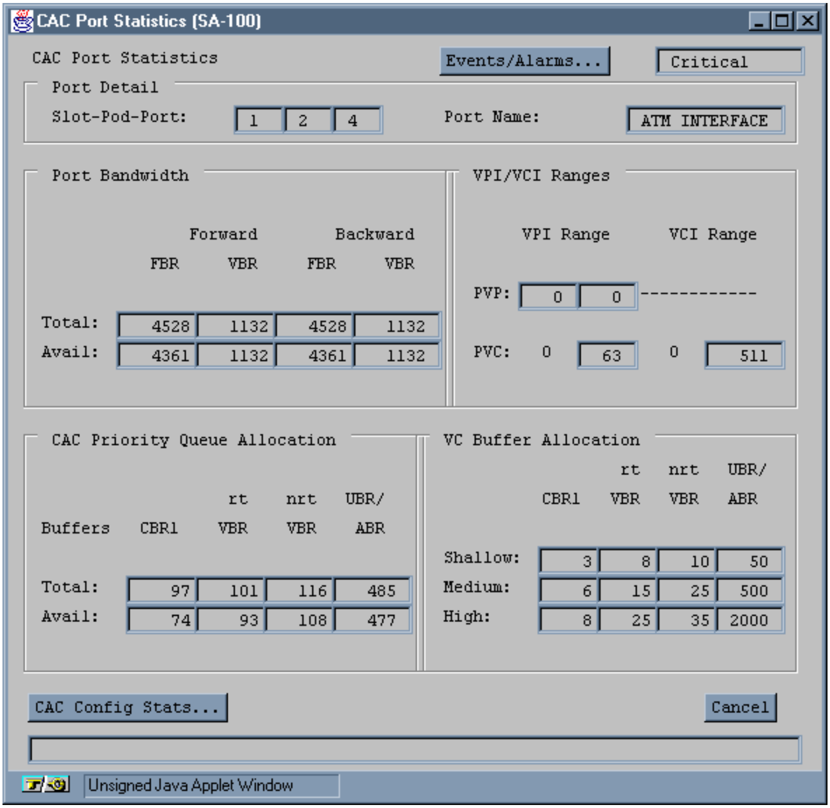

Figure 6-39. CAC Port Statistics Window

Table 6-36. CAC Port Statistics Fields and Buttons

Field/Button	Type	Description
Port Detail		
Slot-POD-Port	read-only	Displays the location (slot and POD number) of the currently selected port. Since there is only one slot in the SA 100, the Slot# is always “1.”
Port Name	read-only	Displays the port name (32 characters max).
Port Bandwidth		
Total FBR	read-only	Displays the amount of fixed bandwidth (fixed bit rate, FBR) that has been allocated for connections.
Avail FBR	read-only	Displays the remaining fixed bandwidth (fixed bit rate, FBR) available for connections.
Total VBR	read-only	Displays the amount of variable bandwidth (variable bit rate, VBR) that has been allocated for connections.
Avail VBR	read-only	Displays the remaining variable bandwidth (variable bit rate, VBR) available for connections.
VPI/VCI Ranges		
VPI Range: PVP	read-only	Displays the VPI Range for PVP.
VPI Range: PVC	read-only	Displays the VPI Range for PVC.
VCI Range: PVC:	read-only	Displays the VCI Range for PVC.

Table 6-36. CAC Port Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
CAC Priority Queue Allocation		
CBR1 Total/Available	read-only	Displays total/available buffers for CBR1.
rt VBR Total/Available	read-only	Displays total/available buffers for rtVBR.
nrt VBR Total/Available	read-only	Displays total/available buffers for nrtVBR.
UBR/ABR Total/Available	read-only	Displays total/available buffers for UBR/ABR.
VC Buffer Allocation		
CBR1 Shallow/ Medium/High	read-only	Displays shallow/medium/high VC buffer allocations for CBR1.
rt VBR Shallow/ Medium/High	read-only	Displays shallow/medium/high VC buffer allocations for rtVBR.
nrt VBR Shallow/ Medium/High	read-only	Displays shallow/medium/high VC buffer allocations for nrtVBR.
UBR/ABR Shallow/ Medium/High	read-only	Displays shallow/medium/high VC buffer allocations for UBR/ABR.
(Other Fields and Buttons)		
CAC Config Stats	window button	Enables you to display CAC Config Statistics.

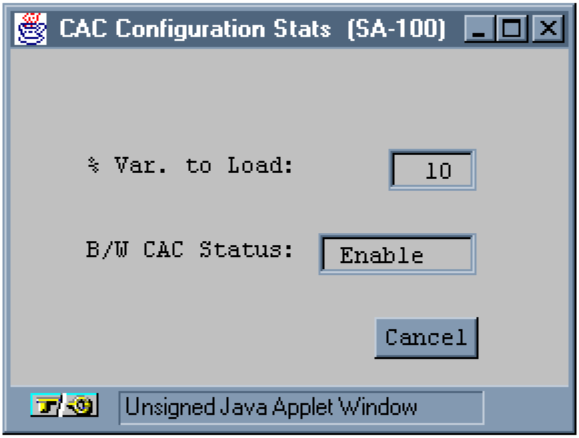

Figure 6-40. CAC Configuration Stats Window

Table 6-37. Connections Summary Fields

Field (read-only)	Description
% Var to Load	Displays the percentage of variable bandwidth that is treated as fixed bandwidth (for the purpose of subtracting the fixed bandwidth that has been allocated for connections from the remaining fixed bandwidth available for connections).
B/W CAC Status	Displays whether bandwidth CAC is enabled or disabled.

Viewing Statistics on Individual ATM-UNI Connections

From the ATM UNI Connections window, there are three ways to display ATM connection status information:

- Select the Connection from the Configured ATM UNI Connections list in the ATM UNI Connections window (page 6-118);
- Select the Connection Summary button in the ATM UNI Connections window, then select the desired connection from the list in the Connections Summary window (page 6-119);

  or

- Select Connection Statistics button in the ATM UNI Connections window, then select the desired connection from the list in the Connections Statistics window (page 6-121).

All three paths bring you to the UNI Connection Options window, shown below in Figure 6-41. Select the Statistics button in the UNI Connection Options window to display the Connection Statistics window shown in Figure 6-42 on page 6-114 and described in Table 6-39.

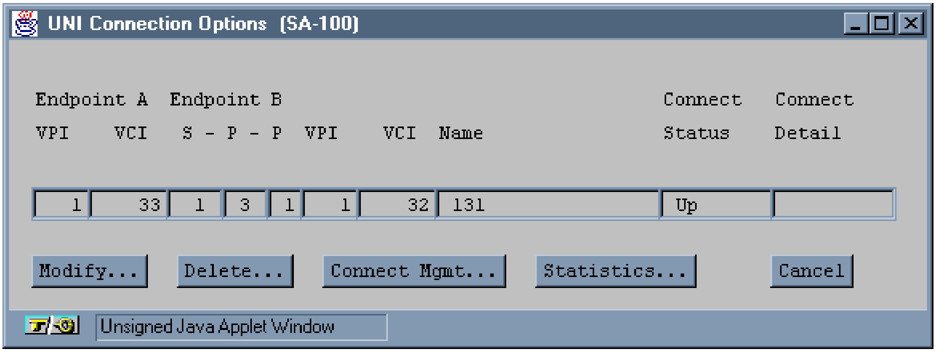

Figure 6-41. UNI Connection Options Window

Table 6-38 describes the fields and buttons in the UNI Connection Options window.

Table 6-38. UNI Connection Options Fields and Buttons

Field/Button	Type	Description
Endpoint A VPI	read-only	Displays the virtual path identifier (VPI) at endpoint A of the ATM connection.
Endpoint A VCI	read-only	Displays the virtual channel identifier (VCI) at endpoint A of the ATM connection.
Endpoint B S-P-P	read-only	Displays the location (slot, POD and port numbers) of the endpoint B port of the ATM connection. Since there is only one slot in the SA 100, the Slot field is always “1.”
Endpoint B VPI	read-only	Displays the virtual path identifier (VPI) at endpoint B of the ATM connection.
Endpoint B VCI	read-only	Displays the virtual channel identifier (VCI) at endpoint B of the ATM connection.
Name	read-only	Displays the name of the currently selected ATM connection.
Connect Status	read-only	Displays the state of the ATM connection: up or down.
Connect Detail	read-only	Displays an error code if any failure is present on this connection, or blank if no failure exists. See “Common Fields/Buttons” on page 2-15 for a list of error codes.
(Other Fields and Buttons)		
Modify	window button	Enables you to modify the selected connection. See “Modifying a Connection” on page 5-17.
Delete	window button	Enables you to delete the selected connection. See “Deleting a Connection” on page 5-19.

Table 6-38. UNI Connection Options Fields and Buttons (Continued)

Field/Button	Type	Description
Connect Mgmt	window button	Enables you to set the selected ATM connection’s status to up or down. See “Making a Connection” and “Breaking a Connection” on page 5-20.
Statistics	window button	Enables you to view ATM statistics on the selected connection. See Figure 6-42 on page 6-114.

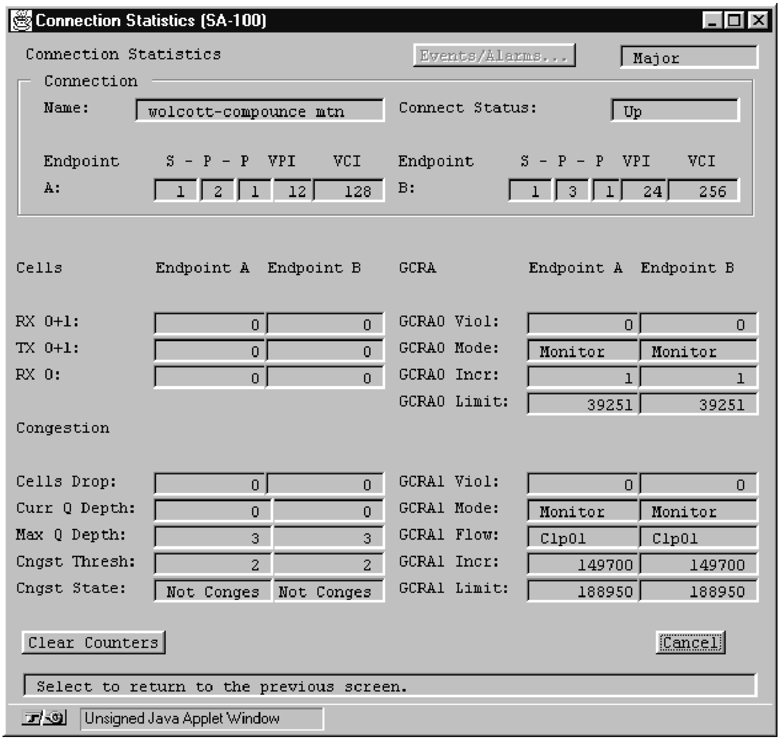

Figure 6-42. Connection Statistics Window

Table 6-39. Connection Statistics Fields and Buttons

Field/Button	Type	Description
Connection		
Name	read-only	Displays the user designation of the ATM connection.
Connect Status	read-only	Displays the state of the connection of the ATM connection: up or down.
Endpoint A/B S-P-P	read-only	Displays the location (slot, POD and port numbers) of the endpoint A/B port of the ATM connection. Since there is only one slot in the SA 100, the Slot field is always “1.”
Endpoint A/B VPI	read-only	Displays the virtual path identifier (VPI) at endpoint A/B of the ATM connection.
Endpoint A/B VCI	read-only	Displays the virtual channel identifier (VCI) at endpoint A/B of the ATM connection.
(Other Fields and Buttons)		
Cells Endpoint A/B RX 0+1	read-only	Displays the number of cells with a cell loss priority of 0+1 received at endpoint A/B.
Cells Endpoint A/B TX 0+1	read-only	Displays the number of cells with a cell loss priority of 0+1 transmitted at endpoint A/B.
Cells Endpoint A/B RX 0	read-only	Displays the number of cells with a cell loss priority of 0 received at endpoint A/B.
Congestion Endpoint A/B Cells Drop	read-only	Displays the number of cells dropped at endpoint A/B in order to control congestion.

Table 6-39. Connection Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
Congestion Endpoint A/B Curr Q Depth	read-only	Displays the present number of cells in the congestion buffer at endpoint A/B.
Congestion Endpoint A/B Max Q Depth	read-only	Displays the maximum number of cells that can be contained by the congestion buffer at endpoint A/B.
Congestion Endpoint A/B Cngst Thresh	read-only	Displays the congestion threshold at endpoint A/B, that is, the number of cells in the congestion buffer that triggers the implementation of the congestion strategy, if any.
Congestion Endpoint A/B Cngst State	read-only	Displays the state of the ATM connection relative to congestion at endpoint A/B.
GCRA Endpoint A/B GCRA0 Viol	read-only	Displays the number of generic cell rate algorithm 0 (GCRA 0) violations at endpoint A/B.
GCRA Endpoint A/B GCRA0 Mode	read-only	Displays the generic cell rate algorithm 0 (GCRA 0) mode of operation at endpoint A/B.
GCRA Endpoint A/B GCRA0 Incr	read-only	Displays the generic cell rate algorithm 0 (GCRA 0) increment at endpoint A/B.
GCRA Endpoint A/B GCRA0 Limit	read-only	Displays the generic cell rate algorithm 0 (GCRA 0) limit at endpoint A/B.
GCRA Endpoint A/B GCRA1 Viol	read-only	Displays the number of generic cell rate algorithm 1 (GCRA 1) violations at endpoint A/B.

Table 6-39. Connection Statistics Fields and Buttons (Continued)

Field/Button	Type	Description
GCRA Endpoint A/B GCRA1 Mode	read-only	Displays the generic cell rate algorithm 1 (GCRA 1) mode of operation at endpoint A/B.
GCRA Endpoint A/B GCRA1 Flow	read-only	Displays the generic cell rate algorithm 1 (GCRA 1) flow type at endpoint A/B.
GCRA Endpoint A/B GCRA1 Incr	read-only	Displays the generic cell rate algorithm 0 (GCRA 0) increment at endpoint A/B.
GCRA Endpoint A/B GCRA1 Limit	read-only	Displays the generic cell rate algorithm 0 (GCRA 0) limit at endpoint A/B.
Clear Counters	command button	Resets all the counter (numeric) fields in the Connection Status window to zero (0).

Viewing the Connection Statistics window from the ATM UNI Connections Window

To view the Connection Statistics window from the ATM UNI Connections window:

1. Select a connection to view from the list of connections in the ATM UNI Connections window (Figure 6-38 on page 6-103).

2. When the UNI Connection Options window appears, choose the Statistics button to open the Connection Statistics window (Figure 6-42 on page 6-114).

Viewing Connection Statistics via the Connections Summary Window

To view the Connection Statistics window via the Connections Summary window:

1. Choose the Connection Summary button in the ATM UNI Connections window. The Connections Summary window appears (see Figure 6-43 and Table 6-40).

2. From the list of connections in the Connections Summary window, select the desired connection.

3. When the UNI Connection Options window appears, choose the Statistics button to display the Connection Statistics window (Figure 6-42).

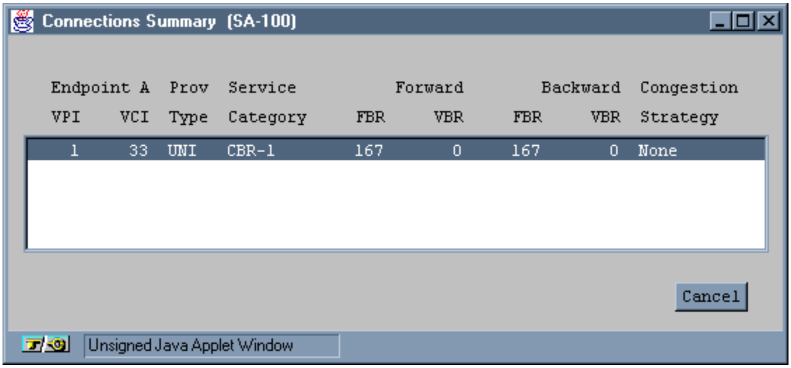

Figure 6-43. Connections Summary Window

Table 6-40. Connections Summary Fields

Field (read-only)	Description
Endpoint A VPI	Displays the virtual path identifier (VPI) at endpoint A of each connection.
Endpoint A VCI	Displays the virtual channel identifier (VCI) at endpoint A of each connection.
Prov Type	Displays the provisioning type used by each connection.
Service Category	Displays the type of service used by each connection.
Forward FBW	Displays the forward fixed bandwidth (FBW) of each connection.
Forward VBW	Displays the forward variable bandwidth (VBW) of each connection.
Backward FBW	Displays the backward fixed bandwidth (FBW) of each connection.
Backward VBW	Displays the backward variable bandwidth (VBW) of each connection.
Congestion Strategy	Displays the method of controlling connection congestion used by each connection.

Viewing Connection Statistics via the Connections Statistics Window

To view the Connections Statistics window via the Connections Statistics window:

1. Choose the Connection Stats button in the ATM UNI Connections window. The Connections Statistics window appears (see Figure 6-44 and Table 6-41):
2. Select the desired connection from the list in the Connections Statistics window.
3. When the UNI Connection Options window appears, choose the Statistics button to display the Connection Statistics window (Figure 6-42).

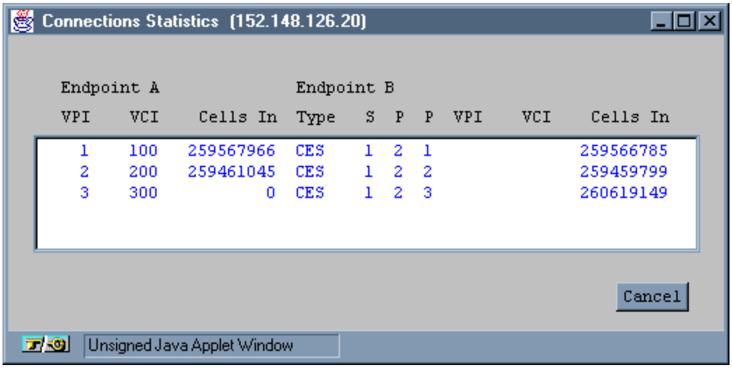

Figure 6-44. Connections Statistics Window

Table 6-41. Connections Statistics Fields

Field (read-only)	Description
Endpoint A/B VPI	Displays the virtual path identifier (VPI) at endpoint A/B of each connection.
Endpoint A/B VCI	Displays the virtual channel identifier (VCI) at endpoint A/B of each connection.
Endpoint B Type	Displays the type of connection at the origin (endpoint B).
Endpoint B S-P-P	Displays the location (slot, POD and port numbers) of the endpoint B port of each connection. Since there is only one slot in the SA 100, the Slot field is always "1."
Endpoint A/B Cells In	Displays the number of incoming cells detected at endpoint A/B of each connection.

Monitoring NLS Connections

You can view status information about the NLS groups and tunnels.

Viewing NLS Group Status Information

To view NLS group status information:

1. Select Service Management from the Main menu.
2. Select an NLS Group from the Configured NLS Groups list to open the NLS Group Options window (see Figure 5-10 on page 5-26).
3. Choose the Stats button. The NLS Group Statistics window appears (Figure 6-45):

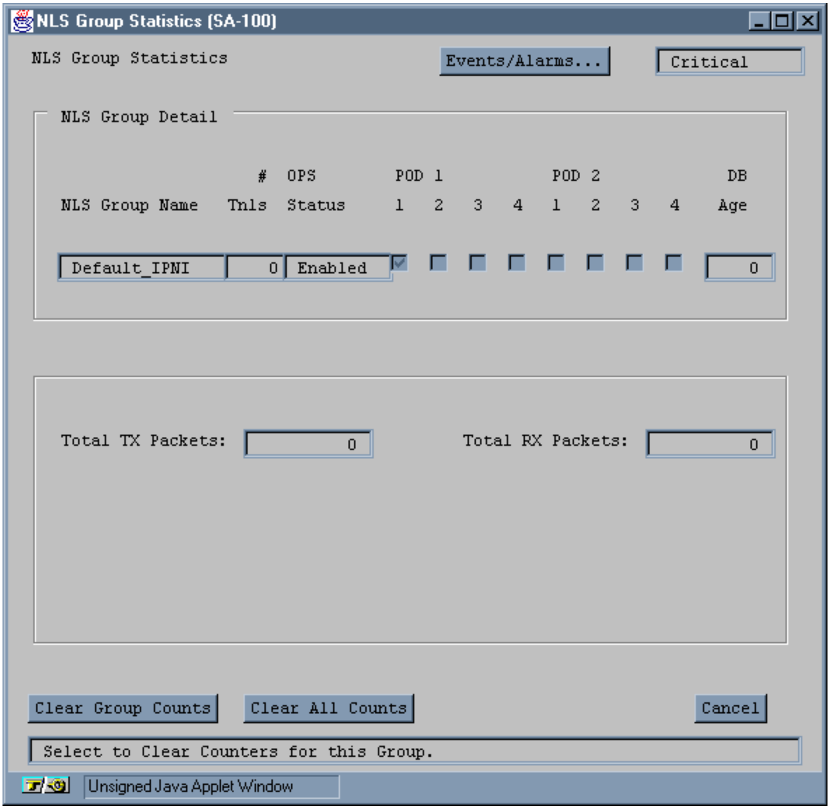

Figure 6-45. NLS Group Statistics Window

4. Table 6-42 describes the fields and buttons shown in the NLS Group Statistics window.

Table 6-42. NLS Group Statistics Fields and Buttons

Field/Button	Type	Action/Description
NLS Group Detail		
NLS Group Name	read-only	Display NLS Group name.
# Tnls	read-only	Displays the number of tunnels established for this NLS group.
OPS Status	read-only	Displays the operational state of the group: up or down.
POD 1 Port 1—4	read-only	Displays a check-mark next to the POD 1 ports which are part of this NLS Group.
POD 2 Port 1—4	read-only	Displays a check-mark next to the POD 2 ports which are part of this NLS Group.
DB Age	read-only	Displays the age of the database.
Total TX Packets	read-only	Displays the total number of packets transmitted by this NLS group.
Total RX Packets	read-only	Displays the total number of packets received by this NLS group.
Clear Group Counts	command button	Resets the group count (numeric) fields in the NLS Group Statistics window to zero (0).
Clear All Counts	command button	Resets all the counter (numeric) fields in the NLS Group Statistics window to zero (0).

Viewing NLS Tunnel Status Information

To view NLS tunnel status information:

1. Open the NLS Tunnels Options window (see “NLS Tunnel Options Window” on page 5-37).
2. Choose the Stats button. The NLS Tunnel Statistics window appears (Figure 6-46):

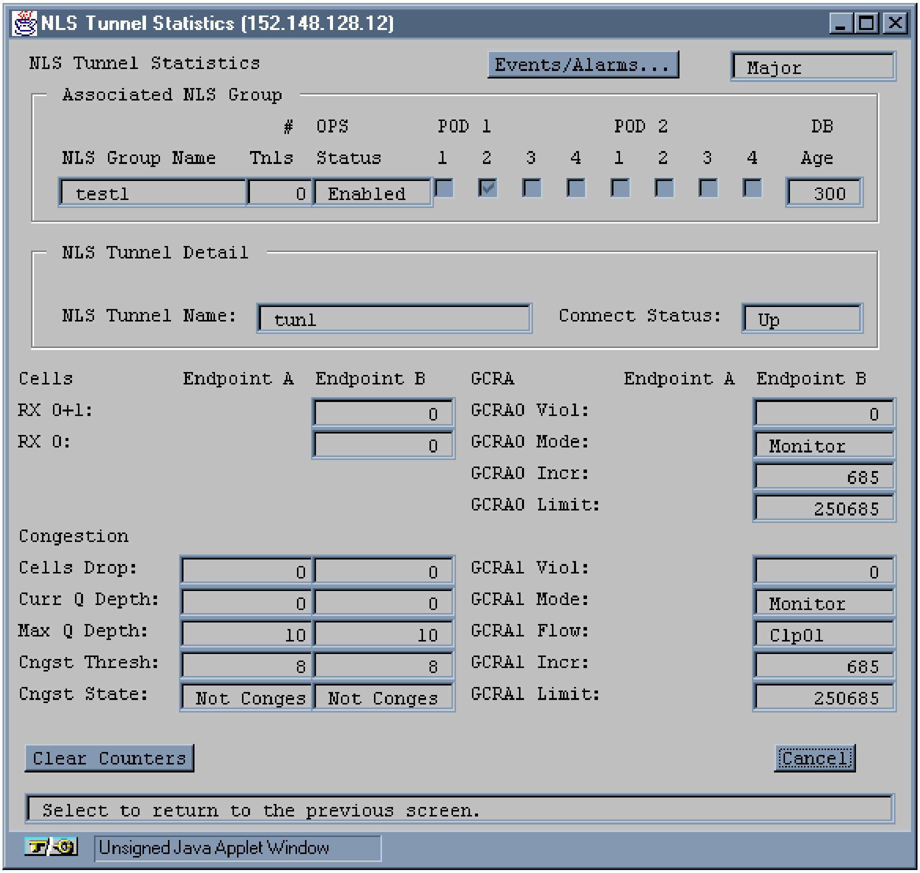

Figure 6-46. NLS Tunnel Statistics Window

3. Table 6-43 describes the fields and buttons in the NLS Tunnel Statistics window.

Table 6-43. NLS Tunnel Statistics Fields and Buttons

Field/Button	Type	Action/Description
Associated NLS Group		
NLS Group Name	read-only	Display NLS Group name.
# Tnls	read-only	Displays the number of tunnels established for this NLS group.
OPS Status	read-only	Displays the operational state of the group: up or down.
POD 1 Port 1—4	read-only	Displays a check-mark next to the POD 1 ports which are part of this NLS Group.
POD 2 Port 1—4	read-only	Displays a check-mark next to the POD 2 ports which are part of this NLS Group.
DB Age	read-only	Displays the age of the database.
NLS Tunnel Detail		
NLS Tunnel Name	read-only	Displays the name of the NLS tunnel.
Connect Status	read-only	Displays the connection status of the NLS tunnel.
(Other Fields and Buttons)		
Cells RX 0+1	read-only	Displays the total number of cells received on this connection.
Cells RX 0	read-only	Displays the total number of CLP0 cells received on this connection.
Congestion Cells Drop	read-only	Displays the number of cells dropped due to congestion.
Congestion Curr Q Depth	read-only	Displays the current queue level for this connection.

Table 6-43. NLS Tunnel Statistics Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Congestion Max Q Depth	read-only	Displays the maximum queue size. Cells are dropped when the queue level reaches this limit.
Cngst Thresh	read-only	Displays the congestion threshold, the queue level at which corresponding congestion control actions are invoked.
Cngst State	read-only	Displays the congestion state for this VC: congested or not congested.
GCRA0 Viol	read-only	Displays the number of cells that did not conform to GCRA0.
GCRA0 Mode	read-only	Displays the current GCRA0 configuration: disabled, monitor, tag, or drop. This specifies action taken by GCRA0 for non-conforming cells.
GCRA0 Incr	read-only	Displays the increment parameter for GCRA0.
GCRA0 Limit	read-only	Displays the size of the bucket (I+L) in GCRA (I,L).
GCRA1 Viol	read-only	Displays the number of cells that did not conform to GCRA1.
GCRA1 Mode	read-only	Displays the current GCRA1 configuration: disabled, monitor, tag, or drop. This specifies action taken by GCRA1 for non-conforming cells.
GCRA1 Flow	read-only	Displays the CLP flow which GCRA1 is programmed to operate in: CLP0 or CLP 0+1.

Table 6-43. NLS Tunnel Statistics Fields and Buttons (Continued)

Field/Button	Type	Action/Description
GCRA1 Incr	read-only	Displays the increment parameter for GCRA1.
GCRA1 Limit	read-only	Displays the size of the bucket (I+L) in GCRA (I,L).
Clear Counters	command button	Clears all counters in this window.

Monitoring CES-IWF Connections

To view CES-IWF connection status information:

1. Open the CES-IWF Options window (see Figure 5-26 on page 5-66).
2. Choose the IWF Stats button. The CES-IWF Statistics window appears (Figure 6-47):

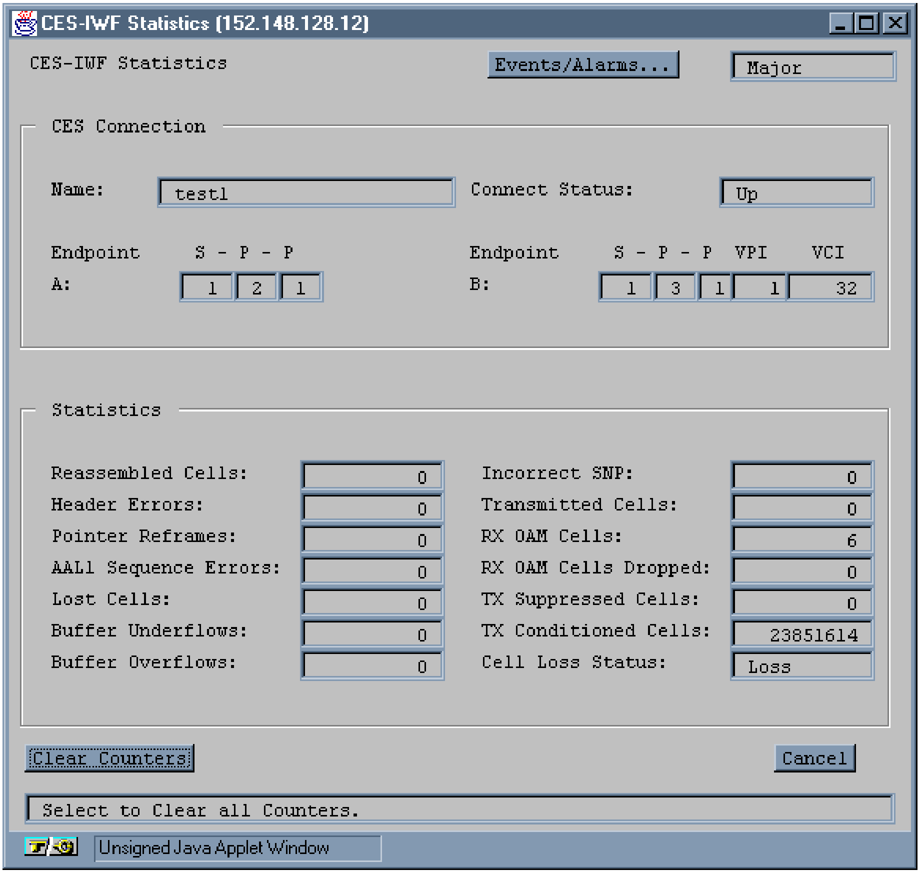

Figure 6-47. CES-IWF Statistics Window

3. Table 6-44 describes the fields and buttons shown in the CES-IWF Statistics window.

Table 6-44. CES-IWF Statistics Fields and Buttons

Field/Button	Type	Action/Description
CES Connection		
Name	read-only	Display CES-IWF Connection name.
Connect Status	read-only	Displays the current connection status: up or down.
Endpoint A: S-P-P	read-only	Displays the slot-POD-port location of Endpoint A.
Endpoint B: S-P-P	read-only	Displays the slot-POD-port location of Endpoint B.
Endpoint B: VPI & VCI	read-only	Displays the virtual path identifier and virtual channel identifier for Endpoint B.
Statistics		
Reassembled Cells	read-only	Displays the number of AAL1 cells that have been reassembled on the CES-IWF. Excludes cells that were discarded for any reason, including cells that were not used due to being declared misinserted or discarded while the reassembler was waiting to achieve syncronization.
Header Errors	read-only	Displays the number of detected header errors on the CES-IWF, i.e., the number of AAL1 cells with uncorrectable CRC. Cells with correctable CRC and cells with bad parity are *not* included.

Table 6-44. CES-IWF Statistics Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Pointer Reframes	read-only	Displays the number of loss of pointer (LOP) defects that have been corrected (reframed) on the CES-IWF. This parameter is meaningful only for structured CES mode, as unstructured CES connections do not use pointers. For unstructured CES, this count indicates zero.
AAL1 Sequence Errors	read-only	Displays the number of ATM adaptation layer type 1 (AAL1) errors that have been detected on the CES-IWF.
Lost Cells	read-only	Displays the number of cells that have been lost on the CES-IWF.
Buffer Underflows	read-only	Displays the count of the number of times the CES reassembly buffer underflows. In the case of a continuous underflow caused by a loss of ATM cell flow, a single buffer underflow is counted.
Buffer Overflows	read-only	Displays the count of the number of times the CES reassembly buffer overflows.
Incorrect SNP	read-only	Displays the number of sequence number protection (SNP) defects that have been detected on the CES-IWF. This is the number of AAL1 cells received with uncorrectable sequence number CRC.
Transmitted Cells	read-only	Displays the number of cells that have been transmitted on the CES-IWF.
RX OAM Cells	read-only	Displays the number of operations administration and maintenance (OAM) cells that have been received on the CES-IWF.

Table 6-44. CES-IWF Statistics Fields and Buttons (Continued)

Field/Button	Type	Action/Description
RX OAM Cells Dropped	read-only	Displays the number of received operations administration and maintenance (OAM) cells that have been dropped on the CES-IWF.
TX Suppressed Cells	read-only	Displays the number of transmitted cells that were suppressed on the CES-IWF; i.e., cells which were not sent because of a line resynchronization.
TX Conditioned Cells	read-only	Displays the number of conditioned cells that were transmitted on the CES-IWF.
Cell Loss Status	read-only	Displays whether any cell loss has occurred ("loss" or "no loss") on the CES-IWF.
(Other Fields and Buttons)		
Clear Counters	command button	Clears all counters in this window.

Viewing CES-IWF Cell Statistics

To view CES-IWF cell status information:

1. Open the CES-IWF Options window (see Figure 5-26 on page 5-66).
2. Choose the Cell Stats button. The Cell Statistics window appears (Figure 6-48).
3. Table 6-45 describes the fields and buttons shown in the Cell Statistics window.

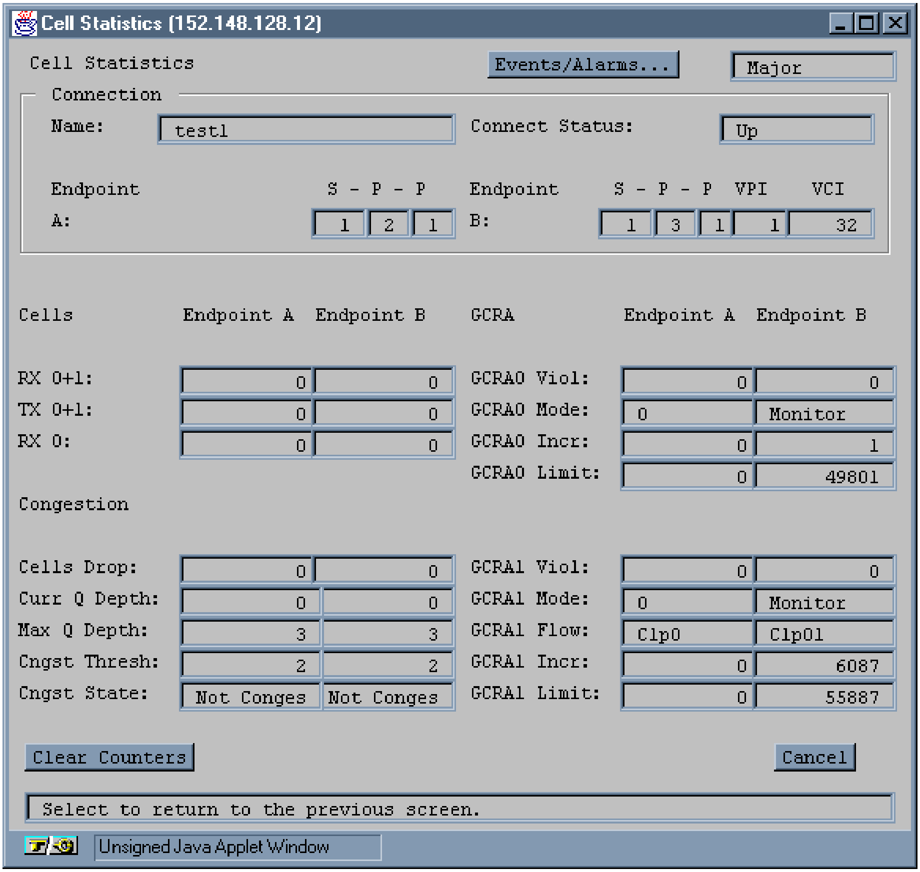

Figure 6-48. Cell Statistics Window

Table 6-45. Cell Statistics Fields and Buttons

Field/Button	Type	Action/Description
Connection		
Name	read-only	Display CES-IWF Connection name.
Connect Status	read-only	Displays the current connection status: up or down.
Endpoint A: S-P-P	read-only	Displays the slot-POD-port address of Endpoint A.
Endpoint B: S-P-P	read-only	Displays the slot-POD-port address of Endpoint B.
Endpoint B: VPI & VCI	read-only	Displays the virtual path identifier and virtual channel identifier for Endpoint B.
(Other Fields and Buttons)		
Cells RX 0+1	read-only	Displays the total number of cells received on this connection.
Cells TX 0+1	read-only	Displays the total number of cells transmitted on this connection.
Cells RX 0	read-only	Displays the total number of CLP0 cells received on this connection.
Congestion Cells Drop	read-only	Displays the number of cells dropped due to congestion.
Congestion Curr Q Depth	read-only	Displays the current queue level for this connection.
Congestion Max Q Depth	read-only	Displays the maximum queue size. Cells are dropped when the queue level reaches this limit.

Table 6-45. Cell Statistics Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Cngst Thresh	read-only	Displays the congestion threshold, the queue level at which corresponding congestion control actions are invoked.
Cngst State	read-only	Displays the congestion state for this VC: congested or not congested.
GCRA0 Viol	read-only	Displays the number of cells that did not conform to GCRA0.
GCRA0 Mode	read-only	Displays the current GCRA0 configuration: disabled, monitor, tag, or drop. This specifies action taken by GCRA0 for non-conforming cells.
GCRA0 Incr	read-only	Displays the increment parameter for GCRA0.
GCRA0 Limit	read-only	Displays the size of the bucket (I+L) in GCRA (I,L).
GCRA1 Viol	read-only	Displays the number of cells that did not conform to GCRA1.
GCRA1 Mode	read-only	Displays the current GCRA1 configuration: disabled, monitor, tag, or drop. This specifies action taken by GCRA1 for non-conforming cells.
GCRA1 Flow	read-only	Displays the CLP flow which GCRA1 is programmed to operate in: CLP0 or CLP 0+1.
GCRA1 Incr	read-only	Displays the increment parameter for GCRA1.
GCRA1 Limit	read-only	Displays the size of the bucket (I+L) in GCRA (I,L).

Table 6-45. Cell Statistics Fields and Buttons (Continued)

Field/Button	Type	Action/Description
Clear Counters	command button	Clears all counters in this window.

What’s Next

After you understand the monitoring functions of WebXtend, you may want to customize the event and alarm functions of the SA 100, or generate event log files. These functions are described in Chapter 7, “Managing Events”.

7

Managing Events

This chapter describes how to:

- Display events and alarms (refer to page 7-2)
- Generate event log files (refer to page 7-8)
- Customize SA 100 events and alarms functions (refer to page 7-8)

Displaying the Events/Alarms Log

The Events/Alarms button (located in the upper-right corner of most WebXtend windows) enables you to view a summary of any current SA 100 events and alarms.

To view current events and alarms, choose the Events/Alarms button. The Events/Alarms Log window appears (see Figure 7-1).

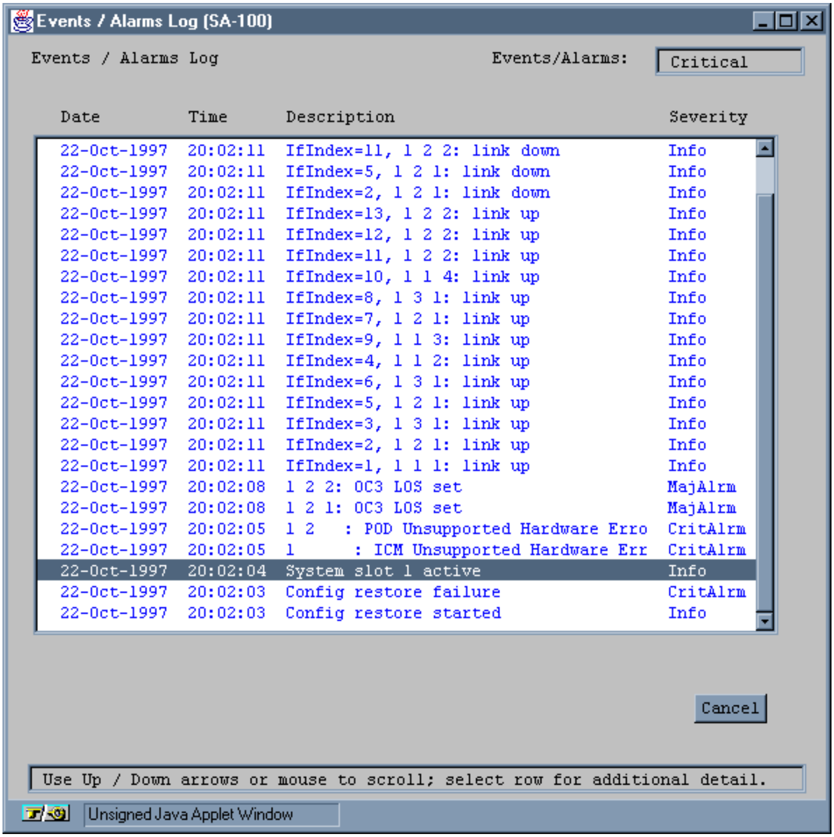

Figure 7-1. Events/Alarms Log Window

The Events/Alarms Log window displays four fields of information about each event and alarm detected by the SA 100. Table 7-1 describes each field in the window.

The newest event or alarm appears at the end of the log. When the log becomes full, the oldest event or alarm is deleted from the log (the log capacity is approximately 200 events/alarms).

Table 7-1. Events/Alarms Log Fields

Designation	Description
Date	Displays the date in European format (day-month-year) when the SA 100 detected the event or alarm.
Time	Displays the time in 24-hour format when the SA 100 detected the event or alarm.
Description	Displays a short statement about the type of alarm.
Severity	Displays the importance of the event or alarm that the SA 100 detected: • `CritAlrm` for critical alarm • `MajAlrm` for major alarm • `MinAlrm` for minor alarm • `Info` for informational purposes (applies to events, rather than alarms) • `Debug` for software debugging purposes.

Viewing Details of Individual Events/Alarms

To view additional details on an individual event or alarm, select it from the log. The Event/Alarm Detail window appears:

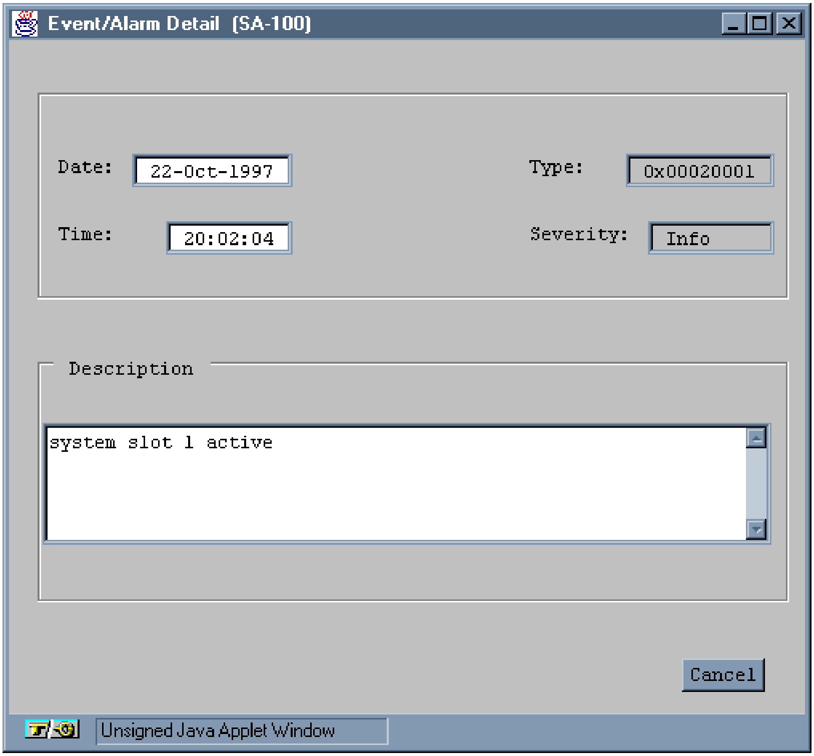

Figure 7-2. Event/Alarm Detail Window

Table 7-2 describes each field in the window.

Table 7-2. Event/Alarm Detail Fields

Designation	Description
Date	Displays the date in European format (day-month-year) when the SA 100 detected the event or alarm.
Type	Displays the type code for the selected error or alarm.

Table 7-2. Event/Alarm Detail Fields (Continued)

Designation	Description
Time	Displays the time in 24-hour format when the SA 100 detected the event or alarm.
Severity	Displays the importance of the event or alarm that the SA 100 detected: • `CritAlrm` for critical alarm • `MajAlrm` for major alarm • `MinAlrm` for minor alarm • `Info` for informational purposes (applies to events, rather than alarms) • `Debug` for software debugging purposes.
Description	Displays a short statement about the type of alarm.

Managing Events and Traps

WebXtend provides several functions for handling alarms and events detected by the SA 100. You can use the Event Management window to:

- Create a file containing the current contents of the Events/Alarms log
- Filter the types of events and alarms that appear in the Events/Alarms log
- Filter the types of events and alarms that generate a trap

To access the Event Management window, choose the Event Management button from the Main menu. The Event Management window appears (Figure 7-3).

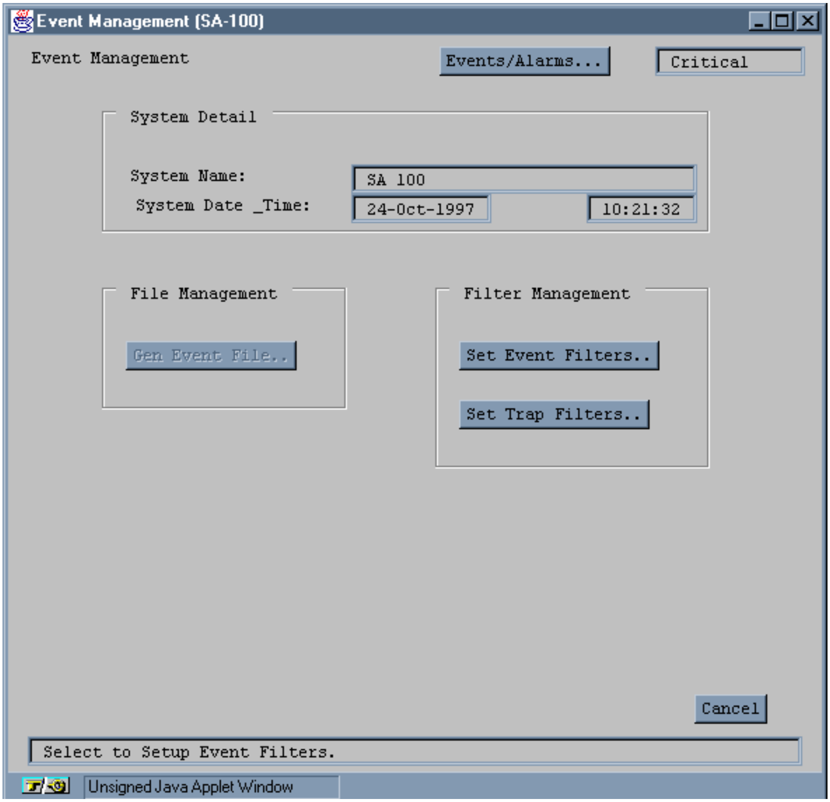

Figure 7-3. Event Management Window

Table 7-3 briefly describes the fields and buttons in the Event Management window.

Table 7-3. Event Management Buttons and Fields

Button/Field	Type	Description
System Name	read-only	Displays the name of the SA 100.
System Date _Time	read-only	Displays the current date in European format (day-month-year) and the current time in 24-hour format as measured by the SA 100 clock.
File Management		
Gen Event File	window button	Enables you to save the current contents of the Events/Alarms log to a file (not supported).
Filter Management		
Set Event Filters	window button	Enables you to select or filter the types of events and alarms that appear in the Events/Alarms log.
Set Trap Filters	window button	Enables you to select or filter the types of events and alarms that cause a trap to be transmitted.

Generating Event Files (not supported)

To save the Events/Alarms log to a file:

1. Choose the Gen Event File button from the File Management frame of the Event Management window. The Generate Event File window appears.
2. Enter a name for the event file in the “Enter a File Name” field. You may enter a maximum of eight characters in this field.
3. Select the Now box.
4. When you are finished, choose OK.

If you choose the OK or Apply button, the SA 100 creates the event file and stores it in flash memory.

To retrieve the event file, you use the Zmodem file transfer protocol to transfer the event file from the SA 100 flash memory to your computer. (Refer to “Transferring Files with Zmodem” on page A-12 for instructions on how to use Zmodem.)

After the file is stored on your computer, you may view, format, and print it with a text editor, word processor, or spreadsheet program.

Filtering Events and Alarms

By default, the Events/Alarms log contains each type of event and alarm at every level of severity detected by the SA 100. When diagnosing SA 100 or network problems, it is convenient to filter this information so that you see only the alarms and events you are specifically concerned with. For instance, you can filter the log to display only alarms and events of a particular type and/or severity level.

To use the event and alarm filtering function:

1. Choose the Set Event Filters button from the Filter Management frame of the Event Management window. The Setup Event Log Filters window appears (see Figure 7-4).

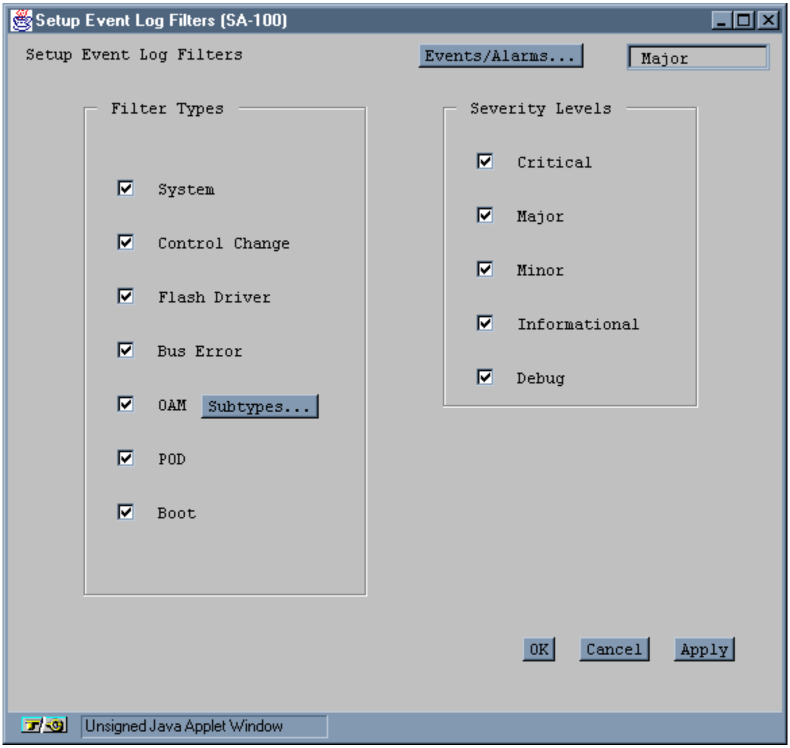

Figure 7-4. Setup Event Log Filters Window

2. Select the types of events and alarms that you want to include in the Events/Alarms log.

3. Select the event and alarm severity levels that you want to include in the Events/Alarms log. (Table 7-4 briefly describes the fields in the Setup Event Filters window.)

For example, to include system related events and alarms and informational severity-level events and alarms from the Events/Alarms log, select the System field (in the Filter Types frame) and the Informational field (in the Severity Levels frame) of the Setup Event Log Filters window.Leave the other check boxes blank.

The OAM field in the Filter Types frame has an associated button (Subtypes) that enables you to filter specific types of OAM events and alarms. This is in contrast to selecting the OAM field itself, which enables you to filter all types of OAM events and alarms.

4. When you are finished, choose OK.

Table 7-4. Setup Event Log Filters Fields and Buttons

Field/Button	Type	Description
Filter Types		
System	read/write	A check mark indicates that system events and alarms are included in the Events/Alarms log.
Control Change	read/write	A check mark indicates that control change events and alarms are included in the Events/Alarms log.
Flash Driver	read/write	A check mark indicates that flash driver events and alarms are included in the Events/Alarms log.
Bus Error	read/write	A check mark indicates that bus error events and alarms are included in the Events/Alarms log.
OAM	read/write	A check mark indicates that operations administration and maintenance (OAM) events and alarms are included in the Events/Alarms log.
Subtypes	window button	Enables you to select specific OAM events and alarms to include in the Events/Alarms log.

Table 7-4. Setup Event Log Filters Fields and Buttons (Continued)

Field/Button	Type	Description
POD	read/write	A check mark indicates that protocol option device (POD) events and alarms are included in the Events/Alarms log.
Boot	read/write	A check mark indicates that boot events and alarms are included in the Events/Alarms log.
Severity Levels		
Critical	read/write	A check mark indicates that critical events and alarms are included in the Events/Alarms log.
Major	read/write	A check mark indicates that major events and alarms are included in the Events/Alarms log.
Minor	read/write	A check mark indicates that minor events and alarms are included in the Events/Alarms log.
Informational	read/write	A check mark indicates that informational events and alarms are included in the Events/Alarms log.
Debug	read/write	A check mark indicates that debug events and alarms are included in the Events/Alarms log.

Filtering Traps

By default, the SA 100 generates a trap for every event and alarm it detects. To reduce the transmission of extraneous information to receiving management stations, you can set the SA 100 to generate traps only in response to certain types of events and alarms and to events and alarms of certain severity-levels.

To use the trap filtering function:

1. Choose the Set Trap Filters button from the Filter Management frame of the Event Management window. The Setup Trap Filters window appears (see Figure 7-5).

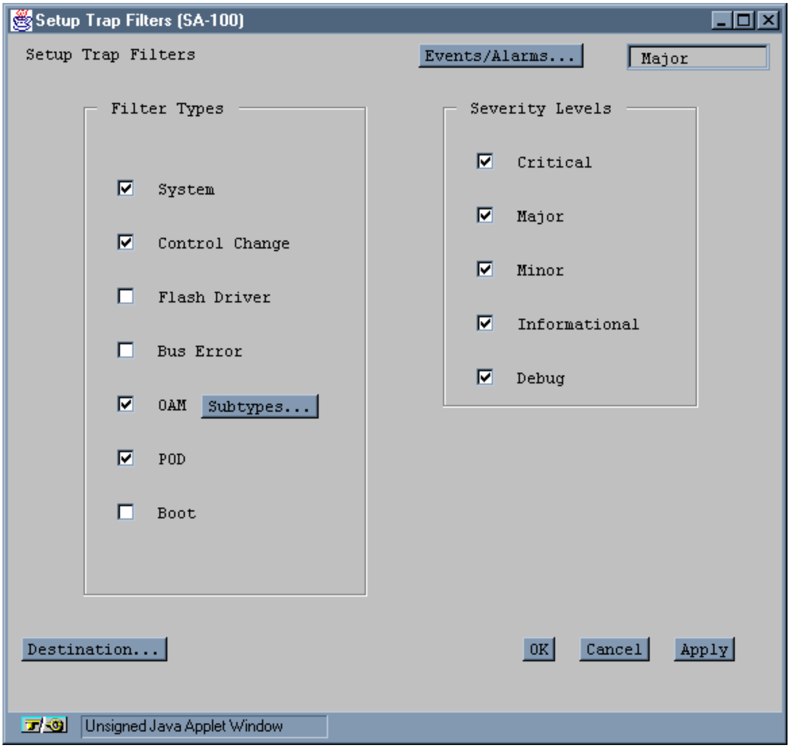

Figure 7-5. Setup Trap Filters Window

2. Select the types of events and alarms that you want to generate a trap.

3. Select the event and alarm severity levels that you want to include.

Table 7-5 briefly describes the fields in the Setup Event Filters window.

For example, to generate a trap on POD-related events and alarms and debug severity-level events and alarms, select the POD field in the Filter Types frame and the Debug field in the Severity Levels frame of the Setup Trap Filters window.

> *The OAM field in the Filter Types frame has an associated button (Subtypes) that enables you to select specific types of OAM events and alarms to generate traps. This is in contrast to selecting the OAM field itself, which enables you to select all types of OAM events and alarms to generate traps.*

Table 7-5. Setup Trap Filters Fields and Buttons

Field/Button	Type	Description
Filter Types		
System	read/write	A check mark indicates that system events and alarms will generate traps.
Control Change	read/write	A check mark indicates that control change events and alarms will generate traps.
Flash Driver	read/write	A check mark indicates that flash driver events and alarms will generate traps.
Bus Error	read/write	A check mark indicates that bus error events and alarms will generate traps.
OAM	read/write	A check mark indicates that operations administration and maintenance (OAM) events and alarms will generate traps.
Subtypes	window button	Enables you to select specific OAM events and alarms that will generate traps.
POD	read/write	A check mark indicates that protocol option device (POD) events and alarms will generate traps.
Boot	read/write	A check mark indicates that boot events and alarms will generate traps.
Severity Levels		
Critical	read/write	A check mark indicates that critical events and alarms will generate traps.
Major	read/write	A check mark indicates that major events and alarms will generate traps.

Table 7-5. Setup Trap Filters Fields and Buttons (Continued)

Field/Button	Type	Description
Minor	read/write	A check mark indicates that minor events and alarms will generate traps.
Informational	read/write	A check mark indicates that informational events and alarms will generate traps.
Debug	read/write	A check mark indicates that debug events and alarms will generate traps.
Other Buttons		
Destinations	window button	Enables you to specify which nodes will receive traps generated by the SA 100.

4. When you are finished selecting which events, alarms, and severity levels will generate traps, choose the Destinations button. The Trap Destinations window appears, listing any current trap destination addresses and their op status (Figure 7-6):

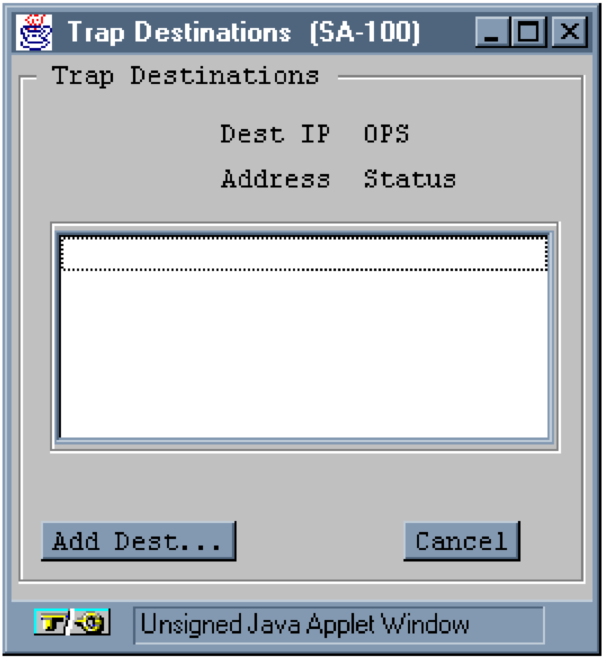

Figure 7-6. Trap Destinations Window

5. Choose the Add Dest(ination) button. The Add Trap Destination window appears (Figure 7-7):

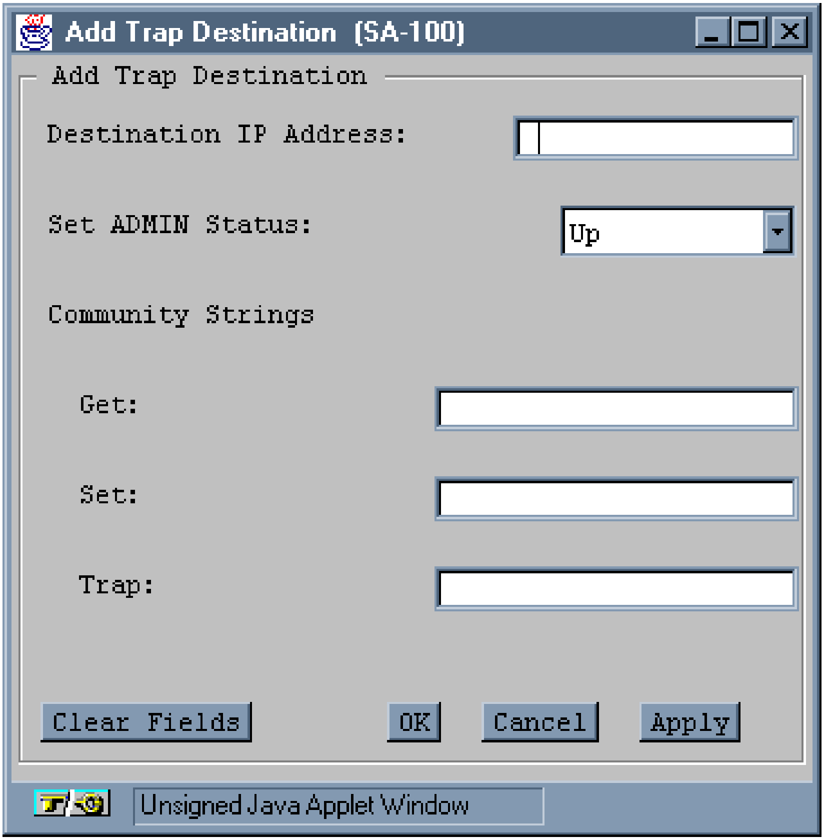

Figure 7-7. Add Trap Destination Window

In the Destination IP Address field, enter the IP address of the management station you want to receive the traps generated by the SA 100. Set the ADMIN Status to up or down, and complete any community strings you wish in the Get, Set, and/or Trap fields, then click OK to return to the Trap Destinations window.

6. In the Trap Destinations window, you can double-click on a destination address in the Trap Destinations list to display the Trap Destination Options screen for the selected destination. The Trap Destination Options screen enables you to modify or delete a destination, or enable or disable the sending of traps to this IP address, using the connect button.

7. When you are finished assigning trap destinations, choose OK in the Trap Destinations window and the Setup Trap Filters window.

What’s Next

After you understand how to manage the SA 100’s events, alarms and traps, you are ready to perform diagnostic tests on the SA 100, as described in Chapter 8, “Testing the SA 100”.

8

Testing the SA 100

This chapter describes how to test SA 100 operation using built-in diagnostics including:

- Cell highway diagnostics (refer to page 8-3)
- Port loopback diagnostics (refer to page 8-8)
- Intentional error insertion (refer to page 8-15)

Accessing Diagnostics Functions

To access the SA 100 diagnostic functions, choose the Diagnostics button from the Main menu. The Diagnostics window appears (see Figure 8-1).

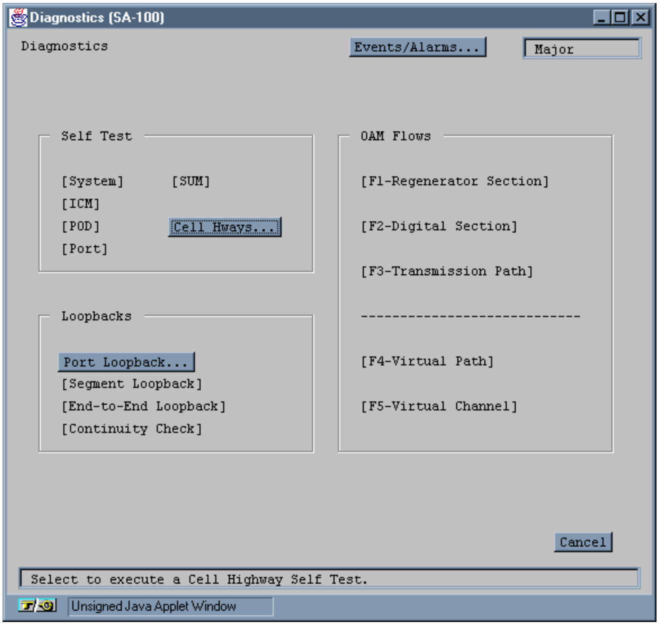

Figure 8-1. Diagnostics Window

Choose one of the following buttons:

Cell Hways – Cell highways diagnostic. See “Testing Cell Highways” on page 8-3 for instructions.

Port Loopbacks - Port loopback diagnostics test a port by creating paths within the port circuitry that enable you to route test data back to its source for validation. See “Testing with Port Loopbacks” on page 8-8 for instructions.

You can also access Port Loopbacks by selecting ports in the Interface Management window.

Testing Cell Highways

To run diagnostics testing on the Cell Highways:

1. Select Cell Hways from the Diagnostics menu. The Select Cell Hwys window appears (Figure 8-2):

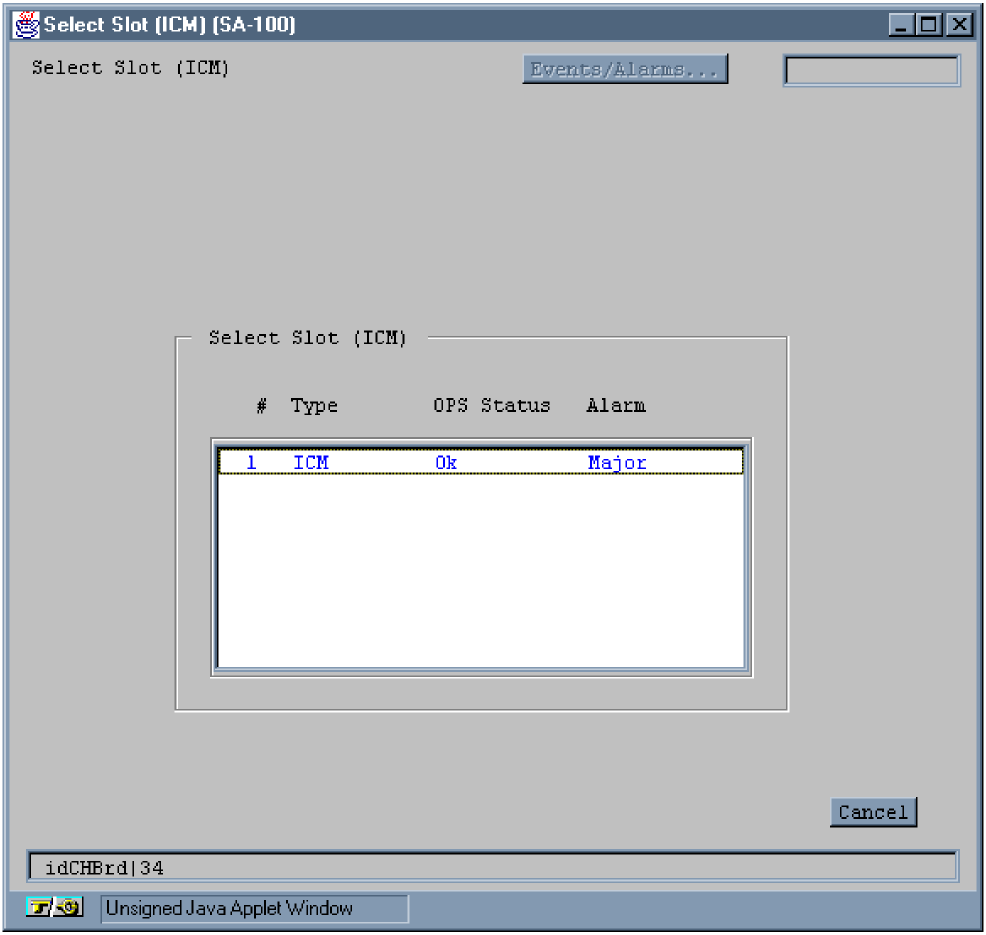

Figure 8-2. Select Cell Hwys Window

2. Choose the ICM whose cell highways you wish to test. (The SA 100 has only one ICM; double-click on it in the Select Slot list.) The Select Cell Highways Self Test window appears (Figure 8-3):

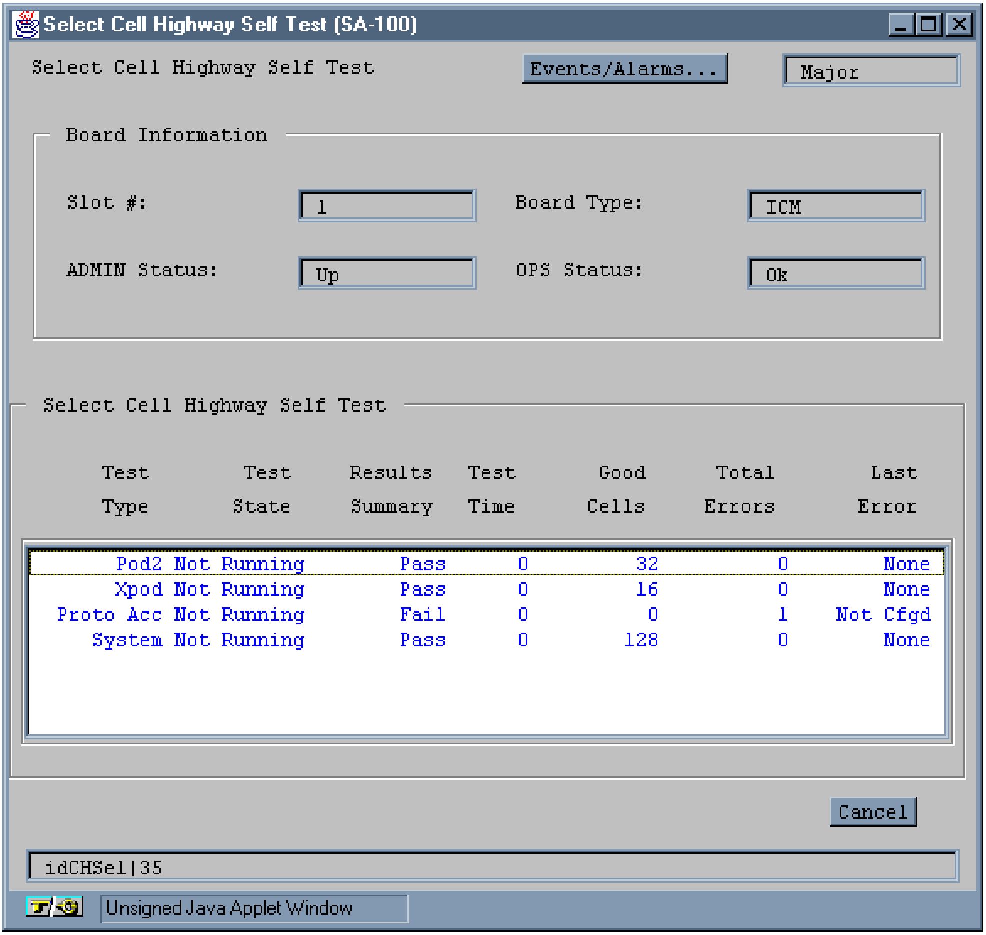

Figure 8-3. Select Cell Highways Self Test Window

3. Choose the cell highway you want to test from the Select Cell Highway Self Test list. The Cell Highway Self Test Window appears (Figure 8-4):

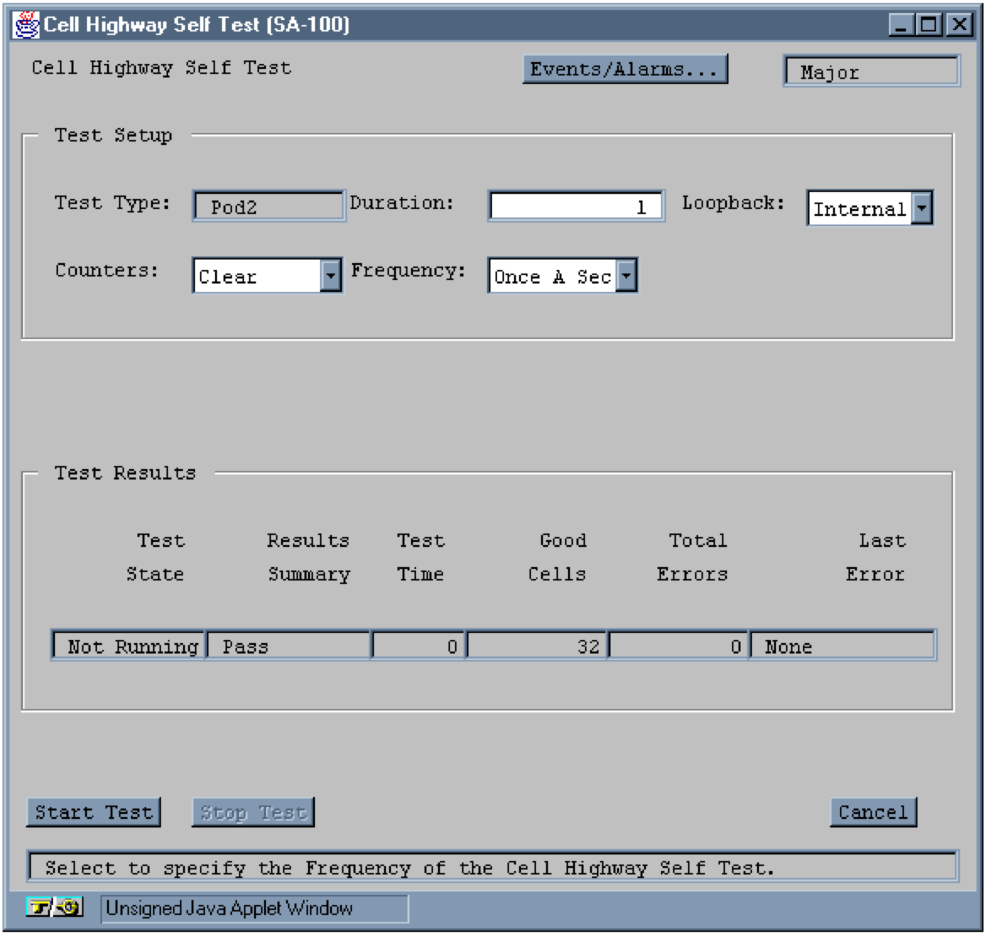

Figure 8-4.　　Cell Highways Self Test Window

4. Complete the fields described in Table 8-1 and choose Start Test to begin running a self test on the cell highway according to the parameters you have selected.

Table 8-1. Cell Highway Self Test Fields and Buttons

Field/Button	Type	Description
(Test Setup)		
Test Type	read-only	Displays the type of test selected.
Duration	read/write	Specify the duration of the self test in seconds. (0 = infinite duration; runs until cancelled.)
Loopback	read/write	Specify the loopback method for the test: Internal or External.
Counters	read/write	Specify whether to clear or accumulate test counters when the test begins.
Frequency	read/write	Specify how often the test is to be run.
(Test Results)		
Test State	read-only	Displays the current testing state: Running or Not Running.
Results Summary	read-only	Displays a brief description of the test results: Pass or Fail.
Test Time	read-only	Displays the total run-time of the test.
Good Cells	read-only	Displays the total number of good cells passed during the test.
Total Errors	read-only	Displays the total number of errors recorded during the test.
Last Error	read-only	Displays the last error recorded before the test was halted.
(Other Buttons)		
Start Test	command button	Start the cell highway self test according to the parameters selected in the Test Setup frame.

Table 8-1. Cell Highway Self Test Fields and Buttons (Continued)

Field/Button	Type	Description
Stop Test	command button	Stop the test and display the results in the Test Results frame.

Testing with Port Loopbacks

To perform port loopback tests on the SA 100:

1. From the Main menu, choose either the Diagnostics or Interface Management button. If you choose Interface Management, skip Step 2.

2. If you chose the Diagnostics button in Step 1, the Diagnostics window appears. Choose the Port Loopbacks button.

3. When the Interface Management window appears, select the port you wish to test using the same procedure you use for selecting a port to configure, i.e., by double-clicking the desired port in the window (refer to "Selecting a Port" on page 4-3).

4. When the configuration window for the selected port appears, select the desired port loopback from the Set Port Loopback field in the Fault Management frame, and click Apply or OK to begin the test. The test will continue until you return the Set Port Looback field to (port type)NoLoop and choose OK or Apply.

You can select various port loopbacks depending on the port type you select for testing: DS1/E1, DS3/E3, or OC-3c/STM-1. The following sections describe the port loopbacks available for each type of SA 100 port.

Testing DS1/E1 Ports

Two port loopbacks are available with DS1/E1 ports:

Payload – Payload loopback tests the internal circuitry of a DS1/E1 port by routing received data through the port receiver and transmitter circuitry and back out of the port (see Figure 8-5).

Line – Line loopback tests a DS1/E1 port interface by routing received data back out of the port (see Figure 8-5).

OtherLoop – OtherLoop loopback tests a DS1/E1 port interface by routing outgoing data back toward the CPOD. On an IMA POD, the data gets looped back toward the IMA chip.

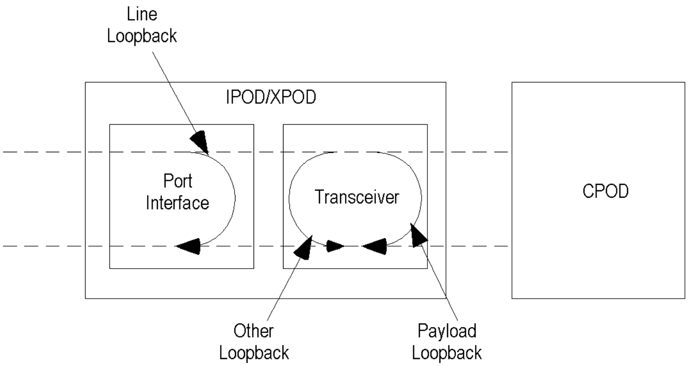

Figure 8-5. DS1/E1 POD Port Loopbacks

To perform a port loopback test — Select the desired test (Dsx1PayloadLoop for payload loopbacks, Dsx1LineLoop for line loopbacks, or Dsx1OtherLoop for otherloop loopbacks) from the Set Port Loopback field and choose OK or Apply to begin the test. Use the Monitor Status function to check the progress of the test.

To stop a port loopback test — Select Dsx1NoLoop from the Set Port Loopback field and choose OK or Apply.

To insert intentional errors into the loopback — Select the desired error from the Set Error Insertion field:

TxYellow – This enables the insertion of yellow alarms in the transmit path.

TxAIS – This enables the insertion of alarm indication signal (AIS) alarms in the transmit path.

TxE1FasError – (E1 only) This enables the insertion of frame alignment errors in the transmit path.

TxE1TS16AIS – (E1 only) This enables the insertion of time-slot 16 alarm indication signal (AIS) alarms in the transmit path.

TxE1MASerror – (E1 only) This enables the insertion of multiframe alignment errors in the transmit path.

To stop intentional error insertion — Select None from the Set Error Insertion field and choose OK or Apply.

Testing DS3/E3 Ports

Three port loopbacks are available with DS3/E3 ports:

Line – Line loopback tests a DS3/E3 port interface by routing received data back out of the port (see Figure 8-6).

Diagnostic – Diagnostic loopback tests the internal circuitry of a DS3/E3 port by routing transmit data back through the port receiver (see Figure 8-6).

Payload – Payload loopback tests the internal circuitry of a DS3/E3 port by routing received data to through the port receiver and transmitter circuitry and back out of the port (see Figure 8-6).

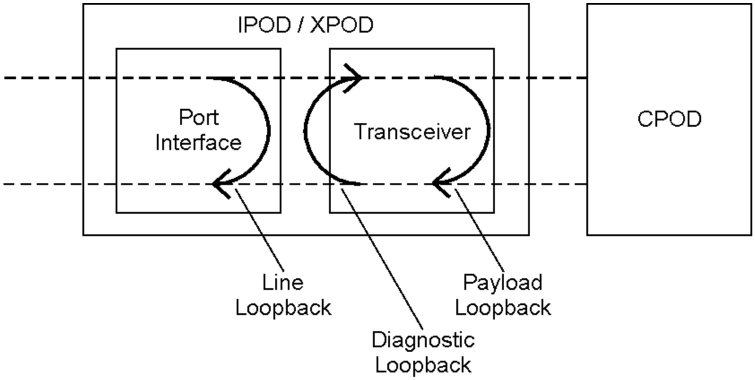

Figure 8-6. DS3/E3 POD Loopbacks

To perform a port loopback test — Select the desired test from the Set Port Loopback field and choose OK or Apply to begin the test. Use the Monitor Status function to check the progress of the test.

To stop a port loopback test — Select None from the Set Port Loopback field and choose OK or Apply.

To insert intentional errors into the loopback — Select the desired error from those that are available in the Set Error Insertion field:

> *TxLOS* – This enables the insertion of loss of signal alarms in the transmit path.

TxAIS – This enables the insertion of alarm indication signal (AIS) alarms in the transmit path.

TxFERF – This enables the insertion of far end receive failure (FERF) or yellow alarms in the transmit path.

TxIdle – (DS3 only) This enables the insertion of idle maintenance signals in the transmit path.

TxLCV – This enables the insertion of line code violations (LCV) in the transmit path.

TxPbitErrs – (DS3 only) This enables the insertion of P-bit errors in the DS3 stream.

TxCbitErrs – (DS3 using C-bit framing only) This enables the insertion of C-bit parity errors in the DS3 stream.

To stop intentional error insertion — Select None from the Set Error Insertion field and choose OK or Apply.

Testing OC-3c/STM-1 Ports

Three port loopbacks are available with OC-3c/STM-1 ports:

Line – Line loopback tests an OC-3c/STM-1 port interface by routing received data back out of the port (see Figure 8-7).

Internal Section – Internal section loopback tests the internal circuitry of a OC-3c/STM-1 port by routing received data through the port receiver and transmitter circuitry and back out of the port (see Figure 8-7).

Internal Path – Internal path loopback tests a OC-3c/STM-1 port interface by routing received data back out of the port (see Figure 8-7).

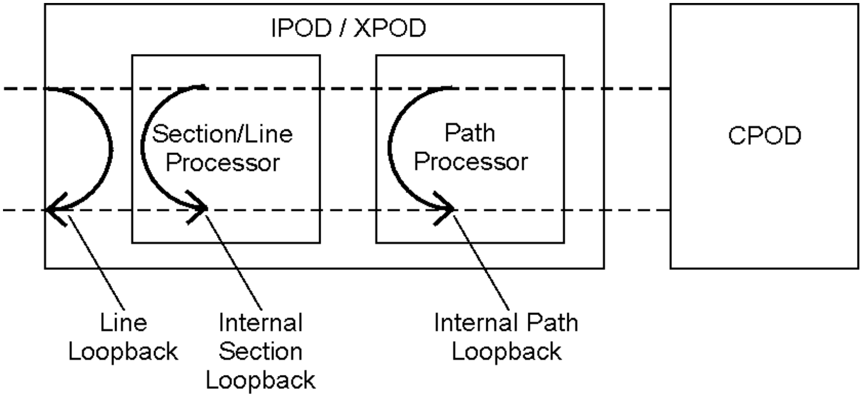

Figure 8-7. OC-3c/STM-1 POD Loopbacks

To perform a port loopback test — Select the desired test from the Set Port Loopback field and choose OK or Apply to begin the test. Use the Monitor Status function to check the progress of the test.

To stop a port loopback test — Select None from the Set Port Loopback field and choose OK or Apply.

To insert intentional errors into the loopback — Select the desired error from the Set Error Insertion field:

> *TxDigitalLOS* – This enables the insertion of digital loss of signal (LOS) alarms in the transmit path.

TxLineAIS – This enables the insertion of line alarm indication signal (AIS) alarms in the transmit path.

TxLineRDI – This enables the insertion of line remote defect indication (RDI) or line yellow alarms in the transmit path.

TxFrameBitErr – This enables the insertion of frame bit errors in the transmit path.

TxSectBipErr – This enables the insertion of section BIP errors in the transmit path.

TxLineBipErr – This enables the insertion of line BIP errors in the transmit path.

To stop intentional error insertion — Select None from the Set Error Insertion field and choose OK or Apply.

Inserting Intentional Errors

The error insertion feature is available on DS1, E1, DS3, E3, and OC-3c/STM-1 ports and OC-3c/STM-1 paths. In addition to using this feature in conjunction with port loopback tests (as already described), you may use this feature as a self-contained diagnostic to test a port or OC-3c/STM-1 path.

Inserting Errors to Test a Port

To intentionally insert errors on a DS1, E1, DS3, E3 or OC-3c/STM-1 port:

1. In the Fault Management frame of the Configure window for the port you wish to test, select the desired error from the Set Error Insertion field and choose OK or Apply.
2. Use the Monitor Status function of WebXtend to check the progress of the test.
3. To stop intentional error insertion, select None from the Set Error Insertion field and choose OK or Apply.

Inserting Errors to Test an OC-3c/STM-1 Path

To intentionally insert errors in an OC-3c/STM-1 path:

1. In the Fault Management frame of the Configure OC-3/STM-1 Path window, select the desired error from the Error Insertion field and choose OK or Apply.
2. Use the Monitor Status function to check the progress of the test.
3. To stop intentional error insertion, select None from the Error Insertion field and choose OK or Apply.

What's Next

After you have learned to test the SA 100, refer to Chapter 9, "Using System Utilities", for information on functions such as saving SA 100 configurations and shutting down the SA 100.

9

Using Utilities

This chapter describes how to:

- Save SA 100 configurations (refer to page 9-5)
- Initialize the SA 100 system (refer to page 9-6)
- Shut down the SA 100 system (refer to page 9-6)
- Exit to the shell operating system of the SA 100 (refer to page 9-6)
- Send and receive files using the Zmodem file transfer protocol (refer to page 9-6)

Accessing SA 100 Utilities

To use the SA 100 utilities, choose the Utilities button from the Main menu. The Utilities window (see Figure 9-1) appears.

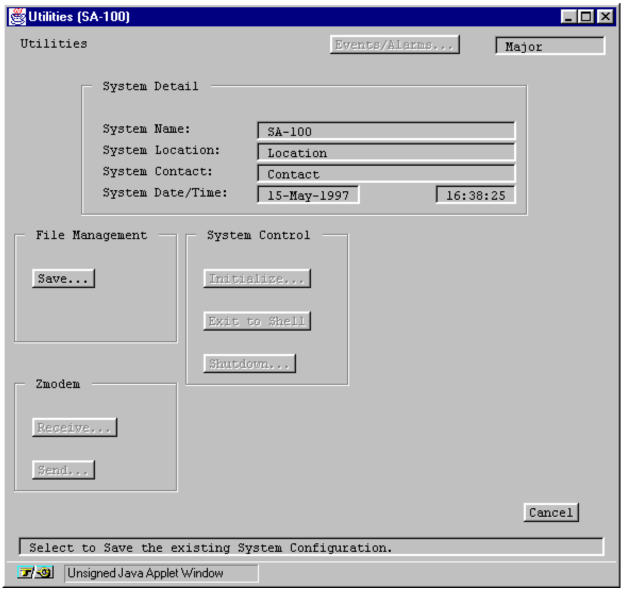

Figure 9-1. Utilities Window

In addition to buttons that provide access to utility tasks, the Utilities window contains fields that provide information about the SA 100 system. Table 9-1 describes the fields and buttons in the Utilities window.

Table 9-1. Utilities Fields and Buttons

Field/Button	Type	Description
System Detail		
System Name	read-only	Displays the name of the SA 100.
System Location	read-only	Displays the name of the site where the SA 100 is located.
System Contact	read-only	Displays contact information for the SA 100.
System Date/Time	read-only	Displays the SA 100 date and time.
File Management		
Save	window button	Enables you to save current configuration file.
System Control		
Initialize	n/a	This function is not available through the WebXtend browser interface. Use the Craft interface for this function. See Appendix A for details.
Exit to Shell	n/a	This function is not available through the WebXtend browser interface. Use the Craft interface for this function. See Appendix A for details.
Shutdown	n/a	This function is not available through the WebXtend browser interface. Use the Craft interface for this function. See Appendix A for details.

Table 9-1. Utilities Fields and Buttons (Continued)

Field/Button	Type	Description
Zmodem		
Receive	n/a	This function is not available through the WebXtend browser interface. Use the Craft interface for this function. See Appendix A for details.
Send	n/a	This function is not available through the WebXtend browser interface. Use the Craft interface for this function. See Appendix A for details.

Saving Configurations

You can save the current configuration of the SA 100 when you log off or at any time using the Utilities function.

To save configuration at logoff:

- Select the Save Configuration radio button in the Log Off window.

To save the configuration at any other time, choose the Save button in the File Management frame of the Utilities window. The Save Configuration File window appears, enabling you to save the configuration immediately or at a future specified date and time (not yet supported).

- To save the configuration immediately, click in the box labeled Now, then choose OK.
- In a future software release, you will also have the ability to schedule a Save Configuration to occur at a specified date and time.

Initializing the System

Initializing the SA 100 is not supported in the WebXtend browser interface. To initialize the SA 100 system, use the Craft interface as described in Appendix A.

Shutting Down the System

Shutting down the SA 100 is not supported in the WebXtend browser interface. To shut down the SA 100 system, use the Craft interface as described in Appendix A.

Exiting to the Shell

Exiting to the Shell is not supported in the WebXtend browser interface. To exit to the shell operating system of the SA 100, use the Craft interface as described in Appendix A.

Transferring Files with Zmodem

File transfers are not supported in the WebXtend browser interface. To transfer files to and from the SA 100 system, use the Craft interface as described in Appendix A.

What's Next?

You've now completed the general instructions for configuring, operating, managing, and testing the SA 100. For troubleshooting information, refer to Chapter 10. For additional information on using the SA 100, refer to the Appendices of this manual.

10

Resolving Problems

This chapter describes how to troubleshoot the SA 100 and provides Customer Support information.

Technical Support Checklist

Before placing a call to the Ascend Technical Assistance Center, review the following checklist to make sure you have gathered all the information you need:

- SA 100 serial number
- A list of the PODs installed in the SA 100
- Type of management interface (craft or ethernet)
- SA 100 IP address and subnet mask

Please have access to your SA 100 when calling the Ascend Technical Assistance Center.

Contacting the Technical Assistance Center

Ascend provides a full range of support to ensure that maximum network uptime is achieved with low equipment cost. Ascend's Technical Assistance Center can assist you with any problems you may encounter when using the SA 100. You can contact the Technical Assistance Center by phone, electronic mail (email), or fax.

Phone

Support is available by phone 24 hours a day, 7 days a week at:

1-800-DIAL-WAN or 1-978-692-2600

E-mail and Fax

Include the following information when requesting assistance electronically (by email or fax):

- Your name and telephone number
- Name and telephone number of contact person (if different from you)
- Brief description of the problem
- List of identifiable symptoms

To contact the Technical Assistance Center by email, address your email to:

cs@casc.com

To contact the Technical Assistance Center by fax, call:

1-978-392-9768

A

Using the Craft Interface

This appendix describes:

- Setting up the VT-100 Terminal to access the SA 100 (refer to page A-2)
- The SA 100 boot sequence (refer to page A-3)
- The functions and features of the SA 100 craft interface (refer to page A-6)
- How to access the craft interface (refer to page A-9)
- Craft interface conventions (refer to page A-10)
- How to perform functions unique to the craft interface (refer to page A-12)

Setting up the VT-100 Terminal

Before you access the craft interface:

1. Make the necessary connections to the craft interface, as described in the *SA 100 Hardware Installation Guide*.
2. Set your VT100 terminal or your computer terminal emulator software to the following parameters (if you are accessing the craft interface remotely, set your modem to the same parameters):
   - 38,400 bps data rate
   - 8 data bits, no parity, 2 stop bits
   - software flow control (XON/XOFF) enabled
   - hardware flow control (RTS/CTS, DSR/DTR) disabled
   - VT100 terminal emulation display selected

About the SA 100 Boot Sequence

When the SA 100 is powered up, it follows a defined boot sequence. Table A-1 shows the sequence of events, what is shown on the screen during each segment of the boot sequence, and what access is available during each period.

Procedure Name	Screen Shows:	What you may access...
Initial boot sequence	`Press SPACEBAR if you want to send a new boot file...` `2... 1...`	Press the spacebar during this countdown to send a new boot file. See “Uploading a new Boot File to the SA 100” on page A-4 for details.

Boot service terminal	`Booting...`
	`Hit the enter key to begin the boot service terminal.`
	`Counting down to SA-100 system boot...`
	`0`
	`Booting SA-100...`
		For Ascend technical service personnel only. See “About the SA 100 Boot Service Terminal” on page A-5.

Login prompt	`Login:` `Password:`	Enter your user name and password to access the craft interface main menu, described in “Accessing the Craft Interface” on page A-9.

Table A-1. SA 100 Boot Sequence

Uploading a new Boot File to the SA 100

When you access the Zmodem function during the initial SA 100 power-up sequence, its functionality is limited to receiving (downloading) new boot files only.

To access the Zmodem *receive* function during the power-up sequence of the SA 100:

1. Toggle on the power switch.
2. When the “Press SPACEBAR if you want to send new boot file...” message appears, quickly press the space bar (before the SA 100 starts booting).
3. After the “Starting Zmodem receive, send boot file now” message appears, send the desired file (typically lzrom.bin) using the Zmodem file transfer protocol. (Refer to the documentation that accompanies the terminal emulator or data communications software for information on how to use its Zmodem functions.)

To cancel a Zmodem file transfer, enter CTRL-Xs until the file transfer stops.

4. After completing the file transfer, shut down, and power up the SA 100.

About the SA 100 Boot Service Terminal

> *The boot service terminal is for use by Ascend technical service personnel only. Please use the Exit to Shell command from the Utilities menu (see* *“Accessing the SA 100 Operating System Shell” on page A-14**) to access OASOS commands.*

About the Craft Interface

The craft interface enables you to configure, monitor, and control the SA 100 locally or remotely using a series of menu-driven screens on a VT100 terminal or on a computer running VT100 terminal-emulation software.

All the functions and windows available in WebXtend are also available through the craft interface. Since the craft interface consists of text-based windows versus the graphic user interface (GUI) of WebXtend, its windows look different but provide exactly the same functions as their WebXtend counterparts. For a comparison, see Figure A-1 and Figure A-2, which illustrate the craft interface and WebXtend versions of the System Administration window.

In addition to supporting all the functions accessible with WebXtend, the craft interface also provides two additional functions that are not supported by WebXtend:

- Zmodem file transfer
- SA 100 operating system (OASOS) access

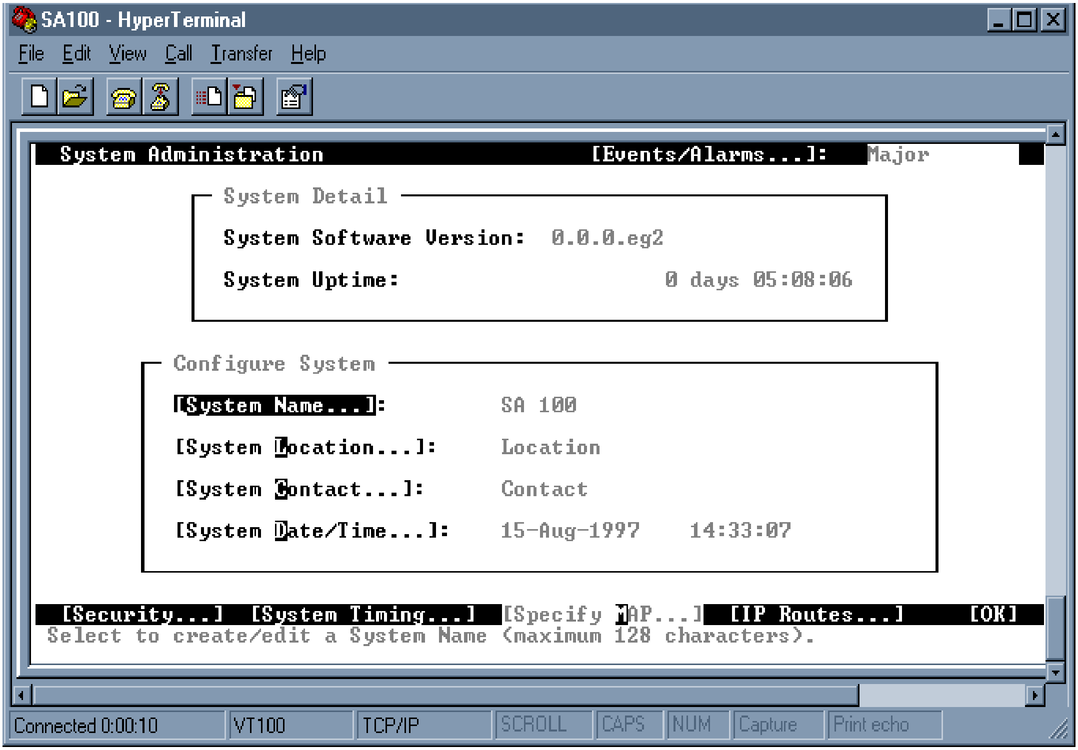

Figure A-1. System Administration Window — Craft Interface Version

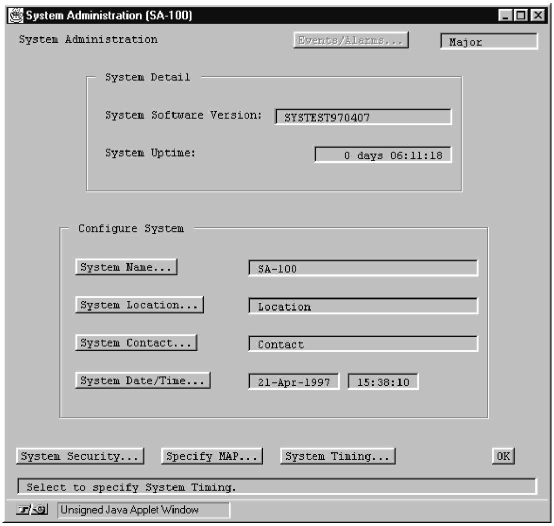

Figure A-2. System Administration Window — WebXtend Version

Accessing the Craft Interface

To access the craft interface:

1. Power up the SA 100 by toggling on the power switch located on the rear panel of the unit.
2. After toggling on the power switch, the SA 100 displays a number of messages in your terminal window as the system boots. After approximately one minute, the system prompts you for login.
3. Type your user name at the Login prompt (“root” is the default user name) and press Enter.
4. Type your password at the Password prompt (“ascend” is the default password) and press Enter.

After accepting your password, the SA 100 displays the Main menu of the craft interface.

Upon logging in to the SA 100 for the first time, you should use the System Administration>System Security menu item to establish a new user name and password and disable the default user name and password, to prevent unauthorized access to the unit. See “System Security” on page 3-5 for instructions on establishing a new user and assigning a password.

Craft Interface Conventions

In order to use the craft interface efficiently, you should be familiar with its conventions.

Navigating Buttons and Fields

There are two ways to navigate the buttons and user-selectable fields that appear in each craft interface window.

- You can use the Tab, Arrow, Enter, and Space Bar control keys.
  - To move between buttons and user-selectable fields, use the Tab and Arrow key.
  - To choose a highlighted button or highlighted option in a user-selectable field, use the Enter key.

> *Highlighted buttons and fields contain reversed text, i.e., black text on a light background.*

  - To place or remove an X in a user-selectable field, use the Tab and/or Arrow key to move the cursor to the field, then press the Space Bar to place or remove the X in that field.
- You can use alphanumeric keys.

  The names of some buttons and user-selectable fields contain an alphanumeric character displayed in reverse text. Typing that highlighted character and the Enter key causes the cursor to move to that button or field.

> *You can select OK, Cancel and Apply buttons at any time by typing O, C and A, respectively, followed by the Enter key.*

Activating Pull-down Menus

To use pull-down menus in the craft interface, select the menu by using the arrow keys as described above, then press F2 to display the pull-down menu options. Use the arrow keys to make your selection, then press the Enter key.

OK vs. Cancel vs. Apply Buttons

OK, Cancel and Apply buttons appear in various craft interface windows. These buttons serve the following functions:

- **OK** — confirms all previous actions you have performed in a window and then closes that window. It also saves all configuration work you performed in that window.
- **Apply** — confirms all previous actions you have performed, but it keeps the window opened for further work. It also saves all configuration work you performed in that window.
- **Cancel** — performs the opposite function of the OK button. It negates all previous actions you have performed in a window and then closes that window. All configuration work you performed in that window is lost.

Events/Alarms Button/Field

In the upper-right corner of each craft interface full-size window is an Events/Alarms field and button, which serves the following functions:

- Events/Alarms field displays the current highest level alarm (Critical, Major, or Minor), if any, detected by the SA 100.
- Events/Alarms button permits you to obtain a summary of any the current events and alarms.

Help Field

Near the bottom of each craft interface windows is a Help field. This field provides a brief, one-line description of whatever button or selectable field is currently highlighted in that window.

Using the Craft-Only Functions

The following sections describe how to use the craft interface to perform those functions that are not accessible with WebXtend. (For those functions that are accessible with the craft interface *and* WebXtend, refer to Chapters 2 through 10.)

Transferring Files with Zmodem

The SA 100 supports the Zmodem file transfer protocol, which enables you to upload configuration files and new software from your computer to an SA 100, or to download configuration files from the SA 100 to your computer for backup.

> *Your computer must have a terminal emulator or data communications program that supports the Zmodem file transfer protocol in order to use this function.*

There are two ways of accessing the Zmodem function from the craft interface:

- From the Utilities window of the interface
- During the SA 100 power-up sequence

> *When you access the Zmodem function during the SA 100 power-up sequence, its functionality is limited to receiving (downloading) new boot files only.*

Accessing Zmodem from the Utilities Window

To access the Zmodem function from the Utilities window:

1. Choose the Utilities button from the Main menu of the craft interface.

2. When the Utilities window appears (see Figure A-3), choose the Receive button in the Zmodem frame of that window.

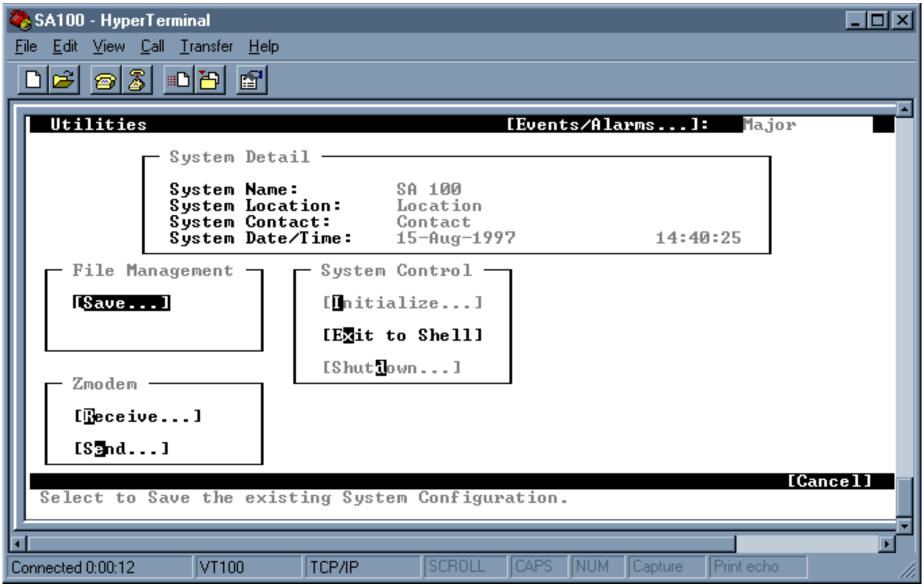

Figure A-3. Craft Interface Utilities Window

3. After the “You may start the ZModem transfer now” message appears, send the desired file(s) using the Zmodem file transfer protocol. (Refer to the documentation that accompanies the terminal emulator or data communications software for information on how to use its Zmodem functions.

To cancel a Zmodem file transfer, enter CTRL-Xs until the file transfer stops.

4. After completing the file transfer, log off, shut down, and power up the SA 100.

Accessing the SA 100 Operating System Shell

The SA 100 has an internal operating system called “OASOS” that enables you to perform several functions that are not accessible with WebXtend. However, the typical user only needs OASOS to perform one task: setting the IP address of the SA 100. This function is described in “Changing the IP address” on page 2-3.

The procedure below describes how to access OASOS. The commands available at the OASOS> prompt are described in Appendix B, “SA 100 OS Command Set”.

Accessing OASOS

To access the SA 100 operating system (OASOS), after logging in to the craft interface:

1. Choose the Utilities button from the Main menu of the craft interface. The Utilities window appears (see Figure A-3).

2. Choose the Exit to Shell button in the System Control frame of the Utilities window.

When the OASOS prompt appears (`OASOS>`), you have access to the SA 100 operating system.

B

SA 100 OS Command Set

This appendix describes:

- The SA 100’s built-in operating system commands

OASOS Commands

Figure B-1 shows the commands available at the OASOS> prompt.

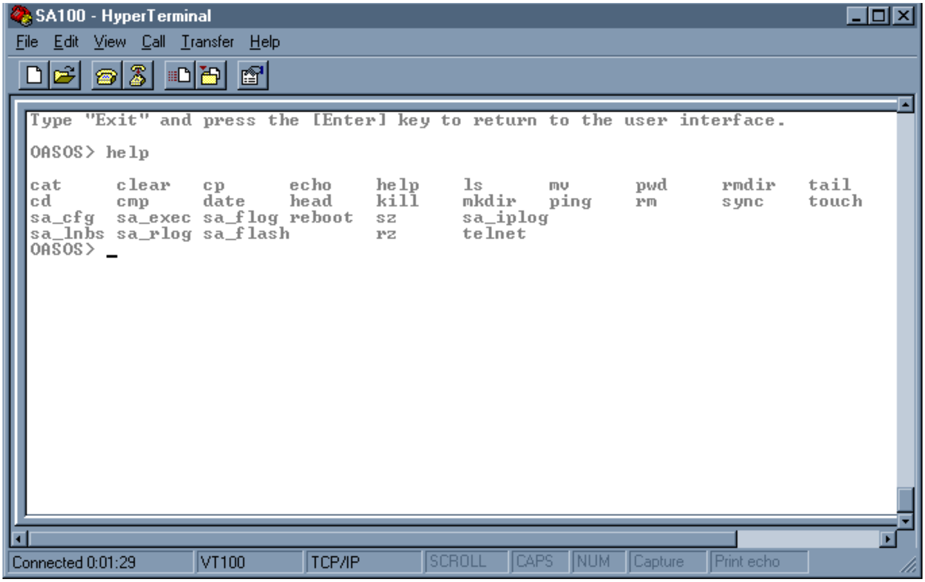

Figure B-1. OASOS Commands

NAME

cat - concatenate and display

SYNOPSIS

cat [-benstv] filename

DESCRIPTION

cat reads each filename in sequence and displays it on the standard output. Thus:

```
OASOS>cat goodies
```

displays the contents of goodies on the standard output.

OPTIONS

-b Number the lines, as -n, but omit the line numbers from blank lines.

-e Display non-printing characters, as -v, and in addition display a $ character at the end of each line.

-n Precede each line output with its line number.

-s Substitute a single blank line for multiple adjacent blank lines.

-t Display non-printing characters, as -v, and in addition display TAB characters as ^I (CTRL-I).

-v Display non-printing characters (with the exception of TAB and NEWLINE characters) so that they are visible. Control characters print like ^X for CTRL-X; the DEL character (octal 0177) print as '^?'. Non-ASCII characters (with the high bit set) are displayed as M-x where M- stands for 'meta' and x is the character specified by the seven low order bits.

NOTES

Using cat to redirect output of a file to the same file, such as cat filenamel > filenamel or cat filenamel >> filenamel, does not work. This type of operation should be avoided at all time since it may cause the system to go into an indeterminate state.

CD

NAME

cd - change working directory

SYNOPSIS

cd [directory]

DESCRIPTION

directory becomes the new working directory.

CLEAR

NAME

clear - clears the terminal screen

CMP

NAME

cmp - perform a byte-by-byte comparison of two files

SYNOPSIS

cmp [-ls] filenamel filename2 [skipl] [skip2]

DESCRIPTION

cmp compares filenamel and filename2. With no options, cmp makes no comment if the files are the same; if they differ, it reports the byte and line number at which the difference occurred, or, that one file is an initial subsequence of the other. skipl and skip2 are initial byte offsets into filenamel and filename2 respectively, and may be either octal or decimal; a leading 0 denotes octal.

OPTIONS

-l   Print the byte number (in decimal) and the differing bytes (in octal) for all differences between the two files.

-s   Silent. Print nothing for differing files.

NAME

cp - copy files

SYNOPSIS

cp [-i] filenamel filename2 cp -rR [-i] directoryl directory2 cp [-irR] filename... directory

DESCRIPTION

cp copies the contents of *filenamel onto filename2*. If *filenamel* is a symbolic link, or a duplicate hard link, the contents of the file that the link refers to are copied; links are not preserved.

In the second form, cp recursively copies *directory],* along with its contents and subdirectories, *to directory2. If directory2* does not exist, cp creates it and duplicates the files and subdirectories of *directory]* within it. *If directory2* does exist, cp makes a copy of the *directoryl* directory within *directory2* (as a subdirectory), along with its files and subdirectories.

In the third form, each filename is copied to the indicated directory; the base name of the copy corresponds to that of the original. The destination directory must already exist for the copy to succeed.

cp refuses to copy a file onto itself.

OPTIONS

-i Interactive. Prompt for confirmation whenever the copy would overwrite an existing file. A y in answer confirms that the copy should proceed. Any other answer prevents cp from overwriting the file.

-r

-R Recursive. If any of the source files are directories, copy the directory along with its files (including any subdirectories and their files); the destination must be a directory.

EXAMPLES

To copy a file:

```
OASOS> cp goodies goodies.old

OASOS> ls

goodies goodies.old
```

To copy a directory, first to a new, and then to an existing destination directory.

```
OASOS> cp -r src bkup

OASOS> ls -R bkup

x.c yx z.sh

OASOS> cp -r src bkup

OASOS> ls -R bkup

src xx yx z.sh

src:

xx y.c z.sh
```

NAME

date - display or set the date

SYNOPSIS

date [yyyymmddhhmm [ss]]

DESCRIPTION

If no argument is given, date displays the current date and time. Otherwise, the current date is set.

yyyy is the four digits of the year; the first mm is the month number; dd is the day number in the month; hh is the hour number (24 hour system); the second mm is the minute number; ss (optional) specifies seconds. The year may be omitted; the current year is supplied as default.

EXAMPLES

```
date 10080045
```

sets the date to Oct 8, 12:45 A.M. of the current year.

ECHO

NAME

echo - echo arguments to the standard output

SYNOPSIS

echo [-n] [argument ...]

DESCRIPTION

echo writes its arguments on the standard output. Arguments must be separated by SPACE characters or TAB characters, and terminated by a NEWLINE.

OPTIONS

-n Do not add the NEWLINE to the output.

NAME

head - display first few lines of specified files

SYNOPSIS

head [-n] filename...

DESCRIPTION

head copies the first n lines of each filename to the standard output. The default value of n is 10 lines.

When more than one file is specified, the start of each file looks like:

```
==>filename<==
```

EXAMPLE

The following example:

```
OASOS> head -4 junkl junk2
```

produces:

```
=> junkl <==

This is junk file one

=> junk2 -

This is junk file two
```

NAME

help - get help about shell commands

SYNOPSIS

help [command-name]

DESCRIPTION

help prints to the console information about shell commands. If no command name is given, help prints out a list of shell commands. If a valid command name is given, help prints out information about that command.

OPTIONS

NONE

EXAMPLE

```
OASOS> help

cat      MP    echo    help    mkfs    pcmount

cd       Cp    getid   kill    mount   ping

clear    date  getpri  Ls      MV      popd

console  du    head    mkdir   pcmkfs  pushd

OASOS> help cat

cat - concatenate and display (reentrant, not locked)
```

KILL

NAME

kill - terminate a task

SYNOPSIS

kill tname|-tid

DESCRIPTION

kill will terminate a task named tname or a task with a tid. It does this by calling t_restart with a second argument of -l. The task must be designed to read this second argument and do its own resource clean up then terminate.

OPTIONS

NONE

EXAMPLE

```
OASOS> kill tftd
```

NAME

ls - list the contents of a directory

SYNOPSIS

ls [**-**aACdfFgilqrRsl **]** filename ...

DESCRIPTION

For each filename which is a directory, ls lists the contents of the directory; for each filename which is a file, ls repeats its name and any other information requested. By default, the output is sorted alphabetically. When no argument is given, the current directory is listed. When several arguments are given, the arguments are first sorted appropriately, but file arguments are processed before directories and their contents.

OPTIONS

-a List all entries.

-A (ls only) Same as -a, except that '.' and '..' are not listed.

-C Force multi-column output, with entries sorted down the columns; for ls, this is the default when output is to a terminal.

-d If argument is a directory, list only its name (not its contents); often used with -l to get the status of a directory.

-f Force each argument to be interpreted as a directory and list the name found in each slot. This option turns off -l, -s, and -r, and turns on -a; the order is the order in which entries appear in the directory.

-F Mark directories with a trailing slash ('/'), executable files with a trailing asterisk (‘*’).

-g For ls, show the group ownership of the file in a long output.

-i For each file, print the i-number in the first column of the report.

-l List in long format, giving mode, number of links, owner, size in bytes, and time of last modification for each file. If the time of last modification is greater than six months ago, it is shown in the format 'month date year'; files modified within six months show 'month date time'.

-q Display non-graphic characters in filenames as the character ?; for ls, this is the default when output is to a terminal.

-r Reverse the order of sort to get reverse alphabetic or oldest first as appropriate.

-R Recursively list subdirectories encountered.

-s Give size of each file, including any indirect blocks used to map the file, in kilobytes.

-1 Force single-column output.

MKDIR

This command reserved for Ascend technician use only.

NAME

mv - move or rename files

SYNOPSIS

mv [-if] filenamel filename2

mv [-if] directoryl directory2

mv [-if] filename... directory

DESCRIPTION

mv moves files and directories around in the file system. A side effect of mv is to rename a file or directory. The three major forms of mv are shown in the synopsis above.

The first form of mv moves (changes the name of) filenamel to filename2. If filename2 already exists, it is removed before filenamel is moved.

The second form of mv moves (changes the name of) directoryl to directory2, only if directory2 does not already exist - if it does, the third form applies.

The third form of mv moves one or more filenames (may also be directories) with their original names, into the last directory in the list.

mv refuses to move a file or directory onto itself.

OPTIONS

-i Interactive mode. mv displays the name of the file followed by a question mark whenever a move would replace an existing file. If you type a line starting with y, mv moves the specified file, otherwise mv does nothing with that file.

-f Force. Override any mode restrictions and the -i option.

PING

NAME

ping - send ICMP ECHO_REQUEST packets to network hosts

SYNOPSIS

ping [-s] host_address [timeout]

DESCRIPTION

ping utilizes the ICMP protocol's mandatory ECHO_REQUEST datagram to elicit an ICMP ECHO_RESPONSE from the specified host, or network gateway. ECHO_REQUEST datagrams, or "pings," have an IP and ICMP header, followed by a struct timeval, and then an arbitrary number of bytes to pad out the packet. If host responds, ping will print host is alive on the standard output and exit. Otherwise after timeout seconds, it will write no answer from host. The default value of timeout is 10 seconds.

When the -s flag is specified, ping sends one datagram per second, and prints one line of output for every ECHO_RESPONSE that it receives. No output is produced if there is no response. The default datagram packet size is 64 bytes.

When using ping for fault isolation, first 'ping' the local host to verify that the local network interface is running.

EXAMPLE

```
OASOS> ping 192.103.54.190

PING (192.103.54.190): 56 data bytes

192.103.54.190 is alive
```

PWD

NAME

pwd - display the pathname of the current working directory

SYNOPSIS

pwd

DESCRIPTION

pwd prints the pathname of the working (current) directory.

OPTIONS

NONE

EXAMPLE

```
OASOS> cd 5.5/usr

OASOS> pwd

5.5/usr
```

REBOOT

NAME

reboot - reboots the SA 100

SYNOPSIS

reboot

DESCRIPTION

Reboots the SA 100 after prompting you for confirmation.

OPTIONS

None

EXAMPLE

```
OASOS> reboot
```

RMDIR

This command reserved for Ascend technician use only.

NAME

rz - receive Zmodem

SYNOPSIS

rz

DESCRIPTION

Sets the SA 100 to receive mode, awaiting a Z-modem file transfer.

OPTIONS

None

EXAMPLE

```
OASOS> rz
```

NOTES

While in shell mode, any incoming Z-modem file transfers are auto-detected. There is no need to issue an additional rz command to receive an incoming Z-modem file transfer.

SA_CFG

NAME

sa_cfg - configure SA 100 IP address, subnet mask and serial port baud rate.

SYNOPSIS

sa_cfg

DESCRIPTION

sa_cfg enables you to configure the SA 100's management IP address, management IP subnet mask, and the baud rate for the console serial port. Enter each item when prompted, pressing ENTER after each one. Baud rates up to 38.4kbps are supported.

OPTIONS

None

EXAMPLE

```
OASOS> sa_cfg
```

SA_EXEC

This command reserved for Ascend technician use only.

SA_FLASH

NAME

sa_flash - provides information on the flash file system's available space

SYNOPSIS

sa_flash [-v]

DESCRIPTION

sa_flash displays a summary of the space used and space available to the SA 100's flash file system.

OPTIONS

-v turns on verbose diagnostic output, displaying additional information

EXAMPLE

```
OASOS> sa_flash
```

SA_FLOG

NAME

sa_flog - displays the last three fatal error logs

SYNOPSIS

sa_flog [c]

DESCRIPTION

sa_flog displays the last three fatal error logs for diagnostic purposes.

OPTIONS

c the c option clears the fatal error logs

EXAMPLES

```
OASOS> sa_flog

OASOS> sa_flog c
```

SA_IPLOG

This command reserved for Ascend technician use only.

SA_LNBS

NAME

sa_lnbs - load new boot application into flash memory

SYNOPSIS

sa_lnbs filename...

DESCRIPTION

sa_lnbs loads the filename into flash memory. This file is usually named lzrom.bin.

OPTIONS

None

EXAMPLE

```
OASOS> sa_lnbs
```

SA_RLOG

NAME

sa_rlog - displays non-volatile event log.

SYNOPSIS

sa_rlog X

DESCRIPTION

sa_rlog displays the X most recent event logs.

OPTIONS

X   The integer x represents the number of event logs to display.

EXAMPLE

```
OASOS> sa_rlog 3
```

The example shown would display the three most recent event logs.

NOTES

The format of the event logs display may seem cryptic; this command is intended for Ascend technician use. You should access event log information using the craft interface or WebXtend.

SYNC

NAME

sync - force changed blocks to disk

SYNOPSIS

sync

DESCRIPTION

sync brings a mounted volume up to date, by writing to the volume all modified file information for open files, and cache buffers containing physical blocks that have been modified.

This call is superfluous under immediate write synchronization mode and is not allowed on a NFS volume.

OPTIONS

None

EXAMPLE

```
OASOS> sync
```

NAME

sz - send Zmodem

SYNOPSIS

sz filename

DESCRIPTION

Initiates a Z-modem transfer of the indicated file. This function enables you to back up SA 100 configuration files prior to performing an sa_format command.

OPTIONS

None

EXAMPLE

```
OASOS> sz nv_db.dat
```

TAIL

NAME

tail - display the last part of a file

SYNOPSIS

tail +|- number [lc] filename

DESCRIPTION

tail copies filename to the standard output beginning at a designated place.

OPTIONS

Options are all jammed together, not specified separately with their own '-' signs.

+number Begin copying at distance number from the beginning of the file. number is counted in units of lines or characters, according to the appended option l or c. When no units are specified, counting is by lines. If number is not specified, the value 10 is used.

-number Begin copying at distance number from the end of the file. number is counted in units of lines or characters, according to the appended option l or c. When no units are specified, counting is by lines. If number is not specified, the value 10 is used.

l number is counted in units of lines.

c number is counted in units of characters.

TELNET

This command reserved for Ascend technician use only.

TOUCH

NAME

touch - update the access and modification times of a file

SYNOPSIS

touch **[-**cf] filename ...

DESCRIPTION

touch sets the access and modification times of each argument to the current time. A file is created if it does not already exist.

OPTIONS

-c Do not create filename if it does not exist.

-f Attempt to force the touch in spite of read and write permissions on filename.

C

Downloading the Enterprise MIB

This appendix describes:

- The procedure to download the Ascend Broadband Access Enterprise MIB from the Ascend FTP site

Accessing the Ascend FTP Site

The Ascend Broadband Access Enterprise MIB can be found at the Ascend FTP site. The URL is:

ftp. casc.com

Once you are connected to the FTP site, log in with the following user name and password:

username: sauser

password: sauser

The Ascend Broadband Access Enterprise MIB is available in two forms:

Windows 95/NT: Sahara.exe

UNIX: Sahara.tar

A subdirectory exists for each release version of the SA product family. Navigate the directory structure to locate the desired MIB.

Download the file appropriate to your system needs. The Windows version is a self-extracting archive. Simply execute in the directory where you store your enterprise MIBs.

For the UNIX version, use the UNIX .tar utility to extract the files from the archive to the desired directory.

In either case, take a moment to review the README file.

Finally, follow the instructions from the SNMP manager you are using to load and compile the MIB.

If you are unsure of which release version of the MIB file is appropriate for your hardware, or experience any difficulties with the above procedure, contact the Ascend Technical Assistance Center, as described in Chapter 10, “Resolving Problems”.

D

SA 100/CascadeView Integration

This appendix describes:

- Downloading the required Java Runtime Environment file
  (refer to page D-2)
- Downloading the required .tar files from Ascend (refer to page D-3)
- Unpacking and installing the SA 100 files (refer to page D-4)
- Integrating the SA 100 into CascadeView

Downloading the Java Runtime Environment

To download the Java Runtime Environment for Solaris from the Ascend FTP site:

1. Connect to the Ascend FTP site using the URL ftp. casc.com.
2. Once you are connected to the FTP site, log in with the following user name and password:

   username: sauser

   password: sauser

3. Locate the Java Runtime Environment archive in the “NMS INTEGRATION” directory. The archive is a self-extracting binary file named jre115_solaris2_sparc.bin.
4. FTP the file to your machine.

   ```
   get jre115_solaris2_sparc.bin
   ```

5. Copy the file to the opt/nms/ directory:

   ```
   mv jre115_solaris2_sparc.bin ./opt/nms/jre115_solaris2_sparc.bin
   ```

6. Make the file executable:

   ```
   chmod a+x jre115_solaris2_sparc.bin
   ```

7. Execute the binary file to extract its contents.
   (Note: you must be logged in as “root”.)

   ```
   ./jre115_solaris2_sparc.bin
   ```

Downloading the Sahara.tar File

To integrate an SA 100 into a CascadeView map, you must first download the SA 100 configuration file (Sahara.tar.Z) from the Ascend FTP site (ftp.casc.com/sauser/nms integration/Sahara.tar.Z). Access the FTP site as described in “Accessing the Ascend FTP Site” on page C-2. Open the “NMS INTEGRATION” directory. Download the Sahara.tar.Z file to your local hard drive following the instructions of your FTP software.

Sahara.tar Contents

The sahara.tar archive is approximately 700K in size (compressed), and contains the following files:

- cesv2.mib — a MIB file.
- sahara.mib — a MIB file.
- identitydb.obj — this file is the security database for the applet viewer, enabling secured viewing of WebXtend applets.
- sa.arf — HPOV application registration file.
- sa.frf — HPOV file registration file.
- sa.srf — HPOV system registration file.
- sa100*.* — these files are CascadeView SA 100 icon files.
- sa600*.* — these files are CascadeView SA 600 icon files.
- sa_app — this file provides support for adding, deleting, or modifying SA 100 and SA 600 icons to a map.
- sa_install — this file contains the installation script.
- sa_uninstall — the Navis WebXtend uninstallation script
- satrapd.conf — HPOV trap configuration file.
- java.security
- applet.viewer.properties

Unpacking the Sahara.tar File

To unpack the Sahara.tar archive:

1. Open a terminal session.
2. At the $ prompt, type:

   ```
   mkdir sa_install
   ```

3. At the $ prompt, type:

   ```
   mv Sahara.tar.z ./sa_install/Sahara.tar.Z
   ```

4. Change to the newly-created sa_install directory.
5. From the sa_install directory, unpack the WebXtend archive by typing:

   ```
   uncompress Sahara.tar.Z
   ```

6. The result is a file **Sahara.tar**.
7. Unpack this file by entering the following command:

   ```
   tar -xvf Sahara.tar
   ```

In the next step, you'll integrate these files into your CascadeView installation.

Installing the Navis WebXtend Files

To install the WebXtend files, you must be logged in as root.

1. At the # prompt, type:

   chmod +x sa_install

2. Install one of the three Java clients by following the appropriate step below:

   - To install the files necessary to use the Java Runtime Environment (the recommended Java client), type:

   ./sa_install jre

   - To install the files necessary to use the Java Developer's Kit as your Java client, type:

   ./sa_install jdk

   - To install the files necessary to use Netscape Navigator as your Java client, type:

   ./sa_install Netscape

3. If an error message reading **Error: Duplicate "atmFormumdbreport"** appears, ignore it.

4. Allow a minute or two for files to install.

5. When the # prompt reappears, you may restart your CascadeView sessions.

Verifying the Navis WebXtend Installation

You can verify the installation's success by adding an object to your CascadeView map.

1. From CascadeView's Edit menu, select Add Object.
2. At the Add Object Palette, select the Cascade Objects class to display the symbol subclasses for Cascade objects.
3. Use the middle mouse button to select and drag an SA-100 symbol to the submap. This will cause the Add Object window to open.
4. Complete the Add Object window for the new SA-100 object:

   Fill in a label for the object.

   In Object Attributes, select Ascend SA Node, and click Set Object Attributes. Enter the node's IP address and click Verify, then OK, to return to the Add Object window.

   Click OK to close the Add Object window and place the object on the submap.

Uninstalling the Navis WebXtend Files

To uninstall the Navis WebXtend files from your CascadeView installation:

1. Log in as root.
2. Exit any active CascadeView sessions.
3. Execute the sa_uninstall script located in the sa_install directory.

E

Managing the SA 100 Remotely

This appendix describes:

- How to manage SA 100 units not equipped with an Ethernet port or remote unit to which an Ethernet connection cannot be made

Setting up a Connection to a Remote SA 100

It is not necessary to have a direct PC-to-SA 100 physical connection or even an Ethernet connection to manage an SA 100. WebXtend makes it possible to remotely manage SA 100 units over ATM connections, as shown in Figure E-1.

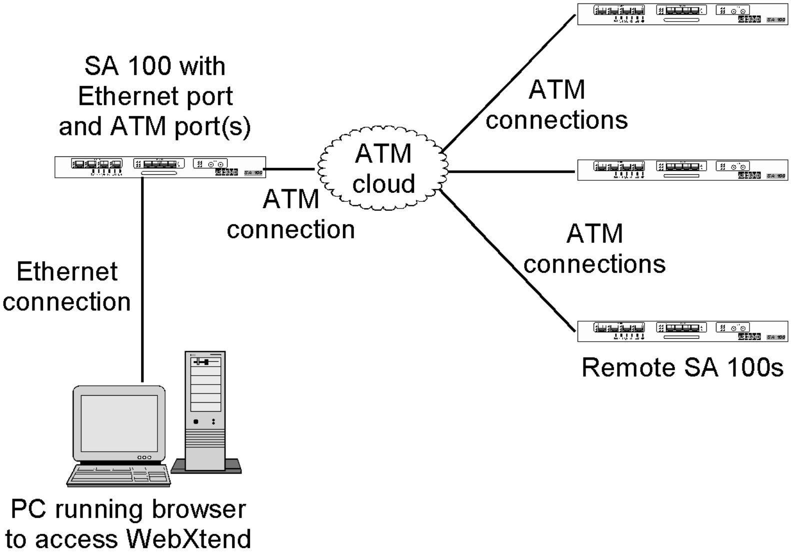

Figure E-1. Remote management of SA 100's without Ethernet ports

The following instructions make several assumptions:

- All SA 100 units have been properly configured with IP addresses as described in the SA 100 Hardware Installation Guide.
- The Ethernet connection between your PC and the local SA 100 unit has been made as described in "Making the Ethernet Management Connection" on page 4-17 of the Hardware Installation Guide.
- The ATM network connections between the local and remote SA 100 unit have been made, including any intermediate switching connections (those in the ATM cloud).

Follow the instructions below to prepare an SA 100 for remote management, then configure your local SA 100 to connect to the remote unit, as described on page E-4.

Preparing an SA 100 for remote management

To prepare an SA 100 for use as a remote unit:

1. Log in to the SA 100 using the craft interface as described in "Accessing the Craft Interface" on page A-9.
2. Select Service Management at the Main menu.
3. From the Service Management window, select Native LAN Service.
4. From the Native LAN Service Groups window, select Add NLS Group.
5. Complete the Add NLS Group window as described in "Adding an NLS Group" on page 5-23. In the IP Management frame, set the Select IP Access to IP, and enter the unit's IP Address and Subnet Mask. Choose OK to add the new group and return to the Native LAN Service Groups window.
6. From the Configured NLS Groups window, select the group created in step 5 to open its NLS Group Options window.
7. From the NLS Group Options window, select the Tunnels button.
8. From the NLS Tunnels window, select Add Tunnel.
9. Complete the Add Tunnel window as described in "Creating Tunnels for an NLS Group" on page 5-28. In the VPI and VCI fields, define a VPI and VCI for this connection. Choose OK to close the window and confirm the new tunnel.

The SA 100 is now ready to serve as a remote unit, able to receive management connections from your local SA 100 and web browser.

Creating the connection from local to remote

To set up a management connection to a remote SA 100:

1. Log in to the local SA 100 using your browser as described in “Accessing WebXtend” on page 2-5.
2. Select Service Management at the Main menu.
3. From the Service Management window, select Native LAN Service.
4. From the Native LAN Service Groups window, select Add NLS Group.
5. Complete the Add NLS Group window as described in “Adding an NLS Group” on page 5-23. Choose OK to add the new group and return to the Native LAN Service Groups window.
6. From the Configured NLS Groups window, select the group created in step 5 to open its NLS Group Options window.
7. From the NLS Group Options window, select the Tunnels button.
8. From the NLS Tunnels window, select Add Tunnel.
9. Complete the Add Tunnel window as described in “Creating Tunnels for an NLS Group” on page 5-28. In the VPI and VCI fields, enter a VPI and VCI for this ATM connection. If the ATM connection you are creating is a point-to-point connection directly from the local to the remote unit, the VPI/VCI should match the VPI/VCI assigned to the remote unit. Otherwise, enter the VPI/VCI of the next device within the ATM cloud. Choose OK to close the window and confirm the new tunnel.

You have now established a connection from your PC over Ethernet through the local SA 100 and from the local SA 100 over the ATM network to the remote SA 100.

To manage the remote SA 100, enter its IP address into your browser. The connection will be made to the remote SA 100 and you will be prompted to log in.

F

Customizing CAC Parameters

This appendix describes:

- Modifying default VP/VC ranges
- Modifying default priority queues
- Modifying VC buffer allocations

Customizing Default CAC Parameters

WebXtend does not support direct editing of the SA 100's default CAC parameters. However, it is possible to customize these parameters by editing the text files which define the parameters.

The default CAC parameters are contained in the following three text files.

- *Vpvc.txt* - Input file for per port VP/VC ranges and overall per port CAC parameters.
- *Priq.txt* - Input file for per priority queues buffer allocation.
- *Vcbfr.txt* - Input file for per VC buffer allocation

The files are included in the compressed software available on the FTP Site. See “Accessing the Ascend FTP Site” on page C-2 for information on connecting to the Ascend FTP site. Locate the correct archive; the file name will be formatted Sa100xxx.exe (DOS version) or Sa100xxx.tar (Unix version), where xxx represents the software revision number.

Download the software archive to your local computer and uncompress the archive.

Locate the Vpvc.txt, Priq.txt and Vcbfr.txt files among the files extracted from the archive. Each of the .txt files contains notes explaining the contents and variables that may be changed. Use a standard text editor to make any desired changes to the files.

After editing, the text files must be converted to .cdt files. An executable file is provided to parse the text file and output a .cdt file for use by the SA 100.

The executables are listed below with the associated text file.

Use...	to parse...	...creating the output file(s):
vpandcac.exe	vpvc.txt	Vpvc.cdt and cac.cdt
priq.exe	priq.txt	Priq.cdt
vcbfr.exe	vcbfr.txt	vcbfr.cdt

Example:

```
c:\(archive directory name)> vpandcac.exe
```

When the prompt asking for a file without the .txt extension comes up, type 'vpvc' (this is the modified vpvc.txt file.) The parsing program will perform its operations on the text file and create an output file of the same name with a .cdt extension.

The resulting .cdt file(s) must be transferred to the SA 100 using the Z-modem or FTP procedure described in Appendix A, "Accessing the Craft Interface", of the SA 100 Network Administrator's Guide.

After transferring any modified .cdt files to the SA 100, the unit must be rebooted for any changes to take effect.

Verifying CAC Changes

To verify any CAC parameter changes from WebXtend, open the ATM File Check dialog box, as described in “Viewing ATM File Check Information” on page 6-27. Any files you have modified should be listed as ‘OK’.

You should verify that changes made to individual parameters are in effect by checking these values in the various dialog boxes available from the ATM UNI Connections window (see “Monitoring ATM Connections” on page 6-102).

G

Acronyms

AAL1	ATM adaptation layer type 1
AIS	alarm indication signal
AIS-L	alarm indication signal line
AMI	alternate mark inversion
ANSI	American National Standards Institute
ATM	asynchronous transfer mode
B8ZS	bipolar with 8 zero substitutions
BES	bursty errored seconds
BIP	bit interleaved parity
BOM	bill of material
BPV	bipolar violation
BSU	broadband service unit

CAC	connection admission control
CAS	channel associated signaling
CBR	constant bit rate
CCS	common channel signaling
CCV	C-bit coding violation
CDV	cell delay tolerance
CDVT	cell delay variation tolerance
CES	C-bit errored seconds or circuit emulation service
CLEI	common-language equipment identification
CLP	cell loss priority
CPE	customer provisioned equipment
CPOD	cell protocol option device
CRC	cyclic redundancy check
CRCLOMF	cyclic redundancy check loss of multiframe
CSES	C-bit severely errored seconds
CSS	controlled slip seconds
DS1	digital service type 1
DS3	digital service type 3
EFCI	explicit forward congestion indicator
ES	errored seconds
ESB	errored seconds type B
ESF	extended superframe format
ETSI	European Telecommunications Standards Institute
EXZ	excessive zeros

FBR	fixed bit rate
FBW	fixed bandwidth
FC	failure count
FCS	frame check sequence
FEBE	far end block errors
FERF	far end receive failure
FTP	file transfer protocol
GCRA	generic cell rate algorithm
HCS	header checksum sequence
HP	Hewlett-Packard
ICM	interface control module
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IP	internet protocol
IPOD	interface protocol option device
ITU-T	International Telecommunication Union Telecommunication Standard Sector
IWF	interworking function
LAN	local area network
LCD	loss of cell delineation
LCV	line code violation or line coding violation
LES	line errored seconds
LOF	loss of frame
LOS	loss of signal

MAP	management access path
Mbps	Megabits per second
MBS	maximum burst size
MCR	minimum cell rate
MIB	management interface base
NLS	native LAN service
NNI	network-to-network interface
NRT-VBR	non-real time variable bit rate
OAM	operations administration and maintenance
OC	optical carrier
OOF	out of frame
PCMCIA	Personal Computer Memory Card International Association
PCR	peak cell rate
PCV	path code violation, path coding violation or P-bit coding violation
PES	P-bit errored seconds
PID	protocol identification
PLCP	phase layer convergence protocol
POD	protocol option device
PSES	P-bit severely errored seconds
RDI	remote defect indication
RDI-L	remote defect indication line
RFC	request for comment
RISC	reduced instruction set computer
RT-VBR	real time variable bit rate

RX	receive or received
SCM	system control module
SCR	sustainable cell rate
SDH	synchronous digital hierarchy
SEF	severely errored frame
SEFS	severely errored framing seconds
SES	severely errored seconds
SF	superframe format
SNMP	simple network management protocol
SNP	sequence number protection
SONET	synchronous optical network
STM	synchronous transfer mode
TS16AIS	time slot 16 alarm indication signal
TS16LOMF	time slot 16 loss of multiframe
TX	transmit or transmitted
UAS	unavailable seconds
UBR	unspecified bit rate
UNI	user-to-network interface
UPC	usage parameter control
VBR	variable bit rate
VBW	variable bandwidth
VCI	virtual channel identifier
VPI	virtual path identifier
WAN	wide area network

XPOD expansion protocol option device

H

Glossary

A

address

The logical location or identifier of a network node, terminal, pc, peripheral device, or location in memory where information is stored.

alarm

A message notifying an operator or administrator of a network problem.

Alarm Indication Signal (AIS)

An error or alarm signal transmitted in lieu of the normal signal to maintain transmission continuity to the receiving node. The signal indicates that there is a transmission fault located either at the sending node or upstream of the sending node.

Alterable Mark Inversion (AMI)

A signaling format used in T1 lines that provides for the “one” pulses to have an alternating priority. Thus, if the nth-one bit is represented by a positive pulse, the nth T1 line would be a negative pulse.

American National Standards Institute (ANSI)

A private, non-governmental, non-profit organization that develops US standards required for commerce.

applet

A small software module that runs on a Java virtual machine inside a Web browser.

Asynchronous Transfer Mode (ATM)

A method used for transmitting voice, video, and data over high-speed LAN and WAN networks.

B

backbone

The part of a network that carries the bulk of the network traffic, e.g., over Ethernet cabling or fiber-optic cabling.

backplane

A circuit board assembly that provides a means of transferring signals between other circuit board assemblies that are connected to it.

bandwidth

The transmission capacity of a computer or a communications channel.

Bipolar with 8 Zero Substitution (B8ZS)

A T1 encoding scheme where eight consecutive zeros are replaced with the sequence 000-+0+- (if the preceding pulse was +), and with the sequence 000-+0+- (if the preceding value was -), where + represents a positive pulse, - represents a negative pulse, and 0 represents no pulse.

bit

A binary unit of measurement, which may be either a one or a zero.

bits per second (bps)

The number of bits transmitted every second during a data transfer.

broadband network

A type of network that transmits large amounts of information, including voice, data, and video, over long distances using the same cable.

broadband service unit (BSU)

A broadband Wide Area Network device that consolidates wide-area ATM access for a combination of video, voice, and LAN-based data traffic.

browser

A software program for navigating and viewing the World Wide Web.

burst

A method of data transmission in which information is collected and then sent in a single high-speed transmission, rather than one character at a time.

C

cell

Any fixed-length data packet. For example, ATM uses fixed-length, 53-byte cells.

cell highway

Circuits in the SA 100 that are used to relay packets between the CPOD and the IPOD(s), XPOD and ICM.

Cell Loss Priority (CLP)

A field in the ATM cell header that indicates the cell's eligibility for discard by the network under congested conditions.

Cell Protocol Option Device (CPOD)

An SA 100 subsystem that provides cell switching.

cell switching

An operational feature of cellular networks that enables callers to move from one location to another without losing the call connection. The cellular system is designed to switch calls to a new cell with no noticeable drop in the conversation. Cell switching is sometimes called “handing off.” While not noticeable in voice communications, the approximate 300 milliseconds this switching requires can be a problem in data transmission.

channel

Any connecting path that carries information from a sending device to a receiving device. May refer to a physical medium (e.g., coaxial cable) or a specific frequency within a larger channel.

client

A device or software application that makes use of the services provided by a server device or software application.

congestion

The point at which devices in the network are operating at their highest capacity. Congestion is handled by employing a congestion avoidance mechanism.

connection admission control (CAC)

Tasks performed by the network to determine whether to accept or reject a request for a connection or requests for reallocation of bandwidth

Constant Bit Rate (CBR)

A Quality of Service class defined by the ATM Forum for ATM networks. CBR is used for connections that depend on precise clocking to ensure undistorted delivery of bits.

craft interface

An interface that allows the user to locally or remotely configure, monitor, and control the SA 100 using a series of menu-driven screens on a VT100 terminal or on a computer running VT100 terminal emulation software.

CRC error

A condition that occurs when the CRC in a frame does not agree with the CRC frame received from the network.

Cyclic Redundancy Check (CRC)

A calculation method used to check the accuracy of digital transmission over a communications link.

D

D4-format

In T1 transmission, 24 channels per T1 line, where channels are assigned sequentially.

Digital Signal (Digital Service) (DS)

A classification of digital circuits. The DS defines the level of common carrier digital transmission service. DS-0 = 64 kbps (Fractional T1), DS-1 = 1.544 Mbps (T1), DS-2 = 6.312 Mbps (T2), DS-3 = 44.736 Mbps (T3), and DS-4 =274-176 Mbps (T4).

DS1

A standard digital transmission facility, operating at 1.544 Mbps.

E

E1

The European counterpart to the North American T1 transmission speed. Adopted by the Conference of European Posts and Telecommunications Administrations, the E1 standard carries data at the rate of 2.048 Mbps.

error rate

In communications, the ratio between the number of bits received incorrectly and the total number of bits in the transmission.

ethernet

A popular LAN protocol and cabling scheme with a transfer rate of 10 or 100 Mbps.

Expansion Protocol Option Device (XPOD)

An SA 100 subsystem that provides expansion capabilities, including an additional ATM wide-area connection.

Extended Superframe Format (ESF)

In Frame Relay, a frame structure that extends the DS1 superframe structure from 12 to 24 frames, for a total of 4632 bits. This format redefines the 8-kbps channel, which consists of framing bits previously used only for terminal and robbed-bit signaling synchronization.

F

fail count

A statistic that displays the number of tests that produced an error condition.

File Transfer Protocol (FTP)

A method of transferring information from one computer to another, either over a modem and telephone line or over a network. FTP is a TCP/IP application utility.

Frame Check Sequence (FCS)

In a frame, a field that contains the standard 16-bit cyclic redundancy check used to detect errors in HDLC and LAPD frames.

G

Gbps

Abbreviation for gigabits (1 billion bits) per second. See *bps*.

H

header

The initial part of a data block, packet, or frame, which provides basic information about the handling of the rest of the block, packet, or frame.

HP OpenView

The UNIX-based network management application used with CascadeView/UX on an NMS to manage a Ascend-switch network.

I

Institute of Electrical and Electronic Engineers (IEEE)

A professional organization that defines network standards.

Interface Control Module (ICM)

An SA 100 subsystem with a cell subsystem and a packet subsystem that switches cells and packets simultaneously.

Interface Protocol Option Device (IPOD)

An SA 100 subsystem that supports service interfaces including Ethernet, circuit switching, and ATM UNI/NNI.

Interim Local Management Interface (ILMI)

A management information base (MIB) that provides status and communication information to ATM UNI devices and provides for a port keep alive protocol. ILMI provides status information and statistics about virtual paths, connections, and address registration. It also determines the operational status of the logical port.

internal clocking

A hardware function that provides the transmit and receive clocks to the user equipment.

International Telecommunication Union Telecommunication Standard Sector (ITU-T)

An advisory committee established under the United Nations to recommend worldwide standards for voice and data. One of the four main organizations of the International Telecommunications Union.

Internet Protocol (IP)

The TCP/IP session-layer protocol that regulates packet forwarding.

Internet Protocol address

A 32-bit address assigned to hosts using TCP/IP. The address is written as four octets separated with periods (dotted decimal format), which are made up of a network section, an optional subnet section, and a host section.

IP address

See *Internet Protocol address*.

J

Java

An object-oriented programming language that creates distributed, executable applications.

jitter

A type of distortion found on analog communications lines, resulting in data transmission errors.

K

kbps

Abbreviation for kilobits (1000 bits) per second. See *bps*.

L

Local Area Network (LAN)

Any physical network technology that connects a number of devices and operates at high speeds (10 Mbps through several gigabits per second) over short distances.

loopback

A diagnostic that directs signals back toward the transmitting source to test a communications path.

loss of frame (LOF)

A T1 error condition when an out-of-frame condition exists for a normal period of 2 1/2 seconds.

loss of signal (LOS)

A T1 error condition when j175+_75 consecutive zeros are received.

M

Management Information Base (MIB)

The set of variables forming a database contained in a CMIP or SNMP-managed node on a network. Network management stations can fetch/store information from/to this database.

Mbps

Abbreviation for megabits (1 million bits) per second. See *bps*.

N

Network-to-Network Interface (NNI)

The standard that defines the interface between ATM switches and Frame Relay switches. In an SMDS network, an NNI is referred to as Inter-Switching System Interface (ISSI).

node

Any device such as a pc, terminal, workstation, etc., connected to a network and capable of communicating with other devices.

O

OASOS

The internal operating system of the SA 100.

out of frame (OOF)

A T1 error condition where two or three framing bits of any five consecutive frames are in error.

P

packet

Any block of data sent over a network. Each packet contains sender, receiver, and error-control information in addition to the actual message; sometimes called payload or data bits.

payload

The portion of a frame that contains the actual data.

Peak Cell Rate (PCR)

In ATM transmission, the maximum cell transmission rate. PCR defines the shortest time period between two cells.

protocol

A set of rules governing communication between two entities or systems to provide interoperability between services and vendors. Protocols operate at different layers of the network, e.g., data link, network, and session.

Protocol Accelerator™

A subsystem on each SA 100 Interface Control Module that translates between flows at multiple levels at up to 200,000 packets per second.

R

red alarm

A T1 alarm condition indicating a loss of signal or loss of frame at the device's local termination point.

Request For Comment (RFC)

A series of notes and documents available online that describe surveys, measurements, ideas, techniques, and observations, as well as proposed and accepted Internet protocol standards, such as Telnet and FTP.

router

An intelligent LAN connection device that routes packets to the correct LAN segment destination address(es). The extended LAN segments may or may not use the same protocols. Routers link LAN segments at the ISO/OSI network layer.

S

server

A device or software application that provides information or services based on requests from client devices or programs.

Simple Network Management Protocol (SNMP)

A standard network management protocol used to manage and monitor nodes and devices on a network.

Sustainable Cell Rate (SCR)

The average cell transmission rate in ATM transmission. Equivalent to CIR for Frame Relay, SCR is measured in cells per second and converted internally to bits per second Usually, SCR is a fraction of the peak cell rate. Cells are sent at this rate if there is no credit.

T

T1

A long-distance, point-to-point circuit that provides 24 channels at 64 kbps each (for a total of 1.544 Mbps). See also *E1*.

T3

A long-distance, point-to-point circuit that provides up to 28 T1 channels. T3 can carry 672 channels of 64 kbps (for a total of 44.736 Mbps).

telnet

The Internet standard protocol for remote terminal-connection services.

throughput

The actual speed of the network.

transceiver

A device that connects a host interface to a LAN. A transceiver transmits and receives data.

U

User-to-Network Interface (UNI)

A standard defined by the ATM Forum for public and private ATM network access. UNI connects an ATM end system (such as a router) and an ATM switch, and is also used in Frame Relay. UNI is called SNI (Subscriber Network Interface) in SMDS.

V

Virtual Circuit Identifier (VCI)

A 16-bit field in the ATM cell header that is used as an addressing identifier to route cell traffic.

Virtual Path Identifier (VPI)

An 8-bit field in the ATM cell header that is used as an addressing identifier to route cell traffic.

W

WebXtend™

The Web browser user interface built into Ascend broadband access products.

Wide Area Network (WAN)

A network that usually consists of packet-switching nodes over a large geographical area.

Y

yellow alarm

A T1 alarm that is generated when the interface receives a red alarm signal from the remote end.

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D