Hewlett Packard Enterprise

HPE ProLiant DL20 Gen10 Plus Server User Guide

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Published: March 2022
Edition: 1

HPE ProLiant DL20 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, and are familiar with the weight and stability precautions for rack installations.

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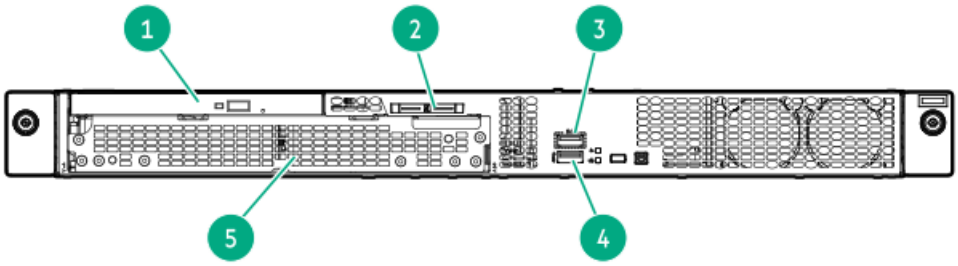
Table of contents

Component identification

This chapter describes the external and internal server features and components.

Front panel components

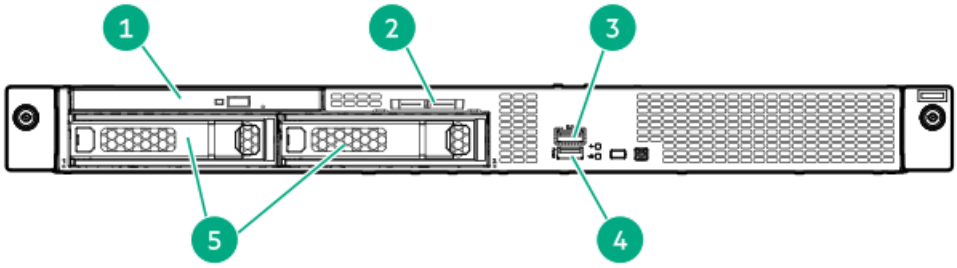
LFF non-hot-plug drive model



Item	Description
1	Optical drive (optional)
2	Serial number/iLO information pull tab [1]
3	iLO service port
4	USB 3.2 Gen1 port
5	2 LFF non-hot-plug drive cage [2]

[1] The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
[2] The 2 LFF non-hot-plug drive cage supports SATA drives.

LFF hot-plug drive model



Item	Description
1	Optical drive (optional)
2	Serial number/iLO information pull tab [1]
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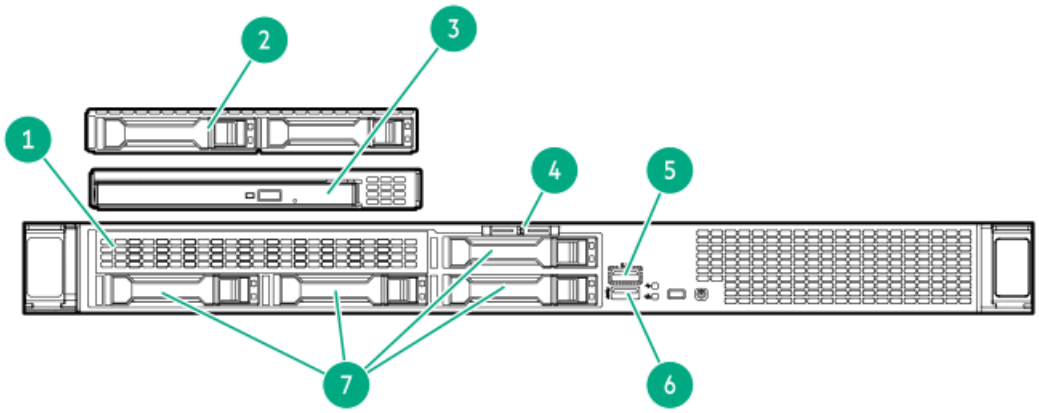
4	USB 3.2 Gen1 port
5	2 LFF hot-plug drives [2]

[1] The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
[2] The 2 LFF drive bays support SAS or SATA hot-plug drives.

SFF hot-plug drive model



Item	Description
1	Media bay [1]
2	2 SFF hot-plug drive cage (optional) [2]
3	Optical drive (optional)
4	Serial number/iLO information pull tab [3]
5	iLO service port
6	USB 3.2 Gen1 port
7	4 SFF hot-plug drives [4]

[1] The media bay supports the optical drive cage or the 2 SFF drive cage option.
[2] The 2 SFF drive cage supports SAS, SATA, or U.3 NVMe drives.
[3] The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
[4] The 4 SFF drive bays support SAS or SATA drives.

iLO Service Port

The Service Port is a USB port with the label **iLO** on supported servers and compute modules.

To find out if your server or compute module supports this feature, see the server specifications document at the following website: **https://www.hpe.com/info/qs**.

When you have physical access to a server, you can use the Service Port to do the following:

- Download the Active Health System Log to a supported USB flash drive.

  When you use this feature, the connected USB flash drive is not accessible by the host operating system.

- Connect a client (such as a laptop) with a supported USB to Ethernet adapter to access the following:
  - iLO web interface
  - Remote console
  - iLO RESTful API
  - CLI

  Hewlett Packard Enterprise recommends the HPE USB to Ethernet Adapter (part number Q7Y55A).

When you use the iLO Service Port:

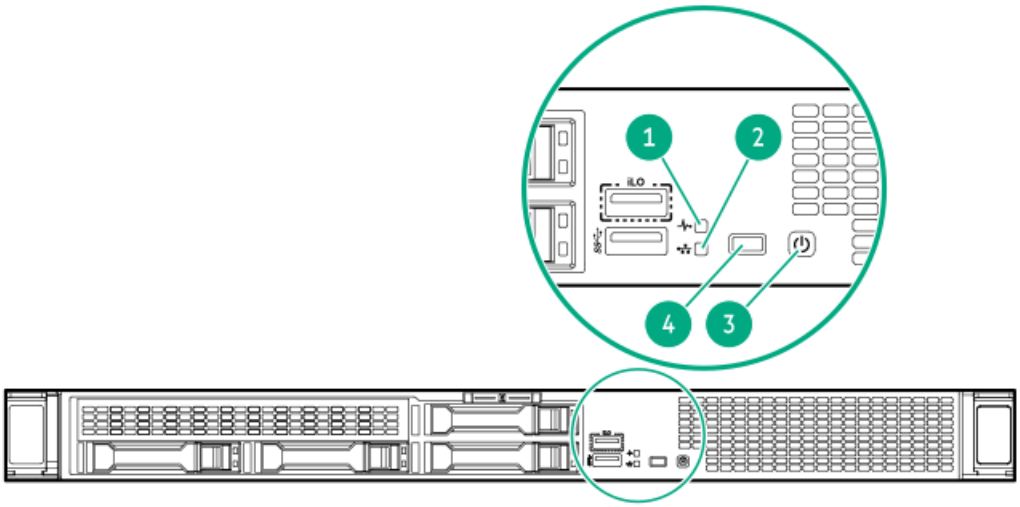
- Actions are logged in the iLO event log.
- The server UID flashes to indicate the Service Port status.

  You can also retrieve the Service Port status by using a REST client and the iLO RESTful API.
- You cannot use the Service Port to boot any device within the server, or the server itself.
- You cannot access the server by connecting to the Service Port.
- You cannot access the connected device from the server.

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

For more information, see the **Anywhere Access to HPE ProLiant Gen10 Servers** video.

Front panel LEDs and buttons



Item	Description	Status	Definition
1	Health LED [1]	Solid green	Normal
		Flashing green	iLO is rebooting
		Flashing amber	System degraded [2]
		Flashing red	System critical [2]
2	NIC status LED [1]	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity
3	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 [3]
4	UID button/LED [1]	Solid blue	Activated
		Flashing blue	• 1 flash per second = Remote management or firmware upgrade in progress • 4 flashes per second = iLO manual reboot sequence initiated • 8 flashes per second = iLO manual reboot sequence in progress
		Off	Deactivated

1 When all LEDs flash simultaneously, a power fault has occurred. For more information, see Front panel LED power fault codes.
2 If the health LED indicates a degraded or critical state, review the system Integrated Management Log (IML) or use HPE iLO to review the system health status.
3 Facility power is not present, power cord is not attached, no power supplies are installed, or power supply failure has occurred.

Server UID LED

The UID LED is used to locate a particular server when it is deployed in a dense rack with other equipment. Activating the UID LED helps an on-site technician to quickly identify a server for maintenance tasks.

Using the UID button to view the Server Health Summary

You can use the UID button to display the iLO Server Health Summary screen on an external monitor. This function works both when the server is powered on or off. Use this feature for troubleshooting if the server will not start up.

> ⚠ **CAUTION:** Press and release the UID button. Holding it down at any time for more than five seconds initiates a graceful iLO reboot or a hardware iLO reboot. Data loss or NVRAM corruption might occur during a hardware iLO reboot.

Prerequisites

- An external monitor is connected.
- In the iLO web interface, the Show Server Health on External Monitor feature is enabled on the Access Settings page.

Procedure

1. Press and release the UID button.

   The Server Health Summary screen is displayed on the external monitor. For more information, see the iLO troubleshooting guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/ilo-docs**).

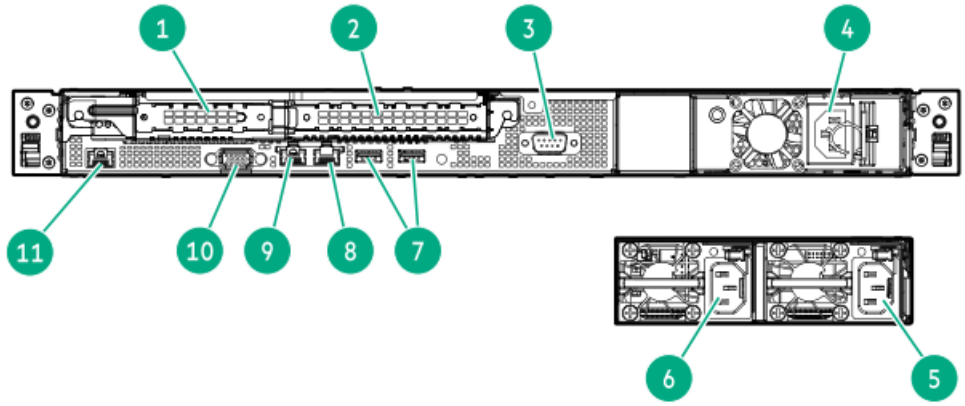
2. Press the UID button again to close the Server Health Summary screen.

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.

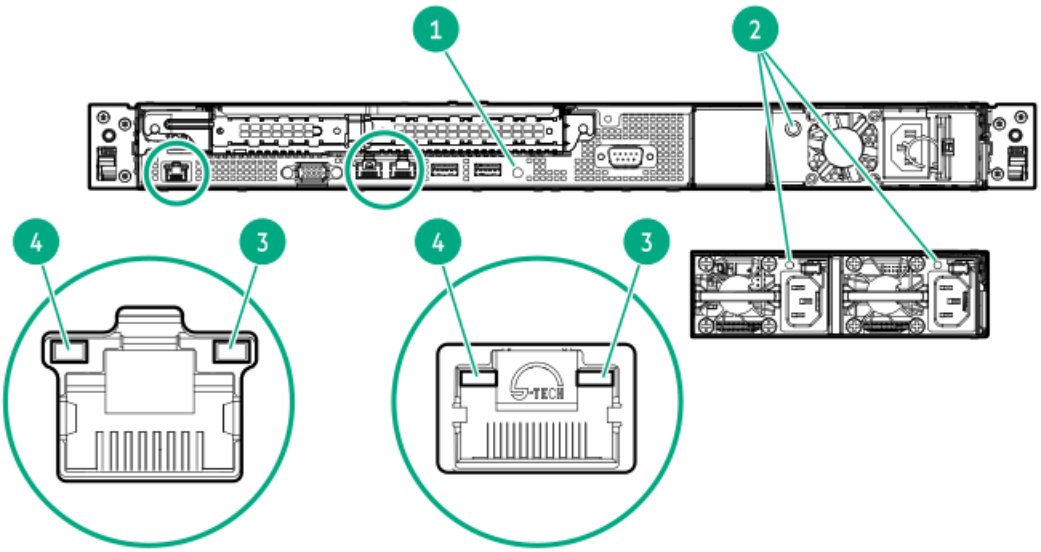
Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Storage controller	6 flashes
System board PCIe slots	7 flashes
Power backplane	8 flashes
Storage backplane	9 flashes
Power supply	10 flashes
PCIe expansion cards installed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

Rear panel components



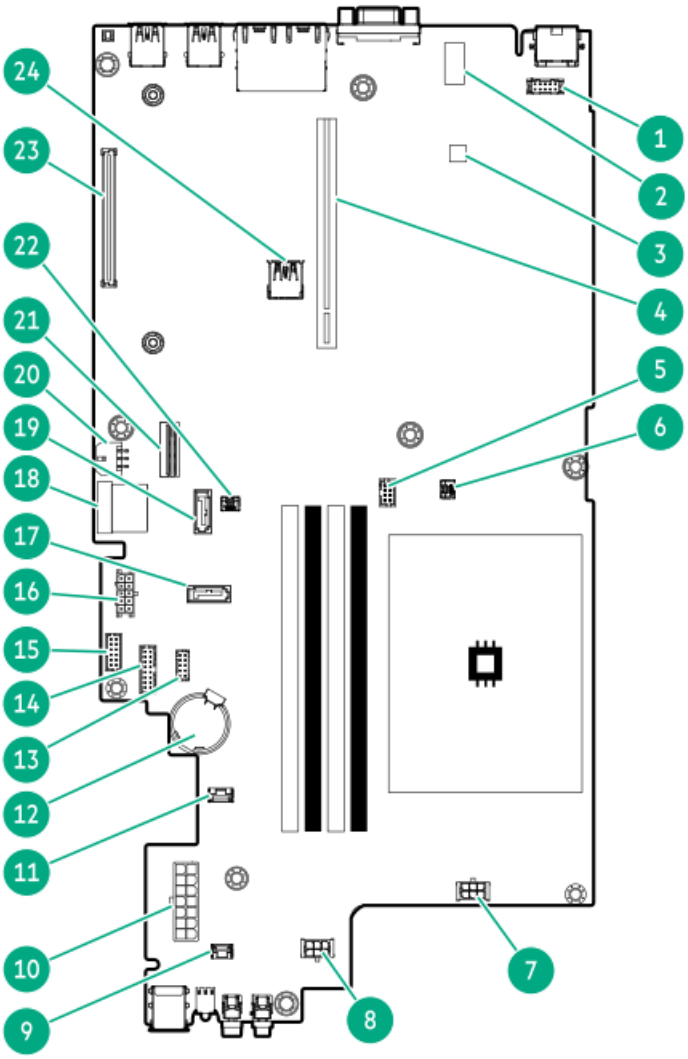
Item	Description
1	Slot 1 PCIe4 x8 (8, 4, 1) or Slot 1 PCIe4 x8 (4, 1)
2	Slot 2 PCIe4 x16 (8, 4, 1) or Slot 2 PCIe4 x16 (16, 8, 4, 1)
3	Serial port (optional)
4	Non-hot-plug power supply
5	Flexible Slot power supply 1 (hot-plug)
6	Flexible Slot power supply 2 (hot-plug, optional)
7	USB 3.2 Gen1 ports
8	NIC port 2 (1 GbE)
9	NIC port 1/iLO shared port (1 GbE)
10	Video port
11	iLO dedicated network port

Rear panel LEDs



Item	LED	Status	Definition
1	UID	Solid blue	Activated
		Flashing blue	• 1 flash per sec = Remote management or firmware upgrade in progress • 4 flashes per sec = iLO manual reboot sequence initiated • 8 flashes per sec = iLO manual reboot sequence in progress
		Off	Deactivated
2	Power supply	Solid green	The power supply is operating normally
		Off	One or more of the following conditions exists: • Power is unavailable • Power supply failure • Power supply is in standby mode • Power supply error
3	NIC/iLO status	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity
4	NIC/iLO link	Solid green	Network link
		Off	No network link

System board components



Item	Description
1	Serial port connector
2	System maintenance switch
3	Trusted Platform Module 2.0 (embedded TPM)
4	PCIe4 riser connector
5	M.2 SSD power-sideband connector
6	Storage controller backup power connector for slot 1
7	Fan connector 2
8	Fan connector 1
9	Chassis intrusion detection switch connector
10	Power supply connector
11	2 SFF drive sideband connector
12	System battery
13	Energy pack connector
14	Power supply sideband connector
15	Flexible Slot power supply sideband connector
16	Drive and optical drive power connector
17	SATA port 2 [1]
18	Mini-SAS port

Item	Description
19	SATA port 1 [1]
20	Fan connector 3
21	M.2 SSD signal connector
22	Storage controller backup power connector for slot 2
23	Type-a modular storage controller slot (AROC)
24	Internal USB 3.2 Gen1 port

[1] All SATA ports support 6Gb/s transfer rate.

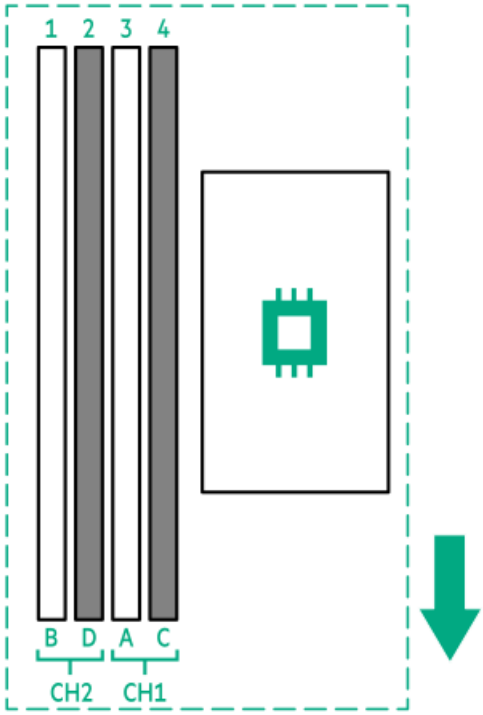
System maintenance switch descriptions

Position	Default	Function
S1 [1]	Off	• Off = iLO 5 security is enabled. • On = iLO 5 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 Configuring security.

DIMM slot location

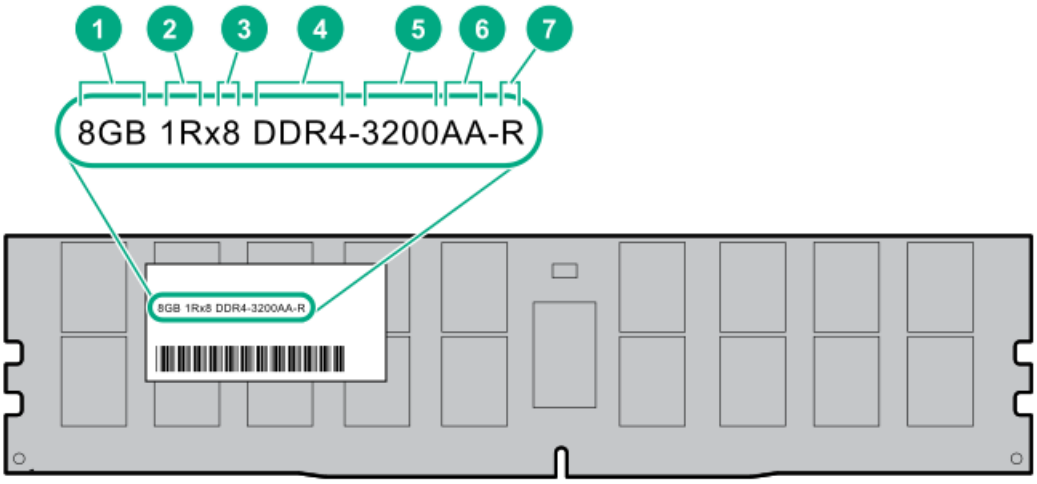
The arrow points to the front of the server.



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.

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**).



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	E = Unbuffered ECC (UDIMM) R = RDIMM (registered) L = LRDIMM (load reduced)

Drive bay numbering

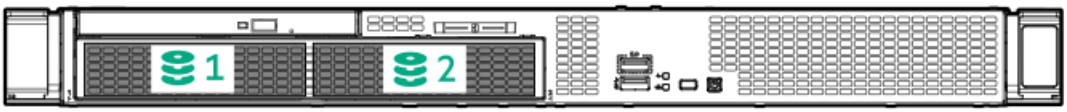
CAUTION:

When a server is purchased without any drive installed, some drive bays might be empty while other drive bays might be populated with drive blanks. To maintain proper system cooling, do not operate the server without a drive or a drive blank installed.

2 LFF non-hot-plug drive bay numbering

In the 2 LFF non-hot-plug drive configuration:

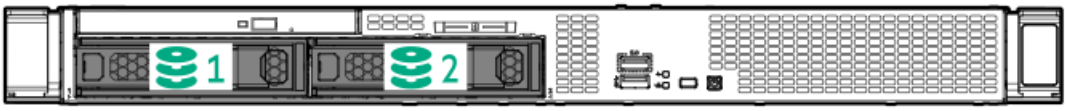
- All drives belong to the same box 1.
- SATA drives are supported.
- Onboard connection for the Intel VROC SATA RAID support is through the Mini-SAS port.



2 LFF hot-plug drive bay numbering

In the 2 LFF hot-plug drive configuration:

- All drives belong to the same box 1.
- SAS or SATA drives are supported.
- Onboard connection for the Intel VROC SATA RAID support is through the Mini-SAS port.



4 + 2 SFF hot-plug drive bay numbering

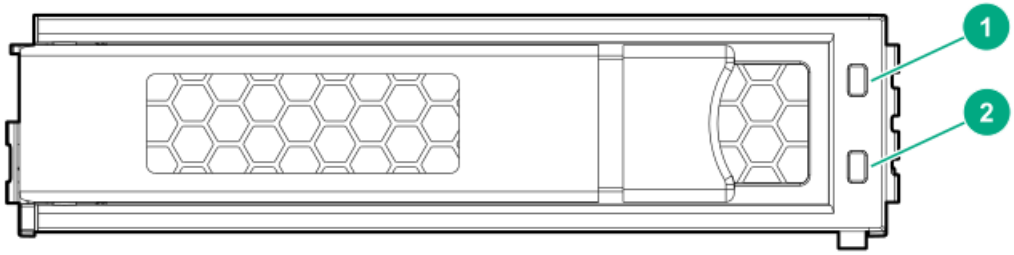
In the 4 + 2 SFF hot-plug drive configuration:

- Drives are assigned to optional box 1 (orange) and default box 2 (green).
- Box 1 supports SAS or SATA drives.
- Box 1 for the Intel VROC SATA RAID support is through SATA ports 1 and 2 on the system board.
- Box 2 supports SAS, SATA, or U.3 NVMe drives.
- Box 2 for the Intel VROC SATA RAID support is through the Mini-SAS port on the system board.

HPE Basic Drive LED definitions

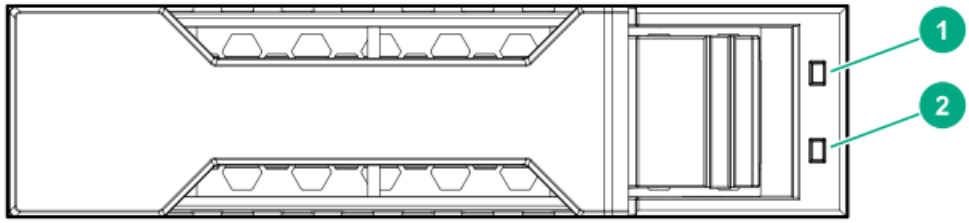
LFF low-profile drive carrier

The LFF low-profile drive carrier supports hot-plug SAS or SATA.



SFF basic drive carrier

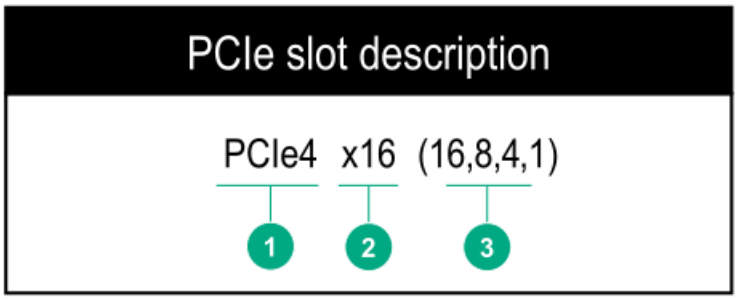
The SFF basic drive carrier supports hot-plug SAS, SATA, or U.3 NVMe.



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	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	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.

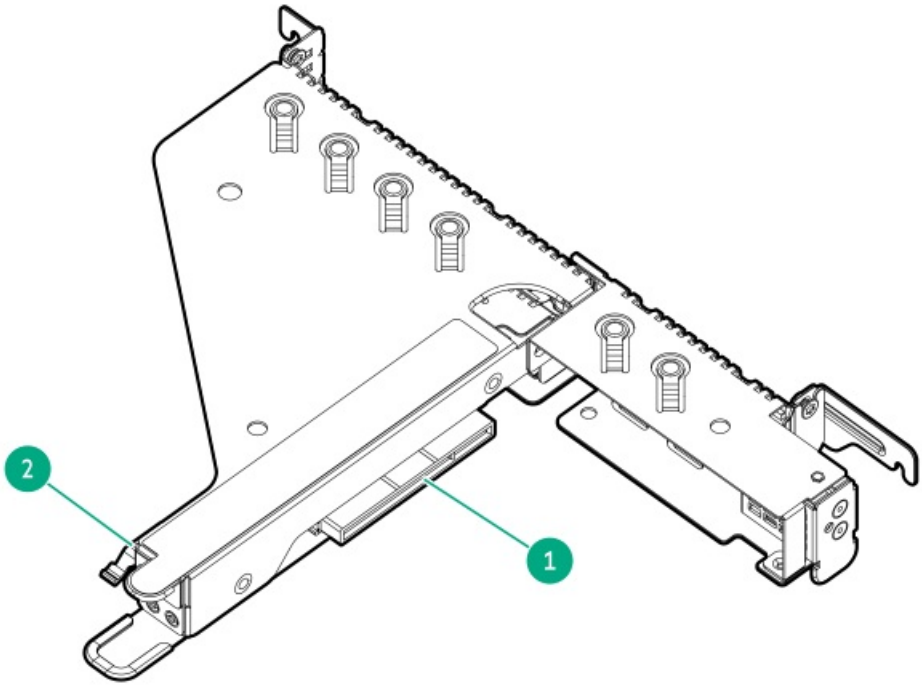
Item	LED	Status	Definition
		Off	The drive is not configured by a RAID controller or is a spare drive.

PCIe4 slot description



Item	Description	Definition
1	PCI Express version	Each PCIe version corresponds to a specific data transfer rate between the processor and peripheral devices. Generally, a version update corresponds to an increase in transfer rate. • PCIe 1.x • PCIe 2.x • PCIe 3.x • PCIe 4.x The PCIe technology is under constant development. For the latest information, see the **PCI-SIG website**.
2	Physical connector link width	PCIe devices communicate through a logical connection called an interconnect or link. At the physical level, a link is composed of one or more lanes. The number of lanes is written with an x prefix with x16 being the largest size in common use. • x1 • x2 • x4 • x8 • x16
3	Negotiable link width	These numbers correspond to the maximum link bandwidth supported by the slot.

Riser board components



Two-slot PCIe4 x16/x4 riser

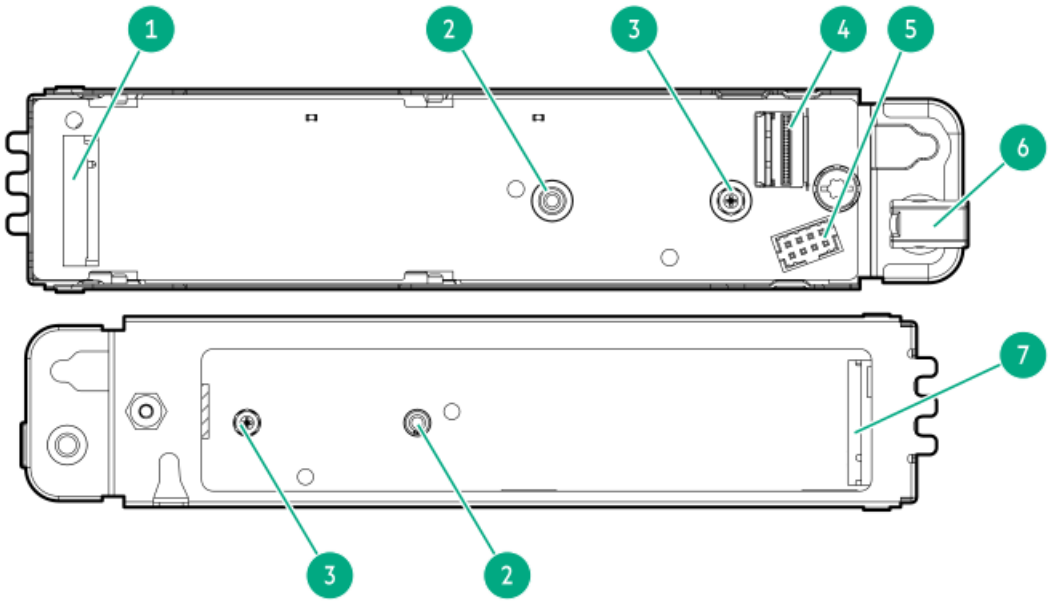
Slot number	Slot type	Slot power	Supported form factors
1	PCIe4 x8 (4, 1)	25 W	Half-height, half-length (low-profile)
2	PCIe4 x16 (16, 8, 4, 1)	75 W	Full-height, half-length

Two-slot PCIe4 x8/x8 riser

Slot number	Slot type	Slot power	Supported form factors
1	PCIe4 x8 (8, 4, 1)	25 W	Half-height, half-length (low-profile)
2	PCIe4 x16 (8, 4, 1)	75 W	Full-height, half-length

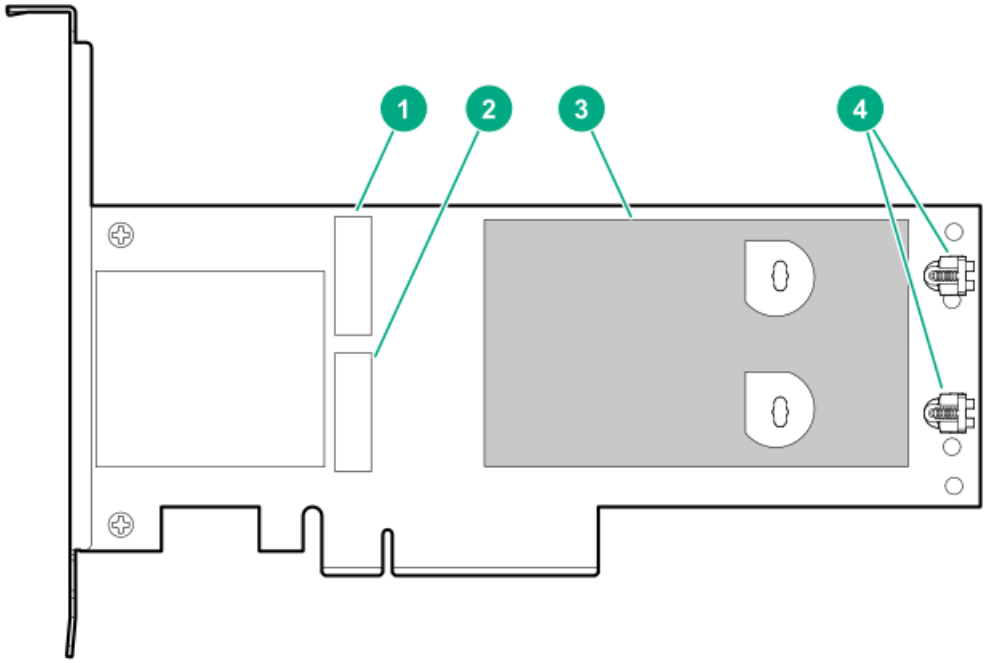
M.2 SSD pass-through card components

The dual-slot M.2 SSD pass-through card option supports both SATA and NVMe SSDs in 2280 and 22110 form factors.



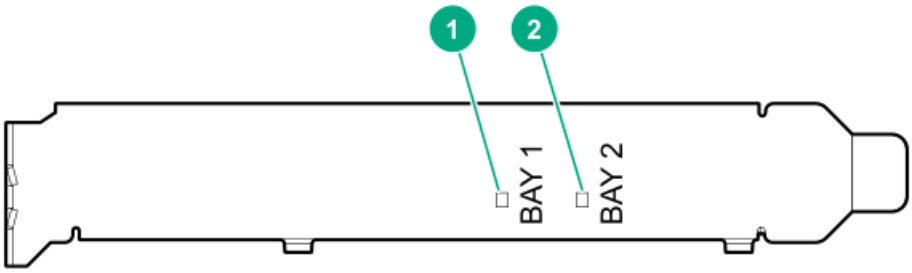
Item	Description
1	M.2 SSD slot 1
2	2280 standoff
3	22110 standoff
4	SlimSAS port
5	Power connector
6	Retaining latch
7	M.2 SSD slot 2

HPE NS204i-p NVMe OS Boot Device components



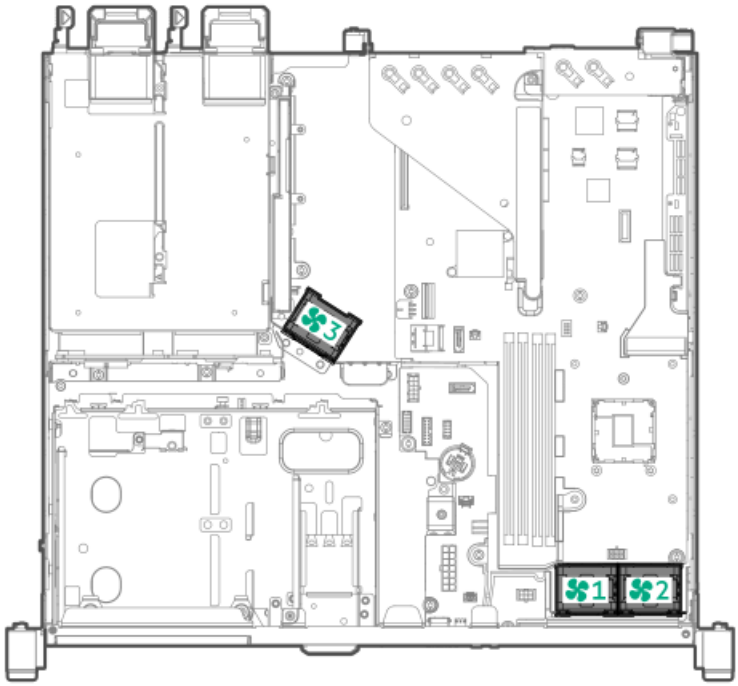
Item	Description
1	Drive bay 1
2	Drive bay 2
3	Thermal interface pad with removable liner
4	M.2 drive retaining latches

HPE NS204i-p NVMe OS Boot Device LED definitions



Item	Description	Fault LED status
1	Bay 1 LED	Off: Normal
2	Bay 2 LED	Flashing 1Hz: Drive predictive failure Amber: Drive failure

Fan numbering



Fan mode behavior

The server supports nonredundant fan mode. If a fan fails or is missing, the following behaviors are exhibited:

- The health LED flashes red.
- The operating system performs a graceful shutdown.

Trusted Platform Module 2.0

The Trusted Platform Module 2.0 (TPM) is a hardware-based system security feature that securely store artifacts used to authenticate the platform. These artifacts can include passwords, certificates, and encryption keys.

The TPM 2.0 is embedded on the server system board.

The TPM 2.0 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**).

Trusted Platform Module 2.0 guidelines

CAUTION:

- Always observe the TPM guidelines in this section. Failure to follow these guidelines can cause hardware damage or halt data access.
- If you do not follow procedures for modifying the server and suspending or disabling the TPM in the OS, an OS that is using TPM might lock all data access. This includes updating system or option firmware, replacing hardware such as the system board and drives, and modifying TPM OS settings.
- Changing the TPM mode after installing an OS might cause problems, including loss of data.

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.

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 the embedded TPM is enabled:
  - In UEFI boot mode, the Trusted Platform Module operates in TPM 2.0 mode.
  - In legacy boot mode, the Trusted Platform Module operation is not supported.
- Use the UEFI System Utilities to configure the TPM. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options. For more information, see the UEFI user guide:

  https://www.hpe.com/support/UEFIGen10-UG-en
- When using the Microsoft Windows BitLocker Drive Encryption feature, always retain the recovery key or password. The recovery key or password is required to enter Recovery Mode after BitLocker detects a possible compromise of system integrity.
- HPE is not liable for blocked data access caused by improper TPM use. For operating instructions, see the documentation for the encryption technology feature provided by the operating system.

BitLocker recovery key/password retention guidelines

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 an encrypted drive.

Operations

This chapter describes the hardware operations carried out prior to and after installing or removing a hardware option, or performing a server maintenance or troubleshooting procedure. Before performing these hardware operations, review:

- Rack warnings and cautions
- Server warnings and cautions

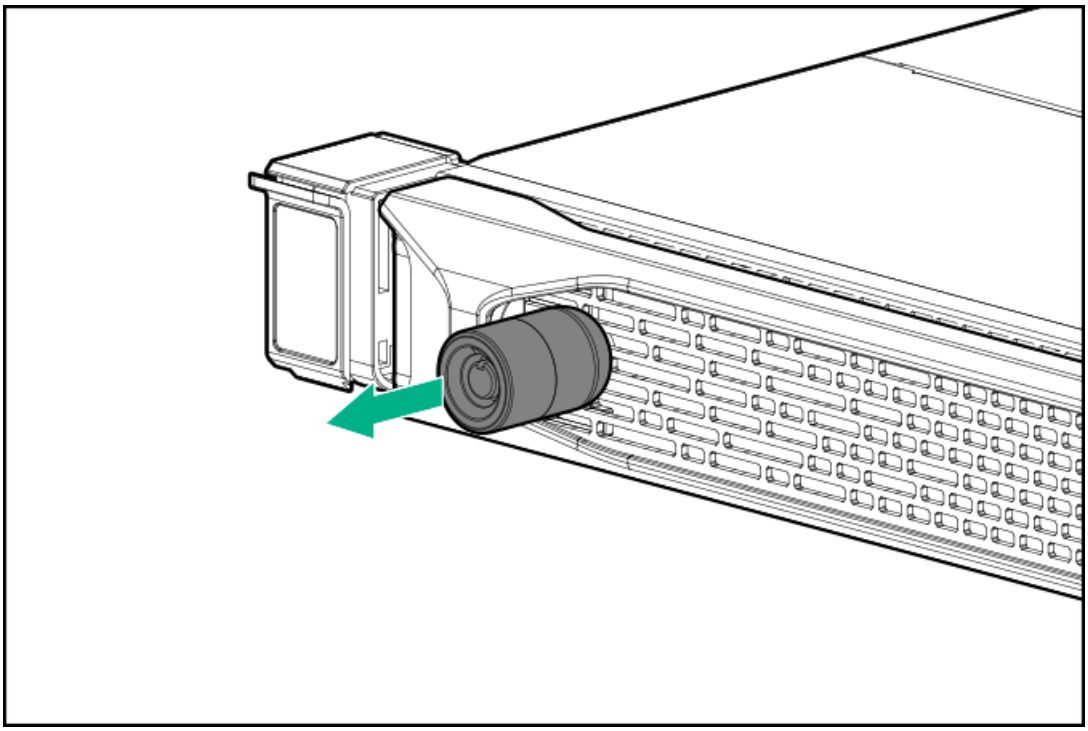
Remove the front bezel

If you are using the virtual power button in iLO to power the server on/off, you do not need to remove the front bezel. Remove the front bezel only if you need to access the front panel components.

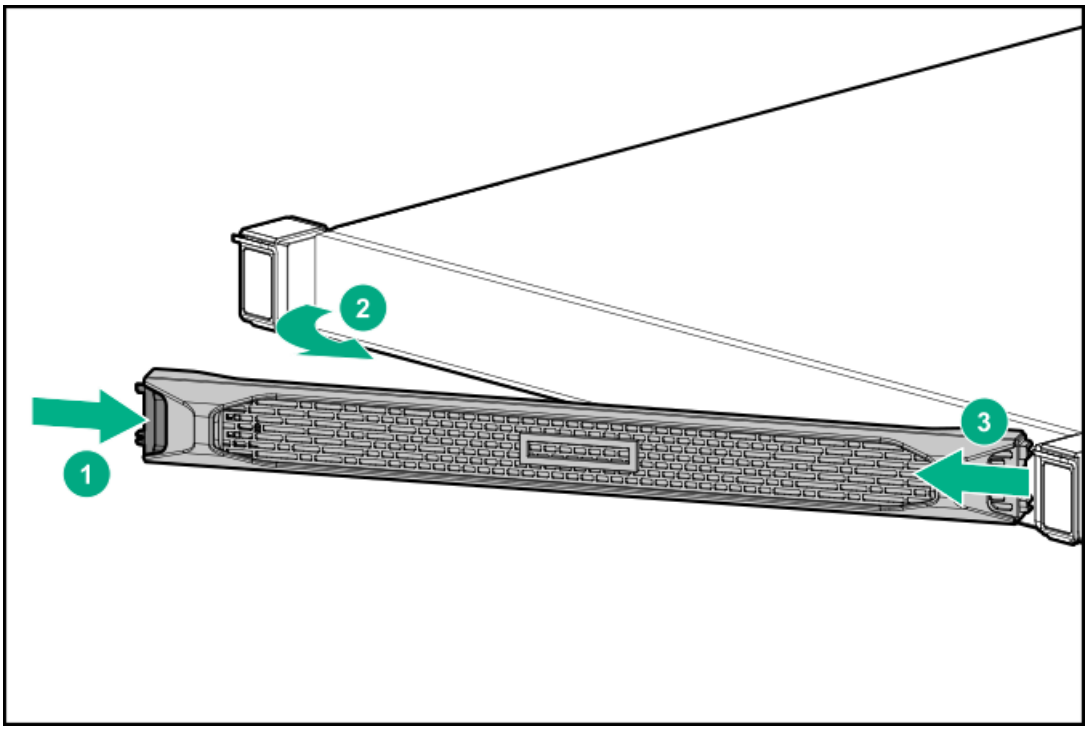
Procedure

1. If installed, remove the Kensington security lock.

   For more information, see the lock documentation.



2. Press the bezel release latch (callout 1), and then pivot the bezel open (callout 2).
3. Release the right side of the bezel from the front panel.



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 5.

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 5.
  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.

Remove the server from the rack

Prerequisites

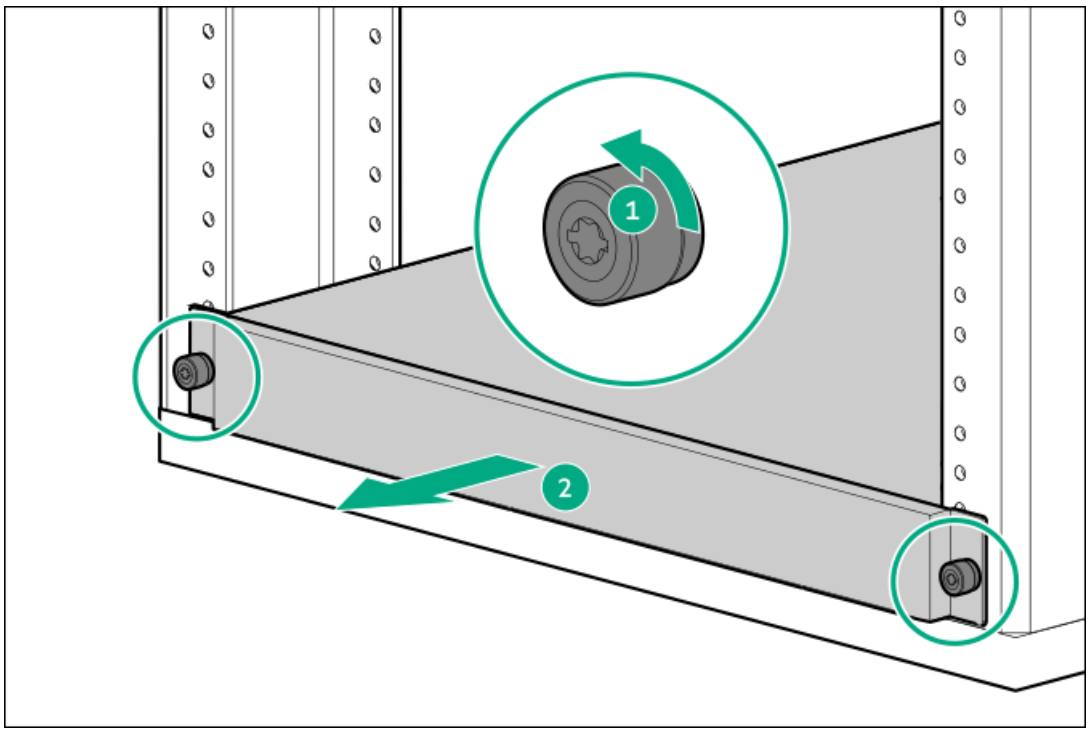
- Get help to lift and stabilize the server during removal from the rack. **If the server is installed higher than chest level, an additional person might be required to help remove the server:** one person to support the server weight, and the other to slide the server out of the rack.
- Before you perform this procedure, review the:
  - Rack warnings and cautions
  - Server warnings and cautions
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external server components before removing the server from the rack.
- Before you perform this procedure, make sure that you have a T-25 Torx screwdriver available.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Extend the server from the rack, do one of the following:

> ⚠ **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.

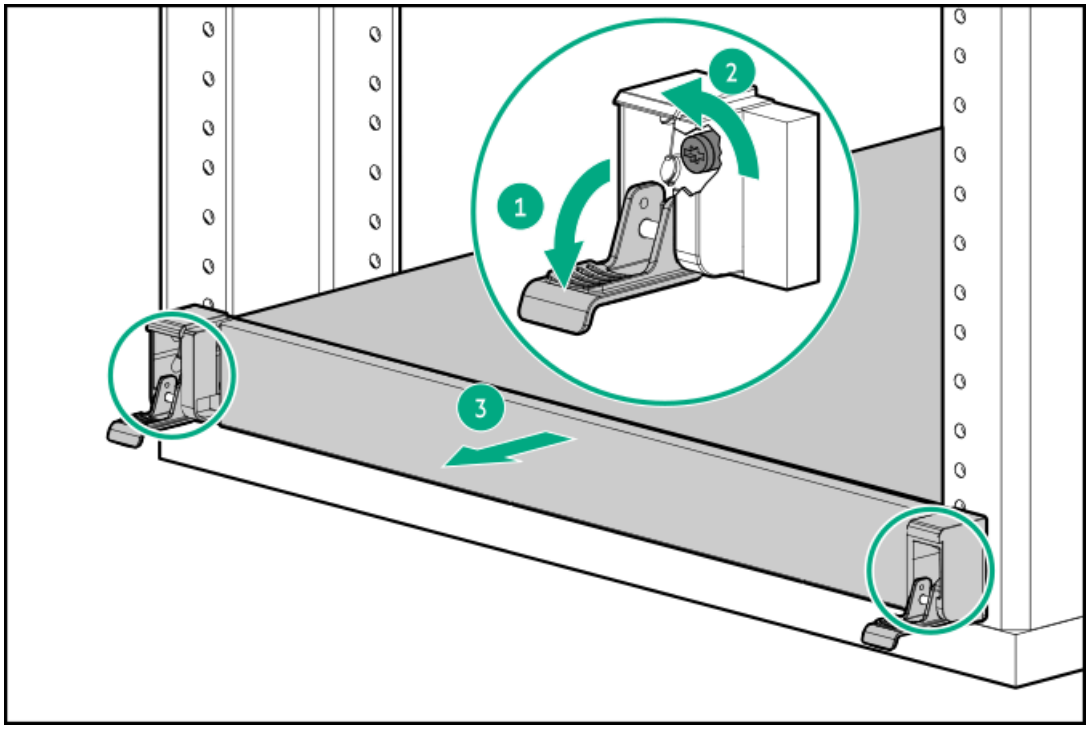
- For a server that has thumbscrew ears, do the following:
  a. Loosen the captive thumbscrews (callout 1).
  b. Slide the server out of the rack until the rail-release latches are engaged (callout 2).



- For a server that has quick-release chassis ears, do the following:
  a. Open the chassis ear latch (callout 1).

b. Loosen the shipping screws (callout 2).

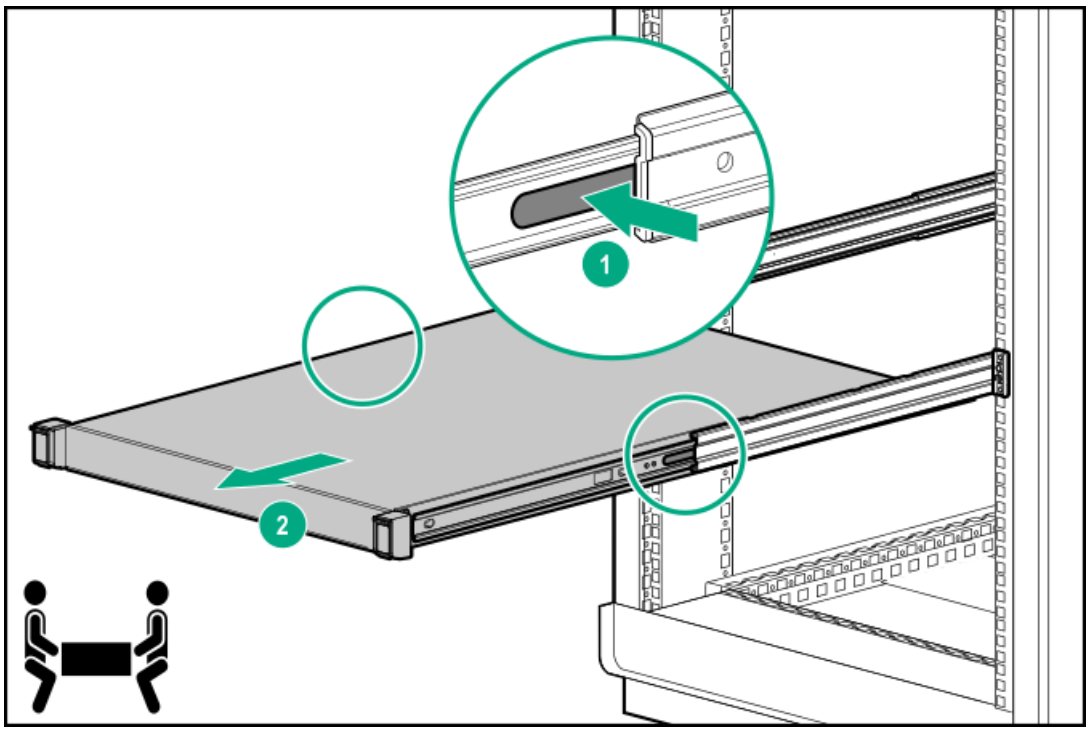
c. Slide the server out of the rack until the rail-release latches are engaged (callout 3).



6. Remove the server from the rack:

a. Press and hold the protruding surface of the server rail-release latches (callout 1).

b. Pull the server from the rack (callout 2).



7. Place the server on a flat, level work 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:

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

CAUTION:

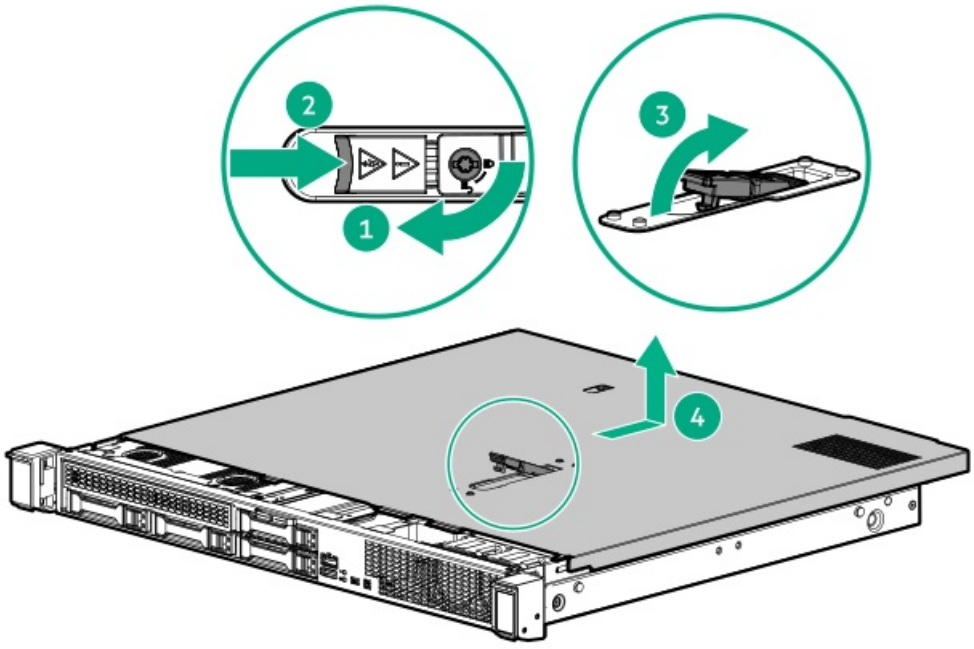
Do not operate the server for long periods with the access panel open or removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel:
   a. If necessary, unlock the access panel latch (callout 1).
   b. To disengage the access panel from the chassis, press the release button and pull up the latch (callouts 2 and 3).
   c. Lift the access panel (callout 4).



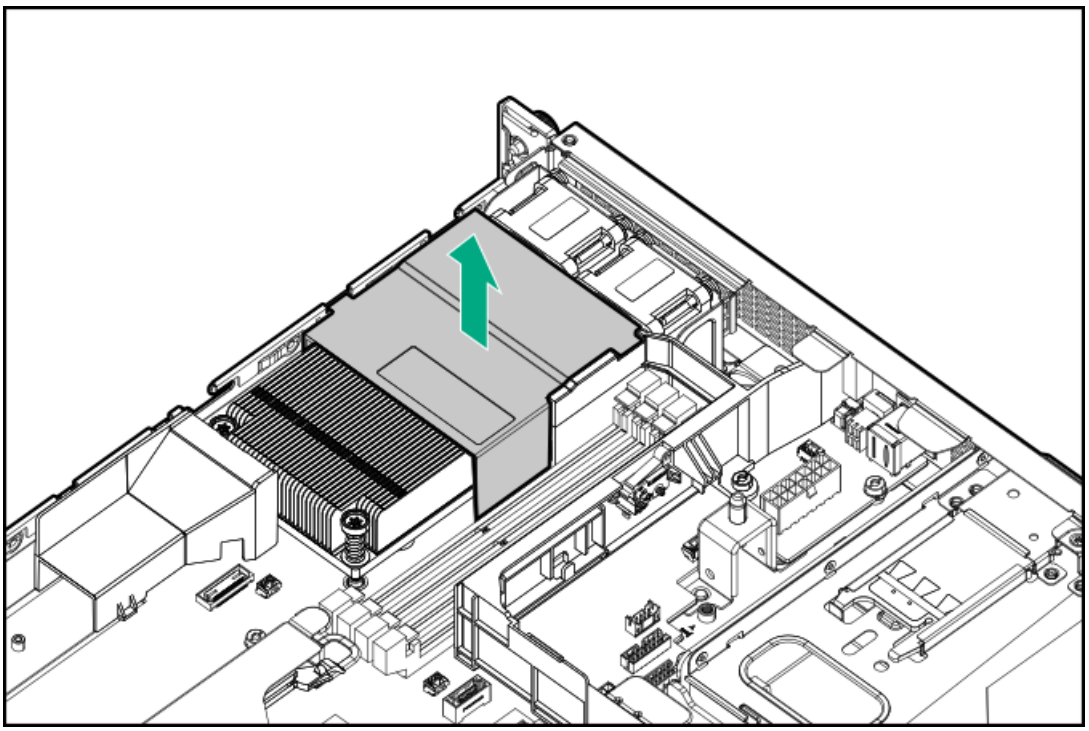
Remove the processor air baffle

CAUTION: For proper cooling, do not operate the server without the access panel, baffles, or blanks installed.

The processor air baffle (P48355-B21) is present when a processor that has a TDP ≥ 95 W is installed.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the processor air baffle.

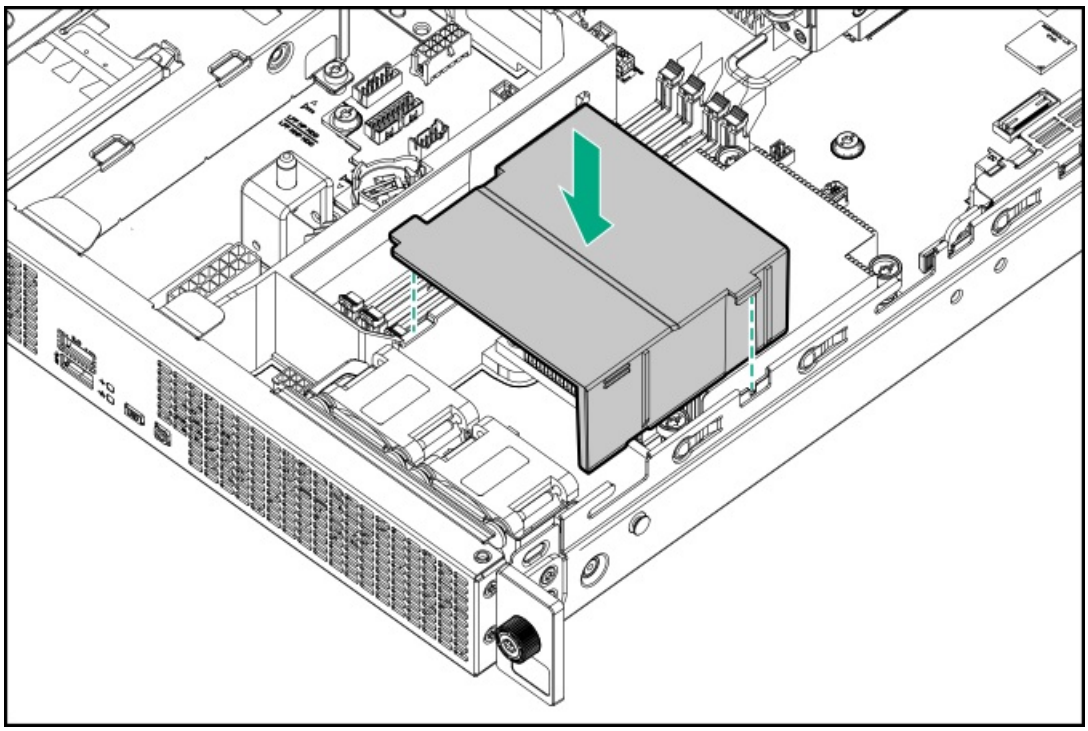


Install the processor air baffle

The air baffle part (P48355-B21) is required when a processor that has a TDP ≥ 95 W is installed.

Procedure

Install the processor air baffle.

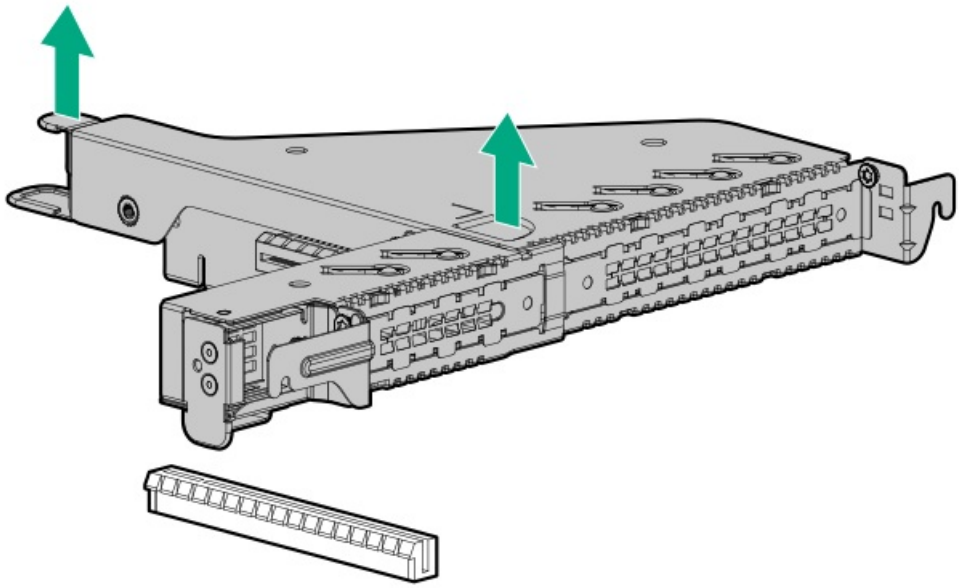


Remove the riser cage

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

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. If an expansion card with internal cables is installed on the riser, disconnect the cables from the card.
9. Lift the riser cage off the system board.

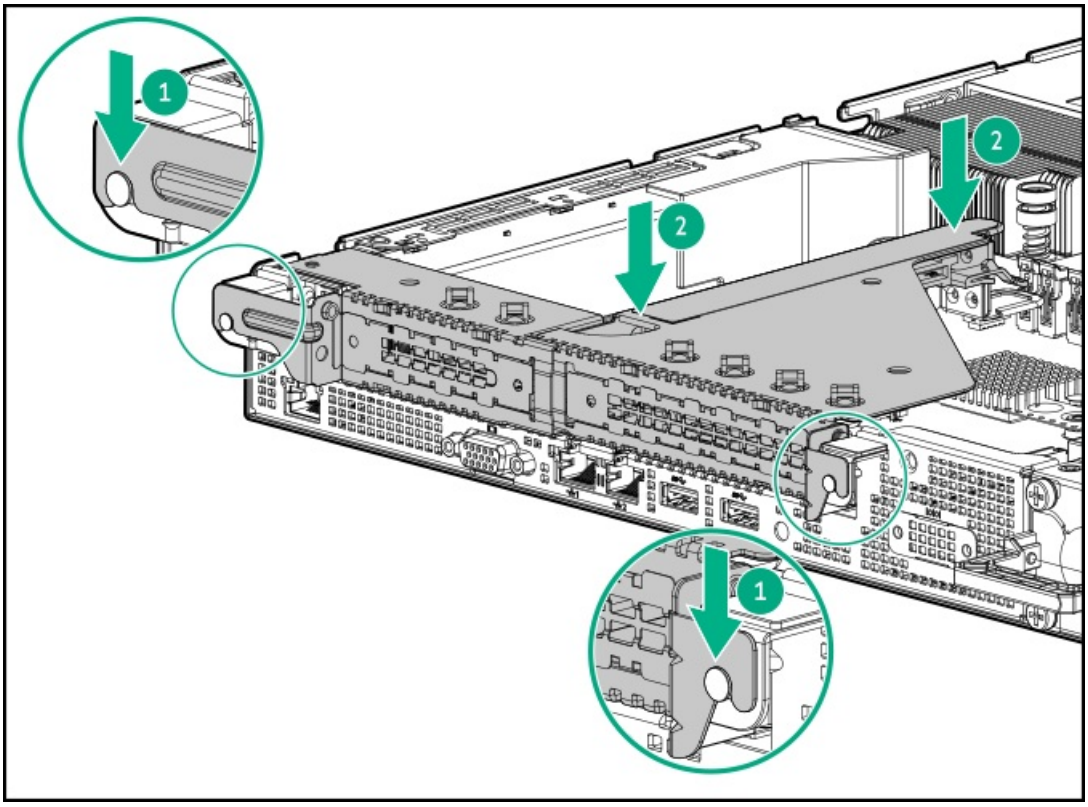


Install the riser cage

Procedure

1. If an expansion card or its internal cabling was removed, reinstall these components.
2. Install the riser cage:
   a. Align the notches on the riser cage with the spools on the rear panel (callout 1).
   b. Carefully press the riser down on its system board connector (callout 2).

      Make sure that the riser board is firmly seated.



Install the access panel

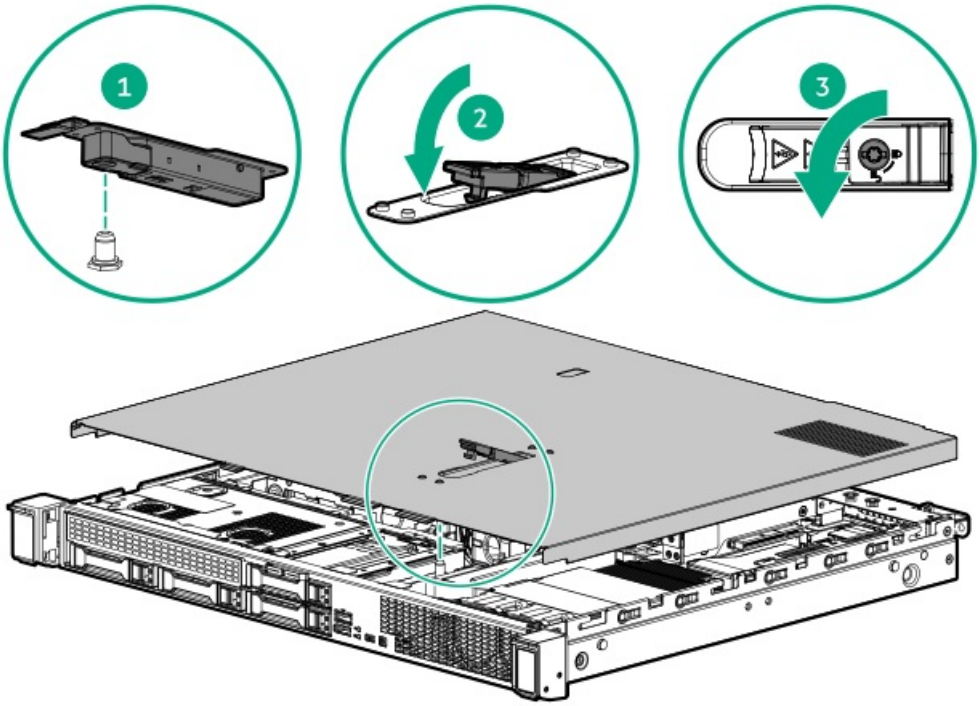
Prerequisites

Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

Procedure

1. With access panel latch open, insert the guide pin on the chassis through the hole on the access panel latch.
2. Close the access panel latch.

   The access panel slides to a closed position.
3. Lock the access panel latch.



4. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the access panel.

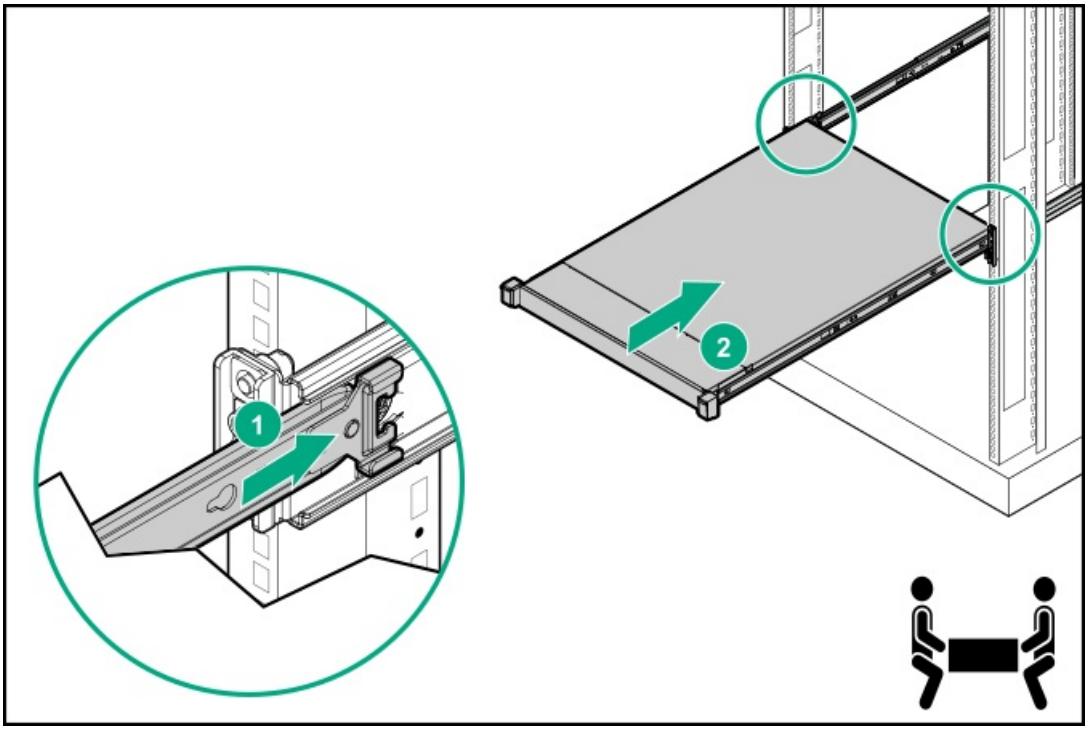
Install the server into the rack

Prerequisites

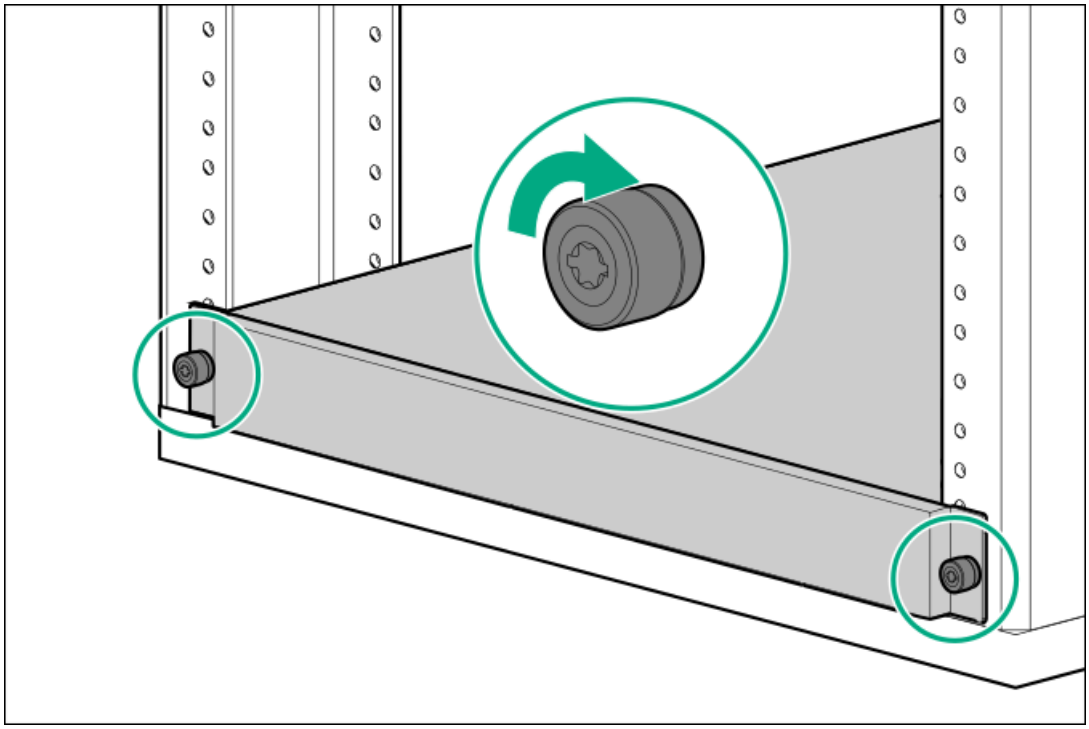
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, an additional person might be required to help install the server:** one person to support the server weight, and the other to slide the server into the rack.
- Before you perform this procedure, review the:
  - Rack warnings and cautions
  - Server warnings and cautions
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- Before you perform this procedure, make sure that you have a T-25 Torx screwdriver available.

Procedure

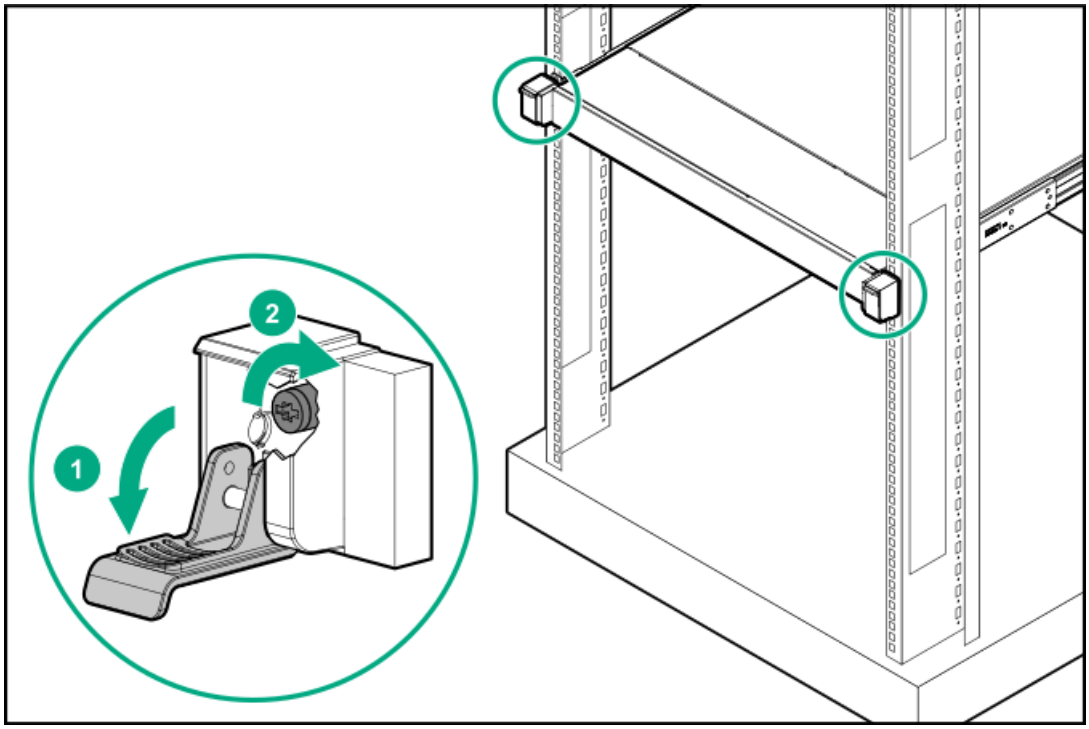
1. Install the server into the rack:
   a. Insert the sliding rails into the rack mounting rails (callout 1).
   b. Slide the server into the rack until the chassis ears are engaged with the rack columns (callout 2).



2. Secure the server on the rack, do one of the following:
   - For a server that has thumbscrew ears, tighten the captive thumbscrews.



- For a server that has quick-release chassis ears , open the latches (callout 1), and then tighten the shipping screws (callout 2).



3. Connect all peripheral cables to the server.
4. Connect the power cords:
   a. Connect each power cord to the server.
   b. Connect each power cord to the power source.

Setup

This chapter describes the initial setup procedure for the server. As well as general operational requirements and safety reminders.

Initial system installation

Depending on your technical expertise and the complexity of the product, for the initial system installation, select one of the following options:

- Ordering the HPE Installation Service
- Setting up the server

HPE Installation Service

HPE Installation Service provides basic installation of Hewlett Packard Enterprise branded equipment, software products, as well as HPE-supported products from other vendors that are sold by HPE or by HPE authorized resellers. The Installation Service is part of a suite of HPE deployment services that are designed to give users the peace of mind that comes from knowing that their HPE and HPE-supported products have been installed by an HPE specialist.

The HPE Installation Service provides the following benefits:

- Installation by an HPE authorized technical specialist.
- Verification prior to installation that all service prerequisites are met.
- Delivery of the service at a mutually scheduled time convenient to your organization.
- Allows your IT resources to stay focused on their core tasks and priorities.
- Full coverage during the warranty period for products that require installation by an HPE authorized technical specialist.

For more information on the features, limitations, provisions, and ordering information of the HPE Installation Service, see this Hewlett Packard Enterprise website:

https://www.hpe.com/support/installation-service

Setting up the server

Prerequisites

Before setting up the server:

- Download the latest SPP:
  https://www.hpe.com/servers/spp

  You might be prompted for your HPE Passport credentials.
- Verify that your OS or virtualization software is supported:
  https://www.hpe.com/support/Servers-Certification-Matrices
- Review the UEFI Deployment Guide for HPE ProLiant Gen10, ProLiant Gen10 Plus Servers and HPE Synergy:
  https://www.hpe.com/support/UEFIGen10-DG-en

  If the UEFI requirements are not met, you might experience boot failures or other errors when installing the operating system.
- If needed, do one of the following to download the storage driver:
  - Download it from the Hewlett Packard Enterprise Support Center website:

    https://www.hpe.com/support/hpesc
  - Extract it from the SPP.
- If you intend to implement software RAID for SATA drives, use the embedded Intel Virtual RAID on CPU (Intel VROC). In the pre-OS environment, the Intel VROC package allows RAID management though the UEFI System Utilities.
  - Ensure you set the server boot mode to UEFI Mode (default).
  - If needed, obtain the Intel VROC downloads (driver, GUI) specific for your system OS from the Hewlett Packard Enterprise Support Center website:

    https://www.hpe.com/support/hpesc
- Read the operational requirements for the server.
- Read the safety and compliance information on the HPE website:

  https://www.hpe.com/support/safety-compliance-enterpriseproducts

Procedure

1. Unbox the server and verify the contents:
   - Server
   - Power cord
   - Rack rail hook-and-loop strap
   - Rack-mounting hardware (optional)
   - Documentation
2. (Optional) Install the hardware options.
3. Install the server into the rack .
4. Press the Power On/Standby button.
5. Decide how to manage the server:
   - Locally: Use a KVM switch or a connect a keyboard, monitor, and mouse.
   - Remotely: Connect to the iLO web interface and run a remote console:
     a. Verify the following:
        - iLO is licensed to use the remote console feature.

          If iLO is not licensed, visit the HPE website:

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

- The iLO management port is connected to a secure network.

b. Using a browser, navigate to the iLO web interface, and then log in.

```
https://<iLO hostname or IP address>
```

Note the following:

- The iLO host name is on the serial number/ iLO information pull tab on the front panel.
- If a DHCP server assigns the IP address, the IP address appears on the boot screen.
- If a static IP address is assigned, use that IP address.
- The default login credentials are on the serial number/ iLO information pull tab on the front panel.

c. Enter the iLO login name and password, and then click Log In.

d. In the navigation tree, click the Remote Console & Media link, and then launch a remote console.

6. Perform the following steps:

a. Configure the initial server setup.

b. Set up the storage.

c. Deploy an OS or virtualization software.

d. After the OS is installed, update the drivers.

7. To experience quicker service and efficient support, register the server at the HPE website:

https://myenterpriselicense.hpe.com

Operational requirements

When preparing the site and planning the installation for the HPE ProLiant DL20 Gen10 Plus Server, be sure to observe the following general operational requirements:

- Space and airflow requirements
- Temperature requirements
- Power requirements
- Electrical grounding requirements

For server-specific environmental requirements, see Environmental specifications.

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:

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.

Rack warnings and cautions

WARNING:

When all components are removed, the server weighs 6.00 kg (13.23 lb). When all components are installed, the server can weigh up to 10.00 kg (22.05 lb).

Before configuring your rack solution, be sure to check the rack manufacturer weight limits and specifications. Failure to do so can result in physical injury or damage to the equipment and the facility.

WARNING:

The server is heavy. To reduce the risk of personal injury or damage to the equipment, do the following:

- 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. The server weighs more than 6.00 kg (13.23 lb), so at least two people must lift the server into the rack together. An additional 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.
- Adequately stabilized 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.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.

WARNING:

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

- The rack has anti-tip measures in place. Such measures include floor-bolting, anti-tip feet, ballast, or a combination as specified by the rack manufacturer and applicable codes.
- The leveling jacks (feet) are extended to the floor.
- The full weight of the rack rests on the leveling jacks (feet).
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple rack installations.

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.

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.

CAUTION:

Before installing the server in a rack, be sure to properly scope the limitations of the rack. Before proceeding with the installation, consider the following:

- You must fully understand the static and dynamic load carrying capacity of the rack and be sure that it can accommodate the weight of the server.

- Be sure sufficient clearance exists for cabling, installation and removal of the server, and movement of the rack doors.

Server warnings and cautions

WARNING:

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

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

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 UPS. This device protects the hardware from damage caused by power surges and voltage spikes and keeps the server in operation during a power failure.

CAUTION:

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

CAUTION:

To avoid data loss, Hewlett Packard Enterprise recommends that you back up all server data before installing or removing a hardware option, or performing a server maintenance or troubleshooting procedure.

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.

Electrostatic discharge

Be aware of the precautions you must follow when setting up the system or handling components. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the system or component.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:
  - Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
  - Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
  - Use conductive field service tools.
  - Use a portable field service kit with a folding static-dissipating work mat.

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

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

Hardware options installation

This chapter provides instructions for installing supported hardware options. To ensure proper server deployment and operation, Hewlett Packard Enterprise recommends installing only HPE-validated hardware options. To see the list of validated options for this server, see the product QuickSpecs on the HPE ProLiant DL20 Gen10 Plus Server website:

https://www.hpe.com/servers/dl20-gen10-plus

To view the warranty for your server and supported options, see Warranty information.

Hardware option installation guidelines

⚠ **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.

- 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.
- If the hardware option installation involves internal cabling, review the Cabling guidelines.

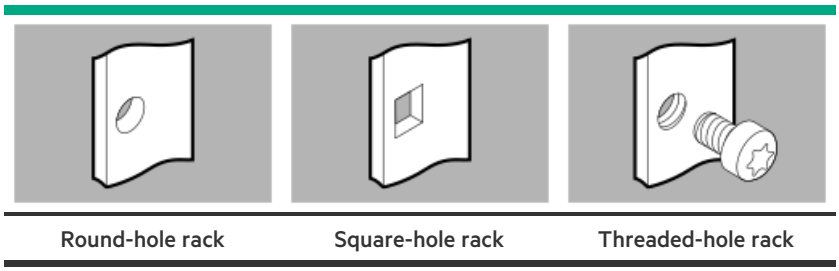
Rack rail option

1. Installing the rack rail option
2. Installing the rack rail hook-and-loop strap

Installing the rack rail option

The rack rails can be installed in round-hole, square-hole, or threaded-hole racks. The rack rails occupy 1U space in the rack.

The illustrations used in this procedure show an icon on the upper right corner of the image. This icon indicates the rack type for which the action illustrated in the image is valid.



Round-hole rack	Square-hole rack	Threaded-hole rack

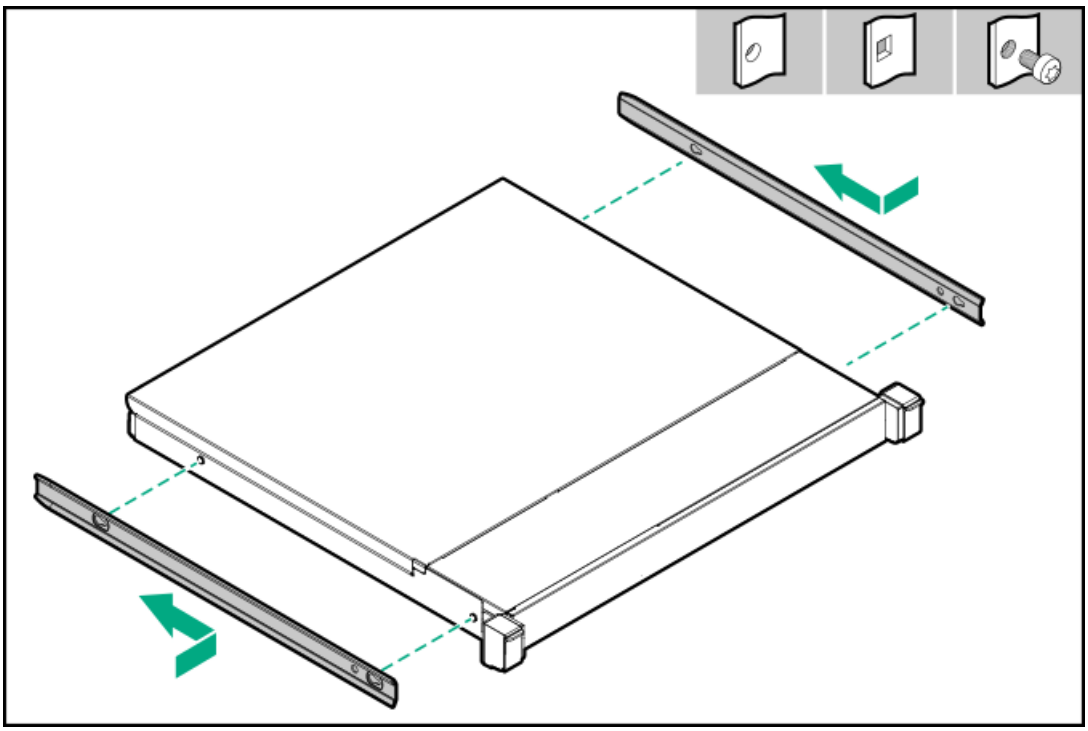
Prerequisites

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

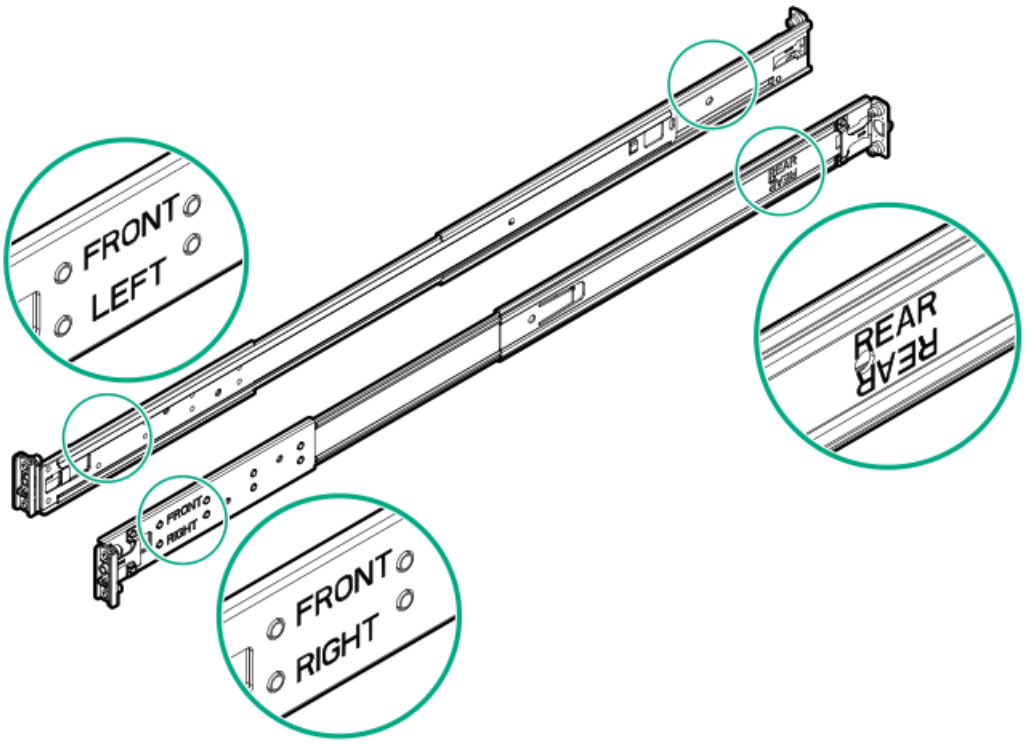
- T-15 Torx screwdriver
- Small slotted screwdriver—This tool is required only if you plan to install the server in a threaded-hole rack.

Procedure

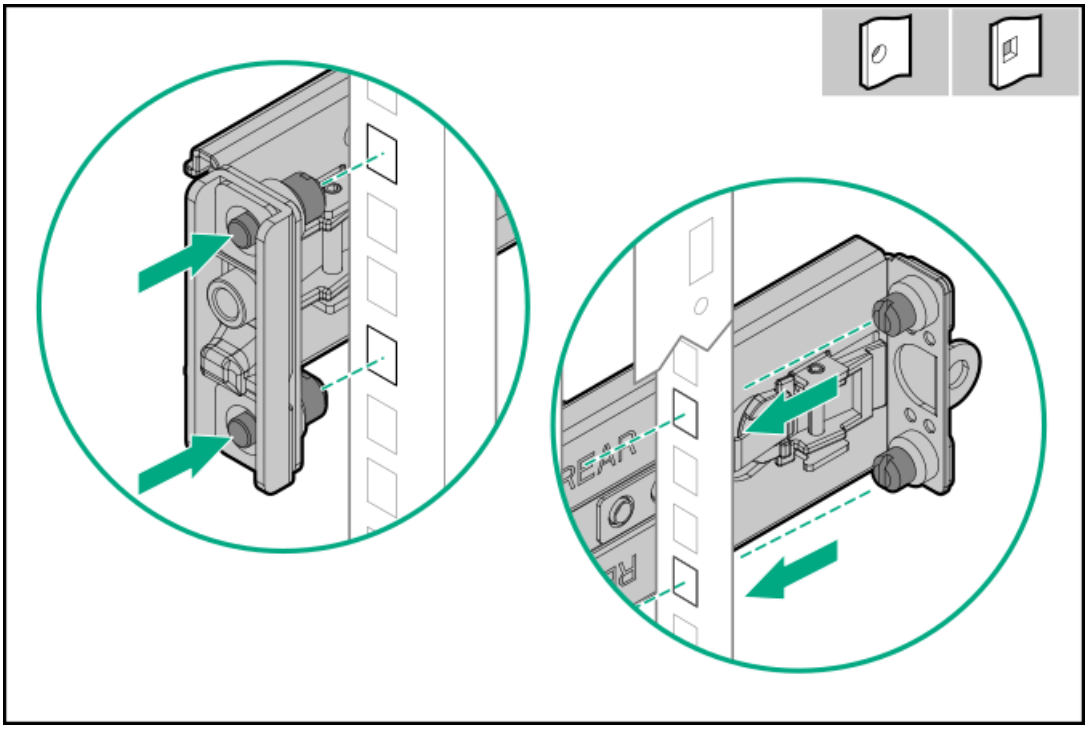
1. Attach the sliding rails to the server:
   a. Insert the spools on the sides of the server through the notches on the rails.
   b. Slide the rail towards the rear panel to lock it into place.



2. Locate the orientation markers on the mounting rails.
   - The front end of the rails is marked as **FRONT LEFT** or **FRONT RIGHT**.
   - The other end of the rails is marked as **REAR**.

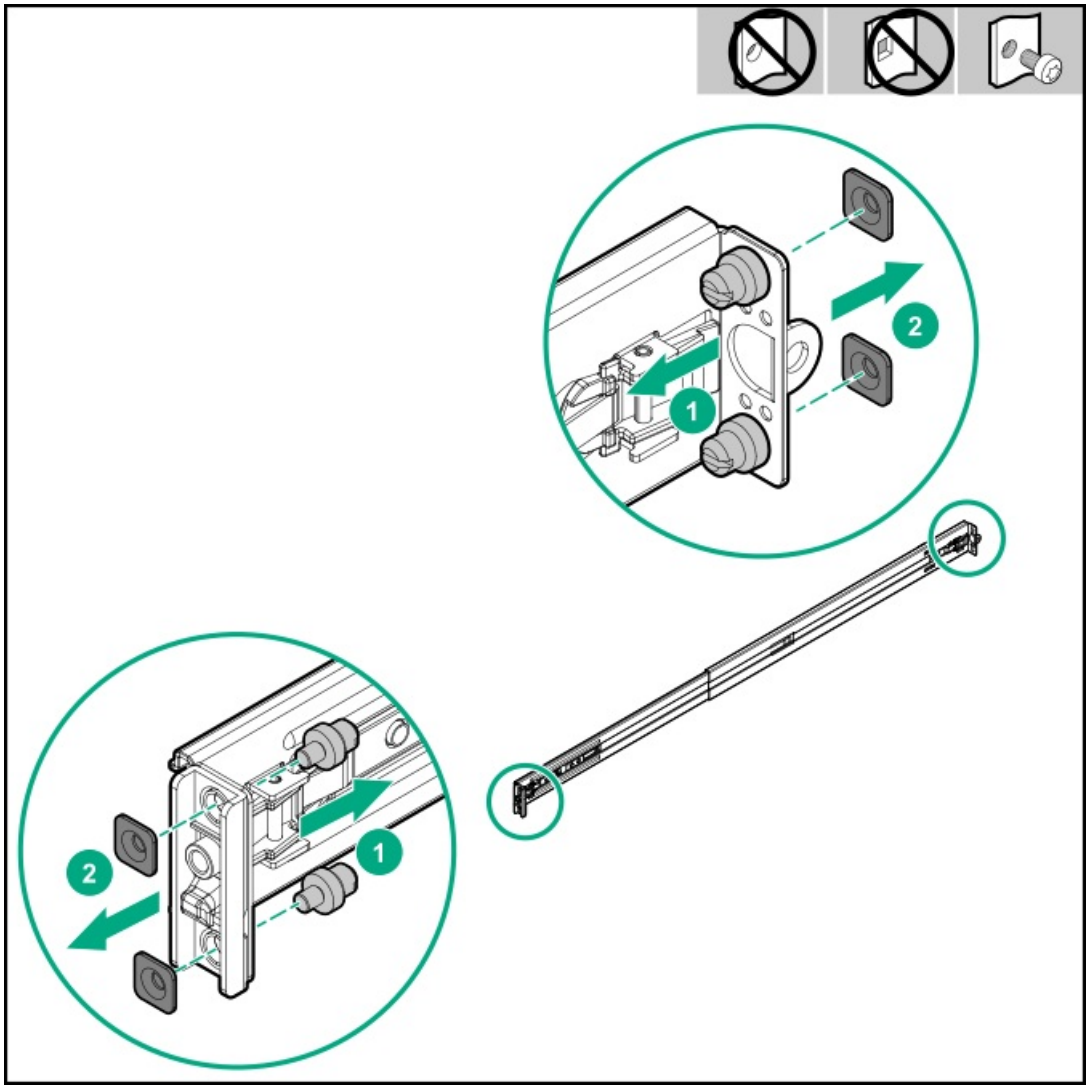


3. Extend the inner rail of the mounting rails to align with the depth of the rack.
4. To install the mounting rails in a round-hole or square-hole rack, insert the pins on the mounting flanges into the rack column holes.



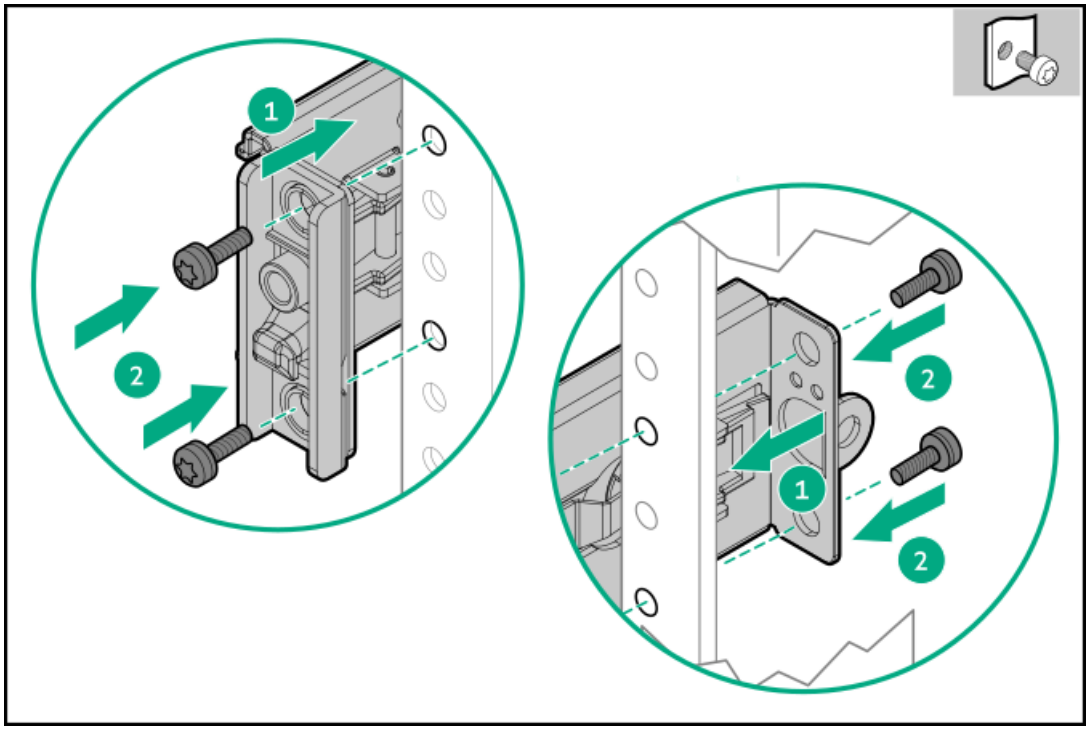
5. To install the mounting rails in a threaded-hole rack, do the following:
   a. Remove the pins and washers from the mounting rails.

      Retain all pins and washers for future use.



b. Position the holes on the mounting flanges against the threaded holes on the rack column (callout 1).

c. Install the rack mounting screws (callout 2).



6. Install the server into the rack .

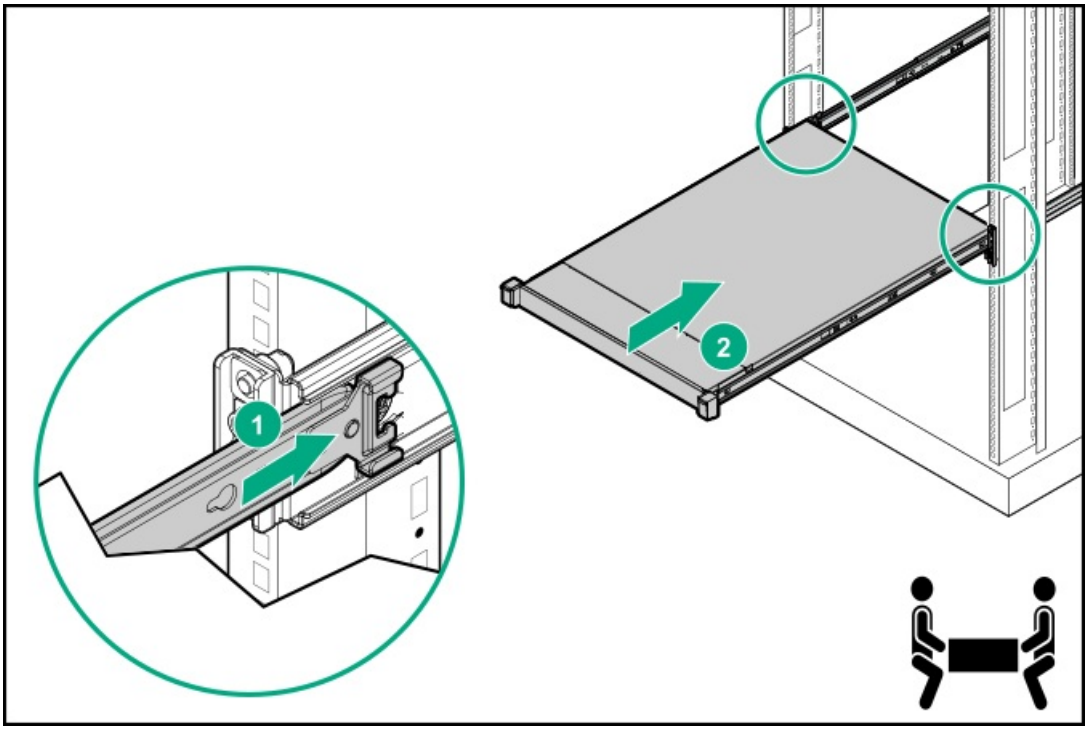
Installing the server into the rack

Prerequisites

- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, an additional person might be required to help install the server:** one person to support the server weight, and the other to slide the server into the rack.
- Before you perform this procedure, review the:
  - Rack warnings and cautions
  - Server warnings and cautions
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- Before you perform this procedure, make sure that you have a T-25 Torx screwdriver available.

Procedure

1. Install the server into the rack:
   a. Insert the sliding rails into the rack mounting rails (callout 1).
   b. Slide the server into the rack until the chassis ears are engaged with the rack columns (callout 2).



2. Connect all peripheral cables to the server.
3. Connect the power cords:
   a. Connect each power cord to the server.
   b. Connect each power cord to the power source.
4. Install the rack rail hook-and-loop strap .

Installing the rack rail hook-and-loop strap

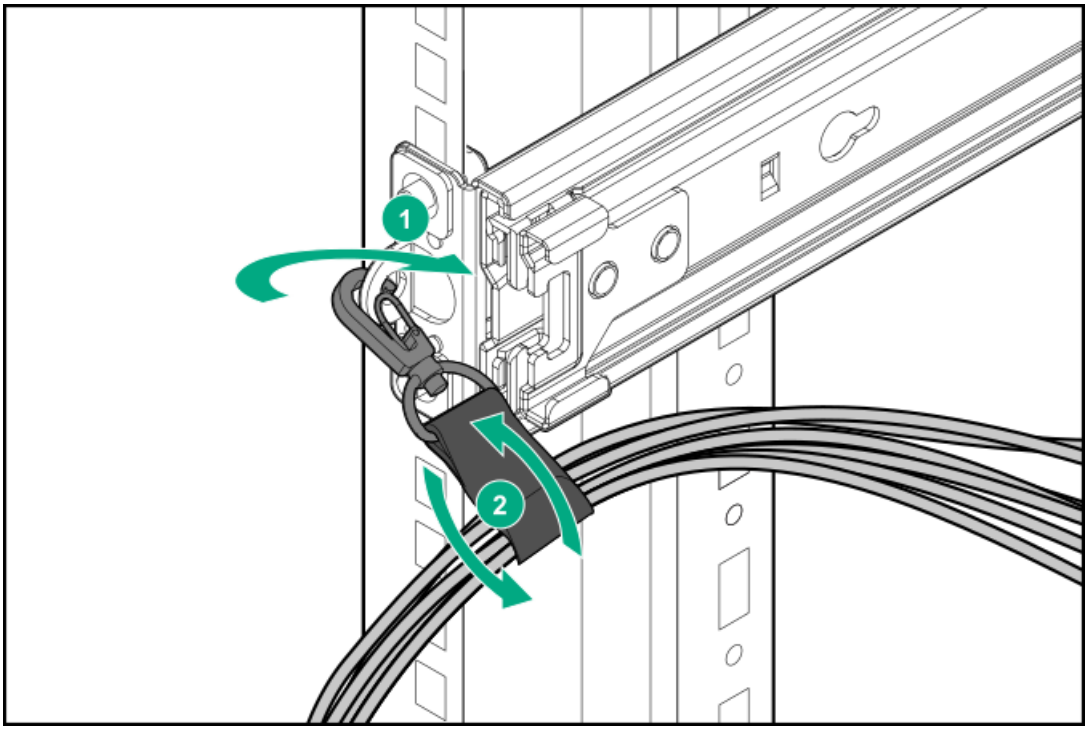
Use the rack rail hook-and-loop strap to manage the rear panel cables. The hook-and-loop strap can be installed on either the left or right rack mounting rail.

Prerequisites

Before you perform this procedure, make sure that you have a T-25 Torx screwdriver available.

Procedure

1. Attach the strap carabiner to the rack mounting rail.
2. Bundle the rear panel power cords and peripheral cables, and then wrap the strap around the cables.



3. Verify that the peripheral cables and power cords are secured properly.

   Two people are needed for this procedure: one to slide the server in and out of the rack, and the other to observe the peripheral cables and power cords.

   a. Fully extend the server out of the rack.

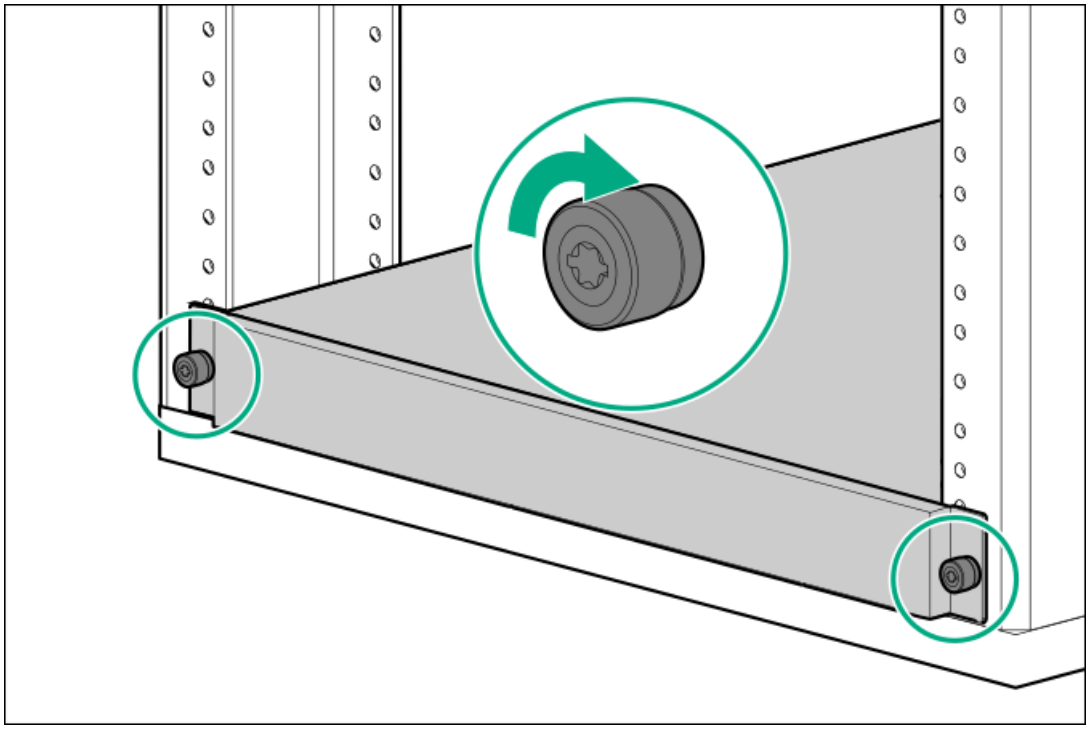
   b. Make sure that there is enough slack in the cables and cords secured in the hook-and-loop strap for a full extension of the rack rails.

      Make sure that there is no cable binding or crimping.

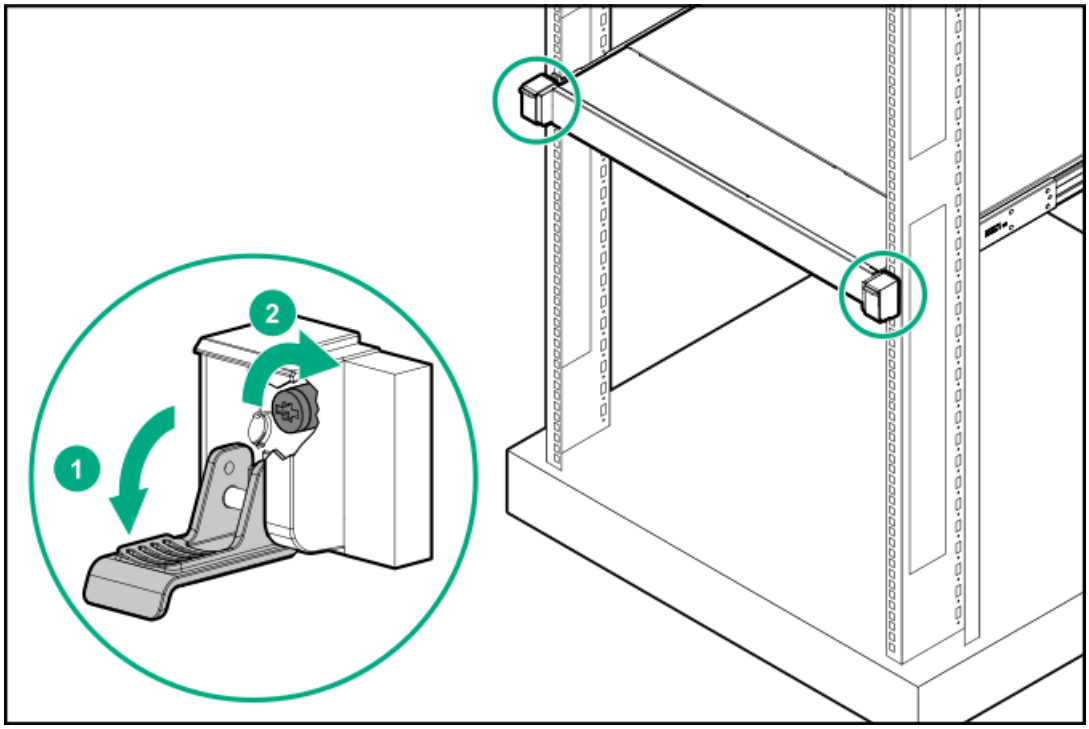
   c. Slide the server in and out of the rack to verify that there is no risk of accidental disconnection of the peripheral cables and power cords.

4. Secure the server on the rack, do one of the following:

   - For a server that has thumbscrew ears, tighten the captive thumbscrews.



- For a server that has quick-release chassis ears , open the latches (callout 1), and then tighten the shipping screws (callout 2).



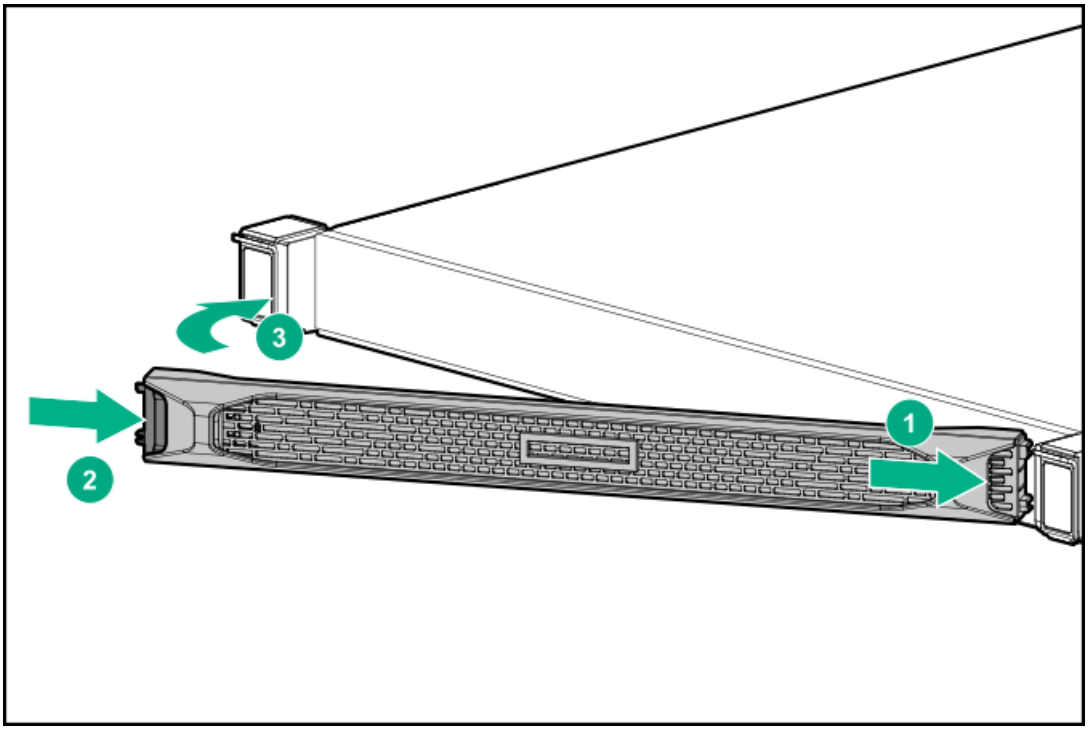
5. Connect the power cords:
   a. Connect each power cord to the server.
   b. Connect each power cord to the power source.
6. Power up the server.

This installation is complete.

Installing the front bezel option

Procedure

1. Attach the front bezel to the right chassis ear.
2. Press and hold the front bezel release latch.
3. Close the front bezel.



4. Install the Kensington security lock.

   For more information, see the lock documentation.

The installation is complete.

Power supply options

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

Hot-plug power supply calculations

For more information on the hot-plug power supply and calculators to determine server power consumption in various system configurations, see the Hewlett Packard Enterprise Power Advisor website (**https://www.hpe.com/info/poweradvisor/online**).

Power supply warnings and cautions

⚠ **WARNING:**
To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug the power cord from the power supply to disconnect power to the equipment.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

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

⚠ **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.

DC power supply warnings and cautions

⚠ **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.

⚠ **WARNING:** To reduce the risk of electric shock, be sure that the cable grounding kit is properly installed and connected to a suitable protective earth terminal before connecting the power source to the rack.

⚠ **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 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.

Installing an AC power supply

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

> △ **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.

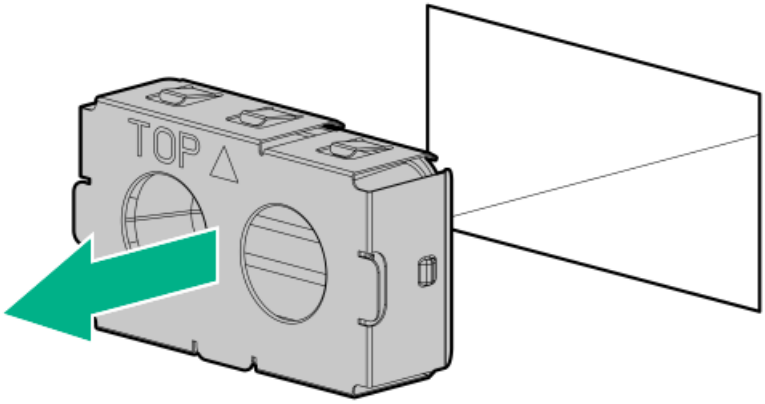
Prerequisites

Before installing a power supply option, review the Power supply warnings and cautions.

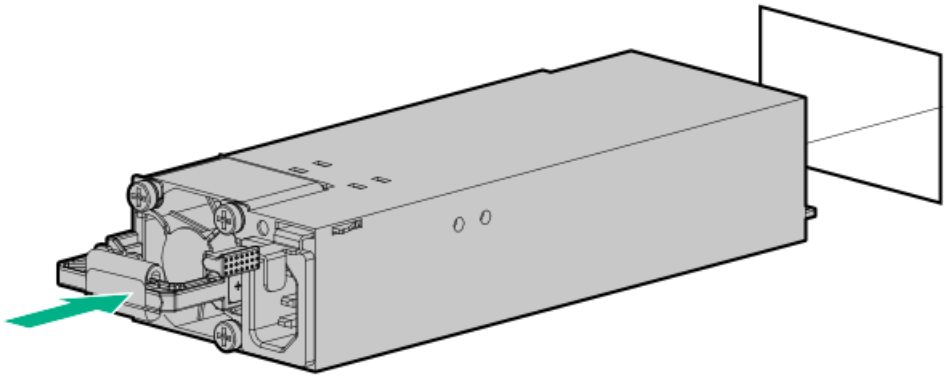
Procedure

1. If you are installing a power supply in the power supply bay 2, remove the power supply blank.

   Retain the blank for future use.



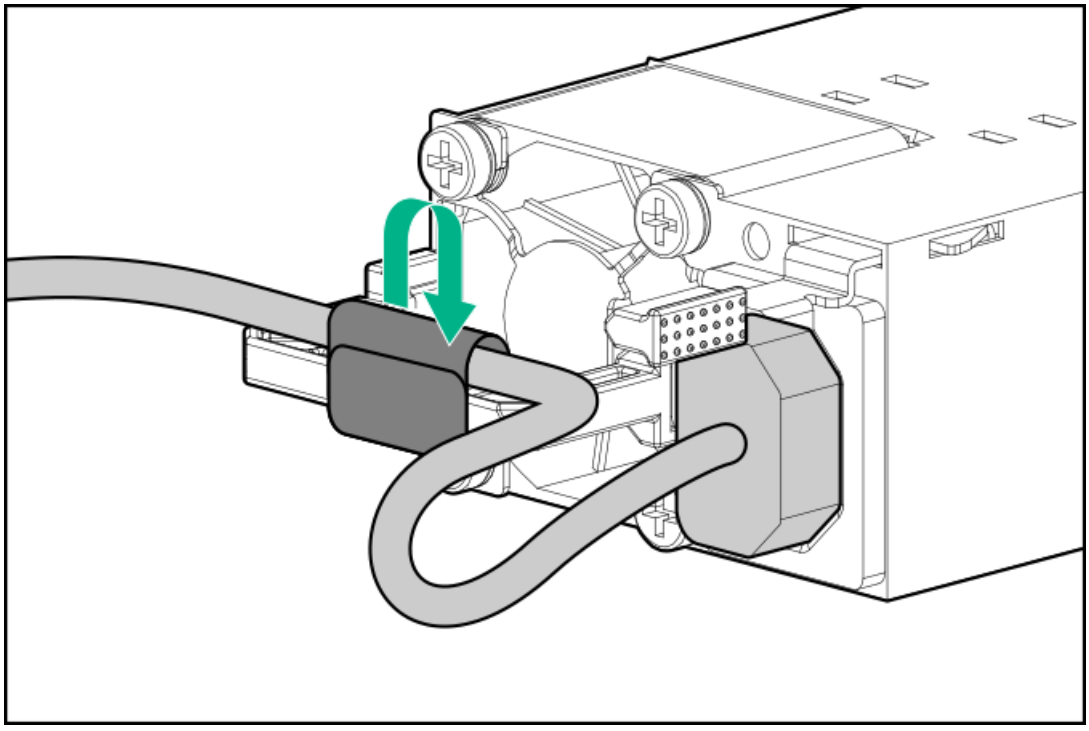
2. Immediately slide the power supply into the bay until it clicks into place.



3. Connect the power cord to the power supply.
4. Secure the power cord in the strain relief strap attached to the power supply handle:
   a. Unwrap the strain relief strap from the power supply handle.

   > △ **CAUTION:** Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.

   b. Secure the power cord with the strain relief strap. Roll the extra length of the strap around the power supply handle.



5. Connect the power cords:
   a. Connect each power cord to the server.
   b. Connect each power cord to the power source.
6. Make sure that the power supply LED is green.

The installation is complete.

Installing a DC power supply

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

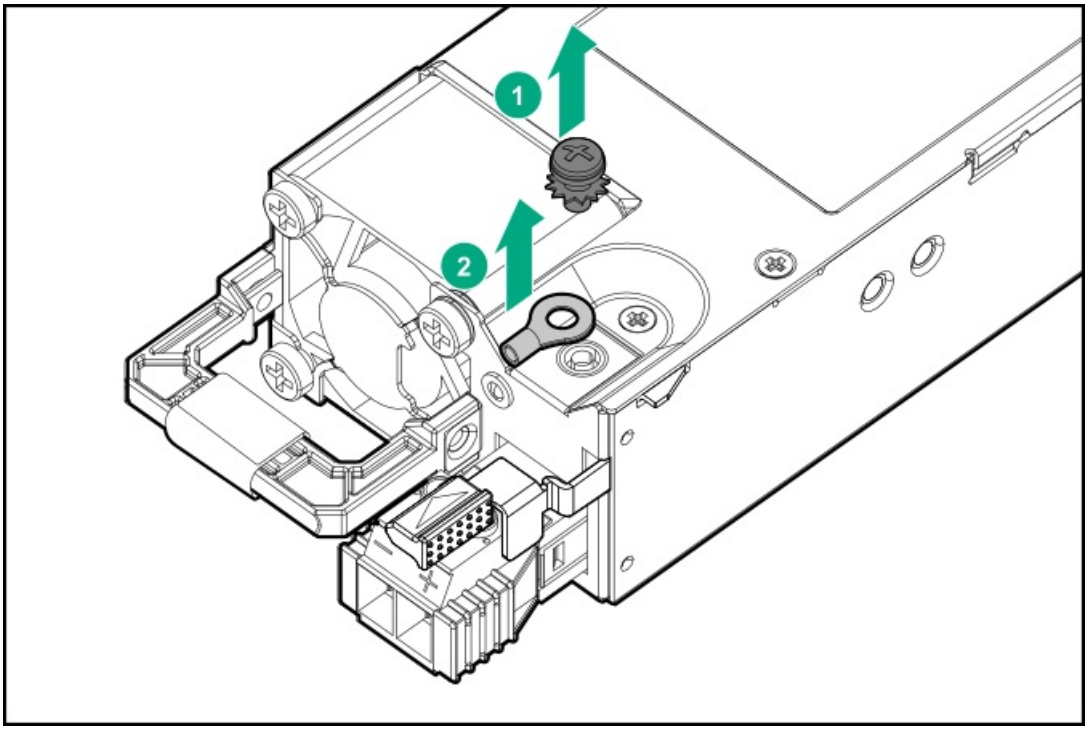
> △ **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Prerequisites

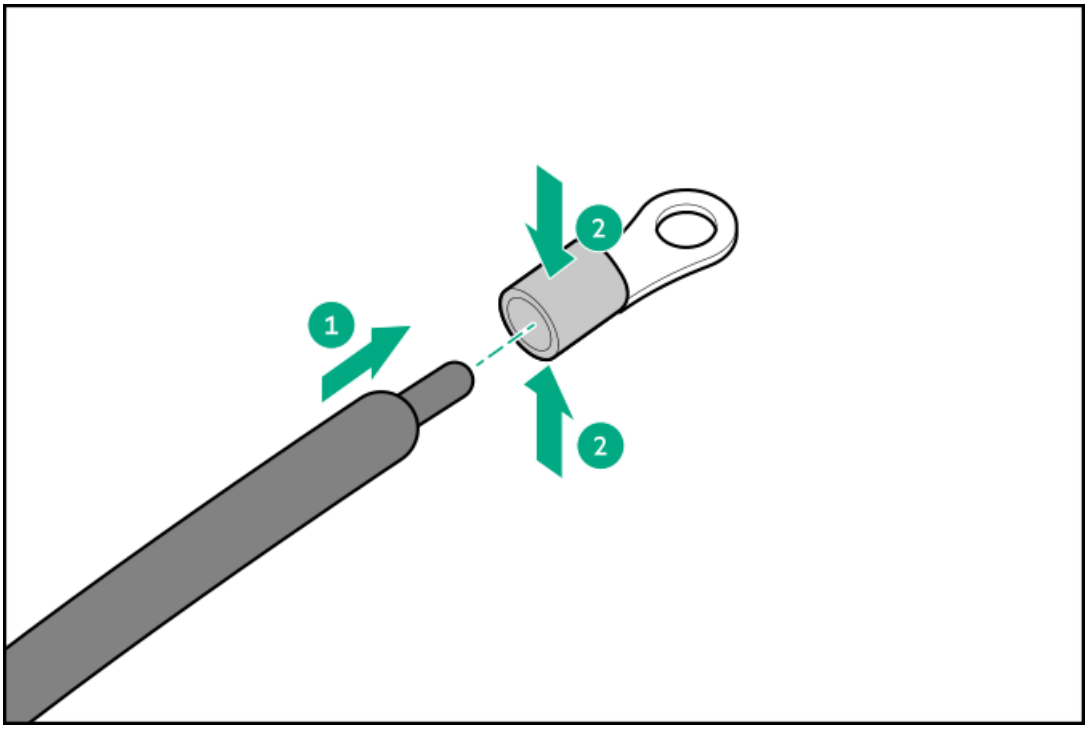
- Power cord requirement: The HPE 12 AWG 48 V DC 3.0 m Power Cord Kit (J6X43A) can be purchased from an authorized Hewlett Packard Enterprise reseller. If an HPE power cord option is not utilized, appropriate cabling must be implemented to ensure product reliability. The power cord connection must be made in consultation with a licensed electrician and be compliant with local code.
- If you are replacing the factory installed ground lug, use the KST RNB5-5 crimp terminal ring or equivalent. Use an M5-0.80 x 8 screw to attach the ground lug to the power supply.
- Before installing a power supply option, review the following:
  - Power supply warnings and cautions
  - DC power supply warnings and cautions
- Before you perform this procedure, make sure that you have the following items available:
  - Phillips No. 1 screwdriver
  - Crimping tool

Procedure

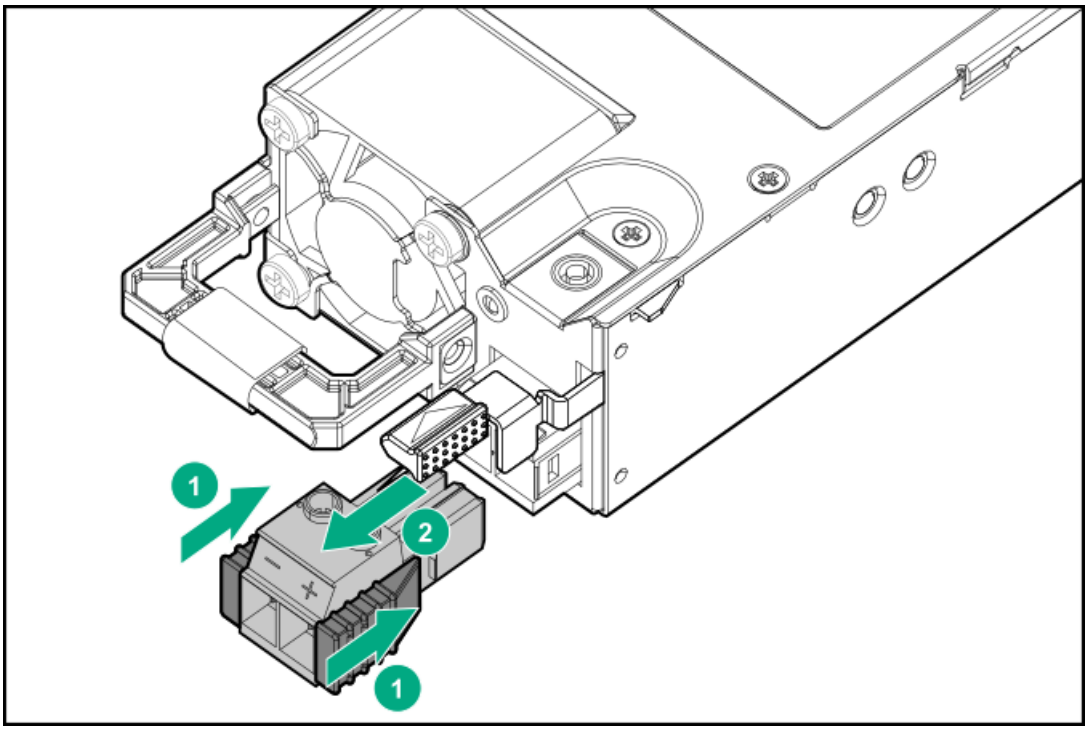
1. Remove the ring tongue.



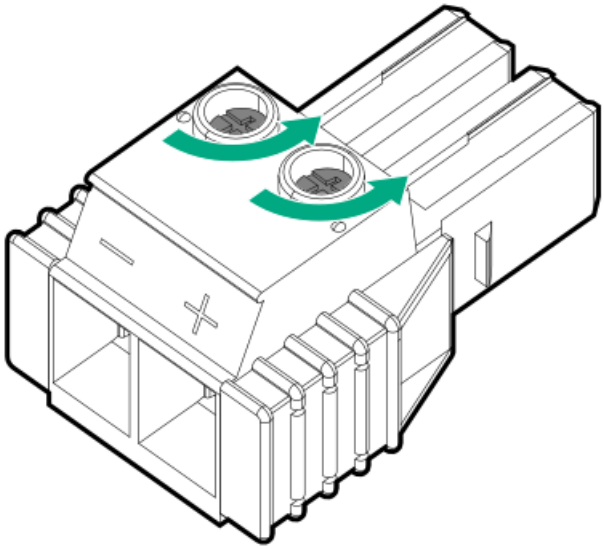
2. Crimp the ring tongue to the ground cable from the -48 V DC power source.



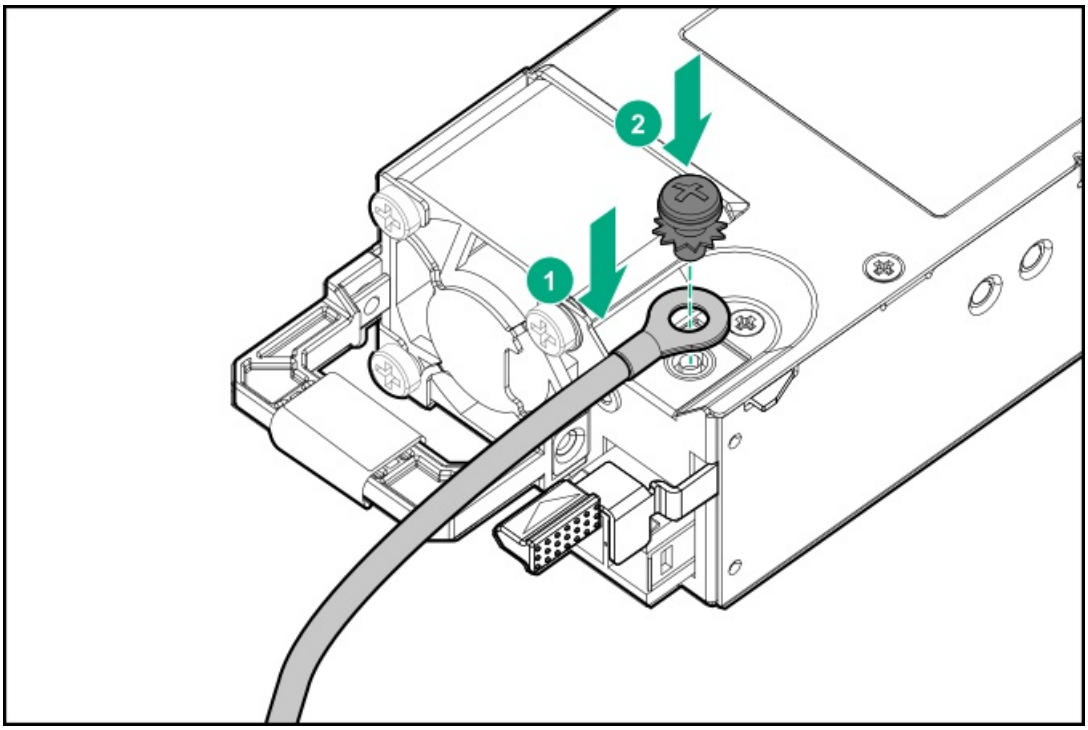
3. Remove the terminal block connector.



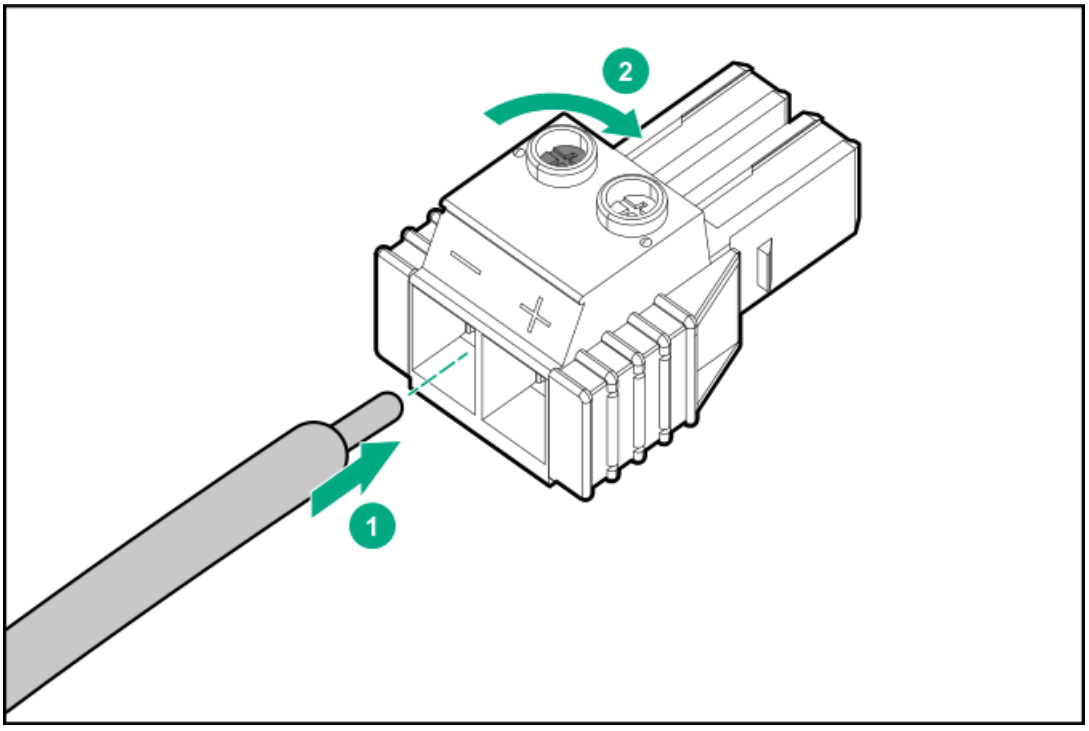
4. Loosen the screws on the terminal block connector.



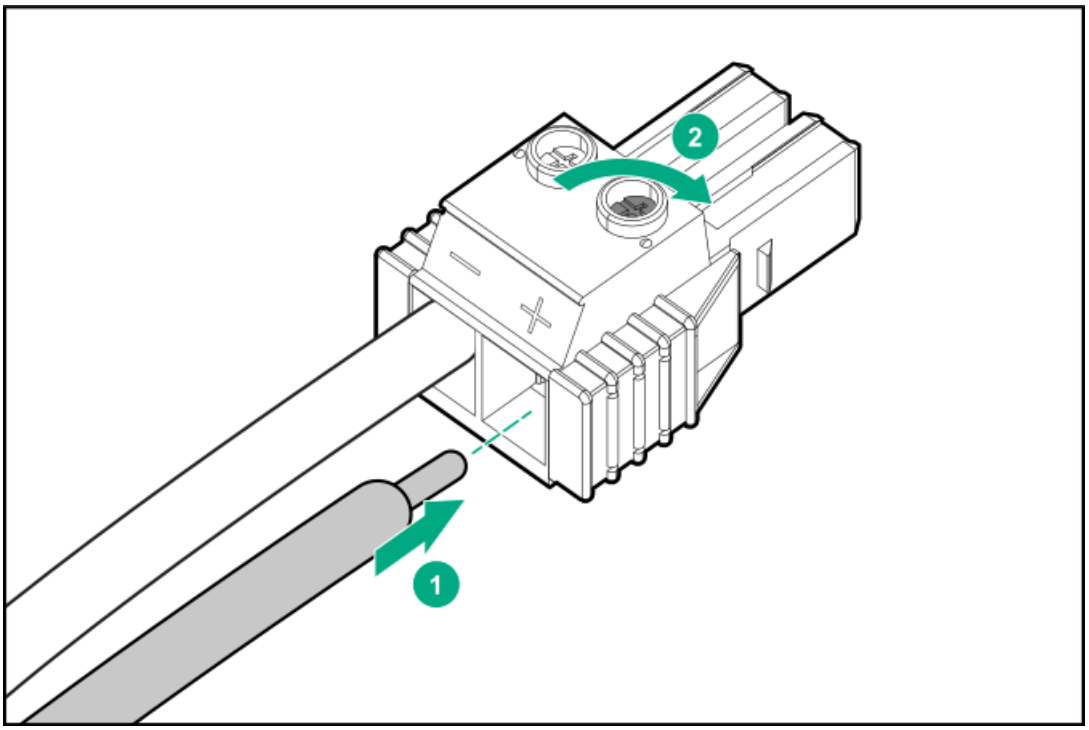
5. Attach the ground (earthed) wire to the ground screw and washer and tighten to 1.47 N m (13 lb-in) of torque. The ground wire must be connected before the -48 V wire and the return wire.



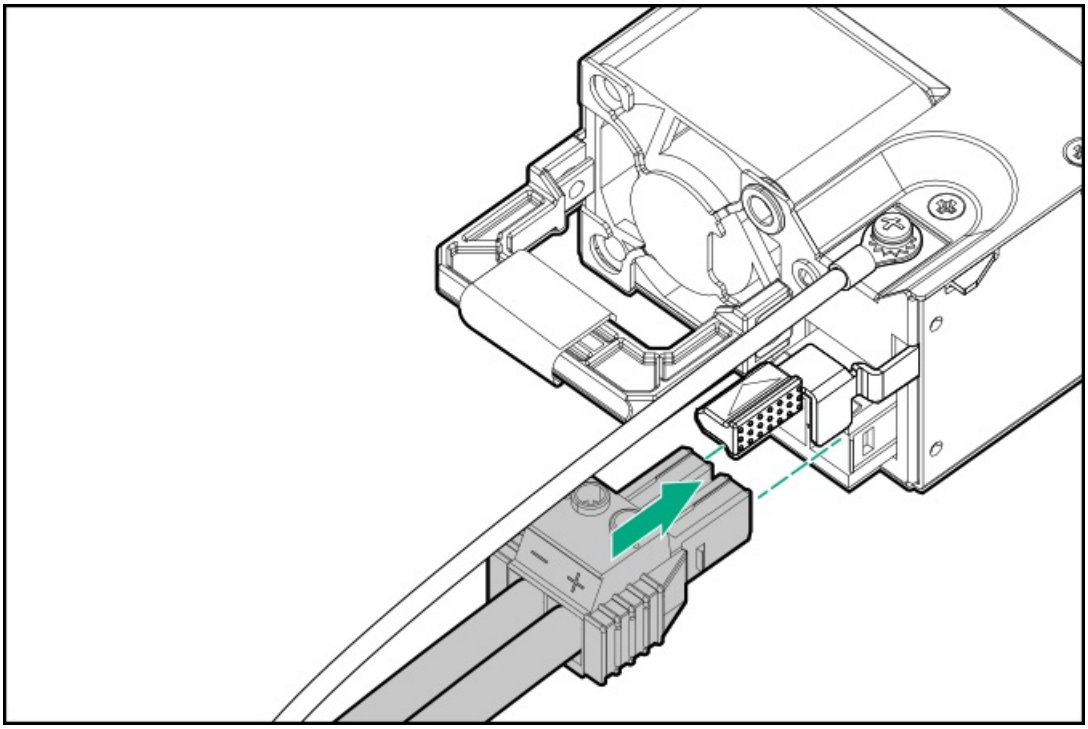
6. Insert the -48 V wire into the left side of the terminal block connector, and then tighten the screw to 1.3 N m (10 lb-in) of torque.



7. Insert the return wire into the right side of the connector, and then tighten the screw to 1.3 N m (10 lb-in) of torque.



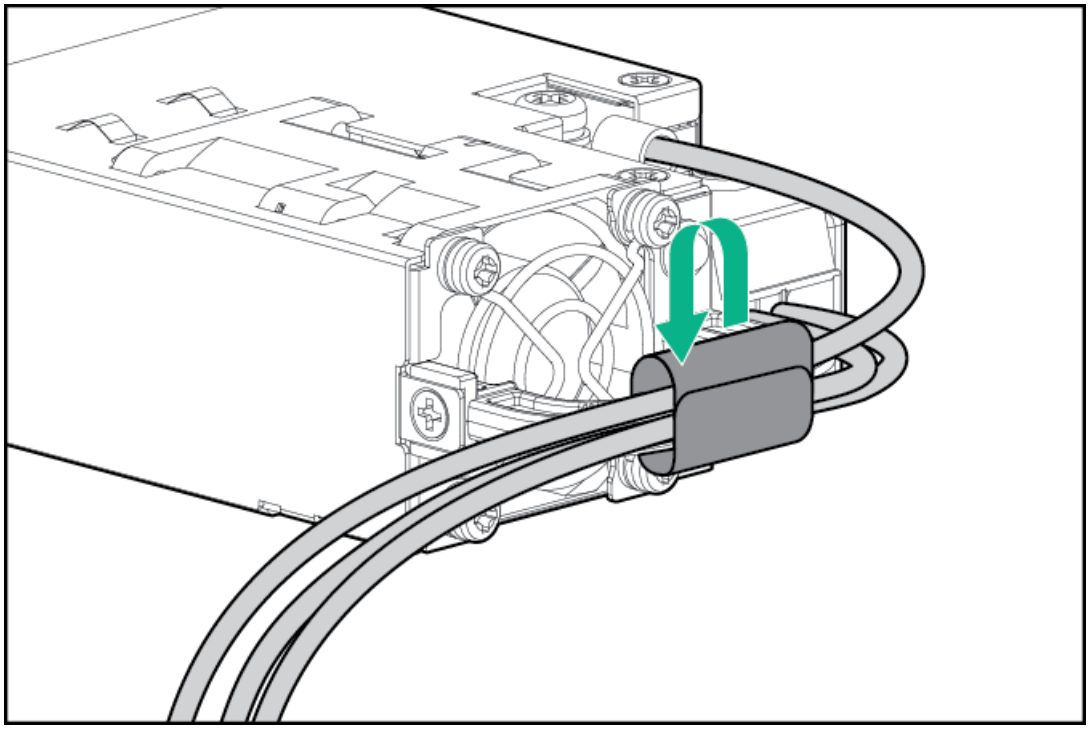
8. Install the terminal block connector in the power supply.



9. Secure the power cord, wires, and cables in the strain relief strap attached to the power supply handle:
   a. Unwrap the strain relief strap from the power supply handle.

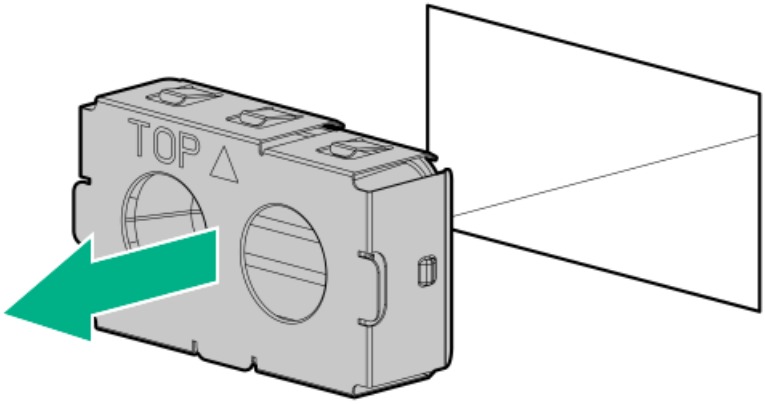
> △ **CAUTION:** Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.

   b. Secure the power cord, wires, and cables with the strain relief strap. Roll the extra length of the strap around the power supply handle.

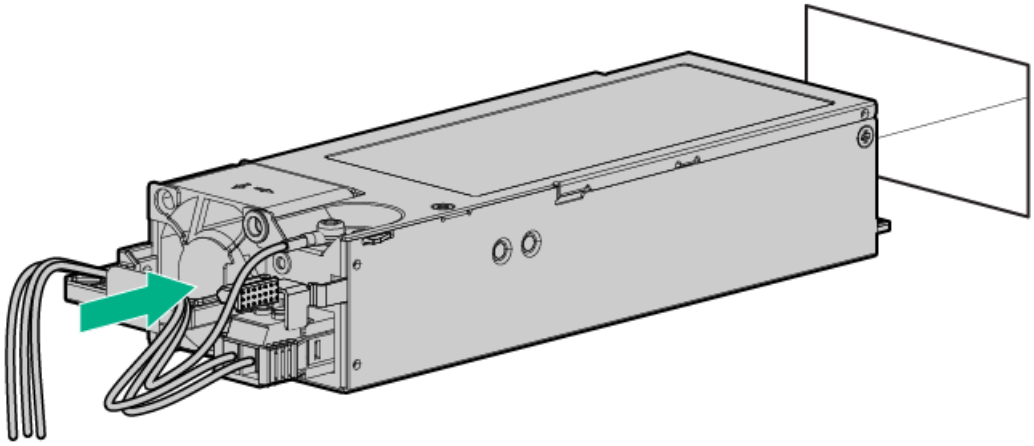


10. If you are installing a power supply in the power supply bay 2, remove the power supply blank.

    Retain the blank for future use.



11. Immediately slide the power supply into the bay until it clicks into place.



12. Make sure the -48 V DC power source is off or the PDU breaker is in the off position, and then connect the power cord to the -48 V DC power source or PDU.
13. Turn on the -48 V power source or switch the PDU breaker to the on position to supply -48 V to the power supply.
14. Make sure that the power supply LED is green.

The installation is complete.

Transceiver option

Transceivers serve as the connection between the adapter and the network cable for maintaining high-speed performance.

Transceiver warnings and cautions

WARNING:

Fiber-optic transceivers and fiber-optic cables connected to transceivers emit laser light that can damage your eyes. To avoid eye injuries, avoid direct eye exposure to the beam from the fiber-optic transceiver or into the ends of fiber-optic cables when they are powered-up.

CAUTION:

The presence of dust in transceiver ports can cause poor cable connectivity. To prevent dust from entering, install a dust plug in an unused transceiver port.

CAUTION:

Supported transceivers can be hot-swapped—removed and installed while the server is powered-on. However, to prevent potential damage to the transceiver or the fiber-optic cable, disconnect the cable from the transceiver before hot-swapping it.

CAUTION:

Do not remove and install transceivers more often than is necessary. Doing so can shorten the useful life of the transceiver.

IMPORTANT:

When you replace a transceiver with another of a different type, the server might retain selected port-specific configuration settings that were configured for the replaced transceiver. Be sure to validate or reconfigure port settings as required.

Installing a transceiver

Prerequisites

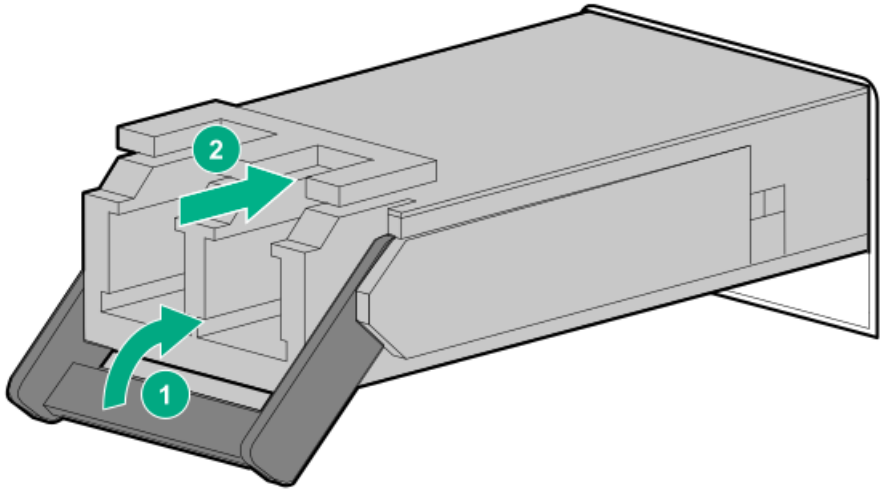
Before installing a transceiver option, review the following:

- Transceiver warnings and cautions
- Transceiver documentation for specific operational and cabling requirements

Procedure

1. Hold the transceiver by its sides and gently insert it into the network adapter port until it clicks into place.

   Transceivers are keyed so that they can only be inserted in the correct orientation. If the transceiver does not fit easily into the port, you might have positioned it incorrectly. Reverse the orientation of the transceiver and insert it again.



2. Remove the dust plug or protective cover from the transceiver.
3. Connect a compatible LAN segment cable to the transceiver.
4. Make sure that the NIC link LED on the port is solid green.

   For more information on the port LED behavior, see the documentation that ships with the transceiver.

5. If needed, see the transceiver documentation for the model-specific fastening mechanism applicable to the transceiver.

The installation is complete.

Drive options

Depending on the drive cage installed, the server supports the following drive types:

- Non-hot-plug LFF SATA drives
- Hot-plug LFF SAS or SATA drives
- Hot-plug SFF SAS, SATA, or U.3 NVMe drives

The embedded Intel Virtual RAID on CPU (Intel VROC) supports software RAID for direct attached SATA drives.

Install an HPE type-a modular (AROC) or type-p PCIe plug-in storage controller option to support hardware RAID.

Drive installation guidelines

Observe the following general guidelines:

- The system automatically sets all drive numbers.

  CAUTION:

  When a server is purchased without any drive installed, some drive bays might be empty while other drive bays might be populated with drive blanks. To maintain proper system cooling, do not operate the server without a drive or a drive blank installed.

- If only one drive is used, install it in the bay with the lowest drive number.
  For drive numbering, see Drive bay numbering.
- This server does not support mixed drive types in the same drive box.
- All drives grouped into the same drive array must meet the following criteria:
  - All drives must be either all hard drives or all solid-state drives.
  - All drives must be of the same capacity to provide the greatest storage space efficiency when drives are grouped into the same drive array.

Installing a non-hot-plug LFF SATA drive

The non-hot-plug LFF drives supported in this server do not require a drive caddy or a drive carrier to install. You only have to use the drive screws preinstalled on top of the drive cage.

> **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.

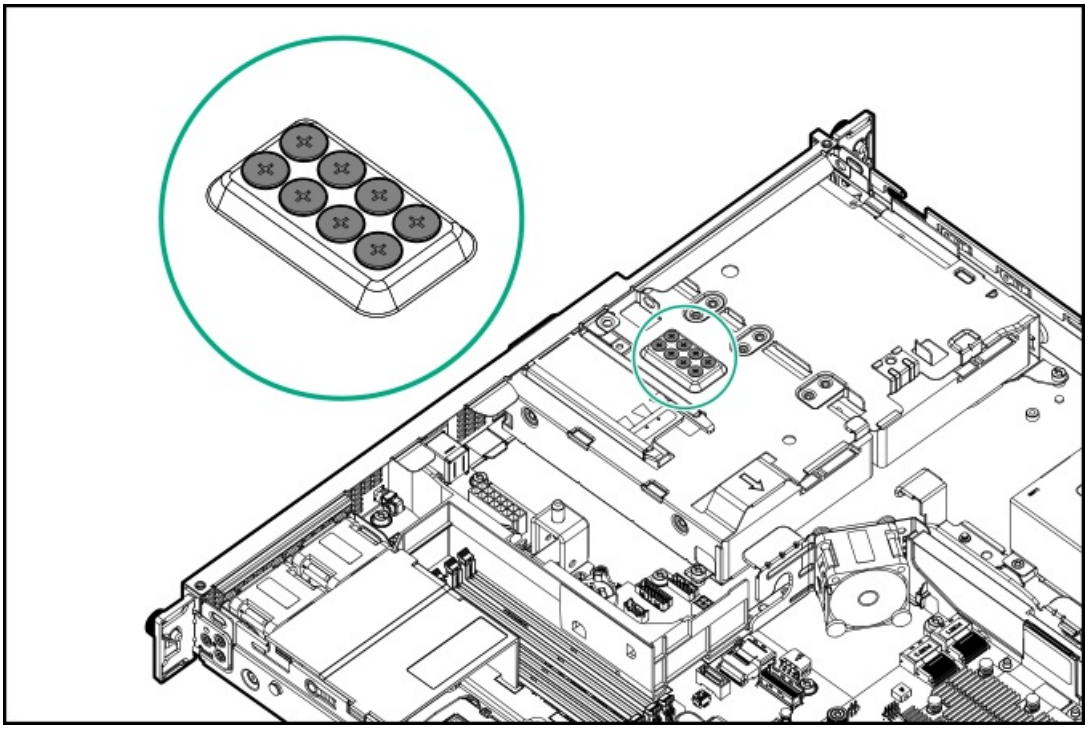
Prerequisites

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

- T-15 Torx screwdriver
- Phillips No. 1 screwdriver

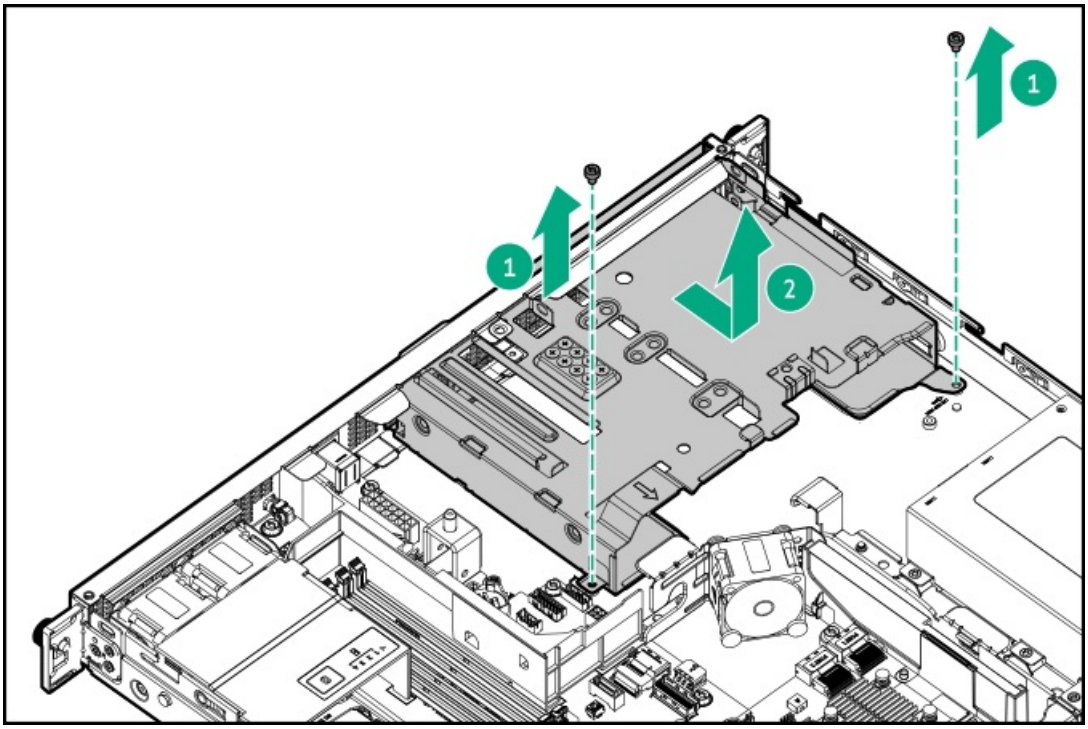
Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the correct number of screws from the drive cage. Each drive requires four screws.

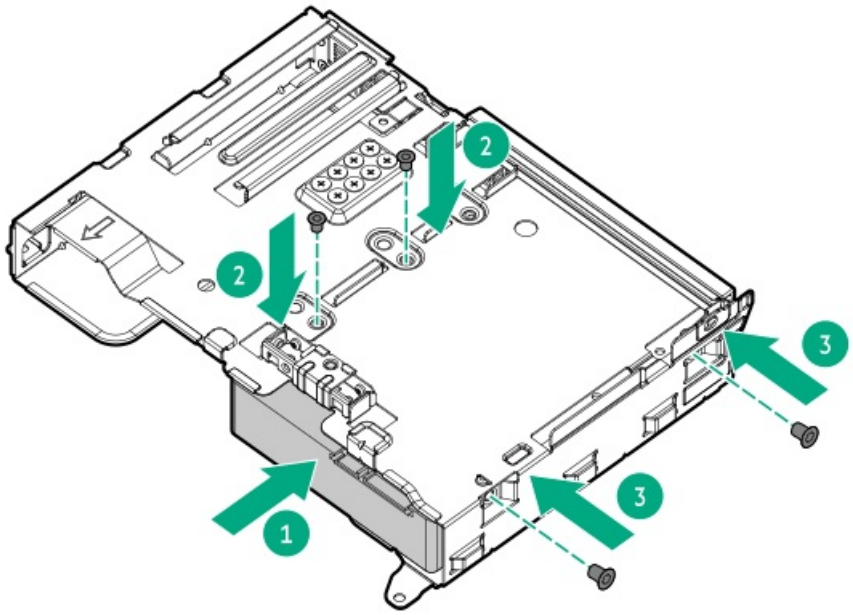


9. If a non-hot-plug drive is already installed, disconnect the drive cables.
10. Remove the non-hot-plug drive cage.

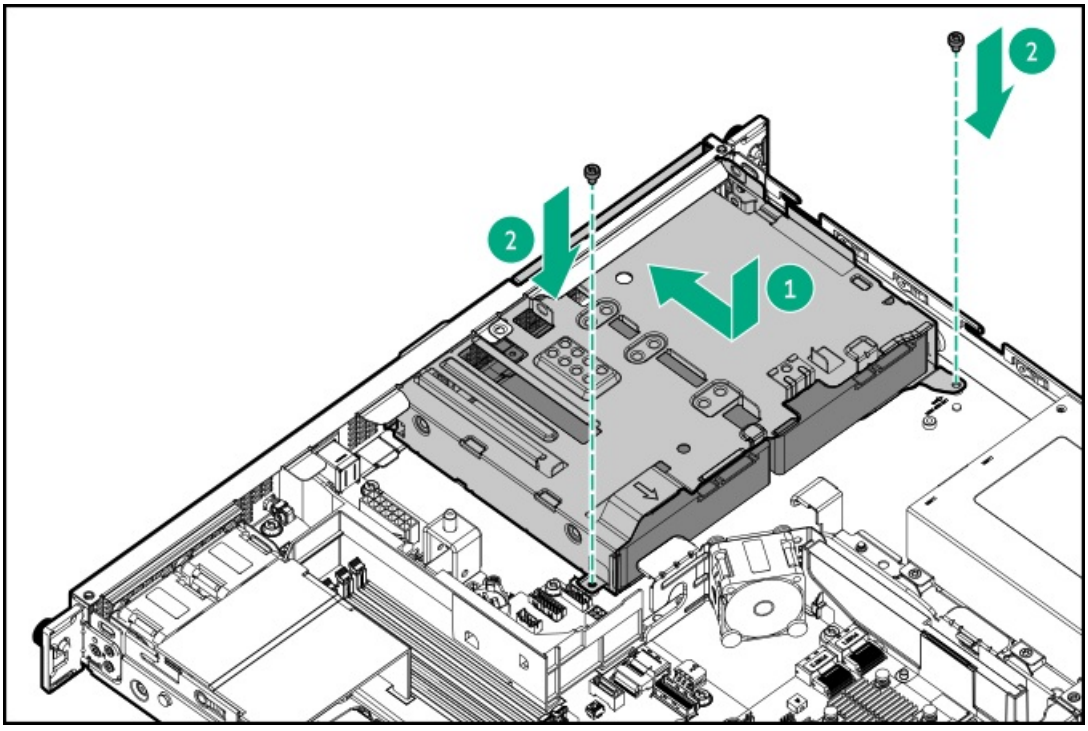
    Retain all screws for future use.



11. Install the non-hot-plug drive.



12. Install the non-hot-plug drive cage.



13. Connect the drive cables.
14. Install the access panel.
15. Install the server into the rack.
16. Connect all peripheral cables to the server.
17. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
18. Power up the server.
19. If removed, install the front bezel.
20. To configure drive arrays, see the relevant storage controller guide.

This installation is complete.

Installing a hot-plug LFF/SFF SAS, SATA or NVMe drive

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.

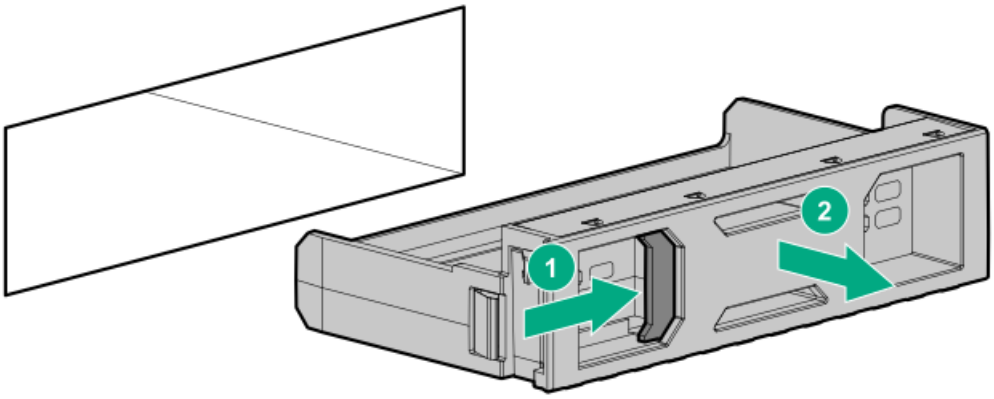
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

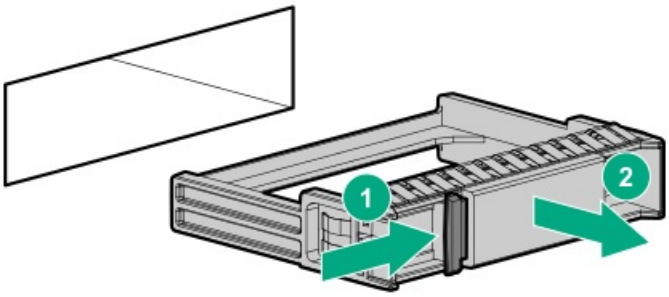
1. If installed, remove the front bezel.
2. Remove the drive blank.

   Retain the blank for future use.

   - LFF drive blank

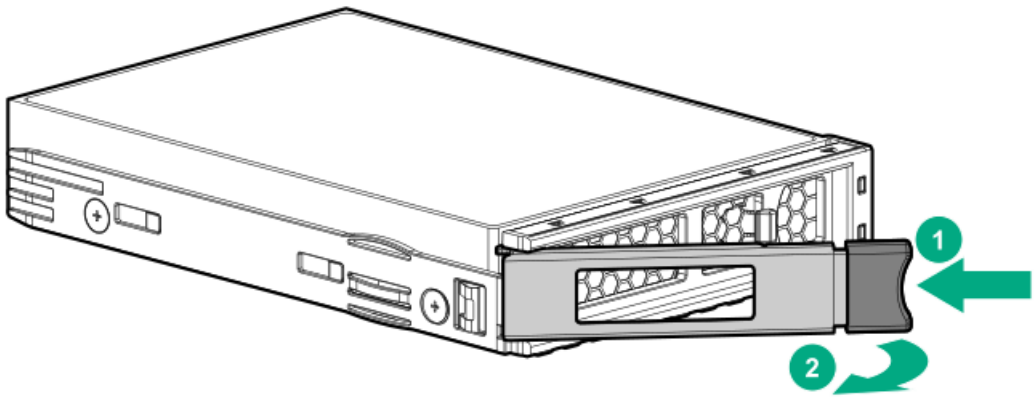


   - SFF drive blank

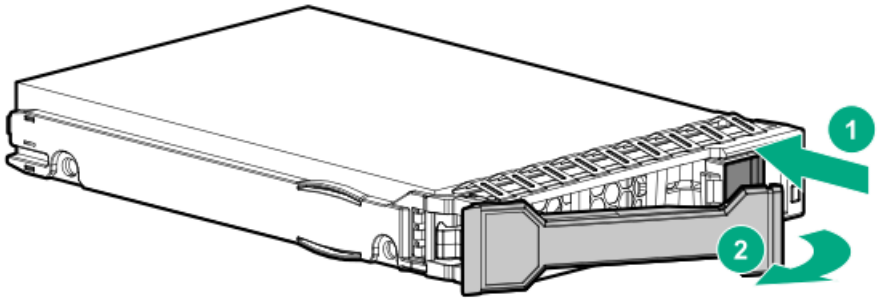


3. Prepare the drive.

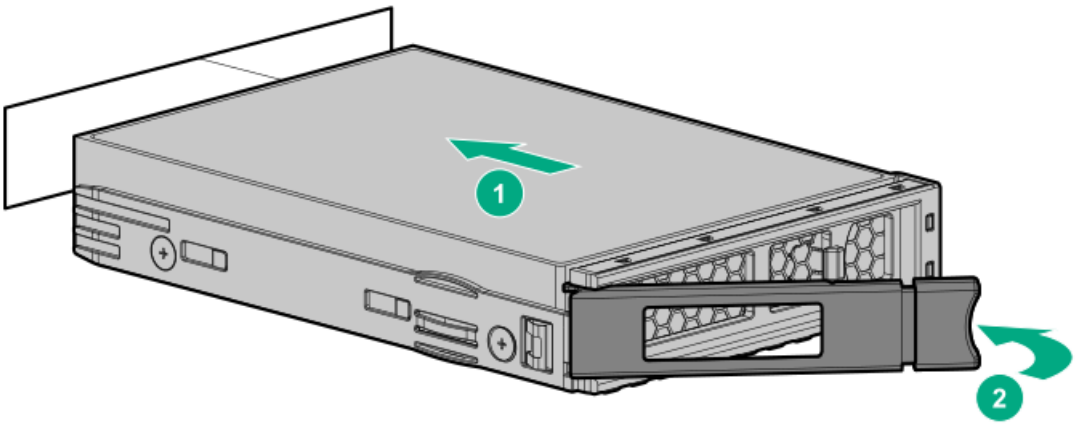
   - LFF drive



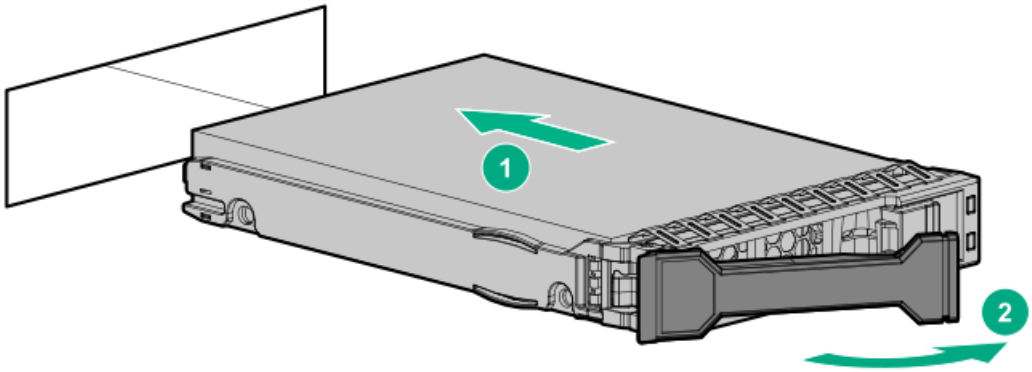
   - SFF drive



4. Install the drive.
   - LFF drive



   - SFF drive



5. Determine the status of the drive from the drive LED definitions .
6. If removed, install the front bezel.
7. To configure drive arrays, see the relevant controller guide.

This installation is complete.

Installing the two-bay SFF drive cage option

For additional storage capacity, install the 2 SFF hot-plug drive cage option in the media bay of the SFF chassis. This drive cage option supports SAS, SATA, or U.3 NVMe drives.

> **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.

Prerequisites

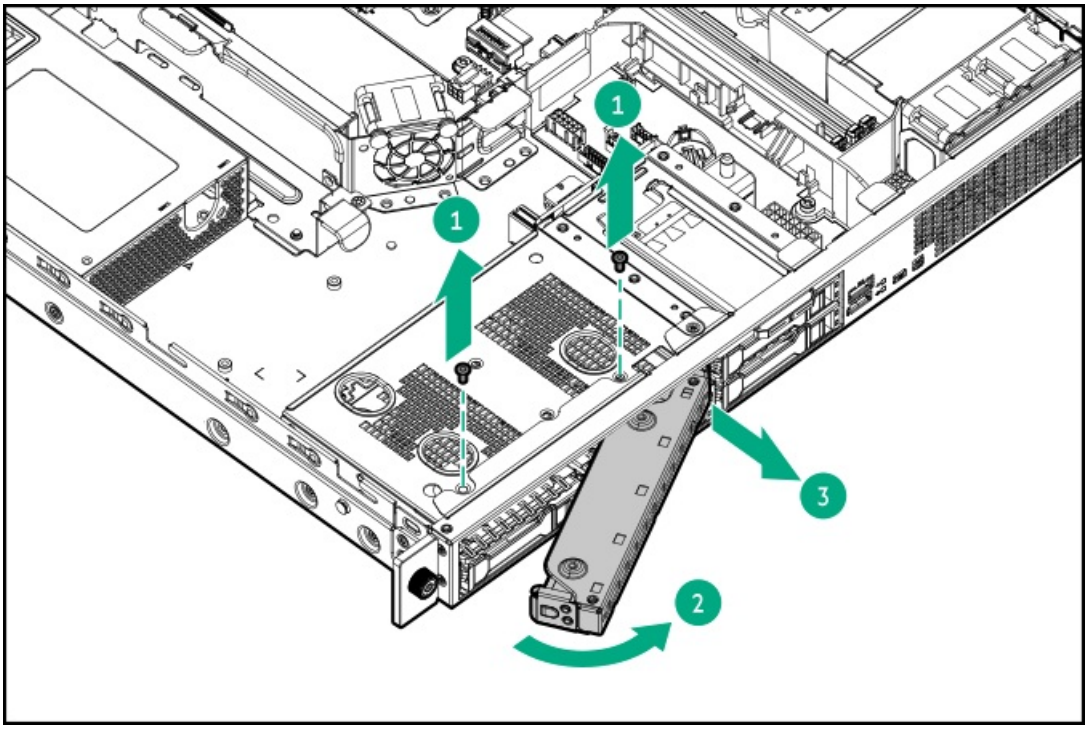
- A Flexible Slot power supply is required in 4 + 2 SFF hot-plug drive configurations .
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

1. If installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the media bay blank:
   a. Remove the media bay blank screws (callout 1).

      Retain all screws for future use.
   b. Disengage the media bay blank (callout 2).
   c. Remove the media bay blank (callout 3).

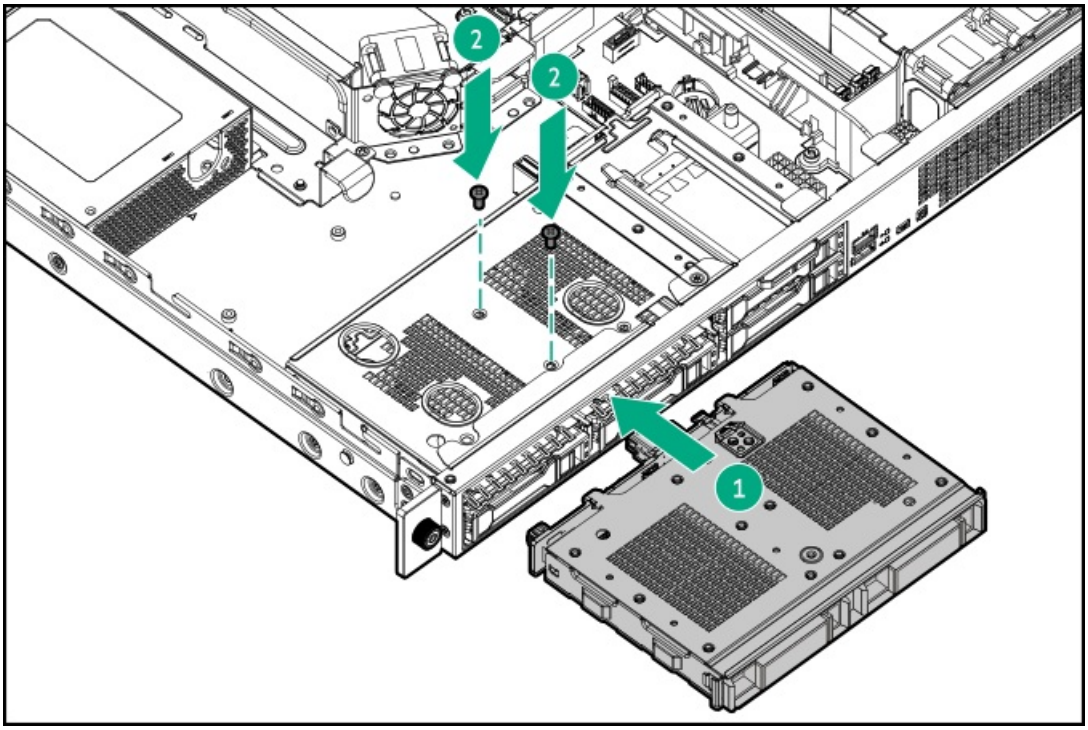
      Retain the blank for future use.



9. Install the 2 SFF hot-plug drive cage:

a. Slide the drive cage into the media bay (callout 1).

b. Secure the drive cage with the screws removed in step 8-a (callout 2).



10. Connect the drive cables.
11. Install the access panel.
12. Install the server into the rack.
13. Connect all peripheral cables to the server.
14. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
15. Power up the server.
16. Install the drives.
17. If removed, install the front bezel.

This installation is complete.

Optical drive option

Install a slim-type SATA optical drive to read/write data on optical discs.

- Installing an optical drive in the LFF drive chassis
- Installing an optical drive in the SFF drive chassis

Installing an optical drive in the LFF drive chassis

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.

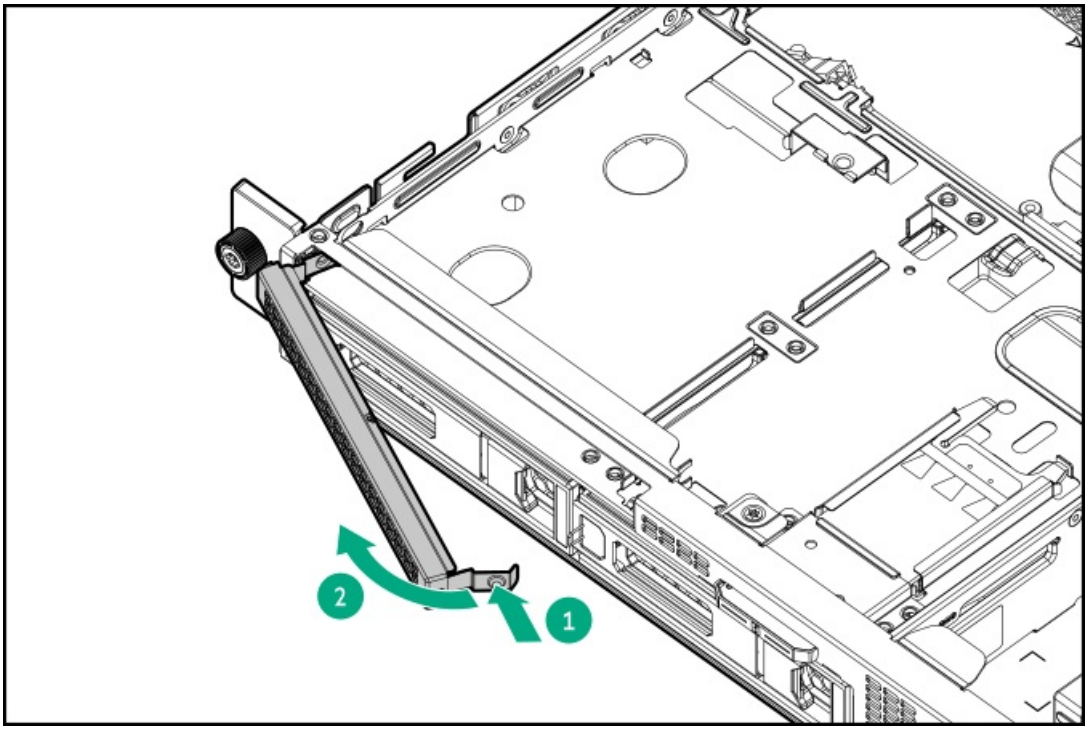
Prerequisites

- In the LFF drive chassis, the optical drive installation requires the P06681-B21 optical drive cable option.
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver

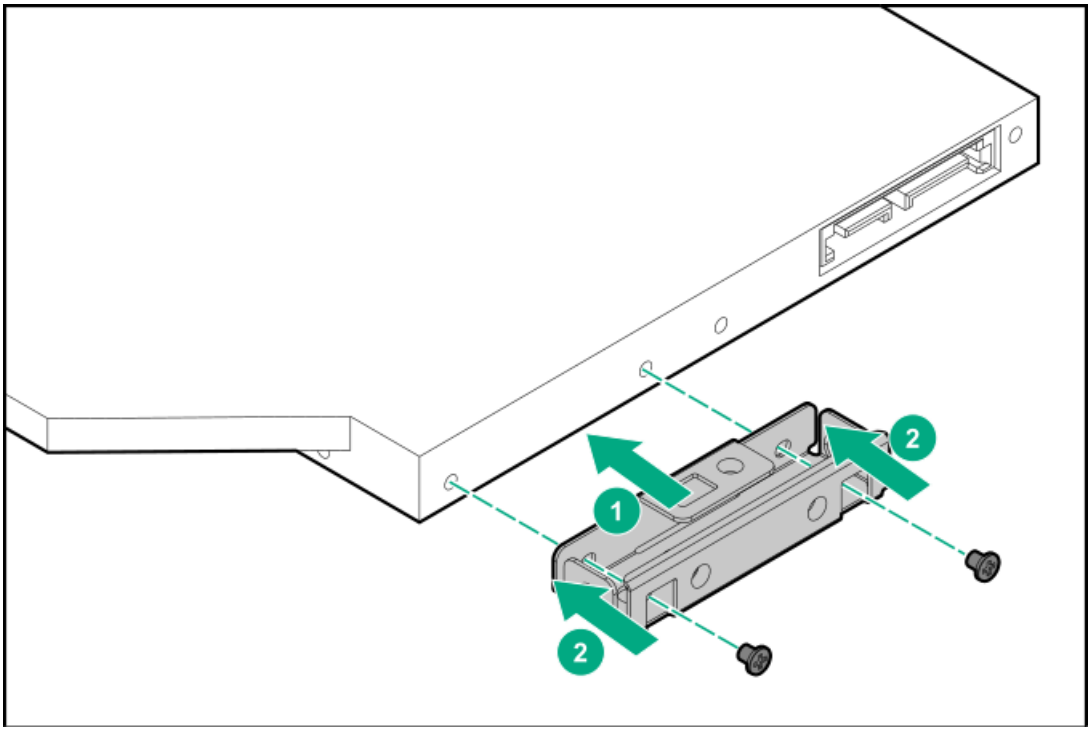
Procedure

1. If installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the optical drive blank.

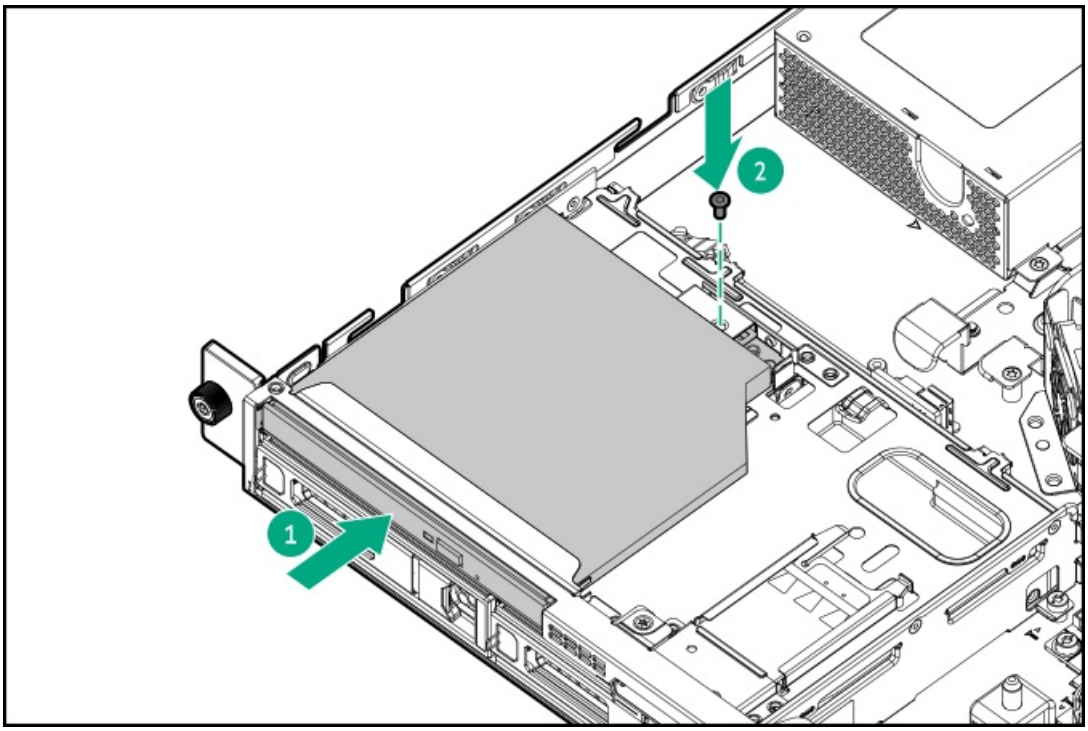
   Retain the blank for future use.



9. Install the optical drive bracket.



10. Install the optical drive.



11. Cable the optical drive.
12. Install the access panel.
13. Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
16. Power up the server.
17. If removed, install the front bezel.

This installation is complete.

Installing an optical drive in the SFF drive chassis

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.

Prerequisites

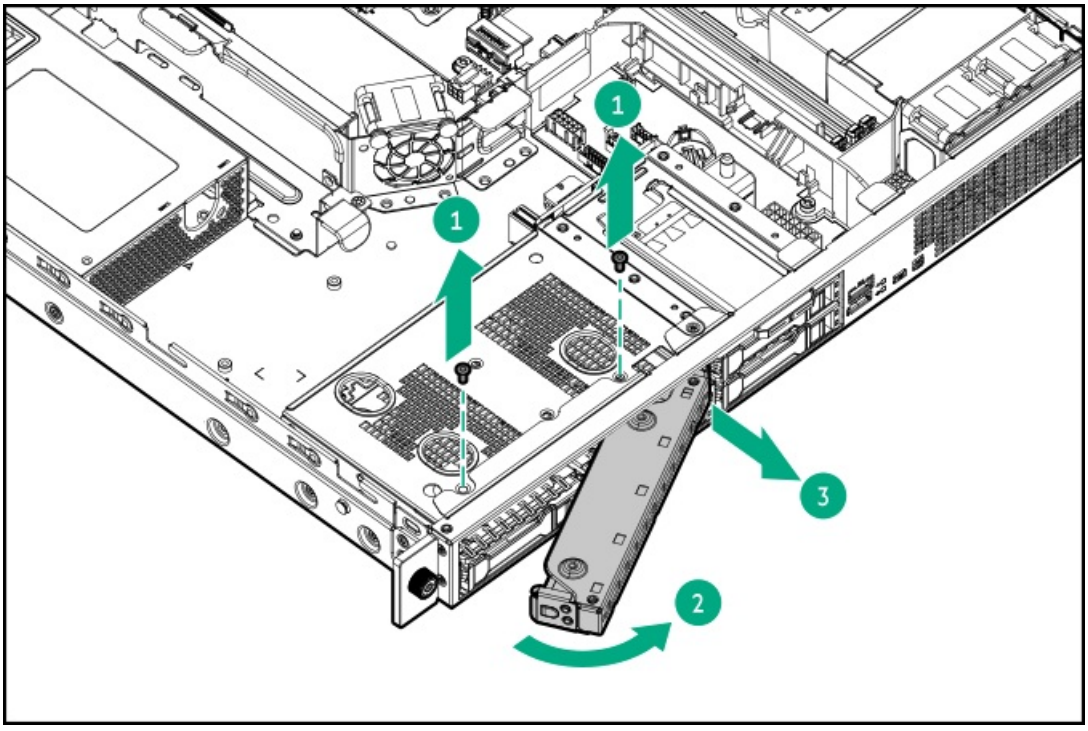
- In the SFF drive chassis, the optical drive installation requires the P06677-B21 optical drive enablement option.
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - T-15 Torx screwdriver
  - Phillips No. 1 screwdriver

Procedure

1. If removed, install the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the media bay blank:
   a. Remove the media bay blank screws (callout 1).

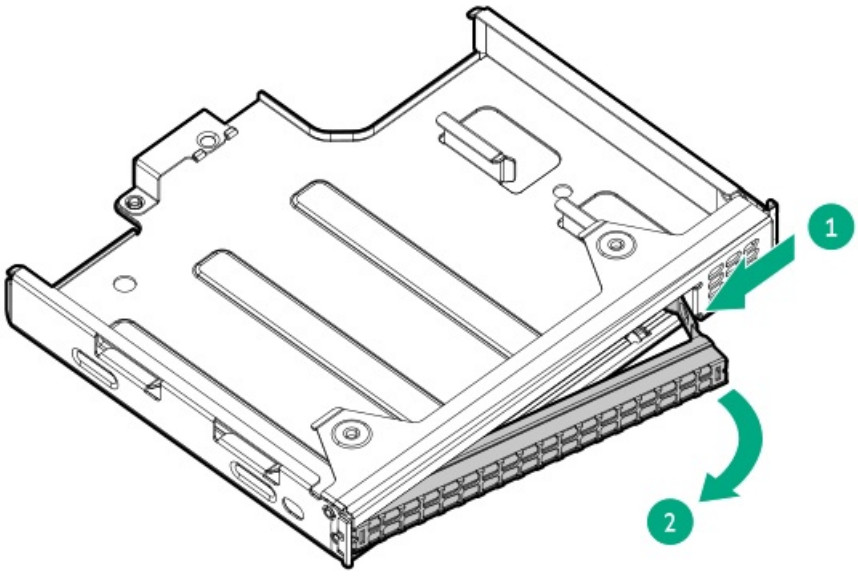
      Retain all screws for future use.
   b. Disengage the media bay blank (callout 2).
   c. Remove the media bay blank (callout 3).

      Retain the blank for future use.

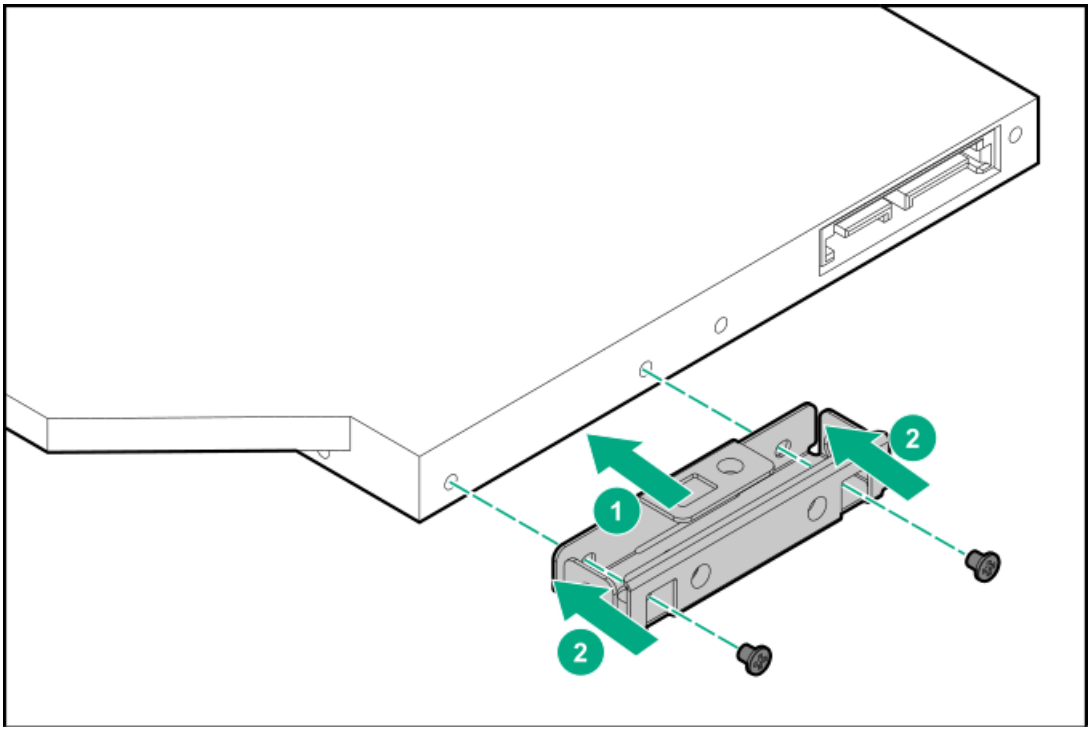


9. Remove the optical drive blank.

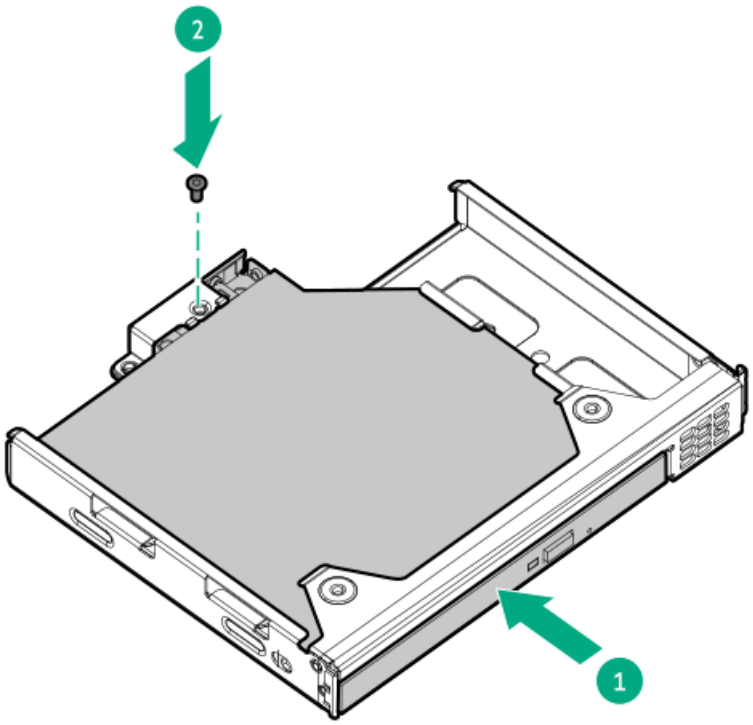
   Retain the blank for future use.



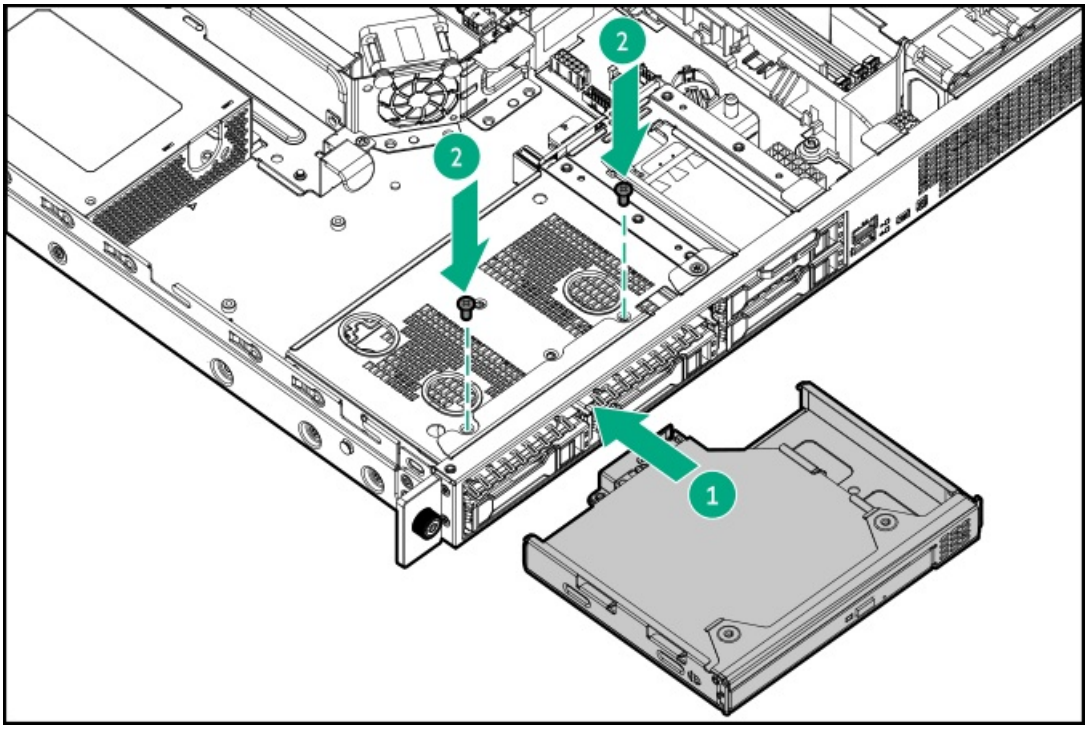
10. Install the optical drive bracket.



11. Install the optical drive in the optical drive cage.



12. Install the optical drive cage in the media bay.

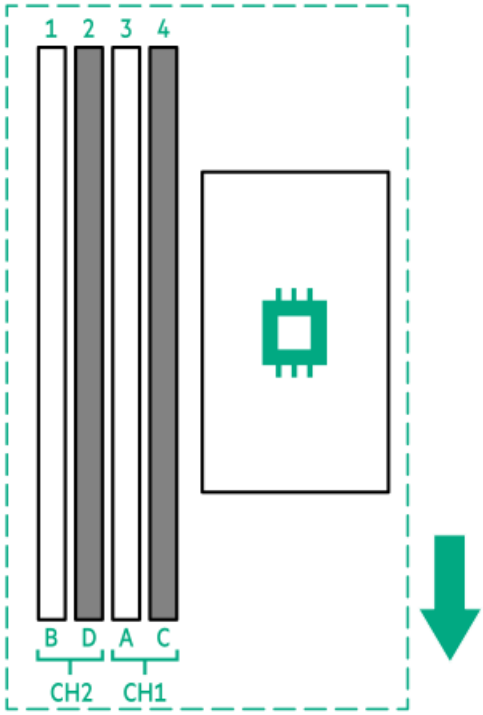


13. Cable the optical drive.
14. Install the access panel.
15. Install the server into the rack.
16. Connect all peripheral cables to the server.
17. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
18. Power up the server.
19. If removed, install the front bezel.

This installation is complete.

Memory option

The server has four DIMM slots supporting DDR4 UDIMM with ECC. Non-ECC UDIMM is not supported .



The arrow points to the front of the server.

DIMM population information

For DIMM population information, see Server Memory Population Rules for HPE ProLiant Gen10 Plus Servers with Intel Xeon E-2300 Processors on the Hewlett Packard Enterprise website (**https://www.hpe.com/docs/server-memory**).

DIMM installation guidelines

When handling a DIMM, observe the following:

- Observe antistatic precautions.
- Hold the DIMM by the side edges only.
- Do not touch the components on the sides of the DIMM.
- Do not touch the connectors on the bottom of the DIMM.
- Never wrap your fingers around a DIMM.
- Never bend or flex the DIMM.

When installing a DIMM, observe the following:

- To align and seat the DIMM, use two fingers to hold the DIMM along the side edges.
- To seat the DIMM, use two fingers to apply gentle pressure along the top of the DIMM.

For more information, see the Hewlett Packard Enterprise website (**https://www.hpe.com/support/DIMM-20070214-CN**).

Installing a DIMM

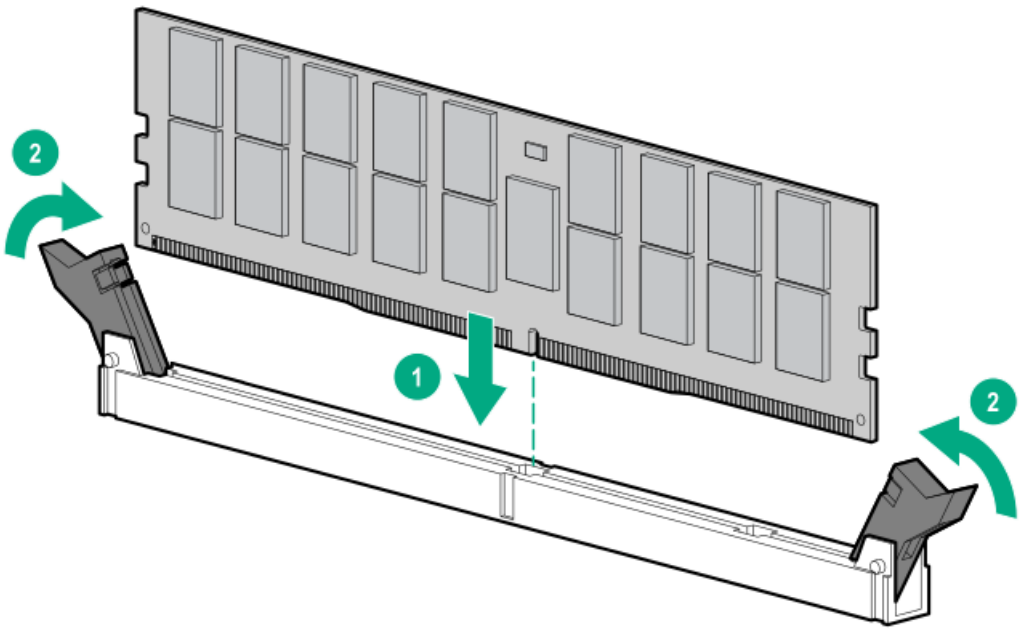
CAUTION:

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.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Install the DIMM:
   a. Open the DIMM slot latches (callout 1).
   b. Align the notch on the bottom edge of the DIMM with the keyed surface of the DIMM slot, and then fully press the DIMM into the slot until the latches snap back into place (callout 2).

      The DIMM slots are structured to ensure proper installation. If you try to insert a DIMM but it does not fit easily into the slot, you might have positioned it incorrectly. Reverse the orientation of the DIMM and insert it again.



9. Install the access panel.
10. Install the server into the rack.
11. Connect all peripheral cables to the server.
12. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.

13. Power up the server.
14. If removed, install the front bezel.
15. To configure the memory settings:
    a. From the boot screen, press **F9** to access UEFI System Utilities.
    b. From the System Utilities screen, select System Utilities > System Configuration > BIOS/Platform Configuration (RBSU) > Memory Options.

This installation is complete.

PCIe riser option

The server supports two dual-slot PCIe riser options:

- PCIe4 x8/x8 riser—Supports standard expansion options.
- PCIe4 x16/x4 riser—Supports high-power expansion options.

  For more information on the riser slots, see Riser board components.

Installing a riser option

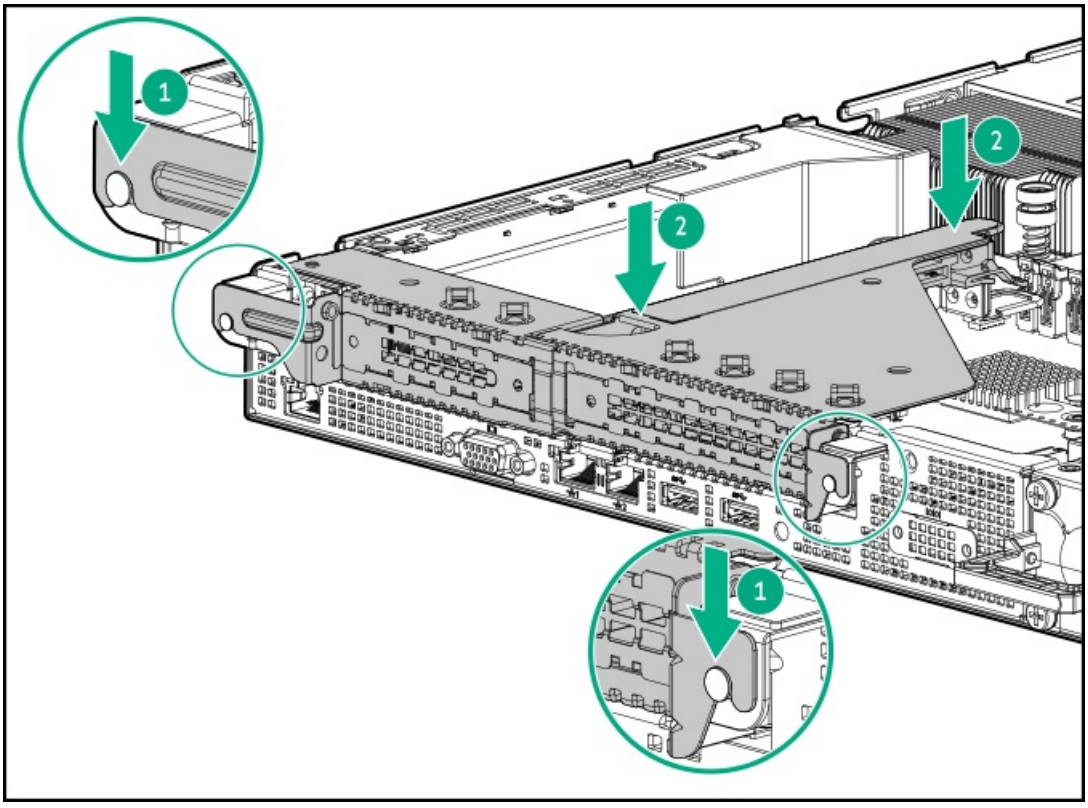
CAUTION:

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.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Install the planned expansion option in the riser slot.
9. Install the riser cage:
   a. Align the notches on the riser cage with the spools on the rear panel (callout 1).
   b. Carefully press the riser down on its system board connector (callout 2).

      Make sure that the riser board is firmly seated.



10. Install the access panel.
11. Install the server into the rack.
12. Connect all peripheral cables to the server.
13. Connect the power cords:
    a. Connect each power cord to the server.

b. Connect each power cord to the power source.

14. Power up the server.
15. If removed, install the front bezel.

This installation is complete.

Storage controller options

The server supports following storage controllers:

- Embedded Intel Virtual RAID on CPU (Intel VROC)—Provides software RAID support for direct attached SATA drives.
- HPE type-a modular (AROC) or type-p PCIe plug-in storage controller option—Supports hardware RAID for SATA and SAS drives.

  For more information on drive array and storage controller configuration, see the relevant controller guide.

Preparing the server for storage controller installation

Prerequisites

Before beginning this procedure, download the Service Pack for ProLiant (SPP) from the Hewlett Packard Enterprise website (**https://www.hpe.com/servers/spp/download**).

Procedure

1. If the server was previously configured:
   a. Back up data on the system.
   b. Close all applications.
   c. Ensure that users are logged off and that all tasks are completed on the server.

   > △ **CAUTION:** In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

2. If server firmware is not the latest revision, update the firmware.
3. If the new controller is the new boot device, configure the controller.

Installing a type-a modular controller option

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.

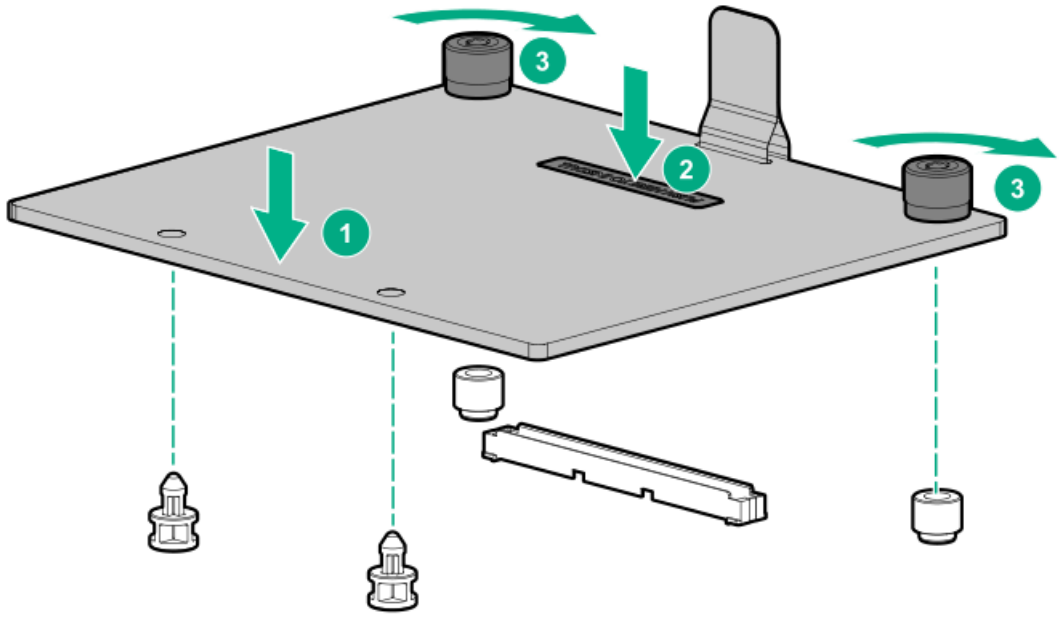
Prerequisites

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

- Compatible controller cable option
- T-15 Torx screwdriver

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the riser cage.
9. Install the type-a modular storage controller:
   a. Insert the alignment pins on the side of the energy pack holder through the holes on the controller board (callout 1).
   b. Press the area of the controller board marked as PRESS TO INSTALL to ensure that the board is firmly seated in the slot (callout 2).
   c. Tighten the controller board thumbscrews (callout 3).



10. Cable the controller.
11. Install the riser cage.

12. Install the access panel.
13. Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
16. Power up the server.
17. If removed, install the front bezel.
18. To configure the controller, see the relevant controller guide.

This installation is complete.

Installing a type-p plug-in controller option

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.

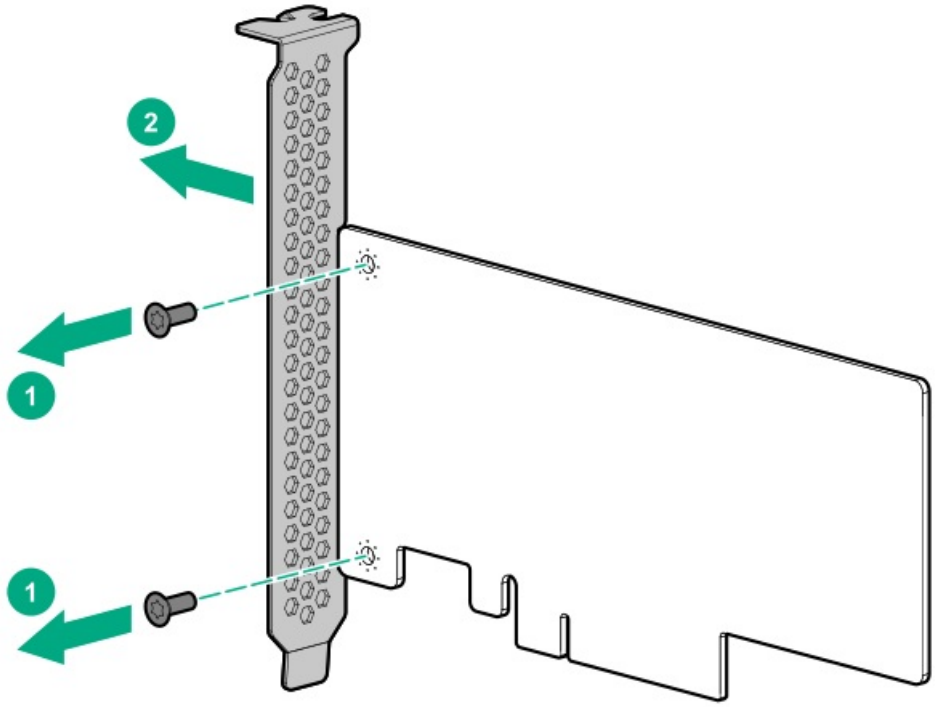
Prerequisites

- To determine the slot compatibility of the storage controller, review the PCIe expansion option population rules .
- The flash-backed write cache (FBWC) feature of some storage controllers requires the installation of an energy pack option. For more information, see the controller QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**).
- Before you perform this procedure, make sure that you have the following items available:
  - Compatible controller cable option
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver—This tool is required only if you plan to replace the default bracket on the storage controller.

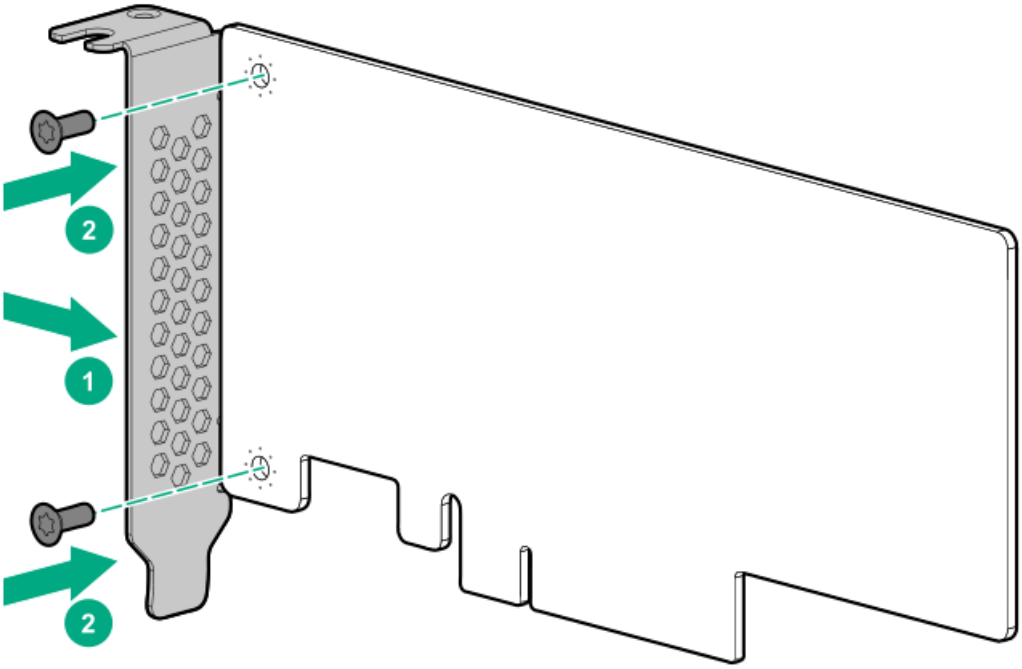
Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack .
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the riser cage.
9. Identify the riser slot compatible with the storage controller .
10. To install a storage controller in the riser slot 1, do the following:
    a. If installed, remove the full-height bracket from the storage controller.

       Retain the bracket and screws for future use.

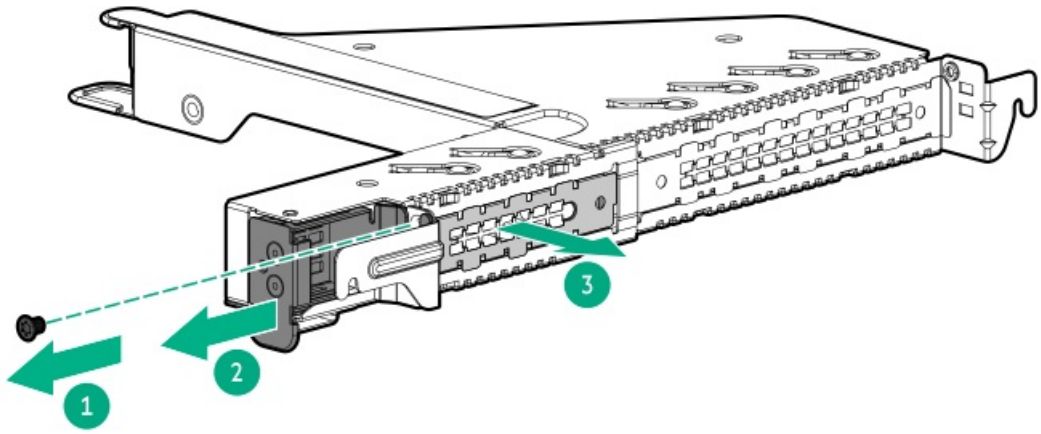


b. Install the low-profile bracket on the storage controller.



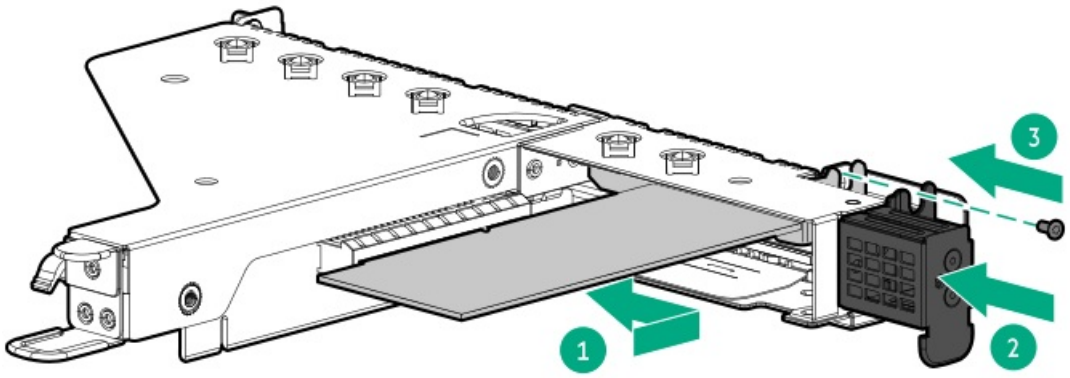
c. Open the riser slot bracket (callouts 1 and 2) and remove the slot blank (callout 3).

Retain the slot blank and the screw for future use.



d. Install the storage controller.

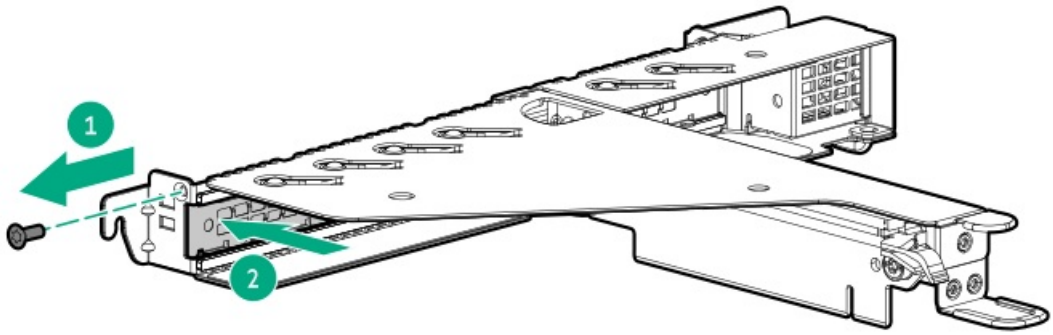
   Make sure that the controller is seated firmly in the slot.



11. To install a storage controller in the riser slot 2, do the following:

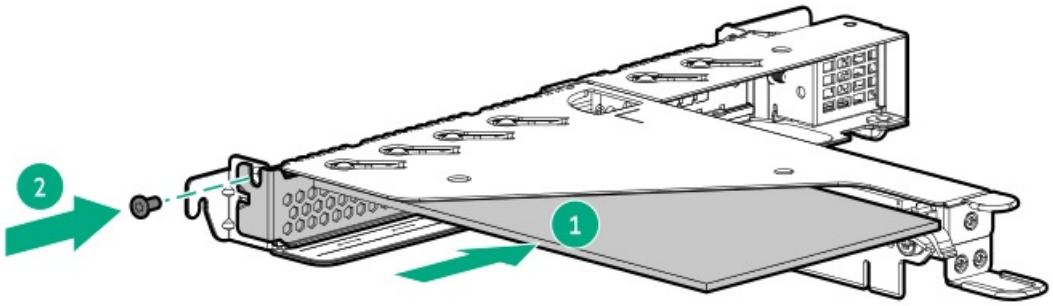
    a. Remove the riser slot screw (callout 1) and slot blank (callout 2).

       Retain the slot blank and the screw for future use.



    b. Install the storage controller.

       Make sure that the controller is seated firmly in the slot.



12. To enable HPE the SR SmartCache or MR CacheCade feature, install the energy pack.

    SmartCache and CacheCade enable solid-state drives to be used as caching devices for hard drive media. These features accelerate access to frequently used data by caching hot data from the hard drives onto the solid-state drives.

13. Install the riser cage.
14. Cable the controller.
15. Install the access panel.
16. Install the server into the rack.
17. Connect all peripheral cables to the server.
18. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
19. Power up the server.
20. If removed, install the front bezel.
21. To configure the controller, see the relevant controller guide.

This installation is complete.

Storage controller guides

For detailed information on configuring drive arrays and storage controllers, see the relevant storage controller guide:

- Intel Virtual RAID on CPU:
  - Intel Virtual RAID on CPU for HPE Gen10 Plus User Guide, Microsoft Windows edition at **https://www.hpe.com/support/IntelVROC-Gen10Plus-Win-UG**
  - Intel Virtual RAID on CPU for HPE Gen10 Plus User Guide, Linux edition at **https://www.hpe.com/support/IntelVROC-Gen10Plus-Linux-UG**
- HPE storage controller:
  - HPE Smart Array SR type-a and type-p Gen10 controller : HPE Smart Array SR Gen10 Configuration Guide at **https://www.hpe.com/support/SSC-config**
  - HPE SR type-a and type-p Gen10 Plus controllers : HPE SR Gen10 Plus Controller User Guide at **https://www.hpe.com/info/SR-Gen10Plus-UG**
  - HPE MR type-a and type-p Gen10 Plus controllers : HPE MR Gen10 Plus Controller User Guide at **https://www.hpe.com/info/MR-Gen10Plus-UG**

Energy pack options

Hewlett Packard Enterprise offers the HPE Smart Storage Battery as a centralized backup power source options to back up write cache content on the controllers in case of an unplanned server power outage.

Once installed, the status of the energy pack displays in HPE iLO. For more information, see the 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 type-p controllers:

- P-class SR Gen10 controllers
- SR 900 series Gen10 Plus controllers
- MR 400 and 900 series Gen10 Plus controllers

This server supports the 12 W HPE Smart Storage Battery with the 230 mm cable. A single 12 W battery can support up to three 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.

Energy pack specifications

Feature	Description
Time required to recharge Smart Storage Battery	12 W: 1 hour (For maximum load of 3 devices)
Duration of Smart Storage Battery backup	150 seconds (maximum support) The Smart Storage Battery provides a sufficient duration to transfer the cached data from DDR memory to flash memory, where the data remains indefinitely or until a controller retrieves the data.

For more information, see the **QuickSpecs document** for the Smart Storage Battery.

Installing an energy pack

Prerequisites

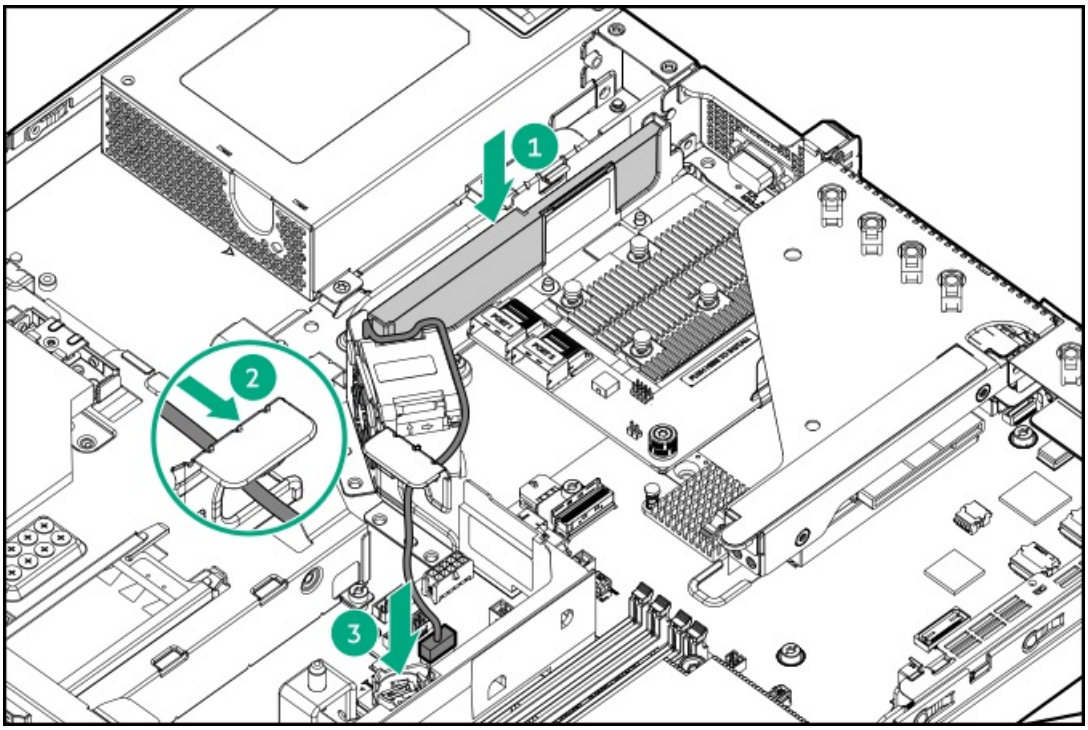
Before proceeding the installation, observe following guide line:

- Make sure that a compatible type-p storage controller is installed .
- Make sure that you have the storage controller backup power cable that ships with the storage controller.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Install the energy pack:
   a. Insert the energy pack in the holder (callout 1).

      Make sure that the energy pack is locked in the holder.
   b. Route the energy pack cable across the midwall cable channel (callout 2).
   c. Connect the energy pack cable (callout 3).



9. Connect the storage controller backup power cable .
10. Install the access panel.
11. Install the server into the rack .
12. Connect all peripheral cables to the server.
13. Connect the power cords:

a. Connect each power cord to the server.

b. Connect each power cord to the power source.

14. Power up the server.

15. If removed, install the front bezel.

This installation is complete.

Expansion card options

The server supports the installation of full-height, half-length and half-height, half-length (low-profile) PCIe expansion / add-in (AIC) cards such as:

- HPE type-p storage controller
- Ethernet adapter
- HDR InfiniBand adapter
- Fibre channel host bus adapter (FC HBA)
- Accelerator (workload, computational, or graphics accelerator)

For more information on the expansion options validated for this server, see the server QuickSpecs on the Hewlett Packard Enterprise website:

https://www.hpe.com/servers/dl20-gen10-plus

PCIe expansion option population rules

- To check the electrical compatibility of the expansion option with the riser slot, see Riser board components.
- Network adapter option:

  Due to the mechanical design of the riser cage, install a four-port network adapter with a full-height bracket in the riser slot 2.
- Type-p storage controller option:
  - Due to the cable length, install a storage controller with internal cabling connection in the riser slot 2.
  - Install a storage controller with external cabling in either riser slot 1 or 2. Populate the riser slot 1 first.
- Accelerator:

  A Flexible Slot power supply is required for accelerator installation .

Installing an expansion card

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either a riser slot blank or an expansion card installed.

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.

Prerequisites

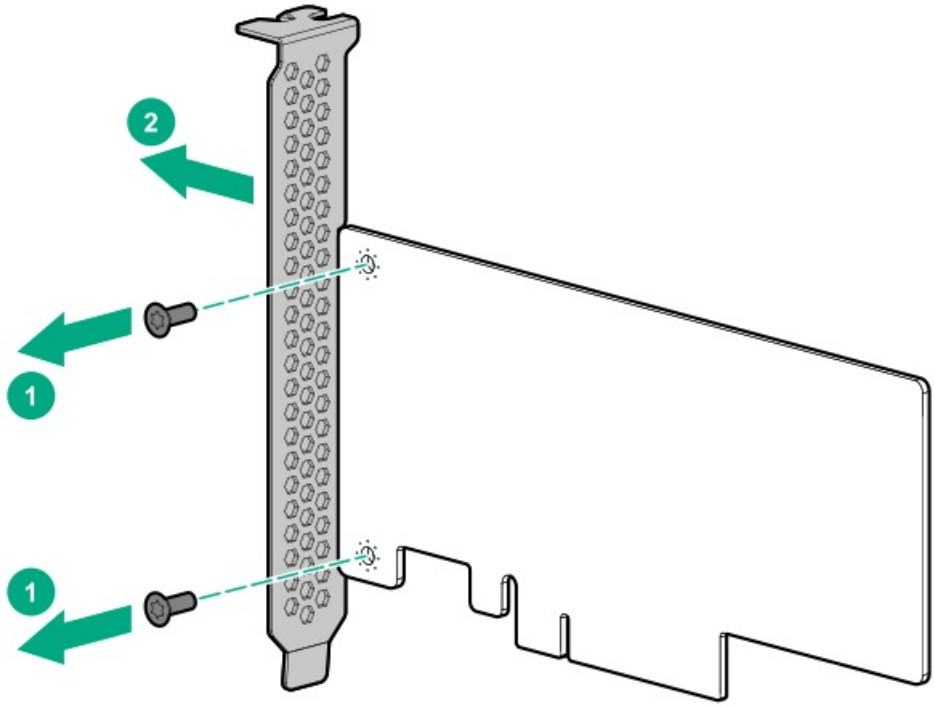
- Observer the Riser board components.
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver—This tool is required only if you plan to replace the default bracket on the expansion card.

Procedure

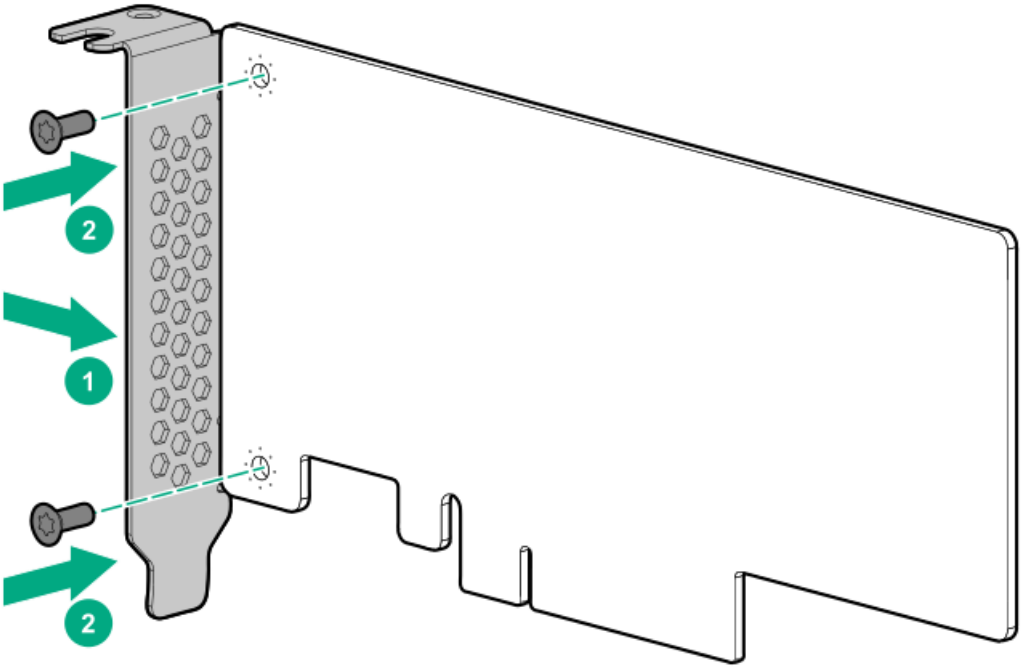
1. If physically powering down a server with the front bezel installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the riser cage.
9. Identify the riser slot compatible with the expansion option .
10. Make sure that any switches or jumpers on the expansion card are set properly.

    For more information, see the documentation that ships with the option.
11. To install an expansion card in the riser slot 1, do the following:
    a. If installed, remove the full-height bracket from the expansion card.

       Retain the bracket and screws for future use.

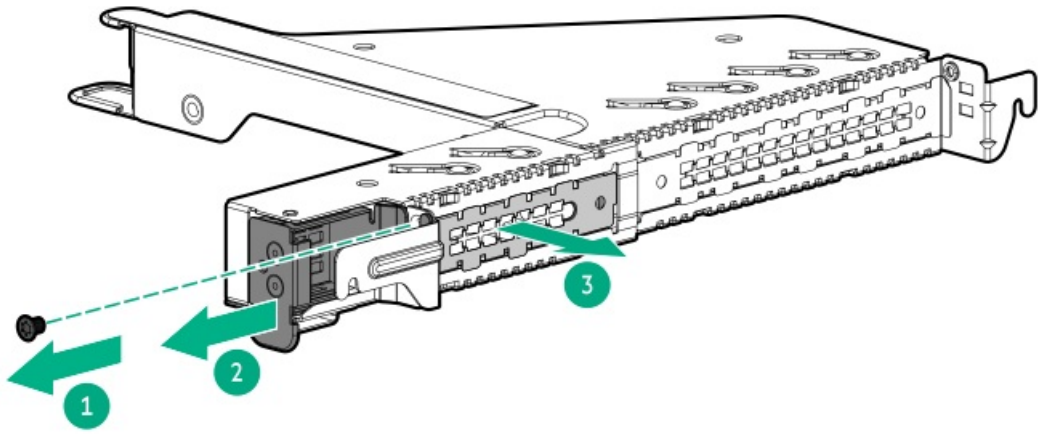


b. Install the low-profile bracket on the expansion card.



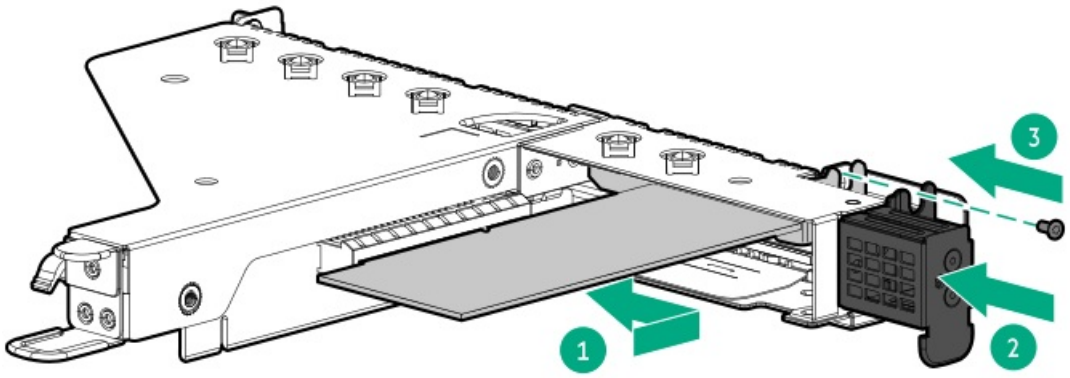
c. Open the riser slot bracket (callouts 1 and 2) and remove the slot blank (callout 3).

Retain the slot blank and the screw for future use.



d. Install the expansion card.

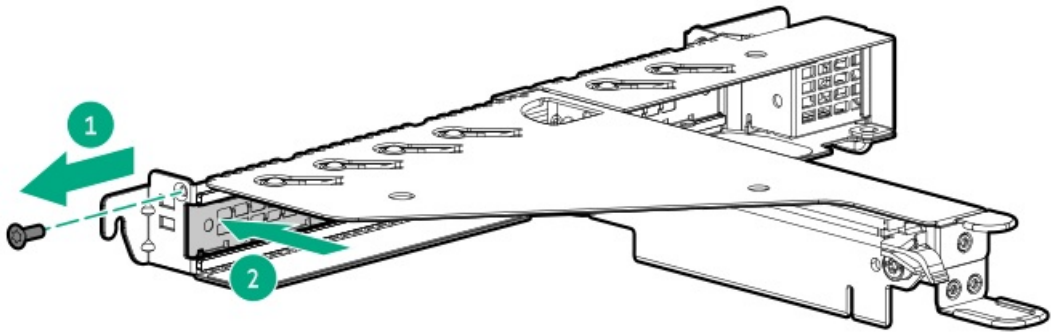
   Make sure that the expansion card is seated firmly in the slot.



12. To install an expansion card in the riser slot 2, do the following:

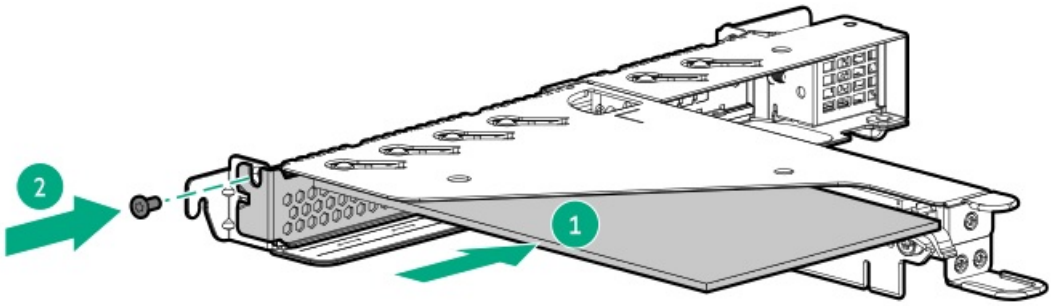
    a. Remove the riser slot screw (callout 1) and slot blank (callout 2).

       Retain the slot blank and the screw for future use.



    b. Install the expansion card.

       Make sure that the expansion card is seated firmly in the slot.



13. Install the riser cage.
14. Connect all necessary internal cabling to the expansion card. For more information on these cabling requirements, see the documentation that ships with the option.
15. Install the access panel.
16. Install the server into the rack.
17. Connect all peripheral cables to the server.
18. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
19. Power up the server.
20. If removed, install the front bezel.

This installation is complete.

M.2 SSD options

In this server, M.2 SSD support is provided through the following options:

- HPE NS204i-p Gen10 Plus Boot Device option
- M.2 SATA SSD enablement option
- M.2 SSD pass-through card

Installing the HPE NS204i-p NVMe OS Boot Device option

Note the following information about the HPE NS204i-p NVMe OS Boot Device option:

- The HPE NS204i-p NVMe OS Boot Device is a PCIe3 x8 add-in card (AIC) that includes two 480 GB M.2 NVMe SSDs.
- This boot device enables the deployed OS to be mirrored through a dedicated hardware RAID 1.
- This boot device is compatible with the following native operating systems:
  - Windows
  - Linux
  - VMware
- This boot device utilizes native inbox OS NVMe drivers.

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either a riser slot blank or an expansion card installed.

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.

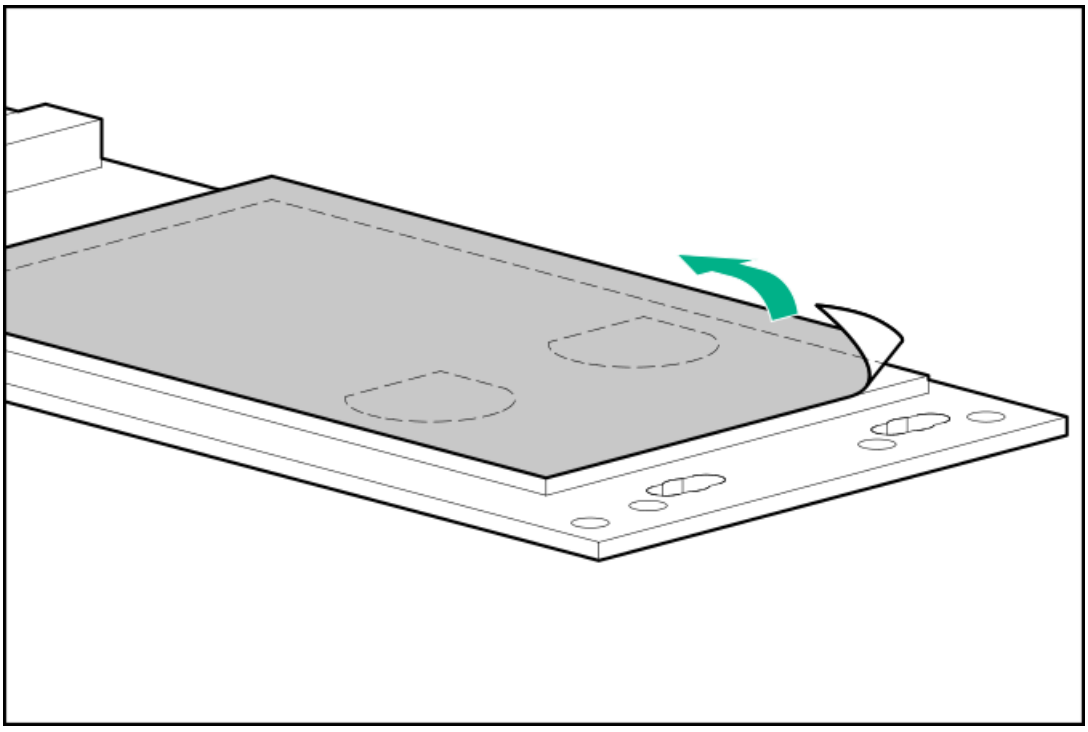
Prerequisites

- Before beginning installation, make sure that the server is updated with the latest operating system firmware and drivers.
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver—This tool is required only if you plan to replace the default bracket on the boot device.

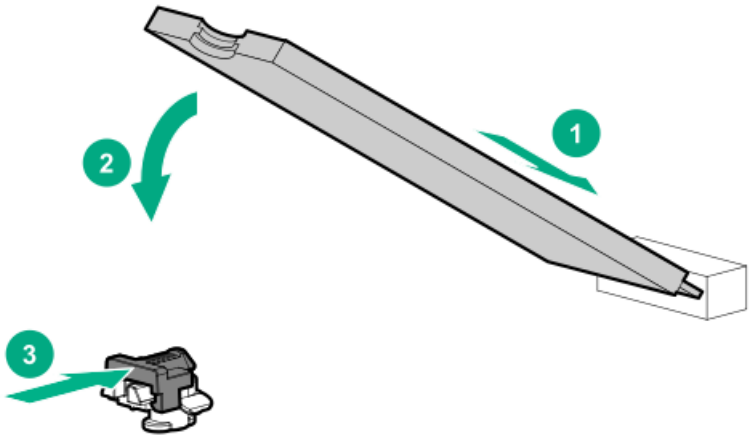
Procedure

Installing drives onto the boot device

1. Remove the liner from the thermal interface pad.



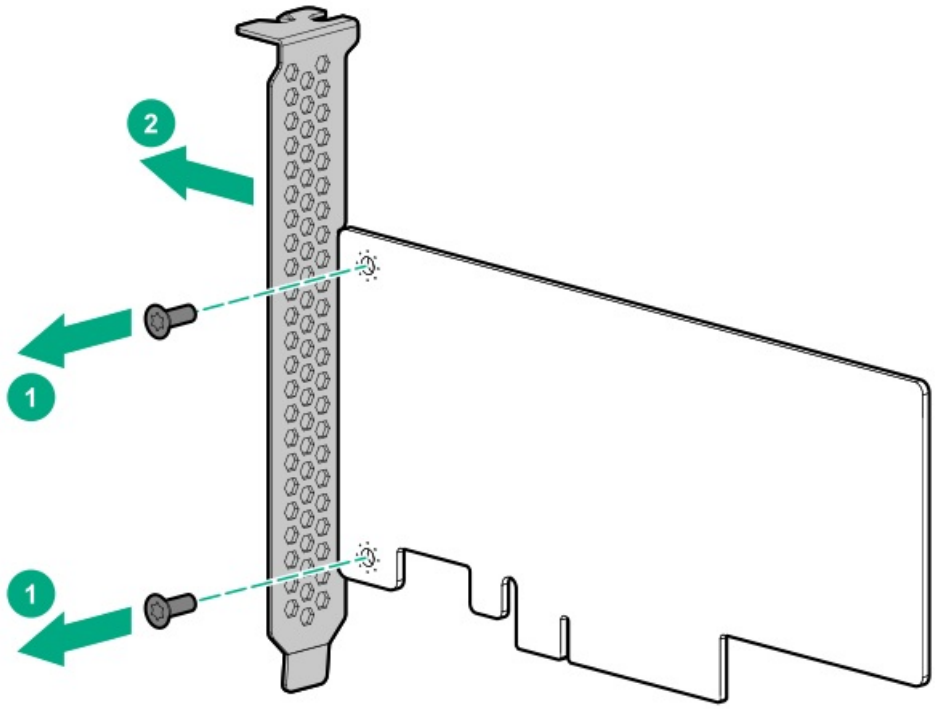
2. Insert the SSD into the M.2 slot at a 45° angle.
3. Carefully press the SSD down to the horizontal position.
4. Close the retaining latch.



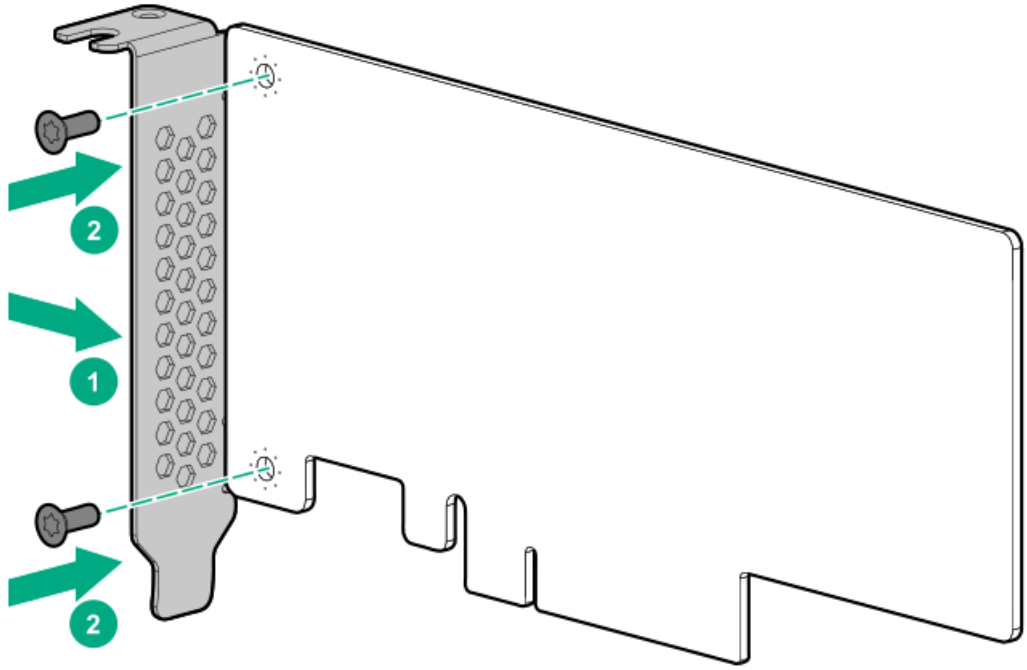
Installing the boot device

5. If physically powering down a server with the front bezel installed, remove the front bezel.
6. Power down the server.
7. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
8. Disconnect all peripheral cables from the server.
9. Remove the server from the rack.
10. Place the server on a flat, level work surface.
11. Remove the access panel.
12. Remove the riser cage.
13. To install the boot device in the riser slot 1, do the following:
    a. If installed, remove the full-height bracket from the boot device.

       Retain the bracket and screws for future use.

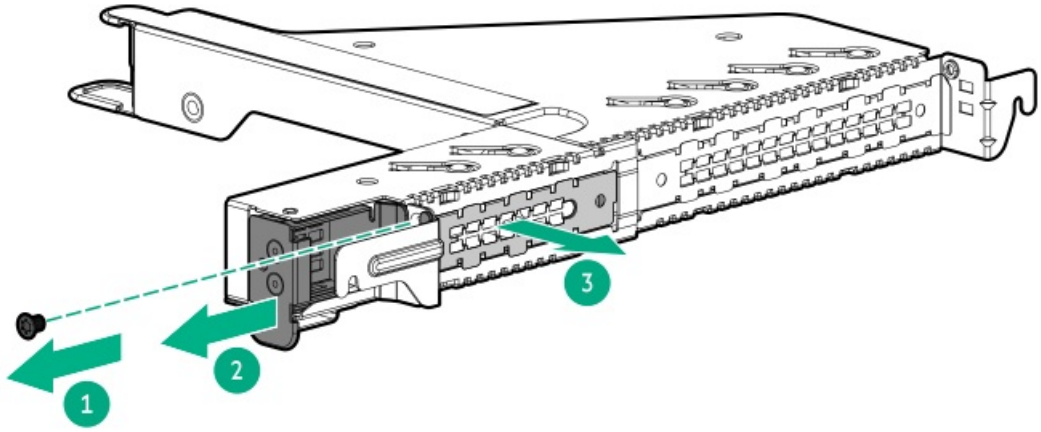


b. Install the low-profile bracket on the boot device.



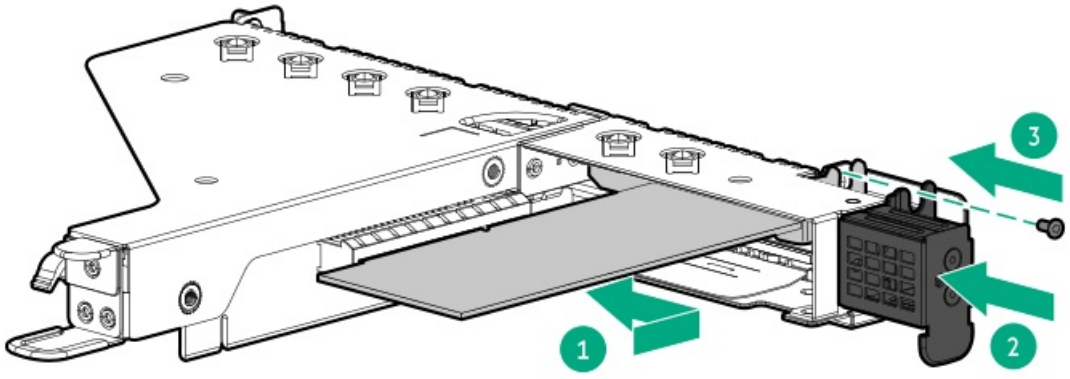
c. Open the riser slot bracket (callouts 1 and 2) and remove the slot blank (callout 3).

Retain the slot blank and the screw for future use.



d. Install the boot device.

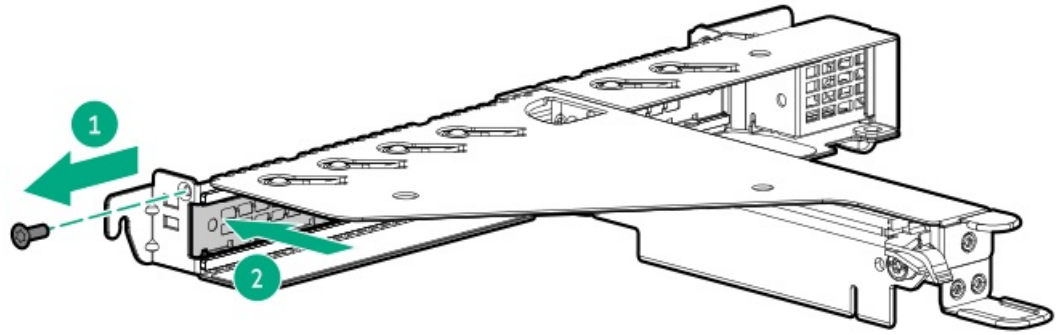
Make sure that the boot device is seated firmly in the slot.



14. To install the boot device in the riser slot 2, do the following:

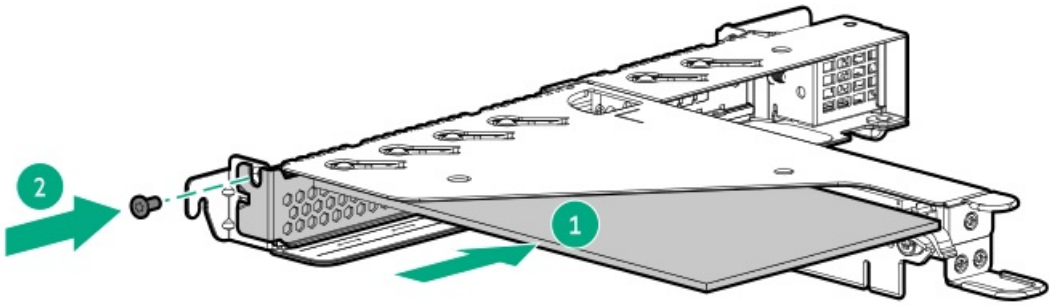
a. Remove the riser slot screw (callout 1) and slot blank (callout 2).

   Retain the slot blank and the screw for future use.



b. Install the boot device.

   Make sure that the boot device is seated firmly in the slot.



15. Install the riser cage.
16. Install the access panel.
17. Install the server into the rack.
18. Connect all peripheral cables to the server.
19. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
20. Power up the server.
21. If removed, install the front bezel.

Deploying an operating system

22. Deploy a supported operating system to the boot device drive.

    For more information, see the product QuickSpecs (**https://www.hpe.com/info/qs**).

    After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

23. Proceed with normal system setup and operation.

Installing the M.2 SATA SSD enablement option

The M.2 SATA SSD enablement option includes a PCIe3 x8 add-in card (AIC) that supports two M.2 2280 SATA SSDs. This AIC is only compatible with Windows operating systems.

> **CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either a riser slot blank or an expansion card installed.

> **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.

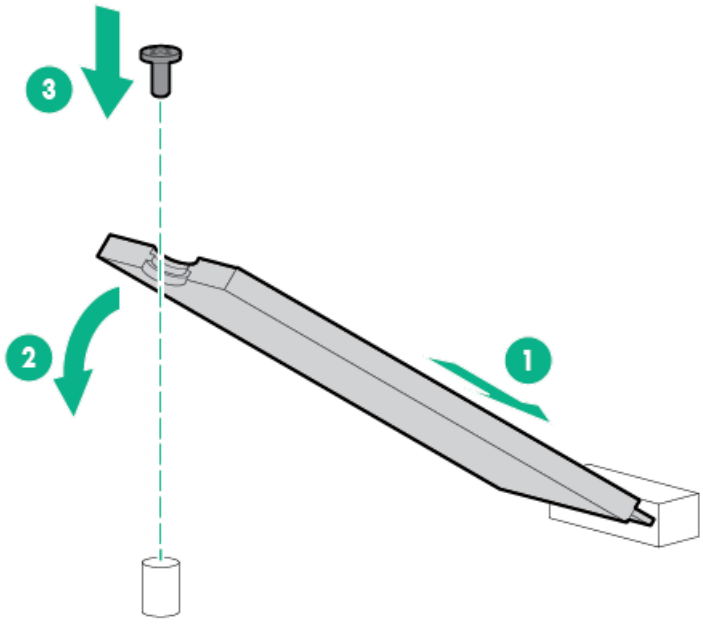
Prerequisites

- The SATA cable that ships with the M.2 SATA SSD AIC is not compatible with this server. Use the P45468-B21 M.2 SATA cable option.
- Before you perform this procedure, make sure that you have the following items available:
  - T-15 Torx screwdriver
  - Phillips No. 1 screwdriver—This tool is required only if:
    - The M.2 SSD is not preinstalled on the add-in card.
    - Replace the default bracket on the add-in card.

Procedure

Installing the drives onto the M.2 SATA add-in card

1. Insert the SSD into the M.2 slot at a 45° angle.
2. Carefully press the SSD down to the horizontal position.
3. Install the SSD mounting screw.



4. If you are installing a second SSD, repeat steps 1–3 on the SSD port 2.

Installing the M.2 SATA SSD add-in card

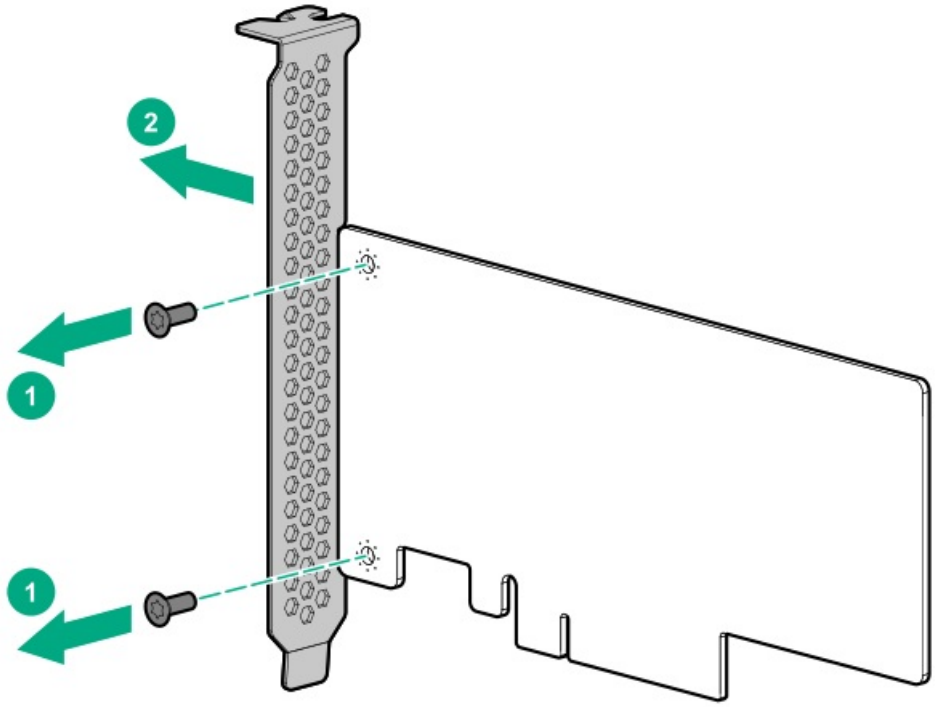
5. If physically powering down a server with the front bezel installed, remove the front bezel.
6. Power down the server.
7. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

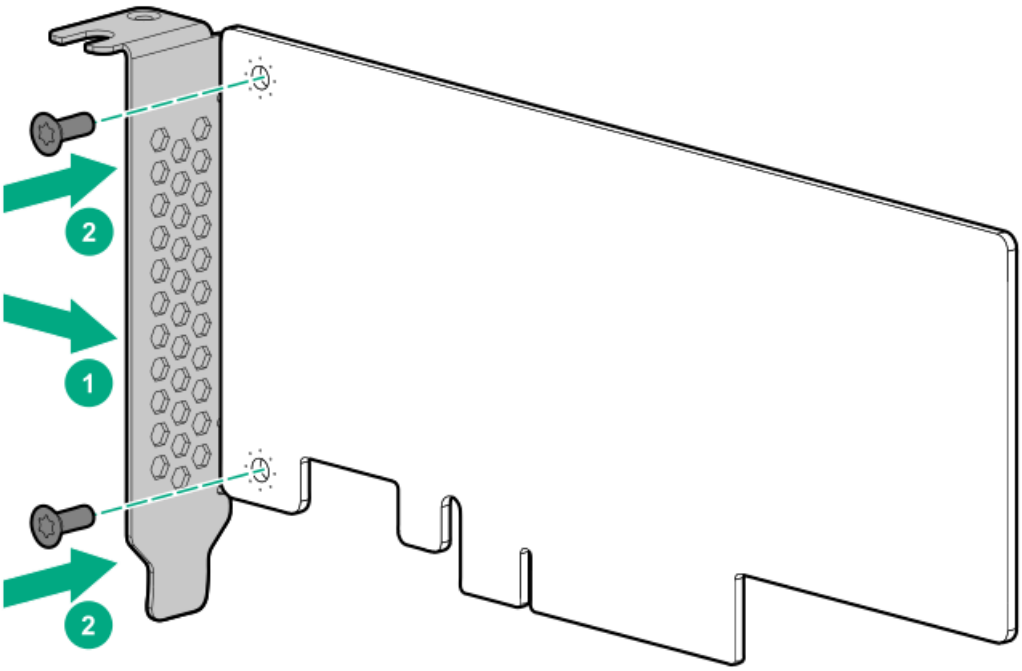
8. Disconnect all peripheral cables from the server.
9. Remove the server from the rack.
10. Place the server on a flat, level work surface.
11. Remove the access panel.
12. Remove the riser cage.
13. To install the add-in card in the riser slot 1, do the following:

a. If installed, remove the full-height bracket from the add-in card.

Retain the bracket and screws for future use.

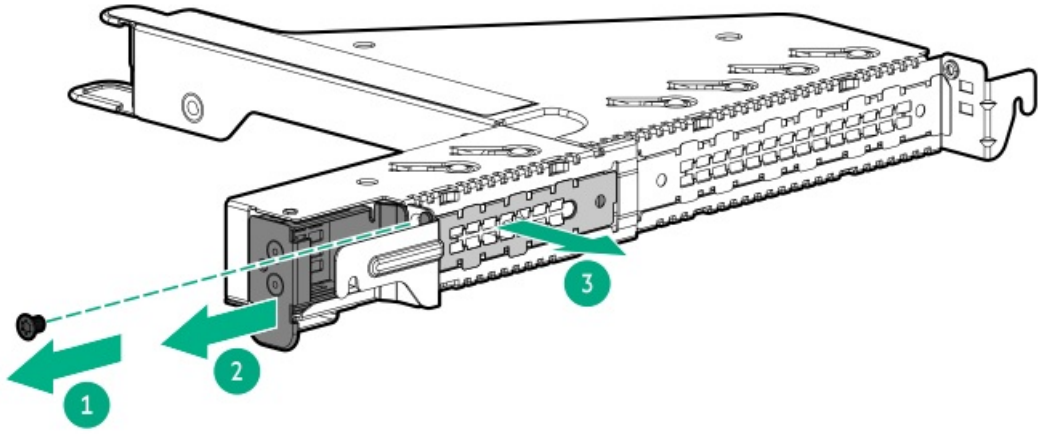


b. Install the low-profile bracket on the add-in card.



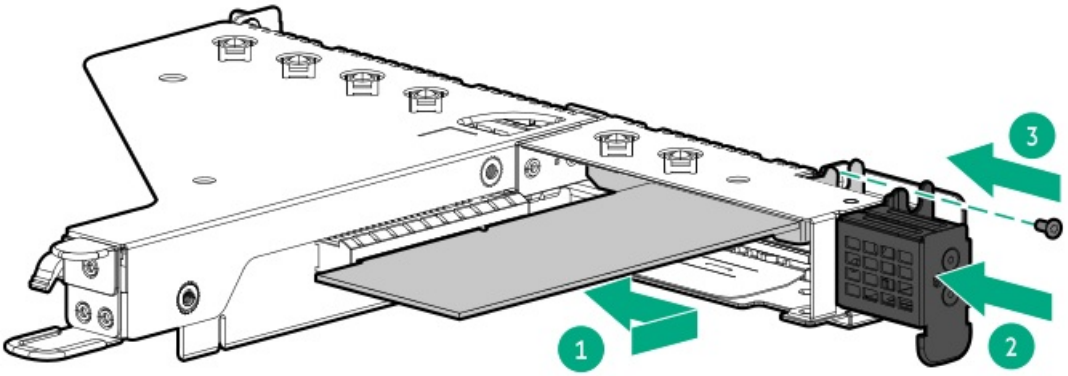
c. Open the riser slot bracket (callouts 1 and 2) and remove the slot blank (callout 3).

Retain the slot blank and the screw for future use.



d. Install the add-in card.

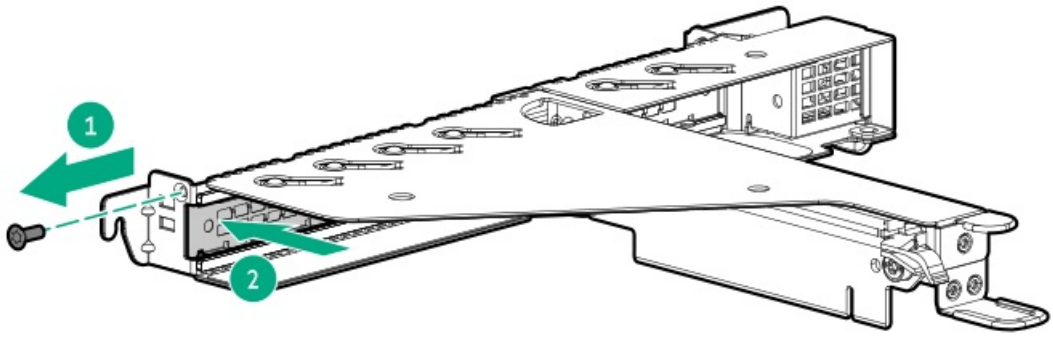
Make sure that the add-in card is seated firmly in the slot.



14. To install the add-in card in the riser slot 2, do the following:

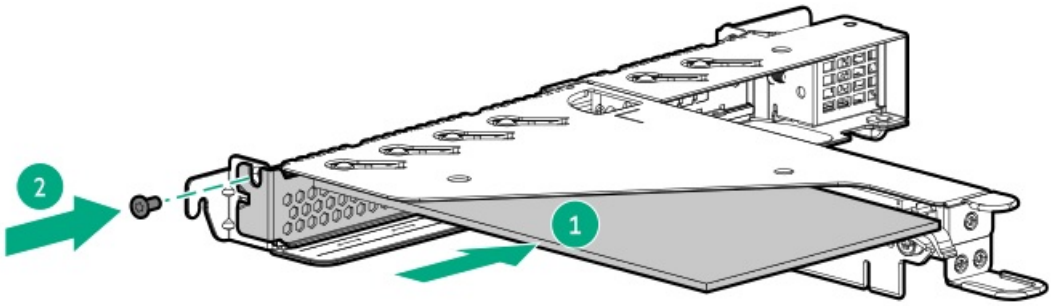
a. Remove the riser slot screw (callout 1) and slot blank (callout 2).

Retain the slot blank and the screw for future use.



b. Install the add-in card.

Make sure that the add-in card is seated firmly in the slot.



15. Install the riser cage.
16. Connect the M.2 SSD SATA cables .
17. Install the access panel.
18. Install the server into the rack .
19. Connect all peripheral cables to the server.
20. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
21. Power up the server.
22. If removed, install the front bezel.
23. To configure the M.2 SSDs, see the OS-specific Intel VROC guide.

This installation is complete.

Installing the M.2 SSD pass-through card option

The dual-slot M.2 SSD pass-through card option supports both SATA and NVMe SSDs in 2280 and 22110 form factors.

- Mixed SSD type installation is not supported.
- When M.2 SATA SSDs are installed, this server supports Intel VROC SATA.
- Software RAID for M.2 NVMe SSDs is not supported. Use NVMe SSDs for storage only.

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.

Prerequisites

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

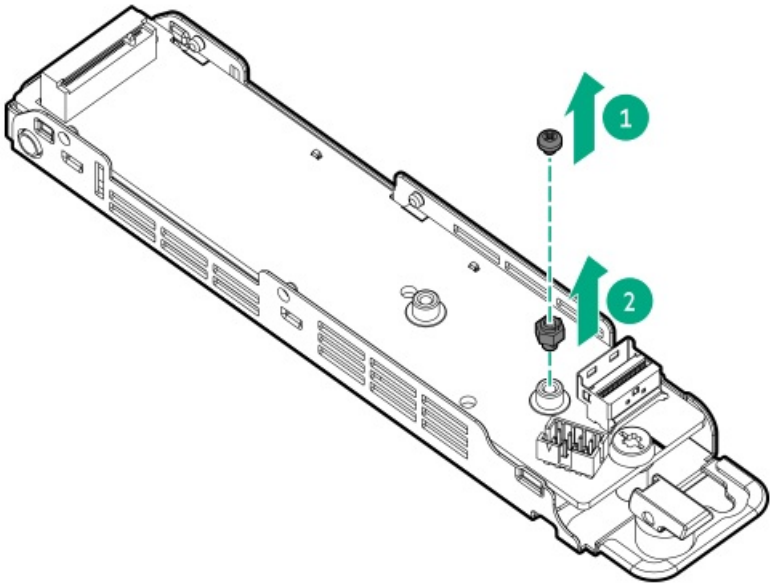
- Phillips No. 1 screwdriver
- 1/4" slotted screwdriver

Procedure

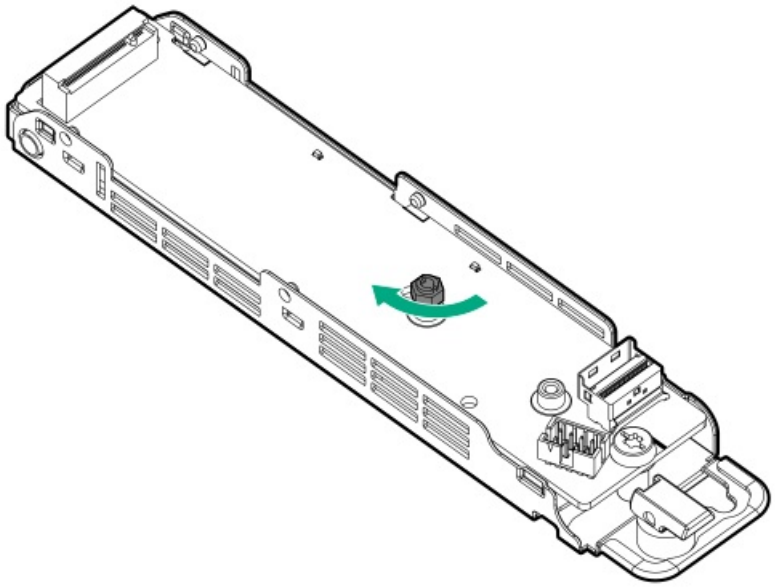
Install the drives onto the M.2 SSD pass-through card

1. If you are installing M.2 2280 SSD on the pass-through card slot 1:
   a. Remove the SSD mounting screw (callout 1) and the hex screw (callout 2) from the 22110 standoff.

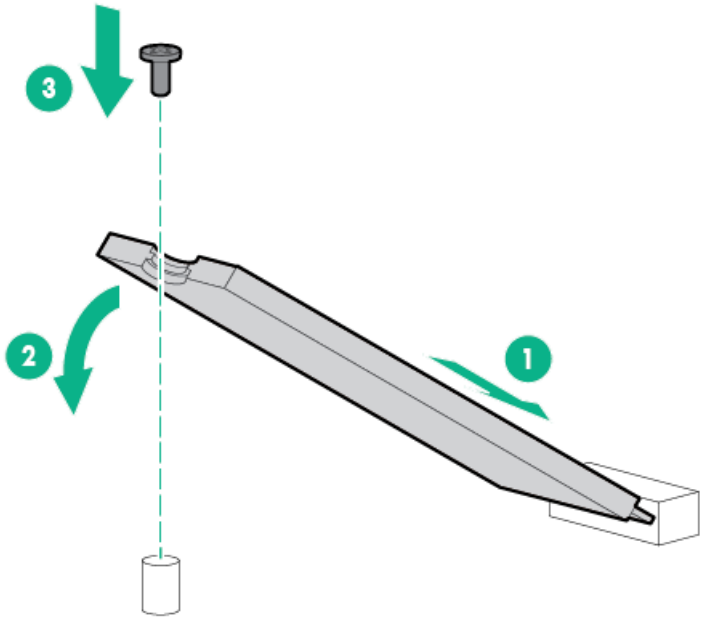
      Retain all screws for future use.



   b. Install the hex screw on the 2280 standoff.



2. Insert the SSD into the M.2 slot at a 45° angle (callout 1).
3. Carefully press the SSD down to the horizontal position (callout 2).
4. Install the SSD mounting screw (callout 3).

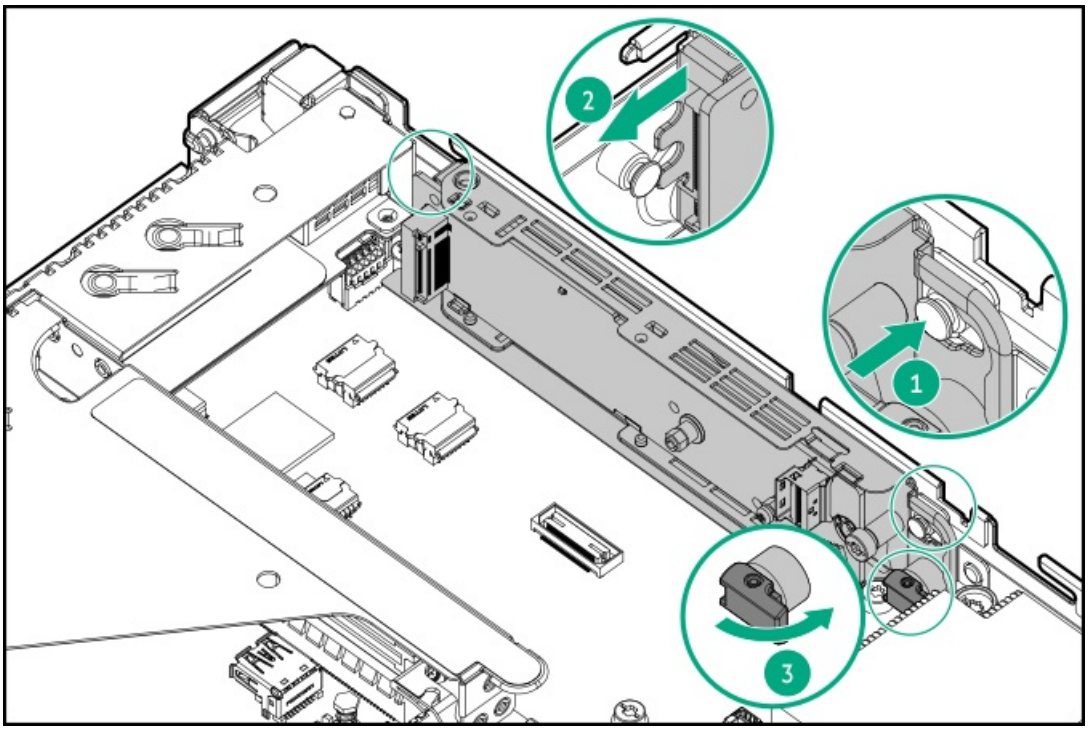


5. If you are installing a second SSD, repeat steps 2–4 on the slot 2.

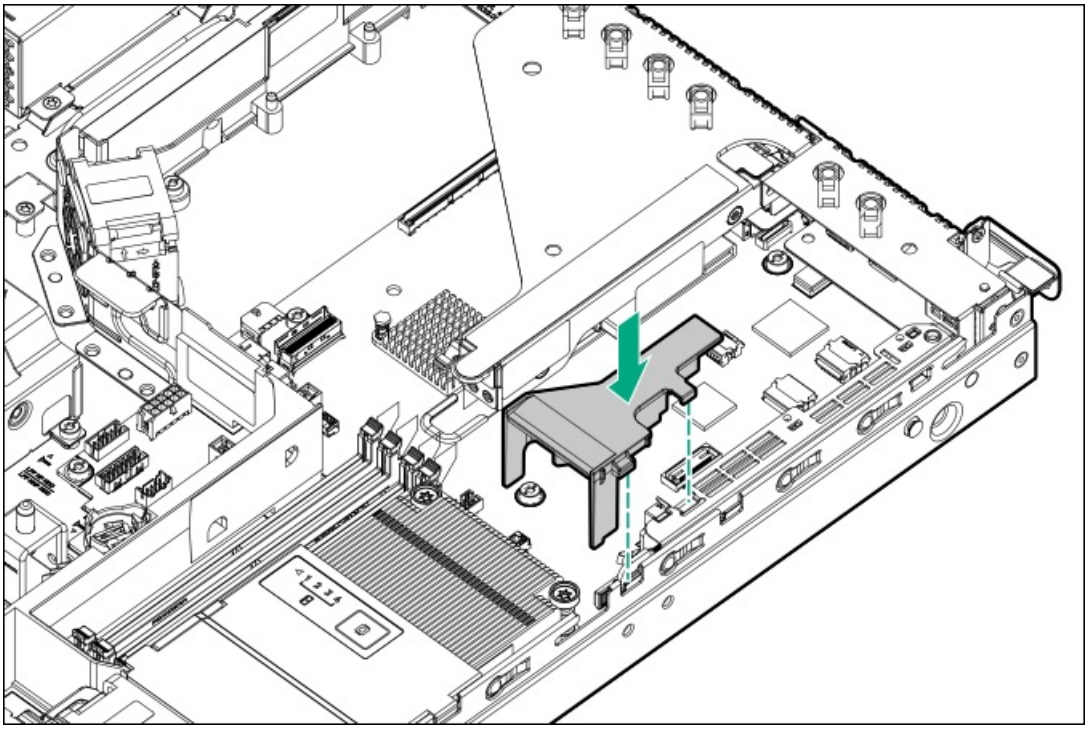
Installing the M.2 pass-through card

6. If physically powering down a server with the front bezel installed, remove the front bezel.
7. Power down the server.
8. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
9. Disconnect all peripheral cables from the server.
10. Remove the server from the rack.
11. Place the server on a flat, level work surface.
12. Remove the access panel.

13. If an expansion card is installed in the riser slot 1, remove the riser cage.
14. Install the M.2 pass-through card assembly:
    a. With the retaining latch in the open position, insert the spool on the side of the chassis through the notch on the card bracket (callout 1).
    b. Slide the pass-through card assembly towards the rear panel (callout 2).
    c. Close the retaining latch (callout 3).



15. Install the M.2 SSD air baffle.



16. Connect the M.2 SSD pass-through card cables .
17. If removed, install the riser cage.
18. Install the access panel.
19. Install the server into the rack .
20. Connect all peripheral cables to the server.

21. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
22. Power up the server.
23. If removed, install the front bezel.
24. To configure the M.2 SSDs, see the OS-specific Intel VROC guide.

This installation is complete.

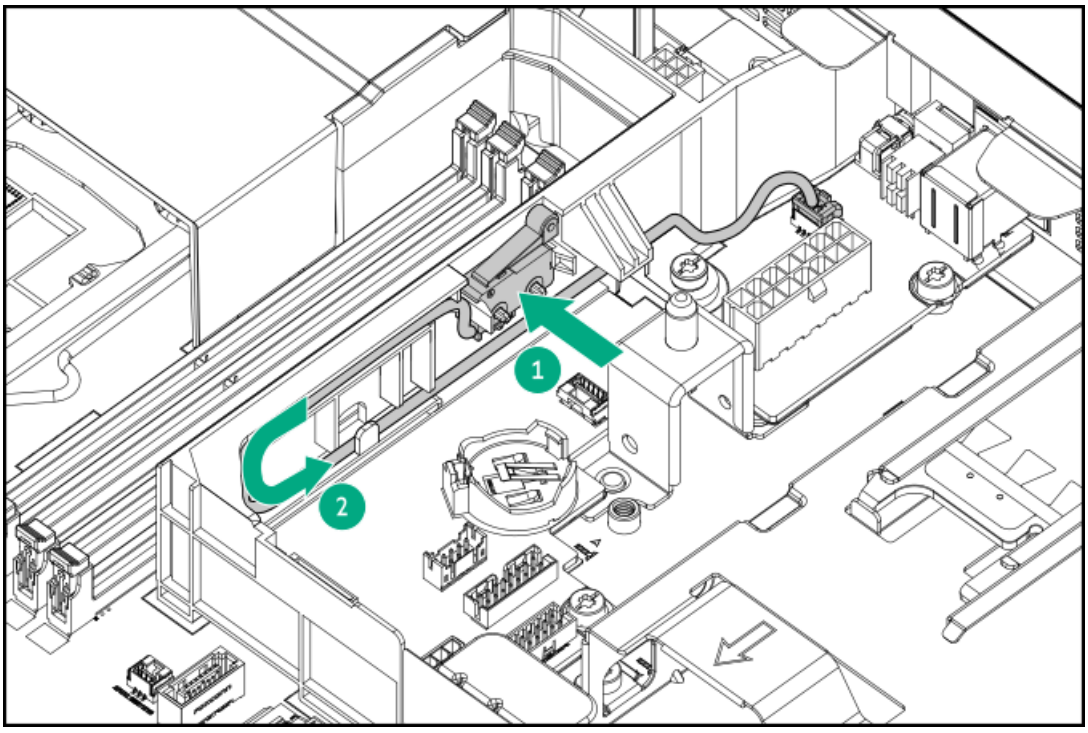
Chassis intrusion detection switch option

The chassis intrusion detection switch enables iLO to record an event in the Integrated Management Log (IML) whenever the access panel is physically opened or removed. An alert is also sent to the BIOS whenever a chassis intrusion is detected. The chassis intrusion detection occurs as long as the server is plugged in, regardless of whether the server is powered on or off.

Installing the chassis intrusion detection switch

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Disconnect following cables from the system board:
   - 14-pin power supply cable
   - Drive Mini-SAS cable, power Y-cable, and sideband-SATA fan-out cable
9. Connect the chassis intrusion detection switch cable.
10. Install the chassis intrusion detection switch:
    a. Insert the alignment pins on the DIMM guard through the holes on the switch (callout 1).
    b. Route the rest of cable on the DIMM guard (callout 2).



11. Reconnect all following cables to system board:
    - 14-pin power supply cable
    - Drive Mini-SAS cable, power Y-cable, and sideband-SATA fan-out cable
12. Install the access panel.
13. Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect the power cords:

a. Connect each power cord to the server.

b. Connect each power cord to the power source.

16. Power up the server.

17. If removed, install the front bezel.

The installation is complete.

The System Intrusion Detection setting in the UEFI System Utilities is automatically enabled after installing the chassis intrusion detection switch. To view a log of intrusion events, use the iLO web interface to access the IML or the iLO event log. For more information, see the iLO user guide on the Hewlett Packard Enterprise website (**https://www.hpe.com/support/ilo-docs**).

Serial port option

Install the serial port option to enable communication to physical serial devices. You can also use the serial connection to remotely access the system BIOS and view POST error messages.

Installing the serial port option

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:

The port blank provides EMI shielding and helps maintain proper thermal status inside the server. Do not operate the server when a port blank is removed without the corresponding I/O port option installed.

Prerequisites

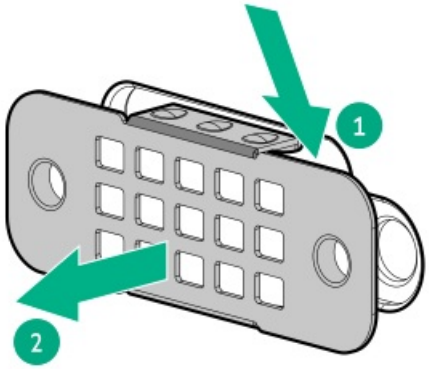
Before you perform this procedure, make sure that you have the following items available:

- Hex screwdriver
- Spudger or any small prying tool

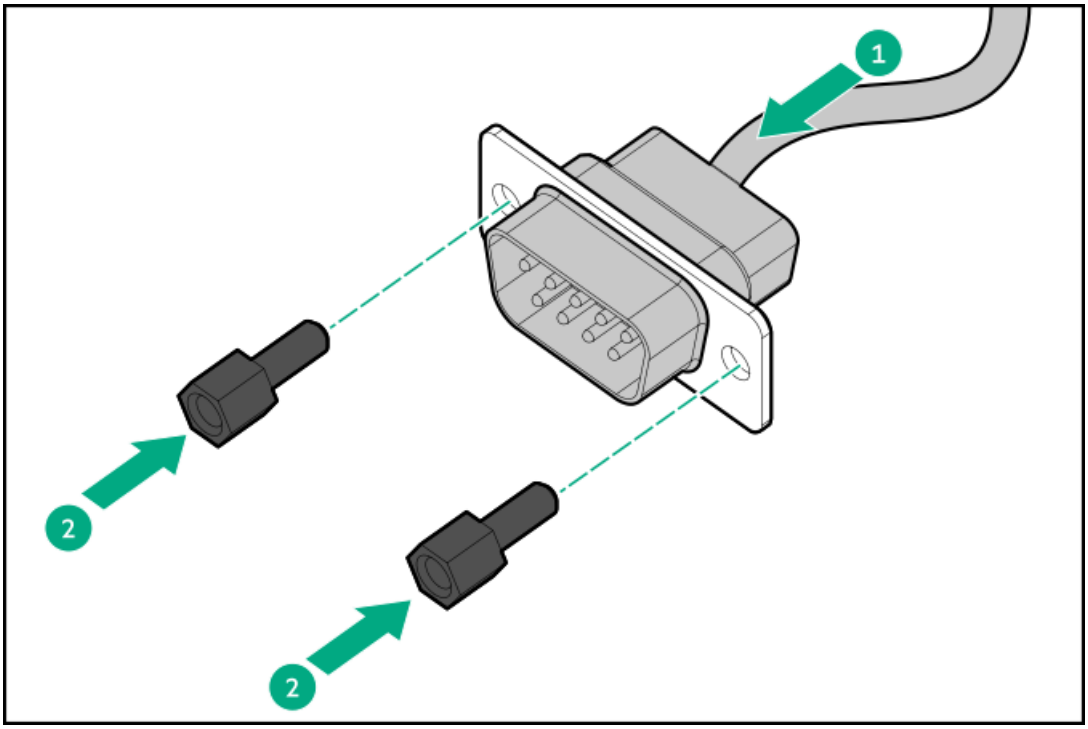
Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the riser cage.
9. Remove the serial port blank:
   a. Detach the right side of the blank (callout 1).
   b. Repeat step a on the left side to remove the blank (callout 2).

   Retain the blank for future use.



10. Install the serial port:
    a. Insert the serial port into the rear panel opening (callout 1).
    b. Install the hex screws (callout 2).



11. Connect the serial port cable .
12. Install the riser cage.
13. Install the access panel.
14. Install the server into the rack .
15. Connect all peripheral cables to the server.
16. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
17. Power up the server.
18. If removed, install the front bezel.
19. To configure the serial port setting:
    a. From the boot screen, press **F9** to access the UEFI System Utilities.
    b. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > System Options > Serial Port Options > Embedded Serial Port.
    c. Select a setting.
    d. Press **F12** key to save your selection.
    e. Click Yes-Save Changes.
    f. Click Reboot.

This installation is complete.

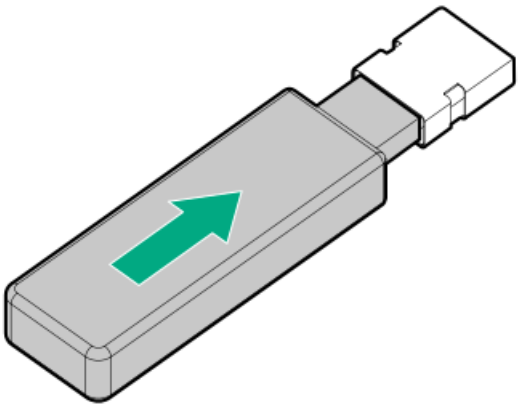
Internal USB device option

The server has an internal USB 3.2 Gen1 port to install a USB device that can be used as a flash boot media or for data backup/redundancy.

Installing an internal USB device

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Locate the internal USB port.
9. Remove the riser cage.
10. Plug in the USB device into the USB port.



11. Install the riser cage.
12. Install the access panel.
13. Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
16. Power up the server.
17. If removed, install the front bezel.

This installation is complete.

Cabling

This chapter includes cabling guidelines and diagrams for internal component cabling.

Cabling guidelines

The cable colors in the cabling diagrams used in this chapter are for illustration purposes only. Most of the system cables are black.

Observe the following guidelines when working with system cables.

Before connecting cables

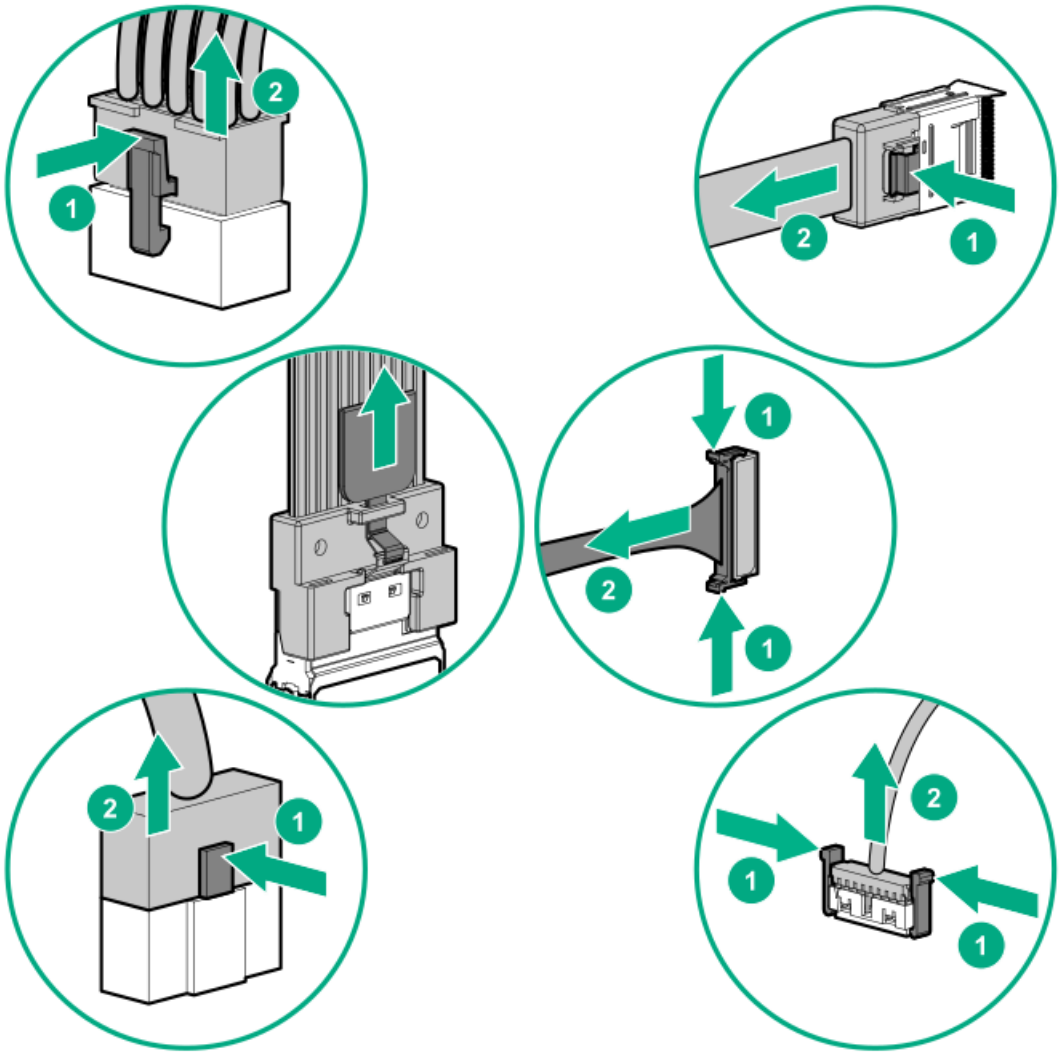
- Note the port labels on the PCA components. Not all of these components are used by all systems:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion card ports (controllers, adapters, expanders, risers, and similar boards)
- Note the label near each cable connector. This label indicates the destination port for the cable connector.
- Some data cables are pre-bent. Do not unbend or manipulate the cables.
- To prevent mechanical damage or depositing oil that is present on your hands, and other contamination, do not touch the ends of the connectors.

When connecting cables

- Before connecting a cable to a port, lay the cable in place to verify the length of the cable.
- Use the internal cable management features to properly route and secure the cables.
- When routing cables, be sure that the cables are not in a position where they can be pinched or crimped.
- Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.
- Make sure that the excess length of cables are properly secured to avoid excess bends, interference issues, and airflow restriction.
- To prevent component damage and potential signal interference, make sure that all cables are in their appropriate routing position before installing a new component and before closing up the system after hardware installation/maintenance.

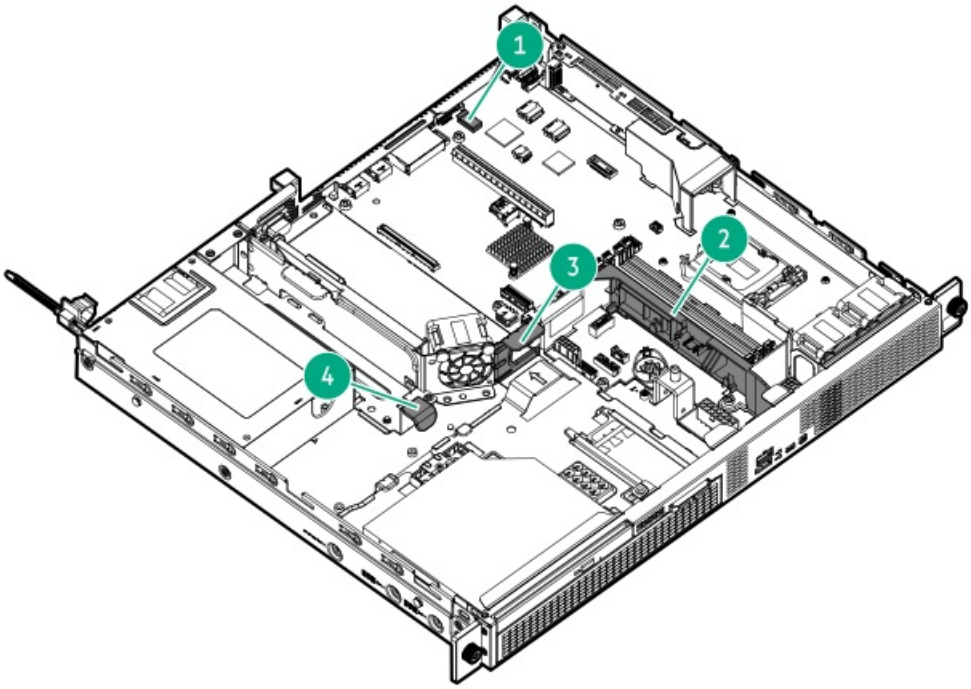
When disconnecting cables

- Grip the body of the cable connector. Do not pull on the cable itself because this action can damage the internal wires of the cable or the pins on the port.
- If a cable does not disconnect easily, check for any release latch that must be pressed to disconnect the cable.



- Remove cables that are no longer being used. Retaining them inside the system can restrict airflow. If you intend to use the removed cables later, label and store them for future use.

Internal cabling management



Item	Description
1	Serial port cable clip
2	DIMM guard [1]
3	Midwall cable channel
4	Metal tab [2]

[1] This DIMM guard is for securing:

- Chassis intrusion detection switch cable
- Power supply cable

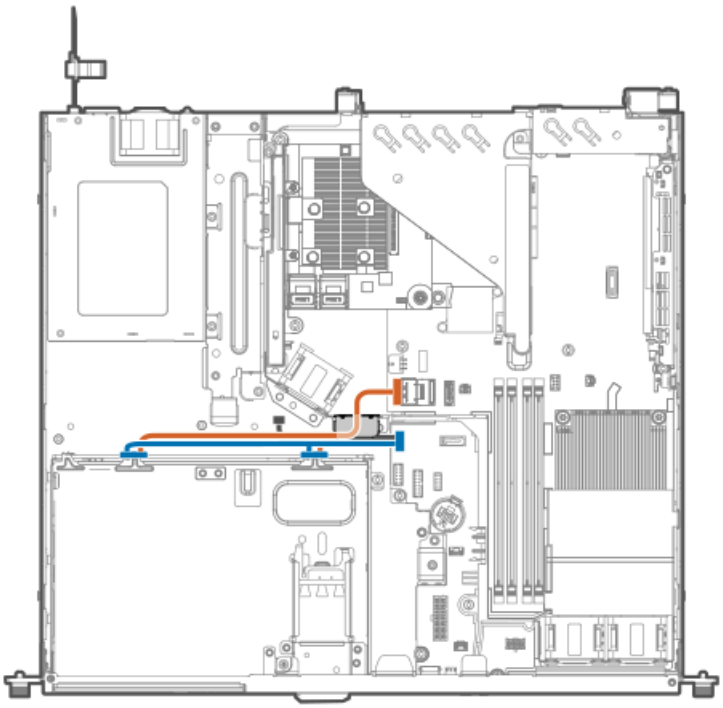
[2] This tab is for securing the ATX non-hot-plug power supply cables.

Storage cabling

- 2 LFF non-hot-plug drive cabling
- 2 LFF hot-plug drive cabling
- 4 SFF hot-plug drive cabling
- 4 + 2 SFF hot-plug drive cabling
- Energy pack cabling
- Storage controller backup power cabling

2 LFF non-hot-plug drive cabling

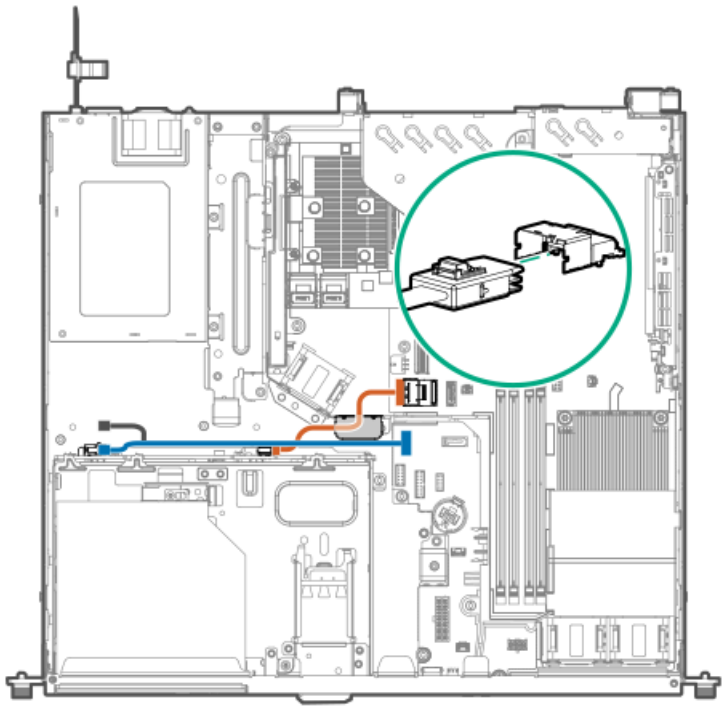
The 2 LFF non-hot-plug drive configuration uses a single multiconnector cable for the drive power and Mini-SAS connections. This cable also has an extension connector for optical drive power.



Color	Description
Orange	Mini-SAS cable
Blue	Drive power cable

2 LFF hot-plug drive cabling

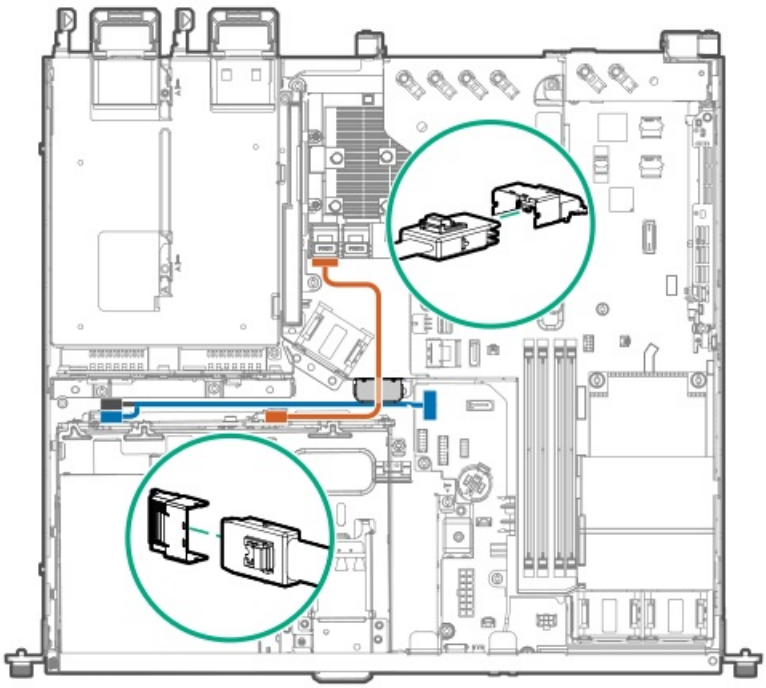
2 LFF drive: Onboard SATA cabling



Color	Description
Orange	Mini-SAS cable
Blue	Drive power Y-cable [1]

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

2 LFF drive: Type-a controller cabling

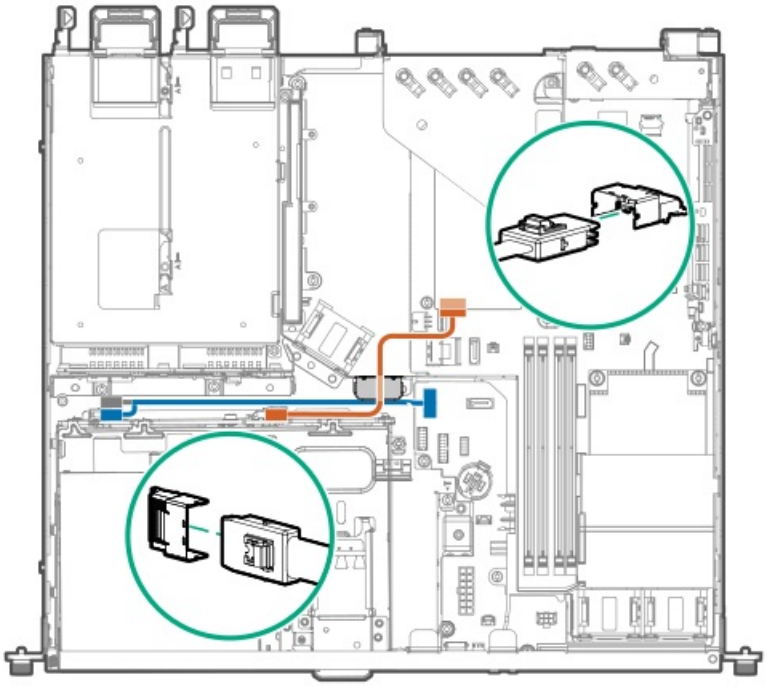


Color	Description
Orange	Mini-SAS cable

Color	Description
Blue	Drive power Y-cable [1]

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

2 LFF drive: Type-p controller cabling

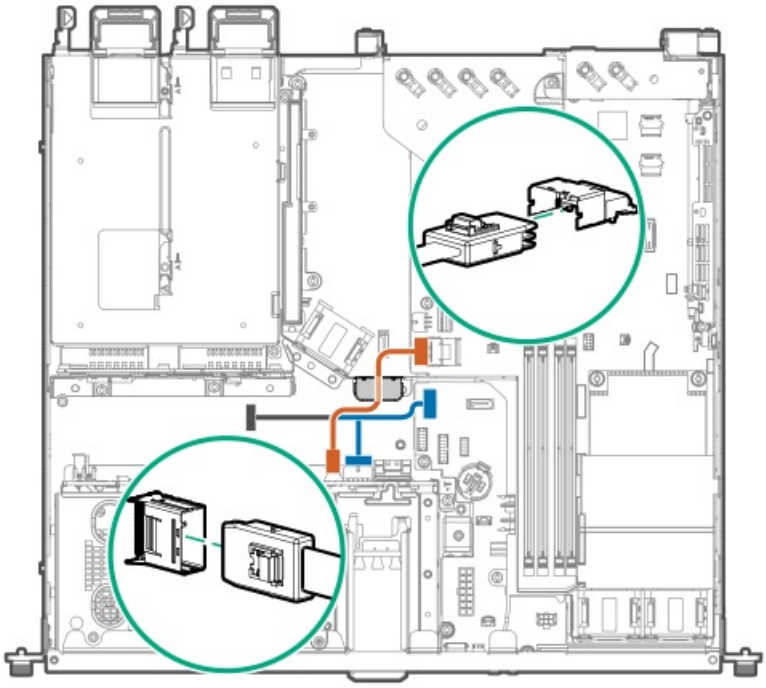


Color	Description
Orange	Mini-SAS cable
Blue	Drive power Y-cable [2]

[2] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

4 SFF hot-plug drive cabling

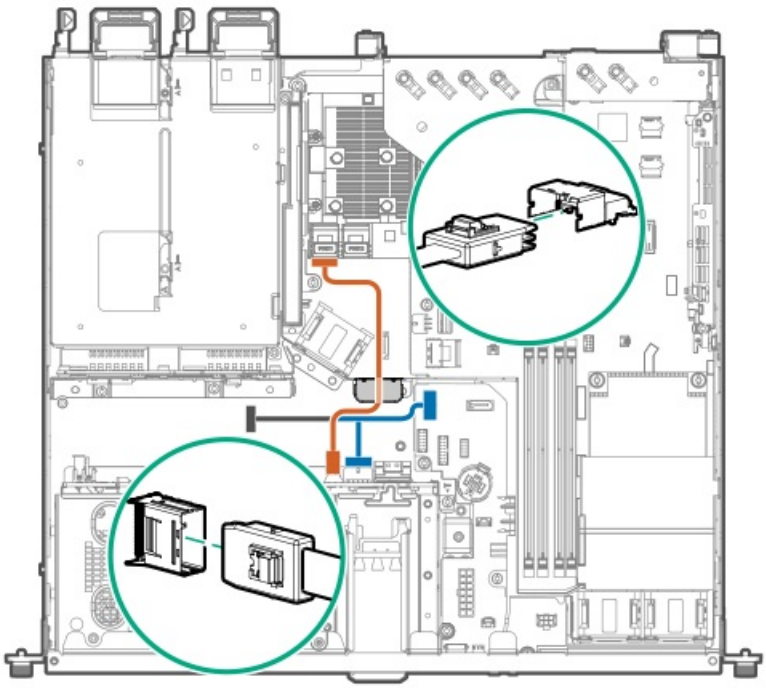
4 SFF drive: Onboard SATA cabling



Color	Description
Orange	Mini-SAS cable
Blue	Drive power Y-cable [1]

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

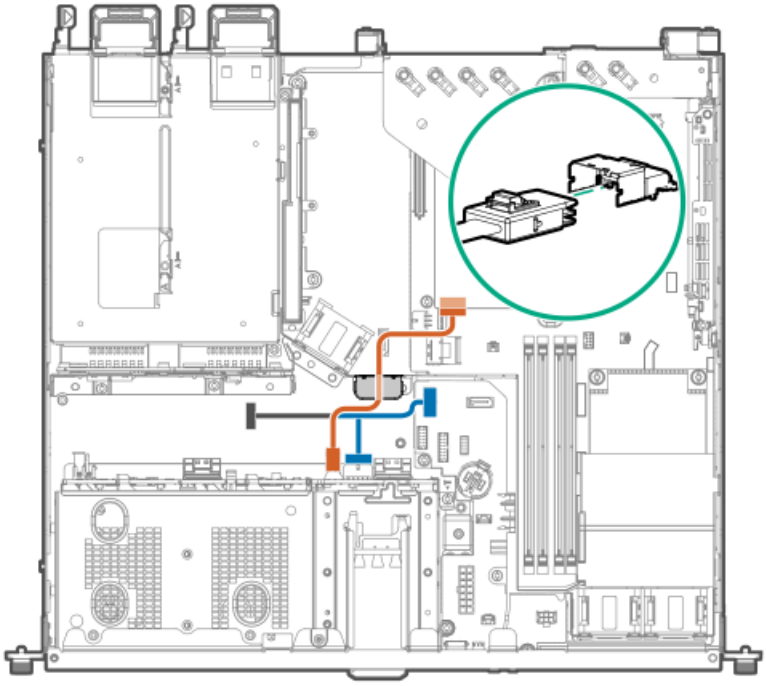
4 SFF drive: Type-a controller cabling



Color	Description
Orange	Mini-SAS cable
Blue	Drive power Y-cable [1]

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

4 SFF drive: Type-p controller cabling

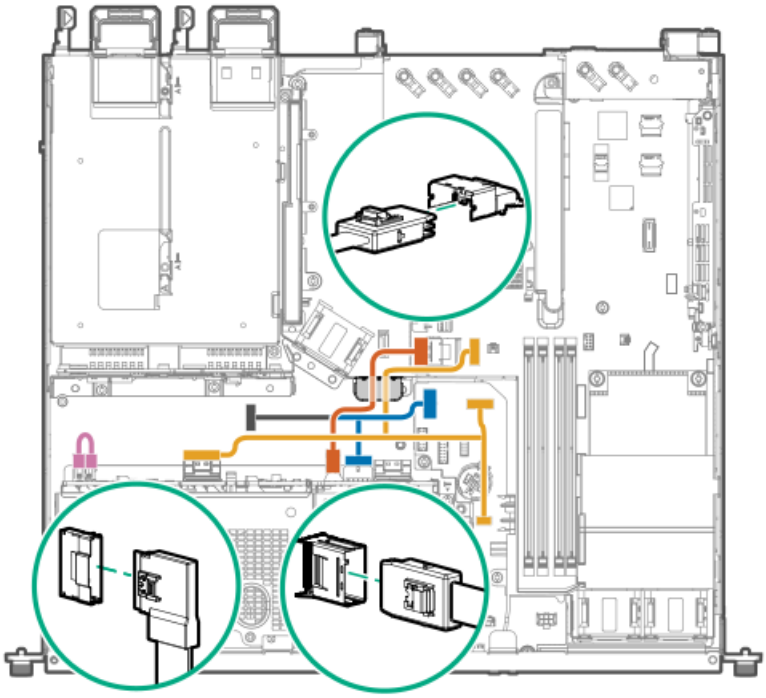


Color	Description
Orange	Mini-SAS cable
Blue	Drive power Y-cable [1]

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

4 + 2 SFF hot-plug drive cabling

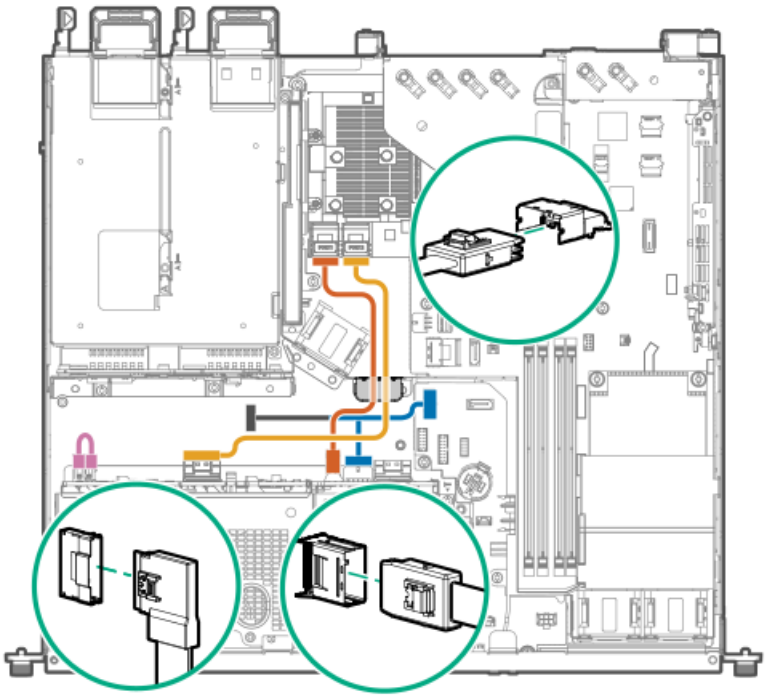
4 + 2 SFF drive: Onboard SATA cabling



Color	Description
Orange	4 SFF drive Mini-SAS cable
Blue	4 SFF drive power Y-cable [1]
Gold	2 SFF drive sideband-SATA fan-out cable
Pink	2 SFF drive power cable

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

4 + 2 SFF drive: Type-a controller cabling

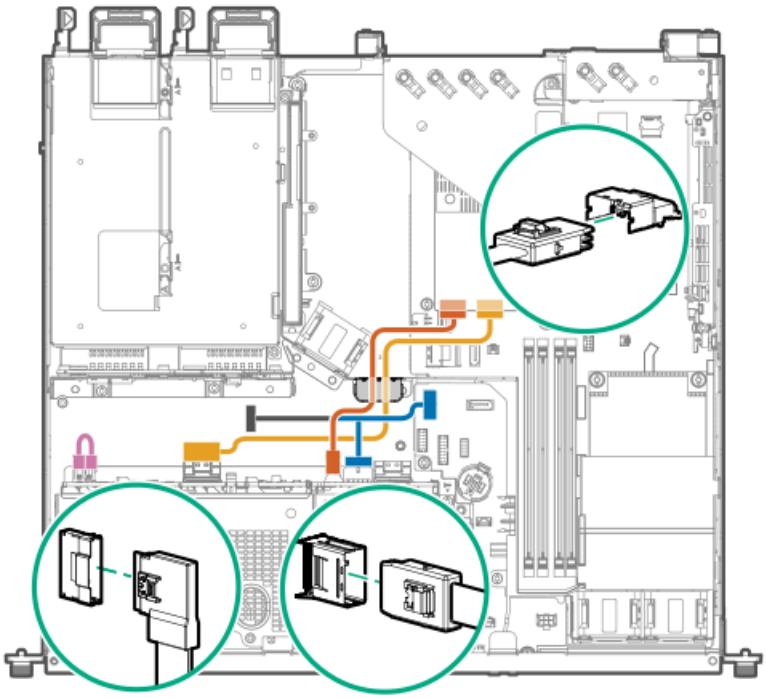


Color	Description

Color	Description
Orange	4 SFF drive Mini-SAS cable
Blue	4 SFF drive power Y-cable [1]
Gold	2 SFF drive Mini-SAS cable
Pink	2 SFF drive power cable

[1] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

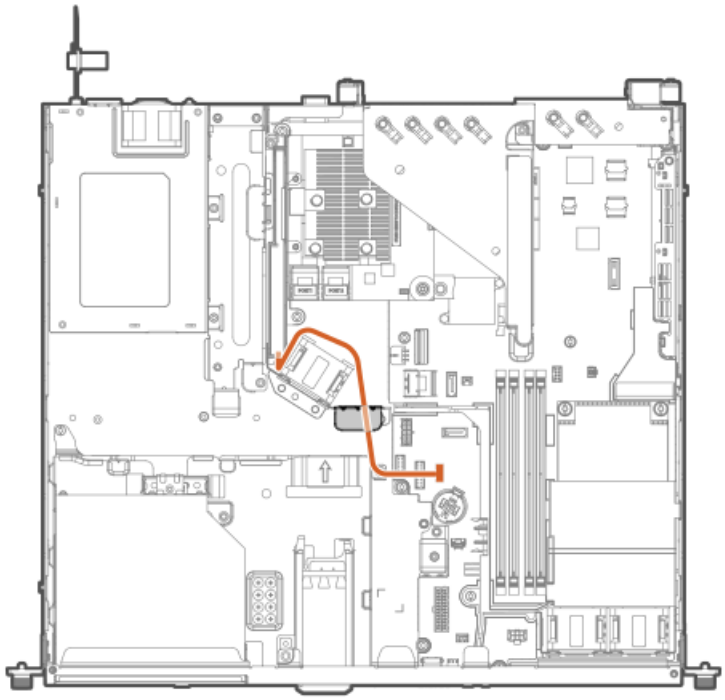
4 + 2 SFF drive: Type-p controller cabling



Color	Description
Orange	4 SFF drive Mini-SAS cable
Blue	4 SFF drive power Y-cable [2]
Gold	2 SFF drive Mini-SAS cable
Pink	2 SFF drive power cable

[2] The P2 connector (gray in the illustration) of this cable connects to the optical drive power-SATA Y-cable.

Energy pack cabling



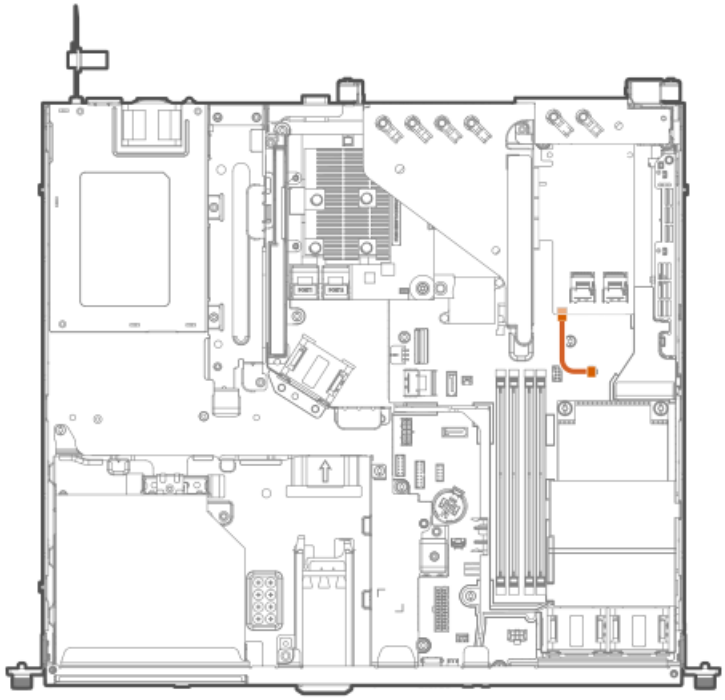
Storage controller backup power cabling

The exact route of the storage controller backup power cabling will depend on:

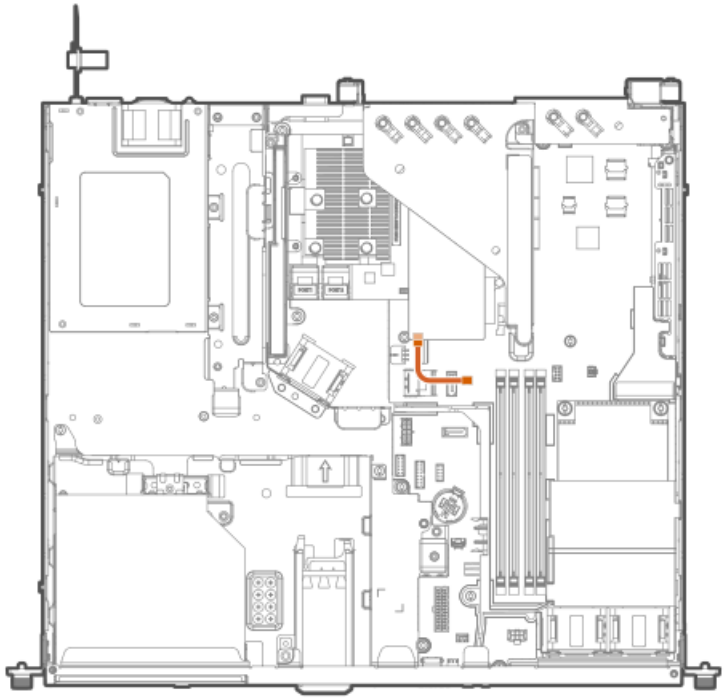
- The riser slot where the controller is installed
- The location of the storage controller backup power connector on the controller

Use the following diagrams for reference only.

Storage controller backup power cabling from the riser slot 1

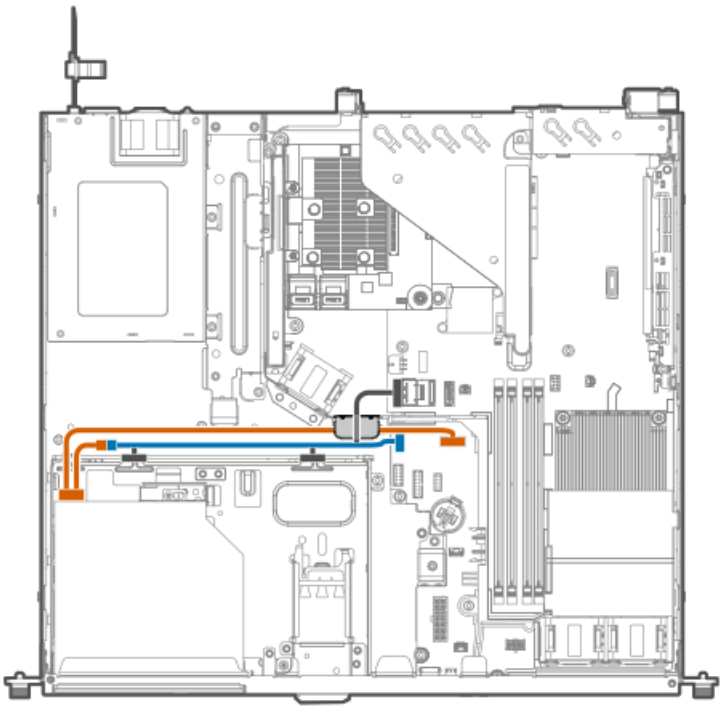


Storage controller backup power cabling from the riser slot 2



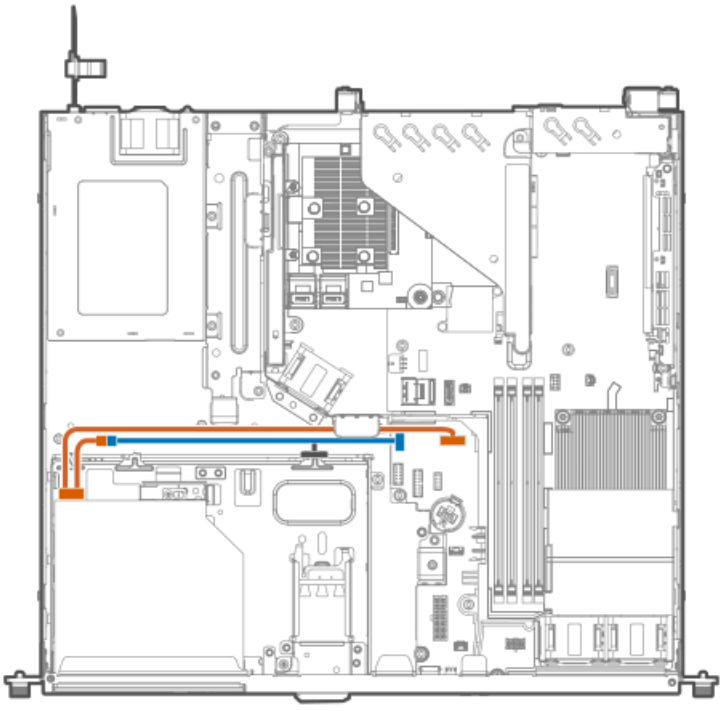
Optical drive cabling

Optical drive cabling in the LFF non-hot-plug drive configuration



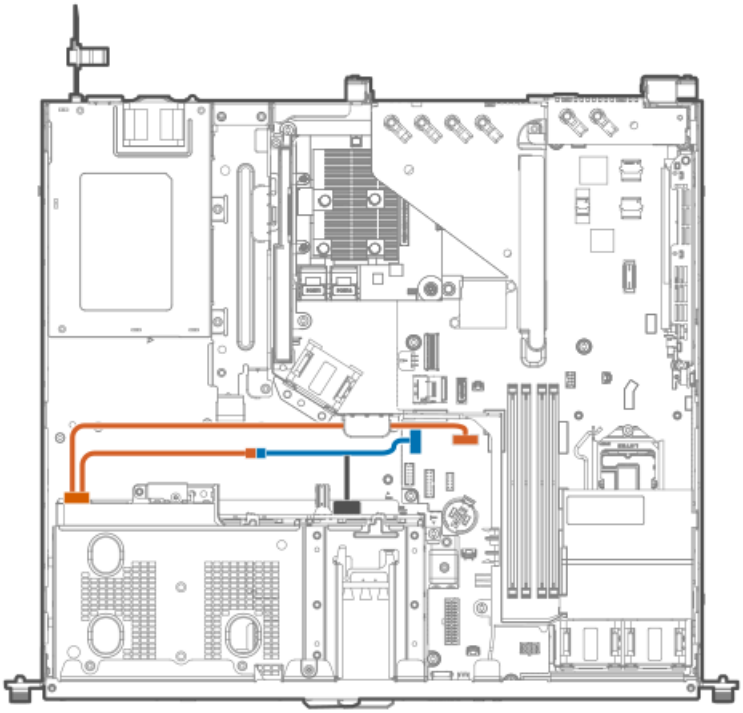
Color	Description
Orange	Optical drive SATA-power Y-cable
Blue	2 LFF non-hot plug drive power-Y cable

Optical drive cabling in the LFF hot-plug drive configuration



Color	Description
Orange	Optical drive SATA-power Y-cable
Blue	2 LFF hot-plug drive power-Y cable

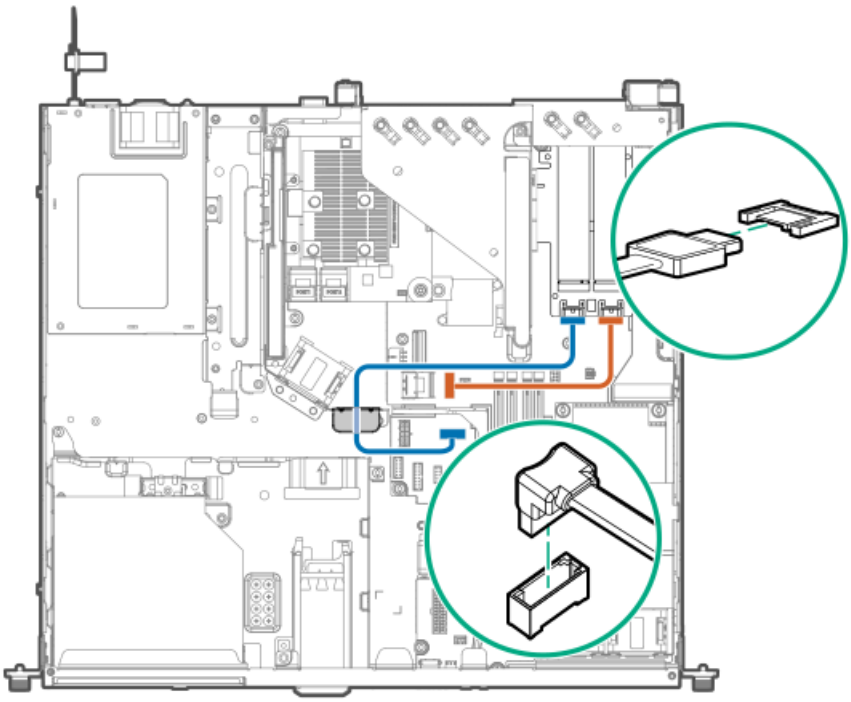
Optical drive cabling in the SFF hot-plug drive configuration



Color	Description
Orange	Optical drive SATA-power Y-cable
Blue	4 SFF drive power-Y cable

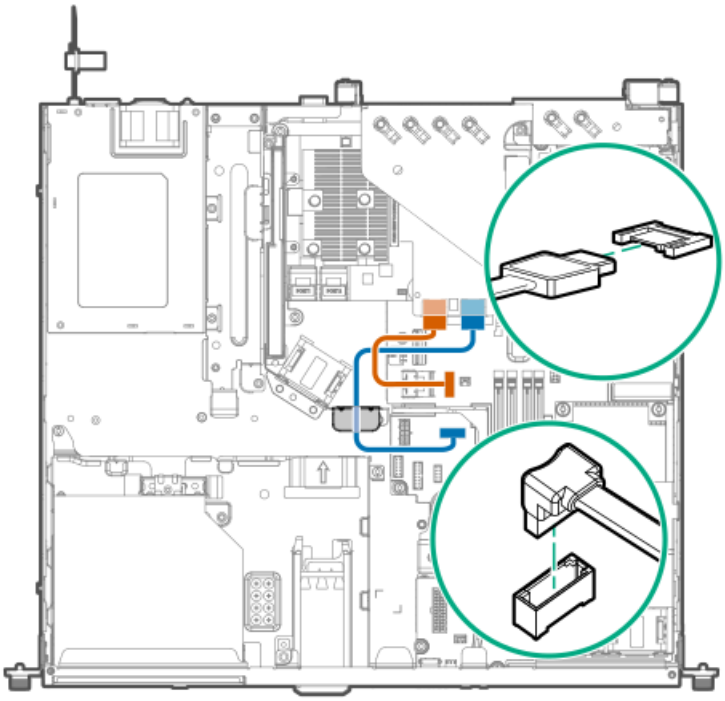
M.2 SATA SSD add-in card cabling

M.2 SATA SSD add-in card cabling from the riser slot 1



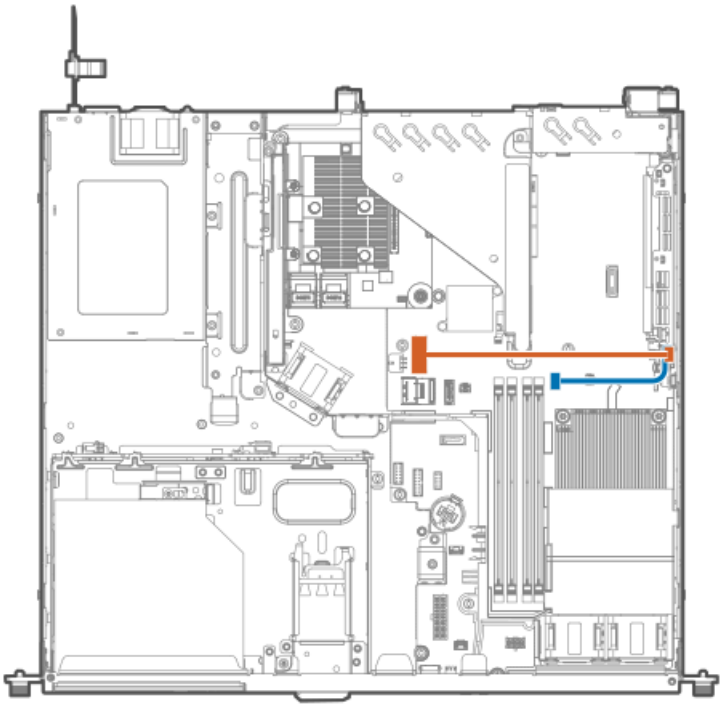
Color	Description
Orange	M.2 SATA SSD 1 cable
Blue	M.2 SATA SSD 2 cable

M.2 SATA SSD add-in card cabling from the riser slot 2



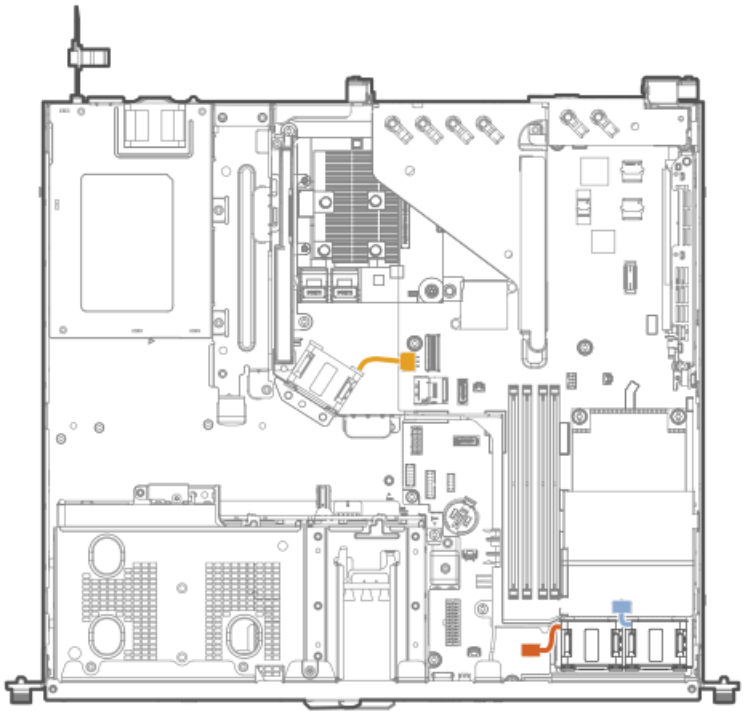
Color	Description
Orange	M.2 SATA SSD 1 cable
Blue	M.2 SATA SSD 2 cable

M.2 SSD pass-through card cabling



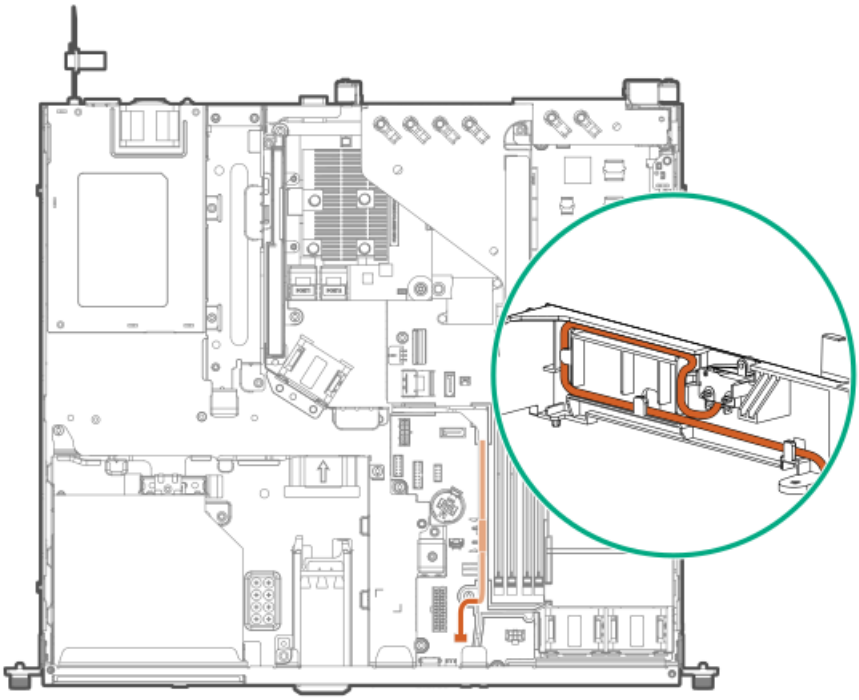
Color	Description
Orange	M.2 SSD SlimSAS cable
Blue	M.2 SSD power-sideband cable

Fan cabling

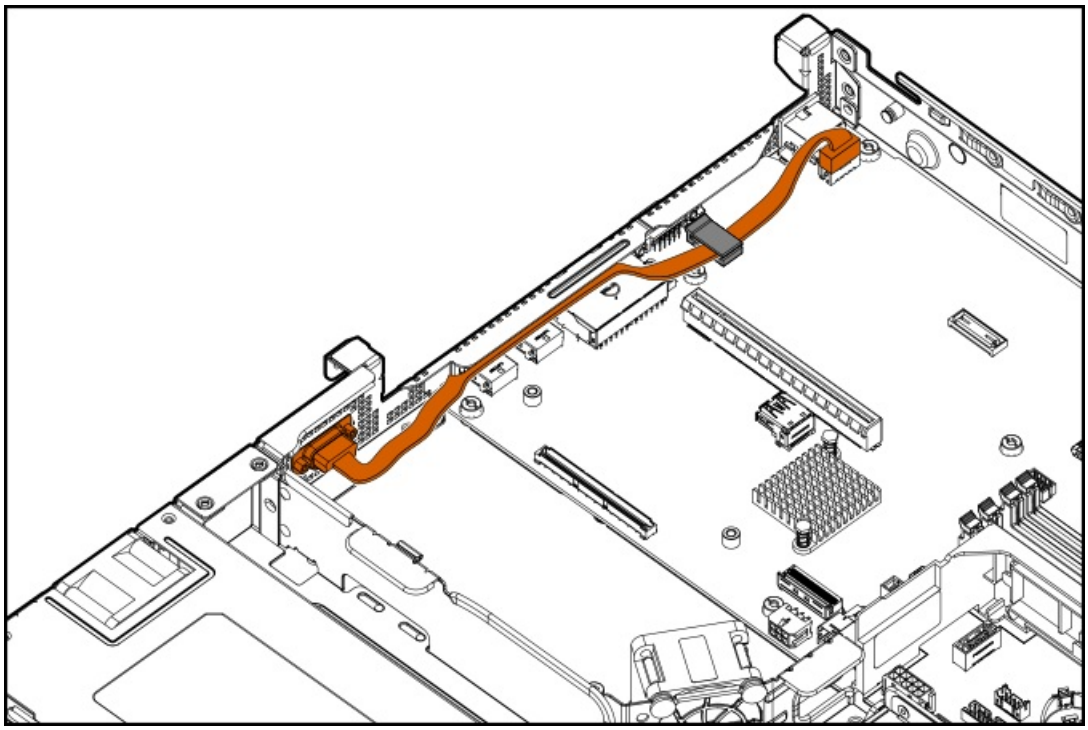


Color	Description
Orange	Fan 1 cable
Blue	Fan 2 cable
Gold	Fan 3 cable

Chassis intrusion detection switch cabling

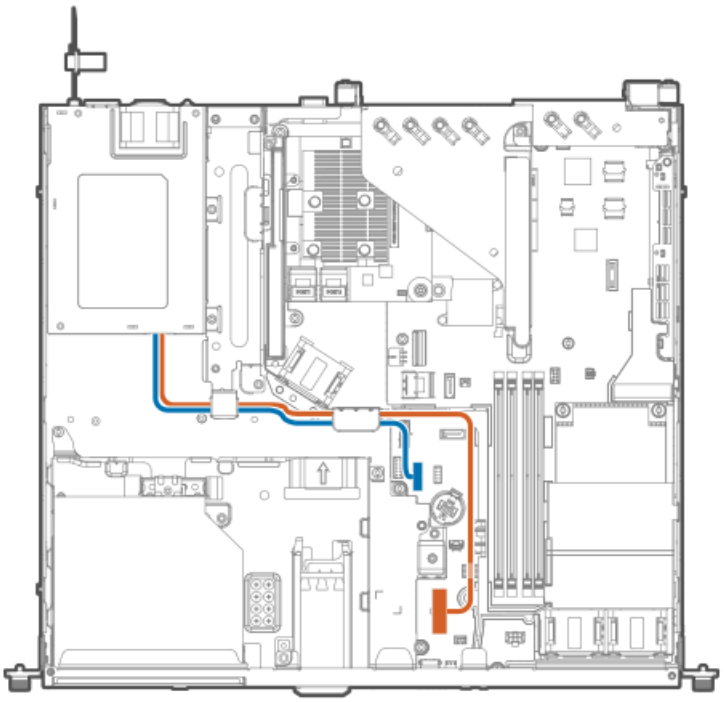


Serial port cabling



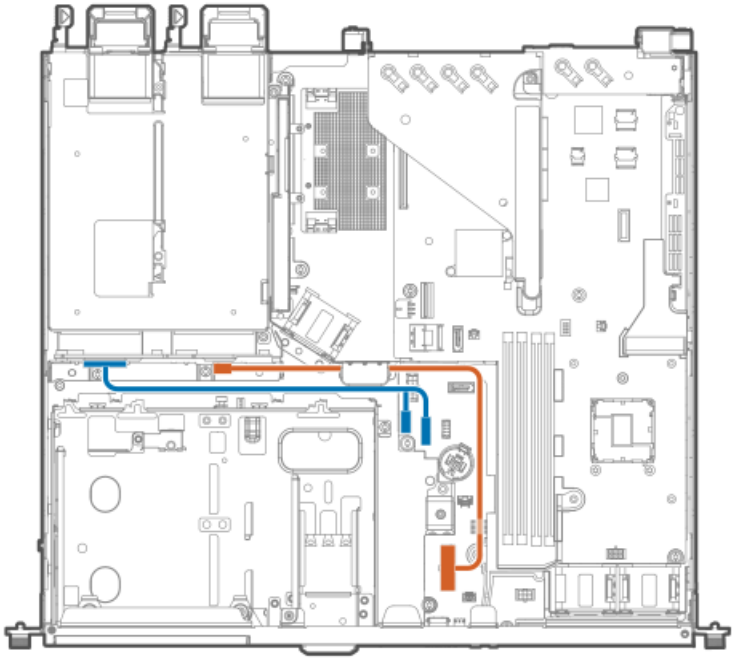
Power supply cabling

Non-hot-plug power supply cabling



Color	Description
Orange	14-pin power supply cable
Blue	ATX power supply sideband cable

Flexible Slot power supply cabling



Color	Description
Orange	14-pin power supply cable
Blue	Flexible Slot power supply sideband Y-cable

Configuration and diagnostic utilities

This chapter provides information about common utilities that might not apply to your server. For information about server compatibility with the utilities listed in this chapter, see the product QuickSpecs at the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**).

NOTE: Servers ordered from HPE Factory Express might have already been configured with all or some of the steps provided in this chapter. Refer to your order from HPE Factory Express to determine if any additional steps are required for setup.

Installing an operating system

To install an operating system on a server, first use iLO Virtual Media to connect the OS installation media to the server. Information about iLO Virtual Media is in the iLO User Guide at **www.hpe.com/support/ilo-docs**. Then, use the Intelligent Provisioning Setup Wizard (**www.hpe.com/info/intelligentprovisioning/docs**) to install the operating system.

For a list of supported operating systems, see the HPE Servers Support & Certification Matrices at **www.hpe.com/support/Servers-Certification-Matrices**.

Configuring the initial setup of a server

To configure	Use
Single server (graphical user interface)	• **Guided process:** Intelligent Provisioning (**www.hpe.com/info/intelligentprovisioning/docs**) • **Manual process:** HPE iLO web interface accessed by iLO remote console. Refer to the iLO online help for more information about iLO remote console. • **Menu-based process:** UEFI System Utilities (**https://www.hpe.com/info/UEFI-manual**)
Single server (scripting)	• **Using CLI for Windows and Linux to configure Redfish settings on a Gen10 or later server:** RESTful Interface Tool (**www.hpe.com/support/restfulinterface/docs**) • **Using Python:** Python iLO Redfish Library (python-ilorest-library) (**github.com/HewlettPackard/python-ilorest-library**) • **Using PowerShell for Windows-based environments:** PowerShell cmdlets (**https://www.hpe.com/info/powershell/docs**) • **Directly to the API using cURL or any other programming interface:** iLO RESTful API (**https://hewlettpackard.github.io/ilo-rest-api-docs/**)
Multiple servers (either UI or scripting)	HPE OneView (**https://www.hpe.com/support/oneview-docs**) [1]

[1] For servers running HPE OneView, do not use another tool, such as iLO, to delete or change certain settings. For more information about using HPE OneView and iLO to manage the same server, see the iLO User Guide at **www.hpe.com/support/ilo-docs**.

Configuring storage controllers

To determine the storage controllers that are supported by your server, see the product QuickSpecs at the Hewlett Packard Enterprise website (**https://www.hpe.com/info/qs**).

Controller type	Documentation
SR hardware RAID	—
Gen10 Plus	HPE SR Gen10 Plus Controller User Guide at **https://www.hpe.com/info/SR-Gen10Plus-UG**

Controller type	Documentation
Gen10	HPE Smart Array SR Controller Gen10 User Guide at https://www.hpe.com/support/SSC-SRGen10-ug
MR hardware RAID	—
Gen10 Plus	HPE MR Gen10 Plus Controller User Guide at https://www.hpe.com/info/MR-Gen10Plus-UG
Gen10	HPE Smart Array P824i-p MR Gen10 User Guide at https://www.hpe.com/info/p824ip-mr-gen10-contr-UG
Software RAID	• HPE SR Gen10 Plus Software RAID User Guide at https://www.hpe.com/support/SSC-SRGen10Plus-ug • User guides for the Intel Virtual RAID on CPU for HPE Gen10 Plus at https://www.hpe.com/support/IntelVROC-Gen10Plus-docs

Configuring NVMe OS boot devices

NVMe OS boot devices are plug and play as of Gen10. Device installation instructions are included in the packaging, server user guides, or server maintenance and service guides.

Configuring network controllers

To determine the network controllers that are supported by your server, see the product QuickSpecs at the Hewlett Packard Enterprise website (https://www.hpe.com/info/qs).

Network controllers are plug and play. For installation instructions, see the server user guide, the documentation included with the controller, or on the Hewlett Packard Enterprise Support Center website (https://www.hpe.com/support/hpesc) see:

Controller	Type	Documentation
OPC NIC 3.0	Network adapter	HPE OCP NIC 3.0 Adapter Installation Instructions at www.hpe.com/support/OCP3-NIC-Installation
PCIe	Network adapter	HPE PCIe Network Adapter Installation Instructions at www.hpe.com/support/PCIe-Installation
Synergy Type C and D	Mezzanine adapter	HPE Synergy Type C and Type D Mezzanine Adapters Installation Instructions at https://www.hpe.com/support/Synergy-Mezz-Installation
FlexibleLOM for Blades	Mezzanine card	HPE FlexibleLOM for Blades Installation Instructions at https://www.hpe.com/support/BLOM-Installation
FlexibleLOM for Racks	Network adapter	HPE FlexibleLOM for Racks Installation Instructions at https://www.hpe.com/support/ALOM-Installation
BladeSystem Type A and B	Mezzanine card	HPE BladeSystem Type A and B Mezzanine Card Installation Instructions at https://www.hpe.com/support/Blade-Mezz-Installation

Monitoring servers

To monitor	Use	Supported notifications
Single server	HPE iLO (www.hpe.com/support/ilo-docs)	• **SNMP** • **Redfish events** • **Email alerts** • **syslog**
Multiple servers	HPE OneView (www.hpe.com/support/oneview-docs)	• **SNMP** • **Redfish change events for Gen10 or later servers:** An example of a change event is adding a disk to a server. • **Email alerts:** HPE OneView provides email notifications based on alerts triggered from HPE iLO and other resources. • **syslogs from iLO:** HPE OneView can configure the iLO servers to forward their syslogs. HPE Oneview does not monitor the content of the forwarded syslogs.

Updating the server

- **HPE ProLiant servers:** HPE provides a comprehensive system software and firmware update solution through Service Packs for ProLiant (SPP).
- **HPE Synergy:** HPE provides updated firmware and software images through HPE Synergy Service Packs (SSPs).

To	Use
View supported operating systems and access operating system updates.	HPE Servers Support & Certification Matrices at www.hpe.com/support/Servers-Certification-Matrices
Determine and deploy which SSPs or SPPs to a single server.	Smart Update Manager (SUM) (www.hpe.com/info/sum-docs)
Deploy SSPs and SPPs to multiple servers.	HPE OneView (www.hpe.com/support/oneview-docs)
Download the SSP.	HPE Synergy management combinations and HPE Synergy Service Packs (SSPs) (www.hpe.com/info/synergy-sw-release-information)
Download the SPP.	HPE Service Pack for ProLiant (SPP) (www.hpe.com/servers/spp)

Optimizing the server

To	Use
Optimize server performance through management and tuning features.	HPE Server Performance Management and Tuning Guide at www.hpe.com/info/server-performance-management-tuning-en
Obtain recommendations for resolving incorrect settings.	HPE InfoSight for Servers (www.hpe.com/info/infosight-servers-docs)

Configuring security

To	See

To	See
Implement server security best practices.	• HPE Gen10 and Gen10 Plus Security Reference Guide at www.hpe.com/info/server-security-reference-en • HPE iLO 5 Security Technology Brief at www.hpe.com/support/ilo5-security-en
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant Gen10 and Gen10 Plus servers and HPE Synergy at www.hpe.com/info/server-config-lock-UG-en

Managing Linux-based high performance compute clusters

To	Use
Provision, manage, and monitor clusters.	HPE Performance Cluster Manager (www.hpe.com/support/hpcm_manuals)
Optimize your applications.	HPE Performance Analysis Tools (www.hpe.com/info/perftools)
Optimize software library for low latency and high bandwidth, both on-node and off-node, for point-to-point and collective communications.	HPE Cray Message Passing Toolkit in the HPE Cray Programming Environment User Guide for your server OS at www.hpe.com/info/cray-pe-user-guides
Optimize software libraries, runtime tools, and a scalable development environment for tuning and accelerating compute-intensive applications.	HPE Message Passing Interface (www.hpe.com/support/mpi-ug-038)

Troubleshooting

- NMI functionality
- Troubleshooting resources

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.

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**.

System battery replacement

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

System battery information

The server contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery that provides power to the real-time clock.

WARNING:
If this battery is not properly handled, a risk of the fire and burns exists. To reduce the risk of personal injury:

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

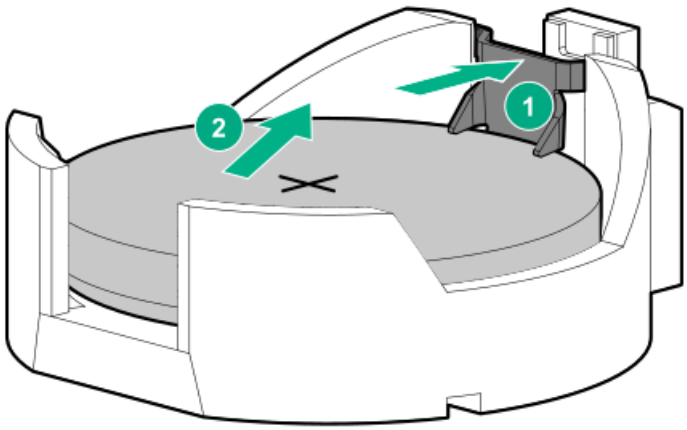
Removing and replacing the system battery

Prerequisites

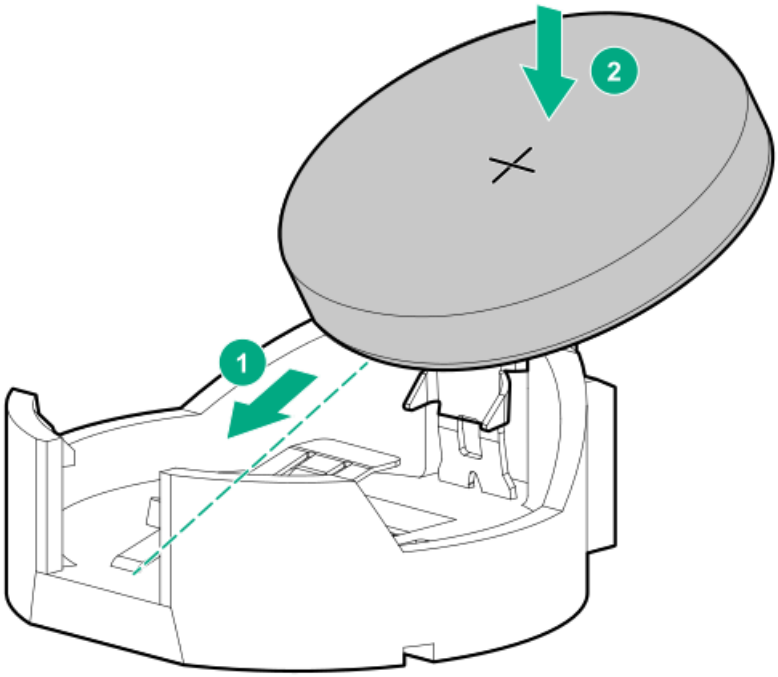
Before you perform this procedure make sure that you have a flat-bladed, nonconductive tool.

Procedure

1. If physically powering down a server with the front bezel installed, remove the front bezel.
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. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Locate the battery on the system board.
9. Disconnect the system cables blocking access to the system battery.
10. Remove the system battery:
    a. Use a small flat-bladed, nonconductive tool to press the battery latch (callout 1).
    b. Remove the system battery from the socket (callout 2).



11. Install the system battery:
    a. With the side of the battery showing the "+" sign facing up, insert the battery into the socket (callout 1).
    b. Press the system battery down until it clicks into place (callout 2).



12. Reconnect the system cables removed in step 9.
13. Install the access panel.
14. Install the server into the rack.
15. Connect all peripheral cables to the server.
16. Connect the power cords:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
17. Power up the server.
18. If removed, install the front bezel.
19. Properly dispose of the old battery.

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

Safety, warranty, and regulatory information

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

Notices for Eurasian Economic Union

Manufacturer and Local Representative Information

Manufacturer information:

Hewlett Packard Enterprise, 6280 America Center Drive, San Jose, CA 95002 U.S.

Local representative information Russian:

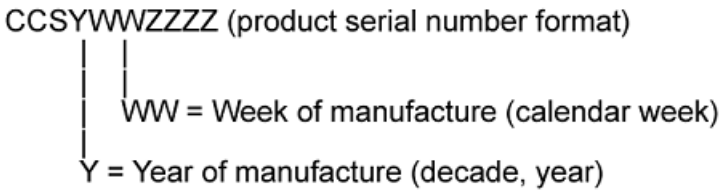
- **Russia**
  ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

Local representative information Kazakh:

- **Russia**
  ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандык ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.



If you need help identifying the manufacturing date, contact **tre@hpe.com**.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

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

Warranty information

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

Specifications

This chapter lists the technical specifications for the server, including:

- Environmental specifications
- Mechanical specifications
- Power supply specifications

Environmental specifications

Specifications	Value
Temperature range*	—
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	8% to 90% 28°C (82.4°F) maximum wet bulb temperature, noncondensing
Nonoperating	5% to 95% 38.7°C (101.7°F) maximum wet bulb temperature, noncondensing
Altitude	—
Operating	3050 m (10,000 ft) This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
Nonoperating	9144 m (30,000 ft) Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).

Standard operating support

10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.

System performance during standard operating support might be reduced if operating above 30°C (86°F).

Extended ambient operating support

For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° 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 (2,953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the **Hewlett Packard Enterprise website**.

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 3,050 m (10,000 ft). The approved hardware configurations for this system are listed on the **Hewlett Packard Enterprise website**.

Mechanical specifications

Specification	Value
Dimensions	—
Height	4.32 cm (1.70 in)
Depth	38.22 cm (15.05 in)
Width	43.46 cm (17.11 in)
Weight, approximate values	—
Minimum	6.00 kg (13.23 lb)
Maximum	10.00 kg (22.05 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:

- ATX 290 W Non-hot-plug Power Supply (92% efficiency)
- ATX 290 W Platinum Non-hot-plug Power Supply (94% efficiency)
- HPE 500 W Flex Slot Platinum Hot-plug Low Halogen Power Supply (94% efficiency)
- HPE 800 W Flex Slot -48 VDC Hot-plug Low Halogen Power Supply

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

ATX 290 W Non-hot-plug Power Supply (92% efficiency)

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	5.5 A
Maximum rated input power	331 W at 115 VAC 330 W at 230 VAC
Efficiency	No less than 88% at 100% load No less than 92% at 50% load No less than 88% at 20% load
Power supply output	—
Rated steady-state power	290 W
Maximum peak power	366 W
Rated output power	290 W

ATX 290 W Platinum Non-hot-plug Power Supply (94% efficiency)

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	5.5 A
Rated input power	331 W at 115 VAC 319 W at 230 VAC
Efficiency	At 230 VAC, 50 Hz: No less than 91% at 100% load No less than 94% at 50% load No less than 90% at 20% load No less than 80% at 10% load At 115 VAC, 60 Hz: No less than 87.6% at 100% load No less than 89.7% at 50% load No less than 87.2% at 20% load No less than 80.8% at 10% load
Power supply output	—
Rated steady-state power	290 W
Maximum peak power	366 W
Rated output power	290 W

HPE 500 W Flex Slot Platinum Hot-plug Low Halogen Power Supply (94% efficiency)

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	5.8 A at 100 VAC 2.8 A at 200 VAC 2.4 A at 240 VDC for China only
Maximum rated input power	580 W at 100 VAC 560 W at 200 VAC 558 W at 240 VDC for China only
BTUs per hour	1999 at 100 VAC 1912 at 200 VAC 1904 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 -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	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	800 W at -40 VDC to -72 VDC
Maximum peak power	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.

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.

Product websites

HPE ProLiant DL20 Gen10 Plus Server product page

https://www.hpe.com/servers/dl20-gen10-plus

HPE ProLiant DL20 Gen10 Plus Server user documents

https://www.hpe.com/info/dl20gen10plus-docs

Support and other resources

- Accessing Hewlett Packard Enterprise Support
- Accessing updates
- Customer self repair
- Remote support
- Documentation feedback

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.

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider.

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 Complete Care

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

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.