



# ProLiant 850R

Setup and Installation Guide

**First Edition (May 1997)**

**298824-001**

**Compaq Computer Corporation**

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## ProLiant 850R Setup and Installation Guide

First Edition (May 1997)  
Part Number 298824-001

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## Preface

# Using the Setup and Installation Guide

The *Compaq ProLiant 850R Setup and Installation Guide* is intended to help you set up your server for optimal performance. Use this guide along with the technical information on the hood labels, the Systems Reference Library CD, the SmartStart and Support Software CD, and the Management CD for complete and comprehensive reference source materials. You can easily and quickly find much of the server's configuration and installation technical information on the hood labels located inside the server cover.

## How this Guide is Organized

This installation guide describes the features, configuration, diagnostics, and technical specifications of your new server. The guide is divided into the following chapters:

- **Chapter 1 – Compaq ProLiant 850R Features**  
This chapter provides a brief summary of the standard features of the ProLiant 850R server. It describes two valuable software programs that Compaq provides for ProLiant 850R users – SmartStart and Compaq Insight Manager.
- **Chapter 2 – Server Installation Overview**  
This chapter provides instructions for first-time server installation.
- **Chapter 3 – Installing Hardware Options**  
This chapter provides instructions for installing options for Compaq ProLiant 850R servers.
- **Chapter 4 – Server Configuration and Utilities**  
This chapter tells how to use the Compaq System Configuration Utility software program to complete configuration changes. The chapter also includes information about special Compaq network drivers.
- **Chapter 5 – Maintaining and Shipping the Server**  
This chapter provides information on general cleaning and maintenance for the ProLiant 850R server. It also provides suggestions for repackaging and shipping the ProLiant 850R server and components.

■ **Appendix A – Electrostatic Discharge**

This appendix suggests ways to prevent electrostatic discharge (ESD) and the damage it can cause.

■ **Appendix B – Installing a New Battery**

This appendix contains information on replacing the System Board and Feature Board configuration batteries.

■ **Appendix C – Power Cord Set Requirements**

This appendix contains requirements for the power cord set now available with the Compaq ProLiant 850R servers. A table lists power cord set requirements for each country.

■ **Appendix D – Switches and Jumpers**

This appendix provides the correct settings for the switches on the System Board.

■ **Appendix E – Regulatory Compliance Notices**

■ **Appendix F – Specifications and Connector Interfaces**

This appendix provides detailed specifications for easy reference.



■ **Index**

# Text Conventions

This document uses the following conventions to distinguish elements of text:

Text Conventions	
Convention	Use
Keys	Keys appear in boldface. A plus sign (+) between two keys indicates that they should be pressed simultaneously.
USER INPUT	User input appears in a different typeface and in uppercase.
<i>FILENAMES</i>	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These always appear in uppercase.
Type	When you are instructed <i>to type</i> information, type the information <b>without</b> pressing the <b>Enter</b> key.
Enter	When you are instructed <i>to enter</i> information, type the information and then press the <b>Enter</b> key.

# Symbols In Text

	<b>WARNING:</b> Text set off in this manner indicates that failure to follow directions in the warning can result in bodily harm or loss of life.
	<b>CAUTION:</b> Text set off in this manner indicates that failure to follow directions can result in damage to equipment or loss of information.

---

**IMPORTANT:** Text set off in this manner presents clarifying information or specific instructions.

---

**NOTE:** Text set off in this manner presents commentary, sidelights, or interesting points of information.

## Symbols on Equipment



---

**WARNING:** Any surface or area of the equipment marked with these symbols indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce risk of injury from a hot component, allow the surface to cool before touching.

---



---

**WARNING:** Any surface or area of the equipment marked with these symbols indicates the presence of electrical shock hazards. Enclosed area contains no operator serviceable parts. To reduce risk of injury from electrical shock hazards, do not open this enclosure.

---



---

**WARNING:** Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection. To reduce risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

---

## Where to Go for Help

Major sources of additional information are as follows:

- Compaq CDs that contain online documents
- Other hardcopy documents
- Compaq Web Site (<http://www.compaq.com>)
- Compaq Authorized Reseller or Service Provider

## Electronic Services

Users can download drivers, patches, and Compaq service updates from the following sources:

- Online services, such as CompuServe, Prodigy, and America Online can be used if you are a member. Use the keywords below to access Compaq materials:
  - CompuServe- The keywords are “GO COMPAQ”.
  - Prodigy- Choose the “Jump” navigation command, then enter the keyword “COMPAQ”.
  - America Online- Enter the keyword “COMPAQ”.
- Internet: Questions can be submitted to Compaq Technical Support staff using the electronic mail address: [support@compaq.com](mailto:support@compaq.com). Compaq files can be accessed using the address: [FTP.COMPAQ.COM](ftp://FTP.COMPAQ.COM). Enter "anonymous" for the user name at the log-in prompt and enter your full Internet electronic mail address for the password. You can access Compaq's World Wide Web server through the Uniform Resource Locator (URL): <http://www.compaq.com>.
- Compaq Download Facility: Call 1-281-518-1418

## Compaq CDs

### Compaq Systems Reference Library CD

Compaq Systems Reference Library CD is located in the Reference Information pack and includes the following online documents:

- ❑ Diagnostics
- ❑ Insight Manager documentation
- ❑ Integration TechNotes
- ❑ Part number lists
- ❑ SCSI and other options guides
- ❑ Security Management
- ❑ Server Maintenance and Service Guides (MSGs)
- ❑ Server reference guides

### Compaq SmartStart and Support Software CD

Compaq SmartStart and Support Software CD is located in the Server Setup and Management pack and contains:

- ❑ System Configuration Utility software
- ❑ ROMPaq
- ❑ Drivers

## Compaq Management CD

Compaq Management CD is located in the Server Setup and Management pack and contains:

- ❑ Insight Manager Utility software
- ❑ Online Help for the Insight Manager Utility

## Other Hardcopy Documents

In addition to this guide, the following hardcopy documents are available:

- *Compaq Integrated Remote Console User Guide* located inside your documentation set
- Instruction label located on the inside of the server cover

## Compaq Web Site

<http://www.compaq.com>

## Compaq Authorized Reseller or Service Provider

Compaq Worldwide Technical Support Telephone Numbers		
Location	Voice	FAX
APD	65-7503030	65-7504909
Argentina	54-1 313 3100	54-1 313 3100 Ext 21
Australia	61-2-9911-1955	61-2-9911-1900
Austria	0222-87816-16	0222-87816-82
Bahrain	973-210-214	
Belgium	(02) 716-96-96	(02) 725-22-13
Brazil	55 11 5505-3600	55 11 5505-3922 Ext 4336
Canada	1-800-386-2172	
Caribbean	1-800-345-1518	
Central America	713-378-2206	
Chile	562-274-3007	
China	86-10-834-6721	86-10-834-6713

*continued*

**Compaq Worldwide Technical Support Telephone Numbers** *continued*

Location	Voice	FAX
Colombia	571-345-0266	571-312-0157
Czech Republic	42-2-232-8772	42-2-232-8773
Denmark	45-90-4545	45-90-4595
Ecuador	593-2504540	
Europe/Middle East/Africa	(49) 089-9933-2891	
Finland	9800-206-720 (358-800-1-206720)	90-6155-9899 (358-0-61559899)
France	(33 1) 41-33-4455	(33 1) 41-33-4263
Germany	0180-5-212111	089-9933-3399
Hong Kong	852-90116633	852-28671734
Hungary	36-1-201-8776	36-1-201-9696
India	(91-80) 559-6023	
Italy	392-57-90300	392-575-00686
Japan	0120-101589	81 3-5402-5959
Korea	82-2-523-3575	82-2-3471-0321
Malaysia	(603) 718-1636	
Mexico	(525) 229-7910	(525) 229-7988
Netherlands	06-91681616	06-8991116
New Zealand	649-307-3969	
Norway	22-072-020	22-072-021
Poland	48-2-630-3535	48-2-630-3553
Portugal	351-1-4120132	351-1-4120654
Singapore	65-7503030	65-7504909
South Africa	27-11-728-6999	27-11-728-3335
Spain	341-640-1302	341-640-0124
Sweden	(46) 8 703 5240	(46) 8 703 5222
Switzerland	411 838 410/2222	01-837-0969
Taiwan	(886) 2-3761170	(886) 2-7322660
Thailand	62-2-679-6222	62-2-679-6220
United Kingdom	44-81-332-3888	44-81-332-3409
United States	1-800-386-2172	1-800-345-1518
Venezuela	(582) 953.69.44	(582) 952.86.70



## Customer Support

Compaq servers are backed by comprehensive and flexible customer support programs. Refer to your SmartStart and Support Software CD for information on Compaq Service Providers and Authorized Compaq Resellers in your area. This information is located under the Service Catalog button of the SmartStart and Support Software CD Online Reference menu.

Compaq Integration TechNotes provide detailed information on optimizing Compaq servers for advanced networks. Download TechNotes from the Systems Reference Library CD.

## Getting Product Updates

The latest product updates are available on the Internet at the Compaq World Wide Web site. Access the site through the following address:  
<http://www.compaq.com>

From the Compaq Home Page, select *Product*.

## Chapter 1

# Compaq ProLiant 850R Features

Compaq ProLiant 850R architecture combines the power of the Intel Pentium Pro processor with PCI bus architecture to provide optimum performance. The innovative architecture gives you maximum performance and flexibility.

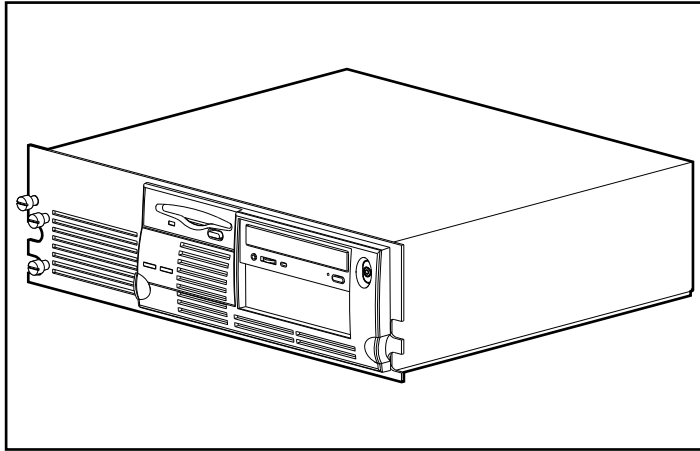


Figure 1-1. Compaq ProLiant 850R server

## Industry Support

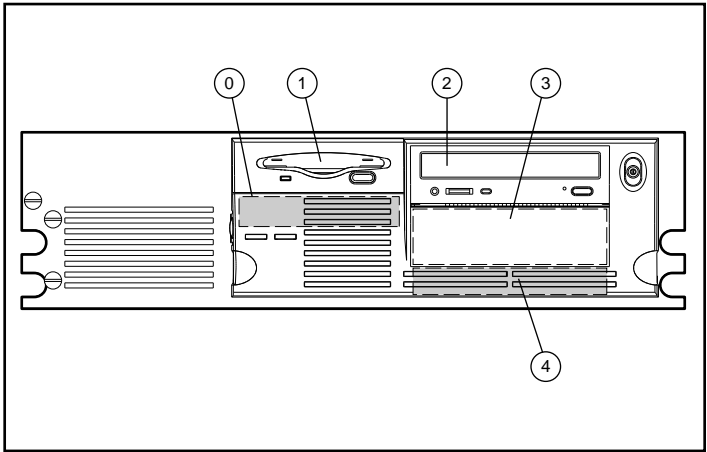
Compaq delivers extensive testing and support for major server operating systems. Because Compaq provides industry-standard buses for expansion, you have access to thousands of high-performance PCI and ISA expansion boards, as well as support for Wide-Ultra SCSI devices.

## Standard Features

The following features are standard on all Compaq ProLiant 850R models, unless otherwise noted.

## Drive Positions

The ProLiant 850R server can house up to five mass storage devices. The following illustration and table describe the recommended drive configurations.



**Figure 1-2.** ProLiant 850R server drive positions

**Table 1-1**  
**Description of Drive Bays**

Drive Bay	Configuration
0	3.5" wide x 1" height drive bay
1	3.5" 1.44MB standard diskette drive
2	5.25" wide x 1.6" height drive bay occupied by standard 8X IDE CD-ROM drive (removable media area)
3	5.25" wide x 1.6" height drive bay (removable media area)
4	5.25" wide x 1" height drive bay

# Processors and Processor Power Modules

- 200/66 256-KB cache Intel Pentium Pro Processor
- Dual Intel Pentium Pro Processor capability
- Processor Power Module (DC-to-DC converter)

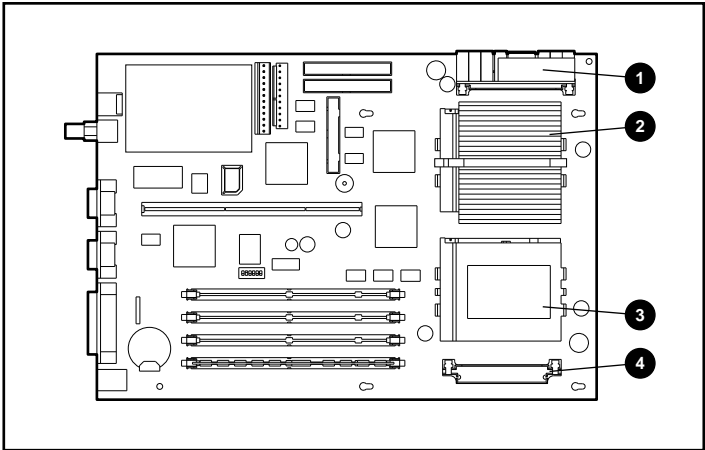


Figure 1-3. Processor Power Module on ProLiant 850R System Board

Table 1-2  
Processor/Processor Power Module Locations

Location	Description
1	Processor Power Module 1 (standard shipping configuration)
2	Intel Pentium Pro Processor 1 (standard shipping configuration)
3	Intel Pentium Pro Processor 2 ZIF Socket
4	Processor Power Module 2 Socket

## Cache Memory and System Architecture

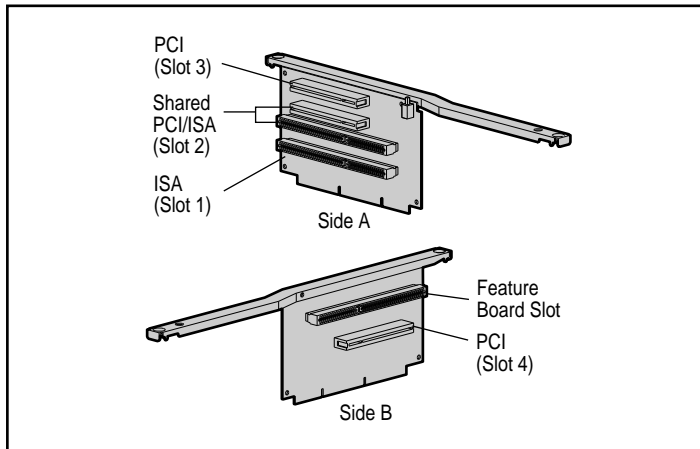
Full-speed 256-KB secondary (L2) cache integrated into the Pentium Pro processor.

## System Memory

32 MB unbuffered extended data out (EDO), error checking and correcting (ECC), random access memory (RAM) standard; expandable to 512 MB of memory installed in dual inline memory module (DIMM) sockets. Memory can be expanded one module at a time.

## Expansion Slots

Four expansion slots are configured on the Riser Board as follows:

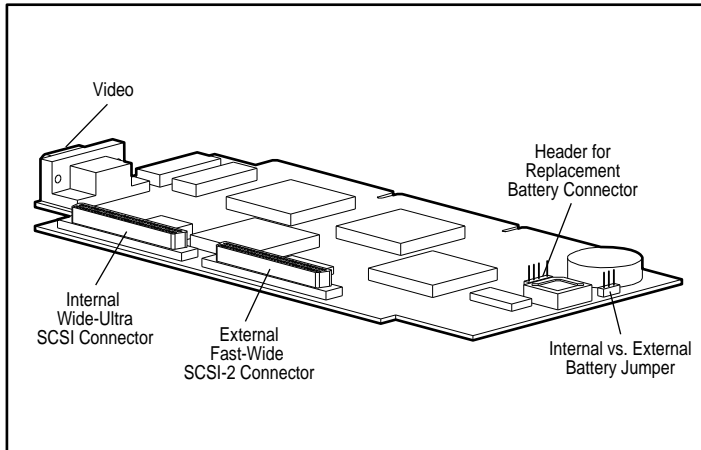


**Figure 1-4.** Locating ProLiant 850R expansion slots

- Two PCI slots for access to PCI bus providing peripheral transactions at a PCI clock speed of 33 MHz.
- One Shared PCI/ISA slot for access to either the PCI bus or to the ISA bus.
- One ISA slot to access the ISA bus.

## Feature Board

The drawing below illustrates Feature Board connectors.



**Figure 1-5.** Video, SCSI, and battery replacement connectors for the Feature Board

The highlights of the Feature Board include the following:

■ Video

- ❑ Integrated PCI Video Controller provides maximum resolution of 1024 x 768, 256 color, non-interlaced resolution
- ❑ 1MB video DRAM standard
- ❑ Supports SVGA, VGA, and EGA graphics resolution

■ SCSI Controller

- ❑ Integrated PCI Wide-Ultra SCSI Controller supports a 16-bit, 20-MHz bus that provides a maximum data transfer rate of 40Mb/s
- ❑ Internal SCSI connector supports Wide-Ultra SCSI, Fast-Wide SCSI-2 and Fast SCSI-2 devices
- ❑ External SCSI connector supports Fast-Wide SCSI-2 and Fast SCSI-2 devices

## **Integrated Network Controller**

The autosensing Compaq Integrated 10/100 TX UTP Controller supports 100 Base-TX, 10 Base-T, and 10 Base-2 Ethernet topologies. The RJ-45 connector is used for 100 Base-TX and 10 Base-T topologies. The BNC connector is used for the 10Base-2 topologies.

## **ROM**

- Software-upgradable firmware

## **Power Supply**

- 200 W Power Supply
- Power Switch Cover Security Feature

## **Warranty**

- Three-Year On-Site Limited Worldwide Warranty

## **Server Management and Configuration**

Compaq offers an extensive set of features and optional tools to support effective server management and configuration. These features are described in this guide:

- SmartStart
- Fault Tolerance
- Compaq Insight Manager
- Automatic Server Recovery-2 (ASR-2)
- Server Health Logs

## SmartStart

SmartStart is the intelligent way to configure your Compaq server with major operating system software. SmartStart helps you achieve a well-integrated server that ensures maximum dependability and supportability. For further information about configuration, refer to Chapter 4, “Server Configuration and Utilities.”

## Fault Tolerance

Allows the server to recover from a hardware problem without interrupting the servers’ performance. SCSI Managed Array Technology (SMART) adds a controller to deliver the following functions:

- RAID 0 - no fault tolerance
- RAID 1 - mirroring
- RAID 4 - data guarding
- RAID 5 - distributed data guarding

Fault tolerance for the ProLiant 850R server is covered in the online documentation on the System Reference Library CD.

## Compaq Insight Manager

Compaq Insight Manger is an easy-to-use intuitive software utility for collecting server information. This information is used by Insight Manager to perform the following functions:

- Send fault condition alerts to a predetermined destination
- Monitor fault conditions and server performance
- Control server security and configuration
- Remotely control servers
- Initiate rapid recovery services



In Compaq servers, every hardware subsystem, such as disk storage, system memory, and system processor, has a robust set of management capabilities. Compaq Full-Spectrum Fault Management prevents faults before they happen, keeps the system up and running in the unlikely event of a failure, and delivers rapid server recovery to normal operation after a fault. See Chapter 4, “Server Configuration and Utilities,” for more information.

## Automatic Server Recovery-2 (ASR-2)

A feature that can enable the server to boot automatically from the operating system or the Compaq Utilities. If there is a critical system failure, Automatic Server Recovery-2 allows you to restart the server and page a designated system administrator. See the Systems Reference Library CD (SRL) for more information on the ASR-2 feature.

## Compaq Integrated Remote Console

The standard Compaq Integrated Remote Console (IRC) performs a wide range of configuration activities. Some of the IRC features include:

- Remotely controls server using ANSI terminal
- Remotely reboots server
- Operates independently of the operating system
- Allows access to system configuration
- Provides out-of-band communication with modem installed in the server

For more information about the IRC, see the *Integrated Remote Console User Guide* located in the documentation set.

## Security Features

Refer to the online documentation on the SRL CD for more information on these security features.

- Power-On Password
- Administrator Password
- Network Server Mode
- Diskette Boot Control
- Power Switch Disable
- Serial/Parallel Interface Control
- QuickLock
- Security Lock Provision
- Intrusion Detection

## Pre-Failure Warranty

The Compaq ProLiant 850R server includes Pre-Failure Warranty for Pentium Pro processors, hard drives, and DIMMs purchased from Compaq through a Compaq Authorized Reseller. Supported components are eligible for replacement under this warranty before they actually fail, if the system determines that these components have degraded below predetermined reliability thresholds within the product warranty period.

## Insight Manager Alert

When Insight Manager alerts you that a component may be eligible for Pre-Failure Warranty replacement, follow the on-screen instructions or contact a Compaq Authorized Service Provider in your area. A yellow status indicator on the Insight Manager control panel signals that a component is in a degraded condition and recommends that you replace the component in a prefailure condition.

## Chapter 2

# Server Installation Overview

This section covers the following information about your new ProLiant 850R server:

- Installing the Server into the rack, including:
  - How to attach the mounting hardware to the rack
  - How to place the server into the rack and attach cables
- How to access the internal components of the rack-mounted server.



**WARNING:** To reduce the risk of electric shock or damage to the equipment:

Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

Disconnect power from the server or other product by unplugging the power cord from either the electrical outlet or the server or other product.

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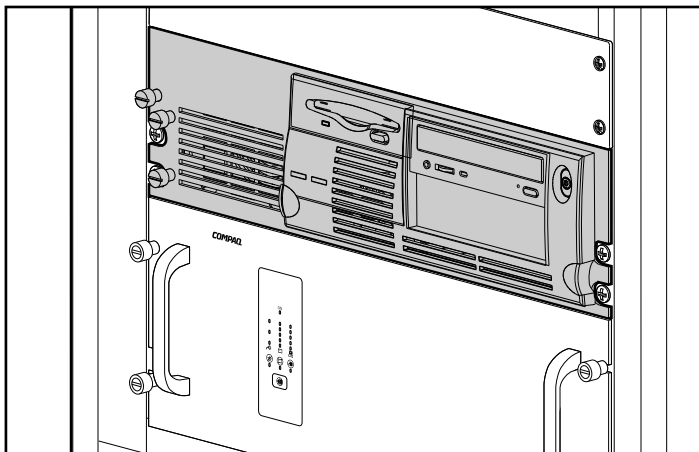
**WARNING:** Because the rack allows you to stack computer components on a vertical rather than horizontal plane, you must take precautions to provide for rack stability and safety. It is important that you follow these precautions to provide for rack stability and safety. It is important that you follow these basic instructions to protect both personnel and property, that you heed all cautions and warnings throughout the installation instructions.

---



**CAUTION:** Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure. Refer to Appendix A, "Electrostatic Discharge," for more information.

---



**Figure 2-1.** ProLiant 850R installed in rack

For more information about Compaq rack-mountable products, refer to the following Compaq documentation:

- Rack Builder diskette (provided with your server)

This program allows you to build an online version of your proposed rack configurations. You can add icons of the rack model server and other rack-mount components to a graphic of the rack you intend to use. You can print reports of your simulations that include a list of all the Compaq parts and part numbers that are required for complete installation.

- Rack-Mountable Compaq ProLiant Server Installation Video (for more information order the video from a Compaq reseller)

This video is about thirty minutes long and contains handy tips and tricks to help you efficiently and safely install rack-mountable products.

- Rack Planning and Installation Guide (for more information order the Guide (PN 165719-004) from a Compaq reseller)

This guide provides you with complete details on Compaq racks and rack-mountable products.

## Rack Warnings and Precautions



**WARNING:** Always load the heaviest item first and always load the rack from the bottom up. This makes the rack “bottom-heavy” and helps prevent the rack from becoming unstable.

---



**WARNING:** To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack.

---



**WARNING:** To reduce the risk of personal injury or damage to the equipment, the bottom stabilizers on the equipment must be fully extended. Ensure that the equipment is properly supported/braced when installing options and cards.

---



**WARNING:** To reduce the risk of personal injury or damage to the equipment, at least two people are needed to safely unload the rack from the pallet. An empty 42U rack weighs 253 lb (115 kg), is over seven ft (2.1m) tall, and may become unstable when being moved on its casters. Do not stand in front of the rack as it rolls down the ramp from the pallet, but handle it from the sides.

---



**WARNING:** A rack may become unstable if more than one component is extended for any reason. To reduce the risk of personal injury, always ensure that the rack is adequately stabilized before extending a component outside the rack, and extend only one component at a time.

---



**WARNING:** Before beginning to work on the rack, be sure that the leveling jacks are extended to the floor, that the full weight of the rack rests on the level floor, and that either stabilizers are installed or that multiple racks are coupled together for stability.

---



**WARNING:** To reduce the risk of personal injury or damage to the server you must support the server when either loading or unloading it from the rack. The ProLiant 850R server is not attached to the support rails of the rack and may fall if not supported when extended from the rack.

---



**CAUTION:** If a third-party rack is used, the following minimum requirements should be observed to ensure adequate airflow and to prevent damage to the equipment:

**Front:** The front door must have a minimum of 120 Sq. inches of unrestricted ventilation openings distributed evenly over the surface of the door.

-or-

Operate the servers with the front door removed.

**Side:** The clearance between the installed module and the side panels of the rack should be a minimum of 2.75 inches.

**Rear:** The clearance between the back of the rack and the wall should be a minimum of 30 inches,

-and-

The equipment should be operating without a rear door.

---

## Server Warnings and Precautions



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the hot plug drives and internal system components to cool before touching.

---



**WARNING:** This equipment is designed for connection to a grounded AC outlet. The grounding type plug is an important safety feature. To avoid risk of electric shock or damage to your equipment, do not disable this feature.

---



**CAUTION:** Ensure that the voltage select switch is in the proper position (115VAC or 230VAC). Failure to do so will result in damage to your equipment.

---



**CAUTION:** Be sure that the power outlet you plug your power cord into is easily accessible and located as close as possible to the equipment operator. When you need to disconnect power to the equipment, be sure to unplug the power cord from the power outlet.

---



**CAUTION:** Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

---



**CAUTION:** The Rack-Mountable Compaq ProLiant 850R server must always be operated with the system unit cover on. Proper cooling will not be achieved if the system unit cover is removed.

---

## General Steps for Installing the Server

The general steps outlined below are either detailed later in this chapter or in Chapter 3, “Installing Hardware Options.” When installing your server, follow the detailed steps to ensure safe and proper installation.

---

**IMPORTANT:** To complete the installation process, follow the detailed procedures provided later in this chapter and in other sections of this *Setup and Installation Guide* to reduce the risk of physical injury and/or damage to your server.

---

- **Ordering SmartStart Activation Keys.** If you are purchasing an operating system from Compaq (optional), you should order the SmartStart Activation Keys. For ordering information, refer to the Server Setup and Management pack shipped with your server.
- **Selecting a site and unpacking the server.** Refer to the next section in this chapter.
- **Setting switches and installing hardware options.**
  - ❑ The voltage switch must be set to the appropriate voltage setting for your country’s voltage requirements.
  - ❑ Refer to the label located inside the server cover. Confirm that System Board switch bank 1 is set as shown on the label.
  - ❑ Install additional memory, hard drives (remember to set the SCSI ID settings on your hard drives), external storage devices, and any ISA and/or PCI expansion boards. Refer to Chapter 3, “Installing Hardware Options” for hardware option installation procedures.
- **Installing the Rack-Mounting Hardware and the Server.** After installing the rack mounting hardware on the rack, slide the server into the rack.
- **Connecting External Interfaces.** Connect the cables associated with the keyboard, mouse, monitor, network, and power as well as any other cables for the server.



- **Booting and Configuring the System.** Turn on the monitor and server and use the SmartStart CD to boot and configure the server. For SmartStart CD initialization procedures, refer to the server Setup and Management pack shipped with your server.
- **Installing Compaq Insight Manager.** Use this utility to manage your server. For Compaq Management CD initialization procedures refer to the server Setup and Management pack shipped with your server. Register your Server. For server registration information, refer to the Server and Setup and Management pack shipped with your server.

For complete details on the SmartStart program, read the SmartStart installation card included in your SmartStart package.

After the SmartStart program has finished configuring your system, you have completed the installation of your new Compaq server.

## Selecting a Site and Unpacking the Server

Unpack your server. Then make sure your server site has the following features:

- A sturdy, level installation site that includes dedicated and properly grounded circuits, air conditioning equipment, and static electricity protection
- A 3-inch (7.6-cm) clearance at the front and back of the computer for proper ventilation
- A separate electrical circuit for the server



**WARNING:** To reduce the risk of electrical shock or damage to your equipment, do not disable the power cord grounding feature. This equipment is designed to be connected to a grounded (earthed) power outlet that is easily accessible to the operator. The grounding type plug is an important safety feature.

---



---

**CAUTION:** Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.

---

## Installing Hardware Options and Setting Switches

General tasks that are performed regularly are included at the end of this chapter, these task include:

- Removing and installing the server cover
- Removing and installing the front bezel
- Securing the System using a padlock

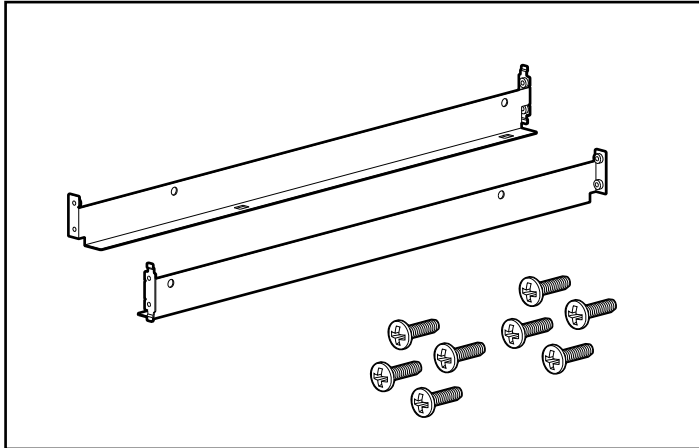
Refer to Chapter 3, “Installing Hardware Options” for hardware option installation procedures. For information on switch settings refer to Appendix D, “Switches and Jumpers” and for battery jumper settings refer to Appendix B, “Installing a New Battery.”

## Installing the Rack-Mounting Hardware and the Server

Installing the server into the rack is a straight forward process. The sections below provide the necessary information to install the rack hardware and place the server into the rack.

## Locating Materials

All of the parts needed for ProLiant 850R rack installation is included.



**Figure 2-2.** Rack mounting hardware included with the server

Locate the following materials shipped with your new server:

- Rack mounting hardware
  - ❑ One pair of support rails
  - ❑ Eight M6 x 1.0-12L Phillips screws
- Power cord
- Documentation inside the server. Most installation and setup instructions are located on a hood label inside the server cover.
- Hardware Documentation and Software Packs inside the shipping box:
  - ❑ Setup and Installation Guide for the ProLiant 850R server
  - ❑ SmartStart Documentation Package
  - ❑ Rack Builder program
  - ❑ CompaqCare folder

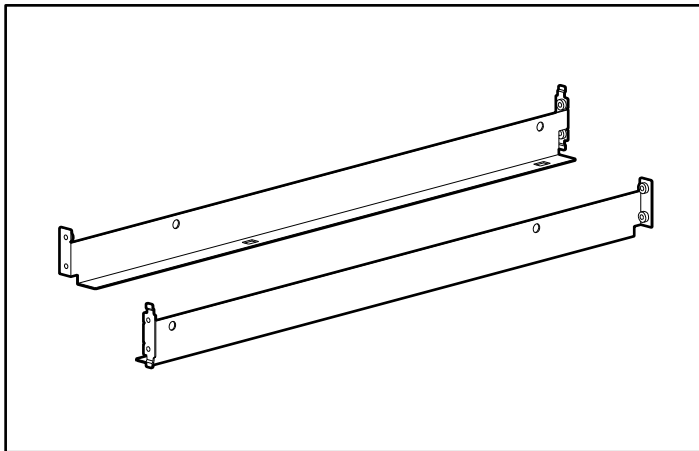
- ☐ Compaq Product Quality Statements
- ☐ Owner's Registration folder
- ☐ Support Software

In addition to these supplied items, you may need:

- Phillips screw drivers
- T-15 Torx screw driver
- Options to be installed, such as
  - ☐ Optional uninterruptible power supply (UPS)
  - ☐ Optional monitor, keyboard, etc.
- SmartStart Activation Keys. If purchasing application software, such as SmartStart from Compaq you will need to order the activation keys.

## Preparing Support Rails

Each pair of support rails supports one rack-mountable server.



**Figure 2-3.** ProLiant 850R support rails

## Measuring with the Template

The template provided with the server offers an easy and reliable way to properly position the server in the rack. Use the tabs on the template to suspend it from the **lower** hole of a two-hole set of perforations in the vertical side rails. Use a pencil to mark the attachment points for the support rails, the cage nut for the front bezel thumb screw, and the top of the server. Use the tick marks on the rack side rails to insure level installation of the server. See illustrations and instructions printed on the template.

---

**IMPORTANT:** Determine the server's place in the rack **before** you start installing the support rails. To remind you of the proper placement of the server in the rack, refer to the Rack Builder report you printed when you planned your rack configuration. Always mount the heaviest item on the bottom of the rack and work from the bottom to the top.

---

1. Align the template carefully with the holes on the rack to determine the exact placement of the screws. Starting at the bottom of the rack or at the top of a previously mounted component, measure the screw hole locations for the support rails. Use a pencil to mark the locations on the outside of the rack. Do this on both the front and the back of the rack.

---

**IMPORTANT:** The template is two-sided (front and back) and printed with arrows indicating where the screws will be inserted, both for the support rails and for the thumb screw that will secure the front bezel to the front of the rack. Align the template carefully with the holes on the rack to determine the exact placement of the screws.

---

2. When you mark the positioning of the support rail screws, also mark the position of the cage nut in the front of the rack. This is the slot marked "C" on the template. The cage nut holds the thumb screw through the server's front bezel, as shown in the following figure.

Be sure to follow the alignment instructions on the template, and keep the sides of the template aligned with the sides of the rack. Tick marks on the rack's vertical rails will help you maintain the proper alignment.

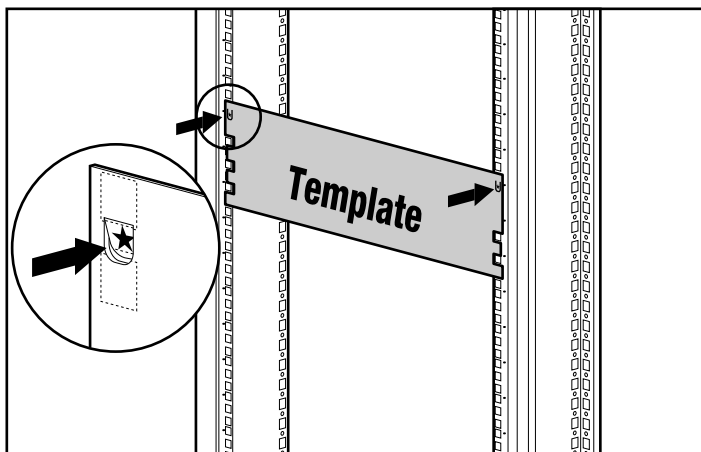


Figure 2-4. Measuring with the template

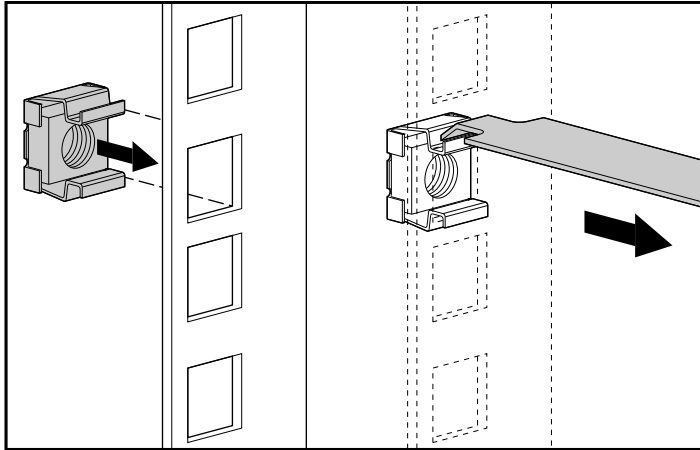
3. After marking the front of the rack, flip the template over and mark the back rails of the rack. Open the rear door of the rack to access the back rails.
4. On the back of the rack, also mark the rail to show the top of the template. This will help you align a template for the next component.

## Inserting the Cage Nut in the Rack Frame

After marking the positions for the fasteners in both the front and back of the rack, use the fitting tool to insert the cage nut on the **inside** of the rail at the marked location. The cage nut and fitting tool are included in the hardware kit supplied with the rack.

1. Position the cage nut as shown in the following figure, on the inside of the rail.
2. Hook one of the lips of the cage nut through the square rail perforation.

3. Insert the tip of the fitting tool through the other side of the perforation and hook the opposite lip of the cage nut.



**Figure 2-5.** Inserting cage nut

4. Using the fitting tool as a lever, pry the cage nut into position.

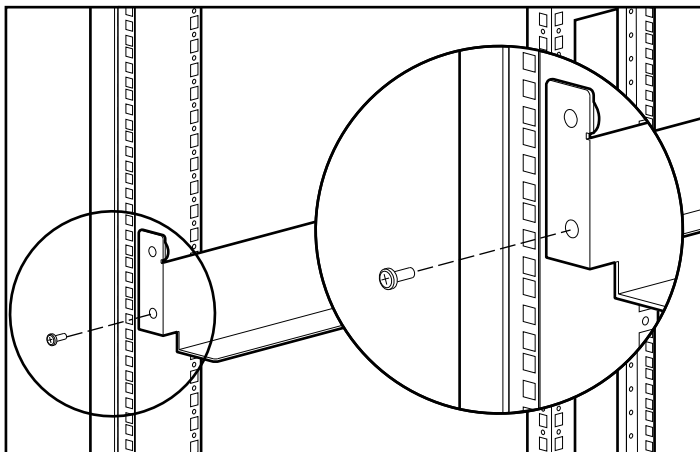
## Mounting the Support Rails



**WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that the rack leveling feet are extended to the floor and support the full weight of the rack. Each rack must be level and stable. Racks that are not coupled together require the installation of stabilizers. This **must** be done before you perform any work on the rack.

See the *Rack Planning and Installation Guide*, for more information on leveling feet and stabilizers.

1. Align the support rail rear flange on the inside of the rear rack frame with the corresponding holes for screw placement. Insert two M6 x 1.0-12L Phillips screws from the outside of cage and tighten.



**Figure 2-6.** Attaching support rail to the rear of the rack

2. Align the front flange of the rail inside the front rack frame, verifying that the support rail is aligned. Insert two M6 x 1.0-12L Phillips screws and tighten.
3. On the opposite side of the rack install the second support rail following steps one and two. Make sure the two rails are level.
4. When the support rails have been installed, load the server into the rack.

## Loading the Rack Server



**WARNING:** To reduce the risk of personal injury or damage to the server you must support the server when either loading or unloading it from the rack. The ProLiant 850R server is not attached to the support rails of the rack and may fall if not supported when extended from the rack.

Load the server and secure it to the rack with the left-most front bezel thumb screw. Ensure that this pair of brackets is perfectly aligned and installed and that the server fits before you continue.



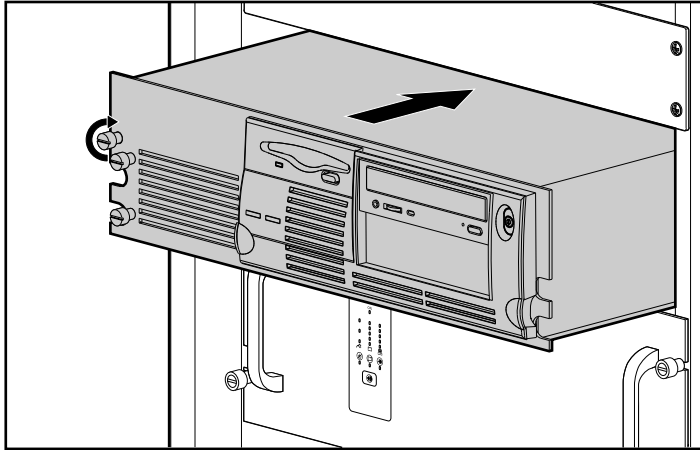


Figure 2-7. Loading the rack server

1. Secure the server front bezel to the front of the rack by fastening the left-most thumb screw into the cage nut.
2. Be sure the thumb screw is fully engaged before closing the rack door.

## Removing the ProLiant 850R Server from the Rack

Reverse the steps from the “Loading the Rack Server” section procedure to remove the server from the rack.

## Removing the Server Cover

The server cover must be removed to gain access to drive bays, expansion slots, or switches inside the server.



**WARNING:** Before removing the server cover, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.



**WARNING:** To reduce the risk of personal injury or damage to the server you must support the server when either loading or unloading it from the rack. The ProLiant 850R server is not attached to the Support Rails of the rack and may fall if not supported when extended from the rack.

To remove the server cover:

1. If the computer is on, turn it off and disconnect the power cord.
2. Disconnect any other external equipment connected to the computer.
3. Release the server's front bezel from the front of the rack by unfastening the left-most thumb screw from the cage nut.
4. Remove the server from the rack and place on a secure table or work bench.
5. Remove the two thumb screws on the rear of the unit.
6. Slide the server cover toward the rear of the unit about 1 inch (2.5cm); then lift the cover up off the unit.

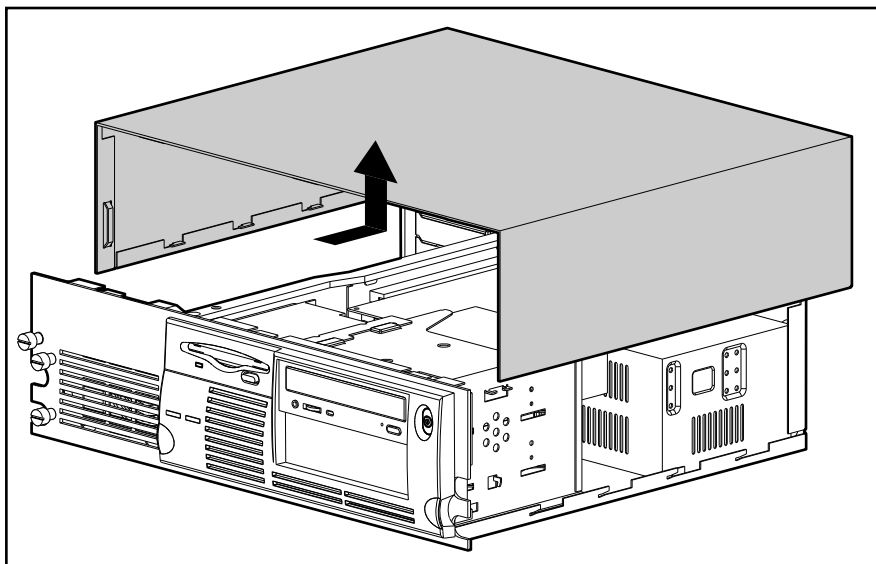
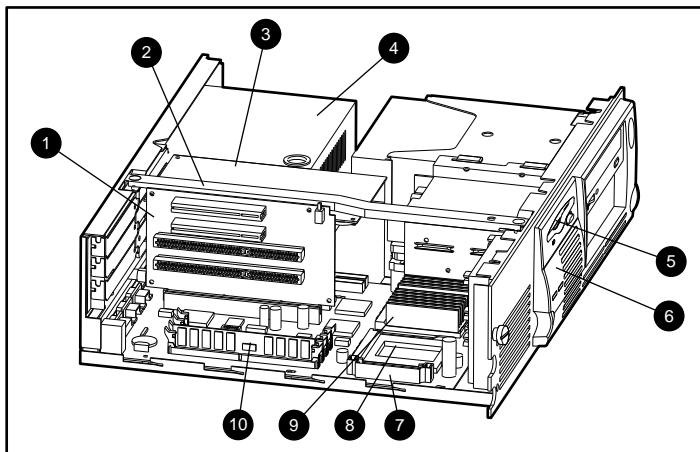


Figure 2-8. Removing the server cover

## Locating ProLiant 850R Server Internal Components

The following illustration provides an inside view of the main features of the server. The table which follows is keyed to illustrate key features.



**Figure 2-9.** An inside view of the Pentium Pro-based server

**Table 2-1**  
**System Board Components**

Pentium Pro Board	Interior Components
❶	Riser Board
❷	Riser Board Brace
❸	Feature Board
❹	Power Supply
❺	Diskette drive
❻	Internal hard drive (Optional)

*continued*

Pentium Pro Board	Interior Components <i>continued</i>
7	Processor Power Module 2 Socket
8	Intel Pentium Pro Processor (CPU) 2 ZIF Socket
9	Intel Pentium Pro Processor (CPU) 1
10	Memory module sockets (DIMM)

## Installing the Server Cover

Reverse the steps from the “Removing the Server Cover” procedure to replace the server cover.



**CAUTION:** Do not operate the server with the cover removed. This cover is an integral part of the cooling system and removing it while the system is running may adversely affect data integrity.

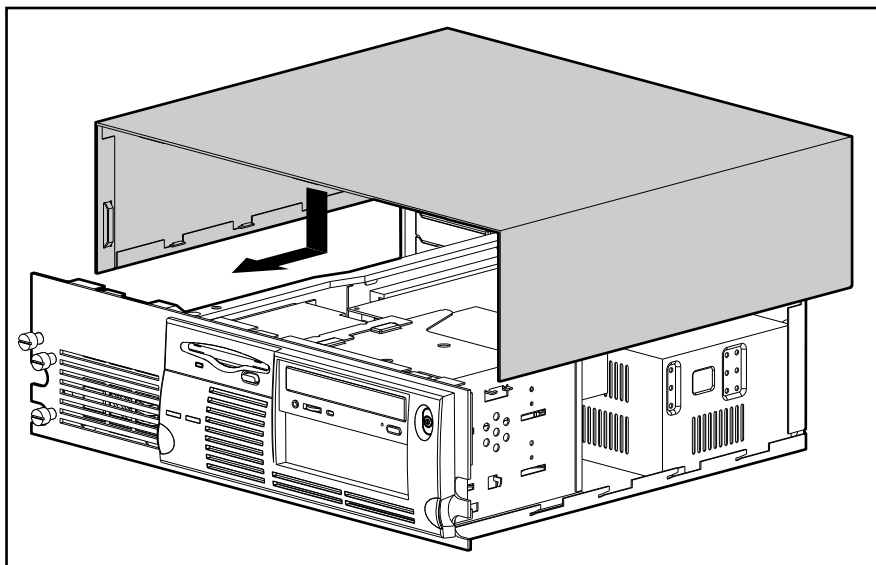
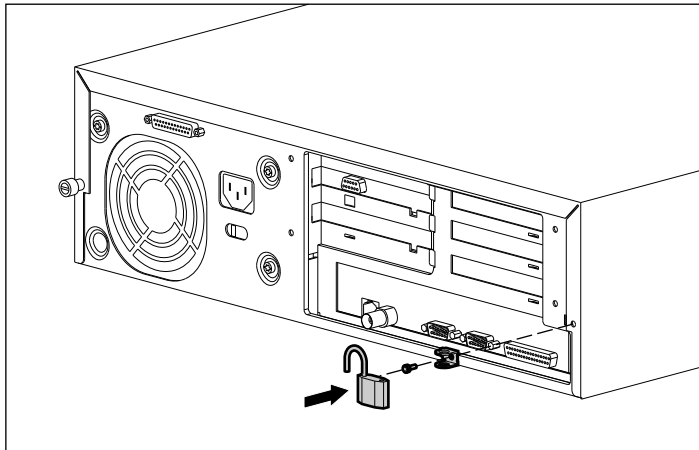


Figure 2-10. Replacing the server cover

## Securing the System Using a Padlock

If desired, the server cover can be locked (with a customer-supplied padlock) to prevent unauthorized access to system components. To install the cable lock provision, complete the following steps:

1. Remove one of the thumb screws from the rear of the computer.
2. Position the bottom part of the cable lock provision over the screw hole and replace the thumb screw with a Torx screw.
3. Cover the screw with the top part of the cable lock provision.
4. Install a lock to prevent unauthorized removal of the server cover.



**Figure 2-11.** Securing the system with a user-supplied padlock

## Removing the Front Bezel

Remove the front bezel to gain access to drive bays and removable media bays.

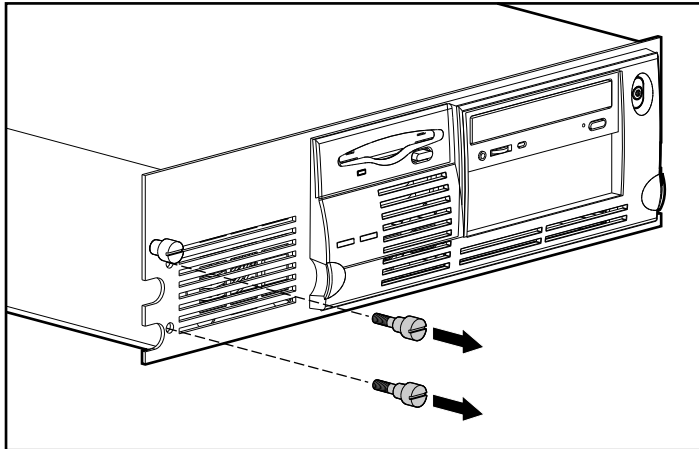


**WARNING:** Before removing the front bezel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

---

To remove the front bezel:

1. If the computer is on, turn it off and disconnect the power cord.
2. Loosen the front bezel from the chassis by unscrewing the two thumb screws on the front left of the bezel.



**Figure 2-12.** Removing screws which secure the front bezel to the chassis

3. Pull the left side of the bezel away from the chassis to about 30 degrees ❶.
4. Pull the bezel to the left to unseat the bezel from the hinge ❷.

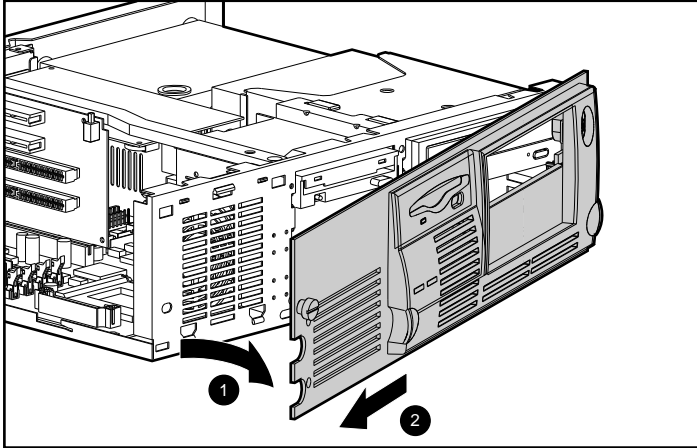


Figure 2-13. Removing the front bezel

## Installing the Front Bezel

Follow the steps listed below to install the front bezel on the ProLiant 850R server.



**WARNING:** Before installing the front bezel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

To install the front bezel:

1. Push the right side of the bezel into the slot on the server at about 30 degrees to seat the hinge of the bezel into the chassis **1**.
2. Push the left side of the bezel into the chassis **2**.

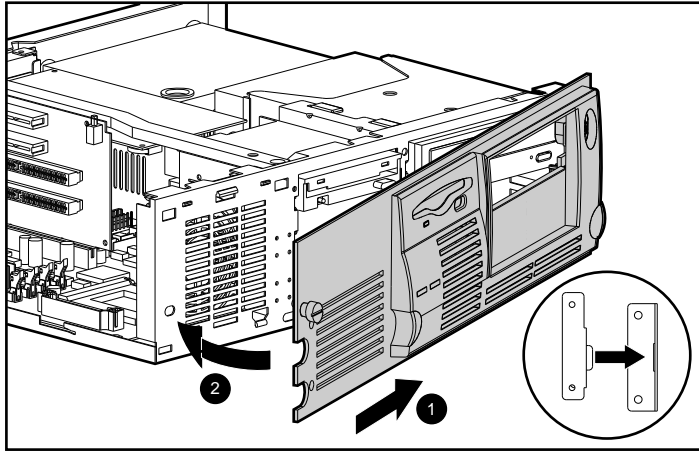


Figure 2-14. Attaching the front bezel to the chassis

3. Insert the two thumb screws into the front left of the bezel to secure the bezel to the chassis.

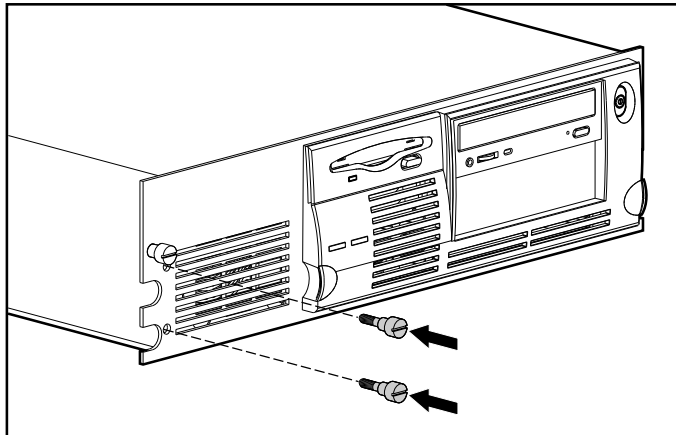


Figure 2-15. Securing the front bezel to the chassis



## Using the Power Switch Cover Security Feature

The server is shipped from the factory with the power switch cover security feature in the locked position. This protects the server from accidentally being shutdown due to incidental contact with the power switch cover. To turn the server ON or OFF, you must use a thin object to depress the center circle of the power switch cover. The eraser end of a pencil works well.

## Disabling the Power Switch Cover Security Feature

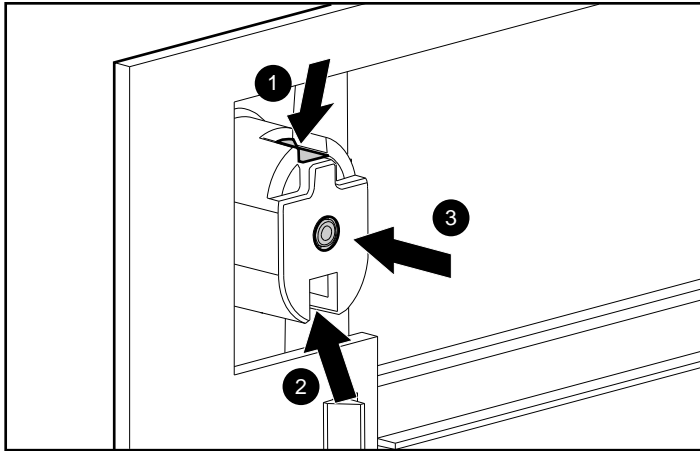
The entire switch cover assembly can be made to depress with your finger, not requiring the eraser end of a pencil.



**WARNING:** Before removing the front bezel, ensure that the computer is turned off and that the power cord is disconnected from the electrical outlet.

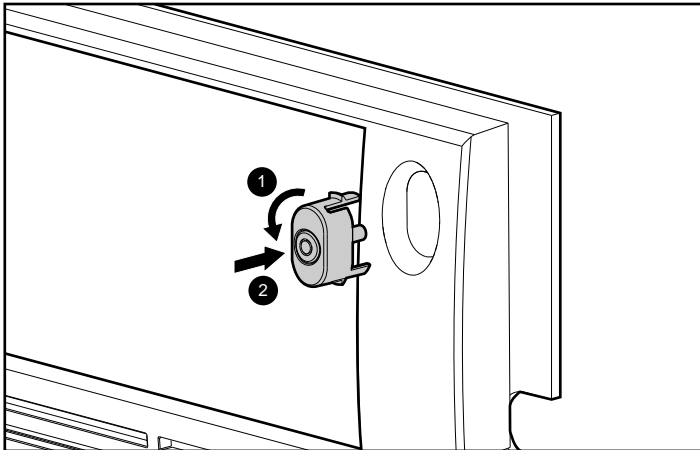
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1. Remove the front bezel.
2. Locate the two clips securing the switch cover in the front bezel on the rear side of the bezel assembly.
3. Use a narrow instrument to release each clip from the bezel ❶ and ❷ by pushing inward slightly.
4. Once each clip is disengaged, remove the switch cover parts from the bezel ❸, collecting the two plastic parts and the spring as they disengage from the bezel. Tension in the spring may cause it to come loose, so be careful with the spring.



**Figure 2-16.** Removing the power switch from the front bezel

5. Rotate the switch cover assembly 180 degrees ❶.
6. Insert the switch into the front bezel as shown below ❷. Make sure that you include the spring, the clips on the switch engage, and the center post of the switch cover aligns with the hole in the bezel.



**Figure 2-17.** Inserting the power switch into the front bezel

7. Replace the front bezel.

## Opening the CD-ROM Manually

The CD-ROM supplied with your server operates like a standard CD-ROM, refer to the online documentation for further details. If the CD-ROM will not open automatically you can open it by using the emergency eject button.

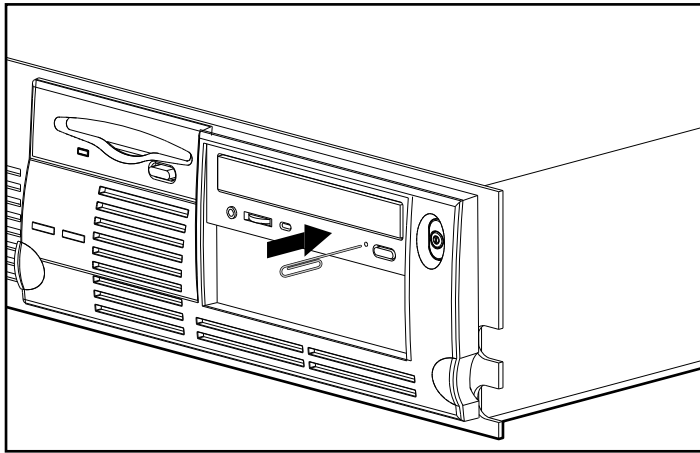


**CAUTION:** Before beginning this procedure, turn off the power to your server.

---

Certain applications or operating system software may disable the eject button to prevent accidental damage to the disk. If the eject button is disabled by the application software, it will not operate.

1. Insert a thin metal rod, such as a straightened paper clip, into the emergency eject hole and push firmly.



**Figure 2-18.** Opening the CD-ROM tray manually

2. Slowly pull the tray out from the drive until the tray is fully extended, then remove the disk.

## Chapter 3

# Installing Hardware Options

Before installing or replacing an option in your server, follow these preliminary steps:

1. Back up your server data.
2. Power down the server and remove the power cable.
3. Remove the server from the rack and place on a secure table or work bench. See Chapter 2, “Server Installation Overview” for detailed instructions.
4. Remove the server cover. See Chapter 2, “Server Installation Overview” for detailed instructions for removing the server cover.



**WARNING:** To reduce the risk of electric shock or damage to the equipment:

Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

Disconnect power from the server or other product by unplugging the power cord from either the electrical outlet or the server or other product.

---



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

---



**CAUTION:** Before removing the server cover, be sure that the server is turned off and that the power cord is disconnected from the electrical outlet.

---



**CAUTION:** Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure. Refer to Appendix A, “Electrostatic Discharge,” for more information.

## Identifying Expansion Slots

The ProLiant 850R server's Riser Board contains four expansion slots:

- Two dedicated PCI local bus expansion slots
- One ISA expansion slot
- One shared PCI/ISA expansion slot

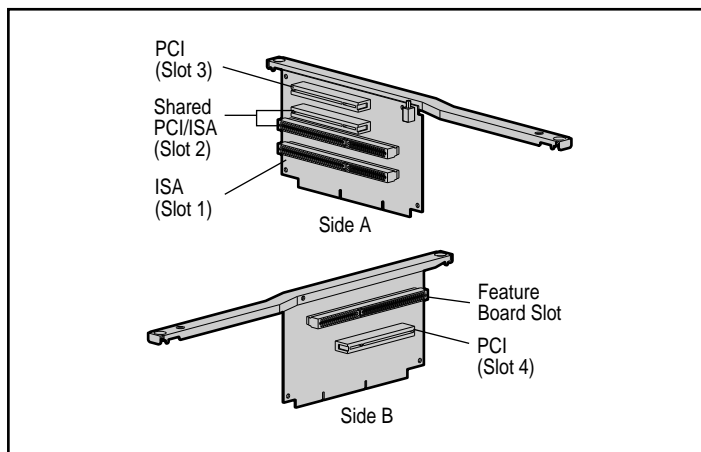


Figure 3-1. Locating ProLiant 850R expansion slots

## Replacing an Expansion Board

To replace an expansion board on the ProLiant 850R server first remove the existing board and then install the new board. Refer to the procedures below.

## Removing an Expansion Board

This procedure also applies to removal of the Feature Board (which resides on side B of the Riser Board).

1. Remove the server from the rack, and remove the server cover. Refer to Chapter 2, “Server Installation Overview” for detailed procedures.
2. Expansion board removal should progress from the top of the Riser Board down. Disconnect any cables attached to the expansion board you wish to remove.
3. If the expansion board is in a slot on side A of the Riser Board, remove the screw at the side of the expansion slot. Then remove the expansion board.

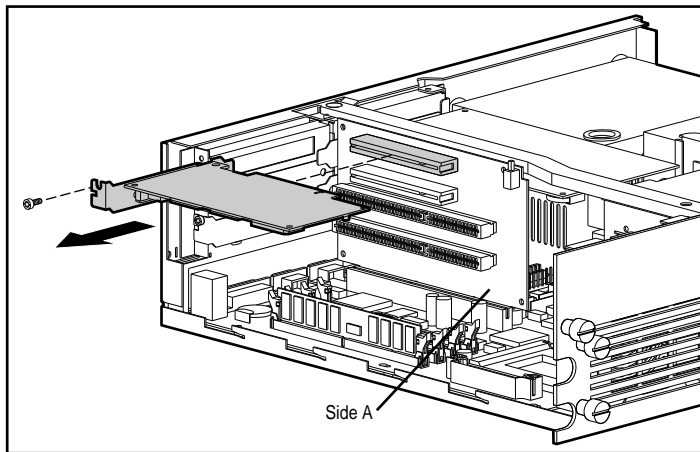


Figure 3-2. Removing an expansion board

4. If the expansion board is on side B of the Riser Board, remove the screw and retaining bracket ❶. Remove the Feature Board to access the slot below it ❷.

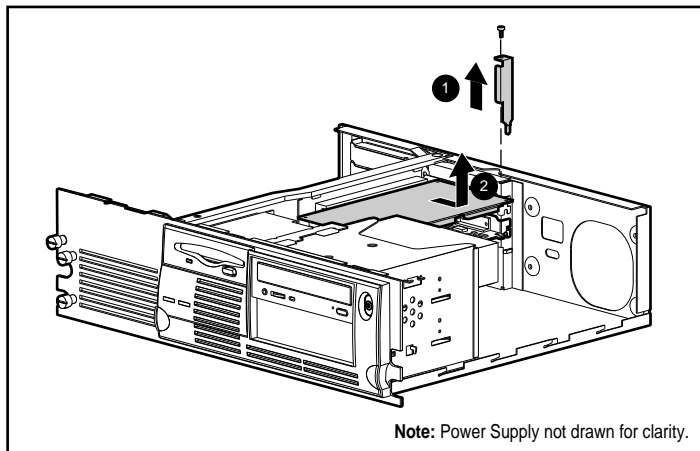


Figure 3-3. Removing the retaining screw and bracket, Feature Board

5. Then remove the expansion board ❸.

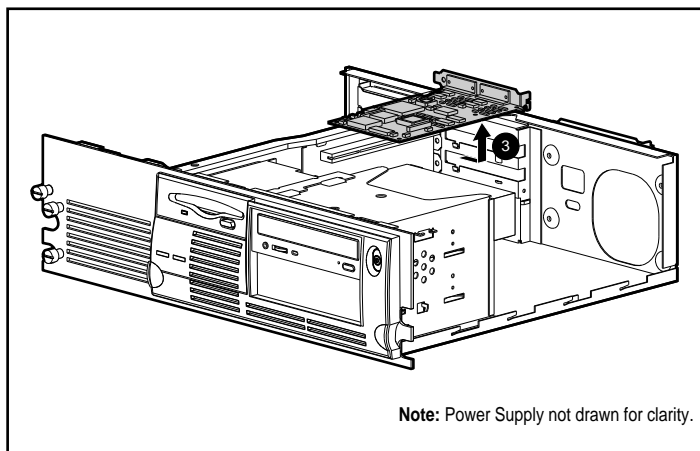
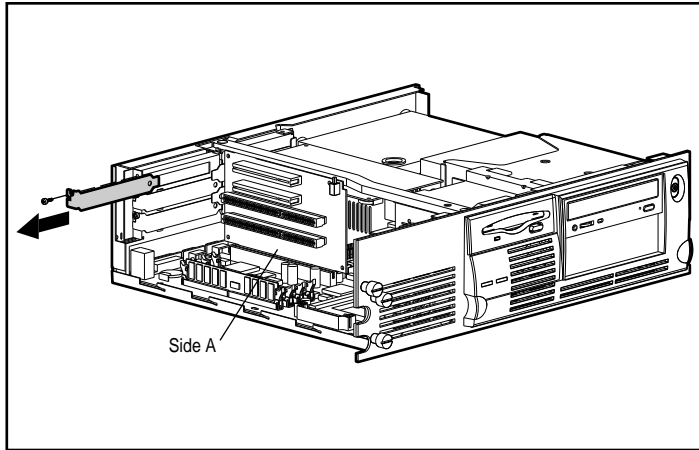


Figure 3-4. Removing the expansion board

## Installing an Expansion Board

To install a PCI or ISA expansion board on side A of the Riser Board, follow the steps listed below.

1. Remove the Server from the rack and remove the server cover. Refer to Chapter 2, “Server Installation Overview,” for details.
2. Locate the correct vacant slot.
3. Remove the retaining screw and the slot cover.



**Figure 3-5.** Removing the retaining screw and slot cover

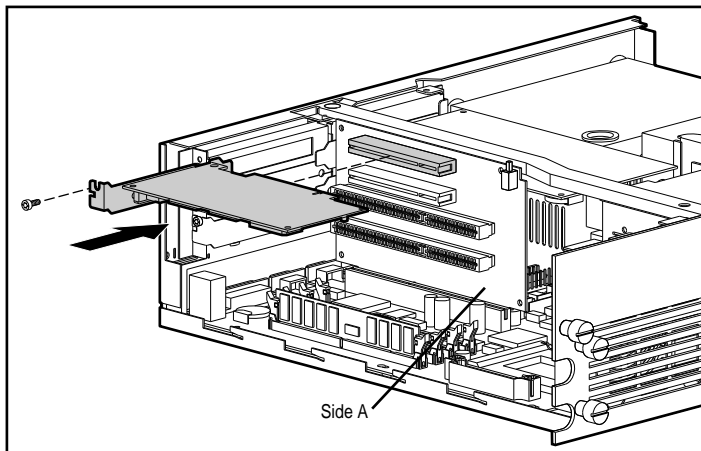
4. Slide the expansion board into the expansion slot and press it firmly into place.

---

**IMPORTANT:** When you install a board, make sure you firmly press on the board so that the whole connector seats properly in the Riser Board slot.

---





**Figure 3-6.** Installing a board into an expansion slot

5. Replace the retaining screw.
6. Replace the server cover.
7. To reconfigure the server refer to Chapter 4. “Server Configuration Utilities.”

To install an expansion board on side B of the Riser Board, follow the steps listed below.

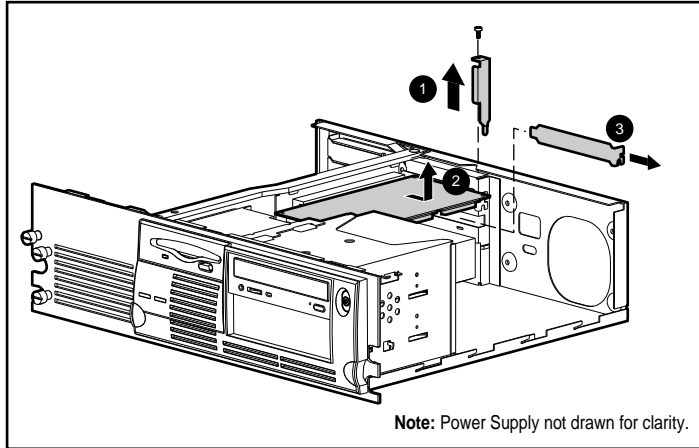
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**IMPORTANT:** When using NetWare as your operating system, you can NOT install a SCSI board in slot 4 located below the Feature Board slot.

---

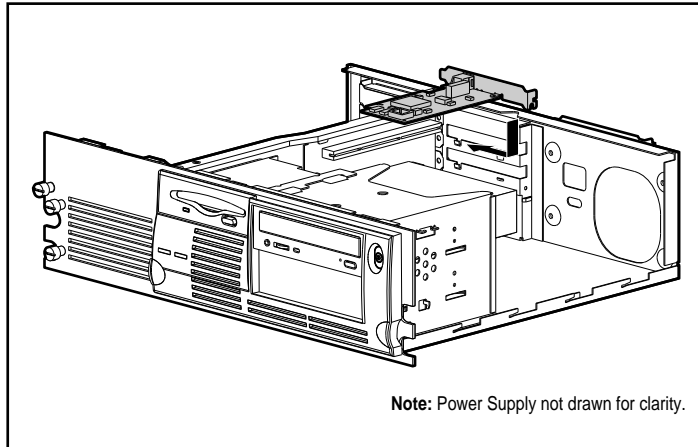
1. Remove the Server from the rack and remove the server cover. Refer to Chapter 2, “Server Installation Overview,” for details.

2. Remove the retaining screw and the retainer bracket ❶. Remove the Feature Board to access the slot below it ❷. Then remove the expansion slot cover ❸.



**Figure 3-7.** Removing the retaining screw, bracket, Feature Board, and slot cover

3. Slide the expansion board into the expansion slot and press it firmly into place.



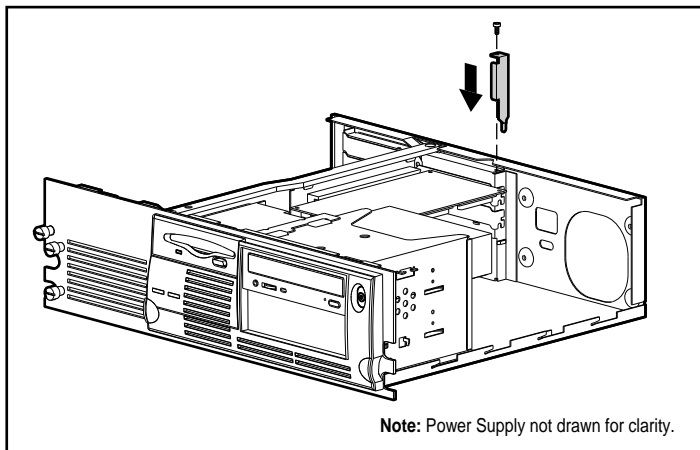
**Figure 3-8.** Sliding an expansion board into the Riser Board

---

**IMPORTANT:** When you install a board, make sure you press firmly on the board so that the whole connector seats properly in the Riser Board slot.

---

4. Replace the Feature Board.
5. Replace the retaining bracket, and retaining screws.



**Figure 3-9.** Replacing the retaining bracket and retaining screws

6. Replace the server cover.
7. To reconfigure the server refer to Chapter 4, “Server Configuration and Utilities.”

## Replacing the Riser Board and Riser Board Brace

In the event that you need to replace the Riser Board or the Riser Board Brace, do not separate these two components. Remove these components as one assembly.



**CAUTION:** If the Riser Board or Riser Board Brace needs to be replaced, both must be sent to Compaq as one unit. If they are sent separately, all warranties are voided for those components.

---

## Removing the Riser Board and Riser Board Brace



**CAUTION:** Do not disassemble the Riser Board from the Riser Board Brace. Doing so voids all warranties for these and possibly other components.

---

1. Remove the Server from the rack and remove the server cover. Refer to Chapter 2, “Server Installation Overview,” for details.
  2. Remove all expansion boards. Refer to the “Replacing an Expansion Board” procedure for details.
- 

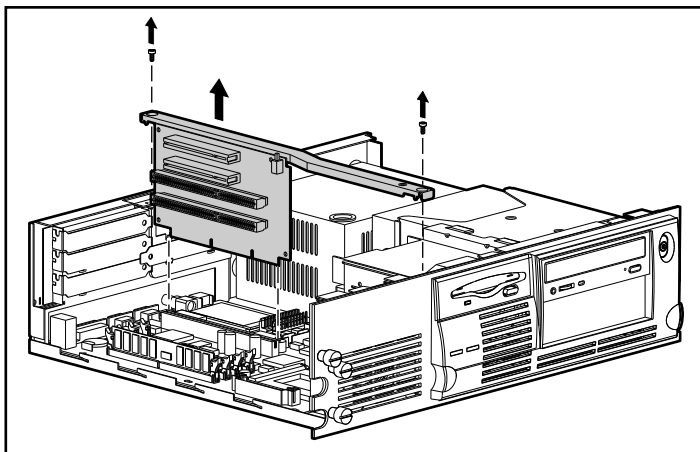


**CAUTION:** When removing the Feature Board on side B of the Riser Board, disconnecting the replacement battery causes your configuration data to be lost from memory. If this battery is disconnected you must reconfigure your system at the conclusion of this procedure.

---

3. Remove the two screws securing the Riser Board Brace.

4. Lift the Riser Board and Riser Board Brace out of the unit as shown below.



**Figure 3-10.**    Removing the Riser Board and Riser Board Brace

5. Install the new Riser Board and Riser Board Brace assembly. Refer to the procedure below.
6. Replace all expansion boards and the Feature Board.
7. Replace the Server cover.
8. Place the ProLiant 850R server into the rack.
9. Reconnect all cabling and reconfigure the server. Refer to Chapter 4, “Server Configuration and Utilities.”

## **Installing the Riser Board and Riser Board Brace**

To install the Riser Board and Riser Board Brace reverse the steps from the “Removing the Riser Board and Riser Board Brace” procedure.

When installing this assembly refer to the drawing below for proper alignment.

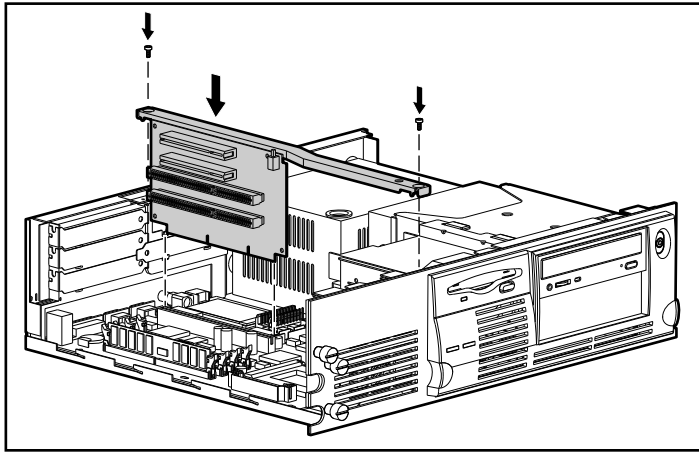


Figure 3-11. Installing the Riser Board and Riser Board Brace

## Replacing a Processor

To replace a processor on the System Board, refer to the label inside the server cover, or follow the instructions below. In this process you remove the existing processor from socket 1, install a new Power Processor Module (if appropriate), and then install the new processor.

### Removing a Processor (CPU) From Socket 1



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

1. Remove the server from the rack and remove the server cover. Refer to Chapter 2, “Overview of Installing the Server,” for details.
2. Remove the front bezel.

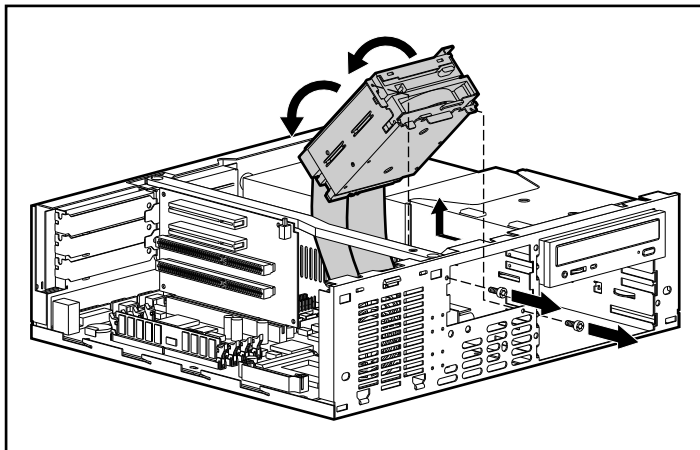
3. Remove the Feature Board and the expansion board below it, (if one is installed). If you have an external battery connected to the Feature Board disconnect it.



**CAUTION:** Disconnecting the Feature Board's external battery looses stored configuration data. You must reconfigure your system when you reconnect the battery.

---

4. Remove the two screws from the disk drive cage and flip the cage and rest it on the rear of the chassis and the Riser Board support bracket.



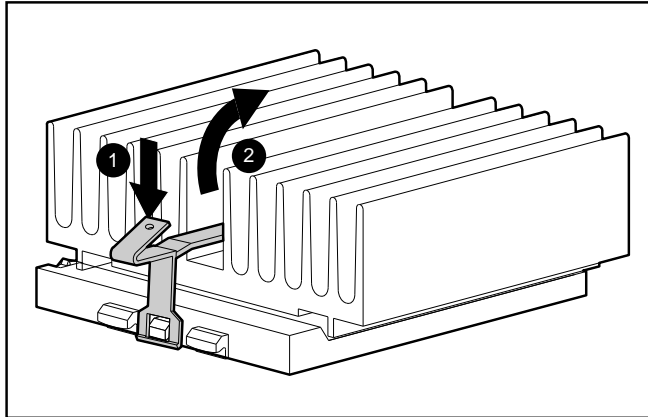
**Figure 3-12.** Removing the two screws and the disk drive cage



**CAUTION:** When replacing a Pentium processor, you must release the heat sink retaining clip prior to pulling the ZIF socket handle. This clip engages the processor socket to hold the heat sink in place.

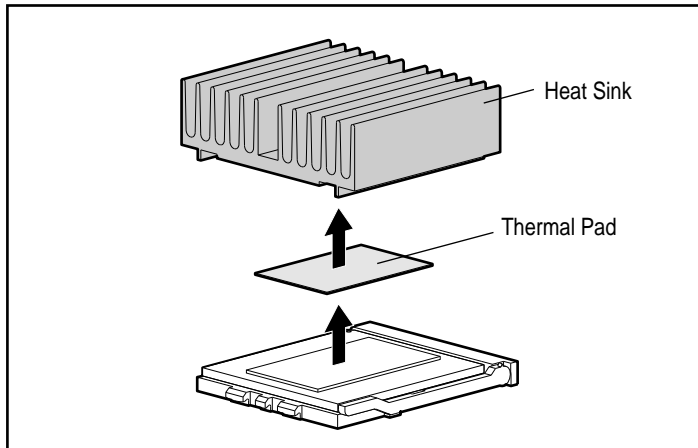
---

5. Remove the heat sink retaining clip ❶ by pressing down on the clip's extended tab until it releases from the safety catch and lift the clip out of the way ❷.



**Figure 3-13.** Removing the heat sink clip

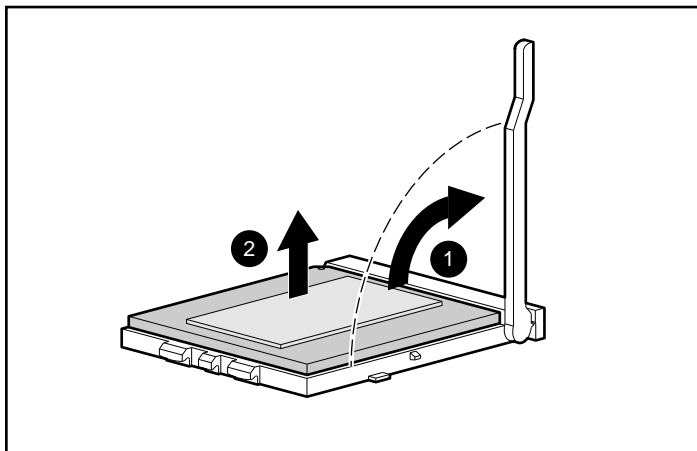
6. Lift the heat sink and thermal pad off the processor. The thermal pad may be stuck to the heat sink or processor. It should be removed and replaced.



**Figure 3-14.** Removing the heat sink and thermal pad



7. Release the original processor from the socket by ❶ pulling the handle on the ZIF socket out and upward.



**Figure 3-15.** Releasing the ZIF socket and removing the processor

8. Lift the processor out of the socket ❷.



**CAUTION:** The handle on the ZIF socket in your server may not be identical to the handle shown in the drawing. All handle types perform the same function.

Now that the old processor has been removed, the following must occur:

- If you have a Processor Power Module to install, you should:
  1. Remove the existing Processor Power Module. Follow the “Removing a Processor Power Module,” procedure later in this chapter.
  2. Install the Processor Power Module. Follow the “Installing a Processor Power Module,” procedure later in this chapter.
  3. Install a New Processor (CPU) in Socket 1. Follow the “Installing a New Processor (CPU) in Socket 1,” procedure below.

- If you do not have a Processor Power Module to install, follow the “Installing a New Processor (CPU)” procedure below to complete the processor installation process.

## Installing a New Processor (CPU) in Socket 1

1. Confirm that the existing processor has been removed from socket 1. Refer to the “Replacing a Processor” section above.
2. Align the new processor with the ZIF socket.

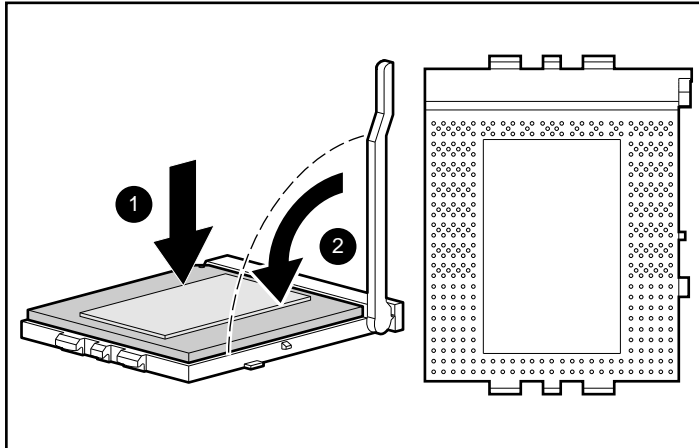


Figure 3-16. Installing the processor

---

**IMPORTANT:** The processor is keyed to ensure correct alignment. Align the pattern of pins in the processor with the pattern of holes in the socket. The pins and holes will not line up if the processor is turned the wrong way.

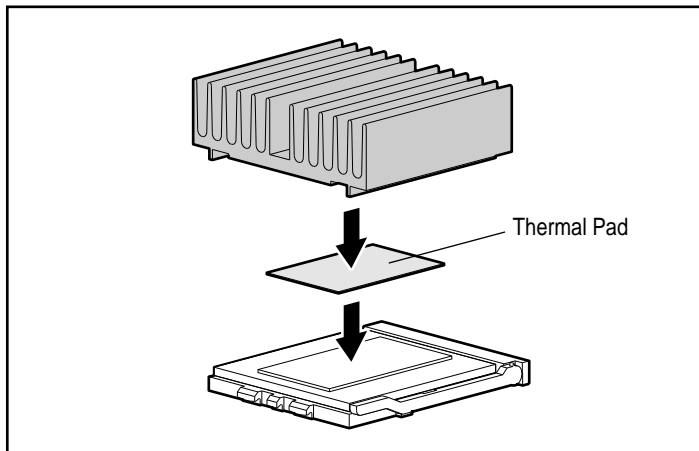
---

3. Install the processor by lowering it into the ZIF socket. Push the handle on the ZIF socket back into place to secure the processor.
4. Install the thermal pad to line up with the rectangular pad on top of the processor.



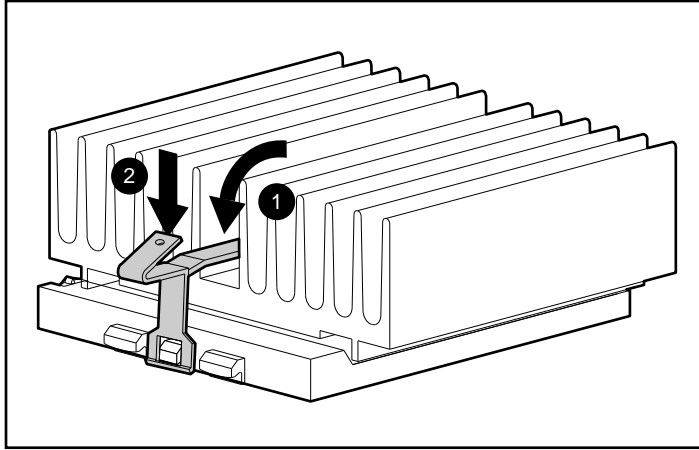
**CAUTION:** The thermal pad **must** be installed or damage **will** occur to your processor.

---



**Figure 3-17.** Installing the processor thermal pad and heat sink

5. Install the heat sink.
6. Install the heat sink retaining clip by attaching the end opposite from the extended tab, then pressing down on the extension tab until the clip snaps into place.



**Figure 3-18.** Installing the heat sink retaining clip

7. Replace the disk drive cage, the expansion board, Feature Board, and assemble the server and return it to the rack by reversing steps 1 through 4 of this procedure.
8. Use the System Configuration Utility to reconfigure your system. Refer to Chapter 4, "System Configuration and Utilities."

## Replacing a Processor Power Module

Every Intel Pentium Pro Processor comes with a Processor Power Module (DC-to-DC converter) that provides power stability for the processor and the System Board. The procedure below lists the steps to remove the existing Processor Power Module and then install another Processor Power Module.

The Processor Power Module is keyed to ensure correct alignment. A notch in the bottom edge of the module, near the center, must align with a tab in the mounting bracket. The notch and tab will not line up if the module is turned the wrong way.

## Removing a Processor Power Module From Socket 1

1. Remove the server from the rack and remove the server cover. Refer to Chapter 2, “Server Installation Overview,” for details.
2. Remove the front bezel.



**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the internal system components to cool before touching.

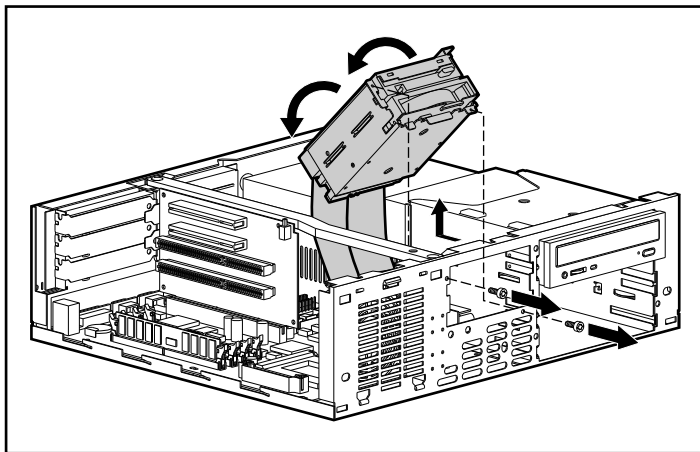
---



**CAUTION:** Disconnecting the Feature Board's external battery causes loss of stored configuration data. You must reconfigure your system when you reconnect the battery.

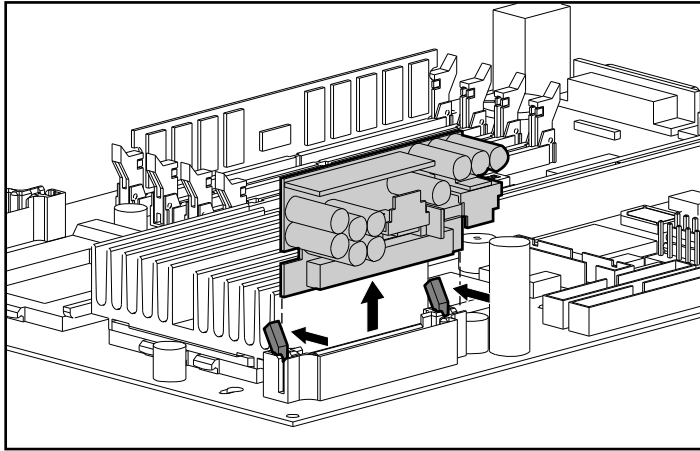
---

3. Remove the Feature Board. If you have an external battery connected to the Feature Board, disconnect it.
4. Remove the two screws from the disk drive cage and flip the cage and rest it on the rear of the chassis and the Riser Board Brace.



**Figure 3-19.** Removing the two screws and moving the disk drive cage

5. Use your thumbs to brace slightly on the module, while at the same time pushing the latches outward with your index fingers until the latches snaps open.
6. As the socket latches spread open, the module comes out of the socket.
7. Remove the module from the socket on the System Board, as shown below.



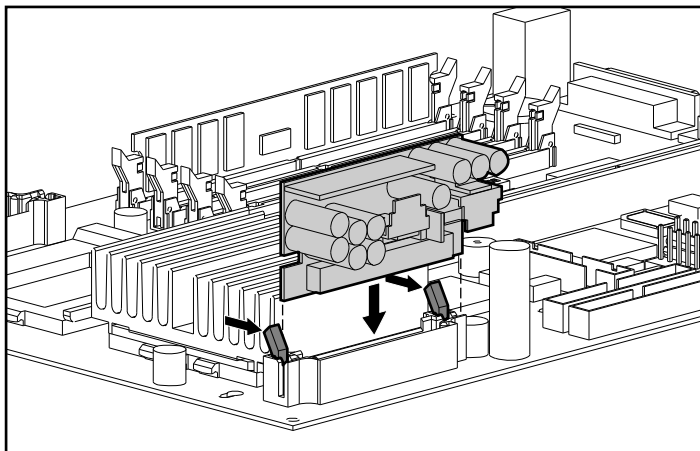
**Figure 3-20.** Removing a Processor Power Module

## Installing a Processor Power Module In Socket 1

Follow these steps to install a Processor Power Module in socket 1:

1. Align the key slot in the bottom edge of the Processor Power Module with the tab in the expansion slot. The module will not seat if turned the wrong way.

2. Insert the module straight into a socket on the System Board.



**Figure 3-21.** Installing a Processor Power Module

3. As the module goes into the socket, the socket latches spread open.
4. Use your thumbs to press firmly on the module, while at the same time pushing the latches inward with your index fingers until the latches snap into place.
5. Replace the disk drive cage, Feature Board, server cover, and front bezel, and then insert the server into the rack and reconnect all cabling. Reverse steps 1 to 3 of the “Removing a Processor Power Module” procedure above.

## Installing a Processor in Socket 2

To install a processor in ZIF socket 2 on the System Board, refer to the label inside the server cover, or follow the instructions below.

## Installing a New Processor (CPU) in Socket 2

1. Confirm the location of Pentium Pro ZIF Socket 2 on the System Board.
2. Open the ZIF Socket by pulling the handle slightly out and then up.
3. Align the new processor with the ZIF socket.

---

**IMPORTANT:** The processor is keyed to ensure correct alignment. Align the pattern of pins in the processor with the pattern of holes in the socket. The pins and holes will not line up if the processor is turned the wrong way.

---

4. Install the processor by lowering it into the ZIF socket ❶. Push the handle on the ZIF socket back into place to secure the processor ❷.

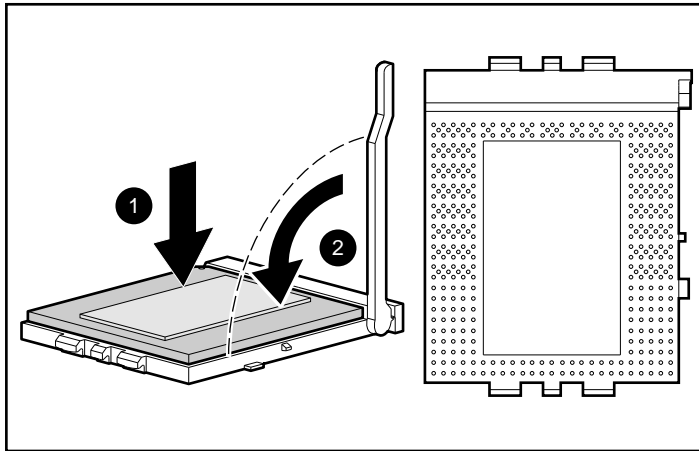


Figure 3-22. Installing the processor

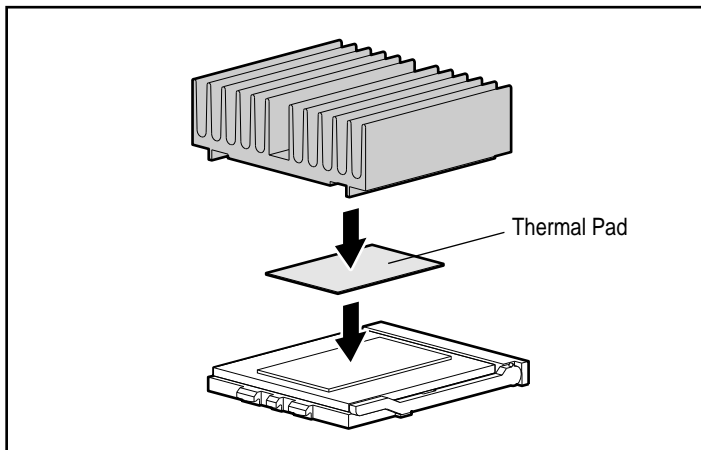


5. Install the thermal pad to line up with the rectangular pad on top of the processor.



**CAUTION:** The thermal pad **must** be installed or damage **will** occur to your processor.

---



**Figure 3-23.** Installing the processor thermal pad and heat sink

6. Install the heat sink.

7. Install the heat sink retaining clip ❶ by attaching the end opposite from the extended tab, then pressing down on the extension tab until the clip snaps in place ❷.

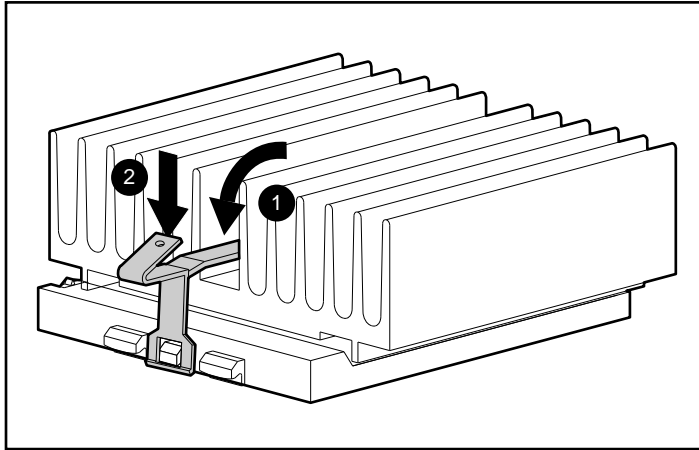


Figure 3-24. Installing the heat sink retaining clip

## Installing the Processor Power Module in Socket 2

Every Intel Pentium Pro Processor comes with a Processor Power Module (DC-to-DC converter) that provides power stability for the processor and the System Board. The procedure below lists the steps to remove the existing Processor Power Module and then install another Processor Power Module.

The Processor Power Module is keyed to ensure correct alignment. A notch in the bottom edge of the module, near the center, must align with a tab in the mounting bracket. The notch and tab will not line up if the module is turned the wrong way.

## Installing a Processor Power Module In Socket 2

To install a Processor Power Module in socket 2:

1. Align the key slot in the bottom edge of the Processor Power Module with the tab in the expansion slot. The module will not seat if turned the wrong way.
2. Insert the module straight into a socket 2 on the System Board.
3. As the module goes into the socket, the socket latches spread open.
4. Use your thumbs to press firmly on the module, while at the same time pushing the latches inward with your index fingers until the latches snap into place.
5. Replace any expansion boards that have been removed and re-assemble the server.
6. Use the System Configuration Utility to reconfigure your system. Refer to Chapter 4, “System Configuration and Utilities.”

## Adding Memory to the ProLiant 850R

The ProLiant 850R memory system uses Error Checking and Correcting (ECC) memory to detect and correct all single-bit memory errors and detect other uncorrectable memory errors. Refer to the System Reference Library CD, specifically the section on memory upgrades for more information.

You can expand server memory by installing Compaq DIMMs (Dual Inline Memory Modules). The system supports up to 4 DIMMs installed in slots on the System Board. The system does not require DIMMs to be installed in pairs.

You **must** observe the following guidelines when installing additional memory:

- DIMMs installed in the ProLiant 850R server must be rated at 60 nanoseconds (ns) or faster, EDO, 72 bits wide, 3.3 volts, and ECC.
- All DIMMs installed must be the same speed, for example, all 60 ns.

- The server is shipped with a DIMM in DIMM socket 1 (System Board connector J6).

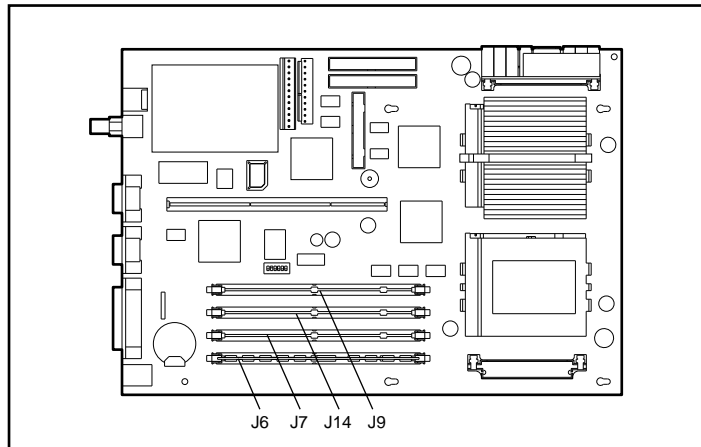
The recommended order of DIMM installation follows:

- Install the second DIMM in DIMM socket 2 (System Board connector J7).
- Install a third DIMM in DIMM socket 3 (System Board connector J14).
- Then install a fourth DIMM in DIMM socket 4 (System Board connector J9).

Any combination of DIMMs may be used in the ProLiant 850R server as long as at least 32 MB of memory is installed; for example, one 32-MB module, one 16-MB module, one 64-MB module, and one 128-MB module may be used simultaneously.



**CAUTION:** Use only Compaq DIMMs. DIMMs from some other sources are known to adversely affect data integrity.



**Figure 3-25.** DIMM slots identified on System Board

## Maximum Memory Configuration

The ProLiant 850R server allows ultimate expansion to 512 MB. In the maximum memory configuration, all four DIMM sockets would be populated with 128-MB DIMMs.

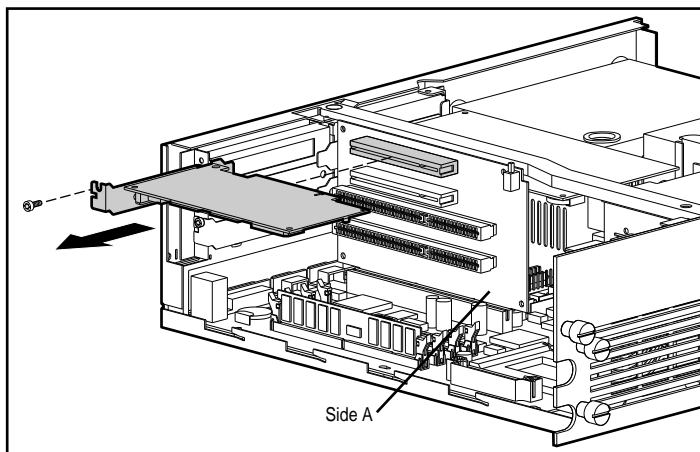
## Installing DIMMs



**CAUTION:** Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure. Refer to Appendix A, "Electrostatic Discharge," for more information.

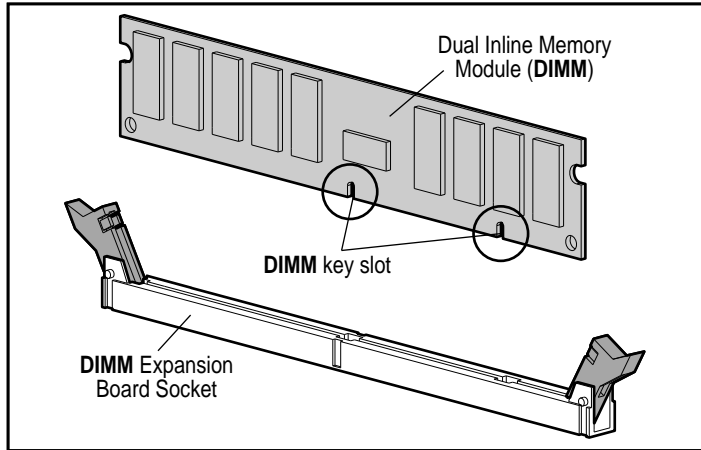
To install a memory module, complete the following steps:

1. Remove any expansion boards that have been installed above the DIMM sockets. (Riser Board side A)



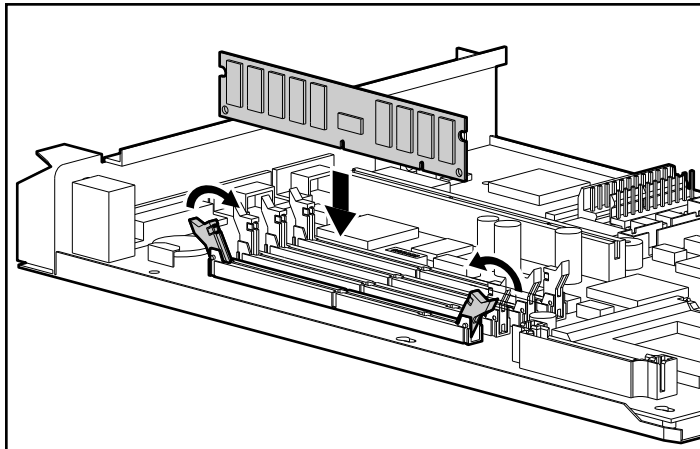
**Figure 3-26.** Removing an expansion board installed above the DIMM sockets

2. Align the key slot in the bottom edge of each DIMM with the tab in the expansion slot. DIMMs will not seat if turned the wrong way.



**Figure 3-27.** Aligning DIMM in the memory expansion slots

3. Insert each DIMM straight down into a socket on the System Board.
4. As the DIMM goes into the socket, the latches close.
5. Use your thumbs to press firmly down on the DIMM while pushing the latches inward with your index fingers until the latches snap into place.



**Figure 3-28.** Installing a DIMM

DIMMs can be placed in any slot; the system ROM automatically recognizes and configures memory changes.

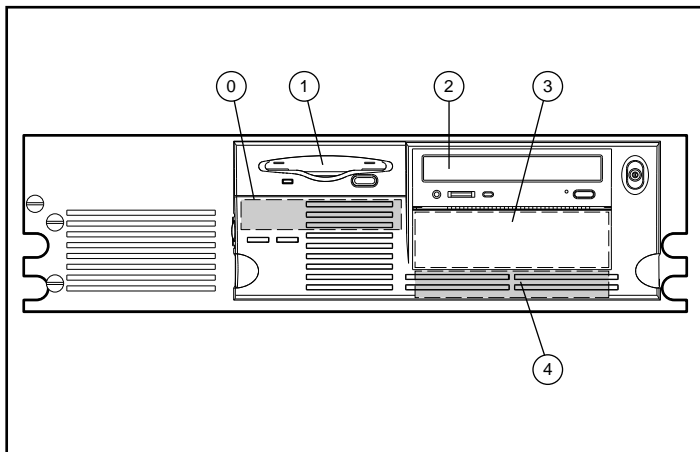
6. Replace the expansion boards you removed. Reverse the steps you followed to remove the expansion boards.

## Installing Mass Storage Devices

There are four drive bays for internal mass storage devices in the ProLiant 850R server. SCSI devices can be installed in drive bays 0, 2, 3, or 4, or attached to the external Fast-Wide SCSI-2 port via an external storage system. SCSI hard drives attached to the SCSI controller must be either internal or in an external storage system, but not both.



**CAUTION:** The ProLiant 850R server does not support the installation of IDE or EIDE fixed disk drives.



**Figure 3-29.** Optional mass storage device placement

**Table 3-1**  
**Drive Bay Hardware Installation Options**

Position Identifier	Drive Bay Description	Standard Hardware Installed	Optional Hardware Installation
0	3.5" wide x 1" height bay		1" height hard drive
1	3.5" wide x 1" height bay	A standard 3.5-inch diskette drive	
2	5.25" wide x 1.6" height bay	CD-ROM drive	diskette drive (3.5-inch or 5.25-inch), tape drive in the top position, or 1.6" height hard drive
3	5.25" wide x 1.6" height bay		An optional CD-ROM drive, diskette drive (3.5-inch or 5.25-inch), tape drive, or 1.6" height hard drive
4	5.25" wide x 1" height bay		1" height hard drive

**Drive Installation Guidelines**

When adding SCSI hard drives to your ProLiant 850R server, observe the following guidelines:

- A maximum of seven SCSI devices per controller may be added.
- Each SCSI drive must have a unique address.
- Compaq SCSI cables for the ProLiant 850R server are terminated. Be sure to remove all terminating jumpers from third-party SCSI devices.
- Supported Compaq SCSI options are not terminated.



### ***SCSI ID Settings for Compaq Hard Drives***

The following chart provides the SCSI ID jumper settings for Compaq SCSI hard drives.

<b>Table 3-2 SCSI ID Settings</b>			
<b>SCSI ID</b>	<b>Bit 2</b>	<b>Bit 1</b>	<b>Bit 0</b>
6	ON	ON	OFF
5	ON	OFF	ON
4	ON	OFF	OFF
3	OFF	ON	ON
2	OFF	ON	OFF
1	OFF	OFF	ON
0	OFF	OFF	OFF

### **Installing Mass Storage Devices**

Hard drives may be installed into drive bays 2 and 3, but these positions are more often used for devices requiring user access.

Either a 1.6" or 1" height drive may be installed into a 1.6" height bay.

### **Installing a Tape Drive or CD-ROM drive in Bay 3**

1. Remove the server cover. Refer to the "Removing a Server Cover" section discussed in Chapter 2 for instructions on powering down the server, disconnecting cables, and removing the server from the rack.
2. Remove the front bezel.
3. Locate the black guide screw installed on the the front of the chassis.
4. Remove two black guide screws from the chassis and install them, (one per side) in the mounting holes on the optional drive.
5. Insert the drive into Bay 3.

6. Secure the drive with one additional retaining screw installed through the side of the drive cage.
7. Attach the power and data cables to the drive.

### **Installing a Hard Drive in Bay 0**

**NOTE:** Bay 0 accepts a 1-inch height hard drive.

1. Remove the server cover. Refer to the “Removing a Server Cover” section discussed in Chapter 2 for instructions on powering down the server, disconnecting cables, and removing the server from the rack.
2. Remove the front bezel.
3. Install two silver wafer head guide screws into the front mounting holes on the hard drive, (one per side).
4. Insert the drive in the drive cage under the floppy drive so that the guide screws slide into the mounting slots.
5. Secure the drive with an additional screw through the side of the drive cage.
6. Attach a power cable and internal SCSI cable to the drive.

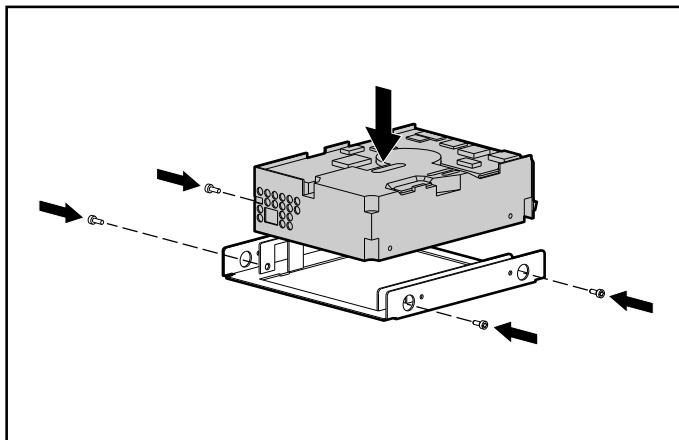
## Installing External Storage Devices

Optional mass storage devices can be connected to the Compaq ProLiant 850R by using the optional external Fast-Wide SCSI-2 port on the back of the unit.

### Installing a 3.5-Inch Drive into a 5.25-Inch Drive Bay

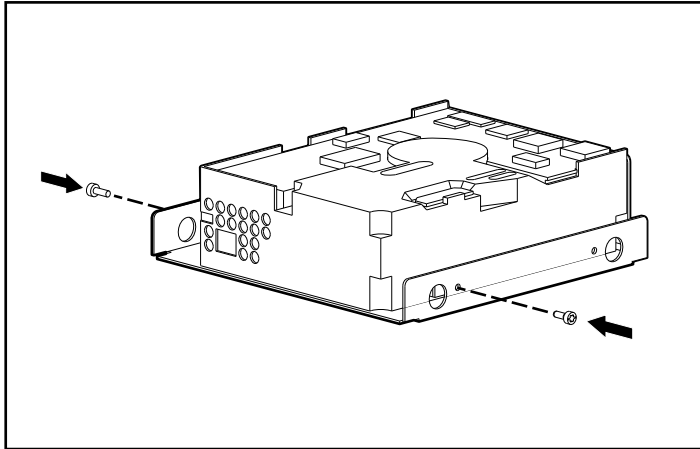
To install a 3.5-inch drive into a 5.25-inch drive bay, complete the following:

1. Shut down all programs and the operating system.
2. Turn off the server and disconnect the power cord.
3. Disconnect any other external equipment connected to the server.
4. Remove the server cover. Refer to Chapter 2, “Server Installation Overview,” for details.
5. Remove the front bezel from the server by removing the two thumb screws on the left side of the bezel.
6. Attach the 3.5-inch drive to the 5.25-inch bracket with the screws provided in your kit.



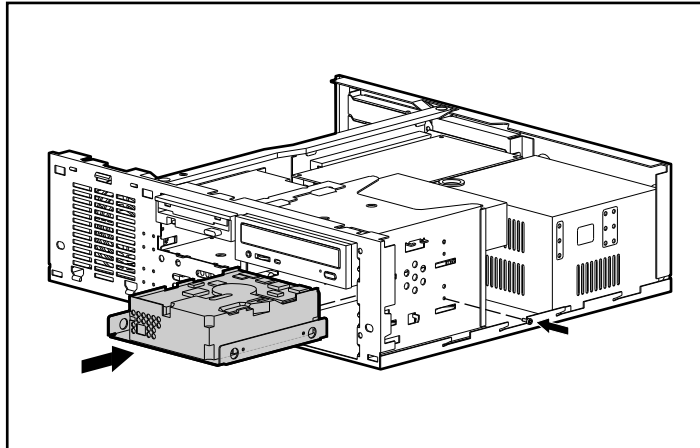
**Figure 3-30.** Attaching a 3.5-inch drive to a 5.25-inch bracket

7. Install the guide screws, provided behind the front bezel on the chassis, into the front screw holes on the left and right side of the bracket.



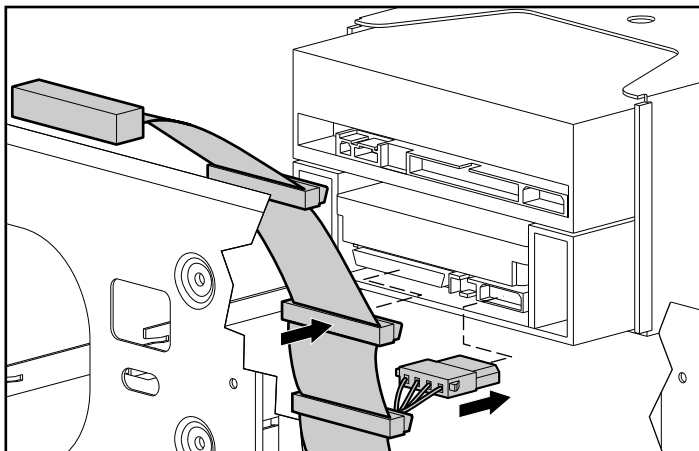
**Figure 3-31.** Installing the guide screw in the drive bracket

8. Install the bracket and drive into the drive bay. Secure the bracket with one screw through the right side of the drive cage. Be sure the guide screw lines up with the guide slot in the drive cage.



**Figure 3-32.** Installing and securing the drive into the chassis

9. Connect the drive power and signal cables.



**Figure 3-33.**   Connecting the drive cables

10. Remove the blank drive bezel from the inside of the front bezel, if necessary, or leave it when adding a hard drive.
11. Replace the front bezel and server cover.
12. Reconfigure the server. Refer to Chapter 4, “Using the System Configuration Utility,” for more information.

## Connecting the Power Cord and Peripheral Devices

After all internal options have been installed and the server cover has been replaced, connect the power cord and peripheral devices such as the keyboard, mouse, and monitor. Icons on the back of the server identify the function of each connector.



**WARNING:** Any RJ-45 receptacle marked with these symbols indicates a Network Interface Connection. To reduce risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

---



**WARNING:** To reduce the risk of electrical shock or damage to your equipment, do not disable the power cord grounding feature. This equipment is designed to be connected to a grounded (earthed) power outlet that is easily accessible to the operator. The grounding plug is an important safety feature.

---



**CAUTION:** Before connecting the power cord and peripheral devices, verify that the AC Voltage Select Switch on the rear of the server next to the power cord connector is set correctly to your local line voltage (either 115 or 230 volts). A reminder label that covers the power cord connector must be removed to install the power cord. If the AC Voltage Select Switch is not properly set, the server will be damaged when power is applied.

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**CAUTION:** Be sure that the power outlet you plug your power cord into is easily accessible and located as close as possible to the equipment operator. When disconnecting power to the equipment, be sure to unplug the power cord from the power outlet.

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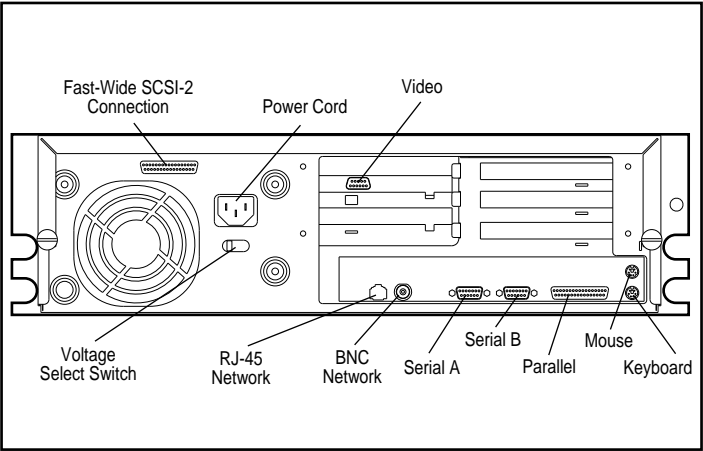
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**IMPORTANT:** Do not place anything on power cords or cables. Arrange them so that no one may accidentally step or trip on them. Do not pull on a cord or cable. When unplugging cords from the electrical outlet, grasp the cord by the plug.

---

## Rear Panel Connectors

The illustration below shows the connectors and switches for the ProLiant 850R server.



**Figure 3-34.**    Location of rear panel connectors and switches

Cables at the rear of the rack should be gathered and tie-wrapped together. Then secure the cable assembly to the nearest ProLiant 850R Support Bracket.

**Table 3-3**  
**Rear Panel Connectors**

Connector	Function
Power Cord	Connects the server to an electrical power outlet.
Voltage Select Switch	Switches voltage between 115V (U.S.) and 230V to match geographical requirements.

*continued*

**Rear Panel Connectors** *continued*

Serial Connector	Connects a serial device, such as a serial printer or modem.
Keyboard Connector	Connects the keyboard (orange icon).
RJ-45 Network Connector	Connects the Ethernet Network by connecting an unshielded twisted pair (UTP) cable. Supports 10 BaseT and 100 BaseTX.
BNC Network Connector	Connectsthe Ethernet Network by using a 50 Ohm coax cable. Supports 10 Base2.
Fast-Wide SCSI-2 Connector	Connects to an external Fast-Wide SCSI-2 or Fast SCSI-2 option.
Parrallel Connector	Connects a parallel device, such as a parallel printer.
Video	Connects a monitor with a PCI graphics controller.

## SCSI Cabling Guidelines

Only controllers listed in the tables below are supported by the ProLiant 850R. Refer to these tables to determine the parts that you need for successful cabling solutions for the ProLiant 850R.

The ProLiant 850R server includes a small bag of additional hardware items in the documentation set to fascilitate the installation of certain SCSI controllers and devices. These items include the following:

- One 1.5-inch SCSI Terminator (PN 281882-001). Refer to the tables below for installation instructions.
- One Wide-to-Narrow SCSI Adapter (68 to 50 pin) (PN 199618-001). Refer to the tables below for installation instructions.



- One I/O bracket with screws (PN 199830-001). The I/O Bracket and provided screws must be used when installing a Smart /2P or Smart 2SL Array Controller in slot 2 of the ProLiant 850R server. Replace the existing bracket with the I/O Bracket using two of the screw locks provided.

## Internal SCSI Cabling

The table below provides information for internal SCSI cabling with the ProLiant 850R server.

**Table 3-4**  
**Internal SCSI Cabling Guide**

<b>Model 1 Includes IDE cable for IDE CD-ROM, a SCSI cable, and a 68-50 pin adapter.</b>	<b>Wide-Ultra and Fast-Wide SCSI Non Hot-Plug Hard Drives</b>	<b>Fast SCSI-2 Non Hot-Plug Hard Drives</b>	<b>2/8 Dat Drive, 4/16 TurboDat Drive, SCSI CD-ROM</b>
Integrated Wide-Ultra SCSI Controller	No additional cables are required.  Attach the four device Wide terminated cable to the devices.	No additional cables are required.  Attach the 68-50 pin adapter to the Wide terminated cable and at the device.  Order Option Kit PN 212055-001 if more than one adapter is required.	No additional cables are required.  Attach the 68-50 pin adapter to the Wide terminated cable and at the device.  Order Option Kit PN 212055-001 if more than one adapter is required.

*Continued*

*Continued*

Model 1 Includes IDE cable for IDE CD-ROM, a SCSI cable, and a 68 to 50 pin adapter.	Wide-Ultra and Fast-Wide SCSI Non Hot-Plug Hard Drives	Fast SCSI-2 Non Hot-Plug Hard Drives	2/8 Dat Drive, 4/16 TurboDat Drive, SCSI CD-ROM
Wide-Ultra SCSI PCI Controller, or SMART-2/P Array Controller , or SMART-2SL Array Controller	<p>No additional cables are required.</p> <p>Detach the four device Wide terminated cable from the Feature Board.</p> <p>Attach the four device Wide terminated cable to the 68-pin controller connector.</p> <p>Attach the 1.5" Wide terminated cable (PN 281882-001) to the "internal" 68-pin connector on the Feature Board.</p> <p>Attach the four device Wide terminated cable to the devices.</p>	<p>No additional cables are required.</p> <p>Detach the four device Wide terminated cable from the Feature Board.</p> <p>Attach the four device Wide terminated cable to the 68-pin controller connector.</p> <p>Attach the 1.5" Wide terminated cable (PN 281882-001) to the "internal" 68-pin connector on the Feature Board.</p> <p>Attach the 68-50 pin adapter to the Wide terminated cable and at the device.</p> <p>Order Option Kit PN 212055-001 if more than one adapter is required.</p>	<p>No additional cables are required.</p> <p>- Detach the four device Wide terminated cable from the Feature Board.</p> <p>- Attach the four device Wide terminated cable to the 68-pin controller connector.</p> <p>- Attach the 1.5" Wide terminated Wide cable (PN 281882-001) to the "internal" 68-pin connector on the Feature Board.</p> <p>- Attach the 68-50 pin adapter to the Wide terminated cable and at the device.</p> <p>- Order Option Kit PN212055-001 if more than one adapter is required. <b>Note:</b> These options are not supported by the SMART-2/P Array Controller or SMART-2SL Array Controller.</p>

## External Cabling For Primary Storage

**Table 3-5**  
**External Cabling for Primary Storage**

ProLiant 850R Servers	Hot-Plug Wide-Ultra Hard Drives, Fast-Wide SCSI Hard Drives	Hot-Plug Fast SCSI-2 Hard Drives
Rack mount ProLiant storage systems (All models)	No additional cables required. All cables are included with the ProLiant Storage System.	No additional cables required. All cables are included with the ProLiant Storage System.
Rack mount External SCSI Storage Expander which are not supported with SMART Array controllers.	No additional cables required. All cables are included with the SCSI Storage Expander	No additional cables required. All cables are included with the SCSI Storage Expander

# External Cabling for Secondary Storage

Table 3-6  
External Cabling for Secondary Storage

ProLiant 850R Servers	2/8 Dat Drive, 4/16 TurboDat Drive, Internal 4/16 TurboDat Autoloader PN 142183-001	External 4/16 TurboDat Autoloader PN 142187-001	15/30 DLT Drive DLT Tape Array Model 0 and Model 4
Integrated Wide-Ultra SCSI Controller or Wide-Ultra SCSI Controller	The SCSI Storage Expander Option Kit includes all necessary cabling for this configuration.	Order Option Kit PN 189632-003, which includes the required 12-ft. (3-m) Standard-to-Wide cable.	All External Tape Drive Systems include all necessary cabling for this configuration.  Tape Array cable Option Kit PN 242427-001 for Model 4 includes two internal SCSI cables, two external Fast-SCSI-2 cables, two external Fast to Fast-Wide SCSI cables. These are included in Model 0.

## Cabling for CD-ROMs

To utilize two CD-ROMs from the IDE controller purchase Option Kit  
PN 295888-001 which includes an 8X IDE CD-ROM and a 2-device IDE cable.

## Chapter 4

# Server Configuration and Utilities

This chapter discusses many configuration options including, using the Compaq System Configuration Utility, SmartStart, and loading device drivers.

## Compaq System Configuration Utility

The Compaq System Configuration Utility performs a wide range of configuration activities, including:

- Automatically configuring PCI and ISA Plug and Play boards
- Providing switch and jumper settings
- Resolving resource conflicts in areas such as memory, port addresses, and interrupt requests (IRQ)
- Managing the installation of mass storage devices such as hard drives, tape drives, and diskette drives
- Setting and storing power-on features like date and time
- Storing configuration information in nonvolatile memory
- Assisting in installing an operating system
- Assisting in running diagnostic tools such as Test and Inspect Utilities

If the SmartStart and Support Software CD is used the first time the server is configured, the SmartStart program automatically creates a system partition and installs the System Configuration Utility and other Compaq utilities in that partition.

---

**IMPORTANT:** This Compaq system utilities partition should not be confused with the partition(s) created by your operating system.

---

In ProLiant 850R servers, the system ROM automatically configures memory changes.

The System Configuration Utility uses option configuration (.CFG) files to set up and configure the computer. The .CFG files provide information such as switch settings, IRQs, and software installation guidelines. The .CFG files for Compaq computers are located on the System Configuration diskettes and SmartStart and Support Software CD (SmartStart CD).

For PCI boards, the utility reads the configuration options from the PCI board's configuration space, or as an option, from a PCI configuration file (.PCF). The .PCF file can be found on the following diskettes or CD-ROM:

- Compaq Options Configuration Files diskette
- Non-Compaq Option Configuration Files diskette
- SmartStart and Support Software CD

The .CFG file provides board resource requirements and switch and jumper setting alternatives. Although ISA boards do not have the automatic configuration capabilities of PCI boards, the System Configuration Utility can allocate system resources to these boards and provide instructions for setting switches and jumpers.

## Resolving Resource Conflicts

If you add a PCI expansion board after the initial startup, the system detects this change when you turn on the computer. The system ROM reads the PCI board identifier and compares it with the current configuration information stored in nonvolatile memory. The system ROM automatically configures PCI boards. If a user selection is required, a POST message directs you to run the System Configuration Utility. Additionally, you may change the default automatic settings by running the System Configuration Utility.

The System Configuration Utility reads the option configuration .CFG files to determine any resource conflicts, such as two devices requiring the same hardware interrupt. If the system identifies a conflict, the software then rechecks all the expansion board specifications to determine if settings for a previously read board can be changed to automatically resolve the conflict between the two boards.

The Compaq ProLiant 850R server employs a system architecture with an expansion slot that must share system resources with one of the embedded system devices. A PCI expansion board in slot 3 must share an interrupt with the embedded PCI Network Interface card. If you change interrupt resources by using the System Configuration Utility for one of the shared devices, then both devices will be changed.

## Starting the System Configuration Utility

The first time you start the Compaq System Configuration Utility, follow the procedure on the SmartStart Installation poster.

After the SmartStart and Support Software CD is used for the first time to create and populate the Compaq system partition, you may access the System Configuration Utility as follows:

1. Press the **Ctrl+Alt+Del** keys to reboot the server.
2. When the following prompt appears at the top of the screen during Power-On Self-Test (POST), press the **F10** key. The System Configuration Utility main menu displays the following:

---

Press "**F10**" key for System Partition Utilities

---

---

**IMPORTANT:** The text appears for only two seconds. If you do not press **F10** during this time, you must reboot the server.

---

## System Configuration Utility Main Menu

This overview of the main menu options explains how to access the main menu and how to set the power-on features. The following options are available from the main menu:

- **System Configuration** - Takes you through the configuration process step-by-step. Select the System Configuration option when a configuration change is required. For example, select this option when adding, replacing, or removing expansion boards, or when adding a diskette drive or a hard drive.

---

**IMPORTANT:** The Compaq System Configuration Utility must be run after adding Plug and Play ISA boards to ensure the boards are correctly configured.

---

- **Operating System Installation** - Allows you to install one of the operating systems listed or to specify installation of an operating system that is not listed.
- **Diagnostics and Utilities** - Tests and inspects the computer.
- **Exit from this Utility** - Restarts the computer.

## System Configuration Menu

The following options are available from the System Configuration Utility menu:

- Configure Hardware
- Power-On Defaults
- System Partition
- Configuration Backup



## Configuring Hardware

When you select the Configure Hardware menu, a screen with five steps is displayed. Below is a listing of each step with a brief explanation.

### ***Step 1: Important System Configuration Information***

This step provides an overview of the configuration process.

### ***Step 2: Add or Remove Boards***

Use this step to add the non Plug and Play ISA boards to the configuration or remove any boards from the configuration. You do not need to choose this option to add or remove PCI boards, or ISA Plug and Play boards. These boards are added and removed from the System Configuration automatically during the System Configuration Utility initialization.

### ***Step 3: View or Edit Details***

Most ISA Plug and Play boards allow the board to be set to one of two modes. The modes are most commonly referred to as “Plug and Play” and “Legacy” mode. If a board is set to “Legacy” mode, usually through a jumper setting on the board, or through configuration software that ships with the board, then the board is treated as though it was a normal ISA board. If adding an ISA Plug and Play board which is set to “Legacy” mode, then you must use “Step 2: Add or Remove Boards” to add the board to the system configuration.

The Compaq ProLiant 850R server employs a system architecture with an expansion slot that must share system resources with one of the embedded system devices. A PCI expansion board in slot 3 must share an interrupt with the embedded PCI Network Interface card. Refer to Chapter 3, “Installing Hardware Options,” for a diagram showing the position of slot 3. If interrupt resources are changed by the user using the System Configuration Utility for one of the shared devices, then both devices will be changed.

Use this step to make necessary configuration changes.

---

**IMPORTANT:** If you edit a function or resource in “Step 3: View or Edit Details,” be sure also to review Step 4: Examine Required Switches.”

---

### ***Step 4: Examine Required Switches***

This step displays the required switch and jumper settings for most ISA boards. Find the appropriate board’s switch and jumper settings and adjust them to match the settings displayed on the screen.

### ***Step 5: Save and Exit***

Use this step to save the configuration update when you have made changes.

## **Setting Power-On Defaults**

You can set and change the Power-On features at any time.

1. Select *System Configuration* from the Main Menu; then select Power-On Defaults.
2. Set the current date in the format:  
MM-DD-YYYY
3. Set the correct time in the format:  
HH:MM:SS
4. Set the Power-On Num Lock state:  
( ) OFF  
(\* ) ON

\* This activates the numeric keypad when the computer is turned ON.

## **System Partition**

The System Partition option allows you to copy and delete configuration files, and create, upgrade, or delete a system partition on the hard drive for the utilities.

The following menu options are available:

- Create System Partition
- Upgrade System Partition
- Delete System Partition
- Copy Files
- Delete Files

## Creating a New System Partition

If you used SmartStart to configure your server, the new System Partition is created automatically. If SmartStart was not used for server configuration follow the procedure below to create one now:

1. Insert the Compaq SmartStart CD in the CD-ROM drive and turn on the server.

---

**IMPORTANT:** The system partition requires about 32 MB of disk space at the beginning of the hard drive and an unused entry in the boot record.

---

2. Select Create/Update System Partition. This process takes three reboots.

## Verifying the System Partition

To verify that the system partition exists, follow this procedure:

1. Remove any media from the CD-ROM drive and the diskette drive.
2. Reboot the system by pressing **Ctrl+Alt+Del** or by turning the server OFF and then ON again.
3. Press the **F10** key when the following prompt appears.

---

Press "**F10**" key for System Partition Utilities

---

**IMPORTANT:** The text appears for only two seconds. If you do not press **F10** within the two seconds, you must reboot the server.

---

4. If a system partition exists, the server boots to the partition. If not, a message displays that no system partition exists.

## Upgrading the System Partition

To upgrade the system partition, follow this procedure:

1. Insert the Compaq SmartStart CD in the CD-ROM drive and turn on the computer.
2. Select *Upgrade System Partition*.
3. Select to upgrade the utilities. SmartStart copies the new utilities from the CD to the system partition.

## Configuration Backup

The Configuration Backup option allows you to create a backup of the system configuration and to restore the system configuration from the backup.

The following menu options are available:

- Backup
- Restore

## Configuration Backup and Configuration History Files

When you save and exit the System Configuration Utility, the utility keeps a history of the configuration. The utility maintains three versions of the system configuration files, including the current and two previous configurations in both binary (.SCI) and text (.CHL) file formats.

- The .SCI files can be used to restore a previous configuration using the System Configuration menu and Restore System Configuration from a .SCI File submenu.
- The .CHL files are text-based files displaying information that is stored in the corresponding .SCI file.

**Table 4-1**  
**System Configuration History Log Files**

Filename	Description
<i>SYSTEM.SCI</i>	Current configuration information
<i>SYSTEM1.SCI</i>	Previous configuration information
<i>SYSTEM2.SCI</i>	Previous configuration information (oldest)
<i>SYSTEM.CHL</i>	Textual representation of <i>SYSTEM.SCI</i> file
<i>SYSTEM1.CHL</i>	Textual representation of <i>SYSTEM1.SCI</i> file
<i>SYSTEM2.CHL</i>	Textual representation of <i>SYSTEM2.SCI</i> file (oldest)

**IMPORTANT:** If there is not enough disk space for the entire System Configuration History Log, the utility deletes log files starting with the oldest files (*SYSTEM2.SCI* and *SYSTEM2.CHL*) until enough disk space is available for the current configuration backup and history files.

# Configuring PCI Boards Automatically

The system ROM automatically configures PCI boards. If a user selection is required, a POST message directs you to run the System Configuration Utility. Also, you may use the System Configuration Utility to change the default automatic settings.

## Removing Boards

System ROM automatically reconfigures the server after a PCI board or DIMM is removed.

## Installing an Operating System

ProLiant 850R servers support the following operating systems:

- NetWare 3.12, 4.x, and IntranetWare from Novell
- Windows NT 3.51 and 4.0
- SCO OpenServer 3.0, 5.0, and 5.02
- SCO UnixWare 2.1
- IBM OS/2 Warp Server 4.0 and Warp Server Advanced 4.0
- IBM OS/2 Warp 3.x and IBM OS/2 2.x
- Banyan VINES v 6.00 and above, including VINES 7.00

If you use SmartStart to install the OS, the drivers are installed automatically. Or when you select the Operating System Installation feature from the System Configuration Utility main menu, the utility provides prompts to simplify the installation.

First the utility prompts you to select the correct operating system. Use the arrow keys to select the operating system and press the **Enter** key. The utility then prompts you for the operating system CD or diskette.

Not all operating systems ship with each server. Consult your local reseller or Compaq Customer Service if you need a SmartStart pack with additional operating system support. Some operating systems have driver support/updates but not an integrated SmartStart installation. You can still configure your server and manually install your operating system. Some operating systems have an integrated installation using the operating system manufacturer's CD.

## SMP Operating System Support

Compaq provides optimized software support for the Dual Processing Boards for:

- Microsoft Windows NT 3.51 and 4.0
- NetWare 4.11 SMP and IntranetWare SMP
- SCO OpenServer 3.0, 5.0, and 5.02
- UnixWare 2.1
- IBM OS/2 SMP version 2.11
- IBM OS/2 Warp Server with SMP 4.0

## Loading Compaq Device Drivers

Drivers are located on the Support Software Diskette and on the Compaq SmartStart and Support Software CD. The drivers on the Support Software Diskette may be newer versions with new functionality and upgraded utilities.

---

**IMPORTANT:** Always check *README* files on SmartStart or any Software Support Diskettes or CDs. If present, these files may contain information about important software updates.

---

## Device Drivers from Compaq for Novell Products

Your server must have certain device drivers to operate with the Novell operating systems. These drivers are located on the Compaq SmartStart and Support Software CD shipped with the server. If you use SmartStart to install the operating system, these drivers will be installed automatically. Otherwise, you can use SmartStart to create a Support Software for Novell Products (NSSD) diskettes to support a manual installation of Novell's operating systems.

For more information on these drivers, run the *README.COM* file in the root directory on any of the Support Software for Novell Products diskettes.

### SmartStart Installation

If you use SmartStart to install the OS, the drivers are installed automatically.

### Manual Installation

If you choose to configure the server without SmartStart, follow this procedure:

1. Insert the Compaq SmartStart CD into the CD-ROM drive.
2. Boot your system.
3. Select *Manual Installation*.
4. Follow the instructions provided by the operating system that you are installing.

### Special Considerations

- When using NetWare as your operating system, you can NOT install a SCSI board in slot 4 located below the Feature Board slot.
- Please run README.COM on any of the Support Software for Novell Products (NSSD) diskettes for more detailed driver installation instructions. NSSD v3.09 or newer provides support for the ProLiant 850R server.



- If you are running IntranetWare, Compaq recommends that you use LAN adapter drivers that have been upgraded to the latest Novell specification (ODI 3.3 compliant). These drivers can be found on the NSSD diskette #3, version 3.09 or newer. The LAN adapter drivers are located in the \NETWORK sub-directory. For example, if you want to load the driver for the Compaq NetFlex-3/P family of adapters, then from the NetWare console you would type:  
`LOAD A:\NETWORK\CPQNF3.LAN`

Please read NETWORK.RDM from the NSSD diskettes for further information.

- Your ProLiant 850R server comes with one IDE channel to which you can attach IDE devices. For each IDE channel to which you have an attached device, you must load the following drivers found on the NSSD diskette according to the type of device attached:
  - ❑ For each IDE channel: `LOAD A:\IDE\IDEATA.HAM`
  - ❑ For an IDE fixed disk : `LOAD A:\IDE\IDEHD.CDM`
  - ❑ For an IDE CD-ROM drive: `LOAD A:\IDE\IDECD.CDM`

Please read STORAGE.RDM from the NSSD diskettes for further information.

- If your server has more than 16 MB of system memory (RAM) installed, then you must apply a loader patch provided by Novell. If you are running NetWare 3.12, the loader patch can be found in the 312PT9.EXE (or newer) file. If you are running NetWare 4.10, the loader patch can be found in the 410PT6.EXE (or newer) file. IntranetWare does not require a patch. The 312PT9.EXE and 410PT6.EXE files are available from Novell through NetWare or their support web site (<http://support.novell.com>)

You can also obtain the 312PT9.EXE patch off the Compaq SmartStart NetWare CD No. 3 under: \PATCHES\NW312

## Windows NT Device Drivers from Compaq

Drivers are supplied to support Windows NT 3.51 and 4.0 on ProLiant servers. They are located on the Support Software Diskette (NT SSD) for Windows NT, and some of the drivers are contained on the Windows NT retail product. These drivers are also located on the Compaq SmartStart CD. The drivers on the SSD may be newer versions with new functionality, problem fixes, and so on. If you use SmartStart to install your operating system, these drivers are installed automatically. Otherwise, you can use SmartStart to create the NT SSD from Compaq to support a manual installation of NT drivers.

For more information on driver installation, run the *README.BAT* file in the root directory of the SSD for Windows NT. This will load the WinHelp file *NTREADME.HLP*.

### SmartStart Installation

If you use SmartStart to install the OS, the drivers are installed automatically.

### Manual Installation

If you choose not to let SmartStart configure the server, follow this procedure:

1. Insert the Compaq SmartStart CD into the CD-ROM drive.
2. Boot your system.
3. Select *Manual Installation*.
4. Follow the instructions that display on the monitor.

### Special Considerations

Please check *README* files on the SmartStart and Support Software CD or NT SSD CDs for additional details. For NT 3.51:

- You must choose custom mode – not express mode.
- During a text mode installation for the adapter driver, you must choose IDE CD-ROM (Dual Channel) driver to detect the IDE CD-ROM.

- During a text mode installation for disk controller adapter, you must choose Other and insert the NT SSD to install the C875 driver support.

## SCO OpenServer and SCO UnixWare Device Drivers from Compaq

Your server must have certain device drivers to operate under the SCO OpenServer and SCO UnixWare 2 operating systems. These drivers are located on the Compaq SmartStart CD. There are three methods to install the SCO operating system onto your server:

- An integrated SmartStart installation is available to assist you with installation of your server by automatically creating the Compaq System Partition with tools to help configure and diagnose your server. The SmartStart CD also includes all the SCO UNIX device drivers for your system.
- Alternatively, by booting the SmartStart CD and choosing a manual installation path, you can use the SCO UNIX from Compaq CDs to install your SCO software. This automatically installs all the drivers your server needs while presenting the SCO interview process instead of the SmartStart interview process. It will also automatically create the Compaq System Partition with tools to help configure and diagnose your server.
- To install SCO UNIX using software from SCO use the Boot Time Loadable Drivers (BTLDS) and the Compaq Enhanced Functionality Supplement (EFS). These can be downloaded onto floppies with tools available on the SmartStart CD. To create these floppies, boot the SmartStart CD and follow the instructions to create Supplemental Support Software diskettes. One of the diskettes on the Compaq EFS contains a bootable documentation diskette. Before attempting to install the SCO UNIX software, boot this diskette and read the README file for the Compaq EFS. It will instruct you on how to use the boot time loadable driver diskettes along with the SCO installation media.

The features requiring device drivers are:

- Compaq Ethernet/Token Ring Adapter

- Automatic Server Recovery-2
- Compaq ProLiant Storage System

## Special Considerations

Please check the "README" files on the SmartStart or EFS Diskettes or CDs for additional details.

## IBM OS/2 Device Drivers from Compaq

Your server must have certain device drivers for some server options to operate using IBM OS/2 Warp Server 4.0, IBM OS/2 Warp Server Advanced 4.0, IBM OS/2 SMP version 2.11, IBM OS/2 Warp Server with SMP 4.0, IBM OS/2 Warp 3.x, and IBM OS/2 2.x. These drivers are located on the Compaq SmartStart CD you received with your server. If you use SmartStart to install your operating system, these drivers are loaded automatically. Otherwise, you can use SmartStart to create an OS/2 Support Software Diskette (SSD) from Compaq to support a manual installation or retail software installation of OS/2.

For more information on these drivers, run the *README.COM* file in the root directory of the OS/2 SSD from Compaq.

## Manual installation

If you choose not to let SmartStart configure the server, follow this procedure:

1. Insert the Compaq SmartStart CD into the drive.
2. Boot your system.
3. Select *Manual Installation*.
4. Follow the instructions that display on the monitor.

## Banyan VINES Device Drivers from Compaq

Your server must have certain device drivers for some server options to operate using the Banyan VINES operating system. Compaq provides driver support for Banyan VINES 6.00 and above, including the new VINES 7.00.

These drivers are located on the Compaq SmartStart CD you received with your server. You can use SmartStart to create a Banyan VINES Support Software Diskette (SSD) from Compaq to support a manual installation of Banyan VINES.

There are two types of SSDs:

- LAN Adapter SSD
- Peripheral Adapter SSD

These SSDs contain the *README* files that list available drivers and driver installation procedures.

These drivers can also be ordered through SoftPaq and can be downloaded from the Compaq Web site.

### Manual installation

1. Insert the Compaq SmartStart CD into the drive.
2. Boot your system.
3. Select *Manual Installation*.
4. Follow the instructions that display on the monitor.

## **Diagnostics and Other Utilities**

- When you select the Diagnostics and Utilities feature from the System Configuration Utility main menu, the utility provides prompts to test, inspect, upgrade, and diagnose the server.
- Diagnostics and Utilities are located on the system partition on the hard drive and must be accessed when a system configuration error is detected during the Power-On Self-Test (POST).
- Run the Inspect Utility after the computer has been configured to get information about the operating system environment.
- For instructions on using the Diagnostics Utility and other Compaq utilities, refer to the online section on Diagnostics Tools.

## *Chapter 5*

# Maintaining and Shipping the Server

This chapter provides information on general cleaning and maintenance steps required to keep your server working properly. It also gives suggestions on repackaging and shipping the server and components.

## System Care and Maintenance

Important care and maintenance issues for your server include:

- Performing routine care
- Preparing your server for shipment
- Taking precautions for your CD-ROM drive
- Avoiding damage from electrostatic discharge.  
See Appendix A, “Electrostatic Discharge.”

## Routine Care of Server and Monitor

All servers need routine care. This section provides information on protecting your server and monitor and supplies information about ergonomic considerations.

Follow these suggestions to protect your server and monitor:

- Operate the server on a level surface.
- To permit required airflow and allow the CD-ROM drive tray to open, leave a clear area of at least 6 inches (15.2 centimeters) in front of and 3 inches (7.6 centimeters) behind the server.
- Keep the server away from excessive moisture, direct sunlight, and extremes of heat and cold.
- Keep liquids away from the server and the keyboard.

- Never cover the ventilation slots on the monitor.
- To lessen interference in a two-monitor system, place the monitors as far apart as possible.



**WARNING:** To reduce the risk of personal injury or damage to the equipment, for the next two suggestions, turn off your server and unplug the AC power cord from the power receptacle.

---

- Wipe the server exterior with a soft, damp cloth as needed. Do not use cleaning products; they can discolor or damage the finish.
- Occasionally clean the air vents on the front and back of the server. Lint and other foreign matter can block the vents and limit the airflow.
- Leave the server cover on while the server is in use.



**CAUTION:** Do not operate the server with the covers removed. The covers are an integral part of the cooling system and removing them while the system is running may adversely affect data integrity.

---

## Preparations for Shipping

Proper shipping preparations protect your server while in transit. Follow the instructions below:

1. Back up the data on the hard drive(s) onto diskettes or tape cartridges. Do not expose the diskettes or tape cartridges to electrical or magnetic impulses during storage or shipment.
2. Remove any diskettes from the diskette drive(s).
3. Turn off the server and the external devices.



4. Disconnect the AC power cord from the AC outlet, then from the server.
5. Disconnect the system components and external devices from their power sources, then from the server.



**CAUTION:** Ensure that all boards are seated properly in the expansion slots before shipping the server.

---

6. To protect the server components and external devices, pack them in their original packing boxes or similar packaging with sufficient packing material.

## ***Appendix A***

### ***Electrostatic Discharge***

A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device. To prevent damaging the system, follow these precautions when setting up the system or handling parts.

- Avoid hand contact by transporting and storing products in static-safe containers.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

### **Grounding Methods**

There are several methods for grounding. Use one or more of the following measures when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm +/- 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heelstraps, toe straps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an Authorized Compaq Reseller install the part. For more information on static electricity or assistance with product installation, contact your Authorized Compaq Reseller.

## ***Appendix B***

# **Installing a New Battery**

The Compaq ProLiant 850R server has two memory devices which require a battery for retaining stored information. One is on the System Board and the other on the Feature Board. Both require batteries to maintain their data.

## **System Board Battery Replacement**

When your server no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is usually about five to ten years. Use Compaq replacement battery 160274-001 a 600-milliampere alkaline, 4.5-volt battery.

After you have completed the battery installation, run the System Configuration Utility to reconfigure your system.

## Installing the System Board Battery

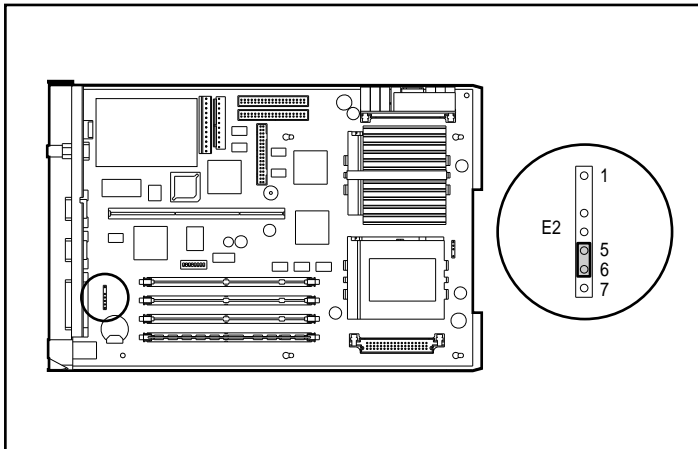


**WARNING:** The System Board contains a clock/CMOS lithium battery. The lithium battery may explode if mistreated. The battery is soldered in place and may not be removed. Do not abuse or disassemble. Use only replacement batteries supplied by Compaq Computer Corporation (spare part number 160274-001).

---

To install the new battery, complete the following steps:

1. Turn off your server, unplug it, and disconnect any external devices.
2. Remove the server from the rack and remove the server cover. Refer to Chapter 2, “Overview of Installing the Server,” for details.
3. Remove expansion boards on side A of the Riser Board to gain access to the header. The following illustration identifies the header location for the new battery.



**Figure B-1.** Battery jumpers on the System Board

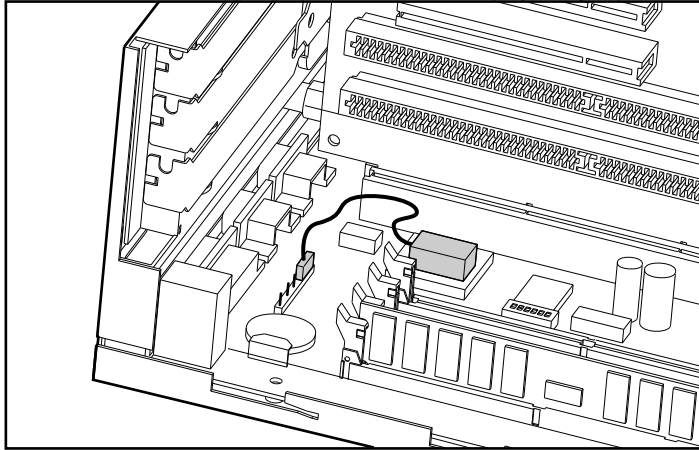
4. Change the jumper on header E2 from pins 6-7 to pins 5-6.

---

**IMPORTANT:** When a jumper is on header E2 / pins 6-7, the internal battery is used. When a jumper is on header E2 / pins 5-6, the external battery is used.

---

5. Remove the backing from the adhesive on the hook-and-loop fastener strip.
6. Place the battery and the hook-and-loop fastener strip on the designated chip, as shown in the following illustration.
7. Plug the battery connector onto pins 1-4 of header E2 on the System Board.



**Figure B-2.** Attaching the battery on the designated chip

8. Reverse steps 1 through 3 to close up the server and reinstall it into the rack.
9. Place the sticker included with your battery kit on the back of your server above the power connector.
10. Plug in the server and reconnect any external devices.



**WARNING:** To reduce the risk of electric shock or damage to the equipment:

Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

Disconnect power from the server or other product by unplugging the power cord from either the electrical outlet or the server or other product.

---

11. Turn on the server.
12. Run the Compaq System Configuration utility to reconfigure the system. Refer to Chapter 4, “Server Configuration and Utilities.”

## Feature Board Battery Replacement

When your server comes up with an error of “172-1 Configuration Nonvolatile Memory Invalid,” it may mean that you need to replace the battery providing power to the nonvolatile CMOS on the Feature Board. Battery life is usually about five to ten years under normal use. Use Compaq replacement battery 160274-001 or a comparable 600-milliampere alkaline, 4.5-volt battery.

When you have completed the battery installation, run the Computer Configuration Utility and reconfigure your system.

## Feature Board Battery Installation



**CAUTION:** Do not attempt to remove your old battery, as it is permanently installed.

---

To install the new battery, complete the following steps:

1. If your server is on, turn it off.
2. Unplug the server and disconnect any external devices.

3. Remove the server from the rack and place on a sturdy table or work bench and remove the server cover. Refer to Chapter 2 for detailed instructions.

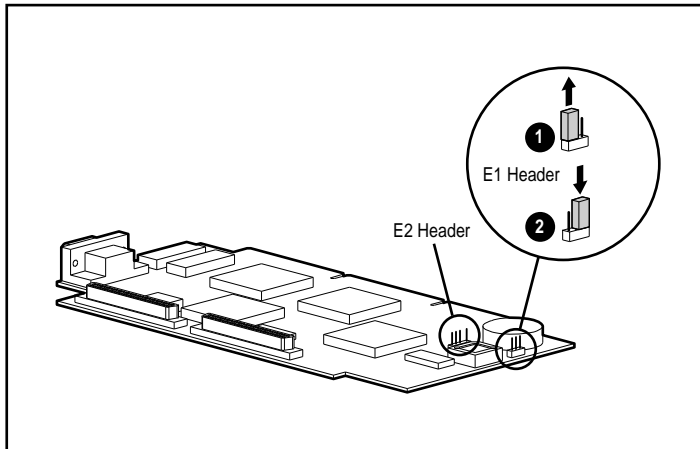
## Battery Placement for Feature Board

1. Remove all boards installed on side B of the Riser Board (that is the Feature Board and possibly a PCI expansion board).
2. On the Feature Board, change the jumper on header E1 from the pins 1-2 to pins 2-3.

---

**IMPORTANT:** When the jumper is placed at header E1 / pins 1-2 on the Feature Board, the internal battery is used. When the jumper is placed at header E1 / pins 2-3, the external battery is used.

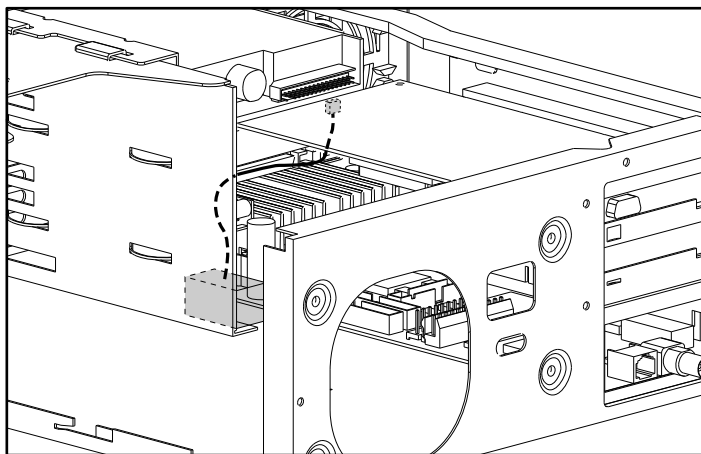
---



**Figure B-3.** Changing the battery jumper on the Feature Board

3. Plug the battery connector onto header E2 on the Feature Board.

4. Remove the backing from the adhesive on the hook-and-loop fastener strip. Place the battery and the hook-and-loop fastener strip as shown in the following illustration.



**Figure B-4.** Installing the battery to the disk drive cage

5. Reinstall all Boards on side B of the Riser Board.
6. Replace the server cover.
7. Place the sticker included with your battery kit on the back of your server above the power connector.
8. Plug in the server and reconnect any external devices.



**WARNING:** To reduce the risk of electrical shock or damage to your equipment, do not disable the power cord grounding feature. This equipment is designed to be connected to a grounded (earthed) power outlet that is easily accessible to the operator. The grounding type plug is an important safety feature.

---

9. Turn on the server.
10. Run the Compaq System Configuration Utility to reconfigure the system. Refer to Chapter 4, "System Configuration and Utilities."



## *Appendix C*

# Power Cord Set Requirements

The power cord set meets the requirements for use in the country where you purchased your equipment. The voltage selection switch allows you to select the appropriate line voltage for your server.

Power cord sets for use in other countries must meet the requirements of the country where you use the server. For more information on power cord set requirements, contact your Authorized Compaq Dealer.

## General Requirements

The requirements listed below are applicable to all countries:

- The length of the power cord must be at least 6.0 feet (1.8 m) and a maximum of 12 feet (3.7 m).
- The power cord set must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord will be used.
- The power cord set must have a minimum current capacity and nominal voltage rating of 10 A/125 volts AC, or 10A/250 volts AC, as required by each country's power system.
- The appliance coupler must meet the mechanical configuration of an EN60320/IEC 320 Standard Sheet C13 Connector, for mating with the appliance outlet on the computer.

# Country-Specific Requirements

Use the following table to identify the appropriate accredited agency in your country.

Table C-1 Power Cord Set Requirements - By Country		
Country	Accredited Agency	Applicable Note Numbers
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	SETI	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

- Notes:
1. Flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
  2. Flexible cord must be Type SVT or equivalent, No. 18 AWG, 3-conductor. Wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V).
  3. Appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. Flexible cord must be Type VCT or VCTF, 3-conductor, 1.0 mm<sup>2</sup> conductor size. Wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7A, 125V) configuration.

## *Appendix C*

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Finland	SETI	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

Notes:

1. Flexible cord must be <HAR> Type HO5VV-F, 3-conductor, 1.0 mm<sup>2</sup> conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.
2. Flexible cord must be Type SVT or equivalent, No. 18 AWG, 3-conductor. Wall plug must be a two-pole grounding type with a NEMA 5-15P (15A, 125V).
3. Appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. Flexible cord must be Type VCT or VCTF, 3-conductor, 1.0 mm<sup>2</sup> conductor size. Wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7A, 125V) configuration.

## ***Appendix D***

# **Switches and Jumpers**

When you add or remove a component or change a security feature, you must reconfigure the computer to recognize these changes. If the system configuration is incorrect, your computer may not work properly and you may receive error messages on the screen. Setting the System Board switches is part of the reconfiguration process, along with running the System Configuration utility.

## **Setting System Board Switches**

The Compaq ProLiant 850R System Board has two switch banks (SW1 and SW2) located on the System Board that are used to set the overall configuration of your server. Switch SW1 is an 8-position switch (S1-S8) that provides configuration settings of your computer. Refer to the hood labels on the inside of the server cover for the proper settings.

# System Maintenance Switch SW1 Settings

The following table defines the function for each switch setting on SW1.

Table D-1  
System Maintenance Switch Settings on SW1

Switch	Position	Status	Function
1-Password	OFF	Enabled	Power-on Password Defeat: On position permanently clears all system passwords. For new passwords turn switch off and run System Configuration Utility.
	ON	Disabled	
2-Reserved	ON	Factory use only. These switches must be set as shown for the server to operate correctly.	
3-Reserved	ON		
4-Reserved	ON		
5-Reserved	OFF		
6-Reserved	ON		
7-Maintenance	OFF	Disabled	Maintenance Mode: on position places the server into maintenance mode status for testing.
	ON	Enabled	
8-Floppy Boot Override	OFF	Disabled	Diskette Boot Enable: System can be booted from diskette drive regardless of the Diskette Boot control option selected with the System Configuration Utility.
	ON	Enabled	

## NIC Operating Mode

The ProLiant 850R server comes standard with the Compaq Integrated 10/100 TX UTP Controller. The controller automatically differentiates between the 10Mb and 100Mb environments when the RJ-45 connector is used. The controller is limited to 10Mb operation when the BNC connector is used.

## SCSI Device Jumper Settings

No two SCSI devices connected to the same SCSI controller can have the same SCSI ID. If another SCSI device is connected to the same controller, check its SCSI ID in the Compaq System Configuration Utility before beginning the installation procedure for this additional drive. The SCSI ID is set by jumpers ID 2, ID 1, and ID 0 located on each SCSI device.

The following chart provides the SCSI ID jumper settings for Compaq SCSI hard drives.

---

**Table D-2**  
**SCSI ID Settings**

SCSI ID	Bit 2	Bit 1	Bit 0
6	ON	ON	OFF
5	ON	OFF	ON
4	ON	OFF	OFF
3	OFF	ON	ON
2	OFF	ON	OFF
1	OFF	OFF	ON
0	OFF	OFF	OFF

## **System Board Battery Jumper Settings**

The System Board allows you to add an external battery, if the battery embedded on the System Board fails. A Jumper on header E2 on the System Board allows you to choose the internal battery and an external battery. Placing the jumper on pins 6-7 selects the internal battery. Placing the jumper on pins 5-6 selects the external battery. See Appendix B, “Installing a New Battery,” for more specific information.

## **Feature Board Battery Jumper Settings**

The Feature Board allows you to add an external battery, if the battery embedded on the Feature Board fails. A Jumper on header E1 on the Feature Board selects between the internal battery and an external battery. Placing the jumper on pins 1-2 selects the internal battery. Placing the jumper on pins 2-3 selects the external battery. See Appendix B, “Installing a New Battery,” for more specific information.



# ***Appendix E***

## **Regulatory Compliance Notices**

### **Federal Communications Commission Notice**

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

### **Modifications**

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Compaq Computer Corporation may void the user's authority to operate the equipment.

### **Cables**

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

## **Declaration of Conformity for Products Marked with the FCC Logo-United States only**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For questions regarding this declaration, contact:

- ❑ Compaq Computer Corporation  
P. O. Box 692000, Mail Stop 510101  
Houston, Texas 77269-2000

Or, call

- ❑ (281) 514-3333

To identify this product, refer to the Series number found on the product.

## **Canadian Notice (Avis Canadien)**

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

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

## European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European Norms:

- EN55022 (CISPR 22) - Electromagnetic Interference
- EN50082-1 (IEC801-2, IEC801-3, IEC801-4) - Electromagnetic Immunity
- EN60950 (IEC950) - Product Safety

## Japanese Notice

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

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## Laser Devices

The CD-ROM drive contains a laser device. All Compaq systems equipped with laser device comply with appropriate safety standards including International Electrotechnical Commission (IEC) 825. With specific regard to the laser, the equipment complies with laser product performance standards set by government agencies as a Class 1 laser product. The product does not emit hazardous light; the beam is totally enclosed during all modes of customer operation and maintenance.

## Laser Safety Warnings



**WARNING:** To reduce the risk of fire, bodily injury, and damage to the equipment, observe the following procedures:

- Do not operate controls, make adjustments, or perform procedures to a laser device other than those specified herein or in the CD-ROM drive installation guide.
  - Allow only Compaq Authorized service technicians to repair the laser equipment.
- 

## Compliance with CDRH Regulations

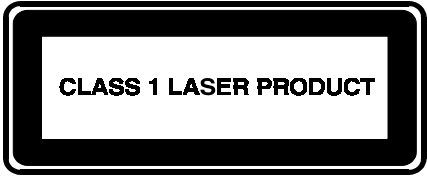
The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration implemented regulations for laser products on August 2, 1976. These regulations apply to laser products manufactured from August 1, 1976. Compliance is mandatory for products marketed in the United States.

## Compliance with International Regulations

All Compaq systems equipped with CD-ROM drives comply with the appropriate safety standards, including IEC825.

Laser Product Label

The following label or equivalent is located on the surface of your CD-ROM drive.



This label indicates that the product is classified as a CLASS 1 LASER PRODUCT. This label appears on a laser device installed in your product.

Laser Information

Laser Type	Semiconductor GaAIAs
Wave Length	780 nm +/- 35 nm
Divergence Angle	53.5 degrees +/- 0.5 degrees
Output Power	Less than 0.2 mW /10,869 W·m <sup>-2</sup> sr <sup>-1</sup>
Polarization	Circular 0.25
Numerical Aperture	0.45 inches +/- 0.04 inches

## Battery Replacement Notice

To reduce the risk of personal injury, Your server is provided with a battery-powered Real-Time Clock circuit. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Replacement is to be done by an Authorized Compaq Service Provider using the Compaq spare designated for this product. For more information about Real-Time Clock battery replacement or proper disposal, contact your Compaq Authorized Reseller or your Compaq Authorized Service Provider.

This product contains an internal Lithium Manganese Dioxide or Lithium, Vanadium Pentoxide, or alkaline battery. Replacement should be performed by a qualified Compaq authorized service technician.

## Battery Recycling Notice



Batteries, battery packs, and accumulators should not be disposed of together with the general household waste. To forward them for recycling or proper disposal, please use the public collection system or return them to Compaq, your authorized Compaq Partners, or their agents.

# Appendix F

## Specifications and Connector Interfaces

This appendix provides operating and performance specifications for the Compaq ProLiant 850R components. For other specifications, refer to the Systems Reference Library CD.

### ProLiant 850R Specifications

Table F-1 ProLiant 850R		
Dimensions		
Height	5.1 in	12.85 cm
Depth	15.8 in	40.13 cm
Width	17.7 in	45.00 cm
Weight		
Fully Configured	30.0 lbs	13.64 kg
Input Requirements		
Rated Input Voltage	100 to 120 VAC	220-240 VAC
Rated Input Voltage	50 - 60 Hz	
Rated Input Current	5.0 A	3.0 A
Power Supply Output Power		
Rated Steady-State Power	200 W	
Maximum Peak Power	200 W	
BTUs	1010 BTU/hr	1010 BTU/hr

*continued*

**Table F-1 ProLiant 850R** *continued*

Temperature Range		
Operating Range	50° to 95°F	10° to 35°C
Non-operating Range	-4° to 122°F	-20° to 50°C
Relative Humidity (noncondensing)		
Operating	8% to 90%	8% to 90%
Nonoperating	5% to 95%	5% to 95%
Maximum Wet Bulb Temperature	101.7° F	38.7° C

# Connector Interfaces

For the pinouts and signals of these connector interfaces, refer to the Systems Reference Library CD:

- Keyboard Connector
- Mouse Connector
- Serial (2) Connector
- Parallel Connector
- Video Connector
- Fast-Wide SCSI-2 Connector
- BNC Network Connector
- RJ-45 Network Connector



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