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Getting Started with the Business Policy Switch 2000 Management Software

NORTEL
NETWORKS™

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Preface

Business Policy Switch 2000 management software provides the means to configure and monitor the operation of your Business Policy Switches. Management software includes the console interface resident in each Business Policy Switch; Java-based Device Manager software, which you install on a management station in the network; and a Web-based management interface accessible through a Web browser.

This guide provides instructions for installing the Device Manager software and summarizes procedures for using Device Manager and the Web interface. For information about using the console interface, refer to *Using the Business Policy Switch 2000*.

This guide includes the following information:

- A summary of management options for the switch
- Instructions to install Device Manager software
- A summary of navigation procedures for Device Manager and initial setup procedures using Device Manager
- An overview of the Web management interface
- Common startup problems and how to troubleshoot them

Before you begin

This guide is intended for network administrators with the following background:

- Basic knowledge of networks, Ethernet bridging, and IP and IPX routing
- Familiarity with networking concepts and terminology
- Basic knowledge of network topologies
- Experience with windowing systems, graphical user interfaces (GUIs), or Web browsers

Text conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is <code>ping <ip_address></code> , you enter <code>ping 192.32.10.12</code>
bold Courier text	Indicates command names and options and text that you need to enter. Example: Enter # chmod 755 ./install_dmvm.
<i>italic text</i>	Indicates new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is <code>install_dmvm <filename></code> <code><target_directory></code> , <i>target_directory</i> is one variable and you substitute one value for it.
plain Courier text	Indicates command syntax and system output, for example, prompts and system messages. Example: % JDM
separator (>)	Shows menu paths. Example: Edit > File System identifies the File System option on the Edit menu.

Related publications

For more information about using the Business Policy Switch, refer to the following publications:

- *Using the Business Policy Switch 2000* (part number 208700-A)
Describes how to install and use the Business Policy Switch 2000; includes instructions to use the console interface to configure the switch.
- *Business Policy Switch 2000 Installation Instructions* (part number 209319-A)
Provides installation instructions for the switch in English and five other languages.
- *Installing Media Dependent Adapters (MDAs)* (part number 302403-D)
Provides installation instructions for media dependent adapters in the Business Policy Switch; includes descriptions of the available MDAs.
- *Reference for the Business Policy Switch 2000 Management Software Operations* (part number 209322-A)
Describes how to use Device Manager software to manage the switch.
- *Installation and Reference for the 100 Watt DC-DC Converter Module* (part number 209132-A)
Describes how to install and connect the BayStack DC-DC Converter.
- *Installing the BayStack 400-ST1 Cascade Module* (part number 304433-B)
Describes how to install cascade modules in the switch and connect up to eight such switches into a stack configuration.
- *Using Web-Based Management for the Business Policy Switch 2000* (part number 209570-A)
Describes how to use the Web-based management interface to configure and monitor switch operations.

You can print selected technical manuals and release notes free, directly from the Internet. Go to the support.baynetworks.com/library/tpubs/ URL. Find the product for which you need documentation. Then locate the specific category and model or version for your hardware or software product. Use Adobe Acrobat Reader to open the manuals and release notes, search for the sections you need, and print them on most standard printers. Go to Adobe Systems at www.adobe.com to download a free copy of Acrobat Reader.

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Technical Solutions Center	Telephone
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North America	(800) 2LANWAN or (800) 252-6926
Asia Pacific	(61) (2) 9927-8800
China	(800) 810-5000

An Express Routing Code (ERC) is available for many Nortel Networks products and services. When you use an ERC, your call is routed to a technical support person who specializes in supporting that product or service. To locate an ERC for your product or service, go to the www12.nortelnetworks.com/ URL and click ERC at the bottom of the page.

Chapter 1

Management basics

This chapter summarizes basic operational procedures in a Business Policy Switch and provides an overview of switch management options. Topics in this chapter include the following information:

- Overview of management tools (next)
- Setting IP parameters for management access to the switch ([page 18](#))
- Access levels and passwords ([page 20](#))

Management tools

You can use three management tools to monitor and manage your Business Policy Switch:

- Device Manager software (next)
- Web management interface ([page 18](#))
- Console port interface (Refer to *Using the Business Policy Switch 2000*.)

Device Manager

The Java-based Device Manager for the Business Policy Switches is a graphical user interface (GUI) that allows you to manage a standalone switch or a single switch stack. Device Manager provides the options found in other management tools, as well as the ability to manage VLANs and MultiLink Trunks. You can display or print statistics and other data in one of three graph formats. To use Device Manager, you must have network connectivity to a management station running Device Manager on one of the supported platforms. You must also assign an IP address to the switch, as described in “[Setting the switch IP parameters](#)” on [page 18](#).”

Web management interface

The Business Policy Switch Web management interface is a Web-based graphical user interface that you use with a Web browser to manage a standalone switch or switch stack. You can access devices on your network from various locations within the network.

To access the Web interface, you need a Web browser and an IP address for the switch or switch stack. To assign the IP address to the switch, refer to “[Setting the switch IP parameters](#)” next.

Setting the switch IP parameters

To allow management access to the switch, you must assign IP parameters for the switch.

To set the IP parameters:

- 1 Connect a terminal to the Console port on the switch.
- 2 Set the terminal protocol as follows:
 - 9600 baud
 - No parity
 - 8 bits
 - 1 stop bit
 - Flow control set to Xon/Xoff
 - Window Terminal Emulator option set to no
 - Terminal Preferences: Function, Arrow, and Control keys active
 - Buffer size set to 24
- 3 Connect the switch to power.
- 4 After the Nortel Networks logo is displayed, press [Ctrl]-Y to display the Main Menu ([Figure 1](#)).

At first the screen displays the Main Menu for a standalone switch. Then, if the switch is part of a stack configuration, the screen is refreshed within 20 seconds to show the Main Menu for a stack configuration. The Main Menu for a stack configuration includes stack features (bold text in [Figure 1](#)).

Figure 1 Main menu

```

Business Policy Switch Main Menu

IP Configuration/Setup...
SNMP Configuration...
System Characteristics...
Switch Configuration...
Console/Comm Port Configuration...
Identify Unit Numbers...
Renumber Stack Units...
Display Hardware Units...
Spanning Tree Configuration...
TELNET Configuration...
Software Download...
Configuration File...
Display Event Log
Reset
Reset to Default Settings
Logout

Use arrow keys to highlight option, press <Return> or <Enter> to
select option. Press Ctrl-R to return to previous menu. Press Ctrl-C
to return to Main Menu.

```

- 5 Select IP Configuration/Setup (or press i) to display the IP Configuration/Setup menu (Figure 2).



Note: The default management VLAN in the Business Policy Switch is VLAN 1. To manage the switch, make sure the network management station is on the management VLAN or is connected to the management VLAN through routers.

Figure 2 IP Configuration/Setup menu

```

IP Configuration/Setup
BootP Request Mode: [ BootP Disabled ]
Configurable          In Use          Last Boot
-----
In-Band Stack IP Address: [xx.xx.xx.xxx]    xx.xx.xx.xxx    0.0.0.0
In-Band Switch IP Address: [xx.xx.xx.xxx]    0.0.0.0         0.0.0.0
In-Band Subnet Mask:    [255.255.255.0]  255.255.255.0  0.0.0.0

Default Gateway:        0.0.0.0         0.0.0.0         0.0.0.0

Use space bar to display choices, press <Return> or <Enter> to select
choice. Press Ctrl-R to return to previous menu. Press Ctrl-C to
return to Main Menu.

```

6 Do one of the following, based on your configuration:

- For a standalone switch, enter the IP address of the switch in the In-Band Switch IP Address field.



Note: If the In-Band Subnet Mask field does not already contain a value when you enter the IP address in the In-Band Switch IP Address field, the switch software provides an in-use default value for the In-Band Subnet Mask field, based on the class of the entered IP address.

- For a stack configuration, enter the Stack IP address in the In-Band Stack IP Address field.



Note: The In-Band Switch IP Address field allows this switch to operate as a standalone switch. However, this field is not required for the operation of the stack. You cannot enter the same IP address in both fields.

7 In the In-Band Subnet Mask field, enter the IP subnet mask address.

8 In the Default Gateway field, enter the default gateway address.

Access levels and passwords

Access to management functions for Business Policy Switches is controlled by passwords and community strings. Different passwords or community strings allow access to different levels of management functions.

Access to Device Manager requires entering community strings. Access to the Web interface requires a user identification and a password.

Chapter 2

Installing Device Manager software

Device Manager software is available on the Nortel Networks Services and Support Web site as a self-extracting executable file. This chapter provides instructions to install the Device Manager software in a Windows or UNIX environment.

Accessing the Nortel Networks Web site

To access the Nortel Networks Services and Support Web site:

- 1 Go to the following URL:
www12.nortelnetworks.com/software
- 2 Under Switching Products, choose Business Policy Switch 2000, and click Go.
- 3 Scroll down to Business Policy Switch Device Manager.
- 4 Follow the instructions in one of the next sections, depending on the platform on which you will install the software.

Windows installation

The minimum system requirements for installing Device Manager on Microsoft® Windows NT®, Windows® 95, or Windows 98 are:

- 75 MHz Pentium or 100 MHz 486 processor
- 16 MB DRAM
- 100 MB space on the hard disk

To install the management software on a Windows platform:

- On the Business Policy Switch software Web page, click `jdm_XXX.exe`.



Note: In the file name, `XXX` represents the current version of the Device Manager software.

The file uncompresses and installs the Java Runtime Environment (JRE) and the Device Manager software into the appropriate directories on your system.

To run the Device Manager software:

- From the Windows Start menu, choose Programs > Nortel Frame Switch Management Software > Device Manager.

UNIX installation

The minimum system requirements for installing Device Manager in a UNIX environment are:

- SPARC workstation running the Sun Solaris 2.5.x (or higher) operating system
 - 120 MB space on the hard disk
 - 4 MB available in a temporary directory
 - 60 MB free in the directory where you want to install the Device Manager software
 - 32 MB DRAMor
- HP workstation running the HP/UX 10.20 or 11.x operating system
 - 120 MB space on the hard disk
 - 4 MB available in a temporary directory
 - 60 MB free in the directory where you want to install the Device Manager software
 - 32 MB DRAMor

- AIX workstation running the IBM AIX 4.1 operating system
 - 120 MB space on the hard disk
 - 4 MB available in a temporary directory
 - 60 MB free in the directory where you want to install the Device Manager software
 - 32 MB DRAM

Installing the Device Manager software in a UNIX environment requires two or three steps, depending on the specific platform:

- 1 In a Solaris environment, install Solaris patches (next).
- 2 In all three environments, install the Java Runtime Environment (JRE):
 - For a Solaris environment, the JRE is available on the Nortel Networks Services and Support Web site ([page 23](#)).
 - For an HP-UX or IBM AIX environment, go to the HP or IBM Web site to obtain the JRE ([page 25](#) or [page 26](#)).
- 3 Install the Device Manager software.

You only need to install the Solaris patches and JRE once. After they are installed, you can upgrade your system to later versions of Device Manager without installing the patches and JRE again.

Installing the software in a Solaris environment

To install the Device Manager software in a Solaris environment:

- 1 Install Solaris patches. Nortel Networks provides the necessary patches for Solaris 5.5.1 and Solaris 5.6.
 - a Use the `uname -a` command to determine the version of Solaris that is installed on your workstation.
 - b On the Business Policy Switch UNIX software Web page, click one of the following links to download the correct patches for your Solaris version:
 - `1.1.8_09a_patches_sparc_5.5.1.tar` for Solaris 5.5.1
 - `1.1.8_09a_patches_sparc_5.6.tar` for Solaris 5.6
 - c For instructions to install the patches, click `README.sparc_1.1.8_09a`.

- 2 Install the Java Runtime Environment for Solaris systems:
 - a On the Business Policy Switch UNIX software Web Page, click Solaris_JRE_1.1.8_09a_sparc.bin.
 - b For instructions to install the Solaris JRE, click install_jre.txt.
- 3 Install the Device Manager software:

On the Business Policy Switch UNIX software Web page, click jdm_XXX.tar.



Note: In the file name, *xxx* represents the current version of the Device Manager software.

The file uncompresses and installs the Device Manager software into the appropriate directories on your system.

Before you run the Device Manager software, you must set the following UNIX environment variables:

```
setenv JAVA_HOME <JRE installed path>
setenv PATH${JAVA_HOME}/bin:${PATH}
setenv LD_LIBRARY_PATH [JAVA_HOME]/lib/sparc/
native_thread:${LD_LIBRARY_PATH}
setenv CLASSPATH ${JAVA_HOME}/lib/rt.jar:${CLASSPATH}
```

To start Device Manager:

➤ Enter:

```
% JDM a.b.c.d
```

where *a.b.c.d* is the IP address of the device.

Installing the software in an HP-UX environment

Nortel Networks does not directly provide the JRE for HP-UX systems. However, you can download the JRE from the HP corporate Web site.

To install the Device Manager software in an HP-UX environment:

- 1 Install the JRE for HP-UX:
 - a Go to one of the following URLs, depending on your version of HP-UX:
 - http://unixsolutions.hp.com/products/java/jre_os10118_content.html for HP-UX 10.20
 - http://unixsolutions.hp.com/products/java/jre_os10118_content.html for HP-UX 11.x
 - b Follow the prompts to download and install the JRE for your HP-UX system.
- 2 Install the Device Manager software:

On the Business Policy Switch UNIX software Web page, click `jdm_XXX.tar`.



Note: In the file name, `xxx` represents the current version of the Device Manager software.

The file uncompresses and installs the Device Manager software into the appropriate directories on your system.

Before you run the Device Manager software, you must set the following UNIX environment variables:

```
setenv JAVA_HOME <JRE installed path>
setenv PATH${JAVA_HOME}/bin:${PATH}
setenv LD_LIBRARY_PATH [JAVA_HOME]/lib/sparc/
native_thread:${LD_LIBRARY_PATH}
setenv CLASSPATH ${JAVA_HOME}/lib/rt.jar:${CLASSPATH}
```

To start Device Manager:

➡ Enter:

```
% JDM a.b.c.d
```

where *a.b.c.d* is the IP address of the device.

Installing the software in an IBM AIX environment

Nortel Networks does not directly provide the JRE for IBM AIX systems. However, you can download the JRE from the IBM corporate Web site.

To install the management software in an IBM AIX environment:

1 Install the JRE for IBM AIX:

- a** Go to the <http://www6.software.ibm.com/dl/dka/dka-p> URL.
- b** Follow the prompts to download and install the JRE for your IBM AIX system.

2 Install the Device Manager software:

On the Business Policy Switch UNIX software Web page, click `jdm_xxx.tar`.



Note: In the file name, *xxx* represents the current version of the Device Manager software.

The file uncompresses and installs the Device Manager software into the appropriate directories on your system.

Before you run the Device Manager software, you must set the following UNIX environment variables:

```
setenv JAVA_HOME <JRE installed path>
setenv PATH${JAVA_HOME}/bin:${PATH}
setenv LD_LIBRARY_PATH [JAVA_HOME]/lib/sparc/
native_thread:${LD_LIBRARY_PATH}
setenv CLASSPATH ${JAVA_HOME}/lib/rt.jar:${CLASSPATH}
```

To start Device Manager:

➡ Enter:

```
% JDM a.b.c.d
```

where *a . b . c . d* is the IP address of the device.

Chapter 3

Device Manager basics

This chapter describes basic procedures for using the Device Manager software. The chapter includes the following information:

- Instructions to start Device Manager, set the Device Manager properties, and open a device (next)
- A summary of the Device Manager user interface features and how to use them (starting on [page 34](#))
- Instructions to view statistics and display graphs ([page 43](#))
- Instructions to use Device Manager to Telnet to a switch ([page 51](#))
- Information about the trap log ([page 51](#))
- Information about online Help ([page 52](#))

Starting Device Manager

To start Device Manager:

- Do one of the following, depending upon your operating system environment:
 - In a Microsoft® Windows® environment, from the Windows taskbar choose Start > Programs > Nortel Frame Switch Management Software > Device Manager.
 - In a UNIX environment, verify that the Device Manager installation directory is in your search path; then enter:

JDM

The initial Device Manager window opens (Figure 3).



Note: On startup, Device Manager performs a DNS lookup for the machine on which it is running. If the DNS lookup is slow or fails, the initial Device Manager window may take up to 30 seconds to open.

Figure 3 Device Manager window



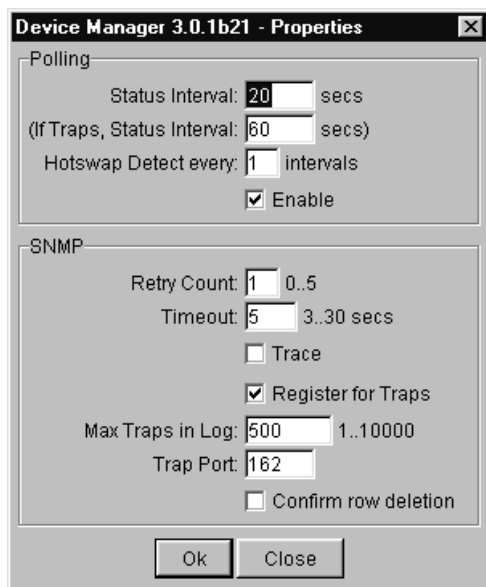
Setting the Device Manager properties

Device Manager communicates with the Business Policy Switch using Simple Network Management Protocol (SNMP). The software is shipped with default values set for important communication parameters, such as the polling interval, timeout, and retry count. You may want to set the parameters before you open a device to manage.

To set the Device Manager properties:

- 1 Choose Device > Properties.

The Properties dialog box opens (Figure 4).

Figure 4 Properties dialog box

- 2 Type information and select check boxes.
- 3 Click OK.

[Table 1](#) describes items in the Properties dialog box.

Table 1 Properties dialog box items

Area	Item	Description
Polling	Status Interval	Interval at which statistics and status information are gathered (default is 300 seconds).
	(If traps, Status Interval)	Interval at which statistics and status information are gathered when traps are enabled (default is 300 seconds).
	Hotswap Detect every	The interval at which Device Manager polls for module information (default is 600 seconds).
	Enable	Enables (checked) or disables (not checked) periodic polling of the device for updated status. If polling is disabled, the switch or stack status is updated only when you click Refresh in the chassis window.

Table 1 Properties dialog box items (continued)

Area	Item	Description
SNMP	Retry Count	Number of times Device Manager retransmits polling information.
	Timeout	Length of each retry of each polling waiting period. When accessing the device through a slow link, you may want to increase the timeout interval and then change the Retransmission Strategy to superlinear.
	Trace	Enables (checked) or disables (not checked) SNMP tracing. When Trace is selected, SNMP protocol data units (PDUs) are displayed in the Device > Log dialog box.
	Register for Traps	Specifies whether or not Device Manager should automatically register to receive traps when Device Manager is launched against a switch.
	Max Traps in Log	The specified number of traps that can exist in the trap log (default is 500).
	Trap Port	Specifies the UDP port that Device Manager will listen on to receive SNMP traps.
	Confirm row deletion	When this check box is selected, a confirmation dialog box is displayed when you try to delete a row from a Device Manager table.

Opening a device

“Opening” a device displays the device view, a picture of the device. To open the device view, you must enter community strings that determine the access level granted to the device. [Table 2](#) shows the default access community strings for the Device Manager software.

Table 2 SNMP community string default values

Access level	Description
Read-only	public
Read-write	private
Read-write-all	secret

To display the device view:

1 Do one of the following:

- Choose Device > Open.
- Choose Device > Open Last, and select an IP address from the list.
- Click the folder icon in the Device Manager window.



- Press [Ctrl] + O.

The Open Device dialog box opens (Figure 5).

Figure 5 Open Device dialog box

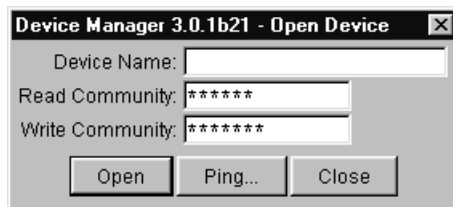


Table 3 describes the items in the Open Device dialog box.

Table 3 Open Device dialog box items

Item	Description
Device Name	Either an IP address or a DNS name for the device, entered by the user.
Read Community	SNMP read community string for the device. Default is <code>public</code> (displayed as <code>*****</code>). The entry is case-sensitive.
Write Community	SNMP write community string for the device. Default is <code>private</code> (displayed as <code>*****</code>). The entry is case-sensitive.

2 In the Device Name text box, type the DNS name or IP address of the device.

- 3 In the Read Community and Write Community text boxes, type the proper community strings (Table 2 on page 32).

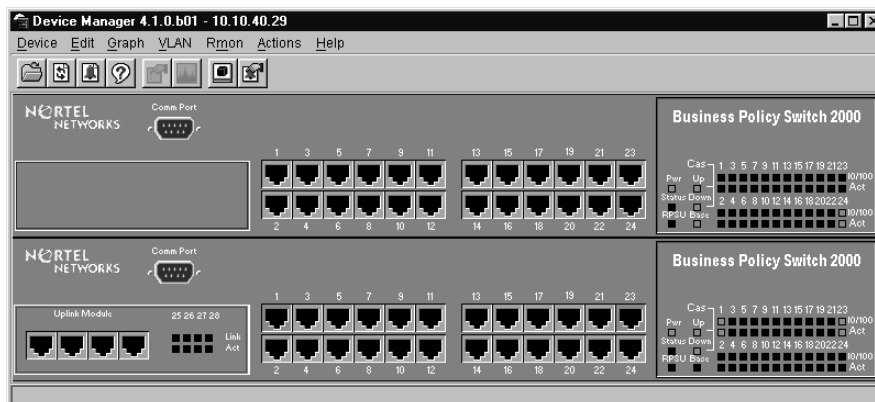


Note: To gain Read-Write-All access to a device in Device Manager, you must enter the Read-Write-All community string for both the Read Community and Write Community strings.

- 4 Click Open.

Device Manager automatically determines what version of software the selected device is running and displays the appropriate Device Manager dialog boxes. The Device Manager window opens, showing a picture of the device (Figure 6) that represents the physical features of the device.

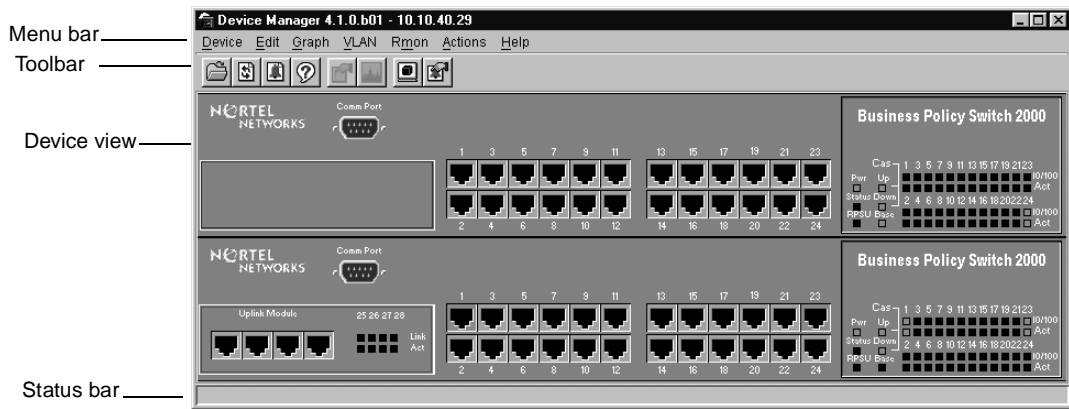
Figure 6 Device view



Device Manager window

The Device Manager window (Figure 7) has the following parts:

- Menu bar
- Toolbar
- Device view
- Status bar

Figure 7 Parts of the Device Manager window

Menu bar

Use the menu bar to set up and operate Device Manager (Table 4).









Table 4 Menu bar commands

Command	Description
Device	Opens the Open Device dialog box.
Edit	Opens edit dialog boxes for selected objects in the device view (refer to "Selecting objects" on page 37). This command also opens dialog boxes for managing files and running diagnostic tests.
Graph	Opens statistics dialog boxes for the selected object.
VLAN	Opens dialog boxes for managing VLANs, spanning tree groups (STGs), and Multi-Link Trunks.
Rmon	Opens RMON configuration and monitoring dialog boxes.
Actions	Provides quick opening of a Telnet session without going through other dialog boxes.
Help	Opens online Help topics for Device Manager and provides a legend for the port colors in the device view.

Toolbar

The toolbar contains buttons that provide quick access to commonly used commands and some additional actions ([Table 5](#)).

Table 5 Toolbar buttons

Button	Name	Description	Menu bar equivalent
	Open Device	Opens the Open Device dialog box.	Device > Open
	Refresh Device Status	Refreshes the device view information.	Device > Refresh Status
	Trap Log	Opens the trap log.	Device > Trap Log
	Help	Opens online Help in a Web browser. ¹	Help > Device
	Edit Selected	Displays configuration data for the selected chassis object.	Edit > Unit Edit > Chassis Edit > Port
	Graph Selected	Opens statistics and graphing dialog boxes for the selected object	Graph > Chassis Graph > Port
	Telnet	Opens a Telnet session.	Actions > Telnet
	Alarm Manager	Opens the Rmon Alarm Manager.	Rmon > Alarm Manager

¹ If the online Help does not launch, refer to [page 52](#).

Device view

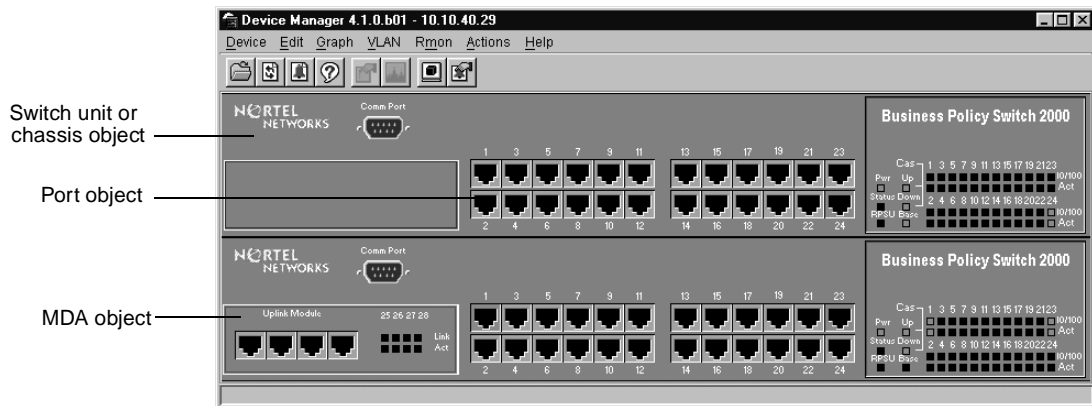
The device view ([Figure 8](#)) allows you to determine at a glance the operating status of the various units and ports in your hardware configuration. You also use the device view to perform management tasks on specific objects.

Selecting objects

The types of objects contained in the device view are:

- A standalone switch (called a unit in the menus and dialog boxes)
- A switch stack (called a chassis in the menus and dialog boxes)
- A media dependent adapter (MDA) (called a unit in the menus and dialog boxes)
- A port

Figure 8 Objects in the device view



Selecting a single object

To select a single object:

- Click the edge of the object.

The object is outlined in yellow, indicating that it is selected. Subsequent activities in Device Manager refer to the selected object.

Selecting multiple objects

To select multiple objects of the same type (such as ports or switches of the same type):

➤ Do one of the following:

- For a block of contiguous ports, drag to select the group of ports.
- For multiple ports, MDAs, or switches in the stack, [Ctrl]-click on the objects.



Note: In a switch stack that contains Business Policy Switches and BayStack switches, you can select only one type of switch at a time.

To select all the ports in a standalone switch or in a switch stack:

➤ Choose Edit > Select > Ports.

To select all the “units” (switches and MDAs, but not ports):

➤ Choose Edit > Select > Units.

To select an entire stack:

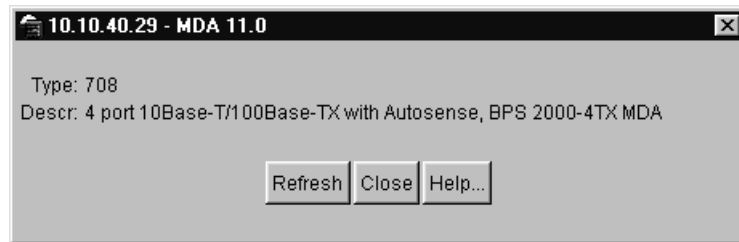
➤ Choose Edit > Select > Chassis.

Viewing information about an MDA

To view information about an MDA:

- 1 Select the MDA.
- 2 Choose Edit > Unit.

The Edit > Unit dialog box opens for the MDA (Figure 9). The Edit > Unit dialog box describes the MDA installed in the switch.

Figure 9 MDA dialog box

LEDs and ports

The color of LEDs in the device view is the same as the colors of the LEDs on the physical switch. However, the device view does not show blinking activity of the LEDs.

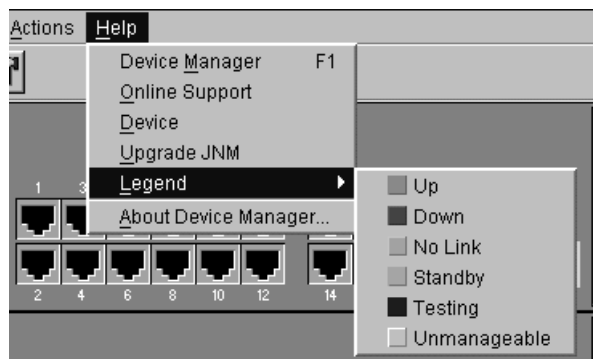
For a full description of the LEDs for the Business Policy Switch, refer to *Using the Business Policy Switch 2000*.

The ports on the device view are color coded to show port status. [Table 6](#) shows the status assigned to each color.

Table 6 Port color codes

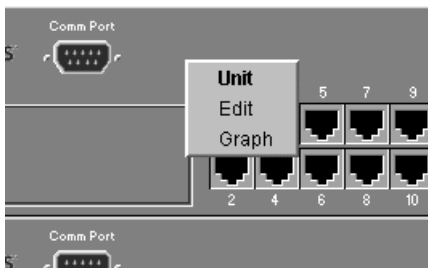
Color	Description
Green	Port is operating.
Red	Port has been manually disabled.
Orange	Port has no link.
Light Blue	Port is in standby mode.
Dark Blue	Port is being tested.
Gray	Port is unmanageable.

In addition, the Help menu provides a legend that identifies the port colors and their meanings ([Figure 10](#)).

Figure 10 Port color legend

Shortcut menus

Each object in the device view has a shortcut menu that opens when you right-click a selected object. The switch shortcut menu ([Figure 11](#)) provides access to basic hardware information about the switch and to the graphing dialog boxes for the switch.

Figure 11 Switch unit shortcut menu

[Table 7](#) describes the commands on the switch unit shortcut menu.

Table 7 Switch unit shortcut menu commands

Command	Description
Edit	Opens a read-only dialog box that provides basic hardware information about the switch.
Graph	Opens a dialog box that displays statistics for the switch and allows you to display the statistics as a graph.

The port shortcut menu (Figure 12) provides a faster path for editing and graphing a single port; however, you can access the same options using the menu bar or the toolbar.

Figure 12 Port shortcut menu

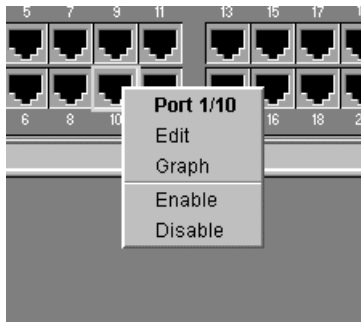


Table 8 describes the commands on the port shortcut menu.

Table 8 Port shortcut menu commands

Command	Descriptions
Edit	Opens a dialog box that allows you to set operating parameters for the port.
Graph	Opens a dialog box that displays statistics for the port and allows you to display the statistics as a graph.
Enable	Administratively brings a port up.
Disable	Administratively shuts down a port. The color of the port changes to red in the device view.

The MDA shortcut menu (Figure 13) contains a single command, Edit, that opens a read-only dialog box with basic hardware information about the MDA.

Figure 13 MDA shortcut menu










Status bar

The status bar displays error and informational messages from the software application. These messages are not related to the device being managed.

Using the buttons in Device Manager dialog boxes

Table 9 describes buttons in Device Manager dialog boxes. Not all buttons appear in all dialog boxes.

Table 9 Device Manager buttons

Button	Name	Description
	Insert	Opens a dialog box to create a new entry for a table; then from the dialog box, inserts the new entry in the table.
	Copy	Copies selected cells from a table.
	Paste	Pastes copied values to a currently selected table cell.
	Reset Changes	Causes changed (but not applied) fields to revert to their previous values.
	Print Table or Print Graph	Prints the table or graph that is displayed.
	Stop	Stops the current action (compiling, saving, and so forth). If you are updating or compiling a large data table, the Refresh button changes to a Stop button while this action is taking place. Clicking the Stop button interrupts the polling process.
	Export Data	Exports information to a file you specify. You can then import this file into a text editor or spreadsheet for further analysis.

Editing objects

You can edit objects and values in the Device Manager device view in the following ways:

- Select an object and, on the toolbar, click the Edit Selected button.



The edit dialog box opens for that object.

- From a switch or port shortcut menu, choose Edit. The edit dialog box opens for that object.

When you change the value in a box, the changed value is displayed in **bold**. However, changes are not applied to the running configuration until you click Apply.



Note: Many dialog boxes contain a Refresh button. After you apply changes to fields, click Refresh to display the new information in the dialog box.

Working with statistics and graphs

Device Manager tracks a wide range of statistics for each switch, the stack (chassis), and each port. You can view and graph statistics for a single object or multiple objects. For information about the statistics tracked for the switch and ports, refer to *Using the Business Policy Switch 2000*.

This section describes the types of statistics and graphs available, the graph dialog boxes, and the procedure for creating a graph.

Types of statistics

The data tables in the statistics dialog boxes list the counters, or categories of statistics being gathered, for the specified object. For example, the categories for ports include Interface, Ethernet Errors, Bridge, and Rmon. Each category can be associated with six types of statistics ([Table 10](#)).

Table 10 Types of statistics

Statistic	Description
AbsoluteValue	The total count since the last time counters were reset. A system reboot resets all counters.
Cumulative	The total count since the statistics window was first opened. The elapsed time for the cumulative counter is displayed at the bottom of the graph window.
Average	The cumulative count divided by the cumulative elapsed time.
Minimum	The minimum average for the counter for a given polling interval over the cumulative elapsed time.
Maximum	The maximum average for the counter for a given polling interval over the cumulative elapsed time.
LastValue	The average for the counter over the last polling interval.

Types of graphs

With Device Manager, you can create line, area, bar, and pie graphs. [Figure 14](#), [Figure 15](#), [Figure 16](#), and [Figure 17](#) illustrate the different graph styles, respectively.

Figure 14 Line graph

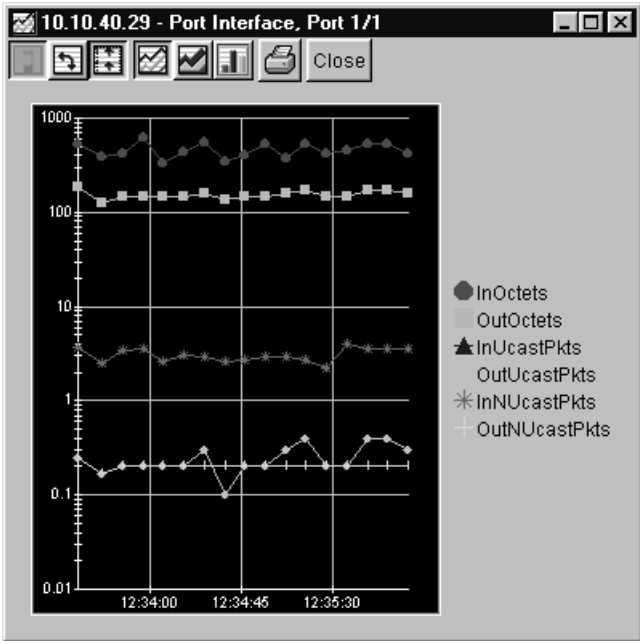


Figure 15 Area graph

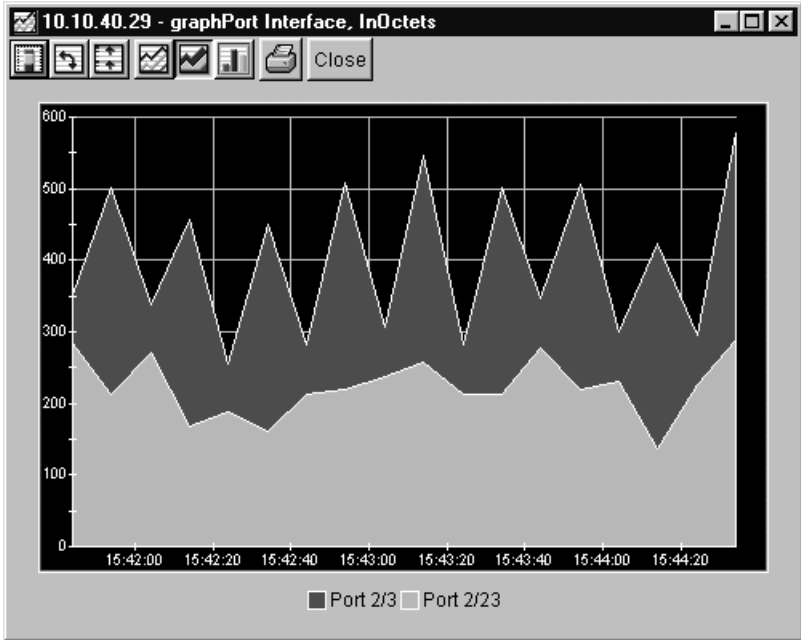


Figure 16 Bar graph

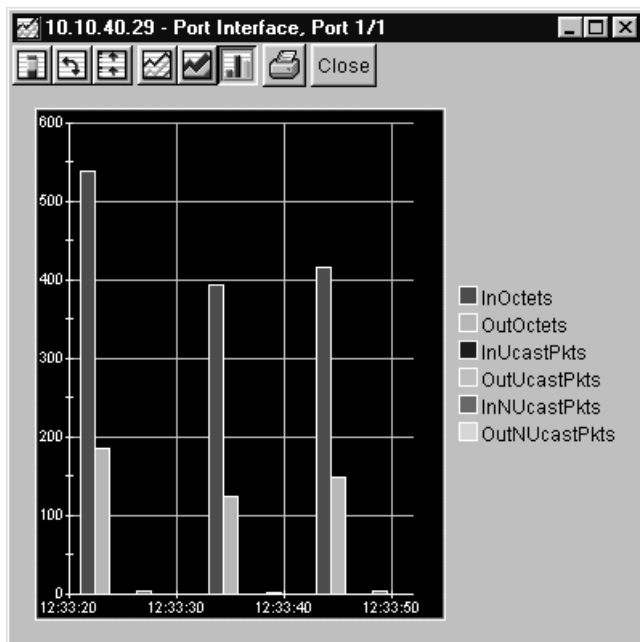
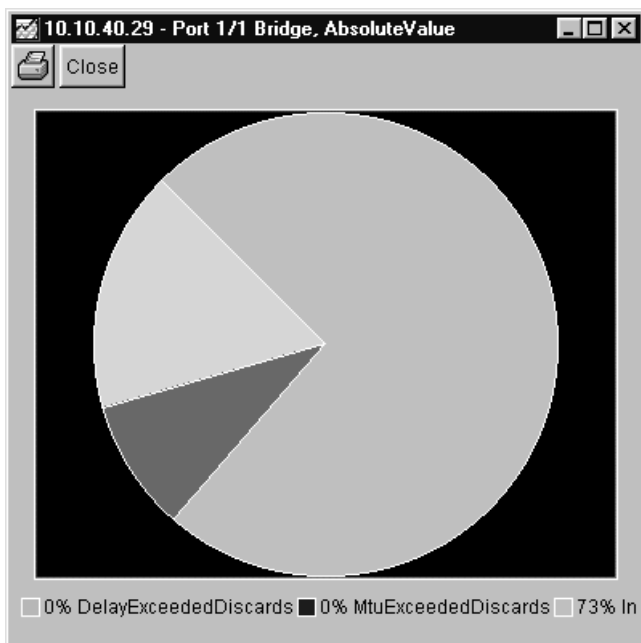


Figure 17 Pie graph



Statistics for single and multiple objects

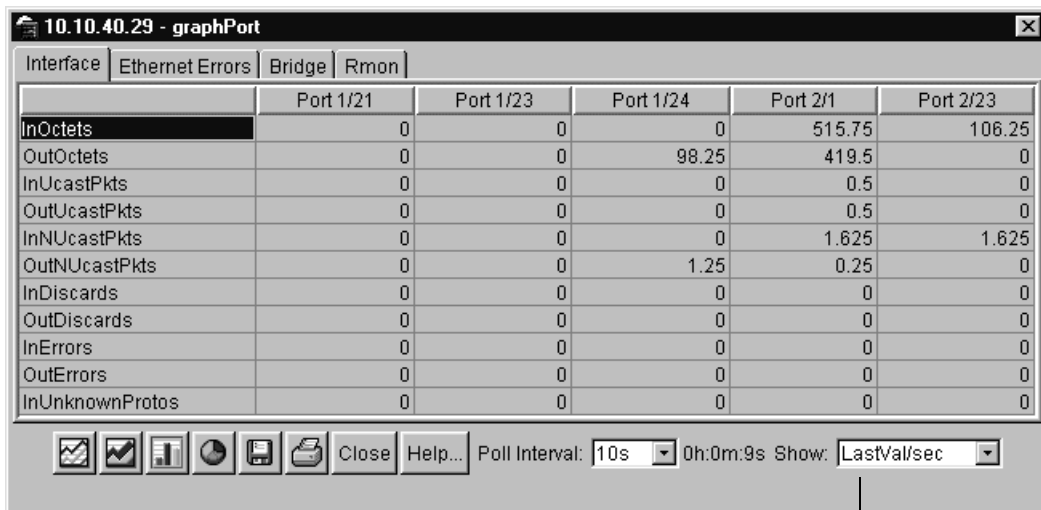
Statistics for a selected object or objects are displayed in the statistics dialog box.

The dialog box for a single object shows all six types of statistics for each counter (Figure 18).

Figure 18 Interface statistics for a single port

Interface	AbsoluteValue	Cumulative	Average/sec	Minimum/sec	Maximum/sec	LastVal/sec
InOctets	45,582,414	11,928	305.846	205.5	485	378.2
OutOctets	4,966,548	6,342	162.615	54	296	259.1
InUcastPkts	3,039	11	0.282	0.125	1	0.4
OutUcastPkts	4,099	11	0.282	0.125	1	0.4
InNUcastPkts	675,497	90	2.308	1.8	3.2	2
OutNUcastPkts	52,451	8	0.205	0	0.25	0.2
InDiscards	0	0	0	0	0	0
OutDiscards	0	0	0	0	0	0
InErrors	0	0	0	0	0	0
OutErrors	0	0	0	0	0	0
InUnknownProtos	0	0	0	0	0	0

The statistics dialog box for multiple objects shows a single type of statistics (Table 10) for the selected objects. For example, Figure 19 shows LastValue statistics for the selected ports.

Figure 19 Interface statistics for multiple ports

Statistics type

To change the type of statistics displayed, select a different type from the show list at the bottom of the dialog box.

The statistics are updated based on the poll interval shown at the bottom of the dialog box. You can select a different polling interval.

Buttons for bar, pie, and line graphs are located at the bottom of a statistics dialog box. See the next section, [“Viewing statistics as graphs,”](#) for instructions to use these buttons.

You can export the statistics to a tab-separated file format and import the file into other applications. To export the information, use the Export Data button below the table.



Viewing statistics as graphs

To create a graph for an object:

- 1 Select the object or objects to be graphed (see “[Selecting objects](#)” on page 37).
- 2 Do one of the following:
 - On the toolbar, click Graph Selected.



- From the shortcut menu for the object, choose Graph.
- From the main menu, choose Graph > Chassis or Graph > Port.

A statistics dialog box opens with tabs for different categories of statistics for the selected object ([Figure 20](#)).

Figure 20 Statistics dialog box for a port

	AbsoluteValue	Cumulative	Average/sec	Minimum/sec	Maximum/sec	LastVal/sec
InOctets	45,120,985	2,717	113.208	0	122.3	122.3
OutOctets	256	0	0	0	0	0
InUcastPkts	274	0	0	0	0	0
OutUcastPkts	0	0	0	0	0	0
InNUcastPkts	676,468	38	1.583	0	1.8	1.5
OutNUcastPkts	4	0	0	0	0	0
InDiscards	0	0	0	0	0	0
OutDiscards	0	0	0	0	0	0
InErrors	0	0	0	0	0	0
OutErrors	0	0	0	0	0	0
InUnknownProtos	0	0	0	0	0	0

- 3 Select a tab for the group of statistics you want to view.
- 4 On the displayed data table, drag to select the cells you want to graph. (They must be in the same row or column.)

- 5 Click one of the graph buttons at the bottom of the dialog box (see [“Types of graphs” on page 44](#)).







A graph dialog box opens for the selected graph type.

- 6 To print a copy of the graph, click Print.



Buttons at the top of the graph dialog boxes for line, area, and bar graphs allow you to change the orientation of the graph, change the scale, or change the graph type. [Table 11](#) describes the buttons in the graph dialog boxes.

Table 11 Graph dialog box buttons

Button	Name	Description
	Stacked	“Stacks” data quantities instead of displaying them side-by-side.
	Horizontal	Rotates the graph 90 degrees.
	Log Scale	Changes the scale of the x-axis (of an unrotated graph) from numeric to logarithmic.
	Line Chart	Converts an area graph or bar graph to a line graph.
	Area Chart	Converts a line graph or bar graph to an area graph.
	Bar Chart	Converts a line graph or area graph to a bar graph.

Telneting to a switch

From Device Manager, you can initiate a Telnet session to the console interface for the switch or stack you are currently accessing.

To Telnet to a switch:

➤ Do one of the following:

- From the Device Manager main menu, choose Actions > Telnet.
- On the toolbar, click the Telnet button.



A Telnet window to the switch opens.

Trap log

You can configure a Business Policy Switch to send SNMP generic traps. When Device Manager is running, any traps received are recorded in the trap log. You set the maximum number of entries in the trap log using the Properties window ([page 30](#)). The default number of trap log entries is 500.

To view the trap log:

➤ Do one of the following:

- On the toolbar, click the Trap Log button.



- From the Device Manager Main Menu, choose Device > Trap Log.



Note: When you operate Device Manager from a UNIX platform, you must be logged in as root in order to receive traps.

By default, traps are sent in SNMP V2c format. However, if you are using an older network management system (NMS), one that supports only SNMP V1 traps (HP OpenView), you can specify that the traps be sent in V1 format.

Management stations operating with Device Manager are automatically added to trap receivers.

For more information about traps and trap receivers, refer to *Using the Business Policy Switch 2000*.

Online Help

Online Help in Device Manager is context-sensitive. You use a Web browser to display online Help. The Web browser should launch automatically when you click the Help button. If the Help topic you are accessing is not displayed in your browser, exit the existing browser session and click the Help button again. If, for some reason, the Web browser does not launch, the default locations of the Help files are the directories listed in [Table 12](#).

Table 12 Help file locations

Platform	Default path
Windows 95, Windows 98, or Windows NT	<i>c:\jnm\help\dm\dm.html</i>
UNIX	<i>DM-UNIX/DM/help/dm/dm.html</i>

Chapter 4

Web management interface basics

A Business Policy Switch includes a Web management interface that lets you monitor your switch through a World Wide Web browser from anywhere on the network. The Web interface provides many of the same monitoring and configuration features as the Device Manager software.

This chapter provides an overview of the Web management interface and its navigation features. For information about specific Web management pages, check the online Help in the Web management interface. For information about using the Web management interface to configure and manage the switch, refer to *Using Web-Based Management for the Business Policy Switch 2000*.

This chapter contains information about the following topics:

- Requirements (this page)
- Accessing your switch through the Web interface ([page 54](#))
- Security ([page 60](#))

Requirements

To use the Web-based management interface you need:

- A computer connected to any of the network ports
- One of the following Web browsers installed on the computer:
 - Microsoft Internet Explorer, version 4.0 or later
 - Netscape Navigator, version 4.51 or later
- The IP address of the switch or switch stack



Note: As long as you have a route to the switch and there are no filters or access policies in effect, you should be able to monitor the switch using the Web interface.

For instructions to set the IP address of the switch, refer to [“Setting the switch IP parameters” on page 18](#).

Access to the Web management interface must also be enabled for the switch (the default setting) using the console interface. For information about enabling Web access, refer to *Using the Business Policy Switch 2000*.

Accessing the Web interface

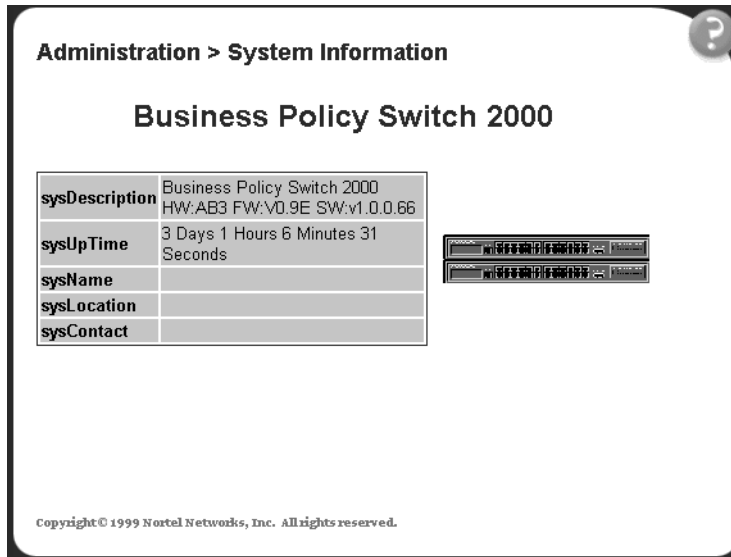
Before you log in to the Web management interface, use the console interface to verify the VLAN port assignments and to make sure that the switch CPU and your computer are assigned to the same VLAN. If the devices are not connected to the same VLAN, the IP address of the switch will not open the home page.

To access the Web interface:

- 1 Start your Web browser.
- 2 In the Web address field of your Web browser, type the switch IP address, and press [Enter].

If this is the first time you are logging in to the Web management interface, the System Information home page opens ([Figure 21](#)).

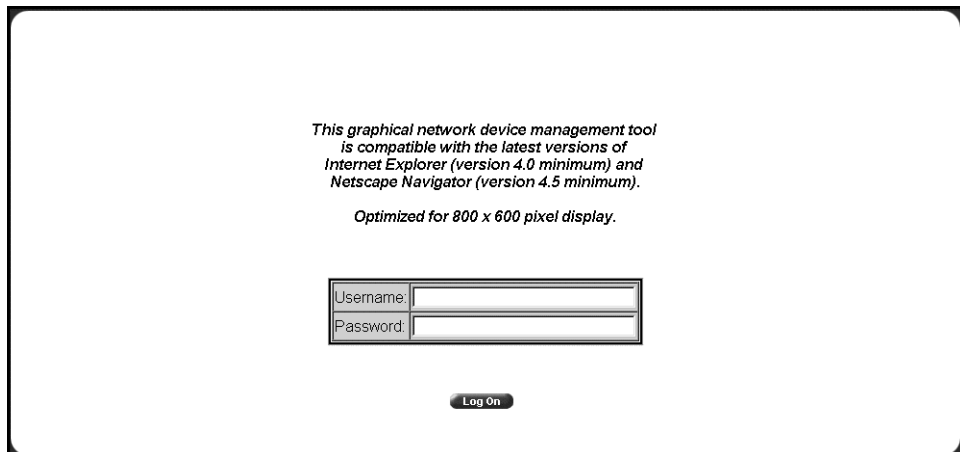
Figure 21 System Information home page



Network security does not yet exist the first time you access the Web management interface. As the system administrator, you must create access parameters and passwords. For more information about setting access parameters and system passwords, refer to “Setting up security” on page 60.

- 3 If passwords have already been set, the login page opens (Figure 22).

Figure 22 Login page



- 4 In the Username text box, type **ro** for read-only access or **rw** for read-write access.

- 5 In the Password text box, type your password.
- 6 Click Log On.

The System Information home page opens.

With Web access enabled, the switch can support up to four concurrent Web page users. Two pre-defined user levels are available, and each user level has a corresponding user name and password.

[Table 13](#) shows the two pre-defined user levels available and their corresponding access levels in the Web management interface.

Table 13 User levels in the Web management interface

User level	User name	Password	Access level
Read-only	ro	XXXXXXXX	Read-only
Read-write	rw	XXXXXXXX	Full read/write access

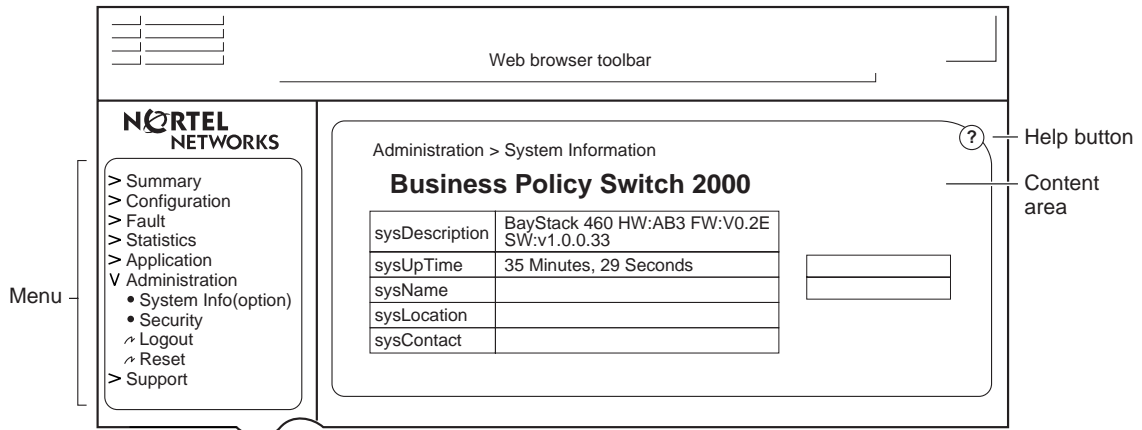
Information is available online about the Web management interface. To access more information about the Web management interface:

- Do one of the following:
 - Click Support > Help to view the entire Help file.
 - For context-sensitive Help, click the Help button on any page to view information specifically about that page.

Web page layout

All the Web management pages for the Business Policy Switch have a common layout ([Figure 23](#)). Each is divided into two sections: the menu and the content area. All Web pages are optimized for an 800 x 600 pixel screen size.

Figure 23 Parts of the Web management page



Menu

The menu (Figure 24) is the same for all pages. It contains a list of seven main headings.

Figure 24 Menu



The first six headings provide options for viewing and configuring switch parameters. The Support heading provides options to open the online Help file and the Nortel Networks Web site. [Table 14](#) lists the main menu headings and their associated options. For detailed information about managing the switch using the Web management interface, refer to *Using Web-Based Management for the Business Policy Switch 2000*.

Table 14 Menu headings and options

Heading	Option
Summary	Stack Information Switch Information Switch View Identify Unit Numbers (only for a stack configuration) Stack Numbering (only for a stack configuration)
Configuration	IP System SNMPv1 SNMPv3 SNMP Trap MAC Address Table Find MAC Address Port Management High Speed Flow Control Software Download Configuration File Console/Comm Port Stack Operational Mode
Fault	RMON Threshold RMON Event Log System Log
Statistic	Port Interface Ethernet Errors Transparent Bridging RMON Ethernet RMON History
Application	Port Mirroring Rate Limiting IGMP VLAN Spanning Tree MultiLink Trunk QoS COPS

Table 14 Menu headings and options (continued)

Heading	Option
Administration	System Information Security Logout Reset Reset to Defaults
Support	Help Release Notes Manuals Upgrade

Content area

The content area displays tables of information with buttons that you use to configure and monitor the switch. Some tables may be too big to fit the displayed page area. In these cases, use the scroll bars at the side and bottom to view the entire table.

Icons

Some pages contain icons that allow you to modify information in a statistical table or to display statistics in chart format. [Table 15](#) describes the icons.

Table 15 Page icons







Icon	Name	Description
	Modify	Modifies the row.
	Help	Opens online Help.
	Delete	Deletes a row.
	Pie chart	Displays the statistics as a pie chart.

Table 15 Page icons (continued)

Icon	Name	Description
	Bar graph	Displays statistics as a bar graph.
	Line graph	Displays statistics as a line graph.

Setting up security

To set passwords and RADIUS (Remote Authentication Dial In User Service) authentication settings for the for the switch or stack, use the Security pages. These pages allow you to create or modify the passwords of a standalone switch or any switches within the stack framework, and allow you to set the security parameters for remote dial access users.



Note: Nortel Networks recommends that when you install the switch, you set the initial system passwords using the console interface. After that, you can update them using the Web management interface. For information about using the console interface, refer to *Using the Business Policy Switch 2000*.

To set console, Web, and Telnet passwords and RADIUS authentication settings:

➤ From the main menu, choose Administration > Security.

Four options are displayed:

- Web
Allows you to define Web password settings in switch or stack mode.
- Telnet
Allows you to define Telnet password settings in switch or stack mode.
- Console
Allows you to define console password settings in switch (stand alone) or stack mode.

- Radius

Allows you to set the server parameters that will provide authentication, authorization, and accounting for RADIUS.



Note: For information on setting switch (standalone) or stack operational modes, refer to *Using Web-Based Management for the Business Policy Switch 2000*.

Setting console, Telnet, and Web passwords

- 1 From the main menu, select Administration > Security.
- 2 On the Security page list, click Console, Telnet, or Web.

The selected password management page opens (Figure 25).



Note: The title of the page indicates which type of access you are setting the password for. In Figure 25, the network administrator selected Administration > Security > Console.

Figure 25 Console password page

- 3 Choose the type of password:
 - None—specifies no password for this type of access
 - Local Password—sets a password for access through direct network connection or a direct Console port connection

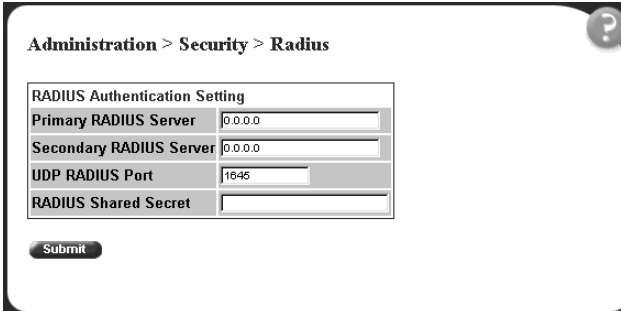
- RADIUS Authentication—sets a password for remote dial-in. If you select this password type, you must also set up RADIUS authentication from the Radius management page.
- 4 Type the password for read-only and read-write user access.
 - 5 Click Submit to save the changes.

Setting remote dial-in access security

To set the parameters for remote dial-in access security:

- 1 From the main menu, select Administration > Security > Radius.
The Radius management page opens (Figure 26).

Figure 26 Radius management page



Administration > Security > Radius

RADIUS Authentication Setting	
Primary RADIUS Server	0.0.0.0
Secondary RADIUS Server	0.0.0.0
UDP RADIUS Port	1645
RADIUS Shared Secret	

Submit

- 2 Type the IP addresses of the primary and secondary RADIUS servers.
- 3 Type the number of the user datagram protocol (UDP) port for the RADIUS server. The default value is 1645.
- 4 Type a character string for the RADIUS Shared Secret. This parameter is a special switch security code that provides authentication to the RADIUS server. The value can be any contiguous ASCII string that contains at least one printable character, up to a maximum of 35.
- 5 Click Submit.

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