COMPAQ

ProLiant DL360 Generation 2 Server

Setup and Installation Guide

First Edition (October 2001)
Part Number 233832-001
Compaq Computer Corporation

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About This Guide

This guide is designed to be used as step-by-step instructions for installation and as a reference for operation, troubleshooting, and future upgrades.

Text Conventions

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

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.
FILENAMES	File names appear in uppercase italics.
Menu Options, Command Names, Dialog Box Names	These elements appear in initial capital letters.
COMMANDS, DIRECTORY NAMES, and DRIVE NAMES	These elements appear in uppercase.
Type	When you are instructed to *type* information, type the information **without** pressing the **Enter** key.
Enter	When you are instructed to *enter* information, type the information and then press the **Enter** key.

Symbols in Text

These symbols may be found in the text of this guide. They have the following meanings.

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

CAUTION: Text set off in this manner indicates that failure to follow directions could 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.

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

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

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.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.

Power Supplies or Systems marked with these symbols indicate the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electrical shock, remove all power cords to completely disconnect power from the system.

Rack Stability

WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single rack installations.
- The racks are coupled together in multiple rack installations.
- A rack may become unstable if more than one component is extended for any reason. Extend only one component at a time.

Getting Help

If you have a problem and have exhausted the information in this guide, you can get further information and other help in the following locations.

Compaq Technical Support

You are entitled to free hardware technical telephone support for your product for as long you own the product. A technical support specialist will help you diagnose the problem or guide you to the next step in the warranty process.

In North America, call the Compaq Technical Phone Support Center at 1-800-OK-COMPAQ[1]. This service is available 24 hours a day, 7 days a week.

Outside North America, call the nearest Compaq Technical Support Phone Center. Telephone numbers for world wide Technical Support Centers are listed on the Compaq website. Access the Compaq website by logging on to the Internet at http://www.compaq.com.

Be sure to have the following information available before you call Compaq:

- Technical support registration number (if applicable)
- Product serial number (s)
- Product model name(s) and numbers(s)
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level
- Detailed, specific questions

Compaq Website

The Compaq website has information on this product as well as the latest drivers and Flash ROM images. You can access the Compaq website by logging on to the Internet at http://www.compaq.com.

Compaq Authorized Reseller

For the name of your nearest Compaq Authorized Reseller:

- In the United States, call 1-800-345-1518.
- In Canada, call 1-800-263-5868.
- Elsewhere, see the Compaq website for locations and telephone numbers.

[1] For continuous quality improvement, calls may be recorded or monitored.

Chapter **1**

Server Features

The dual processor capable *ProLiant*™ DL360 Generation 2 server offers state-of-the-art performance and on-board management with high availability and tool-free serviceability in a dense rack-mount chassis. This robust 1U [4.45 cm (1.75 inches)] server supports rapid deployment and configuration flexibility, making it an unbeatable computing solution for high-density server requirements.

A generation identifier (G2), located on the front of the server, indicates the model of the server purchased. The generation identifier is required to accurately identify the model for service and support. Throughout the user documentation, G2 and Generation 2 are used interchangeably.

ProLiant DL360 Generation 2 Server

The Compaq ProLiant DL360 G2 server supports the latest processor and system architecture technology, including the following components:

- Dual-processor capability with Intel Flip-Chip Pin Grid Array (FC-PGA2) Pentium III processors with speeds greater than 1.13 GHz
- Synchronous DRAM (SDRAM) error-checking and correcting (ECC) memory, which may be upgraded to a 4 GB maximum
- Integrated Smart Array 5i Controller to provide Ultra3 RAID capability
- Integrated Lights Out (iLO) Management Port
- Two 1-inch hot-plug SCSI hard drive bays.
- Two Compaq NC7780 Gigabit server NICs.

- ROM-Based Setup Utility (RBSU)
- Redundant ROM
- 133-MHz front-side bus technology
- Two 64-bit/3.3V/66-MHz full-length PCI expansion slots
- Front bezel system LEDs and rear NIC activity LEDs
- Front and rear Unit identification LED switches with software control of LEDs
- 24X low profile CD-ROM drive
- 1.44 MB Diskette drive
- Toolless serviceable chassis
- Toolless mounting fixed rails or optional sliding rails that attach to the Universal rack rails. Adjustable Telco rack rails.
- Internal modular, reduced cabling design

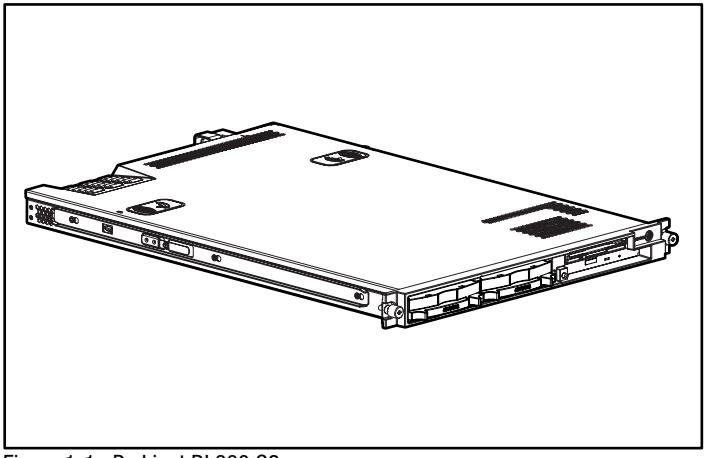

Figure 1-1. ProLiant DL360 G2 server

The combination of features, performance, form factor, and Compaq manageability continue to make this platform ideal for ISP/Communications, file and print management, Web, email, or small database applications.

Industry Support

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

Customer Support

Compaq servers are backed by comprehensive and flexible customer support programs. See "About This Guide" and refer to your Compaq *SmartStart*™ for Servers CD for information about contacting Compaq authorized resellers or Compaq authorized service providers in your area, or visit the Compaq Customer Services website:

www.compaq.com/services

Standard Features

The features described in the following sections are standard on all Compaq ProLiant DL360 G2 servers, unless otherwise specified.

Processors

ProLiant DL360 G2 servers support the following advanced processor features:

- 512K integrated Level 2 cache
- Dual-processor capability with Intel Pentium III FC-PGA2 processors
- 133-MHz front-side bus technology
- Dual Socket 370 FC-PGA2 Pentium III processors using ServerWorks HE-SL Chipset.
- Support for future Intel Pentium III processors

System Memory

ProLiant DL360 G2 servers support the following memory features:

- 133-MHz registered SDRAM memory
- ECC memory for single-bit memory error correction and multi-bit memory error detection
- Interleaved dual DIMM base configuration
- Dual DIMM upgrade
- System memory expandable to 4 GB

Integrated Lights-Out

The primary capabilities of Integrated Lights-Out include:

- Dedicated LAN network connectivity through the dedicated iLO Management Port
- Remote control of the server regardless of the state of the server operating system (Text only. A graphics console, with full keyboard and mouse controls, is available as a separate option)
- Remote cycling of server power to initiate a cold reboot
- Server reboot from remote media (available as a separate option)
- Virtual power button to allow remote powering up/down of server
- Browser support for Internet Explorer
- Integration with *Compaq Insight Manager*™

Expansion Slots

ProLiant DL360 G2 servers provide support for peripheral components. The PCI riser board assembly has two full-length 64-bit/3.3V/66-MHz PCI expansion slots.

SCSI Subsystem

ProLiant DL360 G2 servers include a Wide Ultra3 SCSI subsystem with the following features:

- One internal SCSI port supporting two internal hot-plug SCSI hard drives
- Maximum data transfer of 160 MB/s on SCSI bus

Smart Array 5i Controller

Features of the Smart Array 5i Controller include:

- 32 MB total memory, 16 MB used for code with 16 MB for transfer buffers and read cache
- Support for two internal Wide Ultra3 SCSI hot-plug hard drives in RAID 0 and RAID 1 configurations
- Easy-to-use Array Configuration Utility
- Option ROM Configuration for Arrays
- Performance monitoring, Pre-Failure Notification, and Pre-Failure Warranty through Compaq Insight Manager XE
- Online capacity expansion
- Support for low voltage differential SCSI devices

Standard Network Interface Controllers

The standard NICs provided with a ProLiant DL360 G2 server have the following features:

- Two Compaq NC7780 Gigabit server NICs
- Auto-sensing LAN capable of 10/100/1000 Mbps
- Full-duplex Ethernet for two-way transmission
- PXE support

Mass Storage Devices

The ProLiant DL360 G2 server can house two mass storage devices (Figure 1-2). Standard configurations for drive bays include:

- Support for two 1-inch, hot-plug SCSI hard drives ❶ and ❷
- A fixed, low-profile 3.5-inch diskette drive ❸
- Low profile CD-ROM drive ❹

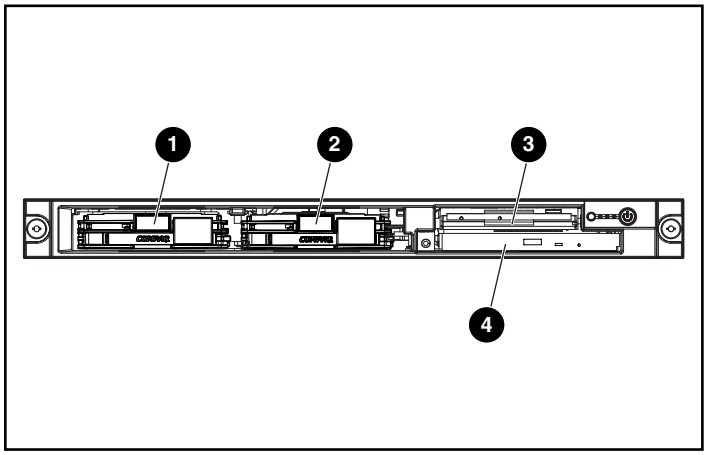

Figure 1-2. ProLiant DL360 G2 server drive bay positions (front view)

Standard Interfaces

The server is equipped with the following standard interfaces (see Chapter 4, Fig 4-10):

- Serial connector (teal)
- Video connector (blue)
- Keyboard connector (purple)
- Mouse connector (green)
- Two Ethernet RJ-45 network connectors
- Two USB ports (black)
- Single RJ-45 Integrated Lights Out (iLO) Management Port
- IDE interface for a CD-ROM
- Floppy interface for a diskette drive

- Remote Insight connector (30-pin) on system board for Compaq Remote Insight Lights-Out Edition card

Video

Standard video integration in ProLiant DL360 G2 servers include:

- Integrated ATI Rage XL 1280 × 1024,16M color video
- Support for SVGA, VGA, and EGA graphics resolution
- 8-MB SDRAM video memory

ROM

Compaq ROM features include:

- Redundant ROM support
- Software-upgradable firmware including diagnostics
- *ROMPaq*™ utility used to upgrade system ROM

Power Supply

The ProLiant DL360 G2 standard power supply includes:

- 200-W power supply
- Auxiliary power supply output for Integrated Lights Out Management and Compaq Remote Insight Lights-Out Edition PCI board.

LED Indicators

The ProLiant DL360 G2 server contains several sets of LEDs that indicate the status of hardware components and settings. For a detailed explanation of LEDs, see Appendix C, “Status LED Indicators.”

Optional Rack Deployment Solutions

The ProLiant DL360 G2 server supports several rack deployment options.

Sliding Rail and Cable Management System Option

The universal rack rail allows the mounting of either fixed or sliding rails. The sliding rail and cable management system option allows the ProLiant DL360 G2 server to be mounted on sliding rails that support in-rack serviceability. Rack depths of 24 in (61 cm) to 36 in (91 cm) are supported. The cable management system provides a clean, effective way to route server cables.

The following figure shows the server extending from the rack on optional sliding rails.

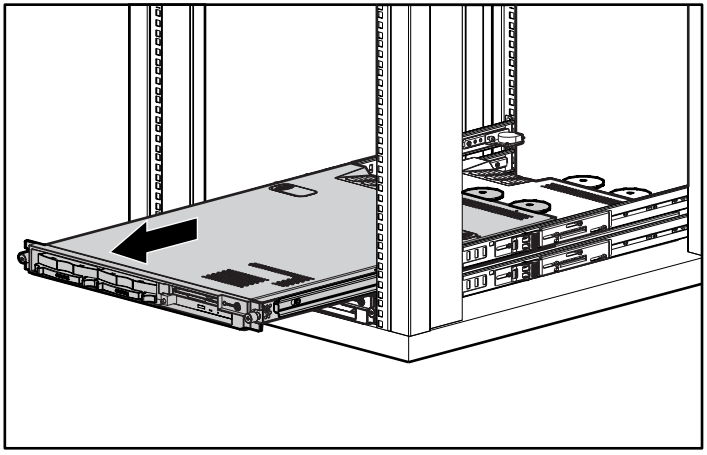

Figure 1-3. Extending the server on sliding rails

The cable management system channels the server cables along the back of the server and to connection points on the rack.

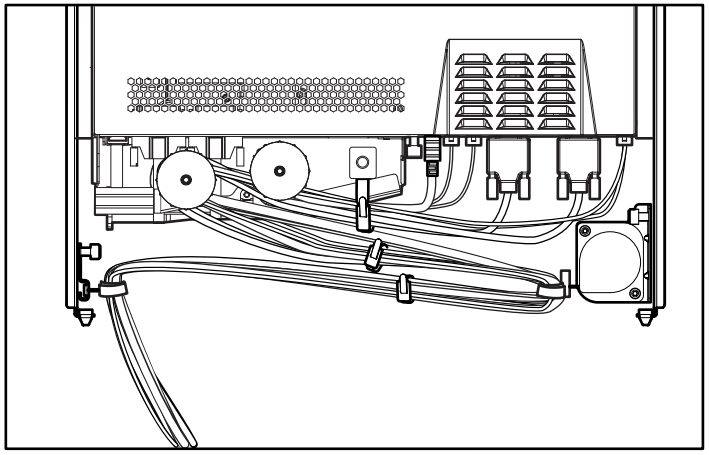

Figure 1-4. Cables routed at the rear of the server

Telco Rack Option

The Telco option contains a set of variable-depth rack brackets that support installation of the ProLiant DL360 G2 server into Telco racks of rail thickness from 3 to 5 inches (7.62 to 12.7cm). These brackets adjust to fit several types of Telco racks, and the kit contains mounting screws.

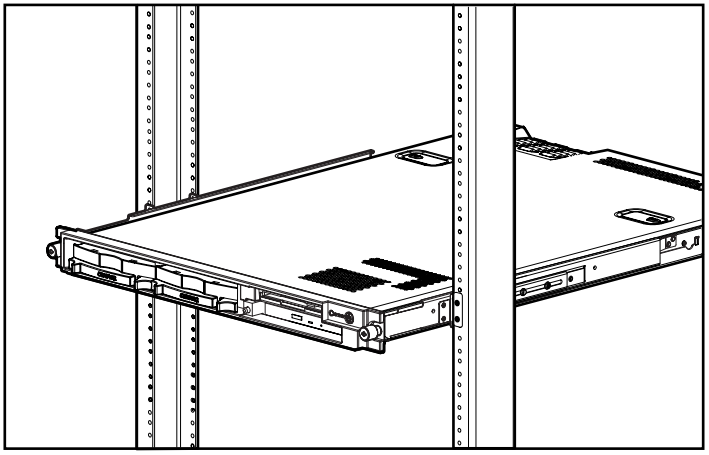

Figure 1-5. Server mounted in Telco rack

Server Configuration and Management

Compaq offers an extensive set of features and optional tools to support server configuration and management. This section briefly explains the following features:

- ROM-Based Setup Utility (RBSU)

  RBSU performs a wide range of configuration activities and provides access to numerous settings, including those for system devices, operating system selection and boot controller order.

- Redundant ROM Support

  The ProLiant DL360 G2 server has a 2-MB ROM that acts as separate, 1-MB ROMs one of which contains the current version of the ROM firmware, while the second contains the previous version of the firmware. If the first ROM becomes corrupt, the system defaults to the backup version, maximizing uptime and server availability.

- ROMPaq Utility

  Flash ROM enables you to upgrade the firmware (BIOS) with system or option ROMPaq utilities.

- Remote ROM Flash Utility

  The Remote ROM Flash Utility enables a user with administrator privileges to flash ROM remotely on servers running Novell NetWare or Microsoft Windows NT and Windows 2000 operating systems.

- ROM Legacy USB Support

  The ProLiant DL360 G2 server supports several USB devices for operating systems that provide USB support of: CD-ROM, diskette drive, keyboard, and mouse. For operating systems without USB support, the ProLiant DL360 G2 server ROM provides USB support for keyboards and mouse devices.

- Compaq SmartStart for Servers CD

  The SmartStart CD is the recommended method for loading system software, thereby achieving a well-integrated server, ensuring maximum dependability and supportability.

- SmartStart Diskette Builder

  The SmartStart Diskette Builder is a utility that uses data stored on the SmartStart CD to create support diskettes. Support diskettes may be created for specific configuration needs or for software that cannot be used directly from the SmartStart CD.

- SmartStart Scripting Toolkit

  The SmartStart Scripting Toolkit is a set of DOS-based utilities that allow configuration and deployment of servers in a customized, predictable, and unattended manner. These utilities provide scripted server and array replication for mass server deployment and duplication of a configured source server onto target systems with minimum user interaction.

- Compaq Insight Manager XE

  Compaq Insight Manager XE is installed from the Compaq Management CD and is an easy-to-use software utility for collecting information on server performance. Data, including fault conditions, security alerts, remote management, and recovery services are recorded.

- Compaq Diagnostics Utility

  The Diagnostics utility displays information about the server hardware and tests the system to ensure it is operating correctly.

- Automatic Server Recovery (ASR-2)

  ASR-2 enables the server to boot automatically from either the operating system or the Compaq utilities. If there is a critical system failure, ASR-2 automatically restarts the server and pages a designated system administrator.

- Integrated Management Log (IML)

  The IML provides a detailed log of key system events. This log, which also monitors the server health log, is accessible by utilities, including Compaq Insight Manager XE and Integrated Lights-Out (iLO) Management.

For more detailed information about these tools and utilities, see Chapter 8, "Server Configuration and Utilities" or refer to the SmartStart documentation, the Server Setup and Management Pack, and the Documentation CD shipped with your server.

Security Features

Security features for the ProLiant DL360 G2 server include:

- Power-on password
- Administrator password
- Network server mode

- QuickLock
- Diskette drive control
- Diskette write control
- Diskette boot override
- Serial interface control
- Configuration lock
- NVRAM write protect

Standard security features are configured through the Compaq RBSU. To access these settings, see Chapter 8, "Server Configuration and Utilities."

For additional information about server security features, refer to the Documentation CD and the SmartStart CD shipped with the server.

Diagnostic Tools

Software and firmware diagnostics tools available for use with the ProLiant DL360 G2 include:

- Power-On Self-Test
- Diagnostics
- Compaq ROMPaq utilities to upgrade flash ROM
- Automatic Server Recovery-2

For information concerning Compaq diagnostic tools, refer to the Documentation CD shipped with the server.

Warranties and Services

The ProLiant DL360 G2 server has the following standard services and warranties:

- Three-Year, On-Site, Limited Global Warranty
- Next Business Day Response
- Pre-Failure Warranty

Three-Year, On-Site, Limited Global Warranty

Compaq covers the cost of necessary parts and labor for on-site service during the specified warranty periods. Under the global warranty, product warranty terms at the time of purchase are honored in any country where Compaq has a service presence. This applies to customers who may purchase a product in one country, then transfer it to another.

IMPORTANT: Customers moving Compaq products between certain countries or regions are asked to provide information needed to ensure that Compaq is prepared to provide the required level of warranty service in the destination country. For information on the Compaq Global Warranty Notification Process, contact your Compaq sales representative or Compaq authorized reseller, or contact Compaq directly:

www.compaq.com/support

Next Business Day Response

Response time is based on commercially reasonable best efforts. In most cases, Next Business Day response is available. In some regions and under certain supplier restraints, Next Business Day response is not always possible. In many areas, response uplifts are available for a fee. Contact your local Compaq service organization for response time and availability in your area.

Pre-Failure Warranty

The ProLiant DL360 G2 server includes a Pre-Failure Warranty for processors, hard drives, and memory purchased from Compaq through Compaq authorized resellers. Under the terms of this warranty, supported components are eligible for replacement before they actually fail provided that you use Compaq Insight Manager XE and that the system determines that the supported components have degraded below predetermined reliability thresholds within the product warranty period.

Chapter **2**

Planning the Server Installation

This chapter provides information and instructions for planning the installation of a new Compaq server. Figure 2-1 illustrates multiple ProLiant DL360 G2 servers installed in a rack.

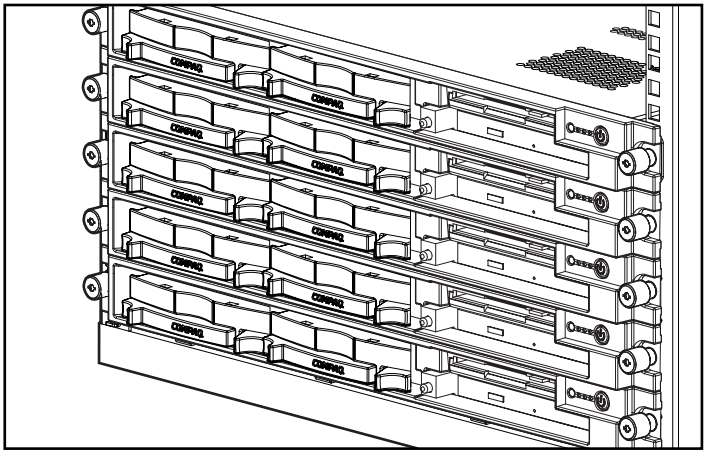

Figure 2-1. ProLiant DL360 G2 servers installed in a rack

The following sections describe the server and site preparation requirements needed for the safe and correct installation of a server. This preparation includes:

- Optimum environment considerations
- Rack planning resources
- Rack warnings

- Server warnings and cautions
- Server shipping contents
- Optional installation service

If multiple ProLiant DL360 G2 servers are to be deployed in a single rack, consult the multiple server deployment white papers on the Compaq website:

www.compaq.com/products/servers/ProLiantdl360

Optimum Environment

When installing a Compaq ProLiant DL360 G2 server in a rack, select a location that meets the environmental standards described in the following paragraphs.

Space and Airflow Requirements

To allow for servicing and adequate airflow, observe the following spatial requirements when deciding where to install a Compaq, Telco, or third-party rack:

- Leave a minimum clearance of 63.5 cm (25 inches) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 inches) in the back of the rack.
- Leave a minimum clearance of 121.9 cm (48 inches) from the back of the rack to the rear of another rack or row of racks.

Compaq servers draw in cool air through the rack front door and expel warm air through the rack rear door. Therefore, the front and rear rack doors must be adequately ventilated to allow ambient room air to enter the cabinet and warm air to escape from the rear of the cabinet.

IMPORTANT: Do not block the ventilation openings.

When there is any vertical space in the rack not filled by servers or rack components, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow.

Compaq 9000 Series racks provide proper server cooling from flow-through perforations in the front and rear doors that provide 64 percent open area for ventilation.

CAUTION: When using a Compaq 7000 Series rack, you must install the high airflow rack door insert [P/N 327281-B21 (42U) and P/N 157847-B21 (22U)] to provide proper front-to-back airflow and cooling.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: if your 42U server rack includes closing front and rear doors, you must allow 5,350 sq cm (830 square inches) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 inches).

CAUTION: Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

Temperature Requirements

To ensure continued safe and reliable equipment operation, install or locate the system in a well-ventilated, climate-controlled environment.

The Compaq maximum recommended ambient operating temperature (TMRA) for most server products is 35°C (95°F). The temperature in the room where the rack is located must not exceed 35°C (95°F).

Power Requirements

WARNING: To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over your facility's wiring and installation requirements.

The installation of this equipment shall be in accordance with local/regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA 75, 1992 Edition (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product's rating label or the user documentation supplied with that option.

When installing more than one server, additional power distribution devices may be required to safely provide power to all devices. Observe the following guidelines:

- The power load must be balanced between available AC supply branch circuits.
- The overall system AC current load must not exceed 80 percent of the branch circuit AC current rating.

Grounding Requirements

For proper operation and safety, the server must be properly grounded. In the United States, you must install the equipment in accordance with NFPA 70, 1999 Edition (National Electric Code) Article 250 as well as any local and regional building codes. In Canada, the equipment must be installed in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code. In all other countries, the installation must follow any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) 364, parts 1 through 7. Furthermore, you must ensure that all power distribution devices used in the installation—such as branch wiring and receptacles—are listed or certified grounding-type devices.

Because of the high ground leakage currents associated with multiple servers connected to the same power source, Compaq recommends the use of a power distribution unit (PDU) that is either permanently wired to the building's branch circuit or includes a non-detachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Compaq does not recommend using common power outlet strips for this equipment.

Rack Planning Resources

The following resource information is available on rack designs and products.

The Rack Builder Pro Configuration Tool and Rack Products documentation information can be found on the Compaq website:

www.compaq.com/support/files/storage/index.html

The entire Rack Resource CD Kit ships with all Compaq racks. A summary of the content of each CD follows:

- Rack Builder Pro Configuration Tool

This information aids in simulating possible configurations in a Compaq rack. Rack Builder Pro provides the following information:

- Graphical preview of properly configured racks
- Site planning data, including power requirements, cooling mandates, and physical specifications
- Ordering information, including required components, part numbers, and appropriate quantities

- Installing Rack Products video

  This video provides a visual overview of operations required for configuring a Compaq rack with rack-mountable components. It also provides the following important configuration steps:

  - Site planning
  - Installing rack servers and rack options
  - Cabling
  - Coupling racks

- Rack Products Documentation CD

  The information on this CD allows viewing, searching, and printing of documentation for Compaq racks and rack options. It also helps set up and optimize new Compaq racks in a manner suitable for the server environment.

Rack Warnings

Before installing a rack, ensure you read and understand the following warnings:

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

WARNING: To reduce the risk of personal injury or equipment damage, ensure that:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizers are attached to the rack for single-rack installation.
- The racks are coupled together in multiple-rack installations.

WARNING: When installing the server in a Telco rack, ensure that the rack frame is adequately secured to the top and bottom of the building structure.

WARNING: To reduce the risk of personal injury or equipment damage, at least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and may become unstable when being moved on its casters.

Never stand in front of the rack when it is rolling down the ramp from the pallet; always handle the rack from both sides.

CAUTION: Always begin by mounting the heaviest item on the bottom of the rack. Continue to populate the rack from the bottom to the top.

Server Warnings and Cautions

Before installing your server, ensure you understand the following warnings and cautions:

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

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.
- Unplug the power cord from the power supply to disconnect power to the equipment.

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

CAUTION: Do not operate the server for long periods without the access panel. Operating the server without the access panel results in improper airflow and improper cooling that can lead to thermal damage.

Server Shipping Contents

Unpack the server shipping carton and locate the materials and documentation necessary for installing a server. All of the rack-mounting hardware necessary for installing the ProLiant DL360 G2 server into the rack is included with the server.

The contents of the server shipping carton include the following:

- Compaq ProLiant DL360 G2 server
- Hardware documentation, reference information, and software products
- Power cord
- Rack-mounting hardware (Figure 2-2 and Table 2-1)

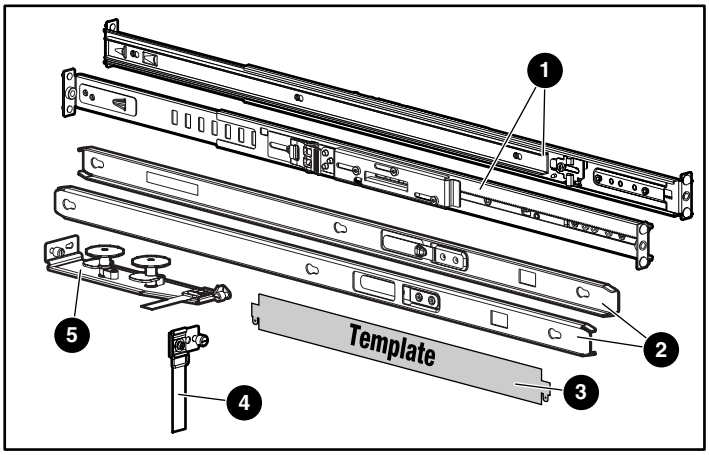

Figure 2-2. Rack-mounting hardware

Table 2-1
Rack-Mounting Hardware

Item	Description
❶	Universal rack rail assembly with fixed rail insert
❷	Server fixed rails (Factory mounted on server)
❸	Measuring template
❹	Velcro strap
❺	Fixed cable tray

In addition to these supplied items, you may need the following items:

- Application software diskettes
- Options to be installed

Optional Installation Service

Compaq will install server systems. The installation service can be purchased as a *CarePaq*™ packaged service or as a customized service agreement to meet specific requirements. Some of the CarePaq services are as follows:

- CarePaq Installation Services for Hardware
- CarePaq Hardware and Operating System Installation for ProLiant DL360 G2 Servers

- CarePaq Installation and Start-up Services for Microsoft Windows 2000 and Windows NT operating systems
- CarePaq Installation and Start-up and Migration Services for Novell NetWare operating system
- CarePaq Installation and Start-up Services for Compaq Insight Manager

Visit the Compaq website for detailed descriptions of these CarePaq services. This method helps ensure top performance right from the start and is especially valuable for business-critical environments.

This optional hardware installation service is available in all countries where Compaq has a direct or indirect service presence. Service may be ordered from and directly provided by a Compaq authorized service reseller or, in the United Sates only, service may be ordered by calling 1-800-OK-COMPAQ. In the United States, Compaq makes all of the arrangements to have the system installed by qualified guaranteed service providers. For U.S. ordering information, refer to the Compaq services website:

www.compaq.com/services/carepaq/us/install

For worldwide ordering information, refer to the Compaq services website:

www.compaq.com/services/carepaq/install

Chapter **3**

Installing Hardware Options

If there are no options to be installed in the server, proceed to Chapter 4, "Server Installation".

This chapter provides information and procedures for installing hardware options on Compaq ProLiant DL360 G2 servers. For complete instructions, refer to the installation documentation shipped with each option kit. Refer to the following items for an illustrated guide to installing Compaq options:

- Hardware installation and configuration poster shipped with the server
- Labels attached to the inside of the system unit access panel

To streamline the installation process, read the installation instructions for all of the hardware options and identify similar steps prior to installing the hardware options.

After all hardware options have been installed, proceed with the server installation procedures in Chapter 4, "Server Installation."

If any problems are encountered during installation, contact your Compaq authorized reseller.

WARNINGS: To reduce the risk of personal injury or damage to the equipment:

- Heed all warnings and cautions throughout the installation instructions.
- Allow internal system components to cool before touching any surfaces.
- Ensure that the power to the server is turned off and that the AC power cord is disconnected before removing the access panel.

CAUTION: Always ensure that equipment is properly grounded before beginning any installation procedure. Electrostatic discharge resulting from improper grounding can damage electronic components. For more information, refer to Appendix B, "Electrostatic Discharge."

Hardware Option Procedures

This chapter includes step-by-step instructions for the following items:

- Preparing the server
  - Powering down the server
  - Removing the server from the rack
  - Removing the access panel
  - Installing the access panel
  - Identifying system board components
- Upgrading a processor
  - Removing a processor
  - Installing a new processor and PPM
- Installing DIMMs
- Installing an expansion board
  - Identifying expansion slots
  - Removing the PCI riser board assembly
  - Installing an expansion board
- Removing the CD-ROM drive
- Installing the CD-ROM drive
- Removing a floppy disk drive
- Installing a floppy disk drive
- Removing hot-plug SCSI hard drive blanks
- Installing hot-plug Wide Ultra3 SCSI hard drives

Other Options

The ProLiant DL360 G2 server supports several rack-mounting options. For more information, see "Optional Rack Deployment Solutions" in Chapter 1, "Server Features."

For more information about these options, contact your Compaq authorized reseller.

Preparing the Server

To prepare the server for installation of hardware options:

- Power down the server (for servers previously installed and/or operating)
- Remove the server from the rack (for servers previously installed and/or operating)
- Remove the access panel
- Identify the system board components

Powering Down the Server

To install most hardware options, all power must be removed from the system. To power down the server before installing the hardware options:

1. Prior to installing hardware options, back up the server data.
2. Shut down the operating system as directed by the operating system instructions.

3. Press the front Unit Identification (UID) switch on the server ❶. An LED illuminates within the front and rear UID switches.

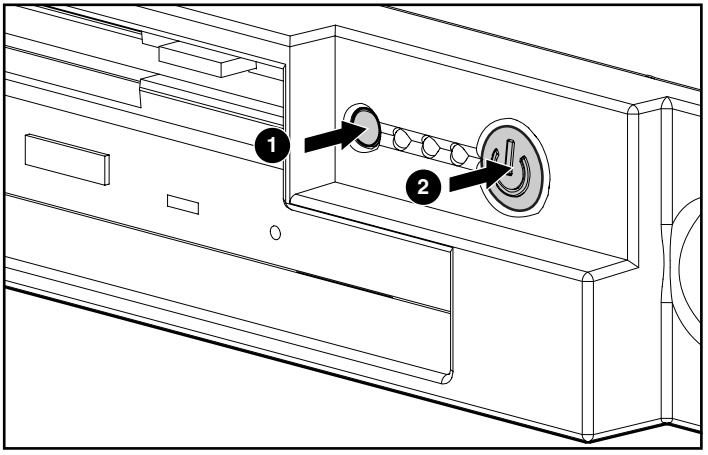

Figure 3-1. Activating the Front Unit Identification switch on the front panel and setting the Power On/Standby switch to the standby power mode

4. Press the server Power On/Standby switch to place it in standby mode ❷. The Power LED within the Power On/Standby switch turns to amber when the server activates standby power mode.

WARNING: The system power in the ProLiant DL360 G2 server is not completely shut off by pressing the front panel Power On/Standby switch. Placing the server Power On/Standby switch in the standby position removes power from most areas of the server; this process may take 30 seconds. Portions of the power supply and some internal circuitry remain active until AC power is removed.

5. At the rear of the rack locate the server being powered down by identifying the illuminated rear Unit Identification LED switch.

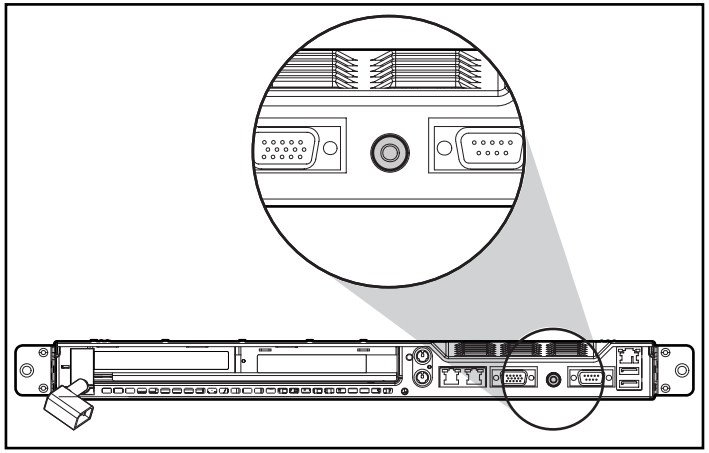

Figure 3-2. Locating the Rear Unit Identification LED switch on the rear panel

6. Disconnect the power cord from the server.

The system is now without power and ready to be removed from the rack for the installation of hardware options.

Removing the Server from the Rack

1. Disconnect all the cables from the server rear panel (including cables extending from expansion boards), moving from left to right ❶.

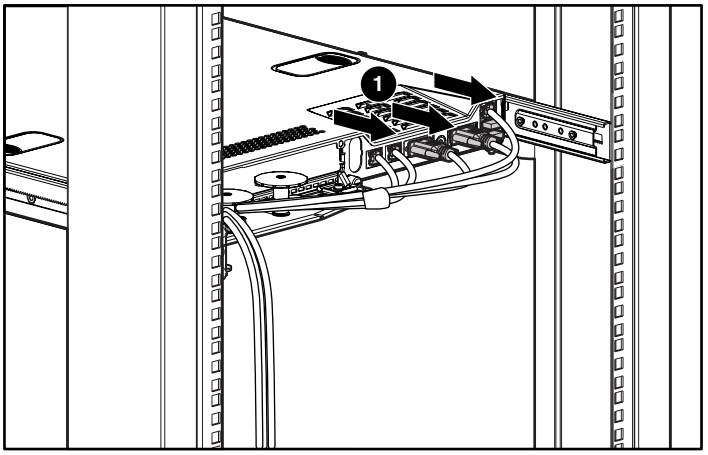

Figure 3-3. Disconnecting cables from the server rear panel

2. Fully loosen the thumbscrew that secures the fixed cable tray to the server.

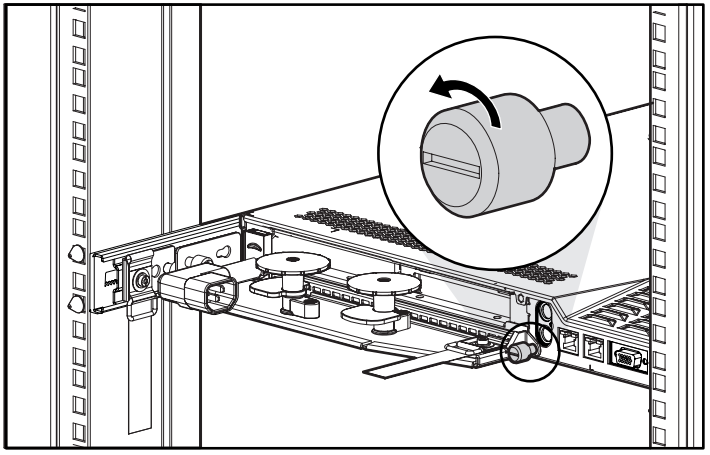

Figure 3-4. Loosening the thumbscrew that secures the fixed cable tray to the server (cables removed for clarity)

3. Move to the front of the rack.
4. Loosen the front panel thumbscrews.

5. Grasp the front panel thumbscrews and extend the server from the rack until the rail-release latches engage. The cables will remain wrapped in the fixed cable tray.

6. Press in and hold the rail-release latches ❶.

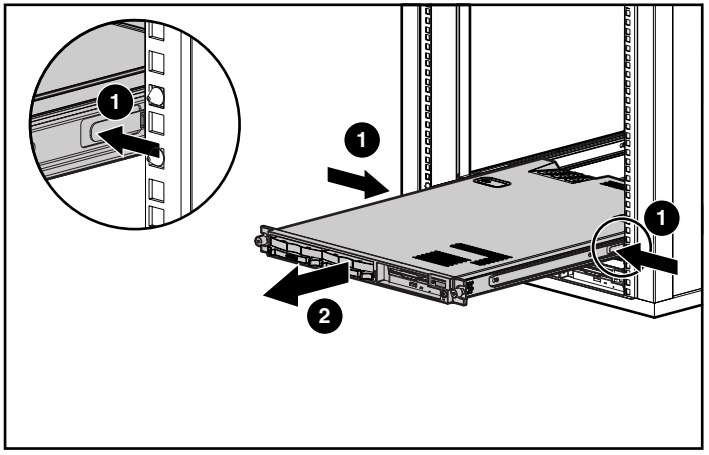

Figure 3-5. Disengaging the rail-release latches

WARNING: Avoid personal injury when pressing the rail-release latches and sliding the server into or out of the rack. The rail-release latches can pinch your fingertips.

7. Holding the rail-release latches, extend the server until the latches clear the front of the rack.

8. Pull the server completely out of the rack ❷, and set it on a flat, level surface.

Access Panel Warnings

To access the system board, processors, memory sockets, expansion slots, and other internal components, the access panel must be removed. Observe the following warnings and cautions.

WARNING: The system power in the ProLiant DL360 G2 server is not completely shut off by pressing the front panel Power On/Standby switch. Moving the server Power On/Standby switch to the standby position removes power from most areas of the server; this process may take 30 seconds. Portions of the power supply and some internal circuitry remain active until AC power is removed.

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

CAUTION: Do not operate the server without the access panel installed because it is required for proper airflow. Operating the server without its access panel results in improper cooling that can lead to thermal damage.

CAUTION: Before removing the server access panel, be sure that the server is in standby mode and that the power cord is disconnected from the server or the electrical outlet.

CAUTION: To avoid the risk of damage to the system or expansion boards, remove all AC power cords before installing or removing expansion boards. When the Power On/Standby switch is in the standby position, auxiliary power is still connected to the PCI expansion slot and may damage the card.

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any installation procedure.

Removing the Access Panel

To remove the access panel:

1. If the server is operating, power down the server. See "Powering Down the Server" earlier in this chapter.
2. If the server is installed in a rack, remove the server from the rack. See the preceding section, "Removing the Server from the Rack."

   NOTE: If the rack management solution option (slide rails and a cable management system) is installed, many hardware procedures may be performed without removing the server from the rack. For more information, see "Optional Rack Deployment Solutions" in Chapter 1, "Server Features."

3. Press and hold down the hood latches ❶.
4. Holding the latches down, slide the access panel toward the rear of the unit about 0.5 inch (1.25 cm) and lift the panel to remove it ❷.

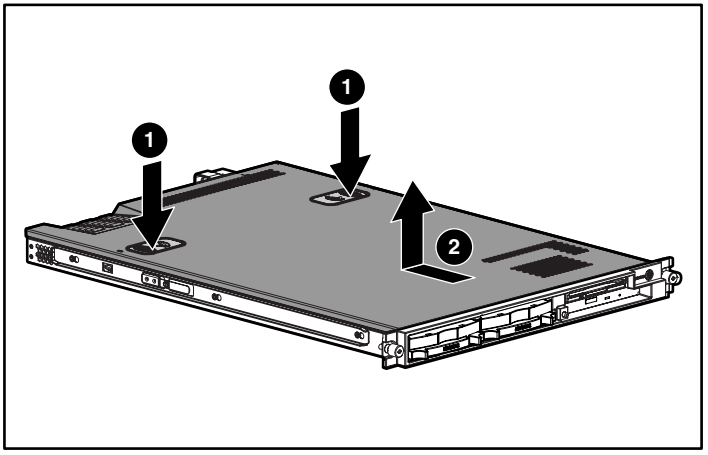

Figure 3-6. Pressing the hood latches and removing the access panel

Installing the Access Panel

To replace the server access panel after installing hardware options for the ProLiant DL360 G2 server:

1. Set the access panel on top of the server, aligning the sides of the panel with the server and allowing the panel to extend past the rear of the server approximately 0.5 inch (1.25 cm) ❶.
2. Slide the access panel toward the front of the unit about 0.5 inch (1.25 cm) ❷. When the panel seats properly, the hood latches click (audibly) into place.

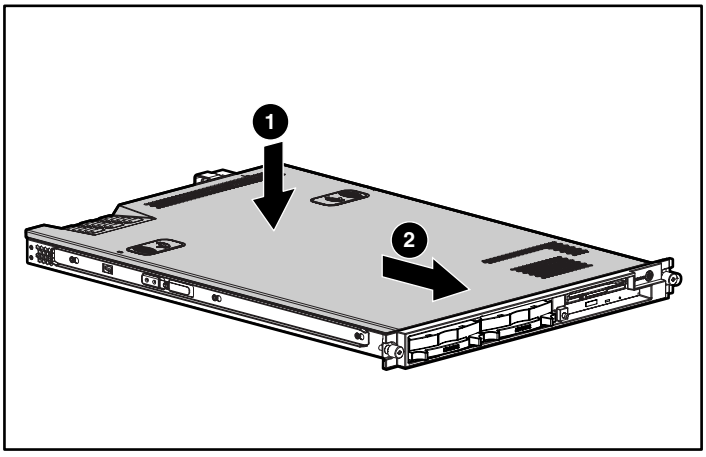

Figure 3-7. Installing the access panel

Identifying System Board Components

Use Figure 3-9 and Table 3-1 to identify the system board connectors and components.

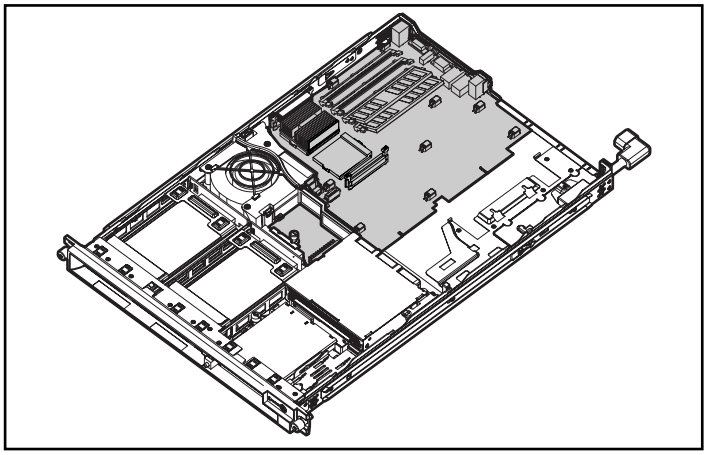

Figure 3-8. Locating the system board in the ProLiant DL360 G2 server (PCI riser board removed for clarity)

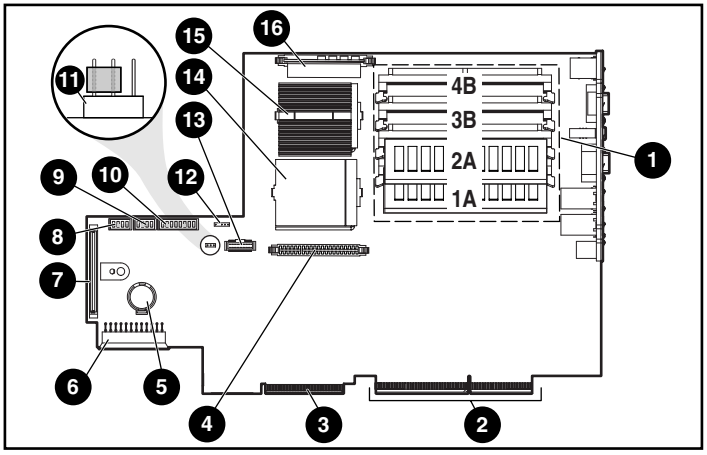

Figure 3-9. Identifying system board components

Table 3-1
System Board Connectors and Components

Location	Component	Location	Component
❶	DIMM sockets (1-4)	❾	System configuration switch (SW3)
❷	PCI riser board assembly connector	❿	System configuration switch (SW4)
❸	CD-ROM and diskette drive backplane cable connector	⓫	Integrated Lights Out (iLO) Security Override Jumper (Non-Override position)
❹	Processor Power Module socket 2	⓬	Fan Connector
❺	RTC battery	⓭	Remote Insight Connector
❻	Power supply connector	⓮	Processor socket 2
❼	Smart Array/SCSI controller interface backplane connector	⓯	Processor socket 1 (populated)
❽	System configuration switch (SW2)	⓰	Processor Power Module 1 (populated)

Upgrading a Processor

ProLiant DL360 G2 servers support dual-processor operation.

CAUTION: Do not mix processors of different types or speeds.

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

To remove or install processors refer to the label attached to the inside of the access panel, to the processor option kit, or use the following procedures. Figure 3-10 and Table 3-2 shows the processor socket locations.

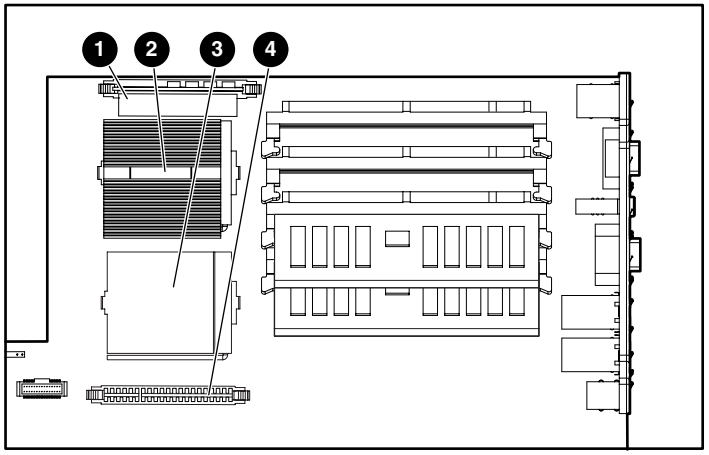

Figure 3-10. Locating processors and sockets

Table 3-2
Processor and Socket Locations

Location	Description
❶	PPM socket 1 (populated)
❷	Processor socket 1 (populated)
❸	Processor socket 2
❹	PPM socket 2

Note: A PPM must be installed with a processor

Removing a Processor

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

To remove an existing processor:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the access panel. See "Removing the Access Panel" earlier in this chapter.
3. Push down on the heat-sink retaining clip to disengage from the retaining tab on the processor socket ❶, ❷.
4. Remove the heat sink and integrated thermal pad from the processor ❸.
5. Lift the processor locking lever ❹.

CAUTION: To ensure correct thermal transfer, do not reuse thermal pads from processors that have been removed from a server.

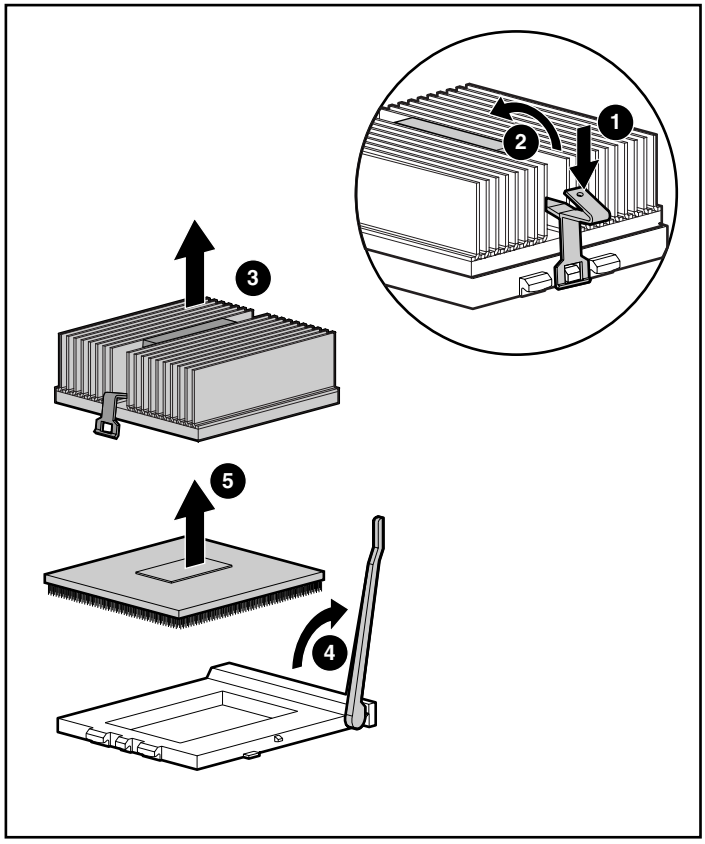

Figure 3-11. Removing a processor from the system board

6. Remove the processor from the socket ❺

7. Install the new processor. See "Installing a New Processor" following this section.

Installing a New Processor

To install a new processor:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the access panel. See "Removing the Access Panel" earlier in this chapter.
3. If a processor is already in the processor socket, remove the processor. See "Removing a Processor" earlier in this chapter.
4. Lift the processor locking lever ❶ and insert the processor ❷ into the vacant processor socket ❸.

IMPORTANT: The processor pins must be aligned to seat the processor into the socket.

5. Close the lever ❶ to lock the processor into the socket.
6. Remove the plastic strip ❹ from a new, unused heat sink ❺ and expose the adhesive side of the integrated thermal pad.

CAUTION: Always install a new thermal pad and heat sink when replacing processors. Failure to use new components may result in processor damage.

7. Place the heat sink onto the processor ❷ ensuring that the pad is centered on the raised portion of the processor.
8. Push down on the heat sink retaining clip ❻, and engage the locking tab, then release the clip to secure the thermal pad and heat sink to the top of the processor.

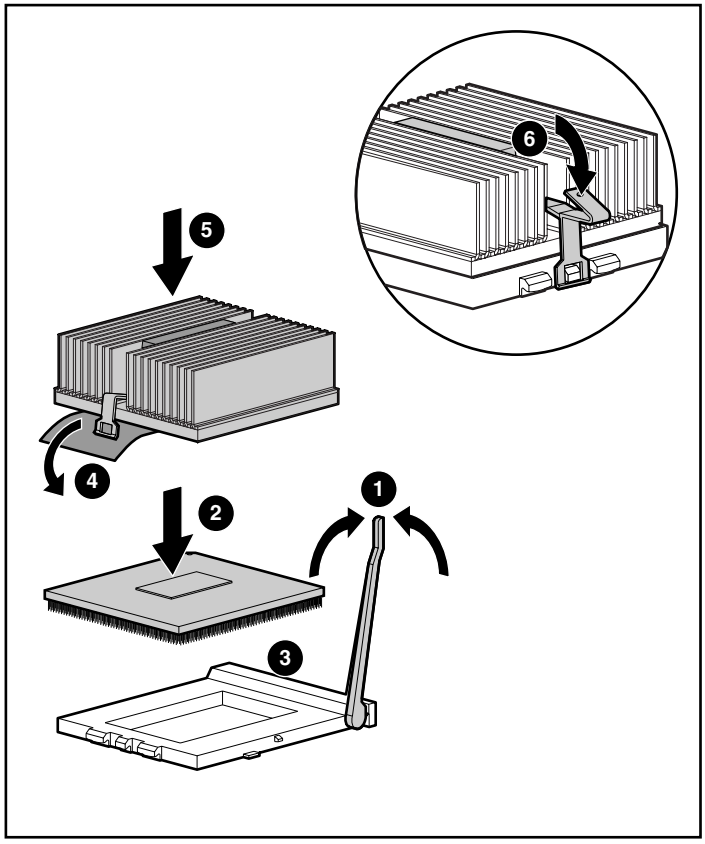

Figure 3-12. Installing a processor

9. If the processor was installed into a previously empty slot a PPM must also be installed. To install a PPM:
   a. Use Figure 3-10 and Table 3-2 to identify the correct PPM socket.
   b. Open the PPM socket latches.
   c. Align the key slot in the bottom edge of the PPM with the key in the PPM socket.
   d. Insert the PPM into the socket ❶. See Figure 3-13.
   e. Press down firmly on the PPM and close the latches ❷.

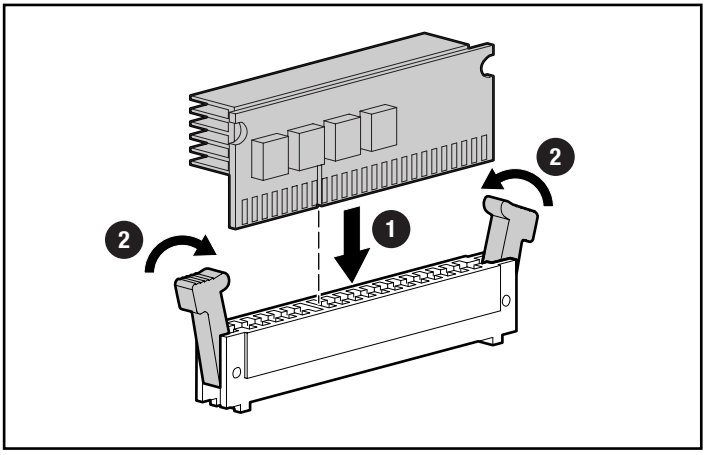

Figure 3-13. Installing a PPM

10. Install the access panel. See “Installing the Access Panel” earlier in this chapter.

Memory

Server memory may be expanded by installing Compaq Synchronous DRAM (SDRAM). The system supports up to four 133-MHz ECC registered SDRAM Dual Inline Memory Modules (DIMMs) installed in sockets on the system board. Identify the DIMM sockets on the system board. Memory must be added two modules at a time.

The server ships with two DIMMs installed in DIMM sockets ❶ and ❷. Server memory may be expanded to 4 GB. In the maximum memory configuration, all four DIMM sockets are populated with 1-GB 133-MHz ECC registered SDRAM DIMMs.

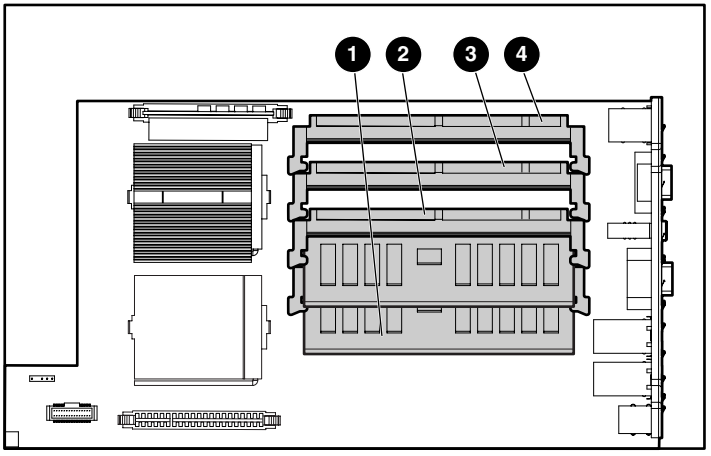

Figure 3-14. Identifying DIMM sockets on the system board

Table 3-3
DIMM Socket Identification

Location	Description
❶	DIMM socket 1 populated with standard 128-MB DIMM
❷	DIMM socket 2 populated with standard 128-MB DIMM
❸	DIMM socket 3
❹	DIMM socket 4

The following guidelines **must** be observed when installing additional memory:

- DIMMs installed in the ProLiant DL360 G2 server must be 133-MHz registered SDRAM, 3.3-volts, 72-bits wide, and ECC.
- DIMMs must be installed in pairs and must be of the same size.

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

The following table lists DIMM option kits.

Table 3-4
DIMM Option Kit Part Numbers

Part Numbers	Description
201692-B21	256-MB (2×128 MB) option kit
201693-B21	512-MB (2×256 MB) option kit
201694-B21	1-GB (2×512 MB) option kit
201695-B21	2-GB (2×1024 MB) option kit

Installing DIMMs

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

To install a DIMM onto the system board:

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the access panel. See "Removing the Access Panel" earlier in this chapter.
3. Use Figure 3-14 and Table 3-3 to identify the correct DIMM sockets.
4. Open the DIMM socket latches.
5. Align the key slot in the bottom edge of the DIMM with the tab in the expansion socket.

IMPORTANT: DIMMs do not seat if turned the wrong way.

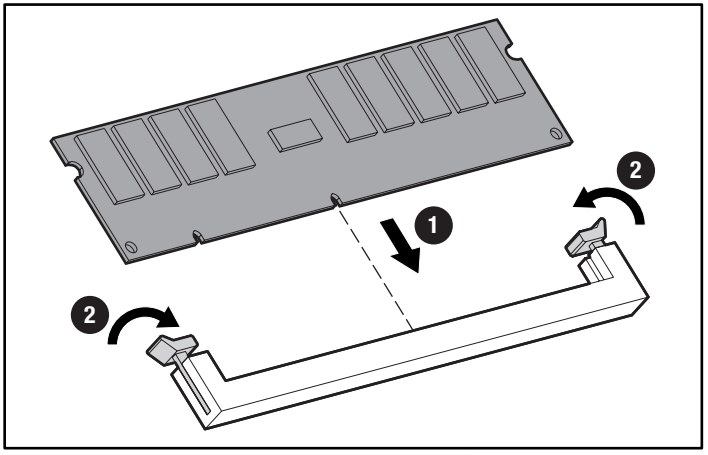

Figure 3-15. Aligning DIMM in a memory expansion socket

6. Insert the DIMM at the same angle as the DIMM socket on the system board ❶. As the DIMM goes into the socket, the latches close ❷.
7. Press down firmly on the DIMM while pushing the latches inward until the latches snap into place.
8. Repeat steps 4 through 7 to install a second DIMM
9. Install the access panel. See “Installing the Access Panel” earlier in this chapter.

Installing an Expansion Board

Installing an expansion board involves:

- Identifying the expansion slot (If option requires placing expansion board into a specific expansion slot)
- Removing the PCI riser board assembly
- Installing the expansion board

Identifying the Expansion Slots

Use Figure 3-16 and Table 3-4 to identify the ProLiant DL360 G2 server expansion slots.

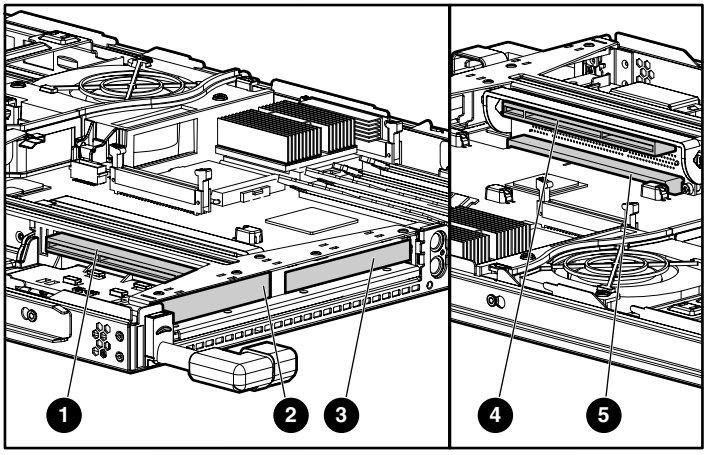

Figure 3-16. Identifying server expansion slots (rear view and side view)

Table 3-4
Expansion Slot Locations

Location	Slot
❶	Slot 1 – 64-bit/3.3V slot with 528-MB/s data transfer
❷	Slot 1 expansion slot cover
❸	Slot 2 expansion slot cover

continued

Table 3-4
Expansion Slot Locations *continued*

Location	Slot
❹	Slot 2 – 64-bit/3.3V slot with 528-MB/s data transfer
❺	System board connector

Removing the PCI Riser Board Assembly

To install expansion boards, remove the PCI riser board assembly from the chassis. Expansion boards are inserted into the riser board before the assembly is reinserted into the chassis.

To remove the riser board assembly:

CAUTION: To avoid the risk of damage to the system or expansion boards, remove all AC power cords before installing or removing expansion boards. When the Power On/Standby switch is in the Standby position, auxiliary power is still connected to the PCI expansion slot and may damage the card.

1. Power down the server. See "Powering Down the Server" earlier in this chapter.
2. Remove the server from the rack. See "Removing the Server from the Rack" earlier in this chapter.
3. Remove the access panel. See "Removing the Access Panel" earlier in this chapter.
4. Disconnect any cables leading from any current expansion boards to the system board.
5. Open the expansion board retaining lever.

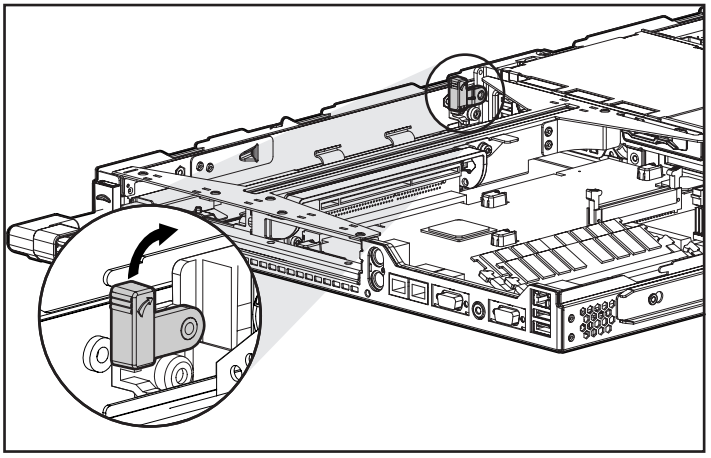

Figure 3-17. Opening the expansion board retaining lever

6. Unlock the PCI riser board assembly locking latch ❶.
7. Lift the PCI riser board assembly ejector ❷ to slide the riser board assembly toward the outside edge of the server ❸.

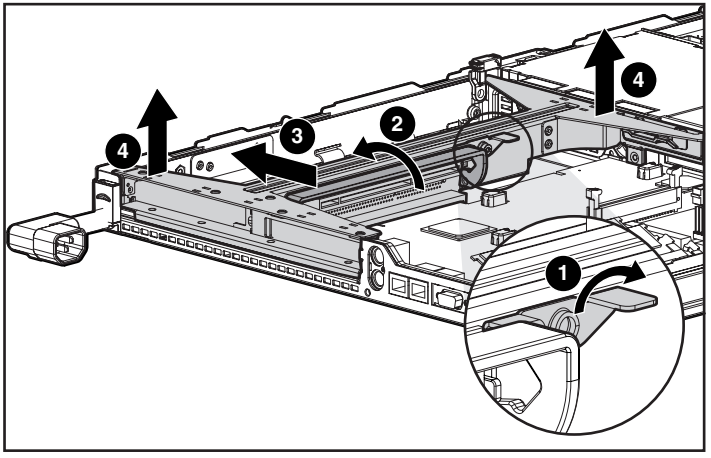

Figure 3-18. Removing the PCI riser board assembly with the ejector

8. Lift the assembly from the server chassis ❹.

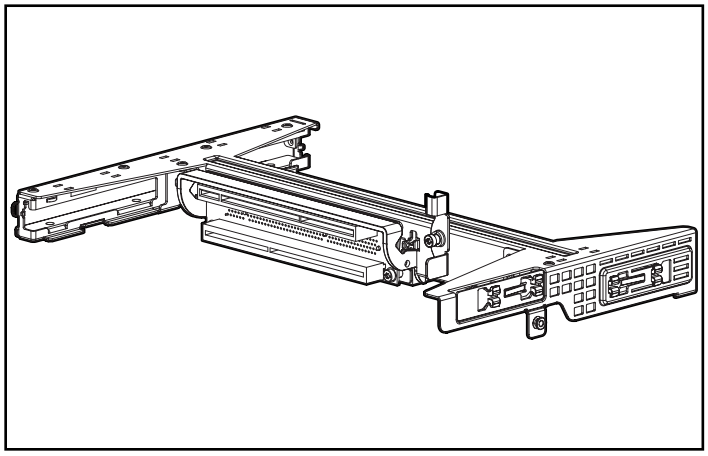

Figure 3-19. The PCI riser board assembly removed from the chassis

Installing an Expansion Board

CAUTION: Do not operate the server unless an expansion board or expansion slot cover is installed in each slot. Failure to do so results in improper cooling that can lead to thermal damage.

To install an expansion board:

1. Power down the server. See “Powering Down the Server” earlier in this chapter.
2. Remove the server from the rack. See “Removing the Server from the Rack” earlier in this chapter.
3. Remove the access panel. See “Removing the Access Panel” earlier in this chapter.
4. Remove the PCI riser board assembly. See “Removing the PCI Riser Board Assembly” earlier in this chapter.

5. To remove the cover in expansion slot 1 (Figure 3-20)

   a. Slide the expansion board retaining clip away from the assembly ❶.

   b. Slide the expansion slot cover laterally until it disengages from the sleeve.

   c. Remove the expansion slot cover ❷.

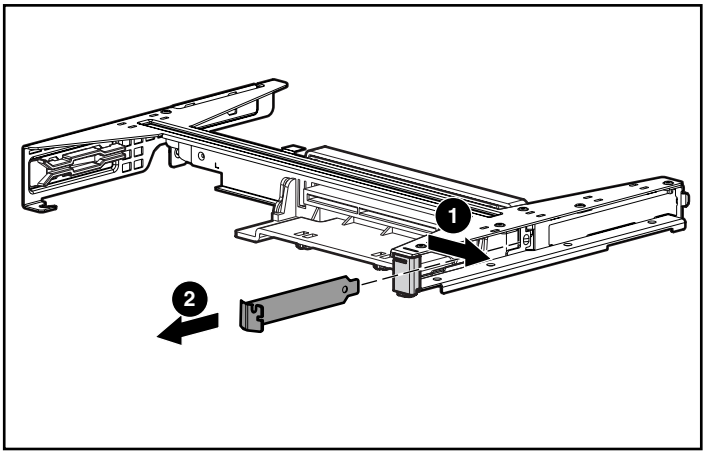

Figure 3-20. Removing the cover from expansion slot 1

6. To install an expansion board into slot 1(Figure 3-21)

   a. Align the expansion board with the slot guide ❶.

   b. Slide the expansion board into the slot and ensure the board seats firmly ❷.

   c. Slide the expansion board retaining clip back into place ❸, securing the end of the expansion board against the assembly.

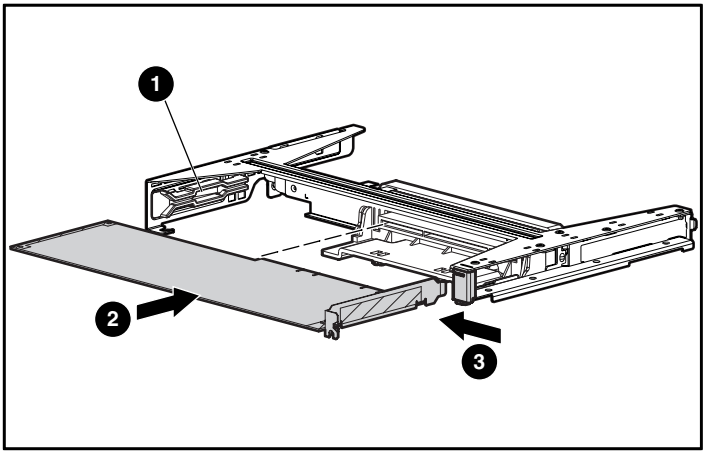

Figure 3-21. Inserting an expansion board into expansion slot 1

7. To remove the cover in expansion slot 2 (Figure 3-22)

   a. Slide the expansion slot cover laterally until it disengages from the sleeve.

   b. Remove the expansion slot cover ❶.

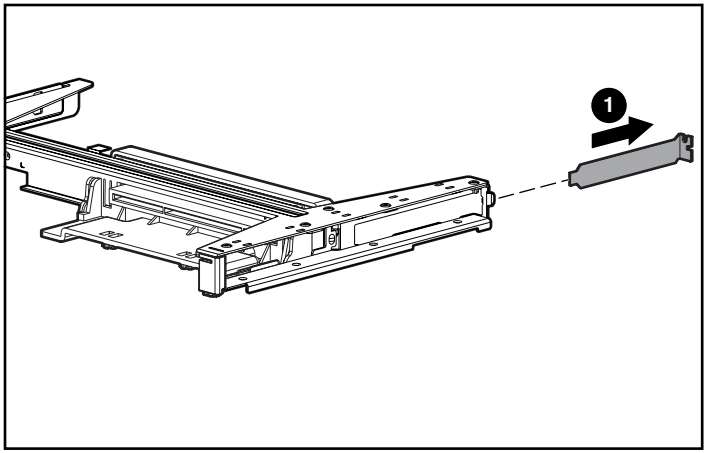

Figure 3-22. Removing the slot cover from expansion slot 2

8. To install an expansion board into slot 2 (Figure 3-23)

   a. Align the expansion board with the expansion slot guide ❶.

   b. Slide the expansion board into the slot and ensure the board seats firmly ❷.

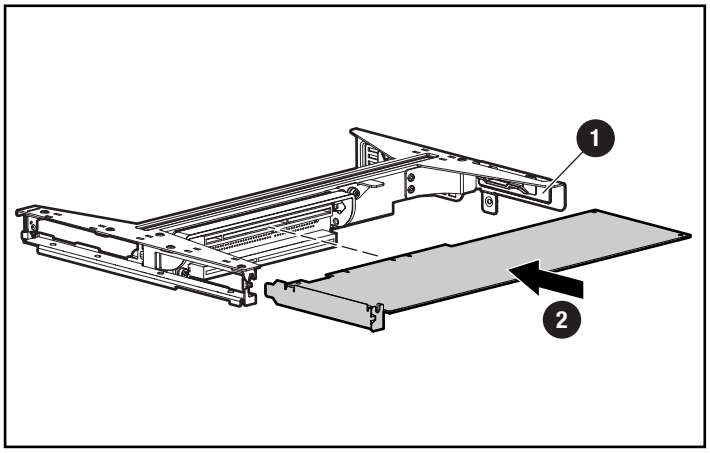

Figure 3-23. Inserting an expansion board into expansion slot 2

9. Replace the PCI riser board assembly:
   a. Align the assembly with the rear and outside edge of the server.
   b. Lower the assembly into the chassis ❶, allowing the assembly to lie flat against the bottom of the server.

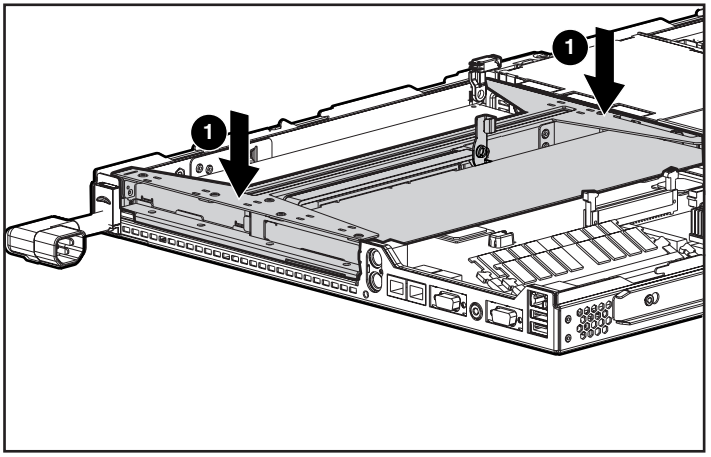

Figure 3-24. Replacing the PCI riser board assembly

   c. Slide the assembly toward the center of the server ❷ until it engages the mounting posts ❸. Ensure that the assembly engages the posts securely.

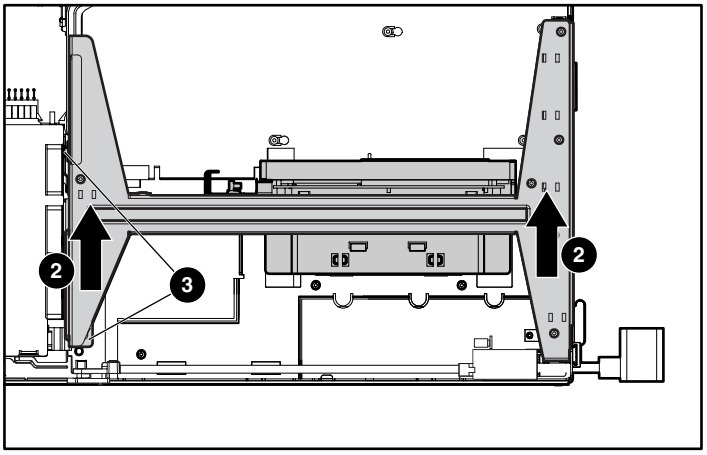

Figure 3-25. PCI riser board assembly seated properly (expansion boards removed for clarity)

d. Press down on the ejector lever to seat the assembly onto the system board ❹. When the assembly is properly seated, the handle is in the fully lowered position.

e. Lock the PCI riser board locking latch ❺.

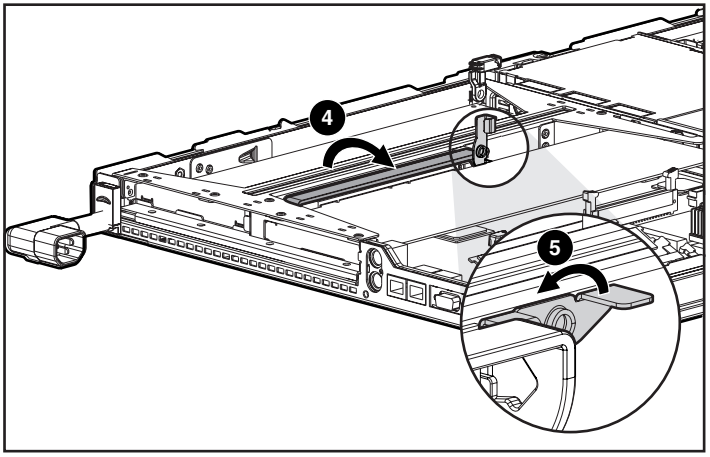

Figure 3-26. Locking the PCI riser board assembly locking latch

10. Close the expansion board retaining lever.

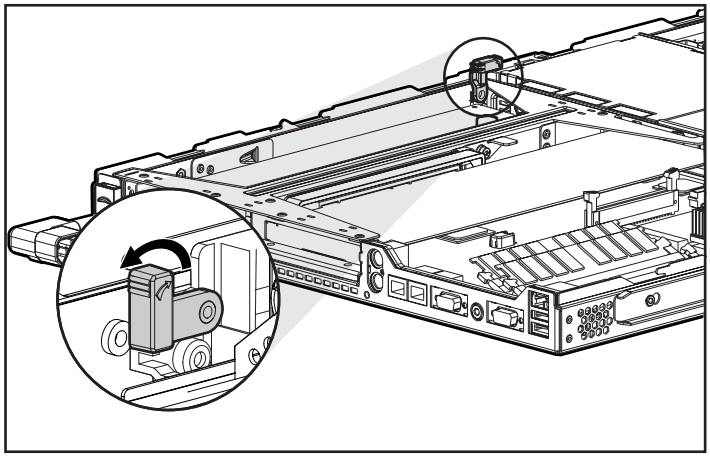

Figure 3-27. Closing the expansion board retaining lever

11. Attach any required internal cabling for the expansion board.
12. Install the access panel. See “Installing the Access Panel” earlier in this chapter.

Removing the CD-ROM Drive

The ProLiant DL360 G2 server is delivered with a low-profile diskette drive and a low-profile CD-ROM drive. The CD-ROM and the diskette drive may be removed independently of each other.

To remove the CD-ROM drive:

1. Perform an orderly shut down of the operating system.
2. Press the Power On/Standby switch to place the server in standby mode.
3. Release the CD-ROM locking latch by pushing the center of the 'dual action' eject button ❶. Continue to push the square body of the button and the ejection lever will push the CD-ROM drive forward out of the chassis ❷.

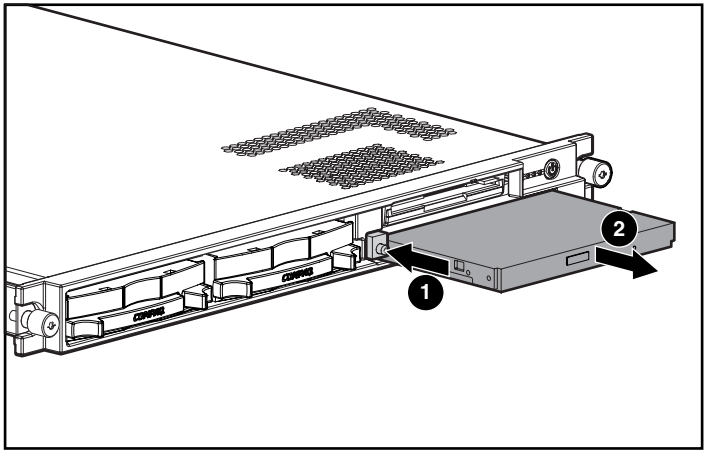

Figure 3-28. Removing the CD-ROM drive

CAUTION: Do not operate the server without a CD-ROM drive installed. Improper cooling may damage the system.

4. Replace the CD-ROM drive, see "Installing the CD-ROM Drive" following this section.

Installing the CD-ROM Drive

To install the CD-ROM drive:

1. The server should already be in standby mode.

CAUTION: Do not operate the server without CD-ROM drive installed. Improper cooling may damage the system.

2. Align the CD-ROM drive with the empty bay and slide it into the chassis until it is fully seated.

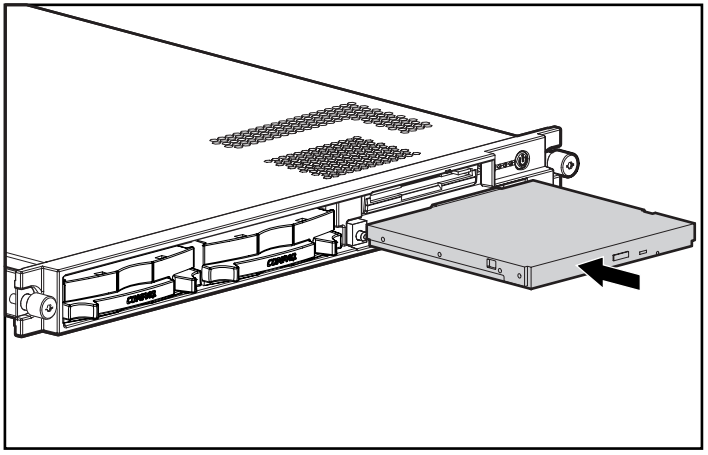

Figure 3-29. Aligning and installing the CD-ROM drive

3. Press the Power/On Standby switch to power on the server, and resume normal operations.

Removing the Floppy Disk Drive

To remove the floppy disk drive:

1. Perform an orderly shut down of the operating system.
2. Press the Power On/Standby switch to place the server in standby mode.
3. Remove the access panel, see "Removing the Access Panel" earlier in this chapter.
4. To remove the floppy disk locking tab, turn the thumbscrew counterclockwise and remove the tab ❶.

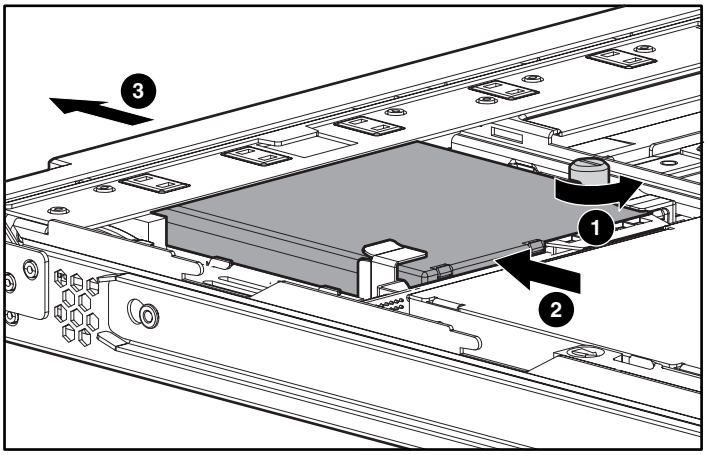

Figure 3-30. Removing the floppy disk drive

5. Push the floppy drive from the rear to release it from the backplane connector ❷ and pull the drive forward out of the chassis ❸.

CAUTION: Do not operate the server without a floppy disk drive installed. Improper cooling may damage the system.

6. Replace the floppy disk drive, see "Installing the Floppy Disk Drive" following this section.

Installing a Floppy Disk Drive

To install the floppy disk drive:

1. Insert the floppy disk drive through the opening in the front panel ❶.

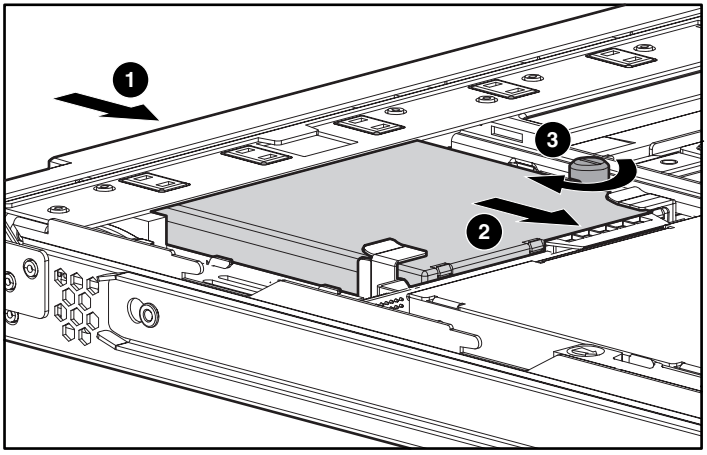

Figure 3-31. Installing the floppy disk drive

2. Align the connectors on the backplane and the rear of the floppy drive and push them together ❷.
3. Replace the floppy disk locking tab and turn the thumbscrew clockwise to secure the drive ❸.
4. Replace the access panel, see "Replacing the Access Panel" earlier in this chapter.
5. Press the Power On/Standby switch to power on the server and resume normal operations.

Removing Hot-Plug SCSI Hard Drive Blanks

The ProLiant DL360 G2 server ships standard with two hot-plug hard drive blanks. Before installing a hot-plug SCSI hard drive, remove the necessary blank.

CAUTION: Always populate drive bays with either a hard drive or drive blank. Proper airflow can only be maintained when the bays are populated. Unpopulated drive bays can lead to improper cooling and thermal damage.

To remove a hard drive blank:

1. Press and hold the locking button ❶.
2. Pull the blank out of the drive bay ❷.

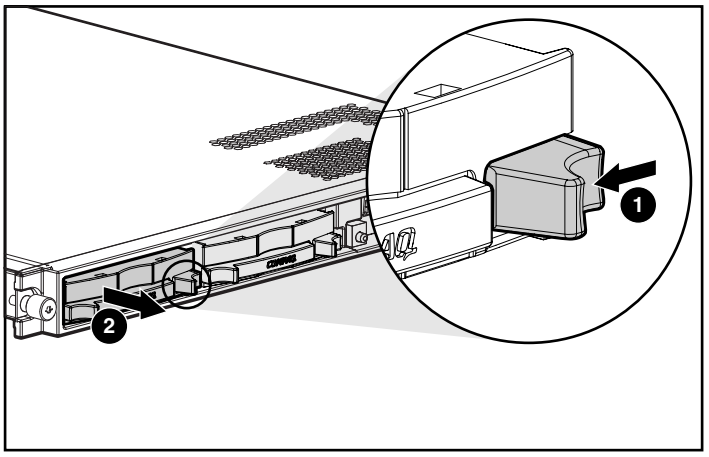

Figure 3-32. Removing a hard drive blank

To install a blank, simply align the blank with the empty bay and push the blank inward until the locking button engages.

Guidelines for Installing Hot-Plug Wide Ultra3 SCSI Hard Drives

The ProLiant DL360 G2 server contains two drive bays for internal mass storage devices. The server ships standard with two 1-inch hot-plug drive cages. The following sections provide general guidelines and installation procedures for upgrading the hot-plug SCSI hard drives.

CAUTION: Read the "Hot-plug Hard Drive Replacement Guidelines" in the *Compaq Servers Troubleshooting Guide* before removing a hard drive.

When adding SCSI hard drives to a ProLiant DL360 G2 server, observe the following:

- Each SCSI drive connected to the same SCSI controller must have a unique address. The system automatically sets all SCSI addresses. Drives are shipped with jumpers set to ID0 to allow the system to detect the drives and assign the proper ID. See Appendix D "Switches and Jumpers" for further details.

SCSI ID Numbers for Wide Ultra3 SCSI Models

The ProLiant DL360 G2 standard configuration consists of two 1-inch hot-plug SCSI hard drive cages and numbered SCSI IDs: 0 and 1 from left to right, ❶ and ❷.

IMPORTANT: Always populate hard drive bays starting with the lowest SCSI ID.

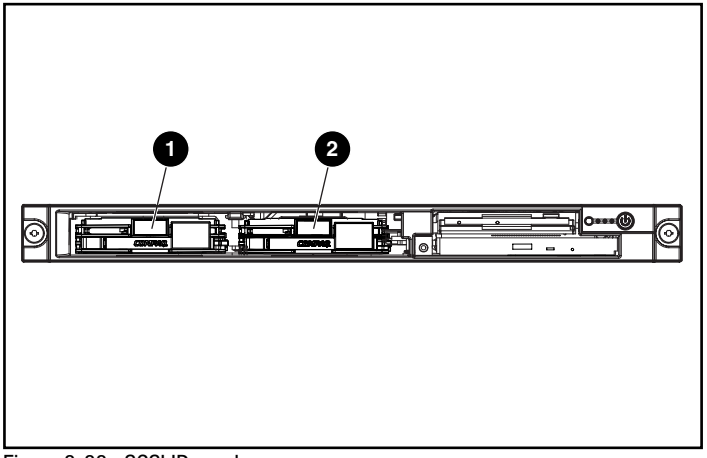

Figure 3-33. SCSI ID numbers

Installing External Storage Devices

Additional mass storage devices may be connected to the Compaq ProLiant DL360 G2 server through optional array controller expansion boards. For more information about cabling external storage devices, see Chapter 7, "Server Cabling."

For additional information on configuring a server, refer to the Documentation CD shipped with the server.

Installing Hot-Plug Wide Ultra3 SCSI Hard Drives

The following procedure details installation for new hot-plug Wide Ultra3 SCSI hard drives.

IMPORTANT: To replace a drive that is part of an array, observe the "Hot-Plug SCSI Hard Drive Replacement Guidelines" in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.

To install new hot-plug Wide Ultra3 SCSI hard drives:

1. Proceed with one of the following steps:
   - ❑ When replacing an existing hard drive, 'back up' all required data, on the server and proceed with step 2.
   - ❑ To add a new hard drive to an empty bay, proceed with step 4.
2. Press the release button on the existing SCSI hard drive ❶.

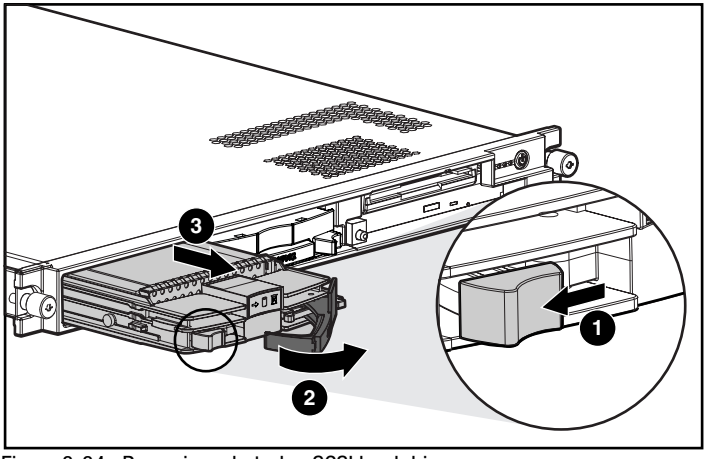

Figure 3-34. Removing a hot-plug SCSI hard drive

3. Pull the ejector lever ❷ and remove the SCSI hard drive ❸.

4. Insert the new hot-plug SCSI hard drive ❶. Push the drive into the slot and lock the drive in place with the drive lever ❷.

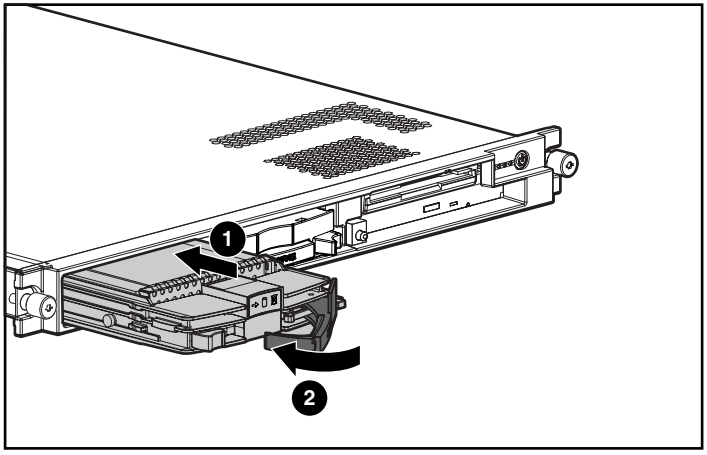

Figure 3-35. Installing a new Wide Ultra3 SCSI hard drive

5. If a drive has been replaced, restore data to the server from a backup.
6. Resume normal server operations.

Chapter **4**

Server Installation

Server Installation Guidelines

Before installing the server, perform the following procedures, as necessary:

- Select an appropriate site for the server rack.

  For environment requirements, see the "Optimum Environment" section in Chapter 2, "Planning the Server Installation." For information on rack planning, refer to the "Rack Planning Resources" section in Chapter 2, "Planning the Server Installation."

- Unpack the server and rack-mounting hardware.

  See the "Server Shipping Contents" section in Chapter 2, "Planning the Server Installation."

- Install any PCI expansion boards.

  See Chapter 3, "Installing Hardware Options." Refer to the option kit documentation for detailed instructions.

- Install other hardware options.

  Other options include additional memory, SCSI hard drives and external storage devices. See Chapter 3, "Installing Hardware Options." Refer to the individual option kits for detailed instructions.

For any other questions or problems, contact your Compaq authorized reseller.

IMPORTANT: For deploying and configuring multiple ProLiant DL360 G2 servers in a single rack, consult the multiple server deployment white papers on the Compaq website:

www.compaq.com/products/servers/proliantdl360

Compaq offers an optional installation service to install rack products. See the "Optional Installation Service" section at the end of Chapter 2, "Planning the Server Installation."

Server Installation Procedures

To install a rack mount server into a Compaq rack, complete all of the following procedures.

CAUTION: When using a Compaq Series 7000 rack, install the new highly ventilated front door to provide proper front-to-back airflow and cooling.

IMPORTANT: Before beginning the following procedures, refer to the *Important Safety Information* guide that shipped with the server.

Measuring with the Template

The rack template provides an easy and reliable way to properly position and mount the universal rack rails.

Use the template to identify the correct holes for inserting the alignment pins on the universal rack rails into the holes of the vertical rack support. Using the top and bottom edges of the template as a guide mark the rack supports with a pencil to locate the server position. If more than one server is to be installed move the template up using the previous marks as a guide.

CAUTION: Install the heaviest item on the bottom of the rack and work from the bottom to the top.

IMPORTANT: Determine a server's place in the rack **before** installing the universal rack rails. Refer to the Rack Builder report printed during planning phase of the rack configuration. See Chapter 2 "Planning the Server Installation."

IMPORTANT: The template is two-sided (front and back) describing and illustrating the insertion of the universal rails into the rack.

To mark the location for the server:

1. Place the template against the rear vertical support rails in the first available space working from the bottom of the rack.
2. Align the template so that the sides of the template are even with the sides of the rack. Small alignment holes on the vertical support rails of Compaq racks indicate U-spaces.

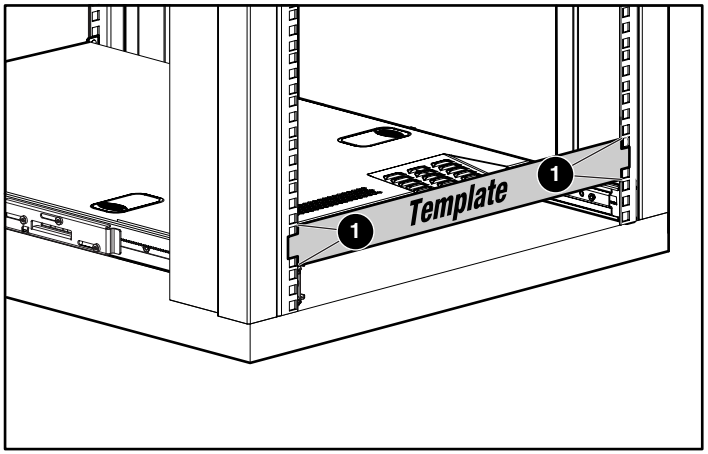

Figure 4-1. Using the template to mark the rack

3. Use the top and bottom edges of the template as a guide and mark the vertical rack supports with a pencil to locate the server position ❶. Match the hole patterns on the template with the holes on the vertical support rails of the rack.
4. Go to the front of the rack and place the template at the bottom of the rack or directly above a previously mounted component. Secure the template against the front of the rack by inserting the two push tabs into the mounting holes. See Figure 4-2.

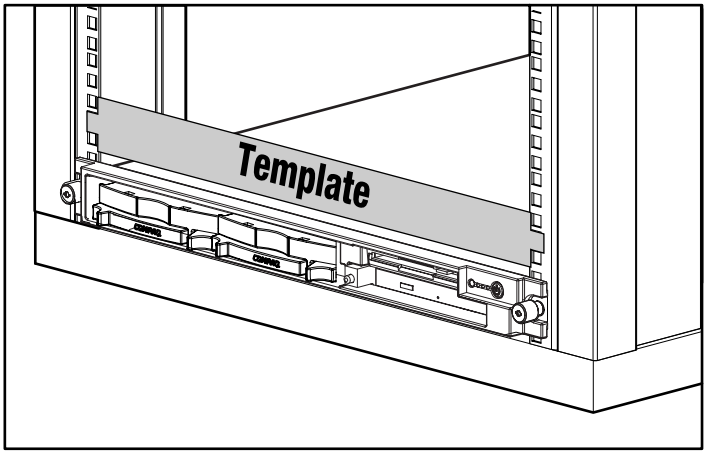

Figure 4-2. Attaching the template to the front of the rack

5. Proceed with attaching of the universal rack rails.

Attaching Universal Rack Rails to the Rack

To attach the universal rack rails to the rack:

1. Complete the procedures for measuring with the template. See "Measuring with the Template" earlier in this chapter.
2. The sliding rail-lock, on the inside rear of the universal rack rail, must be in the 'release' position to adjust the slide for appropriate rack depth ❶. Figure 4-3.
3. To adjust the length of the rail, press the extension release latch ❷.

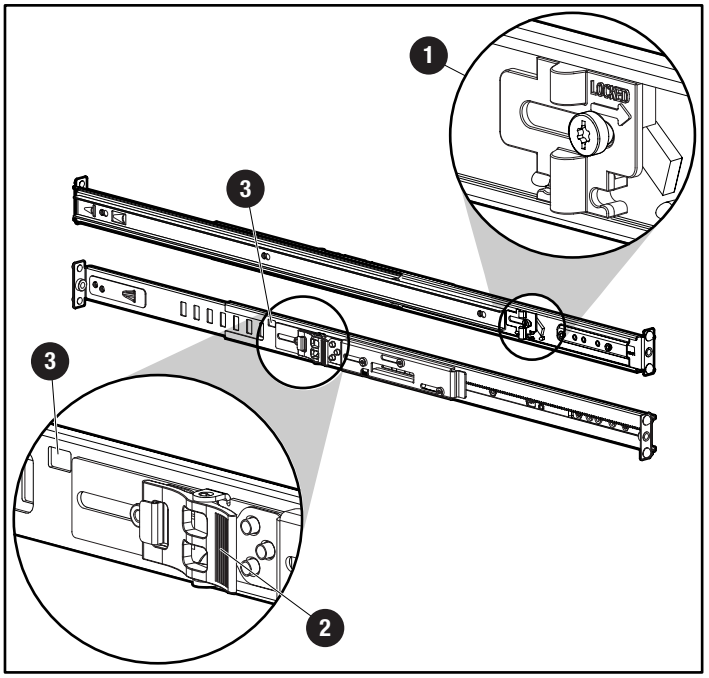

Figure 4-3. Universal rack rails

4. Move the inner section of the rail in the required direction to set the length for the rack depth while observing the rail measurement guide through the adjustment viewing window ❸.
5. Move to the rear of the rack.

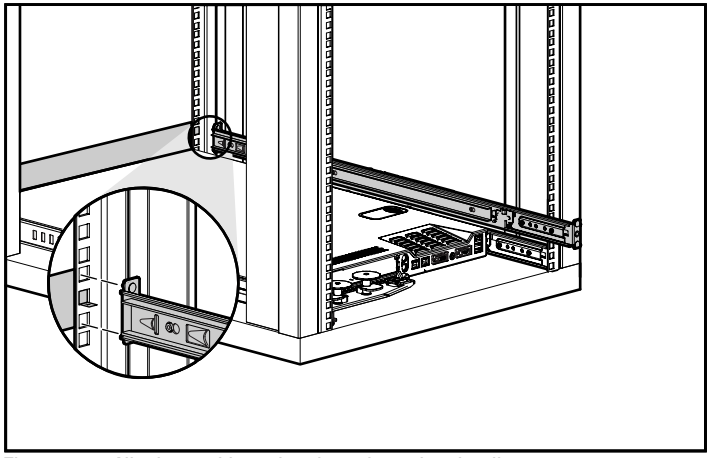

Figure 4-4. Aligning and inserting the universal rack rail

6. Using the previously installed template, identify the front holes to be used for securing the front alignment pins of the universal rack rail.
7. Carefully line up the two alignment pins on the front of the universal rack rail with the holes at the front of the rack.

IMPORTANT: Ensure that inner side of the universal rack rail (fixed rail) faces the inside of the rack.

8. Insert the front alignment pins of the universal rack rail into the rack.
9. Compress the universal rack rail toward the front of the rack, until the rear alignment pins line up with the inner holes on the vertical support at the rear of the rack.
10. Insert the rear alignment pins into the rear holes, and release the rail, Figure 4-5. Move the sliding rail-lock to the 'lock' position to hold and secure the universal rack rail in place, Figure 4-6.

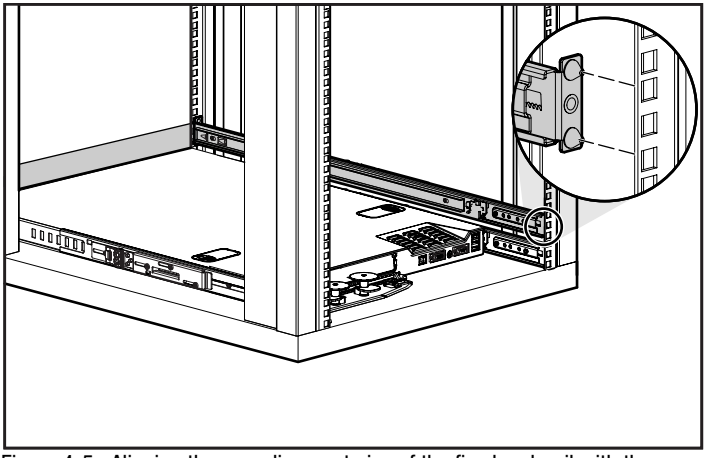

Figure 4-5. Aligning the rear alignment pins of the fixed rack rail with the rear holes (rear view)

Repeat steps 2 through 10 for the second universal rack rail. Figure 4-6 shows a completed installation of the universal rack rails.

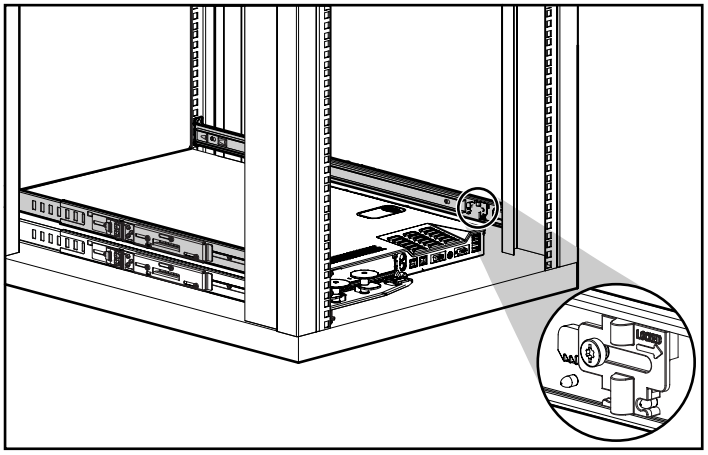

Figure 4-6. Universal rack rails installed in the rack ready for server installation (rear view) and rail-lock shown in locked position

Attaching the Fixed Cable Tray

To attach the fixed cable tray:

1. Move to the rear of the rack.
2. Insert the slots on the left edge of the fixed cable tray onto the mounting spools on the universal rack rail and slide the tray forward ❶.
3. Turn the thumbscrew in a clockwise direction to secure the fixed cable tray to the rail ❷.
4. Insert the slotted hole in the mounting bracket of the velcro strap onto the mounting spool on the universal rack rail and slide forward ❸.
5. Turn the captive thumbscrew clockwise to secure the strap to the rail ❹.

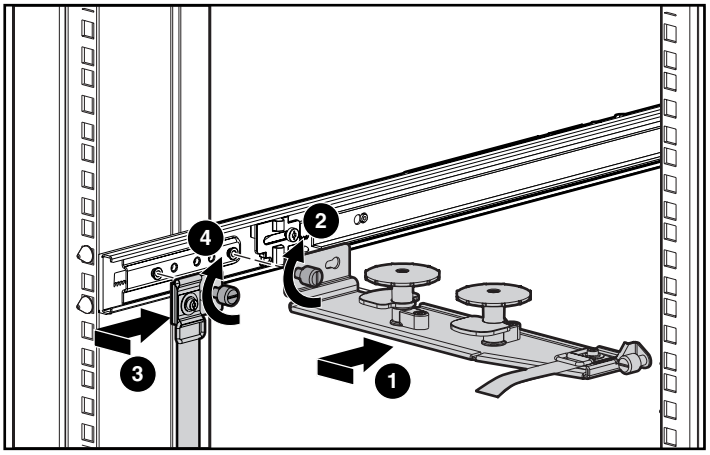

Figure 4-7. Inserting and attaching the fixed cable tray and Velcro cable strap (rear view)

Inserting the Server into the Rack

CAUTION: To avoid destabilizing the rack, install multiple servers starting from the bottom of the rack.

NOTE: The Compaq ProLiant DL360 G2 server ships with standard factory-mounted server fixed rails for simplified rack installation.

To insert the server into the rack:

1. Move to the front of the rack.
2. Ensure that the universal rack rails are installed. See "Attaching the Universal Rack Rails to the Rack" earlier in this chapter.
3. Align the rear end of the server fixed rails (on the sides of the server) with the front end of the fixed rails attached to the universal rack rails.

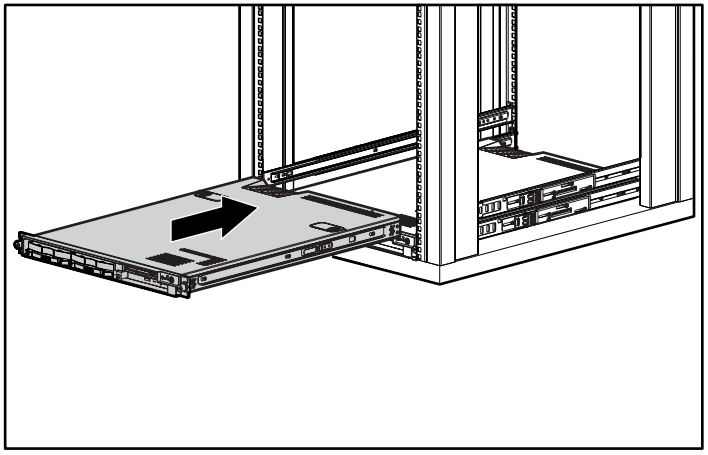

Figure 4-8. Aligning the rear end of the server fixed rails with the front end of the fixed rails mounted to the universal rack rails

4. Insert the server into the rack, ensuring that the server fixed rails slide inside the fixed rails.

WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the component into the rack. The sliding rails could pinch fingertips.

CAUTION: Keep the server parallel to the floor when sliding the server fixed rails into the fixed rails. Tilting the server could damage the rails.

5. Slide the server fully into the rack.
6. Position the front panel thumbscrews through the holes on both sides of the rack and into the round, threaded holes in the front of the universal rack rails.
7. Tighten the thumbscrews by turning them clockwise.

8. At the rear of the rack, secure the fixed cable tray to the server by turning the thumbscrew in a clockwise direction.

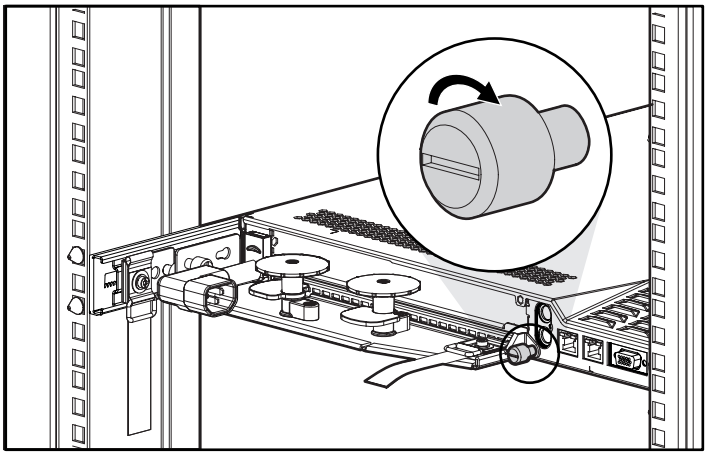

Figure 4-9. Securing the cable tray to the server

Connecting the Power Cord and Peripheral Devices

After the server has been installed in the rack, connect the power cord and peripheral devices to the connectors located on the rear panel of the server. Icons on the back of the server identify the function of each connector.

WARNING: To reduce the risk of electrical shock or fire, do not plug telecommunications/telephone connectors into the NIC connectors.

Use the following figure and table to identify connectors, and follow the connection order to attach all cables and the power cord. The location numbers in the figure and table correspond to the connection order for the peripheral cables and power cord.

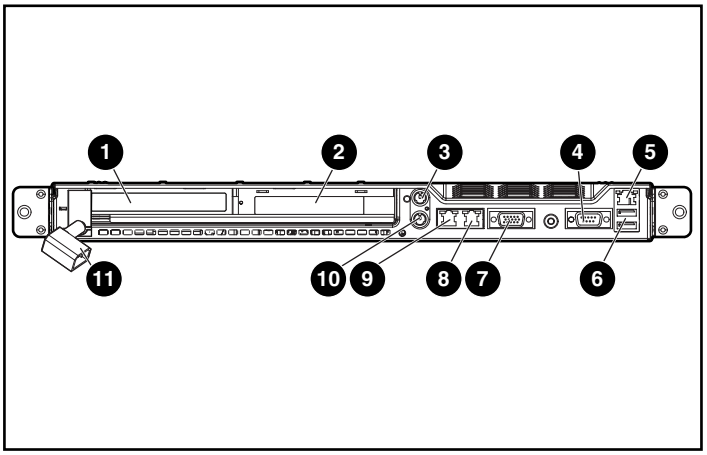

Figure 4-10. Rear panel connectors on the ProLiant DL360 G2 server

Table 4-1
Rear Panel Connectors and Connection Order

Location	Connector
❶	64-bit expansion slot 1
❷	64-bit expansion slot 2
❸	Mouse connector (green)
❹	Serial connector (teal)
❺	Integrated Lights Out (iLO) Management Port
❻	USB Ports 1 and 2
❼	Video connector (blue)
❽	RJ-45 Gb Ethernet connector with 10/100/1000-Mb/s operation for NIC 2
❾	RJ-45 Gb Ethernet connector with 10/100/1000-Mb/s operation for NIC 1
❿	Hot-plug keyboard connector (purple)
⓫	Power connector

Note: The location numbers in this table correspond to the connection order for the peripheral cables and power cord.

Securing the Cables in the Fixed Cable Tray

After attaching the fixed cable tray and connecting the power cord and peripheral devices, all cabling must be secured.

To secure the cables in the fixed cable tray:

1. Starting with the peripheral device cables on the right, route the cables over the cable tray and around the cable guides.

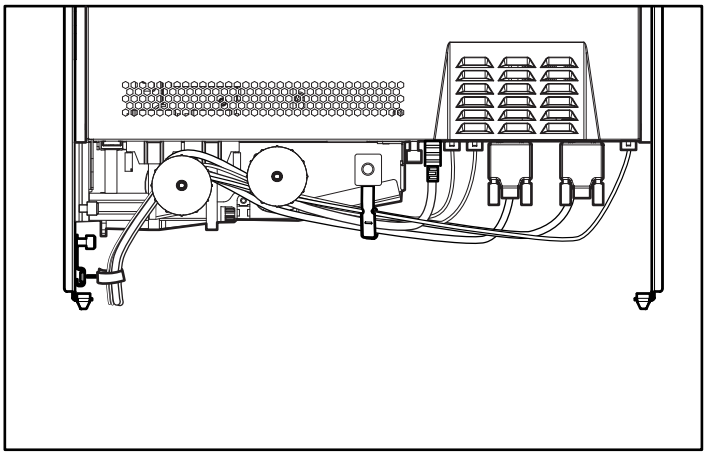

Figure 4-11. Securing the cables to the cable tray

2. Secure the cables onto the tray at the right with the velcro strap.
3. Bring the cables together and secure them with the velcro strap attached to the end of the rack rail. Route the cables down the side of the rack.

Powering Up the Server

After the all the cables have been connected the ProLiant DL360 G2 server is ready for power to be applied.

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.

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

To power up the server:

1. Press the Power On/Standby switch.

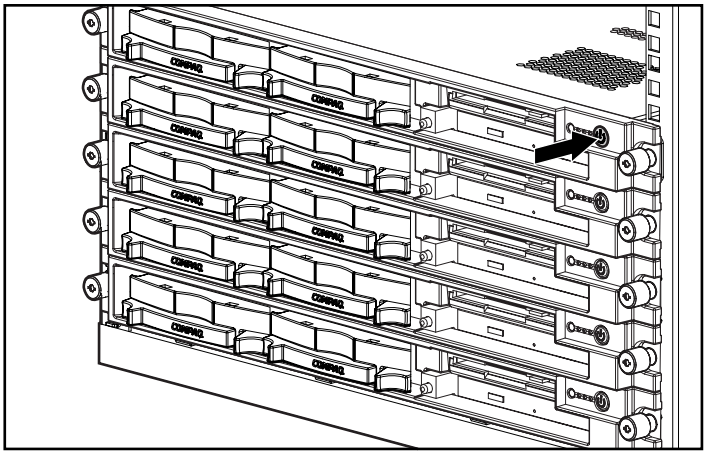

Figure 4-12. Powering up the server

2. Use the LED information in the following table to identify a successful power-up sequence.

Table 4-2
LED Activity During the Power-On Sequence

Action	LED Response
Power cord is disconnected.	No LEDs on.
Power cord is connected.	Power On/Standby LED turns amber.
Power On/Standby switch is pressed.	Power On/Standby LED goes from amber to green.
Server is powering up.	Hard drive activity LED turns on.

Note: For a detailed explanation of all system LEDs, see Appendix C, "Status LED Indicators."

After the server has successfully powered up, begin the configuration process with the ROM-Based Setup Utility. See Chapter 8 "Server Configuration and Utilities."

If the server does not power up successfully, or if it indicates a fault, see Chapter 10, "Troubleshooting."

Power Cords

Observe the following warnings when working with power cords.

WARNING: The system power in the ProLiant DL360 G2 server is not completely shut off by the front panel Power On/Standby switch. The standby position removes power from most of the electronics and the drives, but portions of the power supply and some internal circuitry remain active.

To remove all power from the system disconnect the power cord from the server. In systems with multiple power supplies all the power cords must be disconnected to completely remove power from the system.

WARNING: To reduce the risk of electrical 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.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

Installing an Operating System

To install an operating system on a new server, the ROM Based Setup Utility (RBSU) is used.

To configure the server for the first time:

1. Power up the server and press the **F9** key when prompted to enter RSBU
2. When prompted, select a user language.
3. Select the operating system to be installed on the server. A dialog box is displayed indicating that default system configuration settings have been made in accordance with those appropriate for the selected operating system.

4. Press the **F10** key to exit RBSU or press any other key to return to the RBSU main menu.

After RBSU configures the hardware for the first time, use SmartStart to install an operating system.

1. Insert the SmartStart CD or the selected operating system installation CD.
2. Restart the server.
3. Follow the instructions provided by SmartStart or the operating system manufacturer.

For more information about using RBSU or SmartStart to configure the server, see Chapter 8, "Server Configuration Utilities."

The ProLiant DL360 G2 server supports the following operating systems:

- Microsoft Windows NT and Windows 2000
- Linux
- Novell NetWare
- Sun Solaris for Intel Platform Edition

For the most current information about operating system support on ProLiant DL360 G2 servers, refer to the operating system support matrix available at the Compaq FTP site:

ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf

To create a backup of the hardware configuration, use the Configuration Replication Utility. For more information, see the "SmartStart Scripting Toolkit" section in Chapter 8, "Server Configuration Utilities."

Registering A Server

To register a server, log on to the Internet at

www.compaq.com/products/registration

Routine Maintenance

For information concerning routine maintenance and safety precautions, refer to the Documentation CD included in the Documentation pack shipped with the server.

Maintenance and Service Procedures

In addition to the material in this guide, the *Compaq ProLiant DL360 Generation 2 Maintenance and Service Guide* provides specific information required for general maintenance and component replacement, including:

- Spare part numbers
- Removal and replacement procedures
- Diagnostic tools
- Component specifications

To access the maintenance and service guide, refer to the Documentation CD.

Extending the Server from the Rack (Sliding Rail Option)

To perform some installation and maintenance procedures, the server has to be extended from the rack.

To extend the server from the rack:

1. Loosen the thumbscrews that secure the server faceplate to the front of the rack.
2. Extend the server on the sliding rails until the server rail-release latches engage.

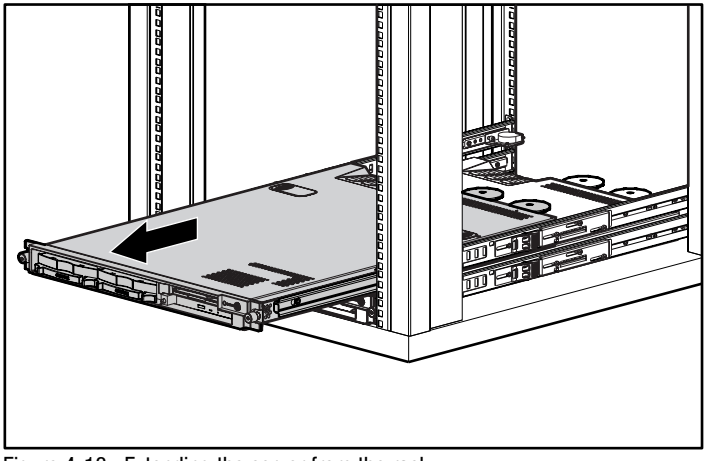

Figure 4-13. Extending the server from the rack

WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the component into or out of the rack. The sliding rails could pinch your fingertips.

3. After performing the installation or maintenance procedure, slide the server back into the rack:
   a. Press the server rail-release latches.
   b. Slide the server fully into the rack.
   c. Secure the server by tightening the thumbscrews.

Chapter **5**

Integrated Smart Array Controller

This chapter provides an overview of the ProLiant DL360 G2 Server Integrated Smart Array Controller.

Features

The ProLiant DL360 G2 Server Integrated Smart Array Controller is an Ultra3 SCSI Array Controller supporting low-voltage differential (LVD) SCSI devices. The controller supports the following features:

- 32-MB total memory and 16-MB read-ahead cache
- 64-bit PCI bus master interface
- RAID 0 and RAID 1 disk fault tolerance (on internal drives only)
- Support for up to two internal Wide Ultra3 SCSI hot-plug hard drives
- Easy-to-use Array Configuration Utility
- Option ROM Configuration for Arrays
- Performance monitoring, Pre-Failure Notification, and Pre-Failure Warranty through Compaq Insight Manager

SCSI Port

The integrated SCSI controller is dedicated to controlling the SCSI drives in the internal drive bays.

Array Configuration

Use the Array Configuration Utility to configure the SCSI drives for optimum performance of the server in the deployed application

For more information about the Integrated Smart Array Controller, refer to the *Compaq Integrated Smart Array Controller User Guide*.

Chapter **6**

Integrated Lights-Out

This chapter provides an overview of Integrated Lights-Out in the ProLiant DL360 G2 server in the following sections:

- Introduction
- Features
- Integrated Lights-Out Security Override Jumper
- Using the Integrated Lights-Out Security Override Jumper
- Integration with Compaq Insight Manager 7
- Browser Support
- Configuration and Operation

Introduction

Compaq Integrated Lights-Out is a new feature of selected Compaq ProLiant servers. Integrated Lights-Out (iLO) provides server health and remote server management. The iLO features are accessed from a network client using a standard Web browser. In addition to other features, iLO provides keyboard, mouse, and video capability for a server, regardless of the state of the host operating system or host server.

The iLO sub-system includes an intelligent microprocessor, secure memory, and a dedicated network interface. This design makes iLO independent of the host server and its operating system. Remote access is provided by iLO to any authorized network client and alert notification is supported along with other server management functions.

Using a standard Web browser, you can:

- Remotely access the console of the host server. Text mode is standard. Graphics console with full keyboard and mouse controls is available as a separate option.
- Remotely power up, power down, or reboot the host server.
- Remotely boot the host server from a virtual floppy to perform a ROM upgrade or to install an operating system. Virtual floppy is available as a separate option.
- Access the Compaq Insight Manager agents on a host server through iLO.
- Send alerts from iLO regardless of the state of the host server.
- Access advanced troubleshooting features provided by iLO.
- Launch a Web browser, use Simple Network Management Protocol (SNMP) alerting, and diagnose iLO using Compaq Insight Manager.

Features

Integrated Lights-Out offers the following features:

- **Virtual Graphical Remote Console**

  Graphical remote console capability is provided by iLO embedded hardware that turns a standard browser into a virtual desktop, giving the user full control over the host server's display, keyboard, and mouse. The operating system independent console supports text and graphic modes, displaying remote host server activities, such as shutdown and startup operations. Text mode is standard. Graphics mode is available as a separate option.

- **Virtual Power Button**

  Using any standard browser interface, iLO can be used to remotely operate a host server's power button. For example, if the host server is off, you can turn it on from a remote console.

- **Power Cycle (Reset)**

  If the remote host server is not responding, this feature allows an administrator to initiate a cold reboot to bring the server back online.

- **Virtual Media**

  With the Virtual Floppy Drive, an administrator can easily direct a remote host server to boot and use a standard media from anywhere on the network, thus saving time and increasing efficiency by eliminating the need to visit a remote server to insert and use a diskette. This feature allows administrators to carry out any of the following functions remotely:

  - Run Compaq User Diagnostics on remote host servers
  - Apply *ROMPaq*™ upgrades to remote servers
  - Deploy an operating system on remote servers from network drives
  - Perform disaster recovery of failed operating systems

  Virtual media is available as a separate option.

- **Remote Firmware Update**

  This feature ensures that iLO is always up-to-date with the latest firmware available from Compaq. Updates to the ROM code on iLO is accomplished through the browser interface.

- **Dedicated LAN network connectivity**

  A 10/100 Mbps Ethernet chip on the iLO provides administrators with a dedicated network connection to iLO ❶. The iLO provides in-band SNMP notification of server problems on a real-time basis without separate telephone connections or modem sharing devices. The NIC can autoselect speeds between 10 Mbps and 100 Mbps.

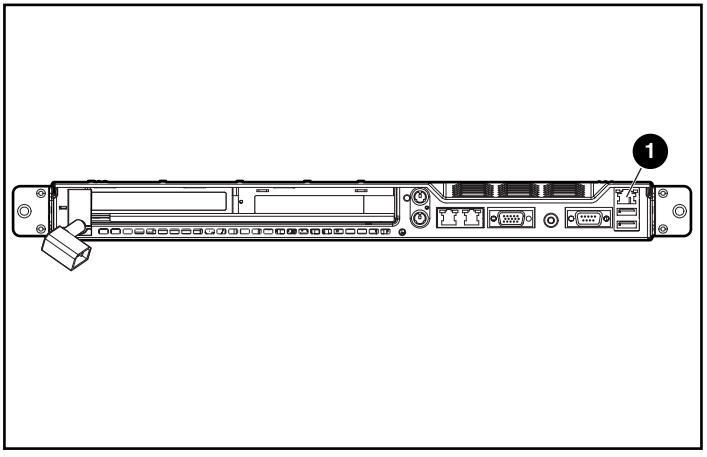

Figure 6-1. Location of iLO Management Port on server rear panel

- **Virtual Private Network (VPN) support**

  When used in conjunction with VPN technology, iLO functionality is available around the world

- **Reset and failure sequence replay**

  Video text sequences stored on the iLO allow an administrator to replay server startup and shutdown sequences. The last two server resets and the last server failure may be viewed.

- **User administration and security**

  12 users with customizable access rights, login names, client IP address restrictions, and advanced password encryption are supported by iLO. Secure password encryption, tracking of all login attempts and record maintenance of all login failures is provided by iLO.

- **128-bit encryption**

  Integrated Lights-Out provides strong security for remote management in distributed IT environments. Secure Sockets Layer (SSL) encryption (up to 128-bits) ensures the HTTP information is secure as it travels across the network.

- **Auto configuration of IP address by means of DNS/DHCP**

  Integrated Lights-Out provides automatic network configuration. The iLO comes with a default name and Dynamic Host Configuration Protocol (DHCP) client that leases an IP address from the DHCP server on the network. For systems that do not use Domain Name Service (DNS)/DHCP, Integrated Lights-Out allows static IP configuration.

  The default user name, password, and DNS name are:

  - User name: Administrator
  - Password: A random, eight-character, alphanumeric string.
  - DNS name: ILOXXXXXXXXXXXX where the 12 Xs are the serial number of the server in which the iLO processor is located. The DNS name of the iLO is configurable by the user.

IMPORTANT: User names and passwords are case sensitive.

- **Integrated Management Log**

  The iLO manages the server's Integrated Management Log that can be accessed using a standard browser, even when the server is not operational. This capability can be helpful when troubleshooting remote host server problems.

- **ROM-Based Configuration Utility F8**

  This versatile, system-independent ROM-Based Configuration Utility enables fast and easy setup of iLO.

NOTE: Additional functionality for Integrated Lights-Out, such as full Graphics Console and Virtual Media, is available by purchasing a separate option from Compaq. More details of iLO are available at

www.compaq.com/lights-out

Integrated Lights-Out Security Override

The iLO Security Override allows the administrator full access to the iLO processor. This will be necessary in the event of a lost or forgotten administrator password and also to flash the iLO boot-block. The iLO Security Override is a jumper located inside the server and cannot be activated without removing the server access panel.

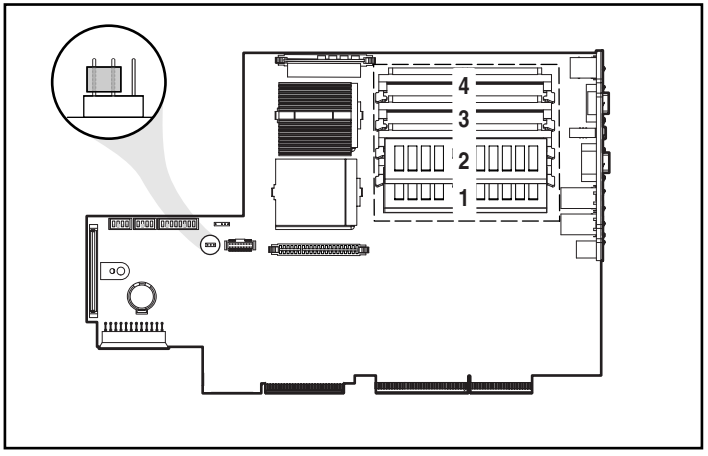

Figure 6-2. Security Override Jumper (Non-override position)

Using the Integrated Lights-Out Security Override Jumper

The iLO Security Override Jumper allows emergency access to the administrator with physical control of the server's system board. Setting the iLO Security Override Jumper allows login access, with all privileges, without a user id and password.

To set the iLO Security Override Jumper:

1. Power down the server, see "Powering Down the Server" in Chapter 3.
2. Remove the server access panel, see "Removing the Access Panel" in Chapter 3.
3. Locate the three pins of J29 and move the jumper from the front and center pins to the center and rear pins to override password security. J29 is to the front of the 30 pin Remote Insight Connector.
4. Press the Power/On Standby switch to power on the server.
5. Logon to the iLO and reset the passwords.

A warning message will be displayed on the iLO Web pages indicating the iLO Security Override function is currently active. An iLO log entry will be added recording the use of the iLO Security Override. An SNMP alert may also be sent upon setting or clearing the iLO Security Override function.

In the unlikely event it is necessary, enabling the iLO Security Override also enables the iLO boot-block to be flashed. The boot-block will be exposed until the iLO is reset. Compaq recommends the iLO be disconnected from the network until the reset is complete.

To reset the iLO Security Override Jumper:

1. Power down the server.
2. Remove the Security Override Jumper from the rear and center pins of J29 and place between the front and center pins.
3. Replace the server access panel.
4. Press the Power/On Standby switch to power on the server and resume normal operation.

Integration with Compaq Insight Manager 7

Full integration is provided with iLO and Compaq Insight Manager 7 under key operating environments. This integration:

- Provides support for SNMP trap delivery to a Compaq Insight Manager console
- Provides support for a new device type, the management processor. All iLO devices installed in servers on the network are discovered in Compaq Insight Manager 7 as management processors. Management processors are associated with the servers in which they are installed.
- Provides Integrated Lights-Out hyperlinks
- Provides a hyperlink on the server device page to launch and connect to iLO easily.
- Allows all iLO to be grouped together logically and displayed on one page, which provides access to iLO from one point in Compaq Insight Manager XE 7.

Browser Support

Microsoft Internet Explorer 5.0 or later gives full and easy access to the features of iLO. This gives administrators full control of the remote host server's display, keyboard, and mouse, regardless of the state of the host server or operating system to perform all remote management tasks.

Configuration and Operation

For specific information on configuring and operating Integrated Lights-Out refer to the *Compaq Integrated Lights-Out User Guide*.

Chapter 7

Server Cabling

This chapter provides guidelines to help in making informed decisions, about cabling the server and hardware options, to optimize performance. For complete and comprehensive information, use this chapter along with the technical information on the Quick Hardware Installation Poster and the labels attached to the inside of the server access panel.

Internal Cabling

The following sections explain internal cabling configurations for the ProLiant DL360 G2 server.

Internal Cabling for Mass Storage Devices

Internal mass storage devices in the ProLiant DL360 G2 server require minimum cabling, as described below.

Hot-Plug SCSI Hard Drives

The ProLiant DL360 G2 standard configuration for internal SCSI hard drives does not require any cabling, because both devices connect directly to the SCSI backplane. The SCSI backplane ❶ connects directly to the system board ❷.

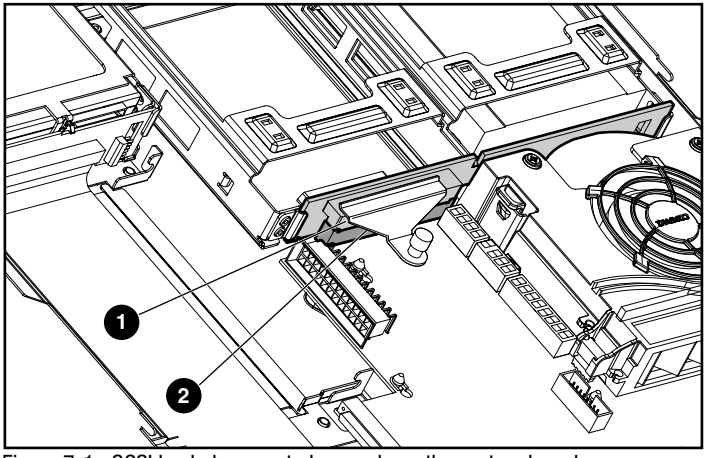

Figure 7-1. SCSI backplane seated properly on the system board

CD-ROM and Diskette Drives

The CD-ROM and diskette drives plug directly into the CD-ROM/diskette drive backplane. An 80-pin cable plugged into this backplane connects to the system board.

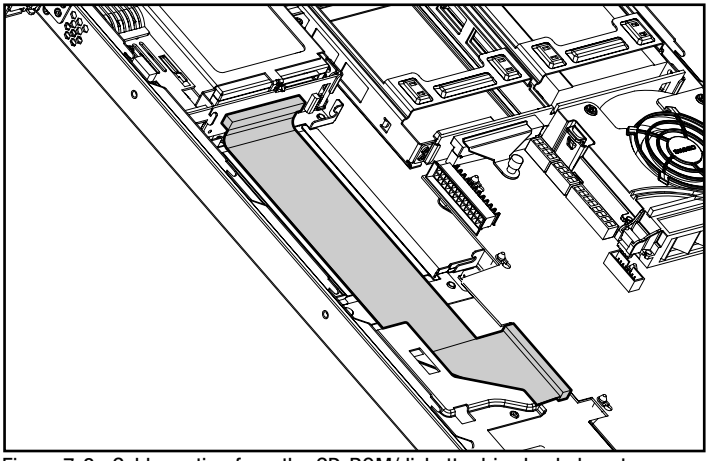

Figure 7-2. Cable routing from the CD-ROM/diskette drive backplane to system board (power supply, cable protector, and PCI riser board assembly removed for clarity)

The ProLiant DL360 G2 server does not support any additional internal mass storage devices. To add mass storage device cables, see the next section "External Cabling".

External Cabling

The following sections describe the proper cabling procedures for peripheral devices and external mass storage devices supported by the ProLiant DL360 G2 server.

Connecting the Power Cord and Peripheral Devices

After all internal options have been installed, replace the server access panel and connect the peripheral device cables and power cord.

Rear panel cabling on the ProLiant DL360 G2 server must always be connected and disconnected in a specific sequence. For a detailed explanation of connectors and the proper cabling sequence, see "Connecting the Power Cord and Peripheral Devices" in Chapter 4, "Server Installation."

CAUTION: Always follow the cabling order for the ProLiant DL360 G2 server because an improper cabling sequence may result in electrical damage to peripheral devices.

Routing the Power Cord and Peripheral Device Cables

Cords and cables connected to the server rear panel are routed through a fixed cable tray that prevents loose cabling in the rear of the rack and protects connectors from damage that results when cables are disconnected improperly.

For detailed instructions on how to route cables through the fixed cable tray, see "Securing the Cables in the Fixed Cable Tray" in Chapter 4, "Server Installation."

When multiple ProLiant DL360 G2 servers are installed in a rack, the fixed cable trays effectively organize the rear panel cabling.

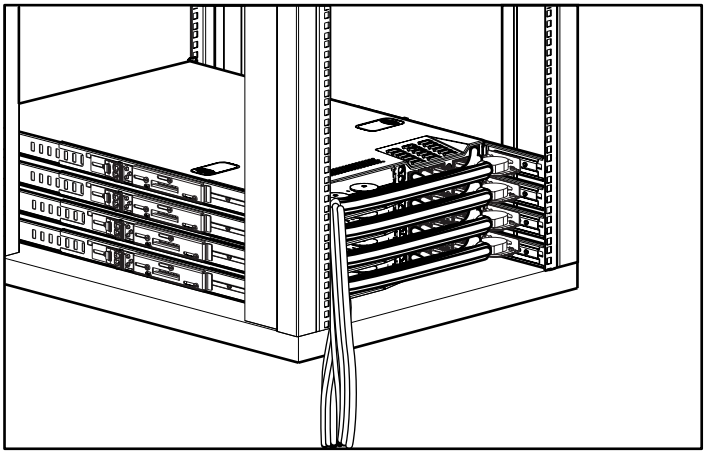

Figure 7-3. Multiple ProLiant DL360 G2 servers installed in a Compaq rack with properly routed cabling

External Mass Storage Cabling (with optional SCSI/Array controller PCI card)

The following sections explain the connectors and guidelines for external SCSI cabling on the ProLiant DL360 G2 server.

SCSI Cable Connectors

To help identify the SCSI cables required for external mass storage devices on ProLiant DL360 G2, see the following illustrations. Observe the characteristics for each of these SCSI cables:

- External SCSI cables have a round wire with securable connectors.
- Internal SCSI cables have a flat ribbon wire with push-on connectors.
- Compaq SCSI cables are keyed so they cannot be installed incorrectly.
- Fast-Wide SCSI-2 (wide SCSI) internal ribbon cables are physically smaller (narrower) than the Fast-SCSI-2 (standard SCSI) cables.

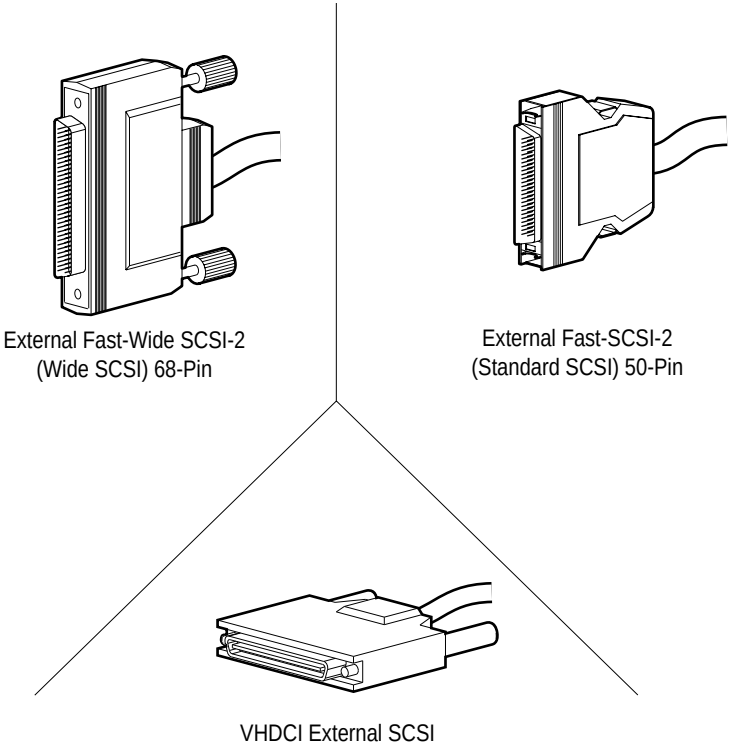

Figure 7-4. SCSI connector differences

SCSI Cabling Guidelines

The following guidelines are an overview for first-time cable connections and installation in the ProLiant DL360 G2 server.

To determine the server cabling needs for a specific application, use the following procedure:

1. Determine whether cabling needs are for primary storage (hard drive) or for secondary storage (tape drive or CD-ROM drive).
2. Identify the controller type.
3. Identify the drive type to be used:
   - ❑ Wide Ultra3 SCSI hard drive
   - ❑ CD-ROM storage drive
4. For information about external cabling, refer to the Compaq website:

   www.compaq.com/support/storage

After cabling of external storage options, use the Compaq SmartStart and Support Software CD to run the following software:

- RBSU to configure new hardware in the system

  IMPORTANT: Always run the System Configuration Utility after installing an option in the ProLiant DL360 G2 server.

- Array Configuration Utility, to configure and manage drive arrays for SCSI hard drives

SCSI Hard Drive Installation Guidelines

Follow these general guidelines when adding external SCSI hard drives:

- A maximum of 15 SCSI devices per port can be supported externally (only two internally).
- Each SCSI drive must have a unique ID.

ProLiant DL360 Generation 2 Server Maximum External Storage Cabling

For maximum external storage capacity, Compaq recommends installing a Smart Array controller in either 64-bit expansion slot of the ProLiant DL360

G2 server. Supported array controllers have external ports on the rear of the controller to allow rear server access to all available controller channels.

For example, one Smart Array 5300 array controller can be installed in the ProLiant DL360 G2 server, in a PCI slot. The controller has four external SCSI channels. At 15 devices per channel, this configuration supports 60 SCSI devices.

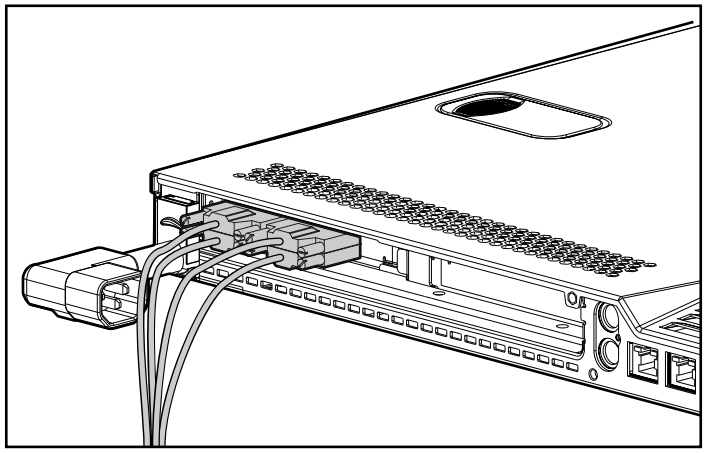

Figure 7-5. Maximum external mass storage configuration with four channels (Smart Array 5300 controller installed in expansion slot 1)

Chapter 8

Server Configuration and Utilities

This chapter provides information about the following utilities and support tools:

- ROM-Based Setup Utility (RBSU)
- Redundant ROM Support
- ROMPaq Utility
- Remote ROM Flash Utility
- ROM Legacy USB Support
- Compaq SmartStart for Servers CD
- SmartStart Diskette Builder
- SmartStart Scripting Toolkit
- Compaq Insight Manager XE
- Compaq Diagnostics Utility
- Automatic Server Recovery (ASR-2)

ROM-Based Setup Utility

RBSU performs a wide range of configuration activities including the following:

- Configuring system devices and installed options
- Viewing system information
- Selecting the operating system
- Selecting the primary boot controller
- Managing storage options

In addition, RBSU includes other features, which are outlined in the "Using RBSU" section in this chapter.

Navigating RBSU

To navigate RBSU, use the following keys:

- To access RBSU, press the **F9** key during power up.
- To navigate the menu system, use the arrow keys.
- To make selections, press the **Enter** key.

RBSU automatically saves settings when the **Enter** key is pressed. The utility does not prompt for confirmation of settings before exiting the utility. To change a selected setting, select a different setting and press the **Enter** key.

Using RBSU

When the server is powered up for the first time, the system prompts to enter the RBSU. Select an operating system and a language. Default configuration settings are made at this time and can be changed later.

NOTE: Most of the features in RBSU are not required in the setup of the server. The options in this utility are designed to assist with specific server configuration issues.

The RBSU is divided into a series of menu selections designed to configure specific areas of the system. The primary menus are as follows:

- System Options
- IPL Device Boot Order

- PCI Devices
- Boot Controller Order
- Date and Time
- Server Passwords
- Automatic Server Recovery
- Server Asset Tags
- Advanced Options
- Utility Language

Table 8-1 at the end of this section contains the default settings for options in primary RBSU menus.

For a complete explanation of RBSU features and functions, refer to the *ROM-Based Setup Utility User Guide* on the Documentation CD.

System Options

The **System Options** menu is for overall system configuration settings. The following selections are included in this menu:

OS Selection prompts for selection of the operating system. This option automatically selects appropriate advanced settings for the selected operating system and must be set before installing the operating system.

Embedded COM Port allows enabling or disabling of the embedded COM port.

Embedded Mouse Port allows enabling or disabling of the embedded mouse port.

Integrated Diskette Controller allows enabling or disabling of the floppy controller.

NUMLOCK Power-On State allows the keyboard **NUMLOCK** feature to be set **on** or **off** when the server starts.

Embedded NIC 1 PXE Support allows enabling or disabling of PXE support for NIC 1.

Embedded NIC 2 PXE Support allows enabling or disabling of PXE support for NIC 2.

Diskette Read/Write Control allows configuration of the Read/Write control of the diskette drive. The options are Read/Write or Read only.

Diskette Boot Control allows the system to boot from the diskette drive.

IPL Device Boot Order

IPL Device Boot Order allows configuration of the device order used to start an operating system. This feature can be set to select which device the system scans first.

PCI Devices

The **PCI Devices** menu option allows viewing and setting of IRQs for all PCI devices.

Boot Controller Order

The **Boot Controller Order** menu option allows viewing and setting of the current controller order.

Date and Time

The **Date and Time** menu option allows the system date and time to be set.

Server Passwords

The **Server Passwords** menu allows a system manager to limit access to the system and its setup options. The following selections are available in this menu:

Administrator Password allows a system manager to assign an administrator password. This password prevents unauthorized users from modifying the setup options.

Power-On Password allows a system manager to assign a power-on password. This password prevents unauthorized users from powering on the system.

Network Server Mode allows a system manager to enable or disable the capability of the system to boot with a locked keyboard or without a keyboard. To unlock the keyboard, enter the Power-On Password.

QuickLock allows the keyboard to be locked while unattended. Pressing any key prompts for the power-on password to unlock the keyboard.

IMPORTANT: In the event of a forgotten password, all passwords will be cleared by resetting the system maintenance switch (SW4-6 On, SW4-2 must be Off). See "System Configuration Switches" in Appendix D, "Switches and Jumpers."

Automatic Server Recovery

The **Automatic Server Recovery** menu includes the following items:

Automatic Server Recovery allows this option to be enabled or disabled.

Thermal Shutdown will occur when the system detects a thermal caution event. This option is enabled by default. Compaq does not recommend disabling this feature.

Server Asset Tags

The **Server Asset Tags** menu allows access to the Server Info Text.

Server Info Text identifies the system with an Asset Tracking Number.

Advanced Options

The **Advanced Options** menu allows configuration of advanced system options. The following selections are available in this menu:

MPS Table Mode allows changes to the APIC table settings. The APIC table settings are automatically set by the OS Selection.

POST Speed Up allows a quick start process. When disabled a complete memory test is performed.

Erase Non-volatile Memory causes the current system configuration to be deleted.

Advanced Memory Protection sets the system to use the standard paired DIMM configuration with ECC.

Utility Language

The **Utility Language** menu allows the user to set the display language for use with RBSU. The following language choices are available:

- English
- French
- Italian
- German
- Spanish
- Japanese

RBSU Default Settings

Table 8-1 contains the default settings for options in primary RBSU menus.

Table 8-1
RBSU Default Settings

Menu/Option	Default Setting
System Options	
OS Selection	—
Embedded COM Port	Enabled
Embedded Mouse Port	Enabled
Integrated Diskette Controller	Enabled

continued

Table 8-1
RBSU Default Settings *continued*

Menu/Option	Default Setting
NUMLOCK Power-On State	Enabled
Embedded NIC 1 PXE Support	Enabled
Embedded NIC 2 PXE Support	Disabled
Diskette Read/Write Control	Enabled
Diskette Boot Control	Enabled
IPL Device Boot Order	
IPL Device Boot Order	Enabled
Server Passwords	
Administrator Password	Disabled
Power-On Password	Disabled
Network Server Mode	Disabled
QuickLock	Disabled
Automatic Server Recovery	
Automatic Server Recovery	Enabled
Thermal Shutdown	Enabled
Server Asset Tags	
Server Info Text	Disabled
Advanced Options	
MPS Table Mode	Enabled
Post Speed Up	Enabled
Erase Non-volatile Memory	Enabled
Advanced Memory Protection	
Standard ECC Support	Enabled

Redundant ROM Support

Compaq ProLiant DL360 G2 servers allow system ROM to be upgraded or configured safely with redundant ROM support. The server has a 2-MB ROM that acts as separate, active and backup, 1-MB ROMs. In the standard implementation, the active ROM contains the current ROM program version, and the backup ROM contains the previous program version.

Safety and Security Benefits

When updating the system ROM, ROMPaq saves the current active ROM program in the backup ROM and places the new version in the active ROM. In the event that the system becomes corrupted the previous version of the system ROM program may be restored to the active ROM. This feature protects an existing ROM version, even if a power failure occurs while flashing the ROM.

Access to Redundant ROM Settings

To access the redundant ROM:

1. During power up and when the cursor displays in the lower right corner of the screen, press the **F9** key to activate the RBSU.
2. Select **Advanced Options**.
3. Select **Redundant ROM**.
4. Select one of the ROM banks as the system ROM.
5. Press the **Enter** key.
6. Press the **Esc** key to exit the current menu or press the **F10** key to exit the RBSU.
7. Restart the server.

When the server boots, the system determines if the current ROM bank is corrupt. If a corrupt ROM is detected, the system will boot from the backup ROM and alert through POST or IML that the current ROM bank is corrupt.

If both the current and backup versions of the ROM are corrupt, the server must be set to the “ROMPaq disaster recovery mode”. To perform this procedure, see the “Enabling ROMPaq Disaster Recovery Mode” section in Appendix D, “Switches and Jumpers.”

ROMPaq Utility

Flash ROM enables upgrades to the firmware (BIOS) with system or option ROMPaq utilities. To upgrade the BIOS, insert a ROMPaq diskette into the diskette drive and boot the system.

The ROMPaq Utility checks the system and provides a choice (if more than one exists) of available ROM revisions. By default, the oldest ROM version is updated. This procedure is the same for both system and option ROMPaq utilities.

If a power loss occurs during a firmware upgrade, redundant ROM support enables data recovery.

Remote ROM Flash Utility

The Remote ROM Flash Utility enables a user with administrator privileges to flash ROM remotely on servers running Novell NetWare or Microsoft Windows NT and Windows 2000 operating systems.

The utility copies a ROM image and driver to the intended server's system partition, and changes the system boot order, enabling the server to boot from the partition and flash the ROM. After the ROM flash is complete, the utility restores the system boot order to the original settings.

ROM Legacy USB Support

When using operating systems that support USB, the ProLiant DL360 G2 server supports USB devices, including, but not limited to:

- CD-ROM drives
- Diskette drives
- Keyboard
- Mouse

For other operating systems, the ROM provides USB support for keyboard and mouse, but not for CD-ROM or diskette drives.

ROM legacy USB support is available during POST, DOS, and while the operating system is running. The ROM does not support hot-plug events for the USB keyboard or USB mouse at any time. The maximum device support is two USB keyboards, two USB mouse devices, and one layer of hubs.

For a list of operating systems supported by the ProLiant DL360 G2 server, visit the Compaq FTP site:

ftp://ftp.compaq.com/pub/products/servers/os-support-matrix-310.pdf

To determine whether an operating system supports a particular feature, visit the Compaq FTP site:

ftp://ftp.compaq.com/pub/products/servers/os%20feature%20matrix%20103000.pdf

Compaq SmartStart for Servers CD

The SmartStart CD is the recommended method for loading system software, thereby achieving a well-integrated server and ensuring maximum dependability and supportability. The SmartStart CD contains ROMPaq and other server management tools.

IMPORTANT: Do not use the SmartStart CD to load system software if the system was purchased with a factory-installed operating system. Refer to the *Compaq Factory-Installed Operating System Software User Guide* for software installation guidelines.

SmartStart performs the following functions:

- Auto-detect and configure server hardware and drive arrays.
- Install any major server operating system using packaged product CDs.
- Install the latest Compaq optimized drivers, ROMPaqs, and management agents.
- Deploy and maintain multiple servers using the Integration Server Management and Replication tools.
- Create and copy standard server configuration scripts using the Scripting Toolkit and Configuration Replication Utility.
- Test Compaq server hardware.
- Create support software diskettes to update drivers.

For more information about SmartStart, refer to the documentation shipped with the server.

SmartStart Diskette Builder

The SmartStart Diskette Builder is a utility that uses data stored on the SmartStart CD to create support diskettes. Support diskettes can be created for

specific configuration needs or for software that cannot be used directly from the SmartStart CD. Use the SmartStart Diskette Builder to create the following support diskettes:

- Array Configuration Utility
- Operating system support
- Server utilities
- Erase utility
- System and Option ROMPaq

To run the Diskette Builder, the following are required:

- A PC with one of the following operating systems:
  - Microsoft Windows 95
  - Microsoft Windows 98
  - Microsoft Windows NT
  - Microsoft Windows 2000
- Several 1.44-MB diskettes

All existing data on the diskettes is overwritten. Insert the SmartStart CD in the PC drive. The CD automatically runs the Diskette Builder utility.

However, if the PC does not support the "auto-run" feature, use Windows Explorer and enter the following command line:

```
[CD-ROM DRIVE]:\DSKBLDR\DSKBLDR.EXE
```

SmartStart Scripting Toolkit

The SmartStart Scripting Toolkit is a set of DOS-based utilities to configure and deploy servers in a customized, predictable, and unattended manner. These utilities provide scripted server and array replication for mass server deployment and duplicate the configuration of a configured source server onto target systems with minimum user interaction.

The Configuration Replication Utility is a stand-alone DOS utility that duplicates the settings of an operating RBSU-configured server by saving the server configuration to a scripted file. Settings can be edited and modified in the scripted file at the subset level. For example, ASR-2 settings can be changed without having to change settings for boot controller order.

For more information, refer to the *Compaq SmartStart Scripting Toolkit User Guide*.

Compaq Insight Manager XE

Compaq Insight Manager XE is the Compaq application for easily managing network devices. Compaq Insight Manager XE delivers intelligent monitoring and alerting as well as visual control of Compaq devices. Documentation for Compaq Insight Manager XE is available on the Compaq Management CD in the *OVERVIEW.HLP* file.

IMPORTANT: Compaq Insight Manager XE must be installed and in use to benefit from the Compaq pre-failure warranties on processors, hard drives, and memory modules.

Compaq Insight Manager XE features include:

- Comprehensive Fault Management—Compaq Insight Manager XE provides comprehensive fault management for all major subsystems, including pre-failure alerting for disks, memory, and processors.
- Integration Management—Compaq Insight Manager XE, in conjunction with SmartStart, allows effective deployment and management of configurations throughout the enterprise using the Integration Server and Insight Version Control.
- Performance Management—Compaq Insight Manager XE sets performance and capacity thresholds for management variables related to CPU and bus utilization, NIC throughput, logical disk capacity, and more.
- Workstation Management—Compaq Insight Manager XE allows monitoring and management of Compaq Professional Workstations.
- Client Management—Compaq Insight Manager XE allows management of faults and assets on Compaq *Deskpro*™ computers and Compaq Portables.
- *Netelligent*™ Management—Compaq Insight Manager XE can receive alarms from Netelligent devices. Full management of Netelligent devices is supported through integration with Compaq Netelligent Management Software.
- Asset Management—Compaq Insight Manager XE allows the exporting of asset information from the Compaq Insight Manager XE database to leading database and spreadsheet applications, making asset management easier than ever.

- Remote Management—Compaq Insight Manager XE allows management of in-band or out-of-band devices online or offline from remote locations.
- Reporting—Using Automatic Data Collection, Compaq Insight Manager XE allows the gathering of historic performance information for graphing or export purposes, which helps with upgrade performance.
- Integration with Enterprise Management Platforms—Compaq Insight Manager XE provides integration with leading management platforms including HP OpenView, IBM NetView, SunNet Manager, and Microsoft Systems Management Server.

Compaq Diagnostics Utility

The Compaq Diagnostics Utility assists in testing and verifying the operation of the server hardware. The utility is located on the system partition of the drive. The utility can also be downloaded from the Compaq Support website:

www.compaq.com/support/files/server/us/index.html

In the event of a hard drive failure, a diskette created from the downloaded utility, can be used to boot the server and run the Compaq Diagnostics Utility.

Automatic Server Recovery-2

ASR-2 is a feature that causes the system to restart if a catastrophic operating system error occurs, such as a blue-screen, ABEND (abnormal end), or panic. A system fail-safe timer, the ASR-2 timer, starts when the Compaq System Management driver, also known as the health driver, is loaded. When the operating system is running correctly, the system periodically resets the timer. However, if the operating system fails, the timer expires and restarts the server.

ASR-2 increases server availability by restarting the server within 10 minutes of a system hang or shutdown. At the same time, the Compaq Insight Manager XE console notifies users, by sending a message to a designated pager number, that ASR-2 has restarted the system. ASR-2 can be disabled from the Compaq Insight Manager XE console or RBSU.

Chapter 9

Integrated Management Log

The Compaq Integrated Management Log (IML) records and logs events in an easy-to-view form. The IML records hundreds of events and time-stamps them with one-minute granularity.

Events listed in the IML are categorized in one of four event severity levels:

- Status – indicates that the message is informational only.
- Repaired – indicates that corrective action has been taken.
- Caution – indicates a non-fatal error condition has occurred.
- Critical – indicates a component failure has occurred.

IML requires Compaq Operating System dependent drivers. Refer to the Compaq SmartStart and Support Software CD for instructions on installing appropriate drivers.

Viewing the Log

Recorded events in the IML may be viewed as follows:

- From within the Compaq Insight Manager
- From within the Compaq Survey Utility

Compaq Insight Manager

Compaq Insight Manager is a server management tool that provides in-depth fault, configuration, and performance monitoring of hundreds of Compaq servers from a single management console. The system parameters being monitored describe the status of all key server components. By being able to view events that have occurred, immediate action can be taken.

The event list may be viewed and printed from within Compaq Insight Manager by following the instructions below. A critical or caution event may be marked as repaired after the affected component has been replaced. For example, when a failed fan has been replaced, the event may be marked as repaired, which lowers the severity of the event.

Viewing the Event List

To view the event list:

1. From the Compaq Insight Manager, select the appropriate server, then select **View Device Data**. The selected server is displayed with buttons around its perimeter.
2. Click **Recovery**.
3. Select **Compaq Integrated Management Log**.
4. If a failed component has been replaced, select the event from the list, then select **Mark Repaired**.

Printing the Event List

To print the event list:

1. From the Compaq Insight Manager, select the appropriate server. The selected server is displayed with buttons around its perimeter.
2. Click **Configuration**.
3. Click **Recovery**.
4. Click **Print**.

Compaq Survey Utility

The Compaq Survey Utility is a serviceability tool available for Novell NetWare, Microsoft Windows NT and Windows 2000 that delivers online configuration capture and comparison to maximize server availability. It is

available on the Management CD in the Server Setup and Management pack, or it is available on the Compaq website:

www.compaq.com/support/files/servers/us/index.html

Refer to the Compaq Management CD for information on installing and running the Survey Utility. After running the Survey Utility, the IML can be viewed by loading the output of the utility (typically called *SURVEY.TXT*) into a text viewer such as Microsoft Notepad. The event list follows the system slot information in the file. Once opened the text file, may be printed from the viewer.

List of Events

The event list displays affected components and their associated error messages. Though the same basic information is displayed, the format of the list may be different depending if it is being viewed from within Compaq Insight Manager or from within the Compaq Survey Utility.

The following table identifies the event types (affected components) and their associated event messages.

Table 9-1
Event Messages

Event Type	Event Message
Machine Environment	
Fan Failure	System Fan Failure (Fan X, Location)
Overheat Condition	System Overheating (Zone X, Location)
Main Memory	
Correctable Error threshold exceeded	Corrected Memory Error threshold passed (Slot X, Memory Module X)
	Corrected Memory Error threshold passed (System Memory)
	Corrected Memory Error threshold passed (Memory Module unknown)

continued

Table 9-1
Event Messages *continued*

Event Type	Event Message
Uncorrectable Error	Uncorrectable Memory Error (Slot X, Memory Module X)
	Uncorrectable Memory Error (System Memory)
	Uncorrectable Memory Error (Module Unknown)
Processor	
Correctable Error Threshold exceeded	Processor Correctable Error threshold passed (Slot X, Socket X)
Uncorrectable Error	Processor Uncorrectable internal error (Slot X, Socket X)
PCI Bus Error	PCI Bus Error (Slot X, Bus X, Device X, Function X)
Power Subsystem	
System Configuration Battery Low	Real-Time Clock Battery Failing
Automatic Server Recovery	
System Lockup	ASR Lockup Detected: Cause
Operating System	
System Crash	Blue Screen Trap: Cause [NT]
	Kernel Panic: Cause [UNIX]
	Abnormal Program Termination: Cause [NetWare]
Automatic OS Shutdown	Automatic Operating System Shutdown Initiated Due to Fan Failure
	Automatic Operating System Shutdown Initiated Due to Overheat Condition
	Fatal Exception (Number X, Cause)

Chapter 10

Troubleshooting

This chapter provides specific information to troubleshoot a ProLiant DL360 G2 server. Details will be given relating to server startup and operation errors.

For information about general troubleshooting techniques, error messages, status messages, and preventative maintenance, refer to the *Compaq Servers Troubleshooting Guide*. Also refer to the *Compaq ProLiant DL360 Generation 2 Maintenance and Service Guide* on the Compaq website:

www.compaq.com/support/techpubs/maintenance_guides/

When the Server Will Not Start

If the server will not start, follow the preliminary steps listed below:

1. Verify that the system and monitor are plugged into a grounded, working outlet.
2. Verify that the server meets the minimum hardware configuration requirements. See the "Minimum Hardware Configuration" section later in this section.
3. Verify that the power source is working normally. Refer to the "Power Source" section in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.
4. Verify that the power supply is working normally. See the "Front Panel Status LED Indicators" section in Appendix C. Also, refer to the "Power Source" section in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.

5. If the system does not complete the Power-On Self-Test (POST) or fails to load an operating system, refer to the "General Loose Connections" section in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.
6. If the server is power cycling, verify that the system is not rebooting because of an Automatic Server Recovery-2 (ASR-2) reboot that is caused by another problem. Refer to the *Compaq Servers Troubleshooting Guide* on the Documentation CD for more information on this utility. Also refer to the "System Short" section of that guide.

   NOTE: When enabled, ASR-2 can restart the server and automatically load the operating system. If a critical error occurs, ASR-2 logs the error in the Integrated Management Log (IML) and restarts the server. Then, the system ROM pages the designated administrator and executes the normal restart process.

7. Restart the server, and see the "Normal Power-up Sequence" later in this section, to verify that the system starts normally.

If by following these steps the problem is not resolved, see "Diagnosis Steps" later in this section to continue the troubleshooting process.

Minimum Hardware Configuration

If errors occur, ensure the server meets the minimum hardware configuration standard listed below.

Table 10-1
Minimum Hardware Configuration

Component	Minimum Specification
Processors	A single processor must be installed in processor 1 socket.
Processor Power Module	A Processor Power Module must be installed in PPM 1 socket
Memory	At least two sockets must be populated with 133-MHz ECC registered SDRAM DIMM.
PCI riser board assembly	The PCI riser board assembly must be plugged in for server operation.

Also refer to the *Compaq ProLiant DL360 Generation 2 Maintenance and Service Guide* at the Compaq website:

www.compaq.com/support/techpubs/maintenance_guides/

Normal Power-Up Sequence

The following sequence of events occurs during normal operation when a system meeting the minimum hardware requirements is powered up.

1. The front panel Power On/Standby LED turns from amber (standby) to green (on).
2. The system board fan and power supply fans start up.
3. The server initializes in the following sequence (POST):
    a. System initialization
    b. PCI auto configuration
    c. Video initialization
    d. Memory test
    e. Memory initialization
    f. Processor initialization
    g. Power supply checking
    h. System event checking
    i. Diskette drive
    j. CD-ROM
    k. SCSI devices
    l. Additional IDE devices
4. The operating system boots.

Diagnosis Steps

If a server will not power up, or powers up but does not complete the Power-On Self-Test (POST), answer the questions in the following table to determine appropriate actions for the symptoms observed. Based on the answers to these questions, direction will be given to one of a series of tables, immediately following. Based on the answers to these questions, the tables outline possible reasons for the problem, options available to assist in diagnosis, possible solutions available, and references to other sources of information.

By opening the access panel of a ProLiant DL360 G2 server, Compaq assumes the user is qualified in the servicing of computer equipment and trained in recognizing risks in products with hazardous energy levels. Otherwise, contact your Compaq authorized service provider for support.

Table 10-2
Diagnosis Steps

Question	Action
Did the Power On/Standby LED on the front panel turn on?	See Table 10-3.
Is video available for diagnosis?	See Table 10-4.

Table 10-3
Did the Power On/Standby LED on the Front Panel Turn On?

See "Status LED Indicators" in Appendix C.		
Answer	**Possible Reasons**	**The Next Step**
No	There is no AC power. There is a broken connection between the system board and Power On/Standby switch. A power supply problem exists. The power supply may not be connected or inserted properly, it may have a damaged connector, or it may have failed. The user interface board may need to be replaced or there may be a broken connection between the system and user interface board.	Verify that the system is attached to a grounded, working outlet. If the server does not start, further information is needed. Go to Table 10-4.
Yes and the LED color is amber.	The server is in standby mode. PCI riser board assembly is not seated properly or is not installed.	Press the Power On/Standby switch firmly to power on the server. Reseat the PCI riser board assembly. See Chapter 3 for instructions on performing this process. If the server does not start, further information is needed. Go to Table 10-4.
Yes and the LED color is green.	The system board may need to be replaced. A processor may have failed, or is not seated properly. A memory module may have failed, or is not seated properly.	If the Power On/Standby LED is green then assume the following is true: ■ AC power is connected to the power supply and providing adequate power. ■ The power supply is connected properly. ■ The connection between the system and user interface board is good. ■ The connection between the system board and power switch is good. Further information is needed. Go to Table 10-4.

Table 10-4
Is Video available for diagnosis?

Answer	Possible Reasons	The Next Step
Yes		Video is available for diagnosis. Determine the next step by observing Power-On Self-Test (POST) progress and error messages. Refer to the *Compaq Servers Troubleshooting Guide* on the Documentation CD for a complete description of each POST error message.
No	Video may not be connected properly.	Verify the video connection on the rear panel of the server. Refer to "Video Problems" in the *Compaq Servers Troubleshooting Guide*.
	The switches may not be set correctly on the system board.	Verify the switch settings on the system board. See Appendix E for switch locations, definitions and settings.
	A processor has failed, or it is not seated properly.	1. Remove a single processor. 2. Reseat the processor firmly. 3. If this does not solve the problem, replace with a known good processor to identify the failed component. 4. If a processor failed, verify that the correct heatsink and thermal pad were installed and always use a new thermal pad when replacing a processor or heatsink. NOTE: Run RBSU to reset a processor fail status after reseating or replacing a processor.
	A memory module has failed, or it is not seated properly.	1. Reseat the memory module firmly. 2. If this does not solve the problem, replace with a known good memory module to identify the failed component. Are there any audible indicators, such as a series of beeps? A series of audible beeps will indicate the presence of a Power-On Self-Test (POST) error message. Refer to the *Compaq Servers Troubleshooting Guide* on the Documentation CD for a complete description of each beep sequence, and the corresponding error messages. Contact your Compaq authorized service representative.

Problems after Initial Boot

Use the following table to troubleshoot server installation problems that occur after the initial boot.

Table 10-5
Installation Problems

Problem	Possible Cause	Possible Solution
System cannot load SmartStart.	SmartStart requirement was not performed.	Check the SmartStart Release notes provided on the SmartStart Online Reference Information.
	80-pin CD-ROM/diskette drive backplane cable is not connected to system board.	Check the cable between system board and CD-ROM/diskette drive backplane to ensure proper connection.
	Insufficient memory is available.	A "Insufficient Memory" message may display the FIRST time SmartStart is booted on certain non configured systems. To correct the problem: 1. Turn off power to the server. 2. Insert the SmartStart and Support Software CD in the CD-ROM drive 3. Power on the server.
	Existing software is causing conflict.	*Run the Compaq System Erase Utility. Please read the cautionary note below. Refer to the instructions in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.
SmartStart fails during installation	Error occurs during installation	*Follow the error information provided. If it is necessary to reinstall, run the Compaq System Erase Utility. Refer to the instructions in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.
	CMOS not cleared	*Run the Compaq System Erase Utility. Read the cautionary note below. Refer to the instructions in the *Compaq Servers Troubleshooting Guide* on the Documentation CD.

*** CAUTION:** The Compaq System Erase Utility causes the loss of all configuration information, as well as the loss of existing data on all connected hard drives. Please read "Running the Compaq System Erase Utility" and the associated warning in the *Compaq Servers Troubleshooting Guide* on the Documentation CD, before performing this operation.

Table 10-5
Installation Problems *continued*

Problem	Possible Cause	Possible Solution
Server cannot load operating system.	A required operating system step was missed.	Follow these steps: 1. Note at which phase the operating system failed. 2. Remove any loaded operating system. 3. Refer to the operating system documentation. 4. Install the operating system again.
	An installation problem occurred.	Refer to the operating system documentation and to the SmartStart Release Notes. Use the System Configuration Utility to troubleshoot where the installation failed.
	A problem was encountered with the hardware added to the system.	Refer to the documentation provided with the hardware.

Appendix **A**

Regulatory Compliance Notice

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, your Compaq ProLiant DL360 G2 server is assigned a Compaq series number. The Compaq series number for this product is: Series ES1024. The Compaq ProLiant DL360 G2 server series number can be found on the product label, along with the required approval markings and information. When requesting certification information for this product, always refer to this series number. This series number should not be confused with the marketing name or model number for your Compaq ProLiant DL360 G2 server.

Federal Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (i.e., personal computers). The FCC requires devices

in both classes to bear a label indicating the interference potential of the device as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class B devices have an FCC logo or FCC ID on the label. Class A devices do not have a FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

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

Class B Equipment

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

Declaration of Conformity for Products Marked with the FCC Logo – United States Only

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

For questions regarding your product, contact:

Compaq Computer Corporation
P. O. Box 692000, Mail Stop 530113
Houston, Texas 77269-2000

or call 1-800-652-6672 (1-800-OK COMPAQ). (For continuous quality improvement, calls may be recorded or monitored.)

For questions regarding this FCC declaration, contact:

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

or call 281-514-3333.

To identify this product, refer to the part, series, or model number found on the product.

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.

Canadian Notice (Avis Canadien)

Class A Equipment

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

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

Class B Equipment

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

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

European Union Notice

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

Compliance with these directives implies conformity to the following European Norms (in brackets are the equivalent international standards):

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

Japanese Notice

ご使用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、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。
取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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Taiwanese Notice

警告使用者：

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

Laser Devices

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

Laser Safety Warnings

WARNING: To reduce the risk of exposure to hazardous radiation:

- Do not try to open the laser device enclosure. There are no user-serviceable components inside.
- Do not operate controls, make adjustments, or perform procedures to the laser device other than those specified herein.
- Allow only Compaq authorized service technicians to repair the laser device.

Compliance with CDRH Regulations

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

Compliance with International Regulations

All Compaq systems equipped with laser devices comply with appropriate safety standards including IEC 825.

Laser Product Label

The following label or equivalent is located on the surface of the Compaq supplied laser device.

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

Laser Information

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

Battery Replacement Notice

Your computer is provided with an internal Lithium battery or battery pack. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Replacement is to be done by a Compaq authorized service provider using the Compaq spare designated for this product.

For more information about battery replacement or proper disposal, contact your Compaq authorized reseller or your authorized service provider.

WARNING: Your computer contains an internal Lithium Manganese Dioxide, or a Vanadium Pentoxide, or an alkaline battery pack. There is risk of fire and burns if the battery pack is not handled properly. To reduce the risk of personal injury,

- Do not attempt to recharge the battery.
- Do not expose to temperatures higher than 60°C.
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the Compaq spare parts designated for this product.

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

Power Cords

The power cord set included in your server meets the requirements for use in the country where you purchased your server. If you need use this server in another country, you should purchase a power cord that is approved for use in that country.

The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater than the voltage and current rating marked on the product. In addition, the diameter of the wire must be a minimum of 1.00 mm^2 or 18AWG, and the length of the cord must be between 6 feet (1.8 m) and 12 feet (3.6 m). If you have questions about the type of power cord to use, contact your Compaq authorized service provider.

IMPORTANT: Route power cords so that they will not be walked on or pinched by items placed upon or against them. Pay particular attention to the plug, electrical outlet, and the point where the cords exit from the product.

Mouse Compliance Statement

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.

Appendix ***B***

Electrostatic Discharge

To prevent damaging the system, be aware of the precautions needed to follow when setting up the system or handling parts. 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.

Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- 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 methods 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 meg-ohm ± 10 percent resistance in the ground cords. To provide proper grounding, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps 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 a Compaq authorized reseller install the part.

NOTE: For more information on static electricity or for assistance with product installation, contact your Compaq authorized reseller.

Appendix ***C***

Status LED Indicators

The ProLiant DL360 G2 server contains several sets of LED indicators that indicate the status of hardware components and settings:

- Front panel status LED indicators
- Rear panel status LED indicators
- Hot-plug SCSI hard drive LED indicators
- System board status LED indicators

Use the following sections to determine the location and status of LEDs on a ProLiant DL360 G2 server.

Front Panel Status LED Indicators

The set of three LEDs and two illuminated switches on the front of the server indicates server status. The following figure and table identify and describe the location and function of the LEDs.

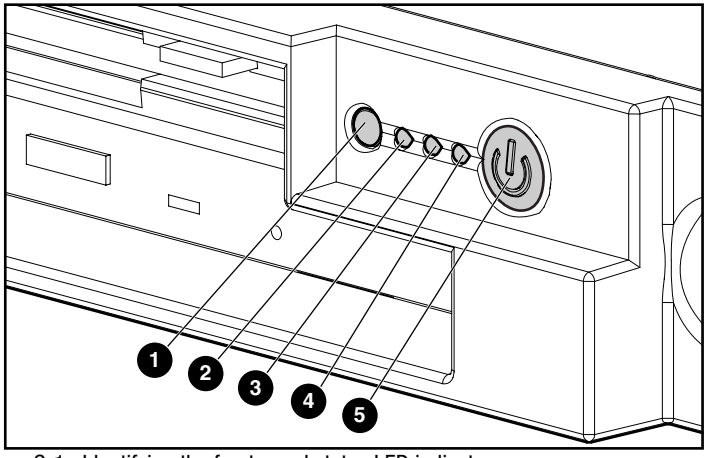

Figure C-1. Identifying the front panel status LED indicators

Table C-1
Front Panel Status LED Indicators

Location	LED Description	Status
❶	Front Unit Identification switch embedded LED	On = Activated Off = Deactivated Blinking = Remote Console Active
❷	NIC 2 network link/activity	On = Linked to network Off = No Link Blinking = Activity
❸	NIC 1 network link/activity	On = Linked to network Off = No Link Blinking = Activity
❹	Internal Health	Green = System healthy Amber = System degraded Red = System Failure
❺	Power On/Standby switch embedded LED	Amber = Standby Green = On Off = power cord not attached to the server or power supply failure

Rear Panel Status LED Indicators

The server rear panel contains seven LEDs: one for the Rear Unit Identification LED switch and six for the RJ-45 connectors. Use the following figure and table to identify each LED.

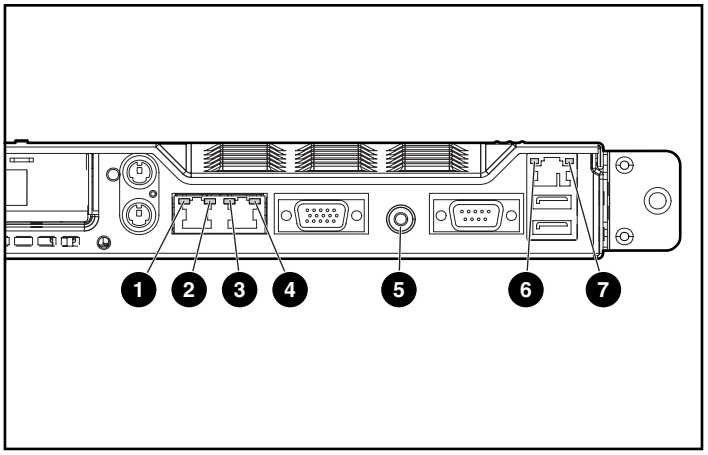

Figure C-2. Identifying the rear panel status LED indicators

Table C-2
Rear Panel Status LEDs

Location	LED	Status
❶	NIC 1 activity	Green = activity Off = no activity
❷	NIC 1 link	Green = network connected Off = network disconnected
❸	NIC 2 activity	Green = activity Off = no activity
❹	NIC 2 link	Green = network connected Off = network disconnected

continued

Table C-2
Rear Panel Status LEDs *continued*

Location	LED	Status
❺	Rear unit identification LED switch	On = activated Off = deactivated Blinking = Remote Console Active
❻	Integrated Lights Out (iLO) Management Port activity	Green = activity Off = no activity
❼	Integrated Lights Out (iLO) Management Port link	Green = port connected Off = port disconnected

Hot-Plug SCSI Hard Drive Status LED Indicators

Each hot-plug SCSI hard drive has three LED indicators located on the front of the drive. They provide activity, online, and fault status for each corresponding drive when configured as a part of an array and attached to a powered-on Smart Array Controller. Their behavior may vary, depending on the status of other drives in the array. Use the following figure and table to analyze the status of each hot-plug SCSI hard drive.

WARNING: Read the "Hot-plug Hard Drive Replacement Guidelines" in the *Compaq Servers Troubleshooting Guide* on the Documentation CD before removing a hard drive.

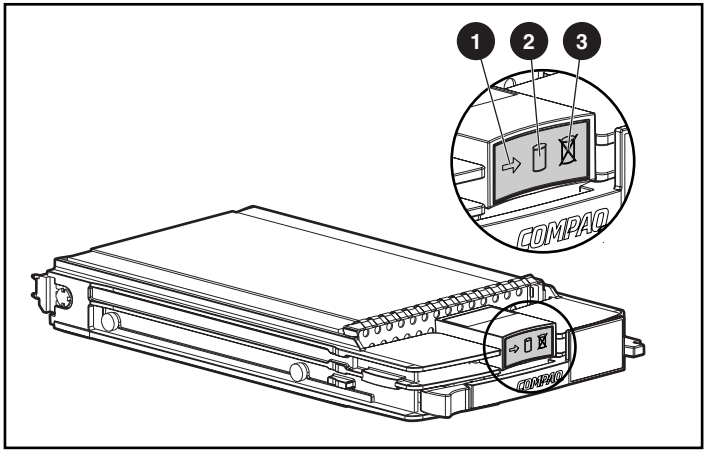

Figure C-3. Identifying the hot-plug SCSI hard drive LED indicators

- The LED on the left indicates Drive Activity ❶, where **on** indicates activity and **off** indicates no activity by the drive.
- The center LED indicates Online Status ❷, where flashing indicates an active online condition and **off** indicates an inactive online condition.
- The LED on the right indicates Fault Status ❸, where flashing indicates fault-process activity and **off** indicates a no fault-process activity.

Table C-3
Hot-Plug Hard Drive LED Indicator Status Combinations

❶ Activity	❷ Online	❸ Fault	Condition
On	Off	Off	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is being accessed and is not configured as part of an array.
On	Flashing	Off	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is rebuilding or undergoing capacity expansion.
Flashing	Flashing	Flashing	**Do not remove the drive. Removing a drive during this process will cause data loss.** The drive is part of an array being selected by the Array Configuration Utility. -Or- The Options ROMPaq is upgrading the drive.
Off	Off	Off	OK to replace the drive online if a predictive failure alert is received and the drive is attached to an array controller. The drive is not configured as part of an array. -Or- If this drive is part of an array, then a powered-on controller is not accessing the drive. -Or- The drive is configured as an online spare.
Off	Off	On	OK to replace the drive online. The drive has failed, and has been placed off-line.

continued

Table C-3
Hot-Plug Hard Drive LED Indicator Status Combinations *continued*

❶ Activity	❷ Online	❸ Fault	Condition
Off	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and configured as part of an array.
On or Flashing	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online. The drive is online and being accessed.

System Board Status LED Indicators

CAUTION: Only operate the system without the access panel for brief periods to identify LEDs that diagnose problems with system components. Operating the system without the access panel prevents proper airflow and can result in thermal damage.

CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning any procedure.

The internal LEDs on the system board identify conditions that are relevant to service personnel. Use the following figure and table to determine system board LED locations and status.

Several LEDs are located on the system board:

- Processor failure
- Processor Power Module failure
- Memory failure
- Over-temperature
- Riser failure
- SCSI error

Use Figure C-4 and Table C-4 to identify their location and status.

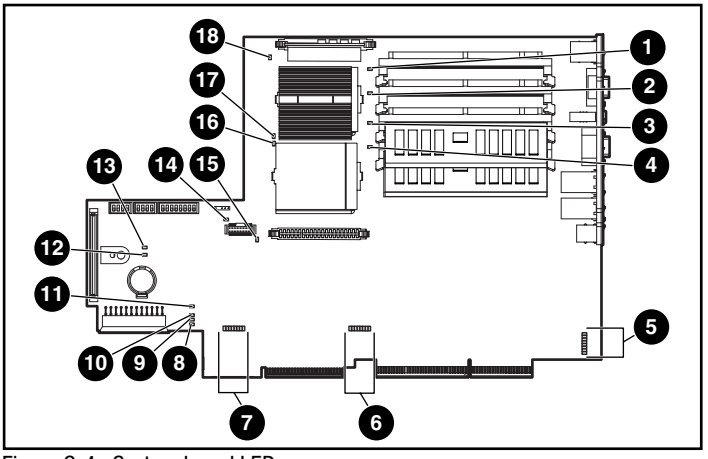

Figure C-4. System board LEDs

Table C-4
System Board LEDs

Item	LED Description	Status
❶	DIMM 4 failure	Amber = Memory failed Off = Normal
❷	DIMM 3 failure	
❸	DIMM 2 failure	
❹	DIMM 1 failure	
❺	Diagnostic LED array	0-7 See “Maintenance and Service Guide”
❻	Diagnostic LED array	0-7 See “Maintenance and Service Guide”
❼	Diagnostic LED array	0-7 See “Maintenance and Service Guide
❽	Power supply	Green = PSU operational Off = Standby mode or Off
❾	Power Supply Fan failure	Amber = Fan failed Off = Normal

continued

Table C-4
System Board LEDs *continued*

Item	LED Description	Status
⑩	Power Supply Failed	Amber = Fan failed Off = Normal
⑪	Riser failure Power Supply Failed	Amber = PCI riser assembly not seated or installed Off = Normal
⑫	Over-temperature	Amber = Temperature has exceeded OS cautionary level or critical hardware level Off = Temperature is OK
⑬	SCSI Buss error	Amber = Checksum error Off = Normal
⑭	CPU Fan Failure	Amber = Fan Failed Off = Fan OK
⑮	Processor Power Module (PPM) 2	Amber = PPM2 failed Off = Normal
⑯	Processor 2 failure	Amber = Processor failed Off = Normal
⑰	Processor 1 failure	Amber = Processor failed Off = Normal
⑱	Processor Power Module (PPM) 1	Amber = PPM1 failed Off = Normal

System LEDs and Internal Health LED Status Combinations

When the internal health LED on the front panel illuminates either amber or red, the server is experiencing a health event. Combinations of illuminated system LEDs and the internal health LED indicate system status (Table C-5).

NOTE: For the internal health LED to provide pre-failure and system conditions, the system management driver must be installed.

The front panel health LED indicates only the current hardware status. In some situations, Compaq Insight Manager XE may report server status differently than the health/system board LEDs because the software tracks more system attributes.

Table C-5
System LEDs and Internal Health LED Status Combinations

System Board LED and Color	Internal Health LED Color	Status
Processor failure, socket *X* (Amber)	Red	■ Processor in socket *X* has failed. ■ Processor *X* has failed over to offline spare. ■ Processor *X* is not installed in the socket. ■ Processor *X* is unsupported. ■ Processors are mismatched (speed and/or type). ■ ROM detects a failed processor during POST.
	Amber	Processor in the socket is in a pre-failure condition.
PPM failure, slot *X* (Amber)	Red	■ PPM in slot *X* has failed. ■ PPM is not installed in slot *X*. ■ PPM is not installed in slot *X*, but the corresponding processor is installed.
DIMM failure, slot *X* (Amber)	Red	■ DIMM in slot *X* has failed. ■ DIMM in slot *X* is an unsupported type. ■ DIMM in slot *X* has experienced a multi-bit error.
	Amber	■ DIMM in slot *X* has reached single-bit correctable error threshold. ■ DIMM in slot *X* is in a pre-failure condition.
DIMM failure, all slots in one bank (Amber)	Red	Interleaving error: ■ DIMM is missing from the bank. ■ DIMMs are mismatched within the bank.

continued

Table C-5
System LEDs and Internal Health LED Status Combinations *continued*

System Board LED and Color	Internal Health LED Color	Status
DIMM failure, all slots in all banks (Amber)	Red	No valid or usable memory is installed in the system.
Over-temperature (Amber)	Red	■ System has reached the operating system cautionary level. ■ System has exceeded the hardware critical level.
Riser (Amber)	Red	PCI riser is unseated.
Fan (Amber)	Red	A CPU or Power Supply fan has failed.

For more detailed server health information, use Compaq Insight Manager XE. See the "Compaq Insight Manager XE" section in Chapter 8, "Server Configuration Utilities."

Appendix ***D***

Switches and Jumpers

When a component is added or removed, or a security feature is changed, the server must be reconfigured to recognize the changes. If the system configuration is incorrect, the server may not work properly and error messages may be displayed on the screen.

This appendix provides reference information about setting the system board switches and jumpers, which is part of the reconfiguration process, along with running the System Configuration Utility.

System Configuration Switches

The system board uses 3 DIP switches: (SW2) maintenance ❶, (SW3) chassis ID ❷ and (SW4) miscellaneous support ❸. Refer to the labels attached to the inside of the server access panel or to the following table for the correct system configuration switch settings. The following figure shows the location of the system configuration switches.

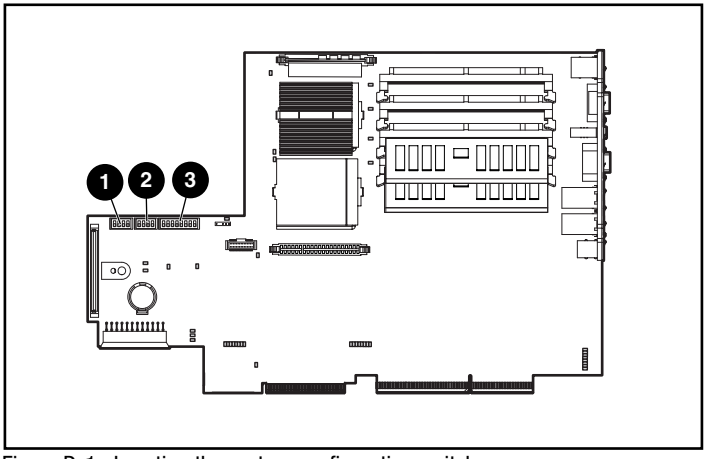

Figure D-1. Locating the system configuration switches

The following table defines the function for each setting on SW2, the maintenance switch.

Table D-1
Maintenance Switch (SW2) Settings ❶

Switch Position				Processor Function
SI	**S2**	**S3**	**S4**	
All Positions Reserved				Reserved

Table D-2
Chassis ID (SW3) Switch Settings ❷

Switch Position			Chassis ID
S1/ID2	**S2/ID1**	**S3/ID0**	
Off	Off	Off	0
Other combinations reserved for future use			
S4/Maintenance function			
Off *	Reserved – Default position		

Table D-3
Miscellaneous Support (SW4) Switch ❸

Switch Position	On/Off	Function
S1	On	Reserved
	Off *	Reserved
S2	On	NVRAM Write Disable (Prevents system reconfiguration)
	Off *	NVRAM Write Enable (Allow system reconfiguration)
S3	On *	Rack Mount (Indicates system is rack mounted)
	Off	Tower Configuration
S4	On	Floppy Boot Override
	Off*	Floppy Boot Control (Allowed by configuration)
S5	On	Power On Password Disabled
	Off *	Power On Password Enabled (Setup in configuration)
S6	On	NVRAM Maintenance (Clears NVRAM prior to reconfiguration)
	Off *	NVRAM Enabled (Current contents valid or ready for reconfiguration. Used in conjunction with S2)
S7	On	IIC Write Enabled
	Off *	IIC Write Protect
S8	Off *	Reserved – Default position

An asterisk (*) indicates the normal default operating position of a switch

Enabling ROMPaq Disaster Recovery Mode

A corrupted system ROM will require recreation of the ROM BIOS by a process called ROM flash. This can be accomplished only when the system is in disaster recovery mode.

IMPORTANT: Before performing this operation, refer to the *Compaq Servers Troubleshooting Guide* for complete instructions on disaster recovery.

To enable disaster mode, set configuration switches 1, 4, 5, and 6 on the SW4, miscellaneous support, switch block to **on**.

Setting the NIC Operating Mode

ProLiant DL360 G2 servers come standard with two Compaq NC7780 Gigabit 10/100/1000 Mbps network interface controllers (NICs). The NIC automatically configures the link to support the highest possible speed based on link partner capability and characteristics of the channel.

Changing SCSI Device Jumper Settings

SCSI devices connected to the same SCSI controller must have different SCSI IDs. With a ProLiant DL360 G2 server, do not change SCSI device jumper settings because the system automatically sets the SCSI ID for all devices, internally and externally. Ensure that all jumpers are set to ID0 (all bits off), and allow the system to detect the drives and assign the proper ID.

Appendix ***E***

Installing a New Battery

The Compaq ProLiant DL360 G2 server has one memory device that requires a battery for retaining stored information.

System Board Battery Replacement

When the server no longer automatically displays the correct date and time, replace the battery that provides power to the real-time clock. Under normal use, battery life is usually about 5 to 10 years. Use a CR2032 lithium battery, Compaq P/N 179322-001.

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.

To install a new battery:

1. If the server is on, place it in standby mode. For detailed instructions on preparing the server for installation or upgrade, see Chapter 3, "Installing Hardware Options."
2. Remove the access panel. See "Removing the Access Panel" in Chapter 3, "Installing Hardware Options."

3. Locate the battery holder between the power supply connector and the SCSI back-plane connector on the system board.
4. Push the battery security clip away from the center of the holder to release the battery ❶.
5. Remove the existing battery ❷.

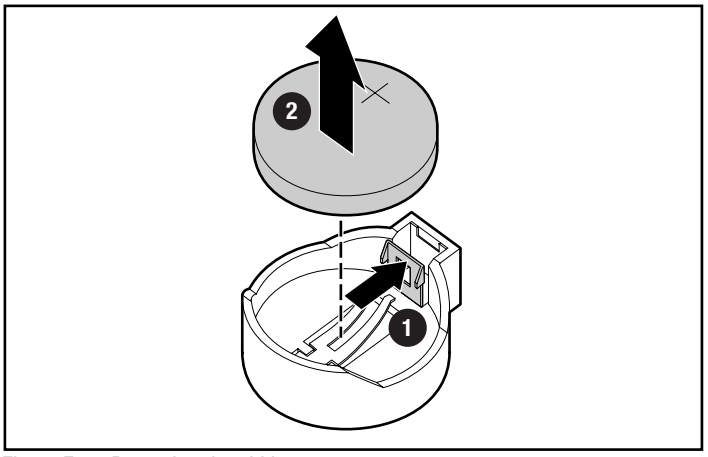

Figure E-1. Removing the old battery

6. Insert the new battery by pressing down lightly until the security clip locks the battery into place.

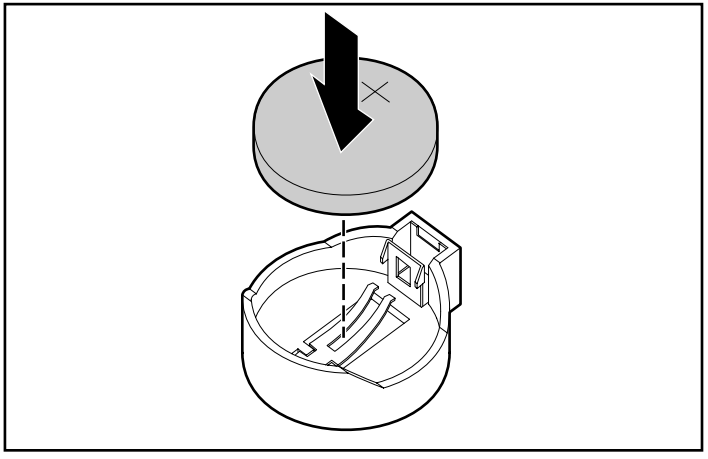

Figure E-2. Installing the new battery

7. Install the access panel. See "Installing the Access Panel" in Chapter 3, "Installing Hardware Options."

8. Insert the server into the rack. See “Inserting the Server into the Rack” in Chapter 4, “Server Installation.”
9. Fasten the thumbscrew that secures the fixed cable tray to the server. See “Attaching the Fixed Cable Tray” in Chapter 4, “Server Installation.”
10. Reconnect the power cord and peripheral devices. See “Connecting the Power Cord and Peripheral Devices” in Chapter 4, “Server Installation.”
11. Power up the server. See “Powering Up the Server” in Chapter 4, “Server Installation.”
12. Run the “ROM-Based Setup Utility” to reconfigure the system with the new battery. See Chapter 8, “Server Configuration and Utilities.”

Appendix ***F***

Server Specifications

Operating and Performance Specifications for the ProLiant DL360 Generation 2 Server Rack Model

Table F-1
Operating and Performance Specifications

Dimensions		
Height (without feet)	4.19 cm	1.65 in
Depth	65.45 cm	25.75 in
Width	42.55 cm	16.75 in
Weight (maximum)	11.81 kg	26 lb
Weight (no drives installed)	9.54 kg	21 lb
Input requirements		
Rated input voltage	100 VAC to 240 VAC	—
Rated input frequency	50 Hz to 60 Hz	—

continued

Table F-1
Operating and Performance Specifications *continued*

Dimensions		
Rated input current	2.8 A (110 V) to 1.4 A (220 V)	—
Rated input power	307 W	—
BTUs per hour	1048	—
Power supply output		
Rated steady-state power	180 W	—
Maximum peak power	200 W	—
Temperature range		
Operating (See note)	10°C to 35°C	50°F to 95°F
Shipping (See note)	-40°C to 70°C	-40°F to 158°F
Relative humidity (noncondensing)		
Operating (See note)	10% to 90%	—
Non-operating (See note)	5% to 95%	—
Maximum wet bulb temperature	28°C	82.4°F

Note: Operating temperature has an altitude derating of 1°C per 1,000 ft. No direct sunlight. Storage maximum humidity of 95% is based on a maximum temperature of 45°C. Altitude minimum for storage is 70 KPa.

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