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Preface
This owner’s guide describes how to use your HP 9000 J280 workstation.

This manual assumes that you have installed your workstation as described in the *J Class Hardware Installation Guide.*
<table>
<thead>
<tr>
<th><strong>Audience</strong></th>
<th>This guide is intended for HP 9000 J280 workstation users.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Safety and Regulatory Statements</strong></td>
<td>See Appendix A in the back of this manual for safety and regulatory statements that apply to this workstation.</td>
</tr>
<tr>
<td><strong>Release Document(s)</strong></td>
<td>Please refer to the <em>Release Document(s)</em> 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.</td>
</tr>
</tbody>
</table>
If you are using HP-UX version 10.20, refer to the following manuals for more information:

- *J Class Hardware Installation Guide* (A2876–90010)
- *Using Your HP Workstation* (A2615–90003)
- *Installing and Updating HP-UX* (B2355–90050)
- *System Administration Tasks HP 9000 Series 700 Computers* (B2355–90051)
- *Configuring HP-UX for Peripherals* (B2355–90053)
- *Managing Clusters of HP 9000 Computers: Sharing the HP-UX File System* (B2355–90038)

To order manuals, please contact your local sales office.

**Revision History**

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

<table>
<thead>
<tr>
<th>HP Part No.</th>
<th>Edition</th>
<th>Revision History</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4081–90601</td>
<td>E0195</td>
<td>First printing</td>
</tr>
<tr>
<td>A4081–90607</td>
<td>E0695</td>
<td>Second printing</td>
</tr>
<tr>
<td>A4476–90013</td>
<td>E0596</td>
<td>Third printing</td>
</tr>
<tr>
<td>A2876–90013</td>
<td>E0996</td>
<td>Latest printing</td>
</tr>
</tbody>
</table>
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 key words 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.

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

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 a notice.

This symbol indicates a procedure.

This symbol indicates a caution.

This symbol indicates the end of a chapter or a part of this guide.
| Questions, Suggestions, or Problems | If you have any questions, suggestions, or problems with our hardware, software, or documentation, please call 1–888–301–5932 (US & Canada) or contact the HP Response Center for your country. |
Chapter 1

System Overview

• Product description
• System unit front panel controls, LED, and LCD
• System unit rear panel connectors
• Monitors
• Keyboard and Mouse
• Pointing devices
• Operating system overview
• Important information you need to note
• Networking overview
This chapter introduces the HP 9000 J 280 workstation. Its purpose is to familiarize you with your workstation and its controls and indicators.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 interface.
<table>
<thead>
<tr>
<th><strong>Product Description</strong></th>
<th>This workstation has the following key features:</th>
</tr>
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<tr>
<td><strong>Operating System</strong></td>
<td>HP-UX version 10.20 or later</td>
</tr>
<tr>
<td><strong>User Interface</strong></td>
<td>HP VUE version 3.0 graphical user interface or HP CDE</td>
</tr>
<tr>
<td><strong>Compatibility</strong></td>
<td>Source and binary code compatible with the Series 700 product family</td>
</tr>
<tr>
<td><strong>Monitors</strong></td>
<td>17-inch 1280x1024 color monitor or 20-inch 1280x1024 color monitor</td>
</tr>
<tr>
<td><strong>Optional Graphics</strong></td>
<td>HP VISUALIZE–EG, 8–plane 2D graphics</td>
</tr>
<tr>
<td></td>
<td>HP VISUALIZE–48XP, 48–plane graphics</td>
</tr>
<tr>
<td></td>
<td>HP VISUALIZE–8/24, Accelerated 8–plane or 24–plane 3D graphics</td>
</tr>
<tr>
<td><strong>Main Memory</strong></td>
<td>32 MB to 2 GB</td>
</tr>
<tr>
<td><strong>Internal Storage Devices</strong></td>
<td>Fast, wide SCSI hard disk drives up to two:</td>
</tr>
<tr>
<td></td>
<td>2.0 GB Drive</td>
</tr>
<tr>
<td></td>
<td>4.0 GB Drive</td>
</tr>
<tr>
<td></td>
<td>Single-Ended SCSI removable Media – up to two:</td>
</tr>
<tr>
<td></td>
<td>CD-ROM Drive</td>
</tr>
<tr>
<td></td>
<td>2.0–8.0 GB, 4-mm DDS tape drive</td>
</tr>
<tr>
<td></td>
<td>Floppy drive (not a SCSI Device)</td>
</tr>
<tr>
<td><strong>Standard Network</strong></td>
<td>Ethernet IEEE 802.3 AUI Thicknet or RJ45, UTP Twisted Pair</td>
</tr>
</tbody>
</table>
• Standard I/O

One SCSI-2: Single-Ended, 8-bit (for removable devices)
5 MB/sec synchronous
1.5 MB/sec asynchronous
ALT-1, 50-pin, high density SCSI-2 connector

One SCSI-3: Fast, wide (for hard disk drives)
20 MB/sec synchronous
68-pin, high-density SCSI-3 P connector

Two serial interfaces
RS-232C, 9-pin male

One parallel interface
Centronics, BUSY handshake
25-pin female
• EISA/GSC Five slots total; four EISA and
  three GSC that can be used as
  follows: two individual EISA, one
  individual GSC, and two
  combination EISA or GSC.

• Keyboard          PS/2 Keyboard

• Mouse            PS/2 Mouse
Before powering on your system, you should become familiar with the system unit controls.

Figure 1–1 shows the system unit front panel controls.

**Figure 1–1. System Unit Front Panel Controls**
System LCD

The Liquid Crystal Display (LCD) is located on the left side of the front panel. It displays messages about the state of the system, including error codes. The following symbols appear in the LCD, representing the different system activities shown:

- Operating system running
- Disk Access in progress
- Network Receive in progress
- Network Transmit in progress

\textit{Figure 1–2. LCD Symbols}

System Power Switch

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

\textbf{CAUTION: Do not} turn off the power to your workstation without first performing the recommended shutdown procedure. If you do not shut down your workstation properly, you can damage the programs and data on your disk.

Using the proper shutdown method for your workstation and operating system also ensures that your system produces the proper diagnostic and self test messages, and broadcasts a warning message to remote terminals that it is about to shutdown.
Follow the instructions in *Using Your HP Workstation* to shut down your workstation.

**System Power LED**

The Power Light Emitting Diode (LED) is located on the left side of the front panel. It lights when the system unit power is on and flashes until the OS is booted. Once the OS is booted, the LED remains on without flashing.

**Removable Device Buttons and LEDs**

Depending on your configuration, you can have up to two (2) of the following removable device drives:

- CD-ROM disc drive
- DDS tape drive
- Floppy diskette drive

**NOTICE:** You **cannot** have two of the same type of device. For example, you can have a CD-ROM device and a floppy device, but not two CD-ROMs.

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

Figure 1–3 shows the system unit with the removable device door open. A removable device is in the top bay; a blank covers the empty bottom bay.
Figure 1–3. System Unit with Removable Device Door Open
### System Unit Rear Panel Connectors

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

- Audio connectors (including headphones and microphone)
- PS/2 keyboard and mouse connectors
- HP parallel Centronics I/O connector
- 802.3 AUI LAN connector
- 802.3 TP (Twisted Pair) LAN connector
- RS-232C serial I/O connectors
- SCSI connectors (including fast, wide SCSI-3 and single-ended SCSI-2)
- TOC button
- Power cord connector

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

Figure 1–4 shows the locations of the connectors on the system unit’s rear panel.
Figure 1–4. System Unit Rear Panel Connectors

*SCSI Connectors are shown with terminators attached, as they are shipped from the factory.

**See Figure 1–5 for detail on Audio Connectors.
The symbols shown to the left of the connector descriptions in the following text, such as the headphone and microphone for audio connectors, are the same symbols used on the rear panel of the J 280 workstation.

**Audio Connectors**

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

![Diagram of Audio Connectors](image)

*Figure 1–5. Audio Connectors*

The audio connectors are standard stereo audio mini-jacks. Hewlett-Packard recommends using gold-plated plugs available through audio retailers for best quality recording and playback through the external connectors. A summary of the workstation audio features follows.
• **Audio Features**

  Programmable sample rates:
  8kHz, 16kHz, 32kHz, 48kHz, 11.025kHz, 22.05kHz, and 44.1kHz.

  Programmable output attenuation:
  0 to –96dB in –1.5dB steps

  Programmable input gain:
  0 to 22.5dB in 1.5dB steps

  Input monitoring:
  16-bit linear, 8-bit u-law, or A-law coding

• **Audio Inputs**

  Line-in

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

  CD-ROM audio (if internal CD–ROM is
  installed)

• **Audio Outputs**

  Line-out

  Headphone

  Mono speaker jacks

  Built-in mono speaker

• **Audio CODEC**

  Crystal CS4215
Table 1–1 summarizes the audio electrical specifications for this workstation.

<table>
<thead>
<tr>
<th>Table 1–1. Audio Electrical Specifications</th>
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</thead>
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<tr>
<td><strong>Frequency Response</strong></td>
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<td><strong>Input Sensitivity/Impedance</strong></td>
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<tr>
<td>Line in</td>
</tr>
<tr>
<td>Microphone</td>
</tr>
<tr>
<td><strong>Max Output Level/Impedance</strong></td>
</tr>
<tr>
<td>Line Out</td>
</tr>
<tr>
<td>Headphone</td>
</tr>
<tr>
<td>Speaker (internal)</td>
</tr>
<tr>
<td><strong>Output Impedance</strong></td>
</tr>
<tr>
<td>Line Out</td>
</tr>
<tr>
<td>Headphone</td>
</tr>
<tr>
<td><strong>Signal to Noise</strong></td>
</tr>
<tr>
<td>Line Out</td>
</tr>
<tr>
<td>Headphone</td>
</tr>
<tr>
<td>Speaker</td>
</tr>
<tr>
<td>Line In</td>
</tr>
<tr>
<td>Microphone</td>
</tr>
<tr>
<td><strong>THD (w/nominal load)</strong></td>
</tr>
<tr>
<td>Line Out</td>
</tr>
<tr>
<td>Headphone</td>
</tr>
<tr>
<td>Speaker</td>
</tr>
<tr>
<td>Line In</td>
</tr>
<tr>
<td>Microphone</td>
</tr>
</tbody>
</table>

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

\[ n = \frac{dB}{20 \log_{10}} \approx \frac{dB}{6} \]

For example, for 61dB S/N then \( n = \frac{61}{6} \approx 10 \)

significant bits, or in other words, about 6 bits of noise.

**Keyboard Connectors**

*PS/2 Keyboard Connectors*

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

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

**802.3 Network Connectors**

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

**RS-232C Serial Input/Output Connector**

You can attach a variety of pointing devices (such as a mouse or trackball), or peripheral devices to the RS-232C Serial Input/Output (SIO) ports on the J280 workstation. Peripheral devices include printers, plotters, modems, and scanners. Consult the documentation that accompanies each pointing or peripheral device for specific information concerning its use.

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

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

SCSI Connectors

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

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

Power Cord Connector

Plug the workstation’s power cord into the power cord connector to provide ac power to the system.
You can use one of the following HP monitors with your workstation:

- 17-inch, 1280x1024 color monitor (A4032A)
- 17-inch, 1280x1024 color monitor (A4330A)
- 20-inch, 1280x1024 color monitor (A4033A)
- 20-inch, 1280x1024 color monitor (A4331A)

Before using your monitor, you should become familiar with its controls, connectors, and indicators. For information on these controls and indicators and on using your monitor, see the documentation that came with it.
You can use an HP three-button mouse (PS/2), a trackball, or other options as pointing devices with your workstation by using the serial ports. For instructions on using your particular pointing device, see the manual that came with it.

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

Your workstation uses the HP-UX operating system, 10.20 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 HP CDE installed and configured.

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

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.

If you have any questions about Instant Ignition, refer to Using Your HP Workstation for more information.
Before you begin using your workstation, take a moment to gather the following important information and note it in the appropriate subsection for future use:

- LANIC ID
- Internet Protocol (IP) address
- Subnetwork mask

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

**LANIC ID**

Locate the contents label that comes with the workstation shipping carton. Find the LANIC ID listed there and record it here:

LANIC ID _______________________________________________

You can also get your LANIC ID by using the `lanscan` command in a terminal window.
IP Address and Subnetwork Mask Information

Get the IP address and the subnet mask information for your workstation from either your system administrator or your network administrator and note them here:

IP address ______________________________________________

subnet mask _____________________________________________
Networking Overview

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

Mail

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

telnet

The telnet application uses the TELNET protocol to communicate with another computer system on the network. The telnet application allows you to log on to the remote system from your workstation. 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 Your HP Workstation manual that came with your workstation and read the online man page by entering the following at a command-line prompt:

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

```
man ftp
```

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

```
man rcp
```

NFS
The Network File System (NFS) allows your workstation to access files on remote computer systems as if they were on your local system. The file system on the remote computer system does not have to be compatible with your workstation’s file system. For more information see Installing and Administering NFS Servers and HP-UX System Administration Tasks manuals.
Chapter 2

Using Your CD-ROM Drive

• CD-ROM drive and media descriptions
• Loading and unloading a CD-ROM disc
• Verifying the CD-ROM drive operation
• Using device files
• Mounting and unmounting a CD-ROM disc
• Reading the busy light
• Troubleshooting
This chapter provides an overview of the optional CD-ROM drive and media, and describes how to use the CD-ROM drive. We assume the CD-ROM drive is set to the factory default address of SCSI ID 2.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 interface.

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

**NOTICE:** Some procedures in this chapter require you to log in as root. If you cannot log in as root, contact your system administrator.
This section describes basic information needed for using the CD-ROM drive and CD-ROM discs.

**CD-ROM Drive**

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

**Controls and Features**

Figure 2–1 and Table 2–1 describe the operating controls and features of the CD-ROM drive.

*Figure 2–1. CD-ROM Drive Controls and Features*
Table 2–1. CD-ROM Drive Operating Controls and Features

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

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

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

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

**Caring for CD-ROM Discs**

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

- Use CD-ROM discs in a clean environment to prevent dust particles from scratching disc surfaces.
- Store CD-ROM discs in a cool, dry place to prevent moisture and heat damage.
- Don’t try to clean the surface of a CD-ROM disc with cleaning solvents, as some cleaning solvents may damage the disc.

**NOTICE:** You must mount the disc after loading it into the drive. Refer to the section “Mounting and Unmounting a CD-ROM Disc,” later in this chapter, for instructions.
Operating the CD-ROM Drive

Loading and Unloading a CD-ROM Disc
This section describes how to load or unload a CD-ROM disc.

Loading a CD-ROM Disc
This CD-ROM drive has an automatic loading/ejecting feature. To load a disc in the CD-ROM drive, follow these steps:

1. Press and release the eject button on the CD-ROM drive. The disc tray opens partway, as shown in Figure 2–2.

![Figure 2–2. CD-ROM Disc Tray Partway Open](image)

Note: the removable device door is not shown for easier viewing of the disk tray.
2. Gently pull the disc tray fully open.

3. Hold the disc by the edges with the label side up and place it in the disc tray as shown in Figure 2–3.

4. Press down gently on the center of the CD-ROM disc to make sure it is seated on the disc tray hub, shown in Figure 2–3.

Figure 2–3. Placing the CD-ROM Disc in the Disc Tray
5. Gently push the disc tray in until it is closed, as shown in Figure 2–4.

*Figure 2–4. Disc Tray Closed*
Unloading a CD-ROM Disc

To unload a disc from the Disc Tray, follow these steps:

1. Press and release the eject button on the CD-ROM drive. The disc tray opens approximately 1 inch, as shown in Figure 2–5.

2. Gently pull the disc tray fully open.

Figure 2–5. CD-ROM Disc Tray Partway Open
3. Grasp the disc by the edges and lift it out of the disc tray, as shown in Figure 2–6. Be careful to touch only the edges of the disc.

*Figure 2–6. Removing the CD-ROM Disc From the Disc Tray*
4. Gently push the disc tray in until it is closed, as shown in Figure 2–7.

![Figure 2–7. Disc Tray Closed](image)

**Verifying the CD-ROM Drive Operation**

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

1. Click on the **Terminal Control** on the **Front Panel** of your Workspace.
A terminal window opens.

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

3. Enter the following at the prompt:

```
/usr/sbin/ioscan -d sdisk Enter.
```
After a few moments the **ioscan** utility lists all of the SCSI I/O devices it could find. The list appears similar to the following:

<table>
<thead>
<tr>
<th>H/W Path</th>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>bc</td>
<td>I/O Adapter</td>
</tr>
<tr>
<td>8</td>
<td>bc</td>
<td>I/O Adapter</td>
</tr>
<tr>
<td>8/0</td>
<td>ext_bus</td>
<td>GSC built-in Fast/Wide SCSI Interface</td>
</tr>
<tr>
<td>8/0.0</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/0.0.0</td>
<td>disk</td>
<td>QUANTUM LPS1080WD</td>
</tr>
<tr>
<td>8/0.5</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/0.5.0</td>
<td>disk</td>
<td>DEC DSP3210SW</td>
</tr>
<tr>
<td>8/0.6</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/0.6.0</td>
<td>disk</td>
<td>DEC DSP3210SW</td>
</tr>
<tr>
<td>8/12</td>
<td>ba</td>
<td>Core I/O Adapter</td>
</tr>
<tr>
<td>8/12/5</td>
<td>ext_bus</td>
<td>Built-in SCSI</td>
</tr>
<tr>
<td>8/12/5.2</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/12/5.2.0</td>
<td>disk</td>
<td>TOSHIBA CD-ROM XM-4101TA</td>
</tr>
<tr>
<td>8/12/5.4</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/12/5.4.0</td>
<td>disk</td>
<td>SEAGATE ST3600N</td>
</tr>
<tr>
<td>8/12/5.6</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/12/5.6.0</td>
<td>disk</td>
<td>MICROP 2112</td>
</tr>
<tr>
<td>10</td>
<td>bc</td>
<td>I/O Adapter</td>
</tr>
<tr>
<td>10/12</td>
<td>ext_bus</td>
<td>GSC add-on Fast/Wide SCSI Interface</td>
</tr>
<tr>
<td>10/12.4</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>10/12.4.0</td>
<td>disk</td>
<td>SEAGATE ST31200W</td>
</tr>
</tbody>
</table>

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

`ioscan: No hardware found`

If you receive this message, go to Chapter 6, “Solving Problems.”
Using Device Files

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

To determine what device files are available for use with your CD–ROM drive, use the following procedure:

NOTICE: The device file names will depend on the naming conventions of your particular system. See “SCSI ID and Device File Information for HP-UX 10.20 or Later” in Chapter 1 of this book.

1. In a terminal window, enter the following command:

   \[\text{sam Enter}\]


5. In the list of CD–ROM drives, click on the desired CD–ROM drive to select it.

6. From the Actions menu, click on Show Device Files. A window opens with a list of the device files for the selected CD–ROM drive with an explanation of each one.
To access information on a CD-ROM disc, you must first mount the disc. This applies to file system information only. If you wish to load a music CD, for example, you would not need to mount the disc. Mounting a disc with file system information on it gives the disc a pathname that allows your workstation to communicate electronically with it. You must unmount the CD-ROM disc before removing it from the drive.

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

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

### Mounting a CD-ROM Disc Using SAM

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

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

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

3. In a terminal window, enter the following command:

   ```
   sam
   ```

4. The **System Administration Manager** window opens. Double-click on **Peripheral Devices**. 
5. The **Peripheral Devices** window opens. Double-click on **Disks and File Systems**.

The following screen message appears:

   Scanning the system’s hardware...

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

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

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

9. Click on **OK**.

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

11. The following screen messages appear:

   Task started.
   
   Creating the device file...
   Mounting file system...
   Modifying “/etc/checklist”...
   Task completed.
Click on [OK].

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

**Unmounting a CD-ROM Disc Using SAM**

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

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

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

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

2. In a terminal window, enter the following command:

```
    sam Enter
```

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


The following screen message appears:

    Scanning the system’s hardware...

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

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

7. A window with the following message opens:

    Do you want to remove the disk?

    Click on **Yes**. The system reboots.

8. Press the eject button on the CD-ROM drive and remove the CD-ROM disc from the disc tray.
**Reading the Busy Light**

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

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

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

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

1. **Light On** – The busy light goes on when the disc loads into the drive.
2. **Light Flashing** – The light flashes six times while a read test is performed on the disc.
3. **Light Off** – The light goes off when the self test is complete.

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

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

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

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

The busy light flashes during normal activity with the system.
Troubleshooting

If you have trouble with any of these procedures for using your CD-ROM drive, see Chapter 6 of this book, “Solving Problems.”
Chapter 3

Using Your DDS Tape Drive

- DDS tape drive and data cassette descriptions
- Setting the write-protect tab on a data cassette
- Operating the DDS tape drive
- Loading and unloading a data cassette
- Using device files
- Archiving data in compressed and non-compressed mode
- Troubleshooting
- Ordering information
This chapter describes how to perform tasks that archive to and transfer data from the optional DDS tape drive. It also describes how to maintain and care for the drive. We assume the DDS tape drive is set to the factory default address of SCSI ID 3.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 interface.

**CAUTION:** Use only data cassettes labeled DDS (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.
This section describes basic information needed for using your DDS tape drive and data cassettes. Depending on your configuration, your DDS drive may be a DDS-DC drive, or a DDS-2 drive.

**NOTICE:** In most cases, the information for using these drives is the same; however, in a few instances (such as the LED codes), the information differs for each drive. For the purposes of this discussion, wherever we refer to simply the “DDS” drive, that information is for both drives. Whenever the information differs, we will specify whether the information refers to the DDS-DC or the DDS-2 drive.

**DDS Drive**

Your DDS tape drive is a 3 1/2-inch form factor DDS tape drive with data compression and a SCSI interface. It conforms to the DDS format standard for storing computer data, and incorporates a data compression capability. It’s a high-capacity, high transfer-rate device for data storage on tape.

**Controls and Indicators**

Figure 3–1 shows the LEDs and eject button of the DDS drive.

![DDS Drive Controls and Indicators](image)

Figure 3–1. DDS Drive Controls and Indicators
LEDs – DDS-DC Drive
This section describes the LED codes that are displayed.

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

If the Cassette Light (left LED) shows steady amber, it means that the cassette is write-protected. If the Drive Light (right LED) shows steady amber, this indicates a fault condition. Table 3–1 lists the LED codes and their meanings.

Table 3–1. LED Display Codes – DDS-DC Drive

<table>
<thead>
<tr>
<th>Cassette Light</th>
<th>Drive Light</th>
<th>Meaning</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cassette (un)loading</td>
<td>OFF</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cassette loaded/online</td>
<td>Green</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cassette loaded/activity</td>
<td>Amber</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cassette loaded/offline</td>
<td>Pulsing Green</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pulsing Amber</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Pulsing Green and Amber</td>
</tr>
</tbody>
</table>

Write-Protect States

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Cassette (un)loading</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Cassette loaded/online</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cassette loaded/activity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cassette loaded/offline</td>
<td></td>
</tr>
</tbody>
</table>

Error States

<table>
<thead>
<tr>
<th></th>
<th></th>
<th>Media wear (caution)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>High humidity</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-test (normal)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Self-test (failure)</td>
<td></td>
</tr>
</tbody>
</table>
**LED Warning Conditions – DDS-DC Drive**
The following sections describe actions to take if the LEDs indicate a warning condition.

*High Humidity*
If the LEDs display the high humidity signal, the humidity is too high 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.

LEDs – DDS-2
The front panel has two colored LEDs: the Tape Light and the Clean/Attention Light. The Tape Light flashes green to show activity (loading, unloading, reading, and writing). Steady green means a cartridge is loaded.

The Clean/Attention Light flashes amber to indicate head cleaning is needed or a cartridge is near the end of its life. Steady amber means a hard fault.

Table 3–2. LED Display Codes – DDS-2 Drive

<table>
<thead>
<tr>
<th>Tape Light</th>
<th>Clean/Attention</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Activity – load or unload</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activity – read or write</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cartridge loaded</td>
</tr>
<tr>
<td>Any</td>
<td></td>
<td>Cleaning needed</td>
</tr>
<tr>
<td>Any</td>
<td></td>
<td>Fault</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Key</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Steady Green</td>
</tr>
<tr>
<td></td>
<td>Steady Amber</td>
</tr>
<tr>
<td></td>
<td>Flashing Green 1/2 sec on, 1/2 sec off</td>
</tr>
<tr>
<td></td>
<td>Flashing Amber 1/2 sec on, 1/2 sec off</td>
</tr>
<tr>
<td></td>
<td>Fast Flash Green 1/4 sec on, 1/4 sec off</td>
</tr>
</tbody>
</table>
**Data Cassettes**

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

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

- The relative humidity in your operating environment is consistently less than 50%.
- You know that the backup software you are using makes multiple passes over 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**
Clean the heads of your tape drive after every 25 hours of tape drive use or if the Media Wear (Caution) signal is displayed on the LED.

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

Follow this procedure to clean the tape heads:

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

2. Write the current date on the label on the cleaning cassette so that you know how many times you have used it. Discard the cleaning cassette after you have used it 25 times.
Media Restrictions
If you interchange media between other HP workstation DDS tape drives, note that data cassettes with compressed data can only be read by tape drives that have data compression capabilities. This includes data cassettes that contain both compressed and noncompressed data.

Setting the Write-Protect Tab on a Data Cassette
You can only store or change information on a data cassette when the write-protect tab is in the write position. So, before trying to write to the data cassette, make sure that the write-protect tab is in the write position, as shown in Figure 3–2.

![Figure 3–2. Setting the Write-Protect Tab on a DDS Tape](image)

To protect information on a data cassette from being overwritten, set the write-protect tab to the write-protect position, as shown in Figure 3–2.

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

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

Loading and Unloading a Data Cassette

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

1. Turn on power to the tape drive.

2. Insert the data cassette into the drive, as shown in Figure 3–3.

![Figure 3–3. Loading a Data Cassette]
3. Push the data cassette about three quarters of the way into the drive. The drive automatically pulls the data cassette the rest of the way in. When the LEDs on the front of the drive stop flashing, the drive has loaded the data cassette.

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

**Verifying the DDS Tape Drive Operation**

Type the following:

```
/usr/sbin/ioscan -d stape
```

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

<table>
<thead>
<tr>
<th>H/W Path</th>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>bc</td>
<td>I/O Adapter</td>
</tr>
<tr>
<td>8/12</td>
<td>ba</td>
<td>Core I/O Adapter</td>
</tr>
<tr>
<td>8/12/5</td>
<td>ext_bus</td>
<td>Built-in SCSI</td>
</tr>
<tr>
<td>8/12/5.3</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/12/5.3.0</td>
<td>tape</td>
<td>HP HP35480A</td>
</tr>
</tbody>
</table>

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

    ioscan: No hardware found

If you receive this message, go to Chapter 6, “Solving Problems.”
Using Device Files

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

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

NOTICE: The device file names depend on the naming conventions of your particular system. See “SCSI and Device File Information for HP-UX 10.20 or Later” in Chapter 1 of this book.

Device Files — No Data Compression

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

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

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

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

Determining Available Device Files

1. In a terminal window, enter the following command:

   ```
   sam Enter
   ```
2. The **System Administration Manager** window opens. Double–click on **Peripheral Devices –>**.

3. The **Peripheral Devices** window opens. Double–click on **Tape Drives –>**.

4. The **Tape Drives** window opens.

5. In the list of tape drives, clock on the desired tape drive to select it.

6. From the Action menu, click on **Show Device Files**.

A window opens with a list of the device files for the selected tape drive with an explanation of each one.
Device Files — Data Compression
If you wish to use the data compression feature, use the device files /dev/rmt/3hc and /dev/rmt/3hcn, which are set for SCSI ID 3.

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

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

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

Archiving Data in Compressed and Noncompressed Mode
This section describes how to transfer data to and from a DDS-format data cassette (saving and restoring) using the HP-UX tar command and your tape drive’s device file.

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

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

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

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

2. Load the data cassette into the tape drive.

3. In a terminal window, enter the following command line to write to the tape:

   `tar –cvf /dev/rmt/devicefile pathname` Enter

   where `devicefile` is one of the device files listed from `sam`, and `pathname` is the pathname of the file or directory containing files that you want to write to the tape. To use the data compression mode, use one of the device file names that `sam` listed as supporting compression.

Restoring Files from a Data Cassette to Your System

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

1. Load the data cassette into the tape drive.

2. In a terminal window, use `cd` to change to the directory in which you want the files to reside.

3. Enter the following command line:

   `tar –xvf /dev/rmt/devicefile pathname` Enter
where `devicefile` is one of the device files listed from `sam`, and `pathname` is the pathname of the file or directory containing files that you want to restore from the tape. If `pathname` is not specified, everything on the data cassette is restored. To use the data compression mode, use one of the device file names that `sam` listed as supporting compression.
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. In a terminal window, enter the following command line to receive a file listing of the data cassette:

   `tar –tvf /dev/rmt/devicefile` Enter

   where `devicefile` is one of the device files listed from `sam`. If the tape was made with data compression, use on the device file names that `sam` listed as supporting compression.
Further Command Information

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

```
man tar
```

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

```
man command
```

Media Interchangeability Restrictions

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

- Data cassettes with compressed data can only be read by tape drives that have data compression capabilities, such as the tape drive (part number C1504–67201) found in Kit A2275A #AHS.
- Full height (5 1/4-in) DDS-format tape drives (models HP 35470A and HP35480A) can get 1.3 GB and can read or write to 60-meter data cassettes only, if they are not using data compression. With data compression, these drives can get 2 GB and can read or write to 90-meter cassettes.

Troubleshooting

If you have trouble with any of these procedures for using your DDS tape drive, see Chapter 6 of this book, “Solving Problems.”
Ordering Information

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

- HP92283A  Box of five 60–meter DDS data cassettes
- HP92283B  Box of five 90–meter DDS data cassettes
- HP92300A  Box of five 120-meter DDS data cassettes (for DDS-2 drive only)
- HP92283K  Package of two cleaning cassettes
- HP92283L  Lockable storage box for 12 cassettes

**CAUTION:** Use only data cassettes labeled as DDS (Digital Data Storage) cassettes. Never use audio cassettes labeled DAT (Digital Audio Tape) in your DDS-format drive.
Chapter 4

Using Your 3.5-Inch Floppy Disk Drive

- Setting the write-protect tab on a diskette
- Inserting and removing a diskette
- Verifying the floppy disk drive configuration
- Using device files
- Floppy disk drive device file
- Formatting a new diskette
- Transferring data to and from a floppy diskette
- Configuring the floppy driver
- Troubleshooting
- Ordering information
This chapter describes how to perform tasks that allow you to archive to or transfer data from the optional 3.5-inch floppy disk drive.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 interface.

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

Some procedures in this chapter require you to log in as root. If you cannot log in as root, contact your system administrator.
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 4–1.

![Figure 4–1. Setting the Write-Protect Tab on a Floppy Diskette](image)

To protect files on a diskette from being overwritten, set the write-protect tab to the write-protect position.

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

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

1. Insert the diskette into the drive, as shown in Figure 4–2.

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

3. To remove the diskette, push the eject button (see Figure 4–2), then take out the diskette.

Figure 4–2. Inserting and Removing a Floppy Diskette
Operating the Floppy Drive

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

Verifying the Floppy Drive Configuration

To verify that your workstation can communicate with the floppy drive, use the `ioscan` command in a terminal window to see which devices are currently in use on your system:

1. Enter the following at a command prompt:

   `/usr/sbin/ioscan -d sflop`  

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

<table>
<thead>
<tr>
<th>H/W Path</th>
<th>Class</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bc</td>
<td>bc</td>
<td>I/O Adapter</td>
</tr>
<tr>
<td>8</td>
<td>ba</td>
<td>Core I/O Adapter</td>
</tr>
<tr>
<td>8/12</td>
<td>ext_bus</td>
<td>Built-in SCSI</td>
</tr>
<tr>
<td>8/12/5</td>
<td>target</td>
<td></td>
</tr>
<tr>
<td>8/12/5.0</td>
<td>disk</td>
<td>TEAC FC-1 HF 07</td>
</tr>
</tbody>
</table>

   If `ioscan` does not see your floppy drive it returns the following message:

   `ioscan: No hardware found`

   If you receive this message, go to Chapter 6, “Solving Problems.”
If the floppy driver is not configured, `ioscan` returns the following message:

```
ioscan: Device driver scsifloppy is not in the kernel
```

If you receive this message, go to the section, “Configuring the Floppy Driver” later in this chapter for information on adding the `scsifloppy` driver to the HP-UX kernel configuration.

**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.

**NOTICE:** The device file names depend on the naming conventions of your particular system. See “SCSI ID and Device File Information for HP-UX 10.20 or Later” in Chapter 1 of this book.

If you set the SCSI address of your floppy drive to a value other than 0, you must create a device file for it. Refer to the *System Administration Tasks* manual for information on how to create a device file.

To determine what device files are available for use with your floppy drive, use the following procedure:

1. In a terminal window, enter the following command:

   ```
   sam
   Enter
   ```

2. The *System Administration Manager* window opens. Double-click on *Disks and File Systems*.

3. The *Disk and File Systems* window opens.
4. In the list of drives, click on the floppy drive listing to select it.

5. From the Actions menu, click on View More Information.

A window opens with a list of information for the floppy drive, including the device files.
Formatting a New Diskette

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

1. Log in as `root`.

2. Make sure that the write-protect tab on the floppy diskette is in the `write` position, as shown in Figure 4–1.

3. Insert the diskette into the floppy disk drive.

4. In a terminal window, execute `mediainit` with an interleave of 2 by entering the following:

   ```
   mediainit -i 2 devicefile
   ```

   where `devicefile` is the device file as listed by `sam`.

Transferring Data To and From a Floppy Diskette

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

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

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

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

2. Load the formatted floppy diskette into the disk drive.

3. In a terminal window enter the following command line to write to the diskette:

   \texttt{tar \ –cvf \ devicefile \ pathname} \ Enter

   where \textit{devicefile} is the device file as listed by \texttt{sam} and \textit{pathname} is the pathname of the file or directory containing files that you want to write to the diskette.

Restoring Files from a Floppy Diskette to Your System

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

1. Load the floppy diskette into the disk drive.

2. In a terminal window, use the \texttt{cd} command to change to the directory you want the files to reside in:

   \texttt{cd \ directory\_path} \ Enter

   where \textit{directory\_path} is the pathname of the directory.

3. Enter the following command line:
**Listing the Files on a Floppy Diskette**

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

1. Load the floppy diskette into the disk drive.

2. In a terminal window, enter the following command line:

   ```
   tar -tvf devicefile
   ```

   where *devicefile* is the device file as listed by *sam*

   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
   ```

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

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

   ```
   man cpio
   ```

The *man* utility looks up man pages on the system.
For more information on copying to or from DOS files, refer to the **doscp** man page by typing the following in a terminal window:

```
man doscp Enter
```

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

```
man dosls Enter
```

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 Enter
```

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

```
man mediainit Enter
```
Configuring the Floppy Driver

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

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

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

Troubleshooting

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

Ordering Information

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

HP–92192X High-Density Micro Flexible Disks (1.44MB Formatted Capacity) – box of ten diskettes
Chapter 5

Solving Problems

- Common problems and solutions
- Dealing with a boot failure
- Memory failures
- LCD-indicated problems
- Running system verification tests
This chapter contains information to help you determine what’s wrong with your system when you have problems. If you have a problem that isn’t listed in this chapter, or if your problem persists, contact your designated service representative. When calling for service, always have your system’s model number and serial number ready.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 graphical interface. If your system is configured with the HP CDE graphical user interface, use command line options in a terminal window to perform tests.
The tables in this section list common problems you may encounter with your workstation. The tables also tell you what to do to help solve the problems.

Table 5–1. Problems Powering Up the System

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The power LED doesn’t light.</td>
<td>Make sure all ac power cables are connected securely to the system.</td>
</tr>
<tr>
<td></td>
<td>Make sure the power cord is plugged into a working ac outlet.</td>
</tr>
<tr>
<td></td>
<td>Make sure the power switch is set to the ON position.</td>
</tr>
<tr>
<td>The power LED lights, but the screen is blank or flickers</td>
<td>Press the brightness control on the monitor to adjust it. If the screen is still blank, turn off the system and monitor power switches. When the system is completely powered off, check the video cable connections.</td>
</tr>
<tr>
<td></td>
<td>Go to the section “Changing Your Monitor Type” in Appendix B for information about displaying and setting your workstation’s monitor configuration.</td>
</tr>
<tr>
<td>LCD messages</td>
<td>See “LCD-Indicated Problems” later in this chapter.</td>
</tr>
</tbody>
</table>

If problems persist, contact your system administrator or call your designated service representative.
### Table 5–2. Problems Loading and Booting the Operating System

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The power LED is lit, and text appears on the screen, but more than two minutes have passed with no sign of system activity.</td>
<td>Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.)</td>
</tr>
<tr>
<td></td>
<td>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.)</td>
</tr>
<tr>
<td>The system stops or hangs while booting.</td>
<td>Follow the instructions in “Dealing With a Boot Failure,” later in this chapter.</td>
</tr>
</tbody>
</table>

If problems persist, contact your system administrator or call your designated service representative.
Table 5–3. Problems with the 802.3 Network

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can’t reach other systems on the network. Applications that rely on the network won’t run.</td>
<td>Check the network connector on the back of the system unit. Make sure that the network cable or transceiver is fastened securely to the connector.</td>
</tr>
<tr>
<td>If problems persist, contact your system administrator or call your designated service representative.</td>
<td></td>
</tr>
<tr>
<td>Problem</td>
<td>Solution</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>The disk drive is not accessible or does not respond.</td>
<td>Make sure that all SCSI devices are set to the proper SCSI ID. (See Appendix C for default SCSI ID settings.) Check that all SCSI devices are correctly cabled. Check that the SCSI bus is correctly terminated. (See Appendix C for information on SCSI cabling and termination.) Make sure that the system can communicate with the drive as described in “Checking the SCSI IDs” in Appendix B. Follow the instructions in “Dealing With a Boot Failure” later in this chapter.</td>
</tr>
</tbody>
</table>

If problems persist, contact your system administrator or call your designated service representative.
Table 5–5. Problems Using the CD-ROM Drive

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The CD-ROM drive does not respond to commands.</td>
<td>Re-enter the commands and make sure that you have typed them correctly.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the system can communicate with the drive as described in “Checking the SCSI IDs” in Appendix B.</td>
</tr>
<tr>
<td></td>
<td>Follow the instructions in the section entitled “Running System Verification Tests” later in this chapter to verify that the CD-ROM drive is functioning properly.</td>
</tr>
</tbody>
</table>

If problems persist, contact your system administrator or call your designated service representative.
Table 5–6. Problems Using the DDS Tape Drive

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The DDS tape drive does not respond to</td>
<td>Re-enter the commands and make sure that you have typed them correctly.</td>
</tr>
<tr>
<td>commands.</td>
<td>Make sure that you specified the correct device file name for commands that require a device file name.</td>
</tr>
<tr>
<td></td>
<td>Make sure the write-protect tab is set to write if you are trying to copy data to a data cassette.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the system can communicate with the drive as described in “Checking the SCSI IDs” in Appendix B.</td>
</tr>
<tr>
<td></td>
<td>Follow the instructions in the section entitled “Running System Verification Tests” later in this chapter to verify that the tape drive is functioning properly.</td>
</tr>
<tr>
<td></td>
<td>If problems persist, contact your system administrator or call your designated service representative.</td>
</tr>
</tbody>
</table>
Table 5–7. Problems Using the Floppy Disk Drive

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The floppy drive does not respond to commands.</td>
<td>Re-enter the commands and make sure that you have typed them correctly.</td>
</tr>
<tr>
<td></td>
<td>Make sure that you specified the device file /dev/rfloppy/c201d0s0 for commands that require a device file name.</td>
</tr>
<tr>
<td></td>
<td>Make sure that the write-protect tab is set to write if you are trying to copy data to a floppy diskette.</td>
</tr>
<tr>
<td></td>
<td>Follow the instructions in the section entitled “Running System Verification Tests” later in this chapter to verify that the floppy drive is functioning properly.</td>
</tr>
</tbody>
</table>

If problems persist, contact your system administrator or call your designated service representative.
Dealing with a Boot Failure

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

To boot a device manually, follow these steps:

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

2. At the Main Menu prompt, type the following:

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

   This causes your workstation to search exhaustively for bootable media.

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

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

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

4. If your workstation still fails to boot, there is either something wrong with the file system or with the hardware. If you suspect a file system failure, see the manual Using HP-UX for help on dealing with file system failures. If you think that something is wrong with the hardware, continue reading this chapter for more troubleshooting information.
J Class systems use Memory Page Deallocation, a feature that allows the system to provide information to the operating system about memory failures.

HP-UX 10.20 uses Memory Page Deallocation information to map out the failing memory areas, and continue normal operation. You can use the command `memrpt` with the detail switch to obtain information about the Memory Page Deallocation Table (PDT) as well as single bit errors logged by the system.

```
# /usr/sbin/sysdiag
DUI >logtool
LOGTOOL> memrpt detail
```

**NOTICE:** You must be logged in as superuser to use the `memrpt` command.

To exit the sysdiag and logtool utilities, use the `exit` command.

The pdt can also be checked using the `pdt` command in the Service menu of the boot console handler. If a failing DIMM is replaced, use the Service menu `pdt clear` command to clear out the PDT.
Your workstation uses an LCD panel to display firmware/OS progress codes. The codes, referred to as chassis codes, consist of one of the mnemonics listed below, followed by a 4-digit hex number identifying the code module being executed. The mnemonics and their meaning are:

- **FLT** – A hardware error has been detected
- **TEST** – Hardware being tested
- **INIT** – Hardware being initialized
- **SHUT** – System being shutdown
- **WARN** – A non-optimal operating condition exists
- **RUN** – System is running operating system

During a normal boot sequence, a set of "windows" appear. In general, the LCD display has the following format:

```
ZZZZ  YYY Y Y Y C P U X X ♥
WWWWWW WWW WWW WWW WWW
```

- **ZZZZ** > 4 character OSTAT
- **YYYY** > 4 digit hex code
- **CP UX X** > Functional CPUs in system
- **♥** > Heart beat
- **WWW WWW WWW WWW WWW** > Text Diagnostic Message
The windows are as follows:

**Window 1**

When the system is hard booted, the LCD will be cleared and the following message will be displayed for approximately 1 second. Then the processor dependent hardware (pdh) is verified.

```
Proceeding To <- line 1
Turn DC On <- line 2
```

**Window 2**

While the pdh is being verified, the following message is displayed:

```
ZZZZ YYYY <- line 1
Selftest Sys Bd <- line 2
```

**Window 3**

After the pdh is verified, the selftest is executed. The display changes to:

```
ZZZZ YYYY ♥ <- line 1  - '♥' flashes with Z Y field change
Selftest <- line 2
```

**Window 4**

When the selftest is complete, the message (once the console is found) is:

```
ZZZZ YYYY CPUXX♥ <- line 1  - '♥' flashes with Z Y field change
AAAAAAA console <- line 2
```

where AAAAAA is RS-232A, RS-232B, or GRAPHICS.
### Window 5

When an attempt to boot is made, the following message is displayed once IPL is successfully loaded and launched:

```
ZZZZ YYYY CPUXX♥ <-- line 1  - '♥' flashes with Z Y field change
BBBBBBBBBBBBBBBB <-- line 2
```

where BBBBBBBBBBBBBBBBB is the model number (for example, 9000/J200).

If the system encounters an FLT code while the system is booting, the FLT code is interpreted and one of the following messages is displayed:

<table>
<thead>
<tr>
<th>FLT CODE MESSAGES</th>
<th>Meaning of X</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Selftest Sys Bd</td>
<td>(0 or 1)</td>
</tr>
<tr>
<td>2. Selftest cpu X</td>
<td>(0 to 4)</td>
</tr>
<tr>
<td>3. Selftest EISA X</td>
<td>(DIMM pair 0 to 7)</td>
</tr>
<tr>
<td>4. Selftest DIMM XX</td>
<td>(DIMM pair 0 to 7)</td>
</tr>
<tr>
<td>5. Selftest Mem Sys</td>
<td></td>
</tr>
<tr>
<td>6. Selftest Graph X</td>
<td>(0 to 2)</td>
</tr>
<tr>
<td>7. Unexp. Trap XX</td>
<td>(0 to 28)</td>
</tr>
<tr>
<td>8. HPMC occurred !</td>
<td></td>
</tr>
</tbody>
</table>
Running System Verification Tests

HP-UX uses a diagnostics product called the Support Tools Manager that allows system operation verification.

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

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

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

```
man cstm  Enter
man mstm  Enter
man xstm  Enter
```

To access the Support Tools Manager, perform the following steps:

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

![Terminal Control](image)
A terminal window opens.

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

3. Enter the following at the prompt:

```
cstm Enter
```

The following screen appears:

```
Support Tool Manager     Version A.01.00
Type 'help' for a list of available commands.
CSTM>
```

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

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

```
CSTM> verify all Enter
```

Messages similar to the following appear:

```
Verification has started on device (CPU).
Verification has started on device (FPU).
CSTM>Verification of (FPU) has completed.
CSTM>Verification of (CPU) has completed.
```

5. Press Enter to return to the CSTM> prompt after all test results are reported.
6. To exit the Support Tools Manager, type the following:

`CSTM> exit Enter`

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

Safety and Regulatory Statements

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

This appendix contains safety and regulatory statements pertaining to your J 280 workstation.
DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name: Hewlett Packard
Manufacturer's Addresses: 100 Domain Drive
Exeter, N.H. 03833
USA

declares that the product
Product Name: Computer Workstation
Model Number: HP 9000 / J200 Series
Base Product Number: A4081A
Product Options: All

conforms to the following Product Specifications:
      EN 50082–1:1992
      0.5 kV Signal Lines

Supplementary Information:
The product herewith complies with the requirements of the Low Voltage Directive
73/23/EEC and the EMC Directive 89/336/EEC.

(1) The product was tested in a typical Hewlett Packard workstation configuration.

Exeter, April 30, 1996
Date

James Kelly
Quality and Engineering Manager

European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ/Standards Europe, Herrenberger Strasse 130, D–71034 Boeblingen (FAX: +49–7031–143143)
Emissions Regulations

Federal Communications Commission (FCC)

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Ask the dealer or an experienced radio/television technician for help.

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

Operation of this device is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept interference received, including interference that may cause undesired operation.
- Cables used with this device must be properly shielded to comply with the requirements of the FCC.
### Emissions Regulations Compliance

Any third-party I/O device installed in HP system(s) must be in accordance with the requirements set forth in the preceding Emissions Regulations 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 J 280 is approved under Approval Number NS/G/1234/J/100003 for indirect connection to Public Telecommunications systems within the United Kingdom.

### Acoustics

<table>
<thead>
<tr>
<th>Acoustic Parameter</th>
<th>Lpa &lt;70dB</th>
<th>Lpa &lt;70dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>operator position</td>
<td>am Arbeitsplatz</td>
<td></td>
</tr>
<tr>
<td>normal operation</td>
<td>normaler Betrieb</td>
<td></td>
</tr>
<tr>
<td>per ISO 7779</td>
<td>nach DIN 45635 T.19</td>
<td></td>
</tr>
</tbody>
</table>

### Regulation On Noise Declaration For Machines –3. GSGV

<table>
<thead>
<tr>
<th>Acoustic Parameter</th>
<th>Lpa &lt;70dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>operator position</td>
<td>am Arbeitsplatz</td>
</tr>
<tr>
<td>normal operation</td>
<td>normaler Betrieb</td>
</tr>
<tr>
<td>per ISO 7779</td>
<td>nach DIN 45635 T.19</td>
</tr>
</tbody>
</table>

### 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 anti-static 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.

IEC 825 Class 1 Laser Label

CLASS 1 LASER PRODUCT

LASER KLASSE 1
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.

WARNING:
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.

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

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

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

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

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

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

Changing Your Workstation’s Hardware Configuration

• Checking the SCSI IDs
• Opening the system unit
• Closing the system unit
• Installing removable media devices
• Adding a hard drive
• Installing additional memory
• Installing an EISA or graphics board
• Changing your monitor type
This appendix describes the procedures to change your workstation’s hardware configuration.

The instructions in this appendix assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 interface.

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

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

- Light-duty flat blade screwdriver with 150 mm (6 in.) blade
- Number 1 Posi-drive driver
- Needlenose pliers

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

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

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

A terminal window opens.

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

3. Enter the following at the prompt:

   ```
   /usr/sbin/ioscan -f Enter
   ```

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

<table>
<thead>
<tr>
<th>Class</th>
<th>I H/W Path</th>
<th>Driver</th>
<th>S/W State</th>
<th>H/W Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>bc</td>
<td>0</td>
<td>root</td>
<td>CLAIMED</td>
<td>BUS_NEXUS</td>
<td></td>
</tr>
<tr>
<td>bc</td>
<td>1 8</td>
<td>ccio</td>
<td>CLAIMED</td>
<td>BUS_NEXUS I/O Adapter</td>
<td></td>
</tr>
<tr>
<td>ext_bus</td>
<td>0 8/0</td>
<td>o730</td>
<td>CLAIMED</td>
<td>INTERFACE GSC built-in Fast/Wide SCSI Interface</td>
<td></td>
</tr>
<tr>
<td>target</td>
<td>0 8/0.0</td>
<td>tgt</td>
<td>CLAIMED</td>
<td>DEVICE</td>
<td></td>
</tr>
</tbody>
</table>
disk  3  8/0.0.0  sdisk   CLAIMED  DEVICE  QUANTUM LP8108WD
target 1  8/0.5  tgt   CLAIMED  DEVICE
disk  2  8/0.5.0  sdisk   CLAIMED  DEVICE  DEC  DSP3210SW
target 2  8/0.6  tgt   CLAIMED  DEVICE
disk  0  8/0.6.0  sdisk   CLAIMED  DEVICE  DEC  DSP3210SW
ba  0  8/12  bus_adapter  CLAIMED  BUS_NEXUS Core I/O Adapter
ext_bus 2  8/12/0  CentIf  CLAIMED  INTERFACE  Built-in Parallel Interface
audio  0  8/12/1  audio  CLAIMED  INTERFACE  Built-in Audio
tty  0  8/12/4  asio0  CLAIMED  INTERFACE  Built-in RS-232C
ext_bus 1  8/12/5  c700  CLAIMED  INTERFACE  Built-in SCSI
target 3  8/12/5.2  tgt  CLAIMED  DEVICE
disk  1  8/12/5.2.0  sdisk   CLAIMED  DEVICE  TOSHIBA CD-ROM XM-4101TA
target 4  8/12/5.3  tgt   CLAIMED  DEVICE
tape  0  8/12/5.3.0  stape  CLAIMED  DEVICE  HP  HP3548A
target 5  8/12/5.4  tgt   CLAIMED  DEVICE
disk 10  8/12/5.4.0  sdisk   CLAIMED  DEVICE  SEAGATE ST3600N
target 6  8/12/5.6  tgt   CLAIMED  DEVICE
disk  5  8/12/5.6.0  sdisk   CLAIMED  DEVICE  MICROP 2112
ba  0  8/12/7  ps2    CLAIMED  INTERFACE  Built-in LAN
bc  2  10  ccio  CLAIMED  BUS_NEXUS I/O Adapter
graphics 0  10/0  graph3  CLAIMED  INTERFACE  Graphics
graphics 1  10/8  graph3  CLAIMED  INTERFACE  Graphics
ext_bus 3  10/12  c720  CLAIMED  INTERFACE  GSC add-on Fast/Wide SCSI Interface
target 7  10/12.4  tgt   CLAIMED  DEVICE
disk  6  10/12.4.0  sdisk   CLAIMED  DEVICE  SEAGATE ST31200W
graphics 2  10/16  graph3  CLAIMED  INTERFACE  Graphics
ba  1  10/20  bus_adapter  CLAIMED  BUS_NEXUS Core I/O Adapter
tty  1  10/20/2  asio0  CLAIMED  INTERFACE  Built-in RS-232C
ba  2  10/20/5  eisa  CLAIMED  BUS_NEXUS EISA Bus Adapter
ext_bus 4  10/20/5/3  hshpib  CLAIMED  INTERFACE  EISA card HWP0C70
target 8  10/20/5/3.0  tgt   CLAIMED  DEVICE
disk  7  10/20/5/3.0.0  cs80  CLAIMED  DEVICE  disk 07959
target 9  10/20/5/3.1  tgt   CLAIMED  DEVICE
disk  8  10/20/5/3.1.0  cs80  CLAIMED  DEVICE  disk 07959
target 10  10/20/5/3.2  tgt   CLAIMED  DEVICE
disk  9  10/20/5/3.2.0  cs80  CLAIMED  DEVICE  disk 07959
processor 0  32  processor  CLAIMED  PROCESSOR  Processor
memory 0  49  memory  CLAIMED  MEMORY  Memory
4. You can determine which SCSI IDs are currently in use by looking under the **H/W Path** heading. The listing **2.0.1 scsi** is the built-in SCSI bus controller. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing **2.0.1.6.0** in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI bus.

The information is presented in a different format if you are using HP-UX 10.0 or later; although you still look under the **H/W Path** heading.

**NOTICE:** Never use SCSI address 7 for any device. Address 7 is reserved for the SCSI controller.
Perform the following steps to open the system unit:

1. Power off the system, the monitor, and any peripheral devices. Unplug the system unit power cord and the power cord of any peripheral devices from ac wall outlets. Refer to *Using Your HP Workstation* for the proper method of shutting down your workstation.

2. Attach the static-grounding wrist strap by following the instructions on the package. Attach the sticky end of the wrist strap to bare metal on the back panel of the system unit.

3. Press down on the two buttons on the top front of the workstation, releasing the front panel (also known as the front bezel) as shown in Figure B–1.
Figure B–1. Removing the Front Panel

4. Swing the panel down and pull up slightly so the two guide pins on the bottom clear their guides and lay the front cover down.
Perform the following steps to close the system unit:

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

1. Insert the two guide pins on the bottom of the front cover into the guides on the bottom of the system unit.

2. Swing the front cover up, and push it firmly into the workstation housing. The front panel edges automatically align with the workstation housing, and the top latch buttons pop up into position. See Figure B–2.

**NOTICE:** To maintain FCC/EMI compliance, verify that the top latches snap completely into position.
3. Reconnect the power cables and any other cables that you disconnected when opening the workstation, then power on any peripherals, the monitor, and the system unit.
Your workstation can have any two of the following removable media devices, with no two the same:

- CD-ROM drive
- 2 to 8 GB, 4 mm DDS tape drive
- 3.5-inch Floppy disk drive

Follow these steps for installing any of the removable media drives into the Storage Assembly. The steps for checking and setting drive jumpers are different for each drive. Jumper information for each drive is included in these steps.

**NOTICE:** Before opening the system unit, follow the instructions in “Checking the SCSI IDs,” earlier in this appendix, to determine the SCSI IDs currently in use on your workstation.

1. Open the system unit according to the directions in “Opening the System Unit,” earlier in this appendix.

2. Unscrew the two captive screws on the left side of the Storage Assembly and pull down the drawer ejector handle on the right side of the Storage Assembly, as shown in Figure B–3.

The Storage Assembly slides partway out of the drawer.
3. Pull the Storage Assembly out as far as it will go. (A safety catch prevents the drawer from coming all the way out.)

**NOTICE:** When sliding the Storage Assembly out of the system unit, move the drawer ejector handle to prevent the Storage Assembly from hitting it.

4. Push in on the safety catch and continue pulling the drawer out. Be sure to support the drawer from the bottom.
5. Set the drawer on a flat surface.

6. Disconnect the power distribution cable from the Fan extender cable.

7. Disconnect the Fan extender cable from the SCSI PCA.

Figure B–4. Removing EMI Plate
8. Unscrew the captive screw holding the FAN/EMI plate at the back of the removable drives and lift the plate up and out of the drawer, as shown in Figure B–45.

9. Disconnect the SCSI and power cables from the drive.
10. Unscrew the two screws holding the drive in the storage drawer, and slide the drive out of the drawer. See Figure B–6.

11. Check the SCSI address/jumper settings on the replacement drive, using the following information sections.
CD-ROM Drive

The CD-ROM drive ships with the drive set to SCSI ID address 2. We recommend keeping the address setting at 2 unless it is used by another device.

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

If you need to change the CD-ROM drive’s address, follow these instructions, referring to Figure B–7. If you do not need to change the drive’s address, go to Step 10 of this installation procedure.

1. Locate the jumpers at the back of the CD-ROM drive.

2. To change the address, use needlenose pliers to set the drive’s SCSI ID to an address that is not used by another SCSI device. Check that the other jumpers are set correctly.

NOTICE: Do not use SCSI ID 7 for your CD-ROM drive’s SCSI address. The host SCSI controller uses SCSI ID 7.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive.
Figure B–7. CD-ROM Drive SCSI Address/Jumper Settings
DDS Tape Drive

The DDS tape drive ships with the drive set to SCSI ID address 3 and the Operation Mode switches set for correct drive operation. We recommend keeping the address setting at 3 unless it is used by another device.

**CAUTION:** SCSI tape drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the DDS tape drive kit. Always handle the drive carefully.

If you need to change the DDS tape drive’s address or operation mode, follow these instructions, referring to Figure B–8 for the DDS-DC drive, Figure B–9 for the DDS-2 drive, and Figure B–10 for operation mode. If you do not need to change the drive’s address or operation mode, go to Step 10 of this installation procedure.

1. Locate the jumpers at the back of the DDS tape drive.

2. To change the jumper settings, use needlenose pliers to set the drive’s SCSI ID to an address that is not used by another SCSI device. Check that the other jumpers are set correctly.

**NOTICE:** Do not use SCSI ID 7 for your DDS tape drive’s SCSI address. The host SCSI controller uses SCSI ID 7.

3. Use needlenose pliers to remove the SCSI terminators, if still attached to the drive.

4. If you need to change the Operation Mode switches, locate the switches on the underside of the DDS tape drive. Switches 1 and 2 are used to configure the data compression operation mode. Switches 3 through 8 are used to specify drive connectivity and functionality according to host or customer requirements. The default setting is all switches ON. Figure B–10 shows the available options.
### Figure B–8. DDS-DC Tape Drive SCSI Address/Jumper Settings

<table>
<thead>
<tr>
<th>Target ID</th>
<th>Term PWR</th>
<th>ID2</th>
<th>Jumpers</th>
<th>ID1</th>
<th>ID0</th>
<th>Target ID</th>
<th>Term PWR</th>
<th>ID2</th>
<th>Jumpers</th>
<th>ID1</th>
<th>ID0</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>1</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 (Default)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td></td>
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<td>5</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

SCSI Terminators (must be removed)
Figure B–9. DDS-2 Tape Drive and SCSI Address/Jumper Settings
Figure B–10. Switch Settings for Data Compression Operation Mode
Floppy Drive

The floppy disk drive ships with the drive set to SCSI ID address 0. We recommend keeping the address setting at 0 unless it is used by another device.

CAUTION: Floppy disk drives are susceptible to mechanical and electrostatic shock. When handling the drive, always wear the static-grounding wrist strap that came in the floppy disk drive kit. Always handle the drive carefully.

If you need to change the floppy disk drive’s address, follow these instructions, referring to Figures B–11 and B–12. If you do not need to change the drive’s address, go to Step 10 of this installation procedure.

1. Locate the jumpers on the top of the floppy drive.

2. To change the jumpers, use needle-nose pliers to set the drive’s SCSI ID to an address that is not used by another SCSI device. Check that the other jumpers are set correctly.

NOTICE: Do not use SCSI ID 7 for your floppy drive’s SCSI address. The host SCSI controller uses SCSI ID 7.

3. Use needle-nose pliers to remove the SCSI terminators, if still attached to the drive.
**Figure B–11. Floppy Drive SCSI Address/Jumper Settings**
Figure B–12. Floppy Drive Terminators
12. Figure B–13 shows the orientation of each of the removable media drives in the bracket and the position of the screws holding the drive bracket in place. The same bracket can be used on all three drives.

Figure B–13. Attaching Removable Drive Mounting Bracket and Drive Orientation
13. With the disk mounting bracket between the guides on each side of the Storage Assembly, slide the disk into the Storage Assembly, securing it with the two side screws. See Figure B–14. Do not over-tighten the side screws.

14. Reconnect the cabling from the back of the drive to the side of the drawer assembly. See Figure B–14.

15. Secure the EMI plate at the back of the removable drives with the captive screw in the bottom of the plate.

16. Slide the drawer back in.

Figure B–14. Replacing Drive Screws
17. Push the drawer ejector handle up until the Storage Assembly slides all the way into the system unit and secure the two captive screws on the left of the Storage Assembly, as shown in Figure B–15.

**NOTICE:** If the ejector handle is not pushed completely in, you may not have proper seating of the SCSI PCB interconnect to the backplane.

*Figure B–15. Replacing the Storage Drawer Assembly*
18. Follow the instructions in “Checking the SCSI IDs” earlier in this appendix, to verify that your workstation can see the newly installed drive.

For information about using your drives see the following chapters in this book:

- Using your CD-ROM drive is in Chapter 3.
- Using your DDS tape drive is in Chapter 4.
- Using your floppy drive is in Chapter 5.
Adding a Hard Drive

This section describes how to add a hard drive to your workstation. The first part deals with installing a hard drive and the second part tells you how to configure your hard disk after it is installed.

Your workstation can have two hard drives. The hard drive that came with your workstation was set to SCSI ID 6. If you are adding a second hard disk, the second hard disk will use SCSI ID 5. If another device on your workstation is using SCSI ID 5, change the hard disk’s SCSI ID to an unused SCSI ID.

NOTICE: Do not use SCSI ID 7 for your hard drive’s SCSI address. The host SCSI controller uses SCSI ID 7. If you are adding a second hard drive, we advise you not to use SCSI ID 6 which is normally reserved for the boot disk drive.

Check the jumpers on the hard drive you plan to install. Figure B–16 shows the correct SCSI address for the jumpers on your drive. These jumpers are the only jumpers you may need to change on the drive.

1. Use a pair of small needle-nose pliers to set the SCSI ID jumpers to SCSI ID 5 if you are adding a second hard drive, or SCSI ID 6 if this is the first hard drive (you are running diskless). Check that the other jumpers are set correctly.

2. If you removed the disk drive mounting bracket from the disk drive, replace it now, making sure not to over-tighten the screws. Figure B–17 shows the orientation of the drive in the bracket for both drives and the position of the screws holding the drive bracket in place.

Be sure the printed circuit side of one drive is facing the printed circuit side of the other drive.
### Figure B–16. Fast, Wide Hard Drive Jumper Settings

<table>
<thead>
<tr>
<th>Jumpers: FW SCSI Address</th>
<th>6</th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>0</th>
<th>15</th>
<th>14</th>
<th>13</th>
<th>12</th>
<th>11</th>
<th>10</th>
<th>9</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest Priority</td>
<td></td>
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<tr>
<td>Lowest Priority</td>
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</tr>
</tbody>
</table>
Figure B–17. Replacing Hard Drive Mounting Bracket and Drive Orientation
Installing a Hard Disk Drive

Perform the following steps to install a hard disk drive.

**NOTICE:** Before opening the system unit, follow the instructions in “Checking the SCSI IDs,” earlier in this appendix, to determine the SCSI IDs currently in use on your workstation.

1. Open the system unit according to the directions in “Opening the System Unit,” earlier in this appendix.

2. Unscrew the two captive screws on the left side of the Storage Assembly and pull down the drawer ejector handle on the right side of the Storage Assembly, as shown in Figure B–18.

The Storage Assembly slides partway out of the drawer.
3. Pull the Storage Assembly out as far as it will go. (A safety catch prevents the drawer from coming all the way out.)

**NOTICE:** When sliding the Storage Assembly out of the system unit, move the drawer ejector handle to prevent the Storage Assembly from hitting it.

4. Press in on the safety catch on each side of the drawer to allow the drawer all the way out and place the drawer on a flat surface.
5. Be sure you have already checked the SCSI ID of the drive you want to install using the method described at the beginning of this section.

6. With the disk mounting bracket between the guides on each side of the Storage Assembly, slide the disk into the Storage Assembly, securing it to the drawer with two side screws. See Figure B–19. Do not over-tighten the side screws.

The drives should be placed in the drive bays with the bottom of each drive toward the middle, as shown in Figure B–19. Refer to Figure B-16 for drive orientation in the bracket.

*Figure B–19. Placing Hard Drives in Storage Drawer*
7. Reconnect the SCSI and power cables from the back of the drive to the side of the drawer assembly.

8. Slide the drawer back in and secure.

9. Close the system unit and reconnect all cables as described in the “Closing the System Unit” section in this appendix.

10. Follow the instructions in the “Checking the SCSI IDs” subsection to verify that your workstation can see the hard drive.

Configuring a Hard Drive

This section describes how to add a hard disk drive to your system as a file system using SAM. For more information about configuring a hard disk drive, refer to the System Administration Tasks manual.

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

1. Log in as root.

2. Move the mouse pointer to the up arrow above the Toolbox control and click the left mouse button.
3. The **Toolbox** subpanel opens. Click on the **General** toolbox icon, shown below.

![General Toolbox Icon](image)

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

![System_Admin Toolbox Icon](image)

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

![SAM Icons](image)

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

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


8. The **Disks and File Systems** window opens. Double-click on **CD-ROM, Floppy, and Hard Disks**.
The following screen message appears:

Scanning the system’s hardware...

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

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

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

11. Click on OK.

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

13. The following screen messages appear:

Task started.
Creating the device file...
Modifying “/etc/checklist”...
Task completed.

Click on OK.
# Installing Additional Memory

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

- Before trying to install additional memory DIMMs in your J 280 workstation, use the procedure described in Appendix D, “The Boot Console Interface,” to determine the current memory configuration for this workstation.

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

- DIMMs must be inserted in the order shown. Refer to Figure B–21.

- You must insert DIMMs in pairs of equal size.

- Be aware that it is possible to insert the DIMMs backwards into the connectors. Be sure therefore, that you understand the proper orientation for DIMMs going into the connectors. See Figure B–22.

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

Perform the following steps to add memory DIMMs to your workstation. Note the instructions in Step 8 of this section on DIMM configuration before beginning these steps.

1. Open the system unit according to the directions in the “Opening the System Unit” section earlier in this appendix.

2. Remove the two screws in the center of the CPU Assembly.

3. Release the ejector tabs on the left side, top and bottom of the CPU Assembly. Refer to Figure B–20.
4. Pull the CPU Assembly straight out and place on a flat surface with an antistatic mat.

**NOTICE:** The CPU Assembly is heavy and has no safety catch. Be sure to pull it out slowly, making sure it is properly supported.

5. Use Figure B–21 to locate the memory DIMMs on the CPU Assembly.
6. To install a new memory DIMM, turn the CPU assembly until the memory DIMMs are in the position shown in Figure B–22.

Figure B–21. Memory DIMM Location
7. Refer to the Position Guide on the CPU board that states, “<— POSITION MEM MODULE AS SHOWN,” as shown in Figure B–22.

8. Install pairs of DIMMs in the following order: Pair 1 (0A, 0B), Pair 2 (1A, 1B), Pair 3 (2A, 2B), and so on.

This workstation has 16 memory slots, labeled 0A, 0B through 7A, 7B. Memory can be configured from 32 MB to 256 MB installed in pairs of 16 MB DIMMs. Memory can be configured from 128 MB to 1 GB, installed in pairs of 64 MB DIMMs, or memory can be configured from 32 MB to 1 GB in combinations of pairs of 32 MB and 128 MB DIMM pairs. Memory DIMMs must be installed in pairs of equal size, with 128 MB DIMM pairs installed first, followed by 32 MB DIMM pairs. Figure B–23 gives the recommended order for installing pairs of DIMMs.
Any Combination of memory may be used, although, for maximum performance, we recommend using common-sized memory DIMMs; either all 32 MB or 128 MB DIMM pairs. Therefore, to achieve both maximum performance and maximum future capacity, use 128 MB DIMM pairs exclusively.

**Figure B–23. Memory DIMM Sequence**

9. Open the ejector tab by pressing down on it at the left of the connector. Refer to Figure B–24.
10. Place the DIMM in the connector, lining it up with the guides. Make sure to put the notched end toward the ejector handle (to the left).

![Diagram of DIMM installation process]

*Figure B–24. Installing Memory Cards*

11. Close the ejector tab.

12. Press firmly and evenly on the DIMM to ensure that it seats properly.

13. To replace the CPU Assembly in the system unit, first align the top of the CPU Assembly with the guide on the system unit. Refer to Figure B–25 and to the label on the back of the assembly. Be sure to support the CPU Assembly properly while replacing it.
Figure B–25. Replacing the CPU Assembly
Next, align the bottom of the CPU Assembly with the guide on the system unit. With the ejector latches in the open position, slide the CPU Assembly into the system unit as far as it will go. See Figure B–25.

14. Press the ejector tabs all the way in and replace the two screws in the center of the CPU Assembly. Make sure the ejectors are completely depressed to ensure proper connector seating.

15. Close the system unit and reconnect all cables as described in the “Closing the System Unit” section in this appendix.

16. To verify that this installation was successful, follow the steps in Appendix D of this book, “The Boot Console Interface,” on displaying memory information. If you have only replaced a faulty DIMM, you must issue the `pdt clear` command in the service menu of the Boot Console Interface. Answer yes (y) to the prompt “Continue? (Y/N) >.”
Perform the following steps to replace the processor module on your workstation:

1. Open the system unit according to the directions in the “Opening the System Unit” section earlier in this appendix.

2. Remove the two screws in the center of the CPU Assembly.

3. Release the ejector latches on the left side, top, and bottom of the CPU Assembly. Refer to Figure B–26.

Figure B–26. Removing the CPU Assembly
4. Pull the CPU Assembly straight out and place on a flat surface with an antistatic mat.

5. Locate the CPU shroud as shown in Figure B–27.

6. Disconnect the fan cable from the system board. Refer to Figure B–28.

   **CAUTION:** Be sure to reconnect the fan cables when you have finished installing the processor. Failure to reconnect the fan could cause the unit to overheat and damage the processor(s).

7. Remove the four screws attaching the CPU shroud to the system board and pull the shroud straight up. Set the shroud aside.
8. When replacing a processor module, you must also remove one dust cover because:

Figure B–28. Removing CPU Shroud and Disconnecting Fan Cable
• Processors are shipped with a dust cover (A) over the connector.

To remove these dust cover, follow the steps in Figure B–29.

A. To remove the dust cover on the processor module, grasp the cover and pull the cover evenly.

B. Install the processor module into the connector by lining it up over the connector and pressing firmly and evenly.

Figure B–29. Removing CPU Dust Cover
9. Insert the board containing the processor module into the guides and press firmly into place.

10. Reconnect the fan cable to the system board.

11. Replace the CPU shroud over the processor and replace the four screws attaching the CPU shroud to the system board.

12. To replace the CPU Assembly in the system unit, first align the top of the CPU Assembly with the guide on the system unit. Refer to Figure B–30 and to the label on the back of the assembly. Be sure to support the CPU Assembly properly while replacing it.

Figure B–30. Replacing the CPU Assembly
Next, align the bottom of the CPU Assembly with the guide on the system unit. With the ejector latches in the open position, slide the CPU Assembly into the system unit as far as it will go. See Figure B–30.

13. Press the ejector tabs all the way in and replace the two screws in the center of the CPU Assembly. Make sure the ejectors are completely depressed to ensure proper connector seating.

14. Close the system unit and reconnect all cables as described in the “Closing the System Unit” section in this appendix.
Your workstation’s EISA Assembly has five slots. Four are EISA slots; of these, two are EISA-only and two are EISA/GSC slots. The bottom slot is GSC only.

The graphics boards supported by your workstation provide:

- HP VISUALIZE EG - Fast 2D graphics
- HP VISUALIZE-8/HCRX-24 Accelerated 8-plane or 24-plane graphics
- HP VISUALIZE-48 24/24 Image plane, 24–bit Z buffer, 3D graphics

NOTICE: Dual graphics boards take up two slots.

Figures B–31 and B–32 show the physical layout of the EISA/GSC slots, first from outside the system unit, then from inside the EISA Assembly.

![Figure B–31. EISA/GSC Slots from Outside the EISA Assembly](image-url)
Physical slot 0 is always reserved for graphics cards only.

*graphics0* Graphics device in slot 0. If using a Dual Graphics Card, this is the port to the right on the card when facing the back of the workstation.

*graphics1* Graphics device in slot 1. If using a Dual Graphics Card, this is the port to the right on the card when facing the back of the workstation.

*graphics2* Graphics device in slot 2. If there is a Dual Graphics Card in slot 1, this is the port to the left on the card when facing the back of the workstation.

*graphics3* This is a logical slot, and can only be reached by using the left port of a Dual Graphics Card in physical slot 0.
Follow these steps to install an EISA or graphics board into your workstation:

1. Working from the rear of the workstation, unscrew the four captive screws and pull the EISA Assembly straight out using the handle. See Figure B–33.

*Figure B–33. Removing the EISA Assembly*
2. Rotate the unit 90 degrees clockwise and place on a flat surface, as shown in Figure B–34.

*Figure B–34. Rotating the EISA Assembly for Installation*
3. Unscrew one screw at the back of the cover and lift the cover up and out to remove it from the EISA Assembly. See Figure B–35.

*Figure B–35. Removing the EISA Assembly Cover*
4. Unscrew one screw at the top of the slot cover and pull the cover straight up to remove it. See Figure B–36.

*Figure B–36. Removing the EISA Slot Cover*
5. Place EISA or graphics board you are installing in the board guides and slide firmly into the connector. Check to see the board is evenly inserted to seat properly. See Figure B–37.

6. Secure board with one screw in top of board connector bracket.

Figure B–37. Installing an EISA or Graphics Board in the EISA Assembly
7. Insert cover in guide and secure with screw. Refer to Figure B–38.

*Figure B–38. Replacing EISA Assembly Cover*
8. Rotate the unit back 90 degrees as shown in Figure B–39 and grasp the handle.

Figure B–39. Rotating the EISA Assembly Back
9. Slide the EISA Assembly into the system unit and secure it with the four captive screws. See Figure B–40.

*Figure B–40. Replacing EISA Assembly*
Changing Your Monitor Type

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

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

Setting the Monitor Type from the Boot Console Interface

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

Setting the Monitor Type at Power On

If you

- replace your workstation’s monitor with a different monitor type, and

- do not set the workstation’s graphics parameters by using the `monitor` command before doing so,

then press `Tab` after your keyboard’s lights flash during the boot process to initiate the automatic monitor selection process.

Your system queries you for the new monitor type. Select the new type by pressing `Enter`. The system queries you to confirm your selection. Press `y` to save this monitor type.

If you don’t press `y`, the system cycles through the other monitor types, some of which your monitor won’t display. Wait for the workstation to display your monitor type again, then select it.
Appendix C

SCSI Connections

- SCSI bus differences
- SCSI restrictions
- Determining SCSI bus length
- Assigning SCSI device IDs
- Connecting to the SCSI ports
This appendix provides information about connecting Small Computer System Interface (SCSI) devices to an HP 9000 J 280 workstation.

The instructions in this chapter assume you are using the HP-UX version 10.20 or later operating system with the HP VUE version 3.0 interface.

**NOTICE:** When attaching external SCSI devices, be sure to terminate the last device on the external SCSI bus. If no external devices are attached, the SCSI connector on the rear of the system must be terminated with the terminator that was shipped with your workstation.
A Small Computer Systems Interface (SCSI) bus is an IEEE standard bus for connecting your workstation to internal and external devices (SCSI devices) running at different speeds, singly or in combination. Examples of these SCSI devices are floppy disk drives, 4-mm DDS-format tape drives, CD-ROM drives, and Winchester hard disk drives.

There are two types of SCSI buses available with this workstation – a single-ended SCSI bus, and a fast, wide SCSI bus. Table C–1 shows the specification differences between these SCSI buses, and Table C–2 shows the SCSI addresses, ID numbers, and arbitration priorities for each.

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

### Table C–1. SCSI Bus Differences

<table>
<thead>
<tr>
<th>Transfer Rate</th>
<th>Data Bus Width</th>
<th>Maximum Addresses*</th>
<th>Maximum Cable Length</th>
<th>Device Physical Location</th>
<th>Controller Embedded or Plugable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-Ended up to 5 Mbytes per second</td>
<td>8 bits</td>
<td>8</td>
<td>6.0 meters (19.6 feet)</td>
<td>internal and external</td>
<td>embedded</td>
</tr>
<tr>
<td>Fast, Wide up to 20 Mbytes per second</td>
<td>16 bits</td>
<td>16</td>
<td>25 meters (82 feet)</td>
<td>internal and external</td>
<td>embedded</td>
</tr>
</tbody>
</table>

* Address 7 is reserved for host controller use on both buses.
### Table C–2. SCSI Bus Addresses, ID Numbers, and Arbitration Priorities

<table>
<thead>
<tr>
<th>SCSI–2 Address</th>
<th>SCSI–2 ID Number</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>. . . . . . . . . 1 . . . . . .</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>. . . . . . . . . . 1 . . . . .</td>
<td>2</td>
</tr>
<tr>
<td>5</td>
<td>. . . . . . . . . . . 1 . . . .</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>. . . . . . . . . . . . 1 . . . .</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>. . . . . . . . . . . . . 1 . . .</td>
<td>5</td>
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<tr>
<td>2</td>
<td>. . . . . . . . . . . . . . 1 .</td>
<td>6</td>
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<tr>
<td>1</td>
<td>. . . . . . . . . . . . . . . 1</td>
<td>7</td>
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<tr>
<td>0</td>
<td>. . . . . . . . . . . . . . . . 1</td>
<td>8</td>
</tr>
<tr>
<td>15</td>
<td>1 . . . . . . . . . . . . . . .</td>
<td>9</td>
</tr>
<tr>
<td>14</td>
<td>. 1 . . . . . . . . . . . . . .</td>
<td>10</td>
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<tr>
<td>13</td>
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<td>11</td>
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<tr>
<td>12</td>
<td>. . . 1 . . . . . . . . . . . .</td>
<td>12</td>
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<tr>
<td>11</td>
<td>. . . . 1 . . . . . . . . . . .</td>
<td>13</td>
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<tr>
<td>10</td>
<td>. . . . . 1 . . . . . . . . . .</td>
<td>14</td>
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<tr>
<td>9</td>
<td>. . . . . . 1 . . . . . . . . .</td>
<td>15</td>
</tr>
<tr>
<td>8</td>
<td>. . . . . . . 1 . . . . . . . .</td>
<td>16</td>
</tr>
</tbody>
</table>

- **8–bit devices**
- **SCSI–2 Single–Ended**
- **16–bit devices**
- **SCSI–3 Fast, Wide Bus**
This section describes the SCSI restrictions that apply to your workstation in the following areas:

- Cables
- Connectors and terminator
- SCSI configuration constraints

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

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

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

- C2911A cable with 0.9 meter (3 feet) length
- C2924A cable with 2.5 meter (8.2 feet) length
- C2925A cable with 10.0 meter (32.8 feet) length
- C2926A cable with 20.0 meter (65.6 feet) length

CAUTION: SCSI cables approved by HP are designed to function within the SCSI tolerances for HP devices. Use of other cables can result in significant problems with system operation.
Singled-ended SCSI-2 definition limits the total cable length of SCSI-2 cables to 6 meters (19.6 feet).

Fast, wide SCSI-3 definition limits the total cable length of SCSI-3 cables to 25 meters (82 feet).

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

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

- 92222A cable with 0.5 meter (1.6 feet) length
- 92222B cable with 1.0 meter (3.2 feet) length
- 92222C cable with 2.0 meter (6.6 feet) length

If you are daisy-chaining fast, wide SCSI-3 devices together, use the following cable:

- C2911A cable with 0.9 meter (3 feet) length
- C2924A cable with 2.5 meter (8.2 feet) length
- C2925A cable with 10.0 meter (32.8 feet) length
- C2926A cable with 20.0 meter (65.6 feet) length

**NOTICE:** See “Determining SCSI Bus Length” later in this Appendix to determine the total length of your cables.
Connectors and Terminator

Any single-ended standard SCSI-2 device connecting to the system board must use a 50-pin high-density thumb screw connector on the end connecting to the system board, and a 50-pin 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.

Any fast, wide SCSI-3 device connecting to the system board must use a 68-pin high-density thumb screw connector on both ends.

The last device connected to the SCSI bus must be terminated with a SCSI terminator. All of the devices listed ship without terminators. If you do not already have a SCSI terminator, you must order terminator K2291 (for 50-pin connectors) or C2905A (for 68-pin connectors) from Hewlett-Packard.

SCSI Configuration Constraints

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

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

- single-ended standard SCSI-2 bus
- fast-wide, SCSI-3 bus

Single-Ended SCSI-2 Bus Configuration Constraints

For the single-ended standard SCSI-2 bus, HP-UX supports only one of each type of removable disk drive and two of the same type tape devices per system. Table C–3 shows configuration constraints for each single-ended standard SCSI-2 device type. If the system has internal hard disk drives or a floppy disk drive, you must count them as SCSI-2 devices.
### Table C–3. Single-Ended SCSI-2 Bus Configuration Constraints

<table>
<thead>
<tr>
<th>Single-Ended SCSI-2 Devices</th>
<th>Maximum Number of Each Type of Device Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Disk Drives (internal and external)</td>
<td>7</td>
</tr>
<tr>
<td>Floppy Disk Drives</td>
<td>1</td>
</tr>
<tr>
<td>CD-ROM Drives</td>
<td>1</td>
</tr>
<tr>
<td>4-mm DDS Tape Drives (one internal)</td>
<td>2</td>
</tr>
<tr>
<td>9-track Tape Drives</td>
<td>2</td>
</tr>
<tr>
<td>650-MB Magneto-Optical Drives</td>
<td>1</td>
</tr>
<tr>
<td>Magneto-Optical Autochangers (see notice below)</td>
<td>1</td>
</tr>
</tbody>
</table>

| Maximum Number of SCSI-2 Devices | 7 |

**NOTICE:** Magneto-Optical Autochangers use three SCSI-2 drive addresses. Each address must be accounted for in the maximum number of SCSI-2 devices allowed.

**CAUTION:** Do not mix single-ended standard and fast, wide SCSI-2 peripherals.
Fast, Wide SCSI-3 Bus Configuration Constraints

Fast, wide SCSI-3 does not work with the single-ended standard SCSI-2. Table C–4 shows the configuration constraints for each fast, wide SCSI-3 device type.

<table>
<thead>
<tr>
<th>External Fast, Wide SCSI-3 Devices</th>
<th>Maximum Number of Each Type of Device Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCSI-3 Drive (fast, wide disk drives only)</td>
<td>15</td>
</tr>
<tr>
<td>SCSI-3 Disk Arrays (addressed as single drive)</td>
<td>7</td>
</tr>
</tbody>
</table>

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

Determining SCSI Bus Length

This section helps you to determine the total length of the single-ended standard SCSI-2 bus and the fast, wide SCSI-3 bus.

Single-Ended SCSI-2 Bus Length

Follow these instructions to calculate your total single-ended standard SCSI-2 bus length (including the system unit, external SCSI-2 devices, and SCSI-2 interconnect cables) using Table C–5:

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

NOTICE: In the third column, the length for the System Unit is already listed. This number must always be used for the system unit.
2. In the fourth column, write down the lengths of the SCSI-2 interconnect cables you are using for your installation. (Cable lengths are listed in subsection “Cables” in the section on “SCSI Restrictions.”)

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

If you have problems, call your designated service representative.
Table C–5. SCSI-2 Bus Length Worksheet for Single-Ended Standard SCSI-2 Bus

<table>
<thead>
<tr>
<th>SCSI-2 Device</th>
<th>Internal SCSI-2 Bus Length meters (feet)</th>
<th>Device Internal Length meters (feet)</th>
<th>External Cable Length meters (feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Unit</td>
<td>1.5 (4.9)</td>
<td>1.5 (4.9)</td>
<td>N/A</td>
</tr>
<tr>
<td>7980S</td>
<td>0.0 (0.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1999A</td>
<td>0.3 (1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1520A</td>
<td>0.2 (0.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1521A</td>
<td>0.2 (0.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1700C</td>
<td>1.1 (3.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1701C</td>
<td>0.3 (1.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1704C</td>
<td>0.0 (0.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1705C</td>
<td>0.0 (0.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2213A</td>
<td>1.5 (4.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2217T</td>
<td>1.3 (4.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Subtotals: +

Total SCSI-2 Bus Length =

(Total SCSI-2 bus length not to exceed total of 6 meters [19.6 feet])
Fast, Wide SCSI-3 Bus Length

Follow these instructions to calculate your total fast, wide SCSI-3 bus length for the fast, wide SCSI-3 bus on your system using Table C–6:

1. List all of your internal SCSI-3 devices in the first column.

2. In the second column, write the lengths of the internal SCSI-3 bus that correspond to your devices.

3. In the third column, write down the lengths of the SCSI-3 interconnect cables you are using for your installation. (Cable lengths are listed in subsection “Cables” in the “SCSI Restrictions” section.)

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

5. Add the subtotals together and write the total in the Total SCSI-3 Bus Length box.

NOTICE: The total length of the SCSI-3 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–6.  SCSI-3 Bus Length Worksheet for Fast, Wide SCSI-3 Bus

<table>
<thead>
<tr>
<th>SCSI-3 Device</th>
<th>Internal SCSI-3 Bus Length (meters)</th>
<th>Device Internal Length (meters)</th>
<th>External Cable Length (meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Unit</td>
<td>1.5 (4.9)</td>
<td>_____</td>
<td>N/A</td>
</tr>
<tr>
<td>C3034T</td>
<td>1.0 (3.3)</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>C3035T</td>
<td>1.0 (3.3)</td>
<td>_____</td>
<td>_____</td>
</tr>
<tr>
<td>C3036T</td>
<td>1.0 (3.3)</td>
<td>_____</td>
<td>_____</td>
</tr>
</tbody>
</table>

Subtotals: _____ + _____

Total SCSI-3 Bus Length =

(Total SCSI-3 bus length not to exceed total of 25 meters [82 feet])
Assigning SCSI Device IDs

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

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

   ![Terminal Control](image)

   A terminal window opens.

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

3. Enter the following at the prompt:

   ```
   /usr/sbin/ioscan -f
   ```

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

<table>
<thead>
<tr>
<th>Class</th>
<th>I</th>
<th>H/W Path</th>
<th>Driver</th>
<th>S/W State</th>
<th>H/W Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

C-14
C-15
You can determine which SCSI IDs are currently in use by looking under the **H/W Path** heading. The listing **2.0.1 scsi** is the built-in SCSI bus controller. For devices connected to the built-in SCSI bus, such as disks, the fourth number is the SCSI ID for that device. For example, the listing **2.0.1.6.0** in the sample device list tells you that there is a SCSI device (a disk) currently using ID 6 on the SCSI bus.

The information is presented in a different format if you are using HP-UX 10.20, although you still look under the **H/W Path** heading.

### Single-Ended Standard System SCSI Device IDs

Before assigning a SCSI device ID to your drive, you need to check your SCSI device IDs. To check what SCSI device IDs are available and assign an ID to your device, follow these instructions which use Table C–7:

1. Write in the SCSI device ID of any internal drives in Table C–7.

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

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

**NOTICE:** The C1700A Magneto-Optical Autochanger uses three SCSI addresses, and accounts for three of the seven devices allowed on the SCSI bus.
4. Check to see which SCSI device IDs are not used. You can use ID numbers 0 through 6 if they are not already in use. If the default ID on your drive does not conflict with any existing drive IDs, use that ID. If your default address conflicts with an existing drive ID, you need to assign a new SCSI device ID to your drive. See the drive installation documentation for information on changing the device ID.

**CAUTION:** Do not use SCSI device ID 7 for any device except the system card.
### Table C–7. Single-Ended SCSI Device IDs

<table>
<thead>
<tr>
<th>SCSI Device Drives</th>
<th>Device ID (Address) Number (Only 0 through 6 Available)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internal</td>
</tr>
<tr>
<td>Internal System Drives:</td>
<td></td>
</tr>
<tr>
<td>System SCSI Drive(s)</td>
<td></td>
</tr>
<tr>
<td>Floppy Disk Drive (if present, uses ID No. 0)</td>
<td>_____</td>
</tr>
<tr>
<td>CD–ROM Drive (if present, uses ID No. 2)</td>
<td>_____</td>
</tr>
<tr>
<td>4-mm DDS Tape Drive (if present, uses ID No. 1)</td>
<td>_____</td>
</tr>
<tr>
<td>External Device Drives:</td>
<td></td>
</tr>
<tr>
<td>1st External Device</td>
<td></td>
</tr>
<tr>
<td>2nd External Device</td>
<td></td>
</tr>
<tr>
<td>3rd External Device</td>
<td></td>
</tr>
<tr>
<td>4th External Device</td>
<td></td>
</tr>
<tr>
<td>5th External Device</td>
<td></td>
</tr>
<tr>
<td>6th External Device</td>
<td></td>
</tr>
<tr>
<td>7th External Device</td>
<td></td>
</tr>
</tbody>
</table>

**NOTICE:** You can have no more than 7 SCSI devices (internal and external) connected to the system.

5. Write in the SCSI device ID of any internal drives.
6. Write in the type of external single-ended drives currently connected to your workstation under the heading “External Device Drives” and each drive’s SCSI device ID under the heading “Device ID Number.”

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

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

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

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

Before assigning a SCSI device ID to your drive, you need to check your SCSI device IDs. To check which SCSI device IDs are available and assign an ID to your device, follow these instructions which use Table C–8:

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

2. Add your new drive to the table.

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

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

Table C–8. Fast, Wide SCSI Device IDs

<table>
<thead>
<tr>
<th>Fast, Wide Differential SCSI Device Drives</th>
<th>Device ID (Address) Number (ID 7 not available)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Internal Device</td>
<td>6</td>
</tr>
<tr>
<td>2nd Internal Device</td>
<td>5</td>
</tr>
</tbody>
</table>

NOTICE: You can have no more than 15 SCSI devices connected to a fast, wide bus.
This section describes how to connect to the system SCSI ports (single-ended and fast, wide).

**System SCSI Port Connection**

The system contains two (2) SCSI connectors:

- System Single-Ended SCSI-2 Connector
- System Fast, Wide SCSI-3 Connector

Figure C–1 shows the rear panel with terminators attached to the two SCSI connectors. Figure C–2 shows the two SCSI connectors without terminators. SCSI cables connect to these ports with a high-density thumb screw connector.
Figure C–1. Rear Panel SCSI Connectors with Terminators Attached


Figure C–2. Rear Panel SCSI Connectors without Terminators

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

The Boot Console Interface

This appendix describes the different features of the boot console interface and how to use them. It presents the information in the following sections:

- Boot console interface features
- Accessing the boot console interface
- Booting your workstation
- Searching for bootable media
- Resetting your workstation
- Displaying and setting paths
- Displaying and setting the monitor type
- Displaying the current memory configuration
- Displaying the status of the System I/O
- Setting the Auto Boot and Auto Search flags
- Displaying and setting the Security mode
- Displaying and setting the Fastboot mode
- Displaying the LAN station address
- Displaying system information
- Displaying PIM information
Boot Console Interface Features

There are times when you want to interact directly with the hardware of your workstation before it boots the operating system. Your workstation provides a menu-driven boot console interface that allows you to perform special tasks, display information, and set certain system parameters, even if the operating system is unavailable.

Here are some of the things you can do:

- Boot your workstation
- Search for bootable media
- Reset your workstation
- Display and set boot paths
- Display and set your monitor type
- Display memory configuration information
- Display the status of the EISA slots
- Set Auto Boot and Auto Search
- Set Fastboot
- Display LAN information
- Display system information
- Display PIM information

NOTICE: All of the tasks in the boot console interface should be performed by a system administrator.

The boot console menus follow, showing the various tasks you can perform and the information available.
The shortened version of all commands is indicated by the uppercase letters.

Help is available for all the menus and commands by using either `help`, `he`, or `?` and the menu or command you want help on.

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOot [PRI</td>
<td>ALT</td>
</tr>
<tr>
<td>PAth [PRI</td>
<td>ALT</td>
</tr>
<tr>
<td>SEArch [DIsplay</td>
<td>IPL] [&lt;path&gt;]</td>
</tr>
<tr>
<td>COnfiguration [&lt;command&gt;]</td>
<td>Access Configuration menu/commands</td>
</tr>
<tr>
<td>INformation [&lt;command&gt;]</td>
<td>Access Information menu/commands</td>
</tr>
<tr>
<td>SERvice [&lt;command&gt;]</td>
<td>Access Service menu/commands</td>
</tr>
<tr>
<td>DIsplay</td>
<td>Redisplay the current menu</td>
</tr>
<tr>
<td>HElp [&lt;menu&gt;</td>
<td>&lt;command&gt;]</td>
</tr>
<tr>
<td>RESET</td>
<td>Restart the system</td>
</tr>
</tbody>
</table>

Main Menu: Enter command >

------
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUto [BOot</td>
<td>SEArch] [ON</td>
</tr>
<tr>
<td>BootID [&lt;proc&gt;] [&lt;boot ID&gt;]</td>
<td>Display or modify processor boot ID</td>
</tr>
<tr>
<td>BootInfo</td>
<td>Display boot-related information</td>
</tr>
<tr>
<td>BootTimer [0 – 200]</td>
<td>Seconds allowed for boot attempt</td>
</tr>
<tr>
<td>CPUconfig [&lt;proc&gt;] [ON</td>
<td>OFF]</td>
</tr>
<tr>
<td>DEfault</td>
<td>Set the system to predefined values</td>
</tr>
<tr>
<td>FastBoot [ON</td>
<td>OFF]</td>
</tr>
<tr>
<td>MOnitor [LIST]&lt;path&gt; &lt;type&gt;]</td>
<td>Change the current monitor type</td>
</tr>
<tr>
<td>PPath [PRI</td>
<td>ALT</td>
</tr>
<tr>
<td>SEArch [DIisplay</td>
<td>IPL] [&lt;path&gt;]</td>
</tr>
<tr>
<td>SECure [ON</td>
<td>OFF]</td>
</tr>
<tr>
<td>Time [c:y:m:d:h:m:[s]</td>
<td>Read or set real time clock in GMT</td>
</tr>
<tr>
<td>BOot [PRI</td>
<td>ALT]&lt;path&gt;]</td>
</tr>
<tr>
<td>DIsplay</td>
<td>Redisplay the current menu</td>
</tr>
<tr>
<td>HElp [&lt;menu&gt;</td>
<td>&lt;command&gt;]</td>
</tr>
<tr>
<td>RESET</td>
<td>Restart the system</td>
</tr>
<tr>
<td>MAin</td>
<td>Return to Main Menu</td>
</tr>
</tbody>
</table>

----- Configuration Menu: Enter command >
Information Menu: Enter command >

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL</td>
<td>Display all system information</td>
</tr>
<tr>
<td>BootINfo</td>
<td>Display boot-related information</td>
</tr>
<tr>
<td>Cache</td>
<td>Display cache information</td>
</tr>
<tr>
<td>ChipRevisions</td>
<td>Display revisions of VLSI and firmware</td>
</tr>
<tr>
<td>COprocessor</td>
<td>Display coprocessor information</td>
</tr>
<tr>
<td>FwrVersion</td>
<td>Display firmware version</td>
</tr>
<tr>
<td>IO</td>
<td>Display I/O interface information</td>
</tr>
<tr>
<td>LanAddress</td>
<td>Display built-in system LAN address</td>
</tr>
<tr>
<td>Memory</td>
<td>Display memory information</td>
</tr>
<tr>
<td>Processor</td>
<td>Display processor information</td>
</tr>
<tr>
<td>WArnings</td>
<td>Display selftest warning messages</td>
</tr>
</tbody>
</table>

Boot [PRI|ALT]<path>  Boot from specified path
Display              Redisplay the current menu
Help [<menu>|<command>] Display help for menu or command
RESET                 Restart the system
Main                  Return to Main Menu
<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChassisCodes [&lt;proc&gt;]</td>
<td>Display chassis codes</td>
</tr>
<tr>
<td>CLEARPIM</td>
<td>Clear (zero) the contents of PIM</td>
</tr>
<tr>
<td>EepromRead [&lt;addr&gt;] [&lt;len&gt;]</td>
<td>Read EEPROM locations</td>
</tr>
<tr>
<td>MemRead [&lt;addr&gt;] [&lt;len&gt;] [&lt;a&gt;]</td>
<td>Read memory locations</td>
</tr>
<tr>
<td>PDT [CLEAR]</td>
<td>Display or clear the Page Deallocation Table</td>
</tr>
<tr>
<td>PIM [&lt;proc&gt; {HPMC</td>
<td>LPMC</td>
</tr>
<tr>
<td>BOot [PRI</td>
<td>ALT]&lt;path&gt;]</td>
</tr>
<tr>
<td>DIsplay</td>
<td>Redisplay the current menu</td>
</tr>
<tr>
<td>HELP [&lt;menu&gt;</td>
<td>&lt;command&gt;]</td>
</tr>
<tr>
<td>RESET</td>
<td>Restart the system</td>
</tr>
<tr>
<td>MAin</td>
<td>Return to Main Menu</td>
</tr>
</tbody>
</table>

Service Menu: Enter command >
Accessing the Boot Console Interface

To access the boot console interface, follow these steps:

**NOTICE:** This procedure should be done by a system administrator.

1. Close any files and applications on your workstation.
2. Press the power switch on the front panel of the system unit.

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

Make sure that you do not unplug the system’s power cord or otherwise interrupt power to the system unit at this time.

3. When the system has completely shut down, power on your workstation.

If Autoboot is turned off, the boot sequence automatically stops at the bootconsole Main Menu.

If Autoboot is turned on, you will see the following messages:

"Processor is starting Autoboot process. To discontinue, press any key within 10 seconds."

If Autoboot and Autosearch are both turned on, you will see the following messages:

"Processor is booting from first available device. To discontinue, press any key within 10 seconds."
NOTICE: If you are using a power–saving monitor, you will have less than 10 seconds from the time this message appears to press a key.

4. Press a key. You will then see the message:

Boot terminated

The Main Menu of the boot console appears.
Booting Your Workstation

Usually, you start your workstation by turning it on and waiting for HP-UX to boot automatically. However, you may not always want the usual sequence to occur.

For example, you may want to start your workstation from an operating system that is stored on a device that is different from your usual boot device. If your normal operating system kernel or the disk on which it resides becomes damaged or unusable, you may wish to boot from a different disk or perhaps another type of device, such as a DDS-format tape drive.

Here are some situations and examples:

- If you know which device you want to boot from, and you know that it contains a bootable operating system, follow the directions in ”Accessing the Boot Console Interface” earlier in this appendix, and then type the following at the prompt:

  Main Menu: Enter command > boot device

  where device is the hardware path to the device, specified in Mnemonic Style Notation.

  For example, if you wish to boot an operating system that is stored on a DDS-format tape in a drive that is located at ”sescsi.1.0”, follow the directions in ”Accessing the Boot Console Interface” earlier in this appendix, and then type the following command at the prompt:

  Main Menu: Enter command > boot sescsi.1.0
If you do not know which device you want to boot from, then type the following at the prompt:

Main Menu: Enter command > **search**

<table>
<thead>
<tr>
<th>Path Number</th>
<th>Device Path</th>
<th>Device Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>P0</td>
<td>FWSCSI.6.0</td>
<td>HP C2490WD</td>
</tr>
<tr>
<td>P1</td>
<td>SESCSI.1.0</td>
<td>HP HP35480A</td>
</tr>
</tbody>
</table>

Main Menu: Enter command > **Boot P1**

The operating system on the specified device is used to start your workstation (also see, *Searching for Bootable Media*).

If you wish to interact with the **Initial System Loader (ISL)** before booting your workstation, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

Main Menu: Enter command > **boot device**

You are prompted:

```
Interact with ISL (Y,N,Q)>
```

Answering yes (**Y**) causes the ISL to be loaded from the specified device. After a short time, the following prompt appears on your screen:

```
ISL>
```

ISL is the program that actually controls the loading of the operating system. By interacting with ISL, you can choose to load an alternate version of the HP–UX operating system. If you do not want ISL to be loaded, you must enter **N**.

For example, if the usual kernel (**/stand/vmunix**) on your root disk (**fwscsi.6.0**) has become corrupted, and you wish to boot your workstation from the backup kernel (**/stand/vmunix.prev**), type the following at the ISL> prompt:
ISL> `hpx /stand/vmunix.prev`

- If you do not know which media in your file systems have bootable operating systems, you can find them with the `search IPL` command.
Searching for Bootable Media

To list devices that contain bootable media, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

Main Menu: Enter command > `search ipl`

The search command searches all buses. The search may turn up more devices than there are lines on your display. If you are using a text terminal, you may control the progress of the search from your terminal’s keyboard by performing the following steps:

- To hold the display temporarily, press `Ctrl S`.
- To continue the display, press `Ctrl Q`.
- To halt the search, press any other key

These flow–control commands do not work with a bitmapped display, but such a display can show more than forty lines of text, so you are unlikely to need them.

To search for devices of just one type that actually contain bootable media, follow the directions in "Accessing the Boot Console Interface" earlier in this appendix, and then type the following at the prompt:

Main Menu: Enter command > `search ipl device_type`

where `device_type` is one of the following:

- `fwscsi` is the built–in fast, wide SCSI bus.
- `sescsi` is the built–in single–ended SCSI bus.
- `lan` is all connections to the built–in LAN.
- `gsc` is an optional fast, wide SCSI interface in slot number `n`. 
Resetting Your Workstation

To reset your workstation to its predefined values, follow the directions in “Accessing the Boot Console Interface” earlier in this appendix, and then type the following at the prompt to access the Configuration Menu:

Main Menu: Enter command > co

When the Configuration Menu appears, type the following at the prompt:

Configuration Menu: Enter command > default
Displaying and Setting Paths

A path is the hardware address of a device that is attached to the I/O system of your workstation. The path command sets the system paths shown in Table 5–8.

The path command sets and displays the hardware address of a specified device attached to the I/O bus of your workstation.

*Table 5–8. System Paths*

| Path Type      | Device                                                                 |
|----------------|Adam                                                   |
| 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 cone| Your workstation’s primary display device             |
| keyboard or key| Your workstation’s primary input ASCII device         |

To display the current settings for the system paths, type the following at the prompt:

Main Menu: Enter command > path

The paths are displayed in Mnemonic Style Notation, as shown in Table 5–9.

*Table 5–9. Mnemonic Style Notation for Boot Paths*

<table>
<thead>
<tr>
<th>I/O Type</th>
<th>Specification Format</th>
</tr>
</thead>
<tbody>
<tr>
<td>Built–in FWSCSI</td>
<td><code>core.fwscsi.scsi_address.logical_unit_number</code></td>
</tr>
<tr>
<td></td>
<td><code>slotn.fwscsi.scsi_address.logical_unit_number</code></td>
</tr>
<tr>
<td>Built–in SCSI</td>
<td><code>core.scsi.scsi_address.logical_unit_number</code></td>
</tr>
<tr>
<td>Built–in LAN</td>
<td><code>core.lan.server_address.init_timeout.io_timeout</code></td>
</tr>
</tbody>
</table>
To display the current setting for a particular system path, follow the directions in “Accessing the Boot Console Interface” earlier in this appendix, and then type the following at the prompt:

Main Menu: Enter command > **path path_type**

where *path_type* is one of the path types listed in Table 5–8.

For example, to get the path to the primary boot device, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt:

Main Menu: Enter command > **path primary**

To set a system path to a new value, follow the directions in “Accessing the Boot Console Interface” earlier in this chapter, and then type the following at the prompt:

Main Menu: Enter command > **path path_type path**

where *path_type* is one of the path types listed in Table 5–8 and *path* is the specification of the path in Mnemonic Style Notation (as described in Table 5–9). For example, to set the primary boot path to a SCSI disk with an ID of 6.0, follow the directions in “Accessing the Boot Console Interface” earlier in this appendix, and then type the following at the prompt:

Main Menu: Enter command > **path pri sescsi.6.0**
Displaying and Setting the Monitor Type

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

The Monitor Command

The monitor command lets you change your workstation’s graphics configuration. This command is available in Configuration Menu of the boot console interface.

**NOTICE:** The monitor command lets you change your workstation’s graphics configuration before you replace your monitor. For information about changing the configuration after you replace your monitor, refer to “Changing Your Monitor Type” in Appendix B.

To display the current graphics and console information, enter the following command;

```
Main Menu: Enter command > co
Configuration: Enter command > mo
```

The correct usage for setting the graphics configuration is:

```
mo graphics_path type
```

where valid `graphics_path` parameters are:
graphics(0) through graphics(2) – Graphics adapters installed in option slots 0 through 2 and type is the numerical monitor type.

For example, a Dual Visualize Enhanced Graphics Card (A4451A) installed in option slot 2 would be graphics(2A) and graphics(2B).
Displaying the Current Monitor Configuration

To display the current monitor configuration for your system from the Configuration Menu of the boot console interface, follow the directions in ”Accessing the Boot Console Interface” earlier in this appendix. Once you are in the Boot Console Interface Main Menu, enter:

Main Menu: Enter command > configuration

This places you in the Configuration Menu. From here, enter:

Configuration Menu: Enter command > monitor

The screen displays a list of the current graphics adapters and there monitor types configured for your workstation.

MONITOR INFORMATION

<table>
<thead>
<tr>
<th>Path</th>
<th>Slot</th>
<th>Head</th>
<th>HPA</th>
<th>Resolution</th>
<th>Freq</th>
<th>Type</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAPHICS(1)</td>
<td>1</td>
<td>f8000000</td>
<td>1280x1024</td>
<td>72Hz</td>
<td>12</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In this example, only the graphics adapter(located in slot 1) graphics(1) is configured. The monitor type for graphics(1) is set to type 12, which is a 1280 by 1024 monitor that uses a frequency of 72 Hz.
Setting the Monitor Type

You can set the monitor type for a graphics adapter by entering the following:

```
Configuration Menu: Enter command > monitor graphics(n)
```

Where \( n \) is the number of the graphics adapter and \( tt \) is the monitor type.

To display a list of supported monitors, enter the following command:

```
Configuration Menu: Enter command > monitor list
```

A list of valid monitor types similar to the following is displayed:

```
MONITOR INFORMATION

<table>
<thead>
<tr>
<th>Path</th>
<th>Slot</th>
<th>Head Type</th>
<th>Size</th>
<th>Freq</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>1</td>
<td>1 1280x1024</td>
<td>75Hz</td>
<td>VESA</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>1</td>
<td>2 1280x1024</td>
<td>75Hz</td>
<td>VESA,Double buffered</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>1</td>
<td>3 1280x1024</td>
<td>75Hz</td>
<td>VESA, Grey scale</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>1</td>
<td>4 1280x1024</td>
<td>75Hz</td>
<td>VESA, Double buffered,Greyscale</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>1</td>
<td>5 1024x768</td>
<td>75Hz</td>
<td>VESA</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>6</td>
<td>800x600</td>
<td>75Hz</td>
<td>VESA</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>7</td>
<td>640x480</td>
<td>75Hz</td>
<td>VESA</td>
</tr>
<tr>
<td>GRAPHICS(0)</td>
<td>0</td>
<td>8</td>
<td>1600x1200</td>
<td>75Hz</td>
<td>VESA</td>
</tr>
</tbody>
</table>
```
GRAPHICS(0) 0 1 9 1600x1200 75Hz VESA,Grey scale
GRAPHICS(0) 0 1 10 1200x1600 75Hz VESA
GRAPHICS(0) 0 1 11 1200x1600 75Hz VESA,Grey scale
GRAPHICS(0) 0 1 12 1280x1024 72Hz
GRAPHICS(0) 0 1 13 1280x1024 72Hz Double buffered
GRAPHICS(0) 0 1 14 640x480 60Hz
GRAPHICS(0) 0 1 15 user defined

Configuration Menu: Enter command >
To set the monitor type for graphics(0) to monitor type 2, enter the following:

Configuration Menu: Enter command `monitor graphics(0) 2`

This will take effect on the next reboot.

MONITOR INFORMATION

<table>
<thead>
<tr>
<th>Path</th>
<th>Slot</th>
<th>Head</th>
<th>HPA</th>
<th>Resolution</th>
<th>Freq</th>
<th>Type</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>f80000000</td>
<td>1280x1024</td>
<td>72Hz</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

The boot console displays a message that tells you that your new monitor selection will take affect the next time you reboot your system. The boot console also displays the new monitor information.

Trying to change the monitor type to a number not listed for that graphics device fails and gives you the following warning message:

Value of monitor type n out of range (n - nn)

Trying to change the monitor type on an empty slot fails and gives you the following warning message:

No such graphics card.
Setting the Monitor Type at Power On

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

Wait two seconds after the Num Lock light flashes near the end of the boot sequence, then press Tab to initiate the automatic monitor selection process.

**NOTICE:** It takes approximately one to two minutes after powering on the workstation before the Num Lock light flashes.

The system cycles through all of the available monitor types one at a time. When you can see a message similar to the following clearly and legibly, select that monitor type by pressing Enter:

```
Path          Slot  Head   Type      Size     Freq  Class
–––––        –––––  ––––   ––––      ––––     ––––  –––––
GRAPHICS(1)     1     1     n     nnnxnnnn   nnHz
```

Press [RETURN] to select this monitor type (type n of n types).

The system queries you to confirm your selection. Press **Y** to save this monitor type.

If you press any key other than **Y**, the following message is displayed:

```
Monitor type not saved.
```

At this point, the new monitor type is active, but not saved. Because you didn’t save the monitor type, the next time you reboot the system the original monitor type will be used.

Next, the following message is displayed:
To select a new Graphics Monitor Type press the <TAB> key now, otherwise EXIT by entering any other key (or will time out in 15 seconds)... 

To restart the monitor selection process, press TAB.
Displaying the Current Memory Configuration

The following sample screen output using the memory command shows: first, a memory configuration table with properly–installed and configured memory (Sample Output 1); and second, output when a DIMM has been improperly installed (Sample Output 2).

To display the current memory configuration for your system, from the Information Menu of the boot console interface, follow the directions in ”Accessing the Boot Console Interface” earlier in this appendix. Once you are in the Boot Console Interface Main Menu, type:

Main Menu: Enter command > information

This places you in the Information Menu. From here type:

Information Menu: Enter command > memory

The screen displays status and configuration information for the memory DIMMs installed in your workstation. The first listing below shows the memory information for a system with correctly installed and configured memory modules. The second listing shows the information for a system that has memory modules incorrectly installed or configured.
Memory Information Sample 1

The following sample shows the memory information when memory modules are properly installed and configured:

MEMORY INFORMATION

MEMORY STATUS TABLE

<table>
<thead>
<tr>
<th>Slot</th>
<th>Size(a+b)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>0a/b</td>
<td>64MB</td>
<td>Configured</td>
</tr>
<tr>
<td>1a/b</td>
<td>32MB</td>
<td>Configured</td>
</tr>
<tr>
<td>2a/b</td>
<td>128MB</td>
<td>Configured</td>
</tr>
</tbody>
</table>

TOTAL 224MB

DETAILED MEMORY CONFIGURATION TABLE

<table>
<thead>
<tr>
<th>SPA</th>
<th>GROUP</th>
<th>SMC</th>
<th>SMC Status</th>
<th>Bank</th>
<th>Bank Status</th>
<th>Size</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000000</td>
<td>0</td>
<td>2</td>
<td>Configured</td>
<td>0</td>
<td>Configured</td>
<td>16MB</td>
<td>1a/b</td>
</tr>
<tr>
<td>0x0c000000</td>
<td>0</td>
<td>2</td>
<td>Configured</td>
<td>0</td>
<td>Configured</td>
<td>16MB</td>
<td>1a/b</td>
</tr>
</tbody>
</table>

Group 1 interleaved 2 ways over 3 banks

Group 0 interleaved 2 ways over 2 banks

BAD MEMORY TABLE
<table>
<thead>
<tr>
<th>SMC</th>
<th>SMC Status</th>
<th>Bank</th>
<th>Bank Status</th>
<th>SIMM Size</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>5a/b</td>
</tr>
<tr>
<td>2</td>
<td>Not Present</td>
<td>0MB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>5a/b</td>
</tr>
<tr>
<td>2</td>
<td>Not Present</td>
<td>0MB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Not Present</td>
<td>0MB</td>
<td></td>
<td></td>
<td>0a/b</td>
</tr>
<tr>
<td>2</td>
<td>Present</td>
<td>1</td>
<td>Not Present</td>
<td>0MB</td>
<td>3a/b</td>
</tr>
<tr>
<td>3</td>
<td>Not Present</td>
<td>0MB</td>
<td></td>
<td></td>
<td>3a/b</td>
</tr>
</tbody>
</table>

Active, installed memory (bytes) : 234881024 of Standard DRAM

Deallocated pages (bytes)        –        0

Available Memory (bytes) : 234881024

Good Memory Required by OS (bytes): 0 (Not Set by OS)

Memory

<table>
<thead>
<tr>
<th>HVERSION</th>
<th>SVERSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x0710</td>
<td>0x0900</td>
</tr>
</tbody>
</table>
Memory Information Sample 2

The following sample shows the memory information when memory modules are not properly installed and configured. In this sample the memory module in memory slot 1A is missing.

MEMORY INFORMATION

WARNING: Memory has been reconfigured due to a physical change or because the Page Deallocation Table (PDT) was cleared. This is for information only. No action is required.

MEMORY STATUS TABLE

<table>
<thead>
<tr>
<th>Slot</th>
<th>Size(a+b)</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>0a/b</td>
<td>64MB</td>
<td>Configured</td>
</tr>
<tr>
<td>1a/b</td>
<td>??MB</td>
<td>SIMM not seated properly.</td>
</tr>
<tr>
<td>2a/b</td>
<td>128MB</td>
<td>Configured</td>
</tr>
</tbody>
</table>

TOTAL 192MB

DETAILED MEMORY CONFIGURATION TABLE

<table>
<thead>
<tr>
<th>SPA</th>
<th>GROUP</th>
<th>SMC</th>
<th>SMC Status</th>
<th>Bank</th>
<th>Bank Status</th>
<th>Size</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>0x00000000</td>
<td>0</td>
<td>0</td>
<td>Configured</td>
<td>1</td>
<td>Configured</td>
<td>64MB</td>
<td>2a/b</td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>0</td>
<td>Configured</td>
<td>3</td>
<td>Configured</td>
<td>64MB</td>
<td>0a/b</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>0</td>
<td>Configured</td>
<td>1</td>
<td>Configured</td>
<td>64MB</td>
<td>2a/b</td>
</tr>
</tbody>
</table>

Group 0 interleaved 2 ways over 3 banks

BAD MEMORY TABLE
<table>
<thead>
<tr>
<th>SMC</th>
<th>SMC Status</th>
<th>Bank</th>
<th>Bank Status</th>
<th>SIMM Size</th>
<th>Slot</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>5a/b</td>
</tr>
<tr>
<td>2</td>
<td>Not Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>4a/b</td>
</tr>
<tr>
<td>1</td>
<td>Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>5a/b</td>
</tr>
<tr>
<td>2</td>
<td>Not Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>4a/b</td>
</tr>
<tr>
<td>3</td>
<td>Not Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>0a/b</td>
</tr>
<tr>
<td>2</td>
<td>Present</td>
<td>0</td>
<td>Sizing Error</td>
<td>0MB</td>
<td>1a/b</td>
</tr>
<tr>
<td>1</td>
<td>Not Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>3a/b</td>
</tr>
<tr>
<td>2</td>
<td>Sizing Error</td>
<td>0</td>
<td>Sizing Error</td>
<td>0MB</td>
<td>1a/b</td>
</tr>
<tr>
<td>3</td>
<td>Not Present</td>
<td>0</td>
<td>Not Present</td>
<td>0MB</td>
<td>3a/b</td>
</tr>
</tbody>
</table>

Active, installed memory (bytes) : 201326592 of Standard DRAM
Deallocated pages (bytes) - 0
Available Memory (bytes) : 201326592
Good Memory Required by OS (bytes): 0 (Not Set by OS)

Memory

HVERSION  SVERSION

--------  --------
0x0710  0x0900
## Displaying the Status of the System I/O

The IO command lets you identify all built-in I/O devices and optional I/O devices installed in the option slots. It is available in the Information Menu.

To use the IO command from the Information Menu of the boot console interface, type:

```
Information Menu: Enter command > IO
```

Information about the built-in and optional I/O devices is displayed.

### I/O MODULE INFORMATION

<table>
<thead>
<tr>
<th>Path</th>
<th>Decimal</th>
<th>Type</th>
<th>Location</th>
<th>HVER</th>
<th>SVER</th>
<th>Vers</th>
<th>Dep</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/0</td>
<td>8/0</td>
<td>Bus Bridge</td>
<td>built-in</td>
<td>6800</td>
<td>0a00</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>FWSCSI</td>
<td>8/12</td>
<td>A DMA I/O</td>
<td>built-in</td>
<td>03b0</td>
<td>8980</td>
<td>0x96</td>
<td>0x00</td>
</tr>
<tr>
<td>8/16</td>
<td>8/16</td>
<td>Bus Adapter</td>
<td>built-in</td>
<td>03b0</td>
<td>8100</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>8/16/0</td>
<td>8/16/0</td>
<td>Parallel</td>
<td>built-in</td>
<td>03b0</td>
<td>7400</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>8/16/1</td>
<td>8/16/1</td>
<td>Audio</td>
<td>built-in</td>
<td>03b4</td>
<td>7b00</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>SERIAL_1</td>
<td>8/16/4</td>
<td>RS232</td>
<td>built-in</td>
<td>03b0</td>
<td>8c00</td>
<td>0x01</td>
<td>0x00</td>
</tr>
<tr>
<td>SESCSI</td>
<td>8/16/5</td>
<td>SE SCSI</td>
<td>built-in</td>
<td>03b0</td>
<td>8200</td>
<td>0x96</td>
<td>0x00</td>
</tr>
<tr>
<td>LAN</td>
<td>8/16/6</td>
<td>LAN</td>
<td>built-in</td>
<td>03b0</td>
<td>8a00</td>
<td>0x02</td>
<td>0x00</td>
</tr>
<tr>
<td>PS2</td>
<td>8/16/7</td>
<td>Keyboard</td>
<td>built-in</td>
<td>03b0</td>
<td>8400</td>
<td>0x00</td>
<td>0x00</td>
</tr>
<tr>
<td>8/16/8</td>
<td>8/16/8</td>
<td>Mouse</td>
<td>built-in</td>
<td>03b0</td>
<td>8400</td>
<td>0x00</td>
<td>0x00</td>
</tr>
</tbody>
</table>
8/16/10 8/16/10 Floppy built-in 03b0 8300 0x00 0x00
8/20 8/20 Bus Adapter built-in 0170 8e00 0x00 0x00
SERIAL_2 8/20/2 RS232 Port built-in 0170 8c00 0x00 0x00
EISA 8/20/5 Bus Adapter built-in 0170 9000 0x00 0x00
GRAPHICS(0) 8/24 INTERNAL_EG_X128 built-in 0160 8500 0x01 0x00
8/63 8/63 Bus Converter built-in 5011 0c00 0x00 0x00
10/63 10/63 Bus Converter built-in 5011 0c00 0x00 0x00

EISA Cards

<table>
<thead>
<tr>
<th>Path</th>
<th>Type</th>
<th>EISA ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>8/20/5/1</td>
<td>EISA</td>
<td>slot is empty</td>
</tr>
<tr>
<td>8/20/5/2</td>
<td>EISA</td>
<td>slot is empty</td>
</tr>
<tr>
<td>8/20/5/3</td>
<td>EISA</td>
<td>slot is empty</td>
</tr>
</tbody>
</table>

PCI Cards

<table>
<thead>
<tr>
<th>Slot</th>
<th>Path</th>
<th>Bus</th>
<th>Class</th>
</tr>
</thead>
</table>

----------------------------------------
Setting the Auto Boot and Auto Search Flags

**auto boot** and **auto search** are variables stored in your workstation’s nonvolatile memory. (Nonvolatile memory retains its contents even after power is turned off.) If you reset these flags to new value, the change takes effect the next time you reboot the workstation.

**auto boot** boots the operating system whenever your workstation is turned on.

To examine the state of the **auto boot** and **auto search** flags, type the following at the prompt:

```
Configuration Menu: Enter command > auto
```

If **auto boot** is set to **on**, your workstation automatically attempts to boot the operating system when turned on. If **auto boot** is set to **off**, your workstation enters the boot administration mode of the boot console user interface.

The state of the **auto search** flag determines how your workstation seeks a boot device during autoboot. If **auto search** is set to **on**, your workstation will search for other boot devices if the primary boot device is not available. If **auto search** is **off**, your workstation will default to the boot administration mode if it can’t see the primary boot device.

To change the state of the **auto boot** or **auto search** flags, type the following at the prompt:

```
Configuration Menu: Enter command > auto boot state
```

or

```
Configuration Menu: Enter command > auto search state
```

where **state** is **on** or **off**.
Autosearch searches for devices in the following order:

Primary boot path
Alternate boot path
Built–in fast, wide SCSI devices
Built–in single–ended SCSI devices
Built–in LAN bootp servers

**NOTICE:** Fast wide SCSI adapter option cards installed in the option slots are not searched unless they are referenced by the primary or alternate boot paths. EISA cards are not searched.
Displaying and Setting the Security Mode

The **SECure flag** is a variable stored in 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.

When the **SECure flag** is set to **on**, **autoboot** and **autosearch** are enabled and cannot be stopped. The system boots from the default boot paths regardless of user intervention.

To display the current setting for the **SECure flag**, enter the following command:

```
secure
```

To set the **SECure flag on** or **off**, enter one of the following:

```
secure on
secure off
```
Displaying and Setting the Fastboot Mode

When `fastboot` is enabled (set to `on`), your workstation does a quick check of the memory and skips I/O interface testing during its power-on self tests. This enables your workstation to complete its boot process quicker. The default factory setting is for `fastboot` to be enabled (`on`).

The `fastboot` mode allows your workstation to boot quickly by performing a less extensive check of the system’s memory.

When `fastboot` is disabled (set to `off`), more extensive memory testing and I/O interface testing is performed during the self tests, causing the boot process to take longer.

If you are experiencing difficulty in booting your workstation, set `fastboot` to `off` and reboot the system. The more extensive testing may reveal the error condition.

To display the status of `fastboot`, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot
```

To disable `fastboot`, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot off
```

To enable `fastboot`, type the following at the prompt:

```
Configuration Menu: Enter command > fastboot on
```
Displaying the LAN Station Address

It is sometimes necessary to supply a LAN station address of your workstation to other users. For example, if your workstation is to become a member of a cluster, the cluster administrator needs to know your LAN station address in order to add your workstation to the cluster.

A LAN station address of your workstation is the label that uniquely identifies the LAN connection for your workstation at the link level (the hardware level).

To display your workstation’s LAN station addresses, type the following at the prompt:

```
Information Menu: Enter command > lanaddress
```

The LAN station address is displayed as a twelve-digit number in hexadecimal notation, similar to the following:

```
LAN Station Addresses: 080009–789abc
```

The address is for the system’s built-in LAN.

Displaying System Information

The `all` command allows you to display the system’s processor revision and speed, cache size, memory size, flag settings, and the boot and console paths. To display system information from the Information Menu, type the following at the prompt:

```
Information Menu: Enter command > all
```

This information is paged to allow you to view it as necessary.
Displaying PIM Information

The `pim` command allows you to display the most recent PIM information for the specified fault type. To display PIM information for a specific fault, from the Service Menu, type the following at the prompt:

```
Service Menu: Enter command > pim processor_number
```

You can use `pim` in the following ways:

- `pim` – gives all fault types
- `pim 0` – HPMC information on processor
- `pim 0 fault_type` – fault type information on processor
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