Lucent Technologies
Bell Labs Innovations

# B-STDX, CBX, and GX Getting Started User's Guide

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## Chapter 3 Creating and Managing Network Maps



## Chapter 4 Configuring the Gateway Switch

## Chapter 7 Downloading the Configuration

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# About This Guide

The *B-STDX, CBX, and GX Getting Started User's Guide* describes how to use NavisCore network management software to set up and manage a switch network. Specifically, this guide describes how to manage the Network Management Station (NMS), configure a gateway switch (the first switch in the network), and manage network maps and switches. This guide is intended for network administrators and operators.

This guide supports the following NMS and switch software releases:

- NavisCore™, Release 09.00.00.00 or greater
- CBX 500® Multiservice WAN switch software Release 09.00.00.00 or greater
- GX 550® Multiservice WAN switch software Release 09.00.00.00 or greater
- Prior supported releases of B-STDX 9000® Multiservice WAN switch software as noted in the Interoperability section of the NavisCore Software Release Notice (SRN).

## What You Need to Know

As a reader of this guide, you should be familiar with UNIX and HP OpenView. You should also know about relational databases to properly maintain Sybase, which is used by NavisCore.

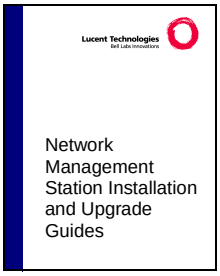
This guide assumes that you have already installed the Lucent switch hardware, NMS, and switch software. See "Related Documents" on page xxiv for a list of documents that describe these and other tasks.

Be sure to read the SRN that accompanies each product. The SRN contains the most current feature information and requirements.

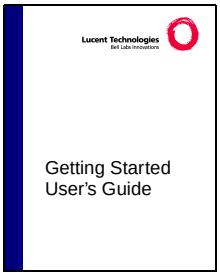
# Reading Path

This section describes all of the documents that support the NavisCore NMS and switch software.

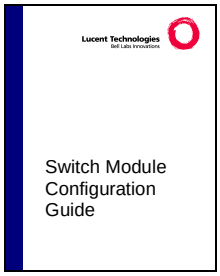
Read the following documents to install and operate NavisCore Release 09.00.00.00 or greater and the associated switch software. Be sure to review the accompanying SRNs for any changes not included in these guides.



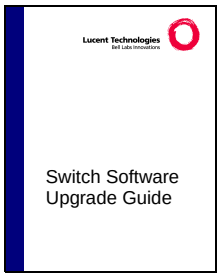

These guides describe prerequisite tasks, hardware and software requirements, and instructions for installing and upgrading Solaris, HP OpenView, and NavisCore on the NMS.



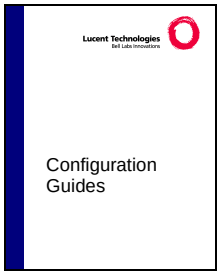

This guide describes how to configure and manage NavisCore, network maps, and Lucent switches. It also describes how to add third-party objects to the map and access them through NavisCore.




This guide describes the processor and input/output modules (IOMs) on each switch platform, and how to configure physical ports, timing, and other attributes through NavisCore.

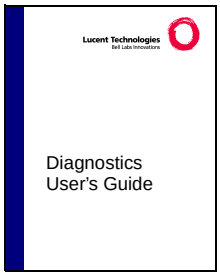



This guide describes procedures for upgrading a Lucent switch to the current software release.

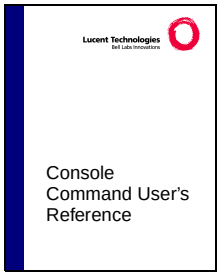



The following guides describe how to configure wide area network (WAN) services on the supported switch platforms:

- *B-STDX and CBX Frame Relay Services Configuration Guide*
- *B-STDX, CBX, and GX ATM Services Configuration Guide*
- *B-STDX and CBX IP Services Configuration Guide*




This guide describes how to monitor and diagnose problems in your NavisCore switch network.




This reference lists and describes the switch console commands.

## Documentation for New Modules

The following guides provide information about hardware installation and switch software configuration for specific modules.

- *CBX 1-Port Channelized STM-1/E1 IMA I/O Module User's Guide* (Product Code: 80170)
- *GX BIO-C, OC-48c/STM-16c, and SF2 Modules Users' Guide* (Product Code: 80199)

# How to Use This Guide

This guide contains the following information:

| Read | To Learn About |
|---|---|
| Chapter 1 | General features of the Network Management Station (NMS). |
| Chapter 2 | Performing the following tasks to administer the NMS:<br>• Starting and shutting down the NMS<br>• Defining NavisCore security passwords<br>• Using the `Audit Trail` utility<br>• Running backup procedures |
| Chapter 3 | Creating and managing network maps, including the following tasks:<br>• Creating and adding objects to a network map<br>• Assigning Class B IP addresses<br>• Creating maps with submaps |
| Chapter 4 | Configuring the NMS and gateway switch. |
| Chapter 5 | Setting switch parameters. |
| Chapter 6 | Setting GX 550 ES parameters. |
| Chapter 7 | Downloading the configuration file to the switch and using the Parameter Random Access Memory (PRAM) features. |
| Appendix A | The contents of the NavisCore configuration file and how to modify this file if necessary. |
| Appendix B | Configuring the Poll Server feature. |
| Appendix C | The NavisCore menu system. |

# What's New in This Guide

This guide describes the following new product features in NavisCore Release 09.00.00.00, and includes the following changes and enhancements:

| Feature or Enhancement | Description | See |
|---|---|---|
| **New Features in This Release** | | |
| CID Server Sync Interval | A new processor module attribute that enables you to specify the interval at which the CID Server synchronizes the set of reserved CIDs with the CID Manager components. | "Configuring the Processor Module" on page 4-9 |
| Layer2 VPN Name | You can now select a layer 2 VPN to assign to a trunk. | "Configuring a Trunk Connection" on page 4-28 |
| **Features Incorporated From Previous Releases** | | |
| Enabling Overload Control | A switch attribute that enables you to enable VC overload control for the switch. | "Enabling Overload Control" on page 5-30 |
| **General Enhancements** | | |
| NavisCore dialog boxes and menu choices | Updated NavisCore dialog box illustrations and menu choice references to reflect recent additions and changes. | Throughout |
| NavisCore configuration file | Updated the contents of the NavisCore configuration file (`cascadeview.cfg`): | Appendix A, "NavisCore Configuration File" |

# Conventions

This guide uses the following conventions, when applicable:

| Convention | Indicates | Example |
|---|---|---|
| `Courier Regular` | System output, filenames, and command names. | `Please wait...` |
| ***<Courier Bold Italics>*** | Variable text input; user supplies a value. | Enter ***<cdrompath>*****/docs/atmcfg.pdf** to display... |
| *<Courier Italics>* | Variable text output. | <*cdrompath*>/docs/atmcfg.pdf |
| **Courier Bold** | User input. | > **show ospf names** |
| Menu ⇒ Option | A selection from a menu. | NavisCore ⇒ Logon |
| *Italics* | Book titles, new terms, and emphasized text. | *B-STDX, CBX, and GX Network Management Installation Guide* |
| A box around text | A note, caution, or warning. | See examples below. |

**Note –** Notes provide additional information or helpful suggestions that may apply to the subject text.

**Caution –** Cautions notify the reader to proceed carefully to avoid possible equipment damage or data loss.

**Warning –** Warnings notify the reader to proceed carefully to avoid possible personal injury.

# Related Documents

This section lists the related Lucent and third-party documentation that may be helpful to read.

## Lucent

- *CBX 500 Multiservice WAN Switch Hardware Installation Guide* (Product Code: 80011)
- *GX 550 Multiservice WAN Switch Hardware Installation Guide* (Product Code: 80077)
- *GX 550 ES Hardware Installation Guide* (Product Code: 80149)
- *B-STDX, CBX, and GX Network Management Station Installation Guide* (Product Code: 80200)
- *B-STDX, CBX, and GX Network Management Station Upgrade Guide* (Product Code: 80201)
- *B-STDX, CBX, and GX Switch Module Configuration Guide* (Product Code: 80196)
- *CBX and GX Switch Software Upgrade Guide* (Product Code: 80198)
- *B-STDX and CBX Frame Relay Services Configuration Guide* (Product Code: 80193)
- *B-STDX, CBX, and GX ATM Services Configuration Guide* (Product Code: 80191)
- *B-STDX and CBX IP Services Configuration Guide* (Product Code: 80194)
- *B-STDX, CBX, and GX Switch Diagnostics User's Guide* (Product Code: 80192)
- *B-STDX, CBX, and GX Switch Troubleshooting User's Guide* (Product Code: 80197)
- *B-STDX, CBX, and GX Console Command User's Reference* (Product Code: 80190)
- *NavisXtend Statistics Server User's Guide* (Product Code: 80215)
- *NavisXtend Accounting Server Administrator's Guide* (Product Code: 80203)
- *NavisXtend Statistics Server User's Guide* (Product Code: 80142)
- *NavisXtend Accounting Server Administrator's Guide* (Product Code: 80046)
- *NavisAX Administrator's Guide* (Product Code: 80202)

All manuals for the Core Switching Division and the *Master Glossary* are available on the Core Switching Division Technical Publications Documentation Library CD-ROM (Product Code: 80025).

### Third Party

- *Solaris 8 Advanced Installation Guide*
- *Solaris 8 (SPARC Platform Edition) Release Notes*
- *Solaris 8 Sun Hardware Platform Guide*
- *Installation Guide Sybase Adaptive Server™ Enterprise on Sun Solaris*
- *HP OpenView 6.2 NNM Migration Guide*
- *HP OpenView 6.2 Release Notes*
- *HP OpenView Managing Your Network*

## Ordering Printed Manuals Online

You can order Core Switching manuals online. Use the following URL to access the Lucent Bookstore:

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- FAX your comments to 978-692-1510, attention Technical Publications.

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**`http://www.lucent.com/support`**

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# NavisCore Overview

NavisCore is an integrated network management software package that runs on a Network Management Station (NMS). NavisCore enables you to do the following:

- Create and edit network maps
- Configure Lucent switches
- Configure multiple networks from a single NMS
- Create trunks and circuits
- Monitor and troubleshoot the network

Figure 1-1 illustrates the various software packages that make up the NMS.

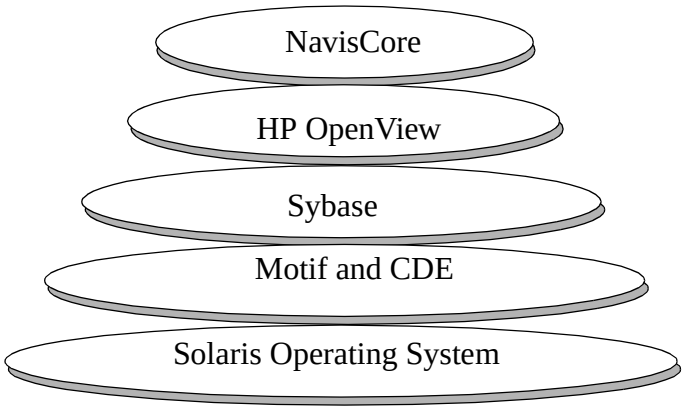


**Figure 1-1. NavisCore Network Management Station (NMS)**

Combined, these software programs present an easy-to-use graphical user interface (GUI) that allows you to configure and maintain a Lucent network. These software programs include:

**Solaris Operating System** — The operating system you install on your SPARCstation. Solaris is a UNIX-based operating system used to design and develop complex networks.

**Motif and CDE** — Window managers that run client applications. Motif and CDE (Common Desktop Environment) enable you to customize your window's visual display.

**Sybase Adaptive Server Enterprise** — A relational database software program used to store database information and provide backup and recovery of database files.

**HP OpenView** — Provides the interface to add, modify, and delete nodes, trunks, and switch configurations from the network map and database.

**NavisCore** — Provides a GUI for setting up and managing a switch network.

# About the Network Management Platform

NavisCore runs under the HP OpenView platform, which provides integrated network and systems management solutions on an industry-standard platform. HP OpenView software enables you to create a graphical network map and use pull-down menus to configure, monitor, and diagnose equipment in the network.

NavisCore provides a logical network configuration interface for setting network-wide parameters, provisioning individual circuits, and configuring other switch functions. NavisCore provides defaults for all required parameters and prompts you for missing parameters, if necessary.

You download the initial network configuration and any updates from the NMS to the switch. The switch stores this configuration in Parameter Random Access Memory (PRAM).

# About Lucent Multiservice WAN Switches

Each Lucent Multiservice WAN switch contains a Simple Network Management Protocol (SNMP) agent, which enables you to manage a Lucent switch from any SNMP management system that supports the Lucent Enterprise Management Information Base (MIB) extensions. When you configure an NMS with NavisCore, the NMS communicates with the switches through either the Internet Protocol (IP) for in-band management connections, or the Serial Line Internet Protocol (SLIP) for out-of-band management.

Running NavisCore, the NMS supports in-band management using an Ethernet connection to a local Lucent switch; alternately, you can configure the NMS and the switch on the same IP network.

# Monitoring Features

After you create your Lucent network, you can closely monitor network activity through the NavisCore monitoring features. NavisCore provides several options for obtaining status information from the network, including:

- A pop-up menu that enables you to obtain configuration information for a physical port, logical port, and circuit on a per-card or per-port basis.
- The Monitor Lucent Objects selection enables you to obtain status information for a switch, port, trunk, and circuit.
- Monitoring the network by running diagnostics, collecting statistical data, generating reports, and reviewing the traps log.

See the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* for information on these NavisCore monitoring features.

# Troubleshooting Features

NavisCore uses a color scheme to identify network problems. When you open a network map, all nodes that are operating and communicating with the NMS appear green. Nodes that are either not operational or unable to communicate with the NMS appear red or wheat, respectively. An input/output module (IOM) in a switch that is out-of-sync appears yellow.

NavisCore also uses a color scheme to indicate the status of a configured trunk link between two Lucent switches, the status of I/O modules, processor modules, fans, power supplies, etc. For more information, see the *B-STDX, CBX, and GX Switch Diagnostics User's Guide*.

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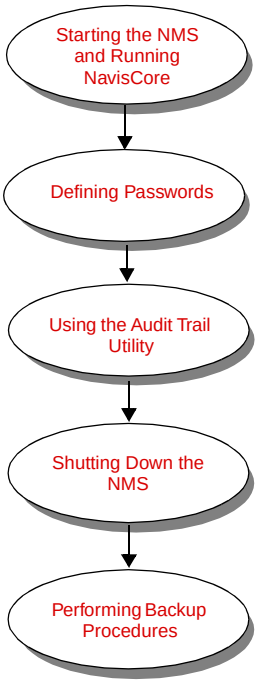
# Administering NavisCore

This chapter describes the following NavisCore administrative tasks:




This guide assumes you have already installed NavisCore and its supporting applications. If you have not installed all of these software products, see the *B-STDX, CBX, and GX Network Management Installation Guide* for instructions.

# Starting the NMS and Running NavisCore

Before you can access NavisCore, you must start the Sybase Server and initiate an HP OpenView session, as described in the following procedure. If you need to start a remote session to the Network Management Station (NMS), contact your UNIX system administrator to set up an Xterm session.

To start the NMS:

1. Log in as root user by entering **`su - root`**. At the prompt, enter the root password.
2. Start the Sybase Server by entering:

   **`/etc/rc2.d/S97sybase &`**

   You do not have to start the local Backup Server because it was never shut down. If you need to start it, enter:

   **`/etc/rc2.d/S98sybase &`**

   When the system displays the last line of text:

   `'iso)_1' (ID = 1).`

   Press Return.
3. Start HP OpenView Services by entering:

   **`/opt/OV/bin/ovstart`**
4. Log in as the nms user by entering:

   **`su - nms`**
5. Execute HP OpenView and NavisCore by entering:

   **`/opt/OV/bin/ovw &`**

   The default HP OpenView root window appears (see Figure 2-1).

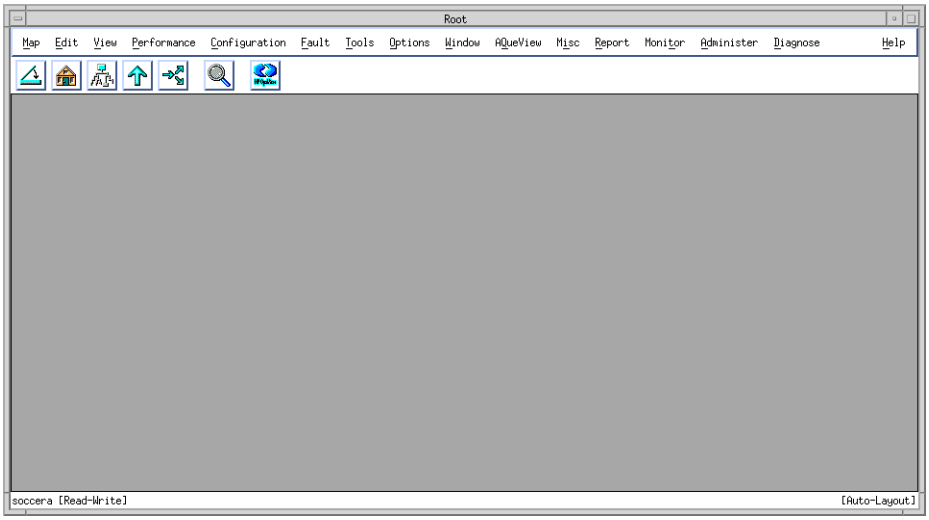



**Figure 2-1. HP OpenView Root Window**

**6.** Make sure the NavisCore icon (see Figure 2-2) appears on the window-manager desktop a few seconds after the default HP OpenView window appears. This indicates that NavisCore is running.


**Figure 2-2. NavisCore Icon**

**Note –** Do *not* invoke any NavisCore commands until the NavisCore icon appears. Do *not* close the NavisCore icon unless one of the supporting programs (such as HP OpenView) stops processing.

After you log into NavisCore, you might need to choose a smaller font size through the workstation's Common Desktop Environment for the best display of online text.

# Modifying Text Field Colors in NavisCore

In the NavisCore resource file, `CascadeView`, you can modify the read/write and read-only text field colors to enable NavisCore to operate more easily with other third-party applications. This file is in `/opt/CascadeView/app-defaults`.

**Note –** Whenever you modify the NavisCore resource file, you must restart NavisCore for the changes to take effect.

To modify text field colors in NavisCore:

1. Log in as the root user by entering **`su - root`**. At the prompt, enter the root password.
2. In the command window, edit the `CascadeView` file by entering:

   **`vi /opt/CascadeView/app-defaults/CascadeView`**

   ```
   ! Resources to disable drag and drop on dialogs
   ! Now screens pop up almost immediately

   CascadeView*dragInitiatorProtocolStyle: XmDRAG_NONE
   CascadeView*dragReceiverProtocolStyle: XmDRAG_NONE

   ! resource to set ReadOnly and ReadWrite Text field
   ! background
   CascadeView*textReadWriteColor:  #6187d9
   CascadeView*textReadOnlyColor:   #729fff
   ```

3. To change the text field colors, modify the RGB color setting in the last two lines:

   `#6187d9` (Default RGB color setting)

   `#729fff` (Default RGB color setting)

4. Enter **`:wq!`** to close the `vi` editor and save your changes.
5. Shut down and then restart NavisCore, as follows:

   **a.** From the File menu, select File ⇒ Exit to close NavisCore.

   **b.** Enter **`/opt/OV/bin/ovw &`** to restart NavisCore.

# Modifying the Circuit Count in NavisCore

In the NavisCore configuration file, `cascadeview.cfg`, you can modify the CV_NUMBER_OF CKT variable to limit the count of circuits returned by the show all circuits query. The number of displayed circuits will match the value configured in this file.

**Note –** Whenever you modify the NavisCore configuration file, you must restart NavisCore for the changes to take effect.

To modify the circuit count:

1. Log in as the root user by entering **`su - root`**. At the prompt, enter the root password.
2. In a command window, edit the `cascadeview.cfg` file by entering:

   **`vi /opt/CascadeView/etc/cascadeview.cfg`**
3. Set the CV_NUMBER_OF_CKT variable in `cascadeview.cfg` by entering a new value. The recommended range is any value between 10 and 400; the default value is 100.

   `CV_NUMBER_OF_CKT=<`***`value`***`>`
4. Enter **`:wq!`** to exit the `vi` editor and save your changes.
5. Shut down and then restart NavisCore, as follows:
   - **c.** From the File menu, select File ⇒ Exit to close NavisCore.
   - **d.** Enter **`/opt/OV/bin/ovw &`** to restart NavisCore.

# Defining Passwords

When you access HP OpenView, you can display network maps and use any of the monitoring functions without having to log in. However, you cannot perform any network management functions without logging in with the appropriate password.

**Note –** When you install Sybase, the maximum number of users is set to 50. In a typical network operations center, you assign only one administrator password. You need at least one operator logon to use all network features.

You can define three levels of access for NavisCore:

**Administrator** — To create passwords. The default is *admin*. For security reasons, you should first create a new administrator password, then create operator and provisioning passwords.

**Operator** — To provision (configure) and manage all network features. The default is *cascade*. You must log in with this password to configure physical ports and download a switch configuration.

**Provisioning** — To configure and monitor logical ports, trunks, and circuits on the network. The default is *provision*. The provisioning password only allows you to perform the basic configuration tasks. You log in as *operator* to download software and configure switch and physical port parameters.

## Assigning Access Levels

To define access levels and modify the default passwords:

1. From the Administer menu, select NavisCore ⇒ Set Password and select one of three access levels: Administrator, Operator, or Provisioning. The Change [*Access Level*] Password dialog box appears for the access level you selected. For example, if you select Provisioning, the Change Provision Password dialog box appears (see Figure 2-3).

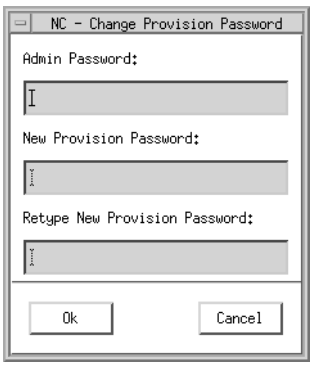



**Figure 2-3. Change Provision Password Dialog Box**

2. Enter the Admin Password.
3. Enter a new password.
4. Retype the new password.
5. Choose OK.
6. Repeat step 1 through step 5 to define additional passwords for each access level.

## Logging On

To log on to NavisCore:

1. From the Misc menu, select NavisCore ⇒ Logon. The NavisCore - Logon dialog box appears (see Figure 2-4).

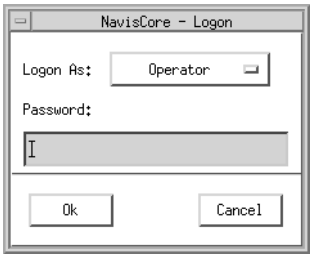



**Figure 2-4. NavisCore Logon Dialog Box**

2. Select Operator or Provisioning from the Logon As option menu.
3. Enter the appropriate password.
4. Choose OK.

You can now perform NavisCore administrative tasks.

# Using the Audit Trail Utility

The `Audit Trail` utility keeps a record of the changes you make to a network map. You can retrieve this information from the database whenever you need to review these changes.

The `Audit Trail` utility logs the following network activity:

- Switch status
- Invalid login attempts
- Logon or logoff actions
- Add, modify, or delete functions for a switch, module, logical port, trunk, or circuit
- Reboot functions for a switch or module
- Download activity for switch software, initialization-script files, or Parameter Random Access Memory synchronization (PRAM Sync) files
- Standby module activity when it takes over in a redundant pair
- Add, delete, or modify functions for a management path or NMS entry
- User session timeout

## Enabling the Audit Trail Utility

To enable the `Audit Trail` utility:

1. Log in as the root user by entering **`su - root`**. At the prompt, enter the root password.
2. In the command window, edit the `cascadeview.cfg` file by entering:

   **`vi /opt/CascadeView/etc/cascadeview.cfg`**

3. Set the `CV_AUDIT_TRAIL_ENABLE` environment variable in the `cascadeview.cfg` file by entering:

   ```
   CV_AUDIT_TRAIL_ENABLE=TRUE
   export CV_AUDIT_TRAIL_ENABLE
   ```

**Note –** To disable the `Audit Trail` utility, enter:
**`CV_AUDIT_TRAIL_ENABLE=FALSE`**

4. Enter **`:wq!`** to exit the `vi` editor and save your changes.
5. Shut down and then restart NavisCore, as follows:
   a. From the File menu, select File ⇒ Exit to close NavisCore.
   b. Enter **`su - root`**.

**c.** At the prompt, enter the root password.

**d.** Enter **`cd /opt/OV/bin/ovstop`** to shut down HP OpenView services:

**e.** Enter **`/opt/OV/bin/ovstart`** to restart HP OpenView.

**f.** Enter **`/opt/OV/bin/ovw &`** to restart NavisCore.

**6.** The `Audit Trail` utility creates an ASCII log file in the `/opt/CascadeView.var/auditlog` directory. The directory and file permissions are set for the world, read/write ("rw").

The filename format is `cv-audit-log.<day of the week>.<date>`. For example, the file `cv-audit-log.tue.4-27-1999` contains information for April 27, 1999.

The `Audit Trail` utility creates a different file for each day of operation (a file for Monday, a file for Tuesday, and so on).

**7.** To view the ASCII log file, enter:

```
cd /opt/CascadeView.var/auditlog/
more cv-audit-log.<day of the week>.<date>
```

Figure 2-5 shows the `Audit Trail` utility's xterm window with a sample log file, which you can display by issuing the `more` command.


**Figure 2-5. Audit Trail Window**

# Shutting Down the NMS

To shut down the NMS:

1. To close NavisCore, select Map ⇒ Exit.
2. At the OpenView Windows WARNING dialog box, choose OK.
3. Log in as root by entering **`su - root`**. At the prompt, enter the root password.
4. Shut down HP OpenView Services by entering:

   **`/opt/OV/bin/ovstop`**
5. Shut down the Sybase Server by entering:

   **`/etc/rc0.d/K01sybase &`**

   You do not have to shut down the local Backup Server.
6. At the # prompt, halt the system by entering:

   **`init 0`**

   Shut down time varies according to site.
7. At the OK prompt, power off the system.

# Performing Backup Procedures

As the NavisCore administrator, you should back up the NMS database on a regular basis. For more information on Sybase and HP OpenView backup procedures, see the *B-STDX, CBX, and GX Network Management Installation Guide*.

**Note –** The Technical Assistance Center (TAC) recommends that you perform daily backups of the Sybase Server and the HP OpenView database.

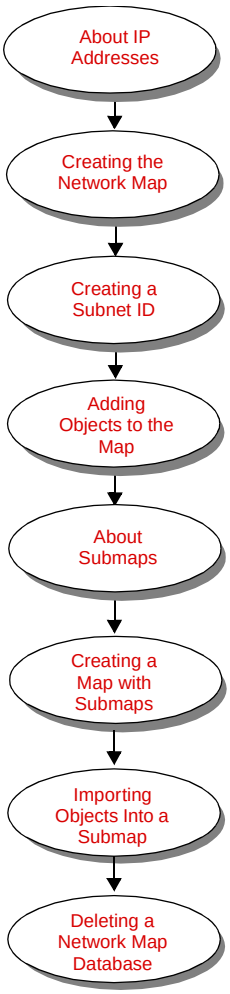
**Note –** If you need to recover switch data in the database, contact the TAC for specific instructions. Do not attempt to restore this database without Lucent's help. For contact information, see "Technical Support" on page xxv.

3

# Creating and Managing Network Maps

This chapter describes Internet Protocol (IP) addressing and subnet addressing concepts. It also describes how to create a network map and subnet ID and add the Lucent switch objects to the network map.

This chapter describes the following topics and tasks:



# About IP Addresses

This section provides an overview of IP addresses and describes the three primary classes of IP addresses (specifically, Class B IP). See the *B-STDX and CBX IP Services Configuration Guide* for a detailed description of the supported IP features.

IP addresses are 32-bit numbers represented by four sequential fields of decimal integers, separated by dots (.); for example, 152.148.225.10. The value of each field (referred to as an *octet* or *byte*) can range from 0 to 255.

The position of the first zero bit in the first four bits determines the class to which an address belongs. The remaining bits specify two subfields, a *network identifier (netid)* and a *host identifier (hostid)*. The netid defines what network the system belongs to, and the hostid represents the specific location on that network, as shown in Table 3-1.

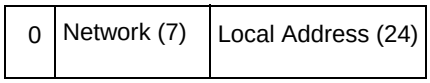
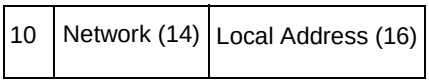
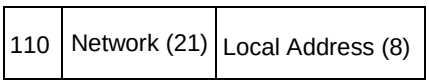
**Table 3-1. Class B IP Address**

| IP Address Class | Network ID | Host ID |
|---|---|---|
| B | 152.148 | 225.10 |

## Three Primary Classes of IP Addresses

There are three primary classes of IP addresses. Each class uses a different address format to accommodate different size networks. Table 3-2 shows the network ID and host ID formats for each class. This guide does not discuss Class D addresses (used for multicasting).

**Table 3-2. IP-Address Classifications**

| Class | Network ID | Host ID | Format |
|---|---|---|---|
| A | 7 bits | 24 bits | Class A addresses are used in large networks and allow 16 million host addresses.<br>  |
| B | 14 bits | 16 bits | Class B addresses are used in intermediate size networks and allow 65,534 host addresses.<br>  |
| C | 21 bits | 8 bits | Class C addresses are used in smaller networks and allow 254 host addresses.<br>  |

## Class B IP Addresses

Lucent supports Class B IP addresses for internal routing (Open Shortest Path First), enabling you to expand your network to configure an unlimited number of switches and trunks (see the *B-STDX and CBX IP Services Configuration Guide*). Class B addresses use the first two bytes for the network address and the last two bytes for the host address. For example, if your Class B network number is 150.100.0.0, you can start numbering your hosts at 150.100.0.1 and go up to host number 150.100.255.254. Using this example, you would have a total of 65,534 host addresses in the Class B network. Using Class B IP addresses, you can group single addresses into subnets to create several smaller networks.

**Note –** If you have a mixed network (for example, switches running two versions of switch software), you must configure all switches running the same version of switch software with circuits within the same subnet.

## About Subnets

A subnet divides a large network into smaller groups (subnets). Subnets support a three-level hierarchy (as opposed to a two-level hierarchy) in which the host number is divided into two parts, the subnet number and the host number on that subnet (see Figure 3-1).

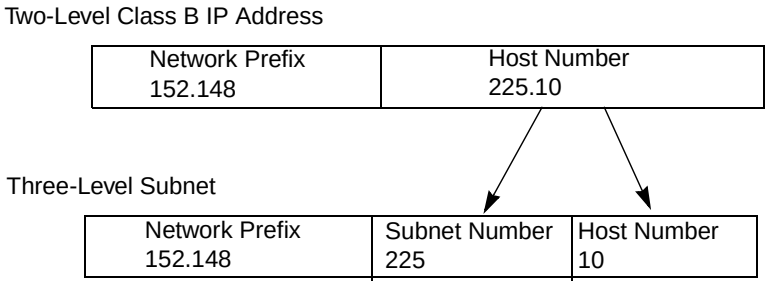



**Figure 3-1. Subnet Example**

You can use a subnet to do the following:

- Connect different physical networks
- Distinguish between different local area networks (LANs)
- Isolate parts of the network
- Delegate network administration by assigning administrators to different subnets

## Choosing a Subnet ID (Mask)

The subnet ID represents a smaller group to which individual addresses belong. When choosing a subnet mask, you must consider the following:

- Number of subnets in your network
- Number of hosts accessing each subnet

# Creating the Network Map

When you create a network map, you specify a unique name for the map and you configure network-wide parameters, such as the network number. These parameters enable the NavisCore application to manage the network map from within HP OpenView.

Use the following procedure to configure a new NavisCore map. This procedure assumes you have started NavisCore.

To create the network map:

1. Access HP OpenView and start NavisCore as described in "Starting the NMS and Running NavisCore" on page 2-2.
2. To log on, select NavisCore ⇒ Logon from the Misc menu. The NavisCore - Logon dialog box appears (see Figure 3-2).

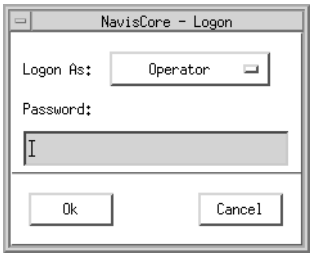



**Figure 3-2. NavisCore Logon Dialog Box**

3. Select Operator from the Logon As option menu.
4. Enter the operator password.
5. Choose OK.
6. From the Map menu, select New. The New Map dialog box appears (see Figure 3-3).

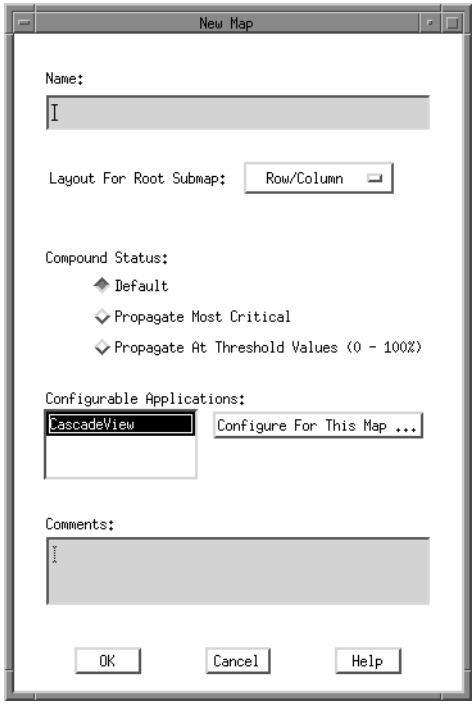



**Figure 3-3. New Map Dialog Box**

**Note –** Once you set the map parameters, you *cannot* modify them. If you need to change the network number after it is set, you must delete the map and start over. Open Shortest Path First (OSPF) uses the network number for path selection. If you must change this setting, first check with the Technical Assistance Center (TAC) for recommended guidelines. For contact information, see "Technical Support" on page xxv.

7. Complete the fields described in Table 3-3.

**Table 3-3. New Map Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Name | Enter an alphanumeric name that identifies the map. |
| Layout For Root Submap | The Row/Column map layout is the default setting. This option affects how the objects are arranged on the map. |
| Compound Status | Specify a status propagation. Compound status defines how HP OpenView propagates symbol status in a low-level submap up to parent submaps to warn you of a problem. For more information, see *HP OpenView Managing Your Network.*<br>Options include:<br>*Default* – Causes HP OpenView to propagate status according to a predefined algorithm.<br>*Propagate Most Critical* – Causes HP OpenView to propagate the status of the most critical symbol in the child submap, to the symbols of the parent object.<br>*Propagate At Threshold Values* (0 - 100%) – Displays four fields that enable you to set threshold values that determine when HP OpenView propagates status. The number shown for each field is the default value.<br>– %warning 30<br>– %minor 20<br>– %major 10<br>– %critical 5 |
| Comments | Enter any additional information for this map. |
| Configurable Applications | Select CascadeView, and then choose Configure For This Map. The CascadeView Configuration dialog box appears (see Figure 3-4). |

Figure 3-4 shows the CascadeView Configuration dialog box.

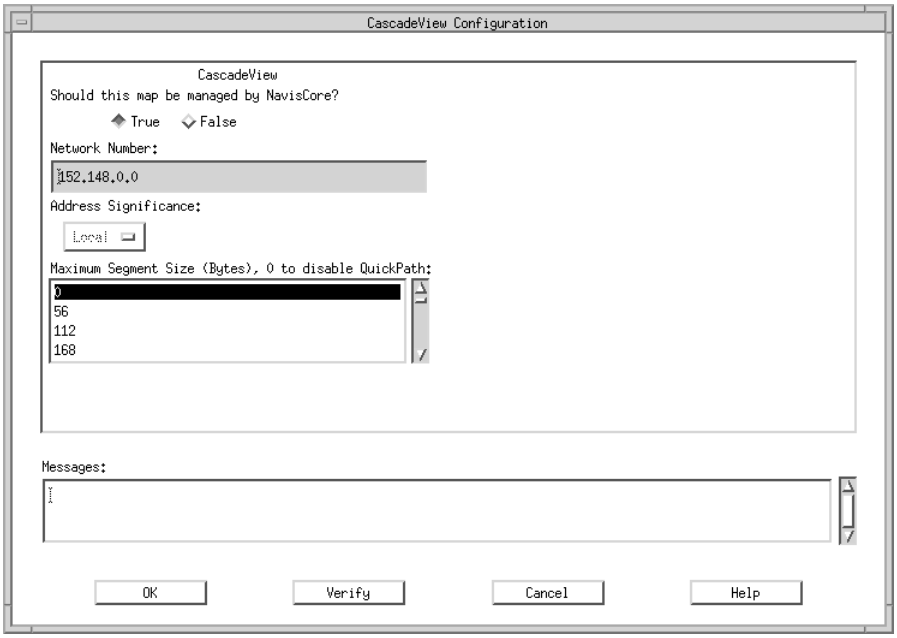



**Figure 3-4. CascadeView Configuration Dialog Box**

8. Complete the fields described in Table 3-4.

**Table 3-4. CascadeView Configuration Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Should this map be managed by NavisCore? | Select True. |
| Network Number | Displays the switch IP network number you specified when you added a static route during the NavisCore installation. Contact the TAC if you must change this number. |
| Address Significance | The default value is Local and cannot be changed. |
| Maximum Segment Size (Bytes), 0 to disable Quickpath | This option is not supported. |

9. Choose Verify to confirm your settings, then choose OK. The New Map dialog box reappears.

**10.** Choose OK. The system displays the following confirmation message (see Figure 3-5).


**Figure 3-5. OpenView Windows WARNING Dialog Box**

**11.** Choose OK to open the new network map.

**Note –** If the IP Internet icon appears on the map, select the icon and from the Edit menu, select Unmanage Objects. Then, from the View menu, select Hidden Objects ⇒ Hide Selected From All Submaps.

**12.** To log on to the network map, select NavisCore ⇒ Logon from the Misc menu. The NavisCore - Logon dialog box appears (see Figure 3-6).

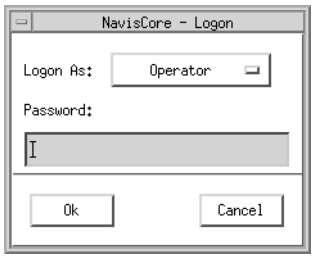



**Figure 3-6. NavisCore Logon Dialog Box**

**13.** Select Operator from the Logon As option menu.

**14.** Enter the operator password (*cascade* is the default).

**15.** Choose OK. You are now logged on to the new map.

# Creating a Subnet ID

You must create at least one subnet ID between 1 and 255. The subnet ID becomes the third byte of the IP address and the switch ID becomes the last byte of the IP address. For example, an IP address of 152.148.225.10 has a subnet ID of 225 and a switch ID of 10.

To add a subnet ID:

1. From the Administer menu, select Lucent Parameters ⇒ Set All Subnets. The Set All Subnets dialog box appears (see Figure 3-7).

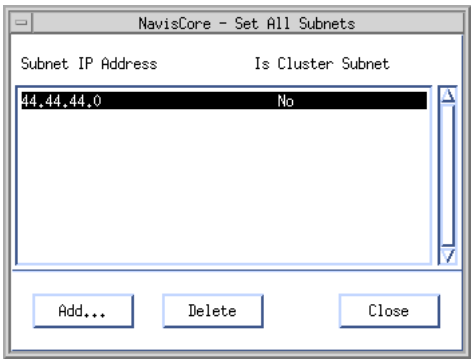



**Figure 3-7. Set All Subnets Dialog Box**

2. Choose Add. The Add Subnet dialog box appears (see Figure 3-8).

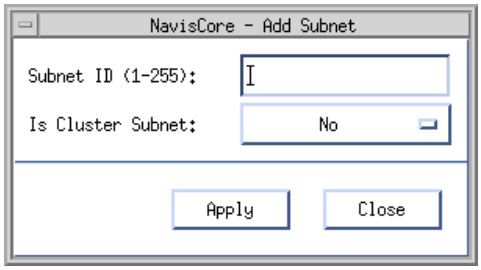



**Figure 3-8. Add Subnet Dialog Box**

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

**Table 3-5. Add Subnet Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Subnet ID (1-255) | Enter a subnet number between 1 and 255.<br>Subnet addresses 240.0.0.0 through 247.255.255.255 are reserved for future use. |
| Is Cluster Subnet (*optional*) | Select Yes to make this subnet a cluster subnet (See "Creating a Cluster" on page 3-11 for instructions). The default is No. If you select No, proceed with "Adding Objects to the Map" on page 3-13. |

4. Choose Apply to add the subnet ID.
5. Choose Close to exit the Add Subnet dialog box.

## Creating a Cluster

A cluster defines a group of switches that operates in a single OSPF routing domain. The switch number in the IP address increments according to the cluster ID, as shown in Table 3-6.

**Table 3-6. Cluster ID and IP Address Range**

| Cluster ID | IP Address Range |
|---|---|
| 0 | 152.148.x.1 - 152.148.x.30 |
| 1 | 152.148.x.33 - 152.148.x.62 |
| 2 | 152.148.x.65 - 152.148.x.94 |
| 3 | 152.148.x.97 - 152.148.x.126 |
| 4 | 152.148.x.129 - 152.148.x.158 |
| 5 | 152.148.x.161 - 152.148.x.190 |
| 6 | 152.148.x.193 - 152.148.x.222 |
| 7 | 152.148.x.225 - 152.148.x.254 |

See the *B-STDX and CBX IP Services Configuration Guide* for information about configuring OSPF parameters. If you selected Yes in the Is Cluster Subnet field (see Table 3-5 on page 3-11), you must create a cluster.

To create a cluster:

1. From the Administer menu, select Lucent Parameters ⇒ Set All Clusters. The Set All Clusters dialog box appears (see Figure 3-9).

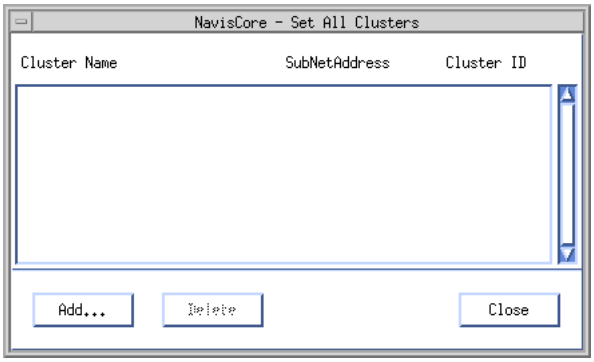



**Figure 3-9. Set All Clusters Dialog Box**

2. Choose Add. The Add Cluster dialog box appears (see Figure 3-10).

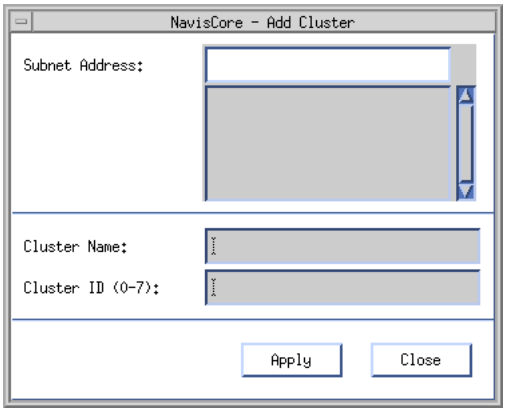



**Figure 3-10. Add Cluster Dialog Box**

3. Complete the fields described in Table 3-7.

**Table 3-7. Add Cluster Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Subnet Address | Select the subnet address to which this cluster belongs. |
| Cluster Name | Select a name for this cluster. |
| Cluster ID (0-7) | Select an ID between 0-7 for this cluster. |

4. Choose Apply to save your changes.
5. Choose Close to exit the Set All Clusters dialog box.

# Adding Objects to the Map

The NavisCore network map provides a graphical representation of your network. As you design the network map, you add a variety of objects (such as a Lucent switch or an external device) to represent the various elements in your network.

This section describes the following:


- "Adding Switch Objects" on page 3-13
- "Adding an External Device Object" on page 3-18


**Note –** To add a PSAX 1250/2300/4500 device to a NavisCore map, see the *NavisAX Administrator's Guide*.

## Adding Switch Objects

When you add a switch object to the network map, you first select and drag the switch icon to the network map. You then define the object attributes that enable NavisCore to manage this switch through HP OpenView.

To add a switch object to the network map:

1. From the Edit menu, select Add Object. The Add Object Palette dialog box appears (see Figure 3-11).

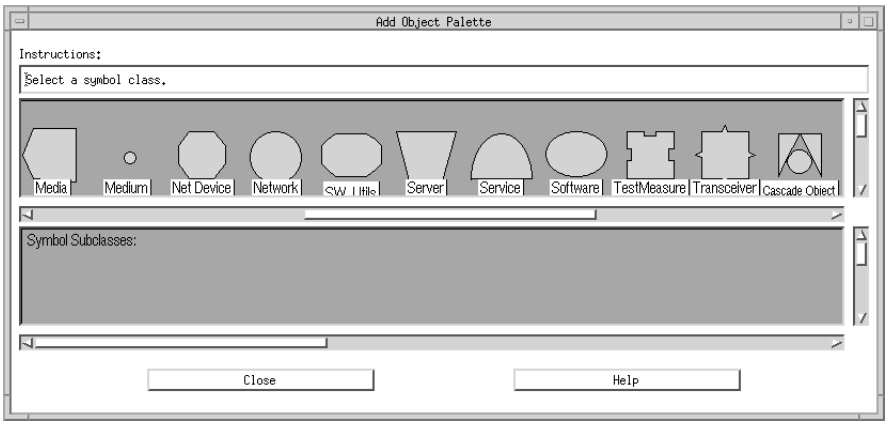



**Figure 3-11. Add Object Palette Dialog Box**

2. Select Cascade Object from the Symbol Classes box. The valid switch types for this object appear in the Symbol Subclasses box (see Figure 3-12).

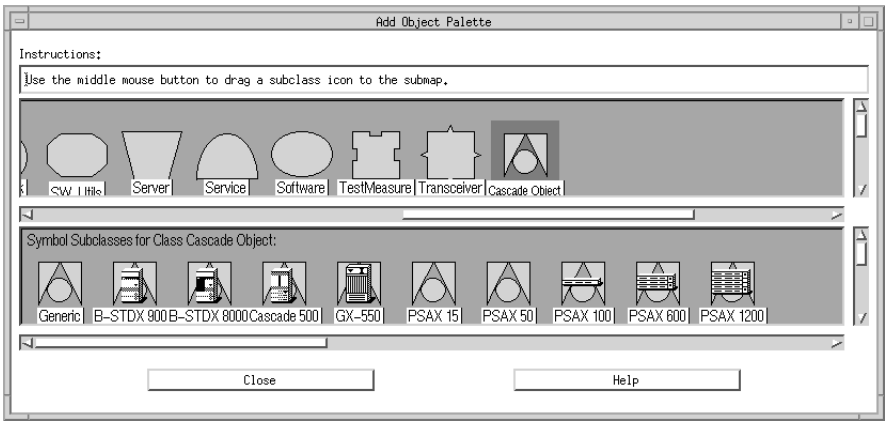



**Figure 3-12. Add Object Palette Dialog Box With Cascade Object Selected**

3. To add a switch object to the network map, select the corresponding switch icon. Using the middle mouse button, select, drag, and release the icon to the map. The Add Object dialog box appears (see Figure 3-13).

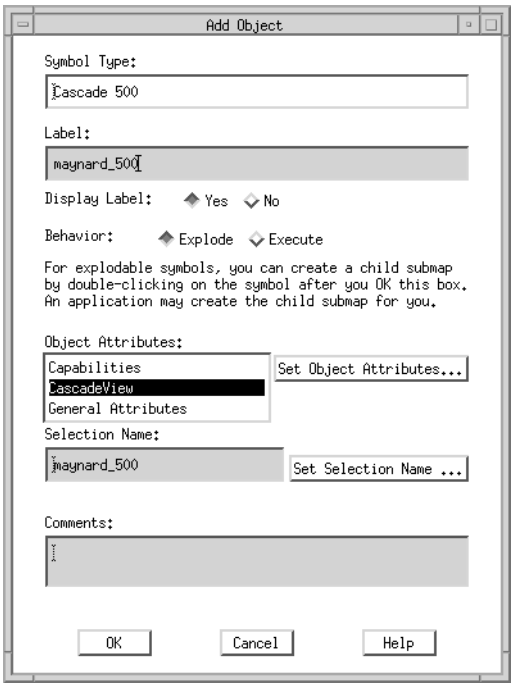



**Figure 3-13. Add Object Dialog Box**

4. Complete the fields described in Table 3-8.

**Table 3-8. Add Object Fields**

| Field | Action/Description |
|---|---|
| Symbol Type | Displays the selected switch type (object) to add to the network map. |
| Label | Enter a name to identify the object. |
| Display Label | Choose Yes to display the label beneath the object on the network map. Choose No if you do not want the label to appear. |
| Behavior | Choose Explode (default). See *HP OpenView Managing Your Network* for more information about choosing Execute. |
| Object Attributes | Select CascadeView. |

5. Choose Set Object Attributes. The Add Object - Set Attributes dialog box appears (see Figure 3-14).

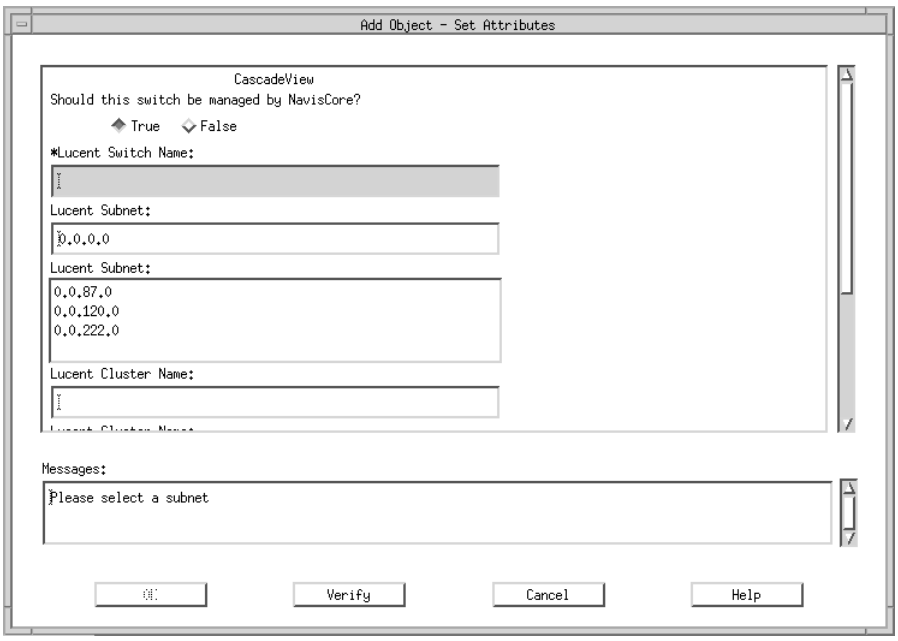



**Figure 3-14. Add Object - Set Attributes Dialog Box**

6. Complete the fields described in Table 3-9.

**Table 3-9. Add Object - Set Attributes Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Should this switch be managed by NavisCore? | Choose True. |
| Lucent Switch Name | Enter a unique name for the switch. |
| Lucent Subnet | Highlight the Lucent subnet to which this switch belongs. |
| Lucent Cluster Name | Displays the name of the cluster to which this subnet belongs. See "Creating a Cluster" on page 3-11 for more information. |
| Should this switch be a gateway switch of the selected cluster? | Choose True to make this a gateway switch. Choose False if you do not want this switch to be a gateway switch for the selected cluster. |
| Lucent Switch IP Address | NavisCore displays the switch's IP address. Every time you add an object to the map, NavisCore increments the last octet (host ID) by 1. If the next host ID number is already in use in the network, NavisCore selects the next available number.<br>If you want a different IP address from the one displayed, you can manually change the last octet. If you created a cluster, the system displays the IP address range shown in Table 3-6 on page 3-11. |
| Number of Power Supplies (*CBX 500 only*) | The NMS must be configured for three power supplies, although only two power supplies may be installed. Otherwise, the switch will report a marginal state without providing an error message.<br>A chassis that supports three power supplies must have at least two power supplies installed at all times. |

7. Choose Verify to confirm your settings. The following message appears in the Message field:

```
Verification has completed.
```

**Note –** If the message `access denied` appears, you may not have logged on to the network map. Choose Cancel to return to the network map, then select Logon from the Misc menu. Enter the default operator password, `cascade`.

8. Choose OK to return to the Add Object dialog box (see Figure 3-13 on page 3-14).

   The Selection Name field automatically defaults to the value you entered for the Label field. The selection name must be unique throughout all HP OpenView objects. Lucent recommends that you leave the selection name unchanged.

9. (*Optional*) In the Comments field of the Add Object dialog box, enter any additional information pertaining to this object.

10. Choose OK. The Add Object Palette dialog box reappears.

11. Choose Close. The network map displays an object icon representing the new switch. The object appears blue and quickly turns red, indicating that the NMS cannot access the switch.

12. On the network map, select the switch object. From the Edit menu, select Unmanage Objects. The switch object turns a wheat color, indicating that the object is in an unmanaged state.

13. Repeat step 1 through step 12 to add more Lucent switches to the network map.

When you finish adding switch objects to your network map, continue with Chapter 5, "Setting Switch Parameters" to configure switch parameters and define the path between the NMS and one or more Lucent switches.

**Note –** To turn off the automatic layout feature so you can move a switch object on the map, choose Automatic Layout ⇒ Off for All Submaps from the View menu.

# Adding an External Device Object

The external device object on the NavisCore network map represents a network device other than a Lucent switch (for example, a workstation). Once you add this device object to the network map, you must add an external trunk to connect the device to a Lucent switch. For information on adding an external trunk, see the *B-STDX and CBX Frame Relay Services Configuration Guide* or the *B-STDX, CBX, and GX ATM Services Configuration Guide*.

To add an external device to the NavisCore network map:

1. From the Edit menu, select Add Object. The Add Object Palette dialog box appears (see Figure 3-15).

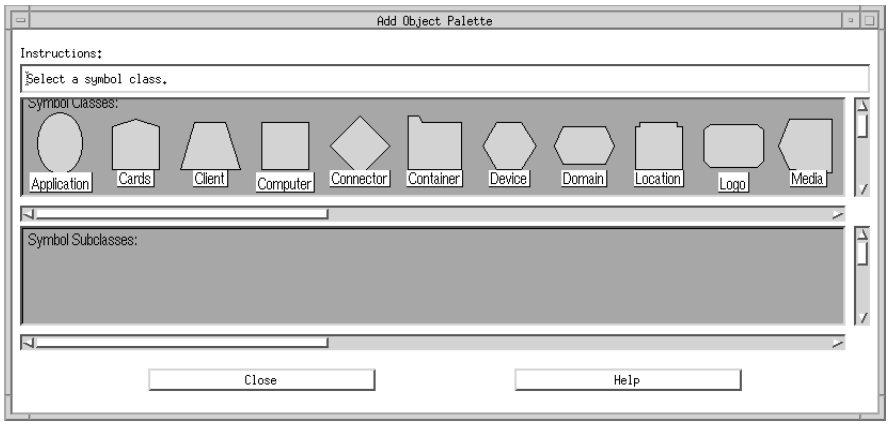



**Figure 3-15. Add Object Palette Dialog Box**

2. Select the device object (for example, Computer) that you want to add from the Symbol Classes box. The subclasses for this device type appear in the Symbol Subclasses box (see Figure 3-16).

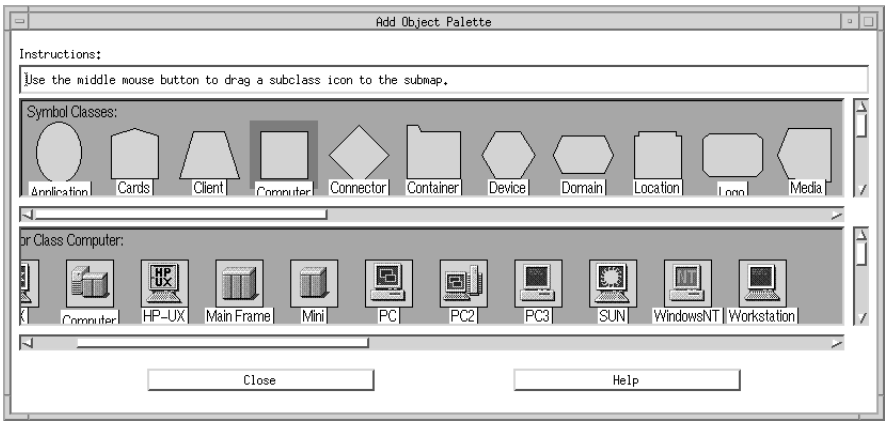



**Figure 3-16. Add Object Palette Dialog Box With Computer Selected**

3. To add an external device (for example, a Sun workstation) to the network map, select the corresponding icon from the Symbol Subclasses box. Using the middle mouse button, select, drag, and release the icon to the map. The Add Object dialog box appears (see Figure 3-17).

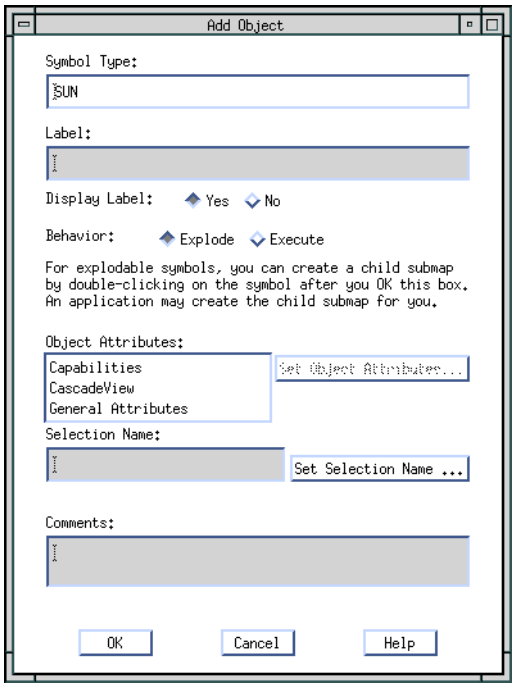



**Figure 3-17. Add Object Dialog Box**

4. Complete the fields described in Table 3-10.

**Table 3-10. Add Object Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Symbol Type | Displays the selected object type to add to the network map. |
| Label | Enter a label to describe the object. |
| Display Label | Choose Yes to display the label beneath the object on the network map. Choose No if you do not want the label to appear. |
| Behavior | Displays the default (Explode). See *HP OpenView Managing Your Network* for more information about choosing Execute. |
| Object Attributes | Select CascadeView. |

5. Choose Set Object Attributes. The Add Object - Set Attributes dialog box appears (see Figure 3-18).

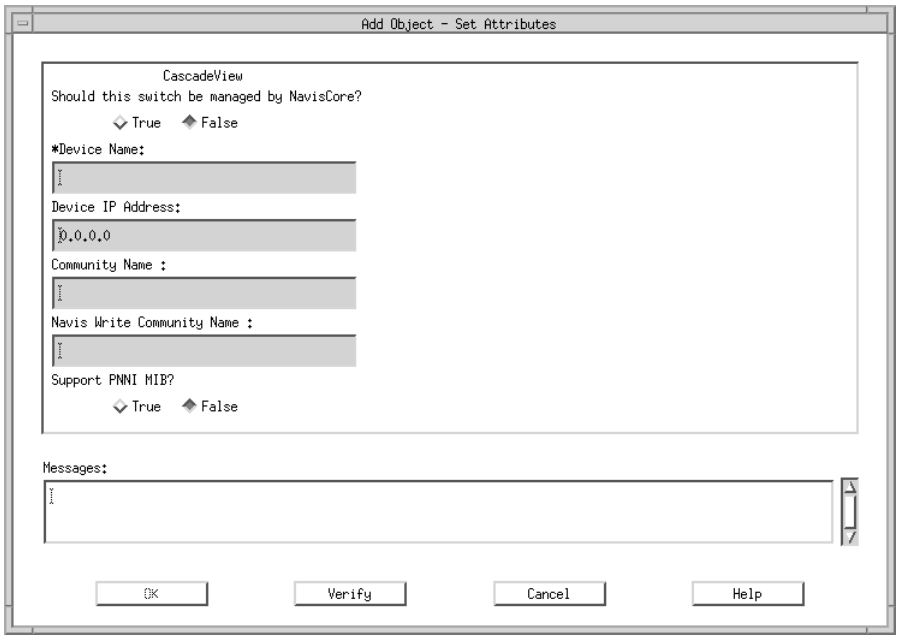



**Figure 3-18. Add Object - Set Attributes Dialog Box**

**6.** Complete the fields described in Table 3-11.

**Table 3-11. Add Object - Set Attributes Dialog Box Fields**

| Field | Description |
|---|---|
| Should this switch be managed by NavisCore? | Choose True to enable NavisCore to manage this device. |
| * Device Name | Enter a unique name for the device. |
| Device IP Address | Enter the IP address for this device. |
| Community Name | Enter the name of the read-only Simple Network Management Protocol (SNMP) community to which this device belongs (for example, public). |
| Navis Write Community Name | Enter the name of the read-write SNMP community to which this device belongs (for example, public). |
| Support PNNI MIB? | Choose Yes to enable this device to support the Private Network-to-Network Interface (PNNI) Management Information Base (MIB) for PNNI services. |

**7.** Choose Verify to configure your settings. The following message appears in the Messages field:

```
Verification has completed
```

**Note –** If the message `access denied` appears, you may not have logged on to the network map. Choose Cancel to return to the network map, then select Logon from the Misc menu. Enter the default operator password, `cascade`.

8. Choose OK to return to the Add Object dialog box.

   The Selection Name field automatically defaults to the value you entered for the Label field. The selection name must be unique throughout all HP OpenView objects. Lucent recommends that you leave the selection name as it appears. In the Comments field, enter any additional information pertaining to this object.

9. Choose OK. The Add Object Palette dialog box reappears.

10. Choose Close. The network map displays an object icon representing the new external device. The object appears blue and quickly turns red, indicating that the NMS cannot access the external object.

11. On the network map, select the device object. From the Edit menu, select Unmanage Objects. The device object turns a wheat color, indicating that it is in an unmanaged state.

# About Submaps

Small to medium size wide area networks (WANs) are easy to configure and manage from a single-level network map. As the WAN grows larger, the network often becomes difficult to manage because of its increased complexity (see Figure 3-19). A submap enables you to organize a growing network.

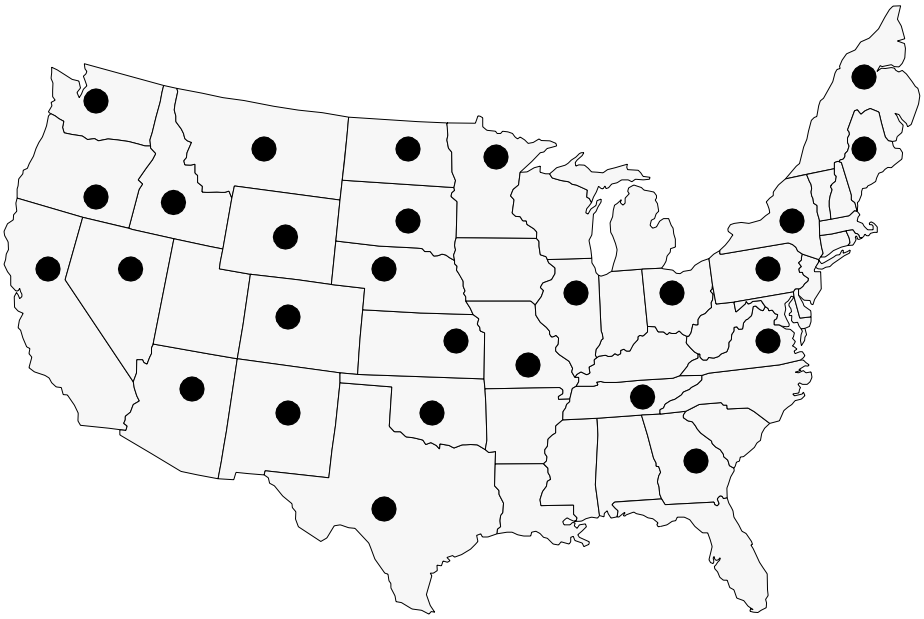


**Figure 3-19. Top-Level Map without Submaps**

A submap is a hierarchical approach to network management. With submaps, a network administrator can divide a map into multiple submaps, then view the overall organization of the network from the top-level map. Figure 3-20 illustrates a top-level map with submaps.

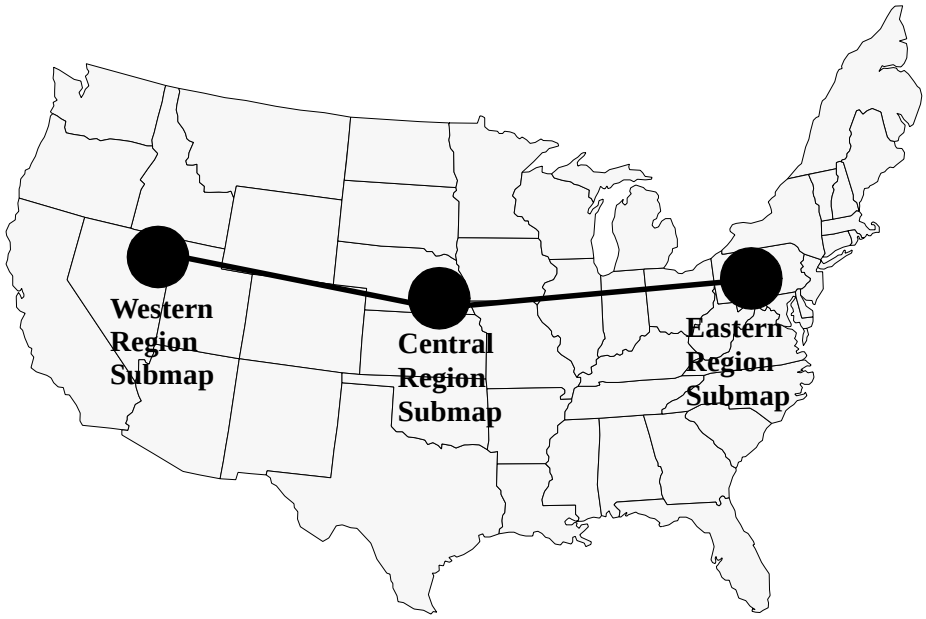



**Figure 3-20. Top-Level Map with Submaps**

Submaps provide the following features:

- A high-level network view
- A top-level status summary
- Ease of use
- Scalability
- Enhanced map detail

These features are described in the following sections.

## High-level Network View

Submaps enable you to view the overall organization of the network by viewing the top-level map. The top-level map summarizes the logical connectivity between submaps without cluttering the map with the details of each physical connection.

## Top-level Status Summary

The status of individual network components propagates upward through the layers of submaps so that the top-layer map shows a status summary of the entire network that is easy to interpret.

## Ease of Use

Well-organized submaps make it easy to locate a particular piece of information (in much the same way that directories make it easy to find the correct file).

## Scalability

Submaps can be easily moved on a top-level map without the need to move multiple objects. All switches contained in the submap will automatically move with the submap with no further user interaction required.

## Enhanced Map Detail

With submaps, you can size individual icons large enough so that you can recognize them on the top-level map. Without submaps, you must reduce the icons to fit onto one map, making them impossible to identify.

# Creating a Map with Submaps

Creating a map with submaps involves the following steps:

1. Develop a submap plan.
2. Create a new map.
3. Add submap icons to the main map.
4. Arrange submap icons.
5. Disable User Plan shadow (*optional*).
6. Create submaps for each submap icon.
7. Create new switches.
8. Create an intra-submap connection.
9. Create an inter-submap connection.
10. Create connections from switches on the root map to switches in submaps.

The following sections describe these steps in detail.

## Developing a Submap Plan

The submap plan should cover the following areas:

- Number of submaps on the main map
- Submap names
- Submap division criteria (by geography, network operations center, or other criteria)
- List of switches in each submap
- Connectivity between switches within a submap
- Connectivity between submaps

## Creating a New Map

See "Creating the Network Map" on page 3-5 for information on how to create a new network map.

## Adding Submap Icons to the Main Map

To add submap icons to the main map:

1. From the Edit menu, select Add Object. The Add Object Palette dialog box appears.
2. Select the Location symbol. A selection of icon types appears.
3. Position the pointer over the Generic symbol, press the middle mouse button, then drag the symbol onto the map. The Add Object dialog box appears.
4. Enter the submap name in the Label field and choose OK.

## Arranging Submap Icons

You can disable automatic layout by selecting Automatic Layout ⇒ Off for All Submaps from the View menu.

Once automatic layout is disabled, you can arrange the submaps on the root map in any order.

**Note –** You might find it helpful to move all switch objects on the top-level map to the side of the map while you are positioning the submaps.

## Disabling User Plane Shadow (*Optional*)

Optionally, you can disable User Plane Shadow by selecting User Plane ⇒ Off for All Submaps from the View menu.

Disabling User Plane Shadow helps to eliminate any confusion about whether the submap can be managed.

## Creating Submaps for Each Submap Icon

To create submaps for each submap icon:

1. Double-click on each submap icon.
2. Choose OK to create the submap.

## Creating New Switches

See “Adding Objects to the Map” on page 3-13 for information. Be sure to drag the switch icon to the submap, rather than the root-level map.

## Creating an Intra-Submap Connection

See "Configuring a Trunk Connection" on page 4-28 for information.

## Creating an Inter-Submap Connection

To create a inter-submap connection:

1. From the Edit menu, select Add Connection to draw a connection between Submap A and Submap B.
2. Enter an appropriate label for the inter-submap connection and choose OK.
3. Verify that the new connection is blue in color.
4. Select the blue line using the right mouse button; then select the Describe/Modify symbol.
5. Set the Status Source field to the Compound (Propagated) value; then choose OK to close this window.
6. Double-click the blue connection line on the map and choose OK to open a submap for that line. Leave this connection submap open.
7. Double-click the Submap A icon to open Submap A. Highlight all switches in Submap A that have connections into Submap B by holding down the <Ctrl> key and clicking on each switch.
8. From the Edit menu, select Copy ⇒ From This Submap; then close Submap A.
9. Select the connection submap. From the Edit menu, select Paste. A copy of the switches from Submap A will be pasted into the new object holding area of the connection submap.
10. Drag these switches to the desired location on the connection submap window.
11. Double-click the Submap B icon to open Submap B.
12. Highlight any switches in Submap B that have connections into Submap A by holding down the <Ctrl> key and clicking on each switch.
13. From the Edit menu, select Copy ⇒ From This Submap; then close Submap B.
14. Select the connection submap. From the Edit menu, select Paste. A copy of the switches from Submap B is pasted into the new object holding area of the connection submap.
15. Drag these switches to the desired location on the connection submap window. The connected nodes from Submap A and Submap B are copied into the connection submap.

16. From the Edit menu, select Add Connection to add the trunks that connect switches inside the connection submap. See "Configuring a Trunk Connection" on page 4-28 for a description of how to configure the trunks.

**Note –** Add only those connections that go between Submap A and Submap B in this connection submap. The intra-submap connections already exist in the submaps themselves and do not need to be added.

17. Choose Close to close the connection submap.
18. Verify that the connection line on the root map is no longer blue. The connection line will change colors to reflect the status of the underlying trunk connections.

## Creating Connections from Switches on the Root Map to Switches in Submaps

To create connections from switches on the root map to switches in submaps:

1. From the Edit menu, select Add Connection to draw a connection between Submap A and Switch B.
2. Enter an appropriate label for the inter-submap connection and choose OK.
3. Verify that the new connection is blue.
4. Select the blue line and choose Describe/Modify Symbol.
5. Select Status Source/Compound (Propagate) from the Describe/Modify Symbol menu.
6. Select the blue connection line on the map and choose OK to open the submap for that line. Leave this connection submap open.
7. Double-click on Submap A.
8. Select any switches in Submap A that have connections to Switch B. You can do this by holding down the <Ctrl> key and selecting each switch.
9. From the Edit menu, select Copy ⇒ From This Submap; then close Submap A.
10. Select the connection submap, and from the Edit menu, select Paste. A copy of the switches from Submap A is pasted into the new object holding area of the connection submap.
11. Drag these switches to the desired location in the connection submap window.
12. Select Switch B on the root-level submap, and from the Edit menu, select Copy ⇒ From This Submap.
13. Select the connection submap. From the Edit menu, select Paste. A copy of Switch B is pasted into the new object holding area of the connection submap.
14. Drag this switch to the desired location in the connection submap window.

15. From the Edit menu, select Add Connection to add the trunks that connect Switch B and the switches from Submap A inside the connection submap. See "Configuring a Trunk Connection" on page 4-28 for a description of how to add the trunks.

**Note –** You should only add the connections that go between Submap A and Switch B in this connection submap. The intra-submap connections already exist in the submaps themselves and do not need to be added to this connection submap.

16. Close the connection submap.
17. Verify that the connection line on the root map is no longer blue. The line will change colors to reflect the status of the underlying trunk connections.
18. Repeat step 9 for each switch-to-submap connection on the root map.

# Importing Objects Into a Submap

You can import switch objects into your NavisCore submap from the NavisCore database using the Import and Selective Import functions. These functions offer you increased flexibility when designing your network map and are also useful in the event that you need to restore your network maps.

You can use the Import function to import *all* objects from the NavisCore database into a submap or you can use the Selective Import function to import *specific* objects from the NavisCore database into your submap.

**Note –** When you import switch objects from the NavisCore database into a NavisCore submap, the imported objects and the original object use the same NavisCore database configuration information; therefore, any configuration changes you make to one object will also be made to the other objects.

## Importing All Objects Into a Submap

To import all objects into a submap from the NavisCore database:

1. Open the root map in your NavisCore network.
2. From the Administer menu, select NavisCore ⇒ Import. NavisCore automatically creates a new submap named `IMPORT <network IP address>` and imports all the switch objects currently in the NavisCore database into the new submap.

# Importing Specific Objects Into a Submap

To import specific objects into your submap from the NavisCore database:

1. Open the submap or root map into which you want to import objects.
2. From the Administer menu, select NavisCore ⇒ Selective Import. The HPOV Map Selective Import dialog box appears (see Figure 3-21), displaying all the switches in the NavisCore database.

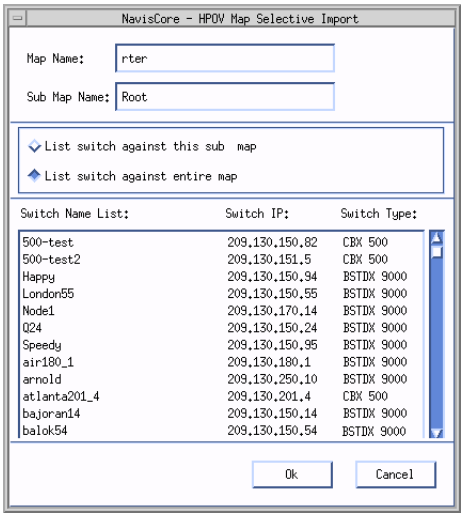



**Figure 3-21. HPOV Map Selective Import Dialog Box**

3. Choose the appropriate option in the HPOV Map Selective Import dialog box, as follows:
   - If you are in a submap, choose *List switch against this sub map*.
   - If you are in a root map, choose *List switch against entire map*.
4. Select the object that you want to import into the submap.
5. Choose OK. The object icon appears on your submap.

# Deleting a Network Map Database

Deleting a network map removes the map information from the HP OpenView database, enabling you to create a new map.

To delete a map:

1. From the Map menu, select Open. The Available Maps dialog box appears.
2. In the Available Maps dialog box, select the map that you want to delete and choose Open Map to display the map. Figure 3-22 shows the Available Maps dialog box with a map selected.

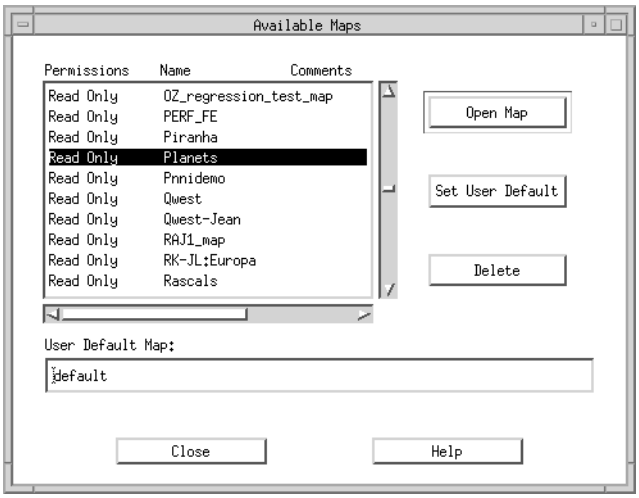



**Figure 3-22. Available Maps Dialog Box With A Map Selected**

3. Delete each object from the map that you want to delete.
4. From the Edit menu, select Delete ⇒ From All Submaps.
5. Delete this map from HP OpenView.
6. From the File menu, select Exit to close HP OpenView.
7. To log in as the root user, enter **`su - root`** and press Return.
8. Type the root password.
9. To shut down HP OpenView services, enter:

   **`/opt/OV/bin/ovstop`**

**Caution –** Step 10 completely removes the database. You *cannot* recover the database after issuing this command.

10. Enter the following command to completely remove the database:

    **`rm -rf /opt/OV/databases/openview/*/*`**

11. Enter the following commands to remove the events and trap alarm logs associated with the database:

    **`rm /opt/OV/log/xnmevents.<username>`**

    **`rm /opt/OV/log/trapd.log`**

    **`rm /opt/OV/log/trapd.log.old`**

12. Enter the following commands to run the HP OpenView database daemon, register the fields in the database, and start all other HP OpenView daemons:

    **`/opt/OV/bin/ovstart ovwdb`**

    **`/opt/OV/bin/ovw -fields`**

    **`/opt/OV/bin/ovstart`**

13. Log in as the root user by entering **`su - root`**.

14. Enter the following command at the # prompt:

    **`/opt/CascadeView/bin/cv-install.sh`**

    The system displays the following message:

    ```
    Verifying super user privileges...
    ```

    ```
    Would you like to view (tail -f) the install log (default=y)?
    ```

    (The Tail window enables you to view the installation log.)

15. Press Return to view the Tail window. The Tail window and NavisCore Installation menu appear. You can close the script at any time by pressing <**`Ctrl`**>**`c`**.

16. At the NavisCore Installation menu, enter **`3`** to select HP OpenView Integration Only (NO DB Action).

    The system displays the following message:

    ```
    No Sybase Functionality will be altered.
    ```

17. At the “Do you wish to extract CV/UX Installation media y/n” prompt, press Return.

18. At the “Do you wish to continue y/n” prompt, press Return.

    The system displays the following message:

    ```
    Configuring NavisCore Environment.
    ```

    ```
    Install NavisCore successful...
    ```

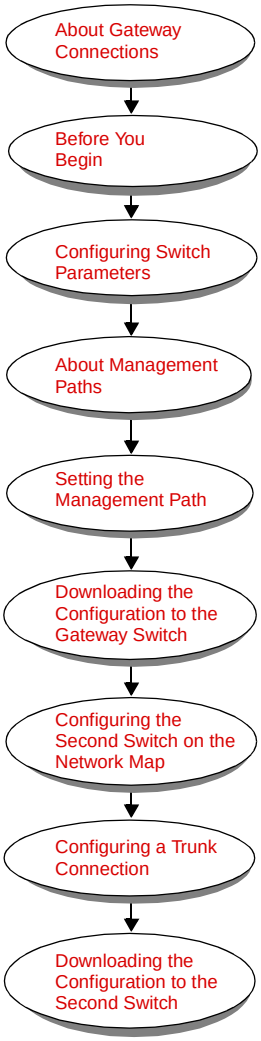
The system recreates the NavisCore environment. You now have a clean HP OpenView database.

# 4

# Configuring the Gateway Switch

This chapter describes how to configure the gateway switch — the first switch in your network — and add a second switch to enable Network Management Station (NMS) communications.

This chapter describes the following topics and tasks:



# About Gateway Connections

The gateway switch acts as a master switch and communicates the status of all switches on the Lucent network to the NMS. Once the NMS can communicate with the gateway switch, you can configure the second switch (and subsequent switches) on the network.

Figure 4-1 illustrates a Lucent switch network with a local Ethernet or Serial Line Internet Protocol (SLIP) connection to the gateway switch.

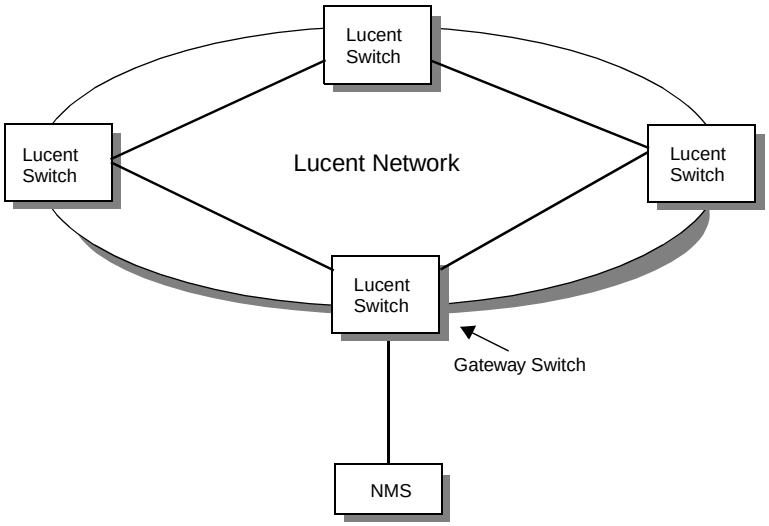



**Figure 4-1. NMS With a Local Connection to the Gateway Switch**

Figure 4-2 illustrates a Lucent switch network with a remote connection to the gateway switch.

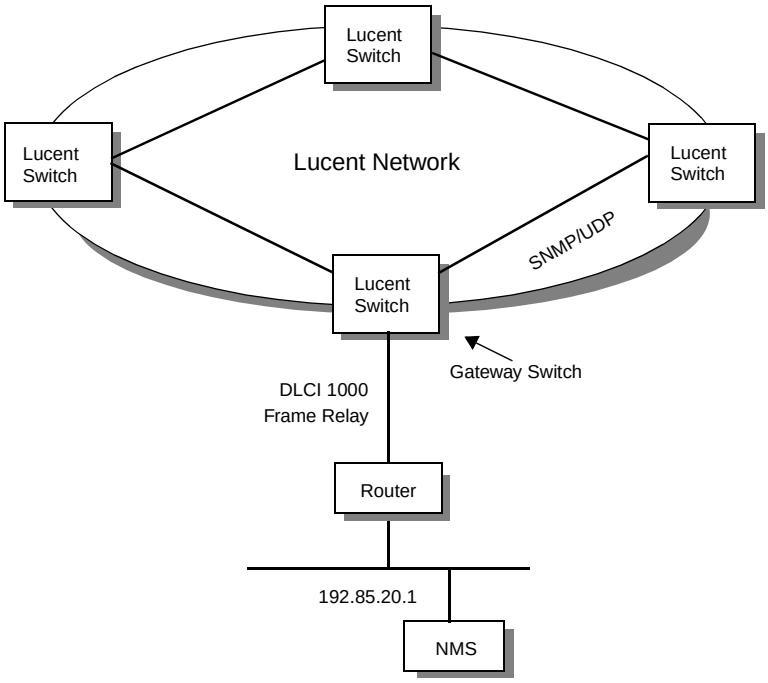



**Figure 4-2. NMS With a Remote Connection to the Gateway Switch**

This chapter describes a typical configuration in which the switch has never been initialized and the NMS uses a local Ethernet or SLIP connection to access the switch (see Figure 4-1). See Chapter 5, "Setting Switch Parameters," for information about gateway connections that occur when the NMS connects to the Lucent switch network via remote access (for example, when the NMS and the switch are on separate LANs as in Figure 4-2) or through a management permanent virtual circuit (MPVC).

# Before You Begin

Before you set up the gateway switch and NMS, verify that the following tasks are complete:

- Connect the NMS SPARCstation to the switch through one of the methods described in your switch hardware installation guide.

  Note whether the NMS is connected via direct Ethernet, indirect Ethernet (on a separate LAN segment), or through a SLIP connection (see "About Gateway Connections" on page 4-2).

- Connect the NMS SPARCstation (either directly or through modems) to the switch through its serial port.

  This task enables you to download the configuration file from the NMS to the switch. (If you choose not to download the configuration file from the NMS, you can copy the configuration file to any workstation that can access the switch. You can then run any terminal emulation package to download the configuration to the switch's PRAM.)

- Clear switch PRAM if the switch has an existing configuration.

  See "Erasing PRAM" on page 7-64 for a description.

- Create the network map and add the first switch (gateway switch).

  See "Creating the Network Map" on page 3-5 for instructions.

# Configuring Switch Parameters

To configure switch parameters:

1. Select the switch object, and from the Misc menu, select NavisCore ⇒ Logon. Enter your operator password and choose OK.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears for your type of switch (see Figure 5-1 on page 5-3, Figure 5-2 on page 5-4, and Figure 5-3 on page 5-5 for examples).

3. Choose Attrs. The Set Switch Attributes dialog box appears. Figure 4-3 shows an example of the Set Switch Attributes dialog box for a CBX 500 Multiservice WAN switch.

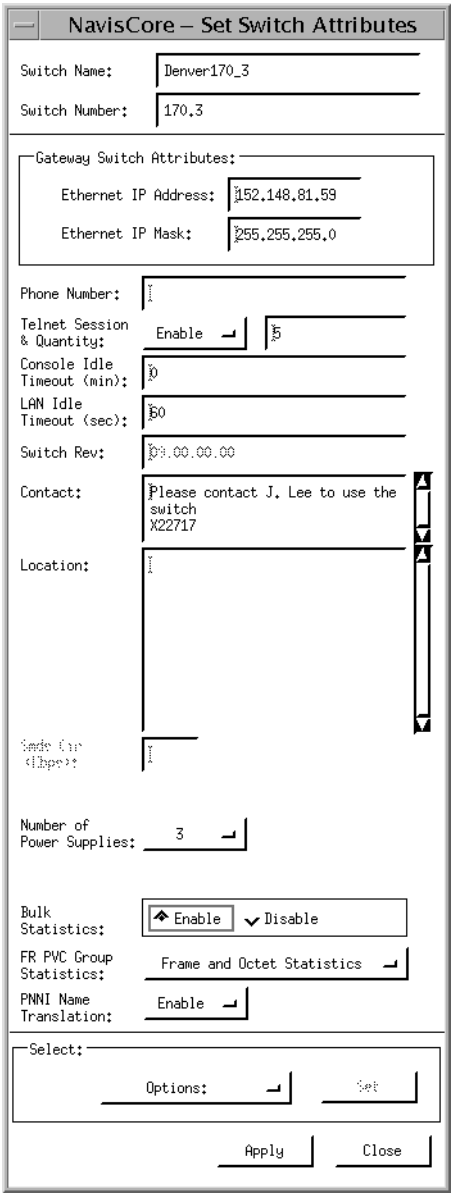



**Figure 4-3. Set Switch Attributes Dialog Box (CBX 500)**

4. Complete the required Set Switch Attributes dialog box fields described in Table 4-1.

**Table 4-1. Set Switch Attributes Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Switch Name | Displays the name of the selected switch. |

**Table 4-1. Set Switch Attributes Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| Switch Number | Displays the number of the selected switch. |
| **Gateway Switch Attributes** | |
| Ethernet IP Address | Enter the local Internet Protocol (IP) address of the gateway switch. This address is the external Ethernet address of the switch. See your network administrator if you do not know this address.<br>***Note*: *You only need to enter the Ethernet IP address for those switches that have an Ethernet connection and communicate with the NMS through this connection.*** |
| Ethernet IP Mask | Enter the in-band (Ethernet) IP mask for this gateway switch. The default is 255.255.255.0. |
| Phone Number | Enter the phone number of the contact person responsible for switch operations. |
| Telnet Session & Quantity | Specify *Enable* (default) to allow the switch to connect to a remote terminal for troubleshooting purposes. Lucent recommends that you do not disable this function.<br>Specify the limit for the number of simultaneous Telnet sessions to a switch. The default limit is two, but you can increase the limit to five. |
| Console Idle Timeout (min) | Specify the time period (in minutes) that the console remains inactive before it is logged off. The default period is five minutes. |
| LAN Idle Timeout (sec) | Specify the Idle Timeout interval, in seconds, for the Ethernet interface that connects the switch to the NMS. The default is 60 seconds. If the Ethernet interface receives no valid IP traffic during this period, the interface is marked as idle and will not be used for outbound traffic. Receipt of a valid IP packet restarts the Idle Timeout counter and reactivates the idle interface. |
| Switch Rev | Displays the current switch-software revision level. |
| Contact | Enter the name of the person responsible for switch operations. |
| Location | Enter the switch's physical location. |
| SMDS CIR (Kbps) *(B-STDX only)* | Enter the committed information rate (CIR), in Kbps, allocated to the Switched Multimegabit Data Service (SMDS) virtual paths originating at the switch. See the *NavisCore SMDS Configuration Guide* for additional information. |

**Table 4-1. Set Switch Attributes Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| Bulk Stats Period (min)<br>*(B-STDX only)* | Set this option if you are using the NavisXtend Statistics Server. See the *NavisXtend Statistics Server User's Guide* for details. |
| Number of Power Supplies<br>*(CBX 500 only)* | The NMS must be configured for three power supplies, although only two power supplies may be installed. Otherwise, the switch will report a marginal state without providing an error message.<br>A chassis that supports three power supplies must have at least two power supplies installed at all times. |
| Lucent External Power Unit<br>*(GX 550 only)* | The default value is *Not In Use*. The GX 550 can use external power rectifiers as a power source. You can set switch attributes to detect a power failure in a remote power source, using traps and status information. If the GX 550 uses an external power source, select *In Use*. |
| Bulk Statistics<br>*(CBX 500 and GX 550 only)* | Enables or disables (default) statistics collection for this switch and for all cards, logical ports, and circuits associated with this switch. See the *NavisXtend Statistics Server User's Guide* for details. |
| FR PVC Group Statistics<br>*(CBX 500 and GX 550 only)* | If Bulk Statistics collection is enabled, select the group of Frame Relay PVC statistics for collection from all circuits for which statistics collection is enabled. Options include:<br>*Frame Statistics Only* – Limits collection to frame statistics.<br>*Octet Statistics Only* – Limits collection to octet (byte) statistics.<br>*Frame and Octet Statistics* – Includes both frame statistics and octet statistics collection.<br>See the *NavisXtend Statistics Server User's Guide* for details. |
| PNNI Name Translation | Enables or Disables (suppresses) flooding of NAME(3) and SUMM_NM(3) LSAs for the specified switch.<br>*Disable* (default) – Use this option if the switch does not need to interoperate with PNNI switches in your network.<br>*Enable* – Use this option if the switch must interoperate with PNNI switches in your network. |
| Select: Options (option menu) | Lists additional attributes you can configure. See Table 5-10 on page 5-17 for information. |

5. Choose Apply to set the parameters.
6. Choose Close to exit the dialog box.

# Configuring the Processor Module

After configuring the gateway switch attributes, you need to configure the processor module, which provides system-level control and management functions for the gateway switch.

To configure the processor module:

1. Select the switch object, and from the Misc menu, select NavisCore ⇒ Logon. Enter your operator password.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears for your type of switch.
3. Place the cursor on the processor module slot on the Switch Back Panel dialog box and double-click the left mouse button. The Set Card Attributes dialog box appears. The exact appearance of the Set Card Attributes dialog box depends on the type of processor module you are configuring:
   - Figure 4-4 displays the dialog box for a B-STDX 9000 Multiservice WAN switch control processor (CP).
   - Figure 4-5 displays the dialog box for a CBX 500 Multiservice WAN switch processor (SP).
   - Figure 4-6 displays the dialog box for a GX 550 Multiservice WAN switch node processor (NP).
4. Complete the fields described in the applicable table:
   - Table 4-2 for a CP
   - Table 4-4 for an SP
   - Table 4-6 for an NP

Figure 4-4 displays the Set Card Attributes dialog box for a CP module.

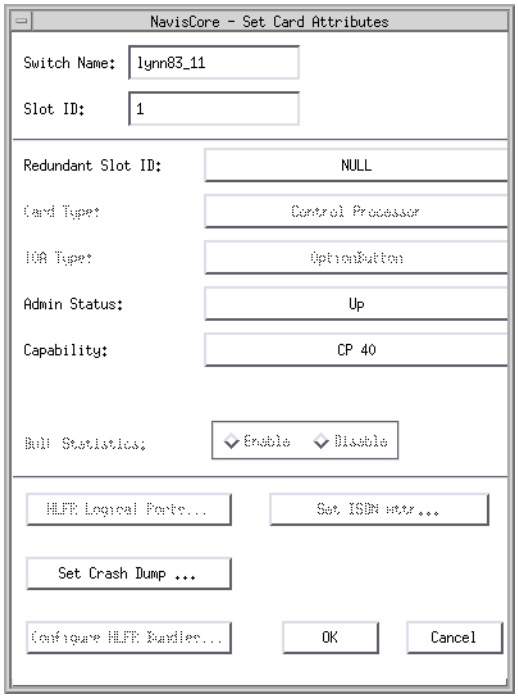



**Figure 4-4. Set Card Attributes Dialog Box (CP Module)**

Table 4-2 describes the Set Card Attributes dialog box fields for a CP module.

**Table 4-2. Set Card Attributes Dialog Box Fields (CP Module)**

| Field | Action/Description |
|---|---|
| Redundant Slot ID (*Optional*) | If you have a redundant CP, select 2 as the redundant Slot ID. You must always configure the main CP in Slot 1. The default, NULL, indicates there is no redundant CP module installed. |
| Card Type | This read-only field automatically defaults to control processor. |
| Admin Status | Set this field as follows:<br>*Up* – (default) This CP becomes fully operational when you start the switch.<br>*Down* – This CP does not come online when you start the switch. This setting saves the configuration in the database but does not download it to the switch. Use this option when you run foreground diagnostics. |

**Table 4-2. Set Card Attributes Dialog Box Fields (CP Module) (Continued)**

| Field | Action/Description |
|---|---|
| Capability | Set this field as follows:<br>*CP Basic* – This CP module has a black dip switch located on the front panel. It is often used in both B-STDX models.<br>*CP Plus* – This CP module has a red dip switch located on the front panel. It has more memory than the CP Basic and can be used in both B-STDX models. This CP type is required for SMDS Billing.<br>*CP 30* – This CP module replaces the CP Basic and has 16 MB Intelligent RAM (IRAM).<br>*CP 40* – This CP module replaces the CP Plus and has 64 MB memory for IP routing.<br>*CP 50* – This CP module replaces the CP Plus and has 128 MB memory for IP routing.<br>The CP 30, 40, and 50 use a 260 or 520 MB internal disk and each CP supports a different amount of memory. These CP types are for B-STDX switch software Release 4.2 or greater. For more information on installing these CP cards, see the *B-STDX 8000/9000 Multiservice WAN Switch Hardware Installation Guide*.<br>***Note*: *If you do not know the CP type and cannot physically view it, you can use the* `show card` *or* `show system` *console commands to retrieve this information. See the* B-STDX, CBX, and GX Console Command User's Reference *for a list of console commands.* |

Figure 4-5 displays the Set Card Attributes dialog box for an SP module.

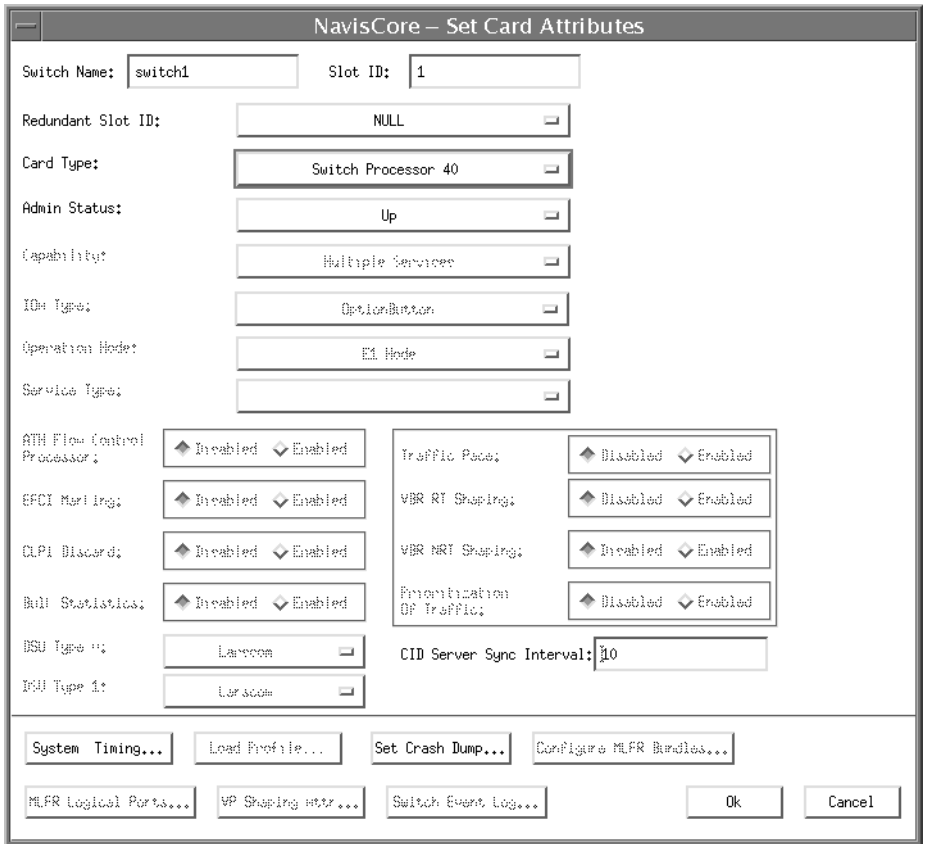



**Figure 4-5. Set Card Attributes Dialog Box (SP Module)**

Table 4-3 describes the buttons and Table 4-4 describes the fields in the Set Card Attributes dialog box for an SP module.

**Table 4-3. Set Card Attributes Dialog Box Buttons (SP Module)**

| Field | Action/Description |
|---|---|
| System Timing | Displays the Set System Timing dialog box. For information about using this dialog box, see "Defining System Timing for SP and NP Modules" on page 4-19. |
| Set Crash Dump | Displays the Modify the Card Crash Configuration dialog box that enables you to configure crash dump system parameters for each module (card) in the switch. See the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* for details. |
| Switch Event Log | Displays the Configure Switch Event Log Card Parameters dialog box that enables you to set Event Log parameters for each module (card) in the switch.<br>***Note:*** *This feature is not currently accessible through the NMS. See the* B-STDX, CBX, and GX Switch Diagnostics User's Guide *for information about accessing the Event Log by using console commands.* |
| OK | Applies changes to the configuration. |
| Cancel | Closes the dialog box without applying changes. |

**Table 4-4. Set Card Attributes Dialog Box Fields (SP Module)**

| Field | Action/Description |
|---|---|
| Redundant Slot ID (*Optional*) | If you have a redundant SP, select 2 as the redundant Slot ID. You must always configure the main SP in Slot 1. The default, NULL, indicates there is no redundant SP module installed. |
| Card Type | Select one of the following:<br>• *Switch Processor 10* – Model 10 (SP 10)<br>• *Switch Processor 20* – Model 20 (SP 20)<br>• *Switch Processor 30* – Model 30 (SP 30). This model has Stratum 3 holdover capability, which enables the switch to continue to provide system timing even after a selected timing source fails.<br>• *Switch Processor 40* – Model 40 (SP 40). This model has Stratum 3 holdover capability, which enables the switch to continue to provide system timing even after a selected timing source fails.<br>***Note**: To run CBX 500 switch software Release 08.00.03.00 or greater, your CBX 500 switch must have an SP 40 processor module installed. CBX 500 Release 09.00.00.00 does not support the use of SP 10, SP 20, or SP 30 processor modules.* |

**Table 4-4. Set Card Attributes Dialog Box Fields (SP Module) (Continued)**

| Field | Action/Description |
|---|---|
| Admin Status | Select one of the following:<br>*Up* – (default) The SP module becomes fully operational when you start the switch. To become operational, the module gets its application code from the Personal Computer Memory Card International Association (PCMCIA) hard drive card, which resides in the Switch Processor Adapter (SPA) module.<br>*Down* – The SP module does not come online when you start the switch. The configuration is saved in the switch configuration table, but is not downloaded to the switch. Use this option when running foreground diagnostics.<br>*Maintenance* – The SP module does not receive the application code when you start the switch. A module in this state runs only from boot code. This setting enables you to reset PRAM for a module that is failing to boot due to invalid PRAM. You can also use this option to troubleshoot a possible hardware problem. |
| CID Server Sync Interval | Specify the interval at which the CID Server synchronizes the set of reserved CIDs with the CID Manager components. The default interval value is 10 seconds and the maximum interval value is 3600 seconds. For more information about configuring the CID Server, see the *B-STDX, CBX, and GX Switch Module Configuration Guide*. |

**Note –** To define the clock source for SP modules, see "Defining System Timing for SP and NP Modules" on page 4-19.

Figure 4-6 displays the Set Card Attributes dialog box for an NP module.

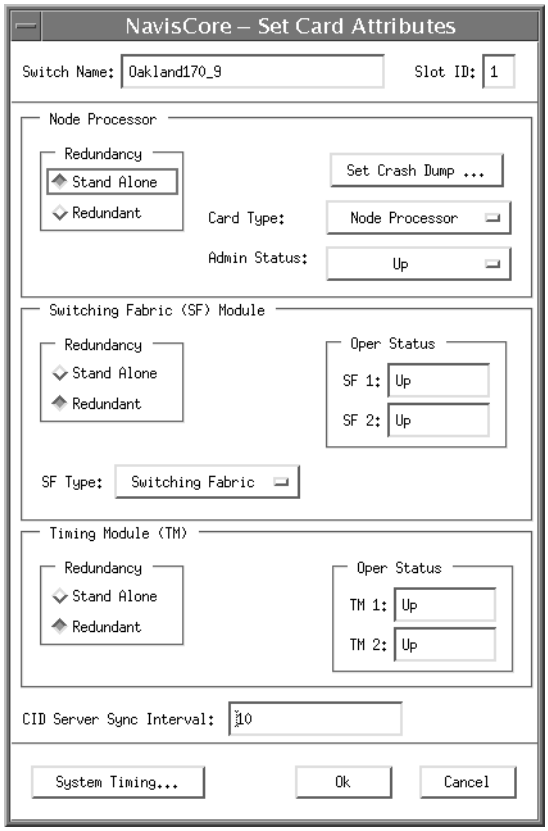



**Figure 4-6. Set Card Attributes Dialog Box (NP Module)**

Table 4-5 describes the buttons and Table 4-6 describes the fields in the Set Card Attributes dialog box fields for an NP module.

**Table 4-5. Set Card Attributes Dialog Box Buttons (NP Module)**

| Field | Action/Description |
|---|---|
| Set Crash Dump | Displays the Modify the Card Crash Configuration dialog box that enables you to configure crash dump system parameters for each module (card) in the switch. See the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* for details. |
| System Timing | Displays the Set System Timing dialog box. For information about using this dialog box, see "Defining System Timing for SP and NP Modules" on page 4-19. |
| OK | Applies changes to the configuration. |
| Cancel | Closes the dialog box without applying changes. |

**Table 4-6. Set Card Attributes Dialog Box Fields (NP Module)**

| Field | Action/Description |
|---|---|
| **Node Processor** | |
| Redundancy | Select Stand Alone if you have a non-redundant NP configuration. Select Redundant if you have a redundant NP installed in the switch. |
| Card Type | Select one of the following to indicate the type of NP module installed:<br>*Node Processor* (default)<br>*Node Processor 2* |

**Table 4-6. Set Card Attributes Dialog Box Fields (NP Module) (Continued)**

| Field | Action/Description |
|---|---|
| Admin Status | Select one of the following:<br>*Up* – (default) The NP module becomes fully operational when you start the switch. To become operational, the module gets its application code from the NP disk drive.<br>*Down* – The NP module does not come online when you start the switch. The configuration is saved in the switch configuration table, but is not downloaded to the switch. Use this option when running foreground diagnostics.<br>*Maintenance* – The NP module does not receive the application code when you start the switch. A module in this state runs only from boot code. This setting enables you to reset PRAM for a module that is failing to boot due to invalid PRAM. You can also use this option to troubleshoot a possible hardware problem. |
| **Switching Fabric (SF) Module** | |
| Redundancy | Select Stand Alone if you have a non-redundant SF configuration. Select Redundant if you have a redundant SF installed in the switch. |
| Oper Status | Displays the operational status of each SF module (SF1 and SF2) installed in the GX switch. |
| **Timing Module (TM)** | |
| Redundancy | Select Stand Alone if you have a non-redundant TM configuration. Select Redundant if you have a redundant TM installed in the switch. |
| Oper Status | Displays the operational status of each TM (TM1 and TM2) installed in the GX 550 switch. |
| CID Server Sync Interval | Specify the interval at which the CID Server synchronizes the set of reserved CIDs with the CID Manager components. The default interval value is 10 seconds and the maximum interval value is 3600 seconds. For more information about configuring the CID Server, see the *B-STDX, CBX, and GX Switch Module Configuration Guide*. |

5. Choose OK to save the attributes or choose Cancel to exit the dialog box. The Switch Back Panel dialog box reappears. If you selected OK, the Switch Back Panel dialog box displays the configured processor module.

Next, you must define the clock source for the SP/NP modules, using one of the following methods:

- To use either of the external clock sources or the internal clock as the switch clock source, define the switch clock sources and clock source priorities as described in the next section, "Defining System Timing for SP and NP Modules."
- To use a BIO module's clock source as the switch clock source, you must configure one of the BIO module's physical ports as a clock source for the switch. See the *B-STDX, CBX, and GX Switch Module Configuration Guide* for information regarding the physical port type you are using as the clock source.

## Defining System Timing for SP and NP Modules

The SP/NP system-timing function enables you to do the following:

- Specify the primary and secondary clock sources for the switch.
- Specify whether or not the switch clock source reverts from secondary back to primary after the primary clock comes back online after a failure.
- Enable or disable the external clock output.
- Specify the external line build-out of the external clock output.
- Manually select the active system-timing clock.
- Configure an SP/NP for international use.

To monitor the configured system-timing options, see the *B-STDX, CBX, and GX Switch Diagnostics User's Guide*.

To define system-timing parameters:

1. Select the switch object on the network map.
2. If you are not logged on, select NavisCore ⇒ Logon from the Misc menu. Enter your operator password and choose OK.
3. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears for your type of switch.
4. Select the processor module and choose Attrs. The Set Card Attributes dialog box appears for your processor module type (see Figure 4-5 on page 4-12 for an SP, and Figure 4-6 on page 4-16 for an NP).

**5.** Choose the System Timing button. The Set System Timing dialog box appears (see Figure 4-7).

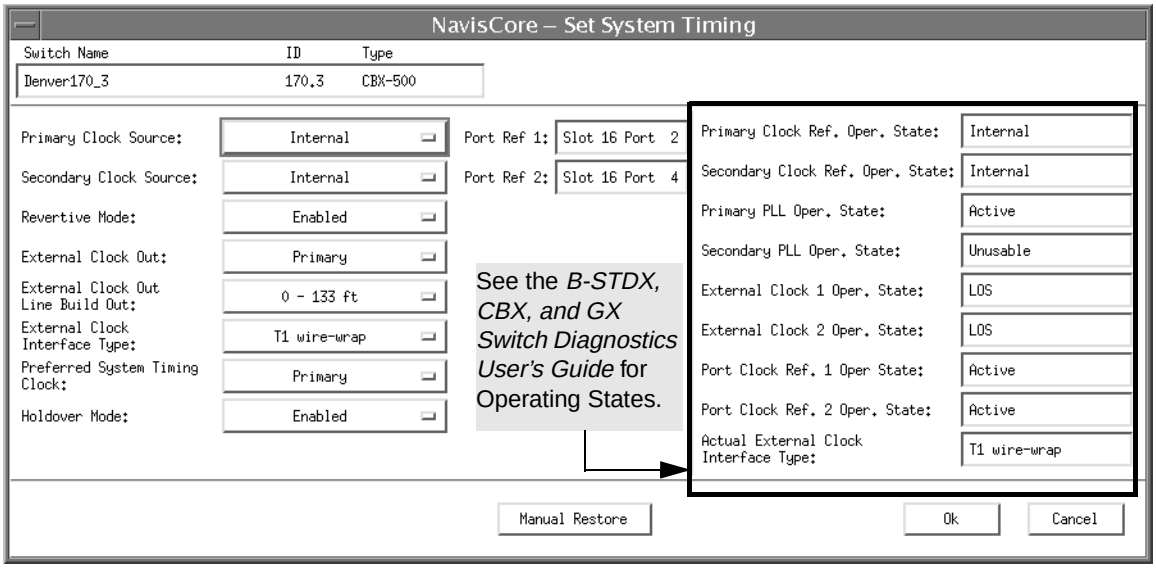



**Figure 4-7. Set System Timing Dialog Box**

**Note –** The Operating State fields on the Set System Timing dialog box are display-only and can vary by switch. See the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* for more information about these fields.

**6.** Complete the fields described in Table 4-7.

**Table 4-7. Set System Timing Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Primary/Secondary Clock Source | Select a different option for both the Primary and Secondary clock sources. If the Primary source becomes unavailable, the Secondary source automatically takes control of system timing.<br>Options include:<br>*Internal* – (default) The switch uses the Stratum 3 clock on the SP/NP module as the primary (or secondary) clock source.<br>*External Clock 1* – To use this option, you must connect an external clock source to the *primary external clock* connection on the SPA/NPA module (see your switch hardware installation guide for connection instructions). This connection is labeled "In 1." The switch uses this external clock as the primary (or secondary) system timing source.<br>*External Clock 2* – To use this option, you must connect an external clock source to the *secondary external clock* connection on the SPA/NPA module (see your switch hardware installation guide for connection instructions). This connection is labeled "In 2." The switch uses this external clock as the primary (or secondary) system timing source.<br>*Port Reference 1* – To use this option, first configure one of the physical ports on the switch as the Primary System Clock Source. The switch uses the incoming clock signal on the selected physical port as the primary (or secondary) system timing source.<br>*Port Reference 2* – To use this option, first configure one of the physical ports on the switch as the Secondary System Clock Source. The switch uses the incoming clock signal on the selected physical port as the primary (or secondary) system timing source. |
| Revertive Mode | Select one of the following options:<br>*Disabled* – (default) If the switch loses the primary clock source, the secondary clock source takes over system timing. However, the system will not automatically revert back to the primary clock source once it is restored.<br>*Enabled* – If the switch loses the primary clock source, causing the secondary clock source to take over system timing, the system automatically reverts back to the primary clock source when it becomes available again.<br>***Note:*** *If you disable Revertive Mode, choose the Manual Restore button on the Set System Timing dialog box to revert back to the primary clock source.* |
| External Clock Out | Select one of the following options:<br>*Tx AIS* – (default) In the event of system clock loss, the external clock output transmits an alarm indication signal (AIS).<br>*Primary* – The external clock output references the clock that the switch uses as the primary source.<br>*Secondary* – (SP 10 and SP 20 only) The external clock output references the clock that the switch uses as the secondary source.<br>*Loopback Ext 1* – The clock that is wired to the external clock input #1 on the SPA/NPA module is fed directly to the external clock output jack. |

**Table 4-7. Set System Timing Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| External Clock Out Line Build Out | If T1 wire-wrap is the the External Clock Interface Type, select a value that matches the distance from the external clocking device to the switch. The default is 0 – 133 ft. |
| External Clock Interface Type | Select one of the following options:<br>*T1 wire-wrap* – (default) The SP/NP accepts T1 timing inputs and provides T1 timing outputs. The signaling is D4 framed.<br>*E1 BNC* – The SP/NP accepts E1 timing inputs and provides E1 timing outputs. |
| Preferred System Timing Clock | Select one of the following options:<br>*Primary* – The switch uses the clock source specified in the Primary Clock Source field.<br>*Secondary* – (SP 10 and SP 20 only) The switch uses the clock source specified in the Secondary Clock Source field.<br>***Note:*** *If the primary clock source becomes unavailable, the system automatically provides the secondary clock source to the I/O modules.* |
| Holdover Mode | Select one of the following options:<br>*Enabled* – (default) Enables Stratum 3 system timing support (also known as Holdover Mode) for SP 30, SP 40, and GX timing modules. This feature provides an enhanced clock state controller for both primary and secondary clock recovery, allowing the system to synchronize from a failed clock until a valid clock can be re-established.<br>*Disabled* – Disables Stratum 3 system timing support (also known as Holdover Mode) for SP 30, SP 40, and GX timing modules.<br>***Note:*** *SP 30 and SP 40 modules have Stratum 3 system timing support. This feature provides an enhanced clock state controller for both primary and secondary clock recovery, allowing the system to synchronize from a failed clock until a valid clock can be re-established. This capability is also known as Holdover Mode.* |
| Port Ref 1/ Port Ref 2 | Displays the location (port number and slot ID) of port reference 1 and port reference 2 on the switch. |

7. Choose OK to save your settings. The Set Card Attributes dialog box reappears.

## Configuring Input/Output Modules

After you configure the processor module and define the system timing and clock source for SP/NP modules, you can configure the input/output (I/O) modules in your gateway switch.

To configure your I/O modules:

1. To configure the first I/O module, double-click on its slot. The Set Card Attributes dialog box appears.

**Note –** You must configure each I/O module for the switch to be fully synchronized with the NMS. However, you do not have to configure all the physical and logical ports on each I/O module at this time.

2. Configure I/O module attributes (if necessary) for your module. For instructions, see the *B-STDX, CBX, and GX Switch Module Configuration Guide* or the applicable user's guide for your specific module.
3. Choose OK. When you finish configuring the necessary I/O modules, choose Close to return to the network map.

# About Management Paths

The Set Management Path function enables you to configure the IP address and access attributes for the NMS workstations. If you do not specify the NMS IP address, the NMS cannot configure a switch or receive switch status information.

The Management Path configuration is node-specific and identifies each NMS that attaches via the gateway switch. You only need to define the Management Path for the switch that contains one of the following connections for sending management-protocol requests and responses:

**Serial Line Internet Protocol (SLIP)** — (B-STDX only) The NMS workstation connects to the switch's serial Network Management port on the B-STDX CP module. The NMS IP address must be the same as the workstation IP address. SLIP is not supported on a UNIX workstation.

**Direct Ethernet**— The NMS connects to the same LAN as the switch's Ethernet connection. You can use only direct Ethernet if the switch can reach the NMS (address) without going through a gateway router.

**Indirect Ethernet**— This connection indicates that the NMS and the switch's Ethernet IP address are on two separate LANs and communicate via a gateway router(s). For this connection method, you enter both the NMS IP address and the associated gateway router IP address. Also, when you installed NavisCore, you entered a “static route” in the gateway router to specify how the router reaches the internal IP network address. This is the network number you specified in the CascadeView Configuration dialog box (see Figure 3-4 on page 3-8).

**Management Data Link Connection Identifier (DLCI)** — This connection is used when the NMS connects to a LAN that contains a router with a Frame Relay connection to the switch. The switch does not need an Ethernet module in the processor module for this type of NMS connection. Network traffic is tunneled through the attached Frame Relay user-to-network interface-data communications equipment (UNI-DCE) connector as a permanent virtual circuit (PVC).

**Management Address (SMDS In-band Management)** — This connection indicates that the NMS is connected remotely to the Lucent network using SMDS services to transport the Simple Network Management Protocol (SNMP), User Datagram Protocol (UDP), or Internet Protocol (IP) packets.

**Management PVC (MPVC)** — This connection is used when the NMS or IP host connects to the switch via an asynchronous transfer mode (ATM) router or network interface card (NIC). You can use this type of connection for all applications involving a switch and an attached NMS or IP host. Because the management PVC is an actual PVC between the UNI port to which the NMS or IP host connects and the remote switch processor module, the switch to which the NMS or IP host connects is not burdened by the traffic traversing the management PVC.

**Management VPI/VCI** — This connection is used when the NMS or IP host connects to the switch via an ATM router or network interface card (NIC). This is the preferred method if you only use the attached NMS or IP host to transfer information between the host and the local switch. You can use a management virtual path identifier/virtual channel identifier (VPI/VCI) connection to transfer information between the host and remote switch(es); however, using this method to transfer large amounts of information can negatively affect the local switch.

# Setting the Management Path

To set the management path:

1. On the network map, select the switch to connect to the NMS.
2. From the Administer menu, select Lucent Parameters ⇒ Set All Management Paths. The Set All Management Paths dialog box appears (see Figure 4-8).

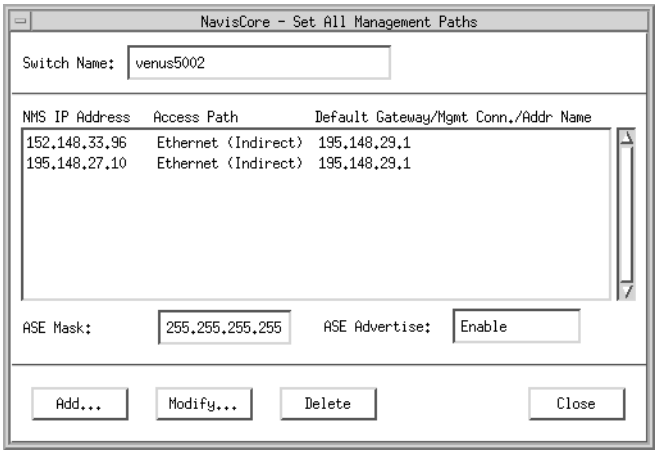



**Figure 4-8. Set All Management Paths Dialog Box**

3. Choose Add to create a new management path. The Add Management Path dialog box appears (see Figure 4-9).

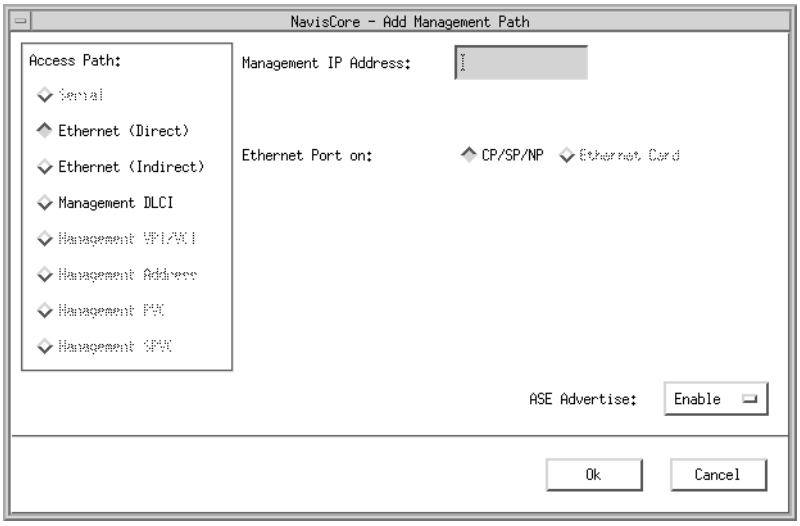



**Figure 4-9. Add Management Path Dialog Box (Direct Ethernet)**

4. Complete the Add Management Path dialog box fields described in Table 4-8:

**Table 4-8. Add Management Path Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Access Path | Select the connection type you used to connect the NMS to the switch. The dialog box displays additional fields to complete for the connection type you select. |
| Management IP Address | Specify the NMS IP address. This should be the IP address of the SPARCstation. |
| ASE Advertise | Enable or disable the Autonomous System External (ASE) Advertise feature to indicate whether or not to advertise the new NMS management path on the network.<br>Options include:<br>*Enable* – (default) Enables ASE Advertise. The new NMS management path is advertised on the network. Using ASE Advertise to select switches that function as gateway switches to the NMS can provide greater control of Open Shortest Path First (OSPF) database size, network control traffic, and CPU usage.<br>*Disable* – Disables ASE Advertise. The new NMS management path is *not* advertised on the network. |

5. Choose OK to save your changes.
6. Choose Close to return to the network map.

# Downloading the Configuration to the Gateway Switch

You must now download switch configuration information to the gateway switch and synchronize the switch. See Chapter 7, "Downloading the Configuration," for instructions.

# Configuring the Second Switch on the Network Map

This section describes how to configure the second switch on the network map.

## Before You Start

Before you set up your next switch, verify that the following tasks are complete:

- Set up the NMS SPARCstation and gateway switch as described in "Adding Objects to the Map" on page 3-13. The gateway switch object should be green on the map.
- Install the physical connection for creating a trunk line between this switch and the gateway (or any active switch you can configure as a hop between this switch and the gateway). See the applicable switch hardware installation guide for instructions.

## Configuring the Second Switch

The following procedure describes the basic steps required to get your second switch (and any other switches) synchronized and communicating with each other and the NMS. To do this, you must add a second switch to the same map, configure the physical and logical port, and define a trunk connection between the two switches.

To configure the second switch on the network map:

1. If necessary, start the NMS and access NavisCore.
2. From the Misc menu, select NavisCore ⇒ Logon.
3. From the Map menu, select Open. The Available Maps dialog box appears (see Figure 3-22 on page 3-31).
4. Select the desired map and choose Open Map.
5. To add the second switch to the map, see "Adding Objects to the Map" on page 3-13. When you finish, the network map should display the second switch, which is unmanaged (wheat color).
6. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears.

7. To configure the processor module, double-click the left mouse button on the module slot. Verify that the admin status is Up and configure the module as described in "Configuring the Processor Module" on page 4-9.
8. Choose OK. The Switch Back Panel dialog box reappears.
9. To configure the first I/O module, double-click its slot. For instructions on configuring each supported I/O module, see the *B-STDX, CBX, and GX Switch Module Configuration Guide* or the applicable user's guide for your specific module.
10. Choose OK. Repeat step 9 for each I/O module in this switch. When you finish setting the card attributes, choose Close to return to the network map.

**Note –** You must configure each I/O module for the switch to be fully synchronized with the NMS. However, you do not have to configure all the physical and logical ports on each I/O module at this time.

# Configuring a Trunk Connection

This section describes how to configure a direct-line trunk connection between the first switch (the gateway switch) and the second switch in a new Lucent network. To configure a direct-line trunk, you must first configure the physical port and logical port on the gateway switch and the second switch. Figure 4-10 shows an example of a direct-line trunk connection.

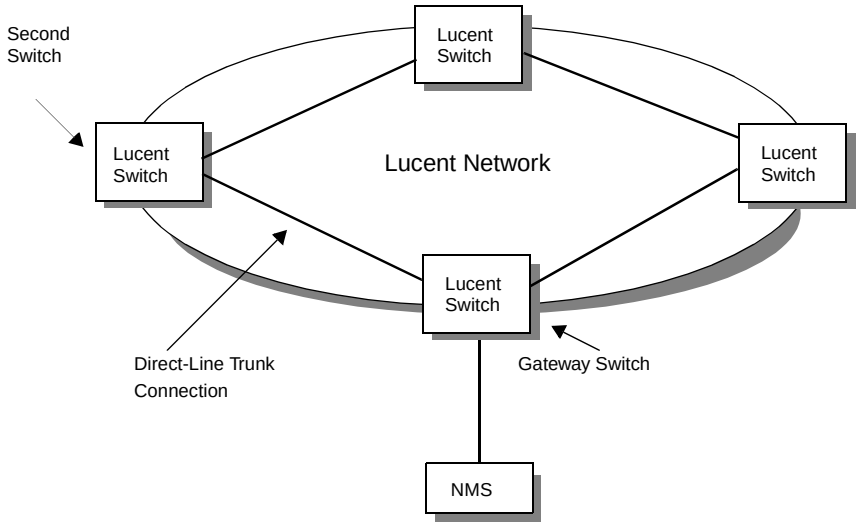



**Figure 4-10. Direct-Line Trunk Connection**

## Non-Disruptive Trunk Attributes

Certain trunk attributes are defined as *non-disruptive*. When you modify any of these attributes, the NMS sends the appropriate SNMP SET commands to the switch without bringing down the trunk and its associated logical port. Switch PRAM and the NMS database are synchronized automatically, without interrupting network traffic.

**Note –** When you modify any attributes other than non-disruptive attributes, the NMS will bring down the trunk and its associated logical port.

Non-disruptive attributes appear in ***bold italicized*** text on NavisCore dialog boxes.

See the *B-STDX, CBX, and GX ATM Services Configuration Guide* for more information.

## Configuring the Trunk's Physical Port

To configure the physical port:

1. On the network map, select the gateway switch.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears.
3. To configure a physical port, select the applicable I/O module. Double-click on the port to use for the trunk connection. The Set Physical Port Attributes dialog box appears.
4. Specify the trunk connection's physical port attributes as described in the *B-STDX, CBX, and GX Switch Module Configuration Guide* or the applicable user's guide for your specific module.
5. Choose Apply to save your selections.

## Configuring the Trunk's Logical Port

To configure the logical port settings for the trunk:

1. On the network map, select the gateway switch.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears.
3. Select the applicable I/O module. Double-click on the port to use for the trunk connection. The Set Physical Port Attributes dialog box appears.
4. Choose the Logical Port button on the Set Physical Port Attributes dialog box. The Set All Logical Ports dialog box appears.
5. Choose Add. The Add Logical Port dialog box appears.

6. Configure the trunk logical port as described in one of the following NavisCore configuration guides:
   - *B-STDX and CBX Frame Relay Services Configuration Guide*
   - *B-STDX, CBX, and GX ATM Services Configuration Guide*
   - *CBX and GX IP Services Configuration Guide*
7. Choose Close, then Cancel to return to the network map.
8. Repeat the steps in "Configuring the Trunk's Physical Port" on page 4-29 and "Configuring the Trunk's Logical Port" on page 4-29 (this procedure) to configure a physical and logical port for the switch (second switch) at the other end of the trunk connection.

## Defining the Trunk Configuration

To configure the trunk between the gateway switch and the second switch:

1. From the Administer menu, select Lucent Parameters ⇒ Set All Trunks. The Set All Trunks dialog box appears.
2. Choose Add. The Select Logical Ports dialog box appears (see Figure 4-11).

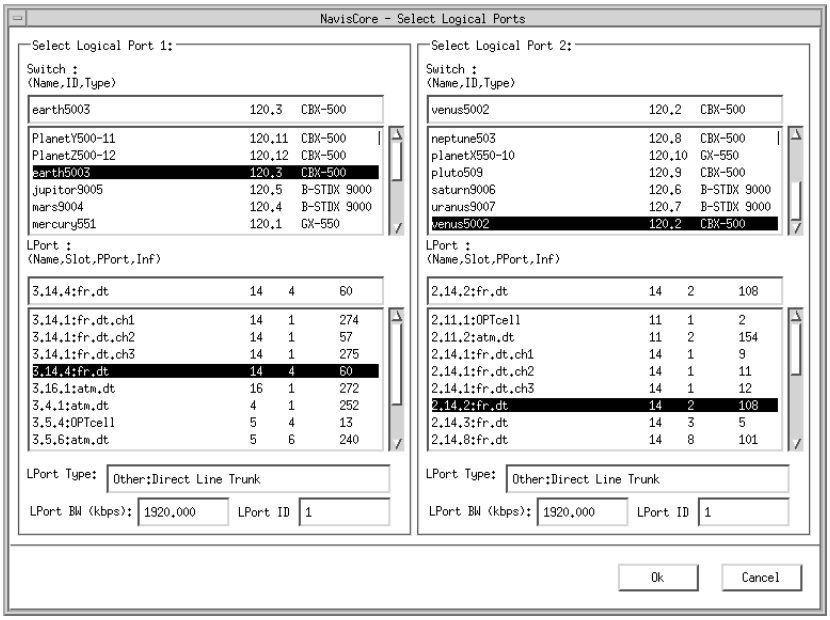



**Figure 4-11. Select Logical Ports Dialog Box**

3. Complete the required fields described in Table 4-9 for both Logical Port 1 and Logical Port 2.

**Table 4-9. Select Logical Port Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Switch (Name, ID, Type) | Select a switch for each endpoint. The dialog box displays the parameters for the selected switch. |
| LPort (Name, Slot, PPort, Inf) | Select the same trunk logical port type for each endpoint. This field also displays the physical port number and I/O slot (number) in which the module resides.<br>***Note**: Review the LPort Bandwidth field for each endpoint to make sure the bandwidth is the same.* |
| LPort Type | Displays the configured logical port type. |
| LPort BW (kbps) | Displays the bandwidth configured for the logical port. This value must be the same for both endpoints. |
| LPort ID | Displays the logical port number. |

4. Choose OK. The Add Trunk dialog box appears, displaying the trunk's parameters for both Logical Port 1 and Logical Port 2 (see Figure 4-12).

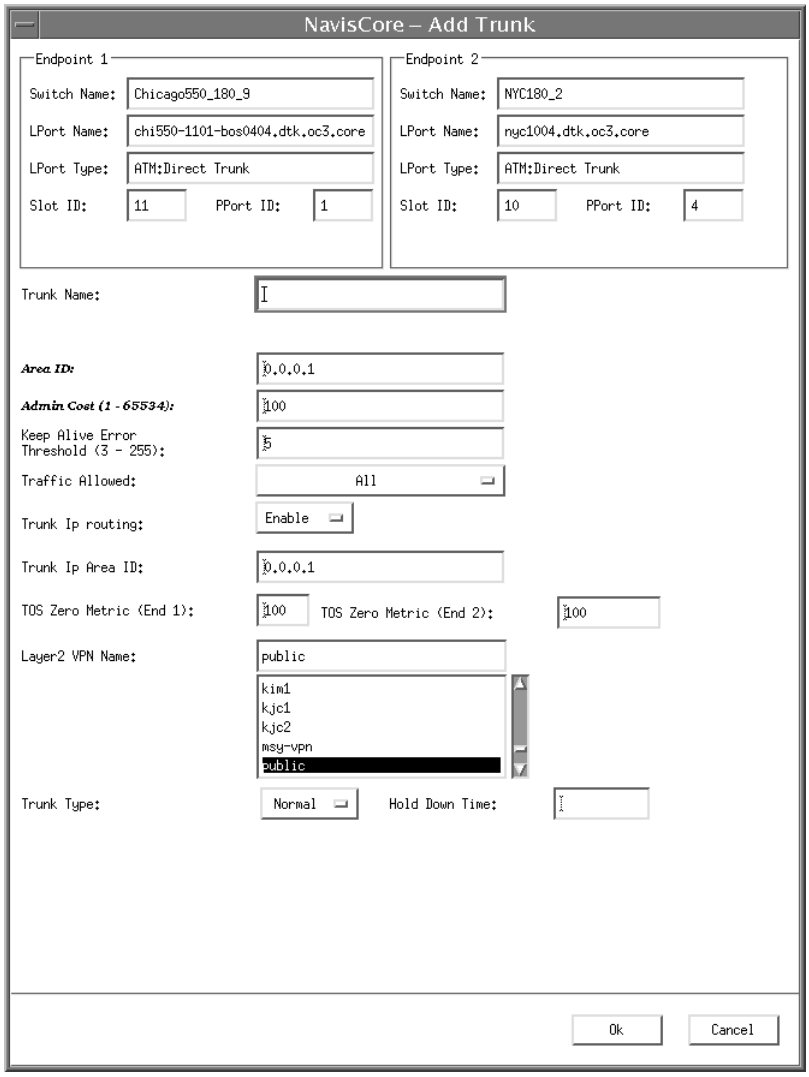



**Figure 4-12. Add Trunk Dialog Box**

**5.** Complete the fields described in Table 4-10.

**Table 4-10. Add Trunk Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Trunk Name | Enter a unique alphanumeric name to identify the trunk. You use this same name when you create the trunk connection.<br>For details on this parameter, see the appropriate configuration guide for your network service. |
| Subscription Factor (%) (100 - 10000) | The trunk oversubscription factor percentage enables you to optimize the aggregate CIR you can configure on the trunk, by allowing you to oversubscribe bandwidth on the trunk. The oversubscription factor represents the V value for this trunk. The bandwidth on a trunk is reserved at runtime, based on the configured CIR value of the PVCs that traverse that trunk.<br>For details on this parameter, see the appropriate configuration guide for your network services.<br>***Note:*** *You cannot oversubscribe an ATM Direct Trunk.* |
| Area ID | Displays the ID of the Open Shortest Path First (OSPF) area to which the trunk belongs. |
| Admin Cost (1 - 65534) | Assign an administrative cost value of 1 to 65534. The lower the admin cost of the path, the more likely OSPF will select it for circuit traffic. The default admin cost value is 100. For details on this parameter, see the configuration guide for your network service.<br>***Note*****:** *When you increase or decrease the administrative cost of a trunk, the reroute-tuning parameters control the rate at which the switch adds or removes circuits from the trunk. See* *"Configuring Circuit Reroute-tuning Parameters" on page 5-22* *for information about reroute tuning. You cannot use trunk admin cost to disable a trunk.* |
| Keep Alive Error Threshold (3 - 255) | Configure the keep-alive threshold for a value between 3 and 255 seconds. The default is 5 seconds.<br>Service is disrupted if you change this value after the trunk is online.<br>For details on this parameter, see the appropriate configuration guide for your network service. |

**Table 4-10. Add Trunk Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| Traffic Allowed | Specify one of the following options to designate the type of traffic allowed on this trunk:<br>*All* – (default) The trunk can carry network management traffic, user traffic, and OSPF address distribution.<br>*Mgmt Only* – The trunk can carry *only* network management traffic, such as Simple Network Management Protocol (SNMP) communication between a switch and the NMS.<br>*Mgmt & User Data* – The trunk can carry network management traffic and user traffic.<br>***Note:*** *To calculate the most efficient route for network management traffic, OSPF uses Trunk Admin Cost. OSPF ignores trunk bandwidth when it selects a route for management traffic; management traffic can use a negative bandwidth trunk.* |
| Trunk IP routing | Enable or disable IP routing for the trunk. If disabled, the trunk is reserved for use by Virtual Network Navigator (VNN). For more information about IP routing, see the *B-STDX and CBX IP Services Configuration Guide*. |
| Trunk IP Area ID | Enter the OSPF Area ID used by the IP services. For more information about IP services, see the *B-STDX and CBX IP Services Configuration Guide*. |
| TOS Zero Metric (End 1) | Displays the type of service (ToS) cost for Endpoint 1 of the trunk. The lowest ToS 0 (zero) has the highest priority for routing. Any value between 1 and 65535 is valid. |
| TOS Zero Metric (End 2) | Displays the type of service (ToS) cost for Endpoint 2 of the trunk. The lowest ToS 0 (zero) has the highest priority for routing. Any value between 1 and 65535 is valid. |
| Layer2 VPN Name | Select a layer 2 virtual private network (VPN) name if applicable. The default value is *public*. |

**Table 4-10. Add Trunk Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| Trunk Type | Select one of the following:<br>*Normal* – (default) Indicates a common trunk with no backup service.<br>*Primary* – Indicates that the trunk has a backup for fault tolerance. If you select Primary, go to step 6 on page 4-35.<br>*Backup* – Indicates that it is the backup trunk (when failure occurs on the primary trunk). If you select Backup, go to step 8 on page 4-36. |
| Hold Down Time | Accept the default value (0), or enter a value between 0 and 65535 (seconds).<br>Hold down time allows you to configure the time delay (in seconds) before link state advertisements (LSAs) are generated when a trunk recovery takes effect on the network. The time delay is not used when a trunk is brought up for the first time, when a trunk's OSPF area ID changes, and when a trunk goes down. This setting can reduce the number of LSAs caused by rapid changes in trunk status. |

**6.** If you selected *Primary* as the Trunk Type, the system displays the fields shown in Figure 4-13.

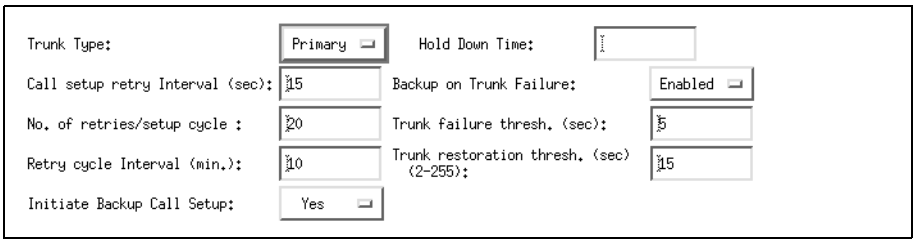



**Figure 4-13. Add Trunk Dialog Box Fields (Primary Trunk)**

7. Complete the fields described in Table 4-11, or accept the default parameters.

**Table 4-11. Add Trunk Dialog Box Fields (Primary Trunk)**

| Field | Action/Description |
|---|---|
| Call setup retry Interval (sec) | Specify the number of seconds between initiating a call. The default is 15 seconds. |
| No. of retries/setup cycle | Specify the number of retries per interval. The default is 20 retries. |
| Retry cycle Interval (min.) | Specify a retry interval in minutes. The default is 10 minutes. |
| Initiate Backup Call Setup | Choose Yes (default) to initiate a backup call. |
| Backup on Trunk Failure | Enable (default) or disable trunk backup. If you enable trunk backup, the system automatically uses the backup trunk if the primary trunk fails. If you choose Disabled, the automatic trunk backup option is not used. |
| Trunk failure thresh. (sec) | Specify the number of seconds (the default is 5). If you enabled trunk backup, this field specifies the number of seconds the system will wait before switching over to the backup trunk. |
| Trunk restoration thresh. (sec) (2 - 255) | Specify the number of seconds that the system will wait for the primary trunk to become functional before resuming use of the primary trunk. The default is 15 seconds. If the primary trunk is out of service and the backup trunk is in use, the system will not resume use of the primary trunk until it has been restored for the period of time you specify. The purpose of this field is to prevent a switch-over to a primary trunk that has only been temporarily restored. |

8. If you selected *Backup* as the Trunk Type, the system displays the fields shown in Figure 4-14.

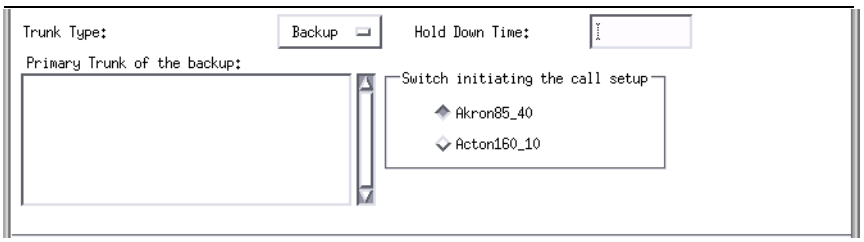



**Figure 4-14. Add Trunk Dialog Box Fields (Backup Trunk)**

9. Complete the field described in Table 4-12.

**Table 4-12. Add Trunk Dialog Box Field (Backup Trunk)**

| Field | Action/Description |
|---|---|
| Primary Trunk of the backup | Select the name of the trunk to backup to this configuration. |
| Switch initializing the call setup | Select the name of the switch that initiates the backup call setup for the trunk. |

10. Choose Close to return to the network map.
11. Proceed to the next section, "Adding a Trunk-Line Connection," to add a trunk-line connection to the network map.

## Adding a Trunk-Line Connection

To add a trunk-line connection to the network map:

1. From the Edit menu, select Add Connection. The Add Connection dialog box appears (see Figure 4-15).

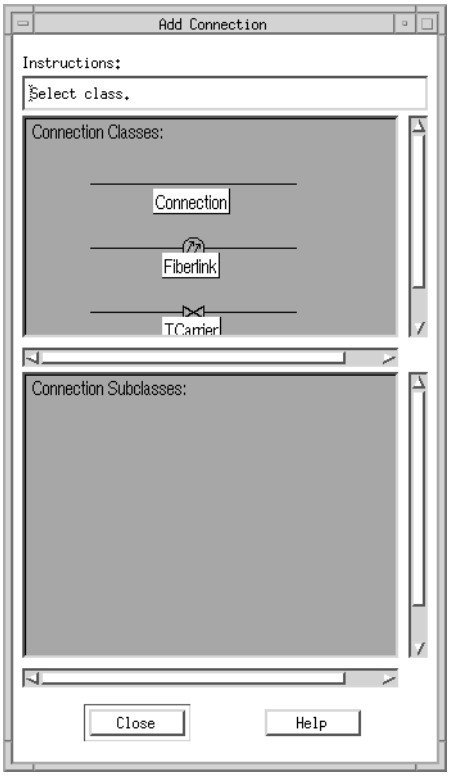



**Figure 4-15. Add Connection Dialog Box**

2. Select a connection class from the Connection Classes list box. The Add Connection dialog box displays the subclasses for the connection class you selected (see Figure 4-16).

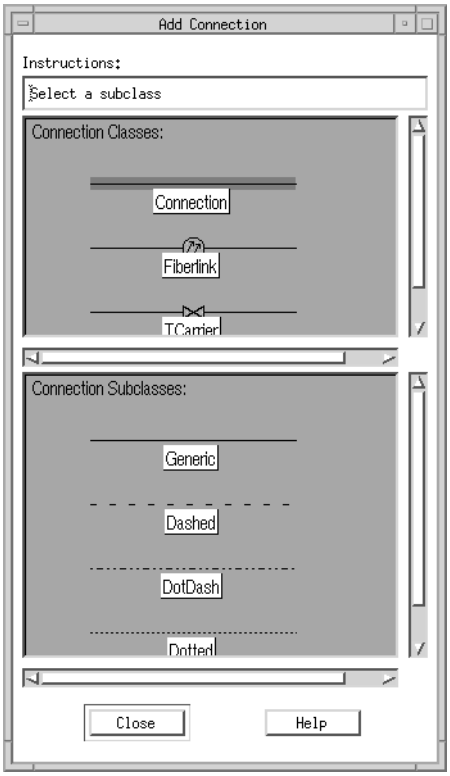



**Figure 4-16. Add Connection Dialog Box With Connection Class Selected**

3. Select a connection subclass from the Connection Subclasses list box.
4. To create a trunk-line connection between the two switches on the network map, click on the first switch object (source symbol) and then on the second switch object (destination symbol). The Add Object dialog box appears (see Figure 4-17).

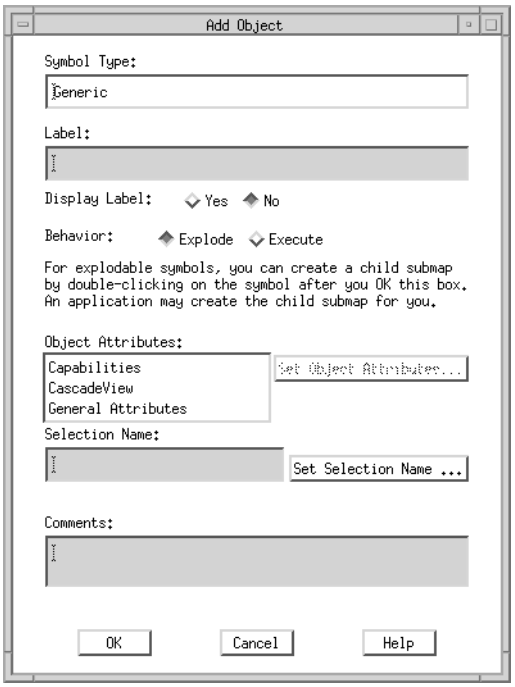



**Figure 4-17. Add Object Dialog Box**

**5.** Complete the fields described in Table 4-13.

**Table 4-13. Add Object Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Symbol Type | Displays the type of connection you are adding to the map. |
| Label | Enter the trunk name you specified on the Add Trunk dialog box (see page 4-33). |
| Display Label | Select Yes to have the label appear below the object on the network map. Select No if you do not want the label displayed. |
| Behavior | Select Explode (default) to create the basic NavisCore network configuration. See *HP OpenView Managing Your Network* for more information about using the Execute function. |
| Selection Name | Automatically defaults to the value entered in the Label field. The selection name must be unique throughout all HP OpenView objects. Lucent recommends that you leave the selection name as it appears. |

6. Select CascadeView from the Object Attributes list box and then choose Set Object Attributes. The Add Object - Set Attributes dialog box appears (see Figure 4-18).

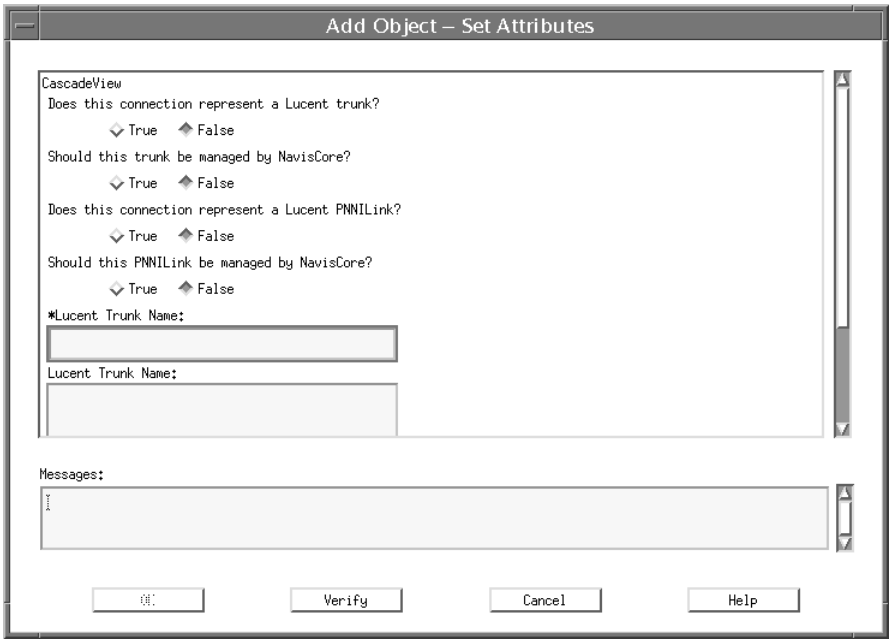



**Figure 4-18. Add Object - Set Attributes Dialog Box**

7. Complete the fields described in Table 4-14.

**Table 4-14. Add Object - Set Attributes Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Does this connection represent a Lucent Trunk? | Select True. |
| Should this trunk be managed by NavisCore? | Select True. |
| Does the connection represent a Lucent PNNI Link? | Select True if this is a Lucent Private Network-to-Network Interface (PNNI) link trunk endpoint. Otherwise, select False.<br>See the *B-STDX, CBX, and GX ATM Services Configuration Guide* for more information about PNNI links. |
| Should this PNNI Link be managed by NavisCore? | Select True if you want NavisCore to manage this PNNI link. Otherwise, select False.<br>See the *B-STDX, CBX, and GX ATM Services Configuration Guide* for more information about PNNI links. |

**Table 4-14. Add Object - Set Attributes Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| *Lucent Trunk Name | Enter the name you assigned to the trunk. This should be the same name you entered in the Label field of the Add Object dialog box (see Figure 4-17 on page 4-39). |

8. Choose Verify to confirm your selections.
9. Choose OK to return to the Add Object dialog box.
10. Choose OK to return to the network map. The trunk-line connection appears between the two switches on the network map.

# Downloading the Configuration to the Second Switch

You must now download switch configuration information to the second switch and synchronize the switch. See Chapter 7, "Downloading the Configuration," for instructions.

After you download the configuration and sychronize the switch, the trunk-line connection and switch objects should appear green on the network map, indicating a successful configuration.

**Note –** If the trunk-line connection is black, make sure the following environment variable is specified in each NMS user's `.profile` file:

```
$ XUSERFILESEARCHPATH =/opt/CascadeView/app-defaults/%N
$ export XUSERFILESEARCHPATH
```

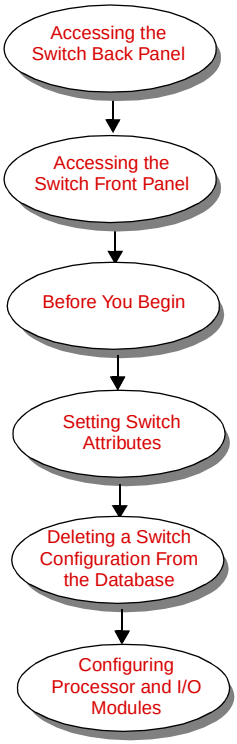
**Note –** If necessary, log in as root and modify the `.profile` or `.cshrc` file. Then log out of NavisCore and log in again to restart the system.

5

# Setting Switch Parameters

After you have created a network map and defined the first switch in NavisCore, you can set the switch parameters. This chapter describes the front and back panels of a switch and how to access and set switch attributes. These steps are the same for all switch platforms. See Chapter 6, "Setting GX 550 ES Attributes," for information on configuring the GX 550 ES (Extender Shelf).

This chapter describes the following topics and tasks:



Before you configure switch parameters, verify that the following tasks are complete:

- "Creating the Network Map" on page 3-5
- "Creating a Subnet ID" on page 3-10
- "Adding Objects to the Map" on page 3-13

# Accessing the Switch Back Panel

From the switch back panel, you can configure each input/output (I/O) module in the switch. After configuring the modules, you can then select each physical port on the module to configure both physical and logical port attributes.

For information about configuring physical ports, see the *B-STDX, CBX, and GX Switch Module Configuration Guide* or the applicable user's guide for your specific module. "Related Documents" on page xxiv lists the NavisCore service configuration guides that provide logical port configuration information.

To display the switch back panel:

1. Select the applicable switch object (B-STDX, CBX, or GX) on the network map.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears for the selected switch. The appearance of the switch back panel depends on the type of switch you are accessing, as shown in the following examples:
   - Figure 5-1 displays the switch back panel for a B-STDX 9000 Multiservice WAN switch.
   - Figure 5-2 displays the switch back panel for a CBX 500 Multiservice WAN switch.
   - Figure 5-3 displays the switch back panel for a GX 550 Multiservice WAN switch.

   See Table 5-1 on page 5-6 for a description of the buttons on the Switch Back Panel dialog box.

Figure 5-1 displays the Switch Back Panel dialog box for a B-STDX 9000 Multiservice WAN switch.

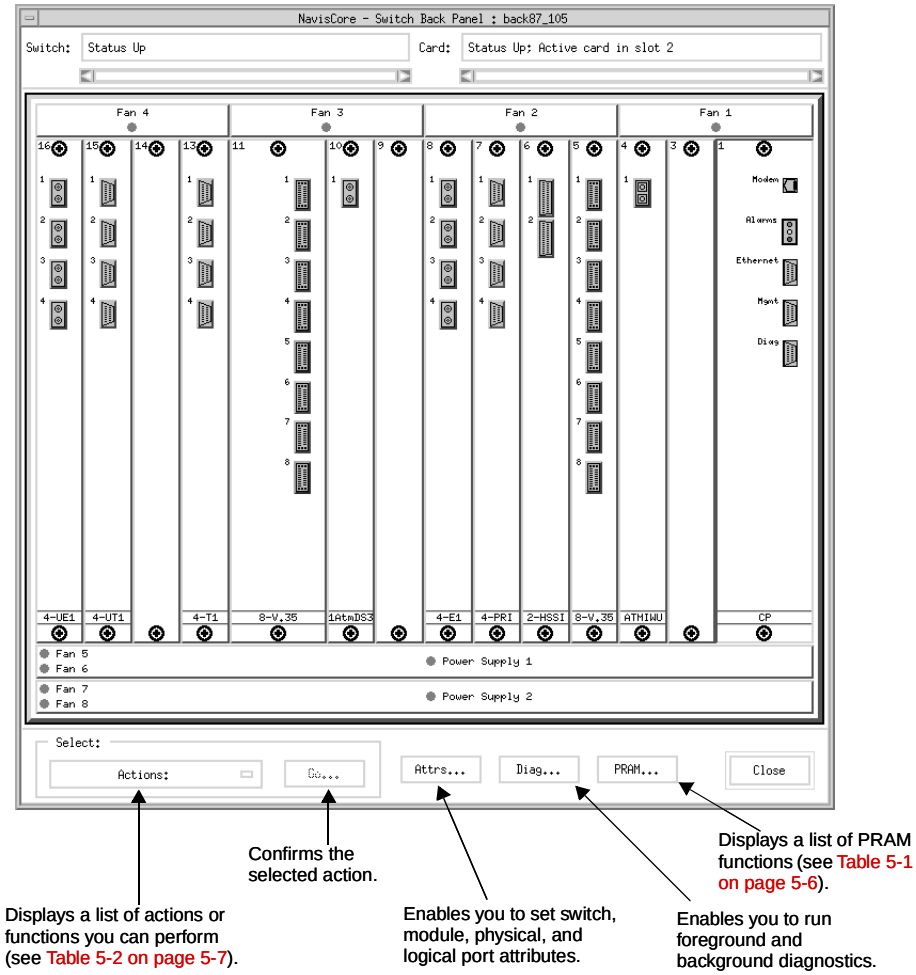



**Figure 5-1. Switch Back Panel Dialog Box (B-STDX 9000)**

Figure 5-2 displays the Switch Back Panel dialog box for a CBX 500 Multiservice WAN switch.

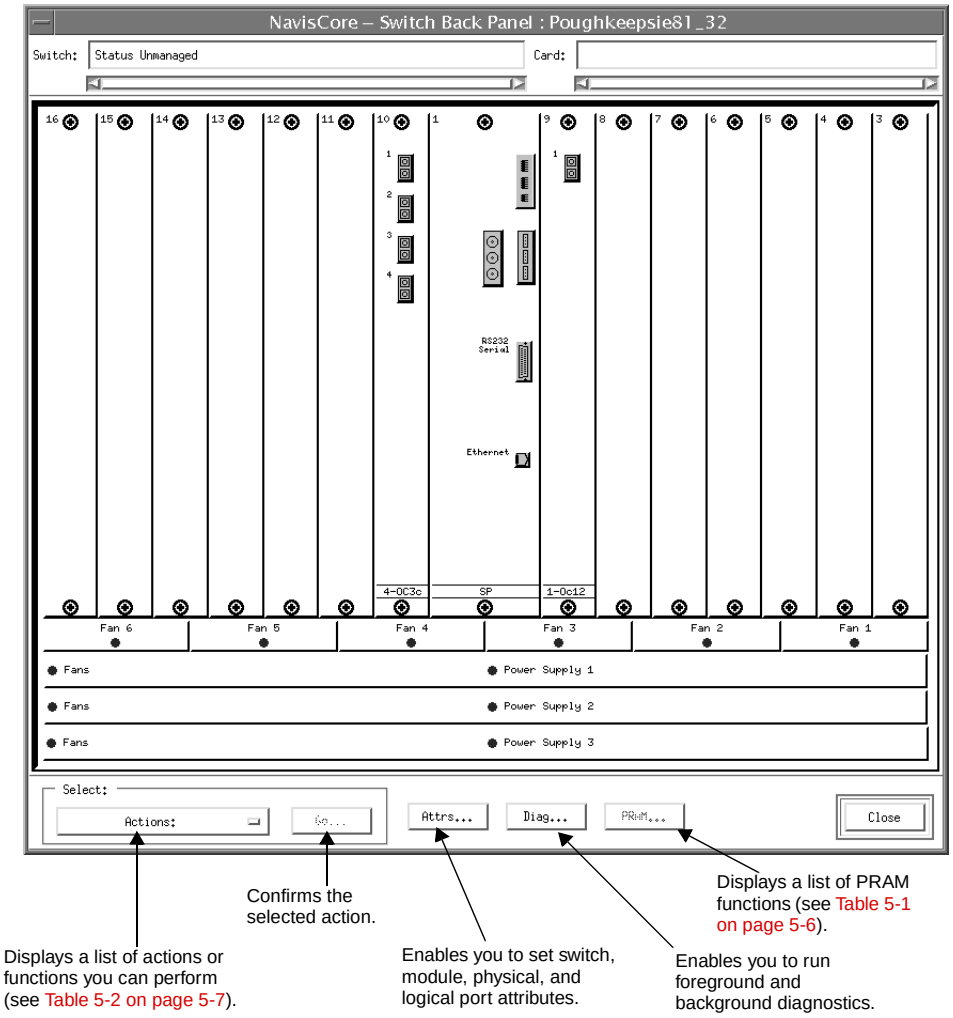



**Figure 5-2. Switch Back Panel Dialog Box (CBX 500)**

Figure 5-3 displays the Switch Back Panel dialog box for a GX 550 Multiservice WAN switch.

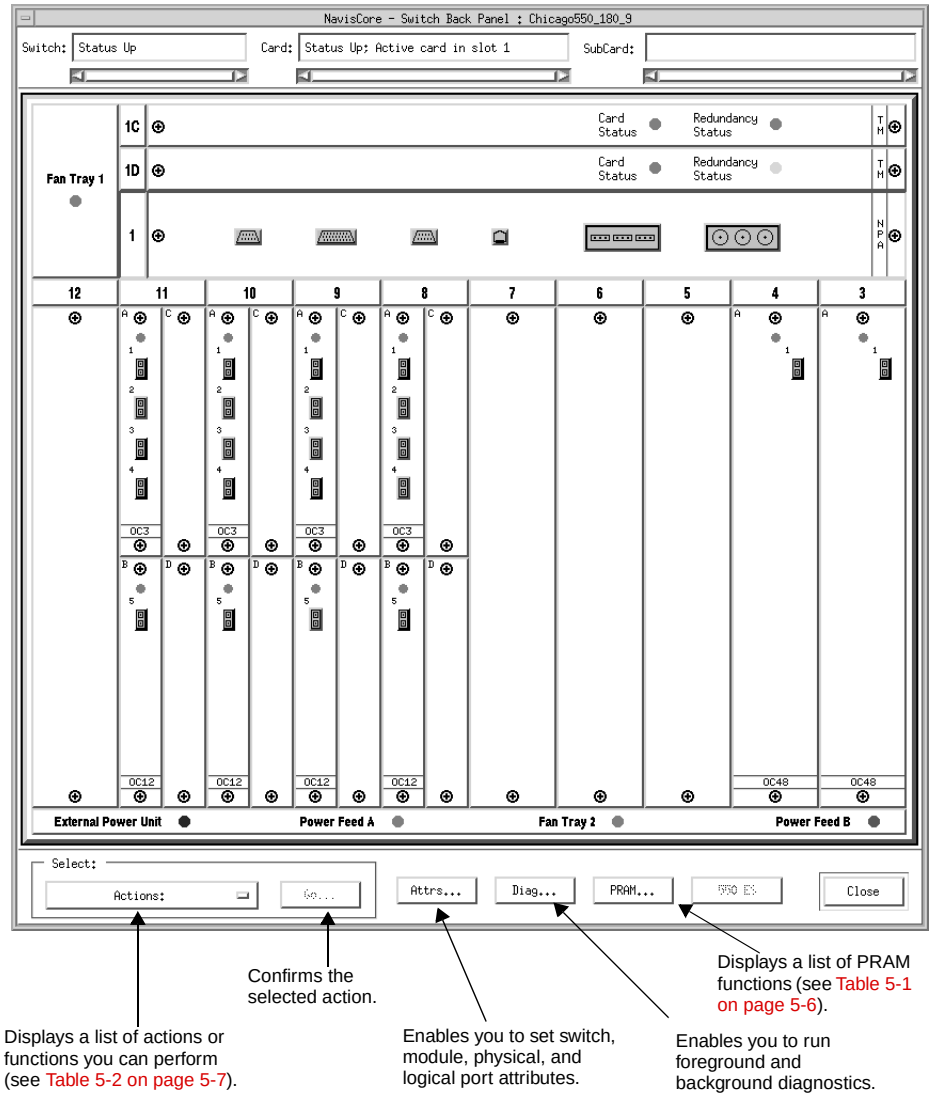



**Figure 5-3. Switch Back Panel Dialog Box (GX 550 Multiservice WAN)**

Table 5-1 describes the buttons on the Switch Back Panel dialog box.

**Table 5-1. Switch Back Panel Dialog Box Buttons**

| Button | Description |
|---|---|
| Select: Actions (option menu) | Displays a list of actions or functions that you can perform (see Table 5-2 on page 5-7). |
| Select: Go | Confirms the selected action. |
| Attrs | Enables you to set switch, module, physical, and logical port attributes. |
| Diag | Enables you to run foreground and background diagnostics. |
| PRAM | Lucent switches use battery backed-up Parameter Random Access Memory (PRAM) to store switch configuration files. When you download a configuration file from the NMS to the switch, the NMS generates an initialization-script file. This file contains the Simple Network Management Protocol (SNMP) SET commands that control the switch's configuration.<br><br>Use the PRAM button to access one of the following options, as described in "Using PRAM Features" on page 7-54:<br><br>*Synchronize PRAM* – If the switch already contains a configuration file, an updated binary image of the configuration is sent to the selected I/O module.<br><br>*Erase PRAM* – Clears a configuration file from PRAM. Use Erase PRAM before you replace an existing configuration file.<br><br>*Upload PRAM* – Uploads the switch configuration file stored in PRAM to the NMS. This feature is supported for physical ports, logical ports, and Switched Multimegabit Data Service (SMDS) services.<br><br>*Generate PRAM* – Generates SET commands to configure PRAM but does not upload the switch configuration file to the NMS. This option enables you to view the file before uploading it. |

The Select: Actions option menu provides a list of options that you can select and access using the Select: Go button. Although the Select: Actions option menu is similar from platform to platform, some functions vary.

**Table 5-2. Select: Actions Option Menu Choices**

| Option | Description |
|---|---|
| Set Switch Attributes | Enables you to set the switch attributes, including the local Internet Protocol (IP) address of the switch. See "Setting Switch Attributes" on page 5-14 for details. |
| View Front Panel | Displays the front panel of the switch. See "Accessing the Switch Front Panel" on page 5-9 for details. |
| Coldboot | Restarts the switch as if it were powered off, then on. |
| Warmboot | Resets the selected module. As it reboots, all physical ports, logical ports, and permanent virtual circuits (PVCs) on the module stall for approximately 20-30 seconds. |
| Switch to Redundant Unit | Passes operation changes from an active I/O module to a redundant standby module. See the *B-STDX, CBX, and GX Switch Module Configuration Guide* for more information. |
| View Port Redundancy | Displays physical port redundancy pairings. |
| ISDN Status<br>*(B-STDX only)* | This option is not supported. |
| Erase Standby | Erases a standby control processor (CP), switch processor (SP), or node processor (NP) module. |
| Enable Pop-up Help | Enables the back panel Help/Info pop-up menu for module and port statistics. |
| Disable Pop-up Help | Disables the back panel module and port pop-up Help. |
| Send Auto LPorts | Sends a command to the switch to configure any "dummy" (auto) logical ports that have been configured in the NMS database but not on the switch. This restores synchronization between the switch and the NMS database. |

## Switch Back Panel Status LEDs

Table 5-3 describes the operating status indicators of fans and power supply units.

**Table 5-3. Switch Back Panel Status LEDs**

| LED Color | Indicates |
|---|---|
| Green | Fan or power supply unit is operational. |
| Red | Fan or power supply unit is not operational. |
| Blue | NMS cannot access a fan or power supply unit for status. |

## Switch Back Panel Port Colors

Table 5-4 describes the physical port colors, which indicate port operational status.

**Table 5-4. Switch Back Panel Port Colors**

| Port Color | Indicates |
|---|---|
| Gray | Port is unknown. This condition usually occurs if the configuration has not been downloaded or if the NMS and PRAM configurations do not match. |
| Green | Port is accurately configured and operational. |
| Red | Port is configured but has an admin status and/or an operational status of Down. Red could also indicate that no logical port has been configured. |
| Cyan | Port is configured but one or more (but not all) logical ports have an admin status or an operational status of Down. |

## Switch Back Panel I/O Module Colors

Table 5-5 describes the I/O module colors, which indicate operational status.

**Table 5-5. Switch Back Panel I/O Module Colors**

| IOM Color | Indicates |
|---|---|
| Red | Module is bad or not present. |
| Yellow | Module may be in a marginal state or out-of-sync. |
| Gray | Module is operational. |

# Accessing the Switch Front Panel

The Switch Front Panel dialog box displays a graphical representation of the switch front panel configuration.

You access the front panel from the Switch Back Panel dialog box. Choose View Front Panel from the Select: Actions option menu and then choose Go. The Switch Front Panel dialog box appears. The appearance of the Switch Front Panel depends on the type of switch you are accessing, as shown in the following examples:

- Figure 5-4 displays the Switch Front Panel for a B-STDX 9000 Multiservice WAN switch.
- Figure 5-5 displays the Switch Front Panel for a CBX 500 Multiservice WAN switch.
- Figure 5-6 displays the Switch Front Panel for a GX 550 Multiservice WAN switch.

Figure 5-4 displays the Show Switch Front Panel dialog box for a B-STDX 9000 Multiservice WAN switch.

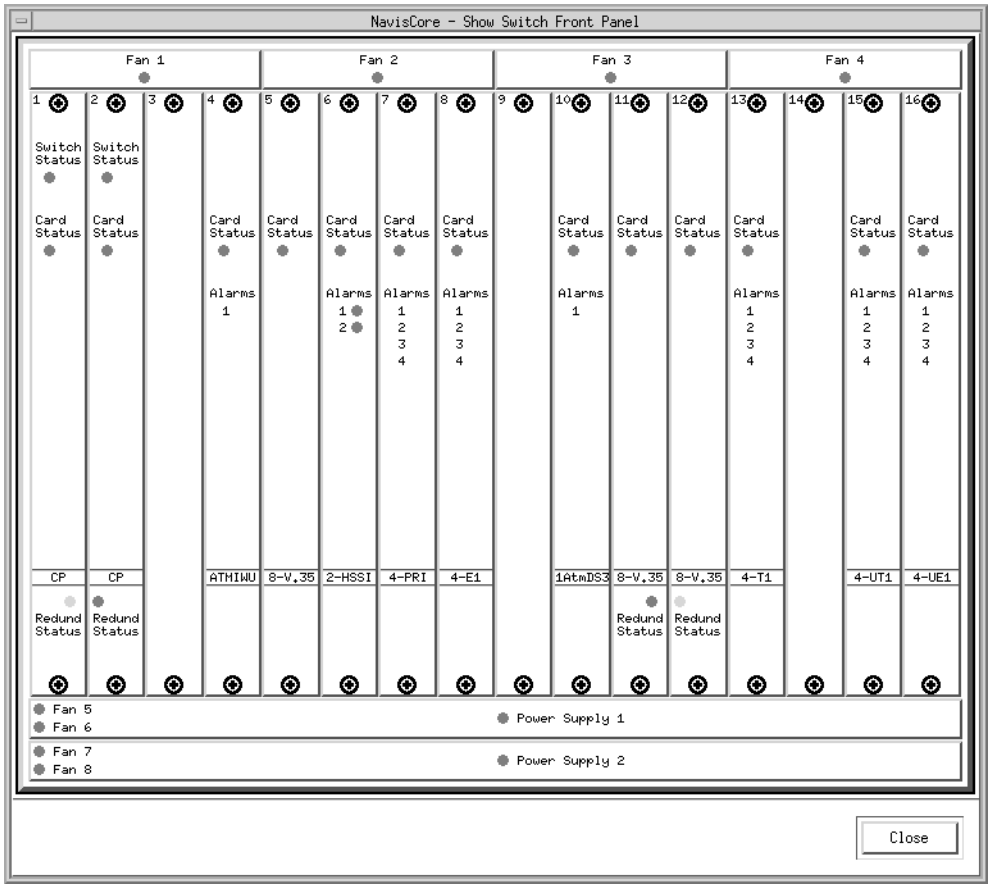



**Figure 5-4. Show Switch Front Panel Dialog Box (B-STDX 9000)**

Figure 5-5 displays the Show Switch Front Panel dialog box for a CBX 500 Multiservice WAN switch.

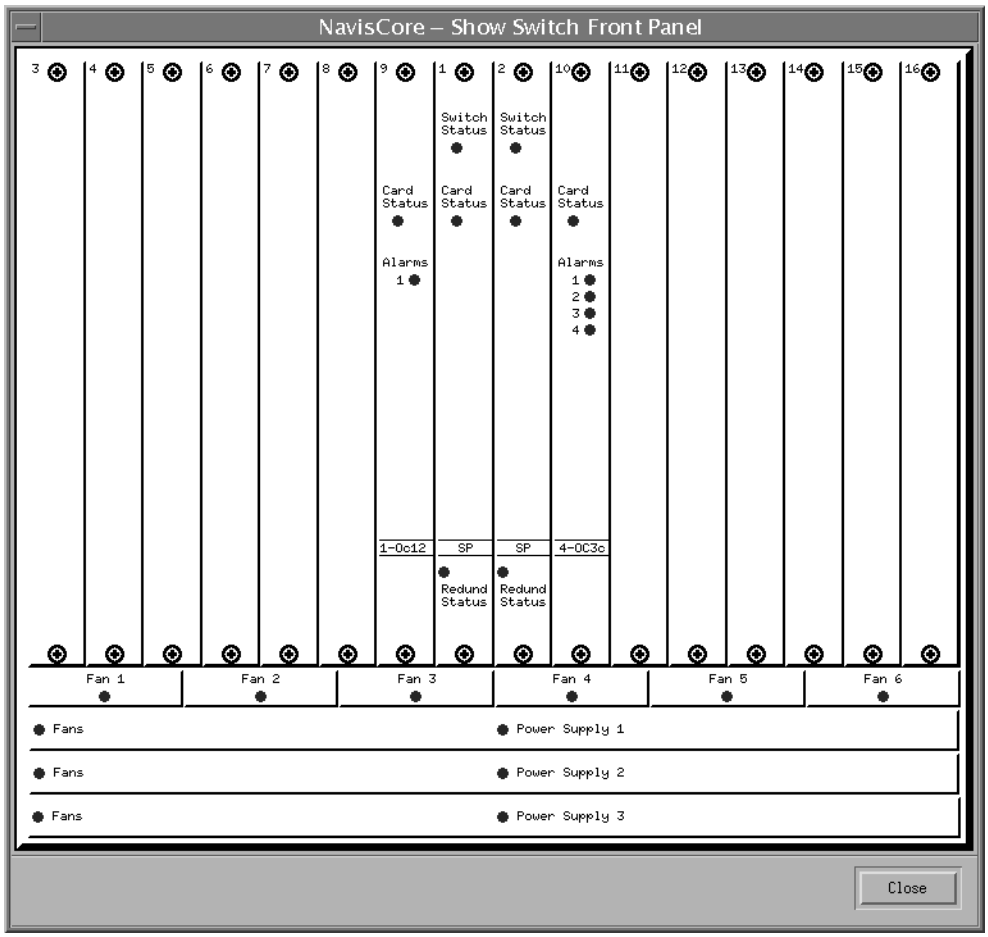



**Figure 5-5. Show Switch Front Panel Dialog Box (CBX 500)**

Figure 5-6 displays the Show Switch Front Panel dialog box for a GX 550 Multiservice WAN switch.

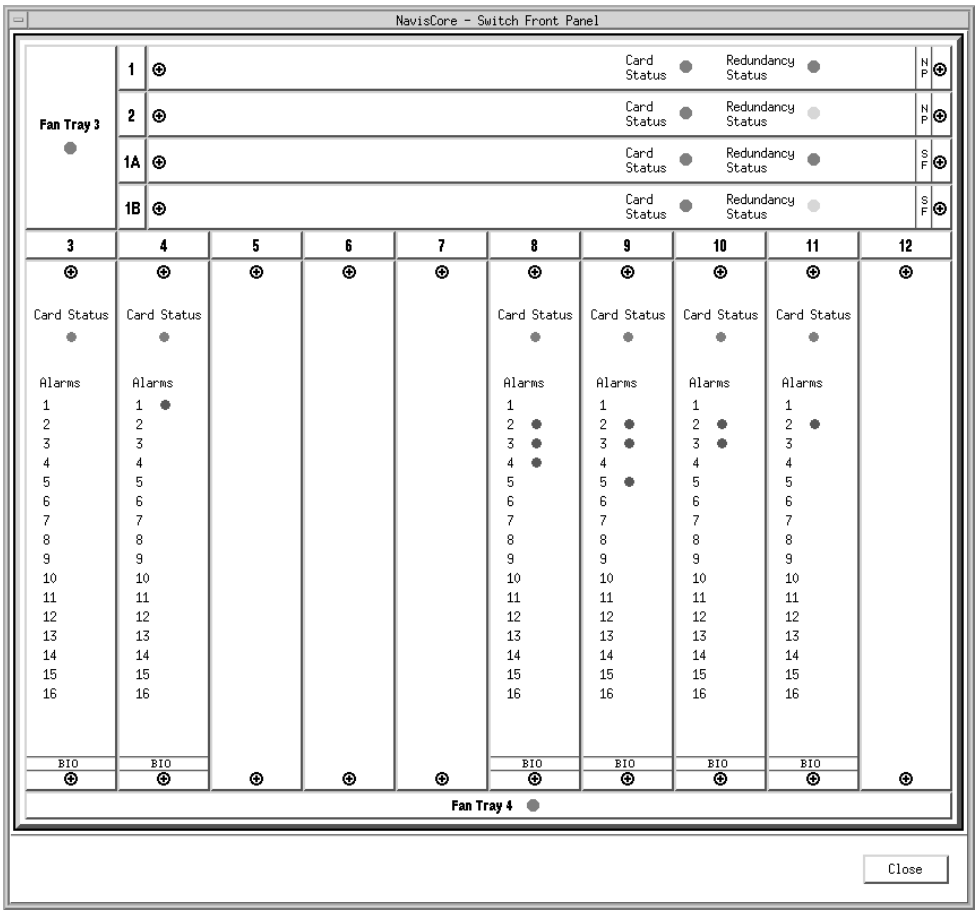



**Figure 5-6. Show Switch Front Panel Dialog Box (GX 550 Multiservice WAN)**

## Switch Front Panel Status LEDs

The switch front panel, like the switch back panel, displays status LEDs that indicate the operational status of components. Table 5-6 describes the switch front panel status LED indicators.

**Table 5-6. Switch and I/O Module Status LEDs**

| LED Color | Indicates |
|---|---|
| Green | Module is operational. |
| Red | Module is not operational. |
| Blue | NMS cannot access the unit for status. Blue LEDs are used on all processor modules, fans, and power supply units. |
| Yellow | Switch is out-of-sync, or the switch reports a module-type mismatch or marginal state. |

## Switch Front Panel Alarm Status LEDs

The number and type of alarms differ depending on the type of I/O module. Table 5-7 lists alarm LED descriptions.

**Table 5-7. Alarm Status LEDs**

| LED Color | Indicates |
|---|---|
| No LED | No alarm conditions |
| Red | Red alarm condition |
| Yellow | Yellow alarm condition |

# Before You Begin

Before you configure the switch, you need to know the following information:

- The local IP address of the gateway switch.
- The SNMP community name specified in the `cascadeview.cfg` in the `/opt/CascadeView/etc` directory. To view the contents of this file, enter:

  **`more /opt/CascadeView/etc/cascadeview.cfg`**
- The IP address of the SPARCstation (for serial connections).
- The IP address of the router that connects the NMS to the switch (if applicable).

Follow these steps to configure and manage a switch:

1. (*Optional*) Set up an authentication domain (see "Adding an Authentication Domain" on page 5-24).
2. Set the switch attributes (see "Setting Switch Attributes" on page 5-14).
3. Define an additional NMS, if necessary (see "Defining Additional Network Management Stations" on page 5-19).
4. Define the circuit reroute-tuning parameters (see "Configuring Circuit Reroute-tuning Parameters" on page 5-22).
5. Define the console authentication parameters (see "Defining Console Authentication" on page 5-23).
6. Configure the IP address and access attributes for the NMS or IP host (see "Setting the Management Path" on page 4-25).
7. Configure the processor module (see the *B-STDX, CBX, and GX Switch Module Configuration Guide* for instructions).

The following sections describe these steps in detail.

# Setting Switch Attributes

To set the switch attributes:

1. Start NavisCore and display the network map.
2. Select the switch object and from the Misc menu, select NavisCore ⇒ Logon. Enter your operator password and choose OK.
3. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears for the selected switch (see Figure 5-1 on page 5-3 for a B-STDX switch, Figure 5-2 on page 5-4 for a CBX switch, or Figure 5-3 on page 5-5 for a GX switch).
4. To configure switch parameters, choose Attrs. The Set Switch Attributes dialog box appears. Figure 5-7 shows an example of the Set Switch Attributes dialog box for a CBX 500 switch.

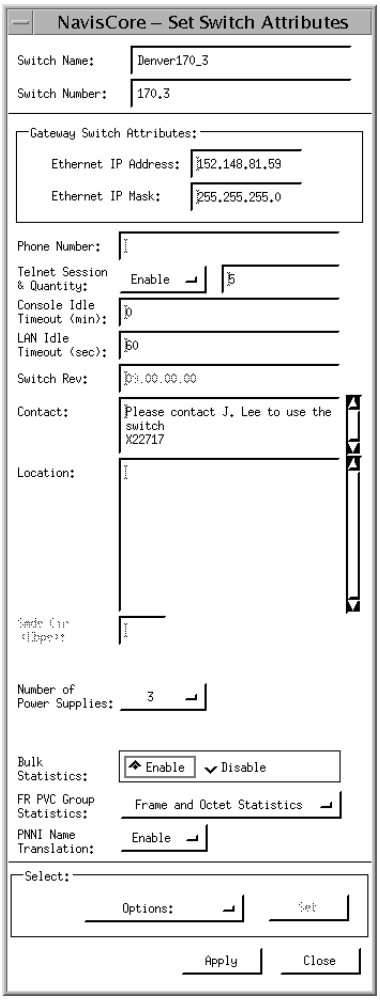



**Figure 5-7. Set Switch Attributes Dialog Box (CBX 500)**

The Set Switch Attributes dialog box displays the switch name (assigned to the switch when you added the object to the map) and the unique number of the switch (switch number). If this switch belongs to a cluster subnet, the switch number increments according to the Cluster ID. See "Creating a Cluster" on page 3-11 for more information.

5. Do one of the following:
   - *If this is a gateway switch*, complete the fields described in Table 5-8.
   - *If this is not a gateway switch*, proceed to step 6.

**Table 5-8. Set Switch Attributes Dialog Box Fields for Gateway Switch**

| Field | Action/Description |
|---|---|
| Ethernet IP Address | Enter the local IP address of the switch. This address is the external Ethernet address of the switch. See your network administrator if you do not know this address.<br>***Note:*** *You only need to enter the Ethernet IP address for the switch or switches that have an Ethernet connection and will communicate with the NMS via this connection.* |
| Ethernet IP Mask | Enter the in-band (Ethernet) IP mask for this switch. The default is 255.255.255.0. |

6. Complete the fields described in Table 5-9. If you access additional switch attributes from the Select:Options option menu, see Table 5-10 on page 5-17.

**Table 5-9. Set Switch Attributes Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Switch Name | Displays the name of the selected switch. |
| Switch Number | Displays the number of the selected switch. |
| Phone Number | Enter the phone number of the contact person responsible for switch operations. |
| Telnet Session & Quantity | Specify *Enable* (default) to allow the switch to connect to a remote terminal for troubleshooting purposes. Lucent recommends that you do not disable this function.<br>Specify the limit for the number of simultaneous Telnet sessions to a switch. The default limit is two, but you can increase the limit to five. |
| Console Idle Timeout (min) | Specify the time period (in minutes) that the console remains inactive before it is logged off. The default period is five minutes. |

**Table 5-9. Set Switch Attributes Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| LAN Idle Timeout (sec) | Specify the Idle Timeout interval, in seconds, for the Ethernet interface that connects the switch to the NMS. The default is 60 seconds. If the Ethernet interface receives no valid IP traffic during this period, the interface is marked as idle and will not be used for outbound traffic. Receipt of a valid IP packet restarts the Idle Timeout counter and reactivates the idle interface. |
| Switch Rev | Displays the current switch-software revision level. |
| Contact | Enter the name of the person responsible for switch operations. |
| Location | Enter the switch's physical location. |
| SMDS CIR (Kbps) *(B-STDX only)* | Enter the committed information rate (CIR), in Kbps, allocated to the Switched Multimegabit Data Service (SMDS) virtual paths originating at the switch. See the *NavisCore SMDS Configuration Guide* for additional information. |
| Bulk Stats Period (min) *(B-STDX only)* | Set this option if you are using the NavisXtend Statistics Server. See the *NavisXtend Statistics Server User's Guide* for details. |
| Number of Power Supplies *(CBX 500 only)* | The NMS must be configured for three power supplies, although only two power supplies may be installed. Otherwise, the switch will report a marginal state without providing an error message.<br>A chassis that supports three power supplies must have at least two power supplies installed at all times. |
| Lucent External Power Unit *(GX 550 only)* | The default value is *Not In Use*. The GX 550 can use external power rectifiers as a power source. You can set switch attributes to detect a power failure in a remote power source, using traps and status information. If the GX 550 uses an external power source, select *In Use*. |
| Bulk Statistics *(CBX 500 and GX 550 only)* | Enables or disables (default) statistics collection for this switch and for all cards, logical ports, and circuits associated with this switch. See the *NavisXtend Statistics Server User's Guide* for details. |

**Table 5-9. Set Switch Attributes Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| FR PVC Group Statistics *(CBX 500 and GX 550 only)* | If Bulk Statistics collection is enabled, select the group of Frame Relay PVC statistics to apply to all circuits for which statistics collection is enabled. Options include:<br>*Frame Statistics Only* – Selects only frame statistics to collect.<br>*Octet Statistics Only* – Selects only octet (byte) statistics to collect.<br>*Frame and Octet Statistics* – Selects both frame statistics and octet statistics to collect.<br>See the *NavisXtend Statistics Server User's Guide* for details. |
| PNNI Name Translation | Enables or Disables (suppresses) flooding of NAME(3) and SUMM_NM(3) LSAs for the specified switch.<br>*Disable* (default) – Use this option if the switch does not need to interoperate with PNNI switches in your network.<br>*Enable* – Use this option if the switch must interoperate with PNNI switches in your network. |
| Select:Options (option menu) | Lists additional attributes that you can configure. See Table 5-10 for information. |

Table 5-10 describes the additional switch attributes that you can access and, optionally, set by using the Select:Options option menu.

**Table 5-10. Select:Options Option Menu Choices**

| Option | Action/Description |
|---|---|
| Crash Configuration | Displays the Modify the Switch Crash Configuration dialog box that enables you to modify the crash dump switch configuration. See the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* for information about managing the crash dump system. |
| NMS Entries | Select this option to define an additional NMS and continue with "Defining Additional Network Management Stations" on page 5-19. |
| Tuning | Select this option to define parameters that enable the NMS to balance circuits between switches. See "Configuring Circuit Reroute-tuning Parameters" on page 5-22 for more information. |

**Table 5-10. Select:Options Option Menu Choices (Continued)**

| Option | Action/Description |
|---|---|
| Accounting | Select this option to define parameters that enable, disable, and calculate PVC and switched virtual circuit (SVC) accounting. See the *NavisXtend Accounting Server Administrator's Guide* for information. |
| SMDS Billing *(B-STDX only)* | Select this option if you are using the Billing feature. See the *SMDS Billing System Administrator's Guide* for more information. |
| Clock Sources | Select this option to define the clock source on an ATM CS, ATM IWU, or ATM T1/E1 module. You must first configure an ATM CS, ATM IWU, or ATM T1/E1 module in the switch before you set the clock source. See the *B-STDX, CBX, and GX Switch Module Configuration Guide* for more information. |
| Console Authen | Select this option to set password protection for the switch, and continue with "Defining Console Authentication" on page 5-23. Console authentication allows you to assign a password (other than *cascade*) to each switch. |
| Bulk Stats | Select this option to access switch attributes for ATM bulk statistics. See the *NavisXtend Statistics Server User's Guide* for details. |
| RIP Configuration | Select this option to configure Routing Information Protocol (RIP) parameters for a switch running IP services. See the *B-STDX and CBX IP Services Configuration Guide* for more information. |
| Trap Config | Select this option to clear contact alarm relays that are used to notify you of switch malfunctions. You can also use this function to disable the dry contact alarm relay function for this switch. See the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* for information about these alarms. |
| Time Server | Select this option to define from one to three reference-time servers to be used as clock synchronization sources for the switches in your network. See "Defining Time Servers" on page 5-28 for more information. |
| Set Switch Time | Select this option to configure the switch's time. |
| Switch Control | Select this option to enable overload control for a switch, and continue with "Enabling Overload Control" on page 5-30. |

7. When you have finished setting switch attributes, choose Apply to set the parameters and Close to close the dialog box.

## Defining Additional Network Management Stations

Lucent switches support a maximum of 256 Network Management Station (NMS) entries and 256 NMS paths per node. The NMS Entries option (see Table 5-10 on page 5-17) enables you to configure additional NMS workstations for read/write or read-only access to the same switch. Through NMS workstations, you can communicate with switches on the network via SNMP commands.

As you configure additional switches on your network map, use the Set Switch Attributes option to enter an Ethernet IP address, if applicable. Always leave the Telnet Session parameter enabled, so that each switch can accept remote terminal connections for troubleshooting purposes.

To define an NMS entry, enter the IP address of each workstation and use the same community name for each NMS you define. The file `cascadeview.cfg` in the `/opt/CascadeView/etc` directory provides the default read/write community name.

To define an additional NMS:

1. From the Set Switch Attributes dialog box (see Figure 5-7 on page 5-14), choose NMS Entries from the Select:Options option menu, and then choose Set. The Set NMS Entries dialog box appears, displaying the current NMS entries (see Figure 5-8).

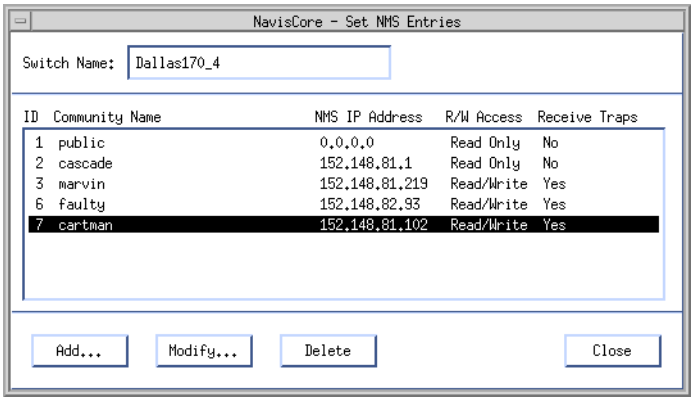



**Figure 5-8. Set NMS Entries Dialog Box**

2. Choose Add. The Add NMS Entry dialog box appears (see Figure 5-9).

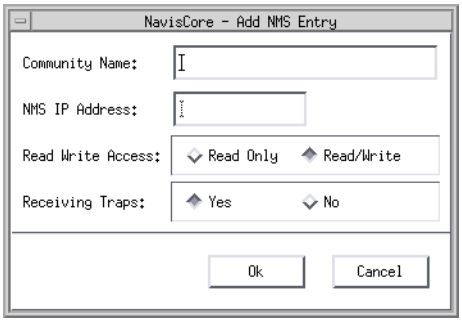



**Figure 5-9. Add NMS Entry Dialog Box**

3. Complete the fields described in Table 5-11.

**Table 5-11. Add NMS Entry Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Community Name | Enter the community name. |
| NMS IP Address | Enter the NMS IP address for the target NMS workstation. |
| Read Write Access | Select the access rights for this NMS. Options include:<br>*Read/Write* – (default) Enables you to monitor and configure network maps from this NMS.<br>*Read Only* – Enables you to monitor network functions from this NMS. |
| Receiving Traps | Select *Yes* (the default) to enable the NMS to receive trap-alarm conditions that notify the operator of events taking place on the switch. Select *No* to prevent the NMS from receiving traps. |

4. Choose OK to set the parameters. Repeat step 1 through step 3 for each NMS you want to add. The Set NMS Entries dialog box reappears with the new NMS confirmation.

5. (*Optional*) Choose Modify to modify an NMS entry or Delete to delete an NMS entry.

**Note –** To modify the community name, you must first change it on the Add NMS Entry dialog box, and then edit the CV_SNMP_READ_WRITE_ COMMUNITY value in the `cascadeview.cfg` file. For information about editing the `cascadeview.cfg` file, see Appendix A, "NavisCore Configuration File."

# Defining Reroute Tuning

*Reroute Tuning* enables the switch to rapidly redistribute PVCs across trunks, based on Open Shortest Path First (OSPF) updates and cost metrics. In large networks with thousands of PVCs, rerouting circuits while re-establishing a trunk is very time-consuming.

The Tuning feature enables you to tune the rate of reroute requests per switch by defining the number of reroute requests during a single reroute batch request. You can also set the time delay (in seconds) that the switch waits between each batch request.

**Note –** When you define individual circuits, you must enable the Reroute Balance parameter for circuits to benefit from the tuning parameters you define for a switch.

## Types of Load Balancing

Reroute tuning enables you to perform both intra-area and inter-area load balancing.

**Intra-area load balancing** — Enables the switch to reroute a circuit, restricted to a single OSPF area, to a path that provides more bandwidth than the current path. You can select a load-balancing algorithm that configures the switch to aggressively search for an alternate path with greater bandwidth.

**Inter-area (end-to-end) load balancing** — Enables the switch to reroute a circuit that spans multiple OSPF areas to an inter-area path of a lesser cost. To avoid false reroute attempts, the current path will not be released until a new path becomes available. The maximum number of inter-area reroute attempts per time period is one circuit (per module) every three minutes. See "Configuring Circuit Reroute-tuning Parameters" on page 5-22 for information on how to enable and disable inter-area load balancing.

## Load Balancing Example

If a switch has four modules, each with 50 intra-area PVCs and 1 inter-area PVC, and you set the reroute count to five circuits and the reroute delay to 50 seconds, the switch performs a batch reroute consisting of the first five intra-area circuits on each module (for a total of 20 circuits). The switch then waits 50 seconds before it begins to reroute the next batch of 20 intra-area circuits. Every 180 seconds (three minutes), the switch attempts a reroute for one inter-area circuit from each module (for a total of four inter-area circuits).

**Note –** Under normal circumstances, the reroute ratio should be no greater than one circuit (reroute count) in 10 seconds (reroute delay). A higher reroute ratio (for example, two circuits in 10 seconds) can cause network instability, and circuits may bounce from one trunk to the next indefinitely. To balance a set of circuits after a trunk failure, use the above example to set the reroute count to five circuits, and the reroute delay to 50 seconds.

## Configuring Circuit Reroute-tuning Parameters

To set the tuning parameters:

1. From the Set Switch Attributes dialog box (see Figure 5-7 on page 5-14), choose Tuning from the Select:Options option menu, and then choose Set. The Set Switch Tuning Attributes dialog box appears (see Figure 5-10).

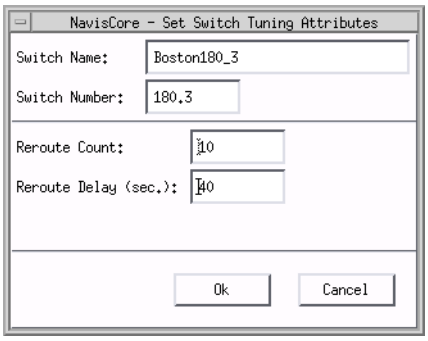



**Figure 5-10. Set Switch Tuning Attributes Dialog Box**

2. Complete the fields described in Table 5-12.

**Table 5-12. Set Switch Tuning Attributes Fields**

| Field | Action/Description |
|---|---|
| Reroute Count | Enter a value between 0 (zero) and 64. The reroute count specifies the number of intra-area circuits from each module that can issue reroute requests in a single batch. The default is 1 circuit.<br>***Note:*** *This value applies to intra-area load balancing only. The reroute count for inter-area load balancing is always set to 1.* |
| Reroute Delay (sec.) | Enter a value between 1 and 32767 (in seconds). Choose an even value to enable inter-area load balancing, or choose an odd value to disable it.<br>The reroute delay represents the time delay (in seconds) that each module in the switch waits between reroute batch requests. This parameter controls the rate at which each module polls the virtual circuits for a better route. The default value of 180 seconds is a very conservative setting for normal operation. |

3. Choose OK to return to the Set Switch Attributes dialog box.
4. Choose Apply to set the parameters and Close to exit the dialog box.

# Defining Console Authentication

Console authentication is a domain security feature that is handled by the Remote Authentication Dial-In User Service (RADIUS) protocol. It is used to authenticate users connecting to a Lucent-switch console port through remote dial-up and Telnet access.

## Setting Up a RADIUS Server

To enable RADIUS authentication, you must have an active RADIUS server that the switch can reach through the User Datagram Protocol (UDP) or IP. If you cannot reach the RADIUS Server when you log in to the switch console port, use the shared-secret password for the login name and login password. (You also use the shared-secret password for console debug mode.)

The RADIUS server's database must contain the following information:

- User authentication information (for example, username and password)
- Switch information for all switches initiating authentication requests (for example, IP address or host name)
- Shared secret (password) for each switch that initiates authentication requests

## Adding an Authentication Domain

You can add an authentication domain and shared secret for each switch in the network. You set the RADIUS server parameters, such as the server's domain IP address, for each authentication domain server. You can also designate backup servers (Server 2 and Server 3) in the event that Server 1 becomes unreachable or inactive.

To add the authentication domain and configure the RADIUS server parameters:

1. Select a switch on the network map.
2. From the Administer menu, select Lucent Parameters ⇒ Set All Authentication Domains. The Set All Authentication Domains dialog box appears (see Figure 5-11).

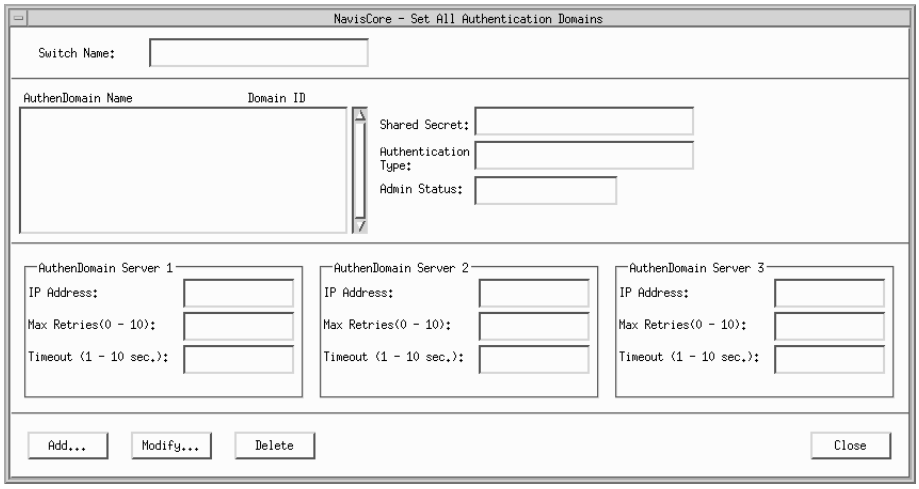



**Figure 5-11. Set All Authentication Domains Dialog Box**

3. Choose Add. The Add AuthenDomain Domain dialog box appears (see Figure 5-12).

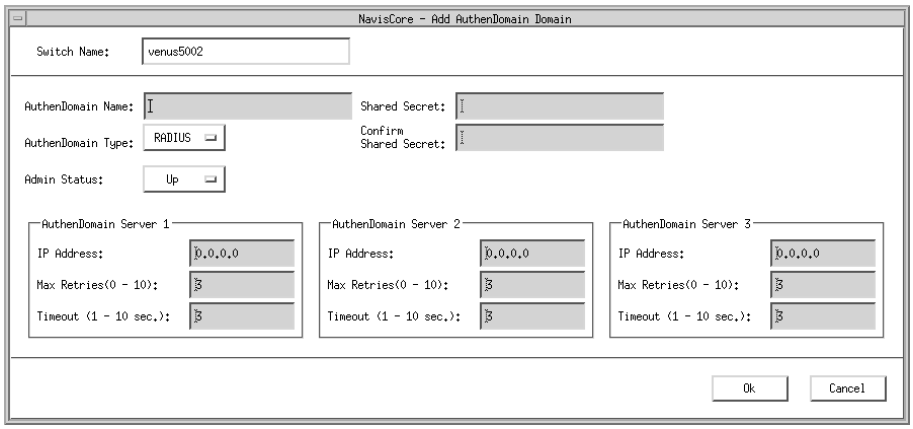



**Figure 5-12. Add AuthenDomain Domain Dialog Box**

4. Complete the fields described in Table 5-13. Be sure to complete the AuthenDomain Server fields for Server 1, Server 2, and Server 3.

**Table 5-13. Add AuthenDomain Domain Dialog Box Fields**

| Field | Action/Description |
|---|---|
| AuthenDomain Name | Enter an alphanumeric name (up to 32 characters) for this domain. |
| AuthenDomain Type | This field defaults to RADIUS and cannot be changed. |
| Shared Secret | Enter an alphanumeric shared secret (password) for this switch and all RADIUS Servers in this domain. |
| Confirm Shared Secret | Retype the alphanumeric shared secret (password) exactly as you entered it in the Shared Secret field. |
| Admin Status | Set the admin status to *Up* (default) to allow immediate access.<br>Set the admin status to *Down* to disable the server. This does not disable console authentication. |

**Table 5-13. Add AuthenDomain Domain Dialog Box Fields (Continued)**

| Field | Action/Description |
|---|---|
| **AuthenDomain Server 1, Server 2, and Server 3** | |
| IP Address | Enter the IP address for this server. |
| Max Retries (0-10) | Enter the maximum number of attempts (retries) the server makes to authenticate this user. The default is 3 retry attempts. |
| Timeout (1-10 sec) | Specify the duration, in seconds, of inactivity before the switch retries the authentication request or sends the request to the next server. The default is 3 seconds.<br>Indicates the number of seconds the server waits before sending an authentication request if there was no response from the previous request. If a single server is used, it will retry the request. If multiple servers are defined, the request is sent to the next server. |

5. Choose OK to set the authentication parameters. The Set All Authentication Domains dialog box reappears.
6. Choose Close to return to the network map.
7. Enable the authentication parameter described in "Configuring Console Authentication" on page 5-27.

## Configuring Console Authentication

You can use the Console Authentication option to enable and disable authentication on the selected switch.

To enable the authentication parameters:

1. From the Set Switch Attributes dialog box (see Figure 5-7 on page 5-14), choose Console Authen from the Select:Options option menu, and then choose Set. The Console Authen dialog box appears (see Figure 5-13). This dialog box lists all configured authentication domain names for this switch.

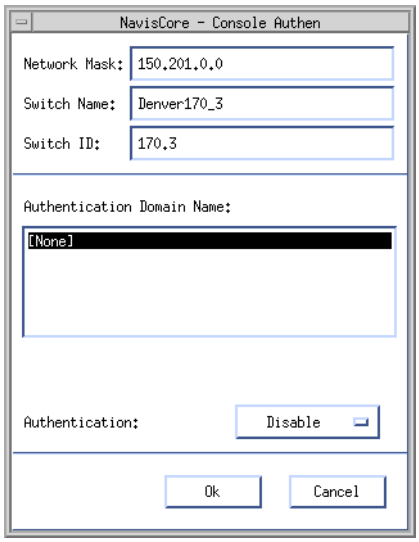



**Figure 5-13. Console Authen Dialog Box**

2. Select a domain from the list.
3. Choose *Disable* (default) or *Enable* to set the authentication parameter.
4. Choose OK to save the authentication parameters.

# Defining Time Servers

NavisCore and the Network Timing Protocol (NTP) enable you to define from one to three reference-time servers. A reference-time server is used as a clock-synchronization source for the switches in your network.

Since a reference-time server is not required, and not all switches have configured reference-time servers, you should continue to use a nightly `cron` job to set all the switch clocks. When modifying or adding a reference-time server, the time sent to the server will be the time on the NMS workstation.

To configure a reference-time server:

1. From the Set Switch Attributes dialog box (see Figure 5-7 on page 5-14), choose Time Server from the Select:Options option menu, and then choose Set. The Configure Reference Time Servers dialog box appears (see Figure 5-14).

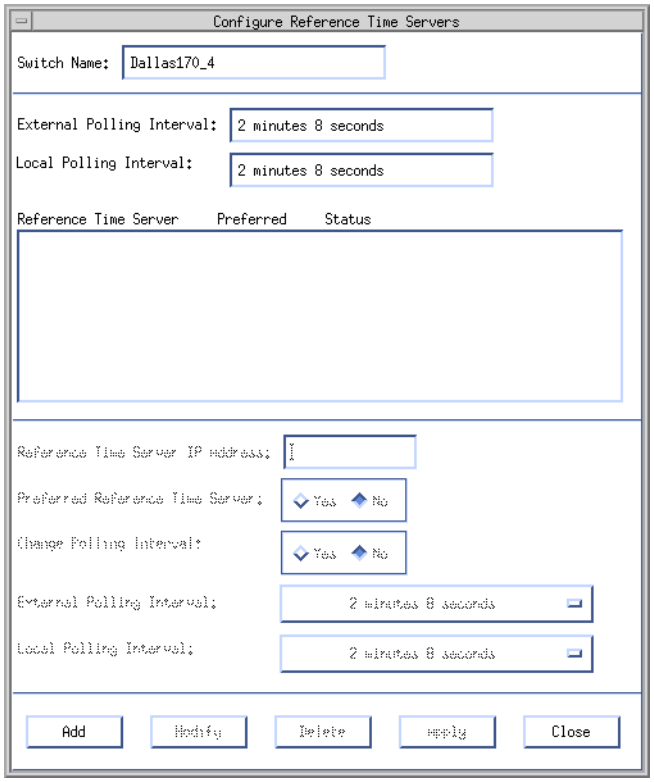



**Figure 5-14. Configure Reference Time Servers Dialog Box**

2. Choose Add. The Configure Reference Time Servers dialog box displays the fields shown in Figure 5-15.

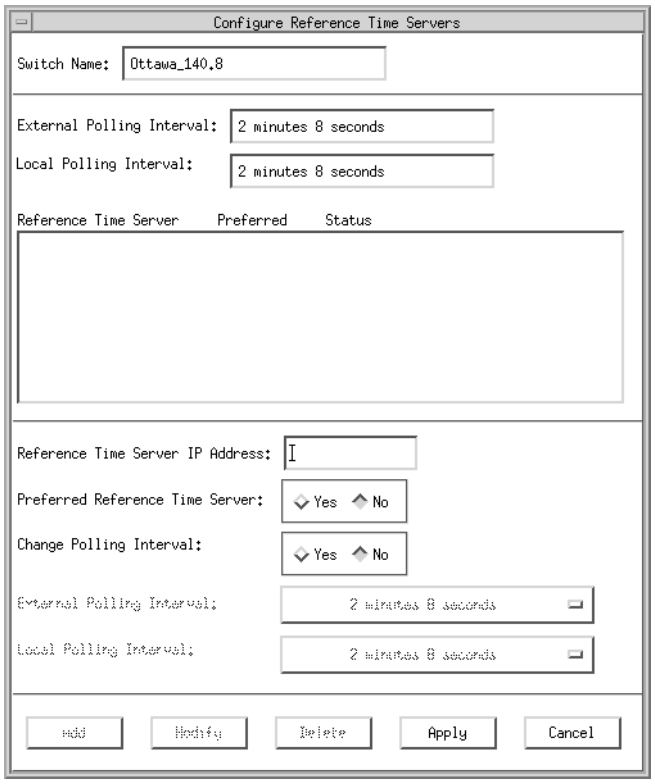



**Figure 5-15. Configure Reference Time Servers Dialog Box With Add Selected**

3. Complete the fields described in Table 5-14.

**Table 5-14. Configure Reference Time Servers Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Reference Time Server IP Address | Enter the IP address of the reference-time server. |
| Preferred Reference Time Server | Select *Yes* to make this server the preferred reference-time server. If you do not select a preferred reference-time server, the switch will select one for you. |
| Change Polling Interval | Select *Yes* to change the polling interval. Doing so will enable the external and local polling intervals. |
| External Polling Interval | Select the rate, in seconds, at which each individual reference-time server will be polled. This setting applies to all reference-time servers. |
| Local Polling Interval | Select the rate (in seconds) at which each I/O module and redundant processor module polls the active processor module for time. This setting applies to one switch. |

4. Choose Apply. Repeat step 1 through step 4 for each reference-time server you want to configure.
5. (*Optional*) Choose Modify to modify a reference-time server entry or Delete to delete a reference-time server entry.

## Enabling Overload Control

When the Overload Control feature is enabled, the PVC Establishment Rate Control feature varies the rate between a minimum of 20 calls/sec and the maximum allowed by the card without going into overload. Having Overload Control enabled on the call initiating switch sets the upper limit for the PVC re-establishment rate. For more details, see the *B-STDX and CBX Frame Relay Services Configuration Guide* or the *B-STDX, CBX, and GX ATM Services Configuration Guide*.

To enable overload control for a switch, perform the following tasks:

1. From the Set Switch Attributes dialog box (see Figure 5-7 on page 5-14), select Switch Control from the Select: Options (option menu) and choose Set.

   The Set Switch Control Attributes dialog box appears (see Figure 5-16 on page 5-31).

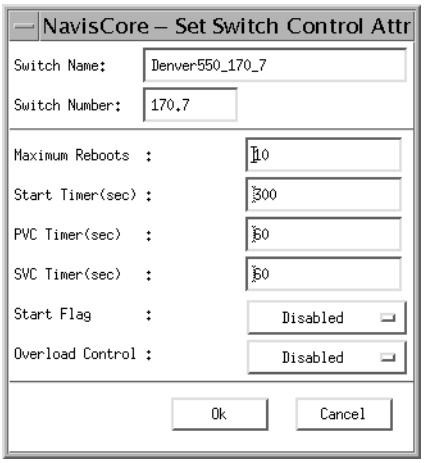



**Figure 5-16. Set Switch Control Attributes Dialog Box**

2. In the Overload Control field, select *Enabled*.
3. Choose OK.

# Deleting a Switch Configuration From the Database

To delete a switch configuration from the database, you must first delete the entire configuration associated with the switch (for example, its logical ports, trunks, and circuits). For assistance, contact the Technical Assistance Center (TAC). For contact information, see "Technical Support" on page xxv.

Follow these steps to delete a switch configuration from the database:

1. Delete all PVCs defined for the switch.
2. Delete all trunk connections for the switch.
3. Delete all logical ports and physical ports on the switch.
4. Delete all I/O module configurations on the switch.
5. Delete the switch icon from the map.

# Configuring Processor and I/O Modules

After you set the switch attributes, you must configure the processor module and input/output (I/O) modules in NavisCore. You can also configure a *redundant standby module*. For instructions, see the *B-STDX, CBX, and GX Switch Module Configuration Guide* or the applicable user's guide for your specific module.

6

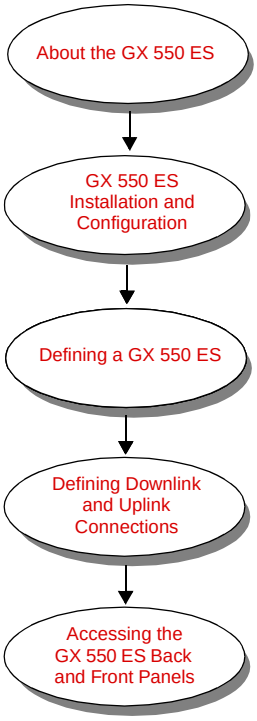
# Setting GX 550 ES Attributes

This chapter describes how to set GX 550 ES (Extender Shelf) attributes. The GX 550 ES is a service and physical-port extension for the GX 550 Multiservice WAN switch. The GX 550 ES allows the high-speed GX 550 to support high-density, lower-speed ATM and time division multiplexing (TDM) interfaces.

**Note –** The product formerly called the GX 250 Multiservice Extender is now referred to as the GX 550 ES in the NavisCore NMS menus and dialog boxes.

**Note –** The NavisCore NMS may display features that are not available in this release. For a complete list and explanation of each of the features that are supported in this release, see the NavisCore Software Release Notice.

This chapter describes the following topics:



# About the GX 550 ES

The GX 550 ES (Extender Shelf) is managed as an extension of the GX 550 switch via a standard multimode fiber cable that connects a GX 550 ES downlink phy module (installed in the GX 550 switch) to an uplink phy module (installed in the GX 550 ES). Therefore, there is no direct NMS connection for the GX 550 ES. Instead, you can view the GX 550 ES in NavisCore as an extended GX 550 phy module, displaying the ports within the extender and allowing for card and port configuration.

The GX 550 ES consists of two half shelves, half shelf A and half shelf B. Each half shelf:

- Supports up to three active transport modules plus one redundant transport module and two uplink modules
- Has the same card capacity
- Operates independently of the other shelf

The extender can be configured as fully redundant, providing continued operation after other equipment failures.

This chapter assumes you have already installed and connected the GX 550 ES to the associated GX 550. See the *GX 550 Multiservice WAN Switch Hardware Installation Guide* for information.

The next section, "GX 550 ES Installation and Configuration Overview," outlines the steps for installing and configuring the GX 550 ES.

# GX 550 ES Installation and Configuration Overview

This section gives an overview of the steps for installing and configuring a GX 550 ES.

## Installing a GX 550 ES

To install a GX 550 ES, perform the following for each half shelf that you are connecting to a GX 550:

1. Install the uplink and uplink phy (physical interface) module pair into the GX 550 ES.
2. Install a BIO module and downlink phy module into the GX 550.
3. Install up to three active ATM DS3 CE or ATM DS3 transport modules (each consisting of one ATM DS3 CE transport module and one ATM DS3 CE phy module) and one redundant ATM DS3 CE transport module (each consisting of one ATM DS3 CE transport module and one redundant ATM DS3 CE phy module) into the GX 550 ES.
4. Connect the GX 550 ES to the GX 550.

## Configuring a GX 550 ES

To configure a GX 550 ES in NavisCore:

1. Configure the card and physical port attributes for the downlink module in the GX 550. See the *B-STDX, CBX, and GX Switch Module Configuration Guide* for information.
2. Define the GX 550 ES and the downlink and uplink connections as described in "Defining a GX 550 ES" on page 6-4 and "Defining Downlink and Uplink Connections" on page 6-6.
3. Access the GX 550 ES back and front panels as described in "Accessing the GX 550 ES Back and Front Panels" on page 6-9.
4. Configure the card and physical port attributes for the GX 550 ES ATM DS3 CE transport module. See the *B-STDX, CBX, and GX Switch Module Configuration Guide* for information.
5. Configure the logical port attributes for the GX 550 ES ATM DS3 CE transport module. See the *B-STDX, CBX, and GX ATM Services Configuration Guide* for information.
6. Configure circuits as necessary. See the *B-STDX, CBX, and GX ATM Services Configuration Guide* for information.

# Defining a GX 550 ES

Before you configure the ATM DS3 CE transport modules on the GX 550 ES, you must define the GX 550 ES, and then define the connection between the uplink module in the GX 550 ES and the downlink module in the GX 550.

To define a GX 550 ES:

1. From the Administer menu, select Lucent Parameters ⇒ Set 550ES Parameters ⇒ Set All 550ESs. The Set All 550ESs dialog box appears (see Figure 6-1).

**Note** – If you are not logged on, select NavisCore ⇒ Logon from the Misc menu. Enter your operator password.

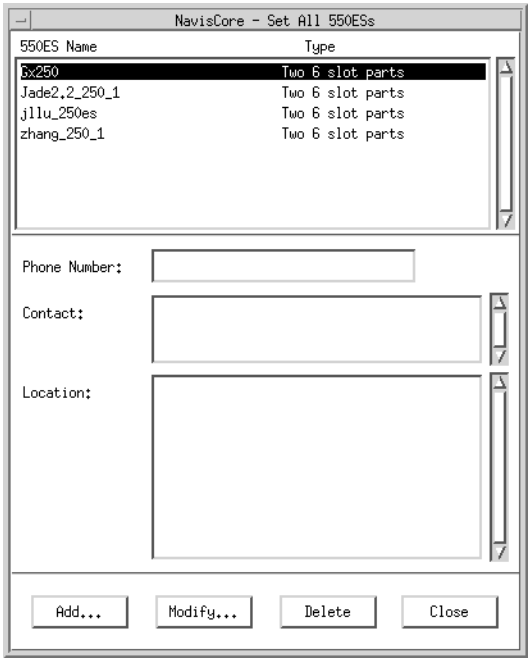



**Figure 6-1. Set All 550ESs Dialog Box**

2. Choose Add. The Add 550ES dialog box appears (see Figure 6-2).

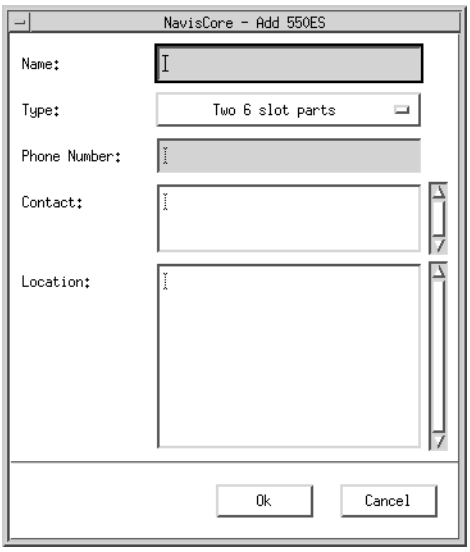



**Figure 6-2. Add 550ES Dialog Box**

3. Complete the fields described in Table 6-1.

**Table 6-1. Add 550ES Dialog Box Fields**

| Field | Action |
|---|---|
| Name | Enter a unique name for the GX 550 ES. |
| Type | Select the type of GX 550 ES. Currently, the only option is: *Two 6 slot parts*. |
| Phone Number | Enter the phone number of the person responsible for extender operations. |
| Contact | Enter the name of the person responsible for extender operations. |
| Location | Enter the extender shelf's physical location. |

4. Choose OK to enter the GX 550 ES information.
5. Choose Close to close the dialog box.

# Defining Downlink and Uplink Connections

To configure the connection between the downlink and uplink modules:

1. From the Administer menu, select Lucent Parameters ⇒ Set 550ES Parameters ⇒ Set All Uplink Connections. The Set All Switch and 550ES Links dialog box appears (see Figure 6-3).

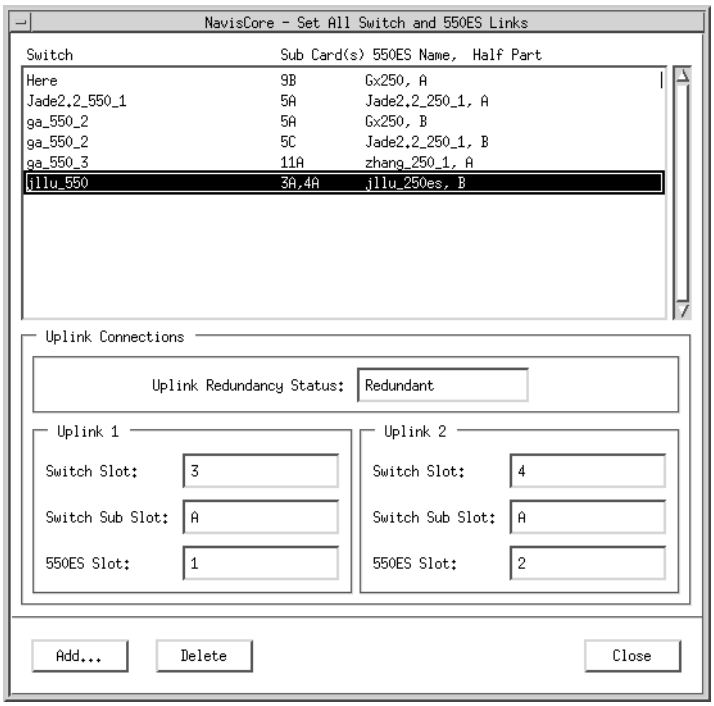



**Figure 6-3. Set All Switch and 550ES Links Dialog Box**

**2.** Choose Add. The Add a Switch and 550ES Link dialog box appears (see Figure 6-4).

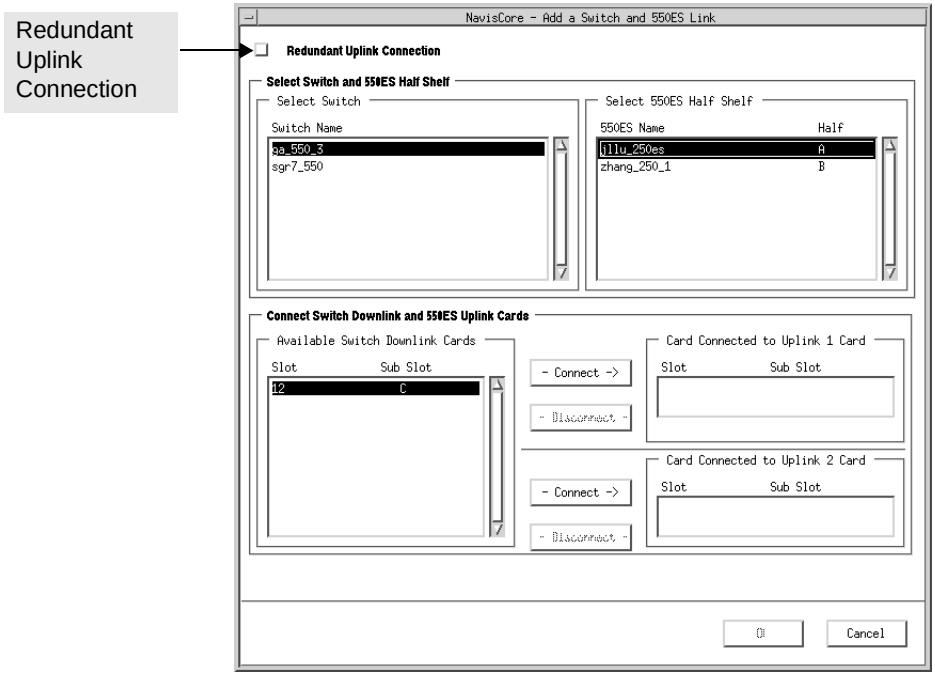



**Figure 6-4. Add a Switch and 550ES Link Dialog Box**

3. Complete the fields described in Table 6-2:

**Table 6-2. Add a Switch and 550ES Link Dialog Box Fields**

| Field | Action/Description |
|---|---|
| Redundant Uplink Connection | (*Optional*) Choose this field to create a redundant uplink connection for a GX 550 ES. When you choose this field, the Select Switch list box displays the switches for which you have configured downlink modules with Fast APS 1+1.<br>***Note:*** *Before you create a redundant uplink connection for a GX 550 ES, you must configure redundant downlink physical ports. See the* B-STDX, CBX, and GX Switch Module Configuration Guide *for information.* |
| Select Switch | Select the GX 550 to which you are connecting the GX 550 ES half shelf. The Available Switch Downlink Cards list box displays the number of the slot and letter of the sub slot in which the downlink module resides. |
| Select 550ES Half Shelf | Select the GX 550 ES half shelf to which you are connecting the GX 550. |
| Available Switch Downlink Cards | Select a downlink module from the list box and do one of the following:<br>• Choose one of the two - Connect -> buttons to connect the downlink module to Uplink Card 1 or Uplink Card 2 of the GX 550 ES half shelf.<br>• Choose one of the two <- Disconnect - buttons to disconnect the downlink module from Uplink Card 1 or Uplink Card 2 of the GX 550 ES half shelf. |
| Card Connected to Uplink 1 Card | Displays the slot number and sub slot letter of the downlink module connected to Uplink Card 1 of the GX 550 ES half shelf. |
| Card Connected to Uplink 2 Card | Displays the slot number and sub slot letter of the downlink module connected to Uplink Card 2 of the GX 550 ES half shelf. |

4. Choose OK to connect the downlink module with the uplink module. The Set All Switch and 550ES Links dialog box reappears with the new link confirmation.
5. Choose Close to close the dialog box.

# Accessing the GX 550 ES Back and Front Panels

To access the GX 550 ES back and front panels:

1. On the network map, select the GX 550 switch object that is connected to a GX 550 ES.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The GX 550 Switch Back Panel dialog box appears (see Figure 6-5).

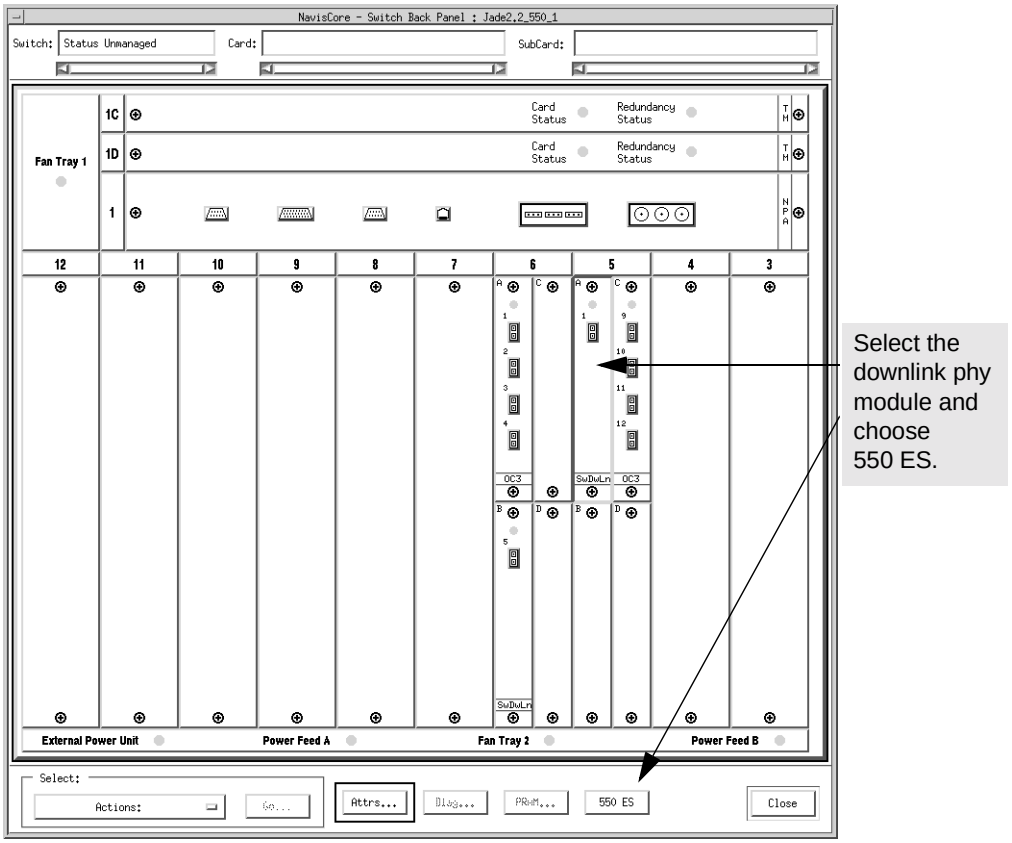



**Figure 6-5. Switch Back Panel Dialog Box (GX 550)**

3. Select the downlink module (labeled SwDwLn) and choose 550 ES.

   The 550 ES Back Panel dialog box appears (see Figure 6-6).

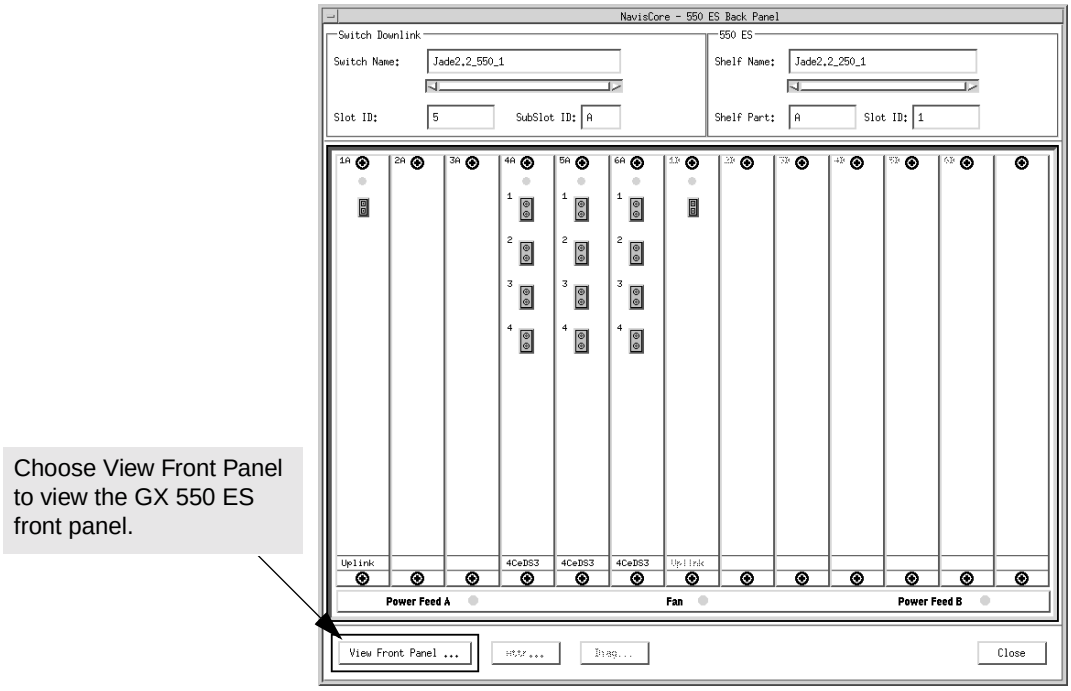



**Figure 6-6. 550 ES Back Panel Dialog Box**

Table 6-3 describes the buttons and Table 6-4 describes the fields on the 550 ES Back Panel dialog box.

**Table 6-3. 550 ES Back Panel Dialog Box Buttons**

| Button | Description |
|---|---|
| View Front Panel | Displays the GX 550 ES front panel (see Figure 6-7 on page 6-12). |
| Attr | Enables you to configure GX 550 ES modules. See the *B-STDX, CBX, and GX Switch Module Configuration Guide* for more information. |
| Diag | Accesses diagnostics for a selected module. See the *B-STDX, CBX,and GX Switch Diagnostics User's Guide* for more information. |
| Close | Closes the GX 550 ES back panel. |

**Table 6-4. 550 ES Back Panel Dialog Box Fields**

| Field | Description |
|---|---|
| Switch Name | Displays the name of the GX 550 switch that is connected to the GX 550 ES half shelf. |
| Slot ID | Displays the number of the GX 550 slot in which the downlink module resides. |
| Sub Slot ID | Displays the letter of the GX 550 sub slot in which the downlink module resides. |
| Shelf Name | Displays the name of the GX 550 ES half shelf that is connected to the GX 550 switch. |
| Shelf Part | Displays the portion of the GX 550 ES (either A or B) that is connected to the GX 550 switch. |
| Slot ID | Displays the GX 550 ES slot number in which the uplink module resides. |

**Note –** To configure the module (card) and physical port attributes for the transport modules, see the *B-STDX, CBX, and GX Switch Module Configuration Guide*.

**Note –** To configure the logical ports for the transport modules and the necessary circuits, see the *B-STDX, CBX, and GX ATM Services Configuration Guide*.

**4.** To display the GX 550 ES front panel, choose View Front Panel. The 550 ES Front Panel dialog box appears (see Figure 6-7). For information about the status light indicators on the switch front panel, see the *B-STDX, CBX, and GX Switch Diagnostics User's Guide*.

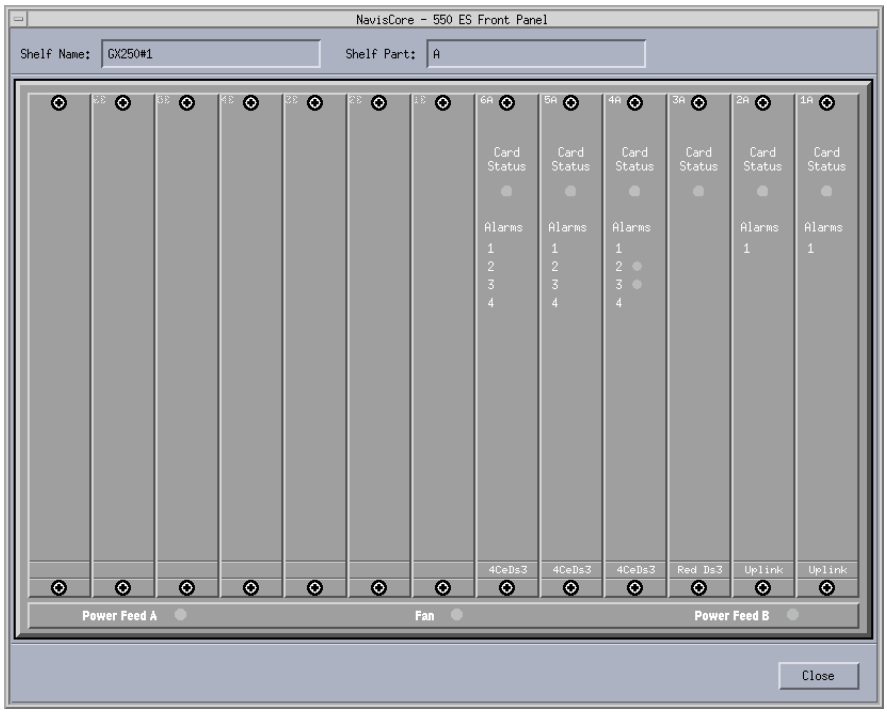


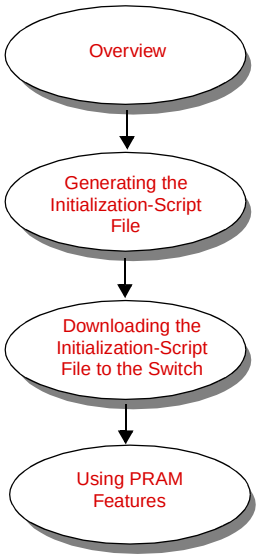

**Figure 6-7. 550 ES Front Panel Dialog Box**

7

# Downloading the Configuration

This chapter describes how to download information to the switch and establish Network Management Station (NMS)-to-switch communications. You can use these procedures to activate a new switch or to reconfigure an existing switch.

This chapter describes the following topics and tasks:



# Overview

After you define the switch configuration through NavisCore, you must download a configuration to the switch and synchronize the switch. Follow these steps:

1. Download configuration information to the switch with either of the following methods:
   - "Generating an Initialization File and Downloading It To the Switch" on page 7-2
   - "Using the Console Install Program to Directly Enter Configuration Information into the Switch" on page 7-8.
2. Synchronize the switch from the NMS (see "Synchronizing PRAM" on page 7-54).

# Generating an Initialization File and Downloading It To the Switch

This section describes how to generate an initialization file from NavisCore and download it to the switch with a utility or terminal emulation software.

## Overview

Follow these steps to generate and download a switch configuration file:

1. Create the initial switch configuration by generating an initialization-script file from the NMS (see "Generating the Initialization-Script File" on page 7-2.)
2. Download the initialization-script file to the switch (see "Downloading the Initialization-Script File to the Switch" on page 7-4).

After you have downloaded the initialization-script file to the switch, synchronize the switch from the NMS (see "Synchronizing PRAM" on page 7-54).

## Generating the Initialization-Script File

The Initialize Switches feature generates an initialization-script file that contains the SNMP SET commands for each configuration. The initialization-script file is then used to load the initial switch configuration or to reload the configuration if the original configuration is erased or destroyed. The initialization-script file, `switchname.init`, is stored in the `/var/CascadeView/initFiles` directory.

**Note –** To download a new initialization-script file to a switch that already contains a configuration, you must first clear the Parameter Random Access Memory (PRAM). See "Clearing Switch PRAM" on page 7-64 for instructions.

To generate the initialization-script file:

1. Select a switch from your network map.
2. From the Misc menu, select NavisCore ⇒ Logon. Enter your operator password and choose OK.
3. From the Administer menu, select Lucent Switches ⇒ Initialize Switches. The Initialize Switches dialog box appears (see Figure 7-1).

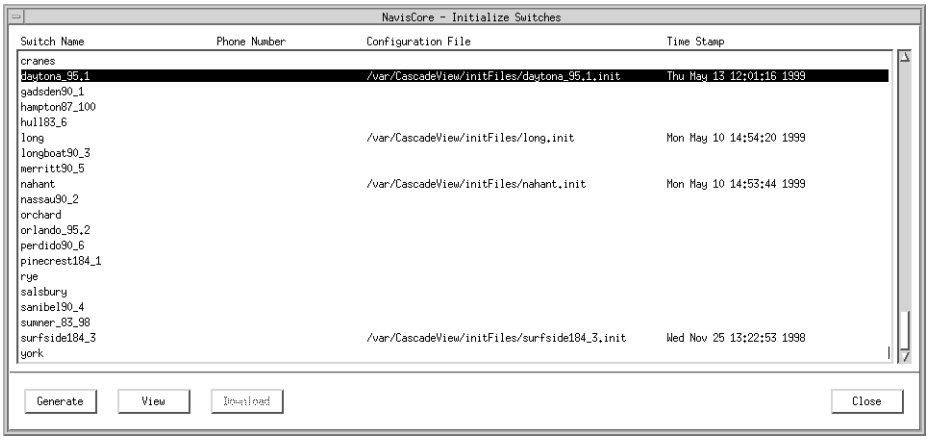



**Figure 7-1. Initialize Switches Dialog Box**

4. From the Switch Name list box, select the switch you want to initialize.
5. Choose Generate to create the initialization-script file containing the SNMP SET commands. The initialization-script file will get a new date and time stamp each time the file is updated. This is the file you need to download to the switch.
6. Repeat step 4 and step 5 for each switch you need to initialize. Proceed to "Viewing the Initialization-Script File" on page 7-4.

# Viewing the Initialization-Script File

To view the initialization-script file before downloading it to the switch:

1. From the Initialize Switches dialog box, highlight the desired switch.
2. Choose View. The system displays the file contents similar to the example in Figure 7-2.

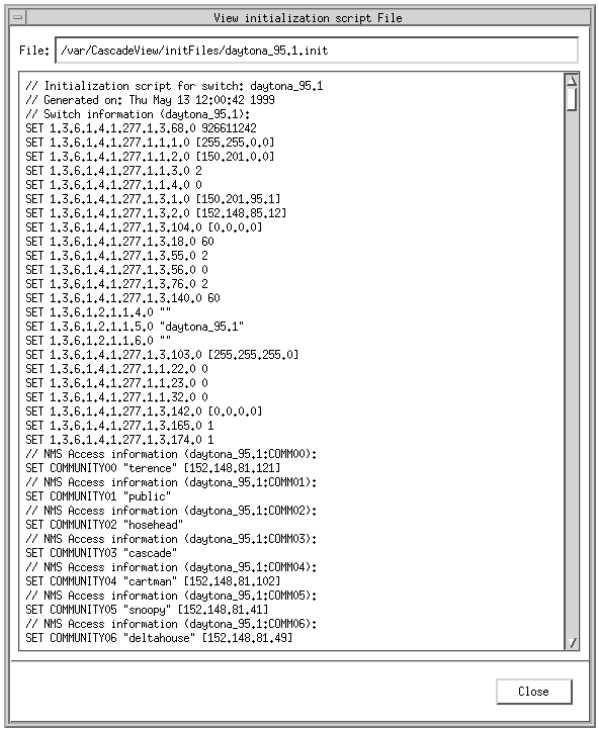



**Figure 7-2. View Initialization Script File Dialog Box**

3. When you finish viewing the file, choose Close to return to the Initialize Switches dialog box.
4. Proceed to "Downloading the Initialization-Script File to the Switch" on page 7-4.

# Downloading the Initialization-Script File to the Switch

After you have generated and viewed the initialization-script file, you can download it to the switch using any of the following methods:

**`Tip` Utility** — The Solaris `Tip` program. See "Using the Tip Utility" on page 7-5 for instructions.

**Terminal Emulation Software** — PC in terminal emulation software. See "Using Terminal Emulation Software" on page 7-7 for instructions.

**Note –** Lucent recommends that you configure management permanent virtual circuits (MPVCs) after you download the NMS initialization-script to initialize the switch. If you configure MPVCs before you initialize the switch, the NMS searches the entire circuit table for the presence of MPVCs. Generating the initialization-script file can take 10 minutes or more, depending on the size of the circuit table.

## Using the Tip Utility

Before you use the Solaris `Tip` utility to download the initialization-script file, verify the following:

- The console cable connects to serial port A on the back of your workstation. See your workstation hardware guide for information about locating serial port A.
- The hardwire entry device (dv) is set for `/dev/cua/a`.
- The hardwire entry in the `/etc/remote` file specifies 19200 bps. For example:

```
hardwire:\
:dv=/dev/cua/a:br#19200:el=^C^S^Q^U^D:ie=%$:oe=^D
```

**Note –** In UNIX, ^D means press D while holding down the Ctrl key.

### *Accessing the Switch*

To access the switch:

1. In an Xterm window, enter **`su - root`** and enter the root login and password.
2. Enter **`tip hardwire`**.

   You should get a `connected` message.
3. Enter **`~#`**.

   This command sends a break character to the switch. The console prompt appears.
4. Log in to the switch.
5. At the > prompt, enter the following:

```
enable debug
password: <your debug password>
```

   If you do not know your debug password, contact the Technical Assistance Center (TAC) for help. For contact information, see "Technical Support" on page xxv.

6. At the ## prompt, enter the following:

   **`## reset pram all`**

7. At the following prompt, enter **YES**.

   `Reset PRAM on all cards? Are you sure (YES/NO)?`

8. At the ## prompt, enter the following:

   **`## reset system`**

9. At the following prompt, enter **YES**.

   `Are you sure (YES/NO)?`

   The system displays the following message:

   `resetting switch, stand by...`

   When the switch comes up (in approximately one to two minutes), the >> prompt appears. This prompt indicates that you successfully erased PRAM and the switch can accept a new initialization-script file (see "Downloading the Initialization File" on page 7-6). Before you download the file, verify that all I/O modules are up by issuing a `show card` console command.

### *Downloading the Initialization File*

The initialization-script file (executable) is located in `/opt/CascadeView/bin`.

To download the initialization file:

1. Open a second Xterm window.
2. Change the directory by entering:

   **`cd /opt/CascadeView/bin`**

3. Enter the following command (on a single line):

   **`./script-download -in <`*`ifn`*`> -out <`*`ofn`*`>`**
   **`-linedelay <`*`# in 1/10 second`*`>`**

   where:

   **`<`*`ifn`*`>`** is the initialization filename
   (for example, `/var/CascadeView/initFiles/shuttle38.init`)

   **`<`*`ofn`*`>`** is the output filename (for example, `/dev/cua/a`)

   **`<`*`# in 1/10 second`*`>`** is the value of the line delay in 1/10th of a second (for example, use 3 to use a 3/10th-second line delay). Do not use a value less than 1.

4. When you finish, type **~^D** in the Xterm window to exit the `Tip` utility session.

**Note –** Observe the switch on the network map. If the switch remains yellow and does not turn green within a few minutes, see "Synchronizing Switches With the Synchronize PRAM Function" on page 7-56 to synchronize the switch.

### *Correcting Error Messages*

If you have problems and you receive the error message `Couldn't open input file` when you ran script-download, enter the following command to change permissions on the `/dev/cua/a` device (you must have root privilege to change the file permission.):

```
chmod 666 /dev/cua/a
```

## Using Terminal Emulation Software

You can use any commercially-available terminal emulation software package to download the initialization-script file from a PC. The initialization-script file (executable) is located in `/opt/CascadeView/bin`. See the user guide that comes with the emulation software package for specific instructions for downloading text files.

Regardless of the terminal emulation software package you use, make sure to set the following variables:

**Transfer protocol** — Set this to text mode transfer.

**Line delay** - Set this to a minimum of 5/10 seconds per line.

**Character delay -** Set this to a minimum of 5 milliseconds per character.

Before you transfer the configuration text file to the PC, you may need to run the UNIX command, `unix2dos`, on this file.

# Using the Console Install Program to Directly Enter Configuration Information into the Switch

You can use the Console Install program to directly enter the configuration information into the switch that has no PRAM.

For a B-STDX 9000 Multiservice WAN switch, go to "Using the Console Install Program With B-STDX Switches" on page 7-8.

For a CBX 500 Multiservice WAN or GX 550, go to "Using the Console Install Program with CBX and GX Switches" on page 7-30.

After you have entered the configuration information into the switch, synchronize the switch from the NMS (see "Synchronizing PRAM" on page 7-54).

## Using the Console Install Program With B-STDX Switches

You use the `Console Install` program to enable B-STDX 8000/9000 Multiservice WAN switches with no PRAM to communicate with the NMS. Once switch-to-NMS connectivity is established, you can perform the remaining configuration tasks directly from the NMS.

### Accessing the Switch

To access the switch using the `Console Install` program:

1. Establish a connection to the switch console port, using the NMS workstation or a stand-alone PC.
2. At the <*switch name*>## prompt, enter **`Reset Pram all`**.
3. At the `Reset PRAM on all cards. ARE YOU SURE <Yes|No>?` prompt, enter **`YES`**.
4. At the <*switch name*>## prompt, enter **`reset system`**.
5. At the `ARE YOU SURE <Yes|No>?` prompt, enter **`YES`**.

   The system displays the following message:

   ```
   RESETTING SWITCH, STAND BY....
   ```

6. At the >> prompt, enter **`install`**.

7. The system prompts you for the following information. Enter the applicable response and press Return after each entry.

```
Enter the network number:

Enter the network mask:

Select the DLCI addressing scheme (1-Global, 2-Local):

Enter the address of this switch:

Enter the NMS IP address:

Enter the SNMP community:
```

If this is the first switch in the network, use the default internal Internet Protocol (IP) address shown or modify the last octet to represent the actual switch address.

Enter the community name of the NMS used to manage this switch. The default community name is *cascade*.

The system displays a menu of interfaces that the switch can use to communicate with the NMS. Table 7-1 lists the interface menu choices for B-STDX 9000 Multiservice WAN switches and the section in this chapter that provides more information about using each interface.

**Table 7-1. Console Install Interface Menu Choices (B-STDX Switches)**

| Interface | See |
|---|---|
| Direct Ethernet | "Using Direct Ethernet" on page 7-10 |
| Indirect Ethernet | "Using Indirect Ethernet Through a Gateway Device" on page 7-10 |
| Direct Trunk | "Using a Direct Trunk" on page 7-11 |
| ATM OPTimum Cell Trunk | "Using an ATM OPTimum Cell Trunk Through an Adjacent Switch" on page 7-13 |
| Management PVC (single-hop) | "Using a Single-hop MPVC" on page 7-15 |
| Multi-Hop MPVC Over a Direct Trunk | "Using a Multi-hop MPVC Over a Direct Trunk" on page 7-17 |
| Multi-Hop MPVC Over an ATM OPTimum Trunk | "Using a Multi-hop MPVC Over an ATM OPTimum Trunk" on page 7-20 |
| Frame Relay OPTimum Trunk | "Using a Frame Relay OPTimum Trunk Through an Adjacent Switch" on page 7-22 |
| Multi-Hop MPVC Over a Frame Relay OPTimum Trunk | "Using a Multi-hop MPVC Over a Frame Relay OPTimum Trunk" on page 7-24 |
| ATM OPTimum Frame Trunk | "Using an ATM OPTimum Frame Trunk Through an Adjacent Switch (B-STDX Only)" on page 7-27 |

**Table 7-1. Console Install Interface Menu Choices (B-STDX Switches) (Continued)**

| Interface | See |
|---|---|
| Multi-Hop MPVC Over an ATM OPTimum Frame Trunk | "Using a Multi-hop MPVC Over an ATM OPTimum Frame Trunk" on page 7-28 |

8. Select your connection type, then proceed to the applicable section in Table 7-1 for further instructions.

## Using Direct Ethernet

To use direct Ethernet to communicate with the NMS:

1. Enter the IP address of the Ethernet port.
2. Enter the IP address mask of the Ethernet port.

   The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Direct Ethernet
Ethernet Port IP Address 152.148.82.25
Ethernet Port Mask 255.255.0.0
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

## Using Indirect Ethernet Through a Gateway Device

To use indirect Ethernet through a gateway device to communicate with the NMS:

1. Enter the IP address of the Ethernet port.
2. Enter the IP address mask of the Ethernet port.

3. Enter the IP address of the gateway device.

   The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Indirect Ethernet (through a gateway
device)
Ethernet Port IP Address 152.148.82.25
Ethernet Port Mask 255.255.0.0
Gateway IP Address 152.148.82.79
```

4. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

5. When prompted, enter **yes** to reboot the switch.

## Using a Direct Trunk

If you are using a direct trunk to communicate with the NMS, choose from the following module types:

8-port Universal Input/Output (UIO)
4-port 24-channel fractional T1
4-port 30-channel fractional E1
10-port DSX-1
2-port HSSI
Channelized DS3
1-port ATM UNI DS3
1-port ATM UNI E3
1-port ATM IWU OC3c/STM1
1-port ATM CS/DS3
1-port ATM CS/E3
12-port E1
4-port unchannelized T1
4-port unchannelized E1
Channelized DS3-1-0
12-port ATM E1
12-port ATM T1

To use a direct trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.

2. Enter the following configuration information at the prompts:

   a. Enter the slot number of the trunk I/O module.

   b. Enter the port number of the trunk I/O module.

   c. Enter the clock source selection. The system displays the following clock source options:

```
1 DCE
2 Loop Timed DCE
3 DTE
4 Direct Trunk
```

   d. Enter the clock speed in Kbps.

   e. Enter the interface number of the trunk.

   f. Enter the Open Shortest Path First (OSPF) area ID.

   g. Enter **yes** or **no** for the OSPF area 1 backward compatibility.

   h. Enter the interface number of the remote trunk.

   i. Enter the internal IP address of the remote switch.

   The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Direct Trunk (through an adjacent
switch)
Card Type 8 Port UIO
Slot Number of card 3
Port Number 1
Clock Selection DCE
Clock Speed 64
Interface # of the trunk 1
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 1
Internal IP Address of remote switch 152.148.50.2
```

**Note –** You may need to configure additional parameters, depending on the I/O module type you are configuring. Contact the TAC for assistance. For contact information, see "Technical Support" on page xxv.

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

   ```
   Committing

   Preliminary installation completed!

   Use the NMS to complete the full installation.
   ```

4. When prompted, enter **yes** to reboot the switch.

## Using an ATM OPTimum Cell Trunk Through an Adjacent Switch

If you are using an ATM OPTimum cell trunk to communicate with the NMS, choose from the following module types:

1-port ATM UNI DS3
1-port ATM UNI E3
1-port ATM IWU OC3c/STM1
1-port ATM CS/DS3
1-port ATM CS/E3
12-port ATM E1
12-port ATM T1

To use an ATM OPTimum cell trunk through an adjacent switch to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the clock selection (1 - Loop timed, 2 - Internal).
   c. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   d. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   e. Enter the interface number of the trunk.
   f. Enter the OSPF area ID.
   g. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   h. Enter the interface number of the remote trunk.
   i. Enter the internal IP address of the remote switch.
   j. Enter the interface number of the feeder logical port.

**k.** Enter the virtual path identifier (VPI) for the local OPTimum trunk.

The program displays your configuration information:

```
Network Number: 150.201.0.0
Network Mask: 255.255.0.0
DLCI Scheme: Local
Internal Switch IP Address: 150.201.85.4
NMS IP Address: 152.148.81.45
Community String: pike
NMS -> Switch Interface: ATM OPTimum Cell Trunk (through
an adjacent switch)
Card Type: 1-port ATM CS/DS3
Slot Number of card: 5
Port Number: 1
Clock Selection: Internal
Cell Payload Scrambling Mode: Enabled
Cell Mapping Mode: PLCP
Interface # of the trunk: 8
OSPF Area ID: 0.0.0.1
OSPF Area 1 backward compatibility: Yes
Interface # of the remote trunk: 16
Internal IP Address of remote switch: 150.201.85.1
Interface # of the feeder lport: 1
VPI for local OPTimum trunk: 10
```

**3.** When prompted, enter **yes** or **no** to confirm that this configuration is correct. When it receives confirmation, the system displays the following:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Single-hop MPVC

If you are using a single-hop management permanent virtual circuit (MPVC) to communicate with the NMS, choose from the following module types:

8-port UIO
4-port 24-channel fractional T1
4-port 30-channel fractional E1
10-port DSX-1
2-port HSSI
Channelized DS3
1-port ATM UNI DS3
1-port ATM UNI E3
1-port ATM IWU OC3c/STM1
1-port ATM CS/DS3
1-port ATM CS/E3
12-port E1
4-port unchannelized T1
4-port unchannelized E1
Channelized DS3-1-0
12-port ATM E1
12-port ATM T1

To use a single-hop MPVC to communicate with the NMS:

1. Select the module used for the MPVC endpoint or user-to-network interface (UNI) and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the MPVC endpoint or UNI I/O module.
   b. Enter the port number of the MPVC endpoint or UNI I/O module.
   c. Enter the clock selection. The system displays the following clock source options:

```
1 DCE
2 Loop Timed DCE
3 DTE
4 Direct Trunk
```

   d. Enter the clock speed in Kbps.
   e. Enter the interface number of the UNI I/O module.
   f. Enter the link management interface (LMI) protocol. The system displays the following options:

```
1 Disabled
2 LMI Rev1
3 ANSI T1.617 Annex D
4 CCITT Q.933 Annex A
```

**g.** Enter the UNI logical port type (1 - DCE, 2 - DTE, 3 - NNI).

**h.** Enter the Data Link Connection Identifier (DLCI) on the management logical port.

**i.** Enter the DLCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Management PVC (single-hop)
Card Type 8 Port UIO
Slot Number of card 4
Port Number 1
Clock Selection DCE
Clock Speed 1536
Interface # of the UNI 30
LMI Type ANSI T1.617 Annex D
UNI Lport Type DCE
DLCI on the Mgmt Lport 43
DLCI on the UNI 43
```

**3.** When prompted, enter **yes** or **no** to confirm that this configuration is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over a Direct Trunk

If you are using a multi-hop MPVC over a direct trunk to communicate with the NMS, choose from the following module types:

8-port UIO
4-port 24-channel fractional T1
4-port 30-channel fractional E1
10-port DSX-1
2-port HSSI
Channelized DS3
1-port ATM UNI DS3
1-port ATM UNI E3
1-port ATM IWU OC3c/STM1
1-port ATM CS/DS3
1-port ATM CS/E3
12-port E1
4-port unchannelized T1
4-port unchannelized E1
Channelized DS3-1-0
12-port ATM E1
12-port ATM T1

To use a multi-hop MPVC over a direct trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the channel number of the trunk I/O module.
   c. Enter the clock speed in Kbps.
   d. Enter the clock source selection. The system displays the following clock source options:

```
1 DCE
2 Loop Timed DCE
3 DTE
4 Direct Trunk
```

**e.** Enter the link framing selection. The system displays the following link framing options:

```
1 D4
2 ESF-ANSI
3 ESF-ATT-a
4 ESF-NONE
5 E1-CAS-CRC4
6 E1-CAS-NO-CRC4
7 E1-NO-CAS-CRC4
8 E1-NO-CAS-NO-CRC4
9 ESF-ATT-b
10 SF-ANSI
11 E1-UNSTRUCTURED
```

**f.** Enter the zero coding scheme. The system displays the following zero coding options:

```
1 AMI
2 B8ZS
3 HDB3
4 Jammed-bit
5 Nx56
6 Nx64
```

**g.** Enter the interface number of the trunk.

**h.** Enter the OSPF area ID.

**i.** Enter **yes** or **no** for the OSPF area 1 backward compatibility.

**j.** Enter the interface number of the remote trunk.

**k.** Enter the internal IP address of the remote switch.

**l.** Enter the DLCI on the management logical port.

**m.** Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).

**n.** Enter the MPVC remote UNI interface number.

**o.** Enter the switch IP address of the remote MPVC endpoint.

**p.** Enter the DLCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC over
Card Type Channelized DS3
Slot Number of card 4
Channel Number 6
Clock Speed 1536
Clock Selection Internal
Link Framing ESF-ANSI
Zero Coding Scheme B8ZS
Interface # of the trunk 2
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 1
Internal IP Address of remote switch 150.201.82.65
DLCI on the Mgmt Lport 30
MPVC Remote UNI Interface Type Frame-Relay
MPVC Remote UNI Interface # 60
Switch IP Addr of Remote MPVC Endpoint 150.201.82.65
DLCI on the UNI 60
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over an ATM OPTimum Trunk

If you are using a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS, choose from the following module types:

1-port ATM UNI DS3
1-port ATM UNI E3
1-port ATM IWU OC3c/STM1
1-port ATM CS/DS3
1-port ATM CS/E3
12-port ATM E1
12-port ATM T1

To use a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the clock selection (1 - Loop timed, 2 - Internal).
   c. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   d. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   e. Enter the interface number of the trunk.
   f. Enter the OSPF area ID.
   g. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   h. Enter the interface number of the remote trunk.
   i. Enter the internal IP address of the remote switch.
   j. Enter the interface number of the feeder logical port.
   k. Enter the VPI for the local OPTimum trunk.
   l. Enter the DLCI for the management logical port.
   m. Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).
   n. Enter the MPVC remote UNI interface number.
   o. Enter the switch IP address of the remote MPVC endpoint.
   p. Enter the VPI on the UNI.

**q.** Enter the virtual channel identifier (VCI) on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC over
Card Type 1-port ATM UNI DS3
Slot Number of card 3
Port Number 1
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Cell Mapping Mode PLCP
Interface # of the trunk 45
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 30
Internal IP Address of remote switch 150.201.82.65
Interface # of the feeder lport 5
VPI for local OPTimum trunk 11
DLCI on the Mgmt Lport 20
MPVC Remote UNI Interface Type ATM
MPVC Remote UNI Interface # 34
Switch IP Addr of Remote MPVC Endpoint 150.201.82.65
VPI on the UNI 12
VCI on the UNI 56
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Frame Relay OPTimum Trunk Through an Adjacent Switch

If you are using a Frame Relay OPTimum trunk to communicate with the NMS, choose from the following module types:

8-port UIO
4-port 24-channel fractional T1
4-port 30-channel fractional E1
10-port DSX-1
2-port HSSI
Channelized DS3
12-port E1
4-port unchannelized T1
4-port unchannelized E1
Channelized DS3-1-0

To use a Frame Relay OPTimum trunk through an adjacent switch to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter the clock selection. The system displays the following clock source options:

      ```
      1 DCE
      2 Loop Timed DCE
      3 DTE
      4 Direct Trunk
      ```

   d. Enter a clock speed in Kbps.
   e. Enter the local trunk interface number of the trunk.
   f. Enter the OSPF area ID.
   g. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   h. Enter the interface number of the remote trunk.
   i. Enter the internal IP address of the remote switch.

**j.** Enter the DLCI for the local OPTimum trunk.

**k.** Enter the link management interface (LMI) protocol. The system displays the following options:

```
1 Disabled

2 LMI Rev1

3 ANSI T1.617 Annex D

4 CCITT Q.933 Annex A
```

**l.** Enter the feeder logical port type (1 - DTE, 2 - NNI).

The program displays your configuration information:

```
Network Number: 150.201.0.0
Network Mask: 255.255.0.0
DLCI Scheme: Local
Internal Switch IP Address: 150.201.85.4
NMS IP Address: 152.148.81.45
Community String: pike
NMS -> Switch Interface: Frame Relay OPTimum Trunk
(through an adjacent switch)
I/O module Type: 8 Port UIO
Slot Number of I/O module: 13
Port Number: 8
Clock Selection: DTE
Clock Speed: 1536
Interface # of the trunk: 10
OSPF Area ID: 0.0.0.1
OSPF Area 1 backward compatibility: Yes
Interface # of the remote trunk: 6
Internal IP Address of remote switch: 150.201.85.5
Interface # of the feeder lport: 9
DLCI for local OPTimum trunk: 16
LMI Type: Disabled
Feeder Lport Type: NNI
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over a Frame Relay OPTimum Trunk

If you are using a multi-hop MPVC over a Frame Relay OPTimum trunk to communicate with the NMS, choose from the following module types:

8-port UIO
4-port 24-channel fractional T1
4-port 30-channel fractional E1
10-port DSX-1
2-port HSSI
Channelized DS3
12-port E1
4-port unchannelized T1
4-port unchannelized E1
Channelized DS3-1-0

To use a multi-hop MPVC over a Frame Relay OPTimum trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter a clock speed in Kbps.
   d. Enter the clock selection. The system displays the following clock source options:

```
1 Loop Timed
2 Internal
3 External
4 Chassis
```

   e. Enter the link framing selection. The system displays the following link framing options:

```
1 D4
2 ESF-ANSI
3 ESF-ATT-a
4 ESF-NONE
5 E1-CAS-CRC4
6 E1-CAS-NO-CRC4
7 E1-NO-CAS-CRC4
8 E1-NO-CAS-NO-CRC4
9 ESF-ATT-b
10 SF-ANSI
11 E1-UNSTRUCTURED
```

**f.** Enter the zero coding scheme. The system displays the following zero coding options:

```
1 AMI
2 B8ZS
3 HDB3
4 Jammed-bit
5 Nx56
6 Nx64
```

**g.** Enter the local trunk interface number of the trunk.

**h.** Enter the OSPF area ID.

**i.** Enter **yes** or **no** for the OSPF area 1 backward compatibility.

**j.** Enter the interface number of the remote trunk.

**k.** Enter the internal IP address of the remote switch.

**l.** Enter the interface number of the feeder logical port.

**m.** Enter the DLCI for the local OPTimum trunk.

**n.** Enter the link management interface (LMI) protocol. The system displays the following options:

```
1 Disabled
2 LMI Rev1
3 ANSI T1.617 Annex D
4 CCITT Q.933 Annex A
```

**o.** Enter the feeder logical port type (2 - DTE, 3 - NNI).

**p.** Enter the DLCI on the management logical port.

**q.** Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).

**r.** Enter the MPVC remote UNI interface number.

**s.** Enter the switch IP address of the remote MPVC endpoint.

**t.** Enter the VPI on the UNI.

**u.** Enter the VCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC over
Card Type 12-Port E1
Slot Number of card 3
Port Number 2
Clock Speed 1536
Clock Selection Internal
Link Framing ESF-ANSI
Zero Coding Scheme B8ZS
Interface # of the trunk 25
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 35
Internal IP Address of remote switch 150.201.82.65
Interface # of the feeder lport 11
DLCI for local OPTimum trunk 47
LMI Type ANSI T1.617 Annex D
Feeder Lport Type DTE
DLCI on the Mgmt Lport 34
MPVC Remote UNI Interface Type ATM
MPVC Remote UNI Interface # 65
Switch IP Addr of Remote MPVC Endpoint 150.201.82.76
VPI on the UNI 7
VCI on the UNI 32
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using an ATM OPTimum Frame Trunk Through an Adjacent Switch (*B-STDX Only*)

You can only use the ATM OPTimum Frame trunk interface with the 1-port ATM IWU OC3c/STM1 module in B-STDX 9000 Multiservice WAN switches.

To use an ATM OPTimum Frame trunk through an adjacent switch to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the clock selection (1- Loop Timed, 2 - Internal).
   c. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   d. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   e. Enter the Optical Transmission mode (1 - SONET, 2 - SDH).
   f. Enter the interface number of the trunk.
   g. Enter the OSPF area ID.
   h. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   i. Enter the internal IP address of the remote switch.
   j. Enter the interface number of the feeder logical port.
   k. Enter the VPI for the local OPTimum trunk.
   l. Enter the VCI for local OPTimum trunk.

   The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.65
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface ATM OPTimum Frame Trunk (through
an adjacent switch)
Card Type 1-port ATM IWU OC3c/STM1
Slot Number of card 9
Port Number 1
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Cell Mapping Mode PLCP
Optical Transmission Mode SONET
Interface # of the trunk 31
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 44
```

```
Internal IP Address of remote switch 150.201.82.71
Interface # of the feeder lport 30
VPI for local OPTimum trunk 1
VCI for local OPTimum trunk 33
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over an ATM OPTimum Frame Trunk

If you are using a multi-hop MPVC over an ATM OPTimum Frame trunk to communicate with the NMS, choose from the following module types:

1-port ATM UNI DS3
1-port ATM UNI E3
1-port ATM IWU OC3c/STM1
1-port ATM CS/DS3
1-port ATM CS/E3
12-port ATM E1
12-port ATM T1

To use a multi-hop MPVC over an ATM OPTimum Frame trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the clock selection (1- Loop Timed, 2 - Internal).
   c. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   d. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   e. Enter the Optical Transmission mode (1 - SONET, 2 - SDH).
   f. Enter the interface number of the trunk.
   g. Enter the OSPF area ID.
   h. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   i. Enter the interface number of the remote trunk.
   j. Enter the internal IP address of the remote switch.
   k. Enter the interface number of the feeder logical port.
   l. Enter the VPI for the local OPTimum trunk.

**m.** Enter the VCI for the local OPTimum trunk.

**n.** Enter the DLCI on the management logical port.

**o.** Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).

**p.** Enter the MPVC remote UNI interface number.

**q.** Enter the switch IP address of the remote MPVC endpoint.

**r.** Enter the VPI on the UNI.

**s.** Enter the VCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
DLCI Scheme Local
Internal Switch IP Address 150.201.82.71
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC over
Card Type 4-port Unchannelized T1
Slot Number of card 6
Port Number 3
Clock Speed 1536
Clock Selection Internal
Link Framing ESF-ANSI
Zero Coding Scheme B8ZS
Interface # of the trunk 55
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 28
Internal IP Address of remote switch 150.201.82.65
Interface # of the feeder lport 33
DLCI for local OPTimum trunk 88
LMI Type ANSI T1.617 Annex D
Feeder Lport Type DTE
DLCI on the Mgmt Lport 78
MPVC Remote UNI Interface Type Frame-Relay
MPVC Remote UNI Interface # 65
Switch IP Addr of Remote MPVC Endpoint 150.201.82.65
DLCI on the UNI 65
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

# Using the Console Install Program with CBX and GX Switches

You use the `Console Install` program to enable CBX 500 Multiservice WAN and GX 550 switches with no PRAM to communicate with the NMS. Once switch-to-NMS connectivity is established, you can perform the remaining configuration tasks directly from the NMS.

## Accessing the Switch

To access the switch using the `Console Install` program:

1. Establish a connection to the switch console port, using the NMS workstation or a stand-alone PC.
2. At the <*switch name*>## prompt, enter **`Reset Pram all`**.
3. At the `Reset PRAM on all cards. ARE YOU SURE <Yes|No>?` prompt, enter **`YES`**.
4. At the <*switch name*>## prompt, enter **`reset system`**.
5. At the `ARE YOU SURE <Yes|No>?` prompt, enter **`YES`**.

   The system displays the following message:

   ```
   RESETTING SWITCH, STAND BY....
   ```

6. At the `>>` prompt, enter **`install`**.
7. The system prompts you for the following information. Enter the applicable response and press Return after each entry.

   ```
   Enter the network number:

   Enter the network mask:

   Enter the address of the switch:

   Enter the NMS IP address:

   Enter the SNMP community:
   ```

   If this is the first switch in the network, use the default internal IP address shown or modify the last octet to represent the actual switch address.

   Enter the community name of the NMS used to manage this switch. The default community name is *cascade*.

The system displays a menu of interfaces that the switch can use to communicate with the NMS. Table 7-2 lists the interface menu choices for CBX and GX switches and the section in this chapter that provides more information about using each interface.

**Table 7-2. Console Install Interface Menu Choices (CBX and GX Switches)**

| Interface | See |
|---|---|
| Direct Ethernet | "Using Direct Ethernet" on page 7-32 |
| Indirect Ethernet | "Using Indirect Ethernet Through a Gateway Device" on page 7-32 |
| Direct Trunk | "Using a Direct Trunk" on page 7-33 |
| ATM OPTimum Cell Trunk | "Using an ATM OPTimum Cell Trunk Through an Adjacent Switch" on page 7-36 |
| Management PVC (single-hop) | "Using a Single-hop MPVC" on page 7-39 |
| Multi-Hop MPVC Over a Direct Trunk | "Using a Multi-hop MPVC Over a Direct Trunk" on page 7-42 |
| Multi-Hop MPVC Over an ATM OPTimum Trunk | "Using a Multi-hop MPVC Over an ATM OPTimum Trunk" on page 7-46 |
| Frame Relay OPTimum Trunk | "Using a Frame Relay OPTimum Trunk Through an Adjacent Switch (CBX Only)" on page 7-50 |
| Multi-Hop MPVC Over a Frame Relay OPTimum Trunk | "Using a Multi-hop MPVC Over a Frame Relay Optimum Trunk (CBX Only)" on page 7-52 |

8. Select your connection type, then proceed to the applicable section listed in Table 7-2 for further instructions.

## Using Direct Ethernet

To use direct Ethernet to communicate with the NMS:

1. Enter the Ethernet port IP address.
2. Enter the Ethernet port mask.

   The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface Direct Ethernet
Ethernet Port IP Address 152.148.81.124
Ethernet Port Mask 255.255.0.0
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

## Using Indirect Ethernet Through a Gateway Device

To use indirect Ethernet through a gateway device to communicate with the NMS:

1. Enter the Ethernet port IP address.
2. Enter the Ethernet port mask.
3. Enter the gateway IP address.

   The system then provides the entered values as shown in the following example:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface Indirect Ethernet (through a gateway
device)
Ethernet Port IP Address 152.148.82.124
Ethernet Port Mask 255.255.0.0
Gateway IP Address 150.148.82.79
```

4. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

   ```
   Committing

   Preliminary installation completed!

   Use the NMS to complete the full installation.
   ```

5. When prompted, enter **yes** to reboot the switch.

## Using a Direct Trunk

You can use a direct trunk to communicate with the NMS on both the CBX 500 and GX 550.

### *CBX 500*

If you are using a direct trunk to communicate with the NMS, choose from the following module types:

8-port DS3
8-port E3
4-port OC3/STM1
1-port OC12/STM4
8-port T1
8-port E1
6-port Frame T3
6-port Frame E3

To use a direct trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter the clock selection (1 - Loop timed, 2 - Internal).
   d. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   e. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   f. Enter the interface number of the trunk.
   g. Enter the OSPF area ID.
   h. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   i. Enter the interface number of the remote trunk.

**j.** Enter the internal IP address of the remote switch.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface Direct Trunk (through an adjacent
switch)
Card Type 8 Port DS3
Slot Number of card 4
Port Number 1
Clock Selection Loop Timed
Cell Payload Scrambling Mode Enabled
Cell Mapping Mode PLCP
Interface # of the trunk 54
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 33
Internal IP Address of remote switch 150.201.82.66
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

### *GX 550*

If you are using a direct trunk to communicate with the NMS, choose from the following module types:

BIO1 - 4-port OC3 SubCard
BIO1 - 1-port OC12 SubCard
BIO1 - 1-port OC12x4 SubCard
BIO1 - 1-port OC48 SubCard

To use a direct trunk to communicate with the NMS:

**1.** Select the module used for the trunk and press Return.

**2.** Enter the following configuration information at the prompts:

**a.** Enter the slot number of the trunk I/O module.

**b.** Enter the port number of the trunk I/O module.

**c.** Enter the clock selection (1 - Loop timed, 2 - Internal)

**d.** Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).

**e.** Enter the optical transmission mode (1 - SONET, 2 - SDH).

**f.** Enter the interface number of the trunk.

**g.** Enter the OSPF area ID.

**h.** Enter **yes** or **no** for the OSPF Area 1 backward compatibility.

**i.** Enter the interface number of the remote trunk.

**j.** Enter the internal IP address of the remote switch.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.70
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Direct Trunk (through an adjacent
switch)
Card Type BIO1 - 4-port OC3 SubCard
Slot Number of card 5
Port Number 1
Clock Selection Loop Timed
Cell Payload Scrambling Mode Enabled
Optical Transmission Mode SONET
Interface # of the trunk 45
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 54
Internal IP Address of remote switch 150.201.82.66
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using an ATM OPTimum Cell Trunk Through an Adjacent Switch

You can use an ATM OPTimum cell trunk to communicate with the NMS on both the CBX 500 and GX 550.

### *CBX 500*

If you are using an ATM OPTimum cell trunk to communicate with the NMS, choose from the following module types:

8-port DS3
8-port E3
4-port OC3/STM1
1-port OC12/STM4
8-port T1
8-port E1

To use an ATM OPTimum cell trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter the clock selection (1 - Loop timed, 2 - Internal).
   d. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   e. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   f. Enter the interface number of the trunk.
   g. Enter the OSPF area ID.
   h. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   i. Enter the interface number of the remote trunk.
   j. Enter the internal IP address of the remote switch.

**k.** Enter the VPI for the local OPTimum trunk.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface ATM OPTimum Cell Trunk (through
an adjacent switch)
Card Type 8 Port E3
Slot Number of card 5
Port Number 1
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Cell Mapping Mode PLCP
Interface # of the trunk 33
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 20
Internal IP Address of remote switch 150.201.82.67
Interface # of the feeder lport 32
VPI for local OPTimum trunk 1
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

### *GX 550*

If you are using an ATM OPTimum cell trunk to communicate with the NMS, choose from the following module types:

BIO1 - 4-port OC3 SubCard
BIO1 - 1-port OC12 SubCard
BIO1 - 1-port OC12x4 SubCard
BIO1 - 1-port OC48 SubCard

To use an ATM OPTimum cell trunk to communicate with the NMS:

**1.** Select the module used for the trunk and press Return.

**2.** Enter the following configuration information at the prompts:

**a.** Enter the slot number of the trunk I/O module.

**b.** Enter the port number of the trunk I/O module.

**c.** Enter the clock selection (1 - Loop timed, 2 - Internal).

**d.** Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).

**e.** Enter the Optical Transmission mode (1 - SONET, 2 - SDH).

**f.** Enter the interface number of the trunk.

**g.** Enter the OSPF area ID.

**h.** Enter **yes** or **no** for the OSPF area 1 backward compatibility.

**i.** Enter the interface number of the remote trunk.

**j.** Enter the internal IP address of the remote switch.

**k.** Enter the interface number of the feeder logical port.

**l.** Enter the VPI for the local OPTimum trunk.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.70
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface ATM OPTimum Cell Trunk (through
an adjacent switch)
Card Type BIO1 - 1-port OC12 SubCard
Slot Number of card 3
Port Number 1
Clock Selection Loop Timed
Cell Payload Scrambling Mode Enabled
Optical Transmission Mode SONET
Interface # of the trunk 43
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 58
Internal IP Address of remote switch 150.201.82.66
Interface # of the feeder lport 65
VPI for local OPTimum trunk 2
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

## Using a Single-hop MPVC

You can use a single-hop management permanent virtual circuit (MPVC) to communicate with the NMS on both the CBX 500 and GX 550.

### *CBX 500*

If you are using a single-hop MPVC to communicate with the NMS, choose from the following module types:

8-port DS3
8-port E3
4-port OC3/STM1
1-port OC12/STM4
8-port T1
8-port E1
6-port Frame T3
6-port Frame E3
4-port Channelized DS3

To use a single-hop MPVC to communicate with the NMS:

1. Select the module used for the UNI and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the UNI I/O module.
   b. Enter the port number of the UNI I/O module.
   c. Enter the clock selection (1 - Loop timed, 2 - Internal).
   d. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   e. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   f. Enter the interface number of the UNI I/O module.
   g. Enter the UNI logical port type (1 - DCE, 2 - DTE).
   h. Enter the OSPF area ID.
   i. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   j. Enter the VPI on the management logical port.
   k. Enter the VCI on the management logical port.
   l. Enter the VPI on the UNI I/O module.

**m.** Enter the VCI on the UNI I/O module.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface Management PVC
Card Type 8 Port E3
Slot Number of card 5
Port Number 1
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Cell Mapping Mode PLCP
Interface # of the UNI 23
UNI Lport Type DCE
VPI on the Mgmt Lport 1
VCI on the Mgmt Lport 37
VPI on the UNI 4
VCI on the UNI 68
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

### *GX 550*

If you are using a single-hop MPVC to communicate with the NMS, choose from the following module types:

BIO1 - 4-port OC3 SubCard
BIO1 - 1-port OC12 SubCard
BIO1 - 1-port OC12x4 SubCard
BIO1 - 1-port OC48 SubCard

To use a single-hop MPVC to communicate with the NMS:

**1.** Select the module used for the UNI and press Return.

**2.** Enter the following configuration information at the prompts:

**a.** Enter the slot number of the UNI I/O module.

**b.** Enter the port number of the UNI I/O module.

**c.** Enter the clock selection (1 - Loop timed, 2 - Internal).

**d.** Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).

**e.** Enter the Optical Transmission mode (1 - SONET, 2 - SDH).

**f.** Enter the interface number of the UNI I/O module.

**g.** Enter the UNI logical port type (1 - DCE, 2 - DTE).

**h.** Enter the VPI on the management logical port.

**i.** Enter the VCI on the management logical port.

**j.** Enter the VPI on the UNI I/O module.

**k.** Enter the VCI on the UNI I/O module.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.70
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Management PVC
Card Type BIO1 - 1-port OC12x4 SubCard
Slot Number of card 4
Port Number 1
Clock Selection Loop Timed
Cell Payload Scrambling Mode Enabled
Optical Transmission Mode SONET
Interface # of the UNI 30
UNI Lport Type DCE
VPI on the Mgmt Lport 1
VCI on the Mgmt Lport 65
VPI on the UNI 3
VCI on the UNI 34
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over a Direct Trunk

You can use a multi-hop MPVC over a direct trunk to communicate with the NMS on both the CBX 500 and GX 550.

### *CBX 500*

If you are using a multi-hop MPVC over a direct trunk to communicate with the NMS, choose from the following module types:

8-port DS3
8-port E3
4-port OC3/STM1
1-port OC12/STM4
8-port T1
8-port E1
6-port Frame T3
6-port Frame E3

To use a multi-hop MPVC over a direct trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter the clock selection (1 - Loop timed, 2 - Internal).
   d. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   e. Enter the Cell Mapping mode (1 - PLCP, 2 - Direct Mapping).
   f. Enter the interface number of the trunk.
   g. Enter the OSPF area ID.
   h. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   i. Enter the interface number of the remote trunk.
   j. Enter the internal IP address of the remote switch.
   k. Enter the VPI on the management logical port.
   l. Enter the VCI on the management logical port.
   m. Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).
   n. Enter the MPVC remote UNI interface number.
   o. Enter the switch IP address of the remote MPVC endpoint.

**p.** Enter the DLCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.81.12
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC
over a Direct Trunk
Card Type 8 Port DS3
Slot Number of card 3
Port Number 4
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Cell Mapping Mode PLCP
Interface # of the trunk 50
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 45
Internal IP Address of remote switch 150.201.82.65
VPI on the Mgmt Lport 13
VCI on the Mgmt Lport 33
MPVC Remote UNI Interface Type Frame-Relay
MPVC Remote UNI Interface # 20
Switch IP Addr of Remote MPVC Endpoint 150.201.82.65
DLCI on the UNI 20
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

### *GX 550*

If you are using a multi-hop MPVC over a direct trunk to communicate with the NMS, choose from the following module types:

BIO1 - 4-port OC3 SubCard
BIO1 - 1-port OC12 SubCard
BIO1 - 1-port OC12x4 SubCard
BIO1 - 1-port OC48 SubCard

To use a multi-hop MPVC over a direct trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   - **a.** Enter the slot number of the trunk I/O module.
   - **b.** Enter the port number of the trunk I/O module.
   - **c.** Enter the clock selection (1 - Loop timed, 2 - Internal).
   - **d.** Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   - **e.** Enter the Optical Transmission mode (1 - SONET, 2 - SDH).
   - **f.** Enter the interface number of the trunk.
   - **g.** Enter the OSPF area ID.
   - **h.** Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   - **i.** Enter the interface number of the remote trunk.
   - **j.** Enter the internal IP address of the remote switch.
   - **k.** Enter the VPI on the management logical port.
   - **l.** Enter the VCI on the management logical port.
   - **m.** Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).
   - **n.** Enter the MPVC remote UNI interface number.
   - **o.** Enter the switch IP address of the remote MPVC endpoint.
   - **p.** Enter the VPI on the UNI.

**q.** Enter the VCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.70.3
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC
over a Direct Trunk
Card Type BIO1 - 1-port OC12x4 SubCard
Slot Number of card 5
Port Number 6
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Optical Transmission Mode SONET
Interface # of the trunk 65
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 34
Internal IP Address of remote switch 150.201.81.65
VPI on the Mgmt Lport 11
VCI on the Mgmt Lport 45
MPVC Remote UNI Interface Type ATM
MPVC Remote UNI Interface # 45
Switch IP Addr of Remote MPVC Endpoint 150.201.81.65
VPI on the UNI 10
VCI on the UNI 67
```

3. When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

4. When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over an ATM OPTimum Trunk

You can use a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS on both the CBX 500 and GX 550.

### *CBX 500*

If you are using a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS, choose from the following module types:

8-port DS3
8-port E3
4-port OC3/STM1
1-port OC12/STM4
8-port T1
8-port E1

To use a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the clock selection (1 - Loop timed, 2 - Internal).
   c. Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   d. Enter the optical transmission mode (1 - SONET, 2 - SDH).
   e. Enter the interface number of the trunk.
   f. Enter the OSPF area ID.
   g. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   h. Enter the interface number of the remote trunk.
   i. Enter the internal IP address of the remote switch.
   j. Enter the VPI for the local OPTimum trunk.
   k. Enter the VPI on the management logical port.
   l. Enter the VCI on the management logical port.
   m. Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).
   n. Enter the MPVC remote UNI interface number.
   o. Enter the switch IP address of the remote MPVC endpoint.
   p. Enter the VPI on the UNI.

**q.** Enter the VCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.81.12
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC
over an ATM OPT Trunk
Card Type 1 port OC12/STM4
Slot Number of card 4
Port Number 1
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Optical Transmission Mode SONET
Interface # of the trunk 22
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 34
Internal IP Address of remote switch 152.148.81.201
Interface # of the feeder lport 7
VPI for local OPTimum trunk 4
VPI on the Mgmt Lport 15
VCI on the Mgmt Lport 56
MPVC Remote UNI Interface Type ATM
MPVC Remote UNI Interface # 29
Switch IP Addr of Remote MPVC Endpoint 152.148.82.65
VPI on the UNI 2
VCI on the UNI 78
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

### *GX 550*

If you are using a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS, choose from the following module types:

BIO1 - 4-port OC3 SubCard
BIO1 - 1-port OC12 SubCard
BIO1 - 1-port OC12x4 SubCard
BIO1 - 1-port OC48 SubCard

To use a multi-hop MPVC over an ATM OPTimum trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   - **a.** Enter the slot number of the trunk I/O module.
   - **b.** Enter the clock selection (1 - Loop timed, 2 - Internal).
   - **c.** Enter the Cell Payload Scrambling mode (1 - Disabled, 2 - Enabled).
   - **d.** Enter the Optical Transmission mode (1 - SONET, 2 - SDH).
   - **e.** Enter the interface number of the trunk.
   - **f.** Enter the OSPF area ID.
   - **g.** Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   - **h.** Enter the interface number of the remote trunk.
   - **i.** Enter the internal IP address of the remote switch.
   - **j.** Enter the VPI for the local OPTimum trunk.
   - **k.** Enter the VPI on the management logical port.
   - **l.** Enter the VCI on the management logical port.
   - **m.** Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).
   - **n.** Enter the MPVC remote UNI interface number.
   - **o.** Enter the switch IP address of the remote MPVC endpoint.
   - **p.** Enter the VPI on the UNI.

**q.** Enter the VCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.0.0
NMS IP Address 150.201.70.3
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC
over an ATM OPT Trunk
Card Type BIO1 - 1-port OC12 SubCard
Slot Number of card 7
Port Number 5
Clock Selection Internal
Cell Payload Scrambling Mode Enabled
Optical Transmission Mode SONET
Interface # of the trunk 34
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 76
Internal IP Address of remote switch 150.201.81.65
Interface # of the feeder lport 65
VPI for local OPTimum trunk 7
VPI on the Mgmt Lport 8
VCI on the Mgmt Lport 77
MPVC Remote UNI Interface Type ATM
MPVC Remote UNI Interface # 56
Switch IP Addr of Remote MPVC Endpoint 150.201.81.65
VPI on the UNI 2
VCI on the UNI 48
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Frame Relay OPTimum Trunk Through an Adjacent Switch (*CBX Only*)

If you are using a Frame Relay OPTimum trunk through an adjacent switch to communicate with the NMS, choose from the following module types:

6-port Frame T3
6-port Frame E3

To use a Frame Relay OPTimum trunk through an adjacent switch to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter the clock selection (1 - Loop timed, 2 - Internal).
   d. Enter the interface number of the trunk I/O module.
   e. Enter the OSPF area ID.
   f. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   g. Enter the interface number of the remote trunk.
   h. Enter the internal IP address of the remote switch.
   i. Enter the interface number of the feeder logical port.
   j. Enter the DLCI for the local OPTimum trunk.
   k. Enter the LMI type. The system displays the following options:

```
1 Disabled
2 LMI Rev1
3 ANSI T1.617 Annex D
4 CCITT Q.933 Annex A
```

**l.** Enter the feeder logical port type (2 - DTE, 3 - NNI).

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.82.67
NMS IP Address 152.148.81.45
Community String pike
NMS -> Switch Interface Frame Relay OPTimum Trunk
(through an adjacent switch)
Card Type 6 port Frame T3
Slot Number of card 3
Port Number 1
Clock Selection Internal
Clock Speed 1536
Interface # of the trunk 32
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 44
Internal IP Address of remote switch 150.201.82.67
Interface # of the feeder lport 20
DLCI for local OPTimum trunk 56
LMI Type ANSI T1.617 Annex D
Feeder Lport Type NNI
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

## Using a Multi-hop MPVC Over a Frame Relay Optimum Trunk (*CBX Only*)

If you are using a multi-hop MPVC over a Frame Relay OPTimum trunk to communicate with the NMS, choose from the following module types:

6-port Frame T3
6-port Frame E3

To use a multi-hop MPVC over a Frame Relay OPTimum trunk to communicate with the NMS:

1. Select the module used for the trunk and press Return.
2. Enter the following configuration information at the prompts:
   a. Enter the slot number of the trunk I/O module.
   b. Enter the port number of the trunk I/O module.
   c. Enter the clock selection (1 - Loop timed, 2 - Internal).
   d. Enter the clock speed in Kbps.
   e. Enter the interface number of the trunk.
   f. Enter the OSPF area ID.
   g. Enter **yes** or **no** for the OSPF area 1 backward compatibility.
   h. Enter the interface number of the remote trunk.
   i. Enter the internal IP address of the remote switch.
   j. Enter the DLCI for the local OPTimum trunk.
   k. Enter the link management interface (LMI) protocol. The system displays the following options:

      ```
      1 Disabled
      2 LMI Rev1
      3 ANSI T1.617 Annex D
      4 CCITT Q.933 Annex A
      ```

   l. Enter the feeder logical port type (2 - DTE, 3 - NNI).
   m. Enter the VPI on the management logical port.
   n. Enter the VCI on the management logical port.
   o. Enter the MPVC remote UNI interface type (1 - ATM, 2 - Frame Relay).
   p. Enter the MPVC remote UNI interface number.
   q. Enter the switch IP address of the remote MPVC endpoint.

**r.** Enter the DLCI on the UNI.

The program displays your configuration information:

```
Network Number 150.201.0.0
Network Mask 255.255.0.0
Internal Switch IP Address 150.201.81.12
NMS IP Address 152.148.81.201
Community String orca
NMS -> Switch Interface Multi-hop Mgmt PVC
over an FR OPT Trunk
Card Type 6 port Frame T3
Slot Number of card 6
Port Number 3
Clock Selection Internal
Clock Speed 1536
Interface # of the trunk 34
OSPF Area ID 0.0.0.1
OSPF Area 1 backward compatibility Yes
Interface # of the remote trunk 67
Internal IP Address of remote switch 152.148.81.201
Interface # of the feeder lport 43
DLCI for local OPTimum trunk 24
LMI Type ANSI T1.617 Annex D
Feeder Lport Type DTE
VPI on the Mgmt Lport 12
VCI on the Mgmt Lport 37
MPVC Remote UNI Interface Type Frame-Relay
MPVC Remote UNI Interface # 54
Switch IP Addr of Remote MPVC Endpoint 152.148.82.65
DLCI on the UNI 54
```

**3.** When prompted, enter **yes** or **no** to confirm that this information is correct. When the system receives confirmation, it displays the following message:

```
Committing

Preliminary installation completed!

Use the NMS to complete the full installation.
```

**4.** When prompted, enter **yes** to reboot the switch.

# Using PRAM Features

This section describes the various PRAM features and the tasks associated with their use.

## Synchronizing PRAM

Whenever you download an initialization-script file from the NMS to the switch for the *first time*, you must synchronize PRAM (called PRAM Sync) for the switch to receive complete configuration information. Occasionally you may also need to synchronize a switch to correct a mismatch between the NMS database and the configuration that resides in switch PRAM. This situation occurs when you use the NMS to make modifications to a switch that is unmanaged or not actively communicating with the NMS (unreachable) or if changes are made to the switch using console commands.

**Note –** For more information on correcting PRAM differences following an upgrade, see the "PRAM Differences" section in the *NavisCore Software Release Notice* accompanying your release.

The Synchronize PRAM feature enables you to correct inconsistencies between the NMS database and switch PRAM. Table 7-3 describes the object status indicators that identify these inconsistencies.

**Table 7-3. Object Status Indicators**

| Object Color | Description |
|---|---|
| Yellow | An I/O module in the switch may be out-of-sync. Display the Switch Back Panel dialog box and review the status of each module. If necessary, synchronize PRAM. If the switch does not turn green, see the *B-STDX, CBX, and GX Switch Diagnostics User's Guide* to review background diagnostic statistics. |
| Wheat | The switch object is not managed. You *unmanage* an object to prevent the NMS from polling the object while you configure it. To manage an object, select Manage Object from the Map menu. |
| Red | The indicated object is in a failed state and cannot actively communicate with the NMS. |
| Green | The indicated objects/switches are actively communicating with the NMS. |

For more information about monitoring the network, see the *B-STDX, CBX, and GX Switch Diagnostics User's Guide*.

## Partial PRAM Sync

The Non-service affecting Partial PRAM Sync feature (*available for CBX 500 Release 08.00.02.00 or greater and GX 550 Release 08.00.02.00 or greater only*) enables you to synchronize logical ports or circuits without having to PRAM Sync an entire I/O module and disrupt service.

Before a Partial PRAM Sync may be performed, both Upload PRAM and Compare PRAM operations must be performed. See "Uploading PRAM" on page 7-59 for more information.

If a circuit or logical port has been modified using console commands or by using the NMS to make modifications to a switch that is unmanaged or not actively communicating with the NMS (unreachable), these will be identified as out-of-sync.

The Partial PRAM Sync button is only available when the Compare PRAM operation finds logical port and/or circuit differences between switch PRAM and the NMS database. If other types of differences in addition to logical port and/or circuit differences are found, the Partial PRAM Sync button is still available.

When these differences occur, the Partial PRAM Sync function only synchronizes the logical port and/or circuit differences, not the other differences. You will need to PRAM Sync the entire card to resolve differences other than those related to logical ports and circuits. The View button (see step 6 on page 7-62) can be used to identify the differences found during the Compare PRAM operation.

Choosing the Partial PRAM Sync button causes the configuration in the NMS database to overwrite the configuration stored in switch PRAM.

You can only use the Partial PRAM Sync feature to resolve logical port and circuit differences on an I/O module. You *cannot* perform a Partial PRAM Sync on a switch processor (SP) or node processor (NP) module.

## Before You Synchronize

Before you synchronize a switch, verify that you have defined the following:

- NMS IP Address
- Community Name
- Read/Write privileges

You can synchronize the switch by using either of the following procedures:

- "Synchronizing Switches With the Synchronize PRAM Function" on page 7-56
- "Synchronizing Switches by Downloading PRAM Files Via the Console" on page 7-57

**Note –** CPU-intensive operations, such as PRAM synchronization, can cause NavisCore to drop node polls. To avoid this problem, increase the amount of time between SNMP retries. Edit the `cascadeview.cfg` file and increase the CV_SNMP_RETRY_INTERVAL value from 300. This value is in tenths of a second. (See Appendix A, "NavisCore Configuration File," for instructions on editing the `cascadeview.cfg` file.)

Lucent recommends a value of 1.5 seconds for a configuration with 10 to 15 simultaneous instances of NavisCore and more than 15 switches in the network. This change takes effect when you restart NavisCore.

## Synchronizing Switches With the Synchronize PRAM Function

To synchronize a switch with the Synchronize PRAM function:

1. On the network map, select the switch you want to synchronize.
2. From the Misc menu, select NavisCore ⇒ Logon and enter the operator password. Then choose OK. (You can only synchronize one switch at a time.)
3. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears.
4. Select the I/O module you want to synchronize.

**Note –** If you changed some switch attributes, such as the management path, you must synchronize the processor module before you synchronize any I/O modules. If you need to synchronize more than one module, always synchronize from the processor module first. Then work your way toward the module with the highest slot ID.

5. Choose the PRAM button. The PRAM Sync dialog box appears (see Figure 7-3).

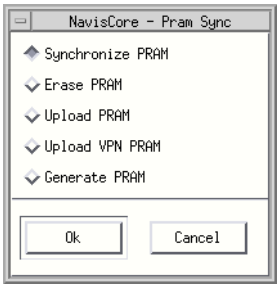



**Figure 7-3. PRAM Sync Dialog Box**

6. Select Synchronize PRAM and choose OK. This sends the binary image of the configuration to the selected module, causing it to perform a warm boot. When the module reboots, all physical ports, logical ports, PVCs, and active sessions stall for approximately 0-30 seconds. If you have a heavily configured module, it may take several minutes or more to reboot.

**Note –** If you made only minimal changes to the configuration, you can synchronize PRAM at a later time to avoid interrupting network traffic.

## Synchronizing Switches by Downloading PRAM Files Via the Console

You can use the `Kermit` utility to transfer the PRAM file through the console port to your switch's CP/SP/NP (processor) module. For gateway switches, you only need to download your switch's CP/SP/NP module PRAM file. For non-gateway nodes, you need to download the CP/SP/NP module PRAM file and the PRAM file of the module that provides the trunk connection to the gateway node.

After the CP/SP/NP module reboots with the PRAM file, you do not have to perform a PRAM Sync of the processors and modules.

To download the PRAM files to the switch:

1. Connect a console cable to serial port A on the back of your workstation. See your workstation hardware guide for information about serial port A.
2. Use the Generate PRAM feature (see "Generating PRAM" on page 7-58) to generate a configuration file for the main processor and module(s), observing the following guidelines:
   - *If this is a gateway switch*, generate PRAM only for the CP/SP/NP module.
   - *If this is not a gateway switch*, you must generate a PRAM file for the CP/SP/NP module and the module that provides the trunk connection to the gateway node.

     The NMS stores the generated PRAM files in the `/opt/CascadeView.var/cfgSyncFiles` directory. For each type of Lucent switch, Table 7-4 lists typical names for the subdirectories containing the PRAM files associated with this release.

     The subdirectories in Table 7-4 contain several files that include the name of the associated switch followed by a `.P<`*`slot number`*`>`. For example, for a switch named Westford1, the CP/SP/NP module PRAM file name would be `Westford1.P01`. If the PRAM file was from the module in slot 14, the PRAM file name would be `Westford1.P14`. These file types are the ones you must download to the switch.

**Table 7-4. PRAM Files**

| Switch Type | Subdirectory |
|---|---|
| B-STDX 8000/9000 Multiservice WAN | 9000-07.xx.xx |
| CBX 500 Multiservice WAN | 500-09.xx.xx |
| GX 550 | 550-09.xx.xx |

3. If you are going to download the files to the switch from a PC, transfer the files from the NMS to a PC.
4. From either the NMS or the PC, establish a console connection to the switch (19200 bps).
5. At the console prompt, type **`kermit`** and press Return. This sets the console port to `Kermit` mode for file transfer.
6. Start a `Kermit` session with binary-file transfer mode selected.
7. Transfer the CP/SP/NP module PRAM file. Once complete, the `Kermit` session automatically terminates and the CP/SP/NP module should automatically warm boot.
8. If this is not a gateway switch, repeat step 5 through step 7 to transfer the PRAM file(s) for the module that provides the trunk connection to the gateway node.
9. After the download is complete, the NMS should be able to access the switch. On the Switch Back Panel dialog box, if any remaining input/output processors (IOPs) are yellow, you can PRAM Sync them. See "Using PRAM Features" on page 7-54 for instructions.

## Generating PRAM

The Generate PRAM feature generates SNMP SET commands to configure PRAM but does not upload the switch configuration file to the NMS. This feature enables you to view the configuration file before uploading it to the switch.

To generate PRAM:

1. On the network map, select the switch you want to synchronize.
2. From the Misc menu, select NavisCore ⇒ Logon and enter the operator password. Then choose OK.
3. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears.
4. Choose the PRAM button. The PRAM Sync dialog box appears (see Figure 7-3 on page 7-56).

5. Select Generate PRAM and choose OK. This sends the SNMP SET commands to a configuration file. See "Uploading PRAM" on page 7-59 for information on how to upload the switch configuration file to the NMS.

# Uploading PRAM

Occasionally the switch configuration file for a specific I/O module and the configuration in the NMS database do not match. A mismatch can occur when you upgrade your switch software, make a change through NavisCore, or change a switch configuration through SNMP commands or the MIB.

**Note –** For more information on correcting PRAM differences following an upgrade, see the "PRAM Differences" section in the *NavisCore Software Release Notice* accompanying your release.

## Required NMS and Switch Software

To use the Upload PRAM feature, you need the following NMS and switch software:

- NavisCore Release 04.00.00.00 or greater
- Any of the following switch software releases:
  - B-STDX 8000/9000 Multiservice WAN switch software Release 06.00.00.00 or greater
  - CBX 500 Multiservice WAN switch software Release 03.00.00.00 or greater
  - GX 550 switch software Release 01.00.00.00 or greater

To use the Partial PRAM Sync feature, which is a subset of the Upload PRAM feature, you need the following NMS and switch software:

- NavisCore Release 08.00.02.00 or greater
- Either of the following switch software releases:
  - CBX 500 Multiservice WAN switch software Release 08.00.02.00 or greater
  - GX 550 switch software Release 08.00.02.00 or greater

## Supported PRAM Objects

The Upload PRAM feature currently supports the following network objects:

- Physical ports
- Logical ports
- IP objects excluding point-to-point label switched path (LSP) connections

## Guidelines for Uploading PRAM

You can use the Upload PRAM feature to perform the following tasks in a Lucent switch network:

- Resolve PRAM conflicts by viewing the switch configuration file stored in PRAM. This enables you to compare the configuration file in the switch (PRAM) to the configuration file in the NMS database.
- Replace the configuration file in the NMS database with the switch configuration file.
- Add objects from switch PRAM to the NMS database, as long as the objects being added do not conflict with existing objects in the database; for example, if the NMS database already contains a switch with that name.
- Delete objects from the database.

  Because objects in the database are interdependent, *be careful* when you use the Upload PRAM feature to delete objects from the database. In general, make sure there are no dangling objects (that is, objects without a parent) in the switch before using the Upload PRAM feature. For example, deleting a logical port without first deleting all associated individual addresses or address screens creates dangling objects and causes a problem during the Upload PRAM process.

## Uploading a Switch Configuration File

To upload the switch configuration file stored in PRAM:

1. On the network map, select the switch object.
2. From the Administer menu, select Lucent Parameters ⇒ Set Parameters. The Switch Back Panel dialog box appears.
3. Select either the I/O module or the processor module and choose the PRAM button. The PRAM Sync dialog box appears (see Figure 7-3 on page 7-56).

**Note –** To use the Partial PRAM Sync feature (see step 8 on page 7-63), you *must* select an I/O module. You *cannot* use Partial PRAM Sync with a switch processor (SP) or node processor (NP) module.

4. Select Upload PRAM and choose OK. The Card PRAM Upload and NMS Synchronization dialog box appears (see Figure 7-4).

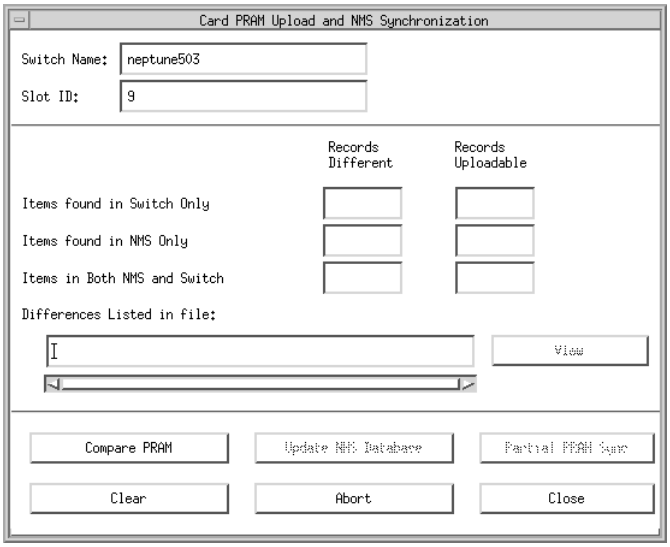



**Figure 7-4. Card PRAM Upload and NMS Synchronization Dialog Box**

**5.** Choose Compare PRAM.

After several seconds, the Card PRAM Upload and NMS Synchronization dialog box displays information about the number of inconsistencies between the PRAM configuration file and the NMS database. If the field displays a 0 (zero), there are no differences between the PRAM and NMS configuration files.

Figure 7-5 shows an example of the Card PRAM Upload and NMS Synchronization dialog box after a Compare PRAM operation. The dialog box indicates that there are 23 differences between the PRAM and NMS configuration files, and displays the name and location of the file that lists these differences.

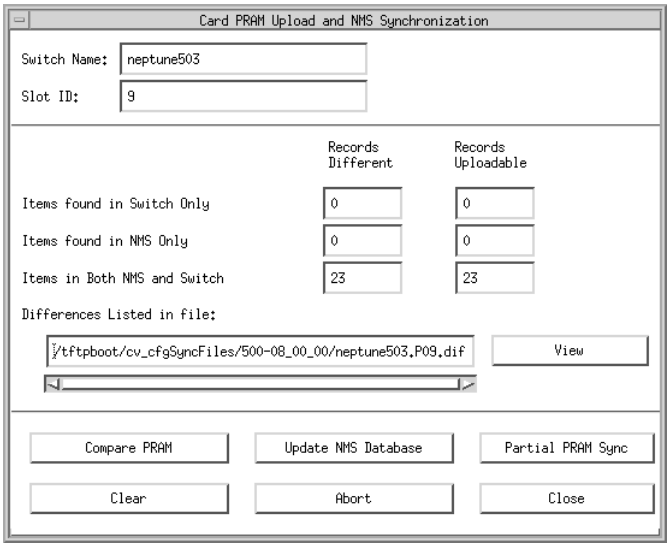



**Figure 7-5. Card PRAM Upload and NMS Synchronization Dialog Box With Differences Reported**

An *item* can be a single physical port or logical port definition and can include:

**Items found in Switch Only** — The item exists in switch PRAM, but not in the NMS database. This situation occurs when you configure a switch using a third-party NMS, use the MIB to change configuration information, or make configuration changes to an unmanaged switch.

**Items in NMS Only** — The item exists in the NMS database, but not in the switch PRAM. This discrepancy occurs when you make configuration changes to an unmanaged switch.

**Items in Both NMS and Switch** — The item exists in both places, but there are discrepancies in the configuration. This can happen if you modified the configuration directly from the console. For example, if you used console commands to change the admin status of a logical port, the logical port definition in switch PRAM indicates that the logical port is Down; the NMS database records indicate the logical port is Up. These discrepancies can also occur if a PRAM synchronization or SET fails.

6. In the Card PRAM Upload and NMS Synchronization dialog box (see Figure 7-5 on page 7-61), choose the View button to compare the files. The View PRAM Comparison File dialog box appears (see Figure 7-6). This example indicates that there are logical port differences between switch PRAM and the NMS database.

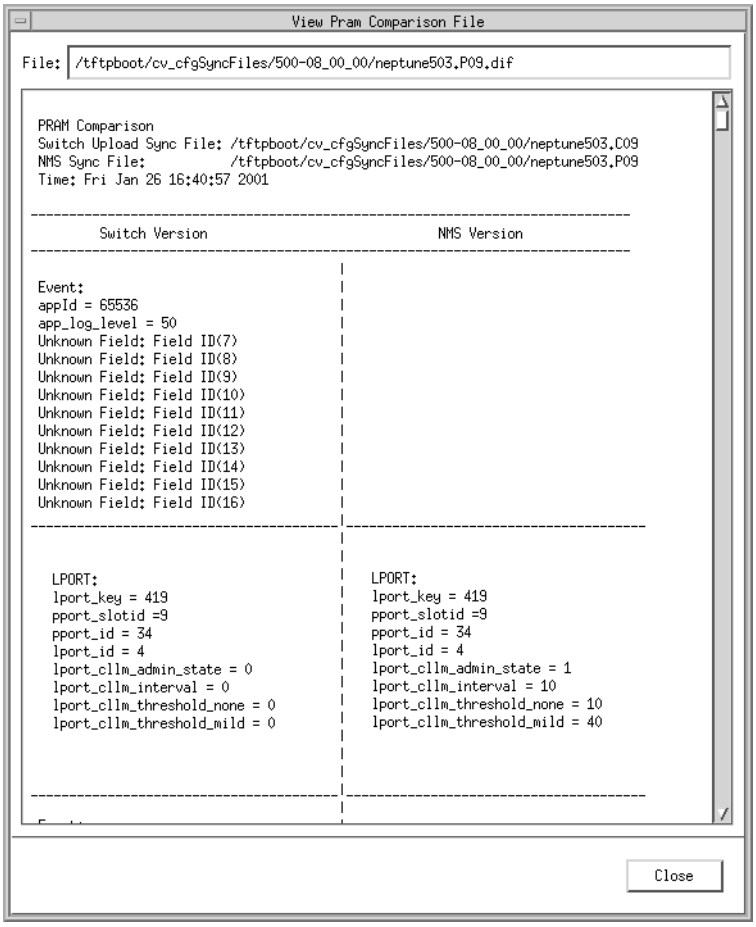



**Figure 7-6. View PRAM Comparison File Dialog Box**

7. Choose Close to return to the Card PRAM Upload and NMS Synchronization dialog box.

8. To synchronize the configuration information between switch PRAM and the NMS database, choose one of the following buttons in the Card PRAM Upload and NMS Synchronization dialog box (see Figure 7-5 on page 7-61):

   - **Update NMS Database** — Choose Update NMS Database to use the configuration stored in switch PRAM. This causes the switch PRAM file to overwrite the configuration stored in the NMS database.
   - **Partial PRAM Sync** — If the View PRAM Comparison File dialog box (see Figure 7-6 on page 7-63) shows that there are logical port and/or circuit differences between switch PRAM and the NMS database, choose Partial PRAM Sync to resolve these differences *without* performing a warm boot of the module and disrupting service.
   - **Close** — Choose Close to use the configuration stored in the NMS database and update PRAM using the Synchronize PRAM feature (see "Synchronizing PRAM" on page 7-54).

9. Repeat step 3 through step 8 for each I/O module to complete the configuration upload process.

**Note –** If an error occurs during the upload process, a message dialog box appears. After closing this dialog box, you can choose Update NMS Database to continue the upload process for the remaining physical port and logical port definition. If there are problems with the PRAM configuration file, see "Synchronizing PRAM" on page 7-54 for instructions on downloading the configuration file stored in the NMS database.

# Erasing PRAM

Occasionally you must download the initialization-script file to switch PRAM if you suspect the switch PRAM configuration file is incorrect. If you experience problems with a new release of switch software, you might also have to download the file as part of a switch downgrade or upgrade procedure. Before you download the file, you must first clear the existing switch configuration file from PRAM using the Erase PRAM feature.

## Clearing Switch PRAM

You can clear the existing PRAM configuration in the following ways:

**Method 1 (recommended)** — Use the NMS software to clear PRAM.

**Method 2 (backup)** — Connect a console terminal and clear the PRAM on each I/O module.

**Method 3 (not recommended)** — Use this method as a last resort and *only after consulting a Lucent Technical Assistance Center (TAC) representative.*

### *Clearing Switch PRAM Using Method 1*

To clear the existing PRAM configuration using the NMS software:

1. On the network map, select the switch for which you want to clear PRAM.
2. From the Administer Menu, select Lucent Parameters ⇒ Set Parameters.
3. Select each I/O module (one at a time) and choose the PRAM button. The Pram Sync dialog box appears (see Figure 7-3 on page 7-56).
4. Select Erase PRAM.
5. Choose OK.
6. Repeat step 3 through step 5 until you erase the PRAM for each module.

### *Clearing Switch PRAM Using Method 2*

To clear the existing PRAM configuration using a console terminal:

1. Install a console terminal to the network management port on the main processor module. (See "Connecting a Console" in your switch hardware installation guide for details.)
2. Force a line break condition to the switch.
3. Enter a minimum of three characters for the login name and enter a valid community name as the password (*cascade* is the default community name).

**Note –** If you are using console authentication, call the Lucent TAC for additional information. See also "Configuring Console Authentication" on page 5-27.

**Note –** If you are erasing PRAM on all I/O modules in the switch (including the processor module) clear the PRAM on the highest numbered slot first and continue to the lowest numbered slot (that is, processor module last).

4. At the *switchname* > prompt, enter the following:

   ```
   enable debug
   Debug password: <your debug password>
   ```

5. At the <*switchname*>## prompt, enter the following:

   ```
   reset pram [#]
   ```

   where [#] is the module or slot number. Entering **`reset pram All`** resets all I/O modules.

6. At the `Reset PRAM. Are you sure (YES/NO)?` prompt, enter **`YES`** (uppercase).

### *Clearing Switch PRAM Using Method 3*

**Note –** Use this method *only* as a last resort and *only* as instructed by a Lucent TAC representative.

To clear the existing PRAM configuration:

1. Latch down all the I/O modules.
2. Install a connection from the NMS SPARCstation to your switch's network management port. (See your hardware installation guide for details.)
3. Set both of the two-position dip switches (located on the front of the CP/SP/NP) to the Off position (left).
4. Latch up all the I/O modules.

5. Establish a terminal emulation session. Set the line parameters as follows: 19,200 baud, 8 bits, no parity.
6. Press Return.
7. At the `%` prompt, enter the following:

   ```
   erase_pram
   ```

   Wait for the prompt to appear.
8. Latch down all of the I/O modules.
9. Set one or both of the main processor module's two-position dip switches to the On position, pointing to the right, away from the position numbers on the switch.
10. Latch up all of the I/O modules.

    Once the switch comes up (approximately one to two minutes), a >> prompt appears. This prompt indicates that PRAM is erased on the CP/SP/NP only, and the switch is ready for a new configuration file download.

# A

# NavisCore Configuration File

This appendix describes the NavisCore defaults configuration file, `cascadeview.cfg`. This file is located in the `/opt/CascadeView/etc/` directory and contains the default variables for many Lucent switch software features.

Whenever you modify this file, you must restart NavisCore for the changes to take effect. See Chapter 2, "Administering NavisCore," for instructions on stopping and starting NavisCore.

# cascadeview.cfg Contents

To view the `cascadeview.cfg` file, enter:

**`more /opt/CascadeView/etc/cascadeview.cfg`**

This section shows the contents of the `cascadeview.cfg` file. For descriptions of the variables included in this file, see "cascadeview.cfg Variables" on page A-11.

```
#!/bin/sh

#
#  @(#)cascadeview.cfg  (version: $Revision:   1.22  $Date$)
#
#  NavisCore configuration file.
#
#  Copyright 1999 Lucent Technologies Corp.
#  All rights reserved.
#
#
#  Config for tracing:
#
CV_TRACE_ENABLED=0
CV_TRACEFILE=

export CV_TRACE_ENABLED CV_TRACEFILE
#
#  Config for message catalogs:
#
CV_ERROR_MSG_CAT_PATH=${CV_ERROR_MSG_CAT_PATH:-${CV_ROOT:-/opt/CascadeView}/nl
s/C/cascadeview-errors.cat}

export CV_ERROR_MSG_CAT_PATH
#
#  Config for database:
#
CVDB_TRACE_FILE_NAME=

export CVDB_TRACE_FILE_NAME
#
#  Config for map application:
#
CV_DEF_ADDRESS_SIGNIFICANCE=2       #local
CV_DEF_NETWORK_NUMBER=152.148.0.0

export CV_DEF_ADDRESS_SIGNIFICANCE CV_DEF_NETWORK_NUMBER
#
#  Config for switch initialization:
#
CV_SWITCH_INIT_FILE_DIR=/var/CascadeView/initFiles

export CV_SWITCH_INIT_FILE_DIR
#
#  Configuration to tell where the installation of the HP/OV is on the system.
#
HPOV_Symbol_Path=${OVwSymbolDir:-/opt/OV/symbols/C}
CV_HPOV_Cascade_Capability=${HPOV_Symbol_Path}/cascadeview.srf
CV_HPOV_AC_60_Capability=${HPOV_Symbol_Path}/Connector/Connector_ac60
CV_HPOV_PSAX_1250_Capability=${HPOV_Symbol_Path}/Connector/Connector_psax1250
CV_HPOV_PSAX_2300_Capability=${HPOV_Symbol_Path}/Connector/Connector_psax2300
```

```
CV_HPOV_PSAX_4500_Capability=${HPOV_Symbol_Path}/Connector/Connector_psax4500
export CV_HPOV_Cascade_Capability CV_HPOV_AC_60_Capability
CV_HPOV_PSAX_1250_Capability CV_HPOV_PSAX_2300_Capability
CV_HPOV_PSAX_4500_Capability
#
# Navis i-engineer executable script.
#
#CV_IENGINEER_EXECUTABLE=${CV_IENGINEER_EXECUTABLE:-${CV_ROOT:-/opt/CascadeVie
w}/etc/start-i-engineer.sh}
#export CV_IENGINEER_EXECUTABLE
#
# End to end PVC provisioning Client executable script.
#
CV_EEPS_CLIENT_EXECUTABLE=${CV_EEPS_CLIENT_EXECUTABLE:-${CV_ROOT:-/opt/Cascade
View}/etc/start-eeps-client.sh}
export CV_EEPS_CLIENT_EXECUTABLE
#
#  Config for configuration sync.:
#
CV_SYNC_FILE_DIR=/tftpboot/cv_cfgSyncFiles
CV_SYNC_CHECK_DELAY=8
CV_SYNC_CHECK_INTERVAL=3
CV_SYNC_CHECK_COUNT=10

CV_UPLOAD_CHECK_DELAY=5
CV_UPLOAD_CHECK_INTERVAL=3
CV_UPLOAD_CHECK_COUNT=20

export CV_SYNC_FILE_DIR
export CV_SYNC_CHECK_DELAY CV_SYNC_CHECK_INTERVAL CV_SYNC_CHECK_COUNT
export CV_UPLOAD_CHECK_DELAY CV_UPLOAD_CHECK_INTERVAL CV_UPLOAD_CHECK_COUNT
#
# Config for offline pram sync file name
#
CV_SYNC_FILE_OFFLINE_LIST=/tftpboot/cv_cfgSyncFiles/offline.lst
export CV_SYNC_FILE_OFFLINE_LIST
#
# Config for Core Switch Software download root directory
#
CV_SWDOWNLOAD_DIR=/tftpboot/cv_switchSoftware
export CV_SWDOWNLOAD_DIR
#  Config for SNMP management
#
CV_SNMP_IS_ENABLED=1
CV_SNMP_MAX_RETRIES=4

# RETRY_INTERVAL is specified in 1/10's of a second. This defines the
# SNMP timeout value to the switch.
CV_SNMP_RETRY_INTERVAL=300

CV_SNMP_PUBLIC_COMMUNITY=public
CV_SNMP_READ_WRITE_COMMUNITY=cascade

export CV_SNMP_IS_ENABLED CV_SNMP_MAX_RETRIES
export CV_SNMP_RETRY_INTERVAL CV_SNMP_PUBLIC_COMMUNITY
export CV_SNMP_READ_WRITE_COMMUNITY
#
# Hostname of NMS IP address used in building SNMP requests.
# Only necessary if NMS workstation has more than 1 IP interface.
# Default is hostname of workstation having only 1 IP interface.
#
CV_SNMP_NMS_HOSTNAME=
```

```
export CV_SNMP_NMS_HOSTNAME
#
#  Config for diagnostics (all time periods are in seconds):
#
CV_BG_DIAG_POLL_INTERVAL=3
CV_FG_DIAG_CHECK_DELAY=5
CV_FG_DIAG_CHECK_INTERVAL=1
CV_FG_DIAG_CHECK_COUNT=3

CV_DIAG_REASON_CATALOG=${CV_ROOT:-/opt/CascadeView}/nls/C/cvDiagReasons.cat

export CV_BG_DIAG_POLL_INTERVAL CV_FG_DIAG_CHECK_DELAY
export CV_FG_DIAG_CHECK_INTERVAL CV_FG_DIAG_CHECK_COUNT

export CV_DIAG_REASON_CATALOG
#
#  Config for switch configuration:
#
CV_NODE_QOS_POLL_TIMER=60

export CV_NODE_QOS_POLL_TIMER
#
#  Config for status monitoring (time periods are in seconds):
#
CV_STATUS_POLL_INTERVAL=300

export CV_STATUS_POLL_INTERVAL
#
#  Config for physical port performance tuning:
#
CV_PPORT_DEF_DISCARD_HIGH=32
CV_PPORT_DEF_DISCARD_LOW=10
CV_PPORT_DEF_AQL_THRESHOLD=16

export CV_PPORT_DEF_DISCARD_HIGH
export CV_PPORT_DEF_DISCARD_LOW
export CV_PPORT_DEF_AQL_THRESHOLD
#
#  Config for SMDS Prefix Length: (temporary)
#
CV_SMDS_MASK_SIZE=6

export CV_SMDS_MASK_SIZE
#
#  Disable Smds Switching System
#  0 to enable and 1 to disable
#
CV_DISABLE_SMDS_SS=0

export CV_DISABLE_SMDS_SS
#
#  Enable audit trail
#
CV_AUDIT_TRAIL_ENABLE=TRUE

export CV_AUDIT_TRAIL_ENABLE

#
#  Determine how frequent to refresh the out-of-sync flag from the database.
#  0 will be used to disable this feature and
#  N implies out-of-sync flag will be refreshed for every N node poll
intervals
#
```

```
CV_OUT_OF_SYNC_REFRESH_CNT=5

export CV_OUT_OF_SYNC_REFRESH_CNT
#
#  Enable HSSI PPort over clocking
#  Warning: User is not recommended to enable this feature because
overclocking
#  the HSSI pport may cause instability to the HSSI card.
#
CV_ENABLE_HSSI_PPORT_OVERCLOCKING=FALSE

export CV_ENABLE_HSSI_PPORT_OVERCLOCKING

#
#  Enable ATM OPTimum Trunk Bandwidth over subscribing.
#
CV_ENABLE_ATM_TRK_BW_OVERSUBSCRIBE=FALSE

export CV_ENABLE_ATM_TRK_BW_OVERSUBSCRIBE
#
#  Override default max LPorts per STDX 3000/6000.
#  <= 0 or missing - use default (currently 150). > 0 - use this value.
CV_MAX_INTERFACES_PER_STDX=150

export CV_MAX_INTERFACES_PER_STDX
#CV_POLL_SERVER_PORT=10888
#CV_POLL_SERVER_ADDRESS=localhost
#export CV_POLL_SERVER_PORT CV_POLL_SERVER_ADDRESS
#
#  ATM UNI logical port defaults.
#
#    o  "UNI Type" defaults can be "PUBLIC" or "PRIVATE"
#    o  "Connection Type" defaults can be "NET_ENDSYS" or "NET_NET"
#
CV_ATMUNI_UNI_TYPE_DEFAULT=PUBLIC
CV_ATMUNIDCE_CONN_TYPE_DEFAULT=NET_ENDSYS

export CV_ATMUNI_UNI_TYPE_DEFAULT
export CV_ATMUNIDCE_CONN_TYPE_DEFAULT
#
#  Enable Move All Circuit
#
CV_ENABLE_MOVE_ALL_CIRCUIT=TRUE

export CV_ENABLE_MOVE_ALL_CIRCUIT
#
#  Checking the card type for Move All Circuit
#
CV_MV_CKT_CARD_TYPE_CHECKING=TRUE

export CV_MV_CKT_CARD_TYPE_CHECKING
#
# VPN/Customer configuration
#
# CV_CUR_VPNCUST =[VPN | CUSTOMER ]
CV_CUR_VPNCUST=
CV_CUR_VPN_NAME=
CV_CUR_CUST_NAME=
export CV_CUR_VPNCUST
export CV_CUR_VPN_NAME
export CV_CUR_CUST_NAME
#
#  Default Login settings
```

```
#
# CV_LOGON_TYPE =[OPERATOR | PROVISIONING]
#
#CV_LOGON_TYPE=OPERATOR
#export CV_LOGON_TYPE
#
#  4 or 16 levels of circuit priorities
#
# CV_CKT_PRIORITY_LEVELS =[FOUR | SIXTEEN]
#
CV_CKT_PRIORITY_LEVELS=FOUR

export CV_CKT_PRIORITY_LEVELS
#
#  Time interval to refresh Qos metrics (time periods are in seconds):
#    Range is (300 to 1799)
#
CV_OSPF_LSA_REFRESH_INTERVAL=0

export CV_OSPF_LSA_REFRESH_INTERVAL
#
# Snmp Trace FILE
#
CV_SNMP_TRACE_FILE=
export CV_SNMP_TRACE_FILE
#
# GUI SNMP Trace Facility ENABLE
# To Enable  -- CV_GUI_SNMP_TRACE_ENABLE=1
# To Disable -- CV_GUI_SNMP_TRACE_ENABLE=0
#
CV_GUI_SNMP_TRACE_ENABLE=0
export CV_GUI_SNMP_TRACE_ENABLE
#
#  Cell Circuits defined as interworking
#
# CV_CELLCKT_TYPE =[NORMAL | INTERWORKING]
#
#CV_CELLCKT_TYPE=INTERWORKING

#export CV_CELLCKT_TYPE
#
# enable Config for Pram Upload Abort button; 1 to enable;
#                                             otherwise to disable;
#
CV_PRAM_UPLOAD_ABORT_ENABLED=1
export CV_PRAM_UPLOAD_ABORT_ENABLED
#
# enable 310 bulk lport creation
# CV_310_BULK_LPORT =[TRUE| FALSE]   default is disabled
CV_310_BULK_LPORT=
export CV_310_BULK_LPORT
#
#  Network distribution evaluation interval.
#
#    o  CV_NET_DIST_EVAL_INTERVAL is the number of seconds to pause
#       between evaluations when determining the network distribution
#       of a distributed Cascade object.  To be used when defining an
#       evaluation threshold for a Cascade distributed object.  Allowable
#       values are "1" to "60".
#
CV_NET_DIST_EVAL_INTERVAL=2

export CV_NET_DIST_EVAL_INTERVAL
```

```
#
#  SVC Closed User Groups network distribution evaluation threshold.
#
#    o  CV_SVC_CUG_NODE_EVAL_THRESH is the number of nodes (out of all of
#       the nodes in the network to be evaluated) on which to match configured
#       SVC addresses against a member rule regular expression at one time
#       before pausing for CV_NET_DIST_EVAL_INTERVAL seconds.  A value of
#       zero ("0") results in all nodes in the network being evaluated at
#       once with no pause.
#    o  CV_SVC_CUG_LOGFILE is the path and filename to log the results of
#       matching configured SVC addresses against a member rule regular
#       expression when determining whether or not a node belongs in a member
#       rule's network distribution.  A valid value enables logging.  A null
#       or invalid value disables logging.  The CascadeView PID will be
#       appended to the filename.
#
CV_SVC_CUG_NODE_EVAL_THRESH=0
CV_SVC_CUG_LOGFILE=

export CV_SVC_CUG_NODE_EVAL_THRESH
export CV_SVC_CUG_LOGFILE

#
#  CBX 500 shared switching fabric thread bandwidth limit enforcement
#
#    When this variable is set to "TRUE" CascadeView will restrict the sum
#    of the logical port bandwidth on two IOMs sharing a common switching
#    fabric thread to the thread's maximum supported bandwidth.  Setting this
#    variable to "FALSE" will disable this restriction and permit logical
#    ports to oversubscribe the thread.
#
CV_ENFORCE_CBX500_THREAD_BW_LIMIT=TRUE
export CV_ENFORCE_CBX500_THREAD_BW_LIMIT
#
#  Config for Loading Profile Rate Tables
#
CV_PROFILE_DISCARD_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvDiscard.dat
CV_PROFILE_CONGESTION_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvCongestion.dat
CV_PROFILE_RIF_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvRif.dat
CV_PROFILE_RDF_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvRdf.dat

export CV_PROFILE_DISCARD_FILE
export CV_PROFILE_CONGESTION_FILE
export CV_PROFILE_RIF_FILE
export CV_PROFILE_RDF_FILE

# Env variable to DISABLE Get Card Status action before an
# ADD or DELETE or MODIFY is performed on a Circuit object
#CV_CARD_STATS=DISABLE
#export CV_CARD_STATS

# Enable CRC PassThru
CV_CRC_PASSTHRU_ENABLED=0

export CV_CRC_PASSTHRU_ENABLED
#
# Config for saving statistics directory
# Note: directory must be writable by others
#
CV_SAVE_STATS_DIR=
export CV_SAVE_STATS_DIR
#
# Default trunk OSPF area
```

```
#
CV_DEFAULT_TRUNK_OSPF_AREA=0.0.0.1
export CV_DEFAULT_TRUNK_OSPF_AREA
#
# Caching Dialogs
# To cache a dialog, and therefore only create one instance of it,
# set the CV_CACHE_SET_ALL_LPORTS_DIALOG environment variable to TRUE.
#
# Caching LPort screens
CV_CACHE_SET_ALL_LPORTS_DIALOG=
export CV_CACHE_SET_ALL_LPORTS_DIALOG
#
#
# The following environment variable allows the user to enable
# Drag and Drop.  To do this, uncomment out the "export XENVIRONMENT"
# line and restart ovw.
#
XENVIRONMENT=${CV_ROOT:-/opt/CascadeView}/app-defaults/CVEnableDragDrop
#export XENVIRONMENT
#
# IP Server PVC
# This allows customer to create IPServerPVC with both ends resides on
# being IPServer LPorts
# set the CV_CACHE_SET_ALL_LPORTS_DIALOG environment variable to TRUE.
#
CV_IP_SERVER_PVC_BOTH_ENDS_IP_SERVER_LPORTS=TRUE
export CV_IP_SERVER_PVC_BOTH_ENDS_IP_SERVER_LPORTS


# JNI CLASSPATH points to the Java Runtime Environment and the jConnect class
# for running JDBC to Sybase.
CV_JNI_CLASSPATH=${CV_ROOT}/jre/jre1.2/usr/java1.2/jre/lib/rt.jar:${CV_ROOT}/j
avalib/jConnect-4_2.jar:${CV_ROOT}/javalib/naviscore.jar

export CV_JNI_CLASSPATH
#
# database debug for JDBC layer
#
CVDB_JDBC_TRACE_FILE=
export CVDB_JDBC_TRACE_FILE

# This sets the packetsize for the database server.
# The decision is to disable the packetsize selection, so that we will
# always use the default DB packetsize. The suggested value is 1024
# instead of 512.
#CVDB_PACKETSIZE=1024
#export CVDB_PACKETSIZE

# This sets the maximum heap allocation size for the Java VM.
# The default value is 24m (24Mbytes). If a non-default value is to be used
# then uncomment the following two lines, and assign the required
# value. Typical values are 32m or 40m or 64m. Refer the SRN for
# more infotmation.
#CVENV_MAX_JAVAVM_HEAP_SIZE=
#export CVENV_MAX_JAVAVM_HEAP_SIZE

# The following two flags are used for the "Reliable Provisioning" feature
# OBJECT_PRAMSTATUS_OFF & DELETE_MARK_OUT_OF_SYNC.

# NOTE: This feature is not supported for PSAX 1250- CBX 500 circuits.

# OBJECT_PRAMSTATUS_OFF is for disabling the reliable provisioning
# which will record the SNMP status with new configuration for LPort
```

```
# and Ckt into the database when there is a SNMP failure.
# Through NavisCore if the  flag is set to '1', the SNMP status will
# not  be recorded in the  database, and the user will have the option
# to abort the   provisioning operation. If the flag is set to '0',
# which means the reliable provisioning feature is enabled, the user
# will not  have the option to abort the operation, and the SNMP status
# with new configuration will be recorded into the database when there
# is a SNMP failure. If the flag is not set, the default behaviour is
# equivalent to setting it to 1.
# Through the Provisioning Server, if OBJECT_PRAMSTATUS_OFF is set to 1
# then any snmp error that occurs will be returned to the client and the
# request will not be commited to the database. If it is set to 0, the
# snmp error will be ignored, the request will be commited to the
# database with the appropriate 'Status' &  'Failed Reason',
# &  no error will be sent back to the client.
# This is for the Add/Modify Provisioning requests.
# For Delete requests the DELETE_MARK_OUT_OF_SYNC flag has to be used in
# combination with OBJECT_PRAMSTATUS_OFF .
# The flag is obsolete in Europa
OBJECT_PRAMSTATUS_OFF=1
export OBJECT_PRAMSTATUS_OFF

# DELETE_MARK_OUT_OF_SYNC is only applicable when
# OBJECT_PRAMSTATUS_OFF is set to 0.
# Through NavisCore, DELETE_MARK_OUT_OF_SYNC is for the user
# to choose the behaviour when delete operation results in a
# SNMP error. If the flag is set to '1' then the user would be
# allowed to delete the object from DB and set the card out of
# sync. If the flag is set to '0' then  delete of the object
# has to succeed on the SWITCH to delete it from the DB.
# Through the Provisioning Server, if DELETE_MARK_OUT_OF_SYNC is
# set to 1 then upon a delete operation, the snmp error will be
# sent to the client,and no updation of the 'Status' &
# 'Failed Reason' attributes in the database will be made.
# If it is set to 0, then no error will be sent to the client,
# but the 'Status' & 'Failed Reason' attributes in the database
# will be updated appropriately. In both cases, the object
# will be left in the database upon snmp failure.
DELETE_MARK_OUT_OF_SYNC=1
export DELETE_MARK_OUT_OF_SYNC

# PS: In case of Circuits specially, the code is such
# that ,it checks for the Card Status.If the card is down
# whatever the combination of these flags be, an error will be returned.

# CV_MAP_MONITOR is used for optional map monitoring feature.
# By default, this variable is set to Enable.
# When CV_MAP_MONITOR is set to ENABLE, there will be periodic polls
# for the switches/trunks on the open map.
# When CV_MAP_MONITOR is set to DISABLE, there will be NO polls for
# the switches/trunks on the open map.
# Real status of a switch can be seen through the back panel though.
# After the user changes the variable setting here, NavisCore session
# needs to be restarted.
CV_MAP_MONITOR=ENABLE
export CV_MAP_MONITOR

# The maximum number of switches within the OSPF areas that the switch
# endpoint defined
# WARNING: DO NOT CHANGE THIS PARAMETER UNLESS INSTRUCTED TO DO SO
# BY LUCENT CUSTOMER SERVICE.  The limit of 400 switches is necessary
# for reliable switch performace in most networks.  It may only be
# raised in very special networks under emergency conditions.
```

```
# Also, Lucent reserves the right to remove this parameter in later
# releases.
#CV_OSPF_MAX_NUM_SWITCH=400
#export CV_OSPF_MAX_NUM_SWITCH

# When CV_NUMBER_OF_CKT is enabled, it restricts the wildcard search against
the database
# in Set/Show All PVC/Redirect PVC screens, by limiting the number of ckts
returned
# by the database server
#CV_NUMBER_OF_CKT=100
#export CV_NUMBER_OF_CKT

#Ingress HEC Error Uncorrectable Threshold Value
CV_MAXINHECERRORUTHR=1000
export CV_MAXINHECERRORUTHR

# When running multiple PS(more than 3) for adding Circuits, set this value.
# eg. set this value to max number of parallel PS user plans to run.
#CV_NUM_PS_ADD=1
#export CV_NUM_PS_ADD
#
#  end cascadeview.cfg
#
```

# cascadeview.cfg Variables

The `cascadeview.cfg` file contains the following variable descriptions:

**CV_TRACE_ENABLED=0** — This trace tool variable is for Lucent Customer Support diagnostic purposes only. Set to 1 to enable tracing.

**CV_TRACEFILE** — Specifies the location of the trace file.

**CV_ERROR_MSG_CAT_PATH=${CV_ROOT:-/opt/CascadeView}/nls/C/cascadeview-errors.cat** — Sets the location of the error file that NavisCore uses. *Do not modify* this path and filename.

**CVDB_TRACE_FILE_NAME** — Displays the trace filename for database trace. This file is used by Lucent Customer Support in conjunction with the previous trace variable.

**CV_DEF_ADDRESS_SIGNIFICANCE=2 # local** — Indicates that the addressing scheme used for DLCIs is of local significance only. A DLCI must only be unique to a logical port. *Do not modify* this value.

**CV_DEF_NETWORK_NUMBER** — Displays the internal IP address for the Lucent network. The NMS uses this number to contact and communicate with the gateway switch. This number must be a unique number within the LAN environment and must not be the same as any external Ethernet address. See Chapter 3, "Creating and Managing Network Maps," for more information about configuring the network number for the NMS.

**CV_SWITCH_INIT_FILEDIR=/var/CascadeView/initFiles** — Sets the location of the switch initialization files. *Do not modify* this path and filename.

**CV_HPOV** — The following variables specify the location of the HP OpenView configuration files.

**CV_HPOV_Cascade_Capability=${HPOV_SymbolPath}/cascadeview.srf** — Sets the location of the symbol registration file for HP OpenView that defines NavisCore objects.

**CV_HPOV_AC_60_Capability=${HPOV_SymbolPath}/Connector/Connector_ac60** — Defines the symbol for the PacketSTAR AC 60 Access Concentrator device.

**CV_HPOV_PSAX_1250_Capability=${HPOV_SymbolPath}/Connector/Connector_psax1250** — Defines the symbol for the PacketStar PSAX 1250 device.

**CV_HPOV_PSAX_2300_Capability=${HPOV_SymbolPath}/Connector/Connector_psax2300** — Defines the symbol for the PacketStar PSAX 2300 device.

**CV_HPOV_PSAX_4500_Capability=${HPOV_SymbolPath}/Connector/Connector_psax4500** — Defines the symbol for the PacketStar PSAX 4500 device.

**CV_IENGINEER_EXECUTABLE=${CV_IENGINEER_EXECUTABLE:-${CV_ROOT:-/opt/CascadeView}/etc/start-i-engineer.sh}** — Sets the location of the script that starts the Navis i-engineer client application.

**CV_EEPS_CLIENT_EXECUTABLE=${CV_EEPS_CLIENT_EXECUTABLE:-${CV_ROOT:-/opt/CascadeView}/etc/start-eeps-client.sh}** — Sets the location of the script that starts the end-to-end PVC provisioning client application.

**CV_SYNC** — The following variables provide specific PRAM Sync information.

**CV_SYNC_FILE_DIR=/tftpboot/cv_cfgSyncFiles** – Specifies the location of the PRAM synchronization files. *Do not modify* this path and filename.

**CV_SYNC_CHECK_DELAY=8**

**CV_SYNC_CHECK_INTERVAL=3**

**CV_SYNC_CHECK_COUNT=10**

**CV_UPLOAD_CHECK_DELAY=5** – Specifies the time delay (in seconds) that the NMS waits before it checks the PRAM upload status.

**CV_UPLOAD_CHECK_INTERVAL=3** – Specifies the amount of time (in seconds) between checks.

**CV_UPLOAD_CHECK_COUNT=20** – Specifies the maximum number of checks before the NMS reports an error.

**CV_SYNC_FILE_OFFLINE_LIST=/tftpboot/cv_cfgSyncFiles/offline.lst** (*B-STDX only*) — Sets the location of the offline PRAM synchronization files. *Do not modify* this path and filename.

**CV_SNMP_IS_ENABLED=1** — This setting enables SNMP. *Do not modify* this value.

**CV_SNMP_MAX_RETRIES=4** — Specifies the number of retries the SNMP client attempts before it declares a timeout. The default is 4. In larger networks where the NMS is on a very busy LAN segment or is multiple hops away from the switch that contains the Ethernet module, you may need to increase this value to 5.

**CV_SNMP_REQUEST_TIMEOUT=1600** — Specifies the amount of time (in tenths of a second) between SNMP retries from the Provisioning Client to the Provisioning Server. This variable is currently set to a default value of 1600, which indicates that there is a 160-second wait between each SNMP retry.

**CV_SNMP_RETRY_INTERVAL=300** — Specifies the amount of time (in tenths of a second) between SNMP retries from NavisCore or Provisioning Server to a switch. This variable is currently set to a default value of 300, which indicates that there is a 30-second wait between each SNMP retry. CPU-intensive operations, such as PRAM synchronization, can cause NavisCore to drop node polls. Increase the amount of time between SNMP retries to avoid this problem. If you modify this value, restart NavisCore.

**Note –** Lucent recommends a value of 30 seconds for a configuration with 10 to 15 simultaneous instances of NavisCore and more than 15 switches in the network.

**CV_PUBLIC_COMMUNITY=public** — Specifies the SNMP public community name.

**CV_SNMP_READ_WRITE_COMMUNITY** — Specifies the default master community name of the NMS. Each NMS you define must use this name.

**CV_SNMP_NMS_HOSTNAME** — Specifies an alternate SNMP hostname. Use this variable if your NMS has more than one IP interface. The default for this variable is the NMS with one IP interface.

**CV_BG_DIAG_POLL_INTERVAL=3** — This variable has no effect since background diagnostics do not poll the background diagnostic result.

**CV_FG_DIAG_CHECK_DELAY=5** — Sets the time delay (in seconds) that the NMS waits before it sends the first PDU to check that foreground diagnostics are complete.

**CV_FG_DIAG_CHECK_INTERVAL=1** — The NMS sends a “check PDU” multiple times until the diagnostics are complete. The CHECK_INTERVAL is the interval (in seconds) between the check PDUs.

**CV_FG_DIAG_CHECK_COUNT=3** — The CHECK_COUNT is the maximum number of check PDUs that the NMS will send.

**Note –** The value of CHECK_COUNT is used as the interval and the value of CHECK_INTERVAL is used as the count. *Do not modify* these values.

**CV_DIAG_REASON_CATALOG=${CV_ROOT:-/opt/CascadeView}/nls/C/cvDiagReasons.cat** — This variable points to the catalog file that contains the diagnostics result strings**.** *Do not modify* this path and filename.

**CV_NODE_QOS_POLL_TIMER=60** — Sets the default value for the Quality of Service (QoS) statistics for retrieving circuit data from the switches.

**CV_STATUS_POLL_INTERVAL=300** — The NMS node poll status interval variable sets the time interval (in seconds) that NavisCore uses to poll the nodes in the network. The default value is 300 seconds (5 minutes).

You can change the interval based on the number of users running NavisCore. A system with 30 users polls approximately once every 10 seconds. This change takes effect when you restart NavisCore. In a configuration with 10-15 simultaneous instances of NavisCore, 60 seconds is an acceptable value for this variable.

**Note –** The following "CV_PPORT_DEF" values are used for physical port performance tuning. *Do not modify* these values.

- CV_PPORT_DEF_DISCARD_HIGH=32
- CV_PPORT_DEF_DISCARD_LOW=10
- CV_PPORT_DEF_AQL_THRESHOLD=16

**CV_SMDS_MASK_SIZE=6** (*B-STDX only*) — Use this variable to modify the size of the SMDS address mask for the entire network map. The mask size indicates the number of address digits a switch uses to make a switching decision. Valid values are 1 through 15. A mask size of 0 (zero) will disable the SMDS switching system. For more information, see the *NavisCore SMDS Configuration Guide*.

**CV_DISABLE_SMDS_SS=0** (*B-STDX only*) — Use this variable to enable (0) or disable (1) the SMDS switching system for the entire NavisCore network. If you modify this value, you must PRAM Sync each control processor (CP) card in the network.

**CV_AUDIT_TRAIL_ENABLE=TRUE** — Use this variable to enable (TRUE) or disable (FALSE) the `Audit Trail` utility. If you modify this variable, you must shut down and then restart NavisCore. For more information about the `Audit Trail` utility, see "Using the Audit Trail Utility" on page 2-8.

**CV_OUT_OF_SYNC_REFRESH_CNT=5** — The map you display in each session of NavisCore refreshes every N node polls, where N is the number of specified node polls. To refresh, NavisCore checks the database for any out-of-sync conditions. Edit this variable to modify the refresh rate. To disable this feature, set this variable to 0 (zero).

**CV_ENABLE_HSSI_PPORT_OVERCLOCKING=FALSE** (*B-STDX only*) — Use this variable if you must exceed the maximum HSSI module capacity. The total bandwidth of all physical ports on the HSSI module can exceed the maximum module capacity of 44.212 Mbps. However, this setting can cause frame errors if all physical ports are running at full speed. To resolve this problem, set this variable to True.

**CV_ENABLE_ATM_TRK_BW_OVERSUBSCRIBE=FALSE** — If you set this value to True, the total bandwidth of all ATM OPTimum trunk logical ports on a single physical port can exceed maximum physical port bandwidth.

**CV_MAX_INTERFACES_PER_STDX=150** — This value specifies the maximum number of logical ports that can be defined on an STDX switch. You can set this value between 0 and 254.

**CV_POLL_SERVER_PORT=10888** — This variable represents the port NavisCore polls when using the Poll Server function. The default value is 10888. The value must match the POLL_SRV_SRV_PORT. See Appendix B, "Configuring Poll Server," for more information.

**CV_POLL_SERVER_ADDRESS=localhost** — This variable is required and provides the IP address (in dot notation) of the node used to run the Poll Server. If the Poll Server runs on the same node as NavisCore, this variable is set to a value of `localhost`. Setting this variable and the CV_POLL_SERVER_PORT variable enables Poll Server. See Appendix B, "Configuring Poll Server," for more information.

**CV_ATMUNI_UNI_TYPE_DEFAULT=PUBLIC** — This value is set to Public if at least one end of this connection attaches to a public network. It is set to Private if this connection resides completely within a private network. See the *B-STDX and CBX Frame Relay Services Configuration Guide* for more information about ATM UNI logical ports.

**CV_ATMUNIDCE_CONN_TYPE_DEFAULT=NET_ENDSYS** — This value is set to Net_Endsys if this port connects to a router or host. It is set to Net_Net if this port connects to another ATM switch. See the *B-STDX and CBX Frame Relay Services Configuration Guide* for more information about connection types.

**CV_ENABLE_MOVE_ALL_CIRCUIT=TRUE** — If this variable is set to True, the Move Circuit feature is enabled for this network; if set to False, it is disabled. See the *B-STDX and CBX Frame Relay Services Configuration Guide* for more information about the Move Circuit feature.

**CV_MV_CKT_CARD_TYPE_CHECKING=TRUE** — The Move Circuit function fails if the number of circuits moved exceeds the maximum allowed for the IOM. If this variable is set to True, the NMS notifies you that this problem exists before you move the circuit. If you set this variable to False, notification is not sent.

**CV_CUR_VPNCUST** — Indicates the current view (binding) for this map, either VPN or CUSTOMER.

**CV_CUR_VPN_NAME** — If CV_CUR_VPNCUST indicates a VPN binding, this variable displays the VPN name the map is using.

**CV_CUR_CUST_NAME** — If CV_CUR_VPNCUST indicates a customer binding, this variable displays the customer name the map is using.

**CV_LOGON_TYPE** — This variable displays the logon privilege you enabled for this map, either OPERATOR or PROVISIONING.

**CV_CKT_PRIORITY_LEVELS=FOUR** — This variable represents the time interval (in seconds) to refresh QoS metrics. Valid values are FOUR and SIXTEEN. The range is 300 to 1799 seconds.

**CV_OSPF_LSA_REFRESH_INTERVAL=0** — This variable represents the time interval to refresh QoS metrics. The time periods are in seconds. Valid value range from 300 to 1799.

**CV_SNMP_TRACE_FILE=** — This variable represents the path and filename used to log SNMP results.

**CV_CELLCKT_TYPE=INTERWORKING** — When set to INTERWORKING, cell circuits will be interworking circuits; otherwise, cell circuits will be normal. Valid values are INTERWORKING and NORMAL.

**CV_PRAM_UPLOAD_ABORT_ENABLED=1** — This variable adds the Pram Upload Abort button to the PRAM dialog box. To disable this feature, set the value to 0 (zero).

**CV_310_BULK_LPORT=FALSE** — This variable adds the Bulk LPort Create button to the Set All Logical Ports dialog box. This feature is disabled by default.

**CV_NET_DIST_EVAL_INTERVAL=2** — This variable represents the number of seconds to pause between evaluations when determining the network distribution of a distributed Lucent object. It is used when defining an evaluation threshold for a Lucent distributed object. Valid values range from 1 to 60.

**CV_SVC_CUG_NODE_EVAL_THRESH=0** — This variable represents the number of nodes (out of all the nodes in the network to be evaluated) on which to match configured SVC addresses before pausing for the number of seconds identified by the variable CV_NET_DIST_EVAL_INTERVAL. A value of 0 (zero) results in all nodes in the network being evaluated at once with no pause.

**CV_SVC_CUG_LOGFILE** — This variable represents the path and filename used to log the results of matching configured SVC addresses when determining if a node belongs in a member rule's network distribution. A valid value enables logging. A null or invalid value disables logging. The NavisCore process ID will be appended to the filename.

**CV_ENFORCE_CBX500_THREAD_BW_LIMIT=TRUE** — When set to True, this variable will restrict the sum of the logical port bandwidth on two IOMs sharing a common switching fabric thread to the thread’s maximum supported bandwidth. A False setting will permit logical ports to oversubscribe the thread.

**CV_PROFILE** — The following variables specify the location of the default buffer threshold and rate profile files used for the ATM Flow Control Processor (FCP) module. The ATM FCP module uses these tables to determine the available bandwidth, the rate increase factor (RIF), and the rate decrease factor (RDF) for each VC on a port. See the *B-STDX, CBX, and GX ATM Services Configuration Guide* for more information.

**CV_PROFILE_DISCARD_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvDiscard.dat** – Sets the location of the default discard file for NavisCore.

**CV_PROFILE_CONGESTION_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvCongestion.dat** – Sets the location of the default congestion file for NavisCore.

**CV_PROFILE_RIF_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvRif.dat** – Sets the location of the default RIF file for NavisCore.

**CV_PROFILE_RDF_FILE=${CV_ROOT:-/opt/CascadeView}/etc/cvRdf.dat** – Sets the location of the default RDF file for NavisCore.

**CV_CARD_STATS** — Use this variable to disable the Get Card Status activity before an add, delete, or modify is performed on a circuit object. This feature is enabled by default.

**CV_CRC_PASSTHRU_ENABLED=0** — This variable, when set to 1, enables end-to-end cyclic redundancy check (CRC) protection for Frame Relay logical ports on supported B-STDX 9000 and CBX 500 modules. Enabling end-to-end CRC protection guarantees that any corruption of the frame by Lucent switches will be detected and discarded by the end user as an invalid CRC frame.

By default, CV_CRC_PASSTHRU_ENABLED is set to 0 (zero), which disables the end-to-end CRC check feature. When you set CV_CRC_PASSTHRU_ENABLED to 1 and restart NavisCore, the CRC Checking field becomes enabled in the Add Logical Port and Modify Logical Port dialog boxes for those modules that support the feature.

**CV_SAVE_STATS_DIR** — This variable identifies the directory used for storing various configuration statistics. The directory must have write privileges.

**CV_DEFAULT_TRUNK_OSPF_AREA** — This variable identifies the default trunk OSPF area.

**CV_CACHE_SET_ALL_LPORTS_DIALOG** — This variable, when set to True, caches a dialog box.

**XENVIRONMENT=${CV_ROOT:-/opt/CascadeView}/app-defaults/CVEnableDragDrop** — This variable, when uncommented, enables drag and drop functionality. You may need to restart HP OpenView.

**CV_IP_SERVER_PVC_BOTH_ENDS_IP_SERVER_LPORTS=TRUE** — This variable, when set to True, allows IP Server PVCs with IP Server logical ports on both endpoints.

**CV_JNI_CLASSPATH=${CV_ROOT}/jre/jre1.2/usr/java1.2/jre/lib/rt.jar: ${CV_ROOT}/javalib/jConnect-4_2.jar:${CV_ROOT}/javalib/naviscore.jar** — This variable is necessary for the Java Database Connectivity (JDBC) protocol to communicate with the database server. *Do not modify* this path and filename.

**CVDB_JDBC_TRACE_FILE=** — Specifies the location of the JDBC trace file.

**CVDB_PACKETSIZE=** — This variable represents the packet size used by the application to communicate with the database server. NavisCore always uses the default packet size configured for your database. As a result, the CVDB_PACKETSIZE variable is commented out by default.

**CVENV_MAX_JAVAM_HEAP_SIZE=** — This variable represents the total number of PVCs that can be configured on a BIO2 module in a GX 550 switch. The default maximum PVC limit used by NavisCore is 24k, using a default value of 24m (MBytes). To allow for more PVCs, up to a maximum of 64k, specify another amount in the format of "Nm" where N is the number of PVCs required. For example, to allow for 32K PVCs, use the following variable statement:

CVENV_MAX_JAVAVM_HEAP_SIZE=32m

Typical values are 32m, 40m, or 64m.

**OBJECT_PRAMSTATUS_OFF=1** — Use this variable to enable (1 - default) or disable (0) the `Sync Tool` utility. If you modify this variable, you must shut down and then restart NavisCore.

**DELETE_MARK_OUT_OF_SYNC=1**— Use this variable to manage PVC, logical port, and PMP circuit deletions with the `Sync Tool` utility.

*If you set this variable to 1* (default), you can delete a circuit or logical port on a managed or unmanaged switch. If the switch is unmanaged, NavisCore deletes the record from the database and marks the card on which the circuit, logical port, PMP leaf, or PMP root resides as out-of-sync.

*If you set this variable to 0 (zero)* and a circuit or logical port deletion fails, NavisCore does not remove the record from the database; instead, the database stores a failed status.

**CV_MAP_MONITOR=ENABLE** — Use this variable to control the optional map monitoring feature. If you set this value to ENABLE, there will be periodic polls for the switches/trunks on the open map. If you set the value to DISABLE, there will be no polls for the switches/trunks on the open map. If you modify this value, restart NavisCore.

**Note –** The value of **CV_OSPF_MAX_NUM_SWITCH** is used to specify the maximum number of switches within the OSPF areas that the switch endpoint defined. The limit of 400 switches is necessary for reliable switch performance in most networks.

**Note –** *Do not modify* this parameter unless instructed to do so by Lucent Customer Service.

**CV_NUMBER_OF_CKT=100** — Use this variable to restrict a wildcard search against the database by limiting the number of circuits returned by the database server.

**CV_MAXINHECERRORUTHR=1000** — Use this variable to configure the ATM threshold crossing alarm ingress HEC error uncorrectable threshold value. The default is 1,000 and the variable can be set to a maximum value of 10,000.

B

# Configuring Poll Server

This release provides the optional Poll Server feature, which does not run automatically until you configure and start it. By using the Poll Server, you can reduce NavisCore's status-polling overhead when there are multiple NavisCore users monitoring the network simultaneously. If there are more than five NavisCore sessions running, using the Poll Server is the most efficient way to poll the switches without causing switch congestion.

The Poll Server acts like a daemon running in the background waiting for requests from an NMS session. When the Poll Server receives a request for status information, it polls the switch. Any additional NMS sessions requesting data receive status information from the Poll Server directly.

**Note –** As a general guideline, with 40 consecutive users and 50 switches in the network, the Poll Server uses approximately 2 MB of RAM.

To use the Poll Server, you must set corresponding parameters in both NavisCore and the Poll Server's environment variables. NavisCore uses these environment variables to locate the Poll Server. If the environment variables are not set, NavisCore assumes that Poll Server is not present and communicates directly with your switches.

# NavisCore Environment Variables

The environment variables that configure the Poll Server for NavisCore are set in the `cascadeview.cfg` file located in the default directory `/opt/CascadeView/etc`. The environment variable settings in the `cascadeview.cfg` file disable the Poll Server by default. If you change these variables in `cascadeview.cfg`, you must start the Poll Server node and restart all NavisCore sessions for the changes to take effect.

See Appendix A, "NavisCore Configuration File," for information about modifying the `cascadeview.cfg` file.

Table B-1 describes the main parameters used to configure NavisCore to use the Poll Server function.

**Table B-1. Poll Server Parameters in the cascadeview.cfg File**

| Parameter | Description |
|---|---|
| CV_POLL_SERVER_PORT | The port that NavisCore polls when using the Poll Server. The default value is 10888. This parameter is required and must match the POLL_SRV_SRV_PORT parameter (described in Table B-2).<br>***Note:*** *As a minimum configuration, set this parameter to 10888, and set CV_POLL_SERVER_ADDRESS to the node where the Poll Server is running.* |
| CV_POLL_SERVER_ADDRESS | IP address (in dot notation) of the node used to run the Poll Server. If the Poll Server runs on the same node as NavisCore, you can specify `localhost`. To use Poll Server, you must set this variable.<br>***Note:*** *As a minimum configuration, set this parameter to the node where the Poll Server is running, and set CV_POLL_SERVER_PORT to 10888.* |
| CV_STATUS_POLL_INTERVAL | *(Optional)* Status polling interval used by NavisCore. The default is 300 seconds. This setting should be greater than the POLL_TIME_INTERVAL setting (described in Table B-2). |

# Poll Server Environment Variables

You configure the Poll Server environment variables in the `run-pollsrv.sh` file, which is located in the `/opt/CascadeView/bin` directory. Table B-2 describes the main parameters used to configure the Poll Server feature.

**Table B-2. Poll Server Parameters in run-pollsrv.sh File**

| Parameter | Description |
|---|---|
| POLL_SRV_SRV_PORT | *(Optional)* The port used to receive polls from NavisCore. This setting must match the CV_POLL_SERVER_PORT setting (described in Table B-1). The default value is 10888. |
| POLL_SRV_COMMUNITY | *(Optional)* The default value for the community name used to poll switches. The default value is `public`. |
| POLL_TIME_INTERVAL | *(Optional)* The polling interval used to poll switches. This setting should be less than the CV_STATUS_POLL_INTERVAL setting (described in Table B-1). The default value is 20 seconds. |
| POLL_SRV_DEV_PORT | *(Optional)* The port used when polling switches. The default value is 161. Normally, you should not change this value. |
| POLL_SRV_DEV_TIMEOUT | *(Optional)* The timeout value used when polling switches. The default value is 1500 milliseconds. |
| POLL_SRV_DEV_RETRIES | *(Optional)* The number of retry attempts for polling. The default value is 4. Normally, you should not change this value. |

# Minimum Configuration

The minimal configuration that enables NavisCore to use the Poll Server is to set CV_POLL_SERVER_PORT to 10888 and CV_POLL_SERVER_ADDRESS to the node where the Poll Server is running. If the Poll Server runs on the same node, you can set CV_POLL_SERVER_ADDRESS to `localhost`. If you do not set these environment variables, NavisCore polls the switches directly.

The Poll Server expects that the community string sent to the switch will be embedded in the string sent from the client. If the Poll Server cannot find the community string value, it uses the value of the POLL_SRV_COMMUNITY variable as the community name for the switches. It uses the same value is used for all switches.

The Poll Server periodically refreshes its cached values. The setting of the POLL_TIME_INTERVAL variable specifies the expiration time for a value. This value should be lower than the CV_STATUS_POLL_INTERVAL, because values collected more frequently than the POLL_TIME_INTERVAL will not reflect changes.

# Starting and Stopping Poll Server

This section describes how to start and stop the Poll Server. This procedure assumes that the default NavisCore directory is `/opt/CascadeView`. If your default directory is in a different location, substitute your directory pathname for `/opt/CascadeView` in the following steps.

**Note –** When starting and stopping the Poll Server, be sure to close (exit) and restart all NavisCore sessions to take advantage of the configured polling service.

## Starting Poll Server

To start the Poll Server:

1. As the root user, enter the following command to start the Poll Server:

   **`/opt/CascadeView/bin/start-pollsrv.sh`**

   This command adds the `run-pollsrv.sh` entry in the `/etc/inittab` file and starts the Poll Server (pollsrv) process.

2. Edit the `/opt/CascadeView/etc/cascadeview.cfg` file as follows:

   a. Locate the following CV_POLL_SERVER environment variables in the `cascadeview.cfg` file:

   ```
   CV_POLL_SERVER_PORT
   CV_POLL_SERVER_ADDRESS
   export CV_POLL_SERVER_PORT CV_POLL_SERVER_ADDRESS
   ```

**b.** Verify that there is no **#** (comment) sign before these environment variables. If there is a # sign preceding a variable, uncomment the variable by removing the # sign.

**3.** (*Optional*) If necessary, customize the Poll Server-related variables.

**4.** Press the Escape key.

**5.** Enter **`:wq!`**

Any NavisCore sessions started after you complete these steps will use the Poll Server.

## Stopping Poll Server

To stop the Poll Server:

**1.** As the root user, enter the following command:

**`/opt/CascadeView/bin/stop-pollsrv.sh`**

This command removes the `run-pollsrv.sh` entry from the `/etc/inittab` file and stops the Poll Server (pollsrv) process.

**2.** Edit the `/opt/CascadeView/etc/cascadeview.cfg` file as follows:

**a.** Locate the following CV_POLL_SERVER environment variables in the `cascadeview.cfg` file:

`CV_POLL_SERVER_PORT`

`CV_POLL_SERVER_ADDRESS`

**b.** Comment out these environment variables by adding a **#** sign before each line.

Any NavisCore sessions started after you complete these steps no longer use the Poll Server.

C

# NavisCore Menu System

This appendix contains a diagram of the NavisCore menu system shown in Figure C-1.

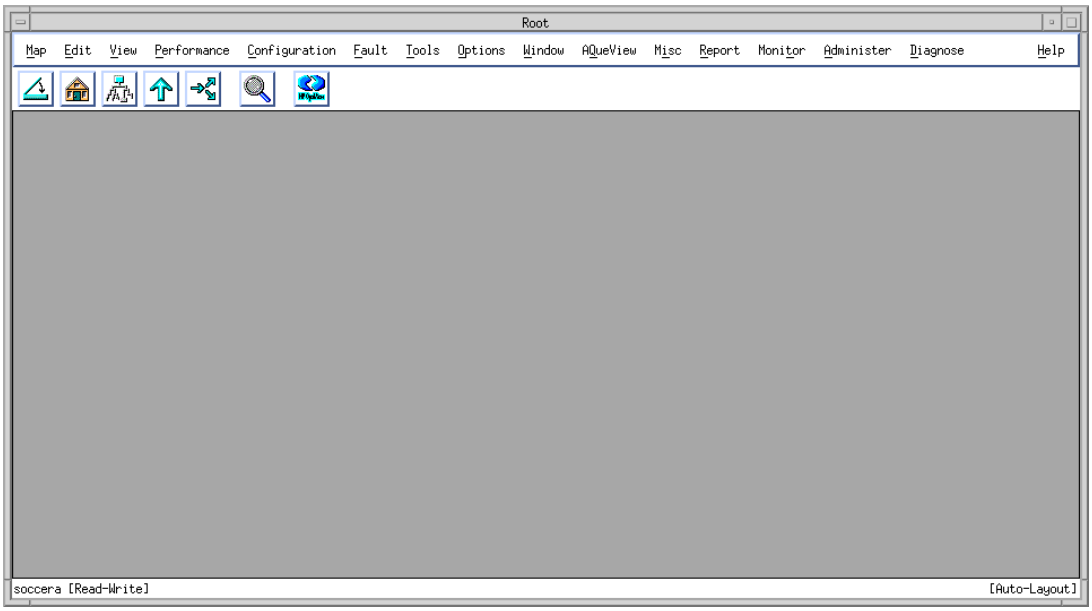
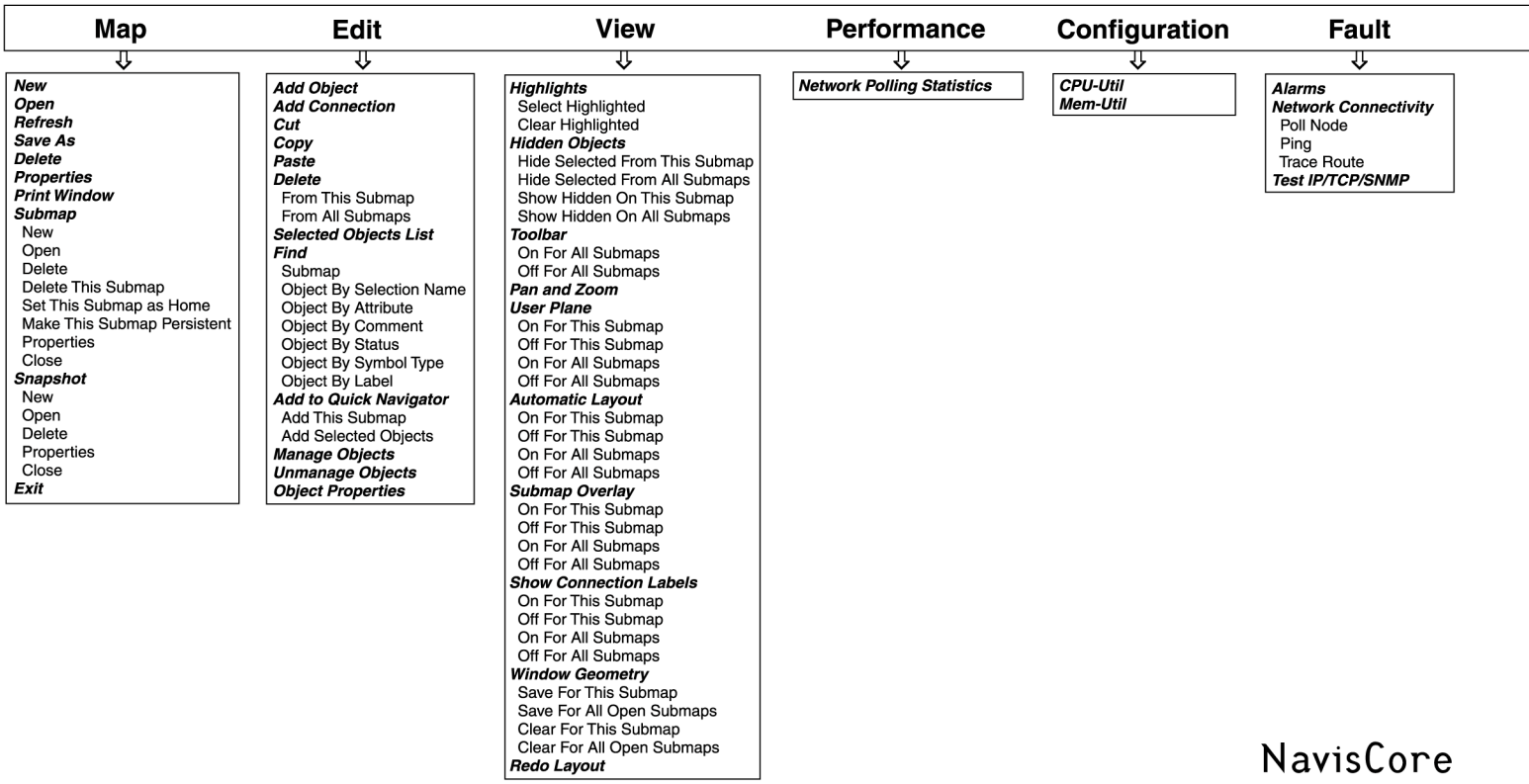
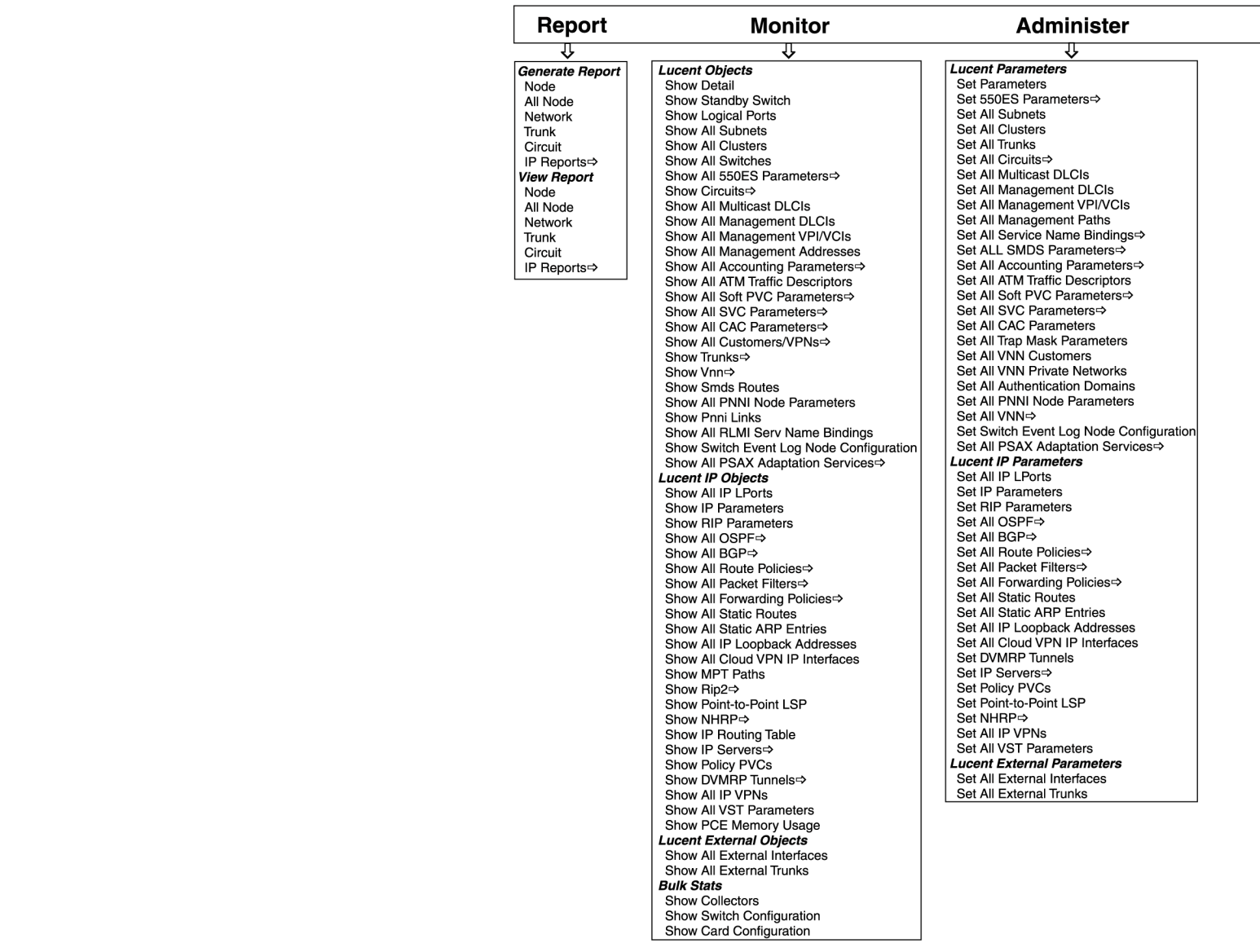



**Figure C-1. Root Window with Menu Bar**

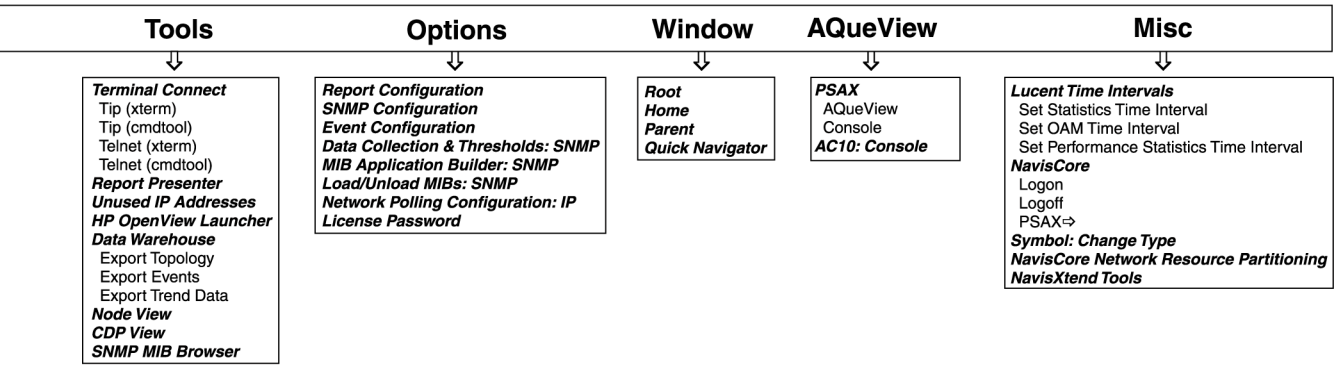
NavisCore



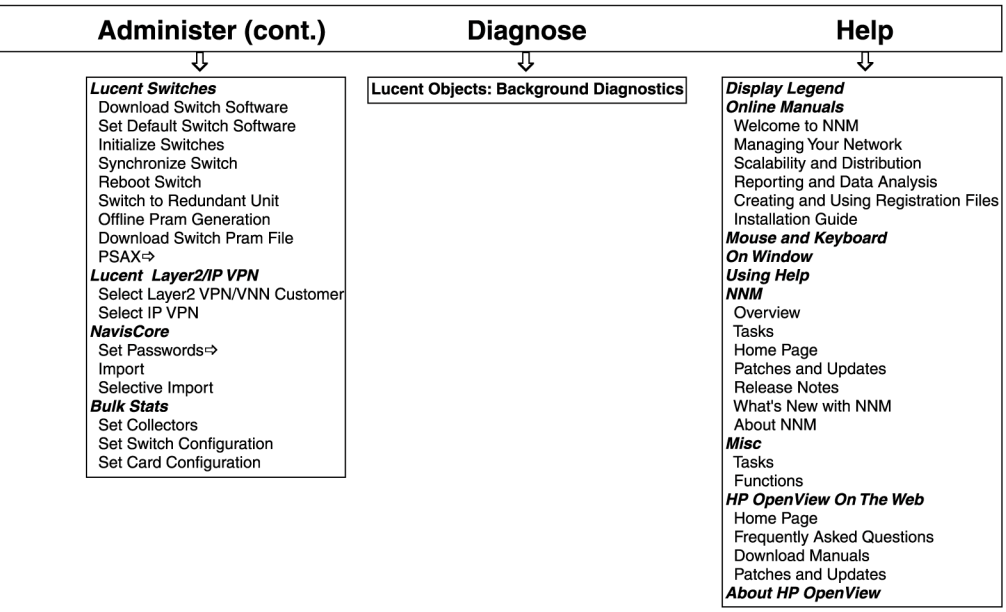

NavisCore



# Menu System




# Menu (cont.)



# Acronyms

This guide uses the following acronyms:

| Acronym | Description |
|---|---|
| AIS | alarm indication signal |
| APS | Automatic Protection Switching |
| ASE | Autonomous System External |
| ATM | asynchronous transfer mode |
| BIO | Base Input/Output |
| CCITT | Consultative Committee for International Telegraph and Telephone<br>Now called *ITU-T.* |
| CDE | Common Desktop Environment |
| CE | circuit emulation |
| CIR | committed information rate |
| CP | control processor |
| CPA | Control Processor Adapter |
| CPE | customer premise equipment |
| CRC | cyclic redundancy check |
| DCE | data communications equipment |
| DLCI | Data Link Connection Identifier |
| DTE | data terminal equipment |
| EEPS | End-to-end Provisioning Server |

| Acronym | Description |
|---|---|
| FCP | Flow Control Processor |
| FR | Frame Relay |
| FRAD | Frame Relay assembler/disassembler |
| FRF | Frame Relay Forum |
| FTP | File Transfer Protocol |
| GUI | graphical user interface |
| HSSI | high-speed serial interface |
| IMA | Inverse Multiplexing for ATM |
| INS | InterNetworking Systems |
| I/O | input/output |
| IOM | input/output module |
| IOP | input/output processor |
| IP | Internet Protocol |
| IRAM | Intelligent Random Access Memory |
| ITU | International Telecommunications Union |
| ITU-T | International Telecommunications Union - Telecommunication Standardization Sector (formerly CCITT) |
| JDBC | Java Database Connectivity |
| Kbps | kilobits per second |
| LAN | local area network |
| LED | light emitting diode |
| LMI | local management interface |
| LSA | link state advertisement;<br>link state acknowledgement;<br>link state announcement |
| LSP | label switched path |
| Mbps | megabits per second |
| MIB | Management Information Base |

| Acronym | Description |
|---|---|
| MPVC | management permanent virtual circuit |
| NIC | network interface card |
| NMS | Network Management Station |
| NNI | Network-to-Network Interface |
| NP | node processor |
| NPA | node processor adapter |
| NTP | Network Timing Protocol |
| OPTimum | Open Packet Trunking |
| OSPF | Open Shortest Path First |
| PCMCIA | Personal Computer Memory Card International Association |
| PDU | protocol data unit |
| Phy | physical sublayer; physical interface module |
| PLCP | Physical Layer Convergence Protocol/Procedure |
| PMP | point-to-multipoint |
| PNNI | private network-to-network interface |
| Pport | physical port |
| PRAM | Parameter Random Access Memory |
| PVC | permanent virtual circuit |
| QoS | Quality of Service |
| RADIUS | Remote Authentication Dial-In User Service |
| RAM | Random Access Memory |
| RDF | rate decrease factor |
| RIF | rate increase factor |
| RIP | Routing Information Protocol |
| SF | signal fail;<br>switch fabric module |
| SLA | Service Level Agreement |
| SLIP | Serial Line Internet Protocol |

| Acronym | Description |
|---|---|
| SMDS | Switched Multimegabit Data Service |
| SNMP | Simple Network Management Protocol |
| SONET | Synchronous Optical Network |
| SP | switch processor |
| SPA | switch processor adapter |
| SQL | Structured Query Language |
| SPVC | soft permanent virtual circuit |
| SPVCC | soft permanent virtual channel connection |
| SPVPC | soft permanent virtual path connection |
| SRN | Software Release Notice |
| SVC | switched virtual circuit |
| TAC | Technical Assistance Center |
| TDM | time division multiplexing |
| TM | timing module;<br>Traffic Management |
| ToS | Type of Service |
| UDP | User Datagram Protocol |
| UIO | Universal Input/Output |
| UNI | user-to-network interface |
| VC | virtual channel |
| VCA | virtual circuit availability |
| VCC | virtual channel connection;<br>virtual circuit connection |
| VCI | virtual channel identifier;<br>virtual circuit identifier |
| VCL | virtual circuit link;<br>virtual channel link |
| VNN | Virtual Network Navigator |
| VPI | virtual path identifier |

| Acronym | Description |
|---|---|
| VPN | virtual private network |
| WAN | wide area network |

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# B-STDX, CBX, and GX Getting Started User's Guide
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