HEWLETT® PACKARD

HP AdvanceStack Switch 208/224 Management Module

HP AdvanceStack Switch 208/224 Management Module

Installation and Reference Guide

Disclaimer

The information contained in this document is subject to change without notice.

HEWLETT-PACKARD COMPANY MAKES NO WARRANTY OF ANY KIND WITH REGARD TO
THIS MATERIAL, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Hewlett-Packard shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Hewlett-Packard assumes no responsibility for the use or reliability of its software on equipment that is not furnished by Hewlett-Packard.

Warranty

A copy of the specific warranty terms applicable to your Hewlett-Packard products and replacement parts can be obtained from your HP Sales and Service Office or authorized dealer.

HP Customer Support Services

How to get the latest software/agent firmware
You can download from the World Wide Web, HP FTP Library Service, CompuServe, and HP BBS a compressed file (j3178xx.exe) containing the latest version of the HP Switch 208/224 Management Module software and proprietary MIB. After you download the file, **extract** the file by typing *filename* and pressing Enter.
For example, **j317801** Enter.

World Wide Web
> http://www.hp.com/go/network_city

Select the "Support" section.

From this web site, you can also download information on the HP networking products. If you have a growing network, download the D*esigning HP AdvanceStack Workgroup Networks Guide* or call 1-800-752-0900 in the U.S. to receive a copy through the mail.

HP FTP Library Service
1. FTP to Internet IP Address — ftp ftp.hp.com.
2. Log in as anonymous and press Return at the password prompt.
3. Enter bin to set the transfer type.
4. Enter cd /pub/networking/software.
5. Enter get *filename* to transfer the file to your computer, then quit.

CompuServe
1. Login to CompuServe.
2. Go to the "hp" service.
3. Select "HP Systems, Disks, Tapes, etc."
4. Select "Networking Products" library.
5. Download *filename* and then quit.

HP BBS
Set your modem to no parity, eight bits, 1 stop bit, set speed up to 14400 bps, and with your telecommunication program (e.g., Windows Terminal) dial (208) 344-1691 in the U.S. to get the latest software for your HP networking product. For other countries, see http://www.hp.com/cposupport/eschome.html.

--------------------------------✂--------------------------------

(over for more services)

**HEWLETT®
PACKARD**

Obtain the latest console code (j3178xx.exe) from:

HP FTP Library: ftp ftp-boi.external.hp.com

World Wide Web: http://www.hp.com/go/network_city

HP BBS: (208) 344-1691

(over)

HP FIRST Fax Retrieval Service

HP FIRST is an automated fax retrieval service that is available 24 hours a day, seven days a week. HP FIRST provides information on the following topics:

- Product information
- Troubleshooting instructions
- Technical reviews and articles
- Configuration information

To access HP FIRST, dial one of the following phone numbers:

Location	Phone Number
U.S. and Canada Only	Dial 1 (800) 333-1917 with your fax machine or touch-tone phone and press 1.
Outside the U.S. and Canada	Dial 1 (208) 344-4809 from your fax machine and press 9.

To receive a list of currently available documents, enter document number 19941. The information you requested will be sent to you by return fax. For other countries, see http://www.hp.com/cposupport/eschome.html.

Additional HP Support Services

In addition to the above services, you can purchase various HP telephone support services which provide you expert HP technical assistance:

- Network Phone-In Support provides you support at an hourly rate. In the U.S., call 1-800-790-5544. In other countries, please contact your local HP Response Center to see if this service is available in your country.
- HP SupportPack Comprehensive Network Support provides complete problem resolution for medium to large interconnected local and wide area networks. Contact your HP Authorized Reseller or the nearest HP Sales and Support Office for more information.

HP offers other hardware support services. Please contact your reseller for more information.

✂

CompuServe:	Go hpsys Lib 7. Download j3178xx.exe
Network Phone-In Support (hourly):	1-800-790-5544

Contents

1

Installing the Management Module

The HP J3178A AdvanceStack Switch 208/224 Management Module is installed into the front of the HP AdvanceStack Switch 208T or 224T.

In this manual, this module will be called the Switch Management Module.

Switch Management Module
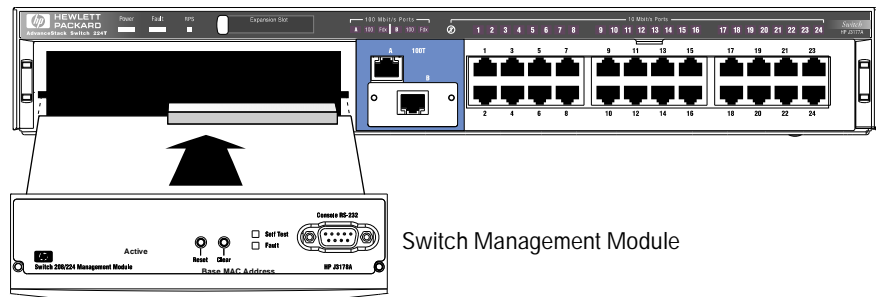
Figure 1-1. The Switch 208/224 Management Module

When installed, the Switch Management Module adds these features to your switch:

- Access to the switch console from which you can configure, monitor, and troubleshoot the switch
- Access to the switch from SNMP network management programs, such as HP AdvanceStack Assistant, for controlling the switch using an advanced, graphics-based interface
- Configurable full-duplex port operation
- Configurable support for the Spanning Tree Protocol for switched networks
- Configurable MAC Address Table aging

This chapter shows you how to install your Switch Management Module.

Included Parts

Verify that these parts were included with the product:

- Switch 208/224 Management Module
- *HP AdvanceStack Switch 208/224 Management Module Installation and Reference Guide* (5966-5228), this manual
- Console cable (5182-4794)
- HP AdvanceStack Assistant for Windows CD kit
- HP AdvanceStack Products CD kit

Installation Steps

Caution

Anti-Static Precautions:

Static electricity can severely damage the sensitive electronic components on the module. When installing the module in your switch, follow these procedures to avoid damage from static electricity:

- Handle the module by its edges and avoid touching the components and the circuitry on the board.
- Equalize any static charge difference between your body and the switch by wearing a wrist static-protector strap and attaching it to the switch's metal body, or by frequently touching the switch's metal body while you are installing the module.

1. Before installing the Switch Management Module, unplug your switch from the power source. This protects the module and switch from potential electrical damage.

2. Unscrew the two captured screws holding the cover plate to the switch's Management Slot and remove the cover, as shown in figure 1-2. Note that the screws will release outward when unscrewed far enough. Do not unscrew them completely from the cover plate.
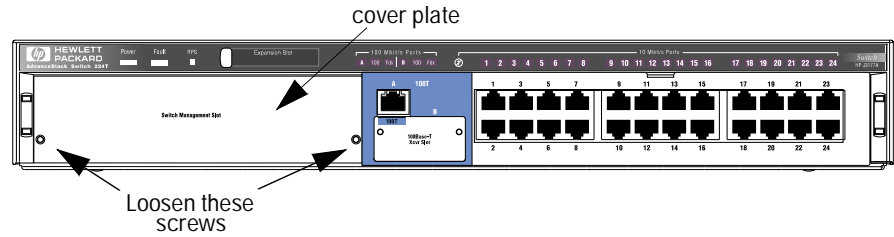
Figure 1-2.   Remove the cover plate

3.   Insert the Management Module into the switch. Line up the sides of the
      module with the rails on the sides of the switch's slot, then push the
      module into the slot until it is firmly seated in the connector in the back
      of the slot.

Switch Management Module
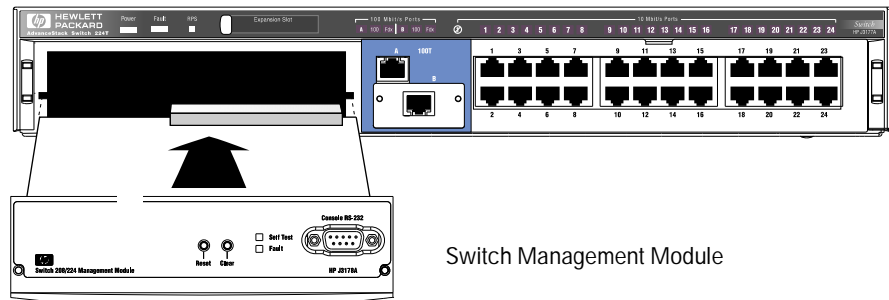
Figure 1-3.   Insert the Switch Management Module

4.   Tighten the two screws that hold the module in place. *Be careful not to
      overtighten the screws.*

5. Turn on the power to the switch by plugging in the power cord. During power-on, the following occurs:

At Power On	The switch begins its power-on self test followed by the module's self test. Ports are temporarily disabled until the Switch Management Module configures the ports.
During Self Test	All Switch and Module LEDs are on for approximately 5 seconds, then just the switch Power and Fault LEDs and the Management Module Self Test and Fault LEDs are on for the remainder of the self test. The switch and module self tests require approximately 15 seconds total.
After Self Test	The switch Fault LED and the module LEDs (Self Test and Fault) turn off.

If the module Fault LED stays on or flashes, refer to chapter 7, "Troubleshooting" in this guide.

You have now completed installation and verification of the module.

To configure IP/IPXcommunication for the Switch Management Module, see chapter 4, "Configuring the Switch From the Console".

Removing the Module

The module is removed from the switch by reversing the installation steps described earlier in this document. When handling the module, be sure to follow the anti-static precautions described on page 1-2.

To remove the module, follow these steps:

1. Remove power from the switch by unplugging the power cord.

2. Unscrew the two captured screws holding the module in the switch.

3. Pull the module out of the slot.

4. Replace the Management Slot cover plate.

Caution   Replace the cover plate over the slot using the two screws that hold it in place. *Be careful not to overtighten the screws.* When using the switch, the cover plate must always be installed. This is required for safety and to ensure proper switch cooling.

2

Management Module Description

Overview

The HP AdvanceStack Switch 208/224 Management Module is installed in the Management Slot in the front of either the HP Switch 208T or HP Switch 224T. The Switch Management Module has the physical elements shown in the figure below.
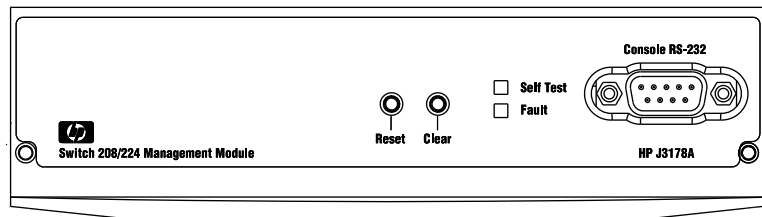
■ **Reset Button** - used to reboot the Management Module and the switch in which it is installed. This clears any temporary error conditions that may have occurred, executes the module and switch self tests, and returns all network activity counters to zero. The counters are displayed in the switch console interface and through network management applications.

■ **Clear Button** - used for these purposes:

• When pressed by itself for at least one second, deletes any switch console access passwords that you may have configured. Use this feature if you have misplaced the password and need console access.

   This button is provided for your convenience, but its presence means that if you are concerned with the security of the switch configuration and operation, you should make sure the switch with the management module is installed in a secure location, such as a locked wiring closet.

- • When pressed with the Reset button in a specific pattern, clears any configuration changes you may have made through the switch console and SNMP management, and restores the factory default configuration to the switch and the module. See "Restoring the Factory Default Configuration" in chapter 7, "Troubleshooting" for the specific method to restore the factory default configuration.

- ■ **Self Test LED** - When lit, indicates that the Management Module or the switch in which the module is installed is undergoing its self test, which occurs every time the switch is plugged into a power source, or as a result of pressing the Reset button on the Management Module, or from rebooting or resetting the switch from the switch console or from network management.

- ■ **Fault LED** - When lit with the Self Test LED, indicates that the Management Module is executing its self test. The self test normally takes approximately 10 seconds. If the Self Test and Fault LEDs stay on for longer than this, or if the Fault LED is flashing at any time, an error has occurred on the module. See chapter 7, "Troubleshooting" for more information on the LED and error recovery procedures.

- ■ **Console RS-232 Port** - This port is used to connect a console to the switch, either directly using the serial cable supplied with the Management Module, or through a modem connection. These connections are described in chapter 3, "The Switch Console". The console can be either a PC running a VT-100 terminal emulator, or a VT-100 terminal itself.

- ■ **MAC Address** - This is the unique hardware identity of the management module. It is also used to identify the switch into which the module is installed, and can be used in network connectivity tests between the switch and other network devices. In an IPX network, this address is also used as the Node Address part of the IPX network address.

Module Features

When you install the Switch 208/224 Management Module in your Switch 208T or 224T, you get these enhanced switch capabilities:

■ **Full-duplex port operation.** By default, the 10 Mbit/s and 100 Mbit/s ports on the Switch 208/224 operate in half-duplex mode. With the Switch Management Module installed, these ports can be configured to operate in full-duplex mode.

■ **Address Aging.** The Switch 208/224 automatically learns the MAC address of the devices connected to its ports and stores those addresses in an 8000-entry address table. When a device is moved, its new location is automatically learned and kept in the table so proper communication is maintained with the device. With the Management Module installed, the additional benefit is that inactive addresses are aged out of the table -- the table is kept up to date with the addresses of active nodes only.

■ **Spanning Tree Support.** The Switch 208/224 uses the IEEE 802.1d Spanning Tree Protocol (STP) to ensure that only one path at a time is active between any two nodes in the network, thus preventing loops that cause broadcast storms from occurring in the network topology.

By default, STP is disabled on the switch. You can use the switch console to enable STP operation; see chapter 4, "Configuring the Switch From the Console" for those configuration procedures. For more information on how STP works, see appendix D, "Spanning Tree Operation".

■ **Switch Console.** The Management Module has an RS-232 port to which you can connect a console that can be used to configure, monitor, and troubleshoot the switch and its ports. The console interface can be used "out-of-band" from a PC or terminal directly connected to the port or remotely through a modem connection, or "in-band" through a Telnet session. For more information on the switch console, see the section "Switch Console Features" in chapter 3, "The Switch Console".

■ **Network Management.** The Management Module has firmware agents on board that provide SNMP Network Management control of the switch, support for RMON (four groups) and HP Embedded Advanced Sampling Environment (EASE) agents to diagnose network problems to help optimize network performance. For more information the network management features provided by the Management Module and how to configure those features, see chapter 6, "Using SNMP to Monitor and Manage the Switch".

Management Module
Description

The Switch Console

Overview

About the Console Interface. The console interface enables you to recon-figure the switch and to monitor the switch status and performance. It consists of a series of management screens accessed through a menu-driven screen structure that begins at the Main Menu.

The switch console interface enables you to use a PC or a terminal to do the following:

■ Modify the switch's configuration, or provide configuration for Telnet or network management access from an SNMP-based management program such as Hewlett-Packard's AdvanceStack Assistant (ASA)

■ Monitor the switch and port status and network activity counters

■ Control console security by configuring passwords

■ Use the switch's event log and some advanced commands to help in troubleshooting

■ Download new software

Note

The Switch 208/224 and its Management Module are shipped with a factory default configuration that enables operation as a multiport learning bridge when installed in a network. All ports are enabled, Spanning Tree Protocol support is disabled, and SNMP network management is enabled over IPX and IP (by way of Bootp). For this operation, connecting a console device is unnecessary. However, for some of the other uses listed above, you will need to use the switch console.

This chapter describes the following features:

■ Connecting a console to the switch (page 3-2)

■ Starting and ending a console session (page 3-6)

■ The Main Menu Features (page 3-8)

■ Screen structure and navigation (page 3-9)

■ Using password security (page 3-11)

■ Rebooting the switch (page 3-15)

The Switch Console

Connecting a Console to the Switch

The Switch 208/224 Management Module offers two methods of access to the console interface:

- Out-of-band console access:
  - Directly connected to the Console RS-232 port, using a serial cable and a PC running a VT-100 terminal emulator or an actual VT-100 terminal
  - Remotely connected to the Console RS-232 port, using modems and a PC running a terminal emulator or an actual terminal
- In-Band access using Telnet from a PC or UNIX station on the network, and a VT-100 terminal emulator. This method requires that you first configure an IP address and subnet mask by using either out-of-band console access or Bootp. The Management Module allows one outbound and one inbound Telnet session to be running simultaneously. It can also simultaneously support one console session through the Console RS-232 port and one Telnet console session.

You can put security restrictions on console access by setting Manager-level and Operator-level passwords. See "Using Password Security" later in this chapter.

Default Serial Communication Settings

The default communication settings on the Switch Management Module are:

- 9600 baud
- 8 data bits
- 1 stop bit
- XON/XOFF
- For Windows Terminal program, also disable (uncheck) the "Use Function, Arrow, and Ctrl Keys for Windows" option.

Configure your PC or terminal to operate with these settings. If you want to operate the terminal using a different configuration, make sure you change with settings on both the terminal and on the switch. Change the switch settings first, then change the terminal settings, and reestablish the console session.

The Switch Console

Direct Console Connection, Using A Serial Cable and a PC Terminal Emulator or Terminal

You can use either a PC emulating a VT-100 terminal (such as the terminal application included with Microsoft Windows 3.1) or a VT-100 terminal.

To directly connect a PC or terminal to a Management Module, follow these steps:

1. Connect the PC or terminal to the switch's Console RS-232 port, on the Management Module, using an RS-232-C console cable (included with the Management Module). (If your PC or terminal has a 25-pin connector, first attach a 9-pin to 25-pin "straight-through" adapter at one end of the console cable.)
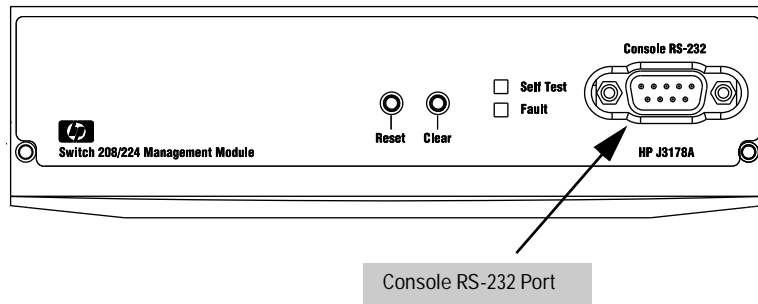
Console RS-232 Port

Figure 3-1.   Connecting a PC or Terminal to the Console RS-232 Port

2. Turn on the terminal or PC's power (and, if using a PC, start the PC terminal emulation program).

3. When you see this message:

        Waiting for speed sense. Press enter to continue.

    Press Enter. You will then see the switch console Main Menu. See "Starting and Ending a Console Session" on page 3-6.

4. If you want to continue with console management of the switch at this time, refer to the rest of this chapter for general console procedures, to chapter 4, "Configuring the Switch From the Console", and to chapter 5, "Monitoring Switch Operation From the Console".

Remote Console Connection Using a Modem and a PC Terminal Emulator or Terminal

N o t e   For remote console management, use a pair of full-duplex, asynchronous (character-mode) modems as shown in figure 3-2.

1. Before installing the modems, make sure they are both correctly initialized. Refer to appendix B, "Modem Configuration" for the correct initialization strings.

2. At the site where the Switch 208/224 is installed:

   a. Connect the modem to the Switch Management Module's console port using a standard "straight-through" RS-232-C modem cable. (For modem cable pin-outs, refer to "Modem Cable Pin-Out" on next page.)

   b. If necessary, configure the PC or terminal to operate with the current serial link configuration of the Switch Management Module.

3. At the site where the console is to be located, connect the PC emulating a terminal, or a terminal to the modem using a standard RS-232-C modem cable. Make sure the terminal and modems are functioning properly, then establish the link between the terminal's modem and the switch's modem according to the modem instructions.
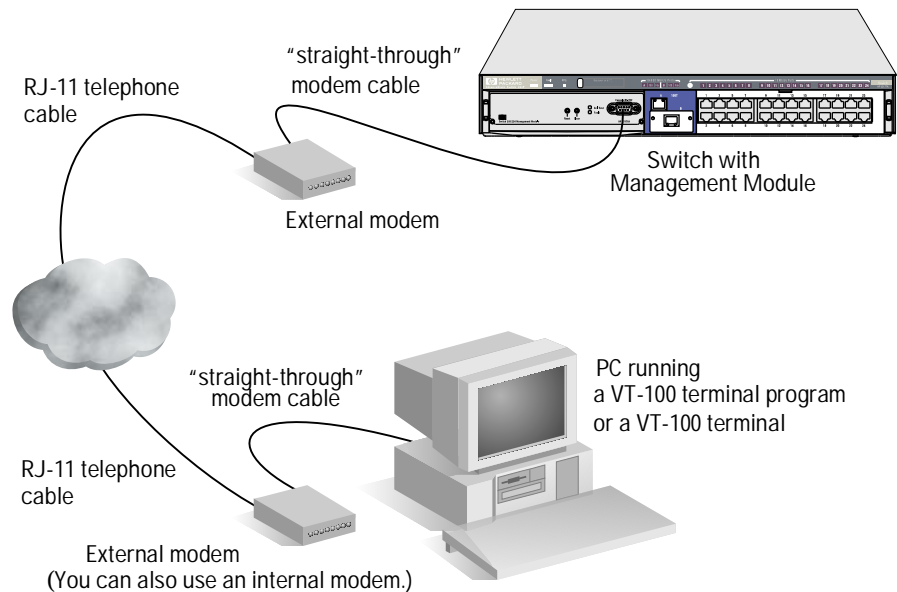
Figure 3-2.   Example of Remote Access through a Modem Connection

The Switch Console

4. When you see this message:

    ```
    Waiting for speed sense. Press enter to continue.
    ```

    Press ⎣Enter⎦. You will then see the switch console Main Menu. See "Starting and Ending a Console Session" on page 3-6.

5. If you want to continue with console management of the switch at this time, refer to the rest of this chapter for general console procedures, to chapter 4, "Configuring the Switch From the Console", and to chapter 5, "Monitoring Switch Operation From the Console".

Modem Cable Pin-Out

Modem end 25-pin male		Switch end 9-pin male	Signal
2	◄———	3	Tx
3	———►	2	Rx
4	◄———	7	RTS
5	———►	8	CTS
6	———►	6	DSR
7	———	5	GND
8	———►	1	CD OR DCD
20	◄———	4	DTR
22	———►	9	RI
23	◄———		DRS – typically on V.24 (European) modems (not connected)

The Switch Console

Starting and Ending a Console Session

Note   This section assumes that you have already configured and connected a terminal device to your switch (as described earlier in this chapter) or that you have already enabled Telnet access to the switch. (To enable Telnet access, refer to "Console Configuration" on page 4-16.)

How To Start a Console Session:

1. Start your PC terminal emulator, terminal, or Telnet session on a remote terminal device.

2. Do one of the following:
    *   If you are using Telnet, go to the next step.
    *   If you are using a PC terminal emulator or a terminal, you should then see the following prompt:

        ```
        Waiting for speed sense. Press <Enter> to continue.
        ```

        Note: *If the console displays a series of random and/or unreadable characters instead of the above prompt, the Baud Rate setting for the terminal may be different from that of the console interface. The switch's autosensing feature remedies this problem when you press any key. You may have to press the key a few times.*

        Press ⌈Enter⌉ and go to the next step.

3. A message indicating the baud rate at which the serial interface (Console RS-232 port) is operating is briefly displayed, followed by the copyright screen. Do one of the following:
    *   If a password has been set, the Password prompt appears. Type the password and press ⌈Enter⌉ to display the Main Menu (figure 3-3).
    *   If no password has been set, you will see this prompt:

        ```
        Press any key to continue.
        ```

        Press ⌈Enter⌉ to display the Main Menu (figure 3-3).

    If there is any system-down information to report, the switch displays it in this step and in the Event Log.

The Switch Console

```
HP J3177A Switch 224T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=========================
                              Main Menu

 Status and Counters...                Advanced Commands...
 Event Log...                          Set Passwords...
 Configuration...                      Download OS...
 LOGOUT                                Reboot Switch

 Provides the menu to display configuration, status, and counters.
 Use arrow keys to change menu selection and <Enter> to execute selection.
```

Figure 3-3.   The Main Menu

For a description of Main Menu features, refer to "Main Menu Features" on page 3-8.

How To End a Console Session:.

1. If you have not made configuration changes in the current session, return to the Main Menu, highlight LOGOUT , and press Enter.

2. Configuration changes requiring a reboot of the switch are indicated by an asterisk (*) next to the configured item in the Configuration menu. (See "Rebooting To Activate Configuration Changes" on page 3-16.) If you have made configuration changes that require a reboot of the switch in order to take effect:

   a. Return to the Main Menu.

   b. Use the arrow keys (←, →, ↓, and ↑) to highlight Reboot Switch in the Main Menu and press Enter to reboot.

   c. When the reboot completes, the switch automatically reestablishes the console connection, and you can restart your console session, as described on the previous page. Or, if you have finished using the console, you can close the terminal emulation program before restarting the console session.

Main Menu Features

The Main Menu (figure 3-3 on page 3-7) gives you access to these console
interface features:

- **Status and Counters:** Displays information on the switch,
  individual ports, the address tables, and Spanning Tree Protocol
  settings. (Refer to chapter 5, "Monitoring Switch Operation From the
  Console".)

- **Event Log:** Enables you to read progress and error messages that
  are useful for checking and troubleshooting switch operation. A
  listing of Event Log messages is included on the CD shipped with your
  Switch Management Module. (Refer to "Event Log" on page 5-12.)

- **Configuration:** Enables you to display the current configuration
  settings and to reconfigure individual parameters. (Refer to chapter
  4, "Configuring the Switch From the Console".)

- **LOGOUT:** Disconnects Telnet or modem access to the switch. (Refer
  to "How To End a Console Session" on page 3-7.)

- **Advanced Commands:** Provides access to a set of system manage-
  ment, monitoring, and troubleshooting commands that generally
  require greater knowledge of networking. These commands are listed
  at the end of this chapter under "Advanced Commands", and they are
  described from the command prompt by entering Help .

- **Set Passwords**: Enables you to set Operator and Manager pass-
  words to help restrict who has access to the console interface. (Refer
  to "Using Password Security" on page 3-11.)

- **Download OS:** Enables you to download new software to the
  Management Module. (Refer to appendix C, "File Transfers".)

- **Reboot Switch:** Performs a software reboot, which is required (in
  some cases) to activate configuration changes that have been made.
  (Refer to "Rebooting To Activate Configuration Changes" on page
  3-16.)

The Switch Console

Screen Structure and Navigation

Console screens include these three elements:

■ Parameter fields and/or read-only information such as statistics

■ Navigation and configuration actions, such as Save, Edit, and Cancel

■ Help line to describe navigation options, individual parameters, and read-only data

For example, in the System configuration screen:
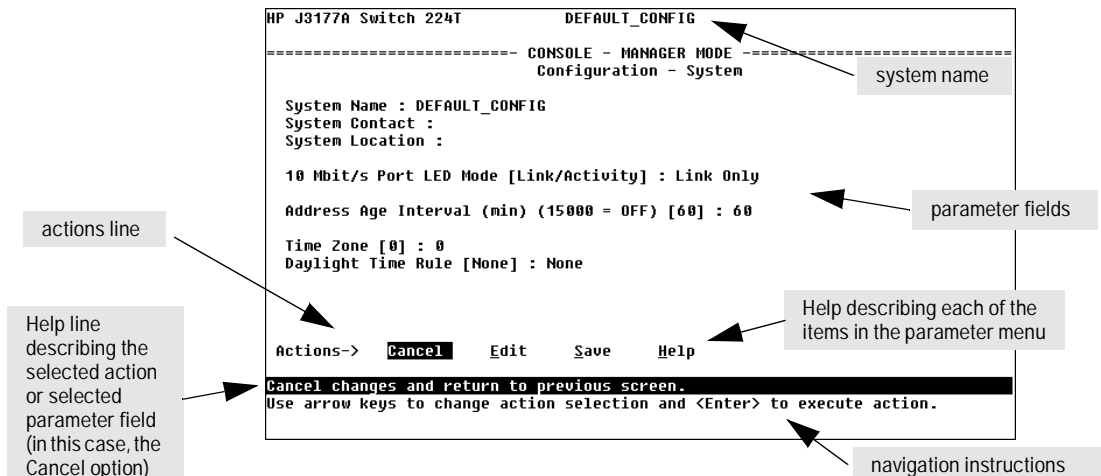
Figure 3-4. Elements of Screen Structure

"Forms" Design. The configuration screens, in particular, operate similarly to a number of PC applications that use forms for data entry. When you first enter these screens, you see the current configuration for the item you have selected. To change the configuration, the basic operation is to:

1. press E to select the Edit action

2. navigate through the screen making ALL the necessary configuration changes, then

3. press Enter to return to the action line. From there you can select to save the configuration changes or to cancel the changes. Cancel returns the configuration to the values you saw when you first entered the screen.

See the next page for specific instructions on using the console screens.

Table 3-1. How To Navigate in the Console

Task:	Actions:
Execute an action from an "Actions-[>] list:	Use either of the following methods: ■ Use the arrow keys (⎗ ,or ⎘) to highlight the action you want to execute, then press Enter. ■ Press the key corresponding to the capital letter in the action name. For example, in a configuration menu, press E to select Edit and begin editing parameter values.

Reconfigure (edit) a parameter setting or a field:	1. Select a configuration item, such as System. (See figure 3-4.)
	2. Press E (for Edit on the Actions line).
	3. Use Tab or the arrow keys to highlight the item or field.
	4. Do one of the following:
	   • If the parameter has preconfigured values, use the Space bar to select a new option (the help line instructs you to "Select" a value)
	   • If there are no preconfigured values, type in a value (the help line instructs you to "Enter" a value)
	5. If you want to change another parameter value, return to step 3.
	6. If you are finished editing parameters in the displayed screen, press Enter and do one of the following:
	   • To save any configuration changes you have made (or if you have made no changes), press S (for the Save action).
	   • To exit from the screen without saving any changes that you have made, press C (for Cancel).
	   Note: Some parameter changes are activated when you execute Save, and it is therefore not necessary to reboot the switch after making these changes. But if an asterisk appears next to any menu item you reconfigure, it is necessary to reboot the switch to implement the change. In this case, rebooting should be done after you have made all desired changes and then returned to the Main Menu.
	7. When you are finished editing parameters, return to the Main Menu.
	8. If necessary, reboot the switch by highlighting Reboot Switch and pressing Enter. (Refer to the *Note*, above.)

Using Password Security

There are two levels of console access: Manager and Operator. For security, you can set a password on each of these levels.

Level	Actions Permitted
Manager:	Access to all console interface areas.
	This is the default level. That is, if a Manager password has *not* been set prior to starting the current console session, then anyone using the console can access any area of the console interface.
Operator:	Access to the Status and Counters, Event Log, and minimal Configuration. Use of the LOGOUT command.
	On the Operator level, the Advanced Commands, Set Passwords, Download OS, and Reboot options are not available in the Main Menu.

To use password security:

1. Set a Manager password (and an Operator password, if applicable for your situation).

2. Activate the password(s) by exiting from the current console session.

If you do steps 1 and 2, above, then the next time a console session is started, the console interface will prompt you for a password. Assuming that both a Manager password and an Operator password have been set, the level of access to the console interface will be determined by which password is entered in response to the prompt.

If you set a Manager password, you may also want to configure the Connection Inactivity Time parameter in the Serial Link configuration screen (page 4-15). This causes the console session to end after the specified period of inactivity, thus giving you added security against unauthorized console access. (Once a Manager password is set and the console session is ended, access to the full console interface for any subsequent sessions requires the Manager password to be entered.)

The Switch Console

N o t e   If there is only a Manager password set (with no Operator password), and the Manager password is not entered correctly when the console session begins, the switch console operates on the Operator level.

If there is both a Manager password and an Operator password, but neither is entered correctly, access to the console will be denied.

If a Manager password is not set, anyone having access to the console interface can operate the console with full manager privileges, regardless of whether an Operator password is set. It is recommended that if you want to restrict access to the console, you should always set at least a Manager password. Then, if you also want to restrict access to the minimal Operator capabilities, also set an Operator password.

Passwords are case-sensitive.

The rest of this section covers how to:

- Set a Password
- Delete a Password
- Recover from a Lost Password

To set Manager and Operator passwords:.

1.   From the Main Menu select Set Passwords. This screen appears:

```
HP J3177A Switch 224T                DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -===========================
                                Set Password

    Return to Main Menu
    Set Operator Password
    Set Manager Password
    Delete Password Protection
```

```
Returns to the console Main menu.
Use arrow keys to change menu selection and <Enter> to execute selection.
```

Figure 3-5.   The Set Password Screen

The Switch Console

2. To set a new password:

   a. Select `Set Manager Password` or `Set Operator Password`. You will then be prompted with `Enter new password`.

   b. Type a password of up to 16 characters and press `Enter`. (Remember that passwords are case-sensitive.)

   c. When prompted with `Enter new password again`, retype the new password and press `Enter`.

   d. To set another password, return to step 2a. Otherwise, go to step 3.

3. Select `Return to Main Menu` to exit from the Set Password screen.

After a password is set, if you use LOGOUT or reboot or reset the switch, you will be prompted to enter the password to start a new console session.

To Delete Password Protection:

This procedure deletes *both* passwords (Manager and Operator).

1. Enter the console at the Manager level.

2. From the Main Menu select Set Passwords. You will then see the screen shown in figure 3-5.

3. Select Delete Password Protection. You will then see the following prompt:

   `Continue Deletion of password protection? No`

4. Press the Space bar or press `Y` to select Yes, then press `Enter`.

5. Press `Enter` to clear the Password protection message.

6. Select `Return to Main Menu` to exit from the Set Password screen.

To Recover from a Lost Manager Password:

If you cannot start a console session at the manager level because of a lost Manager password, you can clear the password by getting physical access to the switch and pressing and holding the Clear button on the Management Module for at least one second.

The Switch Console

To Recover from a Lost Operator Password:

To recover from a lost Operator password, delete all passwords as described above, then re-enter new passwords. If you have physical access to the switch, press the Clear button on the Management Module to clear all password protection, then enter new passwords as described earlier in this chapter. If you do not have physical access to the switch, you will need the Manager password:

1. Begin a console session at the Manager level (by entering the Manager password when the password prompt appears).

2. Select Set Passwords from the Main Menu.

3. Select Delete Password Protection.

4. When you see the prompt to continue deletion, use the Space bar to select Yes, then press Enter. You will then see the following message:

   Password protection removed.

   This means that both the Manager and Operator passwords have been removed and the switch no longer has password protection.

5. Press Enter.

6. Set new passwords as described on page 3-12.

Rebooting the Switch

Rebooting the switch terminates the current console session and performs a reset of the operating system. Some of the reasons for performing a reboot include:

■   Activating certain configuration changes that require a reboot

■   Resetting statistical counters to zero

■   Clearing the switch address table

To Reboot the switch, use the Reboot Switch option in the Main Menu. (If a Manager password has been previously set, Reboot Switch appears only if this password is entered at the beginning of the console session.)

```
HP J3177A Switch 224T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=============================
                              Main Menu

   Status and Counters...          Advanced Commands...
   Event Log...                    Set Passwords...
   Configuration...                Download OS...
   LOGOUT                          Reboot Switch



      the Reboot Switch option




Reboots the switch to activate changes (momentary shut down).
Use arrow keys to change menu selection and <Enter> to execute selection.
```
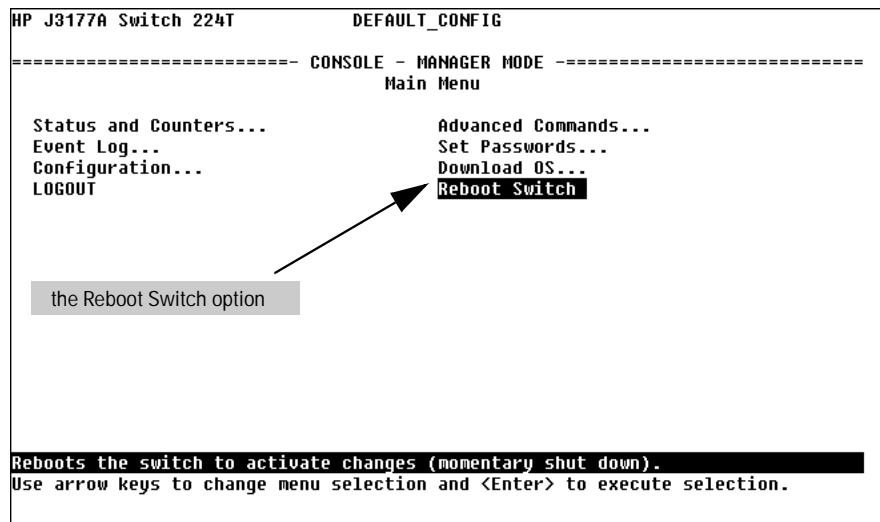
Figure 3-6.   The Reboot Switch Option in the Main Menu

Rebooting To Activate Configuration Changes. Configuration changes for some parameters become effective as soon as you save them. However, you must reboot the switch in order to implement any changes to any parameters in the following areas:

- IPX Service
- Internet (IP) Service
- Serial Link

If configuration changes requiring a reboot have been made, the switch console displays an asterisk next to the configuration menu item in which the change has been made. For example, if you change and save parameter values for the switch's IP configuration, the need for rebooting the switch would be indicated by an asterisk appearing in the following screen:

```
HP J3177A Switch 224T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=============================
                              Configuration

   Return to Main Menu                SNMP Communities...
   System...                          Trap Receivers...
   Ports...                           Serial Link...
   IPX Service...                     Console...
  *Internet (IP) Service...           Network Monitoring Port...
                                      Spanning Tree...




 Configures IP service for switch management.
 Use arrow keys to change menu selection and <Enter> to execute selection.
 (*Needs reboot to activate changes.)
```

asterisk indicates a configuration change that requires a reboot in order to take effect

reminder to reboot the switch to activate configuration changes.
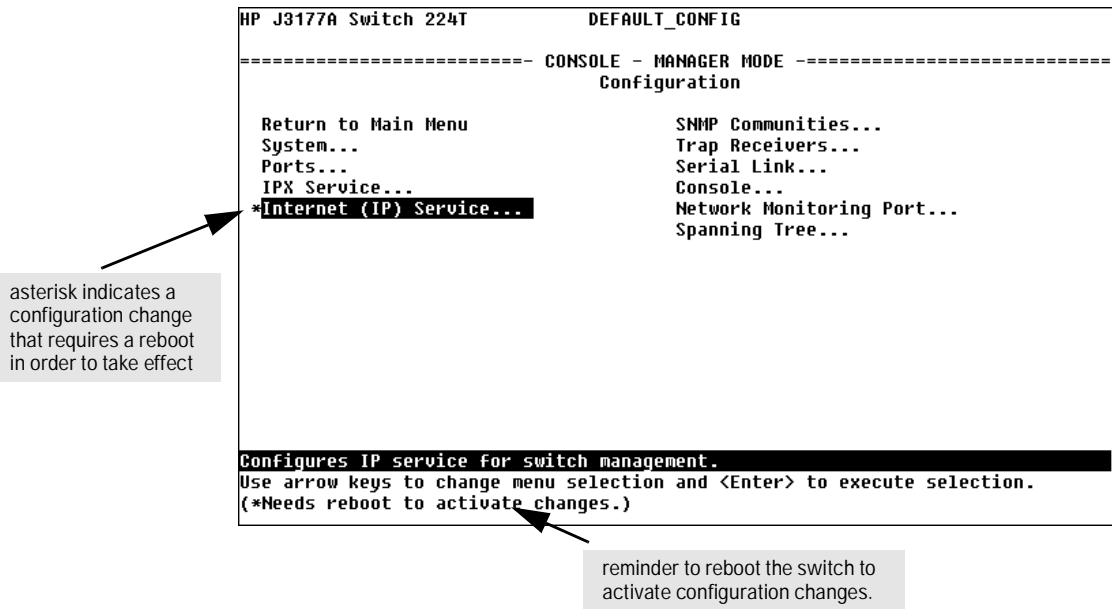
Figure 3-7. Example of a Configuration Change Requiring a Reboot

Advanced Commands

Selecting Advanced Commands from the Main Menu presents a command prompt from which you can enter the following system management commands:

Listing of Commands Available under Advanced Commands

!	Get (TFTP)	Ping	Time
ClearLED	Help	Print	Version
Config	History	Put (TFTP)	WalkMIB
Date	IPXPing	Redo	Zget
Delete	LinkTest	Repeat	Zput
Exit	Log	SetMIB	
GetMIB	Page	Telnet	

To get a definition of these commands and their syntax, enter `Help` at the command prompt. When you see — MORE — at the bottom of the screen:

- To advance the display one line at a time, use [Enter].
- To advance the display one screen at a time, use the Space bar.

If you want to stop the help listing, press [Q].

How To Use the Advanced Commands:

1. To access the command prompt, use the arrow keys to highlight `Advanced Commands` in the Main Menu and press [Enter].

2. The command prompt appears near the bottom of the screen. The text in the prompt matches the System Name parameter. For example, in the factory default configuration (no system name configured), the command prompt is DEFAULT_CONFIG:

3. Type in the command you want to execute and press [Enter]. For example, to set the time to 9:55 a.m. you would execute the following command:

   DEFAULT_CONFIG: **time 9:55** [Enter]

How To Exit from the command prompt:

Type `exit` and press [Enter] to return to the Main Menu.

Configuring the Switch From the Console

Overview

This chapter provides an overview of the Switch 208/224 Management Module configuration features.

Default Configuration.   In its factory default configuration, the Switch 208T and 224T with a Switch Management Module installed automatically operates as a multiport learning bridge. All ports are enabled, Spanning Tree Protocol support is disabled, and SNMP network management is enabled over IPX and IP (by way of Bootp).If you wish to "fine-tune" your switch for the specific performance, security, and diagnostic needs in your network, you may choose to reconfigure certain switch parameters.

Note   In the factory default configuration, the Spanning Tree Protocol (STP) is off. However, if the topology of your network includes any redundant data paths between switches or bridges, you should enable support for STP. See "Spanning Tree Configuration" (page 4-17).

Configuration Features. The Switch Management Module enables you to configure the following switch features. For information on individual configuration parameters, use the online Help provided with each configuration screen in the console user interface.

- System (page 4-4)
- Ports (page 4-5)
- IPX Service (page 4-6)
- Internet (IP) Service (page 4-8)
- SNMP Communities (page 4-12)
- Trap Receivers (page 4-14)
- Serial Link (page 4-15)
- Console (page 4-16)
- Spanning Tree (page 4-17)
- Network Monitoring Port (page 4-19)

To get Help on individual parameter descriptions. In all screens except the Advanced Commands screen there is a Help option in the Actions menu. Whenever the Actions menu is active, you can display Help for that screen's parameters by pressing H. (The Actions menu is active whenever any of the choices in the Actions menu is highlighted.) For example:

```
HP J3177A Switch 224T                DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -=============================
                       Configuration - System

  System Name : DEFAULT_CONFIG                        default values are
  System Contact :                                    shown in brackets [ ]
  System Location :

  10 Mbit/s Port LED Mode [Link/Activity] : Link Only

  Address Age Interval (min) (15000 = OFF) [60] : 60

  Time Zone [0] : 0                              pressing H or highlighting
  Daylight Time Rule [None] : None               Help and pressing Enter
                                                 displays Help for the
                                                 parameters listed in the
                                                 upper part of the screen


  Actions->  Cancel    Edit     Save     Help
Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

highlight on any item in the Actions menu indicates that the Actions menu is

help line

Figure 4-1.   Example Showing How To Display Help

To get Help on the actions or data fields in each screen: Use the arrow keys (←, →, ↑, or ↓) to select an action or data field. The help line under the Actions menu describes the currently selected action or data field. (For guidance in how to navigate in a configuration screen, see the instructions provided at the bottom of the screen, or refer to "Screen Structure and Navigation" on page 3-9.)

Configurable Features

How To Access the Switch Configuration:

1. Begin at the Main Menu and select `Configuration` and the Configuration menu appears as shown in figure 4-2.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                             Configuration

   Return to Main Menu               SNMP Communities...
   System...                         Trap Receivers...
   Ports...                          Serial Link...
   IPX Service...                    Console...
   Internet (IP) Service...          Network Monitoring Port...
                                     Spanning Tree...








Return to the console Main menu.
Use arrow keys to change menu selection and <Enter> to execute selection.
```

Figure 4-2.   The Configuration Menu

2. Use the arrow keys (⬅, ➡, ⬆, and ⬇) to highlight the configuration topic you want, then press `Enter`.

3. Refer to the appropriate sections in the remainder of this chapter for information on configuring specific features.

System Configuration

This screen configures basic switch management information, including system identification information, address aging, the port LED behavior, and time zone parameters:

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -=============================
                         Configuration - System

  System Name : DEFAULT_CONFIG                         system name
  System Contact :
  System Location :

  10 Mbit/s Port LED Mode [Link/Activity] : Link Only

  Address Age Interval (min) (15000 = OFF) [60] : 60

  Time Zone [0] : 0
  Daylight Time Rule [None] : None




  Actions->   Cancel     Edit      Save      Help

Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 4-3.   The System Configuration Screen (Default Values)

Note

To help simplify administration, it is recommended that you configure System Name to a character string that is meaningful within your system.

To set the time and date, set the Time Protocol parameters for your time server (page 4-8) or use the time and date commands available under Advanced Commands.

10 Mbit/s Port LED Mode. Using this parameter, the LEDs associated with the 10 Mbit/s network ports on the switch can be configured to operate in one of two ways:

■   Link/Activity - In this mode, each LED indicates the connection status of the port for 3 seconds after the network cable is first installed and every time the switch is powered on. After 3 seconds, the LED is used to indicated network activity on that port--it flashes briefly with each packet that is either received or transmitted on the port.

■   Link Only - In this mode, the LED continues to indicate the connection status and does not convert to an activity indicator.

Port Configuration

This screen configures the operating state (enabled or disabled) and mode for each port. The available modes for each port type are listed and described in the online help for the screen. To view this information, select the Help action.

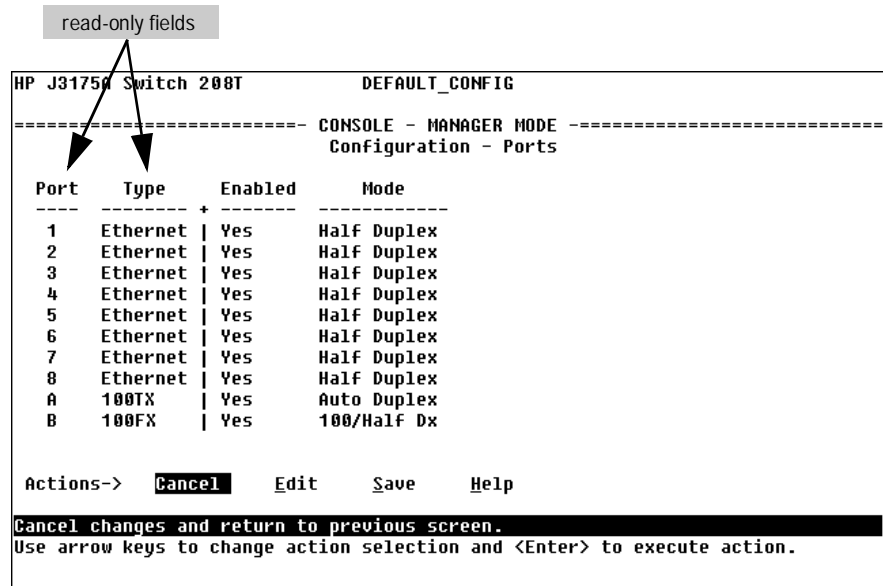The read-only fields in this screen display the port numbers and port types.

```
                read-only fields


HP  J31750  Switch 208T              DEFAULT_CONFIG

=====================- CONSOLE - MANAGER MODE -=============================
                       Configuration - Ports

  Port     Type      Enabled        Mode
  ----   --------  + -------     ------------
    1    Ethernet  | Yes         Half Duplex
    2    Ethernet  | Yes         Half Duplex
    3    Ethernet  | Yes         Half Duplex
    4    Ethernet  | Yes         Half Duplex
    5    Ethernet  | Yes         Half Duplex
    6    Ethernet  | Yes         Half Duplex
    7    Ethernet  | Yes         Half Duplex
    8    Ethernet  | Yes         Half Duplex
    A    100TX     | Yes         Auto Duplex
    B    100FX     | Yes         100/Half Dx


  Actions->  Cancel      Edit       Save      Help

Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 4-4.   Example of the Port Configuration Screen

The screen image in figure 4-4 shows the default Mode value for each of the port types available on the Switch 208/224. Select the Help action to see the other modes available for each port type.

IPX Service

The Switch Management Module, by default, has IPX communication enabled. This allows the switch to be managed from an SNMP network management station in an IPX network. The Switch Management Module automatically configures the IPX network address using its MAC address as the node address (displayed in the Node Address field in the IPX Service configuration screen as shown in figure 4-5), and it learns the IPX network number by listening on the network.

In the IPX Service configuration screen, you can disable IPX management by changing the IPX Enabled value to No. You can also configure an IPX gateway frame encapsulation type so that the switch can be managed from a remote IPX network as described in the next section.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                        Configuration - IPX Service

  Node Address : 0060b0-31feeb
  IPX Enabled [Yes] : Yes
  Gateway Encap :                              read-only field



                                             default setting for
                                             "IPX Enabled"






  Actions->   Cancel      Edit      Save      Help

 Cancel changes and return to previous screen.
 Use arrow keys to change action selection and <Enter> to execute action.
```
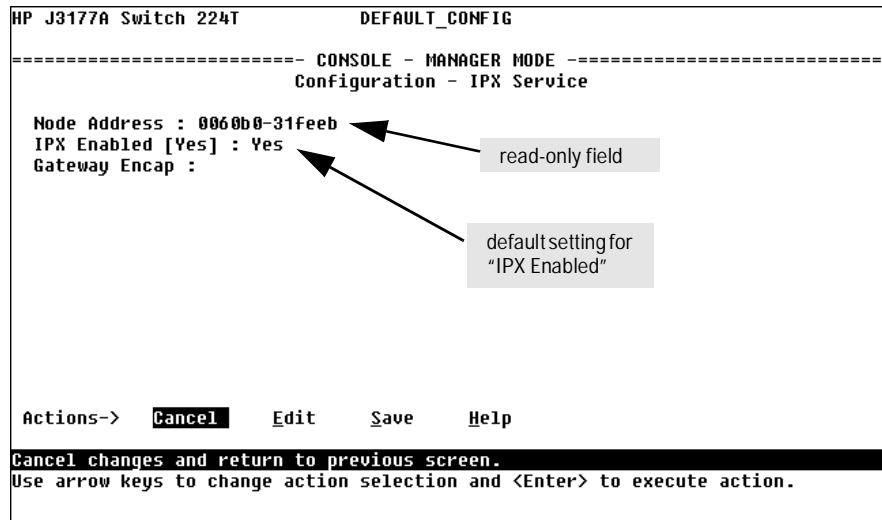
Figure 4-5.   The IPX Service Configuration Screen (Default Values)

(Optional) How To Configure IPX for Management from a Remote IPX Network.   To enable management from a remote IPX network, you must configure the gateway encapsulation type.

1. From the Configuration screen, select IPX Service to display the above screen.

2. Press E (for Edit).

3. If the IPX Enabled parameter is not already set to "Yes" (the factory default), then select this parameter and press the Space bar to select Yes.

4. Select the Gateway Encap field and use the Space bar to select the appropriate gateway encapsulation for the gateway device.

5. Press Enter, then S (for Save).

6. Return to the Main Menu and reboot the switch.

Internet (IP) Service

For managing the Switch 208/224 from an SNMP network management station over an IP network, or for using the switch console through a Telnet session, use the IP Service screen to configure:

■ IP address, subnet mask, and (optionally) the gateway address for the switch so that it can be managed in an IP network

■ The time server information (used if you want the switch to get its time information from another device operating as a Timep server)

You can manually configure an IP address, subnet mask, and a Gateway IP address by setting the IP Config parameter to Manual. Or, you can use Bootp to configure IP for the switch from a Bootp server. In this case you must also configure your Bootp server accordingly. If you plan to use Bootp, refer to "Bootp Operation" in chapter 6, "Using SNMP to Monitor and Manage the Switch". Otherwise, set the IP Config parameter to Manual and then manually enter the IP address and subnet mask you want for the Switch 208/224.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -==========================
                    Configuration - Internet (IP) Service

    Time Protocol Enabled [No] : Yes ◄——           The default setting for Time
    Timep Server Address :                         Protocol Enabled is No.
    Timep Poll Interval (min) [720] : 720          Setting it to Yes as shown
                                                   here, then pressing [↓] or [Tab]
    IP Config [Use Bootp] : Use Bootp              causes the Timep Server
    IP Address : 127.1.254.235                     Address and Timep Poll
    Subnet Mask : 255.255.255.0                    Interval parameters to
    Gateway :                                      appear. For descriptions of
                                                   these parameters, select the
                                                   Help action for this screen.




    Actions->  Cancel    Edit     Save     Help
 Edit the fields displayed above.
 Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 4-6. Example of the IP Service Configuration Screen (Default Values)

To manually configure the switch for IP:

1. From the Configuration screen, select `Internet (IP) Service` to display the above screen.

2. Press `E` (for Edit).

3. Select the `IP Config` field and use the Space bar to select `Manual`.

4. Select the `IP Address` field and enter the IP address you want to assign to the switch.

5. Select the `Subnet Mask` field and enter the subnet mask for the IP address.

6. If you want to reach off-subnet destinations, select the `Gateway` field and enter the IP address of the gateway router.

7. Press `Enter`, then `S` (for Save).

8. Return to the Main Menu and reboot the switch.

Using Bootp

In its default configuration, the switch is configured to enable Bootp operation. However, if an IP address has previously been configured or if the `IP Config` parameter has been set to `Disabled`, then you will need to use this procedure to reconfigure the parameter to enable Bootp operation.

This procedure assumes that a Bootp database record has already been entered into an appropriate Bootp server, and that the necessary network connections are in place. For samples of Bootp server table entries, see "Bootp Database Entries" later in this chapter.

To configure the switch for Bootp:

1. In the Main Menu, select `Configuration`.

2. In the Configuration screen select `Internet (IP) Service`.

3. Press `E` (for Edit mode), then use `↓` to move the cursor to the `IP Config` parameter field.

4. Use the Space bar to select the `Use Bootp` option for the `IP Config` parameter. (This disables access to the IP Address, Subnet Mask, and Gateway parameters.)

5. Press `Enter` to exit from edit mode, then press `S` to save the configuration change.

When you reboot the switch with Bootp enabled, it will do one of the following:

■ Receive a minimal configuration (IP address and subnet mask).

■ If the reply provides information for downloading a configuration file, the switch then uses TFTP to download the file from the designated source, then reboots itself. (This assumes that the switch has connectivity to the TFTP file server specified in the Bootp database configuration record and that the Bootp database record is correctly configured.)

Bootp Operation

Bootp is used to download configuration data to the switch from the Bootp server that is configured on the switch. Either a minimal IP configuration or a full configuration can be retrieved from the Bootp server.

Note   The switch supports only the DHCP (Dynamic Host Configuration Protocol) implementations that are backwards compatible with Bootp.

The Bootp Process

Whenever the switch reboots with the IP Config parameter set to Use Bootp (the default), Bootp requests are broadcast on all local networks. When the Bootp server receives the request it searches its Bootp database for a record entry that matches the Switch Management Module MAC address, which is in the Bootp request. If a match is found, the configuration data in the associated database record is returned to the switch. For most Unix systems, the Bootp database is contained in the /etc/bootptab file.

Bootp Database Record Entries

An entry in the Bootp table file /etc/bootptab to update an IP address and subnet mask to the switch configured in the switch would be similar to this entry:

```
switch208224:\
   ht=ether:\
   ha=080009123456:\
   sm=255.255.248.0:\
   lg=11.22.33.44:\
   hn:\
   ip=55.66.77.88:\
   vm=rfc1048:
```

An entry in the Bootp table file `/etc/bootptab` to tell the switch where to obtain a configuration file download would be similar to this entry:

```
switch208224:\
   ht=ether:\
   ha=080009123456:\
   sm=255.255.248.0:\
   lg=11.22.33.44:\
   hn:\
   ip=55.66.77.88:\
   T144="switch.cfg":\
   vm=rfc1048:
```

where:

`switch208224`	is a user-defined symbolic name to help you find the correct section of the bootptab file. If you have multiple switches that will be using Bootp to get their IP configuration, you should use a unique symbolic name for each switch.
`ht`	is the "hardware type". For the HP AdvanceStack switch, set this to **ether** (for Ethernet). *This tag must precede the* ha *tag.*
`ha`	is the "hardware address". Use the Switch Management Module's 12-digit MAC address. *Make sure you use the address displayed on the front of your Switch Management Module.*
`sm`	is the subnet mask of the subnet in which the switch is installed.
`lg`	TFTP server address (source of final configuration file).
`hn`	send nodename (boolean flag, no "=value" needed).
`ip`	is the IP address to be assigned to the switch.
`T144`	is the vendor-specific "tag" assigned to HP; the name of the configuration file to download is in quotes.
`vm`	is a required entry that specifies the Bootp report format. For the HP AdvanceStack switch, set this parameter to **rfc1048**.

Notes for the bootptab file:

- Blank lines and lines beginning with the pound sign (#) are ignored.
- Make sure you include a colon (:) and a back slash (\) as a continuation indication at the end of each line except the last one. The last line should end with just a colon (:)
- Spaces are not allowed between the characters on a line.
- Names, such as switch208224 must begin with a letter and can only contain letters, numbers, periods, or hyphens.

SNMP Communities

This screen enables you to add, edit, or delete SNMP communities. Use this feature if you expect to manage the Switch 208/224 from an SNMP management station. You can configure up to five SNMP communities, each with either an operator-level or a manager-level view, and either restricted or unrestricted write access. (For more on this topic, refer to chapter 6, "Using SNMP To Monitor and Manage the Switch", and to the online Help.)
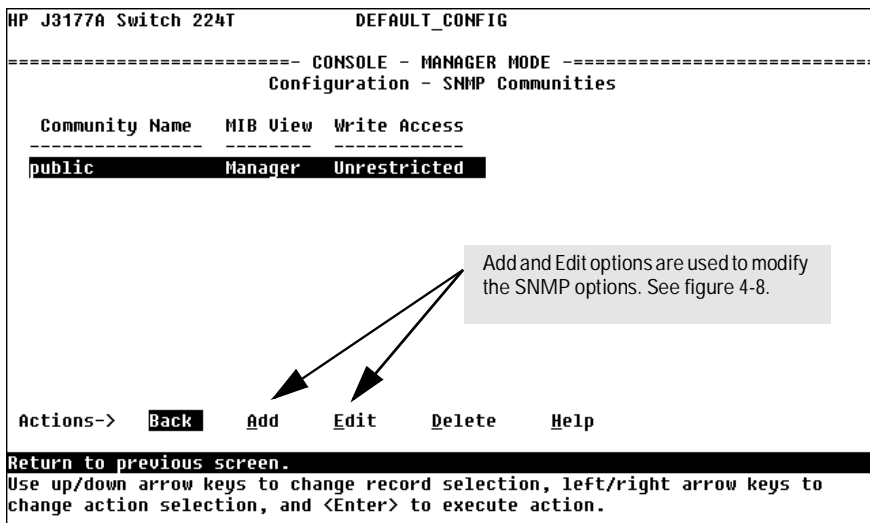
This screen gives an overview of the SNMP communities that are currently configured. All fields in this screen are read-only.

```
HP J3177A Switch 224T                 DEFAULT_CONFIG

========================- CONSOLE - MANAGER MODE -=========================
                          Configuration - SNMP Communities

    Community Name   MIB View   Write Access
    ---------------  --------   ------------
   public           Manager    Unrestricted



                                              Add and Edit options are used to modify
                                              the SNMP options. See figure 4-8.




    Actions->    Back      Add      Edit      Delete      Help

 Return to previous screen.
 Use up/down arrow keys to change record selection, left/right arrow keys to
 change action selection, and <Enter> to execute action.
```

Figure 4-7.   The SNMP Communities Screen (Default Values)

Caution

Deleting the community named "public" disables many network management functions (such as auto-discovery, traffic monitoring, and threshold setting). If security for network management is a concern, it is recommended that you change the write access for the "public" community to "Restricted".

How To Configure the Switch for SNMP Communities.

Ensure that the switch has been configured for IP and/or IPX service.

1. From the Configuration screen, select SNMP Communities to display a screen similar to figure 4-7.

2. Press [A] (for Add) to display the following screen:

```
HP J3177A Switch 224T                  DEFAULT_CONFIG

===========================- CONSOLE - MANAGER MODE -===========================
                         Configuration - SNMP Communities

   Community Name : ███████████████
   MIB View : Operator                        Write Access : Restricted


      Protocol            Manager Address
   ---------------     ----------------------




   Actions->   Cancel      Edit      Save      Help

 Enter Community Name - up to 16 characters, case sensitive; no spaces
 Use arrow keys to change field selection, <Space> to toggle field choices,
 and <Enter> to go to Actions.
```

If you are adding a community, the fields in this screen are blank.

If you are editing an existing community, the values for the selected community appear in the fields.

type the value for this field

use the Space bar to select values for other fields
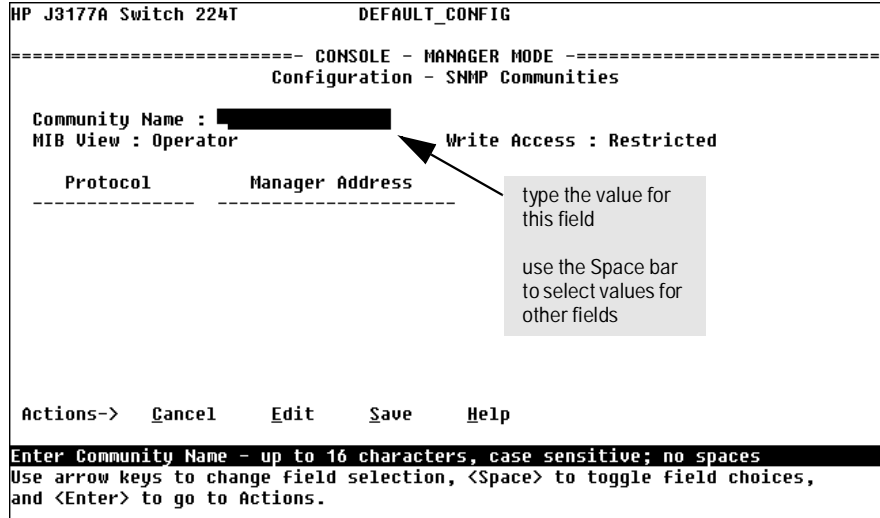
Figure 4-8.   The SNMP Communities Add or Edit Screen

Note

If you choose to not restrict the use of a community to specific network management stations, you do not need to list the manager addresses on this screen. You can use this screen to just configure community names and to set the MIB View and Write Access for each community.

All community names that you create using this screen can be used to access the switch into which the Switch Management Module is installed. Any management station using the correct community name may access the switch with the corresponding MIB View and Write Access levels.

If you want to restrict access to one or more specific management stations for a given SNMP community, listing the addresses of those stations on this screen creates that limitation. For each SNMP Community, you can authorize up to ten management stations by entering their IP and/or IPX addresses into the Manager Address field.

3.   Enter the appropriate value in each of the above fields (use the [Tab] key or arrow keys to move from one field to the next).

4.   Press [Enter], then [S] (for Save), and the new SNMP Community configuration is automatically activated.

5.   Return to the Main Menu to access other functions.

Trap Receivers

This screen enables you to configure up to ten IP and/or IPX management stations (trap receivers) to receive SNMP trap packets sent from the switch. Trap packets describe specific event types. (These events are the same as the log messages displayed in the event log.) The protocol, address, and community define which management stations receive the traps. Check the event log to help determine why the authentication trap was sent. (Refer to chapter 3 for information on the event log.)

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -==========================
                      Configuration - Trap Receivers

  Send Authentication Traps [No] : No

  Protocol         Address           Community       Events Sent in Trap
  --------  ----------------------   ----------------  -------------------
                                                       None




  Actions->   Cancel      Edit      Save      Help

Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 4-9. The Trap Receivers Configuration Screen (Default Values)

Serial Link Configuration

Use the serial link configuration screen to adjust the console RS-232 configuration to customize the connection with the PC, terminal, or modem you are using for console access. Refer to appendix B, "Modem Configuration" for information on modem settings. Refer also to "Console Configuration" on the next page.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                       Configuration - Serial Link

 Baud Rate [Speed Sense] : Speed Sense
 Flow Control [XON/XOFF] : XON/XOFF
 Connection Inactivity Time (min) [0] : 0
 Modem Connection Time (sec) [60] : 60
 Modem Lost Receive Ready Time (msec) [400] : 400
 Modem Disconnection Time (sec) [1] : 1




 Actions->   Cancel      Edit     Save     Help

Cancel changes and return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 4-10. The Serial Link Configuration Screen (Default Values)

Console Configuration

This screen lets you enable or disable inbound Telnet access and control the types of events displayed in the event log. Also specifies the terminal type and the console screen refresh interval used by the statistics screens (that is, the frequency with which statistics are updated on the statistics screens).

N o t e

"Inbound" Telnet is Telnet access to the switch console from another device. "Outbound" Telnet, which is using Telnet through the switch console to access another device, is always enabled as long as the Switch Management Module has been configured with a valid IP address. (To configure an IP address for the switch, refer to "Internet (IP) Service Features" on page 4-8.)

The Switch Management Module supports one inbound and one outbound Telnet sessions simultaneously.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

===========================- CONSOLE - MANAGER MODE -===========================
                       Configuration - Console

  Inbound Telnet Enabled [Yes] : Yes                    default inbound
  Terminal [VT100] : VT100                              Telnet setting
  Screen Refresh Interval (sec) [3] : 3
  Displayed Events [All] : All








  Actions->  Cancel      Edit      Save      Help

 Cancel changes and return to previous screen.
 Use arrow keys to change action selection and <Enter> to execute action.
```
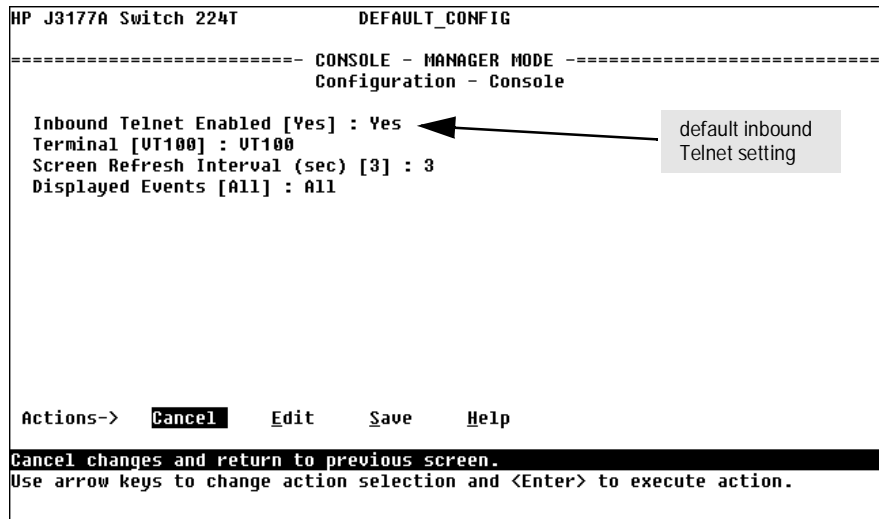
Figure 4-11. The Console Configuration Screen (Default Values)

Spanning Tree Configuration

Use this screen to activate the IEEE 802.1d Spanning Tree Protocol (STP) on the switch and to adjust spanning tree parameters, if necessary. In the factory default, STP is off. If there are any redundant paths (loops) between nodes in your network, you should set the Spanning Tree Enabled parameter to Yes. This ensures that all redundant ports (those providing backup parallel connections) are in a blocking state and not used to forward data.

The switch automatically senses port identity and type, and automatically defines port cost and priority for each type. The interface allows you to adjust the Cost and Priority for each port, as well as the global STP parameter values for the switch.

To configure the STP parameters: In most cases, the default STP parameter settings are adequate. In cases where it is not, use this procedure to make configuration changes.

C a u t i o n	If you enable STP (step 4), it is recommended that you leave the remainder of the STP parameter settings at their default values until you have had an opportunity to evaluate STP performance in your network. Because incorrect STP settings can adversely affect network performance, you should avoid making changes without having a strong understanding of how STP operates. To learn the details of STP operation, refer to appendix D, "Spanning Tree Operation", and examine the IEEE 802.1d standard.

1.   From the Main Menu, select Configuration.

2.   In the Configuration screen, select Spanning Tree .

3.   Select Edit to highlight the Spanning Tree Enabled parameter.

4.   Press the Space bar to select Yes . (This enables STP.)

```
HP J3177A Switch 224T              DEFAULT_CONFIG

===========================- CONSOLE - MANAGER MODE -==============================
                      Configuration - Spanning Tree

  STP Enabled [No] : Yes
  STP Priority [32768] : 32768          Hello Time [2] : 2
  Max Age [20] : 20                     Fwd. Delay [15] : 15

  Port    Type     Cost   Priority  |  Port    Type     Cost   Priority
  ----  -------- + ----- --------   |  ----  -------- + ----- --------
  1     Ethernet | 100   128        |  14    Ethernet | 100   128
  2     Ethernet | 100   128        |  15    Ethernet | 100   128
  3     Ethernet | 100   128        |  16    Ethernet | 100   128
  4     Ethernet | 100   128        |  17    Ethernet | 100   128
  5     Ethernet | 100   128        |  18    Ethernet | 100   128
  6     Ethernet | 100   128        |  19    Ethernet | 100   128
  7     Ethernet | 100   128        |  20    Ethernet | 100   128

  Actions->   Cancel      Edit     Save      Help

Enter the Port Cost.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

Figure 4-12. Example of the STP Configuration Screen

5. If the remaining STP parameter settings are adequate for your network, go to step 8.

6. Use [Tab] or the arrow keys to select the next parameter you want to change, then type in the new value. (If you need information on STP parameters, press [Enter] to select the Actions line, then press H to get help.)

7. Repeat step 6 for each additional parameter you want to change.

8. When you are finished editing parameters, press [Enter] to return to the Actions line.

9. Press [S] to save the currently displayed STP parameter settings and return to the Configuration menu. The Spanning Tree configuration is automatically activated when it is saved.

10. Return to the Main Menu to access other functions.

Network Monitoring Port

You can designate a port for monitoring traffic on any one of the other ports on the switch. This is accomplished by copying all traffic from the specified port to the designated monitoring port. The feature is also referred to as "mirroring".

How To Configure the Switch for Monitoring: This procedure describes configuring the switch for monitoring when monitoring is disabled. (**If monitoring has already been enabled, the screens will appear differently than shown in this procedure.**)

1.   Select Network Monitoring Port from the Configuration screen.

2.   In the Actions menu, press Ⓔ (for Edit).

3.   If monitoring is currently disabled (the default) then enable it by pressing the Space bar (or Ⓨ) to select Yes.

```
HP J3177A Switch 224T                    DEFAULT_CONFIG

===========================- CONSOLE - MANAGER MODE -=============================
                     Configuration - Network Monitoring Port

   Monitoring Enabled [No] : No  ◄────────       enable monitoring by
                                                 setting this parameter
                                                 to "Yes"







   Actions->   Cancel     Edit     Save     Help

 Cancel changes and return to previous screen.
 Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 4-13. The Default Network Monitoring Configuration Screen

4.   Press ⬇ to display a screen similar to the following and move the cursor to the Monitoring Port parameter.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                    Configuration - Network Monitoring Port

  Monitoring Enabled [No] : Yes
  Monitoring Port : █
  Monitored Port :










  Actions->   Cancel     Edit      Save      Help

Select the port that will act as the Monitoring Port.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

Figure 4-14. Example of Selecting a Monitoring Port

5. Press the Space bar or type the port number to select which port to use
    for the monitoring port

6. Press ↓ to move to the Monitored Port field and press the Space
    bar or type the port number to select the port you want to monitor.

7. Return to the Main Menu to select other functions. You don't need to
    reboot the switch; the Network Monitoring Port configuration is dynam-
    ically activated.

Note   The port you select as the Monitoring Port is identified on the port status and
             counter screens and the port configuration screens with -MP after the port
             number

             The port you select as the Monitoring Port cannot participate in Spanning Tree
             protocol, so it will not be displayed on the Spanning Tree configuration or
             status screens.

Saving Configurations

Once you have completed all your switch configuration changes, it is a good idea to save the configuration in a secure location. The configuration is contained in a file that can be transferred to a PC or server. See "Transferring Switch Configurations" in appendix C, "File Transfers" for the procedures to save your switch configuration.

Monitoring Switch Operation From the Console

Overview

The Main Menu in the switch's console interface gives you access to the following sources of read-only data for helping you to monitor, analyze, and troubleshoot switch operation:

Table 5-1.   Read-Only Monitoring and Analyzing Features

Main Menu Item	Data Type	Purpose
Status and Counters Menus	Switch Information	Lists switch-level operating information.
	Port Status	Displays the operational status of each port.
	Port Counters	Summarizes port activity.
	Address (forwarding) Table	Lists the MAC addresses of nodes the switch has detected on the network, along with the corresponding switch port.
	Port Address Table	Lists the MAC addresses that the switch has learned from the selected port.
	Spanning Tree Information	Lists Spanning Tree data for the switch and for individual ports.
Event Log		Lists event messages generated by the switch.

Status and Counters Menu

Select Status and Counters from the Main Menu to display the Status and
Counters menu:

```
HP J3177A Switch 224T                  DEFAULT_CONFIG

===========================- CONSOLE - MANAGER MODE -===========================
                             Status and Counters

  Return to Main Menu
  Switch Information...
  Port Status...
  Port Counters...
  Address Table...
  Port Address Table...
  Spanning Tree Information...




Displays current status of all the switch ports.
Use arrow keys to change menu selection and <Enter> to execute selection.
```

Figure 5-1.   The Status and Counters Menu

Each of the above menu items accesses the read-only screens described on
the following pages. Refer to the online help for a description of the entries
displayed in these screens.

Switch Information

```
HP J3177A Switch 224T             DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -============================
                          Switch Information

  OS Version         : A.03.01        Mgmt. MAC Address  : 123456-789012
  ROM Version        : A.01.01        Expansion Module   : Router/Rem Access

  Up Time            : 78 hours       Memory   - Total   : 2,234,080
  CPU Util (%)       : 3                        Free     : 1,528,496

  Message  - Total   : 199            Packet   - Total   : 199
  Buffers    Free    : 174            Buffers    Free    : 199
             Lowest  : 158                       Lowest  : 196
             Missed  : 0                         Missed  : 0

  IP Mgmt  - Pkts Rx : 0              IPX Mgmt - Pkts Rx : 0
             Pkts Tx : 12                        Pkts Tx : 0

Actions->    Back     Help

Return to previous screen.
Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 5-2.   Example of Switch Information

This screen tells you the following information about the switch and the
Switch Management Module:

■   the version of the OS (operating system) code

■   the version of the ROM (read-only memory) code

■   the MAC address of the Switch Management Module

■   the identity of the expansion module, if one is installed in the Expansion
    Slot in the back of the switch:

    •   None indicates that no module is installed

    •   Router/Rem Access indicates that a router module (for example,
        the HP J3138A Internet Router Module), or a remote access module
        (for example, the HP J3230A LanRover/10A by Shiva) is installed.

■   a dynamic indication of how individual switch resources are being used

Port Status

```
HP J3175A Switch 208T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=============================
                             Port Status

   Port  ID    Type    Media  Enabled    Status         Mode
   ----  --  --------  -----  -------  ----------   --------------
   1     1   Ethernet  UTP    Yes      Up           Half Duplex
   2     2   Ethernet  UTP    Yes      Up           Half Duplex
   3     3   Ethernet  UTP    Yes      Up           Half Duplex
   4     4   Ethernet  UTP    Yes      Up           Half Duplex
   5     5   Ethernet  UTP    Yes      Up           Half Duplex
   6     6   Ethernet  UTP    Yes      Up           Half Duplex
   7     7   Ethernet  UTP    Yes      Up           Half Duplex
   8     8   Ethernet  UTP    Yes      Down         Half Duplex
   A     9   100TX     C5UTP  Yes      Up           100/Half Dx
   B     10  100FX     Fiber  Yes      Up           100/Half Dx


   Actions->   Back     Help

 Return to previous screen.
 Use up/down arrow keys to scroll to other entries, left/right arrow keys to
 change action selection, and <Enter> to execute action.
```

Figure 5-3.   Example of Port Status

For each port, this screen provides you the following information:

- Port -- the port number (*note that even if a transceiver module is not installed in the transceiver slot in the front of the switch--port B, a port B entry is displayed in the list*)

- ID -- the port ID number to use for SNMP MIB access

- Type -- the network technology type of the port

- Media -- the type of network media connected to the port

- Enabled -- whether the port is enabled (Yes or No)

- Status -- the operational status of the port (Up -- operating correctly, or Down -- not operating correctly)

- Mode -- the port's operating mode

Use the Help action item on this screen to see a list of possible values for each of these items, and definitions of those values.

Port Counters

```
HP J3177A Switch 224T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=========================
                              Port Counters

   Port   Total Bytes    Total Frames     Errors Rx
   ----   -------------   -------------    -------------
  1        120,513,880      1,472,043                0
  2        120,601,820      1,473,409                0
  3            987,877           9930                 0
  4          1,349,355         15,785                 0
  5          3,889,482         38,760                 0
  6            827,891           8488                 0
  7                  0              0                 0
  8         29,099,336        345,225                 0
  9                  0              0                 0
 10         29,132,640        345,740                 0
 11                  0              0                 0

 Actions->   Back      Show details      Reset      Help

Show detailed port information.
Use up/down arrow keys to scroll to other entries, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

Figure 5-4. Example of Port Counters

This screen enables you to determine the traffic patterns for each port. Port Counter features include:

■   Dynamic display of counters summarizing the traffic on each port since the last reboot or reset

■   Option to reset the counters to zero (for the current console session). This is useful for troubleshooting. Refer to the Note, below.

■   An option to display the link status, and further port activity details for a specific port (Show details). When you select the Show details action, you are prompted to select the switch port. A sample detailed port counters screen is shown in figure 5-5.

Note   The Reset action on this screen and the Show Details screen resets the counter display to zero for the current session, but does not affect the cumulative values in the actual hardware counters. (In compliance with the SNMP standard, the values in the hardware counters are not reset to zero unless you reboot or reset the switch.) Thus, using the Reset action resets the displayed counters to zero for the current session only. Exiting from the console session and starting a new session restores the counter displays to the accumulated values in the hardware counters.

Port Counters - Show Details

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -=============================
                          Port Counters - Port 16

  Link Status      : Up              Mgmt MAC Address: 123456-789012

  Bytes Rx         : 3,440,181       Bytes Tx        : 9754
  Unicast Rx       : 10,610          Unicast Tx      : 136
  Bcast/Mcast Rx   : 15,000          Bcast/Mcast Tx  : 0

  Drops Rx         : 0               Collisions Tx   : 1
  FCS/Align Rx     : 4
  Fragments Rx     : 1,269
  Giants Rx        : 0
  Total Rx Errors  : 1,273




  Actions->   Back-    Reset     Help
  Return to previous screen.
  Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 5-5. Example of Port Counters - Show Details

This screen shows you additional counters for the selected port. For defini-
tions of these counters, use the Help action.

In addition to the counters, this screen displays the status of the network
connection to this port (Link Status), and the MAC address of the Switch
Management Module. This MAC address can be used to perform level-2
network connectivity tests (link tests) through this port. See chapter 7,
"Troubleshooting" for more information about link tests.

Address Table

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -=============================
                              Address Table

   MAC Address    Located on Port
   -------------  ---------------
  00000c-73a201  16
   0060b0-001d00  16
   0060b0-045631  16
   0060b0-1a6659  1
   080009-02a9f1  1
   080009-0ab5ac  10
   080009-0f6bac  10
   080009-0fc65f  10
   080009-1369c4  4
   080009-167be4  16
   080009-16fbf6  16


 Actions->   Back      Search      Next page      Prev page      Help

Return to previous screen.
Use up/down arrow keys to scroll to other entries, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

Figure 5-6.   Example of the Address Table

This screen lets you easily determine which switch port is being used to access
a specific device on the network. The listing includes:

■   The MAC addresses that the switch has learned from network devices
     attached to the switch

■   The port on which each MAC address was learned

You can use the Search action at the bottom of the screen to locate a specific
device (MAC address).

Port Address Table

This screen lets you easily determine which devices are attached to the selected switch port by listing all of the MAC addresses detected on that port.

You can use the Search action at the bottom of the screen to determine whether a specific device (MAC address) is connected to the selected port.

To use the port address table:

1. Select Port Address Table from the Status and Counters menu.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

========================- CONSOLE - MANAGER MODE -==============================
                          Status and Counters

  Return to Main Menu
  Switch Information...
  Port Status...
  Port Counters...
  Address Table...
  Port Address Table...
  Spanning Tree Information...


                                          Use the Space bar to select the port for
                                          which you want to display the address table.


Select port : 16

━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━━
Use arrow keys to change menu selection and <Enter> to execute selection.
```
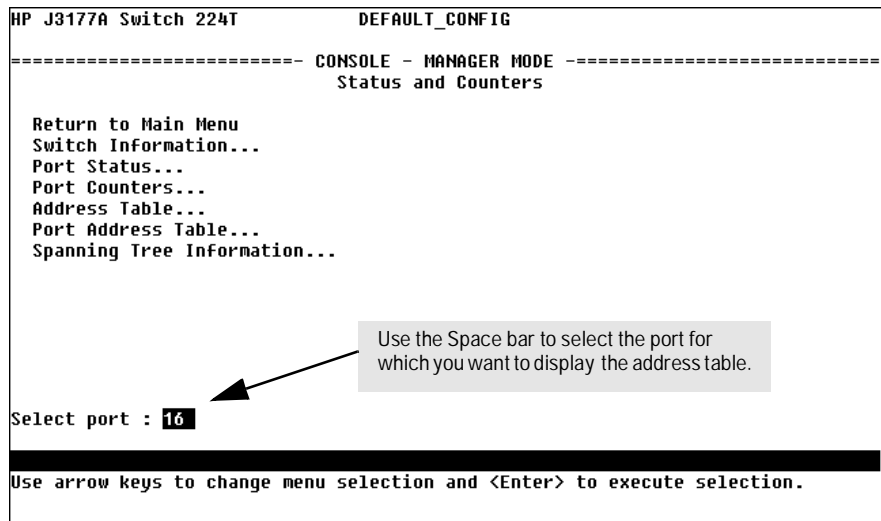
Figure 5-7. Example of How To Access the Port Address Table

2. When the Select Port prompt appears, press the Space bar to display the number of the port you want to examine, then press Enter. (See figure 5-7, above.)

    Each port is identified by its port number.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -==============================
                        Port Address Table - Port 16

   MAC Address
   ------------
  000000-010800
  00000c-73a201              In this example, several MAC addresses
  0060b0-001d00              accessed through port 16 appear in the
  0060b0-045631              initial listing. To view any additional
  0060b0-1a6659              addresses that may be in the listing, use
  0060b0-1d4158              the Next page action.
  0060b0-1e0250
  0060b0-31fead
  080009-02a9f1
  080009-0619ed
  080009-0ab5ac

 Actions->    Back      Search      Next page      Prev page      Help

Return to previous screen.
Use up/down arrow keys to scroll to other entries, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

Figure 5-8.   Example of a Port Address Table for a Specific Port

Spanning Tree (STP) Information

Use this screen to determine current switch-level STP parameter settings and statistics.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=============================
                            Spanning Tree

  STP Enabled           : Yes
  Switch Priority       : 32,768
  Hello Time            : 2
  Max Age               : 20
  Foward Delay          : 15

  Topology Change Count : 0
  Time Since Last Change : 3 hours

  Root MAC Address      : 123456-789012
  Root Path Cost        : 0
  Root Port             : This switch is root
  Root Priority         : 32768

 Actions->   Back      Show ports     Help

 Return to previous screen.
 Use arrow keys to change action selection and <Enter> to execute action.
```

Figure 5-9.   Example of Spanning Tree Information

You can use the $\underline{S}$how ports action at the bottom of the screen to display
port-level information and parameter settings for each port in the switch
(including port type, source MAC address, cost, priority, operating state, and
designated bridge).

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -===========================
                      Spanning Tree - Port Information

   Port    Type      Cost   Priority     State      Designated Bridge
   ----    --------  -----  --------   ----------   -----------------
   1       Ethernet  100        128    Blocking     00c0ba-002920
   2       Ethernet  100        128    Forwarding   080009-f5b5a0
   3       Ethernet  100        128    Forwarding   00c0ba-002920
   4       Ethernet  100        128    Forwarding   080009-f5b5a0
   5       Ethernet  100        128    Forwarding   080009-f5b5a0
   6       Ethernet  100        128    Disabled
   7       Ethernet  100        128    Blocking     080009-f5b5a0
   8       Ethernet  100        128    Disabled
   9       Ethernet  100        128    Disabled
   10      Ethernet  100        128    Disabled
   11      Ethernet  100        128    Disabled

   Actions->   Back     Help

 Return to previous screen.
 Use up/down arrow keys to scroll to other entries, left/right arrow keys to
 change action selection, and <Enter> to execute action.
```

Figure 5-10. Example of STP Port Information

Caution   Because incorrect STP settings can adversely affect network performance,
you should avoid making changes without having a strong understanding of
how STP operates. For more on STP, refer to appendix D, "Spanning Tree
Operation" and read the IEEE 802.1d standards document.

Event Log

The Event Log records operating events as single-line entries listed in chrono-
logical order. Each entry is composed of five fields:

Severity   Date   Time   System Module   Event Message

```
I    08/05/96    10:52:32    ports: port 1 enabled
```

Severity is one of the following codes:

- I (information) indicates routine events.

- W (warning) indicates that a service has behaved unexpectedly.

- C (critical) indicates that a severe switch error has occurred.

- D (debug) reserved for HP internal diagnostic information.

Date is the date in *mm/dd/yy* format that the entry was placed in the log.

Time is the time in *hh:mm:ss* format that the entry was placed in the log.

System Module is the internal module (such as "ports" for port manager) that
generated the log entry.

Event Message is a brief description of the operating event.

Entering and Navigating in the Event Log Display. To enter the event log, select Event Log from the Main Menu.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

=========================- CONSOLE - MANAGER MODE -=========================
I 01/01/97 05:51:02 system: ----------------------------------------------
I 01/01/97 05:51:04 stp: Spanning Tree Protocol enabled
I 01/01/97 05:51:04 ip: entity enabled
I 01/01/97 05:51:04 ipx: entity enabled
I 01/01/97 05:51:04 tftp: entity enabled
I 01/01/97 05:51:04 bootp: entity enabled
I 01/01/97 05:51:04 tcp: configuration complete
I 01/01/97 05:51:04 tcp: entity enabled
I 01/01/97 05:51:04 telnet: Inbound telnet enabled
I 01/01/97 05:51:04 telnet: Outbound telnet enabled
I 01/01/97 05:51:05 system: System Booted.
I 01/01/97 05:51:15 console: connection established
I 01/01/97 05:51:17 mgr: SME CONSOLE Session - MANAGER Mode established
----  Log events stored in memory 1-14.  Log events on screen 1-14.


 Actions->    Back      Next page      Prev page      End      Help

Return to previous screen.
Use up/down arrow scroll log one line, left/right arrow keys to
change action selection, and <Enter> to execute action.
```

log status line   range of events in the log   range of log events displayed

Figure 5-11. Example of an Event Log Display

When you first display the event log, the first event of the most recent reboot is positioned at the top of the display. To display other portions of the log—either preceding or following the currently visible portion—use either the actions listed at the bottom of the display (Next page, Prev page, or End), or the arrow keys as described in the following table:

Table 5-2.   Event Log Control Keys

Key	Action
N	Advance the display by one page (next page).
P	Roll back the display by one page (previous page).
↓	Advance display by one event (down one line).
↑	Roll back display by one event (up one line).
E	Advance to the end of the log.
H	Display Help for the event log.

The event log holds up to 100 lines in chronological order, from the oldest to the newest. Each line consists of one complete event message. Once the log has received 100 entries, it discards the current oldest line each time a new line is received. The event log window contains 20 lines and can be positioned to any location in the log.

The log status line at the bottom of the display identifies where in the sequence of event messages the display is currently positioned.

The event log will be erased if any of the following occurs:

■ The switch is reset by using the Reset button on the Switch Management Module.

■ Power to the switch is interrupted, or the power is cycled.

■ A new operating system is downloaded to the switch.

(The event log is not erased by using the `Reboot Switch` command in the console Main Menu.)

6

Using SNMP To Monitor and Manage the Switch

Overview

You can manage the Switch 208/224 that has a Management Module installed from a network management station. Included with your Switch 208/224 Management Module is a CD-ROM containing a copy of **HP AdvanceStack Assistant**, an easy to install and use network management application that runs on your Windows NT- or Windows 95-based PC. It can be used as an application under the HP OpenView network management environment, or it can be run as a stand-alone application running directly under Windows.

HP AdvanceStack Assistant provides complete control of your Switch 208 or 224 through its graphical interface. In addition, it makes use of the HP Embedded Advanced Sampling Environment (HP EASE) and RMON agent software that is on the Switch Management Module to provide powerful but easy to use traffic monitoring and network activity analysis tools.

 This chapter provides an overview of SNMP management for the Switch 208/224 and provides an overview of the configuration process for supporting SNMP management of the switch. For configuration procedures for specific features, see chapter 4, "Configuring the Switch From the Console".

SNMP Management Features

SNMP management features provided by the Switch 208/224 Management Module include:

- Security via configuration of SNMP communities
- Event reporting via SNMP traps and RMON
- Managing the switch with a network management tool such as HP AdvanceStack Assistant
- Monitoring data normally associated with the SNMP v2 agent ("Get" operations). Supported *Standard* MIBs include:
  - Bridge MIB (RFC 1493)
  - Ethernet MAU MIB (RFC 1515)
  - Interfaces Evolution MIB (RFC 1573)
  - Novell Standard IPX MIB (ipx.mib)
  - RMON MIB (RFC 1757)—etherstats, events, alarms, and history
  - SNMP MIB-II (RFC 1213)
  - Entity MIB (RFC 2037)

  HP Proprietary MIBs include:
  - Statistics for message and packet buffers, tcp, telnet, and timep (netswtst.mib)
  - Port counters, forwarding table, and CPU statistics (stat.mib)
  - tftp download (downld.mib)
  - Integrated Communications Facility Authentication Manager and SNMP communities (icf.mib)
  - HP AdvanceStack Switch 208/224 configuration (config.mib)
  - HP Embedded Advanced Sampling Environment (ease.mib)

The Switch Management Module SNMP agent also uses certain variables that are included in a Hewlett-Packard proprietary MIB file you can add to the SNMP database in your network management tool. You can copy the MIB file from the HP AdvanceStack Products CD, shipped with the Switch Management Module, or from following World Wide Web site:

```
http://www.hp.com/go/network_city
```

For more information, refer to the perforated card at the front of this manual.

SNMP Configuration Process

If you are using IP, you must either configure the switch with the appropriate IP address or, if you are using Bootp to configure the switch, ensure that the Bootp process provides the IP address. (The IPX address is automatically configured.)

The general steps to configuring for SNMP access to the preceding features are:

1. From the Main Menu, select Configuration.

2. Configure an network address for the switch, including any necessary gateways:

    a. Use the IPX address. On IPX networks, the switch automatically acquires an IPX address based on the network number and the Switch Management Module MAC address. (Refer to page 4-6 for more information.)

    b. Use Bootp, which is enabled by default, to acquire an IP address. Make sure the Bootp server is configured to support this switch. (Refer to "Using Bootp" on page 4-9 for more information.)

    c. Manually configure an IP address. (Refer to page 4-8 for more information.)

3. Configure the appropriate SNMP communities. (The "public" community exists by default and is used by HP's network management applications.) (For more on configuring SNMP communities, refer to page 4-12.)

4. Configure the appropriate trap receivers. (For more on configuring trap receivers, refer to page 4-14.)

Note   SNMP community and trap receiver configurations are activated when saved. Rebooting the switch is not necessary unless you have also configured other parameters that require rebooting in order to be activated.

Any IP or IPX service configuration changes are not activated when saved. For these changes, the switch must be rebooted for the changes to take effect.

For more on when it is necessary to reboot, refer to "Rebooting the Switch" in chapter 3, "The Switch Console".

Advanced Management: RMON and EASE Support

The Management Module supports RMON (Remote Monitoring) and EASE on all network segments connected to the switch. This allows for troubleshooting and optimizing of your network.

RMON

The following RMON groups are supported:

- Ethernet Statistics (except the numbers of packets of different frame sizes)

- Alarm

- History (of the supported Ethernet statistics)

- Event

You can access the Ethernet statistics, Alarm, and Event groups from the HP AdvanceStack Assistant network management software included with your Switch Management Module.

EASE

EASE (Embedded Advanced Sampling Environment) is a network monitoring and troubleshooting tool that analyzes traffic from a network-wide perspective. EASE notifies you about network problems and identifies the end node at fault. That information can be used to set up RMON to study the problem more closely, if desired. Because it is based on statistical sampling instead of RMON's all-inclusive collection schema, EASE lessens the load on devices and network bandwidth. See the Traffic Monitor portion of the HP AdvanceStack Assistant CD-ROM (supplied with your Management Module) for more information on using EASE.

7

Troubleshooting

This chapter describes how to troubleshoot your Switch Management Module.
This chapter covers these topics:

■ checking the Switch Management Module LEDs

■ using the problem/solution table

■ checking for IP configuration errors

■ using diagnostic tests

■ resetting the switch

■ clearing a password for the switch console

■ HP Customer Support Services

Checking the Module LEDs

The following table lists Switch Management Module LED behavior showing error conditions.

Table 7-1.   Switch Management Module LED Behavior

LED	Status	Description
Self Test	ON	The module is being self tested as a result of being powered on or because of a reset. If it stays ON for a prolonged period of time (more than 30 seconds), the module has experienced a hardware failure. See the instructions for the ON condition under the Fault LED below.
	Flashing	This should only occur if the Fault LED is also flashing, and indicates that the module has failed its firmware self test. See the instructions for the Flashing condition under the Fault LED below. Try resetting the switch and module by pressing the Reset button on the module. If the fault condition persists, attach a PC to the switch and run the console interface; the log file should indicate the error condition. See Note below.
Fault	ON	The module is being self tested as a result of being powered on or because of a reset. If it stays ON for a prolonged period of time (more than 30 seconds), the module has experienced a hardware failure. Try resetting the switch and module by pressing the Reset button on the module. If the failure persists, it may be due to incorrect module installation. Remove power from the switch and try reinstalling the module. This condition may also be caused by an incorrectly installed SIMM on the module. While the module is removed, verify that the SIMM is correctly installed. Apply power to the switch again. If the fault condition persists, the module may have to be replaced. If none of these procedures resolves the condition, the module may be faulty and would need to be replaced. Contact your HP-authorized LAN dealer for assistance.
	Flashing	Indicates that the module has failed its firmware self test. Try resetting the switch and module by pressing the Reset button on the module. If the fault condition persists, attach a PC to the switch and run the console interface; the log file should indicate the error condition. See Note below.

Note:
If the Self Test and Fault LEDs are flashing (not constantly on), you should be able to use the switch console to read the switch event log to identify the problem. If necessary to resolve the problem, contact your HP-authorized LAN dealer, or use the electronic support services from HP to get assistance. See the perforated card at the front of this manual for more information.

Problem/Solution Table

Use the following table to diagnose the problem with your Management Module:

Table 7-2.   Typical Switch Problems and Their Solutions

Problem	Solution
How do I reset the switch?	Either: • Push the reset button on the Switch Management Module. • Select Reboot Switch from the switch console. • Select the Reset command from HP AdvanceStack Assistant. • Power cycle the switch. Note that only the power cycle option causes the switch and Switch Management Module to run their diagnostic self tests.
None of the Management Module LEDs are on.	The Module may not be installed correctly. Make sure the Module is fully inserted and screws are tightened.
I can't remember the console password to configure and diagnose the switch.	While the switch is on, press the Clear button on the Management Module for at least 1 second. Then release. Then specify a new password to keep access to the switch restricted. (The steps are described in chapter 3 under "Using Password Security".)
A user can't send data to another user.	There may be a cabling problem with the connection for one or both of the users. Follow the procedures under "Diagnostic Tests" to identify the problem.
I think the Switch Management Module isn't working anymore because the Fault LED stays on or flashes. What do I do?	See the information in table 7-1 for what to do under these conditions.

If the answer to your question is not in this table, read the IP configuration and diagnostic test information on the next pages.

Troubleshooting

IP Configuration Errors

If you are using IP communications, make sure your IP configuration parameters are set properly. Use the switch console's IP Configuration function as described in chapter 4. Incorrect IP configuration on the Switch Management Module will prevent it from communicating with the network management station, and may cause other network problems.

In particular, make sure you provide the Switch Management Module with a unique IP address, and that you use the correct subnet mask for your network.

Diagnostic Tests

The HP AdvanceStack Assistant and switch console provide tests and indicators that can be used to monitor the switch and its network connections.

Testing the Switch and Management Module

If you believe that the switch or its Management Module are not operating correctly, remove and reinsert the power cord for that switch. This procedure causes the switch and module to complete their power-on self test.

Normally, when the self test completes, the module's Self Test LED and all Fault LEDs on the switch and module will go OFF. If any error conditions exist in the switch or the module, the LEDs should display the condition. See the *HP AdvanceStack Switch 208/224 Installation and Reference Guide* to interpret the LED display for the switch. For the module, see the table under "Checking the Module LEDs" at the beginning of this chapter.

Testing the Switch's Ports and the Links

To test the switch's ports and the attached network links, follow these procedures:

1. **Check for link beat detection on the port.** When the switch first detects the link beat signal (also called "link test pulse signal") coming from an active device, the port LED comes ON for approximately 3 seconds. This happens whenever the switch is powered on and an active device that is sending link beat is connected to the port, or the connected device is powered on, or the switch is powered on and an active network cable is plugged in to the port.

   In its default configuration, the switch indicates the link status for 3 seconds on its 10 Mbit/s port LEDs and then converts them to displaying network activity on the port. (The 100 Mbit/s port always operate this way.) You can configure the 10 Mbit/s port LEDs to continuously indicate the link status and not convert to activity indicators. This configuration option is on the System configuration screen under the Configuration menu on the switch console interface. See "System Configuration" in chapter 4, "Configuring the Switch From the Console".

2. **Run network communication tests.** Use these tests if you have link beat detected for a port. Choose one of the following ways to run a test of the network communication between the switch and an addressable device connected at the remote end of each of the cables you wish to test:

   • Select **Link Test** from HP AdvanceStack Assistant's Network Test function or the switch console's Advanced Commands option. This causes the switch to send IEEE 802.2 Test command packets to a specified network device.

     The device must be able to send an IEEE 802.2 Test response packet upon receipt of a Test command packet. Usually this would be another network device such as a hub, switch, or router. You specify the remote device by its 12-digit hexadecimal MAC address.

   • Select **Ping Test**. This is a network layer test that you can run on TCP/IP networks. The switch sends ICMP Echo Request packets to a specified network device. This works with devices that have an IP address and are able to respond to an ICMP Echo Request packet. Most end nodes using IP will respond to this packet. You specify the remote device by its IP address.

- Select **IPXping Test**. This is a network layer test that you can run on Novell NetWare IPX networks. The switch sends IPX test packets to a specified network device. This works with devices that have an IPX address and are able to respond to an IPX test packet. Most end nodes using IPX will respond to this packet. You specify the remote device by its IPX address.

If the test passes, the switch's port, the network link, and the remote device are all working properly. If you are testing the transceiver module port, this also tests the transceiver that is installed in the switch.

If the test fails, you can test the switch using the "Testing the Switch Only" procedures on the previous page. You should also verify that the remote device is powered on and functioning properly, and that the cable is good.

If the switch passes its tests, but the network test (link test, Ping test, or IPXping test) fails, the problem is in the cabling, the remote device, or possibly the output circuitry of the switch's port.

A frequent problem is that the wrong type of network cable is used. To connect the switch ports to end nodes, use a "straight-through" twisted-pair cable; to connect to hubs or other switches, use a "crossover" twisted-pair cable. Refer to appendix A, "Cables and Connectors" in the *HP AdvanceStack Switch 208/224 Installation and Reference Guide* for more information on the pin-outs and use of these cables.

See the HP AdvanceStack Assistant online help and the switch console advanced commands help for more information on how to execute the network connectivity tests.

Resetting the Switch

Resetting requires physical access to the Switch Management Module. There are two levels of reset:

■ **Hardware reset:** Momentarily interrupts switch operation, performs a complete hardware self test, clears the switch event log, and reboots the switch.

To execute this test, press the Reset button on the Switch Management Module with a pointed object (the button is recessed to prevent accidental actuation). Initially, all the module and switch LEDs will be illuminated. The test completes when the module Self Test and Fault LEDs turn off.

■ **Configuration reset:** This is a drastic action that interrupts switch operation, clears any passwords, clears the event log, performs a complete self test, and reboots the switch in its factory default configuration. You should consider performing a configuration reset only if you want all configurable parameters reset to the factory default values.

To execute this test, perform these steps:

1. Using pointed objects simultaneously press both the Reset and Clear buttons on the Switch Management Module.

2. Continue to press the Clear button while releasing the Reset button.

3. When the Self Test LED begins to flash, release the Clear button.
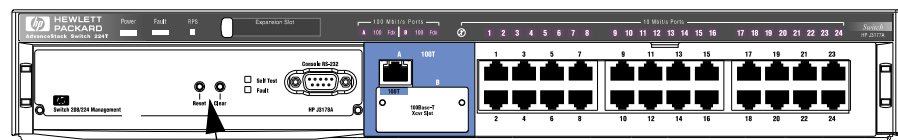
Use the Reset and Clear buttons described in the reset procedures.

Troubleshooting

Clearing Passwords on the Switch Console

You can use the Clear button to clear a forgotten console password that was previously configured on the switch.

To clear the password, follow these steps:

1. Verify the switch has powered-up, and passed self test.

1. Press the Clear button on the Management Module for at least one second.
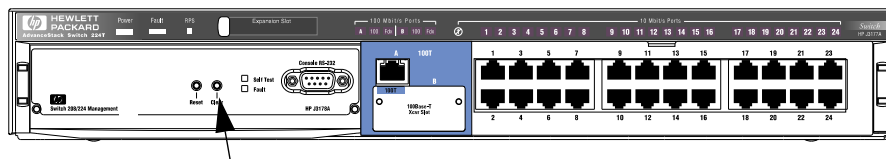
Press the Clear button for at least one second.

Note

After the password has been cleared, access to the switch from the console will no longer be password protected. A new password can be assigned from the switch console.

HP Customer Support Services

If you are still having trouble with your switch or Switch Management Module, Hewlett-Packard offers support 24 hours a day, seven days a week through the use of automated electronic services, including:

- the World Wide Web
- HP BBS
- HP FTP Library Service on the Internet
- CompuServ
- HP Network Phone-In Support (NPS)
- HP FIRST FAX Retrieval Service

See the perforated card at the beginning of this manual for information on how to get technical support.

Your HP-authorized network reseller can also provide you with assistance, both with services that they offer and with services offered by HP.

Troubleshooting

Specifications

Physical (*includes bulkhead and connector*):

Width	16.7 cm (6.6 in)
Depth	18.3 cm (7.2 in)
Height	4.5 cm (1.8 in)
Weight	2.3 kg (.50 lb)

Environmental:

	Operating	Non-Operating
Temperature	+0°C to +55°C (32°F to 131°F)	-40°C to 70°C (-40°F to 158°F)
Relative humidity (non-condensing)	15% to 95%at 40°C (104°F)	15% to 90% at 65°C (149°F)
Maximum altitude	4.6 km (15,000 ft)	4.6 km (15,000 ft)

Connectors:

The RS-232-C console port conforms to V.22 bis.

Electromagnetic:

Emissions:
    FCC part 15 Class A
    CISPR-22 Class A/EN 55022 Class A
    VCCI Level 1

Immunity:

(*See the Declaration of Conformity at the end of the Safety and Regulatory Statements in the HP AdvanceStack Switch 208/224 Installation and Reference Guide.*)

Safety:

Complies with IEC 950: (1991)+A1,A2/.EN60950 I(1992)+A1,A2

Acoustic Noise: Not applicable

Management Protocols

RFC 1157	SNMP
RFC 1901-1908	SNMPv2C
RFC 1420	SNMP over IPX

Supported MIBS

RFC 1493	Bridge MIB
IETF	Entity MIB
RFC 1213	MIB-II
RFC 1515	Ethernet MAU MIB
RFC 1573	Interface Evolution MIB
RFC 1650	Ethernet Interface MIB
RFC 1757	RMON MIB
HP Switch Config MIB	
HP EASE MIB	version 2
HP MIB Extensions	Available on request. Contact your HP-authorized dealer or local HP sales office

Communication Protocols

RFC 786	UDP
RFC 791	IP
RFC 792	ICMP
RFC 793	TCP
RFC 826	ARP
RFC 854	Telnet
RFC 951	Bootp
RFC 1350	TFTP
Novell IPX	

Regulatory Statements

FCC Statement (For U.S.A. Only) Federal Communications Commission Radio Frequency Interference Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

VCCI Class 1 (For Japan Only)

注意

　この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準
に基づく第一種情報技術装置です。この装置を家庭環境で使用すると電波妨
害を引き起こすことがあります。この場合には使用者が適切な対策を講ずる
よう要求されることがあります。

European Community

This equipment complies with ISO/IEC Guide 22 and EN55022 Class A.

Note

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Complies with Canadian EMC Class A requirements.

Modem Configuration

Before installing the modems (one attached to the Switch Management Module's console port and one attached at the user end to the terminal/PC), configure them by this procedure:

1. Connect them, one at a time, to the PC or terminal and issue the appropriate AT command, as described in the tables in this appendix.

    Note that, in each case, the configuration string for the modem attached to the switch is different than for the one attached to the PC or terminal.

2. Install the modems in the appropriate locations. Make sure the correct modem is installed in each location, according to how it was configured.

The modems listed in this appendix have been tested and found to work properly with the Switch Management Module using the initialization strings shown.

Hayes Smartmodem Optima 28.8 (V.34)

At the switch end:	Issue the following AT command: AT&FQ2&C2&D3S0=1&W0
At the user end:	Issue the following AT command: AT&FW1&C1&W

Hayes Acura 288 V.34 + FAX

At the switch end:	Issue the following AT command: AT&FQ2&C2&D3S0=1&W0
At the user end:	Issue the following AT command: AT&FW1&C1&W

US Robotics Courier V.FC/V.34

At the switch end:	Issue the following AT command: AT&F&C0S0=1&W0
At the user end:	Issue the following AT command: AT&F&W

Megahertz XJ2288 PCMCIA card modem

At the user end:	Issue the following AT command: AT&F\N0&W

Practical Peripherals PM288MT II V.34

At the switch end:	Issue the following AT command: AT&F0&C2S0=1Q2&D3&W0
At the user end:	Issue the following AT command: AT&F0&W0

C

File Transfers

Overview

You can download new Switch Management Module software (operating system—OS) and upload or download Switch 208/224 configuration files. These features are useful for acquiring periodic switch software upgrades and for storing or retrieving a switch configuration.

Downloading an Operating System

There are several methods you can use to download new operating system code to the Switch Management Module. You can use any of the following methods, whichever is more convenient:

- the TFTP feature-- `Download OS` command on the console Main Menu
- HP's SNMP Download Manager
- a switch-to-switch file transfer
- the switch console's Zmodem capabilities in the console Advanced Commands

The rest of this section describes these methods.

Note   Downloading a new OS does not change the current switch configuration. The switch configuration is contained in a separate file that can also be transferred, for example to be saved or used on another Switch 208/224. See "Transferring Switch Configurations" later in this appendix.

Using TFTP To Download the OS File

Before you use this procedure, make sure of the following:

- The switch is properly connected to the network and is configured for either IP or IPX service, whichever you need to communicate with the TFTP server used for the download.

- The OS software to download must be stored in a file on a TFTP server in your network. (The OS file is typically available from HP's electronic services—refer to the perforated card at the front of this manual.)

- You know the name of the OS file stored in the TFTP server. (For example, `j317801.cmp` .)

- You have determined the IP or IPX address of the TFTP server in which the OS file has been stored.

Note

If your TFTP server is a Unix workstation, ensure that the case (upper or lower) that you specify for the filename in the switch console Download OS screen is the same case as the characters in the OS filenames on the TFTP server.

1. In the switch console Main Menu, select Download OS. You will then see this screen:

```
HP J3177A Switch 224T                 DEFAULT_CONFIG

===========================- CONSOLE - MANAGER MODE -===========================
                              Download OS

  Method : TFTP
  Protocol : IP
  TFTP Server :
  Remote File Name :











  Actions->   Cancel     Edit      eXecute     Help

Select the network protocol.
Use arrow keys to change field selection, <Space> to toggle field choices,
and <Enter> to go to Actions.
```

Figure C-1. The Download OS Screen (Default Values)

2. Press ⌊E⌋ (for Edit).

3. With the Protocol field highlighted, use the Space bar to select either IP or IPX, depending on the protocol in use in your network.

4. Highlight the TFTP Server field and type in the IP or IPX address of the TFTP server in which the OS file has been stored.

5. Highlight the Remote File Name field, then type the name of the OS file.

6. Press ⌊Enter⌋, then ⌊X⌋ (for eXecute) to begin the OS download. The following screen then appears:

File Transfers

```
HP J3177A Switch 224T              DEFAULT_CONFIG


=========================- CONSOLE - MANAGER MODE -=========================
                           Download OS

    Method : TFTP                        example of a TFTP
    Protocol : IP                        server address
    TFTP Server : 15.100.100.1
    Remote File Name : J317801.CMP  ◄     example of a remote
                                          file name on a PC
                                          workstation

             Received 220,000 bytes of OS download.
    +----------------------------------------------------------------+
    |**********************                                          |
    +----------------------------------------------------------------+
```
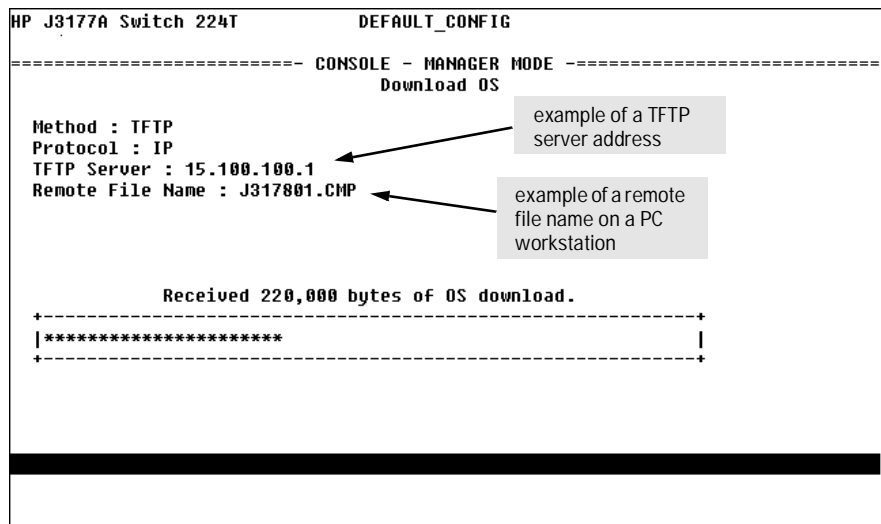
Figure C-2. Example of the Download OS Screen During a Download

7. A "progress" bar indicates the progress of the download. When the entire operating system has been received, all activity on the switch halts and the following message appears:

    WRITING SYSTEM SOFTWARE TO FLASH, BACK SOON

   After the system flash memory has been updated with the new operating system, the Switch Management Module reboots itself and begins running with the new operating system.

8. To confirm that the operating system downloaded correctly:
   a. Select Status and Counters from the Main Menu
   b. Select Switch Information from the Status and Counters menu.
   c. Check the OS Version line. It should show the new version number.

Using the SNMP-Based HP Download Manager

Included with your Switch Management Module is the HP AdvanceStack
Assistant CD ROM. Included in the software on that CD is a utility called HP
Download Manager. You can use that utility to download the OS to the Switch
Management Module.

To perform this procedure, do the following:

- At a minimum, use an IBM-compatible PC with a 386 MHz or better
  processor, and 8 Mbyte of RAM.
- Make sure the PC is connected to the same network as the switch.
- Obtain software and instructions from HP's BBS or World Wide Web site.
  (Refer to the "Customer Support Services" section in chapter 7, "Trouble-
  shooting". The HP Download Manager also has detailed online help that
  can guide you through the procedures.

Using the Switch-to-Switch Download

If you have two or more Switch 208/224s with Switch Management Modules
installed and operating in the same network, you can download the OS
software from one Switch Management Module to another by using the
Download OS feature in the switch console interface.

To do so:

1. On the console connected to the switch that will be receiving the OS,
   select Download OS from the Main Menu.

2. Enter the IP or IPX address of the remote switch containing the OS you
   want to download.

3. Enter "OS" for the Remote File Name.

4. Execute the download.

Using the Zmodem to Download the OS File

This procedure assumes that the following items have been done:

■ The PC is serially connected to the Switch Management Module Console RS-232 port.

■ The PC can support the Zmodem file transfer protocol. This protocol is supported by the terminal emulator on Windows NT 4.0 and Windows 95, and on communication programs such as Procomm and Reflections.

■ The OS software to download has been stored in a file on the PC. (The OS file is typically available from HP's electronic services—refer to the perforated card at the front of this manual.)

1. From the switch console Main Menu, select `Advanced Commands`

2. At the command prompt, enter **update** (This command may not be listed in the Advanced Commands help listing.)

3. You will see a message asking if you want to overwrite the current OS. Enter Ⓨ, for yes, to proceed. You should then see the message

   ```
   Jumping to console code ...
   ```

4. At the `Switch console>` prompt, enter **do** (for "download").

5. You will then see a message about invoking the console download utility and a prompt asking if you wish to continue. Enter Ⓨ, for yes, to proceed.

6. You will then see the following message:

   ```
   Please start ZMODEM download from terminal emulator,
   and ignore any characters that may appear on the next line.
   ```

7. With whatever terminal emulation program you are using on your PC, select the Zmodem file transfer method and send the OS file (for example, `j317801.cmp`) as a binary file to the Switch Management Module.

   Your terminal emulation program should provide information on the success of the transfer and an indication of when it is completed.

8. When the OS file transfer completes, the switch will automatically reboot and activate the new OS.

Troubleshooting TFTP Downloads

If a TFTP download fails, the Download OS screen indicates the failure.

```
HP J3177A Switch 224T              DEFAULT_CONFIG

==========================- CONSOLE - MANAGER MODE -=============================
                            Download OS

  Method : TFTP
  Protocol : IP
  TFTP Server : 15.100.100.1
  Remote File Name : J317801.CMP



                   Received 0 bytes of OS download.
     +------------------------------------------------------------+
     |                                                            |
     +------------------------------------------------------------+



transfer J317801.CMP aborted after 6 retransmissions
                             Press any key to continue
```

message Indicating TFTP
download failure

Figure C-3. Example of Message for Download Failure

To find more information on the cause of a download failure, examine the messages in the switch's Event Log. (See "Event Log" on page 5-11.)

Some of the causes of download failures include:

- Wrong protocol specified for the Protocol parameter
- Incorrect or unreachable address specified for the TFTP Server parameter. This may include network problems. Try pinging the server to test the connectivity.
- Incorrect name specified for the Remote File Name parameter, or the specified file cannot be found on the TFTP server. This can also occur if the TFTP server is a Unix machine and the case (upper or lower) for the filename on the server does not match the case for the filename entered for the Remote File Name parameter in the Download OS screen.

- One or more of the Switch Management Module's IP or IPX configuration parameters are incorrect. Try pinging the server to test the connectivity.

- For a Unix TFTP server, the file permissions for the OS file do not allow the file to be copied.

- Another console session (through either a direct connection to a terminal device or through Telnet) was already running when you started the session in which the download was attempted.

Note   If an error occurs in which normal switch operation cannot be restored, the switch automatically reboots itself. In this case, an appropriate message is displayed in the copyright screen that appears after the switch reboots. You can display the same information by selecting the Advanced Commands option from the Main Menu and executing the History command.

File Transfers

Transferring Switch Configurations

You can use the following commands to transfer switch configurations between the switch and a PC or Unix workstation.

Command	Function
Get	Download a switch configuration file from a networked PC or Unix workstation using TFTP.
Put*	Upload a switch configuration to a file in a networked PC or Unix workstation using TFTP.
ZGet	Uses a Zmodem-compatible terminal emulation program to download a switch configuration file from a PC or Unix workstation connected to the switch's console port (either directly or via a modem).
ZPut*	Uses a Zmodem-compatible terminal emulation program to upload a switch configuration to a file in a PC or Unix workstation connected to the switch's console port (either directly or via a modem).
*Can also be used to send the output of certain commands to a file on another device.	

Using Get and Put To Transfer a Configuration Between the Switch and a Networked PC or Unix Workstation

To use Get or Put, you need the following:

- The IP or IPX address of the remote PC or Unix workstation that is acting as a TFTP server
- The name assigned to the configuration file you will use on the remote PC or Unix workstation

Note   The Get operation overwrites the switch's current configuration with the newly retrieved configuration. The switch then automatically reboots itself.

1. From the Main Menu select `Advanced Commands`

2. At the command prompt, execute one of the following commands:

   To upload a configuration to a file on a PC or Unix workstation:

   ```
   put IP_address CONFIG remote_file
   put IPX_address CONFIG remote_file
   ```

   To download a configuration from a file on a PC or Unix workstation:

   ```
   get IP_address CONFIG remote_file
   get IPX_address CONFIG remote_file
   ```

   where: *IP_address* or *IPX_address* is the address of the PC or Unix workstation in which the configuration is to be stored.

   remote_file is the name of the configuration file in the PC or Unix workstation

Using ZGet and ZPut To Transfer a Configuration Between the Switch and a PC or Unix Workstation

The PC or workstation must be operating as a VT-100 or ANSI terminal, and can be connected either directly or via a modem to the switch's console port. Also, the PC or workstation must be running a Zmodem-compatible terminal emulation program. If a manager password has been set, you must log on to the switch using that password in order to execute the Zget or Zput commands.

N o t e   ZGet overwrites the switch's current configuration with the downloaded configuration.

To use ZGet or ZPut, you need the name assigned to the configuration file on the PC or workstation

1. On the PC or workstation, start the Zmodem-compatible terminal emulation program, then follow the instructions provided with the program to prepare for a file transfer.

2. From the switch console's Main Menu select `Advanced Commands`.

3. At the command prompt, execute one of the following commands:

    To upload a configuration to a file on a PC or Unix workstation:

    ```
    zput config remote_file [overwrite] [dos/unix]
    ```

    To download a configuration from a file on a PC or Unix workstation:

    ```
    zget config remote_file [dos/unix]
    ```

    where: *remote_file* is the name of the file in which the configuration
    is stored

    [overwrite] is one of the following optional values:

    > 0   (the default) allows a new file to be created, but
    > does not allow an existing file to be overwritten.

    > 1   creates a new file or overwrites an existing file.

    [dos/unix] is one of the following optional values:

    > 0   (the default) specifies the DOS file format.

    > 1   specifies the Unix file format.

    If the PC or workstation does not respond to a ZPut or ZGet command
    within approximately 70 seconds, the command times out and control
    returns to the prompt line.

Spanning Tree Operation

Spanning Tree Protocol (STP)

The Switch 208/224 Management Module uses the IEEE 802.1d Spanning Tree Protocol (STP) to ensure that only one path at a time is active between any two nodes on the network. In networks where there is more than one physical path between any two nodes, STP ensures a single active path between them by blocking all redundant paths.

STP is necessary in such networks because having more than one path between a pair of nodes causes loops in the network, which can result in a switch detecting the same node on more than one port. This results in duplication of messages, leading to a "broadcast storm" that can bring down the network.

Note   The default STP setting in the switch is "Off". If you are using the switch to provide redundant network paths, you should reconfigure the Spanning Tree Protocol to "On". Refer to "Spanning Tree Configuration" in chapter 4, "Configuring the Switch From the Console" for procedures on enabling STP.

While allowing only one active path through a network at any time, STP retains any redundant physical path to serve as a backup (blocked) path in case the existing active path fails. Thus, if an active path fails, STP automatically activates (unblocks) an available backup to serve as the new active path for as long as the original active path is down. In the event of a topology change such as a switch, bridge, or data link failure, STP develops a new spanning tree that may result in changing some switch ports from the blocking state to the forwarding state.

For example, see the illustration on the next page.

- Active path from node A to node B: 1—> 3
- Backup (redundant) path from node A to node B: 4 —> 2 —> 3
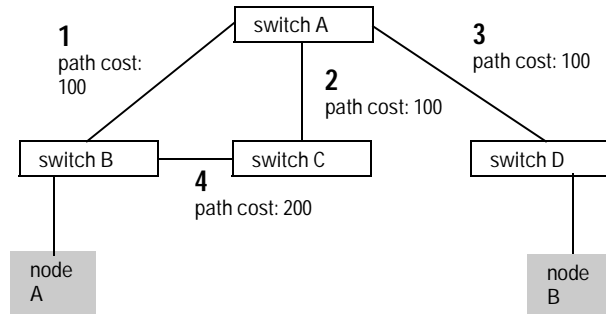
Figure D-1. Example of Logical and Redundant Paths Between Two Nodes

Index

Index

Index

R

reboot
 See also reset
 SNMP community and traps … 6-3
 switch, reasons to … 3-15
reconfiguring a parameter … 3-10
redundant path … D-1
 spanning tree … 4-17
remote console
 connecting to … 3-4
removing the module … 1-4
Reset
 description of button on module … 2-1
reset
 effect on event log … 5-14
 port counters … 5-5
 troubleshooting procedure … 7-4
 types of … 7-7
restricted write access, SNMP … 4-12
RFC 1213 … 6-2
RFC 1493 … 6-2
RFC 1515 … 6-2
RFC 1573 … 6-2
RFC 1757 … 6-2
RFC 2037 … 6-2
RFC. *See Also* MIB
RMON … 6-2
 description … 6-4
 support … 6-4
ROM version
 displaying … 5-3
router
 gateway … 4-9
RS-232 cable
 for direct console connection … 3-3
 for modem connection … 3-4

S

screen refresh interval, setting … 4-16
security
 setting a password … 3-11
self-test … 1-4, 7-7
Self-Test LED … 2-2
 description of states … 7-2
Serial Link Configuration screen … 4-15
server, Bootp … 4-8
setting a password … 3-12

severity code, definition of … 5-12
SNMP … 6-1
 Communities screen … 4-12
 how to configure … 6-3
 how to configure communities … 4-12
 IP address … 6-3
 MIB access … 5-4
 public community … 4-12
 restricted access … 4-12
 traps … 6-2
 v2 agent … 6-2
 when configuration is activated … 6-3
Spanning Tree
 blocking … 4-17
 caution … 5-11
 configuration screen … 4-17
 default … 4-17
 forwarding state … D-1
 global information … 5-10
 overview … D-1
 port cost … 4-17
 priority … 4-17
 when to enable … 4-1
speed sense
 configuring serial link … 4-15
 console connection … 3-3, 3-5 – 3-6
statistics
 clear counters … 3-15
 update frequency … 4-16
statistics of switch
 displaying … 5-1
status
 of port … 5-4
Status and Counters menu … 5-2
STP
 See Spanning Tree
subnet mask … 4-8 – 4-9
 IP … 4-8
switch
 clearing console password … 7-8
 connecting a console to … 3-2
 module features added … 1-1
 resetting … 7-7
 transferring switch configuration … C-8
system configuration screen … 4-4
system down
 when it displays … 3-6

Index

HEWLETT®
PACKARD