

HP NetServer Product Line Service Reference Guide

Volume 1 Low-End and Accessories



Version 1

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Audience Assumptions

The guide is for HP authorized service personnel who install, administer, and troubleshoot HP NetServers. The Hewlett-Packard Company assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

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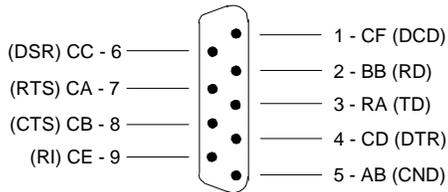
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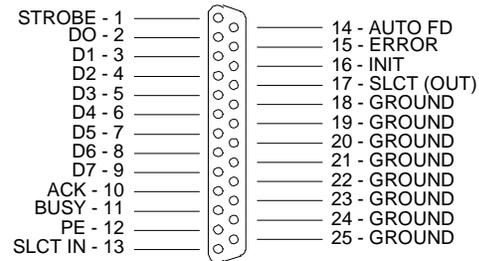
General System Information

System Connector Pinouts

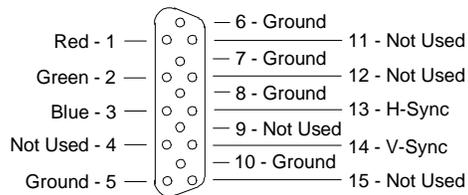
Serial Port Connector



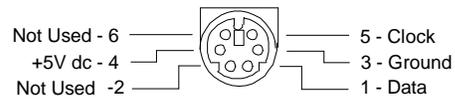
Parallel Port Connector



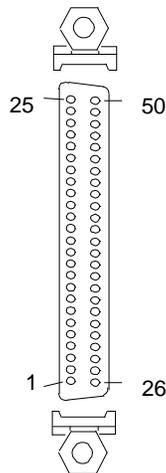
VGA Connector



Keyboard and Mouse Connector



SCSI Connector



Pin	Signal Desc.	Pin	Signal Desc.
1	Ground	26	-DB(0) ¹
2	Ground	27	-DB(1) ¹
3	Ground	28	-DB(2) ¹
4	Ground	29	-DB(3) ¹
5	Ground	30	-DB(4) ¹
6	Ground	31	-DB(5) ¹
7	Ground	32	-DB(6) ¹
8	Ground	33	-DB(7) ¹
9	Ground	34	-DB(P) ¹
10	Ground	35	Ground
11	Ground	36	Ground
12	Reserved	37	Reserved
13	Open	38	TERMPWR
14	Reserved	39	Reserved
15	Ground	40	Ground
16	Ground	41	-ATN ¹
17	Ground	42	Ground
18	Ground	43	-BSY ¹
19	Ground	44	-ACK ¹
20	Ground	45	-RST ¹
21	Ground	46	-MSG ¹
22	Ground	47	-SEL ¹
23	Ground	48	-C/D ¹
24	Ground	49	-REQ ¹
25	Ground	50	-I/O ¹

(1) A minus sign shows the signal is active low.

System Support

HP NetServer Navigator Release History and Status Report

To obtain a Release History or a Status Report, you will need a Document Number.

- Release History: Document Number is 6005
- Status Report: The number is different for each Status Report. Each version of the HP NetServer Navigator CD-ROM has a four-digit Document Number printed on the disk.

You can obtain the Release History and Status Report for your CD-ROM in one of these ways:

- World Wide Web: netserver.hp.com/netserver/support
- Internet FTP: [ftp.hp.com/pub/servers/software](ftp://ftp.hp.com/pub/servers/software)
- Fax: Call HP's fax system at (1 800) 333-1917. Outside the U.S. and Canada, call (1 208) 344-4809 from your fax machine. Request the fax using the Document Number.

HP NetServer Navigator Subscription Service

Subscribe to the HP NetServer Navigator Subscription Service to automatically receive CD-ROM updates. The subscription service issues 8 to 12 releases per year.

The updates include the following:

- Updates to system software, such as BIOS and driver upgrades
- Enhancements to server management tools

For a subscription form and subscription rates see:

- Internet WWW: netserver.hp.com/netserver/support
- Fax: Call HP's fax system at (1 800) 333-1917. Outside the U.S. and Canada, call (1 208) 344-4809 from your fax machine.

World Wide Web and Internet FTP

HP has a home page on the Internet World Wide Web specifically for the HP NetServer

netserver.hp.com/netserver/support

You can download NetServer files from HP via Internet FTP by entering the following:

<ftp://ftp.hp.com/pub/servers>

Proactive Notification for HP NetServer Products

HP Proactive Notification is a web-based information service that provides timely technical support information on HP NetServer products via email. The types of technical information that will be emailed to you include:

- Software driver notifications, such as BIOS updates, patches, and NOS- specific drivers
- Navigator CD Release History

- NetServer Support news articles
- Frequently Asked Questions (FAQ) documents
- Accessory information

You can sign up for Proactive Notification by visiting the following World Wide Web URL:

<http://proact.hp.com:8088/NetServer> **netserver.hp.com/netserver/support**

Automated Fax

In the U.S., call (800) 333-1917 from a push button tone phone to request that an index of available documents be sent to your fax machine. Call again to select the documents that you want transmitted.

Outside the U.S. and Canada, call (208) 344-4809 from your fax machine. Use the handset and touch-tone keyboard on your fax machine to request an index of available documents.

HP NetServer Support News

HP NetServer Support News can be obtained in several ways:

- Via HP's World Wide Web home page
- Via Internet FTP
- From HP's Bulletin Board System

The most convenient way to keep up-to-date is to visit the HPPC forum on CompuServe regularly. Issues of HP NetServer Support News are posted in the forum as they come out—part of the ongoing seminar on HP NetServer systems.

Ordering HP Cables, Drive Trays, and Technical Publications

Service information and reference documents, such as the Dealer Configuration File Creation Guide (CFG), are also available in Information Assistant on the HP NetServer Navigator CD-ROM.

Telephone Ordering Information

U.S.

- To identify a part or manual:
automated fax (800) 333-1917; voice (800) 227-8164.
- To order with a credit card: (800) 227-8164.

Canada

- Call (800) 387-3154.
- Also available for part or manual identification: automated fax (800) 333-1917; voice (916) 783-0804.

Latin America

- Call your local HP office or (305) 267-4220 (Miami).
- Also available for part or manual identification: 4(800) 227-8164.

- Other countries.
- Call your local HP office.
- Also available for part or manual identification: call (800) 227-8164
- After hours ordering: (916) 785-3035.

Troubleshooting Tools

Common Installation Problems

WARNING	Before removing the cover, always disconnect the power cord and unplug telephone cables. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages.
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Troubleshooting Sequence

To troubleshoot an installation problem, do the following:

- First, make sure that the system is configured properly. Most system problems are the result of incorrect system and SCSI subsystem configurations. Check any Configuration Utility and if your HP NetServer is configured with a disk array, check the Disk Array Utility.
- If it is a network-related error, determine if the server has enough memory and hard disk drive capacity. Consult your network operating system manual.
- Verify that all cables and boards are securely plugged into their appropriate connectors or slots.
- Remove all added options and always change one thing at a time.

If it is a hardware error, follow these steps:

1. Log users off the LAN and power down the server. Remove the HP NetServer cover.
2. Simplify the HP NetServer configuration to the minimum required: a monitor, one flexible and one hard disk drive and a keyboard. Remove all third-party options, and reinstall one at a time, checking the system after each installation.
3. Boot the system. If the system does not function, refer to the following procedures.

If the System Will Not Power On

Follow these steps:

1. Check to ensure that all cables and power cords are firmly plugged into their proper receptacles.
2. Make sure that the top cover is on, and is fully locked in place. Some NetServer will not power on if the top cover is off or loose. This is a safety feature.
3. Check to ensure that all parts of the system are turned on and properly adjusted.
4. If the server is plugged into a switched multiple-outlet box, make sure the switch on the outlet box is turned on.
5. Plug a different electrical device (such as a printer) into the power outlet, and turn it on.
6. Make sure that the power supplies' LEDs are lit.

If the System Powers On but the System Fails the POST (Power-On Self Test)

Do one of the following:

- If the system gives a series of beeps, this indicates a system error.
- If the system fails POST, an error message displays on the screen.

If the System Passes the POST (Power-On Self Test) but Will Not Function

If an error message displays on the screen, read the error message text for actions to take.

If there is no error message, follow these steps:

1. Check to ensure that the HP NetServer is configured correctly in the configuration or setup utility.
2. If the server still does not work, turn it off and remove all external peripherals, except the monitor and keyboard. Test to see if the server now works.
3. If the server still doesn't work, turn off the monitor, the server, and all external devices, and check the internal hardware, as follows:
 - A. Unplug the power cord and all telephone cables. Remove the HP NetServer cover.
 - B. Check that all accessory boards are firmly seated in their slots.
 - C. Ensure that all disk drive power and data cables are securely and properly connected. Verify the mass storage configuration with the cabling and switch diagrams on the Service Reference Label/Card or in Information Assistant.
 - D. Verify that switches and jumpers on the mass storage devices and boards are properly set. Check the manuals that came with the devices.
 - E. Verify that the SIMMs/DIMMs are firmly seated on the Memory Board. Verify that added SIMMs/DIMMs are HP products.
 - F. Replace the HP NetServer covers.
 - G. Replace all power cords and power cables.
 - H. Turn on the monitor.
 - I. Turn on the server.
 - J. Check for error messages.
4. Run the HP diagnostic utility on the Navigator CD-ROM.

HP NetServer Utilities

NOTE HP NetServer utilities are constantly changed and upgraded. See the specific HP Navigator CD-ROM for the latest information on utilities.

Configuration Software

There are many different configurations utilities available for NetServers. These include the EISA Configuration Utility, a Setup Utility in ROM, a SCSI Utility, and the Navigator CD-ROM. Which one the system uses depends on when the NetServer went into service. Below are highlights of the different utilities available.

HP NetServer Navigator CD-ROM

Some systems use the *HP NetServer Navigator CD-ROM* (Navigator) to perform configuration tasks or view online system documentation. For older systems and other utilities look after this section.

Release Notes

To ensure that you have the latest versions of the HP NetServer Navigator software, obtain the current *HP NetServer Navigator CD-ROM* Release Notes. The Release Notes are updated for each new release of the CD-ROM.

The Release Notes briefly describe the following for each release:

- Major changes to the CD-ROM for the current release
- Version number
- Release date
- Part number of the *HP NetServer Navigator CD-ROM*
- Document Number

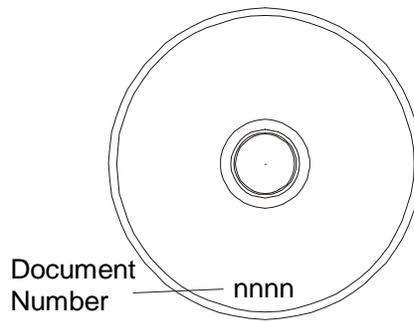
Status Report

The Status Report for your specific *HP NetServer Navigator CD-ROM* describes in detail any software updates between this version of the CD-ROM and the previous version.

To obtain Release Notes or a Status Report, go to:

`http://netserver.hp.com/netserver/support/compatibility/nav_cd/navigator.asp`

For status report, use the four-digit Document ID Number printed on the disk, for example, 7754.



Location of Document Number on Navigator CD

Using the Navigator CD-ROM

1. Press the power-on button.
2. Press the CD-ROM drive eject button.
3. Place the *HP NetServer Navigator CD-ROM* in the drive, and press the eject button again to close the drive.
4. If the CD-ROM fails to autorun, follow the diagnostic instructions on the screen.
5. Go to the HP Navigator main menu.

NOTE

If this is the first time you are using Navigator, you are prompted to set the language, time, and date. The Main menu will appear after the information is entered.

6. If the language needs to be changed, select **User Preferences** and the language you want.

You can also change the language of the BIOS, but this is only available when in the BIOS Setup Utility.

7. Select **README File**. Review the Table of Contents for pertinent topics. This file includes recent information that was not included in the printed documentation.

HP NetServer Navigator CD-ROM Main Menu

The *HP NetServer Navigator CD-ROM* Main Menu provides access to modules where you can perform configuration tasks or read online system documentation. There are many different Navigator CD-ROMs.

Menu buttons are provided for the following modules:

- README File
- Configuration Assistant and Installation Assistant
- HP Management Solutions
- Information Assistant
- HP NetServer Utilities
- User Preferences

README File

This file includes recent information that was not included in the printed documentation. Review the Table of Contents for pertinent topics.

Configuration Assistant and Installation Assistant

Configuration Assistant guides you through the steps necessary to configure the HP NetServer. You can view configuration advisories and change your hardware if necessary.

Insert the *HP NetServer Navigator CD-ROM* into the CD-ROM drive. If the system fails to start, follow the instructions on the screen.

1. Set language, time, and date, if necessary.
2. Go to the HP NetServer Navigator main menu and select **Configuration Assistant and Installation Assistant**.
3. Follow the on-screen instructions to continue installation on the NetServer.

Three methods of configuration are available: Express, Custom, and Replicate.

Express Configuration

Express configuration is the preferred method of configuring your NetServer since it leads you through the configuration process in sequence and offers default selections. Express configuration includes the following steps:

- Update System BIOS:
- Select NOS:
- Select NOS Installation Mode:
- View Configuration Advisories:
- Configure Remote Management:
- Show System Information:
- Configure Disk Array:
- Install Utility Partition:
- Execute Card Utilities:

Custom Configuration

In Custom configuration mode, you perform the same configuration steps as provided in Express configuration mode, but these may be done in any order.

After you have selected the NOS, NOS version, and NOS installation mode (automated or manual), and after you have viewed the Configuration Advisories, the Custom Configuration screen displays the following menu:

Replicate Configuration

In Replicate configuration mode, you can save a copy of your current system configuration or load a previously saved configuration. This method saves time when configuring multiple, identical systems. Select **Replicate** on the Configuration Assistant menu.

HP Management Solutions

HP Management Solutions is a comprehensive suite of utilities, applications, and built-in features to manage multiple HP NetServers locally or from remote locations.

TopTools for Servers

HP TopTools for Servers is new browser-based management software that provides remote administration and monitoring of critical HP NetServer components. TopTools provides vital information for the fastest troubleshooting and proactive management of NetServers. Processors, memory, storage, and NICs are a few examples of the components managed by TopTools.

TopTools is included with every NetServer L series HP NetServer and should be installed to help your service provider troubleshoot your system. TopTools is located on *HP TopTools CD-ROM* included with the system.

TopTools Remote Control

TopTools Remote Control is a management function bundled with the HP NetServer and embedded into the System board. It enables remote LAN or modem-based server management and alerting through a pager or e-mail for improved remote administration of your NetServer.

PcANYWHERE32

pcANYWHERE32 is remote-control graphics-redirection software from Symantec Corporation that allows you to take control of Microsoft Windows NT Servers across the network or over a modem. Refer to the *HP NetServer Online Documentation CD-ROM* for details, or the *HP TopTools Remote Control User Guide*.

NetServer Utilities

NetServer Utilities menu provides access to the following utilities:

- **DiagTools:** An easy-to-use hardware diagnostic for system verification, burn-in, and rapid troubleshooting.
- **Event Log Report Utility:** Displays all logged HP NetServer management events, Power-On Self Test (POST) errors and other system events.
- **Diskette Library:** Allows you to conveniently generate a flexible diskette for any utility or driver available on the HP NetServer Navigator CD-ROM. For example, you can create flexible diskettes for the following utilities and drivers: BIOS Update, HP NetServer Assistant, PowerWise Assistant, DiagTools, and NOS Drivers.
- **Print or View Information:** Allows you to print or view the current system configuration including details of which boards are detected in the system and which resources are allocated to the boards.
- **Change User Preferences:** Lets you change the language used by the HP Navigator CD-ROM, and the system date and time.

Setup Utility

Some HP NetServer have a Setup Utility (BIOS) in read-only memory. The utility features several system configuration and housekeeping options, including security, and system console characteristics.

The following sections tell how to access the Setup Utility, and how to perform selected tasks.

Starting the Setup Utility

To reach the Setup Utility, boot or reboot the system. After the first boot messages are displayed, this prompt appears: Press <F2> to enter SETUP

Press F2 while the prompt is displayed. More boot messages appear, followed by the message `Entering Setup...`. After the embedded (Symbios) SCSI Configuration initialization and the Optional ROM scan both finish, the menu bar of the Setup Utility appears.

If you do not press F2, the HP NetServer boots normally.

Using the Setup Screens

Online help explains the settings displayed on the Setup Utility screens. Instructions are also provided for navigating between the screens and entering or changing the setup data.

SCSI Configuration Utility

If you need to verify or modify SCSI host adapter settings, or if you need to low-level format SCSI disks or verify SCSI disk media, run the Configuration utility:

1. Turn on or reboot your system.
2. During system start-up or reset, when the message appears, press the [CTRL] and [C] keys at the same time.
3. Use the arrow keys to move the cursor, press [Enter] to select an option, and press [Esc] to exit.

HP NetServer Information Assistant

HP NetServer Information Assistant gives you complete access to all HP NetServer information and documentation. HP NetServer Information Assistant allows you to search, display, and print a topic or a series of topics. The topics cover the complete user and service information available in online format; these can be viewed on screen and printed. Also included are system and accessory installation documentation, NOS Guides, troubleshooting, error messages, part numbers, replacement instructions, and additional important information.

HP NetServer Information Assistant can be accessed in two ways:

- From the HP NetServer Documentation CD-ROM
- On an HP Vectra or other PC running Windows 3.1 and above, Windows 95 or Windows NT, where HP NetServer Information Assistant has been installed.

HP NetServer Navigator EISA Configuration Utility

On some older systems the EISA Configuration Utility is used and resides on the HP NetServer Navigator CD-ROM. It can be accessed in four ways:

- **Express Configuration** contains the EISA Configuration Utility as one of the steps and should be used when initially setting up the HP NetServer.
- **Custom Configuration** is used to configure or to add or remove options after initial configuration.
- **Utilities Menu** accesses the NetServer utilities.
- **Create ECU Diskette** creates a copy of the EISA Configuration Utility (ECU), CFG, and OVL files on a flexible disk.

To access the EISA Configuration Utility from the CD-ROM perform the following steps:

1. Turn on the HP NetServer and insert the HP NetServer Navigator CD-ROM in the CD-ROM drive.

2. Press the Reset button on the front of the HP NetServer. The HP NetServer will boot from the HP NetServer Navigator CD-ROM. The HP NetServer Navigator Main Menu will appear.
3. To access the express or custom configuration, select "Configure NetServer" and press **Enter** to access Express or Custom configuration options. At the next menu, select "Express" or "Custom" and follow directions.
Or go to NetServer Utilities and select EISA Configuration Utility.

Configuration (CFG) Files

For the system to operate properly, all ISA and EISA boards must have a configuration (CFG) file. CFG files store information about the boards in the system that PCI boards and some operating systems require to operate properly.

Creating a Configuration (CFG) File

If you are installing EISA or ISA boards, use the CFG file included with the board. If a CFG file is not included, contact the manufacturer of the board. If a CFG file is unavailable from the manufacturer, perform the following steps:

1. Go to the EISA Configuration Utility.
2. Select "Step 2: Add or remove boards."
3. Select the appropriate slot for the board and press the Insert key. Follow the directions to search the HP NetServer Navigator CD ROM for a CFG file for the board. If no CFG file is found, the message "No CFG Files found" will display.
4. Press F5 (Not listed) and select "Create a CFG file" and follow instructions to create a CFG file for the board.
5. Select "Step 3: View or edit details."
6. Press F7 and select "Lock/unlock boards." Select the ISA board and lock.
7. Exit and save the configuration.

HP NetServer LS and E Series SCSISelect Utility

Some NetServers includes a built-in, menu-driven SCSISelect configuration utility, which allows you to change almost all host adapter option settings without opening the computer case or handling the board. The following table lists the settings you can change with the SCSISelect utility and the default values for these settings.

Description	Default Setting
Host Adapter SCSI ID	7
SCSI Parity Checking	Enabled
Reset SCSI Bus at IC Initialization	Enabled
Host Adapter BIOS	Enabled
Support All Removable Disks as Fixed Disks	Boot only
Extended BIOS Translation for DOS Drives > 1 GB	Enabled
BIOS Support for Bootable CD-ROM	Enabled
BIOS Support for Int13Extensions	Enabled
BIOS Support for More Than 2 Drives	Enabled

Initiate Sync Negotiation	Yes
Maximum Sync Transfer Rate	10 MHz
Enable Disconnection	Yes
Initiate Wide Negotiation	(ID 0-7) No (ID 8-15) Yes
Send Start Unit SCSI Command	No
Include In BIOS Scan	Yes

Running the SCSISelect Utility

To start the SCSISelect utility:

1. Turn on or reboot your system.

During system start-up or reset, a BIOS banner appears. The BIOS banner includes a description of each SCSI device connected to the host adapter and its corresponding SCSI ID number. You are asked to press **Ctrl-A**.

Press <Ctrl><A> for SCSISelect(TM)Utility!

2. Press **Ctrl-A** while the banner appears on the screen.

EISA Configuration Utility

Use the following instructions for older servers which are not using the HP Navigator CD-ROM Configuration Utilities.

Starting from Diskette #1

To start the System Administration Manager from the Diskette #1, simply insert the diskette into drive A and then turn on the computer.

Starting SAM from the MS-DOS Prompt

To use these parameters while running diskette #1, you must edit the "shell=SAM" line in the CONFIG.SYS file on the backup copy of diskette #1. The line should be "shell=SAM /parm." You must run System Administration Manager from the directory it is in. Options that you fill in appear in *italics* and are defined in the table below.

Command: [drive:]\HPSYS\SAM [/A] [/B] [/F] [/H] [/K] [/M] [/N] where:

Parameter	Description
drive:	the drive that contains the System Administration Manager files.
HPSYS	HP NetServer LM only: directory containing EISA utility.
SAM	the command that starts the System Administration Manager
/A ***	advanced dealer mode. This parameter is used to display features that are not available when running the System Administration Manager in normal mode.
/B	displays all screens in the EISA Configuration Utility using BIOS Int 10h calls for computers with non-standard displays.
/F	automatic configuration mode. Auto-adds EISA boards using information in CMOS memory and EISA board IDs.

/H	displays the System Administration Manager in 43-line mode if you have an EGA display. Displays the System Administration Manager in 50-line mode if you have a VGA display.
/K	prevents the computer from supporting the use of a mouse in the EISA Configuration Utility even if one is present.
/M	displays the System Administration Manager screens in black and white.
/N	modeling mode. Allows you to edit or create a custom SCI file that can be saved without changing the contents of CMOS.

*** Accessing Advanced Configuration Settings

In addition to using the SAM /A command to access the hidden advanced fields in "Step 3: View or edit details" of the EISA Configuration Utility, you can also use one of following methods:

- Enter <Ctrl-A> at the SAM (System Administration Manager) "Welcome" screen.
- Enter <Ctrl-A> instead of <Enter> in the Configure Computer menu when the "Run Configuration Utility" entry is highlighted.

HP NetServer LM, LM2, LF only:

- MS-DOS version 6.0 or later must be installed on the server and the hard disk is formatted before you install SAM.
- The memory driver HIMEM.SYS version 2.78 or later must be installed.
- Do not install the System Administration Manager in the root directory (C:\) because the CONFIG.SYS file will be replaced with the one on the Diskette #1. A directory named HPSYS is recommended. Do not add the directory to the PATH statement. System Administration Manager must be run from the directory it is in.
- You need approximately 1 MB of free space on the hard disk drive to copy the files from #1 diskette.
- If the hard disk drive is connected to an EISA board (that is, HP EISA SCSI Host Adapter), and the EISA board is not configured properly, access to the hard disk drive might be denied. If the hard disk controller is an EISA board, running the EISA Configuration Utility from #1 diskette is recommended.
- If you have several terminate-and-stay-resident (TSR) programs or device drivers loaded, the server might not have enough available memory to run the EISA Configuration Utility from the hard disk drive.
- If you are reinitializing a hard disk drive, run the System Administration Manager from #1 diskette since reinitializing a hard disk drive destroys all data on it.
- If you are running under the Windows environment, exit it before running SAM.

Hard Disk Drive Installation Steps:

To install the System Administration Manager on the hard disk drive:

1. Create the proper operating environment. See below.
2. Make a directory named HPSYS in which to store the System Administration Manager files on the hard disk drive.
3. Insert #1 diskette in drive A and enter: COPY A:.* [drive:]\HPSYS.

Creating the Proper Operating Environment for the System Administration Manager

To avoid potential problems, create the proper operating environment before using the System Administration Manager on a hard disk.

1. Modify the CONFIG.SYS file included with the System Administration Manager. This file originally contains the following lines:

```
COUNTRY001,A:\COUNTRY.SYS

DEVICE=A:\DISPLAY.SYS CON:(,437,2)
DEVICE=HIMEM.SYS
SHELL=A:\SAM.EXE /P
```

Change to the following:

```
COUNTRY001,C:\HPSYS\COUNTRY.SYS
DEVICE=C:\HPSYS\HIMEM.SYS
```

2. Save the file when you are finished editing.
3. Make a copy of your current CONFIG.SYS file by entering: REN CONFIG.SYS CONFIG.STD
4. Make a copy of your current AUTOEXEC.BAT file by entering: REN AUTOEXEC.BAT AUTOEXEC.STD
5. Replace the existing CONFIG.SYS with the System Administration Manager version by entering: COPY C:\HPSYS\CONFIG.SYS C:\CONFIG.SYS
6. Restart your server to allow the new CONFIG.SYS file to create the proper operating environment for the System Administration Manager.

Setup Program - HP NetServer LM

In addition to the EISA Configuration Utility, you can also use the Setup Utility to configure the HP NetServer LM or LM2. It is recommended that the BIOS Setup Utility only be used

- to enable the diskette drive
- if you do not have access to a diskette drive
- if you are unable to run the System Administration Manager

Starting Setup

To run Setup, press F1 when the message shown below appears on the bottom of the screen during system start:

```
To Continue Press Esc
To Configure system, press F1
```

- To move from one Setup menu screen to another, press **PageUp** or **PageDown**.
- To change a configuration value on a menu screen, use - and = to move the cursor to the menu item that you want to change. The cursor only moves to the items on the screen that you can change.
- Use [+] or [-] to cycle through the available values for the menu item that you select.

- To save the configuration values and reboot the system so that these values take effect, press **Esc** and then **F4**.
- To exit from Setup without changes, press **Esc** and **F6**.

Exiting Setup

After you have made all desired changes to the Setup Utility pages, press **Esc** to display the Exiting Setup menu.

Press **F4** to save the changes and reboot the system. If you want to exit without saving the changes, press **F6**.

NOTE If you change any of the three video refresh rates, you must either press the reset button or turn the system off and back on after you exit Setup in order to make those changes effective.

Setup Program - HP NetServer E Series

The integrated (ROM-based) *Setup* program displays the NetServer's configuration and allows you to set certain parameters. Setting incorrect values may cause system boot failure. Should this occur, press **[F9]**. This will load default values to recover.

The *Setup* program is menu-driven, and menus are grouped in the following categories: Main, Preferences, Configuration, Security, Power, Boot, and Exit. Some categories give sub-menus. Menu items that have sub-menus are indicated.

You will probably not need to change most of the parameter settings shown in the Setup program. However, if additional accessories are installed in the NetServer, you should check that they have been recognized by the Setup program or modify the configuration manually.

NOTE If you are unable to change the NetServer's configuration, check that you entered the correct password when you started Setup. Check also that the system board switch 8 is not set to the closed position

The *Setup* program is accessed by pressing **[F2]** during the NetServer's power-on system hardware test. On-line help is provided, in English only, at the right-hand side of the screen for each item. The help for the item is displayed when you highlight the item.

Saving Changes to the Setup Configuration

When you have finished updating the NetServer's configuration, or you have verified that the installed components have been correctly detected:

- Press **[F3]** to save any changes you have made and exit the *Setup* program.
- Press **[F12]** to exit the *Setup* program without saving any changes.

The NetServer will continue its startup process as usual.

PrintCFG Utility

The PrintCFG Utility lets you view information about CFG files and the boards they represent. You can display this information on the screen, or print it.

PrintCFG Syntax

Variables that you fill in appear in italics. Optional parameters are enclosed in brackets []. Do not enter the brackets.

PRINTCFG [*drive:*]\HPSYS*filename.cfg* [>PRN]

Parameter	Description
<i>drive:</i>	is the drive on which the CFG file is stored. The default is the active drive.
HPSYS	specifies the path from the root directory to the directory where the CFG file is stored. The default is the current directory.
<i>filename.cfg</i>	is the name of the CFG file. You must specify the CFG extension. To display information about more than one CFG file, use the MS-DOS wildcard characters (? and *).
>PRN	sends the information to the printer.

Examples of PrintCFG Commands

To print information on a CFG file

PRINTCFG A:\US\!HWP0030.CFG

To print information about all CFG files beginning with the characters !HWP in the US directory of #2 Diskette, insert #2 Diskette in drive A and enter

PRINTCFG A:\US\!HWP* .CFG >PRN

HPView Utility

The HPView diagnostic utility allows you to check the state of the server by displaying its current configuration, which you can print if the printer is properly configured. HPView displays the following information:

- current system (system name, type of processor, processor speed, coprocessor)
- memory (base, extended, ROMS)
- system I/O (serial port, parallel port, and mouse port)
- BIOS and configuration (current BIOS version, interrupt vectors, BIOS data area, ISA and EISA CMOS data areas)
- disk drives (flexible disk drives, hard disk drive parameters and partitions, hard disk drive table)
- video (video type and video BIOS version)
- drive C MS-DOS (MS-DOS version, contents of AUTOEXEC.BAT and CONFIG.SYS files)

HPView Command Syntax

[*drive:*]\HPSYS\HPVIEW

Parameter	Description
<i>drive:</i>	is the drive on which HPView is located.
HPSYS	is the path to the HPView program.
HPVIEW	is the command that starts the HPView Utility.

Use **Page Up** and **Page Down** to view the information you need.

Running HPView from the System Administration Manager program:

If SAM (System Administration Manager) is in the HPSYS directory on the hard disk drive, change to that directory, and type "SAM." Or insert #1 Diskette in drive A and then turn on the server.

1. Select "Run HPView Utility."
2. Use Page Up and Page Down to view the information you need.
3. Select <Ok> to return to the previous screen.

HPUpdate Utility

The HPUpdate Utility helps you review and update the system BIOS and ROM-based utilities that are stored on the NVRAM (Erasable Programmable ROM) chip in the HP server. Use of the utility is different for the HP NetServer LE, LF, and LM.

Running the HPUpdate Utility

You can run the HPUpdate utility from the hard drive, System Administration Manager program (SAM) or boot from the A drive.

CAUTION If there are any memory-resident programs in the configuration, running the HPUpdate Utility from the command line may damage the NVRAM. It is important that you start (boot) the server with the HPUpdate Utility in drive A to provide a safe environment for the update process.

If you do run the utility from the command line, you can enter the following parameters:

Option	Description
e	clear the screen after exiting the utility
l#	where # = 0 for English 1 for French 2 for German 3 for Spanish 4 for Italian
	Language update only (the -w option is implied). This option is used by the EISA Configuration Utility when the user changes the system language. Also, you can use this as a quick method of changing the system language without having to boot the configuration utility. Note that this option will not clear the screen so -e must also be used if the screen needs to be cleared.
o	Override all NVRAM contents with the diskette contents. Since HPUpdate only updates newer versions of components, this is the option used to force HPUpdate to use the disk contents without any comparison to the version currently in the NVRAM. This option can also be used if the NVRAM data is corrupted
p	The user guarantees that HPUpdate is executing from a protected environment (free of TSRs, memory managers, etc., that can potentially interrupt the system during an update process). This must always be typed if HPUpdate is run from the command line; otherwise, the user will see an error message.

w	Perform an NVRAM update with minimal user interaction (whisper mode). Typically used in a manufacturing environment.
----------	--

Example:

```
A:\hpupdate -1 -e -p
```

Update the system language to French, do not change the versions of any components (system BIOS, Video BIOS, etc.) and clear the screen if the user aborts the language update process.

HPUpdate Utility and HP NetServer LE, LF

1. Set the BIOS switch in the computer to UNLOCKed.
2. Insert the HPUpdate Utility diskette in drive A.
3. Type A:\hpupdate or restart (reboot) the computer.
4. Follow the instructions on the screen to perform the update.
5. LOCK the BIOS switch when you finish. If you need further information while you are using the utility, press F1 at the screen for which you need help.

CAUTION	Although the HPUpdate Utility includes safeguards to protect the EEPROM from damage, it is still possible to damage the computer's EEPROM if there is a loss of power while the update is in progress. You will see a warning about this before the update process begins.
----------------	--

If the update is in progress and there is a loss of power to the computer, replace the System Board for the computer.

If the HPUpdate Utility indicates that it has encountered errors during the update process, you will be requested to either retry or abort the operation. RETRY the update at least once before aborting the operation.

Aborting the operation damages the EPROM, and you will have to install a new System Board. However, as long as you do not remove power from the computer, you may still be able to use the computer until you receive the replacement System Board.

Using the Configuration Utility with the HPUpdate Utility

If configuration utility requests that you insert the HPUpdate Utility diskette into drive A, you do not have to restart (reboot) the system to use the HPUpdate Utility. The configuration utility will ensure a SAFE environment before asking you to put the HPUpdate Utility diskette into drive A.

HP Flash Memory Update Utility and the HP NetServer LM

To "flash" the BIOS:

1. Insert the HP Flash Memory Update Utility diskette in drive A.
2. Reboot the server.
3. Follow the instructions on the screen to perform the update.
 - A. Press ENTER to continue to the Main Menu.
 - B. Select Update FLASH Memory Area from a File and press ENTER
 - C. Press ENTER to Update System BIOS.
 - D. Press TAB to select *Files*.
 - E. Press ENTER to begin the update.

- F. Press ENTER to Continue with programming.
4. Remove the diskette and press ENTER to reboot the system.

CAUTION Although the Flash Memory Utility includes safeguards to protect the NVRAM from damage, it is still possible to damage the server's NVRAM if there is a loss of power while the update is in progress. You will see a warning about this before the update process begins.

If the update is in progress and there is a loss of power to the server, you must replace the system board. You will not be able to use the server until the new system board is installed.

If the Flash Update Utility indicates that it has encountered errors during the update process, you will be requested to either retry or abort the operation. PLEASE RETRY the update at least once before aborting the operation.

Aborting the operation damages the EPROM, and you will have to replace the system board. However, as long as you do not remove power from the server, you may still be able to use the server until you receive the replacement system board.

Using the Configuration Utility with the HPUpdate Utility

If configuration utility requests that you insert the Flash Memory Utility diskette into drive A, you do not have to restart (reboot) the system to use the Flash Memory Utility. The configuration utility will ensure a SAFE environment before asking you to put the Flash Memory Utility diskette into drive A.

HP NetServer DiagTools

DiagTools for HP NetServers is a set of off-line diagnostic tests, including tests for system and processor components, memory and storage elements, ports, and input/output devices. DiagTools is supplied on the HP NetServer Navigator with HP NetServer series LC, LH, LP and LX and later systems.

The user prepares DiagTools software for use by transferring it to diskette. Then the DiagTools diskette is used to boot the server. A basic suite of tools checks key NetServer components, and a menu of advanced tests is available for in-depth testing. DiagTools has the capability to test the following components:

- system board
- memory modules
- flexible disk drives
- serial ports
- video monitor
- processors
- hard disk drives
- keyboards
- parallel ports
- CD-ROM drives

DiagTools is an off-line diagnostic test series. Off-line diagnostics do not use the main operating system (OS) of the HP NetServer. The alternate DiagTools OS has far fewer features than the full-fledged OS. Thus, its capabilities are limited to a set of basic tests and a series of advanced tests. In addition, DiagTools does not use any tests which might write over and thus destroy user data. Tests which require user inputs or decisions are left to the advanced series of tests.

Advantages and Limitations of Hardware Diagnostics

Off-line diagnostic software should be used only by experienced personnel who can take a wider view of its limitations, which include:

- booting the server from the diagnostics diskette

- no access to operating system error logs, since the OS is not operating at the same time as the diagnostic tools
- limited ability to test only a single component at a time
- inability to indicate problems with wrongly configured systems or the network

HP NetServer Diagnostic Assistant

Before Diagtools, there was Diagnostic Assistant. It is located on a flexible diskette in a resealable pouch inside the server cabinet and is also a selection on the HP NetServer Navigator CD-ROM under HP NetServer Utilities.

NOTE You should run these diagnostics first before you change or replace any parts to help make sure the system is properly configured, especially for SCSI problems.

The flexible disk is bootable -- to ensure that it is independent of the customer's network operating system. However, it does not include COMMAND.COM -- so it cannot be used as a DOS system.

Diagnostic Assistant Tests

Tests are included for the system board and processor, the memory subsystem, IDE hard drives, the SCSI controllers and buses, and SCSI hard drives. If the Diagnostic Assistant loads and comes up, you know that the flexible disk, display controller, monitor, and keyboard are working. When the Diagnostic Assistant first runs, it presents you with a hardware inventory of what it sees configured in the system. To help you see if the server is configured properly, use this list to compare with what you think is installed and configured.

Quick and Continuous Tests

- Each Quick Test is designed to run in less than three minutes on a typically-configured system. The main menu gives enough information for you to estimate total test time before starting a test. The Quick Tests halt on the first error.
- The Continuous Tests are designed to be run overnight or over a weekend. The Main Test Menu gives enough information for you to estimate test rate for the system under test.
- Any Quick or Continuous test can be interrupted or aborted by pressing the ESC key while the test is running. All tests are non-destructive.
- Lines indicating errors are appended to a LOG file on the flexible disk which can be returned with a failed part.
- The CD-ROM and DAT tests require the use of a CD-ROM disk (an audio disk will do) or DAT tape. The DAT test is non-destructive.

For additional information on the HP NetServer Diagnostic Assistant, see the On-line Manual that is available within the Diagnostic Assistant program.

The Diagnostic Assistant works on the following systems: LC, LF, LH, LS, LX, LXe, E Series.

Starting the Quick or Continuous Tests

To run Diagnostic Assistant:

1. Bring down the network, if running.
2. Insert the disk in drive A, or HP NetServer Navigator CD-ROM; and reboot the computer
3. Follow the instructions on the menus. (Choose NetServer utilities on the HP NetServer Navigator.)

To start the test: use the keyboard cursor keys to select the test or item you want and press Enter.

Accessing the Disk Array Utilities

The Disk Array Utilities are used to perform disk array configuration tasks during initial HP NetServer installation and when changing disk array options. The Disk Array Utilities reside on the HP NetServer Manager CD-ROM and can be accessed in three ways:

- ◇ Express Configuration contains the Disk Array Utilities as one of the steps when a controller card is installed and should be used when initially setting up the HP NetServer.
- ◇ Custom Configuration, used for custom configuration or when adding or removing options after initial configuration, also presents the Disk Array Utilities.
- ◇ NetServer Utilities Menu is used to directly access the Disk Array Utilities.

To access the Disk Array Utilities, perform the following steps:

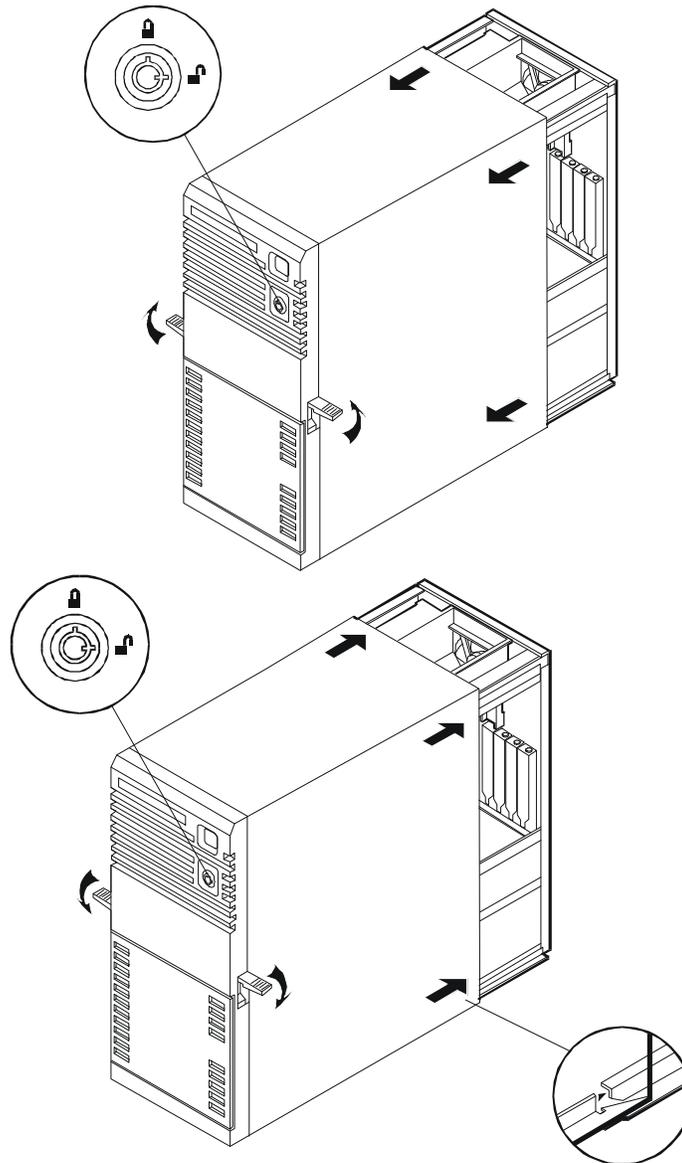
1. Turn on the HP NetServer and load the HP NetServer Manager CD-ROM in the CD ROM drive. Press the Reset button on the front of the HP NetServer. The HP NetServer Manager Main Menu will appear.
2. To access the Disk Array Utilities through the utilities directory, select "NetServer Utilities" and press **Enter**.
3. At the NetServer Utilities Menu, select "Disk Array Utilities" and press **Enter**. The Utilities have help screens to assist you in the disk array setup.

Low-End Systems

HP NetServer E30

Covers

WARNING Before removing the cover, always disconnect the power cord and unplug telephone cables. Disconnect the power cord to avoid exposure to high energy levels that may cause burns when parts are short-circuited by metal objects such as tools or jewelry. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages.



HP NetServer E 30 Product Configurations

Processor Upgrades	Not applicable, none available
Memory	16MB ECC standard (2x8MB 60ns SIMMs - fast page mode not EDO) - 6 total slots Expandable to 192MB (6x32MB)
Cache Memory	256 KB second level write-back cache standard
Video	Up to 1024x768 256 colour non-interlaced; 1 MB standard video memory
NIC	DeskDirect PCI 10BaseT adapter J2973A (World wide except Europe) DeskDirect PCI 10BaseT/Thin LAN adapter J2970A (Europe only)
Controller	Single channel busmaster PCI Installed Fast SCSI-2 controller (Fast & narrow) Adaptec 2910Ai. No external SCSI port. Integrated dual channel Enhanced IDE controller
Internal Storage	
Standard	None on Model 1, 2.1GB on Model 2100
Maximum	21GB (5x 4.2GB with CD ROM removed)
Removable Media	
3.5-in Floppy	One 1.44MB
CD-ROM	IDE standard
Expansion Slots	2 PCI, 2 PCI/ISA combo and 2 ISA bus master slots
Built-in I/O Ports:	One 24-pin parallel, two 9-pin serial ports, Video port, Mini-DIN keyboard and mouse connectors
Mass Storage Shelves	6 shelves total: One 3.5-inch floppy drive shelf 3 front accessible, half-height 5.25" shelves 2 internal half-height 5.25" shelves
Mouse	Bundled
Keyboard	Windows 95 (extra keys are used by Windows NT Server 4.0)
Hard Disk Drive	4500 RPM 2.1 GB Fast SCSI-2 (< 12ms seek time, 10.5ms average) (<14ms write time)
Security	Power-on password Floppy Write and boot enable/disable CD ROM boot enable/disable Hard Disk boot enable/disable Admin Password ISA configuration and BIOS protection switches Serial and parallel ports enable/disable Lockable front bezel

Memory

The processor board has 6 sockets which accept memory SIMMs. Two of these sockets come preinstalled with 8 MB SIMMs. The amount of available memory can be increased up to a total of 192 MB (6 SIMMs x 32 MB). When installing additional memory, note the following:

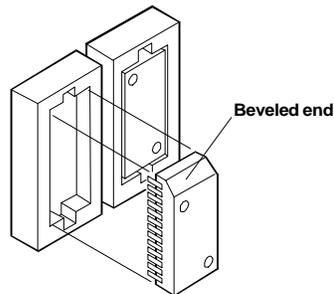
- You must install SIMMs in pairs which are the same size and type.
- Only these HP SIMMs are supported:

SIMM Type	HP Product Number
_____	_____

8 MB SIMM	D4890A
16 MB SIMM	D4891A
32 MB SIMM	D4892A

Video Memory

The NetServer E Series has two sockets in which to install the two 512 KB memory chips required, both of which must be installed at the same time. These chips are 256 K x 16 bit, 50 ns, Dual-CAS, SOJ, EDO.



Boot Device Priority

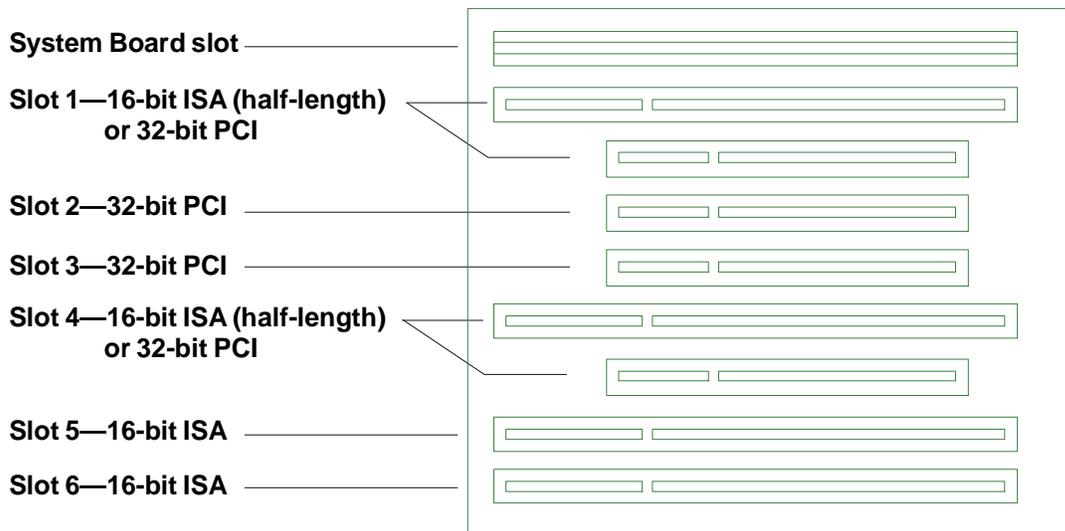
Use the following boot device priority for determining which device will be the boot device for the server.

1. IDE CD-ROM Drive
2. Flexible Disk Drive
3. IDE hard disk drive
4. SCSI devices in this order:
 - ID 0
 - ID 1
 - ID 2
 - ID 3
 - ID 4
 - ID 5
 - ID 6
5. PCI slot devices in this order:
 - Slot 3
 - Slot 1
 - Slot 2
 - Slot 4

I/O Board

This HP NetServer contains six ISA- and PCI-compatible slots which provide the capability of adding accessory boards, such as disk controller boards and network interface boards.

NOTE A board can be identified as ISA or PCI by the bracket-offset angle and the unique slot connector.



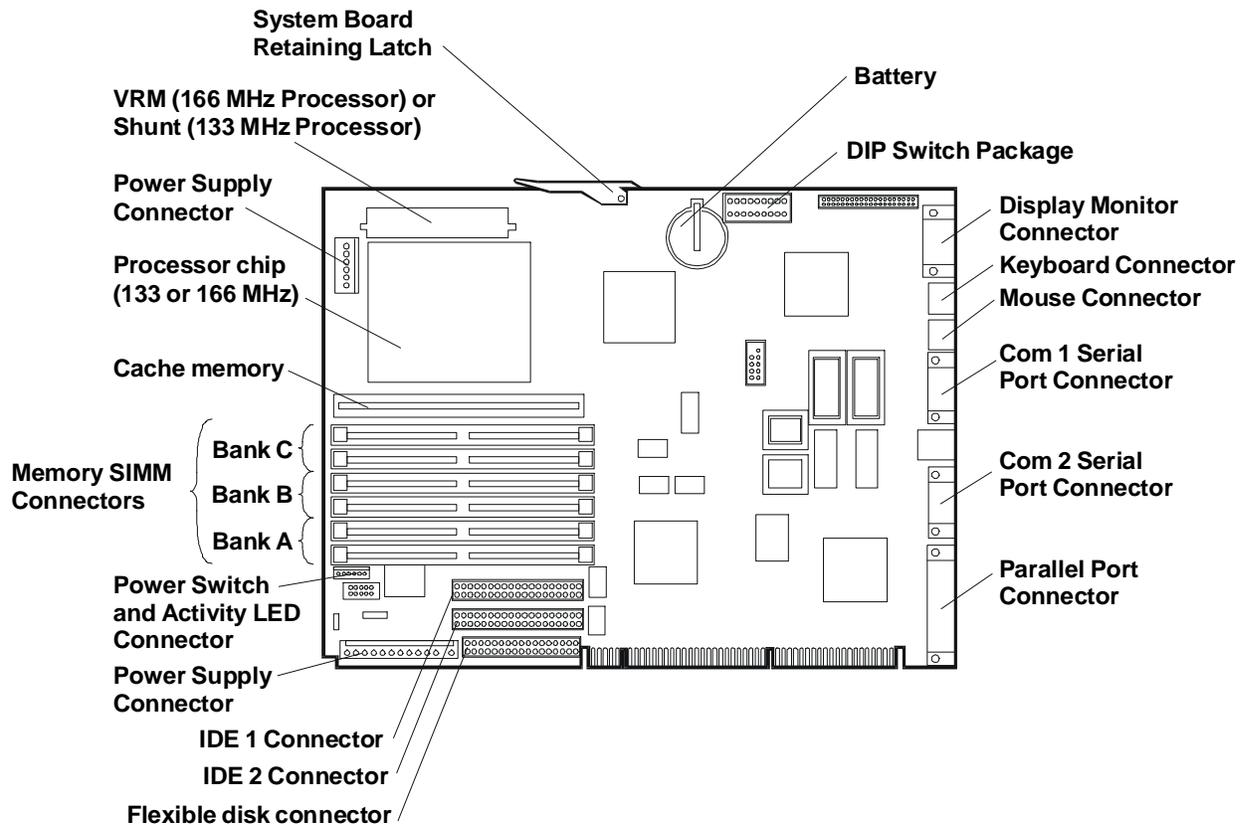
These slots allow you to install accessory boards as follows:

- Slot 1 (the innermost) can be used for a short 16-bit ISA board or a 32-bit PCI board.
- Slots 2 and 3 can be used for 32-bit PCI boards.
- Slot 4 can be used for a full-length 16-bit ISA board or a 32-bit PCI board.
- Slots 5 and 6 can be used for full-length 16-bit ISA boards

The NetServer comes with a SCSI card preinstalled and configured in Slot 1, and network interface card preinstalled and configured in Slot 3.

NOTE If you are manually configuring an accessory board, avoid using COM1 and COM4, if possible, due to the possibilities of resource conflicts with some application software programs.

System Board



System Board Switch Settings

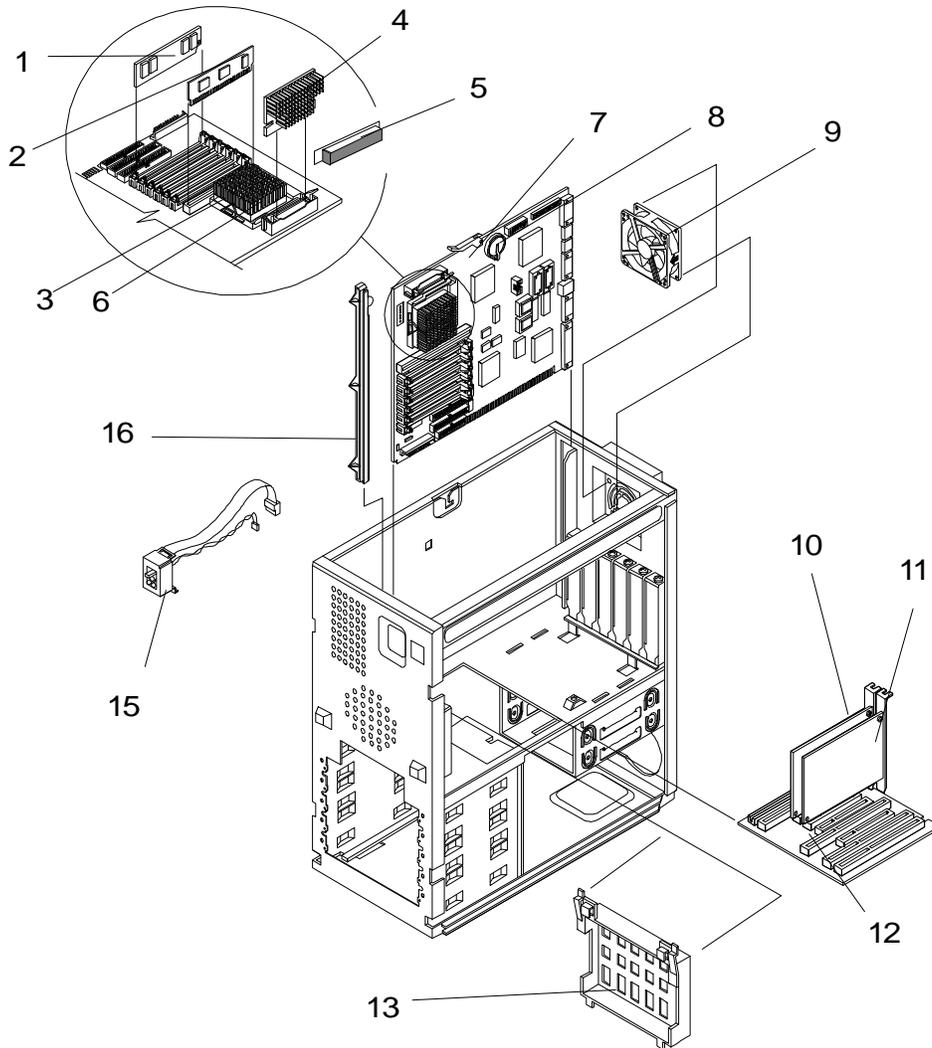
Switch position	Factory preset	Definition:
1, 2, 3. & 4	(See table below)	Select processor speed settings. The switch positions may need to be changed when upgrading the processor. See the table below for required settings for your Intel 166 MHz CPU.
5	Open	Clears the password. Set the switch to the closed position and restart the NetServer to clear the password. Return the switch to the open position and restart the NetServer to return to normal operation.
6	Open	Resets the CMOS configuration to the default values. Set the switch to the closed position and restart the NetServer to reset the CMOS. Return the switch to the open position and restart the NetServer to return to normal operation.
7	Closed	Reserved
8	Open	Reserved
9	Closed	Enable or disable space bar power-on. If you want to enable this feature, set this switch to Closed. If you want to disable it, set this switch to Open. This feature must also be configured in the BIOS using the SETUP utility.
10	Open	Reserved

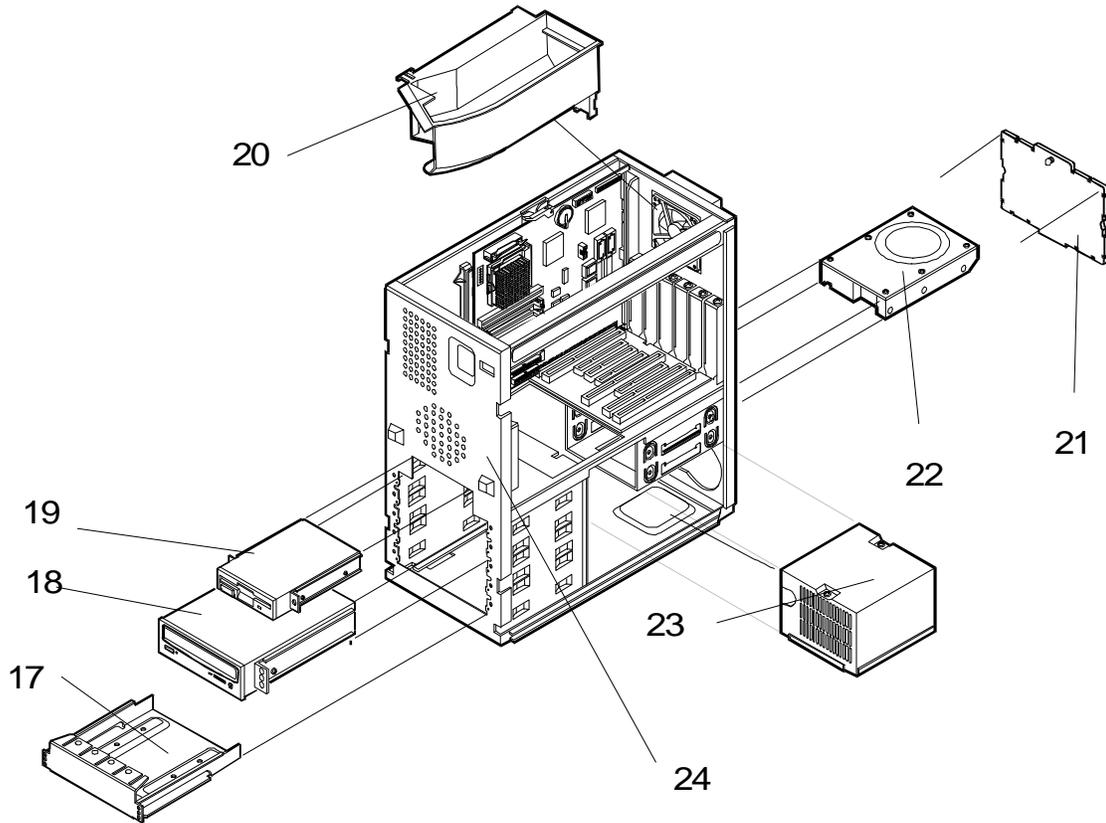
Processor Switch Settings

The following table shows the settings that you must changed when installing your 166 MHz Intel CPU.

CPU Speed	Switch 1	Switch 2	Switch 3	Switch 4
133 MHz	Open	Closed	Closed	Open
166 MHz	Open	Closed	Closed	Closed

Exploded Views





Parts List

Fig	Description	Replacement	Exchange
1a	SIMM, 8 MB	D4890-63001	D4890-69001
1b	SIMM, 16 MB, 60 ns	D4891-63001	D4891-69001
1c	SIMM, 32 MB, 60 ns	D4892-63001	D4892-69001
2	Cache assembly, 256 KB	0960-0936	
3a	CPU Chip, P54/166	1821-2604	
3b	CPU Chip, P54/133	1821-2295	
4	Voltage Regulator (P5/166)	5063-7940	
5	Shorting block (P5/133)	5063-7939	
6	Heatsink	1205-0832	
7	System board	D4874-63001	D4874-69001
8	Battery	1420-0314	
9	Fan	3160-1054	
10	SCSI controller	5064-1912	
11a	LAN Adapter, 10BT2 (Europe)	J2970-61001	J2970-69001
11b	LAN Adapter, 10BT	J2973-61001	J2973-69001
12	Backplane	5064-0244	
13	Support Chassis Kit *	5064-0236 *	
15	Status Panel Assembly	5064-0736	

Fig	Description	Replacement	Exchange
16	Guide, system board	5042-0507	
17	Mass Storage Trays, 3 ½ inch	5002-1946	
18	CD-ROM Drive	D2896-63401	
19	Flexible disk drive	D2035-63121	
20	Air Flow Guide	5042-1484	
21	Mass storage rear cover **	not orderable	
22	2.1 GB Hard Disk Drive	D4884-63001	D4884-69001
23	Power Supply	5063-8760	
24	Chassis **	not orderable	
25	Bezel Assembly Kit, front	5064-1935	
26	Cover Assembly **	not orderable	
27	Keylock assembly ***	not orderable	
28	Bezel door ***	not orderable	
29	Filler panel ***	not orderable	
****	Cable, flexible disk	5182-3509	
****	Cable, CD-ROM	5182-3508	
****	Cable, SCSI	5182-9323	
****	Cable, Fan	5182-9379	
****	Mouse	C3751-60201	
****	Thermal grease for processor		
****	HP Navigator CD-ROM *****		
****	Video DRAM +		
<p>* Contains all chassis supported parts ** Part in the Support Chassis Kit *** Part in the Front Bezel Assembly Kit **** This part is not on an exploded view ***** This part number is constantly revised for each new release + See Video Memory - DRAM section</p>			

Keyboards

Language	HP Part Number	Language	HP Part Number
Swedish #ABS	C3758-60212	UK/Irish #ABU	C3758-60213
US #ABA	C3758-60201	Danish #ABY	C3758-60216
Dutch #ABH	C3758-60206	German #ABD	C3758-60203
Russian #ACB	C3758-60230	Spanish #ABE	C3758-60204
Czech #AKB	C3758-60236	French #ABF	C3758-60205
Italian #ABZ	C3758-60217	Norwegian #ABN	C3758-60209
Turkish #AB8	C3758-60234	Swiss #ABP	C3758-60211
Taiwan #AB0	C3758-60223		

Power Cords

Country	HP Part Number	Country	HP Part Number
Australia	8120-1369	UK	8120-1351
United States	8120-1751	Japan	8120-4753
Denmark	8120-2956	Switzerland	8120-2104
Europe	8120-1689		

Cables

Only the following HP cables are supported:

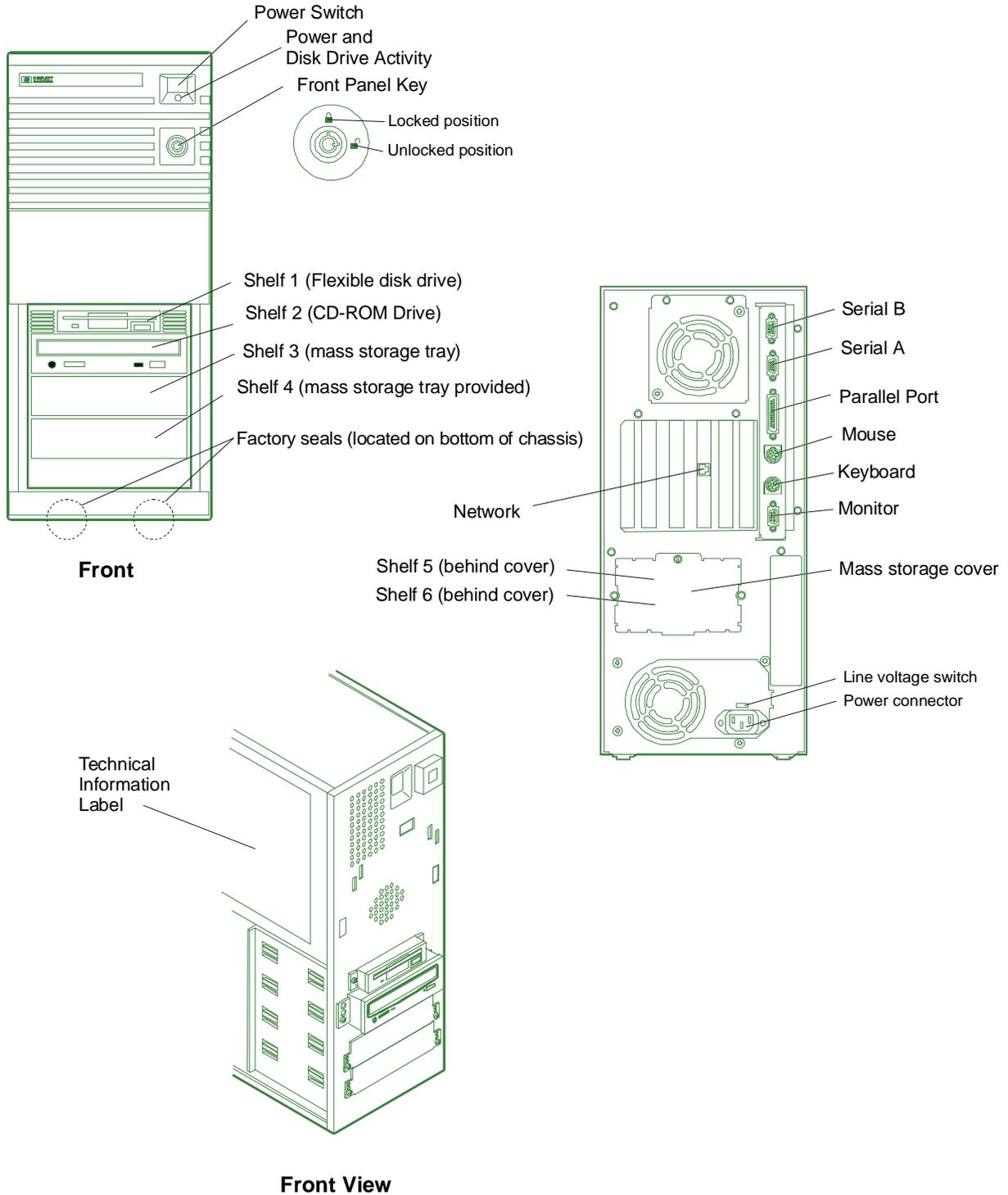
Cable	Part Number
Cable, Flexible disk	5182-3509
Cable, SCSI	5182-9323
Cable, IDE/CD-ROM	5182-3508
Fan	5182-9379

Specifications

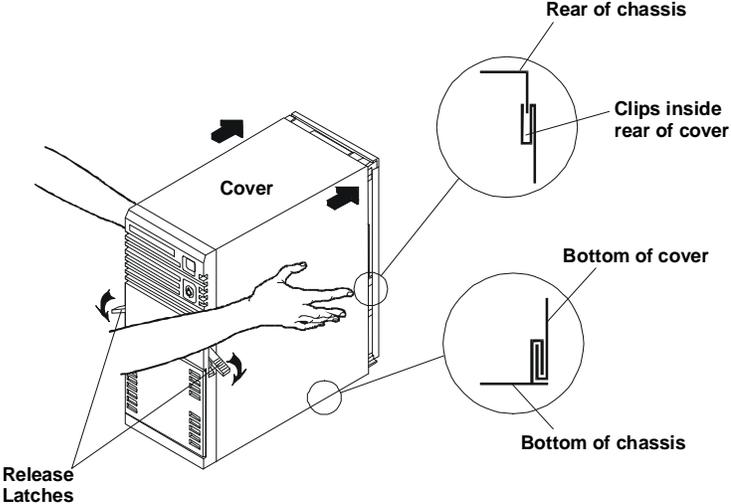
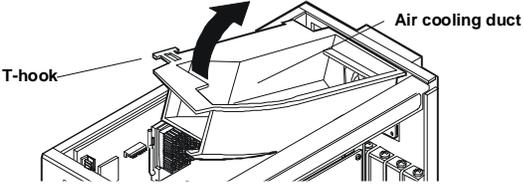
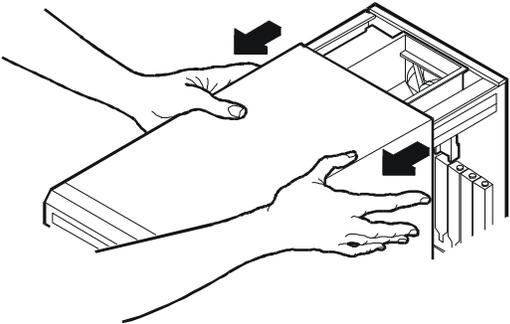
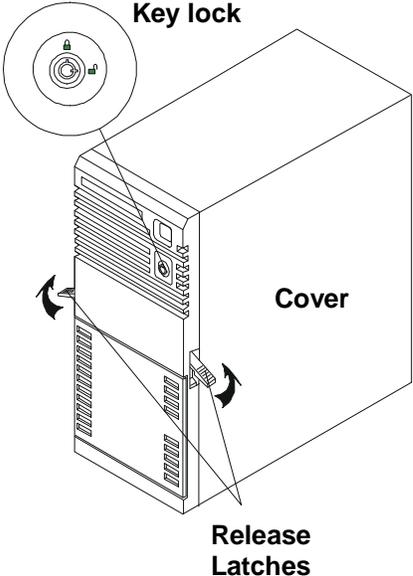
Power Availability	160W continuous, 200W peak Switch selectable input range for 115 or 230V input
Power Supply	nominal 100-127/200-240VAC 50/60Hz range 90-140/180-264V AC 47/63Hz
Power Consumption	246W continuous max with 110/220V supply 307W peak with 110/220V supply. Recommended UPS size 600VA
System Dimensions	17.25 inches high x 7.5 inches wide x 17.5 inches deep
System Weight	32lbs without keyboard, mouse & navigator
Operating Temperature	5 to 35 degrees C
Operating Humidity	20% to 80% non-condensing
Acoustic Emission	Sound Level (LpA): <45 dB(A)

HP NetServer E 40

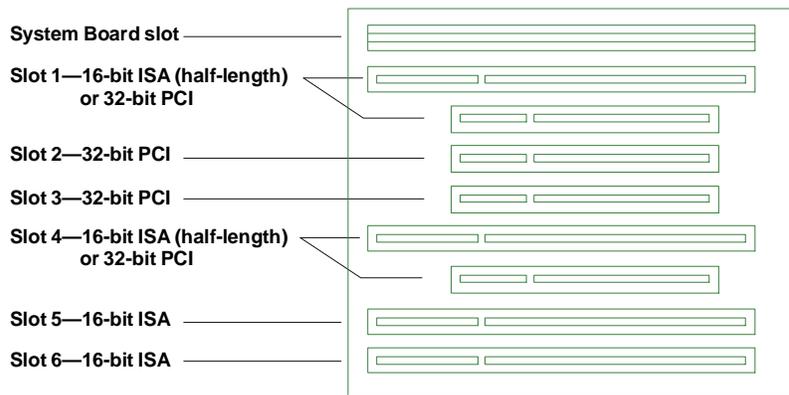
System Views



Covers



I/O Boards



These slots allow you to install accessory boards as follows:

- Slot 1 (the innermost) can be used for a short 16-bit ISA board or a 32-bit PCI board.
- Slots 2 and 3 can be used for 32-bit PCI boards.
- Slot 4 can be used for a full-length 16-bit ISA board or a 32-bit PCI board.
- Slots 5 and 6 can be used for full-length 16-bit ISA boards

The NetServer comes with a SCSI card preinstalled and configured in Slot 1, and a network interface card preinstalled and configured in Slot 3.

NOTE

If you are manually configuring an accessory board, avoid using COM1 and COM4, if possible, due to the possibilities of resource conflicts with some application software programs.

Boot Device Priority

1. IDE CD-ROM Drive
2. Flexible Disk Drive
3. IDE hard disk drive
5. PCI slot devices in this order:

- Slot 3 *
- Slot 1 *
- Slot 2 *
- Slot 4 *

* If any of these slots have a SCSI controller board, SCSI devices connected to this controller will boot in this order:

- ID 0
- ID 1
- ID 2
- ID 3

- ID 4
- ID 5
- ID 6

Memory

The processor board has 6 sockets which accept memory SIMMs. This NetServer comes preinstalled with two 8 MB or 16 MB SIMMs. When installing additional memory, note the following:

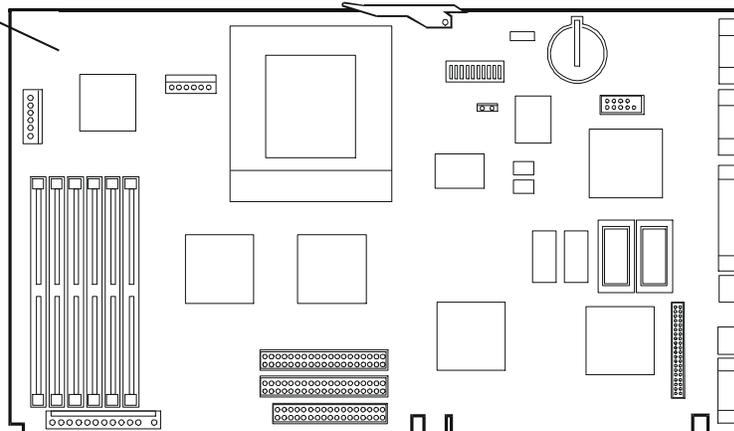
- You must install SIMMs in pairs which are the same size and type.
- Only these HP SIMMs are supported:

SIMM Type	HP Product Number
8 MB SIMM	D4890A
16 MB SIMM	D4891A
32 MB SIMM	D4892A
64 MB SIMM	D4290A

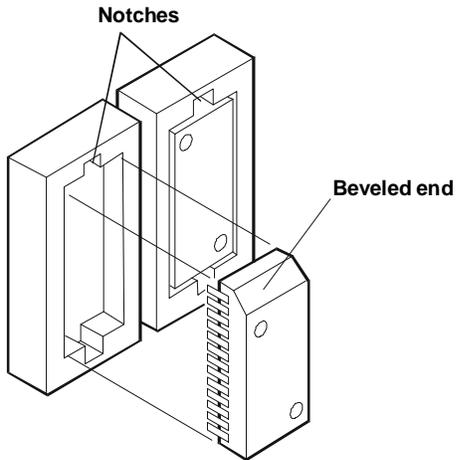
Video DRAM

Your NetServer is supplied with 1 MB of video memory as standard. If additional video memory is required for displaying more colors, obtaining higher resolution, or for increased speed, you can install an additional 1 MB inside your NetServer. The NetServer has two sockets in which to install the two 512 KB memory chips required, both of which must be installed at the same time. These chips are 256 K x 16 bit, 50 ns, Dual-CAS, SOJ, EDO. Purchase this memory from a local supplier.

System board



Video Memory Upgrade Sockets



Video Resolutions

The video resolutions available for your NetServer depend on the operating system you are using and the amount of video memory. The tables below show the available video resolutions.

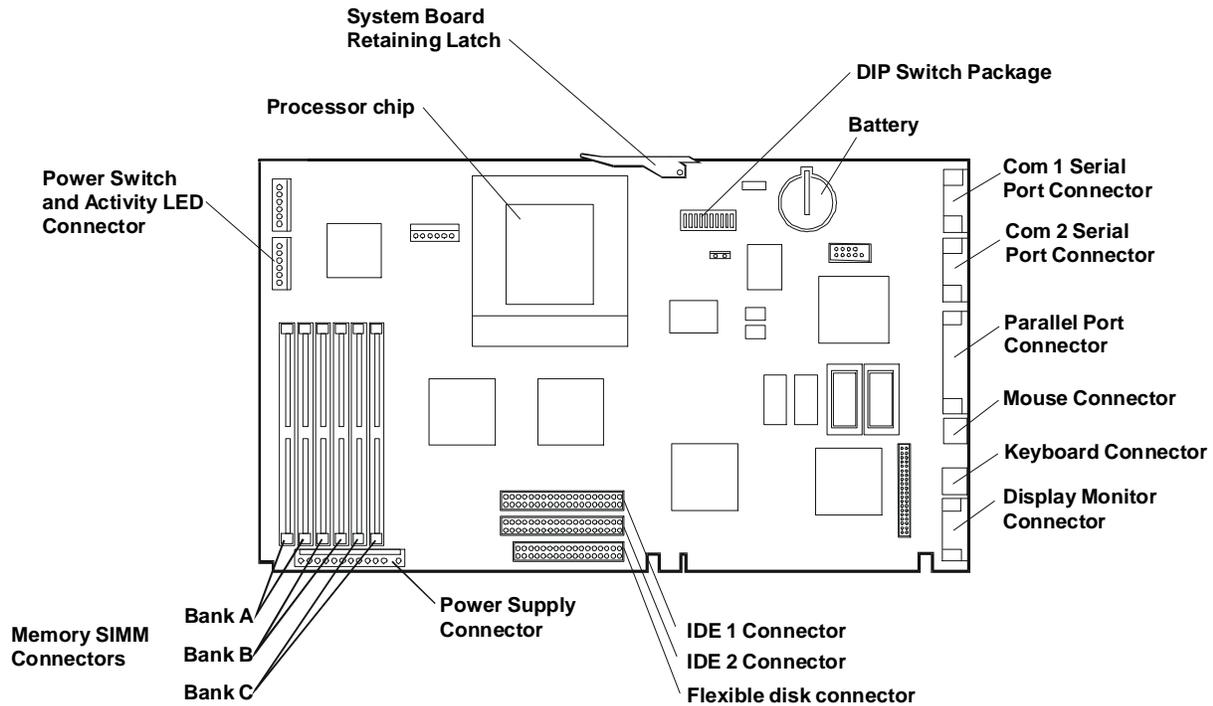
Video Resolutions with 1 MB Memory Installed

Resolution	Number of Colors	Video Refresh Rate
640 x 480	16, 256, 32K, 64K, 16M	60, 72, 75, 85 Hz
800 x 600	16, 256, 32K	56, 60, 72, 75, 85 Hz
1024 x 768	16, 256	43i, 60, 70, 72, 75, 85 Hz
1280 x 1024	16	43i, 60, 71.2, 75 Hz
1152 x 864	256	70, 75

Video Resolutions with 2 MB Memory Installed

Resolution	Number of Colors	Video Refresh Rate
640 x 480	16, 256, 32K, 64K, or 16M	60, 72, 75, 85 Hz
800 x 600	16, 256, 32K, 64K, or 16M	56, 60, 72, 75, 85 Hz
1024 x 768	16, 256, 32K, or 64K	43i, 60, 70, 72, 75, 85 Hz
1280 x 1024	16, or 256	43i, 60, 70, 71.2, 75 Hz
1600 x 1200	256	48i Hz
1152 x 864	256, 64K	70, 75

System Board



System Board Switch Settings

Switch position	Factory preset	Definition:
1 - 5	(See table below)	Select processor speed settings. The switch positions may need to be changed when upgrading the processor (see table below).
6	Open	Resets the CMOS configuration to the default values. Set the switch to the closed position and restart the NetServer to reset the CMOS. Return the switch to the open position and restart the NetServer to return to normal operation.
7	Open	Clears the password. Set the switch to the closed position and restart the NetServer to clear the password. Return the switch to the open position and restart the NetServer to return to normal operation.
8	Closed	Enable or disable space bar power-on. If you want to enable this feature, set this switch to Closed. If you want to disable it, set this switch to Open. This feature must also be configured in the BIOS using the SETUP utility.
9	Open	Open = normal operation Closed = Clear system product ID
10	(See table below)	Sets the processor supply voltage (see table below). Open = 3.3V Closed = 3.5V

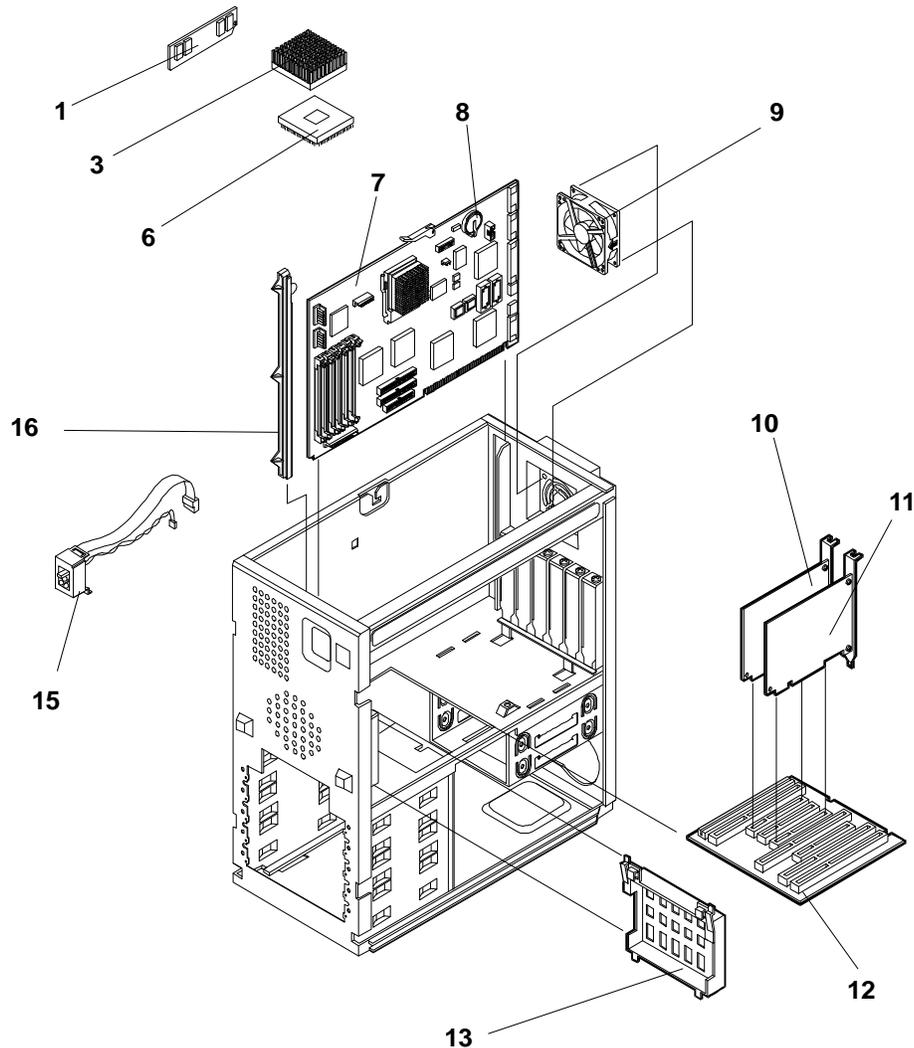
CAUTION

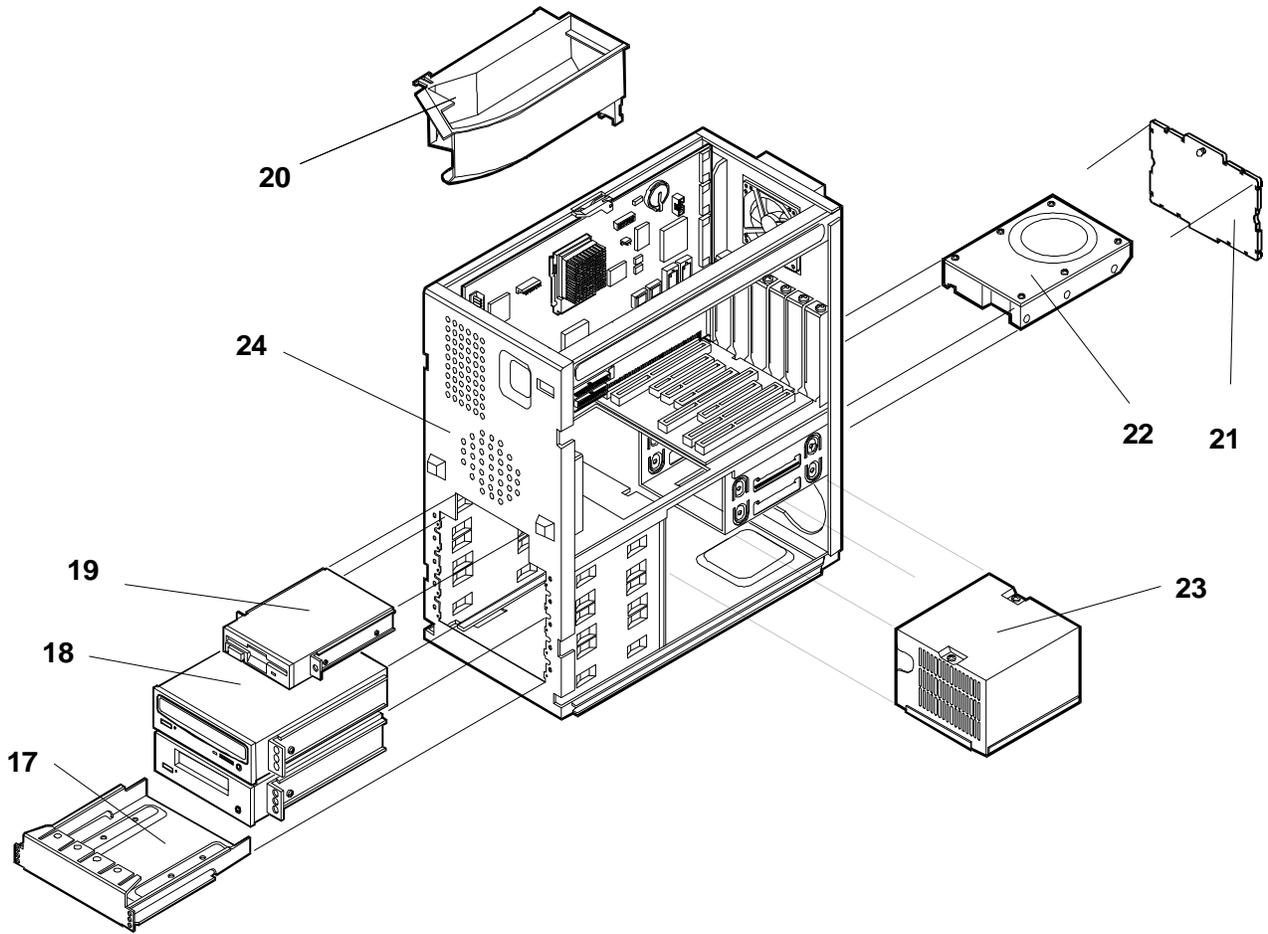
Position 10 on the system board DIP switch package is to be changed only by a Hewlett-Packard-authorized service provider. Setting this switch incorrectly could result in damage to the processor chip, system board, or other components. Damage due to incorrect switch settings is not covered by the HP warranty.

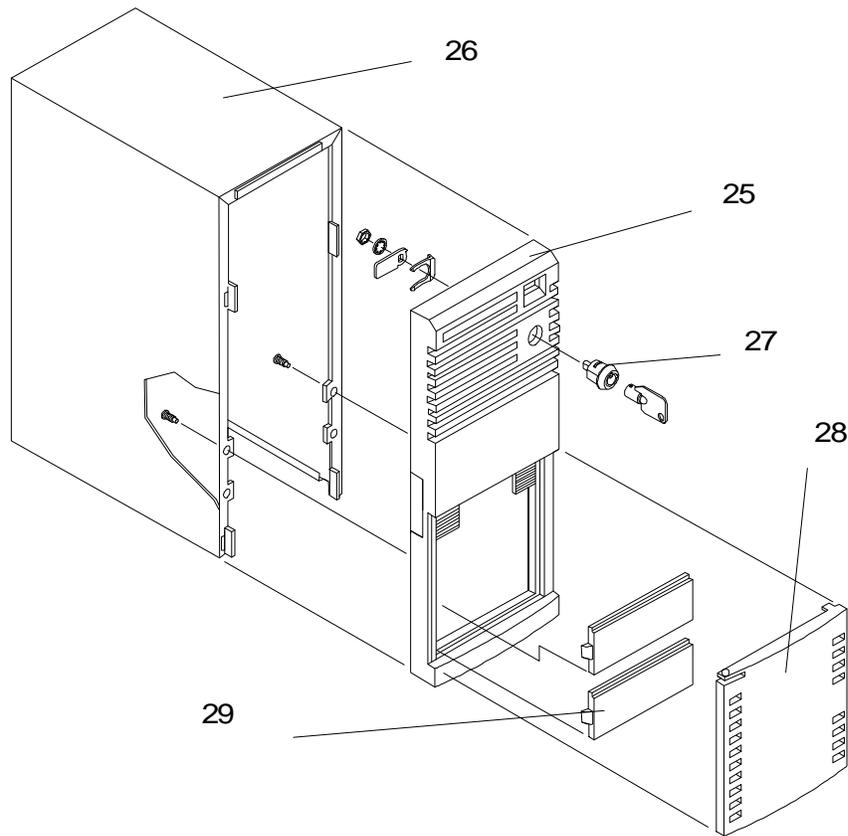
Processor Switch Settings

The following table shows the settings for each of the Intel CPUs. To set the switches correctly, observe the markings on the replacement CPU chip. Each CPU chip will have a speed marking ("180 MHz" or "200 MHz"), and a voltage marking ("SL255" or "SL22V"). Use the table below to look up the appropriate switch settings for each of these CPUs.

CPU Speed	Voltage Marking	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5	Switch 10
180 MHz	SL22V	Closed	Open	Open	Closed	Open	Open
200 MHz	SL22V	Open	Open	Open	Closed	Open	Open
200 MHz	SL255	Open	Open	Open	Closed	Open	Closed

Exploded Views





Parts List

Fig	Description	Replacement	Exchange
1a	SIMM, 8 MB	D4890-63001	
1b	SIMM, 16 MB, 60 ns	D4891-63001	
1c	SIMM, 32 MB, 60 ns	D4892-63001	D4892-69001
1d	SIMM, 64 MB, 60 ns	D4290-63002	D4290-69002
3a	CPU Chip, P6/180	1821-3450	
3b	CPU Chip, P6/200	1821-3449	
6	Heatsink	1205-1170	
7	System board	D4937-63002	D4937-69002
8	Battery	1420-0314	
9	Fan	3160-1054	
10	SCSI controller	5064-1912	
11a	LAN Adapter, 10BT2 (Europe)	J2970-61001	J2970-69001
11b	LAN Adapter, 10BT	J2973-61001	J2973-69001
11c	LAN Adapter, 10/100BT	J3171-61021	
12	Backplane	5063-0244	5063-0234
13	Support Chassis Kit *	5064-0236 *	
15	Status Panel Assembly	5064-0736	
16	Guide, system board	5042-0507	

Fig	Description	Replacement	Exchange
17	Mass Storage Trays, 3 ½ inch	5002-1946	
18	CD-ROM Drive	D4381-63001	D4381-69001
19	Flexible disk drive	D2035-60282	
20	Air Cooling Duct	5042-1492	
21	Mass storage rear cover **	not orderable	
22	2.1 GB Hard Disk Drive	D4884-63001	D4884-69001
23	Power Supply	5064-0778	5064-5850
24	Chassis **	not orderable	
25	Bezel Assembly Kit, front	5064-1935	
26	Cover Assembly **	not orderable	
27	Keylock assembly ***	not orderable	
28	Bezel door ***	not orderable	
29	Filler panel ***	not orderable	
****	Cable, flexible disk	5182-3509	
****	Cable, CD-ROM	5182-3508	
****	Cable, SCSI	5182-9323	
****	Cable, Fan	5182-9379	
****	Mouse	C3751-60201	
****	Thermal grease for processor		
****	HP Navigator CD-ROM *****		
****	Video DRAM +		
<p>* Contains all chassis supported parts ** Part in the Support Chassis Kit *** Part in the Front Bezel Assembly Kit **** This part is not on an exploded view ***** This part number is constantly revised for each new release + See Video Memory - DRAM section</p>			

Keyboards

Language	HP Part Number	Language	HP Part Number
Swedish #ABS	C3758-60212	UK/Irish #ABU	C3758-60213
US #ABA	C3758-60201	Danish #ABY	C3758-60216
Dutch #ABH	C3758-60206	German #ABD	C3758-60203
Russian #ACB	C3758-60230	Spanish #ABE	C3758-60204
Czech #AKB	C3758-60236	French #ABF	C3758-60205
Italian #ABZ	C3758-60217	Norwegian #ABN	C3758-60209
Turkish #AB8	C3758-60234	Swiss #ABP	C3758-60211
Taiwan #AB0	C3758-60223		

Power Cords

Country	HP Part Number	Country	HP Part Number
Australia	8120-1369	UK	8120-1351
United States	8120-1751	Japan	8120-4753
Denmark	8120-2956	Switzerland	8120-2104
Europe	8120-1689		

Cables

Only the following HP cables are supported:

Cable	Part Number
Cable, Flexible disk	5182-3509
Cable, SCSI	5182-9323
Cable, IDE/CD-ROM	5182-3508
Fan	5182-9379

Specifications

Operating Environment

Non-operating altitude:	40,000 feet (12,200 meters)
Operating altitude:	10,000 feet (3048 meters)
Non-operating temperature (storage):	-40 degrees to +70 degrees C (-40 degrees to +158 degrees F)
Operating temperature:	+5 degrees to +35 degrees C
Non-operating humidity:	8 to 80% relative humidity
Operating humidity:	15 % to 80% relative humidity
Acoustic emission:	Sound level (LpA): < 45 dB(A)

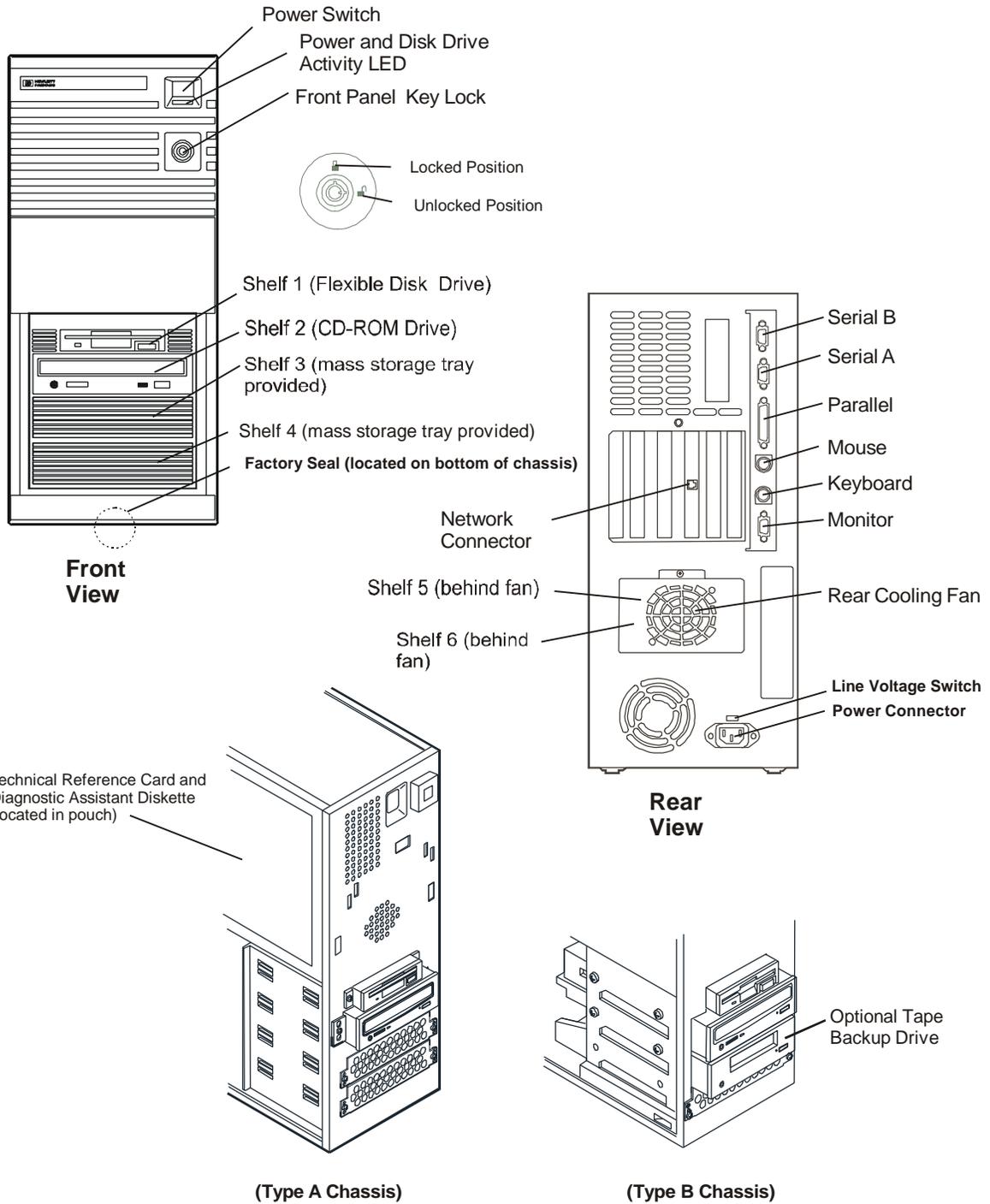
NOTE Procedure for recovery from moisture condensation: let the product stabilize at room temperature for 15 minutes then power on.

Electrical Specifications

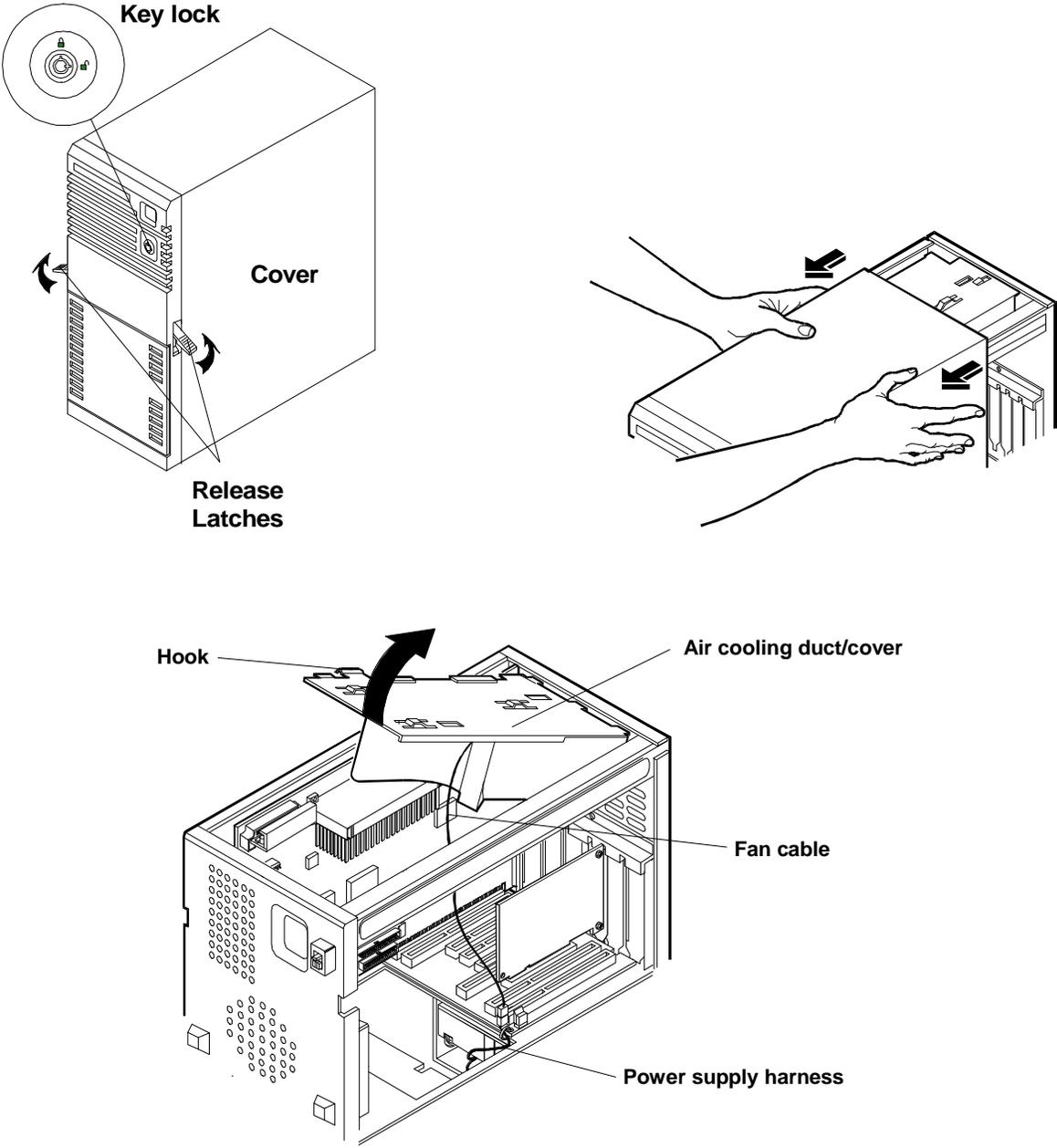
Input Voltage	Power Consumption
100 to 127 Volts AC ~ 5.0 A at 50 - 60 Hertz or	307 watts maximum with 110 - 220 volt line voltage
200 to 240 Volts AC ~ 2.85 A at 50 - 60 Hertz	369 watts peak with 110 - 220 volt line voltage
Heat Output	Power Availability
1000 BTUs/hour maximum peak	200 watts continuous
252 KCals/hr	240 watts peak

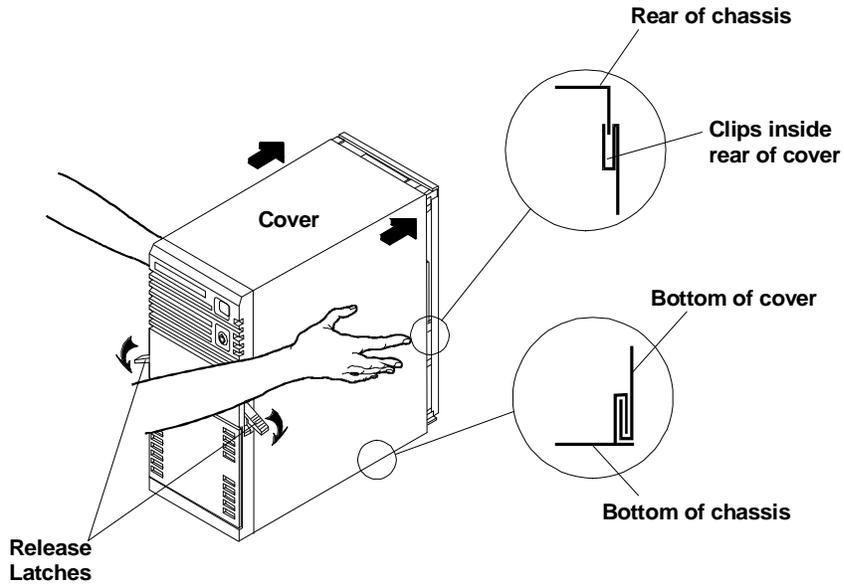
HP NetServer E45/E50

System Views



Covers



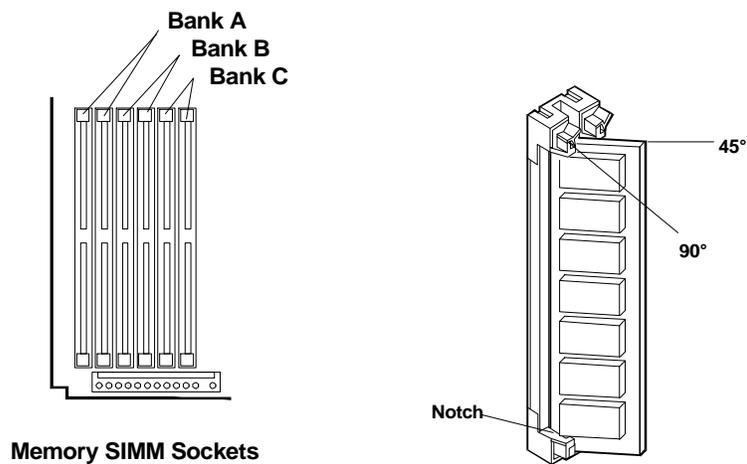


Memory

The processor board has 6 sockets which accept SIMMs. This NetServer comes preinstalled with two 16 MB SIMMs.

- You must install SIMMs in pairs which are the same size and type.
- Only these HP SIMMs are supported:

SIMM Type	HP Product Number
8 MB SIMM	D4890A
16 MB SIMM	D4891A
32 MB SIMM	D4892A
64 MB SIMM	D4290A



Boot Device Priority

Use the following boot device priority for determining which device will be the boot device for the server. The NetServer searches for a bootable device in this order:

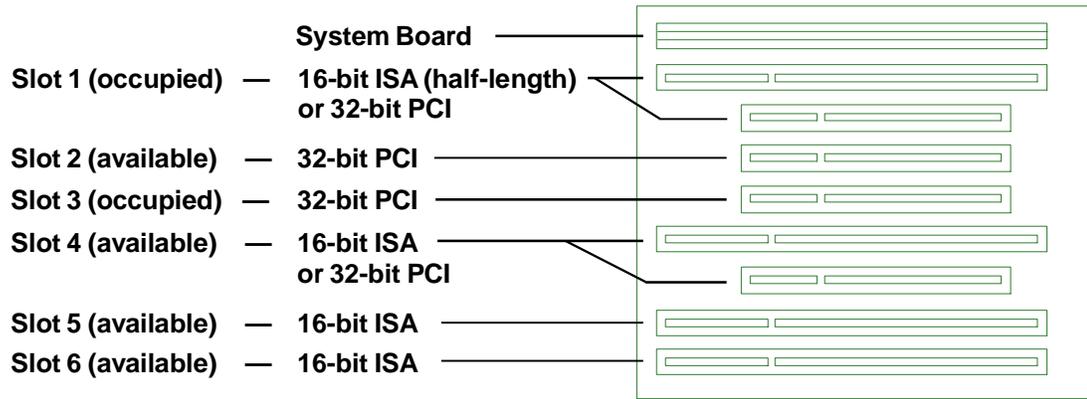
1. IDE CD-ROM Drive
2. Flexible Disk Drive
3. IDE hard disk drive
4. PCI slot devices in this order:
 - Slot 3
 - Slot 1
 - Slot 2
 - Slot 4

If any of these slots have an Adaptec 2910 BUi SCSI adapter board, SCSI devices connected to this controller will boot (before any other devices in the system) in this order:

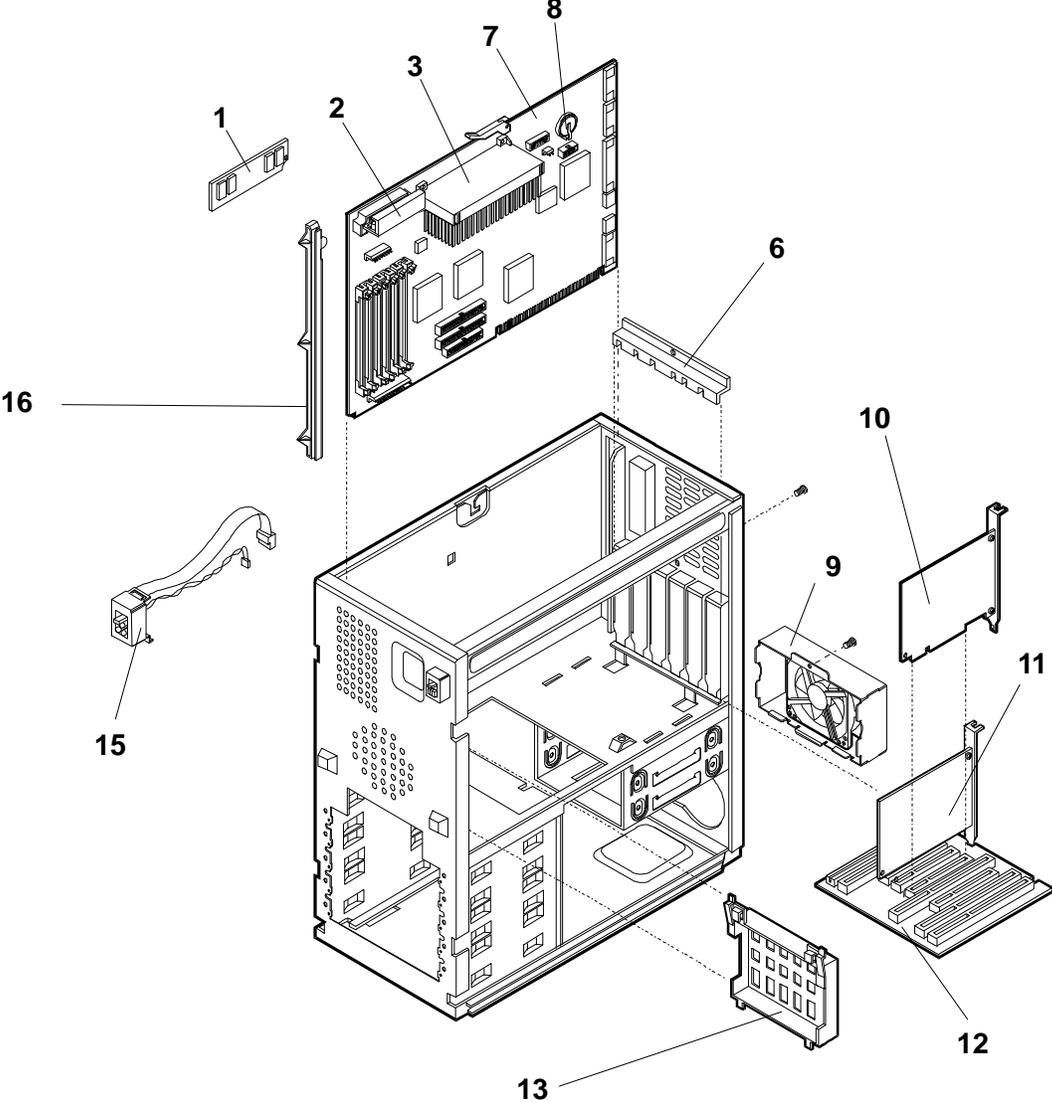
- ID 0
- ID 1
- ID 2
- ID 3
- ID 4
- ID 5
- ID 6

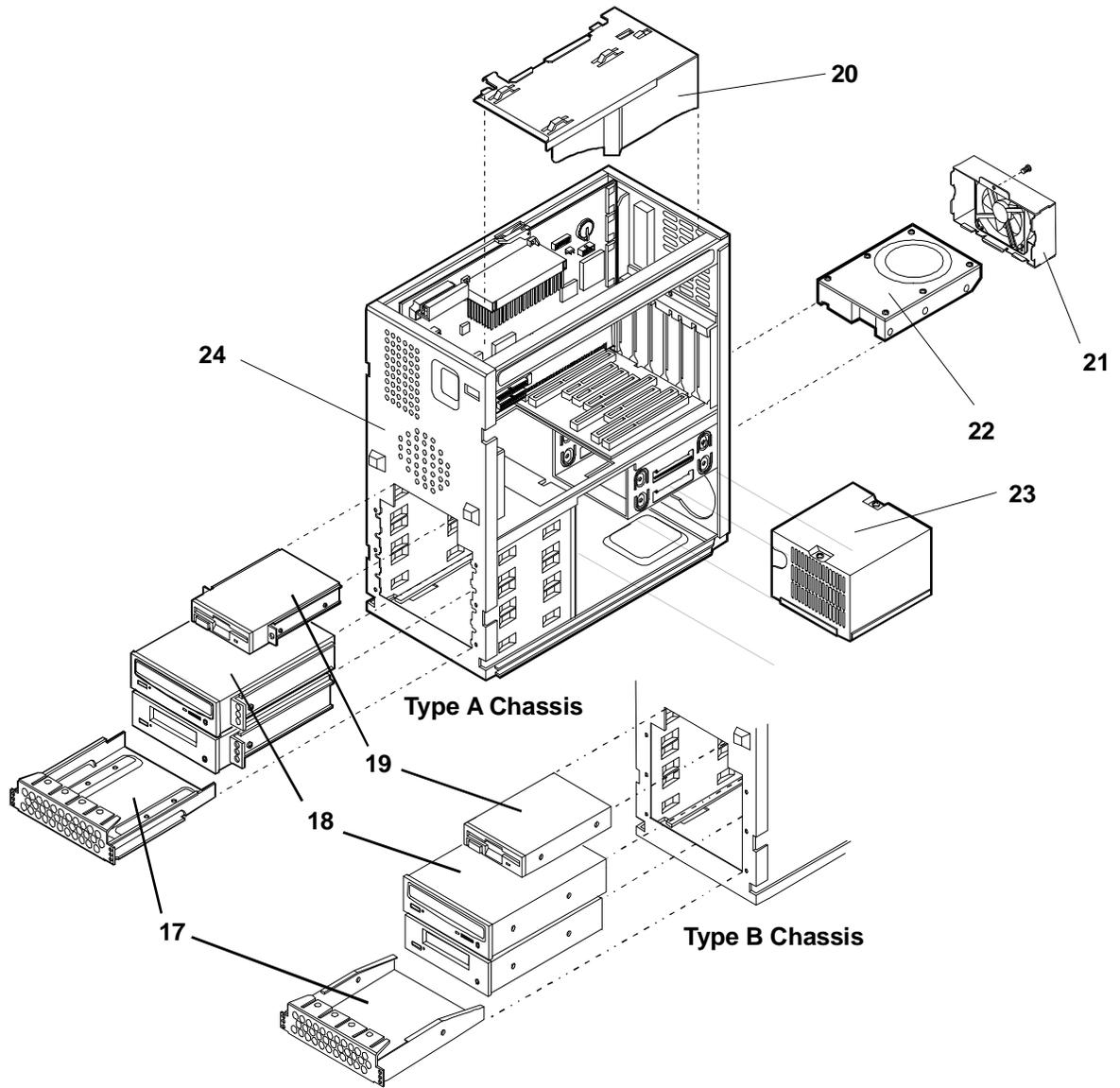
NOTE

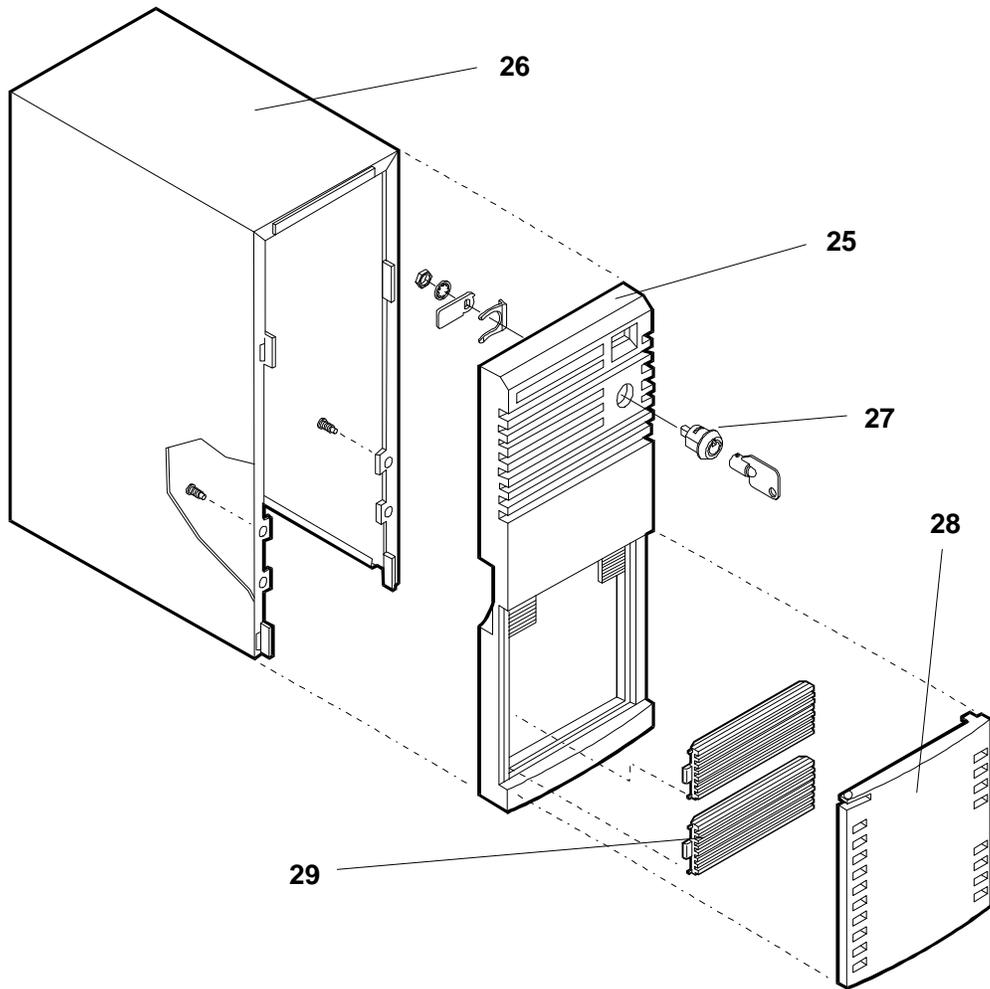
If more than 1 Adaptec 2910 BUi adapter is installed in this system, the PCI slot order determines which one will boot the system. If another adapter (other than a 2910 BUi) or DAC is installed, the 2910 BUi will always boot the system. If you want a SCSI adapter other than the 2910 BUi or a DAC to boot the system, you must first remove the 2910 BUi or disable its BIOS using SCSISelect (see procedure below). Boot order will then be determined by PCI slot order, as described above. With the 2910 BUi BIOS disabled, devices attached to the 2910 BUi will be recognized during POST and by the NOS once it loads. Due to BIOS limitations, a maximum of two 2910 BUi adapters is supported by this system. This limitation does not apply to other SCSI adapters.



Exploded Views







Parts List

Fig	Description	Replacement	Exchange
1a	SIMM, 8 MB	D4890-63001	
1b	SIMM, 16 MB, 60 ns	D4891-63001	
1c	SIMM, 32 MB, 60 ns	D4892-63001	D4892-69001
1d	SIMM, 64 MB, 60 ns	D4290-63002	D4290-69002
2	Voltage Regulator Module	0950-3310	
3a	Processor Module, PII/233, E 45	D4973-63002	D4973-69002
3b	Processor Module, PII/266, E 45	D4975-63001	D4975-69001
3c	Processor Module, PII/300, E 50	D6034-63003	
3d	Processor Module, PII/333, E 50	D6034-63002	
6	Slot Cover Bracket	not orderable	
7	System board, E 45	D4973-63001	D4973-69001
7	System board, E 50	D6034-63001	D6034-69001
8	Battery	1420-0314	

Fig	Description	Replacement	Exchange
9	Rear Cooling Fan	5064-1984	
10	SCSI controller board, E 45	5064-1985	
10	SCSI controller board, E 50	5064-4633	
11	LAN Adapter, 10/100BT	J3171-61021	
12	Backplane	5064-1843	
15	Status Panel/Switch Assembly	5064-0736	
16	Guide, system board	5042-0507	
17	Mass Storage Trays (for Type A Chassis)	5002-3876	
18	CD-ROM Drive	D4383-63001	D4383-69001
19	Flexible disk drive	D2035-60152	
20	Cooling Duct/Cover	5064-1886	
21	Rear Cooling Fan	5064-1984	
22	4.2 GB Hard Disk Drive, Narrow SCSI, E 45	D4963-63001	D4963-69001
22	4.2 GB Hard Disk Drive, Wide SCSI, E 50	D4910-63001	D4910-69001
23	Power Supply	5064-0778	5064-5850
24	Chassis	**	
25	Bezel Assembly Kit, front	5064-1983	
26	Cover	**	
27	Keylock assembly	***	
28	Bezel door (early style)	***	
28	Bezel door (late style)	***	
29	Filler panel	***	
	Support Chassis Kit	5064-1842	
****	Cable, flexible disk	5182-3509	
****	Cable, CD-ROM	5183-2104	
****	Cable, SCSI, E 45	5183-2436	
****	Cable, SCSI, E 50	5183-3709	
****	Mouse	C3751-60201	
****	HP Navigator CD-ROM *****		
****	Technical Reference Card	D6034-80201	

** This part can be ordered only in the Support Chassis Kit

*** Not available separately; only as part of the Front Bezel Assembly Kit

**** This part is not on an exploded view

***** This part number is constantly revised for each new release

Keyboards

Language	HP Part Number	Language	HP Part Number
US #ABA	C3758-60201	Danish #ABY	C3758-60216
Dutch #ABH	C3758-60206	German #ABD	C3758-60203
Russian #ACB	C3758-60230	Spanish #ABE	C3758-60204
Czech #AKB	C3758-60236	French #ABF	C3758-60205

Italian #ABZ	C3758-60217	Norway #ABN	C3758-60209
Turkish #AB8	C3758-60234	Swiss #ABP	C3758-60211
Taiwan #AB0	C3758-60223	Swedish #ABS	C3758-60212
UK/Irish #ABU	C3758-60213		

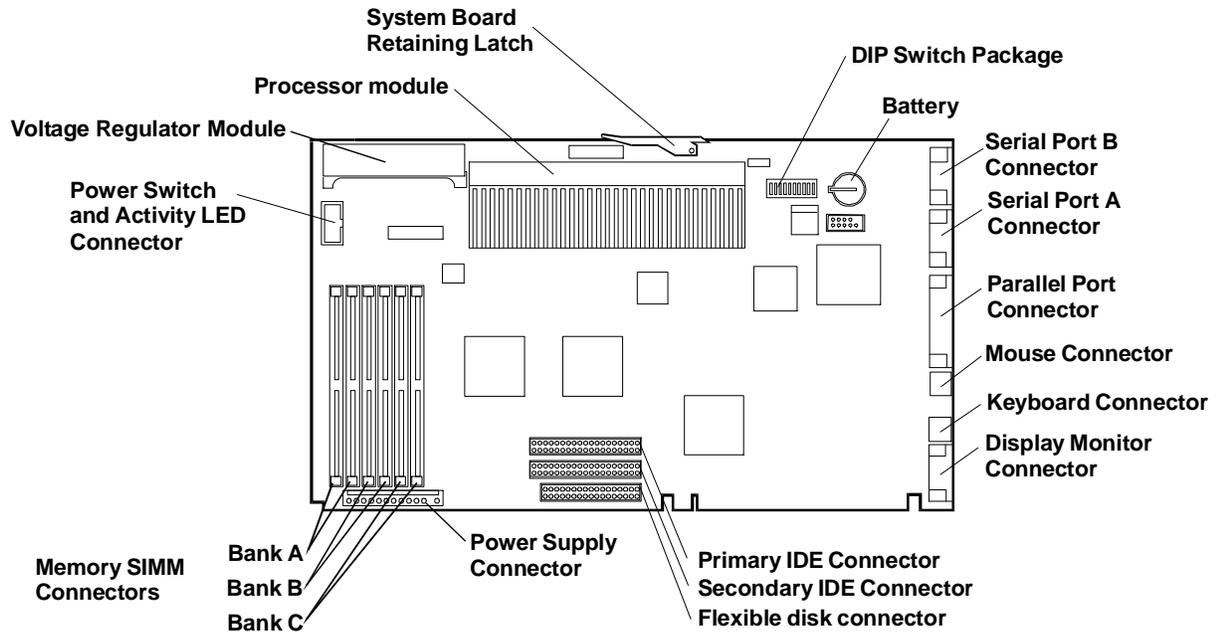
Power Cords

Country	HP Part Number
Australia	8120-1369
United States	8120-1751
Denmark	8120-2956
Europe	8120-1689
UK	8120-1351
Japan	8120-4753
Switzerland	8120-2104

Cables

Cable	Part Number
Cable, Flexible disk	5182-3509
Cable, SCSI	5182-9323
Cable, IDE/CD-ROM	5182-3508
Fan	5182-9379

System Board



System Switches

Switch position	Factory preset	Definition:
1 - 5	(See table below)	Select processor speed settings. The switch positions may need to be changed when upgrading the processor (see table below).
6	Open	Resets the CMOS configuration to the default values. Set the switch to the closed position and restart the NetServer to reset the CMOS. Return the switch to the open position and restart the NetServer to return to normal operation.
7	Open	Clears the password. Set the switch to the closed position and restart the NetServer to clear the password. Return the switch to the open position and restart the NetServer to return to normal operation.
8	Closed	Enable or disable space bar power-on. If you want to enable this feature, set this switch to Closed. If you want to disable it, set this switch to Open. This feature must also be configured in the BIOS using the SETUP utility.
9	Open	Clear system product code
10	Open	Reserved

Processor Switch Settings

CPU Speed	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5
233 MHz	Open	Open	Open	Closed	Closed
266 MHz	Open	Open	Closed	Open	Open
300 MHz	Open	Open	Closed	Open	Closed
333 MHz	Open	Open	Closed	Closed	Open

Specifications

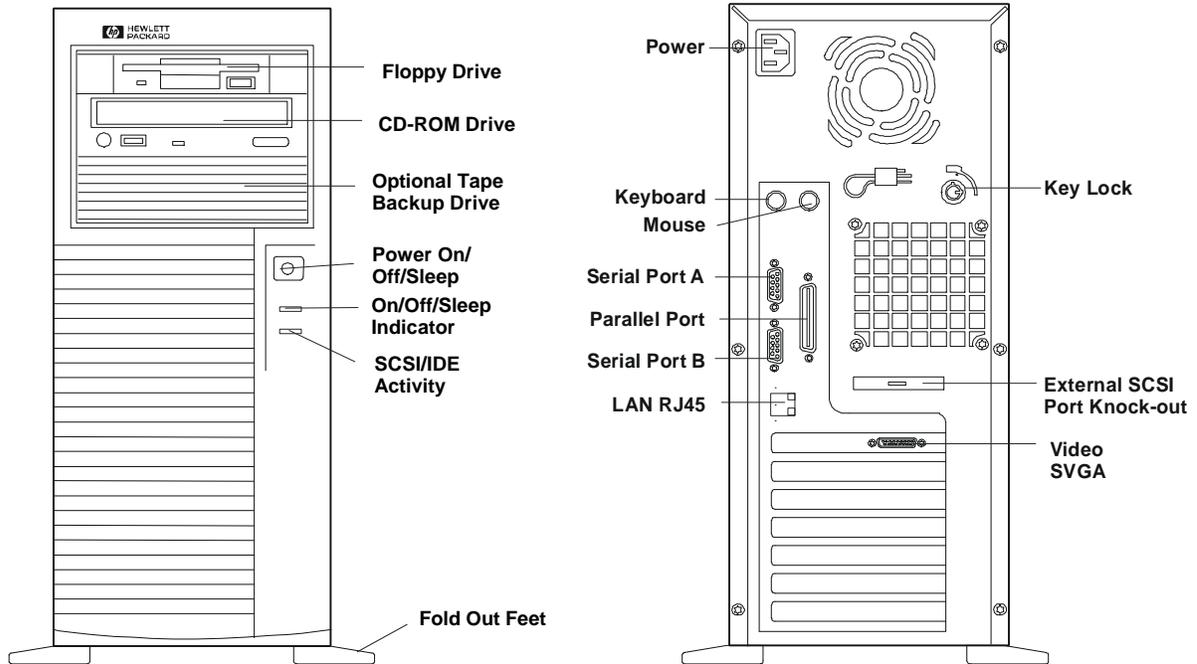
Physical Dimensions	
Server*	Keyboard
Height: 445 mm (17.5 in)	Height: 35 mm (1.4 in)
Width: 191 mm (7.5 in)	Width: 467 mm (18.4 in)
Depth: 451 mm (17.75 in)	Depth: 198 mm (7.8 in)
Weight: 14 Kg (30.8 lbs) Model 1*	Weight: 1.9 mm (4.2 lbs)
	Keyboard mini-DIN cable: 3 meters (9.9 feet)
Environmental Specifications	
Operating altitude:	3046 m (10,000 ft)
Non-operating altitude:	12,200 m (40,000 ft)
Operating temperature:	5 degrees to 35 degrees C (41 degrees to 95 degrees F)
Non-operating temperature (storage):	-40 degrees to 70 degrees C (-40 degrees to 158 degrees F)
Operating humidity:	20 % to 80% relative humidity
Non-operating humidity:	5% to 95% relative humidity

Acoustic emission:	Sound level (LpA): < 45 dB(A)
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Input Voltage	Power Consumption
100 to 127 Volts AC ~ 5.0 A at 50 - 60 Hertz or	307 watts maximum with 110 - 220 volt line voltage
200 to 240 Volts AC ~ 2.85 A at 50 - 60 Hertz	369 watts peak with 110 - 220 volt line voltage
Heat Output	Power Availability
1000 BTUs/hour maximum peak	200 watts continuous
252 KCals/hr	224 watts peak

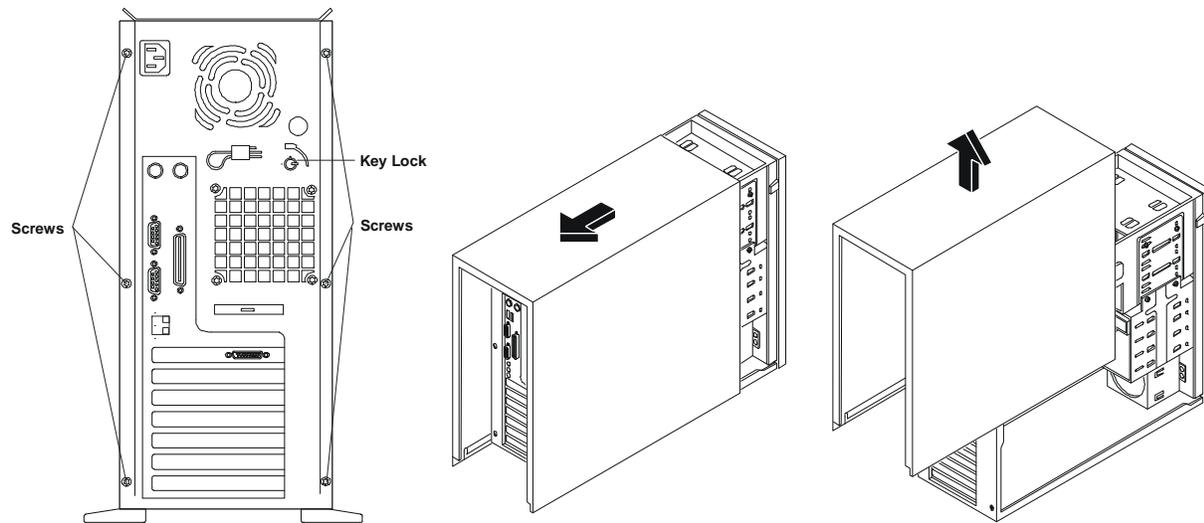
HP NetServer E60

System Views

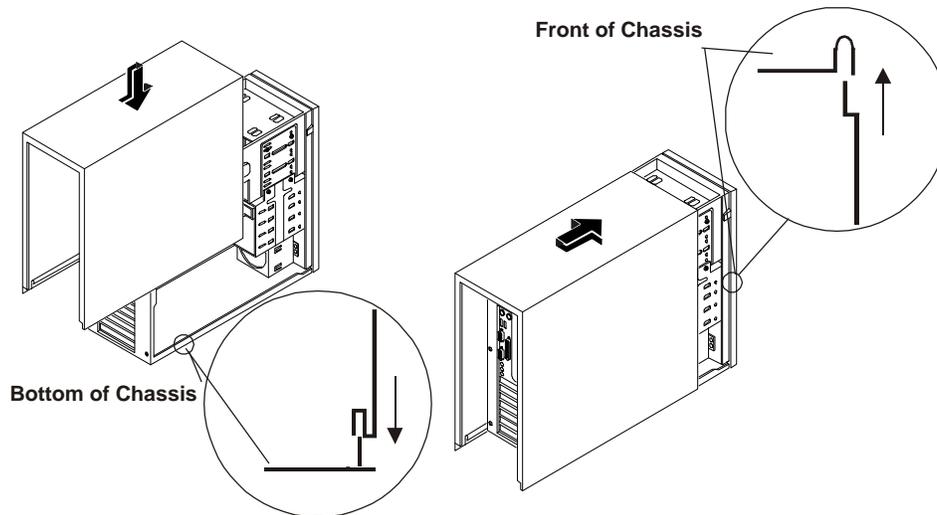


Covers

To remove and replace the cover, you will need a Torx 15 driver or 1/4-inch flat blade screwdriver.



Removing the Cover



Installing the cover

Memory

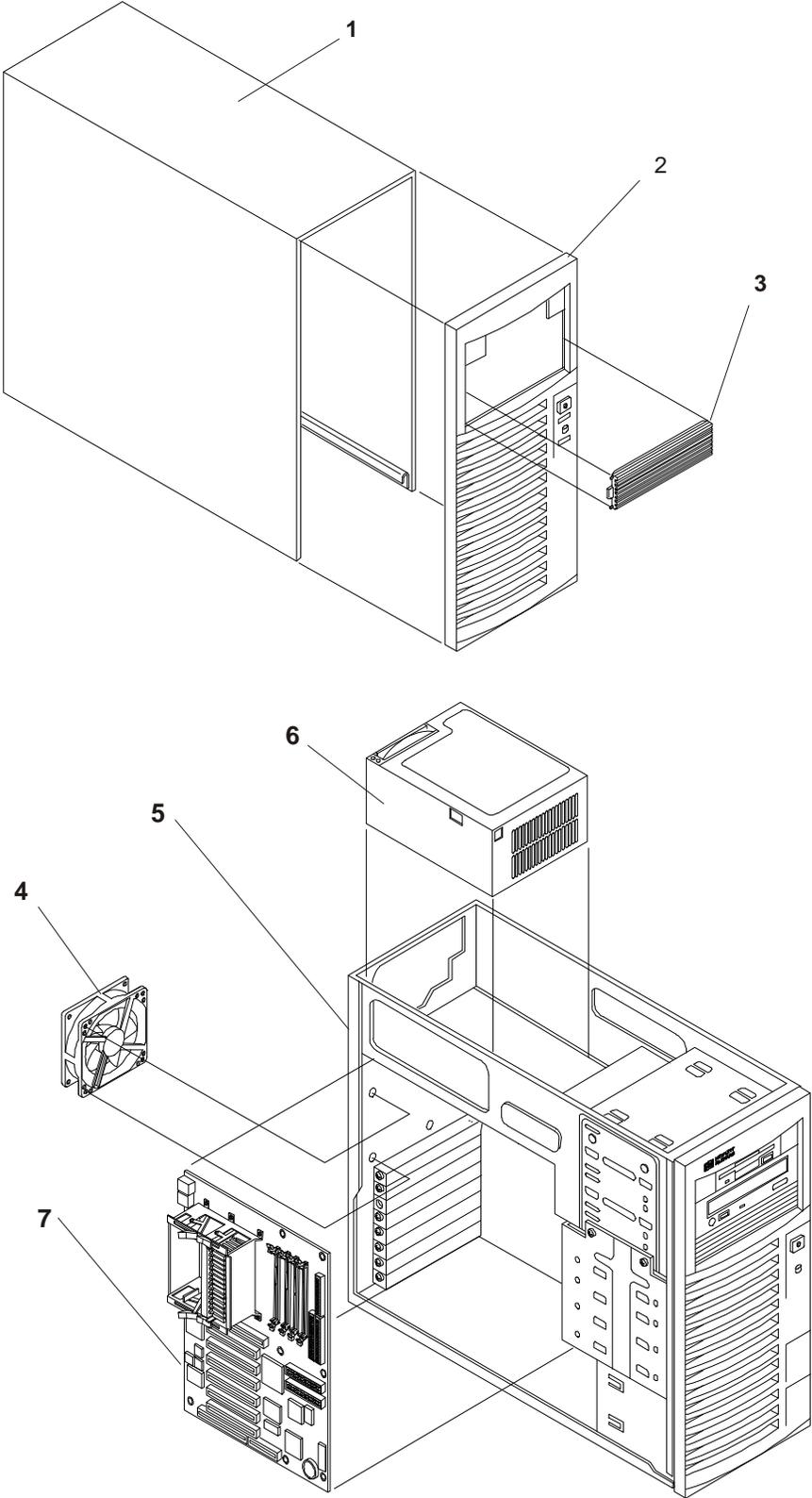
The NetServer E 60's main memory is implemented with 3.3V, 100 MHz, unbuffered SDRAM DIMMs (Dual In-Line Memory Modules). The NetServer E 60 ships with at least 64 MB of main memory and supports up to 1 GB. Memory is available in the following DIMM capacities: 64, 128, and 256 MB.

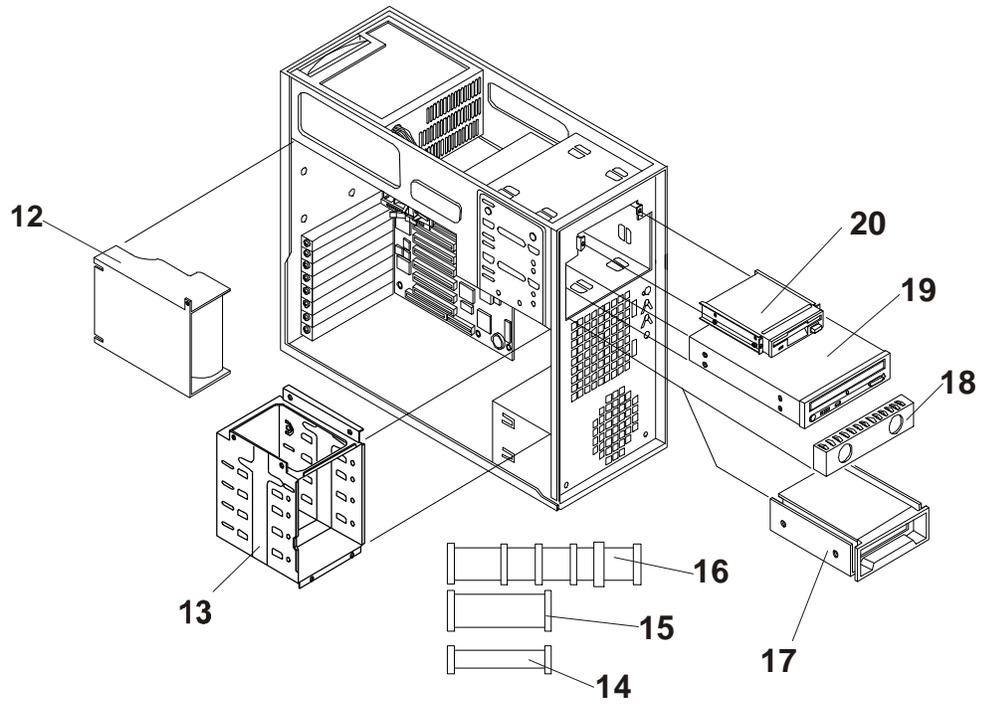
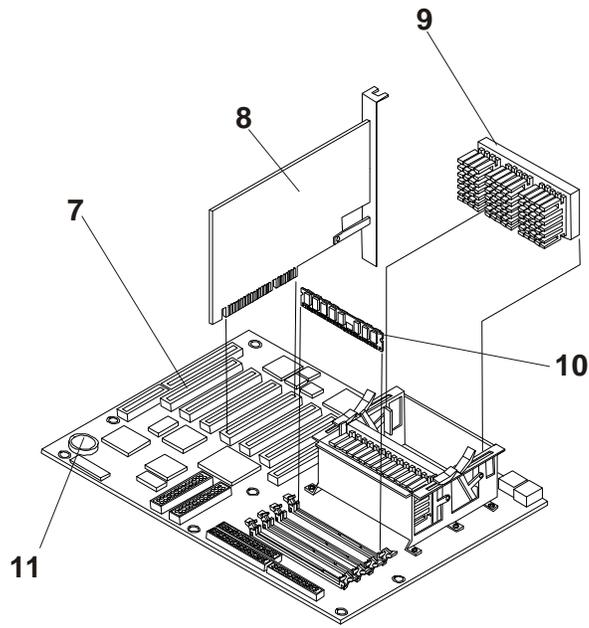
There are four DIMM sockets on the system board. DIMMs may be installed in any combination in any socket. However, HP recommends starting at socket 0 and filling the sockets in order: 1, 2, and 3. Use only HP DIMMs.

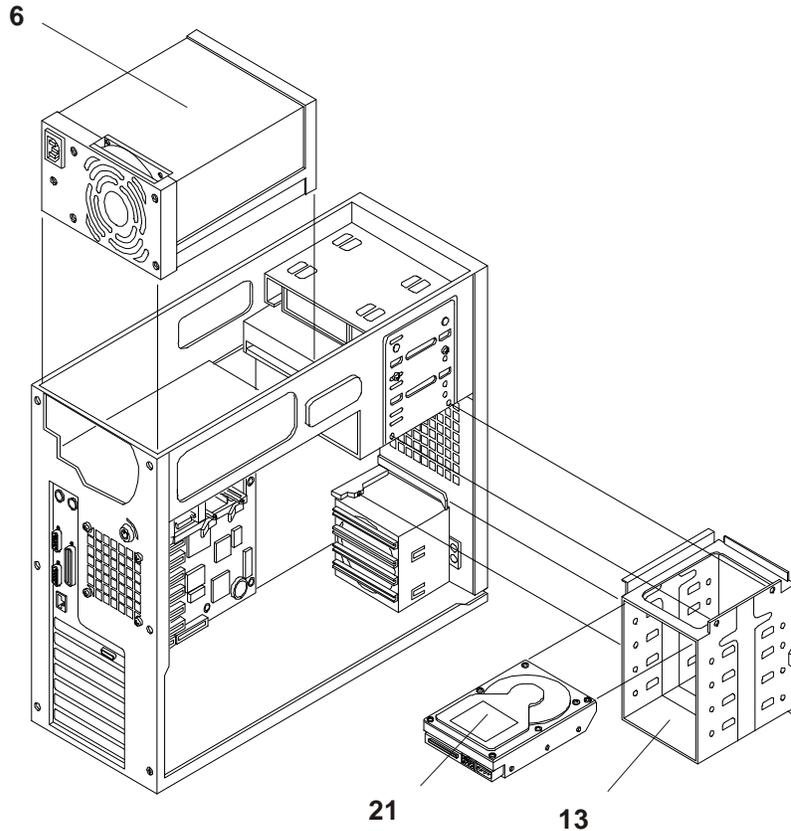
Boot Device Priority

1. IDE CD-ROM Drive
2. Flexible Disk Drive
3. Embedded SCSI A
4. Embedded SCSI B
5. PCI 2
6. PCI 1
7. PCI 6
8. PCI 3
9. PCI 4
10. PCI 5

Exploded Views







Parts List

NOTE

The part numbers listed here are valid at the time of publication. Part numbers may change after publication. If a part number changes, HP's parts price list database will generally contain a reference to the new or revised part number. If a system board needs to be replaced, remove the processor, memory, video board, and any added accessory boards, and keep them with the system under repair.

* This part is not on an exploded view

** This part number is constantly revised for each new release

Fig	Description	Replacement	Exchange
1	Cover	Not orderable	
2	Bezel	D7140-63003	
3	Drive Bay Cover	Not orderable	
4	Cooling Fan	D7140-63009	
5	Chassis	D7140-63002	
6	Power Supply	0950-2873	
7	ATX System board	D7140-63000	D7140-69000
8	AGP Video Board	D7140-63008	
9a	Processor Module, PII/400	D7152-63000	
9b	Processor Module, PII/450	D7153-63000	

9c	Processor Module, PIII/500	D7154-63000	
10a	DIMM, E 60, 64 MB	D7155-63000	D7155-69000
10b	DIMM, E 60, 128 MB	D7156-63000	D7156-69000
10c	DIMM, E 60, 256 MB	D7157-63000	D7157-69000
11	Battery, 3V coin	D7140-63012	
12	Air Flow Guide	D7140-63011	
13	Drive Cage	Not orderable	
14	Cable, flexible disk	D7140-63006	
15	Cable, IDE CD-ROM	D7140-63005	
16	Cable, SCSI, Internal	D7140-63001	D7140-69001
17	Tape Drive, SureStore T20 SCSI Travan	C4402 -63001	C4402-69001
18	Spacer	Not orderable	
19	32x CD-ROM Drive	D7140-63015	
20	3.5 inch flexible disk drive	D2035-60285	
21	9.1 GB Hard Disk Drive, Ultra 2 Wide	D4911-63000	D4911-69003
*	Cable, Power Supply Harness	D7140-63012	
*	Foot	D7140-63004	
*	E60 Nameplate	D7140-63007	
*	CPU terminator card	D7140-63014	
*	HP Navigator CD-ROM	**	
*	Technical Reference Card	D7140-63010	

Keyboards

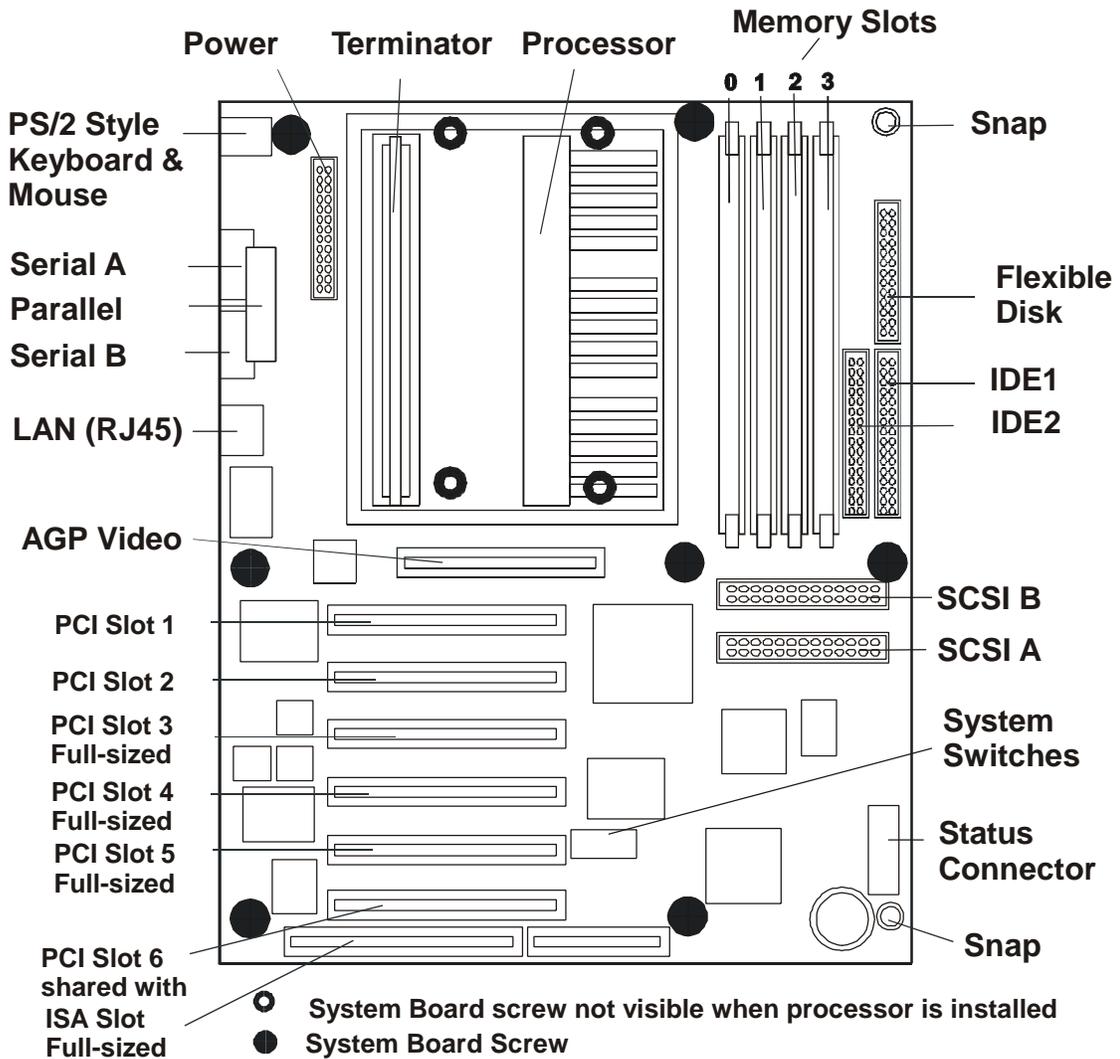
Language	HP Part Number	Language	HP Part Number
US #ABA	D4950-63001	Spanish #ABE	D4950-63004
Dutch #ABH	D4950-63006	French #ABF	D4950-63005
Russian #ACB	D4950-63030	Norway #ABN	D4950-63009
Czech #AKB	D4950-63036	Swiss #ABP	D4950-63011
Italian #ABZ	D4950-63017	Poland #AKD	D4950-63038
Turkish #AB8	D4950-63033	Swiss-German #ABP	D4950-63011
Taiwan #AB0	D4950-63023	Arab-English #ABV	D4950-63020
UK/Irish #ABU	D4950-63013	Arab-French #AB6	D4950-63025
Danish #ABY	D4950-63016	Korean #AB1	D4950-63021
German #ABD	D4950-63003	Belgium-Flemish #ABW	D4950-63014
Portugal #AB9	D4950-63027	Hungary #AKC	D4950-63037
Greek #AB7	D4950-63032	Swedish #ABS	D4950-63012

Power Cords

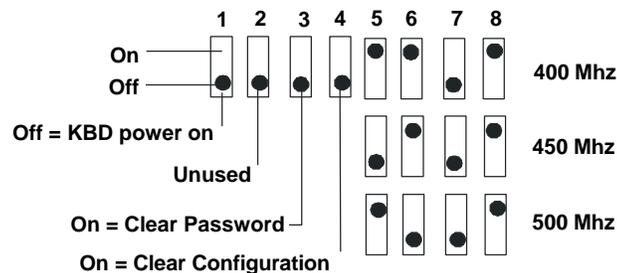
Country	HP Part Number	Country	HP Part Number
Australia	8120-1369	UK	8120-1351

United States	8120-1751	Japan	8120-4753
Denmark	8120-2956	Switzerland	8120-2104
Europe	8120-1689		

System Board



System Switch Details



The switches and each of their definitions are listed below.

Switch position	Factory preset	Definition:
1	OFF	Off - let's you power on your system by pressing any key on the keyboard or the power-on button. On – let's you power on the system only by pressing the power-on button.
2		Unused
3	OFF	Clears the password. Set the switch to the ON position and restart the NetServer to clear the password. Return the switch to the OFF position and restart the NetServer to return to normal operation.
4	OFF	Resets the CMOS configuration to the default values. Set the switch to the ON position and restart the NetServer to reset the CMOS. Return the switch to the OFF position and restart the NetServer to return to normal operation.
5 - 8	(See table below)	Select processor speed settings. The switch positions may need to be changed when upgrading the processor (see table below).

Processor Switch Settings

The following table shows the settings for each Intel processor module. To set the switches correctly, observe the markings on the replacement processor module. Each processor module will have a speed marking. Use the table below to look up the appropriate switch settings for each of these CPUs.

CPU Speed	Switch 5	Switch 6	Switch 7	Switch 8
400 MHz	OFF	OFF	ON	OFF
450 MHz	ON	OFF	ON	OFF
500 MHz	OFF	ON	ON	OFF

Specifications

Temperature

Operating	5° to 35° C (41° to 95° F)
Non-operating	-40° to +65° C (-40° to +149° F)

Humidity (non-condensing)

Operating	20% to 80% relative humidity, non-condensing
Non-operating	5% to 95% relative humidity, non-condensing

Altitude

Operating	-30 to 3,000 m (~ 10,000 ft)
Non-operating	-30 to 12,000 m (~ 40,000 ft)

Thermal Output

Maximum Operating	1116 BTU/hr
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Hardware

Processors	Intel Pentium II or III (up to 2 processors), supported speeds: 400, 450, and 500MHz. 512KB level 2 cache on processor.
Chipset	Intel 440BX AGPset with 66/100 MHz bus speed support.
Memory	Supports up to four SDRAM DIMMS for a maximum total of 1GB. Supported DIMM types: 64MB, 128MB, or 256MB unbuffered, 72 bits wide, ECC single-bit correcting, multi-bit detecting.
Video	AGP slot (rev. 1.0 compliant) with bundled ATI Rage IIc AGP (Accelerated Graphics Port) video with 4MB SDRAM. Supports up to 1600x1200, 65K colors. AGP IRQ Enable/disable jumper is set to disable by default. Set to enable if DVD or other video application is used.
SCSI	Embedded Adaptec AIC-7895 Ultra/wide SCSI dual channel PCI controller. 40MB/s transfer rate, two 68-pin connectors.
IDE	Embedded Ultra DMA/33 E-IDE dual channel PCI controller.
LAN	Embedded Intel 82559 10/100 PCI Fast Ethernet Controller. Wake up on LAN enable/disable via BIOS setup.
PCI Bus	32-bit, 33MHz speed. PCI rev. 2.1 compliant.
I/O	Two Serial ports. One bi-directional parallel port with ECP/EPP high speed support. PS/2 style mouse and keyboard connectors.
CD-ROM	Bundled HP D4384A CD-ROM drive. IDE interface. 32x speed.

Weight and Dimensions

Weight	Approx. 30 lbs (14 kg.), depending on configuration – excludes keyboard and monitor.
Height	17.09 inches (434 mm)
Width	7.1 inches (180mm) 11.67 inches (296.5mm) Feet opened
Depth	19.57 inches (497mm)

Power Supply Specifications

Type	Auto-ranging
Input - Max. Range	100 to 127 VAC ~5 A at 50/60 Hz 200 to 240 VAC ~ 2.85 A at 50/60 Hz
Operating Current	100 VAC: 5.3 A 120 VAC: 4.6 A 200/208 VAC: 3.2 A 220/230 VAC: 2.8 A
In-rush Current	25 A
Operating Power	305 W

System Accessories

HP NetServer Rack Storage/8

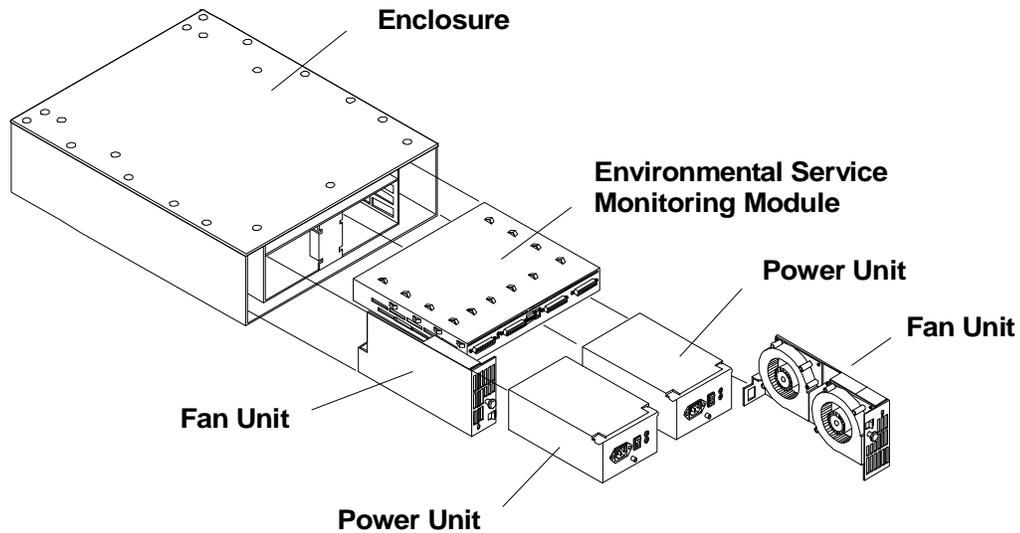
Rack Storage/8 Components

The HP Rack Storage/8 System provides mass storage for use in an HP NetServer rack mount configuration. The HP Rack Storage/8 is compatible with the Small Computer System Interface (SCSI) industry standards. Fast/Wide and Ultra/Wide are supported. The HP Rack Storage/8 carton contains the following items:

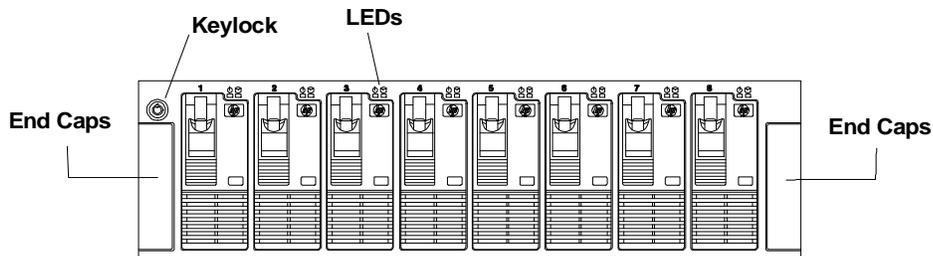
- One single ended HP Environment Services Monitor (ESM)
- Two Hot Swap redundant power supplies
- Two Hot Swap redundant fan modules
- Single pack transportation package, consisting of:
 - 1 Rack Mounting Kit
 - 1 Bridge Cable
 - 2 Single Ended Terminators
 - 2 Localized Power Cords
 - 1 Localized Manual
- Eight blank drive covers
- Technical instructions label (located on top rear of enclosure box)
- Two AC receptacle seals
- One Labeling Kit

System Views

Customer Serviceable Components

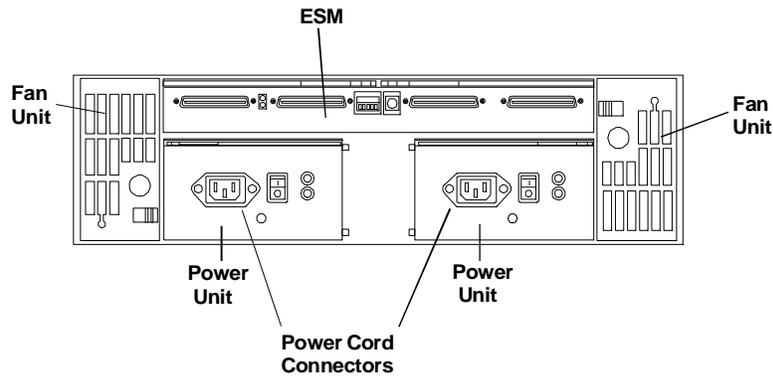


Front Panel



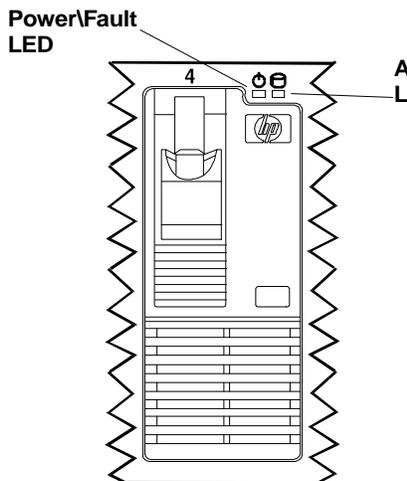
SCSI Drives	Hot swap SCSI-2 hard disk drive modules can be installed in the HP Rack Storage/8.
Drive Activity (LED) Light	This LED glows green to indicate SCSI activity to and from the associated drive.
In Place/Fault (LED) Light	The LED lights above each drive indicate that drives status.
End Caps	The End Caps in the bezel permits access to the enclosure screws that secure the HP Rack Storage/8 to the rack.
Hot-Swap Hard Drive Module Keylock	A key is required to remove any of the hot-swap hard drives when the HP Rack Storage/8 is locked.

Rear View



Power Cord Connectors	Provides a connection for the AC power cord.
Environmental Services Monitoring (ESM) Module	This board provides three functions: Status reporting for the subsystem through the SCSI interface SCSI connection between the subsystem and the host Electrical isolation of internal and external buses.
Power Supplies	There are two hot-swap power supply units accessible from the rear of the system. Each unit is portable and hot-swappable containing one 250 watt, redundant switching, regulated power supply.
Fan Units	There are two fan units accessible from the rear of the system. Each is a portable, hot-swappable unit.

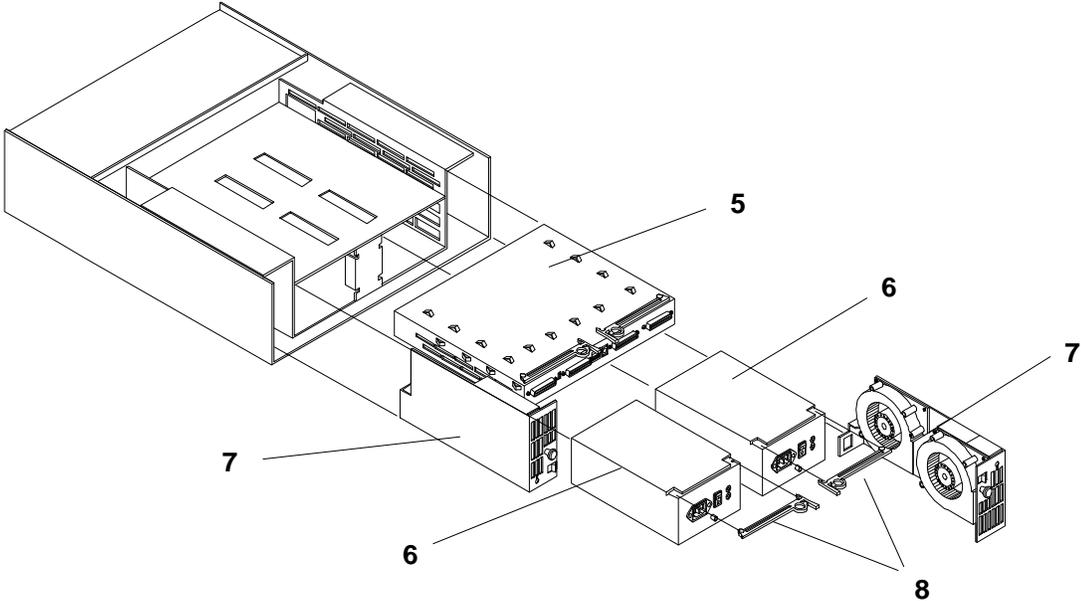
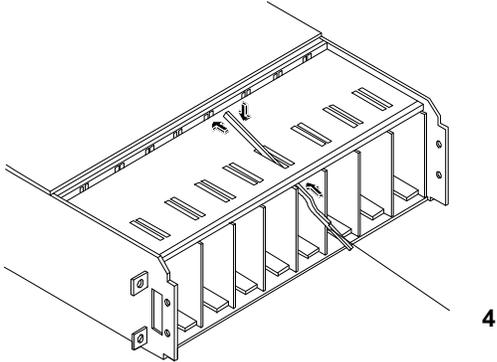
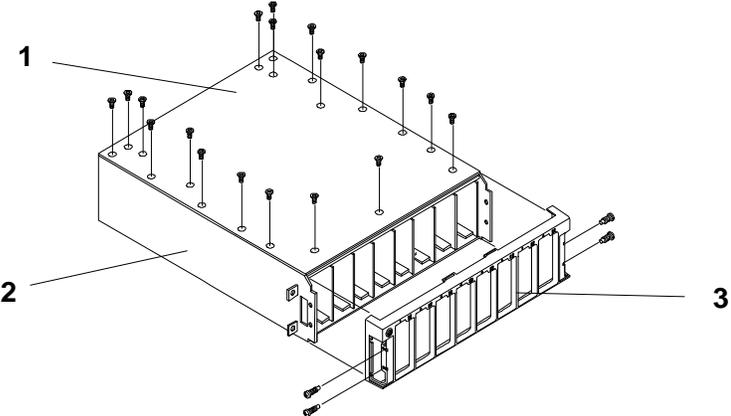
Hot Swap Disk Drive Front View



Drive Activity LED This LED blinks green to indicate SCSI activity to and from the associated drive.

Power/Fault LED The LED lights above each drive indicate that drive's status. If the LED is green, the drive is operating correctly.

Exploded Views



Parts List

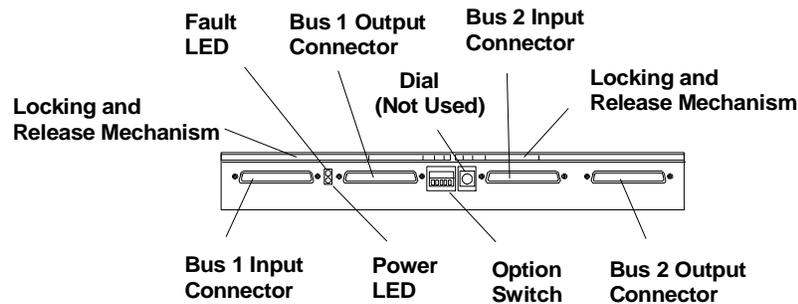
NOTE

The part numbers in the list were the ones that were available at the time of publication. Part numbers may change after publication. HP's parts price list database will generally contain a reference to the revised part number.

* This part is not on an exploded view.

Fig	Description	Replacement	Exchange
1	Chassis Cover	not orderable	
2	Chassis	not orderable	
3	Front Bezel (with End Caps)	D4902-63005	
4	Light Pipes	Not orderable	
5	Environmental Services Monitoring (ESM) Module	D4902-63002	D4902-69002
6	Hot Swap Power Supply	D4902-63003	D4902-69003
7	Hot Swap Fan Unit	D4902-63004	
8	Power Supply Levers	D4902-63007	
9	Midplane	D4902-63001	D4902-69001
*	End Cap	D4902-63006	
*	Disk module tray kit	D3349A	
*	Hot Swap Assembly - Tray Bezel	5063-8398	
*	Hot Swap Assembly - Filler Panel	5063-8391	
*	Hot Swap Cage Key	5182-4534	
*	SCSI Bridge Cable	5183-2407	
*	SCSI Terminator	5183-2408	

Configuration

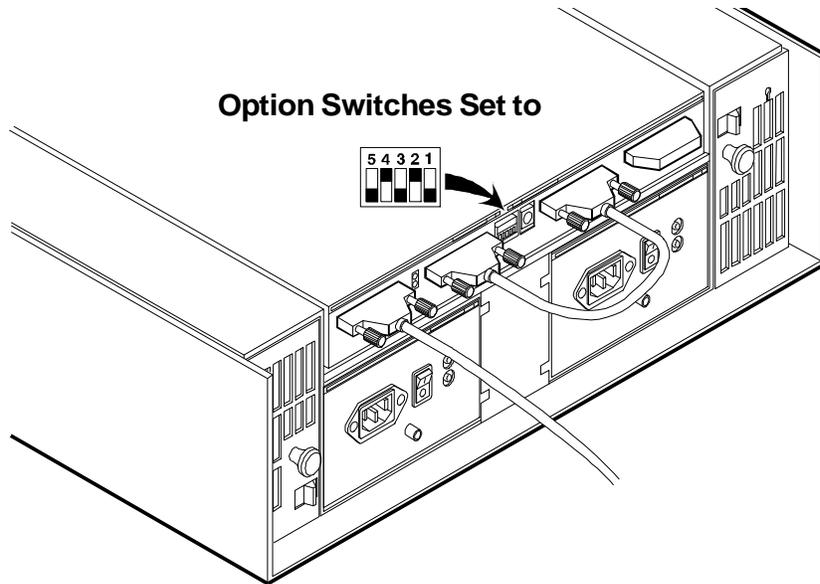


Single Bus Cabling

The HP Rack Storage/8 provides up to eight hard disk drives on a single SCSI bus.

1. Move the option switches number four and number two to the up positions.
2. Use the short bridge cable included as part of the shipped items and connect the Bus 1 Output connector and the Bus 2 Input.

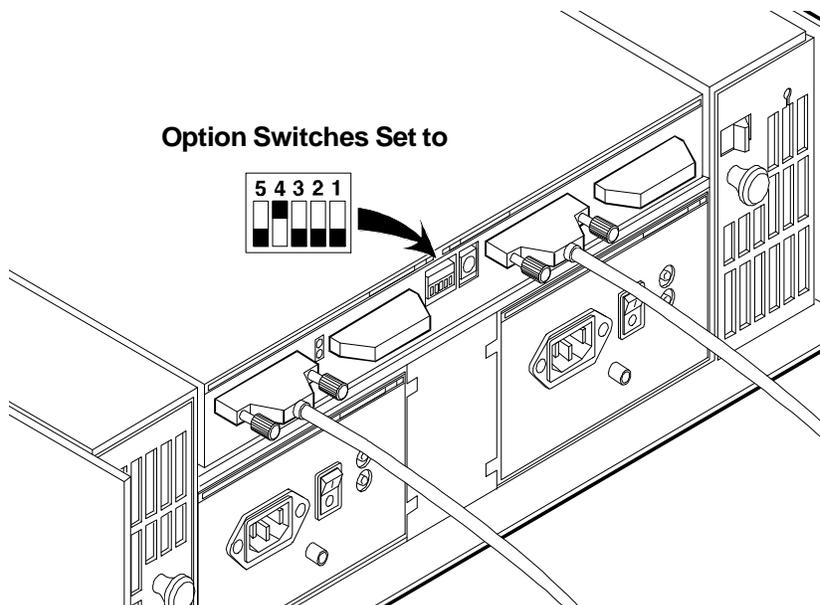
3. Place one of the Single Ended Terminators on the Bus 2 Output.



Dual Bus Cabling

When cabled as a dual bus storage unit, the HP Rack Storage/8 provides two independent SCSI buses.

1. Only option switch four is in the up position.
2. Place a Single Ended Terminator on the open Bus 1 Output connector and Bus 2 Output connector on the ESM Module.



SCSI Addresses

Based on the selected cabling configuration (single or dual bus), the system automatically provides the SCSI addresses according to the following table:

SCSI ID Reference

Slot	SCSI ID Dual Bus	SCSI ID Single Bus
1	0	0
2	1	1
3	2	2
4	3	3
5	0	8
6	1	9
7	2	A
8	3	B

Switch Settings

Switch Number	Position	Description
0	Channel 0 SCSI Ids	
	OFF	0, 1,2,3 /E*
	ON	4, 5, 6, 7 /C*
1	Channel 1 SCSI Ids	
	OFF	0, 1, 2, 3 /E*
	ON	8, 9, A, B /F*
2	Remote Start	
	OFF	<<Switch 3 controls startup>>
	ON	Wait for host start command
3	Delayed Start	
	OFF	All drives spin up when power is applied
	ON	Drives delayed by ID time 6 seconds
4	UPS InPlace	
	NOT USED	

* Enclosure Management ID

HP Rack Storage/8 Rack Guidelines

ALWAYS refer to the **HP NetServer Rack Installation Road Map** to be sure that you are proceeding correctly. Failure to perform this installation in accordance with the Road Map could result in significant extra installation effort.

The HP Rack Storage/8 enclosure is supported in the rack by two support rails that are attached to the framework of the rack. Since the HP Rack Storage/8 enclosure weighs approximately 58.9 lb. (26.8 kgs) without hard disk drives, it is advisable that no less than two people lift the unit to place it on the installed support rails.

Observe the following guidelines:

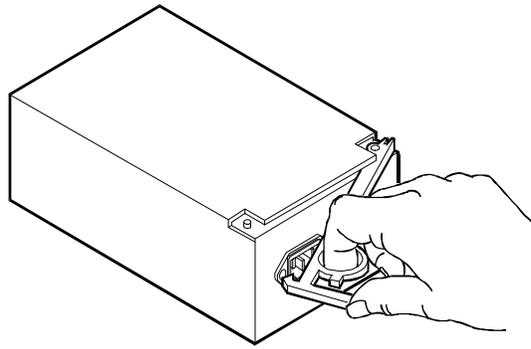
- Mass storage devices are susceptible to mechanical shock and can be damaged by a drop as small as a quarter of an inch. Never ship the HP Rack Storage/8 with hard disk drives mounted in the enclosure.
- Do not dispose of the filler panel. If you decide to operate the storage system with the empty bay, it must be covered with a blank panel cover to ensure proper cooling and electronic radiation compliance.
- When the hot swap disk module stops, it is not flush with the bezel; the module extends about one-quarter inch from the bezel. When you lock the module in place, the module moves to the final position, flush with the bezel. Forcing the module past the first stop may damage the module.
- The module drive platters may still be spinning and may be warm to touch.
- For proper cooling the HP Rack Storage/8 uses two fan units located on each side of the enclosure next to the power units. Each unit is a portable and hot-swappable. The same model of the fan unit is used on both sides of the enclosure. From the back of the rack, the fan unit on the right side has the latch lever to the top. On the left side, the latch lever is at the bottom.
- Do not operate the HP Rack Storage/8 for extended periods with a fan unit removed. Doing so could cause overheating and failure of the disk drives.

Power Supply Units

Each power supply contains one 250 watt, redundant switching, regulated power supply. In addition each unit has a power-factor correction, auto-ranging AC input and is able to operate at low line conditions (from 90 VAC to 135 VAC) or at high line conditions (180 VAC to 257 VAC) at either 50 Hz or 60 Hz.

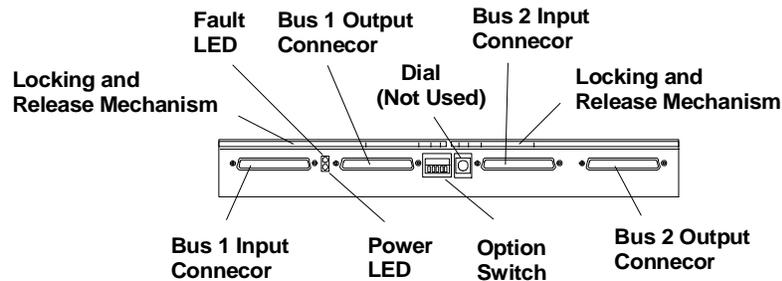
NOTE

The orientation of the finger ring on Locking and Release Mechanism should always be toward the outside of the enclosure. However, you can change the orientation of the ring by removing the screw on the pivot point and flipping the mechanism end to end.



Environmental Services Monitoring (ESM) Module

WARNING The ESM is not hot-swappable. You must shut off the HP Rack Storage/8 AC supply before removing the ESM from the enclosure.



SCSI Connectors Bus 1	Provides two 68-pin, high-density SCSI interface connections for SCSI drive slots 1,2,3, and 4.
SCSI Connectors Bus 2	Provides two 68-pin, high-density SCSI interface connections for SCSI drive slots 4, 5, 6, and 7.
Option Switch	Switch one controls the operation of SCSI bus one and switch two controls SCSI bus two as explained below.
Dial	Sets the module identification. It is not used in the HP Rack Storage/8 application.
Power LED	Shows green when the module has power .
Over Temperature LED	Goes on when the enclosure's ambient temperature is too high for proper operation.

Specifications

Temperature

Operating	5° to 35° C (40° to 95° F)
Non-operating	-40° to 65° C (-40° to -140° F)

Humidity (noncondensing)

Operating	20% to 80% relative humidity
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Non-operating	Maximum 95% relative humidity
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Altitude

Operating	3,046 m (10,000 ft)
Non-operating	12,200 m (40,000 ft)

Weight and Dimensions

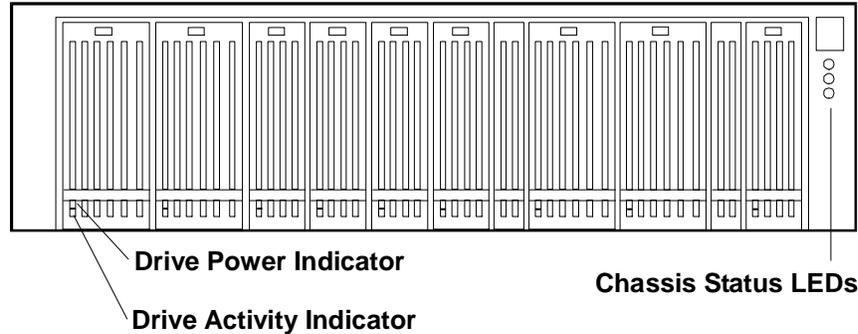
Height	13.3 cm (5.19 in)
Width	48.2 cm (18.97 in)
Depth	55.88 cm (22 in)
Weight, fully loaded	36.6 kg (80.5 lb)
Weight, without drives	26.8 kg (58.9 lb)

Power Supply Specifications

Power supply input voltage	Redundant switching with the following power-factor auto-range AC input: 100 to 127 VAC ~ 6.0 A at 50/60 Hz 220 to 240 VAC ~ 3.15 A at 50/60 Hz
Power supply output	194 W continuous 230 W peak

HP NetServer Rack Storage/12 Information

System Views



Chassis Status LEDs

The three Status LEDs indicate the current operating status of the HP Rack Storage/12. The following conditions are displayed by the Status LEDs:

- **Green:** Normal operation.
- **Flashing Yellow:** Warning condition exists in the chassis. Attention is required. Check the operating status of all components on the front and rear panels.
- **Flashing Red:** Fault condition exists in the chassis. Immediate attention is required. Check the operating status of all components on the front and rear panels.
- **Off:** No power.

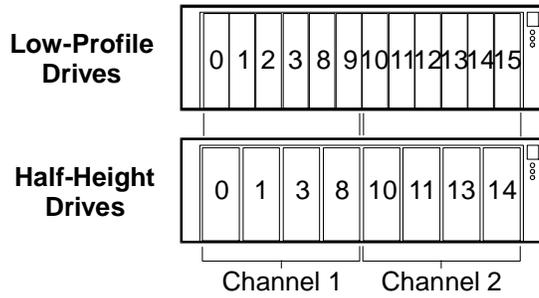
Drive Power Indicator

- **Off:** Hard drive not present, or not connected to the cage.
- **Green (solid):** Hard drive present.

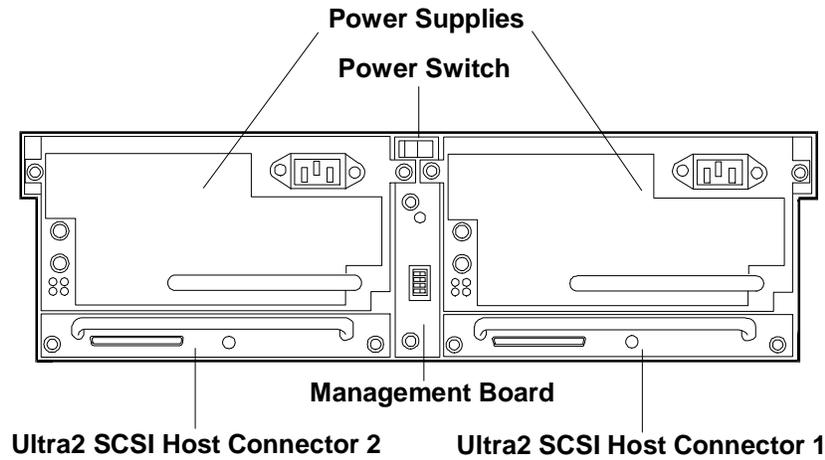
Drive Activity Indicator

- **Off:** No disk activity.
- **Flickering Green:** Accessing disk.
- **Flashing Yellow:** Disk failure predicted.
- **Red:** Disk fault, or drive is offline.

SAF-TE chassis management processor is assigned SCSI ID 5. The default SCSI IDs assigned to 8 half-height drives and 12 low-profile drives is shown below.



Rear View



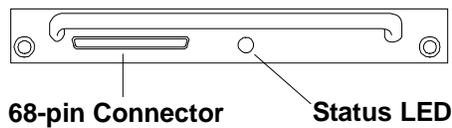
Power Switch

The power switch controls AC power to the HP Rack Storage/12. The switch is located behind a hinged cover to prevent accidental power off.

NOTE

5 VDC standby power is supplied to the HP Rack Storage/12 even when the power switch is set OFF. To remove standby power, disconnect both power supplies from their AC sources.

RS/12 SCSI Card



Status LED

The Status LED indicates the current operating status of the RS/12 SCSI Card.:

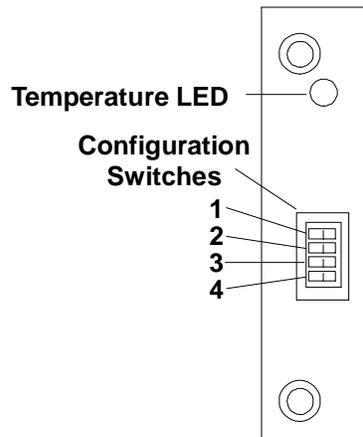
- **Green:** Normal operation.
- **Flashing Yellow:** Firmware revision mismatch between the two installed RS/12 SCSI cards.
- **Flashing Red:** Hardware fault on the RS/12 SCSI card.

- **Off:** No power supplied to the RS/12 SCSI card.

68-Pin Connector

The 68-pin high-density connector connects the HP Rack Storage/12 to the host system. SCSI bus termination is inside the HP Rack Storage/12. The host system and the HP Rack Storage/12 can be connected by external SCSI cables up to 12 meters long. External SCSI cables are not included with the HP Rack Storage/12. Order SCSI cables from your HP Reseller.

Management Board



Temperature LED

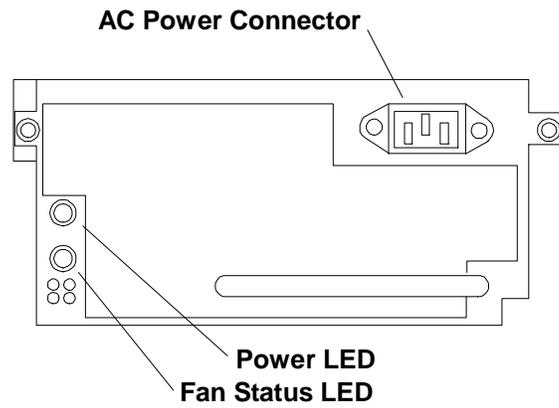
- **Green:** Normal operation.
- **Flashing Yellow:** High temperature warning within the chassis. Check fan operation, cooling, or airflow problems.
- **Flashing Red:** Critical high temperature within the chassis. Check fan operation, cooling, or airflow problems.
- **Off:** No power.

Configuration Switches

- The bank of four switches configures the HP Rack Storage/12 for non-cluster or cluster environments.
- The switches are set **Left** or **Right**. The default switch setting is **Left** for all switches. The description of each switch follows:

Set Left (Default)	Switch	Set Right
Non-cluster Operation	1	Cluster Operation
Reserved	2	Reserved
Reserved	3	Reserved
Reserved	4	Reserved

Power Supplies



Power Status LED

The Power status LED displays the current operating condition of the power supply.

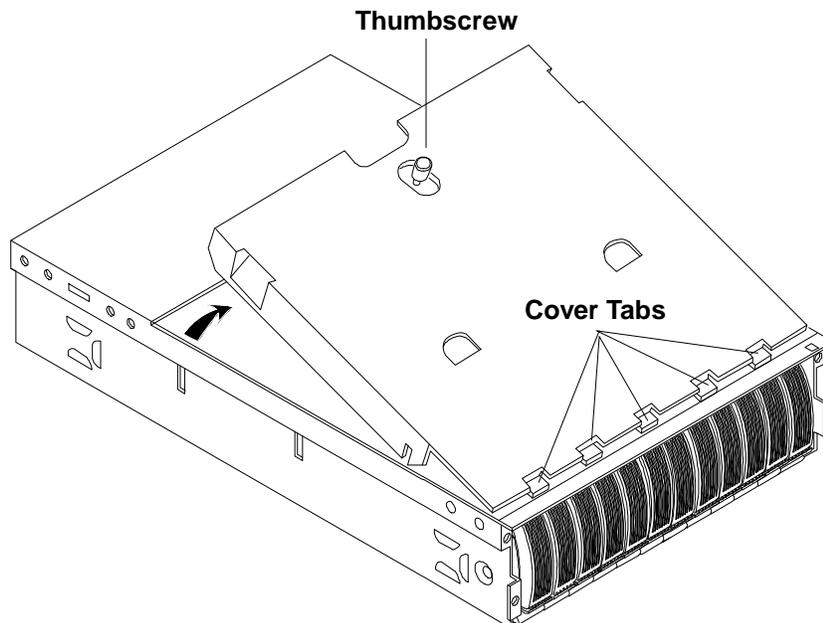
- **Green:** Normal operation.
- **Off:** No power or power supply failure.

Fan Status LED

The fan status LED displays the current operating condition of the fan module.

- **Green:** Normal operation.
- **Off:** No power or fan module failure.

Covers

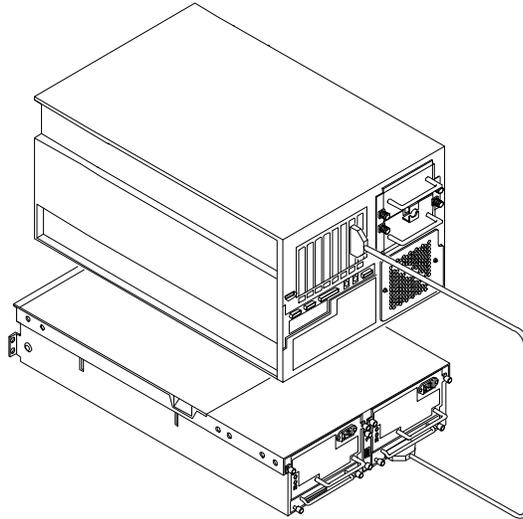


RAID Management

Refer to the *HP NetRaid Series User Guide* for information on HP NetRAID adapters, network operating system requirements, and use of the HP NetRAID configuration and management applications to configure the hard drives in the HP Rack Storage/12.

HP Rack Storage/12 Configurations

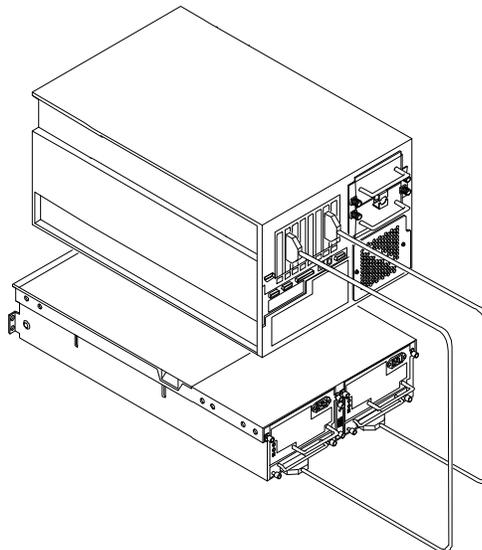
Simplex Configuration



Simplex Cable Configuration Example

Set Management Board Configuration Switch 1 **Left** for non-cluster configuration.

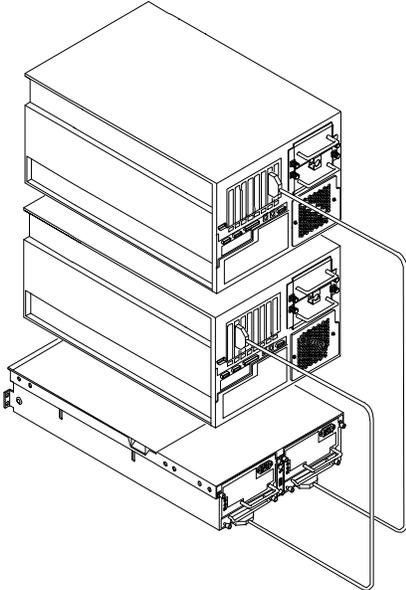
Duplex Configuration



Duplex Cable Configuration Example

Set Management Board Configuration Switch 1 **Left** for non-cluster configuration.

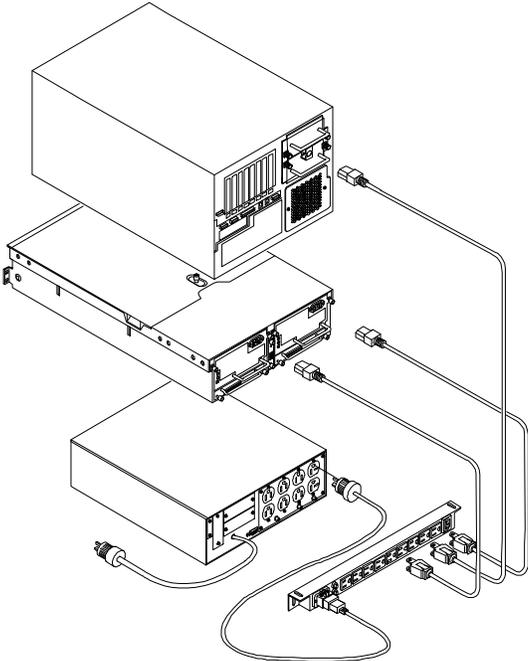
Cluster Configuration



Cluster Configuration Example

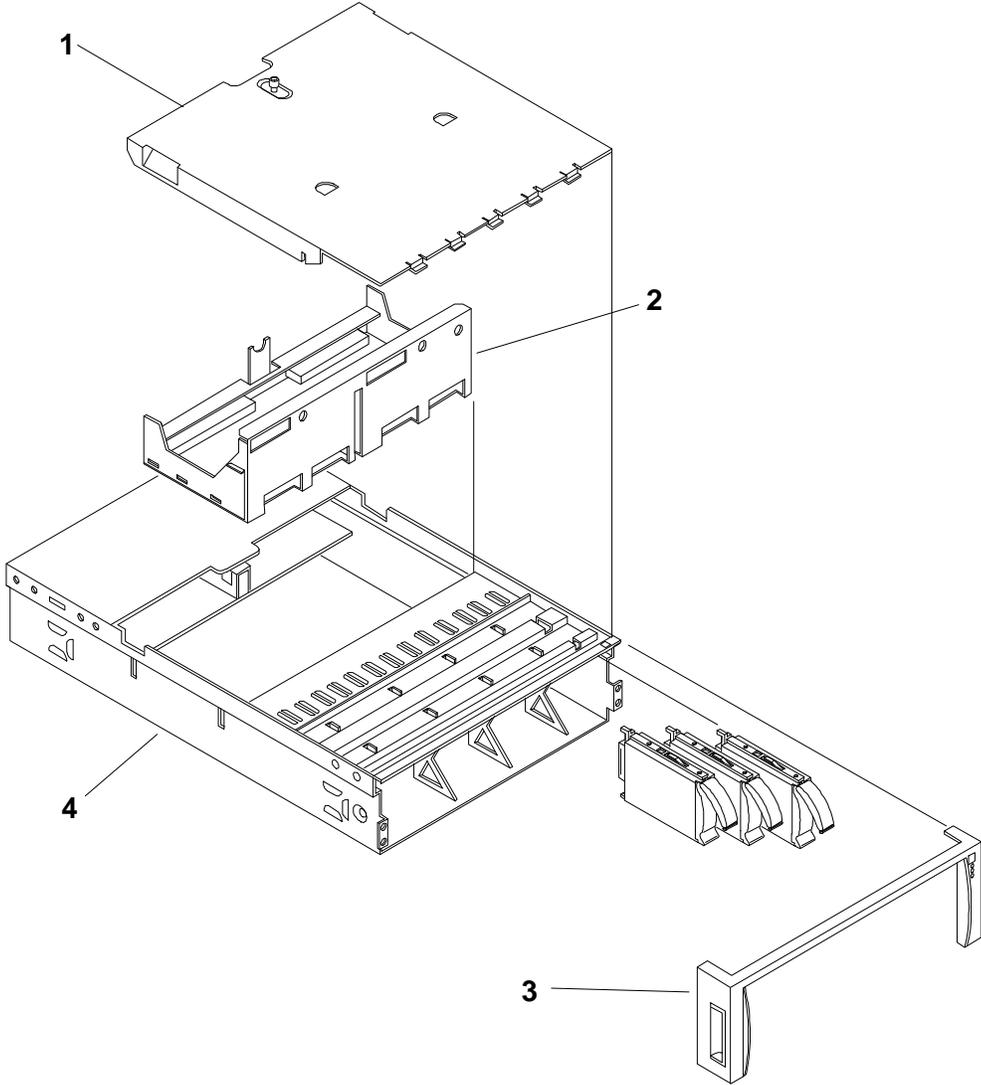
Set Management Board Configuration Switch 1 **Right** for cluster configuration:

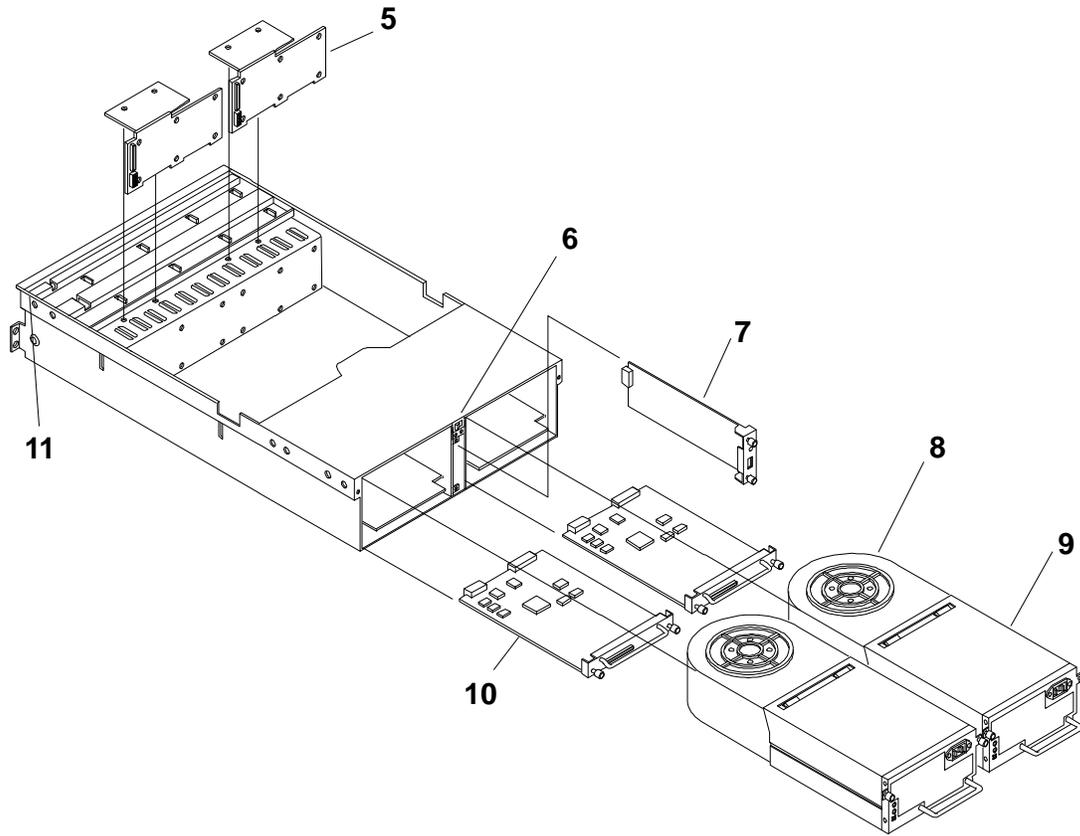
Power Cabling



Power Cabling Example

Exploded Views





Parts List

NOTE

The part numbers in the list were the ones that were available at the time of publication. Part numbers may change after publication.

* This part is not on an exploded view.

Fig	Description	Replacement	Exchange
1	Chassis Cover	not orderable	
2	Midplane Assembly	D5989-63000	D5989-69000
3	HP Front Bezel	D5989-63006	
*	Non-HP Front Bezel	D5989-63015	
4	Chassis	not orderable	
5	Backplane Kit	D5989-63010	
6	Power Switch	D5989-63009	
7	Management Board	D5989-63012	
8	Fan Module	D5989-63002	
9	Power Supply	D5989-63017	D5989-69017
10	RS/12 SCSI Card	D5989-63001	D5989-69001
11	Stoplight LED	D5989-63014	
*	Power Cord	D5989-63008	

Fig	Description	Replacement	Exchange
*	SCSI Slot Filler	D5989-63004	
*	HP Rail Kit	D5989-60003	

Specifications

Temperature

Operating	5° to 35° C (40° to 95° F)
Non-operating	-40° to 65° C (-40° to -140° F)

Humidity (noncondensing)

Operating	20% to 80% relative humidity
Non-operating	Maximum 95% relative humidity

Altitude

Operating	3,046 m (10,000 ft)
Non-operating	12,200 m (40,000 ft)

Weight and Dimensions

Height	13.2 cm (5.19 in)
Width	46.36 cm (18.25 in)
Depth	71.76 cm (28.25 in)
Weight, chassis fully loaded	37.7 kg (83 lb)
Weight, chassis empty	15.9 kg (35 lb)

Power Requirements

Input voltage range	90-264 VAC
Frequency	47-63 Hz.

Typical AC input requirements for fully loaded configuration (73% of power supply capability):

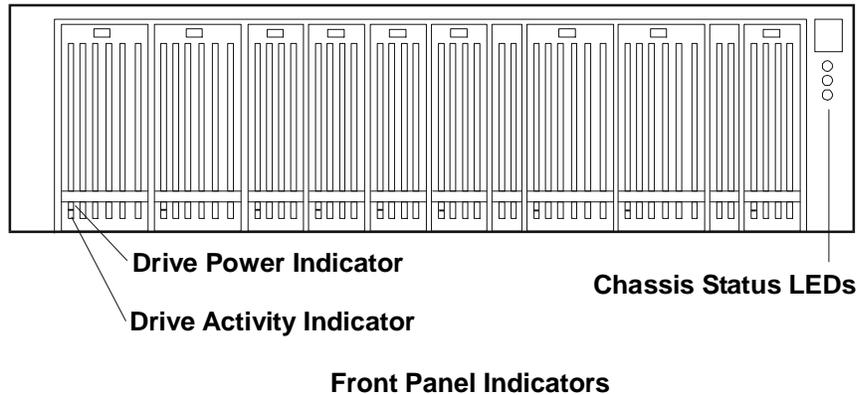
Nominal Volts	Amps	Watts
100	5.48	537
120	4.51	530
200	2.61	512
230	2.25	507

Power supply type	Wide input range, power factor corrected
DC output power	500 Watts DC, continuous, maximum
Peak AC inrush current	30 Amps @ 230 VAC

HP NetServer Rack Storage/12 FC Information

System Views

Front View



Chassis Status LEDs

Green: Normal operation.

Flashing Yellow: Warning condition exists in the chassis. Attention is required. Check the operating status of components on the front and rear panels.

Flashing Red: Fault condition exists in the chassis. Immediate attention is required. Check the operating status of all components on the front and rear panels.

Off: No power.

Hard Drive Status Indicators

The drive power indicator displays the following conditions:

Off: Hard drive not present, or not connected to the cage.

Green (solid): Hard drive present.

Drive Activity Indicator

The drive activity indicator displays the following conditions:

Off: No disk activity.

Flickering Green: Accessing disk.

Flashing Yellow: Disk failure predicted.

Red: Disk fault, or drive is offline.

SCSI Channels

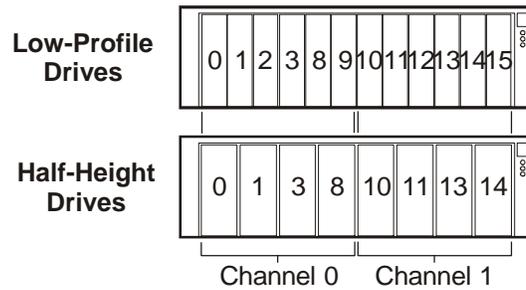
NOTE

Each FCArray Controller card has 4 SCSI channels:

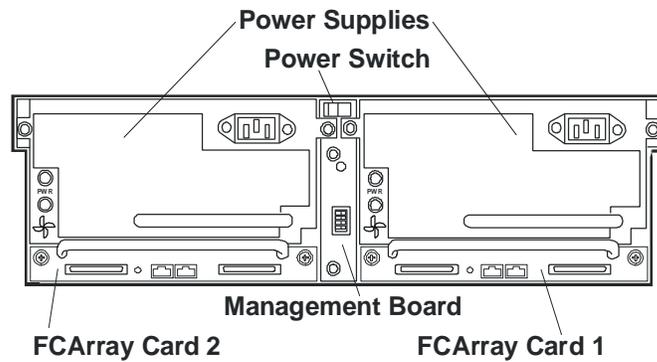
- 2 internal SCSI buses (channels 0, 1)
 - 2 external SCSI buses (channels 2, 3)
-

SCSI Addresses

The SCSI ID assigned to a hard drive is determined by its position in the drive cage. The SAF-TE chassis management processor is assigned SCSI ID 5. The default SCSI IDs are assigned to the 8 half-height drives and 12 low-profile drives.



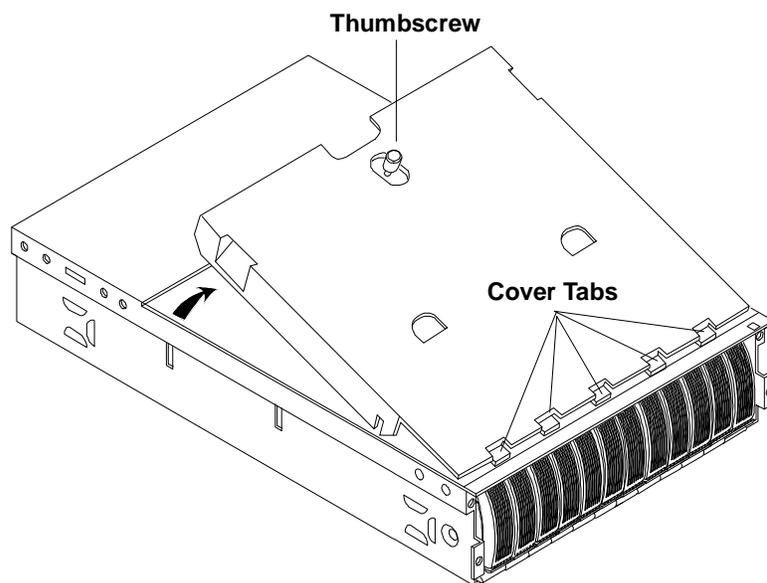
Rear View



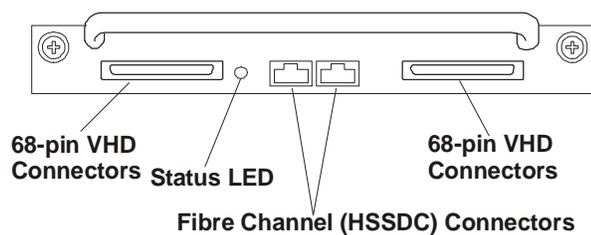
NOTE

To fully remove power, disconnect both AC power cords from the rear of the chassis. The HP Rack Storage/12FC has 5 VDC standby power, even when the power switch is set to OFF.

Covers



FCArray Controller Card



FCArray Controller Card Ports and Indicator

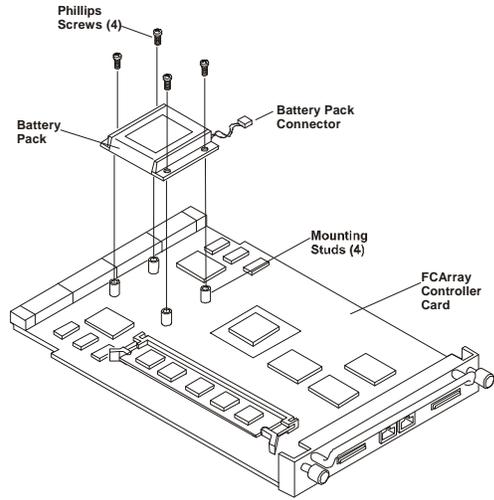
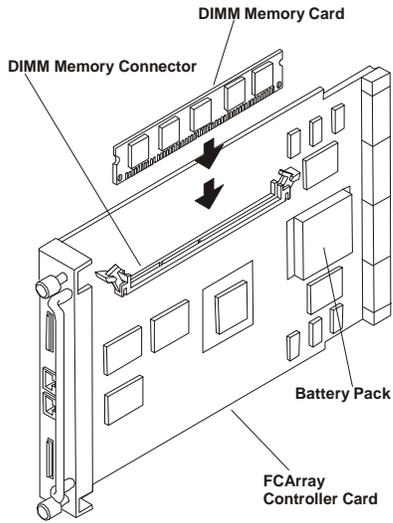
FCArray Controller Status LED

Green: Normal operation

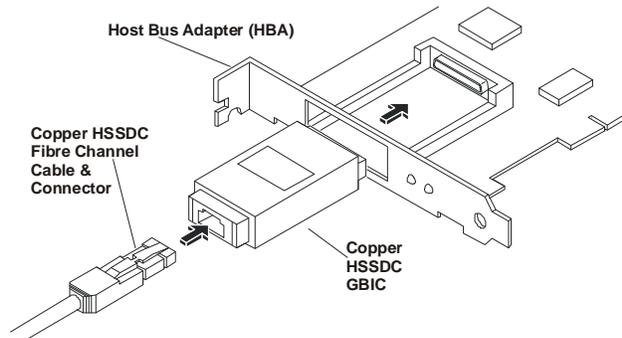
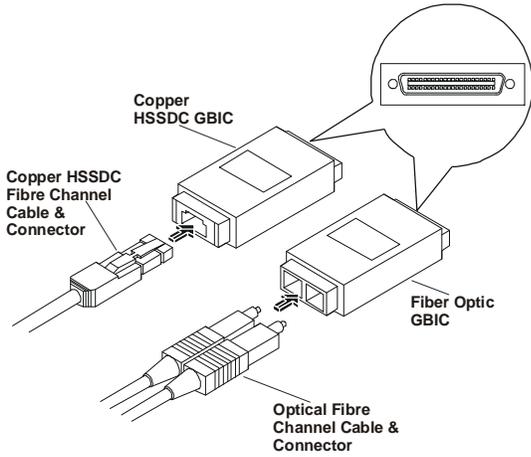
Flashing Yellow: FCArray Controller card is temporarily unavailable (rebooting), or a firmware revision mismatch exists between the two installed FCArray Controller cards.

Flashing Red: Hardware fault on the FCArray Controller card or the card has gone offline.

Off: No power supplied to the FCArray Controller card.



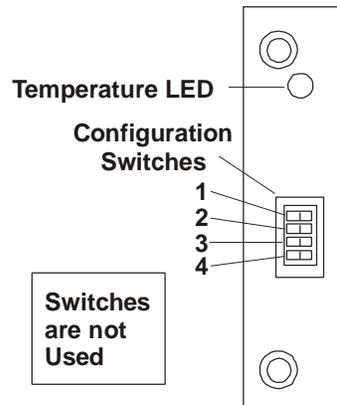
Accessories



Fiber Optic and Copper HSSDC GBICs and Cables

Management Board

The Management board switches and indicators are shown below, but the switches are reserved for future use and not used.



Management Board Controls and Indicators

Temperature LED

The temperature LED displays the current environmental temperature status of the HP Rack System/12FC.

Green: Normal operation.

Flashing Yellow: High temperature warning within the chassis. Check fan operation, cooling, or airflow problems.

Flashing Red: Critical high temperature within the chassis. Check fan operation, cooling, or airflow problems.

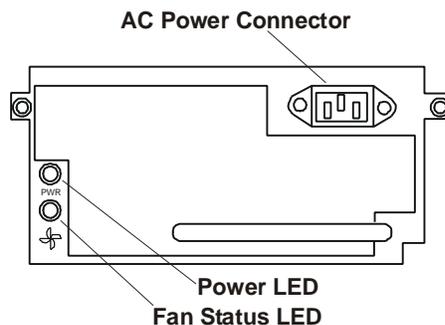
Off: No power.

Configuration Switches

The bank of four switches is reserved and not presently used with FCArray Controller cards.

The switches may be set Left or Right. The default switch setting is Left for all switches; however, the switches are inactive at this time.

Power Supplies



Power Supply Ports and Indicators

Power Status LED

Green: Normal operation.

Off: No power or power supply failure.

Fan Status LED

Green: Normal operation.

Off: No power or fan module failure.

RAID Management

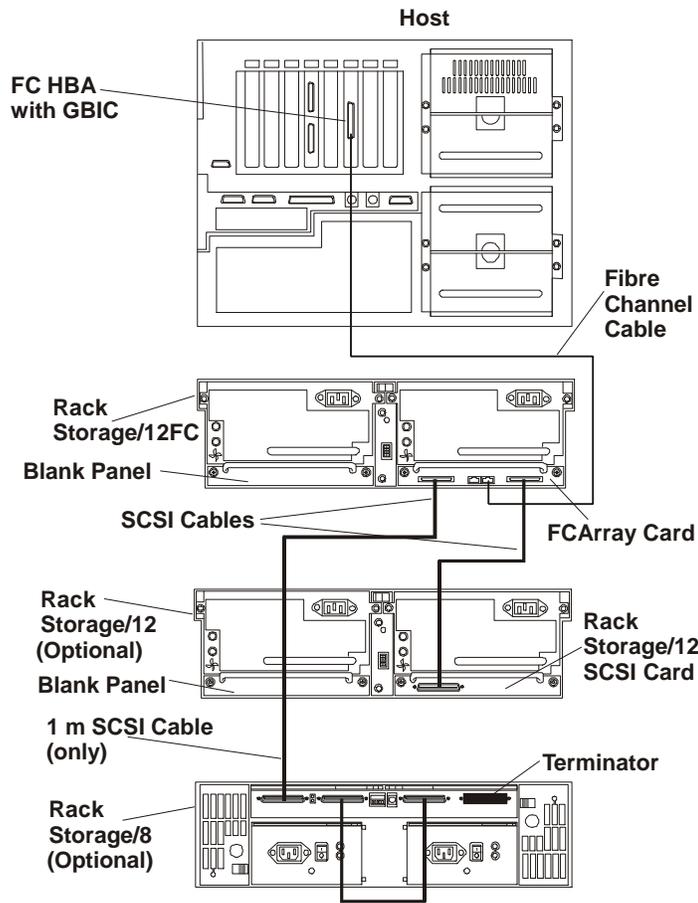
Refer to the *FCArray Assistant Installation and User Guide* for information on managing disk arrays used in or with the HP Rack Storage/12FC.

Configurations

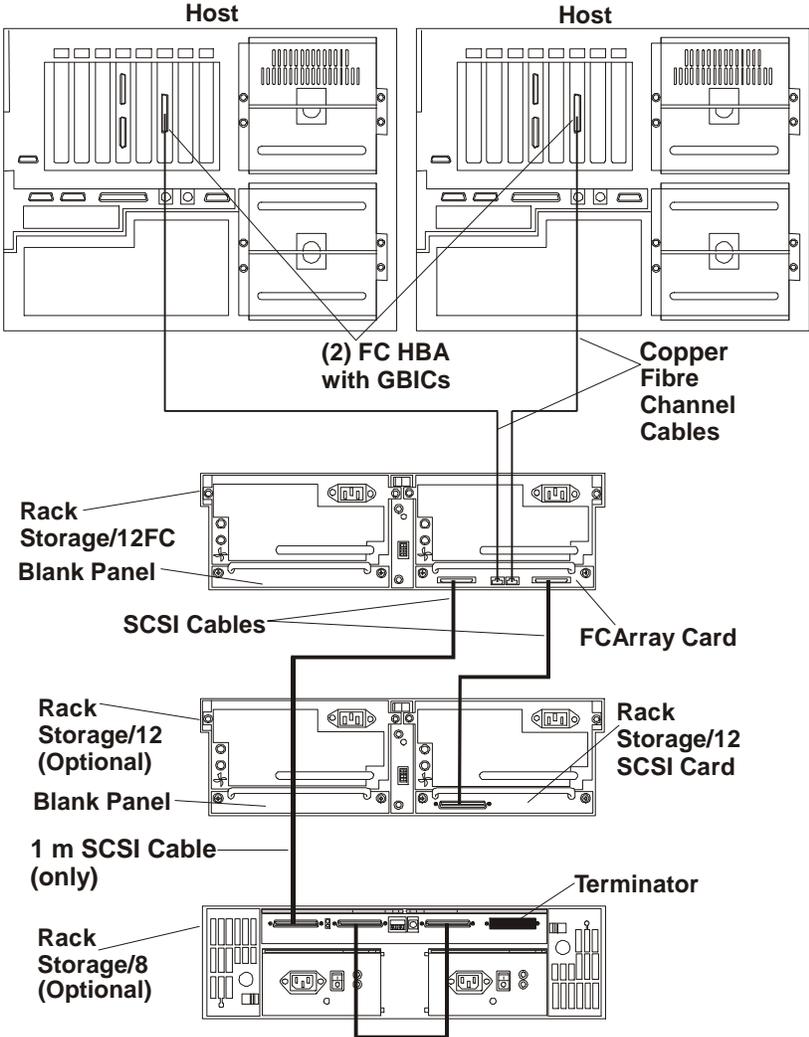
Cluster Configurations

Contact your Cluster Certified HP Reseller for assistance in installing your HP NetServer and HP Rack Storage/12FC in a cluster environment.

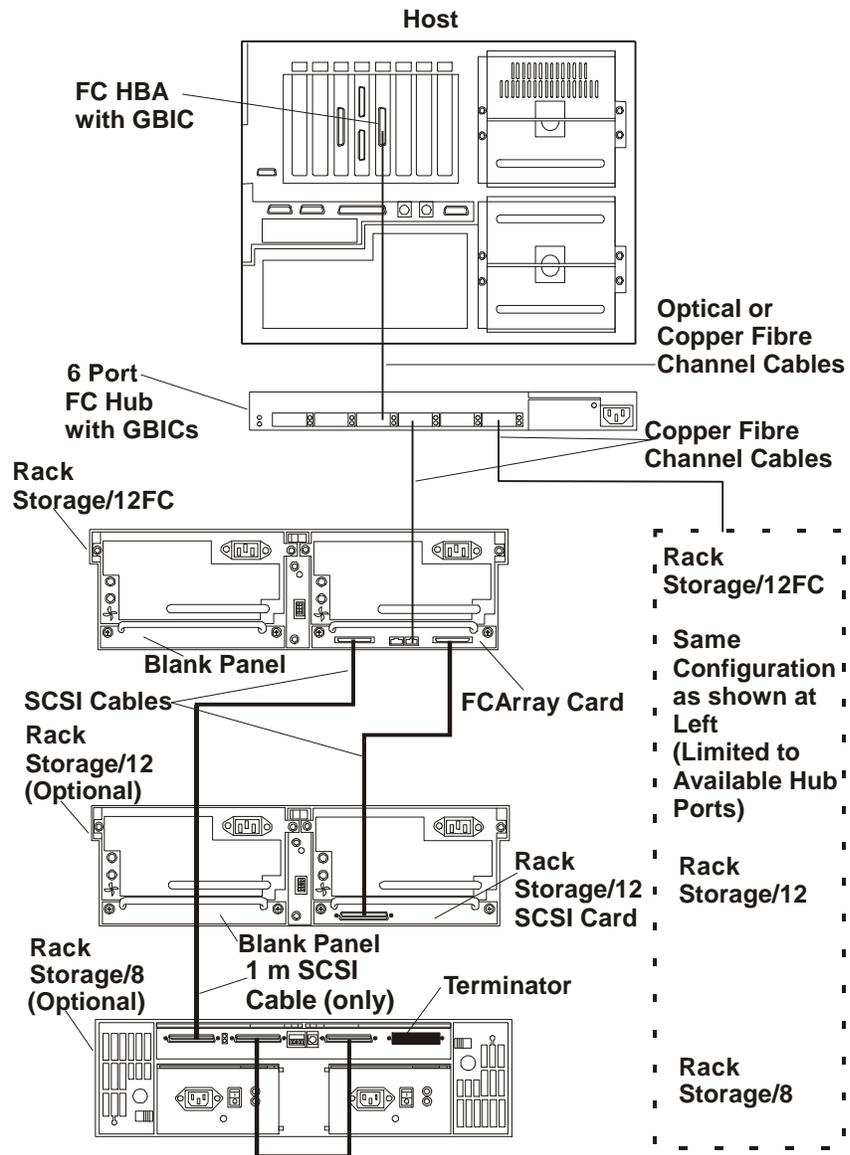
Single Host Configuration



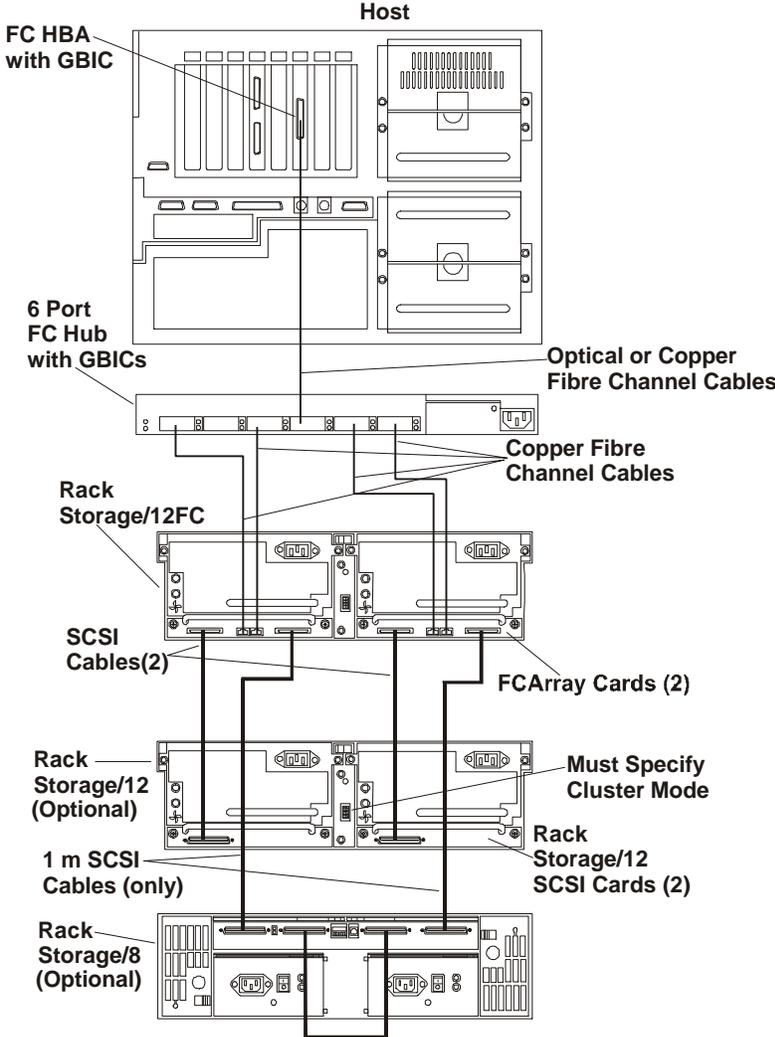
Host Cluster Configuration



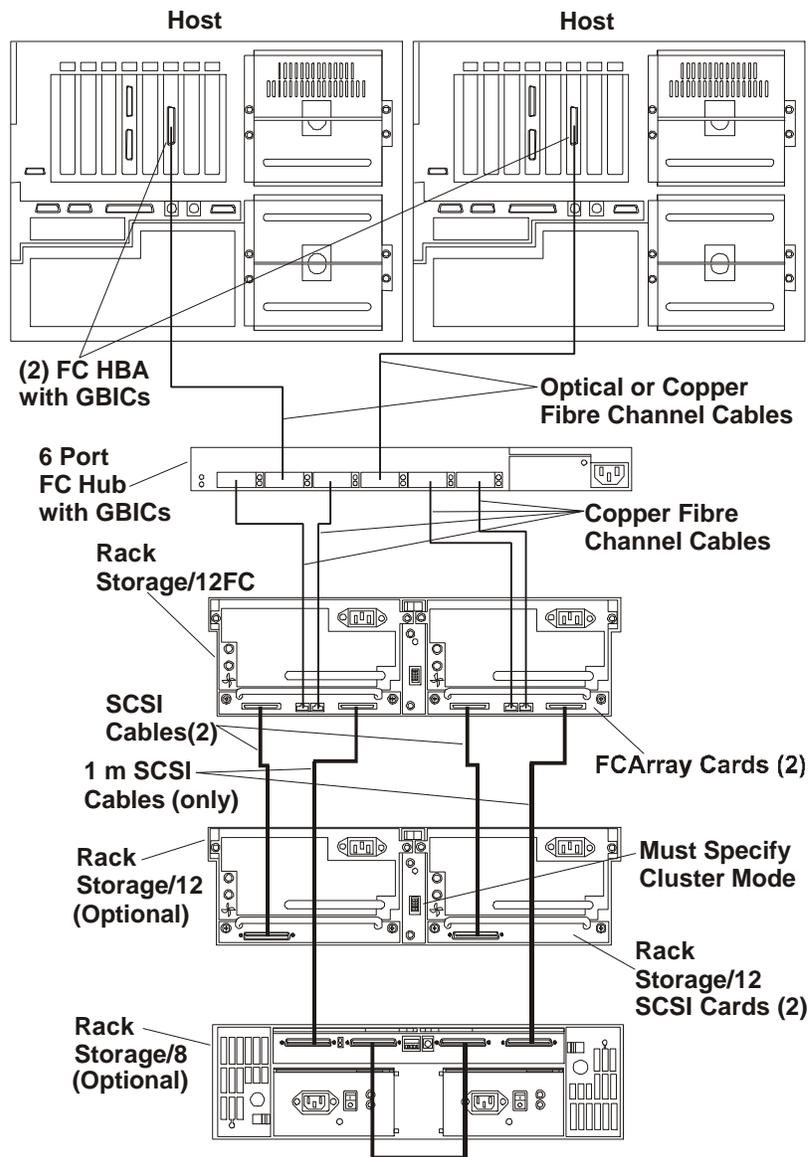
Multi-Array Configuration



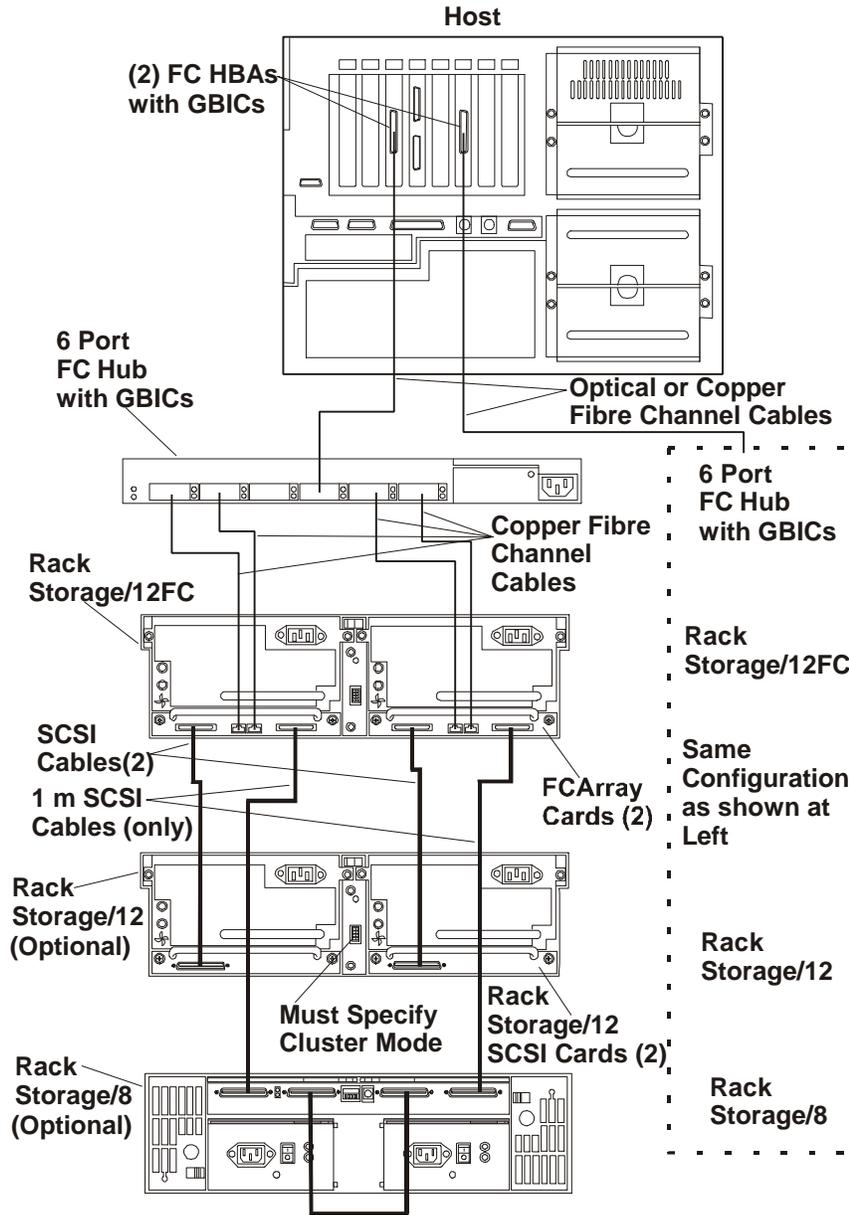
Single Host and Hub Configuration



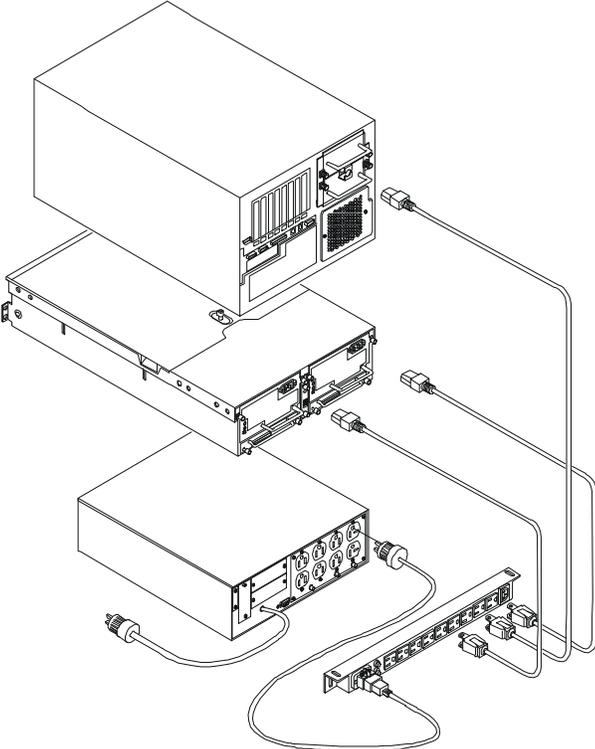
Host Cluster and Hub Configuration



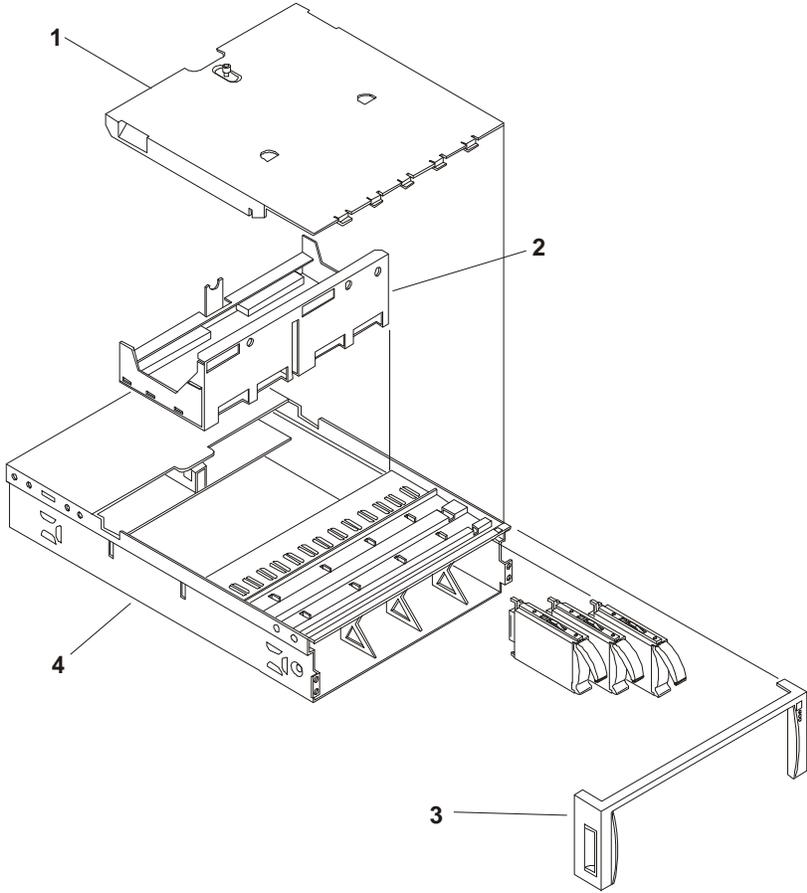
Multi-Array and Hub Configuration

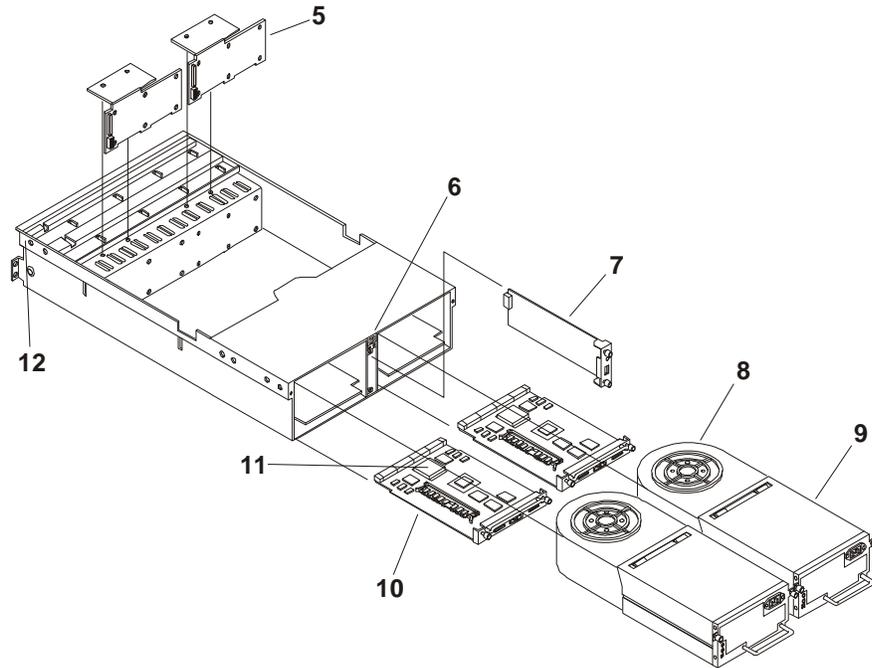


Power Cabling



Exploded Views





Parts List

NOTE The part numbers provided in the list are the most current part numbers available at the time of publication. Part numbers may change after the date of the publication. HP's parts price list database will generally contain a reference to the revised part number.

* This part is not in an exploded view.

	Descriptions	Replacement	Exchange
1	Chassis Cover	not orderable	
2	Midplane Assembly	D5989-63000	D5989-69000
3	HP Front Bezel	D5989-63006	
*	Non-HP Front Bezel	D5989-63015	
4	Chassis	not orderable	
5	Backplane	D5989-63010	
6	Power Switch	D5989-63009	
7	Management Board	D5989-63012	
8	Fan Module	D5989-63002	
9	Power Supply	5064-7064	
10	RS/12FC Array Controller Card	D5990-63000	D5990-69000
11	Battery Pack	D5990-63002	
12	Stoplight LED	D5989-63014	
*	Controller Slot Filler (Blank Panel)	D5989-63004	
*	HP Rail Kit	D5989-60003	
	Hub and Accessories		

	Descriptions	Replacement	Exchange
*	Fibre Channel HBA	D6977-63001	D6977-69001
*	Fibre Channel Hub	D6976-63001	D6976-69001
*	Fibre Channel Optical GBIC	D6975-63001	
*	Fibre Channel Copper GBIC	D6976-63002	
*	Cable, Optical, 100 meters	D6981-63001	
*	Cable, Copper, 3 meters	D6978-63001	
*	Cable, Copper, 5 meters	D6979-63001	
*	Cable, Copper, 10 meters	D7080-63001	
*	Cable, Copper, 30 meters	D7081-63001	
*	Cable, Copper, 50 meters	D6980-63001	
*	HP Rail Kit, Fibre Channel Hub	D6976-63009	

Specifications

Temperature

Operating	5° to 35° C (40° to 95° F)
Non-operating	-40° to 65° C (-40° to -140° F)

Humidity (non-condensing)

Operating	20% to 80% relative humidity
Non-operating	Maximum 95% relative humidity

Altitude

Operating	3,046 m (10,000 ft.)
Non-Operating	12,200 m (40,000 ft.)

Weight and Dimensions

Height	13.2 cm (5.19 in.)
Width	46.36 cm (18.25 in.)
Depth	71.76 cm (28.25 in.)
Weight, chassis fully loaded	37.7 kg (83 lb.)
Weight, chassis empty	15.9 kg (35 lb.)

Power Requirements

Input voltage range	90-264 VAC
Frequency	47-63 Hz.

Typical AC input requirements for fully loaded configuration (73% of power supply capability):

Nominal Volts	Amps	Watts
100	5.48	537
120	4.51	530
200	2.61	512
230	2.25	507

Power supply type	Wide input range, power factor corrected
DC output power	500 Watts DC, continuous, maximum
Peak AC inrush current	30 Amps @ 230 VAC

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