Hewlett Packard
Enterprise

HPE ProLiant DL365 Gen10 Plus Server User Guide

Part Number: 30-B47095AD-001
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HPE ProLiant DL365 Gen10 Plus Server User Guide

Abstract
This document is for the person who installs, administers, and troubleshoots servers and storage systems. Hewlett Packard Enterprise 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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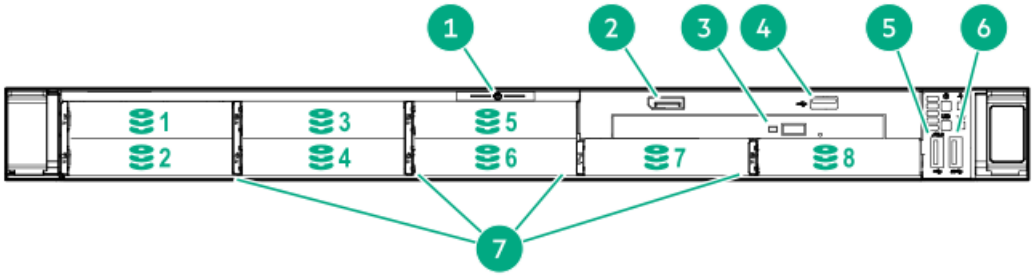
Component identification

Front panel components

8SFF/8SFF + 2SFF



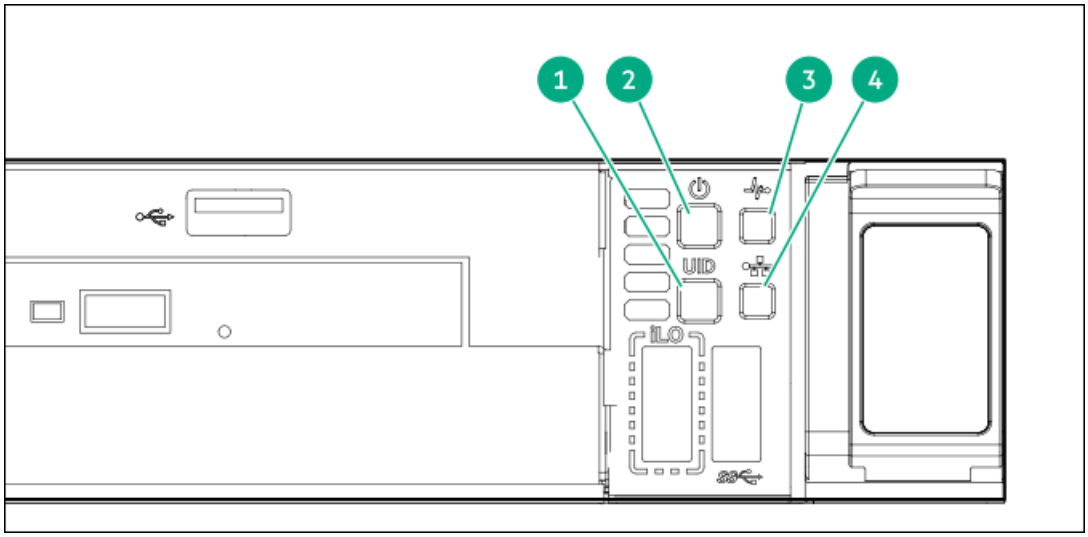
Item	Description
1	Serial number/iLO information pull tab
2	Display port (optional) [1]
3	Optical drive (optional) [1]
4	USB 2.0 port (optional) [1]
5	iLO Service Port [2]
6	USB 2.0/USB 3.0 port
7	Drive bays

[1] Optional 2SFF drive bays in 8SFF + 2SFF model

[2] The operating system does not recognize this port as a USB port.

Front panel LEDs and buttons

8 SFF/8 SFF + 2 SFF



Item	Description	Status
1	UID button/LED [1]	Solid blue = Activated Flashing blue: • 1 Hz = Remote management or firmware upgrade in progress • 4 Hz = iLO manual reboot sequence initiated • 8 Hz = iLO manual reboot sequence in progress Off = Deactivated
2	Power On/Standby button and system power LED [1]	Solid green = System on Flashing green = Performing power on sequence Solid amber = System in standby Off = No power present [2]
3	Health LED [1]	Solid green = Normal Flashing green = iLO is rebooting. Flashing amber = System degraded Flashing red = System critical [3]
4	NIC status LED [1]	Solid green = Link to network Flashing green = Network active Off = No network activity

[1] When all four LEDs described in this table flash simultaneously, a power fault has occurred.
[2] 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.
[3] If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

UID button functionality

The UID button can be used to display the Server Health Summary when the server will not power on. For more information, see the latest HPE iLO 5 User Guide on the **Hewlett Packard Enterprise website**.

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	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Storage controller	6 flashes
System board PCIe slots	7 flashes
Power backplane	8 flashes
Storage backplane	9 flashes
Power supply	10 flashes
PCIe expansion cards installed in riser board	11 flashes
Chassis	12 flashes
GPU card	13 flashes

Systems Insight Display combined LED descriptions

The combined illumination of the following LEDs indicates a system condition:

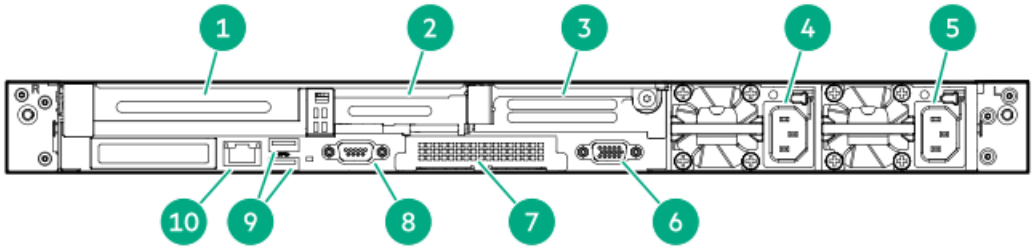
- Systems Insight Display LEDs
- System power LED
- Health LED

Systems Insight Display LED and color	Health LED	System power LED	Status
Processor (amber)	Red	Amber	One or more of the following conditions might exist: • Processor in socket X has failed. • Processor X is not installed in the socket. • Processor X is unsupported. • ROM detects a failed processor during POST.
Processor (amber)	Amber	Green	Processor in socket X is in a pre-failure condition.
DIMM (amber)	Red	Green	One or more DIMMs have failed.
DIMM (amber)	Amber	Green	DIMM in slot X is in a pre-failure condition.
Over temp (amber)	Amber	Green	The Health Driver has detected a cautionary temperature level.
Over temp (amber)	Red	Amber	The server has detected a hardware critical temperature level.
PCI riser (amber)	Red	Green	The PCI riser cage is not seated properly.
Fan (amber)	Amber	Green	One fan has failed or has been removed.
Fan (amber)	Red	Green	Two or more fans have failed or been removed.
Power supply (amber)	Red	Amber	One or more of the following conditions might exist: • Only one power supply is installed and that power supply is in standby. • Power supply fault. • System board fault.
Power supply (amber)	Amber	Green	One or more of the following conditions might exist: • Redundant power supply is installed and only one power supply is functional. • AC power cord is not plugged into redundant power supply. • Redundant power supply fault. • Power supply mismatch at POST or power supply mismatch through hot-plug addition.
Power cap (off)	—	Amber	Standby.

Systems Insight Display LED and color	Health LED	System power LED	Status
Power cap (green)	—	Flashing green	Waiting for power.
Power cap (green)	—	Green	Power is available.
Power cap (flashing amber)	—	Amber	Power is not available.

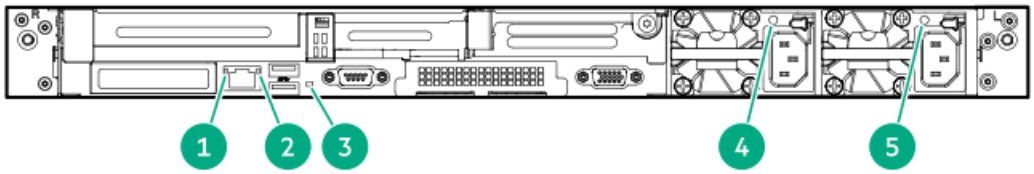
IMPORTANT: If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

Rear panel components



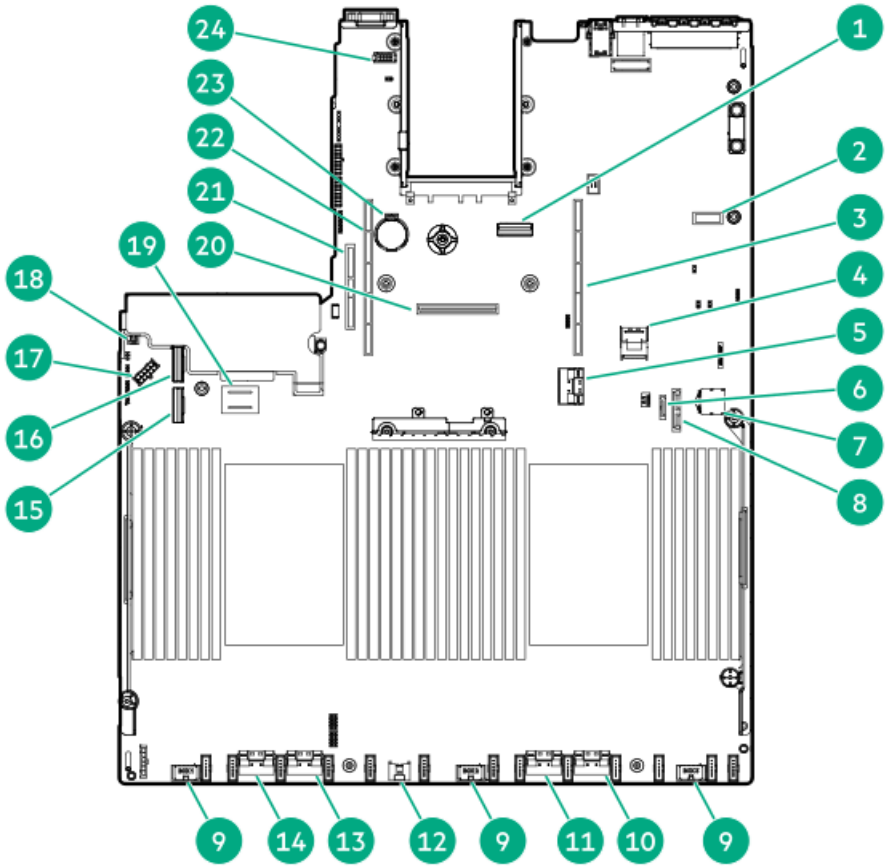
Item	Description
1	Slot 1 PCIe4
2	Slot 2 PCIe4
3	Slot 3 PCIe4 (optional - requires second processor)
4	Power supply 2 (PS2)
5	Power supply 1 (PS1)
6	Video (VGA) port
7	OCP 3.0 adapter (if equipped)
8	Serial port (optional)
9	USB 3.0 ports
10	iLO Management Port

Rear panel LEDs



Item	Description	Status
1	iLO 5/standard NIC link LED	Solid green = Link exists. Off = No link exists.
2	iLO 5/standard NIC activity LED	Solid green = Activity exists. Flashing green = Activity exists. Off = No activity exists.
3	UID LED	Solid blue = Identification is activated. Flashing blue = System is being managed remotely. Off = Identification is deactivated.
4	Power supply 2 LED	Solid green = Normal Off = One or more of the following conditions exists: • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit.
5	Power supply 1 LED	Solid green = Normal Off = One or more of the following conditions exists: • AC power unavailable • Power supply failed • Power supply in standby mode • Power supply exceeded current limit.

System board components



Item	Description
1	OCP X16 Slimline connector
2	Display port/USB connector
3	Primary (processor 1) PCIe riser connector
4	x4 SATA port 2
5	NVMe port 8A
6	x1 SATA port 2
7	Front power/USB 3.1 connector
8	Optical/SATA port 3
9	Drive backplane power connectors
10	x8 NVMe port 2A
11	x8 NVMe port 1A
12	Energy pack connector
13	x8 NVMe port 2B
14	x8 NVMe port 1B
15	x8 NVMe port 1C
16	x8 NVMe port 2C
17	Drive backplane power connector
18	Chassis Intrusion Detection connector
19	Dual USB port
20	Flexible Smart Array connector
21	Tertiary (processor 2) PCIe riser connector

Item	Description
22	Secondary (processor 2) PCIe riser connector
23	System battery
24	Serial port connector

System maintenance switch descriptions

Position	Default	Function
S1 [1]	Off	Off = iLO security is enabled. On = iLO security is disabled.
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 [1]	Off	Off = Power-on password is enabled. On = Power-on password is disabled.
S6 [1], [2], [3]	Off	Off = No function On = Restore default manufacturing settings
S7	Off	Reserved
S8	—	Reserved
S9	—	Reserved
S10	—	Reserved
S11	—	Reserved
S12	—	Reserved

[1] To access the redundant ROM, set S1, S5, and S6 to On.
[2] When the system maintenance switch position 6 is set to the On position, the system is prepared to restore all configuration settings to their manufacturing defaults.
[3] When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored.
For more information, see Secure Boot.

NMI functionality

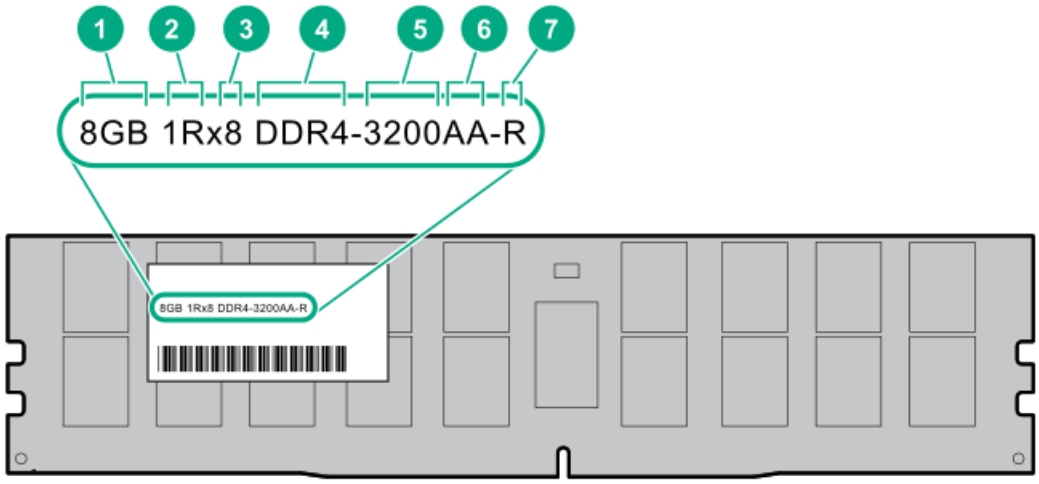
An NMI crash dump enables administrators to create crash dump files when a system is hung and not responding to traditional debugging methods.

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

To force the OS to initiate the NMI handler and generate a crash dump log, the administrator can use the iLO Generate NMI feature.

DIMM label identification

To determine DIMM characteristics, see the label attached to the DIMM. The information in this section helps you to use the label to locate specific information about the DIMM.

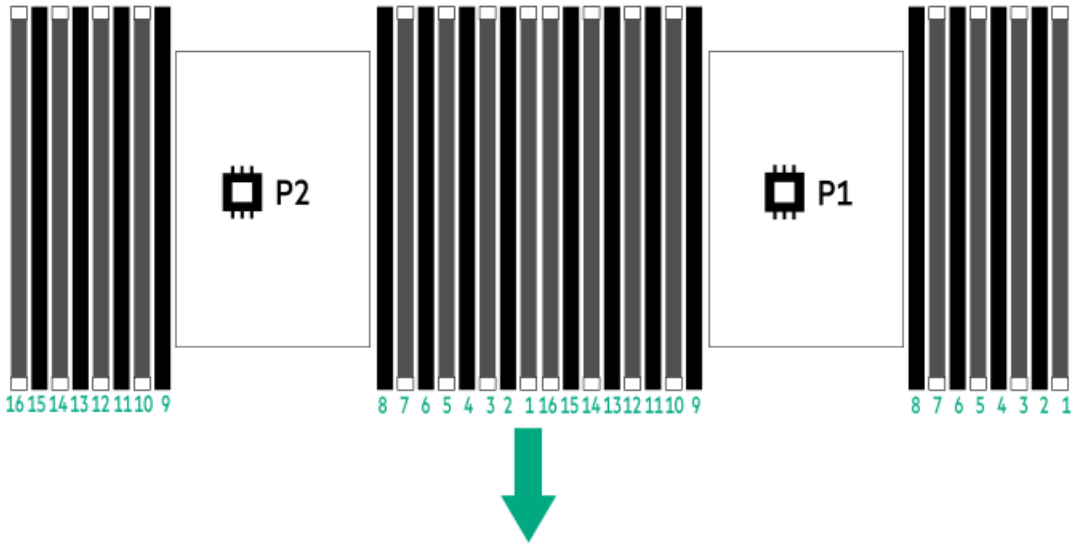


Item	Description	Example
1	Capacity	8 GB 16 GB 32 GB 64 GB 128 GB 256 GB
2	Rank	1R = Single rank 2R = Dual rank 4R = Quad rank 8R = Octal rank
3	Data width on DRAM	x4 = 4-bit x8 = 8-bit
4	Memory generation	PC4 = DDR4
5	Maximum memory speed	3200 MT/s
6	CAS latency	AA = CAS 22-22-22 AA = CAS 26-22-22 (for 3DS LRDIMM)
7	DIMM type	R = RDIMM (registered) L = LRDIMM (load reduced)

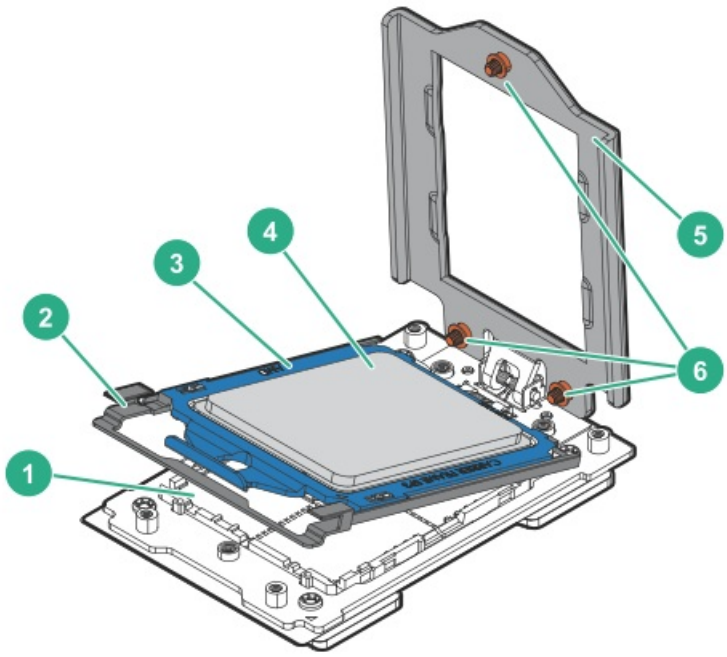
For more information about product features, specifications, options, configurations, and compatibility, see the HPE DDR4 SmartMemory QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/DDR4SmartMemoryQS**).

DIMM slot locations

DIMM slots are numbered sequentially (1 through 16) for each processor. The supported AMP modes use the letter assignments for population guidelines.



Processor and socket components



Item	Description
1	Pin field
2	Rail frame
3	Carrier frame
4	Processor
5	Force frame
6	Captive screws (Torx T-20)

Device numbers

8 SFF device bay numbering

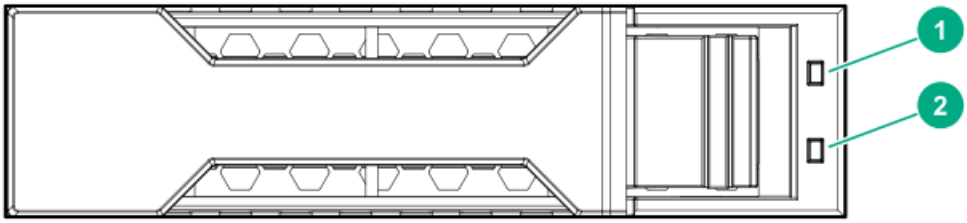
8 SFF + 2 SFF device bay numbering

Drives

HPE Basic Drive LED definitions

SFF basic drive carrier

The SFF basic drive carrier supports hot-plug SAS, SATA, and NVMe drives.



Item	LED	Status	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (1 flash per second)	The drive is doing one of the following: • Rebuilding or performing a RAID • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Flashing green (4 flashes per second)	The drive is operation normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

DSC-25 2-port SFP28 card ports and LEDs

Ports

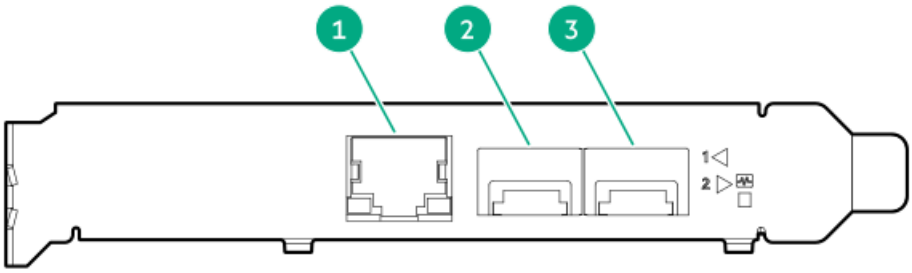


Table 1: Ports

Item	Port	Description
1	Management port	1GbE RJ45
2	Network interface port	10/25G SFP+ based
3	Network interface port	10/25G SFP+ based

LEDs

The HPE for Pensando DSP DSC-25 2p SFP28 card is a dual-port, single-slot, half-height, half-length (HHHL) SFP28 network adapter. It has LEDs for Link (L) and Activity (A) for each port. A half-height bracket is shown in the following illustration with SFP28 ports and LEDs.

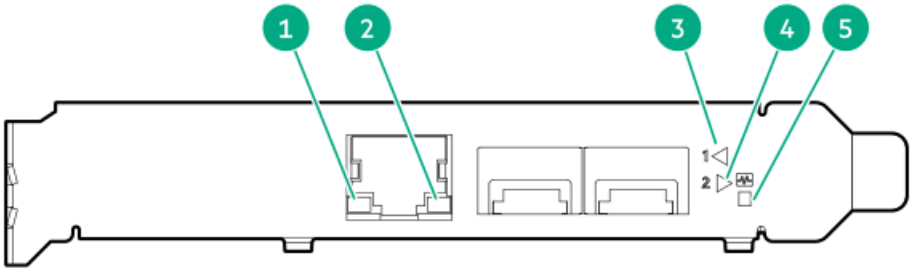
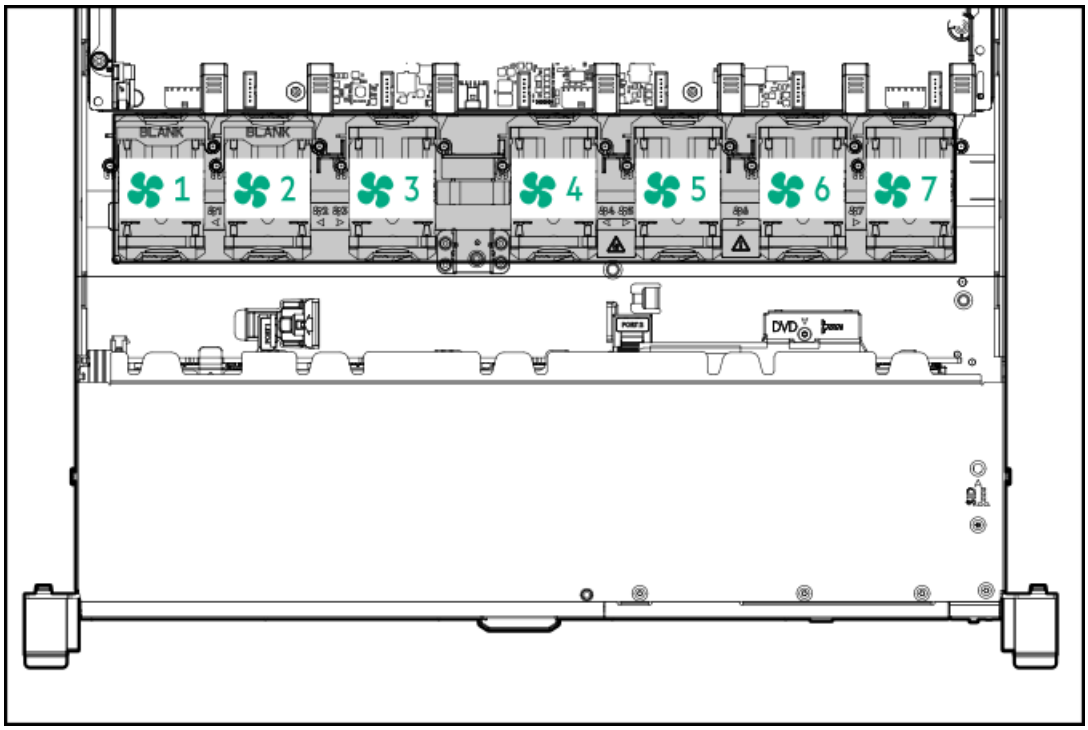


Table 2: LED indicators

Item	LED	Status	Description
1	Management Port Activity LED	Off	No activity
		Flashing	Passing traffic; flashing frequency indicates traffic intensity
2	Management Port Link LED	Off	A link has not been established
		Solid green	Valid Ethernet link
3	SFP Port 1 Link/Activity LED	Off	A link has not been established
		Solid green	Valid Ethernet link
		Flashing green	Passing traffic; flashing frequency indicates traffic intensity
		Solid amber	Link fault

Item	LED	Status	Description
4	SFP Port 2 Link/Activity LED	Off	A link has not been established
		Solid green	Valid Ethernet link
		Flashing green	Passing traffic; flashing frequency indicates traffic intensity
		Solid amber	Link fault
5	System status LED	Off	System is not powered
		Solid amber	Power is up, software has not booted yet
		Solid green	System is up and fully operational

Fan bay numbering



Operations

Power up the server

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

- Press the Power On/Standby button.
- Use the virtual power button through iLO.

Power down the server

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

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

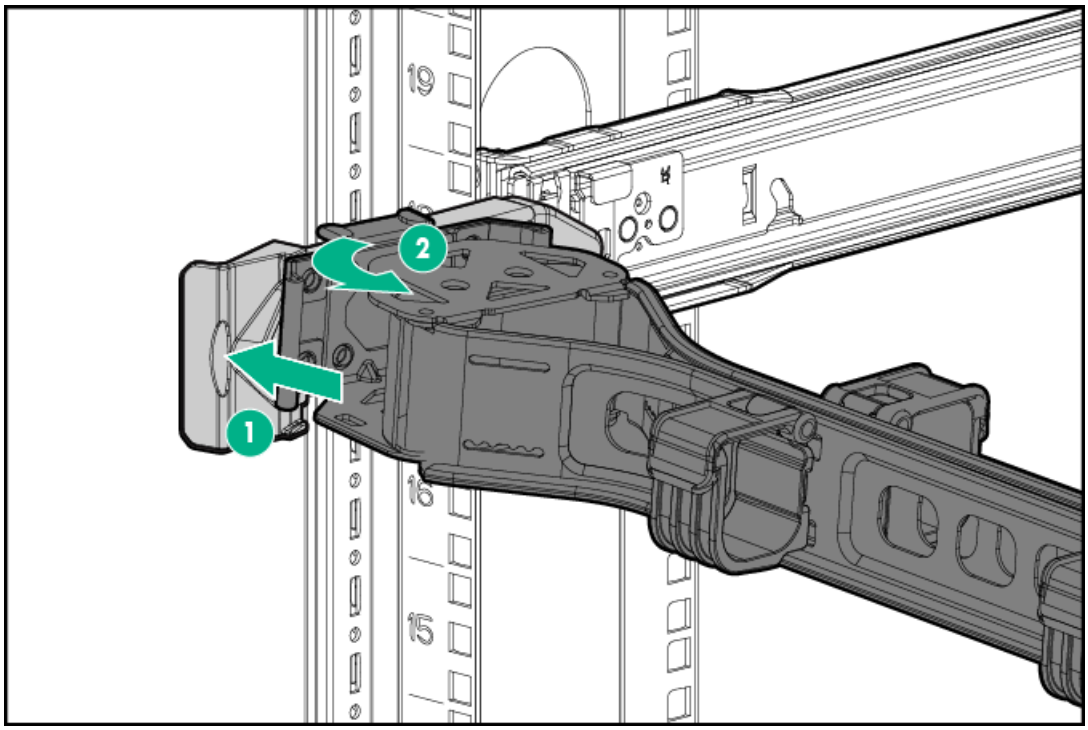
To power down the server, use one of the following methods:

- 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 that the server is in standby mode by observing that the system power LED is amber.

Release the cable management arm

Release the cable management arm and then swing the arm away from the rack.



Extend the server from the rack

NOTE:

If the cable management arm option is installed, you can extend the server without powering down the server or disconnecting peripheral cables and power cords. These steps are only necessary with the standard cable management solution.

Procedure

1. Power down the server.
2. Disconnect all peripheral cables and power cords.
3. Loosen the front panel thumbscrews.
4. Extend the server on the rack rails until the server rail-release latches engage.

WARNING:

To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

WARNING:

To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

5. After the installation or maintenance procedure, slide the server into the rack:
   a. Slide the server fully into the rack.
   b. Secure the server by tightening the thumbscrews.
6. Connect the peripheral cables and power cords.

Remove the server from the rack

To remove the server from a Hewlett Packard Enterprise, Compaq-branded, Telco, or third-party rack:

Procedure

1. Power down the server.
2. Extend the server from the rack.
3. Disconnect the cabling and remove the server from the rack. For more information, see the documentation that ships with the rack mounting option.
4. Place the server on a sturdy, level surface.

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:** 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.

Procedure

1. Power down the server.
2. Extend the server from the rack.
3. Open or unlock the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.

Install the access panel

Procedure

1. Place the access panel on top of the server with the latch open.

   Allow the panel to extend past the rear of the server approximately 1.25 cm (0.5 in).

2. Push down on the latch.

   The access panel slides to a closed position.

3. Tighten the security screw on the latch, if needed.

Remove the hot-plug fan

Procedure

1. Observe the following alert:

   IMPORTANT: After removing a high-performance (dual-rotor) fan, install or replace the fan within 60 seconds. Otherwise, the server will shut down gracefully.

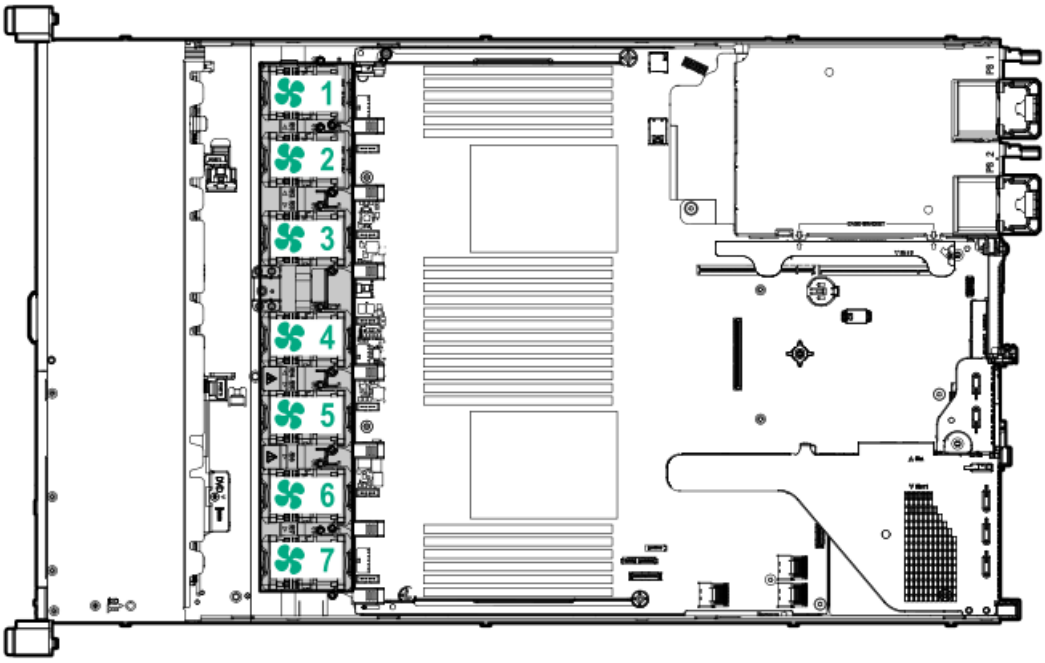
2. Do one of the following:

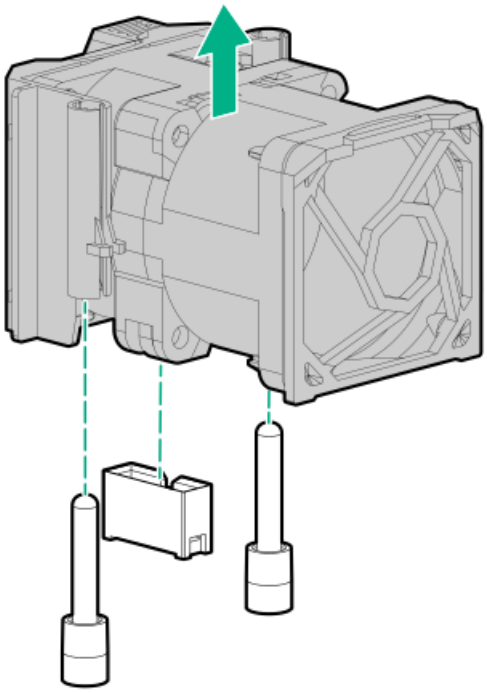
   a. Extend the server from the rack (Extend the server from the rack).

   b. Remove the server from the rack (Remove the server from the rack).

3. Remove the access panel (Remove the access panel).

4. Remove the fan.





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.

IMPORTANT: For optimum cooling, install fans in all primary fan locations.

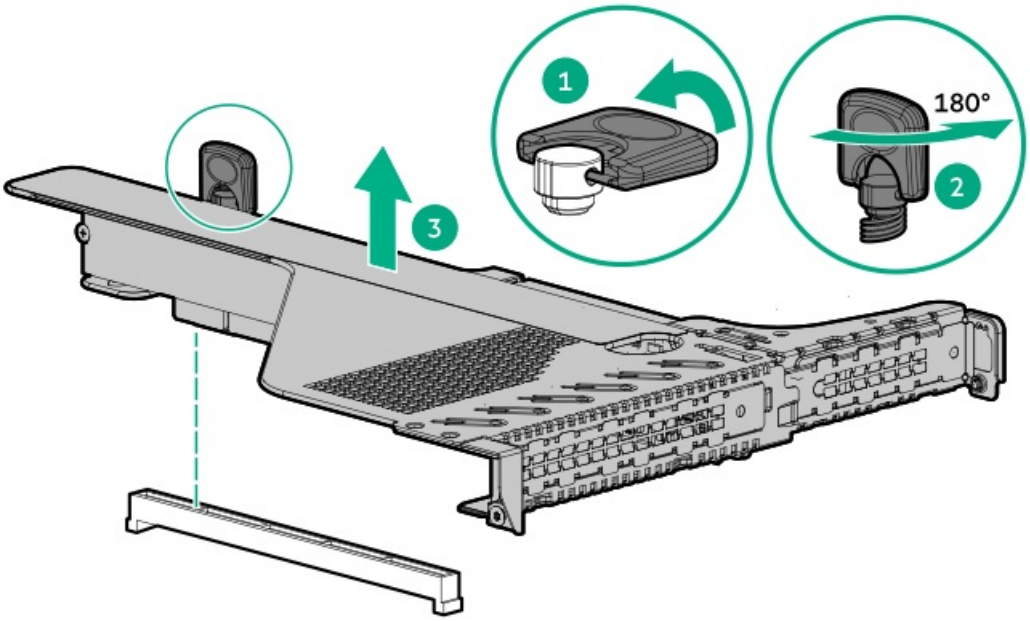
To replace the component, reverse the removal procedure.

Remove the primary PCI riser cage

CAUTION: To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

Procedure

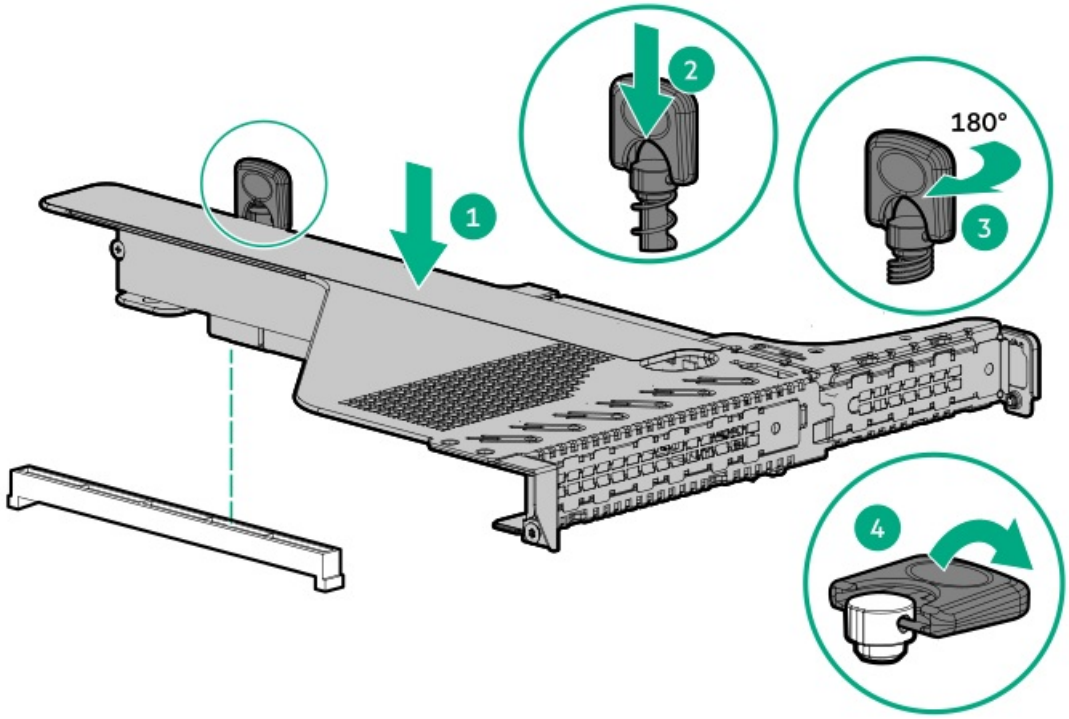
1. Back up all server data.
2. Power down the server (Power down the server).
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
5. Remove the access panel (Remove the access panel).
6. Remove the PCI riser cage.



Install the primary PCI riser cage

Procedure

1. Install the PCI riser cage.



2. Install the access panel (Install the access panel).
3. Install the server into the rack (Installing the server into the rack).
4. Connect each power cord to the server.
5. Connect each power cord to the power source.
6. Power up the server (Power up the server).

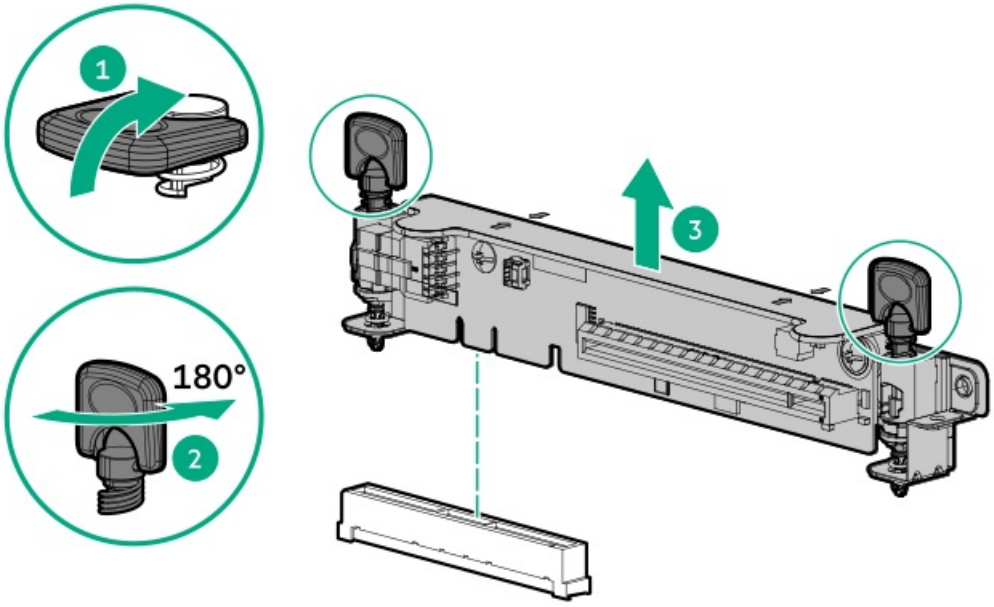
Remove the secondary PCI riser cage

Procedure

1. Observe the following alert:

   > **CAUTION:** To prevent damage to the server, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

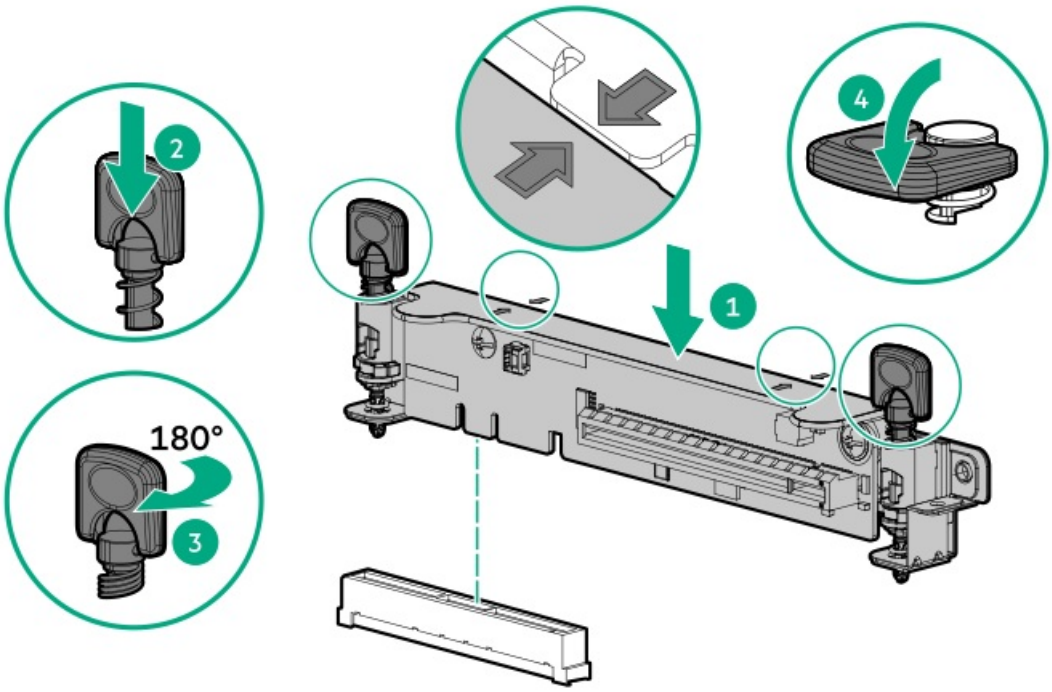
2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
6. Remove the access panel (Remove the access panel).
7. If needed, remove the primary PCI riser cage (Remove the primary PCI riser cage).
8. Disconnect any cables connected to the PCI riser cage.
9. Remove any expansion boards installed in the PCI riser cage.
10. Remove the PCI riser cage.



Install the secondary PCI riser cage

Procedure

1. Install the riser cage.

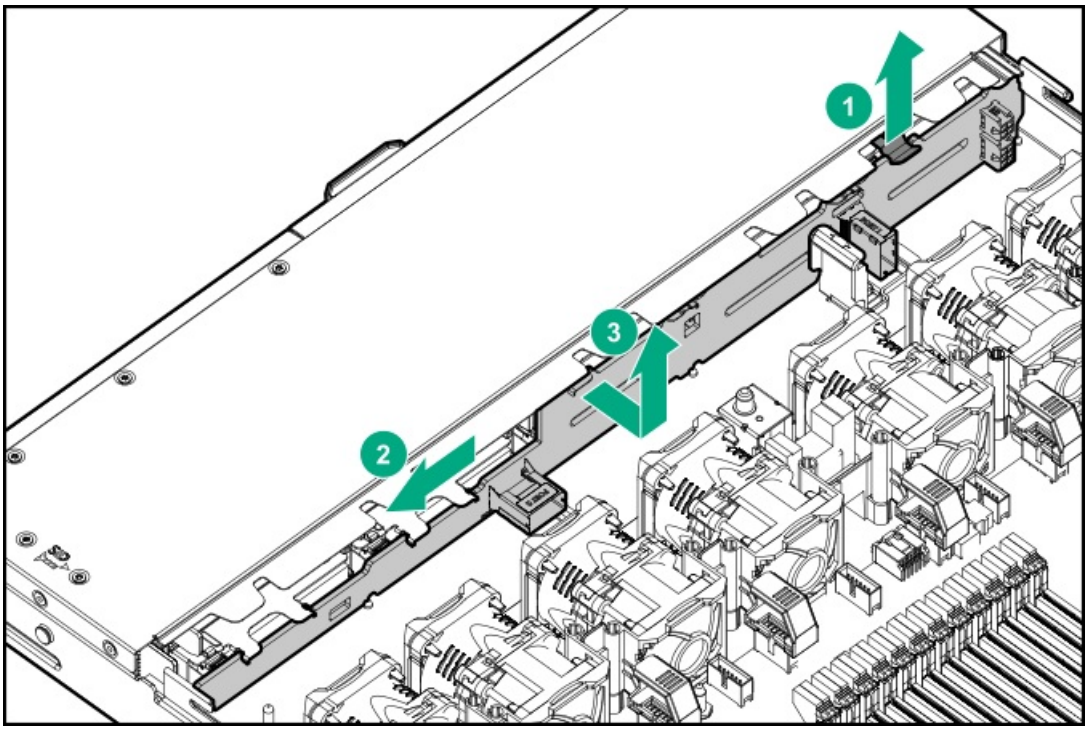


2. If needed, install expansion boards (Installing an expansion board in the secondary riser cage).
3. Install the access panel (Install the access panel).
4. Install the server into the rack (Installing the server into the rack).
5. Connect each power cord to the server.
6. Connect each power cord to the power source.
7. Power up the server (Power up the server).

Remove the 8SFF drive backplane

Procedure

1. Back up all server data.
2. Power down the server (Power down the server).
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
5. Remove the access panel (Remove the access panel).
6. Remove all drives.
7. Disconnect and remove all cables connected to the drive backplane.
8. Remove the 8 SFF SAS/SATA drive backplane.



Setup

Optimum environment

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

Space and airflow requirements

To allow for servicing and adequate airflow, observe the following space and airflow requirements when deciding where to install a rack:

- Leave a minimum clearance of 63.5 cm (25 in) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 in) behind the rack.
- Leave a minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks.

Hewlett Packard Enterprise servers draw in cool air through the front door and expel warm air through the rear door. Therefore, the front and rear rack doors must be adequately ventilated to allow ambient room air to enter the cabinet, and the rear door must be adequately ventilated to allow the warm air to escape from the cabinet.

△ **CAUTION:** To prevent improper cooling and damage to the equipment, do not block the ventilation openings.

When vertical space in the rack is not filled by a server or rack component, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow.

△ **CAUTION:** Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

The 9000 and 10000 Series Racks provide proper server cooling from flow-through perforations in the front and rear doors that provide 64 percent open area for ventilation.

△ **CAUTION:** When using a Compaq branded 7000 series rack, install the high airflow rack door insert (PN 327281-B21 for 42U rack, PN 157847-B21 for 22U rack) to provide proper front-to-back airflow and cooling.

△ **CAUTION:**

If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7 cm (2.75 in).

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 ambient operating temperature (TMRA) for most server products is 35°C (95°F). The temperature in the room where the rack 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 or to increase the internal rack temperature 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, refer to the product rating label or the user documentation supplied with that option.

⚠ **WARNING:** To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.

⚠ **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.

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, 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, Hewlett Packard Enterprise 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.

Connecting a DC power cable to a DC power source

WARNING:
To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel, as defined by the NEC and IEC 60950-1, Second Edition, the standard for Safety of Information Technology Equipment.
- Connect the equipment to a reliably grounded Secondary circuit source. A Secondary circuit has no direct connection to a Primary circuit and derives its power from a transformer, converter, or equivalent isolation device.
- The branch circuit overcurrent protection must be rated 27 A.

WARNING: When installing a DC power supply, the ground wire must be connected before the positive or negative leads.

WARNING: Remove power from the power supply before performing any installation steps or maintenance on the power supply.

CAUTION: The server equipment connects the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. For more information, see the documentation that ships with the power supply.

CAUTION: If the DC connection exists between the earthed conductor of the DC supply circuit and the earthing conductor at the server equipment, the following conditions must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment should be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system should be earthed elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices should not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

To connect a DC power cable to a DC power source:

1. Cut the DC power cord ends no shorter than 150 cm (59.06 in).
2. If the power source requires ring tongues, use a crimping tool to install the ring tongues on the power cord wires.

   IMPORTANT: The ring terminals must be UL approved and accommodate 12 gauge wires.

   IMPORTANT: The minimum nominal thread diameter of a pillar or stud type terminal must be 3.5 mm (0.138 in); the diameter of a screw type terminal must be 4.0 mm (0.157 in).
3. Stack each same-colored pair of wires and then attach them to the same power source. The power cord consists of three wires (black, red, and green).

For more information, see the documentation that ships with the power supply.

Server warnings and cautions

WARNING:

This server is 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. Hewlett Packard Enterprise recommends that a minimum of two people are required for all rack server installations. If the server is installed higher than chest level, a third person may be required to help align the server.
- 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/DC power is removed.

WARNING:

To reduce the risk of fire or burns after removing the energy pack:

- Do not disassemble, crush, or puncture the energy pack.
- Do not short external contacts.
- Do not dispose of the energy pack in fire or water.
- Do not expose the energy pack to low air pressure as it might lead to explosion or leakage of flammable liquid or gas.
- Do not expose the energy pack to temperatures higher than 60°C (140°F).

After power is disconnected, battery voltage might still be present for 1s to 160s.

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.

Rack warnings

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

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

⚠ **WARNING:** To reduce the risk of personal injury or equipment damage when unloading a rack:

- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and might become unstable when being moved on its casters.
- Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.

⚠ **WARNING:**

To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.

⚠ **WARNING:**

When installing a server in a telco rack, be sure that the rack frame is adequately secured at the top and bottom to the building structure.

Identifying the contents of the server shipping carton

Unpack the server shipping carton and locate the materials and documentation necessary for installing the server. All the rack mounting hardware necessary for installing the server into the rack is included with the rack or the server.

The contents of the server shipping carton include:

- Server
- Power cord
- Hardware documentation and software products
- Rack-mounting hardware and documentation

In addition to the supplied items, you might need:

- Operating system or application software
- Hardware options
- Screwdriver

Installing hardware options

Install any hardware options before initializing the server. For options installation information, refer to the option documentation. For server-specific information, refer to "Hardware options installation."

Installing the server into the rack

To install the server into a rack with square, round, or threaded holes, refer to the instructions that ship with the rack hardware kit.

WARNING: This server is 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. Hewlett Packard Enterprise 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.

CAUTION:

Always plan the rack installation so that the heaviest item is on the bottom of the rack. Install the heaviest item first, and continue to populate the rack from the bottom to the top.

Procedure

1. Install the server and cable management arm into the rack. For more information, see the installation instructions that ship with the selected rail system.
2. Connect peripheral devices to the server. For more information, see Rear panel components.
3. Connect the power cord to the rear of the server.
4. Use the hook-and-loop strap to secure the power cord.
5. Connect the power cord to the power source.

Operating system

This ProLiant server does not ship with provisioning media. Everything required to manage and install the system software and firmware is preloaded on the server.

To operate properly, the server must have a supported operating system. Attempting to run an unsupported operating system can cause serious and unpredictable results. For the latest information on operating system support, see the **Hewlett Packard Enterprise website**.

Failure to observe UEFI requirements for ProLiant Gen10 servers can result in errors installing the operating system, failure to recognize boot media, and other boot failures. For more information on these requirements, see the HPE UEFI Requirements on the **Hewlett Packard Enterprise website**.

To install an operating system on the server, use one of the following methods:

- Intelligent Provisioning—For single-server deployment, updating, and provisioning capabilities. For more information, see Installing the operating system with Intelligent Provisioning.
- Insight Control server provisioning—For multiserver remote OS deployment, use Insight Control server provisioning for an automated solution. For more information, see the Insight Control documentation on the **Hewlett Packard Enterprise website**.

For additional system software and firmware updates, download the Service Pack for ProLiant from the **Hewlett Packard Enterprise website**. Software and firmware must be updated before using the server for the first time, unless any installed software or components require an older version.

For more information, see Keeping the system current.

For more information on using these installation methods, see the **Hewlett Packard Enterprise website**.

Installing the operating system with Intelligent Provisioning

Procedure

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 server POST, press F10.
4. Complete the initial Preferences and Registration portion of Intelligent Provisioning.
5. At the Start screen, click **Configure and Install**.
6. To finish the installation, follow the onscreen prompts. An Internet connection is required to update the firmware and systems software.

Selecting boot options in UEFI Boot Mode

On servers operating in UEFI Boot Mode, the boot controller and boot order are set automatically.

Procedure

1. Press the Power On/Standby button.
2. During the initial boot:
   - To modify the server configuration ROM default settings, press the **F9** key in the ProLiant POST screen to enter the UEFI System Utilities screen. By default, the System Utilities menus are in the English language.
   - If you do not need to modify the server configuration and are ready to install the system software, press the **F10** key to access Intelligent Provisioning.

For more information on automatic configuration, see the UEFI documentation on the **Hewlett Packard Enterprise website**.

Selecting boot options

This server supports both Legacy BIOS Boot Mode and UEFI Boot Mode. On servers operating in UEFI Boot Mode, the boot controller and boot order are set automatically.

Procedure

1. Press the Power On/Standby button.
2. Do one of the following:
   - To enter the UEFI System Utilities screen and modify the server configuration ROM default settings, press the **F9** key on the ProLiant POST screen. Choose one of the following boot modes:
     - Legacy BIOS
     - UEFI (default)
   - If you do not need to modify the server configuration and are ready to install the system software, press the **F10** key to access Intelligent Provisioning.

For more information on automatic configuration, see the UEFI documentation on the **Hewlett Packard Enterprise website**.

Registering the server

To experience quicker service and more efficient support, register the product at the **Hewlett Packard Enterprise Product Registration website**.

Hardware options installation

Hewlett Packard Enterprise product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**).

Introduction

Install any hardware options before initializing the server. If multiple options are being installed, read the installation instructions for all the hardware options to identify similar steps and 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.

Installing a redundant hot-plug power supply

Prerequisites

Before installing this option, be sure you have the following:

The components included with the hardware option kit

Procedure

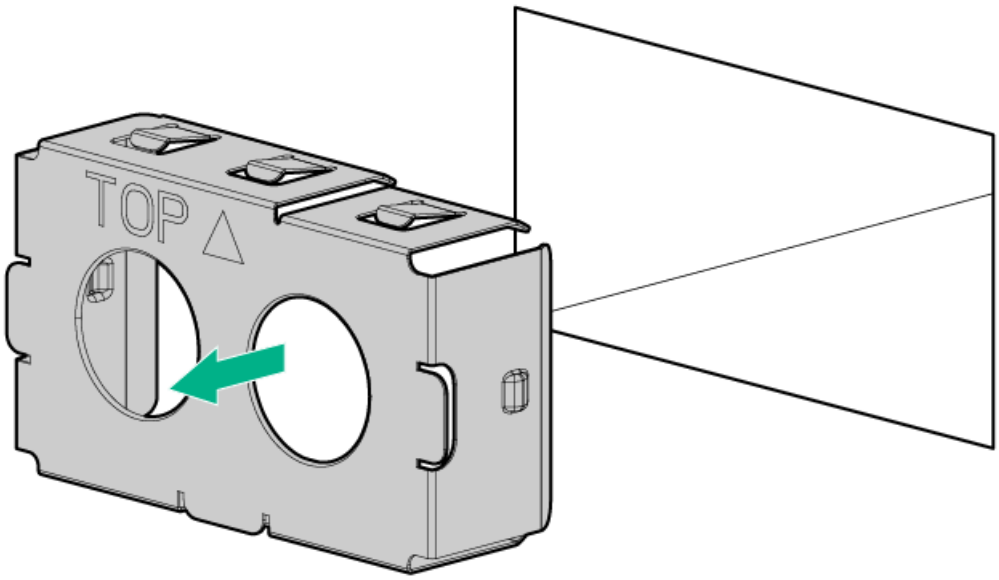
1. Observe the following alerts:

> **CAUTION:** All power supplies installed in the server must have the same output power capacity. Verify that all power supplies have the same part number and label color. The system becomes unstable and may shut down when it detects mismatched power supplies.

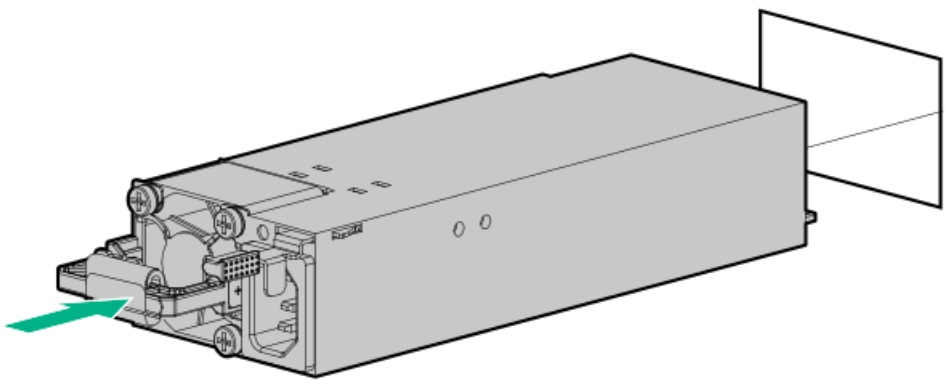
> **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

2. Access the product rear panel (Release the cable management arm).
3. Remove the blank.

> **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.



4. Insert the power supply into the power supply bay until it clicks into place.



5. Connect the power cord to the power supply.

6. Route the power cord. Use best practices when routing power cords and other cables. A cable management arm is available to help with routing. To obtain a cable management arm, contact a Hewlett Packard Enterprise authorized reseller.
7. Connect the power cord to the AC power source.
8. Be sure that the power supply LED is green (Rear panel LEDs).

Memory options

IMPORTANT: This server does not support mixing LRDIMMs and RDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS initialization. All memory installed in the server must be of the same type.

DIMM population information

For specific DIMM population information, see the DIMM population guidelines on the Hewlett Packard Enterprise website (https://www.hpe.com/docs/amd-population-rules-Gen10Plus).

DIMM-processor compatibility

The installed processor determines the type of DIMM that is supported in the server:

AMD EPYC processors support DDR4-3200 DIMMS.

Mixing DIMM types is not supported. Install only the supported DDR4-3200 DIMMs in the server.

HPE SmartMemory speed information

For more information about memory speed information, see the Hewlett Packard Enterprise website (https://www.hpe.com/docs/memory-speed-table).

Installing a DIMM

The server supports up to 32 DIMMs.

Prerequisites

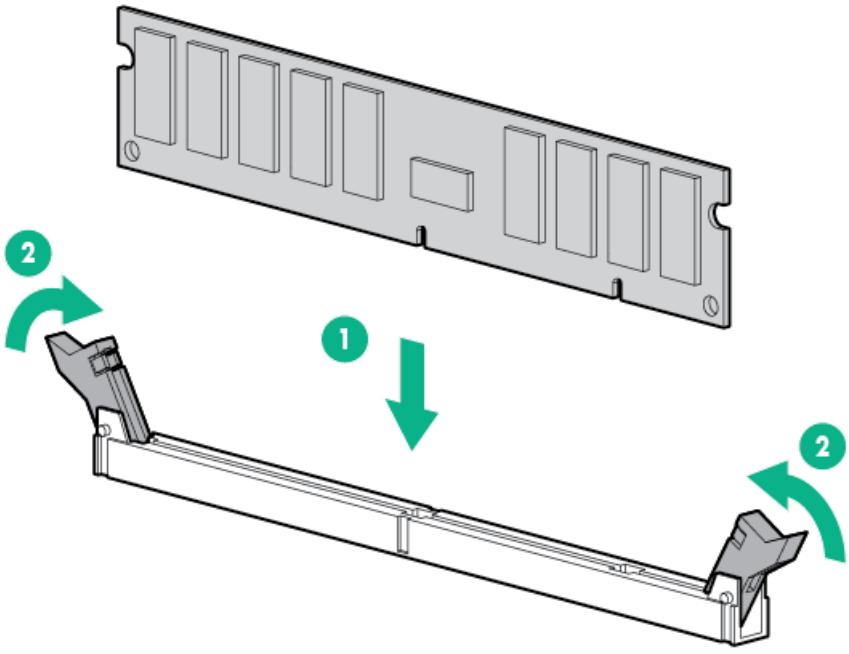
Before installing this option, be sure you have the following:

The components included with the hardware option kit

For more information on specific options, see the server QuickSpecs on the **Hewlett Packard Enterprise website**.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. Open the DIMM slot latches.
6. Install the DIMM.



7. Install the access panel.
8. Install the server in the rack.
9. Connect each power cord to the server.
10. Connect each power cord to the power source.
11. Power up the server.

Use the BIOS/Platform Configuration (RBSU) in the UEFI System Utilities to configure the memory mode.

For more information about LEDs and troubleshooting failed DIMMs, see "Systems Insight Display combined LED descriptions."

Installing a high-performance fan

Certain hardware configurations require high-performance fans. To verify a specific configration, see the product QuickSpecs on the Hewlett Packard Enterprise **website**.

This kit meets extended ambient operating temperatures above 35 degrees Celsius. For more information about extended ambient configurations, see the **Hewlett Packard Enterprise website**.

Prerequisites

Before installing this option, be sure you have the following:

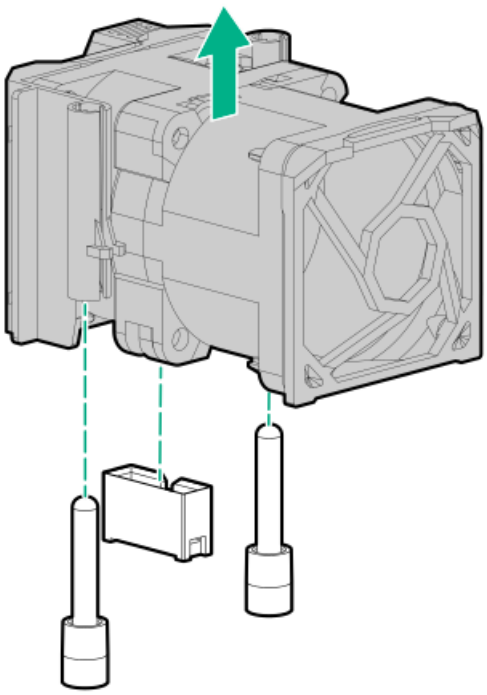
The components included with the hardware option kit

Procedure

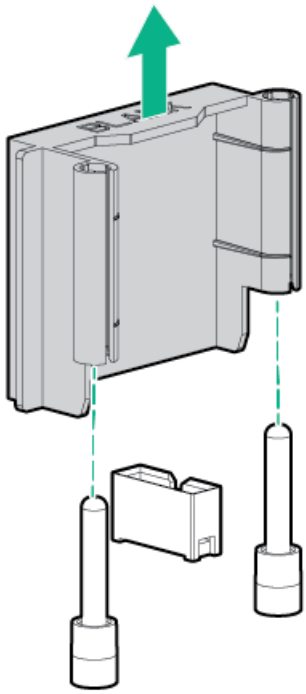
1. Observe the following alert:

   IMPORTANT: After removing a high-performance (dual-rotor) fan, install or replace the fan within 60 seconds. Otherwise, the server will shut down gracefully.

2. Power down the server (Power down the server).
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
5. Remove the access panel (Remove the access panel).
6. Remove all standard fans from the fan bays.

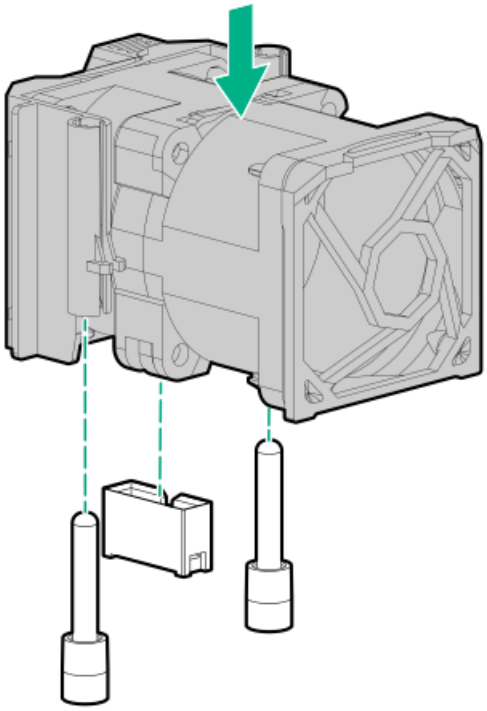


7. Remove fan blanks from the fan bays, if installed.



8. Install high-performance fans in each of the seven fan bays.

   If needed, ensure each fan is securely installed by pressing the tab. Do not press on other areas of the fan.



9. Install the access panel (Install the access panel).
10. Slide the server into the rack.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server (Power up the server).

Drive options

Depending on the configuration, this server supports SAS, SATA, NVMe, and M.2 drives. For more information on drive support, see Device numbers.

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

- The system automatically sets all device numbers.
- If only one hard drive is used, install it in the bay with the lowest device number.
- Drives should be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array.

Hot-plug drive guidelines

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

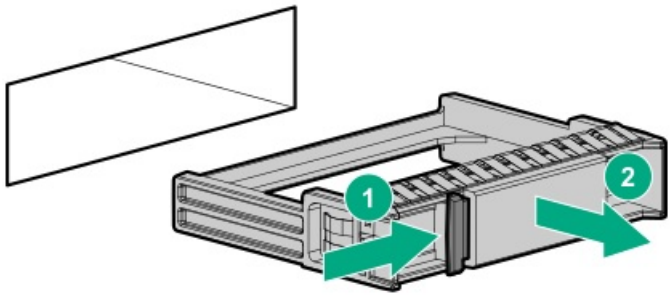
- The system automatically sets all device numbers.
- If only one drive is used, install it in the bay with the lowest device number.
- Drives should be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array.

Installing a hot-plug SAS, SATA or NVMe drive

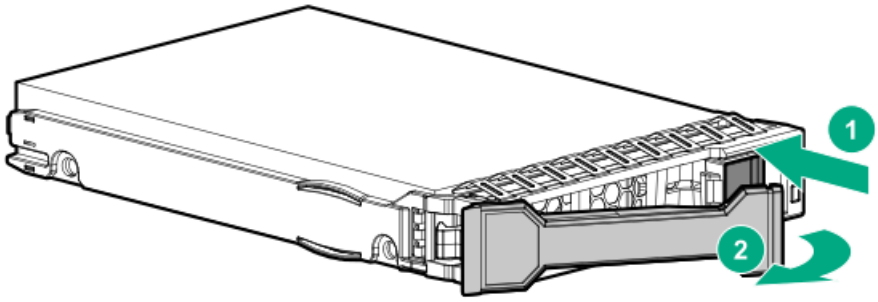
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all drive and device bays are populated with either a component or a blank.

Procedure

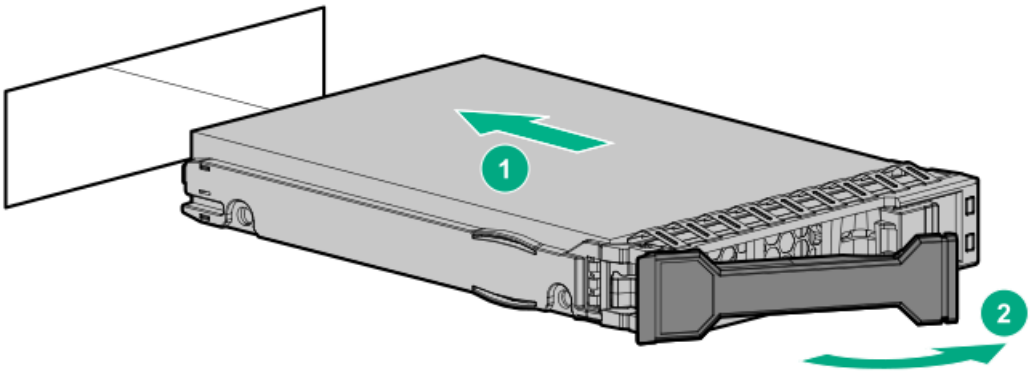
1. Remove the drive blank:



2. Prepare the drive.



3. Install the drive.



4. Determine the status of the drive from the drive LED definitions .

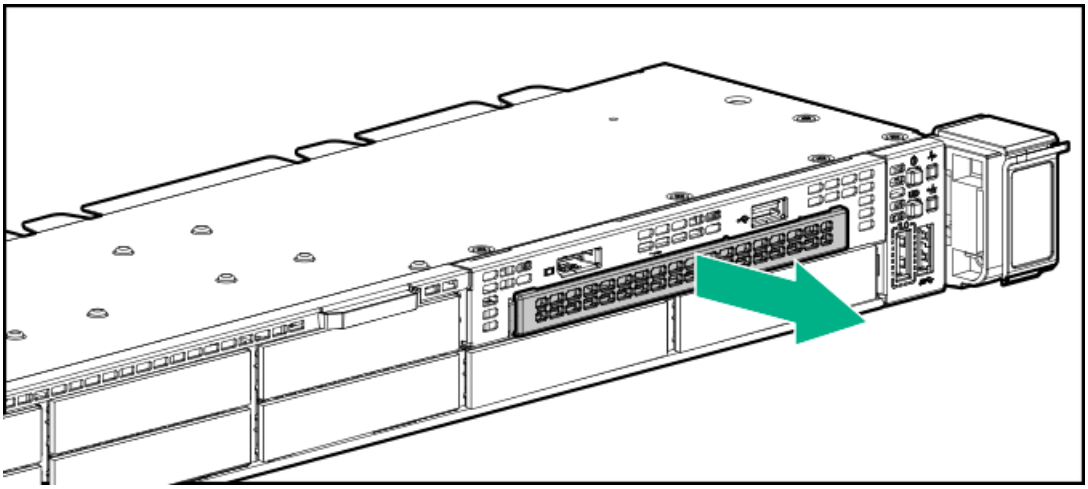
Installing an 8 SFF optical drive

Prerequisites

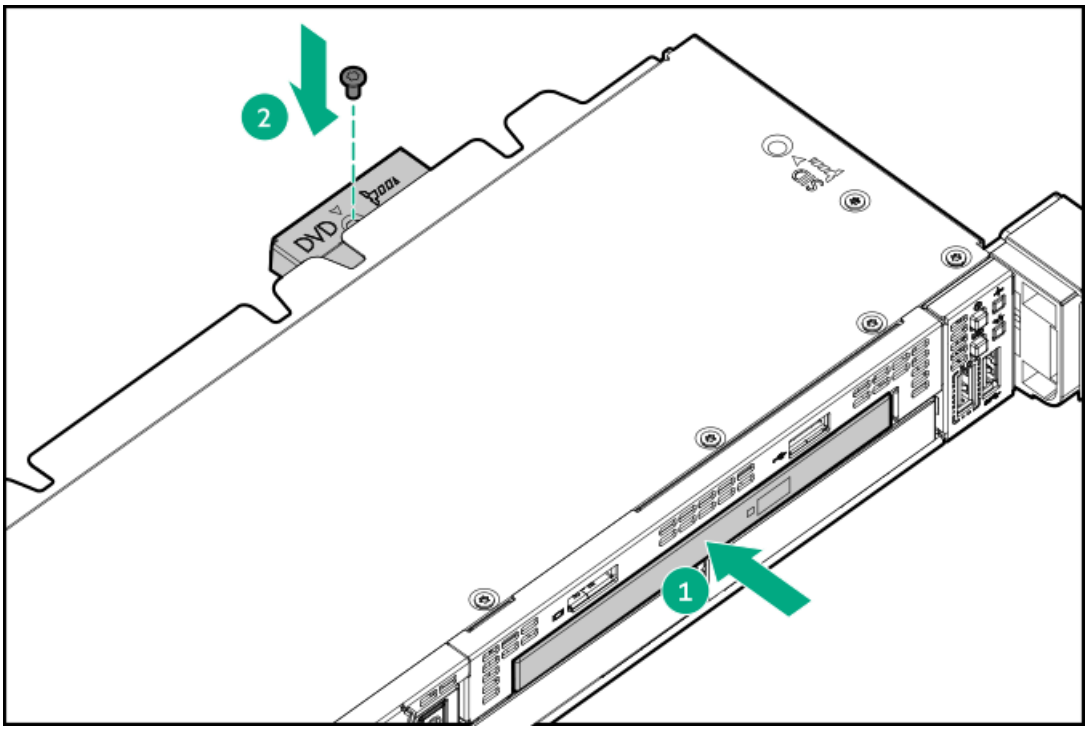
Before installing an optical drive, be sure the 8 SFF display port/USB/optical blank option is installed. For more information, see Installing an 8 SFF display port/USB/optical blank option .

Procedure

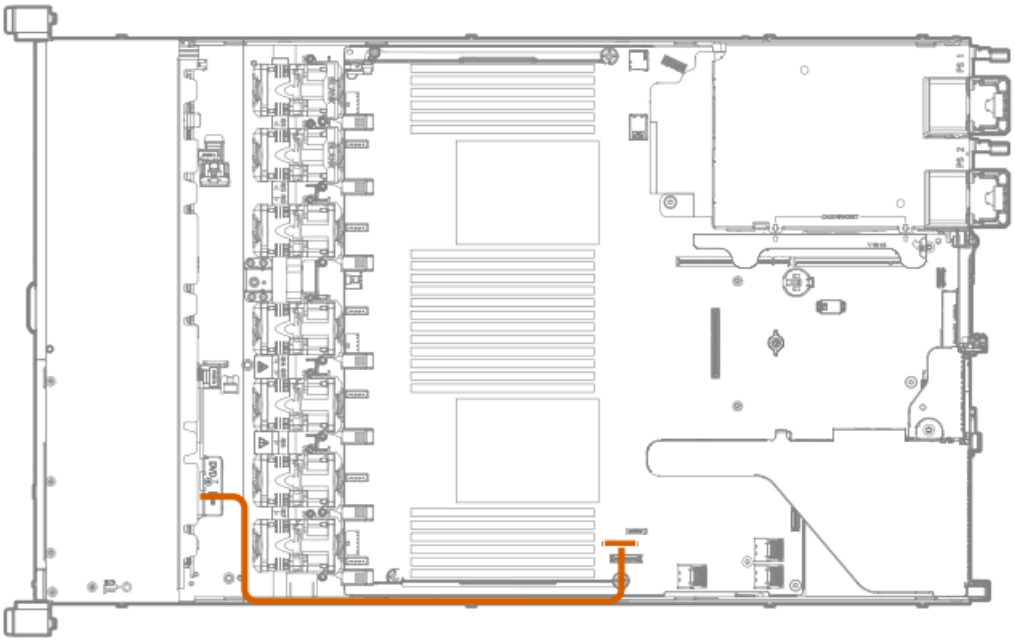
1. Remove the optical drive blank.



2. Install the optical drive.



3. Connect the optical drive cable.



Universal media bay options

Installing a 2 SFF SAS/SATA drive cage

Prerequisites

Universal media bay options are compatible only with the 8 SFF chassis.

Hewlett Packard Enterprise recommends installing the P816i-a controller to support 10 SAS/SATA drives. However, additional controller options are available. For more information, see Installing an HPE Smart Array P816i-a SR Gen10 Controller option .

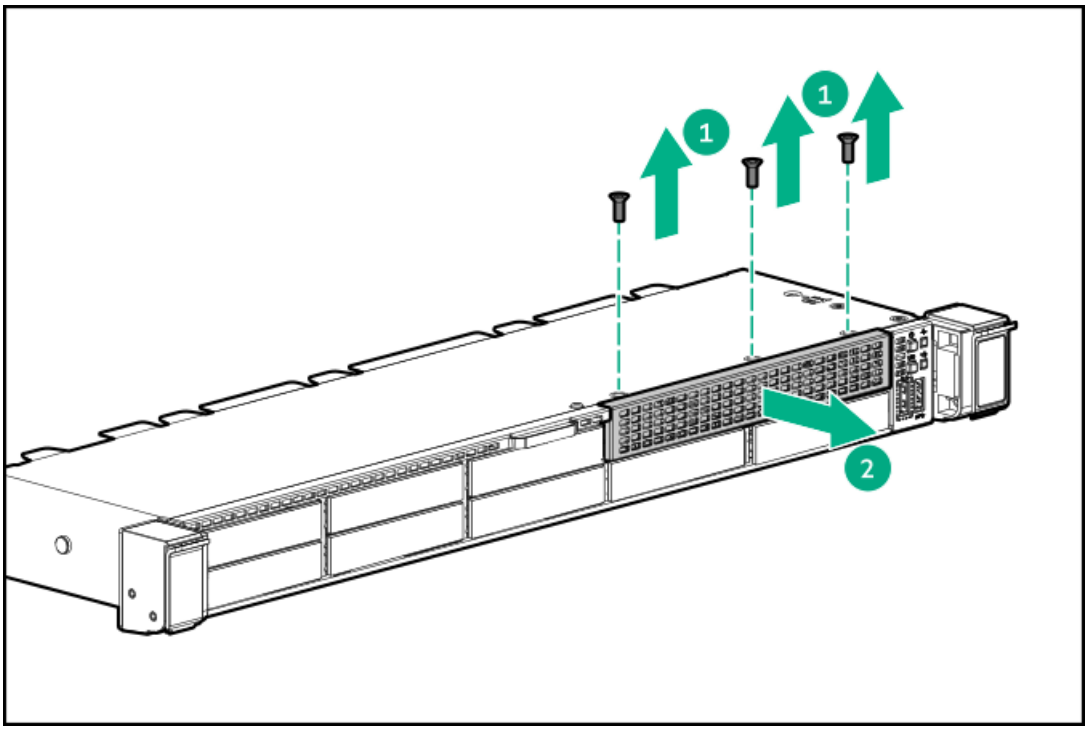
In addition, be sure that you have the following:

- The components included with the hardware option kit
- T-10 Torx screwdriver
- Additional cables, as needed. For more information, see SFF cables.
- 2 SFF SAS or SATA drives or blanks

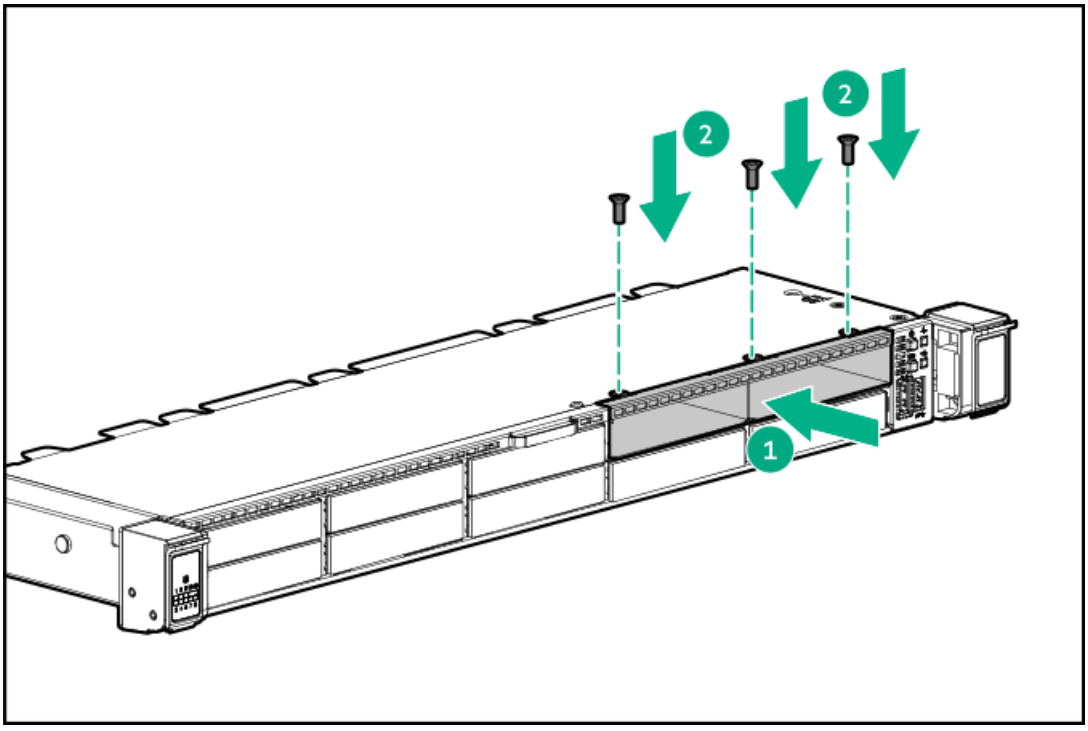
  For more information, contact a Hewlett Packard Enterprise authorized reseller.

Procedure

1. Back up all server data.
2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
5. Remove the access panel.
6. Remove the universal media bay blank.



7. Install the 2 SFF SAS/SATA drive cage.

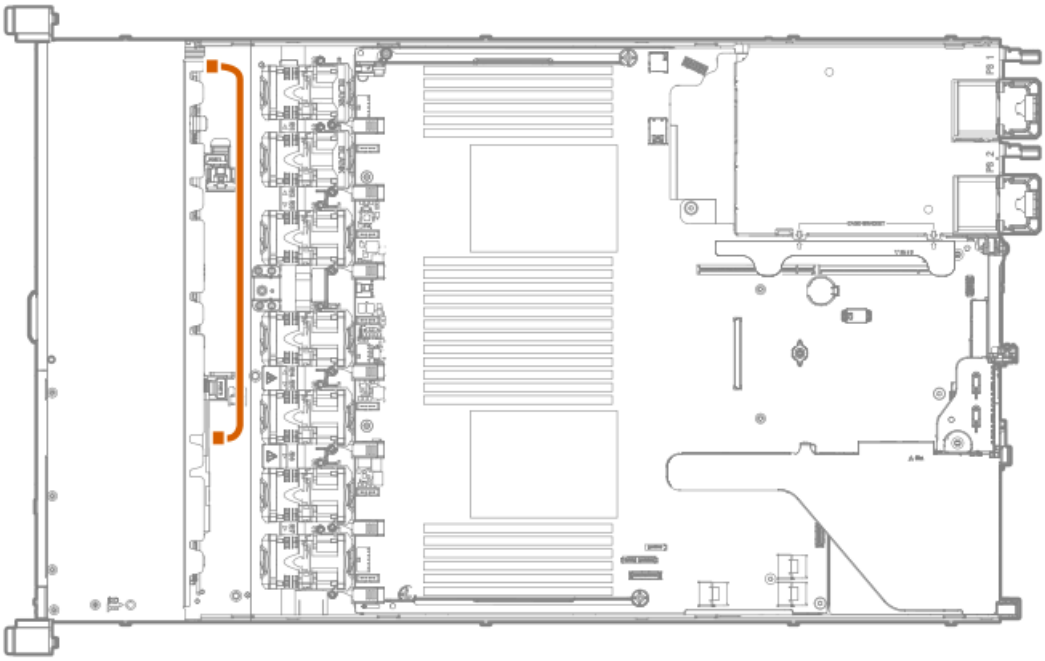


8. Observe the following:

> **NOTE:**
>
> The following information describes the standard cable routing for this component.

9. Route and connect the data cable.

10. Route and connect the power cable.



11. Install the access panel.
12. Install the server in the rack.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.
16. Install drives.

Installing a 2 SFF NVMe drive cage option

Prerequisites

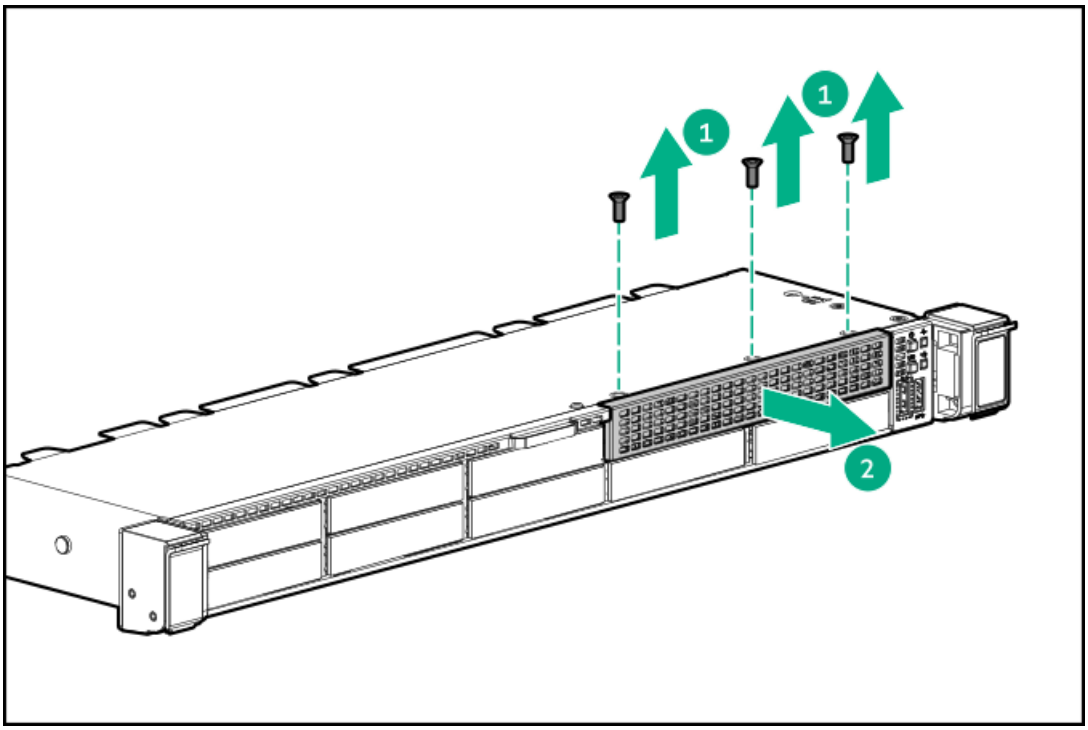
Before installing this option, be sure that you have the following:

- The components included with the hardware option kit
- T-10 Torx screwdriver
- T-15 Torx screwdriver
- Additional cables, as needed. For more information, see SFF cables.
- NVMe drives

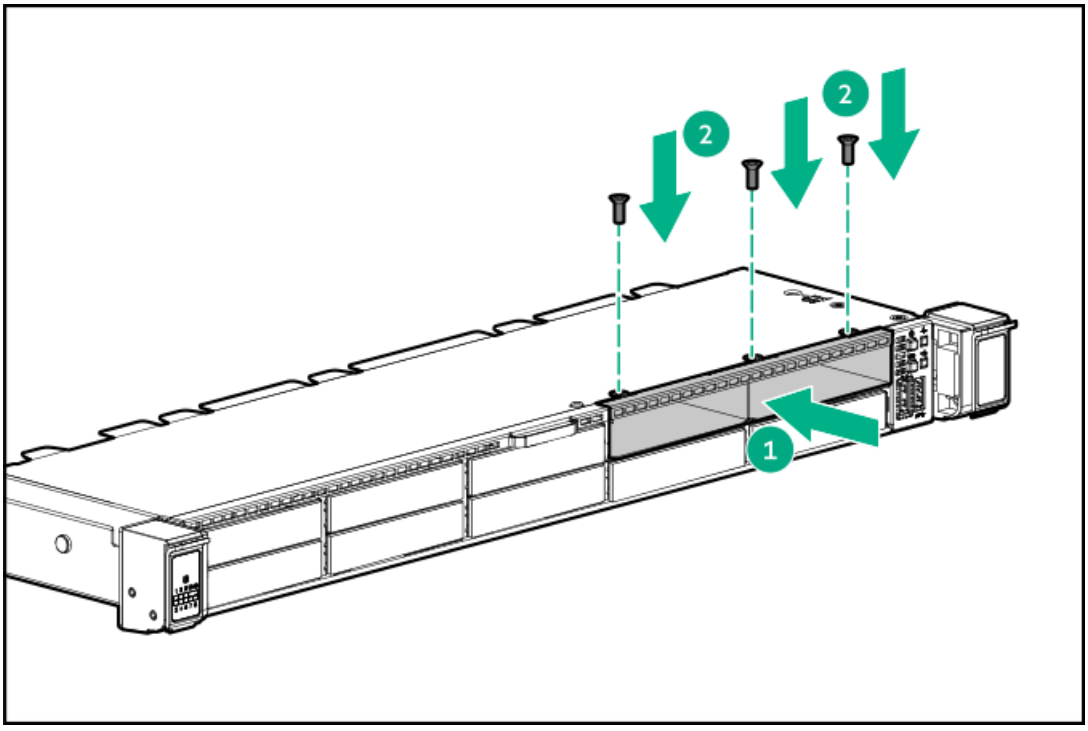
  For more information, contact a Hewlett Packard Enterprise authorized reseller.

Procedure

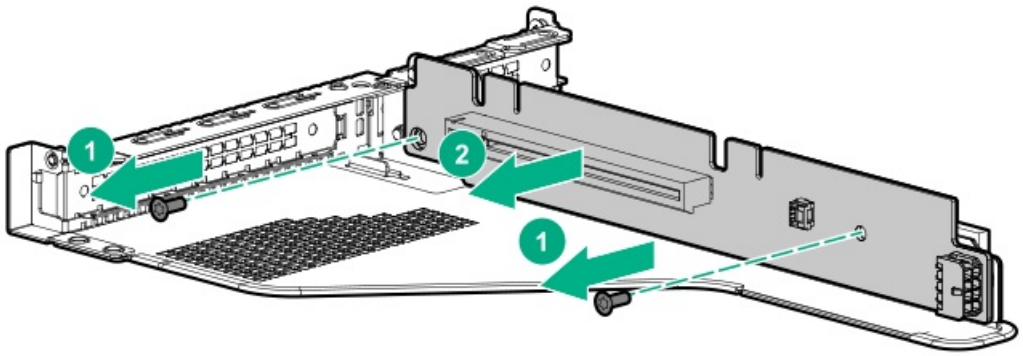
1. Back up all server data.
2. Power down the server (Power down the server).
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
5. Remove the access panel (Remove the access panel).
6. Use a T-10 Torx screwdriver to remove the universal media bay blank.



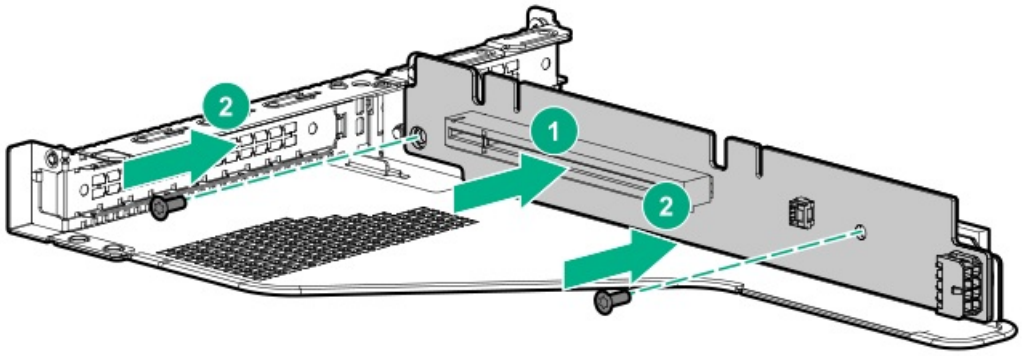
7. Use a T-10 Torx screwdriver to install the 2 SFF NVMe drive cage.



8. Remove the primary PCI riser cage (Remove the primary PCI riser cage).
9. Use a T-15 Torx screwdriver to remove the existing riser board.



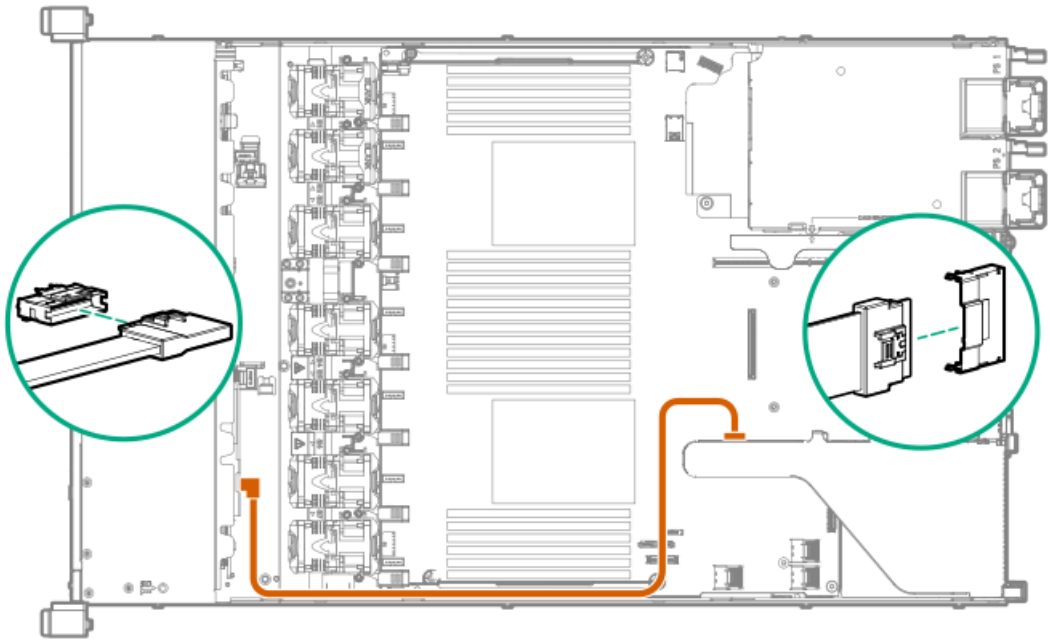
10. Use a T-15 Torx screwdriver to install the riser provided in the kit in the primary PCI riser cage.



11. Observe the following:

> **NOTE:**
>
> The following information describes the standard cable routing for this component.

12. Route and connect the data cable.



13. Install the primary PCI riser cage.
14. Install the access panel (Install the access panel).
15. Install the server in the rack.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server (Power up the server).
19. Install drives.

Installing an 8 SFF display port/USB/optical blank option

Prerequisites

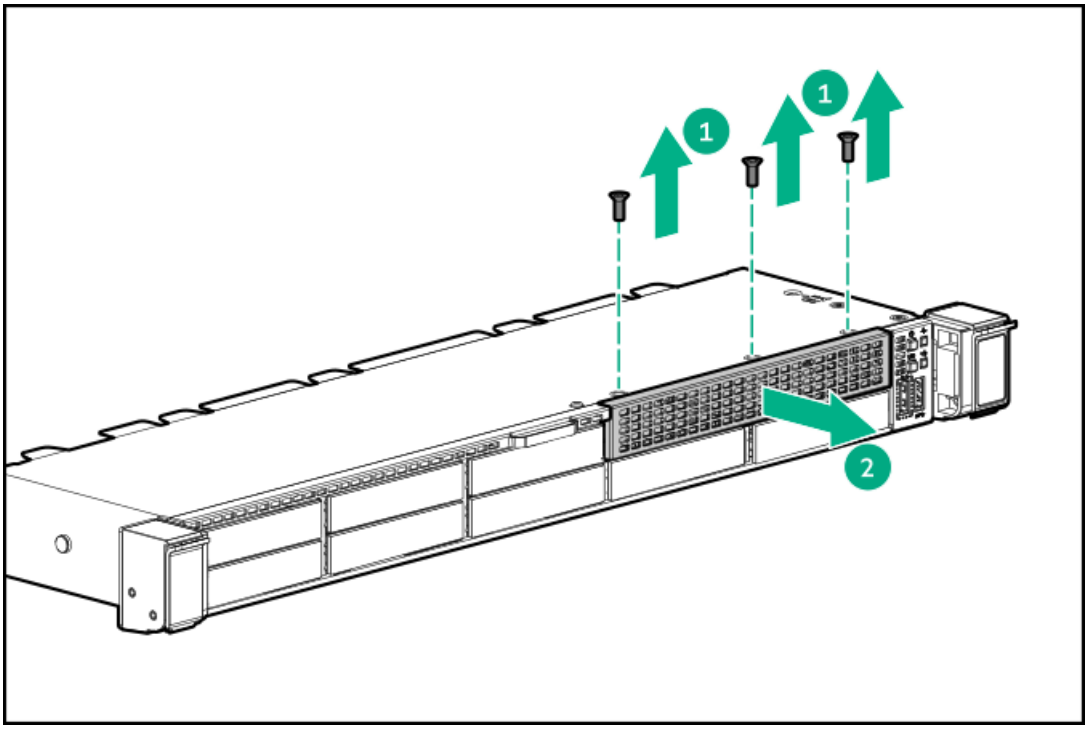
Before installing this option, be sure that you have the following:

- The components included with the hardware option kit
- T-10 Torx screwdriver
- An optical drive, if installing

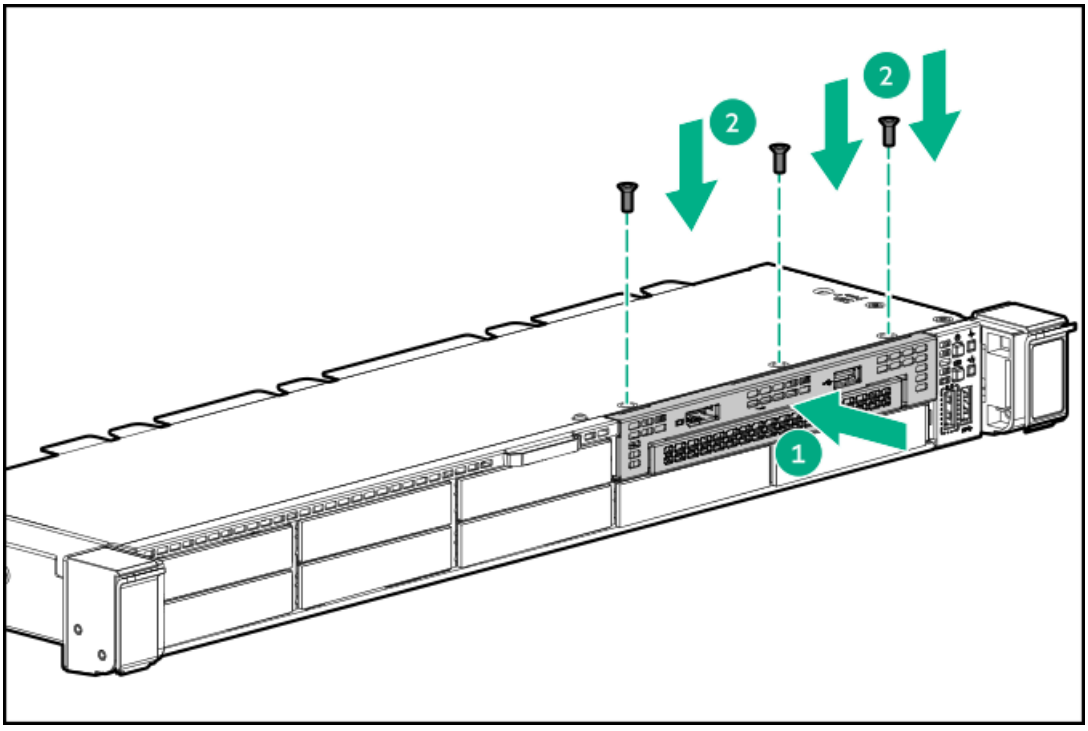
  For more information, contact a Hewlett Packard Enterprise authorized reseller.

Procedure

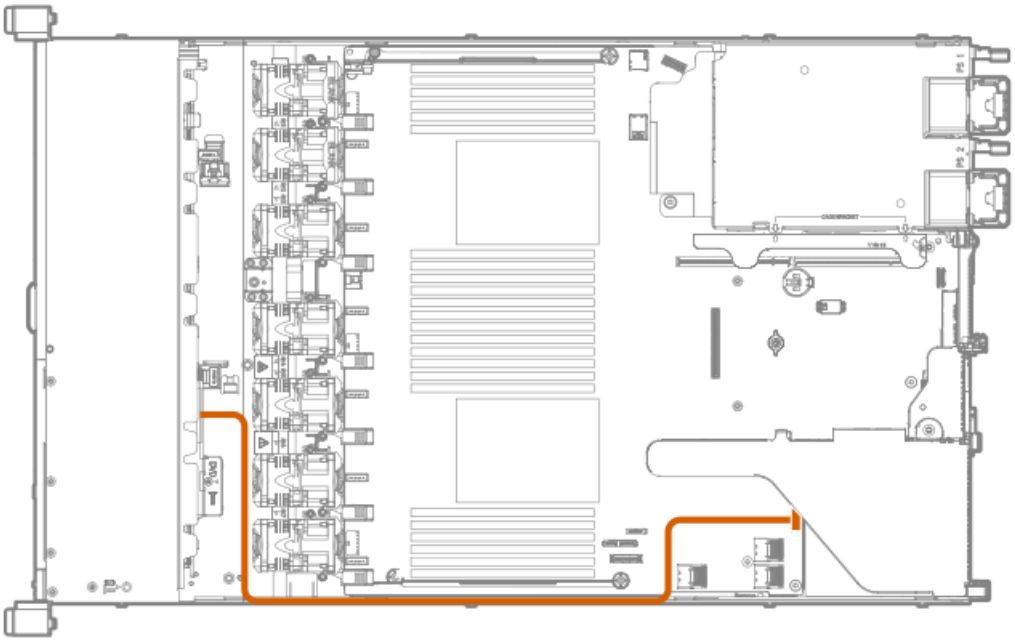
1. Back up all server data.
2. Power down the server (Power down the server).
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
5. Remove the access panel (Remove the access panel).
6. Remove the universal media bay blank.



7. Install the 8 SFF display port/USB/optical blank option.



8. Route and connect the data cable.



9. If needed, install an optical drive (Installing an 8 SFF optical drive).
10. Install the access panel (Install the access panel).
11. Install the server in the rack.
12. Connect each power cord to the server.
13. Connect each power cord to the power source.
14. Power up the server (Power up the server).

Primary PCI riser cage options

The primary PCI riser cage supports the following:

- Slot 1: Full-height, 3/4-length expansion boards (up to 9.5")
- Slot 2:
  - Half-length, half-height expansion boards
  - 3/4-length expansion boards when either a low-profile type -a controller or no controller is installed.

Installing an optional primary PCI riser board

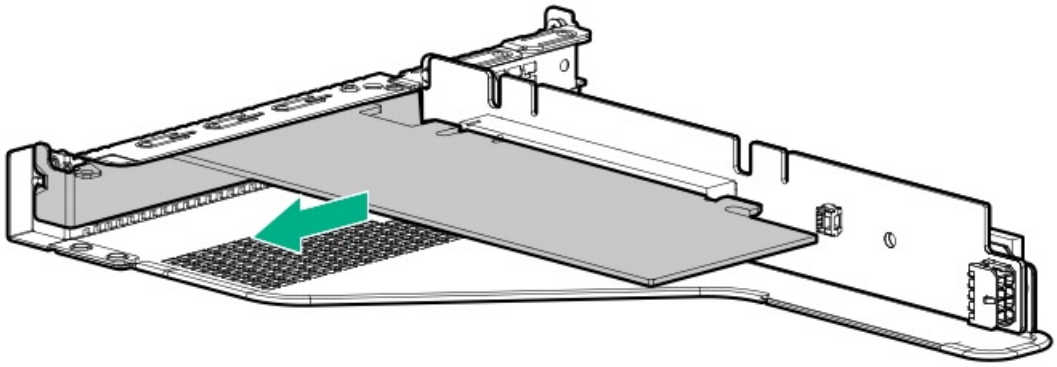
Prerequisites

Before installing this option, be sure you have the following:

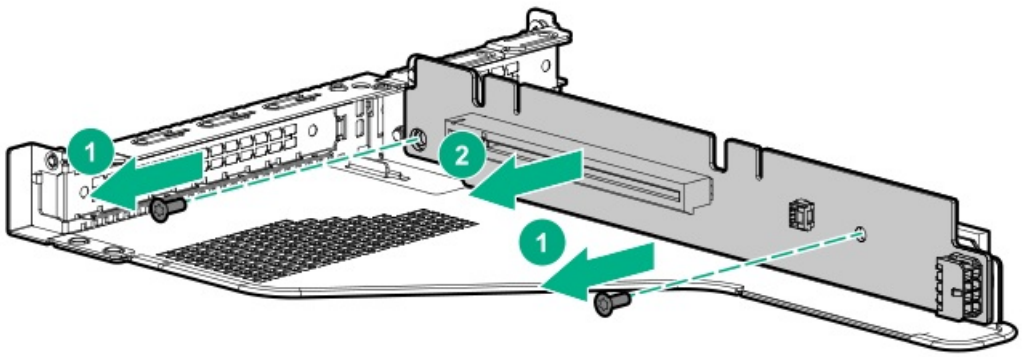
- The components included with the hardware option kit
- T-15 Torx screwdriver

Procedure

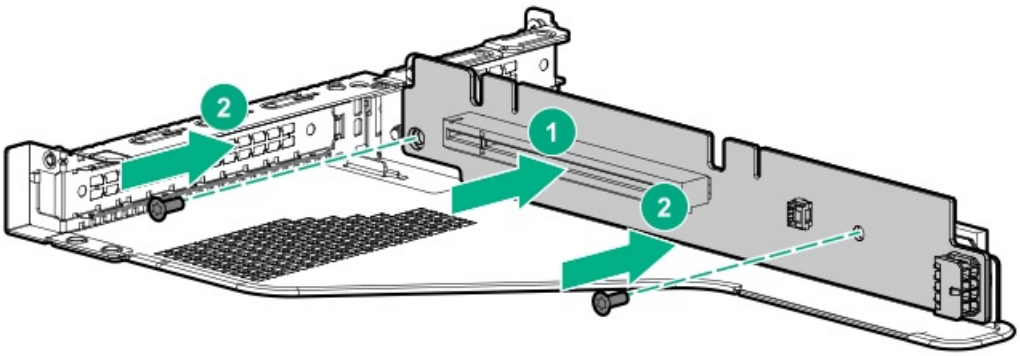
1. Back up all server data.
2. Power down the server (Power down the server).
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
5. Remove the access panel (Remove the access panel).
6. Remove the primary PCI riser cage (Remove the primary PCI riser cage).
7. If needed, remove any expansion boards installed in the riser cage.



8. Remove the existing riser board from the PCI riser cage.



9. Install the optional riser board in the riser cage.



10. Install the following, as needed:
    - Expansion boards (Installing an expansion board in the primary riser cage)
    - GPU (Installing an accelerator or GPU in the primary riser cage)
    - Controllers (Smart Array controller options)
11. Install the riser cage (Install the primary PCI riser cage).
12. Install the access panel (Install the access panel).
13. Install the server in the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server (Power up the server).

Installing the SATA M.2 2280 riser option

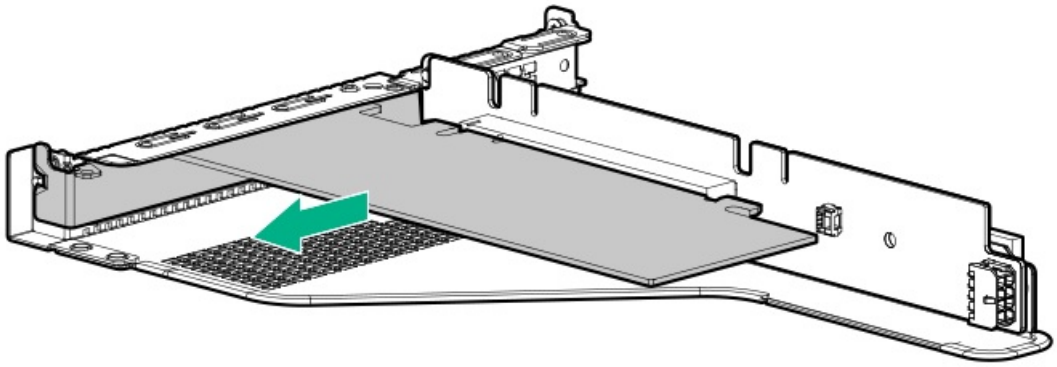
Prerequisites

Before installing this option, be sure that you have the following:

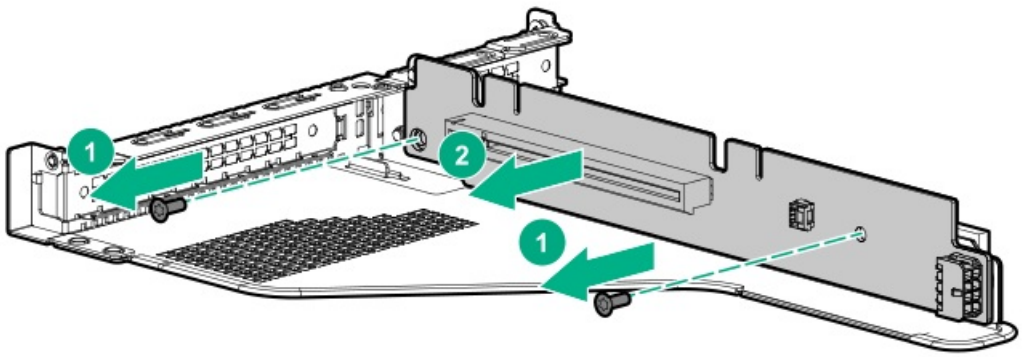
- The components included with the hardware option kit
- Up to two 2280 form factor M.2 drives
- T-15 Torx screwdriver

Procedure

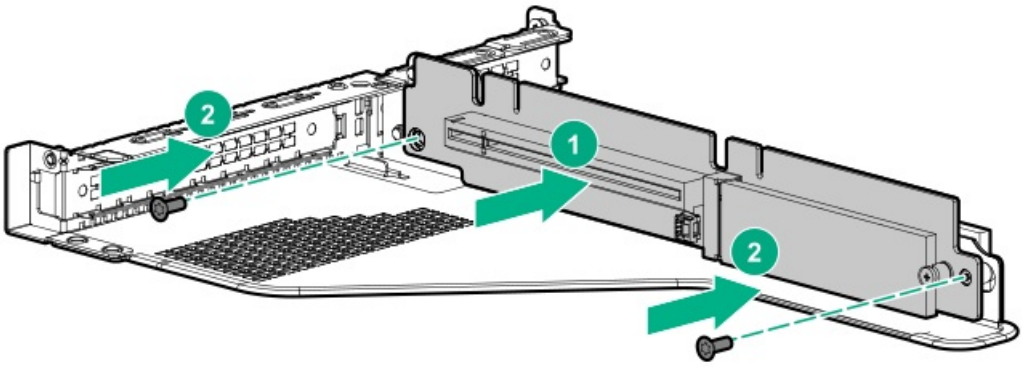
1. Power down the server (Power down the server).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
4. Remove the access panel (Remove the access panel).
5. Remove the primary PCI riser cage (Remove the primary PCI riser cage).
6. If needed, remove any expansion boards installed in the riser cage.



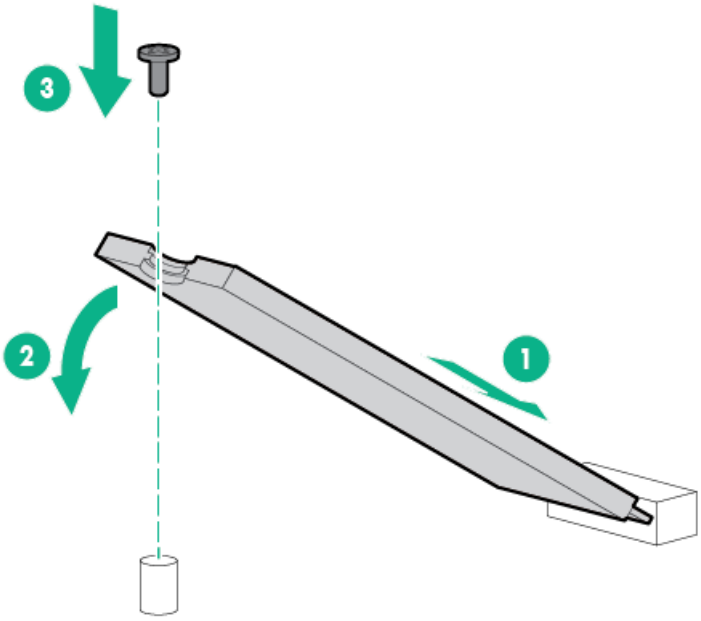
7. Remove the existing riser board from the riser cage.



8. Install the M.2 riser board.



9. Remove the screw securing the standoff on the riser.
10. Install the M.2 drives.



11. Install the following, as needed:
    - Expansion boards (Installing an expansion board in the primary riser cage)
    - Controllers (Smart Array controller options)
12. Install the primary PCI riser cage (Install the primary PCI riser cage).
13. Install the access panel (Install the access panel).
14. Install the server in the rack.

Installing an expansion board in the primary riser cage

Use these instructions to install expansion boards such as Smart I/O cards (such as DSC-25 2-port SFP28 card), solid state NVMe/PCIe Add-In-Cards, HBAs, CNAs, InfiniBand adapters, and accelerators.

Prerequisites

Before installing this option, be sure you have the following:

- The components included with the hardware option kit.
- T-10 Torx screwdriver.

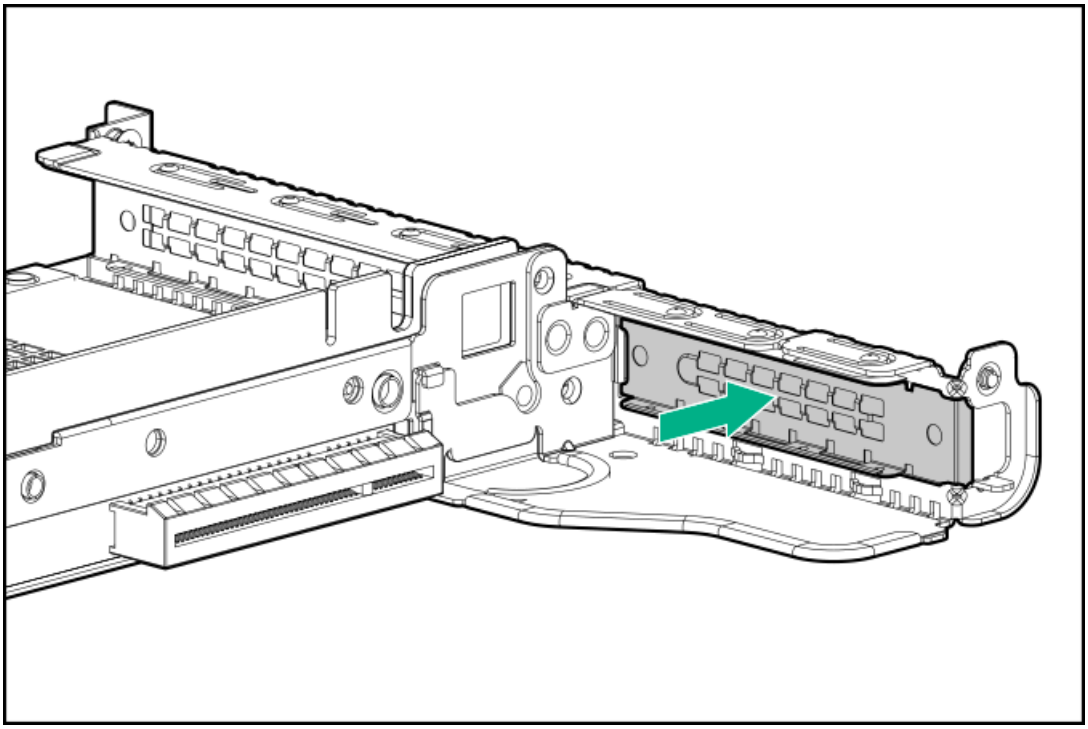
Procedure

1. Observe the following alerts:

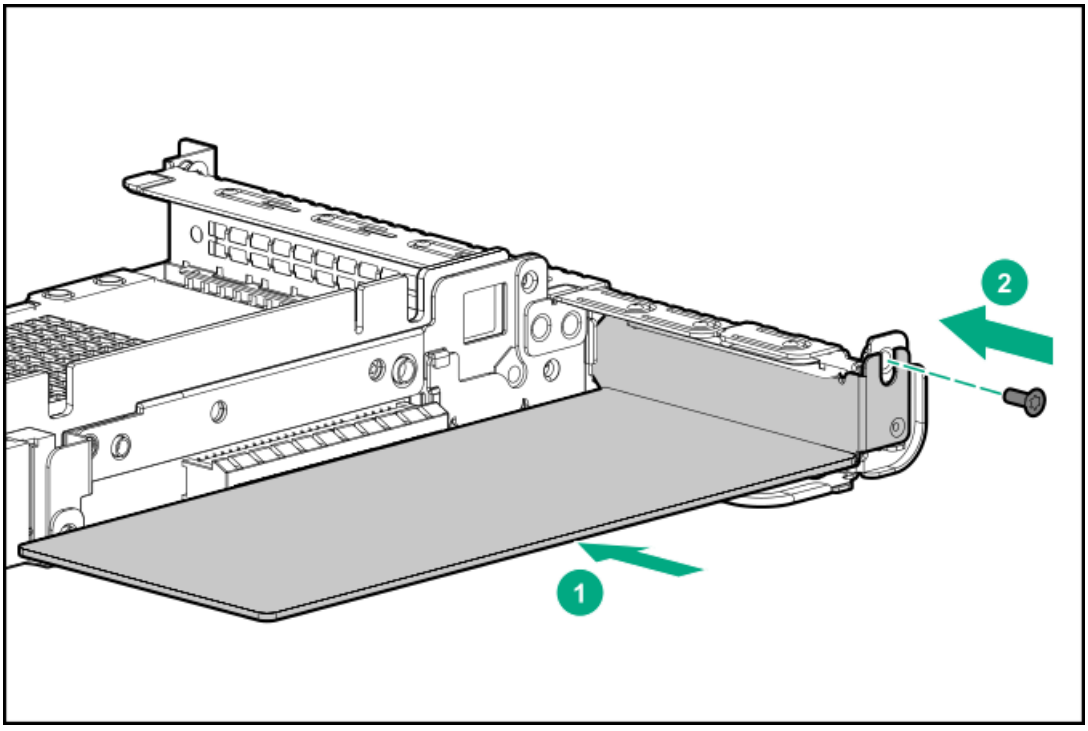
   WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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

2. Back up all server data.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Remove the primary PCI riser cage.
8. Remove the expansion slot blank.



9. Use a T-10 Torx screwdriver to Install the expansion board.



10. Connect any required internal or external cables to the expansion board.
11. Install the primary PCI riser cage.
12. Install the access panel.
13. Install the server in the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Installing an accelerator or GPU in the primary riser cage

Use these instructions to install accelerator options, including GPUs, in the server.

Prerequisites

This option requires the standard primary PCI riser cage.

Before installing this option, be sure that the power supplies support the installation of this option. For more information, see the **Hewlett Packard Enterprise Configurator website**.

In addition, be sure that you have the following items:

- The components included with the hardware option kit
- HPE ProLiant DL365 Gen10 Plus Server CPU1 Cable Kit (If installing a high-powered GPU kit)

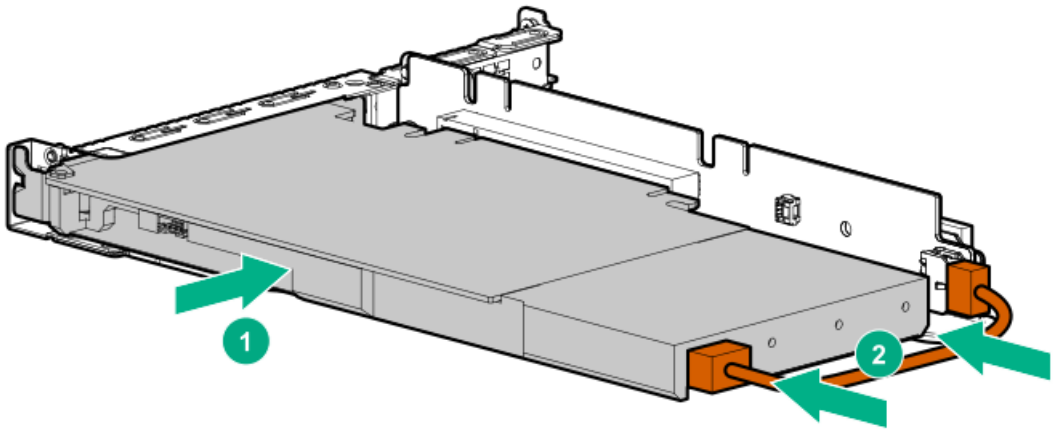
Procedure

1. Observe the following alerts:

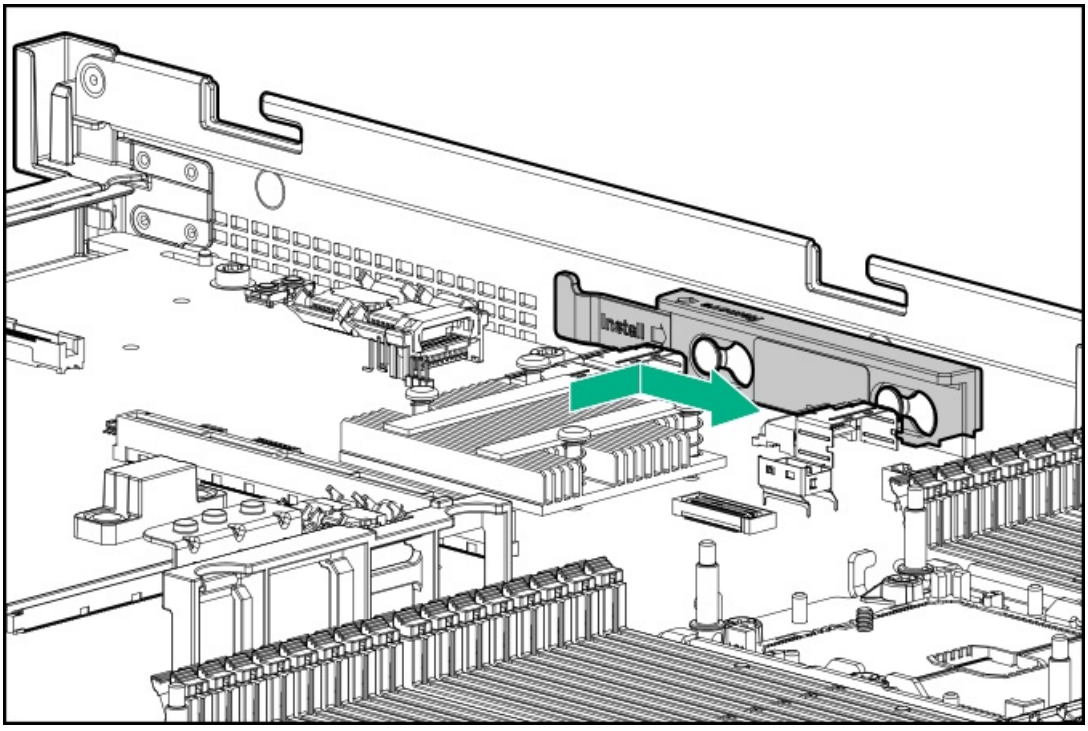
   WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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

2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
6. Remove the access panel (Remove the access panel).
7. Remove the primary PCI riser cage (Remove the primary PCI riser cage).
8. Install the card in the x16 slot in the primary PCI riser cage position.
9. If installing a GPU requiring greater than 75 W, connect the power cable to the primary riser power connector.



10. If the card requires rear support, install the GPU support bracket.



11. Install the riser cage (Install the primary PCI riser cage).
12. Install the access panel (Install the access panel).
13. Install the server in the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server (Power up the server).

Secondary PCI riser options

Installing a secondary full-height PCI riser cage option

When installed, this riser cage supports full-height, 3/4-length expansion boards up to 9.5". PCIe3 slot 2 is no longer available.

Prerequisites

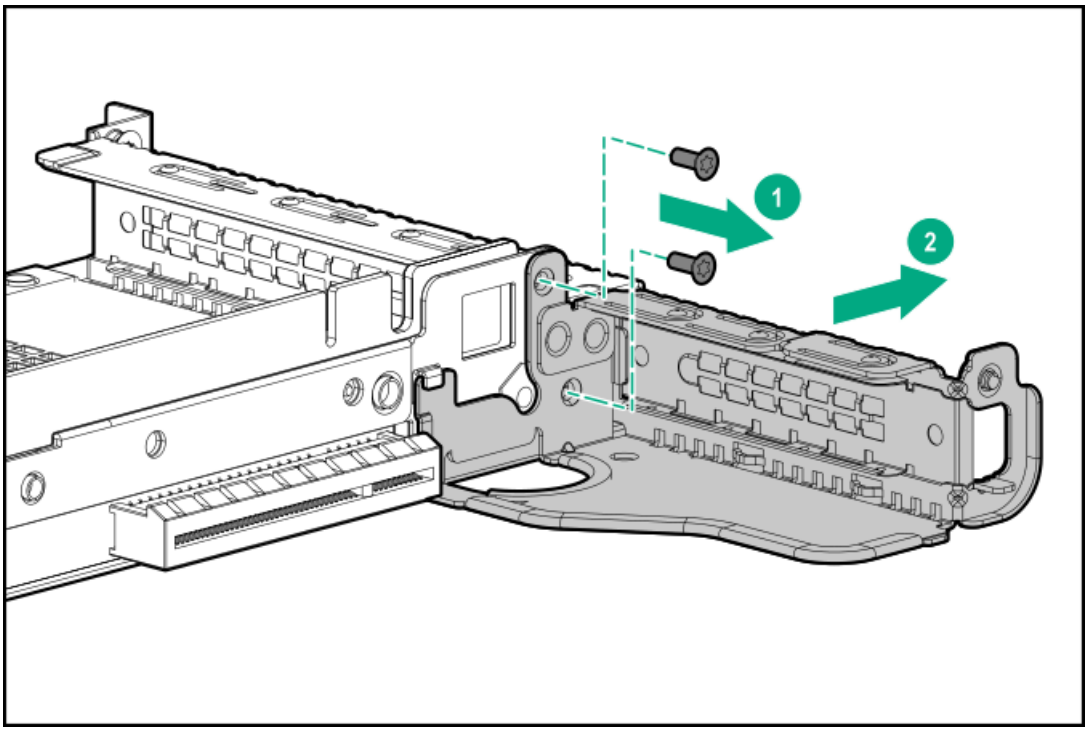
This option requires a dual processor configuration.

Before installing this option, be sure you have the following:

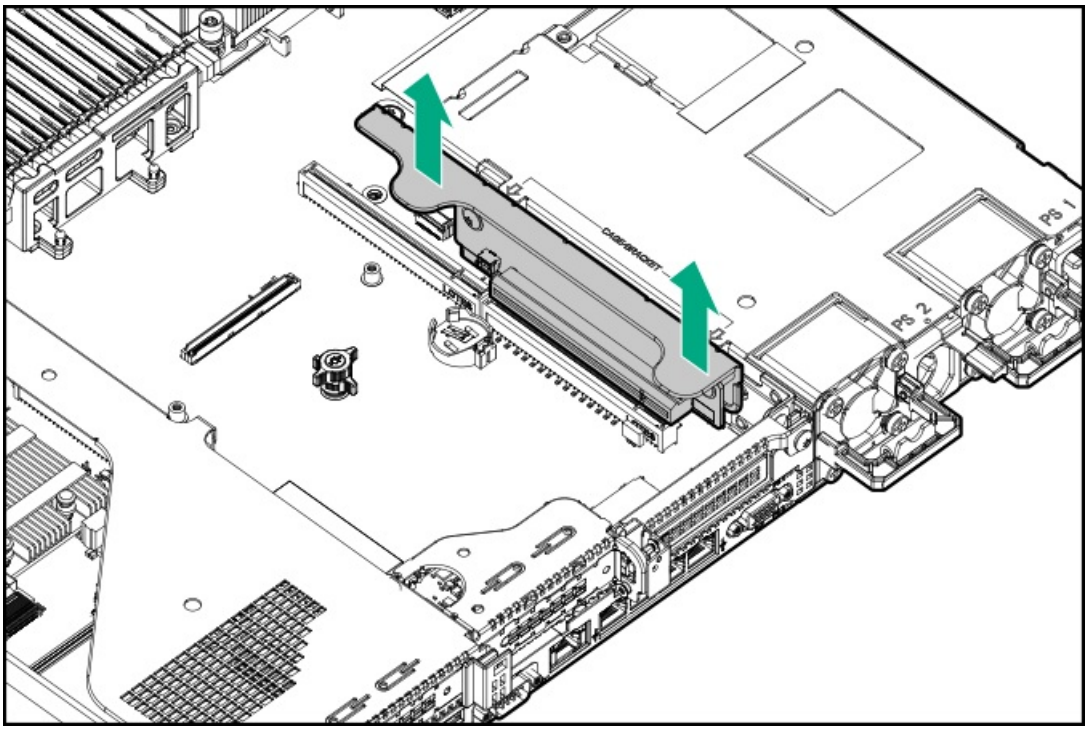
- The components included with the hardware option kit
- Any expansion boards or controllers you plan to install
- T-10 Torx screwdriver
- T-15 Torx screwdriver

Procedure

1. Power down the server (Power down the server).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
4. Remove the access panel (Remove the access panel).
5. Remove the primary PCI riser cage (Remove the primary PCI riser cage).
6. Use a T-10 Torx screwdriver to remove the slot 2 bracket from the primary riser cage.

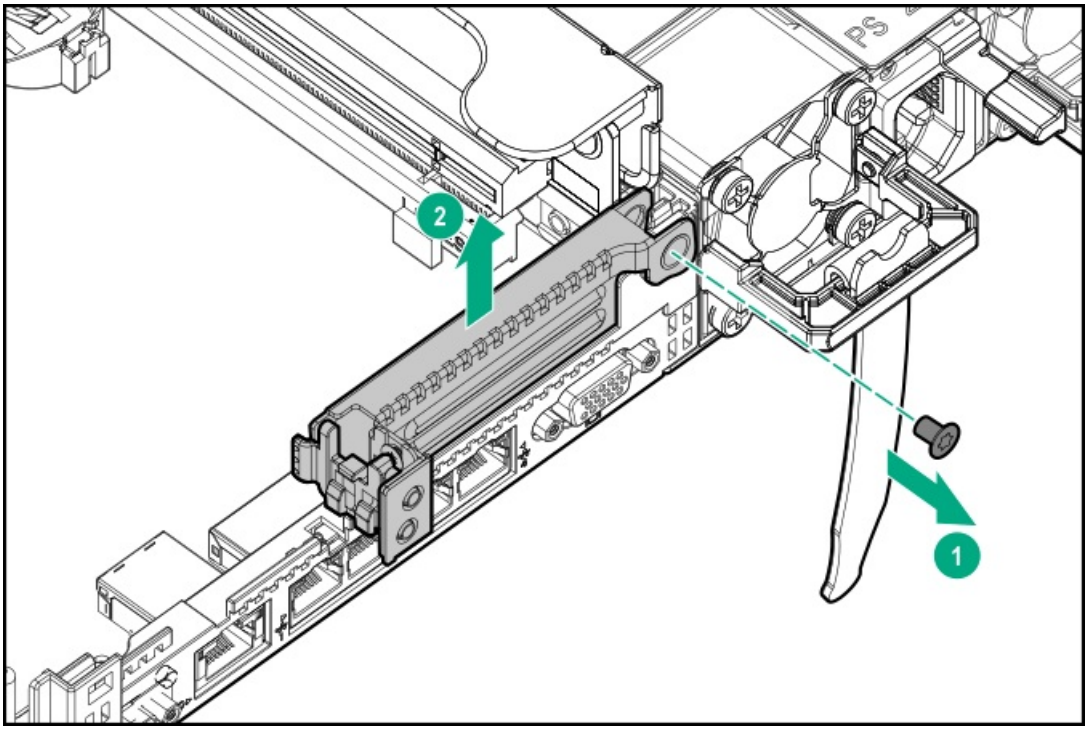


7. If installed, remove the low-profile riser cage.



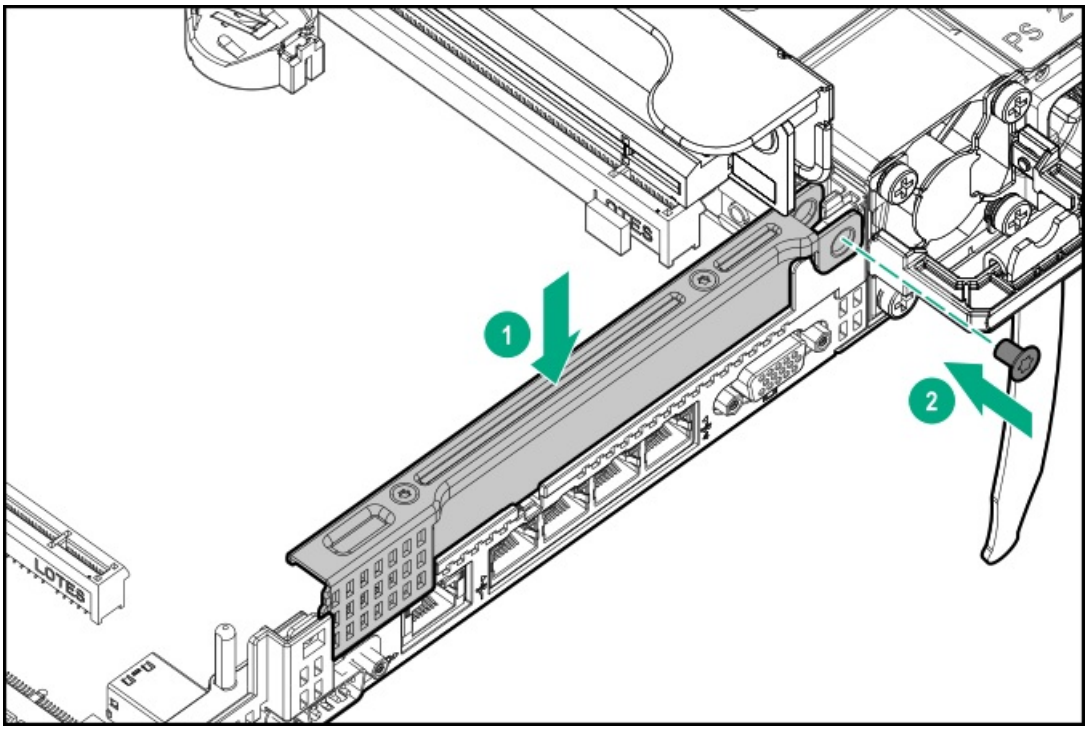
8. Lift and remove the secondary riser cage latch.

   Use a T-15 Torx screwdriver to remove the riser cage screw.

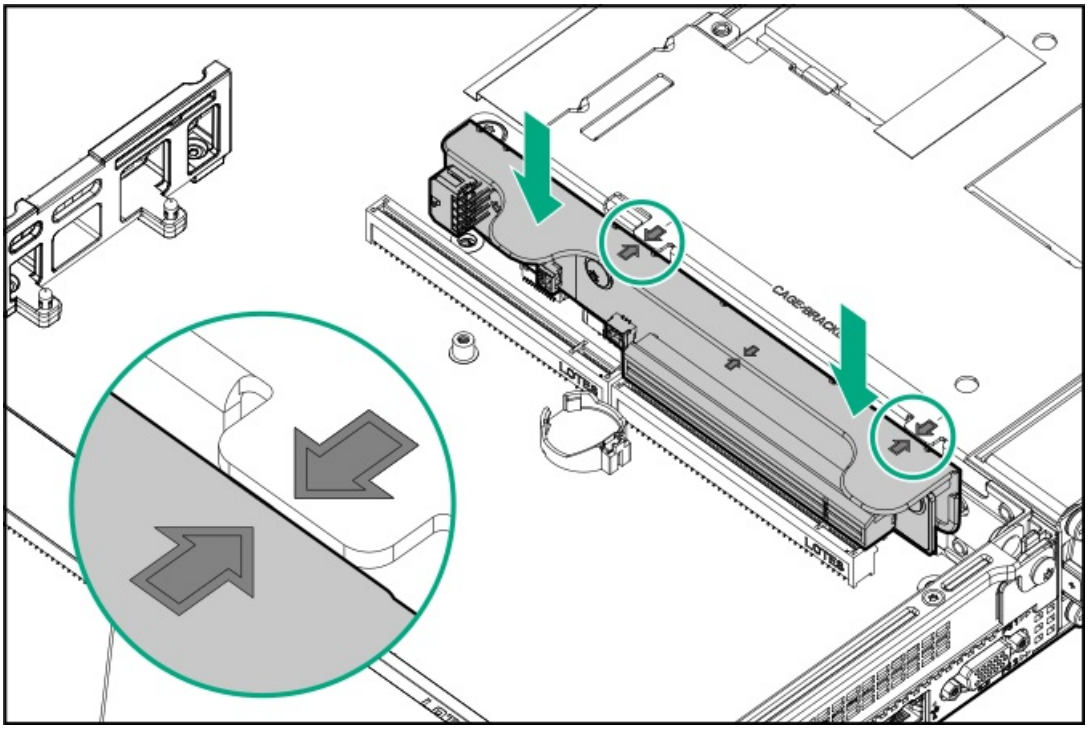


9. Install the full height PCIe x16 riser cage latch.

   Use a T-15 Torx screwdriver to remove the riser cage screw.



10. Install the riser cage.



11. Install one of the following, as needed:
    - Expansion boards (Installing an expansion board in the secondary riser cage)
    - GPU (Installing an accelerator or GPU in the secondary riser cage)
    - Controllers (Smart Array controller options)
12. Install the access panel (Install the access panel).
13. Install the server in the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server (Power up the server).

Installing a secondary low-profile PCIe slot riser cage option

When installed, this riser cage provides an additional low profile slot and supports half-length/half-height expansion boards.

Prerequisites

This option requires a dual processor configuration.

Before installing this option, be sure that you have the following:

The components included with the hardware option kit

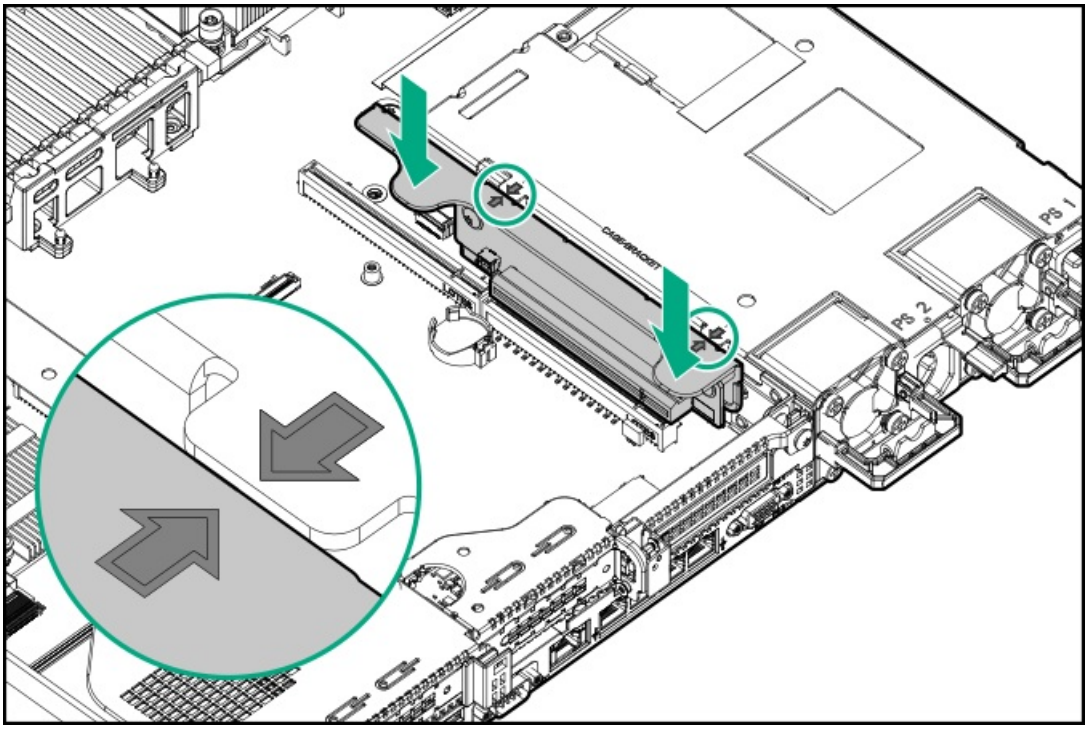
Procedure

1. Observe the following alerts:

   > ⚠ **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.

2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
6. Remove the access panel (Remove the access panel).
7. Install the secondary low-profile PCIe slot riser cage.



8. Install one of the following, as needed:
   - Expansion boards (Installing an expansion board in the secondary riser cage)
   - Controllers (Smart Array controller options)

9. Install the access panel (Install the access panel).
10. Install the server into the rack (Installing the server into the rack).
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server (Power up the server).

Installing an expansion board in the secondary riser cage

Use these instructions to install expansion boards such as Smart I/O cards (such as DSC-25 2-port SFP28 cards), solid state NVMe/PCIe Add-In-Cards, HBAs, CNAs, InfiniBand adapters, and accelerators.

Prerequisites

Before installing this option, be sure that you have the following:

- The components included with the hardware option kit
- T-10 Torx screwdriver

Procedure

1. Observe the following alerts:

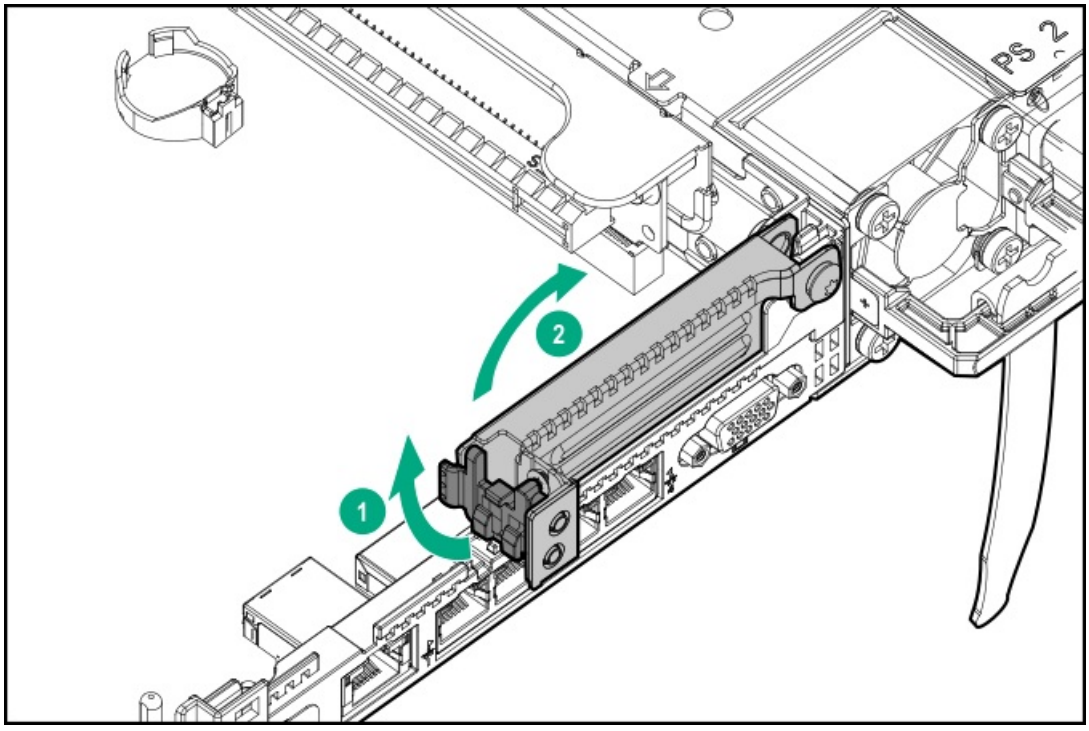
   ⚠ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

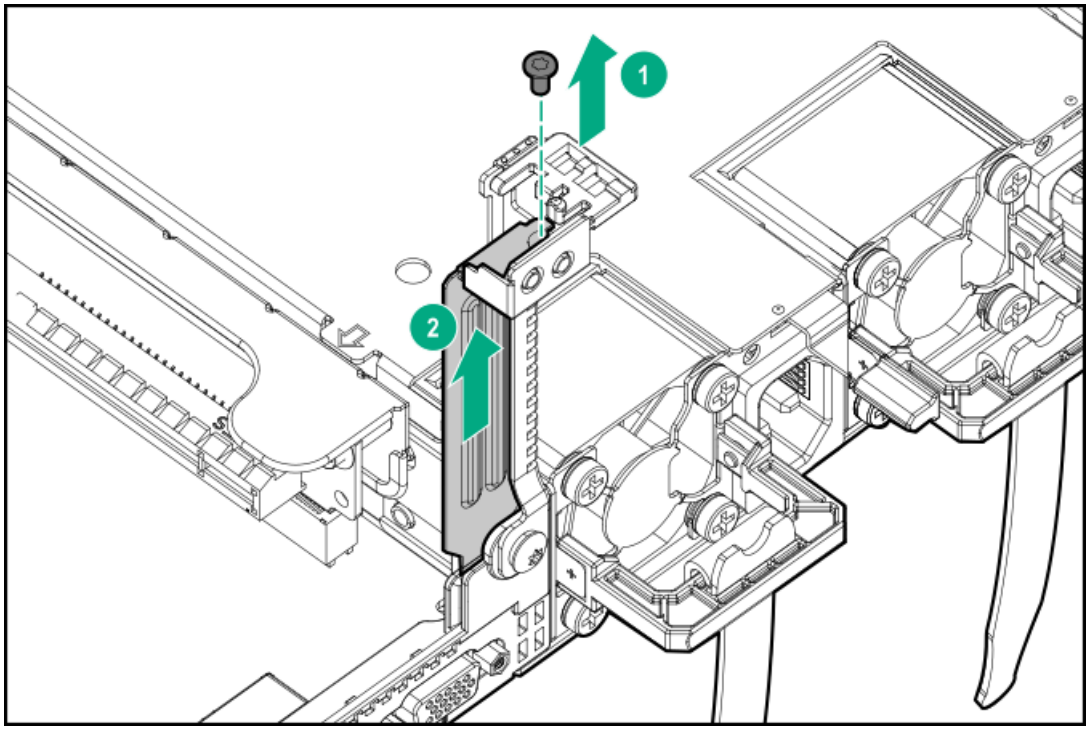
   △ **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Install a secondary riser cage:
   - Low-profile (Installing a secondary low-profile PCIe slot riser cage option)
   - Full-height (Installing a secondary full-height PCI riser cage option)
8. Remove the expansion slot blank:

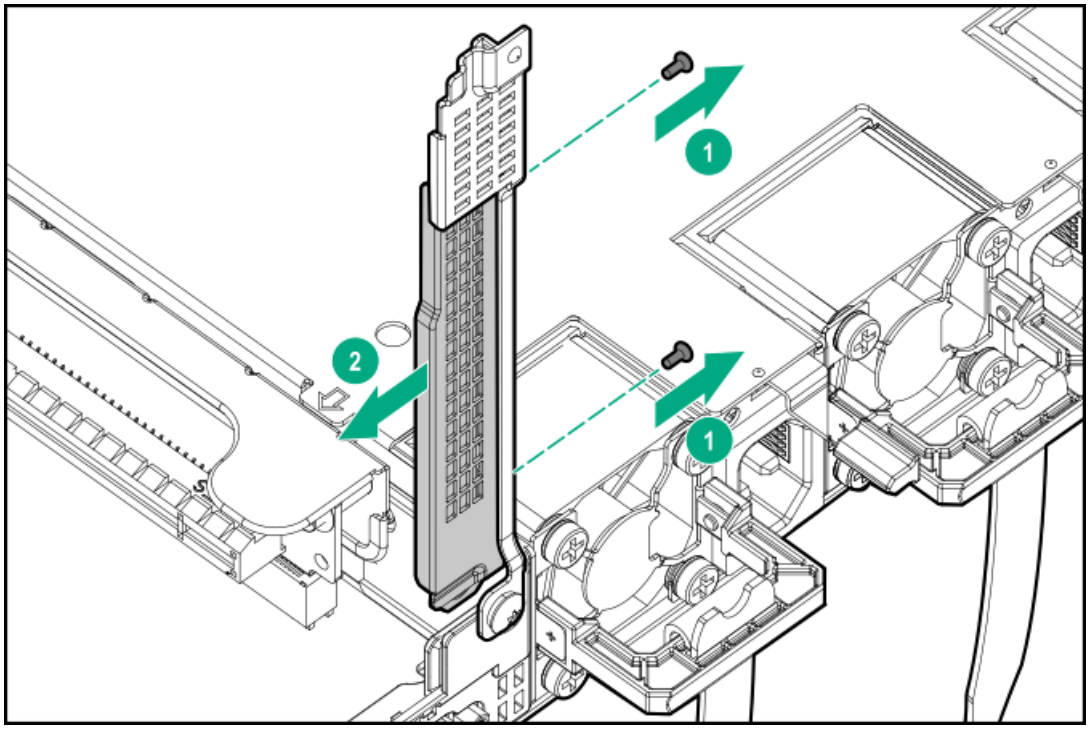
   A T-10 Torx screwdriver is required to remove the expansion slot blank.

   - Half-length

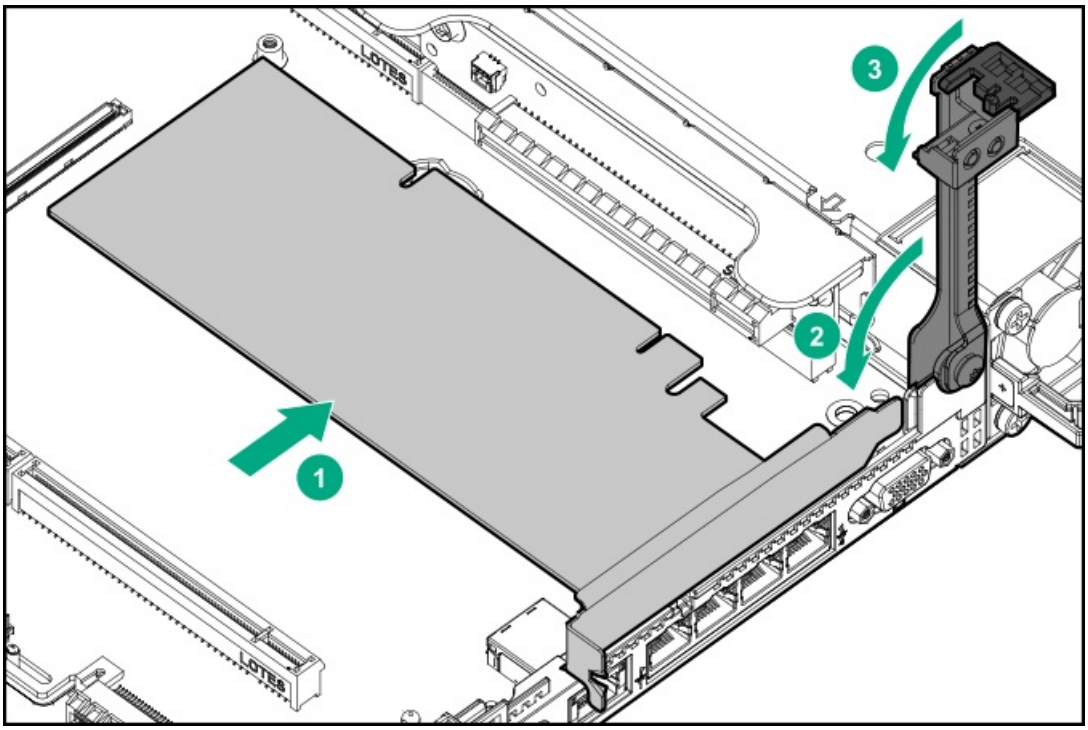




- Full-length



9. Install the expansion board.



10. Connect any required internal or external cables to the expansion board.
11. Install the access panel (Install the access panel).
12. Install the server in the rack.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

Installing an accelerator or GPU in the secondary riser cage

Use these instructions to install accelerator options, including GPUs, in the server.

Prerequisites

When installing a 3/4-length GPU, a low profile type -a controller must be installed.

Before installing this option, do the following:

- Be sure that the power supplies support the installation of this option. For more information, see the **Hewlett Packard Enterprise Configurator website**.
- Be sure that you have the following items:
  - The components included with the GPU enablement option kit
  - T-15 Torx screwdriver

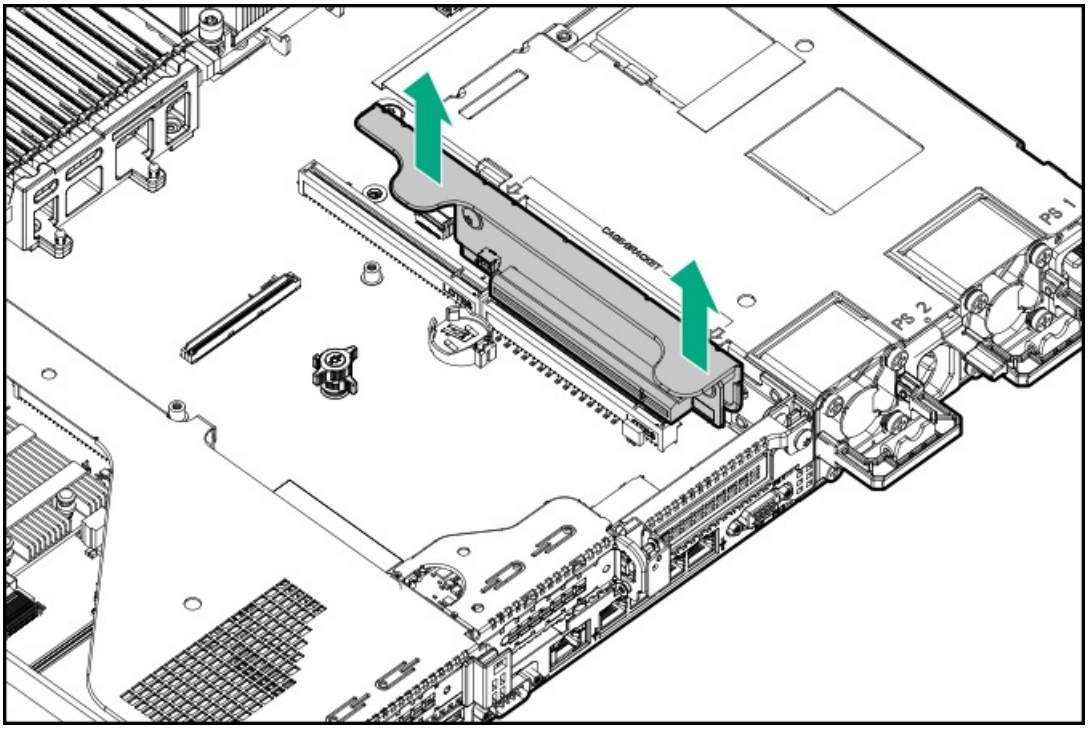
Procedure

1. Observe the following alerts:

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

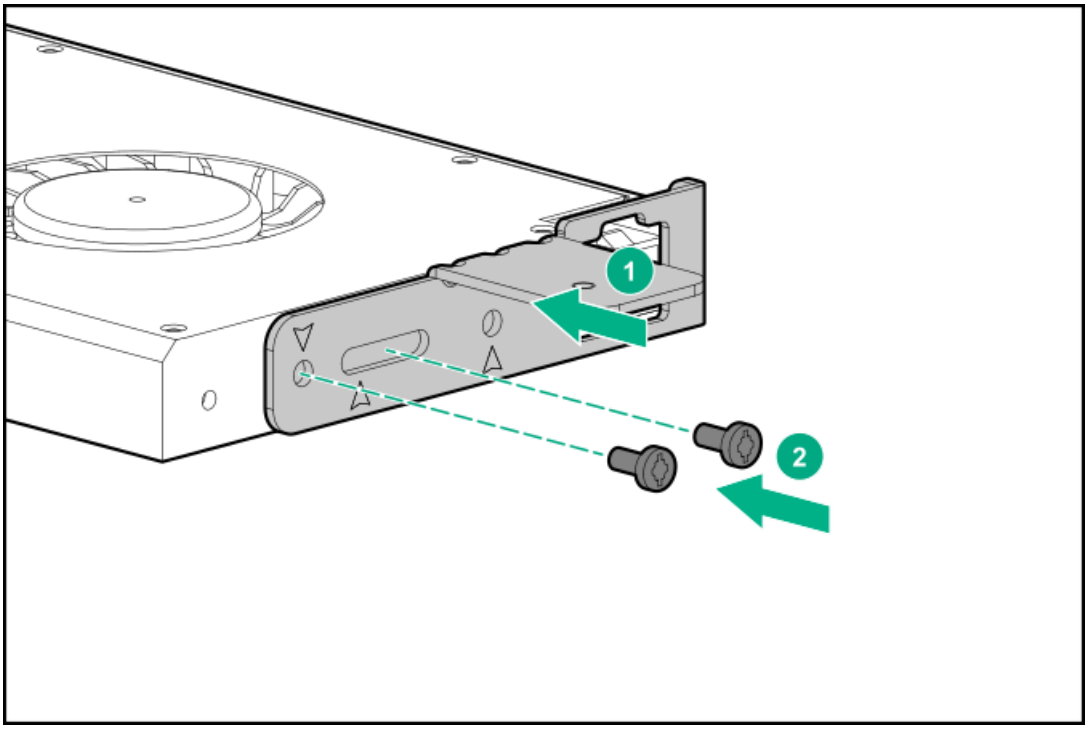
   CAUTION: To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
6. Remove the access panel (Remove the access panel).
7. If installed, remove the low profile riser cage.

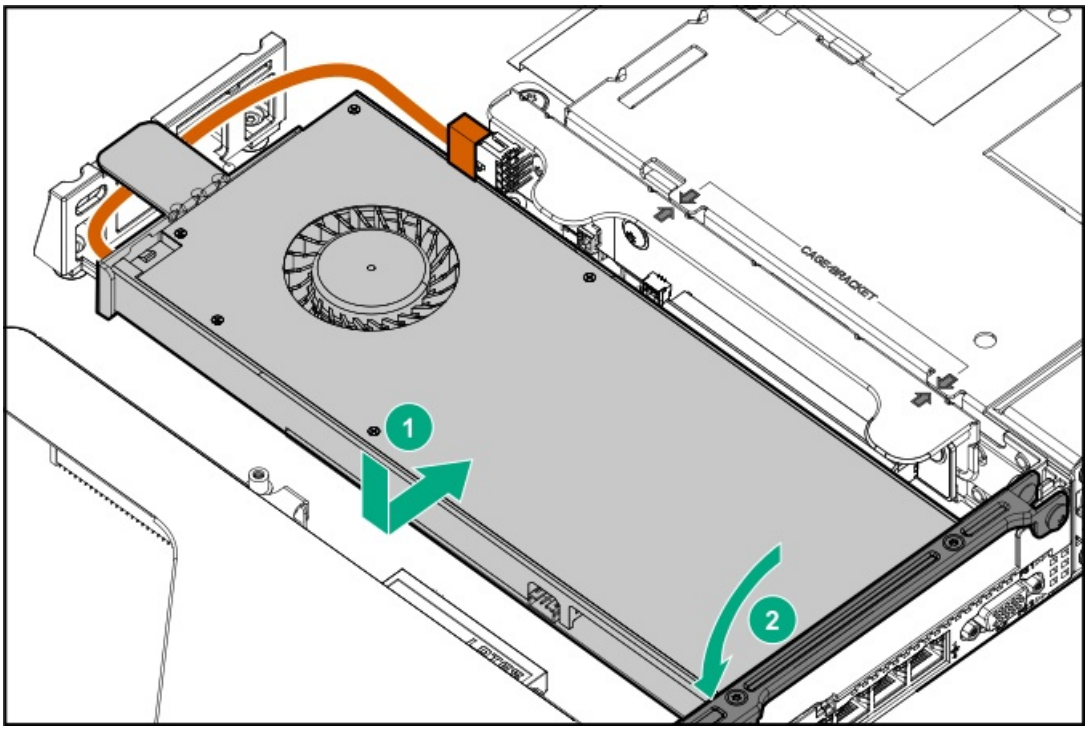


8. Install the secondary full-height PCI riser cage (Installing a secondary full-height PCI riser cage option).
9. Remove the existing rear guide bracket from the card, if installed.
10. If installing a 3/4-length GPU, install the bracket supplied in the kit.

    A T-15 Torx screwdriver is required to install the bracket.



11. Install the card in the riser cage, and then connect any required cables, if applicable.
12. If installing a GPU requiring greater than 75 W, connect the power cable to the primary riser power connector.



13. Install the access panel (Install the access panel).
14. Install the server in the rack.
15. Connect each power cord to the server.
16. Connect each power cord to the power source.
17. Power up the server (Power up the server).

Smart Array controller options

For more information on controllers, see the following information:

- The controller data sheet on the Hewlett Packard Enterprise website (**https://www.hpe.com/h20195/V2/Getdocument.aspx?docname=a00017196enw**)
- The controller QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**).

Installing an HPE Smart Array P408i-a SR Gen10 Controller option

Prerequisites

Before installing this option, be sure that you have the following:

- The components included with the hardware option kit
- T-15 Torx screwdriver

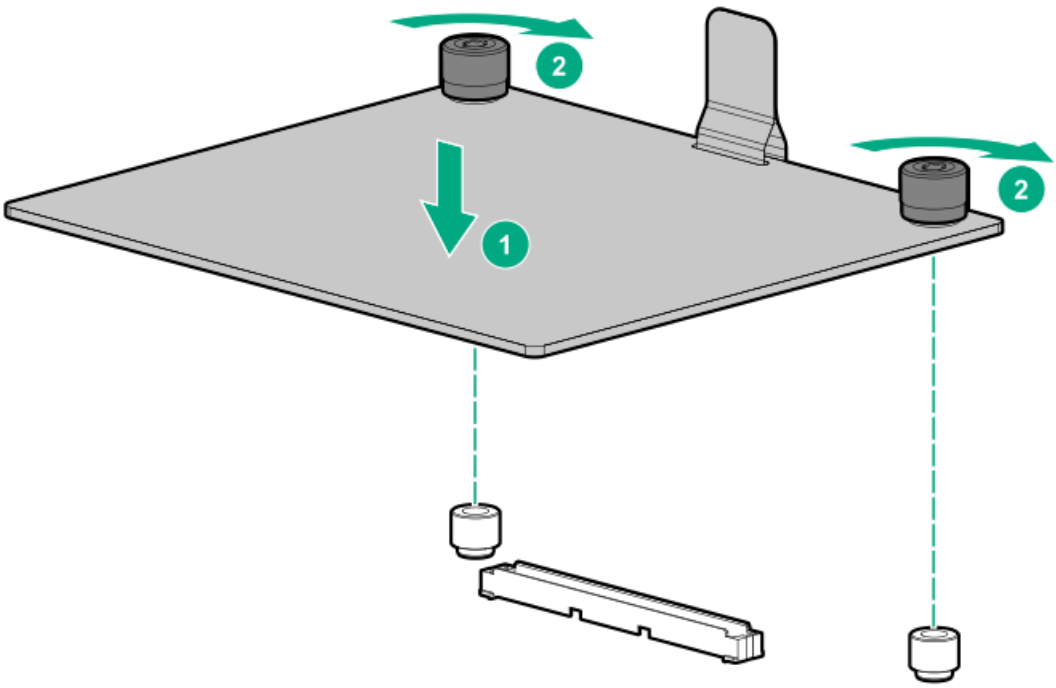
Procedure

1. Observe the following alerts:

   ⚠ **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.

2. Back up all server data.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Install the controller.

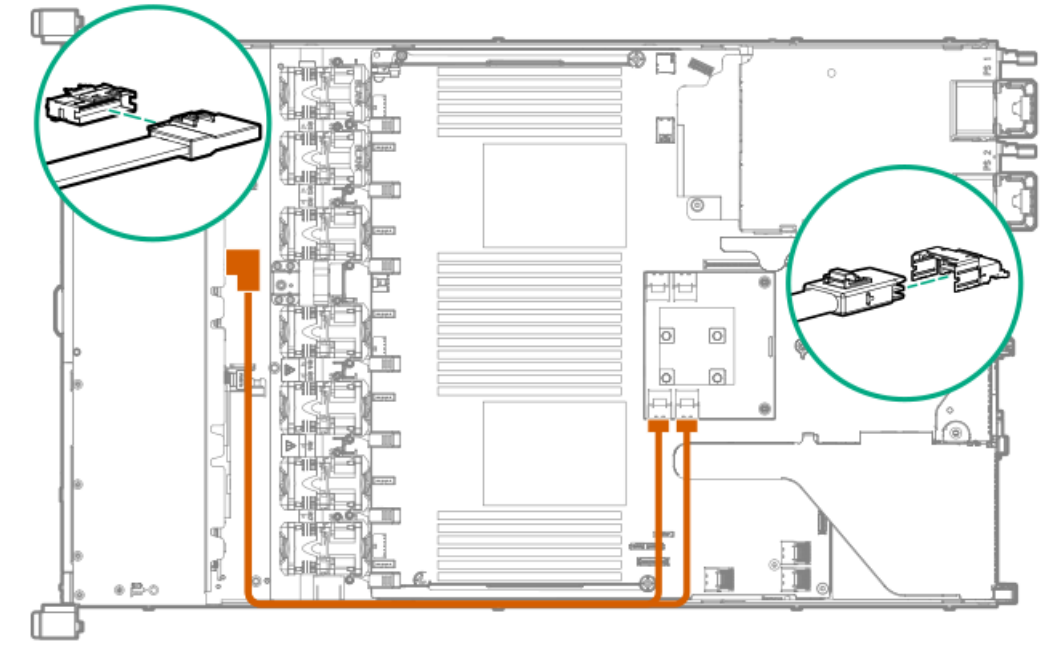


8. Connect the cables.

   Additional cabling options are available. For more information, see the HPE DL365 Gen10 Server cabling matrix on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/CablingMatrixGen10**).

   - 8 SFF

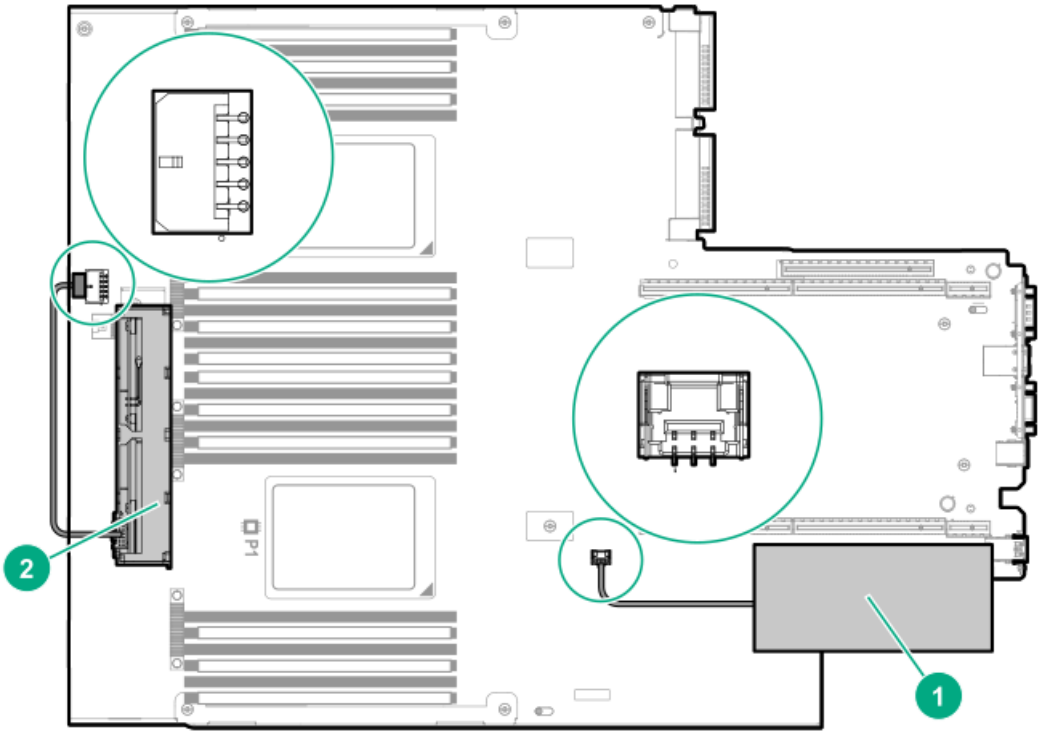
- 10 SFF SAS/SATA NVMe Combo



IMPORTANT:

To enable SmartCache or CacheCade in a P-class type-p Smart Array controller, you must:

- Connect the controller backup power cable to the controller backup power connector on the system or riser board.
- Connect the energy pack cable to the energy pack connector on the system board.



9. Install the access panel.
10. Install the server in the rack.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server.

Installing an HPE Smart Array P408i-p SR Gen10 Controller option

Prerequisites

Before installing this option, be sure you that have the following:

- The components included with the hardware option kit
- T-10 Torx screwdriver

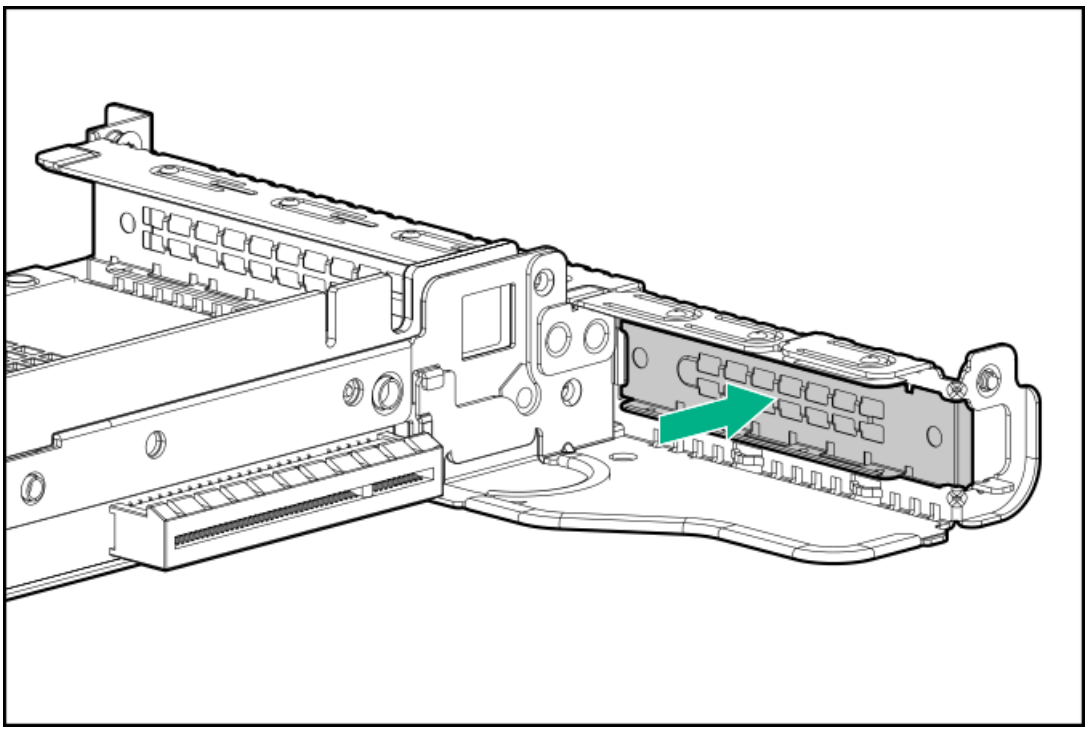
Procedure

1. Observe the following alerts:

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

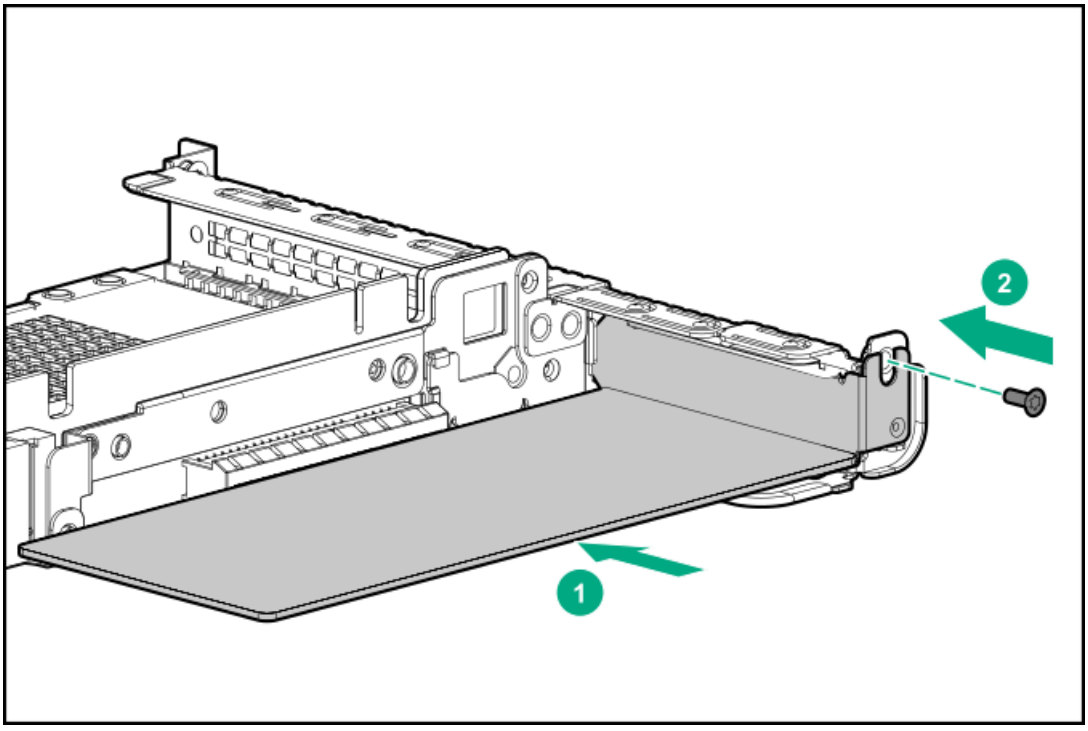
   △ **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

2. Back up all server data.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Remove the primary PCI riser cage.
8. Remove the slot 2 expansion board blank.

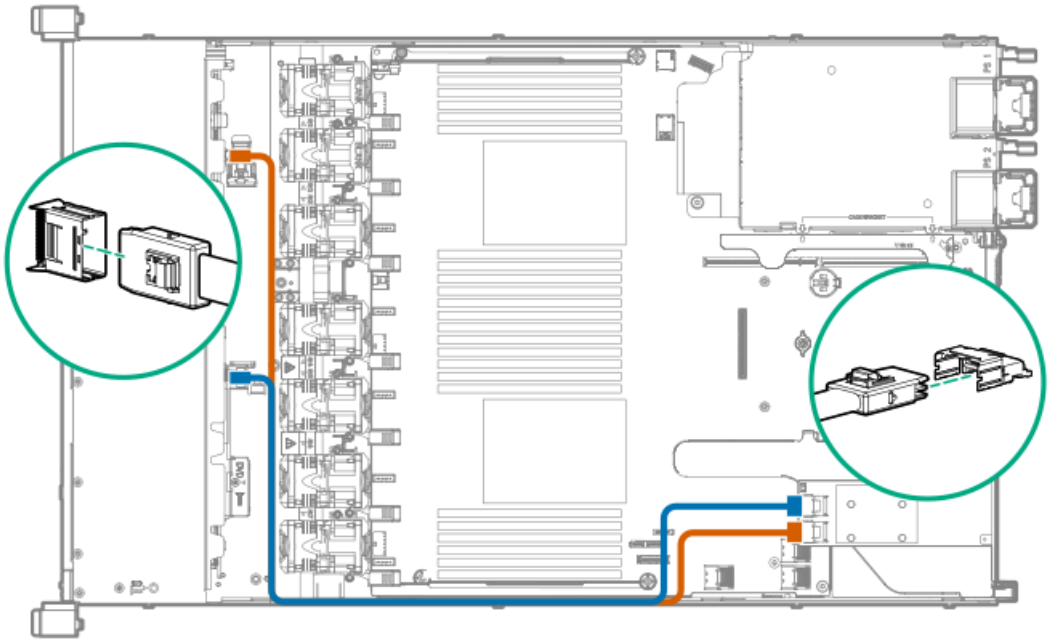


9. Use a Torx T-10 screwdriver to install the controller.

   The controller can also be installed in slot 1.



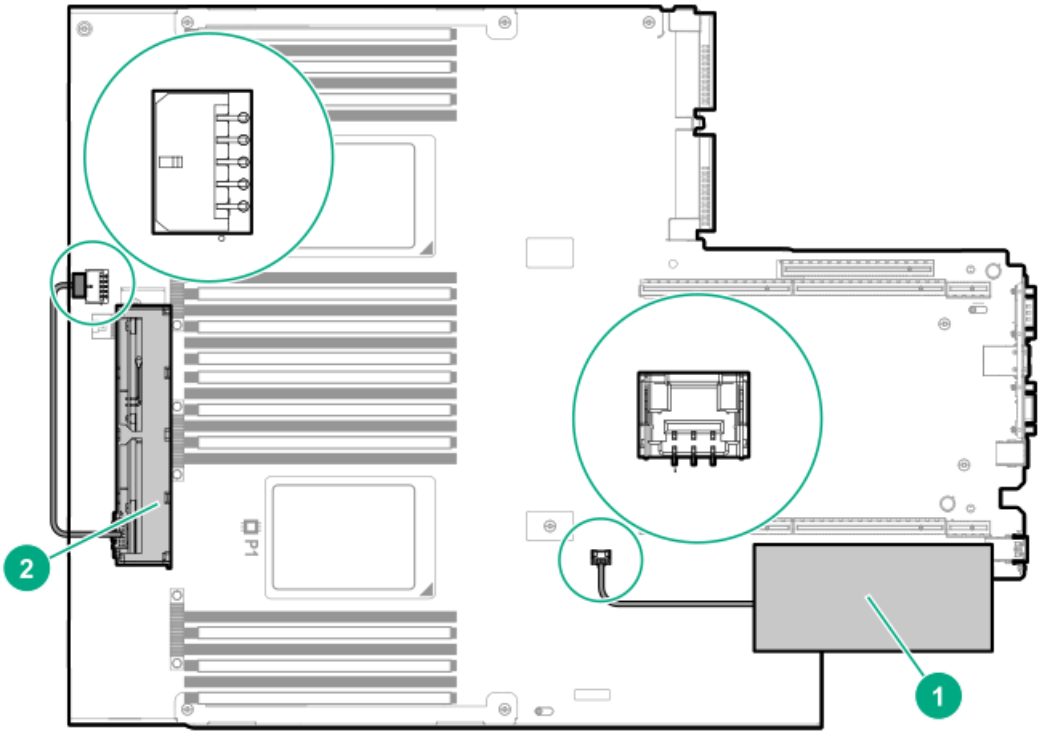
10. Install the primary PCI riser cage.
11. Connect the cables.
    - 8 SFF



IMPORTANT:

To enable SmartCache or CacheCade in a P-class type-p Smart Array controller, you must:

- Connect the controller backup power cable to the controller backup power connector on the system or riser board.
- Connect the energy pack cable to the energy pack connector on the system board.



12. Install the access panel.
13. Install the server in the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Installing an HPE Smart Array P816i-a SR Gen10 Controller option

Prerequisites

Before installing this option, be sure that you have the following:

- The components included with the hardware option kit
- Additional cables, as required. For more information, see Cabling
- T-15 Torx screwdriver

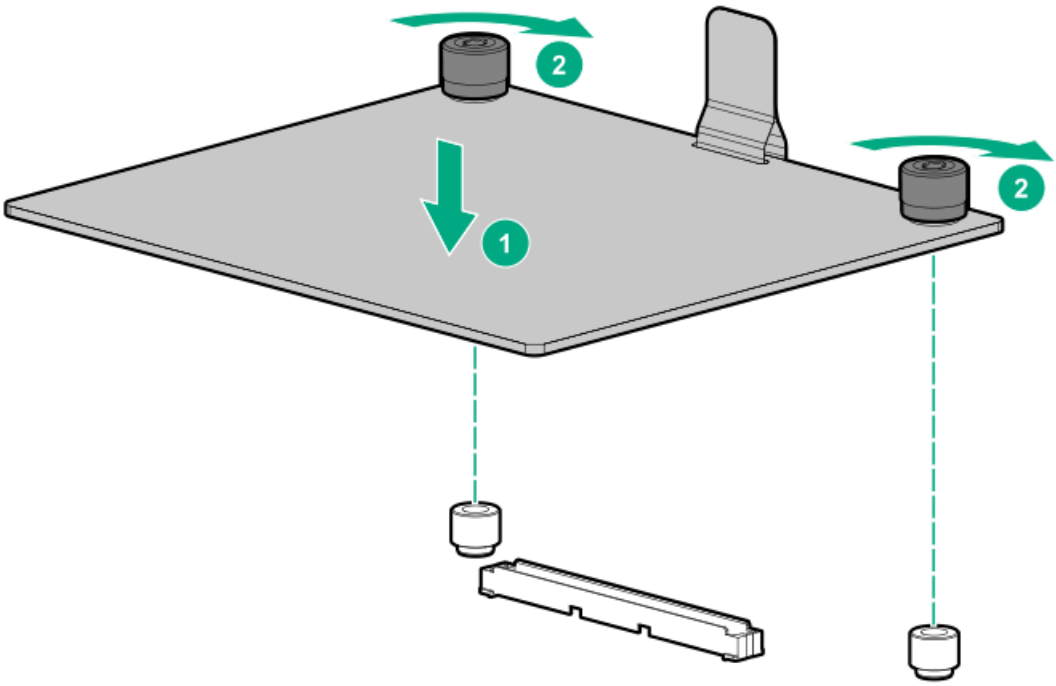
Procedure

1. Observe the following alerts:

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

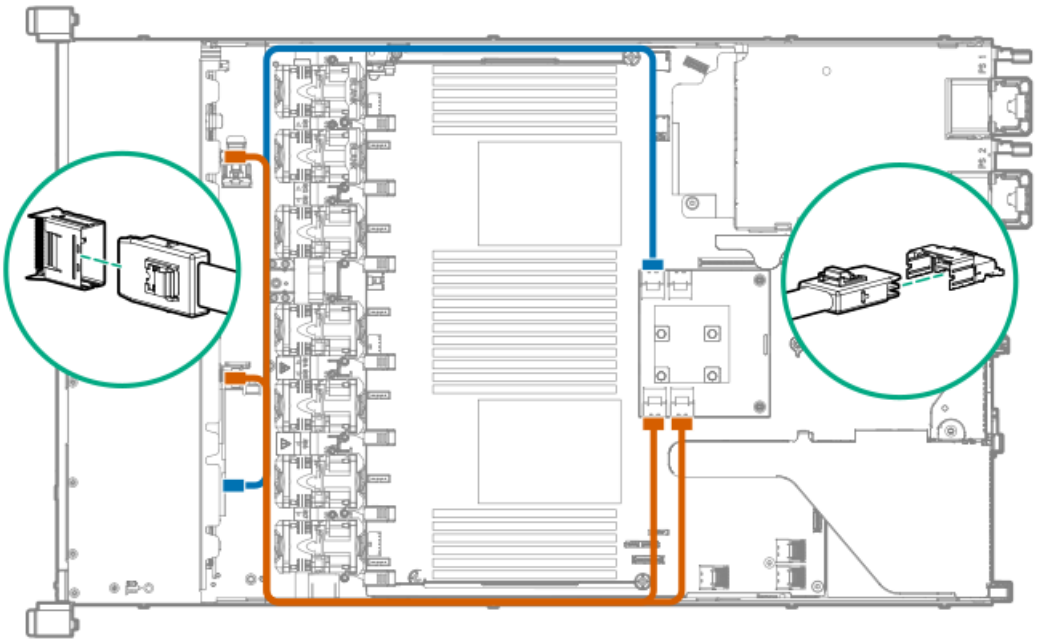
   △ **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

2. Back up all server data.
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
6. Remove the access panel.
7. Install the controller.



8. Connect the cables.

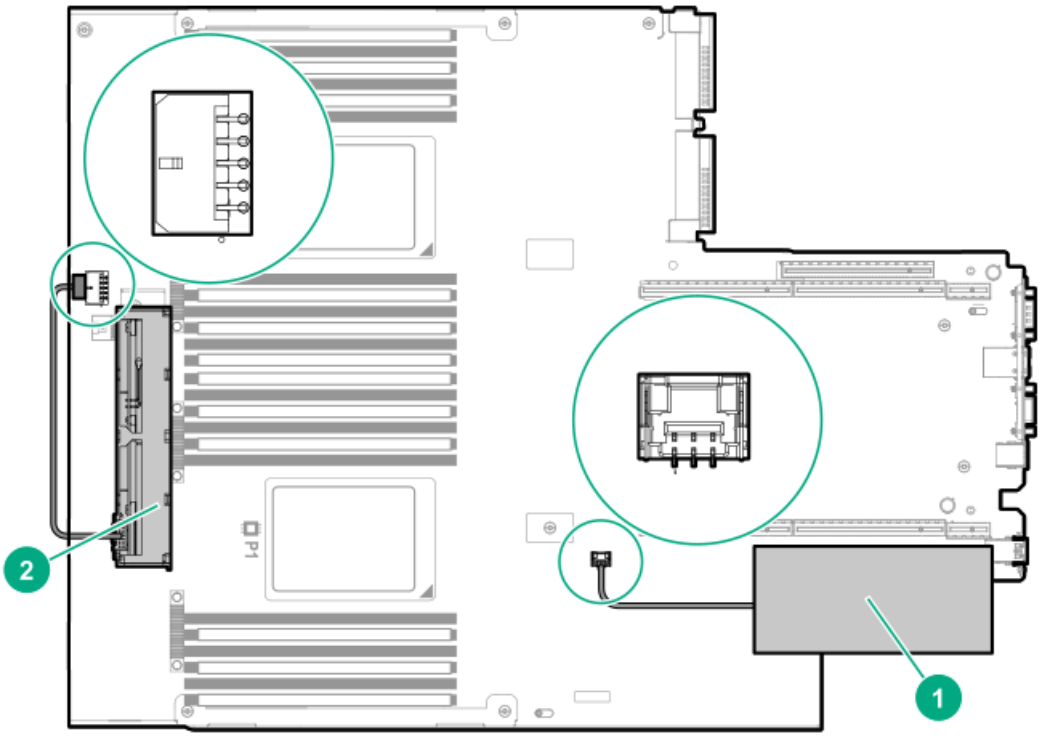
   The following illustration shows the 8+2 SFF backplane configuration connected to the controller. Additional cabling options are available.



IMPORTANT:

To enable SmartCache or CacheCade in a P-class type-p Smart Array controller, you must:

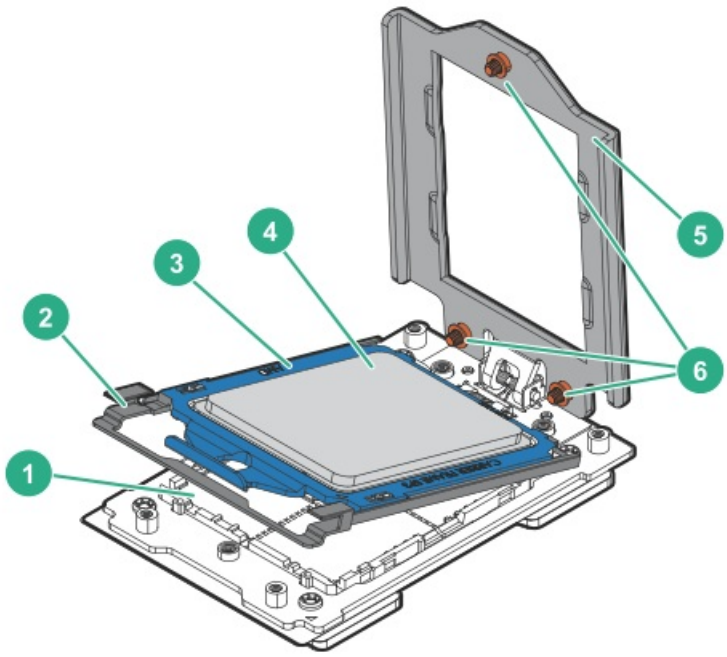
- Connect the controller backup power cable to the controller backup power connector on the system or riser board.
- Connect the energy pack cable to the energy pack connector on the system board.



9. Install the access panel.
10. Install the server in the rack.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server.

Processor and heatsink options

Processor and socket components



Item	Description
1	Pin field
2	Rail frame
3	Carrier frame
4	Processor
5	Force frame
6	Captive screws (Torx T-20)

Installing a processor

Hewlett Packard Enterprise recommends identifying the processor and socket components before performing this procedure.

Prerequisites

Before you perform this procedure, make sure that you have the following items available:

- The components included with the hardware option kit
- T-20 Torx screwdriver
- 1.0 gm (0.5 ml) or two 0.5 gm (0.25 ml) of thermal grease
- Alcohol wipe

Procedure

1. Observe the following alerts:

   CAUTION: To avoid damage to the processor or system board, only authorized personnel should attempt to replace or install the processor in this server.

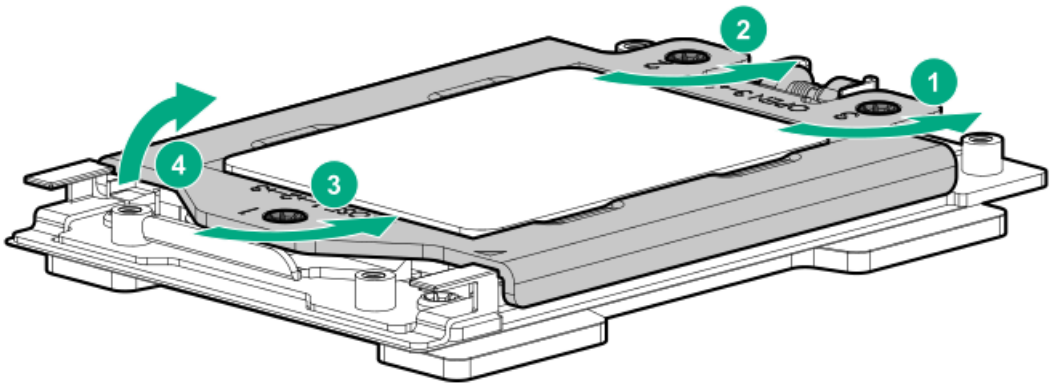
   CAUTION: To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

   CAUTION: If installing a processor with a faster speed, update the system ROM before installing the processor.

   To download firmware and view installation instructions, see the **Hewlett Packard Enterprise Support Center website**.

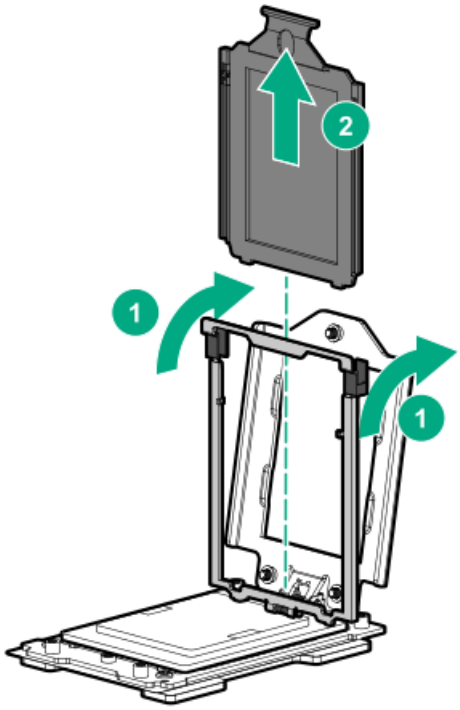
   CAUTION: THE CONTACTS ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the socket or processor, do not touch the contacts.

2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Remove the access panel.
6. Remove the air baffle
7. Remove the heatsink blank.
8. Use a T-20 Torx screwdriver to loosen the three captive screws in the sequence shown in the following image, and then pivot the force frame upward.



9. Remove the external cap:
   a. Hold the lift tabs near the front end of the rail frame, and then pivot the rail frame to the vertical position.
   b. Slide the external cap out of the rail frame.

      Retain the external cap for future use.

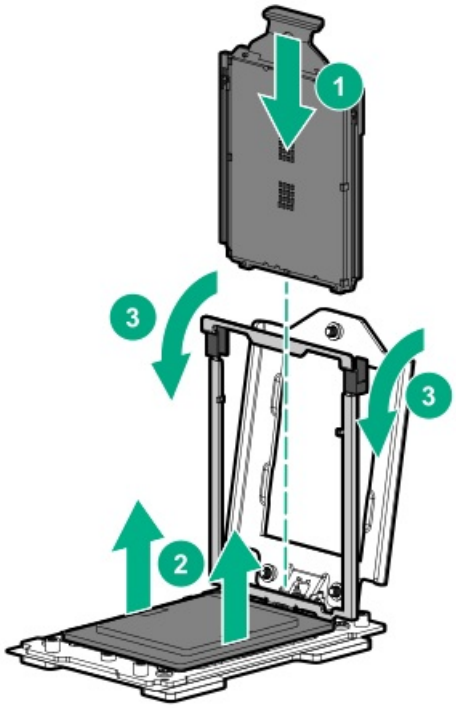


10. Install the processor:
    a. Hold the processor by its carrier handle and slide the processor into the rail frame until it engages with a click sound.
    b. Remove the pin field cover cap.

> △ **CAUTION:**
>
> To prevent the risk of damaging the pins in the processor socket, do not reinstall the pin field cover cap after removing it.

    c. Hold the lift tabs near the front end of the rail frame, and then pivot the rail frame to the closed position.

       A click sound indicates that the rail frame is properly engaged.



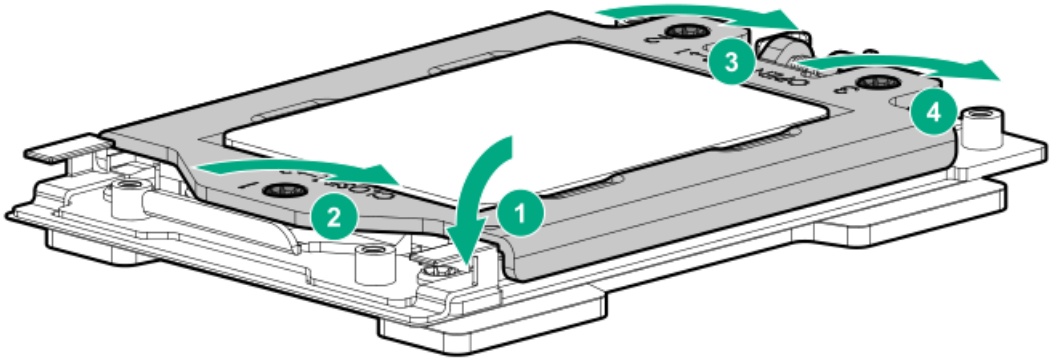
11. Close the force frame:

> **CAUTION:**
>
> Do not overtighten the screws as this might damage the system board or the processor socket.

a. Pivot the spring loaded force frame downward and hold it down (callout 1).

b. Use a T-20 Torx screwdriver to tighten the captive screws in the sequence shown in the following image (callouts 2–4).

When using a torque wrench to tighten the screws, apply a torque of 1.58 N·m (14 lbf-in).



12. Remove the thermal interface protective cover from the new heatsink.

13. Install the heatsink:

> **CAUTION:**
>
> To prevent mechanical damage or depositing oil on your hands or other contaminant to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

> **CAUTION:**
>
> To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the processor.

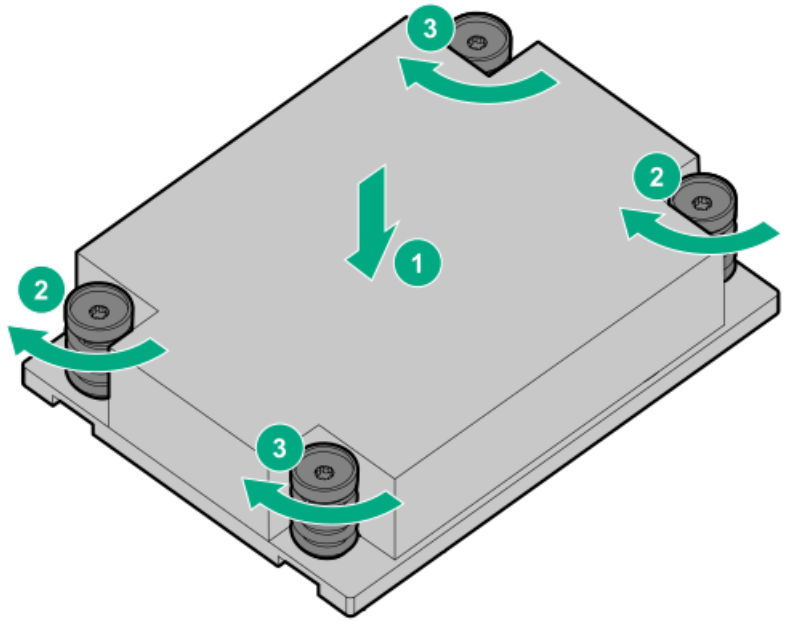
CAUTION:

Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

a. Position the heatsink on top of the processor, ensuring that it is properly seated before securing the screws.

b. Use a T-20 Torx screwdriver to tighten the captive screws in the sequence specified on the heatsink label.

When using a torque wrench to tighten the screws, apply a torque of 1.58 N-m (14 lbf-in).



14. Install the air baffle
15. Install the access panel.
16. Install the server into the rack.
17. Connect each power cord to the server.
18. Connect each power cord to the power source.
19. Power up the server.

Installing a heatsink

This procedure shows a standard heatsink as an example. The installation process is the same for both the standard and high-performance heatsinks.

Hewlett Packard Enterprise recommends identifying the processor and socket components before performing this procedure.

Prerequisites

Before you perform this procedure, make sure that you have the following items available:

- The components included with the hardware option kit
- T-20 Torx screwdriver
- 1.0 gm (0.5 ml) or two 0.5 gm (0.25 ml) of thermal grease
- Alcohol wipe

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the air baffle.
6. Allow the existing heatsink to cool.
7. Remove the heatsink:

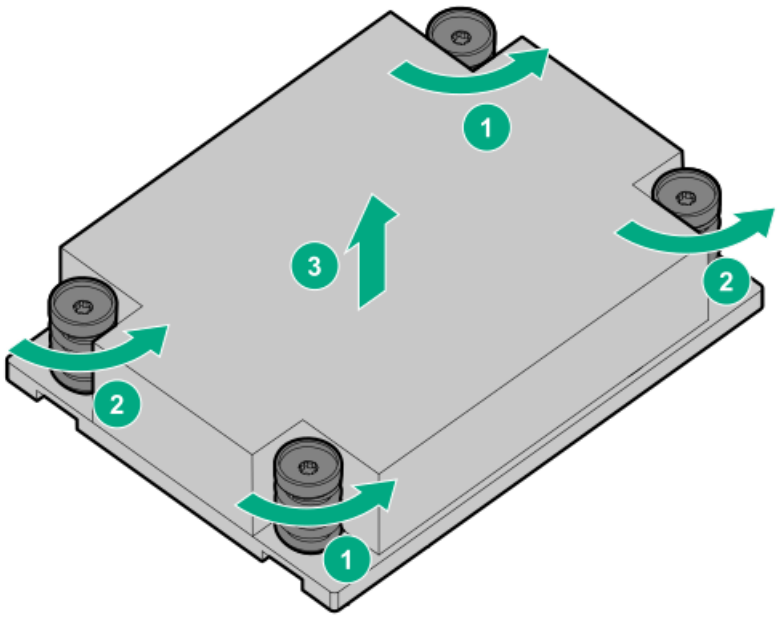
CAUTION:

To prevent mechanical damage or depositing oil on your hands or other contaminant to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

CAUTION:

Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

   a. Use a T-20 Torx screwdriver to loosen the captive screws in the sequence specified on the heatsink label.
   b. Lift the heatsink away from the system board.



c. Place the heatsink on a flat work surface with its contact side facing upward.

8. Use an alcohol wipe to remove the existing thermal grease from the processor.

   Allow the alcohol to evaporate before continuing.

9. Remove the thermal interface protective cover from the new heatsink.

10. Install the heatsink:

> **CAUTION:**
>
> To prevent mechanical damage or depositing oil on your hands or other contaminant to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

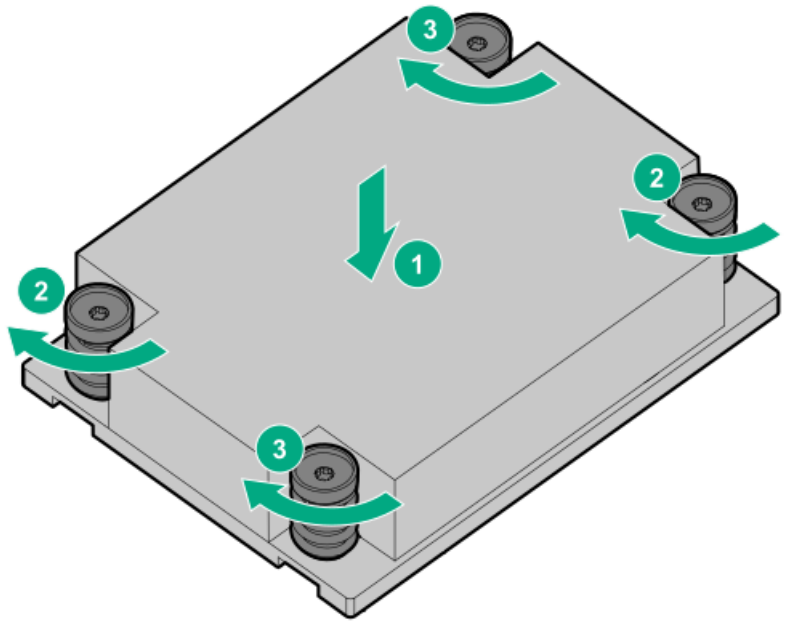
> **CAUTION:**
>
> To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the processor.

> **CAUTION:**
>
> Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

a. Position the heatsink on top of the processor, ensuring that it is properly seated before securing the screws.

b. Use a T-20 Torx screwdriver to tighten the captive screws in the sequence specified on the heatsink label.

   When using a torque wrench to tighten the screws, apply a torque of 1.58 N-m (14 lbf-in).



11. Install the air baffle.
12. Install the access panel.
13. Install the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Installing the Systems Insight Display power module

Prerequisites

Before installing this option, be sure you have the following:

- The components included with the hardware option kit
- T-10 Torx screwdriver

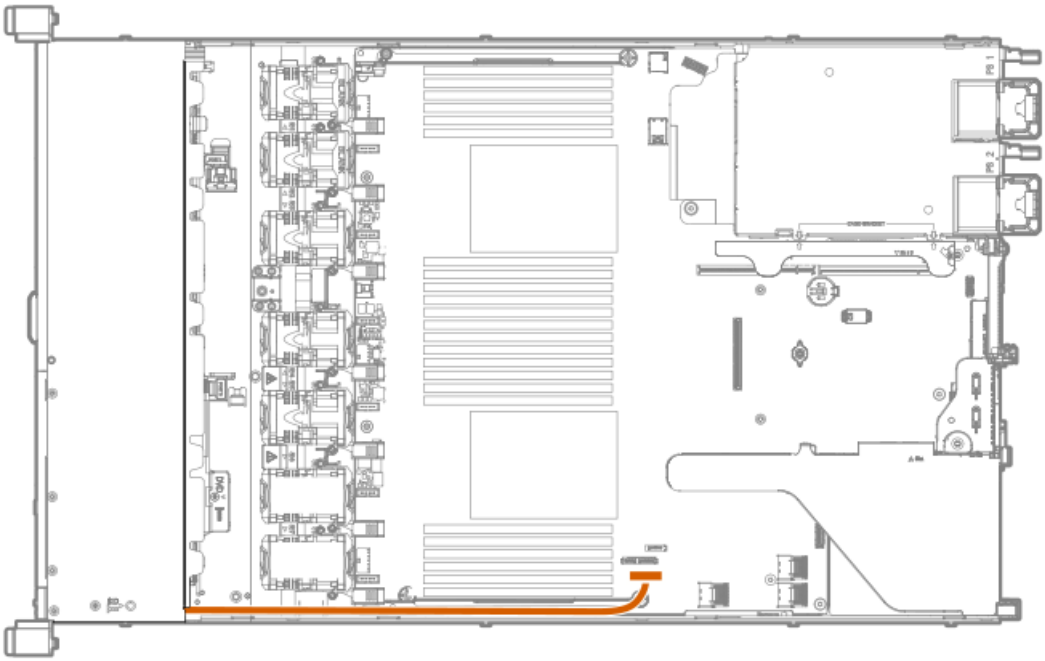
Procedure

1. Observe the following alerts:

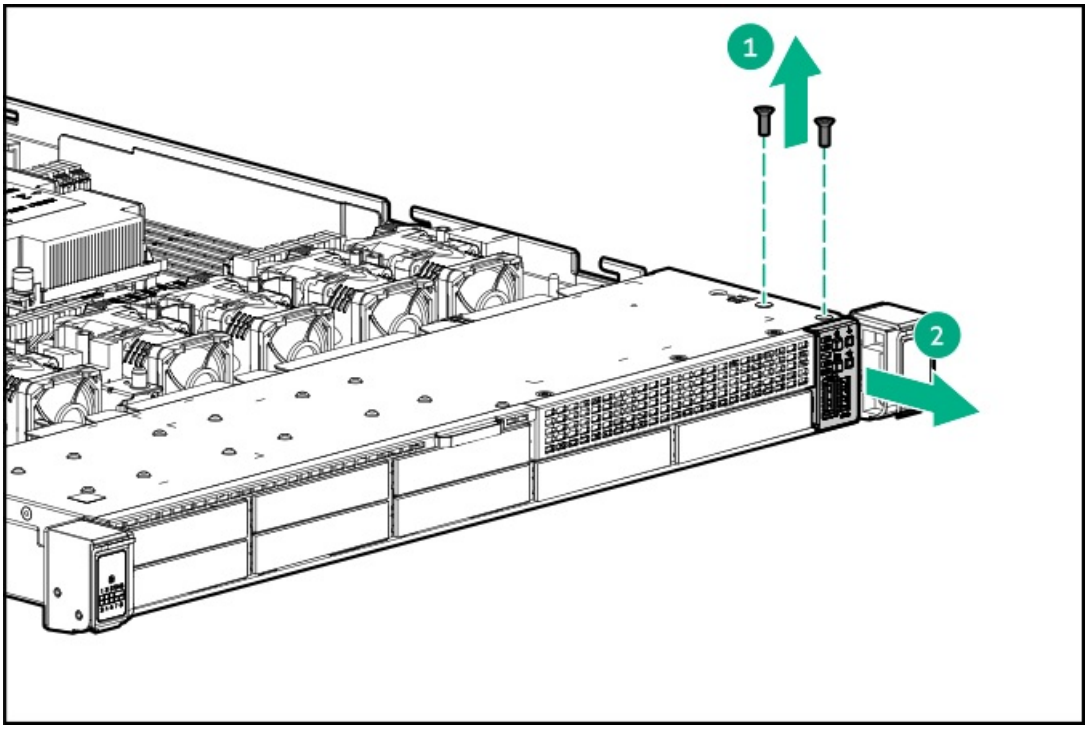
   ⚠ **WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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

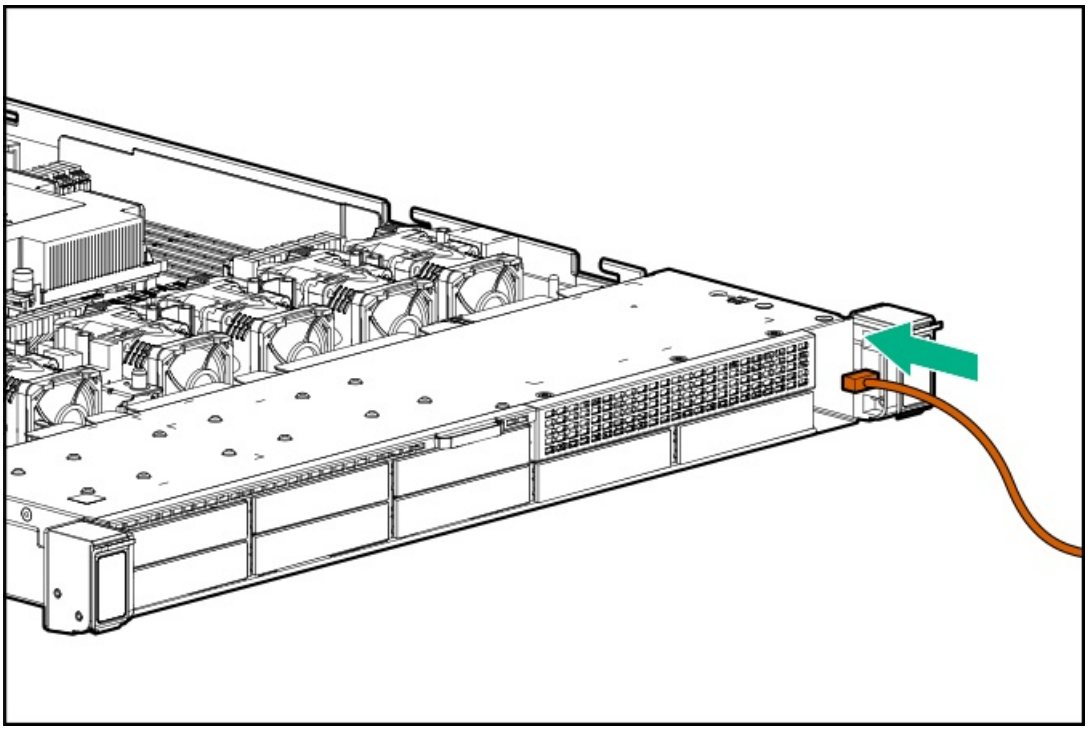
2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
6. Remove the access panel (Remove the access panel).
7. Disconnect the Power/UID/USB cable from the front power button/USB 3.0 on the system board.



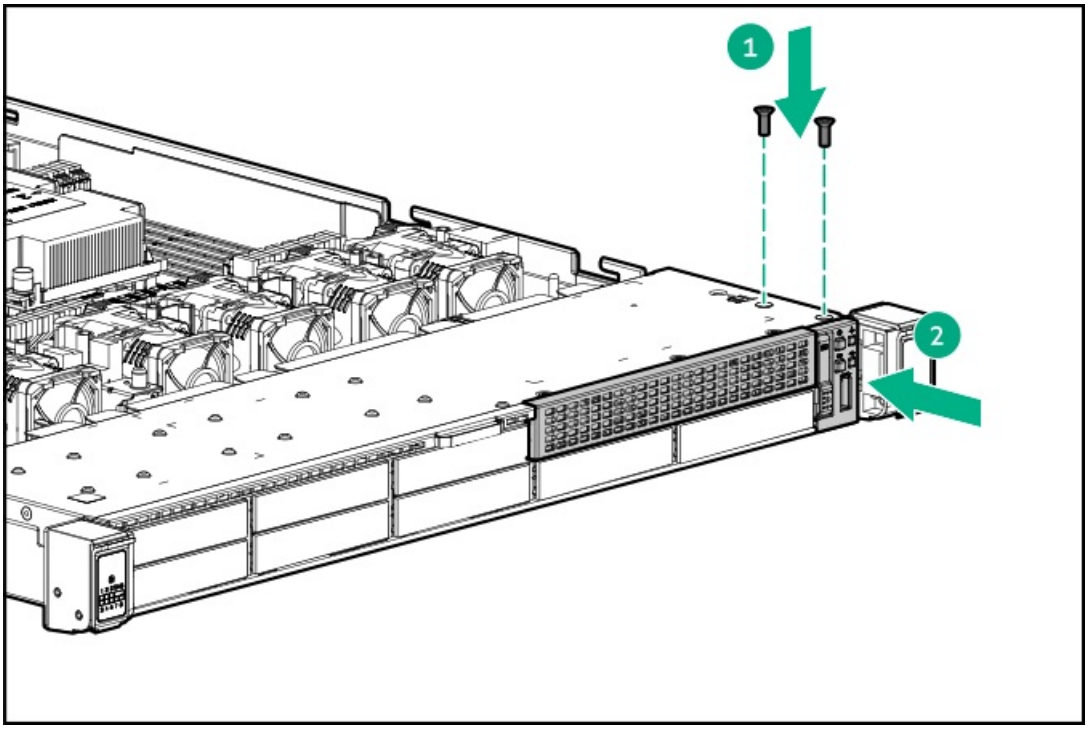
8. Using a Torx T-10 screwdriver, remove the Power/UID/USB assembly.



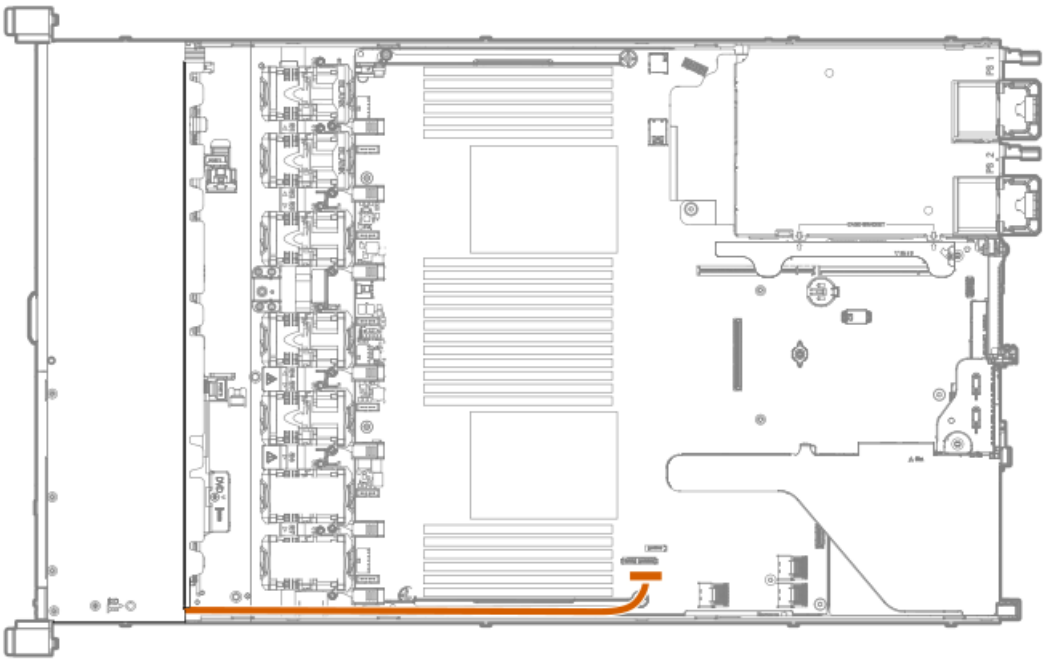
9. Guide the SID cable through the front of the server.



10. Install the SID module into the front panel. Using a T-10 Torx screwdriver, secure the module to the chassis with the screws from the kit.



11. Connect the SID cables to the front power button/USB 3.0 connector on the system board.



Installing the serial cable option

Prerequisites

Before installing this option, be sure you have the following:

- The components included with the hardware option kit
- 5 mm socket

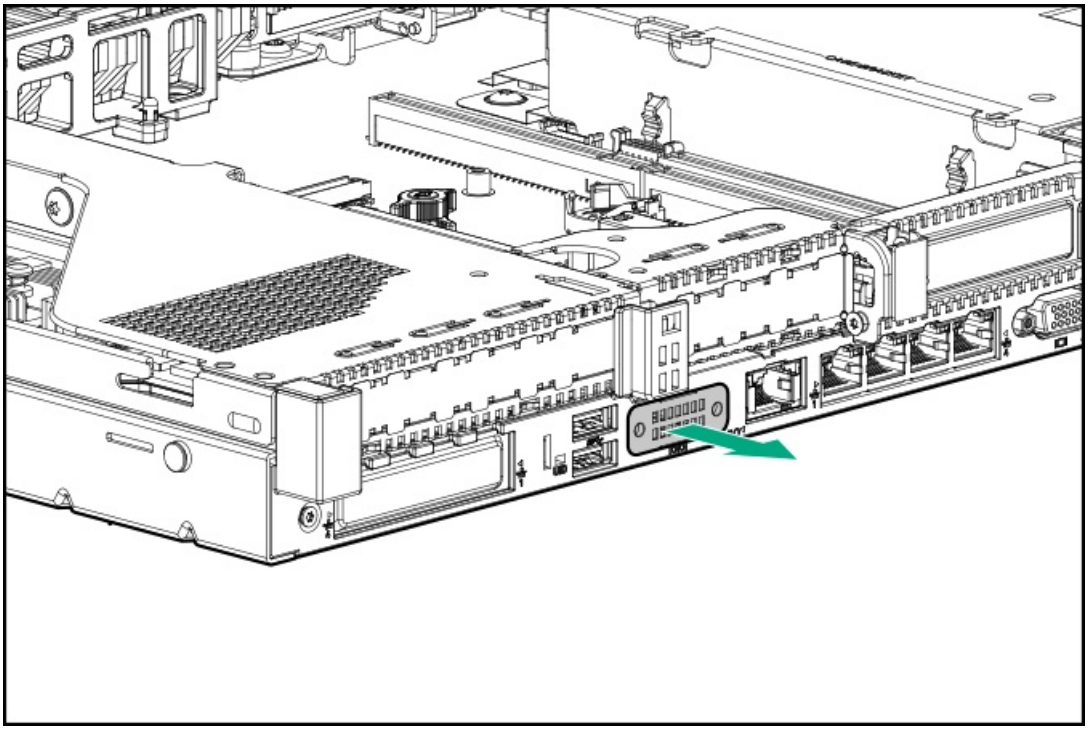
Procedure

1. Observe the following alerts:

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

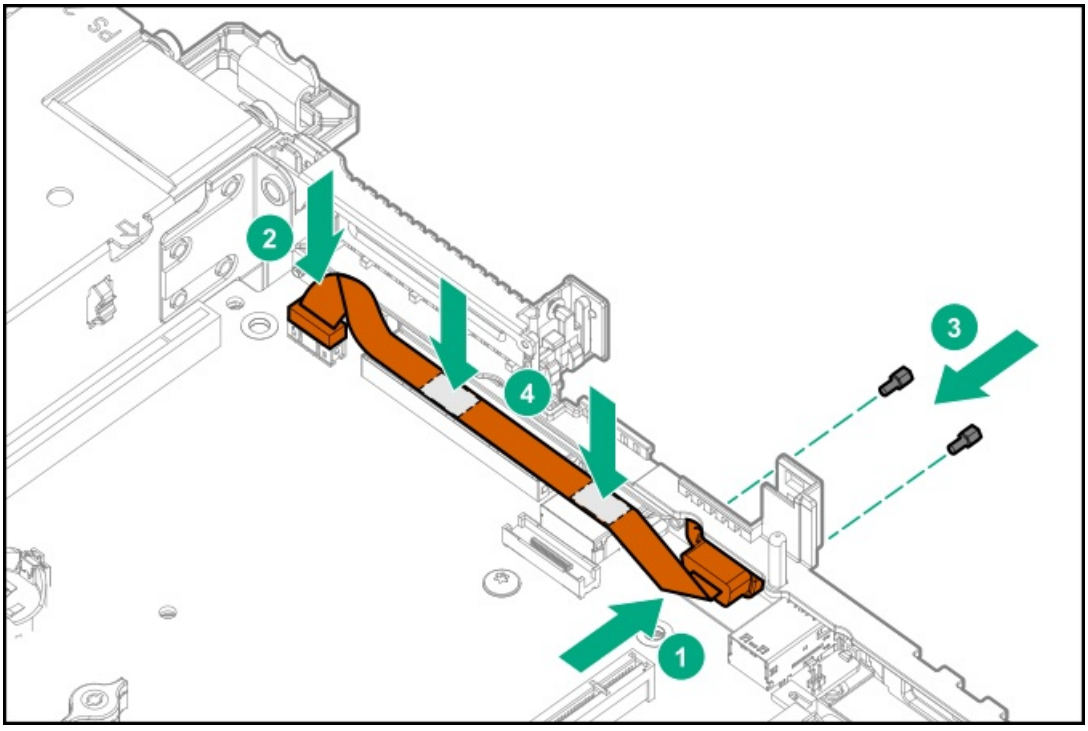
   ⚠ **CAUTION:** To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause electrostatic discharge.

2. Back up all server data.
3. Power down the server (Power down the server).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
6. Remove the access panel (Remove the access panel).
7. Remove the serial cable blank.



8. Connect the serial cable option, and then secure the cable with two T-10 screws. Then, remove the backing from the double-sided tape and press down where indicated.

   A 5 mm socket is required for this step.



9. Install the access panel (Install the access panel).
10. Install the server in the rack.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server (Power up the server).

Installing the Chassis Intrusion Detection switch option

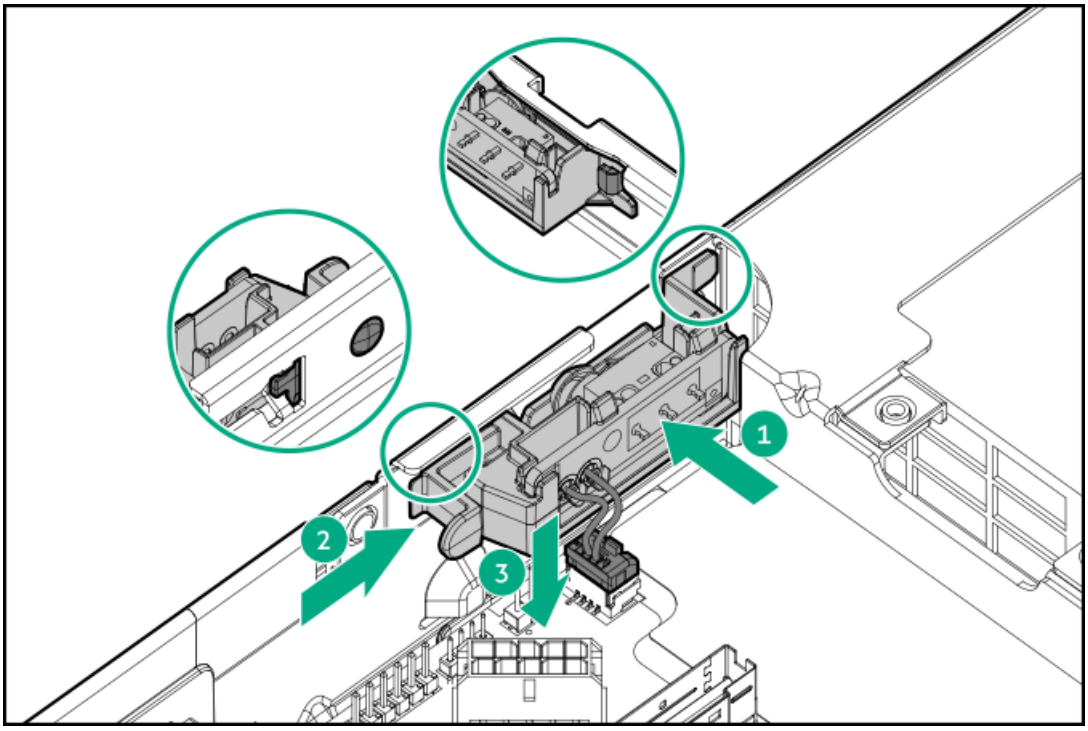
Prerequisites

Before installing this option, be sure you have the following:

- The components included with the hardware option kit

Procedure

1. Power down the server (Power down the server).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   a. Extend the server from the rack (Extend the server from the rack).
   b. Remove the server from the rack (Remove the server from the rack).
4. Remove the access panel (Remove the access panel).
5. Assemble the connector/cable harness pin openings to the alignment pegs on the DIMM guard.
6. Install the DIMM guard, and then connect the cable to the system board.



7. Install the access panel (Install the access panel).
8. Install the server in the rack.
9. Connect each power cord to the server.
10. Connect each power cord to the power source.
11. Power up the server (Power up the server).

Installing the Pensando DSP DSC-25 2p SFP28 card

IMPORTANT:

Before beginning this procedure, follow the warnings and cautions.

The DSC-25 card can be installed in any PCIe slot if it is not installed with the iLO Sideband ALOM Module.

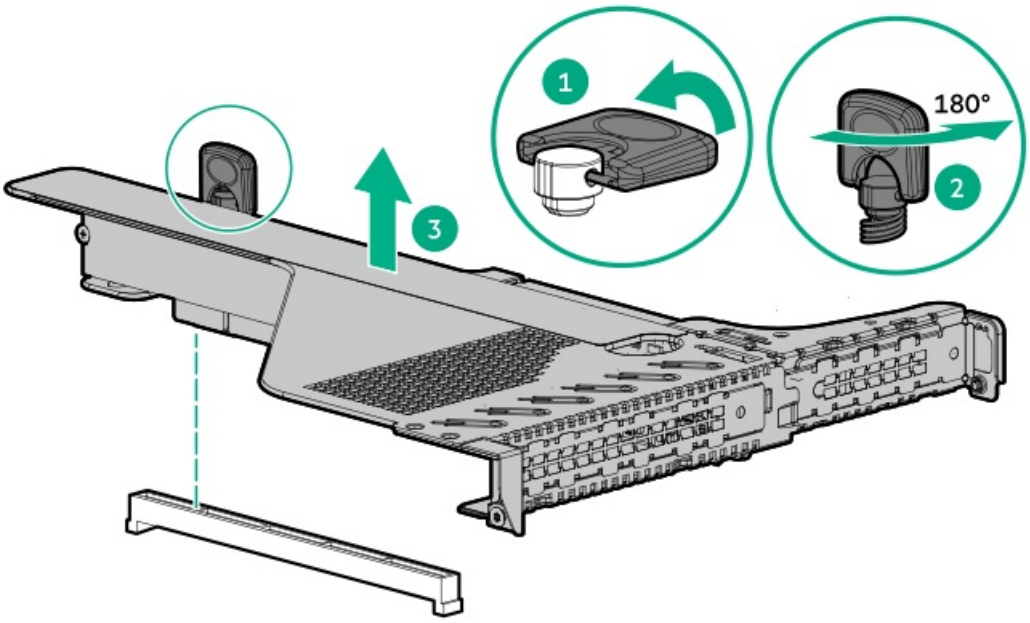
Prerequisites

Before you perform this procedure, make sure that you have the following items available:

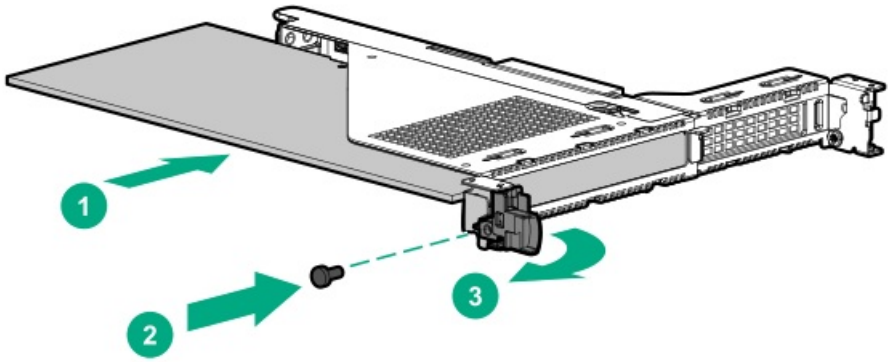
- The components included with the hardware option kit
- T-15 Torx screwdriver

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. If applicable, remove the primary riser cage.



6. Remove the primary riser blank.
7. Install the DSC-25 card.



8. Install the primary PCI riser cage.
9. Install the access panel.
10. Install the server in the rack.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server.

Warnings and cautions

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:

A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION:

To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

Energy pack options

Hewlett Packard Enterprise offers two centralized backup power source options to back up write cache content on P-class Smart Array controllers in case of an unplanned server power outage.

- HPE Smart Storage Battery
- HPE Smart Storage Hybrid Capacitor

> **IMPORTANT:**
>
> The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 and later servers.

One energy pack option can support multiple devices. An energy pack option is required for P-class Smart Array controllers. Once installed, the status of the energy pack displays in HPE iLO. For more information, see the HPE iLO user guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/ilo-docs**).

HPE Smart Storage Battery

The HPE Smart Storage Battery supports the following devices:

- HPE Smart Array SR controllers
- HPE Smart Array MR controllers

A single 96W battery can support up to 24 devices.

After the battery is installed, it might take up to two hours to charge. Controller features requiring backup power are not re-enabled until the battery is capable of supporting the backup power.

This server supports the 96W HPE Smart Storage Battery with the 145mm cable.

HPE Smart Storage Hybrid Capacitor

The HPE Smart Storage Hybrid Capacitor supports the following devices:

- HPE Smart Array SR controllers
- HPE Smart Array MR controllers

The capacitor pack can support up to three devices.

This server supports the HPE Smart Storage Hybrid Capacitor with the 145mm cable.

Before installing the HPE Smart Storage Hybrid Capacitor, verify that the system BIOS meets the minimum firmware requirements to support the capacitor pack.

IMPORTANT:

If the system BIOS or controller firmware is older than the minimum recommended firmware versions, the capacitor pack will only support one device.

The capacitor pack is fully charged after the system boots.

Minimum firmware versions

Product	Minimum firmware version
HPE ProLiant DL365 Gen10 Plus Server system ROM	1.40
HPE Smart Array SR controllers	1.90
HPE Smart Array MR controllers	24.23.0-0041

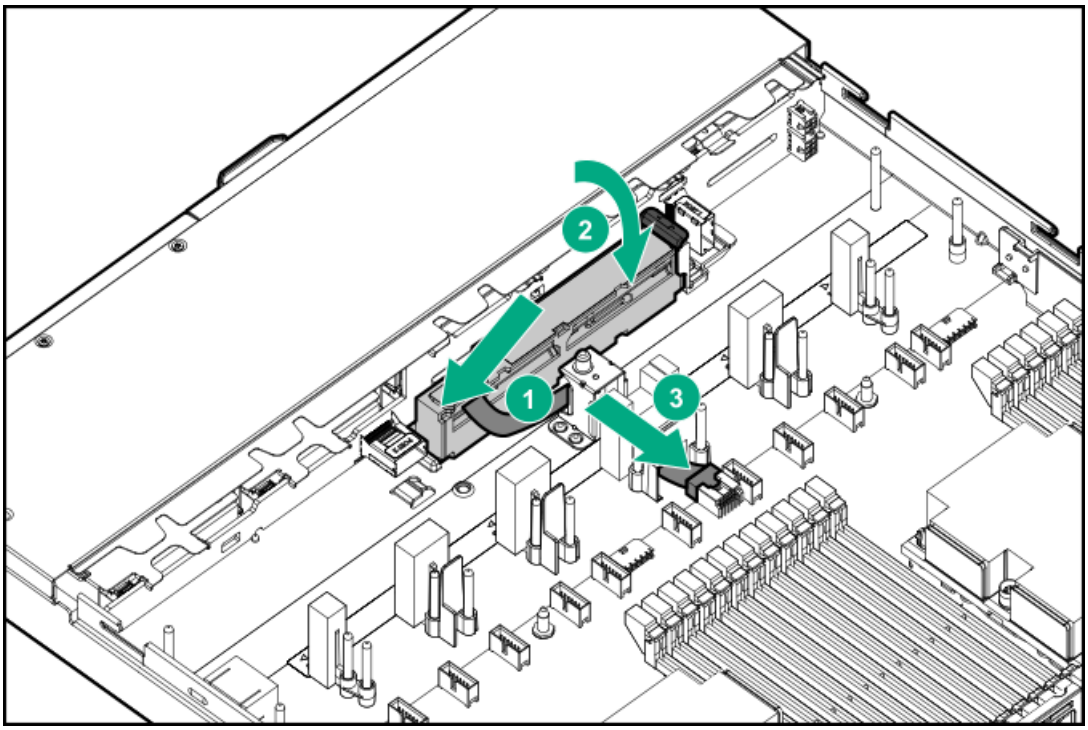
Installing an energy pack

Prerequisites

Before installing this option, be sure you that have the components included with the hardware option kit.

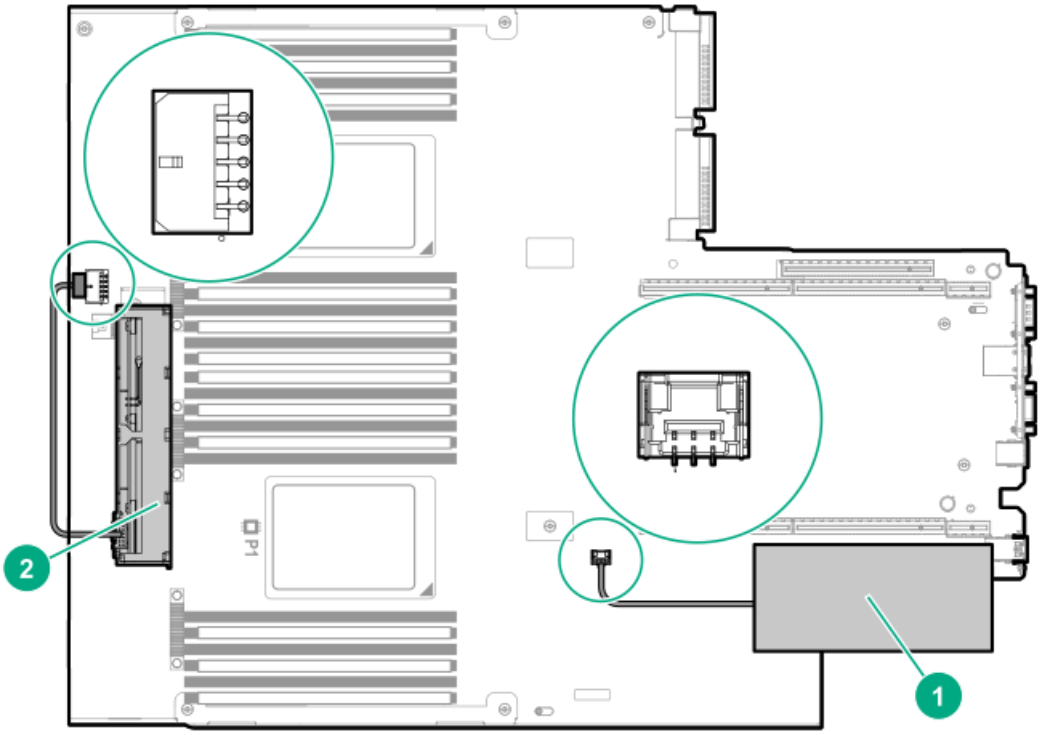
Procedure

1. Power down the server (Power down the server).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. Install the energy pack and connect the energy pack cable.



IMPORTANT:
To enable SmartCache or CacheCade in a P-class type-p Smart Array controller, you must:

- Connect the controller backup power cable to the controller backup power connector on the system or riser board.
- Connect the energy pack cable to the energy pack connector on the system board.



6. Install the access panel (Install the access panel).
7. Install the server in the rack.
8. Connect each power cord to the server.
9. Connect each power cord to the power source.
10. Power up the server.

HPE Trusted Platform Module 2.0 Gen10 Plus option

Overview

Use these instructions to install and enable an HPE TPM 2.0 Gen10 Plus Kit in a supported server. This option is not supported on Gen10 and earlier servers.

This procedure includes three sections:

1. Installing the Trusted Platform Module board.
2. Enabling the Trusted Platform Module.
3. Retaining the recovery key/password.

HPE TPM 2.0 installation is supported with specific operating system support such as Microsoft Windows Server 2012 R2 and later. For more information about operating system support, see the product QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**). For more information about Microsoft Windows BitLocker Drive Encryption feature, see the Microsoft website (**https://www.microsoft.com**).

CAUTION: If the TPM is removed from the original server and powered up on a different server, data stored in the TPM including keys will be erased.

IMPORTANT: In UEFI Boot Mode, the can be configured to operate as TPM 2.0 (default) or TPM 1.2 on a supported server. In Legacy Boot Mode, the configuration can be changed between TPM 1.2 and TPM 2.0, but only TPM 1.2 operation is supported.

HPE Trusted Platform Module 2.0 guidelines

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

Hewlett Packard Enterprise SPECIAL REMINDER: Before enabling TPM functionality on this system, you must ensure that your intended use of TPM complies with relevant local laws, regulations and policies, and approvals or licenses must be obtained if applicable.

For any compliance issues arising from your operation/usage of TPM which violates the above mentioned requirement, you shall bear all the liabilities wholly and solely. Hewlett Packard Enterprise will not be responsible for any related liabilities.

慧与特别提醒：在您启用系统中的TPM功能前，请务必确认您对TPM的使用遵守当地相关法律、法规及政策，并已事先获得所需的一切批准及许可（如适用），因您未获得相应的操作/使用许可而导致的违规问题，皆由您自行承担全部责任，与慧与无涉。

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, Hewlett Packard Enterprise 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, Hewlett Packard Enterprise Service provides a TPM with the spare system board.
- Any attempt to remove the cover of an installed TPM from the system board can damage the TPM cover, the TPM, and the system board.
- If the TPM is removed from the original server and powered up on a different server, all data stored in the TPM including keys will be erased.
- When using BitLocker, always retain the recovery key/password. The recovery key/password is required to complete Recovery Mode after BitLocker detects a possible compromise of system integrity.
- Hewlett Packard Enterprise is not liable for blocked data access caused by improper TPM use. For operating instructions, see the TPM documentation or the encryption technology feature documentation provided by the operating system.

Installing and enabling the HPE TPM 2.0 Gen10 Plus option

Installing the Trusted Platform Module board

Preparing the server for installation

Procedure

1. Observe the following warnings:

   > ⚠ **WARNING:** The front panel Power On/Standby button does not shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.
   > To reduce the risk of personal injury, electric shock, or damage to the equipment, remove power from the server:
   > - For rack and tower servers, remove the power cord.
   > - For server blades and compute modules, remove the server blade or compute module from the enclosure.

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

2. Update the system ROM.

   Locate and download the latest ROM version from the Hewlett Packard Enterprise Support Center website (**https://www.hpe.com/support/hpesc**). To update the system ROM, follow the instructions on the website.

3. Power down the server.
   a. Shut down the OS as directed by the OS documentation.
   b. To place the server in standby mode, press the Power On/Standby button. When the server enters standby power mode, the system power LED changes to amber.
   c. Disconnect the power cords (rack and tower servers).
4. Do one of the following:
   - Depending on your product, extend or remove the server from the rack.
   - Remove the server from the enclosure.
5. If removed, place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove any options or cables that might prevent access to the TPM connector.
8. Proceed to "Installing the TPM board and cover."

Installing the TPM board and cover

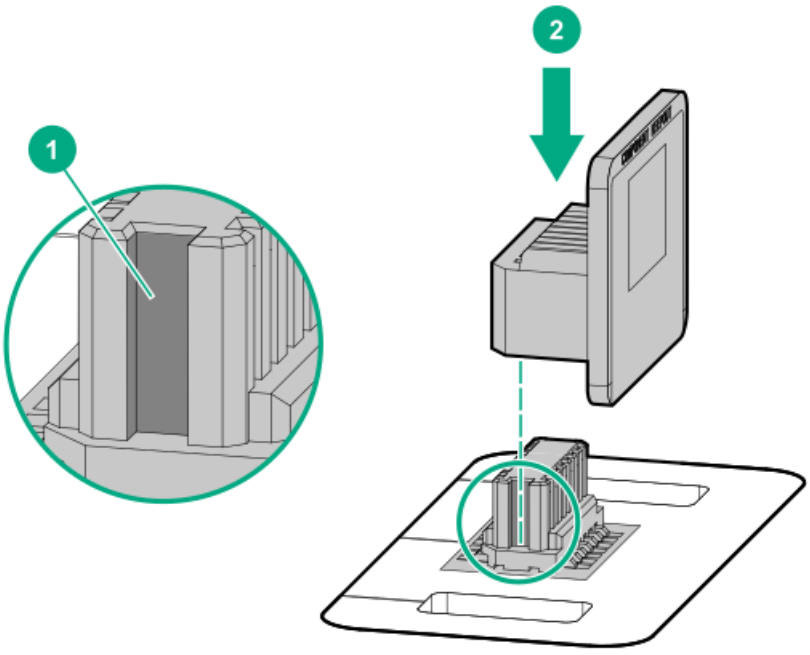
Procedure

1. Observe the following alerts:

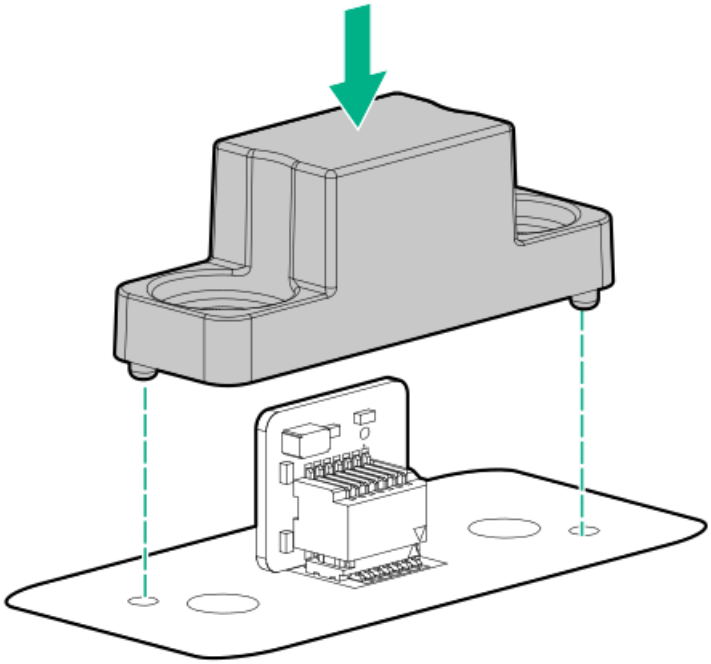
   > **CAUTION:** If the TPM is removed from the original server and powered up on a different server, data stored in the TPM including keys will be erased.

   > **CAUTION:** The TPM is keyed to install only in the orientation shown. Any attempt to install the TPM in a different orientation might result in damage to the TPM or system board.

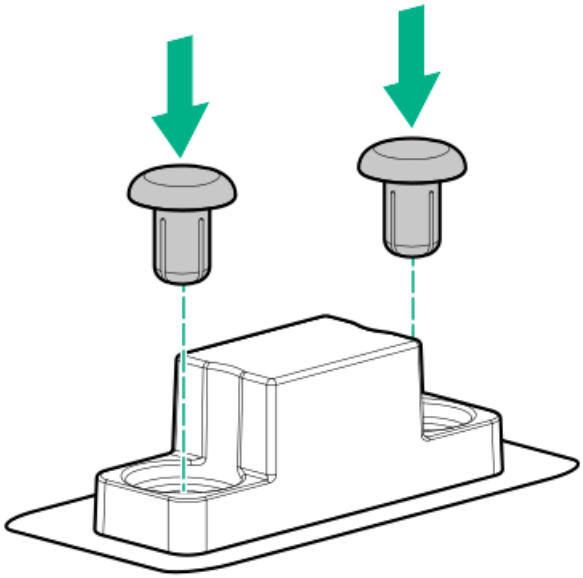
2. Install the TPM board:
   a. Locate the TPM connector on the system board. See the server hood label for the exact location.
   b. Align the TPM board with the key on the connector, and then install the TPM board. To seat the board, press the TPM board firmly into the connector.



3. Install the TPM cover:
   a. Align the pins on the cover with the openings on the system board.
   b. Press straight down on the middle of the cover until the alignment pins are seated into the holes.



4. Secure the rivets into place by pushing them firmly through the holes in the TPM cover.



5. Proceed to "Preparing the server for operation."

Preparing the server for operation

Procedure

1. Install any options or cables previously removed to access the TPM connector.
2. Install the access panel.
3. Do one of the following:
   - Slide or install the server into the rack.
   - Install the server into the enclosure.
4. Power up the server.
   a. Connect the power cords (rack and tower servers).
   b. Press the Power On/Standby button.

Enabling the Trusted Platform Module

When enabling the Trusted Platform module, observe the following guidelines:

- By default, the Trusted Platform Module is enabled as TPM 2.0 when the server is powered on after installing it.
- In UEFI Boot Mode, the Trusted Platform Module can be configured to operate as TPM 2.0 (default) or TPM 1.2.
- In Legacy Boot Mode, the Trusted Platform Module configuration can be changed between TPM 1.2 and TPM 2.0 (default), but only TPM 1.2 operation is supported.

Enabling the Trusted Platform Module as TPM 2.0

Procedure

1. During the server startup sequence, press the F9 key to access System Utilities.
2. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options.
3. Verify the following:
   - "Current TPM Type" is set to TPM 2.0.
   - "Current TPM State" is set to Present and Enabled.
   - "TPM Visibility" is set to Visible.
4. If changes were made in the previous step, press the F10 key to save your selection.
5. If F10 was pressed in the previous step, do one of the following:
   - If in graphical mode, click Yes.
   - If in text mode, press the Y key.
6. Press the ESC key to exit System Utilities.
7. If changes were made and saved, the server prompts for reboot request. Press the Enter key to confirm reboot.

   If the following actions were performed, the server reboots a second time without user input. During this reboot, the TPM setting becomes effective.
   - Changing from TPM 1.2 and TPM 2.0
   - Changing TPM bus from FIFO to CRB
   - Enabling or disabling TPM
   - Clearing the TPM
8. Enable TPM functionality in the OS, such as Microsoft Windows BitLocker or measured boot.

   For more information, see the **Microsoft website**.

Enabling the Trusted Platform Module as TPM 1.2

Procedure

1. During the server startup sequence, press the F9 key to access System Utilities.
2. From the System Utilities screen select System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options.
3. Change the "TPM Mode Switch Operation" to TPM 1.2.
4. Verify that "TPM Visibility" is set to Visible.
5. Press the F10 key to save your selection.
6. When prompted to save the change in System Utilities, do one of the following:
   - If in graphical mode, click Yes.
   - If in text mode, press the Y key.
7. Press the ESC key to exit System Utilities.

   The server reboots a second time without user input. During this reboot, the TPM setting becomes effective.
8. Enable TPM functionality in the OS, such as Microsoft Windows BitLocker or measured boot.

   For more information, see the **Microsoft website**.

Retaining the BitLocker 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.

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
Active Health System	Online and Offline
HPE iLO 5	Online and Offline
HPE Smart Storage Administrator	Online and Offline
iLO RESTful API	Online and Offline
Intelligent Provisioning	Online and Offline
Scripting Toolkit for Windows and Linux	Online
Service Pack for ProLiant	Online and Offline
Smart Update Manager	Online and Offline
UEFI System Utilities	Offline

Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**).

Active Health System Viewer

Active Health System Viewer (AHSV) is an online tool used to read, diagnose, and resolve server issues quickly using AHS uploaded data. AHSV provides Hewlett Packard Enterprise recommended repair actions based on experience and best practices. AHSV provides the ability to:

- Read server configuration information
- View Driver/Firmware inventory
- Review Event Logs
- Respond to Fault Detection Analytics alerts
- Open new and update existing support cases

Active Health System

The Active Health System monitors and records changes in the server hardware and system configuration.

The Active Health System provides:

- Continuous health monitoring of over 1600 system parameters
- Logging of all configuration changes
- Consolidated health and service alerts with precise time stamps
- Agentless monitoring that does not affect application performance

For more information about the Active Health System, see the iLO user guide at the following website: **https://www.hpe.com/support/ilo-docs**.

Active Health System data collection

The Active Health System does not collect information about your operations, finances, customers, employees, or partners.

Examples of information that is collected:

- Server model and serial number
- Processor model and speed
- Storage capacity and speed
- Memory capacity and speed
- Firmware/BIOS and driver versions and settings

The Active Health System does not parse or change OS data from third-party error event log activities (for example, content created or passed through the OS).

Active Health System Log

The data collected by the Active Health System is stored in the Active Health System Log. The data is logged securely, isolated from the operating system, and separate from customer data. Host resources are not consumed in the collection and logging of Active Health System data.

When the Active Health System Log is full, new data overwrites the oldest data in the log.

It takes less than 5 minutes to download the Active Health System Log and send it to a support professional to help you resolve an issue.

When you download and send Active Health System data to Hewlett Packard Enterprise, you agree to have the data used for analysis, technical resolution, and quality improvements. The data that is collected is managed according to the privacy statement, available at **https://www.hpe.com/info/privacy**.

HPE iLO 5

iLO 5 is a remote server management processor embedded on the system boards of supported HPE servers and compute modules. iLO enables the monitoring and controlling of servers from remote locations. iLO management is a powerful tool that provides multiple ways to configure, update, monitor, and repair servers remotely.

For more information about iLO, see the iLO user guide at the following website: **https://www.hpe.com/support/ilo-docs**.

iLO Federation

iLO Federation enables you to manage multiple servers from one system using the iLO web interface.

When configured for iLO Federation, iLO uses multicast discovery and peer-to-peer communication to enable communication between the systems in iLO Federation groups.

When you navigate to one of the iLO Federation pages, a data request is sent from the iLO system running the web interface to its peers, and from those peers to other peers until all data for the selected iLO Federation group is retrieved.

iLO supports the following features:

- Group health status—View server health and model information.
- Group virtual media—Connect URL-based media for access by a group of servers.
- Group power control—Manage the power status of a group of servers.
- Group power capping—Set dynamic power caps for a group of servers.
- Group firmware update—Update the firmware of a group of servers.
- Group license installation—Enter a license key to activate iLO licensed features on a group of servers.
- Group configuration—Add iLO Federation group memberships for multiple iLO systems.

Any user can view information on iLO Federation pages, but a license is required for using the following features: Group virtual media, Group power control, Group power capping, Group configuration, and Group firmware update.

For more information about iLO Federation, see the iLO user guide at the following website: **https://www.hpe.com/support/ilo-docs**.

iLO RESTful API

iLO includes the iLO RESTful API, which is Redfish API conformant. The iLO RESTful API is a management interface that server management tools can use to perform configuration, inventory, and monitoring tasks by sending basic HTTPS operations (GET, PUT, POST, DELETE, and PATCH) to the iLO web server.

To learn more about the iLO RESTful API, see the Hewlett Packard Enterprise website (**https://www.hpe.com/support/restfulinterface/docs**).

For specific information about automating tasks using the iLO RESTful API, see libraries and sample code at **https://www.hpe.com/info/redfish**.

RESTful Interface Tool

The RESTful Interface Tool (iLOREST) is a scripting tool that allows you to automate HPE server management tasks. It provides a set of simplified commands that take advantage of the iLO RESTful API. You can install the tool on your computer for remote use or install it locally on a server with a Windows or Linux Operating System. The RESTful Interface Tool offers an interactive mode, a scriptable mode, and a file-based mode similar to CONREP to help decrease automation times.

For more information, see the following website: **https://www.hpe.com/info/resttool**.

iLO Amplifier Pack

iLO Amplifier Pack is an advanced server inventory, firmware and driver update solution that enables rapid discovery, detailed inventory reporting, firmware, and driver updates by leveraging iLO advanced functionality. iLO Amplifier Pack performs rapid server discovery and inventory for thousands of supported servers for the purpose of updating firmware and drivers at scale.

For more information about iLO Amplifier Pack, see the iLO Amplifier Pack User Guide at the following website: **https://www.hpe.com/support/ilo-ap-ug-en**.

Integrated Management Log

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

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

- From within HPE SIM
- From within the UEFI System Utilities
- From within the Embedded UEFI shell
- From within the iLO web interface

Intelligent Provisioning

Intelligent Provisioning is a single-server deployment tool embedded in ProLiant servers and HPE Synergy compute modules. Intelligent Provisioning simplifies server setup, providing a reliable and consistent way to deploy servers.

Intelligent Provisioning prepares the system for installing original, licensed vendor media and Hewlett Packard Enterprise-branded versions of OS software. Intelligent Provisioning also prepares the system to integrate optimized server support software from the Service Pack for ProLiant (SPP). SPP is a comprehensive systems software and firmware solution for ProLiant servers, server blades, their enclosures, and HPE Synergy compute modules. These components are preloaded with a basic set of firmware and OS components that are installed along with Intelligent Provisioning.

IMPORTANT:

HPE ProLiant XL servers do not support operating system installation with Intelligent Provisioning, but they do support the maintenance features. For more information, see "Performing Maintenance" in the Intelligent Provisioning user guide and online help.

After the server is running, you can update the firmware to install additional components. You can also update any components that have been outdated since the server was manufactured.

To access Intelligent Provisioning:

- Press F10 from the POST screen and enter either Intelligent Provisioning or HPE Rapid Setup Software.
- From the iLO web interface using Lifecycle Management. Lifecycle Management allows you to access Intelligent Provisioning without rebooting your server.

Management security

HPE ProLiant Gen10, HPE ProLiant Gen10 Plus, and HPE Apollo servers are built with some of the industry's most advanced security capabilities, out of the box, with a foundation of secure embedded management applications and firmware. The management security provided by HPE embedded management products enables secure support of modern workloads, protecting your components from unauthorized access and unapproved use. The range of embedded management and optional software and firmware available with the iLO Advanced license provides security features that help ensure protection, detection, and recovery from advanced cyber attacks. For more information, see the HPE Gen10 and Gen10 Plus Security Reference Guide at **Hewlett Packard Enterprise Support Center**.

Scripting Toolkit for Windows and Linux

The STK for Windows and Linux is a server deployment product that delivers an unattended automated installation for high-volume server deployments. The STK is designed to support ProLiant 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 STK 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 or to download the STK, see the **Hewlett Packard Enterprise website**.

HPE Message Passing Interface

The HPE Message Passing Interface is an MPI development environment designed to enable the development and optimization of high performance computing (HPC) Linux applications. The HPE Message Passing Interface leverages a scalable MPI library and takes advantage of the underlying server infrastructure by boosting performance of existing MPI applications on Hewlett Packard Enterprise HPC clusters without requiring recompilation. For more information, see the HPE Message Passing Interface documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/software/mpi**).

HPE Performance Cluster Manager

HPE Performance Cluster Manager is a point of contact for the deployment, system management, monitoring, and reporting on the HPE cluster system. For more information, see the HPE Performance Cluster Manager documentation on the Hewlett Packard Enterprise website (**https://www.hpe.com/software/hpcm**).

UEFI System Utilities

The UEFI System Utilities is embedded in the system ROM. Its features enable you to perform a wide range of configuration activities, including:

- Configuring system devices and installed options.
- Enabling and disabling system features.
- Displaying system information.
- Selecting the primary boot controller or partition.
- Configuring memory options.
- Launching other preboot environments.

HPE servers with UEFI can provide:

- Support for boot partitions larger than 2.2 TB. Such configurations could previously only be used for boot drives when using RAID solutions.
- Secure Boot that enables the system firmware, option card firmware, operating systems, and software collaborate to enhance platform security.
- UEFI Graphical User Interface (GUI)
- An Embedded UEFI Shell that provides a preboot environment for running scripts and tools.
- Boot support for option cards that only support a UEFI option ROM.

Selecting the boot mode

This server provides two Boot Mode configurations: UEFI Mode and Legacy BIOS Mode. Certain boot options require that you select a specific boot mode. By default, the boot mode is set to UEFI Mode. The system must boot in UEFI Mode to use certain options, including:

- Secure Boot, UEFI Optimized Boot, Generic USB Boot, IPv6 PXE Boot, iSCSI Boot, NVMe Boot and Boot from URL
- Fibre Channel/FCoE Scan Policy

> **NOTE:**
> The boot mode you use must match the operating system installation. If not, changing the boot mode can impact the ability of the server to boot to the installed operating system.

Prerequisite

When booting to UEFI Mode, leave UEFI Optimized Boot enabled.

Procedure

1. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Boot Options > Boot Mode.
2. Select a setting.
   - UEFI Mode (default)—Configures the system to boot to a UEFI compatible operating system.
   - Legacy BIOS Mode—Configures the system to boot to a traditional operating system in Legacy BIOS compatibility mode.
3. Save your setting.
4. Reboot the server.

Secure Boot

Secure Boot is a server security feature that is implemented in the BIOS and does not require special hardware. Secure Boot ensures that each component launched during the boot process is digitally signed and that the signature is validated against a set of trusted certificates embedded in the UEFI BIOS. Secure Boot validates the software identity of the following components in the boot process:

- UEFI drivers loaded from PCIe cards
- UEFI drivers loaded from mass storage devices
- Preboot UEFI Shell applications
- OS UEFI boot loaders

When Secure Boot is enabled:

- Firmware components and operating systems with boot loaders must have an appropriate digital signature to execute during the boot process.
- Operating systems must support Secure Boot and have an EFI boot loader signed with one of the authorized keys to boot. For more information about supported operating systems, see **https://www.hpe.com/servers/ossupport**.

You can customize the certificates embedded in the UEFI BIOS by adding or removing your own certificates, either from a management console directly attached to the server, or by remotely connecting to the server using the iLO Remote Console.

You can configure Secure Boot:

- Using the System Utilities options described in the following sections.
- Using the iLO RESTful API to clear and restore certificates. For more information, see the Hewlett Packard Enterprise website (**https://www.hpe.com/info/redfish**).
- Using the `secboot` command in the Embedded UEFI Shell to display Secure Boot databases, keys, and security reports.

Launching the Embedded UEFI Shell

Use the Embedded UEFI Shell option to launch the Embedded UEFI Shell. The Embedded UEFI Shell is a preboot command-line environment for scripting and running UEFI applications, including UEFI boot loaders. The Shell also provides CLI-based commands you can use to obtain system information, and to configure and update the system BIOS.

Prerequisites

- Embedded UEFI Shell is set to Enabled.

Procedure

1. From the System Utilities screen, select Embedded Applications > Embedded UEFI Shell.

   The Embedded UEFI Shell screen appears.

2. Press any key to acknowledge that you are physically present.

   This step ensures that certain features, such as disabling Secure Boot or managing the Secure Boot certificates using third-party UEFI tools, are not restricted.

3. If an administrator password is set, enter it at the prompt and press Enter.

   The `Shell>` prompt appears.

4. Enter the commands required to complete your task.

5. Enter the `exit` command to exit the Shell.

HPE Smart Storage Administrator

HPE SSA is the main tool for configuring arrays on HPE Smart Array SR controllers. It exists in three interface formats: the HPE SSA GUI, the HPE SSA CLI, and HPE SSA Scripting. All formats provide support for configuration tasks. Some of the advanced tasks are available in only one format.

The diagnostic features in HPE SSA are also available in the standalone software HPE Smart Storage Administrator Diagnostics Utility CLI.

During the initial provisioning of the server or compute module, an array is required to be configured before the operating system can be installed. You can configure the array using SSA.

HPE SSA is accessible both offline (either through HPE Intelligent Provisioning or as a standalone bootable ISO image) and online:

- Accessing HPE SSA in the offline environment

  IMPORTANT: If you are updating an existing server in an offline environment, obtain the latest version of HPE SSA through Service Pack for ProLiant before performing configuration procedures.

  Using one of multiple methods, you can run HPE SSA before launching the host operating system. In offline mode, users can configure or maintain detected and supported devices, such as optional Smart Array controllers and integrated Smart Array controllers. Some HPE SSA features are only available in the offline environment, such as setting the boot controller and boot volume.

- Accessing HPE SSA in the online environment
  This method requires an administrator to download the HPE SSA executables and install them. You can run HPE SSA online after launching the host operating system.

For more information, see HPE SSA online help.

Smart Storage Administrator

SSA is the main tool for configuring arrays on these controllers. It exists in three interface formats: the SSA GUI, the SSA CLI, and SSA Scripting. All formats provide support for configuration tasks. Some of the advanced tasks are available in only one format.

The diagnostic features in SSA are also available in the standalone software Smart Storage Administrator Diagnostics Utility CLI.

- **Accessing SSA in the offline environment:** Using one of multiple methods, you can run SSA before launching the host operating system. In offline mode, users can configure or maintain detected and supported HPE ProLiant devices, such as optional controllers and integrated controllers. Some SSA features are only available in the offline environment, such as setting the boot controller or performing split-mirror operations.
- **Accessing SSA in the online environment:** This method requires an administrator to download the SSA executables and install them. You can run SSA online after launching the host operating system.

HPE InfoSight for servers

The HPE InfoSight portal is a secure web interface hosted by HPE that allows you to monitor supported devices through a graphical interface.

HPE InfoSight for servers:

- Combines the machine learning and predictive analytics of HPE InfoSight with the health and performance monitoring of Active Health System (AHS) and HPE iLO to optimize performance and predict and prevent problems
- Provides automatic collection and analysis of the sensor and telemetry data from AHS to derive insights from the behaviors of the install base to provide recommendations to resolve problems and improve performance

For more information on getting started and using HPE InfoSight for servers, go to: **https://www.hpe.com/info/infosight-servers-docs**.

USB support

Hewlett Packard Enterprise Gen10 and Gen10 Plus servers support all USB operating speeds depending on the device that is connected to the server.

External USB functionality

Hewlett Packard Enterprise provides external USB support to enable local connection of USB devices for server administration, configuration, and diagnostic procedures.

For additional security, external USB functionality can be disabled through USB options in UEFI System Utilities.

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

Updating firmware or system ROM

To update firmware or system ROM, use one of the following methods:

- The Firmware Update option in the System Utilities.
- The `fwupdate` command in the Embedded UEFI Shell.
- Service Pack for ProLiant (SPP)
- HPE online flash components
- Moonshot Component Pack

Service Pack for ProLiant

SPP is a systems software and firmware solution delivered as a single ISO file download. This solution uses SUM as the deployment tool and is tested and supports HPE ProLiant, HPE BladeSystem, HPE Synergy, and HPE Apollo servers and infrastructure.

SPP, along with SUM and SUT, provides Smart Update system maintenance tools that systematically update HPE ProLiant, HPE BladeSystem, HPE Synergy, and HPE Apollo servers and infrastructure.

SPP can be used in an online mode on a server running Windows, Linux, or VMware vSphere ESXi, or in an offline mode where the server is booted to an operating system included in the ISO file.

The preferred method for downloading an SPP is using the SPP Custom Download at **https://www.hpe.com/servers/spp/custom**.

Smart Update Manager

SUM is an innovative tool for maintaining and updating the firmware, drivers, and system software of HPE ProLiant, HPE BladeSystem, HPE Synergy, HPE Superdome Flex servers, and HPE Apollo servers, infrastructure, and associated options.

SUM identifies associated nodes you can update at the same time to avoid interdependency issues.

Key features of SUM include:

- Discovery engine that finds installed versions of hardware, firmware, and software on nodes.
- SUM deploys updates in the correct order and ensures that all dependencies are met before deploying an update.
- Interdependency checking.
- Automatic and step-by-step Localhost Guided Update process.
- Web browser-based user interface.
- Ability to create custom baselines and ISOs.
- Support for iLO Repository (Gen10 or later iLO 5 nodes only).
- Simultaneous firmware and software deployment for multiple remote nodes.
- Local offline firmware deployments with SPP deliverables.
- Extensive logging in all modes.

NOTE:
Support for HPE Integrity servers has been discontinued from SUM 8.x.

Integrated Smart Update Tools

Integrated Smart Update Tools (SUT) is the smart update solution for performing online firmware and driver updates. SUT is used with iLO 4, iLO 5, and with update solutions (management appliances such as iLO Amplifier Pack or HPE OneView and Smart Update Manager to stage, install, and activate firmware and driver updates.

The solution must be installed on the operating system, where it updates results through Rich Infrastructure Services (RIS) communication.

- **SUT:** Polls iLO to check for requests from SUM, iLO Amplifier Pack, or HPE OneView for updates through local iLO using the iLO channel interface driver installed on the OS and orchestrates staging, deploying, and activating updates. You can adjust the polling interval by issuing the appropriate command-line option provided by SUT. Performs inventory on target servers, stages deployment, deploys updates, and then reboots the servers.
- **iLO 5 with integrated Smart Update** (Gen10 or later servers only): Performs iLO Repository-based updates by downloading the components from iLO Repository when iLO Installation Queue has the components which can be updated by SUT.
- **iLO Amplifier Pack and HPE OneView:** Displays available updates for servers. Communicates with SUT (or SUT 1.x) to initiate updates using the iLO Redfish interface. SUT reports the status of updates to iLO Amplifier Pack through iLO Restful Interface.
- **SUM:** A tool for firmware and driver maintenance for HPE ProLiant servers and associated options.

NOTE:
SUM and iLO Amplifier Pack should not manage the same nodes.

Updating firmware from the System Utilities

Use the Firmware Updates option to update firmware components in the system, including the system BIOS, NICs, and storage cards.

Procedure

1. Access the System ROM Flash Binary component for your server from the Hewlett Packard Enterprise Support Center.
2. Copy the binary file to a USB media or iLO virtual media.
3. Attach the media to the server.
4. Launch the System Utilities, and select Embedded Applications > Firmware Update.
5. Select a device.

   The Firmware Updates screen lists details about your selected device, including the current firmware version in use.
6. Select Select Firmware File.
7. Select the flash file in the File Explorer list.

   The firmware file is loaded and the Firmware Updates screen lists details of the file in the Selected firmware file field.
8. Select Image Description, and then select a firmware image.

   A device can have multiple firmware images.
9. Select Start firmware update.

Updating the firmware from the UEFI Embedded Shell

Procedure

1. Access the System ROM Flash Binary component for your server from the Hewlett Packard Enterprise Support Center (**https://www.hpe.com/support/hpesc**).
2. Copy the binary file to a USB media or iLO virtual media.
3. Attach the media to the server.
4. Boot to the UEFI Embedded Shell.
5. To obtain the assigned file system volume for the USB key, enter `map -r`.
6. Change to the file system that contains the System ROM Flash Binary component for your server. Enter one of the `fsx` file systems available, such as `fs0:` or `fs1:`, and press **Enter**.
7. Use the `cd` command to change from the current directory to the directory that contains the binary file.
8. Flash the system ROM by entering `fwupdate -d BIOS -f filename`.
9. Reboot the server. A reboot is required after the firmware update in order for the updates to take effect and for hardware stability to be maintained.

Online Flash components

This component provides updated system firmware that can be installed directly on supported operating systems. Additionally, when used in conjunction with SUM, this Smart Component allows the user to update firmware on remote servers from a central location. This remote deployment capability eliminates the need for the user to be physically present at the server to perform a firmware update.

Drivers

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

Update drivers using any of the following **Smart Update Solutions**:

- Download the latest Service Pack for ProLiant (includes Smart Update Manager)
- Create a custom SPP download
- Download Smart Update Manager for Linux
- Download specific drivers
  To locate the drivers for a server, go to the **Hewlett Packard Enterprise Support Center website** , and then search for the product name/number.

Software and firmware

Update software and firmware 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 from the Hewlett Packard Enterprise website (**https://www.hpe.com/servers/spp/download**).
- Download individual drivers, firmware, or other system software components from the server product page in the Hewlett Packard Enterprise Support Center website (**https://www.hpe.com/support/hpesc**).

Operating system version support

For information about specific versions of a supported operating system, refer to the **operating system support matrix**.

HPE Pointnext Portfolio

HPE Pointnext delivers confidence, reduces risk, and helps customers realize agility and stability. Hewlett Packard Enterprise helps customers succeed through Hybrid IT by simplifying and enriching the on-premise experience, informed by public cloud qualities and attributes.

Operational Support Services enable you to choose the right service level, length of coverage, and response time to fit your business needs. For more information, see the Hewlett Packard Enterprise website:

https://www.hpe.com/us/en/services/operational.html

Utilize the Advisory and Transformation Services in the following areas:

- Private or hybrid cloud computing
- Big data and mobility requirements
- Improving data center infrastructure
- Better use of server, storage, and networking technology

For more information, see the Hewlett Packard Enterprise website:

https://www.hpe.com/services/consulting

Proactive notifications

30 to 60 days in advance, Hewlett Packard Enterprise sends notifications to subscribed customers on upcoming:

- Hardware, firmware, and software changes
- Bulletins
- Patches
- Security alerts

You can subscribe to proactive notifications on the **Hewlett Packard Enterprise website**.

Troubleshooting

Troubleshooting resources

Troubleshooting resources are available for HPE Gen10 and Gen10 Plus server products in the following documents:

- Troubleshooting Guide for HPE ProLiant Gen10 and Gen10 Plus servers provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance.
- Error Message Guide for HPE ProLiant Gen10 Plus servers and HPE Synergy provides a list of error messages and information to assist with interpreting and resolving error messages.
- Integrated Management Log Messages and Troubleshooting Guide for HPE ProLiant Gen10 and Gen10 Plus servers and HPE Synergy provides IML messages and associated troubleshooting information to resolve critical and cautionary IML events.

To access troubleshooting resources for your product, see the **Hewlett Packard Enterprise website**.

Cabling

Cabling overview

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

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

SFF cables

Option kit	Cable part number	Connects from	Connects to
8 SFF x4TMode UBM3 backplane kit (P26429-B21)			
8 SFF NVMe backplane, MLB, x8 port1a	P20855-001	8 SFF x4 UBM3 backplane ports 1 and 2	Port 1B / Port 2B
8 SFF NVMe backplane, MLB, x8 port1b	P20856-001	8 SFF x4 UBM4 backplane ports 3 and 4	Port 1A / Port 2A
8 SFF x4NVMe UBM4 backplane kit (P26433-B21)			
8 SFF NVMe backplane, MLB, x8 port1a	P20855-001	8 SFF x4 UBM4 backplane ports 1 and 2	Port 1B / Port 2B
8 SFF NVMe backplane, MLB, x8 port1b	P20856-001	8 SFF x4 UBM4 backplane ports 1 and 2	Port 1B / Port 2B
8 SFF SAS/SATA backplane kit (P38579-B21)			
SAS/SATA 8 SFF backplane, P408i-a/P816i-a	P20816-001	8 SFF SAS/SATA backplane	Smart Array controllers P408i-p/E208i-p/P408i-a/P816i-a port 1 or port 2
2 SFF SAS/SATA Backplane kit (P38580-B21)			
Power cable, 8 SFF to 2 SFF	869667-001	2 SFF backplane	8 SFF backplane
SAS/SATA, 2 SFF backplane, P816i-a, 10P	P20817-001	2 SFF SAS/SATA backplane	Smart Array controller P816i-a port 3
SAS/SATA 2 SFF backplane, P/E	P26551-001	2 SFF SAS/SATA backplane	SATA port 1, Smart Array controllers P408i-p/E208i-p port 1
2 SFF U.3 Backplane Option Kit (P38581-B21) / 2 SFF U.2 Backplane option kit (P38582-B21)			
Power cable, 8 SFF to 2 SFF	869667-001	2 SFF backplane	8 SFF backplane
2 SFF U.3 backplane Pri NVMe	P20857-001	2 SFF U.3 backplane	R16 riser port 3A
NVMe, 2 SFF backplane, MLB to port 8A	P39979-001	2 SFF U.3 backplane	Port 8A, AROC passthrough board port 7A
8 SFF TMode Cable Kit (P26451-B21)			
8 SFF U.3 backplane, NVMe	P20863-001	8 SFF U.2 / U.3 backplane	HPE Smart Array Controller SR932i-p port 4i
8 SFF U.3 backplane, NVMe2	P20864-001	8 SFF U.2 / U.3 backplane	HPE Smart Array Controller SR932i-p port 3i
8 SFF U.3 backplane, NVMe3	P20865-001	8 SFF U.2 / U.3 backplane	HPE Smart Array Controller SR932i-p port 2i
8 SFF U.3 backplane, NVMe4	P20866-001	8 SFF U.2 / U.3 backplane	HPE Smart Array Controller SR932i-p port 1i

Option kit	Cable part number	Connects from	Connects to
8 SFF U.2 / U.3 backplane, x8, NVMe	P20867-001	8 SFF U.2 / U.3 backplane port 3 / port 4	HPE Smart Array Controllers SR932i-p/SR416i-p/MR416i-p/MR216i-p /SR416i-a/MR416i-a/MR216i-a Port 1-4
8 SFF U.2 / U.3 backplane, x8, NVMe2	P20868-001	8 SFF U.2 / U.3 backplane port 1 / port 2	HPE Smart Array Controllers SR932i-p/SR416i-p/MR416i-p/MR216i-p /SR416i-a/MR416i-a/MR216i-a Port 1-4
2 SFF Trim cable kit (P36657-B21)			
2 SFF U.3 backplane, tri-mode, NVMe	P20869-001	2 SFF U.2 / U.3 backplane	HPE Smart Array Controllers SR932i-p/SR416i-p/MR416i-p/MR216i-p Port 1-4
8 SFF DP/USB/ODD blank kit (P40003-B21)			
Display, SFF	P20854-001	ODD blank kit	MLB
Assy, Slim SATA, SFF	P20813-001	ODD	MLB
SFF SID Power module kit (P26447-B21)			
Assy, SLIM SAS, SFF SW/SID	P20825-001	Switchboard	MLB
Assy, FFC	P26557-001	SID board	Switchboard
SFF Internal cables kit (P26449-B21)			
Mini-SAS, 8 SFF slot 2	P36180-001	8 SFF SAS/SATA backplane	Port 8A
SAS/SATA 2 SFF backplane, P816i-a	P20817-001	2 SFF SAS/SATA backplane	Smart Array Controller P816i-a Port 3
SAS/SATA 2 SFF backplane, P/E	P26551-001	2 SFF SAS/SATA backplane	SATA port 1, HPE Smart Array Controller P408i-p and E208i-p port 1
CPU1 GPU Cable kit (P26469-B21)			
Assy, pwr, 2x3 to 2x4, GPU	869686-001	GPU	Riser
Assy, pwr, 2x4 to 2x4, GPU	869821-001	GPU	Riser
Rear serial cable kit (P26475-B21)			
Assy, Serial, 2x5P/9P	P27044-001	Rear serial port	MLB
AROC NVMe Adapter kit (P38585-B21)			
NVMe, 2 SFF backplane, MLB to port 8a	P39979-001	2 SFF U.2 backplane	AROC Passthrough board Port 7A

Specifications

For more information on cable, power, environmental, compliance, and general specifications, see the **HPE Compute Transceiver and Cable Hardware Matrix**.

Environmental specifications

Specification	Value
Temperature range [1]	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (noncondensing)	—
Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity Maximum to be 24°C (75.2°F) dew point or 90% relative humidity
Nonoperating	5% to 95% 38.7°C (101.7°F), maximum wet bulb temperature

[1] All temperature ratings shown are for sea level. An altitude derating of 1.0°C per 304.8 m (1.8°F per 1000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Maximum rate of change is 20°C per hour (36°F per hour). The upper limit and rate of change might be limited by the type and number of options installed.

For certain approved hardware configurations, the supported system inlet temperature range is extended:

- 5°C to 10°C (41°F to 50°F) and 35°C to 40°C (95°F to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).

The approved hardware configurations for this system are listed on the **Hewlett Packard Enterprise website**.

Server specifications

Specification	Value
Height	4.28 cm (1.68 in)
Depth	74.19 cm (29.21 in)
Width	43.46 cm (17.11 in)
Weight, SFF minimum	13.29kg (29.51 lb)
Weight, SFF maximum	18.21 kg (40.14 lb)

Power supply specifications

Depending on the installed options and the regional location where the server was purchased, the server can be configured with one of the following power supplies:

- HPE 500 W Flex Slot Platinum Hot-plug Low Halogen Power Supply
- HPE 800 W Flex Slot Platinum Hot-plug Low Halogen Power Supply
- HPE 800 W Flex Slot Titanium Hot-plug Low Halogen Power Supply
- HPE 800 W Flex Slot Universal Hot-plug Low Halogen Power Supply
- HPE 800 W Flex Slot -48 VDC Hot-plug Low Halogen Power Supply
- HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply
- HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply

For detailed power supply specifications, see the QuickSpecs on the **Hewlett Packard Enterprise website**.

△ **CAUTION:** Mixing different types of power supplies in the same server might:

- Limit or disable some power supply features including support for power redundancy.
- Cause the system to become unstable and might shut down.

To ensure access to all available features, all power supplies in the same server should have the same output and efficiency ratings. Verify that all power supplies have the same part number and label color.

HPE 500 W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	5.6 A at 100 VAC 2.7 A at 200 VAC 2.3 A at 240 VDC for China only
Maximum rated input power	557 W at 100 VAC 539 W at 200 VAC 537 W at 240 VDC for China only
BTUs per hour	1902 at 100 VAC 1840 at 200 VAC 1832 at 240 VDC for China only
Power supply output	—
Rated steady-state power	500 W at 100 VAC to 127 VAC input 500 W at 100 VAC to 240 VAC input 500 W at 240 VDC input for China only
Maximum peak power	500 W at 100 VAC to 127 VAC input 500 W at 100 VAC to 240 VAC input 500 W at 240 VDC input for China only

HPE 800 W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	9.1 A at 100 VAC 4.4 A at 200 VAC 3.6 A at 240 VDC for China only
Maximum rated input power	899 W at 100 VAC 867 W at 200 VAC 864 W at 240 VDC for China only
BTUs per hour	3067 at 100 VAC 2958 at 200 VAC 2949 at 240 VAC for China only
Power supply output	—
Rated steady-state power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only

HPE 800 W Flex Slot Titanium Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	4.35 A at 200 VAC 3.62 A at 240 VAC 3.62 A at 240 VDC for China only
Maximum rated input power	851 W at 200 VAC 848 W at 240 VAC 848 W at 240 VDC for China only
BTUs per hour	2905 at 200 VAC 2893 at 240 VAC 2893 at 240 VDC for China only
Power supply output	—
Rated steady-state power	800 W at 200 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 200 VAC to 240 VAC input 800 W at 240 VDC input for China only

HPE 800 W Flex Slot Universal Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 277 VAC 380 VDC
Rated input frequency	50 Hz to 60 Hz
Rated input current	4.4 A at 200 VAC 3.1 A at 277 VAC 2.3 A at 380 VDC
Maximum rated input power	869 W at 200 VAC 865 W at 230 VAC 861 W at 277 VAC 863 W at 380 VDC
BTUs per hour	2964 at 200 VAC 2951 at 230 VAC 2936 at 277 VAC 2943 at 380 VDC
Power supply output	—
Rated steady-state power	800 W at 200 VAC to 277 VAC input
Maximum peak power	800 W at 200 VAC to 277 VAC input

HPE 800 W Flex Slot -48 VDC Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	-40 VDC to -72 VDC -48 VDC nominal input
Rated input current	22.1 A at -40 VDC input 18.2 A at -48 VDC input, nominal input 12.0 A at -72 VDC input
Rated input power (W)	874 W at -40 VDC input 865 W at -48 VDC input, nominal input 854 W at -72 VDC input
Rated input power (BTUs per hour)	2983 at -40 VDC input 2951 at -48 VDC input, nominal input 2912 at -72 VDC input
Power supply output	—
Rated steady-state power (W)	800 W at -40 VDC to -72 VDC
Maximum peak power (W)	800 W at -40 VDC to -72 VDC
Maximum peak power	800 W at -40 VDC to -72 VDC input

⚠ **WARNING:** To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel.
- Connect the equipment to a reliably grounded secondary circuit source. A secondary circuit has no direct connection to a primary circuit and derives its power from a transformer, converter, or equivalent isolation device.
- The branch circuit overcurrent protection must be rated 27 A.

⚠ **CAUTION:** This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment.

If this connection is made, all of the following must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices must not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.7 A at 200 VAC 7.2 A at 240 VAC
Maximum rated input power	1734 W at 200 VAC 1725 W at 240 VAC
BTUs per hour	5918 at 200 VAC 5884 at 240 VAC
Power supply output	—
Rated steady-state power	1600 W at 200 VAC to 240 VAC input 1600 W at 240 VDC input
Maximum peak power	2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply

Specification	Value
Input requirements	—
Rated input voltage	-40 VDC to -72 VDC
Rated input frequency	DC
Nominal input current	44.2 A DC at -40 VDC input 36.6 A DC at -48 VDC input 24.4 A DC at -72 VDC input
Maximum Rated Input Wattage Rating	1766 W at -40 VDC input 1758 W at -48 VDC input 1755 W at -72 VDC input
BTUs per hour	6026 at -40 VDC input 6000 at -48 VDC input input 5989 at -72 VDC input
Power supply output	—
Rated steady-state power	1600 W at -40 VDC to -72 VDC
Maximum peak power	1600 W at -40 VDC to -72 VDC

Hot-plug power supply calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the server, see the Hewlett Packard Enterprise Power Advisor website (**https://www.hpe.com/info/poweradvisor/online**).

Websites

General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

https://www.hpe.com/storage/spock

Storage white papers and analyst reports

https://www.hpe.com/storage/whitepapers

For additional websites, see Support and other resources.

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:

  https://www.hpe.com/info/assistance

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  https://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center

  https://www.hpe.com/support/hpesc

  Hewlett Packard Enterprise Support Center: Software downloads

  https://www.hpe.com/support/downloads

  My HPE Software Center

  https://www.hpe.com/software/hpesoftwarecenter
- To subscribe to eNewsletters and alerts:

  https://www.hpe.com/support/e-updates
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center More Information on Access to Support Materials page:

  https://www.hpe.com/support/AccessToSupportMaterials

IMPORTANT:

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which initiates a fast and accurate resolution based on the service level of your product. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

HPE Get Connected

https://www.hpe.com/services/getconnected

HPE Pointnext Tech Care

https://www.hpe.com/services/techcare

HPE Datacenter Care

https://www.hpe.com/services/datacentercare

Warranty information

To view the warranty information for your product, see the links provided below:

HPE ProLiant and IA-32 Servers and Options

https://www.hpe.com/support/ProLiantServers-Warranties

HPE Enterprise and Cloudline Servers

https://www.hpe.com/support/EnterpriseServers-Warranties

HPE Storage Products

https://www.hpe.com/support/Storage-Warranties

HPE Networking Products

https://www.hpe.com/support/Networking-Warranties

Regulatory information

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center:

https://www.hpe.com/support/Safety-Compliance-EnterpriseProducts

Additional regulatory information

Hewlett Packard Enterprise is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at:

https://www.hpe.com/info/reach

For Hewlett Packard Enterprise product environmental and safety information and compliance data, including RoHS and REACH, see:

https://www.hpe.com/info/ecodata

For Hewlett Packard Enterprise environmental information, including company programs, product recycling, and energy efficiency, see:

https://www.hpe.com/info/environment

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, use the Feedback button and icons (located at the bottom of an opened document) on the Hewlett Packard Enterprise Support Center portal (**https://www.hpe.com/support/hpesc**) to send any errors, suggestions, or comments. All document information is captured by the process.