Model C100/110 Owner's Guide

HEWLETT®
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1

System Overview

This chapter introduces the HP 9000 C100/C110 workstation. Its purpose is to familiarize you with your workstation and its controls and indicators. The information is presented in the following sections:

- Product Description
- System unit front panel controls and LEDs
- System unit rear panel connectors
- Monitors
- Keyboards
- Pointing devices
- Operating system overview
- Important information you need to note
- Networking overview

NOTICE: The instructions in this chapter assume you are using HP-UX version 9.05 or greater operating system with HP VUE version 3.0 interface.

Product Description

This workstation has the following key features:

- Processor Performance   C100, 100 Mhz; C110, 120 Mhz

- Operating System   Native HP-UX (version 9.05 or greater)

- User Interface   HP VUE version 3.0 graphical user interface

- Compatibility   Source and binary code compatible with the Series

    700 product family

- Optional Graphics:

    Fast 2D color graphics; choice of 2 or 3 head

    HCRX-8Z Fast 8-plane or 24-plane graphics

    HP VISUALIZE-8\24 Accelerated 8-plane or 24-plane 3D graphics

    HP VISUALIZE-48   24/24 image planes, 8 overlay planes, 24-bit Z buffer 3D graphics

- Main Memory   32 MB to 512 MB in pairs of 16 MB or 64 MB modules.

    Four pairs maximum

- Internal Storage Devices:

  Fast, Wide SCSI Hard Disk Drives:

  1-inch Low Profile (up to three)

  1.6-inch Full Height (one)

  Single-Ended SCSI Removable Media:

  CD-ROM Drive

  or

  2.0/4.0 GB, 4-mm DDS-Format Tape Drive

  3.5-inch Floppy Disk Drive (not a SCSI Device)

- Standard Network   Ethernet IEEE 802.3 AUI

  RJ45, UTP Twisted Pair

- Standard I/O   One Single-Ended, 8-bit (for removable devices)
  5 MB/sec synchronous 1.5 MB/sec asynchronous
  50-pin, high density SCSI connector

  One Fast, Wide SCSI (for hard disk drives)
  20 MB/sec synchronous 68-pin, high-density connector

  Two Serial Interfaces RS232C, 9-pin male

  One Parallel Interface, Centronics, BUSY handshake
  25 pin female

  Audio Line-in, Line-out, Mic, and Headphone

  One HP-HIL connector

  Two PS/2 ports

- EISA/GSC   4 slots total; 3 EISA or GSC and 1 GSC only

- Keyboards   PS/2 Keyboard (mouse)

  or

  ITF Keyboard (also known as HP HIL) (HP HIL mouse)

System Unit Front Panel Controls and LEDs

Before powering on your system, you should become familiar with the system unit controls.

Figure 1 shows the system unit front panel controls.
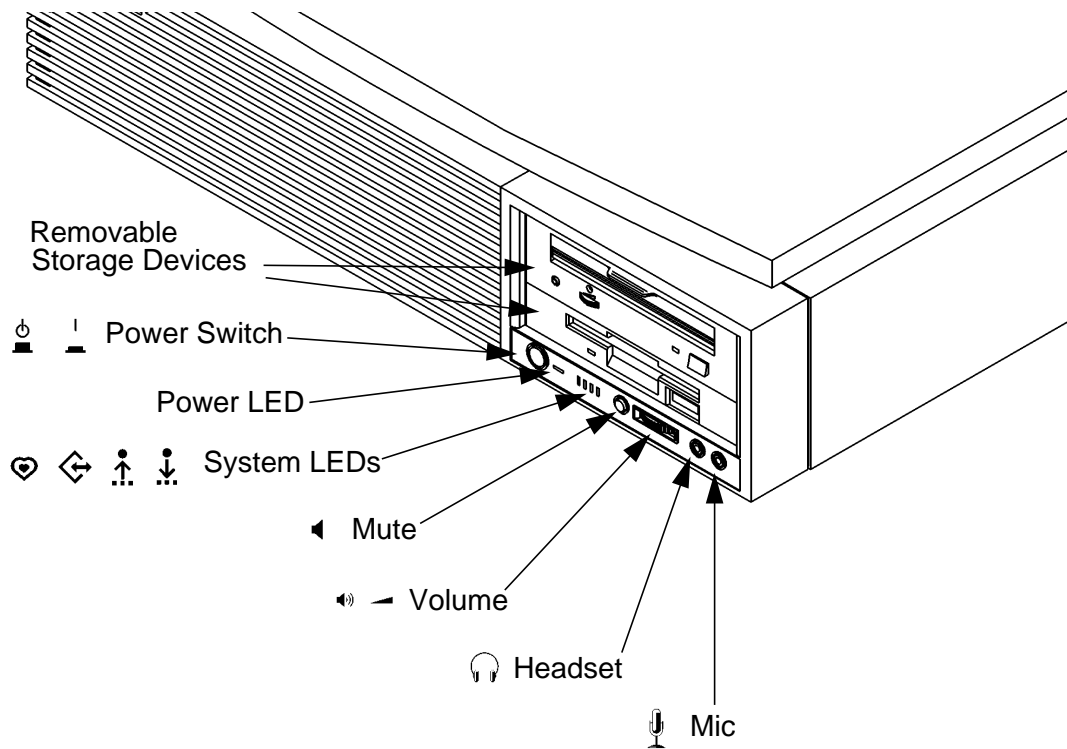
Figure 1   **System Unit Front Panel Controls**

System Power Switch

Use the Power switch to power the system unit on and off.

NOTICE:	There is no need to manually shut down the HP-UX operating system on your workstation before powering it off. When you turn off the power switch, your workstation automatically shuts down the operating system before terminating the power.

Power LED

The Power LED lights when the system unit power is on.

System LEDs

The system LEDs indicate the status of your workstation. In the event of a system problem, the LEDs are lighted in different patterns to indicate error codes. See Chapter 6 for a complete list of the system LED error codes.

❤️   LED 4 - System Heartbeat

◇   LED 3 - SCSI Bus Activity

↑   LED 2 - Network Transmit

↓   LED 1 - Network Receive

Audio Controls

Next to the system LEDs are the following audio controls:

Headset Jack	Accommodates mini-headphones with a 3.5-mm diameter miniature stereo plug.
Volume Control	Adjusts the audio output volume to the headset jack or line out.
Mic Jack	Accommodates microphones with a 3.5-mm diameter miniature stereo plug.
Mute Button	Turns off the audio output to line out and speaker only.

NOTICE: The volume Control, Headphone Jack, and Microphone Jack Features of the CD-ROM are supported through applications only

For more information on the features and electrical specifications, see "Audio Connectors" later in this chapter.

Removable Storage Devices

The model C100/110 supports the following removable storage devices:

- CD-ROM Disc Drive or DDS-Format Tape Drive

- Floppy Diskette Drive

NOTICES: Due to space limitations, a DDS-format tape drive and a CD-ROM drive cannot both be mounted in the system at the same time.

A description of each drive's controls and indicators is in the chapter describing that device, later in this book.

System Unit Rear Panel Connectors

This section describes the following connectors on the system unit's rear panel:

- Security Loop

- Audio Line IN and Line OUT connectors

- PS/2 keyboard and mouse connectors

- HP parallel Centronics I/O connector

- 802.3 AUI LAN connector

- 802.3 TP (Twisted Pair) LAN connector

- Serial I/O connectors

- HP HIL connectors (keyboard, mouse, optional HIL devices)

- Monitor connector

- SCSI connectors (including fast, wide SCSI and single-ended SCSI)

- TOC button (Transfer of Control)

- Power cord connector

NOTICE: To maintain electro-magnetic and radio frequency emissions compliance, verify that all cables are fully seated and properly fastened.

Figure 2 shows the locations of the connectors on the system unit's rear panel.

Power

TOC

LAN-AUI
LAN-TP

Serial 1 1

Serial 2 2

PS/2 Mouse

PS/2 Keyboard

Monitor

HP Parallel

HP HIL • •

Single-ended SCSI
Fast, Wide SCSI

Audio Line Out
Audio Line In
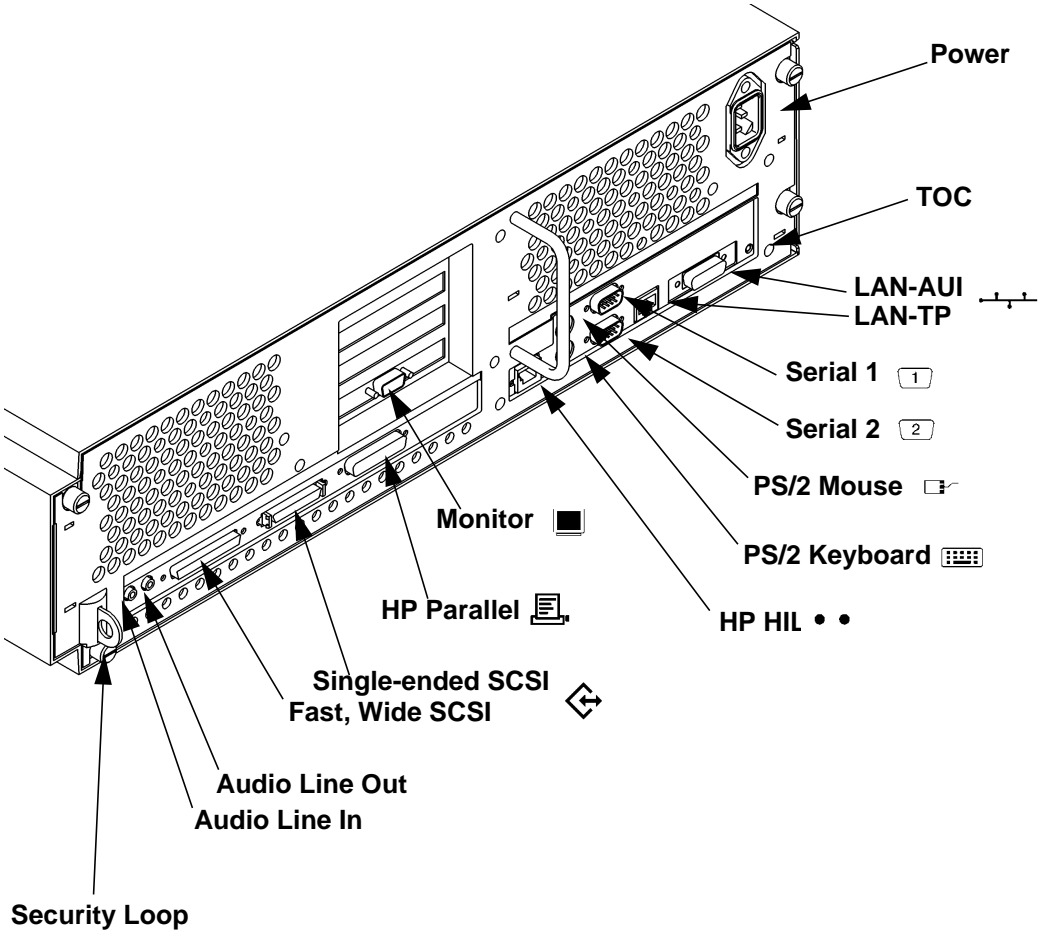
Security Loop

Figure 2   **System Unit Rear Panel Connectors**

Security Loop

The security loop provides a means of locking the storage tray, with a padlock or other locking device, to prevent unauthorized removal from the system.

Audio Connectors

Your workstation has audio input and output capability through external input and output connectors on the rear panel and through an internal speaker. The rear panel contains the Audio IN (stereo line-in) and Audio OUT (stereo line-out) connectors.

The audio connectors are standard stereo audio mini-jacks. Hewlett-Packard recommends using gold-plated plugs available through audio retailers for best quality recording and playback through the external connectors. The following is a summary of the workstation audio features:

- Audio Features   Programmable sample rates:

    8kHz, 16kHz, 32kHz, 48kHz, 11.025kHz,

    22.05kHz, and 44.1kHz.

    Programmable output attenuation:

    0 to -96dB in -1.5dB steps

    Programmable input gain:

    0 to 22.5dB in 1.5dB steps

    Input monitoring:

    16-bit linear, 8-bit u-law, or A-law coding

- Audio Inputs   Line-in

    Mono microphone (on the front panel) compatible with 1.5V
      phantom supply (bias voltage supplied by the system).

    CD-ROM audio (if internal CD-ROM is installed.

- Audio Outputs   Line-out

    Headphone (on the front panel)

    Built-in mono speaker

- Audio CODEC   Crystal CS4215

The audio electrical specification for this workstation are summarized in Table 1.

Table 1   **Audio Electrical Specifications**

Frequency Response	25-20,000 Hz
Input Sensitivity/Impedance	
Line In	2.0Vpk/47k ohm
Microphone	22mVpk/1k ohm
Max Output Level/Impedance	
Line Out	2.8Vpp/47k ohm
Headphone	2.75Vpp/50 ohm
Speaker (internal)	5.88Vpp/48 ohm
Output Impedance	
Line Out	619 ohm
Headphone	118 ohm
Signal to Noise*	
Line Out	65 dB
Headphone	61 dB
Speaker	63 dB
Line In	61 dB
Microphone	57 dB
THD (w nominal load)	
Line Out	-73 dB
Headphone	-70 dB
Speaker	-68 dB
Line In	-75 dB
Microphone	-73 dB

*To convert from dB to number of significant bits, use the formula:

$$'n = \left(\frac{dB}{[20 \log 10]} \approx \frac{dB}{6} \right)$$

For example, for 61dB S/N then n=61/6 or approx. 10 significant bits, or in other words, about 6 bits of noise.

Keyboard Connectors

PS/2 Keyboard and Mouse Connectors

The PS/2 connectors provide an interface for a keyboard and a mouse to the system. Consult the documentation that accompanies each input device for specific information concerning its use.

HP-HIL Keyboard Connector

The HP HIL connector provides an interface for the ITF Keyboard and its mouse to the system. Consult the documentation that accompanies each input device for specific information concerning its use.

HP Parallel I/O Connector

The 25-pin HP Parallel I/O interface uses Centronics interface protocols to support peripheral devices such as printers and plotters. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

802.3 Network Connectors

Your workstation has built-in ThickNet LAN-AUI and LAN-TP (Twisted Pair) connectors for the 802.3 (ETHERNET) network. Connections to Thin-LAN networks require an external transceiver. Your workstation will autoselect the correct network setting.

Serial I/O Connectors

You can attach a variety of pointing devices (such as a mouse or trackball), or peripheral devices to the Serial Input/Output (SIO) ports on the C100/C110 workstation. Peripheral devices include printers, plotters, modems, and scanners. Consult the documentation that accompanies each pointing or peripheral device for specific information concerning its use.

The SIO ports are programmable. You can set functions such as bit rate, character length, parity, and stop bits. The SIO Ports are used as an interface for serial asynchronous devices to the CPU. The ports operate at up to a 460.8K baud rate.

Table 2 shows the SIO connector pin listings. The serial connectors are 9-pin D-sub connectors. Signal names are those specified in the EIA RS-232 standard.

Table 2   **Serial I/O Pins**

Pin No.	Signal	Description
1	DCD	Data Carrier Detect
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

SCSI Connectors

Use the single-ended and fast, wide connectors to connect external SCSI devices such as DDS-format tape drives and CD-ROM drives. Consult the documentation that accompanies each SCSI device for specific information concerning its use. Refer to Appendix C for information about connecting SCSI devices to your workstation.

NOTICE: When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus.

TOC Button

The TOC button resets the system and transfers control from the default device to an auxiliary device.

Power Cord Connector

Plug the workstation's power cord into the power cord connector to provide ac power to the system.

Monitors

You can use one of two HP monitors with your workstation:

- 17-inch, 1280x1024 color monitor (A4032A)

- 20-inch, 1280x1024 color monitor (A4033A)

Before using your monitor you should become familiar with its controls, connectors, and indicators. For this information, consult the documentation that was packaged with your monitor, or see the *HP A4032/A4033 Color Monitor CE Handbook (A4033-90099).*

Keyboards

There are two types of Hewlett-Packard keyboards available for use with your workstation.

- PS/2 Keyboard (P/S2 interface)

- ITF Keyboard (HP-HIL interface)

CAUTION: Only connect devices that conform to the HP-HIL specification with Hewlett-Packard HIL ports. Devices that are not HP-HIL compatible but have similar connectors may appear to be compatible, but will damage your system.

Keyboard Differences

Aside from the obvious difference in the appearance of the PS/2 and ITF keyboards due to the arrangement of the keys, there is also a difference in the keys and their output codes. For example, some keys on one keyboard may not exist on the other keyboard. These keys generate codes that may not exist as output from the other keyboard (or may be generated by a different key). Codes that are generated when a key is pressed are called keycodes.

Some applications expect to use keycodes generated by keys existing on one of the keyboards (the ITF keyboard for example). Since the keys do not exist on the other keyboard (the PS/2 keyboard for example), an accommodation must be made if the PS/2 keyboard is to be used. In most cases, it is still possible to use some other key that is equivalent (generates the same keycode from a different keycap). To do this, it is necessary to know which keys are equivalent on the two keyboards. Table 3 compares the equivalent keys of the ITF and PS/2 keyboards.

NOTICE: Keyboard keys not mentioned inTable 3 are the same on both keyboards.

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Table 3   **PS2 Keyboard and ITF Keyboard Equivalent Keys**

PS/2 Keycap Symbol	ITF Keycap Symbol
F9	blank1 (left)
F10	blank2
F11	blank3
F12	blank4 (right)
PrintScreen / SysReq	Menu
Scroll Lock	Stop
Pause / Break	Break / Reset
Page Up	Prev
Num Lock	System / User
End	Select
Page Down	Next
Enter	Return
Alt (left)	Extend Char (left)
Alt (right)	Extend Char (right)
No Equivalent	Clear Line
No Equivalent	Clear Display
No Equivalent	Insert Line
No Equivalent	Delete Line
No Equivalent	Print / Enter
No Equivalent	, (number pad)
No Equivalent	Tab (number pad)
Esc	Esc / Del
Insert	Insert Char

Table 3   **PS2 Keyboard and ITF Keyboard Equivalent Keys**

PS/2 Keycap Symbol	ITF Keycap Symbol
Home	▶
Delete	Delete Char
Caps Lock	Caps
Esc Shifted	Esc / Del Shifted
Pause / Break Shifted	Break / Reset Shifted
Num Lock Shifted	System / User Shifted
0 / Ins (number pad)	0 (number pad)
1 / End (number pad)	1 (number pad)
2 / ▼ (number pad)	2 (number pad)
3 / Pg Dn (number pad)	3 (number pad)
4 / ◀ (number pad)	4 (number pad)
6 / ▶ (number pad)	6 (number pad)
7 / Home (number pad)	7 (number pad)
8 / ▲ (number pad)	8 (number pad)
9 / Pg Up (number pad)	9 (number pad)
. / Del (number pad)	. (number pad)
Ctrl (left)	Ctrl
Ctrl (right)	No Equivalent

Pointing Devices

You can use an HP three-button mouse, a trackball, or other options as pointing devices using the PS/2 connector, the HIL port, or the Serial ports. For instructions on using your particular pointing device, see the manual that came with it.

For general information on using three-button mice and on the various cursor shapes associated with different areas of HP VUE while using a mouse, see *Using Your HP Workstation*.

Operating System Overview

Your workstation uses the HP-UX operating system, version 9.05 or greater. Instant Ignition systems, (systems with preloaded software), have X-windows and Hewlett-Packard's graphical user interface, HP VUE version 3.0, installed and configured.

Please refer to the "Instant Ignition System Configuration Information" sheet that shipped with your system for details on configuration.

If you have any questions about Instant Ignition, refer to *Using Your HP Workstation* for more information.

NOTICE: When you power on your workstation, a selftest program runs before the system boots.

Important Information You Need to Note

Before you begin using your workstation, take a moment to gather the following important information and note it in the appropriate subsection for future use:

- LANIC ID

- SCSI device ID

- Device file used for each SCSI device

- Internet Protocol (IP) address

- Subnetwork mask

NOTICE: For help with these, refer to *Using your HP Workstation*.

LANIC ID

Locate the contents label that comes with the workstation shipping carton. Find the LANIC ID listed there and write it down in the space provided:

LANIC ID _____

You can also get your LANIC ID by using the lanscan command in a terminal window. To do this, follow these steps:

1   Turn your workstation and monitor on, if you have not already done so. Figure 1 of this chapter shows the location of the power switch on the workstation. See the documentation that came with your monitor for the location of the monitor power switch.

2   Move the mouse cursor to the Terminal Control on the Front Panel of your Workspace and click the left mouse button.
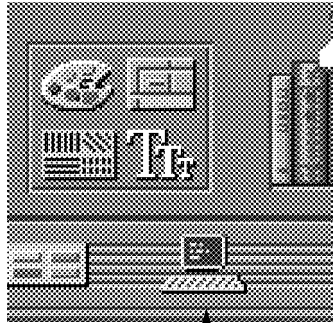
Terminal Control

A terminal window opens.

3 Move the mouse cursor into the terminal window and single-click the left mouse button.

4 If you are using HP-UX 9.05, enter the following at the prompt:

/etc/lanscan

If you are using HP-UX 10.0, enter the following at the prompt:

/usr/sbin/lanscan

You will see a table similar to Table 4.

Table 4   **Sample LANSCAN COMMAND TABLE**

Hardware	Station	Dev	Hard ware	Net-Interface		NetMgt	Encapsulation
Path	Address	lu	State	NameUnit	State	ID	Methods
2.0.2	0x0800091595EE	0	UP	lan0	UP	4	ETHER IEEE8023

The LANIC ID in this example is 0800091595EE.

SCSI ID and Device File Information for HP-UX 9.05

Default device file names for your drives are listed below. The underlined number in the device file name indicates the SCSI ID number:

Device	Device File Name
CD-ROM drive	/dev/dsk/c201d<u>2</u>s0
DDS-format tape drive	/dev/rmt/<u>3</u>m

These device file names assume the SCSI ID of your drive is set to the factory default. If you change the factory-set value, you must create a new device file and substitute the pathname of your device file for the pathname above. See the *System Administration Tasks* manual for information on how to create a device file.

SCSI ID and Device File Information for HP-UX 10.0

Default device file names for your drives are listed below.

Device	Device File Name
CD-ROM drive	/dev/[r]dsk/c#t#d#

c# identifies the bus address of the SCSI interface card.

t# identifies the target address of the SCSI disk.

d# identifies the SCSI lun address (0, except for disk arrays).

The device file should have its protections set to read and write for owner and group.

Device file names for DDS drives at HP-UX 10.0 depend on the naming conventions of the system on which you are installing them.

For installation on a system permitting long file names:

/dev/rmt/c#t#d#BEST	AT&T style, best available density, character entry.
/dev/rmt/c#t#d#BESTb	Berkeley style, best available density character entry.
/dev/rmt/c#t#d#BESTn	AT&T style, no rewind, best available density, character entry.
/dev/rmt/c#t#d#BESTnb	Berkeley style, no rewind, best available density, character entry.

For installation on a system requiring short file names:

/dev/rmt/c#t#d#f0	AT&T style, best available density, character entry.
/dev/rmt/c#t#d#f0b	Berkeley style, best available density character entry.
/dev/rmt/c#t#d#f0n	AT&T style, no rewind, best available density character entry.
/dev/rmt/c#t#d##f0nb	Berkeley style, no rewind, best available density, character entry.

IP Address and Subnetwork Mask Information

Get the IP address and the subnet mask information for your workstation from either your System Administrator or your Network Administrator and note them here:

IP address _____

subnet mask _____

Networking Overview

Your workstation is capable of many more tasks than are described in this owner's guide. This section gives an overview of some of the networking capabilities of your system and directs you to the appropriate source for more information.

Mail

Electronic mail allows you to send and receive mail messages on your workstation. For information on setting up and using electronic mail on your workstation, contact your system administrator and also see the *Using Your HP Workstation* manual that came with your workstation.

telnet

The telnet application uses the TELNET protocol to communicate with another computer system on the network. The telnet application allows you to log on to the remote system from your workstation. If your system has manpages installed, you may read the online **telnet** man page by entering the following at a command-line prompt:

      man telnet

rlogin

The rlogin application also allows you to log on to another computer system on the network from your workstation. For more information on rlogin, see the *Using Your HP Workstation* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man rlogin

ftp

The ftp application is a user interface to the File Transfer Protocol. Use ftp to copy files between your workstation and another computer system on the network. For more information, see the *Using Your HP Workstation* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man ftp

rcp

The rcp application allows you to remotely copy files from another computer system on a network to your workstation. For more information, see the *Using Your HP Workstation* manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

man rcp

NFS

The Network File System (NFS) allows your workstation to access files on remote computer systems as if they were on your local system. The file system on the remote computer system does not have to be compatible with your workstation's file system. For more information, see Installing and *Administering NFS Servers* and *HP-UX System Administration Tasks* manuals.

2

Setting Up Your Printer

This chapter describes how to configure your workstation to use a printer that you have physically attached to either the parallel connector or the serial (RS-232C) connector on the rear of your workstation.

This chapter is divided into the following sections:

- Gathering printer information
- Setting up a local printer using SAM
- Setting up your printer for network printing
- Printing a file
- Solving printing problems

The instructions in this chapter assume you are using HP-UX version 9.05 or 10.0 operating system with HP VUE version 3.0 or later interface.

NOTICES: Make sure you have installed the printer as described in the manufacturer's instructions before following the instructions in this chapter. Also ensure that the printer is powered on, connected to your workstation, has paper loaded, and is online.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Gathering Printer Information

Before you start, fill in the following list with the requested information and refer to it during the printer setup procedure:

- Printer Interface (check one):

  ❐ Parallel

  ❐ Serial (RS232C) Port 1

  ❐ Serial (RS232C) Port 2

- Printer Name _____

  (The printer name is a name the system uses to identify the printer. The printer name can be any name that you wish.)

- Printer Model Number_____

  (On Hewlett-Packard printers the model number is located on a label on the back of the printer.)

Setting Up a Local Printer Using SAM

Follow the instructions in this section to set up a printer that is physically attached to your workstation.

The procedures in this section require you to log in as root. If you cannot log in as root, contact your system administrator.

If your workstation is running HP VUE, follow these instructions to set up your printer using SAM.

1   Log in as root. If you need information on logging in or setting up a user account, see *Using Your HP Workstation.*

2   Move the mouse pointer to the up arrow above the Toolbox control and click the left mouse button. (This is called a single click, or simply a click.)
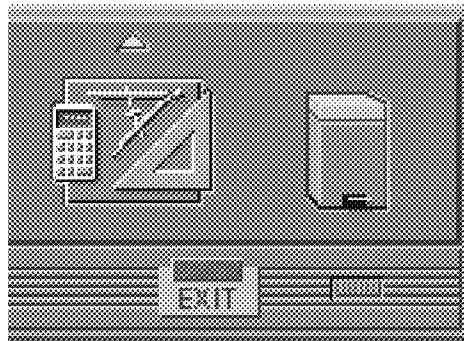
Figure 3   **Opening the Toolbox Subpanel**

3   The Toolbox subpanel opens. Click on the General toolbox icon, shown below.
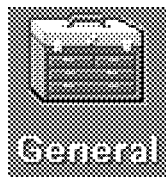
Figure 4   **Opening the General Toolbox**

4 A file manager window appears with a number of icons in it. Double-click on the System_Admin toolbox icon.
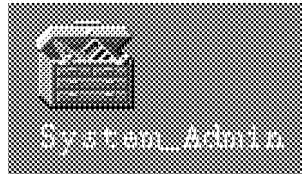
Figure 5   **Opening the System_Admin Toolbox**

5 Move the mouse cursor to the SAM icon shown below (your icon can look like either of these) and double-click the left mouse button.
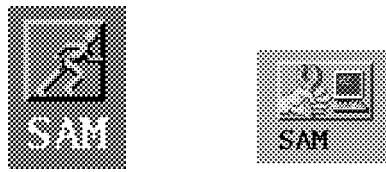
Figure 6   **Executing the SAM Icon**

6 The System Administration Manager window opens. Double-click on **Printers and Plotters ->.**

7 The Printers and Plotters window opens. Double-click on **Printers/Plotters.**

If your workstation doesn't have any printers set up, a message window opens. Click on **OK** to remove it.

8 From the Actions menu, click on **Add Local Printer/Plotter.**

9 Another menu opens. If your printer is connected to the parallel port on your workstation, click on **Add a Parallel Printer/Plotter.**

If your printer is connected to one of the serial connectors on your workstation, click on **Add Serial (RS-232C) Printer/Plotter.**

A window opens displaying the available parallel or serial interfaces.

10 If you chose **Add Parallel Printer/Plotter** in the previous step, only one parallel interface will be listed. Place the mouse cursor on the listed parallel interface and click the left mouse button.

If you chose **Add Serial (RS-232C) Printer/Plotter** in the previous step, more than one serial interface may be listed. The serial interfaces are listed in ascending order. The lowest numbered serial interface corresponds to the lowest numbered serial connector on your workstation. Choose the serial interface that corresponds to the connector to which you have connected your printer. Place the mouse cursor on the selected serial interface and click the left mouse button.

11 Click on **OK**.

12 A window opens. Click on the **Printer Name** box. Then enter the printer's name and press **Enter**.

13 Click on **Printer/Model Interface**.

14 A window opens. Move the mouse cursor onto the scroll bar slider at the side of the new window. Press and hold the left mouse button while moving the mouse. When the model name of your printer appears, release the left mouse button.

15 Move the mouse cursor to your printer's model name and click the left mouse button.

16 Click on **OK**.

The window closes and the Add Local Printer/Plotter window becomes visible again.

17 If you want your printer to be set as the system default printer, move the mouse cursor to the small box labeled **Make this the system default printer** and click the left mouse button.

18 Click on **OK**.

19 A small window opens with a message that asks if you want to add your printer to the "Printers" subpanel. Click on **Yes**.

20 Another small window opens with a message that asks if you want to restart the workspace manager. With the left mouse button, click on **OK**.

21 If the print spooler was not previously running, a window will open with the following question:

```
Do you want to start the print spooler now?
```
Click on **Yes**.

22 A window appears asking if your printer is powered on, has paper, is connected to your workstation, and is online. Check your printer to make sure it meets these requirements.

Click on **OK**.

23 Click on $\overline{\textbf{OK}}$ at the bottom of the **Messages** window.

The **Printer/Plotter Manager** window now lists your printer.

24 Move the cursor to the word **List** at the top of the **Printer/Plotter Manager** window and click the left mouse button.

25 A menu opens below the word **List**. Click on **Exit**.

The main **SAM** window becomes visible again.

26 In the main **SAM** window, click on $\overline{\textbf{Exit SAM}}$.

The **SAM** window closes.

27 Double-click on the window menu button in the upper-left corner of the **Toolbox** window. The window closes.

28 To test the printer, first create a terminal window by clicking the **Terminal Control** on the **Front Panel** as shown. Refer to *Using Your HP Workstation* for the placement if the Terminal Control if you are using VUE Lite.

Terminal Control
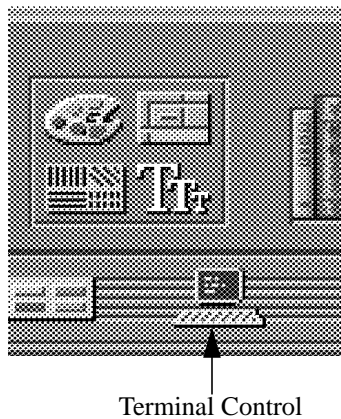
A terminal window opens.

29 Move the mouse cursor into the terminal window and click the left mouse button.

30 If you made your printer the default system printer, enter the following command to test your printer:

> **lp .vueprofile**

If your printer isn't the default system printer, enter the following command to test your printer:

> **lp -d***printername* **.vueprofile**

where *printername* is the name you chose when setting up your printer.

The lp command sends files to a printer.

The file named **.vueprofile** prints out on the printer.

If the file doesn't print, see the section titled "Printing Problems," later in this chapter.

Setting Up Your Printer for Network Printing

If you have a printer physically attached to your workstation, you can set it up to receive print requests from other computers on your network. To do this, you must start up the remote line printer daemon.

Follow the instructions in this section to set up your workstation to accept print requests from other computers on your network.

1   Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

2   If you are using HP-UX 9.05, using a text editor such as vi or Text Editor, edit the following file:

    /etc/inetd.conf

   If you are using HP-UX 10.0, using a text editor such as vi or Text Editor, edit the following file:

    /usr/sbin/inetd.conf

3   Find the following section in the file:

```
##
#
#  Other HP-UX network services
#
##
```

4   The following line should be directly below Other HP-UX network services:

```
# printer stream tcp nowait root /usr/lib/rlpdaemon rlpdaemon -i
```

   If the line is present, delete the pound sign (#) from the beginning. If the line is not there, add it without the pound sign (#) at the beginning.

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The line should look like the following:

```
 printer stream tcp nowait root /usr/lib/rlpdaemon rlpdaemon  -i
```

5 Save the file and close it.

6 Click on the **Terminal Control** on the **Front Panel** of your Workspace.

A terminal window opens.

7 Move the mouse cursor into the terminal window and click the left mouse button.

8 If you are using HP-UX 9.05, enter the following command line to reboot your workstation:

> **/etc/reboot**

If you are using HP-UX 10.0, enter the following command line to reboot your workstation:

> **/usr/sbin/reboot**

Your workstation shuts itself down and then reboots automatically. This may take a few minutes. When the login prompt returns, your system is ready to accept printer requests from other computers on your network.

Printing a File

To print a file, use one of the following command lines in a terminal window

lp *filename*

or

lp -d*printername filename*

where *filename* is the name of the file that you want to print, and
printername is the name of the printer on which you wish to print the file.

The **lp** command sends files to a printer.

1   Click on the **Terminal Control** on the **Front Panel** of your Workspace.

A terminal window opens.

2   Move the mouse cursor into the terminal window and click the left mouse button.

3   Enter the **lp** command as described above.

For more information on the **lp** command, enter the following:

man lp

Also see the manual *Using Your HP Workstation* for information on printing
files by dragging and dropping the file icon onto the printer tool.

Solving Printer Problems

If you have problems printing, check the following:

- Printer's power cord is plugged in.

- Printer is powered on.

- Printer is online.

- Printer has paper loaded.

- Printer is set up for the correct interface type.

- Printer cable is connected to the correct interface port on your printer.

- Printer cable is connected to the correct interface port on your workstation.

3

Using Your CD-ROM Drive

This chapter describes how to use your CD-ROM drive. It is divided into the following sections:

- CD-ROM drive and CD-ROM media descriptions
- Operating the CD-ROM Drive
- Mounting and unmounting a CD-ROM disc
- Troubleshooting

NOTICE   Be sure you read and understand the information on mounting and unmounting CD-ROM discs before you begin using your CD-ROM disc drive.

This chapter provides an overview of the optional CD-ROM drive and media, and describes how to use the CD-ROM drive. We assume the CD-ROM drive is set to the factory default address of SCSI ID 2.

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system with HP VUE version 3.0 or later interface.

NOTICE   Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

CD-ROM Drive and CD-ROM Media Descriptions

This section describes basic information needed for using the CD-ROM drive and CD-ROM discs.

CD-ROM Drive

The CD-ROM drive is a random access read-only mass storage device that uses removable CD-ROM discs. The drive supports the ISO 9660 and High Sierra format standards. You can access information from the drive like any other disk drive, except that you cannot write to the drive. The drive contains a semiconductor laser for reading data optically, and includes an embedded controller with a SCSI interface.

Controls and Features

Figure 7 shows and Table 5 describes the operating controls and features of
the CD-ROM drives.
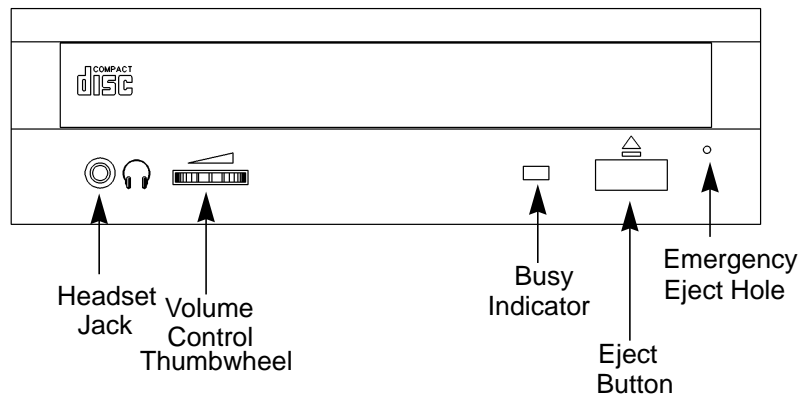
Figure 7   **CD-ROM Drive Controls and Features**

Table 5   **CD-ROM Drive Operating Controls and Features**

Control/Feature	Purpose
Headset Jack	You can plug mini-headphones with a 3.5-mm diameter miniature stereo plug into this jack.
Volume Control	Use the volume control to adjust the audio output volume to the headset jack.
Busy Indicator	The Busy Indicator lights during a data access operation and blinks during a data transfer. The indicator blinks initially and then stays lit when there is one of the following: • A defective disc • A disc insertion error (for example, an upside-down disc) • No disc present
Eject Button	Press the Eject Button to open the Disc Tray and insert or remove a disc. When the drive is in use, you must press the eject button for more than one second to open the Disc Tray.
Emergency Eject	By removing the Phillips type screw and inserting the end of a paper clip, you can open the Disc Tray when the workstation does not have power.

NOTICE   The Volume Control, Headset Jack, and Audio Jack features of the CD-ROM drive are supported through applications only.

CD-ROM Media

CD-ROM discs are 120 mm (4.7 in.) in diameter, and use one data surface with a capacity of approximately 600 megabytes. The data surface contains pits and flat spots arranged in a continuous spiral track, which is read at a constant speed. You may access files and data stored on a CD-ROM disc, but you may not write files or data to a CD-ROM disc.

CD-ROM data discs are identical to audio compact discs (CDs) except that they store computer data and information.

CAUTION: Handle CD-ROM discs by the edges only. Always be sure a CD-ROM disc is either in the CD-ROM drive or its protective case when not in use. This will lessen the chance of exposing the disc surface to dust. Over time, dust reduces the reliability of the read head in the CD-ROM drive.

Caring for CD-ROM Discs

Observe the following guidelines to help prevent data loss and prolong the life of your CD-ROM discs and drive:

- Use CD-ROM discs in a clean environment to prevent dust particles from scratching disc surfaces.

- Store CD-ROM discs in a cool, dry place to prevent moisture and heat damage.

- Don't try to clean the surface of a CD-ROM disc with cleaning solvents, as some cleaning solvents may damage the disc.

NOTICE: You must mount the disc after loading it into the drive. Refer to the section "Mounting and Unmounting a CD-ROM Disc," later in this chapter, for instructions about mounting a disc.

Operating the CD-ROM Drive

This section describes how to perform tasks with your CD-ROM drive.

Loading and Unloading a CD-ROM in the Disc Tray

This subsection describes how to load or unload a CD-ROM disc in the CD-ROM drive.

Disc Tray Description

This CD-ROM is designed to be used in either the horizontal or vertical position, depending on whether your system unit is horizontal or vertical (in the floor stand). The disc tray has three spring-loaded disc holders that hold the disc in place when the CD-ROM drive is in the vertical position. When the drive is in the horizontal position, the disc holders are not used and are held out of the way by three disc holder retainers. Figure 8 shows the CD-ROM disc tray, and disc holders.
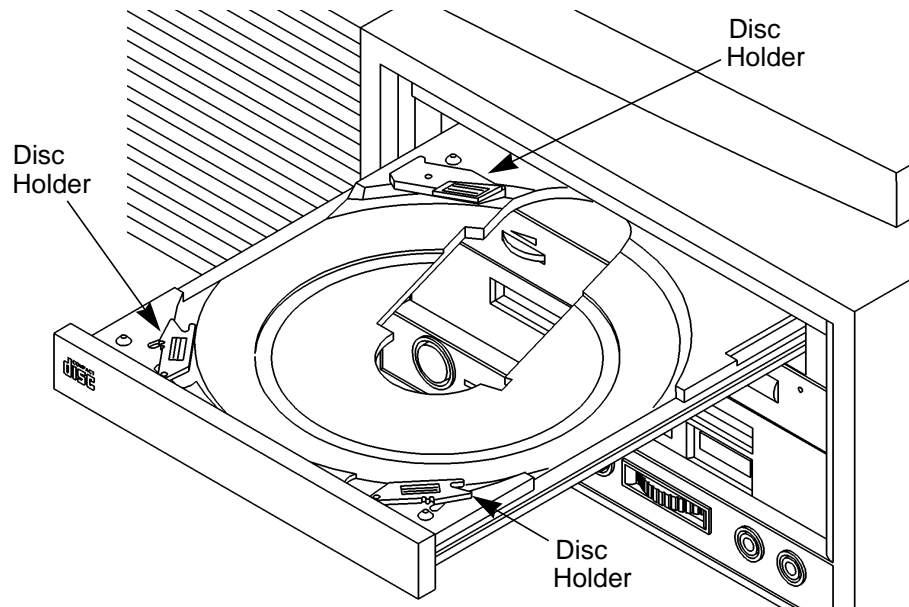
Figure 8   **CD-ROM Disc Tray**

Loading a CD-ROM Disc in a Horizontally Mounted Drive

This CD-ROM drive has an automatic loading/ejecting feature. To load a disc in the CD-ROM drive, follow these steps:
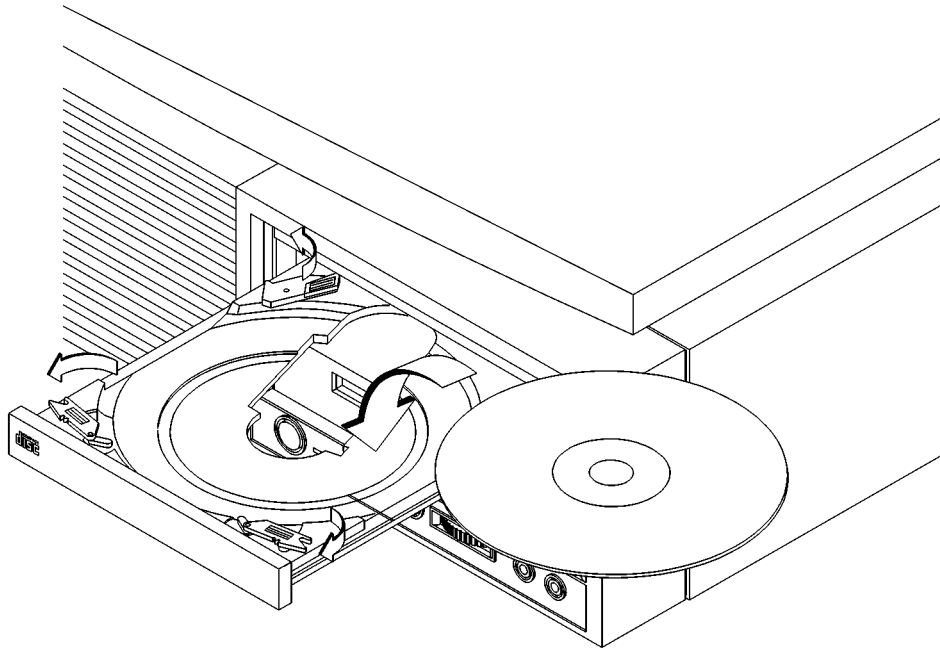
Figure 9   **Placing a CD-ROM Disc in a Horizontally Mounted Drive**

1 Check that the workstation is powered on.

2 To open the disc tray, press and release the load/eject button on the CD-ROM drive.

3 Be sure the disc holders are held away from the disc by the disc holder retainers.

4 Hold the disc by the edges with the label side up and place it in the disc tray as shown in Figure 8.

5 To close the disc tray, push the front of the disc tray gently towards the drive until it closes by itself.

Unloading a CD-ROM Disc in a Horizontally Mounted Drive

Perform the following steps to unload a disc from the CD-ROM drive:
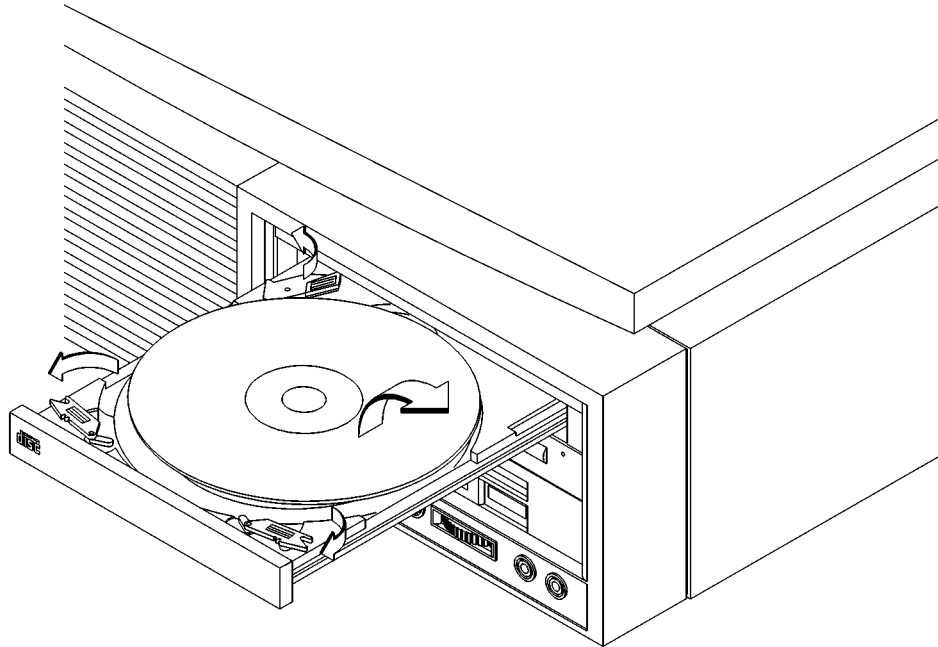
Figure 10   **Removing a CD-ROM Disc From a Horizontally Mounted Drive**

1 Press the eject button to eject the disc tray from the drive. If the drive is in use, you must press the eject button form more than one second to eject the disc tray. The emergency eject feature allows you to eject the disc tray if the normal procedure fails. See Table 5.

NOTICE: You must unmount the disc before eject it from the drive. Refer to the subsection, "Unmounting a CD-ROM Disc Using SAM," for instruction on unmounting a disc.

2 Wait until the drive has fully ejected the disc tray, then remove the disc from the tray as shown in Figure 11. Be careful to touch only the edges of the disc.

3 To close the Disc Tray, push the front of the disc tray gently towards the drive until it closes by itself.

Loading a CD-ROM Disc in a Vertically Mounted Drive

To load a disc in the CD-ROM drive, follow these steps:

Disc
Holder C

Disc
Holder A
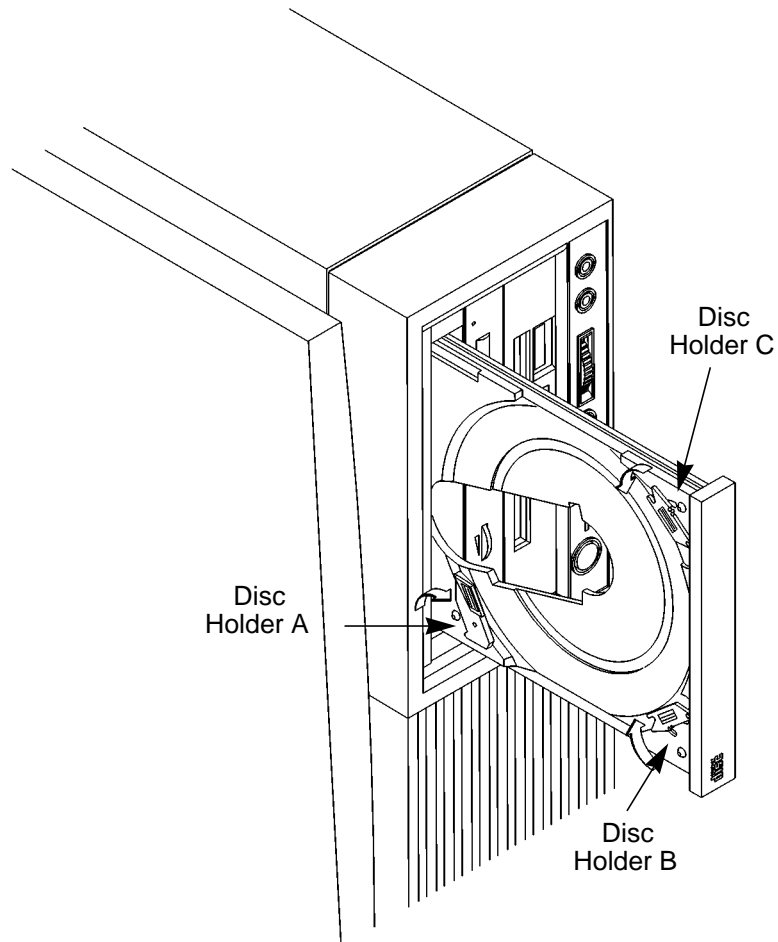
Disc
Holder B

Figure 11   **Releasing the Disc Holder Retainers**

1 Make sure the three disc holders are disengaged from the disc holder retainers, as
shown in Figure 11.

2 Hold the disc with the label side to the left and place the edge of the disc onto disc holders A and B as shown in
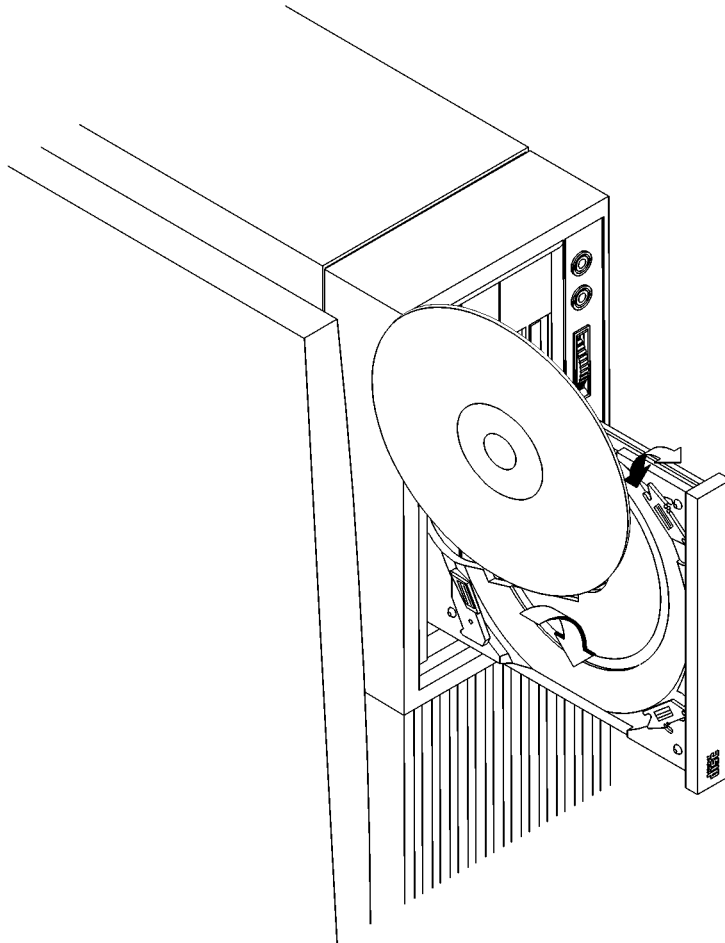
Figure 12   **Placing a CD-ROM Disc in a Vertically Mounted Drive**

3 Press down gently against the spring tension of disc holders A and B, and swing the top of the disc in until it is held by disc holder C.

4 To close the disc tray, push the front of the disc tray gently towards the drive until it closes by itself.

Unloading a CD-ROM Disc in a Vertically Mounted Drive

Perform the following steps to unload a disc from the CD-ROM drive:
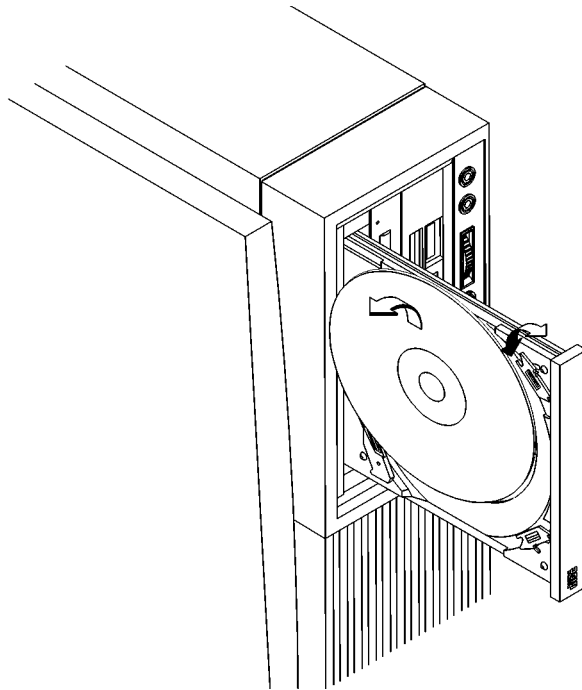
Figure 13   **Removing a CD-ROM Disc From a Vertically Mounted Drive**

1   Press the eject button to eject the disc tray from the drive. If the drive is in use, you must press the eject button for more than one second to eject the disc tray. The emergency eject feature allows you to eject the disc tray if the normal procedure fails. See Table 5.

NOTICE: You must unmount the disc before eject it from the drive. Refer to the subsection, "Unmounting a CD-ROM Disc Using SAM," for instruction on unmounting a disc.

2   Press down gently against the spring tension of disc holders A and B and swing the top of the disc away from disc holder C as shown in Figure 13.

3   Remove the disc from disc holders A and B.

4   To close the Disc Tray, push the front of the disc tray gently towards the drive until it closes by itself.

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Verifying the CD-ROM Drive Operation

To verify that your workstation can communicate with the CD-ROM drive, follow these steps:

1 Click on the **Terminal Control** on the **Front Panel** of your Workspace.
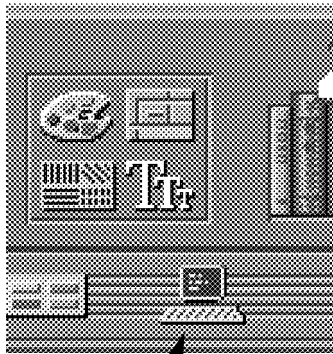
Terminal Control

A terminal window opens.

2 Move the mouse cursor into the terminal window and click the left mouse button.

3 If you are using HP-UX 9.05, enter the following at the prompt:

/etc/ioscan -d scsi

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. If there is a SCSI CD-ROM drive in the list, that listing appears similar to the following:

```
H/W Path     Description     Status
====================================
2.0.1.2.0    cd-rom_drive    ok(nnnnnnnn)
```

If you are using HP-UX 10.0, enter the following at the prompt:

/usr/sbin/ioscan -d sdisk

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

```
H/W Path     Class       Description
============================================
             bc
8            bc          I/O Adapter
8/12         ext_bus     GSC built-in Fast/Wide SCSI Interface
8/12.0       target
8/12.0.0     disk        QUANTUM LPS1080WD
8/12.5       target
8/12.5.0     disk        DEC     DSP3210SW
8/12.6       target
8/12.6.0     disk        DEC     DSP3210SW
8/16         ba          Core I/O Adapter
8/16/5       ext_bus     Built-in SCSI
8/16/5.2     target
8/16/5.2.0   disk        TOSHIBA CD-ROM XM-4101TA
8/16/5.4     target
8/16/5.4.0   disk        SEAGATE ST3600N
8/16/5.6     target
8/16/5.6.0   disk        MICROP  2112
10           bc          I/O Adapter
10/12        ext_bus     GSC add-on Fast/Wide SCSI Interface
10/12.4      target
10/12.4.0    disk        SEAGATE ST31200W
```

If **ioscan** does not see your CD-ROM drive it returns the following message:

```
ioscan: No hardware found
```

If you receive this message, go to Chapter 6, "Solving Problems."

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device, and tell what kind of device it is.

The examples in this section assume that the SCSI ID of your CD-ROM drive is set to the factory default of SCSI ID 2, using the device file **/dev/dsk/c201d2s0**. (The underlined 2 indicates the SCSI ID number.)

NOTICE: The device file name used in these examples is appropriate only for systems running HP-UX 9.05. If you are using HP-UX 10.0, the device file names will depend on the naming conventions of your particular system. See "SCSI ID and Device File Information for HP-UX 10.0" in Chapter 1 of this book.

If you set the SCSI address of your CD-ROM drive to a value other than 2, you must create a device file for it, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

Mounting and Unmounting a CD-ROM Disc

To access information on a CD-ROM disc, you must first mount the disc. This applies to file system information only. If you wish to load a music CD, for example, you would not need to mount the disc. Mounting a disc with file system information on it gives the disc a pathname that allows your workstation to communicate electronically with it. You must unmount the CD-ROM disc before removing it from the drive.

CAUTION: To use a CD-ROM disc as a mounted file system, you must mount the CD-ROM disc **every** time you load it into the drive. You must also unmount the CD-ROM disc **every** time you unload it from the drive. Failure to mount or unmount a disc can cause a system error condition that can require rebooting the system.

If your workstation is running HP VUE, follow these instructions to mount and unmount a CD-ROM disc as a file system. If you're using something other than HP VUE, use the instructions for mounting and unmounting a CD-ROM disc that come with that product. For more information on config-uring your CD-ROM drive, see the *System Administration Tasks* manual or online help.

The procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Mounting a CD-ROM Disc Using SAM

Use the following procedure to mount a CD-ROM disc:

1 Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

2 Load the CD-ROM disc into the disc tray and gently push the tray into the drive.

3 Move the mouse pointer to the **arrow** above the **Toolbox** control and click the left mouse button once.

Toolbox Arrow
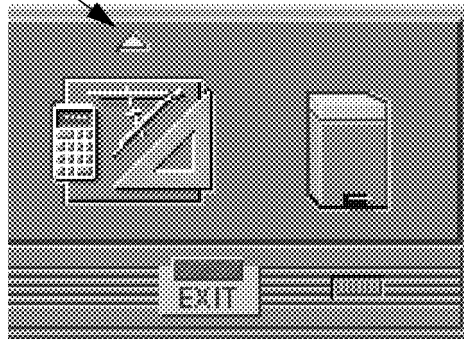
4   The **Toolboxes** subpanel opens. Click on the **General** toolbox icon,
shown below.
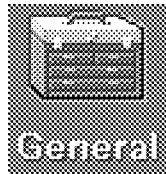
5   A file manager window appears with a number of icons in it. Double-click
on the **System_Admin** toolbox icon.
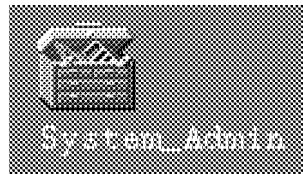
6   Move the mouse cursor to the **SAM** icon shown below (your icon can look
like either of these) and double-click the left mouse button.

7 The **System Administration Manager** window opens. Double-click on **Peripheral Devices ->.**

8 The **Peripheral Devices** window opens. Double-click on **Disks and File Systems ->.**

9 The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks**.

The following screen message appears:

```
Scanning the system's hardware...
```

The **CD-ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system. Disks that are unmounted will have the word "unused" in the Use column.

10 From the **Actions** menu, click on **Add a Hard Disk Drive**

11 The **Select a Disk to Add...** window opens with a list of unused disks. Highlight the CD-ROM disc you want to mount.

12 Click on **OK**.

13 The **Set Disk Usage and Options...** window opens. Select **File System** and click on **OK**.

14 The following screen messages appear:

```
Task started.
Creating the device file...
Mounting file system...
Modifying "/etc/checklist"...
Task completed.
```

Click on **OK**.

Now you can access the CD-ROM disc as you would any other mounted file system.

Unmounting a CD-ROM Disc Using SAM

Use the following procedure to unmount a CD-ROM disc:

NOTICE: Before you unmount a CD-ROM disc, make sure that your working directory (the directory in which a relative path name search begins) is set to some directory other than the one under which the disc was mounted.

CAUTION: If you wish to use a CD-ROM disc as a mounted file system, you must mount the CD-ROM disc **every** time you load it into the drive. You must also unmount the CD-ROM disc **every** time you unload it from the drive. Failure to mount or unmount a disc may cause a system error condition that may require rebooting the system.

1 Log in as **root**. If you need information on logging in or setting up a user account, see *Using Your HP Workstation*.

2 Move the mouse pointer to the **Toolbox** control and click on the **arrow** with the left mouse button.

Toolbox Arrow
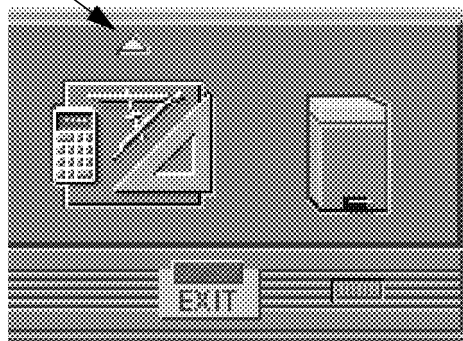
3 The **Toolbox** subpanel opens. Place the mouse cursor on the **General** toolbox icon, shown below, and click the left mouse button.
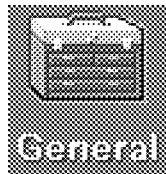
4 A file manager window appears with a number of icons in it. Double-click on the **System_Admin** toolbox icon.
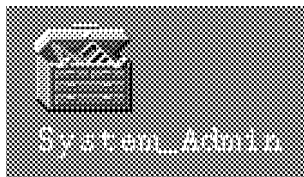
5 Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double-click the left mouse button.

6 The **System Administration Manager** window opens. Double-click on **Peripheral Devices ->.**

7 The **Peripheral Devices window** opens. Double-click on **Disks and File Systems ->.**

8 The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks.**

The following screen message appears:

```
Scanning the system's hardware...
```

The **CD-ROM, Floppy, and Hard Disks** window opens containing a list of drives currently configured on this system.

9 Highlight the disc you want to unmount and click on **Remove a Hard Disk Drive** from the Actions menu.

10 A window with the following message opens:

```
Do you want to remove the disk?
```

Click on **Yes**.

11 Press the eject button on the CD-ROM drive and remove the CD-ROM disc from the disc tray.

Reading the Busy Light

The CD-ROM busy light shows the status of the drive during the self test and during activity with the host system.

The CD-ROM drive performs the self test when one of the following happens:

- You load a disc and close the Disc Tray.
- You turn on the workstation with a disc already loaded in the CD-ROM drive.

For the self test, the busy light operates in the following sequence:

1 Light On - The busy light goes on when the disc loads into the drive.

2 Light Flashing - The light flashes six times while a read test is performed on the disc.

3 Light Off - The light goes off when the self test is complete.

The busy light stays on after the self test when one of the following conditions exist:

- A defective disc
- A disc insertion error (for example, an upside-down disc)
- No disc present

The busy light goes off when one of the following conditions exist:

- A CD-ROM drive power failure exists.
- The drive is idle on the SCSI bus.

The busy light flashes during normal activity with the system.

Troubleshooting

If you have trouble with any of these procedures for using your CD-ROM drive, see Chapter 6 of this book, "Solving Problems."

4

Using Your Digital Data Storage (DDS) Tape Drive

This chapter describes how to perform tasks that archive to and transfer data from the optional Digital Data Storage (DDS) tape drive. It also describes how to maintain and care for the drive. We assume the DDS tape drive is set to the factory default address of SCSI ID 3.

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system with HP VUE version 3.0 or later interface.

This chapter provides information on the following:

- DDS tape drive and data cassette descriptions

- Operating the DDS Tape Drive

- Troubleshooting

- Ordering information

CAUTION: Use only data cassettes labeled DDS cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

DDS Tape Drive and Data Cassette Descriptions

This section describes basic information needed for using your DDS tape drive and data cassettes. Note that this drive is also referred to as a DDS-DC drive, the DC standing for Data Compression.

DDS Drive

Your DDS tape drive is a 3.5-inch form factor DDS tape drive with data compression and a SCSI interface. It conforms to the DDS format standard for storing computer data, and incorporates a data compression capability. It's a high-capacity, high transfer-rate device for data storage on tape.

Controls and Indicators

Figure 14 shows the LEDs, power on/off button, and eject button of the DDS drive.

Cassette LED   Drive LED   Eject Button
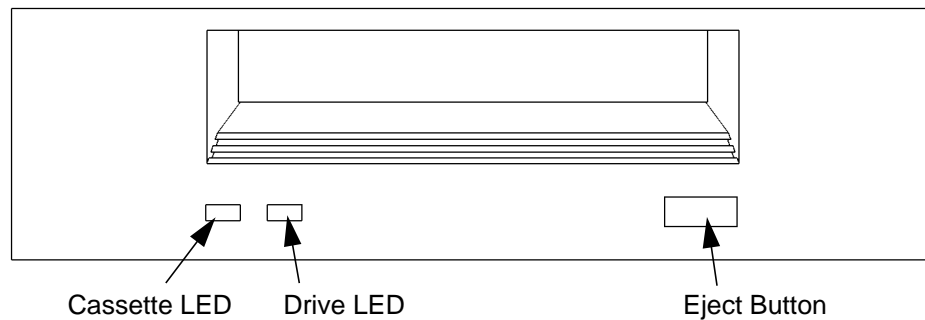
Figure 14   **DDS Drive Controls and Indicators**

LEDs

This section describes the LED codes that are displayed.

LEDs (light emitting diodes) indicate different activities or problems that occur with your workstation DDS drive.

The front panel has two colored LEDs: Cassette and Drive. A **green** light indicates normal operation, and an **amber** light indicates a warning condition. Pulsing shows activity between the drive and the SCSI bus.

If the Cassette Light (left LED) shows steady amber, it means that the cassette is write-protected. If the Drive Light (right LED) shows steady amber, this indicates a fault condition. Figure 15 lists the LED codes and their meanings.

Cassette	Drive	Meaning	Key	
Read/Write States			OFF	
▮▯	▮▯	Cassette (un)loading	▮ Green	
▮	▮	Cassette loaded/online	▮ Amber	
▮	▮▯	Cassette loaded/activity	▮▯ Pulsing Green	
▮	▯	Cassette loaded/offline	▮▯ Pulsing Amber	
Write-Protect States			▮▮ Pulsing Green and Amber	
▮▯	▮▯	Cassette (un)loading		
▮	▮	Cassette loaded/online		
▮	▮▯	Cassette loaded/activity		
▮	▯	Cassette loaded/offline		
Error States				
▮	▮▮	Media wear (caution)		
▮	▮	High humidity		
▮▯	▮▯	Self-test (normal)		
▮	▮	Self-test (failure)		

Figure 15   **DDS Tape Drive LED Display Codes**

LED Warning Conditions

The following sections describe actions to take if the LEDs indicate a warning condition.

High Humidity If the LEDs display the high humidity signal, the humidity is too high. The drive does not perform any operations until the humidity drops.

Self-Test (Failure) If the LEDs display the self-test (failure) signal, a fault was diagnosed during the self tests. Note the pattern of the pulses and contact your local service representative.

Media Wear (Caution) Hewlett-Packard DDS drives continually monitor the number of errors they have to correct when reading and writing to a tape to determine tape wear and tape head cleanliness. If excessive tape wear or dirty tape heads are suspected, the drive warns you by displaying the Media Wear (Caution) signal on the LED indicators.

If the LED indicators on your DDS-format drive display the Media Wear (Caution) condition, follow this procedure:

1   Check the system console for any tape error messages. A hard error during a read or write operation may have occurred.

2   Clean the heads with a cleaning cassette (HP92283K) as described in the "Cleaning the Tape Heads" section, later in this chapter.

3   Repeat the operation you performed when the Media Wear (Caution) signal displayed. If the Media Wear (Caution) signal still displays, then the data cassette should be replaced.

4   If you are performing a backup from disk to tape, discard the data cassette and back up your files using a new data cassette.

5   If you are performing a restore from tape to disk, complete the restore, back up the files to a new data cassette, then discard the data cassette

Data Cassettes

Media Life

HP DDS data cassettes are currently specified to 2000 passes over any part of the tape under optimal environmental conditions (50% relative humidity, 22 degrees C). During a tape operation, any one area of the tape may have multiple passes over the heads. This translates into approximately 200 to 300 backups or restores.

Under certain conditions, the life of your data cassette is less. Replace your data cassettes after 100 backups or restores if your operating conditions meet any of the following criteria:

•   The relative humidity in your operating environment is consistently less than 50%.

•   You know that the backup software you are using makes multiple passes over sec-

tions of the tape during backups or restores.

• You notice that when you do backups and restores the tape stops and starts frequently.

Cleaning the Tape Heads

Clean the heads of your tape drive after every 25 hours of tape drive use or if the Media Wear (Caution) signal is displayed on the LED.

NOTICE:	Only use HP Cleaning Cassettes (HP92283K) to clean the tape heads. Do not use swabs or other means of cleaning the tape heads.

Follow this procedure to clean the tape heads:

1 Insert the cleaning cassette into the drive. The tape automatically loads the cassette and cleans the heads. At the end of the cleaning cycle, the drive ejects the cassette.

2 Write the current date on the label on the cleaning cassette so that you know how many times you have used it. Discard the cleaning cassette after you have used it 25 times.

Media Restrictions

If you interchange media between other HP workstation DDS tape drives, note that data cassettes with compressed data can only be read by tape drives that have data compression capabilities. This includes data cassettes that contain both compressed and noncompressed data.

Setting the Write-Protect Tab on a Data Cassette

You can only store or change information on a data cassette when the write-protect tab is in the *write* position. So, before trying to write to the data cassette, make sure that the write-protect tab is in the *write* position, as shown in Figure 16.

Push tab right
for *write*.

Push tab
left for
write-protect.
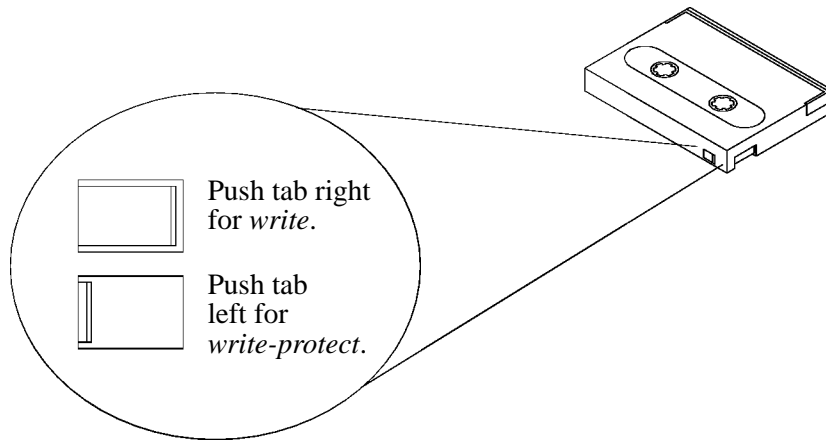
Figure 16   **Setting the Write-Protect Tab on a DDS Tape**

To protect information on a data cassette from being overwritten, set the
write-protect tab to the *write-protect* position, as shown in Figure 16.

NOTICE: The write-protect tab should always be in the *write* position for transferring
data to a cassette.

Operating the DDS Tape Drive

This section describes how to perform tasks with your DDS tape drive.

Loading and Unloading a Data Cassette

Follow these steps to load and unload a data cassette from the DDS tape drive:

1   Turn on power to the tape drive.

2   Insert the data cassette into the drive, as shown in Figure 17.

Eject Button
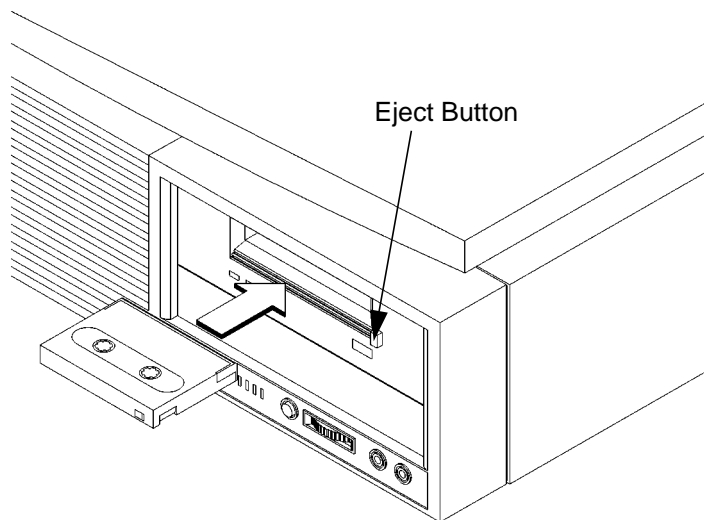
Figure 17   **Loading and Unloading a Data Cassette**

3   Push the data cassette about three quarters of the way into the drive. The drive automatically pulls the data cassette the rest of the way in. When the LEDs on the front of the drive stop flashing, the drive has loaded the data cassette.

4   To remove the data cassette, press and release the eject button on the front of the drive, as shown in Figure 17. The LEDs on the drive flash on and off. Ten to twenty seconds later, the data cassette slides partway out of the drive. Remove the cassette from the drive.

Verifying the DDS Tape Drive Operation

To verify that your workstation can communicate with the DDS-format tape drive, if you are using HP-UX 9.05, enter the following:

/etc/ioscan -d scsi

After a few moments the **ioscan** utility returns a message similar to the following:

```
H/W Path   Description  Status
====================================
2.0.1.3.0  tape_drive   ok(nnnnnnnnn)
```

If you are using HP-UX 10.0, enter the following:

/usr/sbin/ioscan -d stape

After a few moments the **ioscan** utility returns a message similar to the following:

```
H/W Path    Class               Description
===========================================
            bc
8           bc                  I/O Adapter
8/16        ba                  Core I/O Adapter
8/16/5      ext_bus             Built-in SCSI
8/16/5.3    target
8/16/5.3.0  tape                HP   HP35480A
```

If **ioscan** does not see your tape drive it will return the following message:

```
ioscan: No hardware found
```

If you receive this message, go to Chapter 6, "Solving Problems."

Using Device Files

Your system has four default device files for use with your tape drive: two device files for noncompressed mode and two device files for compressed mode. If you use these device files, you do not need to create any device files.

Device files are special files that tell your system which system hardware pathway to use when communicating with a specific device and what kind of device it is.

If the SCSI address of your tape drive is not set to the factory default of SCSI ID 3, you must create a device file, then substitute the pathname of your device file in the examples that follow. Refer to the *System Administration Tasks* manual for information on how to create a device file.

NOTICE: The device file names used in these examples are appropriate only for systems running HP-UX 9.05. If you are using HP-UX 10.0, the device file names will depend on the naming conventions of your particular system. See "SCSI ID and Device File Information for HP-UX 10.0" in Chapter 1 of this book.

Device Files — No Data Compression

Your system has two device files for using your tape drive with data compression turned off. The device files are named **/dev/rmt/3m** and **/dev/rmt/3mn**, and are set for SCSI ID 3.

If you use the **/dev/rmt/3m** device file, the tape drive rewinds the data cassette every time the system releases the drive from its control.

If you use the **/dev/rmt/3mn** device file, the drive does not rewind the data cassette. The tape stays where it was after the last operation.

If you use these device files, you do not need to create any device files.

Device Files — Data Compression

If you wish to use the data compression feature, use the device files **/dev/rmt/3hc** and **/dev/rmt/3hcn**, which are set for SCSI ID 3.

If you use the **/dev/rmt/3hc** device file, the tape drive compresses the data and rewinds the data cassette every time the system releases the drive from its control.

If you use the **/dev/rmt/3hcn** device file, the drive compresses the data, but does not rewind the data cassette. The tape stays where it was left after the last operation.

If you use these device files, you do not need to create any device files.

Archiving Data in Compressed and Noncompressed Mode

This section describes how to transfer data to and from a DDS- format data cassette (saving and restoring) using the HP-UX **tar** command and your tape drive's device file.

NOTICE: Before using your DDS-format tape drive to back up your file system, make sure you read the "Media Interchangeability Restrictions" section later in this chapter.

The **tar** (tape file archiver) command allows you to save files to a data cassette, restore files from a data cassette to your system, or list the files on your data cassette.

The examples in this chapter use the device file **/dev/rmt/3m**, which archives the data in noncompressed mode and causes the drive to rewind the data cassette. To use data compression, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**. If you named your device files differently, substitute the correct file name where appropriate.

NOTICE: A DDS-format tape drive with data compression capability is labeled **DCLZ** on its front panel.

Writing to a Data Cassette

Use the following instructions to save files to a data cassette:

1 Check that the write-protect tab on the data cassette is in the *write* position.

2 Load the data cassette into the tape drive.

3 Click on the **Terminal Control** on the **Front Panel** of your Workspace.

   A terminal window opens.

4   Move the mouse cursor into the terminal window and click the left mouse button.

5   Enter the following command line to write to the tape:

> **tar -cvf /dev/rmt/3m** *pathname*

where *pathname* is the pathname of the file or directory containing files that you want to write to the tape. To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Restoring Files from a Data Cassette to Your System

Use the following instructions to restore files from a data cassette to your system:

1   Load the data cassette into the tape drive.

2   Click on the **Terminal Control** on the **Front Panel** of your Workspace.

A terminal window opens.

3   Move the mouse cursor into the terminal window and click the left mouse button.

4   Use **cd** to change to the directory you want the files to reside in.

5   Enter the following command line to restore data:

> **tar -xvf /dev/rmt/3m** *pathname*

where *pathname* is the pathname of the file or directory containing files that you want to restore from the tape. If *pathname* is not specified, everything on the data cassette is restored. To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Listing the Files on a Data Cassette

Use the following instructions to list the files on a data cassette:

1   Load the data cassette into the tape drive.

2   Click on the **Terminal Control** on the **Front Panel** of your Workspace.

A terminal window opens.

3   Move the mouse cursor into the terminal window and click the left mouse button.

4 Enter the following command line to receive a file listing of the data cassette:

> **tar -tvf /dev/rmt/3m**

To use the data compression mode, substitute **/dev/rmt/3hc** for **/dev/rmt/3m**.

Further Command Information

For additional information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following:

> **man tar**

The **man** utility looks up man pages on the system.

You may also communicate with the tape drive with the **cpio**, **ftio, mt**, and **fbackup** commands. For more information on these commands, enter the following in a terminal window:

> **man** *command*

Media Interchangeability Restrictions

If you interchange media between DDS-format tape drives, the following two restrictions apply to the media:

- Data cassettes with compressed data can only be read by tape drives which have data compression capabilities, such as the tape drive (part number C1504-67201) found in Kit A2275A #AHS. This includes data cassettes that contain both compressed and noncompressed data.

- Use 90-meter data cassettes only in the 3.5-inch form factor DDS-format tape drives found in Kit A2274A #AHS (part number C1503-67201) and Kit A2275A #AHS (part number C1504-67201). The full height (5 1/4-in) DDS-format tape drives cannot read or write to 90-meter data cassettes.

Troubleshooting

If you have trouble with any of these procedures for using your DDS tape drive, see Chapter 7 of this book, "Solving Problems."

Ordering Information

To order Hewlett-Packard data cassettes and cleaning cassettes for use in your DDS tape drive, use the following order numbers:

- HP92283A   Box of five 60-meter DDS data cassettes

- HP92283B   Box of five 90-meter DDS data cassettes

- HP92283K   Package of two cleaning cassettes

CAUTION: Use only data cassettes labeled as DDS cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

5

Using Your 3.5-Inch Floppy Disk Drive

This chapter describes how to perform tasks that allow you to archive to or transfer data from the optional 3.5-inch floppy disk drive. The information is organized into the following sections:

• Using the floppy diskette

• Operating the floppy drive

• Troubleshooting

• Ordering information

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system with HP VUE version 3.0 or later interface.

NOTICES: When examples of user input are given in this chapter, enter them at the command-line prompt in an HP VUE terminal window or HP-UX shell.

Some procedures in this chapter require you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

Using the Floppy Diskette

This section describes basic information needed for using your floppy diskettes.

Setting the Write-Protect Tab on a Diskette

You can only store or change information on a diskette when the write-protect tab is in the *write* position. So, before trying to write to the diskette, make sure that the write-protect tab is in the *write* position, as shown in Figure 18.

Push tab up for *write*.

Push tab down for *write-protect*
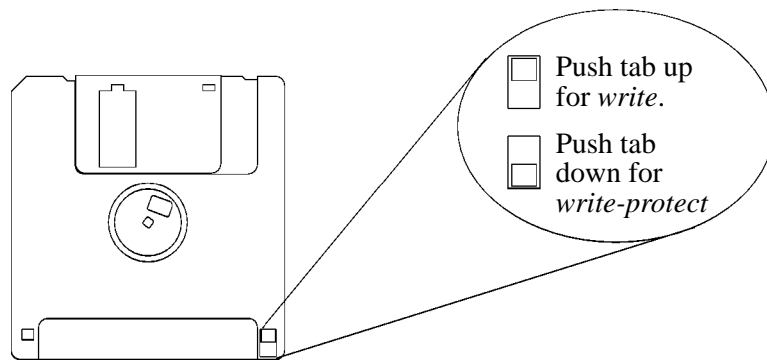
Figure 18   **Setting the Write-Protect Tab on a Floppy Diskette**

To protect files on a diskette from being overwritten, set the write-protect tab to the *write-protect* position, as shown in Figure 18.

NOTICE: The write-protect tab should always be in the write position for formatting a new diskette and transferring data to a diskette.

Inserting and Removing a Diskette

Follow these steps to insert and remove a diskette from the floppy disk drive:

1 Insert the diskette into the drive, as shown in Figure 19.
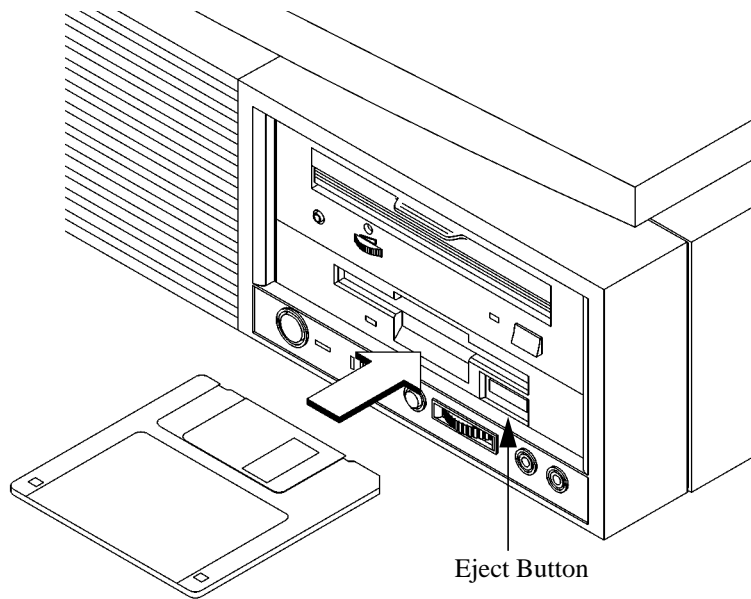
Eject Button

Figure 19   **Inserting and Removing a Floppy Diskette**

2 Push the diskette into the floppy drive until it clicks into place.

3 To remove the diskette, push the eject button (Figure 19), then take out the diskette.

Operating the Floppy Drive

This section describes how to perform tasks with your 3.5-inch floppy disk drive.

Verifying the Floppy Drive Configuration

To verify that your workstation can communicate with the floppy drive, use the **ioscan** command in a terminal window to see which devices are currently in use on your system. The following are examples of using **ioscan** for version 9.05 and version 10.0:

1 Click on the **Terminal Control** on the **Front Panel** of your Workspace.
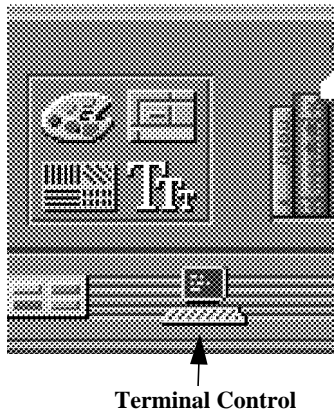
Terminal Control

A terminal window opens.

2 Move the mouse cursor into the terminal window and click the left mouse button.

3 Enter the following at the prompt:

       /etc/ioscan (for 9.05)

       ioscan (for 10.0)

After a few moments the **ioscan** utility lists all of the I/O devices it could find. If there is a floppy drive in the list, that listing appears similar to the following:

Example of version 9.05 output:

```
H/W Path          Description    Status

=========================================

2.0.10            floppy         ok(nnnnnn)
2.0.10.1.0         disk          ok(nnnnnn)
```

2.0.10 floppy is the floppy controller. **2.0.10.1.0 disk** is the floppy drive.

Example of version 10.0 output:

```
H/W Path      Class           Description

==============================================

8             bc              I/O Adapter
8/0                graphics    Graphics
8/16/10            unknown     Built-in Floppy Drive
```

Using Device Files

Device files are special files that tell your system which pathway to use through the system hardware when communicating with a specific device and what tell kind of device it is.

Your workstation uses the following device file to communicate with the floppy drive:

/dev/rfloppy/c20Ad1s0

Formatting a New Diskette

You must always format a new floppy diskette with the **mediainit** utility before using it. To format a new floppy diskette follow these steps:

1 Log in as **root**.

2 Make sure that the write-protect tab on the floppy diskette is in the *write* position, as shown in Figure 18.

3 Insert the diskette into the floppy disk drive.

4 Click on the **Terminal Control** on the **Front Panel** of your Workspace.
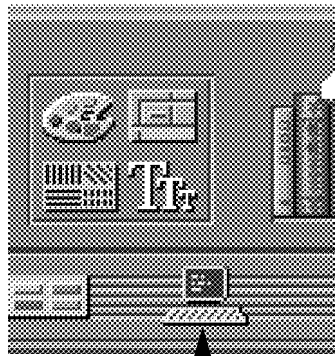
Terminal Control

A terminal window opens.

5 Move the mouse cursor into the terminal window and click the left mouse button.

6 Execute **mediainit** with an interleave of 2 by entering the following:

mediainit -i 2 /dev/rfloppy/c20Ad1s0

Transferring Data To and From a Floppy Diskette

This section describes how to transfer data to and from your floppy diskette (saving and restoring) using the HP-UX **tar** command with your floppy drive's device file.

The tar (tape file archiver) command saves files to a floppy diskette, restores files from a floppy diskette, or lists files on a floppy diskette.

You need to set the write protect tab to the *write* position to transfer data to the diskette. The write-protect tab can be in either position when restoring data from a diskette or listing the files on a diskette.

Saving Files to a Floppy Diskette

Use the following instructions to save files to a floppy diskette:

1   Check that the write-protect tab on the floppy diskette is in the *write* position.

2   Load the formatted floppy diskette into the disk drive.

3   Click on the **Terminal Control** on the **Front Panel** of your Workspace.
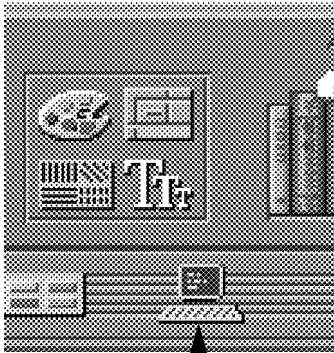
Terminal Control

A terminal window opens.

4   Move the mouse cursor into the terminal window and click the left mouse button.

5 Enter the following command line to write to the diskette:

tar -cvf /dev/rfloppy/c20Ad1s0 *pathname*

where *pathname* is the pathname of the file or directory containing files that you want to write to the diskette.

Restoring Files from a Floppy Diskette to Your System

Use the following instructions to restore files from a floppy diskette to your system:

1 Load the floppy diskette into the disk drive.

2 Click on the **Terminal Control** on the **Front Panel** of your Workspace.
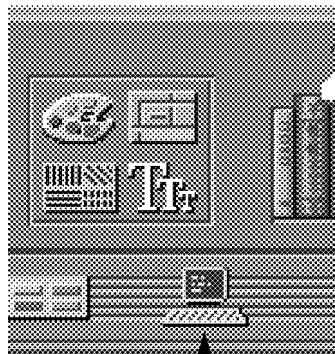
Terminal Control

A terminal window opens.

3 Move the mouse cursor into the terminal window and click the left mouse button.

4 Use the **cd** command to change to the directory you want the files to reside in:

cd *directory_path*

where *directory_path* is the pathname of the directory.

5   Enter the following command line:

> **tar -xvf /dev/rfloppy/c20Ad1s0** *pathname*

where *pathname* is the pathname of the file or directory containing files that you want to restore from the diskette. If you don't specify *pathname*, everything on the floppy diskette is restored.

Listing the Files on a Floppy Diskette

Use the following instructions to list the files on a floppy diskette:

1   Load the floppy diskette into the disk drive.

2   Click on the **Terminal Control** on the **Front Panel** of your Workspace.
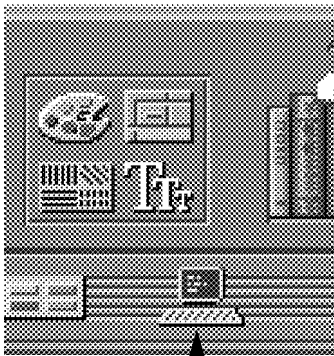
Terminal Control

A terminal window opens.

3   Move the mouse cursor into the terminal window and click the left mouse button.

4   Enter the following command line:

> **tar -tvf /dev/rfloppy/c20Ad1s0**

All files on the floppy diskette are listed.

For More Information

For more information on using **tar** and a complete list of the command arguments, refer to the **tar** man page by typing the following in a terminal window:

man tar

The man utility looks up man pages on the system.

You can mount the floppy drive as a file system using the SAM utility. Be sure to unmount the drive before removing it as a file system. For more information about how to mount and unmount the floppy drive, see the manual *Using HP-UX* (B2910-90001).

For more information on copying data to or from your system to other media, including your floppy diskette, refer to the **cpio** man page by typing the following in a terminal window:

man cpio

For more information on copying to or from DOS files, refer to the **doscp** man page by typing the following in a terminal window:

man doscp

For more information on listing the contents of DOS directories, refer to the **dosls** man page by typing the following in a terminal window:

man dosls

For more information on using your floppy disk drive and floppy diskettes, refer to the **floppy** man page by typing the following in a terminal window:

man floppy

For more information on using the **mediainit** command, refer to the **mediainit** man page by typing the following in a terminal window:

man mediainit

Configuring the Floppy Driver

If you reload software or rebuild the Instant Ignition system on your work-station, you need to reconfigure the HP-UX Kernel to add the floppy driver. Use the SAM utility to add the **flexible disk** driver and build a new HP-UX kernel.

For more information about how to reconfigure the kernel using SAM, see the following manuals:

- *System Administration Tasks HP 9000 Series 700 Computers* (B2355-90040)
- *Using HP-UX* (B2910-90001)

Troubleshooting

If you have trouble with any of these procedures for using your floppy disk drive, see Chapter 6 of this book, "Solving Problems."

Ordering Information

To order Hewlett-Packard micro flexible diskettes for use in your 3.5-inch floppy disk drive, use the following order number:

HP-92192X   High-Density Micro Flexible Disks
(1.44MB Formatted Capacity) - box of ten diskettes

6

Solving Problems

This chapter contains information to help you determine what's wrong with your system when you have problems. If you have a problem that isn't listed in this chapter, or if your problem persists, contact your designated service representative. When calling for service, always have your system's model number and serial number ready.

This chapter is divided into the following sections

- Common problems and solutions

- Dealing with a boot failure

- Running system verification tests

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system with HP VUE version 3.0 or later interface.

Common Problems and Solutions

The tables in this section list common problems you may encounter with your workstation. The tables also tell you what to do to help solve the problems.

Problems with Powering Up the System

Table 6 describes possible problems you may encounter when powering up the system and offers solutions.

Table 6   **Power Up Problems**

Problem	Solution
The power LED does not light.	Make sure all AC power cables are connected securely to the system.
	Make sure the power cord is plugged into a working AC outlet.
	Make sure the power switch is set to the ON position.
The power LED lights, but the screen is blank or flickers.	Press the brightness control on the monitor to adjust it. If the screen is still blank, turn off the system and monitor power switches. When the system is completely powered off, check the video cable connections.
	Go to the section "Changing Your Monitor Type" in Appendix B for information about displaying and setting your workstation's monitor configuration.
If the problem persists, contact your system administrator or call your designated service representative.	

Problems Loading and Booting the Operating System

Table 7 describes possible problems you may encounter when loading and booting the operating system and offers solutions.

Table 7   **Problems Loading and Booting the Operating System**

Problem	Solution
The power LED is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.	Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See Appendix C for information on SCSI cabling and termination).
The system stops or hangs while booting.	Follow the instructions in "Dealing With a Boot Failure" in this chapter.
If problem persists, contact your system administrator or call your designated service representative.	

Problems with the 802.3 Network

Table 8 describes possible problems you may encounter with the 802.3 network and offers solutions.

Table 8   **Problems with the 802.3 Network**

Problem	Solution
Cannot reach other systems on the network. Applications that rely on the network will not run.	Check the network connector on the back of the system unit. Make sure that the network cable or transceiver is fastened securely to the connector.
If problem persists, contact your system administrator or call your designated service representative.	

Problems Using a Hard Disk Drive

Table 9 describes possible problems you may encounter using the hard disk drive and offers solutions.

Table 9　　　　　　　　**Problems Using a Hard Disk Drive**

Problem	Solution
The disk drive is not accessible or does not respond.	Make sure that all the SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.)
	Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See Appendix C for information on SCSI cabling and termination.)
	Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B.
	Follow the instructions in "Dealing With a Boot Failure" in this chapter.
If problems persist, contact your system administrator or call your designated service representative.	

Problems Using the CD-ROM Drive

Table 10 describes a possible problem you may encounter when you use the CD-ROM drive and offers a solution.

Table 10   **Problems Using the CD-ROM Drive**

Problem	Solution
The CD-ROM drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly. Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B. Follow the instructions in the section "Running the System Verificatin Tests" in this chapter to verify that the CD-ROM drive is functioning properly.
If problems persist, contact your system administrator or call your designated service representative	

Problems Using the DDS Tape Drive

Table 11 describes a possible problem you may encounter using the DDS tape drive and offers solutions.

Table 11   **Problems Using the DDS Tape Drive**

Problem	Solution
The DDS tape drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly.
	Make sure that you specified the correct device file name for commands that require a device file name.
	Make sure the write-protect tab is set to *write* if you are trying to copy data to a data cassette.
	Make sure that the system can communicate with the drive as described in "Checking the SCSI IDs" in Appendix B.
	Follow the instructions in the section "Running the System Verification Tests" in this chapter to verify that the tape drive is functioning properly.
If the problem persists, contact your system administrator or call your designated service representative.	

Problems Using the Floppy Disk Drive

Table 12 describes a possible problem you may encounter using the floppy disk drive and offers a solution.

Table 12   **Problems Using the Floppy Disk Drive**

Problem	Solution
The floppy drive does not respond to commands.	Re-enter the commands and make sure that you have typed them correctly.
	Make sure that you specified the device file **/dev/rfloppy/c301d0s0** for commands that require a device file name.
	Make sure that the write-protect tab is set to *write* if you are trying to copy data to a floppy diskette.
	Follow the instructions in the section "Running the System Verification Tests" in this chapter to verify that the floppy drive is functioning properly.
If the problem persists, contact your system administrator or call your designated service representative.	

Dealing with a Boot Failure

If your usual boot device (typically a disk) is not responding as it should, you must try to boot from the disk (or another boot device) by selecting it manually.

To boot a device manually, follow these steps:

1 Follow the directions in "Accessing the Boot Console Interface," in Appendix D of this book.

NOTICE: Your workstation automatically shuts down the operating system before it terminates the power.

2 At the Main Menu prompt, type the following:

```
Main Menu: Enter a command or a menu >   search ipl
```

This causes your workstation to search *exhaustively* for bootable media.

The search command looks for bootable media on your workstation.

3 Boot from one of the listed devices by typing the following at the prompt:

```
Main Menu: Enter a command or a menu >   boot   device
```

where *device* is the **hardware path** to the device, specified in mnemonic style notation, such as **scsi.5.0**

4 If your workstation still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual *Using HP-UX* for help on dealing with file system failures. If you think that something is wrong with the hardware, continue reading this chapter for more troubleshooting information.

Running System Verification Tests

HP-UX uses a diagnostics product called SupportWave. SupportWave contains the Support Tools Manager so that you can verify your system operation.

You can access the Support Tools Manager in a terminal window. If you are using HP VUE as your interface, you can also access the Support Tools Manager through the **sys_admin** directory.

Three interfaces are available with the Support Tools Manager: a command line interface (accessed through the **cstm** command), a menu-driven interface (accessed through the **mstm** command), and the graphical user interface (accessed through the **xstm** command).

For more information on SupportWave user interfaces, see the on-line man pages by entering the following at a command line prompt:

> **man cstm**

> **man mstm**

> **man xstm**

To run SupportWave from either HP VUE or the HP-UX command line
shell, perform the following steps:

1 Click on the **Terminal Control** on the **Front Panel** of your Workspace.
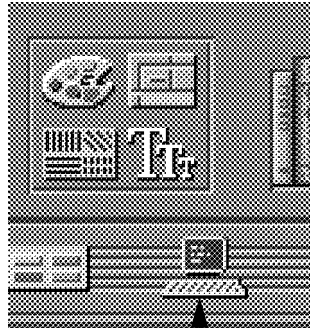
Terminal Control

A terminal window opens.

2 Move the mouse cursor into the terminal window and click the left mouse button.

3 Enter the following at the prompt:

       cstm

The following screen appears:

```
*************************************************************
******                                                ******
******              SUPPORT TOOLS MANAGER             ******
******                                                ******
******             Command Line Interface             ******
******                                                ******
******               Version   x.xx.xx                ******
******                                                ******
******            Part Number   xxxxx-xxxxx           ******
******                                                ******
******      (C) Copyright Hewlett Packard Co. xxxx    ******
******               All Rights Reserved              ******
******                                                ******
*************************************************************
Please Wait. System mapping in progress . . .
Please type HELP or ? to list available commands.
CSTM>
```

4 At the CSTM> prompt, you can enter several commands. To see what commands
are available, type the **help** command.

5 To verify the system operation, type the following at the CSTM> prompt:

>   **CSTM> verify all**

The following messages appear:

```
Verification has started on device (CPU).
Verification has started on device (FPU).
Verification has started on device (0/0/0).
Verification has started on device (2/0/1.0.0).
Verification has started on device (2/0/1.5.0).
Verification has started on device (2/0/1.6.0).
Verification has started on device (2/0/2).

CSTM>Message from (0/0/0):
This graphics test displays a number of graphics images on the
screen of the graphics device being tested. If an X server is
not currently running on that display, X Windows will be started
and run for the duration of the test. The Starbase shared li-
brary (/usr/lib/libsbisl) should be present to run this test.

CAUTION: This test will fail if any portion of the test window
is modified or overlaid in any way.

NOTE: If a VUE login screen is currently displayed on the mon-
itor, the test will wait until someone logs in the HP VUE on the
graphics monitor to release the lock. The test stops if the
Screen Saver times out, it runs again once the Screen is acti-
vated.

WARNING: Do not run this exercise with any other option.
(Type 'R' for Ready, Type 'S' for Skip) [R] >>
```

6 When you see the >> prompt shown above, enter **r**

The following messages and a graphics test window appear:

```
Verification of (2/0/1.0.0) has completed. Result status - (Success)
Verification of (2/0/1.5.0) has completed. Result status - (Success)
Verification of (2/0/1.6.0) has completed. Result status - (Success)
Verification of (CPU) has completed. Result status - (Success)
Verification of (FPU) has completed. Result status - (Success)
Verification of (2/0/2) has completed. Result status - (Success)
Verification of (0/0/0) has completed. Result status - (Success).
```

7 Press **Enter** to return to the CSTM> prompt after all test results are reported.

8 To exit the Support Tools Manager, enter the following:

>   **CSTM> exit**

If any tests failed, further diagnosis is necessary by qualified service personnel.
Contact your designated service representative.

A

Safety and Regulatory Statements

This appendix contains safety and regulatory statements pertaining to your C100/C110 workstation. It provides information on the following topics:

- Emissions regulations
- Emissions regulations compliance
- Datacom users statement
- Acoustics
- Electrostatic discharge (ESD) precautions
- Safety statements
- Laser safety statements
- Warnings and cautions

Emissions Regulations

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (determined by turning the equipment off and on), you can correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and the receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Ask the dealer or an experienced radio/television technician for help.

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your computer. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Operation of this device is subject to the following conditions:

- This device may not cause harmful interference.

- This device must accept interference received, including interference that may cause undesired operation.

- Cables used with this device must be properly shielded to comply with the requirements of the FCC.

VCCI Class 2 ITE

Manual statement for Class 2 equipment

この装置は、第二種情報処理装置（住宅地域又はその隣接した地域において使用され
るべき情報処理装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障
害自主規制協議会（VCCI）基準に適合しております。
　しかし、本装置をラジオ、テレビジョン受信機等に近接してご使用になると、受信障
害の原因となることがあります。
　取扱説明書に従って正しい取り扱いをして下さい。

Emissions Regulations Compliance

Any third-party I/O device installed in HP system(s) must be in accordance
with the requirements set forth in the preceding Emissions Regulations state-
ments. In the event that a third-party noncompliant I/O device is installed,
the customer assumes all responsibility and liability arising therefrom.

Acoustics

Regulation On Noise Declaration For Machines -3. GSGV

Lpa <70dB	Lpa<70dB
operator position	am Arbeitsplatz
normal operation	normaler Betrieb
per ISO 7779	nach DIN 45635 T.19

Electrostatic Discharge (ESD) Precautions

Electrostatic charges can damage the integrated circuits on printed circuit boards. To prevent such damage from occurring, observe the following precautions during board unpacking and installation:

- Stand on a static-free mat.

- Wear a static strap to ensure that any accumulated electrostatic charge is discharged from your body to ground.

- Connect all equipment together, including the static-free mat, static strap, routing nodes, and peripheral units.

- Keep uninstalled printed circuit boards in their protective antistatic bags.

- Handle printed circuit boards by their edges, once you have removed them from their protective antistatic bags.

Safety Statement

This equipment conforms to the following safety standards:

- UL 1950
- CSA 950
- IEC 950
- EN 60950

Laser Safety Statement (U.S.A. Only)

The CD ROM mass-storage system is certified as a Class-1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968.

This means that the mass-storage system does not produce hazardous laser radiation. Because laser light emitted inside the mass-storage system is completely confined within protective housings and external covers, the laser beam cannot escape from the machine during any phase of user operation.

Warnings and Cautions

WARNING:

Removing device cover may expose sharp edges in equipment chassis. To avoid injury, use care when installing customer add–on devices.

WARNUNG:

Das Entfernen der Geräteabdeckung legt die scharfen Kanten im Inneren des Gerätes frei. Um Verietzungen zu vermeiden, seien Sie vorsichtig beim Einbau von zusätzlichen Bauteilen, die vom Kunden selber eingebaut werden können.

AVERTISSEMENT:

Des bords tranchants du châssis de l'équipement peuvent être exposés quand le cache de l'unité n'est pas en place. Pour éviter des blessures, faire très attention lors de l'installation de modules supplémentaires par le client.

WARNING:

Disconnect power plug from wall outlet or source power before moving or removing the device, or installing add–on components.

WARNUNG:

Entfernen Sie die Stromzuführung von der Steckdose oder der Stromquelle bevor Sie das Gerät bewegen, abbauen, oder zusätzliche Bauteile installieren.

AVERTISSEMENT:

Débrancher la fiche de la prise de courant ou de la source d'alimentation électrique avant de déplacer ou de retirer l'unité, ou avant d'installer des modules supplémentaires.

WARNING:

Lithium batteries may explode if mistreated. Do not put lithium batteries in fires or try to recharge or disassemble them.

Replace battery only with Matsushita Electric BR–2325 three–volt lithium battery (HP part number 1420–0314)! Use of any other battery may cause fire or explosion.

B

Changing Your Workstation's
Hardware Configuration

This appendix describes the procedures to change your workstation's hardware configuration. It presents the information in the following sections:

- Checking the SCSI IDs
- Preparing your workstation
- Installing storage devices
- Removing the main tray assembly
- Replacing the main tray assembly
- Installing additional memory
- Installing an EISA or GSC option board
- Changing your monitor type

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system with HP VUE version 3.0 or later interface.

NOTICE: Your workstation shipped with a package of extra disk slides. Keep the slides in a safe place, you will need them when you add new devices to the storage tray.

CAUTION: Always wear a properly grounded wrist strap when reconfiguring your workstation.

Use the following tools to remove or replace hardware parts when changing your configuration:

- Light-duty flat blade screwdriver with 150 mm (6 in.) blade
- Needlenose pliers

Also, read the ESD Precautions in Appendix A of this guide.

Checking the SCSI IDs

To determine which SCSI IDs are currently in use on your system, use the
ioscan command in a terminal window:

1 Click on the **Terminal Control** on the **Front Panel** of your Workspace.

A terminal window opens.

2 Move the mouse cursor into the terminal window and single-click the left mouse
button.

3 If you are using HP-UX 9.05 or greater, enter the following at the prompt:

/etc/ioscan -d scsi

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could
find. The list should appear similar to the following:

```
H/W Path    Description         Status
============================================
2.0.1.2.0   cd-rom_drive        ok(nnnnnnnn)
```

If you are using HP-UX 10.0, enter the following at the prompt:

/usr/sbin/ioscan -f

115

After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

```
Class      I   H/W Path     Driver      S/W State  H/W Type    Description
=========================================================================================
bc         0                root        CLAIMED    BUS_NEXUS
bc         1   8            ccio        CLAIMED    BUS_NEXUS   I/O Adapter
ext_bus    0   8/0          c720        CLAIMED    INTERFACE   GSC built-in Fast/Wide SCSI
Interface
target     0   8/0.0        tgt         CLAIMED    DEVICE
disk       3   8/0.0.0      sdisk       CLAIMED    DEVICE      QUANTUM LPS1080WD
target     1   8/0.5        tgt         CLAIMED    DEVICE
disk       2   8/0.5.0      sdisk       CLAIMED    DEVICE      DEC     DSP3210SW
target     2   8/0.6        tgt         CLAIMED    DEVICE
disk       0   8/0.6.0      sdisk       CLAIMED    DEVICE      DEC     DSP3210SW
ba         0   8/16         bus_adapter CLAIMED    BUS_NEXUS   Core I/O Adapter
ext_bus    2   8/16/0       CentIf      CLAIMED    INTERFACE   Built-in Parallel Interface
audio      0   8/16/1       audio       CLAIMED    INTERFACE   Built-in Audio
tty        0   8/16/4       asio0       CLAIMED    INTERFACE   Built-in RS-232C
ext_bus    1   8/16/5       c700        CLAIMED    INTERFACE   Built-in SCSI
target     3   8/16/5.2     tgt         CLAIMED    DEVICE
disk       1   8/16/5.2.0   sdisk       CLAIMED    DEVICE      TOSHIBA CD-ROM XM-4101TA
target     4   8/16/5.3     tgt         CLAIMED    DEVICE
tape       0   8/16/5.3.0   stape       CLAIMED    DEVICE      HP      HP35480A
target     5   8/16/5.4     tgt         CLAIMED    DEVICE
disk       10  8/16/5.4.0   sdisk       CLAIMED    DEVICE      SEAGATE ST3600N
target     6   8/16/5.6     tgt         CLAIMED    DEVICE
disk       5   8/16/5.6.0   sdisk       CLAIMED    DEVICE      MICROP  2112
lan        0   8/16/6       lan2        CLAIMED    INTERFACE   Built-in LAN
ps2        0   8/16/7       ps2         CLAIMED    INTERFACE   Built-in Keyboard/Mouse
bc         2   10           ccio        CLAIMED    BUS_NEXUS   I/O Adapter
ext_bus    3   10/12        c720        CLAIMED    INTERFACE   GSC Fast/WideSCSI Interface
target     7   10/12.4      tgt         CLAIMED    DEVICE
disk       6   10/12.4.0    sdisk       CLAIMED    DEVICE      SEAGATE ST31200W
graphics   2   10/16        graph3      CLAIMED    INTERFACE   Graphics
ba         1   8/20         bus_adapter CLAIMED    BUS_NEXUS   Core I/O Adapter
hil        0   8/20/1       hil         CLAIMED    INTERFACE   Built-in HIL
tty        1   8/20/2       asio0       CLAIMED    INTERFACE   Built-in RS-232C
ba         2   8/20/5       eisa        CLAIMED    BUS_NEXUS   EISA Bus Adapter
ext_bus    4   8/20/5/3     hshpib      CLAIMED    INTERFACE   EISA card HWP0C70
target     8   8/20/5/3.0   tgt         CLAIMED    DEVICE
target     9   8/20/5/3.1   tgt         CLAIMED    DEVICE
target     10  8/20/5/3.2   tgt         CLAIMED    DEVICE
processor  0   32           processor   CLAIMED    PROCESSOR   Processor
memory     0   49           memory      CLAIMED    MEMORY      Memory
```

4 If you are using HP-UX 9.05 or greater, you can find out the SCSI IDs currently in use by looking under the **H/W Path** heading. The listing **2.0.1 scsi** is the built-in SCSI bus controller. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing **2.0.1.<u>6</u>.0** in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI bus.

Although the information is presented in a different format if you are using HP-UX 10.0, you also look under the **H/W Path** heading.

NOTICE: Never use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.

Preparing Your Workstation

This section describes how to prepare your workstation for changing its configuration. Use the following procedure to prepare your workstation:

1   Power off your workstation by pressing the power button on the front panel.

When you press the power button, the workstation automatically shuts down the operating system before it powers off the system.

2   When the workstation has completed shutting down and powering off, power off the monitor, and any peripheral devices connected to the workstation.

3   Unplug the power cord of the system unit, the monitor, and any peripheral devices from ac wall outlets.

4   Unplug the power cord from the back of the system unit.

5   Remove the floor stand from the system unit, as shown in Figure 20.
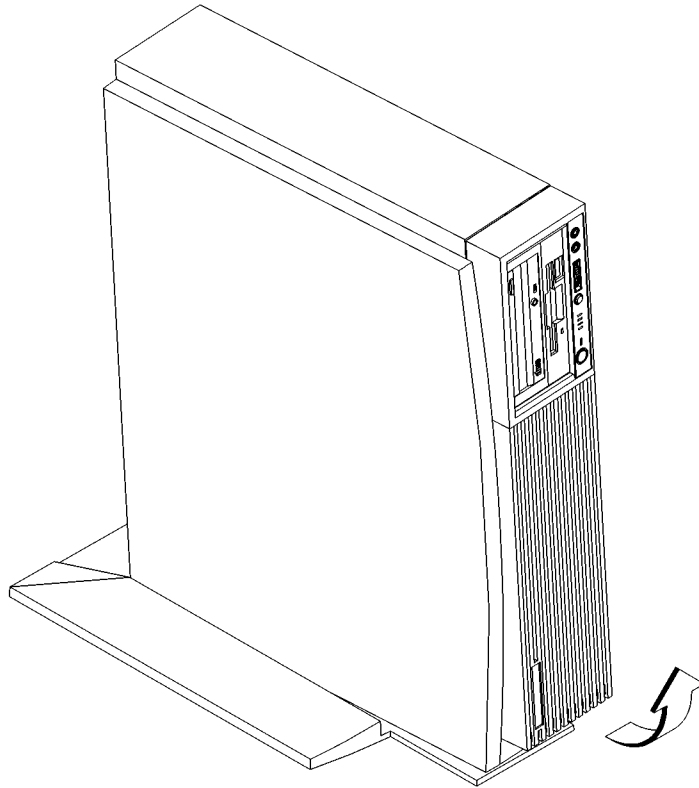
Figure 20   **Removing the Floor Stand**

6 Lay the system unit on a flat surface, such as a table top.

7 Attach a static-grounding wrist strap to bare metal on the back of the system unit.

Installing Storage Devices

This section describes how to install storage devices in your workstation. Before installing a new storage device, perform the following procedures as described earlier in this chapter:

- Checking the SCSI IDs

- Preparing Your Workstation

CAUTION: All storage devices are susceptible to mechanical and electrostatic shock. When handling the devices, always wear the static-grounding wrist strap that came in the storage device kit. Always handle the drive carefully.

NOTICE: Do not use SCSI ID 7 for any of your storage devices' SCSI addresses. The host SCSI controllers use SCSI ID 7.

Preparing to Install Your Storage Device

This section describes information that you need to consider and procedures that you need to perform before installing any storage device.

Configuring your Storage Device

Table 13 lists the recommended SCSI IDs for internal storage devices. If an existing device already uses one of the suggested IDs, select an alternate ID.

Table 13   **Default SCSI IDs**

Fast/Wide Differential SCSI Devices	SCSI ID
1st Hard Disk Drive	6
2nd Hard Disk Drive	5
3rd Hard Disk Drive	4
Single-Ended SCSI-2 Devices	**SCSI ID**
CD-ROM Drive	2
DDS-Format Tape Drive	3
NOTE: The floppy drive is not a SCSI device.	

Set the jumpers and SCSI IDs according to the installation instructions that came with your device.

Determining Your Storage Devices Position

Each storage device is restricted as to where in the storage tray it may be installed. Before installing a storage device, use Figure 21 and Table 14 to determine which disk tray position is correct for your device.

Figure 21 shows the storage device positions in the disk tray. Table 14 lists what devices are supported in the different disk tray positions. The numbers in the table's left column refer to the position numbers in Figure 21.
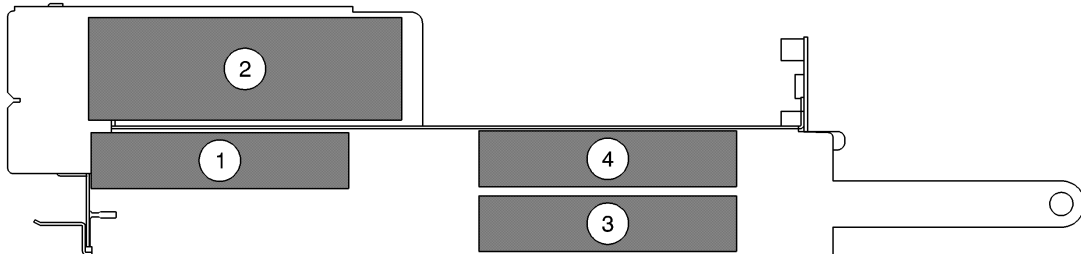
Figure 21   **Disk Tray Positions**

Table 14   **Storage Configurations**

Disk Tray Position	Supported Devices	Conditions
1	Floppy Drive 1-inch Low Profile Disk Drive	
2	CD-ROM DDS-Tape	
3	1-inch Low Profile Disk Drive 1.6-inch Full Height Disk Drive	If a CD-ROM drive is installed, install a 1.6-inch full height disk drive in this position.
4	1-inch Low Profile Disk Drive 1.6-inch Full Height Disk Drive	This is the preferred position for a 1.6-inch full height disk drive. If a CD-ROM drive is installed, a 1.6-inch full height disk drive cannot be installed in this position.
All hard disk drives are fast, wide SCSI devices. The CD-ROM drive and the DDS tape drive are single-ended SCSI devices. The floppy drive is not a SCSI device.		

Mounting the Storage Device Slides

From the accessory hardware kit which came with your workstation, locate
two plastic storage device slides. Using the screws that came with the stor-
age device, mount the slides on the new storage device so that the locking
tabs are at the connector end of the drive, as shown in Figure 22.

Locking Tab
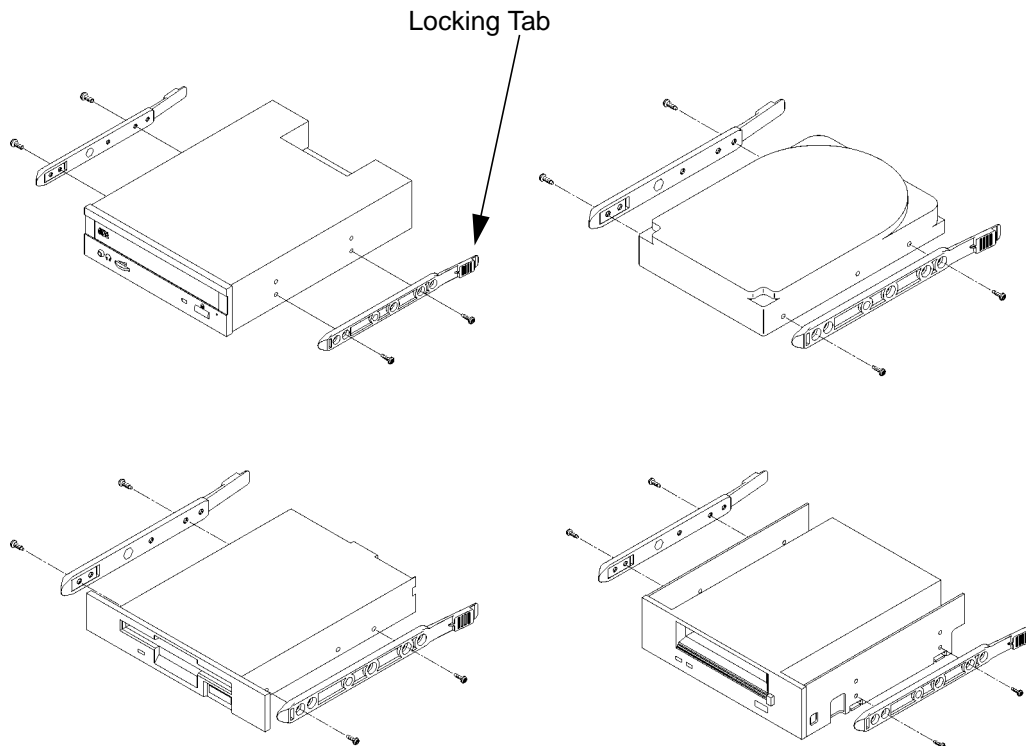
Figure 22   **Mounting the Storage Device Slides**

CAUTION: When mounting the storage device slides, only use the screws that shipped
with the storage device. Use of other screws can cause physical damage to
the device.

Storage Device Cable Routing

When you install your storage device, be aware of the suggested cable rout-
ing paths as indicated in the cable routing label that is affixed to the top of
the storage tray.

Disk Shield

If you are installing a hard disk manufactured by Hewlett-Packard, you need
to install a disk shield.

1   Check the manufacturer's labeling on the disk drive to determine if it is a
disk manufactured by Hewlett-Packard.

   If the disk is not a Hewlett-Packard disk, skip the rest of this procedure.

2   From the accessory hardware kit which came with your workstation, lo-
cate the disk shield and four screws. See Figure 23.

3   Use the four screws to mount the disk shield on the drive, as shown in Figure 23.
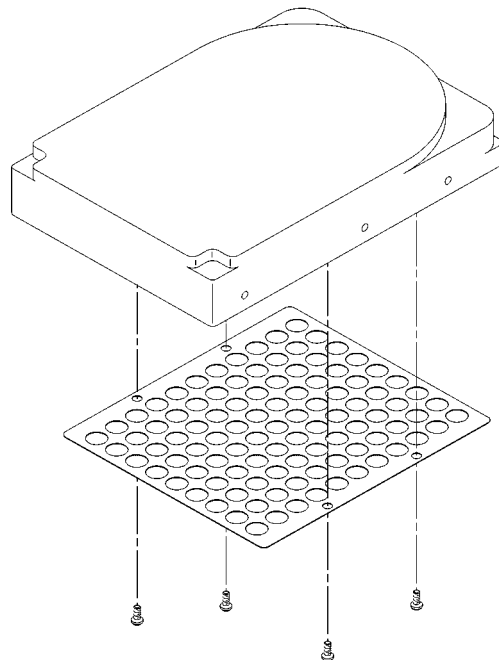
Figure 23   **Mounting the Disk Shield**

Removing the Disk Tray

Perform the following procedure to remove the Storage Tray from the system unit:

1 Remove the storage tray retaining screw, as shown in Figure 24.

2 If installed, remove any locking device from the storage tray security loop on the rear of the system unit.

3 Place your fingertips in the groove on the bottom of the storage tray bezel. See Figure 24.

Retaining Screw
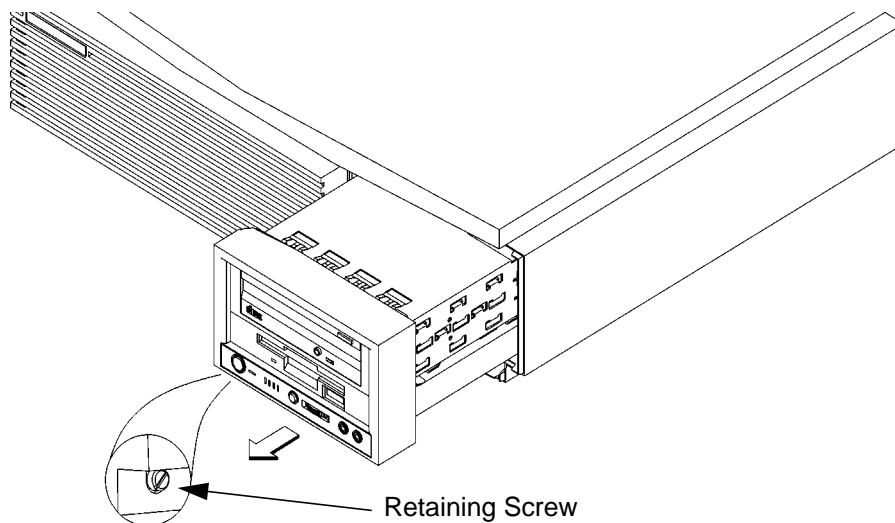
Figure 24   **Removing the Storage Tray**

4 Slide the storage tray completely out of the system unit.

CAUTION: Be sure to support the storage tray from underneath while sliding it out of the system unit.

Proceed to one of the following sections in this chapter to install your storage device in the disk tray:

• Installing a CD-ROM or a DDS-Format Tape Drive

• Installing a Floppy Drive

• Installing a Hard Disk Drive in Position 3 or Position 4

Installing a CD-ROM or a DDS-Format Tape Drive

Perform the following procedure to install a CD-ROM or DDS tape drive in the disk tray:

1   Remove the disk filler panel from the top location of the bezel by using a coin or other flat, blunt, object to pry it from the front., as shown in Figure 25.
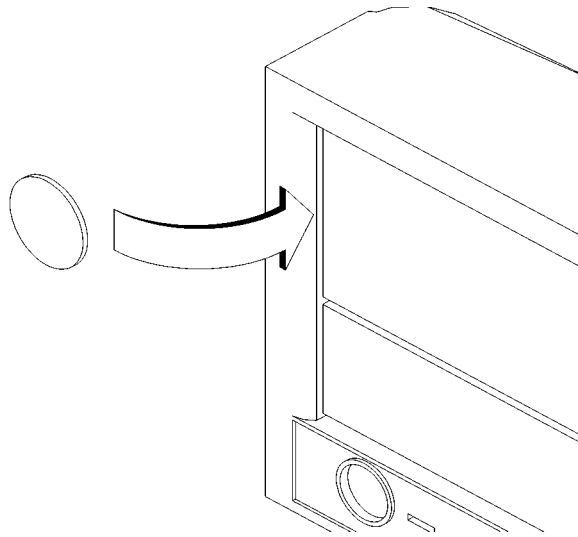
Figure 25   **Removing a Disk Filler Panel**

2 From the rear of the storage tray, line up the disk slides on the CD-ROM or DDS tape drive with the position 1slots in the storage tray chassis, and slide it into place, as shown in Figure 26.

Figure 26   **Installing a CD-ROM or DDS Tape**

3 Push the storage device in until the locking tabs snap into place.

4 Connect the single-ended SCSI-2 data cable and the power cable to the drive. Refer to the cable routing label on the storage tray.

5 Proceed to the section entitled Replacing the Storage Tray.

Installing a Floppy Drive

Perform the following procedure to install a floppy drive in the disk tray:

1 Remove the disk filler panel from the bottom location of the bezel by using a coin
   or other flat, blunt, object to pry it from the front, as shown in Figure 27.
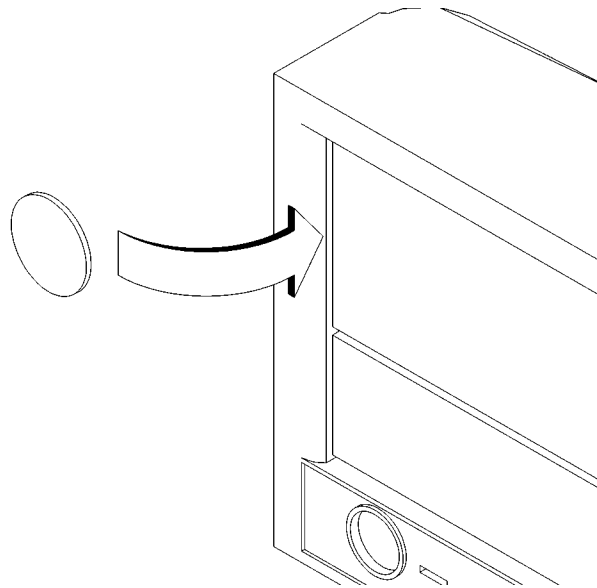
Figure 27   **Removing a Disk Filler Panel**

2 Reach into the storage bay and locate the power and data cables for the floppy
   drive.

   Refer to the cable routing label on the storage tray. See Figure 28.

3 Connect the cables to the drive.

4 From the front of the storage tray, line up the disk slides on the floppy drive with the position 2 slots in the storage tray chassis and slide it into place, as shown in Figure 28.

Cable Routing Label
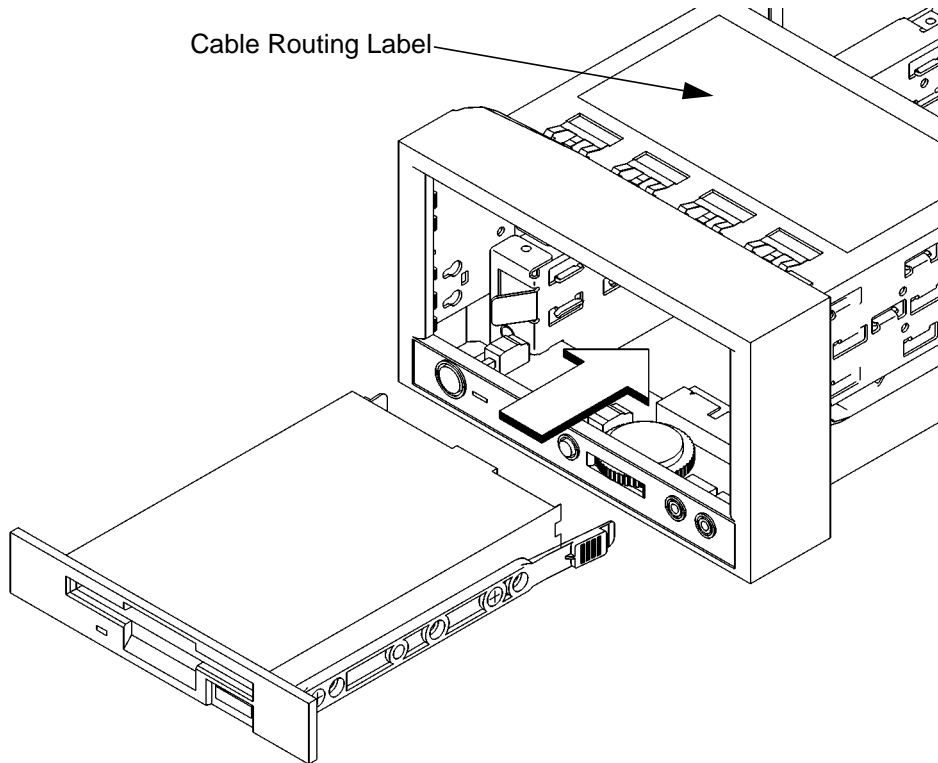
Figure 28   **Installing a Floppy Drive**

5 Push the floppy drive in until the locking tabs snap into place.

6 Proceed to the section entitled Replacing the Storage Tray.

Installing a Hard Disk Drive in Position 1

Perform the following procedure to install a hard disk drive:

1   Remove the disk filler panel from the bottom location of the bezel by using a coin or other flat, blunt, object to pry it from the front, as shown in Figure 29.
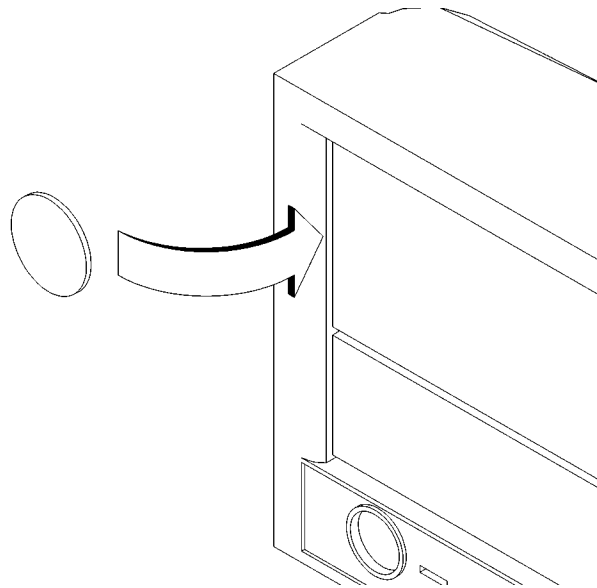
Figure 29   **Removing a Disk Filler Panel**

2   Reach into the storage bay and locate the power and data cables for the disk drive.

Refer to the cable routing label on the storage tray. See Figure 30.

3   Connect the cables to the drive.

4   From the front of the storage tray, line up the disk slides on the hard disk drive with the position 1 slots in the storage tray chassis and slide it into place, as shown in Figure 30.

Cable Routing Label
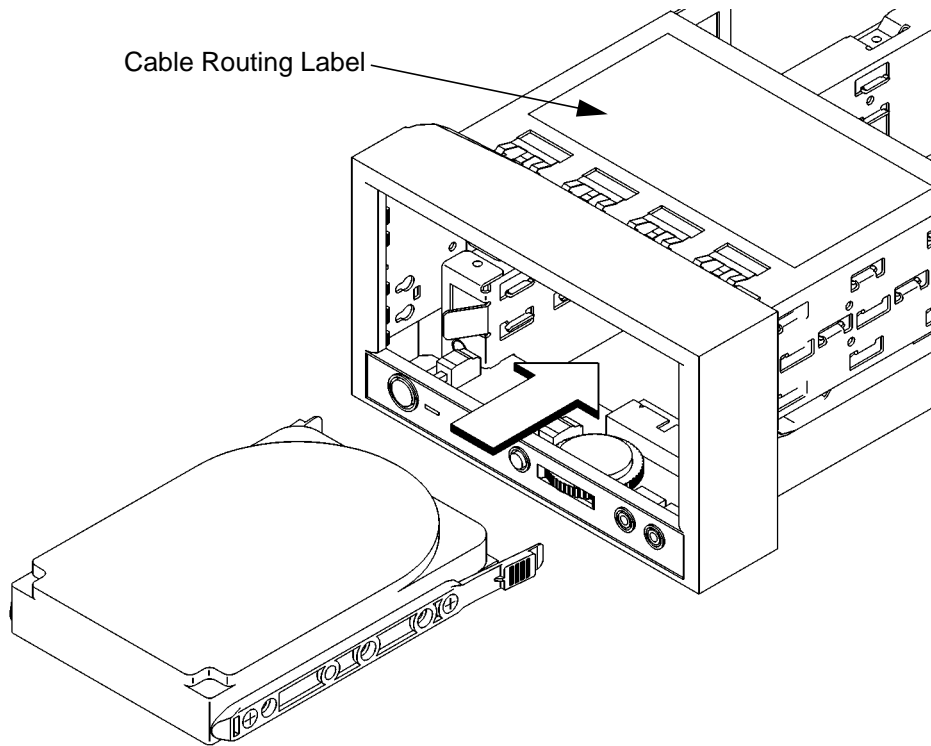
Figure 30   **Installing a Hard Disk Drive in Position 1**

5 Push the drive in until the locking tabs snap into place.

6 Snap the disk filler panel into the lower bezel position.

7 Proceed to the section entitled Replacing the Storage Tray.

Installing a Hard Disk Drive in Position 3 or Position 4

Perform the following procedure to install a hard disk drive in positions 3 or 4 of the disk tray:

1 Remove the two retaining screws from the disk interconnect board, as shown in Figure 31.
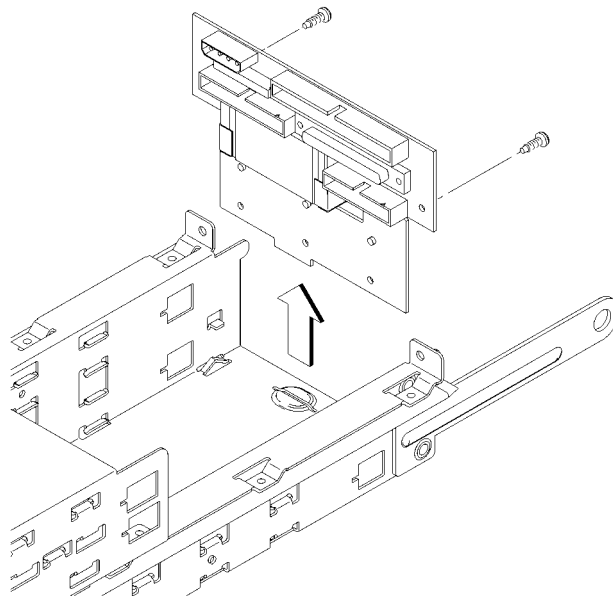
Figure 31   **Removing the Disk Interconnect Board**

2 Disconnect any cables from the disk interconnect board.

3 Hold the disk interconnect board on the edges and lift it straight up to remove it, as shown in Figure 31.

4 From the rear of the storage tray, line up the disk slides on the hard disk drive with the position 3 or position 4 slots in the storage tray chassis and slide it into place, as shown in Figure 32.
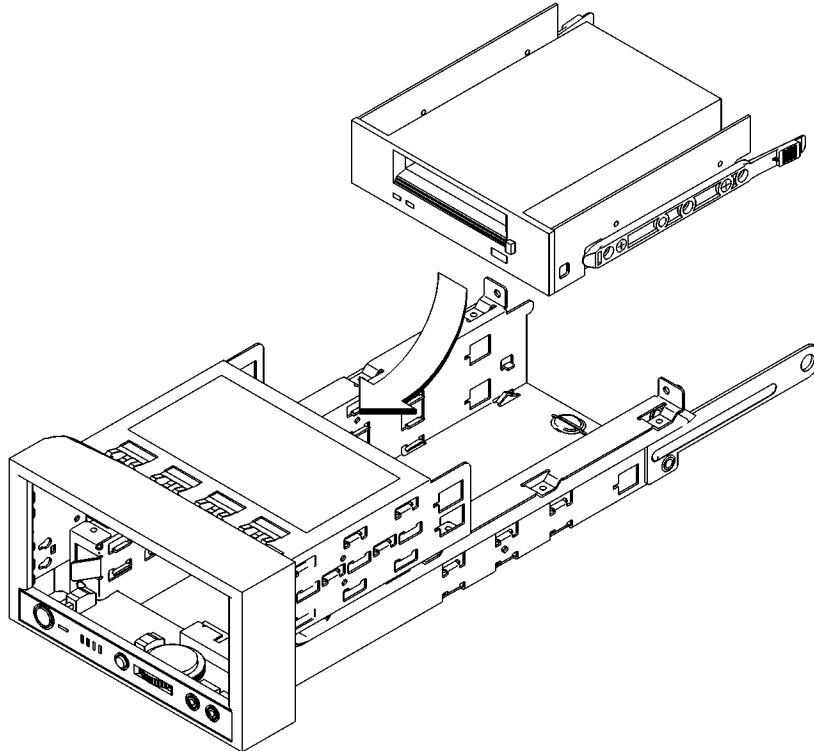
Cable Routing Label
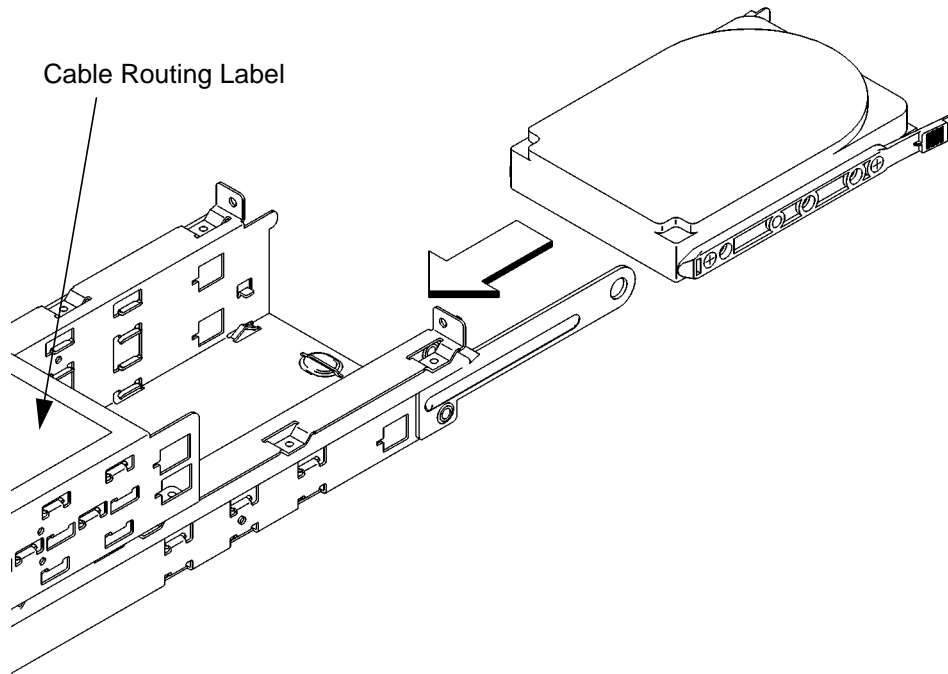
Figure 32 **Installing a Hard Disk Drive**

5 Push the storage device in until the locking tabs snap into place.

6 Connect the fast, wide SCSI data cable and the power cable to the drive.

7 Slide the disk interconnect board into the storage tray, as shown in Figure 33.
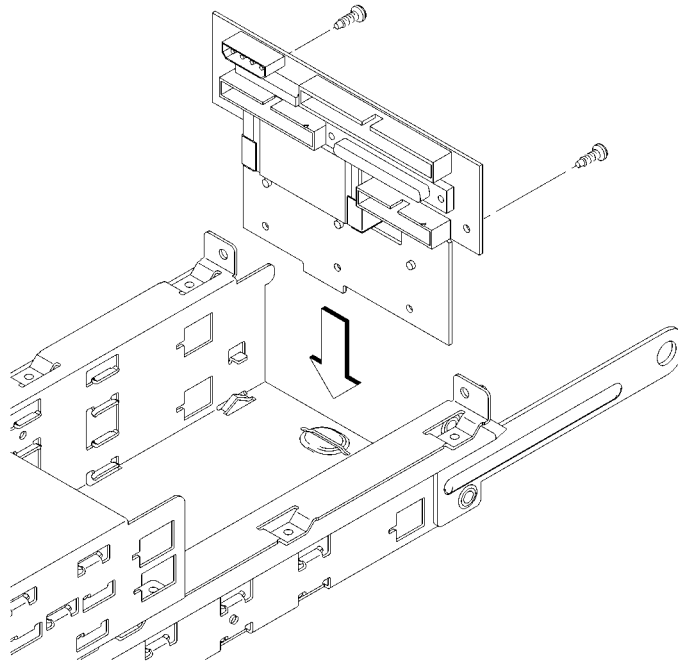
Figure 33   **Installing the Disk Interconnect Board**

8 Reconnect the human interface cable, and the disk drive data and power cables to the disk interconnect board.

9 Replace the disk interconnect board retaining screws and tighten them firmly, as shown in Figure 33.

10 Proceed to the section entitled "Replacing the Storage Tray."

Replacing the Storage Tray

1 Slide the storage tray assembly into the system unit chassis, as shown in Figure 34.
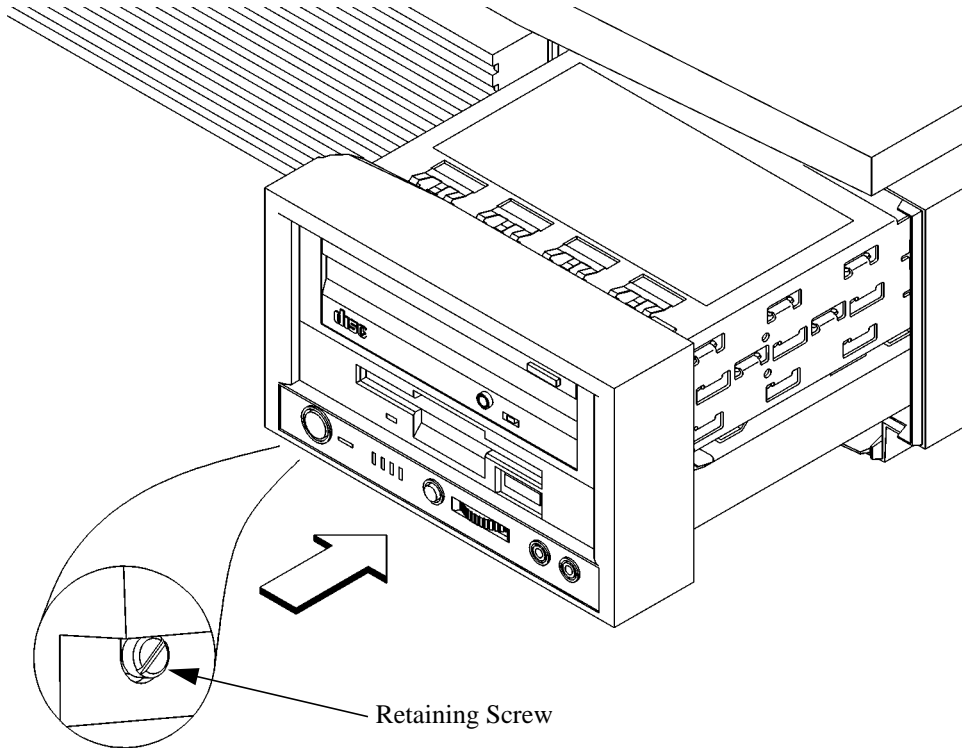
Retaining Screw

Figure 34   **Installing the Storage Tray Assembly**

2 Tighten the storage tray retaining screw, as shown in Figure 34.

3 Reconnect the power cords to the system unit, the monitor and any peripherals. Connect the power cords to the ac wall outlets.

4 Power on any peripherals, the monitor, and the system unit.

If you installed a new hard disk drive, proceed to the section entitled "Configuring a Hard Disk Drive."

If you installed a new removable media device, refer to the following chapters for information on using the device:

- Chapter 3 - Using Your CD-ROM Drive

- Chapter 4 - Using Your Digital Data Storage (DDS) Tape Drive

- Chapter 5 - Using Your 3.5-inch Floppy Drive

Configuring a Hard Disk Drive

This section describes how to add a hard disk drive to your system as a file system using SAM. If you installed a new hard disk drive, follow these instructions to make your new disk usable as a file system. For more information about configuring a hard disk drive, refer to the *System Administration Tasks* manual.

This procedure requires you to log in as **root**. If you cannot log in as **root**, contact your system administrator.

1   Log in as **root**.

2   Move the mouse pointer to the **arrow** above the **Toolbox** control and click the left mouse button.

Toolbox Control Arrow
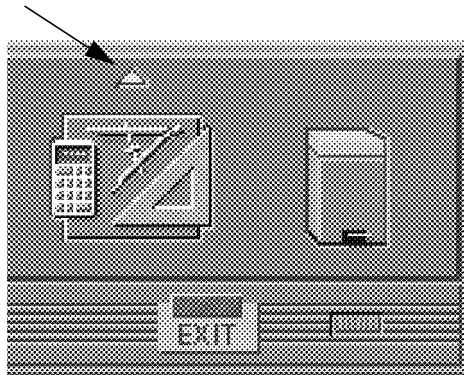
3   The **Toolbox** subpanel opens. Click on the **General** toolbox icon, shown below.
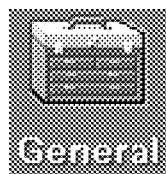
4 A file manager window appears with a number of icons in it. Double-click on the **System_Admin** toolbox icon.
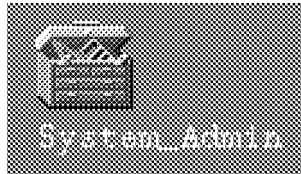
5 Move the mouse cursor to the **SAM** icon shown below (your icon can look like either of these) and double-click the left mouse button.

SAM (System Administration Manager) is a utility that performs system administration tasks using a windows graphical user interface.

6 The **System Administration Manager** window opens. Double-click on **Peripheral Devices ->**.

7 The **Peripheral Devices** window opens. Double-click on **Disks and File Systems ->**.

8 The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks**.

The following screen message appears:

```
Scanning the system's hardware...
```

The **CD-ROM, Floppy, and Hard Disks** window opens, containing a list of drives currently configured on this system.

9 From the Actions menu, click on **Add a Hard Disk Drive**.

10 The Select a Disk to Add... window opens with a list of unused disks. Highlight the hard disk drive you want to add to your system.

11 Click on $\overline{OK}$.

12 The Set Disk Usage and Options... window opens. Select File System and click on $\overline{\text{OK}}$.

13 The following screen messages appear:

> Task started.
>
> Creating the device file...
>
> Modifying "/etc/checklist"...
>
> Task completed.

Click on $\overline{\text{OK}}$.

Removing the Main Tray Assembly

Perform the following steps to remove the Main Tray Assembly:

1 Power off the system, the monitor, and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets. Disconnect the power cord from the system unit.

NOTICE: There is no need to manually shut down the HP-UX operating system on your workstation before powering it off. When you turn off the power switch, your workstation automatically shuts down the operating system before terminating the power.

2 Disconnect cables from any peripheral devices.

3 Attach a static-grounding wrist strap to bare metal on the back panel of the system unit.

4 Completely loosen the four captive screws on the rear of the system unit, as shown in Figure 35.
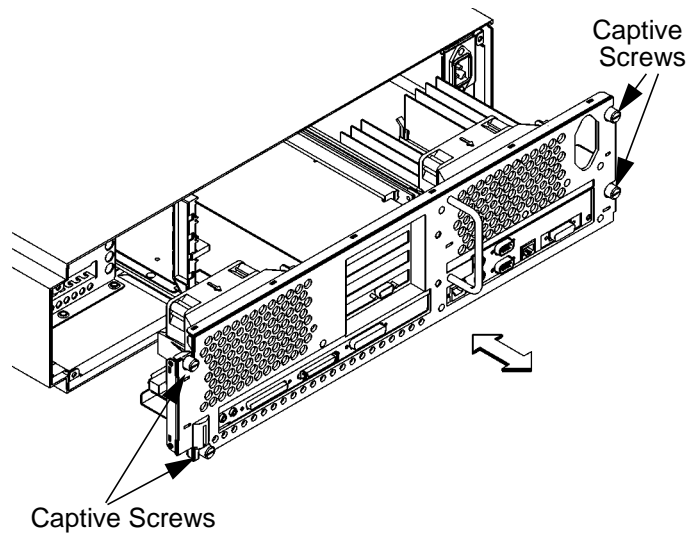
Figure 35 **Removing Main Tray Assembly**

5 Place one hand on the top of the system unit and push, while pulling the handle on the rear panel with your other hand. See Figure 35.

6 Slide the main tray assembly out of the chassis.

Replacing the Main Tray Assembly

Perform the following steps to replace the main tray assembly:

1   Align the main tray assembly with the chassis and slide it into place, as shown in Figure 36.

Captive
Screws

Captive Screws
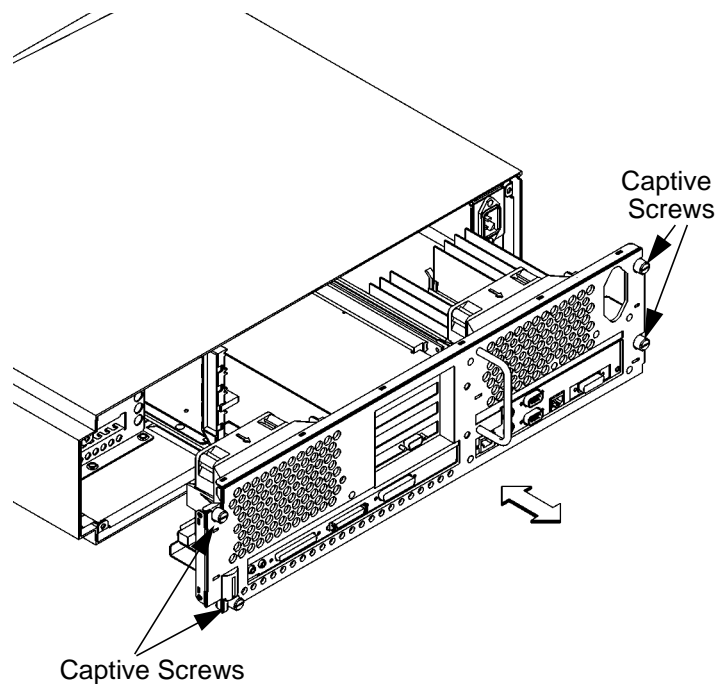
Figure 36   **Replacing the Main Tray Assembly**

2   Slide the main tray in until you feel it make contact with the internal connectors.

3   Push firmly and evenly on the main tray assembly to make sure that all connectors are fully seated.

4   Tighten the four captive screws, as shown in Figure 36.

NOTICE: To maintain FCC/EMI compliance, verify that the main tray is fully seated and all four captive screws are completely tightened.

5 Reconnect the power cables and any other cables that you disconnected when opening the workstation.

6 Power on the monitor, any peripheral devices, and the system unit.

Installing Additional memory

Take a moment to read over the following important notes about installing memory.

- Before you attempt to install additional memory modules in your C100/C110 workstation, use the procedure described in Appendix D, "Boot Console Interface," to determine the current memory configuration for this workstation.

- Read over the steps involved in installing memory modules before you begin.

- You must insert memory modules in pairs of equal size.

- Modules must be inserted in the lowest numbered memory pair first then in numerical order. For example, install memory in 0A and 0B first, then 1A and 1B, 2A and 2B, and 3A and 3B. Refer to Figure 37 for memory pair numbering and location.

- When you have finished installing additional memory modules, use the Boot Console Interface to verify that they are seen by the workstation.

Table 15 shows the allowable memory configurations.

Table 15   **C100/C110 Memory Configurations**

Configuration Number	Pair 0		Pair 1		Pair 2		Pair 3		Total MB
	A	**B**	**A**	**B**	**A**	**B**	**A**	**B**	
1	16	16	-	-	-	-	-	-	32
2	16	16	16	16	-	-	-	-	64
3	16	16	16	16	16	16	-	-	96
4	16	16	16	16	16	16	16	16	128
5	64	64	-	-	-	-	-	-	128
6	64	64	16	16	-	-	-	-	160
7	64	64	16	16	16	16	-	-	192
8	64	64	16	16	16	16	16	16	224
9	64	64	64	64	-	-	-	-	256
10	64	64	64	64	16	16	-	-	288
11	64	64	64	64	16	16	16	16	320
12	64	64	64	64	64	64	-	-	384
13	64	64	64	64	64	64	16	16	416
14	64	64	64	64	64	64	64	64	512

Perform the following steps to add memory modules to your workstation.

1 Remove the main tray assembly according to the directions in "Removing the Main Tray Assembly" earlier in this appendix.

2 Use Figure 37 to locate the memory modules on the CPU Assembly.
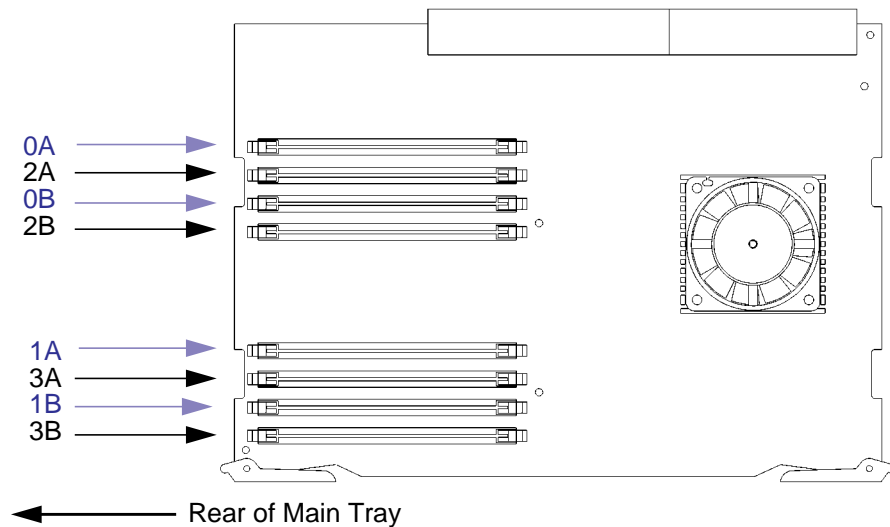
Figure 37   **Memory Module Location**

This workstation has 8 memory slots, labeled 0A, 0B through 3A, 3B. The memory configuration is 32 MB to 512 MB installed in pairs of 16 MB or 32 MB memory modules.

Memory modules must be installed in pairs of equal capacity.

Always install the largest capacity memory modules in the lowest numbered memory slots.

For example, if you have a pair of 16 MB memory modules and a pair of 64 MB memory modules, first install the pair of 64 MB memory modules in slots 0A and 0B, then install the 16 MB modules in slots 1A and 1B.

NOTICE: Memory slots must be filled in order from 0A and 0B through 3A and 3B.

3 Close the ejector tabs on each side of the memory connector. See Figure 38.
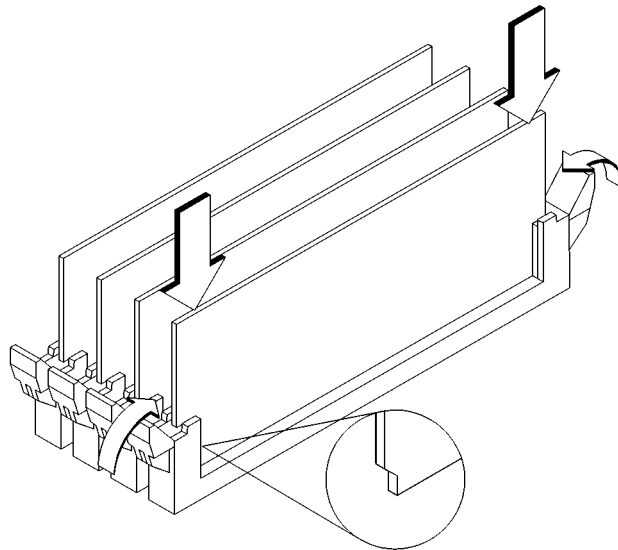
Figure 38   **Installing Memory Cards**

4 Place the memory module in the connector, lining it up with the guides. Make sure to put the notched end toward the left, as shown in Figure 38.

5 Press firmly and evenly on the memory module to ensure that it seats properly.

6 Replace the main tray assembly as described in "Replacing the Main Tray Assembly" earlier in this appendix.

To verify that this installation was successful, follow the steps in Appendix D, "The Boot Console Interface," on displaying memory information. If you have only replaced a faulty memory module, you must issue the pdt **clear** command in the service menu of the Boot Console Interface. Answer yes (**y**) to the prompt "Continue? (Y/N) >."

Installing an EISA or GSC Option Board

Your workstation has 4 option slots. The top three are EISA/GSC slots and the bottom one is GSC only.

NOTICES:

For optimum optional graphics board performance, we recommend that you install graphics boards in slots 3 and 4 and not mix them with other boards.

Dual graphics boards must be installed in slot 3 or slot 4 only.

Figure 39 shows the physical layout of the EISA/GSC slots.
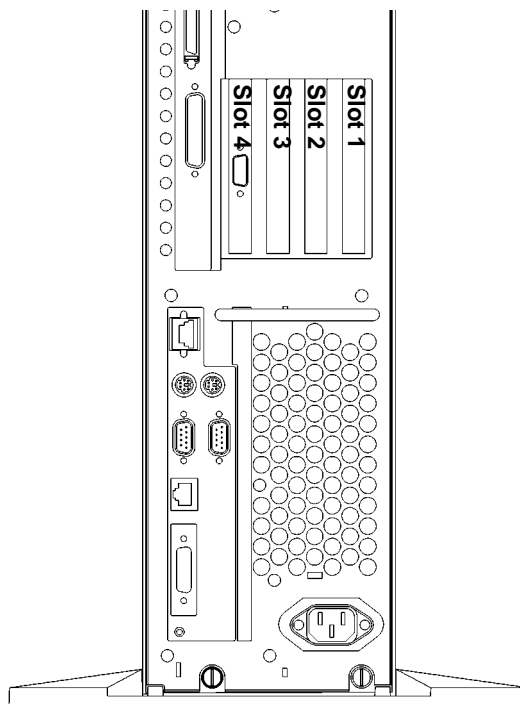
Figure 39   **EISA/GSC Slots from Outside the System Unit**

Graphics Paths

If you are installing a graphics option, read the information in this section first.

graphics0 through *graphics2* are not supported. If the configuration value is set to *"default" (graphics 0)*, the system console will be *graphics 3, Slot 3*.

graphics3 Graphics device in slot3. If there is a Dual Graphics Card in slot4, this is the port to the right on the card when facing the back of the workstation.

graphics4 Graphics device in slot4. If there is a Dual Graphics Card in slot 3 or 4, this is the port to the left on the card when facing the back of the workstation.

NOTICE: If you install a VISUALIZE-48 graphics card (geometry accelerator board installed in slot 3 or slot 4) the system path is *graphics 3*.

If your model C100/110 is running HPUX 9.05, the system console graphics device must be installed in Slot 3.

If your model C100/110 is running HPUX 9.07 or later, the system will find a console graphics device installed in Slot 3 by default. You may install the console graphics device in Slot 4 if you modify your system files as described in *HP Visual User Environment Users Guide* or *HPUX X User Environment User's Guide.*

Installing the Option Board

Follow these steps to install an EISA or GSC board into your workstation:

NOTICE:	You may not install any graphics cards in Slots 1 or 2.

1 Remove the main tray assembly as described in "Removing the Main Tray Assembly" earlier in this appendix.

2 Press the fan release clip and rotate the fan, as shown in Figure 41.
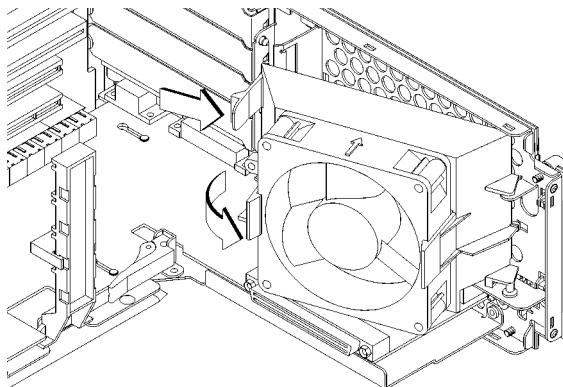
Figure 40   **Rotating the Fan**

3 Remove the screw from the EISA retainer, and remove the EISA retainer, as shown in Figure 41.
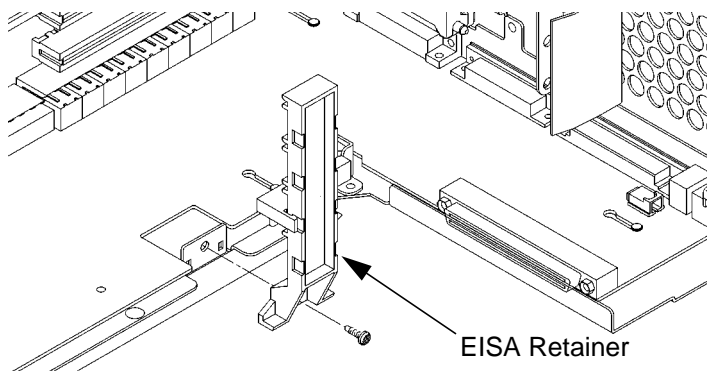
EISA Retainer

Figure 41   **Removing the EISA Retainer**

4 Remove the EISA Slider, as shown in Figure 42.

5 In the desired EISA slot, turn the blank plate's locking knob counter-clockwise to unlock the plate, as shown in Figure 42.

Locking Knob

Blank Plate
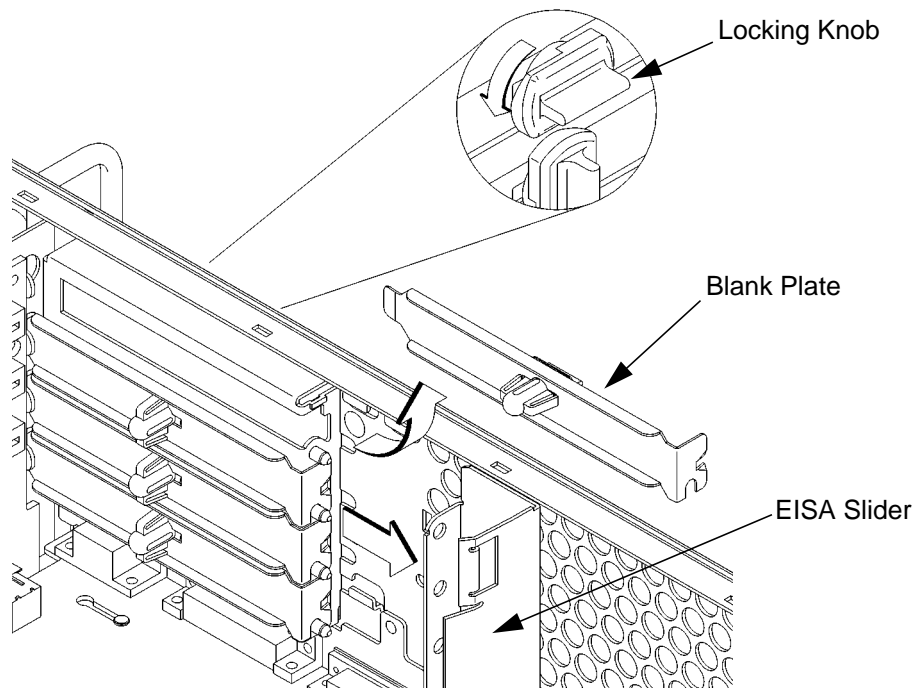
EISA Slider

Figure 42   **Removing the EISA Slider and Blank Plate**

6 Remove the blank plate from the slot, as shown in Figure 42.

7   Slide the board into the slot. Make sure that the hole in the board's handle aligns with the pin on the back panel, as shown in Figure 43.
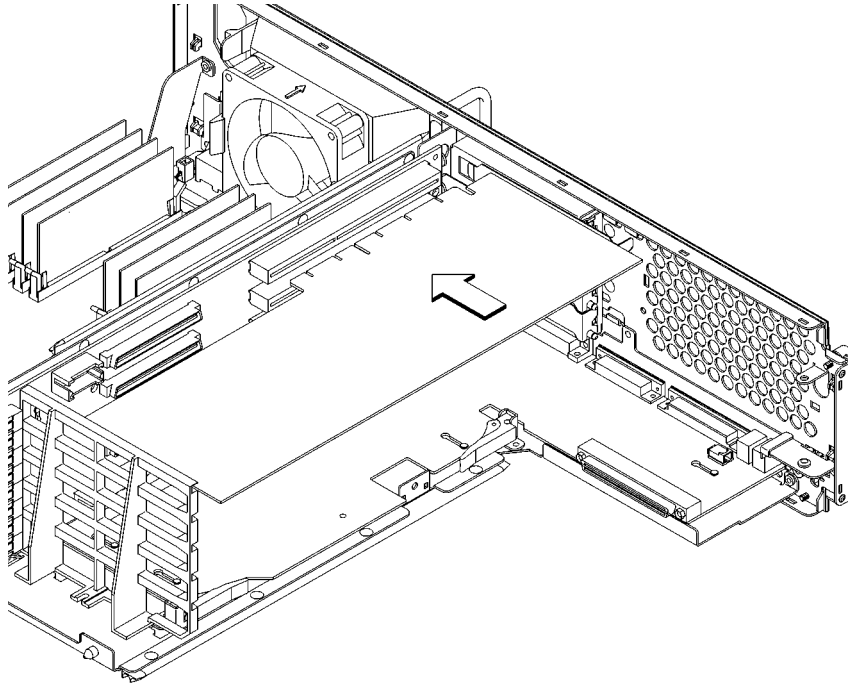
Figure 43   **Installing an Option Board**

8   Press in firmly on both ends of the option board at the same time to make sure that it is firmly seated in the backplane connector.

9 Replace the EISA retainer and its screw, as shown in Figure 44.
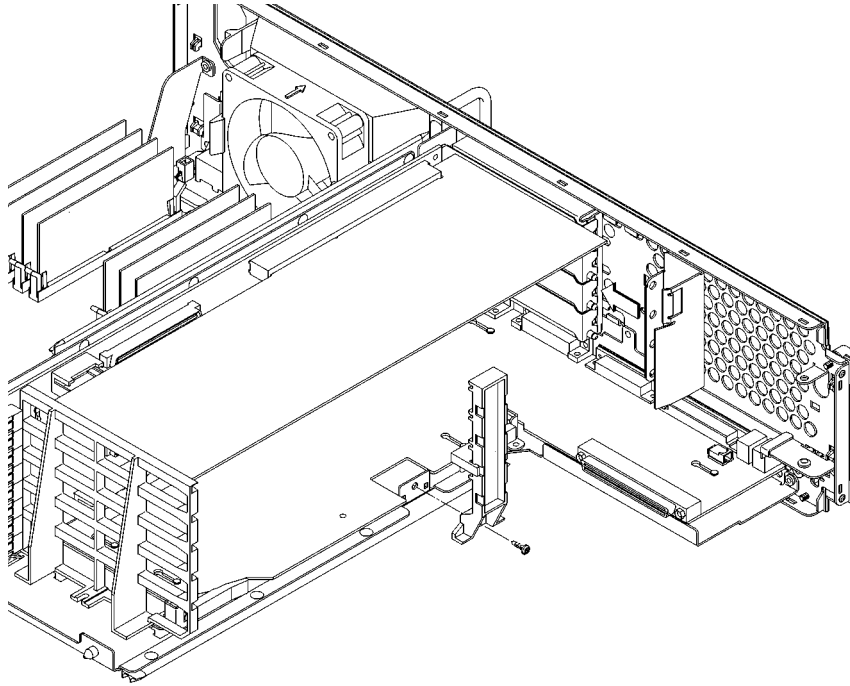
Figure 44   **Installing the EISA Retainer and EISA Slider**

10 Replace the EISA slider, as shown in Figure 44.

11 Rotate the fan back into place. Push it into the rear panel firmly until the clip snaps into place, as shown in Figure 45.
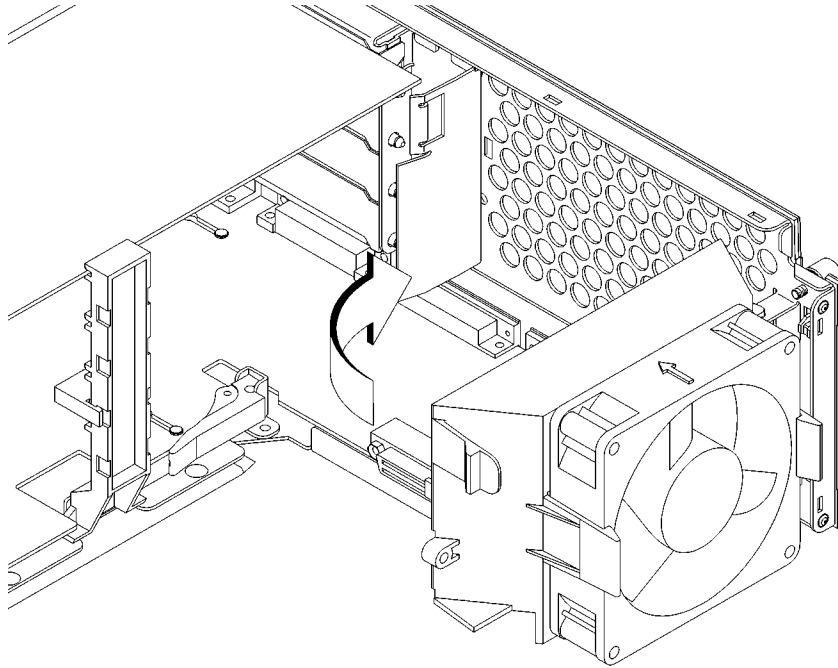
Figure 45   **Securing the Fan**

12 Replace the main tray assembly as described in "Replacing the Main Tray Assembly" earlier in this appendix.

Replacing the Battery

1 Remove the main tray as described in Removing the Main Tray Assembly earlier in this chapter.

2 Note the orientation of the battery. Make sure that you put the new battery in place with the positive (+) side facing in the same direction.

3 Lift the clip and slip the battery out of its holder, as shown in Figure 42.
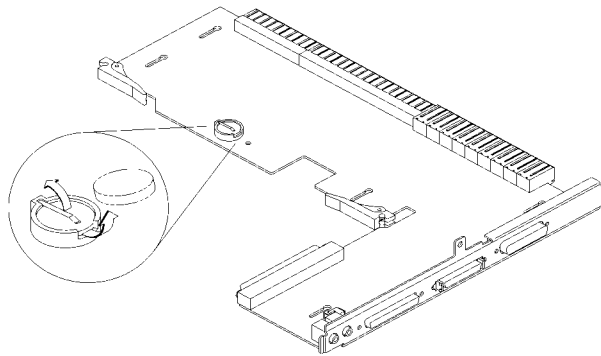
Figure 46   **Removing the Battery**

4 Insert the new battery in the same orientation as the old one. (Only use HP part number 1420-0314 or equivalent.)

NOTICE: If you cannot gain access to the battery, you may need to remove an option board. Refer to Installing an EISA or GSC Option Board earlier in this chapter for information on accessing the option boards.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

5 Follow the instructions in Replacing the Main Tray Assembly earlier in this chapter to close and restart the system.

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Changing Your Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your monitor with a different type, you must reconfigure your workstation to support it.

There are two ways to reconfigure your workstation to support a different monitor type:

Setting the Monitor Type from the Boot Console Interface

To change your workstation's graphics parameters *before* you replace your monitor, go to "Displaying and Setting the Monitor Type" in Appendix D.

Setting the Monitor Type at Power On

If you replace your workstation's monitor with a different monitor type, and do not set the workstation's graphics parameters by using the monitor command before doing so, you need to perform the following:

If your keyboard connects to the PS/2 connector on your system, wait 2 seconds after the Num Lock light flashes near the end of the boot sequence, then press $\overline{\text{Tab}}$ to initiate the automatic monitor selection process.

If you have a keyboard that connects to the HIL connector on your system, press $\overline{\text{Tab}}$ every three seconds during the boot sequence to initiate the automatic monitor selection process.

Your system queries you for the new monitor type. Select the new type by pressing $\overline{\text{Enter}}$. The system queries you to confirm your selection. Press **y** to save this monitor type.

If you don't press y, the system stops cycling. You can use the **monitor graphics** command in the configuration menu to change monitor type.

C

SCSI Connections

This appendix provides information about connecting Small Computer System Interface (SCSI) devices to an HP 9000 C100/C110 workstation. It presents the information in the following sections:

- SCSI bus differences

- SCSI restrictions

- Determining SCSI bus length

- Assigning SCSI device IDs

- Connecting to the SCSI ports

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system with HP VUE version 3.0 or later interface.

NOTICE   When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus.

SCSI Bus Differences

A Small Computer Systems Interface (SCSI) bus is an IEEE standard bus for connecting your workstation to internal and external devices (SCSI devices) running at different speeds, singly or in combination. Examples of these SCSI devices are 4-mm DDS-format tape drives, CD-ROM drives, and Winchester hard disk drives.

There are two types of SCSI buses available with this workstation - a single-ended SCSI bus, and a fast, wide differential SCSI bus. Table 16 shows the specification differences between these SCSI buses, and Table 17 shows the SCSI addresses, ID numbers, and arbitration priorities for each.

CAUTION: Do not mix single-ended and fast, wide devices on any one bus type. Doing this will cause a system failure.

Table 16   **SCSI Bus Differences**

Transfer Rate	Data Bus Width	Maximum Addresses*	Maximum Cable Length	Device Physical Location	Controller Embedded or Plugable
Single-Ended Up to 5 Mbytes per second	8 bits	8	6.0 meters (19.6 feet)	Internal and external	Embedded
Fast, Wide Differential Up to 20 Mbytes per second	16 bits	16	25 meters (82 feet)	Internal and external	Embedded
* Address 7 is reserved for host controller use on both buses.					

Table 17 **SCSI Bus Addresses, ID Numbers, and Arbitration Priorities**

SCSI-2 Address	SCSI ID Number 15 8	SCSI ID Number 7 0	Priority
7	. . . .	1	1
6	. . . .	. 1	2
5	. . . .	. . 1	3
4	. . . .	. . . 1	4
3	. . . .	. . . . 1 . . .	5
2	. . . .	. . . . . 1 . .	6
1	. . . .	. . . . . . 1 .	7
0	. . . .	 1	8
15	1	. . . .	9
14	. 1	. . . .	10
13	. . 1	. . . .	11
12	. . . 1	. . . .	12
11	. . . . 1 . . .	. . . .	13
10	. . . . . 1 . .	. . . .	14
9	. . . . . . 1 .	. . . .	15
8	 1	. . . .	16

8-bit Devices Single-Ended SCSI Bus

16-bit Devices Fast, Wide SCSI Bus

SCSI Restrictions

This section describes the SCSI restrictions that apply to your workstation in the following areas:

- Cables

- Connectors and Terminator

- SCSI configuration constraints

Cables

All SCSI devices ship without cables. Only SCSI cables approved by HP can be used to connect your workstation and any SCSI devices. HP offers the following SCSI cables for single-ended standard SCSI devices:

- K2296 cable with 0.9 meter (3 feet) length

- K2297 cable with 1.5 meter (5 feet) length

HP offers the following SCSI cables for connecting externally connected devices to the system fast, wide port:

- C2911A cable with 0.9 meter (3 feet) length

- C2924A cable with 2.5 meter (8.2 feet) length

- C2925A cable with 10.0 meter (32.8 feet) length

- C2926A cable with 20.0 meter (65.6 feet) length

CAUTION: SCSI cables approved by HP are designed to function within the SCSI tolerances for HP devices. Use of other cables can result in significant problems with system operation.

Singled-ended SCSI-2 definition limits the total cable length of SCSI-2 cables to 6 meters (19.6 feet).

Fast, wide differential SCSI definition limits the total cable length of Fast, Wide SCSI cables to 25 meters (82 feet).

Always use the shortest possible cable(s) for your configuration.

If you are daisy-chaining single-ended standard SCSI-2 devices together, use the following cables:

• 92222A cable with 0.5 meter (1.6 feet) length

• 92222B cable with 1.0 meter (3.2 feet) length

• 92222C cable with 2.0 meter (6.6 feet) length

If you are daisy-chaining fast, wide differential SCSI devices together, use the following cables:

• C2911A cable with 0.9 meter (3 feet) length

• C2924A cable with 2.5 meter (8.2 feet) length

• C2925A cable with 10.0 meter (32.8 feet) length

• C2926A cable with 20.0 meter (65.6 feet) length

NOTICE See "Determining SCSI Bus Length" later in this Appendix to determine the total length of your cables.

Connectors and Terminators

Any standard single-ended SCSI device connecting to the system board must use a 50-pin high-density thumb screw connector on the end connecting to the system board.

Any fast, wide differential SCSI device connecting to the system board must use a 68-pin high-density thumb screw connector on both ends.

It is not necessary to put a terminator on empty SCSI connectors on the back panel. However, a SCSI device attached to the SCSI bus or the last device connected to the SCSI bus must be terminated with a SCSI terminator. All of the devices listed ship without terminators. If you do not already have a SCSI terminator, you must order terminator C2904A (for 50-pin connectors) or C2905A (for 68-pin connectors) from Hewlett-Packard.

SCSI Configuration Constraints

You are limited to the number of same-type SCSI devices per system. Before adding another SCSI device, determine if the system can support the additional device.

This workstation offers the following types of SCSI bus, each with its own configuration constraints:

- single-ended standard SCSI-2 bus

- fast, wide, differential SCSI bus

Single-Ended SCSI-2 Bus Configuration Constraints

For the single-ended standard SCSI-2 bus, HP-UX supports only one of each type of removable disk drive and two of the same type tape devices per system. Table 18 shows configuration constraints for each single-ended standard SCSI-2 device type. If the system has internal hard disk drives or a CD-ROM drive, you must count them as SCSI-2 devices.

Table 18   **Single-Ended SCSI-2 Bus Configuration Constraints**

Single-Ended SCSI-2 Devices	Maximum Number of Each Type of Device Allowed
Hard Disk Drives (external only)	7
CD-ROM Drives	1
4-mm DDS Tape Drives (one internal)	2
9-track Tape Drives	2
650-MB Magneto-Optical Drives	1
Magneto-Optical Autochangers (see notice below)	1
Maximum Number of SCSI-2 Devices	7
NOTICE: Magneto-Optical Autochangers use three SCSI-2 drive address. Each address must be accounted for in the maximum number of SCSI-2 devices allowed.	

CAUTION: Do not mix single-ended standard and fast, wide SCSI-2 peripherals.

Fast, Wide Differential SCSI Bus Configuration Constraints

Fast, wide SCSI does not work with the single-ended standard SCSI-2. Table 19 shows the configuration constraints for each fast, wide, differential SCSI device type.

Table 19   **Fast, Wide Differential SCSI Bus Configuration Constraints**

External Fast, Wide SCSI Devices	Maximum Number of Each Type of Device Allowed
Fats, Wide SCSI Drive (fast, wide disk drives only)	15
Fast, Wide SCSI Disk Arrays (addressed as single drive)	7

CAUTION: Do not mix single-ended, fast differential, and fast, wide SCSI peripherals together on the same bus.

Determining SCSI Bus Length

This section helps you to determine the total length of the single-ended standard SCSI-2 bus and the fast, wide SCSI bus.

Single-Ended SCSI-2 Bus Length

Follow these instructions to calculate your total single-ended standard SCSI-2 bus length (including the system unit, external SCSI-2 devices, and SCSI-2 interconnect cables) using Table 20:

1 Find all of your external SCSI-2 devices in the first column. In the third column, write the SCSI-2 bus lengths (from the second column) that correspond to your devices.

NOTICE In the third column, the length for the System Unit is already listed. This number must always be used for the system unit.

2 In the fourth column, write down the lengths of the SCSI-2 interconnect cables you are using for your installation. (Cable lengths are listed in subsection "Cables" in the section on "SCSI Restrictions."

3 Add all of the numbers in the third column and write that number on the subtotal line at the bottom of the column. Do the same for the fourth column.

4 Add the subtotals together and write the total in the Total SCSI-2 Bus Length box.

NOTICE The total length of the single-ended standard SCSI-2 bus must not exceed 6 meters (19.6 feet). If the number you write for Total SCSI-2 Bus Length is greater than 6 meters (19.6 feet), try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table 20 **Bus Length Worksheet for Single-Ended SCSI Bus**

SCSI-2 Device	Internal SCSI-2 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
System Unit	1.5 (4.9)	1.5 (4.9)	N/A
A2655A	0.3 (1.0)		
C1520B	0.2 (0.7)		
C1521B	0.2 (0.7)		
C1700C	1.1 (3.6)		
C1701C	0.3 (1.0)		
C1704C	0.0 (0.0)		
C1705C	0.0 (0.0)		
C2213A	1.5 (4.9)		
C2217T	1.3 (4.3)		

Subtotals: _____   + _____

Total SCSI-2 Bus Length   = _____

(Total single-ended SCSI bus length not to exceed 6 meters [19.6 feet])

Fast, Wide Differential SCSI Bus Length

Follow these instructions to calculate your total bus length for the fast, wide SCSI bus on your system, using Table 21.

1 List all of your internal Fast, Wide SCSI devices in the first column.

2 In the third column, write the lengths of the internal Fast, Wide SCSI bus that correspond to your devices.

3 In the fourth column, write down the lengths of the Fast, Wide SCSI interconnect cables you are using for your installation. (Cable lengths are listed in subsection "Cables" in the section on "SCSI Restrictions.")

4 Add all of the numbers in the third column and write the sum on the subtotal line at the bottom of the column. Do the same for the fourth column.

5 Add the subtotals together and write the total on the Total Fast, Wide SCSI Bus Length line.

NOTICE: The total length of the Fast, Wide SCSI bus must not exceed 25 meters (82 feet). If the number you write for Total Fast, Wide SCSI Bus Length is greater than 25 meters, try configuring your installation with shorter cables.

If you have problems, call your designated service representative.

Table 21 **Fats, Wide SCSI Bus Length Worksheet for Fast, Wide Differential SCSI Bus**

Fats, Wide Device	Internal Fats, Wide SCSI Bus Length meters(feet)	Device Internal Length meters(feet)	External Cable Length meters(feet)
System Unit	1.5 (4.9)		N/A
C3034T	1.0 (3.3)		
C3035T	1.0 (3.3)		
C3036T	1.0 (3.3)		

Subtotals: _____   +   _____

Total Fast, Wide SCSI Bus Length   =   _____

(Total fast, wide SCSI bus length not to exceed total of 25 meters [82 feet])

Assigning SCSI Device IDs

Before assigning a SCSI device ID to your drive, you need to check your
existing SCSI device IDs. To determine which SCSI device IDs are available
for your device, use the ioscan command in a terminal window:

1 Click on the Terminal Control on the Front Panel of your Workspace.

Terminal Control

A terminal window opens.

2 Move the mouse cursor into the terminal window and single-click the left mouse
button.

3 If you are using HP-UX 9.05 or greater, enter the following at the prompt

/etc/ioscan -d scsi

After a few moments the ioscan utility lists all of the SCSI I/O devices it could
find. The list should appear similar to the following:

```
H/W Path     Description     Status
====================================
2.0.1.2.0    cd-rom_drive    ok(nnnnnnnn)
```

If you are using HP-UX 10.0, enter the following at the prompt:

/usr/sbin/ioscan -f

After a few moments, the ioscan utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

```
Class     I  H/W Path       Driver      S/W State H/W Type    Description
=============================================================================
bc        0                 root        CLAIMED   BUS_        NEXUS
bc        1  8              ccio        CLAIMED   BUS_NEXUS   I/O Adapter
ext_bus   0  8/12           c720        CLAIMED   INTERFACE   GSC built-in Fast/Wide SCSI
target    0  8/12.0         tgt         CLAIMED   DEVICE
disk      3  8/12.0.0       sdisk       CLAIMED   DEVICE      QUANTUM LPS1080WD
target    1  8/12.5         tgt         CLAIMED   DEVICE
disk      2  8/12.5.0       sdisk       CLAIMED   DEVICE      DEC     DSP3210SW
target    2  8/12.6         tgt         CLAIMED   DEVICE
disk      0  8/12.6.0       sdisk       CLAIMED   DEVICE      DEC     DSP3210SW
ba        0  8/16           bus_adapter CLAIMED   BUS_NEXUS   Core I/O Adapter
ext_bus   2  8/16/0         CentIf      CLAIMED   INTERFACE   Built-in Parallel Interface
audio     0  8/16/1         audio       CLAIMED   INTERFACE   Built-in Audio
tty       0  8/16/4         asio0       CLAIMED   INTERFACE   Built-in RS-232C
ext_bus   1  8/16/5         c700        CLAIMED   INTERFACE   Built-in SCSI
target    3  8/16/5.2       tgt         CLAIMED   DEVICE
disk      1  8/16/5.2.0     sdisk       CLAIMED   DEVICE      TOSHIBA CD-ROM XM-4101TA
target    4  8/16/5.3       tgt         CLAIMED   DEVICE
tape      0  8/16/5.3.0     stape       CLAIMED   DEVICE      HP      HP35480A
target    5  8/16/5.4       tgt         CLAIMED   DEVICE
disk     10  8/16/5.4.0     sdisk       CLAIMED   DEVICE      SEAGATE ST3600N
target    6  8/16/5.6       tgt         CLAIMED   DEVICE
disk      5  8/16/5.6.0     sdisk       CLAIMED   DEVICE      MICROP  2112
lan       0  8/16/6         lan2        CLAIMED   INTERFACE   Built-in LAN
ps2       0  8/16/7         ps2         CLAIMED   INTERFACE   Built-in Keyboard/Mouse
bc        2  10             ccio        CLAIMED   BUS_NEXUS   I/O Adapter
ext_bus   3  10/12          c720        CLAIMED   INTERFACE   GSC add on Fast/Wide SCSI
target    7  10/12.4        tgt         CLAIMED   DEVICE
disk      6  10/12.4.0      sdisk       CLAIMED   DEVICE      SEAGATE ST31200W
graphics  2  10/16          graph3      CLAIMED   INTERFACE   Graphics
ba        1  10/20          bus_adapter CLAIMED   BUS_NEXUS   Core I/O Adapter
hil       0  10/20/1        hil         CLAIMED   INTERFACE   Built-in HIL
tty       1  10/20/2        asio0       CLAIMED   INTERFACE   Built-in RS-232C
ba        2  10/20/5        eisa        CLAIMED   BUS_NEXUS   EISA Bus Adapter
ext_bus   4  10/20/5/3      hshpib      CLAIMED   INTERFACE   EISA card HWP0C70
target    8  10/20/5/3.0    tgt         CLAIMED   DEVICE
target    9  10/20/5/3.1    tgt         CLAIMED   DEVICE
target   10  10/20/5/3.2    tgt         CLAIMED   DEVICE
processor 0  32             processor   CLAIMED   PROCESSOR   Processor
memory    0  49             memory      CLAIMED   MEMORY      Memory
```

4   If you are using HP-UX 9.05 or greater, you can which SCSI IDs are currently in use by looking under the H/W Path heading. The listing 2.0.1 scsi is the built-in SCSI bus controller. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing 2.0.1.6.0 in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI bus.

Although the information is presented in a different format if you are using HP-UX 10.0, you look under the H/W Path heading also.

Single-Ended Standard System SCSI Device IDs

Before assigning a SCSI device ID to your drive, you need to check your SCSI device IDs. To check what SCSI device IDs are available and assign an ID to your device, follow these instructions which use Table 22:

1   Write in the SCSI device ID of any internal drives in Table 22

2   Write in the type of external drives (single-ended standard, EISA, or fast, wide devices) currently connected to your system under the heading "External Device Drives" and each drive's SCSI device ID under the heading "Device ID."

3   Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 4.

NOTICE: The C1700A Magneto-Optical Autochanger uses three SCSI addresses, and accounts for three of the seven devices allowed on the SCSI bus.

4   Check to see which SCSI device IDs are not used. You can use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI device ID to your drive. See the drive installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI device ID 7 for any device. It is reserved for the built-in SCSI bus controller

Table 22   **Single-Ended SCSI Device IDs**

SCSI Device Drives	Device ID (Address) Number (Only 0 through 6 Available) Internal External	
Internal System Drives:		
System SCSI Drive(s)		
CD-ROM Drive (if present, uses ID No.2)	_____	N/A
4-mm DDS Tape Drive (if present, uses ID No.1)	_____	N/A
External Device Drives	N/A	_____
1st External Device _____	N/A	_____
2nd External Device _____	N/A	_____
3rd External Device _____	N/A	_____
4th External Device _____	N/A	_____
5th External Device _____	N/A	_____
6th External Device _____	N/A	_____
7th External Device _____	N/A	_____
NOTICE: You can have no more than 7 single-ended SCSI devices (internal and external) connected to the system.		

5 Write in the SCSI device ID of any internal drives in Table 22.

6 Write in the type of external single-ended drives currently connected to your workstation under the heading "External Device Drives" and each drive's SCSI device ID under the heading "Device ID."

7 Add your new drive to the table if it is an external device. If it is an internal drive, continue to Step 8.

NOTICE: The C1700A Magneto-Optical Autochanger uses three SCSI IDs, and accounts for three of the seven devices allowed on the SCSI bus

8 Check to see which SCSI device IDs are not used. You may use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI device ID 7 for any device. It is reserved for the built-in SCSI bus controller.

Fast, Wide Differential SCSI IDs

Before assigning a SCSI device ID to your drive, you need to check your SCSI device IDs. To check which SCSI device IDs are available and assign an ID to your device, follow these instructions which use Table 23.

1 Write in the type of internal drives currently connected to your system under the heading "Fast, Wide Differential SCSI Device Drives" and each drive's SCSI device ID under the heading "Device ID."

2 Add your new drive to the table.

3 Check to see what SCSI device IDs are not used. You may use ID numbers 0 through 6 and 8 through 15 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, assign a new fast, wide differential SCSI device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI device ID 7 for any device.

Table 23 **Fast, Wide Differential SCSI Device Drives and Device ID**

Fast, Wide Differential SCSI Device Drives	Device ID (Address) Number (ID 7 not available)
1st Internal Device _____	6
2nd Internal Device _____	5
NOTICE: You can have no more than 15 SCSI devices connected to a fast, wide bus.	

Connecting to the SCSI Ports

This section describes how to connect to the system SCSI ports (single-ended and fast, wide).

System SCSI Port Connection

The system contains two (2) SCSI connectors:

- System Single-Ended SCSI Connector
- System Fast, Wide SCSI Connector

Figure 47 shows the two SCSI connectors. SCSI cables connect to these ports with a high-density thumb screw connector.

Single-ended SCSI

Fast, Wide SCSI
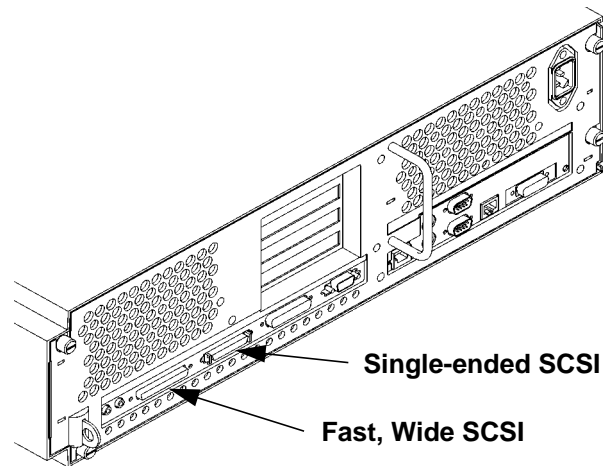
Figure 47   **Rear Panel SCSI Connectors without Terminators**

NOTICE: It is not necessary to put a terminator on empty SCSI connectors on the backpanel. However, the last device connected to the SCSI bus must be terminated with a SCSI terminator. All of the devices listed ship without terminators. If you do not already have a SCSI terminator, you must order a C2905A, 68-pin terminator for the fast, wide SCSI bus, or a C2904A, 50-pin high density terminator for the single-ended SCSI bus from Hewlett-Packard.

D

The Boot Console Interface

This appendix describes the different features of the boot console interface and how to use them. It presents the information in the following sections:

- Boot console interface features
- Accessing the boot console interface
- Booting your workstation
- Searching for bootable media
- Resetting your workstation
- Displaying and setting paths
- Displaying and setting the monitor type
- Displaying the current memory configuration
- Displaying the status of the EISA slots
- Setting the Auto Boot and Auto Search flags
- Displaying and setting the Fastboot mode
- Displaying the LAN station address
- Displaying system information
- Displaying PIM information

The instructions in this chapter assume you are using HP-UX version 9.05 or later operating system.

Boot Console Interface Features

There are times when you want to interact directly with the hardware of your workstation **before** it boots the operating system. Your workstation provides a menu-driven **boot console interface** that allows you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are some of the things you can do:

- Boot your workstation

- Search for bootable media

- Reset your workstation

- Display and set boot paths

- Display and set your monitor type

- Display memory configuration information

- Display the status of the EISA slots

- Set Auto Boot and Auto Search

- Set Fastboot

- Display LAN information

- Display system information

- Display PIM information

NOTICE: All of the tasks in the boot console interface should be performed by a system administrator.

The **boot console** menus follow, showing the various tasks you can perform and the information available.

The shortened version of all commands is indicated by the uppercase letters.

Help is available for all the menus and commands by using either **help**, **he**, or **?** and the menu or command you want help on.

```
------ Main Menu ----------------------------------------------------
Command                          Description
-------                          -----------
BOot [PRI|ALT|<path>]            Boot from specified path
PAth [PRI|ALT|CON|KEY][<path>]   Display or modify a path
SEArch [DIsplay|IPL] [<path>]    Search for boot devices
COnfiguration menu               Displays or sets boot values
INformation menu                 Displays hardware information
SERvice menu                     Displays service commands
DIsplay                          Redisplay the current menu
HElp [<menu>|<command>]          Display help for menu or command
RESET                            Restart the system
------
Main Menu: Enter a command or a menu >
```

```
------ Configuration Menu -------------------------------------------
Command                          Description
-------                          -----------
AUto [BOot|SEArch] [ON|OFF]      Display or set specified flag
BootInfo                         Display boot-related info
DEfault                          Set system to predefined values
FastBoot [ON|OFF]                Display or set boot tests execution
LanAddress [<option>]            Display Core LAN station address
MOnitor [<option>]               Display or set monitor type in EEPROM
PAth [PRI|ALT|CON|KEY] [<path>]  Display or modify a path
PRocessor [<proc>] [ON|OFF]      Config/Deconfig processor
SEArch [DIsplay|IPL] [<path>]    Search for boot devices
TIme [c:y:m:d:h:m:[s]            Read or set real time clock in GMT
BOot [PRI|ALT|<path>]            Boot from specified path
DIsplay                          Redisplay the current menu
HElp [<command>]                 Display help for menu or command
RESET                            Restart the system
MAin                             Return to Main Menu
------
Configuration Menu: Enter a command or a menu >
```

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```
------ Information Menu --------------------------------------------
Command              Description
-----------          -----------
ALL                  Display all system information
BootInfo             Display boot-related information
CAche                Display cache information
COprocessor          Display coprocessor information
EIsa                 Display EISA slot information
FWrVersion           Display firmware version
MEmory               Display memory information
MOnitor              Display monitor type in EEPROM
PRocessor            Display processor information
BOot [PRI|ALT|<path>] Boot from specified path
DIsplay              Redisplay the current menu
HElp [<command>]     Display help for menu or command
RESET                Restart the system
MAin                 Return to Main Menu
------
Information Menu: Enter a command or a menu >
```

```
------ Service Menu ---------------------------------------------
Command                    Description
-------                    -----------
MemRead <address> [<len>]  Read memory and I/O locations
PIM [<proc>][HPMC|LPMC|TOC]  Display PIM information
PDT [CLEAR]                Display or clear the Page Deallocation
                             Table
ChassisCodes [<proc>]      Display chassis codes
BOot [PRI|ALT|<path>]      Boot from specified path
DIsplay                    Redisplay the current menu
HElp [<command>]           Display help for menu or command
RESET                      Restart the system
MAin                       Return to Main Menu
------
Service Menu: Enter a command or a menu >
```

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Accessing the Boot Console Interface

To access the boot console interface, follow these steps:

NOTICE:　This procedure should be done by a system administrator.

1　Close any files and applications on your workstation.

2　Press the power switch on the front panel of the system unit.

NOTICES:　There is no need to manually shut down the HP-UX operating system on your workstation before powering it off. When you turn off the power switch, your workstation automatically shuts down the operating system before terminating the power.

Make sure that you do not unplug the system's power cord or otherwise interrupt power to the system unit at this time.

3　Power on your workstation.

If **Autoboot** is turned off, the boot sequence automatically stops at the boot console Main Menu.

If Autoboot is turned on, you will see the following messages:

```
Processor is starting Autoboot process. To discontinue,
press any key within 10 seconds.
```

NOTICE:　If you are using a power-saving monitor, you will have less than 10 seconds from the time this message appears to press a key.

4　Press a key. You will then see the message:

```
Boot terminated
```

The Main Menu of the boot console appears.

Booting Your Workstation

Usually, you start your workstation by turning it on and waiting for HP-UX to boot automatically. However, you may not always want the usual sequence to occur.

For example, you may want to start your workstation from an operating system that is stored on a device that is different from your usual boot device. If your normal operating system kernel or the disk on which it resides becomes damaged or unusable, you may wish to boot from a different disk or perhaps another type of device, such as a DDS-format tape drive.

Here are some situations and examples:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

        Main Menu: Enter a command or a menu > **boot** *device*

    where *device* is the **hardware path** to the device, specified in Mnemonic Style Notation.

    For example, if you wish to boot an operating system that is stored on a DDS-format tape in a drive that is located at "scsi.1.0", follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following command at the prompt:

        Main Menu: Enter a command or a menu > **boot scsi.1.0**

    The operating system on the specified device is used to start your workstation.

- If you wish to interact with the Initial System Loader (ISL) before booting your workstation, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt

        Main Menu: Enter a command or a menu > **boot** *device*

    You are prompted:

        Interact with ISL (Y or N) >

Answering yes (**y**) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on your screen:

```
ISL>
```

ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP-UX operating system. If you do not want ISL to be loaded, you must enter NO.

For example, if the usual kernel (**/hp-ux** for 9.05, and **/stand/vmunix** for 10.0) on your root disk (**fwscsi.6.0**) has become corrupted, and you wish to boot your workstation from the backup kernel (**/SYSBCKUP** for 9.05, and **/stand/vmunix.prev** for 10.0), type the following at the ISL> prompt:

> ISL> **hpux /SYSBCKUP** (for 9.05)

> ISL> **hpux /stand/vmunix.prev** (for 10.0)

• If you do not know which media in your file systems have bootable operating systems, you can find them with the **search IPL** command.

Searching for Bootable Media

To list devices that contain bootable media, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > search ipl
```

The search command searches all buses. The search may turn up more devices than there are lines on your display. If you are using a text terminal, you may control the progress of the search from your terminal's keyboard by performing the following steps:

- To hold the display temporarily, press **Ctrl** **S**

- To continue the display, press **Ctrl** **Q**

- To halt the search, press any other key

These flow-control commands do not work with a bitmapped display, but such a display can show more than forty lines of text, so you are unlikely to need them.

To search for devices of *just one type* that actually contain bootable media, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu >   search ipl device_type
```

Where *device_type* is one of the following:

fwscsi is the built-in fast, wide SCSI bus

scsi is the built-in single-ended SCSI bus

lan is all connections to the built-in LAN

slot*n*.fwscsi is an optional fast, wide SCSI interface in slot number *n*

Resetting Your Workstation

To reset your workstation, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

```
Main Menu: Enter a command or a menu > reset
```

To reset your workstation to its predefined values, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt to access the Configuration Menu:

```
Main Menu: Enter a command or a menu > co
```

When the Configuration Menu appears, type the following at the prompt:

```
Configuration Menu: Enter a command or a menu > default
```

Displaying and Setting Paths

A **path** is the hardware address of a device that is attached to the I/O system of your workstation. The **path** command sets the system paths shown in Table 24.

The **path** command sets and displays the hardware address of a specified device attached to the I/O bus of your workstation.

Table 24   **System Paths**

Path Type	Device
primary or **pri**	Your workstation's default boot device (usually the root disk)
alternate or **alt**	Your workstation's alternate boot device (usually a DDS-format tape device)
console or **con**	Your workstation's primary display device
keyboard or **key**	Your workstation's primary ASCII input device

To display the current settings for the system paths, type the following at the prompt:

> Main Menu: Enter a command or a menu > **path**

The paths are displayed in **Mnemonic Style Notation,** as shown in Table 25.

Table 25   **Mnemonic Style Notation**

I/O Type	Specification Format
Built-in FWSCSI	**core.fwsci.***scsi_address.logical_unit_number*
Built-in SCSI	**core.scsi.***scsi_address.logical_unit_number*
Built-in LAN	**core.lan.***server_address.init_timeout.io_timeout*

To display the current setting for a particular system path, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

> Main Menu: Enter a command or a menu > **path** *path_type*

where *path_type* is one of the path types listed in Table 24.

For example, to get the path to the primary boot device, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt:

> Main Menu: Enter a command or a menu > **path primary**

To set a system path to a new value, follow the directions in "Accessing the Boot Console Interface" earlier in this chapter, and then type the following at the prompt:

> Main Menu: Enter a command or a menu > **path** *path_type path*

where *path_type* is one of the path types listed in Table 24 and *path* is the specification of the path in Mnemonic Style Notation (as described in Table 25). For example, to set the primary boot path to a scsi disk with an ID of 6.0, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

> Main Menu: Enter a command or a menu > **path pri scsi.6.0**

Displaying and Setting the Monitor Type

Your system ships from the factory preset to use a monitor with a specific resolution and frequency. If you replace your workstation's monitor with a different type of monitor, you must reconfigure your workstation to support the new monitor.

The Monitor Command

The **monitor** command lets you change your workstation's graphics configuration. This command is available in both the Information and Configuration Menus of the boot console interface. However, when you use it in the Information Menu, **monitor** displays only the current graphics and console information. You must use **monitor** in the Configuration Menu to set a monitor type.

NOTICE:
The monitor command lets you change your workstation's graphics configuration before you replace your monitor. For information about changing the configuration after you replace your monitor, go to the section "Changing Your Monitor Type" in Appendix B.

To display the current graphics and console information, enter the following command;

> **monitor**

The correct usage for setting the graphics configuration is:

> **monitor** *graphics_path*

where valid *graphics_path* parameters are:

graphics3

Graphics device in slot3. If there is a Dual Color Graphics Card in slot4, this is the console port to the right on the card when facing the back of the workstation.

graphics4

Graphics device in slot4. If there is a Dual Color Graphics Card in slot4, this is the console port to the left on the card when facing the back of the workstation.

Displaying the Current Monitor Configuration

To display the current monitor configuration for your system from the Configuration Menu of the boot console interface, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix. Once you are in the Boot Console Interface Main Menu, type:

> Main Menu: Enter a command or a menu > **configuration**

This places you in the Configuration Menu. From here type:

> Configuration Menu: Enter command > **monitor**

The screen displays a list of the current monitors configured for your workstation.

```
MONITOR INFORMATION
Slot #          HPA            State   Resolution      Frequency   Class
---------       -------        ----    ----------      ---------   -------
graphics3       f4000000       Present Fixed
graphics4       f6000000       Empty

Current Console Path:    core.RS232_.9600.8.none

Stable Store Console Path:GRAPHICS3
```

In this example, the graphics cards are configured as follows:

- Graphics slot3 - CRX48Z
- Graphics slot4 - Empty

Setting the Monitor Type

Using the list in the example above, you can set the monitor type for graphics slot3 by typing the following:

```
Configuration Menu: Enter command > monitor graphics3
```

NOTICE:

You can exit at this point by entering **x**, and the monitor type will not be changed.

The screen displays the choice of supported monitors, similar to the following. Follow the directions in the screen prompts and enter the monitor type you want to configure (in this example, number 2).

```
MONITOR INFORMATION
Type    Resolution    Frequency
----    ----------    ---------
1       1280x1024     72Hz
2       1024x768      75Hz
3       1024x768      70Hz
4       1024x768      75Hz    Flat Panel
5       1280x1024     60Hz
6       1024X768      60Hz
7       640X480       60Hz
8       1280X1024     75Hz    VESA
9       1024X768      75Hz    VESA
10      800X600       75Hz    VESA
11      640X480       75Hz    VESA
12      1280X1024     72HZ    GrayScale
13      1280X1024     50HZ

Enter monitor type selection from list above (or 'x' to exit): 2
        2       1024x768      75Hz

Press <y> to save monitor type <x> to exit monitor selection: y
```

The MONITOR INFORMATION table reappears with the new monitor shown in slot0.

```
MONITOR INFORMATION

Slot #            HPA             State    Resolution      Frequency   Class
---------         -------         ----     ----------      ---------   -------
graphics3         f4000000        Present  Fixed
graphics4         f6000000        Empty


Current Console Path:    core.RS232_.9600.8.none


Stable Store Console Path:GRAPHICS3
```

Trying to change the monitor type on a slot that cannot support that monitor results in a warning, as shown in the following example:

```
        Configuration Menu: Enter command > monitor graphics3
```
```
MONITOR INFORMATION


Reminder: SGIC only supports one type of monitor.
          Changing its monitor type will not have any effect.


Slot #            HPA             State    Resolution      Frequency   Class
---------         -------         ----     ----------      ---------   -------
graphics3         f4000000        Present  Fixed
graphics4         f6000000        Empty


Current Console Path:    core.RS232_.9600.8.none


Stable Store Console Path:GRAPHICS3
```

Trying to change the monitor type on an empty slot, fails and gives you this
warning message:

```
        Configuration Menu: Enter command > monitor graphics4

MONITOR INFORMATION


WARNING: Intended graphics hardware does not exist.
         Be sure to install the hardware after you power down the system.


Slot #          HPA            State   Resolution      Frequency   Class
---------       -------        ----    ----------      ---------   -------
graphics3       f4000000       Present Fixed
graphics4       f6000000       Empty


Current Console Path:    core.RS232_.9600.8.none


Stable Store Console Path:GRAPHICS3
```

Table 26 shows the possible combinations of graphics cards and slots.
Graphics 3, and Graphics 4 refer to the console paths, GRAPHICS3, and
GRAPHICS4, respectively. There is no GRAPHICS 1 or GRAPHICS 2
path. Configurations 6 and 7 use the GRAPHICS3 path even though the
Geometry Accelerator card is in slot 4.

The abbreviations in the table represent the following:

   "S", a color graphics or Hyperdrive series graphics card

   "D", a dual color graphics card

   "V", a VISUALIZE-48 graphics card

Table 26   **Graphics Configurations**

Config. Number	Number of Heads	Graphics 3 10/16	Graphics 4 10/20	Slot 1	Slot 2	Slot 3	Slot 4
1	1	Y				S	
2	1		Y				S
3	2	Y	Y			S	S
4	2	Y	Y			D	
5	2	Y	Y				D
6	1	Y				V	
7	1	Y					V

NOTICE: HPUX 9.05 requires **path console graphics3**.

Do not put a graphics card into slot 1 or slot 2.

In Table 26, use **path console graphics3** for configuration numbers 6, and 7.

Setting the Monitor Type at Power On

If you replace your workstation's monitor with a different monitor type, and do not set the workstation's graphics parameters by using the monitor command before doing so, you need to perform the following:

If your keyboard connects to the PS/2 connector on your system, wait 2 seconds after the Num Lock light flashes near the end of the boot sequence, then press T̄ab̄ to initiate the automatic monitor selection process.

If you have a keyboard that connects to the HIL connector on your system, press T̄ab̄ every three seconds during the boot sequence to initiate the automatic monitor selection process.

Your system queries you for the new monitor type. Select the new type by pressing Ēnter̄. The system queries you to confirm your selection. Press **y** to save this monitor type.

If you don't press y, the system stops cycling. You can use the **monitor graphics** command in the configuration menu to change monitor type.

Displaying the Current Memory Configuration

The following sample screen output using the **memory** command shows: first, a memory configuration table with properly-installed and configured memory (Sample Output 1); and second, output when a SIMM has been improperly installed (Sample Output 2).

To display the current memory configuration for your system, from the Information Menu of the boot console interface, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix. Once you are in the Boot Console Interface Main Menu, type:

```
Main Menu: Enter a command or a menu >  information
```

This places you in the Information Menu. From here type:

```
Information Menu: Enter command >  memory
```

The screen displays a list of the current memory SIMMs configured for your workstation.

Sample Output 1

The following sample shows the memory configuration table when memory SIMMs are properly installed and configured.

```
MEMORY INFORMATION

DETAILED MEMORY CONFIGURATION TABLE

SPA         GROUP    SMC    SMC Status  Bank   Bank Status    Size    Slot/Sys Brd
---         -----    ---    ----------  ----   -----------    ----    ------------
0x00000000  0        0      Configured  3      Configured     64MB    0a/b
                     1      Configured  0      Configured     16MB    2a/b
                     2      Configured  0      Configured     64MB    0a/b
                     3      Configured  3      Configured     16MB    2a/b
0x04000000  1        1      Configured  3      Configured     16MB    1a/b
                     3      Configured  0      Configured     16MB    1a/b

Group 0 interleaved  4 ways over  4 banks
Group 1 interleaved  2 ways over  2 banks

Active, Installed Memory (bytes)  :201326592  of Standard DRAM's
Deallocated Pages (bytes)         -         0
                                            ---------
Available Memory (bytes)          :201326592

Good Memory Required by OS (bytes):  8151040

Memory
HVERSION  SVERSION
--------  ---------
0x0490    0x00000900
```

Sample Output 2

The following sample shows the memory configuration table when a memory SIMM has been improperly installed, or not installed in pairs. In this example, there is only one SIMM installed in slot 4a. Note that now the BAD MEMORY TABLE is displayed.

```
MEMORY INFORMATION

  WARNING:  Memory banks deallocated due to a SIMM size mismatch or a SIMM failure.

            Refer to the ME command in the INFORMATION menu for error information.

DETAILED MEMORY CONFIGURATION TABLE

SPA         GROUP   SMC     SMC Status  Bank    Bank Status     Size    Slot/Sys Brd
---         -----   ---     ----------  ----    -----------     ----    ------------
0x00000000  0       0       Configured  3       Configured      16MB    0a/b
                    1       Configured  0       Configured      16MB    2a/b
                    2       Configured  0       Configured      16MB    0a/b
                    3       Configured  3       Configured      16MB    2a/b
0x04000000  1       1       Configured  3       Configured      64MB    1a/b
                    3       Configured  0       Configured      64MB    1a/b

Group 0 interleaved  4 ways over  4 banks
Group 1 interleaved  2 ways over  2 banks

BAD MEMORY TABLE
SMC     SMC Status      Bank    Bank Status     SIMM Size       Slot/Sys Brd
---     ----------      ----    -----------     ---------       ------------
 1      Present         1       Sizing Error    0MB             4a/b
 3      Present         2       Sizing Error    0MB             4a/b

Active, Installed Memory (bytes)  :201326592  of Standard DRAM's
Deallocated Pages (bytes)         -         0
                                  ---------
Available Memory (bytes)          :201326592

Good Memory Required by OS (bytes):    8151040

        Memory
HVERSION  SVERSION
--------  ---------
0x0490   0x00000900
```

Displaying the Status of the EISA Slots

The **eisa** command lets you identify all EISA cards currently installed on your workstation by showing you the current status of your workstation's four EISA slots. It is available only in the Information Menu.

To use the **eisa** command from the Information Menu of the boot console interface, type:

```
Information Menu: Enter command > eisa
```

The following table appears:

```
Slot #        Slot State          Device Information

-------       ------------        --------------------

  1           Empty               Empty

  2           Unconfigured        HWP1850

  3           Empty               Empty
```

In the table above, "Slot #" is the slot number as seen on the back of your workstation; "Slot State" is the current state of any card in each slot; and "Device Information" is the compressed EISA ID, read from the EISA card itself.

Setting the Auto Boot and Auto Search Flags

auto boot and **auto search** are variables stored in your workstation's non-volatile memory. (Nonvolatile memory retains its contents even after power is turned off.) If you reset these flags to new value, the change takes effect the next time you reboot the workstation.

auto boot boots the operating system whenever your workstation is turned on.

To examine the state of the **auto boot** and **auto search** flags, type the following at the prompt:

```
Configuration Menu: Enter command > auto
```

If **auto boot** is set to **on**, your workstation automatically attempts to boot the operating system when turned on. If **auto boot** is set to **off**, your workstation enters the boot administration mode of the boot console user interface.

The state of the **auto search** flag determines how your workstation seeks a boot device during autoboot. If **auto search** is set to **on**, your workstation will search for other boot devices if the primary boot device is not available. If **auto search** is **off**, your workstation will default to the boot administration mode if it can't see the primary boot device.

To change the state of the **auto boot** or **auto search** flags, type the following at the prompt:

```
Configuration Menu: Enter command > auto boot state
```

or

```
Configuration Menu: Enter command > auto search state
```

where *state* is **on** or **off**.

Autosearch searches for devices in the following order:

Primary Boot Path

Alternate Boot Path

Built-in Fast, Wide SCSI Devices

Built-in Single-Ended SCSI Devices

Built-in LAN bootp servers

NOTICE: Fast Wide SCSI adapter option cards installed in the option slots are not searched unless they are referenced by the primary or alternate boot paths.

EISA cards are not searched.

Displaying and Setting the Fastboot Mode

When **fastboot** is enabled (set to **on**), your workstation does a quick check of the memory and skips I/O interface testing during its power-on self tests. This enables your workstation to complete its boot process quicker. The default factory setting is for **fastboot** to be enabled (**on**).

The **fastboot** mode allows your workstation to boot quickly by performing a less extensive check of the system's memory.

When **fastboot** is disabled (set to **off**), more extensive memory testing and I/O interface testing is performed during the self tests, causing the boot process to take longer.

If you are experiencing difficulty in booting your workstation, set **fastboot** to **off** and reboot the system. The more extensive testing may reveal the error condition.

To display the status of **fastboot**, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot
```

To disable **fastboot**, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot off
```

To enable **fastboot**, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot on
```

Displaying the LAN Station Address

It is sometimes necessary to supply a LAN station address of your workstation to other users. For example, if your workstation is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your workstation to the cluster.

A **LAN station address** of your workstation is the label that uniquely identifies the LAN connection for your workstation at the **link level** (the hardware level).

To display your workstation's LAN station addresses, type the following at the prompt:

```
Configuration Menu: Enter command > lanaddress
```

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

```
LAN Station Addresses:     080009-789abc
```

The address is for the system's built-in LAN.

Displaying System Information

The **all** command allows you to display the system's processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information from the Information Menu, type the following at the prompt:

```
Information Menu: Enter command > all
```

This information is paged to allow you to view it as necessary.

Displaying PIM Information

The **pim** command allows you to display the most recent PIM information for the specified fault type. To display PIM information for a specific fault, from the Service Menu, type the following at the prompt:

```
Service Menu: Enter command > pim processor_number
```

You can use **pim** in the following ways:

pim - gives all fault types

pim 0 - HPMC information on processor

pim 0 *fault_type* - fault type information on processor

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absolute pathname The full pathname of a file, including all the directories leading to it, starting with the root directory ("/") and ending with the filename itself. *See also* **file**, **filename**, **pathname**.

access permissions Settings that allow a user or group of users to read, write, or execute files. *See also* **file access permissions**.

active window The window that is receiving input from the keyboard at the present time. If there is no active window, anything you type is lost. Only one window can be active at a time. The active window is said to have the "keyboard focus."

ANSI The American National Standards Institute, a non-profit organization, made up of various expert committees, that publishes standards for use by national industries. ANSI has adopted the IEEE standards for local area networks.

argument The part of a command line that identifies the file or directory to be acted on.

attachment unit interface (AUI) A transceiver cable that conforms to IEEE 802.3 specifications.

back up v. To make a copy of the file system on a tape or disk that can be stored separately from the original files. Also called "backing up the system" or simply "system backup."

bitmap Generally speaking, an array of data bits used for graphic images. Strict-ly speaking, a pixmap of depth one, capable of representing 2-color images.

boot Short for bootstrap service. A service provided by a short program, stored in the read-only memory of your workstation, that loads the operating system (or any complex program) into main memory. Partner workstations provide bootstrap service to diskless workstations. *See also* **boot ROM**.

boot console interface The interactive firmware that enables you to interact with the hardware of your workstation before the workstation boots the operating system. The boot console interface allows you to perform special tasks, display information, and set certain system parameters.

boot ROM A read-only memory that is incorporated into a workstation for the purpose of starting the operating system, testing the terminal, and producing a standard display.

bootstrap service *See* **boot**.

byte A fundamental character-code unit, usually consisting of 8 bits.

CD-ROM Compact Disc Read-Only Memory. *See also* **CD-ROM disc**, **CD-ROM drive**.

CD-ROM disc CD-ROM discs are identical to the audio compact discs (CDs) used to record stereo music, except that they store data. CD-ROM discs are 120 mm (4.7 inches) in diameter, and use one data surface with a capacity of 600 MB. The data surface contains pits

Glossary

and flat spots arranged in a continuous spiral track, which is read at a constant speed.

CD-ROM drive A random-access, read-only, mass-storage device that uses removable CD-ROM discs. The drive contains a semiconductor laser for reading data optically and an embedded controller with a SCSI interface.

Central Processing Unit (CPU) The part of a workstation that interprets and executes instructions.

child directory *See* **subdirectory**.

click To press *and release* a mouse button. The term comes from the fact that pressing and releasing most mouse buttons makes a clicking sound.

cluster A group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, performs as a file-system server for the cluster clients. *See also* **cluster client**, **cluster node**, **cluster server**.

cluster client A cluster node that does not have a local HP-UX file system. Its file system resides on the cluster server. *See also* **cluster**, **cluster node**, **cluster server**.

cluster node A member of a group of workstations connected via a Local Area Network (LAN). One workstation, the cluster server, performs as a server to the cluster. *See also* **cluster**, **cluster client**, **cluster server**.

cluster server A workstation that provides file access, login access, file transfer, printing, and other services across a network to a defined cluster of systems (cluster nodes) connected via a LAN. *See also* **cluster**, **cluster client**, **cluster node**, **host**.

command An instruction that you enter into the system at a prompt, to execute a program or perform a task. *See also* **shell command**.

command argument Information you provide on a command line to describe the object (usually a file or directory) to be operated on by the command.

command interpreter A program that reads lines of text from standard input (typed at the keyboard or read from a file) and interprets them as requests to execute other programs. An HP-UX command interpreter is called a shell. *See also* **shell**.

command option Information you provide on a command line to indicate any special action you want the command to take. *See also* **default**.

configuration The arrangement of a workstation or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term configuration may refer to a hardware configuration or a software configuration.

control key sequence A keystroke combination used as a shorthand way of specifying commands. To enter a control key sequence, you hold down the control

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key while pressing another key.

cpu *See* **Central Processing Unit**.

CRX color graphics Expanded graphics capability offering 24-plane color, 24-plane Z-buffered color, or 48-plane Z-buffered color capability.

current directory *See* **current working directory**.

current session The work and processes that have been created since you logged into the system (and before you log out again). *See also* **session**.

current working directory The directory in which a relative path name search begins, as well as the directory in which you are currently working. It is also called the working directory or current directory.

cursor The small blinking box displayed in whatever screen is active at a particular time. The cursor marks your current typing position on the screen and indicates which program (HP VUE terminal window or shell) will receive your commands.

daisy-chaining A method of connecting devices where the signal passes from one device to the next in serial fashion along a bus.

DDS tape drive A device that stores data on Digital Data Storage (DDS) cassettes.

default Most commands give you a

choice of one or more options. If you don't specify an option, the command automatically assigns one. This automatic option is called the default. *See also* **command option**.

dialog box A special type of HP VUE screen that is called by the user from a window. Dialog boxes contain controls and settings. To display an example of a dialog box, click the Style Manager button on the Workspace, then click on Color.

directory A special type of object that contains information about the objects beneath it in the HP-UX organizational structure. Basically, it is a file that stores names and links to files and other directories. *See also* **file**.

disk A thin, round plate with a magnetic surface coating on which data is stored by magnetic recording. *See also* **floppy diskette**, **hard disk**, **CD-ROM disc**.

disked workstation A workstation that has its own hard disk drive. *See also* **diskless workstation**, **node**, **partner node**, **workstation**.

diskette *See* **floppy diskette**.

diskless booting Loading the operating system into local memory from the disk of a partner workstation.

diskless workstation A workstation that has no disk. A diskless workstation can use the disk of its partner workstation or other workstations. If necessary, it can also use the computational services of the partner workstation or other work-

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stations. A diskless workstation boots from its partner workstation. *See also* **disked workstation**, **node**, **partner node**, **workstation**.

double click To press and release a mouse button twice in rapid succession.

drag To press and hold down a mouse button while moving the mouse (and the pointer on the screen). *See also* **drop**.

drive *See* **CD-ROM drive**, **DDS tape drive**, **floppy drive**, **hard disk drive**.

drop To release an icon that has been "dragged" to a new position. *See also* **drag**.

EISA (Extended Industry Standard Architecture) An industry standard bus architecture based on and compatible with that used by IBM in their AT series computers.

environment The conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment variables**.

environment variables The set of defined shell variables (some of which are PATH, TERM, SHELL, EXINIT, HOME) that define the conditions under which your commands are executed. These conditions include your workstation characteristics, home directory, and default search paths. *See also* **environment**.

ETHERNET The LAN developed jointly by Digital Equipment Corporation, Intel, and Xerox Corporation, upon which the IEEE 802.3 network is based.

fast, differential SCSI An 8-bit wide bus with high-power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 10 MB per second. *See also* **fast-wide SCSI**, **single-ended standard SCSI**, **Small Computer System Interface**.

fast-wide SCSI A 16-bit wide bus with high-power receivers and drivers, which allows a cable length of up to 25 meters and a speed of up to 20 MB per second. *See also* **fast, differential SCSI**, **single-ended standard SCSI**, **Small Computer System Interface**.

file The basic named unit of data stored on disk. *See also* **directory**, **filename**.

file access permissions The access rights given to a particular file or directory. Every file and directory has a set of access permissions, a code that determines whether a process can perform a requested operation on the file (such as opening the file or writing to it). *See also* **access permissions**.

File Manager The HP VUE application that allows you to manage your files and directories, and to set viewing preferences.

filename The name given to a particular file. *See also* **absolute pathname**, **file**, **pathname**.

file server A workstation whose prima-

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ry task is to control the storage and retrieval of data from hard disks. Any number of other workstations can be linked to the file server in order to use it to access data.

file system The organized set of files and directories on a hard disk.

firmware The control software that is embedded in ROM and is always resident despite the status of the operating system. It handles the booting of the system, initialization of I/O, and starts the loading of the operating system.

floppy diskette A thin, record-shaped plate that stores data on its magnetic surfaces. The system uses heads (similar to heads in tape recorders) to read and write data on concentric disk tracks.

floppy drive A device that stores data on a flexible diskette.

hard disk A type of disk that is rigid as opposed to a floppy diskette, which is flexible.

hard disk drive A device that stores data on a hard disk. The hard disk is a permanent part of the drive and cannot be removed.

HCRX color graphics Accelerated 8-plane or 24-plane graphics. *See also* **CRX color graphics**.

Help Manager The HP VUE application that provides online help.

$HOME The environment variable rep-resenting the home directory. This is the directory in which you are placed after you log in. Typically, this is /users/ *login*, where *login* is your username. *See also* **home directory**.

home directory A shorthand way of referring to a frequently used directory, almost always the login directory.

host *See* **cluster server**.

host name *See* **internet protocol address**.

HP-UX cluster *See* **cluster node**, **cluster server**.

HP Visual User Environment A user interface that draws a graphical layer over the complexities of the other layers of the system (the hardware, operating system, and X Window system), enabling you to control your workstation by directly manipulating graphical objects instead of by typing commands at a command-line prompt.

HP VUE *See* **HP Visual User Environment**.

icon A small, graphic representation of an object. Objects can be "iconized" (turned into icons) to clear a cluttered workspace. Icons can be restored to their original appearance when needed. Whatever processes are executing in an object continue to execute when the object is iconized.

iconify *See* **iconize**.

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iconize To turn a window or shell into an icon. *See also* **icon**.

Initial System Loader The program that actually controls the loading of the operating system.

input device Any of several pieces of hardware equipment used to give information to a system. Examples are the keyboard and the mouse. *See also* **output device**.

input window The window that displays a program's prompt and any commands typed but not yet executed.

internet protocol address (IP address) A string of characters that uniquely identifies a workstation in a network. Also referred to as the IP address, the system name, and the host name.

invisible filename A filename in which the first character is a dot (.). Invisible filenames are not displayed by the listing commands such as **ls** and **ll** without add options, such as **-a**.

IP address *See* **internet protocol address**.

ISL *See* **Initial System Loader**.

kernel The part of the operating system that is an executable piece of code responsible for managing the computer's resources. The kernel controls the rest of the operating system.

LAN *See* **local area network**.

LAN station address *See* **local area network station address**.

link n. A special object that contains the name of another object. When you specify a link as a pathname or part of a pathname, the system substitutes the pathname that the link contains.

v. To join together two or more objects.

local area network (LAN) A data communications system that allows a number of independent devices to communicate with each other. The systems and clusters that share data, hardware, and software resources via Networking Services software.

local area network system address The label that uniquely identifies the local area network (LAN) connection for your workstation at the hardware level.

log in To initially sign on to the system so that you may begin to use it. This creates your first user process. *See also* **username**.

login directory The directory in which you are placed when you log in, usually your home directory. *See also* **home directory**.

Login Manager The program that controls the initial startup of HP VUE and accepts the user's username and password.

login script The shell program that runs at each login, and sets the login environment for your system.

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menu bar An area at the top or bottom of a window that contain the titles of the pull-down or pop-up menus for that application.

minimize button In HP VUE, a push button on the window frame that turns a screen into an icon. *See also* **icon**, **iconize**.

mouse pointer *See* **pointer**.

name A character string associated with a file, directory, or link. A name can include various alphanumeric characters, but never a slash (/) or null character. *See also* **pathname**.

network Two or more workstations sharing information. *See also* **cluster**, **workstation**.

network controller A printed circuit board that passes bit streams between the network and the main memory of the workstation. Coupled with the network transceiver, the controller also handles signal processing, encoding, and network media access.

node A network computer (workstation). Each node in the network can use the data, programs, and devices of other network nodes. Each node contains main memory and has its own disk or shares one with another node. *See also* **disked workstation**, **diskless workstation**, **workstation**.

node name A unique identifying name given to a workstation in a cluster. *See also* **cluster**, **node**.

nonvolatile memory System memory that retains its contents even after workstation power is turned off.

object Any file, directory, or link in the network. *See also* **directory**, **file**, **link**, **pathname**.

operating system The program that supervises the execution of other programs on your workstation. For example, the entire HP-UX system, including the kernel and all HP-UX commands. *See also* **kernel**.

option *See* **command option**.

output device Any of several pieces of hardware used for receiving messages from the workstation. Display screens and printers are examples of output devices. *See also* **input device**.

output window The window that displays a process response to your command.

parent directory A directory that contains other directories, each of which is then called a subdirectory. *See also* **subdirectory**.

partner node A workstation that shares its disk with a diskless node. *See also* **diskless workstation**.

password The word you enter next to the password prompt at login time. Keep your password secret and change it occasionally in order to protect your account from unauthorized use. *See also* **user account**.

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path The hardware address of a device that is attached to the I/O system of your workstation.

pathname A series of names separated by slashes that describe the path of the operating system from some starting point in the network to a destination object. Pathnames begin with the name of the starting point, and include every directory name between the starting point and the destination object. A pathname ends with the name of the destination object. *See also* **name**, **object**.

permissions A set of rights (read, write, execute) associated with an object in the file system. Determines who may use the object.

PID Process Identification. Also referred to as a process ID. *See also* **process ID**.

pointer Sometimes called the "mouse pointer," the pointer shows the mouse location on the screen. The pointer's shape depends on its location. In the HP VUE Workspace, the pointer is an X. On a window frame, the pointer is an arrow.

process A computing environment in which you may execute programs; a program currently running in the system.

process ID A unique identification number assigned to all processes by the operating system. Also referred to as a PID. *See also* **PID**.

program A unit of executable code, in binary or "source" form. Most HP-UX commands and routines consist of pro-

grams.

prompt A message or symbol displayed by the system to let you know that it is ready for your input.

push button A graphic control that simulates a real-life push button. Use the pointer and mouse to push the button and immediately start an action.

RAM Random access memory.

ROM Read-only memory.

root *See* **superuser**.

scroll bar A vertical or horizontal bar located on the side or bottom of a window that allows the user to view information that does not fit within the window.

SCSI *See* **Small Computer System Interface**.

server A program that controls all access to input and output devices.

session The time between when you log in and when you log out. Also called a work session or a login session. *See also* **current session**.

shell A command-line interpreter program used to invoke utility programs. Some examples of HP-UX shells are the Bourne, Korn, Key, and C shells. Sometimes referred to as a command interpreter. *See also* **command interpreter**.

shell command An instruction you

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give the system to execute a utility program or shell script. *See also* **shell script**, **utility program**.

shell script A file that contains commands that the system can interpret and run in a shell.

shutdown The process of taking the system from multi-user state to system administration state.

SIMM *See* **Single In-line Memory Module**.

single-ended standard SCSI An 8-bit wide SCSI bus with standard receivers and drivers, which limits total cable length to 6 meters. *See also* **fast, differential SCSI**, **fast-wide SCSI**, **Small Computer System Interface**.

Single In-line Memory Module A memory board.

slider One of the components of a scroll bar. The slider is the object that is dragged along the scroll area to cause a change.

Small Computer System Interface (SCSI) An IEEE standard for interfacing a computer to multiple, disparate high-speed peripherals such as a floppy disk or a CD-ROM, singly or in combination. *See also* **fast, differential SCSI**, **fast-wide SCSI**, **single-ended standard SCSI**.

standalone A workstation that is not part of a cluster. *See also* **cluster**.

Style Manager The HP VUE application that provides the ability to customize various aspects of your system, including colors, fonts, the keyboard, the mouse, session startup and termination behavior, and access to other workstations.

subdirectory A directory that is located in, or anywhere on a path below, another directory. The directory above the subdirectory is called the parent directory. The subdirectory is also referred to as the child directory. *See also* **parent directory**.

superuser A user with permission to enter the top-level directory and make changes to files and programs that users are not allowed to change. To "become superuser" or "become **root**" means to let the system know that you are now assuming the role of system administrator. You can do this either by logging into the system as **root**, or by typing **su** at a command-line prompt. You must know the **root** password to become **root**.

system administrator The person responsible for system and network installation, updating, maintenance, and security at your site.

system call Invocation of a kernel process by a user program.

system name *See* **internet protocol address**.

terminal window A terminal window is a type of HP VUE window that emulates a complete display terminal. Terminal windows are typically used to fool

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non-client programs into believing they are running in their favorite terminal. When not running programs or executing operating system commands, terminal windows display the command-line prompt. *See also* **HP Visual User Environment**.

title bar The rectangular area between the top of the window and the window frame, that contains the title of the window object.

transceiver A device that transmits and receives signals.

user account The system administrator defines a user account for every person authorized to use the system. Each user account contains the name the computer uses to identify the person (user ID), and the person's password. User accounts also contain project and organization names, to help the system determine who can use the system and what resources each person or organization can use. *See also* **user ID**, **password**.

user ID The name the computer uses to identify you. Your system administrator assigns you a user ID. Enter your user ID during the login procedure when the system displays the login prompt. *See also* **user account**.

username The name that the system recognizes as uniquely yours. Also known as your login name. The username is also the name that identifies you to the mail system and other software requiring secure entry.

utility *See* **utility program**.

utility program A program provided with the operating system to perform a frequently required task, such as printing a file or displaying the contents of a directory. *See also* **command**, **shell command**.

window A rectangular area of the screen for viewing information. HP VUE allows you to create several types of windows on the screen. Each window is a separate computing environment in which you may execute programs, edit text, or read text. *See also* **Workspace Manager**.

Window Manager The HP VUE program that controls the size, placement, and operation of windows.

working directory *See* **current working directory**.

Workspace What the screen becomes when you start HP VUE. Although you can hide the workspace under terminal windows or other graphic objects, you can never position anything behind the workspace. All windows and graphic objects appear stacked on the workspace. *See also* **HP Visual User Environment**, **terminal window**.

Workspace Manager The program that controls the size, placement, and operation of windows on the HP VUE Workspace. The Workspace Manager is a special Window Manager. *See also* **Window Manager**.

workstation A compact, graphics-oriented computer having high speed and high memory capacity. A workstation

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usually includes a keyboard, a monitor,
and a system unit. *See also* **node**, **disked
workstation**, **diskless workstation.**

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