English

HP NetServer E 60
Installation Guide

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Audience Assumptions

This guide is for the person who installs, administers, and troubleshoots LAN servers. Hewlett-Packard Company assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.

English

Contents

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1 Setting Up the HP NetServer E 60

Setup Steps

It is important that you follow the setup steps in the exact order shown below. Skip any steps that do not apply to you. To provide further details, these steps include references to other sections of this manual and to other documents.

Preparations

CAUTION	The HP NetServer E 60 weighs approximately 31 pounds, excluding a keyboard or monitor. Use appropriate lifting precautions when you move it.

Verify Contents

Unpack the contents of the shipping box.

Verify the contents of the shipping box against the Contents list included with your HP NetServer E 60. If anything is missing or damaged, call your reseller.

Save Packaging

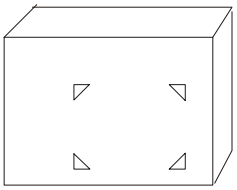
Store the empty boxes and packing material in a safe place. This is especially important if you plan to ship the HP NetServer E 60 elsewhere for final installation.

Find System Configuration CD

HP NetServer Navigator CD-ROM

This CD-ROM is used to configure and troubleshoot the HP NetServer E 60. It is shipped with each E 60.

Support Documentation



Technical Reference card inside the cover in tabs.

HP NetServer E 60 Installation Guide

This document describes installation, hardware upgrades, configuration, and troubleshooting of your HP NetServer E 60.

HP NetServer Online Documentation CD-ROM

A hypertext online documentation system that contains the entire set of documentation for the E 60. See Chapter 10 for details on using this.

Technical Reference Card

A card that summarizes key technical data on the E 60. It is attached to the inside of the E 60.

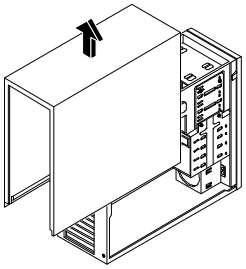
Installation Options

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.

WARNING	The following upgrades (PCI cards, memory DIMMs, hard disk drives, and processor modules) require removing the cover from the HP NetServer E 60. *BE SURE* to disconnect power from the unit before opening it. *BE SURE* to observe appropriate ESD precautions when handling electronic components.

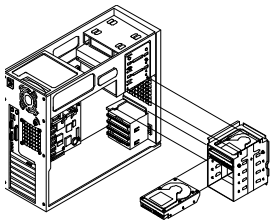
English

If Installing Accessories, remove Cover



See Chapter 3, "Removing and Replacing the System Cover."

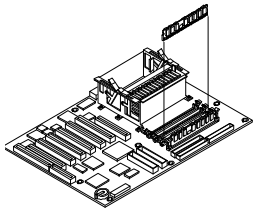
Add Hard Disk Drives



For details see Chapter 4, "Installing Mass Storage Devices."

An optional external SCSI port cable kit is available to extend one of the system's embedded SCSI ports to the rear of the system.

Add Memory

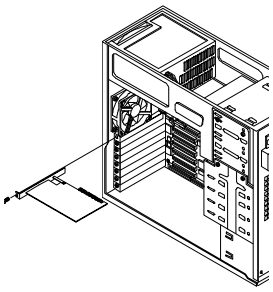


Use HP DIMMs only.

Supported DIMMs may be installed in any combination, in any sockets.

For details see Chapter 5, "Installing Additional Memory."

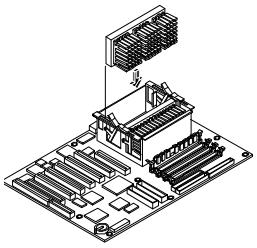
Add PCI Boards



Note that slot assignments of disk drive controller cards affects boot order.

For details see Chapter 6, "Installing Additional Boards."

Add a Processor



The HP NetServer E 60 supports either Pentium II or Pentium III processors. Do not mix Pentium II and Pentium III processors in the system. Do not mix processors with different clock speeds in the system.

For details see Chapter 7, "Installing a Second Processor."

Replace the Cover

Be sure cables are properly routed and all components are fully seated.

For details see Chapter 3, "Removing and Replacing the System Cover."

English

Configuring the System

1) Connect Peripherals

For details on rear panel interface connectors, see Chapter 2.

For details on connecting the keyboard, mouse, monitor, and UPS, see Chapter 8.

2) Boot the *HP NetServer Navigator CD-ROM*

Turn on the monitor. Press the power-on button on the HP NetServer, and press the eject button on the CD-ROM drive.

Place the *HP NetServer Navigator CD-ROM* in the drive, and close the drive. Press the Reset button. If the system fails to restart, follow the instructions on the screen.

When the HP Navigator starts, you can set the time and date, and change the display language.

For details, see Chapter 9, "Configuring the Server Using the *HP NetServer Navigator CD-ROM*."

3) Read the System Readme File

Select **View Readme** from the HP Navigator main menu. The Readme file contains the latest information to help you install your HP NetServer.

4) Run Configuration/ Installation Assistant

If you want to change the language, select **Set Preferences** from the HP Navigator main menu and choose a language. From the Navigator main menu, select **Configuration and Installation Assistant**. Select **Express** from the next screen to begin the Express mode of configuration.

5) Choose a NOS

Select the Network Operating System (NOS) you will install from the choices displayed.

6) Select the NOS Installation Mode

Automated NOS install: If you select certain versions of Novell NetWare or Microsoft Windows NT Server, you will be asked, "Would you like to use HP's automated mode of NOS installation?" Choose automated NOS installation mode for a first-time installation of Novell NetWare or Microsoft Windows NT Server on a factory configured HP NetServer E 60.

Manual NOS install: You will need to perform a manual NOS installation if you are installing a NOS other than Novell NetWare or Microsoft Windows NT Server, or if you replace HP components. (For example, if you disable the embedded 10/100TX LAN adapter and replace it with an HP network interface card or a third party card, install the NOS manually.)

7) Read Configuration Advisor

Configuration Advisor will appear. It provides information on optimizing hardware configuration and resource settings. It includes notes on specific operating systems.

8) Configure Disk Array

If you've installed an optional HP NetRAID-3Si disk array controller accessory, select **Execute** on the Configure Disk Array screen to start the utility that configures the disk array.

9) Create the Drivers Diskette if you selected a manual NOS Install

On the Create Driver Diskette(s) screen, select **Create Drivers Diskette(s)**.

On the Show NOS Installation Instructions screen, select **Save to Disk**. Then print out the NOS installation instructions from the disk. Read these instructions before starting to install the NOS.

Follow the instructions on the screen and the Network Operating System Installation Instructions to perform the manual NOS installation.

English

10) Run DiagTools (Optional)

To verify that the HP NetServer hardware is fully functional, create a DiagTools diskette to run DiagTools from after configuration. Select **NetServer Utilities** from the HP Navigator main menu, and then select **DiagTools** from the NetServer utilities menu.

11) HP NetServer Management

Refer to the *HP NetServer Management Reference Guide* to install HP TopTools, set up the Remote Console feature and other server management options.

12) Install Information Assistant (Optional)

Information Assistant is an online documentation viewer that will help you support your HP NetServer. It includes all system documentation. It may be run from any PC running Windows. The software is installed from the *HP NetServer Online Documentation CD-ROM* included with your system. Insert this CD into your PC's CD-ROM drive or a networked CD-ROM drive.

13) View Order Assistant (Optional)

This is on the World Wide Web at:

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

Order Assistant lists HP accessories, cables, and connectors for your HP NetServer E 60.

English

2 Controls, Indicators, and Ports

Front Panel

Before installation, familiarize yourself with the HP NetServer E 60's switches and LED (Light Emitting Diode) indicators. The connections, switches, indicators, ports and the user-serviceable internal components of the NetServer E 60 are shown in Figure 2-1.

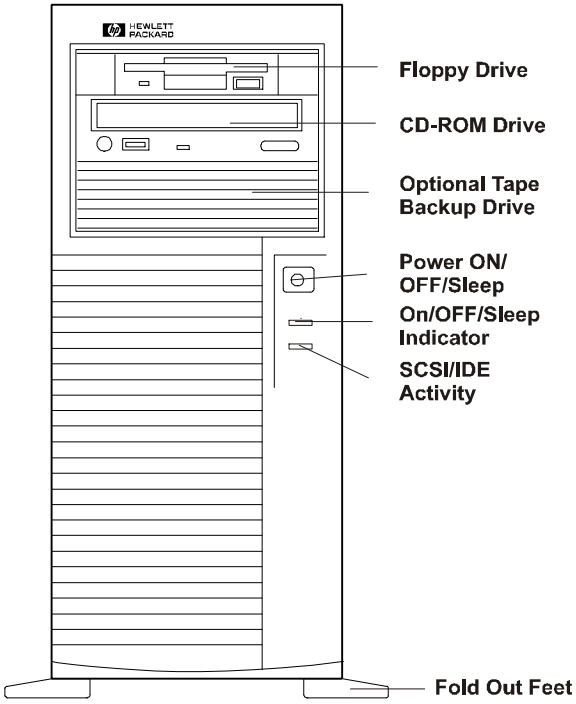


Figure 2-1. Front Panel

Table 2-1 shows the Control panel switches and the associated indicator definitions.

Table 2-1. Control Panel Switch and Indicators

Control / Indicator	Description
Power On/Off/Sleep Switch 	The power button acts as both a button for transitioning the system between the on and sleep states, and for transitioning the system between the off and on states. With the system on, pressing this button will set the system into the sleep state. The term "sleep" refers to a low latency (reduced power consumption) wake up state. In this state the system appears to be off (no display; hard disks and CD-ROM drives are not spinning). When the system detects activity (i.e., mouse, keyboard, or certain types of LAN activity), the system will become fully operational. The prerequisite here is that the operating system must support power management based on the ACPI (Advanced Configuration and Power Interface) standard. For example, Microsoft Windows 98 and 2000 allow the function of the button to be configured via a user interface. The power button also has the capability to unconditionally power off the system when the button is held in for over four seconds (until the system powers off). If the operating system does not support power management using ACPI, the power button will act as a normal power button (on/off only).
On/Off/Sleep LED 	This green LED indicator remains steady on when the system is running, and off when the system is off. This indicator blinks once per second when the system is in sleep state.
Drive Active LED 	This yellow LED indicator flashes during SCSI or IDE disk drive activity.

English

Rear View

The ports and connectors in the rear are listed below, and shown in Figure 2-2.

- The system includes a LAN port based on the Intel 82559 10/100 BaseT Fast Ethernet PCI embedded controller. It has an RJ-45 LAN connector and two LEDs to indicate LAN speed and valid connection.
- The Serial Port A is a standard serial port.
- The Serial Port B is a standard serial port.
- The Parallel Port is a standard parallel port which supports Extended Capabilities Port (ECP) / Enhanced Parallel Port (EPP).
- The Mouse Port accepts a standard mouse with a PS/2 connector.
- The Keyboard Port accepts a standard keyboard with a PS/2 connector.
- The Monitor Port interface specifications are listed in the "Video Display Modes" section of Appendix A.
- The Power Connector accepts a standard power cable to connect the HP NetServer E 60 with the site power supply.
- To install an external SCSI port you need the optional HP NetServer E 60 External SCSI Port Cable Kit (P/N D8214A).

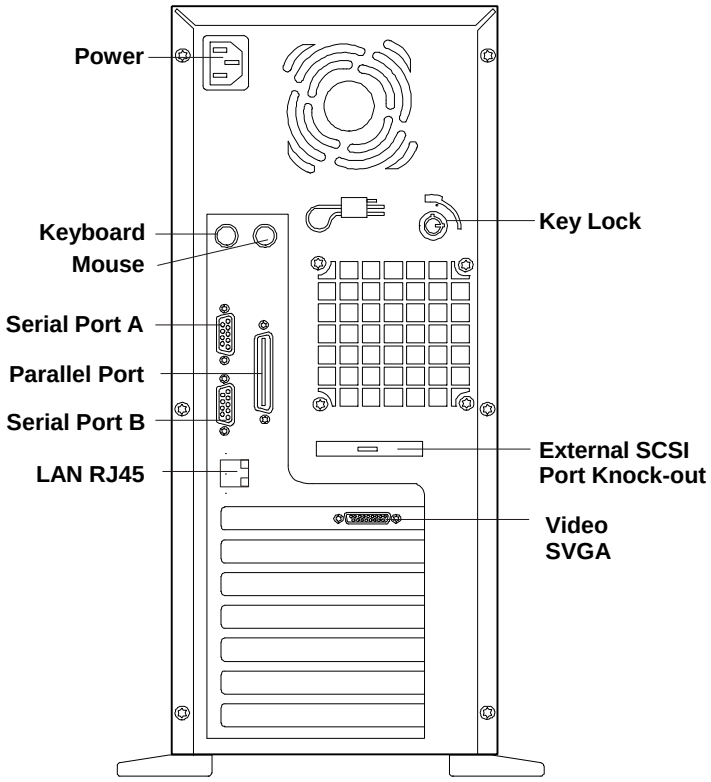
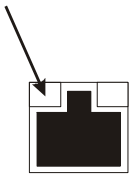
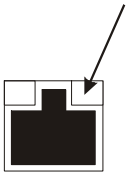


Figure 2-2. Rear Panel and Ports

English

Table 2-2 shows the LAN LED indicators.

Table 2-2. LAN Port (RJ45) LED Indicator Definitions

Indicator	Definition
Link LED 	This green LED is the activity/link indicator. When steady on, this LED indicates a valid LAN link. This LED will also flash when there is LAN activity.
LAN Speed Indicator 	This yellow LED is the LAN speed indicator. The LED remains off to indicate 10 Mbps, and steady on to indicate 100Mbps LAN speed.

Power-Up and Power-Down Procedures

Power-Up Procedure

NOTE Turn on power to the monitor connected to the E 60 before you power-on the E 60. This allows proper auto-configuration of video output of the E 60 as it boots up.

When you press the power button on the control panel, the E 60 powers up and loads the operating system. The system runs a set of Power On Self Tests (POST) during this process. For details refer to Chapter 12, "Troubleshooting."

Power-Down Procedure

1. Log off all users (schedule the power down for a time when the fewest users will be affected by the server being down). If you will be doing any kind of hardware or software upgrade, be sure your server's data has been backed up. Follow instructions in your network operating system (NOS) documentation to gracefully shut down all networking software and applications.

2. Press the power switch on the HP NetServer's control panel when prompted by the operating system. Normally this is the complete procedure.

NOTE The power supply will continue to provide standby current to the NetServer until the power cable is disconnected from the rear panel.

English

3 Removing and Replacing the System Cover

Removing and Replacing the Cover

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.

Tools Required

To remove and replace the cover, you will need a Torx® 15 driver or ¼-inch flat blade screw driver.

Removing the Cover

To remove the cover, follow these steps:

NOTE	These steps do not include the removal of the front bezel of the system. You ***do not*** need to remove the front bezel of the HP NetServer E 60 to install internal accessories, such as memory or mass storage.

1. Turn off the NetServer and disconnect the power cord and any phone line.
2. Unlock the cover: use the key in the key bag located on the rear of the NetServer. The locking mechanism is at the rear (see Figure 3-1).
3. Remove six (6) Torx 15/slotted screws (see Figure 3-1).

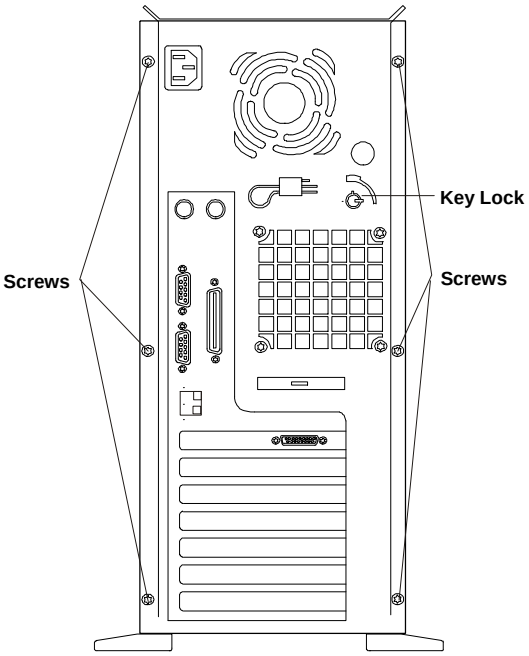


Figure 3-1. Screws and Lock Holding on Cover

4. Remove the NetServer cover. Place your hands near the bottom front of the cover, one along each side. Pull the cover slightly back to release it and then lift up and off the chassis (see Figure 3-2).

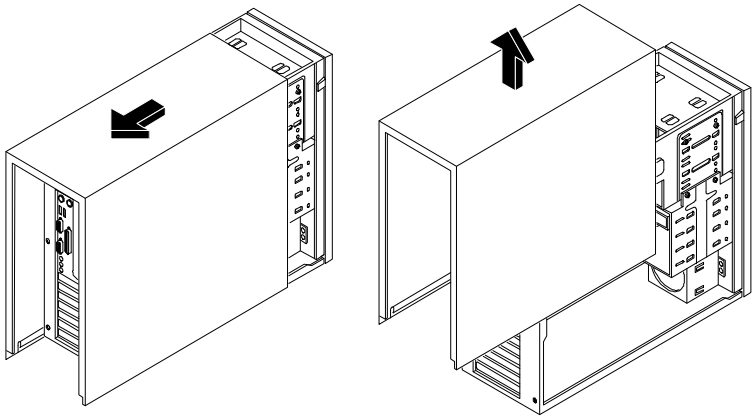


Figure 3-2. Removing the Cover

English

Replacing the Cover

To replace the cover, follow these steps:

1. If necessary, return the air duct to its closed position.
2. Place one hand on either side of the cover and press inward lightly while lowering the cover onto the chassis. The cover has flanges that rest on the rails inside the chassis (see Figure 3-3).

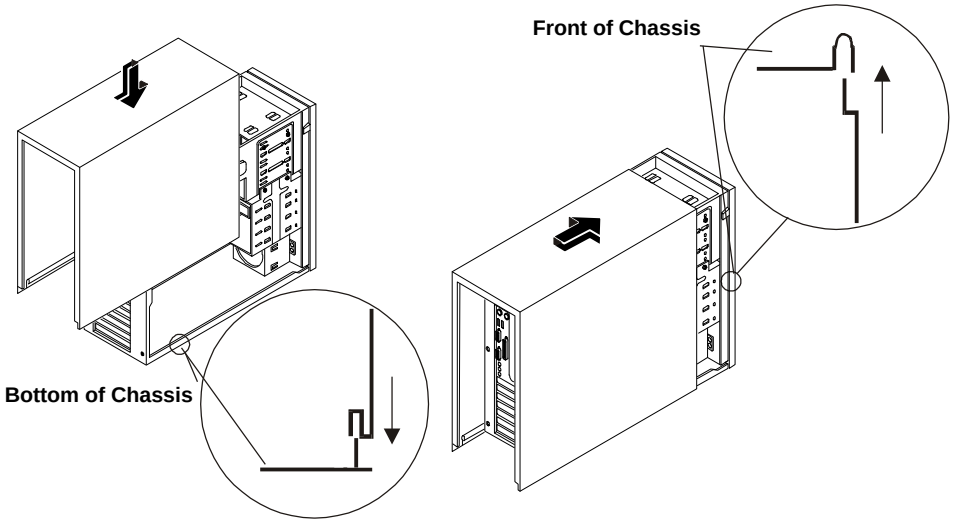


Figure 3-3. Replacing the Cover

3. Push the cover forward until it is seated in place.
4. Replace the six (6) Torx 15/slotted screws in the rear (see Figure 3-1).
5. Relock the cover.

Adjusting the System Feet

When adding internal accessories to the system, turn the feet inward so that the system will lay flat on its side on the floor.

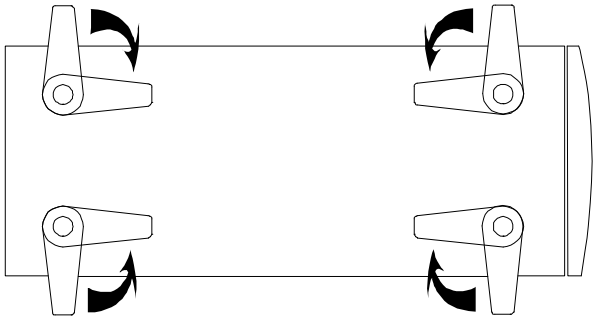


Figure 3-4. Turn Feet Inward before Laying the NetServer on Its Side

4 Installing Mass Storage Devices

Introduction

The HP NetServer E 60 comes standard with an IDE CD-ROM and a floppy disk drive (some models also include a SCSI hard disk drive and a tape backup drive). The internal mass storage cage can hold, and cabling is provided for, up to four Ultra Wide SCSI hard disk drive devices.

The SCSI cable has five 68-pin, high-density connectors for the available hard disk drive shelves. One or two of these connectors will be attached to the factory installed hard disk and optional tape drive. Refer to the Reference card on the system chassis for details. One 68-pin connector is attached to a 68- to 50-pin adapter, reserved for the optional tape drive.

The embedded dual-channel Ultra Wide PCI SCSI controller includes SCSI channels A and B. Channel A is used for cabling the factory installed hard disk drive and up to four additional SCSI drives (including an optional tape drive). Channel B may be used in a duplexing arrangement or to accommodate an external mass storage solution (either require an additional cable kit). Duplexing requires that at least two hard disk drives be installed.

Devices in the HP NetServer E 60 are cable terminated.

Boot Priority

By default, the HP NetServer searches for bootable devices in the order shown below.

- IDE CD-ROM Drive
- Floppy Disk Drive
- Embedded SCSI A
- Embedded SCSI B

On each controller, the server scans for a boot device starting at device ID 0 and works up the ID numbers. The system's embedded controller is always SCSI ID 7.

The optional bundled tape drive takes SCSI address ID 4.

For information about booting off of a hard disk connected to an accessory board, see "Installing a Disk Array Controller Board and Altering the Boot Priority" in Chapter 6.

NOTE The boot order can be changed using the system's BIOS Setup utility (press [F2] during the boot process).

Installing Mass Storage Devices

The following table shows how mass storage devices may be added to the HP NetServer E 60:

Interface	Max Number of Devices Possible	Installed Devices and Addresses
Floppy	1	Factory installed floppy drive in slot 1 (top shelf)
IDE	2*	Factory installed CD-ROM drive in shelf 2 (Primary)
Ultra Wide SCSI Channel A	up to 5**	• Optional Tape Drive in shelf 3 (address=ID 4) • Factory installed Hard Disk in shelf 4 (address=ID 0) • Embedded SCSI controller (address=ID 7)
Ultra Wide SCSI Channel B	up to 7**	Embedded SCSI controller (address=ID 7)

* The primary connector is cabled to the factory-installed CD-ROM drive. A secondary connector is available, but requires an additional standard IDE cable. Uses of the secondary connector is not supported by Hewlett-Packard.

** Both SCSI channels (A and B) can support up to 7 devices; however, there are only enough internal storage shelves for 5 devices. Channel B is typically used to install external SCSI devices. If you decide to duplex internal drives using Channel B, you are restricted to available internal drives.

English

Embedded SCSI Controller Configuration

Typically, no configuration of the embedded SCSI controller is required. You do have the option of reassigning the designation of channel A and B. In order to verify or modify SCSI host adapter settings, or to low-level format SCSI disks or verify SCSI media, run the SCSI Select Utility. See Chapter 11, "Using the BIOS Setup and SCSI Select Utilities," for further information.

CAUTION	You may not connect high voltage differential (HVD) SCSI devices on the embedded SCSI bus or you will damage the devices.

Tools Required

To secure the hard disk drives in the hard disk drive cage, you will need a Torx 15 driver or ¼-inch flat blade screw driver. Check your device's documentation for additional tool requirements.

Installing Hard Disk Drives

1. If the system is already installed and working, gracefully power down the system as described in Chapter 2.
2. Disconnect the power cables and any external cables connected to the system. If necessary, label them to expedite reassembly.
3. Remove the cover and turn in the system feet (so that the system will lay flat on its side) as described in Chapter 3.

4. Lay the server on its side (components showing). Unsnap the air duct and move it out of the way (see Figure 4-1).

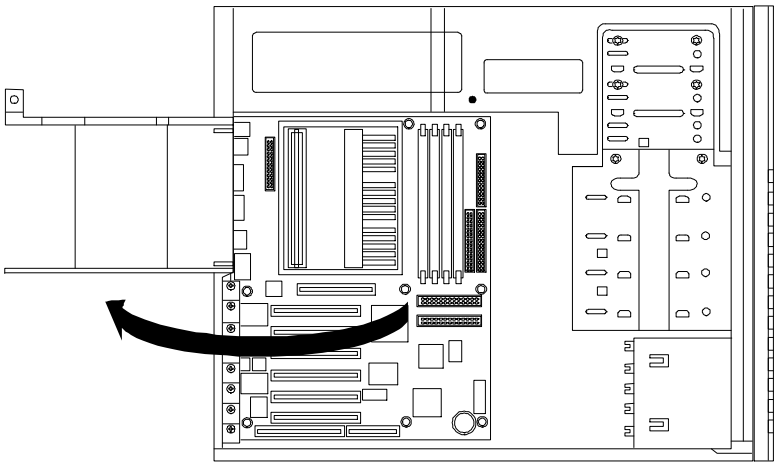


Figure 4-1. Moving the Air Duct

5. Loosen three captive screws on the mass storage cage (see Figure 4-2).
6. Unplug the power and SCSI cables to any hard disk drives already in the cage.

CAUTION	Install and remove connectors carefully, and avoid displacing any the pins.

English

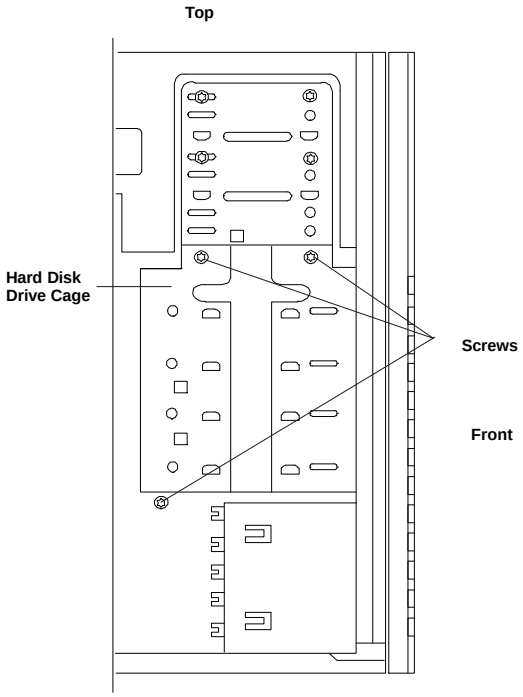


Figure 4-2. Captive Screws Holding the Hard Disk Drive Cage

7. Remove the cage (see Figure 4-3).

CAUTION	All mounting screws that thread into the hard disk drive must be #6-32 and not exceed ¼-inch in length. Longer screws may cause internal damage to the mass storage device. Damage caused by incorrect mounting screws is not covered by the HP warranty.

8. Slide the drive into the cage opening with the cable connectors toward the rear of the system (see Figure 4-3). Align the screw holes on the drive (or the shelf or brackets) with the screw holes in the hard disk drive cage.

NOTE	If the hard disk drive you are planning to install already has a mounting tray attached, you must remove it before you can install the drive in your HP NetServer E 60.

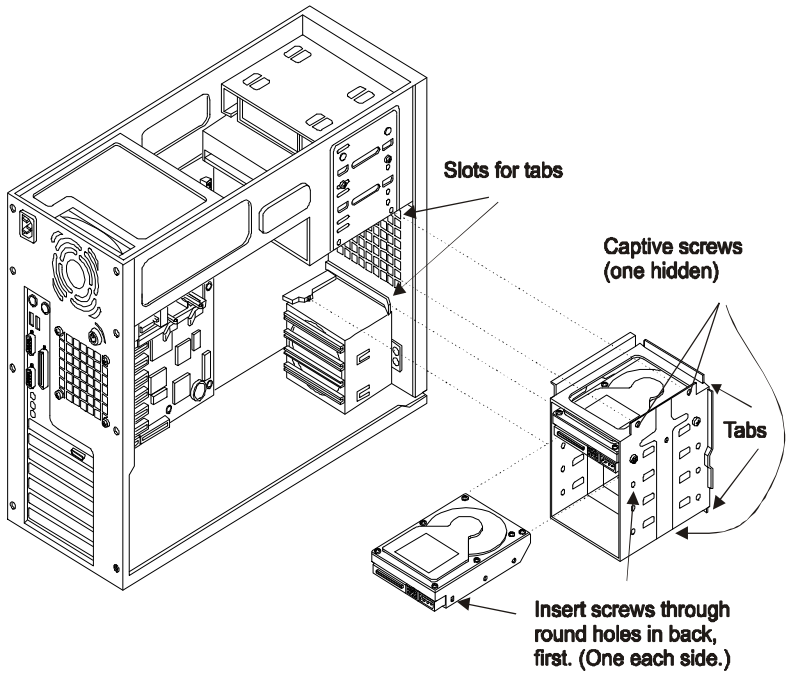


Figure 4-3. Adding a Hard Disk Drive

9. Install the screws that secure the drive (or the shelf or the brackets) to the mass storage cage. First, attach one of the screws through the round screw hole at the rear of the cage, then through the elongated hole at the front of the cage. Repeat on the other side of the cage (see Figure 4-4).

English

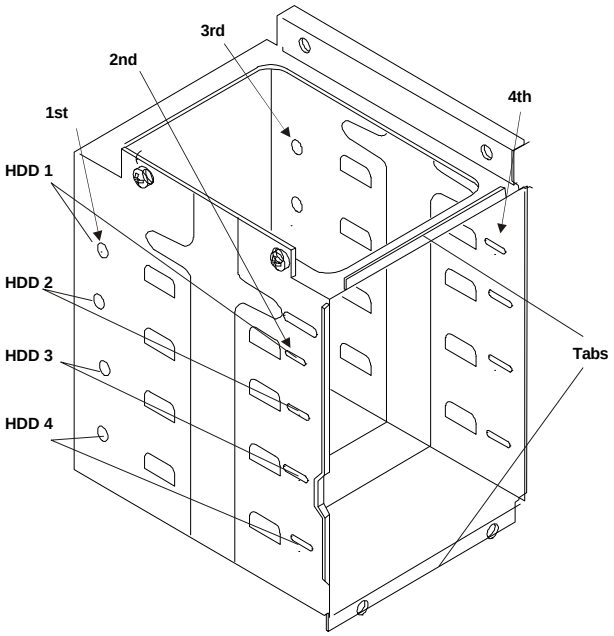


Figure 4-4. Hard Disk Drive Cage Screw Holes

10. Reinstall the mass storage cage. Make sure the tabs at the front on the cage slide into the slots provided for them (see Figure 4-3).

11. Connect the SCSI cable to the disk drive. There are five connectors on the SCSI cable. The first four are intended for the four hard disk drive positions in the hard disk drive cage. The end connector is intended for the optional tape drive.

12. Connect the power cable to the drives. The power cable is split into two cables, each with three power connectors. The designed distribution is:

    One string of three: CD-ROM, optional tape drive, top hard disk drive.

    Second string of three: lower three hard disk drives.

    If a power connector has no mate, for example, no optional tape drive installed, leave it unconnected and use connector designed for the device you are connecting.

13. Replace the NetServer cover, external cables, and power cord.

Installing the Optional HP NetServer E 60 Duplexing Cable Kit

The E 60 can be configured to allow two-channel duplexing using the embedded SCSI controller. This means that if you intend to mirror drives you have the additional safety option of having your mirrored drives on two different SCSI channels in case one channel goes down. It requires you have at least two hard disk drives be installed in the hard disk drive cage, and a second SCSI cable (HP NetServer E 60 SCSI Duplex Cable Kit P/N D8212A).

To cable the duplex configuration refer to the figure below:

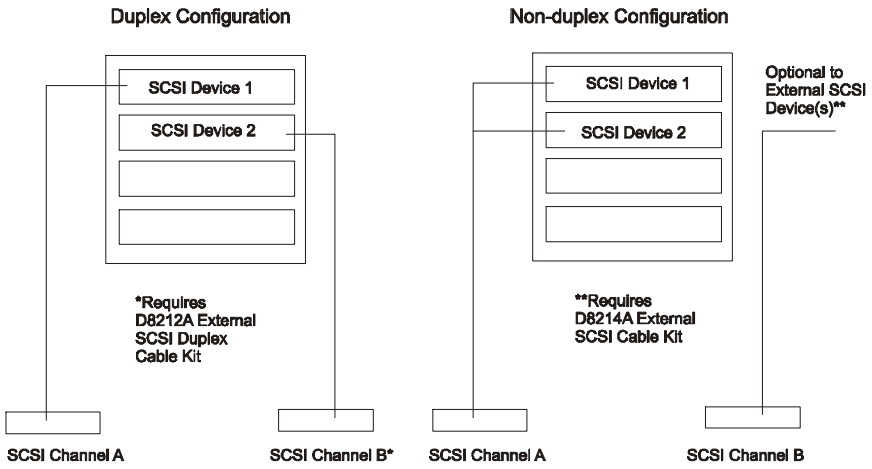


Figure 4-5. Duplex and Non-Duplex Cabling

Installing the Optional HP NetServer E 60 External SCSI Cable Kit

The E 60 can be configured to extend one of its SCSI channels (typically channel B) to an external connector. This allows you to connect additional external mass storage devices to the second channel of the system's embedded SCSI controller. It requires a second SCSI cable (HP NetServer E 60 External SCSI Cable Kit part number D8214A).

English

1. To install the external cable, connect one end to the free SCSI connector on the System board (refer to the Technical Reference Card on the chassis for location).
2. Using a flat blade screwdriver, pop out the external SCSI knock-out at the rear of the system (see Figure 4-7 for location).
3. Thread the cable from the SCSI channel B connector, between the processor cage and the factory installed AGP Video board, to the cutout at the rear of the chassis (see Figure 4-6).

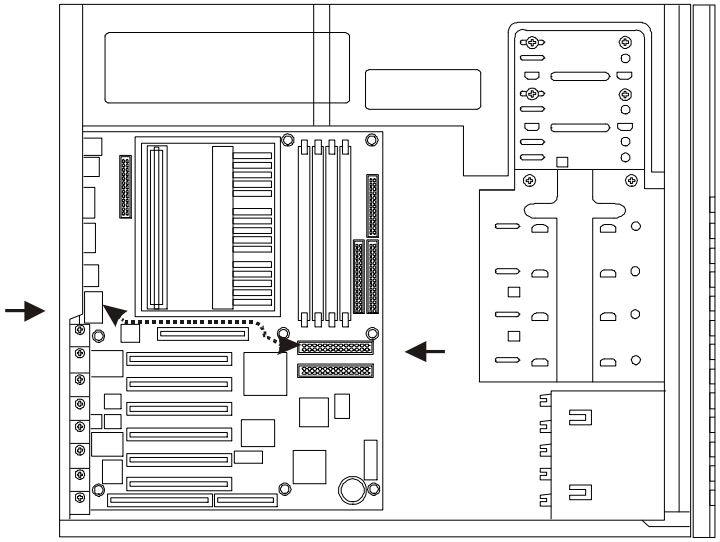


Figure 4-6. Threading External SCSI Cable

4. Install the external connector end of the cable to the rear where the knockout was removed and insert the two threaded studs from the outside (see Figure 4-7).

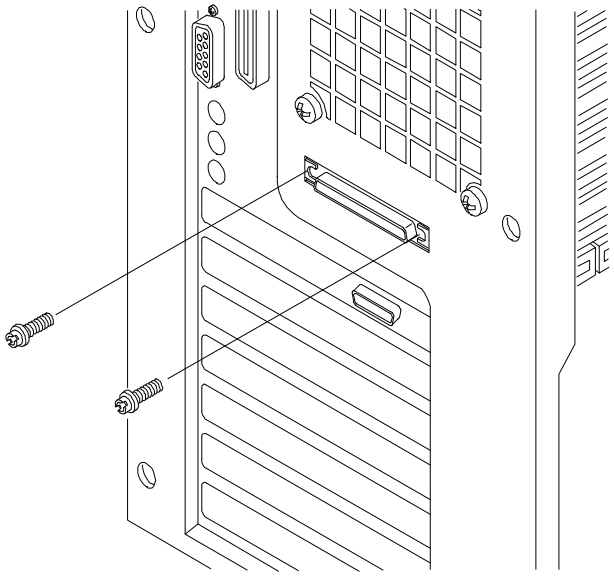


Figure 4-7. Connecting the Cable to the Rear of the System

5 Installing Additional Memory

Introduction

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.

Tools Required

Use an anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Installation Basics

There are four DIMM sockets on the system board. See Figure 5-1 for socket location. 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. For availability of DIMM upgrade kits for the NetServer E 60, check the web site at:

`http://www.hp.com/netserver/products/accessories/`

Installing Additional DIMMs

1. If the system is already installed and working, gracefully power down the system as described in Chapter 2.
2. Disconnect the power cables and any external cables connected to the system. If necessary, label them to expedite reassembly.
3. Remove the cover and turn in the system feet (so that the system will lay flat on its side) as described in Chapter 3.

WARNING	The power supply will continue to provide standby current to the NetServer E 60 until the power cable is disconnected.

4. Lay the server on its side (components showing).
5. Unsnap the air duct and move it out of the way (refer to Figure 4-1).

CAUTION	The memory modules are sensitive to static electricity and can be easily damaged by improper handling. Do the following when handling the accessory kit: Leave the memory module in the anti-static container until you are ready to install it. Use an anti-static wrist strap and a grounding mat. Before you remove a memory module from the anti-static container, touch a grounded, unpainted metal surface on the HP NetServer E 60 to discharge static electricity.

6. Locate the DIMM sockets (see Figure 5-1).

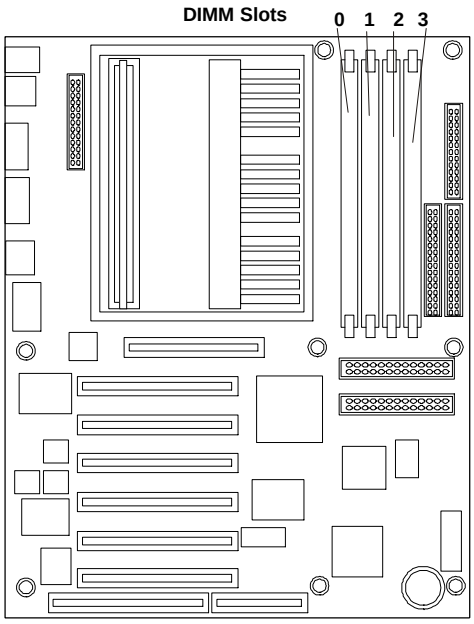


Figure 5-1. DIMM Locations on System Board

English

7. Install the DIMMs (see Figures 5-2 and 5-3):

   a. Remove a DIMM from its container, handling the module by its edges. Lay it on an anti-static surface.

   b. Choose a socket into which you want to install a DIMM. DIMMs may be installed in any combination, in any socket.

CAUTION	Use only HP DIMMs.

   c. Spread the two retaining clips on the socket outward.

   d. Align the notches on the DIMM with the keys on the socket (see Figure 5-2).

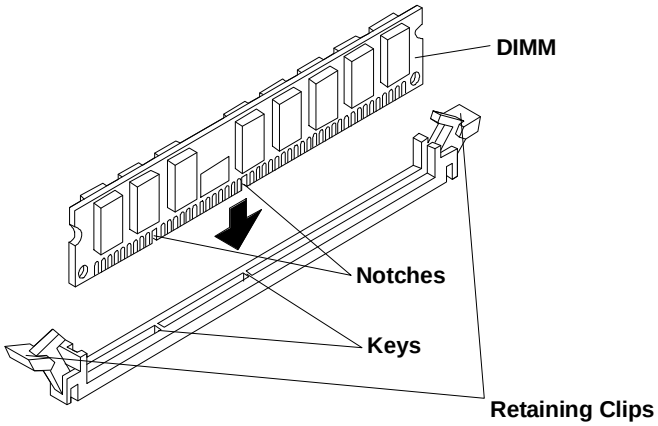


Figure 5-2. DIMM to Socket Alignment

   e. Holding the DIMM at 90 degrees to the system board, press the DIMM fully into the socket until the retaining clips close (see Figure 5-3). If the clips do not close, the DIMM is not inserted correctly.

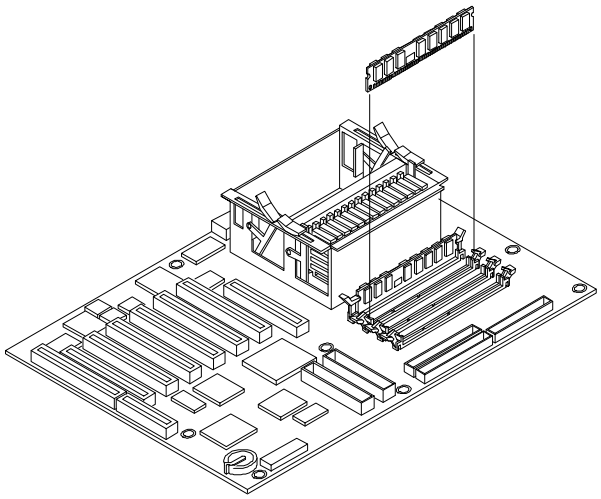


Figure 5-3. DIMM Insertion

8. Repeat to install all of the DIMMs for your memory configuration.

NOTE	Most DIMMs are dimensionally identical, so, if you have three or more DIMMs installed, you may check that they are all seated by sliding a straight edge (a pen, for example) across their top edges and checking that it remains in continuous contact with all of the DIMMs.

Removing DIMMs

You may need to remove a DIMM module to downsize your memory configuration or to replace a defective DIMM.

1. If the system is already installed and working, gracefully power down the system as described in Chapter 2.
2. Disconnect the power cables and all external cables and, if necessary, label them to support reassembly.

WARNING	The power supply will continue to provide standby current to the NetServer until the power cable is disconnected.

3. Remove the top cover from the NetServer. See Chapter 3 for details.
4. Open the retaining clips.
5. Lift the DIMM completely away from the socket.
6. Place the DIMM in its anti-static container.
7. Repeat steps 4-6 for as many DIMMs as you need to remove.

6 Installing Additional Boards

Introduction

The HP NetServer E 60 includes six PCI slots and one ISA slot that is shared with PCI slot 6. PCI slots 3-6 have a slot guide for full-sized boards (as shown in Figure 6-1).

This chapter tells how to use the six available expansion slots. For the latest information on accessory cards for the E 60, including slot recommendations, see the Readme file and Configuration Advisor on your *HP NetServer Navigator CD-ROM* (for instructions, see Chapter 9).

Tools Required

You will need:

- T15 Torx or ¼-inch flat blade screw driver.
- An anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Installation Basics

For every accessory board you install, the system needs to set aside available resources to support it. An accessory board typically requires resources such as an IRQ (Interrupt Request) and port address. When installing PCI accessories, the system uses their Plug-and-Play feature to correctly assign these resources automatically. In the case of some ISA cards, you may need to do this manually (see "Configuring an ISA Non-Plug-and-Play Board" in Chapter 11 for details).

Interrupt Sharing

Since system IRQs are limited, the system allows IRQ sharing. This means that two devices (for example, two PCI accessory slots) may share the same interrupt. Using this scheme the system is capable of supporting more accessory devices and avoiding internal conflicts; however, interrupt sharing results in a small performance loss as the operating system has to resolve which of the devices

caused the interrupt before it responds. For example, if you have drives connected to the embedded SCSI controller, use the other PCI slots before using slot 3.

IRQs are shared in the HP NetServer E 60 system as shown below. If you are installing a PCI board that does not support interrupt sharing (refer to the accessory board documentation), make sure that the shared slot is empty or has no embedded device assigned to it.

IRQ Shared Devices and Slots
Slot 1 and slot 5
Slot 2 and slot 6
Embedded SCSI and slot 3
Embedded LAN and slot 4

NOTE The AGP Video board shipped with the NetServer E 60 has the interrupt jumper disabled. The performance of some video intensive operations, such as 3D rendering, can be improved by enabling this jumper on the video board. You should also be aware that the AGP slot on the system board is physically connected to PCI Interrupt A, shared with slots 1 and 5.

Using the Primary or Secondary PCI Bus

To support six PCI accessory slots in the system, the NetServer E 60 has a Primary and Secondary PCI bus. HP recommends that you place high-performance cards on the Primary bus before populating the Secondary PCI bus.

PCI Slots	PCI Bus
Slots 1 and 2	Primary PCI Bus
Slots 3 through 6	Secondary PCI Bus

English

PCI Slot Initialization Order

During system boot, the PCI slots are initialized in the following order:

PCI slot 2
PCI slot 1
PCI slot 6
PCI slot 3
PCI slot 4
PCI slot 5

Installing a Disk Array Controller Board and Altering the Boot Priority

Adding a disk array controller board provides additional fault tolerance to your internal or external mass storage devices. If you plan on adding a disk array controller board to the HP NetServer E 60, HP recommends the HP NetRAID 3Si PCI board be installed in slot 5. When installing a disk array controller board, you may alter the server's boot order to allow the system to boot off one of the array's drives. This boot order can be changed under the **Configuration** menu of the server's BIOS Setup utility (under Boot Device Ordering | Hard Drive Priority | Bootable Cards).

Installing Accessory Boards

To install an accessory board:

1. If the system is already installed and working, gracefully power down the system as described in Chapter 2.
2. Disconnect the power cables and any external cables connected to the system. If necessary, label them to expedite reassembly.
3. Remove the cover and turn in the system feet (so that the system will lay flat on its side) as described in Chapter 3.

WARNING	The power supply will continue to provide standby current to the NetServer E 60 until the power cable is disconnected.

CAUTION	Wear a wrist strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure that the metal of the wrist strap contacts your skin.

4. Lay the server on its side (components showing).
5. Read the documentation that is included with the accessory card. Note any special instructions.

NOTE Adding a PCI-to-PCI bridge card to the HP NetServer may alter the server's boot order. This boot order can be changed using the SETUP utility (press [F2] during the boot process). Refer to Chapter 4, "Installing Mass Storage Devices," and see the subsection, "Boot Priority."

6. Identify the accessory slot number to be used. Note that Slot 6 (closest to the edge) is a shared slot for ISA and PCI. This means that you may only use one of these slots at a time (see Figure 6-1).

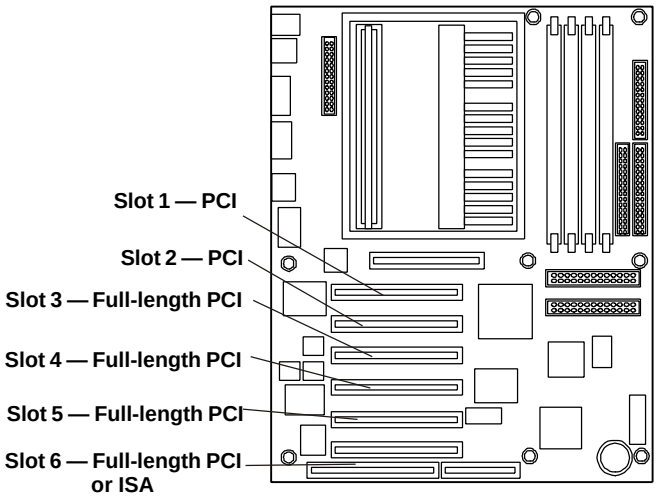


Figure 6-1. Accessory Slots

NOTE For slot recommendations for specific PCI cards, see the Readme file, Tested Products List, or Configuration Advisor on your *HP NetServer Navigator CD-ROM* (for instructions, see Chapter 9).

English

7. Use the T15 driver or flat blade screw driver to remove the PCI slot cover for each slot to be used, and store it for future use (see Figure 6-2).

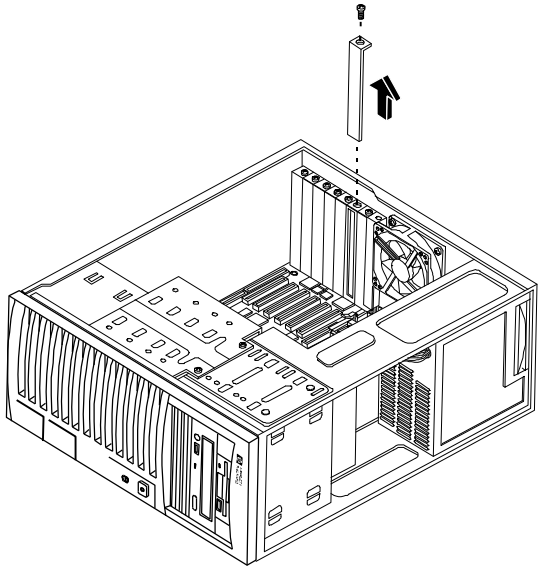


Figure 6-2. Removing the Accessory Slot Cover

8. Slide the accessory board into the slot (see Figure 6-3).

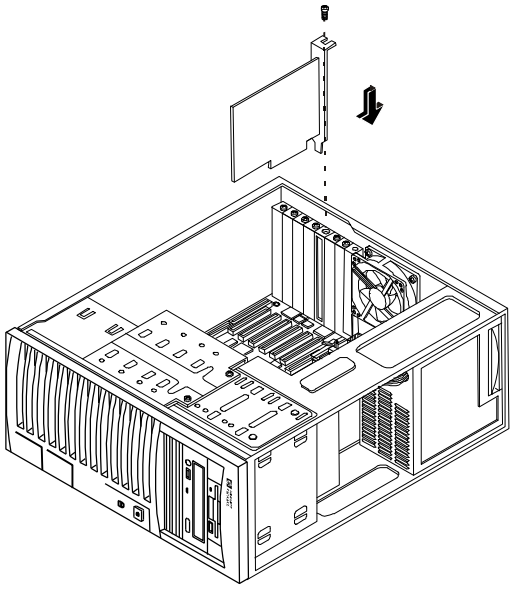


Figure 6-3. Inserting an Accessory Board

9. Secure the accessory board using the screw you previously removed with the slot cover. Use the T15 driver or flat blade screw driver.

Once the accessory board is installed, you may need to install software drivers. The drivers for the new board are either part of your existing system software or included on a floppy diskette that accompanies the accessory.

Removing Accessory Boards

Apply the same steps as in the installation procedure. Replace the slot cover. See the preceding sections for details.

English

7 Installing a Second Processor

Introduction

The NetServer E 60 supports up to two processor modules. Processor modules are available at different clock speeds.

The HP NetServer E 60 supports either Pentium II or Pentium III processors. **Do not mix Pentium II and Pentium III processors in the system. Do not mix processors with different clock speeds in the system (example: 400MHz and 450MHz processors).**

Note that compatible processors are not necessarily identical in appearance.

Tools Required

This tool is required for removal and installation of CPU modules:

- An anti-static service kit (3M™ 8501/8502/8503 or equivalent). This kit includes a static-dissipating work surface, a chassis clip lead, and a wrist strap.

Installation Steps

Open the NetServer E 60

1. If the system is already installed and working, gracefully power down the system as described in Chapter 2.
2. Disconnect the power cables and any external cables connected to the system. If necessary, label them to expedite reassembly.
3. Remove the cover and turn in the system feet (so that the system will lay flat on its side) as described in Chapter 3.
4. Lay the server on its side (components showing).
5. Unsnap the air duct and move it out of the way (refer to Figure 4-1).

WARNING	The power supply will continue to provide standby current to the NetServer until the power cable is disconnected.

CAUTION	Wear a wrist strap and use a static-dissipating work surface connected to the chassis when handling components. Ensure that the metal of the wrist strap contacts your skin.

Determine Where to Place the Processor Module

1. Locate the processor cage on the system board (see Figure 7-3).
2. Check the processor clock switch settings and determine the clock speed of the processor module already on the system board (see Figure 7-1).

NOTE	HP recommends that the system switch settings always be set to match the processor speed, even though some processor modules do not read the system switch settings (instead relying on settings internal to the CPU). These processors will still perform at their normal rated speed in the NetServer E 60 regardless of the system switch settings.

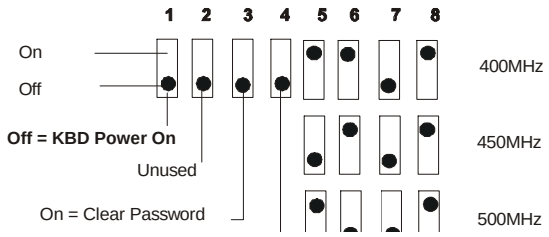


Figure 7-1. System Switch Settings

3. Check your upgrade kit to ensure that the additional processor module is the same clock rate as the installed processor.
4. If necessary, use a miniature screwdriver to reset the processor clock switch.

Install the Processor Module

CAUTION	The processor module is sensitive to static electricity and can be easily damaged by improper handling. Do the following when handling the accessory kit:

English

Leave the processor module in the anti-static container until you are ready to install it.

Use an anti-static wrist strap and a grounding mat.

Before you remove a processor module from the anti-static container, touch a grounded, unpainted metal surface on the HP NetServer E 60 to discharge static electricity.

1. Remove the terminating resistor module from the secondary processor slot as shown in the following illustration. First, unclip the two plastic securing clips that hold down the resistor module. Hold the resistor module by its edges and pull directly upward (see Figure 7-2).

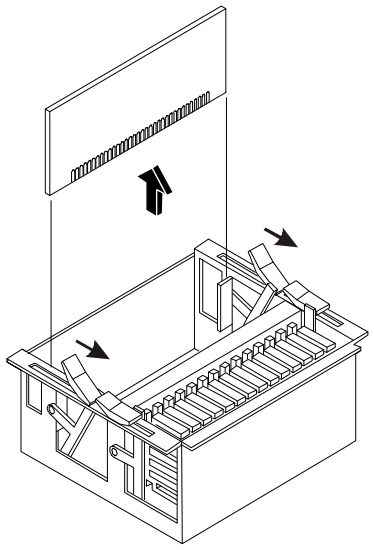


Figure 7-2. Removing the Terminating Resistor Module

2. Align the second processor module over the secondary processor module slot so that the heat sink faces the same direction as the processor module already installed (see Figure 7-3).
3. Firmly push down on the second processor module until it is fully seated.

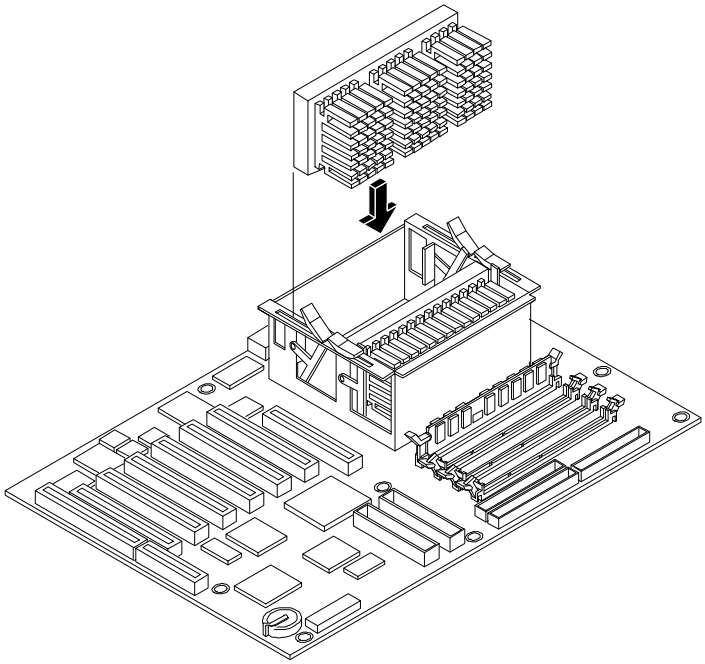


Figure 7-3. Installing the Processor Module on the System Board

4. Rotate the plastic securing clips into position over the processor. These clips will only lay down flat against the top of the processor when the processor is fully seated.

Upgrading the Firmware

If your processor included a new *HP NetServer Navigator CD-ROM*, insert the CD into the HP NetServer E 60 CD-ROM drive and power on the system. Follow instructions to ensure that the BIOS is up-to-date.

Reinstalling the NOS

You may have to reinstall your Network Operating System in order to use the additional processor. If you have gone from a uni-processor to dual-processor configuration, check your NOS documentation or the Readme First file and Configuration Advisor utilities on the *HP NetServer Navigator CD-ROM*.

English

Removing a Processor Module

Use the same procedure as above, and simply remove rather than add the processor module. *BE SURE* to replace the terminating resistor module.

English

8 Connecting the Monitor, Keyboard, Mouse, and UPS

Connect the monitor, keyboard, and mouse cables and the AC power cord to the appropriate connectors on the rear of the chassis. Use the power cord strain relief clamp to secure the power cord. When connecting the HP NetServer E 60 to peripherals, use the cable ties and labels that come with the product (see Figure 8-1).

If you are using a switch box to connect one monitor, keyboard and mouse to a number of servers, refer to the instructions that came with the switch box.

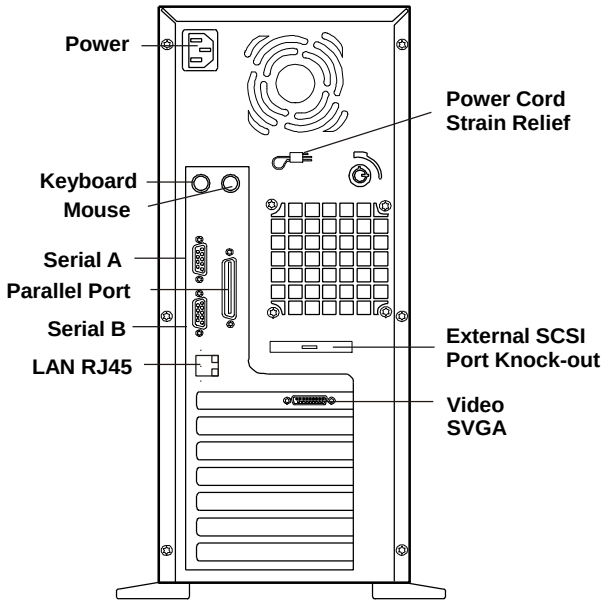


Figure 8-1. Rear Panel Ports

If you have an uninterruptible power supply (UPS), refer to the instructions supplied with it. Install and turn on the UPS.

The HP NetServer E 60 performs a diagnostic test when it is connected to an external power source, and then performs another test when the power switch is turned on. If an error condition occurs, note any error code appearing on the display, then refer to Chapter 12, "Troubleshooting."

9 Configuring the Server Using the *HP NetServer Navigator CD-ROM*

The *HP NetServer Navigator CD-ROM* is shipped with your NetServer. You will use this CD-ROM to configure your NetServer.

Contents of the *HP NetServer Navigator CD-ROM*

The Main Menu of HP Navigator directs you to modules where you can perform configuration tasks or access online system documentation. The menu buttons for these modules are as follows and are described in this chapter:

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

Before the HP Navigator Main Menu is displayed, you may be prompted to set the language and the time and date.

The following is a description of the contents of the *HP NetServer Navigator CD-ROM*, as accessed from the Main Menu.

Obtaining NetServer Product History

When the NetServer is connected to its monitor, keyboard, and power supply, you are ready to begin installation and configuration. As you configure the NetServer for use, it's important to have the very latest configuration information. This will inform you of any applicable compatibility issues, and provide you with a current list of HP-tested peripherals and accessories. Refer to the "Tested Products List" on the *HP NetServer Navigator CD-ROM*, or at the NetServer web site at:

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

You should also be familiar with HP DiagTools (on the *HP NetServer Navigator CD-ROM*) and Information Assistant (on the *HP NetServer Online Documentation CD-ROM*) to help you configure the NetServer.

Readme File

This file includes the most recent information that was not available at the time that the installation documentation was printed. It is important to check this file before proceeding with the installation.

Viewing the Readme File

1. Press the power-on button. Press the CD-ROM drive eject button. Place the *HP NetServer Navigator CD-ROM* in the drive, and press the eject button again to close the drive. Turn the power off, wait 10 seconds, and turn the power on again. If the system fails to boot, follow the diagnostic instructions on the screen.
2. Go to the HP Navigator Main Menu. If the language needs to be changed, select **User Preferences** and the language you want. You can also change the language of the BIOS when prompted.
3. Select **Readme File**. The Readme file contains the latest information to help you install your HP NetServer. Read it carefully before beginning your installation.

Configuration Assistant and Installation Assistant

HP Configuration Assistant guides you through the steps necessary to configure the NetServer. Three methods of configuration are available: Express, Custom, and Replicate.

HP Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration.

Before you run Configuration Assistant and Installation Assistant, you may need to run the SCSI Select utility and the Setup utility to do the following:

- 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 SCSI Select utility described in Chapter 11.

If you have installed an ISA non-Plug-and-Play accessory board, you must reserve system resources for it. Refer to the "Configuring an ISA Non-Plug-and-Play Board" section in Chapter 11.

English

Run Configuration Assistant and Installation Assistant

Insert the *HP NetServer Navigator CD-ROM* into the CD-ROM drive. Turn the power off, wait 10 seconds, and turn the power on again. If the system fails to start, follow the instructions on the screen.

1. When HP NetServer Navigator starts, you may need to set the language, time, and date. Follow the onscreen instructions. You can also change the language of the BIOS when prompted.
2. Go to the HP NetServer Navigator Main Menu and select "Configuration Assistant and Installation Assistant."
3. Follow the onscreen instructions in Configuration Assistant to continue your NetServer installation.

Express Configuration

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

- Update System BIOS: This step appears if Configuration Assistant detects that a newer version of the BIOS is available on the *HP NetServer Navigator CD-ROM*. You must update your BIOS to the new version if you want to continue in Express mode. You can also update the language that the BIOS displays.
- Select NOS: You will be asked to select the NOS and version that you plan to install.
- Select NOS Installation Mode: For certain versions of Novell NetWare and Microsoft Windows NT Server, you will be asked,

  ```
  Would you like to use HP's automated mode of NOS
  installation?
  ```

  - Select **Yes** for automated NOS installation, which will guide you through the NOS installation, set up the hard disk drive, and configure your NOS with appropriate drivers for HP-bundled configurations. Perform an automated NOS installation for first-time installation of Novell NetWare or Microsoft Windows NT Server on a factory-configured NetServer, or one to which you have added a Network Interface Card listed on HP's Tested Products List (TPL). This installation also loads Local TopTools for Servers onto Windows NT or NetWare systems, as well as pcANYWHERE-32 for remote access

to Windows NT systems. The Local TopTools for Servers program is a stand-alone support tool accessed directly from the NetServer. It gives you information to help you manage the NetServer.

- ◊ Select **No** for manual NOS installation. A manual NOS installation is the default if you are installing a NOS other than certain versions of Novell NetWare or Microsoft Windows NT Server, and also should be used if you have replaced any HP components with non-HP components other than Network Interface cards on the TPL.

- Configure ISA Non-Plug-and-Play Board: If you have installed an ISA non-Plug-and-Play board, and you have not reserved system resources for it, select **Configure** Non-PnP board on the information window that pops up.
- View Configuration Advisories: Read the configuration advisories, and print them if necessary. You can change your hardware at this time to conform to the advisories.
- Show System Information: Use this screen to display information about standard and accessory boards and devices in the system, as well as the used and available system resources.
  - ◊ Select **View System Information** on the Show System Information screen to display information about standard and accessory boards and devices in the system.
  - ◊ Select **View Resources** on the Show System Information screen to display used and available system resources, such as memory ranges, I/O port ranges, DMA channels, and interrupt (IRQ) levels.
- Configure Disk Array: If you have an HP disk array, you must configure it with the disk array utility. Select **Execute** on the Configure Disk Array screen to start the Disk Array utility.
- Install Utility Partition: This step creates a 32 MB utility partition on the server hard disk where HP Navigator will copy DiagTools, the BIOS update utility, the disk array utility, the NIC configuration utility, the Remote Console feature, troubleshooting utilities, and other utilities. It is not available for SCO UNIX. Select **Execute** on the Install Utility Partition screen.
- Execute Board Utilities: When Configuration Assistant detects installed boards for which there are additional configuration utilities on the *HP NetServer Navigator CD-ROM*, you can execute these utilities to complete

the configuration of the boards by selecting **Execute** on the Execute Board Utilities screen.

- Install NOS:
  - ◊ Automated NOS Installation: For certain versions of Novell NetWare or Microsoft Windows NT Server, Configuration Assistant partitions and formats the hard disk drive, and Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration and for Network Interface Cards on HP's TPL.
  - ◊ Manual NOS Installation: Before you perform a manual NOS installation, you must print instructions and manually create NOS-specific drivers diskettes, as follows:
    - ◊ Create Drivers Diskette(s): On the Create Drivers Diskette(s) screen, select **Create Drivers Diskette(s)** to create one or more customized diskettes containing HP drivers and configuration files to use when you install the NOS.
    - ◊ Print and Read Instructions: On the Show NOS Installation Instructions screen, select **Save to Disk** to copy the Network Operating System Installation Instructions to disk. Then print them out from the disk. Read the instructions first, and follow them to manually install the NOS.

Custom Configuration

In Custom configuration mode, you perform the same configuration steps as for Express configuration mode, but you can do them in any order. Select **Custom** on the Configuration Assistant menu if you are experienced in NetServer configuration and have a preferred sequence of steps, or if you prefer to configure your system one component at a time.

After you have selected the 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:

- Essential Steps:
  - ◊ Configure Disk Array: If you have an HP disk array, you must configure it with the disk array utility. Select **Execute** on the Configure Disk Array screen to start the Disk Array utility.

- Execute Board Utilities: When HP Navigator finds installed boards for which there are additional configuration utilities on the CD-ROM, this option becomes available to complete the configuration of the boards. Select **Execute** on the Execute Board Utilities screen.
- Install NOS (in automated NOS installation mode), or Create Drivers Diskette(s) (in manual NOS installation mode).

- Recommended Steps:
  - Update System BIOS: Use this to update the system BIOS to the newer version on the *HP NetServer Navigator CD-ROM*.
  - Install Utility Partition: This step creates a 32 MB utility partition on the server hard disk where HP Navigator will copy DiagTools, the BIOS update utility, the disk array utility, the NIC configuration utility, the Remote Console feature, troubleshooting utilities, and other utilities. It is not available for SCO UNIX. Select **Execute** on the Install Utility Partition screen.
  - Select **View System Information** on the Show System Information screen to display information about standard and accessory boards and devices in the system.
  - Select **View Resources** on the Show System Information screen to display used and available system resources, such as memory ranges, I/O port ranges, DMA channels, and interrupt (IRQ) levels.
  - Show NOS Installation Instructions: Select this option and **Save to Disk** to copy the Network Operating System Installation Instructions to disk. Then print them out from the disk. Read the instructions first, and follow them to manually install the NOS.

The NOS installation process, whether automated or manual, is the same as in Express configuration mode:

- For Manual NOS Installation Only: Before you perform a manual NOS installation, you must print instructions and manually create NOS-specific drivers diskettes, as follows:
  - Create Drivers Diskette(s): On the Create Drivers Diskette(s) screen, select **Create Drivers Diskette(s)** to create one or more customized diskettes containing HP drivers and configuration files to use when you install the NOS.
  - Print and Read Instructions: You may already have done this directly from the Custom Configuration menu option Show NOS Instructions.

If not, on the Show NOS Installation Instructions screen, select **Save to Disk** to copy the Network Operating System Installation Instructions to disk. Then print them out from the disk. Read the instructions first, and then follow them to manually install the NOS.

- Install NOS:
  - ◊ Automated NOS Installation: For certain versions of Novell NetWare or Microsoft Windows NT Server, Configuration Assistant partitions and formats the hard disk drive, and Installation Assistant guides you through the NOS installation and configures the NOS with the appropriate drivers for the HP-bundled configuration and for Network Interface Cards on HP's TPL.

Replicate Configuration

In Replicate Configuration mode, you can save a copy of your current system hardware 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 servers locally or from remote locations. If you are unfamiliar with these products or concepts,

- Go to the Management Web site on the HP Web Site at

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

  to view information on HP TopTools and all server management options for your NetServer.

- Read the *HP NetServer Server Management Reference Guide* included with your NetServer. This guide covers TopTools and all other server management utilities and options for the NetServer.

HP TopTools

HP TopTools is the browser-based management software that provides remote administration and monitoring of critical server components. TopTools (with the server component) provides vital information for the fastest troubleshooting and

proactive management of your HP NetServers. Processors, memory, storage, and NICs are a few examples of the components managed by TopTools.

Some of the features of TopTools include:

- Notification of problems with key hardware components, including memory, disk drives, SCSI controllers, and NICs
- Unified event log to review a complete history of server activity in one place
- Predictive disk problem warning backed by HP's pre-failure warranty replacement
- Disk capacity threshold alert and usage tracking
- View of critical server inventory information, such as the BIOS version, driver and firmware versions, ISA and PCI slot contents, and serial and parallel ports
- Easy linkage with leading management platforms, including HP OpenView Network Node Manager and Computer Associates' Unicenter TNG and Tivoli products
- HP TopTools AutoAlert provides proactive warning of problems and advice on quick resolution through a friendly "traffic light" user interface
- Support for DMI 2.0, which provides the same Desktop Management Interface inventory information for NetServers as for desktop PCs

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

For sites with a single-server installation, you may not need the power of the web-based HP TopTools. Instead, **HP TopTools Auto Alert** and **Local TopTools for Servers**, included on the *HP NetServer Navigator CD-ROM* can provide all the tools you need to manage your small business environment. Local TopTools for Servers provides the same information as HP TopTools but is run directly at the server. Local TopTools for Servers is automatically installed on your server when using the HP NetServer Navigator CD to install your Network Operating System. HP TopTools Auto Alert may be installed either from the *HP TopTools CD-ROM* or the *HP NetServer Navigator CD-ROM*.

- See the *HP NetServer Management Reference Guide* for detailed installation instructions.

English

- You can also download the TopTools software and documentation from the NetServer Web Site at

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

pcANYWHERE32

pcANYWHERE32 is remote-control graphics-redirection software from Symantec Corporation included with your HP NetServer (on the *HP NetServer Navigator CD-ROM*) 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.

NetServer Utilities

NetServer Utilities displays a menu where you can directly execute utilities, such as the following (only utilities supported on your system will be available):

- Diskette Library: Allows you to conveniently generate any flexible diskette available on the *HP NetServer Navigator CD-ROM*. For example, you can create the following diskettes: BIOS Update, 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.
- System BIOS Update Utility: Allows you to update the BIOS of your NetServer. Depending upon the language selected in User Preferences, it will also update the system language of your HP NetServer E 60.

Another utility, **DiagTools**, provides an easy-to-use hardware diagnostic for system verification, burn-in, and rapid troubleshooting. It must first be copied to diskette and then executed from the diskette.

User Preferences

User Preferences lets you change the language and the system date and time. You can also change the system language displayed by the HP NetServer E 60 BIOS.

10 Information Assistant

Overview

The *HP NetServer Online Documentation CD-ROM* includes Information Assistant, which contains the entire set of documentation for your NetServer E 60. Information Assistant provides a task-oriented interface that allows you to quickly and efficiently locate information including:

- complete documentation of your HP NetServer system and accessories
- important information on installing your NOS
- error message and beep code descriptions
- available diagnostics and servicing information
- parts lists
- available management software options and documentation

to help you better understand your NetServer and make choices compatible with your network.

Using Information Assistant

Information Assistant has many features that help you quickly find the information you need. The following is a brief description of these features. To understand how to use each function, use the Information Assistant help system.

Restart from the *HP NetServer Online Documentation CD-ROM* on the NetServer and run Information Assistant, or install Information Assistant as an application program on a Windows client machine (see the section "Installing HP Information Assistant Software" in this chapter).

Getting Help

Help button. Displays the help system for Information Assistant. The Information Assistant help system explains how to use Information Assistant to find the information you need.

Finding Information

Information Assistant provides many ways to navigate through its topics and locate information. For example:

Map button. Displays a window with an outline of every module and topic in Information Assistant for the selected product. The Map enables you to view the contents of the Information Assistant in outline format, and then select a topic to view.

Search button. Search performs full-text searches for topic text. It not only takes you to the topic found, but highlights the word or words found by the search. You can use search operators such as AND, OR, NOT, and NEAR to further narrow your search.

Product button. Each button represents a product or group of products.

Previous button. Displays the previous topic in a module.

Next button. Displays the next topic in a module.

Back button. Displays the previous topic viewed. Clicking this button more than once backtracks through topics in the order that you viewed them.

You can also navigate between topics by using hot spots and by using the History button to revisit previously viewed topics. For example:

- **Hot Spot Text**. Click on hot spots in graphics and text that link to other topics or to more information about the current topic. Hot spot text appears as bold green text. Identify hot spots on graphics by moving the pointer over the graphic. When you point to a hot spot, the pointer changes to a hand.
- **History button**. As you view topics, Information Assistant keeps a record of where you have been. The History button displays a list of the topics you have viewed, starting with the most recent. Select any topic from this list to return to it.

English

Copying and Printing Information

You can copy topic text in Information Assistant for use in other applications, such as word processors, by copying text onto the Windows Clipboard and pasting the text into any Windows application.

To print topics in Information Assistant, use one of the print options on the File drop-down menu. You can choose to print the current topic or all of the topics in a product book.

After selecting the print option, the Windows Print dialog box appears. Print options vary with the capabilities of your printer.

Installing HP Information Assistant Software

HP Information Assistant runs on a PC running Windows 3.1 and above, Windows 95/98, or Windows NT. Install it from the *HP NetServer Online Documentation CD-ROM* onto the client system that will manage the NetServer.

The installation program gives you the option of accessing the data files from your hard disk or from the CD-ROM. The default is to access the data files from the CD-ROM. You can copy the data files to your hard disk to improve access time, but this could take up a significant amount of disk space.

Installing from the CD-ROM

To install Information Assistant onto a Windows PC from the *HP NetServer Online Documentation CD-ROM*, perform these steps:

1. Turn on your computer and CD-ROM drive.
2. Run Windows and display the Program Manager.
3. Insert the *HP NetServer Online Documentation CD-ROM* into the CD-ROM drive.
4. From Program Manager (Windows 3.1 or NT 3.51) select the **File** menu and choose **Run**. If you have Windows 95 or Windows 98 or NT 4.0, click **Start** and then click **Run**.
5. At the command prompt, type the following:

   ***drive*:\infoasst\setup**

   where *drive* is the letter of the CD-ROM drive.
6. Follow the instructions that appear on your screen.

In Program Manager or the Programs group, the Setup utility creates a new program group called NetServer Information Assistant, with an icon for running the application.

11 Using the BIOS Setup and SCSI Select Utilities

The HP NetServer E 60 BIOS Setup utility is used to configure the following system options:

- User Preferences
- Security
- Configuration

Using the BIOS Setup Utility

Turn on the monitor and the NetServer, and start the Setup utility by pressing the [F2] key when

```
Press <F2> to enter SETUP
```

appears on the boot screen. The menu offers the choices listed above, and these choices are described here.

User Preferences

Use this menu option to set the system time, date and keyboard functions.

Security

Use this menu option to set Power-on password protections and hardware security options. Two choices are available under Security:

- Power On Password

  Use this option to set the power-on password: you can set a requirement that a password be provided upon powering on.

- Hardware Security

  Use the options under this head to enable or disable writing to floppy disks connected to the embedded controller. Also found here are switches for allowing booting from the floppy drive, disk drive, and CD-ROM.

Configuration

Use this menu option to configure I/O ports, I/O addressing, interrupts, PCI slot masters, IRQ interrupt locking, boot device ordering, embedded NIC enable/disable and Wake-on-LAN.

- **Integrated I/O Port.** Configure ports for serial and parallel, assign base addresses and interrupts, pointing devices (mouse), and console redirection for remote control.
- **Flexible Disk Drive.** Enable or disable the floppy disk drive controller.
- **Memory Cache.** Enable or disable memory hole and enable or disable RAM to free address space.
- **IDE Devices.** Set primary master/slave, secondary master/slave relationships on IDE devices, and set the local bus IDE adapter.
- **PCI Slot Devices.** Set a PCI slot as master, and PCI IRQ locking. BIOS warns of conflict.
- **Boot Device Ordering.** Set the boot order, including bootable boards.
- **ISA non-Plug-and-Play Devices.** Allows you to manually configure ISA non-plug-and-play boards in the system, see the next section.
- **Wake-on-LAN.** Wakes the system from its "sleep" state upon receiving a "Magic Packet". While the system is in the sleep state, the embedded LAN adapter scans all incoming frames addressed to the server for a specific data sequence, indicating to the adapter's controller that this is a wake-up frame. If the adapter detects the data sequence, it alerts the server's ACPI power management circuitry to wake up the system. The wake-up frame is based on industry-standard Magic Packet specification.
- **Embedded NIC.** Enable or disable the embedded LAN adapter.

Configuring ISA Non-Plug-and-Play Boards (Optional)

This section describes how to configure the NetServer for non Plug-and-Play boards.

English

Reserving Resources for ISA Non-Plug-and-Play Boards

If you have installed an ISA non-Plug-and Play accessory board, you must reserve system resources for it. Turn on the monitor and the NetServer, and start the Setup utility by pressing the [F2] key when

```
Press <F2> to enter SETUP
```

appears on the boot screen.

NOTE Pressing the [F2] key when prompted should start the Setup utility. For some ISA boards, the Setup utility will not start. When this happens you must remove the ISA board, use the Setup utility to reserve system resources for the ISA board, and reinstall the ISA board.

Use the Setup utility to allocate system resources to the ISA non-Plug-and-Play accessory board.

Configuring an ISA Non-Plug-and-Play Board

If you installed an ISA non-Plug-and-Play accessory board (such as certain modem boards, network interface boards, or multi-port boards) in a NetServer, you must reserve system resources for the board by using the Setup utility.

1. Read the documentation for the accessory board and determine what system resources it requires. These resources may include memory range, I/O port range, DMA channel, and interrupt (IRQ) level. For some resources there may be one value, or several values from which you may select by configuring jumpers or switches on the board. A board may not require resources from all of these categories. If the documentation for the board does not discuss some of these resources, they may not be required, and need not be reserved.
2. Turn on power to the NetServer and display monitor.
3. When you see the message

   ```
   Press <F2> to enter SETUP
   ```

   appears on the display monitor, press the [F2] function key.
4. If a password has been set, provide it when prompted.
5. When the Setup Utility menu is displayed, use the left and right arrow keys to select the **Configuration** menu25.

6. Use the up and down arrow keys to highlight **ISA non-Plug-and-Play Devices**, and press Enter to select that submenu.
7. Use the up and down arrow keys to highlight **Memory Resources**, and press Enter to select that submenu.
8. Use the up and down arrow keys to highlight the memory block that corresponds to the memory range required for the ISA board you are installing, and press the + or - key on the keypad to reserve it. If the memory range required for a board spans two or more blocks shown on the screen, reserve all blocks required by the board. If the memory range required for the board is less than one block, select the whole block that contains the range.
9. When all the necessary memory blocks are reserved, press ESC to return to the ISA non-Plug-and-Play Devices submenu.
10. Use the up and down arrow keys to highlight the **DMA Resources** item, and press Enter to select that submenu.
11. Use the up and down arrow keys to select the DMA channel that corresponds to the DMA channel required for the ISA board you are installing, and press the + or - key on the keypad to reserve it. Reserve all DMA channels needed for the board.
12. When all the necessary DMA channels are reserved, press ESC to return to the ISA non-Plug-and-Play Devices submenu.
13. Use the up and down arrow keys to highlight **I/O Resources**, and press Enter to select that submenu.
14. Use the up and down arrow keys to highlight the I/O port block that corresponds to the I/O port range required by the board you are installing, and press the + or - key on the keypad to reserve that block. If the I/O port range required for the board spans two or more blocks shown on the screen, reserve all blocks required by the board. If the I/O port range required for the board is less than one block, select the whole block that contains the range.
15. When all the necessary I/O port blocks are reserved, press ESC to return to the ISA non-Plug-and-Play Devices submenu.
16. Use the up and down arrow keys to highlight **Interrupt Resources**, and press Enter to select that submenu.

17. Use the up and down arrow keys to highlight the IRQ that corresponds to the IRQ required for the board you are installing, and press the + or - key on the keypad to reserve that IRQ. Reserve all IRQs needed for the board.
18. When all the necessary IRQs and other resources are reserved, press the [F10] function key to save and exit.
19. In the Setup Confirmation dialog box, press Enter to answer "Yes" to the question, "Save configuration and exit now?" The NetServer will reboot.

NOTE If you change your mind and want to exit the Setup utility **without** making the changes you have selected, press ESC once or twice to return to the Setup Utility menu. Use the right arrow key to select the **Exit** menu. Use the down arrow key to highlight **Exit Discarding Changes**. In the Setup Warning dialog box, use the spacebar or right arrow key to highlight **Yes**. Press Enter to answer "**Yes**" to the question.

Enabling the Remote Console Feature

HP Remote Console is built into the NetServer BIOS and is NOS independent. Use HP's BIOS level remote access to diagnose and remedy problems associated with a NetServer's hardware operations or configuration.

To enable the Remote Console feature of the HP NetServer E 60, enter the BIOS Setup utility as described above, then do the following:

1. Select **Configuration** from the menu bar.
2. Select **Integrated I/O** Ports.
3. Select **Serial Ports**.
4. Select **Console Redirection**.
5. Set the **Com Port Address** to 3F8/IRQ 4 (Serial Port A).
6. Select a baud rate.
7. Select console type.
8. Select flow control.
9. Select modem for console connection.

10. Then, after setting up your server and a remote PC console with modems, you install your terminal emulation software (pcANYWHERE32 included with the system) on the remote console to establish a connection. For in-depth details on configuring and using the Remote Console feature, refer to the "Remote Console Feature" online documentation found under the Management button of Information Assistant.

About the Remote Console Feature

The following illustration shows how HP's Remote Console works.

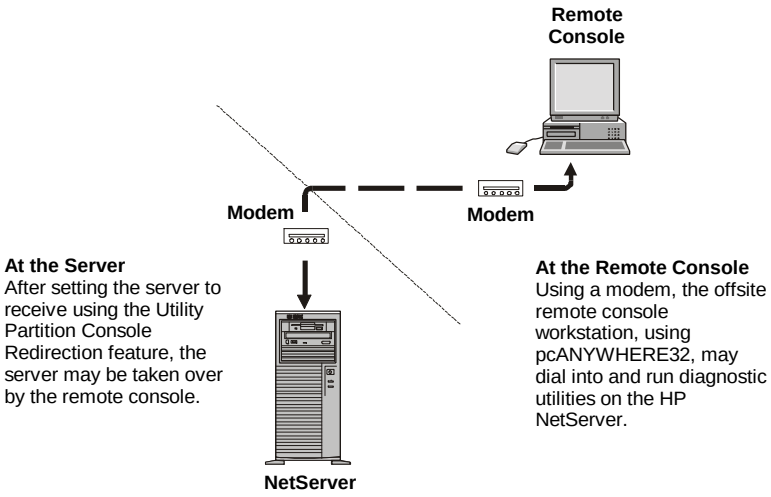


Figure 11-1. HP Remote Console Setup

Using the Remote Console feature, you can remotely access a customer's NetServer Utility Partition to:

- Update the system BIOS. This feature is particularly useful since it allows you to update a NetServer's BIOS remotely.
- Run the HP LAN configuration utility to configure and test embedded 10/100TX LAN Adapter (NIC).
- Run the SCSI Configuration Utility. This utility allows you to configure the server's SCSI host adapter settings, format a disk, or verify disk media.

English

- Run NetServer Diagnostics. This utility provides you with ways to test a NetServer's hardware components, including main circuit board function.
- Remotely boot the server and view startup messages.
- Set or reset system date, time, and keyboard language.

In addition, your HP NetServer E 60 includes pcANYWHERE32 communications software (by Symantec Inc.) that may also be installed on both the server and remote console to graphically redirect your Windows NT server console to a remote location. For in-depth details, refer to the "Remote Console Feature" online documentation found under the Management button of Information Assistant.

Using the SCSI Select Utility

Shortly after the system begins the boot process, a message appears that says:

```
<Ctrl A> for SCSI Select
```

SCSI Select is used for configuring embedded SCSI controllers and devices connected to SCSI controllers.

NOTE You typically would not need to use this utility unless you are an experienced administrator or requested to do so by a support provider.

You are informed of your SCSI host adapter type and model, Bus, Device, and Channel configuration.

There are two main topics under SCSI Select. They are **Configure/View Host Adapter Setting**, and **SCSI Disk Utilities**. Use them for the following purposes:

Configure/View Host Adapter Setting

Use this menu option to configure embedded SCSI controllers and devices connected to SCSI controllers.

- Host Adapter SCSI

  Set host adapter IDs.

- Boot Device Options

  Set boot channel and boot SCSI ID.

- Advanced Configuration Options

  Reset SCSI, display <Ctrl><A> message, enables or disables SCSI BIOS and features.

SCSI Disk Utilities

Use this menu option to format and verify media.

- Select device

  Select a device for low-level formatting or media verification.

CAUTION	Low-level formatting of a disk drive will destroy all of its data.

English

12 Troubleshooting

Troubleshooting Tools

If you are having problems installing your HP NetServer, there are a number of different tools available for troubleshooting:

- HP NetServer Information Assistant contains the following tools:
  - ◊ Troubleshooting Information
  - ◊ Parts Information
  - ◊ List of Error Messages and Beep Error Messages
- Navigator CD-ROM contains NetServer Utilities. At the Main Menu, select "NetServer Utilities" to use the following tool:
  - ◊ Diskette Library: A collection of diskette images that enables you to conveniently generate any flexible diskette available on the *HP NetServer Navigator CD-ROM*. For example, you can create the following diskettes: BIOS Update, and NOS Drivers.
- HP DiagTools Utility: An easy-to-use hardware diagnostic for system verification, burn-in, and rapid troubleshooting. Copy DiagTools to floppy from the *HP NetServer Navigator CD-ROM*, and execute from the floppy.

Common Installation Problems

The following sections contain general procedures to help you locate installation problems. If you need assistance, it is recommended that you contact your reseller first. If you need to get assistance from Hewlett-Packard, refer to Appendix D for information on service and support.

WARNING	Before removing the cover, always disconnect the power cord and unplug telephone cables. Disconnect telephone cables to avoid exposure to shock hazard from telephone ringing voltages. 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.

If the System Will Not Power On

Follow these steps if the power/activity light does not light green after you press the power-on button:

1. Remove the AC power cord, wait 15 seconds, reconnect the power cord, and try again.
2. Check to ensure that all cables and power cords are firmly plugged into their proper receptacles.
3. If the server is plugged into a switched multiple-outlet box, make sure the switch on the outlet box is turned on.
4. Plug a different electrical device (such as a printer) into the power outlet, and turn it on to check if the fault is with the power supply.
5. Check that the power supply is connected to the System board.
6. Check that the front power switch is connected to the System board.

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.
- 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, and only one thing, at a time.

NOTE	If the NetServer has a large amount of memory installed, it may take 30 seconds for the first screen to display.

If it is a hardware error, follow these steps:

1. Log users off the LAN and power down the server. Remove the NetServer's cover.

English

WARNING	Before removing the cover, always unplug telephone cables and disconnect the power cord. Unplug telephone cables to avoid exposure to shock hazard from telephone ringing voltages. 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.

2. Simplify the HP NetServer configuration to the minimum required: a monitor, one flexible disk drive, one CD-ROM drive, one hard disk drive, keyboard, mouse, and NIC. 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, consult the troubleshooting steps in the section "Hardware Problems." If you get an error message, see the section "Error Messages" below.
4. If the system still will not boot, clear the CMOS memory and reboot (see "Clearing the CMOS Configuration").

Error Messages

If you get a POST error message, press Enter (View System Error) to get a more detailed explanation and a possible solution.

No Error Messages Displayed

General Checks

1. All external cables and power cables are firmly plugged in.
2. The power outlet is working.
3. The computer and monitor are turned on. (The power-on indicator should be illuminated.)
4. The display's contrast and brightness settings are correct.
5. All internal cables are properly connected and all boards firmly seated.
6. Check that the CPU module is fully seated in its socket on the system board.
7. Check that Memory is installed correctly and fully seated. Check that slots and tabs are aligned in the DIMM connector.

After Installing an Accessory

1. Turn off the monitor, the computer, and any external devices.
2. Unplug all cables from the power outlet.
3. Remove the cover.
4. Check the following:
   - ◊ If you have installed an accessory board, check that the board is firmly seated in its slot and that any switches or jumpers on the accessory board are properly set. (Refer to the manuals that came with each board.)
   - ◊ Check all internal cabling and connections.
   - ◊ If you have changed any switches on the system board, check that they are properly set.
5. Replace the cover and connect all cables.
6. Turn on the monitor and computer.
7. If the NetServer still does not work:
   - ◊ Repeat steps 1, 2, and 3 of this section.
   - ◊ Remove all accessories, except the primary boot hard disk drive and AGP video board.
   - ◊ Replace the cover and connect all cables.
   - ◊ Turn on the monitor and the computer.
   - ◊ If the NetServer now works, replace the boards and accessories one at a time to determine which one is causing the problem.

If a Power-On System Hardware Test Error Message Appears

If an error occurs during the power-on system hardware test (when the NetServer starts) details of the error are displayed. Follow the instructions on the screen.

It is recommended that you correct the error before proceeding, even if the NetServer appears to start successfully.

If the NetServer starts, but the power-on system hardware test still reports an error message, clear the CMOS configuration, as described below.

English

Clearing the CMOS Configuration

You may need to clear the CMOS configuration if the configuration has been corrupted by a program, or if incorrect settings made in the Setup program have made the display unreadable.

To clear the configuration:

1. Turn off power to the NetServer and remove the cover and the cooling duct/cover.
2. Move switch 4 on the system board (labeled "Clear Configuration") to the ON position (see Figure 7-1).
3. Turn on power to the NetServer. A message displays indicating that the configuration has been cleared.
4. Turn off power to the NetServer.
5. Return switch 4 on the system board to the OFF position.
6. Replace the cooling duct/cover and the cover.
7. Turn on power to the NetServer. The message

   ```
   Incorrect PC Configuration
   Option ROM error
   ```

   is displayed.
8. Press [F2] to run the Setup program when **<F2=Setup>** appears.
9. Make any configuration changes that are required.
10. Choose the Exit option and save the changes to save the configuration and exit the Setup program.

Power-On System Hardware Test Error Messages

There are two kinds of error messages that may prevent the NetServer from booting. These are:

- Messages in reverse video (black text on white background.) Press the Return key to see a definition of the message and what action to take to remedy the problem.
- Power-on system hardware test errors. These display in normal video (white text on black background.)

The following table describes power-on errors and the corrective action you may take to remedy the problem:

Message	Corrective Action
Operating system not found	Check whether the drive from which you are booting has the power and SCSI flat cables connected. Verify that the SCSI cable is securely plugged into the SCSI controller board.
	Check that the boot device is enabled in the Start-up center under the Security menu of the Setup program. If the problem persists, contact your HP support organization.
	Verify that the boot device has an operating system installed.
Monitor type does not match CMOS - Run SETUP	Press [F2] to run the Setup utility, then choose the Exit option and save the changes to set the correct monitor configuration. Exit the Setup utility and reboot the system.
Keyboard error	Check that the keyboard is connected to the correct connector (not the mouse connector) at the rear of the system.
	Check system board switch one is in the OFF position.
	Replace the keyboard. If the problem persists, contact your HP support organization.
Mouse error	Check that the mouse is connected to the correct connector (not the keyboard connector) at the rear of the system.
	Replace the mouse. If the problem persists, contact your HP support organization.
System CMOS checksum bad - Run Setup	Press [F2] to run Setup. Change settings as required. Choose the Exit option and save the changes to save the new settings. Exit Setup and reboot the system.

If no message appears but the system stops after the power-on system hardware test, check that main memory DIMMs are correctly installed.

English

If a NetServer configuration error is reported during the startup routine, clear the CMOS memory as described under "Clearing the CMOS Configuration," and restart the NetServer.

Hardware Problems

This section describes what to do if you have problems with your monitor, mass storage devices, printer, accessory boards, keyboard, or mouse.

The Monitor Does Not Work

NOTE	If the NetServer has a large amount of memory installed, it may take 30 seconds for the first screen to display.

1. If nothing is displayed on the screen, but the computer starts and you have verified that the keyboard, disk drives, and other peripheral devices are functioning properly:
   - ◊ Check that the monitor is plugged in and power is turned on.
   - ◊ Check that the brightness and contrast controls of the monitor are properly set.
   - ◊ Check that the monitor video cable is securely connected to the computer.
   - ◊ Turn off the monitor and computer and unplug them from the power outlet. Disconnect the video cable from the computer and examine the video cable connector pins to see if they are bent. If they are, carefully straighten them.
   - ◊ If you have manually configured any accessories, check that each does not use the same I/O address as the integrated video interface (03B0h to 03DFh.) Refer to the documentation supplied with the accessory for more information. Check the video board is correctly seated in its slot.
2. If the display image does not align with the screen (usually after you have changed resolutions), use the display's controls to center the image. Refer to the monitor manual for information about the controls.
3. If the screens generated by the NOS do not look right, check the operating system manual to find out which video standard is required. Also check your monitor manual to find out which refresh rate is required.

4. If the screen goes blank after the NOS has booted, contact your HP support organization.

The Keyboard or Mouse Does Not Work

1. Check that the keyboard and mouse are connected to the correct connectors. Refer to the I/O panel label on the rear panel of the NetServer.
2. Check that the mouse is correctly defined in the control options of your NOS.
3. Clean the mouse ball and rollers using a lint-free cloth.

The CD-ROM Drive Does Not Work

1. Check that a CD is inserted in the drive.
2. Check that the power and data cables are correctly connected to the device.
3. Check that the CD-ROM is configured correctly in the Startup Center menu located under the Security menu in the Setup program.
4. If you intend to boot from the CD, make sure that option is enabled in the Setup program.
5. For further information, see your CD-ROM documentation.

A SCSI Device Does Not Work

If error messages display on the monitor indicating a failure of a SCSI hard disk or tape backup device, perform these checks:

1. Verify that the power cable is securely connected to the drive, and that the flat cable is securely connected to the drive and to the SCSI controller board.
2. Check that all SCSI devices have unique IDs. Refer to the Technical Reference Card, located on the side of the chassis for more details on setting SCSI IDs.
3. Ensure your device is set for cable termination.
4. Ensure connector pins are not displaced or distorted.

English

Password Problems

This section describes some common password problems.

Resetting Lost Passwords

If you have forgotten the User or Administrator password, you can reset them. The User password can be reset if you know the Administrator password; the Administrator password can only be reset by a switch on the system board.

User Password

If you have forgotten the User password, but the Administrator password is set and known, perform the following steps:

1. Restart the NetServer.
2. During the boot process, press [F2] to start the Setup program.
3. Enter the Administrator password then access the Setup program menu.
4. From the User Password menu, select "Set User Password" option.
5. Set the User password. Enter the Administrator password as the old password. (This will replace the old, forgotten password.)
6. Choose the Exit option and save the changes to save the new password.

Administrator Password

If you have forgotten the Administrator password, your NetServer will function normally, but you will not be able to change the system configuration settings (including User password) in the Setup program. To reset the Administrator password:

1. Turn off power to the NetServer.
2. Remove the cover and move the cooling duct/cover.
3. Move switch 3 on the system board (labeled "Clear Password") to the ON position (see Figure 7-1).
4. Turn on power to the NetServer and allow it to complete its startup routine. The old passwords (both User and Administrator) will be erased.
5. Turn off power to the NetServer.
6. Return switch 3 on the system board to the OFF position.

7. Replace the cooling duct/cover and the NetServer cover.
8. Turn on power to the NetServer and allow it to complete its startup routine.
9. If you wish to set passwords again, after the power-on system hardware test has completed, press [F2] to start the Setup program.
10. Set the new password(s).
11. Choose the Exit option and save the changes to save the new password(s).

Battery Problems

If your HP NetServer repeatedly loses its configuration or the CPU clock stops, you should replace the battery or install an external battery (an external battery with a 5-year life span is available from HP, order 1420-0513 from your authorized reseller.)

WARNING	There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn the old battery. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

To Install a Replacement Battery

1. Turn off power to the NetServer.
2. Remove the NetServer cover and the cooling duct/cover.
3. Remove the existing battery.

English

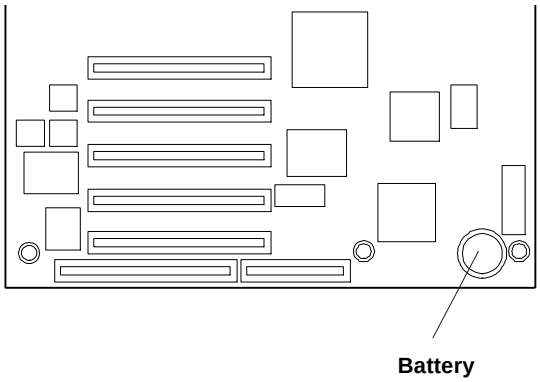


Figure 12-1. Battery on System Board

4. Insert the new battery with the positive sign (+) facing out, and ensure that it is seated completely. Make sure that the retaining clip is in place, and holds the battery firmly.
5. Replace the cooling duct/cover and the NetServer cover.

Problems Running the Setup Program

If you cannot run the Setup program, the NetServer's configuration in CMOS memory may have become corrupt. The only way to recover from a corrupted configuration is to clear it. See "Clearing the CMOS Configuration," earlier in this chapter.

A Specifications

The specifications listed below can vary if you install a mass storage device in your server that has more stringent environmental limits. Make sure that the operating environment for your server is suitable for all the mass storage devices that you are using.

Environment

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

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 512 MB. Supported DIMM types: 64MB or 128MB 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. See the next section "Video Display Modes" for more details.
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.

Video Display Modes

Resolution	Max. Refresh Rate @ 256 Colors	Max. Refresh Rate @ 65K Colors	Max. Refresh Rate @ 16.7M Colors
640x480	200Hz	200Hz	200Hz
800x600	200Hz	200Hz	160Hz
1024x768	150Hz	150Hz	120Hz
1152x864	120Hz	120Hz	85Hz
1280x1024	100Hz	100Hz	85Hz
1600x1200	76Hz	76Hz	Not available

English

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 – Maximum 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 Board Layout

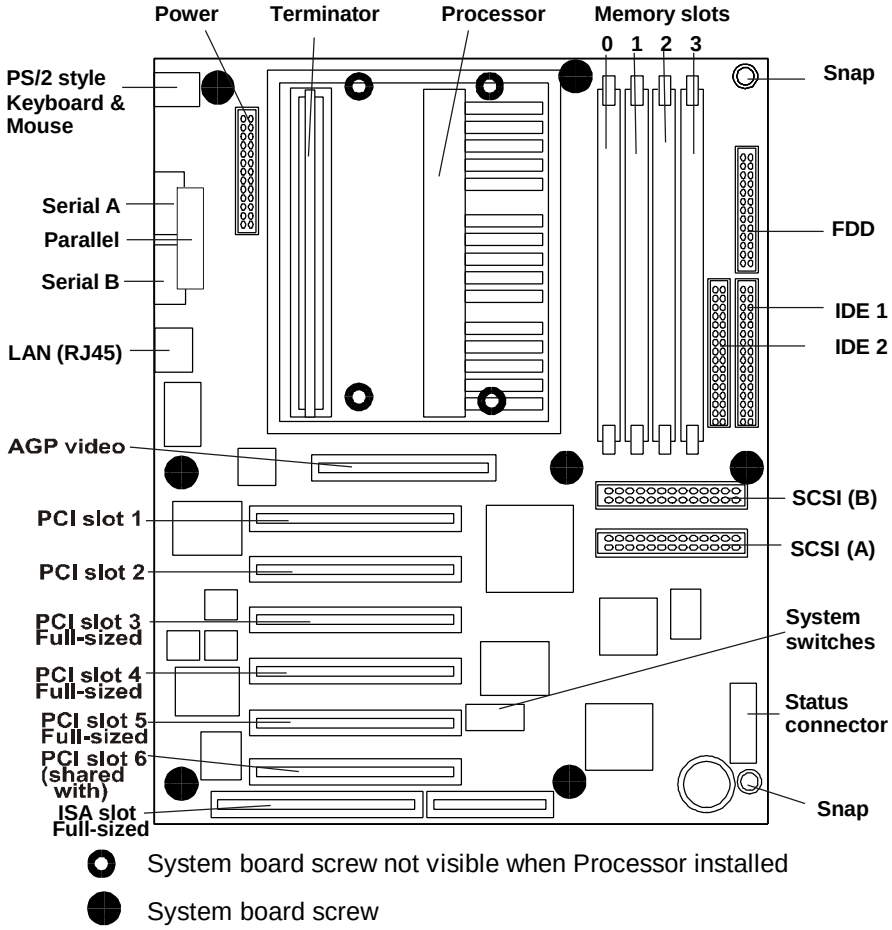


Figure A-1. NetServer E 60 System Board

B Regulatory Information

Regulatory Notices - Electromagnetic Compliance

Electromagnetic Compatibility (EMC) requirements have been established in many countries to regulate the radio frequency energy generated by Information Technology Equipment (ITE). This energy is generated during the normal and intended use of this equipment and so it is limited by country regulations to levels intended to minimize potential interference to other electrical equipment, including public safety services.

Two levels of radio frequency energy are allowed according to the type or use of equipment. Class A levels have been established for use in commercial or business environments. Class B levels are lower than the class A requirement and have been established for use in residential environments. Class B levels are also suitable when the environment includes electrically sensitive equipment.

The server equipment you have purchased has been provided with a compliance label to indicate where it may be used with reasonable protection to the environment in which it is used. Additional statements are provided below as required by the requirements of international and domestic regulations.

NOTE	Check the label on your product to determine the level of operation.

Notice for United States (Federal Communications Commission)

Class B Equipment

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

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

Hewlett-Packard's system certification tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your computer. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment. Cables used with this device must be properly shielded to comply with the requirements of the FCC.

Class A Equipment

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

Class A Accessories

Installation and use of a Class A accessory creates a system that meets the requirements for industrial and commercial environments. If you are installing a class A accessory in a system that has been labeled as a class B product, the requirements and notice for class A equipment shall be applied.

Notice for Canada (Industry Canada)

This digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

English

Notice for Japan

The configuration of the server you have purchased may be in either the class A or class B category.

For products labeled as Class B:

This equipment is in the Class B category information technology equipment based on the rules of Voluntary Control Council For Interference by Information Technology Equipment (VCCI). Although aimed for residential area operation, radio interference may be caused when used near a radio or TV receiver.

Read the instructions for correct operation.

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＢ情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると受信障害を引き起こすことがあります。
取り扱い説明書に従って正しい取り扱いをして下さい。

For products labeled as Class A:

This equipment is in the Class A category information technology equipment based on the rules of Voluntary Control Council For Interference by Information Technology Equipment (VCCI). When used in a residential area, radio interference may be caused. In this case, user may be required to take appropriate corrective actions.

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Notice for Korea

The configuration of the server you have purchased may be in either the class A or class B category.

Class A Equipment :

Please note that this equipment has been approved for business purposes with regards to electromagnetic interference, if purchased in error for use in residential area, you may wish to exchange the equipment where you purchased it.

Class B Equipment :

Please note that this equipment has been approved for non-business purposes with regards to electromagnetic interference. This equipment can be allowed for use in all areas as well as residential areas.

A급 기기 :

이기기는 업무용으로 전자파 장해검정을 받은 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 만약 잘못 구입하셨을 때에는 구입한 곳에서 비업무용으로 교환하시기 바랍니다.

B급기기 :

이기기는 비업무용으로 전자파 장해검정을 받은기기서 주거지역은 물론 모든 지역에서 사용할 수 있읍니다.

English

Notice for Taiwan: Class A Warning Statement

警告使用者:
這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Notice for European Union

Radio Frequency Emissions Warning for Accessories

This product has been found to comply with CISPR 22 Class B EMC emission limits. Installation and use of a Class A accessory creates a system that meets the requirements for industrial and commercial environments. However, in a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Notice for the United Kingdom: General Approval

This HP NetServer E 60 Product is approved under approval number NS/G/1234/J/100003 for indirect connection to Public Telecommunication Systems in the UK.

Declaration of Conformity (US, EU, Australia)

DECLARATION OF CONFORMITY
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's/Supplier Name:	Hewlett-Packard Company
Manufacturer's/Supplier Address:	10955 Tantau Avenue Cupertino, CA 95014-5040 USA

declares, that the product

Product Name:	Network Server
Model Number(s):	HP NetServer E 60
Product Options:	ALL

conforms to the following Product Specifications:

Safety:	IEC 950: 1991+A1, A2, A3, A4 / EN 60950: 1992+A1, A2, A3, A4 GB 4943-1995
EMC:	CISPR 22:1993 / EN 55022:1994 GB 9254-1988 EN 50081-1:1992 - Generic Emission EN 50082-1:1992 - Generic Immunity IEC 801-2:1991, 4 kV CD, 8 kV AD IEC 801-3:1984, 3 V/m IEC 801-4:1988, 0.5 kV Signal Lines, 1 kV Power Lines FCC Title 47 CFR, Part 15

Supplementary Information:
1) The product was tested in a typical configuration with Hewlett-Packard peripherals.
2) Models were configured with a network interface board and shielded twisted-pair data cable.
3) The product complies with Part 15 of the FCC rules. Operation is subject to the following two conditions:
This device may not cause harmful interference, and
This device must accept any interference received, including interference that may cause undesired operation.

The product herewith complies with the requirements of the following directives and carries the CE marking accordingly:
- EMC Directive 89/336/EEC including CE Marking Directive 93/68/EEC
- Low Voltage Directive 73/23/EEC

Santa Clara, February 15, 1999

Regulatory Engineering Manager

North American Contact: Hewlett-Packard Company Product Regulations Manager
3000 Hanover Street, Palo Alto, CA 94304 Phone: 415-857-1501
European Contact: Your local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ / Standards Europe, Herrenberger Straße 130, D-7030 Böblingen (FAX: + 49-7031

English

Regulatory Notices - Product Safety

The following information applies only to servers with factory-installed drives.

CD-ROM Electrical Safety Statement

WARNING	To prevent fire or shock hazard, do not expose the unit to rain or moisture. To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

Laser Safety Statements

CAUTION	This CD-ROM mass storage system contains a laser system and is classified as a "Class-1 Laser Product" under a U.S. Department of Health and Human Services (DHHS) Radiation Performance standard according to the Radiation Control for Health and Safety Act of 1968. To ensure proper use of this product, please read this instruction manual carefully and retain for future reference. Should the unit ever require maintenance, contact an authorized service location.

CAUTION	Use of controls, adjustments or the performance procedures other than those specified herein may result in hazardous radiation exposure. To prevent direct exposure to laser beam, do not try to open the enclosure.

LASER Safety - Finland

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP NetServer E 60 - verkkopalvelimeen voidaan asentaa lisävarusteena laitteensisainen CD-ROM-lukulaite, joka on laserlaite.

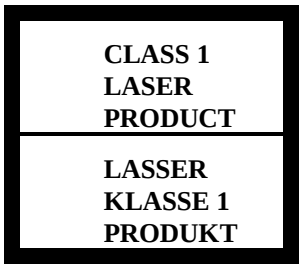
Kyseinen CD-ROM-lukulaite on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä lukulaitteen suojakotelo estää laseräteen pääsyn laiteen ulkopuolelle. Laitteen turvallisuusluokka on määritetty standardin EN 60825 (1991) mukaisesti.

Laser Safety - Germany

VORSICHT	Diese Gerät enthält ein Laser-System und ist als "LASER PRODUKT DER KLASSE 1"klassifiziert. Für den richtigen Gebrauch dieses Modells die Bedienungsanleitung sorgfältig durchlesen und als Referenz aufbewahren. Falls Probleme mit diesem Modell aufreten, die nächste "authorisierte Services-Verrtetung" benachrichtigen. Um einen direkten Kontakt mit dem Laserstrahl zu vermeiden, soll das Gehäuse nicht geöffnet werden.

VORSICHT	Die Verwendung von anderen Steuerungen oder Einstellungen oder das Durchführen von anderen Vorgängen als in der Bedienungsanleitung beschrieben kann gefährliche Strahlenexpositionen zur Folge haben.

English



This CD-ROM Drive Unit is classified as a CLASS 1 LASER PRODUCT.

The CLASS 1 LASER PRODUCT label is located on the top of the drive.

Bei diesem CD-ROM-Laufwerk CDU56S handelt es sich um ein Laser-Produkt der Klasse 1. Ein entsprechender Aufkelber mit der Beschriftung LASER KLASSE 1 PRODUKT befindet sich der Obersiete des Geräts.

Batteries

This product uses a lithium battery.

WARNING	Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

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

Noise Declaration and Ergonomics

Germany

Sound Pressure: LpA < 50 dB (A)

am Arbeitsplatz, Beobachter Position (workplace, bystander position)
normaler Betrieb (normal operation)
nach DIN 45635 T. 19 (per ISO 7779)

This product has not been evaluated for compliance with the ZH1/618 ergonomic requirements.

C Service and Support

English

For all service and support information, see the *HP NetServer Warranty and Service/Support Booklet* included with your product.

D Warranty and Software License

Warranty

See the *HP NetServer Warranty and Service/Support Booklet* included with your product for all warranty and service/support information.

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in the original Software on all copies or adaptations. You may not copy the Software onto any public network.

If your Computer was shipped with a Recovery CD, (i) the Recovery CD and/or Support Utility software may be used only for restoring the hard disk of the HP computer system with which the Recovery CD originally was provided, and (ii) if separate EULA(s) are included with your Computer for any other MS products which are included on the Recovery CD, those MS products are subject to the terms of their respective EULA(s).

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English

Non-Nuclear Usage

HP NetServers are not specifically designed, manufactured, or intended for sale as parts, components, or assemblies for the planning, construction, maintenance, or direct operation of a nuclear facility. Customer is solely liable if Products or Support purchased by Customer are used for these applications. Customer releases HP and will hold HP harmless from all loss, damage, expense, or liability in connection with such use.

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