HP Integrity rx2660 Server Installation Guide

Localized Documentation

This Installation Guide has been translated to the following languages:

日本語

http://www.docs.hp.com/ja/index.html

한글

http://www.docs.hp.com/ko/index.html

简体中文

http://www.docs.hp.com/zh_cn/index.html

繁體中文

http://www.docs.hp.com/zh_tw/index.html

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About This Document

This document describes how to unpack the HP Integrity rx2660 server, install additional components, install the server into a standard rack or pedestal configuration, power on the server, and start a server console session.

The document printing date and part number indicate the document's current edition. The printing date changes when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The document part number changes when extensive changes are made.

Document updates may be issued between editions to correct errors or document product changes. To ensure you receive the updated or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

The latest version of this document can be found on the HP website at:

http://www.docs.hp.com.

Intended Audience

This document is intended to provide technical product and support information for customers, authorized service providers, system administrators, and HP support personnel.

New and Changed Information in This Edition

This document has been updated to comply with the latest HP formatting standards.

Publishing History

The publishing history below identifies the edition dates of this manual. Updates are made to this publication on an unscheduled, as needed, basis. The updates will consist of a complete replacement manual and pertinent online or CD documentation.

Table 1 Publishing History Details

Manufacturing Part Number	Supported Operating Systems	Publication Date
AB419-9000A	• HP-UX, • Microsoft® Windows® • Linux® • OpenVMS	December 2006
AB419-9000B	• HP-UX, • Microsoft Windows • Linux • OpenVMS	May 2007
AB419-9000C	• HP-UX, • Microsoft Windows • Linux • OpenVMS	November 2007

Document Organization

The *HP Integrity rx2660 Installation Guide* is divided into several sections that contain information about installing the HP Integrity rx2660 server.

Safety Information

Provides high-level safety information for server installation.

Installation Sequence and Checklist

Provides the installation sequence and an installation checklist.

Unpacking and Inspecting the Server

Provides information about unpacking and inspecting the server.

Installing Additional Components

Provides procedures on installing additional components purchased with the server that were not factory installed.

Installing the Server Into a Rack or Pedestal

Provides procedures to mount the server into a rack or pedestal configuration.

Connecting Cables

Provides procedures to connect external cables to the server.

Connecting and Setting up the Console

Provides procedures to start a console session on a newly installed server.

Accessing the Host Console

Provides information and instructions on the different ways to access the host console.

Powering On and Powering Off the Server

Provides procedures to power the server on.

Verifying Installed Components In the Server

Provides procedures to verify the components installed in your server.

Installation Troubleshooting

Provides high-level troubleshooting procedures when installing the server.

Typographic Conventions

This document uses the following conventions.

WARNING!   A warning lists requirements that you must meet to avoid personal injury.

CAUTION: A caution provides information required to avoid losing data or to avoid losing system functionality.

NOTE: A note highlights useful information such as restrictions, recommendations, or important details about HP product features.

Book Title	The title of a book. On the web and on the Instant Information CD, it may be a link to the book itself.
KeyCap	The name of a keyboard key. **Return** and **Enter** both refer to the same key.
Emphasis	Text that is emphasized.
Bold	Text that is strongly emphasized.
Term	The defined use of an important word or phrase.
ComputerOut	Text displayed by the computer.
UserInput	Commands and other text that you type.
Command	A command name or qualified command phrase.
Option	An available option.
Variable	The name of a variable that you can replace in a command or function or information in a display that represents several possible values.
[ ]	The contents are optional in formats and command descriptions. If the contents are a list separated by |, you must select one of the items.
{ }	The contents are required in formats and command descriptions. If the contents are a list separated by |, you must select one of the items.
...	The preceding element may be repeated an arbitrary number of times.

| Separates items in a list of choices.

HP-UX Release Name and Release Identifier

Each HP-UX 11i release has an associated release name and release identifier. The `uname`
`(1)` command with the `-r` option returns the release identifier. This table shows the releases
available for HP-UX 11i.

Table 2 HP-UX 11i Releases

Release Identifier	Release Name	Supported Processor Architecture
B.11.11	HP-UX 11i v1	PA-RISC
B.11.20	HP-UX 11i v1.5	Intel® Itanium®
B.11.22	HP-UX 11i v1.6	Intel Itanium
B.11.23	HP-UX 11i v2	Intel Itanium
B.11.31	HP-UX 11i v3	Intel Itanium

Warranty Information

The latest versions of the *BCS Global Limited Warranty and Technical Support* documentation is
posted on the HP website in the *Enterprise Servers, Workstations, and System Hardware* collection
under each server to which it applies, at: **http://www.docs.hp.com**

Related Information

You can find other information on HP server hardware management, Microsoft Windows, and
diagnostic support tools in the following publications.

Web Site for HP Technical Documentation: **http://www.docs.hp.com/en/hw.html**

Server Hardware Information: **http://docs.hp.com/hpux/hw/**

Windows Operating System Information   You can find information about administration of the
Microsoft Windows operating system at the following websites, among others:
- **http://docs.hp.com/windows_nt/**
- **http://www.microsoft.com/technet/**

Diagnostics and Event Monitoring: Hardware Support Tools   Complete information about HP
hardware support tools, including online and offline diagnostics and event monitoring tools, is
available on the HP website at:**http://docs.hp.com/hpux/diag/**

This site has manuals, tutorials, FAQs, and other reference material.

Web Site for HP Technical Support: **http://us-support2.external.hp.com/**

Books about HP-UX Published by Prentice Hall   The **http://www.hp.com/hpbooks/** website
lists the HP books that Prentice Hall currently publishes, such as:
- *HP-UX 11i System Administration Handbook*
  http://www.hp.com/hpbooks/prentice/ptr_0130600814.html
- *HP-UX Virtual Partitions*
  http://www.hp.com/hpbooks/prentice/ptr_0130352128.html

HP books are available worldwide through bookstores, online booksellers, and office and
computer stores.

HP Encourages Your Comments

HP encourages your comments concerning this document. We are truly committed to providing
documentation that meets your needs.

Send comments to: **netinfo_feedback@cup.hp.com**.

Include the title, manufacturing part number, and any comment, error found, or suggestion for improvement you have concerning this document. Also, please include what we did right so we can incorporate it into other documents.

1 Installing the Server

This chapter provides information and procedures for installing the HP Integrity rx2660 server.

This chapter addresses the following topics:

Safety Information

Use care to prevent injury and equipment damage when performing removal and replacement procedures. Voltages can be present within the server. Many assemblies are sensitive to damage by electrostatic discharge (ESD).

Follow the safety conventions listed below to ensure safe handling of components, to prevent injury, and to prevent damage to the server:

- When removing or installing any server component, follow the instructions provided in this guide.
- If installing a hot-swappable or hot-pluggable component when power is applied (fans are running), reinstall the server cover immediately to prevent overheating.
- If installing a hot-pluggable component, complete the required software intervention prior to removing the component.
- If installing an assembly that is neither hot-swappable nor hot-pluggable, disconnect the power cable from the external server power receptacle before starting the installation.

⚠️ **WARNING!**   Ensure that the system is powered off and all power sources are disconnected from the server prior to removing or installing server hardware (unless you are removing or installing a hot-swappable or hot-pluggable component).

Voltages are present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is off.

Failure to observe this warning can result in personal injury or equipment damage.

- Do not wear loose clothing that can snag or catch on the server or on other components.
- Do not wear clothing subject to static charge buildup, such as wool or synthetic materials.
- If installing an internal assembly, wear an antistatic wrist strap and use a grounding mat, such as those included in the Electrically Conductive Field Service Grounding Kit (HP 9300-1155).
- Handle accessory boards and components by the edges only. Do not touch any metal edge connectors or any electrical components on accessory boards.

Installation Sequence and Checklist

Table 1-1 lists the server installation steps. Follow these steps in sequence to complete a successful installation.

Table 1-1 Installation Sequence Checklist

Step	Description	Completed
1	Unpack and inspect the server shipping container. Inventory the contents using the packing slip.	
2	Install any additional components shipped with the server.	
3	Install the server into a rack or pedestal.	
4	Connect cables to the server.	
	a: Connect ac input power cable.	
	b: Connect LAN core I/O cable.	
5	Connect and set up the console for access.	
6	Power on the server.	
7	Access the console.	
8	Verify components in the server.	
9	Boot the operating system. **NOTE:** For information on the operating system, see the *HP Integrity rx2660 User Service Guide* or your operating system documentation.	
10	Verify the server configuration.	

Unpacking and Inspecting the Server

This section describes procedures you perform before installation. Ensure that you have adequately prepared your environment for the new server, received the components that you ordered, and verified that the server and its containers are in good condition after shipment.

This section addresses the following topics:

- "Verifying Site Preparation" (page 14)
- "Inspecting the Shipping Containers for Damage" (page 15)
- "Unpacking the Server" (page 15)
- "Checking the Inventory" (page 15)
- "Returning Damaged Equipment" (page 15)
- "Unloading the Server With a Lifter" (page 15)

Verifying Site Preparation

Verifying site preparation is an essential factor of a successful server installation, and includes the following tasks:

- Gather LAN information. The IP addresses for the iLO 2 MP LAN and the system LAN are located on the right side of the server near the bezel, above the rack mounting rail.
- Establish a method to connect to the server console.
- Verify electrical requirements. Ensure that grounding specifications and power requirements are met.
- Validate server physical space requirements.
- Confirm environmental requirements.

For more information on server electrical, physical space, and environmental requirements, see the *HP Integrity rx2660 Site Preparation Guide*.

Inspecting the Shipping Containers for Damage

HP shipping containers protect their contents under normal shipping conditions. After the equipment arrives, carefully inspect each carton for signs of shipping damage. Shipping damage constitutes moderate to severe damage, such as punctures in the corrugated carton, crushed boxes, or large dents. Normal wear or slight damage to the carton is not considered shipping damage. If you find shipping damage to the carton, contact your HP customer service representative immediately.

Unpacking the Server

To unpack the server, follow these steps:

1. Follow the instructions printed on the outside top flap of the carton to remove the banding and the outer carton from the server pallet.
2. Remove all inner accessory cartons and the top foam cushions, leaving only the server.

IMPORTANT: Inspect each carton for shipping damage as you unpack the server.

Checking the Inventory

The sales order packing slip lists all the equipment shipped from HP. Use this packing slip to verify that all of the equipment has arrived.

NOTE: To identify each item by part number, refer to the sales order packing slip.

Returning Damaged Equipment

If the equipment is damaged, contact your HP customer service representative immediately. The service representative initiates appropriate action through the transport carrier or the factory and assists you in returning the equipment.

Unloading the Server With a Lifter

WARNING! Use caution when using a lifter. Because of the weight of the HP Integrity rx2660 server, you must center the server on the lifter forks before lifting it off the pallet to avoid injury.

NOTE: HP recommends that you follow your local guidelines when lifting equipment.

To unload the server from the pallet using a lifter (if necessary), follow these steps:

1. Unpack the server.
2. Unroll the bottom corrugated tray corresponding to the side on which the lifter will be placed, and slide the server as close to that edge of the pallet as possible.
3. Break off any foam packaging that can prevent the lifter from being fully inserted under the server. Do not remove the foam packaging from the corners of the server. This foam is required to elevate the server and to enable the forks of the lifter to be placed under the server.
4. Insert the lifter forks under the server.
5. Carefully roll the lifter forward until it is fully positioned against the side of the server.
6. Slowly raise the server off the pallet until it clears the pallet cushions.
7. Carefully roll the lifter and server away from the pallet. Do not raise the server any higher than necessary when moving it over to the rack.

Installing Additional Components

This section describes how to install components into the server that are not factory-installed. If you have additional components to install, be sure to install the additional components before installing the server into your rack or pedestal configuration. Most servers are pre-configured with all components installed prior to shipping from the HP factory.

This section addresses the following topics:

Introduction

The rx2660 server contains external components (installable without removing the top cover), and internal components that are accessed by removing the top cover.

The externally accessible components are as follows:

- SAS hard drives
- Power supplies

The internal components are as follows:

- System memory
- Processors
- PCIe/PCI-X cards

⚠ **WARNING!** Ensure that the system is powered off and all power sources are disconnected from the server prior to removing or installing server hardware (unless you are removing or installing a hot-swappable or hot-pluggable component).

Voltages are present at various locations within the server whenever an ac power source is connected. This voltage is present even when the main power switch is turned off.

Failure to observe this warning can result in personal injury or damage to the equipment.

Installing a SAS Hard Drive and Removing a SAS Hard Drive Filler

There are eight hot-pluggable SAS hard drive slots located on the front of the server. Slots without SAS hard drives installed have slot fillers installed for cooling purposes. To install a SAS disk drive you must first remove the hard drive filler.

Removing a SAS Hard Drive Filler

To remove a hard drive filler, follow these steps:

1. Squeeze the tabs on the front of the filler to release it from the slot in the drive bay (1).

2. Pull gently until the filler slides out of the server (2).

Figure 1-1 Removing a Hard Drive Filler
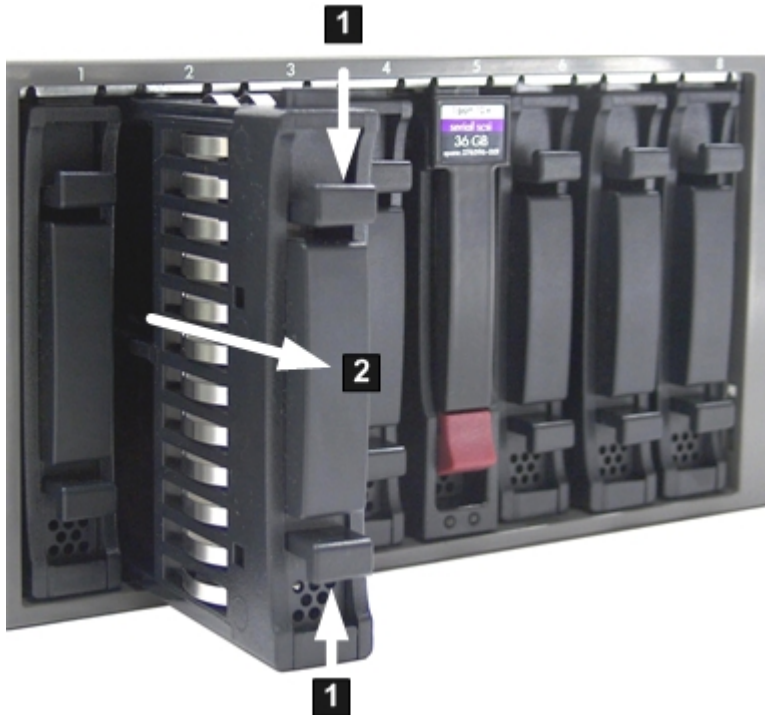
> **NOTE:** SAS hard drives are loaded in order, starting with slot 8, going from right to left, to slot 1.
>
> Save the SAS hard drive filler for future use. For airflow purposes, always place hard drive fillers in slots that do not contain SAS disk drives.

Installing a SAS Hard Drive

To install a SAS hard drive, follow these steps.

1. Insert the hard drive into the slot guides, and slide the drive into the slot until it seats into the socket on the disk backplane (1).

2. Close the drive extraction handle by pushing it downward until it clicks into place (2).
    Figure 1-2 shows how to install a SAS hard drive.

Figure 1-2 Installing a SAS Hard Drive
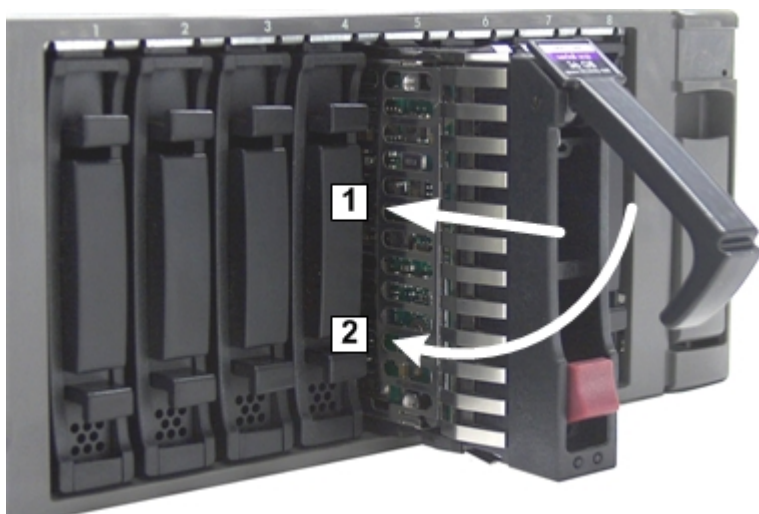
Installing a Hot-Swappable Power Supply

The Data Center server has at least one hot-swappable power supply installed before shipping. This power supply is located at the rear of the server. You can install a second, optional power supply to provide 1+1 capability. Use the following procedures to install an additional power supply.

> ⚠ **CAUTION:** Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server.

> 📝 **NOTE:** If you have an Office Friendly server, you have two power supplies already installed. You do not need to perform this procedure.

> **NOTE:** The power supply is a hot-swappable device. It does not require interaction with the operating system before the it is removed from or installed into the server.

Power Supply Loading Guidelines

The supported configuration of the server requires a minimum of one power supply installed in slot P1. The right slot (viewed from the rear of the server) is slot P1, and the left slot is P2.

Figure 1-3 Power Supply Location
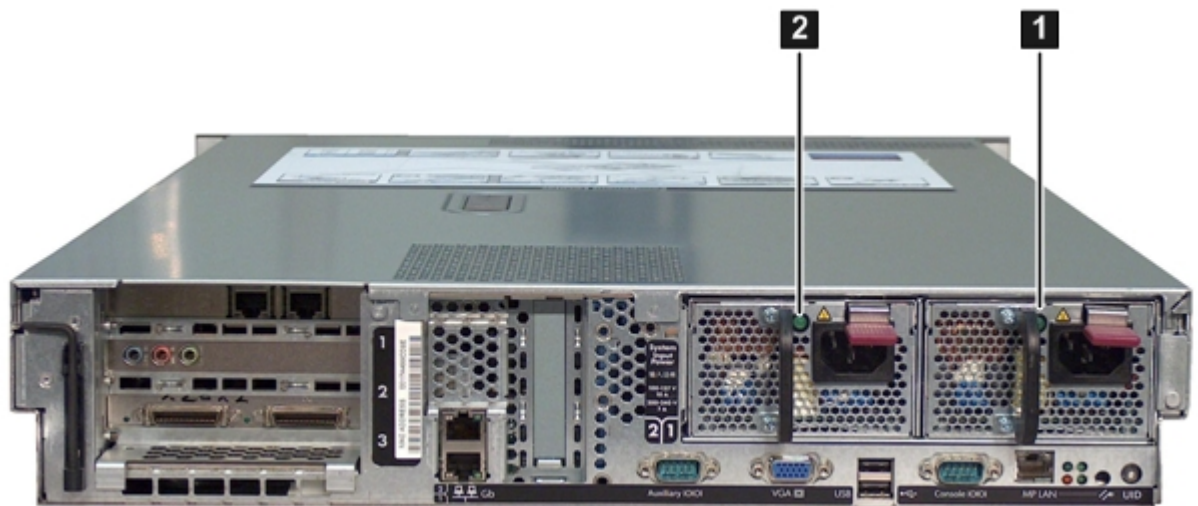
1 Power supply 1	**2** Power supply 2

⚠ **CAUTION:** If you do not purchase a second power supply, the empty power supply slot must remain covered with the supplied metal filler panel. Failure to observe this caution can result in server shutdown due to overheating.

Installing a Power Supply

To install a power supply, follow these steps.

1. Remove the metal slot filler by pulling it straight out of the server using the finger holes (1).
2. Support the power supply with both hands, and slide it into the empty slot until it clicks into place (2).

📝 **IMPORTANT:** Ensure the power supply is flush with the adjacent power supply.

Figure 1-4 shows how to install a power supply.

Figure 1-4 Installing a Power Supply
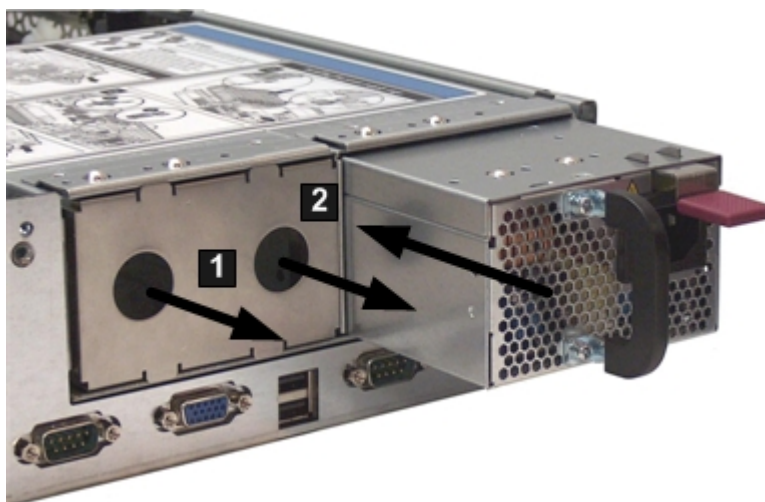
Removing the Top Cover

When installing internal components into the server, you must first remove the top cover. Figure 1-5 (page 20) shows how to remove the top cover.

To remove the top cover, follow these steps.

1. Unlock the cover release lever (if necessary) by turning the cam approximately 90 degrees counterclockwise with the Allen wrench provided on the rear panel of the server (1).
2. Pull up on the cover release lever to disengage the top cover from the chassis (2).
3. Slide the cover toward the rear of the server until the tabs release from the slots in the chassis (3).
4. Lift the cover off the chassis (4).

Figure 1-5 Removing the Top Cover
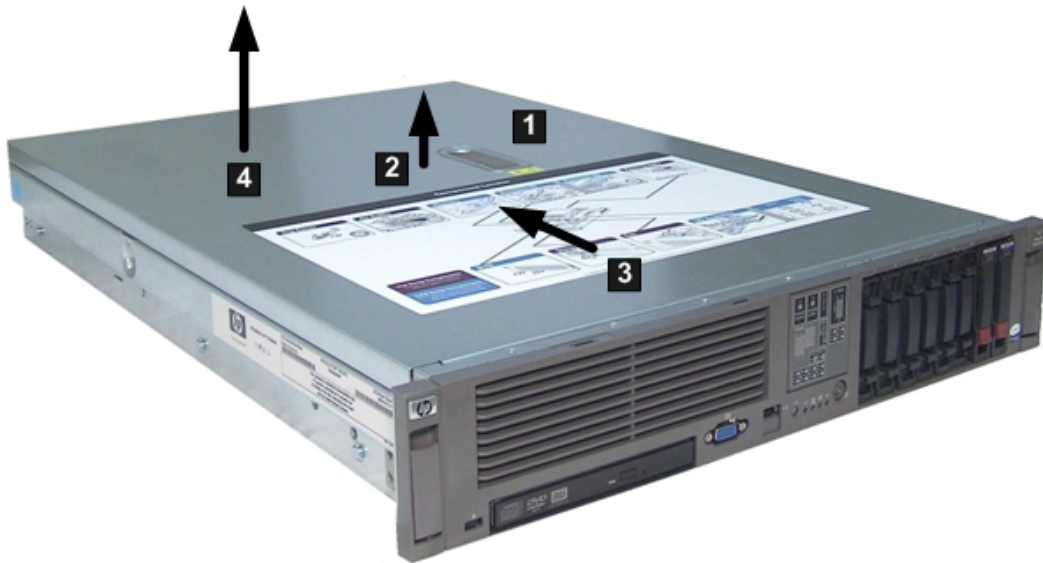
Removing the Airflow Guide

The airflow guide in the rx2660 server directs airflow from eight of the system fans to the processors and the system memory on the system board. To install an additional processor or system memory, you must remove the airflow guide (and optionally, the RAID battery).

To remove the airflow guide from the server, follow these steps:

1. Remove the top cover.

2. If the RAID battery is connected to the airflow guide, remove it before removing the airflow guide. To remove the RAID battery, follow these steps:
   a. Pull the RAID battery lock away from the RAID battery (1).
   b. Slide the RAID battery toward the front of the server to disengage it from the airflow guide (2).
   c. Pull straight up on the RAID battery to remove it from the airflow guide.

   Figure 1-6 Removing the Airflow Guide
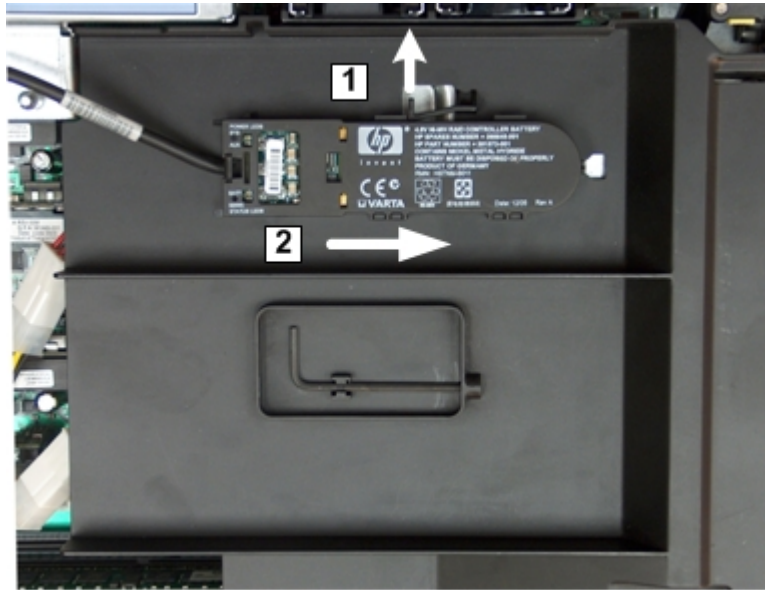
3. Lift up on the fan carrier handle approximately 5 cm (2 in) to allow the airflow guide to be lifted out of the server (1).

4. Lift the airflow guide straight up and out of the server (2).

Figure 1-7 shows the Data Center fan carrier.

Figure 1-7 Fan Carrier Handle

Installing System Memory

The rx2660 server has eight system memory (DIMM) slots located on the system board.

⚠ **CAUTION:** Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server.

Memory Installation Conventions

Before installing memory, read and understand the following memory installation conventions:

- Supported DIMM sizes and memory configurations
- DIMM load order
- DIMM slot IDs

Supported DIMM Sizes

System DIMMs seat onto the memory boards. The minimum server configuration requires at least one memory pair (group of two DIMMs).

The supported DIMM sizes for the server are as follows:

- 512 MB
- 1 GB
- 2 GB
- 4 GB

Memory Pairs

When installing memory, use a minimum of one pair of like-sized DIMMs. You can install additional DIMMs later. Install DIMMs into the appropriate slots on the system board; each slot has a unique ID.

Figure 1-8 shows the DIMM slot IDs.

Figure 1-8 Memory Location and Slot IDs

CAUTION: Failure to observe the following cautions results in system degradation or failure:
- Do not mix DIMM sizes or types within a pair.
- Load DIMM pairs in order of size from largest to smallest. For example, if you have a pair of 4 GB DIMMs and a pair of 1 GB DIMMs, install the pair of 4 GB DIMMs first.

Table 1-2 lists the memory load order.

Table 1-2 Memory Load Order

Pair Number	Memory Slots
1	0A; 0B
2	1A; 1B
3	2A; 2B
4	3A; 3B

Memory Loading Rules and Guidelines

Use the following rules and guidelines when installing memory:
- Install DIMMs in pairs
- Ensure that DIMMs within a pair are identical
- Install DIMM pairs in order of size from largest to smallest
- Install DIMM pairs in the specified order shown in Table 1-2

Installing Memory

To install memory, follow these steps:

1. Remove the top cover from the server. See "Removing the Top Cover" (page 19).
2. Remove the airflow guide. See "Removing the Airflow Guide" (page 20).
3. Complete the following memory installation prerequisite tasks before installing the memory:
   a. Determine the DIMM load order. For more information, see "Memory Load Order" (page 23).
   b. See Figure 1-8 (page 23) to determine which DIMM slots to populate.
   c. Read, understand, and follow the general guidelines to install memory in the server..
4. Install each DIMM.
   a. Align the DIMM with the slot located on the memory board, and align the key in the connector with the notch in the DIMM.
   b. Firmly and evenly push on each end of the DIMM until it seats into the slot.
   c. Ensure the extraction levers are in the fully closed position.
5. Replace the airflow guide if you are finished installing additional components. See "Replacing the Airflow Guide" (page 29).
6. Replace the top cover if you are finished installing additional components. See "Replacing the Top Cover" (page 35). Otherwise, continue with installing components.

Installing a Processor

The rx2660 server utilizes single- or dual-core processors. Dual-core processors contain two cores that function as separate processors. Dual-core processors double the processing power of the processor while maintaining the physical dimensions of a single processor.

The server holds one or two single- or dual-core processors that provide the following configuration options:

- 1P/1C (One processor / one core)
- 1P/2C (One processor / two cores)
- 2P/2C (Two processors / two cores)
- 2P/4C (Two processors / four cores)

The server has one processor installed in slot Module 0 before shipping. Install the additional processor in slot Module 1.

⚠ **CAUTION:** Intel Montvale processors cannot be intermixed with similar Montecito processors. Processor speed and cache size must be identical for all processors in a system. To ensure compatibility whether upgrading, replacing, or adding an additional processor, use processors with identical part numbers.

Failure to observe this caution results in performance degradation or system failure.

To ensure compatibility, use processors with identical part numbers.

CAUTION: Observe all ESD safety precautions before attempting this procedure. Failure to follow ESD safety precautions can result in damage to the server.

Processor Load Order

The server holds up to two single- or dual-core processors on the processor board. The slots on the processor board are labeled Module 0 and Module 1. If the server has only one processor, it is installed in slot Module 0. Install the second processor in slot Module 1.

Table 1-3 lists the processor load sequence.

Table 1-3 rx2660 Processor Load Order

Processor	Slot
0	Module 0
1	Module 1

Required Tools

To install processors, use the processor install tool fastened to the airflow guide.

TIP: Prior to installing a processor into the server, read the following instructions carefully and refer to the figures in this section for a complete understanding of this process.

To install a processor, follow these steps:

1. Remove the top cover. See "Removing the Top Cover" (page 19)
2. Remove the airflow guide. See "Removing the Airflow Guide" (page 20)

3. Open the processor cage.
    a. Grasp the processor cage handle and apply adequate force to rotate the handle upward.
        Figure 1-9 shows the processor cage handle open.

        Figure 1-9 Processor Cage Handle
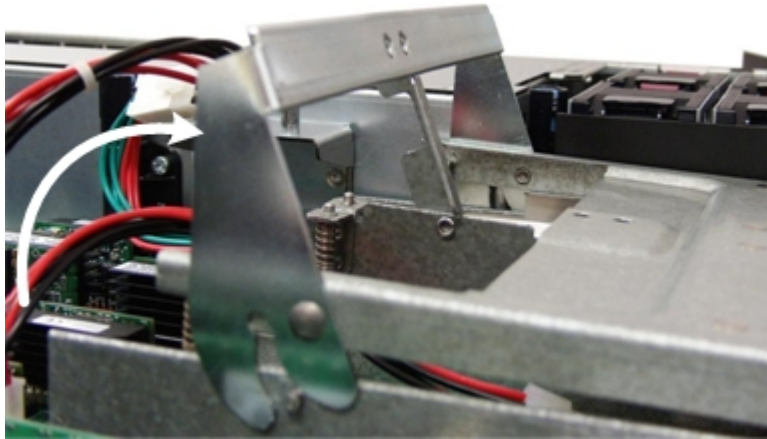
    b. Use the handle to rotate the cage closure approximately 90 degrees toward the front of
        the assembly until it stops.

        Figure 1-10 shows the processor cage fully open.

    Figure 1-10 Processor Cage Open
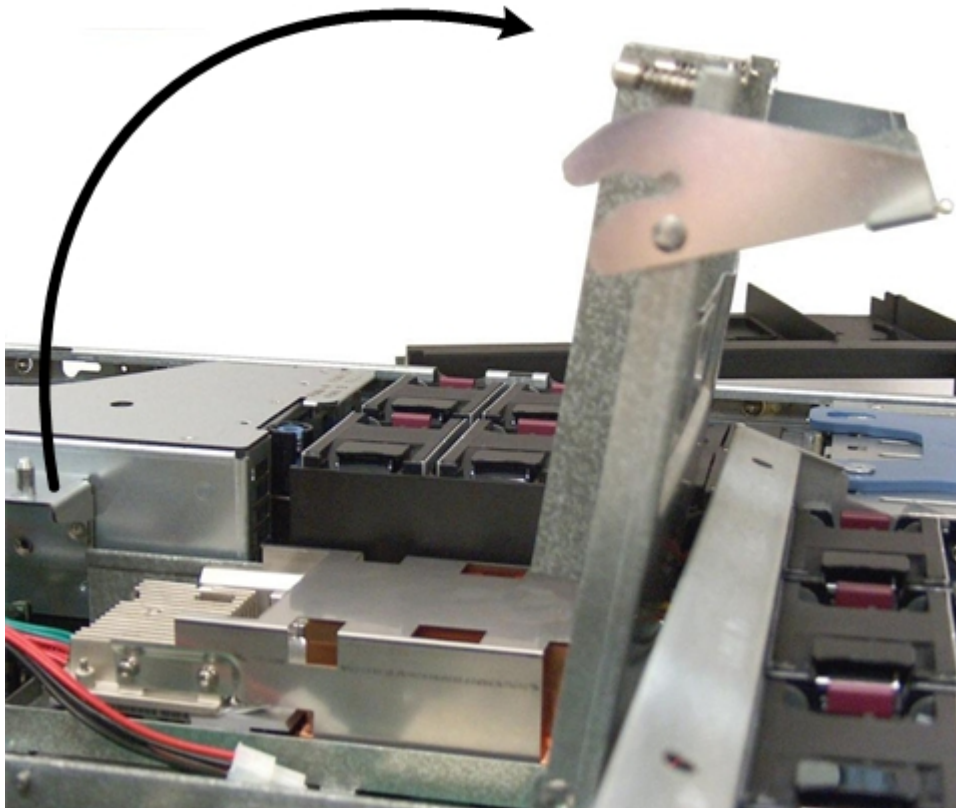
    IMPORTANT: Ensure the processor slot is entirely exposed. The processor must clear the
    cage enclosure for proper installation.

4. Locate the slot Module 1 on the system board for the processor installation.

Figure 1-11 shows the slot locations on the system board.

Figure 1-11 ZIF Socket, Alignment Holes and Posts, and Slot Locations
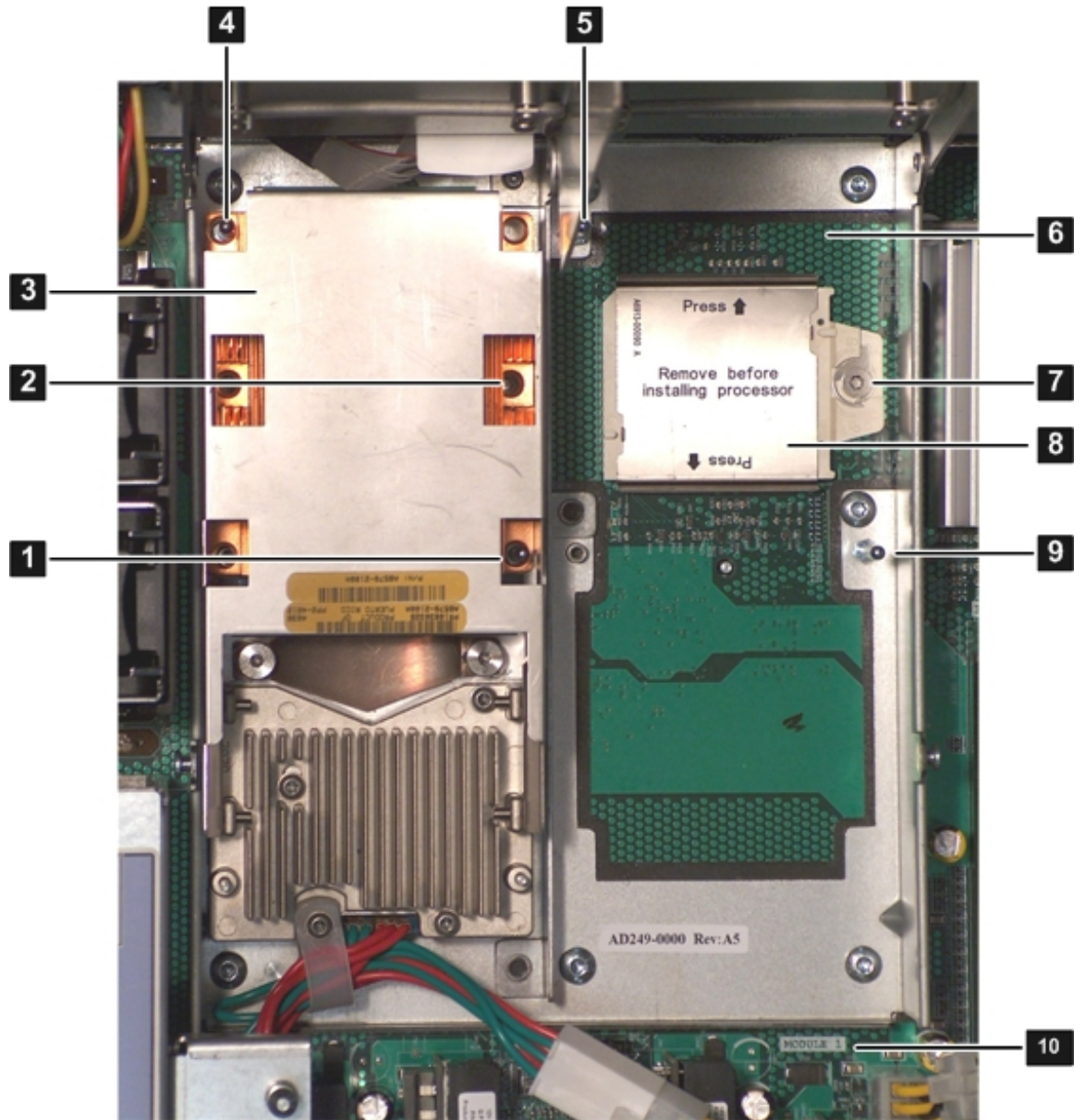
1	Alignment hole on the processor	6	Processor slot 1 on the system board (Module 1)
2	Access hole for the ZIF socket	7	ZIF socket on the system board
3	Processor 0	8	Processor socket dust cover
4	Alignment hole on the processor	9	Alignment post on the system board
5	Alignment post on the system board	10	Module 1 label on the system board

5. Remove the plastic airflow blocker covering the processor slot (if installed).
6. Remove the protective dust cover from the processor socket (if installed).
7. Ensure the cam on the ZIF socket is in the unlocked, counterclockwise position.

Figure 1-12 shows the unlocked ZIF socket.

Figure 1-12 ZIF Socket
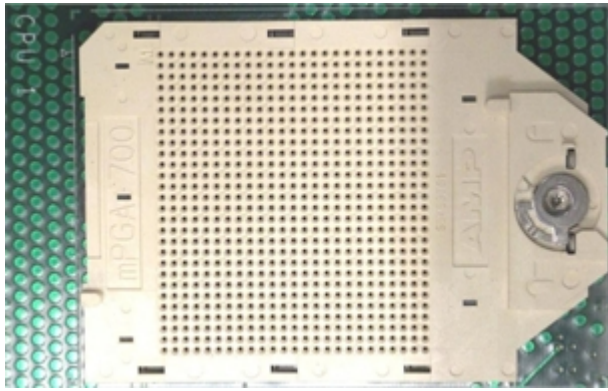
> ⚠ **CAUTION:** The ZIF socket for the processor is locked and unlocked by half a full turn of the processor install tool. The counterclockwise 180 degree rotation (half turn) unlocks the socket. A clockwise 180 degree rotation locks the socket. Attempting to turn the locking mechanism more than 180 degrees can severely damage the socket.

8. Remove any protective packaging from the processor.

> 📝 **NOTE:** Protective covers are installed to protect connector pins. Save these covers for future use.

9. Inspect the processor pins to verify the pins are not bent.
10. Align the alignment holes on the processor with the alignment posts on the processor cage, and carefully lower the processor onto the processor socket. Figure 1-11 (page 27) shows the alignment holes and posts on the processor and system board.

> ⚠ **CAUTION:** Do not press the processor into the socket. When properly aligned, the processor pins seat into the socket. No additional pressure is required. Damage to the pins may occur if pressure is applied.

11. Lock the processor into the socket on the processor board.
    a. Remove the processor install tool (2.5 mm driver) from the tool holder on the airflow guide.
    b. Insert the processor tool into the hole that runs down the side of the heatsink.
    c. Rotate the processor tool clockwise 180 degrees to lock the ZIF socket.
    d. Refasten the processor install tool (2.5 mm driver) to the tool holder on the airflow guide.
12. Connect the processor power cable into the connector cable that attaches directly to the system board.

    Figure 1-13 shows the processor power cable connectors.

Figure 1-13 Processor Power Connectors
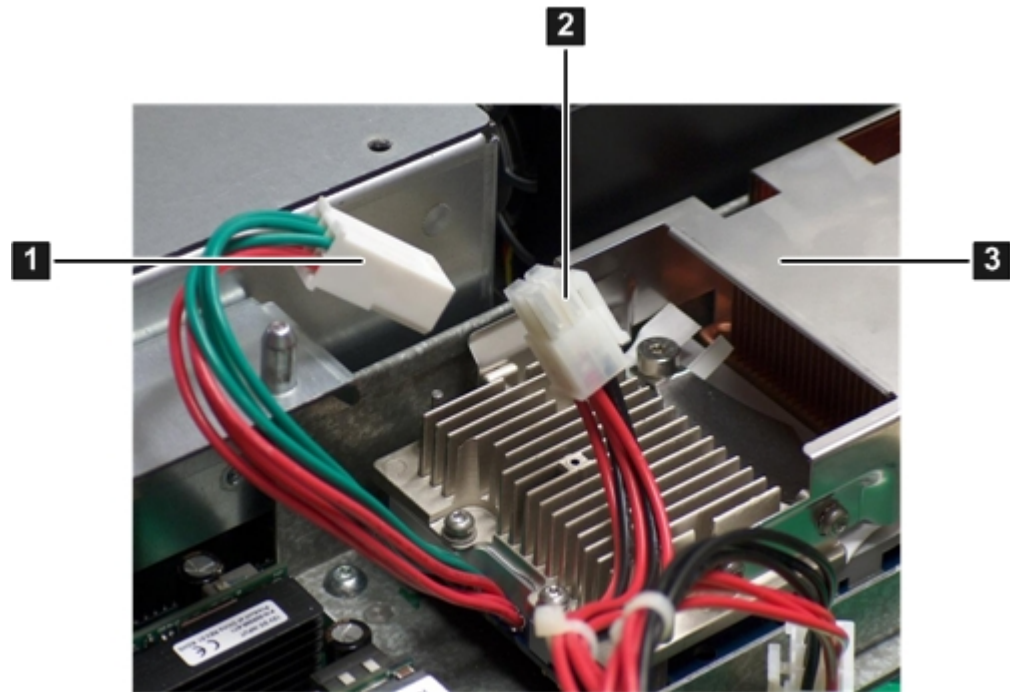
1 Processor power cable and connector	**2** System board power cable and connector	**3** Processor

13. Close the processor cage.
    a. Grasp the processor cage handle and rotate the cage closure inward toward the rear of the assembly until it is completely closed.
    b. Apply adequate force to push the handle down until it is flush with the cage.
14. Replace the airflow guide if you are finished installing additional components. See "Replacing the Airflow Guide" (page 29).
15. Replace the top cover if you are finished installing additional components. See "Replacing the Top Cover" (page 35)

Replacing the Airflow Guide

Use this procedure to replace the airflow guide in the server when you are finished installing additional equipment into the server.

To replace the airflow guide, follow these steps:

1. Ensure the fan carrier handle is raised approximately 5 cm (2 in) to allow clearance for the airflow guide replacement.
2. Place the airflow guide on the edge of the fan carrier and set it down into place on the processor cage (1).
3. Push the fan carrier handle down until it is flush against the airflow guide (2).

   Figure 1-14 shows the fan carrier handle raised.

Figure 1-14 Replacing the Airflow Guide
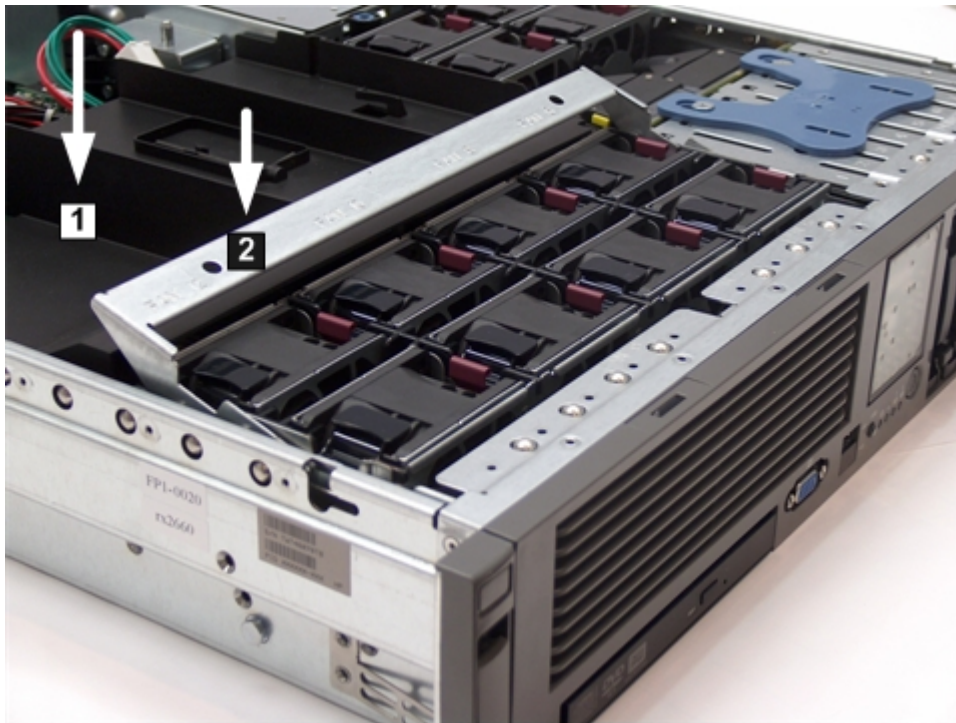
4. Ensure the fans have not become disconnected when opening the fan carrier handle by pushing down on all the fans to make sure they are seated properly.

Installing Additional PCIe/PCI-X Cards

The rx2660 server supports PCI-X cards and PCI-Express (PCIe) cards. There are three PCIe/PCI-X slots in the I/O backplane located on the system board. Depending on your server configuration, you have one of the following I/O backplane assemblies, with the included riser board:

- PCI-X riser board: Three full-length PCI-X public slots
- PCIe/PCI-X riser board: Two PCIe x8 public slots and one full-length PCI-X public slot

NOTE: Wake-on-LAN is not enabled on any of the PCIe/PCI-X slots.

PCIe/PCI-X hot-plugging is not supported on the rx2660 server.

Removing the I/O Backplane from the Server

To install an additional PCIe/PCI-X card into the server, you must first remove the I/O backplane from the system board.

To remove the I/O backplane assembly, follow these steps:

1. Remove the top cover. See "Removing the Top Cover" (page 19).

2. Loosen the two captive screws on the I/O backplane assembly. Follow these steps to loosen the captive screws:

   a. Press the blue button to release the black knob. Figure 1-15 shows the location of the I/O backplane assembly captive screws.

   Figure 1-15 I/O Backplane Assembly Screw Locations
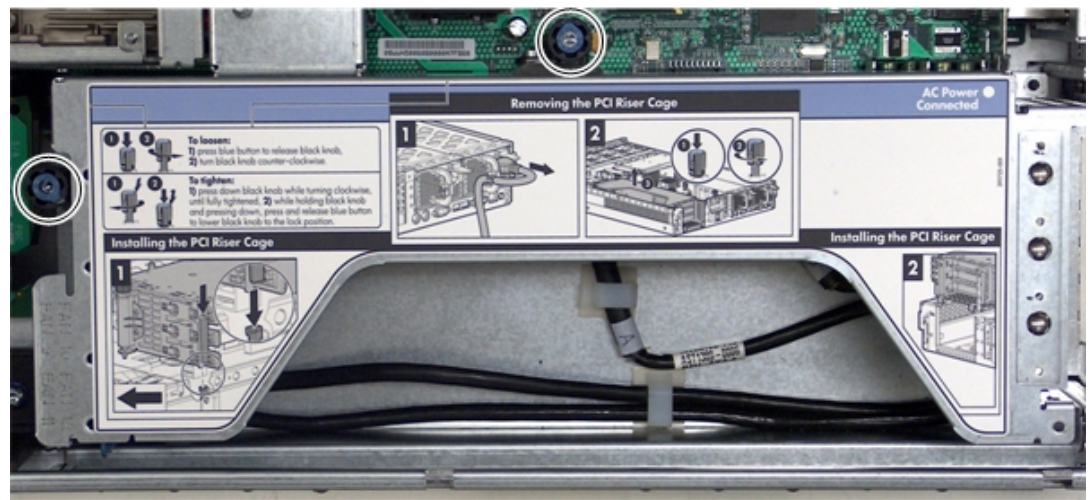
   b. Turn the black knob counterclockwise until the captive screw is free from the server.

3. Lift the assembly straight up and out of the server.

> **NOTE:** Depending on your configuration, you have one of the I/O backplane assemblies shown in Figure 1-16. The top I/O backplane assembly is a PCIe/PCI-X backplane assembly, and the bottom is a PCI-X backplane assembly.

Figure 1-16 I/O Backplane Assemblies
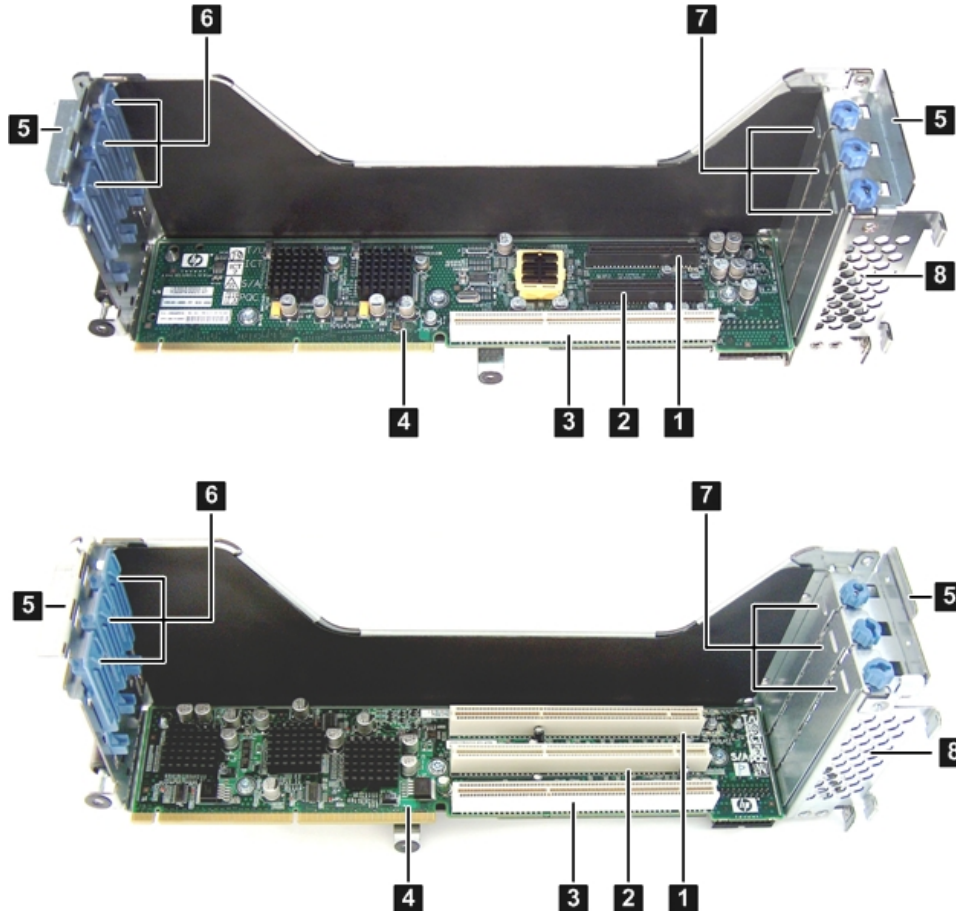
1	Slot 1 (top, PCIe; bottom PCI-X)	**5**	Guide tabs
2	Slot 2 (top, PCIe; bottom PCI-X)	**6**	Gate latches (for full-length cards)
3	Slot 3 (PCI-X)	**7**	Bulkhead fillers
4	I/O backplane riser board (top, PCIe; bottom PCI-X)	**8**	Sheet metal enclosure

Installing a PCIe/PCI-X Card

To install a PCIe/PCI-X card, follow these steps:

1. Select an empty slot that is appropriate for the card you are installing. X shows both a PCI-X and PCIe/PCI-X riser boards.
2. Remove the PCIe/PCI-X bulkhead filler by unscrewing the blue captive screw using a Torx-T15 screwdriver.

3. Insert the PCIe/PCI-X card into the empty slot, and exert even pressure to seat the card in the slot.

⚠ **CAUTION:** Ensure that you fully seat the card into the slot or the card can fail after power is applied to the slot.

4. Close the gate latch to secure the end of the card if it is full length.
5. Attach the PCIe/PCI-X card to the I/O backplane by tightening the T-15 screw on the I/O backplane.

Replacing the I/O Backplane Card Cage

To replace the I/O backplane card cage into the server, follow these steps:

1. Align the tabs with the guide slots in the server and slide the I/O backplane assembly into place.
2. Tighten the two captive screws.
   a. Press the black knob down while turning it clockwise until it is fully tightened.
   b. While holding the black knob and pressing down, press and release the blue button to lower the black knob to the locked position.
3. If you are done installing additional components, replace the top cover. See "Replacing the Top Cover" (page 35). If you have more components to install, continue on to the next section.

Installing the SAS Smart Array and PCIe Expansion Boards

The rx2660 server has two slots dedicated for the SAS Smart Array P400 controller and PCIe expansion boards. If you purchase the RAID option, you must install these boards on the system board. See for the slot locations on the system board.

Installing the PCIe Expansion Board

To install the PCIe expansion board into the server, follow these steps:

1. Pinch the board locking guides to expose the slot guides to the system board slot (1) (see Figure 1-17).
2. Guide the PCIe expansion board down the rails and push into the slot on the system board (2).

Figure 1-17 shows the location of the SAS Smart Array P400 controller and PCIe expansion board.

Figure 1-17 SAS Smart Array P400 Controller and PCIe Expansion Board Slots
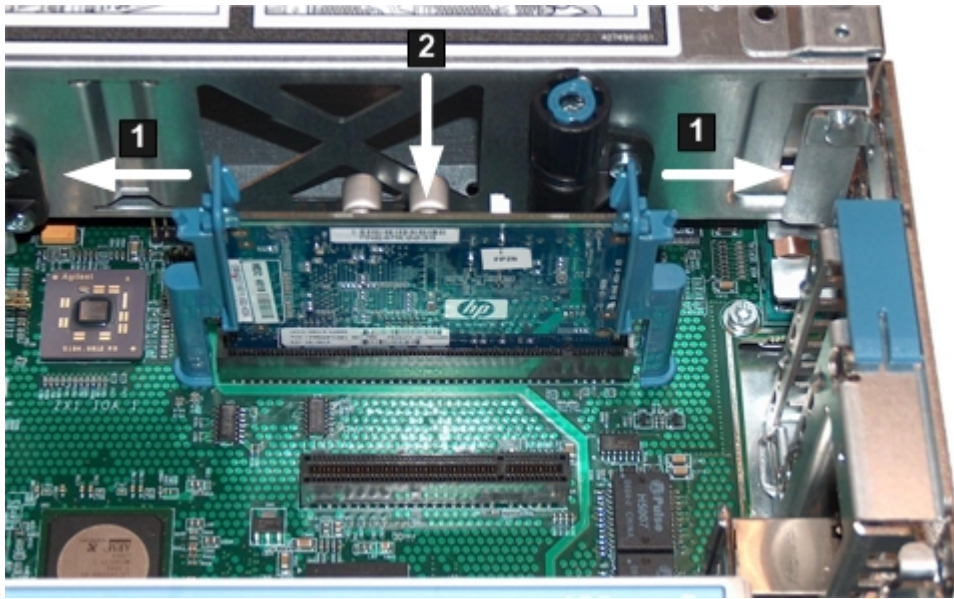
> **NOTE:** The board and slot are keyed, so the board only fits one way into the slot.

3. Close the board locking guides to lock the PCIe expansion board into place on the system board.

Installing the SAS Smart Array P400 Controller and RAID Battery

To install the SAS Smart Array P400 controller and the battery into the server, follow these steps:

1. Open the blue SAS Smart Array P400 controller board lock on the rear panel of the server. See Figure 1-18 (page 34) shows the location of the board lock.
2. Install the SAS Smart Array P400 controller into the slot on the system board as shown in Figure 1-18.
3. Close the board lock over the tab on the SAS Smart Array P400 controller and snap it shut.
4. Attach the SAS cables to the SAS Smart Array P400 controller.

Figure 1-18 Board Lock
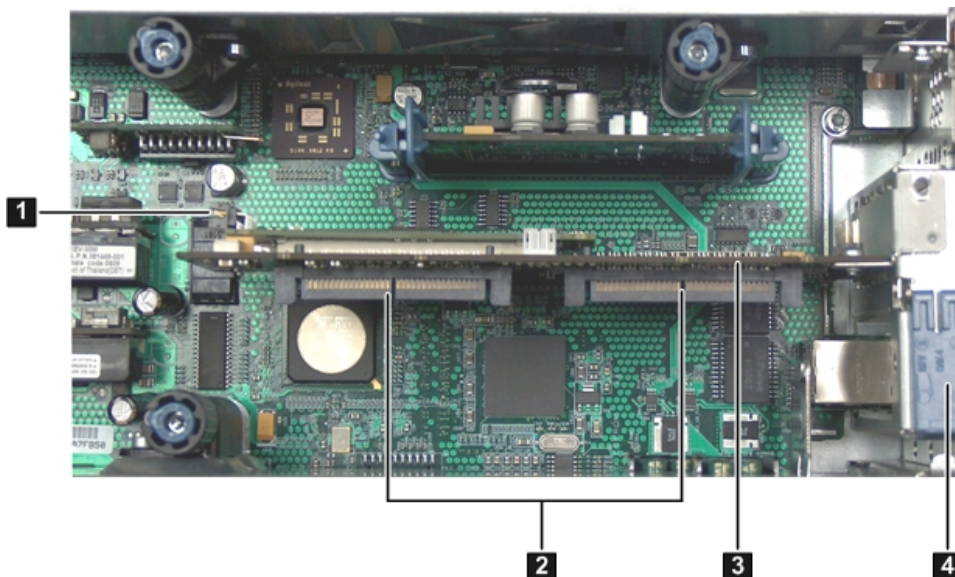
1 RAID battery port on the SAS Smart Array controller	**3** SAS Smart Array P400 controller	**4** SAS cable ports on the SAS Smart Array P400 controller
2 SAS Smart Array P400 controller board lock		

5. To install the RAID battery onto the airflow guide, follow these steps:
    a. Align the tabs on the RAID battery with the slots on the airflow guide.
    b. Slide the RAID battery toward the rear of the server until the locking clip locks the RAID battery in place (1).

    Figure 1-19 shows how to lock the RAID battery onto the airflow guide.

Figure 1-19 Installing the RAID battery
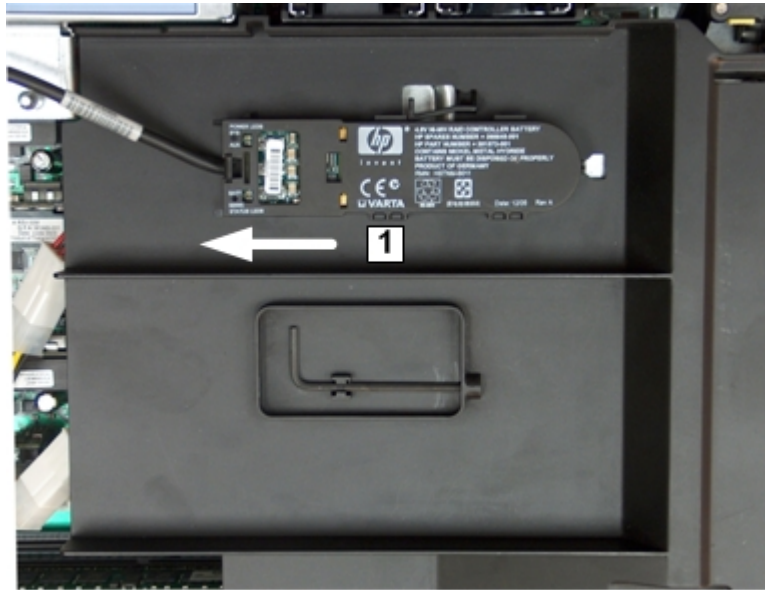
6. Connect one end of the RAID battery cable to the battery on the airflow guide.
7. Connect the other end of the RAID battery cable to the SAS Smart Array P400 controller.

⚠ **CAUTION:** When disconnecting the SAS cables, note the labeling on the cables. When reconnecting these cables, match each cable with the appropriate socket on the SAS Smart Array P400 controller board. If the cables are mismatched, the server may not reboot. Both cables and sockets are clearly marked with the correct channels.

Replacing the Top Cover

To replace the top cover, follow these steps:

1. Ensure the cover release lever is in the open position.
2. Align the tabs of the top cover with the corresponding slots in the chassis and insert the tabs into the slots (1).
3. Slide the cover forward until it is flush with the front of the chassis (2).
4. Push the cover release lever down into the latched position (3).

5. Lock the cover release lever (if necessary) by turning the cam approximately 90 degrees clockwise.

Figure 1-20 shows how to replace the top cover.

Figure 1-20 Replacing the Top Cover
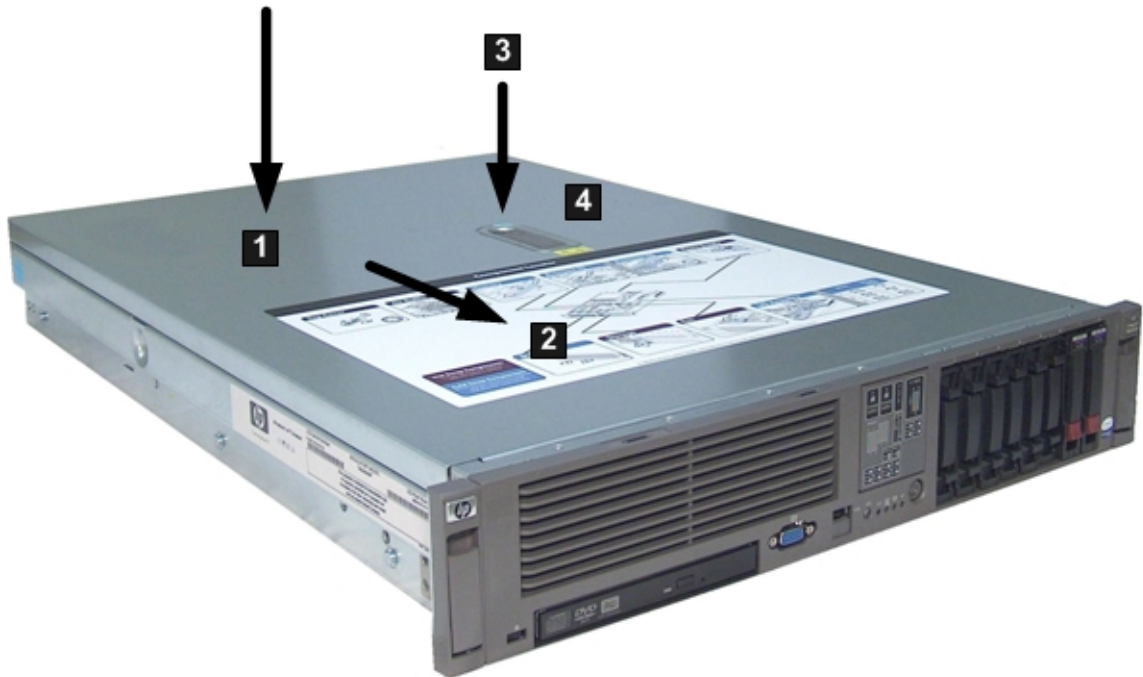
Installing the Server into a Rack or Pedestal

This section provides instructions on how to install the server into a rack or a pedestal.

Installing the Server into a Rack

The following sections describe how to install the server into an HP rack or an approved non-HP rack.

HP Rack

HP servers that are installed into racks are shipped with equipment mounting slides. An installation guide comes with each set of slides: *HP 2U Quick Deploy Rail System Installation Instructions for HP Products*. Follow the steps in this installation guide to determine where and how to install the server into the rack.

Non-HP Rack

The *Mounting in non-HP racks* guide enables you to evaluate the installation of HP equipment into non-HP racks. Use this guide when you need to qualify whether you can install, maintain, and service any HP equipment in a non-HP rack.

The guide is located on the HP website at: **http://www.hp.com/racksolutions** on the HP Integrity and HP 9000 Servers infrastructure page. Click the **Rack Systems/E** link.

Select **Mounting information** from the menu, then select the guide titled *Mounting in non-HP racks*.

Installing the Server Into a Pedestal

The server ships with a pedestal mount if you order the rackless configuration option. The pedestal mount is packaged in a separate carton which is attached to the server carton.

To change the server from a rack mount to a rackless configuration, you need a Server Rackless Mount Kit. The rackless mount kit comes with the *HP Integrity rx2660 Server Pedestal Installation Guide*. Follow the steps in this installation guide to attach the pedestal to the server.

Connecting the Cables

This section describes the cables to connect to power the server and to provide LAN connectivity for the server.

ac Input Power

The server can receive ac input from two different ac power sources. The power receptacles are located at the rear of the chassis. They are labeled Power Supply 1 and Power Supply 2.

For the Data Center server, you can install a maximum of two power supplies in the server. Installing two power supplies in the server provides 1+1 redundancy, meaning that if one power supply fails, there is still enough power supplied to the server to operate. You must promptly replace the failed power supply to restore 1+1 functionality.

A minimum of one power supply is required to power the server. If only one power supply is installed in the server, there is no 1+1 capability.

For the Office Friendly server, two power supplies are required to power the server. The office friendly server can run on one power supply, but runs quieter and more efficiently with two power supplies installed.

Power States

The server has three power states:

* Standby power
* Full power
* Off

Table 1-4 lists the server power states.

Table 1-4 Power States

Power States	Power Cable Plugged Into Receptacle?	Power Activated through the iLO 2 MP PC Command; or Front Panel Power Button Activated?	Standby dc Voltage Applied?	dc Voltage Applied?
Standby power	Yes	No	Yes	No
Full power	Yes	Yes	Yes	Yes
Off	No	No	No	No

⚠ **CAUTION:** If the server is expected to remain in standby mode for more than 30 minutes, ac power should be completely removed from the server. You can do this by switching off the circuit breakers which are part of the building installation, disconnecting or switching off a power distribution unit, or by physically removing all power cords from the server.

📝 **NOTE:** If the power restore feature is set to **Always On** through the iLO 2 MP PR command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

Figure 1-21 shows the ports and power supplies located on the rear panel of the server.

Figure 1-21 Rear Panel Control, Port, and LED Locations
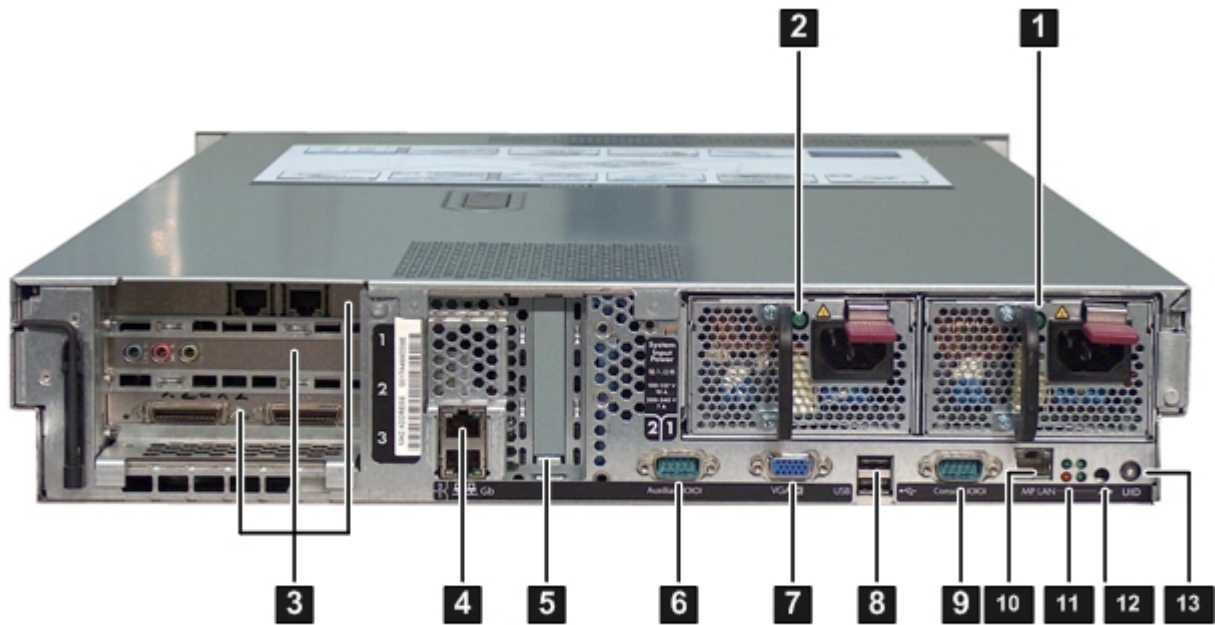
1	Power supply 1 and LED	6	Auxiliary serial port	10	iLO 2 MP LAN port
2	Power supply 2 and LED	7	VGA port	11	iLO 2 MP status LEDs
3	PCI-X/PCIe slots	8	USB ports	12	iLO 2 MP reset
4	Core LAN ports	9	Console serial port	13	UID button/LED
5	Smart Array P400 controller slot				

NOTE: The Office Friendly server is shown in Figure 1-21 (page 38). The Data Center server may only have one power supply installed.

Applying Standby Power to the Server

To apply standby power to the server, follow these steps:

1. If the server has one power supply installed in slot P1, plug the power cord into that receptacle. Plug the other end of the power cord into an appropriate outlet.

NOTE: The LED on the power supply does not illuminate in the standby power state. The LED illuminates green when the server is powered on to full power.

If the power restore feature is set to **Always On** through the iLO 2 MP PR command, the server automatically powers on to the full power state when the power cord is plugged into the server.

2. If the server has two power supplies, plug the second power cord into the power supply in slot P2. Plug the other end of the power cord into an appropriate outlet.

Connecting to the LAN

The server has two LAN ports that provide network connectivity. Figure 1-21 (page 38) shows the available LAN ports for the server.

To enable general network connectivity for the server, follow these steps:

1. Obtain valid IP addresses for each LAN port you plan to activate.

2. Connect the LAN cable from an available LAN port into a live connection on the network.

Connecting and Setting Up the Console

This section describes how to set up and start a console session on an rx2660 server, and addresses the following topics:

Setting Up the Console

Setting up the console includes the following steps:

- Determine the physical access method to connect cables. There are two physical connections to the iLO 2 MP:
  - RS-232
  - LAN.

- Configure the Integrity iLO 2 MP and assign an IP address if necessary. Though there are several methods to configuring the LAN, DHCP with DNS is the preferred method. DHCP with DNS comes preconfigured with default factory settings, including a default user account and password. Other options include:
  - ARP Ping
  - Local RS-232 serial port
  - Remote/modem port

Setup Checklist

Use the checklist in Table 1-5 to assist with the Integrity iLO 2 MP setup process.

Table 1-5 Setup Checklist

	Step	Action	X
Standard Setup			
1	Preparation	1. Determine an access method to select and connect the cables. 2. Determine a LAN configuration method and assign an IP address if necessary.	
2	Configure the iLO 2 MP LAN	Choose one of the three methods to configure the LAN for iLO 2 MP access: • DHCP with DNS • ARP Ping • RS-232 serial port	
3	Log on to the iLO 2 MP	Log in to the iLO 2 MP from a supported web browser or command line using the default user name and password.	
4	Change default user name and password	Change the default user name and password on the administrator account to your predefined selections.	
5	Set up user accounts	Set up the user accounts if you are using the local accounts feature.	
6	Set up security access	Set up the security access settings.	
Advanced Setup			
1	Activate Advanced Pack Features	Activate advanced features by entering a license key.	

Setup Flowchart

Use this flowchart as a guide to assist in the iLO 2 MP setup process.

Figure 1-22 iLO 2 MP Setup Flowchart
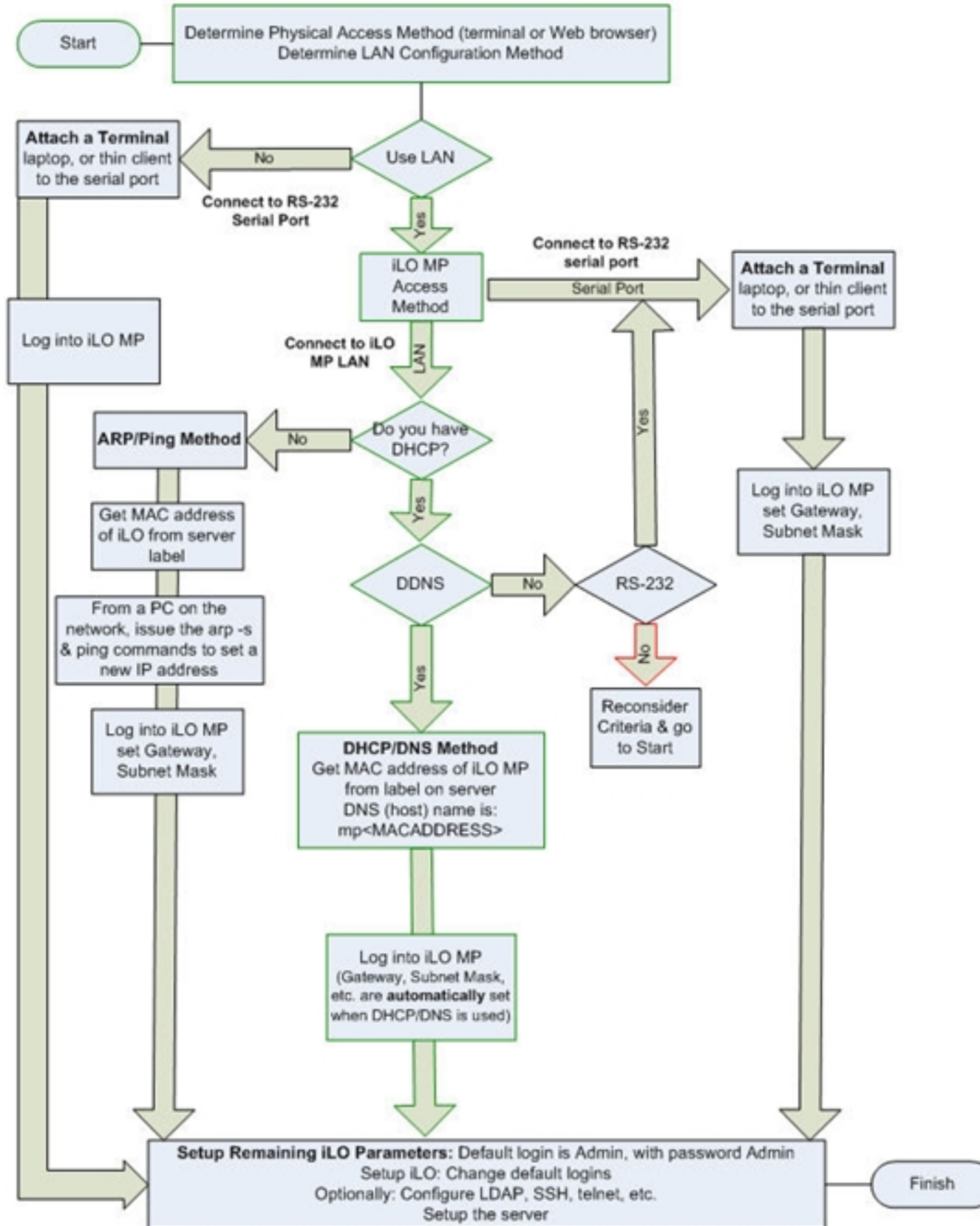
Preparation

You must perform the following tasks before you can configure the iLO 2 MP LAN.
- Determine the physical access method to select and connect cables.
- Determine the iLO 2 MP LAN configuration method and assign an IP address if necessary.

Determining the Physical iLO 2 MP Access Method

Before you can access the iLO 2 MP, you must first determine the correct physical connection method. The iLO 2 MP has a separate LAN port from the system LAN port. It requires a separate LAN drop, IP address, and networking information from that of the port used by the operating system. See Figure 1-21 (page 38) for rear panel console connection port identification and cable connection information.

Table 1-6 lists the appropriate connection method, required connection components, and connectors to the host console. Use Table 1-6 to determine your physical connection method.

Table 1-6 Console Connection Matrix

Operating System	Console Connection Method	Required Connection Components
HP-UX	Local RS-232 serial port Remote/modem port	1. RS-232 DB-9F to DB-9F modem eliminator cable 2. Console device (for example, a laptop or ASCII terminal)
	LAN port	10/100 LAN cable
Linux	Local RS-232 serial port Remote/modem port	1. RS-232 DB-9F to DB-9F modem eliminator cable 2. Console device (for example, a laptop or ASCII terminal)
	LAN port	10/100 LAN cable
OpenVMS	Local RS-232 serial port Remote/modem port	1. RS-232 DB-9F to DB-9F modem eliminator cable 2. Console device (for example, a laptop or ASCII terminal)
	LAN port	10/100 LAN cable
Windows	VGA Port (no iLO 2 MP access; EFI only)	1. Monitor (VGA) 2. Keyboard (USB) 3. Mouse (USB)
	LAN port	10/100 LAN cable

Determining the iLO 2 MP LAN Configuration Method

To access the iLO 2 MP through the iLO 2 MP LAN, the iLO 2 MP must acquire an IP address. The way the iLO 2 MP acquires an IP address depends on whether DHCP is enabled or disabled on the server, and if DHCP and DNS services are available to the server. (See Table 1-7 for possible scenarios.)

Once you have determined the iLO 2 MP access, you must determine how you will configure the iLO 2 MP LAN to acquire an IP address using the following methods:
- DHCP/DNS
- ARP Ping
- Local RS-232 serial port
- Remote/modem port

Table 1-7 provides all the possible scenarios. Use this table to help you select the appropriate LAN configuration method to obtain an IP address.

Table 1-7 LAN Configuration Methods

DHCP	DNS	RS-232 Serial Port (iLO 2 MP `LC` command)	LAN Configuration Method
Yes	Yes	No	DHCP
Yes	Yes	Yes	DHCP, RS-232 serial port, or remote/modem port
No	No	No	ARP Ping
No	Yes	No	ARP Ping
No	Yes	Yes	ARP Ping, RS-232 serial port, or remote/modem port
Yes	No	Yes	RS-232 serial port, or remote/modem port
No	No	Yes	RS-232 serial port, remote/modem port, or ARP Ping
Yes	No	No	Cannot set up the LAN. Reconsider your criteria.

Once you have determined how you will configure the iLO 2 MP LAN in order to acquire an IP address, you must configure the iLO 2 MP LAN using the selected method.

Configuring the iLO 2 MP LAN Using DHCP and DNS

Dynamic Host Configuration Protocol (DHCP) automatically configures all DHCP-enabled servers with IP addresses, subnet masks, and gateway addresses. All HP Integrity entry class servers with iLO 2 MP are shipped from the factory with DHCP enabled.

TIP: HP recommends using the DHCP and Domain Name Server (DNS) method to simplify access to the iLO 2 MP.

When you use DHCP and DNS, you can connect to the iLO 2 MP by typing the default host name in your browser rather than an IP address only if the following conditions apply:

* DHCP must be enabled (DHCP is enabled by default)
* You are using a DHCP server that provides the domain name and the primary DNS server IP address
* The primary DNS server accepts dynamic DNS (DDNS) updates
* The primary DNS server IP address has been configured through the DHCP server

To configure the iLO 2 MP using DHCP and DNS, follow these steps:

1. Obtain the factory-set host name from the iLO 2 MP Media Access Protocol (MAC) address label on the right side of the server above the rail. The default host name is 14 characters long, consisting of the letters **mp** followed by the 12 characters of the MAC address, for example: mp0014c29c064f. This address is assigned to the iLO 2 MP hardware. The iLO 2 MP hardware has a unique MAC address that identifies the hardware on the network.

IMPORTANT: Make sure you obtain the MAC address to the iLO hardware and not the MAC address to the server core LAN card.

2. Connect the LAN cable into the iLO 2 MP port on the rear of the server. shows the location of the iLO 2 MP port.
3. Connect the LAN cable from the server to an active network port.
4. Apply ac power to the server (if not already done).
5. Open a browser, telnet, or SSH client and enter the iLO 2 MP IP address. The iLO 2 MP Log In window opens.

Configuring the iLO 2 MP LAN Using ARP Ping

The Address Resolution Protocol (ARP) and Packet Internet Grouper (Ping) utility uses ARP packets to ping, or discover, a device on the local network segment. The IP address you assign to the server must use the same network segment, or subnet, as the computer assigning the address. ARP does not work across routed or switched networks.

ARP Ping operational issues include the following:

- You can use ARP Ping regardless of the status of DHCP, unless an IP address has ever been acquired using DHCP
- When ARP Ping is successful, DHCP status is disabled
- Some DHCP server options can cause the apparent issuance of ARP Ping to the iLO 2 MP which will negate the DHCP/DDNS method
- The PC and the server must be on the same physical subnet
- When a new server is first booted, DHCP is automatically available (the factory-set default), but ARP Ping does not start until three minutes after the iLO 2 MP is booted. This applies to every subsequent boot of the iLO 2 MP until an IP address is obtained by DHCP or has been assigned using the `LC` command, or ARP Ping succeeds

There are two ways to use the ARP Ping utility:

- Connect a PC to the network that is on the same physical subnet as the server and run the ARP Ping commands from the PC.
- Locate an existing server on the network, log into it, and run the ARP Ping commands from the server.

Table 1-8 lists the ARP Ping commands.

Table 1-8 ARP Ping Commands

Command	Description
`arp -s`	This command assigns an IP address to the iLO 2 MP MAC address. This ARP table entry maps the MAC address of the iLO 2 MP LAN interface to the static IP address designated for that interface.
`ping`	This command tests network connections. It verifies that the iLO 2 MP LAN port is configured with the appropriate IP address.

The following procedure explains how to use the ARP Ping utility using a PC that is connected to the network that is on the same physical subnet as the server.

To configure a static IP address using the ARP Ping utility, follow these steps:

1. Obtain the iLO 2 MP MAC address. To set the IP address using ARP, you must know the MAC address of the iLO 2 MP LAN. You can find the MAC address of the iLO 2 MP LAN on the label located on the server front panel.

> **IMPORTANT:** Make sure you obtain the MAC address of the iLO 2 MP LAN and not the MAC address of the server core LAN.

2. Verify that an active LAN cable on the local subnet is connected to the iLO 2 MP LAN port on the server.
3. Access a PC on the same physical subnet as the server.
4. Open a DOS window on the PC.
5. At the DOS prompt, enter **`arp -s`** to assign the IP address to the iLO MAC address.

   `arp -s`<IP address you assign to the iLO MAC address> <iLO MAC address>

   For example:

   `arp -s 192.0.2.1 00-00-0c-07-ac-00`

6.   At the DOS prompt, enter **ping** followed by the IP address to verify that the iLO 2 MP LAN port is configured with the appropriate IP address. The destination address is the IP address that is mapped to the iLO MAC address. Perform this task from the PC that has the ARP table entry.

ping *<IP address you assigned to the iLO MAC address>*

For example:

ping 192.0.2.1

7.   Connect to the iLO 2 MP LAN using this IP address.
8.   Use web or telnet access to connect to the iLO 2 MP from a host on the local subnet and finish setting up the LAN parameters (gateway and subnet).

Configuring the iLO 2 MP LAN Using the RS-232 Serial Port

The following procedure shows how to configure the iLO 2 MP LAN using the RS-232 serial port.

> **IMPORTANT:** Do not configure duplicate IP addresses on different servers within the same network. Duplicate server IP addresses conflict and the servers cannot connect to the network.

The LC command enables you to configure an IP address, host name, subnet mask, and gateway address.

> **IMPORTANT:** Ensure you have a console connection through the RS-232 serial port or a network connection through the LAN to access the iLO 2 MP and use the LC command.

To assign a static IP address using the LC command, follow these steps:

1.   Ensure the emulation software device is properly configured. The terminal emulation device runs software that interfaces with the server. The software emulates console output as it would appear on an ASCII terminal screen and displays it on a console device screen.
2.   To ensure the emulation software is correctly configured, verify the following:
     a.   Verify that the communication settings are configured as follows:
          - 8/none (parity)
          - 9600 baud
          - None (receive)
          - None (transmit)
     b.   Verify that the terminal type is configured appropriately. Supported terminal types are as follows:
          - hpterm
          - vt100
          - vt100+
          - vt-utf8

> **IMPORTANT:** Do not use hpterm and vt100 terminal types at the same time.

There are many different emulation software applications. Consult the help section of your emulation software application for instructions on how to configure the software options.

3.   Use Table 1-6 to determine the required connection components and the ports used to connect the server to the console device.

4. Connect the cables.
   a. Connect the DB-9 end of the RS-232 serial port female-to-female cable to the console RS-232 serial port.
   b. Connect the other end of the DB-9 female-to-female cable to the console device.
5. Start the emulation software on the console device.
6. Log in to the iLO 2 MP. See "Logging In to the iLO 2 MP" (page 46).
7. At the **MP Main Menu**, enter `CM` and press **Enter** to select command mode.
8. At the command mode prompt, enter `LS` and press **Enter**. The screen displays the default LAN configuration values. Write down the default values or log the information to a file for future troubleshooting.
9. Use the `LC` command to disable DHCP.
   a. From the `LC` command menu, enter `D` and press **Enter**.
   b. Follow the instructions on the screen to change the DHCP status from Enabled to Disabled.
   c. Enter `XD -R` to reset the iLO 2 MP.
10. Use the `LC` command to enter information for the IP address, host, subnet mask, gateway parameters, and so on.
11. Enter `XD -R` to reset the iLO 2 MP.
12. After the iLO 2 MP resets, log in to the iLO 2 MP again and enter `CM` at the `MP>` prompt.
13. Enter `LS` to confirm that DHCP is disabled and display a list of updated LAN configuration settings.

Logging In to the iLO 2 MP

To log in to the iLO 2 MP, follow these steps:

1. Access the iLO 2 MP using the LAN, RS-232 serial port, telnet, SSH, or web method. The iLO 2 MP login prompt appears.
2. Log in using the default the iLO 2 MP user name and password (**Admin**/**Admin**). The **MP Main Menu** screen appears.

> **TIP:** For security reasons, HP strongly recommends that you modify the default settings during the initial login session. See "Modifying User Accounts and Default Password" (page 47).

Following is the **MP Main Menu** screen:

```
MP MAIN MENU:
        CO: Console
       VFP: Virtual Front Panel
        CM: Command Menu
        CL: Console Logs
        SL: Show Event Logs
        HE: Main Menu Help
         X: Exit Connection
```

This example shows the **MP Main Menu** accessed through the local serial port. The list of commands displayed on the screen can be different depending on the method of access to the iLO 2 MP.

When logging in using the local or remote RS-232 serial ports, the login prompt may not display if another user is logged in through these ports. Use **Ctrl-B** to access the **MP Main Menu** and the iLO 2 MP prompt (`MP>`).

Additional Setup

This section provides additional information to help you set up the iLO 2 MP.

Modifying User Accounts and Default Password

The iLO 2 MP comes preconfigured with default factory settings, including a default user account and password. The two default user accounts at initial login are as follows:

- All Rights (Administrator) level user: login = **Admin** password = **Admin**
- Console Rights (Operator) level user: login = **Oper** password = **Oper**

📝 **NOTE:** User account and password are case sensitive.

📝 **IMPORTANT:** For security reasons, HP strongly recommends that you modify the default settings during the initial login session.

Make the following changes using any of the iLO 2 MP user interfaces.

To modify default account configuration settings, follow these steps:

1. Log in as the administrator. You must log in as the administrator in order to modify default user configuration settings.
2. To modify default passwords, follow these steps:
   a. Access the **MP Main Menu**.
   b. Enter **CM** at the MP> prompt.
   c. Enter **UC** at the MP:CM> prompt and follow the prompts to modify default passwords.
3. To set up user accounts, follow these steps:
   a. Access the **MP Main Menu**.
   b. Enter **CM** at the MP> prompt.
   c. Enter **UC** at the MP:CM> prompt and follow the prompts to modify user accounts.

Setting Up Security

For greater security and reliability, HP recommends that iLO 2 MP management traffic be on a separate dedicated management network and that only administrators be granted access to that network. This not only improves performance by reducing traffic load across the main network, it also acts as the first line of defense against security attacks. A separate network enables administrators to physically control which workstations are connected to the network.

HP also strongly recommends that you modify the default settings during the initial login session and determine the security access required and what user accounts and privileges are needed. Create local accounts or use directory services to control user access. See "Modifying User Accounts and Default Password" (page 47).

⚠ **CAUTION:** When DHCP is enabled, the system is vulnerable to security risks because anyone can access the iLO 2 MP until you change the default user name and password.

HP strongly recommends you assign user groups and rights before proceeding.

Determine the security access required and user accounts and privileges needed. The iLO 2 MP provides options to control user access. Select one of the following options to prevent unauthorized access to the iLO 2 MP:

* Change the default user name and password. See "Modifying User Accounts and Default Password" (page 47).
* Create local accounts. You can store up to 19 user names and passwords to manage iLO 2 MP access. This is ideal for small environments such as labs and small-to-medium sized businesses.
* Use directory services. Use the corporate directory to manage iLO 2 MP user access. This is ideal for environments with a large number of frequently changing users. If you plan to use directory services, HP recommends leaving at least one local account enabled as an alternate method of access.

Accessing the Host Console

This section describes the different ways to access the host console of the rx2660 server.

Accessing the Host Console With the TUI - CO Command

This section describes the steps to access the host console using the text user interface (TUI).

To access the host console through the iLO 2 MP, follow these steps:

1. Log in using your user account name and password at the login page.
2. At the iLO 2 MP login prompt (MP>), enter the CO command to switch the console terminal from the **MP Main Menu** to mirrored/redirected console mode. All mirrored data displays.
3. To return to the iLO 2 MP command interface, enter **Ctrl-B** or **Esc** and **+** and press **Enter**.

Interacting with the iLO 2 MP Using the Web GUI

Web browser access is an embedded feature of the iLO 2 MP.

The iLO 2 MP has a separate LAN port from the system LAN port. It requires a separate LAN drop, IP address, and networking information from that of the port used by the operating system.

📝 **IMPORTANT:** Make sure you use the MAC address to the iLO 2 MP LAN, and not the MAC address to the server core LAN.

Before starting this procedure, you must have the following information:

* IP address for the iLO 2 MP LAN
* Host name (used when messages are logged or printed)

To interact with the iLO 2 MP through the web GUI, follow these steps:

1. Open a web browser and enter the host name or the IP address for the iLO 2 MP. The iLO 2 MP Login page appears (Figure 1-23).

Figure 1-23 iLO 2 MP Web Login Page
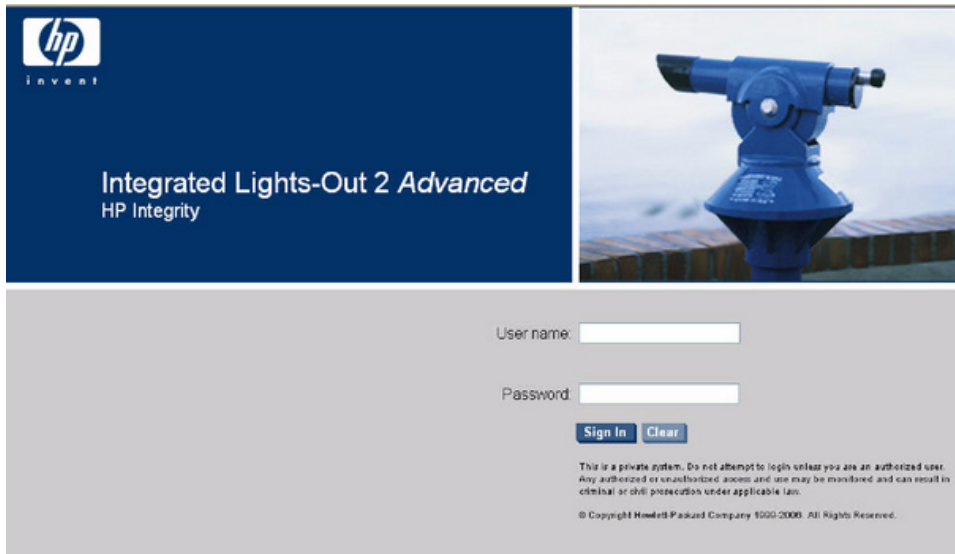
2. Log in using your user account name and password.
3. Click **Sign In**. The Status Summary page appears (Figure 1-24).

Figure 1-24 Status Summary Page
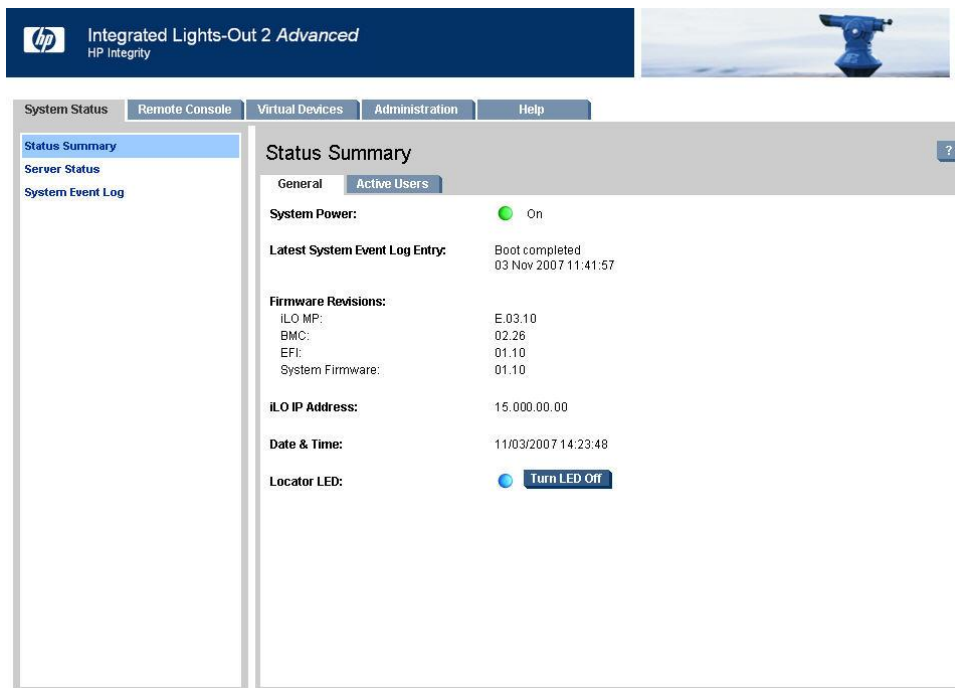
4. Select the web interface functions by clicking the **Function** tabs at the top of the page. Each function lists options in the **Navigation Bar** on the left side of the page.
5. Click an option link to display data in the screen.
6. Click **Refresh** to update the display.

The iLO 2 MP web interface has a robust help system. To launch iLO 2 MP help, click **Help** or click the question mark key (**?**) at the top right corner of each page to display help about that page.

Accessing the Graphic Console Using VGA

VGA is a method you can use to access the graphic console.

NOTE: You cannot access the iLO 2 MP using VGA.

This method requires three elements:

- Monitor (VGA connector)
- Keyboard (USB connector)
- Mouse (USB connector)

The graphic console output displays on the monitor screen.

IMPORTANT: The server console output does not display on the console device screen until the server boots to the EFI Shell. Start a console session using the RS-232 serial port method to view console output prior to booting to the EFI Shell or to access the iLO 2 MP. See "Configuring the iLO 2 MP LAN Using the RS-232 Serial Port" (page 45).

To access the graphic console with VGA, follow these steps:

1. Connect the monitor, keyboard, and mouse cables.
    a. Connect the monitor VGA cable to the appropriate VGA port on your server.
    b. Connect the keyboard USB cable to the appropriate USB port on your server.
    c. Connect the mouse USB cable to the appropriate USB port on your server.
2. Power on the server. The EFI Shell prompt appears.

Powering On and Powering Off the Server

This section provides information and procedures for powering on and powering off the server.

Power States

The server has three power states:

- Standby power
- Full power
- Off

Table 1-9 lists the server power states.

Table 1-9 Power States

Power States	Power Cable Plugged Into Receptacle?	Power Activated through the iLO 2 MP PC Command; or Front Panel Power Button Activated?	Standby dc Voltage Applied?	dc Voltage Applied?
Standby power	Yes	No	Yes	No
Full power	Yes	Yes	Yes	Yes
Off	No	No	No	No

NOTE: If the power restore feature is set to **Always On** through the iLO 2 MP PR command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

Powering On the Server

Power on the server to full power using the following methods if the server is in the standby power state:

- iLO 2 MP `PC` command
- Power button

Powering On the Server Using the iLO 2 MP

NOTE: If the power restore feature is set to **Always On** through the iLO 2 MP `PR` command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

To power on the server using the iLO 2 MP, follow these steps:

1. Plug all power cables into the receptacles on the rear panel of the server.
2. Initiate a console session, and access the **MP Main Menu**.
3. Enter **CM** to enable command mode.
4. Enter **PC** to use the remote power control command.
5. Enter **ON** to power on the server, and enter **YES** when prompted to confirm the action.
6. Start the operating system. For information on how to start the operating system, see the *HP Integrity rx2660 User Service Guide* or your operating system documentation.

Powering On the Server Manually

NOTE: If the power restore feature is set to **Always On** through the iLO 2 MP `PR` command, the server automatically powers on to the full power state when the power cord is plugged in to the server.

To manually power on the server, follow these steps:

1. Plug all power cables into the receptacles on the rear panel of the server.
2. Press the Power button to start the server.
3. Start the operating system. For information on how to start the operating system, see the *HP Integrity rx2660 User Service Guide* or your operating system documentation.

Powering Off the Server

Power off the server using the following methods if the server is in the standby or full power state:

- iLO 2 MP `PC` command
- Power button

Powering Off the Server Using the iLO 2 MP

To power off the server using the iLO 2 MP, follow these steps:

1. Gracefully shut down the operating system. For information on how to shut down the operating system, see the *HP Integrity rx2660 User Service Guide* or your operating system documentation.
2. Initiate a console session, and access the **MP Main Menu**.
3. Enter **CM** to enable command mode.
4. Enter **PC** to use the remote power control command.
5. Enter **OFF** to power off the server, and enter **YES** when prompted to confirm the action.

CAUTION: The main dc voltage is now removed from the system; however, ac voltage for standby power is still present in the server.

6. Unplug all power cables from the receptacles on the rear panel of the server.

Powering Off the Server Manually

To manually power off the server, follow these steps:

1. Gracefully shut down the operating system. For information on how to shut down the operating system, see the *HP Integrity rx2660 User Service Guide* or your operating system documentation.

2. Press the Power button to power off the server.

⚠ **CAUTION:** The main dc voltage is now removed from the system; however, ac voltage for standby power is still present in the server.

3. Unplug all power cables from the receptacles on the rear panel of the server.

Verifying Installed Components In the Server

This section describes how to verify that the components installed in the server are recognized by the server.

Use the following procedure to verify that the components you have installed into the rx2660 server are recognized by the server.

📝 **NOTE:** The processor cache information in the Processor Module Information below shows the L3 Cache Size per logical CPU. Since there are two logical CPUs per processor (dual-core), a reading of 6 MB for the L3 cache means that the cache size is 12 MB.

1. Select **EFI Boot Option** from the **EFI Boot Manager** menu.
2. Wait for the `EFI Shell` prompt to display.

3. Enter **info all** from the EFI Shell prompt. The following displays:

```
Shell>
- - - - - - - - - - - - - Live Console - - - - - - - - - - - - - -
info all

SYSTEM INFORMATION

Date/Time:  Mar  6, 2007  13:00:10  (20:07:03:06:13:00:10)
Manufacturer:  hp
Product Name:  server rx2660
Product Number:  AB419A
Serial Number:  US64293295
UUID:  B6DDD02D-774F-11DB-8759-5250AF09A183
System Bus Frequency:  266 MHz

PROCESSOR MODULE INFORMATION

             # of                  L3      L4     Family/
    CPU      Logical               Cache   Cache  Model           Processor
    Module   CPUs     Speed        Size    Size   (hex.)   Rev    State
    ------   -------  --------     ------  ------ -------   ---    ------------
      0        2      1.6 GHz      12 MB    None  20/00     C1       Active

CPU threads are turned off.

MEMORY INFORMATION

       ---- DIMM A -----  ---- DIMM B -----
       DIMM    Current    DIMM    Current
---   ------  ----------  ------  ----------
 0    1024MB     Active   1024MB     Active
 1    1024MB     Active   1024MB     Active
 2     512MB     Active    512MB     Active
 3     512MB     Active    512MB     Active

   Active Memory    : 6144 MB
   Installed Memory : 6144 MB

I/O INFORMATION

BOOTABLE DEVICES

Order  Media Type  Path
---  ----------  --------------------------------------
1    CDROM       Acpi(HWP0002,PNP0A03,0)/Pci(2|1)/Usb(0, 0)/CDROM(Entry0)
2    HARDDRIVE   Acpi(HWP0002,PNP0A03,200)/Pci(1|0)/Sas(Addr500000E011B1E0)
3    HARDDRIVE   Acpi(HWP0002,PNP0A03,200)/Pci(1|0)/Sas(Addr500000E011B1E0)
4    HARDDRIVE   Acpi(HWP0002,PNP0A03,200)/Pci(1|0)/Sas(Addr5000C500003A05)
5    HARDDRIVE   Acpi(HWP0002,PNP0A03,200)/Pci(1|0)/Sas(Addr5000C500003A05)
6    HARDDRIVE   Acpi(HWP0002,PNP0A03,200)/Pci(1|0)/Sas(Addr500000E0119F9C)
7    HARDDRIVE   Acpi(HWP0002,PNP0A03,200)/Pci(1|0)/Sas(Addr500000E0119F9C)

Seg  Bus  Dev  Fnc  Vendor  Device Slot
#    #    #    #      ID      ID    #   Path
---  ---  ---  ---  ------  ------  --- -----------
00   00   01   00   0x103C  0x1303  XX  Acpi(HWP0002,PNP0A03,0)/Pci(1|0)
00   00   01   01   0x103C  0x1302  XX  Acpi(HWP0002,PNP0A03,0)/Pci(1|1)
00   00   01   02   0x103C  0x1048  XX  Acpi(HWP0002,PNP0A03,0)/Pci(1|2)
00   00   02   00   0x1033  0x0035  XX  Acpi(HWP0002,PNP0A03,0)/Pci(2|0)
00   00   02   01   0x1033  0x0035  XX  Acpi(HWP0002,PNP0A03,0)/Pci(2|1)
00   00   02   02   0x1033  0x00E0  XX  Acpi(HWP0002,PNP0A03,0)/Pci(2|2)
00   00   03   00   0x1002  0x515E  XX  Acpi(HWP0002,PNP0A03,0)/Pci(3|0)
00   01   01   00   0x1000  0x0054  XX  Acpi(HWP0002,PNP0A03,200)/Pci(1|0)
00   01   02   00   0x14E4  0x1648  XX  Acpi(HWP0002,PNP0A03,200)/Pci(2|0)
00   01   02   01   0x14E4  0x1648  XX  Acpi(HWP0002,PNP0A03,200)/Pci(2|1)
00   02   01   00   0x1133  0xB921  03  Acpi(HWP0002,PNP0A03,300)/Pci(1|0)
00   03   01   00   0x13F6  0x0111  02  Acpi(HWP0002,PNP0A03,600)/Pci(1|0)
00   04   01   00   0x8086  0x1079  01  Acpi(HWP0002,PNP0A03,700)/Pci(1|0)
00   04   01   01   0x8086  0x1079  01  Acpi(HWP0002,PNP0A03,700)/Pci(1|1)

   Fast initialization: Disabled
```

```
       System Wake-On-LAN:  Enabled

  BOOT INFORMATION

     Monarch CPU:

     Current   Preferred
     Monarch   Monarch
       CPU        CPU
     Module/   Module/
     Logical   Logical   Warnings
     -------   ---------  --------
        0/0       0/0

     AutoBoot: OFF - Timeout is disabled

     Boottest:

     BOOTTEST Settings Default Variable

     OS is not speedy boot aware.

     Selftest      Setting
     ---------     --------------
     early_cpu     Run this test
     late_cpu      Run this test
     platform      Run this test
     chipset       Run this test
     io_hw         Run this test
     mem_init      Run this test
     mem_test      Run this test

     LAN Address Information:

  LAN Address          Path
  -----------------    -----------------------------------------
 *Mac(0017A4990DFB)   Acpi(HWP0002,PNP0A03,200)/Pci(2|0)/Mac(0017A4990DFB)
  Mac(0017A4990DFA)   Acpi(HWP0002,PNP0A03,200)/Pci(2|1)/Mac(0017A4990DFA)
  Mac(001560045FE0)   Acpi(HWP0002,PNP0A03,700)/Pci(1|0)/Mac(001560045FE0)
  Mac(001560045FE1)   Acpi(HWP0002,PNP0A03,700)/Pci(1|1)/Mac(001560045FE1)

  FIRMWARE INFORMATION

    *System Firmware A Revision: 1.05 [4645]
        PAL_A: 7.31/7.46
        PAL_B: 8.30
        EFI Spec: 1.10
        EFI Intel Drop: 14.62
        EFI Build: 5.65
        SAL Spec: 3.20
        SAL_A: 2.00
        SAL_B: 1.05
        POSSE: 0.21
        ACPI: 7.00
        SMBIOS: 2.3.2a
     System Firmware B Revision: 1.04 [4645]
     BMC Revision: 5.06
        IPMI: 1.00
     Management Processor Revision: F.01.58
     Updatable EFI Drivers:
        Floating-Point Software Assistance Handler:   00000118
        Broadcom Gigabit Ethernet Driver:             00090404
        SCSI Bus Driver:                              00000021
        SCSI Tape Driver:                             00000020
        Usb Ohci Driver:                              00000034
        USB Bus Driver:                               00000014
        USB Bot Mass Storage Driver:                  00000014
        Generic USB Mass Storage Driver:              00000015

     * Indicates active system firmware image

  WARNING AND STOP BOOT INFORMATION
```

```
        CHIP REVISION INFORMATION

        Chip                    Logical    Device      Chip
        Type                      ID         ID       Revision
        -------------------     -------    ------     --------
        Memory Controller           0       4032       0020
        Root Bridge                 0       4030       0020
          Host Bridge            0000        122e       0032
          Host Bridge            0002        122e       0032
          Host Bridge            0003        12ee       0011
          Host Bridge            0006        12ee       0011
          Host Bridge            0007        12ee       0011
          Other Bridge              0          0        0030
            Other Bridge            0          0        5003
              Baseboard MC          0          0        0506

        SYSTEM SECURITY CONFIGURATION
          Trusted Boot:        Not Supported
          TPM:                 Activated
          TPM Next Boot Status: Activated
          TPM Vendor ID:       0x15D1
          TPM Product ID:      0x0006
          TPM TCG Spec Version: 1.1.0.0

        Shell>
```

Installation Troubleshooting

This section provides basic server troubleshooting information. It is designed to help you diagnose common issues that can occur during server installation.

This section addresses the following topics:

Troubleshooting Methodology

The server was tested prior to shipping. Failures encountered during installation can be due to damage that occurred in transit. Re-seating connectors can clear problems that result from rough handling. If you are installing components or assemblies, compatibility problems or incorrect installations can be the cause of the problems. If you are installing components or assemblies, check that items are correctly installed and that all connectors are fully engaged. If the unit does not power on, check the power source before proceeding.

If a problem is encountered during initial operation, remove any add-in or optional components and retest the server before continuing. Verify basic server operation before installing additional cards and configuring software and hardware for the server requirements.

Troubleshooting is based on observation of server status indications and error messages, and by checking system event logs. You can observe the LED indicators on the front and rear of the server. Error messages are displayed on local and remote consoles. System history (console, event, and history logs) is available through the management processor, and is accessed through

the console. Additional information about troubleshooting is available on the CD provided with the server.

Offline troubleshooting programs are available on the resource CD that is shipped with the server. To troubleshoot the server, you must be familiar with the Offline Diagnostics Environment (ODE) which runs in the Extensible Firmware Interface (EFI). Descriptions and user information about offline troubleshooting tools are available at **http://www.docs.hp.com**. The offline tools are available for downloading at **http://www.software.hp.com**.

Troubleshooting Using the Server Power Button

The server Power button on the front panel operates differently depending on how long the button is held in, and on what the system is doing when the button is pressed. You must be aware of its uses to properly troubleshoot the system.

Table 1-10 describes what happens when the server is at EFI, and you press the Power button.

Table 1-10 Server Power Button Functions When Server is On and at EFI

Action	Reaction
1-3 seconds	System power turns off immediately (hard power off)
5 seconds or longer	System power turns off immediately (hard power off)

Table 1-11 describes what happens when the server is on with the operating system running, and you press the Power button.

Table 1-11 Server Power Button Functions When Server is On and OS is Running

Action	Reaction
1-3 seconds	System power turns off (software controlled power off)
5 seconds or longer	System power turns off immediately (hard power off)

If the server is off, and power is not connected to server power supplies, pressing the Power button has no effect.

If the server is off, and power is connected to server power supplies, the front panel power LED blinks at a 1 Hz rate. In this state, standby power is available to server circuits, but main power is off. Table 1-12 describes what happens when the server is off, and you press the Power button.

Table 1-12 Server Power Button Functions When Server is Off

Action	Reaction
1-3 seconds	System power turns on

Server Does Not Power On

The server Power button on the front panel operates differently depending on how long the button is held, and on what the system is doing when the button is pressed. You must be aware of its uses to properly troubleshoot the system.

> **NOTE:** If the server is off, and power is not connected to server power supplies, pressing the Power button has no effect.

Power problems during installation are usually related to the installation process. If the server does not power on, check the LED indicators on the power supply rear panels and follow these steps.

- If the ac power LED on the power supply on the rear panel of the server is lit, power is available to the server.
- If the ac power LED is not lit, the server is either in standby power mode, or there is a problem. Re-seat the power supply. If the problem persists, remove and re-seat the board within the server. If the problem persists, replace the power supply or the power supply interface board.
- If the console shows that the server is powered on, but server LEDs indicate that power is off, remove and re-seat connectors on the LED status board. If the problem persists, replace the LED status board. If the console shows that the server is not powered on (server is off), remove and re-seat connectors on the system board. If the problem persists, replace the power supply interface board, or the system board.

EFI Menu is Not Available

If you cannot access the EFI from either the main disk partition or the CD, use the following tools to help solve the problem:

- Front panel LEDs
- Management processor (iLO 2 MP)
  - Console messages
  - System event logs (SEL)

Operating System Does Not Boot

If the operating system does not boot, but you are able to reach the EFI from either the main disk partition or the CD, use the following tools to help solve the problem:

- Using the EFI Shell, check the system logs and analyze any error messages.
- Offline Diagnostic Environment (ODE)

For information on the operating system, see the *HP Integrity rx2660 User Service Guide* or your operating system documentation.

Operating System Boots with Problems

If the operating system is running and you are experiencing problems, use the following tools to help solve the problem:

- LEDs
- Error Messages and event logs

Intermittent Server Problems

You can usually trace intermittent problems that occur during installation to power source problems, a loose connector, or some other hardware problem. If you are experiencing intermittent problems, follow these steps:

1. Check iLO 2 MP logs and analyze the problem. Determine if there is more than one symptom and if the problem is random.
2. Verify that the ac power source is stable.
3. Re-seat all rear panel connectors.
4. Re-seat all hot-swappable fans and power supplies.

5. Re-seat all main memory DIMMs.
6. Re-seat all cable harnesses and board connectors.

DVD Problems

DVD problems that occur during installation are usually related to faulty connections. If you are experiencing DVD problems, follow these steps:

1. Remove and reinsert the disk.
2. Replace the disk.
3. Remove and reinstall the DVD drive. Check that connectors are fully engaged.
4. Replace the DVD drive.

Hard Drive Problems

Hard drive problems that occur during installation are usually due to rough handling. The drive may not be correctly seated or may have been damaged in transit. If you are experiencing hard drive problems, follow these steps:

1. Remove and reinsert the faulty hard drive.
2. Swap the hard drive with one from another slot or with a known good spare.
3. Remove and reinstall the hard drive backplane. Check that connectors are fully engaged.
4. Replace the hard drive backplane.

Console Problems

Console problems during installations can be caused by faulty interconnections. If you are experiencing monitor, keyboard, or mouse problems, follow these steps:

1. Check the monitor controls. Adjust contrast and brightness as required.
2. Inspect all power and interconnecting cables. Check that all console connectors are fully engaged.
3. Check that all iLO 2 MP board connectors are fully engaged.
4. Exercise the appropriate self-test features of the console software.

Downloading and Installing the Latest Version of the Firmware

HP makes every effort to provide you with the most current version of firmware. However, there can be instances when this is not the case.

To ensure you have the latest version of the firmware running on the server, download the latest version of the firmware from the web, and create a CD to install the firmware on the server.

Downloading the Latest Version of the Firmware

To download the latest version of the firmware from the web, follow these steps:

1. Go to: **http://www.hp.com/go/bizsupport**
2. Select **download drivers and software**.
3. Select **Itanium-based servers**from the Server category.
4. Select your product from the servers listed.
5. Select your operating system.
6. Select the firmware package you want to download.
7. Download the firmware package, and follow the instructions for updating the firmware included in the release notes.

Installing the Latest Version of the Firmware on the Server

To install the latest version of the firmware on the server, follow these steps:

1. Initiate a server console session.
2. Insert the CD with the copy of the latest version of the firmware.
3. Using the EFI Boot Manager menu, boot to the drive that contains the CD with the updated firmware.
4. Follow the instructions to update the firmware.

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