Installation Guide

HP Workstation zx6000
HP Server rx2600

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Printing History

The manual printing date and part number indicate its current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The manual part number will change when extensive changes are made.

Printed manual updates may be issued between editions to correct errors or document product changes. Manuals that are published on the HP Support website (**www.hp.com/go/bizsupport**) are updated often, please visit this website periodically for the most recent versions. To ensure that you receive the updated or new editions, you should also subscribe to the appropriate HP product support service. See your HP Sales Representative for details.

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Important Safety Warnings

Avoiding Electrical Shocks

WARNING   **To avoid electrical shock, do not open the power supplies. There are no user-serviceable parts inside.**

To avoid electrical shock and harm to your eyes by laser light, do not open the DVD laser module. The laser module should be serviced by service personnel only. Do not attempt to make any adjustment to the laser unit. Refer to the label on the DVD for power requirements and wavelength. This product is a class I laser product.

Removing and Replacing the Cover

WARNING   **For your safety, never remove the system side cover without first disconnecting the power cord from the power outlet and removing any connection to a telecommunications network. If a Power Protection Device is fitted to your system, you must shut down your computer using its on/off switch, then remove the power cord before removing the system's side cover. Remove the Power Protection Device cables before any servicing operation. Always replace the side cover before switching the system on again.**

Battery Safety Information

WARNING   **There is a danger of explosion if the battery is incorrectly installed. For your safety, never attempt to recharge, disassemble, or burn an old battery. Replace the battery with the same or equivalent type, as recommended by the manufacturer.**

The battery in this system is a lithium battery that does not contain any heavy metals. However, to protect the environment, do not dispose of batteries in household waste. Return used batteries either to the shop from which you bought them, to the dealer from whom you purchased your system, or to HP so that they can either be recycled or disposed of in the correct way. Returned batteries will be accepted free of charge.

Avoiding Burn Injuries

WARNING   **Some parts inside the computer will be hot. Wait approximately three to five minutes for them to cool down before touching them.**

Avoiding Static Electricity

CAUTION   Static electricity can damage electronic components. Turn OFF all equipment before installing an accessory card. Don't let your clothes touch any accessory card. To equalize the static electricity when replacing an accessory card, rest the accessory card bag on top of the system unit while you are removing the card from the bag. Handle the card as little as possible and with care.

Information on Ergonomic Issues

It is strongly recommended that you read the ergonomics information, available in the "Working In Comfort" section of this manual, before using your system.

You can access more extensive ergonomics information by connecting to HP's web site: **www.hp.com/ergo**

Recycling Your System

HP has a strong commitment toward the environment. Your HP system has been designed to respect the environment as much as possible. HP can also take back your old system for recycling when it reaches the end of its useful life. HP has a product take-back program in several countries. The collected equipment is sent to one of HP's recycling facilities in Europe or the U.S.A. As many parts as possible are reused. The remainder is recycled. Special care is taken for batteries and other potential toxic substances, these are reduced into non-harmful components through special chemical processes. If you require more details about HP's product take-back program, contact your local dealer or your nearest HP Sales Office.

Additional Documentation

The following table lists the documentation available for this system. Only selected publications are in hard-copy format. All are available as PDF files from the HP Web site or on the Documentation CD provided with your system.

Title	Available at HP Web site	Hard-copy?
Installation Poster	PDF file	Yes, A7857-90001
Installation Guide (this book)	PDF file	Yes, A7857-90020
Operation & Maintenance Guide	PDF file (web based)	No (on-line, see below)

Accessing HP's World Wide Web Site

Additional online support documentation, firmware upgrades, and drivers are available from HP's Web site at

http://www.hp.com/large/products

After accessing the site, select the appropriate hardware.

Where To Find The Information

The table below summarizes information provided in the *Installation Guide* and the *Operation & Maintenance Guide*.

	Installation Guide	Operation & Maintenance Guide[1]
Introducing the Workstation		
Product features	Minimal	Key features. Exploded view. Parts list.
Environmental	Setting up the System. Working in Comfort.	Complete listing.
Safety warnings	Basic Safety.	Electrical, multimedia, safety, unpacking, removing, and replacing cover.
Finding on-line information	HP Web sites.	HP Web sites.
Technical information	Basic details.	Advanced.
Formal documents	Certificate of Conformity. Software License Agreement, Hardware Warranty	
Using the Workstation		
Connecting devices and turning on	Rear panel connectors, starting and stopping.	
EFI		Basic details.
Fields and their options within Setup	Basic details. Viewing Setup screen, using, passwords	Complete list.
Upgrading the Workstation		
Opening the System	Overview	Full description.
Supported accessories		Full description
Installing accessories		Processor(s), memory, accessory boards, mass storage devices., fans, power supply, system board, battery
Configuring devices		Installing devices.
System board		Installing and removing, connectors and switch settings. Chip-set details.
Repairing the Workstation		
Troubleshooting	Basic	Advanced. Hardware diagnoses and suggested solutions.
Diagnostic utility	Basic	HP STM, Monitor diagnostics and ODE.

1. For address, see "Accessing HP's World Wide Web Site" on page 9.

Contents of the Documentation CD

Each zx6000/rx2600 system includes a Documentation CD that contains PDF files of all the system documentation. To access the files on a Linux® system, place the CD into the CD-ROM drawer. An introduction page will appear in your browser.

Instructions for Mounting Documentation CD on HP-UX System

1. Logon as root

2. Determine the CD drive, type: `ioscan -fnC disk`

3. Make a mount directory, type: `mkdir <directoryname>`

4. Mount the CD, type:
   `/etc/mount -o cdcase /dev/dsk/<drive> <directory>`

5. View documents with your web browser by entering the following in your browser's Location or Address entry box:
   `file://<directory>/index.htm`

Clicking on the individual document titles will launch the Adobe Acrobat Reader application (also supplied on the CD) and display the PDF of that document. If required, you may print the document from the PDF. Documents included on the CD are:

1. Installation Poster - *poster_<language>.pdf*

2. Installation Guide - *guide_<language>.pdf*

3. Operation and Maintenance guide - *opmaint_english.pdf*

The Install Poster and Guide are also available on the Documentation CD in several localized languages.

1 Setting Up and Using Your System

This Guide provides you with essential information on the system, initial setup tips and basic troubleshooting for your zx6000 or rx2600 system.

System Description

The following table provides an overview of the possible zx6000 and rx2600 configurations:.

Features	zx6000 Workstation Tower	zx6000 Workstation Rack-mount[1]	rx2600 Server Rack-mount	rx2600 Server Tower[2]
Accessory Card Slots	3 PCI 1 AGP	3 PCI 1 AGP	4 PCI	4 PCI
Fan Type/Speed	Quiet/Low	Hi Capacity/High	Hi Capacity/ High	Hi Capacity/High
Management Processor (ECI) Card	No	Optional	Yes	Yes
Redundant Hot Swap Power Supply	No	Optional	Yes	Yes

1. Must be ordered from HP as a rack-mounted workstation.
2. A rack-mount server can be converted to a Tower with conversion kit that provides skins and a floor pedestal.

Features

The following table provides an overview of the zx6000 and rx2600 system features:

Feature	Description
Processor(s)	Systems can be operated with one or two Intel® Itanium® 2 processors
Cache Memory (integrated in processor package)	• Level 0: 16KB • Level 1: 256KB • Level 2: 3MB (1.5 MB for 900MHz processor)
Internal Processor Clock Speed	900MHz and 1GHz
Chipset	HP scalable processor, including a Processor Dependent Hardware interface, AGP/PCI X host controller and Memory Controller
Firmware	8Mb flash EEPROM, write-protected by BMC
Operating System	HP-UX and Linux Operating Systems
Main Memory	Twelve DIMM sockets that support 256MB, 512MB and 1GB DDR SDRAM memory modules. The order in which you install the memory modules is important. For information on installing memory, see the *zx6000/rx2600 Operation & Maintenance Guide* (at **www.hp.com/go/bizsupport**). You can install a minimum of 512MB (1 Gb for server configuration) of memory and a maximum of 12GB.
Mass Storage	Four shelves, supporting: • One front-access, slimline, optical drive. • Three fast access internal 3 1/2-inch hard disk drives (1-inch height).
SCSI Controller	Two channel Ultra 160 SCSI PCI bus.
IDE Controller	Includes an integrated Ultra ATA-100 capable controller that supports one IDE device.
Graphics Controllers	• NVIDIA Quadro2 EX, NVIDIA Quadro4 900XGL or • ATI Radeon 7000, ATI FireGL 8800 and ATI FireGL4

Feature	Description
Accessory Card Slots	Workstation: One AGP Pro 4X 32-bit slot supporting 1.5V AGP cards (≤50W) - optional.
	Three 64-bit 133MHz Peripheral Component Interconnect (PCI-X) slots, supporting all bridges and multifunction PCI-X devices. All three PCI-X slots comply with PCI-X Specification.
	Server: Four 64-bit 133MHz Peripheral Component Interconnect (PCI-X) slots.
	NOTE: Hewlett Packard has done extensive testing of PCI, PCI-X, and AGP cards to ensure proper operation with this system. A full list of HP supported cards is available at **http://www.hp.com/support/itanium_tpl**. If you are considering using a non-supported card, please review the errata notices at **http://www.hp.com/support/itanium_ipf**. These will inform you of any issues HP is aware of and help ensure that your system remains trouble free.
Optical Drive	Models include either a slimline 8x DVD-ROM/CD-RW combo drive or a slimline 8x DVD-ROM drive.
System Board Connectors	• One ATA-100 capable IDE connector • Main power supply connector (plus a redundant power connector) • Main chassis fan connectors • Processor fan connectors • Status panel connector • Three PCI-X connectors and one AGP card connector for zx6000 and four PCI-X connectors for rx2600 systems. The PCI-X connectors are 64-bit, 133MHz slots that support all bridges and multi-function PCI and PCI-X devices. • Management card (optional) • Two internal SCSI connectors and one external connector
Management Card (optional)	• 25-pin Serial connector (with console/remote/USP extensions - requires breakout cable) • 15-pin VGA connector • 10/100 Management LAN

Feature	Description
Rear Connectors (labeled)	• Four USB connectors that are all high speed 480Mb/sec. capable as well as full speed 12 Mb/sec. and low speed 1.5 Mb/sec. HP-UX supports HP's USB keyboard and mouse, Linux supports all 1.1 USB devices. • 9-pin serial (two, buffered) — Standard: Two UART 16550 buffered serial ports (both RS-232-C). — Serial Ports A and B. Note that Serial A Port may be used as console. (if one port uses 2xxh, the other port must use 3xxh). • 10/100 Management LAN and 10/100/1000 LAN • External SCSI

NOTE   The graphics display port functionality on the HP Management Processor Card (A6875A) is not supported on the HP Workstation zx6000 <u>if the system has an AGP graphics card installed</u>. All other HP Management Processor Card functionality is supported.

HP zx6000/rx2600 Physical Characteristics

Characteristic	Specification
Weight (standard configuration as shipped, excluding keyboard and display): Minimum Tower Configuration Maximum Tower Configuration Minimum Rack Configuration Maximum Rack Configuration	 49.4 lbs. (22.4 Kg.) 56.3 lbs. (25.5 Kg.) 38.6 lbs. (17.5 Kg.) 49.0 lbs. (22.2 Kg.)
Dimensions (same configuration as above): Tower Rack mount	 19.5"H x 11.6"W x 26.5"D 3.4"H x 19.0"W x 26.8"D
Footprint (Tower)	0.2 m^2 (2.1 sq ft).
Power Supply Input voltage (input current, max.) Input frequency: Available power (output): Measured input power[1]:	 100 - 127 VAC, 7.2 A Autoranging 200 - 250 VAC, 3.6 A Autoranging 50/60Hz 600 W 560 W
Operating Humidity	15% to 80% (relative)
Operating Temperature Storage Temperature Over-temperature Shutdown	+5 °C to +35 °C (+41°F to +95°F) -40°C to +70°C (-40°F to +158°F) +50° C (+122° F)
Altitude: Operating: Non-operating	 10,000 ft. (3048m) max. 15,000 ft. (4600m) max.

1. In this document, available power and measured input power are different. *Measured input power* is the most the system will draw for the supported configuration. *Available power* is the maximum power that the power supply is capable of delivering. As a guideline, cooling and power specifications should be designed around the measured input value.

NOTE   Operating temperature and humidity ranges may vary depending on the mass storage devices installed. High humidity levels can cause improper operation of disk drives. Low humidity can aggravate static electricity problems and cause excessive wear of the disk surface.

Setting Up Your HP zx6000 or rx2600 System

WARNING   **If you have any doubt that you can lift the system or monitor safely, do not try to move them without help.**

1. Check the materials list shipped with your system to verify that you have all of the components necessary for setting up your system.

2. If the system is to be used as a desk-side workstation, place the system in an area with easily accessible power outlets and enough space for the keyboard, mouse, and any other accessories.

3. If the system is to be used as a rack-mounted server, please refer to the rack mounting instructions provided with your rack mount system.

4. Position the system so that its rear connectors are easily accessible.

Installation Tools

No tools are required to set up your system. However, if you plan to install or replace an accessory inside your system, you will need a T-10 and T-15 Torx screwdriver or a flat-blade screwdriver. Make sure you use the Electrostatic Discharge equipment (static-free mat, static strap, anti-static bags, etc.) to prevent damage to the system.

WARNING   **Metallic particulates can be especially harmful around electronic equipment. This type of contamination may enter the data center environment from a variety of sources, including, but not limited to, raised floor tiles, worn air conditioning parts, heating ducts, rotor brushes in vacuum cleaners or printer component wear. Because metallic particulates conduct electricity, they have an increased potential for creating short circuits in electronic equipment. This problem is exaggerated by the increasingly dense circuitry of electronic equipment.**

Over time, very fine whiskers of pure metal can form on electroplated zinc, cadmium, or tin surfaces. If these whiskers are disturbed, they may break off and become airborne, possibly causing failures or operational interruptions. For over 50 years, the electronics industry has been aware of the relatively rare, but possible, threat posed by metallic particulate contamination. During recent years, a growing concern has developed in computer rooms where these conductive contaminants are formed on the bottom of some raised floor tiles.

Although this problem is relatively rare, it may be an issue within your computer room. Since metallic contamination can cause permanent or intermittent failures on your electronic equipment, Hewlett-Packard strongly recommends that your site be evaluated for metallic particulate contamination before installation of electronic equipment.

Connecting Devices

Before connecting any cords or cables to your system, please read the Warning Notices in the front of this manual.

If you purchased an accessory card that was not installed in your system at the factory, you must install that card now. To install, refer to the instructions that came with the card or see the *Operation & Maintenance Guide* which is available at: **www.hp.com/go/bizsupport.**

Figure 1-1 shows the rear panel connectors for a rack-mounted rx2600 system. Rear panel connectors for the zx6000 Tower system are similar but viewed vertically.

Figure 1-1   Rear Panel Connectors on Rack-mounted System with Management Card
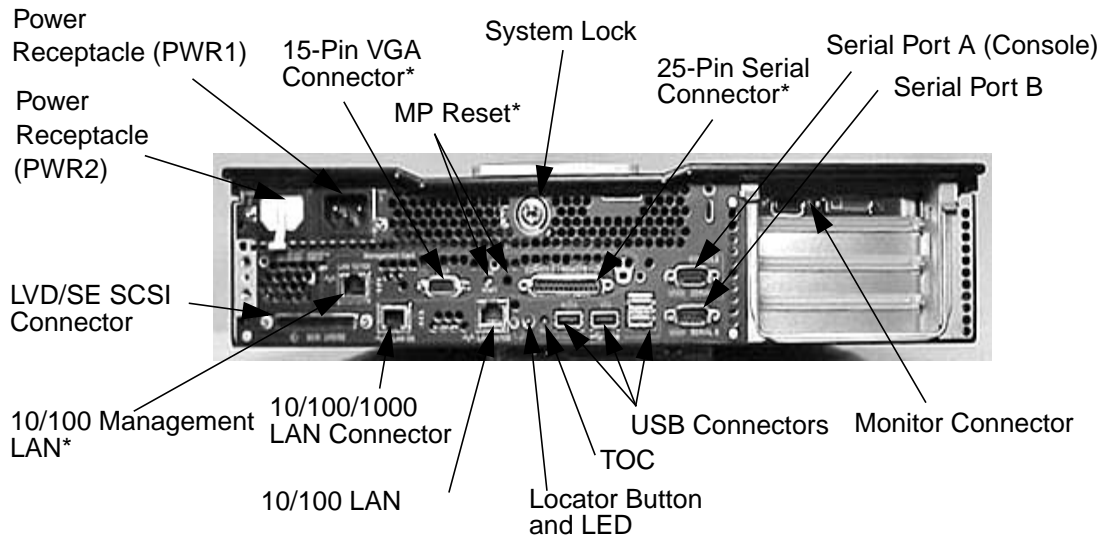
* Available only if the Management Card (ECI) is installed.

The connectors are shaped to go in one way only. Refer to the sticker on the back of the machine.

Audio Accessory Note

The small steel clip attached to your headset connector (see below) reduces radio frequency interference and allows your system to meet international regulatory requirements.

If you connect any other audio accessories to the system, attach one of these clips to each additional connector as shown.

NOTE	Surround sound is not supported on the zx6000 or rx2600 systems.

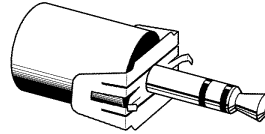### Keyboard and Mouse

The HP A7861A keyboard and mouse provide the basic input accessories necessary to get you started with your workstation. The PC-104/105, -106 key or JIS-109 keyboard is available in 13 different localized layouts, and fully conforms to industry standards.

The A7861A kit provides a choice of 3-button scroll-wheel mouse (standard) or 3-button plain mouse (specify product Option 065). Both the keyboard and the mouse have an extended-length 2.9m (9.5 foot) cable, which allows more flexible positioning of the system than is possible with the 1.8m cable on typical PCs. The keyboard and mouse are connected to the USB connectors on the rear panel of the computer.

Connecting the Power Cord

You will notice that there are two power cord receptacles on the rear panel of the system. These are redundant receptacles to be used in those cases where a redundant power supply is required. One of the receptacles (PWR2) may be covered by a plastic cap (unless you ordered the second power supply as an option). Plug the power cord into the open receptacle (PWR1). If you are using redundant power supplies, you may use both receptacles to achieve redundancy. See the *zx6000/rx2600 Operation & Maintenance Guide* for complete details.

WARNING   **For your safety always connect equipment to a grounded wall outlet. Always use a power cord with a properly grounded plug, such as the one provided with the equipment, or one in compliance with your national safety standards. This equipment can be disconnected from the power by removing the power cord from the power outlet. This means the equipment must be located close to an easily accessible power outlet.**

1. Connect the power cords to the rear of the monitor and the computer. (*The connectors are shaped to go in one way only.*)

2. Connect the monitor's power cord and the computer's power cord to a grounded outlet.

Graphics Cards

Your system has three possible operating systems that you can choose when you purchase it. Depending on the operating system you ordered, you may have one of the following graphics cards installed:

Table 1-1   **Graphics Cards Available for Your System**

Type of Card	HP-UX	Linux
High End/ Extreme 3D	ATI FireGL 4	NVIDIA Quadro4 900XGL
Entry 3D		NVIDIA Quadro2 EX
Professional 2D	ATI Radeon 7000	ATI Radeon 7000

Here is a list of the URLs you can go to for more detailed information about your graphics card:

- ATI Radeon 7000, FireGL 4 and FireGL 8800 — for more information, see:
  `http://www.ati.com/`

- NVIDIA Quadro4 900XGL and Quadro2 EX — for more information, see:
  `http://www.NVIDIA.com/`

Select a Monitor for your Graphics Card

This section provides a list of display resolutions and frequencies for the graphics cards supported by your system. By using these resolutions and frequencies you will be able to select the appropriate monitor for your graphics card. Note that frequencies of 85Hz and higher provide ergonomic, flicker-free viewing.

If the monitor you select is DDC-2B or DDC-2B+ compliant, the graphics card will automatically limit itself to those resolutions and frequencies supported by that monitor. In this case, you do not need to use the tables in this section to select your monitor.

CAUTION   To prevent possible damage to your monitor, make certain you select a monitor that supports the resolutions and frequencies you wish to use.

Table 1-2   **Resolutions and Frequencies for the NVIDIA Quadro2 EX (Analog Monitors and DB-15 Connector; Linux)**

Graphics Card	Display Resolution[1]	Vertical Frequency (Hz)[2]
NVIDIA Quadro2 EX	640×480	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200, 240
	800×600	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200, 240
	1024×768	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200, 240
	1280×1024	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
	1600×1200	60, 70, 72, 75, 85, 100, 120
	1920×1200	60, 70, 72, 75, 85, 100
	2048×1536	60, 70, 72, 75

1. Only common resolutions are listed. Other intermediate resolutions are possible.
2. The maximum frequency may not be available at all color depths.

Table 1-3   **Resolutions and Frequencies for the NVIDIA Quadro4 900 XGL (Analog Monitors with DB-15 Connector; Linux)**

Graphics Card	Display Resolution[1]	Vertical Frequency (Hz)[2]
NVIDIA Quadro4 900XGL	640×480	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200, 240
	800×600	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200, 240
	1024×768	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200, 240
	1152×864	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170, 200
	1280×960	60, 70, 72, 75, 85, 100, 120, 140, 144, 150, 170
	1280×1024	60, 70, 72, 75, 85, 100, 120, 140, 144, 150
	1600×900	60, 70, 72, 75, 85, 100, 120, 140, 144, 150
	1600×1200	60, 70, 72, 75, 85, 100, 120
	1920×1080	60, 70, 72, 75, 85, 100
	1920×1200	60, 70, 72, 75, 85, 100
	2048×1536	60, 70, 72, 75

1. Only common resolutions are listed. Other intermediate resolutions are possible.
2. The maximum frequency may not be available at all color depths.

Table 1-4   **Resolutions and Frequencies for the NVIDIA Quadro4 900 XGL (Digital Monitors with DVI Connector; Linux)**

Graphics Card	Display Resolution[1]	Vertical Frequency (Hz)
NVIDIA Quadro4 900XGL	640×480	60
	800×600	60
	1024×768	60
	1152×864	60
	1280×960	60
	1280×1024	60
	1600×900	60
	1600×1200	60

1. Only common resolutions are listed. Other intermediate resolutions are possible.

Table 1-5   **Resolutions and Frequencies for the ATI Radeon 7000 (Analog Monitor with DB-15 Connector; HP-UX and Linux)**

Graphics Card	Display Resolution[12]	Vertical Frequency (Hz)[3]
ATI Radeon 7000	640×480	60, 72, 75, 85, 90, 100, 120, 160, 200
	800×600	60, 70, 72, 75, 85, 90, 100, 120, 160, 200
	1024×768	60, 70, 72, 75, 85, 90, 100, 120, 140, 150, 160, 200
	1152×864	60, 70, 75, 80, 85, 90, 100, 120, 150, 160
	1280×1024	60, 70, 75, 85, 90, 100, 125, 130, 140
	1600×1200	60, 66, 70, 72, 75, 76, 85, 90, 100
	1792×1344	60, 75, 80, 85
	1920×1080	60, 70, 75, 80, 85, 90
	1920×1200	60, 72, 75, 76, 80, 85
	2048×1536	60, 66

1. Only common resolutions are listed. Other intermediate resolutions are possible.
2. Not all resolutions and frequencies are supported on all operating systems.
3. The maximum frequency may not be available at all color depths.

Table 1-6   **Resolutions and Frequencies for the ATI Radeon 7000 (Digital Monitor with DVI Connector; HP-UX and Linux)**

Graphics Card	Display Resolution[12]	Vertical Frequency (Hz)[3]
ATI Radeon 7000	640×480	60, 75
	800×600	60, 75
	1024×768	60, 75
	1152×864	60, 75
	1280×960	60, 75
	1280×1024	60, 75
	1600×1000	60
	1600×1024	60
	1600×1200	60

1. Only common resolutions are listed. Other intermediate resolutions are possible.
2. Not all resolutions and frequencies are supported on all operating systems.
3. The maximum frequency may not be available at all color depths.

Table 1-7   **Resolutions and Frequencies for the ATI FireGL 4(Analog Monitor with DB-15 Connector; HP-UX)**

Graphics Card	Display Resolution[12]	Vertical Frequency (Hz)[3]
ATI FireGL 4	1024×768 1280×1024 1600×1024 1600×1200 1920×1080 1920×1200	75, 85 60, 75, 85 75, 85 75, 85 75, 85 75, 85

1. Only common resolutions are listed. Other intermediate resolutions are possible.
2. Not all resolutions and frequencies are supported on all operating systems.
3. The maximum frequency may not be available at all color depths.

Table 1-8   **Resolutions and Frequencies for the ATI FireGL 4 (Digital Monitor with DVI Connector; HP-UX)**

Graphics Card	Display Resolution[12]	Vertical Frequency (Hz)[3]
ATI FireGL 4	1024×768 1280×1024 1600×1024 1600×1200	75 75 75 75

1. Only common resolutions are listed. Other intermediate resolutions are possible.
2. Not all resolutions and frequencies are supported on all operating systems.
3. The maximum frequency may not be available at all color depths.

Front Panel

The zx6000/rx2600 front panels have the following features:

- The On/Off LED is green when the power is on, or the power button is pushed in. If the power is on and the button is pushed in then the LED will stay on even after the system is powered down. When the button is released, the green LED will turn off.

- The hard disk drive activity LED is orange during POST and hard disk drive access. When the system is powered down, the LED is off.

Figure 1-2   **Front Panel for the Tower System**

Power On/Off Light

Power On/Off Button

System LED

LAN LED

Diagnostic LED 4
Diagnostic LED 3
Diagnostic LED 2
Diagnostic LED 1
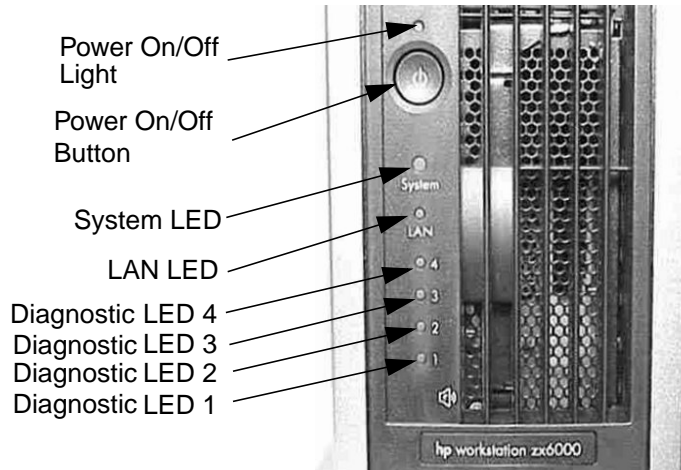
Figure 1-3   **Front Panel for the Rack-mounted System**

Diagnostic LEDs 1 through 4

LAN LED   System LED

Power On/Off Button

Locator LED and Button

Power On/Off LED
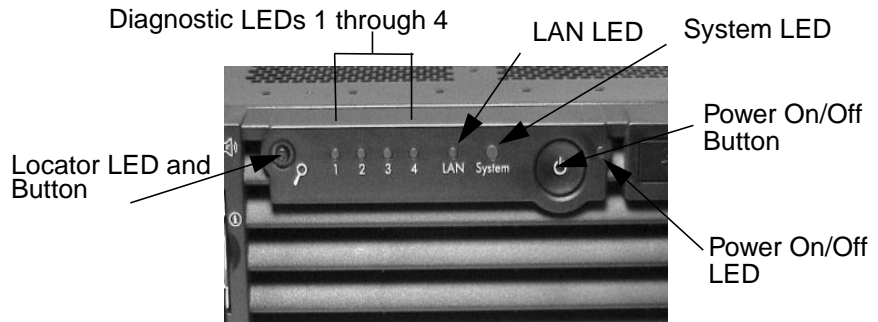
System Configuration

There are three tools available to assist you in setting up your system configuration - the Extensible Firmware Interface (EFI), Management Processor (MP) and Baseboard Management Controller (BMC). This section gives you a brief introduction to these tools. For complete information, refer to the System Configuration chapter in the *zx6000/rx2600 Operation & Maintenance Guide* found at **http://www.hp.com/go/bizsupport** web page.

Extensible Firmware Interface (EFI)

The file system supported by the Extensible Firmware Interface is based on the File Allocation Table (FAT) file system. EFI encompasses the use of FAT-32 for a system partition. The system partition is required on a bootable disk for the IA-64 platform.

The system partition can contain directories, data files, and EFI images. The EFI system firmware may search the \EFI directory of the EFI system partition, EFI volume, to find possible EFI images that can be loaded. The HP-UX bootloader is one example of an EFI image.

Complete information on the commands used by the EFI shell are provided in the *zx6000/rx2600 Operation & Maintenance Guide* found at **http://www.hp.com/go/bizsupport** web page. You can obtain a detailed description of the commands online by typing help and the command name at the EFI shell prompt. For example:

```
shell> help date
```

Management Processor (MP)

First, make sure that you have the Management Card installed in your system. To determine if the card is installed, look at the back panel of your system. You will see a 25-pin Serial Port if the Management Card is installed. See Figure 1-1 on page 21. Complete information on the Management Processor is found in the System Configuration section of the *zx6000/rx2600 Operation & Maintenance Guide* at **http://www.hp.com/go/bizsupport**.

The Management Processor (MP) is an independent support processor for the system console. MP provides services that facilitate the management of the host system. Its major features are:

Table 1-9   **MP Features and their Descriptions**

Feature	Description	
Always on capability	The MP is alive as long as the power cord is plugged in.	
User/password access control	The users supported are both operators and administrator.	
Multiple access methods	Local Port	Use terminal of laptop computer for direct connect
	Remote Port	Use dedicated modem RS-232 port and
	Modem Port	External modem
	LAN	Use telnet or web to access MP LAN
Mirrored console	The system console output stream is reflected to all of the connected console users. Any user can provide input provided the right console is selected and the serial console is deselected.	
Display and/or logging off	The system console, system event logs (chassis codes), Virtual Front Panel (VFP) and system power and configuration status provide information for the user.	
An independent, non-mirrored session	This is available form local and modem ports for MP connection (CSP), or OS login (SE).	
Additional features	The additional features are: power control, system reset, and Transfer of Control (TOC).	

Baseboard Management Controller (BMC)

The Baseboard Management Controller supports the industry-standard Intelligent Platform Management Interface (IPMI) specification. This specification describes the management features that have been built into the system board. These features include: diagnostics, both local and remote, console support, configuration management, hardware management and troubleshooting.

For a complete listing of BMC Commands, see the System Configuration section in the *zx6000/rx2600 Operation & Maintenance Guide* found at **http://www.hp.com/go/bizsupport**.

Internal Component for your System

For complete instructions on how to remove/replace components, see the
zx6000/rx2600 Operation & Maintenance Guide at
www.hp.com/go/bizsupport.

Software and Driver Availability

You can download the latest drivers and firmware for your system.

You can also register to obtain information on new driver availability
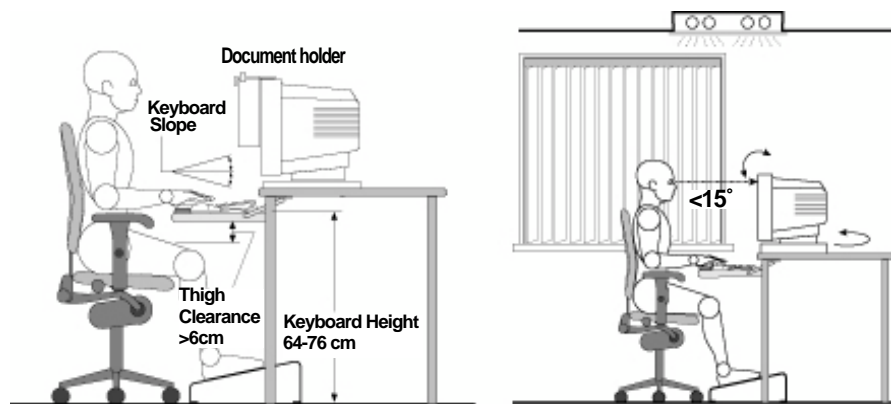automatically.

Contact your dealer for an up-to-date list of supported devices or check
the HP web site: **www.hp.com/go/bizsupport**.

Working in Comfort and Safety

Preparing Your Work Environment

When using HP computing equipment, it is important that your work environment contributes to your comfort and productivity:

Figure 1-4   **Your Work Environment**

- *Work Surface Height*. Your work surface should be height adjustable. To ensure that your work surface is at the correct height, first adjust the height of your chair so that your feet are firmly on the floor or on an angled foot rest, then adjust the work surface height until your forearms are parallel to the floor when you have your fingers on the keyboard or other input devices.

- *Chair*. Your chair should provide a comfortable sitting position including features such as a height and tilt adjustment feature, curved seat edge, a stable base (for example, five legs and castors, adjustable back support, a freely rotating swivel, fully adjustable padded arm rests).

- *Monitor*. Place your monitor so that the top of the screen is at, or slightly below, eye level (up to 15 degrees).

- *Work Surface Arrangement*. Make sure that all elements of your HP system for example, monitor, document holder, keyboard, mice and other input devices, and headphones and speakers- are optimally arranged and adjusted to meet your personal requirements. For

example, if you are primarily using the keyboard, place it directly in front of you, not to the side. If your work involves extensive use of a mouse or other pointing device, place that device directly in front of your left or right arm. If you are using both a mouse and keyboard, place them both at the same work surface height and close together. If a palm rest is used, the height should be flush with the front edge of the keyboard. Other items, such as your telephone or notepad, should also be considered.

CAUTION   Various aspects of using mice, keyboards and other input devices may increase your risk of discomfort or injury. Optimize your comfort and safety by positioning these devices properly.

Your Work Posture

Sitting in one position for long periods can be uncomfortable. To minimize the potential risk for physical discomfort or injury, it's important that you maintain a proper posture.

- *Head.* When viewing your monitor, your head should not be tilted more than 15 degrees forward, and do not turn your head toward either side.

- *Back.* While sitting at your work surface, make sure your back is supported by the chair's backrest in an erect position or angled slightly backwards.

- *Arms.* Make sure your arms and elbows are relaxed and loose, with your upper arms perpendicular to the floor or tilted downward not more than 15 degrees. Keep your forearms and hands approximately parallel with the floor with elbows bent between 70 and 115 degrees. Keep your elbows close to your sides (less than 20 degrees away from your body).

- *Hands, Wrists, Forearms.* Try to keep your hands wrists and forearms in a relaxed neutral position when using your mouse keyboard or other input devices. For example, while using your keyboard and mouse, rest your forearms (flat) on your desktop.

- *Legs.* Your thighs should be horizontal or angled slightly downward. Your lower legs should be near a right angle to your thighs. Make sure there is sufficient room under the work surface for your legs.

- *Feet.* If after adjusting your chair you cannot rest your feet comfortably on the floor, use a footrest, preferably one that can be adjusted in height and angle.

Additional Ergonomic Issues

- Look away from the screen from time-to-time to help reduce eyestrain. Focus on distant objects briefly, and blink periodically to lubricate your eyes. You also should have your eyes checked on a regular basis and ensure your eyeglass prescription is suitable for working on a computer monitor.

- Remember to occasionally shift position and move your body. Keeping your body in one position for long periods is unnatural and stressful. When prolonged work is required, take frequent short breaks. As a rule of thumb, a five or ten minute break every hour is a good idea. Short frequent breaks are more beneficial than longer less frequent breaks. Data show that people who work for long periods of time without a break may be more prone to ergonomic injury.

- Changing tasks frequently will help prevent muscle stiffness. Examples: alternating between keyboarding, reading, writing, filing, and moving around in your work environment, helps you maintain a relaxed posture. Occasionally stretch the muscles in your hands, arms, shoulders, neck and back. You should stretch at least as often as you take brief task breaks — at least once every hour.

- Discomfort may be alleviated by using alternative ergonomic designs and accessories such as ergonomically personalized chairs, palm rests, keyboard trays, alternative input devices, prescription eyeglasses, anti-glare screens, and more. Seek additional information from the sources available to you, including your employer, doctor, local office supply store, and the *Information Sources* listed in the online version of *Working in Comfort*, pre-loaded on the hard disk of your HP computing equipment or available on the HP web site: **www.hp.com/ergo**

2 Troubleshooting Your System

This chapter provides you with essential information on basic troubleshooting for your HP zx6000/rx2600 system.

Solving Hardware Problems

This table gives basic troubleshooting tips. For more in-depth information, see the section "Accessing System Diagnostics" in this manual.

Table 2-1   **Your System Does Not Start Properly**

The system doesn't power on.	
Make sure...	*How*
The system's power cord is properly connected.	Connect the power cord to a working power outlet and to the rear of the system.
There is a buzzing noise.	
A beep code when the system starts up means that there is a configuration problem. Many of the ebuzzer codes relate to the LED diagnostic codes. See section "Using the LEDs and e-buzzer to Troubleshoot Your System".	
Make sure...	*How*
This is the pre-boot diagnostics capability feature. It detects problems with your system.	1. Count the number of beeps after the buzzer (refer to the section "Troubleshooting with the e-buzzer" in this chapter). 2. Contact HP Support (refer to page 54).
If you still have a problem, see "Accessing System Diagnostics" on page 43.	

Table 2-2　　　　　**Your System Has a Hardware Problem**

The keyboard doesn't work.	
Make sure...	*How*
The keyboard cable is correctly connected.	Plug the cable into the correct connector on the back of the system. Color coding is used for easy matching.
The keyboard is free of debris.	Check all keys are at the same height, and none are stuck down.
The keyboard itself is not defective.	Either replace the keyboard by a known working unit or try the keyboard with another system.
You are using the correct driver. For other operating systems, refer to your operating system's documentation.	Download the latest driver from HP's Web at: **www.hp.com/go/bizsupport**
You are using the latest firmware.	Download the latest firmware from HP's Web at: **www.hp.com/go/bizsupport**
The monitor doesn't work.	
The system's power indicator light works but the monitor remains blank	
Make sure...	*How*
The monitor is switched ON (LED is on).	Refer to the monitor manual for an explanation of the LED signals.
The monitor's power cord is correctly connected.	Connect the power cord – ensure it is plugged into a working grounded power outlet and into the monitor.
The graphics card is installed and the monitor (video) cable is correctly connected.	Connect the monitor (video) cable – ensure it is properly connected to both the system and the monitor. Ensure that the cable is connected to the graphics card's connector.
The monitor's brightness and contrast settings are correctly set.	Check the settings using the monitor's OSD (on-screen display) or using controls on the front of the monitor.

Table 2-2   **Your System Has a Hardware Problem (Continued)**
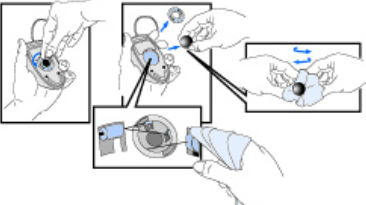
If the system starts and you still have a problem, see "Accessing System Diagnostics" on page 43.	
The mouse doesn't work.	
Make sure...	*How*
The mouse cable is correctly connected.	1. Switch off the system (not necessary with a USB mouse). 2. Plug the cable into the correct connector on the back of the system (color coding is used for easy matching). 3. Switch on the system.
You are using the correct driver. If you are using HP's enhanced mouse, ensure that the correct driver is installed. **This driver is provided with all Linux preloaded systems.**	Download the latest driver from HP's Web at: **www.hp.com/go/bizsupport**
You are using the latest BIOS	Download the latest BIOS from HP's Web at: **www.hp.com/go/bizsupport**
The mouse is clean.	Clean the mouse ball as shown below.
The mouse itself is not defective.	Replace the mouse with unit that is known to work or try the mouse with another system.
If the system starts but you still have a problem, see "Accessing System Diagnostics" on page 43.	
Your system has no sound.	

Table 2-2   **Your System Has a Hardware Problem (Continued)**

Check that...	How
The lime green Speaker/Headphone connector is plugged into the multi-media keyboard.	Either disconnect the lime green connector to activate the internal speaker or plug-in headphones or speaker into the keyboard.

Troubleshooting Tips:

• Restart your system and see if the problem recurs.

• Run the appropriate diagnostic tools. You can create a hardware profile of your system (Support Ticket) that can be faxed or mailed to support. Refer to "Accessing System Diagnostics" on page 43 for more information on using diagnostic tools.

• Visit the HP Support web site **www.hp.com/go/bizsupport** to see if you are experiencing a known problem.

• Update your system's firmware. The latest firmware for your system and instructions on updating the firmware are available from HP's Support web site at:
      www.hp.com/large/product

• Record the details of the problem so that you can describe it accurately.

• Think of anything you may have done recently before you first experienced the problem.

• If possible, have your system up and running and close by when you call HP Support.

• We recommend you contact your HP dealer, or contact HP Support outside of peak times (mid-morning and week day in the early evenings).

If You Lose the Key

If you lose the key to the system, you must order a replacement lock (HP Part Number 5064-9154) from the HP dealer or HP Sales and Service Office. The new lock is delivered with two keys. Contact your HP dealer for installing the new lock.

Need More Help?

For more detailed help refer to the *zx6000/rx2600 Operation and Maintenance Guide* which is available on HP's support web site at:

www.hp.com/go/bizsupport

Accessing System Diagnostics

To troubleshoot your system, you must be familiar with the HP-UX or Linux operating systems and be able to start and stop processes. You should also be familiar with the Offline Diagnostics Environment and the Support Tools Manager for HP-UX systems and TopTools for Linux.

First, note any event messages and use the diagnostics tool that is appropriate for your system to determine what failed. Note that event messages can be found in Appendix D of the *zx6000/rx2600 Operation & Maintenance Guide* at **http://www.hp.com/go/bizsupport**. If a test fails, the diagnostics message will give you an indication of the Field Replaceable Unit (FRU) to replace.

For a complete description of the HP-UX diagnostics tools, go to this URL:

http://docs.hp.com//hpux/diag/

For a complete description of the Linux diagnostic tools, go to this URL:

http://www.hp.com/toptools/

Running Support Tools Manager (HP-UX only)

HP-UX uses an online diagnostics product called the Support Tools Manager (STM) that allows system operation verification.

Three interfaces are available with the Support Tools Manager: a command line interface (accessed through the cstm command), a menu-driven interface (accessed through the mstm command), and the graphical user interface (accessed through the xstm command).

For more information on these user interfaces, see the online man pages by entering the following at a command line prompt:

```
man cstm [Enter]
man mstm [Enter]
man xstm [Enter]
```

For information on the enhanced online diagnostics, see the "Support Tools for HP Computers" documents located at this URL:

http://docs.hp.com//hpux/diag/

To access the Support Tools Manager:

1. In a terminal window, type the following at the `fs0:\>` prompt to invoke the command line interface:

   ```
   fs0:\> cstm [Enter]
   ```

2. The following message appears:
   ```
   Support Tool Manager     Version A.01.00
   Type 'help' for a list of available commands.
   CSTM>
   ```

3. To verify the system operation, type the following at the `CSTM>` prompt:
   ```
   CSTM> verify all [Enter]
   ```

   Messages similar to the following appear:

   ```
   Verification has started on device (CPU).
   Verification has started on device (FPU).

   CSTM> Verification of (FPU) has completed.
   CSTM> Verification of (CPU) has completed.
   ```

4. Press `[Enter]` to return to the `CSTM>` prompt after all test results are reported.

5. To exit the Support Tools Manager, enter the following:

   ```
   CSTM> exit [Enter]
   ```

Running ODE-Based Diagnostics (HP-UX only)

The Offline Diagnostic Environment (ODE) for HP-UX consists of diagnostic modules for testing and verifying system operation. ODE provides all the necessary functions for the user to load specified tests and interact with those tests.

To boot ODE:

1. Invoke the EFI environment from the system disk or a CD ROM.

2. Type `ode [Enter]` after the `fs0:\>` prompt to invoke ODE from the EFI directory on the system disk. The prompt changes to `fs0:\>`.

Not all of the test modules are available on all systems. To see what test modules are available to run on this system, type `ls` at the `fs0:\>` prompt. The available modules include the following:

- `siodiag` – tests and verifies the basic functionality of the SuperI/O multifunction I/O chip, including serial, parallel, USB, and so forth.

- `wdiag` – tests and verifies the functionality of the Itanium chip.

- `memtest` – tests and verifies the memory arrays. If an error is detected, the diagnostic reports the memory card and its slot number that needs replacement. It also provides a map of the memory configuration so that the user can identify the type of memory and its slot location.

- `fupdate` – updates the system's Processor Dependent Code (PDC) firmware.

- `mapper` – identifies the configuration of Itanium systems. It displays path, identification, and revision information of I/O components, configuration of memory controllers, processors, co-processors, cache, and TLB, as well as processor board component revisions and values of various Itanium system identifiers, revisions, and capabilities.

For further information on the various ODE commands and a complete listing of the command set, type `help [Enter]` at the `fs0:\>` prompt or at the prompt of one of the test modules.

Running TopTools (Linux only)

TopTools is the diagnostics tool that you will use for on-line diagnosis of systems running the Linux operating systems.

TopTools is a collection of applications and agents designed to provide device management of Hewlett-Packard computing products. At the center of the TopTools solution is a device management tool (also referred to as the Device Manager) that is designed to help you identify and diagnose network and system problems quickly using a friendly and intuitive web-based interface. Additional "components" can be installed that provide management functions for specific device types such as servers or hubs and switches.

You can install the TopTools server from the TopTools CD ROM (run
`CD:\setup.exe`) or from the TopTools web site. The web site is located
at:
  http://www.hp.com/toptools

Go to the download page and follow the directions provided. The
TopTools installation wizard (setup.exe) is an extensive program
designed to make the TopTools installation process friendly and
successful.

To open a TopTools console immediately following installation, log into
the TopTools server console as a local administrator, a domain
administrator or as the TopTools user (for whichever account you
specified during the installation process). Double-click the TopTools
shortcut placed on the system.

Self-paced training for TopTools is available on the TopTools web site at:

  ftp://ftp.hp.com/pub/toptools/Training/start.html

HP e-DiagTools Hardware Diagnostics

Your system came with a CD containing HP e-DiagTools hardware
diagnostic utilities. These tools may be used to diagnose
hardware-related problems on your HP system.

NOTE   Run e-DiagTools before contacting HP for Warranty service. This is to
obtain information that will be requested by a Support Agent.

With this utility you can:

• Check the hardware configuration and verify that it is functioning
  correctly.

• Test individual hardware components.

• Diagnose hardware-related problems.

• Obtain a complete hardware configuration.

• Provide precise information to an HP support agent so they can solve
  problems quickly and effectively.

Starting HP e-DiagTools

1. Make sure your system model matches the CD-ROM (the CD-ROM is locked to a specific system model).

2. Insert the HP Drivers and Diagnostics CD in the CD-ROM drive.

3. Restart the system.

4. Select the CD-ROM boot option from the EFI startup menu.

NOTE   If you are unable to boot from your CD-ROM drive, restart your system and check the boot options from the Boot Options Maintenance Menu to ensure that your system is configured to boot from the CD-ROM.

---

5. Press **F2 [Continue]** at the e-DiagTools introductory screen to access the Main Menu.

Running HP e-Diagtools and Producing a Support Ticket

To produce a complete record of your system's configuration and test results, you will need to create a Support Ticket. This is a simple text file that contains essential information and is designed to assist your local or HP Support Agent.

To produce a Support Ticket, from the e-DiagTools Main Menu:

1. Select **2 - Run e-Diagtools** to run the diagnostics on your system if you have not already done so.

2. Select **4 - Support Ticket** to create the ticket.

   • To save the Support Ticket, press **4**.

   • To view the Support Ticket, click the button at the bottom of the screen.

   • To exit the Support Ticket tool, press **3**.

For more information about the e-DiagTools utility, refer to the *Operation & Maintenance Guide*, available on the HP web site at:

http://www.hp.com/go/bizsupport/

Using the LEDs and e-buzzer to Troubleshoot Your System

There is a set of four LEDs located on the desk-side and rack-mount system's front panel that are used for diagnosing the health of the system. These LEDs warn of any impending failures and allow you to take preventive action. For example, you may want to make a system backup or replace a system component before it quits functioning. The other four LEDs are the Power, System, LAN, and Locator LEDs. This section explains how the system's LEDs can be used for troubleshooting system problems and how to locate the system you want to work on within a rack of systems.

Figure 2-1   **Rack-mounted System's LEDs and Buttons**
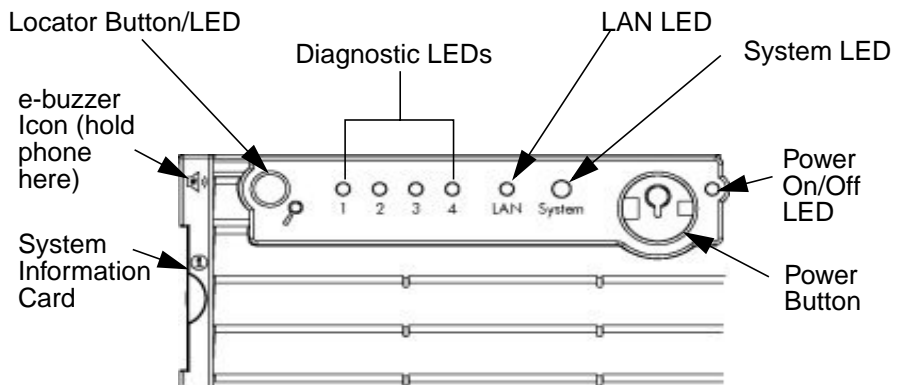
Figure 2-2   **Desk-side System's LEDs and Buttons**
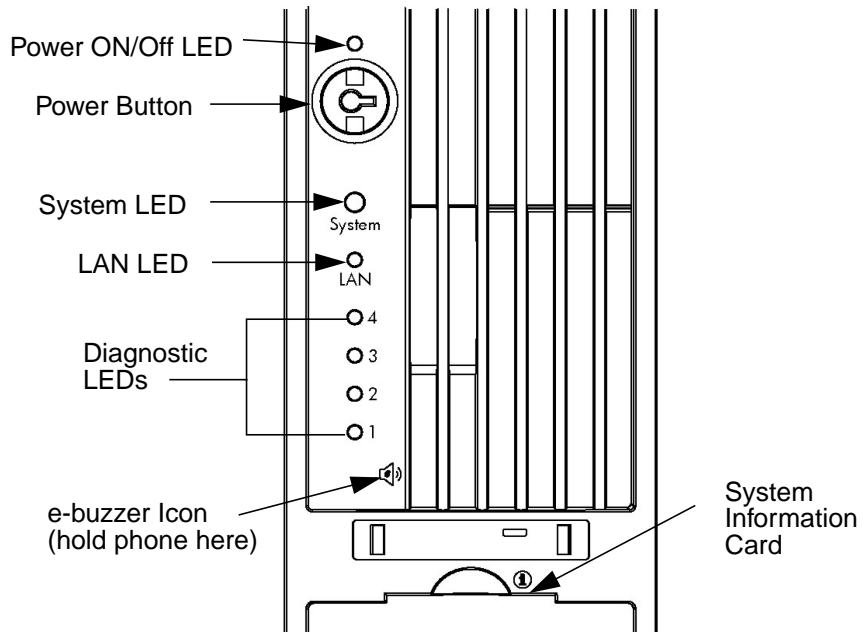
Troubleshooting with the LEDs

Power and System LEDs

The Power and System LEDs indicate the state of the system. Here is a table of these states:

Table 2-3

Power LED	System LED	State
Off	Off	Off
On (green)	Solid green	Running
On (green)	Off	Booting
On (green)	Blinking orange (1/sec.)	Attention
On (green)	Blinking red (2/sec.)	Fault

LAN LED

The LAN LED provides an indication as to whether the system is communicating over the LAN. If the LED is not green, the system is off, and therefore, the system is not communicating over the LAN. If the LAN LED is solid green, there is no system LAN communication taking place, but the system is ready to communicate over the LAN. If the LAN LED is blinking green, the system is communicating over the LAN.

Locator LED and Button (Rack-mounted Systems only)

The locator LED provides a means for locating the system on which you intend to work. For example, you find out that system number 5 in your rack of systems has a LAN cable that needs to be replaced. This will require that you walk all the way around to the back of your rack of systems to replace the cable. Once you get behind the rack of systems, you need to locate the system that needs the cable replaced. The locator LED makes this easier. When the locator button is pressed in, the locator LED begins to flash blue at a frequency of one blink per second both on the front of the system and the back, thus making it easy to locate the system on which you need to work.

The locator LED can also be activated or deactivated by use of the locator button on the back panel of the system or by use of a Management Processor (MP) command.

Diagnostic LEDs

There are four diagnostic LEDs located on the front bezel of your system. They are labeled one through four

NOTE   The zx6000 HP Workstation boot progress is indicated by LEDs 1-4. During the boot-up the LEDs will turn on in sequence until the EFI prompt is reached. These LEDs will be off if there is a Management processor in the workstation.

WARNING   **The rx2600 HP Server boot process will be monitored by the Management Processor Card and not by the LEDs. Refer to the Management Card section for more details.**

The Troubleshooting section of the zx6000/rx2600 Operation &
Maintenance Guide found at http://www.hp.com/go/bizsupport provides a
table with a list of faults associated with the various possible LED
lighting sequences.

Troubleshooting with the e-buzzer

When your system starts up, the system firmware performs pre-boot
diagnostics to test your hardware configuration for any problems. If a
problem is detected during pre-boot, the pre-boot diagnostics will emit an
audio signal through the workstation's internal speaker.

The pre-boot diagnostics emits an audio sequence with two kinds of
sounds. The first is an unusual series of tones that indicate an anomaly
has been detected. This series of sounds also contains an electronic
signal that can be sent through a telephone line to an authorized Help
Desk or HP Support, if necessary. This signal cannot be interpreted by
the human ear. However, it can be decoded by Help Desk equipment to
extract the workstation model, serial number and details about any
faults. To send this signal to HP Support, you need to hold your
telephone next to the e-buzzer Icon on the system's front panel. See
Figure 2-3

Figure 2-3   **e-buzzer Label for Desk-side and Rack-mounted Systems**
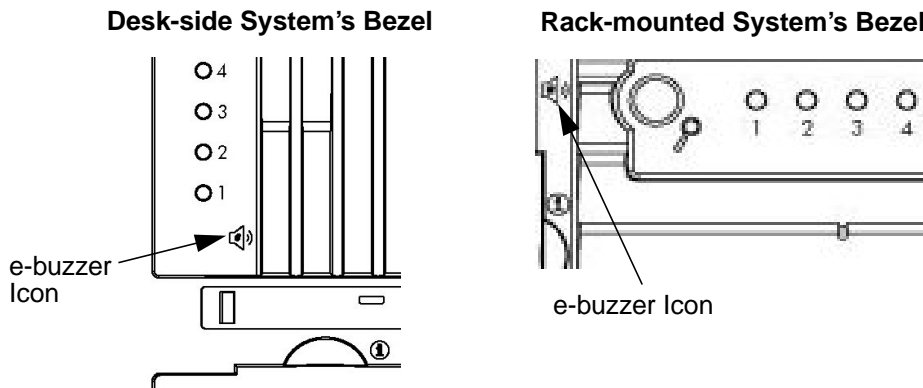
The second type of sound is a series of long beeps that indicate a particular error. If you hear a series of beeps, you should count them as this will help you detect the cause of the problem. Here is the meaning of the number of beeps you hear.

Table 2-4   **Description of Beep Codes**

Number of Beeps	FRU to Replace	Meaning
1	Processor	Processor absent, not correctly connected or ZIF socket not closed; see the associated e-buzzer codes in the section "Diagnostic LEDs" in this chapter
2	Power Supply	Power supply is in protected mode; replace the power supply.
3	Memory	No memory, bad memory modules or incompatible memory module
4	Video Card	Graphics card problem
5	PCI Card	PCI card problem; replace the PCI card.
6	Firmware	Corrupted firmware. You need to activate crisis recovery procedure
7	System Board	Defective system board

If You Miss the Beep Code

If you miss the beep code, send the signal again by pressing the power supply button for 3 seconds and release it once the sound begins.

Recovering Your System

The HP-UX HP Recovery CD or the HP Enablement Kit for Linux will enable you to restore your computer to its original factory configuration and reinstall drivers or other factory-supplied software components. The drivers and software utilities, including documentation and navigational aids, help you to recover the pre-loaded software. There are two CD-ROMs:

• a HP-UX Recovery CD-ROM or HP Enablement Kit for Linux CD

• a Diagnostics CD-ROM

Complete instructions on how to perform an Operating System re-install or full recovery are found in the booklets that accompany the CD-ROM media. For more information go to http://hp.com/go/bizsupport.

CAUTION　　Using the Recovery CD-ROM will permanently erase the current contents of your hard disk. You should always backup your data and personal files before using the Recovery CD-ROM

HP Customer Care Center Phone Numbers

HP Customer Care Centers can help you solve issues related to HP products and, if necessary, initiate appropriate service procedures. In the U.S.A, telephone support is available 24 hours a day, 7 days a week. Elsewhere, it is available during normal office hours. Here is the URL for HP Customer Care Center phone numbers:

http://www.hp.com/cpso-support/guide/psd/expectations.html

A   Regulatory Information

<div style="border: 1px solid;">

Declaration of Conformity
according to ISO/IEC Guide 22 and EN 45014

Manufacturer: Hewlett-Packard Company
                              3404 East Harmony Rd.
                              Fort Collins, CO 80528
                              USA

Declares that the:
  Product Type: Computer Workstation/Server
  Marketing Designation(s): zx6000, rx2600
  Regulatory Model Number: FCLSA-0201
  Product Options: all
conforms to the following specifications:

Safety   IEC 60950:1991+A1+A2+A3+A4/EN 60950:1992+A1+A2+A3+A4
                    IEC 60825-1:1993/EN60825-1:1994+A11 Class 1 for LED's and Lasers
                    U.S.A 21CFR Subpart J – for FC Laser module
                    China GB4943-1995
                    Russia GOST R 50377-92

EMC   CISPR 22: 1997 / EN 55022: 1998 Class A
                    CISPR 24: 1997 / EN 55024: 1998
                        Also compliant with...
                           EN 61000-3-2: 1998
                           EN 61000-3-3: 1995
                           EN 61000-4-2: 1999 - 4 kV CD, 8 kV AD
                           EN 61000-4-3: 1996 - 10 V/m for server version (restricted USB peripherals)
                                              3 V/m for workstation version
                           EN 61000-4-4: 1995 - 2 kV Signal, 4 kV Power Lines
                           EN 61000-4-5: 1995 - 1 kV Differential mode, 2 kV Common mode
                           EN 61000-4-8: 1993 - 3 A/m
                           EN 61000-4-11: 1994
                    U.S.A FCC Part 15, Class A
                    Japan VCCI Class A
                    Australia/New Zealand AS/NZS 2046:1997, AS/NZS 3548:1995
                    China GB9254-1988
                    Region of Taiwan CNS 13438:1997 Class A
                    Russia GOST R 29216-94

and is certified or verified by:
                    UL Listed to UL1950, 3nd edition, File E146385
                    cUL Listed to CSA 22.2 No. 950-M93
                    TUV Certified to EN60950 2nd edition with A1+A2+A3+A4
                    HP Fort Collins CCQD HTC

supplementary information:
The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC directive
89/336/EEC and carries the CE marking accordingly.
This product was tested in a typical Hewlett-Packard system configuration.

For Compliance Information ONLY, contact: European Contact: Hewlett-Packard, HQ-TRE, Herrenberger
Strasse 140, D-71034 Boeblingen (FAX: +49-7031-14-3143)
Americas Contact: Hewlett-Packard, TCD Quality Manager., 3404 E. Harmony Road, Fort Collins, CO 80528, U.S.A.
(FAX: (970) 898-4556)

</div>

Regulatory Information

Federal Communications Commission Radio Frequency Interference Statement (for USA only)

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

Hewlett-Packard's FCC Compliance Tests were conducted with HP-supported peripheral devices and HP shielded cables, such as those you receive with your system. Changes or modifications not expressly approved by Hewlett-Packard could void the user's authority to operate the equipment.

Notice for Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la Class A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Safety Warning for the USA and Canada

If the power cord is not supplied with the computer, select the proper power cord according to your local national electric code.
USA: use a UL listed type SVT detachable power cord.
Canada: use a CSA certified detachable power cord.

For your safety, never remove the system's cover without first removing the power cord and any connection to a telecommunication network. Always replace the cover before switching on again.

Si le cordon secteur n'est pas livré avec votre ordinateur, utiliser un cordon secteur en accord avec votre code electrique national.
USA: utiliser un cordon secteur "UL listed," de type SVT.
Canada: utiliser un cordon secteur certifié CSA.

Pour votre sécurité, ne jamais retirer le capot de l'ordinateur sans avoir préalablement débranché le cordon secteur et toute connection à un réseau de télecommunication. N'oubliez pas de replacer le capot avant de rebrancher le cordon secteur.

Notice for France

Il y a danger ïexplosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou ïun type equivalent recommandé par le constructer. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Notice for the Netherlands

Bij dit apparaat zijn batterijen geleverd. Wanneer deze leeg zijn, moet U ze niet weggooien maar inleveren als KCA.

Notice for Germany

Wenn die Batterie nicht korrekt eingebaut wird, besteht Explosionsgefahr. Zu ihrer eigenen Sicherheit sollten Sie nicht versuchen, die Batterie wiederaufzuladen, zu zerlegen oder die alte Batterie zu verbrennen. Tauschen Sie die Batterie nur gegen den gleichen oder ähnlichen Typ aus, der vom Hersteller empfohlen wird. Bei der in diesem PC intergrierten Batterie handelts sich um eine Lithium-Batterie, die keine Schwermetalle enthält. Batterien und Akkumulatoren gehören nicht in den Hausmüll. Sie verden vom Hersteller, Händler oder deren Beauftragten kostenlos zurückgenommen, um sie einer Verwertung bzw. Entsorgung zuzuführen.

Noise Declaration for Germany

Lärmangabe nach Maschinenlärmverordnung - 3 GSGV (Deutschland)
LpA < 70 db am Arbeitsplatz normaler Betrieb nach EN27779: 11.92.

Notice for Japan (Class A)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Notice for Korea

시용시 안내분 (A급 기기)

이 기기는 업무용으로 진자파장해긴정를 반은 기기이오니, 만약 잘못 구입하싰음 때예는 구입한 곳에서 비입무용으로 교환히시기 비겁니다.

Notice for Taiwan

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

Regulatory Information

B   Warranty Statements

IMPORTANT   This is your product warranty statement. Read it carefully.

Hardware and Software Warranties

Hewlett-Packard (HP) warrants this hardware product against defects in materials and workmanship under normal use, for a period of three (3) years from receipt by the original end-user purchaser or date of purchase. This is the warranty duration or period.

This warranty covers the following HP Product(s):

1. HP zx6000 Workstation - 1 year, next day on-site

2. HP rx2600 Server - 1 year, next day on-site

This limited warranty includes: phone-in hardware support, parts, labor and, when needed, next-day on-site response for the duration of the warranty period. Parts and service are to be provided by an HP Service Center or a participating Authorized HP Computer Dealer Repair Center.

Warranty terms may be different in your country. If so, your Authorized HP Dealer or Hewlett-Packard Sales and Service Office can give you details.

Warranty Limitations

If HP receives notice of above defined defects during the warranty period, HP will either, at its option, repair or replace products, which prove to be defective. Should HP be unable to repair or replace the product within a reasonable amount of time, the customer's alternate exclusive remedy shall be a refund of the purchase price upon return of the product to HP.

Only the system processor unit (SPU), keyboard, mouse, and all Hewlett-Packard accessories installed inside the system processor unit —such as video adapters, mass storage devices, and interface controllers— are covered by this warranty. HP products external to the system processor unit - such as external mass storage subsystems, displays, printers, and other peripherals - are covered by the applicable warranties for those products.

A hardware accessory is a hardware product, specifically designated, and supported, for use with the HP workstation, that is added on or integrated into an HP workstation in order to provide higher performance, capacity or increased capability; and is listed as a product

in HP's Corporate Price List. Upon installation inside an HP workstation, the warranty that came with the accessory applies.

HP is not responsible for defects resulting from: a) improper or inadequate calibration or maintenance, b) software, interfacing parts or supplies not supplied by HP, c) unauthorized modification or misuse, d) operation outside the published environmental specification for the product, e) in-transit damage, e) improper site preparation or maintenance.or f) defects resulting from use of non-HP software, accessories, media, supplies, consumables, or such items not designed for use with the product.

Reloading the bundled or pre-loaded software on your workstation is not covered by the HP warranty. HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.

TO THE EXTENT ALLOWED BY LOCAL LAWS, THE ABOVE WARRANTY IS EXCLUSIVE AND NO OTHER WARRANTY OR CONDITION, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED WITH RESPECT TO THIS PRODUCT. HP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTIBILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES, PROVINCES OR COOUNTRIES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

This warranty is extended worldwide under certain conditions (please check with your local HP office) to products purchased from HP or an Authorized HP Computer Dealer which are reshipped by the original purchaser either for use by the original purchaser or provided as an incidental part of systems integrated by the original purchaser. When available in the country of use, service is provided in the same manner as if the product was purchased in that country and can only be provided in countries where the product is designed to operate. If the product is not normally sold by HP in the country of use, it must be returned to the country of purchase for service. Response time for on-site service, and parts delivery turn-around time for parts service, are subject to changes

from standard conditions based upon non-local parts availability.

This warranty gives you specific legal rights, and you may also have other rights, which vary, from state to state, province to province or country to country.

Limitation of Liability and Remedies

THE REMEDIES PROVIDED ABOVE ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. IN NO EVENT SHALL HP OR ITS SUPPLIERS BE LIABLE FOR LOSS OF DATA OR FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON WARRANTY, CONTRACT, TORT, OR ANY OTHER LEGAL THEORY. Some countries, states, or provinces do not allow the exclusion or limitation of incidental or consequential damages. If so, the above limitation or exclusion may not apply to you.

The foregoing limitation of liability shall not apply in the event that any HP product sold hereunder is determined by a court of competent jurisdiction to be defective and to have directly caused bodily injury, death, or property damage; provided, that in no event shall HP's liability for property damage exceed the greater of $50,000 or the purchase price of the specific product that caused such damage.

Some states, provinces or countries do not allow the exclusion or limitation of incidental or consequential damages —including lost profit— so the above limitation or exclusion may not apply to you.

THE WARRANTY TERMS AND CONDITIONS CONTAINED HEREIN, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY, AND ARE IN ADDITION TO, THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

Third Party Products

HP does not warrant the performance, quality, form or content of third-party hardware or software. HP does not warrant third-party documentation that may be distributed with the workstation. These products may be warranted by the third-party and HP provides such products "as is." On-site visits caused by third-party software or

hardware are subject to standard per-incident travel and labor charges.

Customer Responsibilities

The customer is responsible for the security of its proprietary and confidential information on this system and for maintaining a procedure external to the products for reconstruction of lost or altered files, data, or programs (i.e. backups).

For on-site responses, the customer must provide: access to the product; adequate working space and facilities within a reasonable distance of the product; access to and use of all information and facilities determined necessary by HP to service the product; and operating supplies and consumables such as the customer would use during normal operation.

A representative of the customer must be present at all times during on-site responses. The customer must state if the product is being used in an environment which poses a potential health hazard to repair personnel; HP or the servicing dealer may require that the product be maintained by customer personnel under direct HP or dealer supervision.

Obtaining On-site Warranty Service

Support can be obtained from: U.S. and Canada - 1-800-593-6631. For Worldwide locations, visit:
http://www.hp.com/cpso-support/guide/psd/cscus.html
You will be asked to provide the product model number and serial number and may be required to provide dated proof of purchase.

During the on-site warranty period, customer-replaceable components may be serviced through expedited part shipment. In this event, HP will prepay shipping charges, duty, and taxes; provide telephone assistance on replacement of the component when necessary; and pay shipping charges, duty, and taxes for any part that HP asks to be returned.

On-site visits caused by non-Hewlett-Packard products —whether internal or external to the system processor unit— are subject to standard per-incident travel and labor charges.

On-site service for this product is restricted or unavailable in certain locations. In HP Excluded Travel Areas— areas where geographical obstacles, undeveloped roads, or unsuitable public transportation prohibit routine travel— service is provided on a negotiated basis at extra charge.

Response time for HP on-site service in an HP Service Travel Area is normally next business day (excluding HP holidays) for HP Travel Zones 1-3 (generally 100 miles or 160 Km from the HP office). Response time is second business day for Zones 4 and 5 (200 miles, 320 Km); third business day for Zone 6 (300 miles, 480 Km); and negotiated beyond Zone 6 (greater than 300 miles). Worldwide Customer Support Travel information is available from any HP Sales and Service Office.

Travel restrictions and response time for dealer or distributor service are defined by the participating dealer or distributor.

Service contracts which provide after-hour or weekend coverage, faster response time, or service in an Excluded Travel Area are often available from HP, an authorized dealer, or authorized distributor at additional charge.

Obtaining Parts Warranty Service

The customer may be responsible for installing the replacement part and restoring any operating system, applications, or data. HP may, at its option but is not obligated to, repair the product at the customer's premises or "on-site." If HP is unable to repair or replace the product, the customer will be entitled to a refund of the purchase price upon return of the product/parts.

When parts warranty service applies, the customer may be required to run HP-supplied diagnostic programs before an on-site visit or replacement part will be dispatched.

The customer shall return some defective parts upon HP demand. In that case, HP will prepay shipping charges for parts returned to the HP Parts Service Center.

Software Limited Warranty

HP warrants for a one (1) year period from the date of purchase, that the workstation operating system software will not fail to execute its programming instructions due to defects in materials and workmanship when all files are properly installed and used on HP workstations.

HP does not warrant that the operation of software products will be uninterrupted or error free.

Customer remedies shall be, at HP's option, replacement of the media or refund of purchase price based upon return of the product.

Removable Media (if supplied). HP warrants the removable media, if supplied, upon which the software product is recorded to be free from defects in materials and workmanship under normal use for a period of ninety (90) days from the date of purchase. In the event the media proves to be defective during the warranty period, the customer's remedy shall be to return the media to HP for replacement. Should HP be unable to replace the media within a reasonable amount of time, the customer's

alternative remedy shall be a refund of the purchase price upon return of the product and destruction of all other non-removable media copies of the software product.

HP Telephone Support Services

HP provides free telephone support for your workstation during the warranty period. This service will also provide technical assistance with the basic configuration and setup of your HP workstation and for the bundled or pre-loaded operating system.

HP does NOT provide telephone support for workstations configured as network servers. We recommend HP NetServers for your network server requirements.

Supplemental Warranty and Service Support

Enhanced hardware warranty services, such as after-hour or weekend coverage, faster response, on-site repair, and service in a HP-excluded travel area, may be available from HP at an additional charge.Contact the HP Customer Support Center at 1-800-593-6631for Itanium Workstations.

Contacting HP for Warranty Service

Worldwide:

Refer to: **http://www.hp.com/cpso-support/guide/psd/expectations.htm**l

United States and Canada:

Support can be obtained from: 1-800-593-6631.