

# HP ProLiant BL20p Generation 2 Server Blade Setup and Installation Guide



August 2003 (Second Edition)  
Part Number 307158-002

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## About This Guide

This guide provides step-by-step instructions for installation and reference information for operation, troubleshooting, and future upgrades for the HP ProLiant BL20p Generation 2 server blade.

### Audience Assumptions

This guide is intended for network administrators and IT personnel who install, configure, and troubleshoot system hardware and software.

### Important Safety Information

Before installing this product, read the *Important Safety Information* document included with the server.

The installation and maintenance of this equipment may involve access to high-power circuitry and must be performed by trained service personnel familiar with these conditions. This equipment is intended to be installed in restricted areas, such as equipment closets and data centers, where only trained service personnel are permitted to operate and service the equipment.

### Symbols on Equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions:



**WARNING:** This symbol, in conjunction with any of the following symbols, indicates the presence of a potential hazard. The potential for injury exists if warnings are not observed. Consult the documentation for specific details.

---



This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

**WARNING:** To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.

---



This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

**WARNING:** To reduce the risk of injury from electric shock hazards, do not open this enclosure.

---



This symbol on an RJ-45 receptacle indicates a network interface connection.

**WARNING:** To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.

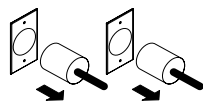
---



This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

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

---



These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

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

---



Weight in kg  
Weight in lb

This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

**WARNING:** To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

---

## Rack Stability



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

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

## Symbols in Text

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



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

---



**CAUTION:** Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

---

**IMPORTANT:** Text set off in this manner presents essential information to explain a concept or complete a task.

**NOTE:** Text set off in this manner presents additional information to emphasize or supplement important points of the main text.

## Related Documents

For additional information on the topics covered in this guide, refer to the following documentation:

- *HP ProLiant BL p-Class System Setup and Installation Guide*
- *HP ProLiant BL p-Class System Maintenance and Service Guide*
- *HP ProLiant BL p-Class System Hardware Installation and Configuration Poster*
- *HP ProLiant Servers Troubleshooting Guide*
- *HP Integrated Lights-Out User Guide*
- *ROM-Based Setup and Utility User Guide*
- White paper: *HP ProLiant BL p-Class System Overview and Planning*
- HP ProLiant BL20p Generation 2 Server Blade QuickSpecs
- *HP StorageWorks Booting Windows Systems from a Storage Area Network*

## Getting Help

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

## Technical Support

In North America, call the HP Technical Support Phone Center at 1-800-652-6672. This service is available 24 hours a day, 7 days a week. For continuous quality improvement, calls may be recorded or monitored. Outside North America, call the nearest HP Technical Support Phone Center. Telephone numbers for worldwide Technical Support Centers are listed on the HP website, [www.hp.com](http://www.hp.com).

For a complete list of information that should be available before you call, refer to the *HP ProLiant Servers Troubleshooting Guide* on the documentation CD.

## HP Website

The HP website has information on this product as well as the latest drivers and flash ROM images. You can access the HP website at [www.hp.com](http://www.hp.com).

## Authorized Reseller

For the name of the nearest authorized reseller:

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

## Reader's Comments

HP welcomes your comments on this guide. Please send your comments and suggestions by e-mail to [ServerDocumentation@hp.com](mailto:ServerDocumentation@hp.com).

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## Installing the Server Blade and Options

This chapter provides installation procedures for an HP ProLiant BL20p Generation 2 Server Blade. For additional installation information, refer to:

- Labels attached to the server blade access panel
- Documentation that ships with each option kit

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

If you encounter any problems during installation, contact an HP authorized reseller.



**WARNING:** To reduce the risk of personal injury or damage to equipment, heed all warnings and cautions throughout the installation instructions.

---

**IMPORTANT:** Before installing server blades for the first time, define the hardware configuration and server blade deployment process. Refer to Chapter 2, “Configuring and Deploying Server Blades.”

## Preparation Procedures

To install server blade options, you may need to:

1. Access internal server blade components.
  - a. Shut down the operating system and power down the server blade.
  - b. Remove the server blade from the server blade enclosure.
  - c. Remove the access panel.
2. Identify the system board components.



**WARNING:** To reduce the risk of electric shock, do not power up the server blade with the access panel removed.

---

3. Install server blade options.
4. Reinstall the access panel.

## Accessing Internal Server Blade Components

To access internal server blade components, you must remove the access panel. Observe the following warnings and cautions.



**WARNING:** To reduce the risk of electric shock, do not power up the server blade with the access panel removed.

---



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

---



**CAUTION:** Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure. Refer to Appendix B, “Electrostatic Discharge,” for more information.

---

To access internal server blade components:

**IMPORTANT:** If the server blade is not installed in the server blade enclosure or is not receiving power through the diagnostic station, begin with step 4.

1. Identify the proper server blade in the server blade enclosure.
2. Remove power from the server blade in one of the following ways:
  - Use the virtual power button feature in the iLO remote console to power down the server blade from a remote location. Be sure that the server blade is in standby mode by observing that the power LED is amber. For iLO information and procedures, refer to the *Integrated Lights-Out User Guide*.
  - Press the Power On/Standby button on the front of the server blade. Be sure that the server blade is in standby mode by observing that the power LED is amber.

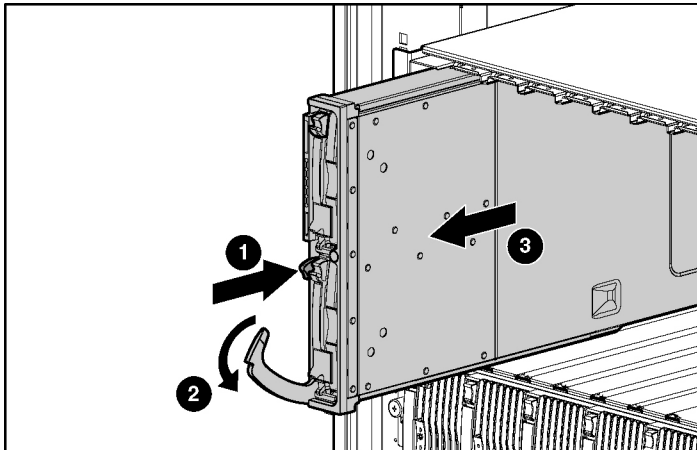


**CAUTION:** After you press the release button, the server blade is unlocked from the server blade enclosure. Use both hands to support the server blade when you remove it from the rack.

---



3. Remove the server blade from the server blade enclosure:
  - a. Press the release button (1).
  - b. Open the release lever (2).
  - c. Grasp the lever and slide the server blade from the server blade enclosure (3). Place a hand under the server blade to support it as you remove it from the server blade enclosure.



**Figure 1-1: Removing a server blade**

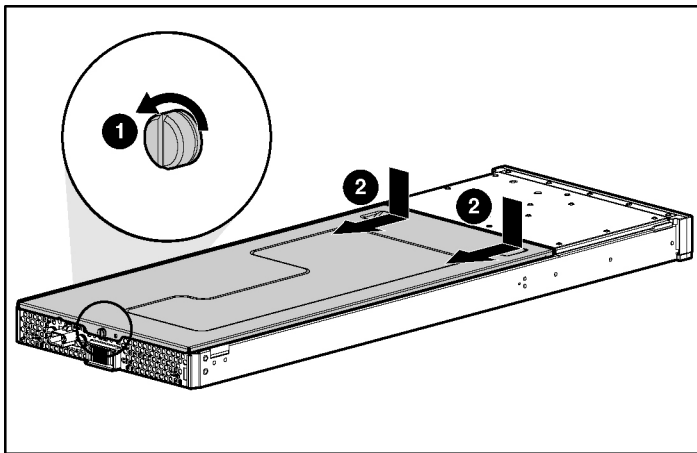
4. Place the server blade on a flat, level surface.
5. Remove the access panel:



**WARNING:** To reduce the risk of electric shock, do not power up the server blade with the access panel removed.

---

- a. Loosen the thumbscrew on the rear of the server blade (1).
- b. Slide the access panel about 1 cm (3/8 in) toward the rear of the unit and lift the panel to remove it (2).

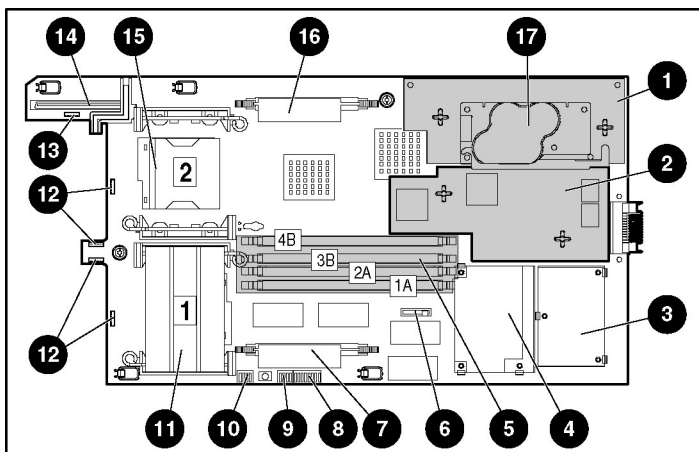


**Figure 1-2: Removing the access panel**

To install the access panel, reverse step 5.

## Identifying System Board Components

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



**Figure 1-3: System board components and connectors**

**Table 1-1: System Board Components and Connectors**

Item	Description
1	Smart Array 5i Plus Controller
2	Standard NIC module (shown) or FC mezzanine card
3	DC filter module
4	DC to DC power converter
5	DIMM slots (4)
6	Battery
7	Processor power module slot 1
8	System Maintenance Switch (SW4)

*continued*

**Table 1-1: System Board Components and Connectors** *continued*

Item	Description
9	System Switch (SW3)
10	System Configuration Switch (SW1)
11	Processor socket 1 (populated)
12	Fan connectors
13	Power button/LED board connector*
14	SCSI backplane board connector
15	Processor socket 2
16	Processor power module slot 2
17	Optional Battery-Backed Write Cache Enabler
*Depending on the configuration and model, this item may not be found on your system board.	

## Memory

You can expand system memory by installing synchronous DDR DIMMs. A ProLiant BL20p G2 server blade supports up to four PC2100 ECC registered DDR SDRAM DIMMs.

### DIMM Installation Guidelines

You must observe the following guidelines when installing additional memory:

- Install only PC2100 registered DDR, 3.3-V, 72-bit wide, ECC DIMMs in the server blade.
- Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A.
- Populate both slots in a bank at the same time: DIMMs 1 and 2 reside in bank A, and DIMMs 3 and 4 reside in bank B.

**NOTE:** The server blade ships with at least two DIMMs installed in DIMM slots 1A and 2A.



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

---

## Installing DIMMs

Before installing DIMMs, review the “DIMM Installation Guidelines” section in this chapter.



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

---



**CAUTION:** Electrostatic discharge can damage electronic components. Properly ground yourself before beginning any installation procedure. Refer to Appendix B, “Electrostatic Discharge,” for more information.

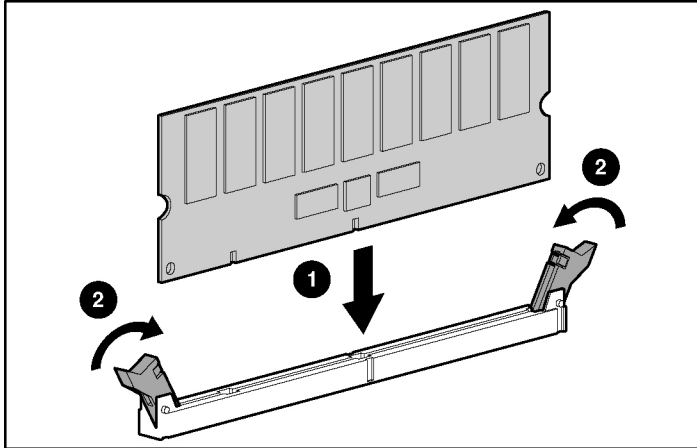
---

To install a DIMM:

1. Access the internal server blade components. Refer to the “Preparation Procedures” section in this chapter.
2. Open the DIMM slot latches.
3. Align the key slot in the bottom edge of the DIMM with the tab in the DIMM slot.

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

4. Insert the DIMM into the DIMM slot (1).
5. Press down firmly. When the DIMM seats fully in the slot, the latches close (2).



**Figure 1-4: Installing a DIMM**

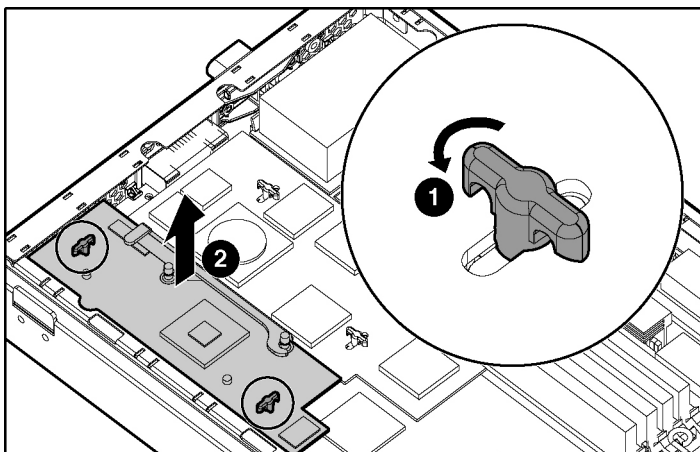
6. Repeat steps 2 through 5 to install the second DIMM.
7. Reinstall the access panel.

## Battery-Backed Write Cache Enabler

The optional Battery-Backed Write Cache Enabler provides the system with a means for storing and saving data in the event of an unexpected system shutdown.

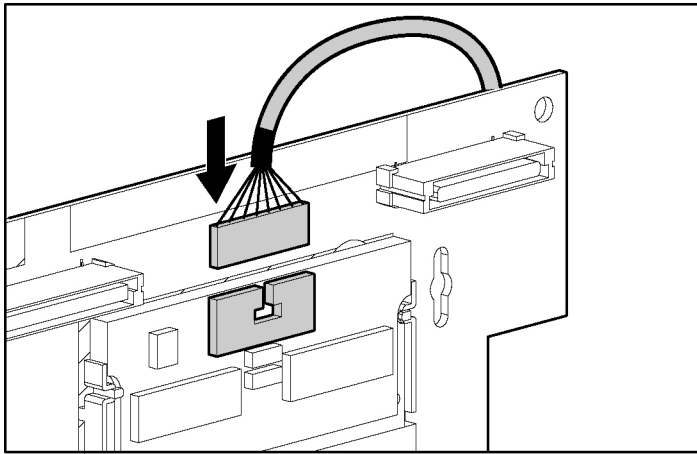
To install the Battery-Backed Write Cache Enabler:

1. Access the internal server blade components. Refer to the “Preparation Procedures” section in this chapter.
2. Remove the Smart Array 5i Plus Controller module from the system board by turning the standoffs  $\frac{1}{4}$  turn (1) and lifting the board (2).



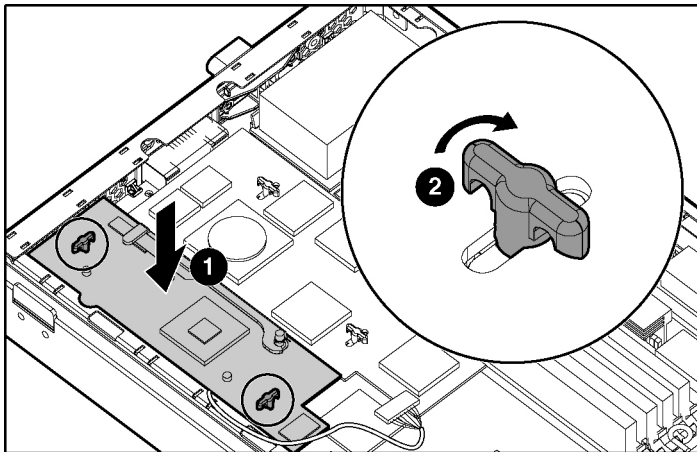
**Figure 1-5: Removing the Smart Array 5i Plus Controller module**

3. Connect the cable to the bottom of the Smart Array 5i Plus Controller module.



**Figure 1-6: Cabling the Smart Array 5i Plus Controller module**

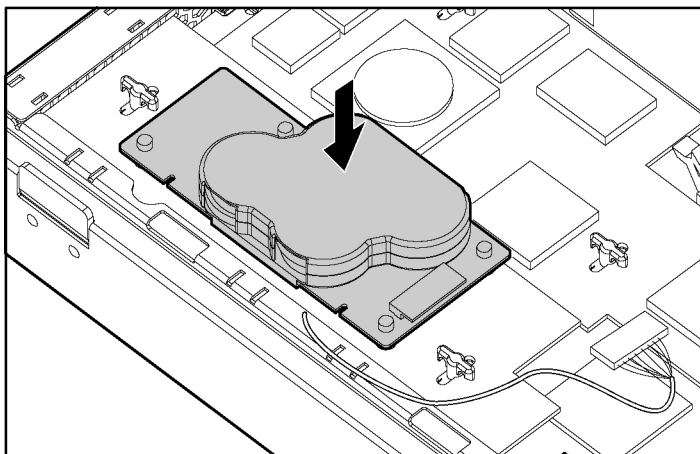
4. Install the Smart Array 5i Plus Controller module into the system board by seating it onto the connector (1) and turning the standoffs (2).



**Figure 1-7: Installing the Smart Array 5i Plus Controller**

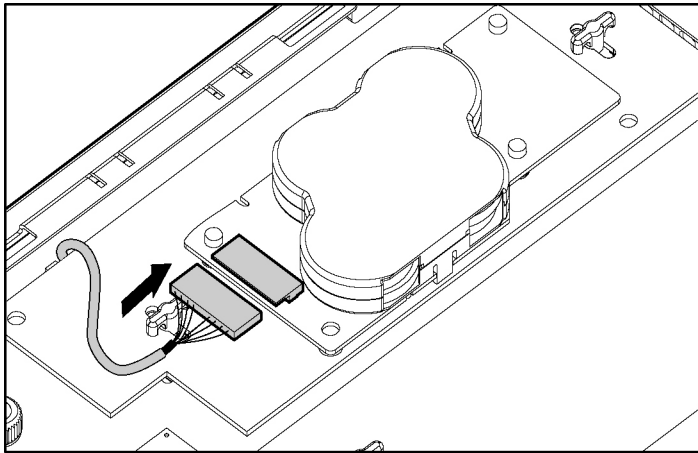


5. Install the Battery-Backed Write Cache Enabler on the brass standoffs on the Smart Array 5i Plus Controller. Be sure the enabler seats firmly.



**Figure 1-8: Installing the Battery-Backed Write Cache Enabler**

6. Connect the cable to the Battery-Backed Write Cache Enabler.



**Figure 1-9: Cabling the Battery-Backed Write Cache Enabler**

7. Reinstall the access panel. Refer to the “Preparation Procedures” section in this chapter.

## Dual Port Fibre Channel Mezzanine Card

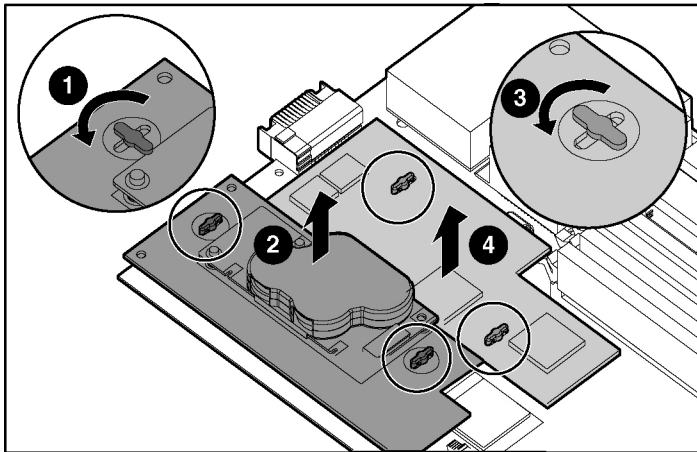
An optional dual port Fibre Channel (FC) mezzanine card enables Fibre Channel support, for clustering capabilities, and SAN connection when used in conjunction with the RJ-45 Patch Panel 2 or any other interconnect that supports a SAN connection. The card replaces the standard NIC module that is shipped with some server blades. Both the standard NIC module and the FC mezzanine card have two 10/100/1000 NICs. Refer to “SAN Configuration Overview” in Chapter 2 for more information about connecting to the SAN.

To install the FC mezzanine card:

**NOTE:** Perform these steps only if you are replacing the standard NIC module with the FC mezzanine card option. The FC mezzanine card may already be installed on some server blades. Refer to the *HP Dual Port Fibre Channel Mezzanine Card Installation Instructions* for more information.

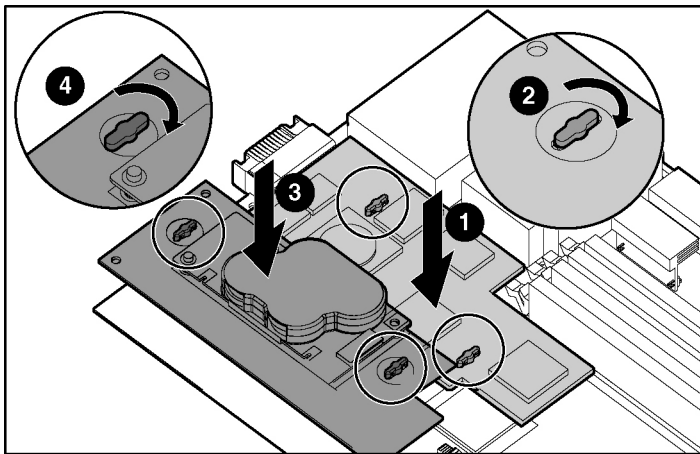
1. Remove the access panel. Refer to Figure 1-2.

2. Remove the standard NIC module:
  - a. Turn the quarter-turn standoff latches on the Smart Array 5i Plus Controller module counter-clockwise (1).
  - b. Lift the Smart Array 5i Plus Controller module from the system board (2).
  - c. Turn the quarter-turn standoff latches on the standard NIC module counter-clockwise (3).
  - d. Lift the standard NIC module away from the system board (4).



**Figure 1-10: Removing the standard NIC module**

3. Align the FC mezzanine card over the quarter-turn standoff latches where the standard NIC module was located and install (1).
4. Turn the standoff latches clockwise to secure (2).
5. Align the Smart Array 5i Plus Controller over the quarter-turn standoff latches and install (3).
6. Turn the standoff latches clockwise to secure (4).



**Figure 1-11: Installing the FC mezzanine card**

## Hot-Plug SCSI Hard Drives and Blanks

### Removing Hard Drive Blanks



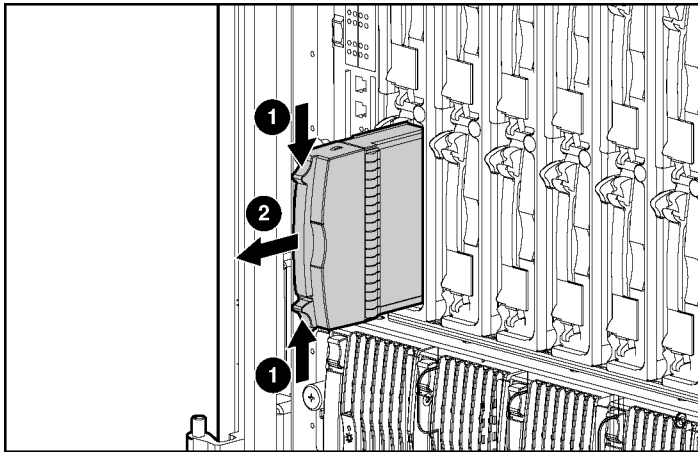
**CAUTION:** Always populate drive bays with either a hard drive or blank. Proper airflow can only be maintained when the bays are populated. Unpopulated drive bays can lead to improper cooling and thermal damage.

To remove a hard drive blank:

1. Press and hold the release button (1).

**NOTE:** Port-colored items indicate hot-plug components.

2. Pull the blank out of the drive bay (2).



**Figure 1-12: Removing a hard drive blank**

**NOTE:** Store the hard drive blank for future use.

To install a hard drive blank, simply align the blank with the empty bay and slide the blank into the bay until the locking button engages.

## SCSI ID Numbers

The server blade hot-plug SCSI hard drives have unique SCSI IDs that the system automatically sets. The IDs number from top to bottom on each server blade.

**IMPORTANT:** Always populate hard drive bays starting with SCSI ID 0 (the top bay).

## Replacing Hot-Plug SCSI Hard Drives

To remove hot-plug SCSI hard drives:

1. Back up all server blade data on the hard drive.



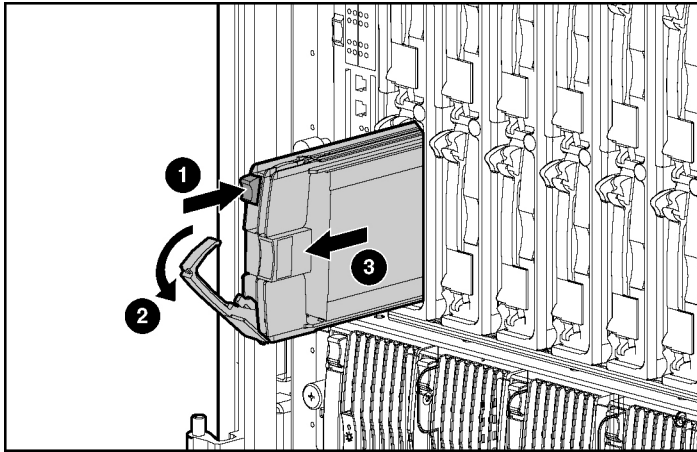
**CAUTION:** Before removing a hot-plug SCSI hard drive, use the LEDs to determine the status of the drive. Refer to the “Hot-Plug SCSI Hard Drive” section in Appendix E, “LEDs and Switches.”



**CAUTION:** If you are replacing a drive that is part of an array, refer to the *HP ProLiant Servers Troubleshooting Guide*.

---

2. Press the port-colored ejector lever release button (1).
3. Pull the ejector lever open (2).
4. Remove the hard drive (3).



**Figure 1-13: Removing a hot-plug SCSI hard drive**

To install hot-plug SCSI hard drives:

1. Remove the existing hard drive blank or SCSI hard drive from the bay:
2. Insert the hot-plug SCSI hard drive. Be sure the drive seats firmly into the connector on the SCSI backplane.
3. Close the ejector lever.
4. If you replaced a hard drive, restore the server blade data from the backup.
5. Use the hot-plug SCSI hard drive LEDs to identify the status of the installed drive. For more information about these LEDs, refer to the “Hot-Plug SCSI Hard Drive” section in Appendix E, “LEDs and Switches.”
6. Resume normal server blade operations.



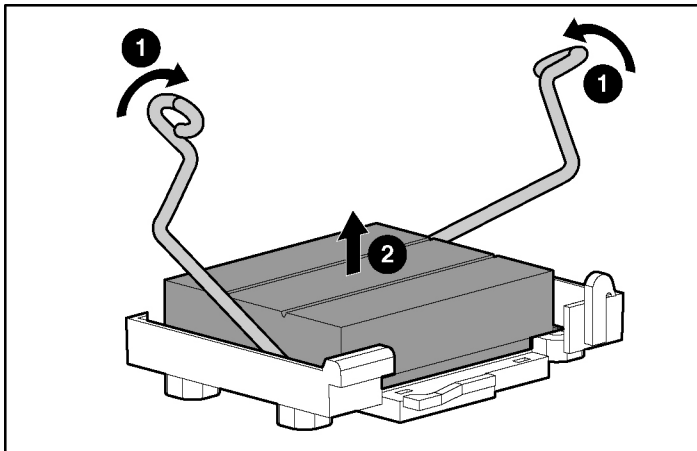
## Processors, Heatsinks, and PPMs

The ProLiant BL20p G2 server blade ships with one or two Intel® Xeon processors.

### Replacing a Processor and Heatsink

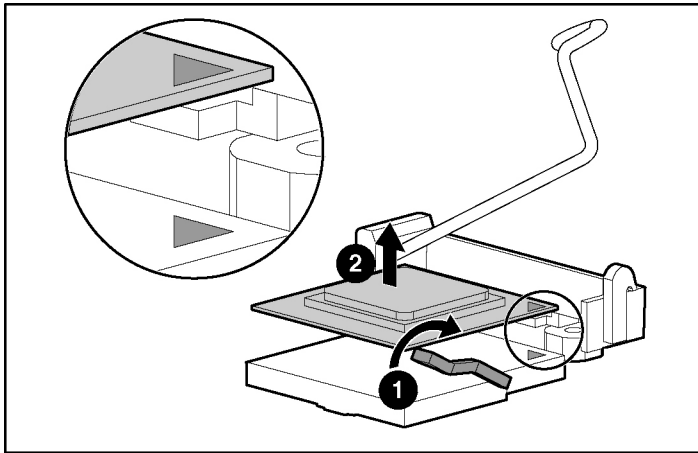
To remove a processor and heatsink:

1. Remove the server blade from the server blade enclosure. Refer to “Preparation Procedures” in this chapter.
2. Remove the access panel. Refer to “Preparation Procedures” in this chapter.
3. Push down on the locking levers on both sides of the processor assembly, and then rotate them up (1).
4. Remove the heatsink (2).



**Figure 1-14: Unlatching the processor locking levers**

5. Raise the locking lever to release the processor (1) and remove the processor (2).



**Figure 1-15: Removing the processor**

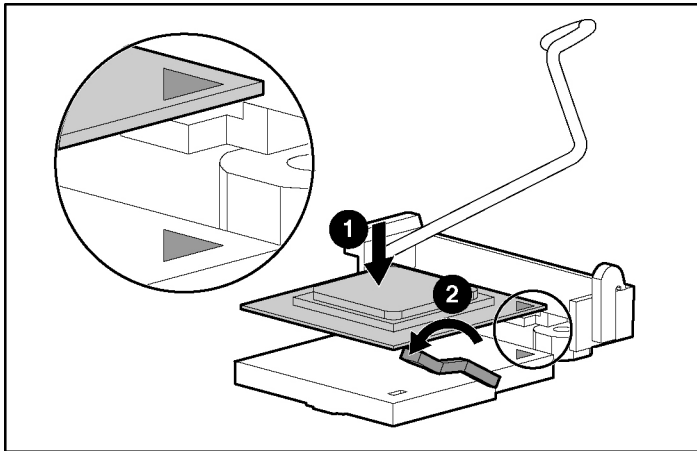
To install a new processor:

1. Install the processor with the edges properly aligned (1), and lower the locking lever (2).



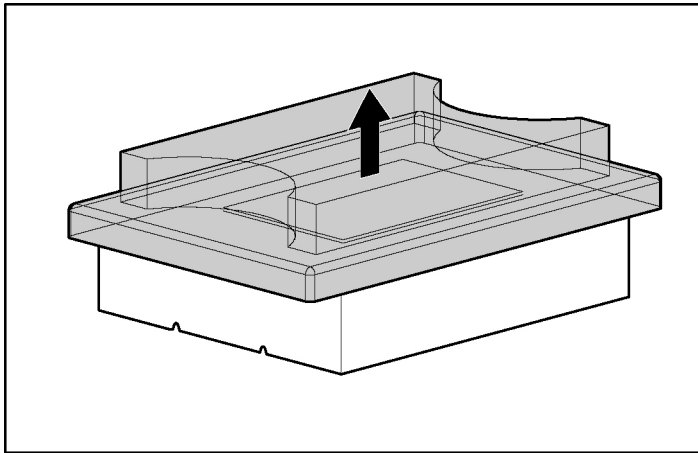
**CAUTION:** When installing the processor into the socket, be sure that the locking lever is fully raised to avoid damaging pins.

---



**Figure 1-16: Installing a processor**

2. Remove the thermal interface media cover.



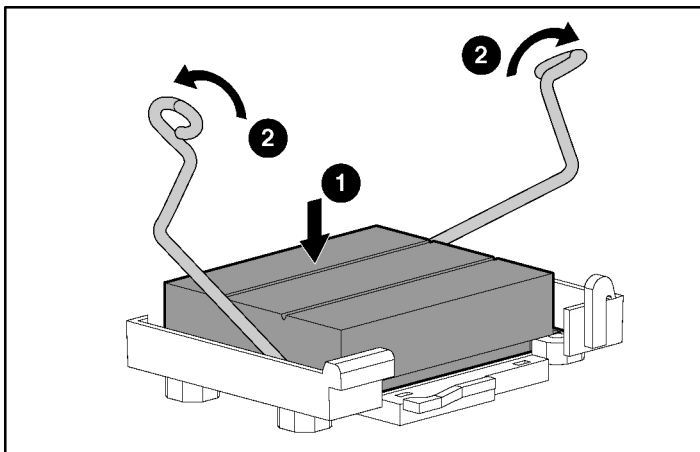
**Figure 1-17: Removing the thermal interface media cover**



**CAUTION:** After the cover is removed, do not touch the thermal interface media. Touching the thermal interface media will reduce the thickness and could cause the processor to overheat.

---

3. Install the heatsink (1), and close the locking levers (2).

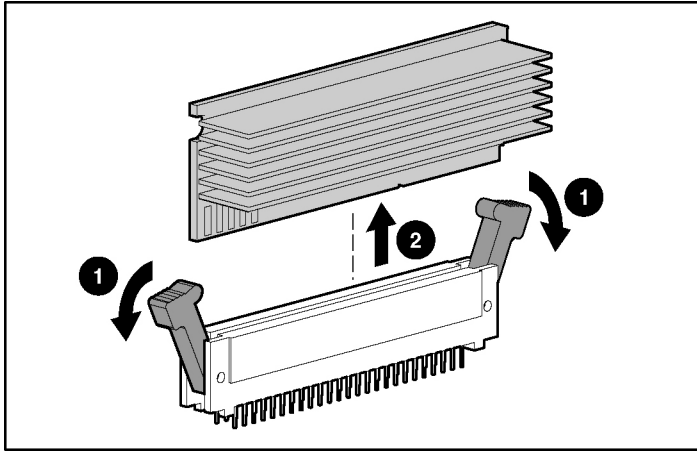


**Figure 1-18: Installing a heatsink**

**IMPORTANT:** The heatsink is not reusable and must be discarded if removed from the processor after application.

## Replacing a Processor Power Module

To remove a processor power module (PPM), push the latches out (1), and pull the PPM out (2).



**Figure 1-19: Removing a PPM**

**NOTE:** PPMs with the same part number may look different, but are functionally equivalent.

To install a PPM, press it into the socket until it seats firmly, and close the latches.

## Server Blades

Before installing server blades for the first time, define the hardware configuration and server blade deployment process. Refer to Chapter 2, “Configuring and Deploying Server Blades.”

## Installing a Server Blade

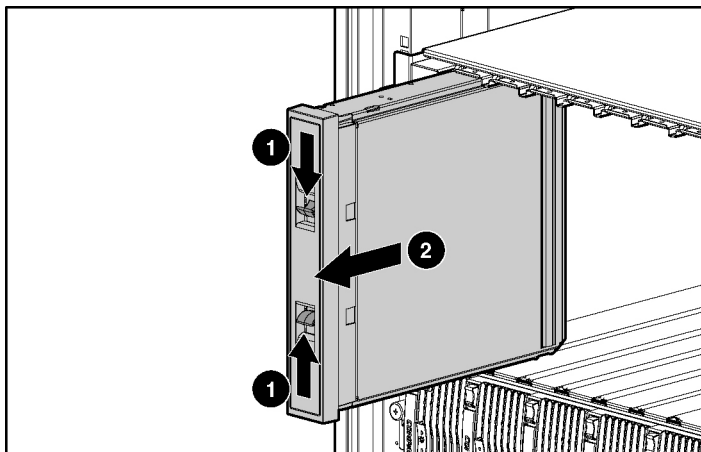


**CAUTION:** Always populate the server blade enclosure bays with either a server blade or server blade blank. Proper airflow can only be maintained when the bays are populated. Unpopulated bays can lead to improper cooling and thermal damage.

---

To install a server blade:

1. Remove the server blade blank:
  - a. Press the release buttons (1).
  - b. Slide the server blade blank out of the bay (2).



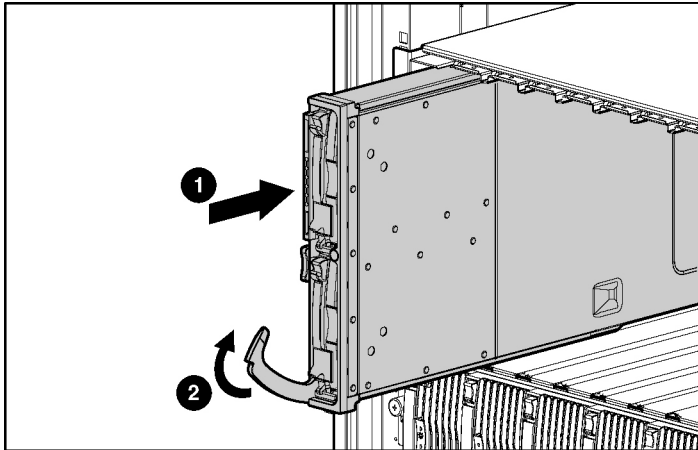
**Figure 1-20: Removing a server blade blank**

**NOTE:** Store the server blade blank for future use.

2. Align the keyed end of the server blade with the guide at the end of a bay on the server blade enclosure.

**IMPORTANT:** The server blade is keyed to fit only one way in the bay. If the server blade does not slide easily into the bay, be sure that the server blade is oriented properly.

3. Install the server blade into the bay (1). Slide the server blade fully into the bay.
4. Close the ejector lever (2).



**Figure 1-21: Installing a server blade**



## Powering Up the Server Blade

To install a server blade in the server blade enclosure, refer to the “Installing a Server Blade” section in this chapter.

Server blades are set to power up automatically. If you changed this setting, use one of the following methods to power up the server blade:

- Power On/Standby button
  - A momentary press initiates a power-up request. The system detects if power is available to power on the server blade.
  - A long press, 5 or more seconds, initiates a power-up override. The system is forced to power up the server blade without detecting available power.



**CAUTION:** Always observe iLO alerts before initiating a power-up override to prevent a hot-plug power supply fault and possible loss of system power.

---

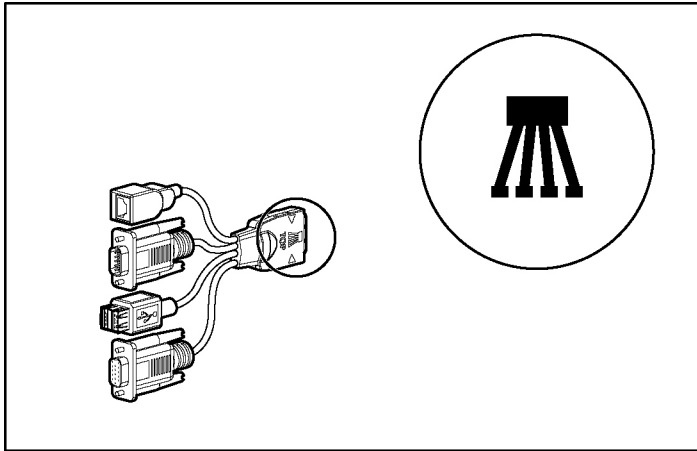
**NOTE:** You may choose to perform a power-up override to power up a server blade and to override the power-up request function when the management modules are not in use and when you know that sufficient power is available.

- Virtual power button features through the iLO remote console
  - A momentary power-up selection initiates a power-up request. The system detects if power is available to power up the server blade.
  - A hold power-up selection initiates a power-up override. The system is forced to power up the server blade without detecting available power.

For more information about iLO, refer to Chapter 2, “Configuring and Deploying Server Blades.”

## Using the Diagnostic Cable or the Local I/O Cable

Use either the diagnostic cable or the I/O cable to perform some server blade configuration and diagnostic procedures. Depending on the model, the server blade has either a diagnostic port or an I/O port. The I/O port only accepts the I/O cable and the diagnostic port only accepts the diagnostic cable. If the server blade has an I/O icon next to the port on the front of the server blade, use the I/O cable. If the port has no icon, use the diagnostic cable. Refer to Figure 1-22 to identify the I/O icon.



**Figure 1-22: I/O cable with large view of the I/O icon**

## Identifying Diagnostic and I/O Cable Connectors

Use Figure 1-23 and Table 1-2 to identify the diagnostic cable and I/O cable connectors.

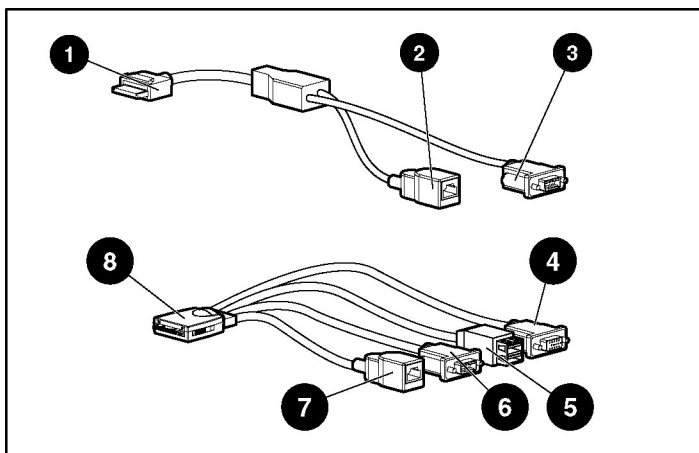


Figure 1-23: Connectors

Table 1-2: Diagnostic and I/O cable connectors

Item	Description
<b>Diagnostic cable</b>	
1	Server blade connector
2	iLO RJ-45 (10/100 Ethernet) connector
3	Kernel debug connector**
<b>I/O cable*</b>	
4	Video connector
5	USB Connector (2)
6	Kernel debug connector**
7	iLO RJ-45 (10/100 Ethernet) connector
8	Server blade connector

\*The I/O cable is labeled with the I/O icon. The Diagnostic cable has no label.

\*\*The kernel debug connector does not function as a serial port.

The I/O cable connects to the I/O port located on the front of the server blade. The other end of the I/O cable provides four connectors:

- **iLO RJ-45 (10/100 Ethernet) connector**—provides a 10/100 Ethernet RJ-45 connector through which you can access the server blade with the iLO Remote Console and a client PC
- **Kernel debug connector**—requires a null modem serial cable and enables trained personnel to perform advanced diagnostic procedures
- **Video connector**—provides video capability
- **USB connector**—provides two USB connections enabling direction connection to the server blade

The diagnostic cable connects to the diagnostic port located on the front of the server blade. The other end of the diagnostic cable provides two connectors:

- **iLO RJ-45 (10/100 Ethernet) connector**—provides a 10/100 Ethernet RJ-45 connector through which you can access the server blade with the iLO Remote Console and a client PC
- **Kernel debug connector**—requires a null modem serial cable and enables trained personnel to perform advanced diagnostic procedures

## Connecting the Diagnostic Cable or the I/O Cable

### Connecting to a Server Blade through iLO

To connect to iLO using either the diagnostic cable or the I/O cable, you must have the following:

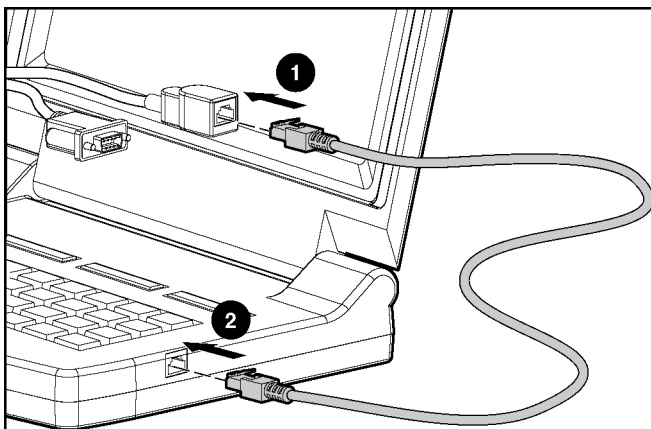
- A client PC with a 10/100 Ethernet RJ-45 connector
- A network cable with RJ-45 connectors

To connect to iLO:

**IMPORTANT:** Do not connect the diagnostic cable to a hub. All server blades have the same IP address through the diagnostic port. Multiples on a hub make the server blades indistinguishable on the network. Refer to "Integrated Lights-Out Advanced Management" in Chapter 2, "Configuring and Deploying Server Blades," for the default server blade IP address.

**IMPORTANT:** Connecting the diagnostic cable to the diagnostic port or the I/O cable to the I/O port automatically disables the iLO connection on the rear of the server blade.

1. Connect one end of the RJ-45 network cable to the diagnostic cable (1) or the I/O cable, depending on your server blade.
2. Connect the other end of the network cable to the 10/100 Ethernet RJ-45 connector on the client PC (2).



**Figure 1-24: Connecting an RJ-45 network cable**

3. Connect the server blade connector to the server blade.



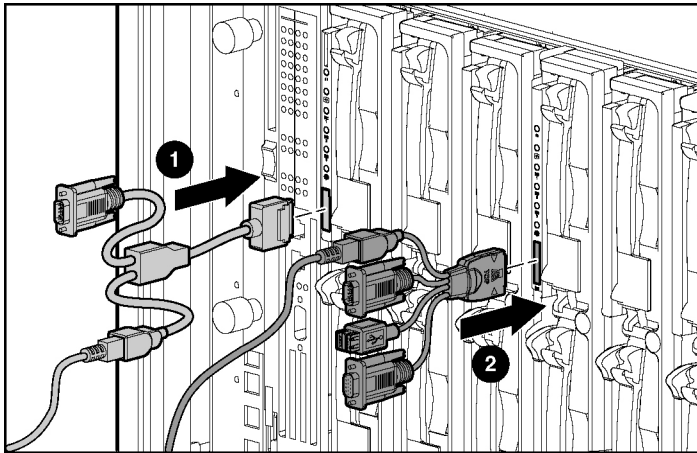
**CAUTION:** Disconnect the Diagnostic cable or the I/O cable from the port when not in use. The port and connector do not provide permanent connections.



**CAUTION:** Rear iLO connector performance degrades when the I/O cable or the diagnostic cable is in use, even when the iLO connector on the cable is not in use.



**CAUTION:** Always match the I/O cable labeled with the I/O icon to the I/O port also labeled with the I/O icon. The Diagnostic cable and port have no labels. Mismatched cables prevent proper connection and can cause damage.



**Figure 1-25: Connecting either the diagnostic cable (1) or the I/O cable (2) to a server blade**



**CAUTION:** For the Diagnostic Cable, the locking buttons are located on the top of the server blade connector.

For the I/O cable, the locking buttons are located on the sides of the server blade connector.

Always be sure to squeeze the locking button(s) on the server blade connector before disconnecting the diagnostic cable or the I/O cable from the diagnostic or I/O port. Failure to do so can result in damage to the equipment.

## **Connecting Directly to a Server Blade using Video and USB Devices**

To connect directly to the server blade, use the I/O cable and any combination of the following USB devices:

- Monitor
- USB Hub
- USB Keyboard
- USB Mouse
- USB CD-ROM
- USB Floppy

The devices can be connected to the I/O cable in various configurations. Two of the possible configurations are detailed below:

## Directly Accessing a Configured Server Blade

Use the following setup to access a configured server blade:

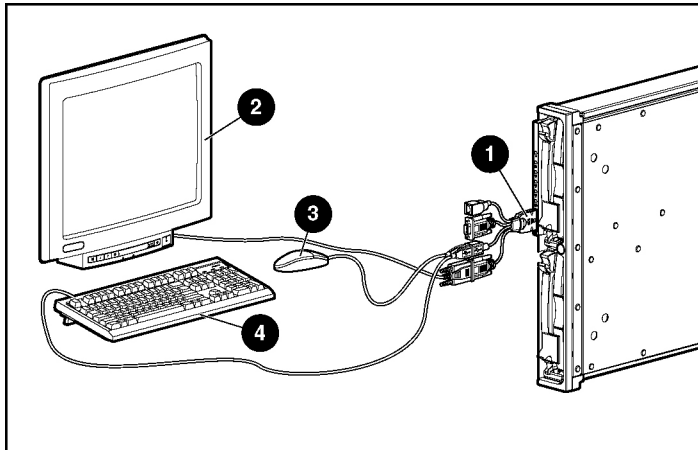


**CAUTION:** Rear iLO connector performance degrades when the I/O cable or the diagnostic cable is in use, even when the iLO connector on the cable is not in use.

---

**NOTE:** For this setup, a hub is not necessary to connect directly to the blade. If you need additional connections, use the second setup.

1. Connect the I/O cable to the server blade (1).
2. Connect the video connector to a monitor (2).
3. Connect a USB mouse to the USB connector (3).
4. Connect a USB keyboard to the USB connector (4).



**Figure 1-26: Directly accessing a configured server blade**



## **Directly Accessing a Server Blade to Configure a Server Blade or Load Software Updates**

Use the following setup to configure a server blade using a Smart Start CD or to load software updates or patches using the CD-ROM:



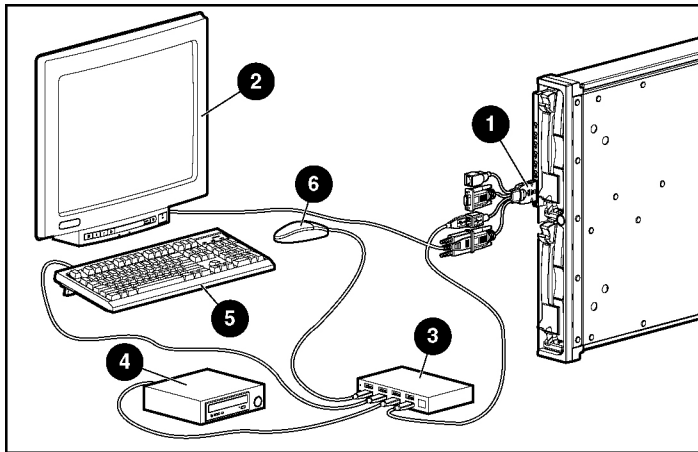
**CAUTION:** Rear iLO connector performance degrades when the I/O cable or the diagnostic cable is in use, even when the iLO connector on the cable is not in use.

---

1. Connect the I/O cable to the server blade (1).
2. Connect a monitor to the video connector (2).
3. Connect a USB hub to a USB connector (3).

4. Connect the following to the USB hub:
  - a. USB CD-ROM (4) and/or a USB floppy drive
  - b. USB keyboard (5)
  - c. USB mouse (6)

**NOTE:** HP recommends the use of a USB hub when connecting a USB floppy and/or USB CD-ROM drive to the server blade. This provides more available connections.



**Figure 1-27: Directly connecting to the server blade using a USB hub**

---

## Configuring and Deploying Server Blades

This chapter contains information about server blade deployment methods, hardware configuration, and the software to accomplish these tasks.

### Configuration and Deployment Overview

Four primary deployment methods are supported:

- ProLiant Essentials Rapid Deployment Pack

This is the recommended method for automatically deploying the server blade with little user intervention. Refer to the “ProLiant Essentials Rapid Deployment Pack” section for more details.

- CD-ROM Deployment
- Diskette image deployment

A DOS-based network-enabled boot diskette is created to execute a script that configures the hardware and installs the operating system.

**IMPORTANT:** To deploy a server blade without the Rapid Deployment Pack, you must create a bootable diskette or image of a bootable diskette.

- Boot from SAN

Refer to the HP website:

<http://h18004.www1.hp.com/products/servers/proliant-bl/p-class/storage.html>

Integrated Lights-Out Advanced (iLO Advanced) can be a helpful debugging tool in the configuration and deployment process. HP recommends using iLO Advanced to follow the process. Refer to the “Integrated Lights-Out Advanced Management” section in this chapter for connection instructions.

## ProLiant Essentials Rapid Deployment Pack

The ProLiant Essentials Rapid Deployment Pack software is the preferred method for rapid, high-volume server blade deployments. The Rapid Deployment Pack software integrates two powerful products: Altiris eXpress Deployment Solution and the ProLiant Integration Module.

The Altiris eXpress Deployment Server Console has an intuitive graphical user interface that provides simplified drag-and-drop server deployment using either imaging or scripting. The console also has advanced features for blade servers. The user can view blade servers in a physical tree view according to their Rack\Enclosure\Bay settings. The Deployment Server can detect when a blade is ripped out and replaced with a new blade. The user can configure the Deployment Server to automatically replay all deployment jobs on the new blade.

If you purchased the Rapid Deployment Pack with the blade enclosure, follow the instructions on the Quick Start Guide, included in the kit, to register and install the software.

For product information and the latest Rapid Deployment Pack documentation, go to [www.hp.com/servers/rdp](http://www.hp.com/servers/rdp)

## CD-ROM Deployment

CD-ROM Deployment involves using a bootable CD that executes script to configure the hardware and install the operating system. After the operating system is configured, the server blade can access the network to locate the scripts and files necessary for deployment.

The server blade should be connected to a network before beginning the deployment process. Connect to the server blade with one of the following methods:

- Through an existing network (in the rack)  
This method requires you to install the server blade in its enclosure and assign it an IP address (manually or using DHCP).
- Through an existing network (out of the rack, with the diagnostic station)  
This method enables you to configure a server blade out of the rack by powering the blade with the diagnostic station and connecting to an existing network through a hub. The IP address is assigned by a DHCP server on a network.

Other methods are available for connecting to the ProLiant BL20p G2 server blade, but they do not provide the network accessibility required to deploy the server. Refer to “Integrated Lights-Out Advanced Management” in this chapter for information about these additional methods.

**NOTE:** For more information about these hardware and cabling configurations, refer to the *HP ProLiant BL p-Class System Hardware Configuration and Installation* poster and the documentation that ships with the diagnostic station.

## Using the CD-ROM

Server blades have two mechanisms for using the CD-ROM:

- iLO Virtual CD-ROM
- USB CD-ROM

## iLO Virtual CD-ROM

To perform a boot CD deployment:

1. Do one of the following:
  - Insert the boot CD into the client PC from which you are running the iLO Remote Console.
  - Use iLO Advanced to create an image file of the boot CD.
  - Copy the image of the boot CD to a location on the network or the client PC hard drive.
2. Remotely access the server blade through iLO Advanced. Refer to “Integrated Lights-Out Advanced Management” in this chapter.
3. Click the **Virtual Devices** tab.
4. Select **Virtual Media**.
5. Use the Virtual Media applet to select the local CD or image file and connect the Virtual CD to the server blade.
6. Use the iLO Virtual Power Button feature to reboot the server blade.
7. After the server blade boots, follow the normal network installation procedure for an operating system.

## USB CD-ROM

SmartStart simplifies the deployment process and facilitates loading the operating system. However, SmartStart does not prevent you from loading the operating system and drivers manually. For more information on SmartStart, refer to the HP website:

[www.hp.com/servers/smartstart](http://www.hp.com/servers/smartstart)

To perform a boot CD deployment:

1. Connect a USB CD-ROM drive to the server blade using the I/O cable.
2. Insert the boot CD into the CD-ROM.
3. Reboot the server blade.

4. After the server blade boots, follow the normal installation procedure for an operating system.

## Diskette Image Deployment

Diskette Image Deployment involves creating a DOS-based network-enabled boot diskette that will execute a script that configures the hardware and installs the operating system. The diskette gets the server blade on the network where it can access the scripts and files necessary for deployment. This implies a deployment infrastructure that may include an administrator workstation, PXE server, Microsoft® Windows® file share, or a Linux file share.

The server blade must be connected to a network before beginning the deployment process. Connect to the server blade with one of the following methods:

- Through an existing network (in the rack)  
This method requires you to install the server blade in its enclosure and assign it an IP address (manually or using DHCP).
- Through an existing network (out of the rack, with the diagnostic station)  
This method enables you to configure a server blade out of the rack by powering the blade with the diagnostic station and connecting to an existing network through a hub. The IP address is assigned by a DHCP server on a network.

Other methods are available for connecting to the ProLiant BL20p G2 server blade, but they do not provide the network accessibility required to deploy the server. Refer to “Integrated Lights-Out Advanced Management” in this chapter for information about these additional methods.

**NOTE:** For more information about these hardware and cabling configurations, refer to the *HP ProLiant BL p-Class System Hardware Configuration and Installation* poster and the documentation that ships with the diagnostic station.

## Creating the Boot Diskette

The SmartStart Scripting Toolkit provides the tools and information for creating a diskette that will configure the hardware and install the operating system.

For details, download the latest version of the SmartStart Scripting Toolkit from [www.hp.com/servers/sstoolkit](http://www.hp.com/servers/sstoolkit)

and refer to the *SmartStart Scripting Toolkit User Guide*.

It is also possible to configure the hardware manually using RBSU through the iLO Advanced remote console. With this method, the diskette would be more generic and would integrate into an existing network OS installation process. Refer to the “Integrated Lights-Out Advanced Management” section in this chapter.

For the most current information about operating system support on server blades, refer to the operating system support matrix, available at

[www.hp.com/products/servers/platforms](http://www.hp.com/products/servers/platforms)

then navigate to the OS support for ProLiant BL p-Class server blades.

**IMPORTANT:** The ProLiant BL20p Generation 2 server blade has the ability to connect to a SAN using the optional FC mezzanine card. You can preconfigure the SAN HBA driver Smart Components in the ProLiant Support Pack. Refer to the *ProLiant Support Pack User Guide* or “SAN Configuration Overview” in this chapter for more information.

## Using the Boot Diskette

Server blades have two mechanisms for using the diskette: iLO Virtual Floppy and PXE.

### iLO Virtual Floppy Deployment

To perform a boot diskette deployment:

1. Do one of the following:
  - Insert the boot diskette into the client PC from which you are running the iLO Remote Console.
  - Use iLO Advanced to create an image file of the boot diskette.
  - Copy the image of the boot diskette to a location on the network or the client PC hard drive.



2. Remotely access the server blade through iLO Advanced. Refer to “Integrated Lights-Out Advanced Management” in this chapter.
3. Click the **Virtual Devices** tab.
4. Select **Virtual Media**.
5. Use the Virtual Media applet to select the local diskette or image file and connect the Virtual Disk to the server blade.
6. Use the iLO Virtual Power Button feature to reboot the server blade.
7. After the server blade boots, follow the normal network installation procedure for an operating system.

## PXE

PXE enables server blades to load an image over the network from a PXE server, then execute it in memory. The first NIC on the server blade is the default PXE boot NIC, but any of the other NICs can be configured to boot PXE. Refer to “PXE Deployment” in this chapter for more information.

A number of third-party PXE deployment tools are available for Windows and Linux. For additional information refer to

[ftp.compaq.com/pub/products/servers/management/pxe\\_wp.pdf](ftp.compaq.com/pub/products/servers/management/pxe_wp.pdf)

## SAN Configuration Overview

The ProLiant BL20p Generation 2 server blade delivers FC support for SAN implementations and clustering capabilities. The ProLiant BL20p Generation 2 server blade uses an optional FC mezzanine card for redundant SAN connectivity and is optimized for HP StorageWorks. In addition, the server blade is also compatible with certain third-party SAN products. Refer to the *HP Dual Port Fibre Channel Mezzanine Card Installation Instructions* for installation requirements and instructions.

For optimal SAN connectivity, verify that:

- The HP ProLiant BL20p Generation 2 server blade has the FC mezzanine card installed, and that it is correctly installed in the server blade enclosure—Refer to the *Dual Port Fibre Channel Mezzanine Card Installation Instructions*

- A Fibre-capable interconnect is installed in the enclosure—Refer to the documentation that shipped with the interconnect option
- The enclosure management module firmware is up-to-date—Refer to the ProLiant BL p-Class support site on [www.hp.com](http://www.hp.com)
- The server blade is properly cabled to a supported SAN
- SAN storage drivers are loaded—Refer to supporting white papers and to [www.hp.com/servers/rdp](http://www.hp.com/servers/rdp)

For SAN configuration information for the server blade, consult the *SAN Design Reference Guide* located at

[www.compaq.com/products/storageworks/san/documentation.html](http://www.compaq.com/products/storageworks/san/documentation.html)

## Software and Utilities

The following utilities and support tools are available for use in configuring and deploying the server blade:

- Integrated Lights-Out Advanced (iLO Advanced) Management
- Redundant ROM Support
- ROMPaq Utility
- ROM-Based Setup Utility (RBSU)
- Option ROM Configuration for Arrays (ORCA) Utility
- Network-based PXE Deployment
- SmartStart Scripting Toolkit
- Insight Manager 7
- Diagnostics Utility
- Automatic Server Recovery (ASR-2)
- Integrated Management Log (IML)

HP also offers the following software components:

- Health and Wellness Driver and IML Viewer
- iLO Advanced Management Interface Driver
- Rack Infrastructure Interface Service
- Management Agents

For Windows operating system users, these items are included in the ProLiant Support Pack for Microsoft Windows, available from the ProLiant BL p-Class system product page at

[www.hp.com/support/files](http://www.hp.com/support/files)

Linux operating system users must install these items manually. For information about downloading these components, refer to

[www.hp.com/support](http://www.hp.com/support)

For information on how to use these components with a Linux operating system, refer to

<http://h18000.www1.hp.com/products/servers/linux/documentation.html#howtos>

## **Integrated Lights-Out Advanced Management**

Integrated Lights-Out Advanced (iLO Advanced) is a standard component of selected ProLiant server blades. The iLO Advanced subsystem provides server health and remote server blade manageability. The iLO Advanced subsystem features are accessed from a network client PC using a supported Web browser. In addition to other features, iLO Advanced provides keyboard, mouse, and video (text and graphics) capability for a server blade, regardless of the state of the host operating system or host server blade.

The iLO Advanced subsystem includes an intelligent microprocessor, secure memory, and a dedicated network interface. This design makes iLO Advanced independent of the host server blade and its operating system. The iLO Advanced subsystem provides remote access to any authorized network client, sends alerts, and provides other server blade management functions.

Using a supported Web browser, you can:

- Remotely access the console of the host server blade, including all text mode and graphics mode screens with full keyboard and mouse controls.

- Remotely power up, power down, or reboot the host server blade.
- Remotely boot a host server blade to a virtual diskette image to perform a ROM upgrade or to install an operating system.
- Send alerts from iLO Advanced regardless of the state of the host server blade.
- Access advanced troubleshooting features provided by iLO Advanced.
- Launch a Web browser, use Simple Network Management Protocol (SNMP) alerting, and diagnose the server blade using Insight Manager 7.

The server blade must be properly cabled for iLO Advanced connectivity. Connect to the server blade with one of the following methods:

- Through an existing network (in the rack)

This method requires you to install the server blade in its enclosure and assign it an IP address (manually or using DHCP).

- Through the server blade diagnostic port

— In the rack

This method requires you to connect the diagnostic cable to the diagnostic port and a client PC. Using the static IP address listed on the diagnostic cable label and the initial access information on the front of the server blade, you can access the server blade with the iLO Advanced Remote Console. For diagnostic cabling instructions, refer to “Using the Diagnostic Cable” in Chapter 1, “Installing the Server Blade and Options.”

— Out of the rack, with the diagnostic station

This method requires you to power the server blade with the optional diagnostic station and connect to an external computer using the static IP address and the diagnostic cable. For cabling instructions, refer to the documentation that ships with the diagnostic station or to the Documentation CD.

- Through the server blade rear panel connectors (out of the rack, with the diagnostic station)

This method enables you to configure a server blade out of the rack by powering the blade with the diagnostic station and connecting to an existing network through a hub. The IP address is assigned by a DHCP server on a network.

## iLO ROM-Based Setup Utility

The iLO ROM-Based Setup Utility (iLO RBSU) is the recommended method to configure and set up the iLO subsystem. The iLO RBSU is designed to assist you with setting up iLO subsystem on a network; it is not intended for continued administration.

To run iLO RBSU:

1. Restart or power up the server blade.
2. Press the **F8** key when prompted during the Power-On Self-Test (POST). The iLO RBSU runs.
3. Enter a valid iLO user ID and password with the appropriate iLO privileges (Administer User Accounts, Configure iLO Settings).
4. Make and save any necessary changes to the iLO configuration.
5. Exit iLO RBSU, when finished.

HP recommends using DNS/DHCP with iLO to simplify installation. If DNS/DHCP cannot be used, use one of the following procedures to disable DNS/DHCP and to configure the IP address and the subnet mask:

1. Log into iLO using the DNS/DHCP IP address.
2. At the **Administration** screen, enter a valid iLO user ID and password with the appropriate iLO privileges.
3. Select **Network Settings** and enter the appropriate information.

or

1. Restart or power up the server blade.
2. Press the **F8** key when prompted during the POST. The iLO RBSU runs.
3. Enter a valid iLO user ID and password with the appropriate iLO privileges (Administer User Accounts, Configure iLO Settings).

**NOTE:** Use the arrow keys to highlight selections.

4. Select **Network, DNS/DHCP**, press the **Enter** key, and then select **DHCP Enable**. Press the spacebar to turn off DHCP. Be sure that DHCP Enable is set to **Off** and save the changes.
5. Select **Network, NIC and TCP/IP**, press the **Enter** key, and type the appropriate information in the **IP Address, Subnet Mask** and **Gateway IP Address** fields.
6. Save the changes. The iLO system automatically resets to use the new setup when you exit the iLO RBSU.

## Redundant ROM Support

Server blades enable you to upgrade or configure the ROM safely with redundant ROM support. The server blade has a 4-MB ROM that acts as two, separate 2-MB ROMs. In the standard implementation, one ROM contains the current ROM program version, while the other ROM contains a backup version.

## Safety and Security Benefits

When you flash the system ROM, ROMPaq writes over the older ROM and saves the current ROM as a backup, enabling you to switch easily to the backup ROM version if the new ROM becomes corrupted for any reason. This feature protects the previous ROM version, even if you experience a power failure while flashing the ROM.

## Access to Redundant ROM Settings

To access the redundant ROM:

1. Access RBSU by pressing the **F9** key during power up when the prompt displays.
2. Select **Advanced Options**.
3. Select **ROM Selection**.
4. Select one of the ROM banks as the system ROM.
5. Press the **Enter** key.
6. Press the **Esc** key to exit the current menu or press the **F10** key to exit RBSU.

7. Restart the server blade.

When the server blade boots, the system identifies whether the current ROM bank is corrupt. If a corrupt ROM is detected, the system boots from the backup ROM and alerts you through POST or IML that the ROM bank is corrupt.

If both the current and backup versions of the ROM are corrupt, you must return the system board for a service replacement. Refer to the *HP ProLiant BL p-Class System Maintenance and Service Guide* and contact an HP authorized reseller.

## Remote ROM Flash

The system contains individual firmware for various components.

The ProLiant BL20p Generation 2 server blade contains:

- Server blade system ROM
- Smart Array 5i Plus memory module ROM
- iLO ROM

The server blade and power enclosures contain:

- Server blade management module ROM
- Power management module ROM

Using the Smart Components for Remote ROM Flash with the Remote Deployment Utility (RDU) console application, Remote ROM Flash enables you to upgrade the firmware (BIOS) on a server blade from a remote location.

To update the ROM from a remote location, download the Online Flash Utility at [www.hp.com](http://www.hp.com)

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

## ROMPaq Utility

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

To upgrade the BIOS:

1. Download the latest ROMPaq at  
[www.hp.com/support](http://www.hp.com/support)
2. Follow the instructions and create a bootable diskette.

**IMPORTANT:** You can use the iLO Virtual Media applet to create the image file. Refer to the “Integrated Lights-Out Advanced Management” section in this chapter. If you use this method, omit step 3.

3. Access the server blade through the iLO Remote Console. Refer to the *HP ProLiant BL p-Class System Hardware Configuration and Installation* poster.
4. Insert the virtual diskette.
5. Use the iLO virtual power button to power the server blade off and then on, and to set the blade to boot from the diskette image you created in step 2.

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

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

## ROM-Based Setup Utility

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

RBSU performs configuration activities and enables you to view server blade configuration information. The server blade ships pre-configured, and changes are not required unless you want to change the default settings.



To navigate RBSU, use the following keys:

- To access RBSU, use the iLO Remote Console and press the **F9** key when prompted during power up.
- To navigate the menu system, use the arrow keys.
- To make selections, press the **Enter** key.

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

Table 2-1 contains the default settings for options in primary RBSU menus.

**Table 2-1: RBSU Default Settings**

Menu/Option	Default Setting
System Options	
OS Selection	Windows 2000
Serial Number	
Embedded NIC Port 1 PXE Support	Enabled
Standard Boot Order (IPL)	*
Automatic Server Recovery	
ASR Status	Enabled
ASR Timeout	10 minutes
Thermal Shutdown	Enabled
*The default boot order is CD-ROM drive, diskette drive, hard drive, and network, respectively.	

*continued*

**Table 2-1: RBSU Default Settings** *continued*

Menu/Option	Default Setting
Server Passwords	
Set Power-On Password	Disabled
Set Admin Password	Disabled
Advanced Options	
MPS Table Mode	AutoSet Table
POST Speed Up	Enabled
POST F1 Prompt	Enabled
ROM Selection	Use Current ROM
Wake-on LAN	Enabled
NMI Debug Button	Enabled
Processor Hyper-Threading	Enabled
Virtual Install Disk	Disabled

## Option ROM Configuration for Arrays Utility

The Option ROM Configuration for Arrays (ORCA) utility is a menu-driven utility that does not require a CD and can be started when the server blade is booting. This utility enables users to perform the following functions:

- Create, configure, and/or delete logical drives
- Specify RAID levels
- Assign online spares
- Set interrupts and the boot controller order

To run ORCA, press the **F8** key from the iLO Remote Console when the server blade is booting.

## PXE Deployment

For each server blade that you are deploying, the PXE server must be connected to the NIC designated for PXE. The server blade defaults PXE functions to NIC 1, but any of the three NICs can be designated for PXE in RBSU. For NIC connector locations on RJ-45 patch panels and interconnect switches, refer to the *HP ProLiant BL20p Generation 2 Server Blade Overview* card included with the server blade.

To deploy an operating system to multiple server blades, you can install a PXE deployment server on a network.

Preboot eXecution Environment (PXE) is a component of the Intel Wired for Management (WfM) specification. The PXE model enables server blades to load and execute a network bootstrap program (NBP) from a PXE server and to execute a pre-configured image. The image can be an operating system image created by software utilities or a boot diskette image. This feature enables a user to configure a server blade and install an operating system over a network.

When a PXE-enabled client boots, it obtains an IP address from a dynamic host configuration protocol (DHCP) server. The client obtains the name of the NBP from the appropriate boot server. Then, the client uses trivial file transfer protocol (TFTP) to download the NBP from the boot server and executes the image.

### Deployment Infrastructure

To establish a network-based PXE deployment infrastructure, you must provide the following software and minimum hardware:

- Client PC (administrative workstation)
  - Intel Pentium® III or higher processor (700 MHz or greater recommended)
  - 128 MB of RAM
  - Microsoft Windows 2000 Professional or Microsoft Windows XP operating system
  - Microsoft Internet Explorer 5.5 or above with 128-bit encryption
  - Ethernet NIC with 10/100 RJ-45 connector

- TCP/IP networking and an IP address compatible with one of the following the iLO Diagnostic Port IP address or an assigned DHCP or static IP address
- CD-ROM drive and/or diskette drive
- Any of the following Java™ Runtime Environment versions:

1.3.1\_02

1.3.1\_07

1.3.1\_08

1.4.1

Access the Java™ Runtime Environment versions at  
<http://java.sun.com/products/archive/index.html>

- DHCP server (IP address assignment)
  - Pentium or Pentium II 200-MHz or faster processor
  - 64 MB of RAM
  - 64 MB of free hard drive space
  - 10 Mb/s network adapter
- PXE deployment server (storing boot images)
  - Intel Pentium III or higher processor (500 MHz recommended)
  - 256 MB of RAM
  - 10 Mb/s network adapter
  - CD-ROM drive
- NFS repository server (only required for Red Hat Linux deployment)
  - Red Hat Linux 7.2 operating system installed
  - Network connection
  - CD-ROM drive
  - NFS installed

- 1.5 GB of available disk space
- Windows repository server (only required for Windows deployment)
  - Windows 2000 or Windows 2003 operating system installed
  - Network connection
  - CD-ROM drive
  - 1.5 GB of available disk space
  - TCP/IP networking and an IP address compatible with one of the following:  
the iLO Diagnostic Port IP address or an assigned DHCP or static IP address
  - CD-ROM drive and/or diskette drive
  - Java Runtime Environment version 1.3.1, available at  
[www.hp.com/servers/manage/jvm.html](http://www.hp.com/servers/manage/jvm.html)
- Network server with an operating system installed

## SmartStart Scripting Toolkit

The HP SmartStart Scripting Toolkit radically simplifies high-volume server deployment, enabling thousands of servers to be deployed quickly and easily. The SmartStart Scripting Toolkit consists of a set of modular utilities that are used to create a set of configuration data files, which are combined using a script or batch file to provide an automated installation process.

The basic steps necessary to use the SmartStart Scripting Toolkit are:

1. Generate the server profile from a previously configured server.
2. Create a script (batch) file that reads in server configuration files to configure the server hardware and install the server operating system
3. Build the server configuration diskette that initiates the automated deployment process.

For details, download the latest version of the SmartStart Scripting Toolkit from [www.hp.com/servers/ss toolkit](http://www.hp.com/servers/ss toolkit) and refer to the User Guide.

## Insight Manager 7

Insight Manager 7 is the HP application for easily managing network devices. Insight Manager 7 delivers intelligent monitoring and alerting as well as visual control of your HP devices. Documentation for Insight Manager 7 is available on the ProLiant Essentials Rapid Deployment Pack CD in the *OVERVIEW.HLP* file.

**IMPORTANT:** You must install and use Insight Manager 7 to benefit from the HP pre-failure warranties on processors, hard drives, and memory modules.

Insight Manager 7 features include:

- Comprehensive Fault Management — Insight Manager 7 provides comprehensive fault management for all major subsystems, including pre-failure alerting for disks, memory, and processors.
- Integration Management — Insight Manager 7 and ProLiant Essentials Rapid Deployment Pack software enable you to effectively deploy and manage configurations throughout the enterprise using Integration Server and Insight Version Control.
- Performance Management — Insight Manager 7 enables you to set performance and capacity thresholds for management variables related to CPU and bus usage, NIC throughput, logical disk capacity, and more.
- Workstation Management — Insight Manager 7 enables you to monitor and manage HP Professional Workstations.
- Client Management — Insight Manager 7 enables you to manage faults and assets on Deskpro computers and HP portables.
- Netelligent Management — Insight Manager 7 can receive alarms from Netelligent devices. Full management of Netelligent devices is supported through integration with HP Netelligent Management Software.
- Asset Management — Insight Manager 7 enables you to export asset information from the Insight Manager 7 database to leading database and spreadsheet applications, making asset management easier than ever.
- Remote Management — Insight Manager 7 enables you to manage in-band or out-of-band devices online or offline from anywhere.

- Reporting — Using Automatic Data Collection, Insight Manager 7 enables you to gather historic performance information for graphing or export purposes, which helps with upgrade performance.
- Integration with Enterprise Management Platforms — Insight Manager 7 provides integration with leading management platforms including HP OpenView, IBM NetView, SunNet Manager, and Microsoft Systems Management Server.

## Diagnostics Utility

Refer to the RBSU user guide and run the internal diagnostics before performing the following procedure.

To run Diagnostics Utility:

1. Download the latest Diagnostics Utility at  
[www.hp.com/support](http://www.hp.com/support)
2. Follow the instructions and create a bootable diskette.

**IMPORTANT:** You can use the iLO Virtual Media applet to create the image file. Refer to the “Integrated Lights-Out Advanced Management” section in this chapter. If you use this method, omit step 3.

3. Access the server blade through the iLO Remote Console. Refer to the *HP ProLiant BL p-Class System Hardware Configuration and Installation* poster.
4. Insert the virtual diskette.
5. Use the iLO virtual power button to power the server blade off and then on, and to set the blade to boot from the diskette image you created in step 2.

The server blade boots from the downloaded image and runs the Diagnostics Utility.

## Automatic Server Recovery-2

ASR-2 is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue-screen or kernel panic. A system fail-safe timer, the ASR-2 timer, starts when the System Management driver, also known as the Health Driver, is loaded. When the operating system is functioning properly, the system periodically resets the timer. However, when the operating system fails, the timer expires and restarts the server blade.

ASR-2 increases server blade availability by restarting the server blade within 10 minutes after a system hang or shutdown. At the same time, the Insight Manager 7 console notifies you by sending a message to a designated pager number that ASR-2 has restarted the system. You can disable ASR-2 from the Insight Manager 7 console or RBSU.

## Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML time-stamps each event with 1-minute granularity.

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

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

## Viewing the Log

You can view recorded events in the IML in several ways, including the following:

- From within the iLO Web pages
- From within the Insight Manager 7
- From within the Survey Utility
- From within operating system specific IML viewers



- For Windows 2000, Event Viewer, or HP IML Viewer
- For Linux operating systems, HP IML Viewer Application

**NOTE:** You can only view the list from the **Recovery/Integrated Management Log** screen.

### Viewing the Event List

To view the event list:

1. From Insight Manager 7, select the appropriate server blade, then select **View Device Data**. The selected server blade appears with buttons around its perimeter.
2. Click **Recovery**.
3. Select **Integrated Management Log**.
4. If a failed component has been replaced, select the event from the list, then select **Mark Repaired**.

### Printing the Event List

To print the event list:

1. From Insight Manager 7, select the appropriate server blade. The selected server blade appears with buttons around its perimeter.
2. Click **Configuration**.
3. Click **Recovery**.
4. Click **Print**.

### Survey Utility

Survey Utility is a serviceability tool that delivers online configuration capture and comparison to maximize server blade availability. It is available on the Rapid Deployment Pack CD or at

[www.compaq.com/products/servers/management/agents/documentation.html](http://www.compaq.com/products/servers/management/agents/documentation.html)

Refer to the ProLiant Essentials Rapid Deployment Pack CD for information on installing and running the Survey Utility. After you run the Survey Utility, you can view the IML by loading the output of the utility (typically called *SURVEY.TXT*) into a text viewer such as Microsoft Notepad. The event list follows the system slot information. After you open the text file, you can print it using the print feature of the viewer.

## List of Events

The event list displays the affected components and the associated error messages. Though the same basic information displays, the format of the list may differ depending on whether you view it from within Insight Manager 7 or from within Survey Utility.

Table 2-2 identifies the event types (affected components) and associated event messages for server blades.

**Table 2-2: Server Blade Event Messages**

Event Type	Event Message
<b>Machine Environment</b>	
Fan failure	System Fan Failure (Fan X, Location)
Overheat condition	System Overheating (Zone X, Location)
<b>Main Memory</b>	
Correctable error threshold exceeded	Corrected Memory Error threshold passed (Slot X, Memory Module X)
	Corrected Memory Error threshold passed (System Memory)
	Corrected Memory Error threshold passes (Memory Module unknown)
<b>Processor</b>	
Correctable error threshold exceeded	Processor Correctable Error threshold passed (Slot X, Socket X)
Uncorrectable error	Processor Uncorrectable internal error (Slot X, Socket X)

*continued*

**Table 2-2: Server Blade Event Messages** *continued*

Event Type	Event Message
<b>PCI Bus Error</b>	PCI Bus Error (Slot X, Bus X, Device X, Function X)
<b>Power Subsystem</b>	
System configuration battery low	Real-Time Battery Clock Failing
<b>Automatic Server Recovery</b>	
System lockup	ASR Lockup Detected: Cause
<b>Operating System</b>	
System crash	Blue Screen Trap: Cause [NT] Kernel Panic: Cause [Linux]
Automatic operating system shutdown	Automatic Operating System Shutdown Initiated Due to Fan Failure Automatic Operating System Shutdown Initiated Due to Overheat Condition Fatal Exception (Number X, Cause)

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## Regulatory Compliance Notices

### Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certification and identification, your product has been assigned a unique series number. The series number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to this series number. The series number should not be confused with the marketing name or model number of then product.

### Federal Communications Commission Notice

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

### Modifications

The FCC requires the user to be notified that any changes or modifications made to this device that are not expressly approved by Hewlett-Packard Company may void the user's authority to operate the equipment.

## Cables

Connections to this device must be made with shielded cables with metallic RFI/EMI connector hoods in order to maintain compliance with FCC Rules and Regulations.

## Canadian Notice (Avis Canadien)

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

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

## European Union Notice



Products bearing the CE marking comply with the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community and, if this product has telecommunication functionality, the R&TTE Directive (1999/5/EC).

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

- EN 55022 (CISPR 22) – Electromagnetic Interference
- EN55024 (IEC61000-4-2, 3, 4, 5, 6, 8, 11) – Electromagnetic Immunity
- EN 60950 (IEC 60950) – Product Safety

## Japanese Notice

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。

## Korean Notice

### A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니  
판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약  
잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기  
바랍니다.

## BSMI Notice

### 警告使用者：

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

## Battery Replacement Notice

Your computer is provided with an internal lithium battery or battery pack. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Unless specific replacement instructions are provided as part of this guide, replacement is to be done by an authorized service provider using the spare designated for this product.

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



**WARNING:** Your computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. There is risk of fire and burns if the battery pack is not handled properly. To reduce the risk of personal injury,

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



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

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## Electrostatic Discharge

To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

### Preventing Electrostatic Damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.



## Grounding Methods

Several methods for grounding are available. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm  $\pm$  10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, have an authorized reseller install the part.

**NOTE:** For more information on static electricity or for assistance with product installation, contact an HP authorized reseller.

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## Server Error Messages

Use POST error messages to assist in troubleshooting and performing basic diagnostic functions in the server blade.

POST error messages are displayed in the following locations:

- Integrated Management Log (IML)
- iLO POST log
- iLO Remote Console

For a complete listing of error messages and other troubleshooting information, refer to the *HP ProLiant Servers Troubleshooting Guide* provided on the Documentation CD or online at

[www.hp.com/support](http://www.hp.com/support)

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## Troubleshooting

For a list of new server error messages that are specific to this server, refer to Appendix C, “Server Error Messages.”

For information on LEDs and switches specific to the server blade, refer to Appendix E, “LEDs and Switches.”

For information about general troubleshooting techniques, diagnostic tools, error messages, and preventative maintenance, refer to the *HP ProLiant Servers Troubleshooting Guide* on the Documentation CD.

### When the Server Blade Does Not Start

This section provides systematic instructions on what to try and where to go for help for the most common problems encountered during initial POST. The server blade must first complete this test each time you power up, before it can load the operating system and start running software applications.

**IMPORTANT:** Always be sure that you have adequate system power applied to all the rack components before troubleshooting the server blade. You may need to add more hot-plug power supplies if you are installing additional server blades. If you have a power problem, refer to the *HP ProLiant BL p-Class System Setup and Installation Guide* and the *HP ProLiant BL p-Class System Overview and Planning* white paper.

If the server blade does not start:

1. Be sure that the server blade is fully seated in the server blade enclosure.
2. Verify that power is applied to the server blade enclosure.
3. Be sure that power is applied to the server blade:
  - a. Check the status using the power on/standby LED. For the location and explanation of the power on/standby LED, refer to the “Server Blade Front Panel” section in Appendix E, “LEDs and Switches.”
  - b. Check the server blade management modules and power management modules for proper cabling and power configuration switch settings.
  - c. The server blade is configured to power up upon insertion. However, if you changed that setting, be sure that the Power On/Standby button was pressed firmly.

**NOTE:** A long press, 5 or more seconds, initiates a power-up override. The system is forced to power up the server blade without detecting available power.

4. If the system does not complete POST or start loading an operating system:
  - a. Use the iLO remote console, the video connection provided through the I/O cable connectors, or the iLO system status page to identify POST messages. Refer to the *HP Integrated Lights-Out User Guide*.
  - b. Refer to the *HP ProLiant Servers Troubleshooting Guide*.
5. Ensure the server blade is not rebooting repeatedly:
  - a. Be sure that the system is not rebooting due to a problem that initiates an ASR-2 reboot.

ASR-2 is defaulted to restart the server blade automatically, loading the operating system. If a critical error occurs, ASR-2 logs the error in the IML and restarts the server blade.

For more information, refer to the *HP ProLiant Servers Troubleshooting Guide*.
  - b. Use the iLO remote console or the video connection provided through the I/O cable connectors to identify a possible thermal event.

6. Restart the server blade. If the server blade does not restart, proceed to the following section, “Server Blade Diagnostic Steps.”
7. Check the server blade for the following normal power-up sequence to be sure that the system meets the minimal hardware requirements and is powered up during normal operations:
  - a. The power on/standby LED turns from standby (amber) to on (solid green).
  - b. The fans start up.
  - c. The health LED flashes during the POST process; it turns solid green if POST is successful.
8. View the iLO remote console or the video connection provided through the I/O cable connectors for the following boot messages to be sure the system meets the minimal hardware requirements and is powered up during normal operations:
  - a. ProLiant logo
  - b. Memory test
  - c. ROM information
  - d. Copyright information
  - e. Processor initialization
  - f. Integrated Lights-Out initialization
  - g. Array controller initialization
  - h. PXE initialization
9. The operating system loads to complete the boot process.

If the server blade completes POST and attempts to load the operating system, refer to the “Problems After Initial Boot” section in this appendix.

## Server Blade Diagnostic Steps

If the server blade does not power up, or powers up but does not complete POST, answer the questions in Table D-1 to determine appropriate actions based on the symptoms observed. According to the answers you give, you are directed to the appropriate table that immediately follows.

**Table D-1: Diagnostic Steps**

Question	Action
Question 1: Is the server blade power on/standby LED illuminated?	If yes, continue to question 2. If no, refer to Table D-2.
Question 2: Is the server blade power on/standby LED green?	If yes, continue to question 3. If no, refer to Table D-3.
Question 3: Is the server blade health LED solid green?	If yes, continue to question 4. If no, refer to Table D-4.
Question 4: Is the iLO remote console displaying error information?	If yes, use the POST messages for further diagnosis. Refer to Table D-5 for details. If no, refer to Table D-5.

**Table D-2: Is the Server Blade Power on/standby LED Illuminated?**

Answer	Possible Reasons	Possible Solutions
No	<p>A broken connection exists between the server blade enclosure and server blade</p> <p>The power enclosure is not powered on.</p> <p>The system may have experienced a short.</p>	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Verify that power is applied to the infrastructure.</li> <li>2. Remove the server blade from the server blade enclosure.</li> <li>3. Check the connectors on the rear of the server blade and on the interior of the server blade enclosure for damage.</li> </ol> <p>If the power on/standby LED is still not illuminated, do one of the following:</p> <ul style="list-style-type: none"> <li>• Use the optional diagnostic station to power the server blade and use the iLO remote console to continue your diagnosis.</li> <li>• Move the server blade into a different slot to determine if the server blade or the server blade enclosure is the source of the problem.</li> <li>• Contact an authorized service provider for replacement parts and service.</li> </ul>
Yes		<p>If the power on/standby LED is illuminated, refer to Table D-3.</p>
<p><b>Note:</b> For LED locations and functions, refer to Appendix E, “LEDs and Switches.” For cabling configurations, refer to the cabling and powering up section in the <i>HP ProLiant BL p-Class System Setup and Installation Guide</i>.</p>		

**Table D-3: Is the Server Blade Power on/standby LED Green?**

Answer	Possible Reasons	Possible Solutions
No, it is amber	<p>Power On/Standby button has not been pressed firmly.</p> <p>The standard NIC module, Smart Array 5i Plus memory module, or FC mezzanine card is unseated.</p> <p>Management modules are not properly cabled.</p> <p>A broken connections exists between the following:</p> <ul style="list-style-type: none"> <li>Power converter module and system board</li> <li>System board and SCSI backplane</li> <li>SCSI backplane and power button/LED board</li> </ul> <p>The power converter module, system board, SCSI backplane, and/or power button/LED board may need to be replaced.</p>	<ol style="list-style-type: none"> <li>With the system powered down, remove the access panel.</li> <li>Be sure that the proper connections exist among the power converter module, system board, SCSI backplane, and power button/LED board.</li> <li>Reseat the standard NIC module, Smart Array 5i Plus memory module, or FC mezzanine card.</li> <li>Reinstall the access panel.</li> <li>Reinstall the server blade.</li> </ol> <p>Firmly press the Power On/Standby button. A long press (5 or more seconds) initiates a power-up override. The system is forced to power up the server blade without detecting available power.</p> <p>Verify proper management module cabling.</p> <p>Restart the server blade through the iLO Virtual Power button feature.</p> <p>If the power on/standby LED is still not green, and if the server blade health LED is amber or red, refer to Table D-4.</p>
Yes		If the power on/standby LED is green, refer to Table D-4.
<b>Note:</b> For LED locations and functions, refer to Appendix E, “LEDs and Switches.”		



**Table D-4: Is the Server Blade Health LED Solid Green?**

Answer	Possible Reasons	Possible Solutions
No, it is amber.	<p>A processor is in pre-failure condition.</p> <p>A DIMM is in pre-failure condition.</p> <p>One memory bank is valid, but another bank is missing a DIMM.</p> <p>One memory bank is valid, but another bank has mismatched DIMMs installed.</p> <p>One memory bank is valid, but another bank has an unsupported DIMM type installed.</p>	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Remove the server blade from the server blade enclosure.</li> <li>2. With the system powered down, remove the access panel.</li> <li>3. Visually inspect the system for damage.</li> <li>4. Reseat or replace processors and/or DIMMs.</li> <li>5. Be sure that the proper connections exist among the power converter module, system board, SCSI backplane, and power button/LED board.</li> <li>6. Verify that DIMMs are installed in pairs.</li> <li>7. Reinstall the access panel.</li> <li>8. Reinstall and power up the server blade.</li> </ol>

*continued*

**Table D-4: Is the Server Blade Health LED Solid Green?** *continued*

Answer	Possible Reasons	Possible Solutions
		<p>If the health LED is still not solid green, do one of the following:</p> <ul style="list-style-type: none"> <li>• Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis.</li> <li>• Use the optional diagnostic station to power the server blade and use the I/O cable connectors, depending on the server blade model, to continue the diagnosis.</li> </ul> <p>Contact an authorized service provider for replacement parts and service.</p>

*continued*

**Table D-4: Is the Server Blade Health LED Solid Green?** *continued*

Answer	Possible Reasons	Possible Solutions
No, it is flashing green.	<p>The server blade is still in POST. If the flashing continues after 1 minute, the following conditions may apply:</p> <ul style="list-style-type: none"> <li>• Nonvolatile RAM (NVRAM) may be corrupted.</li> <li>• The system ROM may be corrupted.</li> <li>• Both the system ROM and redundant ROM may be corrupted.</li> </ul>	<p>Wait for the server blade to complete POST.</p> <p>Clear the system configuration. Refer to the “Clearing the System Configuration” section in this appendix.</p> <p>Switch to the redundant ROM. Refer to the “Accessing the Redundant ROM” section in this appendix.</p> <p>If the health LED is still not solid green, do one of the following:</p> <ul style="list-style-type: none"> <li>• Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis.</li> <li>• Use the optional diagnostic station to power the server blade and use the I/O cable connectors, depending on the server blade model, to continue the diagnosis.</li> <li>• Use the iLO system status page to help determine the problem.</li> <li>• Contact an authorized service provider for replacement parts and service.</li> </ul>

*continued*

**Table D-4: Is the Server Blade Health LED Solid Green?** *continued*

Answer	Possible Reasons	Possible Solutions
No, it is red	<p>A processor has failed.</p> <p>Processor 1 is not installed.</p> <p>A processor is an unsupported type.</p> <p>Processors are mismatched (speed and/or type).</p> <p>A PPM has failed.</p> <p>A PPM is not installed.</p> <p>A DIMM has experienced a multibit error.</p> <p>No valid memory is available in the system. Populated banks have mismatched DIMMs.</p> <p>No valid memory is available in the system. Populated banks have missing DIMMs.</p> <p>No valid memory is available in the system. Populated banks have unsupported DIMM types.</p> <p>One or both fans have failed.</p> <p>An overtemperature condition has occurred.</p>	<p>Do the following:</p> <ol style="list-style-type: none"> <li>1. Remove the server blade from the server blade enclosure.</li> <li>2. With the system powered down, remove the access panel.</li> <li>3. Visually inspect the system for damage.</li> <li>4. Add or replace processors, PPMs DIMMs, and/or the fans.</li> <li>5. Verify the proper connections among the power converter module, system board, SCSI backplane, and power button/LED board.</li> <li>6. Reinstall and power up the server blade.</li> </ol> <p>If the health LED is still not solid green, do one of the following:</p> <ul style="list-style-type: none"> <li>• Use the optional diagnostic station to power the server blade and use the iLO remote console to continue the diagnosis.</li> <li>• Use the optional diagnostic station to power the server blade and use the I/O cable connectors, depending on the server blade model, to continue your diagnosis.</li> <li>• Use the iLO system status page to help determine the problem.</li> <li>• Contact an authorized service provider for replacement parts and service.</li> </ul>
Yes		If the health LED is green, refer to Table D-5.
<p><b>Note:</b> For LED locations and functions, refer to Appendix E, “LEDs and Switches.” For cabling configurations, refer to the cabling and powering up section in the <i>HP ProLiant BL p-Class System Setup and Installation Guide</i>.</p>		

**Table D-5: Is the iLO Remote Console Displaying Error Information?**

Answer	Solution
No	An iLO problem exists. Refer to the <i>HP Integrated Lights-Out User Guide</i> that ships with the server blade.
Yes	Error and event logs are available for diagnosis. Determine the next action by observing POST progress and error messages. Use the iLO system status page or use the I/O cable connectors, depending on the server blade model, to help determine the problem. Refer to Appendix C, “Server Error Messages,” and the <i>HP ProLiant Servers Troubleshooting Guide</i> for a complete description of POST error messages.

## System Configuration Switch Procedures

When you perform troubleshooting steps, this guide may instruct you to perform the following procedures:

- Clear the system configuration.
- Access the redundant ROM.

**IMPORTANT:** Do not perform these procedures until directed to do so by the troubleshooting tables in this appendix.

To complete these procedures, you must change physical settings on the system configuration switch (SW1). For switch locations and positions, refer to Appendix E, “LEDs and Switches.”

## Clearing the System Configuration

To clear the system configuration:

1. Power down the server blade:
  - a. Press the Power On/Standby button on the front of the server blade.
  - b. Use the virtual power button feature in the iLO remote console.
2. Disconnect the server blade from all power sources:
  - a. Remove the server blade from the server blade enclosure and set it on a flat, level surface.
  - b. Disconnect the server blade from the diagnostic station.
3. Remove the access panel. Refer to the “Accessing Internal Server Blade Components” section in Chapter 1, “Installing the Server Blade and Options.”
4. Change position 6 of SW4 to on.
5. Install the access panel. Refer to the “Preparation Procedures” section in Chapter 1, “Installing the Server Blade and Options.”
6. Connect the server blade to system power:
  - a. Install the server blade in the server blade enclosure.
  - b. Connect the server blade to the diagnostic station.
7. Power up the server blade:
  - a. Press the Power On/Standby button on the front of the server blade.
  - b. Use the virtual power button feature in the iLO remote console.
8. Wait for the POST message that prompts you to change the switch setting:  
Maintenance switch detected in the "On" position.  
Power off the server and turn switch to the "Off" position.
9. Repeat steps 1 through 3.

10. Change position 6 of SW4 to off.
11. Repeat steps 5 through 7.

**IMPORTANT:** When the server blade boots after NVRAM is cleared, a delay of up to 2 minutes is normal. During this delay, the system appears non-functional. Do not attempt any procedures during the delay.

## Accessing the Redundant ROM

If the system ROM is corrupted, you can set the system to use the backup version or redundant ROM.

To use the redundant ROM:

1. Power down the server blade:
  - a. Press the Power On/Standby button on the front of the server blade.
  - b. Use the virtual power button feature in the iLO remote console.
2. Disconnect the server blade from all power sources:
  - a. Remove the server blade from the server blade enclosure and set it on a flat, level surface.
  - b. Disconnect the server blade from the diagnostic station.
3. Remove the access panel. Refer to the “Accessing Internal Server Blade Components” section in Chapter 1, “Installing the Server Blade and Options.”
4. Change positions 1, 5 and 6 of SW4 to on.
5. Install the access panel. Refer to the “Preparation Procedures” section in Chapter 1, “Installing the Server Blade and Options.”
6. Connect the server blade to system power:
  - a. Install the server blade in the server blade enclosure.
  - b. Connect the server blade to the diagnostic station.
7. Power up the server blade:
  - a. Press the Power On/Standby button on the front of the server blade.

- b. Use the virtual power button feature in the iLO remote console.

As soon as the server blade powers up, it emits two beeps.

8. Repeat steps 1 through 3.
9. Change positions 1, 5 and 6 of SW4 to off.
10. Repeat steps 5 through 7.

If both the current and backup versions of the ROM are corrupt, you must return the system board for a service replacement. Refer to the *HP ProLiant BL p-Class System Maintenance and Service Guide* and contact an authorized reseller.

## Problems After Initial Boot

Once the server blade has passed POST, you may still encounter errors, such as an inability to load the operating system. Reinstall the operating system and use the documentation that ships on the ProLiant Rapid Deployment Pack CD or refer to “Software Problems” in the *HP ProLiant Servers Troubleshooting Guide* for more information.

Refer to the *HP ProLiant Servers Troubleshooting Guide* for the following:

- Information you need to collect when diagnosing software problems and to provide when contacting support
- Instructions on how to upgrade the operating system and its drivers
- Information about available recovery options and advice on minimizing downtime



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## LEDs and Switches

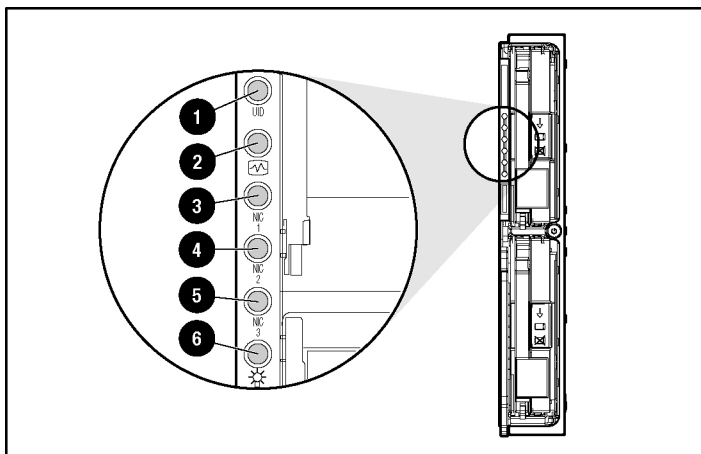
### LEDs

The system contains several sets of LEDs that indicate the status and settings of hardware components. Use the following sections to determine the location and functions of LEDs on these components:

- ProLiant BL20p Generation 2 server blade front panel
- Hot-plug SCSI hard drive

### Server Blade Front Panel

Six LEDs on the front of the server blade indicate server status. Use Figure E-1 and Table E-1 to identify LED locations and functions.



**Figure E-1: ProLiant BL20p G2 server blade front panel LEDs**

**Table E-1: ProLiant BL20p G2 Server Blade Front Panel LEDs**

Item	LED Description	Status
1	Unit identification (UID)	Blue = Flagged Blue flashing = Management mode Off = No remote management
2	Health	Green = Normal status Flashing = Booting Amber = Degraded status Red = Critical status

*continued*

**Table E-1: ProLiant BL20p G2 Server Blade Front Panel LEDs** *continued*

Item	LED Description	Status
3	NIC 1	Green = Linked to network
4	NIC 2	Green flashing = Network activity
5	NIC 3	Off = No activity
6	Power On/Standby	Green = On Amber = Standby (power available) Off = Unit off

## Hot-Plug SCSI Hard Drive

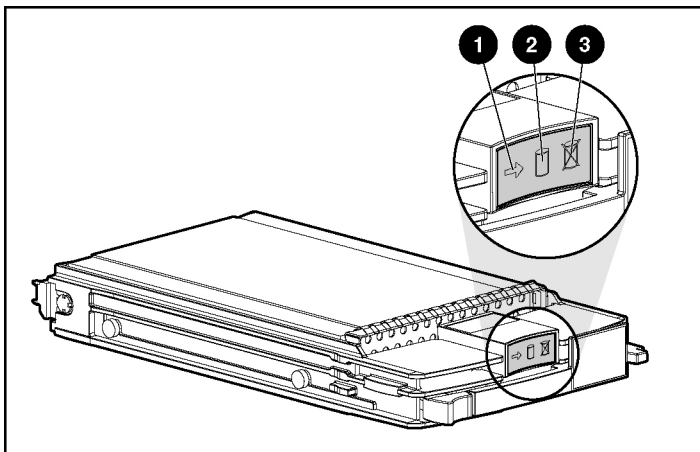
Each hot-plug SCSI hard drive has three LEDs located on the front of the drive. The LEDs provide activity, online, and fault status for each corresponding drive when configured as a part of an array and attached to a powered-on Smart Array controller. Their behavior may vary depending on the status of other drives in the array. Use Figure E-2 and Table E-2 to identify LED locations and functions.



**WARNING:** Before removing a hard drive, read the hot-plug hard drive replacement section in the *HP ProLiant Servers Troubleshooting Guide*.

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- The first LED indicates drive activity status (1), where on indicates activity and off indicates no activity by the drive.
- The second LED indicates online status (2), where flashing indicates an active online condition and off indicates an inactive online condition.
- The third LED indicates fault status (3), where flashing indicates fault-process activity and off indicates a no-fault-process activity.



**Figure E-2: Hot-plug SCSI hard drive LEDs**

**Table E-2: Hot-Plug SCSI Hard Drive LED Status Combinations**

(1) Activity	(2) Online	(3) Fault	Means
On	Off	Off	<p><b>Do not remove the drive. Removing a drive during this process causes data loss.</b></p> <p>The drive is being accessed and is not configured as part of an array.</p>
On	Flashing	Off	<p><b>Do not remove the drive. Removing a drive during this process causes data loss.</b></p> <p>The drive is rebuilding or undergoing capacity expansion.</p>
Flashing	Flashing	Flashing	<p><b>Do not remove the drive. Removing a drive during this process causes data loss.</b></p> <p>The drive is part of an array being selected by the Array Configuration Utility.</p> <p>-Or-</p> <p>The Options ROMPaq is upgrading the drive.</p>
Off	Off	Off	<p>OK to replace the drive online if a predictive failure alert is received and the drive is attached to an array controller.</p> <p>The drive is not configured as part of an array.</p> <p>-Or-</p> <p>If this drive is part of an array, a powered-on controller is not accessing the drive.</p> <p>-Or-</p> <p>The drive is configured as an online spare.</p>
Off	Off	On	<p>OK to replace the drive online.</p> <p>The drive has failed and has been placed offline.</p>

*continued*

**Table E-2: Hot-Plug SCSI Hard Drive LED Status Combinations** *continued*

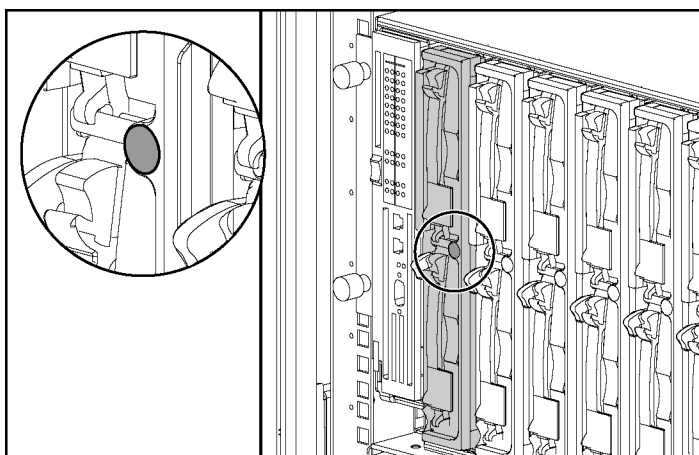
(1) Activity	(2) Online	(3) Fault	Means
Off	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online.  The drive is online and configured as part of an array.
On or flashing	On	Off	OK to replace the drive online if a predictive failure alert is received, provided that the array is configured for fault tolerance and all other drives in the array are online.  The drive is online and being accessed.

## Power On/Standby Button

Setting the server blade Power On/Standby button to the standby position removes power from most areas of the server blade. This process may take 30 seconds, during which time some internal circuitry remains active.

**IMPORTANT:** To remove power completely, remove the server blade from the server blade enclosure.

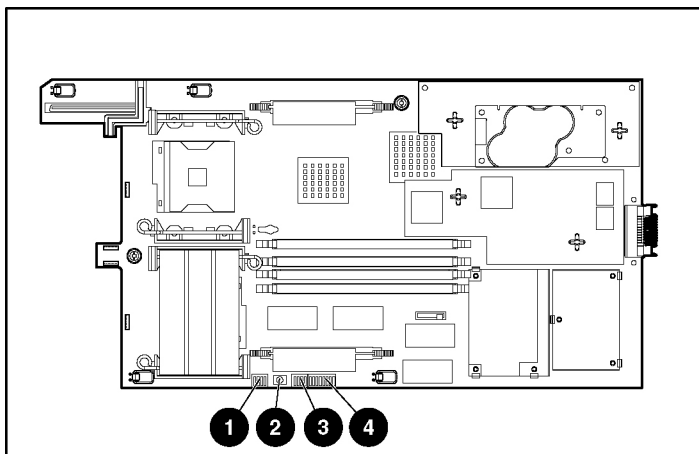
Use Figure E-3 to identify the button location.



**Figure E-3: Power On/Standby button**

## System Switches

System switches enable you to change certain settings or to perform advanced diagnostic procedures. Use Figure E-4 and Table E-3 to identify switch locations and functions.

**Figure E-4: Server blade switches****Table E-3: Server Blade Switches**

Item	Description
1	System configuration switch (SW1)
2	NMI switch
3	System switch (SW3)
4	System maintenance switch (SW4)



### System Configuration Switch (SW1)

The system configuration switch is a four-position reserved switch. The default setting for all four positions is off.



**CAUTION:** Do not change any SW1 settings or the system may not function properly.

### System Switch (SW3)

The system switch is a four-position reserved switch. The default setting for all four positions is off.



**CAUTION:** Do not change any SW3 settings or the system may not function properly.

### System Maintenance Switch (SW4)

The system maintenance switch is an 8-position switch that implements protection and override functions. The default position is off. For the proper system maintenance switch settings, refer to Table E-4 or refer to the labels attached to the inside of the server access panel.

**Table E-4: System Maintenance Switch (SW4) Settings**

Position	Description	On/Off Function
1	iLO Security Override	Off = iLO Security is enabled. On = Overrides iLO security function.
2	Configuration lock	Off = System configuration can be modified. On = System configuration is locked and cannot be modified.
3	Reserved	—

*continued*

**Table E-4: System Maintenance Switch (SW4) Settings** *continued*

Position	Description	On/Off Function
4	Reserved	—
5	Password Clear	Off = Power-on password is normal. On = Power-on password is disabled.
6	Invalidate Configuration	Off = Normal. On = ROM treats the system configuration as invalid.
7	Reserved	—
8	Reserved	—

## NMI Switch

The non-maskable interrupt (NMI) switch is for use by trained service personnel only. Refer to the *HP ProLiant BL p-Class System Maintenance and Service Guide*.

---

## Specifications

### ProLiant BL20p Generation 2 Server Blade

**Table F-1: Operating and Performance Specifications for ProLiant BL20p Generation 2 Server Blade**

Dimensions	
Width	26.14 cm (10.29 in)
Depth	71.1 cm (28.00 in)
Height	4.29 cm (1.69 in)
Weight (maximum)	8.80 kg (19.4 lb)
Temperature range <sup>1</sup>	
Operating <sup>1</sup>	10° to 43°C (50° to 109°F)
Nonoperating <sup>1</sup>	-40° to 60°C (-40° to 140°F)
Shipping Storage	-20° to 60°C (-4° to 140°F)
<sup>1</sup> Operating temperature has an altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft). No direct sunlight. Upper operating limit is 3,048 m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.	

*continued*

**Table F-1: Operating and Performance Specifications for ProLiant BL20p Generation 2 Server Blade** *continued*

Relative humidity <sup>2</sup> (noncondensing)	
Operating <sup>2</sup>	10% to 90%
Non-operating <sup>2</sup>	
Shipping	10% to 90%
Storage	10% to 95%
Maximum wet bulb temperature	30°C (86°F)
<sup>2</sup> Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage is 70 KPa.	

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## System Battery

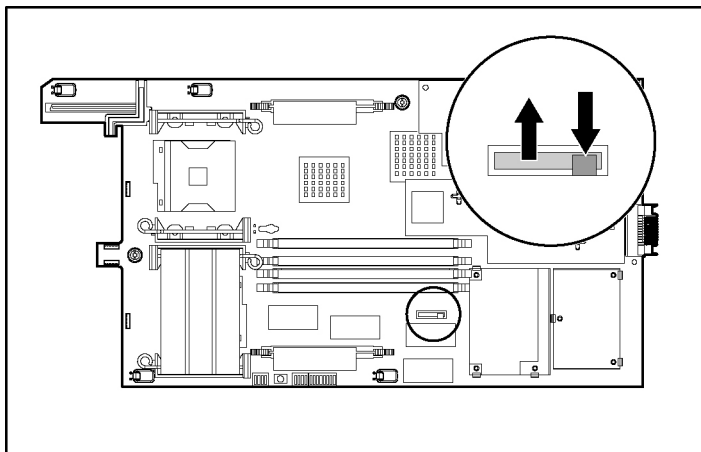
### System Board Battery Replacement

When the server blade no longer automatically displays the correct date and time, you may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is usually about 5 to 10 years. Use an HP 540-mAh, lithium, 3-V replacement battery (spare P/N 234556-001).

To install a new battery:

1. Access the internal server blade components. Refer to the “Preparation Procedures” section in Chapter 1, “Installing the Server Blade and Options.”

2. Locate the battery holder on the system board.
3. Push the tab aside, and pull the existing battery straight up.



**Figure G-1: Battery holder**



**WARNING:** For proper battery disposal, refer to the “Battery Replacement Notice” section in Appendix A, “Regulatory Compliance Notices.”

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4. To install the new battery, push it into the socket until the tab locks in place.



**CAUTION:** The battery is keyed to install only with the positive side facing the tab. Do not force the battery into the socket facing the other direction.

---

5. Install the access panel. Refer to the “Preparation Procedures” section in Chapter 1, “Installing the Server Blade and Options.”
6. Install the server blade in the server blade enclosure. Refer to the “Installing a Server Blade” section in Chapter 1, “Installing the Server Blade and Options.”
7. Power up the server blade. Refer to the “Powering Up the Server Blade” section in Chapter 1, “Installing the Server Blade and Options.”
8. Run RBSU to reconfigure the system with the new battery. Refer to the “ROM-Based Setup Utility” section in Chapter 2, “Configuring and Deploying Server Blades.”

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