

HP Carrier-Grade Server cc3310 Product Guide



Manufacturing Part Number: cc3310-ProductGuide

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U.S.A.

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Related Documents. The *HP Server cc3310 User Information Diagnostics and Utilities Resource CD-ROM* has been provided with your server. It contains a complete documentation set for the server.

The CD will autorun when you insert it into an operating Windows workstation, or boot from the CD after a hardware reset.

In addition, the latest versions of all these documents, and any product updates to these documents, are posted under the appropriate server at:

<http://docs.hp.com>

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Part I: User's Guide

The User's Guide includes descriptions of the HP Carrier Grade Server cc3310, and the associated software and utilities. Operating procedures and assistance with solving problems are also provided.

Advice (Tips)

Lessons learned and tips are provided here to assist you in setup and operation of the server. Familiarize yourself with these tips before you setup and use the server.

Server

1. The system's System Data Record (SDR) must be reprogrammed every time that the hardware configuration changes. A change to memory, processors, power supplies, power cage, hot swap backplane, controller boards, or any hardware device or Field Replaceable Unit (FRU) is not automatically recorded by the system. Failure to update the SDR may result in inaccurate Telco Alarm Manager (TAM) alarm performance. (The TAM may not report critical failures.) Use the following procedure to re-write the SDR:
 - a. Boot the system from the *HP Server cc3310 Information Diagnostics and Utilities Resource CD*.
 - b. After the server has booted, select **Load Configuration Wizard**.
 - c. When the wizard begins, press **Continue**.
 - d. Select **Server Configuration Wizard** and **Continue**.
 - e. Select **Run Wizard** and **Continue**.
 - f. Select **Load SDRs only on to this server** and **Continue**.
 - g. Set the date and time and select **Continue**.
 - h. Select **Update just the SDR repository** and **Continue**.
 - i. Select **Yes – Activate BMC TAM** and **Continue**.
 - j. Choose the desired LED configuration and select **Continue**.
 - k. Save the configuration to disk and select **Continue**.
 - l. Select **OK to program SDRs**.
 - m. Observe that the server boots when the SDR repository has been reprogrammed.
2. The fault light colors on the TAM display are factory configured for North American light settings. TAM fault light colors on the alarm panel can be changed by altering jumpers on the front panel I/O board. Refer to Chapter 8 Upgrading the Hardware for additional information.
3. If you are using the Intel Service Manager (ISM), you must manually configure the SNMP and set ISM health indicators. Refer to the *Intel Server Management (ISM) for the HP Carrier-Grade Server cc3310 Installation and User's Guide* for additional information.
4. Installing the service partition will remove the Operating System (OS) from the server. You will have to reinstall the OS after installing a service partition.

System Configuration

1. HP supports Red Hat Enterprise Linux (RHEL) Advanced Server 2.1, Kernel 2.4.9-e.24 and later. If you do not have RHEL 2.1, Kernel 2.4.9-e.24 (or later), download the appropriate ISO images from Red Hat at <http://rhn.redhat.com>. (Have your user name and password ready.)
2. Linux RHEL AS 2.1 should be installed on the first hard drive of the system. Keep the Red Hat recommended default of "Install Boot Loader Record" on SDA – the master boot record of the system. (If no additional SCSI controllers have been added to the system, the BIOS setup screens - >Boot-> Hard Disk Drives The first hard disk drive must be defined as {00, AIC-7902B: 0 xxxxxx}, which is the internal drive containing the master boot record.)
3. Some limitations of RHEL AS 2.1 are:
RHEL does not support the built-in RAID controller.
RHEL does support a software RAID.
RHEL does not support SCSI hard drive hot swap capabilities.
The Linux poweroff shell command is not supported in RHEL AS 2.1.
4. The system should always have a service partition on the boot drive. This service partition contains utilities, diagnostics, and other support software. If a service partition is not present, you will not be able to configure system settings for the SSU Utility, or operate ISM DPC, or use CSSU features.

Systems are shipped with service partition pre-installed on the internal disk. If this disk has been corrupted, or incorrectly modified, you must reinstall the service partition. Check for an installed service partition during setup - if F4 is available on the BIOS Startup Screen, a service partition exists on the boot disk. Refer to Installing a Service Partition in chapter 4 for additional information.

5. If you will be using a USB floppy drive, install the drive before installing the OS.
6. Use the default boot loader provided on the *HP Server cc3310 Information Diagnostics and Utilities Resource* CD for Linux installation (not LILO). A system hang will occur if using LILO when USB devices are connected to the system.
7. Check system firmware revision numbers and update your firmware, if required. The delivered server firmware consists of the following:
Bios: Version SWV25.86B,0175P11 (P11) or later
BMC Version 01.19 or later
Hot Swap Backplane (HSC): Version 1.05 or later

You can obtain the latest firmware at:

http://www.hp.com/products1/servers/carrier_grade/products/cc3310/index.html

On the displayed web page (under the Production Information section), select the Firmware and Software Download link. Follow the instructions provided to download firmware.

Identify the installed firmware in your system as follows:

- a. Insert the *HP Server cc3310 Information Diagnostics and Utilities Resource* CD into the CD-ROM drive and boot from the CD.
- b. After the server has booted, select **Load Configuration Wizard**.
- c. When the wizard begins, press **Continue**.
- d. Select **Server Configuration Wizard** and **Continue**.
- e. Select **run wizard** and **Continue**.
- f. Select **Load SDR's only on to this server** and **Continue**.
- g. Observe that the date, time, and firmware version numbers are now displayed.
- h. Select **exit** to close the wizard.

- i. Remove the CD from the CD-ROM drive and reset the system.
8. Check the FRUSDR revision numbers and update FRUSDR if required. Identify the installed FRUSDR as follows:
 - a. Reset the server and select **F2** from the BIOS boot screen.
 - b. Place the cursor over the **Server** button, then select **System Management** and **Enter**.
 - c. Locate the FRUSDR version number in the resulting display. (It may be displayed in either of two formats. The original FRUSDR for this server is 5.6.A or 1.0.)
9. HP recommends that all SCSI, RAID, and LAN devices be installed and configured prior to installing the Linux RHEL AS 2.1 Operating System. Adding devices after the OS has been installed will change device name ordering. In some cases, this could prevent Linux from booting and necessitate reinstallation of the OS. Refer to chapter 5 for additional information.

Hardware Tips

1. Additional/optional hardware kits are available for processors, memory, hard drives, power supplies and removable media devices. The maximized system configuration for a single server consists of:
 - a. 12 GB of DDR memory
 - b. 2 internal SCSI hard drives
 - c. 2 single-port Ultra 320 SCSI Interface cards
 - d. 4 dual-port Gigabit LAN adapters (copper)
 - e. 1 RAID controller (Intel SRCZCR)
2. Requirements for memory installation are dependent on memory size and device banking design. Refer to chapter 8 for installation instructions.
3. The COM1 serial port is not accessible. This internal port is intended to factory used only.
4. The COM2 serial port is located on the server rear panel. Serial over LAN should be set to 19.2 for best/consistent data flow.
5. The front and rear serial ports have different connector pin arrangements and require different serial cables. Refer to chapter 9 for connector pin-out data and additional information.
6. The design of the hot swap backplane (HSB) facilitates HDD installation. For standard HDD SCSI address settings of 0 and 1, remove (or verify that they have been removed) all address jumpers from HDD. Refer to chapter 5 for additional information.

Intel RAID Controller Tips

1. HP supports the operation of the Intel external RAID controller (Intel model SRCZCR). The internal RAID controller (which is provided with your server) is not supported by the Linux RHEL AS 2.1 operating system.
2. Red Hat Enterprise Linux (RHEL) Advanced Server 2.1, Kernel 2.4.9-e.24 and later provided the required drivers for the external RAID controller.
3. The external RAID controller must be installed in slot 1 of the low-profile (half-length) card cage.
4. The Intel RAID controller is shipped with a full-height bracket attached. The low-profile bracket is included in the box with the controller. You must remove the full-height bracket and install the low-profile bracket.
5. You may damage the service partition when configuring the external RAID. It may be necessary to reinstall the service partition and the OS after configuring the RAID controller. Refer to chapter 4 for service partition installation instructions.

Networking Tips

1. When configuring the system with internal network ports NIC1 and NIC2, and no other network port hardware, RHEL AS 2.1 will assign the values “eth0” to the NIC2 port and “eth1” to the NIC1 port. If additional network hardware has been installed, RHEL AS 2.3 assigns the “eth_” numerical value to the add-on ports first, and then assigns values to the internal ports. (Example: If a dual –port network card is added to the system, the added ports will be assigned values of “eth0” and “eth1”. The NIC2 port would then be assigned the value “eth2” and the NIC1 port would be assigned the value of “eth3”.
2. Only the NIC 1 port can be used with ISM.

USB Tips

1. The system will boot from a floppy drive.
2. The Resource CD makes reference to a floppy drive.
3. A floppy drive may be used to flash the system, stop a power on/power off loop, transfer a file, etc.

Remote Firmware Update Tips

1. Remote update of firmware requires installation of the ISM. This feature is accessed from the ISM by use of the CSSU SUM operations. Refer to the *Intel Server Management (ISM) HP Carrier-Grade Server cc3310 Installation and User's Guide* for additional information.

ISM Tips

1. Please read the ISM ERRATA for the latest information.

TAM Tips

1. The OS event component of TAM (TAMTools) has several known defects.
2. Please read the TAM ERRATA for the latest information.

Warnings

Warnings and a caution which appear in this User's Guide are summarized here. Familiarize yourself with these warning before you use and service the cc3310 server.

WARNING **Anchor the equipment rack:** The equipment rack must be anchored to an unmovable support to prevent it from falling over when one or more servers are extended in front of the rack on slides. You must also consider the weight of any other device installed in the rack. A crush hazard exists should the rack tilt forward that could cause serious injury.

If AC power supplies are installed:

Main AC power disconnect: The AC power cord(s) is considered the main disconnect for the server and must be readily accessible when installed. If the individual server power cord(s) will not be readily accessible for disconnection then you are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire rack, not just to the server(s). To remove all power, two AC cords must be removed.

Grounding the rack installation: To avoid the potential for an electrical shock hazard, you must include a third wire safety ground conductor with the rack installation. If the server power cord is plugged into an AC outlet that is part of the rack, then you must provide proper grounding for the rack itself. If the server power cord is plugged into a wall AC outlet, the safety ground conductor in the power cord provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: The server is designed for an AC line voltage source with up to 20 amperes of overcurrent protection per cord feed. If the power system for the equipment rack is installed on a branch circuit with more than 20 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured with two power supplies is less than 4 amperes.

WARNING If DC power supplies are installed:
Connection with a DC source should only be performed by trained service personnel. The server with DC input is to be installed in a Restricted Access Location in accordance with articles 110-16, 110-17, and 110-18 of the National Electric Code, ANSI/NFPA 70. The DC source must be electrically isolated by double or reinforced insulation from any hazardous AC source. The DC source must be capable of providing up to 650 Watts of continuous power per feed pair.

Main DC power disconnect: You are responsible for installing a properly rated DC power disconnect for the server system. This main disconnect must be readily accessible, and it must be labeled as controlling power to the server. The circuit breaker of a centralized DC power system may be used as a disconnect device when easily accessible and should be rated no more than 10 amps.

Grounding the server: To avoid the potential for an electrical shock hazard, you must reliably connect an earth grounding conductor to the server. The earth grounding conductor must be a minimum 14AWG connected to the earth ground stud(s) on the rear of the server. The safety ground conductor should be connected to the chassis stud with a Listed closed two-hole crimp terminal with a maximum width of 0.25 inch. The nuts on the chassis earth ground studs should be installed with a 10 in/lbs torque. The safety ground conductor provides proper grounding only for the server. You must provide additional, proper grounding for the rack and other devices installed in it.

Overcurrent protection: Overcurrent protection circuit breakers must be provided as part of each host equipment rack and must be incorporated in the field wiring between the DC source and the server. The branch circuit protection shall be rated minimum 75 Vdc, 10A maximum per feed pair. If the DC power system for the equipment rack is installed with more than 10 amperes of protection, you must provide supplemental protection for the server. The overall current rating of a server configured with two power supplies is 8 amperes.

WARNING Do not attempt to modify or use an AC power cordset that is not the exact type required. You must use a power cordset that meets the following criteria:

1. **Rating:** For U.S./Canada cords must be UL Listed/CSA Certified type SJT, 18-3 AWG. For outside U.S./Canada cords must be flexible harmonized (<HAR>) or VDE certified cord with 3 x 0.75 mm conductors rated 250 AC.
2. **Connector, wall outlet end:** Cords must be terminated in grounding-type male plug designed for use in your region. The connector must have certification marks showing certification by an agency acceptable in your region and for U.S. must be Listed and rated 125% of overall current rating of the server.
3. **Connector, server end:** The connectors that plug into the AC receptacle on the server must be an approved IEC 320, sheet C19, type female connector.
4. **Cord length and flexibility:** Cords must be less than 4.5 meters (14.76 feet) long.

CAUTION Temperature: The temperature in which the server operates when installed in an equipment rack, must not go below 5°C (41°F) or rise above 40°C (104°F). Extreme fluctuations in temperature can cause a variety of problems in your server.

Ventilation: The equipment rack must provide sufficient airflow to the front of the server to maintain proper cooling. The rack must also include ventilation sufficient to exhaust a maximum of 1023 BTUs per hour for the server. The rack selected and the ventilation provided must be suitable to the environment in which the server will be used.

1 Chassis Description

General

The HP Carrier-Grade Server cc3310 is a compact, high-density, rack mount server with support for 1 or 2 Intel® Xeon™ processors with 512 KB L2 cache and 12 GB DDR266 SDRAM DIMM memory. The scalable architecture of the server supports symmetric multiprocessing (SMP) and a variety of operating systems (OS).

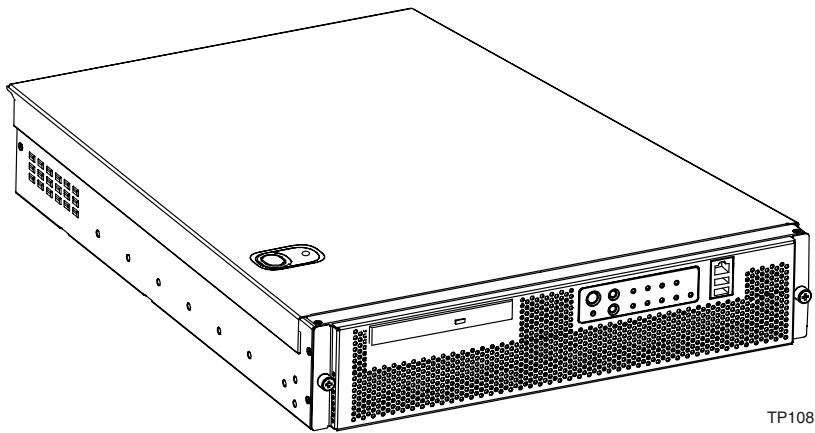
Physical Specifications

Table 1-1 lists the server's physical specifications while Figure 1-1 presents a view of the server chassis.

Table 1-1. Server Physical Specifications

Specification	Value
Height	3.45 inches (87.6 mm)
Width	17.11 inches (434.6 mm)
Depth	20 inches (508 mm)
Front clearance	2 inches (76 mm)
Side clearance	1 inches (25 mm)
Rear clearance	3.6 inches (92 mm)

Figure 1-1. HP Carrier-Grade Server cc3310 Chassis



Environmental Specifications

The server has been tested to the environmental specifications listed in Table 1-2. All testing has been performed per procedures defined in Bellcore GR-63-CORE NEBS Physical Protection, Bellcore GR-3580 NEBS Criteria Levels, Bellcore GR-1089-CORE EMC and Electrical Safety – Generic Criteria for Network Telecommunications Equipment.

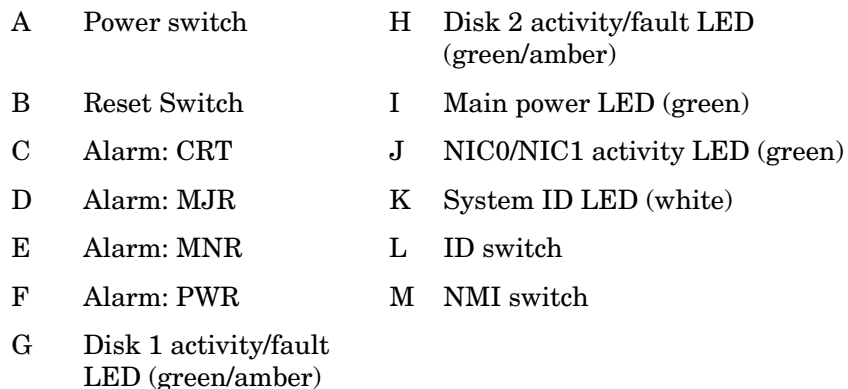
Table 1-2. Environmental Specifications Summary

Environment	Specification
Temperature operating	5°C to 40°C (41°F to 104°F)
Temperature non-operating	–40°C to 70°C (–104°F to 158°F)
Altitude	0 to 3,962m (0 to 13,000 ft)
Humidity non-operating	95%, non-condensing at temperatures of 23°C (73°F) to 40°C (104°F)
Vibration operating	Swept sine survey at an acceleration amplitude of 0.1g from 5 to 100 Hz and back to 5 Hz at a rate of 0.1 octave/minute, 90 minutes per axis on all three axes as per Bellcore GR-63-CORE standards.
Vibration non-operating	Swept sine survey at an acceleration amplitude of 0.5g from 5 to 50 Hz at a rate of 0.1 octaves/minute, and an acceleration amplitude of 3.0g from 50 to 500 Hz at a rate of 0.25 octaves/minute, on all three axes as per Bellcore GR-63-CORE standard. 2.2 Grms, 10 minutes per axis on all three axes
Safety	UL 60950, CSA 60950, IEC 950, TUV/GS EN60950
Emissions	Verified to FCC Class A; tested to CISPR 22 Class A, EN 55022 Class A, VCCI Class A ITE, AS/NZS 3548 Class A, CNS13438
Immunity	Verified to comply with EN 55024
Shock operating	Half-sine 2G, 11 ms pulse, 100 pulses in each direction, on each of the three axes.
Shock non-operating	Trapezoidal, 25G, 170 inches/sec delta V, three drops in each direction, on each of the three axes.
Electrostatic discharge (ESD)	Tested to ESD levels up to 15 kilovolts (kV) air discharge and up to 8 kV contact discharge without physical damage.
Acoustic	Sound pressure: < 55 dBA at ambient temperatures < 28°C measured at bystander positions in operating mode.

Chassis Feature Locations

Front Panel

Figure 1-2 shows the front view of the server including the front panel. The front panel contains control switches, alarm indicators and relays, and status indicators. Front panel controls and LEDs are summarized in Table 1-3.

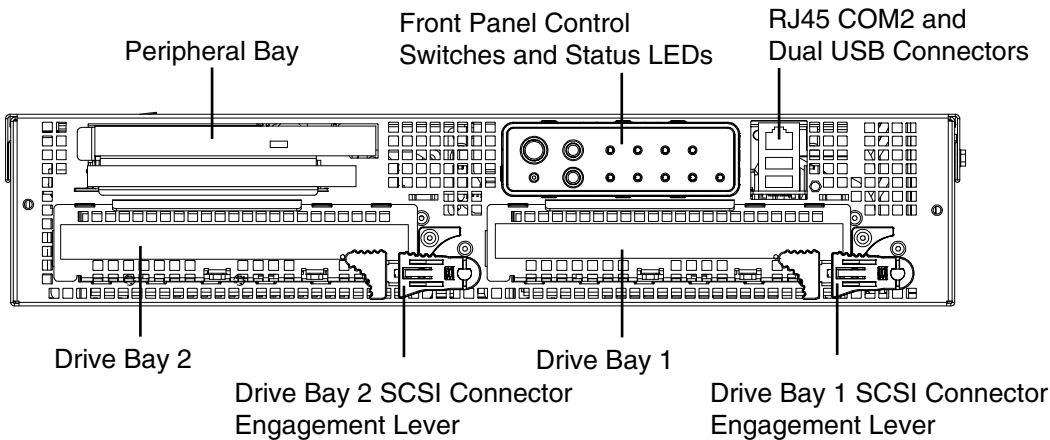


Item	Feature	Description
Front Panel Switches		
A	Power switch	Toggles the server power.
B	Reset switch	Resets the server.
L	ID switch	Toggles server ID LED.
M	NMI switch	Assert NMI to baseboard.
Front Panel Alarm LEDs and Relays		
C	Critical (amber or red)	When continuously lit, indicates the presence of a critical system fault. A critical system fault is an error or event that is detected by the system with a fatal impact to the system. In this case, the system cannot continue to operate. An example could be the loss of a large section of memory, or other corruption, that renders the system not operational. The front panel critical alarm relay will be engaged.

Item	Feature	Description
D	Major (amber or red)	When continuously lit, indicates the presence of a major system fault. A major system fault is an error or event that is detected by the system that has discernable impact to system operation. In this case, the system can continue to operate but in a degraded fashion (reduced performance or loss of non-fatal feature reduction). An example could be the loss of one of two mirrored disks. The front panel major alarm relay will be engaged.
E	Minor (amber)	When continuously lit, indicates the presence of a minor system fault. A minor system fault is an error or event that is detected by the system but has little impact to actual system operation. An example would be a correctable ECC error. The front panel minor alarm relay will be engaged.
F	Power (amber)	When continuously lit, indicates the presence of a power system fault. The front panel power alarm relay will be engaged.
Front Panel Status LEDs		
G	Disk 1 Activity/Fault LED (green/amber or red)	Indicates disk 1 SCSI hard drive activity when green, or a disk 1 SCSI hard drive fault when amber or red.
H	Disk 2 Activity/Fault LED (green/amber or red)	Indicates disk 2 SCSI hard drive activity when green, or a disk 2 SCSI hard drive fault when amber or red.
I	Main power LED (green)	When continuously lit, indicates the presence of DC power in the server. The LED goes out when the power is turned off or the power source is disrupted.
J	NIC0/NIC1 activity LED (green)	Indicates activity on either NIC0 or NIC1.
K	System ID LED (white)	Indicates any system SCSI hard drive activity.

Figure 1-3 shows the front view of the server with the bezel removed.

Figure 1-3. Front View with Bezel Removed

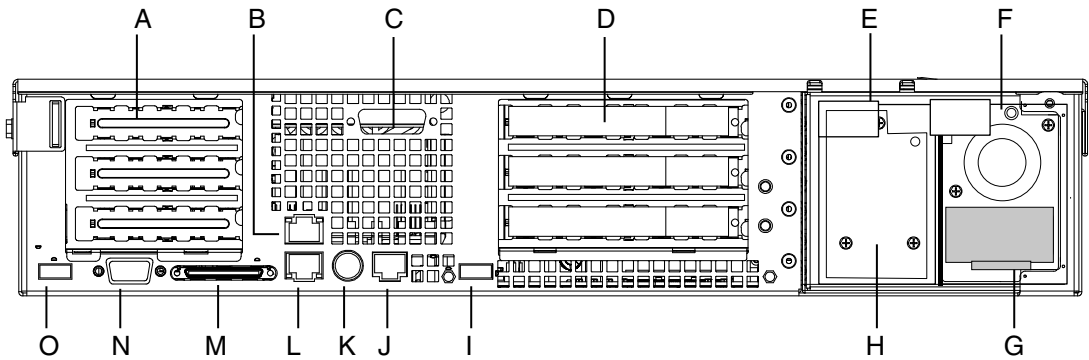


TP181

Back Panel

Figure 1-4 shows the back panel view of the server and Table 1-4 lists the features of the back panel. The back panel of the AC-powered server is similar (except for the power supplies).

Figure 1-4. Back Panel (DC Version)



TP250

Table 1-4. Back Panel Features

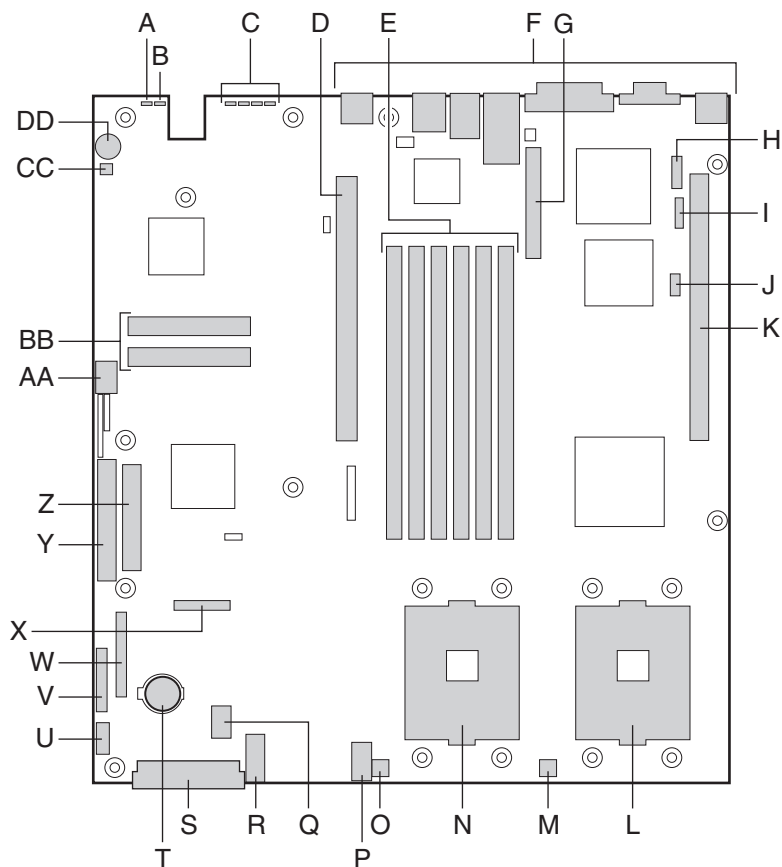
Item	Description
A	PCI card bracket (low profile)
B	RJ-45 NIC2 connector – green status LED / yellow status LED
C	DB15 alarm connector

Item	Description
D	PCI card bracket (full-height)
E	DC power input (primary)
F	DC power input (redundant)
G	Power supply module, redundant (system accessory)
H	Power supply module, primary
I	USB connector 2
J	RJ-45 serial 2 port
K	PS/2 mouse/keyboard connector – requires dongle (Y cable) to connect both keyboard and mouse
L	RJ-45 NIC1 connector
M	U-320 SCSI connector
N	Video connector
O	USB connector 1

Internal Chassis Features

Figure 1-5 shows the location of the connectors and components on the server board.

Figure 1-5. Server Board Connector and Component Locations



OM14124

- | | |
|---|----------------------------------|
| A. System status LED | P. Auxiliary signal connector |
| B. ID LED | Q. Sys fan 1 connector |
| C. Diagnostic LEDs (POST code) | R. Sys fan 2 connector |
| D. 64-bit PCI riser slot for PCI-X bus B (full height) | S. Main power connector |
| E. DIMM slots | T. Battery |
| F. I/O ports | U. Power supply signal connector |
| G. SCSI channel B connector (SCSI version only) | V. ATX front panel connector |
| H. COM 1 serial header | W. SSI front panel connector |
| I. ICMB connector | X. Floppy/FP/IDE connector |
| J. IPMB connector | Y. ATA/IDE connector |
| K. 64-bit PCI riser slot for PCI-X bus C (low profile) RADIOS enabled. Modular ROM-B card support is provided via the riser card (SCSI only) | Z. Floppy drive connector |
| L. Secondary processor socket | AA. USB 2 & 3 connector |
| M. Secondary processor fan connector | BB. N/A |
| N. Primary processor socket | CC. Hard disk drive LED header |
| O. Primary processor fan connector | DD. Speaker |

Processor

The server board accommodates one or two Intel® Xeon™ 2.4 GHz/512 KB L2 cache processors. This processor uses the 0.13 micron technology.

Memory

The server board has six 168-pin DIMM slots' each supporting 72-bit ECC registered DDR DIMMs (DDR266 compatible). Memory is partitioned in three banks. A minimum of 512 MB (256 MB x2) and as much as 12 GB may be installed. Memory must be installed in pairs, starting with bank 1 (slots 1B and 1A).

The controller automatically detects, sizes, and initializes the memory array, depending on the type, size, and speed of the installed DIMMs, and reports memory size and allocation to the server via configuration registers.

NOTE	Use DIMMs that have been tested for compatibility with the server board. Contact your sales representative or dealer for a current list of approved memory modules.
-------------	---

PCI Riser Slots

The server board has two PCI riser slots. Riser slot B (item D in Figure 1-5) provides the following features:

- 184-pin, 5-volt keyed, 64-bit expansion slot connector
- Support for a 3-slot PCI riser card
- Support for both full-length and low-profile PCI cards

Riser C (item K in Figure 1-5) provides the following features:

- 184-pin, 5-volt keyed, 64-bit expansion slot connector
- Support for a 3-slot PCI riser card
- Support for only low-profile PCI cards
- RADIOS enabled for use with zero channel RAID cards (SCSI version only)

Video

The server board uses an ATI* RAGE XL PCI graphics accelerator with 8 MB of video SDRAM. The embedded SVGA video subsystem supports:

- Resolutions up to 1600 x 1200 under 2D and 1024 x 768 under 3D
- CRT and LCD monitors up to 100-Hz vertical refresh rate

The server board supports disabling of the onboard video through the BIOS setup menu or when a plug-in video card is installed in any of the PCI slots.

SCSI Controller

The SCSI version of the server board includes an embedded Adaptec[†] AIC-7902W controller providing dual Ultra-320 Low Voltage Differential (LVD) SCSI channels to the two internal SCSI drive bays. Channel B is routed to the two internal SCSI drive bays. Channel A is routed to the external U-320 connector.

The SCSI bus is terminated on the server board with active terminators that cannot be disabled. The onboard device must always be at one end of the bus. The device at the other end of the cable must also be

Chassis Description

terminated. LVD devices generally do not have termination built-in and need to have a termination source provided. Non-LVD devices generally are terminated through a jumper or resistor pack on the device itself.

Network Controller

NOTE To ensure EMC product regulation compliance for intra-building lighting surges, the server must only be used with shielded LAN cables that are grounded at both ends.

The server board uses the Intel® Fast Ethernet Controller 82546EB and supports two 10Base-T/100Base-T/1000Base-TX network subsystems.

The 82546EB controller supports the following features:

- 32-bit PCI master interface
- Integrated IEEE 802.3 10Base-T, 100Base-TX and 1000Base-TX compatible PHY
- IEEE 802.3u auto-negotiation support
- Full-duplex support at 10 Mbps, 100 Mbps, and 1000 Mbps operation
- Low power +3.3V device

On the server board, NIC 1 can be used as both a network interface and server management interface.

NIC Connector and Status LEDs

The E82546EB controller drives LEDs on the network interface connector that indicate link/activity on the LAN and speed of operation. The green LED indicates network connection when on and TX/RX activity when blinking. The speed LED indicates 1000 Mbps when amber, 100 Mbps when green, and 10 Mbps when off.

Keyboard and Mouse

The keyboard/mouse controller is PS/2-compatible. If specified through the system setup utility, the server may be locked automatically if there is no keyboard or mouse activity for a predefined length of time. Once the inactivity (lockout) timer has expired, the keyboard and mouse do not respond until the previously stored password is entered. A Y-cable can be used if both a PS/2 mouse and keyboard are required at the same time.

RJ-45 Serial Port (Rear Panel)

The rear RJ-45 serial port is a fully functional serial port that supports any standard serial device and provides support for serial concentrators. For server applications that use a serial concentrator to access the server management features of the baseboard, a standard 8-pin CAT-5 cable from the serial concentrator is plugged directly into the rear RJ-45 serial port. The 8 pins of the RJ-45 connector can be configured to match either of two pin-out standards used by serial port devices. To accommodate either standard, the J5A2 jumper block located directly behind the rear RJ-45 serial port must be jumpered appropriately according to the desired standard.

RJ-45 Serial Port (Front Panel)

The front RJ-45 serial port is functionally identical to the rear panel port, but cannot be used at the same time. The cable that attaches to the front panel port must include a jumper (short) between pins 4 and 5. When this cable is connected, the rear panel connector is disabled.

NOTE By default, the RJ-45 serial ports are configured to support a DSR signal.

ACPI

The server board supports the Advanced Configuration and Power Interface (ACPI) as defined by the ACPI 2.0 specification. An ACPI-aware operating system can put the server into a state where the hard drives spin down, the server fans stop, and all processing is halted. However, the power supply will still be on and the processors will still be dissipating some power, so the power supply fans will still run.

The server board supports sleep states s0, s1, s4, and s5:

- s0: Normal running state.
- s1: Processor sleep state. No context will be lost in this state and the processor caches will maintain coherency.
- s4: Hibernate or save to disk. The memory and machine state are saved to disk. Pressing the power button or other wakeup event will restore the system state from the disk and resume normal operation. This assumes that no hardware changes have been made to the server while it was off.
- s5: Soft off. Only the RTC section of the CSB and the BMC are running in this state. No context is saved by the OS or hardware.

CAUTION The server is off only when the server input power cord is disconnected.

Security

Software Locks

The BIOS setup and the system setup utility provide a number of security features to prevent unauthorized or accidental access to the server. Once the security measures are enabled, you can access the server only after you enter the correct password(s). For example:

- Enable the keyboard lockout timer so that the server requires a password to reactivate the keyboard and mouse after a specified time out period—1 to 120 minutes.
- Set and enable an administrator password.
- Set and enable a user password.
- Set secure mode to prevent keyboard or mouse input and to prevent use of the front panel reset and power switches.
- Activate a hot key combination to enter secure mode quickly.
- Disable writing to the diskette drive when secure mode is set.
- Disable access to the boot sector of the operating system hard disk drive.

Using Passwords

You can set the user password, the supervisor password, or both passwords.

If only the user password is set, you:

- Must enter the user password to enter BIOS setup or the system setup utility.
- Must enter the user password to boot the server if Password on Boot is enabled in either the BIOS setup or system setup utility.
- Must enter the user password to exit secure mode.

If only the supervisor password is set, you:

- Must enter the administrator password to enter BIOS setup or the system setup utility.

Chassis Description

- Must enter the administrator password to boot the server if Password on Boot is enabled in either the BIOS setup or system setup utility.
- Must enter the administrator password to exit secure mode.

If both passwords are set, you:

- May enter the user password to enter BIOS setup or the system setup utility. However, you will not be able to change many of the options.
- Must enter the administrator password if you want to enter BIOS setup or the system setup utility and have access to all of the options.
- May enter either password to boot the server if Password on Boot is enabled in either the BIOS setup or system setup utility.
- May enter either password to exit secure mode.

Secure Mode

Configure and enable the secure boot mode by using the system setup utility. When secure mode is in effect:

- You can boot the server and the operating system will run, but you must enter the user password to use the keyboard or mouse.
- You cannot turn off system power or reset the server from the front panel switches.
- Secure mode has no effect on functions enabled via remote server management or power control via the watchdog timer.

Taking the server out of secure mode does not change the state of server power. That is, if you press and release the power switch while secure mode is in effect, the server will not be powered off when secure mode is later removed. However, if the front panel power switch remains depressed when secure mode is removed, the server will be powered off.

Summary of Software Security Features

Table 1-5 lists the software security features and describes what protection each offers. In general, to enable or set the features listed, you must run the system setup utility and select **Security** from the Available Tasks window. Table 1-5 also refers to other system setup utility menus and to the setup utility.

Table 1-5. Software Security Features

Feature	Description
Secure mode	<p>How to enter secure mode:</p> <p>Setting and enabling passwords automatically places the server in secure mode.</p> <p>If you set a hot-key combination (through setup), you can secure the server simply by pressing the key combination. This means you do not have to wait for the inactivity time-out period.</p> <p>When the server is in secure mode:</p> <p>The server can boot and run the operating system, but mouse and keyboard input are not accepted until the user password is entered.</p> <p>At boot time, if a CD is detected in the CD-ROM drive, the system prompts for a password. When the password is entered, the server boots from CD and disables the secure mode.</p> <p>If there is no CD in the CD-ROM drive, the server boots from drive C and automatically goes into secure mode. All enabled secure mode features go into effect at boot time.</p> <p>To leave secure mode: Enter the correct password(s).</p>
Set a time-out period so that keyboard and mouse input are not accepted Also, screen can be blanked	<p>Specify and enable an inactivity time-out period of from 1 to 120 minutes.</p> <p>If no keyboard or mouse action occurs for the specified period, attempted keyboard and mouse input will not be accepted.</p> <p>The monitor display will go blank.</p> <p>To resume activity: Enter the correct password(s).</p>
Control access to using the system setup utility: set administrator password	<p>To control access to setting or changing the system configuration, set an administrator password and enable it through Setup.</p> <p>If both the administrator and user passwords are enabled, either can be used to boot the server or enable the keyboard and/or mouse, but only the administrator password will allow setup to be changed.</p> <p>To disable a password, change it to a blank entry or press CTRL-D in the Change Password menu of the Administrator Password Option menu found in the Security Subsystem group.</p> <p>To clear the password if you cannot access setup, change the Clear Password jumper (refer to Table 7-1).</p>
Control access to the system other than system setup utility: set user password	<p>To control access to using the system, set a user password and enable it through Setup.</p> <p>To disable a password, change it to a blank entry or press CTRL-D in the Change Password menu of the User Password Option menu found in the Security Subsystem Group.</p> <p>To clear the password if you cannot access setup, change the Clear Password jumper (refer to Table 7-1).</p>
Boot without keyboard	<p>The server can boot with or without a keyboard. During POST, before the server completes the boot sequence, the BIOS automatically detects and tests the keyboard if it is present and displays a message.</p>

Chassis Description

Feature	Description
Specify the boot sequence	The sequence that you specify in setup will determine the boot order. If secure mode is enabled (a user password is set), you will be prompted for a password before the server fully boots. If secure mode is enabled and the Secure Boot Mode option is also enabled, the server will fully boot but will require a password before accepting any keyboard or mouse input.

2 Front Panel IO (FPIO) Server board

Introduction

This chapter describes the basic functions and interface requirements of the Front Panel IO (FPIO) server board that is designed for the server.

Features

The server has the following FPIO features:

- Four switches to control power-on, reset, NMI, and the system ID LED
- One system ID LED that can be controlled remotely or by the system ID switch
- Two system activity LEDs that indicate power-on and NIC activity
- Two hard drive activity/fault LEDs that indicate activity/fault status for drives 1 and 2
- Four system fault LEDs that indicate critical, major, minor, and power system fault status
- Four system fault relays for external critical, major, minor, and power fault indicators
- One SCSI bus with hot swap circuitry for controlling SCSI disk drives 1 and 2 (not supported on the initial release of the server)
- IDE bus from IDE connector to blind mate connector
- Floppy bus from floppy connector to blind mate connector
- One blind mate connector for interfacing to CD ROM or CD+RW/DVD assembly
- Connectors for interfacing to the power supply, server baseboard, drive carrier assemblies, and hot plug disk drives 1 and 2

FPIO SCSI Subsystem Status LEDs

The status LEDs give the user a visual indication of the internal disk drives' condition. There is a single LED for each drive. The LEDs are bi-colored and use a combination of color and blinking frequency to indicate multiple conditions. The LEDs are mounted on the FPIO board, and the light is directed to the front panel through the use of a light pipe assembly. Refer to Table 2-1 for LED activity definitions. Refer to the Firmware EPS for definitions of the different blink rates.

Table 2-1. LED Activity Definitions

LED State	Drive Active	Fault Condition
Solid green		
Blinking green	X	
Blinking yellow/green		X
Blinking yellow/blank		X
Blank		

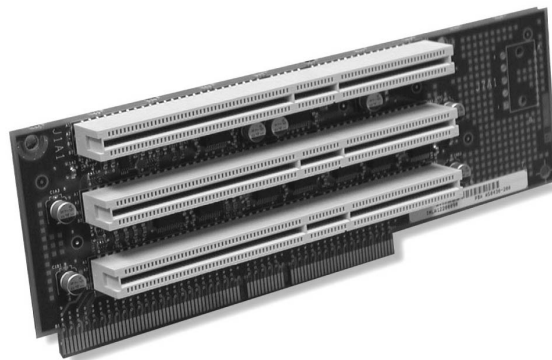
Riser Boards

The server board supports two riser boards, a 3.3-Volt riser board and a 5-Volt full-height riser board. The 3.3-Volt riser board is standard and the a 5-Volt full-height riser board is optional. Features of the 5-Volt riser board include:

- Support for three 33-MHz 5-Volt 64-bit PCI add-in cards
- Provides 5-Volt to 3.3-Volt signal level translation
- Support for a Zero Channel RAID (ZCR) card

The 5-Volt riser board contains voltage level translation converting the 5-Volt PCI add-in card signals to conform to the server board, which has 3.3-Volt signaling levels. The board provides up to 25 Watts per slot. Figure 2-1 illustrates the 5-Volt riser board.

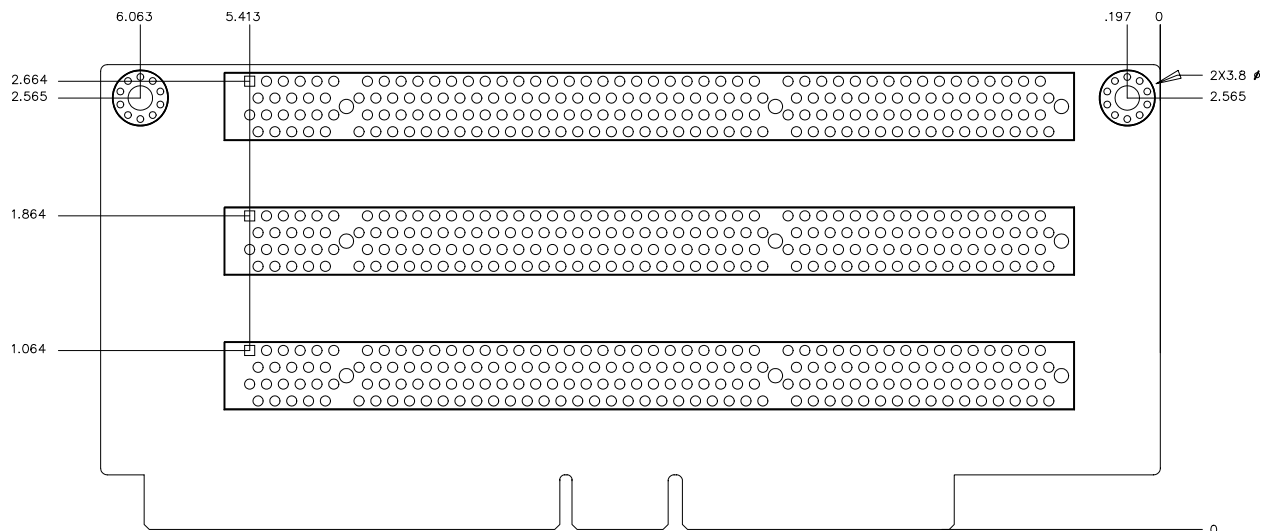
Figure 2-1. 5-Volt Riser Board



OM12821

The 3.3-Volt riser card supports three 3.3-Volt 64-bit slots. The bus speed varies from 33 MHz to 133 MHz depending on the type of PCI adapters configured in the 3.3-Volt riser card. Figure 2-2 illustrates the 3.3-Volt riser board.

Figure 2-2. 3.3-Volt Riser Board



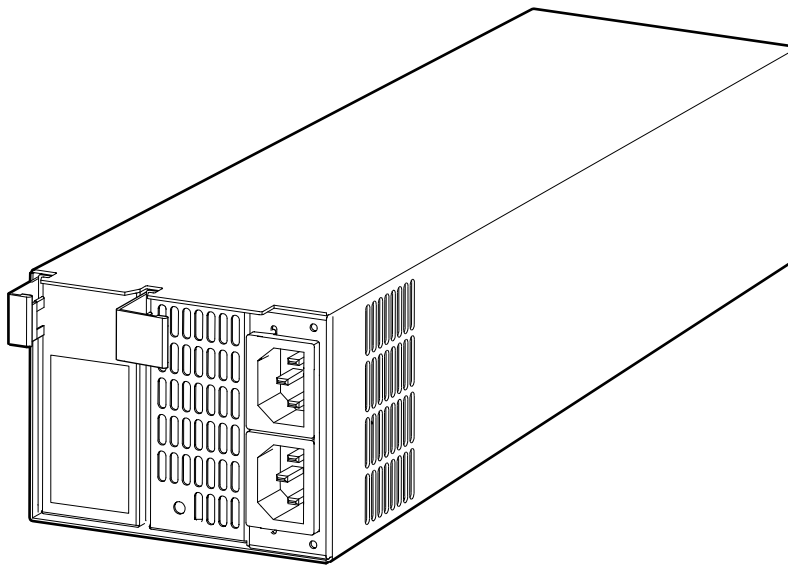
The 3.3-Volt riser board supports ZCR cards. To operate correctly, insert the ZCR card into the lower slot of the 3.3-Volt riser board, and then insert the 3.3-Volt riser board into the low-profile riser board slot on the server board. For the location of the low-profile riser board slot, see callout K on Figure 1-5.

Power Supplies

The power supply cage shown in Figure 2-3 is accessed from the rear of the chassis. The power supply cage supports up to two power supplies (either AC input or DC input) in a (1+1) redundant configuration. A power supply filler module (shown in Figure 2-3) for the empty power supply site is supplied for servers without redundancy.

Only the DC input version is NEBS certified.

Figure 2-3. Non-redundant AC-Power Supply Subsystem (Filler Module Shown)



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DC Power Subsystem

This section defines the features of the DC input switching power subsystem.

Features

- 450-Watt output capability in full DC input voltage range
- Power Good indication LEDs
- Internal cooling fans with multi-speed capability
- Remote sense of 3.3-Volt, 5-Volt, and 12-Volt DC outputs
- DC_OK circuitry for brown-out protection and recovery
- Built-in load sharing capability
- Built-in overloading protection capability
- Onboard Field Replaceable Unit (FRU) information

- I²C* interface for server management functions
- Integral handle for insertion/extraction

Introduction

The DC version of the server uses a –48 to –60 VDC input switching power subsystem, which provides up to 450 Watts with –48 to –60 VDC input and with current and remote sense regulation. The power subsystem consists of one or two 450-Watt power supply modules. A server with two modules forms a redundant (1+1) power subsystem.

Interface Requirements

DC Input

The DC power source may produce hazardous voltage levels exceeding –60 VDC and high energy levels above 240 VAC that may cause electric shock. All DC input connections should be made only by a qualified service person to prevent injury. All wiring terminals connected to the DC input terminal block must be fully insulated with no exposed bare metal.

DC Output Connectors

The power subsystem DC power and control signals are interfaced to the server via wire harnesses when the power supply modules are inserted into the power subsystem enclosure. The safety ground pin of the power supply module is the first pin to connect and the last to disconnect when the module is being inserted or removed from the power subsystem housing. In addition to the 5-V Standby, –12V, +3.3V, +5V and +12 VDC outputs, the following signals and output pins are included:

- +3.3 VDC remote sense
- +5 VDC remote sense
- +12 VDC remote sense
- Remote sense return
- Power subsystem on (DC PWR enable)
- Power good
- I²C interface chip (PS Failure, PS Presence, PS Predictive Fail, +12V Mon, +5V Mon, and the 5V Standby rails failure are being monitored via an I²C interface chip)

Power Supply Module LED Indicators

There is a single bi-color LED to indicate power supply status that is visible on the back of the server. Table 2-2 shows the conditions confirmed by the LED indicators.

Table 2-2. LED Indicators

Power Supply Condition	Power Supply LED
No DC power to all PSUs	OFF
No DC power to this PSU only	AMBER
DC present/only standby outputs on	BLINK GREEN
Power supply DC outputs on and ok	GREEN
Current limit	AMBER
Power supply failure (OTP, OCP, OVP, UV)	AMBER

DC Input Voltage Specification

The power supply will operate within all specified limits over the input voltage range outlined in Table 2-3. The power supply will power-off if the DC input is less than –34 VDC.

Table 2-3. DC Input Rating

Parameter	Minimum Tolerance	Nominal Rating	Maximum Tolerance	Maximum Input Current
Voltage	–38 VDC	–48 to –60 VDC	–72 VDC	8.0 Amps

DC Output Current Specifications

The combined output power of all outputs will not exceed 450W. Each output has a maximum and minimum current rating, as shown in Table 2-4. The power supply meets both static and dynamic voltage regulation requirements for the minimum dynamic loading conditions. The power supply meets only the static load voltage regulation requirements for the minimum static load conditions.

Table 2-4. DC Power Supply Input/Output Summary

Voltage	Current Rating
+3.3 VDC output	20 Amp max ¹
+5 VDC output	26 Amp max ¹
+12 V1DC output	16 Amp max ²
+12 V2DC output	12.0 Amp max ²
+12 V3DC output	12.0 Amp max ²
–12 VDC output	0.5 Amp max
+5 VDC standby	2.0 Amp max
Output balancing	Total combined output power of all output shall not exceed 450W
DC line voltage	–48 VDC to –60 VDC
DC input current	8.0 Amp max

1. Combined 3.3V/5V shall not exceed 150W.

- Maximum continuous load on the combined 12V output shall not exceed 25A. Peak load on the combined 12V output shall not exceed 30A for greater than 10 seconds.

AC Power Subsystem

This section defines the AC input switching power subsystem.

Features

- 480-Watt output capability
- Power Good indication LEDs
- Internal cooling fans with multi-speed capability
- Remote sense of 3.3-Volt, 5-Volt, and 12-VDC outputs
- AC_OK circuitry for brown-out protection and recovery
- Built-in load sharing capability
- Built-in overloading protection capability
- Onboard FRU information
- I²C interface for server management functions
- Integral handle for insertion/extraction

Introduction

The AC version of the server uses an AC input switching power subsystem that provides up to 480-Watt DC with 100–240 VAC input with current and remote sense regulation. The power subsystem consists of one or two 480-Watt power supply modules. A server with two power supply modules forms a redundant (1+1) power subsystem. There is a single bi-color LED to indicate power supply status. Refer to Table 2-5 for conditions of the power supply LEDs.

Table 2-5. LED Indicators

Power Supply Condition	Power Supply LED
No AC power to all PSUs	OFF
No AC power to this PSU only	AMBER
DC present/only standby outputs on	BLINK GREEN
Power supply DC outputs on and ok	GREEN
Power supply in alert condition	BLINK AMBER
Power supply failure (OTP, OCP, OVP, UV)	AMBER

AC Input Voltage Specification

The power supply operates within all specified limits over the voltage ranges outlined in Table 2-6.

Table 2-6. AC Power Supply Input/Output Summary

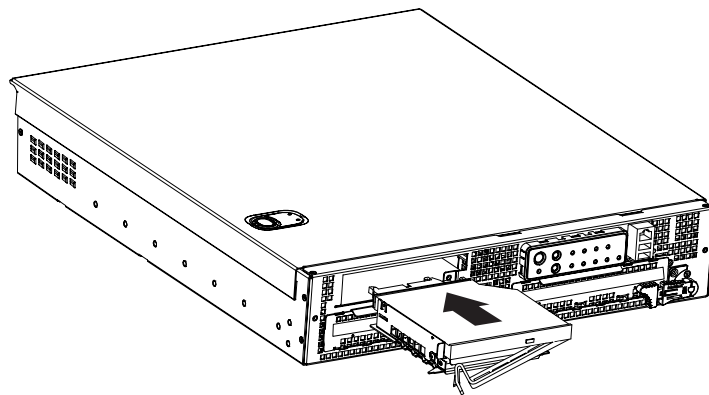
Voltage	Current Rating
+3.3 VDC output	20 Amp max ¹
+5 VDC output	20 Amp max ¹
+12 V1DC output	18 Amp max ²
+12 V2DC output	18.0 Amp max ²
–12 VDC output	0.5 Amp max
+5 VDC standby	2.0 Amp max
Output balancing	Total combined output power of all output shall not exceed 480W
AC line voltage	Auto-ranging for either 100–127 VAC or 200–240 VAC
AC line frequency	50/60 Hz
AC input current	4 Amp at 100–127 VAC 2 Amp at 200–240 VAC

1. Combined 3.3/5V shall not exceed 150W.
2. Maximum continuous load on the combined 12V output shall not exceed 25A. Peak load on the combined 12V output shall not exceed 30A for greater than 10 seconds.

Peripheral Bay

One peripheral drive (a slim-line CD-ROM or CD+RW/DVD drive) can be mounted in the server using a blind-mate peripheral drive carrier inserted into the peripheral drive bay. The peripheral drive bay is located above the hard drive tray and to the left.

Figure 2-4. Peripheral Drive Bay



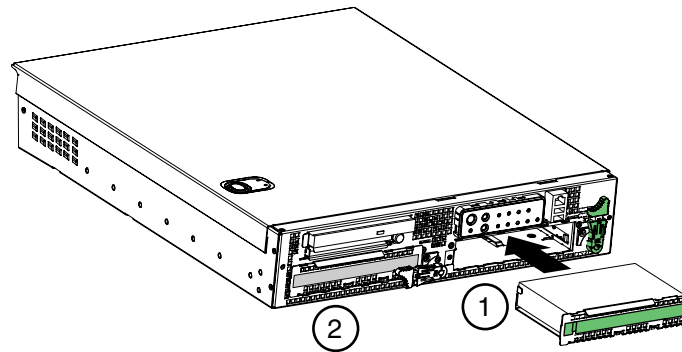
TP127

Hard Drive Tray

Hard Drive Bays

Up to two 1.0-inch Ultra-320* SCSI technology hard drives can be mounted in the drive bays, which are located in the bottom front of the chassis. The front bezel must be removed to access the drive bays.

Figure 2-5. Hard Drive Bays

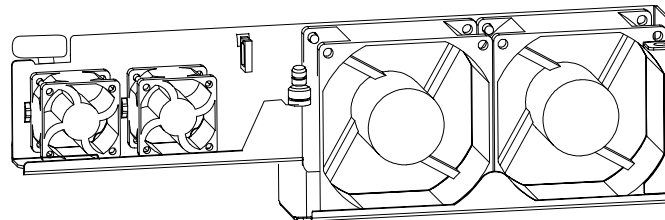


TP130

Cooling Subsystem

All server components except the power supply cage are cooled by a set of fans mounted near the middle of the chassis and behind the hard drive bays (see Figure 2-6).

Figure 2-6. Fan Array with Four Fans Installed



TP107

The server comes in a non-redundant, four-fan configuration that consists of two 80-mm x 38-mm fans and two 40-mm x 28-mm fans.

Air flows in through the front bezel over the peripheral bay and the hard drive bays, passes through the fans and over the baseboard, and exhausts through the rear of the chassis. Each fan provides tachometer signal output to the server baseboard to indicate a fan failure.

The cooling subsystem contains a fan array (see Figure 2-6) consisting of two 80-mm x 38-mm fans and two 40-mm x 28-mm fans to cool the server board and other components. A fan failure is indicated by one of the fault LEDs located on the front panel.

Ambient Temperature Control

The server baseboard contains a Pulse-Width-Modulation (PWM) circuit, which cycles the 12-VDC fan voltage to provide quiet operation when ambient temperature is low and no fan failures exist. There are 16

fan speed settings between 20°C and 35°C, with the lowest fan speed setting at 20°C or below. When the room ambient temperature exceeds 35°C, the fan control circuit ceases cycling and delivers 12 VDC. Following a room temperature excursion above 35°C the fan voltage does not reenter PWM mode until the room temperature drops below 35°C and all fans are operational.

Server Management Summary

The baseboard server management architecture features a Baseboard Management Controller (BMC), which autonomously monitors server status and provides the interface to server management control functions. This controller is responsible for controlling system power, resets, monitoring voltages, temperatures, fans, and communicating with secondary controllers on its Intelligent Platform Management Bus (IPMB).

Server Board Management Controller

The BMC on the system baseboard provides server management monitoring capabilities. A flash memory is associated with the BMC that holds the operational code, Sensor Data Records (SDRs), and System Event Log (SEL). There is also a serial EEPROM that holds the BMC configuration defaults and FRU information. The various server management functions provided by the BMC are listed as follows:

- Baseboard voltage monitoring
- Fan failure detection
- Fan speed control
- Processor voltage monitoring
- Processor presence detection
- Processor Internal Error (IERR) monitoring
- Fault Resilient Booting (FRB)
- Processor disable control
- Watchdog timer
- Periodic System Management Interrupt (SMI) timer
- I²C master controller for the IPMB
- Two private I²C management bus interfaces
- Server Management Software (SMS) and Server Management Mode (SMM) IPMB message receiver
- Event message receiver
- SEL management and access
- SDR repository management and access
- Processor Non-Maskable Interrupt (NMI) monitoring
- Processor SMI monitoring
- Time-stamp clock
- Secure mode, video blank, and floppy write protect
- Software front panel NMI generation

3 POST and BIOS Setup Utilities

Introduction

This chapter describes the power-on self-test (POST) and BIOS setup utilities provided with the server. It also includes information about the Adaptec[†] SCSI Utility. For information about server management utilities, refer to chapter 5.

Table 3-1. POST and BIOS Setup Utilities

Utility	Description and Brief Procedure	Page
Changing boot priority through POST	Change the boot device for the current boot	39
Adaptec SCSI utility	Use to view/configure the settings for the Adaptec AIC-7902 SCSI host adapter	39
BIOS setup	Use to configure system options	41
BIOS update utility	Use to update the BIOS or recover from a corrupted BIOS update	43

Hot Keys

Use the numeric pad of the keyboard to enter numbers and symbols.

Table 3-2. Hot Keys

To Do This:	Press These Keys:
Secure your system immediately.	Ctrl+Alt + hot key (Set your hot key combination with the system setup utility or BIOS or BIOS setup)
Enter the Adaptec SCSI Utility during POST.	Ctrl+A (SCSI version only)
Enter BIOS setup during POST.	F2
Abort memory test during POST.	ESC (press while BIOS is updating memory size on screen)
Display a menu for selecting the boot device.	ESC (press anytime after memory check)
Remove the splash screen.	ESC
Perform a network boot.	F12

Power-On Self-Test (POST)

Each time the server is turned on, the BIOS begins executing the Power-On Self-Test (POST), which is stored in flash memory. POST discovers, configures, and tests the processors, memory, keyboard, and most installed peripheral devices. During the memory test, POST displays the amount of memory that it is able to access and test. The time needed to test memory depends on the amount of memory installed. Turn on your server and observe POST execution as described here:

1. Turn on your server and monitor. After a few seconds, POST begins to run and displays a splash screen.
2. While the splash screen is displayed, make one of the following selections:
 - Press **F2** to enter the BIOS Setup.
 - Press **Ctrl-A** to enter the Adaptec SCSISelect[†] utility. Refer to page 39 for information about the Adaptec SCSISelect Utility.
 - Press **Esc** to view POST diagnostic messages and change the boot device priority for this boot only.
 - Press **F12** to perform a network boot.
3. If you do not make one of the above selections and do not have a device with an operating system loaded, the boot process continues and the server beeps once. The following message is displayed:
Operating System not found

If the system halts before POST completes running, the server emits a beep code indicating a fatal system error that requires immediate attention. If POST can display a message on the video display screen, it causes the speaker to beep twice as the message appears.

Write down both the screen display and the beep code you hear; this information is useful for your service representative. For a listing of common beep codes and error messages that POST can generate, refer to chapter 7, Technical Reference, in this manual.

Temporarily Changing the Boot Device Priority

During POST, you can change the boot device priority for the current boot process. The changes are not saved for the next boot process.

1. Boot the server.
2. At any time during POST, press **Esc**. When POST completes, a popup boot menu displays.
3. Use the arrow keys to highlight the device you want the server to boot from first. For example, if you want the server to boot from the CD-ROM first, then select **ATAPI CD-ROM Drive**.

NOTE	If you boot from a CD-ROM, make sure the CD is in the CD drive before making your selection.
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4. Press **Enter** and the boot process continues.

The Adaptec SCSISelect Utility

Each host adapter includes an onboard SCSISelect configuration utility that allows you to configure/view the settings of the host adapter and devices in the server.

The system finds the Adaptec AIC-7902 SCSI host adapter and displays the message Adaptec AIC-7902 SCSI BIOS V x.xxx where x.xxx is the version number of the SCSISelect utility. Pressing **Ctrl+A** at this time allows you to configure the Adaptec AIC-7902 SCSI host adapter.

When to Run the Adaptec SCSISelect Utility

Use the SCSISelect utility to:

- Change default values
- Check and/or change SCSI device settings that may conflict with those of other devices in the server
- Do a low-level format on SCSI devices installed in the server

Running the SCSISelect Utility

1. When this message appears on the video monitor:
<<<Press <Ctrl><A> for SCSISelect(TM) Utility!>>>
2. Press **Ctrl+A** to run the utility. When the main menu for the host adapter appears, choose the device that you want to configure; each SCSI bus accepts up to 15 devices.

Use the following keys to navigate through the menus and submenus:

Table 3-3. SCSISelect Navigation Keys

Press	To
ESC	Exit the utility
Enter	Select an option
↑	Return to a previous option
↓	Move to the next option
F5	Switch between color and monochrome
F6	Reset to host adapter defaults

Configuring the Adaptec AIC-7902 SCSI Adapter

The Adaptec AIC-7902 SCSI adapter has two buses. Select the bus from the following menu.

Table 3-4. Adaptec Main Menu

Menu Item	Options
You have an AIC-7902 adapter in your system. Move the cursor to the bus:device:channel of the one for configuration and press Enter .	Bus:Device:Channel 01:06:A 01:06:B
F5—Toggle color/monochrome.	

After selecting the bus, the following menu displays.

Table 3-5. Menu for each SCSI Channel

Host Adapter	Option	Comment
AIC-7902 at Bus:Device:Channel 01:06:A (or 01:06:B)	Configure/view host adapter settings	Press Enter to view the configuration menu
	SCSI disk utilities	Press Enter to view the SCSI disk utilities menu. This menu allows you to format hard disks and/or verify disk media.

When you are finished, press **Esc**.

BIOS Setup

You can run BIOS setup with or without an operating system being present. BIOS setup stores most of the configuration values in battery-backed CMOS; the rest of the values are stored in flash memory. The values take effect when the system is booted. POST uses these values to configure the hardware. If the values and the actual hardware do not agree, POST generates an error message.

Record your BIOS setup settings. If default values ever need restoring (after a CMOS clear, for example), you must run BIOS setup again. Your record will make this much easier.

If BIOS Setup is Inaccessible

If you are not able to access BIOS setup, you might need to clear the CMOS memory. Clear CMOS by pressing the reset button and hold it down for five seconds or more, and then, while holding the reset button down, press the power button for five seconds. Release both buttons at the same time.

Starting BIOS Setup

You can enter and start BIOS Setup under several conditions:

- When you turn on the server, after POST completes the memory test
- When you have performed a CMOS clear (press reset and power buttons as described above).

Under either of these two conditions, after rebooting, you will see this prompt:
Press <F2> to enter SETUP

- Under a third condition, when CMOS/NVRAM has been corrupted, you will see other messages but not the **F2** prompt:
Warning: CMOS checksum invalid
Warning: CMOS time and date not set

In this condition, the BIOS will load default values for CMOS and attempt to boot.

BIOS Setup Menus

Each BIOS setup menu page contains a number of features. Except those used for information purposes, each feature is associated with a value field that contains user-selectable parameters. Parameters may be changed depending upon the security option chosen. If a value is not changeable due to insufficient security privileges (or other reasons), the feature's value field becomes inaccessible.

The bottom portion of the BIOS Setup screen provides a list of commands that are used for navigating the setup utility.

Table 3-6. Keyboard Commands

Press	Description
← →	The left and right arrow keys are used to move between the major menu pages. The keys have no effect if a submenu or pick list is displayed.
↑	Select Item up—The up arrow is used to select the previous value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.
↓	Select Item down—The down arrow is used to select the next value in a menu item's option list, or a value field pick list. Pressing the Enter key activates the selected item.

Press	Description
–	Change Value—The minus key or the F5 function key is used to change the value of the current item to the previous value. This key scrolls through the values in the associated pick list without displaying the full list.
+	Change Value—The plus key or the F6 function key is used to change the value of the current menu item to the next value. This key scrolls through the values in the associated pick list without displaying the full list. On 106-key Japanese keyboards, the plus key has a different scan code than the plus key on the other keyboard, but it has the same effect.
Enter	Execute Command—The Enter key is used to activate submenus when the selected feature is a submenu, or to display a pick list if a selected feature has a value field, or to select a sub-field for multi-valued features like time and date. If a pick list is displayed, the Enter key will undo the pick list, and allow another selection in the parent menu.
Esc	Exit—The ESC key provides a mechanism for backing out of any field. This key will undo the pressing of the Enter key. When the ESC key is pressed while editing any field or selecting features of a menu, the parent menu is re-entered. When the ESC key is pressed in any submenu, the parent menu is re-entered. When the ESC key is pressed in any major menu, the exit confirmation window is displayed and the user is asked whether changes can be discarded.
F9	<p>Setup Defaults—Pressing F9 causes the following to appear:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Load Setup Defaults?</p> <p style="text-align: center;">[Yes] [No]</p> </div> <p>If Yes is selected and the Enter key is pressed, all setup fields are set to their default values. If No is selected and the Enter key is pressed, or if the ESC key is pressed, the user is returned to where they were before F9 was pressed without affecting any existing field values.</p>
F10	<p>Save and Exit—Pressing F10 causes the following message to appear:</p> <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Save Configuration changes and exit now?</p> <p style="text-align: center;">[Yes] [No]</p> </div> <p>If Yes is selected and the Enter key is pressed, all changes are saved and setup is exited. If No is selected and the Enter key is pressed, or the ESC key is pressed, the user is returned to where they were before F10 was pressed without affecting any existing values.</p>

Table 3-7. On-Screen Options

When You See This:	What it Means:
On screen, an option is shown but you cannot select it or move to that field.	You cannot change or configure the option in that menu screen. Either the option is auto-configured or auto-detected, or you must use a different BIOS Setup screen.
On screen, the phrase Press Enter appears next to the option.	Press Enter to display a sub-menu that is either a separate full screen menu or a popup menu with one or more choices.

Upgrading the BIOS

Begin by checking the status of the server BIOS. You can determine the version of installed BIOS as follows:

1. Reset the server and select **F2** from the BIOS boot screen.
2. Place the cursor over the **Server** button, then select **System Management** and **Enter**.
3. Locate the BIOS version number in the resulting display. (Only the last 3 digits are significant. The original version BIOS for this server is P11.)

Then, go to: http://hp.com/products1/servers/carrier_grade/products/cc3310/index.html.

On the referenced web page, (under the product information section, select the Firmware and Software Download link. Follow the instruction provided to download BIOS firmware.

4 Configuration Software and Utilities

System Software Update Sequence

When updating the system software, you should do it in the following order:

1. Update firmware (BMC and hot swap controller)
2. Update FRU/SDR
3. Unplug the server for 30 seconds
4. Update BIOS
5. Clear CMOS

Server Configuration Wizard

The server configuration wizard is a utility that is provided to help you configure your server. The server configuration wizard is located on the HP Server cc3310 User Information Diagnostics and Utilities Resource CD shipped with the server and runs automatically when you boot your server to this CD-ROM. The server configuration wizard includes a help system that can be accessed by clicking the Help button.

Run the server configuration wizard to:

- Create or update a service partition and install service partition files, including files that are necessary to run the system setup utility
- Load FRUs and SDRs
- Set the system asset tag
- Set server management settings, including an IP address, Emergency Management Port (EMP) settings, Platform Event Paging (PEP) settings, and LAN/Alert settings
- Execute utility applications that can be used to manually configure the server

When first executed, the server configuration wizard probes the server for installed devices, firmware, chassis information, hard disks, and other relevant data. This information is used to determine what questions the application needs to ask you to complete the configuration.

When you select the option server configuration wizard > run wizard, you will be shown a selection window allowing you to choose the items you want to configure. You can select one or more options to configure at the same time. Some options have dependencies that make you select multiple options. These are:

- If you select **Configure this server for LAN Alerting**, the option for **Configure this server for remote Server Management over a LAN connection** will automatically be selected.
- If you select **Configure this server for Serial/Modem alerting**, the option for **Configure this server for remote Server Management over a Serial/Modem connection** will automatically be selected.

In addition, you can select only one of the following at a time:

- Load SDRs only onto this server
or
- Load FRUs and SDRs onto this server

If you select multiple options, the Server Configuration Wizard will run each option to completion.

To Use the Server Configuration Utility to	Description of Procedure	Page
Configure the server for remote LAN management	Enable a connection to the server from a workstation on the LAN to allow remote management functions, such as powering the server on or off, or running diagnostic utilities.	51
Configure for remote serial/modem management	Enable a connection to the server from a serial or modem connection to allow remote management functions, such as powering the server on or off, or running diagnostic utilities.	53
Configure for serial/modem alerting	Configure the server to send a telephone page in the event that a hardware or firmware error occurs at the server.	55
Configure for LAN alerting	Configure the server to send a notification message to a workstation segment of the network in the event that a hardware or firmware error occurs at the server.	57
Run the FRU/SDR load utility	Use to update the Field Replaceable Unit (FRU) and Sensor Data Record (SDR) flash components NOTE: You must run the FRU/SDR load utility whenever the BMC is updated or if you change your processors.	59
Configure an asset tag	Assign an identification number or serial number to the server.	61
Create/modify the service partition	If a service partition does not already exist, create one. If a service partition has been created earlier, update it.	62
Save/load configuration data	Save the configuration data to a file. Use this saved file to configure other servers identically.	63

Direct Platform Control (DPC) Console

The DPC console is part of Intel Server Management (ISM). Direct Platform Control is a server management application that supports remote system management via LAN, or an RS-232 serial connection to the server's Serial B port over a modem or a direct serial cable. The DPC console provides the ability for remote management of servers via modem or LAN with a capability to run DOS-based programs.

The DPC console runs on a management workstation and is independent of the server operating system. It communicates with a server by:

- Accessing the server management capabilities of the on-board NIC
- A Windows 2000 compatible modem
- An RS-232 connection to the server's Serial B port

Even when the server is off, you can use the DPC console to verify the state of a server or diagnose a problem with the server hardware.

The DPC console features allow you to:

- Establish connection to remote servers
- Server control: power on, power off, and reset operations
- Retrieve and display entries in the SEL

- Retrieve and display SDRs
- Retrieve and display FDR information
- Retrieve and display current Remote Sensor Access (RSA) information
- Access a phonebook for remote connection management
- Establish remote control of the service partition
- Allow file transfer to/from the server

DPC Console Modes of Operation

There are four DPC console modes of operation:

- EMP mode—Access the DPC console features using the DPC console window menus and/or toolbar. Active when a connection is established through the EMP port (Serial B port).
- DPC over LAN mode—Access the DPC console features using the DPC console window menus and/or toolbar. Active when a connection is established through the LAN.
- Re-direct mode—Active when the server is running BIOS console redirection. In this mode, the DPC console launches a separate window. The window operates as an ANSI terminal and communicates with the server through the port. Character-based commands typed in the DPC console go directly to the server, and the DPC console displays the text that you would normally see on the server console.

To use this mode, you must configure the Console Redirection option in BIOS setup for re-direct mode (this option is found on the BIOS setup Server menu). Enabling console redirection also requires that the Boot Time Diag Screen option be Enabled in BIOS setup (this option is found on the BIOS setup Advanced menu). If the redirection window does not display information, the console redirection is either incorrectly configured or disabled, the EMP is disabled in BIOS setup, or the server is in protected mode. For DPC to function in this mode, the server must NOT be in graphics mode.

If the DPC console fails to connect in EMP within 10 seconds and the server can operate in redirect mode, a prompt is displayed with the option to switch to redirect mode.

- Service Partition mode—Entered when the server reboots from the service partition and the DPC console has successfully connected to the server. This mode allows transferring of files and running of DOS-based programs that are stored on the service partition.

Running the DPC Console

For more information about setting up and running the DPC console, refer to the *ISM Installation and User's Guide*. This document is on the *HP Server cc3310 User Information Diagnostics and Utilities Resource CD*.

Using the System Setup Utility

The system setup utility is located on the resource CD that is shipped with the server.

Run the system setup utility to:

- Set boot device priority
- Set passwords and security options
- View the system event log
- View SDRs

- View FRU information
- Save and restore the system configuration (available from Expert mode only)
- Update system firmware and BIOS (available from Expert mode only)
- Access the platform event manager to configure the PEP, LAN or EMP

Using either the system setup utility or BIOS setup, you can specify the boot device sequence and set up system passwords and security options. Both utilities access the same stored configuration data for these items, and the result of making a change to these settings using either utility is identical.

The system setup utility consists of a collection of task-oriented modules plugged into a common framework called the Application Framework. The Application Framework provides a launching point for individual tasks and a location for setting customization information.

Running the System Setup Utility

You can run the system setup utility from the server configuration utilities menu of the server configuration wizard, or from the service partition of the hard disk.

When the system setup utility starts in the default local execution mode, it accepts input from the keyboard or mouse. The system setup utility presents a VGA-based GUI on the primary monitor.

If you run the system setup utility from read-only media, you cannot save user preference settings (such as screen colors).

The system setup utility supports ROM-DOS version 6.22. The system setup utility will not operate from a DOS box running under an operating system such as Windows.

Start the system setup utility using one of the following methods:

- From the resource CD—Boot the server to the server configuration wizard and start the system setup utility from the server configuration utilities menu.
- From the service partition—Boot the server to the service partition and execute the following DOS commands:
C:\> cd SSU
C:\SSU> SSU.bat

The mouse driver loads if it is available; press **Enter** to continue.

When the system setup utility title appears on the screen, press any key to continue.

Working with the System Setup Utility Interface

You can access features of the system setup utility interface using the mouse or keyboard:

- Mouse—Click once to choose menu items and buttons or to select items in a list, such as the Available Tasks list. To run a list item, such as one from the Available Tasks list, select the item and click **OK** or double-click the item.
- Keyboard—Use the tab and arrow keys to highlight buttons and press the **Spacebar** or **Enter** to execute. You can also execute a menu or button by using the Alt key in combination with the underlined letter in the name of the menu or button.

You can have more than one task open at the same time, although some tasks might require complete control to avoid possible conflicts. The tasks achieve complete control by keeping the task as the center of operation until you close the task window.

The system setup utility has a built-in help system, which you access by clicking a help button or choosing the help menu.

Customizing the System Setup Utility Interface

The system setup utility lets you customize your interface using the preferences section of the main window. The Application Framework sets these preferences and saves them in the AF.INI file so that they take effect the next time you start the system setup utility. There are four user-customizable settings:

- **Color**—Lets you change the default colors associated with different items on the screen using predefined color combinations. The color changes take effect immediately.
- **Mode**—Lets you set the desired expertise level: novice, intermediate, or expert. The expertise level determines which tasks are visible in the available tasks section and which actions each task performs. For a new mode setting to take effect, you must exit the system setup utility and restart it.
- **Language**—Lets you change the text in the system setup utility to the appropriate language. For a new language setting to take effect, you must exit the system setup utility and restart it.
- **Other**—Lets you show or hide the status bar at the bottom of the system setup utility main window. The change takes effect immediately.

NOTE	If you run the system setup utility from read-only media (CD-ROM, for example), these preferences are lost when you exit the system setup utility.
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Exiting the System Setup Utility

Exiting the system setup utility closes all system setup utility windows.

Setting Boot Device Priority

To change the boot priority of a device:

1. From the system setup utility Available Tasks window, choose **Boot Devices**.
2. In the Boot Device Priority window, select a device.
3. Click the **Move Up** button to move up the list. Click the **Move Down** button to move down the list.

Setting Passwords and Security Options

You can set a user password and an administrator password for the server. You must set an administrator password before you can set a user password. (You can set the same passwords and security options by using BIOS setup.)

Setting the Administrator Password

The Admin Password button lets you set or change the administrator password used by both the system setup utility and the system BIOS. This option is not available if both an administrator and a user password are set and you entered only the user password when you started the system setup utility. All changes to the administrator password take effect immediately.

To change or clear the administrator password:

1. From the system setup utility Available Tasks window, choose **Security**.
2. Click the **Admin Password** button.
3. If you are changing passwords, enter the old password.
4. Enter the new password (or leave blank to clear).
5. Confirm the password by entering it again (or leave blank to clear).

6. Click **OK** to save the password and return to the security window.

Setting the User Password

The User Password button lets you set or change the user password used by both the SYSTEM SETUP UTILITY and the system BIOS. You must set an administrator password before you can set a user password. All changes to the user password take effect immediately.

To change or clear the user password:

1. From the system setup utility Available Tasks window, choose **Security**.
2. Click the **User Password** button.
3. If you are changing passwords, enter the old password in the first box.
4. Enter the new password (or leave blank to clear).
5. Confirm the password by entering it again (or leave blank to clear).
6. Click **OK** to save the password and return to the security window.

Setting Security Options

To set the security options:

1. From the system setup utility Available Tasks window, choose **Security**.
2. Click the **Options** button.
3. For each option, select the desired setting from the list. The options are:
 - **Security Hot Key**—The key combination that can be used to put the server into secure mode.
 - **Secure Mode Timer**—If no keyboard or mouse activity occurs during the chosen time interval, the server enters secure mode.
 - **Secure Mode Boot**—Enable forces the server to boot directly into secure mode.
 - **Video Blanking**—Enable turns off the video when the server is in secure mode.
 - **Power Switch Inhibit**—Enable prevents the power and reset buttons from functioning when the server is in secure mode. Disable allows the power and reset buttons to function normally when the server is in secure mode.
4. Click **Save** to save the settings and return to the security window.

Viewing the System Event Log (SEL)

To view the SEL:

1. From the system setup utility Available Tasks window, choose **SEL Manager**.
2. When you start the SEL Manager, it automatically loads the current list of events from non-volatile memory.
3. Use the F4 and F5 keys to scroll the window contents to the left and right to view all of the columns.
4. Use the tab key to move from field to field.
5. Use the File and SEL menu items to work with the SEL information:
 - **Open**—Views data from a previously saved SEL file.
 - **Save As**—Saves the currently loaded SEL data to a file.
 - **Properties**—Displays information about the SEL.
 - **Clear SEL**—Clears the SEL data from the non-volatile storage area.
 - **Reload**—Refreshes the display by reading the current SEL entries from the server.

- **Sort By**—Sorts the displayed events by event number, time stamp, sensor type and number, event description, or event generator ID.

Viewing Sensor Data Records (SDRs)

To view the SDRs:

1. From the system setup utility Available Tasks window, choose **SDR Manager**.

When you start the SDR manager, it automatically loads the SDR entries from non-volatile memory.

The SDR manager window has a navigation pane on the left that displays, in a tree format, the SDRs. The tree has categories for each type of record. Clicking on a category expands or collapses a list of SDRs for that category. Clicking on an individual SDR displays the information for that SDR in the presentation pane in the upper right. The description pane in the lower right displays a description of the currently selected SDR type.

2. Use the F4 and F5 keys to scroll the window contents to the left and right to view all of the columns.
3. Use the tab key to move from field to field.
4. Use the File and SDR menu items to work with the SDR information:
 - **Open**—Views data from a previously saved SDR file.
 - **Save As**—Saves the currently loaded SDR data to a file.
 - **Properties**—Displays information about the SDR, including IPMI version, number of SDR entries, time stamps for changes to the SDR information, and free space remaining.
 - **Reload**—Refreshes the display by reading the SDR data from the server.

Viewing Field Replacement Unit (FRU) Information

To view FRU information:

1. From the system setup utility Available Tasks window, choose **FRU Manager**.

When you start the FRU Manager, it automatically loads the current list of FRU devices from non-volatile memory.

The FRU manager window has a navigation pane on the left that displays, in a tree format, the inventory of components in the server. The tree has three categories: product, chassis, and board. Clicking on a category expands or collapses a list of components for that category. Clicking on an individual component displays the FRU information for that component in the presentation pane in the upper right. The description pane in the lower right displays a description of the currently selected FRU area.

2. Use the F4 and F5 keys to scroll the window contents to the left and right to view all of the columns.
3. Use the tab key to move from field to field.
4. Use the File and FRU menu items to work with the FRU information:
 - **Open**—Views data from a previously saved FRU file.
 - **Save As**—Saves the currently loaded FRU data to a file.
 - **Properties**—Displays the number of FRU devices in the system and the number being displayed. Only FRU devices with valid FRU areas are displayed.
 - **Reload**—Refreshes the display by reading the current FRU entries from the server.

Checking System BIOS and Firmware Status

Identify the installed firmware in your system as follows:

1. Insert the HP Server cc3310 Information Diagnostics and Utilities Resource CD into the CD-ROM drive and boot from the CD.
2. After the server has booted, select **Load Configuration Wizard**.
3. When the wizard begins, press **Continue**.
4. Select **Server Configuration Wizard** and **Continue**.
5. Select **run wizard** and **Continue**.
6. Select **Load SDR's only on to this server** and **Continue**.
7. Observe that the date, time, and firmware version numbers are now displayed.
8. Select **exit** to close the wizard.
9. Remove the CD from the CD-ROM drive and reset the system.

Identify the FRUSDR version as follows:

1. Reset the server and select **F2** from the BIOS boot screen.
2. Place the cursor over the **Server** button, then select **System Management** and **Enter**.
3. Locate the SDR version number in the resulting display.

NOTE	The firmware versions should be as noted here, or later: BIOS: P11 BMC: 1.19 FRUSDR: 5.6.A (or 1,0) Hot Swap Backplane (HSPB): 1.05
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Updating the BIOS and Firmware

To update the BIOS or firmware, go to:

http://hp.com/products1/servers/carrier_grade/products/cc3310/index.html.

On the referenced web page (under the product information section), select the Firmware and Software Download link. Follow the instruction provided to download BIOS or firmware.

Managing the Server Remotely

You can set up the server so that you can connect to it from a remote management station to perform management tasks and so that the managed server can contact you if a system error occurs. You can make the connection over a LAN or by using a modem or direct serial cable to the EMP. You can set up the server to notify you when various events occur. Alerts can be delivered either as telephone pages or over the LAN.

Instructions for setting up the server for remote LAN and serial/modem access and for setting up the server to proactively alert or page you are given in the following sections.

How to Set Up Remote LAN Access

To set up the server so you can access it from a remote workstation, you can use either the server configuration wizard or the system setup utility.

To use the server configuration wizard to configure remote LAN access:

1. Use the resource CD to boot the server to the server configuration wizard.

2. Click on the **Continue** button.
3. Select the **Server Configuration Wizard** option and click on the **Continue** button.
4. Select the **Run Wizard** option and click on the **Continue** button.
5. Select the **Configure this server for remote Server Management over a LAN connection** option and click on the **Continue** button.
6. Review the system date and time for accuracy and click on the **Continue** button.
7. In the IP Setup screen, choose either:
 - **DHCP**—The IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - or
 - **Static**—Assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
8. If you chose Static IP setup in the previous step, fill in the IP addressing boxes:
 - Host IP Address—The IP address of this server.
 - Subnet Mask—The IP address for the server's subnet. The server uses this to decide if the alert destination is on the same subnet.
 - Gateway IP Address—The IP address of the router for this server.
 - Backup Gateway IP Address— (optional). The IP address of the alternate router for this server.
9. Click on **Continue**. Click the **LAN Password** button (optional) to require that a password be entered before a user can perform server management functions on this server from a workstation on the LAN.
10. Select the **LAN Access Mode** to set the points at which LAN connectivity can be activated:
 - Always Available—A remote server can initiate a LAN connection, regardless of the server's state or health.
 - Restricted—Power control functions, such as power down, front panel NMI, and system reset cannot be performed remotely.
 - Disabled—Remote LAN connections cannot be initiated.
11. Select the **Serial Over LAN Access Mode** to set the user access level that is required for connecting to the server using serial over LAN.
 - Always Available—An individual can access the server through serial over LAN if that user knows the server's user password.
 - Restricted—An individual can access the server through Serial over LAN if that user knows the server's administrator password.
 - Disabled—Serial over LAN cannot be used.
12. Select the appropriate server over LAN baud rate and click on **Continue**.

To use the system setup utility to configure remote LAN access:

1. From the system setup utility Available Tasks window, choose **Platform Event Manager** (PEM).
2. In the PEM window, click **Configure LAN** and fill in the boxes described in the following steps (boxes that are not listed here are not required for remote access).
3. To require a password for remote access, enter the password in the Enter New Password box and in the Verify New Password box. Passwords can be from 1 to 16 characters long, using any ASCII character in the range [32-126]. To clear the passwords, leave both boxes blank. (You can also clear the password by selecting the menu Options > Clear LAN Password.)

4. From the LAN Access Mode list, select the remote access mode:
 - **Restricted**—A remote server can initiate a LAN connection, but cannot perform control operations such as power down, reset, or front panel NMI.
 - **Always Available**—A remote server can initiate a LAN connection regardless of the state or health of the server.
 - **Disabled**—Remote servers are not allowed to initiate LAN connections.
5. In the IP setup box, choose either:
 - **DHCP**—The IP address for the server is automatically assigned by the Dynamic Host Control Protocol (DHCP) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - or
 - **Static**—Assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
6. If you chose Static IP setup in the previous step, fill in the IP addressing boxes:
 - Host IP Address—The IP address of this server.
 - Gateway IP Address—The IP address of the router for this server.
 - Subnet Mask—The IP address for the server's subnet. The server uses this to decide if the alert destination is on the same subnet.
7. Click **Save** to save the changes.
8. Click **Close** to return to the PEM window.

How to Set Up Remote Modem or Serial Access

To set up the server so you can access it through a modem or a serial connection, you can use either the server configuration wizard or the system setup utility.

To use the server configuration wizard to configure remote modem or serial access:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Click on the **Continue** button.
3. Select the **Server Configuration Wizard** option and click on the **Continue** button.
4. Select the **Run Wizard** option and click on the **Continue** button.
5. Select the **Configure this server for remote Server Management over a Serial/Modem connection** option and click on the **Continue** button.
6. Review the system date and time for accuracy and click on the **Continue** button.
7. Enter the appropriate serial/modem parameters and click on the **Continue** button.
8. Click the **Serial/Modem Password** button (optional) to require that a password be entered before a user can perform server management functions on this server from a serial or modem connection.
9. Select the Access Mode to set the points at which serial/modem connectivity can be activated:
 - **Preboot Only**—The EMP is available only when the server is powered down or is running POST during startup. Once the operating system is loaded, a connection cannot be made.
 - **Always Active**—The EMP is available at any time.
 - **Disabled**—A connection cannot be made to the server using serial/modem access.
10. Select the Restricted Mode to set the restrict power control operations:

- **Enable**—Enable restrictions. A user cannot use serial/modem access to affect the power state of the system, such as powering the server on or off.
- **Disable**—Disables restrictions. A user can choose to power the server on or off through a serial/modem connection.

11. Select the Connection Mode:

- **Direct Connect**—Use direct connect when a management station is connected directly to the server through the serial port, without using an external modem.
- **Modem Connect**—Use modem mode when the serial port is connected to an external modem.

12. Enter a **System Phone Number** (the telephone number that is being used to connect to this server).

13. Click on the **Continue** button.

To use the system setup utility to configure remote modem or serial access:

1. From the System Setup Utility Available Tasks window, choose **Platform Event Manager** (PEM).
2. In the PEM window, click **Configure EMP** and fill in the boxes described in the following steps (boxes that are not listed here are not required for remote access).
3. To require a password for remote access, enter the password in the Enter New Password box and in the Verify New Password box. Passwords can be from 1 to 16 characters long, using any ASCII character in the range [32-126]. To clear the passwords, leave both boxes blank. (You can also clear the password by selecting the menu Options > Clear EMP Password.)
4. In the Modem Ring Time box, enter the number of 500-ms intervals that the BMC should wait before taking control of the Serial 2 port and answering an incoming call. A value greater than zero gives the BIOS time to answer before the BMC takes control. A value of zero causes the BMC to answer immediately. The maximum value, 63, tells the BMC to ignore the call. Modem Ring Time applies only to Preboot access mode and is ignored for other access modes.
5. In the System Phone Number box, enter the number of the phone line connected to the modem on the EMP.
6. From the Access Mode list, choose the remote access mode:
 - **Preboot**—The EMP is available only when the server is powered down or is running POST during startup. Once the operating system is loaded, a connection cannot be made.
 - **Always Active**—The EMP is available at any time.
 - **Disabled**—Remote servers are not allowed to initiate connections.
7. From the Restricted Mode list, choose either:
 - **Enable**—A remote server can initiate a connection, but cannot perform control operations such as power down, reset, or front panel NMI.
or
 - **Disable**—The remote management station has full control of the server.
8. From the Connection Mode list, choose either:
 - **Direct Connect**—The Serial B port on the server is connected by a serial cable to the remote management station.
or
 - **Modem Connect**—The Serial B port on the server is connected to a modem.
9. Click **Save** to save the changes.
10. Click **Close** to return to the PEM window.

How to Set Up Paging Alerts

To set up the server so it pages you in the event of an alert, you can use either the server configuration wizard or the system setup utility.

To use the server configuration wizard to configure the server to send alerts as telephone pages:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Click on the **Continue** button.
3. Select the **Server Configuration Wizard** option and click on the **Continue** button.
4. Select the **Run Wizard** option and click on the **Continue** button.
5. Select the **Configure this server for Serial/Modem Alerting** option. The box that says Configure this server for remote Server Management over a Serial/Modem connection will be automatically selected as a dependency. Click on the **Continue** button.
6. Review the system date and time for accuracy and click on the **Continue** button.
7. Enter the appropriate serial/modem parameters and click on the **Continue** button.
8. Click the **Serial/Modem Password** button (optional) to require that a password be entered before a user can perform server management functions on this server from a serial or modem connection.
9. Select the Access Mode to set the points at which serial/modem connectivity can be activated:
 - **Preboot**—A serial or modem connection can be made when the server is powered down or hard reset. Once the operating system is loaded, a connection cannot be made.
 - **Always Active**—A connection to the server can be established at any time.
 - **Disabled**—A connection cannot be made to the server using serial/modem access.
10. Select the Restricted Mode to set the restrict power control operations:
 - **Enabled**—Enable restrictions. A user cannot use serial/modem access to affect the power state of the system, such as powering the server on or off.
 - **Disabled**—Disables restrictions. A user can choose to power the server on or off through a serial/modem connection.
11. Select the Connection Mode:
 - **Direct Connect**—Use direct connect when a system is connected directly to the server through the serial port, without using an external modem.
 - **Modem Connect**—Use modem mode when the serial port is connected to an external modem.
12. System Phone Number: Enter the telephone number that is being used to connect to this server.
13. Click **Continue**.
14. Select the **Enable Serial/Modem Paging** option.
15. In the Alert Destination Phone Number box, enter the telephone number that the system should send the page to if an event happens.
16. In the Paging String box, enter the paging string that the server should send after a phone connection is made.
17. Enter the Blackout Period in minutes. This is the time (in minutes) that should be allowed between pages. The valid range is [0 – 255] where 0 disables the blackout period. Setting a blackout period can save you from being flooded with repeat pages. After you receive a PEP page, no additional pages are sent by PEP for the duration of the blackout period.
18. Click the **Alert Paging Filters** button. Click the appropriate boxes to enable/disable filters. Click **OK** when you are done, and then click on **Continue**.

To use the system setup utility to set up the server to send alerts as telephone pages:

1. Install an external modem on the EMP (Serial B port).
2. From the system setup utility Available Tasks window, choose **Platform Event Manager** (PEM).
3. In the PEM window, click **Configure EMP**.
4. In the corresponding boxes, enter the following command strings for the modem attached to the EMP port (boxes that are not listed here are not required for paging alerts):
 - **ESC Sequence**—The escape sequence. This string is sent to the modem before sending command strings. The maximum length for the string is five characters; longer strings are truncated.
 - **Hangup String**—Hang up or drop the connection. The EMP automatically sends an <ENTER> character following this string. The maximum length for the string is eight characters; longer strings are truncated.
 - **Modem Dial Command**—The command to dial a phone number. This string is sent to the modem before sending the paging string.
 - **Modem Init String**—Initialization string for the modem. This string is sent every time the EMP initializes. The maximum length for the string is determined at run-time from firmware. You will be notified if the string is truncated. Following a save, the actual string saved is displayed in the edit box.
5. Click **Save** to save the changes.
6. Click **Close** to return to the PEM window.
7. In the PEM window, click **Configure PEP**.
8. Select the **Enable PEP** check box.
9. In the Blackout Period in Minutes box, enter the minimum time, in minutes, between successive pages. The valid range is [0 – 255] where 0 disables the blackout period. Setting a blackout period can save you from being flooded with repeat pages. After you receive a PEP page, no additional pages are sent by PEP for the duration of the blackout period.
10. In the Paging String box, enter the phone number to dial for the page and the message you want sent with the page. The maximum length for the paging string is determined at run-time from firmware. You will be notified if the string is truncated. Following a save, the actual string saved is displayed in the edit box.
11. From the Options menu, choose **Configure Event Actions**.
12. In the Platform Event Paging Actions window, move the events that you want to generate an alert for to the Enabled column and move all other events to the Disabled column using the following buttons:
 - >>: Moves all events from the enabled list to the disabled list.
 - >: Moves the selected event from the enabled list to the disabled list.
 - <: Moves the selected event from the disabled list to the enabled list.
 - <<: Moves all events from the disabled list to the enabled list.
13. Click **Save** to save the changes.
14. Click **Close** to return to the PEP Configuration window.
15. To send a test page to verify that you have correctly configured PEP, from the Options menu, choose **Send Alert**.
16. Click **Save** to save the configuration.
17. Click **Close** to return to the PEM window.

How to Set Up LAN Alerts

To set up the server to send alerts over the LAN, you can use either the server configuration wizard or the System Setup Utility. For more information about LAN alerts, refer to the documentation for Intel Server Management software.

To use the server configuration wizard to configure the server to send alerts over the LAN:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Click on the **Continue** button.
3. Select the **Server Configuration Wizard** option and click on **Continue**.
4. Select the **Run Wizard** option and click on the **Continue** button.
5. Select the **Configure this server for LAN Alerting** option. The box that says Configure this server for remote Server Management over a LAN connection will be automatically selected as a dependency. Click on the **Continue** button.
6. Review the system date and time for accuracy and click on the **Continue** button.
7. In the IP Setup screen, choose either:
 - **DHCP**—The IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
or
 - **Static**—Assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
8. If you chose Static IP setup in the previous step, fill in the IP addressing boxes:
 - **Host IP Address**—The IP address of this server.
 - **Gateway IP Address**—The IP address of the router for this server.
 - **Subnet Mask**—The IP address for the server's subnet. The server uses this to decide if the alert destination is on the same subnet.
 - **Backup Gateway IP Address**—optional). The IP address of the alternate router for this server.
9. Click **Continue**. Click the **LAN Password** button (optional) to require that a password be entered before a user can perform server management functions on this server from a workstation on the LAN.
10. Select the LAN Access Mode to set the points at which LAN connectivity can be activated:
 - **Always Available**—A remote server can initiate a LAN connection, regardless of the server's state or health.
 - **Restricted**—Power control functions, such as power down, front panel NMI, and system reset cannot be performed remotely.
 - **Disabled**—Remote LAN connections cannot be initiated.
11. Select the SOL Access Mode to set the user access level that is required for connecting to the server using serial over LAN.
 - **Always Available**—An individual can access the server through serial over LAN if that user knows the server's user password.
 - **Restricted**—An individual can access the server through serial over LAN if that user knows the server's administrator password.
 - **Disabled**—Serial over LAN cannot be used.
12. Select the baud rate and then click on **Continue**.
13. Select the **Enable LAN Alerting** option.

14. Enter the IP address for the system that should receive notifications if an event happens.
15. Enter the SNMP community string. The default is public.
16. Check the box to resolve the Gateway MAC address (optional).
17. Click on the **LAN Alert Filters** button. Click the boxes to enable/disable filters. Click **OK** when you are done, and then click on **Continue**.

To use the system setup utility to configure the server to send alerts over the LAN:

1. From the system setup utility Available Tasks window, choose **Platform Event Manager** (PEM).
2. In the PEM window, click **Configure LAN** and fill in the boxes described in the following steps (boxes that are not listed here are not required for LAN alerts).
3. Select the **Enable LAN Alerts** check box.
4. (Optional) In the SNMP Community String box, enter a string for the community field in the Header section of the SNMP trap sent for an alert. The string must be from 5 to 16 characters. The default string is public.
5. In the IP Setup box, choose either:
 - **DHCP**—The IP address for the server is automatically assigned by the DHCP (dynamic host control protocol) server on the network. The Host, Gateway, and Subnet Mask boxes in the dialog are ignored.
 - or
 - **Static**—Assign the IP address for the server using the Host, Gateway, and Subnet Mask boxes in the dialog.
6. If you chose Static IP setup in the previous step, fill in the IP addressing boxes:
 - **Host IP Address**—The IP address of this server.
 - **Gateway IP Address**—The IP address of the router for this server.
 - **Subnet Mask**—The IP address for the server's subnet. The server uses this to decide if the alert destination is on the same subnet.
7. Fill in the Alert IP Address1 and Alert IP Address2 boxes. Enter the IP address of the system you want the server to send alerts to. If you want the alert to be broadcast to an entire subnet, enter the IP address for the subnet.
8. From the Options menu, choose **Configure Event Actions**.
9. In the BMC-LAN Alerting Actions window, move the events that you want to generate an alert for to the Enabled column and move all other events to the Disabled column using the following buttons:
 - **>>**: Moves all events from the enabled list to the disabled list.
 - **>**: Moves the selected event from the enabled list to the disabled list.
 - **<**: Moves the selected event from the disabled list to the enabled list.
 - **<<**: Moves all events from the disabled list to the enabled list.
10. Click **Save** to save the changes.
11. Click **Close** to return to the BMC LAN Configuration window.
12. Click **Save** to save the changes.
13. Click **Close** to return to the PEM window.

FRU/SDR Load Utility Description

The FRU/SDR Load-Utility is a DOS-based program that is used to update the server management subsystem's product level FRU and SDR non-volatile storage components (EEPROMs). The utility:

- Discovers the product configuration based on instructions in a master configuration file.
- Displays the FRU information.
- Updates the EEPROM associated with the BMC that holds the SDR and FRU area.
- Generically handles FRU devices that might not be associated with the BMC.

The utility can be run directly from the resource CD.

How to Use the FRU/SDR Load Utility

The server configuration wizard offers two routes to load the FRU/SDR records. One method is through the server configuration wizard > Run Wizard menu. The other is through the server configuration utilities menu. Instructions for each method follow.

To use the server configuration wizard > Run Wizard menu to load the FRU/SDR records:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Click on the **Continue** button.
3. Select **Server Configuration Wizard** and click on the **Continue** button.
4. Select **Run Wizard** and click on the **Continue** button.
5. To load only SDRs, select the **Load SDRs Only Onto this Server** option and click on the **Continue** button. (To load both SDR records and FRU records, go to Step 12.
6. Review the system date and time for accuracy and click on the **Continue** button.
7. Select the appropriate chassis type and click on the **Continue** button.
8. Select **Update Just the SDR Repository** and click on the **Continue** button.
9. Select whether or not you wish to configure the BMC-TAM and click on the **Continue** button.
10. If yes, select the configuration you wish to use. Click on the **Continue** button.
11. Click **OK** to save.
12. To load both SDR records and FRU records, select the **Load FRUs and SDRs Onto this Server** option and click on the **Continue** button.
13. Review the system date and time for accuracy and click on the **Continue** button.
14. Select the appropriate chassis type and click on the **Continue** button.
15. Select **Update FRUs and the SDR Repository** and click on the **Continue** button.
16. Select whether or not you wish to configure the BMC-TAM and click on the **Continue** button.
17. If yes, select the configuration you wish to use. Click on the **Continue** button.
18. Select whether or not you would like to enter the chassis serial number. Click on the **Continue** button.
19. If yes, enter the chassis serial number when prompted to do so. Click on the **Continue** button.
20. Select whether or not you would like to enter an asset tag. Click on the **Continue** button.
21. If yes, enter the product asset tag when prompted to do so. Click on the **Continue** button.

22. Click **OK** to save.

To use the server configuration wizard > server configuration utilities menu to load the FRU/SDR records:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Select **Server Configuration Utilities** and Continue.
3. Select **FRU/SDR Load Utility** and Continue.
4. You will see a black screen with a numbered prompt. Select the appropriate chassis type.
5. Choose to load both FRU and SDR records, to load only SDR records, to modify the system asset tag, or to exit the application and return to the server configuration wizard.

Command Line Format

You can also update the FRU/SDR files from a command-line prompt, separately from the server configuration wizard. This utility:

- Is compatible with ROM-DOS Ver. 6.22, MS-DOS* Ver. 6.22 (and later versions), Windows 95 DOS, and Windows 98 DOS.
- Accepts CFG, SDR, and FRU load files (the executable file for the utility is FRUSDR.exe)
- Requires the following support files:
 - One or more .fru files describing the server's field replaceable units
 - A .cfg file describing the system configuration
 - An .sdr file describing the sensors in the system

The command line format to do this is:

```
cd c:\frusdr
```

```
FRUSDR [-?] [-h] [-d {fru, sdr}] [-cfg filename.cfg] [-fru filename.fru]
```

Table 4-1. Command Line Format

Command	Description
-? or -h	Displays usage information.
-d {fru, sdr}	Displays requested area only.
-cfg filename.cfg	Uses custom CFG file.
-p	Pause between blocks of data.

Parsing the Command Line

The FRU/SDR load utility allows only one command line function at a time. A command line function can consist of two parameters. Example: -cfg filename.cfg. Invalid parameters cause an error message and exit the program. You can use either a slash (/) or a minus sign (-) to specify command line options. Use the -p and flags with any of the other options.

Displaying a Given Area

When the utility is run with the -d FRU or -d SDR command line flag, information about each area is read from memory and printed on the screen. Each area represents one sensor for each instrumented device in the server. If the given display function fails because of an inability to parse the data present or a hardware failure, the utility displays an error message and exits.

Using Specified CFG File

Run the utility with the command line parameter of `-cfg filename.cfg`. The filename can be any DOS-accepted, eight-character filename string. The utility loads the specified CFG file and uses the entries in that file to probe the hardware and to select the proper SDRs to load into non-volatile storage.

Displaying Utility Title and Version

The utility displays its title:

FRU & SDR Load Utility, Version Y.Y, Revision X.XX, where Y.Y is the version number and X.XX is the revision number for the utility.

Configuration File

The configuration file is in ASCII text format. The utility executes commands formed by the strings present in the configuration file. These commands cause the utility to run tasks needed to load the proper SDRs into the non-volatile storage of the BMC and possibly generic FRU devices. Some of the commands may be interactive and require you to make a choice.

Prompting for Product Level FRU Information

With a configuration file, the utility might prompt you for FRU information.

Filtering Records from the SDR File

The MASTER.SDR file has all the possible SDRs for the system. You might need to filter these records based on the current product configuration. The configuration file directs the filtering of the SDRs.

Updating the SDR Non-volatile Storage Area

After the utility validates the header area of the supplied SDR file, it updates the SDR repository area. Before programming, the utility clears the SDR repository area. The utility filters all tagged SDRs depending on the product configuration set in the configuration file. Untagged SDRs come automatically programmed. The utility also copies all written SDRs to the SDR.TMP file; it contains an image of what was loaded. The TMP file is also useful for debugging the server.

Updating FRU Non-volatile Storage Area

After the configuration is determined, the utility updates the FRU non-volatile storage area. First, it verifies the common header area and checksum from the specified FRU file. The internal use area reads from the specified .FRU file then programmed into the non-volatile storage. The chassis area reads from the specified .FRU file. Finally, the utility reads the product area from the specified FRU file. All areas write to the FRU.TMP file.

Setting a System Asset Tag

You can use the server configuration wizard to set an asset tag on the server. An asset tag is a user-defined identification number or serial number and can contain both letters and numbers. Use the steps below to set a system asset tag using the server configuration wizard.

Use the resource CD to boot the server to the server configuration wizard.

1. Click on the **Continue** button.
2. Select the **Server Configuration Wizard** option and click on the **Continue** button.
3. Select the **Run Wizard** option and click on the **Continue** button.

4. Select the option for **Configure this Server with a System Asset Tag** and click on the **Continue** button.
5. Verify the system date and time for accuracy and click on **Continue**.
6. Type in the system asset tag and click on **Continue**.

Installing a Service Partition

You must have a service partition set up for your HP Carrier Grade Server cc3310, to be supported by HP. The service partition should come pre-loaded in your server, but you can set up a service partition (if needed) using the *HP Server cc3310 User Information Diagnostics and Utilities Resource CD*. The service partition includes utilities and other software that can be run locally or remotely to assist in server management. The service partition uses approximately 40 MB of hard disk space.

NOTE	It is highly recommended that you install the service partition before installing an operating system. For more information, refer to the Service Partition section in the <i>ISM Installation and User's Guide</i> . This document is included on the <i>HP Server c3310 User Information Diagnostics and Utilities Resource CD</i> shipped with your server.
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To determine if a service partition exists on your drive, perform the following:

1. Boot the server. (This should be done as part of the initial boot.)
2. Check the displayed screen. If F4 is visible at the bottom of the screen, a service partition is present. (You can then install your OS.)

NOTE	If F4 is not included in the initial boot display, you must install a service partition before proceeding.
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To install the service partition using the server configuration wizard:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Click on the **Continue** button.
3. Select the **Server Configuration Utilities** and click on the **Continue** button.
4. Select the **Run Service Partition Administrator** option and click on the **Continue** button.
5. Select **3** on the Service Partition Administrator Menu to create a service partition.
6. When prompted with "On which drive should the service partition be installed", select the number for the appropriate drive.
7. When the following message, press any key to reboot the server:

The service partition was created successfully. The system will now be rebooted. After the reboot, return to this utility and choose the option to format and install software. The service partition will not operate correctly until it is formatted and software has been installed onto it. Strike a key when ready.

8. After rebooting, the *HP Server cc3310 User Information Diagnostics and Utilities Resource CD* software runs again from the CD, and displays the Server Configuration Wizard. Click on the **Continue** button.
9. Select the **Server Configuration Utilities** and click on the **Continue** button.
10. Select the **Run Service Partition Administrator** option and click on the **Continue** button.
11. Select **4** on the Service Partition Administrator Menu to install service software.
12. When prompted with "Proceed with FORMAT", press **y** to confirm partition formatting.

13. When prompted with “All data on drive D: will be lost! Are you sure? ”, press **y** to reconfirm partition formatting.
14. When prompted with “The service partition has been installed successfully. Strike a key when ready. . .”, press **ESC** to exit.
15. On the next screen, click on **Exit**.
16. When prompted by a pop-up box, click on **OK**. Ignore the warning that changes will be lost. (Your service partition will not be affected.)
17. At the DOS prompt, hit **Ctrl+Alt+Delete**, then remove the CD from the drive.

NOTE	After the service partition is installed, you can boot to it by pressing F4 during POST. The service partition operating system is ROM-DOS. Once you have booted to the service partition, you will be at a DOS prompt. From the prompt, you can access utilities and perform server management functions by running batch files and executables. Example utilities include the system setup utility and FRU/SDR load utilities.
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Saving and Restoring the System Configuration

Using the system setup utility, you can save the following configuration information to a file:

- Platform type, BIOS revision, and firmware revision
- CMOS settings
- Extended system configuration data (ESCD)
- Settings for the EMP, PEP, and BMC LAN alerts

Data is saved from all sources. You cannot choose only certain pieces of configuration data to save. You can also restore the information from a saved configuration file.

NOTE	BIOS passwords are stored in the file. Restoring a configuration can change passwords on a server. EMP and LAN passwords are not stored in the file.
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Using the server configuration wizard, you can save the following configuration information to a file:

- Serial/modem data
- Paging data
- LAN configuration data
- LAN alert data
- Service partition configuration
- System asset tag

NOTE	LAN passwords are not stored in the file. Passwords cannot be saved or restored.
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Saving a Configuration

To save the system configuration from the system setup utility:

1. From the system setup utility Available Tasks window, choose **Config Save/Restore**. (Config Save/Restore is available only in Expert mode.)
2. Click **Save To File** and specify a filename and location.

To save the system configuration from the server configuration wizard:

1. Follow the configuration prompts until you see **Save Server Configuration to Disk**.
2. Select the **Save Server Configuration to Disk** checkbox and click on the **Continue** button.
3. Specify a filename and location as prompted.
4. You will receive the following warning message: "If passwords are set for Serial Mode or LAN access, they will be viewable in the saved configuration file should someone view it with a text editor." Click on **OK** to continue.

Loading a Saved Configuration

To load a previously saved system configuration from a file using the system setup utility:

1. From the system setup utility Available Tasks window, choose **Config Save/Restore**. (Config Save/Restore is available only in Expert mode.)
2. Click **Restore from File** and specify a filename and location.

NOTE	You can only load a configuration that has been previously saved with the system setup utility.
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To restore the system configuration from a file using the server configuration utility:

1. Use the resource CD to boot the server to the server configuration wizard.
2. Click on the **Continue** button.
3. Select the **Server Configuration Wizard** option and click on the **Continue** button.
4. Select the **Load from Diskette** option and click on the **Continue** button.

NOTE	You can only load a configuration that has been previously saved with the server configuration wizard.
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The utility reads the platform type, BIOS revision, and firmware revision from the file and compares that information with the same information retrieved from the server. If the two do not match, an error message is displayed and the load operation aborts. If they do match, the utility saves the configuration data to the server. You will need to reboot your server for the changes to take effect.

Using the Intel® Server Management (ISM)

NOTE	Prior to installation, uninstall any previous version of Intel® Server Management.
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Intel® Server Management and the hard drive service partition provide real-time monitoring and alerting for your server hardware, emergency remote management, and remote server setup. Intel® Server Management is implemented by installing it within client-server architecture.

The service partition provides you with the ability to remotely access a local partition on the server and to identify and diagnose server health issues. Remote access is provided through either a modem or network connection.

You can install ISM software on a managed server or on a workstation used to manage the server. The information here describes installation on a management station running a Microsoft Windows operating system. The Intel® Server Management Console may only be installed on a management station running a Microsoft Windows operating system.

Installing Intel® Server Management

Refer to the *Intel Server Management (ISM) for the HP Carrier-Grade Server cc3310 Installation and User's Guide* ISM installation instructions.

5 Basic I/O Configuration Information

Introduction

This chapter provides information about the I/O functions and capabilities of the server. Operating restrictions and methodologies are described.

COM1/2 Ports

The COM1 serial port is not accessible. This internal port is intended for factory use only. The COM2 serial port is located on the server rear panel. Serial over LAN should be set to 19.2 kbps for best/consistent data flow.

RJ-45 Serial Ports

The front and rear serial ports have different connector pin arrangements and require different serial cables. Refer to chapter 9 for connector pin-out data and additional information.

NIC1/2 Ports

The server is provided with two NIC ports. Additional ports can be added by installing optional PCI NIC cards. The system will support up to 4 additional NIC cards.

If installing additional NIC controllers, begin by installing cards in the full-height PCI expansion card cage. Up to three NIC cards can be installed in the full-height card cage. If a fourth NIC card is to be installed, it should be installed in slot 1 of the low-profile PCI expansion riser. (This requires that no RAID card will be installed).

When configuring the system with internal network ports NIC1 and NIC2, and no other network port hardware, RHEL AS 2.1 will assign the values “eth0” to the NIC2 port and “eth1” to the NIC1 port. If additional network hardware has been installed, RHEL AS 2.1 assigns the “eth_” numerical value to the add-on ports first, and then assigns values to the internal ports. (Example: If a dual –port network card is added to the system, the added ports will be assigned values of “eth0” and “eth1”. The NIC2 port would then be assigned the value “eth2” and the NIC1 port would be assigned the value of “eth3”.

Linux will enumerate newly installed LAN ports before the built-in NIC ports on the server rear panel. This means that the built-in NIC ports will always be the last (highest) two “ethx” devices.

Only the NIC 1 port can be used with ISM.

Intel RAID Controller SRCZCR Tips

1. The internal RAID controller (which is provided with your server) is not supported by the Red Hat Enterprise Linux (RHEL) Advanced Server 2.1 operating system. However, RHEL AS 2.1 does support software RAID.
2. HP supports the operation of the Intel external RAID controller. RHEL AS 2.1, Kernel 2.4.9-e.24 and later provide the required drivers for this external RAID controller.
3. The Intel RAID controller is shipped with a full-height bracket attached. The low-profile bracket is included in the box with the controller. You must remove the full-height bracket and install the low-profile bracket.

4. You may damage the service partition when configuring the external RAID. It may be necessary to reinstall the service partition and the OS after configuring the RAID controller. Refer to chapter 4 for service partition installation instructions.

RAID Devices

The system will support only 1 RAID controller card. It must be installed in slot 1 of the low-profile PCI expansion riser. The Linux OS must be reinstalled after installing a zero channel RAID controller.

Linux will identify a newly installed RAID controller before the internal SCSI controller. This means that any add-in SCSI controllers will have their devices enumerated before internal SCSI drives and external SCSI drives connected to channel A.

PCI SCSI Cards

The system will support up to 2 additional PCI SCSI controller cards. If installing additional SCSI controllers, install them in slots 2 and 3 of the low-profile PCI expansion riser.

Linux will identify newly installed SCSI controllers after internal (channel A and B) SCSI devices, if the newly installed cards are located in the low-profile PCI expansion riser. The SCSI controllers will be identified before internal SCSI devices if the cards are installed in the full-height PCI expansion card cage. If the full-height PCI expansion card cage is used, you must install the SCSI devices in a lower numbered slot than the any RAID card. If SCSI devices are to be installed in the full-height PCI expansion card cage, proceed as follows:

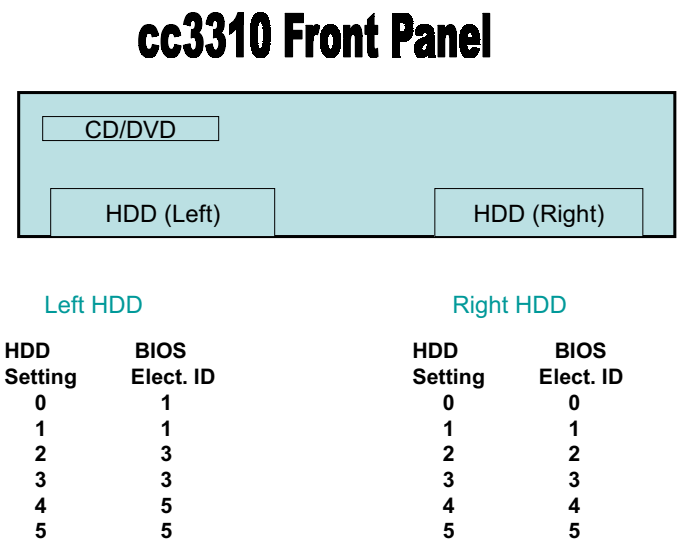
1. Disable their controller's INT13 scan as described in the cc3310 Carrier Grade Server Software & Setup Reference Guide.
2. Do not connect or power on the SCSI drive(s) until after the OS has been installed.
3. After connecting and powering the SCSI drives, modify the parameters on the Linux kernel boot line. Edit the file `/boot/grub/grub/conf` and change the `root=/dev/sda3` argument to reflect your new root disk. (Example: if the root disk is now the fifth drive, the argument should be `root=/dev/sde3`.)

Internal SCSI Hard Drive Address Settings

The design of the hot swap backplane (HSB) facilitates HDD installation. For standard HDD SCSI address settings of 0 and 1, remove (or verify that they have been removed) all address jumpers from HDD. When choosing SCSI address settings other than 0 or 1, be aware of the following:

1. The internal HSB utilizes SCSI address 6.
2. Each internal HDD must be set to a unique SCSI address.
3. The least significant bit (LSB) for the left HDD has been hard wired – only odd-numbered SCSI addresses can be selected for the left HDD.
4. The right HDD can be set to any available SCSI address.
5. Address restrictions are illustrated below.

Figure 5-1. HDD and SCSI Addresses



6 Solving Problems

Introduction

This chapter helps you identify and solve problems that might occur while you are using the server.

Resetting the System

To Do This:	Press:
Soft boot reset, which clears system memory and reloads the operating system.	Ctrl+Alt+Del
Clear system memory, restart POST, and reload the operating system.	Reset button
Cold boot reset. Turn the server power off and then on. This clears system memory, restarts POST, reloads the operating system, and halts power to all peripherals.	Power off/on

Initial System Startup

Problems that occur at initial system startup are usually caused by incorrect installation or configuration. Hardware failure is a less frequent cause. Check the following:

1. Are all cables correctly connected and secured?
2. Are the processors fully seated in their sockets on the server board?
3. Are all add-in PCI boards fully seated in their slots on the server board?
4. Are all jumper settings on the server board correct?
5. Are all jumper and switch settings on add-in boards and peripheral devices correct? To check these settings, refer to the manufacturer's documentation that comes with them. If applicable, ensure that there are no conflicts—for example, two add-in boards sharing the same interrupt.
6. Are all DIMMs installed correctly?
7. Are all peripheral devices installed correctly?
8. If the server has a hard disk drive, is it properly formatted or configured?
9. Are all device drivers properly installed?
10. Are the configuration settings made in BIOS setup correct?
11. Is the operating system properly loaded? Refer to the operating system documentation.
12. Did you press the server power on/off switch on the front panel to turn the server on (power on light should be lit)?
13. Is the server power cord properly connected to the server and plugged into a NEMA 5-15R outlet for 100–120 Volt (or a NEMA 6-15R outlet for 200–240 Volt)?
14. Is power available at the power source?
15. Are all integrated components from the tested components lists? Check the tested memory and chassis lists, as well as the supported hardware and operating system list on the HP support websites (docs.hp.com and software.hp.com). Search using the keyword cc3310.

Running New Application Software

Problems that occur when you run new application software are usually related to the software. Faulty equipment is much less likely, especially if other software runs correctly. Check the following:

1. Does the server meet the minimum hardware requirements for the software? Refer to the software documentation.
2. Is the software an authorized copy? If not, get one; unauthorized copies often do not work.
3. If you are running the software from a diskette, is it a good copy?
4. If you are running the software from a CD-ROM disk, is the disk scratched or dirty?
5. If you are running the software from a hard disk drive, is the software correctly installed? Were all necessary procedures followed and files installed?
6. Are the correct device drivers installed?
7. Is the software correctly configured for the server?
8. Are you using the software correctly?

If the problems persist, contact the software vendor's customer service representative.

After the System Has Been Running Correctly

Problems that occur after the server hardware and software have been running correctly often indicate equipment failure. Many situations that are easy to correct, however, can also cause such problems. Check the following:

1. If you are running the software from a diskette, try a new copy of the software.
2. If you are running the software from a CD-ROM disk, try a different CD-ROM disk to see if the problem occurs on all disks.
3. If you are running the software from a hard disk drive, try running it from a diskette. If the software runs correctly, there may be a problem with the copy on the hard disk drive. Reinstall the software on the hard disk, and try running it again. Make sure all necessary files are installed.
4. If the problems are intermittent, there may be a loose cable, dirt in the keyboard (if keyboard input is incorrect), a marginal power supply, or other random component failures.
5. If you suspect that a transient voltage spike, power outage, or brown-out might have occurred, reload the software and try running it again. (Symptoms of voltage spikes include a flickering video display, unexpected system reboots, and the server not responding to user commands.)

NOTE	Random errors in data files: If you are getting random errors in your data files, voltage spikes on your power line may be corrupting them. If you are experiencing any of the above symptoms that might indicate voltage spikes on the power line, you may want to install a surge suppressor between the power outlet and the server power cord.
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More Problem Solving Procedures

This section provides a more detailed approach to identifying a problem and locating its source.

Preparing the System for Diagnostic Testing

CAUTION Turn off devices before disconnecting cables: Before disconnecting any peripheral cables from the server, turn off the server and any external peripheral devices. Failure to do so can cause permanent damage to the server and/or the peripheral devices.

Check the following:

1. Turn off the server and all external peripheral devices. Disconnect all of them from the server, except the keyboard, mouse, and video monitor.
2. Make sure the server input power is properly connected.
3. Make sure your video display monitor, keyboard, and mouse are correctly connected to the server. Turn on the video monitor. Set its brightness and contrast controls to at least two thirds of their maximum ranges (refer to the documentation supplied with your video display monitor).
4. If the operating system normally loads from the hard disk drive, make sure there is no diskette in drive A. Otherwise, place a diskette containing the operating system files in drive A.
5. Turn on the server. If the power LED does not light, refer to Power Light Does Not Light on page 72.
6. If errors are encountered, power off the server and remove all add-in cards.

Monitoring POST

Refer to Power-On Self-Test (POST) on page 38.

Verifying Proper Operation of Key System Lights

As POST determines the server configuration, it tests for the presence of each mass storage device installed in the server. As each device is checked, its activity light should turn on briefly. Check the following:

1. Does the diskette drive activity light turn on briefly? If not, refer to Diskette Drive Activity Light Does Not Light on page **Error! Bookmark not defined.**
2. If a second diskette drive is installed, does its activity light turn on briefly? If not, refer to Diskette Drive Activity Light Does Not Light on page **Error! Bookmark not defined.**

Confirming Loading of the Operating System

Once the system boots up, the operating system prompt appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear, refer to Initial System Setup on page 69.

Specific Problems and Corrective Actions

This section provides possible solutions for these specific problems:

- Power light does not light
- There is no beep or an incorrect beep pattern
- No characters appear on screen
- Characters on the screen appear distorted or incorrect
- Server cooling fans do not rotate

Solving Problems

- Diskette drive activity light does not light
- CD-ROM drive activity light does not light
- There are problems with the application software
- The bootable CD-ROM is not detected

Try the solutions in the order given. If you cannot correct the problem, contact your service representative or authorized dealer for help.

Power Light Does Not Light

Check the following:

1. Is the server operating normally? If so, the power LED is probably defective or the cable from the front panel to the server board is loose.
2. Are there other problems with the server? If so, check the items listed under Server Cooling Fans Do Not Rotate Properly.

If all items are correct and problems persist, contact your service representative or authorized dealer for help.

No Characters Appear on Screen

Check the following:

1. Is the keyboard functioning? Check to see that the Num Lock light is functioning.
2. Is the video monitor plugged in and turned on?
3. Are the brightness and contrast controls on the video monitor properly adjusted?
4. Are the video monitor switch settings correct?
5. Is the video monitor signal cable properly installed?
6. Is the onboard video controller enabled?

If you are using an add-in video controller board, check the following:

7. Verify that the video controller board is fully seated in the server board connector.
8. Reboot the system for changes to take effect.
9. If there are still no characters on the screen after you reboot the system and POST emits a beep code, write down the beep code you hear. This information is useful for your service representative.
10. If you do not receive a beep code and characters do not appear, the video display monitor or video controller may have failed. Contact your service representative or authorized dealer for help.

Characters Are Distorted or Incorrect

Check the following:

1. Are the brightness and contrast controls properly adjusted on the video monitor? Refer to the manufacturer's documentation.
2. Are the video monitor signal and power cables properly installed?

If the problem persists, the video monitor may be faulty or it may be the incorrect type. Contact your service representative or authorized dealer for help.

Server Cooling Fans Do Not Rotate Properly

If the server cooling fans are not operating properly, server components could be damaged.

Check the following:

1. Is power available at the power source?
2. Is the server power cord properly connected to the server and the power source?
3. Did you press the power button?
4. Is the power on light lit?
5. Have any of the fan motors stopped (use the server management subsystem to check the fan status)?
6. Are the fan power connectors properly connected to the server board?
7. Is the cable from the front panel board connected to the server board?
8. Are the power supply cables properly connected to the server board?
9. Are there any shorted wires caused by pinched cables or power connector plugs forced into power connector sockets the wrong way?

If the switches and connections are correct and power is available, contact your service representative or authorized dealer for help.

If the problem persists, there may be a problem with the diskette drive, server board, or drive signal cable. Contact your service representative or authorized dealer for help.

CD-ROM Drive Activity Light Does Not Light

Check the following:

1. Are the power and signal cables to the CD-ROM drive properly installed?
2. Are all relevant switches and jumpers on the drive set correctly?
3. Is the drive properly configured?
4. Is the onboard IDE controller enabled?

Problems With Application Software

If you have problems with application software, check the following:

1. Verify that the software is properly configured for the server. Refer to the software installation and operation documentation for instructions on setting up and using the software.
2. Try a different copy of the software to see if the problem is with the copy you are using.
3. Make sure all cables are installed correctly.
4. Verify that the server board jumpers are set correctly. Refer to chapter 7.
5. If other software runs correctly on the server, contact your vendor about the failing software.
6. If the problem persists, contact the software vendor's customer service representative for help.

Bootable CD-ROM Is Not Detected

Check the following:

1. Is the BIOS set to allow the CD-ROM to be the first bootable device?

Solving Problems

2. Check cable connections.
3. Verify CD is bootable in another known good CD-ROM drive (especially if the CD is a copy).

Problems with Network

Server Hangs When Drivers Are Loaded

1. Change the PCI BIOS interrupt settings.

Diagnostics Pass, But Connection Fails

1. Make sure the network cable is securely attached.
2. Make sure you specify the correct frame type in your NET.CFG file.

Activity LED Does Not Light

1. Make sure the network hub has power.

Controller Stopped Working When an Add-in Adapter Was Installed

1. Make sure the cable is connected to the port from the onboard network controller.
2. Make sure your PCI BIOS is current.
3. Make sure the other adapter supports shared interrupts. Also, make sure your operating system supports shared interrupts.
4. Try re-seating the add-in adapter.

Add-in Adapter Stopped Working Without Apparent Cause

1. Try re-seating the adapter first; then try a different slot if necessary.
2. The network driver files may be corrupt or deleted. Delete and then reinstall the drivers.
3. Run the diagnostics.

Cannot Connect to a Server

1. Make sure you are using the drivers that are shipped on the resource CD for the onboard network controller.
2. Make sure the driver is loaded and the protocols are bound.
3. Make sure the network cable is securely attached to the connector at the server back panel. If the cable is attached but the problem persists, try a different cable.
4. Make sure the hub port is configured for the same duplex mode as the network controller.
5. Check with your LAN administrator about the correct networking software that needs to be installed.
6. If you are directly connecting two servers (no hub), you will need a crossover cable (refer to your hub documentation for more information on crossover cables).
7. Check the network controller LEDs that are visible through an opening on the server's back panel.

7 Technical Reference

Server Board Jumpers

Figure 7-1. Jumper Locations

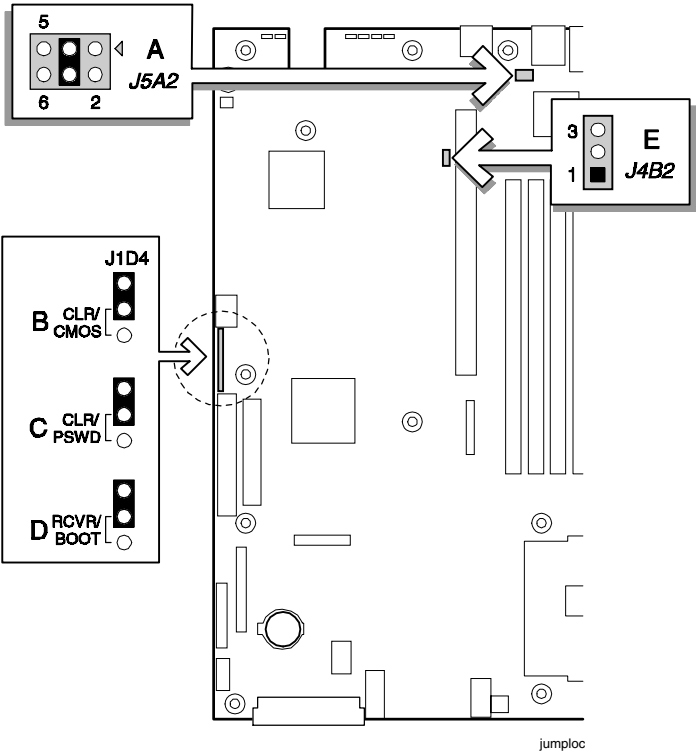


Table 7-1. Configuration Jumper

	Jumper Name:	What it Does at System Reset:
A	RJ-45 serial port config	Configures either a DSR or a DCD signal to the connector.
B	CMOS CLR	If these pins are jumpered, the CMOS settings are cleared. These pins should not be jumpered for normal operation.
C	PSWD CLR	If these pins are jumpered, the password is cleared. These pins should not be jumpered for normal operation.
D	RCVRY BOOT	If these pins are jumpered, the system will attempt BIOS recovery. These pins should not be jumpered for normal operation.
E	BMC boot block write enable	If these pins are jumpered, the BMC boot block is erasable and programmable at next reset. These pins should not be jumpered for normal operation.

System Fault LEDs

There are four front panel system fault LEDs. The function of these system fault LEDs is described in the following table.

Table 7-2 Front Panel System Fault LED Description

Fault LED	Function
Critical	This amber or red LED alarm is illuminated via SMBUS bus and may only be turned off via SMBUS control. When continuously lit, it indicates the presence of Critical System Fault. A critical system fault is an error or event that is detected by the system with a fatal impact to the system. In this case, the system cannot continue to operate. An example could be the loss of a large scale section of memory, or other corruption, that renders the system not operational. The front panel critical alarm relay will be engaged.
Major	This amber or red major alarm is illuminated via SMBUS bus and may be turned off via SMBUS control or alarm connector reset. When continuously lit, it indicates the presence of a Major System Fault. A major system fault is an error or event that is detected by the system that has discernable impact to system operation. In this case, the system can continue to operate, but in a degraded fashion (reduced performance or loss of non-fatal feature reduction). An example could be the loss of one or two mirrored disks. The front panel major alarm relay will be engaged.
Minor	This amber LED minor alarm is illuminated via SMBUS bus and may be turned off via SMBUS control or alarm connector reset. When continuously lit, it indicates the presence of a Minor System Fault. A minor system fault is an error or event that is detected by the system but has little impact to actual system operation. An example would be a correctable ECC error. The front panel minor alarm relay will be engaged.
Power	The amber power alarm is illuminated via SMBUS bus or SYS_FLT_LED_L signal and may only be turned off via SMBUS control. When continuously lit, it indicates the presence of a Power System Fault. The front panel power alarm relay will be engaged.

Diagnostic LEDs

To help diagnose POST failures, a set of four bi-color diagnostic LEDs is located on the back edge of the baseboard. Each of the four LEDs can have one of four states: off, green, red, or amber.

The LED diagnostics feature consists of a hardware decoder and four dual color LEDs. During POST, the LEDs will display all normal Port-80 codes representing the progress of the BIOS POST. Each POST code will be represented by a combination of colors from the four LEDs. The LEDs are in pairs of green and red. The post codes are broken into two nibbles, an upper and a lower nibble. Each bit in the upper nibble is represented by a red LED and each bit in the lower nibble is represented by a green LED. If both bits are set in the upper and lower nibble then both red and green LEDs are lit, resulting in an amber color. Likewise, if both bits are clear then the red and green LEDs are off.

During the POST process, each light sequence represents a specific Port-80 POST code. If a system should hang during POST, the diagnostic LEDs will present the last test executed before the hang. When reading the lights, the LEDs should be observed from the back of the server. The most significant bit (MSB) is the first LED on the left, and the least significant bit (LSB) is the last LED on the right.

NOTE When comparing a diagnostic LED color string from the baseboard to those listed in the diagnostic LED decoder in the following tables, the LEDs on the baseboard should be referenced when viewed by looking into the server from the back. Reading the LEDs from left to right, the most significant bit (MSB) is located on the left.

Table 7-3. POST Codes

Post Code	Diagnostic LED Decoder				Description
	G = Green, R = Red, A = Amber				
	MSB			LSB	
07h	Off	G	G	G	Uncompress various BIOS modules
08h	G	Off	Off	Off	Verify password checksum
08h	G	Off	Off	Off	Verify CMOS checksum
07h	Off	G	G	G	Read microcode updates from BIOS ROM
07h	Off	G	G	G	Initializing the processors. Set up processor registers. Select least featured processor as the boot strap processor (BSP).
0Bh	G	Off	G	G	Hook before the keyboard BAT command is issued.
0Ch	G	G	Off	Off	Keyboard controller test: The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller.
0Eh	G	G	G	Off	Init after keyboard test: The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.
0Fh	G	G	G	G	Write command byte 8042: The initialization after the keyboard controller BAT command test is done. The keyboard command byte will be written next.
10h	Off	Off	Off	R	Keyboard Init: The keyboard controller command byte is written. Next, issuing the pin 23 and 24 blocking and unblocking commands.
10h	Off	Off	Off	R	Disable and initialize 8259
11h	Off	Off	Off	A	Detect configuration mode, such as CMOS clear
13h	Off	Off	G	A	Chipset initialization before CMOS initialization
19h	G	Off	Off	A	Init system timer: The 8254 timer test is over. Starting the memory refresh test next.
1Ah	G	Off	G	R	Check refresh toggle: The memory refresh line is toggling. Checking the 15-second on/off time next.
23h	Off	Off	A	G	Setup interrupt vectors: Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24h	Off	G	R	Off	Before vector: Configuration is required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin.

Post Code	Diagnostic LED Decoder				Description
	G = Green, R = Red, A = Amber				
	MSB			LSB	
25h	Off	G	R	G	Init interrupt vectors: Interrupt vector initialization is done.
F2h	R	R	A	R	Initialize SMM handler. Initialize USB emulation.
F5h	R	A	R	A	Validate NVRAM areas. Restore from backup if corrupted.
12h	Off	Off	G	R	Load defaults in CMOS RAM if bad checksum or CMOS clear jumper is detected
12h	Off	Off	G	R	Initializing APP CMOS RAM for appliance servers only
12h	Off	Off	G	R	Check point after CMOS initialized
27h	Off	G	A	G	Validate date and time in RTC
F4h	R	A	R	R	Load micro code to all CPUs
F6h	R	A	A	R	Scan SMBIOS GPNV areas
15h	Off	G	Off	A	8254 timer test on Channel 2
15h	Off	G	Off	A	Enable 8042
15h	Off	G	Off	A	Keyboard reset
26h	Off	G	A	Off	Initialize LCD, if supported
28h	G	Off	R	Off	Set video mode: Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
29h	G	Off	R	G	Debugger hook
2Ah	G	Off	A	Off	Init PCI devices and motherboard devices. Pass control to video BIOS. Start serial console redirection.
2Bh	G	Off	A	G	Platform hook
2Dh	G	G	R	G	Initialize AMI display manager module. Initialize support code for headless system if no video controller is detected.
2Dh	G	G	R	G	Scan flash for logos and initialize logo data areas
30h	Off	Off	R	R	Detect PS/2 mouse
30h	Off	Off	R	R	Hook after c000 ROM control
2Eh	R	R	A	Off	Set up video parameters in BIOS data area
37h	Off	G	A	A	Activate ADM: The display mode is set. Displaying the power-on message next.
37h	Off	G	A	A	Initialize language module. Display splash logo.
37h	Off	G	A	A	Display sign on message, BIOS ID and processor information
38h	G	Off	R	R	Detect USB mouse: Initializing the bus input, and general devices next, if present.
34h	Off	G	R	R	Reset IDE controllers

Post Code	Diagnostic LED Decoder				Description
	G = Green, R = Red, A = Amber				
	MSB			LSB	
39h	G	Off	R	A	Displaying bus initialization error messages
3Ah	G	Off	A	R	Display setup message: The new cursor position has been read and saved. Displaying the hit setup message next.
40h	Off	R	Off	Off	Ensure timer keyboard interrupts are on
4Bh	G	R	G	G	Memory test: The amount of memory above 8 MB has been found and verified. Checking for a soft reset and clearing the memory below 8 MB for the soft reset next. If this is a power-on situation, going to checkpoint 4Eh next.
57h	Off	A	G	A	Chipset hook after memory size
53h	Off	R	A	A	Display processor cache size
54h	Off	A	Off	R	Disable parity and NMI reporting
60h	Off	R	R	Off	Test 8237 DMA controller: The DMA page register test passed. Performing the DMA controller 1 base register test next.
65h	Off	A	R	G	Init 8237 DMA controller: The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
7Fh	G	A	A	A	Extended NMI enable: Extended NMI source enabling is in progress.
80h	R	Off	Off	Off	Enable mouse and keyboard: The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81h	R	Off	Off	G	Keyboard interface test: A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
82h	R	Off	G	Off	Check stuck key enable keyboard: The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83h	R	Off	G	G	Disable parity NMI: The command byte was written and global data initialization has completed. Checking for a locked key next.
84h	R	G	Off	Off	Verify RAM size: Checking for a memory size mismatch with CMOS RAM data next.
84h	R	G	Off	Off	Check ATA cable type presence of ATAPI devices
84h	R	G	Off	Off	Display keyboard message
16h	Off	G	G	R	Display IDE mass storage devices
17h	Off	G	G	A	Display USB mass storage devices
85h	R	G	Off	G	Report the first set of POST errors to error manager
86h	R	G	G	Off	Boot password check: The password was checked. Performing

Post Code	Diagnostic LED Decoder				Description
	G = Green, R = Red, A = Amber				
	MSB			LSB	
					any required programming before Setup next.
8Dh	A	G	Off	G	OEM patch 9
8Dh	A	G	Off	G	Set printer RS-232 timeout
8Dh	A	G	Off	G	Init FDD devices: Resetting the hard disk controller next.
95h	R	G	Off	A	Lock out PS/2 keyboard/mouse if unattended start is enabled.
92h	R	Off	G	R	Option ROM Scan
98h	A	Off	Off	R	Init boot devices: The adapter ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.
9Bh	A	Off	G	A	Float processor initialize: Performing any required initialization before the coprocessor test next.
9Eh	A	G	G	R	Enable interrupts 0,1,2: Checking the extended keyboard, keyboard ID, and NUM Lock key next. Issuing the keyboard ID command next.
A2h	R	Off	A	Off	Report second set of POST errors to error manager
86h	R	G	G	Off	Prepare and run setup: Error manager displays and logs POST errors. Waits for user input for certain errors. Execute setup.
8Bh	A	Off	G	G	Set base expansion memory size
8Ch	A	G	Off	Off	Adjust setup: Programming the setup options next.
A5h	R	G	R	G	Set display mode
A7h	R	G	A	G	OEM patch 12
A7h	R	G	A	G	Build SMBIOS table and MP tables
A7h	R	G	A	G	Program hot key and timeout settings in keyboard controller
A7h	R	G	A	G	Processor initialization before boot
A7h	R	G	A	G	Copy required language strings to shadow RAM
Aah	A	Off	A	Off	Clear video screen
000h	Off	Off	Off	Off	One beep to indicate end of POST. No beep if silent boot is enabled.
000h	Off	Off	Off	Off	POST completed. Passing control to INT 19h boot loader next.

POST Error Codes and Messages

Table 7-4 and Table 7-5 define the POST error codes and their associated messages. The BIOS prompts the user to press a key in case of serious errors. Some error messages are preceded by the word Error to highlight the fact that the server might be malfunctioning. All POST errors and warnings are logged in the SEL, unless the SEL is full.

Table 7-4. Standard POST Error Messages and Codes

Error Code	Error Message	Pause on Boot
100	Timer Channel 2 Error	Yes
101	Master Interrupt Controller	Yes
102	Slave Interrupt Controller	Yes
103	CMOS Battery Failure	Yes
104	CMOS Options not Set	Yes
105	CMOS Checksum Failure	Yes
106	CMOS Display Error	Yes
107	Insert Key Pressed	Yes
108	Keyboard Locked Message	Yes
109	Keyboard Stuck Key	Yes
10A	Keyboard Interface Error	Yes
10B	System Memory Size Error	Yes
10E	External Cache Failure	Yes
110	Floppy Controller Error	Yes
111	Floppy A: Error	Yes
112	Floppy B: Error	Yes
113	Hard disk 0 Error	Yes
114	Hard disk 1 Error	Yes
115	Hard disk 2 Error	Yes
116	Hard disk 3 Error	Yes
117	CD-ROM disk 0 Error	Yes
118	CD-ROM disk 1 Error	Yes
119	CD-ROM disk 2 Error	Yes
11A	CD-ROM disk 3 error	Yes
11B	Date/Time not set	Yes
11E	Cache memory bad	Yes
120	CMOS clear	Yes
121	Password clear	Yes
140	PCI Error	Yes
141	PCI Memory Allocation Error	Yes
142	PCI IO Allocation Error	Yes

Error Code	Error Message	Pause on Boot
143	PCI IRQ Allocation Error	Yes
144	Shadow of PCI ROM Failed	Yes
145	PCI ROM not found	Yes
146	Insufficient Memory to Shadow PCI ROM	Yes

Table 7-5. Extended POST Error Messages and Codes

Error Code	Error Message	Pause on Boot
8100	Processor 1 failed BIST	No
8101	Processor 2 failed BIST	No
8110	Processor 1 Internal error (IERR)	No
8111	Processor 2 Internal error (IERR)	No
8120	Processor 1 Thermal Trip error	No
8121	Processor 2 Thermal Trip error	No
8130	Processor 1 disabled	No
8131	Processor 2 disabled	No
8140	Processor 1 failed FRB-3 timer	No
8141	Processor 2 failed FRB-3 timer	No
8150	Processor 1 failed initialization on last boot	No
8151	Processor 2 failed initialization on last boot	No
8160	Processor 01: unable to apply BIOS update	Yes
8161	Processor 02: unable to apply BIOS update	Yes
8170	Processor P1: L2 cache Failed	Yes
8171	Processor P2: L2 cache Failed	Yes
8180	BIOS does not support current stepping for Processor P1	Yes
8181	BIOS does not support current stepping for Processor P2	Yes
8190	Watchdog Timer failed on last boot	No
8191	4:1 Core to bus ratio: Processor Cache disabled	Yes
8192	L2 Cache size mismatch	Yes
8193	CPUID, Processor Stepping are different	Yes
8194	CPUID, Processor Family are different	Yes
8195	Front Side Bus Speed mismatch. System Halted	Yes, Halt
8196	Processor Model are different	Yes

Error Code	Error Message	Pause on Boot
8197	CPU Speed mismatch	Yes
8300	Baseboard Management Controller failed to function	Yes
8301	Front Panel Controller failed to Function	Yes
8305	Hot Swap Controller failed to Function	Yes
8420	Intelligent System Monitoring Chassis Opened	Yes
84F1	Intelligent System Monitoring Forced Shutdown	Yes
84F2	Server Management Interface Failed	Yes
84F3	BMC in Update Mode	Yes
84F4	Sensor Data Record Empty	Yes
84FF	System Event Log Full	Yes

BIOS Recovery Beep Codes

In the case of a bootblock update, where video is not available for text messages to be displayed, speaker beeps are necessary to inform the user of any errors. Table 7-6 describes the type of error beep codes that may occur during the bootblock update.

Table 7-6. BIOS Recovery Beep Codes

Beeps	Error Message	POST Progress Code	Description
1	Recovery started		Start recovery process
2	Recovery boot error	Flashing series of POST codes: E9h EEh EBh ECh EFh	Unable to boot to floppy, ATAPI, or ATAPI CD-ROM. Recovery process will retry.
Series of long low-pitched single beeps	Recovery failed	EEh	Unable to process valid BIOS recovery images. BIOS already passed control to operating system and flash utility.
2 long high-pitched beeps	Recovery complete	EFh	BIOS recovery succeeded, ready for power-down, reboot

Bootblock Error Beep Codes

Table 7-7. Bootblock Error Beep Codes

Beeps	Error Message	Description
1	Refresh timer failure	The memory refresh circuitry on the motherboard is faulty.
2	Parity error	Parity cannot be reset
3	Base memory failure	Base memory test failure
4	System timer	System timer is not operational
5	Processor failure	Processor failure detected
6	Keyboard controller Gate A20 failure	The keyboard controller may be bad. The BIOS cannot switch to protected mode.
7	Processor exception interrupt error	The CPU generated an exception interrupt.
8	Display memory read/write error	The system video adapter is either missing or its memory is faulty. This is not a fatal error.
9	ROM checksum error	System BIOS ROM checksum error
10	Shutdown register error	Shutdown CMOS register read/write error detected
11	Invalid BIOS	General BIOS ROM error

Part II: Service Information

The Service Guide presents information and procedures for Carrier Grade Server cc3310 maintenance. These procedures require access to internal server components and should be performed by a cc3310-trained technician. Refer to the *HP Server cc3310 User Information Diagnostics and Utilities Resource* CD for training materials and additional information.

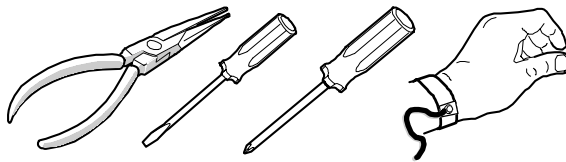
8 Upgrading the Hardware

Tools and Supplies Needed

Procedures in this section require the following tools and supplies:

- Jumper-removal tool or needle-nosed pliers
- Small flat-bladed screwdriver
- Phillips* (cross-head) screwdriver (#2)
- Heat sink clip attach/removal tool
- Antistatic wrist strap and conductive foam pad (recommended)

Figure 8-1. Tools and Supplies Needed



NOTE	Blue-colored items (such as handles, buttons, and screws) represent service touch points. Remove power from server before servicing these components. Green-colored items (such as handles, levers, and buttons) represent hot-pluggable components.
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Equipment log: As you integrate new parts into the system, add information about them to your equipment log (Appendix A). Record the model and serial number of the system, all installed options, and any other pertinent information specific to the system.

Cautions

These warnings and cautions apply throughout this chapter. Only a cc3310-trained qualified person should configure the server hardware.

WARNING	System power on/off: The power button DOES NOT switch off server power. To remove power from the server, you must unplug/disconnect the power connections. Make sure power connections are unplugged/disconnected before you open the chassis, add, or remove any components.
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Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it. Otherwise, personal injury or equipment damage can result.

CAUTION Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static-free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

LED Color Selection

Colors of the ID, disk fault, major alarm, and critical alarm are configurable using 2 position 0.1-inch shunts/jumpers on header J7D1 (see following table). The ID LED may be configured as blue or white. A white ID LED needs shunts across pins 3-4 and 5-6.

Table 8-1 Front Panel LED Color Selection (FPIO Board Jumper Settings)

Shunt	Pins	On	Off
ID blue	1-2	N/C	Blue
ID green	3-4	Green	Off
ID red	5-6	Red	Off
Critical alarm	7-8	Red	Yellow
Disk 0 fault	9-10	Yellow	Red
Disk 1 fault	11-12	Yellow	Red
Spare	13-14		
Spare	15-16		

System Fault Relays

The front panel board contains four relays. These relays are for power, critical, major, and minor alarms. The relays are controlled by the SMBUS. See I²C Interfaces for programming information. System Fault LEDs describes the relay outputs.

I²C Interfaces

This section describes the programming of front panel board.

A PFC8574 remote 8-bit I/O expander on the private I²C bus controls the front panel alarms. All signals are active low. All outputs power up high (inactive). The PFC8574 I²C address is 40 hex (write) and 41 hex (read). On system reset, all ones should be written to PFC8574 since the part doesn't have a reset pin.

Table 8-2 Front Panel Board I2C Interface Input/output Bit Description

Bit	I/O	Name	Description
0	O	Power alarm	Writing 0 turns on the power alarm relay and illuminates the POWER LED, writing 1 turns both off. The relay and LED may also be turned on by a FAN_FAIL_L signal.
1	O	Critical alarm	Writing 0 turns on the critical alarm relay and illuminates the CRITICAL LED, writing 1 turns both off.
2	O	Major alarm	Writing a 1 to 0 edge will turn on the flip-flip that enables major alarm relay. Writing a 1 will turn off the major alarm relay or a MAJOR_RESET signal input. MAJOR LED is on when output is 0, off when output is 1.*
3	O	Minor alarm	Writing a 1 to 0 edge will turn on the flip-flip that enables major alarm relay. Writing a 1 will turn off the major alarm relay or a MINOR_RESET signal input. MINOR LED is on when output is 0, off when output is 1.*
4	I	Major alarm sense	Senses the state of the major alarm relay. 0 relay is on, 1 relay is off. This allows software to detect if the MAJOR_RESET signal was activated. Always write 1 during write operations.
5	I	Minor alarm sense	Senses the state of the minor alarm relay. 0 relay is on, 1 relay is off. This allows software to detect if the MINOR_RESET signal was activated. Always write 1 during write operations.
6	I	Critical/major color	Writing a 1 turns CRITICAL and MAJOR LEDs to yellow, 0 color is RED. Strapping J7D1 pins forces LEDs to RED. Resets to yellow.

* Normally closed (NC) and normally open (NO) relay contacts are provided on the rear panel Telco alarms connector. To activate the relay, a 1 to 0 transition must be written.

Replacing Power Supply Modules

To maintain hot plug capability, ensure that an active AC or DC power supply module is in the adjacent slot before replacing a power supply module.

To replace an AC power supply module, follow this procedure:

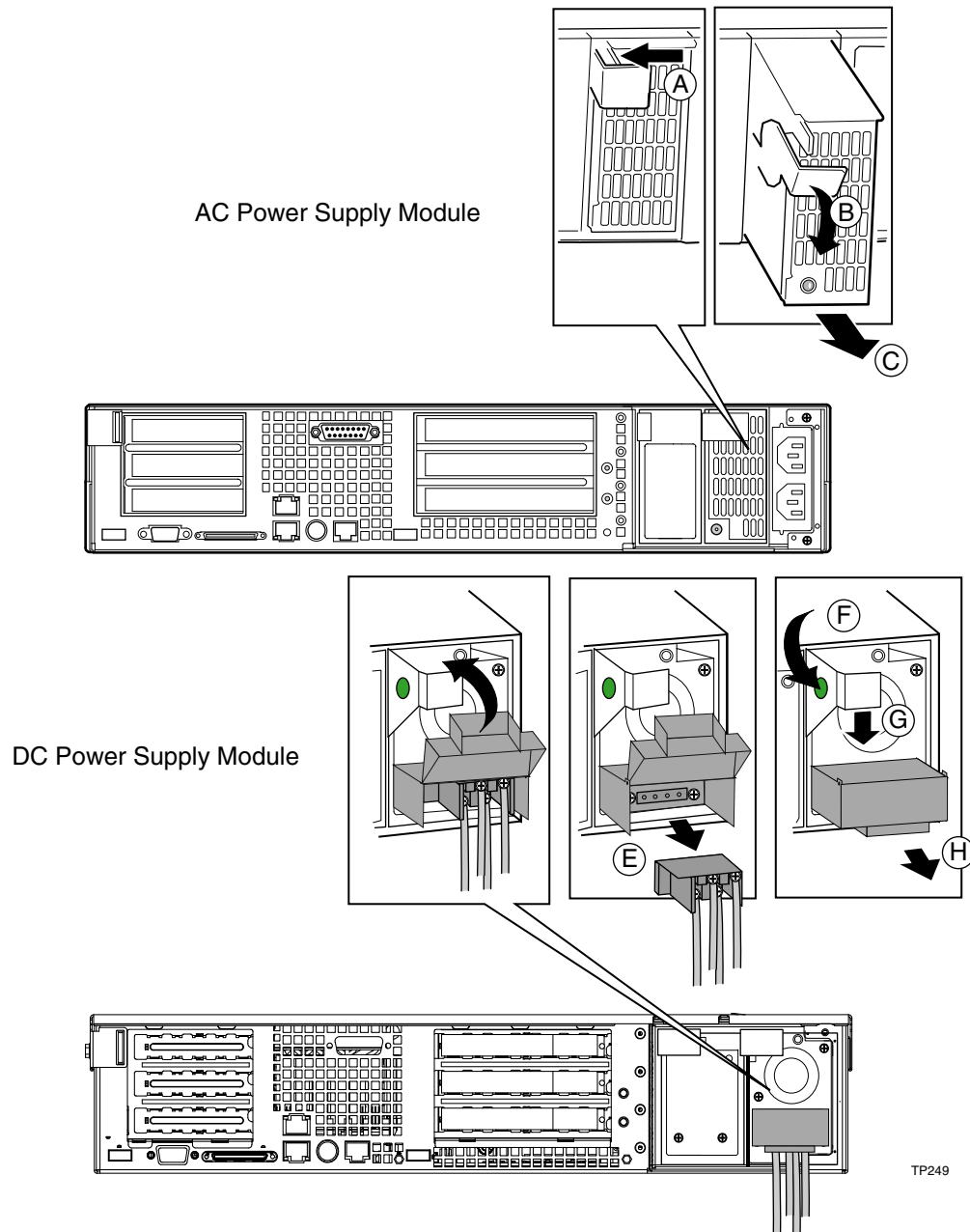
1. Press in locking tab inside of green handle (A in Figure 8-2).
2. Pull green handle slightly downward and rearward, sliding the AC power supply module out of the AC power supply cage (B and C in Figure 8-2).
3. When reinserting an AC power supply module, make sure the green handle is in the downward position before sliding AC power supply module into AC power supply cage.

To replace a DC power supply module, follow this procedure:

1. Disconnect the power cord/cable from the DC source. (Remove power from the power supply.)
2. Using a small flat-head screwdriver, unlatch the black connector cover from the connector base and flip connector cover up (D in Figure 8-2).
3. Disconnect DC power plug from power supply module by pulling DC power plug rearward (E in Figure 8-2). Flip black connector cover down and re-latch connector cover to connector base.

4. Using a Phillips screwdriver, remove the two screws that secure the terminal block to the DC power supply module.
5. Press in green button on handle and pull handle downward. At the same time, pull DC power supply module out of DC power supply cage (F, G, and H in Figure 8-2).
6. When reinserting DC power supply module, make sure the handle is in the downward position before sliding DC power supply module into DC power supply cage.
7. Secure the terminal block to the replacement power supply using 2 Phillips head screws.

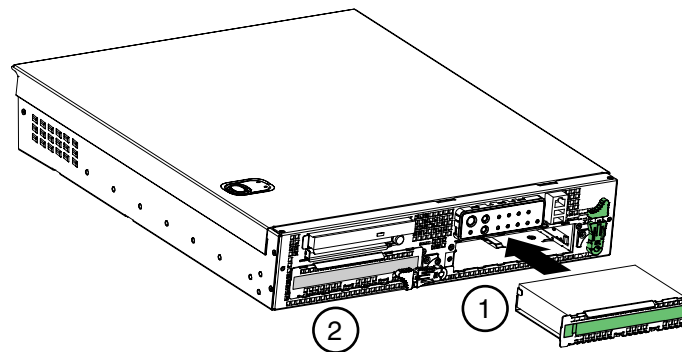
Figure 8-2. Removing the Power Supply Modules



Replacing Hard Disk Drives

There are two hard drive bays in the server (1 and 2 in Figure 8-3). Each hard drive bay supports a tray-mounted Ultra-320 SCSI disk drive with single connector attach (SCA) interconnect. The drive tray is installed into the front of the chassis in the hard drive bay, and then secured in place using the horizontal handle on the drive tray. A small lever on the front of the server is then rotated into the horizontal position to connect the SCA connector on the server flex circuit SCSI cable to the SCA connector on the drive. Ultra-320 SCSI technology (SCA interconnect) or slower hard disk drives can be installed in this hard drive tray. The hard drive bays are designed to accept 15,000 RPM (and below) hard drives that consume up to 18 Watts of power.

Figure 8-3. Hard Drive Bays

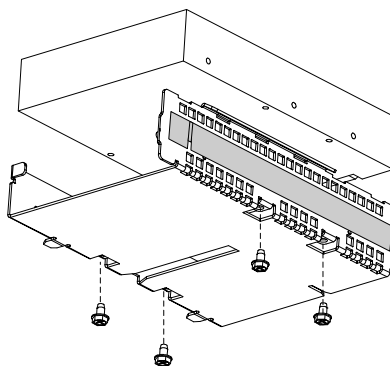


TP130

Hard Drive Tray

Each hard drive used in the server must be mounted to a drive tray using four screws inserted into the bottom of the drive as shown in Figure 8-4.

Figure 8-4. Hard Drive Tray



TP131

Replacing CD-ROM OR CD+RW/DVD Drive

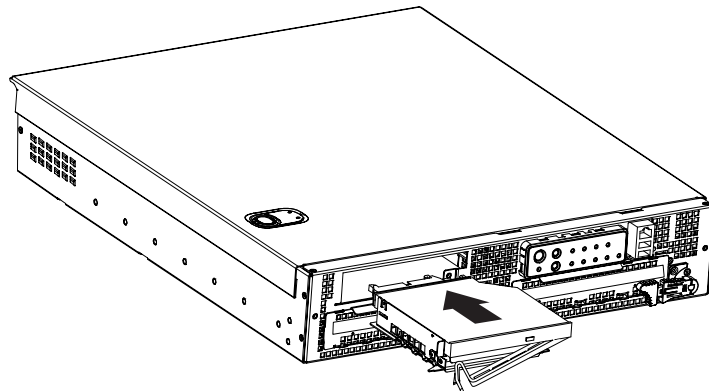
The peripheral bay supports a CD-ROM or CD+RW/DVD drive carrier assembly. These items are supplied in carrier assemblies that can be inserted into the server. The blind-mate carrier assembly can be inserted or

removed when server power is off. After the drive carrier assembly is installed into the server, a horizontal handle is used to secure it to the chassis.

NOTE Disconnect power from server before replacing CD-ROM drives.

The CD-ROM drive carrier assembly utilizes a 0.5-inch (12.7mm) slim-line CD-ROM or CD+RW/DVD drive.

Figure 8-5. Peripheral Drive Bay



TP127

CD-ROM or CD+RW/DVD Drive Carrier Assembly

The CD-ROM drive carrier assembly inserts into the peripheral bay on the front of the server. The mating connectors on the CD-ROM drive carrier assembly and the FPIO board are blind-mate style connectors, and will seat fully when the horizontal handle on the CD-ROM drive carrier assembly is fully secured.

Working Inside the Server

This section describes removal and installation of most components inside the server.

Safety: Before You Remove Server Covers

Before removing covers at any time to work inside the server, observe these safety guidelines:

1. Turn off all peripheral devices connected to the system.
2. Power down the server by pressing and holding the power button on the front of the chassis for several seconds. After the server shuts down, unplug/disconnect the power cord to remove standby power from the server.
3. Label and disconnect all peripheral cables and all telecommunication lines connected to I/O connectors or ports on the back of the server.

Provide ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface) of the server when handling components.

Warnings and Cautions

These warnings and cautions apply whenever you remove covers of the server. Only a technically qualified person should integrate, configure, or service the system.

WARNING **Power Button: Shutting down the server with the power button on the front of the chassis DOES NOT remove all power from the server. To remove all power from server, you must also unplug/disconnect the power cord(s) from the server. Unplugging/disconnecting the power cord(s) from the server removes the +5 Volt standby power that is present when the server is powered down.**

Hazardous conditions, power supply: Hazardous voltage, current, and energy levels are present inside the power supply. There are no user-serviceable parts inside the power supply; technically qualified personnel should do servicing.

Hazardous conditions, devices, and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and unplug/disconnect the power cord(s), telecommunications systems, networks, and modems attached to the server before opening it, otherwise personal injury or equipment damage can result.

Hazardous conditions, processors and power supplies: Thermal conditions may be present in the processor/memory complex. Allow all fans to continue to run until they shut down on their own after power has been turned off. After the fans stop, you can unplug/disconnect the power cord(s).

CAUTION **Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you do all procedures in this section only at an ESD-protected workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.**

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place it on a grounded surface free of static electricity. Do not slide boards over any surface.

Cooling and airflow: For proper cooling and airflow, always install the chassis covers before turning on the server. Operating the server without the covers in place can damage server parts.

Removing and Installing the Top Cover

CAUTION **For proper cooling and airflow, do not operate the server with the cover removed. Always reinstall the cover before turning the server on.**

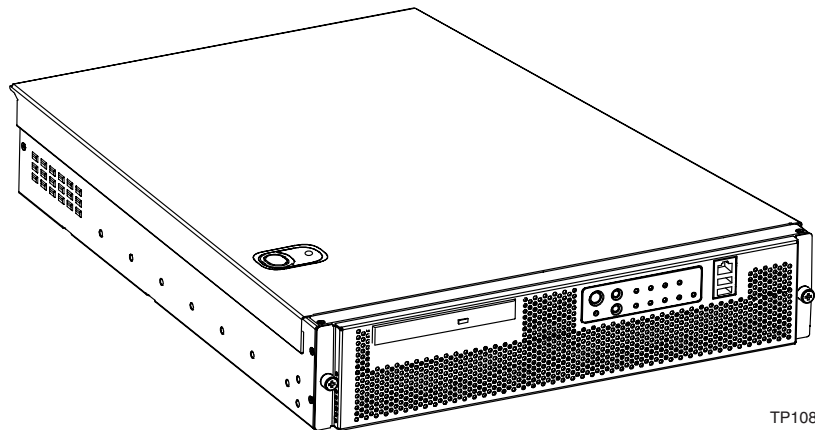
The server comes with a removable top cover. Removal of this cover is necessary when installing or removing many components. You do not have to remove the top cover when removing or installing power supplies, peripheral drive assemblies (CD-ROM or CD+RW/DVD), or hard drives.

WARNING **If rack mounted, make sure that the rack is anchored securely so it will not tilt forward when the server chassis is extended. Should the rack tip forward, a crush hazard exists that could cause serious injury.**

To remove the top cover, follow this procedure:

1. Push down on the blue locking button on the top cover while sliding the top cover rearward to release it from the chassis.
2. Lift the top cover up to remove.

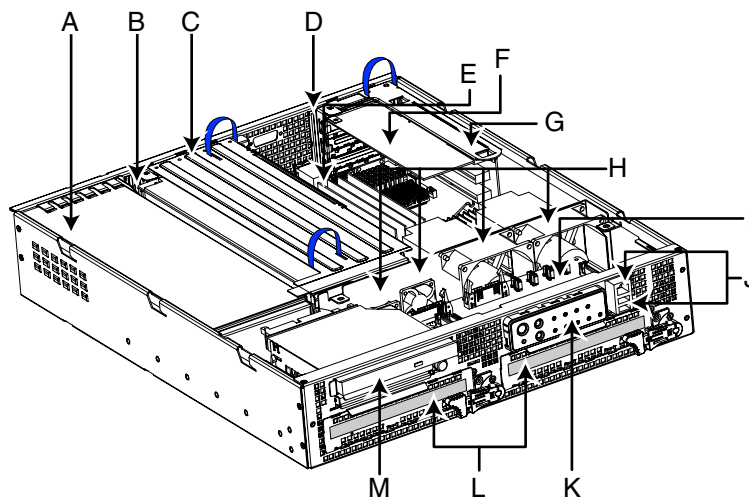
Figure 8-7. Removing the Top Cover



Internal Chassis Layout

The server uses the Telco and Industrial Grade server baseboard, which contains connectors for installing up to two Intel® Xeon™ processors with 512 KB L2 cache utilizing the FCPGA sockets. The baseboard has 6 DIMM slots and supports up to 12 GB error checking and correcting (ECC) SDRAM memory. The Telco and Industrial Grade server baseboard also contains 6 PCI slots (implemented via riser cards), input/output (I/O) ports, and various controllers.

Figure 8-8. HP Carrier-Grade Server (shown with top cover and bezel removed)



- | | |
|--------------------------------------|----------------------------------|
| A. Power supply | H. Server fans |
| B. PCI card bracket (full-length) | I. FPIO server board |
| C. Riser card assembly (full-length) | J. RJ-45 COM2 and dual USB ports |
| D. PCI card bracket (low-profile) | K. Control panel |
| E. Server baseboard | L. SCSI hard disk drive bays |

F. PCI add-in card (accessory to system)
G. Riser card assembly (low-profile)

M. Peripheral bay (optional CD-ROM module
or FDD module available)

Tools and Supplies Needed

- Jumper removal tool or needle-nosed pliers
- Small flat-headed screwdriver
- Phillips* (cross head) screwdriver (#1 bit and #2 bit)
- Antistatic wrist strap and conductive foam pad (recommended)
- Heat sink clip attach/removal tool

Cautions

These warnings and cautions apply throughout this chapter. Only a technically qualified person should configure the server board.

WARNING **Server power on/off: The power button DOES NOT completely turn off the server AC power; 5 Volt standby is still active whenever the server is plugged in. To remove power from server, you must unplug the AC power cord from the wall outlet. Make sure the AC power cord is unplugged before you open the chassis, add, or remove any components.**

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the server and disconnect the power cord, telecommunications systems, networks, and modems attached to the server before opening it, otherwise personal injury or equipment damage can result.

CAUTION Electrostatic discharge (ESD) and ESD protection: ESD can damage disk drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface) on your server when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges. After removing a board from its protective wrapper or from the server, place the board component side up on a grounded, static-free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that you can grip with your fingertips or with a pair of fine needle-nosed pliers. If your jumpers do not have such a tab, take care when using needle-nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool you use to remove a jumper, or you may bend or break the stake pins on the board.

Installing or Replacing Processor(s)

WARNING If the server has been running, any installed processor and heat sink on the processor board(s) will be hot. To avoid the possibility of a burn, be careful when removing or installing server board components that are located near processors.

CAUTION Processor must be appropriate: You may damage the server if you install a processor that is inappropriate for your server. Make sure your server can handle a newer, faster processor (thermal and power considerations). If you are adding a second processor to your server, the second processor must be compatible with the first processor (within one stepping, same voltage, same speed).

The system Sensor Data Records (SDR) must be reprogrammed every time that the processor configuration is changed. If you are adding a processor, or permanently removing a second processor, you must reprogram the SDR . Failure to reprogram the SRD may allow critical system failures to occur without an appropriate Telco alarm. Failure to recognize an alarm condition could result in loss of data or damage to equipment

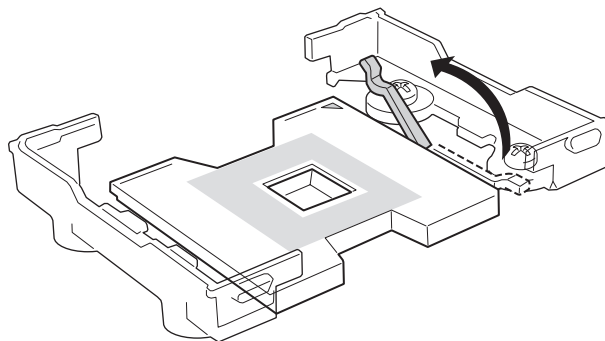
ESD and handling processors: Reduce the risk of electrostatic discharge (ESD) damage to the processor by doing the following: (1) Touch the metal chassis before touching the processor or server board. Keep part of your body in contact with the metal chassis to dissipate the static charge while handling the processor. (2) Avoid moving around unnecessarily.

Retention Mechanism (RM): In 2U and greater chassis, use the RM brackets that ship with the chassis, not the RM that ships with the processor kit.

Installing Processors

1. Raise the locking bar on the socket.

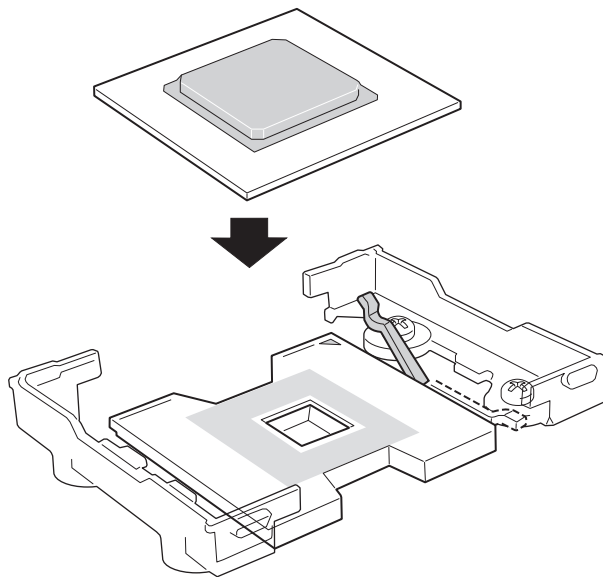
Figure 8-9. Raising the Locking Bar



OM14132

2. Observe the triangular symbols on the socket and on the processor. Orient the processor such that the triangular symbols are aligned.
3. Aligning the pins of the processor with the socket, insert the processor into the socket. Ensure that the pins are fully inserted and that the processor is flush against the socket.

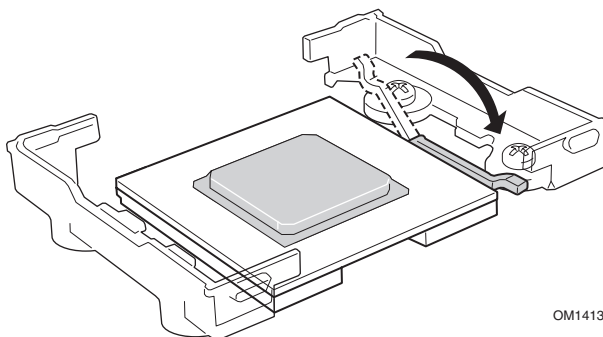
Figure 8-10. Installing Processors



OM14133

4. Lower the locking bar completely.

Figure 8-11. Lowering the Locking Bar



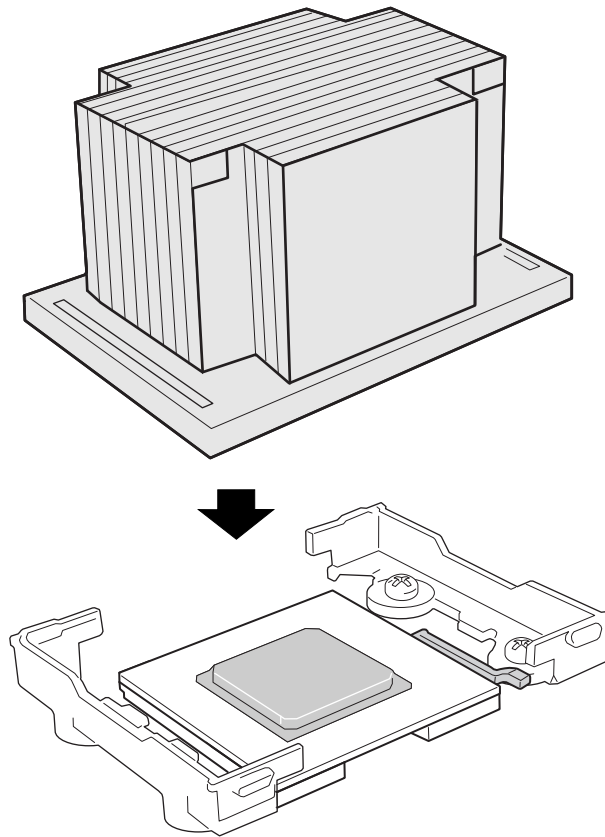
OM14135

5. Follow the instructions packaged with your boxed processor for preparing the heat sink and processor for installation.

CAUTION Use care when handling the heat sink. Protect the fans and thermal pad. Do not scratch or otherwise damage the black thermal pad. Failure to heed this notice may result in decreased cooling efficiency and damage.

6. Position the heat sink above the processor, ensuring that the black thermal pad is positioned directly over the processor, and the heat sink is oriented such that it will fit into the retainers at both sides of the processor.
7. Aligning the raised metal surfaces, place the heat sink into position, on top of the processor.

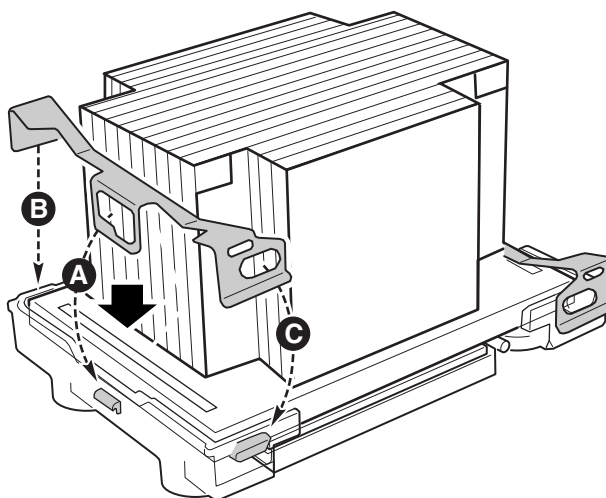
Figure 8-12. Installing the Heat Sink



TP110

8. Place one heat sink clip in position, so the tab on the clip engages the slot on the heat sink (A in Figure 8-13). Position the clip so that the plastic tab on the retaining bracket is located in the narrow portion of the heat sink clip opening.
9. Press one end of the clip down until it locks into position in the retainer. (B in Figure 8-13). Ensure that the plastic tab on the RM bracket protrudes through the corresponding opening in the heat sink clip. Some sideways movement of the clip may be necessary to achieve proper installation.
10. Press the other end of the clip down into position on the retainer (C in Figure 8-13). Ensure that the plastic tab on the RM bracket protrudes through the corresponding opening in the heat sink clip.

Figure 8-13. Installing the Heat Sink Clip



TP111

11. Install the second heat sink clip as described in the preceding steps.

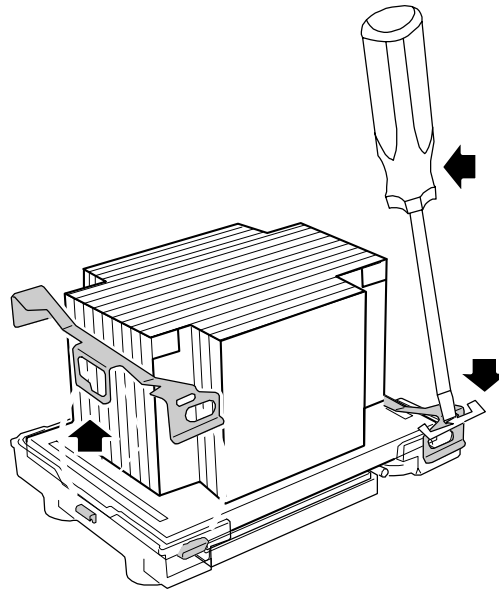
Replacing a Processor

1. Observe the safety and ESD precautions at the beginning of this chapter and the additional cautions given here.

NOTE	Removing the fan assembly makes processor removal and installation easier to accomplish.
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2. Disconnect 4 FAN power connectors from the FPIO board sockets.
3. Loosen the captive screw that secures the fan assembly, and lift the fan assembly from the board.
4. Using a slot screwdriver, disengage the retention clip from the heat sink and processor socket. (One end of the clip has an extended tab to facilitate clip removal.) Press the center of the clip down while using the screwdriver to pull the retention clip from the tab on the RM bracket. Insert the screwdriver blade into the small slot on the end of the retention clip, and pull the clip free of the tab. (See Figure 8-14.) The end of the retention clip will pop off the RM bracket.
5. Remove the clip. If necessary, free the clip from the other end of RM bracket by repeating the process described in the preceding step.

Figure 8-14. Disengaging the Retention Clips from the Processor Socket



TP204

6. Remove the second retention clip as described in the preceding steps.

CAUTION Use care when handling the heat sink. Protect the fans and thermal pad. Do not scratch or otherwise damage the black thermal pad. Failure to heed this notice may result in decreased cooling efficiency and damage.

7. Lift the processor heat sink from the RM bracket and processor.
8. Raise the locking bar on the socket (Figure 8-9), and lift the processor from the socket.
9. A new thermal pad is provided with replacement processors. Discard the old thermal pad after locating the replacement.
10. Follow the instructions packaged with the processor to be installed. Instructions are provided for preparation of the heat sink and processor for installation.
11. Observe the triangular symbols on the socket and on the processor to be installed. Orient the processor such that the triangular symbols are aligned.
12. Aligning the pins of the processor with the socket, insert the processor into the socket. (See Figure 8-10.) Ensure that the pins are fully inserted and that the processor is flush against the socket.
13. Lower the locking bar completely, to lock the processor pins into the socket. (See Figure 8-11.)
14. Position the heat sink above the processor, ensuring that the black thermal pad is positioned directly over the processor, and the heat sink is oriented such that it will fit into the retainer.
15. Aligning the raised metal surfaces, lower the heat sink into position, on top of the processor. (See Figure 8-12.)
16. Place one heat sink clip in position, so the tab on the clip engages the slot on the heat sink (A in Figure 8-13). Position the clip so that the plastic tab on the retaining bracket is located in the narrow portion of the heat sink clip opening.

17. Press one end of the clip down until it locks into position in the retainer. (B in Figure 8-13). Ensure that the plastic tab on the RM bracket protrudes through the corresponding opening in the heat sink clip. Some sideways movement of the clip may be necessary to achieve proper installation.
18. Press the other end of the clip down into position on the retainer (C in Figure 8-13). Ensure that the plastic tab on the RM bracket protrudes through the corresponding opening in the heat sink clip.
19. Install the second heat sink clip as described in the preceding steps.

Reprogramming the SDR

If you have changed the processor configuration, rewrite the SDR as follows:

1. Boot the system from the *HP Server cc3310 Information Diagnostics and Utilities Resource CD*.
2. After the server has booted, select **Load Configuration Wizard**.
3. When the wizard begins, press **Continue**.
4. Select **Server Configuration Wizard** and **Continue**.
5. Select **run wizard** and **Continue**.
6. Select **Load SDRs only on to this server** and **Continue**.
7. Set the date and time and select **Continue**.
8. Select **Update just the SDR repository** and **Continue**.
9. Select **Yes – Activate BMC TAM** and **Continue**.
10. Choose the desired LED configuration and select **Continue**.
11. Save the configuration to disk and select **Continue**.
12. Select **OK to program SDRs**.
13. Observe that the server reboots when the SDR repository has been reprogrammed.

Memory

CAUTION The system Sensor Data Records (SDR) must be reprogrammed every time that the memory configuration is changed. Failure to reprogram the SRD may allow critical system failures to occur without an appropriate Telco alarm. Failure to recognize an alarm condition could result in loss of data or damage to equipment.

NOTE Only DDR266 is supported with a 533 MHz front side bus.

DIMMs must be installed in pairs and in the following order: 1A and 1B, 2A and 2B, 3A and 3B.

Only DDR266 compliant SDRAM is supported by the server board. Install from 256 MB to 12 GB of approved ECC memory, using up to six DIMMs.

If DIMM sizes are to be mixed, install DIMMs in order by capacity. Install the smaller capacity DIMMs in slots 1A and 1B, the same or larger DIMMs in slots 2A and 2B, and the largest DIMMs in slots 3A and 3B. Example:

1. Install the 512 MB DIMM pair in SLOTS 1A/B (2 each 256M DIMMs).

2. Install the 1 GB DIMM pair in SLOTS 2A/B (2 each 512M DIMMs).
3. Install the 2 GB DIMM pair in SLOTS 3A/B (2 each 1 GB DIMMs).

DIMM pairs must be identical. (Do not mix sizes or manufacturers.)

Installed DIMMs must be the same speed.

DIMM installation requirements are presented in Table 8-3 and Table 8-4. For a list of supported memory, call your service representative or visit the HP support website at <http://www.hp.com>. Search using keyword cc3310.

NOTE The cc3310 BIOS will detect memory configuration errors with an audible alarm and/or memory configuration alerts at bootup. The BIOS will display the following message: "violates write ring back spec".

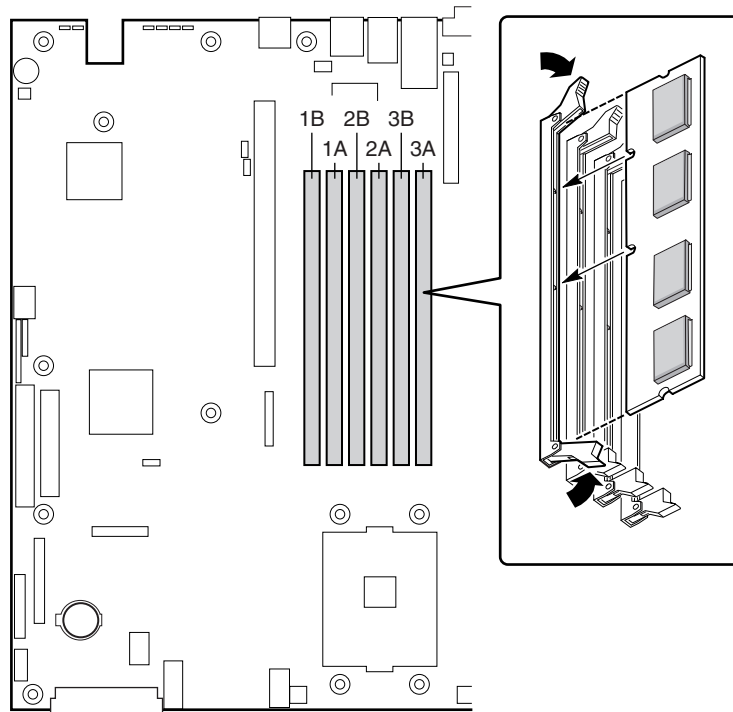
Table 8-3 HP Approved Memory and Banking Cross Reference

HP DIMM Part Number	DIMM Pair Capacity	Banking Technology
A9884-62001	512 MB	SB
A9885-62001	1 GB	SB
A9886-62001	2 GB	DB
A9887-62001	4 GB	DB

Table 8-4 Acceptable DIMM Configurations

DIMM 1A and 1B	DIMM 2A and 2B	DIMM 3A and 3B
DB	Empty	Empty
DB	DB	Empty
DB	DB	DB
SB	Empty	Empty
SB	SB	Empty
SB	SB	SB
SB	DB	Empty
SB	DB	DB
SB	SB	DB

Figure 8-15. Installing Memory



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Reprogramming the SDR

If you have changed the memory configuration, rewrite the SDR as follows:

1. Boot the system from the *HP Server cc3310 Information Diagnostics and Utilities Resource CD*.
2. After the server has booted, select **Load Configuration Wizard**.
3. When the wizard begins, press **Continue**.
4. Select **Server Configuration Wizard** and **Continue**.
5. Select **run wizard** and **Continue**.
6. Select **Load SDRs only on to this server** and **Continue**.
7. Set the date and time and select **Continue**.
8. Select **Update just the SDR repository** and **Continue**.
9. Select **Yes – Activate BMC TAM** and **Continue**.
10. Choose the desired LED configuration and select **Continue**.
11. Save the configuration to disk and select **Continue**.
12. Select **OK to program SDRs**.
13. Observe that the server reboots when the SDR repository has been reprogrammed.

Replacing the Back-up Battery

The lithium battery on the server board powers the real time clock (RTC) in the absence of AC power. When the battery starts to weaken, it loses voltage, and the server settings stored in CMOS RAM in the RTC (for example, the date and time) may be wrong. Contact your customer service representative or dealer for a list of approved devices.

WARNING	There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.
----------------	---

ADVARSEL!	Lithiumbatteri - Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.
------------------	--

ADVARSEL	Lithiumbatteri - Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.
-----------------	--

VARNING	Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.
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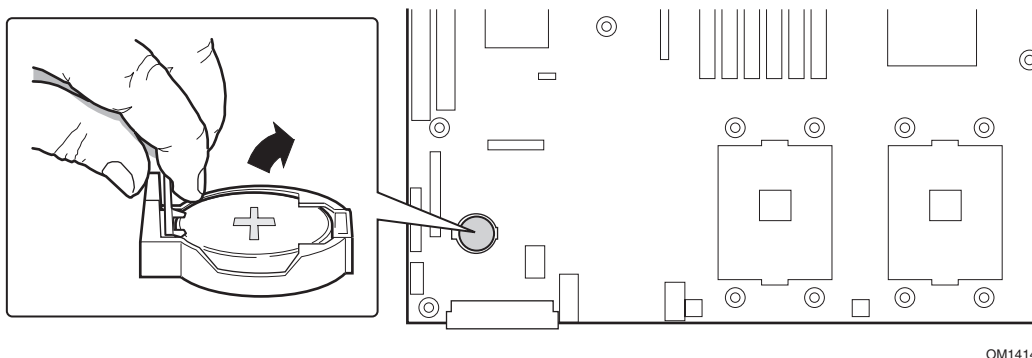
VAROITUS	Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.
-----------------	---

To replace the battery

1. Before proceeding, record your custom BIOS settings.
2. Observe the safety and ESD precautions at the beginning of this chapter.
3. Open the chassis and locate the battery.
4. Push the upper end of the metal retainer away from the battery—the battery pops up.
5. Remove the battery from its socket.
6. Dispose of the battery according to local ordinance.
7. Remove the new lithium battery from its package.
8. Being careful to observe the correct polarity, lay the battery in the socket.
9. Push the battery down—the metal retainer locks the battery in the socket.
10. Close the chassis.

11. Run BIOS setup to restore the configuration settings to the RTC.
12. Restore your custom BIOS settings.

Figure 8-16. Replacing the Back-up Battery



Replacing 3.3-Volt and 5-Volt PCI Add-in Cards in Full-Length PCI Adapter Subsystem

This PCI adapter assembly is configured and installed as shown in Figure 8-17. After the PCI adapter assembly is removed from the server, it is configured with PCI adapters by plugging the PCI adapters into the PCI connectors on the riser card (either a 3.3-Volt riser card or a 5-Volt riser card) that is part of the PCI adapter assembly. The PCI adapter assembly is then installed into the server by plugging the riser card into the riser card connector on the server baseboard. In addition, it is necessary to make sure that the interlocking metal tabs on the back of the PCI adapter assembly are correctly inserted into the slots in the back of the chassis.

Figure 8-17. Segment B Full-Height, Full-Length PCI Adapter Subsystem

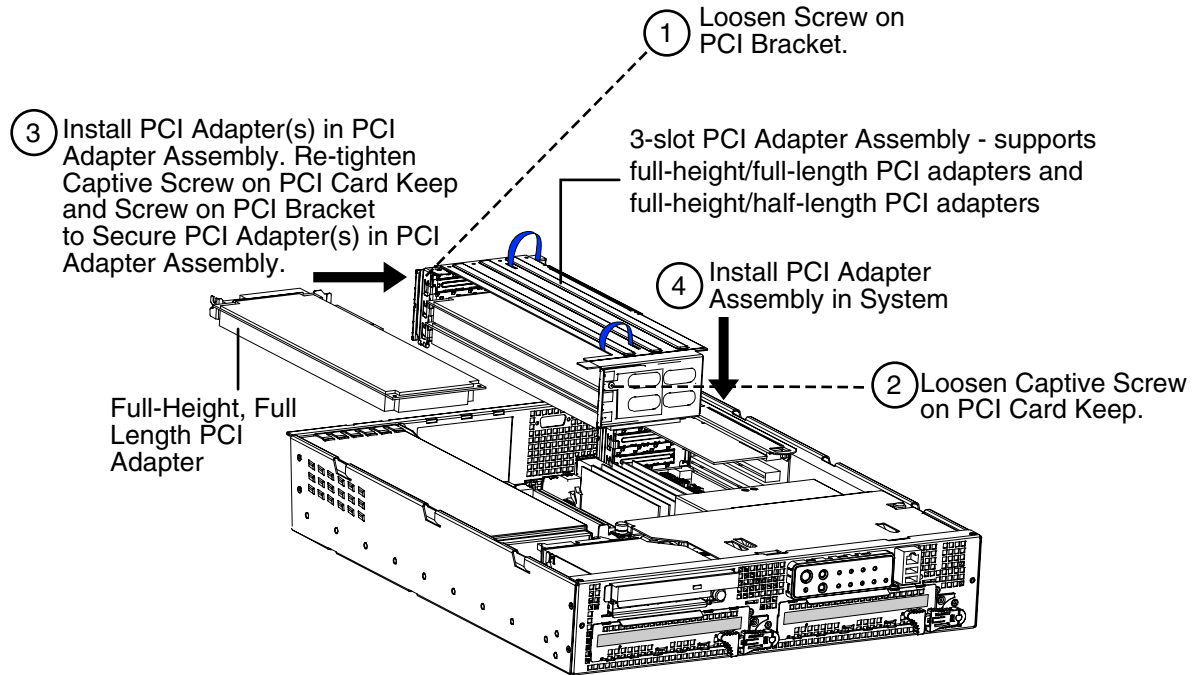


Table 8-5 shows the maximum PCI bus speed achievable on PCI Bus Segment B. Any slower PCI adapter installed in the PCI adapter subsystem will gate the speed.

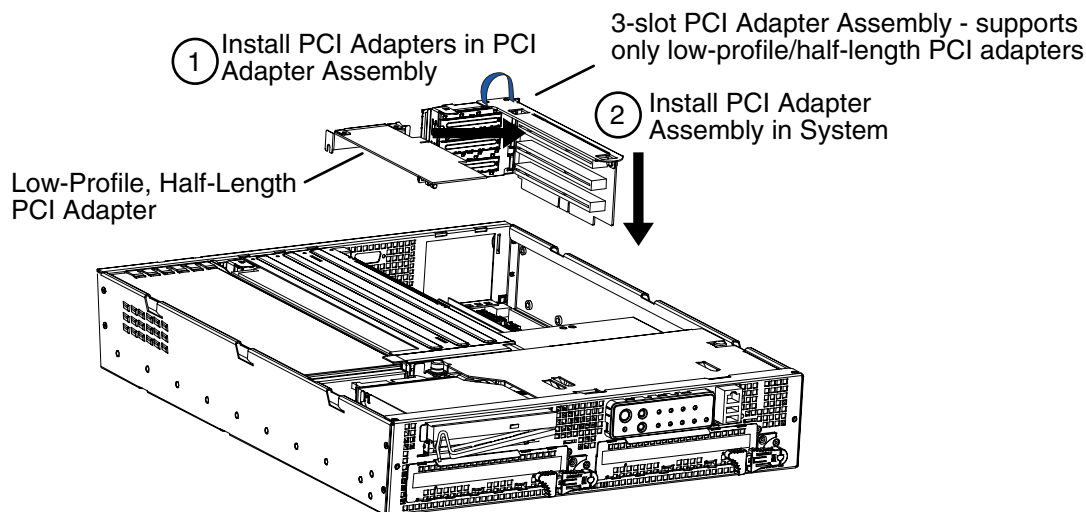
Table 8-5. Segment B PCI Bus Maximum Speed Table

Number of Slots Populated	Bus Speed
Empty riser	100 MHz PCI-X
1 Slot (bottom)	100 MHz PCI-X
2 Slots (bottom and middle)	66 MHz PCI-X
3 Slots	66 MHz PCI-X

Replacing 3.3-Volt and 5-Volt Add-in Cards in Low Profile, Half-Length PCI Adapter Subsystem

A three-slot PCI adapter assembly that supports only low-profile, half-length PCI adapters is installed in the Segment C PCI riser slot located on the right side of the server baseboard. This PCI adapter assembly is configured and installed as shown in Figure 8-18. After the PCI adapter assembly is removed from the server, it is configured with PCI adapters by plugging the PCI adapters into the PCI connectors on the 3.3-Volt riser card that is part of the PCI adapter assembly. The PCI adapter assembly is then installed into the server by plugging the riser card into the riser card connector on the server baseboard. In addition, it is necessary to make sure that the interlocking metal tabs on the back of the PCI adapter assembly are correctly inserted into the slots in the back of the chassis.

Figure 8-18. Segment C Low-Profile, Half-Length PCI Adapter Subsystem



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Table 8-6 shows the maximum PCI bus speed achievable on PCI Bus Segment C. Any slower PCI adapter installed in the PCI adapter subsystem will gate the speed.

Table 8-6. Segment C PCI Bus Maximum Speed Table

Number of Slots Populated	Bus Speed
Empty Riser	100 MHz PCI-X
1 Slot (bottom)	100 MHz PCI-X
2 Slots (bottom and middle)	66 MHz PCI-X
3 Slots	66 MHz PCI-X

Front Panel Board Connectors (FPIO Board)

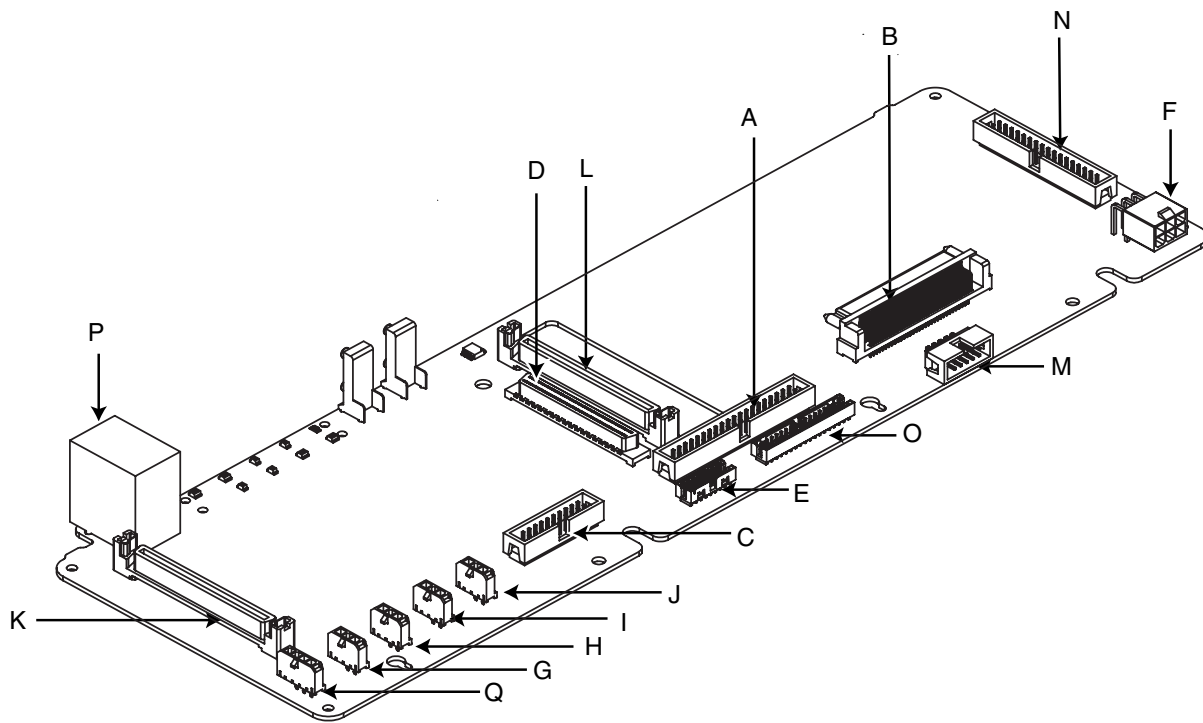
Table 8-7 shows all the connectors on the FPIO server board, the interconnect used for each connector, and the destination for the interconnect. In addition, the first column references the connector location (see Figure 8-19).

Table 8-7. FPIO Board Connections

Loc	Ref Des	Function	Interconnect	Connects to
A	J5A1	2x20 IDE connector	IDE cable	Baseboard IDE connector
B	J2A1	68-Pin blind mate receptacle	CDFDD I/F	CDROM carrier
C	J7A1	2x10 system fan cntrl conn	Fan cntrl cbl	Baseboard fan connectors
D	J5B1	68 pin SCSI connector	SCSI BB Cbl	Baseboard SCSI connector
E	J6A1	2x8 Alarms connector	Alarms cable	Server chassis back

Loc	Ref Des	Function	Interconnect	Connects to
F	J1A1	2x3 P/S power connector	P/S harness	Power supply assembly
G	J9A1	1x3 Server fan 1 conn	Fan 1 harness	Fan 1
H	J8A3	1x3 Server fan 2 conn	Fan 2 harness	Fan 2
I	J8A2	1x3 Server fan 3 conn	Fan 3 harness	Fan 3
J	J8A1	1x3 Server fan 4 conn	Fan 4 harness	Fan 4
K	J9D1	80-Pin SCA connector	SCSI Flex 1	SCSI disk drive 1
L	J5D1	80-Pin SCA connector	SCSI Flex 2	SCSI disk drive 2
M	J3A1	2x5 USB connector	USB cable	Baseboard USB connector
N	J1C1	2x17 floppy conn	Floppy cable	Baseboard Floppy connector
O	J4A1	2x17 front panel conn 2mm	FP cable	Baseboard front panel connector
P	J9D2	RJ45 COM2/dual USB conn	N/C	
Q	J9A2	I ² C connector	IPMB harness	Baseboard IPMB conn

Figure 8-19. FPIO Connector Location



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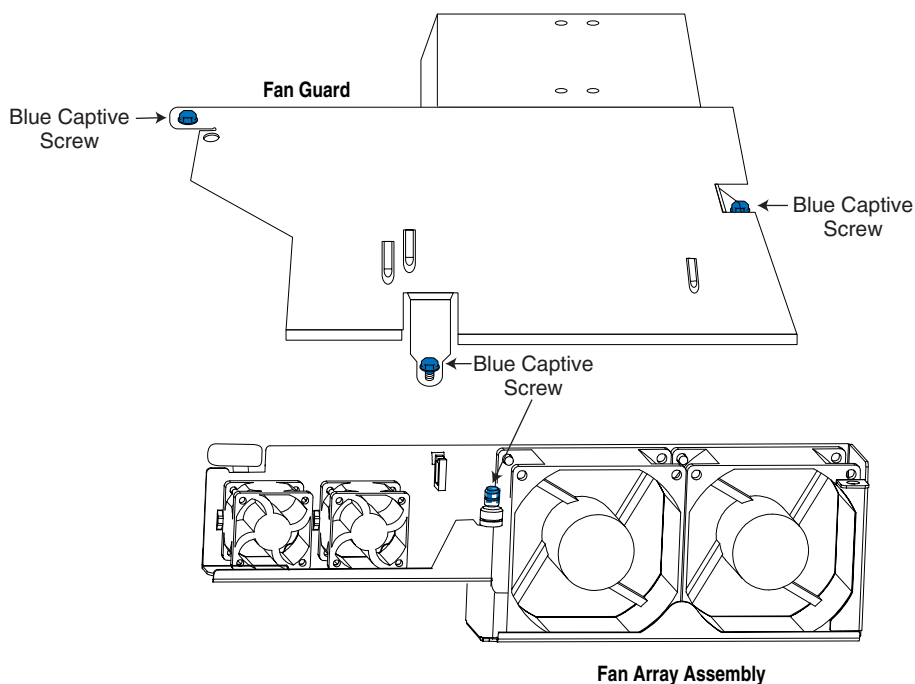
Replacing the Fan Array Assembly

To replace the fan array assembly, do the following:

1. Loosen the three captive screws that secure the fan guard and remove the fan guard.
2. Disconnect the 4 fan power cables from the FPIO board.

3. Loosen the 1 captive screw on the fan array assembly.
4. Remove the fan array assembly.
5. Insert the new fan array assembly.
6. Tighten the one captive screw on the fan array assembly.
7. Reconnect the 4 fan power cables to the connectors on the FPIO board. Take care to reconnect each fan power cable to the correct connector.
8. Replace the fan guard.
9. Tighten the three captive screws on the fan guard.

Figure 8-20. Replacing the Fan Array Assembly



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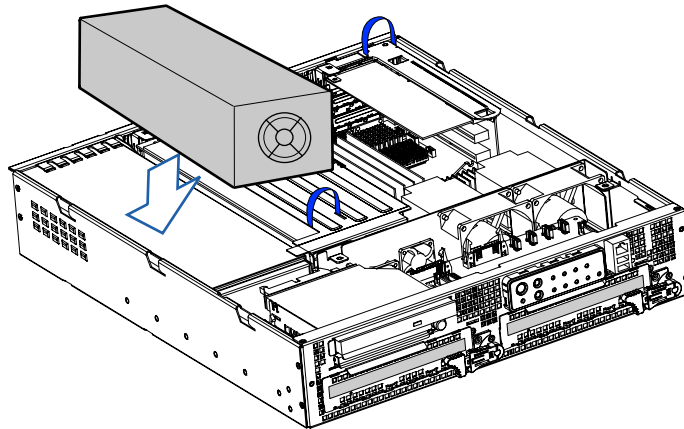
Removing the Power Supply Cage

To replace the power supply cage, follow these instructions:

1. Remove the front bezel.
2. Remove the peripheral drive tray.
3. Remove the fan guard and fan array assembly (see Figure 8-20).
4. Remove the full-length PCI adapter subsystem (see Figure 8-17).
5. Disconnect the PS/2 power connector from the FPIO board (F in Figure 8-19).

6. Disconnect the SSI front panel connector from the server board (W in Figure 1-5).
7. Disconnect the ID LED connector from the server board (B in Figure 1-5).
8. Disconnect the auxiliary signal connector from the server board (P in Figure 1-5).
9. Disconnect the PS signal connector from the server board (U in Figure 1-5).
10. Remove the power supply modules from the power supply cage (see Figure 8-2).
11. Loosen the 2 screws at the rear of the power supply cage, connecting the power supply cage to the chassis.
12. Loosen the one screw at the front of the power supply cage, connecting the power supply cage to the chassis.
13. Pull power supply cage forward (towards front of server) and upward. Lift cage out of chassis.

Figure 8-21. Removing the Power Supply Cage



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9 Technical Reference

Introduction

This section includes:

- Connector pinouts
- Information on jumpers

Connector Pinouts

This section describes certain I/O interface connectors of the server.

Alarms

The alarms port interface is a standard DB15-pin connector (see Figure 9-1). This connector allows remote display of alarm conditions. Each alarm (major, minor, critical and power) is the output of a STDT relay contact. A common contact with normally open and normally closed connections is included. The power alarm has just common and normally open contact outputs. The major and minor alarms contain external reset circuits. Table 9-1 gives the pinout of the alarms connector.

CAUTION Do not apply more than 60 Volts (maximum) to any pin or combination of pins on the alarms connector.

Figure 9-1. 15-Pin Alarms Connector

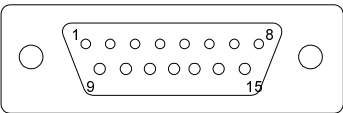


Table 9-1. Alarms Connector Pinout

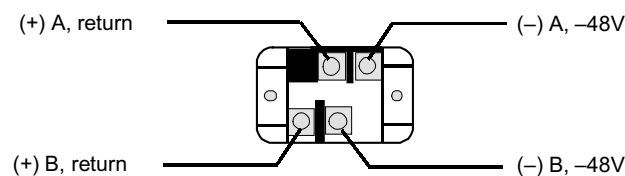
Pin	Description	Pin	Description
1	Minor reset positive	9	Minor alarm normally closed
2	Minor reset negative	10	Minor alarm common
3	Major reset positive	11	Major alarm normally open
4	Major reset negative	12	Major alarm normally closed
5	Critical alarm normally open	13	Major alarm common
6	Critical alarm normally closed	14	Power alarm normally open
7	Critical alarm common	15	Power alarm common
8	Minor alarm normally open		

DC Power Input for DC-Input Power Supply Cage

CAUTION The system Sensor Data Records (SDR) must be reprogrammed every time that the power supply configuration is changed. Failure to reprogram the SDR may allow critical system failures to occur without an appropriate Telco alarm. Failure to recognize an alarm condition could result in loss of data or damage to equipment.

A DC power terminal block is provided at the rear of each DC power supply. For best results (to meet maximum current requirements) all four terminals (2+ and 2–) should be used. Each terminal is rated for 15A.

Figure 9-2. DC Power Input Connector

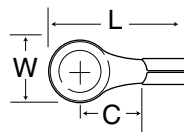


- Both the – terminals should be connected to –48V (right side).
- Both the + terminals should be connected to return (left side)
- To meet maximum current requirements, two pins are used for return and two pins are used for –48V. Each pin is rated for 15A maximum.

dcpower_inputcon

The terminal block will accept standard terminal lugs size Newark™ stock # 81N1501 type CRS-T0-1406-HT that accept 14 AWG wire gauge. The width (W in Figure 9-3) of the lug can be no larger than 0.25 inches.

Figure 9-3. DC Power Terminal Lug



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To connect the earth ground conductor to the chassis stud:

1. Place a #8-32 nut on the chassis stud and tighten to 10 in-lb.
2. Place the earth ground wire terminal lug on the chassis stud.
3. Place another #8-32 nut on the chassis stud so that the earth ground wire terminal is between the two nuts and tighten the second nut to 10 in-lb.

If you have changed the power supply configuration, rewrite the SDR as follows:

1. Boot the system from the HP Server cc3310 Information Diagnostics and Utilities Resource CD.
2. After the server has booted, select **Load Configuration Wizard**.
3. When the wizard begins, press **Continue**.
4. Select **Server Configuration Wizard** and **Continue**.

5. Select **run wizard** and **Continue**.
6. Select **Load SDRs only on to this server** and **Continue**.
7. Set the date and time and select **Continue**.
8. Select **Update just the SDR repository** and **Continue**.
9. Select **Yes – Activate BMC TAM** and **Continue**.
10. Choose the desired LED configuration and select **Continue**.
11. Save the configuration to disk.

RJ-45 Serial Ports (Rear Panel)

The rear RJ-45 serial port is a fully functional serial port that supports any standard serial device and provides support for serial concentrators. For server applications that use a serial concentrator to access the server management features of the baseboard, a standard 8-pin CAT-5 cable from the serial concentrator is plugged directly into the rear RJ-45 serial port. The 8 pins of the RJ-45 connector can be configured to match either of two pinout standards used by serial port devices. To accommodate either standard, the J5A2 jumper block, located directly behind the rear RJ-45 serial port, must be jumpered appropriately according to the desired standard. Pinouts are described in Table 9-2.

Table 9-2. Rear RJ-45 Connector Pinout

Pin	Description	Pin	Description
1	RTS (Request to Send)	5	RIA (Ring Indicator)
2	DTR (Data Terminal ready)	6	RXD (Receive Data)
3	TXD (Transmit Data)	7	DSR/DCD (Data Set Ready/Data Carrier Detect)
4	GND	7	CTS (Clear to Send)

RJ-45 Serial Port (Front Panel)

The front RJ-45 serial port is functionally identical to the rear panel port, but cannot be used at the same time. The cable that attaches to the front panel port must include a jumper (short) between pins 4 and 5. When this cable is connected, the rear panel connector is disabled. Pinouts are described in Table 9-3.

Table 9-3. Front RJ-45 Connector Pinout

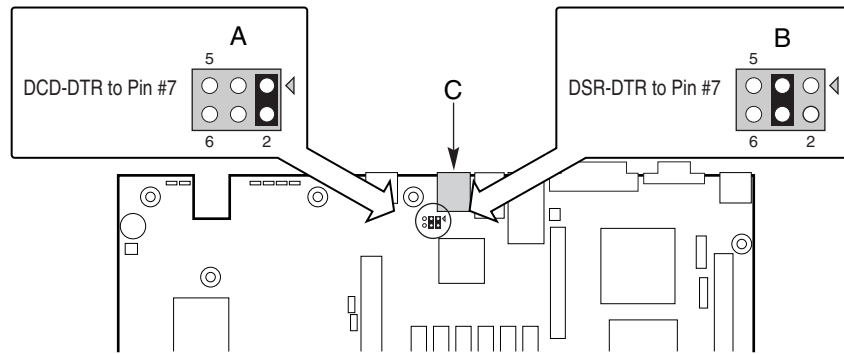
Pin	Description	Pin	Description
1	RTS (Request to Send)	5	GND (Ground disabled the rear panel COM2 I/O port)
2	DTR (Data Terminal ready)	6	RXD (Receive Data)
3	TXD (Transmit Data)	7	DSR/DCD (Data Set Ready/Data Carrier Detect)
4	GND	7	CTS (Clear to Send)

NOTE By default, the RJ-45 serial ports are configured to support a DSR signal.

For serial devices that require a DSR signal (default), the J5A2 jumper must be configured in position 3-4 (B in Figure 9-4).

For serial devices that require a DCD signal, the jumper must be in position 1-2 (A in Figure 9-4).

Figure 9-4. J5A2 Jumper Block for DSR Signal



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10 Parts and Accessories

Replaceable Parts

This chapter contains a list of replaceable parts and accessories for the server.

Table 10-1 Replaceable Parts

Product Number	Part Number (New)	Part Number (Replacement)	Part Number (Exchange)	Description
A9870A	A9870-62001 (Reference only)	A9870-67001	A9870-69001	2.4 GHz, Pentium 4 Xeon processor (Prestonia) with 512 KB cache and install kit.
N/A	A9862-62001 (Reference only)	A9862-67001	A9862-69001	DC chassis, with baseboard, power supply card cage, 2 CPU install kits.
N/A	A9863-62001	A9683-67001	A9683-69001	AC chassis with baseboard, power supply card cage, 2 CPU install kits.
A9884A	A9884-62001 (Reference only)	A9884-67001	A9884-69001	512 MB, 1.2-in. (30.5 mm), DDR266 ECC memory module (2 DIMMs)
A9885A	A9885-62001 (Reference only)	A9885-67001	A9885-69001	1 GB, 1.2-in. (30.5 mm), DDR266 ECC memory module (2 DIMMs)
A9886A	A9886-62001 (Reference Only)	A9886-67001	A9886-69001	2 GB, 1.2-in. (30.5 mm), DDR266 ECC memory module (2 DIMMs)
A9887A	A9887-62001 (Reference only)	A9887-67001	A9887-69001	4 GB, 1.2-in. (30.5 mm), DDR266 ECC memory module (2 DIMMs)
A9864A	5065-5284		A6571-69001	36 GB Ultra320 SCSI 10K RPM Disk
A9865A	0950-4381		A8706-69001	73 GB Ultra320 SCSI 15K RPM Disk
A9877A	0950-4385		A7075-69001	146 GB Ultra320 SCSI 10K RPM Disk
A9875A	A9875-64001		A9875-69001	DVD-ROM Drive
A9876A	A9876-64001		A9876-69001	CD-RW/DVD-ROM Drive
A9868A	A9868-62001	A9868-67001	A9868-69001	3.3V, 2U, PCI riser card (64/133, 64/66, 64/33, 32/66 and 32/33 bit/MHz), with connectors for three full-height, half- or full-length 3.3V I/O cards
A9869A	A9869-62001	A9869-67001	A9869-69001	5.0V, 2U, PCI riser card (64/33 and 32/33 bit/MHz), with connectors for three full-height, half- or full-length 5.0V I/O cards
A9888A	A9888-62001		A9888-69001	Ultra 320 Single Port SCSI I/O card, VDHCI (VHDT S68) connector (1/2 length, low profile)

Product Number	Part Number (New)	Part Number (Replacement)	Part Number (Exchange)	Description
A9888A (option 001)	A9888-62002		A9888-69002	Ultra 320 Single Port SCSI I/O card, VDHCI (VHDS68) connector (1/2 length, full height)
A9889A	A9889-62001		A9889-69001	Dual Port Gigabit LAN Adapter, RJ45 connector (1/2 length, low profile)
A9889A (option 001)	A9889-62002		A9889-69002	Dual Port Gigabit LAN Adapter, RJ45 connector (1/2 length, full height)
N/A	TLPFPIOLP02			Front panel I/O server board with upper and lower light pipes
A9866A	0950-4489		0957-2088	DC power supply
A9867A	0950-4490		0597-2087	AC power supply
N/A	TLPFANSET02			Fan set (2x40mm fans, 2x80mm fans, 1 bracket)
N/A	TLPCBLMSC02			Cable set (IDE and USB cables and cc3310 cables for the floppy drive, peripheral floppy drive, peripheral IDE, CD, alarm, 12C and front panel)
N/A	TLPCBLSCS02			SCSI cables (1 flex cable and 1 round cable)
N/A	THPMSCHW004			Miscellaneous hardware kit (drive carrier, fan, CPU cover, guide plate, PCI riser bracket)
N/A	A9862-40001			Front bezel
N/A	A9870-70001			Processor install kit

Supported Accessories

A current list of supported accessories can be found at <http://www.hp.com>. Search using keyword cc3310.

Table 10-2 Accessories

Product Number	Part Number (New)	Part Number (Replacement)	Part Number (Exchange)	Description
AB229A	A6900-63002			DC power cable
A6904A	A6904-62001			Seismic field rack kits for 19-in. 2-post racks
A6905A	A6905-62001			Seismic field rack kits for 19-in. 4-post racks
A6945A	A6945-62001			Seismic field rack kits for 23-in. 4-post racks

Appendix A

Equipment Log and Configuration Worksheet

Use the blank equipment log provided here to record information about your system. You will need some of this information when you run BIOS Setup.

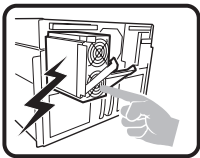
Item	Manufacturer Name and Model Number	Serial Number	Date Installed
System			
System baseboard			
Processor speed and cache			
Keyboard			
Mouse			
Floppy drive			
CD-ROM drive			
Hard disk drive (1)			
Hard disk drive (2)			
First installed power supply			
Second installed power supply			
PCI slot (1)			
PCI slot (2)			
PCI slot (3)			
PCI slot (4)			
PCI slot (5)			
PCI slot (6)			

Appendix B

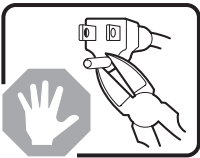
Warnings

- WARNING: English (US)
- AVERTISSEMENTS: Français
- WARNUNG: Deutsch
- AVVERTENZA: Italiano
- ADVERTENCIA: Español

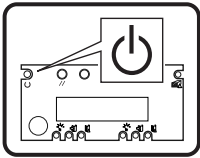
WARNING: English (US)



The power supply in this product contains no user-serviceable parts. There may be more than one supply in this product. Refer servicing only to qualified personnel.



Do not attempt to modify or use the supplied AC power cord if it is not the exact type required. A product might be equipped with more than one AC power cord.



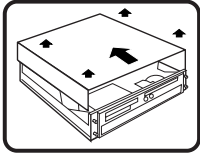
The power button on the server does not turn off all server power. To remove all power from the server, you must unplug/disconnect the power cord from the server.



To avoid injury from electrical and mechanical hazards, chassis covers should only be removed by qualified service personnel.

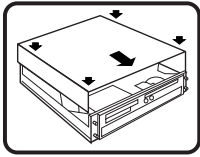
SAFETY STEPS: Whenever you remove the chassis covers to access the inside of the server, follow these steps:

1. Turn off all peripheral devices connected to the server.
2. Turn off the server by pressing the power button.
3. Unplug/disconnect the power cord from the server.
4. Label and disconnect all telecommunication cables and all other cables connected to I/O connectors or ports on the back of the server.
5. Provide some electrostatic discharge (ESD) protection by wearing an antistatic wrist strap attached to chassis ground of the server —any unpainted metal surface—when handling components.
6. Do not operate the server with the chassis covers removed.



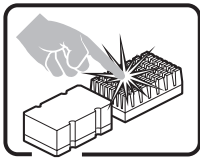
After you have completed the five SAFETY steps above, you can remove the server covers. To do this:

1. Remove and save all screws from the covers.
2. Remove the covers.

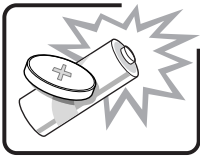


For proper cooling and airflow, always reinstall the chassis covers before turning on the server. Operating the server without the covers in place can damage server parts. To install the covers:

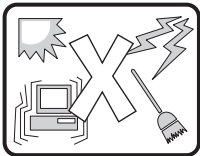
1. Check first to make sure you have not left loose tools or parts inside the server.
2. Check that cables, add-in boards, and other components are properly installed.
3. Attach the covers to the chassis with the screws removed earlier, and tighten them firmly.
4. Connect all external cables and the power cord to the server.



A microprocessor and heat sink might be hot if the server has been running. Also, there might be sharp pins and edges on some board and chassis parts. Contact should be made with care. Consider wearing protective gloves.

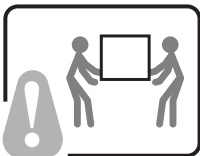


There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.



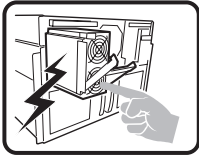
The server is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust)
- Well-ventilated and away from sources of heat including direct sunlight
- Away from sources of vibration or physical shock
- Isolated from strong electromagnetic fields produced by electrical devices
- Protected when in regions that are susceptible to electrical storms. We recommend you plug your server into a surge suppresser and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet
- Provided with sufficient space to access the power supply cords, because they serve as the product's main power disconnect

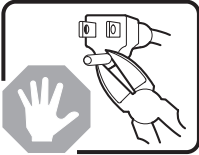


Servers can be too heavy for a single person to lift or move safely. Depending on the server, use two people or a mechanical assist to lift or move the server.

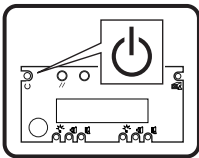
AVERTISSEMENTS: Français



Le bloc d'alimentation de ce produit ne contient aucune pièce pouvant être réparée par l'utilisateur. Ce produit peut contenir plusieurs blocs d'alimentation. Veuillez contacter un technicien qualifié en cas de problème.



Ne pas essayer d'utiliser ni de modifier le câble d'alimentation CA fourni, s'il ne correspond pas exactement au type requis. Un produit peut être équipé de plus d'un câble d'alimentation CA.



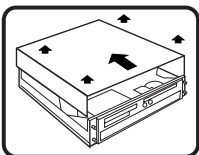
Le bouton d'alimentation du système n'éteint pas toutes les alimentations CA du système. Pour mettre complètement le système hors tension, vous devez débrancher chaque cordon d'alimentation CA de sa prise.



Pour éviter toute lésion à la suite de risques électriques et mécaniques, les panneaux du châssis ne doivent être démontés que par un personnel qualifié.

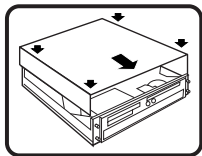
CONSIGNES DE SÉCURITÉ : Lorsque vous retirez les panneaux du châssis pour accéder à l'intérieur du système, suivez les étapes ci-dessous :

1. Mettez hors tension tous les périphériques connectés au système.
2. Mettez hors tension le système en appuyant sur le bouton d'alimentation.
3. Débranchez tous les cordons d'alimentation CA du système ou des prises murales.
4. Identifiez et déconnectez tous les câbles de télécommunications et tous les autres câbles reliés aux connecteurs E/S ou aux ports derrière le système.
5. Pour prévenir les décharges électrostatiques lorsque vous touchez aux composants, portez une bande antistatique pour poignet et reliez-la à la masse du système (toute surface métallique non peinte du boîtier).
6. Ne faites pas fonctionner le système si les panneaux du châssis sont enlevés.



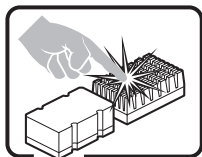
Après avoir suivi les six consignes de SECURITE ci-deSystem Setup Utilitys, vous pouvez retirer les panneaux du système. Pour effectuer cette opération :

1. Retirez et conservez toutes les vis des panneaux.
2. Retirez les panneaux.

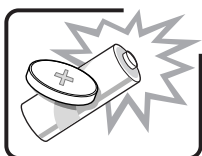


Afin de permettre le refroidissement et l'aération du système, réinstallez toujours les panneaux du châssis avant de mettre le système sous tension. Le fonctionnement du système en l'absence des panneaux risque d'endommager ses pièces. Pour installer les panneaux, procédez comme suit :

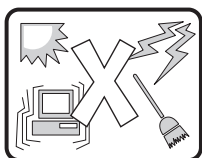
1. Assurez-vous ne pas avoir oublié d'outils ou de pièces démontées dans le système.
2. Assurez-vous que les câbles, les cartes d'extension et les autres composants sont bien installés.
3. Revissez solidement les panneaux du châssis avec les vis retirées plus tôt.
4. Rebranchez tous les cordons d'alimentation CA et câbles externes au système.



Le microprocesseur et le dissipateur de chaleur peuvent être chauds si le système a été sous tension. Faites également attention aux broches aiguës des cartes et aux bords tranchants du capot. Les contacts doivent être établis avec soin. L'usage de gants de protection est conseillé.

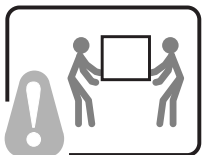


Danger d'explosion si la batterie n'est pas remontée correctement. Remplacer uniquement par une pile du même type ou de type équivalent recommandé par le fabricant. Débarrassez-vous des piles usagées conformément aux instructions du fabricant.



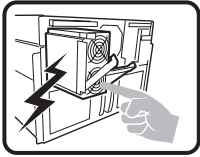
Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être :

1. Propre et dépourvu de poussières en suspension (sauf la poussière normale).
2. Bien aéré et loin des sources de chaleur, y compris du soleil direct.
3. À l'abri des chocs et des sources de vibration.
4. Isolé des forts champs électromagnétiques générés par des appareils électriques.
5. Protégé s'il se trouve dans des régions sujettes aux orages magnétiques. Nous vous recommandons de connecter votre système à un supprimeur de surtension et de déconnecter les lignes de télécommunications de votre modem pendant un orage magnétique.
6. Muni d'une prise murale correctement mise à la terre.
7. Suffisamment spacieux pour vous permettre d'accéder aux câbles d'alimentation (ceux-ci étant le seul moyen de mettre le système hors tension).

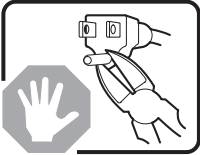


Il se peut que les serveurs soient trop lourds pour qu'une seule personne puisse les soulever et les déplacer en toute sécurité. En fonction du serveur, utilisez deux personnes ou utilisez un équipement mécanique auxiliaire pour soulever ou déplacer le serveur.

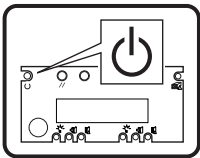
WARNUNG: Deutsch



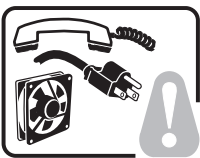
Das Netzteil dieses Computers enthält keine wartungsbedürftigen Teile. Dieses Produkt kann über mehrere Netzteile verfügen. Überlassen Sie Wartungsarbeiten nur qualifizierten Fachleuten.



Versuchen Sie nicht, das mitgelieferte Netzkabel zu verändern oder einzusetzen, wenn es nicht exakt dem benötigten Kabeltyp entspricht. Das Produkt kann über mehrere Netzkabel verfügen.



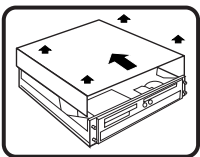
Durch Ausschalten des Netzschalters wird die Wechselstromversorgung des Systems nicht unterbrochen. Um das System vom Netz zu trennen, müssen Sie das Netzkabel aus der Steckdose oder vom Netzteil abziehen.



Vermeiden Sie Verletzungen aufgrund elektrischer oder mechanischer Gefahren; lassen Sie daher den Gehäusedeckel nur von technisch qualifiziertem Personal abnehmen.

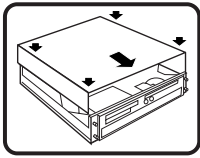
SICHERHEITSHINWEISE: Beachten Sie beim Abnehmen der Gehäuseabdeckung und Arbeiten im Inneren des Systems folgende Schritte:

1. Schalten Sie alle am System angeschlossenen Peripheriegeräte ab.
2. Drücken Sie den Netzschalter, um das System abzuschalten.
3. Ziehen Sie alle Wechselstromkabel vom System und den Steckdosen ab.
4. Kennzeichnen Sie alle Telekommunikationsleitungen und sonstigen Kabel an den E/A-Steckern bzw. Anschlüssen an der Rückseite des Systems, und trennen Sie diese vom Netz.
5. Um sich gegen elektrostatische Entladung zu schützen, sollten Sie eine Antistatik-Manschette tragen, die Sie beim Arbeiten mit Komponenten zur Erdung an einem beliebigen unlackierten Metallteil befestigen.
6. Nehmen Sie das System nicht ohne Abdeckung in Betrieb.



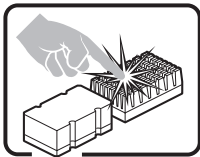
Nachdem Sie die fünf Sicherheitshinweise oben beachtet haben, können Sie die Gehäuseabdeckung abnehmen. Gehen Sie wie folgt vor:

1. Entfernen Sie sämtliche Schrauben der Gehäuseabdeckung, und bewahren Sie diese auf.
2. Nehmen Sie die Gehäuseabdeckung ab.

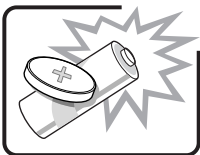


Um eine ordnungsgemäße Kühlung und Belüftung zu gewährleisten, sollten Sie stets die Gehäuseabdeckung anbringen, bevor Sie das System in Betrieb nehmen. Wenn das System ohne obere und vordere Abdeckung betrieben wird, kann es zu einer Beschädigung der Systemkomponenten kommen. So entfernen Sie die Gehäuseabdeckung:

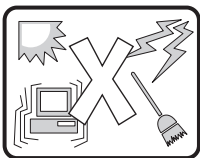
1. Prüfen Sie, daß weder Werkzeuge noch Kleinteile im Innern des Systems vergessen wurden.
2. Prüfen Sie, ob die Kabel und anderen Komponenten richtig installiert sind.
3. Schrauben Sie die Abdeckung mit den zuvor gelösten Schrauben gut am Gehäuse fest.
4. Schließen Sie alle externen Kabel und das Netzkabel an das System an.



Mikroprozessor und Kühlkörper können heiß sein, wenn das System längere Zeit eingeschaltet war. Einige Platinen- und Gehäuseteile können scharfe Spitzen und Kanten aufweisen. Gehen Sie auf jeden Fall mit Vorsicht heran. Das Tragen von Schutzhandschuhen wird empfohlen.

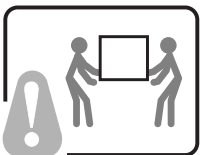


Wird die Batterie unsachgemäß ausgewechselt, besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch denselben oder einen gleichwertigen Batterietyp, der vom Gerätehersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien gemäß den Herstellerempfehlungen.



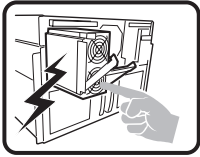
Das System ist für den Betrieb innerhalb normaler Büroumgebungen geeignet. Der Standort sollte folgende Anforderungen erfüllen:

- Saubere, möglichst staubfreie Umgebung
- Gut belüftet und weit entfernt von Wärmequellen wie direkte Sonneneinstrahlung
- Vibrations- und erschütterungsfreie Umgebung
- Abgeschirmt von starken elektromagnetischen Feldern, die durch elektrische Geräte erzeugt werden
- Entsprechender Schutz bei Betrieb in gewittergefährdeten Gebieten. Es empfiehlt sich, den Computer über einen Überspannungsschutz anzuschließen und die Verbindung zwischen dem Modem und dem Telefonanschluß im Falle eines Gewitters zu trennen
- Ausgestattet mit einer ordnungsgemäß geerdeten Wandsteckdose
- Sorgen Sie für ausreichend Platz, damit das Servernetzwerkabel problemlos erreicht werden kann, da das Gerät nur über dieses Kabel vom Netz getrennt wird

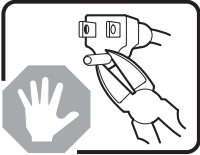


Um einen Server sicher anzuheben und zu bewegen ist eine Person nicht ausreichend. Bewegen Sie den Server, je nach Größe, entweder zu zweit oder mittels einer mechanischen Hilfe.

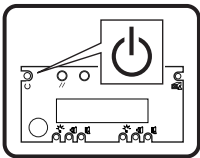
AVVERTENZA: Italiano



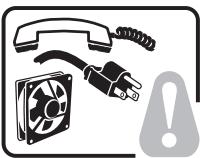
L'alimentatore contenuto nel computer non contiene parti riparabili dall'utente. Questo prodotto può essere fornito con più alimentatori. Per l'assistenza fare riferimento solo a personale qualificato.



Non tentare di modificare o utilizzare cavi di alimentazione in c.a. che non siano del tipo prescritto. Un prodotto potrebbe contenere più di un cavo di alimentazione in c.a.



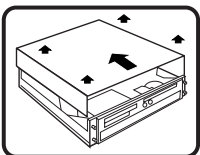
L'interruttore di accensione del sistema non scollega tutta l'alimentazione in c.a. del sistema. Per scollegare tutta l'alimentazione in c.a., è necessario disinserire ogni cavo di alimentazione in c.a. dalla presa a muro o dall'alimentatore.



Per evitare incidenti elettrici e meccanici, i coperchi del telaio devono essere rimossi da personale qualificato.

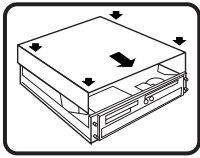
MISURE DI SICUREZZA: Nel caso sia necessario rimuovere i coperchi del telaio per accedere alle parti interne del sistema, procedere nel seguente modo:

1. Spegnerne tutte le periferiche collegate al sistema.
2. Spegnerne il sistema premendo il pulsante di accensione.
3. Scollegare tutti i cavi di alimentazione in c.a. dal sistema o dalle prese a muro.
4. Apporre un'etichetta e scollegare tutti i cavi di telecomunicazione e i cavi collegati ai connettori di I/O o alle porte sulla parte posteriore del sistema.
5. Assicurare un minimo di protezione da scariche elettrostatiche (ESD) indossando un bracciale antistatico collegato a un componente metallico non verniciato del telaio quando si maneggiano i componenti.
6. Non attivare il sistema nel caso in cui i coperchi del telaio siano stati rimossi.



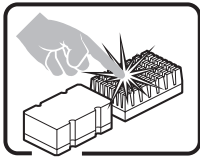
Dopo aver effettuato le operazioni di SICUREZZA descritte in precedenza, è possibile rimuovere i coperchi del sistema. Procedere nel modo seguente:

1. Rimuovere e conservare tutte le viti dei coperchi.
2. Rimuovere i coperchi.

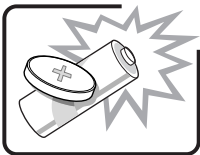


Per evitare che il sistema si surriscaldi e per garantire una ventilazione adeguata, reinstallare sempre i coperchi prima di attivare il sistema. Se si attiva il sistema senza aver riposizionato i coperchi correttamente, alcune parti del sistema potrebbero risultare danneggiate. Per installare i coperchi:

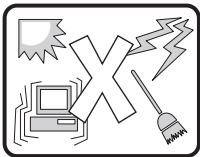
1. Verificare innanzitutto di non aver lasciato utensili o altre parti all'interno del sistema.
2. Verificare che i cavi, le schede aggiuntive e gli altri componenti siano stati installati correttamente.
3. Fissare saldamente i coperchi al telaio utilizzando le viti precedentemente rimosse.
4. Collegare tutti i cavi esterni e il cavo o i cavi di alimentazione in c.a. al sistema.



Se il sistema è stato in funzione, il microprocessore e il dissipatore di calore potrebbero essere caldi. Inoltre su alcune parti della scheda e del telaio potrebbero esserci piedini appuntiti e bordi taglienti. Prestare quindi molta attenzione nel toccarli. Indossare guanti protettivi.

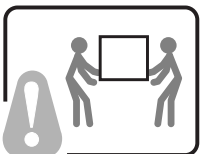


Se sostituita in modo errato, la batteria potrebbe esplodere. Sostituire le batterie scariche solo con batterie originali o del tipo consigliato dal produttore dell'apparecchiatura. Per lo smaltimento delle batterie usate attenersi alle istruzioni del produttore.



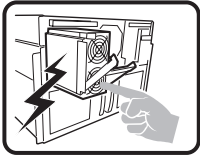
Il sistema è concepito per l'utilizzo in ambienti adibiti a ufficio. Scegliere una postazione con le caratteristiche riportate di seguito.

- Pulita, priva di particelle diverse dalla polvere normalmente presente nell'ambiente di lavoro
- Aerata e lontana da fonti di calore, compresa la luce solare diretta
- Lontana da fonti di vibrazione o urti
- Isolata da forti campi elettromagnetici prodotti da apparecchi elettrici
- Protetta nelle regioni soggette a temporali. Durante un temporale, si consiglia di collegare il sistema a un limitatore di corrente e di scollegare le linee di telecomunicazione dal modem
- La posizione prescelta deve essere dotata di una presa a muro con adeguata messa a terra
- Deve inoltre esserci sufficiente spazio per accedere ai cavi di alimentazione nel caso sia necessario scollegare l'alimentazione principale.

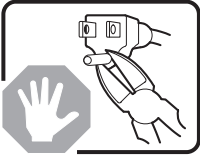


I server possono risultare troppo pesanti per essere sollevati o spostati da una sola persona. Alcuni server devono dunque essere sollevati o spostati da due persone o da un assistente tecnico.

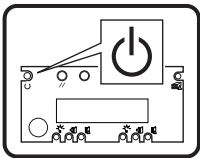
ADVERTENCIA: Español



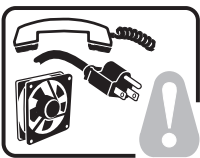
La fuente de alimentación de este producto no contiene piezas que puedan ser reparadas por el usuario. Puede que haya más de una fuente de alimentación en este producto. Para las reparaciones, consulte sólo con el personal cualificado.



No intente modifica ni utilizar el cable de alimentación de CA suministrado si no es del tipo exacto requerido. Un producto puede estar equipado con más de un cable de alimentación de CA.



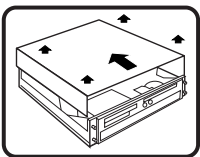
El botón de alimentación del sistema no desactiva toda la alimentación de CA del sistema. Para eliminar toda la alimentación de CA del sistema, deberá desenchufar todos los cables de alimentación de CA del enchufe de pared o de la fuente de alimentación.



Para evitar lesiones causadas por descargas eléctricas y mecánicas, únicamente puede retirar las cubiertas de las carcassas el personal técnico cualificado.

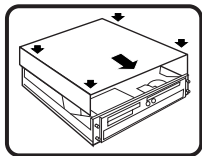
PASOS DE SEGURIDAD: Siempre que retire las cubiertas de las carcassas para acceder al interior del sistema, siga las instrucciones que se especifican a continuación:

1. Desactive todos los dispositivos periféricos conectados al sistema.
2. Pulse el botón de alimentación para desactivar el sistema.
3. Desenchufe todos los cables de alimentación de CA del sistema o de los enchufes de pared.
4. Etiquete y desconecte todas las líneas de telecomunicaciones y todos los cables conectados a los puertos o conectores de E/S de la parte posterior del sistema.
5. Para contar con cierto grado de protección contra descargas electrostáticas (ESD), utilice un brazalete antiestático conectado a la toma de tierra del sistema (cualquier superficie de metal que no esté pintada) al manipular sus componentes.
6. No utilice el sistema sin las cubiertas de la carcassa.



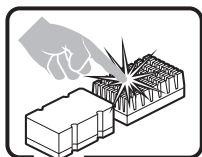
Una vez que haya completado los cinco pasos de SEGURIDAD, podrá retirar las cubiertas del sistema. Para ello:

1. Retire y guarde todos los tornillos de las cubiertas.
2. Retire las cubiertas.

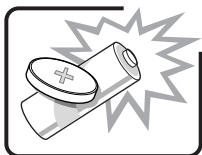


Para obtener una ventilación y un flujo de aire adecuados, reinstale siempre las cubiertas de la carcasa antes de encender el sistema. Si utiliza el sistema sin las cubiertas en su lugar, puede que se dañen algunas piezas del sistema. Para instalar las cubiertas:

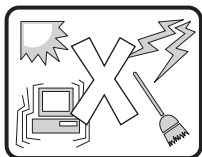
1. Asegúrese primero de no haber dejado piezas o herramientas sueltas en el sistema.
2. Compruebe que los cables, tarjetas adicionales y demás componentes están correctamente instalados.
3. Fije las cubiertas a la carcasa con los tornillos que ha retirado anteriormente y apriételos firmemente.
4. Conecte todos los cables externos y los cables de alimentación de CA al sistema.



Puede que el microprocesador y el disipador de calor se recalienten si se ha estado ejecutando el sistema. Asimismo, puede que algunas tarjetas o piezas de la carcasa tengan patillas o bordes afilados. Los contactos deberán realizarse cuidadosamente. Puede que sea conveniente llevar guantes de protección.

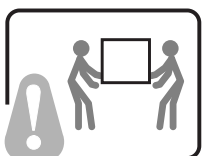


Existe peligro de explosión si la batería se sustituye incorrectamente. Sustitúyala sólo por el mismo tipo o uno equivalente recomendado por el fabricante del equipo. Deseche las baterías usadas según las instrucciones del fabricante.



El sistema está diseñado para que funcione en un entorno de oficina típico. Elija un emplazamiento:

- Limpio y libre de partículas de transportadas por aire (aparte del polvo normal de la habitación)
- Bien ventilado y alejado de las fuentes de calor, incluida la luz del sol directa
- Alejado de las fuentes de vibración o de los golpes físicos
- Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos
- Protegido, si se encuentra en regiones susceptibles de tormentas eléctricas. Se recomienda que enchufe el sistema a un supresor de sobretensiones y desconecte las líneas de telecomunicaciones al módem durante una tormenta eléctrica
- Que tenga un enchufe de pared correctamente conectado a tierra
- Con suficiente espacio para acceder a los cables de la fuente de alimentación, ya que éstos sirven como desconectador de alimentación principal del sistema



Los servidores pueden ser demasiado pesados para que una sola persona los levante o los mueva de forma segura.

Dependiendo del servicio, utilice dos personas o una ayuda mecánica para levantar o mover el servidor.

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