



**Hewlett Packard**  
Enterprise

## **HPE ProLiant ML30 Gen10 Plus Server User Guide**

Part Number: 30-CB359EAA-004

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Edition: 4

# HPE ProLiant ML30 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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# Component identification

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

## Subtopics

[Front panel components](#)

[Front panel LED and button](#)

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[Rear panel LEDs](#)

[System board components](#)

[Component touchpoints](#)

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[HPE Basic Drive LED definitions](#)

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[HPE NS204i-p NVMe OS Boot Device LED definitions](#)

[Fan numbering](#)

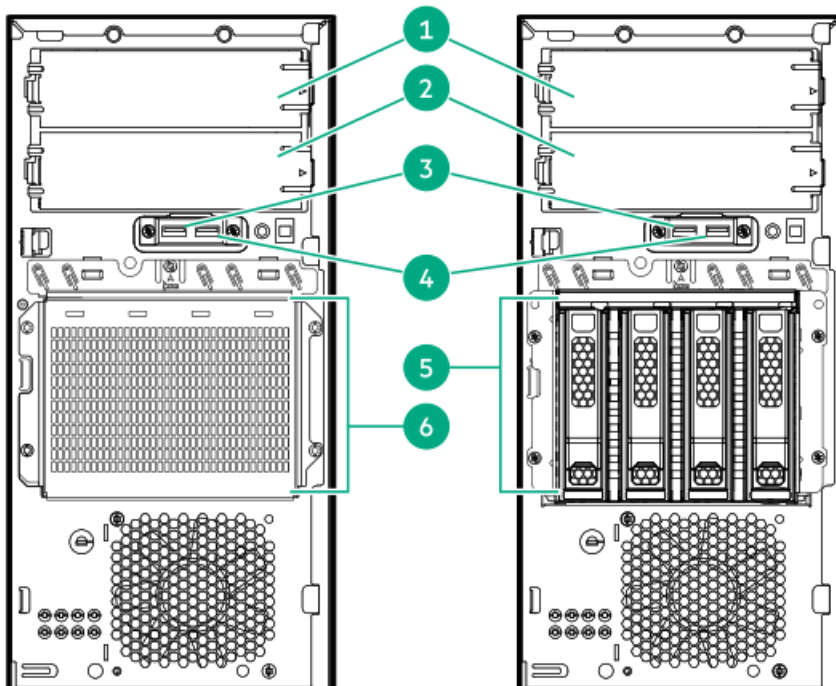
[Fan mode behavior](#)

[Media device screws](#)

[Trusted Platform Module 2.0](#)

## Front panel components

### LFF drive models

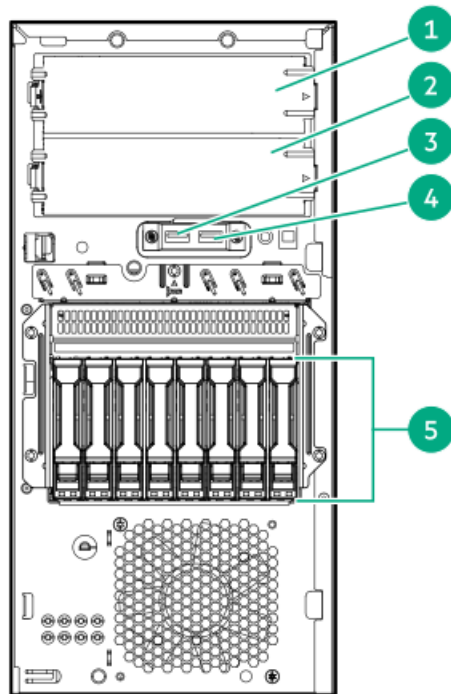


Item	Description
1	Media bay 1 <sup>1</sup>
2	Media bay 2 <sup>2</sup>
3	USB 3.2 Gen1 port
4	USB 2.0 port
5	4 LFF hot-plug drives
6	4 LFF non-hot-plug drive cage

<sup>1</sup> Media bay 1 supports a SATA optical drive, SAS LTO drive, or a USB RDX docking station.

<sup>2</sup> Media bay 2 supports a SATA optical drive or a USB RDX docking station.

## SFF drive model

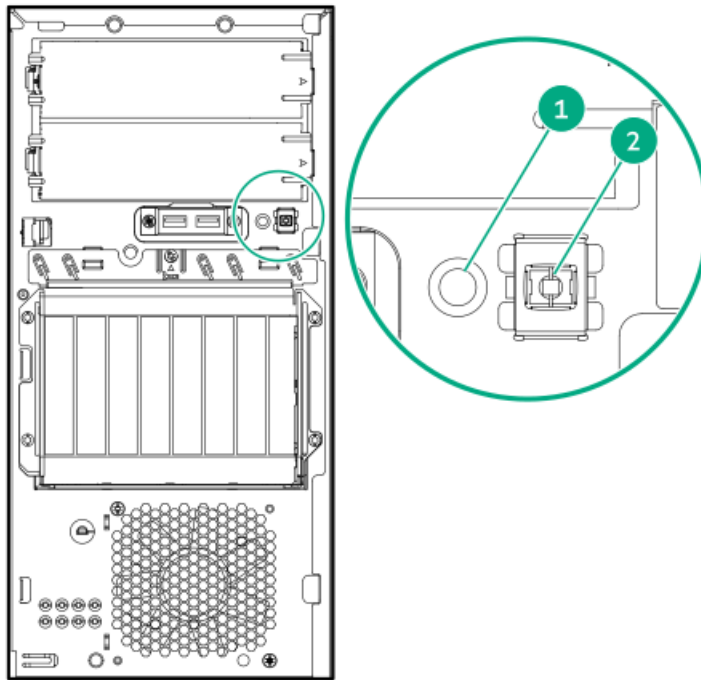


Item	Description
1	Media bay 1 <sup>1</sup>
2	Media bay 2 <sup>2</sup>
3	USB 3.2 Gen1 port
4	USB 2.0 port
5	8 SFF hot-plug drives

<sup>1</sup> Media bay 1 supports a SATA optical drive, SAS LTO drive, or a USB RDX docking station.

<sup>2</sup> Media bay 2 supports a SATA optical drive or a USB RDX docking station.

## Front panel LED and button



Item	Description	Status	Definition
1	Health LED <sup>1</sup>	Solid green	Normal
		Flashing green	iLO is rebooting
		Flashing amber	System degraded <sup>2</sup>
		Flashing red	System critical <sup>2</sup>
2	Power On/Standby button and system power LED <sup>1</sup>	Solid green	System on
		Flashing green	Performing power-on sequence
		Solid amber	System in standby
		Off	No power present <sup>3</sup>

- <sup>1</sup> When the two LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see [Front panel LED power fault codes](#).
- <sup>2</sup> 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.
- <sup>3</sup> Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the front I/O cable is disconnected.

## Subtopics

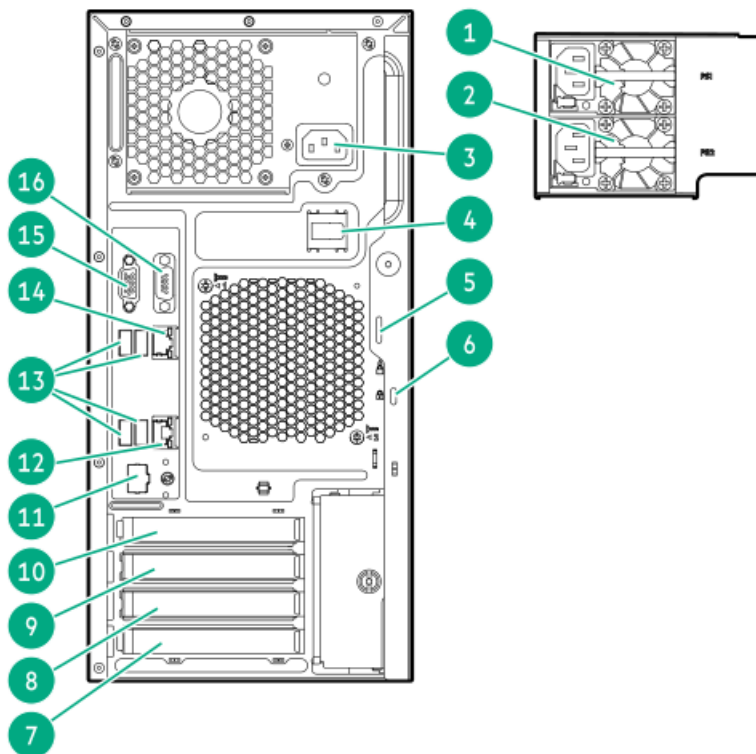
### [Front panel LED power fault codes](#)

## 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.

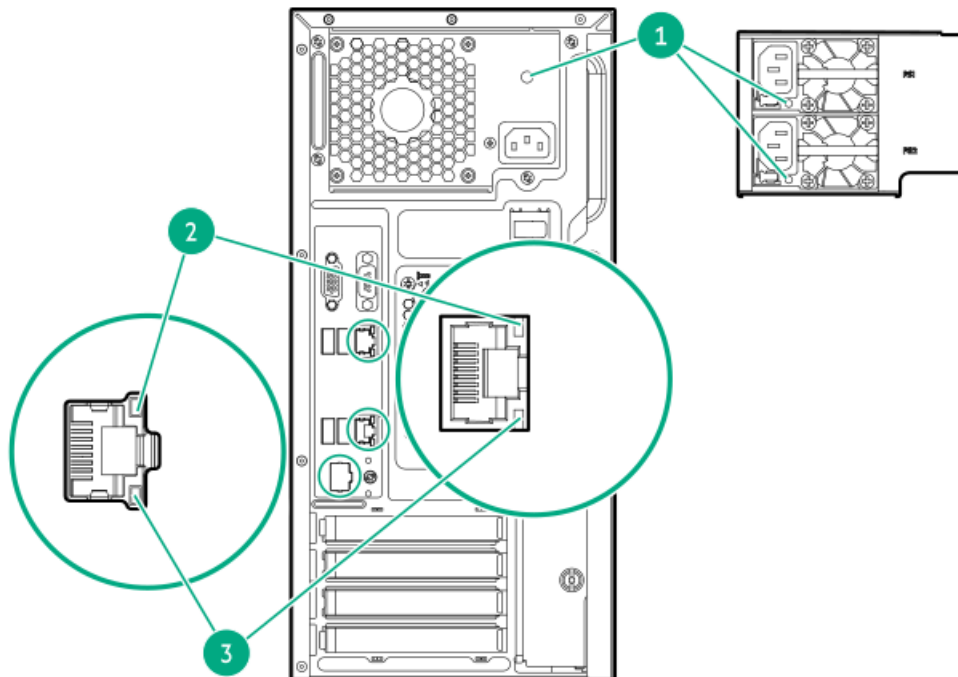
Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Storage controller	6 flashes
System board PCIe slots	7 flashes
Power backplane	8 flashes
Storage backplane	9 flashes
Power supply	10 flashes
PCIe expansion cards installed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

## Rear panel components



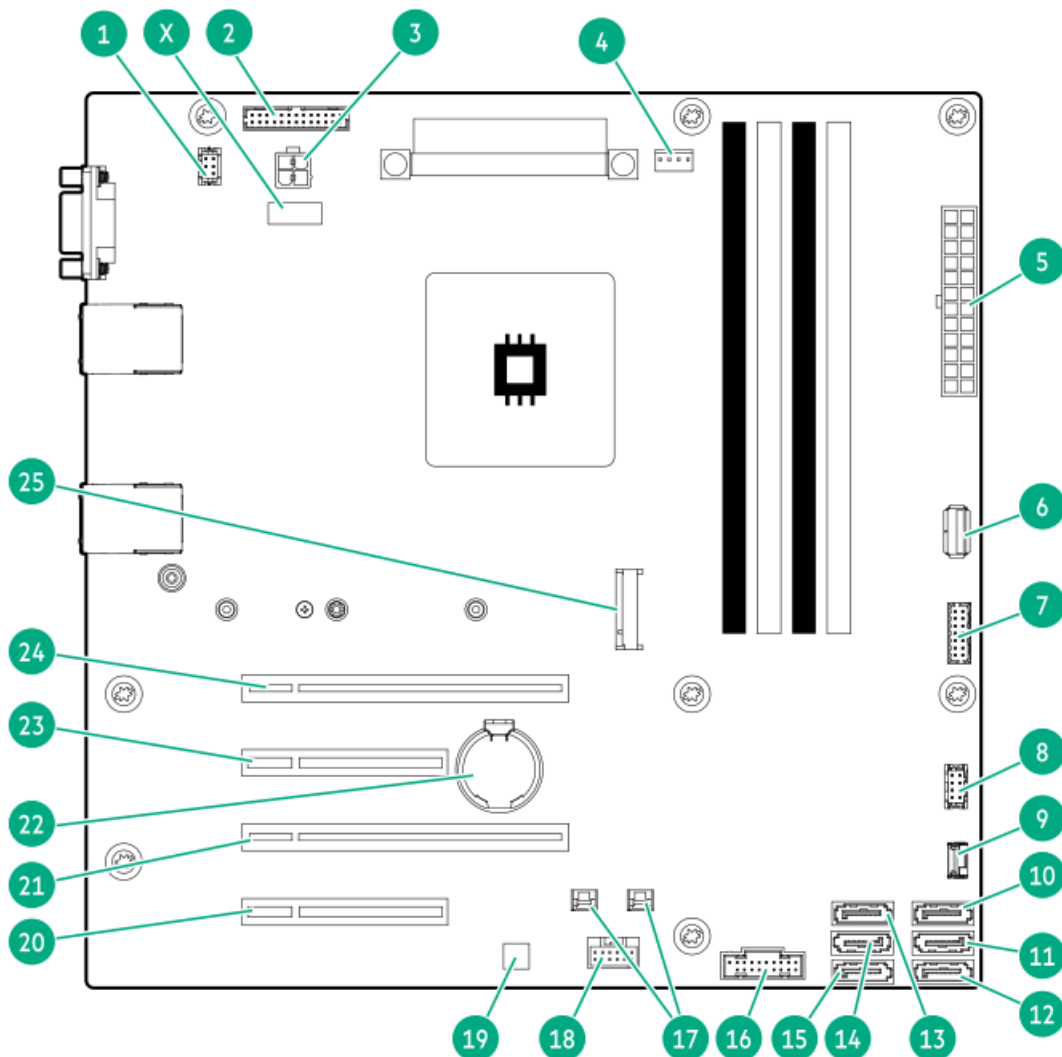
Item	Description
1	Flexible Slot power supply 1 (hot-plug)
2	Flexible Slot power supply 2 (hot-plug)
3	Non-hot-plug power supply
4	Power cord clip (for non-hot-plug power supply)
5	Padlock eye
6	Kensington security slot
7	Slot 4 PCIe3 x8 (4, 1)
8	Slot 3 PCIe3 x16 (4, 1)
9	Slot 2 PCIe3 x8 (4, 1)
10	Slot 1 PCIe4 x16 (16, 8, 4, 1)
11	iLO dedicated network port (optional)
12	NIC port 2 (1 GbE)
13	USB 3.0 ports
14	NIC 1 / iLO shared port (1 GbE)
15	Video port
16	Serial port (optional)

## Rear panel LEDs



Item	Description	Status	Definition
1	Power supply	Solid green	The power supply is operating normally.
		Off	One or more of the following conditions exists: <ul style="list-style-type: none"> <li>Power is unavailable</li> <li>Power supply failure</li> <li>Power supply is in standby mode</li> <li>Power supply error</li> <li>The front I/O cable is disconnected.</li> </ul>
2	NIC/iLO link	Solid green	Network link
		Off	No network link
3	NIC/iLO status	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity

## System board components





Item	Description
1	Fan connector 2 (system fan)
2	Flexible Slot power supply sideband connector
3	4-pin power supply connector
4	Fan connector 3 (heatsink fan)
5	24-pin power supply connector
6	Internal USB 3.2 Gen1 port
7	Front I/O connector
8	Fan connector 1 (PCI fan)
9	Drive backplane sideband connector
10	SATA port 5 <sup>1</sup> , <sup>2</sup>
11	SATA port 6 <sup>1</sup>
12	SATA port 1 <sup>3</sup>
13	SATA port 2 <sup>3</sup>
14	SATA port 3 <sup>3</sup>
15	SATA port 4 <sup>3</sup>
16	Front USB connector
17	Storage controller backup power connectors
18	Energy pack connector
19	<u>HPE Trusted Platform Module 2.0 Gen10 (embedded TPM)</u>
20	Slot 4 PCIe3 x8 (4, 1)
21	Slot 3 PCIe3 x16 (4, 1)
22	System battery
23	Slot 2 PCIe3 x8 (4, 1)
24	Slot 1 PCIe4 x16 (16, 8, 4, 1)
25	M.2 slot <sup>4</sup>
X	<u>System maintenance switch</u>

- <sup>1</sup> All SATA ports support 6Gb/s transfer rate. The ports 5–6 are for the media bays.  
<sup>2</sup> The optical drive option is only supported in SATA port 5.  
<sup>3</sup> All SATA ports support 6Gb/s transfer rate. The ports 1–4 are for drive bays.  
<sup>4</sup> The M.2 slot supports either a SATA or NVMe SSD, or the iLO-M.2-serial module option.

#### Subtopics

[System maintenance switch descriptions](#)

[DIMM slot location](#)

[DIMM label identification](#)

## System maintenance switch descriptions

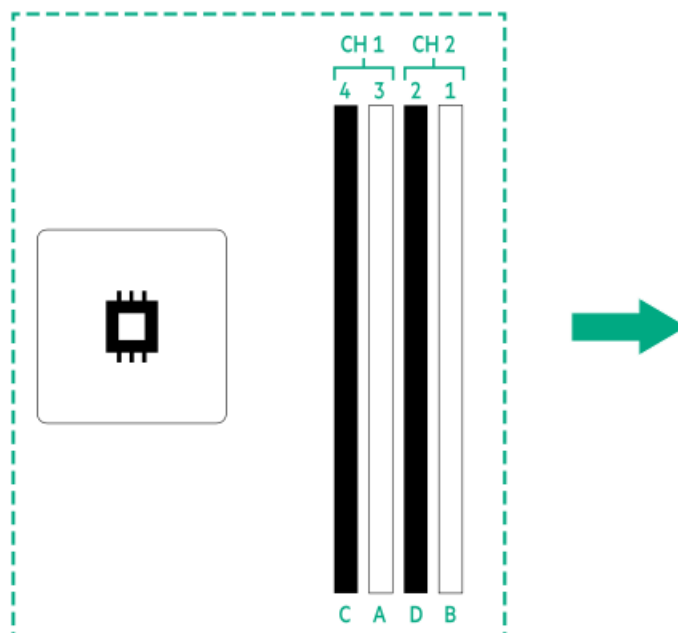


Position	Default	Function
S1 <sup>1</sup>	Off	<ul style="list-style-type: none"> <li>Off—iLO 5 security is enabled.</li> <li>On—iLO 5 security is disabled.</li> </ul>
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 <sup>1</sup>	Off	<ul style="list-style-type: none"> <li>Off—Power-on password is enabled.</li> <li>On—Power-on password is disabled.</li> </ul>
S6 <sup>1, 2, 3</sup>	Off	<ul style="list-style-type: none"> <li>Off—No function</li> <li>On—Restore default manufacturing settings</li> </ul>
S7	Off	Reserved
S8	Off	Reserved
S9	Off	Reserved
S10	Off	Reserved
S11	Off	Reserved
S12	Off	Reserved

- <sup>1</sup> To access the redundant ROM, set S1, S5, and S6 to On.
- <sup>2</sup> 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.
- <sup>3</sup> 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 the server](#).

## DIMM slot location

The arrow points to the front of the server.

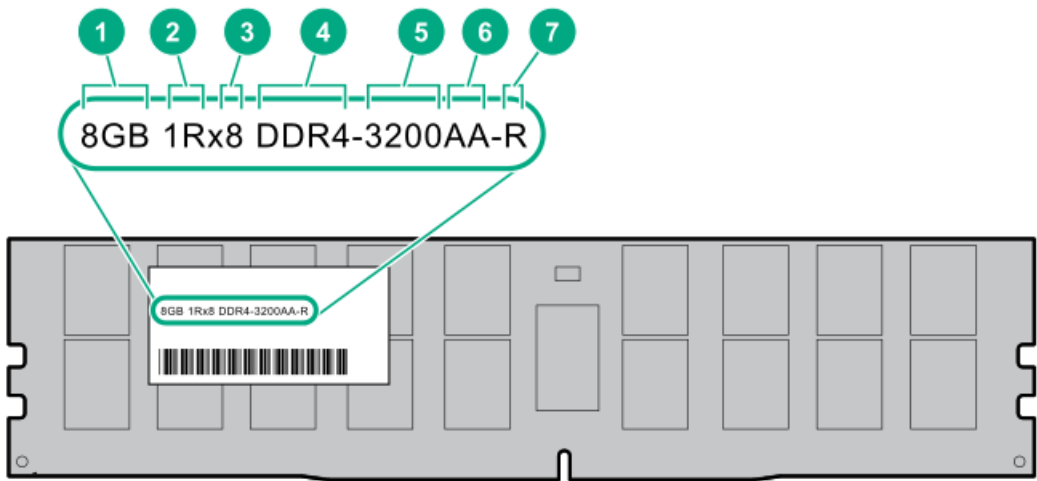


## DIMM label identification

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:

<https://www.hpe.com/support/DDR4SmartMemoryQS>



Item	Description	Example
1	Capacity <sup>1</sup>	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 <sup>1</sup>	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)

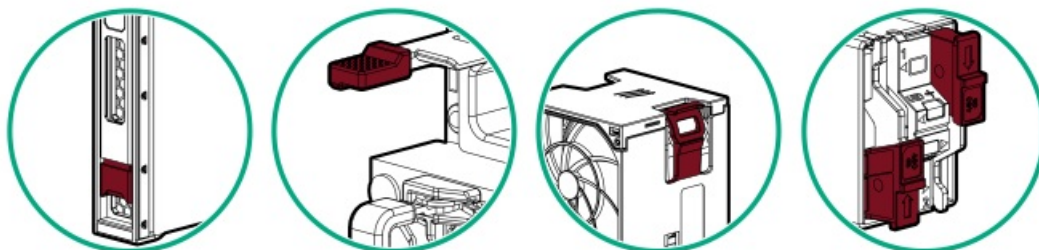
<sup>1</sup> The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model.

## Component touchpoints

Certain components are color-coded. These colors represent the recommended touch areas for a removal process and indicate whether components require a system shutdown before removal.

The following diagrams are examples only.

### HPE hot-plug red

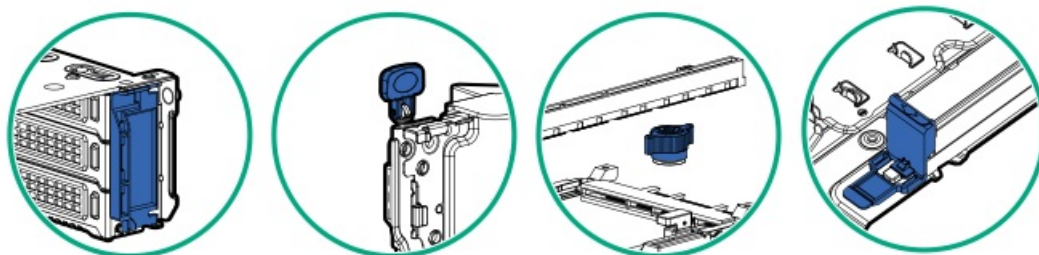


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

Component examples:

- Power supplies in a redundant power configuration
- Hot-plug fans
- Hot-plug drives
- M.2 SSDs in a hot-plug boot device

### HPE touchpoint blue



Touchpoint blue indicates cold-pluggable components. These components require a system shutdown. Failure to do so might result in system failure or data loss. Cold-pluggable components might also indicate touchpoints on non-electrical components.

Component examples:

- Storage devices
- Fan cages
- System boards
- Energy packs

## Drive bay numbering



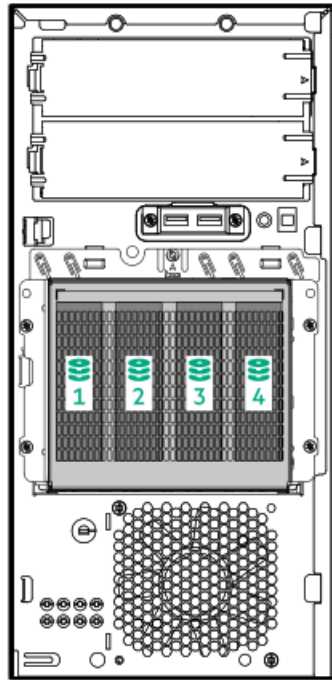
#### CAUTION

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.

### 4 LFF non-hot-plug drive numbering

In the 4 LFF non-hot-plug drive configuration:

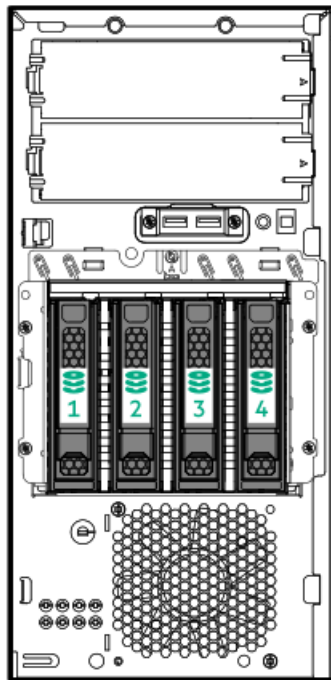
- SATA drives are supported.
- Onboard connection for Intel VROC SATA RAID support is through the SATA ports 1–4.



### 4 LFF hot-plug drive numbering

In the 4 LFF hot-plug drive configuration:

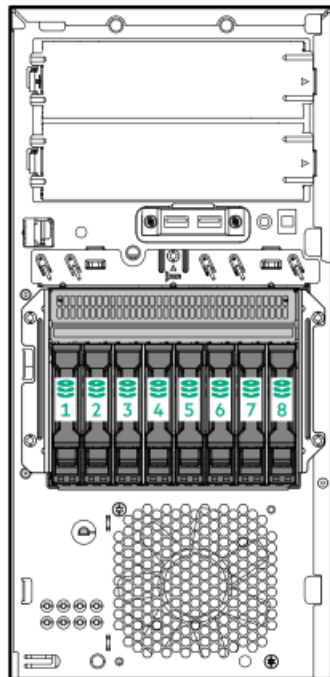
- SAS and SATA drives are supported.
- Onboard connection for Intel VROC SATA RAID support is through the SATA ports 1–4.



## 8 SFF hot-plug drive numbering

In the 8 SFF hot-plug drive configuration:

- SAS and SATA drives are supported.
- Onboard connection for Intel VROC SATA RAID support is through the SATA ports 1–4. Only SATA drives 1–4 are covered in the software RAID.



## HPE Basic Drive LED definitions

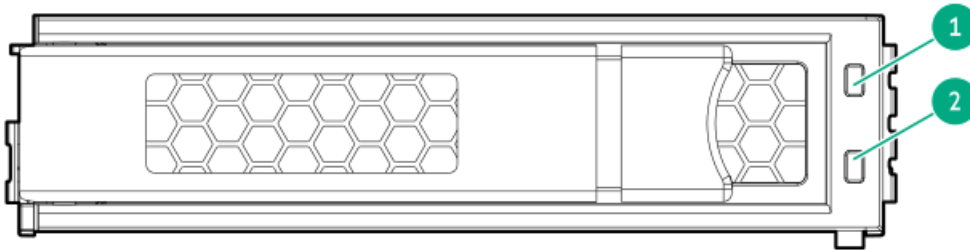
The HPE Basic drive carrier has the following LEDs:



- Amber/blue LED—Managed by the drive backplane in conjunction with the storage controller and is used to indicate drive status.
- Green LED—Managed by the drive itself and indicates the drive activity.

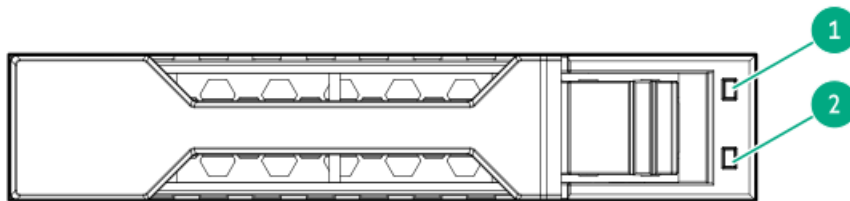
### LFF low-profile drive carrier

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



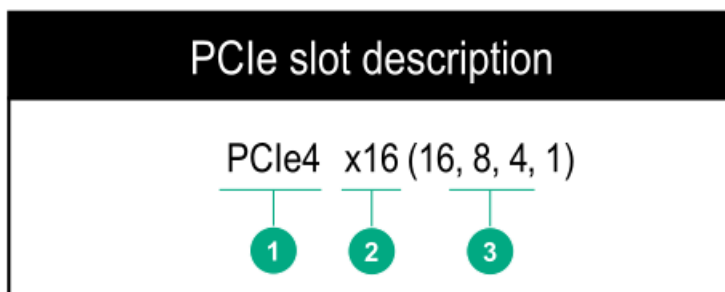
### SFF basic drive carrier

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



Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
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: <ul style="list-style-type: none"> <li>• Rebuilding or performing a RAID</li> <li>• Performing a stripe size migration</li> <li>• Performing a capacity expansion</li> <li>• Performing a logical drive extension</li> <li>• Erasing</li> <li>• Spare part activation</li> </ul>
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

## PCIe4 slot description





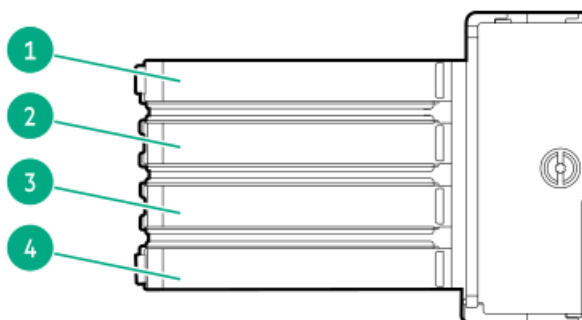
Item	Description	Definition
1	PCI Express version	<p>Each PCIe version corresponds to a specific data transfer rate between the processor and peripheral devices. Generally, a version update corresponds to an increase in transfer rate.</p> <ul style="list-style-type: none"> <li>• PCIe 1.x</li> <li>• PCIe 2.x</li> <li>• PCIe 3.x</li> <li>• PCIe 4.x</li> </ul> <p>The PCIe technology is under constant development. For the latest information, see the <a href="#">PCI-SIG website</a>.</p>
2	Physical connector link width	<p>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.</p> <ul style="list-style-type: none"> <li>• x1</li> <li>• x2</li> <li>• x4</li> <li>• x8</li> <li>• x16</li> </ul>
3	Negotiable link width	<p>These numbers correspond to the maximum link bandwidth supported by the slot.</p>

## PCIe expansion slot definitions



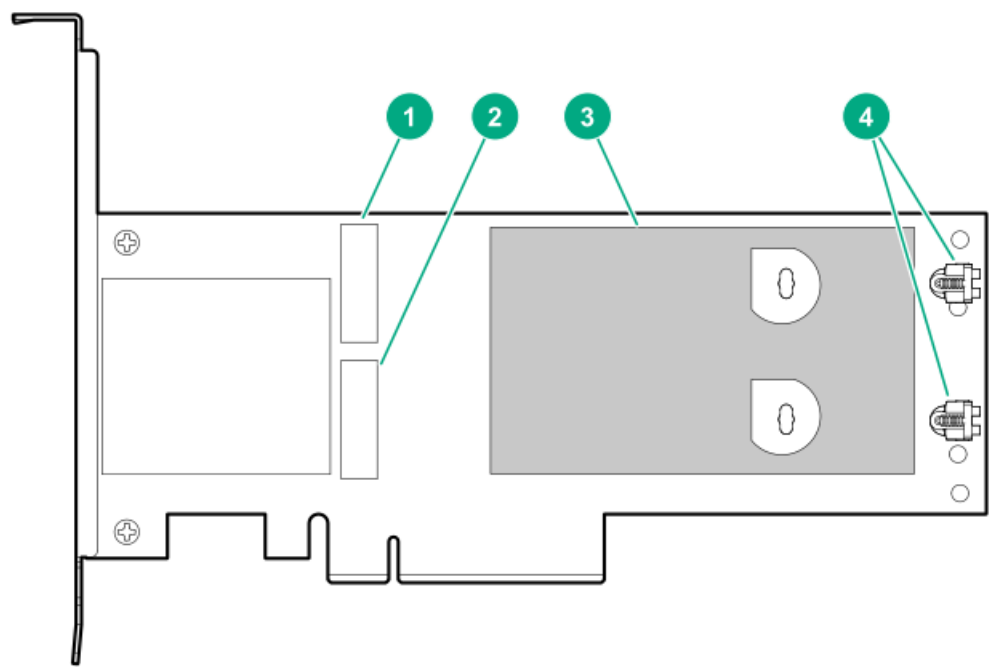
### IMPORTANT

If an Intel Pentium processor is installed, the data transfer rate (throughput) of the PCIe4 expansion slot 1 switches down to PCIe3 speed.



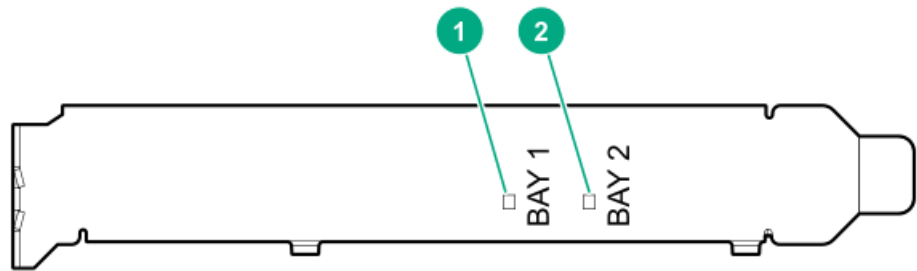
Slot number	Slot type	Slot power	Supported form factors
1	PCIe4 x16 (16, 8, 4, 1)	75 W	Full-height, full-length
2	PCIe3 x8 (4, 1)	25 W	Full-height, half-length
3	PCIe3 x16 (4, 1)	75 W	Full-height, full-length
4	PCIe3 x8 (4, 1)	25 W	Full-height, half-length

## HPE NS204i-p NVMe OS Boot Device components



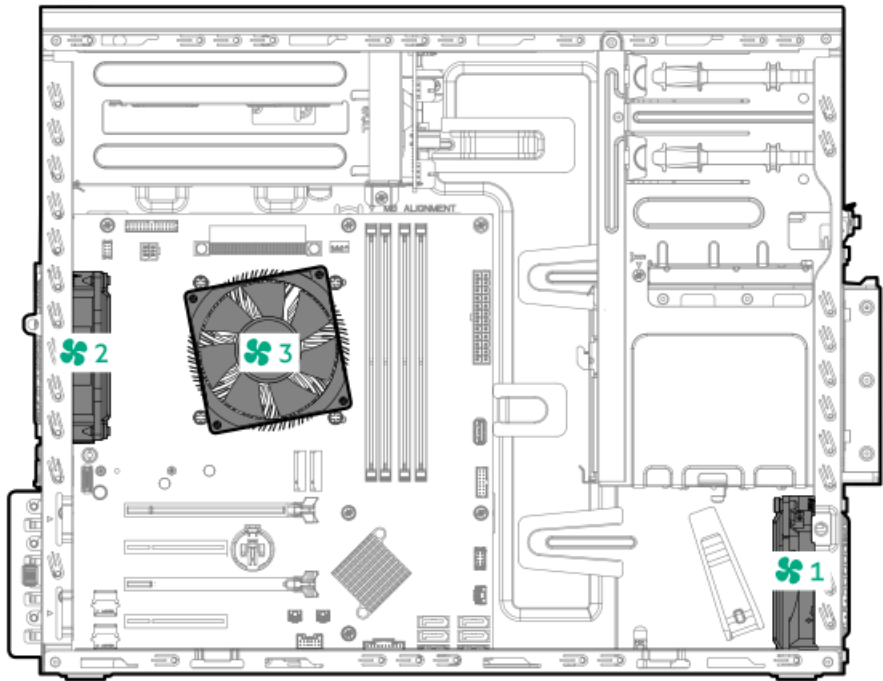
Item	Description
1	Drive bay 1
2	Drive bay 2
3	Thermal interface pad with removable liner
4	M.2 drive retaining latches

## 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 numberDescription	
1	PCI fan (optional)
2	System fan
3	Heatsink fan

## Fan mode behavior

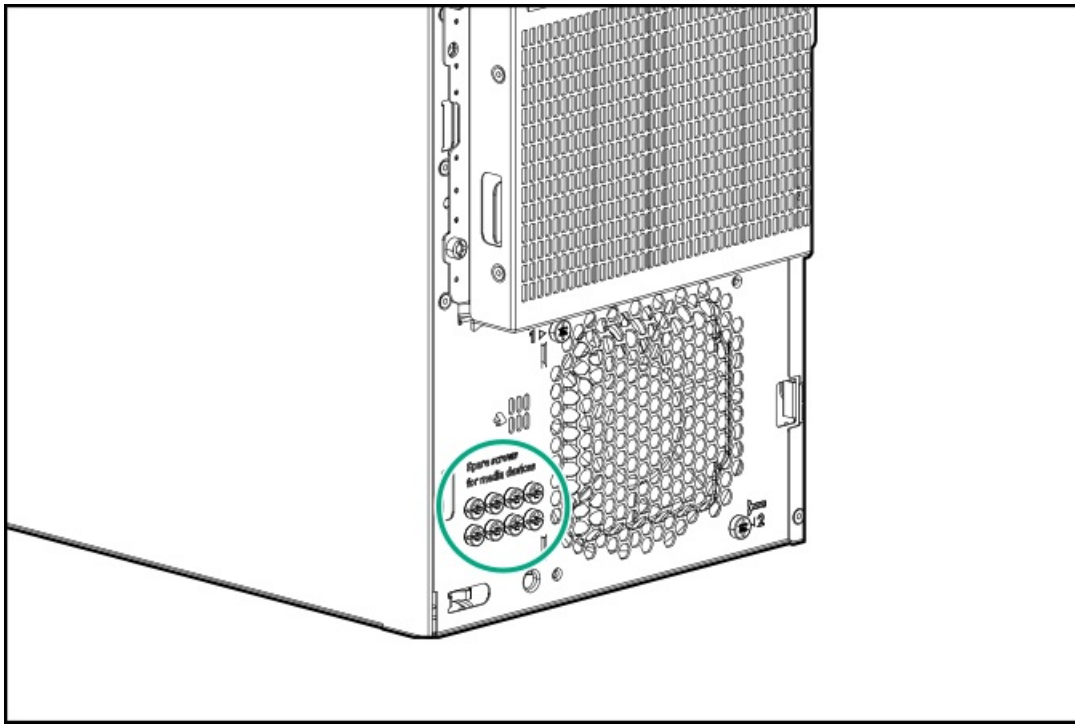
The server supports nonredundant fan mode. If a fan fails or is missing, the following behaviors are exhibited:

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

## Media device screws

There are eight T-15 Torx screws on the front panel. These screws are spare screws for installing media devices.





## Trusted Platform Module 2.0

The Trusted Platform Module 2.0 (TPM) is a hardware-based system security feature that securely stores 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/quickspecs>). For more information about Microsoft Windows BitLocker Drive Encryption feature, see the Microsoft website (<https://www.microsoft.com>).

### Subtopics

[Trusted Platform Module 2.0 guidelines](#)

[BitLocker recovery key/password retention guidelines](#)

## 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.

- ○ 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.

## Setup

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

### Subtopics

- [Initial system installation](#)
- [Operational requirements](#)
- [Rack warnings and cautions](#)
- [Server warnings and cautions](#)
- [Electrostatic discharge](#)

## 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](#)

### Subtopics

- [HPE Installation Service](#)
- [Intel VROC support](#)
- [Setting up the server](#)
- [Setting up the server in tower mode](#)



## 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>

## Intel VROC support

Intel Virtual RAID on CPU (Intel VROC) provides enterprise-level hybrid RAID support. Note the following information:

- Intel VROC provides RAID support for direct attached NVMe SSD.
- The Intel VROC driver is required. For the OS-specific driver download, see the following page:  
[https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002239en\\_us&page=GUID-249FA246-0985-4598-8D7E-94069560F959.html](https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002239en_us&page=GUID-249FA246-0985-4598-8D7E-94069560F959.html)
- Intel VROC requires the server boot mode to be set to UEFI Mode.
- Intel VROC RAID support is disabled by default. In the pre-OS environment, use UEFI System Utilities to enable Intel VROC and create a VROC RAID volume. These tasks are not supported in Intelligent Provisioning.
- The VROC RAID volume must use drives of the same interface and form factor.
- Intel VROC supports RAID management through the following tools:
  - Non-OS specific: UEFI System Utilities
  - Windows: Intel VROC GUI, Intel VROC CLI
  - Linux: `mdadm` CLI

For more information on Intel VROC features and configuration, see [Configuring storage controllers](#).

## Setting up the server

### Prerequisites

- As a best practice, Hewlett Packard Enterprise recommends installing the latest firmware, drivers, and system software before using the server for the first time. You have these options:

- HPE Compute Ops Management is an advanced software-as-a-service platform that securely streamlines operations from edge-to-cloud and automates key life cycle tasks through a unified single browser-based interface. For more information on using HPE Compute Ops Management, see <https://www.hpe.com/info/com-docs>.
- Use the Firmware Update option in Intelligent Provisioning—Intelligent Provisioning is a server deployment tool embedded in HPE ProLiant servers. To access Intelligent Provisioning, during the server boot process, press **F10**. For more information, see the Intelligent Provisioning user guide at <https://www.hpe.com/info/intelligentprovisioning/docs>.
- Download the Service Pack for ProLiant (SPP)—SPP is a comprehensive system software and firmware update solution that is delivered as a single ISO image. This solution uses Smart Update Manager (SUM) as the deployment tool.
  - The preferred method for downloading an SPP is by creating an SPP custom download at <https://www.hpe.com/servers/spp/custom>.  
This option reduces the size of the SPP by excluding firmware and drivers for OS and server models that are not needed.
  - The SPP is also available for download from the SPP download page at <https://www.hpe.com/servers/spp/download>.
- Verify that your OS or virtualization software is supported:  
<https://www.hpe.com/support/Servers-Certification-Matrices>
- This server supports type-p storage controller options. For onboard storage configuration, use either SATA AHCI (default) or Intel Virtual RAID on CPU (Intel VROC). If you plan to use Intel VROC, [review these important information before setting up the server](#).
- Read the [Operational requirements](#) for the server.
- Read the safety and compliance information:  
<https://www.hpe.com/support/safety-compliance-enterpriseproducts>

## Procedure

1. Unbox the server and verify the contents:
  - Server
  - Power cord
  - Rack-mounting hardware (optional)
  - Documentation
2. (Optional) [Install the hardware options](#).
3. Select the server orientation:
  - Tower orientation: [Connect the peripheral cables and power cord](#).
  - Rack orientation: [Install the tower-to-rack conversion kit](#).
4. 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 hostname is on the serial number/ iLO information label on the top side of the chassis.
  - 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 label on the top side of the chassis.
- 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.

5. Press the Power On/Standby button.

For remote management, use the iLO virtual power button.

6. Configure the initial server setup.

7. Set up the storage.

8. Deploy an OS or virtualization software.

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

10. Register the server.

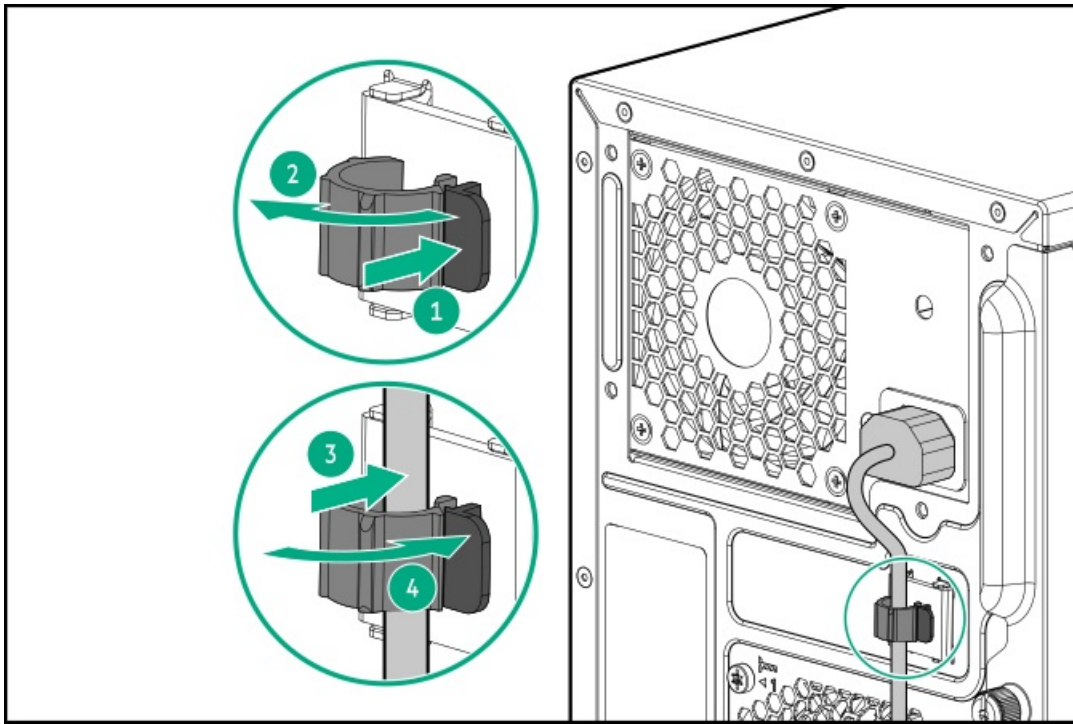
## Setting up the server in tower mode

### Procedure

1. Return the server to an upright position.
2. Connect all peripheral cables to the server.
3. Connect each power cord to the server.
4. Connect each power cord to the power source.
5. If the server is using a non-hot-plug power supply, secure the power cord in the power cord clip on the rear panel.
  - a. Press and hold the clip retainer, and then open the clip.
  - b. Position the power cord inside the clip, and then close the clip.







6. [Power up the server.](#)

## Operational requirements

When preparing and planning the installation, observe the following operational requirements:

- [Space and airflow requirements](#)
- [Temperature requirements](#)
- [Power requirements](#)
- [Electrical grounding requirements](#)

For environmental requirements, see [Environmental specifications](#).

### Subtopics

[Space and airflow requirements](#)

[Temperature requirements](#)

[Power requirements](#)

[Electrical grounding requirements](#)

## Space and airflow requirements

To allow for servicing and adequate airflow, observe the following space and airflow requirements when installing the server in an indoor commercial rack:

- 63.50 cm (25.00 in) in front of the rack
- 76.20 cm (30.00 in) behind the rack
- 121.90 cm (48.00 in) from the back of the rack to the back of another rack or row of racks

Observe the following:



- Servers draw in cool air through the front of the rack and expel warm air through the rear. The front and rear rack doors must be adequately ventilated to allow ambient air to enter the cabinet. 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.

**CAUTION**

When the vertical space in the rack is not filled by a server or rack component, the gaps between the components can cause changes in airflow through the rack and around the servers. Cover all gaps with blanking panels to maintain proper airflow. Using a rack without blanking panels results in improper cooling which can lead to thermal damage.

- If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and 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 7.00 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 10.40 kg (22.93 lb). When all components are installed, the server can weigh up to 19.00 kg (41.89 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 10.40 kg (22.93 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 stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
- 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, observe the following precautions:

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.

**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  $\pm 10$  percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
  - Use heel straps, toe straps, or 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.

## Operations

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

- [Rack warnings and cautions](#)
- [Server warnings and cautions](#)

### Subtopics

[Power up the server](#)  
[Power down the server](#)  
[Remove the server from the rack](#)  
[Remove the front bezel](#)  
[Remove the access panel](#)  
[Remove the air baffle](#)  
[Remove the PCIe blank retainer](#)  
[Remove a media drive](#)  
[Install the PCIe blank retainer](#)  
[Install the air baffle](#)  
[Install the access panel](#)  
[Install the front bezel](#)  
[Install the server into the rack](#)

## Power up the server

### Procedure

- 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 activates a controlled shutdown of applications and the OS before the server enters standby mode. It can also activate a shutdown behavior governed by an OS configuration or policy.
- 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.

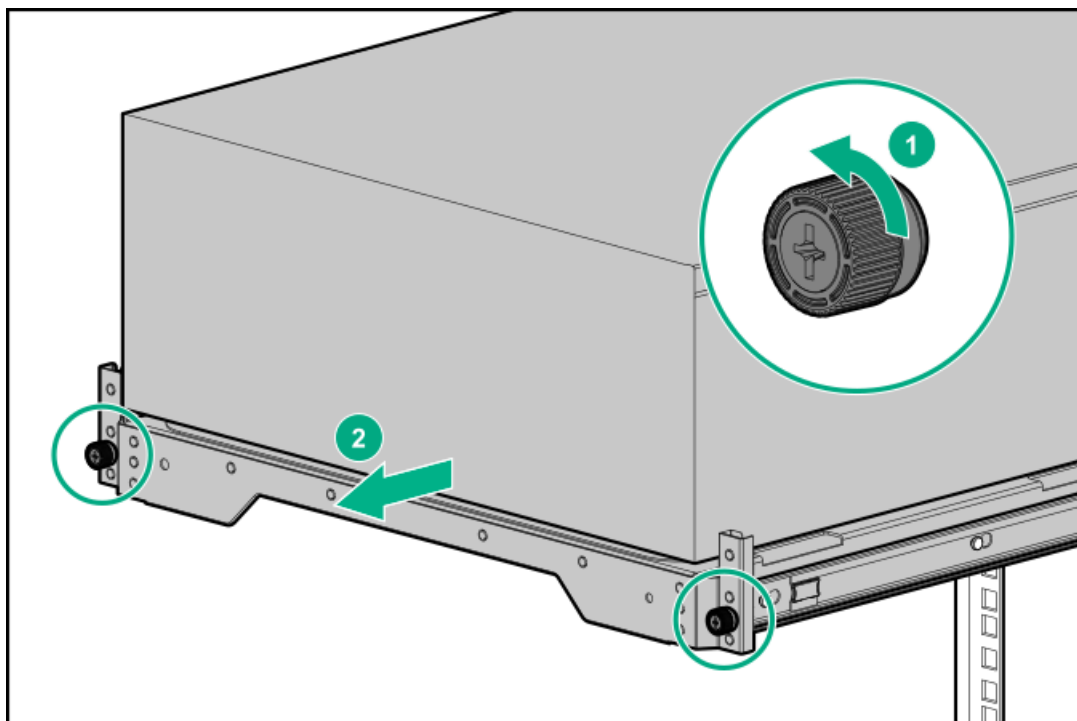
## Remove the server from the rack

### Prerequisites

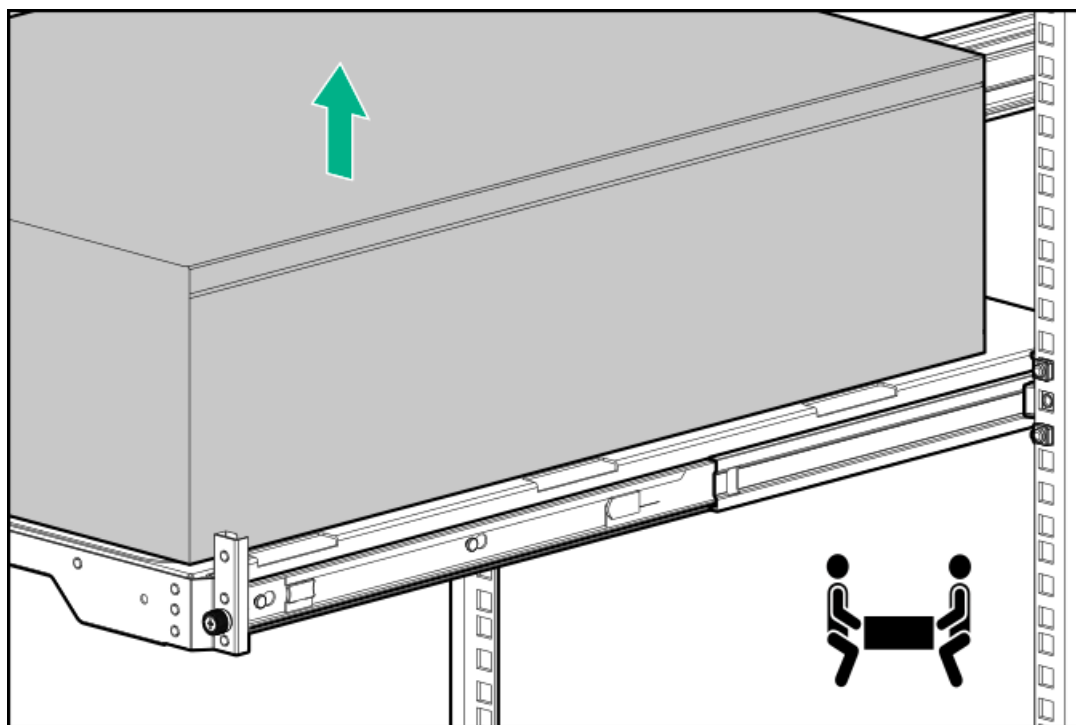
- Before you perform this procedure, review the:
  - [Rack warnings and cautions](#)
  - [Server warnings and cautions](#)
- A fully populated chassis is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before removing the server from the rack.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

### Procedure

1. [Power down the server.](#)
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If installed, unlock and remove the security padlock and/or the Kensington security lock.  
For more information, see the lock documentation.
5. Slide the server tray out of the rack:
  - a. Loosen the server tray thumbscrews.
  - b. Grasp the tray notch and slide the server out of the rack.



6. Remove the server from the tray.



7. Place the server on a flat, level surface with the access panel facing up.

## Remove the front bezel

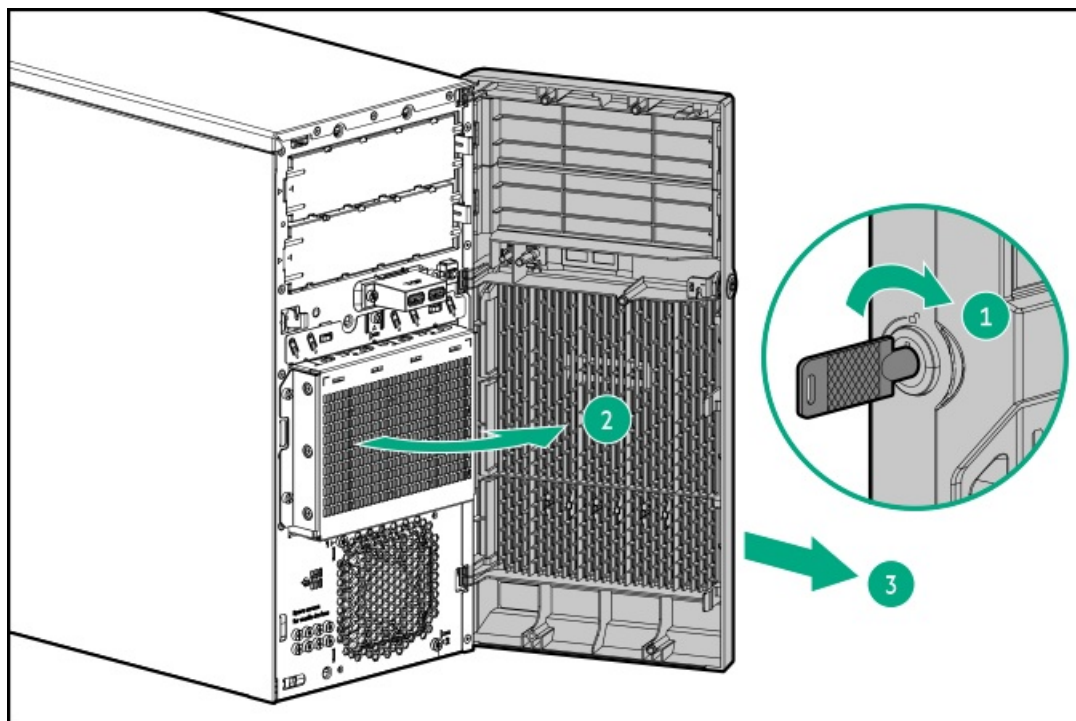
### Procedure

1. Unlock the front bezel.





2. Open the front bezel.
3. Pull the front bezel away from the chassis.



## Remove the access panel

### About this task



#### 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.

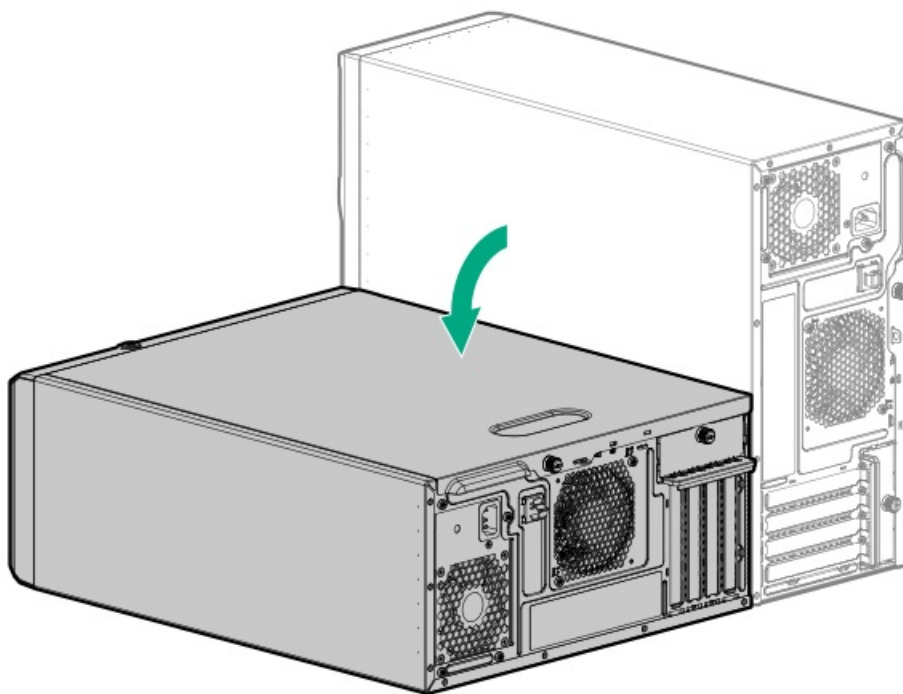
### Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.



4. Do one of the following:

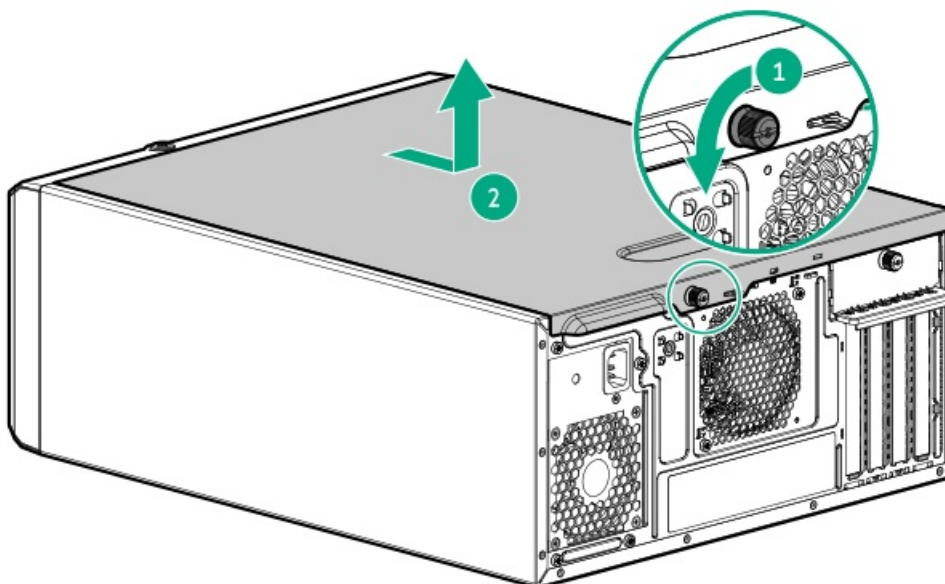
- If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.

5. Remove the access panel:

- Loosen the access panel thumbscrew.
- Slide the access panel toward the rear panel, and then lift it away from the chassis.



## Remove the air baffle

## About this task

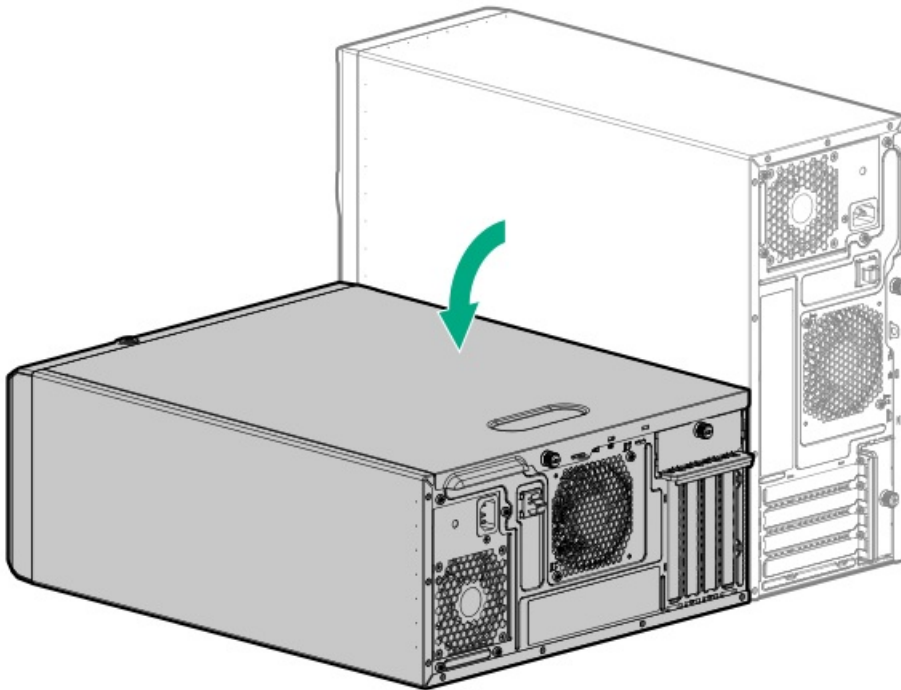


### CAUTION

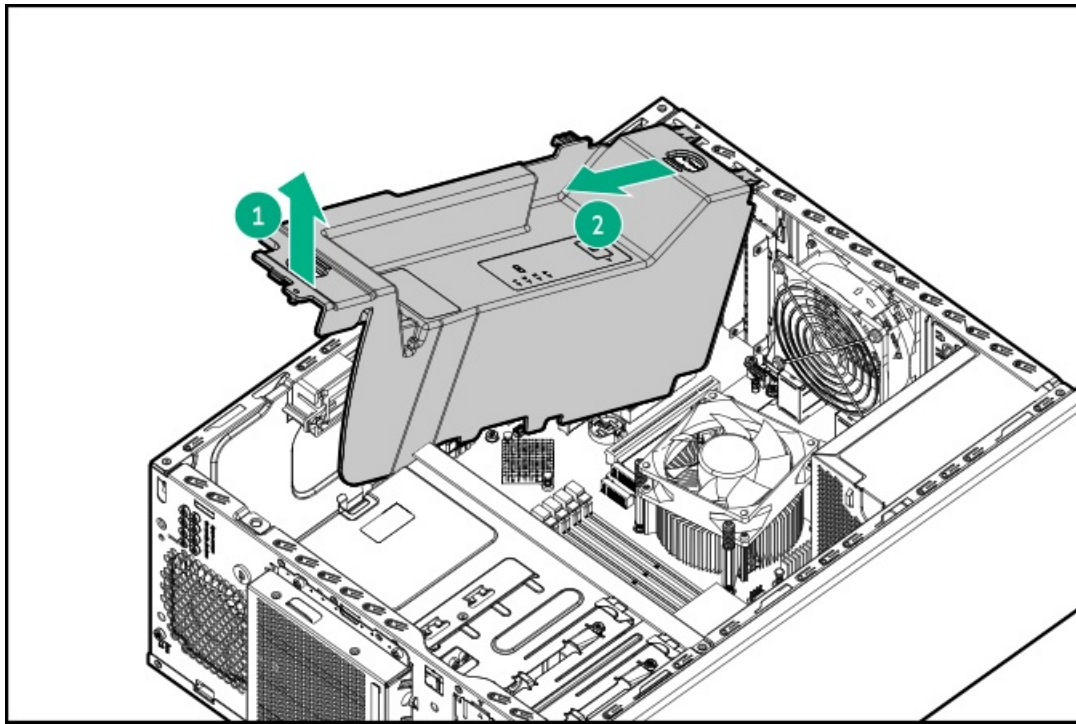
For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed.

## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



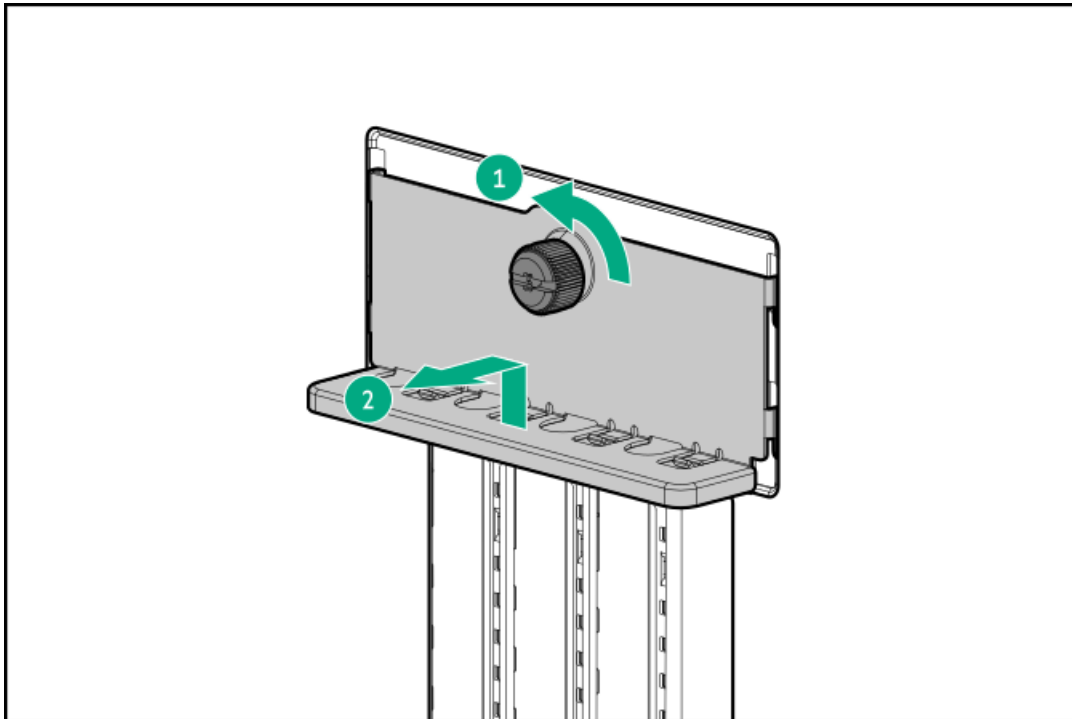
- If the server is in rack mode, remove the server from the rack.
5. Remove the access panel.
  6. Remove the air baffle:
    - a. Lift the front end of the baffle from the chassis (callout 1).
    - b. Remove the baffle tabs from its rear chassis slots (callout 2).



## Remove the PCIe blank retainer

### Procedure

1. Loosen the retainer thumbscrew.
2. Slide the retainer up, and then remove it from the chassis.



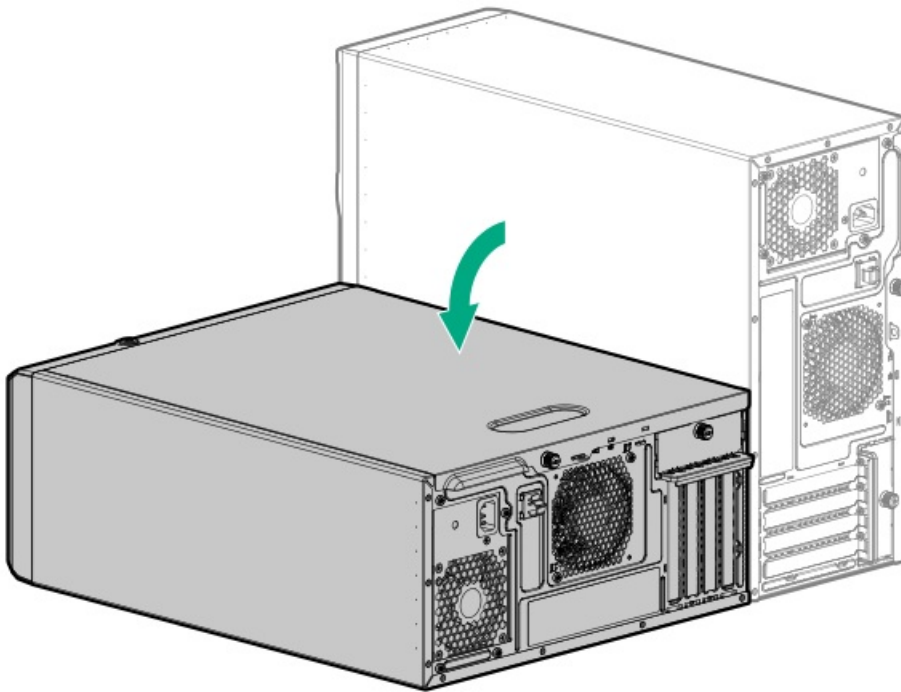
## Remove a media drive

### About this task

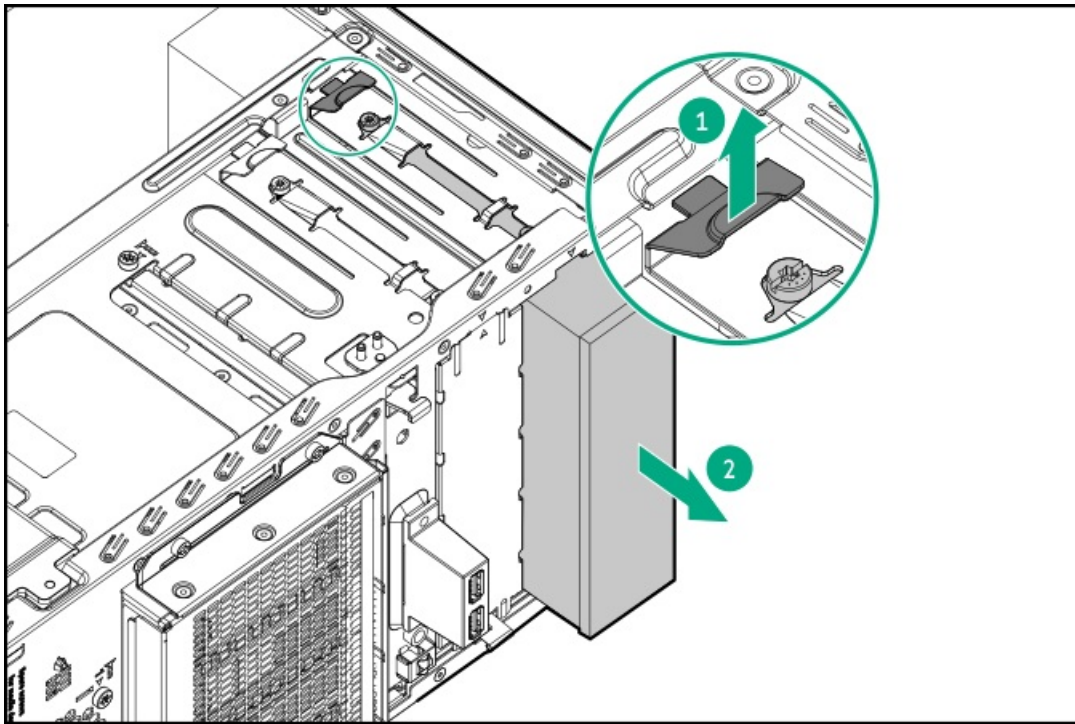
For better access to internal components, some procedures require the removal of the media drives.

### Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.
5. Remove the front bezel.
  6. Remove the access panel.
  7. Disconnect the drive cable from the media drive specified in the procedure:
    - LTO tape drive SAS-power Y-cable
    - RDX drive power and USB cables
    - Optical drive SATA-power Y-cable
  8. Pull and hold the drive release latch (callout 1), and then slide the media drive out of the bay (callout 2).



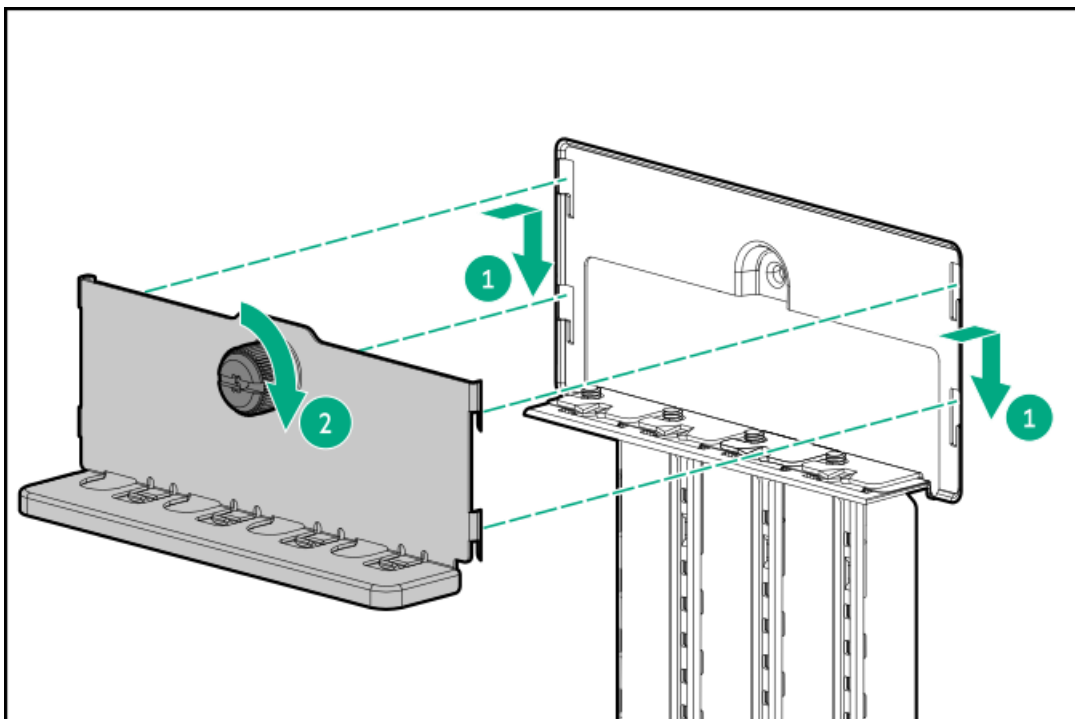
## Install the PCIe blank retainer

### Procedure

1. Insert the retainer tabs into the rear chassis slots.

Make sure the horizontal part of the retainer is flushed against the top side of the slot blanks.

2. Tighten the retainer thumbscrew.





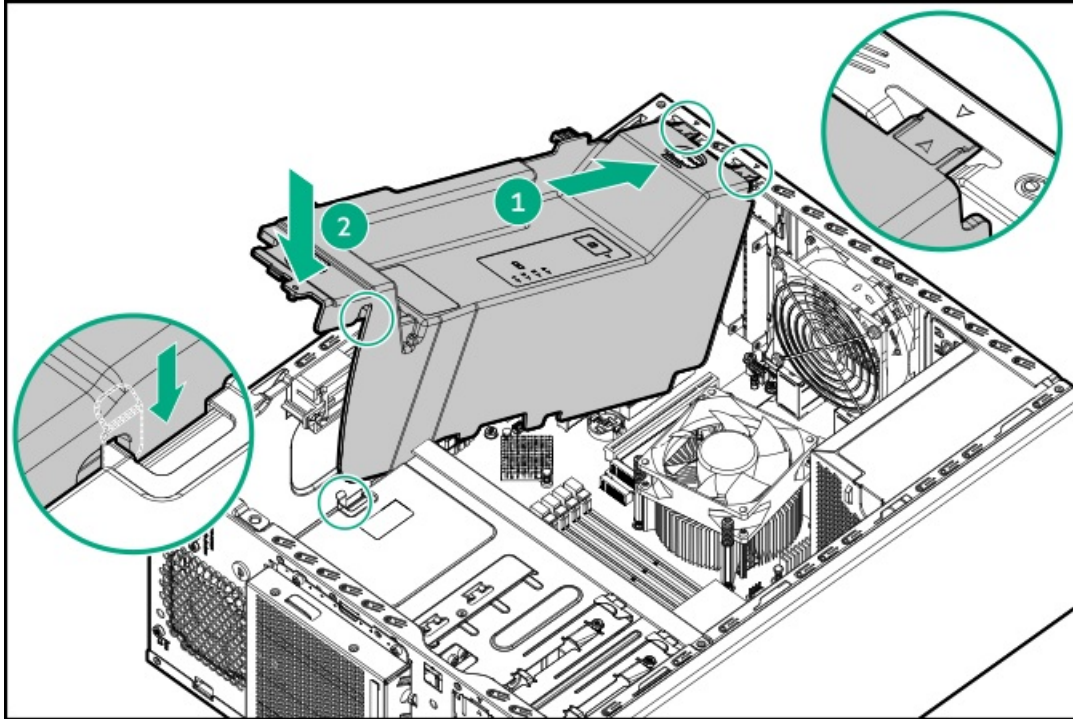
## Install the air baffle

### About this task

The air baffle is part of the PCI fan and air baffle option kit (P06303-B21).

### Procedure

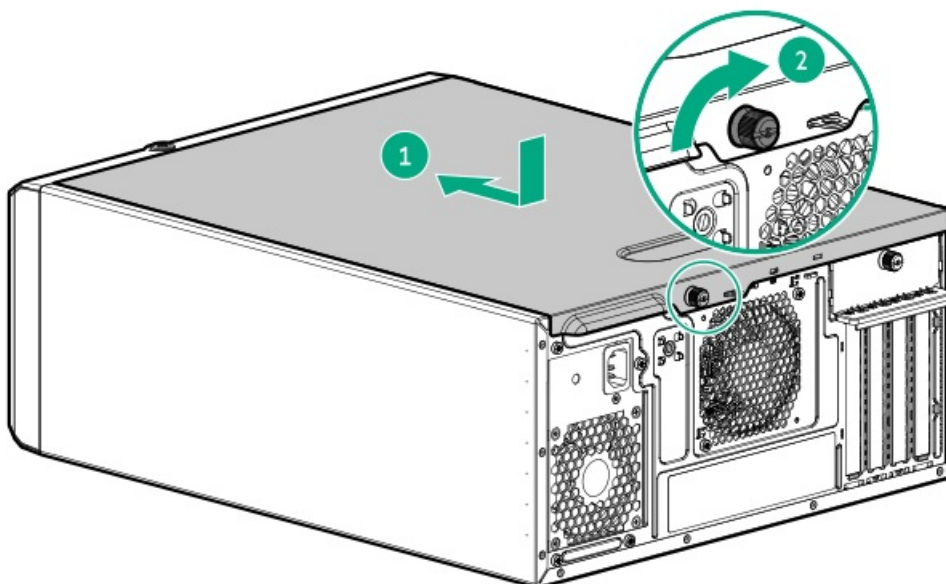
1. Insert the baffle tabs into the slots on the rear chassis.
2. Press the front end of the baffle into the chassis.



## Install the access panel

### Procedure

1. Position the access panel on the chassis, and then slide it toward the front panel.
2. Tighten the access panel thumbscrew.

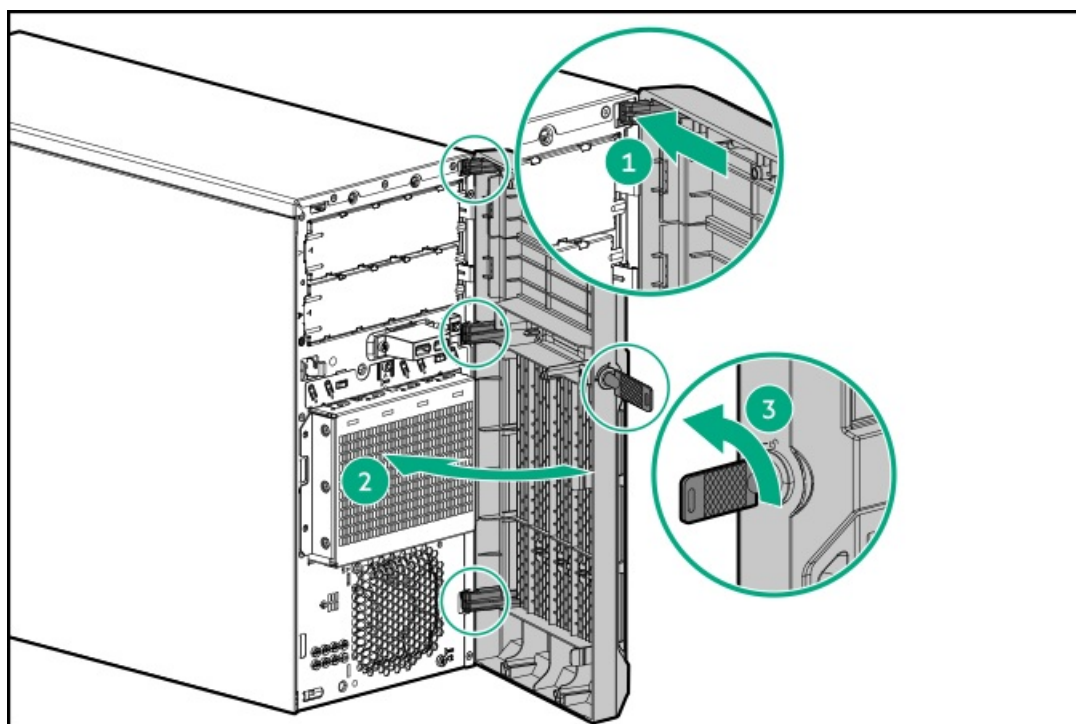


3. Perform the post-installation or maintenance steps required by the procedure that required the removal of the access panel.

## Install the front bezel

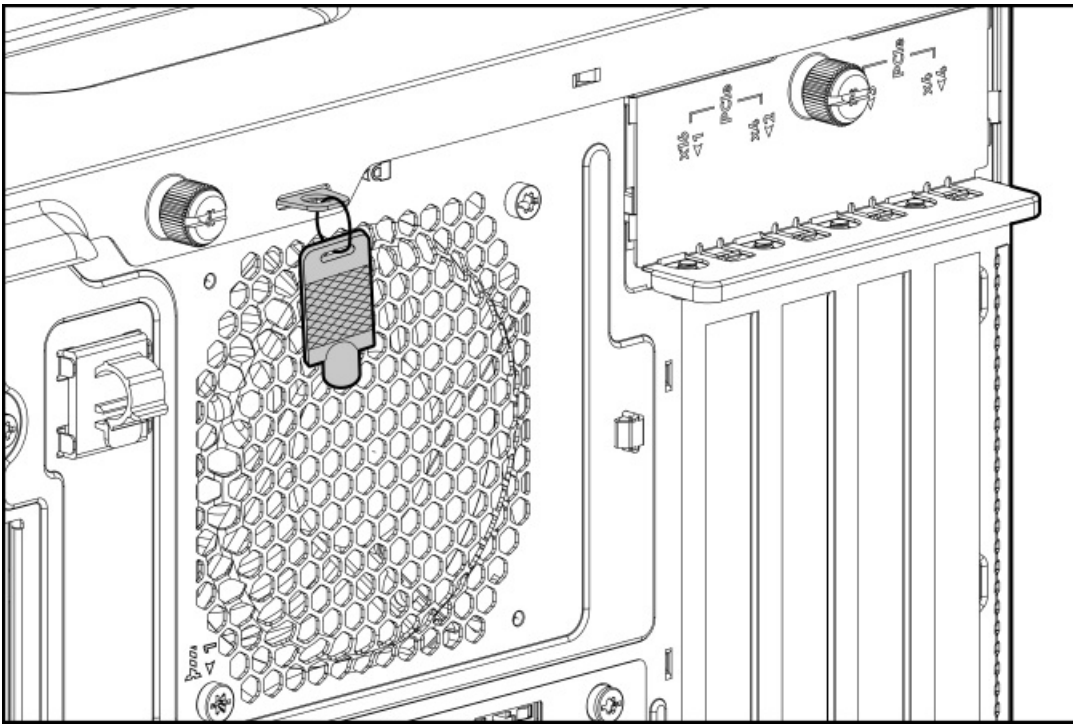
### Procedure

1. Insert the front bezel hooks to the chassis.
2. Close the front bezel.
3. Lock the front bezel.



4. (Optional) For later use, you can hang the front bezel keys on the padlock eye on the rear panel.





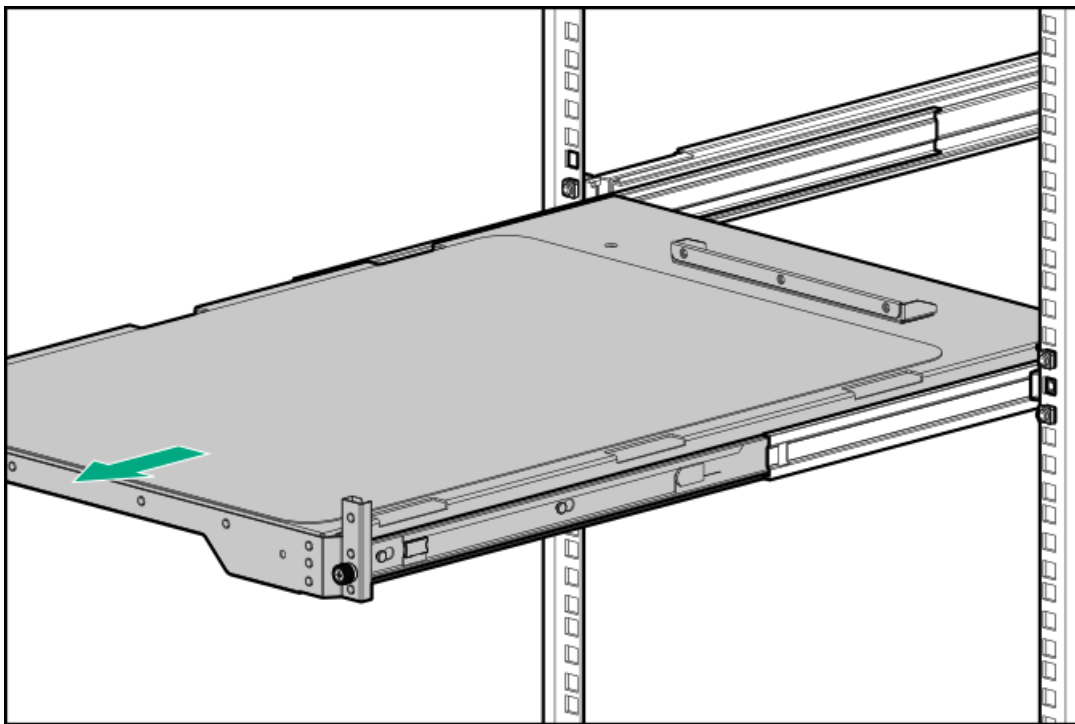
## Install the server into the rack

### Prerequisites

- Before you perform this procedure, review the:
  - [Rack warnings and cautions](#)
  - [Server warnings and cautions](#)
- [Make sure that the PCI fan is installed.](#)
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

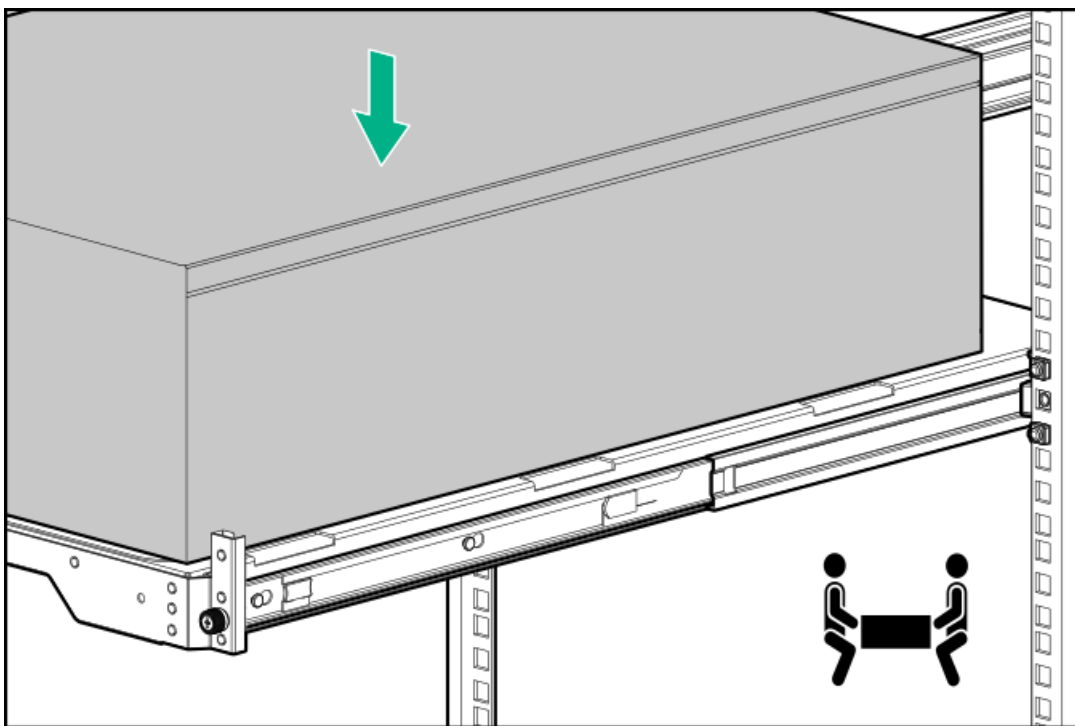
### Procedure

1. Grasp the tray notch to slide the tray out of the rack.

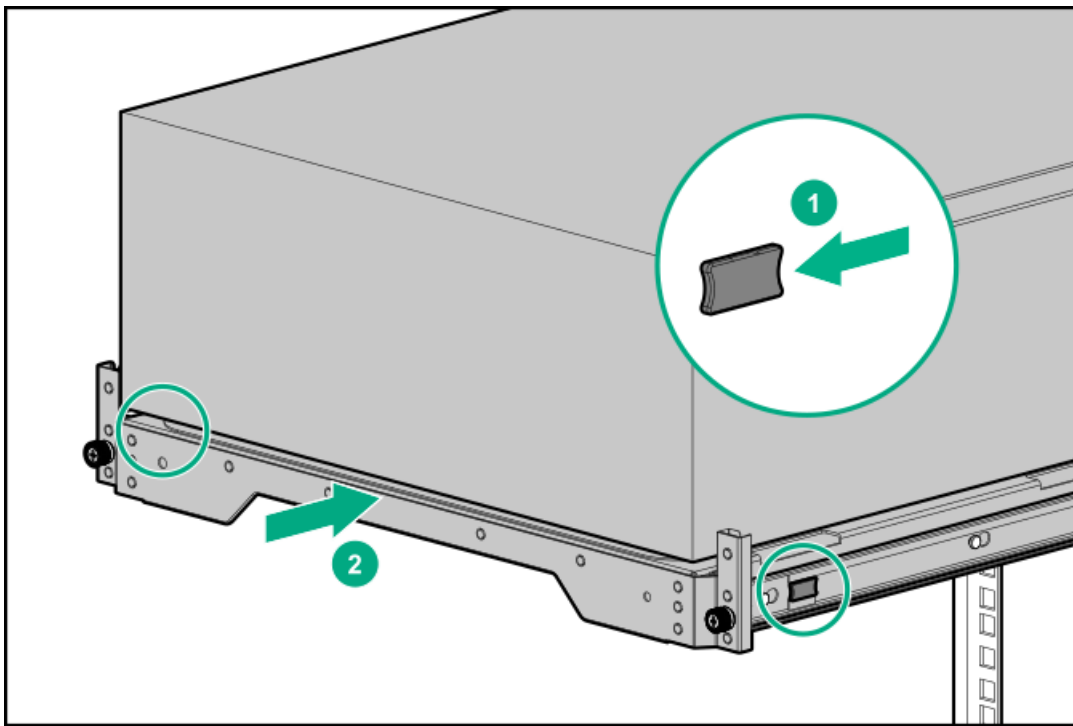


2. Place the server on the tray.

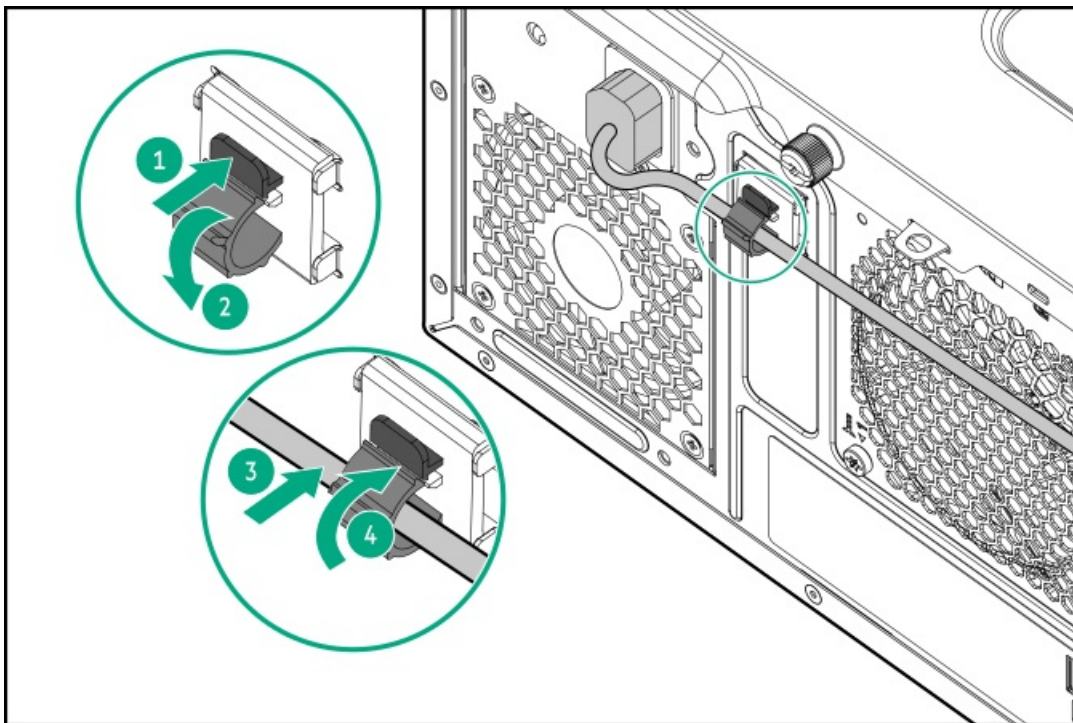
Verify that the front panel of the server is aligned with the front of the tray.



3. Press and hold the blue rail-release tabs, and then slide the tray back into the rack.



4. Connect all peripheral cables to the server.
5. Connect each power cord to the server.
6. If the server is using a non-hot-plug power supply, secure the power cord in the power cord clip on the rear panel.
  - a. Press and hold the clip retainer, and then open the clip.
  - b. Position the power cord inside the clip, and then close the clip.



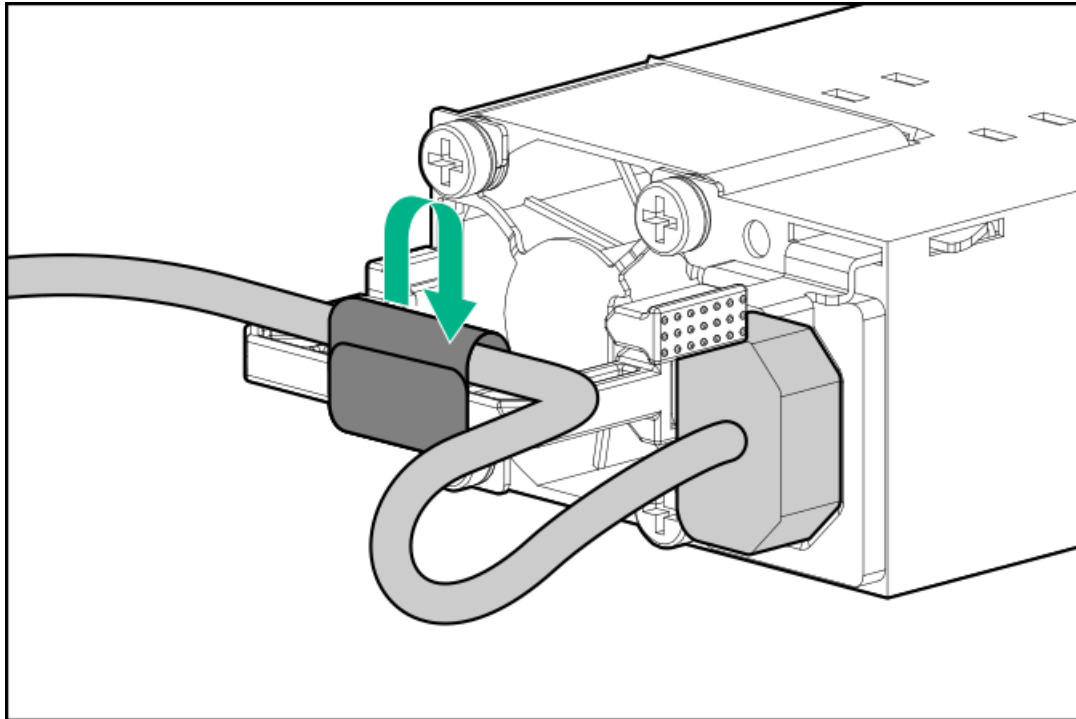
7. If the server is using a hot-plug power supply, secure the power cord in the strain relief strap attached to the power supply handle:
  - a. Unwrap the strain relief strap from the power supply handle.



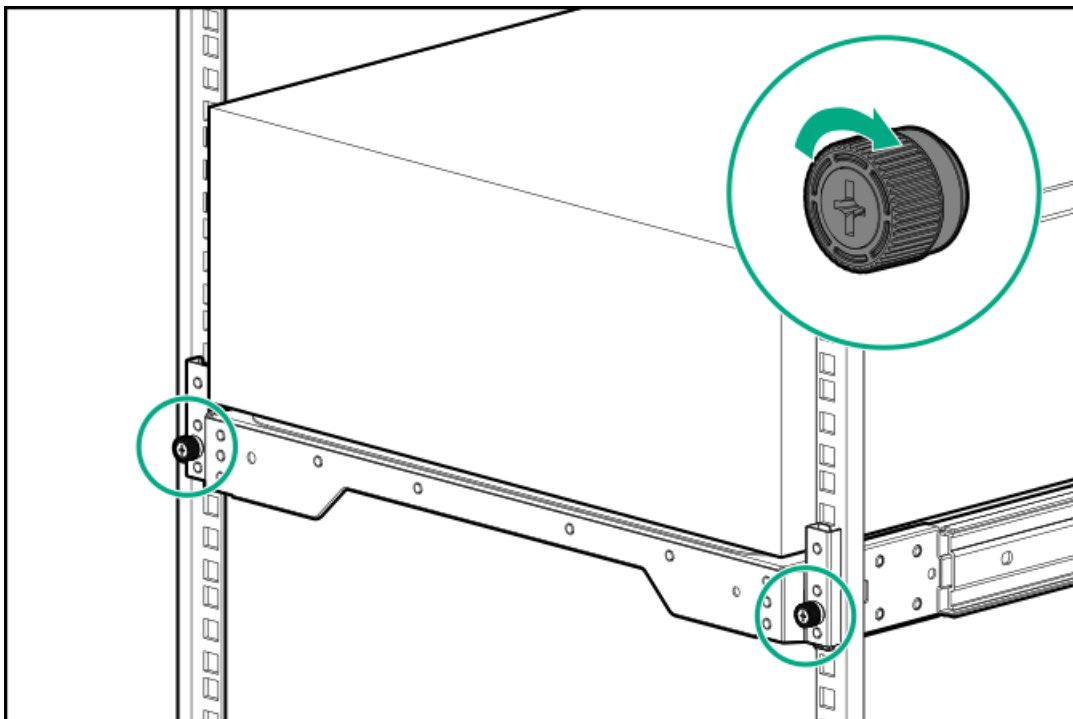
### CAUTION

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.



8. Employ industry best practices in routing and managing the peripheral cables and power cords.
9. Connect each power cord to the power source.
10. Tighten the server tray thumbscrews.



## 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 website:

<https://www.hpe.com/info/quickspecs>

To view the warranty for your server and supported options, see [Warranty information](#).

### Subtopics

[Server data backup](#)

[Hardware option installation guidelines](#)

[Tower-to-rack conversion kit](#)

[Drive options](#)

[Power supply options](#)

[Redundant power supply enablement option](#)

[Media device options](#)

[PCI fan and air baffle options](#)

[Storage controller options](#)

[HPE NS204i-p NVMe OS Boot Device option](#)

[Energy pack options](#)

[Expansion card options](#)

[Memory option](#)

[iLO-M.2-serial module option](#)

[M.2 SSD options](#)

[Internal USB device option](#)

## Server data backup

To avoid data loss, make sure to back up all server data before installing or removing a hardware option, performing a server maintenance, or a troubleshooting procedure.

Server data in this context refers to information that may be required to return the system to a normal operating environment after completing a hardware maintenance or troubleshooting procedure. This information may include:

- User data files
- User account names and passwords
- Application settings and passwords
- Component drivers and firmware
- TPM recovery key/password
- BIOS configuration settings—Use the backup and restore function in UEFI System Utilities. For more information, see the UEFI user guide (<https://www.hpe.com/info/UEFI-manuals>).
  - Custom default system settings
  - Security passwords including those required for power-on and BIOS admin access, persistent memory, and Server Configuration Lock (for HPE Trusted Supply Chain servers)
  - Server serial number and the product ID

- iLO-related data—Use the iLO backup and restore function. For more information, see the iLO user guide (<https://www.hpe.com/support/hpeilodocs-quicklinks>).
  - iLO license
  - Customer iLO user name, password, and DNS name
  - iLO configuration settings

## 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 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

To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement 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.

## Tower-to-rack conversion kit

Use the tower-to-rack conversion kit to switch the tower server to rack mode operation. A rack-mounted server occupies 5U space in the rack.

### Kit contents

The following hardware are included in the option kit. Items marked with an asterisk (\*) are not for use in this server.

- Left and right rack rail assemblies
- Server tray
- Cable management arm\*
- Chassis rear bracket screws (3)\*
- Shipping hardware\*
  - Shipping brackets (2)
  - Shipping bracket screws (4)
  - M5 square-hole cage nuts (4)

- Rear shipping screws (2)

## Subtopics

[Installing the tower-to-rack conversion kit](#)

# Installing the tower-to-rack conversion kit

## About this task

In this procedure, left and right terminology is from the perspective of a user facing the front of the rack.

## Procedure

1. [Power down the server.](#)
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If installed, unlock and remove the security padlock and/or the Kensington security lock.

For more information, see the lock documentation.
5. [Install the rack rails and server tray.](#)
6. [Install the server into the rack.](#)

## Results

The installation procedure is complete.

## Subtopics

[Install the rack rails and server tray](#)

[Install the server into the rack](#)

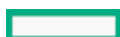
# Install the rack rails and server tray

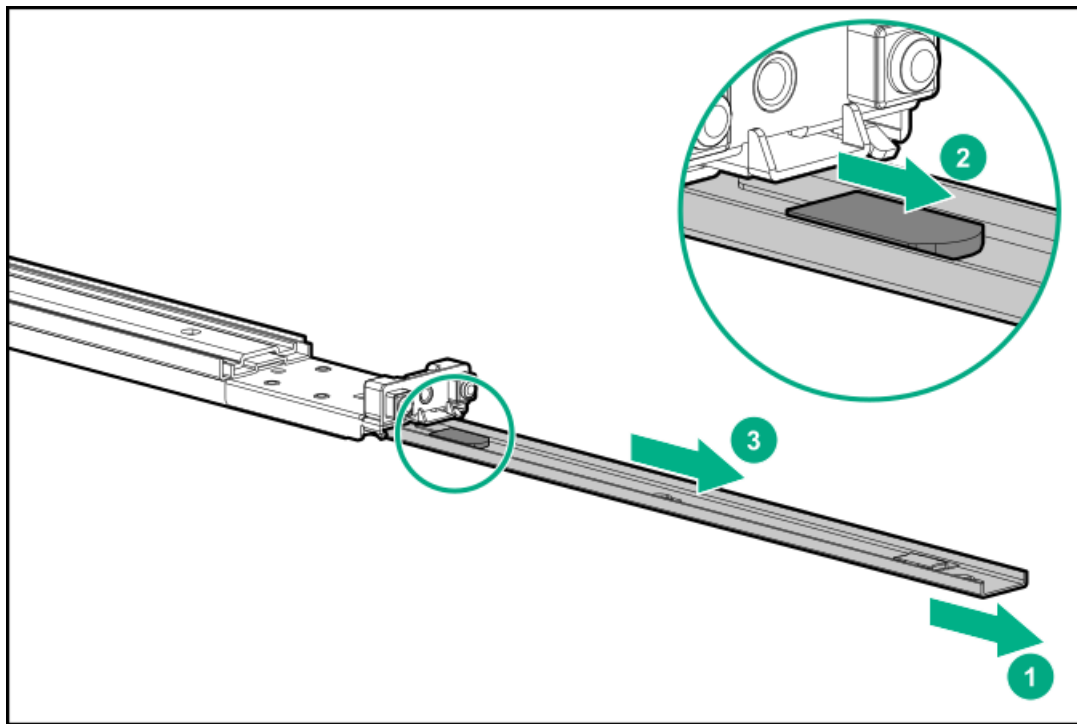
## About this task

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

## Procedure

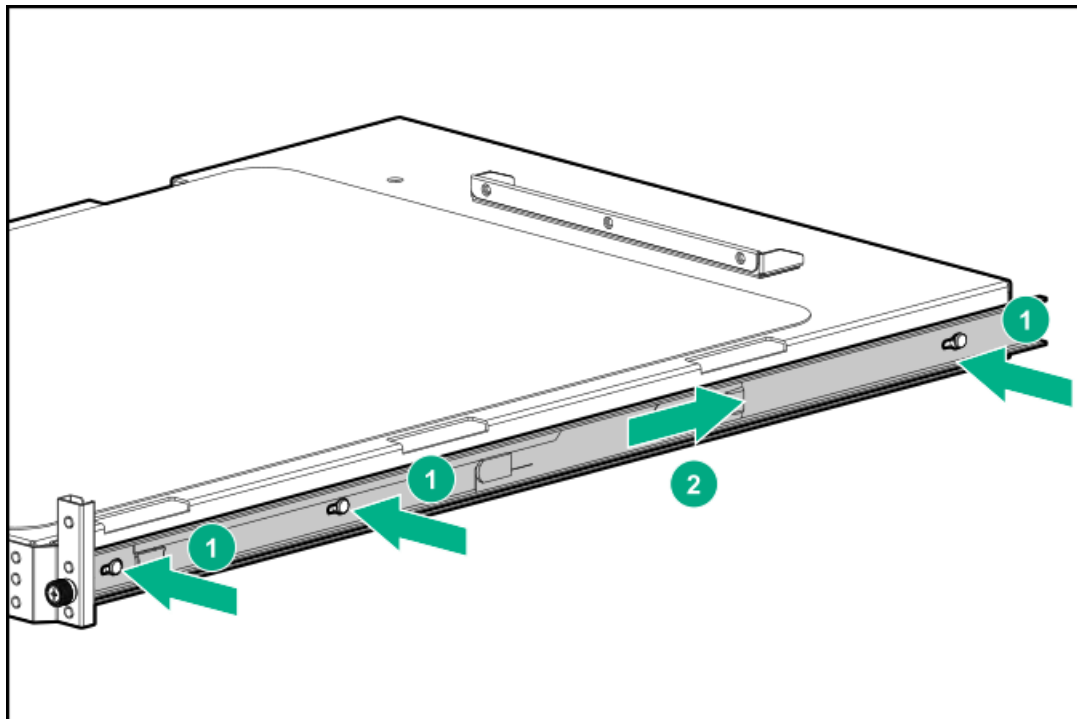
1. Disassemble the rack rail assemblies:
  - a. Pull out the inner sliding rail until it is fully extended.
  - b. Slide and hold the white release tab in the direction shown, and then remove the sliding rail from the mounting rail.





2. Install the sliding rails on the server tray:

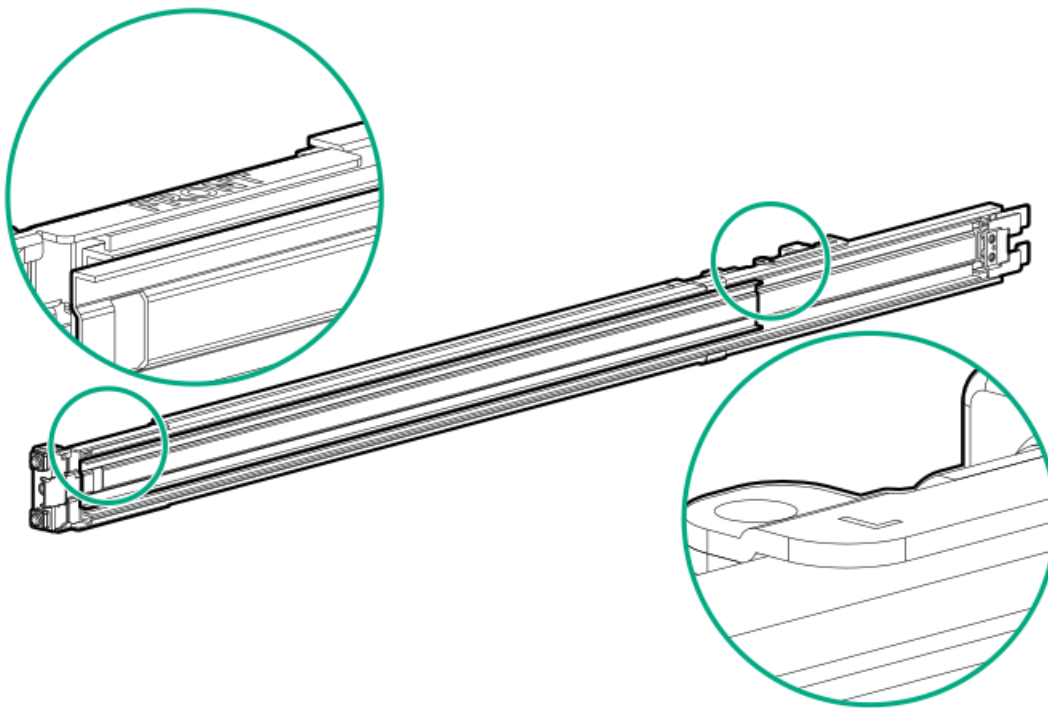
- a. Insert the spools on the sides of the server tray through the notches on the rails.
- b. Slide the rail towards the rear of the tray to lock it into place.



3. Locate the orientation markers on the mounting rails:

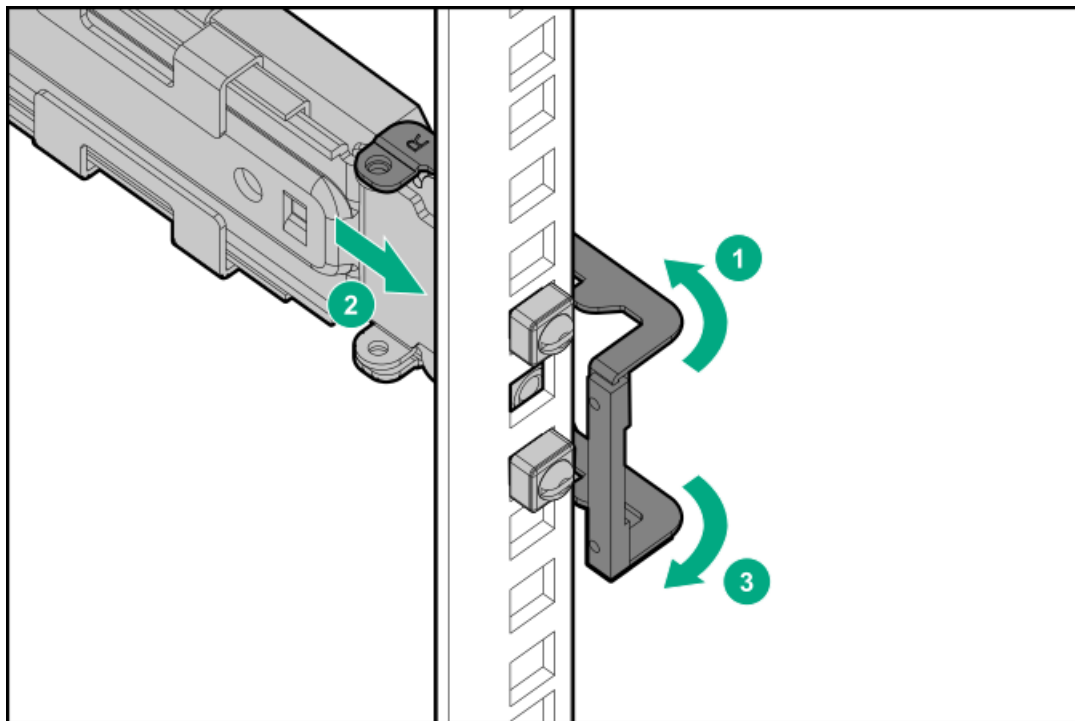
- The front end of the rails is marked **FRONT**.
- The rear end of the rail is marked with **L** for left and **R** for right.



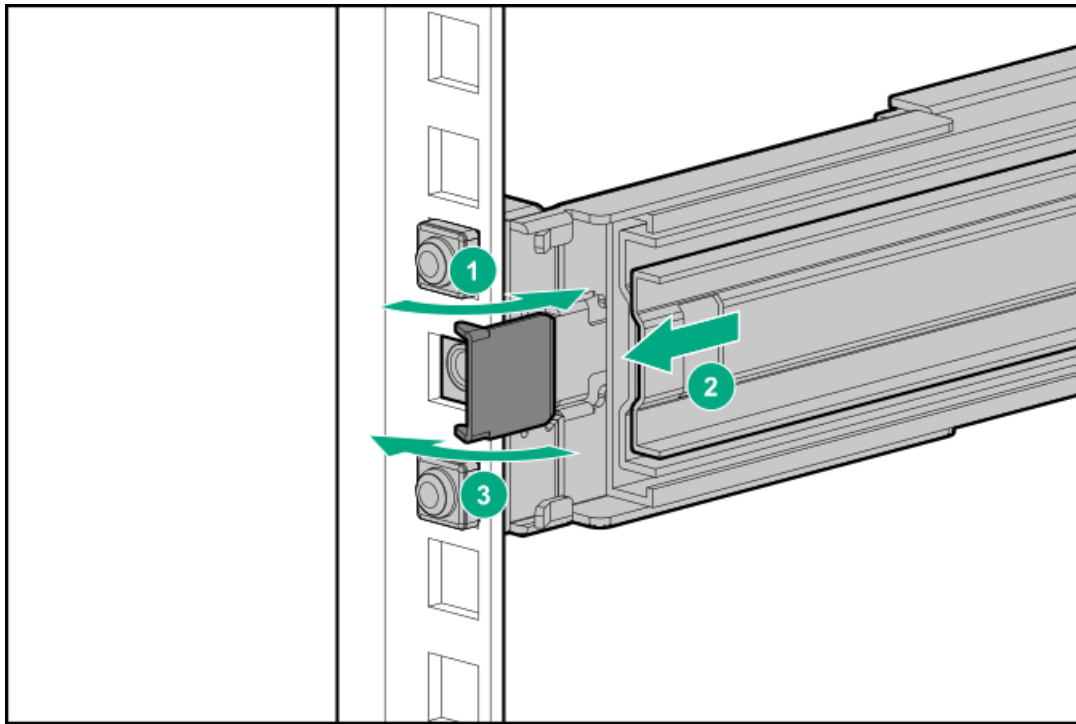


4. Fasten the mounting rails to the rack columns:

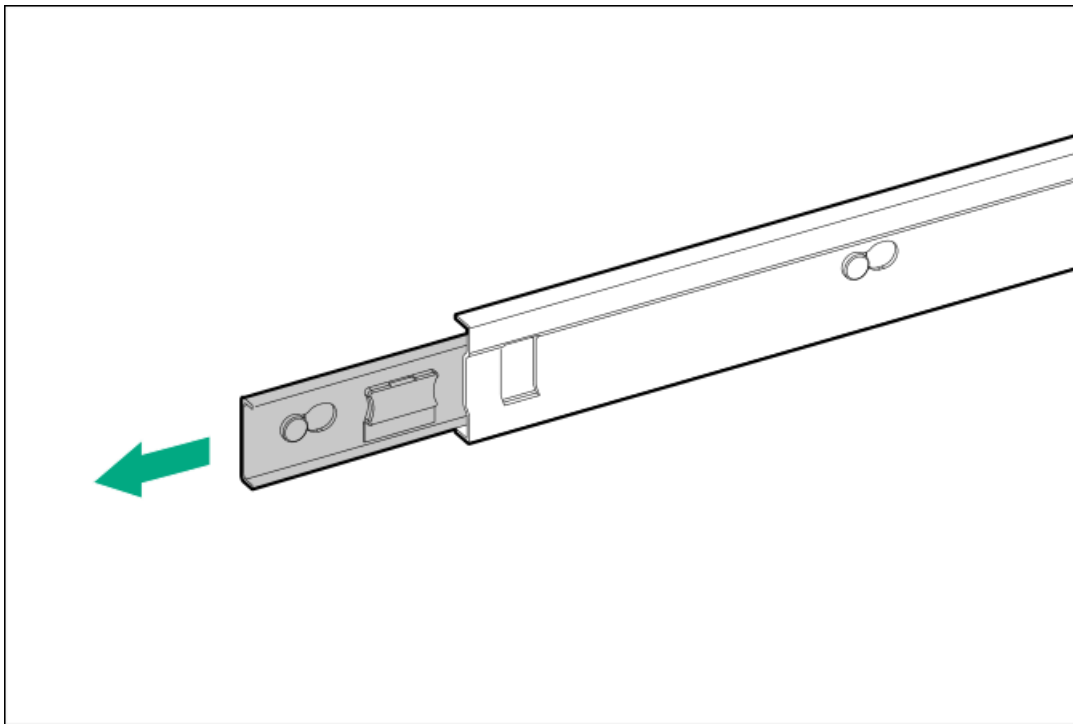
- a. Retract and hold the rear retention bracket.
- b. Insert the pins on the mounting flange into the rack column holes.
- c. Release the rear retention bracket.



- d. Retract and hold the front retention bracket.
- e. Insert the pins on the mounting flange into the rack column holes.
- f. Release the front retention bracket.

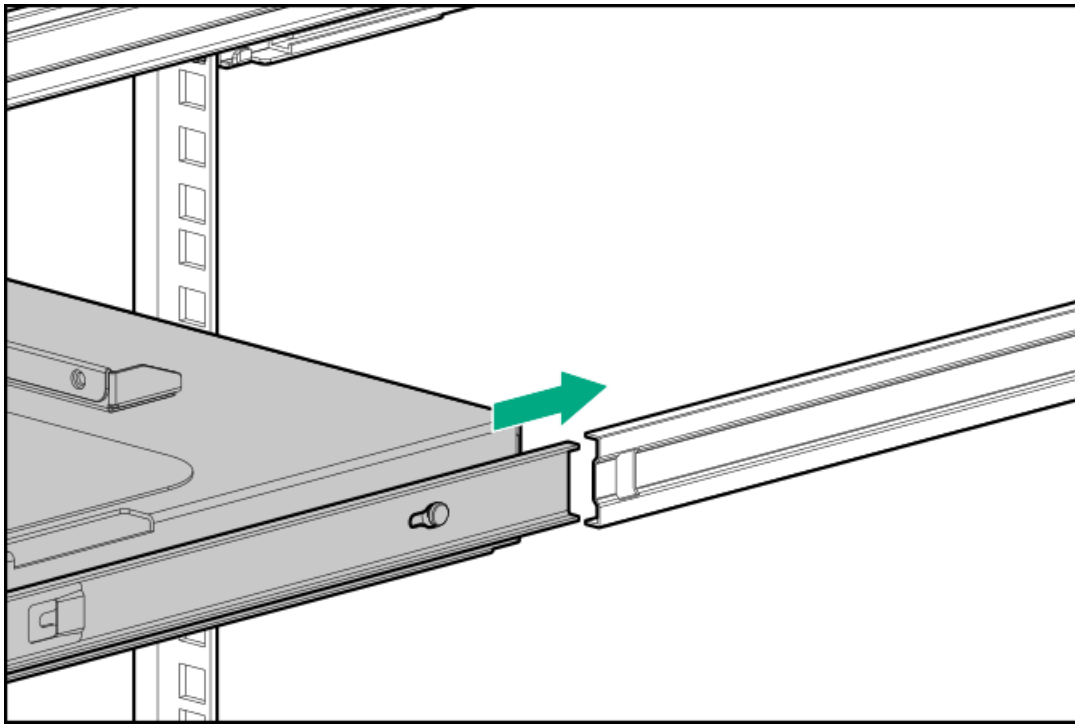


5. Extend the inner rail.



6. Slide the server tray into the rack.

The rack rails will click and lock into place when the tray is properly engaged.



7. Install the server into the rack.

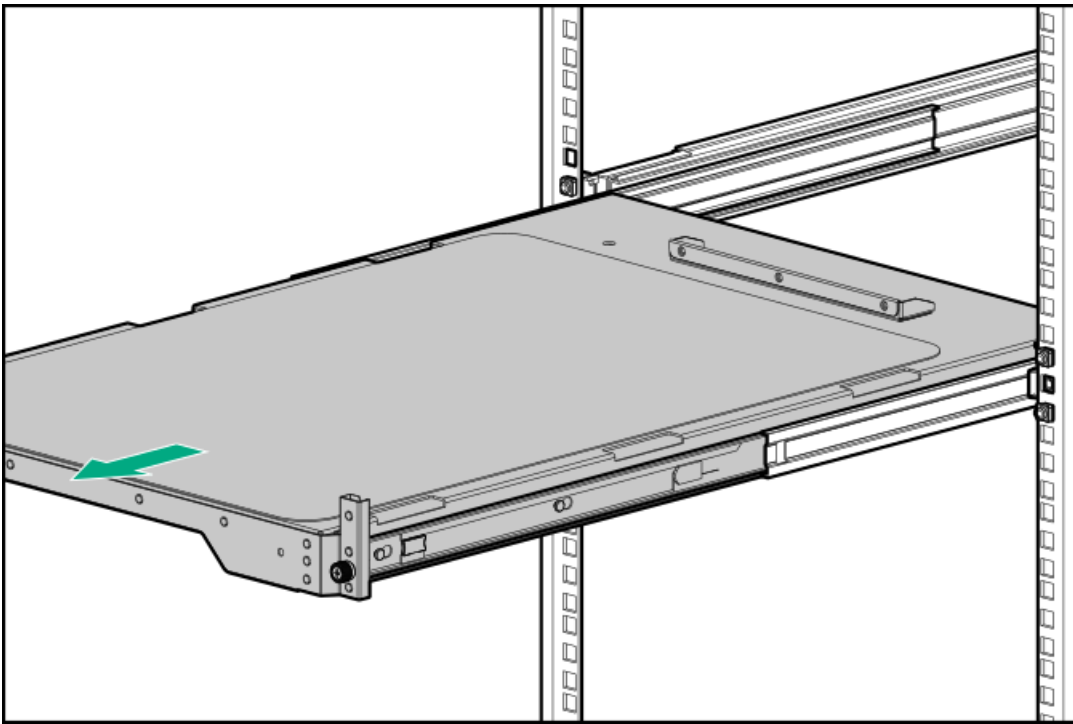
## Install the server into the rack

### Prerequisites

- Before you perform this procedure, review the:
  - [Rack warnings and cautions](#)
  - [Server warnings and cautions](#)
- [Make sure that the PCI fan is installed.](#)
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

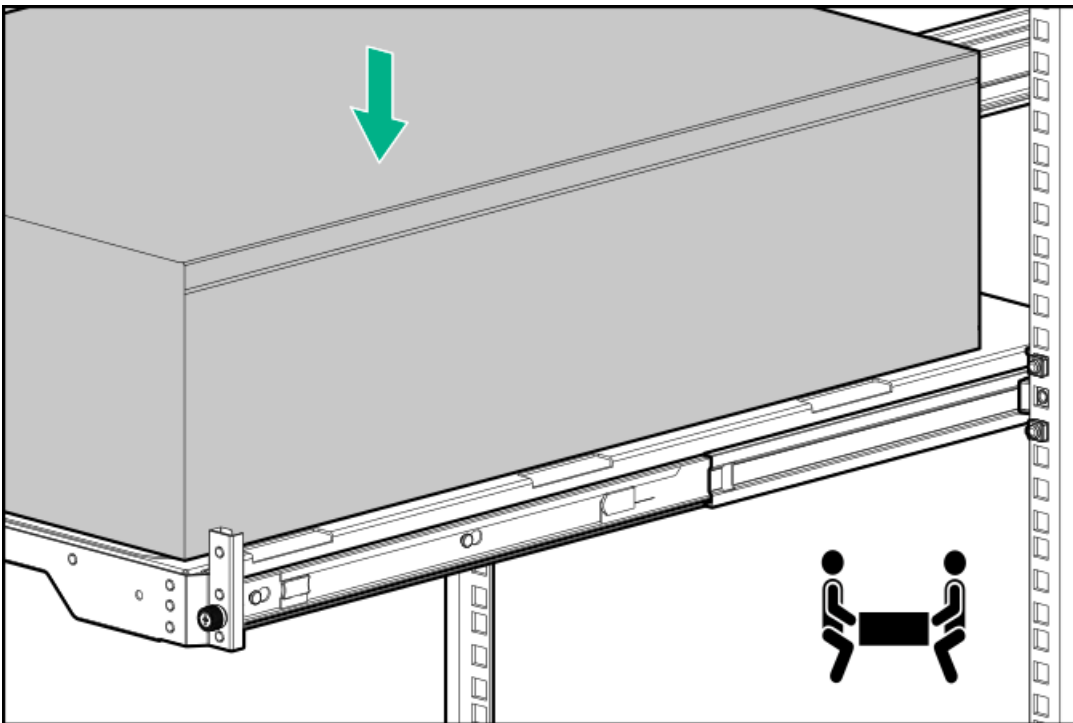
### Procedure

1. Grasp the tray notch to slide the tray out of the rack.

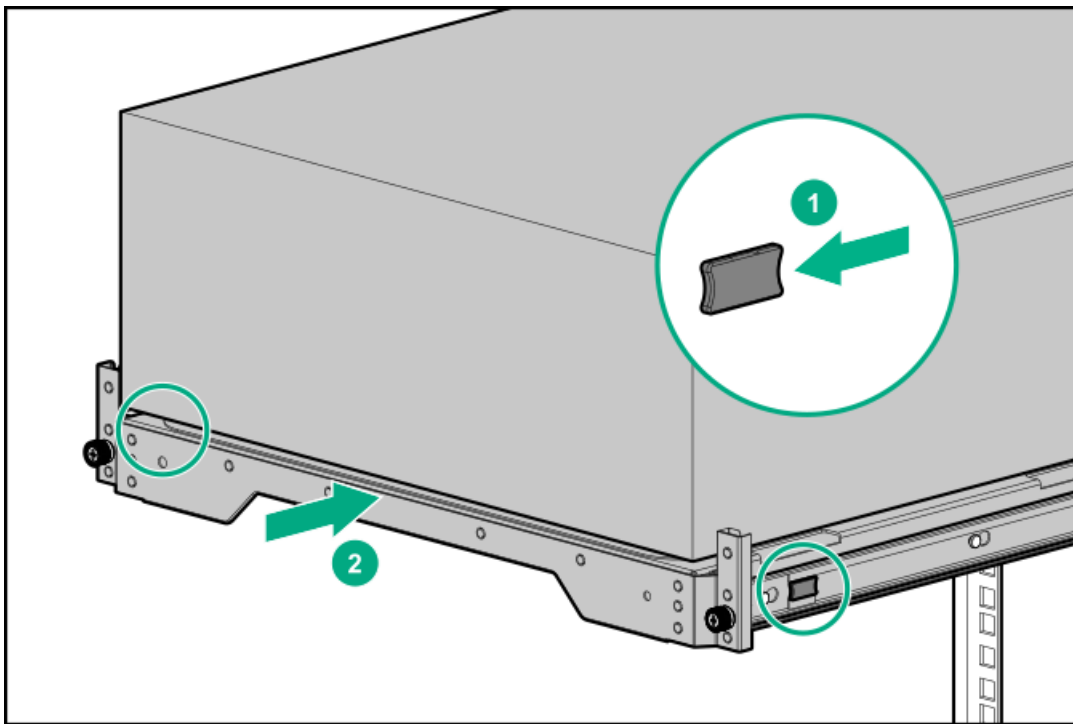


2. Place the server on the tray.

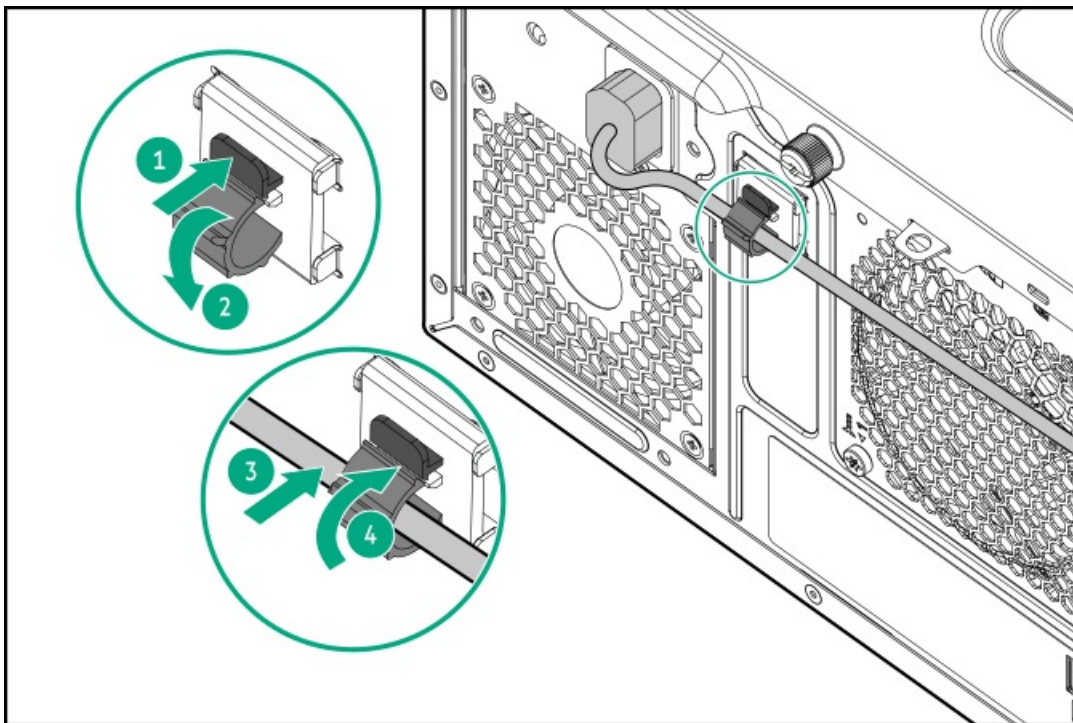
Verify that the front panel of the server is aligned with the front of the tray.



3. Press and hold the blue rail-release tabs, and then slide the tray back into the rack.



4. Connect all peripheral cables to the server.
5. Connect each power cord to the server.
6. If the server is using a non-hot-plug power supply, secure the power cord in the power cord clip on the rear panel.
  - a. Press and hold the clip retainer, and then open the clip.
  - b. Position the power cord inside the clip, and then close the clip.



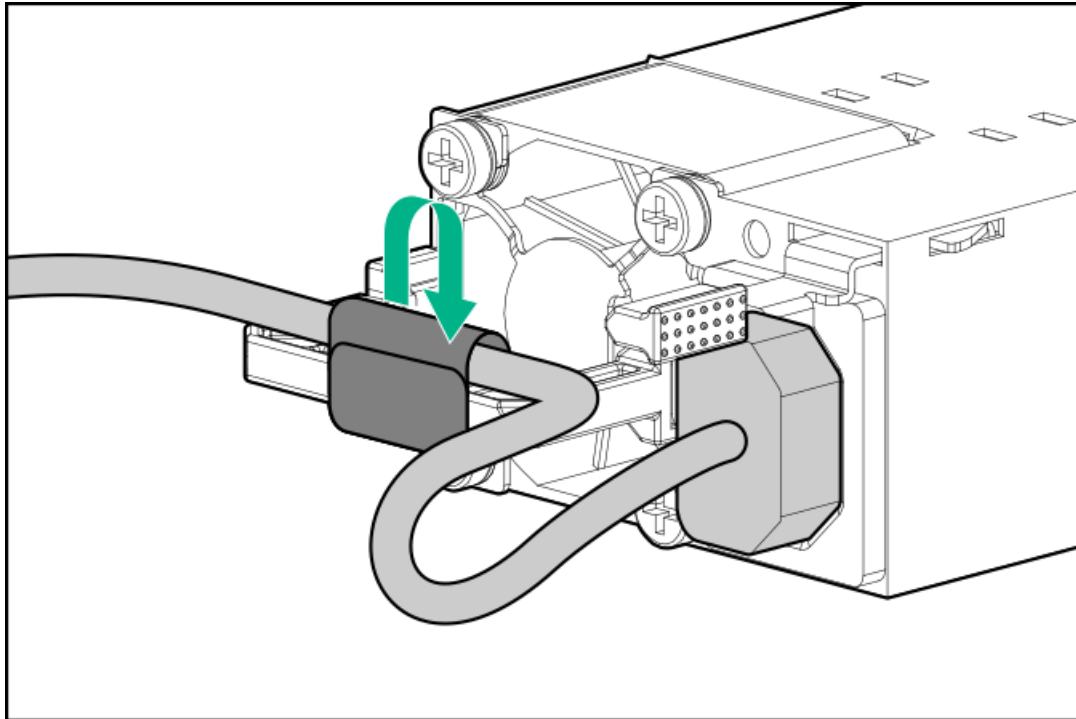
7. If the server is using a hot-plug power supply, secure the power cord in the strain relief strap attached to the power supply handle:
  - a. Unwrap the strain relief strap from the power supply handle.



#### 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.



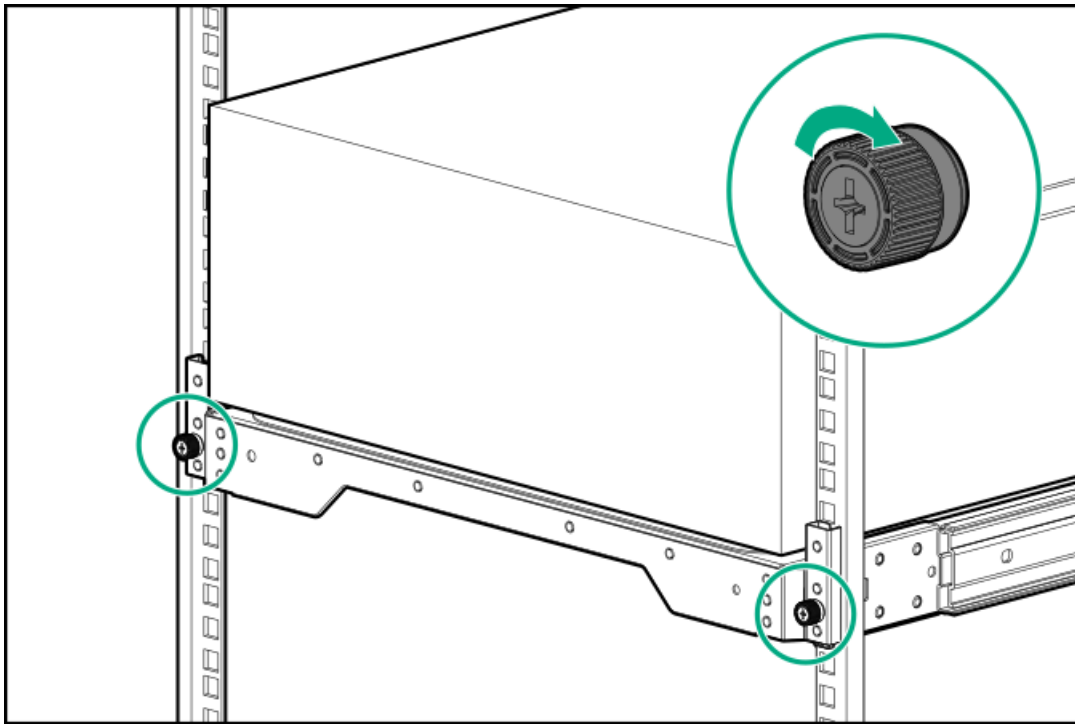
8. Employ industry best practices in routing and managing the peripheral cables and power cords.
9. Verify that the peripheral cables and power cords are secured properly.

**Two people is 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 tray out of the rack.
- b. Make sure that there is enough slack in the cables and cords for a full extension of the rack rails.

Make sure that there is no cable binding or crimping.

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



11. Connect each power cord to the power source.
12. Power up the server.

## Drive options

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

- Non-hot-plug LFF SATA drives
- Hot-plug LFF SATA and SAS drives
- Hot-plug SFF SATA and SAS drives

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

Install an HPE type-p PCIe plug-in storage controller option to support SAS drives and hardware RAID.

### Subtopics

[Drive installation guidelines](#)

[Installing a non-hot-plug LFF SATA drive](#)

[Installing a hot-plug LFF/SFF SAS or SATA drive](#)

## 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

### Prerequisites

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

### About this task

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



#### CAUTION

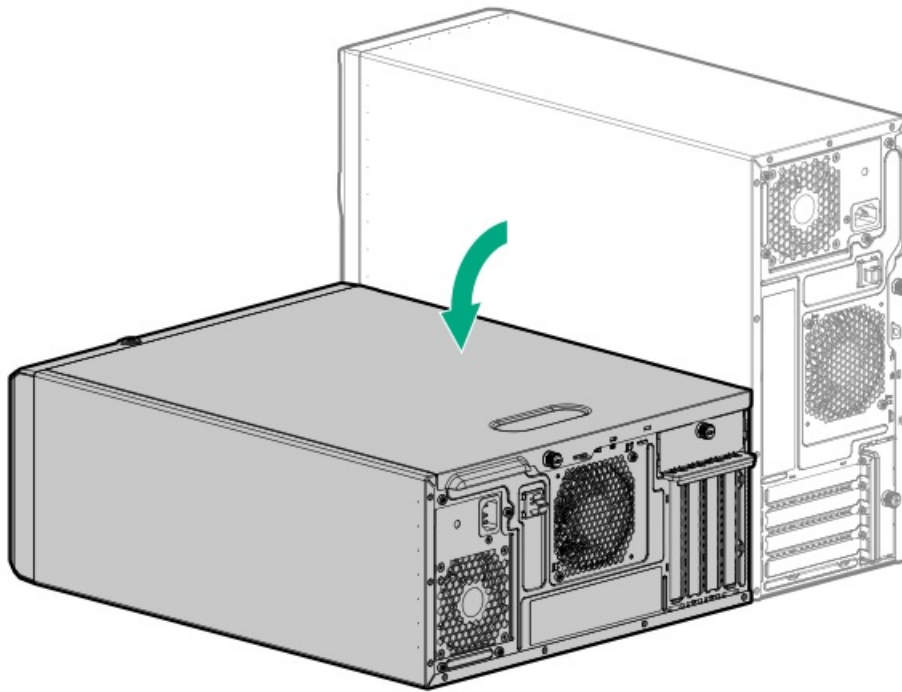
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.

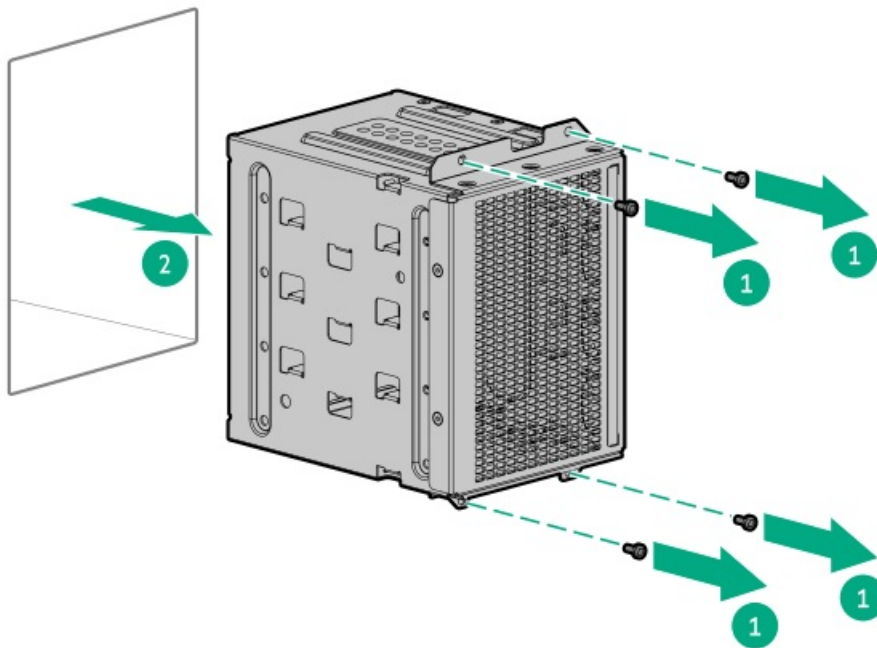






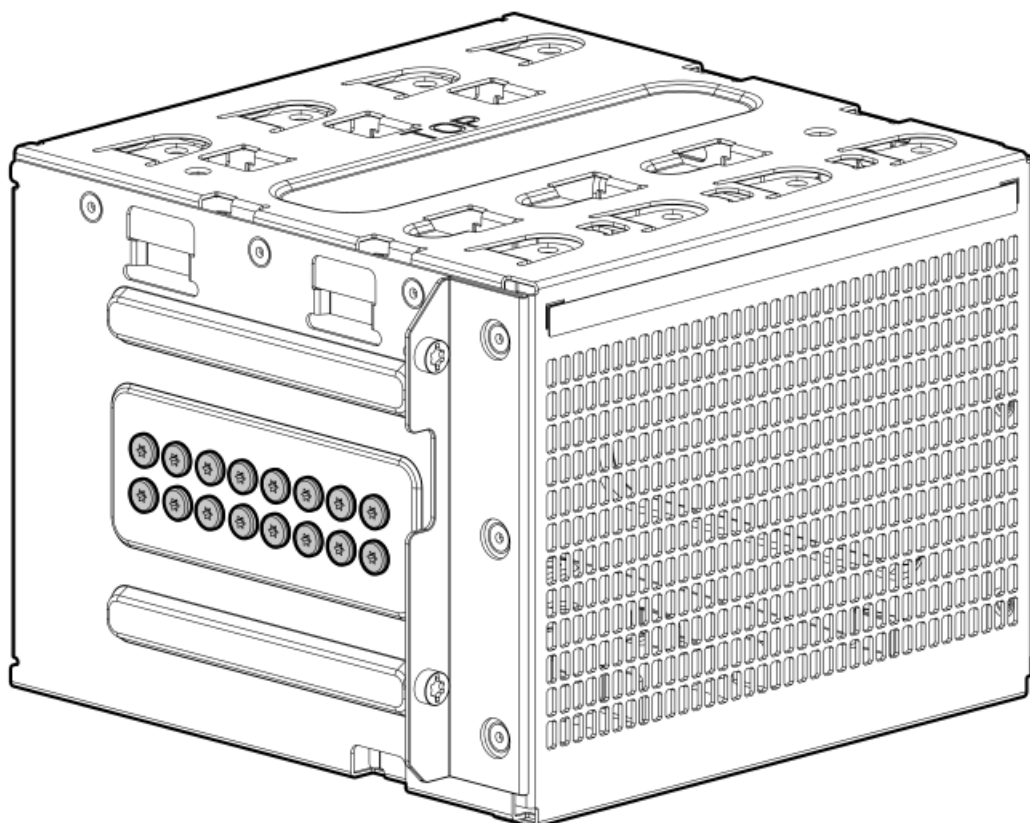
- If the server is in rack mode, remove the server from the rack.

5. Remove the front bezel.
6. Remove the access panel.
7. If a non-hot-plug drive is already installed, disconnect the drive power and SATA cables.
8. Remove the non-hot-plug drive cage.

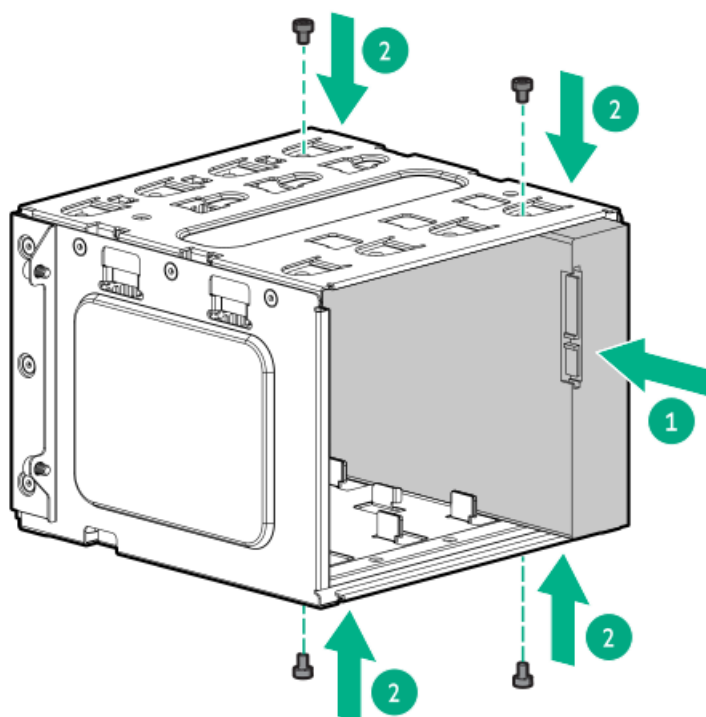


9. Remove the correct number of screws from the drive cage.

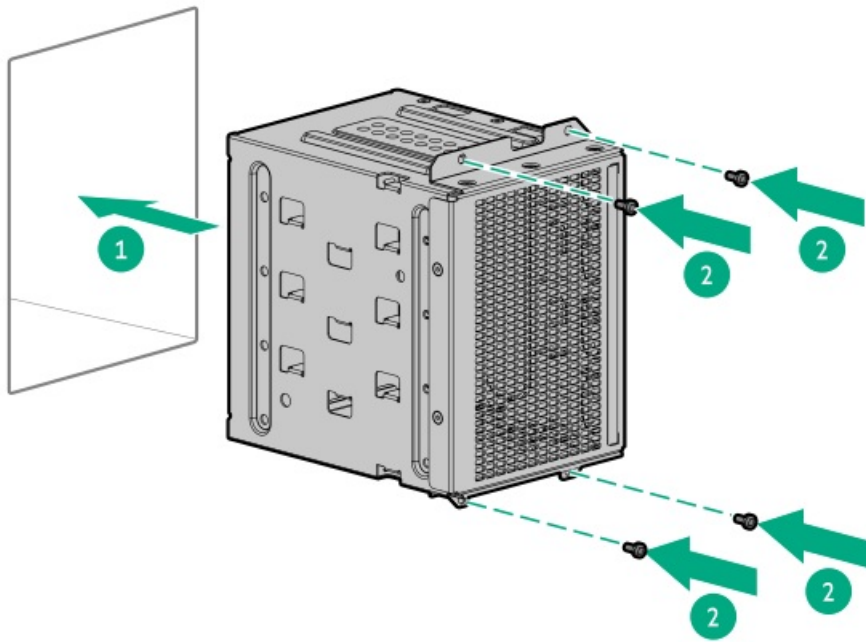
Each drive requires four screws.



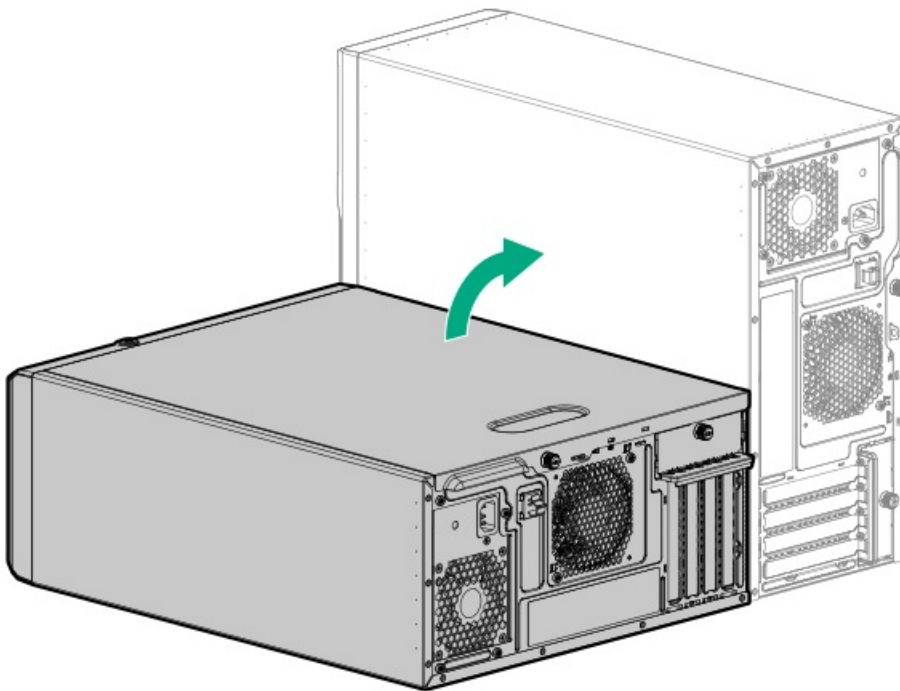
10. Install the non-hot-plug drive.



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



12. Connect the drive power and SATA cables.
13. Install the access panel.
14. Install the front bezel.
15. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.
16. Connect all peripheral cables to the server.
  17. Connect each power cord to the server.
  18. Connect each power cord to the power source.



19. [Power up the server.](#)
20. To configure drive arrays, see the [relevant storage controller guide.](#)

## Results

The installation procedure is complete.

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

### About this task



#### 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](#).

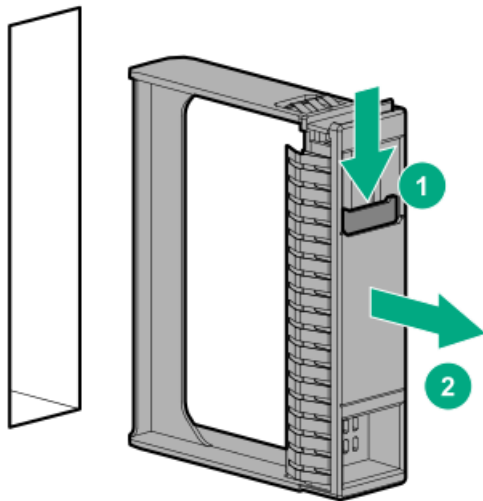


#### CAUTION

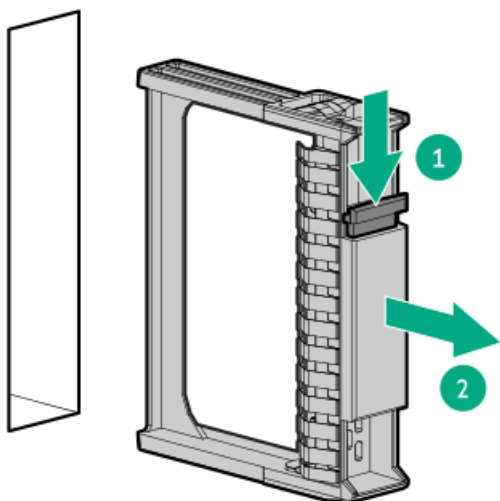
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

### Procedure

1. [Remove the front bezel.](#)
2. Remove the drive blank.
  - LFF drive blank

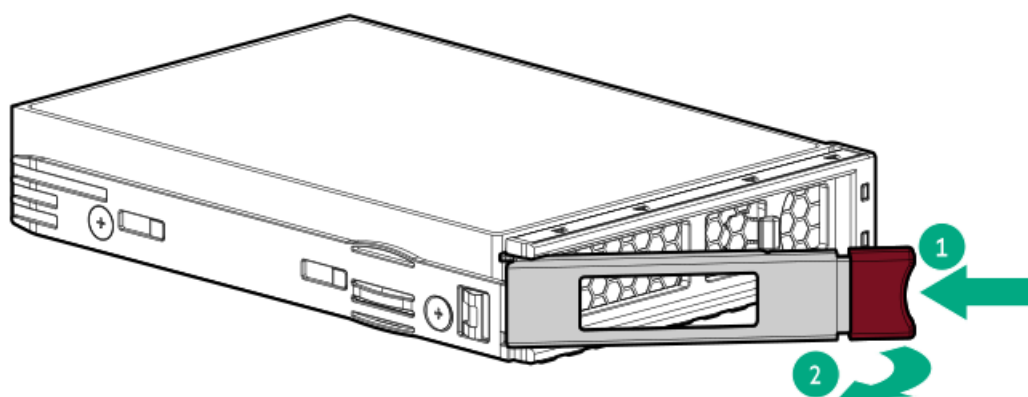


- SFF drive blank

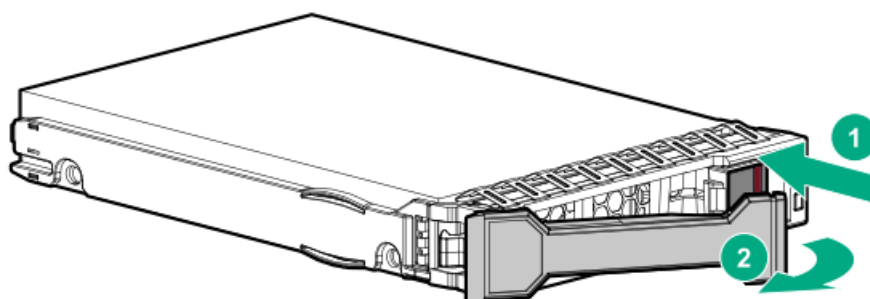


### 3. Prepare the drive.

- LFF drive

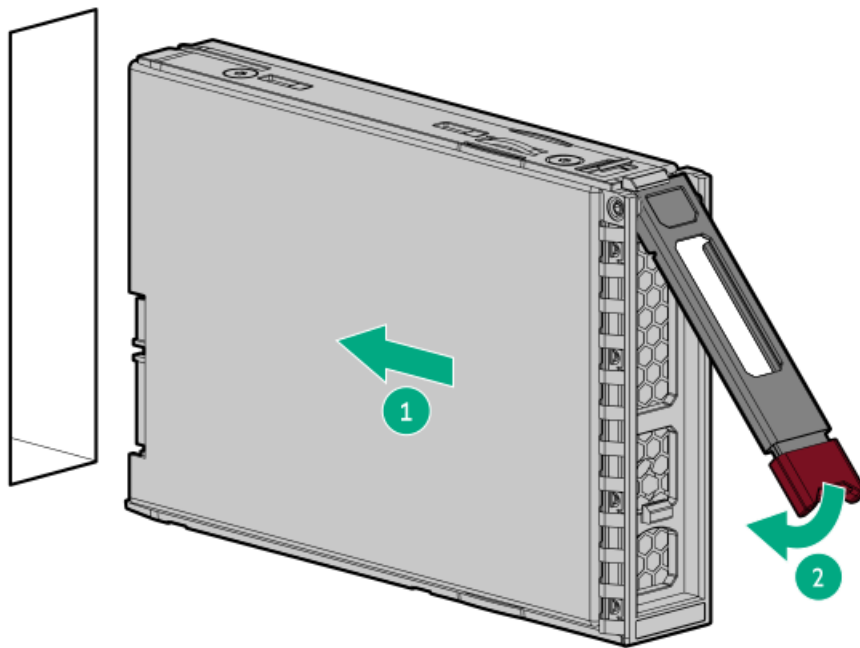


- SFF drive

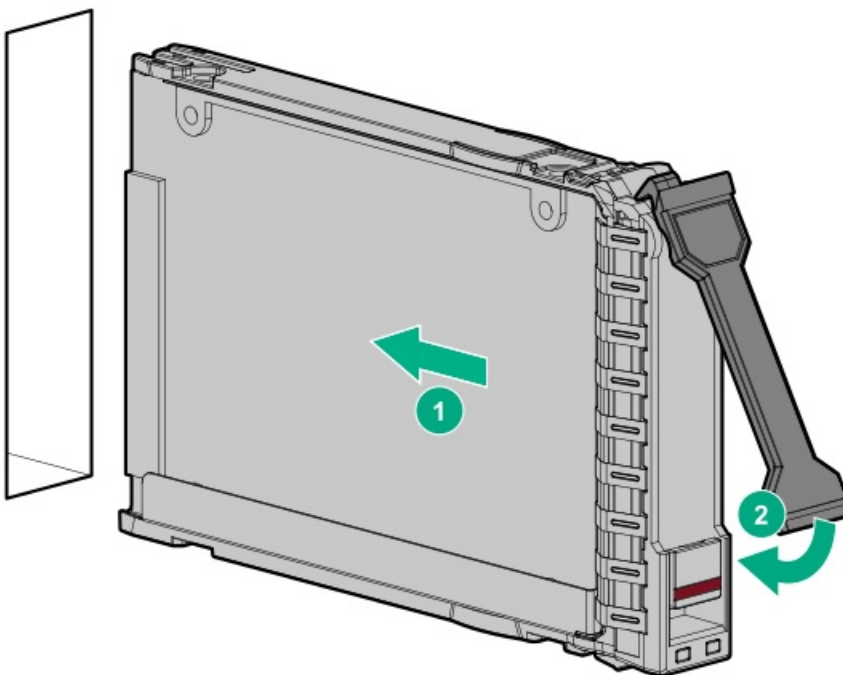


### 4. Install the drive.

- LFF drive



- SFF drive



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

## Results

The installation procedure 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](#).

## Subtopics

[Hot-plug power supply calculations](#)

[Power supply warnings and cautions](#)

[Installing a Flexible Slot power supply](#)

## 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.

## Installing a Flexible Slot power supply

### Prerequisites

Before installing a power supply option, review the [Power supply warnings and cautions](#).

### About this task



**WARNING**

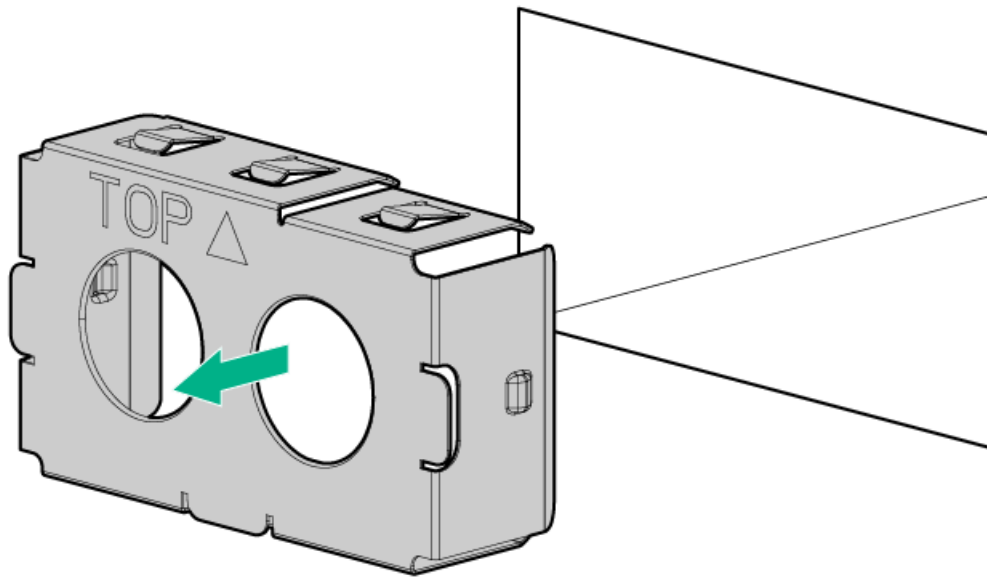
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

**CAUTION**

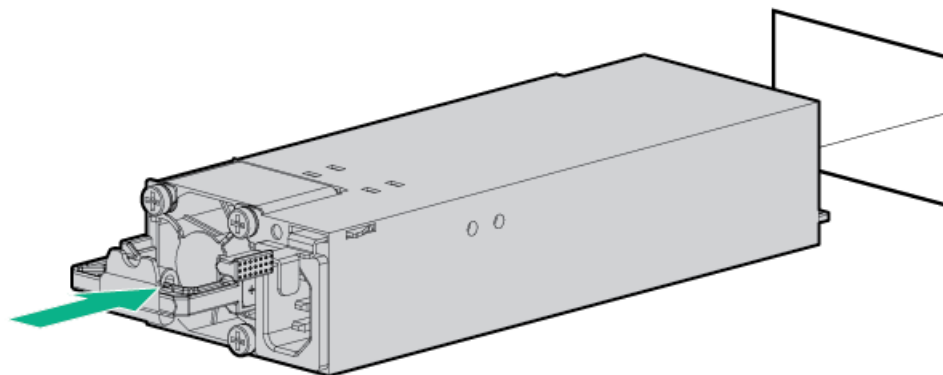
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

**Procedure**

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



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.

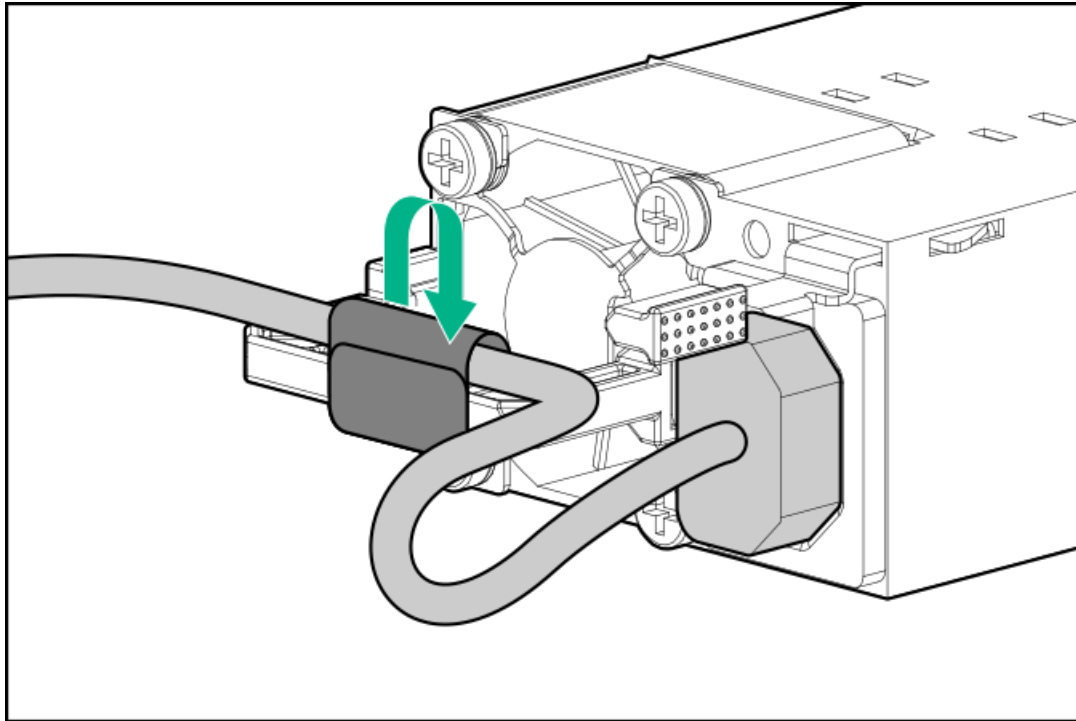




#### CAUTION

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 each power cord to the power source.
6. Make sure that the power supply LED is green.

## Results

The installation is complete.

## Redundant power supply enablement option

The redundant power supply (RPS) enablement option supports the installation of two Flexible Slot (Flex Slot) power supplies. Adding a second power supply provides redundant power support to the server if one power supply fails. You do not have to power down the server before removing or installing a redundant hot-plug power supply.

### Subtopics

[Installing the RPS enablement option](#)

## Installing the RPS enablement option

### Prerequisites

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

## About this task

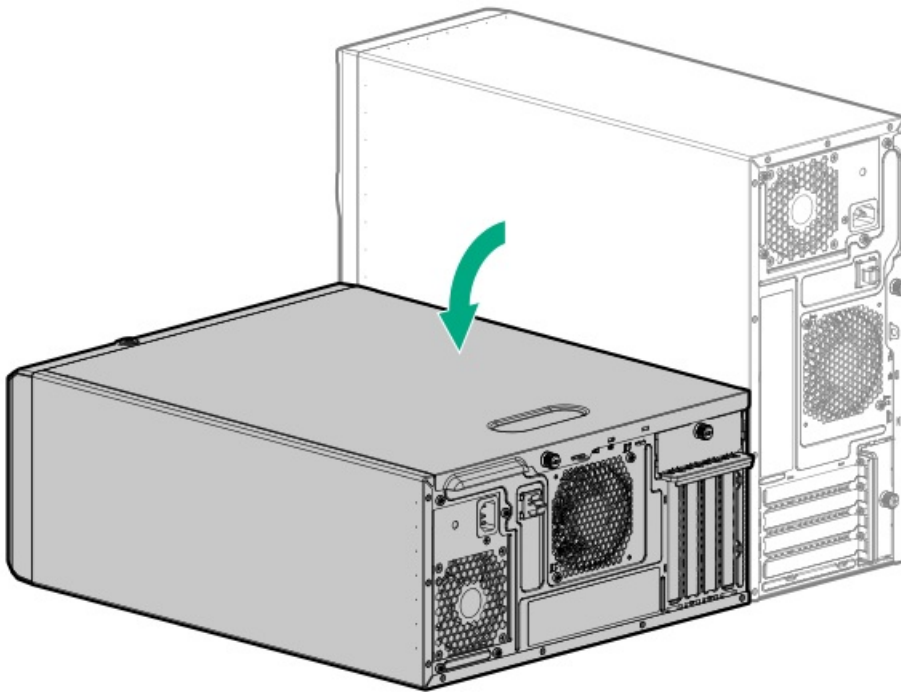


### CAUTION

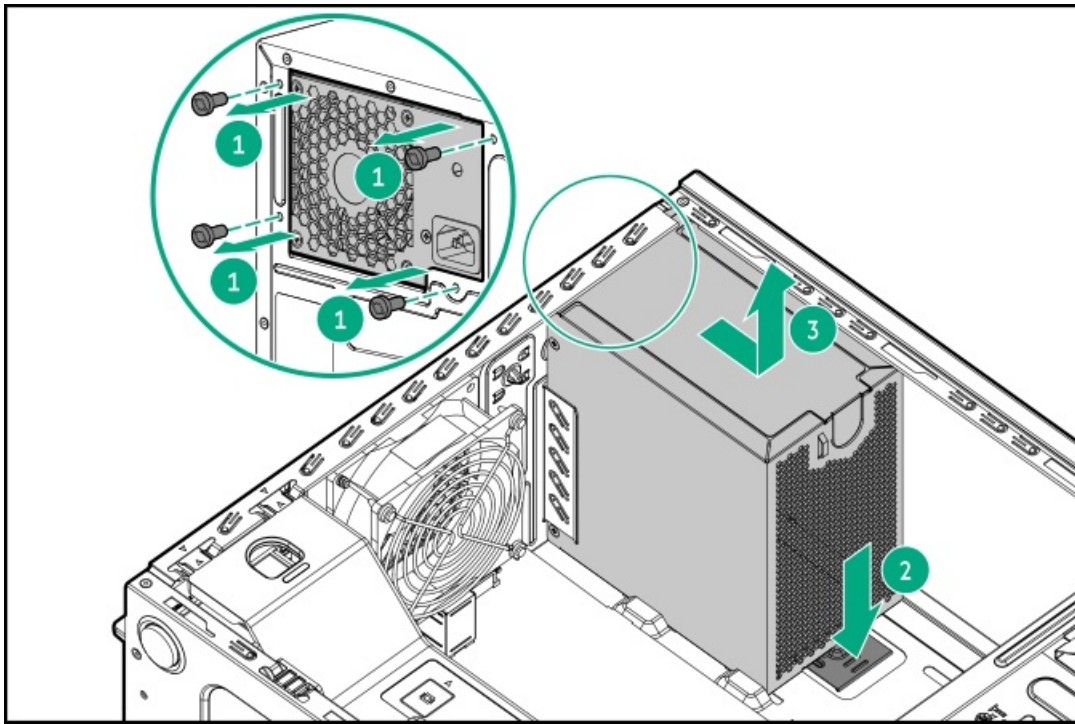
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

## Procedure

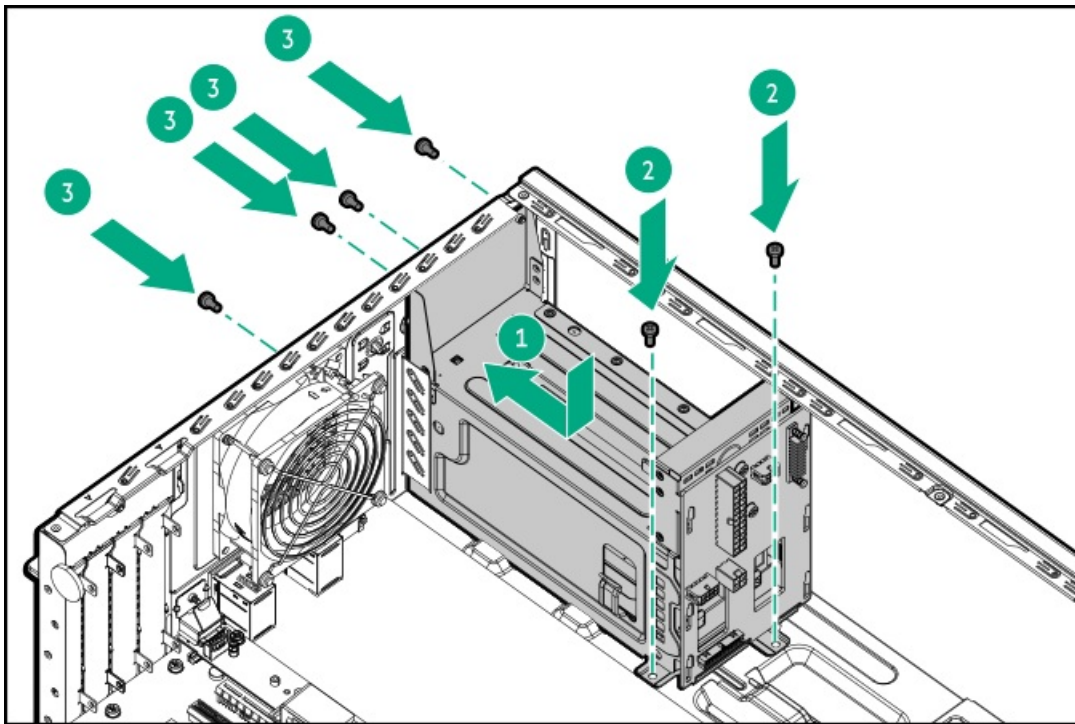
1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



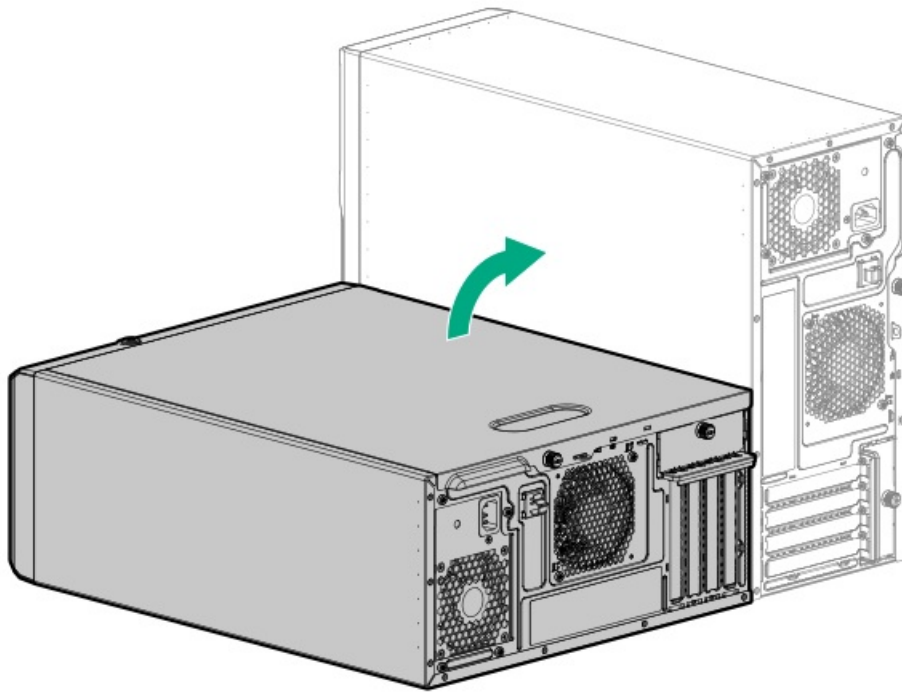
- If the server is in rack mode, [remove the server from the rack](#).
5. [Remove the access panel](#).
  6. If installed, [remove all media drives](#).
  7. [Disconnect all non-hot-plug power supply cables](#).
  8. Remove the non-hot-plug power supply:
    - a. Remove the power supply screws.
    - b. Press and hold the release latch, and then remove the power supply.



9. Install the RPS cage.



10. If only one power supply is going to be installed in the RPS cage, make sure that the blank in the power supply bay 2 is firmly secured.
11. Connect the RPS cables.
12. Install the access panel.
13. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.

14. Install the Flexible Slot power supplies.
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server.

## Results

The installation procedure is complete.

## Media device options

The server has two media bays that support the following media devices. Only one of each media device type can be installed at one time.

- Media bay 1—SATA optical drive, SAS LTO tape drive, or USB RDX docking station
- Media bay 2—SATA optical drive or USB RDX docking station

### Subtopics

SAS LTO tape drive option

USB RDX backup system option

Optical drive option

## SAS LTO tape drive option

Install an LTO tape drive system as an economical and scalable option for long-term storage of infrequently accessed, yet essential data. The backup system consists of two components:

- Tape drive
- Tape cartridge

## Subtopics

### Installing a SAS LTO tape drive

## Installing a SAS LTO tape drive

### Prerequisites

- Make sure that a dedicated HPE type-p SAS controller is installed. This SAS controller can not be shared with the LFF/SFF SAS drives.
- The LTO/RDX power extension cable (851615-B21) is required when installing an LTO tape drive under the following conditions:
  - The server is using a non-hot-plug power supply.
  - The server is using a Flexible Slot power supply and a USB RDX docking station is installed in the media bay 2.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

### About this task

Install the LTO tape drive in the media bay 1.



#### 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.



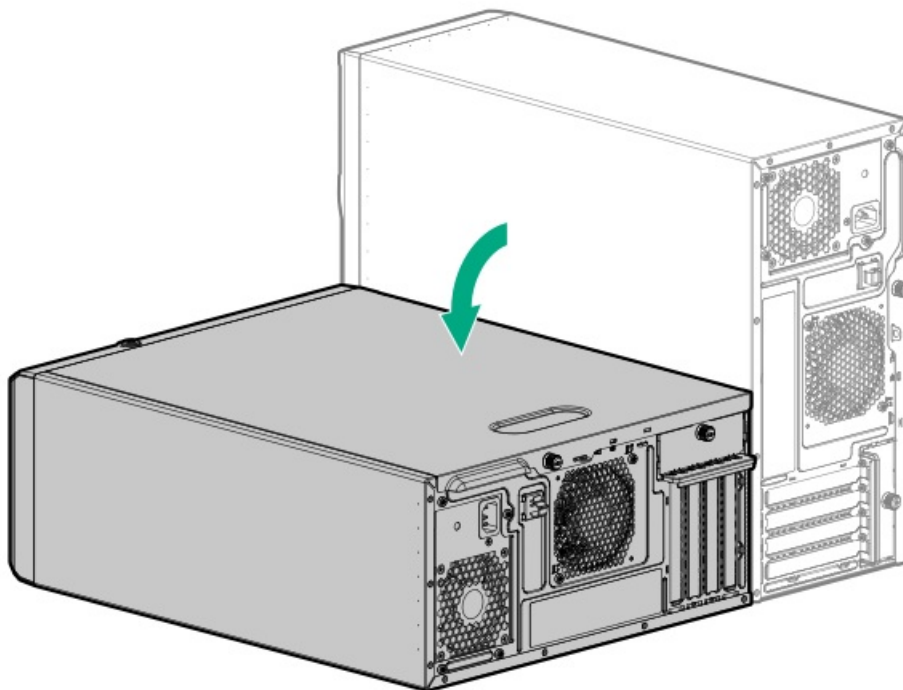
#### CAUTION

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. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.





- If the server is in rack mode, remove the server from the rack.

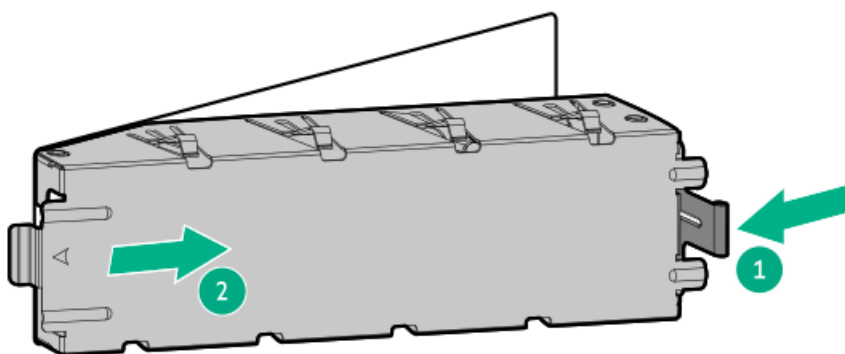
5. Remove the front bezel.

6. Remove the access panel.

7. If installed, remove the air baffle.

8. Press and hold the latch, and then pull out the blank from the bay.

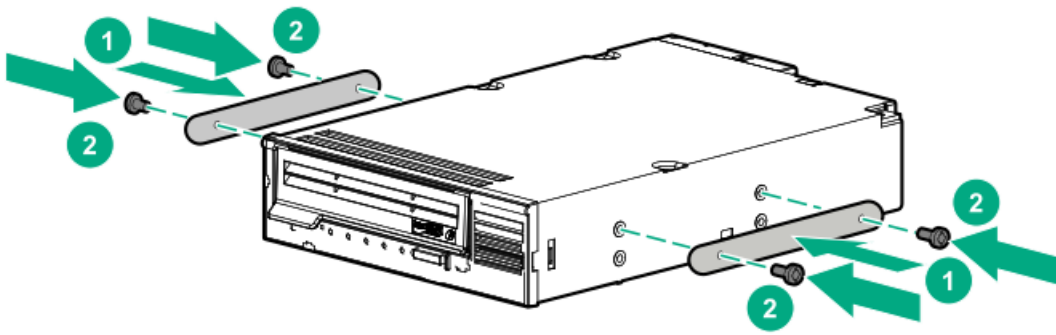
Retain the blank for future use.



9. Secure the metal shims on the LTO tape drive.

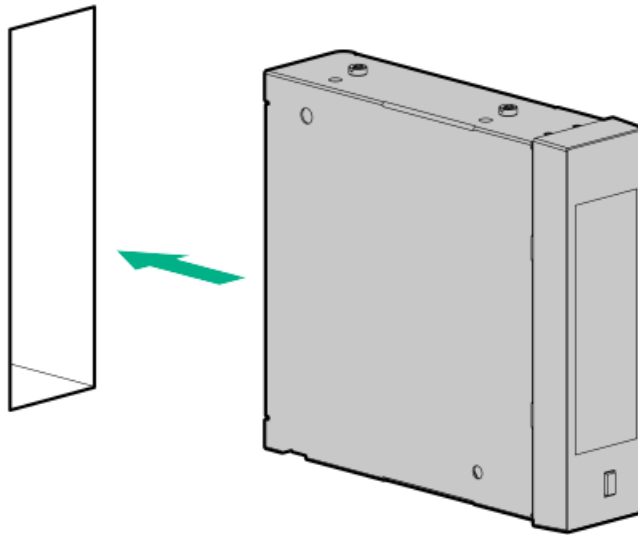
If the option kit does not include screws, use the media device screws on the front panel.

The shims and the screws are included in the LTO tape drive option kit.

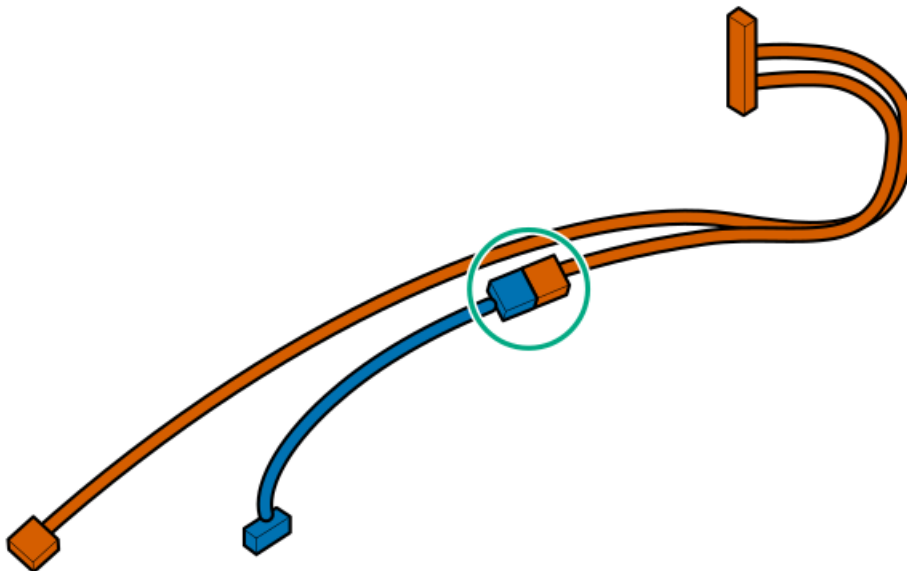


10. Slide the LTO tape drive into the media bay.

Leave enough space on the rear to connect the drive cables.

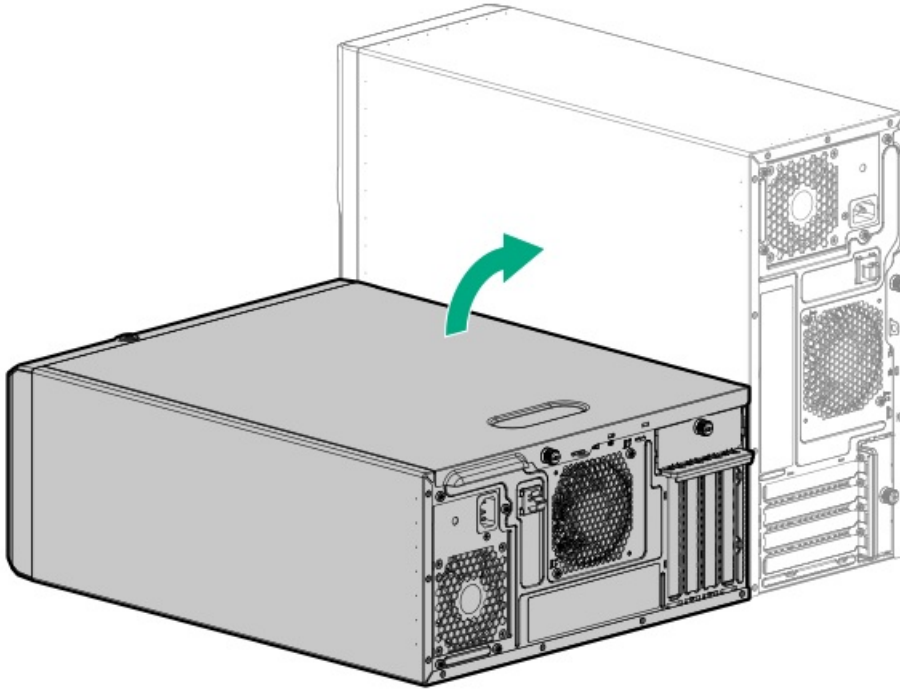


11. If the LTO tape drive is installed under the specified conditions, connect the LTO/RDX power extension cable (blue) to the LTO tape drive SAS-power Y-cable (orange).



12. Connect the drive power and SAS cables.
13. Slide the LTO tape drive into the media bay until it clicks into place.

14. If removed, [install the air baffle](#).
15. [Install the access panel](#).
16. [Install the front bezel](#).
17. Do one of the following:
  - Orient the server back in tower mode.



- [Install the server into the rack](#).
18. Connect all peripheral cables to the server.
  19. Connect each power cord to the server.
  20. Connect each power cord to the power source.
  21. [Power up the server](#).
  22. Perform the configuration procedure required by the tape drive option.

For more information, see the drive documentation.

## Results

The installation procedure is complete.

## USB RDX backup system option

Install an RDX backup system as an inexpensive and portable way of storing data backups. The ruggedized design of this backup system works especially well in harsh work environments. The backup system consists of two components:

- RDX docking station
- RDX cartridge

For more information on installing and configuring the RDX disk backup system, see the RDX product documentation:





## Subtopics

### Installing a USB RDX docking station

## Installing a USB RDX docking station

### Prerequisites

- Make sure that the internal USB port is available.
- The LTO/RDX power extension cable (851615-B21) is required when installing a USB RDX docking station under the following conditions:
  - The server is using a non-hot-plug power supply.
  - The server is using a Flexible Slot power supply and a USB RDX docking station is installed in the media bay 2.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

### About this task

Install an RDX docking station in either media bay 1 or 2.



#### 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.

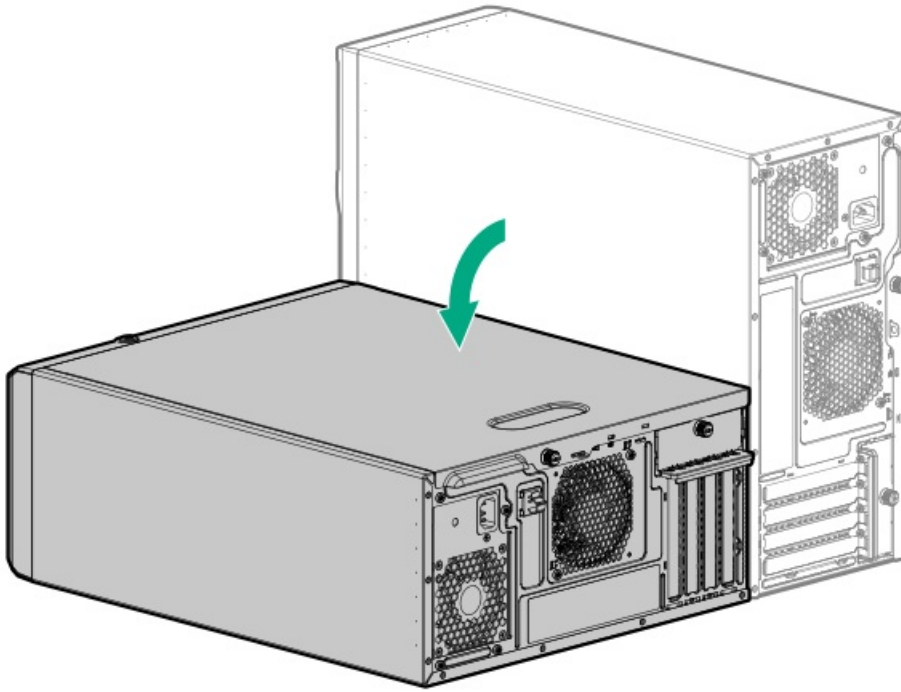


#### CAUTION

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

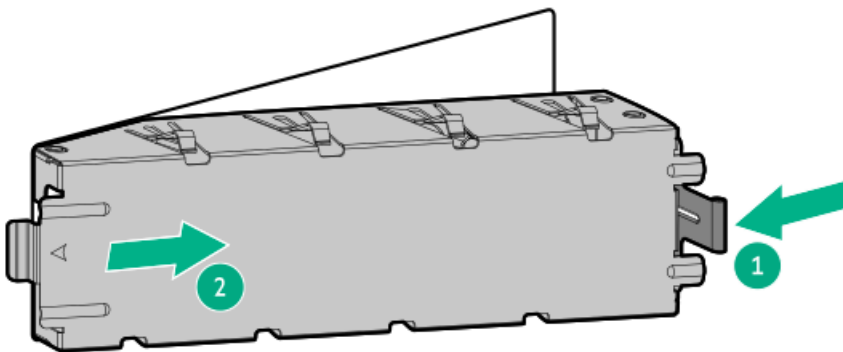
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.

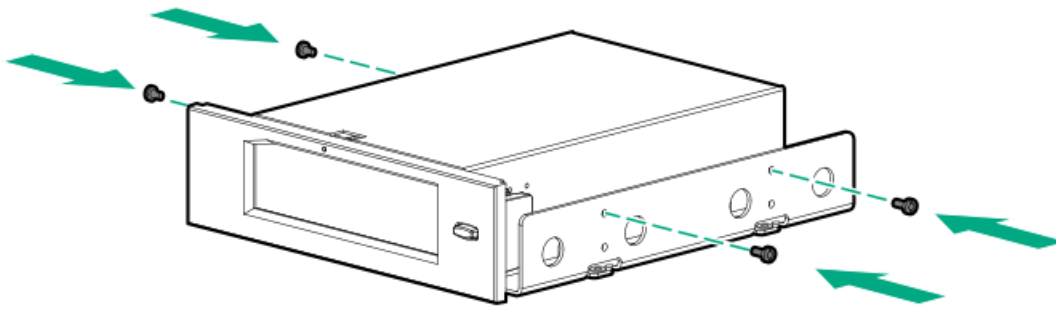
5. Remove the front bezel.
6. Remove the access panel.
7. If installed, remove the air baffle.
8. Press and hold the latch, and then pull out the blank from the bay.

Retain the blank for future use.



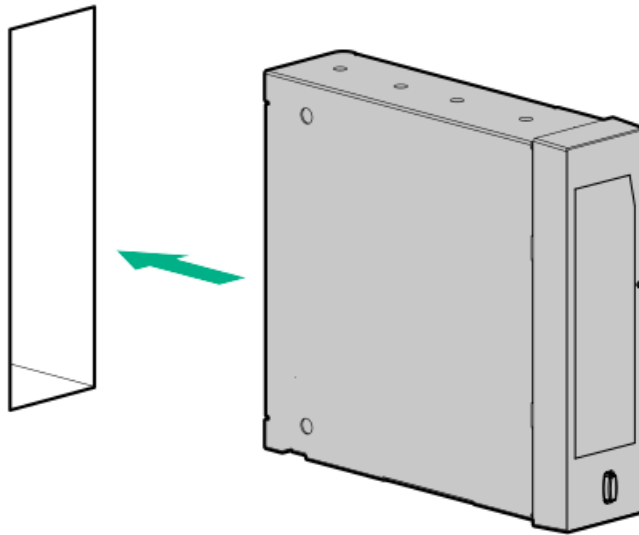
9. Install the RDX docking station screws.

These screws are included in the RDX docking station option kit. If the option kit does not include screws, use the media device screws on the front panel.

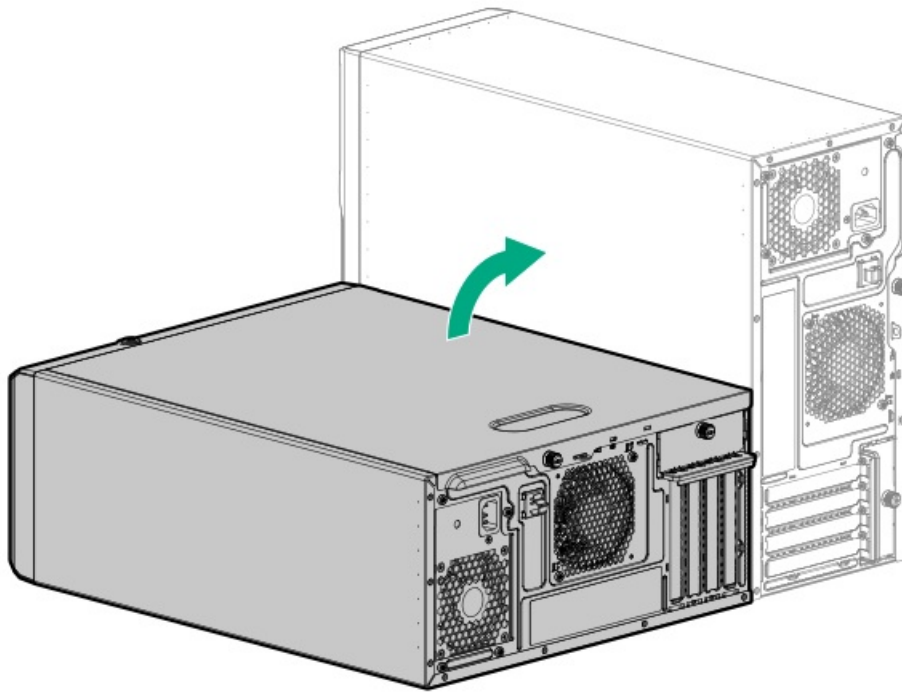


10. Slide the RDX docking station into the media bay.

Leave enough space on the rear to connect the USB and power cables.



11. Connect the power and USB cables.
12. Slide the RDX docking station into the media bay until it clicks into place.
13. If removed, install the air baffle.
14. Install the access panel.
15. Install the front bezel.
16. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.

17. Connect all peripheral cables to the server.
18. Connect each power cord to the server.
19. Connect each power cord to the power source.
20. Power up the server.
21. Perform the configuration procedure required by the RDX system.

For more information, see the RDX system documentation.

## Results

The installation procedure is complete.

## Optical drive option

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

### Subtopics

#### Installing an optical drive

## Installing an optical drive

### Prerequisites

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

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

## About this task

Install an optical drive in either media bay 1 or 2.



### 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.

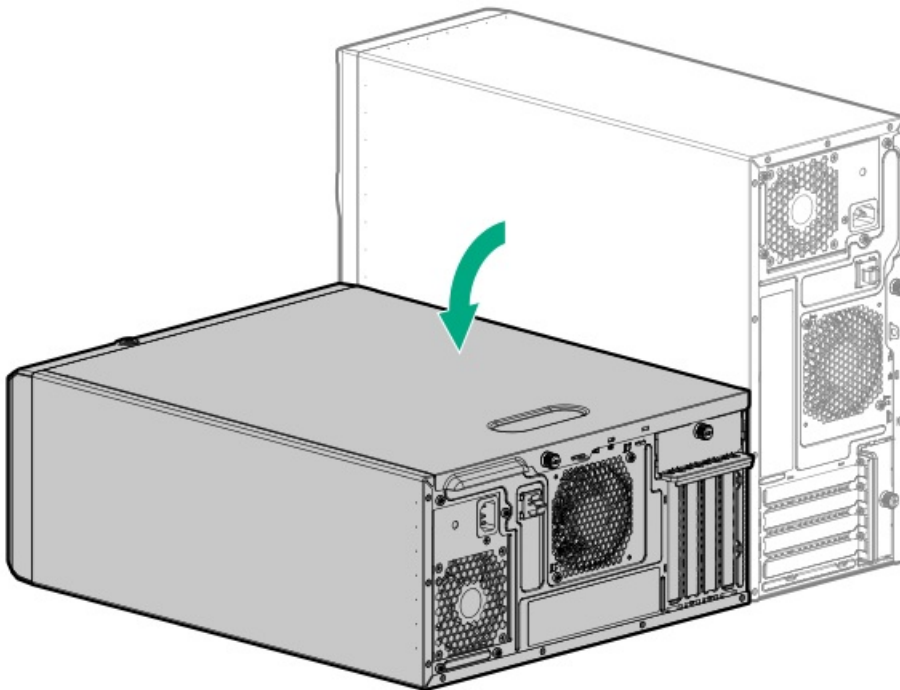


### CAUTION

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

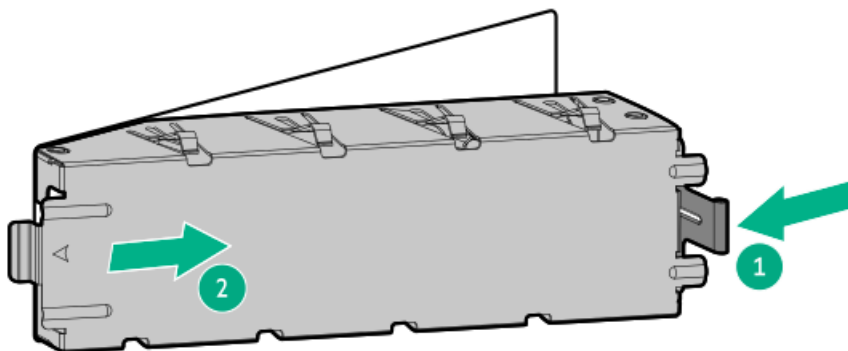
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



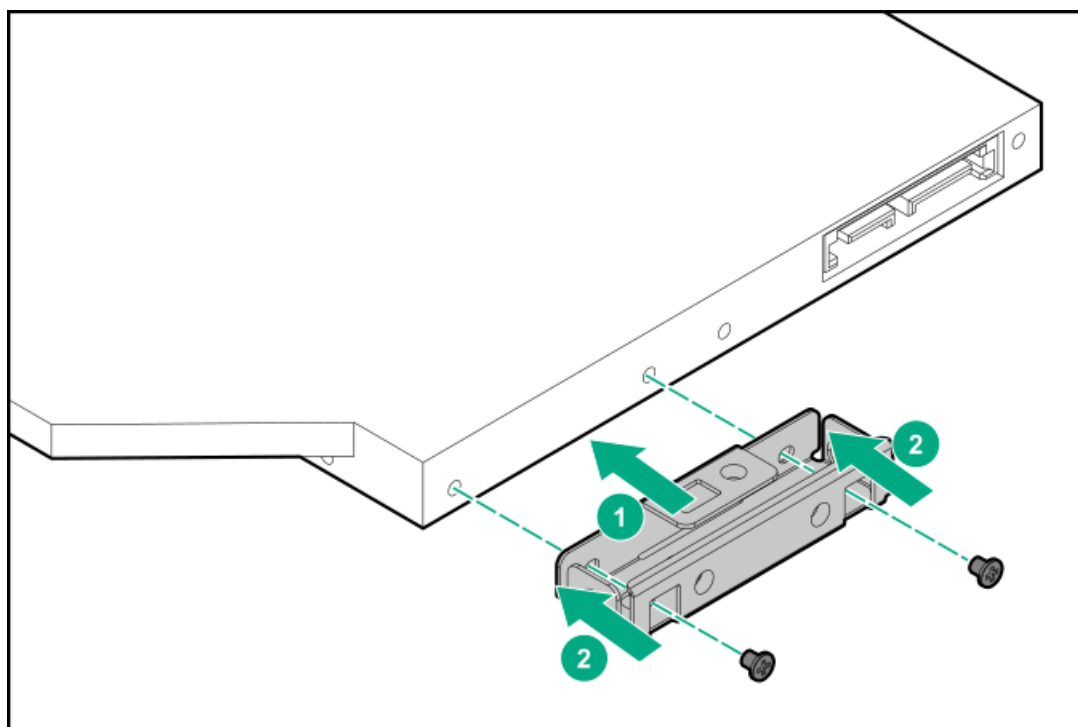
- If the server is in rack mode, remove the server from the rack.
5. Remove the front bezel.
  6. Remove the access panel.
  7. If installed, remove the air baffle.
  8. Press and hold the latch, and then pull out the blank from the bay.

Retain the blank for future use.





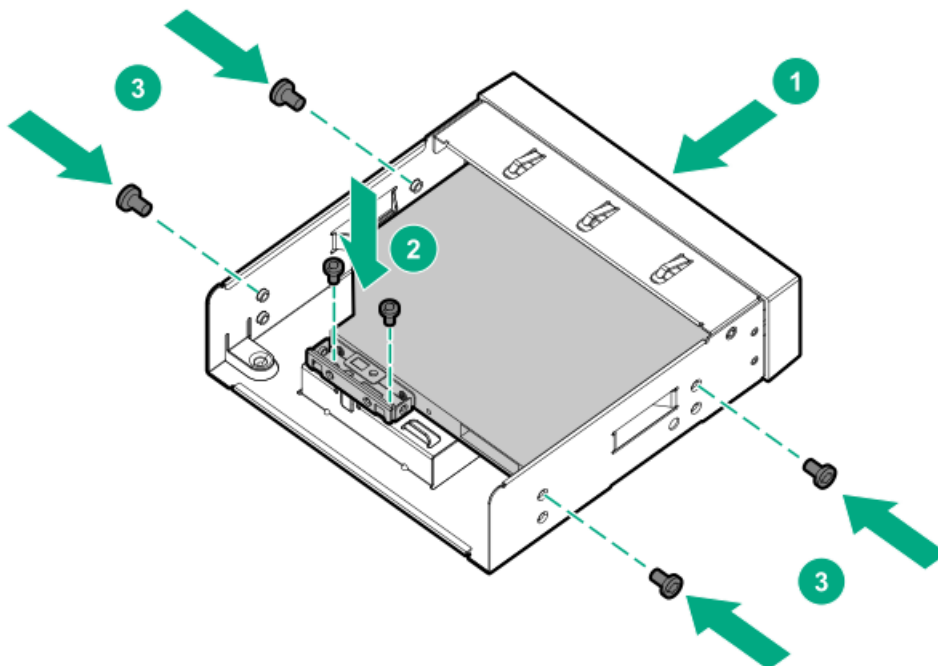
9. Install the optical drive bracket.



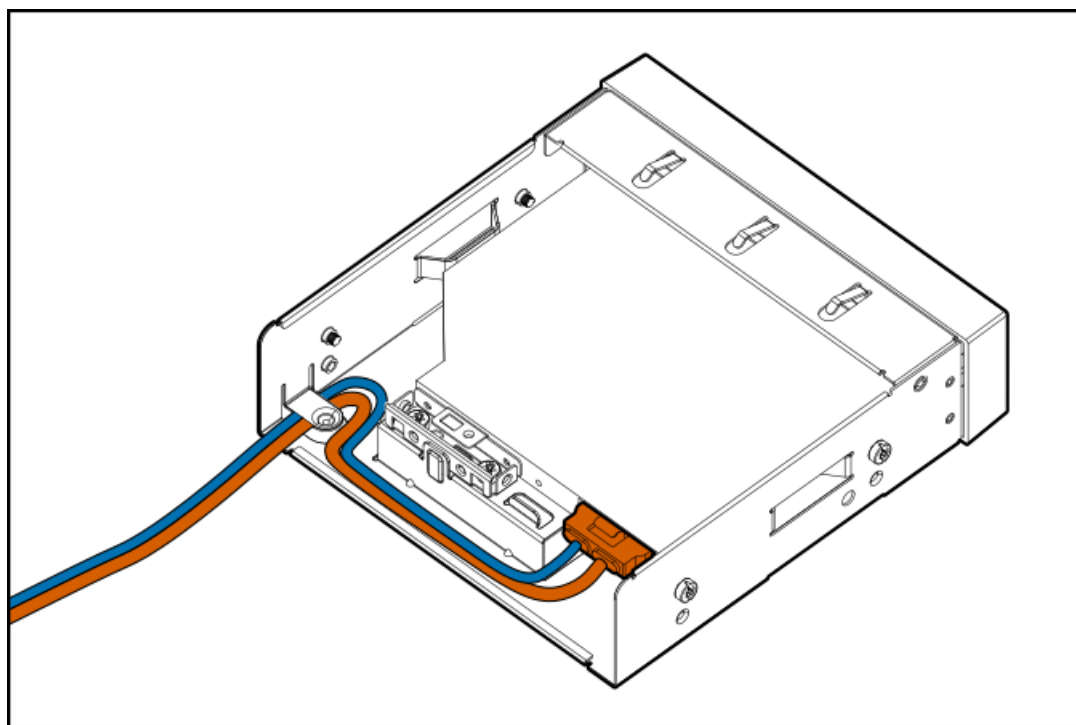
10. Remove four media device screws from the front panel .

11. Install the optical drive in the drive cage:

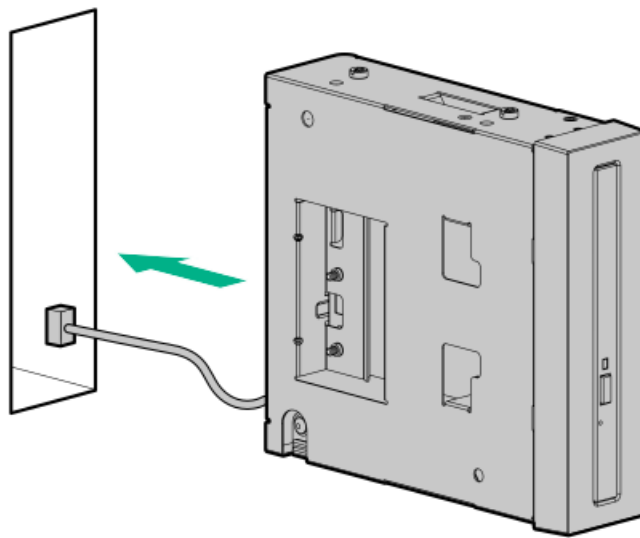
- a. Slide the optical drive into the optical drive cage (callout 1).
- b. Install the drive bracket screws (callout 2).
- c. Install the drive cage screws (callout 3).



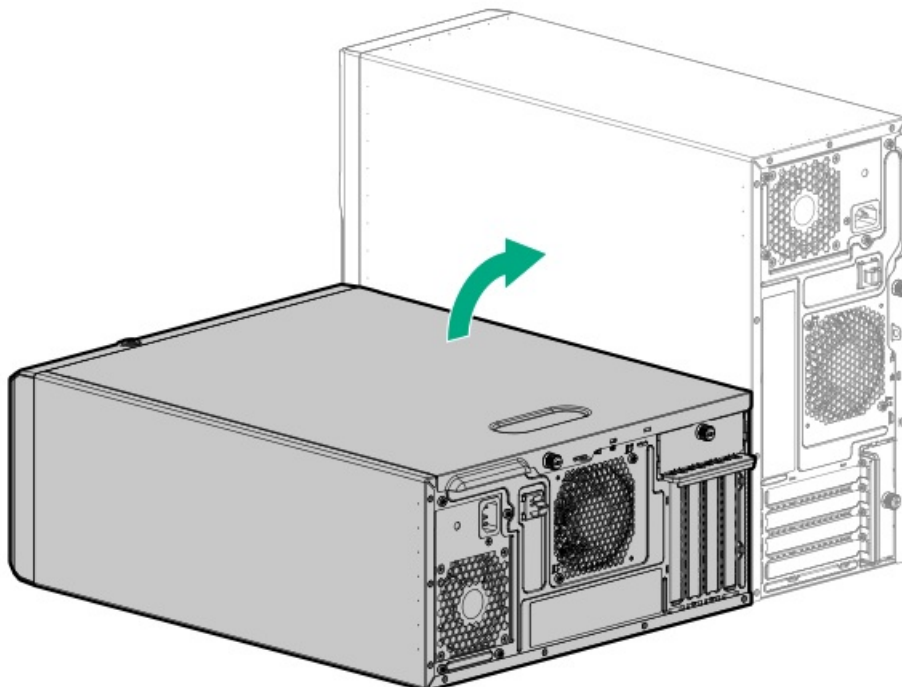
12. Connect the SATA-power Y-cable to the drive, and then route the cable through the clip on the optical drive cage.



13. Slide the optical drive into the media bay until it clicks into place.



14. Connect the power and SATA cables.
15. If removed, install the air baffle.
16. Install the access panel.
17. Install the front bezel.
18. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.
19. Connect all peripheral cables to the server.
  20. Connect each power cord to the server.
  21. Connect each power cord to the power source.
  22. Power up the server.





## Results

The installation procedure is complete.

## PCI fan and air baffle options

To meet the system thermal requirements, the following hardware configurations require the PCI fan and air baffle:

- Server operating in rack mode
- 4 LFF hot-plug SAS/SATA drive configuration
- 8 SFF hot-plug SAS/SATA drive configuration
- 4 LFF non-hot-plug SATA drive configuration with the following expansion options installed:
  - M.2 SSD
  - HPE P-class type-p storage controller
  - GPU (workload, computational, or graphics GPU)
  - Ethernet adapter with 10 Gb or faster speed
  - Fibre channel host bus adapter (FC HBA)

For more information on specific expansion options validated for this server, see the product QuickSpecs on the HPE ProLiant ML30 Gen10 Plus Server website:

<https://www.hpe.com/info/quickspecs>

### Subtopics

[Installing the PCI fan and air baffle](#)

## Installing the PCI fan and air baffle

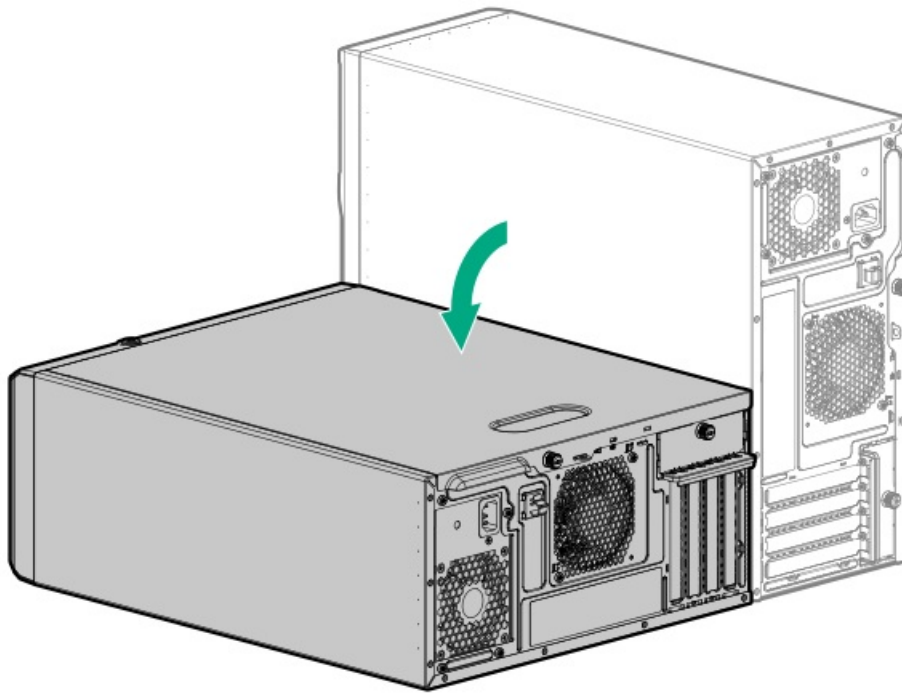
### Prerequisites

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

### Procedure

1. [Power down the server.](#)
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.





- If the server is in rack mode, remove the server from the rack.

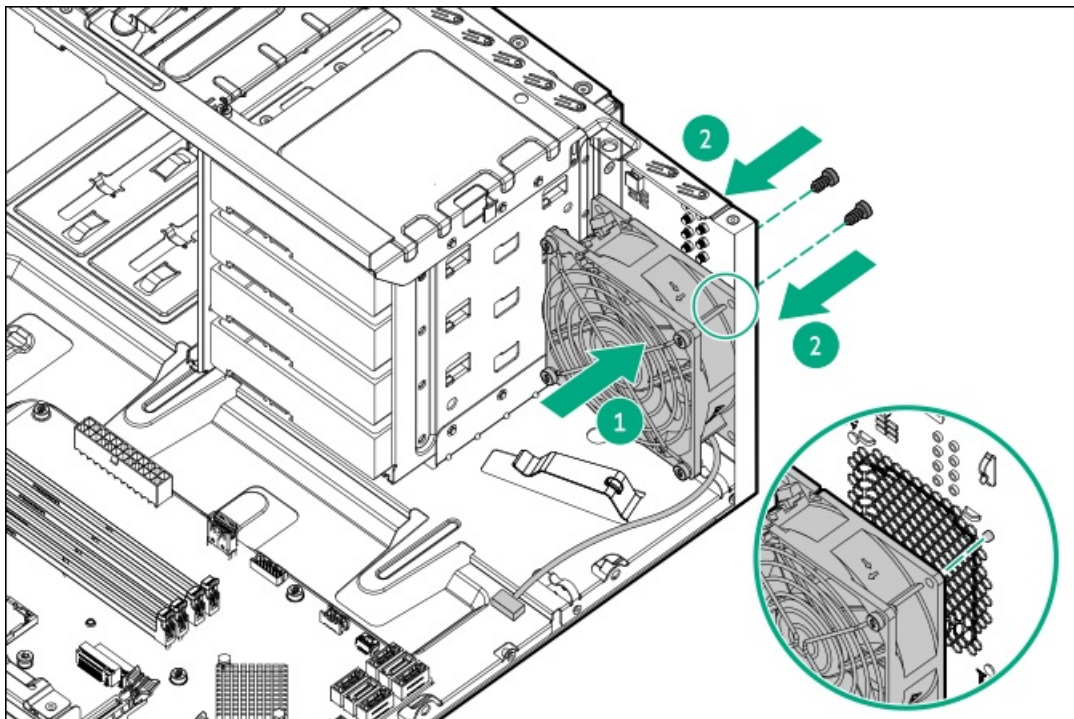
5. Remove the front bezel.

6. Remove the access panel.

7. If needed, disconnect any system cables that might be blocking access to the bottom side of the drive cage.

8. Install the PCI fan:

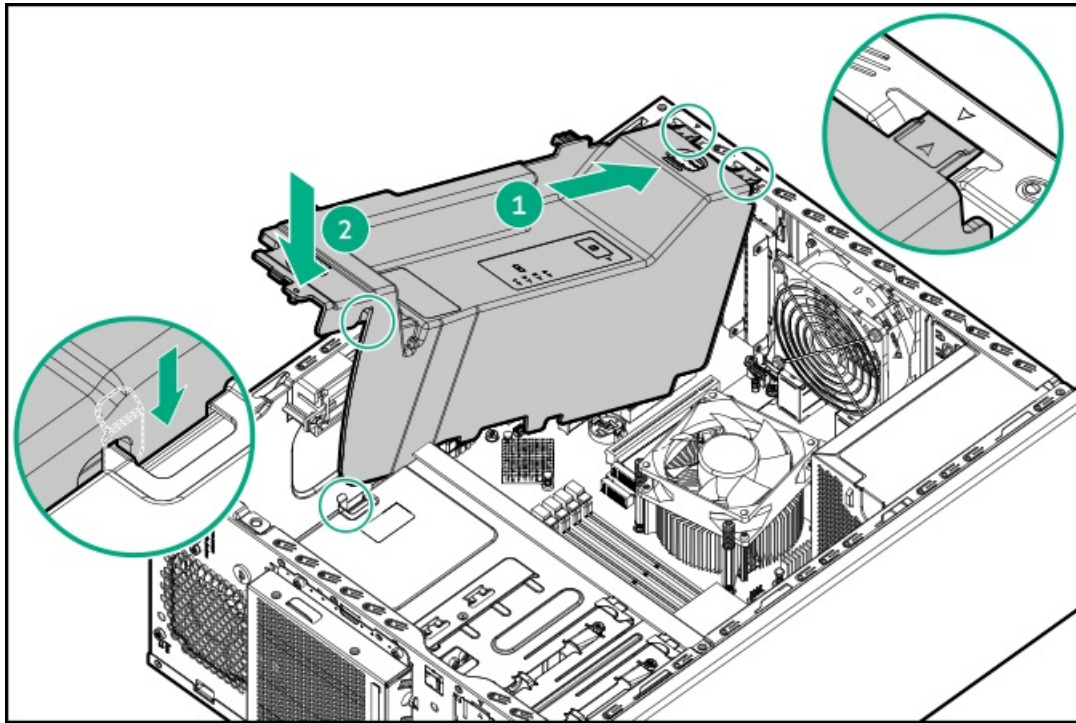
- Align the spool on the chassis wall with the notches on the fan (callout 1).
- Install the fan screws (callout 2).



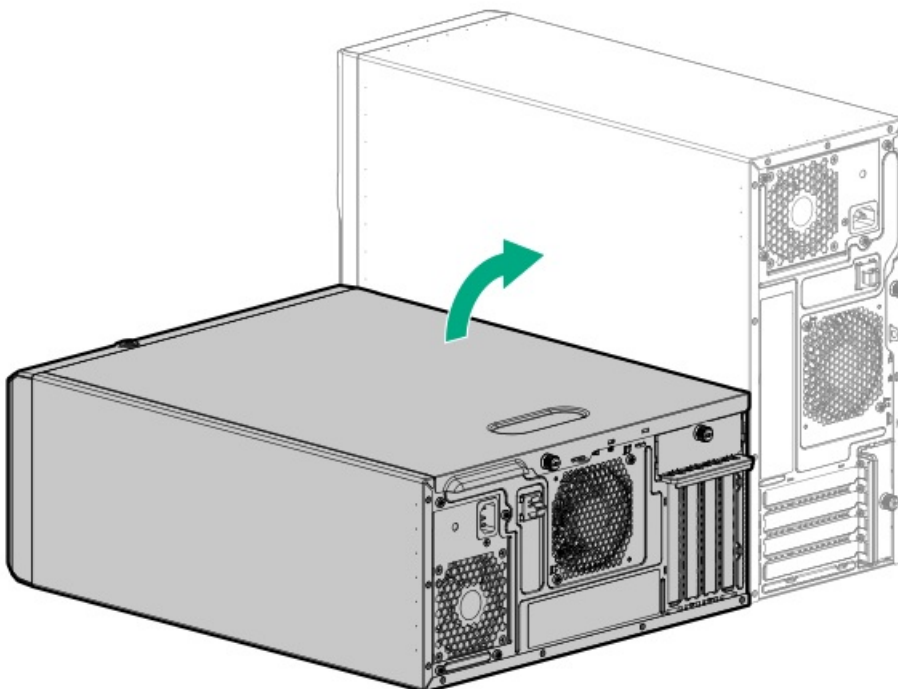
9. Connect the PCI fan cable.

10. Reconnect any system cables that were disconnected in step 7.

11. Install the air baffle:
  - a. Insert the baffle tabs into the slots on the rear chassis (callout 1).
  - b. Press the front end of the baffle into the chassis (callout 2).



12. Install the access panel.
13. Install the front bezel.
14. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.

15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server.

## Results

The installation procedure is complete.

## Storage controller options

The server supports the following storage controllers:

- Intel Virtual RAID on CPU (Intel VROC) —Provides software RAID support for direct attached SATA drives. This controller supports SATA RAID 0, 1, 5, 10 levels . For more information on Intel VROC, see the OS-specific user guide:

<https://www.hpe.com/support/IntelVROC-Gen10Plus-docs>

- Type-p PCIe plug-in storage controller option —Supports hardware RAID for SAS and SATA drives.

For more information on drive array and storage controller configuration, see [Configuring storage controllers](#).

### Subtopics

[Preparing the server for storage controller installation](#)

[Installing a type-p PCIe plug-in controller option](#)

## 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 the server firmware is not the latest revision, update the firmware.
3. If the new controller is the new boot device, install the controller drivers.



# Installing a type-p PCIe plug-in controller option

## Prerequisites

- The flash-backed write cache (FBWC) feature of some storage controllers requires the [energy pack option](#).  
For more information, see the controller QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/qs>).
- [Make sure that the PCI fan is installed](#).
- Before you perform this procedure, make sure that you have the following items available:
  - Compatible controller cable option
  - T-15 Torx screwdriver

## About this task



### 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](#).

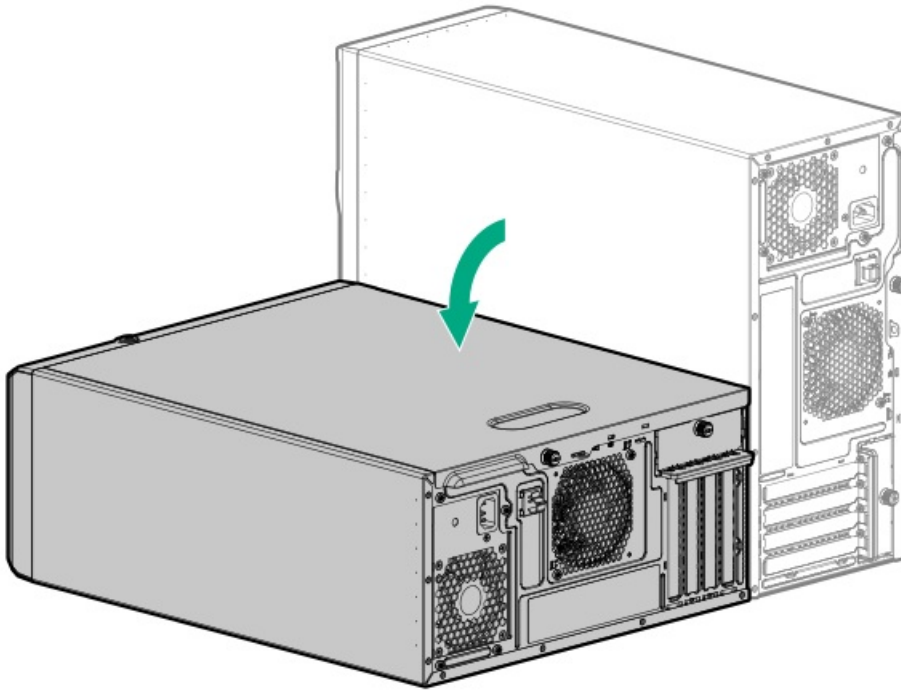


### CAUTION

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

## Procedure

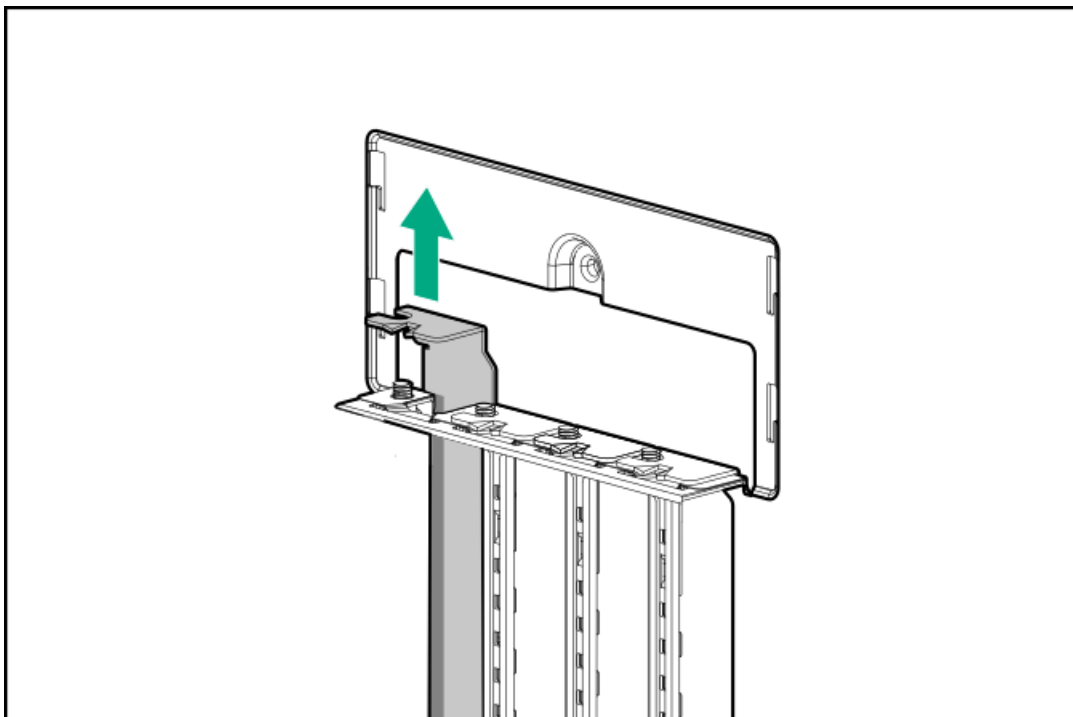
1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.

5. Remove the access panel.
6. Remove the air baffle.
7. Identify the expansion slot compatible with the storage controller.
8. Remove the PCI blank retainer.
9. Remove the blank opposite the selected expansion slot.

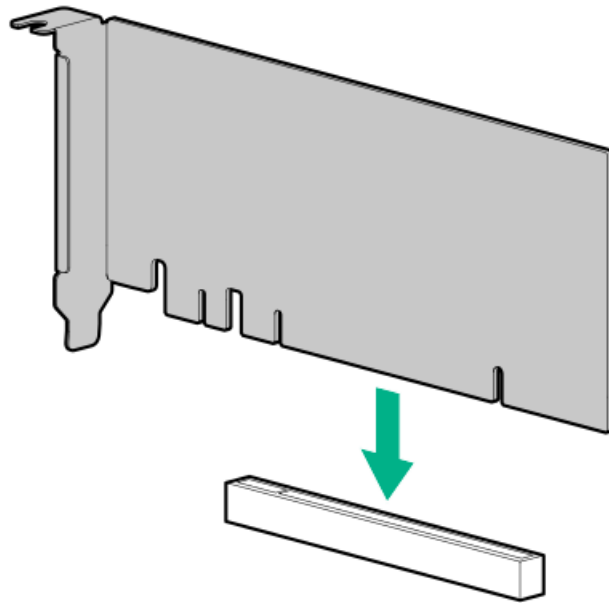
Retain the blank for future use.



10. Install the storage controller.

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





11. To enable the HPE SR SmartCache feature, install an 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.

12. Install the PCI blank retainer.

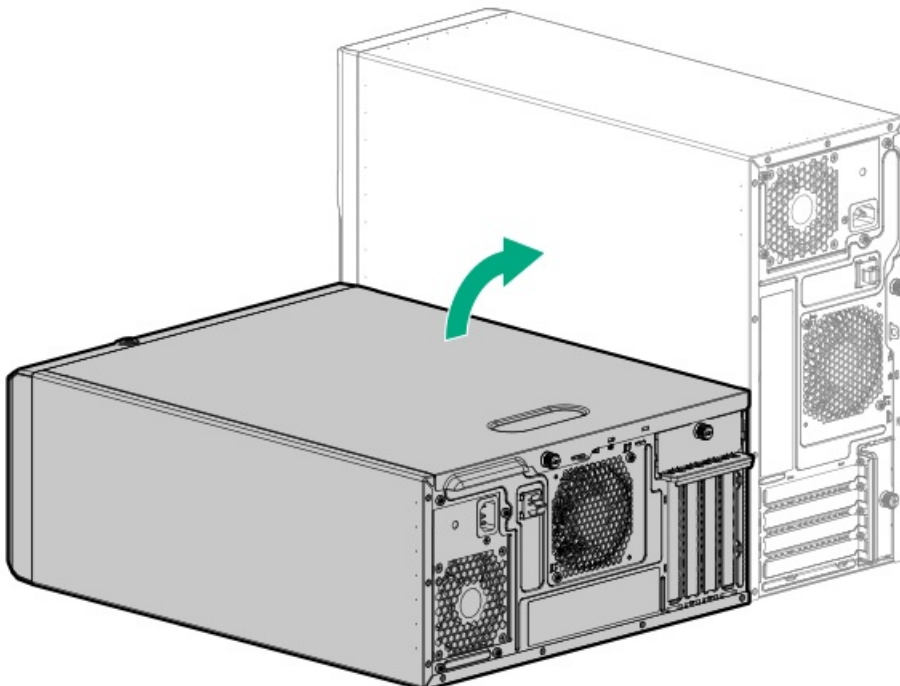
13. Cable the controller.

14. Install the air baffle.

15. Install the access panel.

16. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.





17. Connect all peripheral cables to the server.
18. Connect each power cord to the server.
19. Connect each power cord to the power source.
20. Power up the server.
21. To configure the controller, see the relevant storage controller guide.

## Results

The installation procedure is complete.

## 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 M.2 NVMe SSDs.
- This boot device enables the deployed OS to be mirrored through a dedicated hardware RAID 1.
- The boot device auto-creates a RAID 1 volume during boot. This means the boot device does not require further RAID configuration.
- This boot device is compatible with the following native OS:
  - Windows
  - Linux
  - VMware
- This boot device uses native inbox OS NVMe drivers.

### Subtopics

[Installing the NS204i-p Gen10 Plus Boot Device option](#)

## Installing the NS204i-p Gen10 Plus Boot Device option

### Prerequisites

- Verify that your OS or virtualization software is supported:  
<https://www.hpe.com/support/Servers-Certification-Matrices>
- Verify that you are running the latest iLO firmware and server BIOS version
- Make sure that the PCI fan is installed
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### About this task



#### 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 PCIe slots have either an expansion slot cover or an expansion card installed.



### IMPORTANT

For successful RAID 1 configuration, verify that the boot device SSDs have the same model number and firmware version:

- In the iLO web interface, see the Storage page.
- In UEFI System Utilities, see [System Configuration > HPE NS204i Boot Controller > Physical Device Information](#).

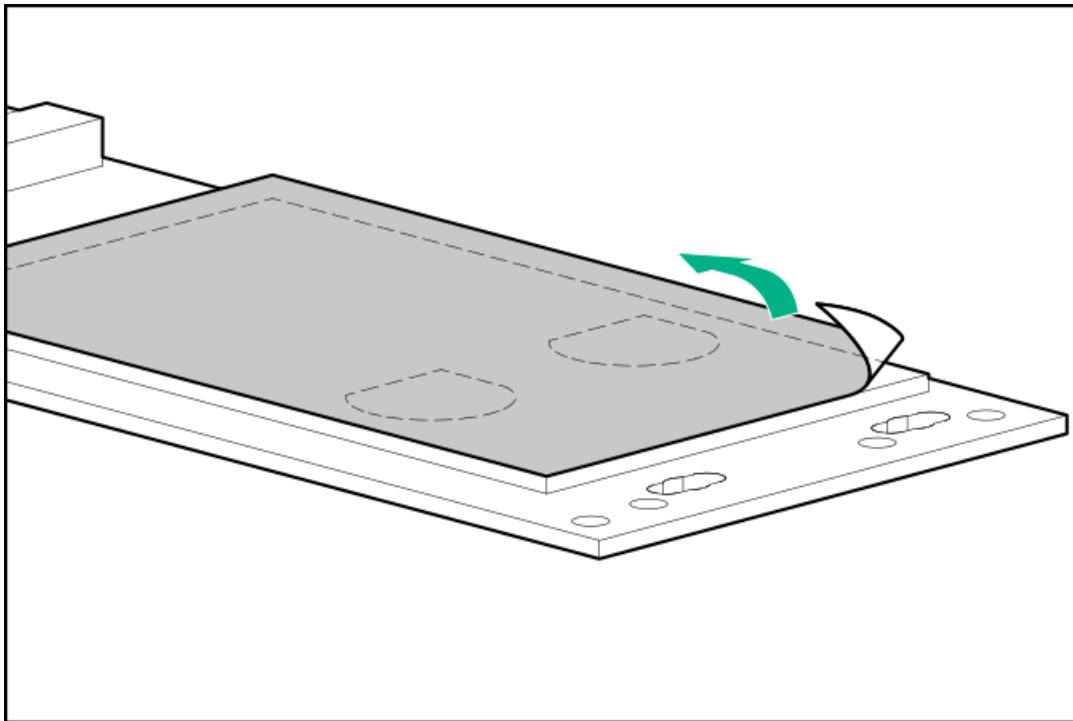
Configurations with SSDs from different manufacturers are not supported.

The P13688-004 SSD has reached its end of life and is no longer available. If you are replacing a P13688-004 SSD, you must replace both SSDs.

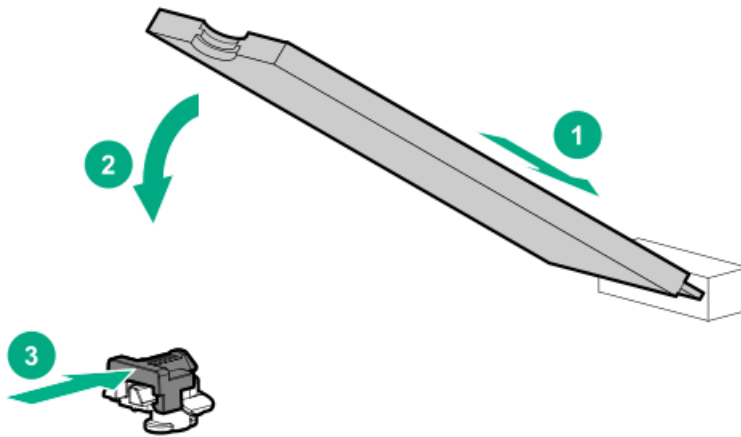
## Procedure

### Installing drives onto the boot device

1. Remove the liner from the thermal interface pad.



2. Install the drive on the boot device:
  - a. Insert the SSD into the M.2 slot at a 45° angle.
  - b. Carefully press the SSD down to the horizontal position.
  - c. Close the retaining latch.



### Installing the boot device

3. Power down the server.

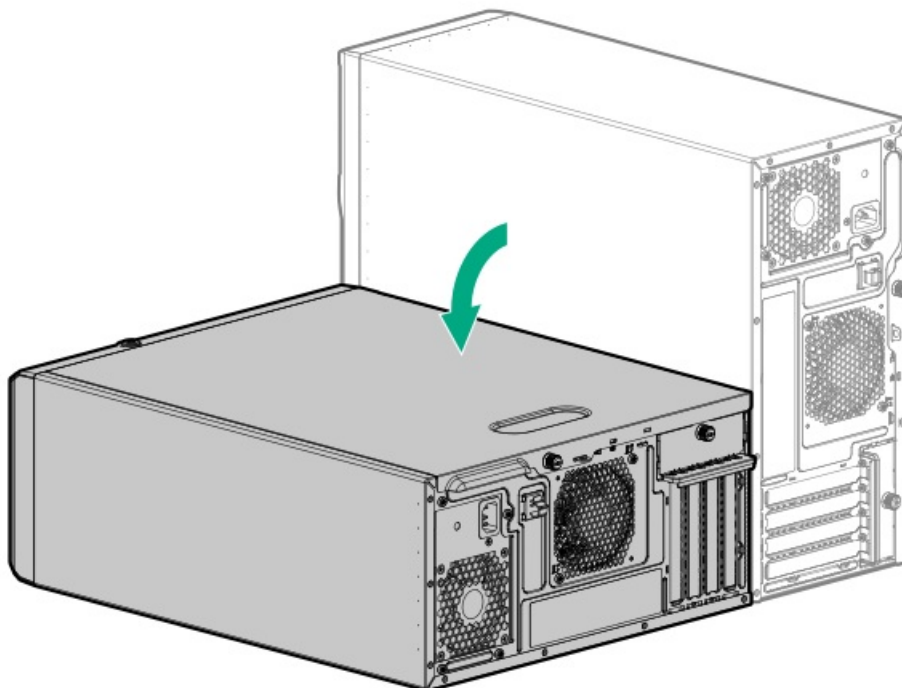
4. Remove all power:

- a. Disconnect each power cord from the power source.
- b. Disconnect each power cord from the server.

5. Disconnect all peripheral cables from the server.

6. Do one of the following:

- If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.

7. Remove the access panel.

8. Remove the air baffle.

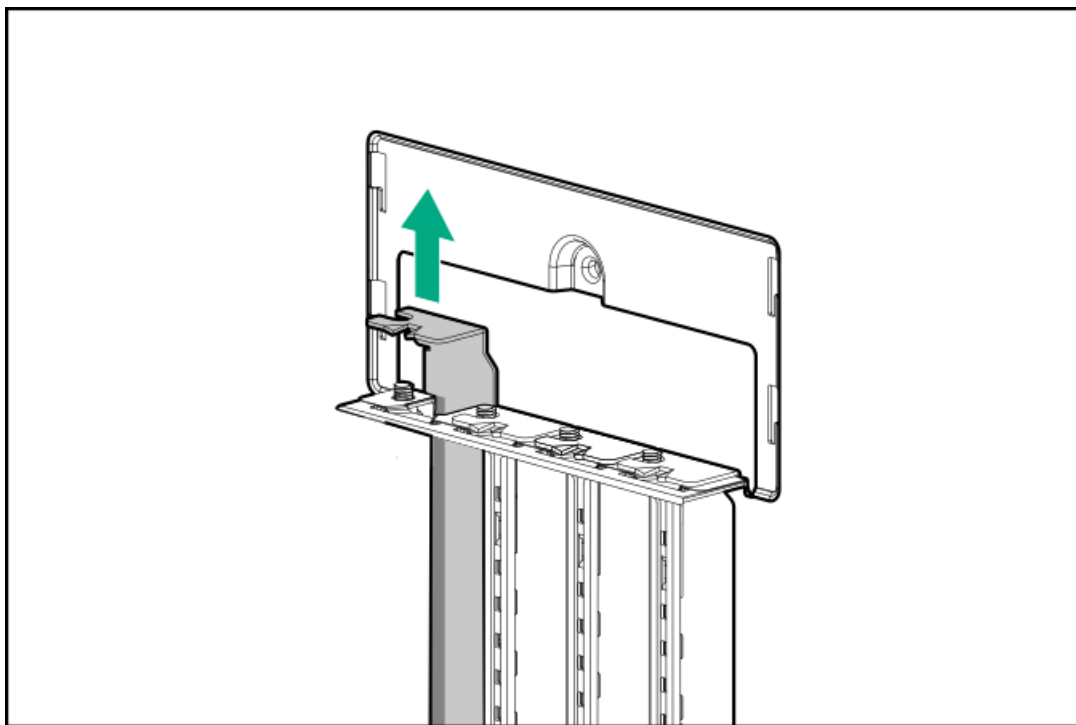
9. Identify the expansion slot compatible with the boot device.

10. Remove the PCI blank retainer.

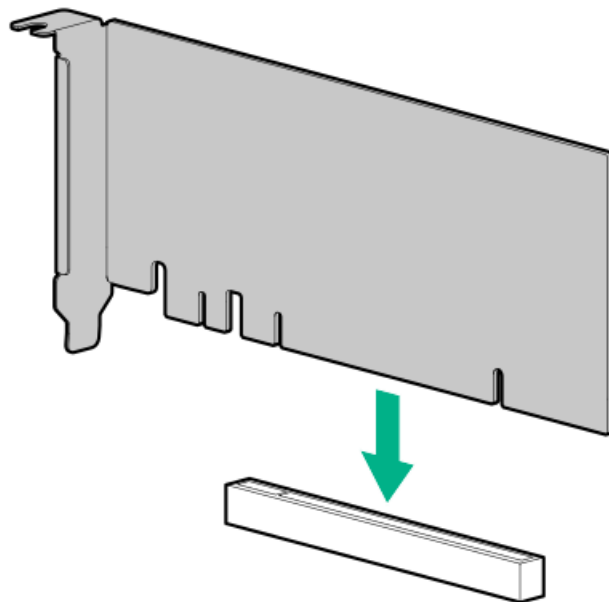


11. Remove the blank opposite the selected expansion slot.

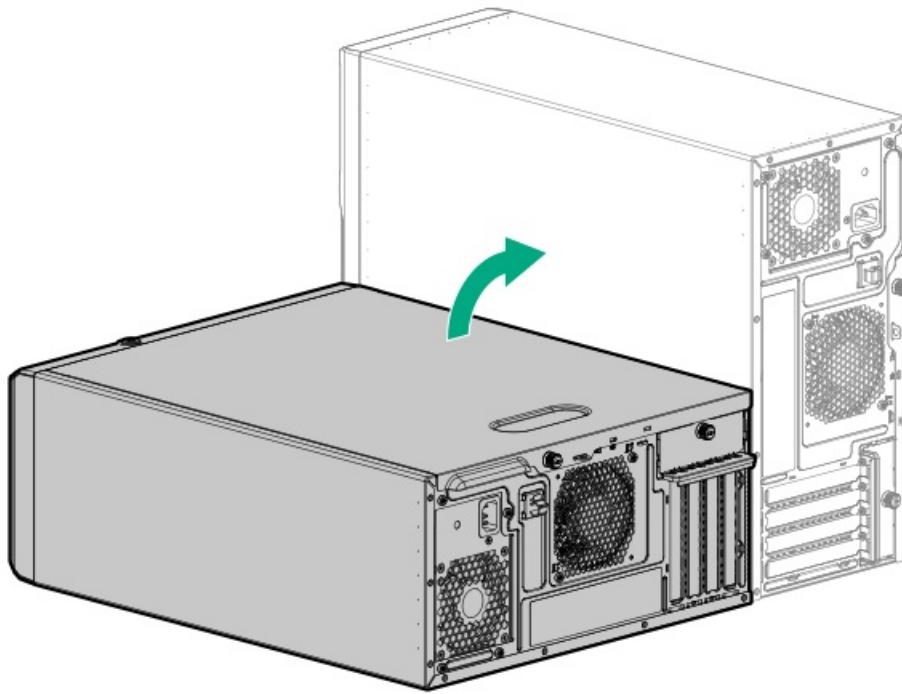
Retain the blank for future use.



12. Install the boot device.



13. Install the PCI blank retainer.
14. Install the air baffle.
15. Install the access panel.
16. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.

17. Connect all peripheral cables to the server.
18. Connect each power cord to the server.
19. Connect each power cord to the power source.
20. Power up the server.
21. Verify that the Online/Activity LEDs on the boot device are solid green .
22. Deploy a supported operating system to the boot device.
23. After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

Proceed with normal system setup and operation.

## Energy pack options

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

- HPE Smart Storage Hybrid Capacitor
- HPE Smart Storage Hybrid Capacitor



### IMPORTANT

The HPE Smart Storage Hybrid Capacitor is only supported on Gen10 and later servers.

One energy pack option can support multiple devices. An energy pack option is optional. However, to enable flash-backed write cache (FBWC) on the storage controller, the energy pack option is required. Once installed, the status of the energy pack displays in HPE iLO. For more information, see the HPE iLO user guide on the [Hewlett Packard Enterprise website](#).

## Subtopics



## HPE Smart Storage Battery

The HPE Smart Storage Battery supports the following devices:

- HPE Smart Array SR controllers

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

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

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

## HPE Smart Storage Hybrid Capacitor

The HPE Smart Storage Hybrid Capacitor supports the following devices:

- HPE SR controllers

The capacitor pack can support up to two devices.

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

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



**IMPORTANT**

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

The capacitor pack is fully charged after the system boots.

**Subtopics**

[Minimum firmware versions](#)

## Minimum firmware versions

Product	Minimum firmware version
HPE ProLiant ML30 Gen10 Plus Server system ROM	1.50
HPE Smart Array SR controllers	1.90

## Installing an energy pack

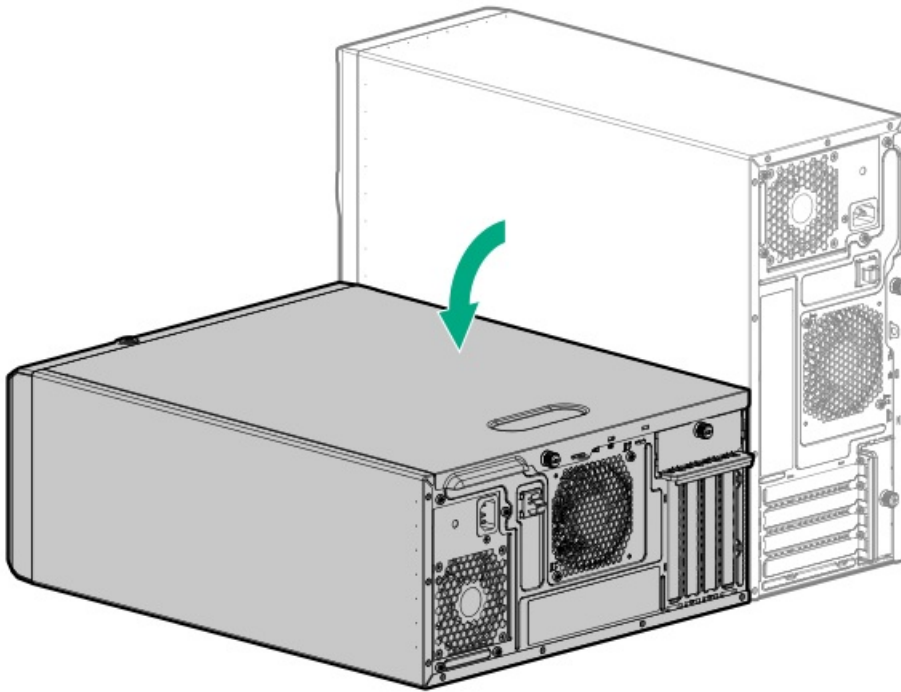


## Prerequisites

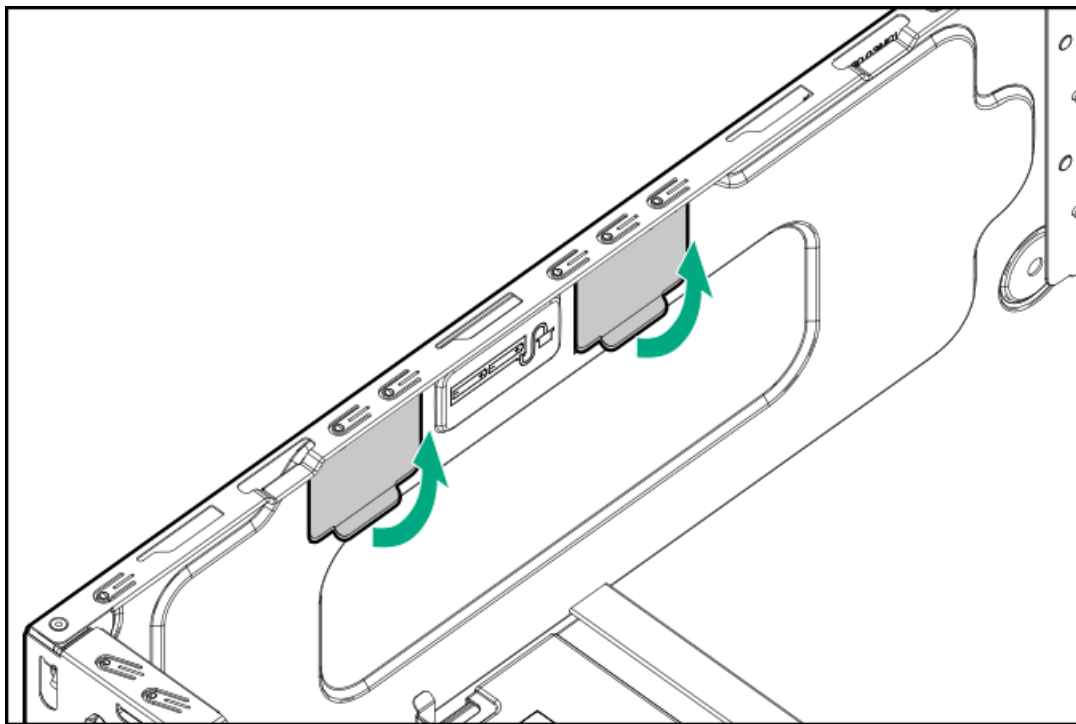
- Make sure that a compatible type-p storage controller is installed.
- Make sure that you have the following items available:
  - Storage controller backup power cable (ships with the storage controller)
  - Energy pack holder option (786710-B21)
- If you are installing the HPE Smart Storage Hybrid Capacitor, verify that the system meets the minimum firmware requirements.

## Procedure

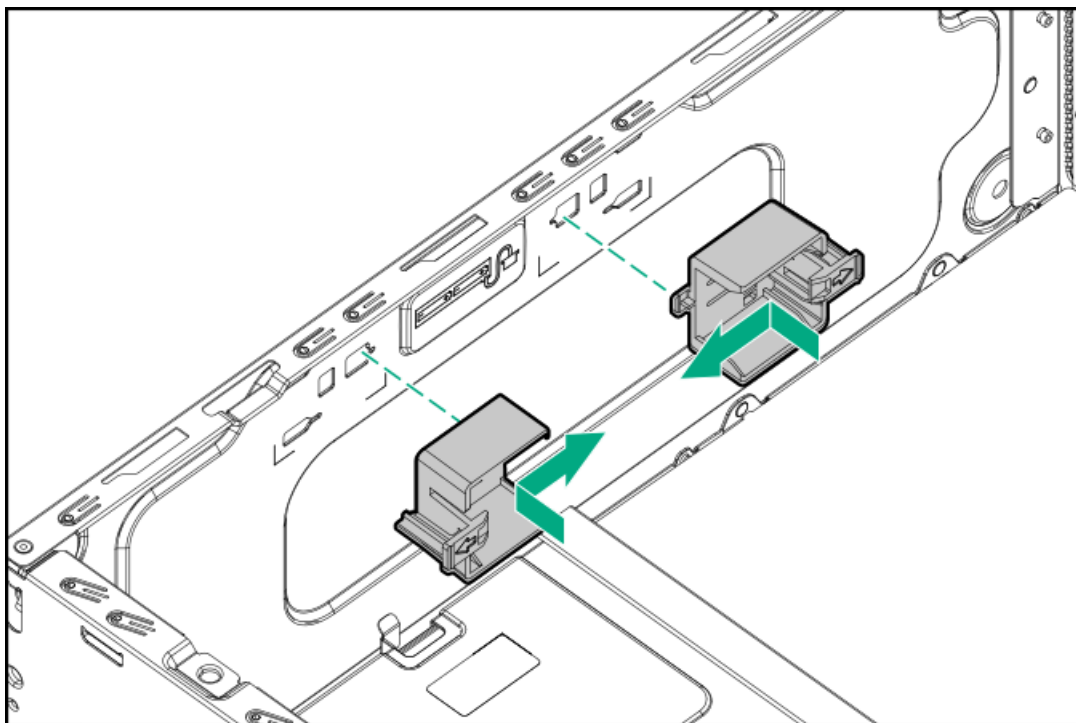
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.
5. Remove the access panel.
  6. If installed, remove the air baffle.
  7. Install the energy pack holders:
    - a. Remove the tapes that cover the installation location for the energy pack holders.

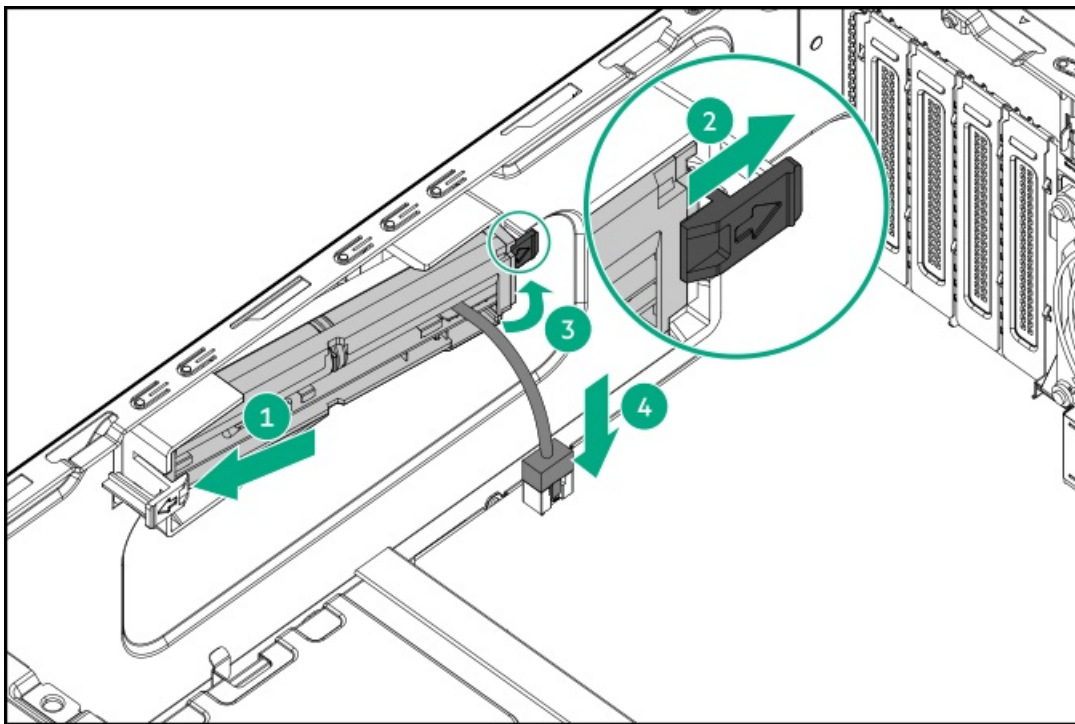


- b. Insert the holder tabs into their chassis slots.



8. Install the energy pack:

- a. Insert the front end of the energy pack in the holder.
- b. Press and hold the rear latch, and then insert the rear end of the energy pack in the holder.
- c. Connect the energy pack cable.



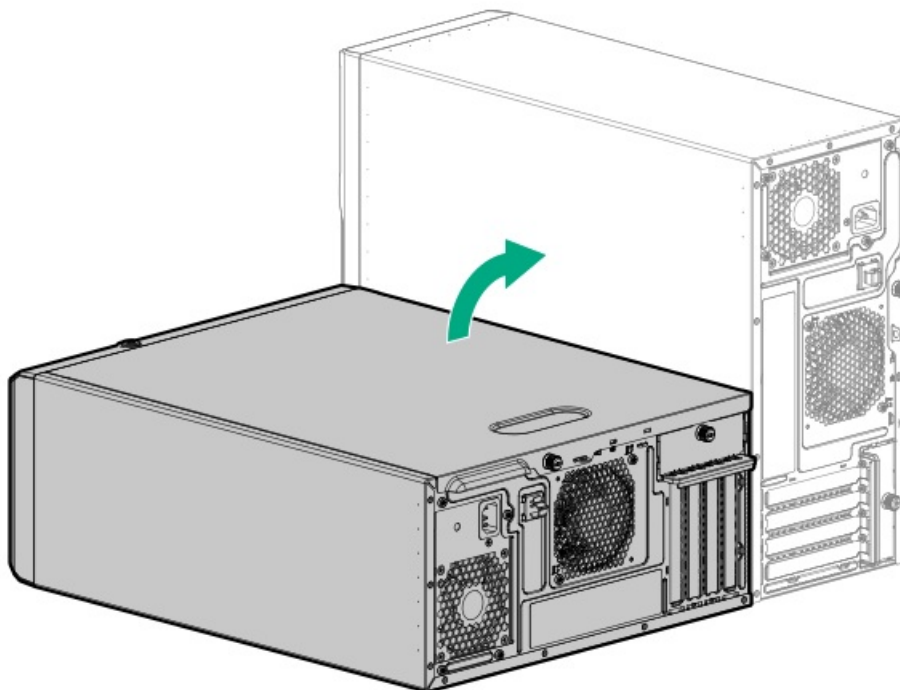
9. Connect the storage controller backup power cable.

10. If removed, install the air baffle.

11. Install the access panel.

12. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.

13. Connect all peripheral cables to the server.

14. Connect each power cord to the server.





15. Connect each power cord to the power source.

16. Power up the server.

## Results

The installation procedure is complete.

## Expansion card options

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

- HPE type-p storage controller
- Ethernet 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/info/quickspecs>

### Subtopics

[Installing an expansion card](#)

## Installing an expansion card

### Prerequisites

- [Determine the fan requirement for the expansion option that you are installing.](#)
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

### About this task



#### 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](#).

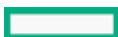


#### CAUTION

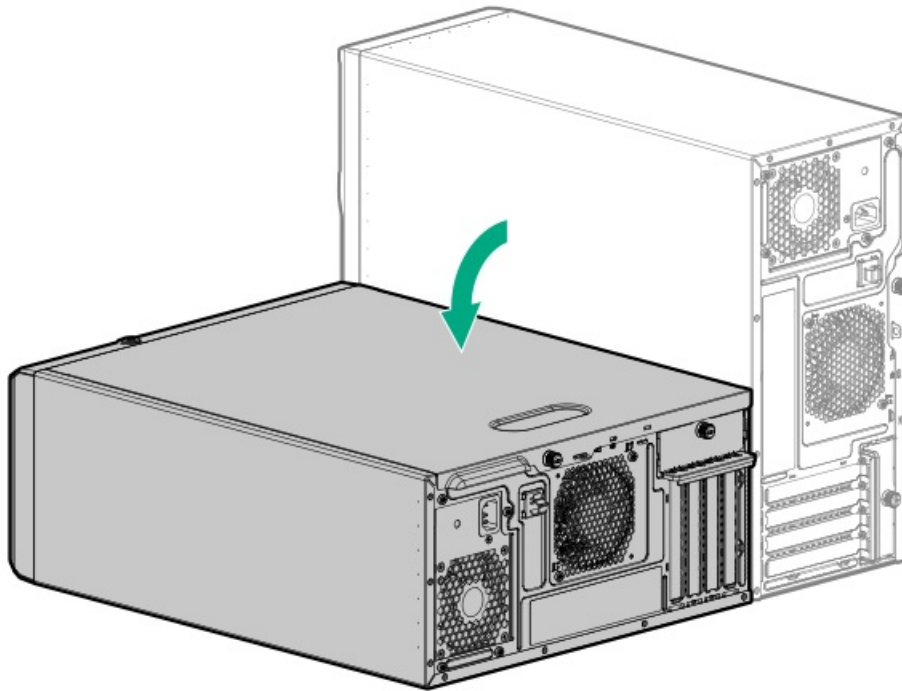
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either an expansion slot cover or an expansion card installed.

### Procedure

1. [Power down the server.](#)
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.



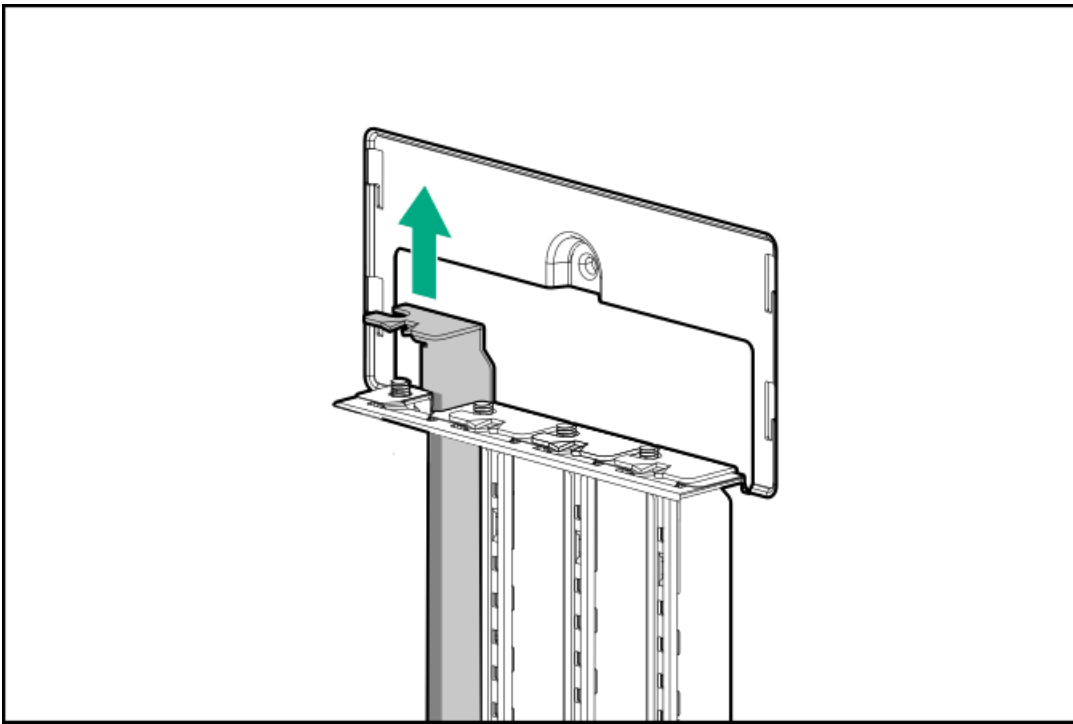
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.
5. Remove the access panel.
  6. If installed, remove the air baffle.
  7. Identify the expansion slot compatible with the expansion card option .
  8. Make sure that any switches or jumpers on the expansion card are set properly.

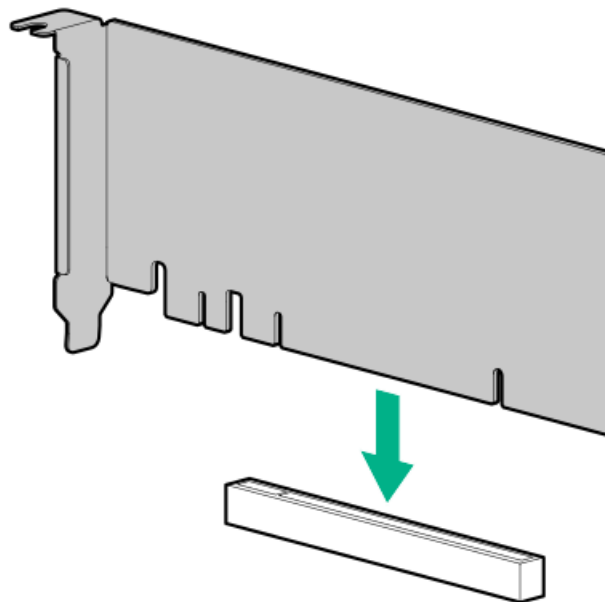
For more information, see the documentation that ships with the option.
  9. Remove the PCI blank retainer.
  10. Remove the blank opposite the selected expansion slot.

Retain the blank for future use.



11. Install the expansion card.

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



12. Connect all necessary internal cabling to the expansion card.

For more information on these cabling requirements, see the documentation that ships with the option.

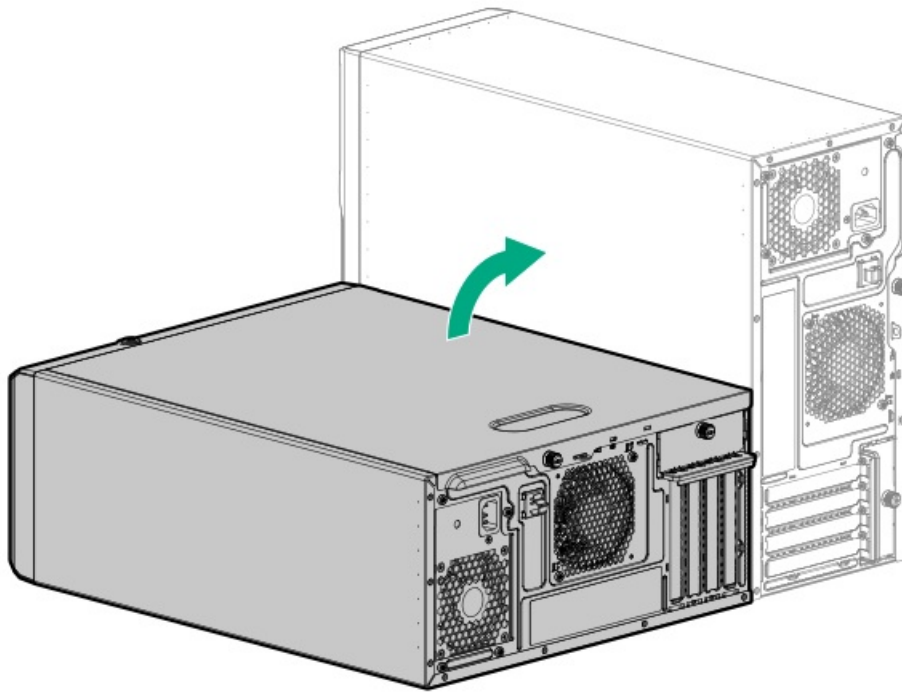
13. Install the PCI blank retainer.

14. If removed, install the air baffle.

15. Install the access panel.

16. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.

17. Connect all peripheral cables to the server.
18. Connect each power cord to the server.
19. Connect each power cord to the power source.
20. Power up the server.

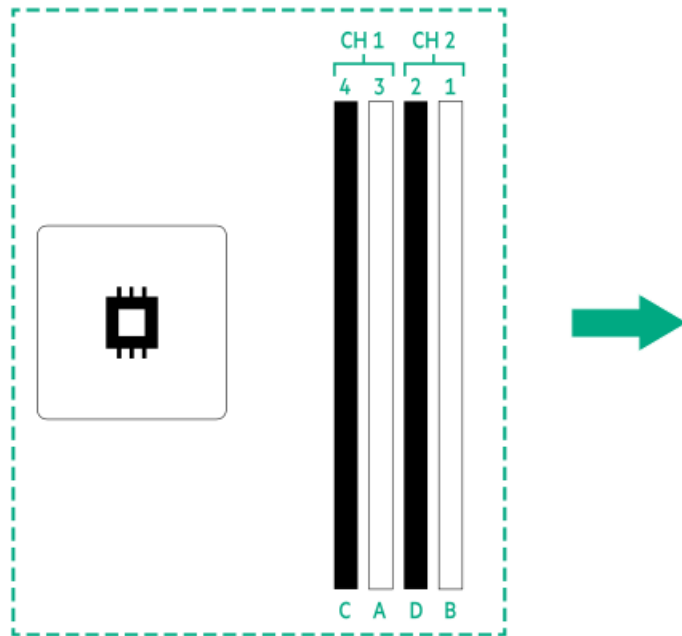
## Results

The installation procedure is complete.

## Memory option

The server has four DIMM slots supporting HPE DDR4 UDIMM with ECC.

The arrow points to the front of the server.



### Subtopics

[DIMM population information](#)

[DIMM installation guidelines](#)

[Installing a DIMM](#)

## 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](#).
- Handle the DIMM only along the edges.
- 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

## Prerequisites

Before you perform this procedure, review the:

- [DIMM population information](#)
- [DIMM installation guidelines](#)

## About this task

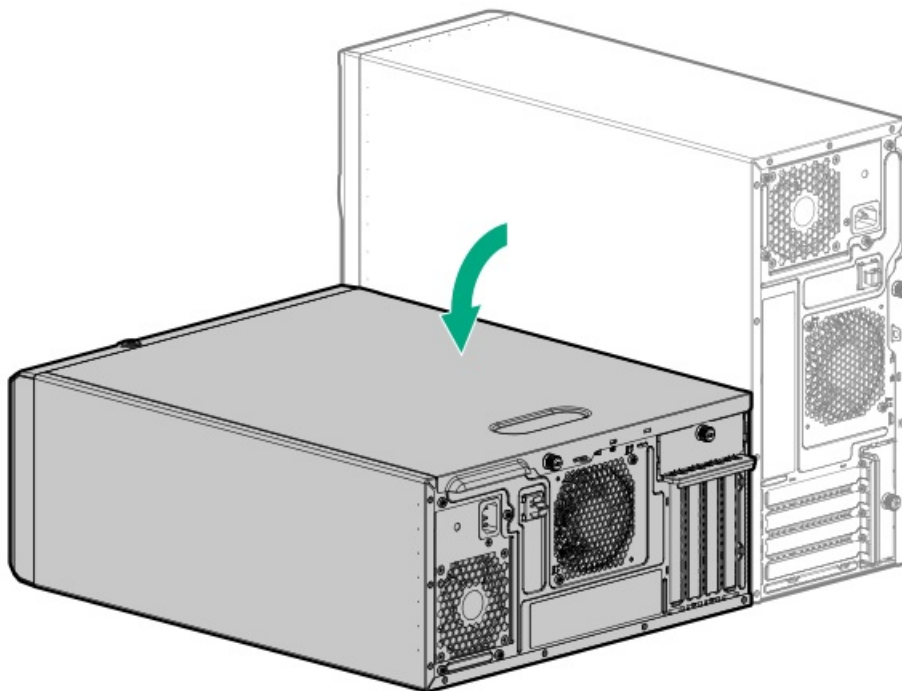


### CAUTION

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. [Power down the server.](#)
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.

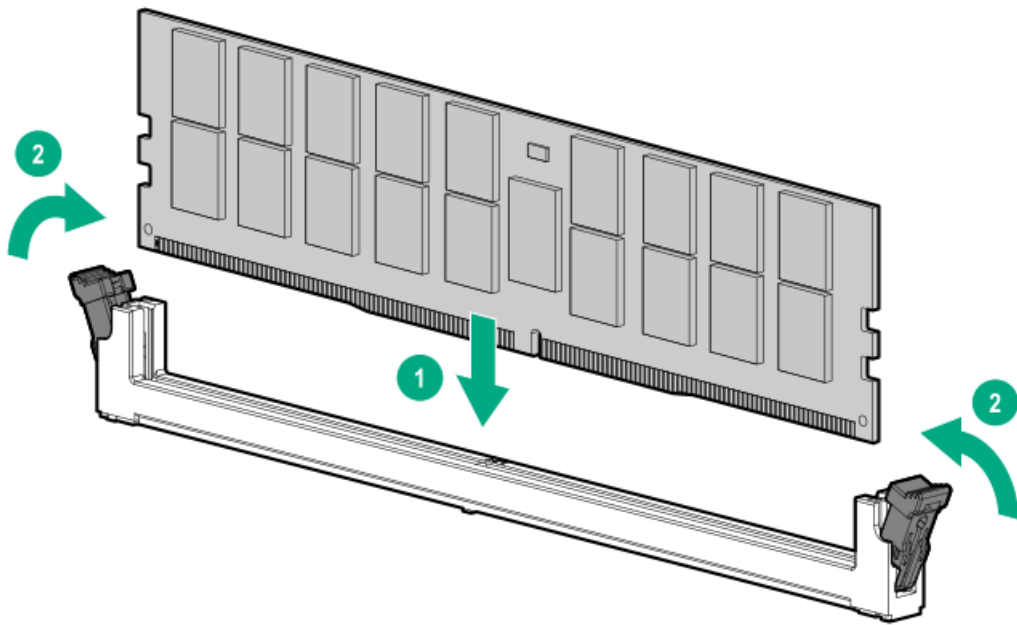


- If the server is in rack mode, [remove the server from the rack.](#)
5. [Remove the access panel.](#)
  6. Install the DIMM:
    - a. Open the DIMM slot latches.



- 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.

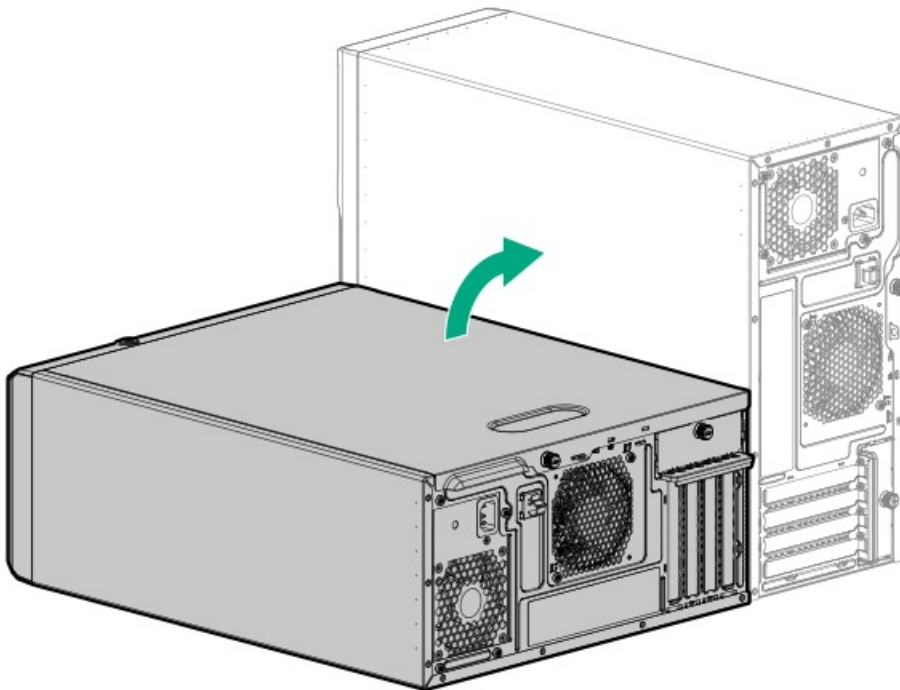
The DIMM slots are structured to ensure proper installation. If you try to insert a DIMM but it does not fit easily into the slot, you might have positioned it incorrectly. Reverse the orientation of the DIMM and insert it again.



7. Install the access panel.

8. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.

9. Connect all peripheral cables to the server.



10. Connect each power cord to the server.
11. Connect each power cord to the power source.
12. Power up the server.
13. To configure the memory settings:
  - 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) > Memory Options.

## Results

The installation procedure is complete.

## iLO-M.2-serial module option

Install the multifunction iLO-M.2-serial module to support the following:

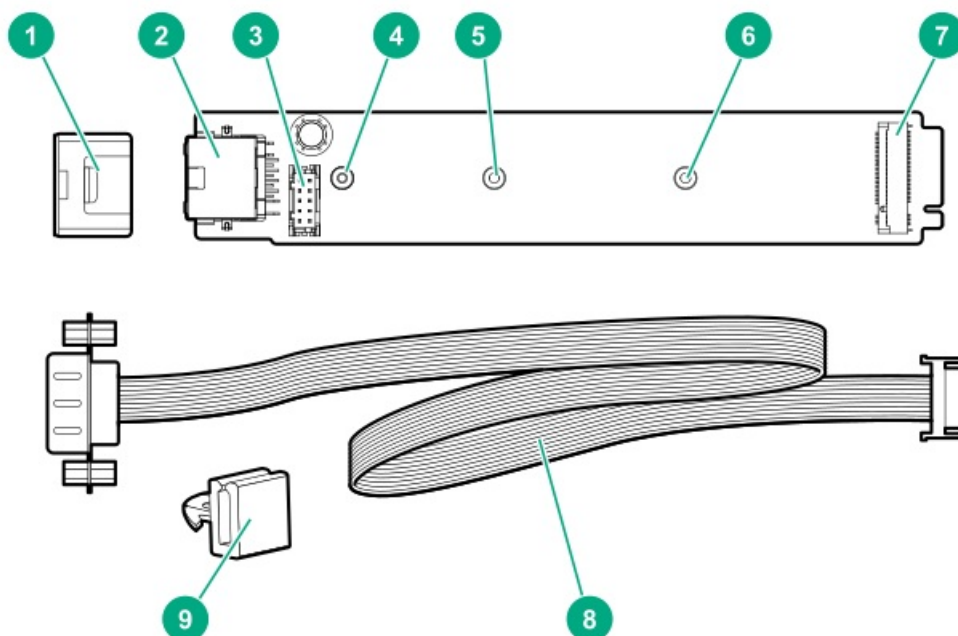
- NVMe SSD in 2280 or 22110
- Serial port
- iLO dedicated network port

### Subtopics

[iLO-M.2-serial module components](#)

[Installing the iLO-M.2-serial module](#)

## iLO-M.2-serial module components





Item	Description
1	Module stabilizer
2	iLO dedicated network port
3	Serial port cable connector
4	Standoff for the M.2 22110 SSD
5	Standoff for the M.2 2280 SSD
6	Standoff for the M.2 2242 SSD <sup>1</sup>
7	M.2 slot <sup>2</sup>
8	Serial port cable
9	Serial port cable clip

- <sup>1</sup> Not for use in this server
- <sup>2</sup> This M.2 slot supports a SATA or an NVMe SSD.

## Installing the iLO-M.2-serial module

### Prerequisites

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

- Spudger or any small prying tool
- Phillips No. 1 screwdriver
- 4.5 mm hex nut screwdriver
- T-15 Torx screwdriver
- Hex screwdriver—This tool is required for installing the serial port cable.

### About this task



#### 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

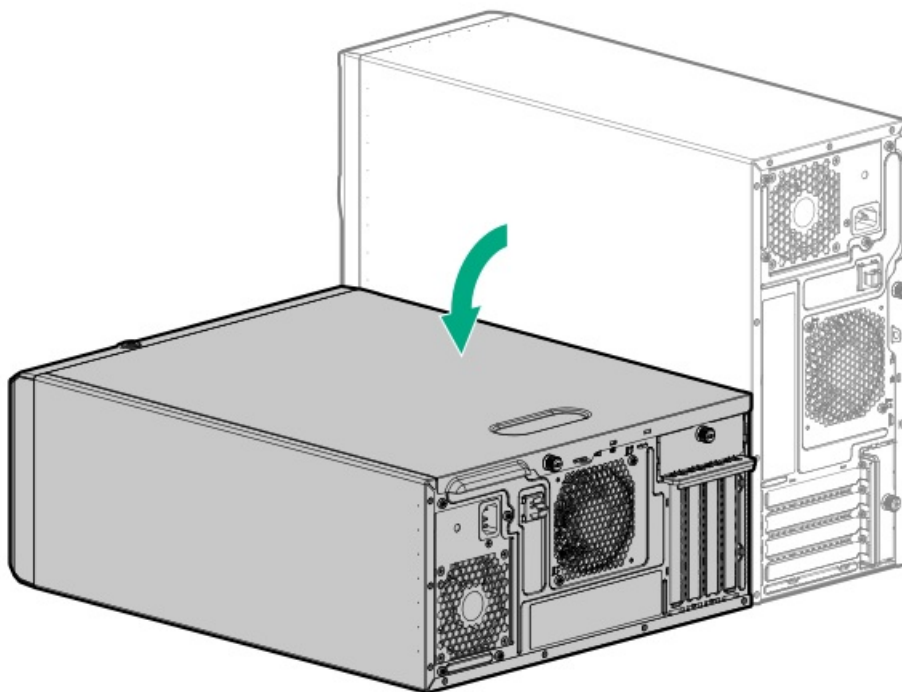
The port blank provides EMI shielding and helps maintain proper thermal status inside the server. Do not operate the server when a port blank is removed without the corresponding I/O port option installed.

## Procedure

### Installing the iLO-M.2-serial module

1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:

- If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



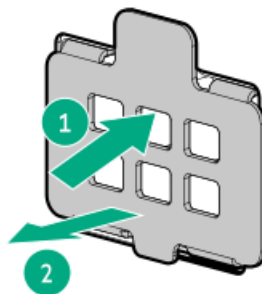
- If the server is in rack mode, remove the server from the rack.

5. Remove the access panel.

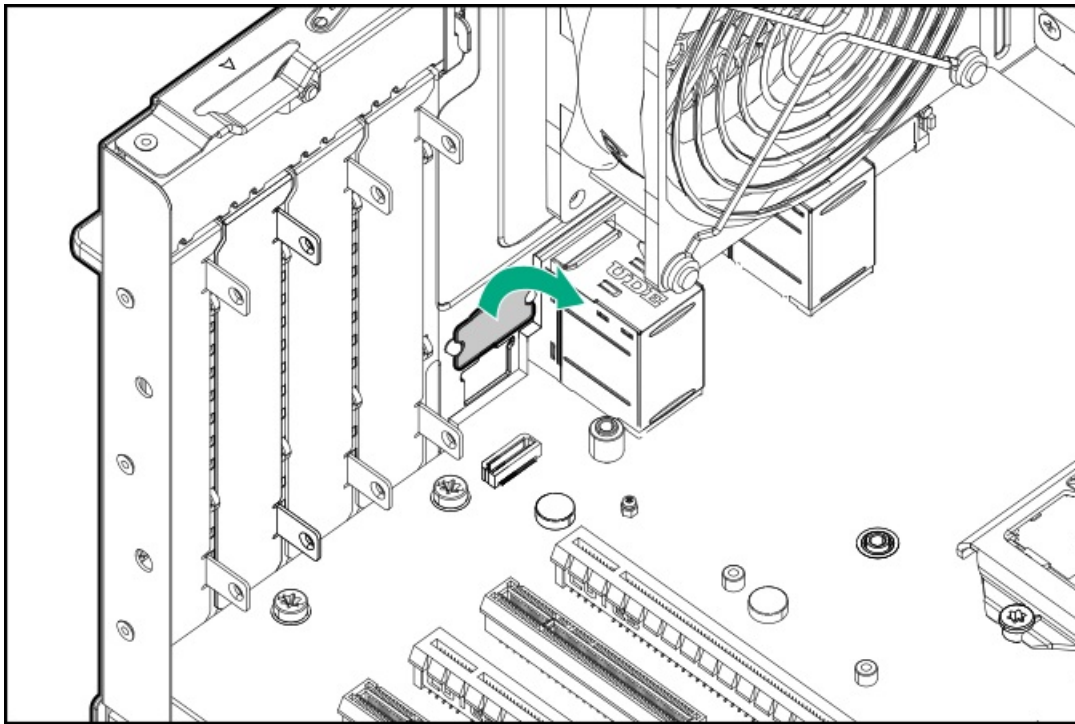
6. If installed, remove the air baffle.

7. Remove the iLO dedicated network port blank:

- a. Use a spudger to pry the blank from the chassis.
- b. Remove the blank.

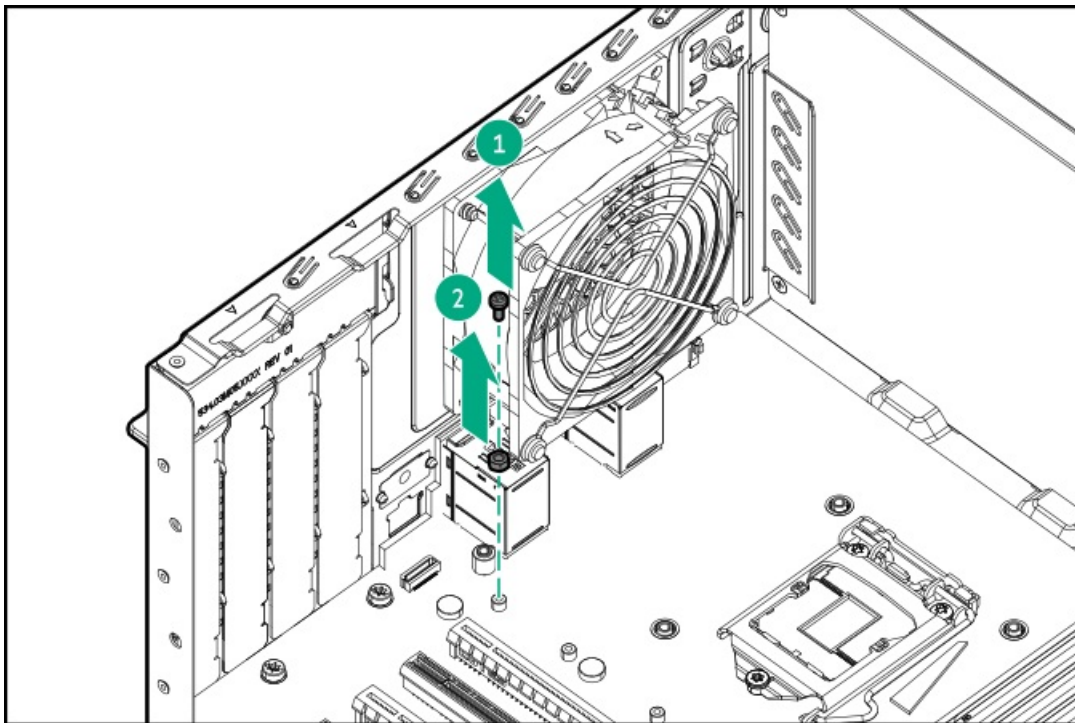


8. Remove the tape above the iLO dedicated network port opening.



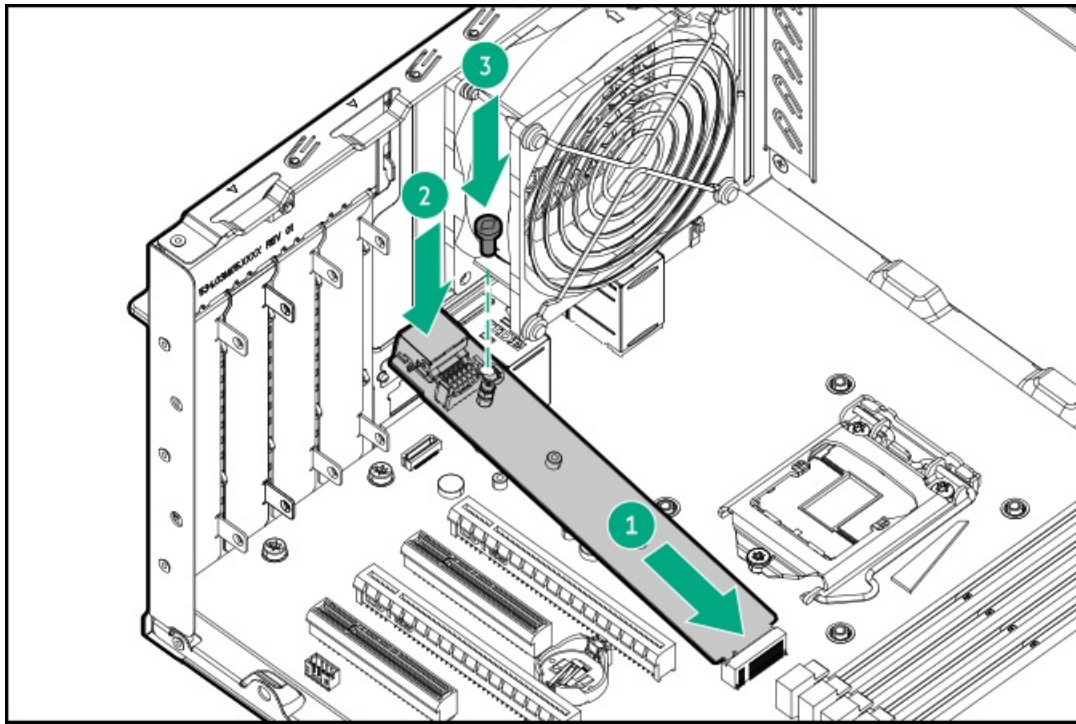
9. Remove the SSD mounting screw and hex nut from the 22110 standoff on the system board.

Retain the SSD mounting screw and hex nut for M.2 SSD installation.

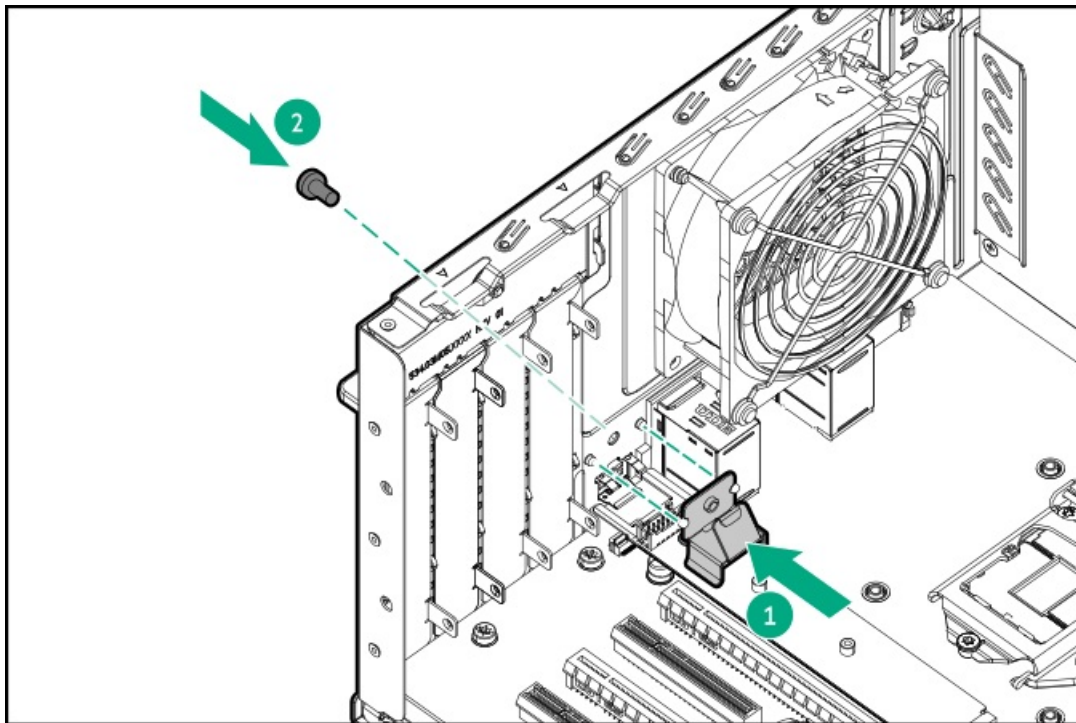


10. Install the iLO-M.2-serial module:

- a. Insert the module into the M.2 slot at a 45° angle (callout 1).
- b. Carefully press the module down in a horizontal position (callout 2).
- c. Install the module screw that is included in the P06687-B21 module kit (callout 3).



d. Install the module stabilizer.

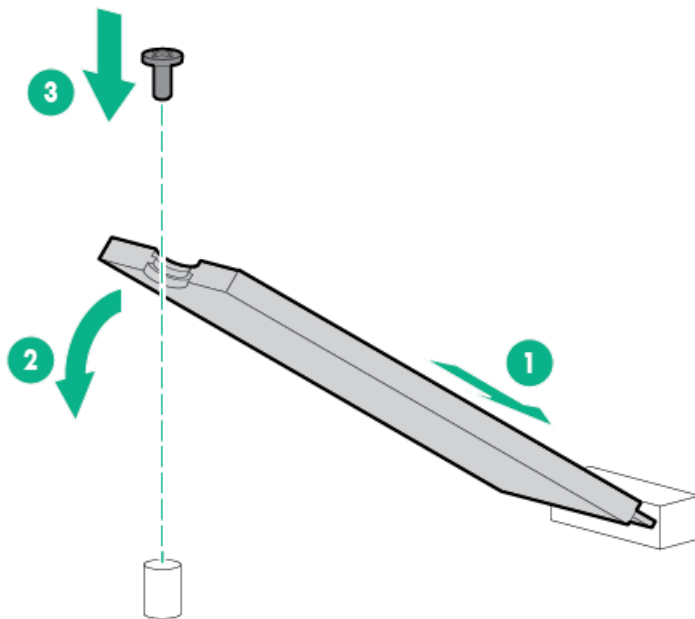


11. If no M.2 SSD will be installed on the iLO-M.2-serial module, install the SSD mounting screw and hex nut removed on [step 9](#) on the [M.2 22110 standoff on the module](#).

#### Installing an M.2 SSD

12. To locate the M.2 standoff on the correct position:
  - a. [Verify that the M.2 standoff position in the module matches the length of the SSD](#).
  - b. Install the hex nut removed on [step 9](#) on the M.2 standoff location.
13. Install the SSD:
  - a. Insert the SSD into the M.2 slot at a 45° angle.

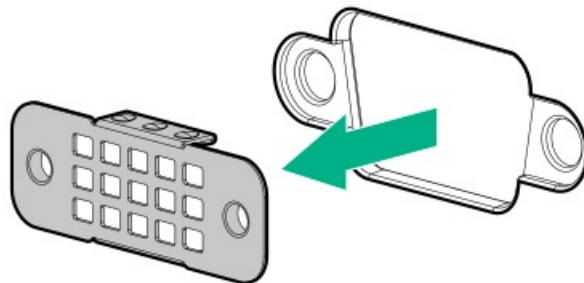
- b. Carefully press the SSD down to the horizontal position.
- c. Install the SSD mounting screw.



#### Installing the serial port cable

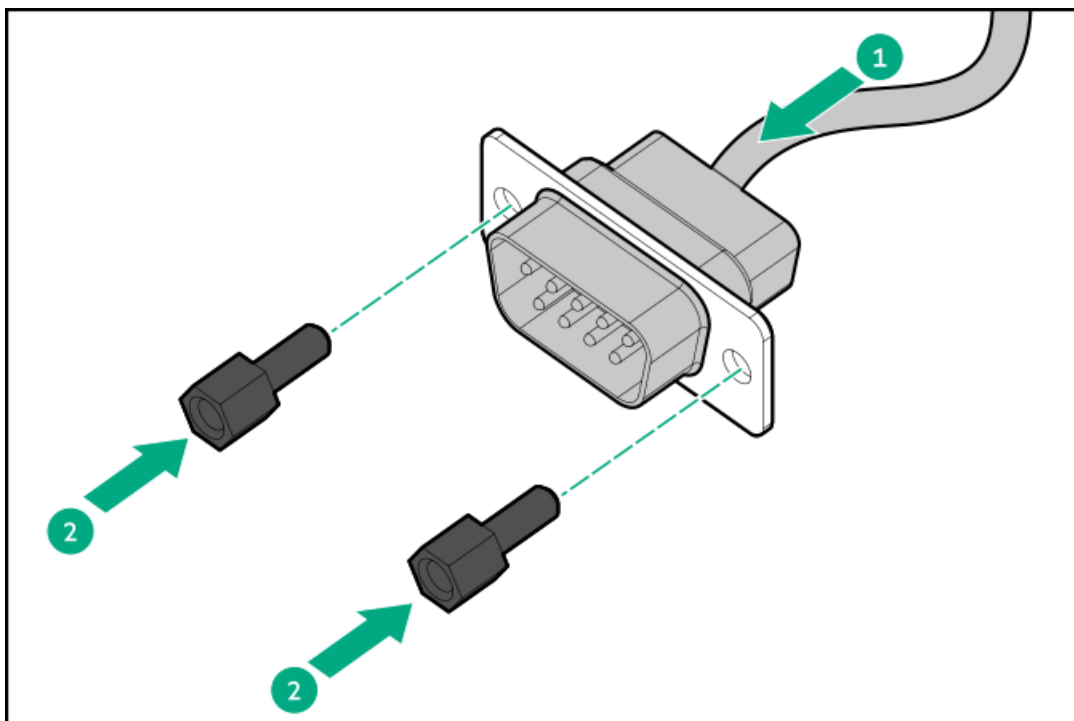
14. Remove the serial port blank.

Retain the blank for future use.

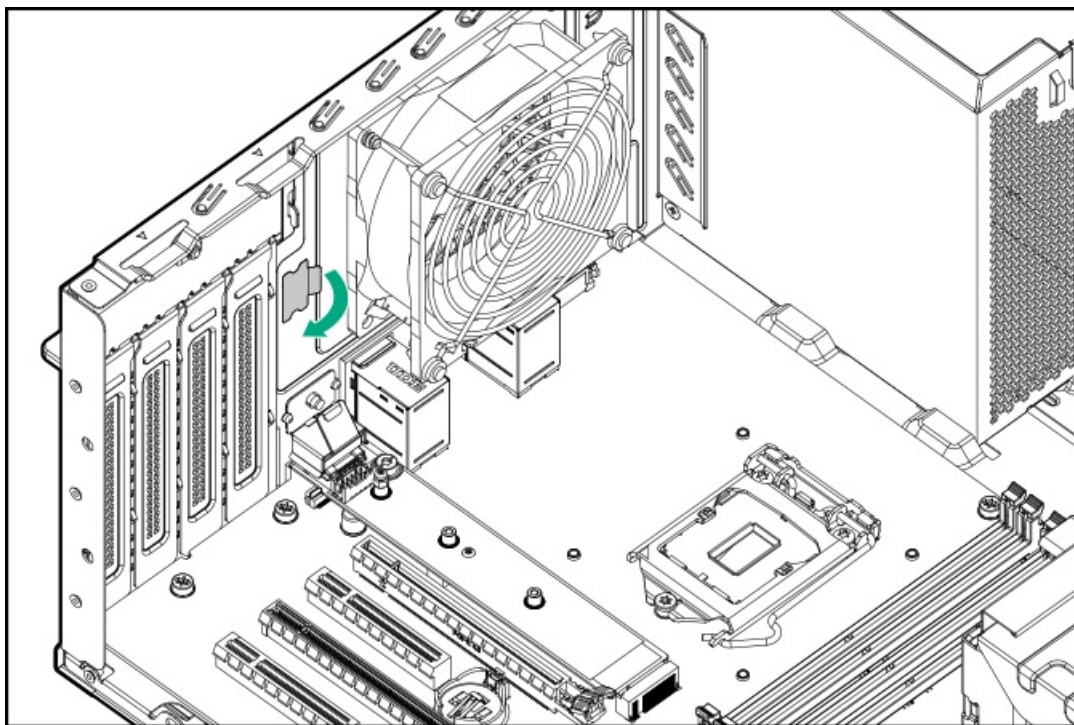


15. Install the serial port cable:
  - a. Insert the serial port into the rear panel opening.
  - b. Install the hex screws.

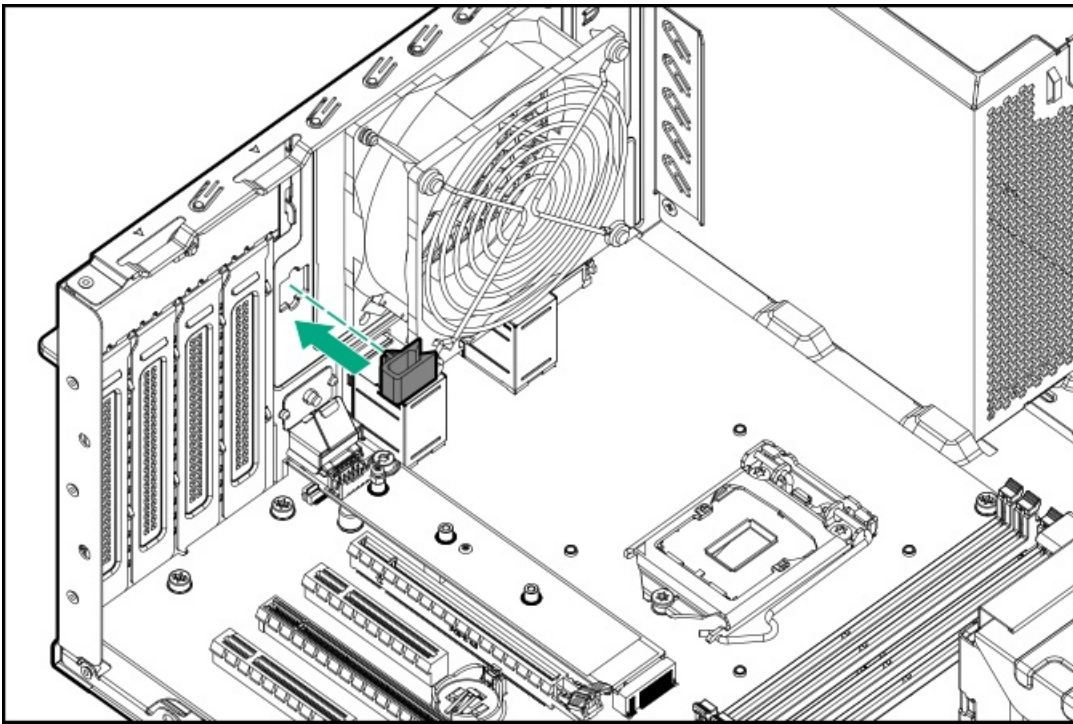




16. Remove the tape from the serial port cable clip opening.



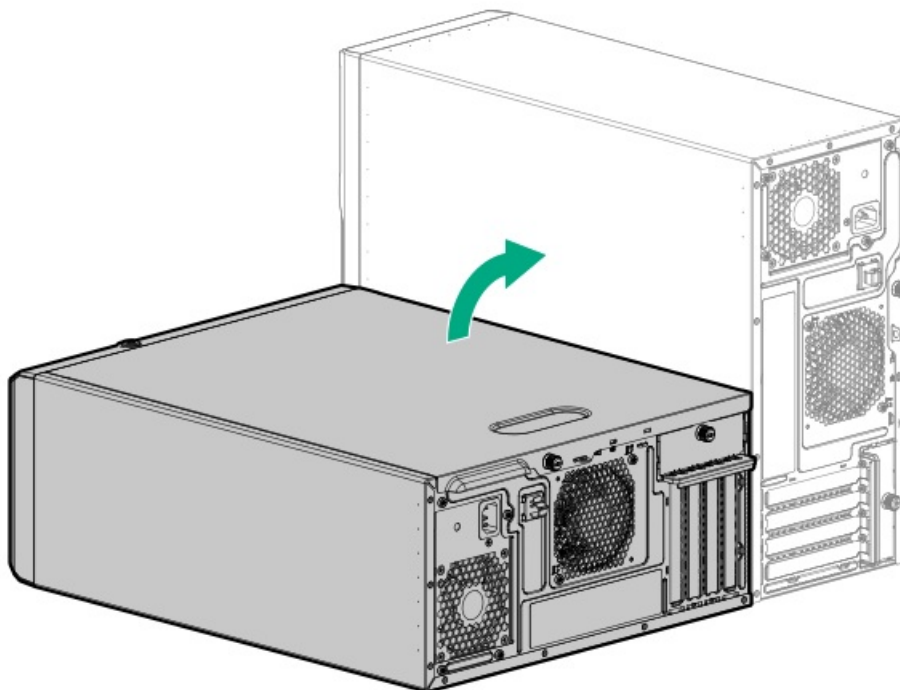
17. Install the serial port cable clip.



18. Connect the serial port cable, and then secure the extra length of the cable in the serial port cable clip.

**Completing the hardware installation**


19. If removed, install the air baffle.
20. Install the access panel.
21. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.
22. Connect all peripheral cables to the server.

23. Connect each power cord to the server.
24. Connect each power cord to the power source.
25. Power up the server.

#### Enabling the iLO dedicated network port

26.  **IMPORTANT**  
If the iLO configuration settings are reset to the default values, remote access to the machine will be lost. Access the physical machine and repeat the procedure described in this section to re-enable the iLO dedicated network port.

The onboard NIC 1/iLO shared port is the default system iLO port.

- a. From the boot screen, press **F9** to access the UEFI System Utilities.
- b. From the System Utilities screen, select System Configuration > iLO 5 Configuration Utility > Network Options.
- c. Set the Network Interface Adapter field to ON, and then press **Enter**.
- d. Press **F10** to save your changes.
- e. Press **Enter** to reboot the iLO settings.
- f. Press **Esc** until the main menu is displayed.
- g. Select Reboot the System to exit the utility and resume the boot process.

The IP address of the iLO dedicated network port appears on the POST screen on the subsequent boot-up. Access the Network Options screen again to view this IP address for later reference.

#### Configuring the serial port

27. 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.

## Results

The installation procedure is complete.

## M.2 SSD options

The server supports the installation of M.2 SATA and NVMe SSD options for:

- Booting up from flash solution
- Data backup/redundancy

#### Subtopics

##### Installing an M.2 SSD on the system board



## Installing an M.2 SSD on the system board

### Prerequisites

- Make sure that the server is updated with the latest operating system firmware and drivers.
- [Make sure that the PCI fan is installed](#)
- Before you perform this procedure, make sure that you have the following items available:
  - Phillips No. 1 screwdriver
  - 4.5 mm hex nut screwdriver

### About this task

The M.2 slot on the system board supports either a SATA or an NVMe SSD.

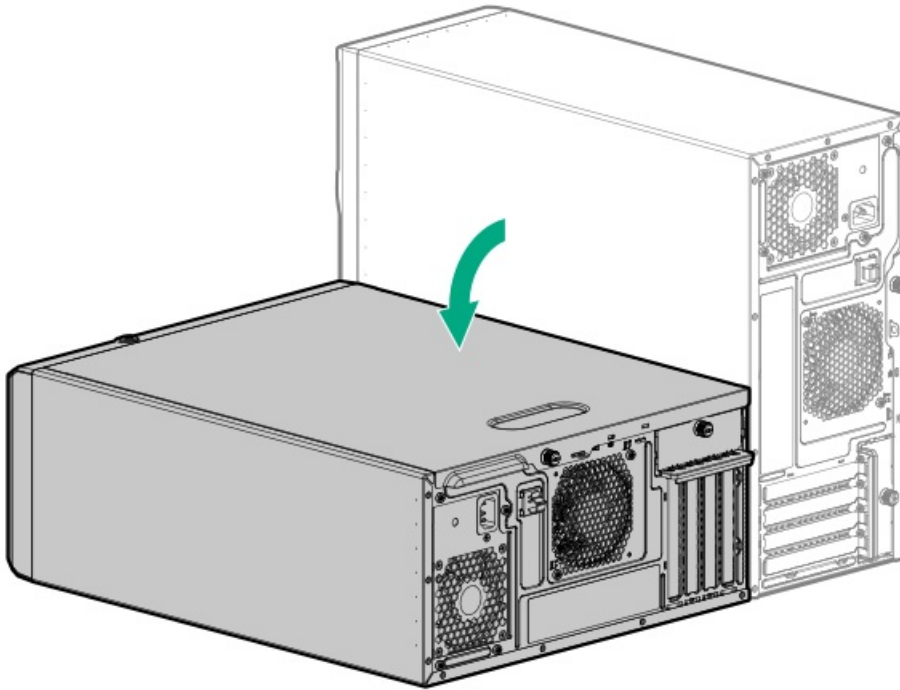


#### CAUTION

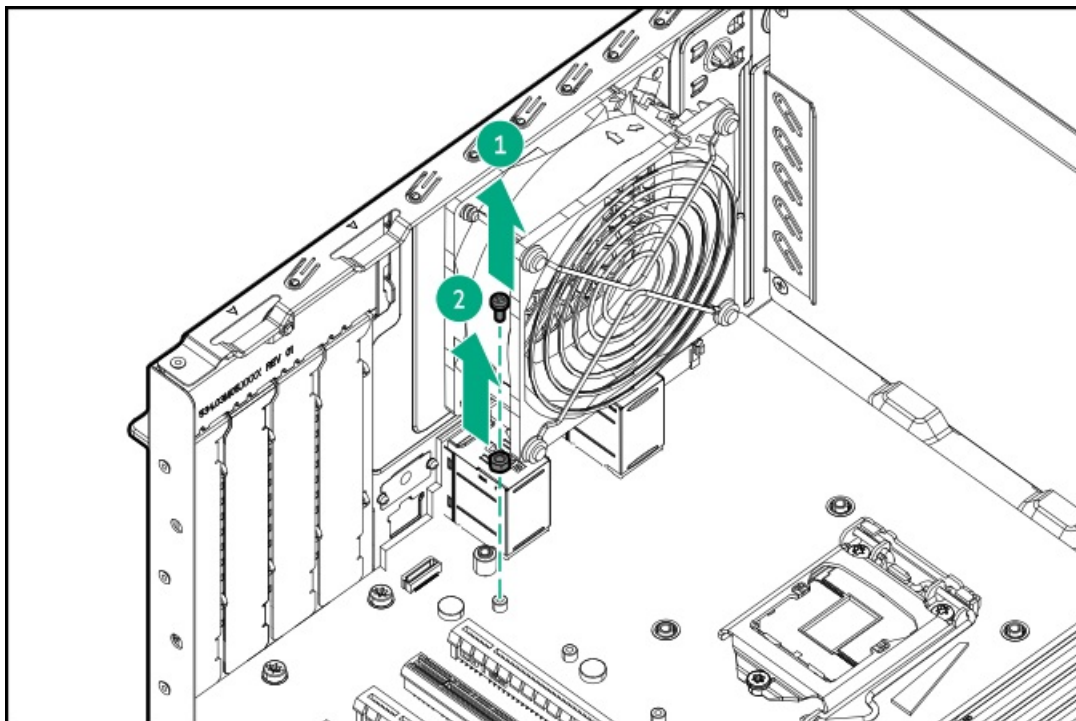
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

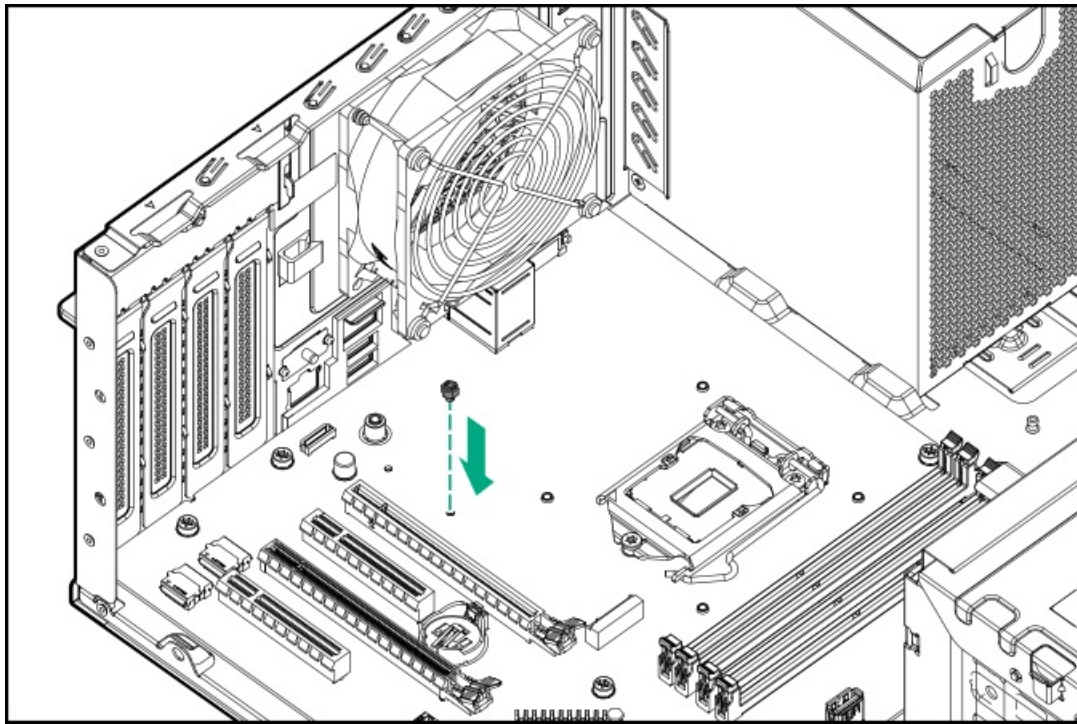
1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



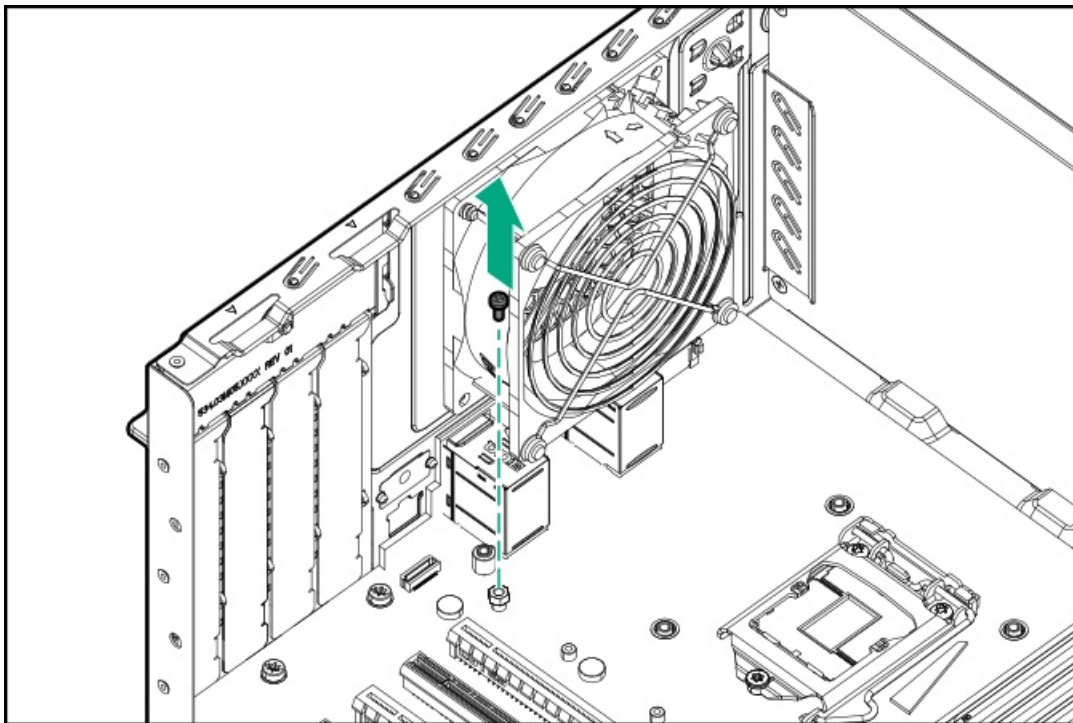
- If the server is in rack mode, remove the server from the rack.
5. Remove the access panel.
  6. Remove the air baffle.
  7. If you are installing an M.2 2280 SSD, do the following:
    - a. Remove the SSD mounting screw and hex nut from the 22110 standoff.



- b. Install the removed hex nut on the 2280 standoff.

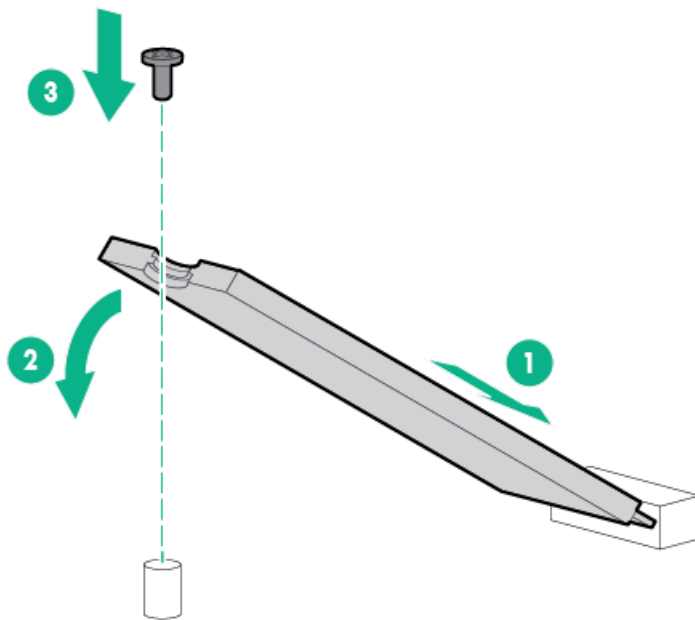


8. If you are installing an M.2 22110 SSD, remove the SSD mounting screw from the 22110 standoff.



9. Install the SSD:

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

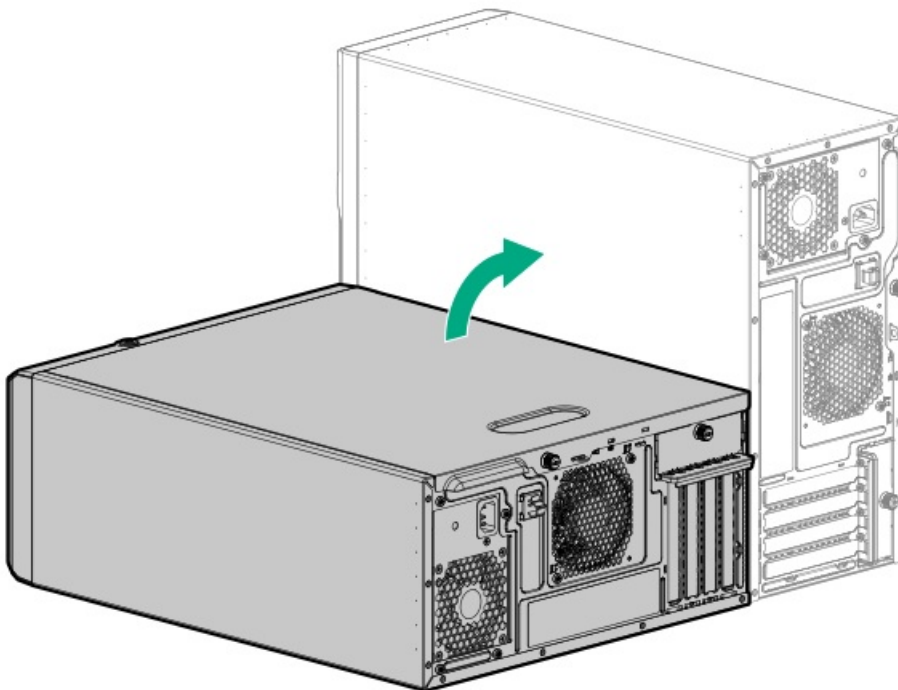


10. Install the air baffle.

11. Install the access panel.

12. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.

13. Connect all peripheral cables to the server.

14. Connect each power cord to the server.

15. Connect each power cord to the power source.

16. Power up the server.



17. To configure the M.2 SSD, do one of the following:

- M.2 SATA SSD: See the [OS-specific Intel VROC guide](#).
- M.2 NVMe SSD: Use the native OS NVMe driver. See the related OS documentation.

## Results

The installation procedure is complete.

## Installing the M.2 SATA SSD enablement option

### Prerequisites

- Make sure that the server is updated with the latest operating system firmware and drivers.
- [Make sure that the PCI fan is installed](#)
- 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 if the M.2 SSDs are not preinstalled on the AIC.

### About this task

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. This server supports the installation of one M.2 SATA SSD enablement 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

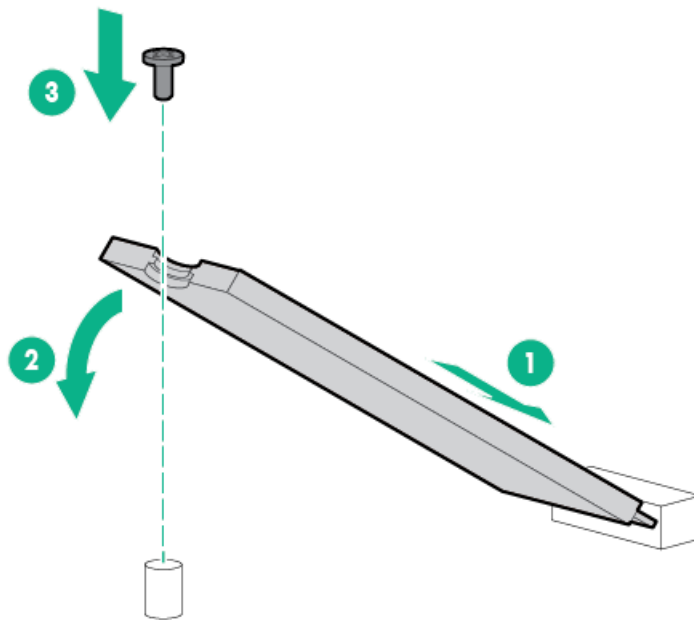
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either an expansion slot cover or an expansion card installed.

## 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.





#### Installing the M.2 SATA SSD add-in card

4. Power down the server.

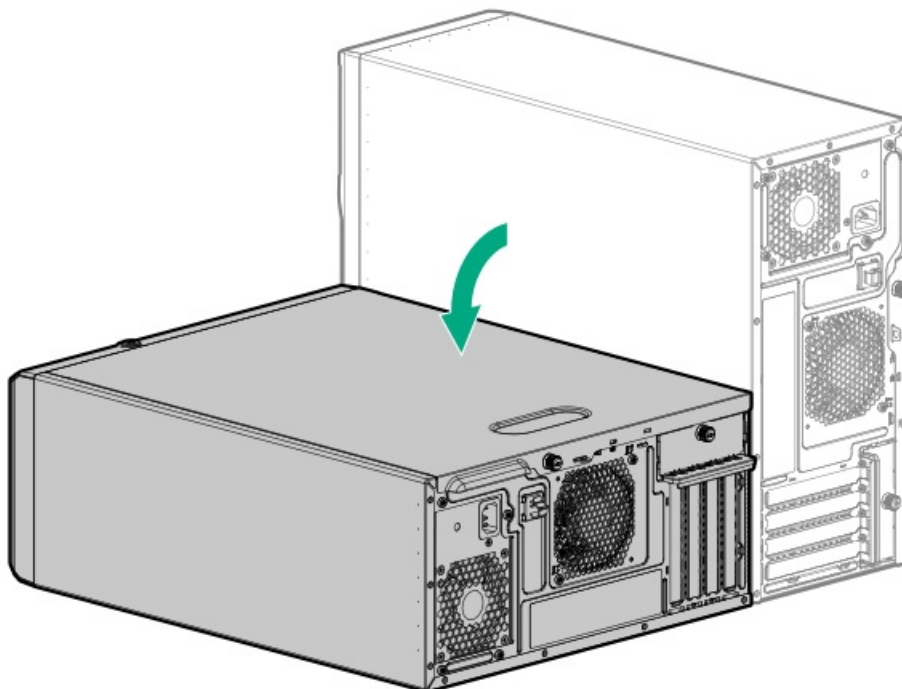
5. Remove all power:

- a. Disconnect each power cord from the power source.
- b. Disconnect each power cord from the server.

6. Disconnect all peripheral cables from the server.

7. Do one of the following:

- If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



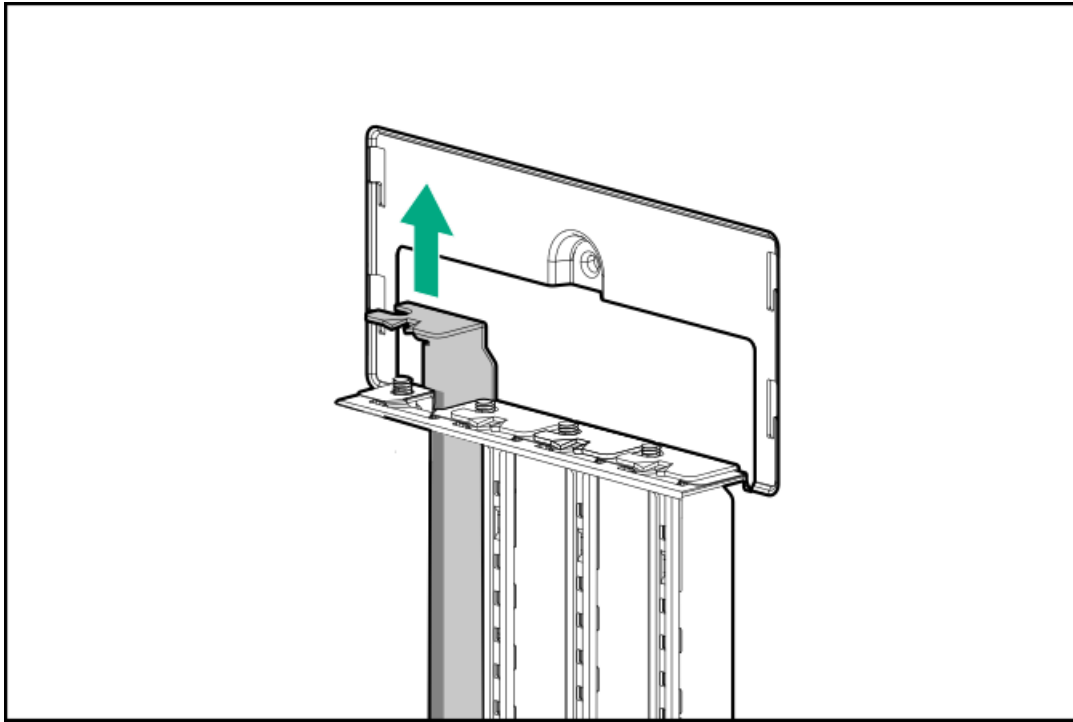
- If the server is in rack mode, remove the server from the rack.

8. Remove the access panel.

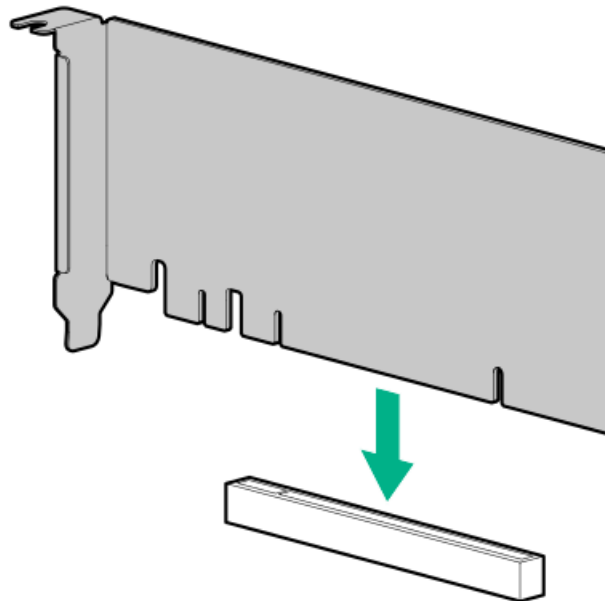


9. Remove the air baffle.
10. Identify the expansion slot compatible with the add-in card.
11. Remove the PCI blank retainer.
12. Remove the blank opposite the selected expansion slot.

Retain the blank for future use.



13. Install the add-in card.

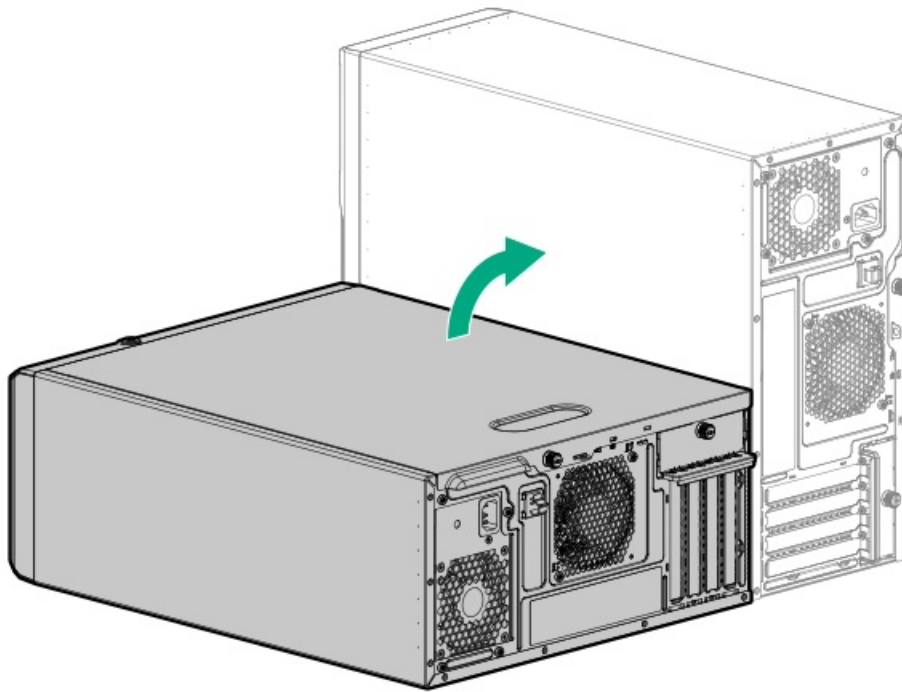


14. Connect the M.2 SATA SSD cable.
15. Install the PCI blank retainer.
16. Install the air baffle.
17. Install the access panel.



18. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.

19. Connect all peripheral cables to the server.

20. Connect each power cord to the server.

21. Connect each power cord to the power source.

22. Power up the server.

23. To configure the M.2 SSDs, see the OS-specific Intel VROC guide.

## Results

The installation procedure is complete.

## Installing an M.2 SSD on the iLO-M.2-serial module

### Prerequisites

- Make sure that the server is updated with the latest OS firmware and drivers.
- Make sure that the PCI fan is installed.
- Before you perform this procedure, make sure that you have the following items available:
  - Phillips No. 1 screwdriver
  - 4.5 mm hex nut screwdriver

### About this task

The M.2 slot on the iLO-M.2-serial module supports either a SATA or an NVMe SSD.



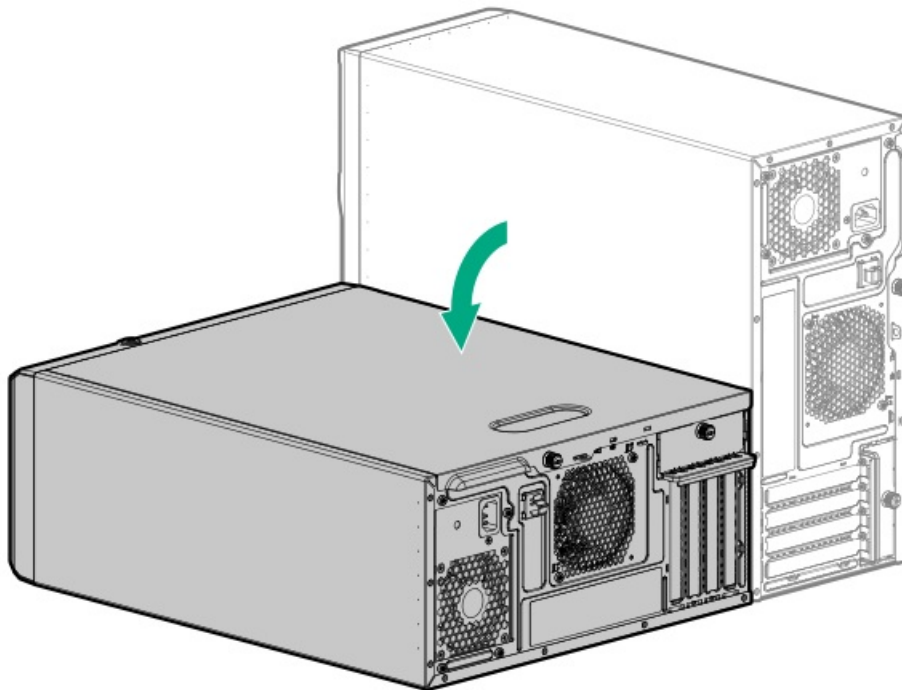


## CAUTION

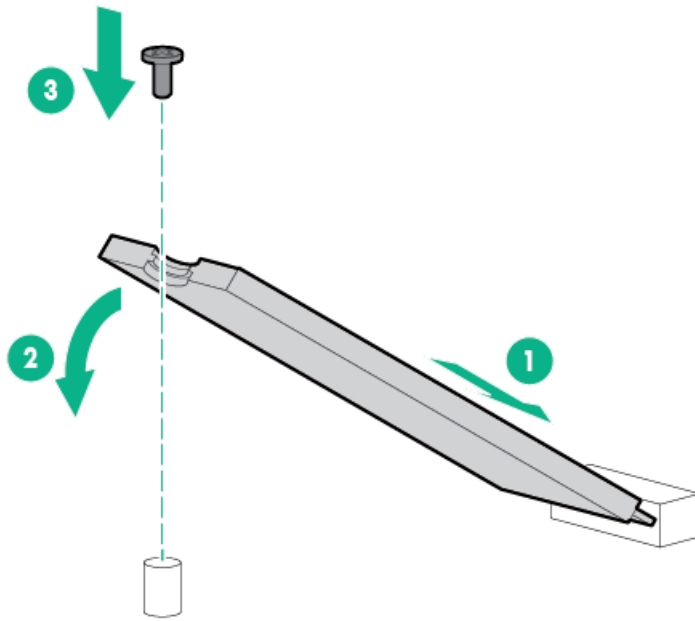
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.



- If the server is in rack mode, remove the server from the rack.
5. Remove the access panel.
  6. Remove the air baffle.
  7. Remove the SSD mounting screw from the 22110 standoff of the module.
  8. If you are installing an M.2 2280 SSD, do the following:
    - a. Remove the hex nut from the 22110 standoff on the module.
    - b. Install the removed hex nut on the 2280 standoff on the module.
  9. Install the SSD:
    - a. Insert the SSD into the M.2 slot at a 45° angle.
    - b. Carefully press the SSD down to the horizontal position.
    - c. Install the SSD mounting screw.

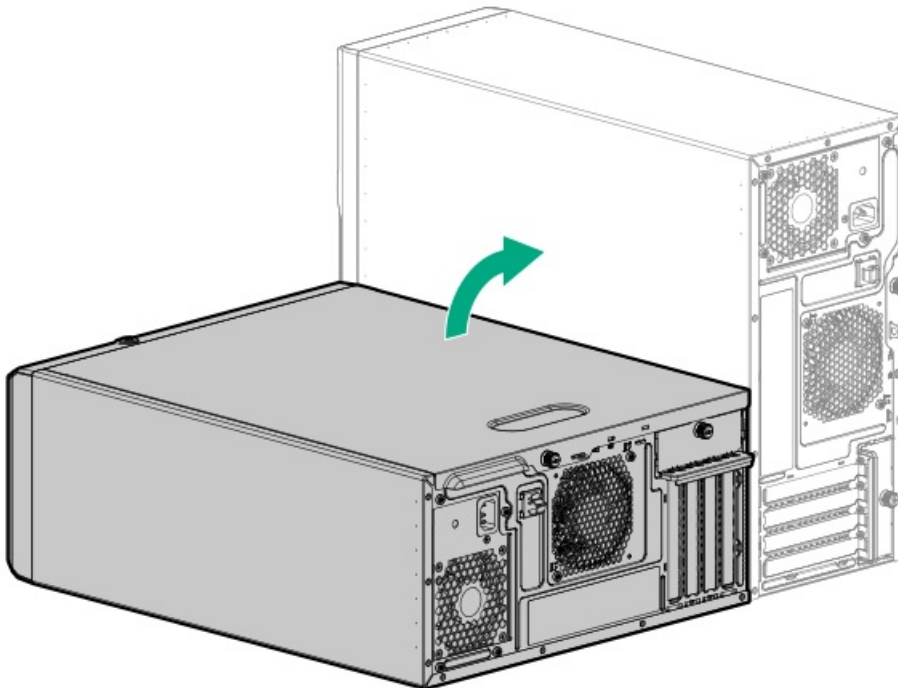


10. Install the air baffle.

11. Install the access panel.

12. Do one of the following:

- Orient the server back in tower mode.



- Install the server into the rack.

13. Connect all peripheral cables to the server.

14. Connect each power cord to the server.

15. Connect each power cord to the power source.



16. [Power up the server.](#)

17. To configure the M.2 SSD, do one of the following:

- M.2 SATA SSD: See the [OS-specific Intel VROC guide](#).
- M.2 NVMe SSD: Use the native OS NVMe driver. See the related OS documentation.

## Results

The installation procedure 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.

### Subtopics

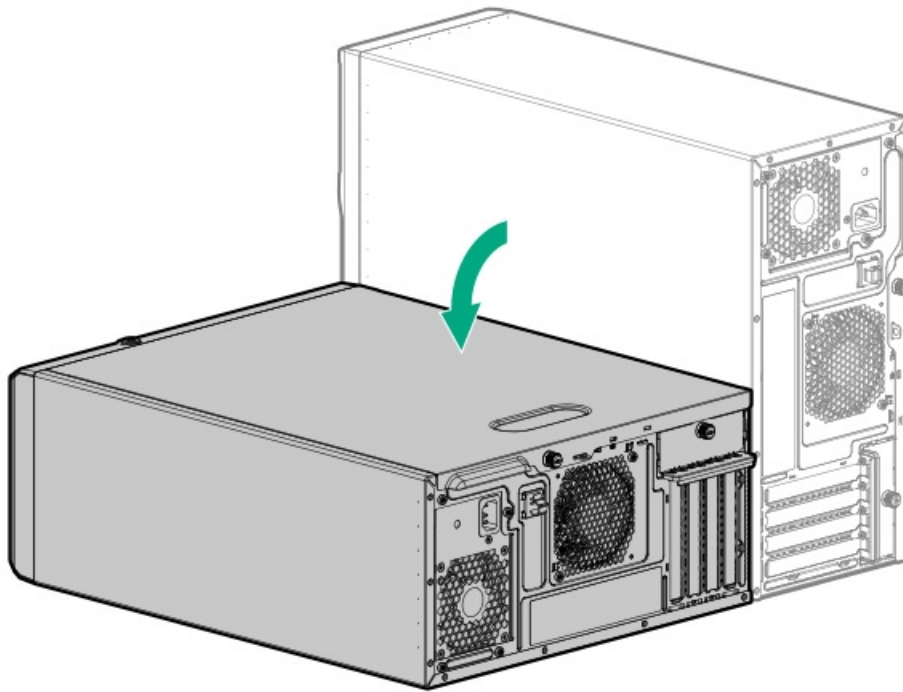
[Installing an internal USB device](#)

## Installing an internal USB device

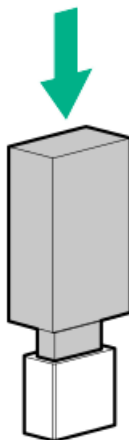
### Procedure

1. [Power down the server.](#)
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.

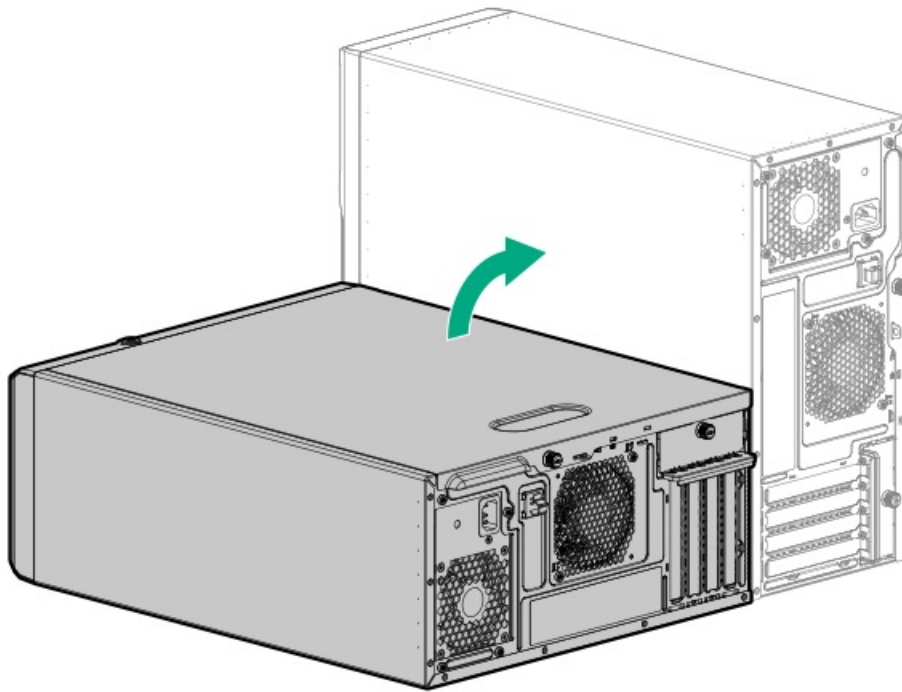




- If the server is in rack mode, remove the server from the rack.
5. Remove the front bezel.
  6. Remove the access panel.
  7. Locate the internal USB port.
  8. Plug in the USB device into the internal USB port.



9. Install the access panel.
10. Install the front bezel.
11. Do one of the following:
  - Orient the server back in tower mode.



- Install the server into the rack.

12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

## Results

The installation procedure is complete.

## Cabling

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

### Subtopics

Cabling guidelines

Storage cabling

Media device cabling

M.2 SATA SSD add-in card cabling

Fan cabling

Serial port cabling

Front I/O cabling

Power supply cabling

## Cabling guidelines

The cabling diagrams in this chapter used different colors to better differentiate one cable from another for illustration clarity. Most of the system cables are actually black.

Observe the following guidelines when working with system cables.

## Before connecting cables

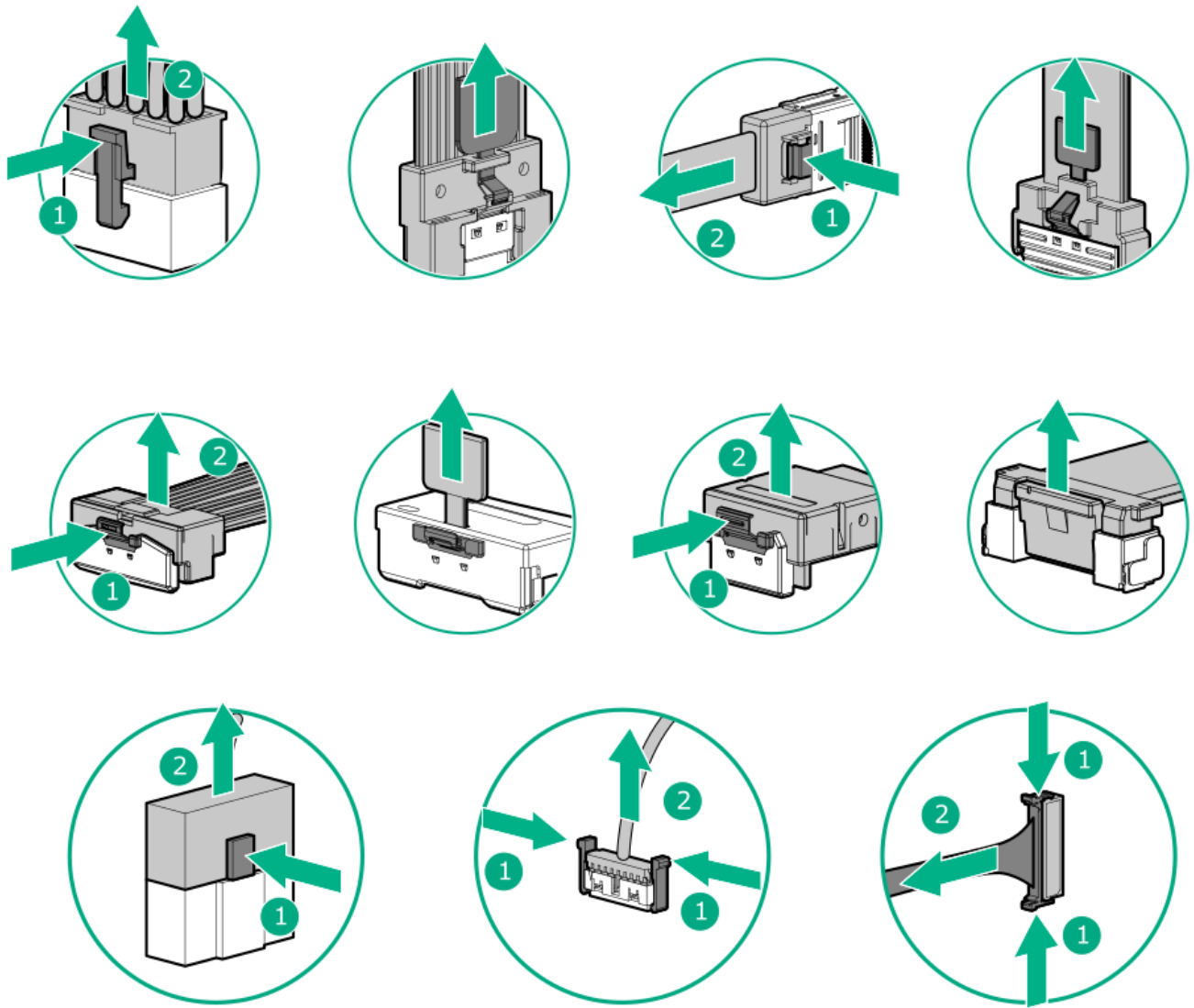
- Note the port labels on the PCA components. Not all these components are used by all systems:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion card ports (controllers, adapters, expanders, risers, and similar boards)
- Note the label near each cable connector. This label indicates the destination port for the cable connector.
- Some data cables are prebent. 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 is 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 server.

## 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.

## Storage cabling

### Subtopics

[Storage controller cabling](#)

[Drive power cabling](#)

[Energy pack cabling](#)

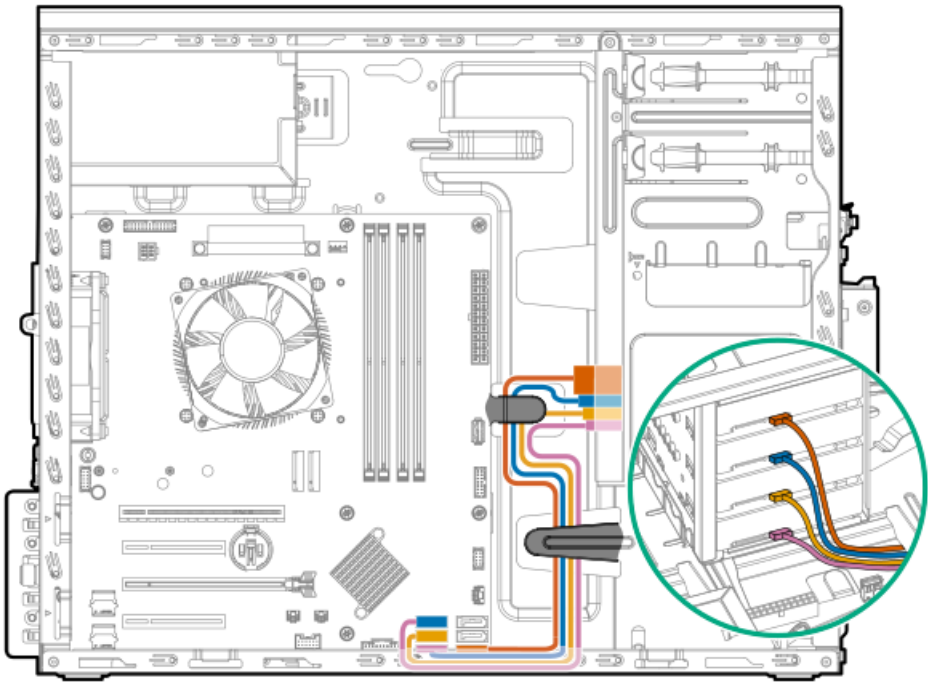
[Storage controller backup power cabling](#)

## Storage controller cabling

### Subtopics



4 LFF non-hot-plug drive controller cabling



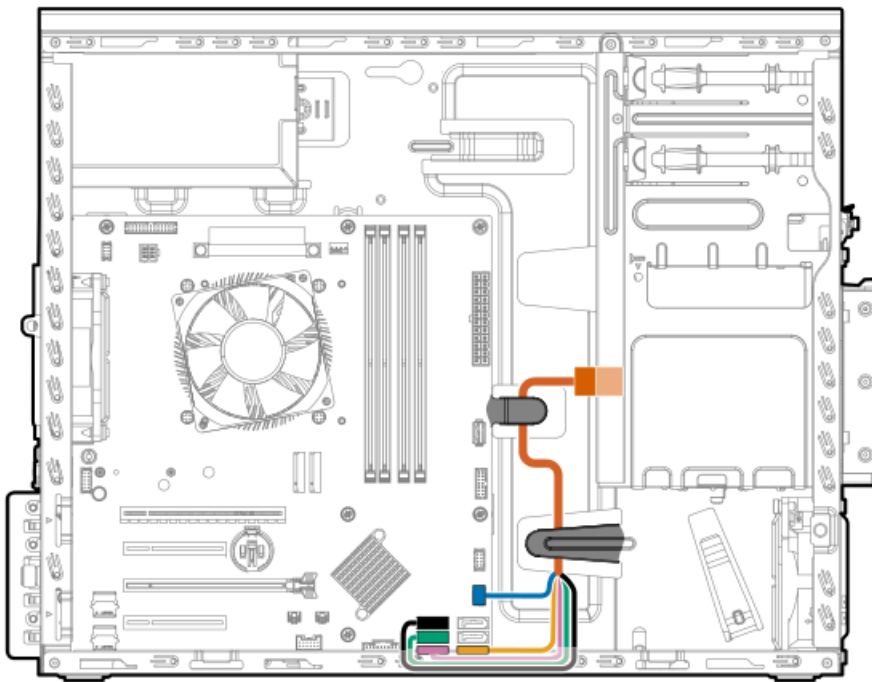
Color	Description
Orange	Onboard SATA port 1 cable
Blue	Onboard SATA port 2 cable
Gold	Onboard SATA port 3 cable
Pink	Onboard SATA port 4 cable

4 LFF / 8 SFF hot-plug drive controller cabling

4 LFF / 8 SFF hot-plug drive: Onboard SATA cabling

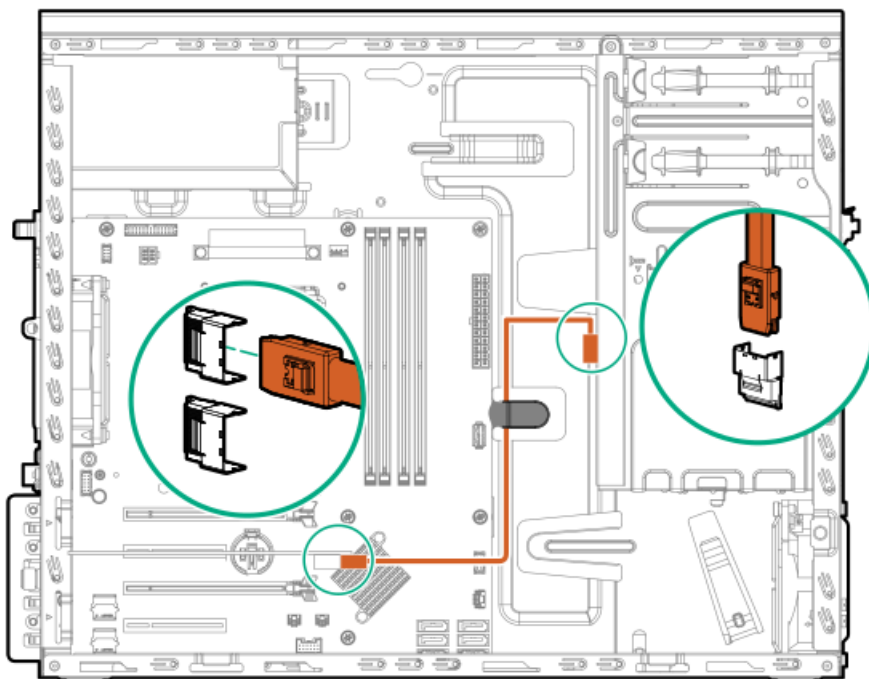
The onboard SATA cabling for the 4 LFF and 8 SFF drive configurations use a single Mini-SAS splitter cable.



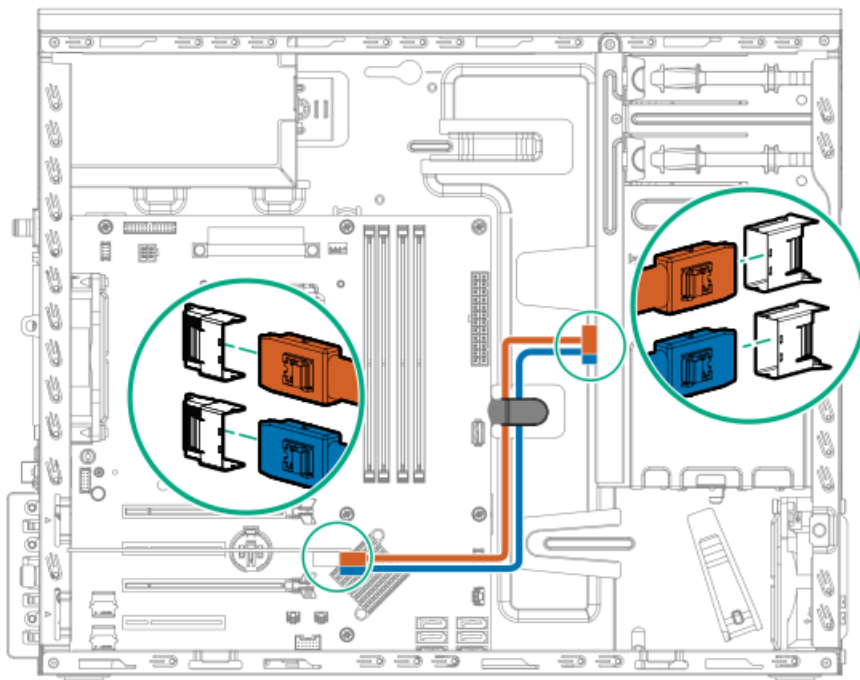


Color	Mini-SAS splitter cable connection
Orange	Drive backplane
Blue	Drive backplane sideband connector
Gold	Onboard SATA port 1
Pink	Onboard SATA port 4
Green	Onboard SATA port 3
Black	Onboard SATA port 2

#### 4 LFF hot-plug drive: Type-p controller cabling



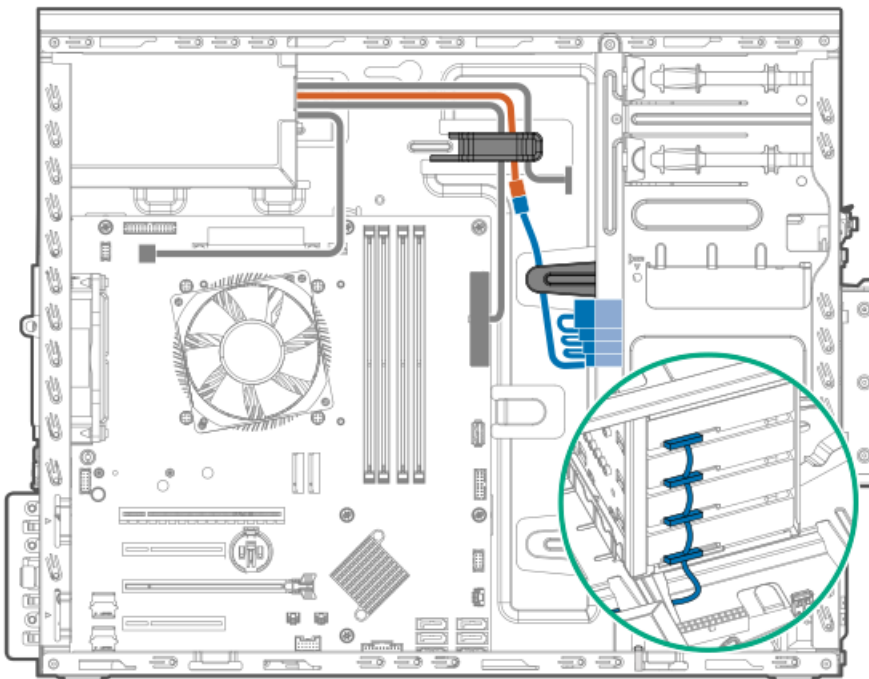
#### 8 SFF hot-plug drive: Type-p controller cabling



Color	Description
Orange	Port 1 Mini-SAS cable
Blue	Port 2 Mini-SAS cable

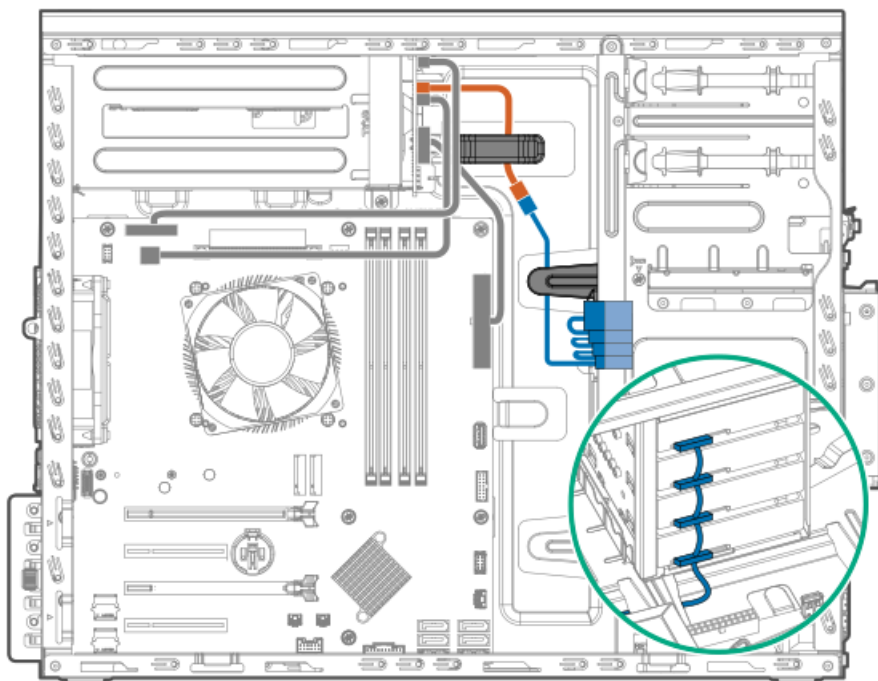
## Drive power cabling

### 4 LFF non-hot plug drive power cabling from the non-hot-plug power supply



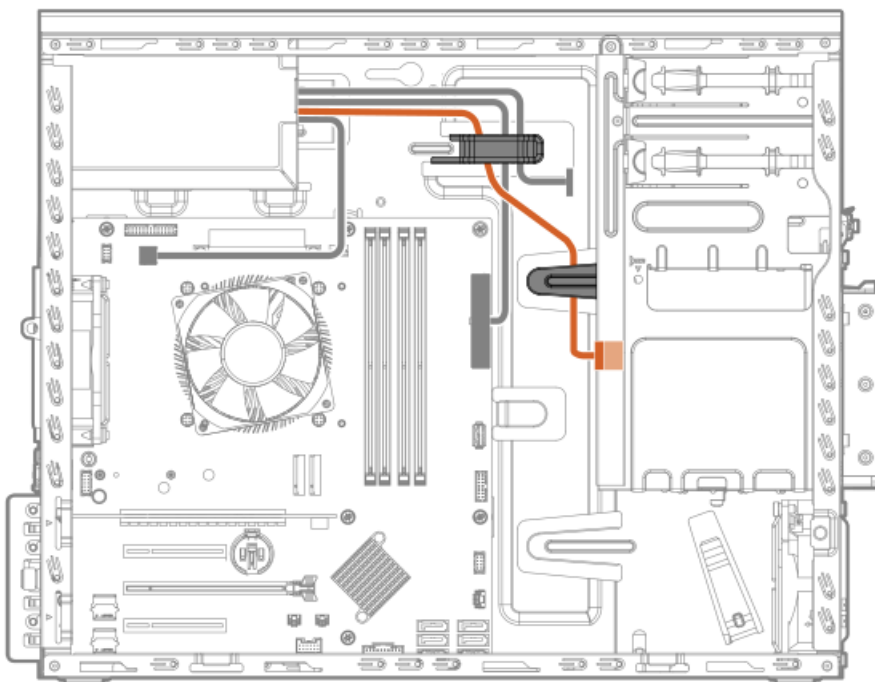
Color	Description
Orange	P3 connector from the non-hot-plug power supply fan-out cable
Blue	SATA-power splitter cable

#### 4 LFF non-hot plug drive power cabling from the Flexible Slot power supply



Color	Description
Orange	Drive power cable (NHP PWR, from the Flexible Slot power fan-out cable)
Blue	SATA-power splitter cable

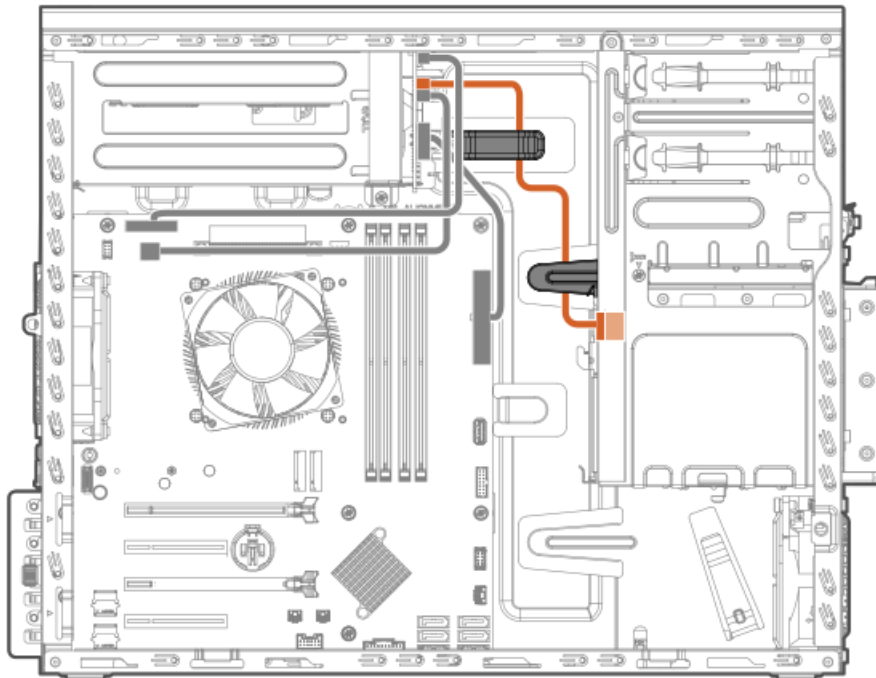
#### 4 LFF / 8 SFF hot-plug drive cabling from the non-hot-plug power supply



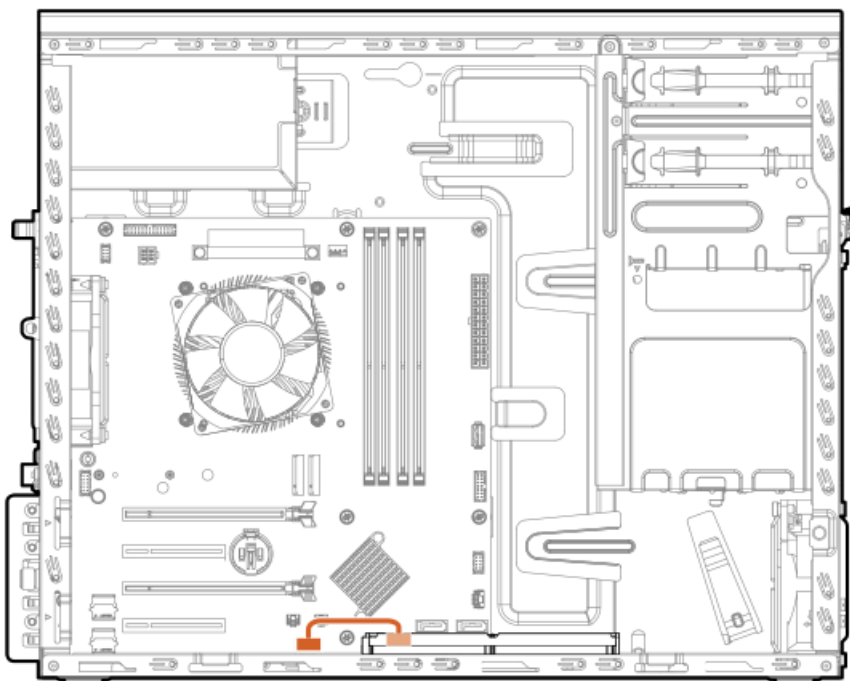
Color	Description
Orange	P3 connector from the non-hot-plug power supply fan-out cable
Blue	SATA-power cable

#### 4 LFF / 8 SFF hot-plug drive cabling from the Flexible Slot power supply

The orange cable in the following diagram is the drive power cable (BP PWR) from the Flexible Slot power fan-out cable.



#### Energy pack cabling

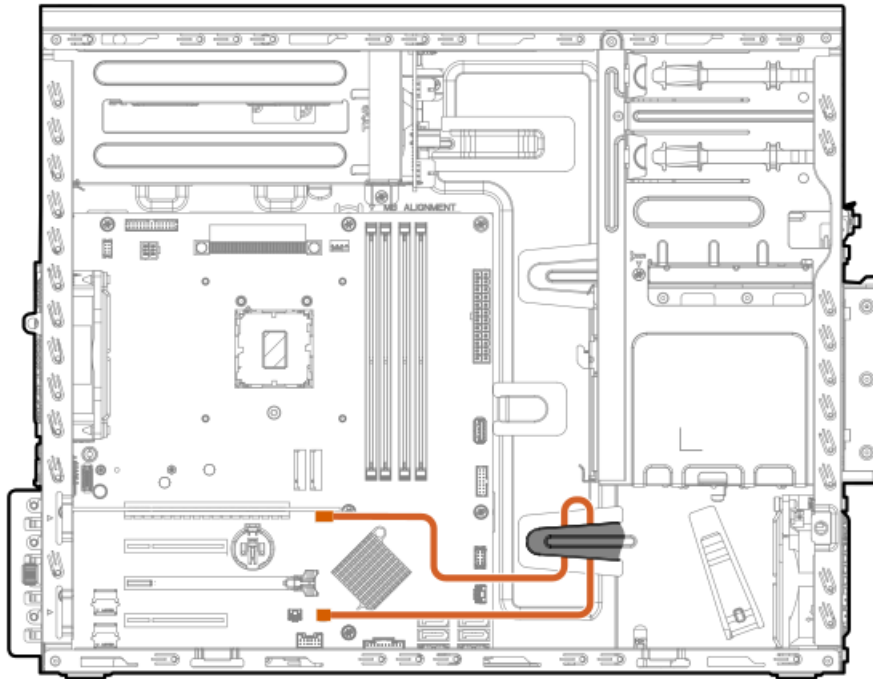


## Storage controller backup power cabling

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

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

Use the following diagram for reference only.



## Media device cabling

### Subtopics

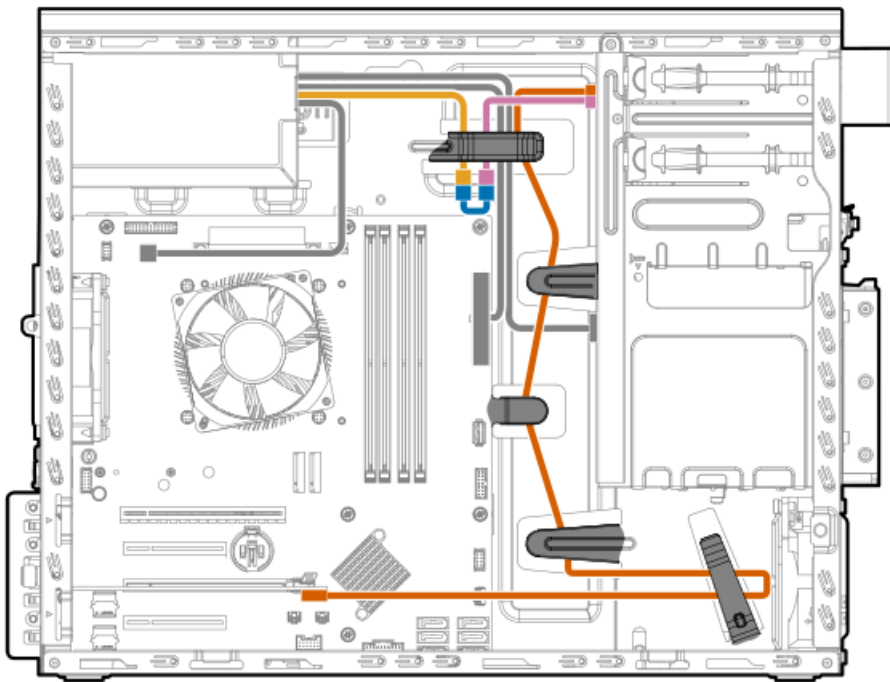
[LTO tape drive cabling](#)

[RDX backup system cabling](#)

[Optical drive cabling](#)

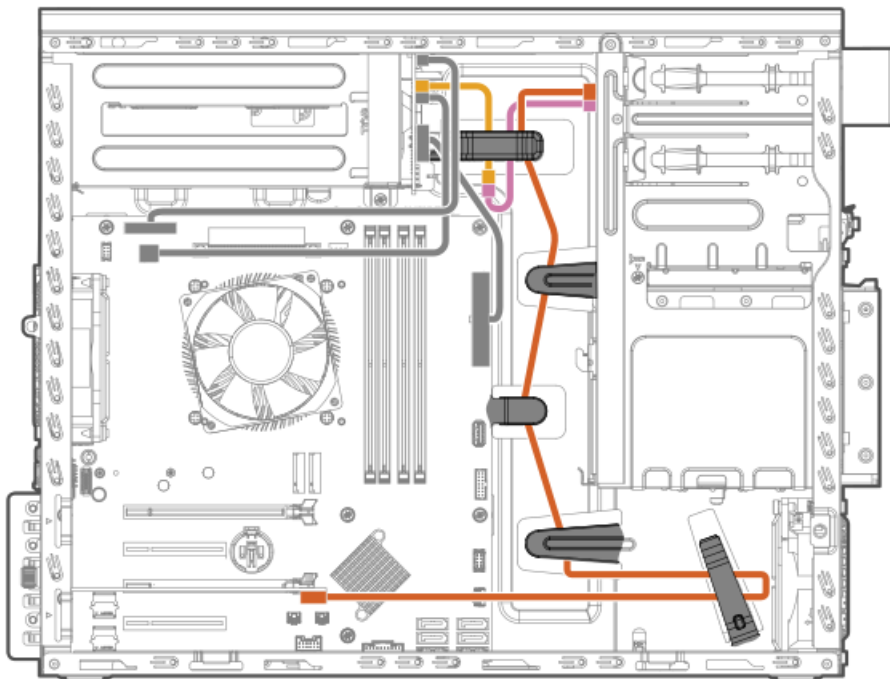
## LTO tape drive cabling

### LTO tape drive cabling with non-hot-plug power supply



Color	Description
Gold	P9 / P10 connector of the non-hot-plug power supply fan-out cable
Pink	Power connector of the LTO tape drive SAS-power Y-cable
Orange	SAS connector of the LTO tape drive SAS-power Y-cable
Blue	LTO/RDX power extension cable

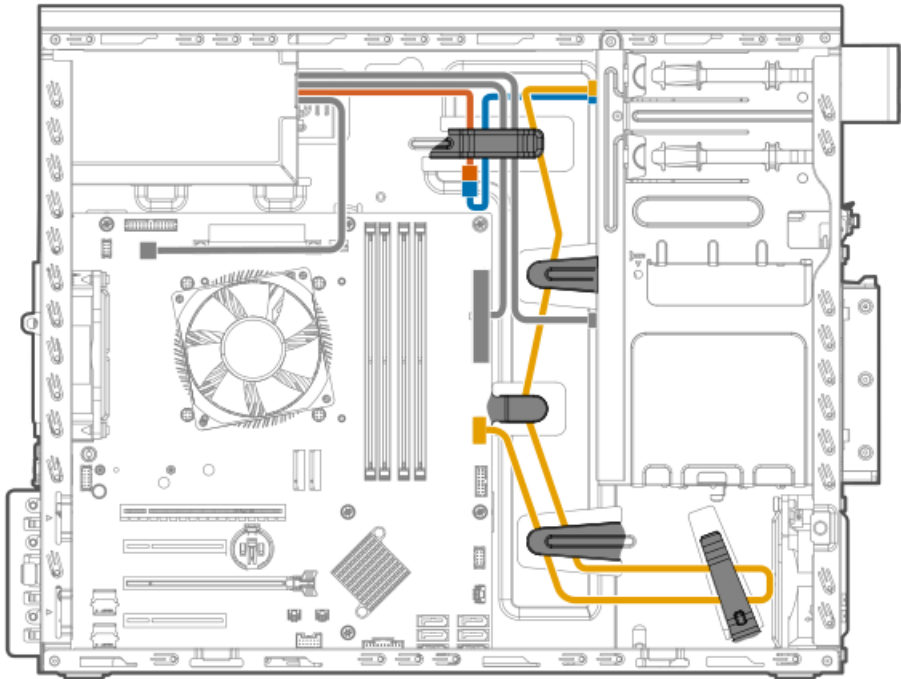
### LTO tape drive cabling with Flexible Slot power supply



Color	Description
Gold	P4 / P2 connector of the Flexible Slot power fan-out cable
Pink	Power connector of the LTO tape drive SAS-power Y-cable
Orange	SAS connector of the LTO tape drive SAS-power Y-cable

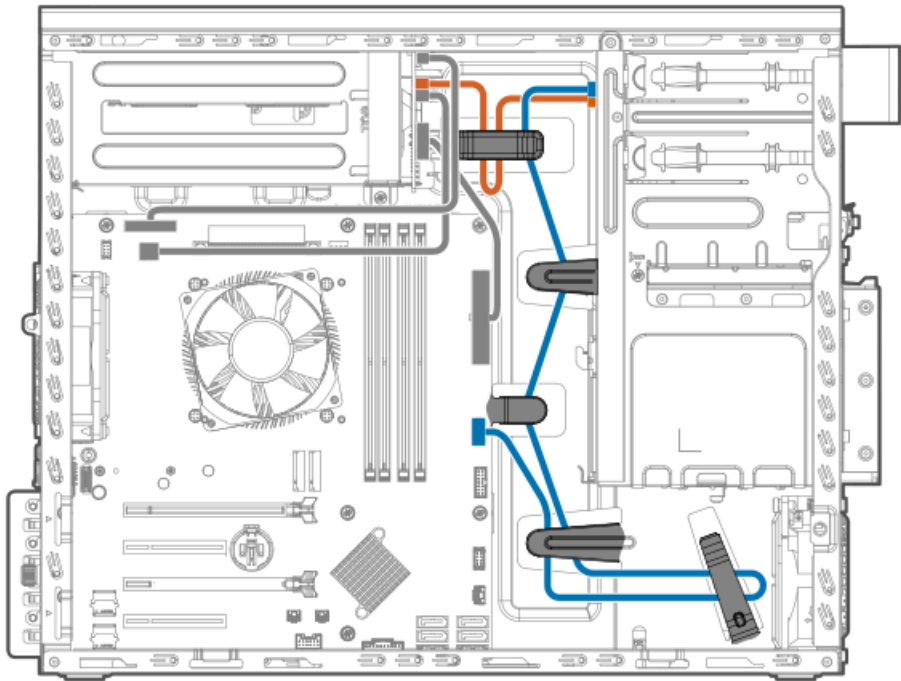
## RDX backup system cabling

### RDX backup system cabling with non-hot-plug power supply



Color	Description
Orange	P9 / P10 connector of the non-hot-plug power supply fan-out cable
Blue	LTO/RDX power extension cable
Gold	RDX USB cable

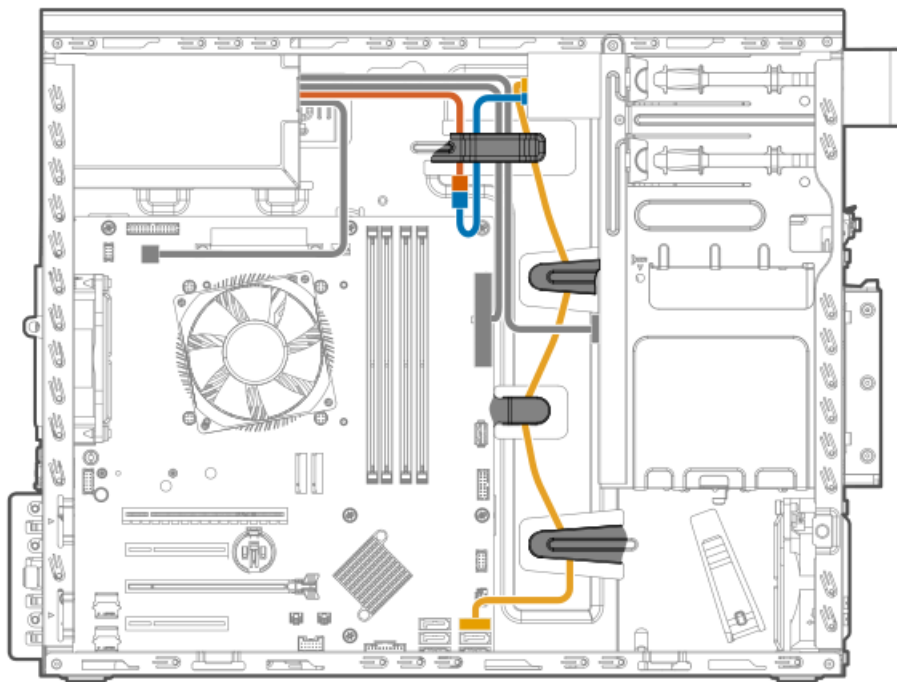
### RDX backup system cabling with Flexible Slot power supply



Color	Description
Orange	P4 / P2 connector of the Flexible Slot power fan-out cable
Blue	RDX USB cable

## Optical drive cabling

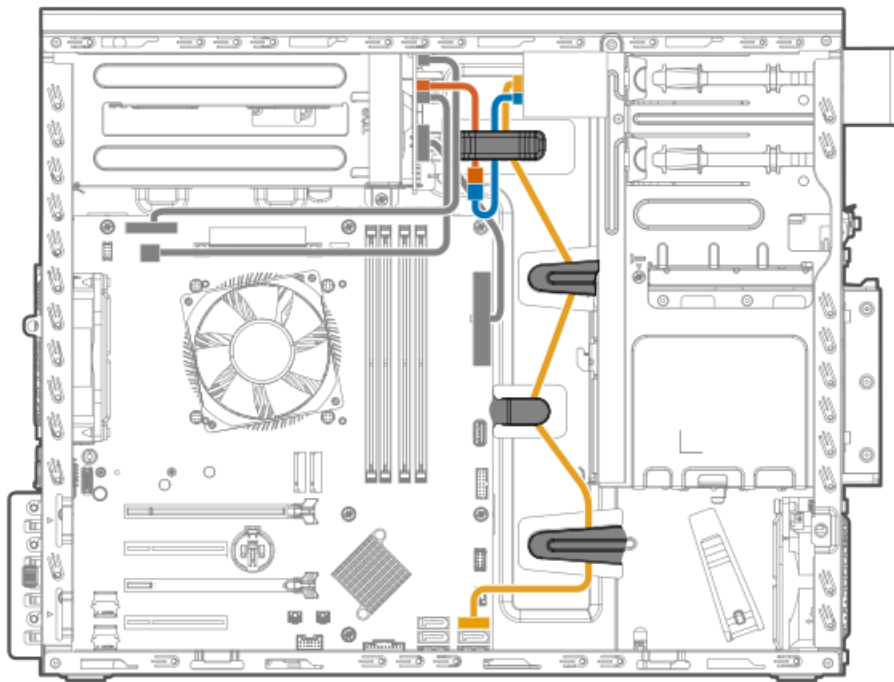
### Optical drive cabling with non-hot-plug power supply



Color	Description
Orange	P4 connector of the non-hot-plug power supply fan-out cable
Blue	Power connector of the SATA-power Y-cable
Gold	SATA connector of the SATA-power Y-cable

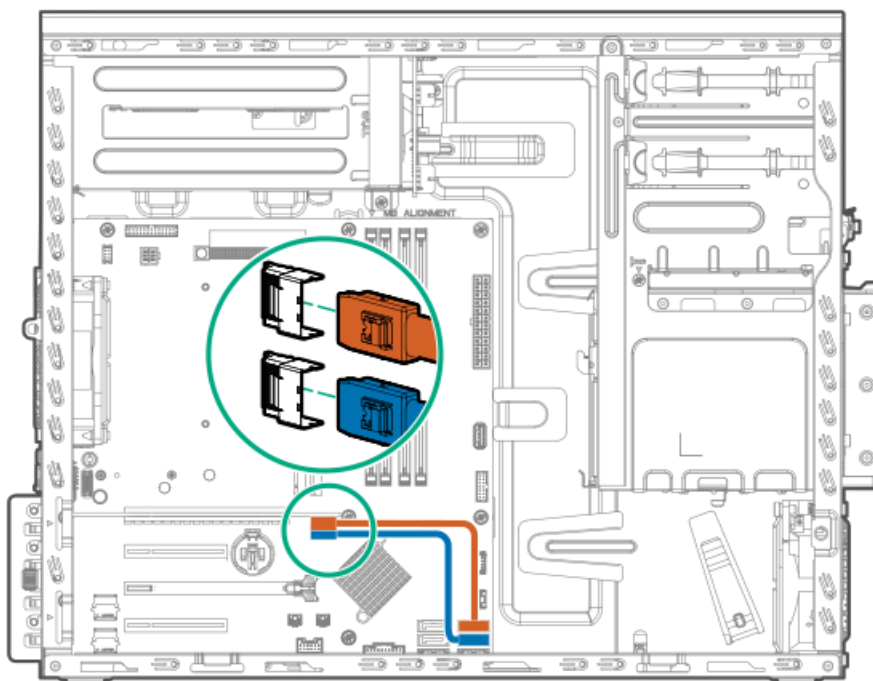
### Optical drive cabling with Flexible Slot power supply





Color	Description
Orange	ODD PWR connector of the Flexible Slot power fan-out cable
Blue	Power connector of the SATA-power Y-cable
Gold	SATA connector of the SATA-power Y-cable

## M.2 SATA SSD add-in card cabling



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

## Fan cabling

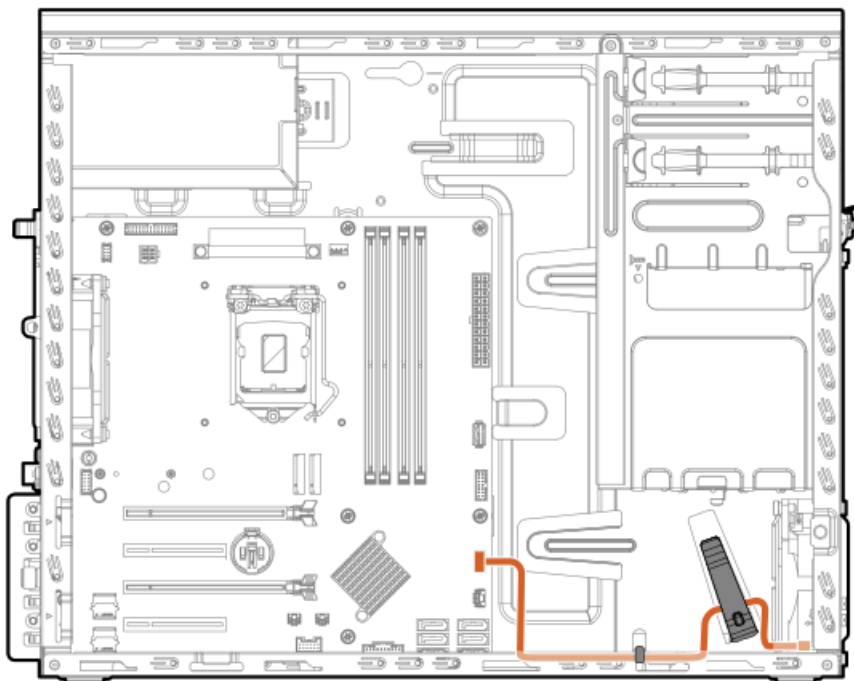
### Subtopics

[PCI fan cabling](#)

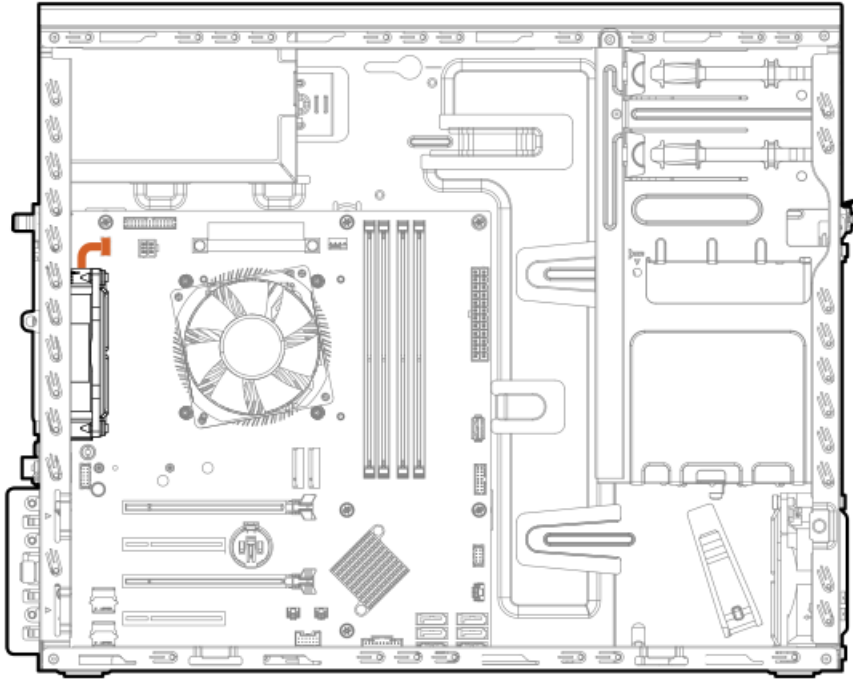
[System fan cabling](#)

[Heatsink fan cabling](#)

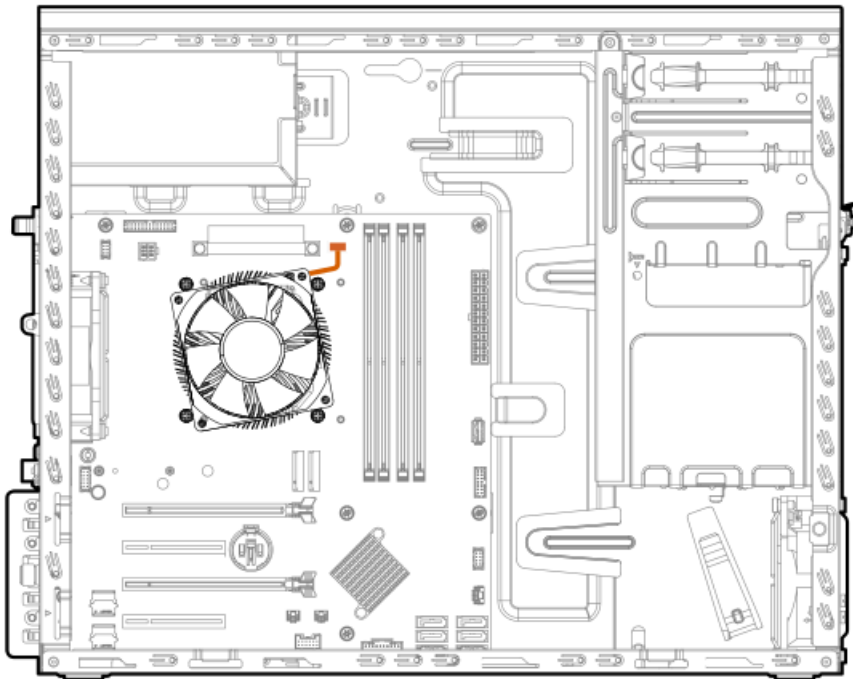
## PCI fan cabling



## System fan cabling

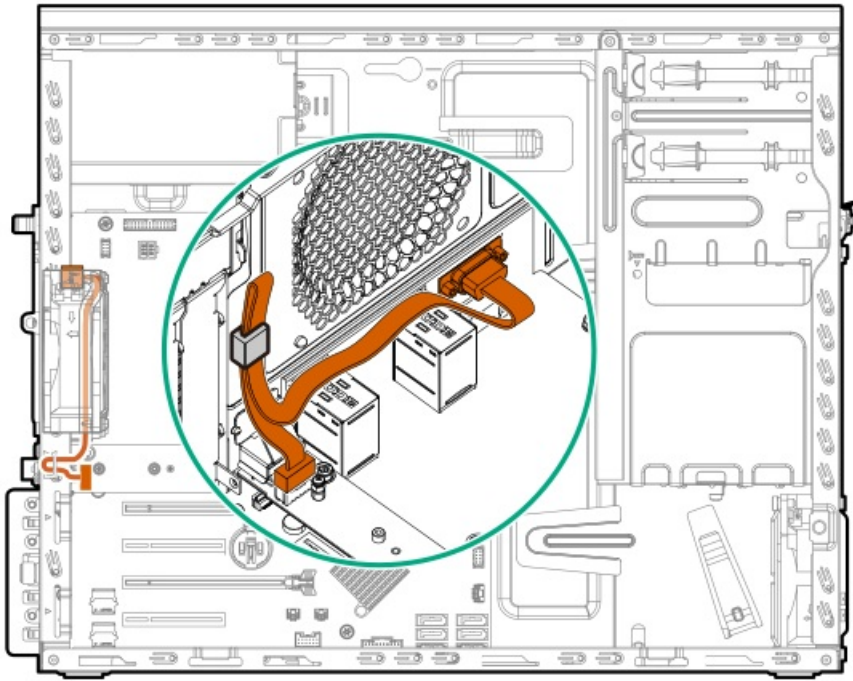


## Heatsink fan cabling

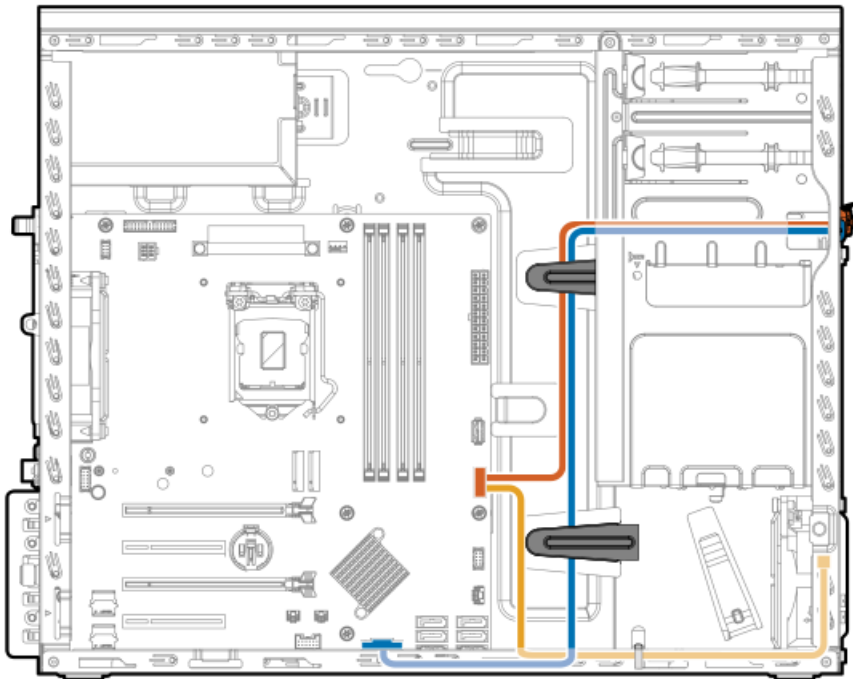


## Serial port cabling

To prevent the serial port cable from blocking the system fan airflow, route the cable beneath the fan, and then secure the extra length of the cable in the serial port cable clip.



## Front I/O cabling



Color	Description
Orange	Front I/O cable
Blue	Front USB cable
Gold	Ambient temperature sensor cable

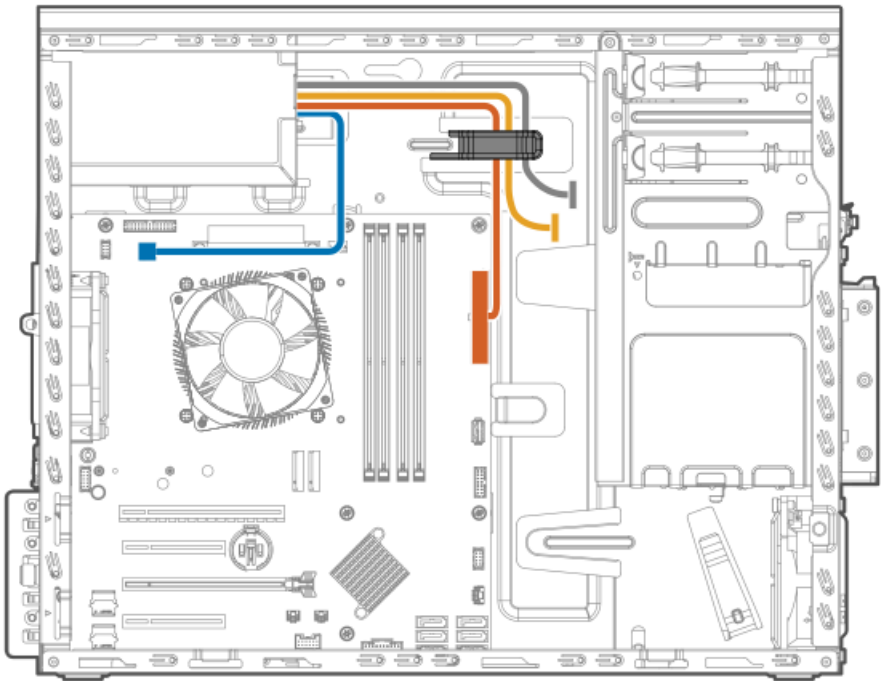
# Power supply cabling

## Subtopics

- [Non-hot-plug power supply cabling](#)
- [Flexible Slot power supply cabling](#)

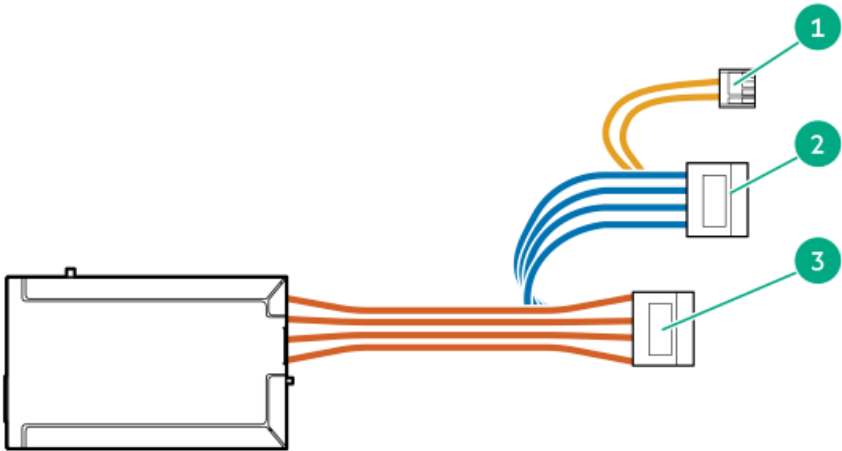
## Non-hot-plug power supply cabling

The gray cable in the following diagram is the [power fan-out cable](#).



Color	Description
Orange	24-pin power supply cable
Blue	4-pin power supply cable
Gold	<a href="#">Drive power cabling</a>

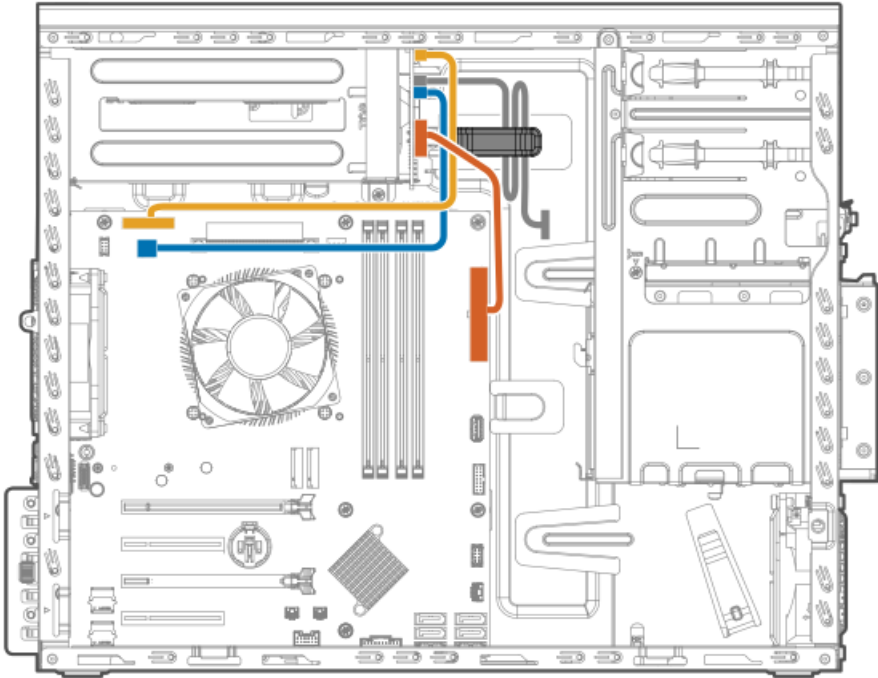
## Non-hot-plug power supply fan-out cable connectors



Item	Cable label	Connection
1	P4	Connects to the optical drive
2	P10	Connects to the LTO/RDX power extension cable
3	P9	Connects to the LTO/RDX power extension cable

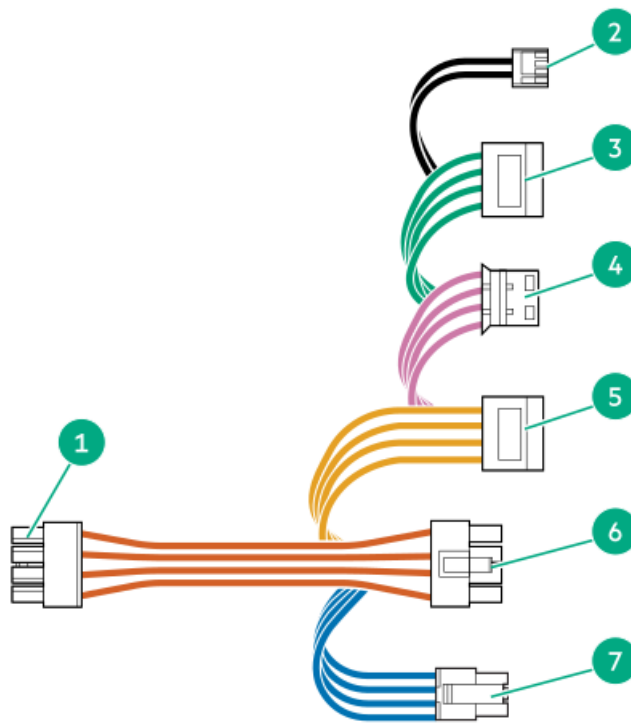
### Flexible Slot power supply cabling

The gray cable in the following diagram is the power fan-out cable.



Color	Description
Orange	24-pin power supply cable
Blue	4-pin power supply cable
Gold	Flexible Slot power supply sideband cable

### Flexible Slot power fan-out cable connectors



Item	Cable label	Connection
1	HDD PWR (PDB)	Connects to RPS power distribution board
2	ODD PWR	Connects to the optical drive
3	P4	Connects to the LTO/RDX power extension cable
4	LTO PWR	LTO/RDX power connector
5	P2	Connects to the LTO/RDX power extension cable
6	NHP PWR	Connects to the SATA-power splitter cable in the 4 LFF non-hot-plug drive configuration
7	BP HP PWR	Connects to the 4 LFF / 8 SFF hot-plug drive backplane

## Configuration resources

Use the following resources to find documentation for configuring and managing your server.

- Some utilities might not apply to your server. For information about server compatibility with the products listed in this chapter, see the product QuickSpecs (<https://www.hpe.com/info/quickspecs>).
- Products ordered from HPE Factory Express might have already been configured with some or all the configurations in this chapter. To determine if any additional setup is required, see your HPE Factory Express order.
- For one-stop access to version-specific software and firmware documentation, including the latest product release notes, see this quick links page:  
<https://www.hpe.com/support/hpeproductdocs-quicklinks>

### Subtopics

[Updating firmware or system ROM](#)

[Configuring the server](#)

[Configuring storage controllers](#)

[Deploying an OS](#)

## Updating firmware or system ROM

To	Use
Download service packs	<ul style="list-style-type: none"> <li>Service Pack for ProLiant (SPP) <a href="https://www.hpe.com/servers/spp/download">https://www.hpe.com/servers/spp/download</a></li> <li>Get an overview of SPP and its ecosystem <a href="https://www.hpe.com/support/SPP-overview-videos-en">https://www.hpe.com/support/SPP-overview-videos-en</a></li> </ul>
Deploy service packs to a single server	Smart Update Manager (SUM) <a href="https://www.hpe.com/info/sum-docs">https://www.hpe.com/info/sum-docs</a>
Deploy service packs to multiple servers	HPE OneView <a href="https://www.hpe.com/support/oneview-docs">https://www.hpe.com/support/oneview-docs</a>
Updating iLO or system firmware in a single server or multiple servers	HPE iLO <a href="https://www.hpe.com/support/hpeilodocs-quicklinks">https://www.hpe.com/support/hpeilodocs-quicklinks</a>
<ul style="list-style-type: none"> <li>Enable policy-based management of server or server group firmware for distributed server infrastructure</li> <li>Monitor server compliance with a configured firmware baseline</li> <li>Receive automatic iLO firmware updates</li> <li>Receive baseline update alerts</li> </ul>	HPE Compute Ops Management <a href="https://www.hpe.com/info/com-docs">https://www.hpe.com/info/com-docs</a>

## Configuring the server



To configure	Use
Single server (GUI)	<ul style="list-style-type: none"> <li>Intelligent Provisioning <a href="https://www.hpe.com/info/intelligentprovisioning/docs">https://www.hpe.com/info/intelligentprovisioning/docs</a></li> <li>iLO remote console or web interface <a href="https://www.hpe.com/support/hpeilodocs-quicklinks">https://www.hpe.com/support/hpeilodocs-quicklinks</a></li> <li>UEFI System Utilities <a href="https://www.hpe.com/info/UEFI-manuals">https://www.hpe.com/info/UEFI-manuals</a></li> <li>HPE Compute Ops Management <a href="https://www.hpe.com/info/com-docs">https://www.hpe.com/info/com-docs</a></li> </ul>
Single server (scripting)	<ul style="list-style-type: none"> <li>RESTful Interface Tool <a href="https://www.hpe.com/support/restfulinterface/docs">https://www.hpe.com/support/restfulinterface/docs</a></li> <li>Python iLO Redfish Library (python-ilorest-library) <a href="https://github.com/HewlettPackard/python-ilorest-library">https://github.com/HewlettPackard/python-ilorest-library</a></li> <li>Scripting Tools for Windows Powershell <a href="https://www.hpe.com/info/powershell/docs">https://www.hpe.com/info/powershell/docs</a></li> <li>iLO RESTful API <a href="https://servermanagementportal.ext.hpe.com/">https://servermanagementportal.ext.hpe.com/</a></li> <li>HPE Compute Ops Management API <a href="https://developer.greenlake.hpe.com/">https://developer.greenlake.hpe.com/</a></li> </ul>
Multiple servers (either UI or scripting)	<ul style="list-style-type: none"> <li>HPE OneView <sup>1</sup> <a href="https://www.hpe.com/support/oneview-docs">https://www.hpe.com/support/oneview-docs</a></li> <li>HPE Compute Ops Management <a href="https://www.hpe.com/info/com-docs">https://www.hpe.com/info/com-docs</a> <ul style="list-style-type: none"> <li><b>Server settings:</b> Define server-specific parameters such as firmware baselines, and then apply them to server groups.</li> <li><b>Server groups:</b> Organize servers into custom-defined sets with associated server settings, and then apply group-specific policies to create a consistent configuration across the servers in the group.</li> </ul> </li> </ul>

<sup>1</sup> 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 <https://www.hpe.com/support/hpeilodocs-quicklinks>.

## Configuring storage controllers

Controller type	Documentation
SR controllers	—
Gen10	HPE Smart Array SR Controller Gen10 User Guide <a href="https://www.hpe.com/support/SR-Gen10-UG">https://www.hpe.com/support/SR-Gen10-UG</a>
Cross-generation SR guides	<ul style="list-style-type: none"> <li>HPE SR Storage Administrator User Guide <a href="https://www.hpe.com/support/SSA-UG">https://www.hpe.com/support/SSA-UG</a></li> <li>HPE SR Storage Administrator CLI User Guide <a href="https://www.hpe.com/support/SSA-UG">https://www.hpe.com/support/SSA-UG</a></li> </ul>
Intel Virtual RAID on CPU	—
Intel VROC for HPE Gen10 Plus	OS-specific Intel VROC user guide: <a href="https://www.hpe.com/support/IntelVROC-Gen10Plus-docs">https://www.hpe.com/support/IntelVROC-Gen10Plus-docs</a> OS-specific configuration guides: <ul style="list-style-type: none"> <li>Intel Virtual RAID on CPU (Intel VROC) for Windows User Guide <a href="https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/338065_Intel_VROC_UserGuide_Windows.pdf">https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/338065_Intel_VROC_UserGuide_Windows.pdf</a></li> <li>Intel Virtual RAID on CPU (Intel VROC) for Linux User Guide <a href="https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/linux-intel-vroc-userguide-333915.pdf">https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/linux-intel-vroc-userguide-333915.pdf</a></li> <li>Intel Volume Management Device Driver for VMware ESXi User Guide <a href="https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/ESXi-Intel-VROC-UserGuide.pdf">https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/ESXi-Intel-VROC-UserGuide.pdf</a></li> </ul>

## Deploying an OS

For a list of supported operating systems, see the HPE Servers Support & Certification Matrices:

<https://www.hpe.com/support/Servers-Certification-Matrices>

To	See
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide <a href="https://www.hpe.com/info/boot-from-san-config-guide">https://www.hpe.com/info/boot-from-san-config-guide</a>
Configure the server to boot from a PXE server	UEFI System Utilities User Guide for HPE ProLiant Gen10, ProLiant Gen10 Plus Servers and HPE Synergy <a href="https://www.hpe.com/support/UEFIGen10-UG-en">https://www.hpe.com/support/UEFIGen10-UG-en</a>
Deploy an OS using iLO virtual media	iLO user guide <a href="https://www.hpe.com/support/ilo5">https://www.hpe.com/support/ilo5</a>
Deploy an OS using Intelligent Provisioning	Intelligent Provisioning user guide <a href="https://www.hpe.com/info/intelligentprovisioning/docs">https://www.hpe.com/info/intelligentprovisioning/docs</a>

## Configuring security

To	See
Implement server security best practices.	<ul style="list-style-type: none"><li>HPE Compute Security Reference Guide <a href="https://www.hpe.com/info/server-security-reference-en">https://www.hpe.com/info/server-security-reference-en</a></li><li>HPE iLO 5 Security Technology Brief <a href="https://www.hpe.com/support/ilo5-security-en">https://www.hpe.com/support/ilo5-security-en</a></li></ul>
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 servers and HPE Synergy <a href="https://www.hpe.com/info/server-config-lock-UG-en">https://www.hpe.com/info/server-config-lock-UG-en</a>

## Optimizing the server

To	See
Optimize server performance through management and tuning features.	HPE Server Performance Management and Tuning Guide <a href="https://www.hpe.com/info/server-performance-management-tuning-en">https://www.hpe.com/info/server-performance-management-tuning-en</a>
Obtain recommendations for resolving incorrect settings.	HPE InfoSight for Servers User Guide <a href="https://www.hpe.com/support/InfoSight-for-Servers-UG-en">https://www.hpe.com/support/InfoSight-for-Servers-UG-en</a>

## Server management

To monitor	See
Single server	HPE iLO <a href="https://www.hpe.com/support/hpeilodocs-quicklinks">https://www.hpe.com/support/hpeilodocs-quicklinks</a>
Multiple servers	HPE OneView <a href="https://www.hpe.com/support/oneview-docs">https://www.hpe.com/support/oneview-docs</a>
Single or multiple servers	HPE Compute Ops Management <a href="https://www.hpe.com/info/com-docs">https://www.hpe.com/info/com-docs</a>

## Managing Linux-based high performance compute clusters

To	Use
Provision, manage, and monitor clusters.	HPE Performance Cluster Manager <a href="https://www.hpe.com/support/hpcm_manuals">https://www.hpe.com/support/hpcm_manuals</a>
Optimize your applications.	HPE Performance Analysis Tools <a href="https://www.hpe.com/info/perftools">https://www.hpe.com/info/perftools</a>
Optimize software library for low latency and high bandwidth, both on-node and off-node, for point-to-point and collective communications.	HPE Cray Programming Environment User Guide <a href="https://www.hpe.com/info/cray-pe-user-guides">https://www.hpe.com/info/cray-pe-user-guides</a>

## Troubleshooting

### Subtopics

[NMI functionality](#)  
[Troubleshooting resources](#)

## NMI functionality

An NMI crash dump enables administrators to create crash dump files when a system is 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](#).

## Safety, warranty, and regulatory information

### Subtopics



## 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>

### Subtopics

[Notices for Eurasian Economic Union](#)

[Turkey RoHS material content declaration](#)

[Ukraine RoHS material content declaration](#)

## Notices for Eurasian Economic Union



### Manufacturer and Local Representative Information

#### Manufacturer information:

Hewlett Packard Enterprise Company, 1701 E Mossy Oaks Road, Spring, TX 77389 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

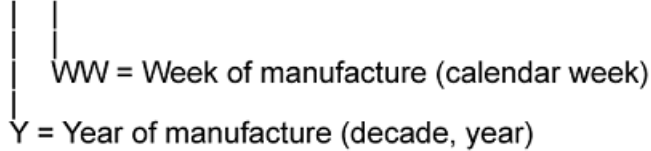
#### Local representative information Kazakh:

- **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 қ., Бостандық ауданы, Әл-

#### Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (product serial number format)



If you need help identifying the manufacturing date, contact [tre@hpe.com](mailto: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 [warranty check tool](#).

## Specifications

### Subtopics

[Environmental specifications](#)

[Mechanical specifications](#)

[Power supply specifications](#)

## Environmental specifications

Specifications	Value
<b>Temperature range*</b>	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-30°C to 60°C (-22°F to 140°F)
<b>Relative humidity (noncondensing)</b>	—
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
<b>Altitude</b>	—
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).

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 (2,953 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
<b>Dimensions</b>	—
Height	36.83 cm (14.50 in)
Depth	47.50 cm (18.70 in)
Width	17.53 cm (6.90 in)
<b>Weight, approximate values</b>	—
Minimum	10.40 kg (22.93 lb)
Maximum	19.00 kg (41.89 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. For detailed power supply specifications, see the QuickSpecs on the [Hewlett Packard Enterprise website](#).

### Subtopics

[HPE 350 W Gold Non-hot-plug Power Supply \(92% efficiency\)](#)

[HPE 350 W Platinum Non-hot-plug Power Supply \(94% efficiency\)](#)

[HPE 500 W Flex Slot Platinum Hot-plug Low Halogen Power Supply](#)

[HPE 800 W Flex Slot Titanium Hot-plug Low Halogen Power Supply](#)

## HPE 350 W Gold Non-hot-plug Power Supply (92% efficiency)

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	6 A
Rated input power	400 W at 115 VAC 400 W at 230 VAC
Efficiency	At 115 VAC: No less than 87% at 100% load No less than 90% at 50% load No less than 87% at 20% load At 230 VAC: 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	350 W at 115 VAC 350 W at 230 VAC
Maximum peak power	385 W at 115 VAC 385 W at 230 VAC
Rated output power	350 W

## HPE 350 W Platinum Non-hot-plug Power Supply (94% efficiency)





Specification	Value
<b>Input requirements</b>	—
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	6 A
Rated input power	< 400 W at 115 VAC / 100% load < 400 W at 230 VAC / 100% load
Efficiency	At 115 VAC: No less than 89% at 100% load No less than 91.7% at 50% load No less than 90% at 20% load At 230 VAC: No less than 91% at 100% load No less than 94% at 50% load No less than 90% at 20% load
<b>Power supply output</b>	—
Rated steady-state power	350 W at 115 VAC 350 W at 230 VAC
Maximum peak power	385 W at 115 VAC 385 W at 230 VAC
Rated output power	350 W

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



Specification	Value
<b>Input requirements</b>	—
Rated input voltage	100 VAC to 240 VAC 240 VDC for China
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
Maximum rated input power	580 W at 100 VAC 560 W at 200 VAC 558 W at 240 VDC for China
BTUs per hour	1999 at 100 VAC 1912 at 200 VAC 1904 at 240 VDC for China
<b>Power supply output</b>	—
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
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

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



Specification	Value
<b>Input requirements</b>	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	4.35 A at 200 VAC 3.62 A at 240 VAC 3.62 A at 240 VDC for China
Maximum rated input power	867 W at 200 VAC 848 W at 240 VAC 848 W at 240 VDC for China
BTUs per hour	2905 at 200 VAC 2893 at 240 VAC 2893 at 240 VDC for China
<b>Power supply output</b>	—
Rated steady-state power	800 W at 200 VAC to 240 VAC input 800 W at 240 VDC input for China
Maximum peak power	800 W at 200 VAC to 240 VAC input 800 W at 240 VDC input for China

## Websites

### General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

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

Product white papers and analyst reports

<https://www.hpe.com/us/en/resource-library>

For additional websites, see [Support and other resources](#).

### Product websites

HPE ProLiant ML30 Gen10 Plus Server user documents

<https://www.hpe.com/info/ml30gen10plus-docs>

## Support and other resources

### Subtopics

[Accessing Hewlett Packard Enterprise Support](#)



[HPE product registration](#)  
[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

## HPE product registration

To gain the full benefits of the Hewlett Packard Enterprise Support Center and your purchased support services, add your contracts and products to your account on the HPESC.

- When you add your contracts and products, you receive enhanced personalization, workspace alerts, insights through the dashboards, and easier management of your environment.
- You will also receive recommendations and tailored product knowledge to self-solve any issues, as well as streamlined case creation for faster time to resolution when you must create a case.

To learn how to add your contracts and products, see <https://www.hpe.com/info/add-products-contracts>.

## 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>

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 Account 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.

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 Tech Care Service

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

HPE Complete Care Service

<https://www.hpe.com/services/completecure>

## 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 (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. This process captures all document information.