

HP ProLiant ML10 v2 Server User Guide

Abstract

This document is for the person who installs, administers, and troubleshoots servers and storage systems. HP assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels.



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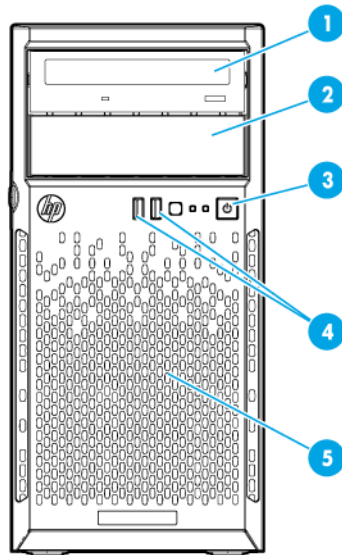
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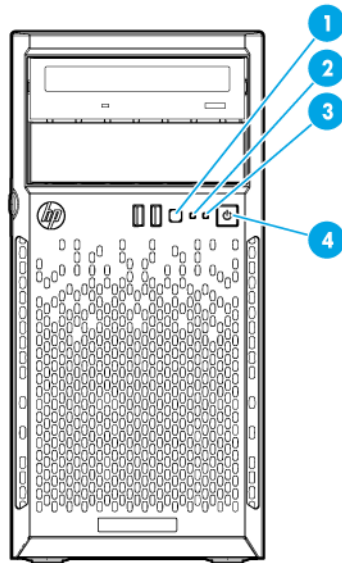
Component identification

Front panel components



Item	Description
1	Optical drive (optional)
2	Media drive bay
3	Power On/Standby button and system power LED
4	USB 2.0 connectors
5	Drive cage bay

Front panel LEDs and buttons



Item	Description	Status
1	UID button/LED*	Solid blue = Activated Flashing blue: <ul style="list-style-type: none"> • 1 Hz/cycle per sec = Remote management or firmware upgrade in progress • 4 Hz/cycle per sec = iLO manual reboot sequence initiated • 8 Hz/cycle per sec = iLO manual reboot sequence in progress Off = Deactivated
2	Health LED*	Solid green = Normal Flashing green (1 Hz/cycle per sec) = iLO is rebooting. Flashing amber = System degraded** Flashing red (1 Hz/cycle per sec) = System critical**
3	NIC status LED*	Solid green = Link to network Flashing green (1 Hz/cycle per sec) = Network active Off = No network activity
4	Power On/Standby button and system power LED*	Solid green = System on Flashing green (1 Hz/cycle per sec) = Performing power on sequence Solid amber = System in standby Off = No power present†

* When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "Front panel LED power fault codes (on page 7)."

** If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

† Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the power button cable is disconnected.

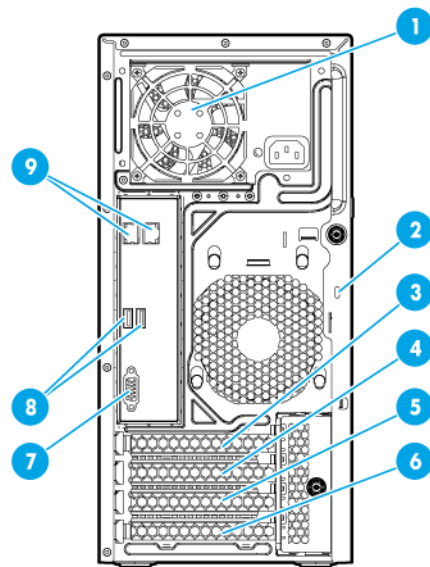
Front panel LED power fault codes

The following table provides a list of power fault codes, and the subsystems that are affected. Not all power faults are used by all servers.

Subsystem	Front panel LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Removable HP Flexible Smart Array controller/Smart SAS HBA controller	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

For more information, see "Front panel LEDs and buttons (on page 7)."

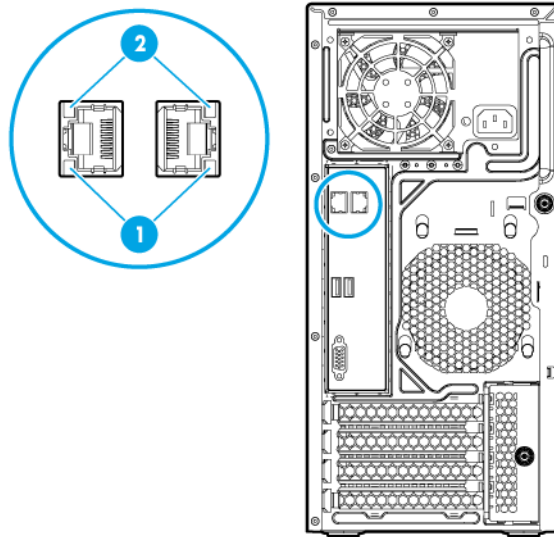
Rear panel components



Item	Description
1	Power supply
2	Kensington security slot
3	PCIe3 x16 (8,4,1) slot 4, full-height, three-quarters-length, stand up expansion board*
4	PCIe3 x8 (8,4,1) slot 3, full-height, half-length, stand up expansion board*
5	PCIe2 x8 (1) slot 2, full-height, half-length, stand up expansion board*
6	PCIe2 x4 (1) slot 1, full-height, half-length, stand up expansion board*
7	Video connector
8	USB 3.0 connectors
9	NIC connectors

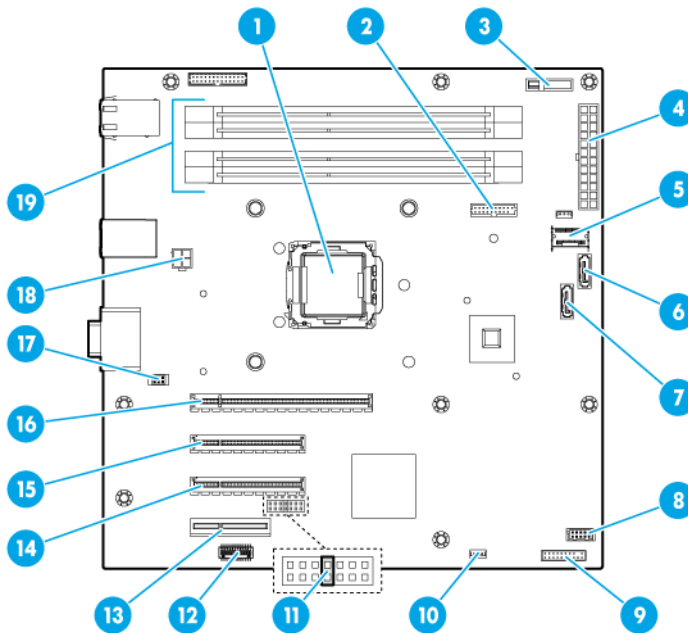
* For more information on the expansion slot specifications, see "PCIe expansion slot definitions (on page 11)."

Rear panel LEDs and buttons



Item	Description	Status
1	NIC activity LED	Solid green = Link to network Flashing green = Network active Off = No network activity
2	NIC link LED	Solid green = Link exists Off = No link exists

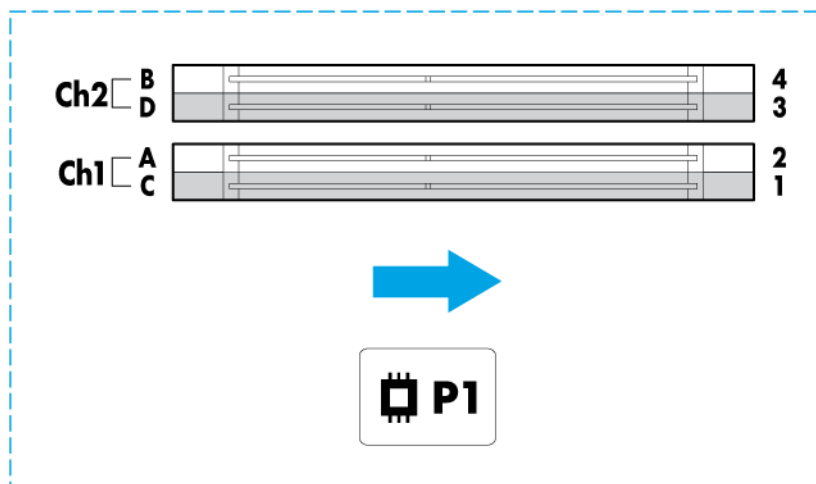
System board components



Item	Description
1	Processor
2	TPM connector
3	System battery
4	24-pin power supply connector
5	Mini-SAS connector
6	SATA Port 1
7	SATA Port 2
8	Front USB connector
9	Front I/O connector
10	Ambient sensor connector
11	NMI Header
12	System maintenance switch
13	PCIe2 x4 (1) slot 1, full-height, half-length, stand up expansion board*
14	PCIe2 x8 (1) slot 2, full-height, half-length, stand up expansion board*
15	PCIe3 x8 (8,4,1) slot 3, full-height, half-length, stand up expansion board*
16	PCIe3 x16 (8,4,1) slot 4, full-height, three-quarters-length, stand up expansion board*
17	Fan power connector
18	4-pin power connector
19	DIMM slots

* For more information on the expansion slot specifications, see "PCIe expansion slot definitions (on page 11)."

DIMM slot locations



The arrow points to the front of the server.

DIMM slots are numbered 1 through 4. Letters are used for AMP mode DIMM ordering.

PCIe expansion slot definitions

Slot number	Type	Length	Height	Connector link width	Negotiable link width
1	PCIe2	Half	Full	x4	x1 signal / 25W
2	PCIe2	Half	Full	x8	x1 signal / 25W
3	PCIe3	Half	Full	x8	x8 signal / 25W
4	PCIe3	3/4	Full	x16	x8 signal / 75W

System maintenance switch

Switch	Default	Function
1	Off	Off = No function On = iLO security is disabled
2	Off	Off = System configuration can be changed On = System configuration is locked
5	Off	Off = Power-on password is enabled On = Power-on password is disabled
6	Off	Off = No function On = ROM reads configuration as invalid
3, 4, 7, 8, 9, 10, 11, 12	—	Reserved

When the system maintenance switch position 6 is set to the On position, the system is prepared to erase all system configuration settings from both CMOS and NVRAM.



CAUTION: Clearing CMOS and/or NVRAM deletes configuration information. Be sure to properly configure the server or data loss could occur.

NMI functionality

An NMI crash dump creates a crash dump log before resetting a system which is not responding.

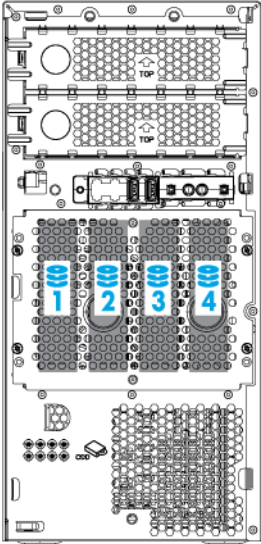
Crash dump log analysis is an essential part of diagnosing reliability problems, such as failures of operating systems, device drivers, and applications. Many crashes freeze a system, and the only available action for administrators is to restart the system. Resetting the system erases any information which could support problem analysis, but the NMI feature preserves that information by performing a memory dump before a system reset.

To force the system to invoke the NMI handler and generate a crash dump log, do one of the following:

- Use the iLO Virtual NMI feature.
- Short the NMI header ("System board components" on page 9).

For more information, see the HP website (<http://www.hp.com/support/NMI>).

Drive numbering



Operations

Power up the server

1. Connect each power cord to the server.
2. Connect each power cord to the power source.
3. Press the Power On/Standby button.

The server exits standby mode and applies full power to the system. The system power LED changes from amber to green.

Power down the server

Before powering down the server for any upgrade or maintenance procedures, perform a backup of critical server data and programs.



WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.



IMPORTANT: When the server is in standby mode, auxiliary power is still being provided to the system.

To power down the server, use one of the following methods:

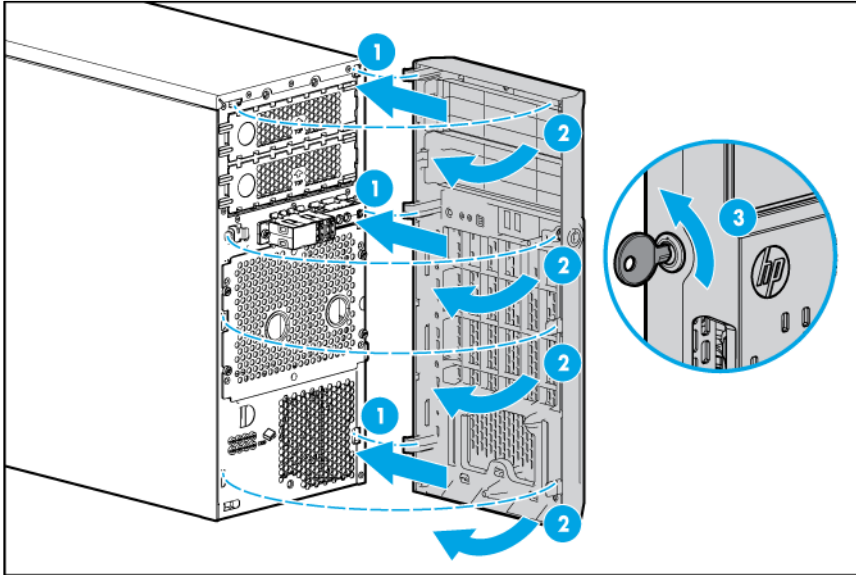
- Press and release the Power On/Standby button.
This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.
- Press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode.
This method forces the server to enter standby mode without properly exiting applications and the OS. If an application stops responding, you can use this method to force a shutdown.
- Use a virtual power button selection through iLO.
This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

Before proceeding, verify the server is in standby mode by observing that the system power LED is amber.

Install the tower bezel

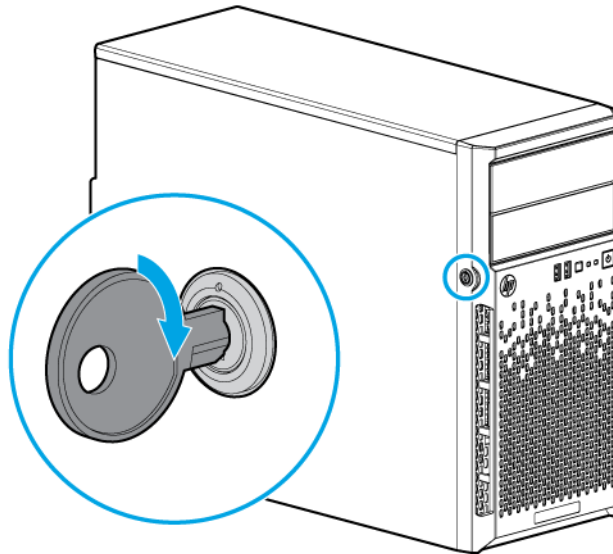
1. Insert the tabs on the tower bezel into the slots on the front chassis.

2. Close and lock the tower bezel.



Unlock the tower bezel

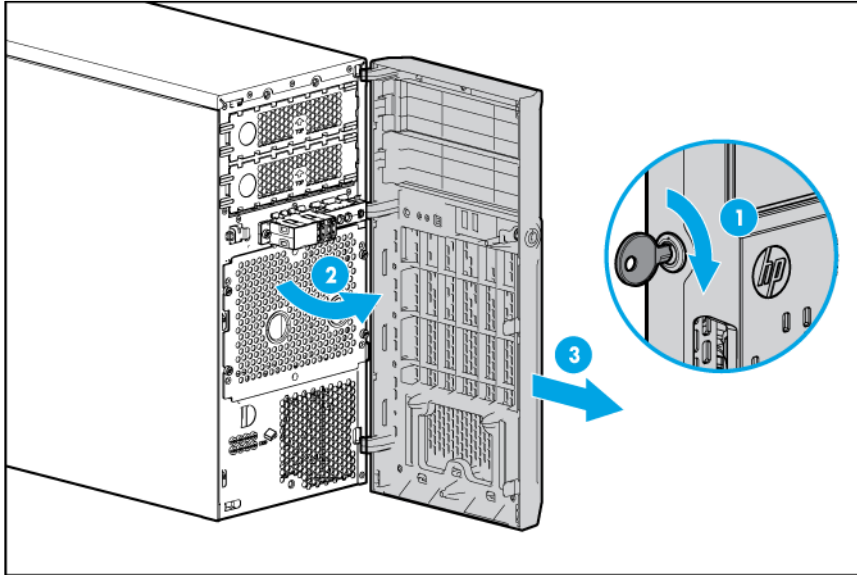
The tower bezel must be unlocked and opened to access the drive cage and media bays. It must be unlocked to remove the access panel. The bezel must remain closed during normal server operations.



Remove the tower bezel

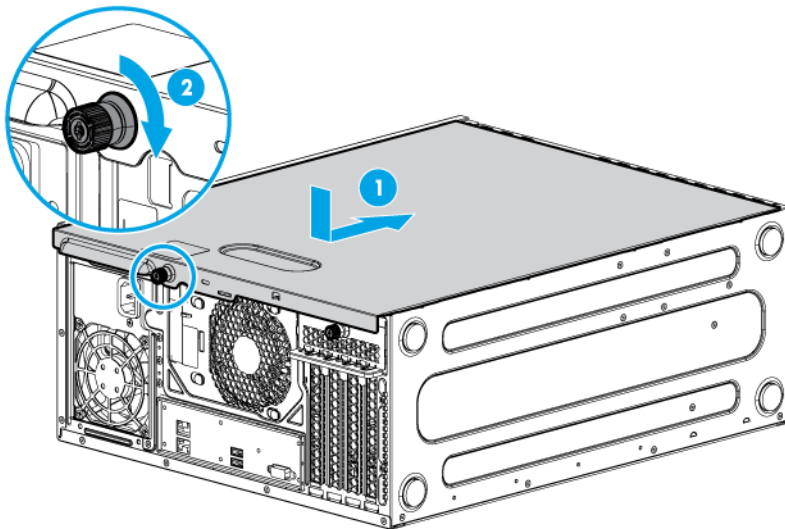
1. Unlock the tower bezel (on page 14).
2. Open the tower bezel.

3. Pull the bezel away from the front chassis.



Install the access panel

1. Unlock the tower bezel (on page 14), if locked.
2. Install the access panel:
 - a. Place the access panel on the chassis, and slide it toward the front of the server.
 - b. Tighten the thumbscrew.



3. Close and lock the tower bezel.

Remove the access panel

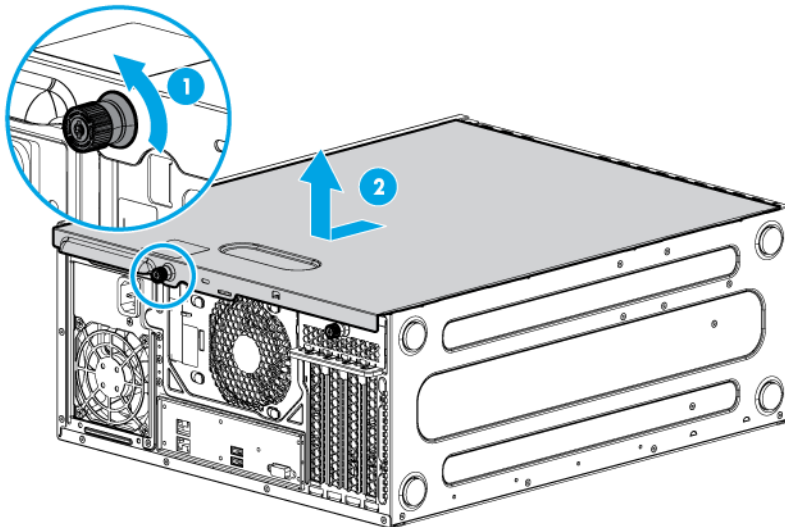


WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.



CAUTION: For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

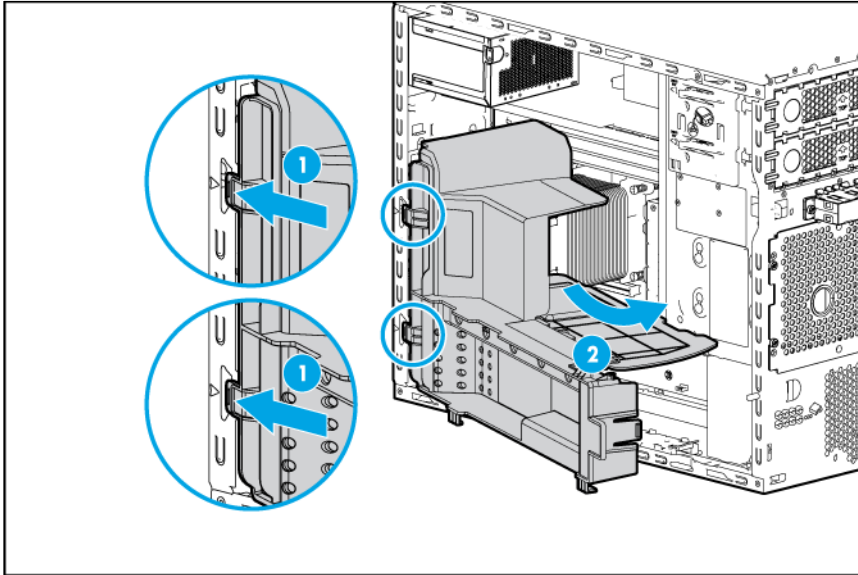
1. Power down the server (on page 13).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Unlock the tower bezel (on page 14).
4. Place the server on its side.
5. Remove the access panel:
 - a. Loosen the access panel thumbscrew.
 - b. Slide the access panel back.
 - c. Lift the access panel away from the chassis.



Install the air baffle

1. Insert the tabs on the baffle into the slots on the rear chassis.

2. Push the front end of the baffle inside the chassis.



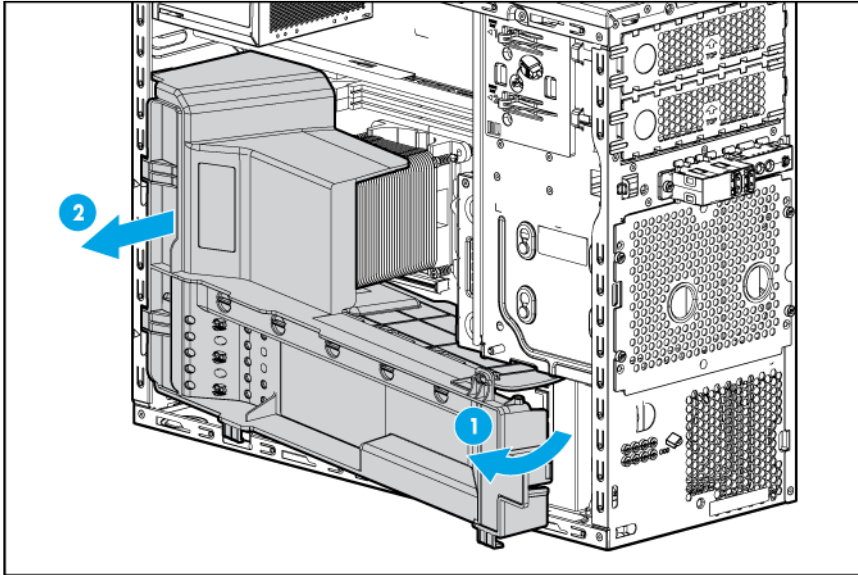
3. Install the access panel (on page 15).
4. Lock the tower bezel.
5. Power up the server (on page 13).

Remove the air baffle

CAUTION: For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

1. Power down the server (on page 13).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Unlock the tower bezel (on page 14).
4. Remove the access panel (on page 15).

5. Remove the air baffle.



Setup

Optional installation services

Delivered by experienced, certified engineers, HP Care Pack services help you keep your servers up and running with support packages tailored specifically for HP ProLiant systems. HP Care Packs let you integrate both hardware and software support into a single package. A number of service level options are available to meet your needs.

HP Care Pack Services offer upgraded service levels to expand your standard product warranty with easy-to-buy, easy-to-use support packages that help you make the most of your server investments. Some of the Care Pack services are:

- Hardware support
 - 6-Hour Call-to-Repair
 - 4-Hour 24x7 Same Day
 - 4-Hour Same Business Day
- Software support
 - Microsoft® operating systems
 - Linux operating systems
 - HP ProLiant Essentials (HP SIM and RDP)
- Integrated hardware and software support
 - Critical Service
 - Proactive 24
 - Support Plus
 - Support Plus 24
- Startup and implementation services for both hardware and software

For more information on HP Care Pack Services, see the HP website (<http://www.hp.com/services/carepack>).

Optimum environment

When installing the server, select a location that meets the environmental standards described in this section.

Space and airflow requirements

Leave at least a 7.6-cm (3-inch) clearance space at the front and back of the server for proper ventilation.

Temperature requirements

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

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



CAUTION: To reduce the risk of damage to the equipment when installing third-party options:

- Do not permit optional equipment to impede airflow around the server beyond the maximum allowable limits.
- Do not exceed the manufacturer's TMRA.

Power requirements

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



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

When installing more than one server, you might have to use additional power distribution devices to safely provide power to all devices. Observe the following guidelines:






- Balance the server power load between available AC supply branch circuits.
- Do not allow the overall system AC current load to exceed 80% of the branch circuit AC current rating.
- Do not use common power outlet strips for this equipment.
- Provide a separate electrical circuit for the server.

Electrical grounding requirements

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

Because of the high ground-leakage currents associated with multiple servers connected to the same power source, HP recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the server is not recommended.

Server warnings and cautions

-
-  **WARNING:** This server is very heavy. 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.
 - Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. HP recommends that a minimum of two people are required for all rack server installations. A third person may be required to help align the server if the server is installed higher than chest level.
 - Use caution when installing the server in or removing the server from the rack; it is unstable when not fastened to the rails.
-
-  **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
-  **WARNING:** To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.
-
-  **CAUTION:** Protect the server from power fluctuations and temporary interruptions with a regulating uninterruptible power supply. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system in operation during a power failure.
-
-  **CAUTION:** Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.
-

Identifying the contents of the server shipping carton

Unpack the server shipping carton and locate the materials and documentation necessary for installing the server.

The contents of the server shipping carton include:

- Server
- Power cord

You need the following items for some procedures:

- T-10/T-15 Torx screwdriver
- Hardware options
- Operating system or application software

Installing hardware options

Install any hardware options before initializing the server. For options installation information, see the option documentation. For server-specific information, see "Hardware options installation (on page 23)."

Installing the operating system

To operate properly, the server must have a supported operating system installed. For the latest information on operating system support, see the HP website (<http://www.hp.com/go/supportos>).

A device driver is required for the operating system to communicate with the storage controller. Download the HP Service Pack for ProLiant from the SPP download site (<http://www.hp.com/go/spp/download>) and create SPP media to extract the device driver required to complete OS installation.

To install an operating system on the server, create installation media on an optical disk or on USB media. Insert the optical drive into a USB-attached optical drive (user provided) or insert the USB device and reboot the server.

For more information, see the HP website (<http://www.hp.com/go/ilo>).

NOTE: The minimum required iLO version is iLO 4 v2.10.

Software and firmware should be updated before using the server for the first time, unless any installed software or components require an older version. For additional system software and firmware updates, see the HP website (<http://www.hp.com/go/spp/download>).

Driver updates are posted to the HP website (<http://www.hp.com/go/spp/download>). When prompted for product information, enter the appropriate server model name or controller model.

Powering on and selecting boot options

1. Connect the Ethernet cable between the network connector on the server and a network jack.
2. Press the Power On/Standby button.
3. During the initial boot, to modify the server configuration ROM default settings, press **F9** when prompted from the start up sequence to enter the RBSU. By default, RBSU runs in the English language.

For more information on automatic configuration, see the *HP ROM-Based Setup Utility User Guide* in the HP RBSU Information Library (<http://www.hp.com/go/rbsu/docs>).

NOTE: The F5 key is not available to launch HP SSA from POST.


Registering the server


To experience quicker service and more efficient support, register the product at the HP Product Registration website (<http://register.hp.com>).

Hardware options installation

Introduction

If more than one option is being installed, read the installation instructions for all the hardware options and identify similar steps to streamline the installation process.

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

 **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

Drive options

The server supports up to four non-hot-plug LFF drives in the default configuration, or up to six LFF drives if two SATA drive enablement kits are installed.


The embedded storage controller supports SATA drive installation only. For SAS drive installation, install an HP host bus adapter.

Drive installation guidelines

When adding drives to the server, observe the following general guidelines:

- The system automatically sets all device numbers.
- Populate drive bays, based on the drive numbering sequence. Start from the drive bay with the lowest device number.
- When drives are grouped together into the same drive array, they must be of the same capacity to provide the greatest storage space efficiency.

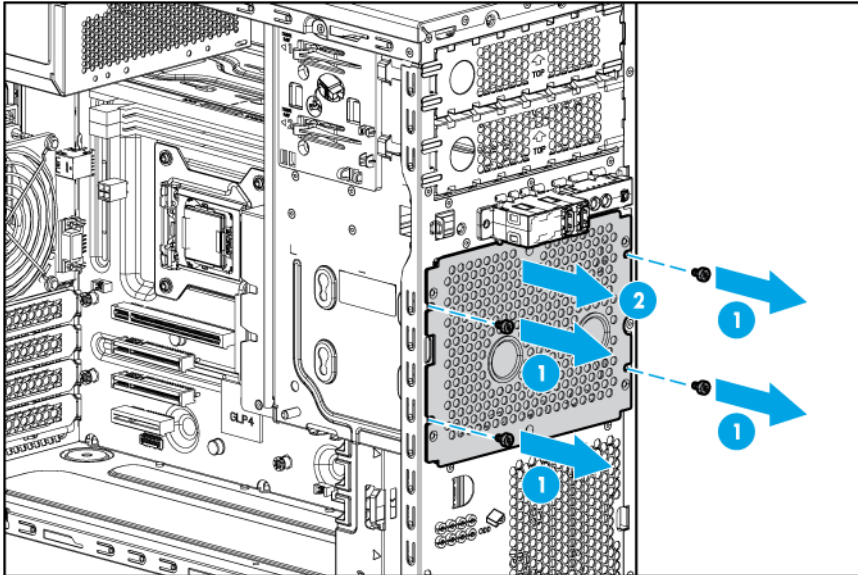
Installing a drive

 **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

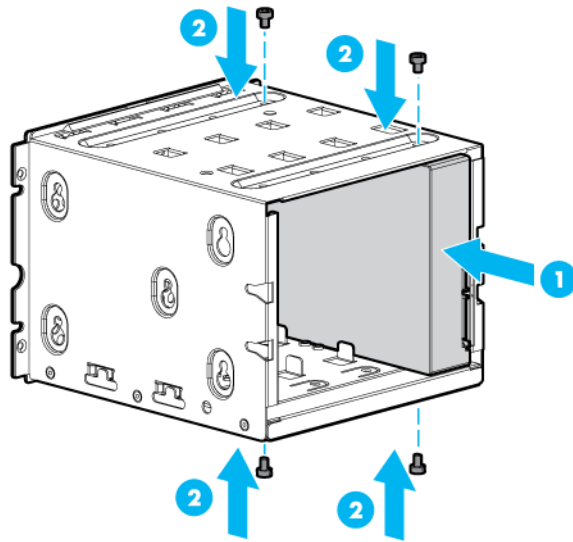
To install the component:

1. Power down the server (on page [13](#)).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Remove the tower bezel (on page [14](#)).
4. Remove the access panel (on page [15](#)).

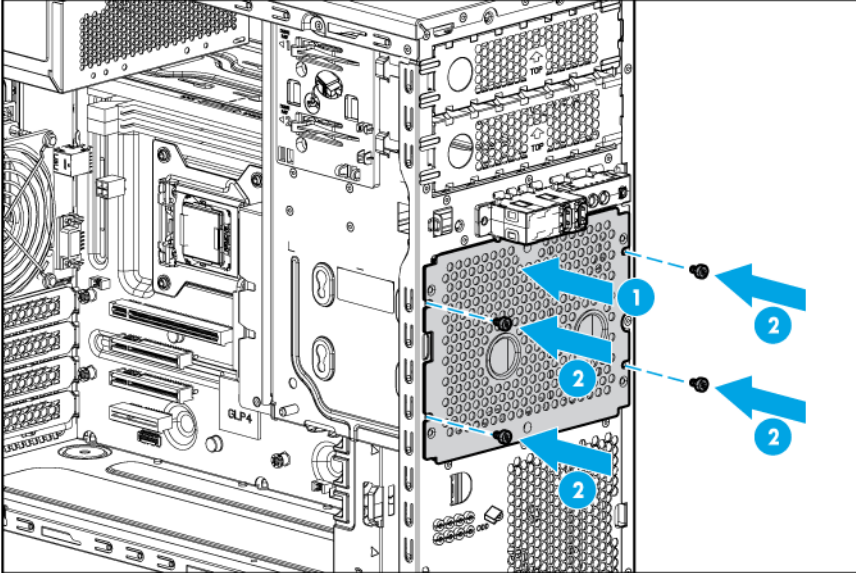
5. Remove the air baffle (on page 17).
6. Disconnect the existing cables from the drive.
7. Remove the installed drive cage assembly.



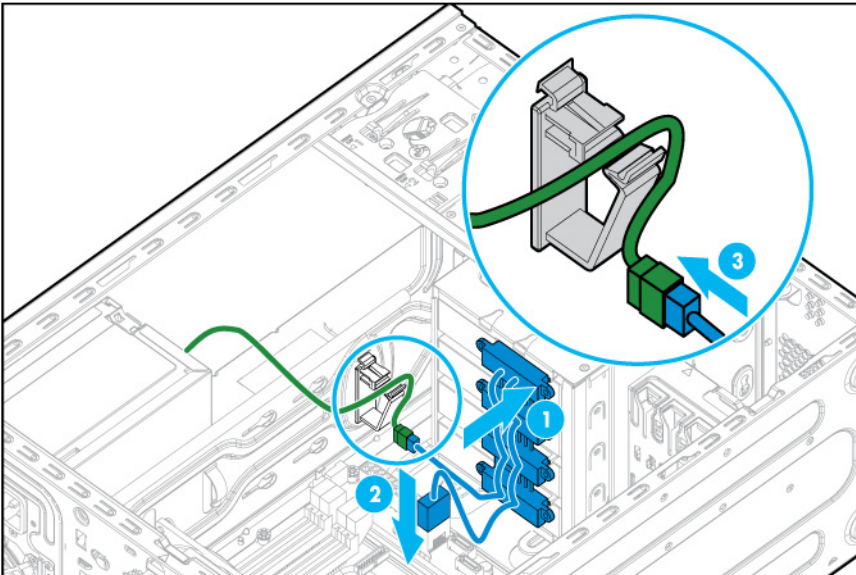
8. Use the screws on the drive cage to install the drive.
9. Install the drive into the drive cage.



10. Install the drive cage into the chassis.



11. Connect all drive cables.



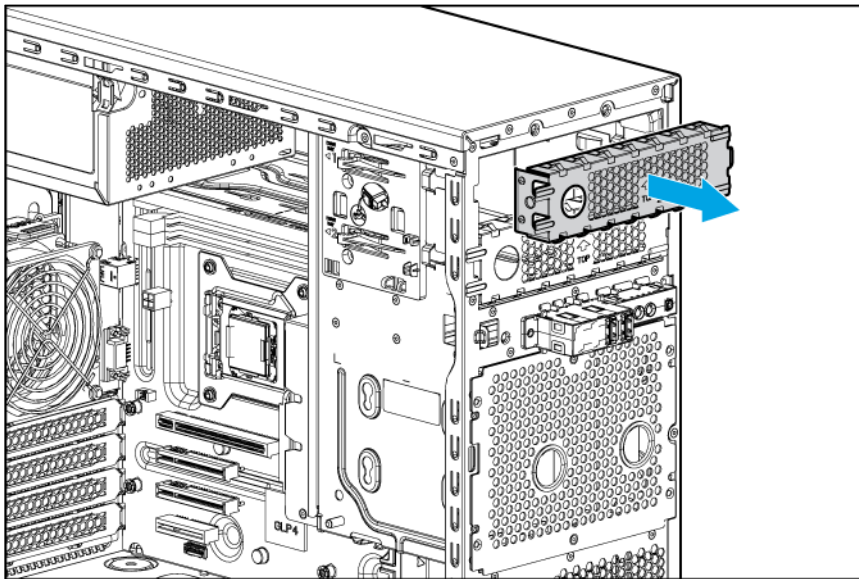
12. Install the air baffle (on page 16).
13. Install the access panel (on page 15).
14. Install the tower bezel (on page 13).
15. Connect each power cord to the server.
16. Connect each power cord to the power source.
17. Power up the server (on page 13).

Drive enablement option

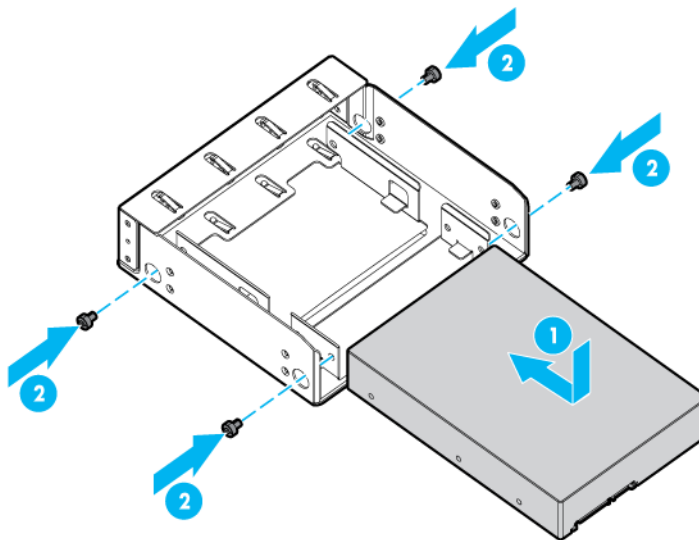
To install the component:

1. Power down the server (on page 13).

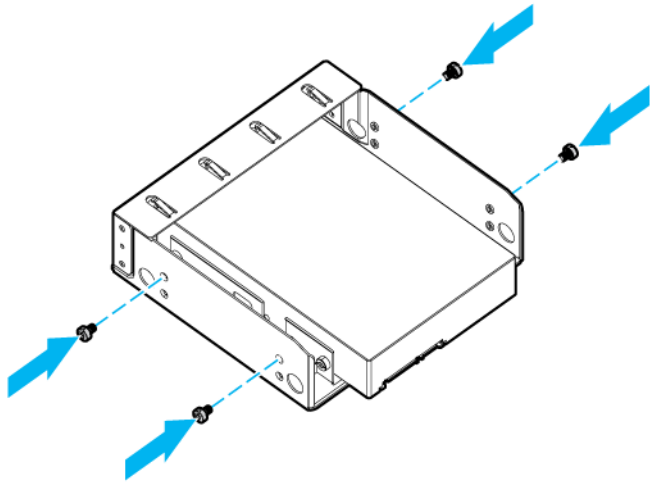
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do the following:
 - a. Unlock the tower bezel (on page 14).
 - b. Remove the tower bezel (on page 14).
4. Place the server on its side.
5. Remove the access panel (on page 15).
6. Remove the air baffle (on page 17).
7. Remove the EMI shield.



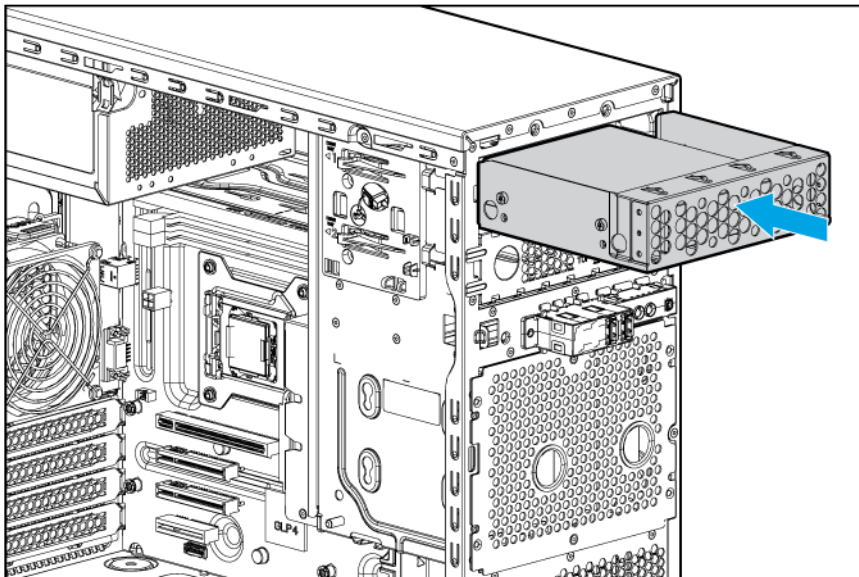
8. Install the drive into the drive carrier and secure it with the T-15 screws.



- Secure the M3 screws (black) to the drive carrier.

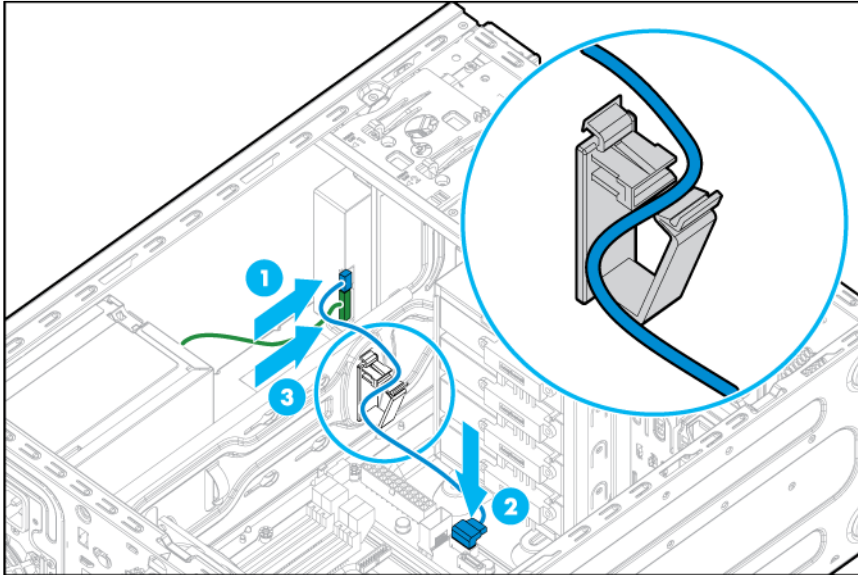


- Insert the drive carrier into the media bay until the carrier locks into place.



- Connect the drive cables.
 - Connect and secure the SATA cable.

- b. Connect the power cable.



12. Install the air baffle (on page 16).
13. Install the access panel (on page 15).
14. Install the tower bezel (on page 13).
15. Return the server to an upright position.
16. Connect the power cord to the server.
17. Connect the power cord to the power source.
18. Power up the server (on page 13).

Controller options

The embedded HP Dynamic Smart Array B120i Controller only supports SATA devices. To obtain the SATA driver required for RAID configuration, first download SPP (<http://www.hp.com/go/spp/download>).

For SAS drive installation, install an HP H220/H221 host bus adapter. For more information about the controller and its features, see the *HP Dynamic Smart Array RAID Controller User Guide* on the HP website (http://www.hp.com/support/DSA_RAID_UG_en).

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP website (<http://www.hp.com/go/qs>).

Installing an HP H220/H221 host bus adapter

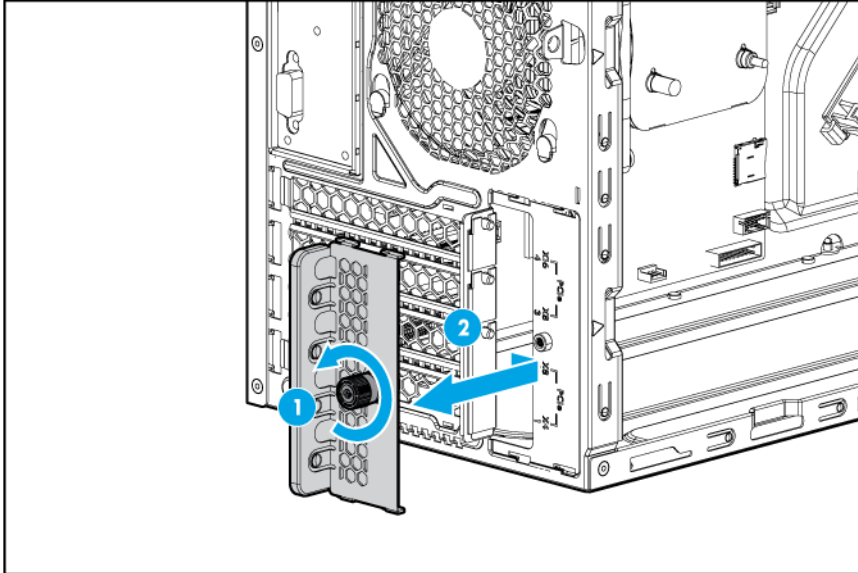


IMPORTANT: For additional installation and configuration information, see the documentation that ships with the option.

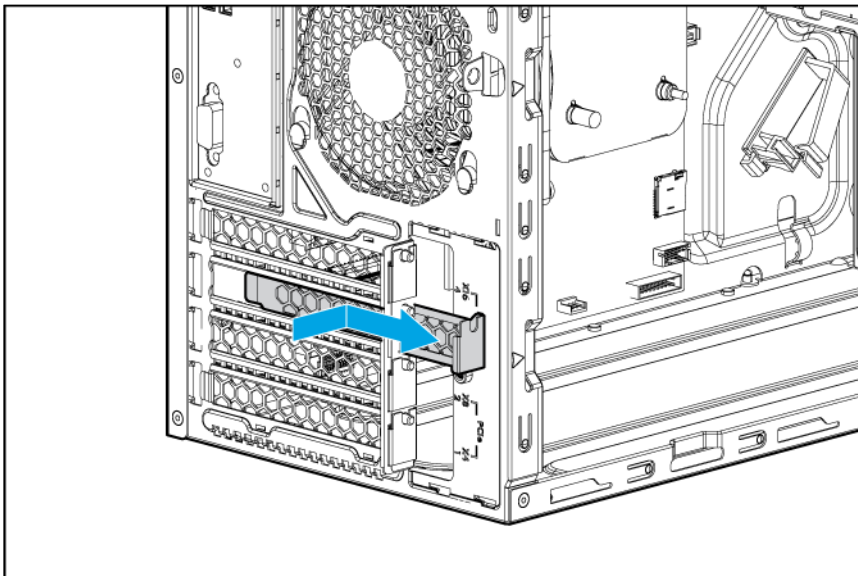
To install the component:

1. Power down the server (on page 13).
2. Remove all power:
 - a. Disconnect each power cord from the power source.

- b. Disconnect each power cord from the server.
- 3. Unlock the tower bezel (on page 14).
- 4. Remove the access panel (on page 15).
- 5. Remove the air baffle (on page 17).
- 6. Remove the expansion slot cover retainer.

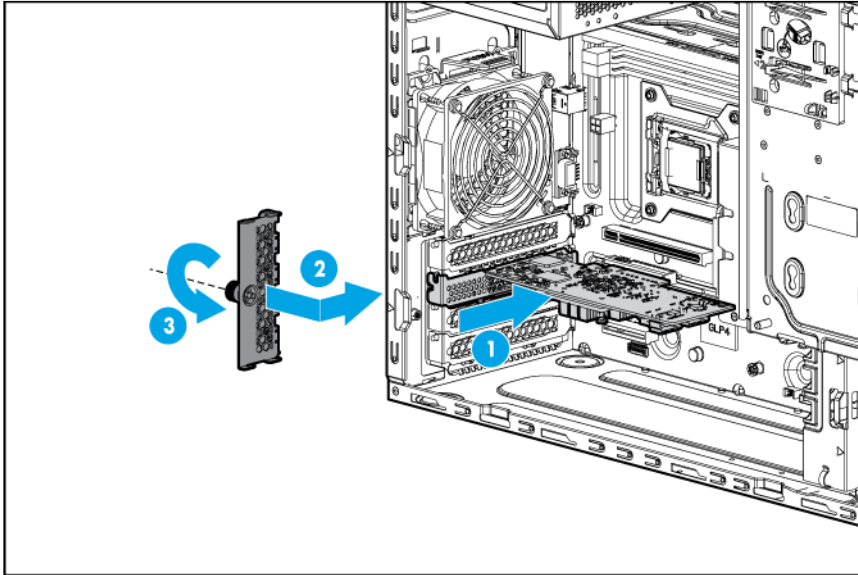


- 7. Remove the slot cover blank.



- 8. Disconnect the Mini-SAS cable from the system board.
- 9. Connect the mini-SAS cable to the host bus adapter.
- 10. Install the host bus adapter in slot 3.

11. Close the expansion slot cover retainer.



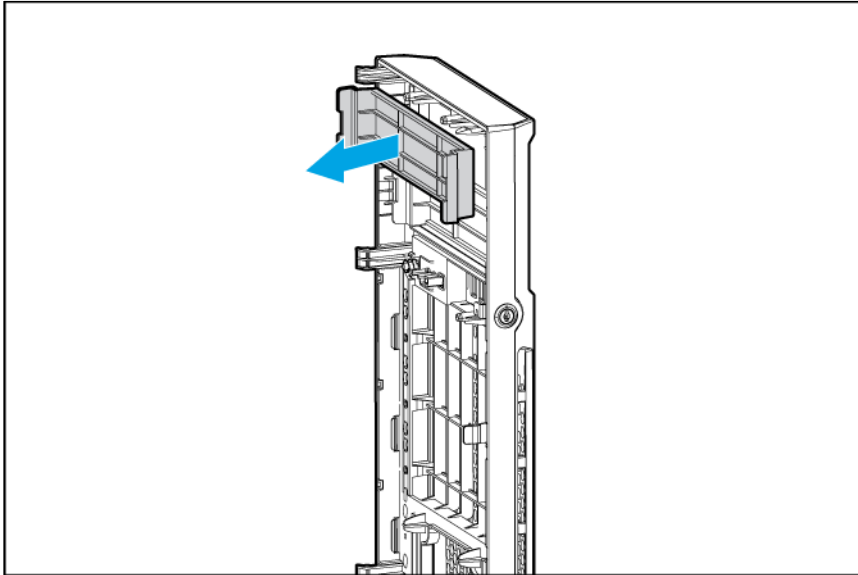
12. Install the air baffle (on page 16).
13. Install the access panel (on page 15).
14. Return the server to an upright position.
15. Connect each power cord to the server.
16. Connect each power cord to the power source.
17. Power up the server (on page 13).

Optical drive option

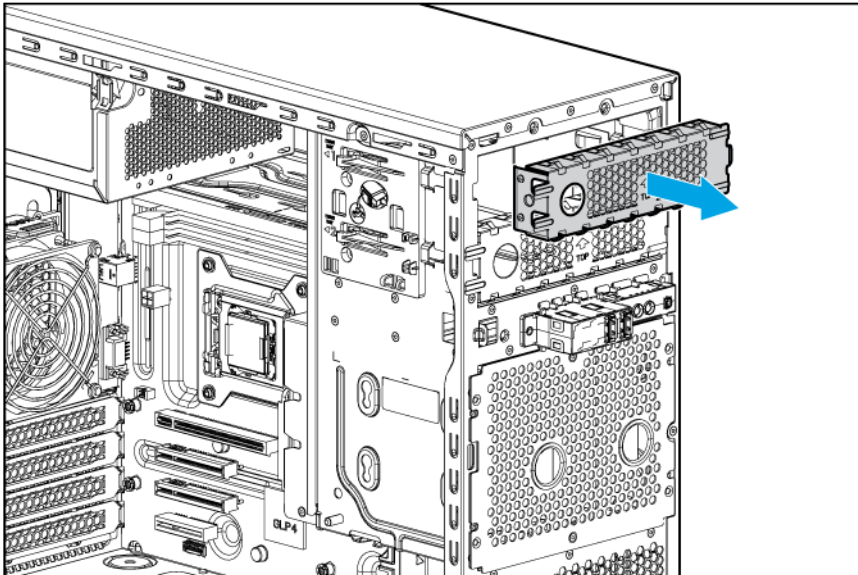
To install the component:

1. Power down the server (on page 13).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do the following:
 - a. Unlock the tower bezel (on page 14).
 - b. Remove the tower bezel (on page 14).
4. Remove the access panel (on page 15).

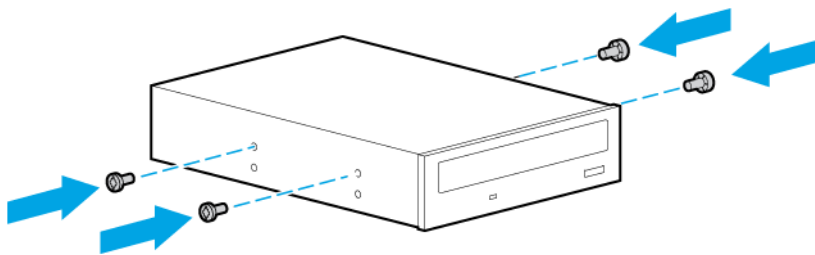
5. Remove the media bay blank.



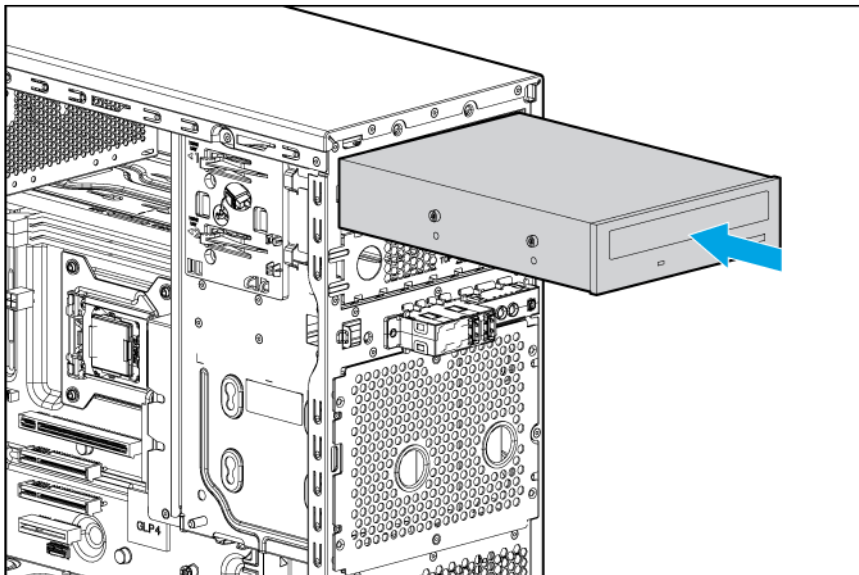
6. Remove the EMI shield.



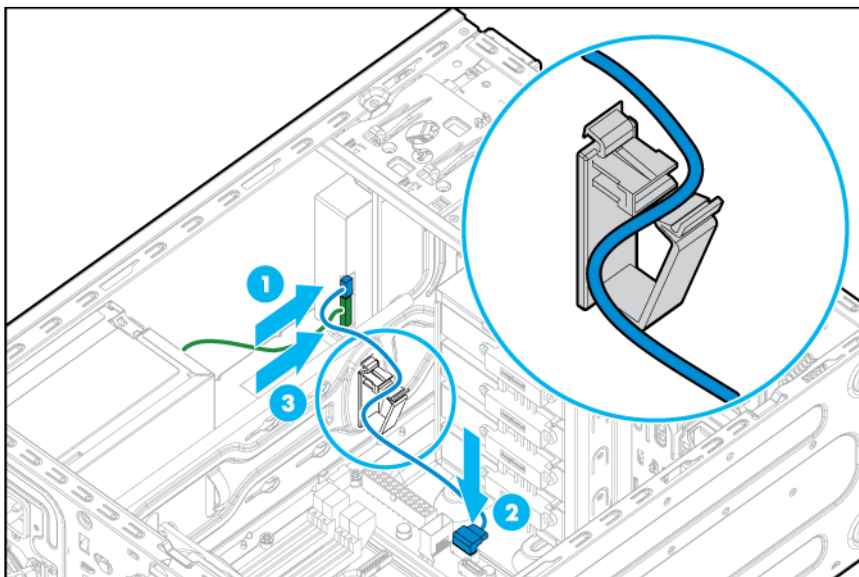
7. Attach four screws from the chassis to the optical drive.



8. Install the optical drive into the media drive bay ("Optical drive cabling" on page 42).



9. Connect the drive cables:
 - a. Connect the power cable to the drive.
 - b. Connect one end of the SATA cable to the drive and the other end to the system board.
For cable routing information, see "Optical drive cabling (on page 42)."



10. Install the air baffle (on page 16).
11. Install the access panel (on page 15).
12. Install the tower bezel (on page 13).
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server (on page 13).

Memory options



IMPORTANT: This server does not support mixing LRDIMMs, RDIMMs, or UDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS initialization.

The server supports dual-rank UDIMMs operating at a speed of up to 1600 MHz. Depending on the processor model and the number of DIMMs installed, the memory clock speed might be reduced to 1333 or 1066 MHz. The server supports a maximum system memory of 32 GB, using 4-GB, and 8-GB UDIMMs.

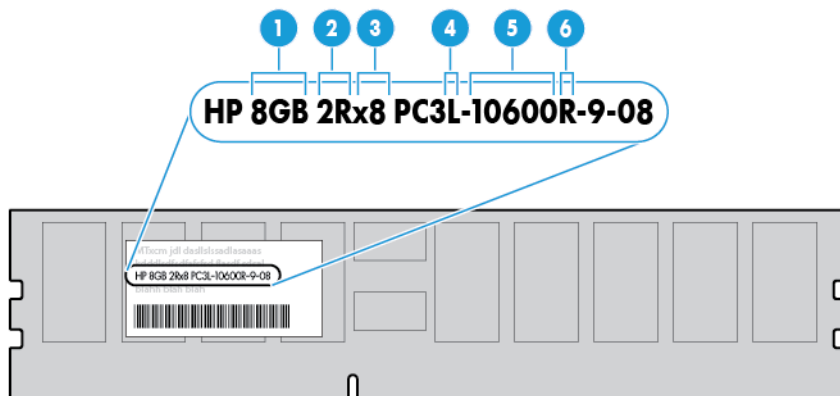
HP SmartMemory

HP SmartMemory, introduced for Gen8 servers, authenticates and unlocks certain features available only on HP Qualified memory and verifies whether installed memory has passed HP qualification and test processes. Qualified memory is performance-tuned for HP ProLiant and BladeSystem servers and provides future enhanced support through manageability software.

Certain performance features are unique with HP SmartMemory. The industry supports UDIMM at 2 DIMMs per channel at 1066 MT/s. HP SmartMemory supports 2 DIMMs per channel at 1600 MT/s, or 25% greater bandwidth.

DIMM identification

To determine DIMM characteristics, use the label attached to the DIMM and the following illustration and table.



Item	Description	Definition
1	Size	—
2	Rank	1R = Single-rank 2R = Dual-rank 3R = Three-rank 4R = Quad-rank
3	Data width	x4 = 4-bit x8 = 8-bit

Item	Description	Definition
4	Voltage rating	L = Low voltage (1.35V) U = Ultra low voltage (1.25V) Blank or omitted = Standard
5	Memory speed	12800 = 1600-MT/s 10600 = 1333-MT/s 8500 = 1066-MT/s
6	DIMM type	R = RDIMM (registered) E = UDIMM (unbuffered with ECC) L = LRDIMM (load reduced)

For the latest supported memory information, see the QuickSpecs on the HP website (<http://www.hp.com/go/qs>). At the website, choose the geographic region, and then locate the product by name or product category.

Single-rank and dual-rank DIMMs

DIMM configuration requirements are based on these classifications:

- Single-rank DIMM—One set of memory chips that is accessed while writing to or reading from the memory.
- Dual-rank DIMM—Two single-rank DIMMs on the same module, with only one rank accessible at a time.

The server memory control subsystem selects the proper rank within the DIMM when writing to or reading from the DIMM.

Dual-rank DIMMs provide the greatest capacity with the existing memory technology. For example, if current DRAM technology supports 2-GB single-rank DIMMs, a dual-rank DIMM would be 4 GB.

Memory subsystem architecture

The memory subsystem in this server is divided into two channels. Each channel supports two DIMM slots.

Channel	Population order	Slot number
1	C	1
	A	2
2	D	3
	B	4

DIMM slots are identified by number and by letter. Letters identify the population order. Slot numbers are reported by ROM messages during boot and are used for error reporting.

For the DIMM slot locations, see "DIMM slot locations (on page 10)."

ECC memory

The server supports the standard ECC memory correction mode. Standard ECC can correct single-bit memory errors and detect multibit memory errors. When multibit errors are detected, the error is signaled to the server and causes the server to halt.

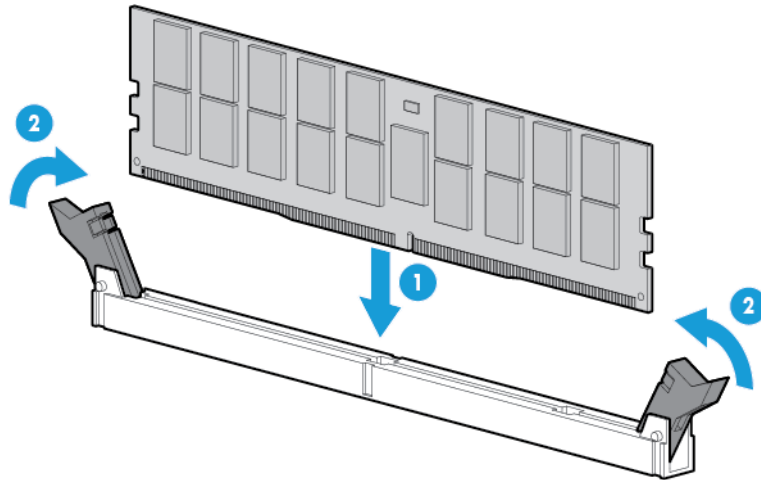
General DIMM slot population guidelines

- The server has four DIMM slots.
- The server supports two channels with two DIMM slots per channel.
 - Memory channel 1 consists of the two DIMMs that are closest to the processor.
 - Memory channel 2 consists of the two DIMMs that are farthest from the processor.
- A white DIMM slot indicates the first slot of a channel (2-A, 4-B).
- Memory speed support depends on the type of processor installed. For more information, see the technical specification of the installed processor.
- The server supports up to 1600 MT/s ECC UDIMMs.
- The server supports up to 32 GB (4x8 GB) UDIMMs.
- The server does not support:
 - RDIMMs
 - Non-ECC UDIMMs
- When installing DIMMs:
 - Populate the DIMM slots in this sequence: 2-A, 4-B, 1-C, 3-D.
 - Use HP-qualified UDIMMs.

Installing a DIMM

1. Power down the server (on page [13](#)).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do the following:
 - a. Unlock the tower bezel (on page [14](#)).
 - b. Remove the tower bezel (on page [14](#)).
4. Remove the access panel (on page [15](#)).
5. Remove the air baffle (on page [17](#)).
6. Open the DIMM slot latches.

7. Install the DIMM.



8. Install the air baffle (on page 16).
9. Install the access panel (on page 15).
10. Install the tower bezel (on page 13).
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server (on page 13).

After installing the DIMMs, to configure memory protection mode, use RBSU.

Setting up the HP PS1810-24G Switch (optional)

If you intend to use the server with the companion HP PS 1810-24G Switch, follow the procedures in this section.

For more information on switch-related settings and operational procedures, see the documentation for your switch model on the HP website (<http://www.hp.com/networking/support>).

Mounting the switch with the server

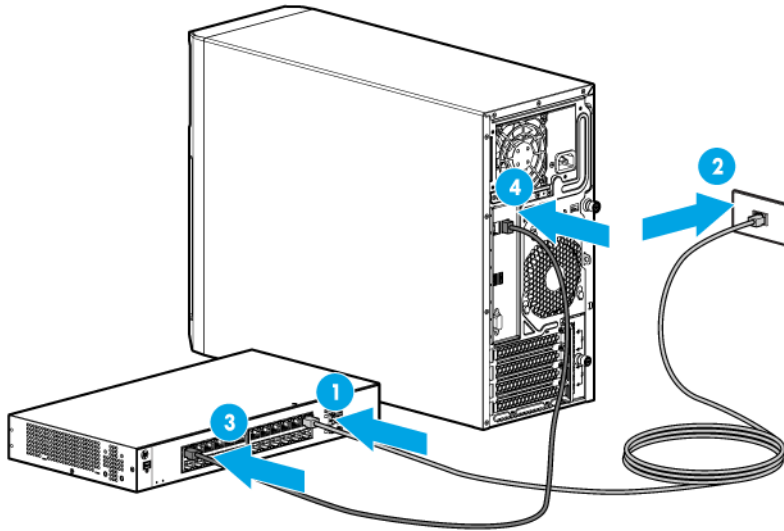
Mount the switch in a rack, on a wall, or on top of or under a horizontal surface. For detailed instructions, see the *HP PS1810-24G Switch Quick Setup Guide*.

Connecting the server to the switch

To establish an Ethernet connection:

1. Connect an Ethernet cable to the switch, and then connect the cable to a network jack.
2. Connect an Ethernet cable to the server NIC connector 1 or 2 ("[Rear panel components](#)" on page 8).

3. Connect the cable to any switch network port.




Completing the switch Self-Test

1. Connect the power adapter to the switch.
2. Connect the power adapter to the AC power source.
3. Check the status of the switch Power LED. This LED is solid green to indicate that the power connection is established.
4. Check the status of the following switch LEDs:
 - o Link/Act LED on the switch network port that is being used—Initially, solid green to indicate successful connection, and then flashing green to indicate active communication with the network.
 - o Fault LED—Remains off to indicate successful Self-Test completion.

For more information on the location of the switch LEDs and their behavior during the Self-Test process, see the switch documentation.

Completing the switch setup

After the Ethernet cable connection is made, check the network LED status on both the server and the switch to confirm successful connection:

- In the server front panel, the NIC status LED  —Solid green
- In the switch, the Link/Act LED on the network connector used—Initially, solid green to indicate successful connection, and then flashing green to indicate active communication with the network.

HP Trusted Platform Module option

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP website (<http://www.hp.com/go/qs>).


Use these instructions to install and enable a TPM on a supported server. This procedure includes three sections:

1. Installing the Trusted Platform Module board.
2. Retaining the recovery key/password (on page 40).

3. Enabling the Trusted Platform Module (on page 40).

Enabling the TPM requires accessing RBSU. For more information about RBSU, see the HP website (<http://www.hp.com/support/rbsu>).


TPM installation requires the use of drive encryption technology, such as the Microsoft Windows BitLocker Drive Encryption feature. For more information on BitLocker, see the Microsoft website (<http://www.microsoft.com>).


 **CAUTION:** Always observe the guidelines in this document. Failure to follow these guidelines can cause hardware damage or halt data access.

When installing or replacing a TPM, observe the following guidelines:

- Do not remove an installed TPM. Once installed, the TPM becomes a permanent part of the system board.
- When installing or replacing hardware, HP service providers cannot enable the TPM or the encryption technology. For security reasons, only the customer can enable these features.
- When returning a system board for service replacement, do not remove the TPM from the system board. When requested, HP Service provides a TPM with the spare system board.
- Any attempt to remove an installed TPM from the system board breaks or disfigures the TPM security rivet. Upon locating a broken or disfigured rivet on an installed TPM, administrators should consider the system compromised and take appropriate measures to ensure the integrity of the system data.
- When using BitLocker, always retain the recovery key/password. The recovery key/password is required to enter Recovery Mode after BitLocker detects a possible compromise of system integrity.
- HP is not liable for blocked data access caused by improper TPM use. For operating instructions, see the encryption technology feature documentation provided by the operating system.

Installing the Trusted Platform Module board

 **WARNING:** To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

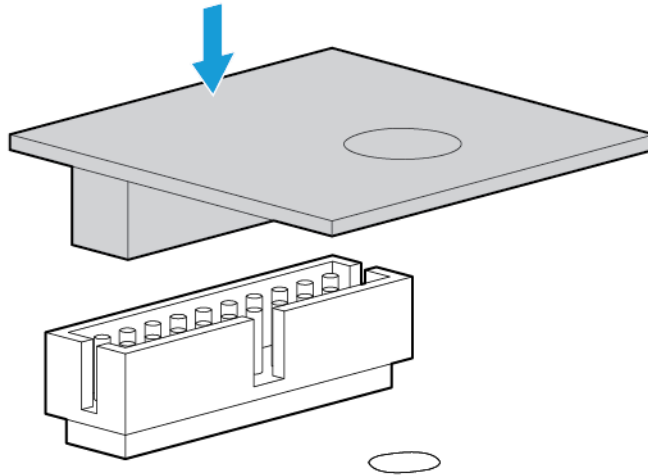
 **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

To install the component:

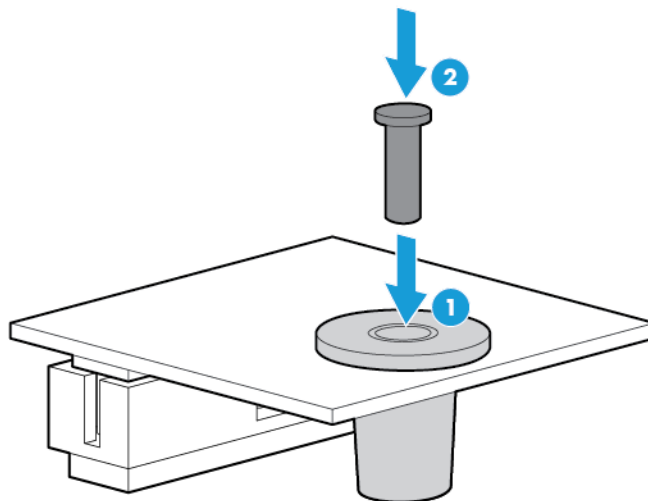
1. Power down the server (on page 13).
2. Do the following:
 - a. Unlock the tower bezel (on page 14).
 - b. Remove the tower bezel (on page 14).
3. Remove the access panel (on page 15).
4. Remove the air baffle (on page 17).

⚠ CAUTION: Any attempt to remove an installed TPM from the system board breaks or disfigures the TPM security rivet. Upon locating a broken or disfigured rivet on an installed TPM, administrators should consider the system compromised and take appropriate measures to ensure the integrity of the system data.

5. Install the TPM board. Press down on the connector to seat the board ("[System board components](#)" on page 9).



6. Install the TPM security rivet by pressing the rivet firmly into the system board.



7. Install the air baffle (on page [16](#)).
8. Install the access panel (on page [15](#)).
9. Lock the tower bezel.
10. Connect each power cord to the server.
11. Connect each power cord to the power source.
12. Power up the server (on page [13](#)).

Retaining the recovery key/password

The recovery key/password is generated during BitLocker setup, and can be saved and printed after BitLocker is enabled. When using BitLocker, always retain the recovery key/password. The recovery key/password is required to enter Recovery Mode after BitLocker detects a possible compromise of system integrity.

To help ensure maximum security, observe the following guidelines when retaining the recovery key/password:

- Always store the recovery key/password in multiple locations.
- Always store copies of the recovery key/password away from the server.
- Do not save the recovery key/password on the encrypted hard drive.

Enabling the Trusted Platform Module

1. When prompted during the start-up sequence, access RBSU by pressing the **F9** key.
2. From the Main Menu, select **Server Security**.
3. From the Server Security Menu, select **Trusted Platform Module**.
4. From the Trusted Platform Module Menu, select **TPM Functionality**.
5. Select **Enable**, and then press the **Enter** key to modify the TPM Functionality setting.
6. Press the **Esc** key to exit the current menu, or press the **F10** key to exit RBSU.
7. Reboot the server.
8. Enable the TPM in the OS. For OS-specific instructions, see the OS documentation.



CAUTION: When a TPM is installed and enabled on the server, data access is locked if you fail to follow the proper procedures for updating the system or option firmware, replacing the system board, replacing a hard drive, or modifying OS application TPM settings.

For more information on firmware updates and hardware procedures, see the *HP Trusted Platform Module Best Practices White Paper* on the HP website (<http://www.hp.com/support>).

For more information on adjusting TPM usage in BitLocker™, see the Microsoft website (<http://technet.microsoft.com/en-us/library/cc732774.aspx>).

Cabling

Cabling overview

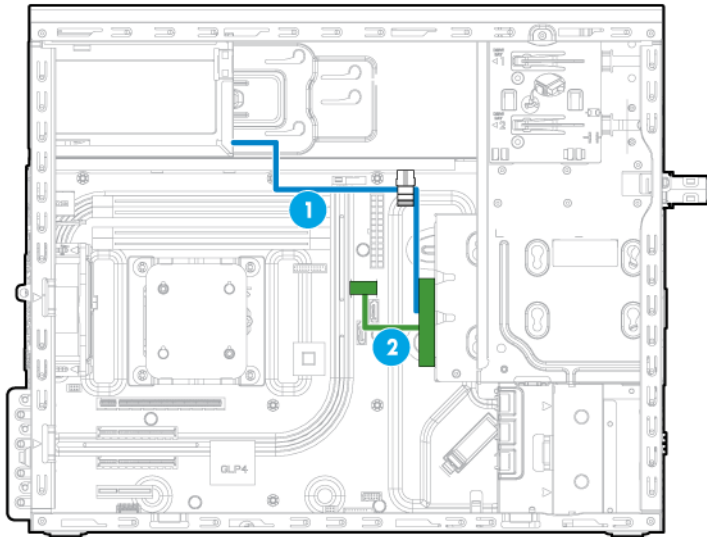
This section provides guidelines to help make informed decisions about cabling the server and hardware options to optimize performance.

For information on cabling peripheral components, see the white paper on high-density deployment at the HP website (<http://www.hp.com/products/servers/platforms>).

CAUTION: When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

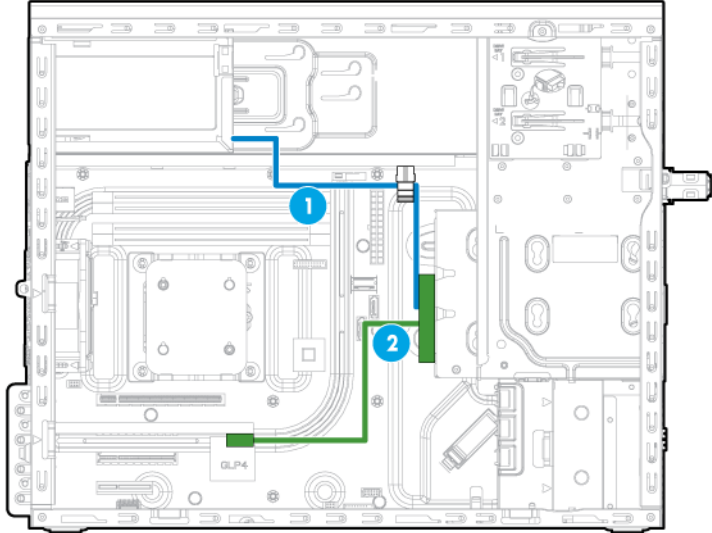
Storage cabling

Drive to system board (SATA drive support only)



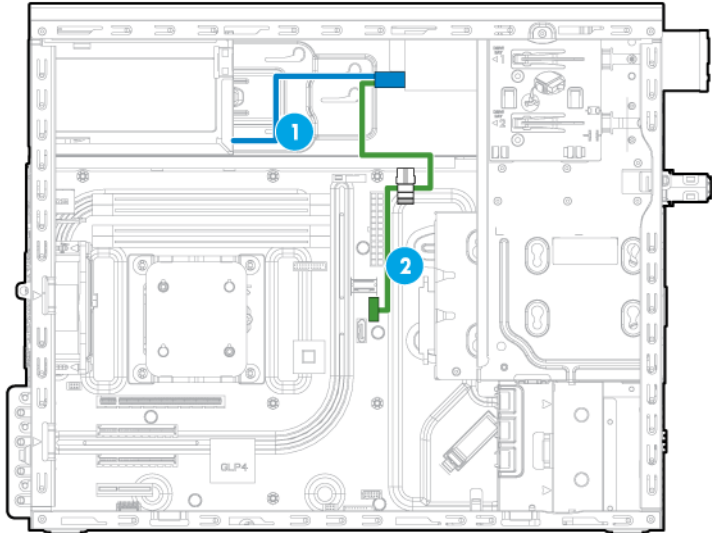
Item	Description
1	Drive power cable
2	Mini-SAS cable

Drive to controller (SATA and SAS drive support)



Item	Description
1	Drive power cable
2	Mini-SAS cable

Optical drive cabling



Item	Description
1	Optical drive power cable
2	SATA cable

Software and configuration utilities

Server mode

The software and configuration utilities presented in this section operate in online mode, offline mode, or in both modes.

Software or configuration utility	Server mode
HP iLO (on page 43)	Online and Offline
Integrated Management Log (on page 44)	Online and Offline
HP Insight Remote Support (on page 44)	Online
HP Insight Online (on page 45)	Online
HP Insight Diagnostics (on page 45)	Online
Scripting Toolkit for Windows and Linux (on page 46)	Online
HP Service Pack for ProLiant (on page 46)	Online and Offline
HP Smart Update Manager (on page 46)	Online and Offline
HP Smart Storage Administrator (on page 47)	Online and Offline

Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP website (<http://www.hp.com/go/qs>).

HP iLO

The iLO subsystem is a standard component of HP ProLiant servers that simplifies initial server setup, server health monitoring, power and thermal optimization, and remote server administration. The iLO subsystem includes an intelligent microprocessor, and secure memory. This design makes iLO independent of the host server and its operating system.

iLO features Agentless Management. All key internal subsystems are monitored by iLO. If enabled, SNMP alerts are sent directly by iLO regardless of the host operating system or even if no host operating system is installed.

Embedded remote support software is available on HP ProLiant Gen8 and later servers with iLO, regardless of the operating system software and without installing OS agents on the server.

Using iLO, you can do the following:

- Access a high-performance and secure Integrated Remote Console to the server from anywhere in the world if you have a network connection to the server.
- Use the shared .NET Integrated Remote Console to collaborate with up to four server administrators.
- Remotely mount high-performance Virtual Media devices to the server.

- Securely and remotely control the power state of the managed server.
- Implement true Agentless Management with SNMP alerts from HP iLO, regardless of the state of the host server.
- Register for HP Insight Remote Support.
- Use Virtual Power and Virtual Media from the GUI, the CLI, or the iLO scripting toolkit for many tasks, including the automation of deployment and provisioning.
- Control iLO by using a remote management tool.

For more information about iLO features, see the iLO documentation on the HP website (<http://www.hp.com/go/ilo/docs>).

For a complete list of supported features and functionality, see the HP iLO 4 QuickSpecs on the HP website (http://h18000.www1.hp.com/products/quickspecs/14276_div/14276_div.pdf).

Integrated Management Log

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

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

- From within HP SIM
- From within operating system-specific IML viewers:
 - For Windows: IML Viewer
 - For Linux: IML Viewer Application
- From within the iLO web interface
- From within HP Insight Diagnostics (on page 45)

HP Insight Remote Support

HP strongly recommends that you register your device for remote support to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP Insight Remote Support supplements your monitoring continuously to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications can be sent to your authorized HP Channel Partner for onsite service, if configured and available in your country.

For more information, see *HP Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures* on the HP website (<http://www.hp.com/go/insightremotesupport/docs>). HP Insight Remote Support is available as part of HP Warranty, HP Care Pack Service, or HP contractual support agreement.

HP Insight Remote Support central connect

When you use the embedded Remote Support functionality with HP ProLiant Gen8 and later server models and HP BladeSystem c-Class enclosures, you can register a server or enclosure to communicate to HP through an HP Insight Remote Support centralized Hosting Device in your local environment. All configuration and service event information is routed through the Hosting Device. This information can be viewed by using the local HP Insight Remote Support user interface or the web-based view in HP Insight Online.

For more information, see *HP Insight Remote Support Release Notes* on the HP website (<http://www.hp.com/go/insightremotesupport/docs>).

HP Insight Online direct connect

When you use the embedded Remote Support functionality with HP ProLiant Gen8 and later server models and HP BladeSystem c-Class enclosures, you can register a server or enclosure to communicate directly to HP Insight Online without the need to set up an HP Insight Remote Support centralized Hosting Device in your local environment. HP Insight Online will be your primary interface for remote support information.

For more information, see the product documentation on the HP website (<http://www.hp.com/go/insightremotesupport/docs>).

HP Insight Online

HP Insight Online is a capability of the HP Support Center portal. Combined with HP Insight Remote Support central connect or HP Insight Online direct connect, it automatically aggregates device health, asset, and support information with contract and warranty information, and then secures it in a single, personalized dashboard that is viewable from anywhere at any time. The dashboard organizes your IT and service data to help you understand and respond to that information more quickly. With specific authorization from you, an authorized HP Channel Partner can also view your IT environment remotely using HP Insight Online.

For more information about using HP Insight Online, see the *HP Insight Online User's Guide* on the HP website (<http://www.hp.com/go/insightremotesupport/docs>).

HP Insight Diagnostics

HP Insight Diagnostics is a proactive server management tool that provides diagnostics and troubleshooting capabilities to assist IT administrators who verify server installations, troubleshoot problems, and perform repair validation.

HP Insight Diagnostics Online Edition is a web-based application that captures system configuration and other related data needed for effective server management. Available in Microsoft Windows and Linux versions, the utility helps to ensure proper system operation.

For more information or to download the utility, see the HP website (<http://www.hp.com/servers/diags>). HP Insight Diagnostics Online Edition is also available in the SPP ("[HP Service Pack for ProLiant](#)" on page 46).

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 45) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

This functionality supports operating systems that are supported by the server. For operating systems supported by the server, see the HP website (<http://www.hp.com/go/supportos>).

If a significant change occurs between data-gathering intervals, the survey function marks the previous information and overwrites the survey data files to reflect the latest changes in the configuration.

Survey functionality can be installed through the SPP ("[HP Service Pack for ProLiant](#)" on page 46).

Scripting Toolkit for Windows and Linux

The Scripting Toolkit for Windows and Linux is a server deployment product that delivers an unattended automated installation for high-volume server deployments. The Scripting Toolkit is designed to support ProLiant BL, ML, DL, SL, and XL servers. The toolkit includes a modular set of utilities and important documentation that describes how to apply these tools to build an automated server deployment process.

The Scripting Toolkit provides a flexible way to create standard server configuration scripts. These scripts are used to automate many of the manual steps in the server configuration process. This automated server configuration process cuts time from each deployment, making it possible to scale rapid, high-volume server deployments.

For more information, and to download the Scripting Toolkit, see the HP website (<http://www.hp.com/go/ProLiant/STK>).

HP Service Pack for ProLiant

SPP is a comprehensive systems software (drivers and firmware) solution delivered as a single package with major server releases. This solution uses HP SUM as the deployment tool and is tested on all supported HP ProLiant servers including HP ProLiant Gen8 and later servers.

SPP can be used in an online mode on a Windows or Linux hosted operating system, or in an offline mode where the server is booted to an operating system included on the ISO file so that the server can be updated automatically with no user interaction or updated in interactive mode.

For more information or to download SPP, see one of the following pages on the HP website:

- HP Service Pack for ProLiant download page (<http://www.hp.com/go/spp>)
- HP Smart Update: Server Firmware and Driver Updates page (<http://www.hp.com/go/SmartUpdate>)

HP Smart Update Manager

HP SUM is a product used to install and update firmware, drivers, and systems software on HP ProLiant servers. HP SUM provides a GUI and a command-line scriptable interface for deployment of systems software for single or one-to-many HP ProLiant servers and network-based targets, such as iLOs, OAs, and VC Ethernet and Fibre Channel modules.

For more information about HP SUM, see the product page on the HP website (<http://www.hp.com/go/hpsum>).

To download HP SUM, see the HP website (<http://www.hp.com/go/hpsum/download>).

To access the *HP Smart Update Manager User Guide*, see the HP SUM Information Library (<http://www.hp.com/go/hpsum/documentation>).

Re-entering the server serial number and product ID

After you replace the system board, you must re-enter the server serial number and the product ID.

1. During the server startup sequence, press the **F9** key to access RBSU.
2. Select the **Advanced Options** menu.
3. Select **Service Options**.

4. Select **Serial Number**. The following warnings appear:
WARNING! WARNING! WARNING! The serial number is loaded into the system during the manufacturing process and should NOT be modified. This option should only be used by qualified service personnel. This value should always match the serial number sticker located on the chassis.
Warning: The serial number should ONLY be modified by qualified service personnel. This value should always match the serial number located on the chassis.
5. Press the **Enter** key to clear the warning.
6. Enter the serial number and press the **Enter** key.
7. Select **Product ID**. The following warning appears:
Warning: The Product ID should ONLY be modified by qualified service personnel. This value should always match the Product ID on the chassis.
8. Enter the product ID and press the **Enter** key.
9. Press the **Esc** key to close the menu.
10. Press the **Esc** key to exit RBSU.
11. Press the **F10** key to confirm exiting RBSU. The server automatically reboots.

Utilities and features

HP Smart Storage Administrator

HP SSA is a configuration and management tool for HP Smart Array controllers. Starting with HP ProLiant Gen8 servers, HP SSA replaces ACU with an enhanced GUI and additional configuration features.

HP SSA exists in three interface formats: the HP SSA GUI, the HP SSA CLI, and HP SSA Scripting. Although all formats provide support for configuration tasks, some of the advanced tasks are available in only one format.

Some HP SSA features include the following:

- Supports online array capacity expansion, logical drive extension, assignment of online spares, and RAID or stripe size migration
- Suggests the optimal configuration for an unconfigured system
- Provides diagnostic and SmartSSD Wear Gauge functionality on the Diagnostics tab
- For supported controllers, provides access to additional features.

For more information about HP SSA, see the HP website (<http://www.hp.com/go/hpssa>).

Automatic Server Recovery

ASR is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue screen, ABEND (does not apply to HP ProLiant DL980 Servers), or panic. A system fail-safe timer, the ASR 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.

ASR increases server availability by restarting the server within a specified time after a system hang. At the same time, the HP SIM console notifies you by sending a message to a designated pager number that ASR has restarted the system. You can disable ASR from the System Management Homepage or through RBSU.

USB support

HP provides standard USB 2.0 support, standard USB 3.0 support, and legacy USB support. Standard support is provided by the OS through the appropriate USB device drivers.

Before the OS loads, HP provides support for USB 2.0 devices through legacy USB support, which is enabled by default in the system ROM. USB 3.0 ports are not functional before the OS loads. The native OS provides USB 3.0 support through appropriate xHCI drivers.

Legacy USB support provides USB functionality in environments where USB support is not available normally. Specifically, HP provides legacy USB functionality for the following:

- POST
- RBSU
- Diagnostics
- DOS
- Operating environments which do not provide native USB support

Redundant ROM support

The server enables you to upgrade or configure the ROM safely with redundant ROM support. The server has a single ROM that acts as two separate ROM images. In the standard implementation, one side of the ROM contains the current ROM program version, while the other side of the ROM contains a backup version.

NOTE: The server ships with the same version programmed on each side of the ROM.

Safety and security benefits

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

Keeping the system current

Access to HP Support Materials

Access to some updates for HP ProLiant Servers may require product entitlement when accessed through the HP Support Center support portal. HP recommends that you have an HP Passport set up with relevant entitlements. For more information, see the HP website (<http://h20564.www2.hp.com/portal/site/hpsc/public/kb/docDisplay/?docId=c03859703>).

Drivers



IMPORTANT: Always perform a backup before installing or updating device drivers.

The server includes new hardware that may not have driver support on all OS installation media.

Drivers, ROM images, and value-add software can be downloaded as part of an SPP ("HP Service Pack for ProLiant" on page 46). If you are installing drivers from SPP, be sure that you are using the latest SPP version that your server supports. To verify that your server is using the latest supported version and for more information about SPP, see the HP website (<http://www.hp.com/go/spp/download>).

To locate the drivers for a particular server, go to the HP website (<http://www.hp.com/go/hpsc>) and click on **Drivers, Software & Firmware**. Then, enter your product name in the **Find an HP product** field and click **Go**.

Software and firmware

Software and firmware should be updated before using the server for the first time, unless any installed software or components require an older version.

For system software and firmware updates, use one of the following sources:

- Download the SPP ("HP Service Pack for ProLiant" on page 46) from the HP Service Pack for ProLiant download page (<http://www.hp.com/go/spp>).
- Download individual drivers, firmware, or other systems software components from the server product page in the HP Support Center (<http://www.hp.com/go/hpsc>).

Operating System Version Support

For information about specific versions of a supported operating system, refer to the operating system support matrix (<http://www.hp.com/go/supportos>).

Version control

The VCRM and VCA are web-enabled Insight Management Agents tools that HP SIM uses to schedule software update tasks to the entire enterprise.

- VCRM manages the repository for SPP. Administrators can view the SPP contents or configure VCRM to automatically update the repository with internet downloads of the latest software and firmware from HP.
- VCA compares installed software versions on the node with updates available in the VCRM managed repository. Administrators configure VCA to point to a repository managed by VCRM.

For more information about version control tools, see the *HP Systems Insight Manager User Guide*, the *HP Version Control Agent User Guide*, and the *HP Version Control Repository Manager User Guide* on the HP website (<http://www.hp.com/go/enterprise/docs>).

1. Select **HP Insight Management** from the available options in Products and Solutions.
2. Select **HP Version Control** from the available options in HP Insight Management.
3. Download the latest document.

HP operating systems and virtualization software support for ProLiant servers

For information about specific versions of a supported operating system, see the HP website (<http://www.hp.com/go/ossupport>).

HP Technology Service Portfolio

Connect to HP for assistance on the journey to the new style of IT. HP Technology Services delivers confidence and reduces risk to help you realize agility and stability in your IT infrastructure.

Utilize our consulting expertise in the areas of private or hybrid cloud computing, big data and mobility requirements, improving data center infrastructure and better use of today's server, storage and networking technology. For more information, see the HP website (<http://www.hp.com/services/consulting>).

Our support portfolio covers services for HP server, storage and networking hardware and software plus the leading industry standard operating systems. Let us work proactively with you to prevent problems. Our flexible choices of hardware and software support coverage windows and response times help resolve problems faster, reduce unplanned outages and free your staff for more important tasks. For more information, see the HP website (<http://www.hp.com/services/support>).

Tap into our knowledge, expertise, innovation and world-class services to achieve better results. Access and apply technology in new ways to optimize your operations and you'll be positioned for success.

Change control and proactive notification

HP offers Change Control and Proactive Notification to notify customers 30 to 60 days in advance of upcoming hardware and software changes on HP commercial products.

For more information, refer to the HP website (<http://www.hp.com/go/pcn>).

Troubleshooting

Troubleshooting resources

The *HP ProLiant Gen8 Troubleshooting Guide, Volume I: Troubleshooting* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance on ProLiant servers and server blades. To view the guide, select a language:

- English (http://www.hp.com/support/ProLiant_TSG_v1_en)
- French (http://www.hp.com/support/ProLiant_TSG_v1_fr)
- Spanish (http://www.hp.com/support/ProLiant_TSG_v1_sp)
- German (http://www.hp.com/support/ProLiant_TSG_v1_gr)
- Japanese (http://www.hp.com/support/ProLiant_TSG_v1_jp)
- Simplified Chinese (http://www.hp.com/support/ProLiant_TSG_v1_sc)

The *HP ProLiant Gen8 Troubleshooting Guide, Volume II: Error Messages* provides a list of error messages and information to assist with interpreting and resolving error messages on ProLiant servers and server blades. To view the guide, select a language:

- English (http://www.hp.com/support/ProLiant_EMG_v1_en)
- French (http://www.hp.com/support/ProLiant_EMG_v1_fr)
- Spanish (http://www.hp.com/support/ProLiant_EMG_v1_sp)
- German (http://www.hp.com/support/ProLiant_EMG_v1_gr)
- Japanese (http://www.hp.com/support/ProLiant_EMG_v1_jp)
- Simplified Chinese (http://www.hp.com/support/ProLiant_EMG_v1_sc)

System battery replacement

If the server no longer automatically displays the correct date and time, then replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

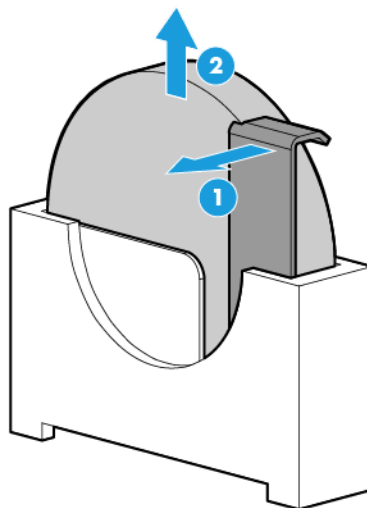


WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

To remove the component:

1. Power down the server (on page 13).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do the following:
 - a. Unlock the tower bezel (on page 14).
 - b. Remove the tower bezel (on page 14).
4. Remove the access panel (on page 15).
5. Remove the air baffle (on page 17).
6. Locate the battery on the system board ("[System board components](#)" on page 9).
7. Remove the battery.





IMPORTANT: Replacing the system board battery resets the system ROM to its default configuration. After replacing the battery, reconfigure the system through RBSU.

To replace the component, reverse the removal procedure.

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

Regulatory information

Safety and regulatory compliance

For safety, environmental, and regulatory information, see *Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products*, available at the HP website (<http://www.hp.com/support/Safety-Compliance-EnterpriseProducts>).

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Warranty information

HP ProLiant and X86 Servers and Options (<http://www.hp.com/support/ProLiantServers-Warranties>)

HP Enterprise Servers (<http://www.hp.com/support/EnterpriseServers-Warranties>)

HP Storage Products (<http://www.hp.com/support/Storage-Warranties>)

HP Networking Products (<http://www.hp.com/support/Networking-Warranties>)

Electrostatic discharge

Preventing 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.

To prevent electrostatic damage:

- 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 to prevent electrostatic discharge

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

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

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

For more information on static electricity or assistance with product installation, contact an authorized reseller.

Specifications

Environmental specifications

Specification	Value
Temperature range*	
Operating	0° C to 40° C (32° F to 104° F)
Nonoperating	-30° C to 65° C (-22° F to 149° F)
Relative humidity (noncondensing)	
Operating, maximum wet bulb temperature of 28°C (82.4°F)	10% to 90%
Nonoperating, maximum wet bulb temperature of 38.7°C (101.7°F)	0% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1° C per 304.8 m (1.8° F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed.

Server specifications

Specification	Tower model
Height	36.82 cm (14.50 in)
Depth	47.52 cm (18.71 in)
Width	17.50 cm (6.89 in)
Minimum weight	10.80 kg (23.81 lb)
Maximum weight	15.20 kg (33.51 lb)

Power supply specifications

Depending on installed options, the server is configured with one of the following power supplies:

- HP 350 W 4U Integrated Power Supply

For more information about the power supply features, specifications, and compatibility, see the HP website (<http://www.hp.com/go/proliant/powersupply>).

Support and other resources

Before you contact HP

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

- Onboard Administrator SHOW ALL report (for HP BladeSystem products only)
For more information on obtaining the Onboard Administrator SHOW ALL report, see the HP website (<http://www.hp.com/go/OAlog>).
- Technical support registration number (if applicable)
- Product serial number
- Product model name and number
- Product identification number
- Applicable error messages
- Add-on boards or hardware
- Third-party hardware or software
- Operating system type and revision level

HP contact information

For United States and worldwide contact information, see the Contact HP website (<http://www.hp.com/go/assistance>).

In the United States:

- To contact HP by phone, call 1-800-334-5144. For continuous quality improvement, calls may be recorded or monitored.
- If you have purchased a Care Pack (service upgrade), see the Support & Drivers website (<http://www8.hp.com/us/en/support-drivers.html>). If the problem cannot be resolved at the website, call 1-800-633-3600. For more information about Care Packs, see the HP website (<http://pro-aq-sama.houston.hp.com/services/cache/10950-0-0-225-121.html>).

Customer Self Repair

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (<http://www.hp.com/go/selfrepair>).

Réparation par le client (CSR)

Les produits HP comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP vous l'envoie directement. Il existe deux catégories de pièces CSR:

Obligatoire - Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agréé local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (<http://www.hp.com/go/selfrepair>).

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP lo spedisce direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese aggiuntive a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (<http://www.hp.com/go/selfrepair>).

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

Zwingend – Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von HP vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Optional – Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (<http://www.hp.com/go/selfrepair>).

Reparaciones del propio cliente

Los productos de HP incluyen muchos componentes que el propio usuario puede reemplazar (*Customer Self Repair*, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional:** componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (<http://www.hp.com/go/selfrepair>).

Customer Self Repair

Veel onderdelen in HP producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

Optioneel: Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie gewenst is, belt u een HP Service Partner om via de telefoon technische ondersteuning te ontvangen. HP vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan HP moet worden geretourneerd. Als het defecte onderdeel aan HP moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan HP. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan HP u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt HP alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest HP zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (<http://www.hp.com/go/selfrepair>).

Reparo feito pelo cliente

Os produtos da HP são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

Opcional – Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (<http://www.hp.com/go/selfrepair>).

カスタマーセルフリペア

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、HP製品には多数のCSR部品があります。診断の際に、CSR部品を使用すれば修理ができるとHP（HPまたはHP正規保守代理店）が判断した場合、HPはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2通りがあります。

- **必須** - カスタマーセルフリペアが必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- **任意** - カスタマーセルフリペアが任意である部品。この部品もカスタマーセルフリペア用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注： HP製品の一部の部品は、カスタマーセルフリペア用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品がカスタマーセルフリペア除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、HPの修理受付窓口にご電話いただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHPに返送する必要があるかどうかが表示されています。故障部品をHPに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HPから部品費用が請求されます。カスタマーセルフリペアの際には、HPは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

客戶自行維修

HP 產品提供許多客戶自行維修 (CSR) 部件，以尽可能縮短維修時間和在更換缺陷部件方面提供更大的靈活性。如果在診斷期間 HP (或 HP 服務提供商或服務合作夥伴) 確定可以通過使用 CSR 部件完成維修，HP 將直接把該部件發送給您進行更換。有兩類 CSR 部件：

- **強制性的** — 要求客戶必須自行維修的部件。如果您請求 HP 更換這些部件，則必須為該服務支付差旅費和人工費用。
- **可選的** — 客戶可以選擇是否自行維修的部件。這些部件也是為客戶自行維修設計的。不過，如果您要求 HP 為您更換這些部件，則根據為您的產品指定的保修服務類型，HP 可能收取或不再收取任何附加費用。

注：某些 HP 部件的設計並未考慮客戶自行維修。為了滿足客戶保修的需要，HP 要求授權服務提供商更換相關部件。這些部件在部件圖解目錄中標記為“否”。

CSR 部件將在下一個工作日發運（取決於備貨情況和允許的地理範圍）。在允許的地理範圍內，可在當天或四小時內發運，但要收取額外費用。如果需要幫助，您可以致電 HP 技術支持中心，將會有技術人員通過電話為您提供幫助。HP 會在隨更換的 CSR 部件發運的材料中指明是否必須將有缺陷的部件返還給 HP。如果要求您將有缺陷的部件返還給 HP，那麼您必須在規定期限內（通常是五 (5) 個工作日）將缺陷部件發給 HP。有缺陷的部件必須隨所提供的發運材料中的相關文件一起返還。如果未能送還有缺陷的部件，HP 可能會要求您支付更換費用。客戶自行維修時，HP 將承擔所有相關運輸和部件返回費用，並指定快遞商/承運商。

有關 HP 客戶自行維修計劃的詳細信息，請與您當地的服務提供商聯繫。有關北美地區的計劃，請訪問 HP 網站 (<http://www.hp.com/go/selfrepair>)。

客戶自行維修

HP 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間 HP (或 HP 服務供應商或維修夥伴) 辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 HP 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制的。如果您要求 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 HP 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電「HP 技術支援中心」，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，HP 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 HP，您必須在指定的一段時間內（通常為五 (5) 個工作天），將損壞的零件寄回 HP。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 將負責所有運費及零件退還費用並指定使用何家快遞/貨運公司。

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (<http://www.hp.com/go/selfrepair>)。

고객 셀프 수리

HP 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(<http://www.hp.com/go/selfrepair>)를 참조하십시오.

Acronyms and abbreviations

ABEND

abnormal end

ACU

Array Configuration Utility

AMP

Advanced Memory Protection

ASR

Automatic Server Recovery

BSMI

Bureau of Standards, Metrology and Inspection

CE

Conformité Européenne (European Conformity)

CSA

Canadian Standards Association

CSR

Customer Self Repair

EMI

electromagnetic interference

FBWC

flash-backed write cache

FCC

Federal Communications Commission

HP SIM

HP Systems Insight Manager

HP SUM

HP Smart Update Manager

IEC

International Electrotechnical Commission

iLO

Integrated Lights-Out

IML

Integrated Management Log

ISO

International Organization for Standardization

LFF

large form factor

LRDIMM

load reduced dual in-line memory module

NMI

nonmaskable interrupt

NVRAM

nonvolatile memory

PCIe

Peripheral Component Interconnect Express

PDU

power distribution unit

POST

Power-On Self Test

RBSU

ROM-Based Setup Utility

RDIMM

registered dual in-line memory module

RDP

Rapid Deployment Pack

RF

radio frequency

RFI

radio frequency interference

SAS

serial attached SCSI

SATA

serial ATA

SD

Secure Digital

SPP

HP Service Pack for ProLiant

TMRA

recommended ambient operating temperature

TPM

Trusted Platform Module

UDIMM

unregistered dual in-line memory module

UID

unit identification

USB

universal serial bus

VCA

Version Control Agent

VCRM

Version Control Repository Manager

xHCI

Extensible Host Controller Interface

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