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Introduction

Using This Reference Guide

This reference guide contains detailed information about the Compaq ProLiant 800 server. Following is a summary of each chapter:

■ **Chapter 1 – *Compaq ProLiant 800 Features***

This chapter provides a brief summary of the standard features of the ProLiant 800 server. It describes two valuable software programs that Compaq provides for ProLiant 800 users – SmartStart and Compaq Insight Manager.

■ **Chapter 2 – *Server Management***

This chapter describes server management features that include fault tolerance, performance, and configuration of servers. Remote server management is explained.

■ **Chapter 3 – *Installing Hardware Options***

This chapter provides instructions for installing options for Compaq ProLiant 800 servers.

■ **Chapter 4 – *Using the System Configuration Utility***

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 – *Using the CD-ROM Drive***

This chapter provides operating instructions for the CD-ROM drive and precautions for use and transportation.

■ **Chapter 6 – *Using Security Management***

This chapter covers various hardware and software features that are built into the ProLiant 800 servers for multilevel security control.

■ **Chapter 7 – *Maintaining and Shipping the Server***

This chapter provides information on general cleaning and maintenance required to keep the ProLiant 800 server working properly. It also gives suggestions on repackaging and shipping the ProLiant 800 server and components.

■ Chapter 8 – *Using Diagnostics Tools*

This chapter describes software and firmware diagnostic tools available for ProLiant 800 users.

■ Appendix A – *Installing a New Battery*

This appendix contains information on replacing the I/O and Riser Wide-Ultra SCSI controller batteries.

■ Appendix B – Power Cord Set Requirements

This appendix contains requirements for the power cord set now available with the Compaq ProLiant 800 servers. A table lists power cord set requirements for each country.

■ Appendix C – *Electrostatic Discharge*

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

■ Appendix D – *Switches and Jumpers*

This appendix provides the correct settings for the switches on the I/O board and processor boards.

■ Appendix E – *Installing the Server*

This appendix provides instructions for first-time server installation.

■ Appendix F – *Federal Communications Commission Notice*

■ 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 without pressing the Enter key.
Enter	When you are instructed <i>to enter</i> information, type the information and then press the Enter key.

Symbols in Text

The following words and symbols mark special messages throughout this guide:



WARNING: Text set off in this manner indicates that failure to follow directions in the warning can result in bodily harm or loss of life.



CAUTION: 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

These icons may be located on equipment in areas where hazardous conditions may exist.



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 avoid 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. The enclosed area contains no operator serviceable parts. To avoid 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 avoid risk of electrical shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

For More Information

Contact your nearest Authorized Compaq Reseller or Service Provider for more information.

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- For Compaq technical support in the United States and Canada, call 1-800-OKCOMPAQ (1-800-652-6672).

Elsewhere, call one of the numbers listed in the following table to locate your nearest Authorized Compaq Reseller or Service Provider:

Worldwide Telephone Numbers	
Location	Telephone Number
Argentina	54-1-796-1616
Asia	(65) 75044371
Australia	008 812 800
Austria	0222 878 16-16
Belgium	02-716-95-11
Brazil	55-11-246-7866
Central America/Caribbean	1-713-374-4420
Chile	56-2-274-1911
Colombia	57-1-312-0145
Denmark	45 90 45 45
Eastern Europe	089/99 33-0
Rest of Europe/Middle East/Africa	089/99 33-27 66
Finland	90 435 77373

continued

Worldwide Telephone Numbers *continued*

Location	Telephone Number
France	(1) 69 86 72 72
Germany	0180/521 21 11
Hong Kong	852 867 1671
Italy	02 167 825 012
Japan	01-2010-1589
Mexico	52-5-229-7900
Netherlands	0 1820-65805
New Zealand	649 307 3969
Norway	22 65 6500
Puerto Rico	1-809-765-4360
Spain	91 640 1500
Sweden	46 08 703 5200
Switzerland	#1 / 838 22 22
United Kingdom	081 332 3888
Venezuela	58-2-953-6861

Online Help

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

- CompuServe
- Prodigy
- America Online
- Internet: Questions can be submitted to the Compaq Technical Support staff using the electronic mail address: **support@compaq.com**. Compaq files can be accessed using the address: 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

Chapter 1

Compaq ProLiant 800 Features

Compaq ProLiant 800 architecture combines the power of the Intel Pentium Pro Processor with bridged PCI bus architecture to provide optimum performance. The innovative architecture gives you maximum performance and flexibility.

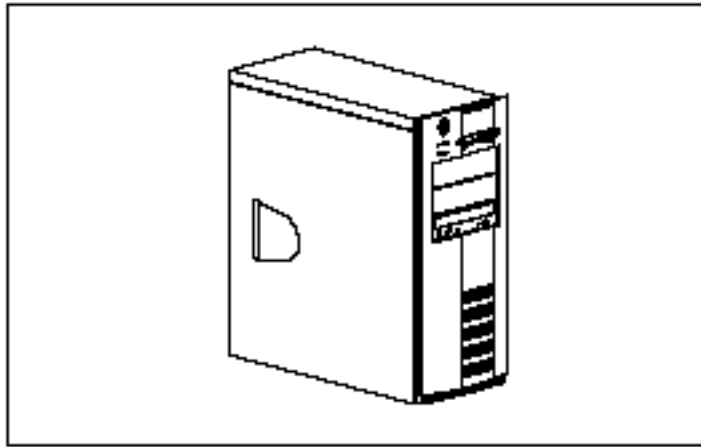


Figure 1-1. Compaq ProLiant 800 server

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.

Comprehensive 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.

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

Standard Features

The following features are standard on all Compaq ProLiant 800 models, unless otherwise noted.

Front Panel Components

The following illustrations and tables show and describe the components on the front panel of the server:

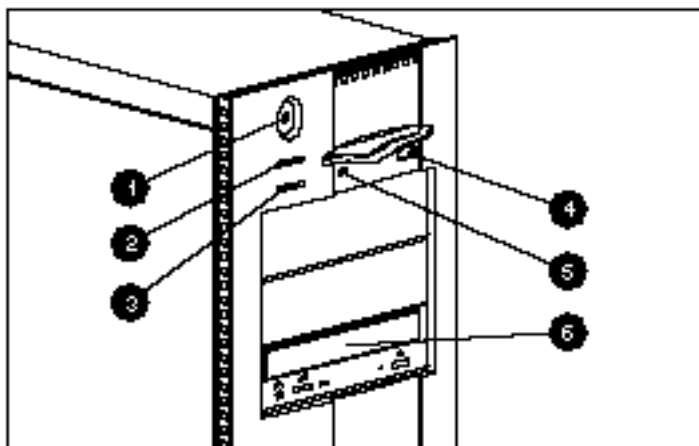


Figure 1-2. ProLiant 800 front panel components

Table 1-1
Front Panel Components

Reference	Component	Function
1	Power Switch	Turns the server on and off.
2	Power-On Light	Turns on when power to the server is turned on and blinks (optional) in Energy Saver mode.
3	Hard Drive Activity Light	Turns on when the hard drive is being accessed.
4	Diskette Eject Button	Ejects a loaded diskette.
5	Diskette Drive Activity Light	Turns on when the diskette drive is being accessed.
6	CD-ROM Drive	Holds a CD-ROM disk.

The lights of the server provide information about its operation. When the power switch ❶ is turned on, the power light ❷ is green.

When the hard drive activity light ③ or diskette drive activity light ⑤ is on, the drive is either reading information from the disk or storing information on the disk. Button ④ ejects the diskette from the floppy drive.

Removing the Side Access Panel

To remove the side access panel:

1. If the server is on, turn it off and disconnect the power cord.
2. Loosen the three thumbscrews on the rear of the unit.
3. Slide the side access panel toward the rear of the unit.
4. Lift and remove the panel.

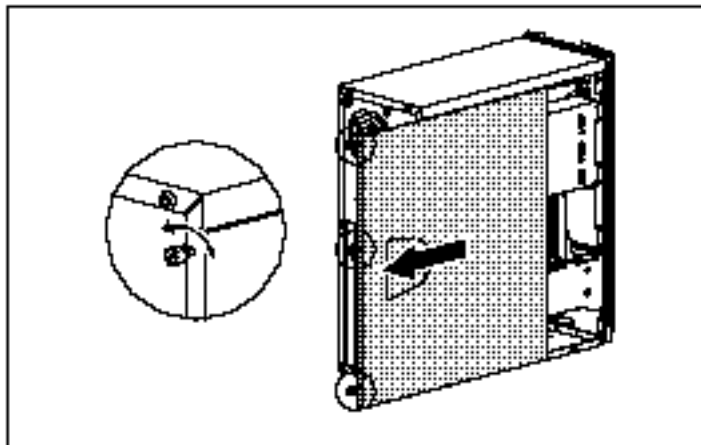



Figure 1-3. Removing the side access panel

Replacing the Side Access Panel

1. Reverse the previous steps to replace the side access panel.
2. If desired, the side access panel can be locked (with a customer-supplied padlock) to prevent unauthorized access to system components. See Figure 1-4.

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

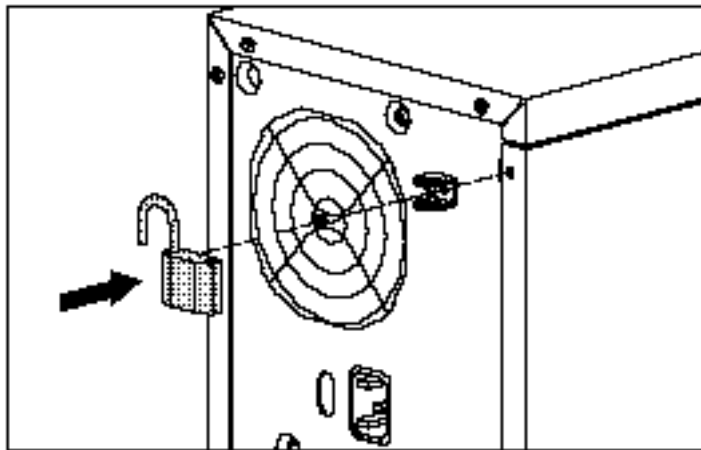


Figure 1-4. Securing the system

Removing the Front Bezel

To gain access to ProLiant 800 hard drive and removable media, remove the front bezel:

1. Remove the side access panel.
2. Release the three snaps that hold the bezel in place; two are located on the side of the bezel and one at the bottom.
3. Rotate the bezel out to about 45 degrees, then pull to remove the bezel from the chassis.

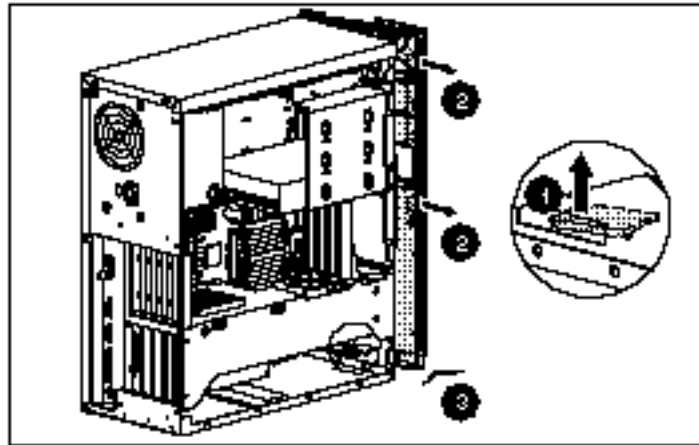


Figure 1-5. Opening the front bezel

Rear Panel Connectors

The following illustrations and tables show and describe the connectors on the rear panel of the server. Each connector includes an icon to help you identify its function.



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

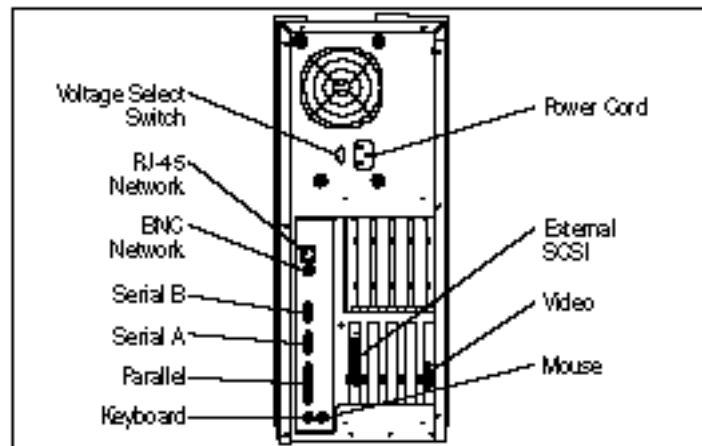


Figure 1-6. ProLiant 800 rear panel connectors and switches

Table 1-2
Rear Panel Connectors

Connector	Function
Voltage Select Switch	Switches voltage between 115V (U.S.) and 230V to match geographical requirements.
Ethernet RJ-45 Connector	Connects the Ethernet network, using an RJ-45 cable. Supports 10BaseT and 100TX.

continued

Rear Panel Connectors *continued*

Connector	Function
Ethernet BNC Connector	Connects the Ethernet network, using a thin-coax cable. Supports only 10Base2.
Serial Connectors A, B	Connects a serial device, such as a serial printer or modem.
Parallel Connector	Connects a parallel device, such as a parallel printer.
Keyboard Connector	Connects the keyboard (orange icon).
External SCSI	Connects SCSI devices.
Power Cord	Connects the server to an electrical power outlet.
Video	Connects a monitor with a PCI graphics controller (black icon).
Mouse	Connects a mouse or other pointing device (green icon).

Drive Positions

The ProLiant 800 server can house up to five mass storage devices. The following table and illustration describe the recommended drive configurations.

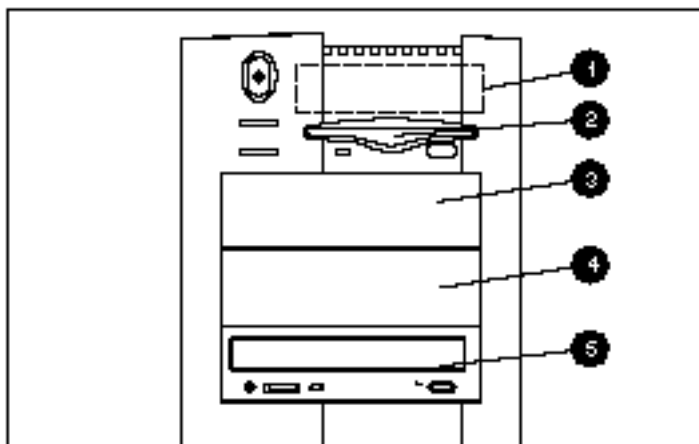


Figure 1-7. ProLiant 800 server drive positions

Table 1-3
Description of Drive Bays

Drive Position	Configuration
1	Standard internal hard drive; 1" form factor
2	3.5" standard diskette drive
3	5.25" half-height drive bay (removable media area)
4	5.25" half-height drive bay (removable media area)
5	5.25" half-height drive bay occupied by standard CD-ROM drive (removable media area)

Processor Boards/Power Module

- 200/66 256-KB cache and 180/60 256-KB cache Pentium Pro
- Dual Pentium Pro processor capability
- Processor Power module (DC-to-DC converter)

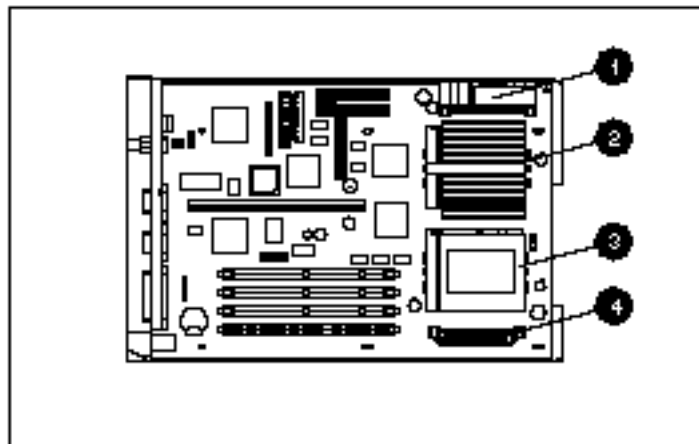


Figure 1-8. Processor Power modules on ProLiant 800 I/O board

Table 1-4
Processor/Power Module Locations

Location ID	Description
1	Power module 1 (standard shipping configuration)
2	Processor 1 (standard shipping configuration)
3	Processor 2
4	Power module 2

Cache Memory and System Architecture

Full-speed 256-KB secondary (L2) cache is 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.

Expansion Slots

Seven expansion slots may be configured using one of the following configurations:

- Five PCI slots for access to PCI bus, providing peripheral transactions at a PCI clock speed up to 33 MHz. Four available slots, one used by a video card.
- Two ISA slots for full compatibility with ISA expansion boards

SCSI Controller

- Standard PCI bus connection
- Supports Wide-Ultra SCSI (internal connector only), a 16-bit, 20-MHz bus providing a maximum data transfer rate of 40 Mb/s
- Automatic detection and communication with Fast-SCSI-2 and Fast-Wide SCSI-2 devices
- Both internal and external connector support for Fast-Wide SCSI-2

Network Controller

Integrated 32-Bit NetFlex-3 Controller on the PCI local bus. Features include the RJ-45 connector for 10BaseT Ethernet (module upgradable to 100TX) and the BNC connector for 10Base2 Thinnet Ethernet.

Video

- External video controller providing maximum resolution of 1024 x 768, 256-color, noninterlaced resolution. 1-MB video RAM standard, upgradable to 2 MB.
- Supports SVGA, VGA, EGA, and CGA graphics resolutions.

ROM

- Software upgradable firmware

Power Supply

- 240 W

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 can help you achieve a well-integrated server that ensures maximum dependability and supportability. For further information about configuration, refer to Chapter 4, "Using the System Configuration Utility."

Fault Tolerance

Fault tolerance for the ProLiant 800 server is covered in more detail in Chapter 2, "Server Management." Adding a SMART-2/P controller will deliver the following functions:

- RAID 0 - no fault tolerance
- RAID 1 - mirroring

- RAID 4 - data guarding
- RAID 5 - distributed data guarding

Compaq Insight Manager

Compaq Insight Manager is an easy-to-use and intuitive software utility for collecting server information. This information is then 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 controls 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, "Using the System Configuration Utility," for more information.

Automatic Server Recovery-2 (ASR-2)

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 information on the Systems Reference Library CD (SRL).

Security Features

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

See Chapter 6, "Using Security Management," for more information on these security features.

Getting Additional Configuration Information

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*.

Compaq Integrated Remote Console

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

- Accessible using the ANSI terminal
- Operates independently of the operating system
- Provides for remote server reboot
- Provides access to system configuration
- Uses out-of-band communication with a dedicated management modem installed in the server

For more information about the IRC, see the *Integrated Remote Console User Guide*.

Chapter 2

Server Management

Compaq server management features provide monitoring, analysis, and control of the fault tolerance, performance, and configuration aspects of the servers. These server management features include:

- Server Parameter Tracking
 - ❑ Environment
 - ❑ Network Fault Prevention Tracking
 - ❑ Memory Fault Prevention Tracking (with option upgrade kit)
- Server Fault Tolerance
 - ❑ Disk Subsystem Fault Tolerance
 - ❑ Memory System Error Correction
- Rapid Recovery Services
 - ❑ Server Health Logs
 - ❑ Storage Fault Recovery Tracking
 - ❑ Storage Automatic Reconstruction
 - ❑ Network Interface Fault Recovery Tracking
 - ❑ Memory Fault Recovery Tracking (with option upgrade kit)
 - ❑ Automatic Server Recovery-2
- Remote Service Features
 - ❑ ROMPaq
- Compaq Insight Manager

Server Parameter Tracking

Server parameter tracking provides timely fault, performance, and configuration information associated with the server environment and the critical server subsystems of the processor, memory, and I/O (storage and network interface). Your server uses a combination of hardware, firmware, and industry-standard management software to implement this feature.

The following topics provide information on specific parameters that your server monitors.

Environment

Level I Temperature, Auto Shutdown

You can configure your server to start an automatic, orderly operating system shutdown if your server detects that the factory preset system temperature has been exceeded. This allows proper clean-up of operating system files, reducing server recovery time when the temperature returns to normal. This shutdown also decreases the potential for heat-related damage to the system components. Consult your Compaq Insight Manager documentation or see Chapter 4, “Using the System Configuration Utility,” for more information on setting this option.

Level II Temperature, Immediate Shutdown

When temperatures exceed the factory preset level II temperature threshold, the hardware tracking of the system thermal environment executes an immediate system shutdown. This shutdown decreases the potential for heat-related damage to the system components.

Storage Subsystem Thermal Tracking

If your server has an external SCSI storage subsystem, the storage chassis thermal environment can be monitored to alert the Compaq Insight Manager console when the subsystem's temperature exceeds the factory preset temperature threshold.

Network Fault Prevention Tracking

Your server tracks six fault prevention parameters of Ethernet and Token Ring network interfaces, such as excessive collisions or frames transmitted after single or multiple collisions. This prevents impending network interface problems.

Memory Fault Prevention Tracking

Your server tracks the operation of the ECC memory subsystem, looking for any correctable memory errors. This allows you to schedule maintenance to either avert or recover from impending ECC memory failures.

Server Fault Tolerance

Several types of fault tolerance are available with the ProLiant 800 server, including:

Disk Subsystem Fault Tolerance

If you are using the optional Compaq SMART-2 Array Controller, you can specify the level of disk subsystem fault tolerance on your Compaq ProLiant 800 Server. Your fault tolerance options are:

- RAID 0 – Data striping with no fault tolerance
- RAID 1 – Drive mirroring
- RAID 4 – Data guarding
- RAID 5 – Distributed data guarding

Use the Array Configuration Utility to select the desired RAID level.

Memory System Error Correction

The ProLiant 800 memory system uses Error Checking and Correcting (ECC) memory to detect and correct all single-bit memory parity errors. This ensures the correction of common memory errors without interrupting system operation.

Rapid Recovery Services

Rapid recovery means fast identification and resolution of complex faults. The Rapid Recovery Engine and Insight Management Agents notify the system administrator when a failure occurs, ensuring that the server experiences minimal downtime. You enable these features through the System Configuration Utility. These integrated server management features are:

- Server Health Logging
- Storage Fault Recovery Tracking
- Storage Automatic Reconstruction
- Network Interface Fault Recovery Tracking
- Memory Fault Recovery Tracking (with option upgrade kit)
- Automatic Server Recovery-2 (ASR-2)

These are discussed in more detail on the Systems Reference Library CD.

Server Health Logs

The Server Health Logs contain information to help identify and correct server failures or correlate hardware changes with server failures. The Server Health Logs are stored in nonvolatile RAM and consist of the Critical Error Log and the Revision History Table.

If errors occur, that information is automatically stored in the Critical Error Log.

When boards or components that support revision tracking are updated to a new revision, the Revision History Table is updated.

Critical Error Log

The Critical Error Log records memory errors as well as catastrophic hardware and software errors that cause the system to fail. This information helps you quickly identify and correct the problem, thus minimizing downtime.

You can view the Critical Error Log through the Inspect Utility, Diagnostics Utility, or Compaq Insight Manager. The Diagnostics Utility either resolves the error or suggests corrective action.

The Critical Error Log identifies and records all the following errors. Each error type is briefly explained below. If you encounter any of these errors, run the Diagnostics Utility.

Table 2-1
Critical Error Log Messages

Message	Description
Abnormal Program Termination	The operating system has encountered an abnormal situation that has caused a system failure.
ASR-2 detected by ROM	An ASR-2 activity has been detected and logged by the system ROM.
ASR-2 Test Event	The System Configuration Utility generated a test alert.

continued

Critical Error Log Messages *continued*

Message	Description
Automatic Server Recovery Base Memory Parity Error	The system detected a data error in base memory following a reset due to the Automatic Server Recovery-2 (ASR-2) timer expiration.
Automatic Server Recovery Extended Memory Parity Error	The system detected a data error in extended memory following a reset due to the ASR-2 timer expiration.
Automatic Server Recovery Memory Parity Error	The system ROM was unable to allocate enough memory to create a stack. Then it was unable to put a message on the screen or continue booting the server.
Automatic Server Recovery Reset Limit Reached	The maximum number of system resets due to ASR-2 timer expiration has been reached, resulting in the loading of Compaq Utilities.
Battery Failing	Low system battery warning. Replace battery within 7 days to prevent loss of nonvolatile configuration memory. Failure of the battery supporting the system's nonvolatile RAM is imminent.
Caution: Temperature Exceeded	The operating system has detected that the temperature of the system has exceeded the caution level. Accompanying data in the log notes if an auto-shutdown sequence has been invoked by the operating system.
Diagnostic Error	An error was detected by the Diagnostics Utility. See the specific error code in this chapter for a detailed explanation.
Error Detected On Boot Up	The server detected an error during the Power-On Self-Test (POST).

continued

Critical Error Log Messages *continued*

Message	Description
Processor Prefailure FS_CPU_Prefailure_Cache	A CPU has passed an internal corrected error threshold - Excessive internal ECC cache errors.
NMI - PCI Bus Parity Error	A parity error was detected on the PCI bus.
NMI - Expansion Board Error	A board on the expansion bus indicated an error condition, resulting in a server failure.
NMI - Expansion Bus Master Time-Out	A bus master expansion board in the indicated slot did not release the bus after its maximum time, resulting in a server failure.
NMI - Expansion Bus Slave Time-Out	A board on the expansion bus delayed a bus cycle beyond the maximum time, resulting in a server failure.
NMI - Fail-Safe Timer Expiration	Software was unable to reset the system fail-safe timer, resulting in a server failure.
Processor Exception	The indicated processor exception occurred.
NMI - Processor Parity Error	The processor detected a data error, resulting in a server failure.
Server Manager Failure	An error occurred with the Server Manager/R.
NMI - Software Generated Interrupt Detected Error	Software indicated a system error, resulting in a server failure.
Caution: Temperature Exceeded	The operating system has detected that the temperature of the system has exceeded the caution level. Accompanying data in the log notes if an auto-shutdown sequence has been invoked by the operating system.

continued

Critical Error Log Messages *continued*

Error Message	Description
NMI- Automatic Server Recovery Timer Expiration	The operating system has received notice of an impending ASR-2 timer expiration.
Required System Fan Failure	The required system fan has failed. Accompanying data in the log notes if an auto-shutdown sequence has been invoked by the operating system.
UPS A/C Line Failure Shutdown or Battery Low	The UPS notified the operating system that the AC power line has failed. Accompanying data indicates if an auto-shutdown sequence has been invoked or if the battery has been nearly depleted.

Revision History Table

Some errors can be resolved by reviewing changes to the server's configuration. The server has an Automatic Revision Tracking (ART) feature that helps you review recent changes to the server's configuration.

One ART feature is the Revision History Table, which contains the hardware version number of the system board and any other system boards providing ART-compatible revision information. This feature lets you determine the level of functionality of an assembly in a system without opening or powering down the unit.

The Revision History format resembles the following table:

Table 2-2 Revision History Table	
Current Revisions	
Date	10/13/95
System Board Revision	03
Assembly Version	1
Functional Revision Level	C
Processor 01 Revision	01
Assembly Version	1
Functional Revision Level	A
Slot 05 Revision	04
Assembly Version	1
Functional Revision Level	D

continued

Revision History Table *continued*

Previous Revisions	
Date	9/21/95
System Board Revision	03
Assembly Version	1
Functional Revision Level	C
Processor 01 Revision	01
Assembly Version	1
Functional Revision Level	A
Slot 05 Revision	04
Assembly Version	1
Functional Revision Level	D

The Revision History Table is stored in nonvolatile RAM and is accessed through the Diagnostics Utility, Inspect Utility, and Compaq Insight Manager.

The following information stored in the Revision History Table allows precise identification of the components in the server:

- Type of board: system or expansion
- Slot number
- Board ID, where applicable
- Version: updated when the system ROM detects a board version change in a system expansion slot. Complete version information is kept on the previous configuration, which allows you to correlate hardware changes with server failure.

Storage Fault Recovery Tracking

This feature tracks over 12 failure indication parameters, such as time-outs, spin-up, and self-test errors of SCSI drives. You can use these parameters to pinpoint failed storage subsystem components and to recover from controller or hard drive failure.

Storage Automatic Reconstruction

This feature automatically reconstructs data to an online spare or to a replaced drive if a drive fails. To use the reconstruction feature, you must configure your server for drive mirroring or data guarding. The reconstruction decreases system downtime by allowing rapid recovery to full system operation if a drive fails.

Network Interface Fault Recovery Tracking

This feature tracks over 20 failure indication parameters, such as alignment errors, lost frames, and frame copy errors, of Ethernet and Token Ring network interfaces. It decreases network downtime by enabling diagnosis of actual network interface failures.

Memory Fault Recovery Tracking

This feature inspects the operation of the memory subsystem looking for uncorrectable memory errors.

Automatic Server Recovery-2

Automatic Server Recovery-2 (ASR-2) lets the server restart automatically from the operating system or the Compaq Utilities. To use this feature, you must use the System Configuration Utility to install Compaq Utilities in the system partition.

You can tell ASR-2 to restart your server after a critical hardware or software error occurs. Using the Compaq System Configuration Utility, configure the system for either automatic recovery or for attended local or remote access to diagnostic and configuration tools.

You can also configure ASR-2 to page an administrator when the system restarts. ASR-2 depends on the application and driver that routinely notifies the ASR-2 hardware of proper system operations. If the time between ASR-2 notifications exceeds the specified period, ASR-2 assumes a fault has occurred and initiates the recovery process.

To configure ASR-2, follow this procedure:

1. Execute the System Configuration Utility.
2. Select *View and Edit Details*.
3. Set the software error recovery status to Enabled.
4. Set the software error recovery time-out.

The available recovery features are:

- **Software Error Recovery** – automatically restarts the server after a software-induced server failure
- **Environmental Recovery** – allows the server to restart when temperature, fan, or AC power conditions return to normal

Unattended Recovery

For unattended recovery, ASR-2 logs the error information to the Critical Error Log, resets the server, pages you (if a modem is present and you selected paging), and tries to restart the operating system. Often the server restarts successfully, making unattended recovery the ideal choice for remote locations where trained service personnel are not immediately available.

ASR-2 tries to restart the server up to 10 times. If ASR-2 cannot restart the server within 10 attempts, it places a critical error in the Critical Error Log, starts the server into Compaq Utilities, and enables remote access (if you configured remote access).

To use this level of ASR-2, you must configure ASR-2 to load the operating system after restart.

Attended Recovery

For attended recovery, ASR-2 takes the following actions:

- Logs the error information to the Critical Error Log
- Resets the server
- Pages you (if a modem is present and you selected Paging)
- Starts Compaq Utilities from the hard drive
- Enables remote access

During system configuration, these utilities are placed on the system utilities partition of the hard drive.

If you have configured for dial-in access and have a modem with an auto-answer feature installed, you can dial in and remotely diagnose or reconfigure the server.

If you have configured the Compaq Utilities for network access, you can access the utilities over the network. You can use Compaq Insight Manager for dial-in or network access.

Hardware Requirements

To use this level of ASR-2 over a modem, you need the following:

- Compaq modem or optional Hayes modem
- System Configuration Utility and Diagnostics Utility installed on the system partition of the hard drive
- ASR-2 configured to load Compaq Utilities after restart

You may also run Compaq Utilities remotely over an IPX or IP network using the Network feature:

- To use Compaq Utilities on an IPX network, you must have Compaq Insight Manager 2.0 or later or an NVT (Novell Virtual Terminal) Terminal Emulator with VT100 or ANSI terminal capabilities.
- To use Compaq Utilities on an IP network, you must have Compaq Insight Manager 2.10 or above or a Telnet Terminal Emulator with VT100 or ANSI capabilities.

If you are notified that ASR-2 restarted the server and you have restarted to Compaq Utilities, use the Inspect Utility or Compaq Insight Manager to view the critical error in the Critical Error Log. Run Diagnostics to diagnose and resolve the problem.

You can configure ASR-2 to restart the server into Compaq Utilities to diagnose the critical error, or to start the operating system to return the server to operational status as rapidly as possible.

When you enable ASR-2 to start the operating system, the server tries to start from the primary partition. In this mode, ASR-2 can page you if a critical error occurs, but you cannot access Compaq Utilities.

When you enable ASR-2 to start Compaq Utilities, your server restarts after a critical error and loads Compaq Utilities from the system partition on the hard drive.

You can configure your server to start Compaq Utilities in four different ways:

- Without remote console support; for example, to run Compaq Utilities from the server console only
- With remote console support using modems for dial-in access
- With remote console support using a modem to dial a predetermined telephone number
- With remote console support through a network connection (IP or IPX)

Compaq Integrated Remote Console

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

- Accessible using ANSI terminal
- Operates independently of the operating system
- Provides for remote server reboot
- Provides access to system configuration
- Uses out-of-band communication with dedicated management modem installed in the server

For more information about the IRC, see the *Integrated Remote Console User Guide*.

IMPORTANT: Before configuring ASR-2, verify that the System Configuration Utility and Diagnostics software are installed on the system partition. ASR-2 must have this to start Compaq Utilities after a system restart. Compaq recommends this even if you configure ASR-2 to start the operating system.

Compaq Health Driver

The Compaq Health Driver resets the ASR-2 timer according to the frequency you specified in the System Configuration Utility (for example, 10 minutes). If the ASR-2 timer counts down to zero before being reset, ASR-2 restarts the server into either Compaq Utilities or the operating system (as indicated by the System Configuration parameters). The default value is 10 minutes. The allowable settings are 5, 10, 20, and 30 minutes.

The Compaq Health Driver is independent of the ASR-2 timer. You can load it without enabling the ASR-2 timer. This allows the driver to log information in the Server Health Logs without restarting the server if a critical error occurs. However, you cannot enable the ASR-2 timer without loading the Compaq Health Driver.

The following ASR-2 flow chart shows you the sequence of events after a hardware or software error occurs:

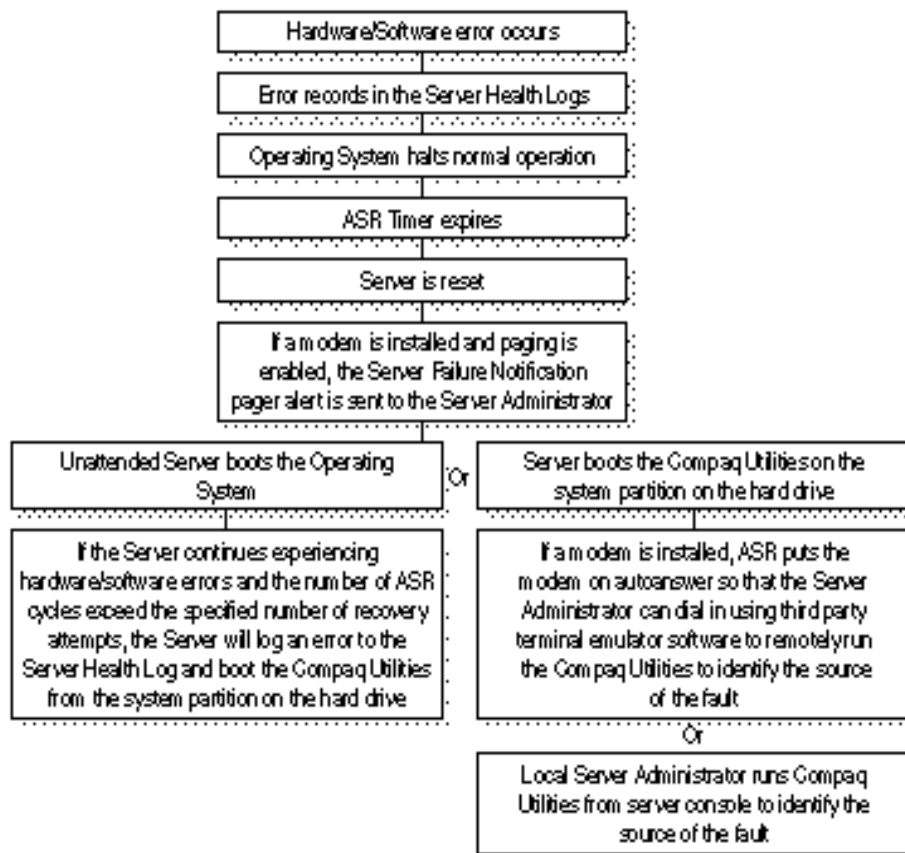


Figure 2- 1. ASR-2 flow chart

Booting into Compaq Utilities

When you enable ASR-2 to start into Compaq Utilities and a critical error occurs, the operating-system-specific Health Driver logs the error information in the Critical Error Log and the ASR-2 feature restarts the server. When the system reinitializes, the system pages the designated administrator (if enabled), and starts Compaq Utilities from the hard drive.

If Dial-In status is enabled, the modem is placed in auto-answer mode. If you enable Dial-Out status, you are automatically enabled for Dial-In.

If Network Status is enabled, the appropriate network support software is loaded, depending on the network protocol, IP or IPX. This allows remote access via the network.

IMPORTANT: Compaq Utilities are loaded from a specially created system partition on the hard drive. This partition was configured during server configuration.

You can access the server and view the Server Health Logs remotely by modem, in-band over the network, or directly from the server. For modem access, you must have either Compaq Insight Manager 2.0 or above or have a VT100 or ANSI terminal type device. You may use a standard CRT with VT100 or ANSI emulation capability, or you may use a PC with a VT100 or ANSI terminal emulation package. The communication parameters must be set for 8 data bits, no parity, and 1 stop bit.

You can also enable ASR-2 to allow network access using the Network Status feature in the System Configuration Utility. You must have either Compaq Insight Manager 2.0 or greater or a Novell Virtual Terminal (NVT) emulator on an IPX network to use this feature. You must also have version 2.24 or later of the System Configuration Utility. For IP access, you must have either Compaq Insight Manager 2.10 or above or a Telnet Terminal emulator to use this feature. You also must have version 2.24 or later of the System Configuration Utility.

The System Configuration Utility settings should resemble the following when you enable ASR-2 to start into Compaq Utilities:

Table 2-3
Compaq System Configuration Utility
Pager Settings for Booting into Compaq Utilities

Pager Data	Setting	Description
Pager status	Enabled	Indicates if the pager feature is enabled or disabled.
Pager dial string	ATDT 555-5555	Indicates the pager dial string and delay before the pager message. Pagers typically use one of the following formats: Local pagers: ATDT 555-5555,, Wide area pagers: ATDT 1-800-555-5555,,,,,1234567#
Pager message	1234567#	Represents a unique number (maximum seven digits, numeric only) that you must designate to identify the server on your pager display. The ROM adds a three-digit code to the front of this number. The first two indicate the subsystem and the third indicates the severity of the error that caused the alert. The # symbol usually terminates the message. If no message is required, delete the # symbol.

continued

Compaq System Configuration Utility Pager Settings
for Booting into Compaq Utilities *continued*

Pager Data	Setting	Description
Pager test	Select to test pager setup	Use this to test the current pager settings. Press Enter to dial the pager number, and the pager message (if present) displays. You must configure the server before testing the pager and the Pager Status must be set to Enabled. Do not test the pager if you are running remotely and are using only one modem.
Serial interface	COM1	Select the communications port for the modem used by the pager and the remote ASR-2 functions. The options are COM1 and COM2.
Dial-in status	Enabled	<p>Set Dial-In Status to Enabled. Be sure the Reset Boot option is set to Boot Compaq Utilities. When the system starts because of an ASR reset, it starts the Compaq Utilities, sets the Management Modem to auto-answer, and waits for the administrator to dial in and run the Compaq Utilities.</p> <p>You automatically disable this option when you configure the software error recovery start option to Boot Operating System. When ASR pages you, you cannot dial in unless ASR-2 exceeds 10, the threshold number of server restart retries. When this happens, ASR-2 restarts the server into the Compaq Utilities and places the modem in auto-answer mode.</p>

continued

Compaq System Configuration Utility Pager Settings
for Booting into Compaq Utilities *continued*

Pager Data	Setting	Description
Dial-out status	Enabled	Allows ASR-2 to dial out to a remote workstation. If you selected this option, Dial In Status is automatically selected. To use the dial-out feature, set Dial-Out Status to Enabled and set the Dial-Out String to the correct phone number. You must also set the Reset Boot option to Boot Compaq Utilities. When the system restarts because of an ASR reset, the administrator is paged via Pager Status and Pager Dial String, the system restarts to the Compaq Utilities, and dials out to the phone number provided in the Dial-Out string. The dial-out number will be tried five times. If it fails to connect after five attempts, the modem is put in auto-answer mode.
Dial-out string	555-1234	Enter the dial string followed by the remote server's telephone number.
Network status	Enabled	To allow network access to Compaq Utilities, set Network Status to Enabled and make sure the Reset Boot option is set to Boot Compaq Utilities.

continued

Compaq System Configuration Utility Pager Settings
for Booting into Compaq Utilities *continued*

Pager Data	Setting	Description
Network protocol		<p>To use IPX network access, set Network Protocol to IPX. When the system restarts to the Compaq Utilities because of an ASR reset, it loads IPX network support. This enables remote access via NVT.</p> <p>To use IP network access, set Network protocol to IP. Also make sure to set Network IP address, Network IP net mask, and Network IP router address. When the system restarts to the Compaq Utilities because of an ASR reset, it loads IP network support. This enables remote access via Telnet.</p> <p>NOTE: The Network Status must be set to Enabled for network access.</p>
Network controller	Compaq	For all Compaq Standard Network Controllers.
Network host name	CPQHOU	Enter the network name of the server. Use underscores instead of spaces within the name; for example, Compaq_Server. If you are using IPX network access to the Compaq Utilities, this server name is used to advertise NVT host services. This server name displays in the Compaq Insight Manager server list when it determines it can communicate via NVT. Set this name to be the same as the server name you assign when the host OS is running.
Network card slot	Slot #	Select the slot number of the network interface card you wish to use for network access to Compaq Utilities.

continued

Compaq System Configuration Utility Pager Settings
for Booting into Compaq Utilities *continued*

Pager Data	Setting	Description
Network frame type	ETHERNET_I	Select the frame type for your network. Selections include both Ethernet and Token Ring topologies.
Network IP address		Enter the IP address for this server in standard dot notation. NOTE: This is not used if you select Custom for Network controller. You must enter your IP address in the <i>NET.CFG</i> file that you load into the system partition.
Network IP net mask		Enter the net mask for this server in standard dot notation. NOTE: This is not used if you select Custom for network controller. You must enter your IP address in the <i>NET.CFG</i> file that you load into the system partition.
Network IP router address		Enter the router to be used for this server in standard dot notation. NOTE: This is not used if you select Custom for network controller. You must enter your IP address in the <i>NET.CFG</i> file that you load into the system partition.

If you configure the server to boot into Compaq Utilities, the server prepares for remote communications, so you can remotely run Diagnostics software, Inspect Utility, or System Configuration Utility using a workstation running terminal emulation software, such as Compaq Insight Manager or PC Anywhere.

Booting into the Operating System

When you enable ASR-2 to restart into the operating system and a critical error occurs, ASR-2 logs the error in the Critical Error Log and restarts the server. The system ROM pages the designated administrator, and executes the normal restart process.

IMPORTANT: When you enable ASR-2 to restart into the operating system, Modem Dial-In Status, Network Status, and Modem Dial-Out Status are automatically disabled. In this mode, ASR-2 can page you if a critical error occurs, but you cannot access the server, and the server cannot dial out to a remote workstation.

During the recovery process, the ASR-2 feature tries to restart the server up to 10 times. If the ASR-2 feature cannot restart the server within 10 attempts, it logs a critical error in the Critical Error Log, restarts the server into the Compaq Utilities, and puts the modem into auto-answer mode.

Your System Configuration Utility setting should resemble the following when you enable ASR to restart into the operating system:

■ Serial interface	COM1
■ Dial-in status	Disabled
■ Dial-out status	Disabled
■ Dial-out string	555-1234
■ Network status	Disabled
■ Network protocol	IPX
■ Network controller	Compaq
■ Network host name	CPQHOU
■ Network card slot	Slot #
■ Network frame type	ETHERNET_II

- ## ASR-2 Security

During ASR-2, the system does not prompt for the Power-On Password. This allows the ASR-2 to restart the operating system or Compaq Utilities without user intervention.

Select an Administrator Password (an option in the System Configuration Utility). During attended ASR-2 (local or remote), you must enter this Administrator Password before any modifications can be made to the server configuration.

Remote Service Features

Your Compaq ProLiant 800 server has the following management features that you can access by modem or network:

Table 2-4
Compaq Servers
Remote Management Features

Feature	Description
Service Session	Provides remote access to all the utilities on the system partition, including Diagnostics utilities, Inspect, ROMPaq, Drive Array Advanced Diagnostics (DAAD), and the System Configuration Utility. Also provides the capability for remote file transfer services to and from the system partition.
Disk-Based Diagnostics	Provides remote diagnostic capability after you configure ASR-2 and the reset restart option to restart from Compaq Utilities. Also allows you to view Health Logs. Disk-based diagnostics can also be run locally. Press F10 during the restart process when the cursor moves to the upper-right corner of the monitor.
Server Restart	Provides the ability to restart the server remotely from Compaq Insight Manager while the operating system is running. Allows the server to restart back to the operating system or restart to the system partition. Provides a complete system reset to all peripherals. If you select Boot to Compaq Utilities from Compaq Insight Manager, Compaq Utilities loads the appropriate remote services so that remote access is available. If network status is enabled, network support is loaded. If Dial-In status is enabled, the modem is set to auto-answer.
Configuration Utility	Allows you to run the System Configuration Utility remotely. You can also run the remote configuration utility locally. Press F10 during the restart process when the cursor moves to the upper-right corner of the monitor.
Firmware Updates	Allows you to update the server's firmware remotely. Uses firmware images on the system partition that might have been previously uploaded with the file transfer services.

ROMPaq

Using flash ROM in Compaq servers allows the firmware (BIOS) to be upgraded with system or option ROMPaq utilities. To upgrade the ROM,

- Run the ROMPaq utility from the system partition

or

- Insert a ROMPaq diskette into drive A and cold boot the system.

The ROMPaq utility then checks the system and provides a choice (if more than one exists) of ROM revisions to which the system can be upgraded. This procedure is the same for both system and option ROMPaq utilities.



CAUTION: Do not turn the power off during a firmware upgrade. A loss of power during upgrade may corrupt the firmware and prevent the system from booting.

Compaq Insight Manager

Compaq Insight Manager is the Compaq application that allows you to easily manage network servers, workstations, and desktops. Compaq Insight Manager delivers intelligent monitoring and alerting as well as visual control of your servers.

For additional information, refer to the *Compaq Insight Manager User Guide*, located on the Management CD, that came with your server.

Chapter 3

Installing Hardware Options

Before installing or removing options, follow these steps:

1. Back up your server data.
2. Power down the server.
3. Remove the power cable.
4. Remove the side access panel.



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

For more detailed information, see the Quick Installation Poster that accompanied your server, and read Appendix E, "Installing the Server."

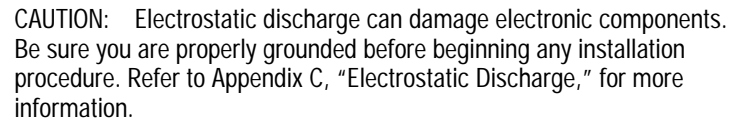


WARNING: To avoid the risk of electric shock or damage to the equipment:

- 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.



Pre-Failure Warranty

Includes Pre-Failure Warranty for Pentium Pro processors, hard drives, and DIMMs purchased from Compaq through an Authorized Compaq 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 an Authorized Compaq Service Provider in your area.

Insight Manager status indicator: a yellow status indicator on the Insight Manager control panel that indicates that a component is in a degraded condition. Insight Manager recommends that you replace a component that is in a prefailure condition.

Identifying Expansion Board Slots

The ProLiant 800 server contains seven expansion slots:

- Five dedicated PCI local bus expansion slots
- Two ISA expansion slots

PCI and ISA expansion boards can be installed in the following expansion board slot locations:

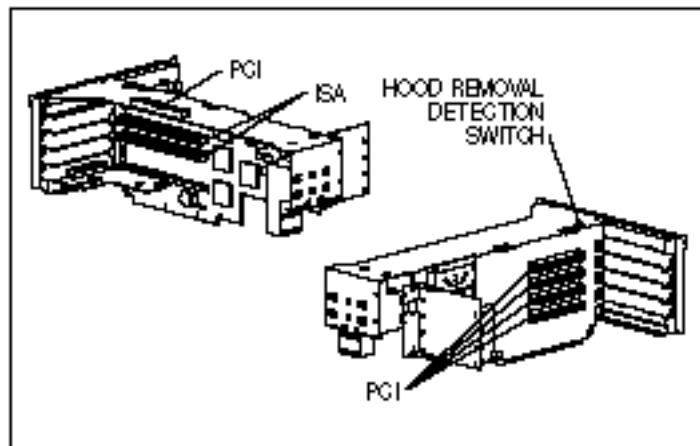


Figure 3-1. Locating ProLiant 800 expansion board slots

Removing the Expansion Backplane Brace



CAUTION: Before an expansion board can be installed or replaced, you must remove the expansion backplane brace that holds the expansion cards. Follow these steps to safely remove the expansion backplane brace.

1. Turn off the server and disconnect the power cord.
2. Disconnect any other external equipment connected to the server.
3. Remove the side access panel.
4. Grasp the expansion backplane brace at both ends and pull it out of the server chassis. Use care when guiding the assembly out of the unit to prevent damaging the boards.

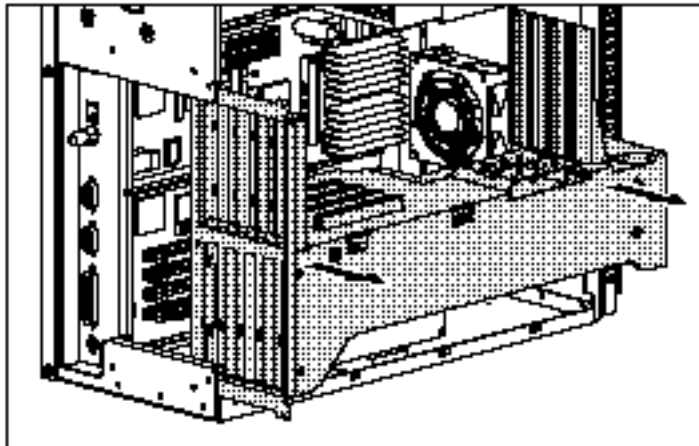


Figure 3-2. Removing the expansion backplane brace

IMPORTANT: When reinstalling the expansion backplane brace, fully seat the backplane board attached to the cage into the system board socket to ensure complete electrical contact.

Replacing the Expansion Backplane Brace

1. Grasp the expansion backplane brace at both ends and push it into the server chassis. Use care when guiding the assembly into the unit to prevent damaging the boards.

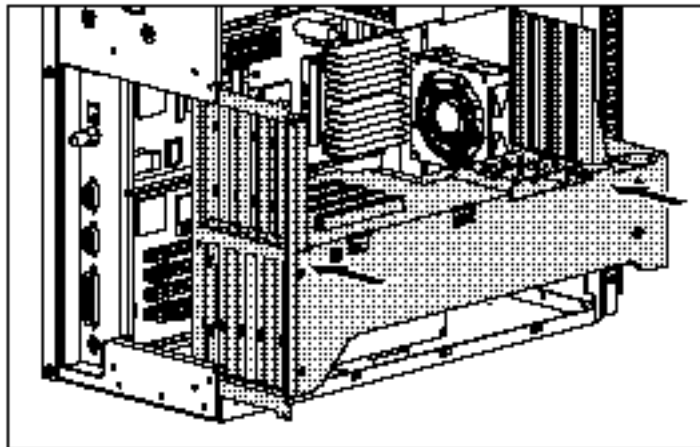


Figure 3-3. Replacing the expansion backplane brace

2. Replace the side access panel.
3. Reassemble the server.
4. Turn on the server.

Removing an Expansion Slot Cover

To install a PCI or an ISA expansion board, complete the following steps:

1. Locate the correct vacant slot in the expansion board.
2. Remove the screw from the expansion slot cover, then remove the expansion slot cover.

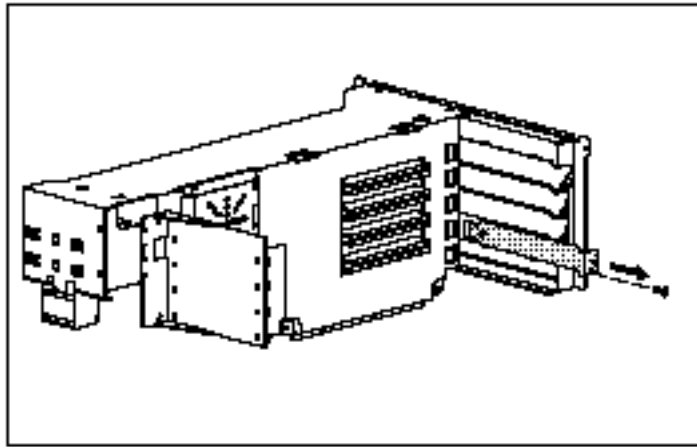


Figure 3-4. Removing the screw and expansion slot cover

Installing an Expansion Slot Cover

To install an expansion slot cover, follow these steps:

1. Slide the expansion slot cover into place over the slot opening.
2. Install the screw at the side of the expansion slot to secure the slot cover.

Removing an Expansion Board

To remove an expansion board, follow these steps:

1. Remove the expansion board cage.
2. Disconnect any cables attached to the expansion board.
3. Remove the screw at the side of the expansion slot.
4. Hold the board at each end and carefully rock it back and forth until the connectors pull free from the slot. Be sure not to scrape the board against other components.

Installing an Expansion Board

When you install a PCI or ISA expansion board, make sure you press firmly on the board so that the whole connector seats properly in the expansion board slot. Complete the following steps:

1. Turn off the server and disconnect the power cord.
2. Disconnect any other external equipment connected to the server.
3. Remove the side access panel.
4. Grasp the expansion backplane brace at both ends and pull it out of the server chassis. Use care when guiding the assembly out of the unit to prevent damaging the boards.

Installing a Second Processor



CAUTION: Installing the processor upgrade incorrectly may cause damage to the processor board. Compaq recommends that you have a Compaq Authorized Reseller or Service Provider install the processor upgrade. If you plan to install it yourself, read all the instructions carefully before you begin.

To install a second processor:

1. Remove the side access panel.
2. Remove the expansion backplane brace as described in the section "Removing the Expansion Backplane Brace."
3. Install the new processor.

The installation steps are described below.

Installing the Processor

1. Remove the side access panel.
2. Remove the expansion backplane brace as described in the section "Removing the Expansion Backplane Brace."
3. Align the new processor with the ZIF socket.
4. Install the thermal pad first, then install the processor by lowering it into the ZIF socket.



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

5. Push the handle on the ZIF socket back into place to secure the processor.

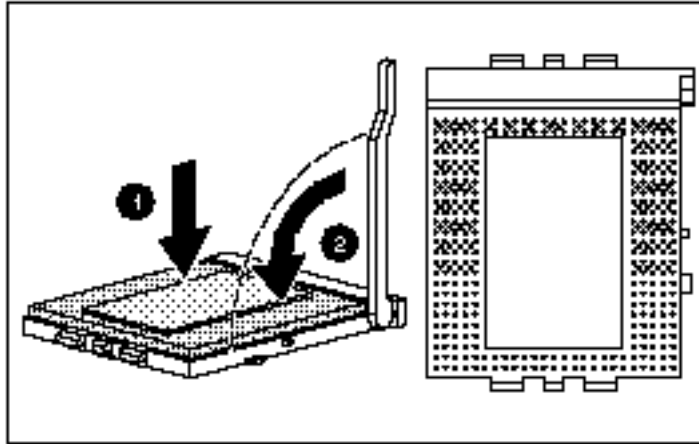


Figure 3-6. Installing the processor

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.

6. Install the thermal pad, heat sink, and the heat sink retaining clip.

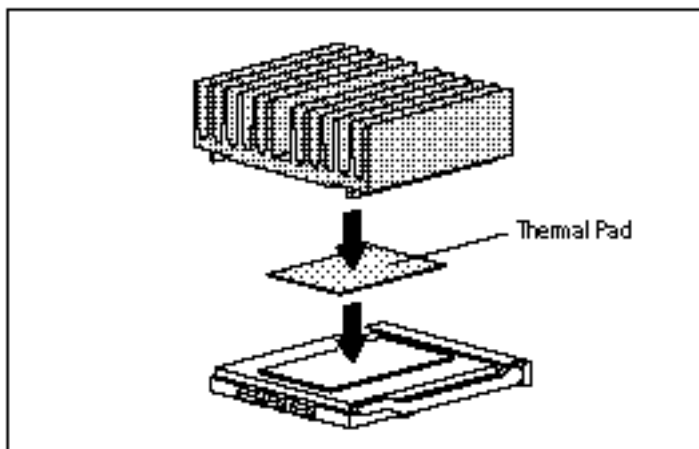


Figure 3-7. Installing the processor thermal pad and heat sink

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

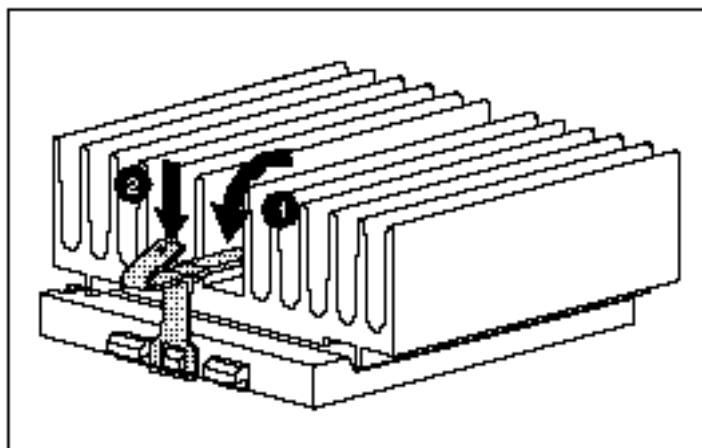


Figure 3-8. Installing the heat sink retaining clip

NOTE: Each processor comes with a Processor Power module that must be installed before you power up the server.

8. Install the Processor Power module (DC-to-DC converter). See the next section, "Installing a Processor Power Module."
9. Replace the expansion backplane brace as described in the section "Replacing the Expansion Backplane Brace."
10. Replace the side access panel.
11. Run the System Configuration Utility. See Chapter 5, "Using the Compaq System Configuration Utility."

Installing a Processor Power Module

Every Pentium Pro Processor comes with a Processor Power module (DC to DC converter) that provides power stability for the processor and the I/O board.

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.

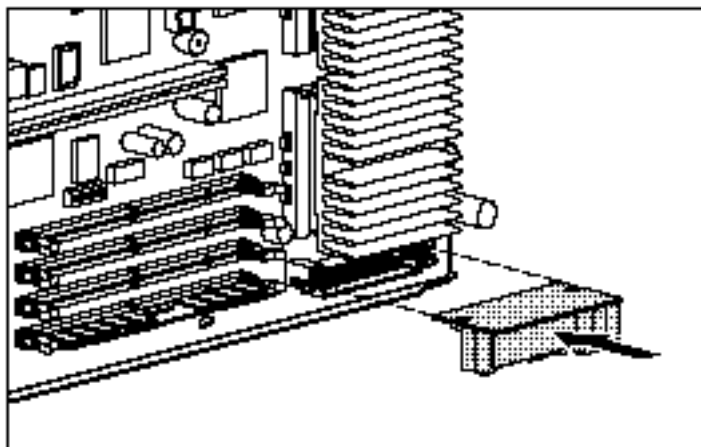


Figure 3-9. Installing a Processor Power module

Follow these steps to install a Processor Power module:

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 down into a socket on the memory board.
3. As the module goes into the socket, the socket latches spread open.
4. Use your thumbs to press firmly down on the module, while at the same time pushing the latches inward with your index fingers until the latches snap into place.

Removing the Processor

1. Remove the heat sink retaining clip ❶ by pressing down on the clip's extended tab until it releases from the safety catch.

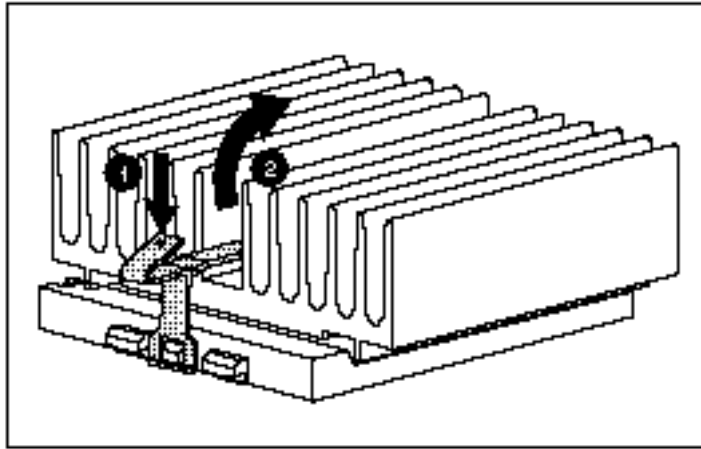


Figure 3-10. Removing the heat sink clip

2. Lift the heat sink and thermal pad off the processor.

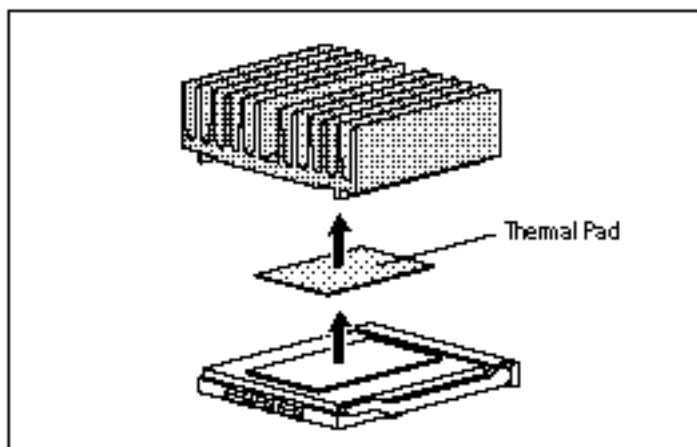


Figure 3-11. Removing the processor heat sink and thermal pad

3. Release the original processor from the socket by ❶ pulling the handle on the ZIF socket out and upward.
4. Lift the processor out of the socket ❷.

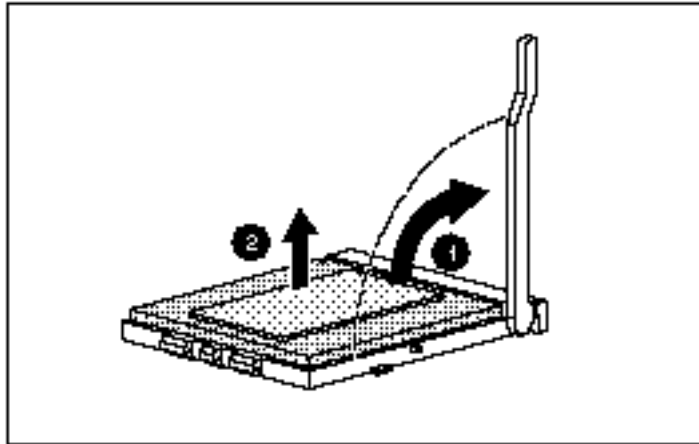


Figure 3-12. Releasing the ZIF socket and removing the processor



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.

Removing a Processor Power Module

Reverse the procedures in the “Installing a Processor Power Module” section.

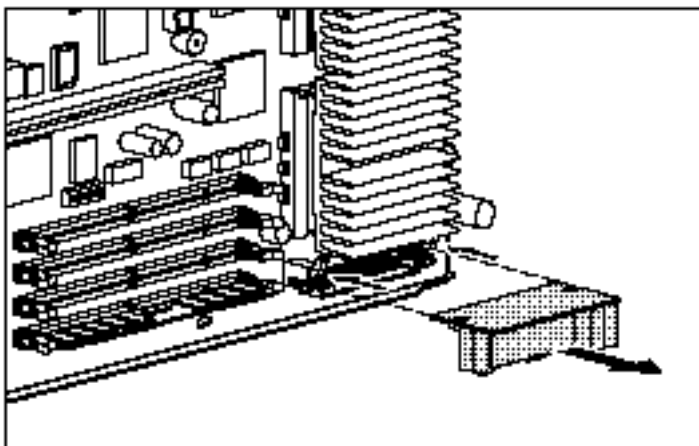


Figure 3-13. Removing a Processor Power module

Installing a Memory Upgrade on the Video Board

To install an additional 1-MB DRAM upgrade module on the PCI graphics board:

1. Turn off the server, disconnect the power cord from the electrical outlet and remove the side access panel.



CAUTION: Static electricity can damage electronic components or optional boards. Before beginning these procedures, be sure that you are discharged of static electricity by briefly touching a grounded metal object. Refer to Appendix C, "Electrostatic Discharge," for more information.

2. Remove the expansion board cage.
3. Remove the screw at the side of the expansion slot and remove the graphics controller board.

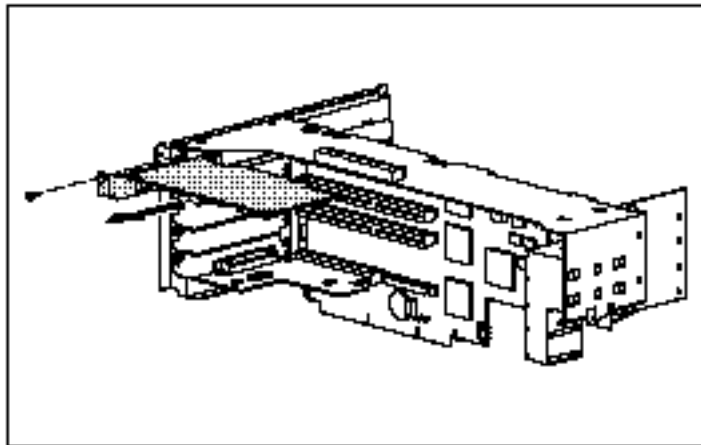


Figure 3-14. Removing the graphics board from the expansion slot

4. Place the graphics board on a grounded, flat surface and install the video memory upgrade module as illustrated below.

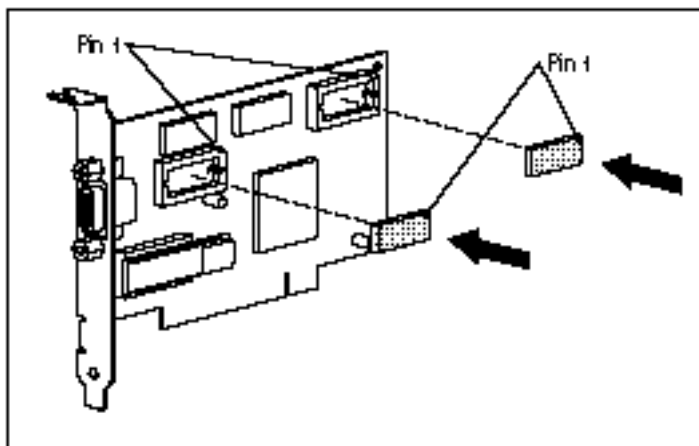


Figure 3-15. Installing upgrade memory modules on the PCI graphics board

5. Replace the graphics board into the same expansion slot.
6. Replace the screw into the expansion slot.
7. Replace the expansion board cage into the server chassis and replace the side panel.
8. Change the video resolution to take advantage of the additional display modes now available with the upgraded memory. Refer to "Changing Graphics Resolutions" in Chapter 4, "Using the Compaq System Configuration Utility," for more information.

Adding Memory to the ProLiant 800

The ProLiant 800 memory system uses Error Checking and Correcting (ECC) memory to detect and correct all single-bit memory errors and detect other uncorrectable memory errors. See Chapter 2, "Server Management," 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 Processor I/O 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 800 server must be rated at 60 nanoseconds (ns) or faster, EDO, 72 bits wide, 3.3 volts, and ECC.
- The same speed DIMMs must be installed, for example, all 60 ns.
- The server is shipped with a DIMM in DIMM socket 1 (system board connector J6).
- Install a DIMM in DIMM socket 2 (system board connector J7).
- Then install a DIMM in DIMM socket 3 (system board connector J14).
- Then install a DIMM in DIMM socket 4 (system board connector J9).

The ProLiant 800 server requires a minimum of 32 MB of memory to operate. Any combination of DIMMs may be used in the ProLiant 800; for example, one 32-MB module, one 16-MB module, one 64-MB module, and one 128-MB module may be used simultaneously.

DIMM option kits from Compaq contain four matched modules.



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

Table 3-1
Incremental Memory Additions

DIMM Speed	DIMM Size	4-DIMM Increment Total
60 ns or faster	16 MB	64 MB
60 ns or faster	32 MB	128 MB
60 ns or faster	128 MB	512 MB

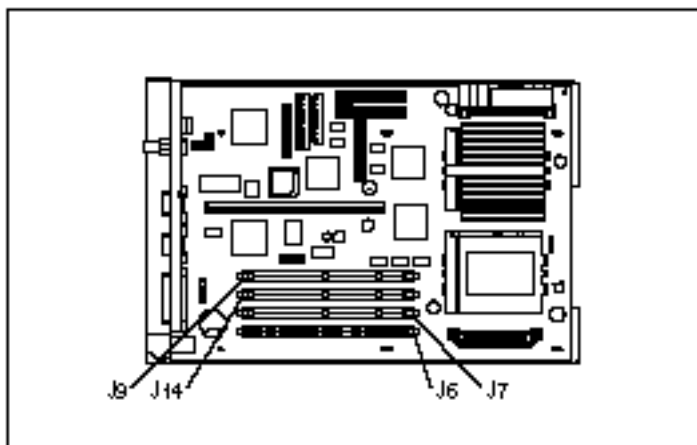


Figure 3-16. DIMM slots identified on system board

Maximum Memory Configuration

The ProLiant 800 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 C, "Electrostatic Discharge," for more information.

To install a memory module, complete the following steps:

1. Remove the expansion backplane brace.
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.

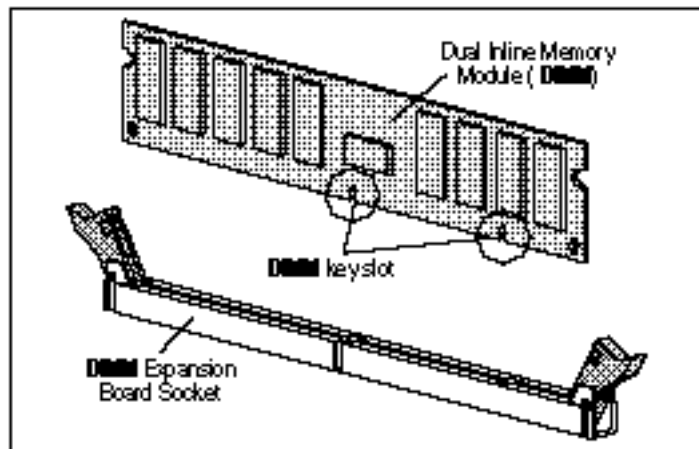


Figure 3-17. Aligning DIMM in the memory expansion slots

3. Insert each DIMM straight down into a socket on the memory 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.

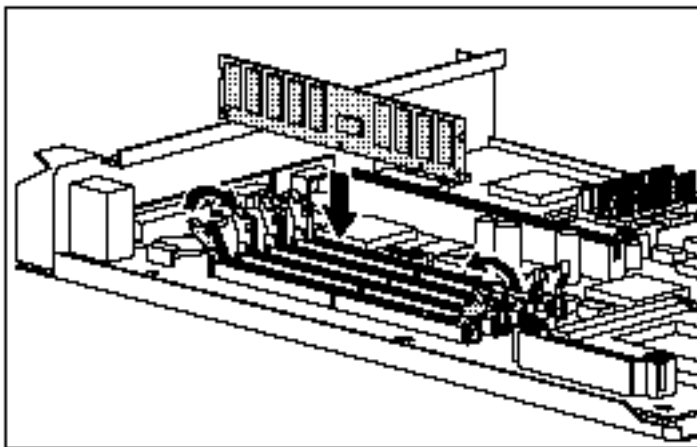


Figure 3-18. Installing a DIMM

6. Replace the expansion backplane brace.

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

Installing Mass Storage Devices

There are four drive bays for internal mass storage devices in the ProLiant 800 server. SCSI devices can be installed in either the removable media 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 on the Integrated 32-bit Wide-Ultra SCSI controller must be either internal or in an external storage system, but not both.



WARNING: The ProLiant 800 server does not support the installation of IDE or EIDE fixed disk drives.

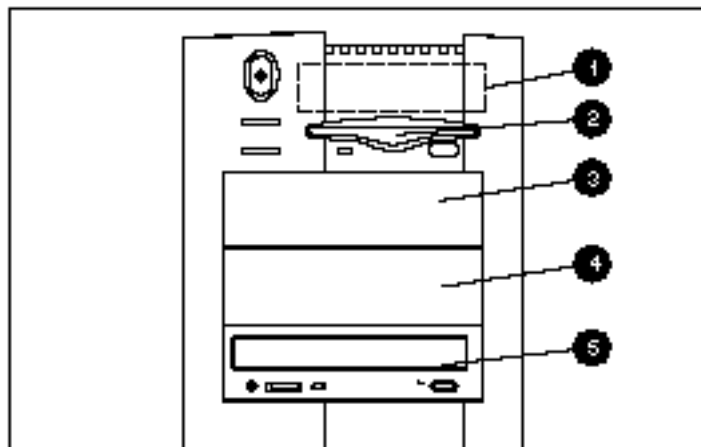


Figure 3-19. Optional mass storage device placement

Table 3-2
Mass Storage Bay Locator

Position Identifier	Position Description
❶	Mass Storage Bay 0
❷	Mass Storage Bay 1
❸	Mass Storage Bay 2
❹	Mass Storage Bay 3
❺	Mass Storage Bay 4

Removable Media Storage

A 1.44-MB diskette drive comes standard in removable media drive bay 1 and a CD-ROM drive is installed in bay 4. Three half-height removable storage devices such as diskette, tape, or hard drive can be installed in bays 2, 3, and 4.

Drive Installation Guidelines

When adding SCSI hard drives to your ProLiant 800 server, pay attention to the following guidelines:

- A maximum of seven SCSI devices per controller may be added.
- The SCSI ID for each device should be the same as the bay number (Bay 0 = SCSI ID 0).
- If only one SCSI hard drive is used, install it in bay 0.
- Compaq SCSI cables for the ProLiant 800 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.

Table 3-3 Drive Bay Numbers and Corresponding SCSI ID Settings				
Drive Bay Number	SCSI ID	Bit 2	Bit 1	Bit 0
4	4	ON	OFF	OFF
3	3	OFF	ON	ON
2	2	OFF	ON	OFF
1	1	OFF	OFF	ON
0	0	OFF	OFF	OFF

Installing a Mass Storage Device in the Removable Media Area

Table 3-4
Mass Storage

Drive Position	Description
1	A standard primary hard drive; third-height bay
2	A standard 3.5-inch diskette drive; third-height bay
3	An optional CD-ROM drive, diskette drive (3.5-inch or 5.25-inch), or tape drive in the top position; half-height bay
4	An optional CD-ROM drive, diskette drive (3.5-inch or 5.25-inch), or tape drive in the bottom position; half-height bay
5	An optional CD-ROM drive, diskette drive (3.5-inch or 5.25-inch), or tape drive in the bottom position, half-height bay

Additional hard drives may be installed into drive bays 2, 3, and 4, but these positions are more often used for devices requiring user access.

Either a third-height or a half-height drive may be installed into a half-height bay.

When installing optional drives, you must install one guide screw to ensure that the drive will line up correctly in the drive cage. Install the guide screw in the middle hole on 3.5-inch drives (drive bay 0 only) and in the front hole on 5.25-inch drives. Compaq has provided extra guide screws, installed in the front of the server chassis, under the front bezel.

Some options use M3 metric thread hardware. The Compaq-supplied metric screws are black.

Installing External Storage Devices

Optional mass storage devices can be connected to the Compaq ProLiant 800 by using the 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 steps:

1. Shut down all programs and the operating system.
2. Turn off the server, disconnect the power cord from the electrical outlet, and remove the side access panel and front bezel.
3. Attach the 3.5-inch drive to the 5.25-inch bracket with the screws provided.

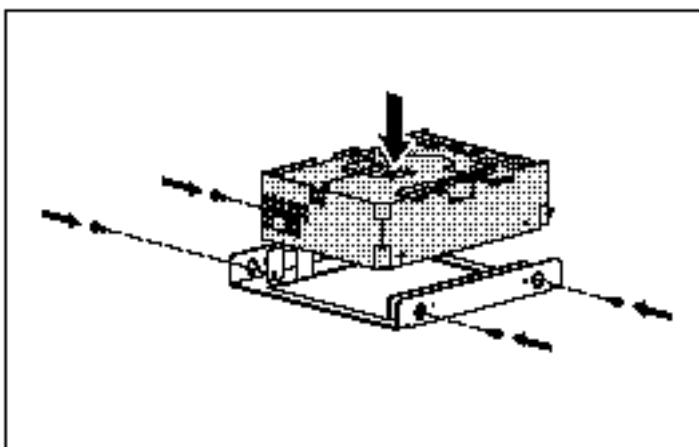


Figure 3-20. Attaching a 3.5-inch drive to a 5.25-inch bracket

4. Install the guide screw in the front screw hole on the right side of the bracket.

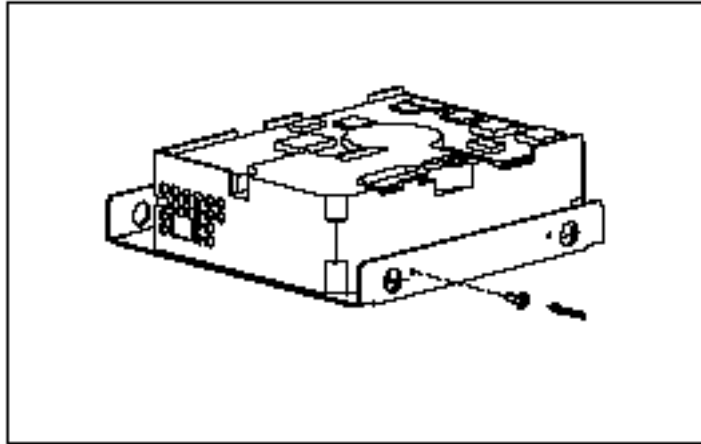


Figure 3-21. Installing the guide screw in the drive bracket

5. Install the bracket and drive into the drive bay. Secure the bracket with two screws through the side of the drive cage. Be sure the guide screw lines up with the guide slot in the drive cage.

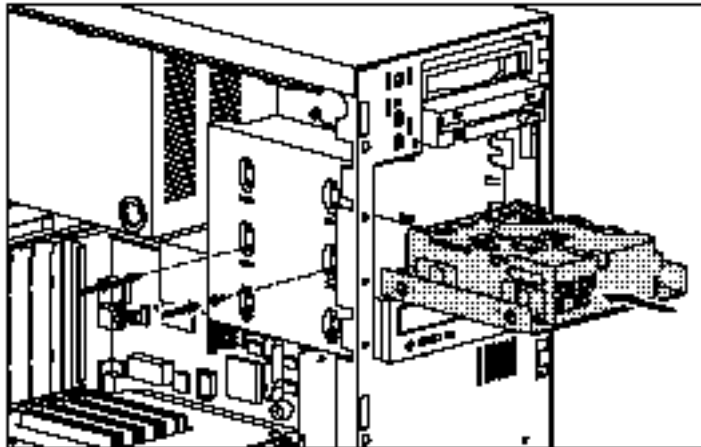


Figure 3-22. Installing the drive into the chassis

6. Connect the drive power and signal cables.

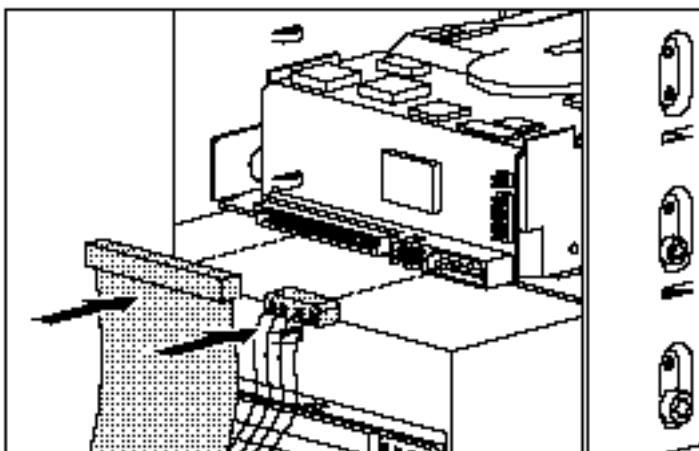


Figure 3-23. Connecting the drive cables

7. Remove the blank drive bezel from the inside of the front bezel, if necessary.
8. Replace the front bezel and side access panel.
9. Reconfigure the server. Refer to Chapter 4, "Using the System Configuration Utility," for more information.

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. An 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.

1. Remove the Side Access Panel.
2. Remove the front bezel.
3. Locate the two clips securing the switch cover in the front bezel on the rear side of the bezel assembly.
4. Use a narrow instrument to release each clip from the bezel ❶ and ❷ by pushing inward slightly.
5. 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 not to lose the spring.

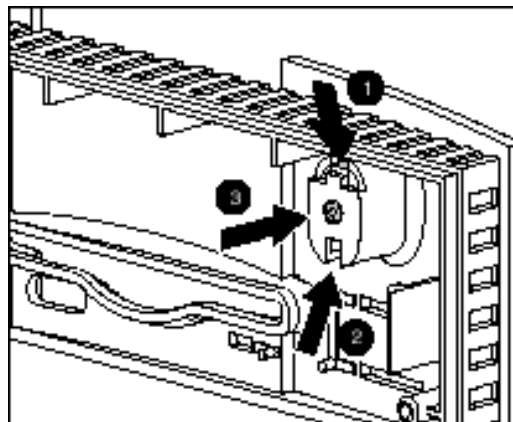


Figure 3-24. Removing the power switch from the front bezel

6. Rotate the switch cover assembly 180 degrees.
7. Insert the switch into the front bezel as shown below. 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.

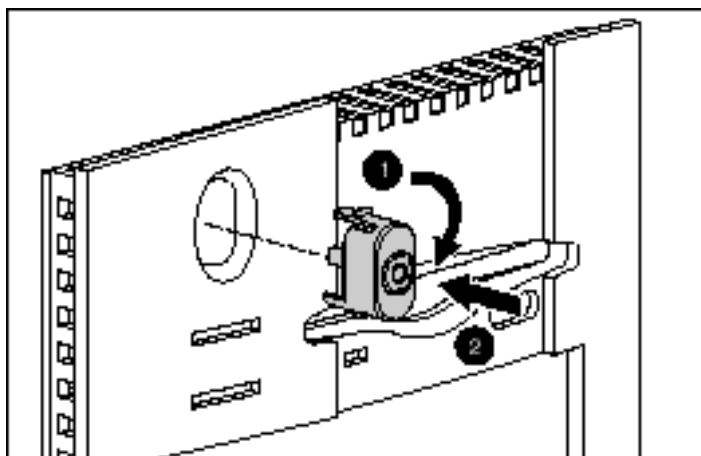


Figure 3-25. Inserting the power switch into the front bezel

8. Replace the front bezel.
9. Replace the Side Access Panel.

Connecting the Power Cord and Peripheral Devices

After all internal options have been installed and the side access panel 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 avoid 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 Selector 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 has been placed over the power cord connector and must be removed to install the power cord. If the AC Voltage Selector Switch is not properly set, the server will be damaged when power is applied.



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.

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

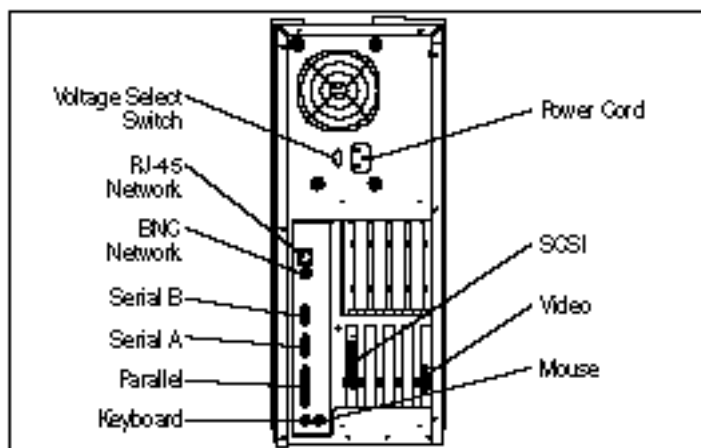


Figure 3-26. Location of rear panel connectors and switches

Chapter 4

Using the 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 (IRQs)
- 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 800 servers, the system ROM automatically configures memory and processor 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 CD.

For PCI boards, the utility reads the configuration options from the PCI board's configuration space and optionally from a PCI configuration file (.PCF).

- Compaq Option 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 later, the system discovers 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.

NOTE: The Compaq ProLiant 800 employs a system architecture with expansion slots that must share system resources with two of the ProLiant 800's embedded system devices. A PCI expansion board in slot 3 must share an interrupt with the embedded PCI Network Interface card, and similarly, a PCI expansion board in slot 4 must share an interrupt with the embedded PCI SCSI-2 Controller. 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.

Starting the System Configuration Utility

To start the Compaq System Configuration Utility for the first time, refer to 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.

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 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 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 that 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 displays. Following is a brief explanation of each step:

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.

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 you are 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 800 employs a system architecture with expansion slots that must share system resources with two of the ProLiant 800’s embedded system devices. A PCI expansion board in slot 3 must share an interrupt with the embedded PCI Network Interface card, and similarly, a PCI expansion board in slot 4 must share an interrupt with the embedded PCI SCSI-2 Controller. 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.

Step 3: View or Edit Details

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 Steps.”

Step 4: Examine Required Switches

Use this step to find the required switch and jumper settings for most ISA boards. Then adjust the switch and jumper settings on each board 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, this procedure was done for you. Use this procedure if SmartStart was not used to configure your server.

To create a system partition, follow this procedure:

1. Insert the Compaq SmartStart and Support Software 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 will take 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 and Support Software 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 error 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 800 servers support the following operating systems:

- NetWare 3.12, 4.11, and IntranetWare
- Windows NT 3.51 and 4.0
- SCO OpenServer 3.0, 5.0, and 5.02
- SCO UnixWare 2.1
- IBM OS/2 Warp 3.x, Warp Server 4.0, and Warp Server Advanced 4.0
- IBM OS/2 2.x (Microsoft OS/2 not supported)
- Banyan VINES v 6.00 and above, including VINES 7.00

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 to get a SmartStart pack with additional operating system support. Some operating systems have driver support/updates but not 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 CDs.

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 Warp Server SMP 4.0

Loading Compaq Device Drivers

Drivers are located on the Support Software Diskettes and on the Compaq SmartStart and Support Software CD. The drivers on the Support Software Diskettes 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.

NetWare Device Drivers from Compaq

Your server must have certain device drivers to operate using NetWare. 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 NetWare Programs from Compaq (NPFC) diskette to support a manual installation of NetWare.

For more information on these drivers, run the *README.COM* file in the root directory of the NetWare Programs from Compaq diskette.

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

1. Please run *README.COM* on the NetWare Programs From Compaq (NPFC) diskettes for more detailed driver installation instructions. NPFC v3.05 or newer provides support for ProLiant 800 server.

2. 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 NPFC Supplement diskette, version 3.05 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 family of adapters, then from the NetWare console you would type:
`LOAD A:\NETWORK\CPOQNF3.LAN`

Please read *NET_SRVR.RDM* from the NPFC diskettes for further information.

3. Your ProLiant 800 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 NPFC diskette according to the type of device attached:

- ❑ LOAD A:\IDE\IDEATA.HAM for each IDE channel
- ❑ LOAD A:\IDE\IDEHD.CDM for an IDE fixed disk
- ❑ LOAD A:\IDE\IDECD.CDM for an IDE CD-ROM drive

Please read *STORAGE.RDM* from the NPFC diskettes for further information.

4. 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 NetWire 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*.

Manual installation

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

1. Insert the Compaq SmartStart and Support SoftwareCD 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:

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

3. During 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 and Support Software CD and choosing a manual installation path, you can use the SCO UNIX from Compaq CDs to install you SCO software. This will also automatically install all the drivers your server needs while presenting the more familiar 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 you will need to create the Boot Time Loadable Drivers (BTLDs) and the UNIX drivers from the Compaq Enhanced Functionality Supplement (EFS). These can be downloaded onto floppies with tools available on the SmartStart and Support Software CD. To create these floppies, boot the SmartStart and Support Software 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 *README* files on SmartStart or EFS Diskettes or CDs for additional details:

SCO OpenServer

The README file included in the Compaq EFS for SCO UNIX contains any information needed to install using SCO media. If you install using SCO UNIX from Compaq using either the integrated or manual methods, the fixes will have already been included.

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 SMP 4.0, OS/2 Warp, OS/2 Warp Connect 3.0, and OS/2 2.x. These drivers are located on the Compaq SmartStart and Support Software 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 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 and Support Software 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 and Support Software 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 and Support Software 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 once 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 Chapter 8, "Diagnostics Tools."

Chapter 5

Using the CD-ROM Drive

The internal 8X CD-ROM drive is a random access, read-only storage device capable of retrieving data from removable compact disk media, which can store up to 680 megabytes of digital information.

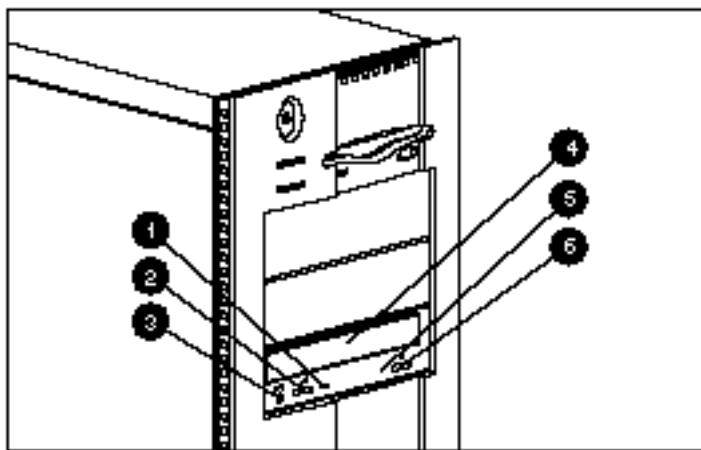


Figure 5-1. Identifying CD-ROM drive lights and switches

Table 5-1
Internal 8X CD-ROM

Ref	Component	Function
❶	Busy Indicator	Turns green when a disk is present; flashes amber when the drive is reading a CD
❷	Headphone Volume Control	Increases or decreases the headphone volume

continued

Internal 8x CD-ROM *continued*

Ref	Component	Function
③	Headphone Jack	Connects the headphone
④	Disk Tray	Slides in and out of the Internal 8X CD-ROM drive bay and holds the disk in place
⑤	Emergency Eject Hole	Allows you to manually eject a CD if the eject button is inoperable
⑥	Eject Button	Opens and closes the disk tray

Opening the Tray Automatically

You can use the automatic eject button to open and close the CD-ROM tray. Allow plenty of clearance for the tray to open and close, following the instructions below:

1. With your server turned on, open the CD-ROM tray by pressing the eject button on the front panel of the drive.
2. Place the CD-ROM disk in the tray, handling the disk from the edges. Do not touch the flat surfaces of the disk.

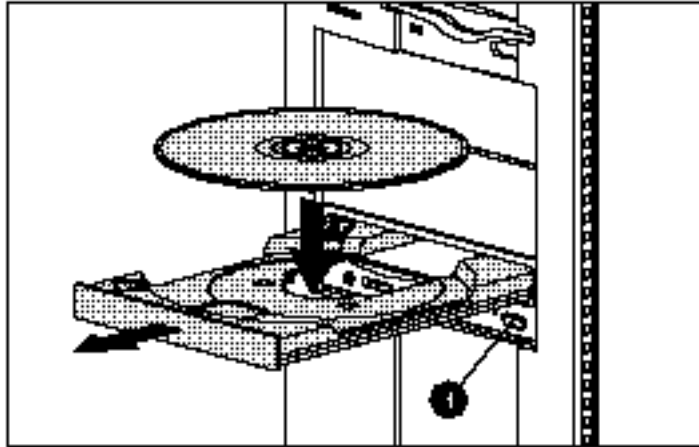


Figure 5- 2. Opening the CD-ROM tray automatically

3. Close the tray by again pressing the eject button ❶.
 - ❑ The drive performs a diagnostic check and automatically begins reading the table of contents. The busy indicator turns amber while the drive reads the table of contents.
 - ❑ The tray automatically opens if the disk is upside-down, not properly nested in the tray, or if any other condition prevents the drive from reading the disk.
4. When the busy indicator turns green, the drive is ready to receive commands and data may be retrieved from the disk.

Opening the Tray Manually



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

If the tray will not open automatically, you can open it manually by using the emergency eject button.

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 ❶ and push firmly.

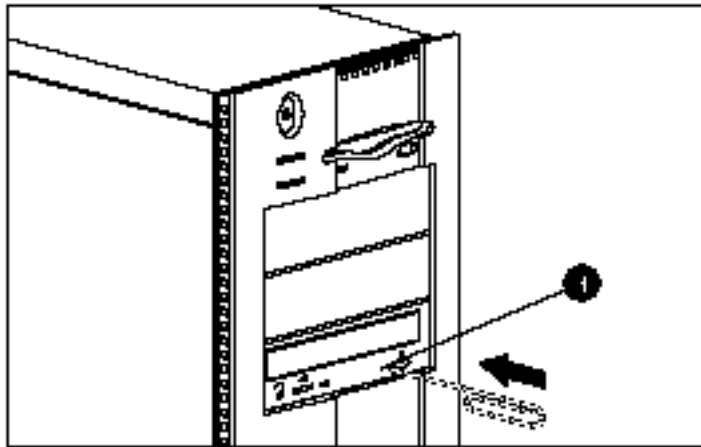


Figure 5- 3. Opening the CD-ROM tray manually

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

CD-ROM Drive Care and Safety Precautions

Follow these precautions to install, operate, or transport your CD-ROM drive.

Installation

- Avoid locating the drive in areas of high humidity, extreme temperatures, mechanical vibration, or direct sunlight.
- Always use the drive in a horizontal or vertical orientation.

Operation

- Do not move the drive while it is operating, because this may cause it to malfunction.
- Avoid exposing the drive to sudden changes in temperature. Sudden changes in temperature can allow condensation to form inside the unit, causing it to malfunction.
- Do not drop the disk drive or subject it to shock.

Transportation

- Remove any CD-ROM disk before moving the drive.

Safety

If any object or liquid falls into the CD-ROM drive, immediately unplug the server and have it checked by an Authorized Compaq Service Provider.

Chapter 6

Using Security Management

Compaq ProLiant servers offer multilevel security to provide you with just the right security solutions. This comprehensive security system works on three levels: software, hardware, and mechanical. These three types of security features enable and disable key subsystems of the computer, providing flexibility in designing system security. The following table provides an overview of the features and how they are accessed:

Table 6- 1
Security and Network Features

Feature	Purpose	How Accessed
Administrator Password	Prevents reconfiguration of the computer (use of the Computer Setup option) until the password is entered.	Computer Setup from the System Configuration Utility menu
Power-On Password	Prevents use of the computer until the password is entered.	Computer Setup from the System Configuration Utility menu
Logon Password	Prevents use of the computer unless password is entered.	Windows NT security and several other operating systems

continued

Security and Network Features *continued*

Feature	Purpose	How Accessed
Network Server Mode	Allows system startup from the hard drive or network while keyboard is disabled.	Computer Setup from the Compaq System Utilities menu
QuickLock	Disables keyboard without exiting application; enabled with a password.	Computer Setup from the System Configuration Utility menu
Serial Interface Control	Prevents transfer of data through the integrated serial interface.	Computer Setup from the System Configuration Utility menu
Parallel Interface Control	Prevents transfer of data through the integrated parallel interface.	Computer Setup from the System Configuration Utility menu
Diskette Boot Control	Controls startup from the floppy drives.	Computer Setup from the System Configuration Utility menu

continued

Security and Network Features *continued*

Feature	Purpose	How Accessed
Smart Cover Sensor	Indicates when computer cover or side panel has been removed. Can require Power-On password after cover or side panel has been removed.	Computer Setup from the System Configuration Utility menu
Cable Lock Provision	Inhibits access to the interior of the computer to prevent unwanted configuration changes or component removal. Can also be used to secure the computer to a fixed object.	Install a padlock with the security bracket to inhibit access to the interior of the computer; add a cable lock to secure the computer to a fixed object
Power Switch Lock	Prevents accidental shutdown of the system.	<p>In locked (default) position, power switch cannot be pressed. To turn server on and off, use a small object, such as a pencil eraser, to depress the center button.</p> <p>To disable lock, remove front bezel, push power switch out from the back, rotate it 180 deg., and reinsert the switch. Now the switch can be easily pressed.</p>

Accessing the System Configuration Utility

Most of the security features are established through the System Configuration Utility. To access this utility, complete the following steps:

1. Turn on the server to start the boot sequence.
2. Press F10 when the following message appears at the top of the screen during POST:

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

If you do not press F10 during this time, you must reboot the server to run the System Configuration Utility.

3. Select *System Configuration* from the main menu and press **Enter**.
4. Select *Configure Hardware* and press **Enter**.
5. Select *Step 3: View or Edit Details* and press **Enter**.
6. Use the arrow keys to select the feature you want and press **Enter**.
7. Use the arrow keys to enable the feature as shown:
☐ Disabled
☒ Enabled
8. Save the configuration and exit the utility.

Power-On Password

The Power-On Password prevents use of the computer unless the correct password is entered when the server is turned on.

When you turn on the server, a Power-On Password screen appears. You must enter the valid password before you can continue the boot sequence.

Administrator Password

If an Administrator Password was established through the System Configuration Utility, configuration changes cannot be made unless the Administrator Password is entered. When you start the System Configuration Utility, the Administrator Password screen appears. Changes to the system configuration will not be allowed until the correct password is entered.

Establishing a Password

Both the Power-On and Administrator Passwords are established in the System Configuration Utility and are entered and changed in similar ways.

IMPORTANT: Record all your passwords and keep them in a safe place. If you set the Administrator Password and then forget it, you cannot change the server configuration. Refer to "Clearing the Password" discussed later in this section for more information.

To establish the Power-On and Administrator Passwords, complete the following steps:

1. Start the System Configuration Utility.
2. Select *Step 3: View or Edit Details* and press **Enter**.
3. Use the arrow keys to select the *Set Power-On Password* or *Set Administrator Password* as applicable, and press **Enter**.
4. Type your password and press **Enter**. You will be asked to verify the password before it is set.
5. Press F10 to return to the Steps menu.
6. Select *Step 5: Save and exit*.

Entering the Password

To enter the password, complete the following steps:

1. Turn on the computer.
2. When the Power-On password screen appears on the monitor, enter the current password. For security, the characters you type do not appear on the screen.
3. If you enter the power-on password incorrectly, the message "Password Invalid" is displayed. Try again. After three unsuccessful tries, you must turn the computer off and on again before you can continue.

The Power-On password entry screen appears only when the computer is turned on. When you reset the computer using **Ctrl+Alt+Del**, you do not have to enter the password. The new password takes effect the next time you turn on the computer.

Changing the Password

To change the password, complete the following steps:

1. Turn on the computer.
2. When the Power-On password entry screen appears, enter
current/new/new

where current is the current password, new is the new password, and the second new is a verification of the new password.

3. The new password takes effect the next time you turn on the computer.

Deleting the Password

1. Turn on the computer.
2. When the Power-On password entry screen appears, enter
current/

where current is the current password.
3. The password is now deleted until you establish a new password through the System Configuration Utility.

Clearing the Password

If you forget your Power-On or Administrator Password, you can clear all passwords by turning off the computer and disabling the Power-On and Administrator Password by placing switch 1 on the 8-position switch bank (SW1) to the ON position. This switch change does not take effect until the computer is turned on.

NOTE: Switch 1 must be OFF to reenable the Power-On and Administrator Passwords.

To clear the Power-On and Administrator Passwords, follow these steps:

1. Turn off the server.
2. Remove the side access panel of the unit.
3. Place switch 1 on the 8-position switch bank (SW1) to the ON position.
4. Replace the side access panel of the unit and turn on the computer.
The Power-On and Administrator Passwords are now clear.

Reenabling the Password

To reenable the Power-On and Administrator passwords, follow these steps:

1. Turn off the server.
2. Remove the side access panel.
3. Place switch 1 on the 8-position switch bank (SW1) to the OFF position.
4. Replace the side access panel and turn on the computer. The Power-On and Administrator Passwords can now be set with the Compaq System Configuration Utility.

The following figure illustrates the Power-On and Administrator password jumper position on the system board.

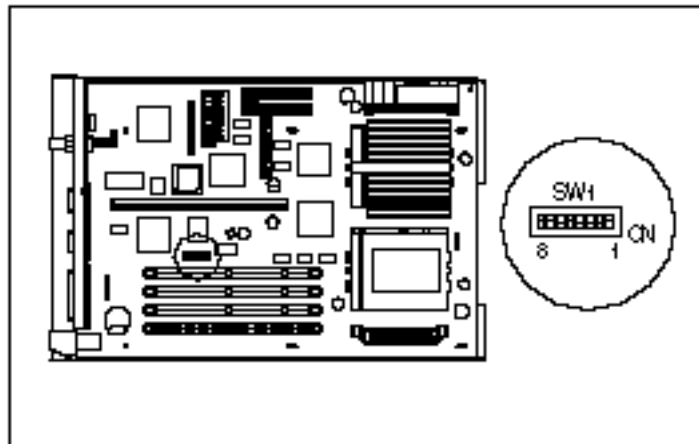


Figure 6- 1. Password jumper position

Smart Cover Sensor

A feature of the Compaq ProLiant 800 Server, the Smart Cover Sensor is a combination of hardware and software technology that alerts you when the computer cover or side panel has been removed. There are three levels of protection, as described in the following table:

Table 6-2 Smart Cover Sensor Protection Levels		
Level	Setting	Description
Level 1	Disabled	Smart Cover Sensor is disabled.
Level 2	Notify User	When the computer is restarted, a message indicates that the computer cover or side panel has been removed.
Level 3	Setup Password	When the computer is restarted, a message indicates that the computer cover or side panel has been removed. You must enter the Power-On password to continue.

QuickLock

When QuickLock is enabled through the System Configuration Utility, you can disable the keyboard and pointing device interface connected to the built-in mouse connector while you are still within an application.

- To activate QuickLock and disable the keyboard and pointing device after you are in an application, press and hold the **Ctrl** and **Alt** keys while pressing the value for *n*. The default value for *n* is "L." For example, entering the QuickLock hot key combination **Ctrl+Alt+L** disables the keyboard and the pointing device interface.

The application cannot be accessed now, but remains in view on the monitor screen. To reenable the input device interface and bring the application to the screen, enter the Power-On Password that you established in the System Configuration Utility.

- You can change the QuickLock hot key combination (**Ctrl+Alt+n**) if it conflicts with your application software. To change the hot key combination, you must have the KP Utility installed. Refer to your MS-DOS documentation for information on changing hot key combinations.

Diskette Drive Control

To allow the system to boot from diskette regardless of the System Configuration settings, follow these steps:

1. Turn off the computer.
2. Remove the side access panel.
3. Set switch 8 on SW1 located on the system board to the ON position to override the disable diskette boot control feature.
4. Replace the side access panel and turn on the computer.
5. When you no longer wish to use the feature, turn the computer off and set switch 8 on SW1 to the OFF position.

The following figure illustrates the diskette boot override switch.

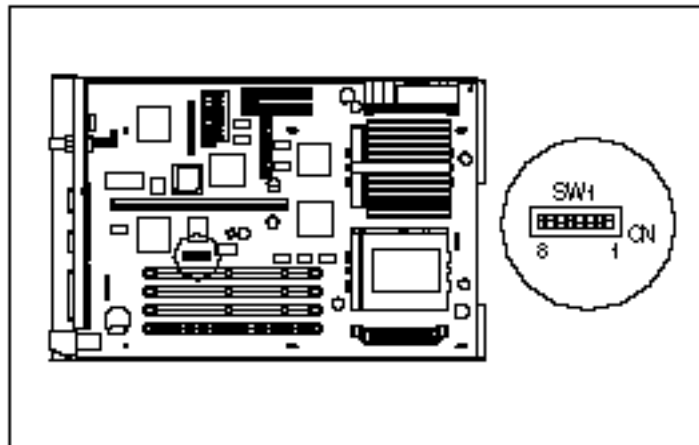


Figure 6- 2. Diskette boot override switch

Security Lock

You can install a padlock on the rear of the computer to prevent unauthorized access to internal components. You can use a cable instead of the padlock to secure the server to a desk or wall. The following figure illustrates the security lock provision:

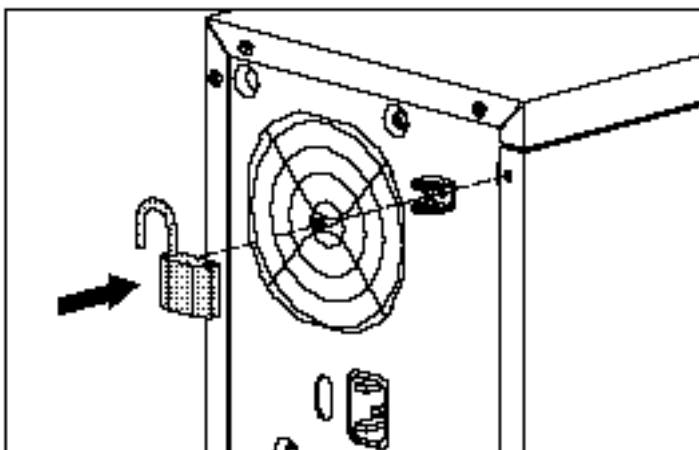


Figure 6- 3. Securing the system

Chapter 7

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 repacking 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 C, “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.

- 

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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.

Chapter 8

Diagnostics Tools

This chapter describes software and firmware diagnostics tools available for Compaq server products. These include:

- Power-On Self-Test (POST)
- Diagnostics (DIAGS)
- Drive Array Advanced Diagnostics (DAAD)
- ROMPaq utilities to upgrade flash ROMs
- Automatic Server Recovery (ASR-2)

Power-On Self-Test (POST)

POST is a series of diagnostic tests that run automatically on Compaq servers when the system is turned on. POST checks the following assemblies to ensure that the server is functioning properly:

- Keyboard
- Power supply
- System board
- Memory
- Memory expansion boards
- Controllers
- Diskette drives
- Hard drives

POST indicates an error condition by an audible and/or visual message. If an error code is displayed on the screen during POST or after resetting the system, follow the instructions in the table below. The error messages and codes listed in this table include all codes generated by Compaq products. Your system generates only those codes that are applicable to your configuration and options.

Table 8-1
POST Error Messages

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
A Critical Error occurred prior to this power-up	None	A catastrophic system error, which caused the server to crash, has been logged.	Run Diagnostics. Replace failed assembly as indicated.
101-ROM Error	1L,1S	System ROM checksum	Run Diagnostics. Replace failed assembly or contact your service provider.
101-I/O ROM Error	None	Options ROM checksum	Run Diagnostics. Replace failed assembly or contact your service provider.
102-System Board Failure	None	DMA, timers, etc.	Replace the system board. Run the System Configuration Utility.
104-ASR-2 Timer Failure	None	System board failure	Run Diagnostics.
162-System Options Not Set	2S	Configuration incorrect	Run the System Configuration Utility and correct.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
163-Time & Date Not Set	2S	Invalid time or date in configuration memory.	Run the System Configuration Utility and correct.
164-Memory Size Error	2S	Configuration memory incorrect	Run the System Configuration Utility and correct.
170-Expansion Device Not Responding	None	EISA or PCI expansion board failure	Check board for secure installation. Replace the failed board if necessary.
172- Configuration Nonvolatile Memory Invalid	None	Nonvolatile configuration corrupt or jumper installed.	Run the System Configuration Utility and correct.
172-1 Configuration Nonvolatile Memory Invalid	None	Nonvolatile configuration corrupt.	Run the System Configuration Utility and correct.
173-Slot ID Mismatch	None	Board replaced, configuration not updated.	Run the System Configuration Utility and correct.
174-Configuration /Slot Mismatch Device Not Found	None	EISA or PCI board not found.	Run the System Configuration Utility and correct.
175-Configuration /Slot Mismatch Device Found	None	EISA or PCI board added, configuration not updated.	Run the System Configuration Utility and correct.
176-Slot with Not Readable ID Yields Valid ID	None	EISA or PCI board in slot that should contain an ISA board.	Run the System Configuration Utility and correct.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
177-Configuration Not Complete	None	Incomplete System Configuration.	Run the System Configuration Utility and correct.
178-Processor Configuration Invalid	None	Processor type or step does not match configuration memory.	Run the System Configuration Utility and correct.
179-System Revision Mismatch	None	A board was installed that has a different revision date.	Run the System Configuration Utility and correct.
201-Memory Error	None	RAM failure	Run Diagnostics.
203-Memory Address Error	None	RAM failure	Run Diagnostics.
205-Cache Memory Error	None	Cache memory error	Replace the processor board in the slot indicated.
205-Option Cache Memory Error	None	Option cache memory error	Replace the option cache board.
206-Cache Controller Error	None	Cache controller failure	Run Diagnostics.
207-Invalid Memory Configuration - Check DIMM [SIMM] Installation	None	Memory module installed incorrectly	Verify placement of memory modules.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
208-Invalid Memory Speed - Check DIMM [SIMM] Installation	1L,1S	The speed of the memory is too slow, where: xx00 = expansion board SIMMs are too slow, or 00yy = system board SIMMs are too slow. xx and yy have corresponding bit set.	The speed of the memory modules must be 60 ns. Verify the speed of the memory modules installed.
211-Cache Switch Set Incorrectly	None	Switch not set properly during installation or upgrade	Verify switch settings.
212-System Processor Failed/Mapped out	1S	Processor in slot x failed.	Run Diagnostics and replace failed processor.
213-Cache Size Error	None	Invalid optional cache size	Replace cache with 256K cache.
213-System Processor Not Installed	1S	System processor configured for slot indicated is missing.	Install processor in the slot indicated or run the System Configuration Utility to remove the processor from the .CFG file.
214-DC-DC Converter Failed	None	PowerSafe Module (DC-DC Converter) Failed	Run Diagnostics. Contact your service provider.
301-Keyboard Error	None	Keyboard failure	Turn off the computer, then reconnect the keyboard.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
301-Keyboard Error or Test Fixture Installed	None	Keyboard failure	Replace the keyboard.
ZZ-301-Keyboard Error	None	Keyboard failure. (ZZ represents the Keyboard Scan Code.)	<ol style="list-style-type: none"> 1. A key is stuck. Try to free it. 2. Replace the keyboard.
303-Keyboard Controller Error	None	System board, keyboard, or mouse controller failure	Contact your service provider.
304-Keyboard or System Unit Error	None	Keyboard, keyboard cable, or system board failure	<ol style="list-style-type: none"> 1. Make sure the keyboard is attached. 2. Run Diagnostics to determine which is in error. 3. Replace the part indicated.
40X-Parallel Port X Address Assignment Conflict	2S	Both external and internal ports are assigned to parallel port X.	Run the System Configuration Utility.
402-Monochrome Adapter Failure	1L,2S	Monochrome display controller	Replace the monochrome display controller.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
501-Display Adapter Failure	1L,2S	Video display controller	Replace the video board.
601-Diskette Controller Error	None	Diskette controller circuitry failure	<ol style="list-style-type: none"> 1. Make sure the diskette drive cables are attached. 2. Replace the diskette drive and/or cable. 3. Replace the system board.
605-Diskette Drive Type Error	2S	Mismatch in drive type	Run the System Configuration Utility to set diskette type correctly.
702-A coprocessor has been detected that was not reported by CMOS.	None	Installed coprocessor not configured.	Run the System Configuration Utility and correct.
703-CMOS reports a coprocessor that has not been detected	2S	Coprocessor or configuration error.	<ol style="list-style-type: none"> 1. Run the System Configuration Utility and correct. 2. Replace the coprocessor.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1151-Com Port 1 Address Assignment Conflict	2S	Both external and internal serial ports are assigned to COM1.	Run the System Configuration Utility and correct.
1152-Com Port 2, 3, or 4 Address Assignment Conflict	2S	Both external and internal serial ports are assigned to COM2, COM3, or COM4.	Run the System Configuration Utility and correct.
1600-Server Manager/R Failure	None	Server Manager/R board failure. Error code displays after error message.	Run Diagnostics. Replace failed assembly or contact your service provider
1610-Temperature Violation Detected. Waiting for system to cool.	2S	Ambient system temperature too hot.	Check fan in system environment.
1611-Fan Failure Detected	2S	Required fan not installed or spinning.	Check fans.
1612-Primary Power Supply Failure	2S	Primary power supply has failed.	Replace power supply as soon as possible.
1613-Low System Battery	None	Real time clock system battery is running low on power.	Run Diagnostics. Contact your service provider.
1701-SCSI Controller failure	None	A test on the Fast SCSI-2 Controller failed	Contact your service provider.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1702-SCSI cable error detected. System halted.	None	Incorrect cabling	<p>1. For Integrated SCSI Controllers, ensure that the internal connector has SCSI termination attached.</p> <p>2. For option card SCSI controllers, ensure that only one of the two internal connectors has termination attached.</p>
1703-SCSI cable error detected. Internal SCSI cable not attached to system board connector. System halted.	None	Incorrect cabling	Ensure that the integrated SCSI controller has SCSI termination attached.
1704-Unsupported Virtual Mode Disk Operation. DOS Driver Required. System Halted.	None	System attempted to perform a virtual mode disk operation without virtual mode memory services.	Use fixed-disk device driver that supports virtual mode memory services.
1705-Locked SCSI Bus Detected. System Halted.	None	SCSI bus failure	Run Diagnostics. Contact your service provider.
1730-Fixed Disk 0 does not support DMA Mode	None	Fixed disk drive error	Run the System Configuration Utility and correct.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1731-Fixed Disk 1 does not support DMA Mode	None	Fixed disk drive error	Run the System Configuration Utility and correct.
1740-Fixed Disk 0 failed Set Block Mode command	None	Fixed disk drive error	Run the System Configuration Utility and correct.
1741-Fixed Disk 1 failed Set Block Mode command	None	Fixed disk drive error	Run the System Configuration Utility and correct.
1750-Fixed Disk 0 failed Identify command	None	Fixed disk drive error	Run the System Configuration Utility and correct.
1751-Fixed Disk 1 failed Identify command	None	Fixed disk drive error	Run the System Configuration Utility and correct.
1760-Fixed Disk 0 does not support Block Mode	None	Fixed disk drive error	Run the System Configuration Utility and correct.
1761-Fixed Disk 1 does not support Block Mode	None	Fixed disk drive error.	Run the System Configuration Utility and correct.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1764- Slot x Drive Array - Capacity Expansion Process is Temporarily Disabled (followed by one of the following):			Reattach or replace Array Accelerator, wait until the Array Accelerator batteries have charged, or for Automatic Data Recovery to complete, as indicated.
Expansion will resume when Array Accelerator has been reattached.			
Expansion will resume when Array Accelerator has been replaced.			
Expansion will resume when Array Accelerator RAM allocation is successful.			
Expansion will resume when Array Accelerator battery reaches full charge.			
Expansion will resume when automatic data recovery has been completed.			
1765-Slot x Drive Array Option ROM Appears to Conflict With an ISA Card. ISA cards with 16-bit memory cannot be configured in memory range C0000 to DFFFF along with the SMART-2/E 8-bit Option ROM due to EISA bus limitations. Please remove or reconfigure your ISA card.			Remove or reconfigure conflicting ISA cards. Disable "shared memory" on any ISA network cards that may be installed. Call customer support if this does not help.
1766- Slot x Drive Array requires System ROM Upgrade. Run Systems ROMPaq Utility			Run the latest Systems ROMPaq Utility to upgrade your System ROMs.

continued

POST Error Messages <i>continued</i>			
Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1767- Slot x Drive Array Option ROM is Not Programmed Correctly or may Conflict with the Memory Address Range of an ISA Card. Check the Memory Address Configuration of installed ISA Card(s) or run Options ROMPaq Utility to attempt SMART-2/E Option ROM Reprogramming.			Remove or reconfigure conflicting ISA cards, especially any cards that are not recognized by the System Configuration Utility. Try reprogramming the SMART-2/E Controller's ROMs using the latest Options ROMPaq (version 2.29 or higher). Call customer support if this does not help.
1768-Slot x Drive Array - Resuming logical drive expansion process	None	SMART-2 Controller error	No action required. Appears whenever a controller reset or power cycle occurs while array expansion is in progress.
1769- Slot x Drive Array - Drive(s) disabled due to failure during expand. Select F1 to continue with logical drives disabled. Select F2 to accept data loss and to re-enable logical drives.	None	SMART-2 Controller error	Data has been lost while expanding the array, therefore the drives have been temporarily disabled. Press F2 to accept the data loss and re-enable the logical drives. Restore data from backup.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1771-Primary Disk Port Address Assignment Conflict	None	Internal and external hard drive controllers are both assigned to the primary address.	Run the System Configuration Utility and correct.
1772-Secondary Disk Port Address Assignment Conflict	None	Address Assignment Conflict. Internal and external hard drive controllers are both assigned to the secondary address.	Run the System Configuration Utility and correct.
1773-Primary Fixed Disk Port Assignment Conflict	None	Fixed disk drive error.	Run the System Configuration Utility and correct.
1774- Slot x Drive Array - Obsolete data found in Array Accelerator. Select F1 to discard contents of Array Accelerator. Select F2 to write contents of Array Accelerator to drives.	None	SMART-2 Controller error	Data found in Array Accelerator is older than data found on drives. Press F1 to discard the older data in the Array Accelerator and retain the newer data on the drives.
1776-Drive Array - SCSI Port Termination Error	None	External and internal SCSI drives are both configured to Port 1.	Reconfigure drives.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1777-Drive Array - External Drive Subsystem Error	None	Cooling fan failure, internal temperature alert or open side panel.	Inspect for cooling fan failure or side panel open.
1778-Drive Array resuming Automatic Data Recovery process	None	This message appears whenever a controller reset or power cycle occurs while Automatic Data Recovery is in progress.	No action necessary.
1779-Drive Array Controller detects replacement drives	None	Intermittent drive failure and/or possible loss of data.	If this message appears and drive X has not been replaced, this indicates an intermittent drive failure. This message also appears once immediately following drive replacement when data must be restored from backup.
1780-Disk 0 Failure	None	Hard drive/format error	Run Diagnostics. Replace failed assembly or contact your service provider.
1781-Disk 1 Failure	None	Hard drive/format error	Run Diagnostics. Replace failed assembly or contact your service provider.
1782-Disk Controller Failure, Secondary Disk Controller Failure	None	Hard disk drive circuitry error	Run Diagnostics. Replace failed assembly or contact your service provider.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1784-Drive Array Drive Failure, Physical Drive	None	Defective drive and/or cables	Check for loose cables. Replace defective drive X and/or cables(s)..
1785-Drive Array not Configured	None	Configuration error	Run the System Configuration Utility and correct.
1786-Drive Array Recovery Needed The following drive(s) need Automatic Data Recovery: Drive X. Select "F1" to continue <u>with</u> recovery of data to drive(s). Select "F2" to continue <u>without</u> recovery of data to drive(s).	None	Interim Data Recovery mode. Data has not been recovered yet.	Press F1 key to allow Automatic Data Recovery to begin. Data will automatically be restored to drive X now that the drive has been replaced or now seems to be working. -Or- Press the F2 key and the system will continue to operate in the Interim Data Recovery mode.
1787-Drive Array Operating in Interim Recovery Mode. Physical drive replacement needed: Drive X	None	Hard drive X failed or cable is loose or defective. After system restart, message reminds you that drive X is defective and fault tolerance is being used.	1. Replace drive X as soon as possible. 2. Check loose cables. 3. Replace defective cables.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
*1788-Incorrect Drive Replaced: Drive X Drive(s) were incorrectly replaced: Drive Y Select F1 to continue - drive array will remain disabled. Select F2 to reset configuration - all data will be lost.	None	Drives are not installed in their original positions, so the drives have been disabled. <i>See note below.</i>	Reinstall the drives correctly as indicated. Press F1 to restart the computer with the drive array disabled. -Or- Press F2 to use the drives as configured and lose all the data on them.

*NOTE : The 1788 error message might also be displayed inadvertently because of a bad power cable connection to the drive or by noise on the data cable. If this message was caused by a bad power cable connection, but not caused by an incorrect drive replacement, repair the connection and press F2.

-Or-

If this message was not caused by a bad power cable connection, and no drive replacement took place, this could indicate noise on the data cable. Check cable for proper routing.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1789-Drive Not Responding, Physical Drive	None	Cable or hard drive failure.	1. Check the cable connections. 2. If cables are connected, replace the drive. 3. If you do not want to replace the drives now, press F2.
Check cables or replace physical drive X.			
Select F1 to continue - drive array will remain disabled.			
Select F2 to fail drive(s) that are not responding -			
Interim Recovery Mode will be enabled if configured for fault tolerance.			
1790-Disk 0 Error	None	Hard drive error or wrong drive type	Run the System Configuration Utility.
1790-Disk 0 Configuration Error	None	Hard drive error or wrong drive type	Run the System Configuration Utility and Diagnostics.
1791-Disk 1 Error	None	Hard drive error or wrong drive type.	Run the System Configuration Utility and Diagnostics and correct.

continued

POST Error Messages <i>continued</i>			
Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1792-Drive Array Reports Valid Data Found in Array Accelerator. Data will automatically be written to drive array.	None	While the system was in use, power was interrupted while data was in the Array Accelerator memory. Power was then restored within eight to ten days, and the data in the Array Accelerator was flushed to the drive array.	No action necessary; no data has been lost. Perform orderly system shut-downs to avoid data remaining in the Array Accelerator.
1793-Drive Array - Array Accelerator Battery Depleted - Data Lost (Error message 1794 also displays.)	None	This indicates that while the system was in use, power was interrupted while data was in the Array Accelerator memory. Array Accelerator batteries failed. Data in Array Accelerator has been lost.	Power was not restored within eight to ten days. Perform orderly system shut- downs to avoid data remaining in the Array Accelerator.
1794-Drive Array - Array Accelerator Battery Charge Low. Array Accelerator is temporarily disabled. Array Accelerator will be reenabled when battery reaches full charge.	None	This is a warning that the battery charge is below 75%. Posted writes are disabled.	Replace the Array Accelerator board if batteries do not recharge within 36 power-on hours.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1795-Drive Array - Array Accelerator Configuration Error. Data does not correspond to this drive array. Array Accelerator is temporarily disabled.	None	While the system was in use, power was interrupted while data was in the Array Accelerator memory. The data stored in the Array Accelerator does not correspond to this drive array.	1. Match the Array Accelerator to the correct drive array. -Or- 2. Run the System Configuration Utility to clear the data in the Array Accelerator.
1796-Drive Array - Array Accelerator Not Responding. Array Accelerator is temporarily disabled.	None	Array Accelerator is defective or has been removed.	1. Check that the Array Accelerator is properly seated. 2. Run the System Configuration Utility to reconfigure the Compaq IDA-2 without the Array Accelerator.
1797-Drive Array - Array Accelerator Read Error Occurred. Data in Array Accelerator has been lost. Array Accelerator is disabled.	None	Hard parity error while reading data from posted writes memory.	Enable Array Accelerator.

continued

POST Error Messages *continued*

Error Code	Audible Beeps L=Long S=Short	Probable Source of Problem	Action
1798-Drive Array - Array Accelerator Write Error Occurred. Array Accelerator is disabled.	None	Hard parity error while writing data to posted- writes memory.	Enable Array Accelerator.
1799-Drive Array - Drive(s) Disabled due to Array Accelerator Data Loss. Select F1 to continue with logical drives disabled. Select F2 to accept data loss and to reenable logical drives.	None	Volume failed because of loss of data in posted- writes memory.	Press F1 to continue with logical drives disabled or F2 to accept data loss and reenable logical drive.
Beeps only: 2 long + 2 short	2L,2S	Power is cycled. Temperature too hot. Processor fan not installed or spinning.	Check fans.
(Run System Configuration Utility - F10 key)	None	A configuration error occurred during POST.	Press F10 to run System Configuration Utility.
(RESUME - F1 KEY)	None	As indicated to continue.	Press the F1 key.

Diagnostics Utility

When you select Diagnostics and Utilities from the System Configuration Utility main menu, the utility prompts you 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).

The following options are available from the Diagnostics and Utilities menu:

- Test Computer
- Inspect Computer
- Upgrade Firmware
- Remote Utilities
- Diagnose Drive Array

Running Diagnostics

There are two ways to access the utilities:

- From the System Partition.
- From diskette. A diskette can be created from the SmartStart and Support Software CD.

Accessing the utilities from the system partition:

1. Reboot the server by pressing the **Ctrl+Alt+Delete** keys.
2. Press **F10** when the following prompt appears at the top of the screen during POST.

Press "**F10**" 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.

3. From the System Configuration Main Menu, select *Diagnostics and Utilities*.

If there are errors detected in the Server Health Log, the Diagnostics Utility automatically displays the following screen message:

CAUTION: Errors have been detected in your Server Health Log. Diags will now identify your system hardware.

4. Press the **Enter** key to continue.
5. After a short pause, the Server Health Log menu displays with a list of system errors. If there is more than one error, press the Space Bar to select the error you want to correct. Then press **Enter**.
6. The Diagnostics Utility prompts you and suggests corrective action.

Diagnostic Error Codes

The Diagnostic error codes and recommended actions are listed in the following tables.

IMPORTANT: This information is intended for the user's reference only. Many of the corrective actions involve complex hardware and/or software changes and should be performed only by an Authorized Compaq Service Provider.

100 Series - Primary Processor Test Error Codes

The 100 series of Diagnostic error codes identify failures with processor and system board functions. Corrective action may require replacement of system boards or processor assemblies (either processor cards or system boards that include the processor).

Primary Processor Test Error Codes	
Error Code Range	Possible Corrective Action
100-xx ... 106-xx	The processor assembly may require replacement.
107-xx ... 109-xx	The battery/clock module or system board may require replacement.
110-xx ... 113-xx	The system board may require replacement.
114 - xx	A loose or defective speaker assembly may cause this error. The speaker assembly or the system board may require replacement.
122-xx ... 123-xx	The processor assembly may require replacement.

200 Series - Memory Test Error Codes

The 200 series of Diagnostic error codes identify failures with the memory subsystem. Corrective action may require replacement of the memory expansion board, the memory modules, or the processor assembly.

Memory Test Error Codes	
Error Code Range	Possible Corrective Action
200-xx ... 215-xx	The indicated memory module may require replacement.

300 Series - Keyboard Test Error Codes

The 300 series of Diagnostic error codes identify failures with keyboard and system board functions. Corrective action may require replacement of the keyboard or the system board assembly.

Keyboard Test Error Codes	
Error Code Range	Possible Corrective Action
301-xx ... 304-xx	The keyboard or the system board may require replacement.

400 Series - Parallel Printer Test Error Codes

The 400 series of Diagnostic error codes identify failures with parallel printer interface card or system board functions. Corrective action may require replacement of the serial/parallel interface board or the system board assembly.

Parallel Printer Test Error Codes	
Error Code Range	Possible Corrective Action
400-xx ... 403-xx	Run the System Configuration Utility. Loose or defective cables may cause error messages. The parallel interface board or the system board may require replacement.

600 Series - Diskette Drive Test Error Codes

The 600 series of Diagnostic error codes identify failures with diskette, diskette drive, or system board functions. Corrective action may require replacement of the diskette, the diskette drive, or the system board assembly.

Diskette Drive Test Error Codes	
Error Code Range	Possible Corrective Action
600-xx ... 698-xx	A defective diskette, loose cables, or defective cables may cause error messages. The diskette drive or system board may require replacement.
699-xx	<ol style="list-style-type: none">1. Replace the diskette and retest.2. Run the System Configuration Utility.

1100 Series - Serial Test Error Codes

The 1100 series of Diagnostic error codes identify failures with serial/parallel interface board or system board functions. Corrective action may require replacement of the serial/parallel interface board or the system board assembly.

Serial Test Error Codes	
Error Code Range	Possible Corrective Action
1100-xx ... 1109-xx	Run the System Configuration Utility. Loose or defective cables may cause error messages. The serial interface board or the system board may require replacement.

1200 Series - Modem Communications Test Error Codes

The 1200 series of Diagnostic error codes identify failures with the modem. Corrective action may require replacement of the modem.

Modem Communications Test Error Codes	
Error Code Range	Possible Corrective Action
1200-xx ... 1210-xx	Refer to the modem documentation for correct setup procedures. Poor line quality may cause errors. The modem may require replacement

1700 Series - Fixed Disk Drive Test Error Codes

The 1700 series of Diagnostic error codes identify failures with fixed disk drive, fixed disk drive controller board, fixed disk drive cabling, and system board functions. Corrective action may require replacement of the fixed disk drive cables, fixed disk drive controller board, fixed disk, or system board assembly. If your system uses a drive array controller, see the section for Drive Array Advanced Diagnostics (DAAD).

Fixed Disk Drive Test Error Codes	
Error Code Range	Possible Corrective Action
1700 - 1799	Run the System Configuration Utility. Loose or defective cable connections may cause error messages. The fixed disk drive, the fixed disk drive controller, or the system board may require replacement.

1900 Series - Tape Drive Test Error Codes

The 1900 series of Diagnostic error codes identify failures with tape cartridge, tape drive cabling, adapter board, tape drive, or system board assembly. Corrective action may require replacement of the tape cartridge, tape drive cabling, adapter board, tape drive, or system board assembly.

Tape Drive Test Error Codes	
Error Code Range	Possible Corrective Action
1900-xx ... 1906-xx	A defective tape cartridge, loose cable connections, or defective cable connections may cause error messages. The tape drive, the tape adapter board, or the system board may require replacement.

2400 Series - Advanced VGA Board Test Error Codes

The 2400 series of Diagnostic error codes identify failures with the video board, monitor, or system board assembly. Corrective action may require replacement of the monitor, video board, or system board assembly.

Advanced VGA Board Test Error Codes	
Error Code Range	Possible Corrective Action
2400-xx ... 2480-xx	Run the System Configuration Utility. Loose or defective cable connections may cause error messages. The monitor, the video board, or the system board may require replacement.

6000 Series -
32-Bit DualSpeed NetFlex-2 Controller and
32-Bit DualSpeed Token Ring Controller Test
Error Codes

The 6000 series of Diagnostic error codes identify failures with 32-bit DualSpeed NetFlex-2/Token Ring Controllers. Corrective action may require replacement of the 32-bit DualSpeed NetFlex-2/Token Ring Controller.

32-Bit DualSpeed NetFlex-2 Controller and 32-Bit DualSpeed Token
Ring Controller Test Error Codes

Error Code Range	Possible Corrective Action
6000-xx ... 6089-xx	Run the System Configuration Utility. Loose or defective cable connections may cause error messages. The controller may require replacement.

6500 Series -
SCSI Fixed Disk Drive Test Error Codes

The 6500 series of Diagnostic error codes identify failures with fixed disk drives, fixed disk drive controller boards, fixed disk drive cabling, and system board functions. Corrective action may require replacement of fixed disk drive cables, fixed disk drive controller, fixed disk, or system board assembly. If your system uses a drive array controller, see the section for Drive Array Advanced Diagnostics (DAAD).

SCSI Fixed Disk Drive Test Error Codes

Error Code Range	Possible Corrective Action
6500-xx ... 6528-xx	Loose or defective cable connections may cause error messages. The fixed disk drive, the fixed disk drive controller, or the system board may require replacement.

6600 Series - CD-ROM Drive Test Error Codes

The 6600 series of Diagnostic error codes identify failures with the CD-ROM cabling, CD-ROM drive, adapter board, or system board assembly. Corrective action may require replacement of the CD-ROM cabling, CD-ROM drive, adapter board, or system board assembly.

CD-ROM Drive Test Error Codes	
Error Code Range	Possible Corrective Action
6600-xx ... 6628-xx	A defective CD, loose cable connections, or defective cable connections may cause error messages. The CD-ROM drive, the CD-ROM adapter board, or the system board may require replacement.

6700 Series - SCSI Tape Drive Test Error Codes

The 6700 series of Diagnostic error codes identify failures with tape cartridge, tape drive, tape drive cabling, adapter board, or system board assembly. Corrective action may require replacement of the tape cartridge, tape drive cabling, adapter board, tape drive, or system board assembly.

SCSI Tape Drive Test Error Codes	
Error Code Range	Possible Corrective Action
6700-xx ... 6728-xx	A defective tape cartridge, loose cable connections, or defective cable connections may cause error messages. The tape drive, the tape adapter board, or the system board may require replacement.

7000 Series - Server Manager/R Board Test Error Codes

The 7000 series of Diagnostic error codes identify failures with the Server Manager/R board. Corrective action may require replacement of the Server Manager/R board, the Integrated 2400-baud modem, voice ROM, or battery on the Server Manager/R board.

Server Manager/R Board Test Error Codes	
Error Code Range	Possible Corrective Action
7000-xx ... 7046-xx	The Server Manager/R board may require replacement.
7051-xx ... 7057-xx	The Server Manager/R board Enhanced 2400-Baud Integrated Modem may require replacement.
7061-xx ... 7062-xx	The Server Manager/R board Voice ROM may require replacement.
7078-xx ... 7079-xx	The Server Manager/R board battery may require replacement.

8600 Series - Pointing Device Interface Test Error Codes

The 8600 series of Diagnostic error codes identify failures with the pointing device (mouse, trackball, and so forth) or the system board assembly. Corrective action may require replacement of the pointing device or the system board assembly.

Pointing Device Interface Test Error Codes	
Error Code Range	Possible Corrective Action
8601	Loose or defective cable connections may cause error messages. The pointing device or the system board may require replacement.

Test Computer

The Test utility determines if the various computer components are recognized by the system and functioning properly. Running Test Computer is optional, but advisable, after you install or connect a new device. However, this utility does not detect **all** non-Compaq devices.

You can display, print, or save the information. Your Authorized Compaq Reseller or Service Provider may ask you to run this utility to assist in analyzing the system. This information allows the service provider to reproduce the same environment on another computer for testing.

IMPORTANT: Run Test Computer and have the printed report available before placing a call to the Compaq Customer Support Center or your local Compaq Service Provider.

Running Test

To run Test, complete the following steps:

1. Press the **Ctrl+Alt+Delete** keys to reboot the server.
2. Press **F10** when the following prompt appears at the top of the screen during POST.

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.

3. Select the *Diagnostics and Utilities* option.
4. Select *Test Computer*.
5. Select *View Device List*.

6. A list of the installed hardware devices is displayed. (This utility does not detect all third-party devices.)
 - ☐ Verify that the utility has correctly detected the devices installed. If the list is correct, select *OK* and go to step 9.
 - ☐ If the list is incorrect, be sure that any new devices are installed properly. If you do not find an installation problem, call your Authorized Compaq Reseller or Service Provider.
7. Select one of the following from the test option menu:
 - ☐ **Quick Check Diagnostics** - This option runs a quick, general test on each device with a minimal number of prompts. If errors occur, they are displayed when the testing is complete.
 - ☐ **Automatic Diagnostics** - This option runs unattended, maximum testing of each device with minimal prompts. You can choose how many times to run the tests, to stop on errors, or to print or file a log of errors.
 - ☐ **Prompted Diagnostics** - This option allows maximum control. You can choose attended or unattended testing, decide to stop on errors, or choose to print or file a log of errors.

IMPORTANT: When you run Test, be sure to record the error message numbers and have them available when you contact your Authorized Compaq Reseller or Service Provider.

8. Follow the instructions on the screen as the diagnostic tests are run on the devices. When the testing is complete, the test option menu is displayed again.
9. Exit to the Diagnostics menu, then exit the utility. Look elsewhere in this chapter for possible explanations of any failures.
10. When Exit This Utility is displayed, press the **Enter** key to restart the computer.

Inspect Computer

The Inspect Computer utility provides information about the operating system environment once the computer has been configured. Inspect Computer operates with MS-DOS and provides the following information:

- Serial number of the computer
- Type of computer
- Type of processor
- Operating system installed
- Contents of MS-DOS startup files
- Type of diskette drive and hard drive
- Operating speed
- Current memory configuration
- System, video, and option ROM revisions
- Active printer and communications interfaces

You can display, print, or save the information. Your Authorized Compaq Reseller or Service Provider may ask you to run this utility to assist in analyzing the system. This information allows the service provider to reproduce the same environment on another computer for testing.

IMPORTANT: Run Inspect Computer and have the printed output available before placing a call to the Compaq Customer Support Center or your local Authorized Compaq Service Provider.

Running Inspect

To run Inspect, complete the following steps:

1. Press the **Ctrl+Alt+Delete** keys to reboot the server.
2. Press **F10** when the following prompt appears at the top of the screen during POST.

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.

3. Select the *Diagnostics and Utilities* option.
4. Select *Inspect the Computer*. Operating environment information displays.
5. Review, print, file, or discuss this information with your Authorized Compaq Reseller or Service Provider.

Drive Array Advanced Diagnostics (DAAD)

Drive Array Advanced Diagnostics (DAAD) is a DOS-based tool designed to run on all Compaq products that contain a Compaq SMART SCSI Array Controller, Compaq Intelligent Drive Array Controller-2 (IDA-2), Compaq Intelligent Drive Array Controller (IDA), or Compaq Intelligent Array Expansion Controller.

The error messages and codes listed below include all codes generated by Compaq products. Your system generates only those codes that are applicable to your configuration and options.

DAAD has two main functions:

- Collect all possible information about the array controllers in the system
- List all detected problems

DAAD Diagnostic Messages

The following table lists the diagnostic messages that may appear in the Diagnosis menu dialog box. To view the problems detected by DAAD, select the Diagnosis button. If DAAD found no problems, a message, "No Problems Detected," displays.

Table 8-2 DAAD Diagnostic Messages		
Message	Description	Recommended Action
Accelerator board not detected	Array controller did not detect a configured array accelerator board.	Install array accelerator board on array controller. If an array accelerator board is installed, check for proper seating on the array controller board. You may need to run the System Configuration Utility and disable the array accelerator board to get this message off the screen.
Accelerator error log	List of the last 32 parity errors on transfers to or from memory on the array accelerator board. Displays starting memory address, transfer count, and operation (read and write).	If there are many parity errors, you may need to replace the array accelerator board.
Accelerator parity read errors: n	Number of times that read memory parity errors were detected during transfers from memory on array accelerator board.	If there are many parity errors, you may need to replace the array accelerator board.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Accelerator parity write errors: n	Number of times that write memory parity errors were detected during transfers to memory on the array accelerator board.	If there are many parity errors, you may need to replace the array accelerator board.
Accelerator status: Permanently disabled	Array accelerator board has been permanently disabled. It will remain disabled until it is reinitialized using the System Configuration Utility.	Check the Disable Code field. Run the System Configuration Utility to reinitialize the array accelerator board.
Accelerator status: Possible data loss in cache	Possible data loss detected during power-up due to all batteries being below sufficient voltage level and no presence of the identification signatures on the array accelerator board.	There is no way to determine if dirty or bad data was in the cache and is now lost.
Accelerator status: Temporarily disabled	Array accelerator board has been temporarily disabled.	Check the Disable Code field.
Accelerator status: Unrecognized status	A status returned from the array accelerator board that DAAD does not recognize.	Call your Authorized Compaq Reseller for the latest copy of DAAD.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Accelerator status: Valid data found at reset	Valid data was found in posted write memory at reinitialization. Data will be flushed to disk.	Not an error or data loss condition. No action needs to be taken.
Accelerator status: Warranty alert	Catastrophic problem with array accelerator board. Refer to other messages on Diagnostics screen for exact meaning of this message.	Replace the array accelerator board.
Adapter/NVRAM ID mismatch	EISA nonvolatile RAM has an ID for a different controller from the one physically present in the slot.	Run the System Configuration Utility.
Battery pack X below reference voltage	Battery pack on the array accelerator is below the required voltage levels.	Allow enough time for batteries to recharge (36 hours). If batteries have not recharged after 36 hours, replace the array accelerator board.
Battery X not fully charged	Battery is not fully charged.	If 75% of the batteries present are fully charged, the array accelerator is fully operational. If more than 75% of the batteries are not fully charged, allow 36 hours to recharge them.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Board not attached	Array controller configured for use with array accelerator board, but one is not attached.	Attach array accelerator board to array controller.
NVRAM configuration present, controller not detected	EISA nonvolatile RAM has a configuration for an array controller but there is no board in this slot. Either a board has been removed from the system or a board has been placed in the wrong slot.	Place the array controller in the proper slot or run the System Configuration Utility to reconfigure nonvolatile RAM to reflect the removal or new position.
Compatibility port problem detected	Compatibility port configured for this IDA controller. When DAAD was verifying this interface, a serious problem was detected.	A hardware problem has occurred; replace the IDA controller.
Configuration signature is zero	DAAD detected that nonvolatile RAM contains a configuration signature that is zero. Old versions of the System Configuration Utility could cause this.	Run the latest version of System Configuration Utility to configure the controller and nonvolatile RAM.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Configuration signature mismatch	Array accelerator board configured for a different array controller board. Configuration signature on array accelerator board does not match the one stored on the array controller board.	To recognize the array accelerator board, run the System Configuration Utility.
Controller communication failure occurred	Controller communication failure occurred.	DAAD was unable to successfully issue commands to the controller in this slot.
Controller detected. NVRAM configuration not present	EISA nonvolatile RAM does not contain a configuration for this controller.	Run the System Configuration Utility to configure the nonvolatile RAM.
Controller firmware needs upgrading	Controller firmware is below the latest recommended version.	Run Options ROMPaq to upgrade the controller to the latest firmware revision.
Controller firmware needs upgrading (DAAD Error 102)	Controller is correct, however, IDA firmware version should be greater than 1.26.	Call your Authorized Compaq Reseller to obtain the latest firmware.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Controller is located in special "video" slot	Controller is installed in slot for special video control signals. If controller is used in this slot, LED indicators on front panel may not function properly.	Install the controller in a different slot and run the System Configuration Utility to configure the controller and nonvolatile RAM.
Controller is not configured	Controller is not configured. If controller was previously configured and you change drive locations, there may be a problem with placement of the drives. DAAD examines each physical drive and looks for drives that have been moved to a different drive bay.	Look for messages indicating which drives have been moved. If none appear and drive swapping did not occur, run the System Configuration Utility to configure the controller and nonvolatile RAM. Do not run the System Configuration Utility if you believe drive swapping has occurred.
Controller needs replacing (DAAD Error 102)	IDA firmware is less than version 0.96.	Replace the controller as soon as possible.
Controller needs replacing (DAAD Error 104)	The Intelligent Array Expansion System firmware is less than version 1.14.	Replace the controller as soon as possible.

continued

DAAD Diagnostic Messages <i>continued</i>		
Message	Description	Recommended Action
Controller reported POST error. Error Code: x	The controller returned an error from its internal Power-On Self Tests.	Replace the controller.
Controller restarted with a signature of zero	DAAD did not find a valid configuration signature to use to get the data. Nonvolatile RAM may not be present (unconfigured) or the signature present in nonvolatile RAM may not match the signature on the controller.	Run the System Configuration Utility to configure the controller and nonvolatile RAM.
DAAD recorded errors attempting to access: X	DAAD found errors while attempting to access physical drive X, believed to be operational. Message followed by specific information about the error.	Replace the drive, or correct the condition that caused the error.
Disable command issued	Posted writes have been disabled by the issuing of the Accelerator Disable command. This occurred because of an operating system device driver.	Restart the system. Run the System Configuration Utility to reinitialize the array accelerator board.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Drive (bay) X needs replacing (DAAD Error 102)	The 210-megabyte hard drive has firmware version 2.30 or 2.31.	Replace the drive.
Drive Monitoring features are unobtainable	DAAD unable to get monitor and performance data due to fatal command problem such as drive time-out, or unable to get data due to these features not supported on the controller.	Check for other errors (time-outs, etc.). If no other errors occur, upgrade the firmware to a version that supports monitor and performance, if desired.
Drive Monitoring is NOT enabled for drive bay X	The monitor and performance features have not been enabled.	Run the System Configuration Utility to initialize the monitor and performance features.
Drive time-out occurred on physical drive bay X	DAAD issued a command to a physical drive and the command was never acknowledged.	The drive or cable may be bad. Check the other error messages on the Diagnostics screen to determine resolution.
Drive (bay) X firmware needs upgrading	Firmware on this physical drive is below the latest recommended version.	Run the Options ROMPaq Utility to upgrade the drive firmware to the latest revision.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Drive (bay) X has invalid M&P stamp	Physical drive has invalid monitor and performance data.	Run the System Configuration Utility to properly initialize this drive.
Drive X indicates position Y	Message indicates which physical drive appears to be scrambled or in a drive bay other than the one for which it was originally configured for.	Examine the graphical drive representation on DAAD to determine proper drive locations. Remove drive X and place it in drive position Y. Rearrange the drives according to the DAAD instructions.
Drive (bay) X RIS copy mismatch	The copies of the RIS on this drive do not match.	This drive may need to be replaced. Check for other errors.
Drive (bay) X upload code not readable	An error occurred while DAAD was trying to read the upload code information from this drive.	If there were multiple errors, this drive may need to be replaced.
Duplicate write memory error	Data could not be written to the array accelerator board in duplicate due to the detection of parity errors. This is not a data loss situation.	Replace the array accelerator board.
Error occurred reading RIS copy from drive (bay) X	An error occurred while DAAD was trying to read the RIS from this drive.	If there were multiple errors, this drive may need to be replaced.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
FYI: Drive (bay) X is non-Compaq supplied	The installed drive was not supplied by Compaq.	If problems exist with this drive, replace it with a Compaq drive.
Identify controller data did not match with NVRAM	The identify controller data from the array controller did not match with the information stored in nonvolatile RAM. This could occur if new, previously configured drives have been placed in a system that has also been previously configured. It could also occur if the firmware on the controller has been upgraded and the System Configuration Utility was not run.	Check the identify controller data under the Inspect Utility. If the firmware version field is the only thing different between the controller and nonvolatile RAM data, this is not a problem. Otherwise run the System Configuration Utility.
Identify logical drive data did not match with NVRAM	The identify unit data from the array controller did not match with the information stored in nonvolatile RAM. This could occur if new, previously configured drives have been placed in a system that has also been previously configured.	Run the System Configuration Utility to configure the controller and nonvolatile RAM.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Insufficient adapter resources	The adapter does not have sufficient resources to perform operations to the array accelerator board. Drive rebuild may be occurring.	Operate the system without the array accelerator board until the drive rebuild completes.
Less than 75% batteries at sufficient voltage	The operation of the array accelerator board has been disabled due to less than 75% of the battery packs being at the sufficient voltage level.	Allow sufficient time for the batteries to recharge (36 hours). If the batteries have not recharged after 36 hours, replace the array accelerator board.
Logical drive X failed due to cache error	This logical drive failed due to a catastrophic cache error.	Replace the array accelerator board and reconfigure using the System Configuration Utility.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Logical Drive X status = FAILED	This status could be issued for several reasons. If this logical drive is configured for No Fault Tolerance and one or more drives fail, this status will occur. If mirroring is enabled, and any two mirrored drives fail, this status will occur. If Data Guarding is enabled, and two or more drives fail in this unit, this status will occur. This status may also occur if another configured logical drive is in the WRONG DRIVE REPLACED or LOOSE CABLE DETECTED state.	Check for drive failures, wrong drive replaced, or loose cable messages. If there was a drive failure, replace the failed drive(s) and then restore the data for this logical drive from the tape backup. Otherwise, follow the wrong drive replaced or loose cable detected procedures.
Logical Drive X status = INTERIM RECOVERY	A physical drive in this logical drive has failed. The logical drive is operating in interim recovery mode and is vulnerable.	Replace the failed drive as soon as possible.
Logical Drive X status = LOOSE CABLE DETECTED	A physical drive has a cabling problem.	Turn the system off and attempt to reattach the cable onto the drive. If this does not work, replace the cable.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Logical Drive X status = NEEDS RECOVER	A physical drive in this logical drive has failed and has now been replaced. This drive needs to be rebuilt from the mirror drive or the parity data.	When booting up the system, select the "F1 - rebuild drive" option to rebuild the replaced drive.
Logical Drive X status = OVERHEATED	The temperature of the Intelligent Array Expansion System drives is beyond safe operating levels and it has shut down to avoid damage.	Check the fans and the operating environment.
Logical Drive X status = OVERHEATING	The temperature of the Intelligent Array Expansion System drives is beyond safe operating levels.	Check the fans and the operating environment.
Logical Drive X status = RECOVERING	A physical drive in this logical drive has failed and has now been replaced. The replaced drive is rebuilding from the mirror drive or the parity data.	Nothing needs to be done. Normal operations can occur.
Logical Drive X status = WRONG DRIVE REPLACED	A physical drive in this logical drive has failed. The incorrect drive was replaced.	Replace the drive that was incorrectly replaced. Then, replace the original drive that failed with a new drive. Do not run the System Configuration Utility to reconfigure - you will lose data on the drive.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Loose cable detected - logical drives may be marked FAILED until corrected	Controller unable to communicate with one or more physical drives, probably because of a cabling problem. Logical drives may be in a FAILED state until the condition is corrected, preventing access to data on the controller.	Check all controller and drive cable connections.
Mirror data miscompare	Data was found at reinitialization in the posted write memory, however, the mirror data compare test failed resulting in data being marked as invalid. Data loss is possible.	Replace the array accelerator board.
Mirrored memory location errors	Soft errors occurred when attempting to read the same data from both sides of the mirrored memory. Data loss will occur.	Replace the array accelerator board.
No configuration for Accelerator Board	The array accelerator board has not been configured.	If the array accelerator board is present, run the System Configuration Utility to configure the board, if desired.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Drive (bay) X has loose cable	The array controller could not communicate with this drive at power-up. This drive has not previously failed.	Check all cable connections first. The cables could be bad, loose, or disconnected. Turn on the system and attempt to reconnect data/power cable to the drive. If this does not work, replace the cable. If that does not work, the drive may need to be replaced.
Drive (bay) X is a replacement drive	This drive has been replaced. This message displays if a drive is replaced in a fault tolerant logical volume.	If the replacement was intentional, allow the drive to rebuild.
Drive (bay) X is a replacement drive marked OK	This drive has been replaced and marked OK by the firmware. This may occur if a drive has an intermittent failure (for example, if a drive has previously failed, then when DAAD is run, the drive starts working again).	Replace the drive.
Drive (bay) X is failed	The indicated physical drive has failed.	Replace this drive.
Drive (bay) X has insufficient capacity for its configuration	Drive has insufficient capacity to be used in this logical drive configuration.	Replace this drive with a larger capacity drive.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Drive (bay) X is undergoing drive recovery	This drive is being rebuilt from the corresponding mirror or parity data.	Normal operations should occur.
Drive (bay) X was inadvertently replaced	The physical drive was incorrectly replaced after another drive failed.	Replace the drive that was incorrectly replaced and replace the original drive that failed. Do not run the System Configuration Utility and try to reconfigure - data will be lost.
SCSI port X, drive ID Y firmware needs upgrading	Drive's firmware may cause problems and should be upgraded.	Run Options ROMPaq to upgrade the drive's firmware to a later revision.
Set configuration command issued	The configuration of the array controller has been updated. The array accelerator board may remain disabled until it is reinitialized.	Run the System Configuration Utility to reinitialize the array accelerator board.
Soft Firmware Upgrade required	DAAD has determined that your controller is running firmware that has been soft upgraded by the Compaq Upgrade Utility. However, the firmware running is not present on all drives. This could be caused by the addition of new drives in the system.	Run the Compaq Upgrade Utility to place the latest firmware on all drives.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Threshold for drive (bay) X violated	This message indicates that a monitor and performance threshold for this drive has been violated.	Check for the particular threshold that has been violated.
Threshold violations for drive (bay) X	This is a list of the individual thresholds that have been violated for this drive.	The drive may need to be replaced. Run the Compaq Diagnostics Utility to determine if the drive has been initialized and the threshold violation warrants drive replacement.
Unknown disable code	A code was returned from the array accelerator board that DAAD does not recognize.	Call your Authorized Compaq Reseller for the latest version of DAAD.
Warning bit detected	A monitor and performance threshold violation may have occurred. The status of a logical drive may not be OK.	Check the other error messages for an indication of the problem.
WARNING - Drive Write Cache is enabled on X	Drive has its internal write cache enabled. The drive may be a third-party drive or the drive's operating parameters may have been altered. Condition may cause data corruption if power to the drive is interrupted.	Replace the drive with a Compaq supplied drive, or restore the drive's operating parameters.

continued

DAAD Diagnostic Messages *continued*

Message	Description	Recommended Action
Wrong Accelerator	This could mean that either the board was replaced in the wrong slot or placed in a system that was previously configured with another board type. Included with this message is a message indicating the type of adapter sensed by DAAD and a message indicating the type of adapter last configured in EISA nonvolatile RAM.	Check the diagnosis screen for other error messages. Run the System Configuration Utility to update the system configuration.

Appendix A

Installing a New Battery

The Compaq ProLiant 800 server has two CMOS memories, one on the system board and the other on the expansion backplane 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 or a comparable 600-milliampere alkaline, 4.5-volt battery



CAUTION: It is important to make a set of backup diagnostics diskettes before you install a new battery.



CAUTION: If you are using a third-party hard drive, it is important to take the following steps *before* installing the battery.

1. Run the System Configuration Utility and note the drive type that is displayed in the summary.
2. If the drive type number is 65 or 66, make a note of the drive parameters. You can view these parameters by restarting the server and pressing **F10** when the square cursor appears in the upper-right corner of the screen. From the Compaq Utilities menu, select the System Configuration Utility to view the parameters. It is important to write down these parameters before continuing.
3. When you have completed the battery installation, you may need to run the System Configuration Utility and reconfigure your system using the drive table parameters noted earlier.

Installing the System Board Battery



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



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 side access panel. See the instructions in Appendix E, "Installing the Server," for information on removing the cover.

The following illustration identifies the header location for the new battery.

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

NOTE: 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.

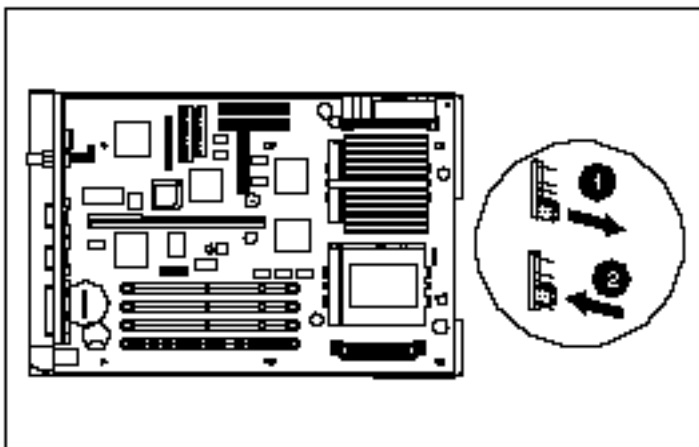
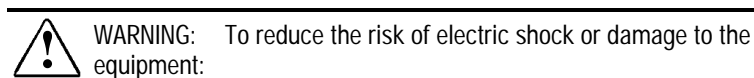


Figure A-1. Battery Jumpers on the System Board

Placing the Battery

1. Remove the backing from the adhesive on the hook-and-loop fastener strip.
2. Place the battery and the hook-and-loop fastener strip on the chassis floor, as shown in the following illustration.

-



- _____

7. Turn on the server.
8. Run the Compaq System Configuration utility to reconfigure the system. Refer to Chapter 4, "Using the System Configuration Utility."

Backplane Board Battery Replacement



CAUTION: It is important to make a set of backup diagnostics diskettes before you install a new battery

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 backplane board disk controller. 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.



CAUTION: If you are using a third-party hard drive, it is important to take the following steps *before* installing the battery.

1. Run the Computer Setup utility and observe the drive type that is displayed in the System Configuration summary.
2. If the drive type number is 65 or 66, make a note of the drive parameters. You can view these parameters by restarting the server and pressing **F10** when the square cursor appears in the upper-right corner of the screen. From the Compaq Utilities menu, select Computer Setup. Select Storage, then select Configure Fixed Disk Drive to view the parameters. Write down these parameters before continuing.
3. When you have completed the battery installation, you may need to run the Computer Setup utility and reconfigure your system using the drive table parameters noted earlier.

2. Plug the battery connector onto header E4 of the backplane board.
3. 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.

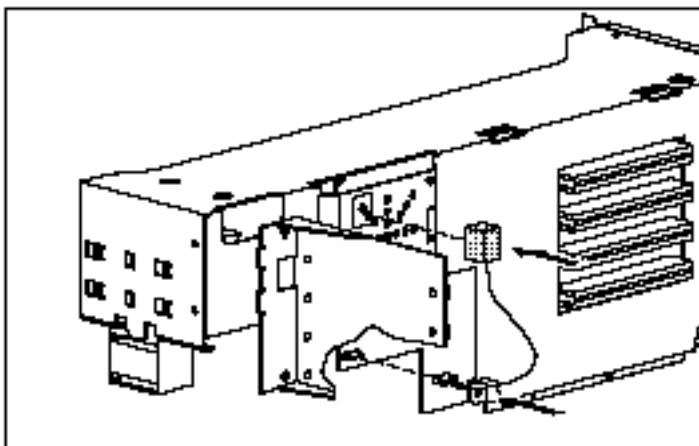
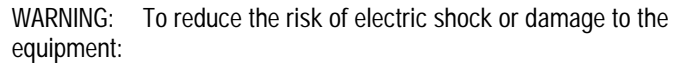


Figure A-4. Installing the battery

4. Replace the side access panel.
5. Place the sticker included with your battery kit on the back of your server above the power connector.
6. Plug in the server and reconnect any external devices.



7. Turn on the server.
8. Run the Compaq System Configuration Utility to reconfigure the system. Refer to Chapter 4, "Using the System Configuration Utility."

Appendix B

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.

Country-Specific Requirements

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

Table B-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 mm² 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 mm² conductor size. Wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (7A, 125V) configuration.

Appendix C

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, toestraps, 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 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 800 system board has two switch modules (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.

System Maintenance Switch SW1 Settings

The following table defines the function for each switch setting on SW1. The default positions are marked with an asterisk.

Table D-1
System Maintenance Switch Settings on SW1

SW	Function	Position	Status
S1	POWER-ON PASSWORD DEFEAT: All system passwords are permanently cleared when this switch is on. To enter new passwords, the switch must be turned off and System Configuration Utility must be run.	OFF* ON	ENABLED DISABLED
S2	HOST BUS FREQUENCY: The bus frequency, either 60 MHz or 66 MHz, is selected by this switch.	OFF ON*	60 MHz 66 MHz
S3-S4	RESERVED	ON*	Must be ON
S5-S6	CORE FREQUENCY TO BUS FREQUENCY SELECT	see Table D-2	
S7	MAINTENANCE MODE: When enabled, this places the server into a maintenance mode status for testing.	OFF* ON	DISABLED ENABLED
S8	DISKETTE BOOT ENABLE: System can be booted from diskette drive regardless of the Diskette Boot control option selected with the System Configuration Utility.	OFF* ON	DISABLED ENABLED
* Default			

Table D-2
Switch 1 Position 2, 5, 6

Core Frequency/Bus Frequency (MHz)	POS 2	POS 5	POS 6
120/60	OFF	ON	ON
150/60	OFF	ON	OFF
180/60	OFF	OFF	ON
133/66	ON	ON	ON
166/66	ON	ON	OFF
200/66	ON	OFF	ON

Setting NIC Switches

SW2 controls the network frequency of the optional ProLiant 800 100 Mb/s Network Adapter module.

- Placing all the SW2 switches in the **ON** position places the integrated NIC in the 10 Mb/s mode.
- Placing the switches in the **OFF** position activates the 100 Mb/s option, if installed.

The ProLiant 800 server comes standard with the 10 Mb/s and requires the 100 Mb/s option for this switch to be functional.

SCSI Device Jumper Settings

The 32-Bit Fast-SCSI-2 Controller requires that a SCSI ID be set for each SCSI device. 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. Refer to the label on the Side Access Panel of your server for the jumper settings of supported SCSI devices.

Appendix E

Installing the Server

The following instructions are provided for first-time installations and for hardware option upgrades. If you have any problems, contact your Authorized Compaq Reseller.



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

Overview of Installing the Server

Follow this sequence when installing your Compaq ProLiant 800 server for the first time. This sequence is the same as illustrated on the quick install chart that came with your new server. Additional information on each step is provided in the remainder of this manual.

1. Unpack the server, keyboard, mouse, and monitor (monitor not supplied).
2. Install any ISA and/or PCI expansion boards.
3. Install other options such as additional memory, hard drives, and external storage devices.
4. Connect peripheral devices such as keyboard, mouse, monitor, and network cables.
5. Set the input voltage select switch to the appropriate input voltage.
6. Connect the power cord.
7. Turn on the monitor.
8. Turn on the server and place the SmartStart and Support Software CD in the CD-ROM drive to boot and configure the server.

Selecting a Site

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.

Unpacking

Unpack the server, keyboard, and cables following the instructions and illustrations printed on the packaging.

Locating Materials

Locate the following materials that were shipped with your new server:

- Documentation and Software
 - ❑ *Quick Hardware Installation* poster
 - ❑ *Reference Guide*
 - ❑ *SmartStart*
- ProLiant 800 server
- Keyboard
- Mouse
- Power cord

In addition to these supplied items, you may need:

- T-15 Torx screwdriver
- Options to be installed
- Application software diskettes
- Optional uninterruptible power supply (UPS)

Removing the Side Access Panel

To remove the side access panel:

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. Loosen the three thumbscrews on the rear of the unit.
4. Slide the side access panel toward the rear of the unit. See Figure E-1.
5. Lift and remove the panel.

Replacing the Side Access Panel

1. Reverse the above steps to replace the side access panel.
2. If desired, the side access panel can be locked (with a customer-supplied padlock) to prevent unauthorized access to system components. See Figure E-2 for information.



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

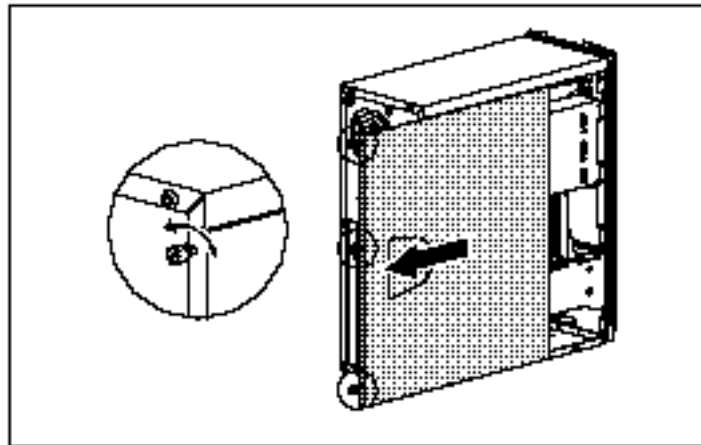


Figure E-1. Removing the side access panel

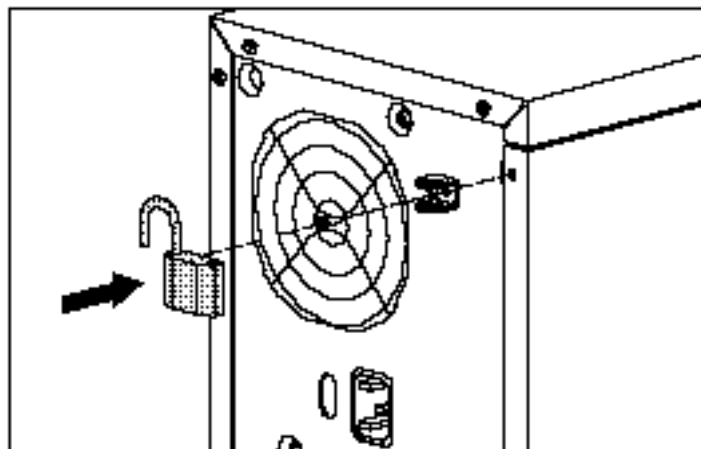


Figure E-2. Securing the system with a user-supplied padlock

Appendix F Regulatory Notices

Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, 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 - 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

(713) 514-3333

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

Canadian Notice

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

Avis Canadien

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

European Union (EU) 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

お使いになっている装置にVCCIマークが付いていましたら、次の説明文をお読み下さい。

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。

VCCIマークが付いていない場合には、次の点にご注意下さい。

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Laser Safety

All Compaq systems equipped with CD-ROM drives comply with appropriate safety standards including 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. It does not emit hazardous light; the beam is totally enclosed during all modes of customer operation and maintenance.

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.

This device is classified as a Class 1 laser product as defined by the CDRH regulations (CFR 1040.10, para. b, item 5). This means that this is a Class of laser products that does not emit hazardous laser radiation; this is possible only because the laser beam is totally enclosed during all modes of customer operation.

The laser produces a beam that, if looked into, could cause eye damage. Installation and Service procedures must be followed exactly as written without change.



WARNING: Because the internal laser beam may cause eye damage, do not open the cabinet. Wearing glasses and contact lenses, etc., increases the hazard. All maintenance should be performed by an Authorized Compaq Service Provider.



WARNING: Use of controls or adjustments or performance of procedures other than those specified herein or in the CD ROM installation guide may result in hazardous radiation exposure.

International Regulations

This device is designed to comply with the appropriate safety standards, including IEC950 and IEC825. This device is classified as a Class 1 laser product as defined by IEC825. The following label (or equivalent) is located on the surface of your CD-ROM drive.

Laser Product Label



This system is classified as a CLASS 1 LASER PRODUCT. This label is located on the outside of your system. A similar label also appears on the internal CD-ROM installed in your system.

Laser Information

Laser Type:	Semiconductor GaAIAs
Wave Length:	780 +/- 35 nm
Divergence Angle:	53.5 Degree +/- 1.5 Degree
Output Power:	Less than 0.2mW or $10,869 \text{ W} \cdot \text{m}^{-2} \text{ sr}^{-1}$
Polarization:	Circular
Numerical Aperture:	0.45 +/- 0.04

Only authorized technicians trained by Compaq should attempt to repair this equipment. All troubleshooting and repair procedures are detailed to allow only subassembly/module level repair. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or to make modifications to any printed wiring board. Improper repairs can create a safety hazard.

Battery Notices

Battery Recycling Notice



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

Battery Replacement Notice



WARNING: 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. Do not attempt to recharge the battery, disassemble it, immerse it in water, or dispose of it in fire. 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 Authorized Compaq Reseller or your Authorized Compaq Service Provider.

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.

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