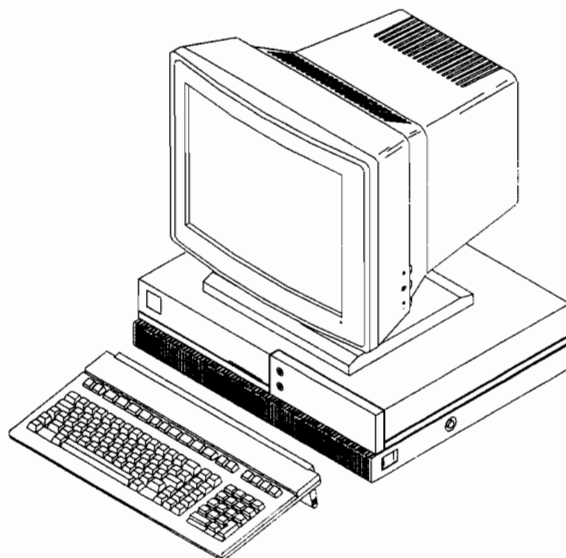


HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 Owner's Guide



Workstation Systems Group

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Contents

Preface

Chapter 1 System Overview

Product Description	1-2
System Unit Controls and Front Panel Connectors	1-4
Power Switch	1-5
TOC Switch	1-5
Audio/Headphone OUT and Audio/Mic IN Connectors	1-5
The Front Panel LEDs	1-6
System Unit Rear Panel Connectors	1-8
SCSI Connector	1-10
HP Parallel I/O Connector	1-10
HP-HIL Connector	1-10
RS-232 Serial Input/Output Connectors	1-10
802.3 Network Connector	1-11
Built-In Graphics Connector	1-11
Optional Connector for EISA or CRX Graphics	1-12
Power Cord Connector	1-15
Audio Connectors	1-15
Monitor Controls, Connectors, and Indicators	1-16
Keyboards	1-22
Keyboard Differences	1-22
Networking Overview	1-25
Mail	1-25
telnet	1-25
rlogin	1-25

ftp	1-26
rcp	1-26
NFS	1-26
Operating System Overview	1-26

Chapter 2 Getting Started Using HP VUE

Starting Up Your Workstation for the First Time	2-2
Starting Up Your Workstation	2-5
Logging In to Your Workstation	2-6
The HP VUE Workspace	2-8
Understanding HP VUE Windows	2-9
Understanding the HP VUE Control Panel	2-12
Using the HP VUE Workspace	2-14
Using the HP VUE Online Help	2-17
Creating a New User Account	2-19
Changing Your Password	2-23
Logging Out from Your Workstation	2-25
Shutting Down Your Workstation	2-27
Creating a Recovery System Tape and Backing Up Your Files	2-31
For More Information	2-31

Chapter 3 Getting Started Using the HP-UX Command Line Shell

Starting Up Your Workstation for the First Time	3-2
Starting Up Your Workstation	3-5
Logging In to Your Workstation	3-6
Creating a New User Account	3-8
Changing Your Password	3-13
Logging Out from Your Workstation	3-14
Shutting Down Your Workstation	3-15
Creating a Recovery System Tape and Backing Up Your Files	3-17
For More Information	3-17

Chapter 4 Setting Up Your Printer

Gathering Printer Information	4-2
Setting Up a Printer	4-3
Setting Up a Printer with HP VUE	4-3
Setting Up a Printer from the HP-UX Command Line Shell	4-12
Printing a File	4-20
Solving Printing Problems	4-21

Chapter 5 Using Your 3.5-Inch Floppy Disk Drive

Setting the Write-Protect Tab on a Diskette	5-2
Inserting and Removing a Diskette	5-3
Formatting a New Diskette	5-4
Transferring Data To and From a Floppy Diskette	5-5
Saving Files to a Floppy Diskette	5-5
Restoring Files from a Floppy Diskette to Your System	5-6
Listing Files on a Floppy Diskette	5-6
For More Information	5-7
Configuring the SCSI Floppy Driver	5-8
Ordering Information	5-8

Chapter 6 Using Your CD-ROM Drive

Inserting and Removing a CD-ROM Disc	6-2
Loading and Unloading a CD-ROM Disc Caddy	6-4
Using Device Files	6-6
Mounting a CD-ROM Disc	6-6
Unmounting a CD-ROM Disc	6-8
Ordering Information	6-9

Chapter 7 Using Your DDS-Format Tape Drive

Setting the Write-Protect Tab on a Data Cassette	7-2
Loading and Unloading a Data Cassette	7-3
Using Your DDS-Format Tape Drive	7-5
Device Files Overview	7-5
Device Files — No Data Compression	7-5
Device Files — Data Compression	7-5
Testing the DDS-Format Tape Drive	7-6
Archiving Data in Compressed and Noncompressed Mode	7-7
Writing to a Data Cassette	7-7
Restoring Files from a Data Cassette	7-8
Listing the Files on a Data Cassette	7-8
Further Command Information	7-9
LED Indicators	7-10
LED Warning Conditions	7-12
Media Life	7-13
Cleaning the Tape Heads	7-13
Media Interchangeability Restrictions	7-14
Ordering Information	7-14

Chapter 8 Solving Problems

Common Problems and Solutions	8-2
LED Error Codes	8-9
Problems with the Optional CRX Graphics	8-13
Dealing with a Boot Failure	8-15
Running System Verification Tests	8-18

Appendix A Safety and Regulatory Statements

Declaration of Conformity	A-2
Emissions Regulations	A-3
Federal Communications Commission (FCC)	A-3
Canadian Department of Communications (CDC)	A-3
VCCI Class 1 ITE	A-4
Emissions Regulations Compliance	A-5
Datacom Users Statement (United Kingdom Only)	A-5
Acoustics	A-5
Electrostatic Discharge (ESD) Precautions	A-6
Laser Safety Statement (For U.S.A. Only)	A-7
LASERTURVALLISUUS	A-8
Warnings and Cautions	A-9

Appendix B Changing Your Workstation's Hardware Configuration

Opening the System Unit	B-2
Closing the System Unit	B-7
Installing Additional Memory	B-8
Setting the Graphics Configuration Switches	B-12
Configuring the CRX Graphics Options	B-15
Setting Up a Single Monitor System	B-16
Setting Up a Dual Monitor System	B-20
Installing an EISA Option Board	B-25

Appendix C SCSI-2 Connections

SCSI-2 Restrictions	C-2
Cables	C-2
Connectors and Terminator	C-3
SCSI-2 Configuration Constraints	C-4
Single-Ended Standard SCSI-2 Bus Configuration Constraints	C-4
EISA Fast, Differential SCSI-2 Bus Configuration Constraints	C-6

Determining SCSI-2 Bus Length	C-7
Single-Ended Standard SCSI-2 Bus Length	C-7
EISA Fast, Differential SCSI-2 Bus Length	C-9
Assigning SCSI-2 Device IDs	C-11
Single-Ended Standard SCSI-2 Device IDs	C-11
EISA Fast, Differential SCSI-2 Device IDs	C-15
Connecting to the SCSI-2 Port	C-17
Single-Ended System SCSI-2 Port Connection	C-17
EISA Fast, Differential SCSI-2 Port Connection	C-18

Appendix D The Boot Console User Interface

Accessing the Boot Console User Interface	D-3
Entering the Boot Administration Mode	D-5
Exiting the Boot Administration Mode	D-5
Getting Help for the Boot Console User Interface Commands	D-6
Booting the Workstation	D-7
Searching for Bootable Media	D-9
Redisplaying the Results of a Search	D-11
Resetting the Workstation	D-11
Displaying and Setting Paths	D-12
Displaying and Setting the Real-Time Clock	D-15
Displaying and Setting the Autoselect Flag	D-16
Displaying and Setting the Secure Boot Mode	D-17
Displaying and Setting the Fastboot Mode	D-18
Displaying the LAN Station Address	D-19

Glossary

Figures

1-1	System Unit Controls and Front Panel Connectors	1-4
1-2	Front Panel LEDs	1-6
1-3	System Unit Rear Panel Connectors	1-9
1-4	CRX-24 or CRX-24Z Graphics Connector	1-13
1-5	CRX-48Z Graphics Connections	1-14
1-6	19-Inch Color Monitor (Model A1097A/A1097B)	1-17
1-7	19-Inch Color Monitor (Model A2094)	1-18
1-8	19-Inch Grayscale Monitor (Model A2088A)	1-19
1-9	17-Inch Color Monitor (Model A1497A/A1497B)	1-20
1-10	15-Inch Color Monitor (Model D1196A)	1-21
5-1	Setting the Floppy Diskette Write-Protect Tab	5-2
5-2	Inserting and Removing the Diskette	5-3
6-1	CD-ROM Disc and Disc Caddy	6-2
6-2	Loading a CD-ROM Disc Caddy	6-4
7-1	Setting the Write-Protect Tab on a DDS-Format Tape	7-2
7-2	Loading a Data Cassette	7-3
7-3	DDS-Format Tape Drive LED Indicators	7-10
8-1	Front Panel LEDs	8-10

Figures

B-1	Disconnecting the Optional Graphics Unit	B-3
B-2	Laying the System Unit Flat	B-4
B-3	Removing the Floor Stand	B-5
B-4	Opening the System Unit	B-6
B-5	Connecting the Optional Graphics Unit	B-7
B-6	Memory Board Locations	B-8
B-7	Memory Connectors	B-9
B-8	Removing Memory Boards	B-10
B-9	Installing Memory Boards	B-11
B-10	Graphics Configuration Sticker	B-13
B-11	Graphics Configuration Switches	B-14
B-12	Removing EISA Option Components	B-26
B-13	Removing the EISA Filler Panel Assembly	B-27
B-14	Installing the Connector Bucket	B-28
B-15	Connecting the EISA Board to the Adapter Board	B-29
B-16	Inserting the EISA Assembly into the System Unit	B-30
B-17	Securing the EISA Board with the End Cap	B-31
B-18	Connecting to the EISA LAN/9000-802.3 Option Board	B-32
B-19	Connecting to the EISA HPIB Host Adapter	B-33
C-1	Connecting to the Single-Ended System SCSI-2 Port	C-17
C-2	Connecting to the EISA Fast, Differential SCSI-2 Port	C-18

Tables

1-1	LED Display During Normal System Activity	1-7
1-2	Serial I/O Pins	1-11
1-3	PC Keyboard to ITF Keyboard Equivalent Keys	1-23
7-1	LED Display Codes	7-11
8-1	Problems Powering Up the System	8-2
8-2	Problems with Loading and Booting the Operating System	8-3
8-3	Problems with the 802.3 Network	8-4
8-4	Problems Using the Floppy Disk Drive	8-5
8-5	Problems Using the CD-ROM Drive	8-6
8-6	Problems Using the DDS-Format Tape Drive	8-7
8-7	Problems with System Memory	8-8
8-8	LED Error Codes	8-11
C-1	Single-Ended Standard SCSI-2 Bus Configuration Constraints	C-5
C-2	EISA Fast, Differential SCSI-2 Bus Configuration Constraints	C-6
C-3	SCSI-2 Bus Length Worksheet for Single-Ended Standard SCSI-2 Bus	C-8
C-4	SCSI-2 Bus Length Worksheet for EISA Fast, Differential SCSI-2 Bus	C-10
C-5	Single-Ended Standard SCSI-2 Device IDs	C-14
C-6	EISA Fast, Differential SCSI-2 Device IDs	C-16
D-1	System Paths	D-12
D-2	Mnemonic Style Notation	D-13

Preface

This owner's guide describes how to use your HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 workstations.

This manual assumes that you have installed your workstation as described in the *HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 Hardware Installation Guide*.

Audience

This guide is intended for use by users of HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 workstations.

Safety and Regulatory Statements

See Appendix A in the back of this manual for the safety and regulatory statements that apply to the HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 workstations.

Release Document(s)

Please refer to the *Release Document(s)* you received with your system or system software for additional information that we may not have been able to include in this guide at the time of its publication.

Related Manuals

For more information, refer to the following manuals:

- *Using HP-UX* (B2910-90001)
- *HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 Hardware Installation Guide* (A2084-90612)
- *System Administration Tasks HP 9000 Series 700 Computers* (B2355-90040)
- *Installing and Updating HP-UX* (B2355-90039)
- *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* (B2355-90038)
- *HP Visual User Environment User's Guide* (B1171-90061)

To order manuals, please contact your local sales office.

Revision History

The revision history for each edition of the manual is listed below:

Edition	Revision History
E1092	First Printing.
E0193	Added information on the CRX-24, CRX-24Z, and CRX-48Z graphics options, and the 15-inch color monitor.

Documentation Conventions

Unless otherwise noted in the text, this guide uses the following symbolic conventions.

literal values Bold words or characters in formats and command descriptions represent commands or keywords that you must use literally. Pathnames are also in bold.

user-supplied values Italic words or characters in formats and command descriptions represent values that you must supply.

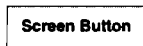
sample user input In examples, information that the user enters appears in color.

output Information that the system displays appears in `this typeface`.



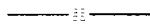
RETURN

A colored rectangle with rounded corners and a key label denotes a key on your keyboard. (In this manual we refer to the **RETURN** key. On your keyboard the key may be labeled either **RETURN** or **ENTER**.)



Screen Button

This colored symbol with a label in it denotes an HP VUE screen button. A screen button is a key or button which is drawn on your workstation's graphic display by HP VUE. It works like a keyboard key, except that you must move the mouse cursor over it and press the left mouse button to activate it. The screen button's label describes its function.



This symbol indicates the end of a chapter or a part of this guide.

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Chapter 1

System Overview

This chapter introduces the HP Apollo 9000 Series 700 Model 715/33 and Model 715/50 workstations. Its purpose is to familiarize you with your workstation, its controls and indicators, and give an overview of the some of the system's networking capabilities.

Included in this chapter are the following topics:

- Product description
- System unit controls and front panel connectors
- Understanding the LEDs
- System unit rear panel connectors
- Monitor controls, connectors, and indicators
- Keyboards
- Networking overview
- Operating system overview

Product Description

The Model 715/33 and Model 715/50 workstations house up to three internal mass storage devices connected to the internal SCSI interface. The first and second disk bays may be fitted with either a 525-MB or 1-GB hard disk drive. The third disk bay may be fitted with either a 3.5-inch floppy drive, a CD-ROM drive or a DDS-format tape drive. Hard disk drives are pre-formatted.

The Model 715/33 and Model 715/50 workstations contain the following key features:

- Operating System HP-UX
- User Interface HP VUE graphical user interface
- Compatibility Source and binary code compatible with the Series 700 product family
- Built-In Graphics 8-plane graphics with choice of one of the following:
 - 19-inch 1280 x 1024 color monitor
 - 19-inch 1280 x 1024 grayscale monitor
 - 17-inch 1024 x 768 color monitor
 - 15-inch 1024 x 768 color monitor
- Graphics Options 19-inch color monitor with choice of one of the following:
 - 24-plane CRX color graphics
 - 24-plane CRX Z-buffered color graphics
 - 48-plane CRX Z-buffered color graphics (available only on the Model 715/50)
- Main Memory 16 MB to 256 MB main memory in the Model 715/50
8 MB to 192 MB main memory in the Model 715/33
- Mass Storage Up to two 3.5-inch SCSI disk drives (525-MB, 1-GB)
Optional 3.5-inch flexible disk drive, CD-ROM drive,
or DDS-format 4-mm tape drive

- Network ETHERNET IEEE 802.3 LAN port

- I/O Two 9-pin RS-232 Ports
 One 25-pin HP parallel port
 8-bit, single-ended SCSI-2 interface
 HP-HIL port for keyboard and other HP-HIL devices
 CD quality stereo input and output
 EISA-bus adapter (optional on the 715/33)

System Unit Controls and Front Panel Connectors

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

Figure 1-1 shows the locations of the system unit controls and front panel connectors.

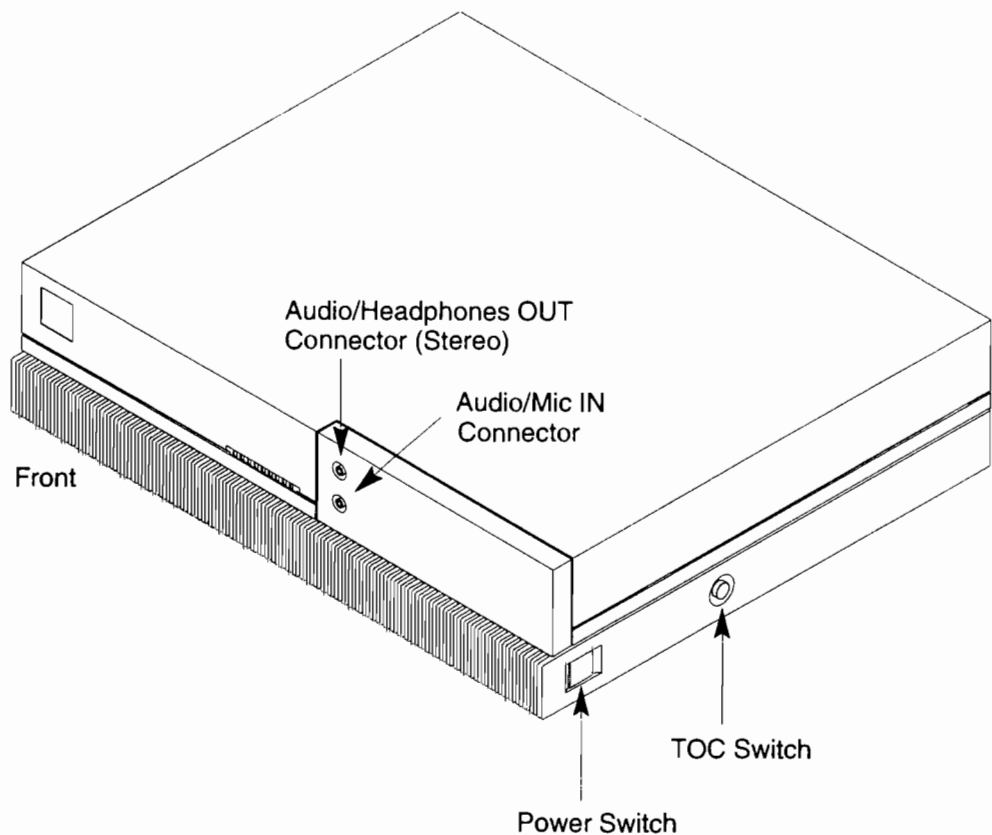


Figure 1-1. System Unit Controls and Front Panel Connectors

Power Switch

Use the Power switch to power the system unit on and off. The power LED lights green when the system unit is powered on.

TOC Switch

Use the TOC switch to reset the system. Do not push the TOC switch unless you have first shutdown your operating system, as described in Chapter 2 or Chapter 3.

Audio/Headphone OUT and Audio/Mic IN Connectors

Your workstation has audio input and output capability through external input and output connectors on the front and rear panels and through an internal speaker.

The Audio/Headphone OUT connector is a stereo headphone output. The Audio/Mic IN connector is a mono microphone input. The ring connector of the microphone jack supplies +5 volts dc for microphones that require it. (A microphone for audio input is not supplied with your workstation.) The audio connectors are standard stereo audio mini-jacks. For more information on the audio capability of your workstation see the *Audio Users Guide* manual.

NOTICE: Hewlett-Packard recommends that, for best quality recording and playback of audio through the external connectors, you use gold-plated plugs available through audio retailers.

The Front Panel LEDs

There are 9 Light Emitting Diodes (LEDs) located on the front panel, as shown in Figure 1–2. The green LED on the far right is the Power LED. It lights when the system unit power is on. The other eight LEDs are amber colored and are labeled 8 through 1, left to right. The rightmost four LEDs (labeled 4, 3, 2, and 1) show that the system is running and communicating over the network. Along with the leftmost four LEDs (8, 7, 6, and 5), they light in certain patterns during system failures (see Chapter 8).

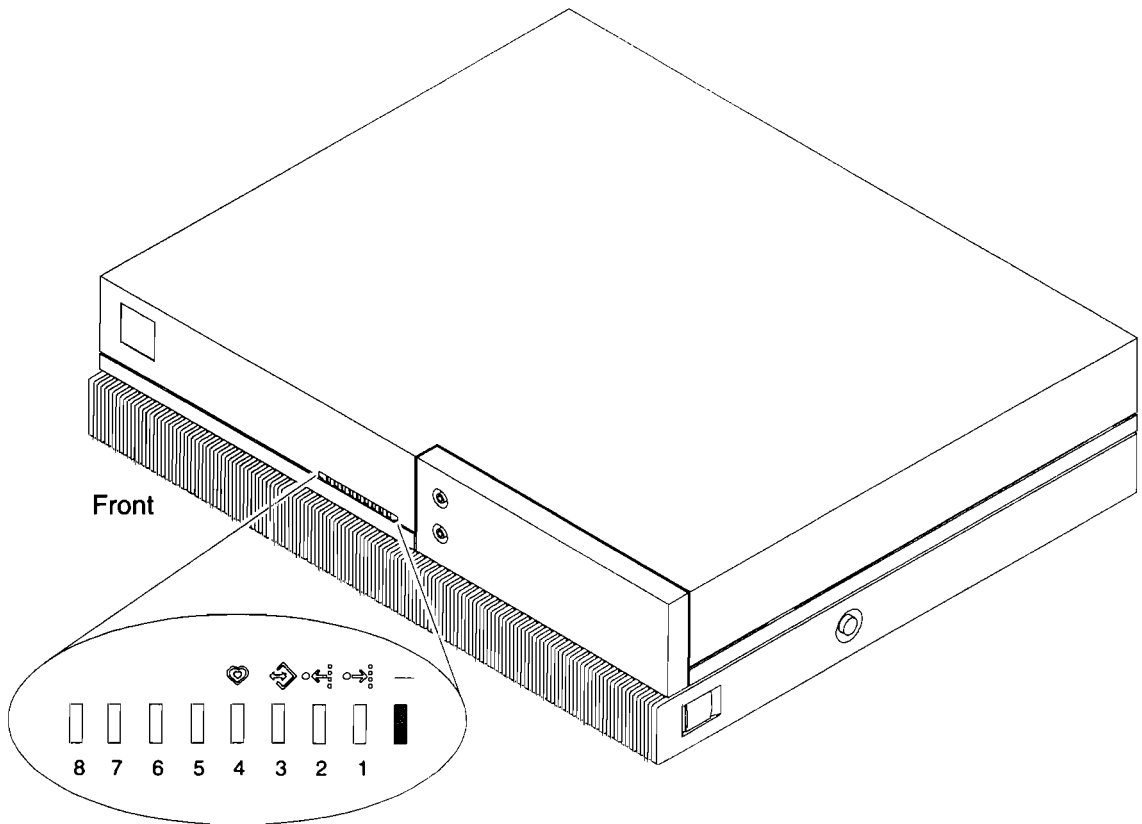


Figure 1–2. Front Panel LEDs

Table 1–1 lists how the LEDs report during normal HP–UX system activity. The green Power LED remains lit while the system is powered on.

Table 1–1. LED Display During Normal System Activity

LED Display	Meaning
<p>8 7 6 5 4 3 2 1</p> <p>□ □ □ □ ■ □ □ □</p>	Operating System Running
<p>□ □ □ □ □ ■ □ □</p>	Disk Access In Progress
<p>□ □ □ □ □ □ ■ □</p>	Network Receive In Progress
<p>□ □ □ □ □ □ □ ■</p>	Network Transmit In Progress
<p>■ = LED On or Flashing</p>	

System Unit Rear Panel Connectors

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

- SCSI connector
- HP parallel I/O connector
- HP-HIL connector
- RS-232 serial input/output connectors
- 802.3 network connector
- Built-in graphics connector
- Optional connector for EISA or CRX graphics
- Power cord connector
- Audio connectors

NOTICE: To maintain FCC/EMI compliance, verify that all cables are fully seated and properly fastened.

Figure 1-3 shows the locations of the connectors on the system unit's rear panel. The symbols shown are depicted on the rear panel.

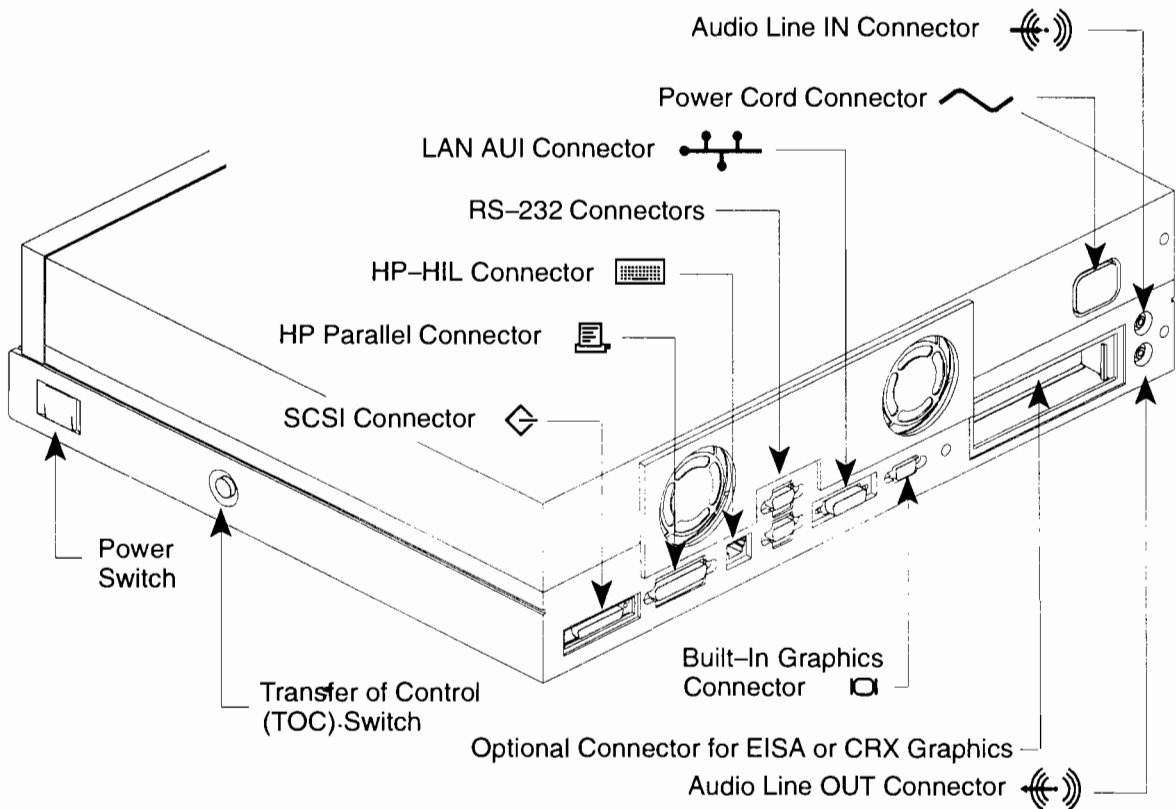


Figure 1-3. System Unit Rear Panel Connectors

SCSI Connector

Use the SCSI connector 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.

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

HP Parallel I/O Connector

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

HP-HIL Connector

The HP-HIL connector provides an interface for the system's keyboard, mouse and other optional HIL input devices. Consult the documentation that accompanies each input device for specific information concerning its use.

RS-232 Serial Input/Output Connectors

You can attach a variety of peripheral devices to the two RS-232 Serial Input/Output (SIO) ports on the workstation. These peripheral devices include printers, plotters, modems, and scanners. Consult the documentation that accompanies each peripheral device for specific information concerning its use.

Both SIO ports are programmable. You can set functions such as bit rate, character length, parity, and stop bits. SIO Ports 1 and 2 are used as interfaces for serial asynchronous devices to the CPU. Both ports operate at up to a 19.2 K baud rate.

Table 1–2 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 1–2. 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

802.3 Network Connector

Figure 1–3 shows the location of the connector for the 802.3 (ETHERNET) network. Connect your ETHERNET transceiver to this connector for communicating with a network.

Built-In Graphics Connector

Use the built-in graphics connector to connect the monitor's video cable to your system if you do not have the CRX graphics option installed. If you do have the CRX graphics option, connect your monitor or external graphics unit to the CRX graphics connector described on the next page. If you are setting up a dual monitor system, connect one monitor to the built-in graphics connector and the other monitor to the optional graphics.

Optional Connector for EISA or CRX Graphics

Your system has a slot for either an optional EISA (Extended Industry Standard Architecture) board or an optional CRX graphics board.

EISA

The one-slot EISA I/O port is a superset of ISA (Industry Standard Architecture). It extends the capabilities of that standard while maintaining compatibility with ISA expansion boards. EISA provides 32-bit memory addressing and 32-bit data transfers. The EISA slot allows quick and easy integration in heterogeneous networks as well as simple connections of high-speed, low-cost disks and other peripherals. Some EISA option boards have external connectors for connecting these devices. Consult the documentation that accompanies each device for specific information concerning its use.

CRX Graphics

If your system has an optional CRX graphics board installed, you will have one of the following graphics connectors:

- Color graphics card (CRX-24 or CRX-24Z graphics) — This device has a D-sub miniature connector which is connected to the monitor by a cable, as shown in Figure 1-4.
- Graphics interface card (CRX-48Z graphics) — This device is connected by a cable to an external graphics processor, which in turn is connected to a video monitor, as shown in Figure 1-5.

Figure 1-4 shows the location of the CRX-24 or CRX-24Z graphics connector on the system unit's rear panel.

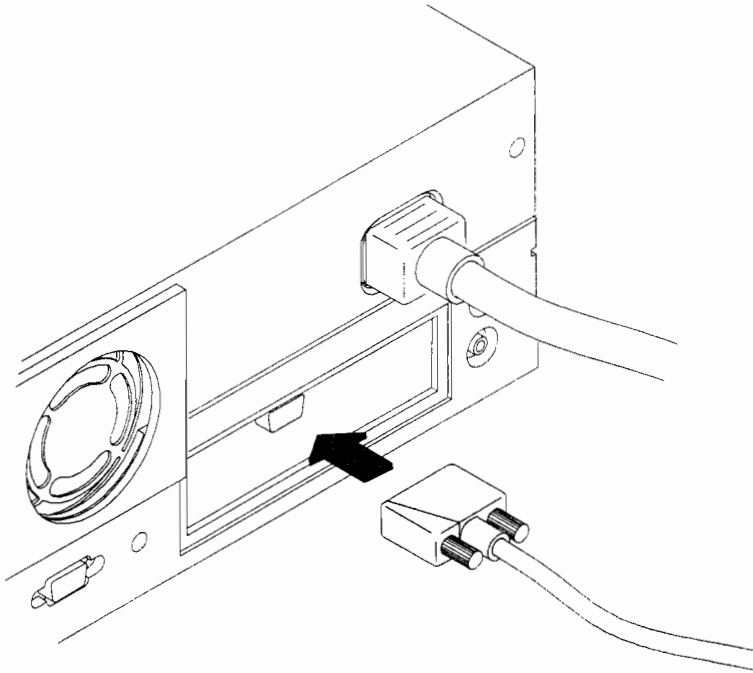


Figure 1-4. CRX-24 or CRX-24Z Graphics Connector

Figure 1-5 shows the locations of the CRX-48Z graphics connections on the system unit's rear panel and on the rear panel of the external graphics processor.

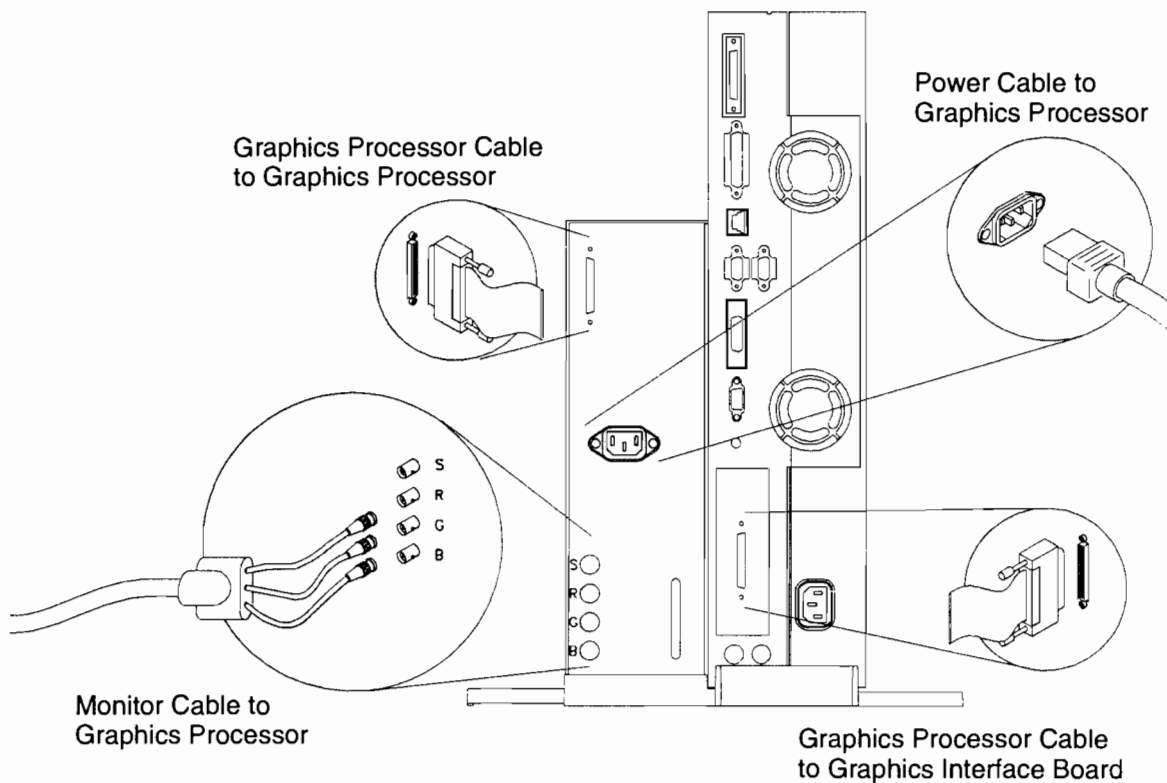


Figure 1-5. CRX-48Z Graphics Connections

Power Cord Connector

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

Audio Connectors

Your workstation has CD quality stereo audio input and output capability through external input and output connectors and an internal speaker. A microphone for audio input is not supplied with your workstation. The audio connectors are standard audio mini-jacks. For more information on the audio capability of your workstation see the *Audio Users Guide* manual.

Monitor Controls, Connectors, and Indicators

Before using your monitor, you should become familiar with its controls, connectors, and indicators.

The Power-On LED, when lit, indicates that the monitor has ac power applied. Use the following controls to adjust your monitor:

- The Power-on button turns the monitor's power on and off.
- The Brightness control adjusts the brightness of the display.
- The Contrast control adjusts the light-to-dark and dark-to-light contrast of the display.
- The Degauss control demagnetizes the color monitor. Degaussing disperses any accumulated magnetic charge from the face of the monitor. Magnetic disturbances such as picture distortion or color impurity can be caused by either moving the monitor from one place to another or swiveling the monitor on its base.

Refer to the manual that came with your monitor for information on any other controls that may be present on your monitor.

The following figures illustrate the monitors for your workstation.

Figures 1-6 and 1-7 show the 19-inch color monitors.

Figure 1-8 shows the 19-inch grayscale monitor.

Figure 1-9 shows the 17-inch color monitor.

Figure 1-10 shows the 15-inch color monitor.

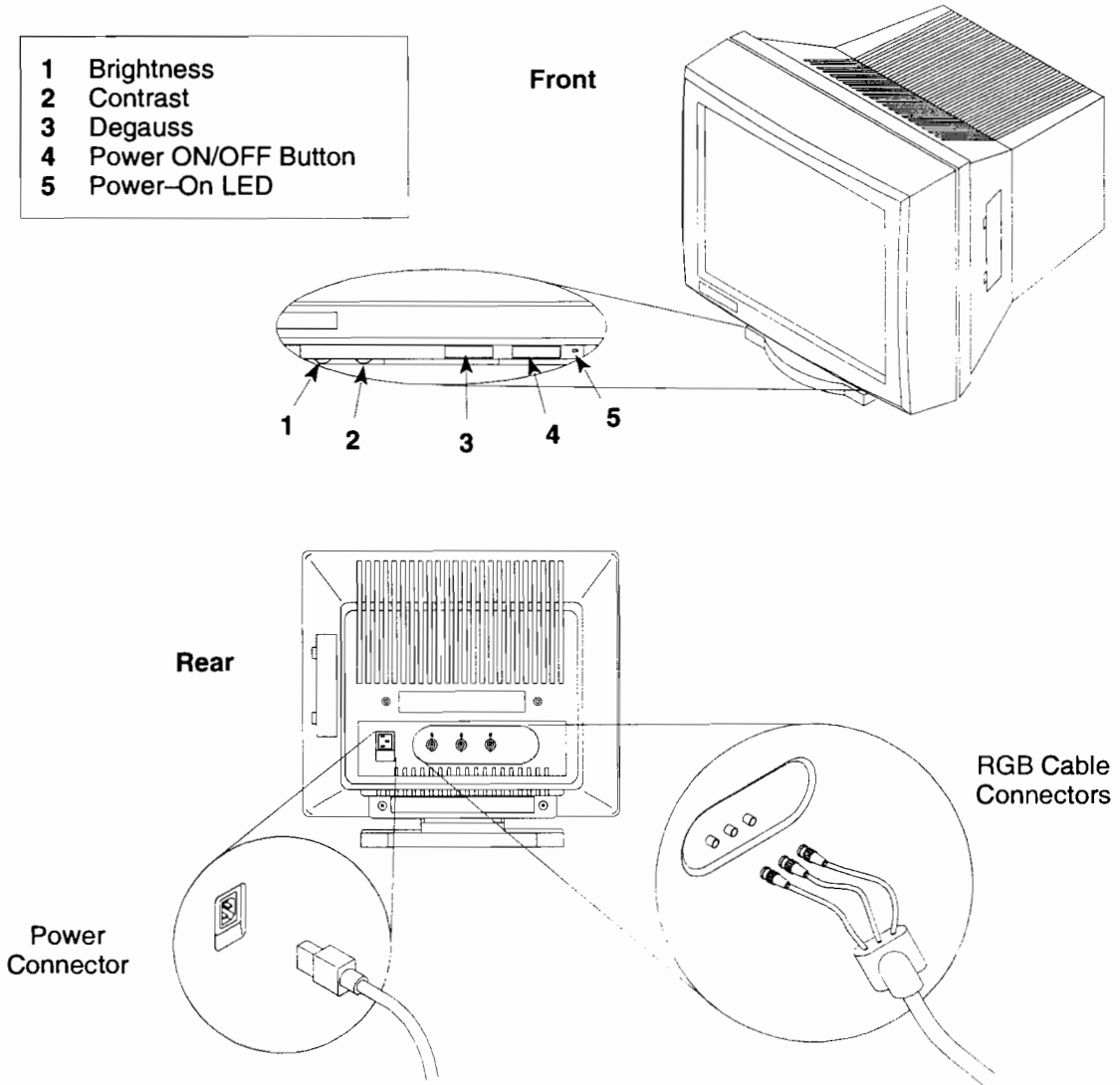


Figure 1-6. 19-Inch Color Monitor (Model A1097A/A1097B)

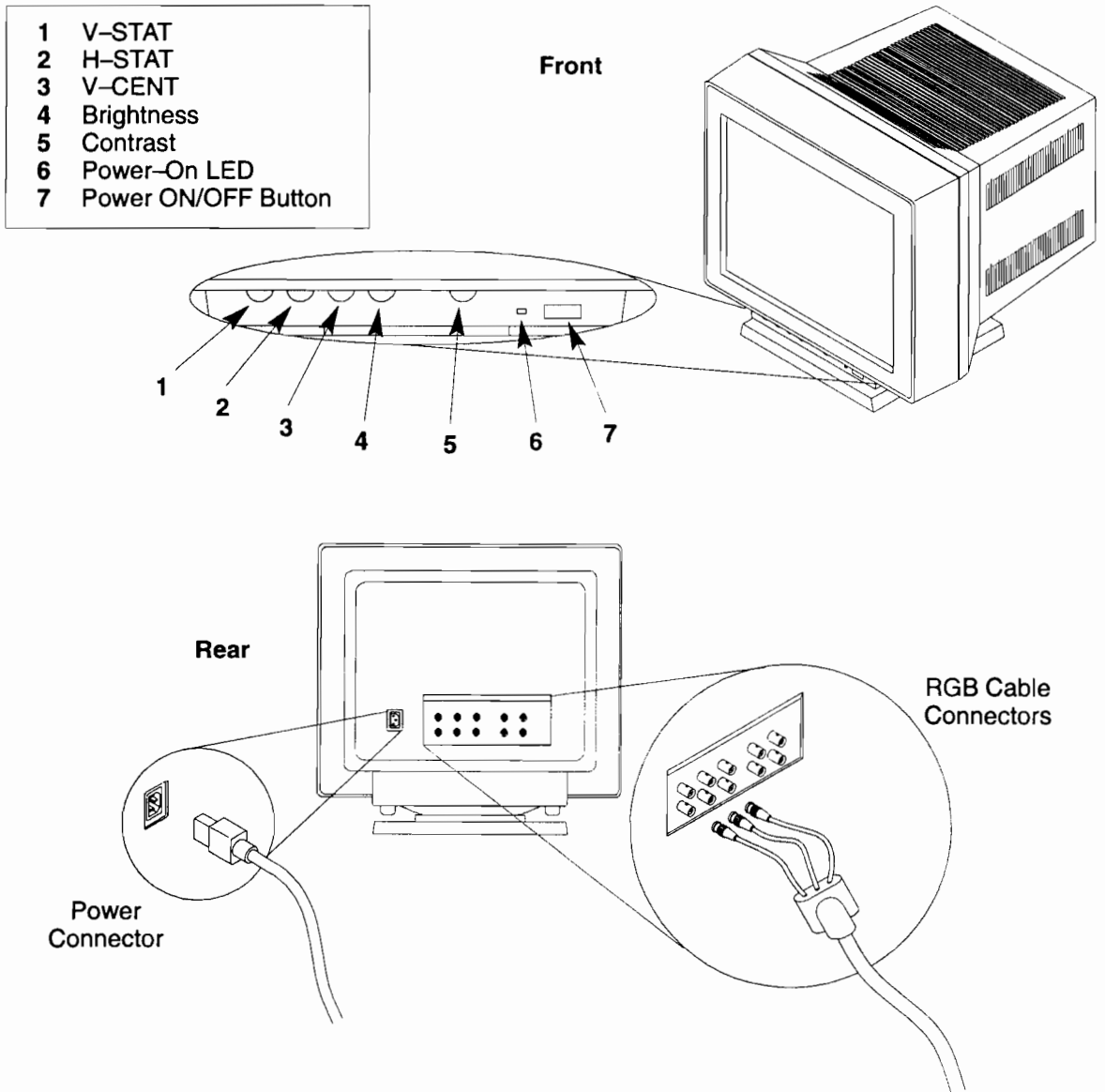


Figure 1-7. 19-Inch Color Monitor (Model A2094)

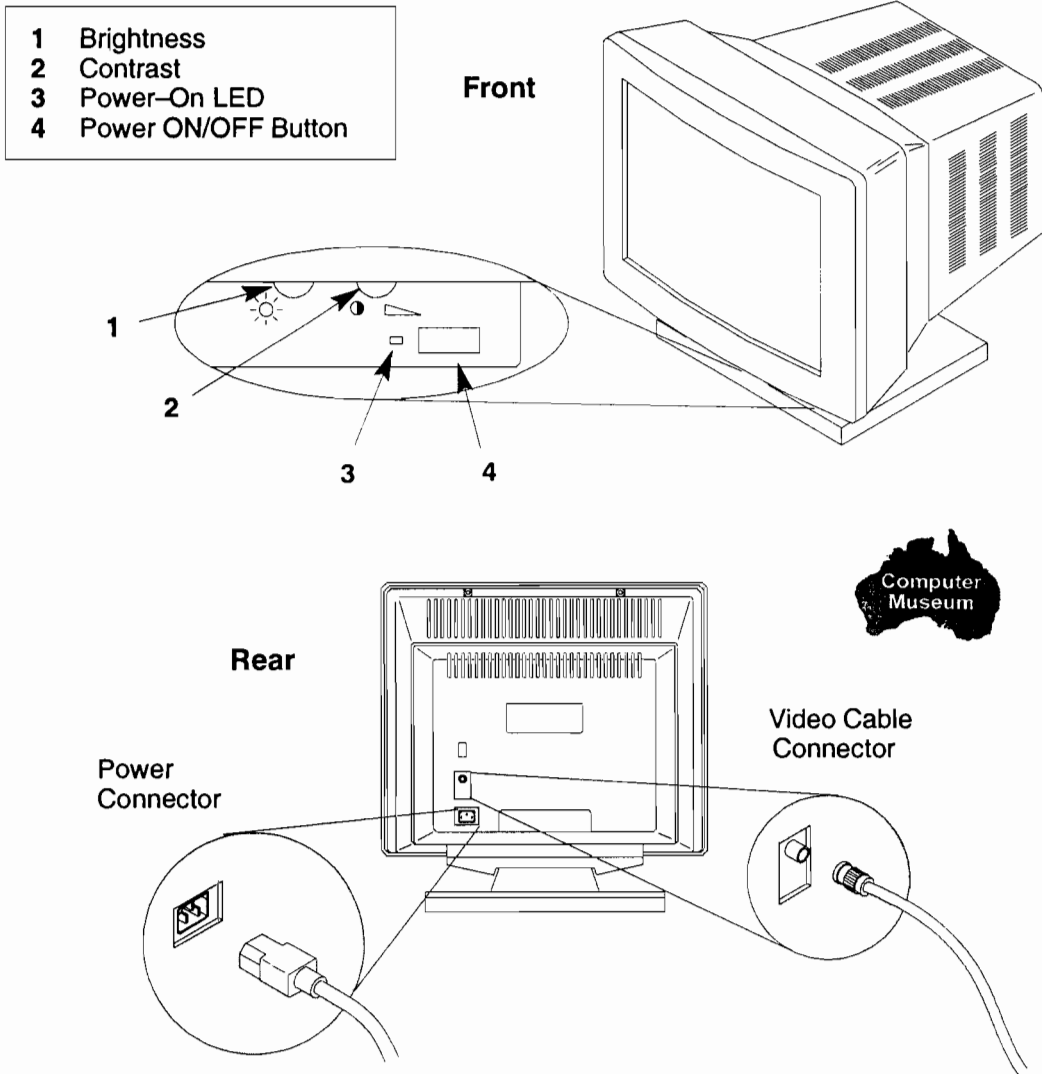


Figure 1-8. 19-Inch Grayscale Monitor (Model A2088A)

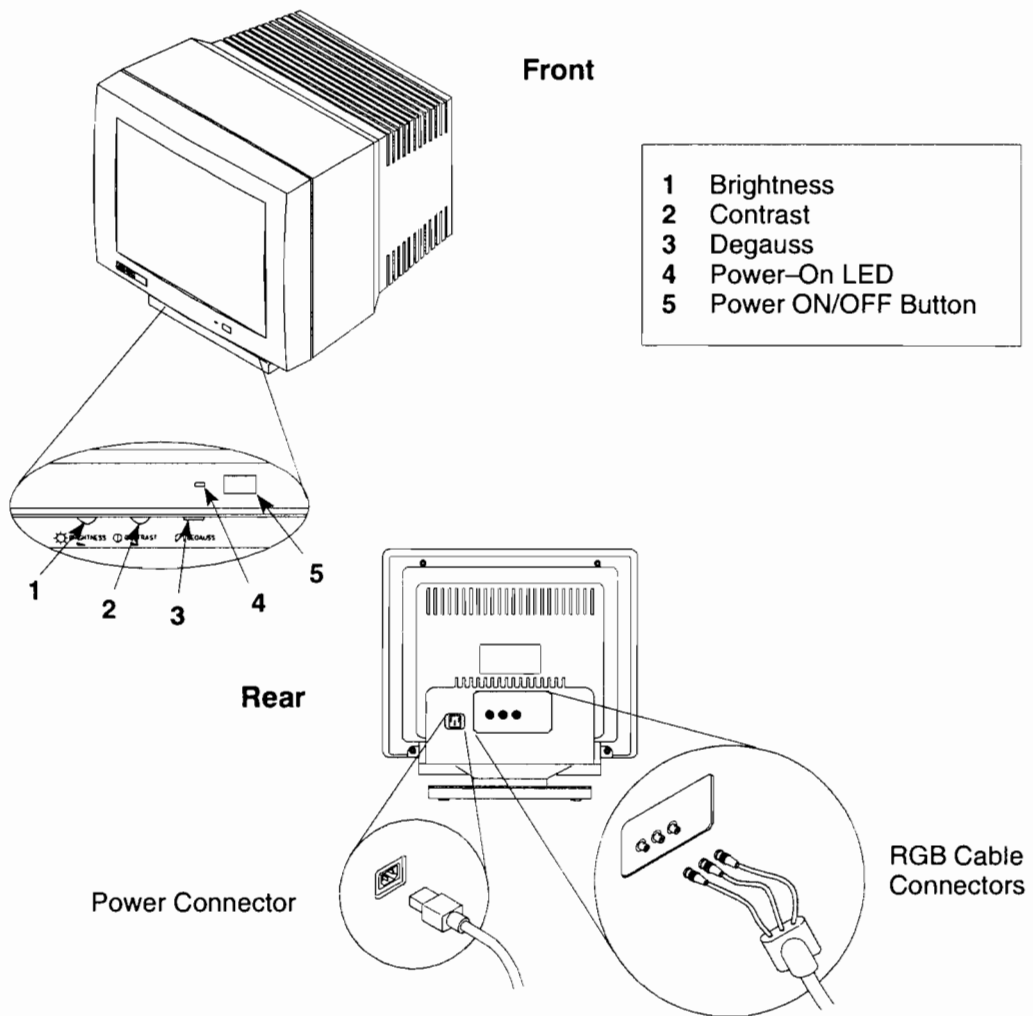


Figure 1-9. 17-Inch Color Monitor (Model A1497A/A1497B)

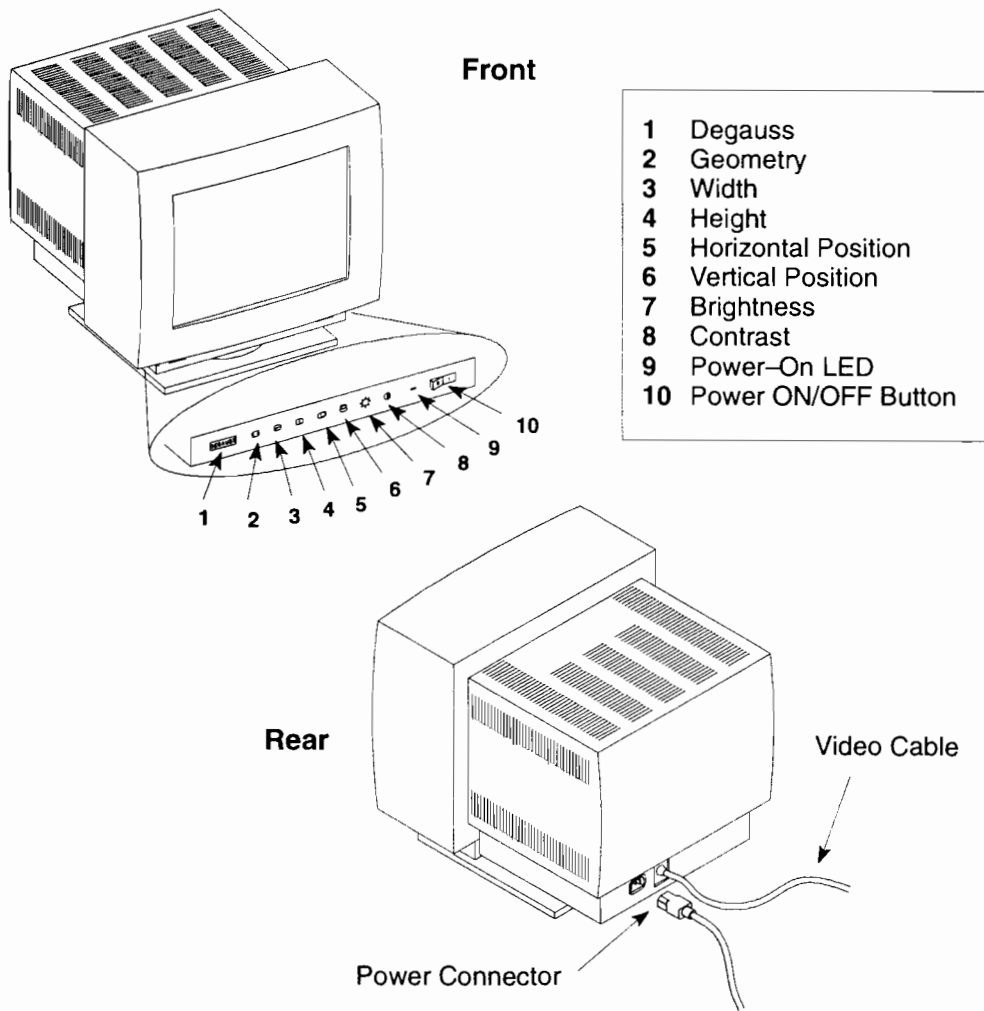


Figure 1-10. 15-Inch Color Monitor (Model D1196A)

Keyboards

There are two types of Hewlett–Packard keyboards available for use with your workstation. They are the following:

ITF Keyboard	(Also known as the HP 46201A/B Keyboard)
PC Keyboard	(Also known as the PC–101 (HIL) Keyboard, the “Enhanced Vectra” Keyboard, and the C1429A/B Keyboard)

CAUTION: Use only devices that conform to the HP–HIL specification with Hewlett–Packard computer systems. 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 ITF and PC keyboards due to the arrangement of the keys, there is also a difference in the keys and their output codes. Some keys on one keyboard (the ITF keyboard for example) may not exist on the other keyboard. These keys generate codes which also 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 PC keyboard for example), an accommodation must be made if the PC 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 1–3 compares the equivalent keys of the ITF and PC keyboards.

NOTICE: Keyboard keys not mentioned in Table 1–3 are the same on both keyboards.

Table 1-3. PC Keyboard to ITF Keyboard Equivalent Keys

PC 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)

(Continued)

Table 1-3. PC Keyboard to ITF Keyboard Equivalent Keys (cont.)

PC Keycap Symbol	ITF Keycap Symbol
Esc	Esc / Del
Insert	Insert Char
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

Networking Overview

Your Model 715/33 or Model 715/50 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 manuals for more information.

Mail

With electronic mail you can 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 HP-UX* 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. For more information on **telnet** read the online 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 HP-UX* 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 HP-UX* manual that came with your workstation and read the on-line 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 HP-UX* 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 the *Using HP-UX* manual that came with your workstation.

Operating System Overview

Your HP 9000 Series 700 Model 715 workstation uses the HP-UX operating system, version 9.01 or later. Instant Ignition systems, (systems with preloaded software), have X-windows and Hewlett-Packard's graphical user interface, HP VUE version 3.0 (or later), installed and configured.

If your Instant Ignition system does not have the kernel preconfigured with all of the device drivers you need, refer to the manual *System Administration Tasks HP 9000 Series 700 Computers* to reconfigure your kernel.

Chapter 2

Getting Started Using HP VUE

This chapter introduces you to your workstation, HP-UX and the Hewlett-Packard Visual User Environment (HP VUE) by explaining the following tasks:

- Starting up your workstation for the first time
- Starting up your workstation
- Logging in to your workstation
- The HP VUE workspace
- Creating a new user account
- Changing your password
- Logging out from your workstation
- Shutting down your workstation

NOTICES: Use this chapter if your workstation is running HP VUE.

If your system does not have HP VUE installed, go to the next chapter entitled “Getting Started Using the HP-UX Command Line Shell.”

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

Starting Up Your Workstation for the First Time

This section describes the procedure for starting up your workstation for the first time after the initial hardware installation. If this is not the first time your workstation has been started up, go to the “Starting Up Your Workstation” section later in this chapter.

If your workstation has preloaded software (the HP-UX operating system is loaded on the hard disk at the factory), it is shipped with a yellow sticker covering the system’s power switch. Follow the instructions in this section to start up a workstation with preloaded software for the first time after the initial hardware installation.

If your workstation does not have preloaded software and you ordered the HP-UX software separately, refer to the manual *Installing and Updating HP-UX* for instructions.

If you have an 8-MB system, see the *Installing and Configuring Your 8 MB Diskless HP 9000 Series 700 Computer* manual for installation and configuration information.

If your system does not have a hard disk installed, or if it has a hard disk installed and you want your workstation to be a cluster client node (cnode), refer to the *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* manual for instructions on setting up clusters and cnodes.

When you turn on your workstation for the first time, you are asked for some information about your system. If you do not have the information, you may press the following key:



HP-UX uses its default value for that question.

Before you start, you should know the following information:

- The *system name* of your computer. (This is sometimes called the *host name*.) The system name cannot exceed eight characters in length. Obtain a system name from your system administrator.
- If you are connecting your system to a local area network, you also need to know the *Internet Protocol address (IP address)* of your computer. This is a four-element code that uniquely identifies your computer among all those located on your network (or any other network). Obtain this address from your system administrator.
- The *time zone* where your computer is located.

Use the following instructions to start up your workstation:

- 1.** Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.
- 2.** Turn on the power to any external peripherals.
- 3.** Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

4. You are prompted for information about your workstation. Enter this information as it is requested. If you do not have the information when prompted for it, press the following key:

RETURN

You can provide the information later by executing the following command from a terminal window:

`/etc/set_parms` **RETURN**

The system will also ask if you want to set a root password. You should set a password for the root account at this time. If you choose not to select a root password, you may do so later as described in the “Changing Your Password” section later in this chapter.

When you have finished answering the questions, the system finishes its boot sequence and the login window opens. See the section entitled “Logging In to Your Workstation” later in this chapter for instructions on logging in.

Starting Up Your Workstation

This section describes the procedure for starting up your workstation. If this is the first time that your workstation has been started up since the initial hardware installation, go to the “Starting Up Your Workstation for the First Time” section earlier in this chapter.

Use the following instructions to start up your workstation:

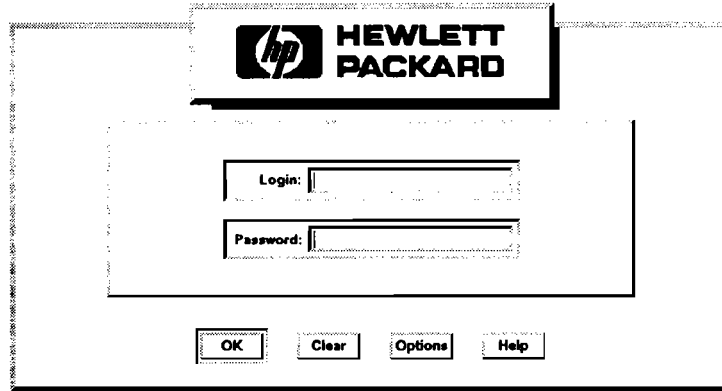
- 1.** Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.
- 2.** Turn on the power to any external peripherals.
- 3.** Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

After two or three minutes, many messages appear on your screen. These messages convey information about the various hardware and software subsystems that are being activated by the boot process. Unless something is wrong with your system, you are not asked to respond to any of these messages.

The login window opens. See the next section entitled “Logging In to Your Workstation” for instructions on logging in.

Logging In to Your Workstation

After your workstation has successfully booted HP-UX and started HP VUE, the following login window opens:



If this window does not appear, see Chapter 8, “Solving Problems.”

1. The first time you log in, you must log in as **root**. To log in as **root**, type the following in the **Login:** box:

`root`

If this is not the first time you have logged in, type your username in the **Login:** box.

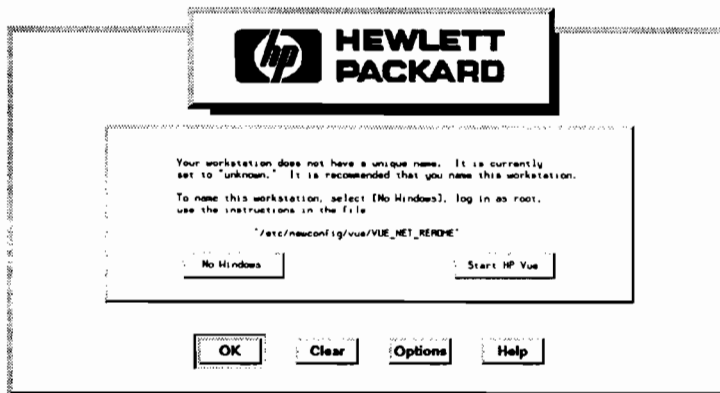
If you don't have a username yet, ask your system administrator to assign you a personal username account or follow the instructions in the section entitled “Creating a New User Account,” later in this chapter. Until you get a username account, you may log in as **root**.

2. If a password has been set for **root**, or if you are logging in with your own user-name, you must enter the correct password in the **Password:** box at this time. The password is secret and does not appear on the screen.

If the copyright notice appears on your screen followed by the HP VUE workspace, you are now logged in. Skip Step 3.

If a window opens over your login window cautioning you about your workstation's hostname being **unknown**, start HP VUE as described in Step 3.

3. If the following window opened over your login window:



Move your mouse pointer to the following and click the left mouse button once:

Start HP VUE

NOTICE: If your system's hostname is unknown, at some later time you should run the program `/etc/set_parms` or contact your system administrator to set a hostname.

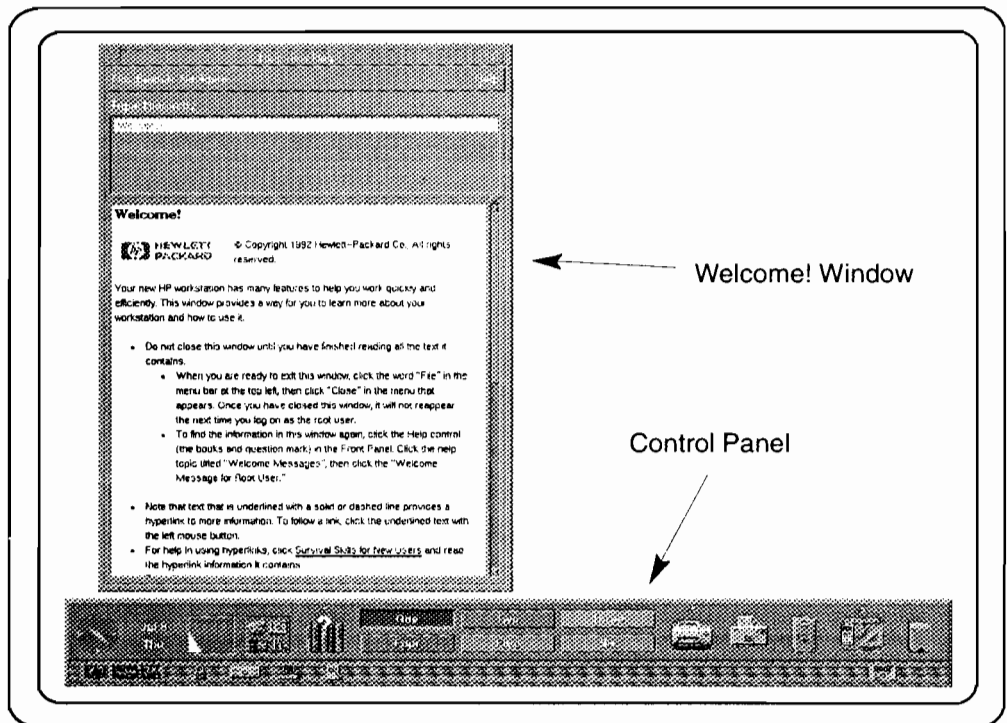
The copyright notice appears on your screen followed by the HP VUE workspace. You are now logged in.

The HP VUE Workspace

This section gives an overview of the HP VUE environment. For more information on using HP VUE, refer to the *HP Visual User Environment User's Guide*.

After you log in, an HP VUE workspace, similar to the following, opens. There is a **Welcome!** window and the **control panel**.

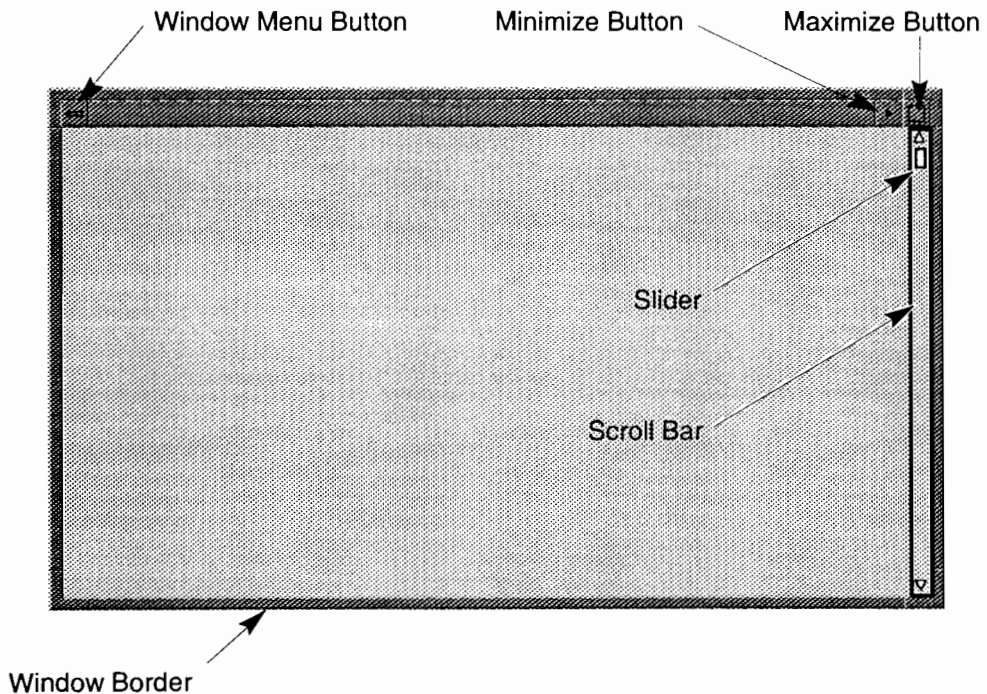
NOTICE: Your initial HP VUE workspace may look slightly different from the one shown.



Understanding HP VUE Windows

This subsection describes some features of windows in the HP VUE environment.

All windows in HP VUE have some characteristics in common. All windows have a **Window Menu Button**, a **Minimize Button**, a **Maximize Button**, and a **Window Border**. Some windows may also have a **scroll bar** on the side or along the bottom. The following illustration shows where each of these window features is located.



Window Menu Button — The **Window Menu Button** creates a menu list from which you can choose a window control action. If you move the mouse pointer to the **Window Menu Button** and press and release the left mouse button once (*single-click*), a **Window Menu** opens with a list of choices. To select a choice from the menu, move the mouse pointer to the desired menu selection and single-click the left mouse button. To close the

Window Menu without making a selection, move the mouse pointer outside of the window and single-click the left mouse button.

Minimize Button — The **Minimize Button** changes a window into an **icon**. (An **icon** is a small picture.) When you minimize a window, whatever process is running in that window keeps running, even though you can't see its progress.

To minimize a window, move the mouse pointer to the window's minimize button and single-click the left mouse button. The window closes and a small icon opens on your HP VUE workspace. To get the window back from an icon, place the mouse pointer on the icon, then quickly press and release the left mouse button twice. (This is called *double-clicking*.) The icon closes and the window reopens.

Maximize Button — The **Maximize Button** changes the size of the window so that it fills the entire workspace. To maximize a window, move the mouse pointer to the window's maximize button and single-click the left mouse button. The window grows. Single-clicking on the maximize button again restores the window to its original size.

Window Border — The **Window Border** has two purposes: to size the window and indicate whether or not the window is the active window.

- To **size a window**, move the mouse pointer to a spot on the window border. The mouse pointer changes to an arrow that points either up, down, left, right or in one of the four possible diagonal directions, depending upon where on the window border the mouse pointer is placed. Press and hold the left mouse button. Move the mouse in the direction of the arrow. An outline appears. Move the mouse until the outline is the appropriate size. Release the mouse button and the window grows or shrinks to the selected size.
- In the HP VUE environment, one window is always the **active window**. The active window is the one which is receiving input from the keyboard at the present time. When a window is the **active window**, it has a different border color than the other windows on the display.

To make a window the **active window**, place the mouse pointer anywhere inside of the window and single-click the left mouse button.

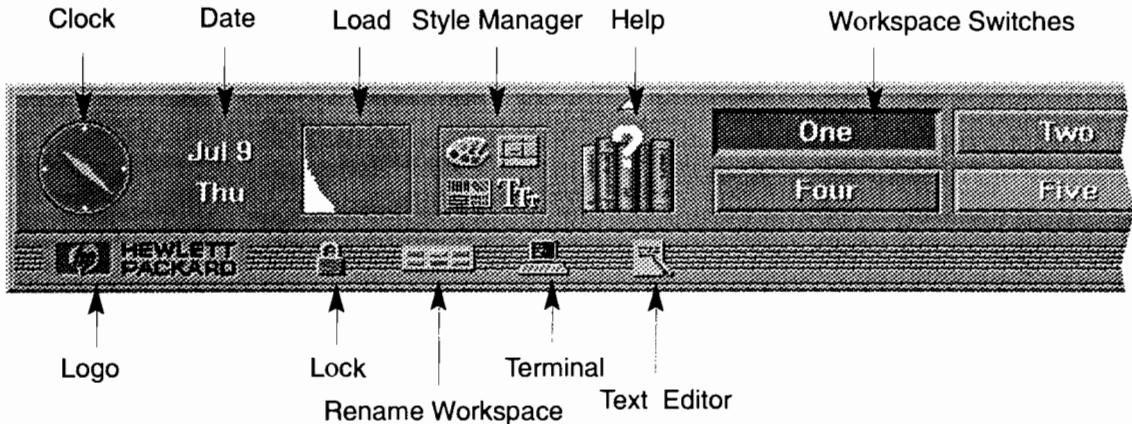
Scroll Bar — A **scroll bar** appears on a window that contains more information than will fit in the window. If there is a vertical scroll bar on the right side of a window, there is more information either above or below the information that is currently displayed in the window. If there is a horizontal scroll bar along the bottom of the window, there is more information either to the left or the right of the information that is currently displayed in the window.

Use the **scroll bar** to view the rest of the window's information by moving the mouse cursor to the **scroll bar slider**. Press and hold the left mouse button and move the mouse until more information scrolls into the window. When the information you wish to view is visible, release the left mouse button.



Understanding the HP VUE Control Panel

This section describes the HP VUE **control panel** buttons and their features.



Clock — The **clock** display shows the current workstation time.

Date — The **date** display shows the current workstation date.

Load — The **load** display shows workstation activity. This is actually an application displaying a window in the **control panel**.

Style Manager — The **style manager** button starts up the **style manager** which allows you to change your display's appearance, and allows you to change the system device behavior (the speed necessary to double-click your mouse, for example).

Help — The **help** control starts up the **help manager** which provides online help.

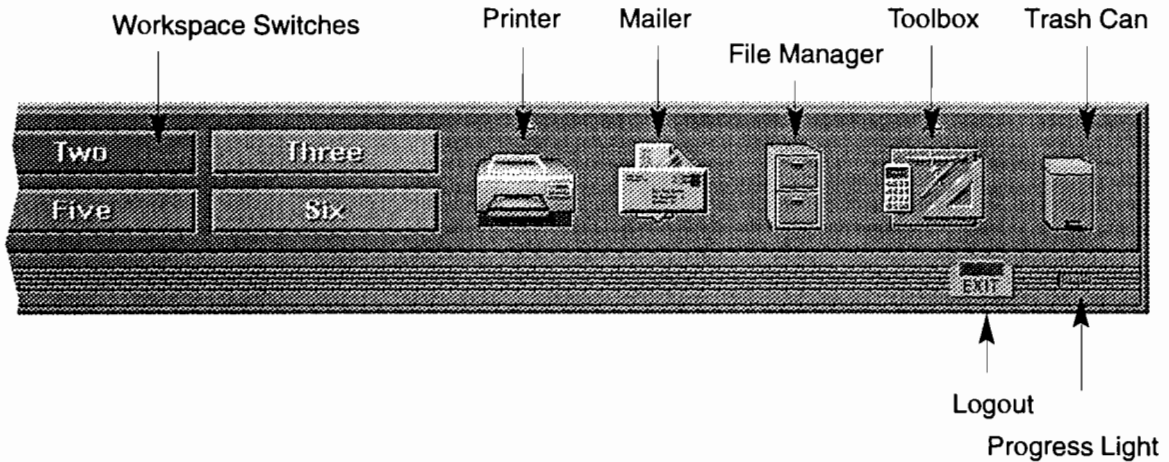
Logo — The **logo** control allows you to see HP VUE version information.

Lock — The **lock** control allows you to lock your workstation, preventing unauthorized input.

Rename Workspace — The **rename workspace** button displays a dialog box that allows you to rename a workspace.

Terminal — The **terminal** control starts up a terminal window, providing access to a command-line prompt.

Text Editor — The **text editor** control starts up the **text editor**. This button is also a drop zone that accepts a file icon dragged from a file manager window.



Workspace Switches — The **workspace switches** allow you to select another workspace.

Printer — The **printer** control allows you to display printer job status on the system default printer. This button is also a drop zone that accepts a file icon. The **printer** sub panel can be configured for printers other than the default.

Mailer — The **mailer** control starts up your electronic mail application. This button is also a drop zone that accepts a file icon.

File Manager — The **file manager** control starts up a **file manager** window showing your home directory.

Toolbox — The **toolbox** control opens your **personal toolbox**. The **toolbox** sub panel opens other toolboxes that contain actions and utilities.

Trash Can — The **trash can** control allows you to display the contents of the trash can. This button is also a drop zone that accepts a file icon.

Logout — Clicking on the **logout** control begins the logout process.

Progress Light — The **progress light** blinks to indicate an activity in progress, such as a new window opening.

Using the HP VUE Workspace

This subsection describes how to perform a few basic tasks in the HP VUE Workspace.

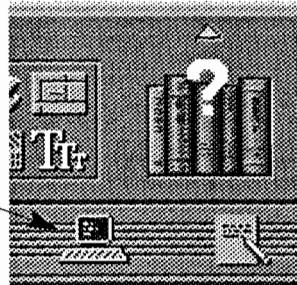
- 1.** Read and explore the information in the *Welcome!* window, then continue with Step 2 below.
- 2.** Close the *Welcome!* window by placing the mouse cursor on the window's **menu button** and double-clicking the left mouse button.

- 3. **Terminal windows** are like user terminals connected to your system. Enter keyboard commands to execute programs and control your workstation in a **terminal window**.

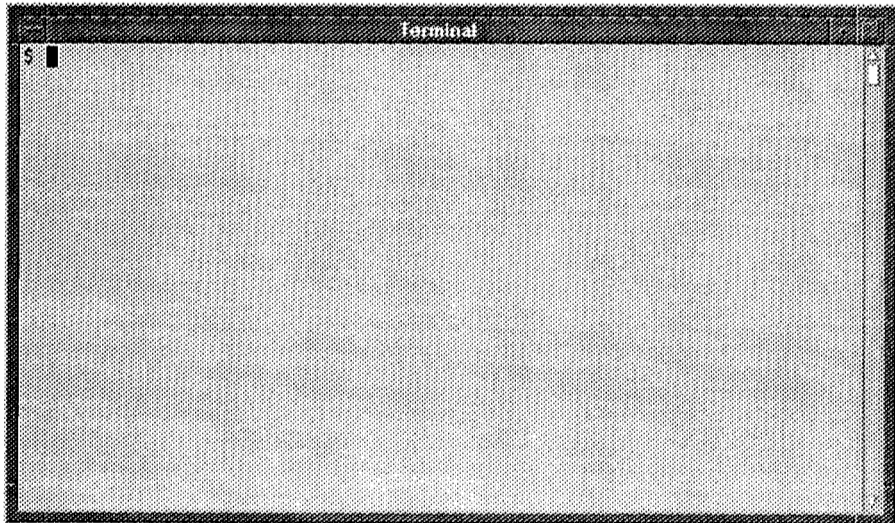
Always use a terminal window to enter commands from the keyboard. You may have several terminal windows open at the same time and execute commands in each terminal window separately.

To create a terminal window, move the mouse pointer to the **terminal control**. (The **terminal control** is the icon on the control panel that looks like a computer terminal, as shown in the following illustration.) Click the left mouse button once. A terminal window opens.

Terminal Control



4. Place the mouse pointer anywhere in the new terminal window and single-click the left mouse button to make it the active window. The border of the window changes color to indicate that it is now the active window. Enter your commands from the keyboard.



5. To display the revision level of HP-UX your system is running, enter the following in your terminal window:

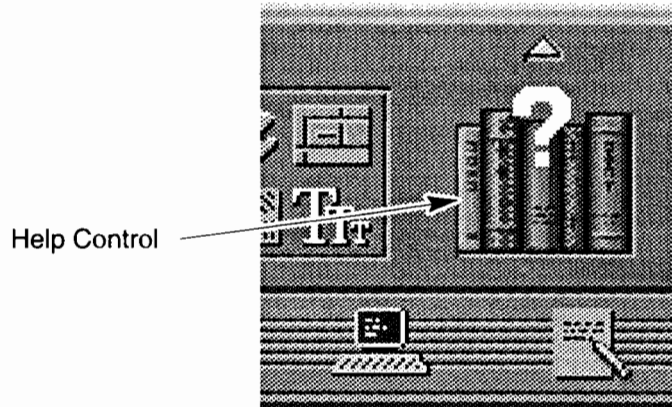
```
uname -r 
```

6. Close the terminal window by double-clicking its window menu button.

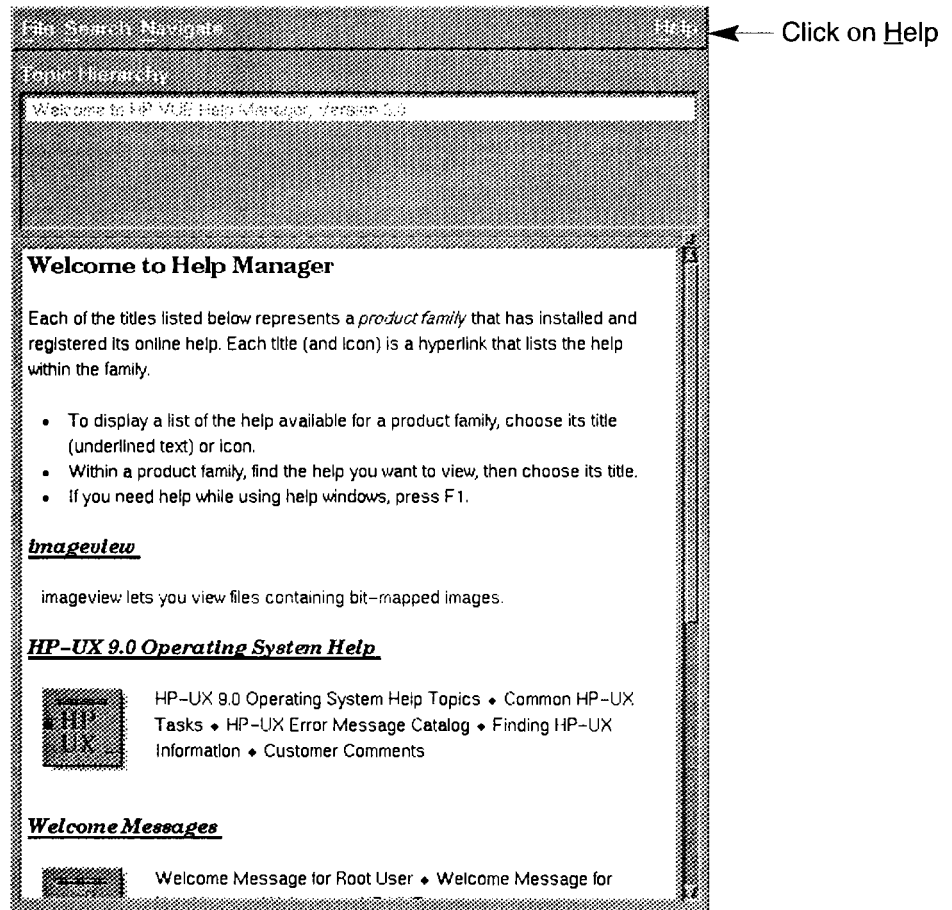
Using the HP VUE Online Help

This subsection describes how to get to the help system.

1. Move the pointer to the **help control**, which is the icon on the control panel with a question mark (?). Single-click the left mouse button once.



2. The help window opens. Click on **H**elp in the upper right hand corner of the window for help on using the help system.



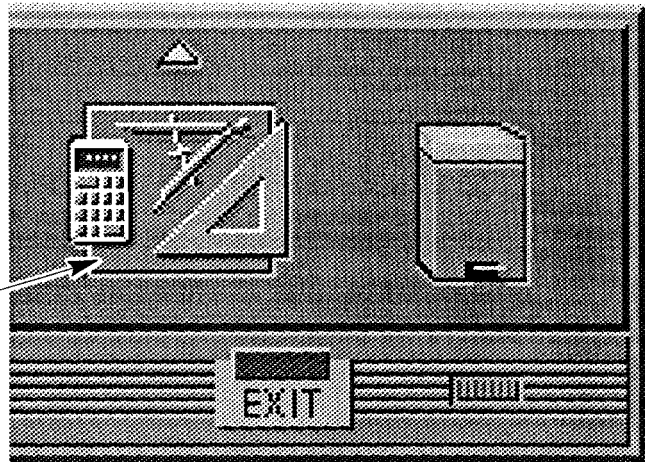
3. To close the help window, place the mouse cursor on its window menu button and double-click the left mouse button. The window closes.

Creating a New User Account

A new user account is created with a system utility called SAM (System Administration Manager). Follow the instructions in this section to create a new user account.

1. Log in as **root**.
2. Move the mouse pointer to the **personal toolbox control**, shown below, and single-click the left mouse button.

Personal Toolbox Control



3. The **PersonalToolbox** window opens. Move your mouse pointer onto the **Sam** icon shown below and double-click the left mouse button.



4. The initial SAM window opens. Double-click on the line labeled as follows:

Users and Groups ->

5. The Users and Groups window opens. Double-click on the line labeled as follows:

Users

6. The **Users** window opens. At the top of the window is a list. Single-click on the following:

Actions

7. A menu opens below the word **A**ctions. Single-click on the following menu selection:

Add...

8. Single-click the box labeled Login Name:, then type the name for the new user account.

9. Single-click on the following:

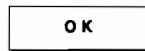


10. A password window opens. Single-click the box labeled Password:, then type the login password for the new user account.

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (-), or an underline (_).

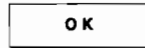
CAUTION: Make sure you do not forget the password you use. If you forget a user account password, log in as root and set a new password with the SAM utility or contact your system administrator.

11. Single-click on the following:



12. You are requested to re-enter the password. Single-click the box labeled Password:, then re-enter the password **exactly** as you entered it the first time.

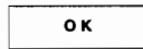
13. Single-click on the following:



- 14.** In a few moments a window opens with the following message:

Task Completed

Single-click the following:



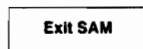
- 15.** At the top of the window is a list. Single-click on the following:

List

- 16.** A menu opens below the word List. Single-click on the following menu selection:

Exit

- 17.** In the main SAM window, single-click on the following:



The SAM window closes.

- 18.** Double-click the window menu button in the upper left corner of the **PersonalToolbox** window. The window closes.

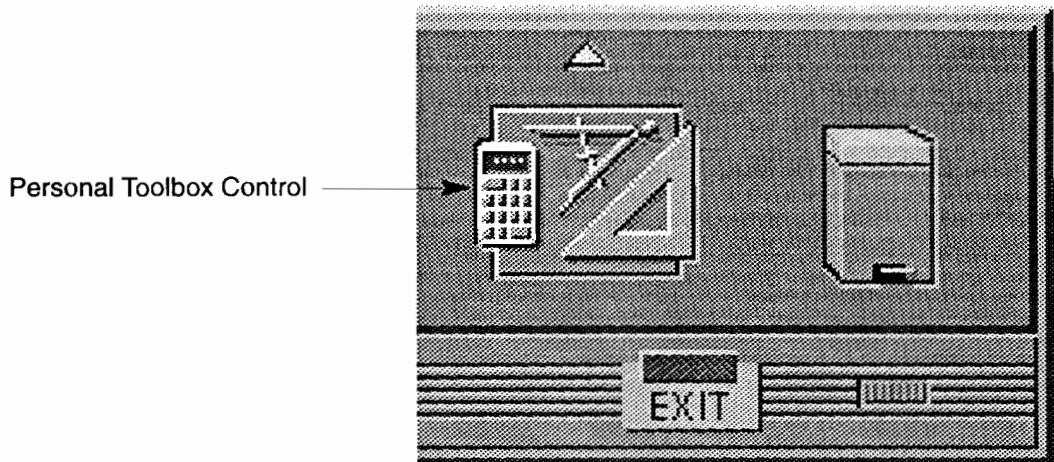
Changing Your Password

This section describes how to change your password from HP VUE.

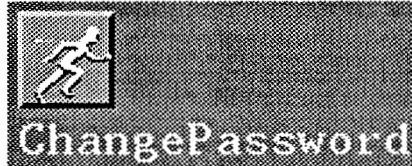
NOTICE: When you log in for the first time, you should add a password for the **root** account to ensure system security.

CAUTION: If you are changing the password for **root**, make sure you do not forget the password you use. If you forget the password for **root**, you cannot log in as **root**; therefore you cannot set a new password for **root**.

1. Log in as the user whose password you want to change.
2. Move the mouse pointer to the **personal toolbox control**, shown below, and single-click the left mouse button.



3. The **PersonalToolbox** window appears. Move your mouse pointer onto the **Change-Password** icon shown below and double-click the left mouse button.



4. A window opens. Enter the password information when prompted.

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (-), or an underline (_).

The process completes and the window closes.

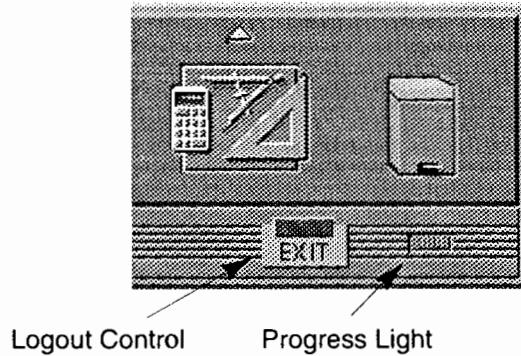
5. Double-click the window menu button in the upper left corner of the **PersonalToolbox** window. The window closes.

Logging Out from Your Workstation

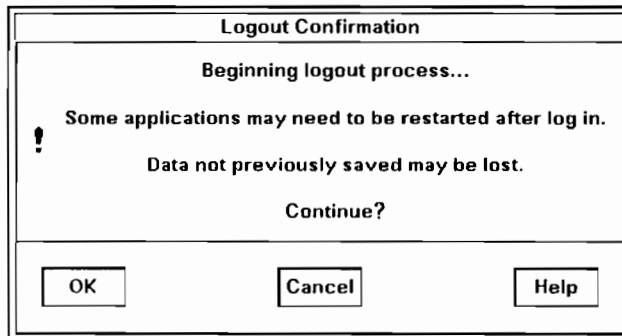
Follow the instructions in this section to log out of your workstation through HP VUE.

1. To log out, move your pointer onto the **EXIT** icon on the control panel. This icon is called the **logout control**. Single-click the left mouse button.

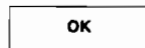
Notice that the **progress light** beside the **logout control** begins to blink. This indicates that the logout process has begun.



2. The following confirmation box opens:



To confirm your logout, click on the following:



A short time later, the login window reopens.

CAUTION: After you log out, **do not** turn off the power to your workstation. You must first perform the shutdown procedure described later in this chapter. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

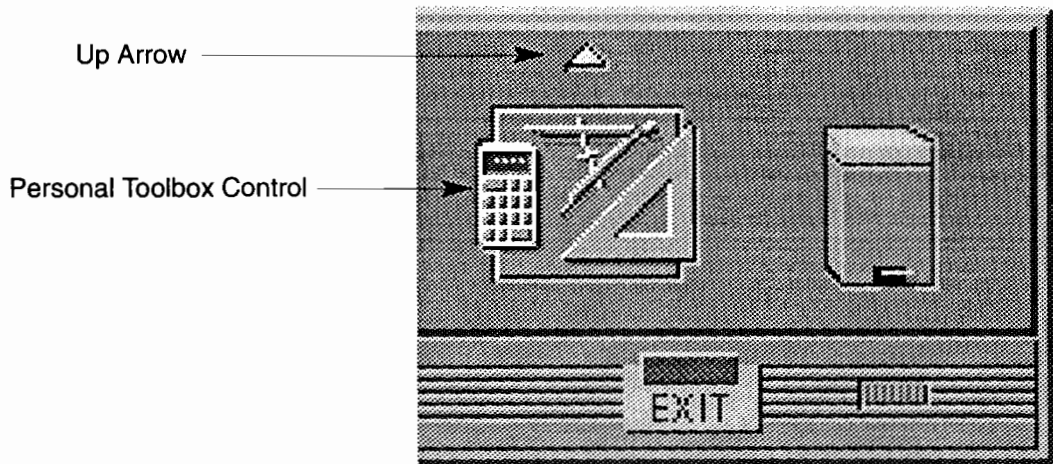
Shutting Down Your Workstation

This section describes how to shut down your workstation using HP VUE.

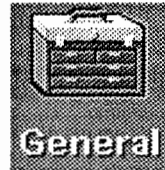
CAUTION: **Do not** turn off the power to your workstation without first performing this shutdown procedure. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

When you need to shut down HP-UX so that your workstation can be powered off, follow these steps. Doing this ensures that your file system remains intact and that you can power up and log in correctly.

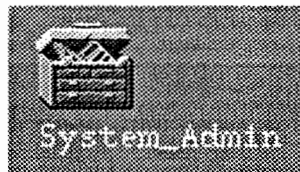
1. Log in as **root**.
2. Move the mouse pointer to the **up arrow** above the **personal toolbox control**, shown below, and click the left mouse button once.



3. The **Toolboxes** subpanel opens. Place the mouse cursor on the **General** toolbox icon, shown below, and single-click the left mouse button.



4. A file manager window appears with a number of icons in it. Double-click the left mouse button on the **System_Admin** toolbox icon.



5. The **System_Admin** window appears. Move the mouse cursor onto the scroll bar slider at the side of the window. Press and hold the left mouse button while moving the mouse toward you. When the **HaltSystem** icon shown below appears, release the left mouse button.



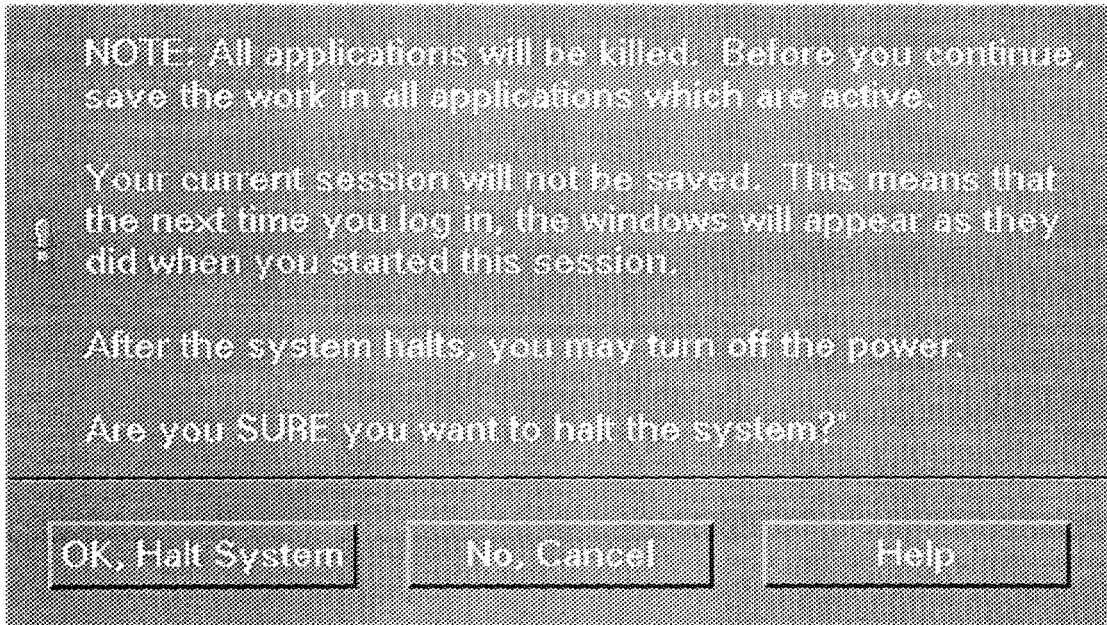
6. Double-click on the **HaltSystem** icon.

7. When the window shown below opens, click on the following:

OK, Halt System

NOTICE: The message displayed in your Halt System window may be different than shown. This does not affect the shutdown procedure.

Any other users who are logged onto your workstation get a warning that the workstation is soon to be unavailable. One minute later, the system begins its shutdown process.



NOTICE: When the Halt System window opens, if you do not want to shut down your system, click on the following:

No, Cancel

- 8.** The shutdown process takes about one minute.

The following message appears in the lower left-hand corner of your screen:

```
Halted, you may now cycle power.
```

When the message appears, you may either push the power switch on the front of the system unit to turn off your workstation or push the TOC switch (Reset Button) to restart your workstation.

Creating a Recovery System Tape and Backing Up Your Files

If you have a tape drive attached to your workstation, you should make a recovery system tape and make periodic backups of your personal files.

For information on creating a recovery system tape and backing up files, see the manual *Using HP-UX* that came with your workstation.

For More Information

To learn more about HP VUE and HP-UX, refer to the manual *Using HP-UX* that came with your workstation.



Chapter 3

Getting Started Using the HP-UX Command Line Shell

This chapter introduces you to your workstation, HP-UX, and the Hewlett-Packard Command-Line Environment by explaining the following tasks:

- Starting up your workstation for the first time
- Starting up your workstation
- Logging in to your workstation
- Creating a new user account
- Changing your password
- Logging out from your workstation
- Shutting down your workstation

NOTICES: Use this chapter if your workstation does not have HP VUE installed.

If your system is running HP VUE, go to the previous chapter entitled “Getting Started Using HP VUE.”

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

Starting Up Your Workstation for the First Time

This section describes the procedure for starting up your workstation for the first time after the initial hardware installation. If this is not the first time your workstation has been started up, go to the “Starting Up Your Workstation” section later in this chapter.

If your workstation has preloaded software (the HP-UX operating system is loaded on the hard disk at the factory), it is shipped with a yellow sticker covering the system’s power switch. Follow the instructions in this section to start up a workstation with preloaded software for the first time after the initial hardware installation.

If your workstation does not have preloaded software and you ordered the HP-UX software separately, refer to the manual *Installing and Updating HP-UX* for instructions.

If you have an 8-MB system, see the *Installing and Configuring Your 8 MB Diskless HP Apollo 9000 Series 700* manual for installation and configuration information.

If your system does not have a hard disk installed, or if it has a hard disk installed and you want your workstation to be a cluster client node (cnode), refer to the *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* manual for instructions on setting up clusters and cnodes.

When you turn on your workstation for the first time, you are asked for some information about your system. If you do not have the information, you may press the following key:

RETURN

HP-UX uses its default value for that question.

Before you start, you should know the following information:

- The *system name* of your computer. (This is sometimes called the *host name*.) The system name cannot exceed eight characters in length. Obtain a system name from your system administrator.
- If you are connecting your system to a local area network, you also need to know the *Internet Protocol address (IP address)* of your computer. This is a four-element code that uniquely identifies your computer among all those located on your network (or any other network). Obtain this address from your system administrator.
- The *time zone* where your computer is located.



Use the following instructions to start up your workstation:

1. Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.
2. Turn on the power to any external peripherals.
3. Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

4. You are prompted for information about your workstation. Enter this information as it is requested. If you do not have the information when prompted for it, press the following key:

RETURN

You can provide the information later by executing the following command:

`/etc/set_parms` **RETURN**

The system will also ask if you want to set a root password. You should set a password for the root account at this time. If you choose not to select a root password, you may do so later as described in the “Changing Your Password” section later in this chapter.

When you have finished answering the questions, the system finishes its boot sequence and the login prompt appears at the bottom of your screen. See the section entitled “Logging In to Your Workstation” for instructions on logging in. If the HP VUE login window appears in the center of your screen, follow the instructions in Chapter 2, “Getting Started Using HP VUE.”

Starting Up Your Workstation

This section describes the procedure for starting up your workstation. If this is the first time that your workstation has been started up since the initial hardware installation, go to the “Starting Up Your Workstation for the First Time” section earlier in this chapter.

Use the following instructions to start up your workstation:

- 1.** Push in the power switch on the monitor. The power LED lights up to indicate that the power is on.
- 2.** Turn on the power to any external peripherals.
- 3.** Push in the power switch on your workstation. The power LED lights up to indicate that the power is on.

After two or three minutes, many messages appear on your screen. These messages convey information about the various hardware and software subsystems that are being activated by the boot process. Unless something is wrong with your system, you are not asked to respond to any of these messages.

The login prompt appears at the bottom of your screen. See the next section entitled “Logging In to Your Workstation” for instructions on logging in. If the HP VUE login window appears in the center of your screen follow the instructions in Chapter 2, “Getting Started Using HP VUE.”

Logging In to Your Workstation

Follow the instructions in this section to log in if your workstation does not have HP VUE installed, or if you selected **No Windows** or **Fail-Safe** from the options menu of the HP VUE login window.

1. The first time you log in, you must log in as **root**. To log in as **root**, type the following at the **Login:** prompt:

```
root 
```

If this is not the first time you have logged in, type your username at the **Login:** prompt.

If you don't have a username yet, ask your system administrator to assign you a personal username account or follow the instructions in the section entitled "Creating a New User Account," later in this chapter. Until you get a username account, you may log in as **root**.

2. If a password has been set for **root**, or if you are logging in with your own username, you must enter the correct password at the **Password:** prompt at this time. The password is secret and does not appear on the screen.

The copyright notice appears briefly, followed by this line:

```
Is your console one of the following: a 2392A, 2393A,  
2397A or 700/92? [y/n]:
```

3. Enter the following:

y 

The following lines then appear:

```
Value of TERM has been set to "hp".  
WARNING: YOU ARE SUPERUSER !!  
#
```

You are now logged in.

Creating a New User Account

A new user account is created with a system utility called SAM (System Administration Manager). Follow the instructions in this section to create a new user account.

1. Log in as **root**.

2. Enter the following:

sam 

3. The initial SAM window opens. Use the arrow keys on your keyboard to select the line labeled as follows:

Users and Groups ->

Press the following key:



4. The Users and Groups window opens. Use the arrow keys on your keyboard to select the line labeled as follows:

Users

Press the following key:



5. The **Users** window opens. At the top of the window is a list. Press the following key to activate the list:



6. Use the arrow keys on your keyboard to select the line labeled as follows:

Actions

Press the following key:



7. A menu opens below the word Actions. Use the arrow keys on your keyboard to select the following menu item:

Add...

Press the following key:



8. A window opens. Enter a name for the new user account. Then press the following key:



9. Press the following key:



10. A password window opens. Type the login password for the new user account.

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (-), or an underline (_).

CAUTION: Make sure you do not forget the password you use. If you forget a user account password, log in as **root** and set a new password with the SAM utility or contact your system administrator.

Press the following key once:



Then press the following key:



11. You are requested to re-enter the password. Re-enter the password **exactly** as you entered it the first time. Then press the following key once:



Press the following key:



- 12.** In a few moments a window opens with the following message:

Task Completed

Press the following key:

RETURN

- 13.** At the top of the window is a list. Press the following key to activate the list:

F4

- 14.** Use the arrow keys on your keyboard to select the following item from the list:

List

Then press the following key:

RETURN

- 15.** A menu opens below the word **List**. Use the arrow keys on your keyboard to select the following menu item:

Exit

Then press the following key:



- 16.** Press the following key:



The SAM utility closes and the command line prompt appears.


Changing Your Password

This section describes how to change your password from an HP-UX command line.

NOTICE: When you log in for the first time, you should add a password for the **root** account to ensure system security.

CAUTION: If you are changing the password for **root**, make sure you do not forget the password you use. If you forget the password for **root**, you cannot log in as **root**; therefore you cannot set a new password for **root**.

1. Log in as the user whose password you want to change.
2. Enter the following:

```
passwd 
```

3. A window opens. Enter the password information when prompted.

NOTICE: A password must contain at least six characters. One of those characters must be a number, a dash (-), or an underline (_).

The process completes and the window closes.

Logging Out from Your Workstation

Follow the instructions in this section to log out from your workstation using an HP-UX command line.

Enter the following at the shell prompt:

exit 

The system closes your login session and in a few moments responds with the login prompt.

CAUTION: After you log out, **do not** turn off the power to your workstation. You must first perform the shutdown procedure described later in this chapter. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

Shutting Down Your Workstation

This section describes how to shut down your workstation using an HP-UX command line.

CAUTION: **Do not** turn off the power to your workstation without first performing this shutdown procedure. If you do not shut down your workstation properly, you may damage the programs and data on your disk.

When you need to shut down HP-UX so that your workstation can be powered off, follow these steps. Doing this ensures that your file system remains intact and that you can power up and log in correctly.

1. Log in as **root**.
2. Set your working directory to the root (*/*) directory by entering the following on the command line:

```
cd / 
```

3. Execute the following shutdown command:

```
/etc/shutdown -h 0 
```

4. Any other users who are logged onto your workstation get a warning that the workstation is soon to be unavailable. One minute later, the system begins its shutdown process.

The shutdown process takes about one minute. When it is complete the following message appears in the lower left-hand corner of your screen:

```
Halted, you may now cycle power.
```

When the message appears, you may either push the power switch on the front of the system unit to turn off your workstation, or push the TOC switch (Reset Button) to restart your workstation.

Creating a Recovery System Tape and Backing Up Your Files

If you have a tape drive attached to your workstation, you should make a recovery system tape and make periodic backups of your personal files.

For information on creating a recovery system tape and backing up files, see the manual *Using HP-UX* that came with your workstation.

For More Information

To learn more about HP-UX, refer to the manual *Using HP-UX* that came with your workstation.





Chapter 4

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 one of the serial (RS-232) connectors on the rear of your workstation by explaining the following tasks:

- Gathering printer information
- Setting up a printer
- Printing a file
- Solving printing problems

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

Gathering Printer Information

Fill in the following list with the requested information and refer to it during the printer setup procedure:

- Printer Interface (check one):

Parallel

Serial (RS232) Port 1

Serial (RS232) 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 Printer

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

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

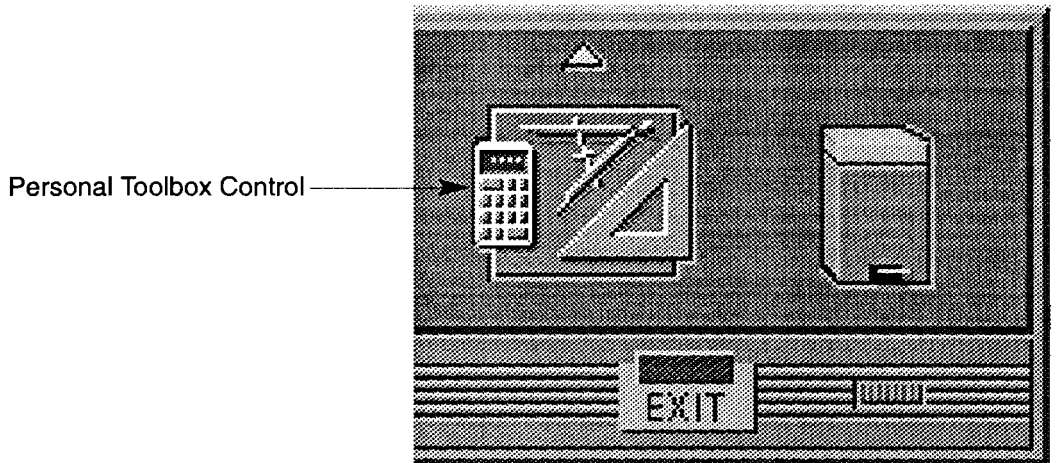
Setting Up a Printer with HP VUE

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

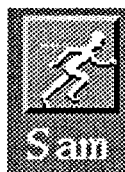
NOTICE: If your workstation does not have HP VUE installed, go to the next subsection entitled “Setting Up a Printer from the HP–UX Command Line Shell.”

1. Log in as **root**.

2. Move the mouse pointer to the **personal toolbox** control, shown below, and single-click the left mouse button.



3. The **PersonalToolbox** window opens. Move the mouse cursor onto the **Sam** icon shown below and double-click the left mouse button.



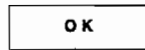
4. The initial SAM screen opens. Double-click on the line labeled as follows:

Printers and Plotters →

5. Another screen opens. Double-click on the line labeled as follows:

Printers/Plotters

If your workstation doesn't have any printers set up, a message window opens. Single-click the following screen button to remove the message window:



6. Move the cursor to the following word at the top of the Printers/Plotters window and single-click the left mouse button:

Actions

7. A menu opens. With the left mouse button, single-click on the following:

Add Local Printer/Plotter

8. If your printer is connected to the parallel port on your workstation, with the left mouse button, single-click on the following:

Add Parallel Printer/Plotter

If your printer is connected to one of the serial connectors on your workstation, with the left mouse button, single-click on the following:

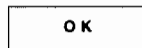
Add Serial (RS-232) Printer/Plotter

A window opens and displays the available parallel or serial interfaces.

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

If you chose **Add Serial (RS-232) Printer/Plotter** in the previous step, more than one serial interface could 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 single-click the left mouse button.

10. With the left mouse button, single-click on the following:



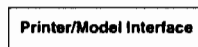
The **Add Local Printer/Plotter** window opens.

11. Place the mouse cursor in the box labeled **Printer Name** and single-click the left mouse button.

12. Enter a name for the system to use for the printer and then press the following:



13. With the left mouse button, single-click on the following:



A window opens.

- 14.** 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 single-click the left mouse button.
- 16.** With the left mouse button, single-click on the following:

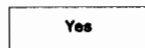


The window closes and the **Add Local Printer/Plotter** window becomes visible again.

- 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 single-click the left mouse button.
- 18.** With the left mouse button, single-click on the following:



- 19.** A small window opens with a message that asks if you want to add your printer to the "Printers" subpanel. With the left mouse button, single-click on the following:



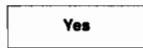
- 20.** Another small window opens with a message that asks if you want to restart the workspace manager. With the left mouse button, single-click on the following:



- 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?

- 22.** With the left mouse button, single-click on the following:

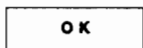


- 23.** A window appears asking if your printer is powered on, has paper, is connected to your workstation, and is online. Check your printer to make sure it meets these requirements.

With the left mouse button, single-click on the following:



- 24.** With the left mouse button, single-click on the following at the bottom of the **Messages** window:



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

- 25.** Move the cursor to the following word at the top of the **Printer/Plotter Manager** window and single-click the left mouse button:

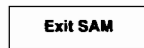
List

- 26.** A menu opens. With the left mouse button, single-click on the following menu item:

Exit

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

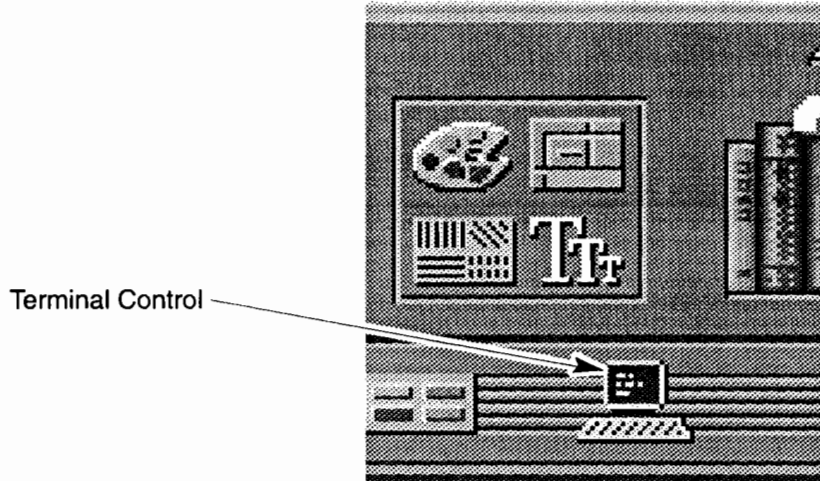
- 27.** With the left mouse button, single-click on the following:



The **SAM** window closes.

- 28.** Double-click the window menu button in the upper left corner of the **PersonalToolbox** window. The window closes.

- 29.** To test the printer, first create a terminal window by single-clicking the **terminal control** on the **control panel** as shown.



A terminal window opens.

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

- 31.** If you made your printer the default system printer, enter the following command to test your printer:

```
lp .profile 
```

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

```
lp -d printername .profile 
```

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

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



Setting Up a Printer from the HP-UX Command Line Shell

Follow the instructions in this section to set up a printer if your system does not have HP VUE installed.

If your workstation is running HP VUE, refer to the previous subsection, “Setting Up a Printer with HP VUE,” for instructions on setting up a printer.

- 1.** Log in as **root**.
- 2.** Enter the following:

san 

- 3.** The SAM window opens. Use your keyboard’s arrow keys to select the line labeled as follows:

Printers and Plotters

Press the following key:



4. Use your keyboard's arrow keys to select the line labeled as follows:

Printers/Plotters

Press the following key:



If your workstation doesn't have any printers set up, a message window opens. Press the following key to remove the message window:



5. At the top of the window is a list. Press the following key to activate the list:



6. Use your keyboard's arrow keys to select the following item from the list:

Actions

Press the following key:



7. A menu opens below the word **A**ctions. Use your keyboard's arrow keys to select the following menu selection:

Add Local Printer/Plotter ->

Press the following key:



8. Another menu opens. If your printer is connected to the parallel port on your workstation, use your keyboard's arrow keys to select the following menu selection:

Add **P**arallel Printer/Plotter

If your printer is connected to one of the serial connectors on your workstation, use your keyboard's arrow keys to select the following menu selection:

Add Serial (**R**S-232) Printer/Plotter

Press the following key:



A window opens and displays the available parallel or serial interfaces.

9. If you chose **Add Parallel Printer/Plotter** in the previous step, only one parallel interface should be listed. Use your keyboard's arrow keys to select the listed parallel interface.

Press the following key until **OK** is selected:



Then press the following key:



If you chose **Add Serial (RS-232) Printer/Plotter** in the previous step, more than one serial interface could 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. Use your keyboard's arrow keys to select the serial interface that corresponds to the connector to which you have connected your printer.

Press the following key until **OK** is selected:



Then press the following key:



10. Enter a name for the system to use for the printer and then press the following:



11. Press the following key:



The **Valid Models/Interfaces** list opens.

12. Use your keyboard's arrow keys to select the model number of your printer from the menu.

Then press the following key:



13. If you want your printer to be set as the system default printer, press the following key until **Make this the system default printer** is selected:



Then press the following key:



14. Press the following key until **OK** is selected:



Then press the following key:



- 15.** 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?

Press the following key:



- 16.** A window opens asking if your printer is powered on, is connected to your workstation, and is online. Check your printer to make sure it meets these requirements.

Press the following key:



- 17.** The message **Task completed** appears.

Press the following key:



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

- 18.** At the top of the window is a list. Press the following key to activate the list:



- 19.** Use your keyboard's arrow keys to select the following item from the list:

List

20. A menu opens. Use the arrow keys to select the following menu item:

Exit

Then press the following key:



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

21. Press the following key until Exit SAM is selected:



Then press the following key:



- 22.** If you made your printer the default system printer, enter the following command to test your printer:

```
lp .profile 
```

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

```
lp -d printername .profile 
```

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

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

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

Printing a File

To print a file, use one of the following command lines:

```
lp filename RETURN
```

or

```
lp -d printername filename RETURN
```

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.

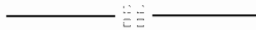
For more information on the **lp** command, enter the following:

```
man lp RETURN
```

Solving Printing 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.





Chapter 5

Using Your 3.5–Inch Floppy Disk Drive

This chapter describes how to perform the following tasks with your 3.5–inch floppy disk drive:

- Setting the write–protect tab on a diskette
- Inserting and removing a diskette
- Formatting a new diskette
- Transferring data to and from a floppy diskette

The instructions in this chapter assume that your 3.5–inch floppy disk drive is set to the factory default address of SCSI ID 0.

NOTICE: 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.

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 5-1.

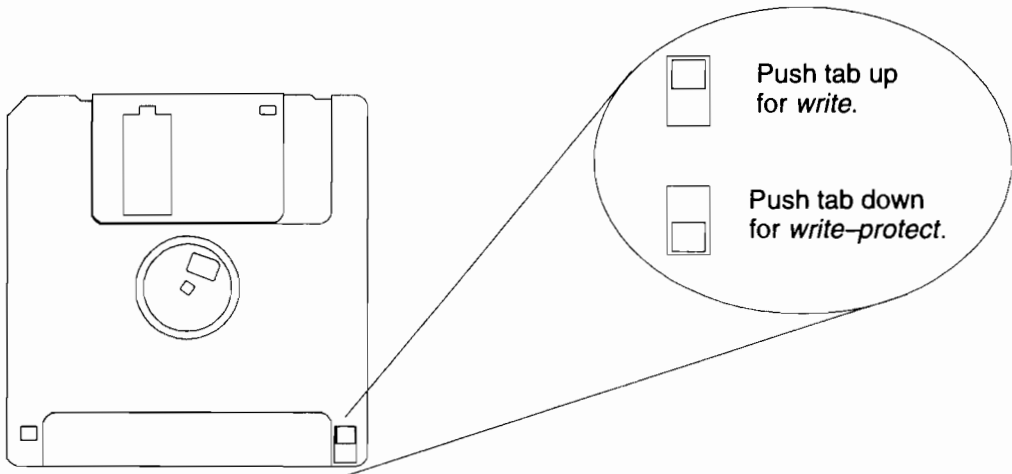


Figure 5-1. Setting the Floppy Diskette Write-Protect Tab

To protect files on a diskette from being overwritten, set the write-protect tab to the *write-protect* position, as shown in Figure 5-1.

NOTICE: The write-protect tab should always be in the *write* position for formatting a new diskette and creating a new file system on 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 5-2.

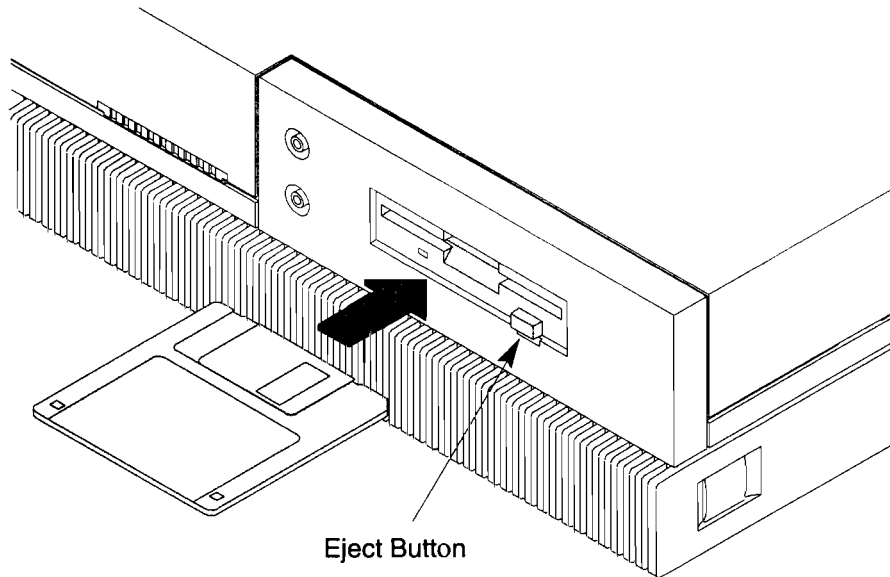


Figure 5-2. Inserting and Removing the Diskette

2. Push the diskette into the floppy drive until it clicks into place.
3. To remove the diskette, push the eject button on the front of the floppy drive (see Figure 5-2), then take out the diskette.


Formatting a New Diskette

This section describes how to use a device file to format a new floppy diskette.

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 kind of device it is. Your floppy drive uses the device file `/dev/rfloppy/c201d0s0`.

To format a new floppy diskette using this device file, follow these steps:

1. Log in as **root**.
2. Insert the diskette into the floppy disk drive.
3. Execute **mediainit** with an interleave of 2 by entering the following:

```
mediainit -i 2 /dev/rfloppy/c201d0s0 
```

NOTICE: Always format a new unformatted diskette with **mediainit** before using it.

Transferring Data To and From a Floppy Diskette

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

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

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 kind of device it is. Your floppy drive uses the device file **/dev/rfloppy/c201d0s0**.

You need to set the write protect tab to *write* and load the floppy diskette into the disk drive to transfer data. Refer to the "Setting the Write-Protect Tab on a Diskette" and "Inserting and Removing a Diskette" sections earlier in this chapter.

Saving Files to a Floppy Diskette

To save files to a floppy diskette, use the following steps:

1. Load a formatted floppy diskette into the disk drive. See "Formatting a New Diskette" earlier in this chapter for information on formatting diskettes.
2. Enter the command line:

```
tar -cvf /dev/rfloppy/c201d0s0 pathname RETURN
```

Where *pathname* is the pathname to individual files or a directory containing files.

Restoring Files from a Floppy Diskette to Your System

To restore files from a floppy diskette to your system, use the following steps:

1. Load a formatted floppy diskette into the disk drive. See “Formatting a New Diskette” earlier in this chapter for information on formatting diskettes.
2. Use **cd** to change to the directory you want the files to reside in.
3. Enter the command line:

```
tar -xvf /dev/rfloppy/c201d0s0 pathname RETURN
```

Where *pathname* is the pathname of individual files or a directory containing files.

Listing Files on a Floppy Diskette

To list the files on your floppy diskette, use the following steps:

1. Load a formatted floppy diskette into the disk drive. See “Formatting a New Diskette” earlier in this chapter for information on formatting diskettes.
2. Enter the command line:

```
tar -tvf /dev/rfloppy/c201d0s0 RETURN
```

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 
```

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

```
man floppy 
```

Configuring the SCSI Floppy Driver

If you reload software or rebuild the Instant Ignition system on your workstation, you will need to reconfigure the HP-UX Kernel to add the SCSI floppy driver. Use the SAM utility to add the SCSI Flexible Disk Driver and build a new HP-UX Kernel.

Ordering Information

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

- **HP-92192X** High-Density Micro Flexible Disks (1.44 MB Formatted Capacity) – box of ten diskettes
- **HP-92192A** Double-Sided Micro Flexible Disks (720 KB Formatted Capacity) – box of ten diskettes



Chapter 6

Using Your CD-ROM Drive

This chapter describes how to perform the following tasks with your CD-ROM drive:

- Inserting and removing a CD-ROM disc
- Loading and unloading a CD-ROM disc caddy
- Mounting a CD-ROM disc
- Unmounting a CD-ROM disc

The instructions in this chapter assume that your CD-ROM drive is set to the factory default address of SCSI ID 2.

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.

Your CD-ROM drive is a read-only device. This means that 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.

Even though your CD-ROM drive has audio capability, Hewlett-Packard does not support audio on CD-ROM drives at this time.

Inserting and Removing a CD-ROM Disc

This section describes how to open the disc caddy and insert or remove a CD-ROM disc.

To open the CD-ROM disc caddy, press inward on the two cover-locking tabs and lift the cover, as shown in Figure 6-1.

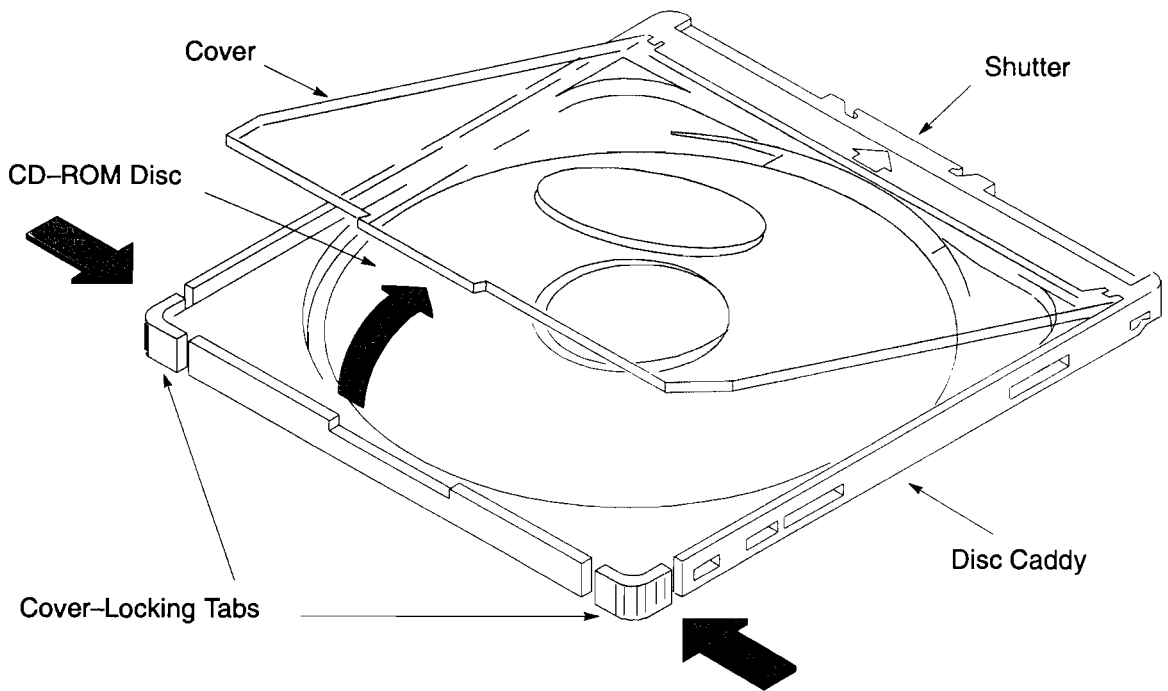


Figure 6-1. CD-ROM Disc and Disc Caddy

To insert a disc in the disc caddy, perform the following steps:

1. Open the disc caddy by pressing inward on the two cover-locking tabs and lifting the cover, as shown in Figure 6-1.
2. Hold the disc by the edges with the label side up.
3. Center the disc on the tray in the disc caddy.
4. Close the cover on the disc caddy, then push lightly on the cover until the cover-locking tabs click into place.



To remove a disc from the disc caddy, perform the following steps:

1. Open the disc caddy by pressing inward on the two cover-locking tabs and lifting the cover, as shown in Figure 6-1.
2. Lift the disc out of the disc caddy. Be careful to touch only the edges of the disc.

Loading and Unloading a CD-ROM Disc Caddy

This section describes how to insert the disc caddy into the CD-ROM drive and how to remove it from the drive.

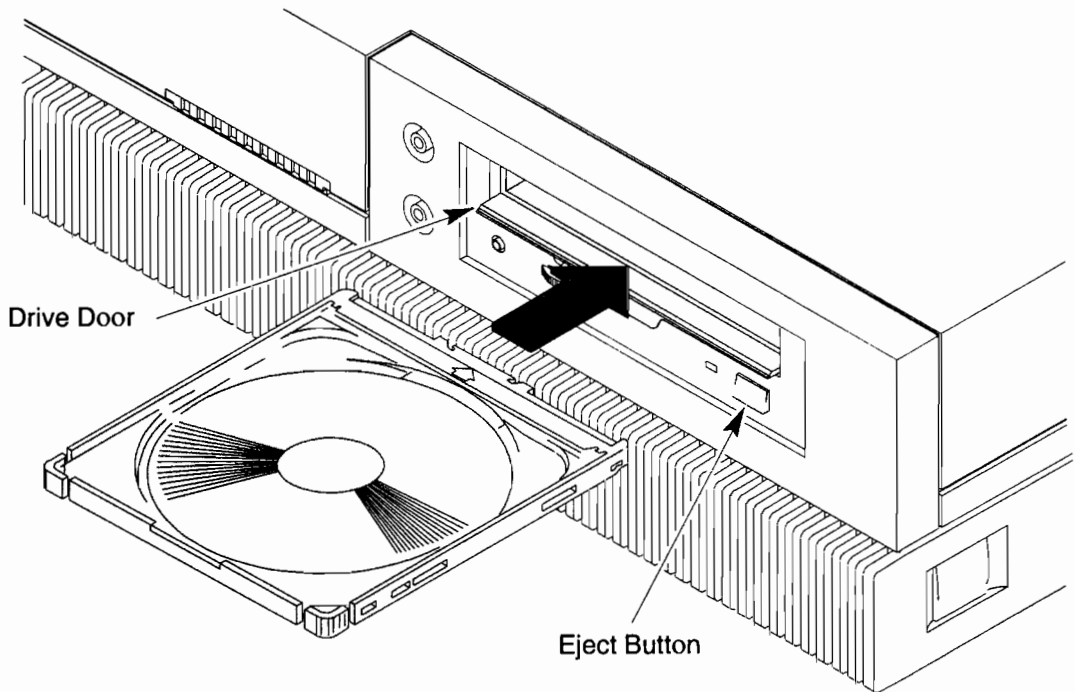


Figure 6-2. Loading a CD-ROM Disc Caddy

Perform the following steps to load a disc caddy into the CD-ROM drive:

1. Manually open the door on the front before loading a CD-ROM disc caddy and always keep the door closed when not loading or unloading a disc caddy. (See Figure 6-2.)

2. Hold the disc caddy with the cover facing up and the arrow on the top of the caddy pointing toward the CD-ROM drive, as shown in Figure 6-2.
3. Push the disc caddy about one third of the way into the loading slot until you hear a click. The drive automatically pulls the disc caddy the rest of the way into the slot.

CAUTION: Do not force the disc caddy into the drive's loading slot, as this may damage the drive's loading mechanism.

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

Perform the following steps to unload a disc caddy from the CD-ROM drive:

1. Press the eject button on the CD-ROM drive. (See Figure 6-2.)
2. Wait until the drive has fully ejected the disc caddy, and then slide it all the way out.

NOTICE: You must unmount the disc before unloading it from the drive. Refer to the subsection "Unmounting a CD-ROM Disc," later in this chapter, for instructions about unmounting a disc.

If you eject the disc caddy and want to reload it, you must pull the caddy out more than 5 mm (0.2 in.) from the ejected position before reloading it.

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 kind of device it is.

For the CD-ROM use the device file `/dev/dsk/c201d2s0`.


Mounting a CD-ROM Disc

This subsection describes how to mount a CD-ROM disc as a file system.

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 and may also require rebooting the system.

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

1. Insert the CD-ROM into the disc caddy, as described in “Inserting and Removing a CD-ROM Disc,” earlier in this chapter.
2. Load the disc caddy into the drive, as described in “Loading and Unloading a CD-ROM Disc Caddy,” earlier in this chapter.
3. The disc must be mounted under a pre-existing directory name. If the directory name does not exist, you must create it with the `mkdir` command. To create a directory named `/cdrom` to use as a mount point for your CD-ROM disc, enter the following:

```
mkdir /cdrom 
```

4. To mount the disc as a file system, enter the following:

```
/etc/mount /dev/dsk/c201d2s0 /cdrom RETURN
```

This tells the **mount** command to let the system know that a removable file system that is described by the device file **/dev/dsk/c201d2s0** is to be attached at the directory **/cdrom**. This directory becomes the name of the root of the newly-mounted file system.

5. Now you can access the CD-ROM disc as you would any other mounted file system. Enter the following command to change your working directory to the CD-ROM disc:

```
cd /cdrom RETURN
```

Unmounting a CD-ROM Disc


This section describes how to unmount a CD-ROM disc.

NOTICE: Before you unmount a CD-ROM disc, make sure that your working directory 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 and may also require rebooting the system.

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

1. Unmount the disc by entering the following:

```
/etc/umount /dev/dsk/c201d2s0 
```

2. Press the eject button on the CD-ROM drive. (See Figure 6-2.)
3. Remove the disc caddy from the drive.

Ordering Information

To order additional disc caddies for use with your CD-ROM drive, use the following order number:

C2293-80001

CD-ROM Disc Caddy





Chapter 7

Using Your DDS–Format Tape Drive

This chapter describes how to perform the following tasks with your DDS–format tape drive:

- Setting the write–protect tab on a data cassette
- Loading and unloading a data cassette
- Using your DDS–format tape drive
- LED indicators
- LED warning conditions
- Cleaning the tape heads

The instructions in this chapter assume that your DDS–format tape drive is set to the factory default address of SCSI ID 3.

NOTICE: 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.

Setting the Write-Protect Tab on a Data Cassette

You can only store 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 7-1.

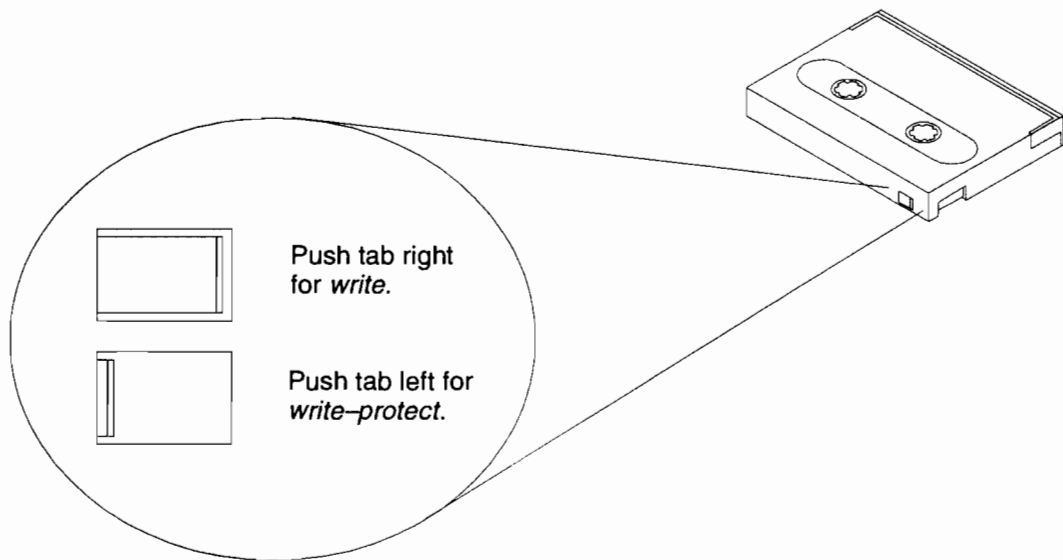


Figure 7-1. Setting the Write-Protect Tab on a DDS-Format Tape

To protect information on a data cassette from being overwritten, set the write-protect tab to the *write-protect* position, as shown in Figure 7-1.

Loading and Unloading a Data Cassette

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

1. Insert the data cassette into the drive, as shown in Figure 7-2.

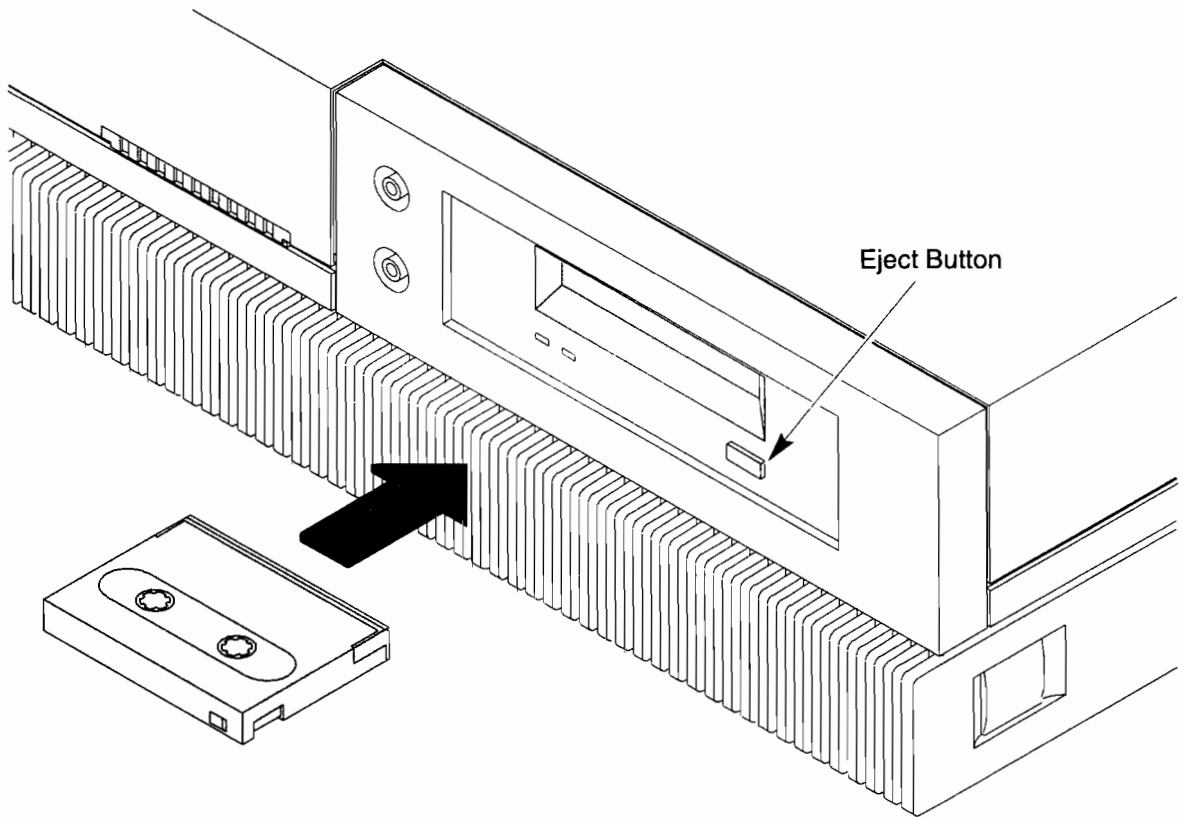


Figure 7-2. Loading a Data Cassette

- 2.** 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.

- 3.** To remove the data cassette, press and release the eject button on the front of the drive, as shown in Figure 7-2. The LEDs on the drive flash on and off. Ten to twenty seconds later, the data cassette slides partway out of the drive.

- 4.** Remove the cassette from the drive.

Using Your DDS-Format Tape Drive

This section describes how to use your DDS-format tape drive.

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

Device Files Overview

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 kind of device it is. Your system has four device files for use with your tape drive: two device files for non-compressed mode and two device files for compressed mode. If you use these device files, you do not need to create any device files. If the SCSI address of your tape drive is not set to the factory default of SCSI ID 3, you need to create a device file. Refer to the *System Administration Tasks* manual for information on how to create a device file before trying to use the tape drive.

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. When 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 left after the last operation. If you use these device files, you do not need to create any device files.

Device Files — Data Compression

If your tape drive is labeled **DCLZ** on its faceplate and 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. When 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.

Testing the DDS-Format Tape Drive

To verify that your workstation can communicate with the DDS-format tape drive, type the following:

```
ioscan /dev/rmt/3m 
```

After a few moments the **ioscan** utility lists all of the input and output devices it could find. The list should include a line similar to the following:

```
2.0.1.n.0          tape_drive        ok
```

Where *n* is the SCSI ID of your tape drive. Your DDS-format tape drive is set at the factory to SCSI ID 3. If **ioscan** does not list your tape drive, see Chapter 8, “Solving Problems.”

Archiving Data in Compressed and Noncompressed Mode


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 copy data to the tape drive:

1. Check that the write-protect tab on a data cassette is in the *write* position.
2. Load the data cassette into the tape drive.
3. 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 which 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

Use the following instructions to restore data from a data cassette:

1. Load the data cassette into the tape drive.
2. Use **cd** to change to the directory you want the files to reside in.
3. Enter the following command line to restore data:

```
tar -xvf /dev/rmt/3m pathname RETURN
```

where *pathname* is the pathname of the file or directory which 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. Enter the following command line to receive a file listing of the data cassette:

```
tar -tvf /dev/rmt/3m RETURN
```

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

Further Command Information

For additional information on **tar**, enter the following:

```
man tar 
```

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:

```
man command 
```


LED Indicators

This section shows the location of the LED indicators and describes the codes which are displayed.

The front panel has two colored LEDs, the Cassette LED and the Drive LED. Figure 7-3 shows their location.

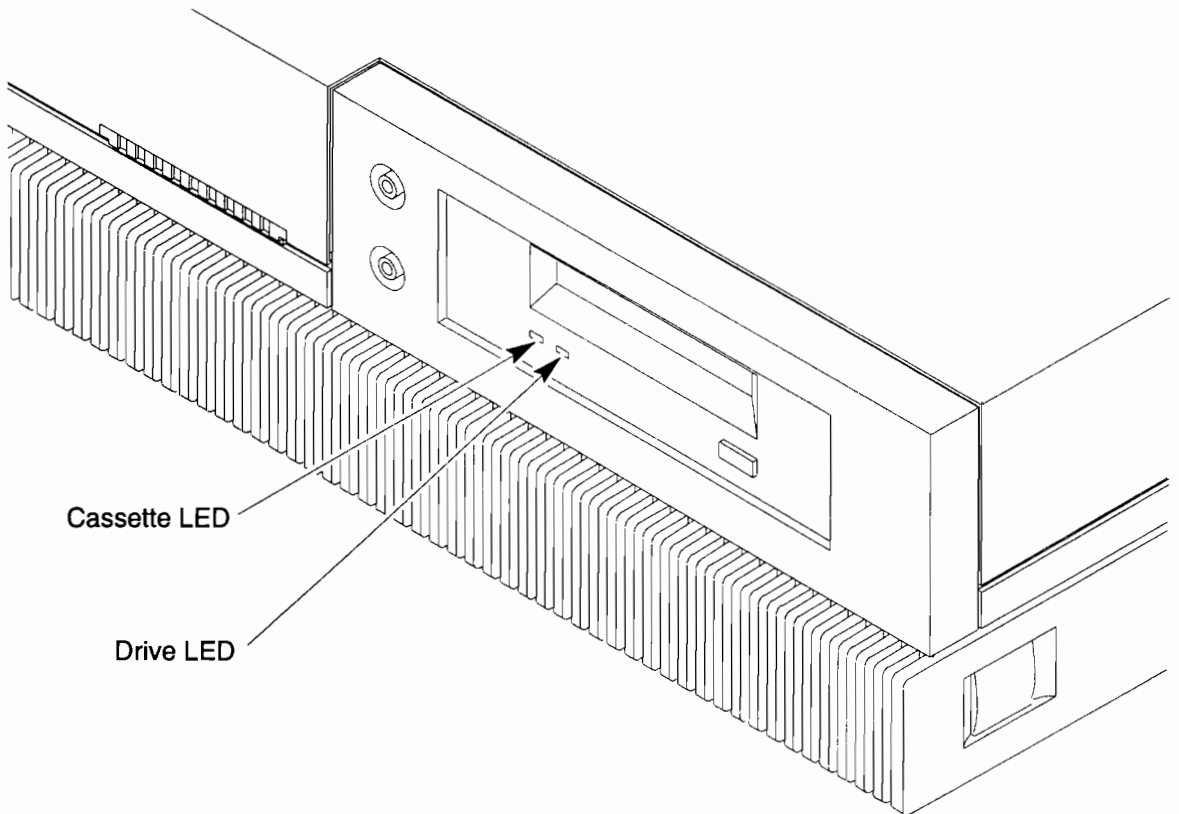


Figure 7-3. DDS-Format Tape Drive LED Indicators

On the LEDs, green indicates normal operation, and amber indicates a warning condition. Pulsing shows activity between the drive and the SCSI bus.

If the Cassette Light (left LED) shows steady amber, this indicates that the cassette is write-protected. If the Drive Light (right LED) shows steady amber, this indicates a fault condition. Table 7-1 lists the LED codes and their meanings.

Table 7-1. LED Display Codes

Cassette	Drive	Meaning
Read/Write States		
		Cassette (un)loading
		Cassette loaded/online
		Cassette loaded/activity
		Cassette loaded/offline
Write-Protect States		
		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)

Key	
	OFF
	Green
	Amber
	Pulsing Green
	Pulsing Amber
	Pulsing Green and Amber

LED Warning Conditions

This section describes 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 and 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, then discard the data cassette and back up the files to a new data cassette.

Media Life

Hewlett-Packard 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). Taking into account the fact that 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 sections 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

You should 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 indicators.

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 Interchangeability Restrictions

If you interchange media between DDS-format tape drives, note that data cassettes with compressed data can only be read by tape drives which have data compression capabilities. This includes data cassettes which contain both compressed and noncompressed data. A DDS-format tape drive with data compression capability is labeled **DCLZ** on its front panel.

Ordering Information

To order Hewlett-Packard data cassettes and cleaning cassettes for use in your DDS-format 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: Only use data cassettes labeled as DDS (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.

Chapter 8

Solving Problems

This chapter contains information to help you determine what's wrong with your system when you have problems. It contains information about the following:

- Common problems and solutions
- LED error codes
- Problems with the optional CRX graphics
- Dealing with a boot failure
- Running the system verification tests



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.

Table 8–2. Problems with Loading and Booting the Operating System

Problem	Solution
<p>The power LED is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.</p> <p>The system stops or hangs while booting.</p>	<p>Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.)</p> <p>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.)</p> <p>Note the pattern of the LEDs on the front panel of the system unit. Check the LED error codes in “LED Error Codes,” later in this chapter.</p> <p>Follow the instructions in “Dealing With a Boot Failure,” later in this chapter.</p> <p>Note the pattern of the LEDs on the front panel of the system unit. Check the LED error codes in “LED Error Codes,” later in this chapter.</p>
<p>If problems persist, contact your system administrator or call your designated service representative.</p>	

Table 8-3. Problems with the 802.3 Network

Problem	Solution
Can't reach other systems on the network. Applications that rely on the network won't run.	Check the network connector on the back of the system unit. Make sure that the network transceiver is fastened securely to the connector.
If problems persist, contact your system administrator or call your designated service representative.	

Table 8-4. Problems Using the Floppy Disk Drive

Problem	Solution
<p>The floppy drive does not respond to commands.</p>	<p>Re-enter the commands and make sure that you have typed them correctly.</p> <p>Make sure that you specified the device file /dev/rfloppy/c201d0s0 for commands that require a device file name.</p> <p>Make sure that the write-protect tab is set to <i>write</i> if you are trying to copy data to a floppy diskette.</p> <p>Follow the instructions in the section entitled "Running the System Verification Tests," later in this chapter, to verify that the floppy drive is functioning properly.</p>
<p>If problems persist, contact your system administrator or call your designated service representative.</p>	

Table 8-5. Problems Using the CD-ROM Drive

Problem	Solution
<p>The CD-ROM drive does not respond to commands.</p>	<p>Re-enter the commands and make sure that you have typed them correctly.</p> <p>Make sure that you specified the device file <code>/dev/dsk/c201d2s0</code> for commands that require a device file name.</p> <p>Follow the instructions in the section entitled "Running the System Verification Tests," later in this chapter, to verify that the CD-ROM drive is functioning properly.</p>
<p>If problems persist, contact your system administrator or call your designated service representative.</p>	

Table 8-6. Problems Using the DDS-Format Tape Drive

Problem	Solution
<p>The DDS-format tape drive does not respond to commands.</p>	<p>Re-enter the commands and make sure that you have typed them correctly.</p> <p>Make sure that you specified the correct device file name for commands that require a device file name.</p> <p>Make sure the write-protect tab is set to <i>write</i> if you are trying to copy data to a data cassette.</p> <p>Follow the instructions in the section entitled "Running the System Verification Tests," later in this chapter, to verify that the tape drive is functioning properly.</p>
<p>If problems persist, contact your system administrator or call your designated service representative.</p>	

Table 8–7. Problems with System Memory

Problem	Solution
<p>When booting the system, LED error codes that indicate memory errors are displayed on the front panel LEDs.</p>	<p>Check that the memory slots are configured correctly. (See “Installing Additional Memory” in Appendix B.)</p> <p>By default, your workstation does a quick memory test on power-up. See “Displaying and Setting the Fastboot Mode” in Appendix D for instructions on how to make your workstation perform more intensive memory testing.</p>
<p>If problems persist, contact your system administrator or call your designated service representative.</p>	

LED Error Codes

This section contains information about the error codes displayed by the LEDs on the system's front panel.

If an error occurs during the power-up diagnostics tests, the diagnostics use the front panel LEDs to display a code for the failing component.

Figure 8-1 shows the location of the system unit's front panel LEDs. There are nine LEDs on the front panel. The green Power LED indicates that the system is powered up. The amber LEDs labeled 1 through 8, right to left, indicate system status and error codes.

Table 8-8 shows the LED error codes as they appear on the front panel display. Use these LED codes to determine the failing component.

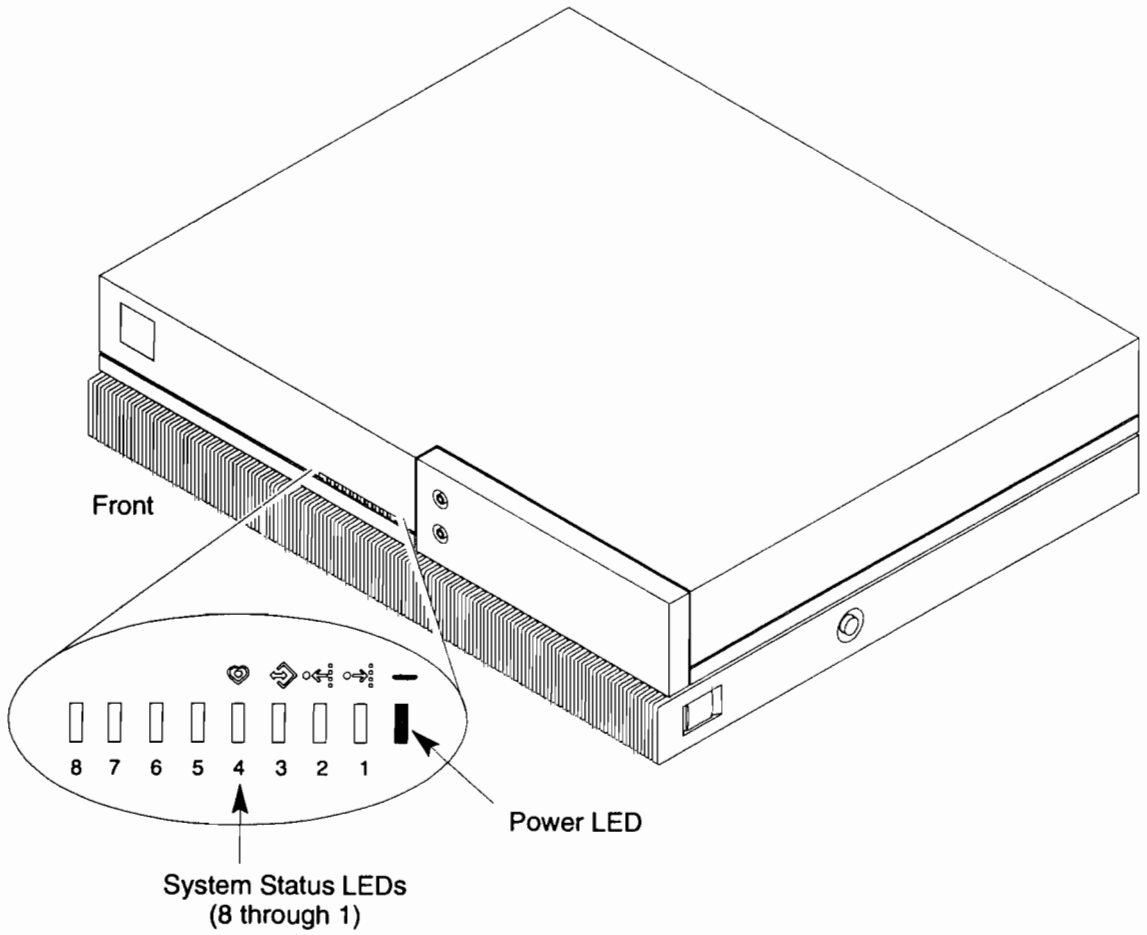


Figure 8-1. Front Panel LEDs

Table 8-8. LED Error Codes

LED Display								Error Message	
8	7	6	5	4	3	2	1		
□	□	□	■	■	■	■	■	CPU Board Error.	
□	□	■	□	■	■	■	■	CPU Board Error.	
□	□	■	■	■	■	■	■	CPU Board Error.	
□	■	□	□	■	■	■	■	CPU Board Error.	
□	■	□	■	□	□	□	■	EISA Interface Error.	
□	■	□	■	□	□	■	□	EISA Interface Error.	
□	■	□	■	□	□	■	■	EISA Interface Error.	
□	■	□	■	□	■	□	□	EISA Interface Error.	
□	■	□	■	□	■	□	■	EISA Interface Error.	
□	■	□	■	■	■	■	■	PDC ROM Checksum Error.	
□	■	■	□	□	■	■	■	Memory Pair 0, Slot B Error.	
□	■	■	□	□	■	■	□	Memory Pair 0, Slot A Error.	
□	■	■	□	□	■	□	■	Memory Pair 1, Slot B Error.	
□	■	■	□	□	■	□	□	Memory Pair 1, Slot A Error.	
□	■	■	□	□	□	■	■	Memory Pair 2, Slot B Error.	
□	■	■	□	□	□	■	□	Memory Pair 2, Slot A Error.	
□	■	■	□	□	□	□	■	Memory Pair 3, Slot B Error.	
□	■	■	□	□	□	□	□	Memory Pair 3, Slot A Error.	
■	= LED On or Flashing							□	= LED Either On or Off

(Continued)

Table 8-8. LED Error Codes (Cont.)

LED Display								Error Message
8	7	6	5	4	3	2	1	
□	■	■	■	■	■	□	■	No memory found.
■	□	□	□	□	□	□	□	Unknown I/O device.
■	□	□	□	□	□	□	■	Error while trying to boot from SCSI Device.
□	■	□	□	□	□	□	■	Error while trying to boot from LAN.
■	□	□	□	□	□	■	■	Error trying to access Console Keyboard.
■	□	□	□	□	■	□	□	Error while trying to access Serial Console Device, Port A.
■	□	□	□	□	■	□	■	Error while trying to access Serial Console Device, Port B.
■	□	□	□	□	■	■	□	Error while trying to access Parallel Port.
■	□	□	□	□	■	■	■	Error on SGC Slot 1 (Built-in Graphics).
■	□	□	□	■	□	□	□	Error on SGC Slot 2 (Optional Graphics).
■	□	□	□	■	□	□	■	Unable to Initialize EISA Slot.
■	□	■	■	□	□	□	■	Error reading from Stable Storage.
■	□	■	■	□	□	■	□	Unexpected interrupt during PDC execution.
■	□	■	■	□	□	■	■	No working console found.
■	□	■	■	□	■	□	□	HPMC handling initiated.
■	□	■	■	□	■	□	■	HPMC due to Cache Error.
■	□	■	■	□	■	■	□	HPMC due to Memory Error.
■	□	■	■	□	■	■	■	HPMC due to Bus Error.
■	□	■	■	■	□	□	□	Nested HPMC occurred.
■	□	■	■	■	□	□	■	Error while writing to EEPROM.

Problems with the Optional CRX Graphics

If your workstation has one of the CRX graphics options installed, and you power on your workstation, and after a few minutes, there is no output on your monitor, use the following procedure to troubleshoot the problem:

- 1.** Power off your workstation and your monitor.
- 2.** Make sure that all connectors and cables are fully seated and that your monitor is connected to the correct connector for your CRX graphics option. See Chapter 1 of this manual for monitor connections.

- 3.** Power on your monitor and your workstation.

If, after a few minutes, there is still no output on your monitor, continue to Step 4.

- 4.** Power off your workstation and your monitor.
- 5.** Disconnect your monitor and connect it to the built-in graphics connector as shown in Chapter 1 of this manual.
- 6.** Check your workstation's graphics configuration switches, as shown in Appendix B of this manual, to ensure that the graphics switches are set correctly for your monitor.
- 7.** Power on your monitor and your workstation.
- 8.** Immediately after you power on your workstation, press the TOC switch on the right side of the system unit. (See Chapter 1 of this manual for the TOC switch location.)

- 9.** After you press the TOC switch, power off your workstation. Wait a few seconds, then power it back on.

If, after a few minutes, you still have nothing displayed on your monitor, call your designated service representative. Otherwise continue with Step 10.

- 10.** Follow the procedures described in the “Configuring the CRX Graphics Options” section in Appendix B of this manual to check that your system is properly setup for the CRX graphics.

- 11.** Shutdown and power off your workstation and your monitor.

- 12.** Disconnect your monitor and reconnect it to the your CRX graphics option connector.

- 13.** Power on your monitor and your workstation.

If, after a few minutes, you still have nothing displayed on your monitor, 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 attempt to boot from the disk (or another boot device) by selecting it manually.

To boot a device manually, follow these steps:

1. Shutdown your system as described in Chapter 2 or Chapter 3.
2. Turn off the power to the workstation for a few seconds. Then turn the power back on.
3. Press **ESC**.

In a few seconds, this message appears:

```
Terminating selection process.
```

A short time later, this message appears:


```
Searching for potential boot devices.
```

```
To terminate search, press and hold the ESCAPE key.
```

```
Device Selection  Device Path  Device Type and Utilities
```

Your workstation is now searching for devices that may hold file systems from which it can boot HP-UX. As they are found, they appear in a list, similar to the following example:

P0	scsi.6.0	QUANTUM PD425S
P1	scsi.5.0	QUANTUM PD425S
P2	scsi.2.0	TOSHIBA CD-ROM DRIVE:XM
P3	lan.123456-789abc	homebase

This process may take several minutes. You can terminate the search at any time by pressing .

If two devices are set to the same SCSI ID, the search terminates when it finds the duplicate SCSI ID. If this happens you must change the SCSI ID of one of the devices.


If no disk devices are listed, then your workstation is failing to communicate with its disks. Recheck the SCSI connections and try again. If there are still no devices listed, there is a serious problem. Contact your designated service representative for assistance.

When the search ends, the following list of actions appears:

b)	Boot from specified device
s)	Search for bootable devices
a)	Enter boot administration mode
x)	Exit and continue boot sequence
?)	Help

Select from menu:

4. If the search locates a disk, attempt to boot from it by entering the **b** (boot) command and a device selection number from the list. For example, if a SCSI disk is listed as item **P0** (as in the previous example list), enter the following:

Select from menu: **b P0** 

It may be several seconds before the boot messages begin to appear on the screen. You may hear sounds coming from the disk drive and see a sequence of changing patterns on the LED display.

5. 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, contact your designated service representative.


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.


As a superuser (logged in as **root**), you can access the Support Tools Manager while 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 **estm** 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 online man pages by entering the following at a command line prompt:

```
man estm 
```

```
man mstm 
```

```
man xstm 
```

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

1. In a terminal window, to invoke the command line interface, type the following at the # prompt:

```
estm 
```

The following screen appears:

```
*****
*****
*****          SUPPORT TOOLS MANAGER          *****
*****
*****          Command Line Interface          *****
*****
*****          Version  A.00.12                *****
*****
*****          Part Number  B2478-10002        *****
*****
***** (C) Copyright Hewlett Packard Co. 1991, 1992 *****
*****          All Rights Reserved              *****
*****
*****
Please wait. System mapping in progress . . .
Please type HELP or ? to list available commands.
CSTM>
```

2. 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 (2/0/1.5.0).  
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 library (/usr/lib/libs-bisl) 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 monitor, 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 activated.

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

3. When you see the >> prompt shown above, type the following:

r 


The following messages and a graphics test window appear:

```
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).
```

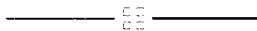
4. To return to the CSTM> prompt, press the following key:



5. To exit the Support Tools Manager enter the following:

CSTM> exit 

If any tests failed, further diagnosis is necessary by qualified service personnel.





Appendix A

Safety and Regulatory Statements

This appendix contains the following safety and regulatory statements:

- Declaration of conformity
- Emissions regulations
- Emissions regulations compliance
- Datacom users statements
- Acoustics
- Electrostatic discharge precautions
- Laser safety statements
- Warnings and cautions

DECLARATION OF CONFORMITY according to ISO/IEC Guide 22 and EN 45014	
Manufacturer's Names: Manufacturer's Addresses:	
Hewlett-Packard 100 Domain Drive Exeter, N.H. U.S.A.	
declares, that the product	
Product: Computer Workstation	
Model Number: 715	
Product Number: A2084A	
conforms to the following Product Specifications:	
Safety: IEC 950:1986 / EN60950 (1988)	
EMC: CISPR 22:1985 / EN 55022 (1988) Class A	
IEC 801-2:1991 / pr EN55101-2 (1990): 3 kV CD, 8 kV AD	
IEC 801-3:1984 / pr EN55024-3 (1991): 3 V/m	
Supplementary Information: The product was tested in a typical Hewlett-Packard Workstation configuration.	
Exeter, Date	 Division Quality Manager
November 4, 1992	
European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ/Standards Europe, Herrenberger 130, D-7030 Boeblingen (FAX: + 49-7031-141623)	

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

Emissions Regulations



Federal Communications Commission (FCC)

The Federal Communications Commission of the U.S. government regulates the radio frequency energy emanated by computing devices through published regulations. These regulations specify the limits of radio frequency emission to protect radio and television reception. All HP Apollo nodes and peripherals have been tested and comply with these limits. The FCC regulations also require that computing devices used in the U.S. display the agency's label and that the related documentation include the following statement:

NOTICE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Canadian Department of Communications (CDC)

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the Radio Interference Requirements of the Canadian Department of Communications.

VCCI Class 1 ITE

この装置は、第一種情報装置（商工業地域において使用されるべき情報装置）で商工業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。

従って、住宅地域またはその隣接した地域で使用すると、ラジオ、テレビジョン受信機等に受信障害を与えることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI基準に適合する為に、シールドされたケーブルをご使用下さい。

Emissions Regulations Compliance

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

Datacom Users Statement (United Kingdom Only)

The HP 9000 Series 700 Models 715/33 and 715/50 are approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunications systems within the United Kingdom.

Acoustics

Regulation On Noise Declaration For Machines –3. GSGV

Lpa <70dB
operator position
normal operation
per ISO 7779

Lpa <70dB
am Arbeitsplatz
normaler Betrieb
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.

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

(For workstations that have a CD ROM drive installed.)

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.

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE KLASS 1 LASER APPARAT

HP Apollo 9000 Series 700 Model 715/33 ja 715/50 –työasematietokoneisiin voidaan asentaa muistilaitteeksi laitteensisäinen CD-ROM-levyasema, joka on laserlaite. Tällöin myös päälaitteena toimiva tietokone katsotaan laserlaitteeksi.

Kyseinen CD-ROM-levyasema on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalisissa käytössä levyaseman suojakotelo estää lasersäteiden pääsyn laitteen ulkopuolelle.

HP Apollo 9000 Series 700 Model 715/33 ja 715/50 –tietokoneet on tyyppihyväksynyt Suomessa laserturvallisuuden osalta Työsuojeluhallitus, Työsuojeluhallituksen hyväksyntänumero TSH 222/6019/90. Laitteiden turvallisuusluokka on määritetty valtioneuvoston päätöksen N:o 472/1985 ja standardin EN 60825 (1991) mukaisesti.

Tiedot CD-ROM-levyasemassa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 780 nm
Teho 0,4 mW
Luokan 1 laser



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 Verletzungen zu vermeiden, seien Sie vorsichtig beim Einbau von zusätzlichen Bauteilen, die vom Kunden selber eingebaut werden können.

ADVERTISSEMENT:

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.

ADVERTISSEMENT:

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.

CAUTION:

System power cord must be plugged into an accessible dedicated ac mains receptacle.

VORSICHT:

Das System-Netzanschlusskabel muß an eine zugängliche spezielle Wechselstrom-Hauptzuführungssteckdose angeschlossen werden.

ATTENTION:

Le fil d'alimentation électrique du système doit être branché dans une prise de courant c.a. spécialisée accessible.

Appendix B

Changing Your Workstation's Hardware Configuration

This appendix tells you how to change your workstation's hardware configuration by performing the following procedures:

- Opening the system unit
- Closing the system unit
- Installing additional memory
- Setting the graphics configuration switches
- Configuring the CRX graphics options
- Installing an EISA board

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

Opening the System Unit

No special tools are required for opening the system unit

CAUTION: Do not attempt to operate the workstation with the top cover removed. The cover is needed for proper air flow for system cooling.

Perform the following steps to open the system unit:

- 1.** Power off the system and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets.
- 2.** Disconnect any cables from the system unit connectors.
- 3.** Disconnect and remove the optional graphics unit (if installed). If your workstation is installed in the deskside (standing) configuration, remove the graphics unit from the floor stand as shown in Figure B-1.

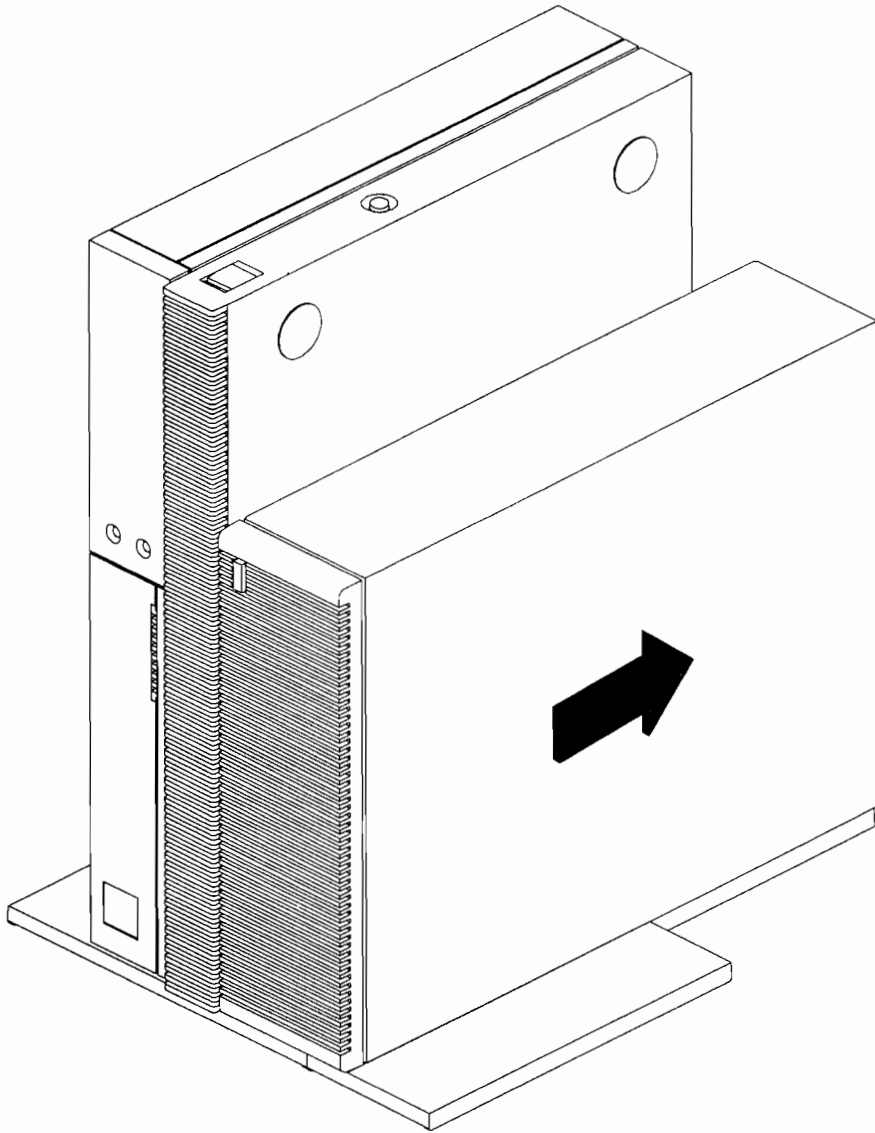


Figure B-1. Disconnecting the Optional Graphics Unit

If your workstation is installed in the deskside configuration, you must remove the floor stand prior to opening the system unit. If your workstation does not have the floor stand installed, go to step 7.

4. Lay the system unit on a flat surface, such as a table top, with the floor stand hanging over the edge. See Figure B-2.
5. On the bottom of the floor stand, slide the latch to unlock the floor stand. See Figure B-2.

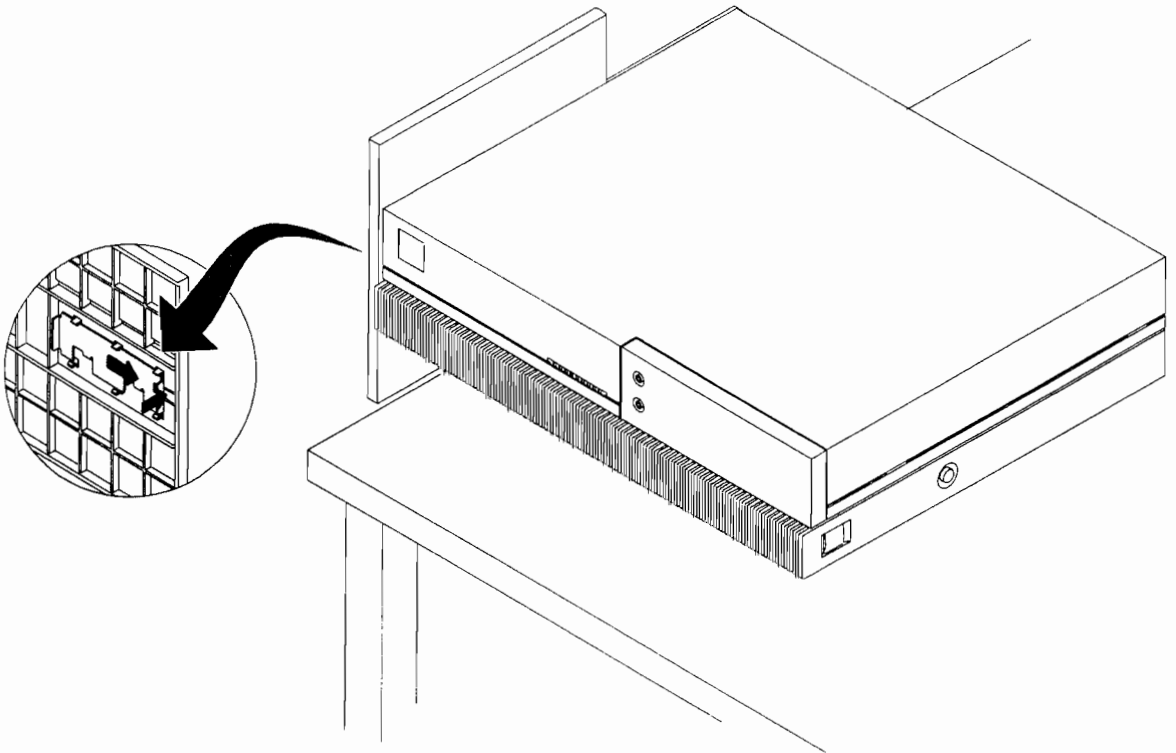


Figure B-2. Laying the System Unit Flat

6. Swing the end of the floor stand away from the system unit and remove it from the system unit. See Figure B-3.

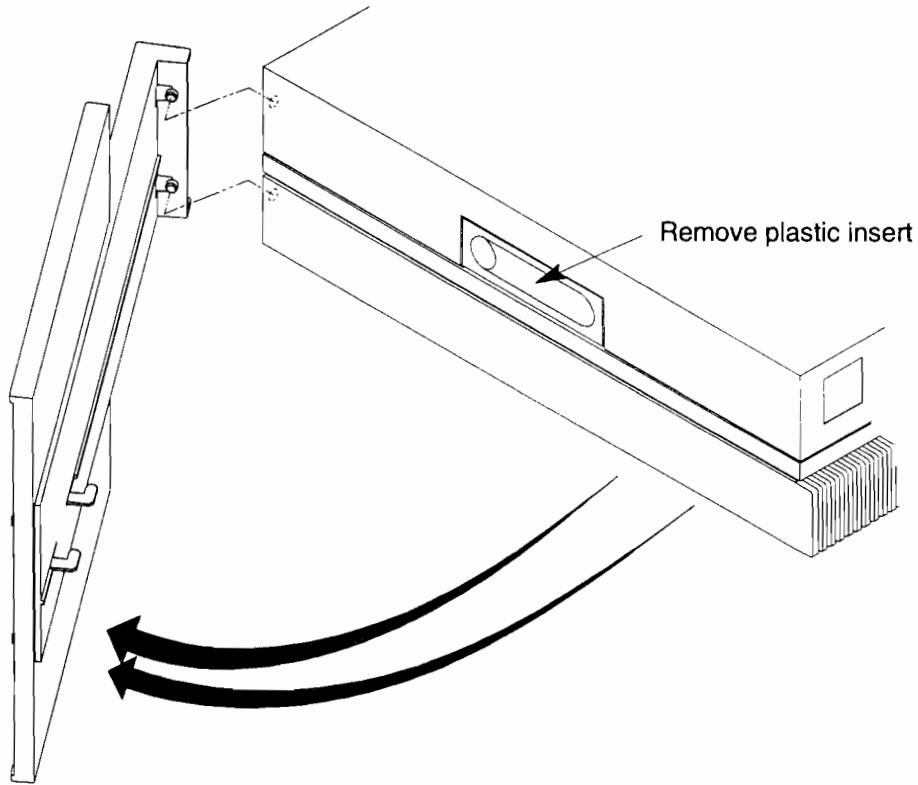


Figure B-3. Removing the Floor Stand

7. If there is a label covering the handle on the side of the system unit, remove and discard it.
8. Remove the plastic insert from the handle as shown in Figure B-3.

9. Push in the handle and carefully lift the top cover to fully open the system unit as shown in Figure B-4.

CAUTION: Never lift the system unit by the handle. Always lift the system unit from the bottom using two hands.

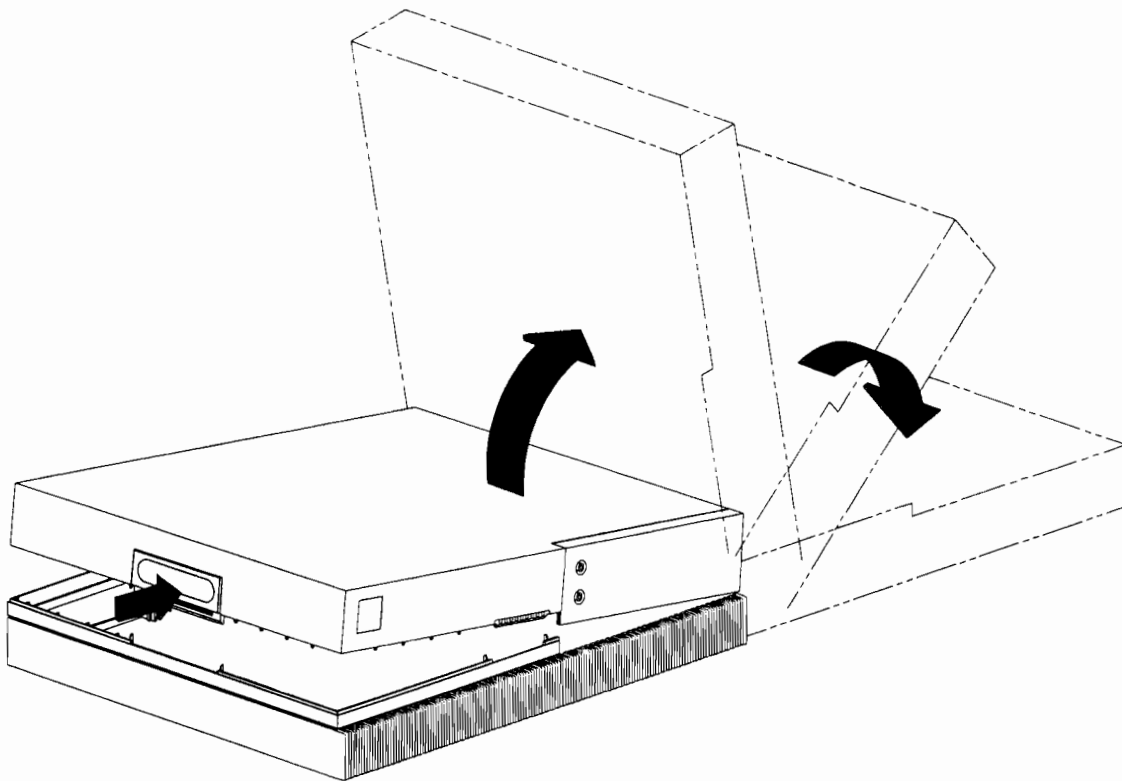


Figure B-4. Opening the System Unit

Closing the System Unit

Close the system unit by reversing the steps in the "Opening the System Unit" section earlier in this chapter. Take care that you do not bend the EMI shields where the bottom and top covers join.

If your workstation is installed in the desktop (standing) configuration, replace the optional graphics unit (if installed) into the floor stand and connect it as shown in Figure B-5. You must lift the rear of the graphics processor slightly while sliding it forward. The two units will lock together.

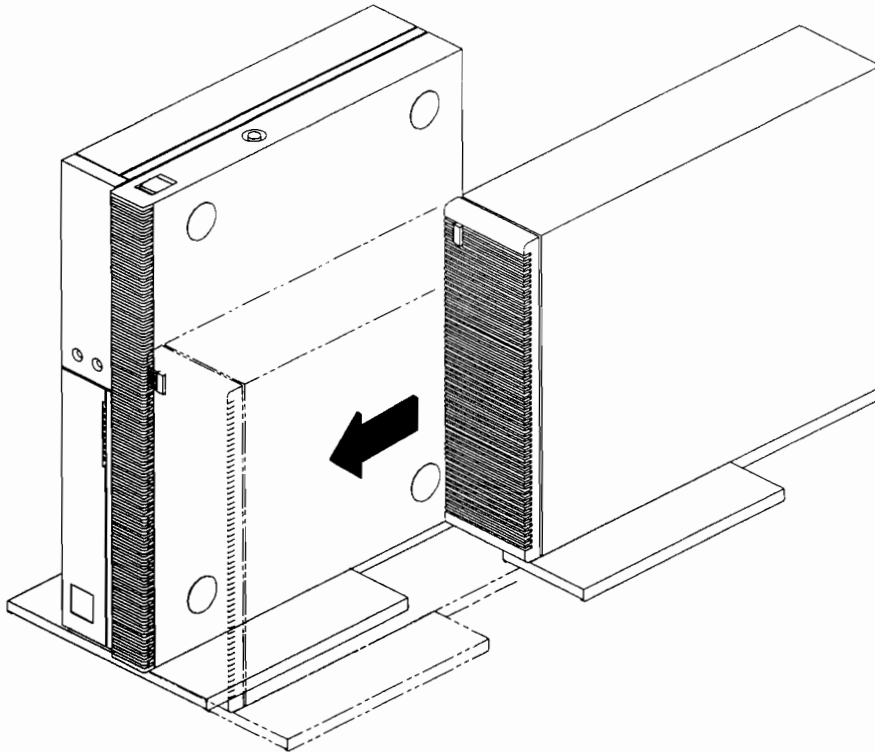


Figure B-5. Connecting the Optional Graphics Unit

Installing Additional Memory

Figure B-6 shows the location of the memory boards within the system unit.

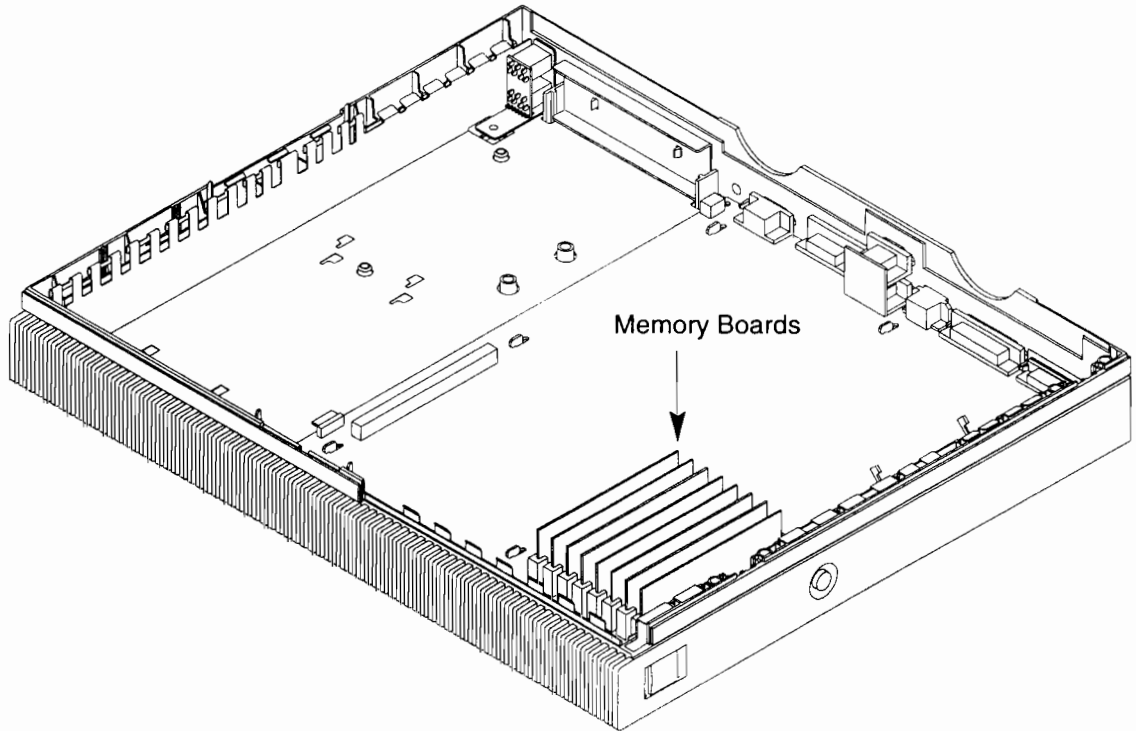


Figure B-6. Memory Board Locations

Memory boards must be installed in pairs of the same memory capacity. You may install up to four pairs of memory boards. (Up to three pairs of boards in the Model 715/33.)

The memory connectors are labeled Pair 0 through Pair 3. Install memory boards in the lowest numbered empty connector pair first. For example, if you have two pairs of memory boards, install the first pair in the connectors labeled **Pair 0** and the second pair in the connectors labeled **Pair 1**. (See Figure B-7.)

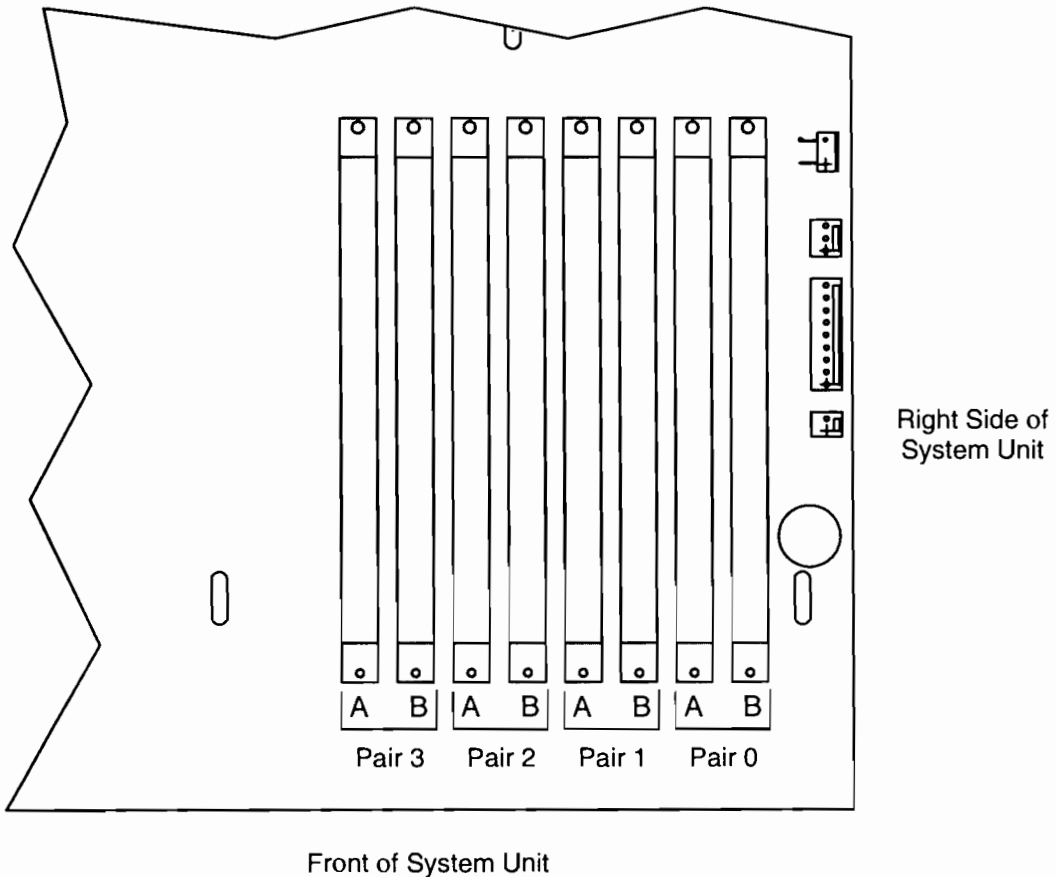


Figure B-7. Memory Connectors

Perform the following steps to add memory boards to your workstation:

- 1.** Open the system unit according to the directions in the “Opening the System Unit” section earlier in this appendix.
- 2.** If you need to install memory boards in a connector pair with a lower number than the connector pair of existing memory boards, then perform this step. (For example, if there are memory boards in the connectors labeled **Pair 1** and you want to install memory boards in the connectors labeled **Pair 0**.)

If you do not need to remove any memory boards, skip this step and go directly to Step 3.

To remove a memory board, push the two slot clips out and then tilt its top toward the left side of the system unit. Lift the memory board up and out of the connector. Place the memory board on a static-free surface. Figure B-8 shows how to remove the memory board.

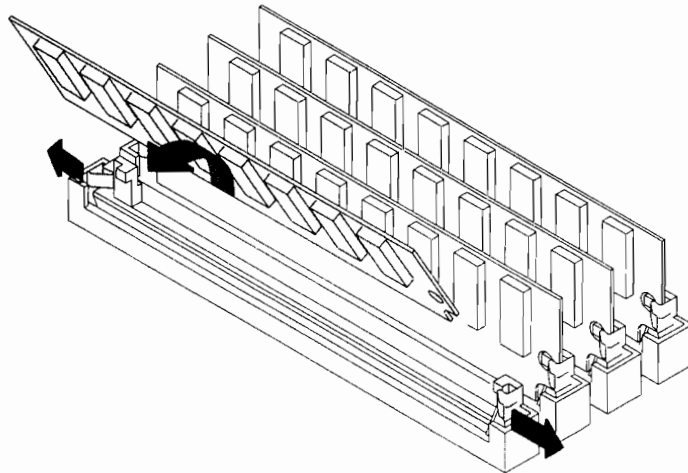


Figure B-8. Removing Memory Boards

3. Install a new memory board with its top edge tilted toward the left side of the system unit. Note that the memory board is notched on one end to fit the keyed connector. Press firmly on the memory board to ensure that it is fully seated. Snap the board into place by moving it to a vertical position. Its ends snap into the connector's spring clips. Figure B-9 shows how to install a memory board.

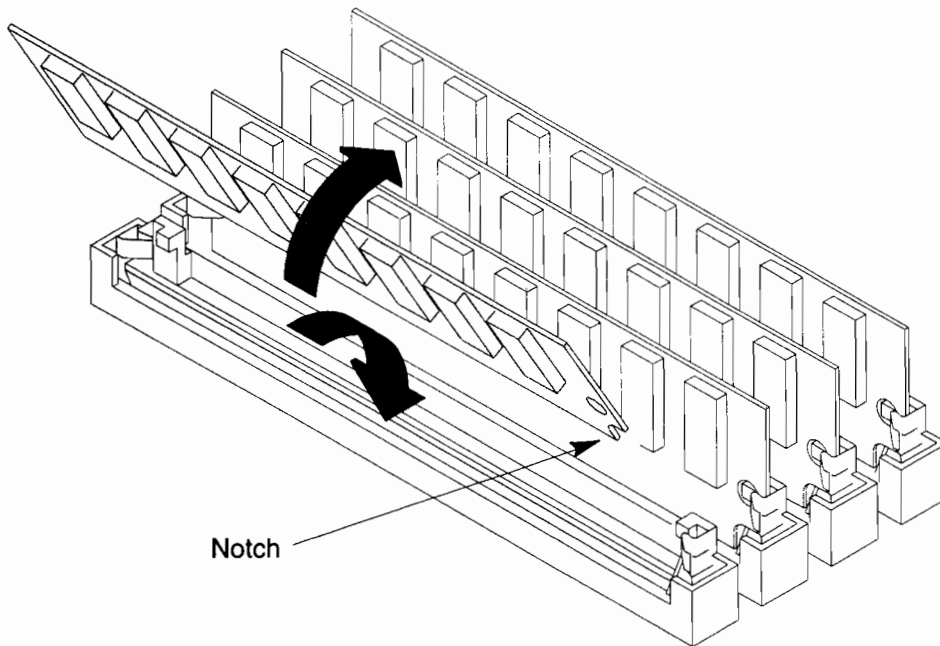


Figure B-9. Installing Memory Boards

4. Close the system unit and reconnect all cables as described in the "Closing the System Unit" section, earlier in this chapter.

Setting the Graphics Configuration Switches

Your system is preconfigured to use a specific type of monitor, which is identified on the rear of the system unit by one of the two labels shown in Figure B-10.

NOTICE: The graphics configuration switches have no affect on the operation of the optional CRX graphics unit (if installed).

To change the built-in graphics configuration for your system, open the system unit of your workstation as described in the “Opening the System Unit” section earlier in this chapter. On the back panel of the system unit, remove the graphics configuration sticker which covers the graphics configuration switches access hole.

Figure B-11 shows the settings for the graphics configuration switches. Use a small probe, such as a jeweler's screwdriver, to set the switches through the access hole, according to the type of monitor that is connected to your workstation. (To determine which monitor you have, refer to the “Monitor Controls, Connectors, and Indicators” section of Chapter 1.)

Replace the graphics configuration sticker on the back panel of the system unit so that the access hole is positioned to indicate your new graphics configuration. See Figures B-10 and B-11.

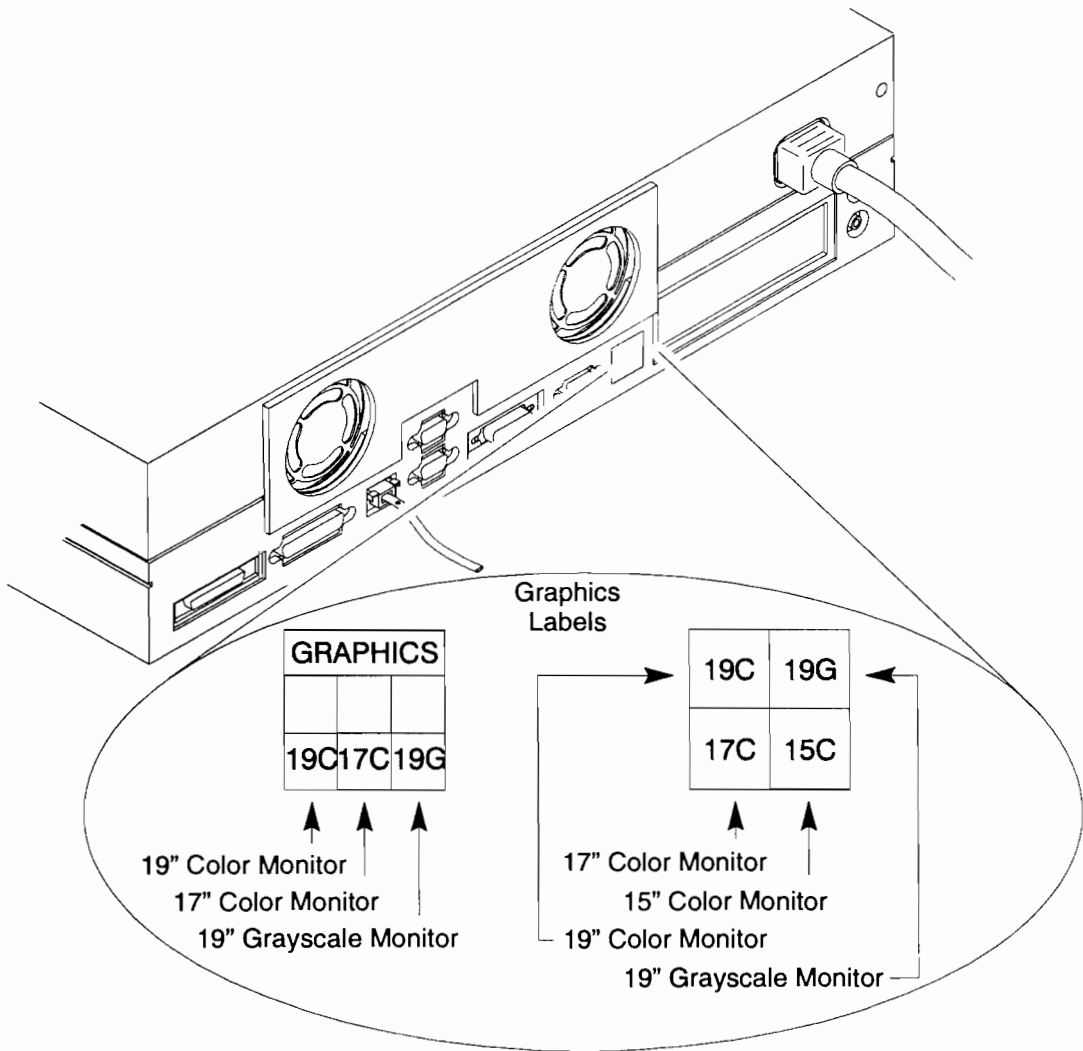


Figure B-10. Graphics Configuration Sticker

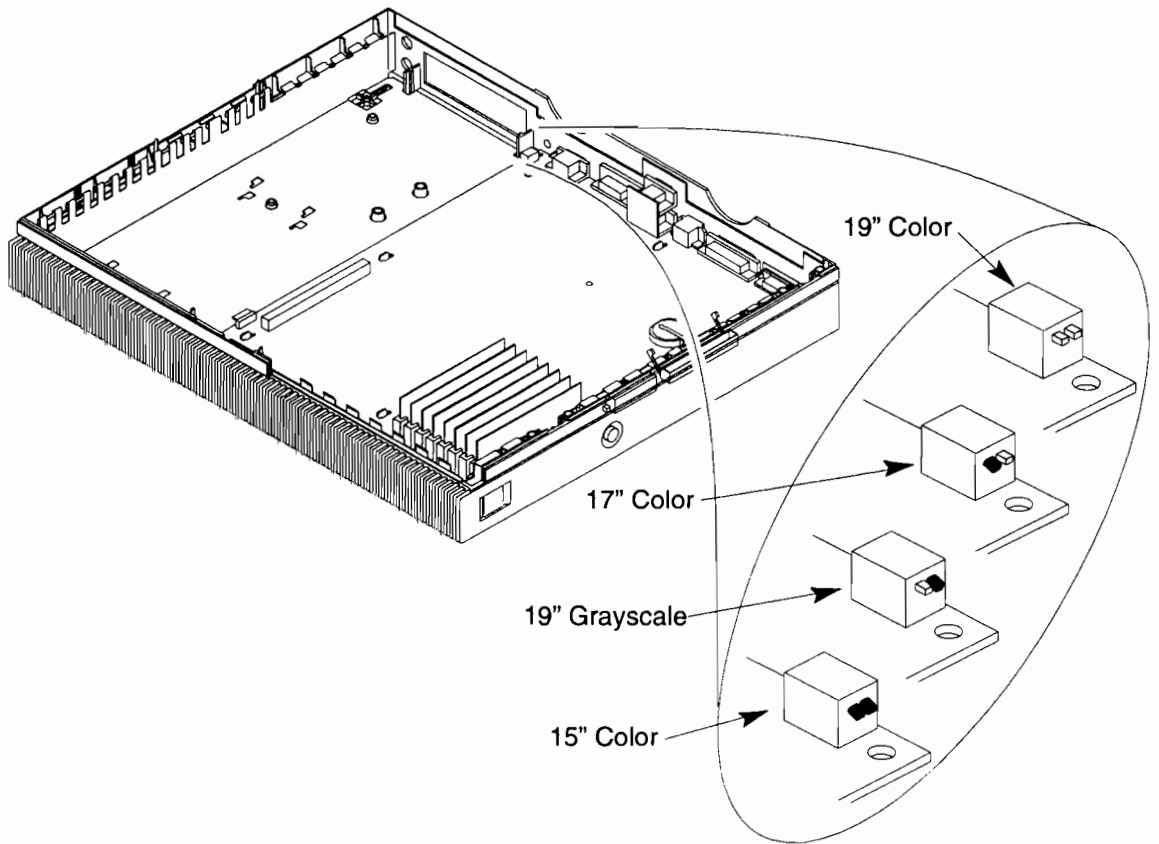


Figure B-11. Graphics Configuration Switches

Configuring the CRX Graphics Options

This section describes how to configure your system to use the CRX graphics options (if installed).

If you update or reinstall HP-UX, and after a few minutes, there is no output on your monitor, use the following procedures to configure your workstation:

- 1.** Power off your workstation.
- 2.** Connect your monitor to the built-in graphics connector as shown in Chapter 1 of this manual.
- 3.** Check your workstation's graphics configuration switches, as shown in "Setting the Graphics Configuration Switches" earlier in this appendix, to make sure the graphics switches are set correctly for your monitor.
- 4.** Power on your monitor and your workstation.
- 5.** Immediately after you power on your workstation, press the TOC switch on the right side of the system unit. (See Chapter 1 of this manual for the TOC switch location.)

Setting Up a Single Monitor System

This subsection describes how to set up your workstation to use only the CRX graphics.

- 1.** Log in as **root**.
- 2.** Enter the following command line to create a device file to support the CRX graphics:

```
/etc/mknod /dev/crt24 c 12 0x100000 RETURN
```

- 3.** Enter the following command line to set the attributes of the device file:

```
chmod 666 /dev/crt24 RETURN
```

- 4.** Make a backup copy of **/usr/lib/X11/X0screens** by entering the following command line:

```
cp /usr/lib/X11/X0screens /usr/lib/X11/X0screens.backup RETURN
```


- 5.** Use a text editor, such as **vuepad** or **vi**, to edit the following file:

```
/usr/lib/X11/X0screens
```


6. Edit the file so that every line begins with a pound sign (#).
7. Add the following line to the file exactly as shown:

```
/dev/crt24
```

8. Save your changes and close the file.
9. Enter the following command:

```
/etc/reboot 
```



10. The system shuts down and starts to reboot. Press and hold  when the following message is displayed:

```
Selecting a system to boot. To stop selection process  
press and hold the ESCAPE key.
```

In a few seconds, the following message appears:

```
Terminating selection process.
```

A short time later, the following message appears:

```
Searching for potential boot devices. To terminate  
search, press and hold the ESCAPE key.
```

Your workstation is now searching for devices that may hold file systems from which it can boot HP-UX. As they are found, they appear in a list similar to the following example:

Device Selection	Device Path	Device Type and Utilities
P0	scsi.6.0	disk_drive_identifier
P1	scsi.5.0	disk_drive_identifier
P2	scsi.4.0	DDS-tape_drive_identifier
P3	scsi.3.0	CD_ROM_drive_identifier

Select from menu:

11. The following list of actions appears:

- b) Boot from specified device
- s) Search for bootable devices
- a) Enter boot administration mode
- x) Exit and continue boot sequence
- ?) Help

Press a

The following prompt appears:

BOOT_ADMIN>

- 12.** Set the default console to the CRX graphics option by entering the following command line:

```
BOOT_ADMIN> path console graphics_2 RETURN
```

- 13.** Enter the following command:

```
BOOT_ADMIN> exit RETURN
```

- 14.** Power off your workstation and your monitor.
- 15.** Connect your 19-inch color monitor to the CRX graphics connector as shown in Chapter 1 of this manual.
- 16.** Power on your monitor and your workstation.

If, after a few minutes, you have nothing displayed on your monitor, call your designated service representative.

Setting Up a Dual Monitor System

This subsection describes how to set up your workstation to use both the CRX graphics and the built-in graphics.

The CRX graphics is set up as the default display and console device and the built-in graphics is set up as the secondary display device.

NOTICE: Only the 19-inch color monitors are supported on the CRX graphics adapters.

The built-in graphics adapter can use any of the supported monitors. See “Setting the Graphics Configuration Switches” earlier in this appendix for information on configuring the built-in graphics.


1. Log in as **root**.
2. Enter the following command line to create a device file to support the CRX graphics adapter:

```
/etc/mknod /dev/crt24 c 12 0x100000 RETURN
```

3. Enter the following command line to set the attributes of the device file:

```
chmod 666 /dev/crt24 RETURN
```

4. Make a backup copy of `/usr/lib/X11/X0screens` by entering the following command line:

```
cp /usr/lib/X11/X0screens /usr/lib/X11/X0screens.backup 
```

5. Use a text editor, such as `vuepad` or `vi`, to edit the following file:

```
/usr/lib/X11/X0screens
```

6. Edit the file so that every line begins with a pound sign (`#`).
7. Add the following two lines to the file exactly as shown and in the order shown:

```
#/dev/crt24  
#/dev/ert
```

Since the device file for the CRX graphics is listed first, it becomes the default (0.0) display device and the built-in graphics becomes the secondary (0.1) display device.

8. Save your changes and close the file.

- 9.** Use a text editor, such as `vuepad` or `vi`, to edit the following file:

`/usr/vue/app-defaults/Vuewm`

- 10.** Add the following two lines exactly as shown:

`Vuewm*multiScreen: True`
`Vuewm*screenList: One Two`

- 11.** Save your changes and close the file.

- 12.** Enter the following command:

`/etc/reboot` **RETURN**

- 13.** The system shuts down and starts to reboot. Press and hold **ESC** when the following message is displayed:

Selecting a system to boot. To stop selection process
press and hold the ESCAPE key.

In a few seconds, the following message appears:

Terminating selection process.

A short time later, the following message appears:

Searching for potential boot devices. To terminate
search, press and hold the ESCAPE key.

Your workstation is now searching for devices that may hold file systems from which it can boot HP-UX. As they are found, they appear in a list similar to the following example:

Device Selection	Device Path	Device Type and Utilities
P0	scsi.6.0	disk_drive_identifier
P1	scsi.5.0	disk_drive_identifier
P2	scsi.4.0	DDS-tape_drive_identifier
P3	scsi.3.0	CD_ROM_drive_identifier

Select from menu:

14. The following list of actions appears:

- b) Boot from specified device
- s) Search for bootable devices
- a) Enter boot administration mode
- x) Exit and continue boot sequence
- ?) Help

Press a **RETURN**

The following prompt appears:

BOOT_ADMIN>

- 15.** Set the default console to the CRX graphics option by entering the following command line:

```
BOOT_ADMIN> path console graphics_2 RETURN
```

- 16.** Enter the following command:

```
BOOT_ADMIN> exit RETURN
```

- 17.** Power off your workstation and your monitor.
- 18.** Connect your 19-inch color monitor to the CRX graphics connector as shown in Chapter 1 of this manual. Connect your second monitor to the built-in graphics connector on the rear of your workstation, as shown in Chapter 1. Check your workstation's graphics configuration switches, as shown in "Setting the Graphics Configuration Switches" earlier in this appendix, to make sure the graphics switches are set correctly for your second monitor.
- 19.** Power on your monitors and your workstation.

If, after a few minutes, you have nothing displayed on one or both of your monitors, call your designated service representative.

Installing an EISA Option Board

Perform the following steps to install an EISA option board in the EISA adapter that was shipped with your workstation:

NOTICE: If you have an optional CRX graphics board installed in your workstation, you may not install an EISA option board.

- 1.** Power off the system and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets.
- 2.** Open the system unit as described in the “Opening the System Unit” section earlier in this chapter.
- 3.** Remove the EISA adapter board, EISA ThinLAN adapter, and connector bucket from the system unit, as shown in Figure B-12.

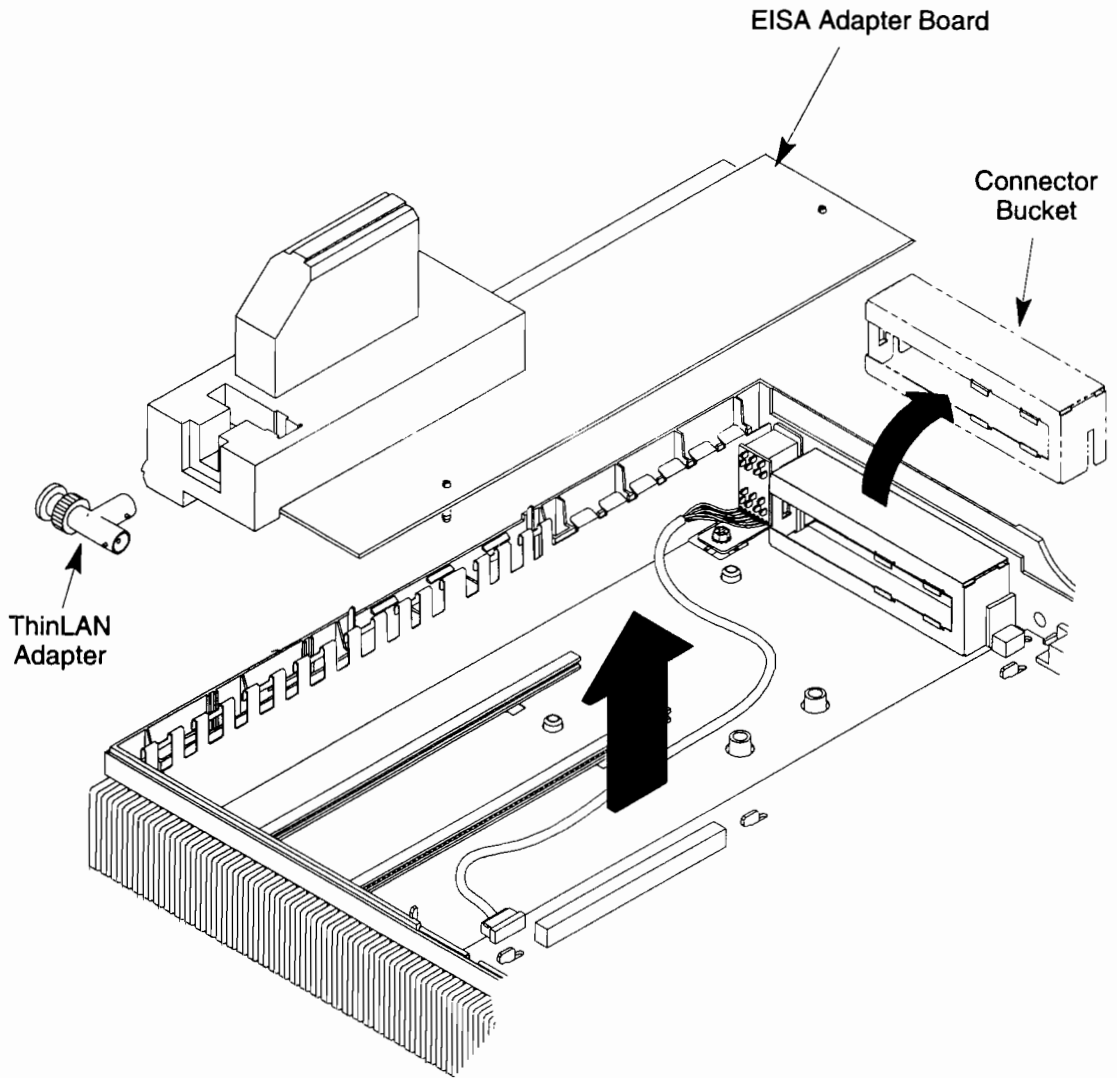


Figure B-12. Removing EISA Option Components

4. Remove the EISA filler panel assembly as shown in Figure B-13.

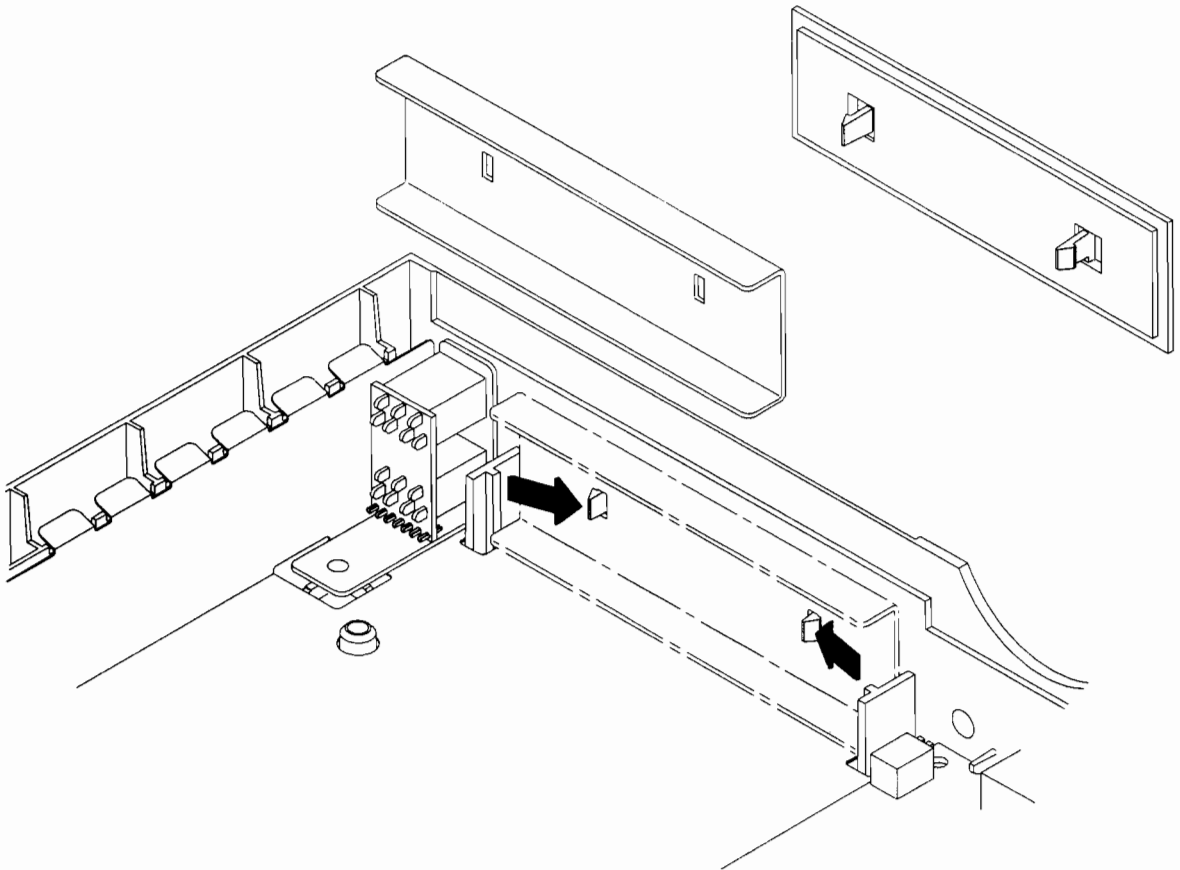


Figure B-13. Removing the EISA Filler Panel Assembly

5. Locate the EISA board you wish to install. Slide the connector bucket onto the EISA board connector bracket as shown in Figure B-14. Insert the board's connector bracket under the tabs on the face of the bucket. Then slide the top of the connector bracket under the tabs on the top of the bucket.

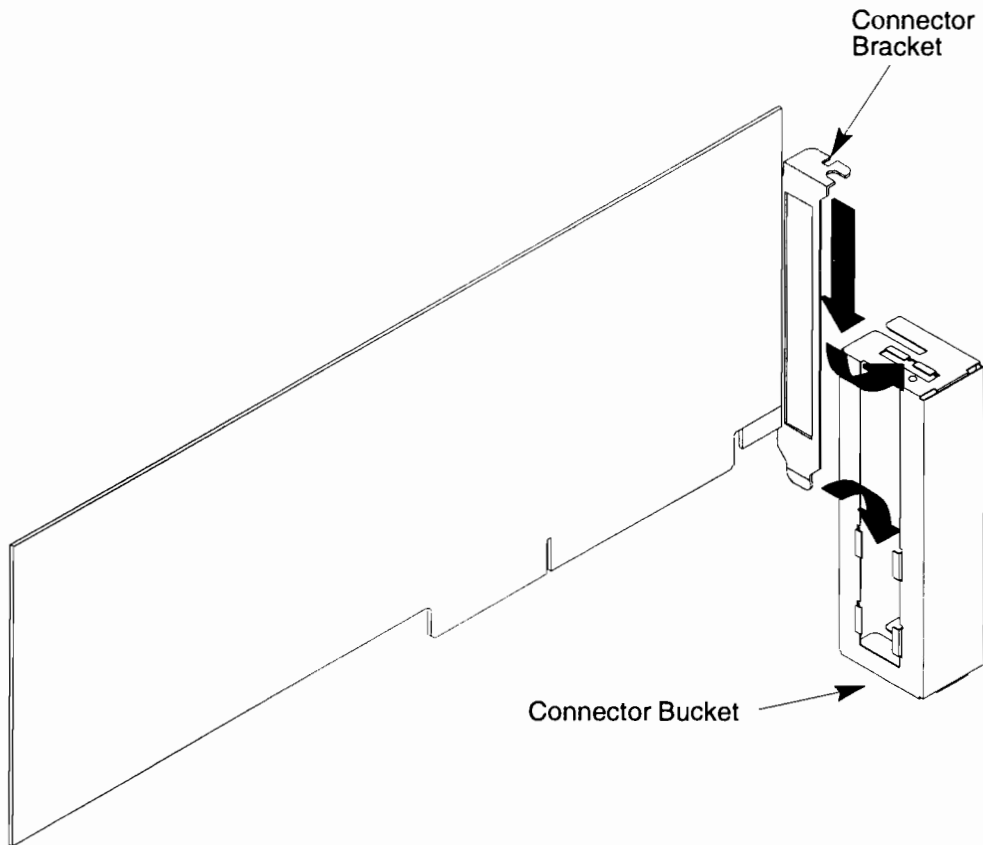


Figure B-14. Installing the Connector Bucket

6. Insert the EISA board into the connector on the adapter board. Push firmly to ensure a secure connection.

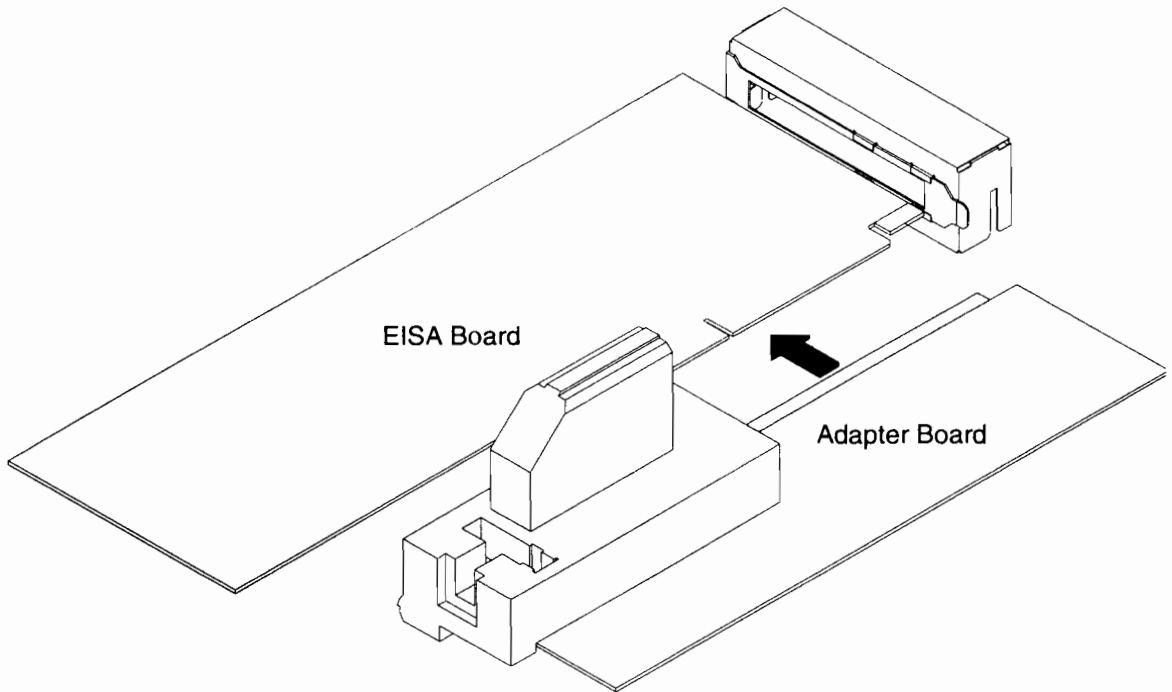


Figure B-15. Connecting the EISA Board to the Adapter Board

7. Slide the connector bucket, which you attached to the EISA board, *partway* into the channels of the connector slot on the rear of the system unit (see Figure B-16). Align the connector on the adapter board with the connector on the processor board, and carefully press the two connectors together. Ensure that the standoffs are aligned with the holes in the CPU board. Press on both the connector bucket and the adapter board to secure the assembly to the system unit.

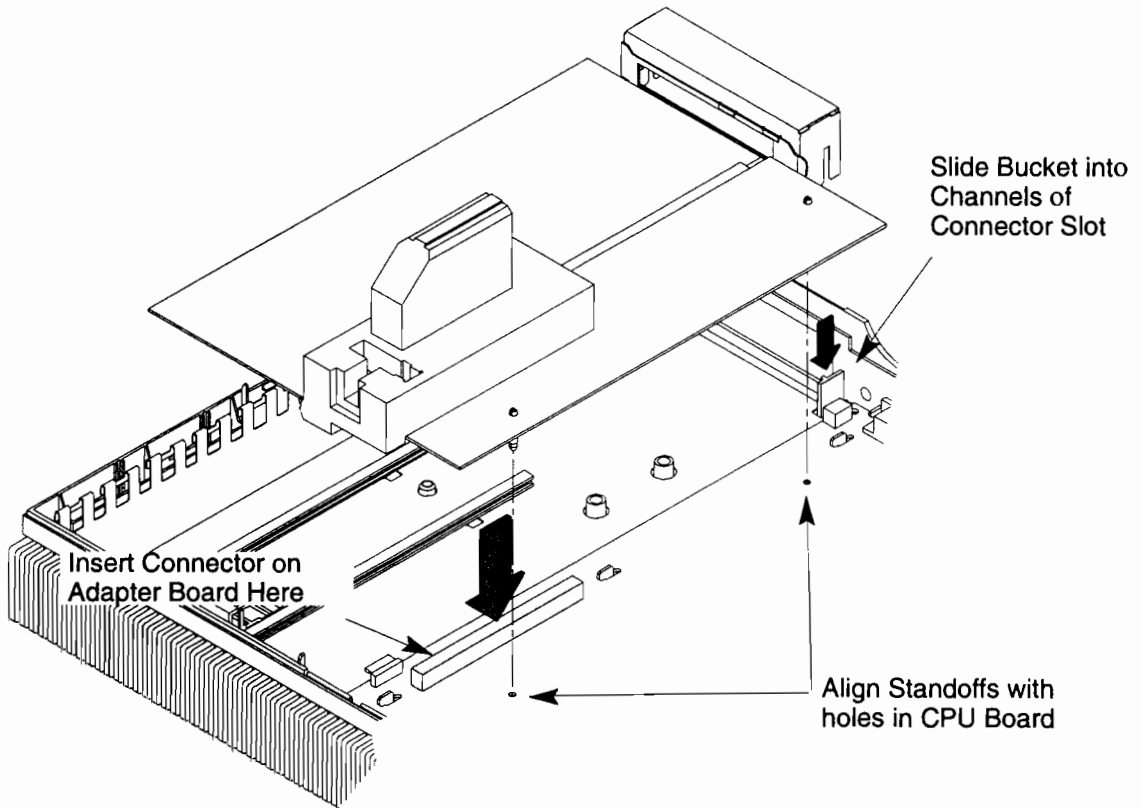


Figure B-16. Inserting the EISA Assembly into the System Unit

8. Pinch the sides of the end cap and slide it to the EISA board (see Figure B-17). Fit the edge of the EISA board into the slot of the end cap to secure the board.

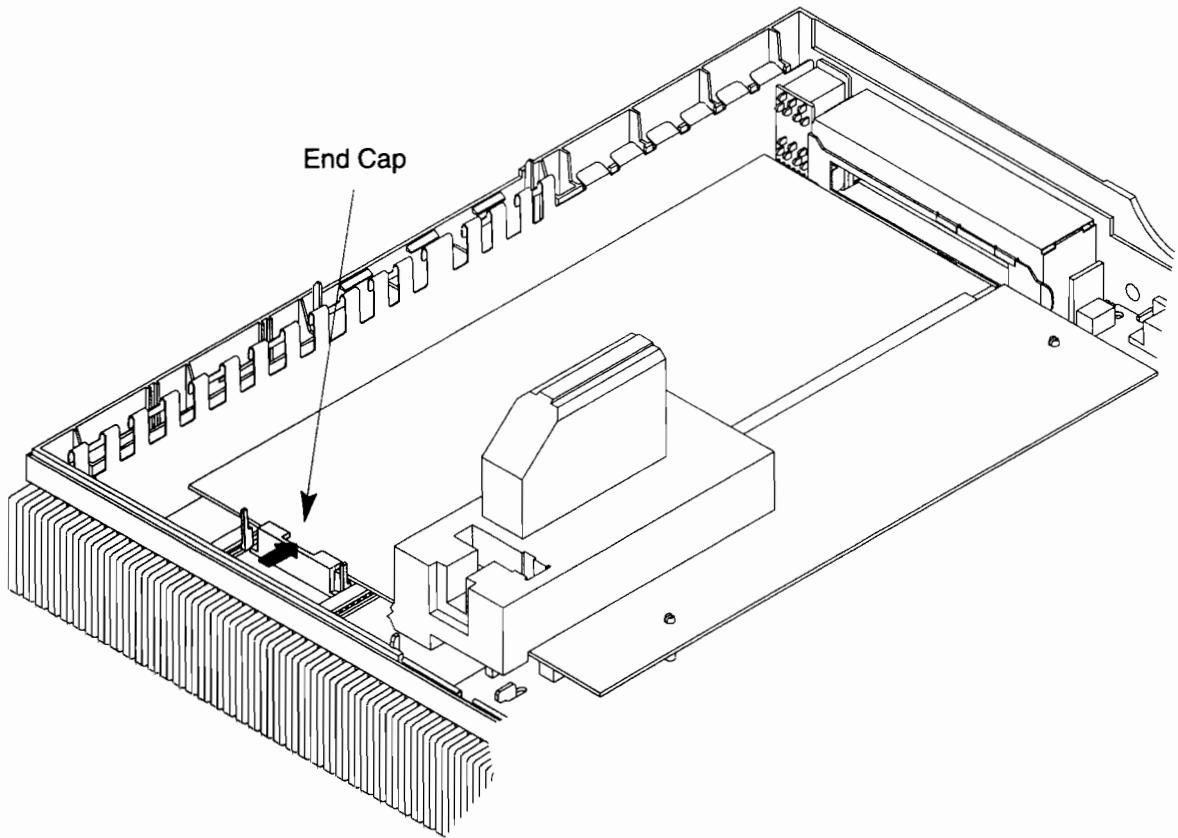


Figure B-17. Securing the EISA Board with the End Cap

9. Close the system unit as described in the "Closing the System Unit" section earlier in this chapter.

- 10.** If you installed the EISA LAN/9000-802.3 option board, use the EISA ThinLAN adapter (1250-2405), which was supplied with the EISA Adapter option, to connect to the board as shown in Figure B-18.

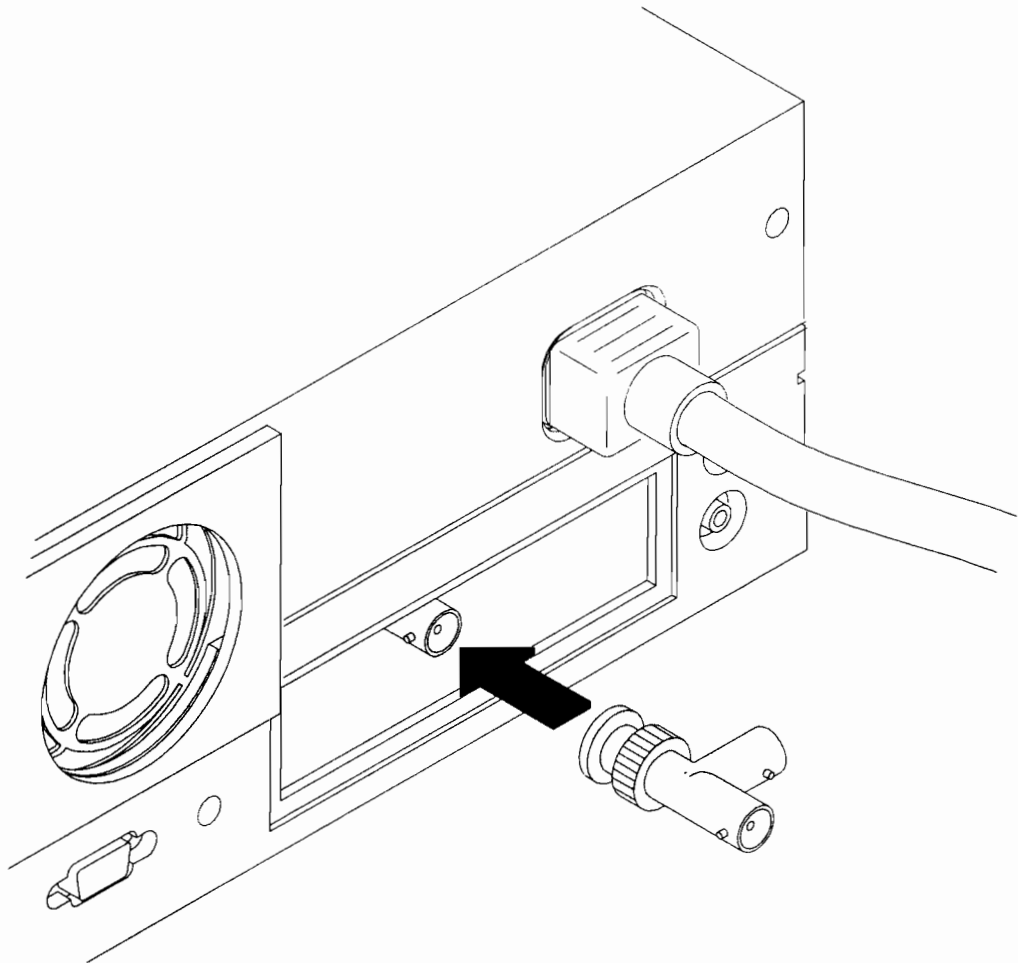


Figure B-18. Connecting to the EISA LAN/9000-802.3 Option Board

- 11.** If you installed the EISA HPIB Host Adapter, use an HPIB extender connector (10834A) to connect to the board as shown in Figure B-19.

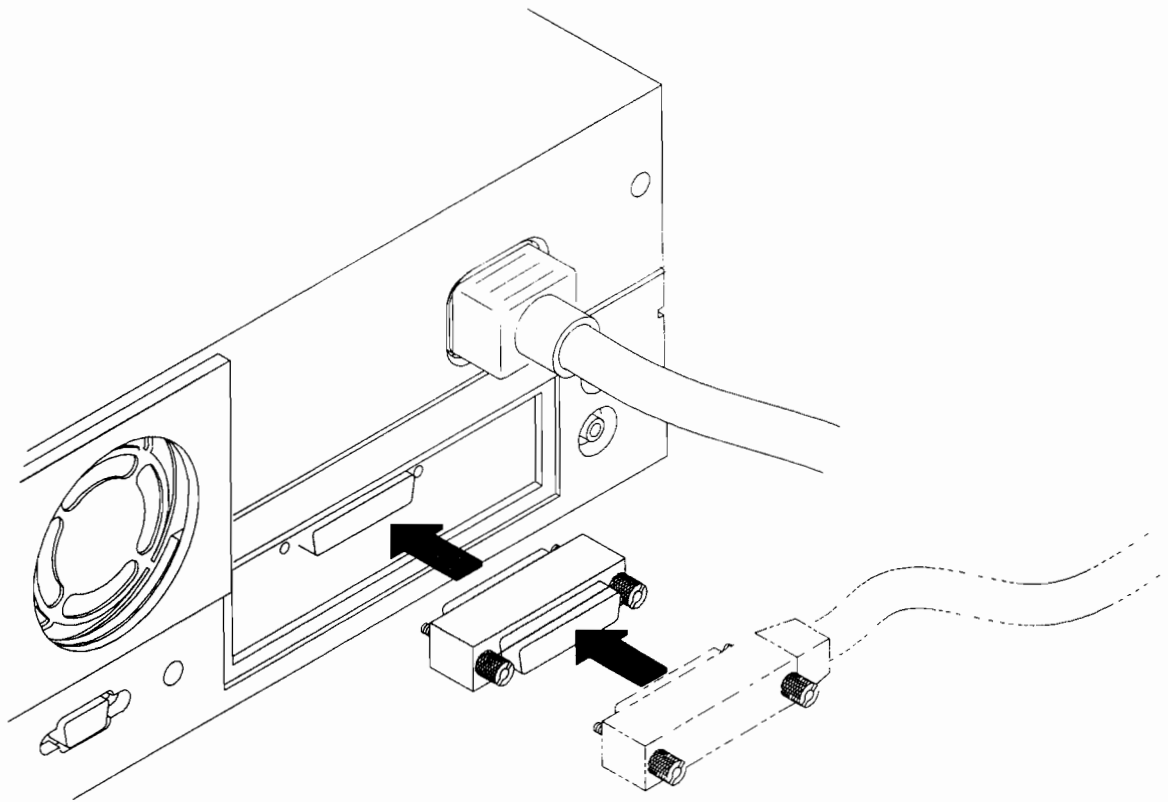


Figure B-19. Connecting to the EISA HPIB Host Adapter



Appendix C

SCSI-2 Connections

This appendix provides the following information about connecting Small Computer System Interface 2 (SCSI-2) devices to a Hewlett-Packard 9000 Series 700 Model 715/33 or Model 715/50 workstation:

- SCSI-2 restrictions
- Determining SCSI-2 bus length
- Assigning SCSI-2 device IDs
- Connecting to the SCSI-2 port

NOTICE: You must terminate any SCSI-2 bus with a SCSI-2 terminator if it does not have any external SCSI-2 devices attached to it.

SCSI-2 Restrictions

This section describes the SCSI-2 restrictions that apply to use of the following with a Hewlett-Packard 9000 Series 700 Model 715/33 or Model 715/50 system:

- Cables
- Connectors and terminator
- SCSI-2 configuration constraints

Cables

All SCSI-2 devices ship without cables. Only SCSI-2 cables approved by Hewlett-Packard should be used with the Model 715/33 and Model 715/50 and any SCSI-2 devices connecting to the system card or to any EISA SCSI-2 option boards. Hewlett-Packard offers the following SCSI-2 cables for both single-ended standard SCSI-2 (located on the system card) and fast, differential SCSI-2 (EISA option) devices:

- K2296 cable with 0.9 meter (3 feet) length
- K2297 cable with 1.5 meter (5 feet) length

CAUTION: SCSI-2 cables approved by Hewlett-Packard are designed to function within the SCSI-2 tolerances for Hewlett-Packard devices. Use of other cables may result in significant problems with system operation.

Singled-ended SCSI-2 definition limits the total cable length of SCSI-2 cables to 6 meters and fast, differential SCSI-2 (EISA option) definition limits the total cable length to 25 meters. Always use the shortest possible cable(s) for your configuration.

If you are daisy-chaining 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

NOTICE: See the “Determining SCSI-2 Bus Length” section of this Appendix to determine the total length of your cables.

Connectors and Terminator

Any SCSI-2 device connecting to the SCSI-2 system connector or an EISA SCSI-2 bus must use a high-density thumb screw connector on one end (end connecting to system connector or EISA bus) and a low-density bail lock connector on the other end. If you attach a second SCSI-2 device, the cable must have low-density connectors on each end.

The last device connected to the SCSI-2 bus must be terminated with a SCSI-2 terminator. All of the devices listed ship without terminators. If you do not already have a SCSI-2 terminator, you must order terminator K2291 from Hewlett-Packard for terminating the SCSI-2 System Bus. Use the 50-pin low-density terminator that came with your EISA SCSI-2 option card to terminate the last device connected to it.

If you do not have any external devices connected to either the single-ended or fast, differential SCSI-2 buses, no terminator is required.

SCSI-2 Configuration Constraints

You are limited in the number of same type SCSI-2 devices per system. Before adding another SCSI-2 device, you should determine if the workstation can support the additional device. The Model 715/33 and Model 715/50 offer both the single-ended standard SCSI-2 bus (system card port) and the fast, differential SCSI-2 bus (EISA option). Each bus has different configuration constraints.

Single-Ended Standard SCSI-2 Bus Configuration Constraints

For the single-ended standard SCSI-2 bus, HP-UX supports only **one** of each type of removable-media disk drive (i.e., floppy disk, CD-ROM, or magneto-optical drives) and two of the same type tape devices (i.e., 4-mm DDS tape drives or 9-track tape drives), per workstation. Table C-1 shows the Model 715/33 and Model 715/50 configuration constraints for each standard single-ended SCSI-2 device type. If the system has internal hard disk drives and/or a floppy disk drive you must count them as SCSI-2 devices.

CAUTION: **Do not** connect single-ended SCSI-2 devices to a fast, differential SCSI-2 bus or fast, differential SCSI-2 devices to a single-ended SCSI-2 bus. Connecting a SCSI-2 device to the wrong SCSI-2 bus can cause system failure.

Table C-1. Single-Ended Standard SCSI-2 Bus Configuration Constraints

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

EISA Fast, Differential SCSI-2 Bus Configuration Constraints

Fast, differential SCSI-2 devices do not work with the standard SCSI-2 bus. Table C-2 shows the Model 715/33 and Model 715/50 configuration constraints for each fast, differential SCSI-2 device type. If any of the EISA slots contain networking boards, do not count these as SCSI-2 devices or buses.

CAUTION: Do not connect single-ended SCSI-2 devices to a fast, differential SCSI-2 bus or fast, differential SCSI-2 devices to a single-ended SCSI-2 bus. Connecting a SCSI-2 device to the wrong SCSI-2 bus can cause system failure.

Table C-2. EISA Fast, Differential SCSI-2 Bus Configuration Constraints

External Fast, Differential SCSI-2 Devices	Maximum Number of Each Type of Device Allowed
SCSI-2 Drive (fast, differential disk drives only)	7
SCSI-2 Disk Arrays (addressed as single drive)	7

Determining SCSI-2 Bus Length

This section helps you to determine the total length of the single-ended standard SCSI-2 bus and the fast, differential SCSI-2 bus (EISA option).

Single-Ended Standard SCSI-2 Bus Length

Follow these instructions to calculate your total single-ended standard SCSI-2 bus length, which includes the system unit, external SCSI-2 devices, and SCSI-2 interconnect cables, using Table C-3:

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 Model 715/33 and Model 715/50 System Unit is already listed. This number must always be used for the system unit whether or not it has internal drives installed.

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" within the section on "SCSI-2 Restrictions.")
3. Add up 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 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 C-3. SCSI-2 Bus Length Worksheet for Single-Ended Standard SCSI-2 Bus

SCSI-2 Device	Internal SCSI-2 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
Model 715/33 /50 System Unit	0.6 (2.0)	0.6 (2.0)	
C1701A	0.3 (1.0)	_____	_____
C1512A	0.9 (3.0)	_____	_____
C2213A	1.5 (4.9)	_____	_____
C2217T	1.3 (4.3)	_____	_____
C1704A	0 (0.0)	_____	_____
C1705A	0 (0.0)	_____	_____
A1999A	0.3 (1.0)	_____	_____
C1700A	1.1 (3.6)	_____	_____
C1520B	0.2 (0.7)	_____	_____
C1521A	0.2 (0.7)	_____	_____
7980S	0 (0.0)	_____	_____

Subtotals: _____ + _____

Total SCSI-2 Bus Length =

(Total SCSI-2 bus length not to exceed total of 6 meters [19.6 feet])

EISA Fast, Differential SCSI-2 Bus Length

Follow these instructions to calculate your total fast, differential SCSI-2 bus length for each EISA SCSI-2 bus on your system, using Table C-4:

1. Find all of your external fast, differential 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.
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" within the section on "SCSI-2 Restrictions.")
3. Add up 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 SCSI-2 bus must not exceed 25 meters (82 feet). If the number you write for *Total SCSI-2 Bus Length* is greater than 25 meters (82 feet), try configuring your installation with shorter cables.

If you have problems, call your designated service representative.



Table C-4. SCSI-2 Bus Length Worksheet for EISA Fast, Differential SCSI-2 Bus

SCSI-2 Device	Internal SCSI-2 Bus Length meters (feet)	Device Internal Length meters (feet)	External Cable Length meters (feet)
C2427JK	0.7 (2.3)	_____	_____
C2425JK	0.7 (2.3)	_____	_____
C2482A	1.3 (4.3)	_____	_____

Subtotals: _____ + _____

Total SCSI-2 Bus Length =

(Total SCSI-2 bus length not to exceed total of 25 meters [82 feet])

Assigning SCSI-2 Device IDs

The Model 715/33 and Model 715/50 have two different SCSI-2 buses available: a single-ended standard SCSI-2 bus (system card SCSI-2 port) and a fast, differential SCSI-2 bus (EISA bus option card). Each bus has its own separate set of device IDs.


Single-Ended Standard SCSI-2 Device IDs

Before assigning a SCSI-2 device ID to your drive, you need to check your existing SCSI-2 device IDs. To check what SCSI-2 device IDs are available and assign an ID to your device, follow these instructions which use Table C-5:

1. Shut down the system.

If you are running HP-UX under HP VUE, shut down your system by performing the shutdown procedure described in Chapter 2.

If you are running HP-UX without HP VUE, shut down your system by typing the following command:

```
/etc/shutdown -h 0 
```

NOTICE: You must have superuser privileges to use the `/etc/shutdown` command. If you do not have superuser privileges, contact your system administrator.

2. Power off the workstation, using the power switch on the front of the workstation.

CAUTION: Do not power off your workstation without first shutting down HP-UX. Powering off with HP-UX still running could damage the data on the disks associated with your workstation.

3. Turn the power back on.

The system self-test runs automatically. Within a few minutes, the following message displays. Press and hold the **ESC** button as soon as this message appears:

```
Selecting a system to boot.  
To stop selection process, press and hold the ESCAPE  
key.....
```

4. Release **ESC** as soon as the following message displays:

```
Selection process stopped.
```

Once you release **ESC**, a list of all the disk drives and tapes available on the system displays, along with a menu of action choices. (Do not select anything from the menu; the purpose of stopping at this screen is to check the SCSI settings.) The device list looks similar to the following:

Device Selection	Device Path	Device Type
P0	scsi.6.0	QUANTUM PD425S
P1	scsi.5.0	QUANTUM PD425S

To find out which SCSI address settings are currently in use, look under the **Device Path** heading for device paths beginning with the sequence **scsi**. The number following **scsi** is the address setting for that device type. For example, the listing **scsi.6.0** in the sample device list tells us that there is a SCSI device currently using address 6.

5. Write in the SCSI-2 device ID of any internal drives in Table C-5.
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-2 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-2 addresses, and accounts for three of the seven devices allowed on the SCSI-2 bus.

8. Check to see what SCSI-2 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-2 device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI-2 device ID 7 for any device. It is reserved for the system bus connector.

Table C-5. Single-Ended Standard SCSI-2 Device IDs

SCSI-2 Device Drives	Device ID (Address) Number (Only 0 through 6 Available)	
	Internal	External
Internal System Drives:		
System SCSI-2 Drive(s):		
1st Winchester Drive (if present, uses ID No. 6)	_____	N/A
2nd Winchester Drive (if present, uses ID No. 5)	_____	N/A
Floppy Disk Drive (if present, uses ID No. 0)	_____	N/A
External Device Drives:		
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 only have a total of 7 SCSI-2 devices (internal and external) connected to the system.		

EISA Fast, Differential SCSI-2 Device IDs

Before assigning a SCSI-2 device ID to your drive, you need to check your existing SCSI-2 device IDs. To check what SCSI-2 device IDs are available and assign an ID to your device, follow these instructions which use Table C-6:

1. Write in the type of external fast, differential drives currently connected to your system under the heading "Fast, Differential EISA Option SCSI-2 Devices" and each drive's SCSI-2 device ID under the heading "Device ID."

NOTICE: If you don't know the device ID(s) of your drive(s), check the address jumpers or switches on each device for its address setting.

If any of the EISA slots contain networking boards, do not count these as SCSI-2 devices.

2. Add your new drive to the table.
3. Check to see what SCSI-2 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-2 device ID to your drive. Refer to the drive's installation documentation for information on changing the device ID.

CAUTION: Do not use SCSI-2 device ID 7 for any device. It is reserved for the EISA option SCSI-2 card.

Table C-6. EISA Fast, Differential SCSI-2 Device IDs

EISA Fast, Differential SCSI-2 Devices	Device ID (Address) Number (Only 0 through 6 Available)
1st External Device _____	_____
2nd External Device _____	_____
3rd External Device _____	_____
4th External Device _____	_____
5th External Device _____	_____
6th External Device _____	_____
7th External Device _____	_____

NOTICE: You can only have a total of 7 SCSI-2 devices connected to an EISA bus.

Connecting to the SCSI-2 Port

This section describes how to connect to the single-ended system SCSI-2 port and an EISA SCSI-2 port.

Single-Ended System SCSI-2 Port Connection

The external single-ended system SCSI-2 port is the left-most connector on the rear panel of the system unit. A SCSI-2 cable connects to this port with a high-density thumb screw connector, as shown in Figure C-1. This port supports the Small Computer Systems Interface (SCSI-2) protocol and supports up to 7 single-ended SCSI devices such as DDS-format tape drives and CD-ROM drives. This port uses a “high-density” 50-pin SCSI connector.

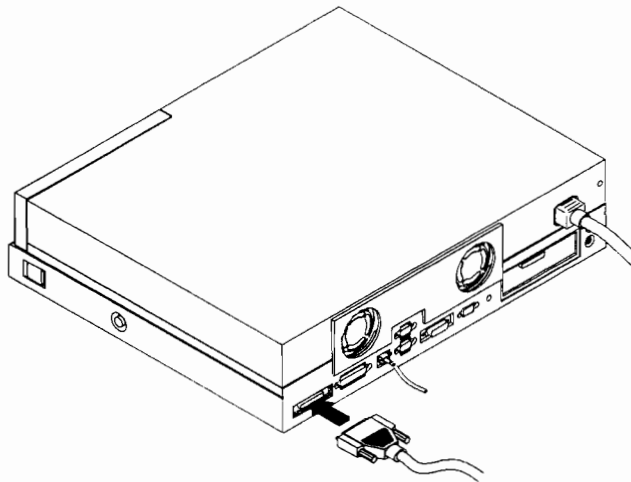


Figure C-1. Connecting to the Single-Ended System SCSI-2 Port

NOTICE: The last device connected to the SCSI-2 bus must be terminated with a SCSI-2 terminator. All of the devices listed ship without terminators. If you do not already have a SCSI-2 terminator, you must order terminator K2291 from Hewlett-Packard.

EISA Fast, Differential SCSI-2 Port Connection

The external EISA fast, differential SCSI-2 port is located in the optional EISA slot. A SCSI-2 cable connects to this port with a high-density thumb screw connector, as shown in Figure C-2.

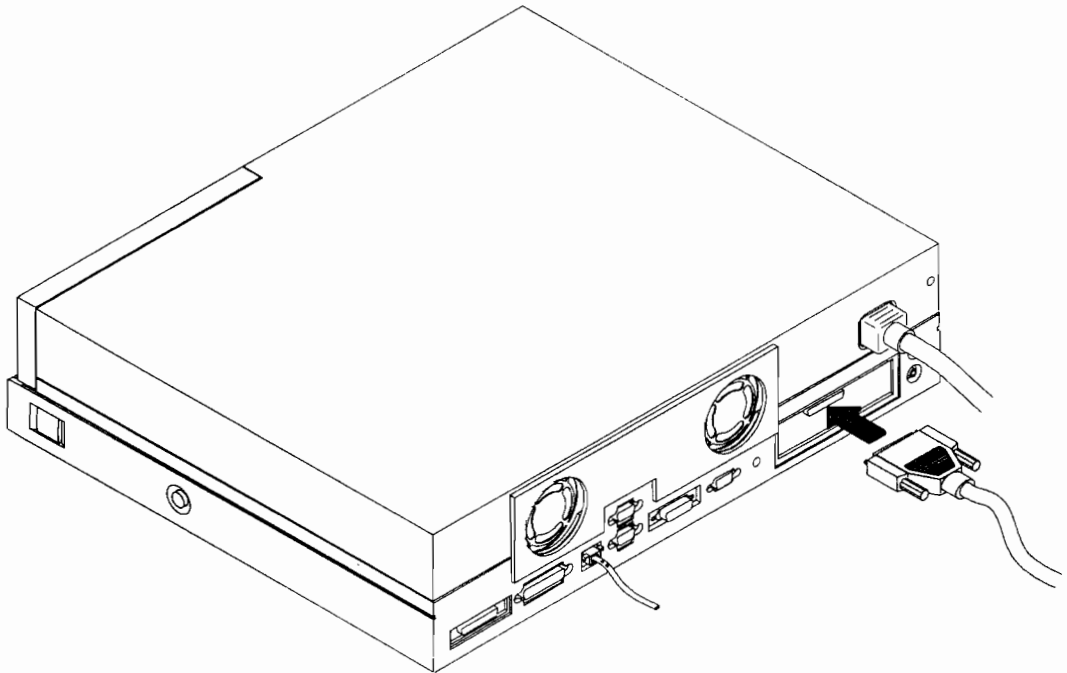


Figure C-2. Connecting to the EISA Fast, Differential SCSI-2 Port

NOTICE: The last device connected to the SCSI-2 bus must be terminated with a SCSI-2 terminator. All of the devices listed ship without terminators. If you do not already have a SCSI-2 terminator, you must order terminator K2291 from Hewlett-Packard.

Appendix D

The Boot Console User Interface

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 **boot console user interface** to allow you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are the special tasks that you can perform:

- Boot your workstation from any specified hardware device.
- Search for hardware devices that contain media from which your workstation can be booted.
- Reset the workstation.

Here are some of the kinds of information that your system displays:

- A list of the commands you may issue from the boot console user interface
- The real-time clock's time and date
- The setting of the Autoselect flag
- The status (on or off) of the secure boot mode
- The station address for the built-in LAN interface
- The primary boot path
- The console path

Here are some of the system parameters that you can set:

- The real-time clock's time and date
- The Autoselect flag
- The status (on or off) of the secure boot mode
- The status (on or off) of the **fastboot** memory test
- The primary boot path
- The console path

Accessing the Boot Console User Interface

To access the boot console user interface, follow these steps:

1. Shut down your workstation as described in Chapter 2 or Chapter 3.
2. Turn off the power to your workstation for a few seconds. Then turn it back on.
3. Press **ESC** .

In a few seconds, this message appears:

```
Terminating selection process.
```

A short time later, this message appears:

```
Searching for potential boot devices. To terminate  
search, press and hold the ESCAPE key.
```

```
Device Selection  Device Path  Device Type and Utilities  
-----
```

Your workstation is now searching for devices that may hold file systems from which it can boot HP-UX. As they are found, they appear in a list similar to the following example:

```
P0      scsi.6.0          disk_drive_identifier
P1      scsi.5.0          disk_drive_identifier
P2      scsi.4.0          DDS-format_tape_drive_identifier
P3      scsi.3.0          CD_ROM_drive_identifier
P4      lan.123456-789abc cluster_server_identifier
```

This process may take several minutes. When the search ends, this list of actions appears:

```
b)      Boot from specified device
s)      Search for bootable devices
a)      Enter boot administration mode
x)      Exit and continue boot sequence
?)      Help
```

Select from menu:

This is the **boot console user interface menu**.

If your workstation is a member of a **cluster** (a group of computers that share the file system of a **host** by means of a network connection), there may be no disks listed because your workstation has no disks directly attached to it.

Entering the Boot Administration Mode

To change system hardware parameters, you must enter the boot administration mode. From within this mode, you may enter any of the commands used in the task descriptions that follow.

To enter the boot administration mode, type **a** at the menu prompt as shown:

```
Select from menu: a RETURN
```

The following prompt is displayed:

```
BOOT_ADMIN>
```

Exiting the Boot Administration Mode


To exit the boot administration mode, take one of the following actions, depending on your need:

- Type **exit** at the `BOOT_ADMIN>` prompt. This returns you to the boot console user interface menu.
- Type **reset**. This restarts the workstation.
- Issue a **boot** command. See the section “Booting the Workstation” for details.
- Turn off the workstation. There is no need to shut down the workstation with the special procedure described in Chapter 2 or Chapter 3, since the workstation has not yet been booted, and the file system has not been activated.

Getting Help for the Boot Console User Interface Commands

You may issue many different commands in the boot administration mode. For a complete listing, at the `BOOT_ADMIN>` prompt type `h`, `help`, or `?` and a summary of all of the commands is listed.

To get help for a particular command, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> help command_name 
```

where *command_name* is the name of one of the listed commands.

The displayed help information usually includes a description of the command, its options, and the format for parameters.

Booting the Workstation

Usually, you start your workstation by turning it on and waiting for HP-UX to boot automatically. However, you may not 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, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> boot device 
```

where *device* is one of the following:

- The **hardware path** to the device, specified in Mnemonic Style Notation
- The **P_n** designation of the device, as listed in the device search

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” and is designated by the search as device “P2”, type one of the following commands at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> boot scsi.1.0 
```

OR

```
BOOT_ADMIN> boot P2 
```

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, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> boot device isl 
```

This 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.

For example, if the usual kernel (`/hp-ux`) on your root disk (`scsi.6.0`) has become corrupted, and you wish to boot your workstation from the backup kernel (`/SYSBCKUP`), type the following at the `ISL>` prompt:

```
ISL> hpux boot disk(scsi.6;0)/SYSBCKUP 
```

- If you do not know the locations of the bootable operating systems on the various media in your file system, you can find them with the **search** command.


NOTICE: You may also boot the workstation from the main menu of the Boot Console User Interface by using a command in this form:

```
Select from menu: b device_path 
```

where *device_path* is a designator for the path to the device that contains a bootable file system.

Searching for Bootable Media




The initial search conducted by the boot console user interface locates devices that *might* contain bootable media. This search might find a DDS-format tape drive which actually does not contain a bootable tape. To check to see which devices actually contain bootable media, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> search 
```

This causes your workstation to search *exhaustively* for bootable media. It searches all types of I/O devices in the following order:

1. Built-in SCSI
2. Built-in LAN
3. EISA (if installed)

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  S .
- To continue the display, press  Q .
- To halt the search, press  .

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.

NOTICE: If the search discovers ten devices, the label in the **Device Selection** column for the tenth entry is labeled **P9**. Any subsequent entries are labeled **P***.

P* cannot be used as a device designator for boot administration commands because it is ambiguous. To refer to a device labeled **P*** in a search, specify it by means of the entry in the **Device Path** column.

To search to see which devices of *just one type* actually contain bootable media, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> search device_type 
```

where *device_type* is one of the following:

scsi is the built-in SCSI bus

lan is all connections to the built-in LAN

eisa is the EISA bus

NOTICE: You may also search for bootable media from the main menu of the Boot Console User Interface by using a command in one of the following forms:

```
Select from menu: s 
```

```
Select from menu: s device_type 
```

where *device_type* is the type of device (**scsi**, **lan** or **eisa**) for which you wish to search.

Redisplaying the Results of a Search

The list of bootable devices is stored until you conduct another search or you reboot your system. To see the list of devices again, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> show 
```

It is much faster to redisplay the list with `show` than it is to conduct the search again.

Resetting the Workstation

The act of resetting your workstation causes it to restart completely. It's similar to turning the workstation off and then back on again. To reset your workstation, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> reset 
```

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 can set any of the paths shown in Table D-1:

Table D-1. 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 `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> path 
```

The paths are displayed in **Mnemonic Style Notation** as shown in Table D-2.

Table D-2. Mnemonic Style Notation

I/O Type	Specification Format
Built-in SCSI	<i>scsi.scsi_address.logical_unit_number</i>
Built-in LAN	<i>lan.server_address.init_timeout.io_timeout</i>
Built-in HIL	hil
RS-232 Port A	<i>rs232_a.baud_rate.word_length.parity_option</i>
RS-232 Port B	<i>rs232_b.baud_rate.word_length.parity_option</i>
Graphics Slot	graphics
Built-in Parallel Port	parallel
Optional EISA SCSI	<i>eisa.eisa_slot.scsi_address</i>

To display the current setting for a particular system path, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> path path_type RETURN
```

where *path_type* is one of the path types listed in Table D-1.

For example, to get the path to the primary boot device, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> path primary RETURN
```

To set a system path to a new value, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> path path_type path RETURN
```

where *path_type* is one of the path types listed in Table D-1 and *path* is the specification of the path in Mnemonic Style Notation (as described in Table D-2). For example, to set the console path to RS-232 Port A with a baud rate of 4800, a word length of 7, and even parity, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> path console rs232_a.4800.7.even RETURN
```

For help in using the **path** command, type one of the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> help path RETURN
```

```
BOOT_ADMIN> help path_type RETURN
```

where *path_type* is one of the path types listed in D-1. The help screens offer complete descriptions of all path options.

Displaying and Setting the Real-Time Clock

It is usually a good idea to set the real-time clock in your workstation with the HP-UX **date** command, since that command contains special safeguards that can help you to avoid disruption of time-related processes (like those controlled by the **crontab** command). But you may also set the clock from within the boot administration mode.

To display the current setting of the real-time clock, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> date 
```

Your workstation reports the information in this form:

```
Mon Jul 1 14:55:05 GMT (19:91:7:1:14:44:5)
```

To set the real-time clock, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> date century:year:month:day:hour:minute:second 
```

For example, to set the clock to July 1, 1991, 2:44:05 PM, GMT, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> date 19:91:7:1:14:44:5 
```

NOTICE: The boot administration mode's **date** command only understands Greenwich Mean Time (GMT). You must compute GMT relative to your own time zone to get the correct value for *hours* (and, in some time zones, *minutes*).

Displaying and Setting the Autoselect Flag

Autoselect is a variable stored in your workstation's non-volatile memory. (Non-volatile memory retains its contents even after power is turned off.) If you reset this flag to a new value, the change takes effect the next time you reboot the workstation.

To examine the state of the **Autoselect** flag, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> auto 
```

If **Autoselect** is set to **on**, when your workstation is turned on, it automatically attempts to boot the operating system. If it is set to **off**, your workstation enters the boot console user interface and a search for all potential bootable devices takes place.

To change the state of the **Autoselect** flag, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> autoselect state 
```

where *state* is **on** or **off**.

Displaying and Setting the Secure Boot Mode

There may be circumstances in which you would not wish to allow anyone to attempt to boot your workstation from a device other than the device you have specified, nor to control the system from any console other than the one you have designated. This can be an important consideration in secure installations.

If you set up your system in such a way that it is physically impossible for unauthorized persons to disconnect it from its designated boot device, you can guarantee that the boot console user interface cannot be used to boot the system from an unauthorized device or to change the console path. If the secure boot mode is set to **on**, the boot console interface cannot be activated; thus, you are assured that your system's security cannot be compromised through interaction with that interface.

To check the status of the secure boot mode, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> secure 
```



The value **on** or **off** is displayed.

To change the value of the secure boot mode, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> secure state 
```

where *state* is **on** or **off**.

CAUTION: Once the secure boot mode is set to **on**, the only way to turn it off is to disconnect the boot device. When you turn on your workstation after isolating it from its boot device, the boot console interface reappears. You can then turn the secure boot mode **off**, turn off your workstation, reconnect the boot device, and turn the system back on.

Displaying and Setting the Fastboot Mode

When **fastboot** is enabled (set to **ON**), your workstation does a quick check of the memory during its power-on self tests. This enables your workstation to complete its boot process quicker. When **fastboot** is disabled (set to **OFF**), more extensive memory testing is performed during the self tests causing the boot process to take significantly longer. The default factory setting is for **fastboot** to be enabled (**ON**).

If your workstation has a large amount of memory installed, the power-on tests may take several minutes to complete with **fastboot** set to **OFF**.

To display the status of **fastboot**, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> fastboot 
```

To disable **fastboot**, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> fastboot off 
```

To enable **fastboot**, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> fastboot on 
```

Displaying the LAN Station Address

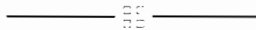
The **LAN station address** of your workstation is the label that uniquely identifies the LAN connection for your workstation at the **link level** (the hardware level). It is sometimes necessary for you to supply this address to other users. For example, if your workstation is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your workstation to the cluster.

To display your workstation's LAN station address, type the following at the `BOOT_ADMIN>` prompt:

```
BOOT_ADMIN> lan_addr 
```

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

```
LAN Station Address: 123456-789abc
```



Glossary

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 which allow a user or group of users to read, write, or execute files. *See also* **file access permissions**.

active window

The window which 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 which 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. Strictly 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 user interface

The interactive program that enables you to interact with the hardware of your workstation before the workstation boots the operating system. The boot console user 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 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 which 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 which 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.

console user interface menu

A list of the actions you can perform from the boot console user interface. *See also* **boot console user interface.**

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 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-format tape drive

A device which 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 workstations. 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-format tape drive, floppy drive, hard disk drive**.

drop

To release an icon that has been “dragged” to a new position. *See also* **drag**.

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.

Extended Industry Standard Architecture (EISA)

An industry standard bus architecture based on and compatible with that used by IBM in their AT series computers.

fast, differential SCSI-2

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-2, single-ended standard SCSI-2, Small Computer System Interface**.

fast-wide SCSI-2

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-2, single-ended standard SCSI-2, 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.

file server

A workstation whose primary 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.

filename

The name given to a particular file. *See also* **absolute pathname, file, pathname.**

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 which stores data on a flexible diskette.

hard disk

A type of disk which is rigid as opposed to a floppy diskette which is flexible.

hard disk drive

A device which stores data on a hard disk. The hard disk is a permanent part of the drive and cannot be removed.

Help Manager

The HP VUE application that provides online help.

\$HOME

The environment variable representing 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** and **cluster server**.

HP Visual User Environment

A user interface which 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**.

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 which share data, hardware, and software resources via Networking Services software.

local area network station 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.

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 which 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**.

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 programs.

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 which allows the user to view information which does not fit within the window.

SCSI-2

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 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-2

An 8-bit wide SCSI bus with standard receivers and drivers, which limits total cable length to 6 meters. *See also* **fast, differential SCSI-2, fast-wide SCSI-2, 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-2, fast-wide SCSI-2, single-ended standard SCSI-2.*

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.

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 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** and **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 usually includes a keyboard, a monitor, and a system unit. *See also* **node**, **disked workstation**, **diskless workstation**.





Index

A

auto command, D-16

autoselect command, D-16

B

boot command, D-7

boot console user interface, D-1

accessing, D-3

autoselect, D-16

boot administration mode, D-5

booting the workstation, D-7

fastboot, D-18

getting help, D-6

LAN station address, D-19

paths, D-12

resetting the clock, D-15

resetting the workstation, D-11

searching, D-9

secure boot mode, D-17

booting the system, failure. *See* solving problems

C

CD-ROM drive, 6-1

disc caddy

inserting and removing a CD-ROM disc,
6-2

loading and unloading, 6-4

mounting a disc, 6-6

unmounting a disc, 6-8

commands

auto, D-16

autoselect, D-16

boot, D-7

cpio, 5-7, 7-9

cstm, 8-16

date, D-15

exit, 3-14, 8-19, D-5

fastboot, D-18

fbackup, 7-9

ftio, 7-9

help, D-6

ioscan, 7-6

lan_addr, D-19

lp, 4-11, 4-19

mediainit, 5-4

mkdir, 6-6

mount, 6-7

mt, 7-9

passwd, 3-13

path, D-12

reset, D-5, D-11

sam, 3-8, 4-12

search, D-9

secure, D-17

set_parms, 2-4, 3-4

show, D-11

shutdown, 3-15

tar, 5-5, 7-7

umount, 6-8

verify, 8-17

configuring hardware, B-1
 built-in graphics switches, B-12
 closing system unit, B-7
 CRX graphics options, B-15
 dual monitor system, B-20
 single monitor system, B-16
 installing EISA board, B-25
 installing memory, B-8
 opening system unit, B-2

connectors
 monitor, 1-16
 system unit, 1-8
 ac power, 1-15
 audio IN/OUT, 1-5, 1-15
 built-in graphics, 1-11
 HP-HIL, 1-10
 network, 1-11
 options, 1-12
 parallel, 1-10
 RS-232, 1-10
 SCSI, 1-10
 serial, 1-10

controls
 monitor, 1-16
 system unit, 1-4
 power switch, 1-5
 TOC switch, 1-5

copying files, from a remote terminal. *See* **rcp**

cpio command, 5-7, 7-9

CRX graphics unit
 disconnecting from system unit, B-2
 reconnecting to system unit, B-7

cstm command, 8-16

D

date command, D-15

DDS-format tape
 archiving data, 7-7
 listing files, 7-8
 restoring files, 7-8
 write-protect tab, 7-2
 writing to, 7-7

DDS-format tape drive, 7-1
 cleaning the tape heads, 7-13
 LED indicators, 7-10
 display codes, 7-11
 warning conditions explained, 7-12
 loading and unloading a data cassette, 7-3
 media life, 7-13
 testing the configuration, 7-6
 using, 7-5
 write-protecting a data cassette, 7-2

description of system. *See* product description

device files
 CD-ROM drive, 6-6
 DDS-format tape drive
 compressed mode, 7-5
 noncompressed mode, 7-5
 floppy disk drive, 5-4

E

electronic mail. *See* networking, electronic mail

electrostatic discharge precautions, A-6

emissions regulations, A-3

exit command, 3-14, 8-19, D-5

F

fastboot command, D-18

fbackup command, 7-9

file backup, 2-31, 3-17

File Transfer Protocol. *See* **ftp**

floppy disk drive, 5-1

- formatting a diskette, 5-4
- inserting and removing a diskette, 5-3
- write-protecting a diskette, 5-2

floppy diskette

- archiving data, 5-5
- formatting, 5-4
- listing files, 5-6
- restoring files, 5-6
- saving files, 5-5
- transferring data, 5-5
- write-protect tab, 5-2

ftio command, 7-9

H

hardware configuration. *See* configuring hardware

help, HP VUE, 2-17

help command, D-6

host name. *See* system name

HP VUE

- changing password, 2-23
- control panel, 2-12
 - clock, 2-12
 - date, 2-12
 - file manager, 2-13
 - help, 2-12
 - load, 2-12
 - lock, 2-12

logo, 2-12

logout, 2-13

mailer, 2-13

printer, 2-13

progress light, 2-13

rename workspace, 2-12

style manager, 2-12

terminal, 2-12

text editor, 2-12

toolbox, 2-13

trash can, 2-13

workspace switches, 2-13

creating new user account, 2-19

help, 2-17

logging in, 2-6

logging out, 2-25

on-line help, 2-17

setting up printer, 4-3

shutting down, 2-27

starting up after the first time, 2-5

starting up for the first time, 2-2

testing printer, 4-10

Welcome window, 2-8, 2-14

windows, 2-9

border, 2-10

maximize button, 2-10

menu button, 2-9

minimize button, 2-10

scroll bar, 2-11

scroll bar slider, 2-11

sizing, 2-10

workspace, 2-8

terminal windows, 2-15

using, 2-14

HP-UX command line

changing password, 3-13

creating new user account, 3-8

logging in, 3-6

logging out, 3-14

- setting up printer, 4–12
- shutting down, 3–15
- starting up after the first time, 3–5
- starting up for the first time, 3–2
- testing printer, 4–19

I

indicators

LED

- DDS-format tape drive, 7–10
- system unit, 1–6

monitor, 1–16

Internet Protocol (IP) address, 2–3, 3–3

introduction. *See* system overview

ioscan command, 7–6

K

keyboards

ITF, 1–22

key equivalents, 1–23

PC, 1–22

L

lan_addr command, D–19

laser safety statements, A–7

LEDs

- DDS-format tape drive
- display codes, 7–11

- warning conditions explained, 7–12

- system unit, 1–6

- display codes, 1–7

- error codes, 8–9

logging in

- from a remote terminal. *See* **rlogin**

- HP VUE, 2–6

- HP-UX command line, 3–6

logging out

- HP VUE, 2–25

- HP-UX command line, 3–14

lp command, 4–11, 4–19

M

media interchangeability restrictions, 7–14

mediainit command, 5–4

memory, configuration, B–8

mkdir command, 6–6

mnemonic style notation, D–13

monitor

- 15-inch color, 1–21

- 17-inch color, 1–20

- 19-inch color, 1–17, 1–18

- 19-inch grayscale, 1–19

- connectors, 1–16

- controls, 1–16

- indicators, 1–16

mount command, 6–7

mt command, 7–9

N

Network File System (NFS), 1–26

networking

- electronic mail, 1–25
- ftp, 1–26
- NFS, 1–26
- overview, 1–25
- rcp, 1–26
- rlogin, 1–25
- telnet, 1–25

O

on-line help

- cpio** command, 5–7, 7–9
- cstm** command, 8–16
- fbackup** command, 7–9
- floppy information, 5–7
- ftio** command, 7–9
- ftp**, 1–26
- help** command, D–6
- HP VUE, 2–17
- lp** command, 4–20
- mt** command, 7–9
- rcp**, 1–26
- rlogin**, 1–25
- tar** command, 5–7, 7–9
- telnet**, 1–25

opening system unit

- foot removal, B–4
- optional graphics unit removal, B–2

ordering information

- CD-ROM disc caddies, 6–9
- DDS-format data cassettes, 7–14
- floppy diskettes, 5–8

P

passwd command, 3–13

password

- HP VUE
 - changing, 2–23
 - creating, 2–19
- HP-UX command line
 - changing, 3–13
 - creating, 3–8

path command, D–12

power up. *See* starting up

printer. *See* setting up printer

printing

- files, 4–20
- solving problems, 4–21

problems. *See* solving problems

product description, 1–2

R

rcp, 1–26

recovery system tape, 2–31, 3–17

remote copy. *See* **rcp**

remote login. *See* **rlogin**

reset command, D–5, D–11

rlogin, 1–25

RS-232

- connector, 1–10
- pinout, 1–10

S

SAM. *See* system administration manager

sam command, 3–8, 4–12

SCSI-2, C-1

assigning device IDs

EISA fast, differential, C-15

single-ended standard, C-11

bus length

EISA fast, differential, C-9

single-ended standard, C-7

cables, C-2

configuration constraints

EISA fast, differential, C-6

single-ended standard, C-4

connectors and terminator, C-3

port connections

EISA fast, differential, C-18

single-ended standard, C-17

restrictions, C-2

search command, D-9

secure command, D-17

serial

connector, 1–10

pinout, 1–10

set_parms command, 2–4, 3–4

setting up printer, 4–1

HP VUE, 4–3

HP-UX command line, 4–12

show command, D-11

shutdown command, 3–15

shutting down

HP VUE, 2–27

HP-UX command line, 3–15

solving problems, 8–1

boot failure, 8–13

LED error codes, 8–9

printing, 4–21

problems and solutions, 8–2

CD-ROM drive, 8–6

DDS-format tape drive, 8–7

floppy disk drive, 8–5

loading and booting the OS, 8–3

memory, 8–8

network, 8–4

powering up, 8–2

system verification tests, 8–16

starting up

HP VUE

after the first time, 2–5

for the first time, 2–2

HP-UX command line

after the first time, 3–5

for the first time, 3–2

SupportWave, 8–16

switches

power, 1–5

Transfer of Control (TOC), 1–5

system administration manager

HP VUE

creating new user account, 2–19

setting up printer, 4–4

HP-UX command line

creating new user account, 3–8

setting up printer, 4–12

system default printer, 4–7, 4–16

system name, 2–3, 3–3

system overview, 1–1

system verification tests, 8–16

T**tar** command

DDS-format tape drive, 7-7

floppy disk drive, 5-5

telnet, 1-25

testing printer

HP VUE, 4-10

HP-UX command line, 4-19

trouble shooting. *See* solving problems**U****umount** command, 6-8

user account

HP VUE

changing password, 2-23

creating, 2-19

HP-UX command line

changing password, 3-13

creating, 3-8

username, 2-6, 3-6

V**verify** command, 8-17**W**

warning and caution statements, A-9





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Please take a few minutes to give us the information we need to revise and improve our manuals from your point of view.

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Order No.: A2084-90613

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Company _____

Address _____

Telephone number (____) _____ Date _____

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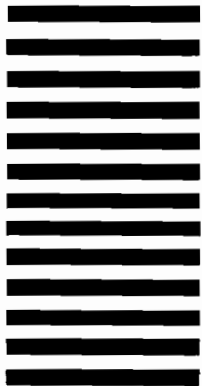
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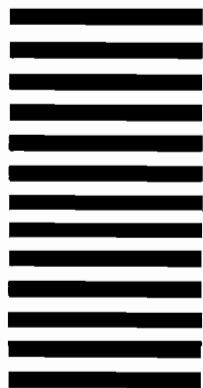
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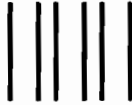
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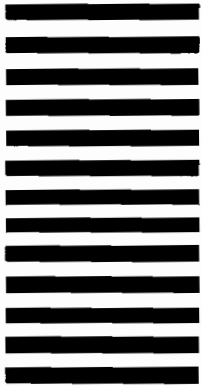
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