



**Hewlett Packard**  
Enterprise

## HPE ProLiant ML110 Gen11 Server User Guide

Part Number: 30-896389FE-006  
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Edition: 6

# HPE ProLiant ML110 Gen11 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.

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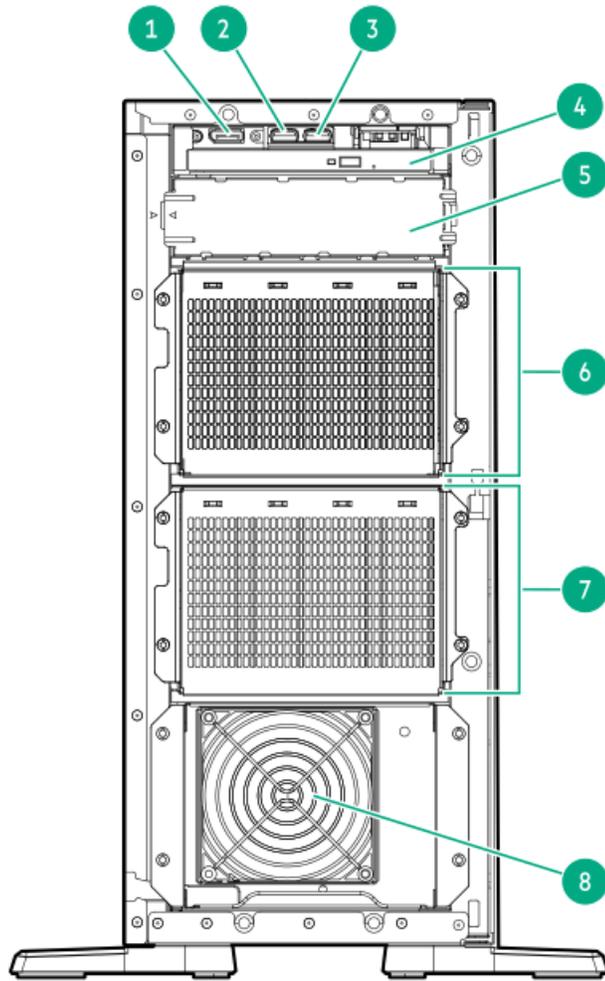
[HPE NS204i-u Boot Device components](#)

[HPE NS204i-u Boot Device LED definitions](#)

## Front panel components

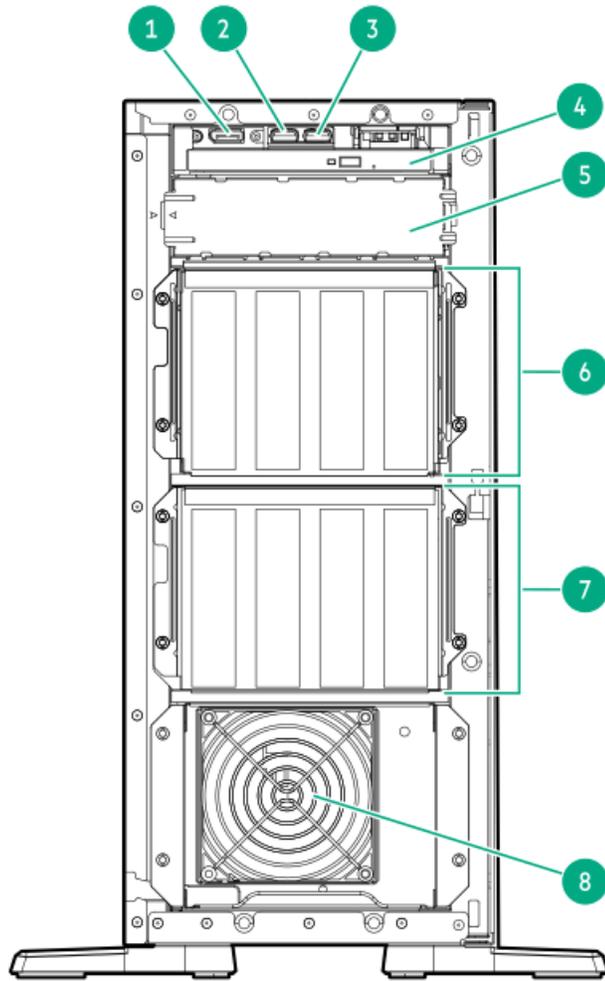
### 8 LFF non-hot-plug drive configuration





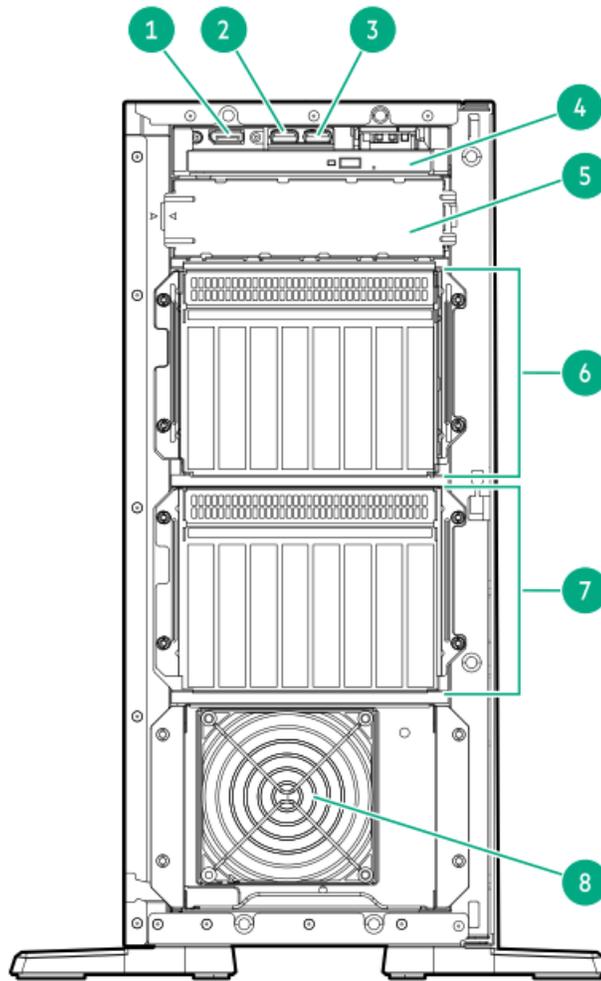
### 8 LFF hot-plug drive configuration





**16 SFF hot-plug drive configuration**





Item	Description
1	DisplayPort 1.1a
2	USB 3.2 Gen 1 port
3	<u>iLO service port</u>
4	Optical drive (optional)
5	Media bay <sup>1</sup>
6	Box 1
7	Box 2
8	PCI fan

<sup>1</sup> The media bay supports the internal USB RDX docking station or SAS LTO tape drive.

## Subtopics

### iLO Service Port

## iLO Service Port

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

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

The Service Port is a USB port with the label **iLO** on the front of the server.

To find out if your server supports this feature, see the server specifications document at the following website: <https://www.hpe.com/info/quickspecs>.

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

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

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

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

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

When you use the iLO Service Port:

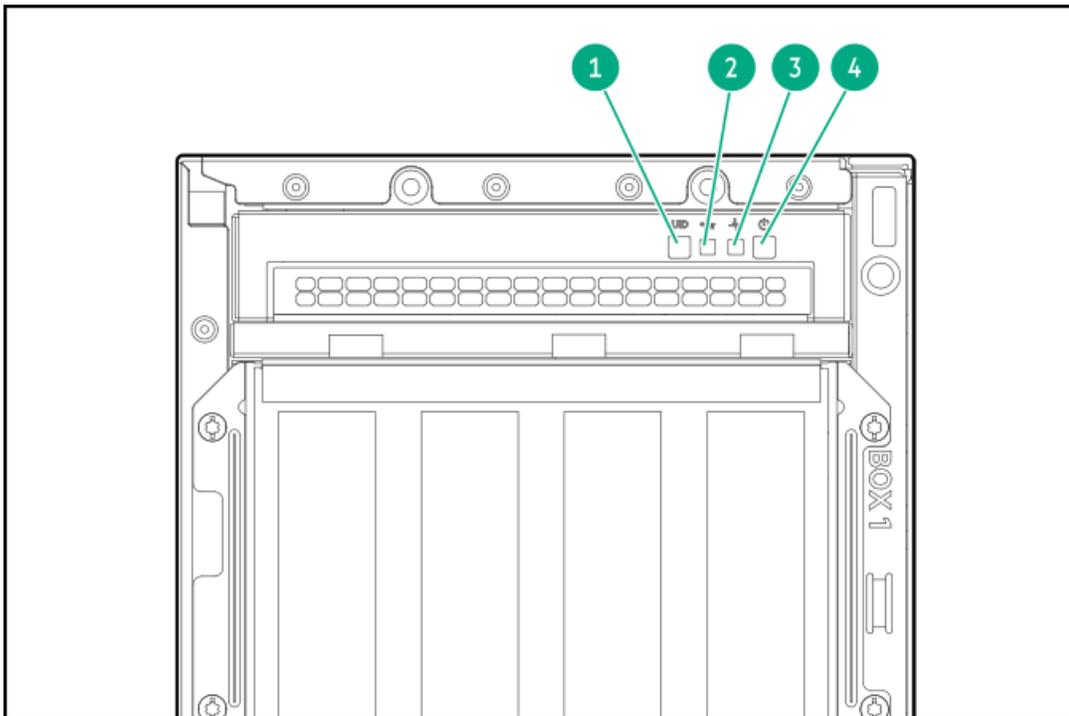
- Actions are logged in the iLO event log.
- The server UID flashes to indicate the Service Port status.

You can also retrieve the Service Port status by using a REST client and the iLO RESTful API.

- You cannot use the Service Port to boot any device within the server, or the server itself.
- You cannot access the server by connecting to the Service Port.
- You cannot access the connected device from the server.

For more information about the iLO Service Port, see the iLO user guide at the following website: <https://www.hpe.com/support/ilo6>.

## Front panel LEDs and button



Item	Description	Status	Definition
1	UID button/LED <sup>1</sup>	Solid blue	Activated
		Flashing blue	<ul style="list-style-type: none"> <li>1 flash per second—Remote management or firmware upgrade in progress</li> <li>4 flashes per second—iLO manual reboot sequence initiated</li> <li>8 flashes per second—iLO manual reboot sequence in progress</li> </ul>
		Off	Deactivated
2	NIC status LED <sup>1</sup>	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity
3	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>
4	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 all 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

### [Server UID LED](#)

### [Using the UID button to view the Server Health Summary](#)

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

## Server UID LED

The UID LED can be used to help an on-site technician quickly identify or locate a particular server when it is deployed in a dense rack with other equipment. It can also be used to identify if a remote management, firmware upgrade, or reboot sequence is in progress.

## Using the UID button to view the Server Health Summary

### Prerequisites

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

### About this task



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



#### CAUTION

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

## Procedure

1. Press and release the UID button.

The Server Health Summary screen is displayed on the external monitor. For more information, see the iLO troubleshooting guide:

<https://www.hpe.com/support/ilo6>

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

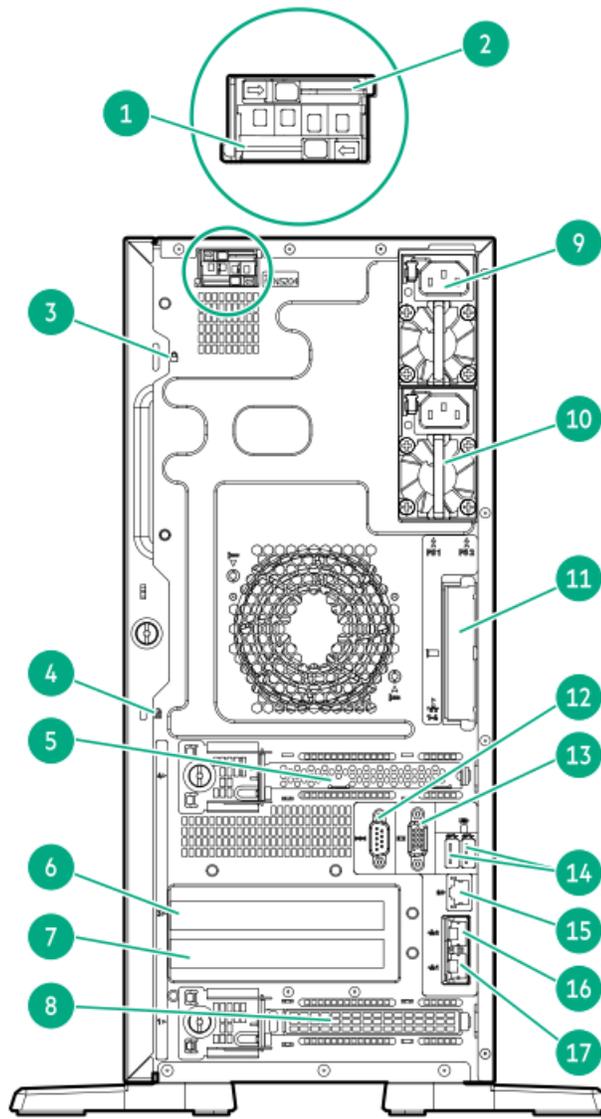
## Front panel LED power fault codes

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

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

## Rear panel components





Item	Description
1	HPE NS204i-u Boot Device slot 1 (optional)
2	HPE NS204i-u Boot Device slot 2 (optional)
3	Padlock eye
4	Kensington security slot
5	Slot 4 PCIe5 x16 (16, 8, 4)
6	Slot 3 PCIe5 x16 (16, 8, 4) (optional) *
7	Slot 2 PCIe5 x16 (16, 8, 4) (optional) *
8	Slot 1 PCIe5 x16 (16, 8, 4)
9	Flexible Slot power supply 1
10	Flexible Slot power supply 2 (optional)
11	Slot 14 OCP PCIe5 x16
12	Serial port (optional)
13	VGA port
14	USB 3.2 Gen 1 ports
15	iLO dedicated network port
16	NIC port 2
17	NIC 1 / iLO shared port (1 GbE)

\* Slots 2 and 3 are located on the PCIe riser board option.

## Subtopics

### Display device setup

## Display device setup

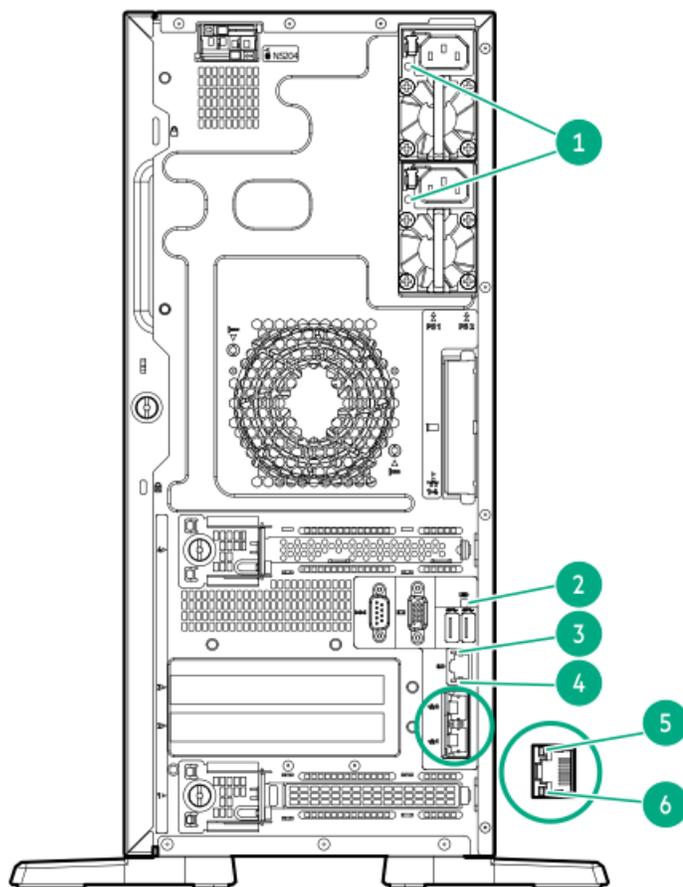
The server supports both VGA port and DisplayPort 1.1a. Before connecting a display device, observe following:

- Display output modes:
  - If you connect two display devices to the server using both the VGA port and DisplayPort, the same image is mirrored on both devices.
  - The embedded video controller in the iLO chipset does not support dual display or screen extension mode. To enable dual display, install a compatible graphics card.
- When using HDMI or DVI adapters for the DisplayPort, use an active-type adapter. Passive-type adapters marked with the DP++ symbol are not supported.

Whenever possible, use the same display connection type. For example, if your monitor only has a VGA port, use the VGA port on the server. Using other adapters or converter cables or dongles might lead to decreased display quality or a lag over the connection.

## Rear panel LEDs





Item	Description	Status	Definition
1	Power supply LED	Solid green	Normal
		Off	One or more of 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> </ul>
2	UID LED	Solid blue	Activated
		Flashing blue	System is being managed remotely.
		Off	Deactivated
3	iLO status	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity
4	iLO link	Solid green	Network link
		Off	No network link
5	NIC link LED	Solid green	Network link
		Off	No network link
6	NIC status LED	Solid green	Linked to network
		Flashing green	Network active
		Off	No network link

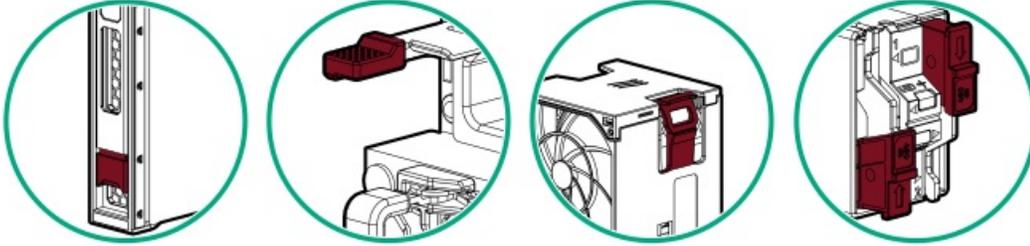


## Component touchpoints

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

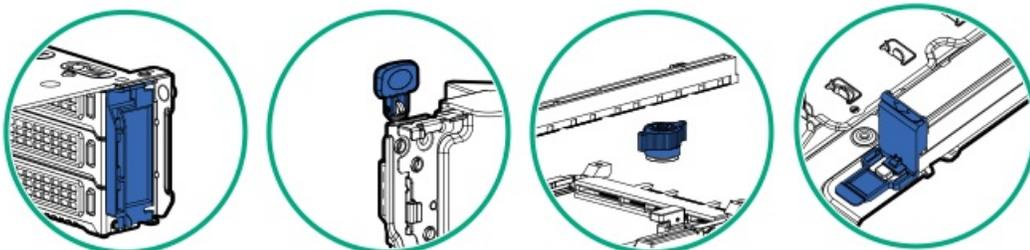


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

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:

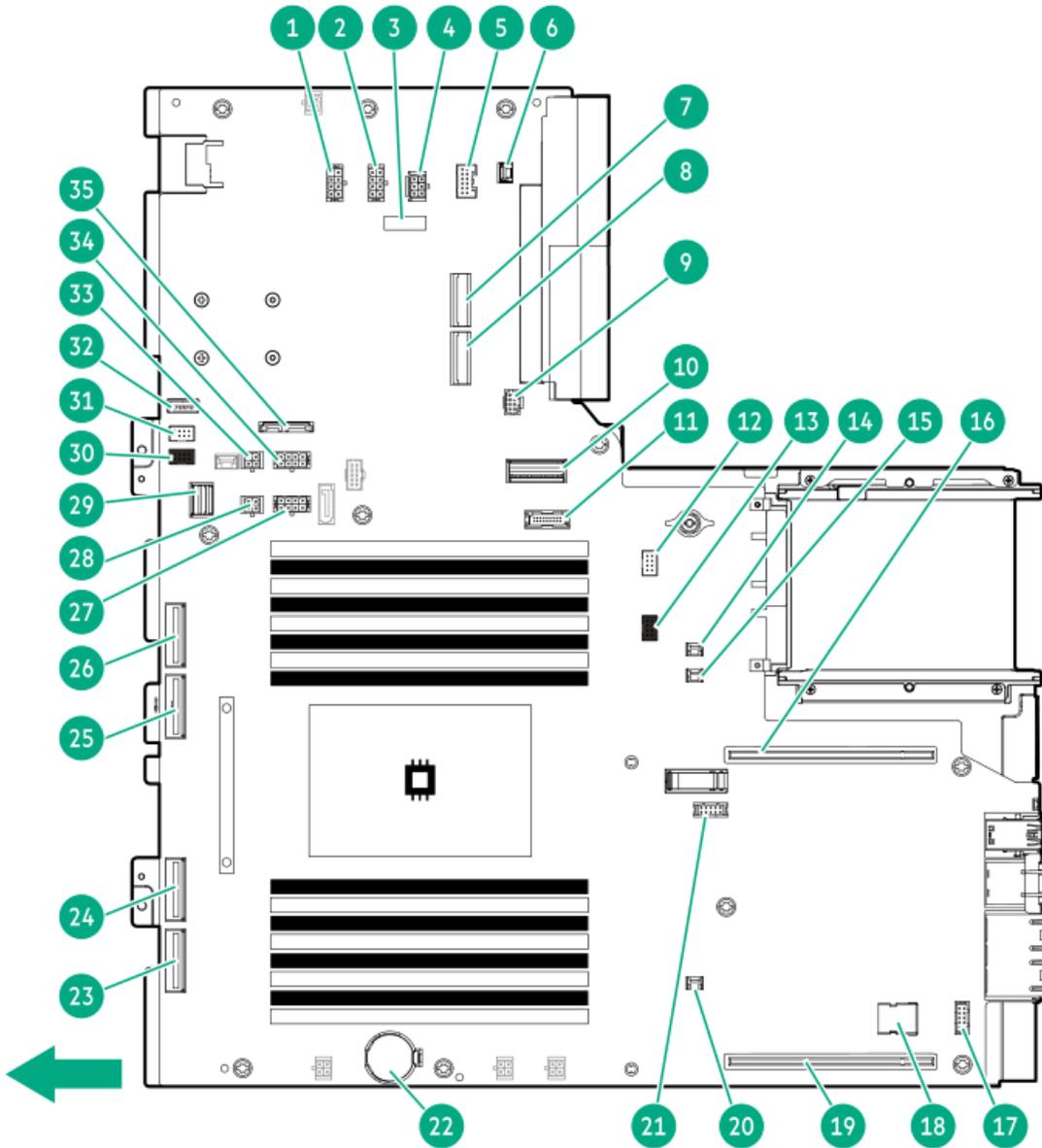
- Storage devices
- Fan cages
- System boards
- Energy packs

## System board components

The grayed out components in the system board image are not for use in this server.

The arrow points to the front of the server.





Item	Description
1	Drive box 2 power connector
2	Drive box 1 power connector
3	<a href="#">System maintenance switch</a>
4	Media drive power connector
5	Energy pack connector
6	Chassis intrusion detection switch connector
7	M.2 slot 2 <sup>1</sup>
8	M.2 slot 1 <sup>1</sup>
9	NS204i-u power connector
10	SlimSAS x8 port
11	DisplayPort connector
12	Fan connector 4
13	Fan connector 3
14	Slot 14 OROC storage backup power connector
15	Slot 4 storage controller backup power connector
16	Slot 4 PCIe5 x16 (16, 8, 4)
17	Serial port connector
18	USB 2.0 port
19	Slot 1 PCIe5 x16 (16, 8, 4)
20	Slot 1 storage controller backup power connector
21	VGA port connector
22	System battery
23	MCIO port 1 for the riser slot 2
24	MCIO port 2 for the riser slot 2
25	MCIO port 3 for the riser slot 3
26	MCIO port 4 for the riser slot 3
27	GPU auxiliary power connector 2 <sup>2</sup>
28	Power connector for the riser slot 2
29	Front I/O & USB 3.2 Gen 1 and iLO service port connector
30	Fan connector 1
31	Fan connector 2
32	USB 3.2 Gen 1 port
33	Power connector for the riser slot 3
34	GPU auxiliary power connector 1 <sup>2</sup>
35	Optical drive SATA-power connector

<sup>1</sup> The onboard M.2 slots support SATA and NVMe SSDs in 2280 and 22110 form factors.  
<sup>2</sup> For high-power GPU options (> 75 W TDP)

## Subtopics

[System maintenance switch descriptions](#)

[DIMM label identification](#)

[DIMM slot numbering](#)

[Heatsink and processor socket components](#)

## System maintenance switch descriptions

Position	Default	Function
S1 <sup>1</sup>	Off	<ul style="list-style-type: none"> <li>Off—iLO 6 security is enabled.</li> <li>On—iLO 6 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](#).

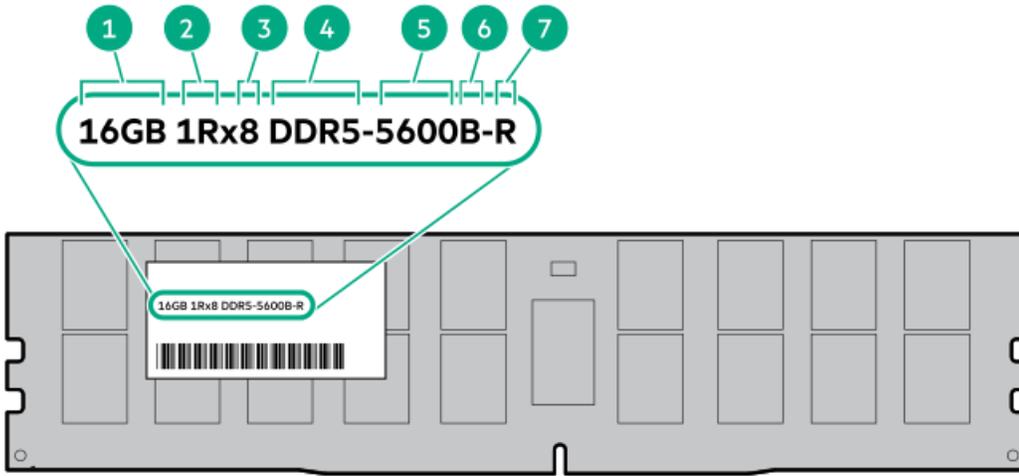
## DIMM label identification

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 DDR5 SmartMemory QuickSpecs](#):

<https://www.hpe.com/docs/server-memory>



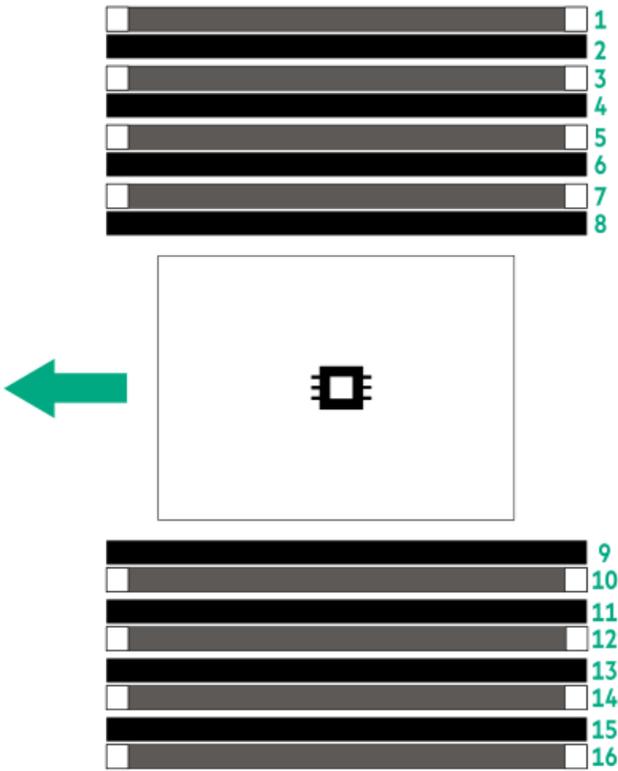


Item	Description	Example
1	Capacity <sup>1</sup>	16 GB 32 GB 64 GB 128 GB 256 GB
2	Rank	1R—Single rank 2R—Dual rank 4R—Quad rank 8R—Octal rank
3	Data width on DRAM	x4—4-bit x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed <sup>1</sup>	4800 MT/s 5600 MT/s
6	CAS latency	B—42-42-42 B—50-42-42 (for 128 GB and 256 GB capacities)
7	DIMM type	E—UDIMM (unbuffered with ECC) R—RDIMM (registered)

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

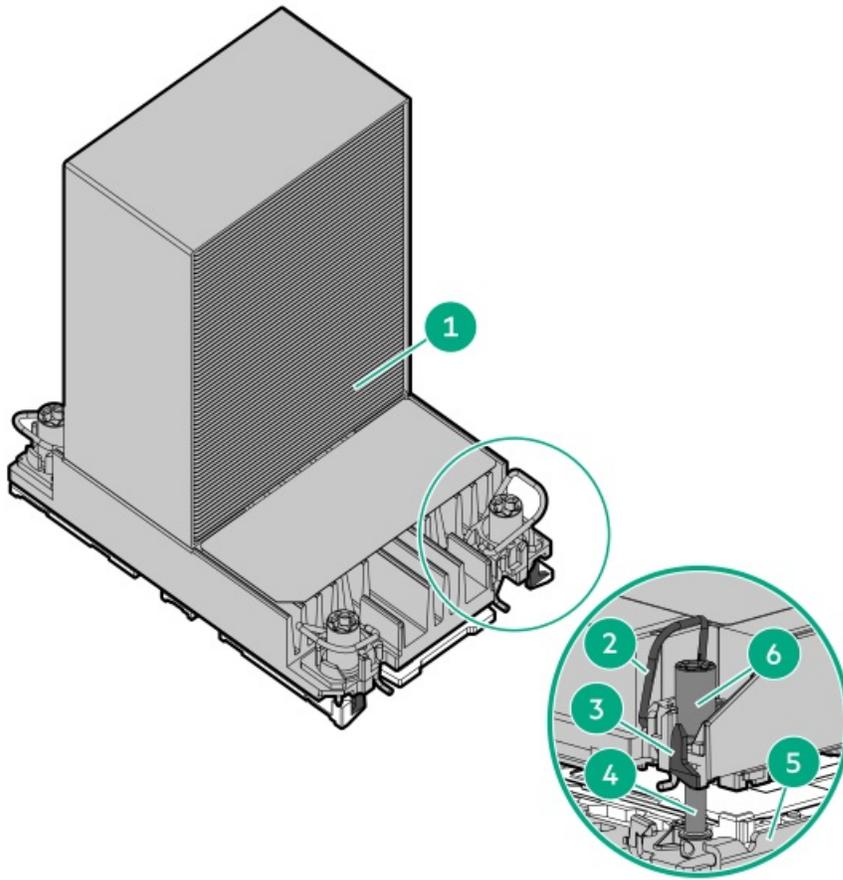
## DIMM slot numbering

The arrow points to the front of the server.



## Heatsink and processor socket components

A standard heatsink is shown. Your heatsink might look different.



Item	Description
1	Processor-heatsink module *
2	Anti-tilt wires
3	Processor carrier release tabs
4	Bolster plate guide posts
5	Bolster plate
6	Heatsink screws

\* This module consists of the heatsink attached to the processor that is already secured in its carrier.

## M.2 SSD numbering

The server has two M.2 slots on the system board. These slots support NVMe and SATA SSDs in 2280 and 22110 form factors .

Mixed SSD type configuration is not supported.

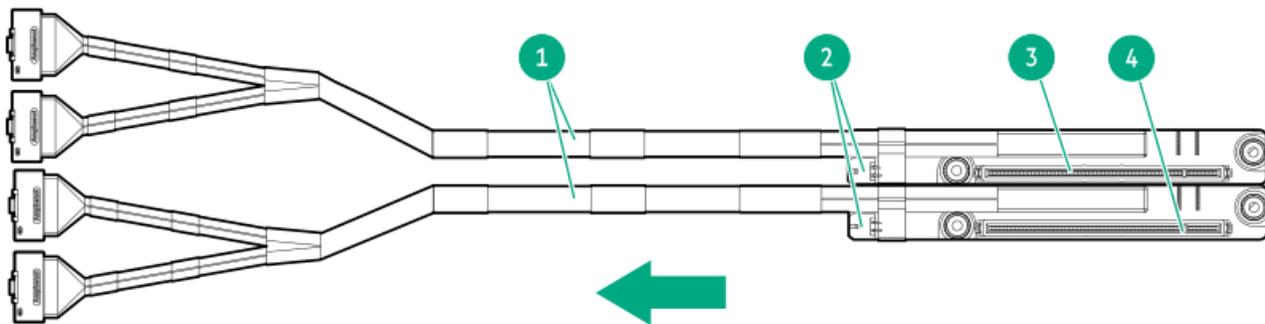
The arrow points to the front of the server.



## Riser board components

- This server supports one type of PCIe riser and is rated for a maximum power draw of 75 W.
- This riser type has its signal cable soldered on the board itself. This riser type is combined with another riser in the riser cage.

The arrow points to the front of the server.



Item	Description	Supported form factors
1	Riser signal cable	—
2	Riser power connector	—
3	Slot 3 PCIe5 x16 (16, 8, 4, 1) <sup>1</sup>	<ul style="list-style-type: none"> <li>• Full-height, full-length</li> <li>• Full-height, half-length</li> <li>• Half-height, half-length (low-profile)</li> </ul>
4	Slot 2 PCIe5 x16 (16, 8, 4, 1) <sup>2</sup>	

<sup>1</sup> Slot 3 supports a single-width GPU.  
<sup>2</sup> Slot 2 supports a single-width or double-width GPU.

## HPE Basic Drive LED definitions

The HPE Basic drive carrier has the following LEDs:

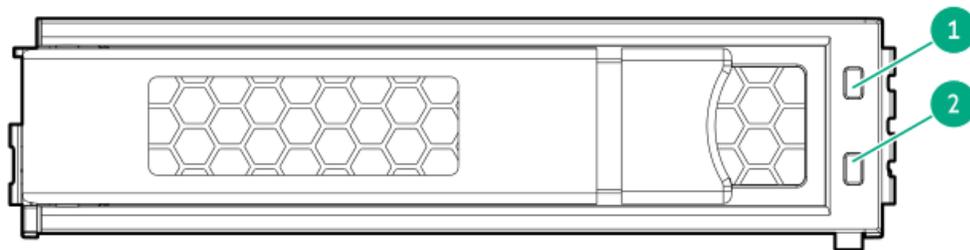
- Amber/blue LED—Managed by the drive backplane in conjunction with the storage controller and is used to indicate drive status.



- Green LED—Managed by the drive itself and indicates the drive activity.

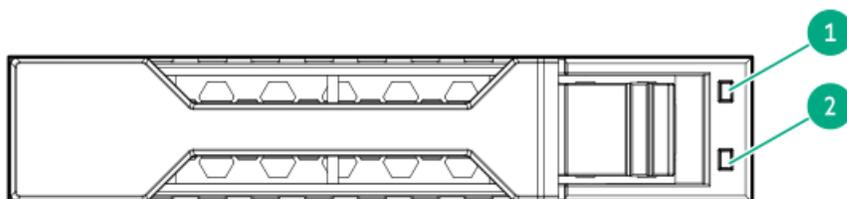
### LFF low-profile drive carrier

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



### SFF basic drive carrier

The SFF basic drive carrier supports hot-plug SAS or 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.

## 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.

### Subtopics

[LFF non-hot-plug drive bay numbering](#)

[LFF hot-plug drive bay numbering](#)

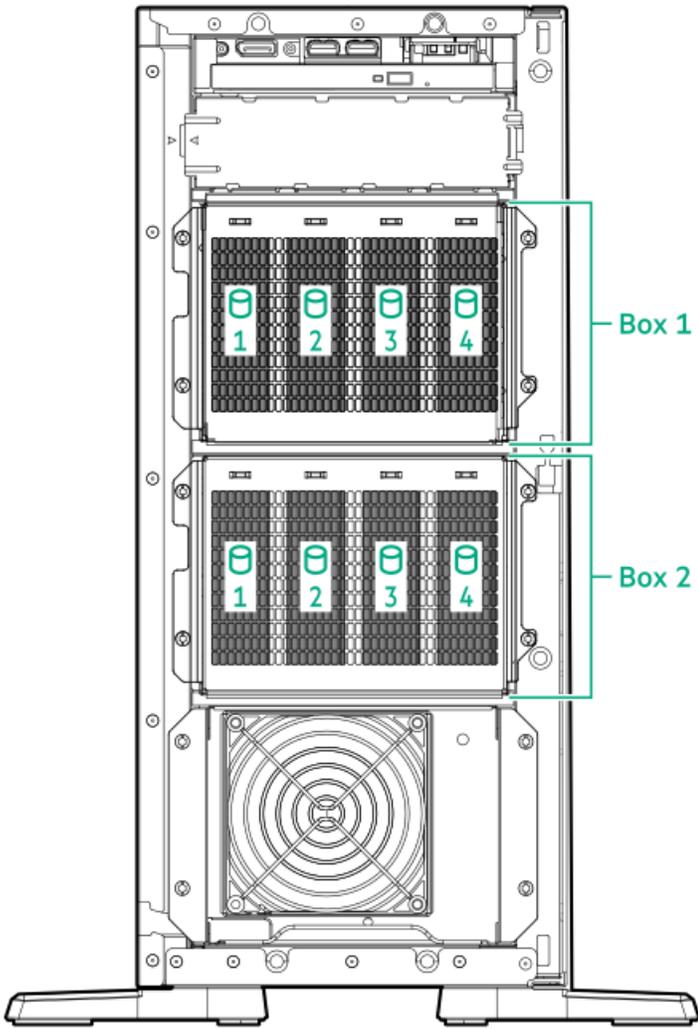
[SFF hot-plug drive bay numbering](#)

[Mixed hot-plug drive bay numbering](#)

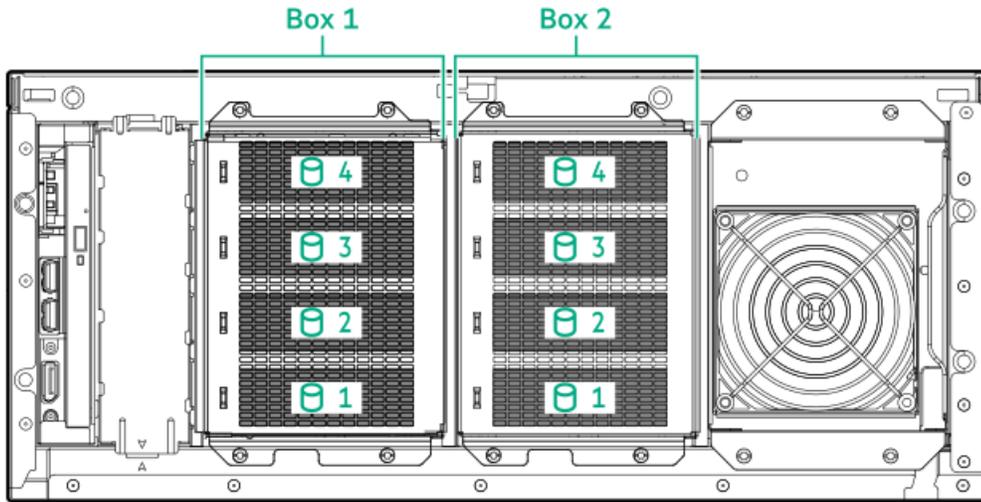
## LFF non-hot-plug drive bay numbering

This server supports up to 8 SATA drives in two LFF non-hot-drive boxes.

### Tower orientation



**Rack orientation**

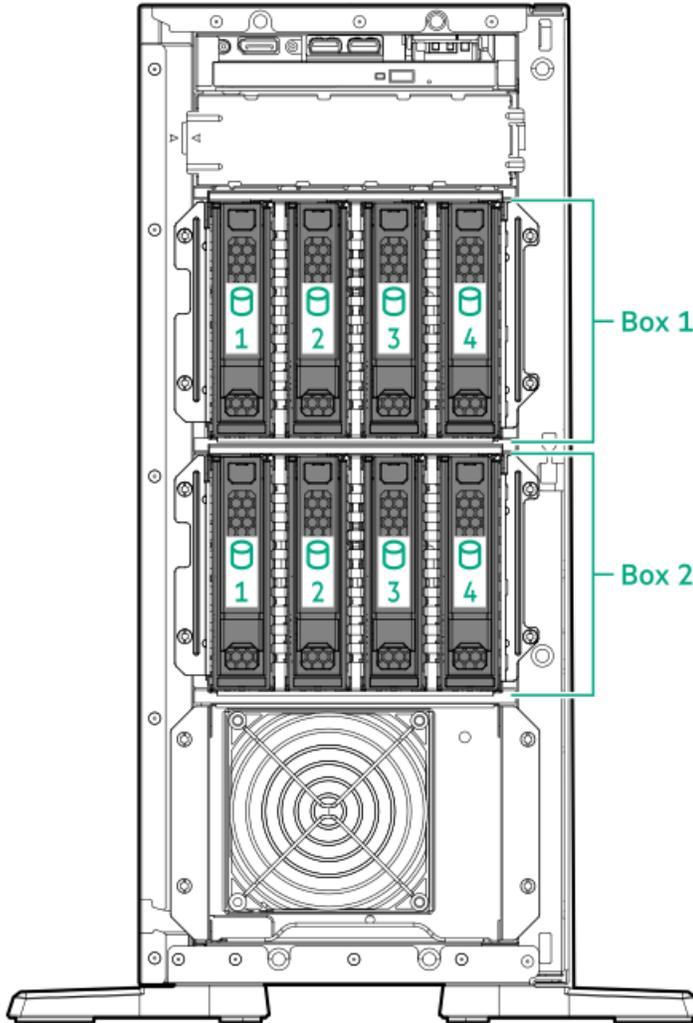


## LFF hot-plug drive bay numbering

LFF hot-plug drive box uses the 4 LFF 12G x1 SAS / SATA UBM3 drive backplane.

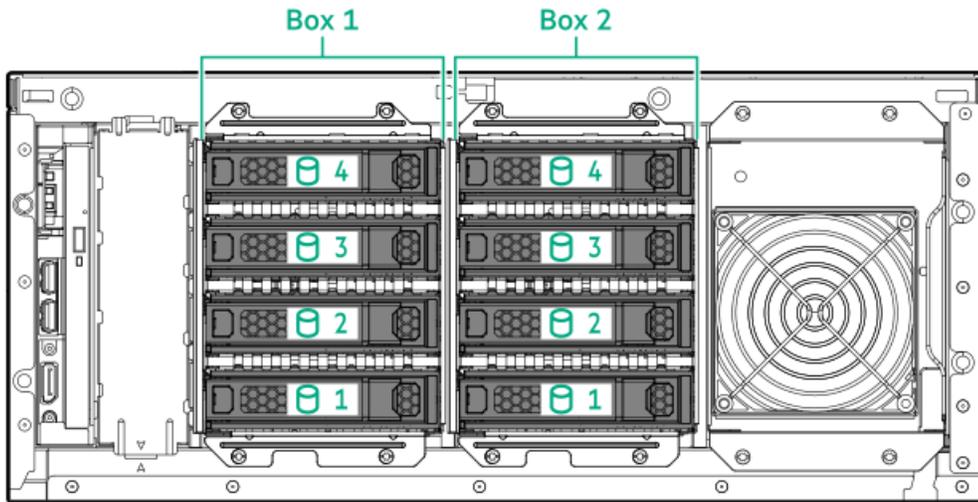
For more information on the drive backplane description, see [Drive backplane naming](#).

## Tower orientation



## Rack orientation





## SFF hot-plug drive bay numbering

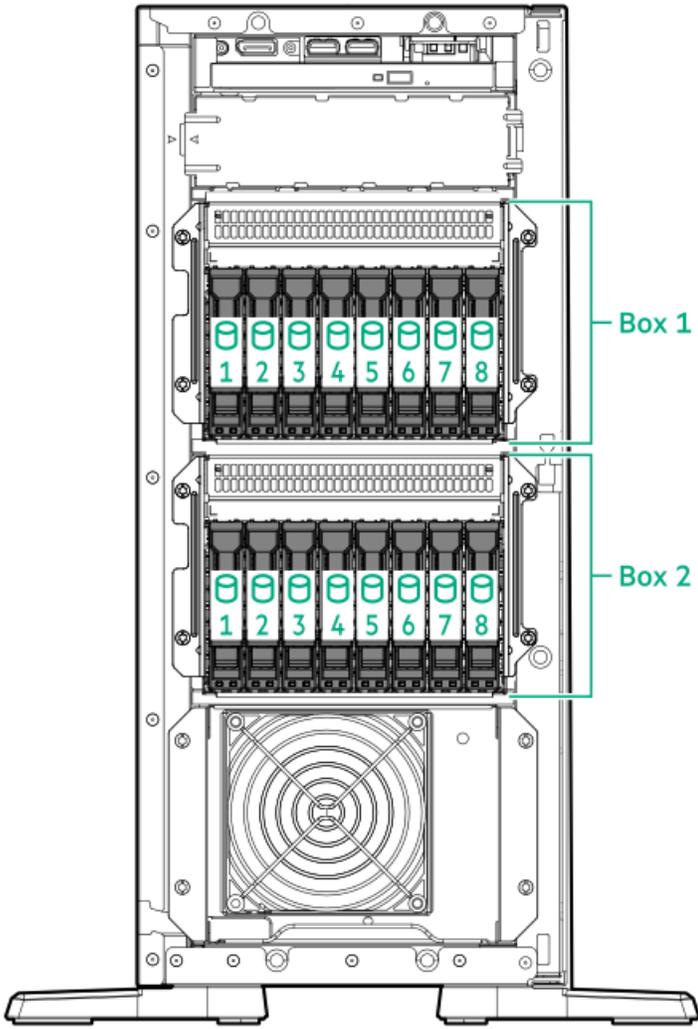
The following drive backplane options are supported in the SFF hot-plug drive configuration:

- 8 SFF 24G x1 SAS / SATA UBM3 BC
- 8 SFF 24G x1 SAS / SATA UBM6 BC

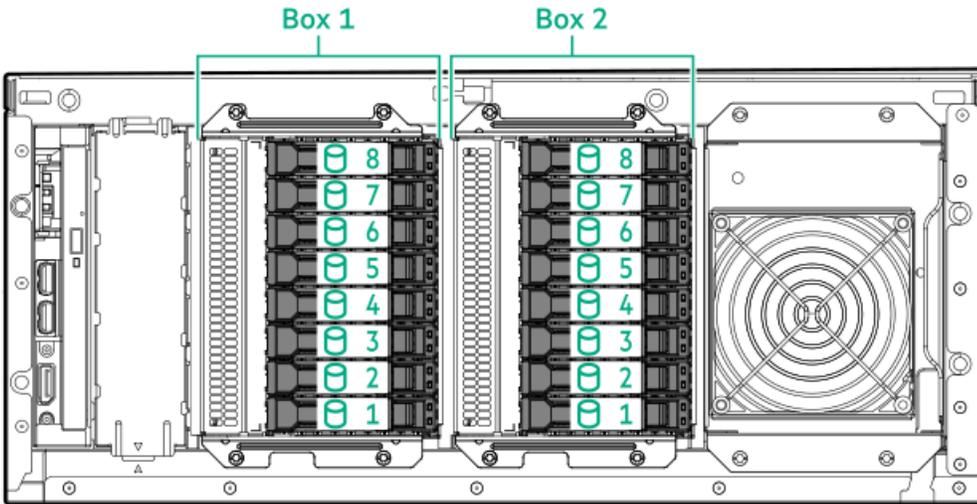
For more information on the drive backplane description, see [Drive backplane naming](#).

## Tower orientation





**Rack orientation**

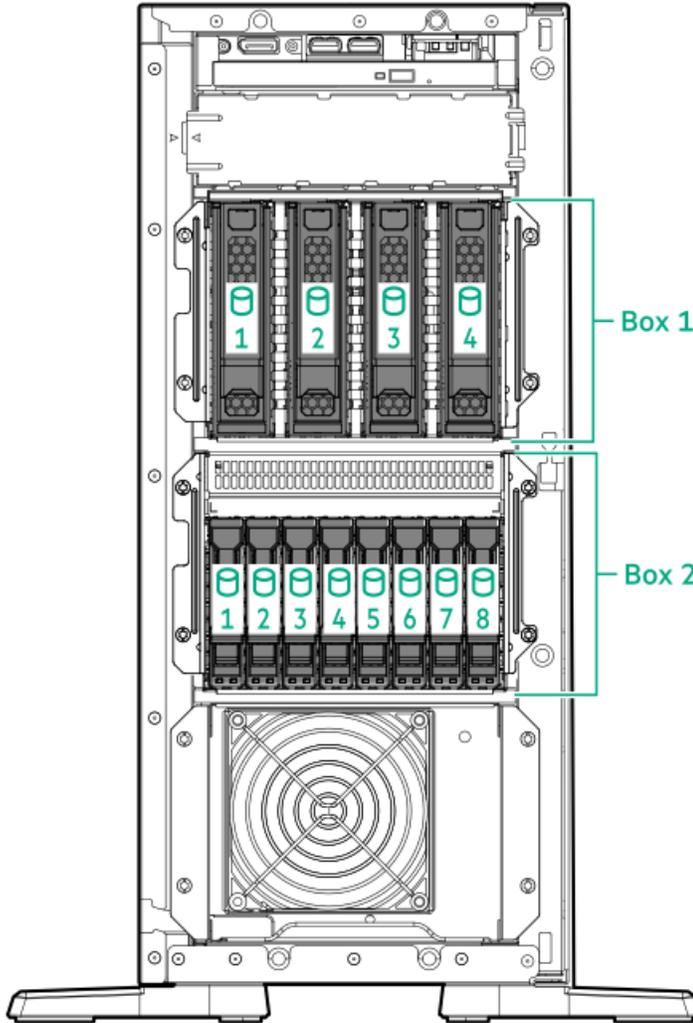


## Mixed hot-plug drive bay numbering

This server supports mixed hot-plug drive configuration with:

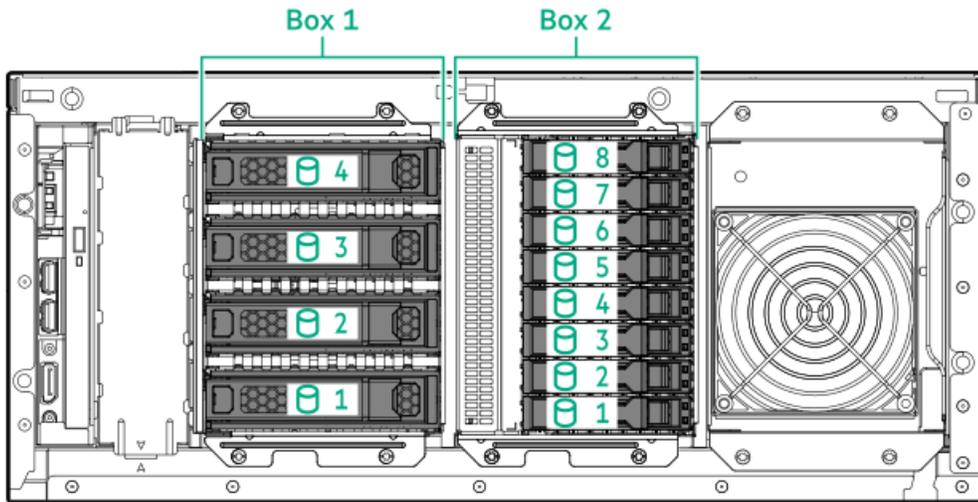
- Box 1: 4 LFF hot-plug drives
- Box 2: 8 SFF hot-plug drives

## Tower orientation



## Rack orientation





## Drive backplane naming

This topic explains the features represented in the drive backplane naming. This naming convention was adopted starting in the HPE Gen11 server release. Your server might not support all the features listed in this topic. For server-specific support information, see the server guides:

- Drive backplane support, see [Drive bay numbering](#).
- Drive backplane cabling, see [Storage cabling](#).



Item	Description	Values
1	Drive bay count	Number of drive bays supported by the backplane.
2	Drive form factor	LFF—Large Form Factor SFF—Small Form Factor E3S—Enterprise and Datacenter Standard Form Factor (EDSFF E3.S)
3	Maximum link rate per lane (GT/s)	12G 16G 24G 32G
4	Port link width and interface	x1 NVMe/SAS—U.3 NVMe, SAS, or SATA <sup>1</sup> x4 NVMe/SAS—U.3 NVMe, SAS, or SATA <sup>2</sup> x4 NVMe—U.2 NVMe <sup>3</sup> x4 NVMe—E3.S
5	Universal backplane manager (UBM) model	The UBM model defines the UBM firmware used by the backplane. Examples of UBM models: UBM2, UBM3, etc.
6	Drive carrier type	BC—Basic carrier (SFF) LP—Low-profile carrier (LFF) EC—E3.S carrier

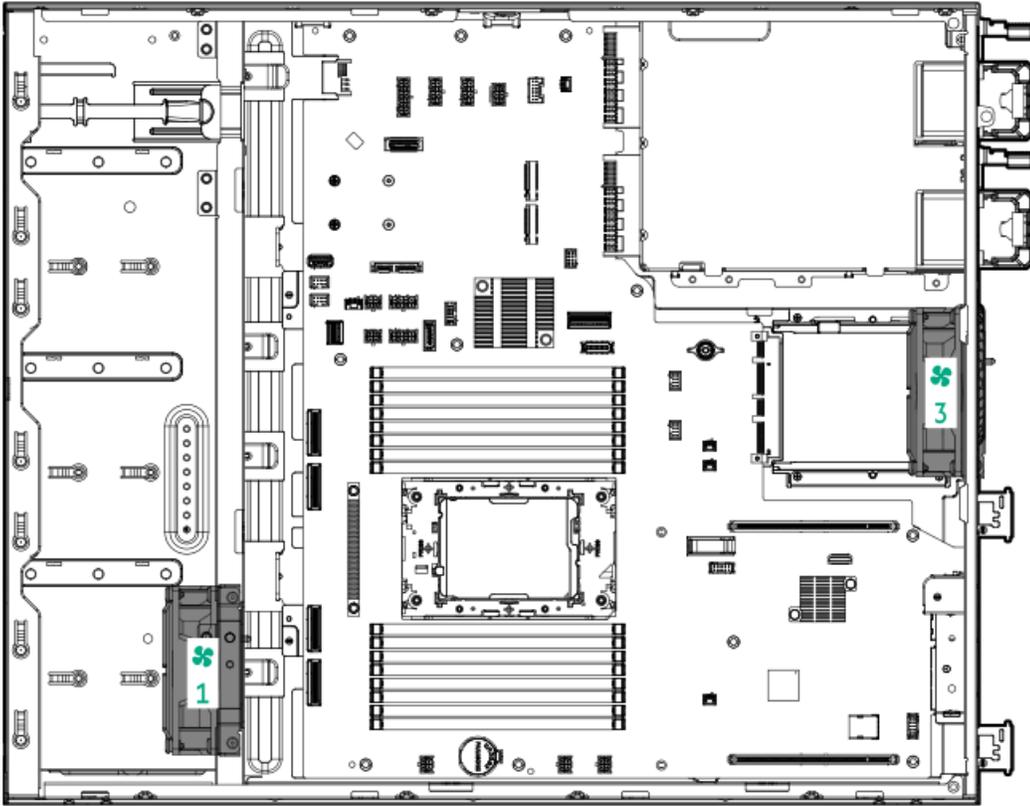
<sup>1</sup> Tri-mode controller support for x1 U.3 NVMe, SAS, and SATA drives. System board connection supports SATA drives only (not available on Gen12).

<sup>2</sup> CPU direct attach or tri-mode controller support for x4 U.3 NVMe, x2 (via a splitter cable) U.3 NVMe, or x1 SAS and SATA drives.

<sup>3</sup> CPU direct attach or tri-mode controller support for x4 U.2 NVMe drives.

## Fan numbering

### Default fan numbering

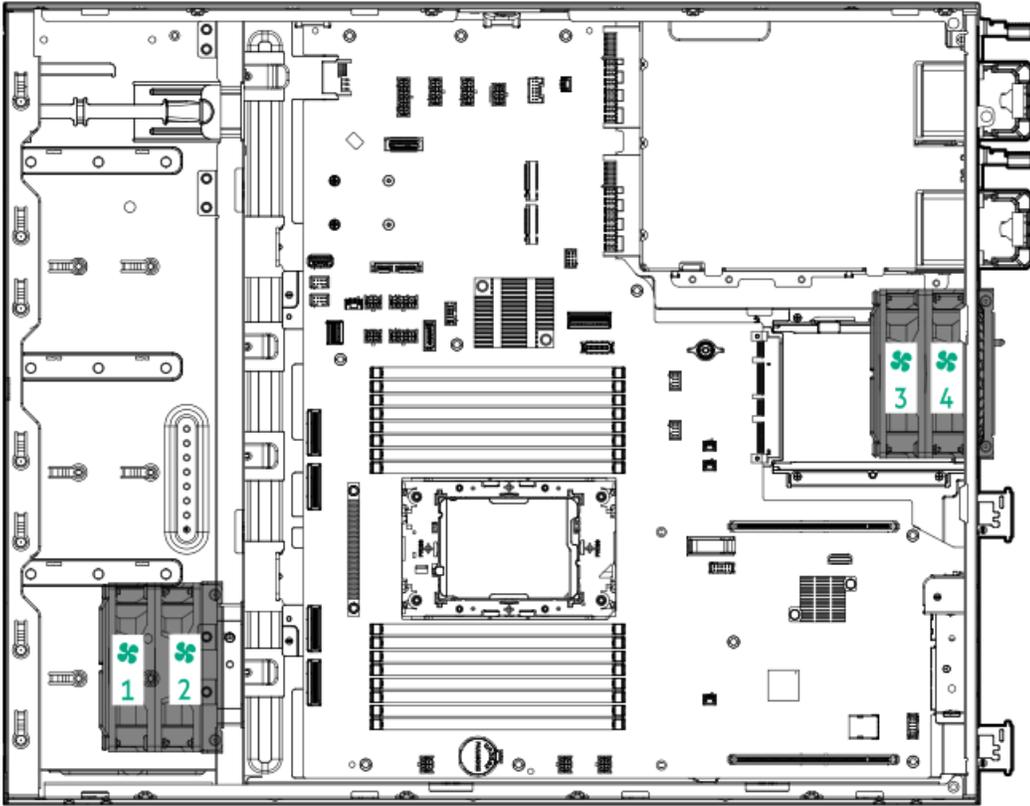


**Fan number Description**

1	PCI fan
3	System fan

**Redundant fan numbering**





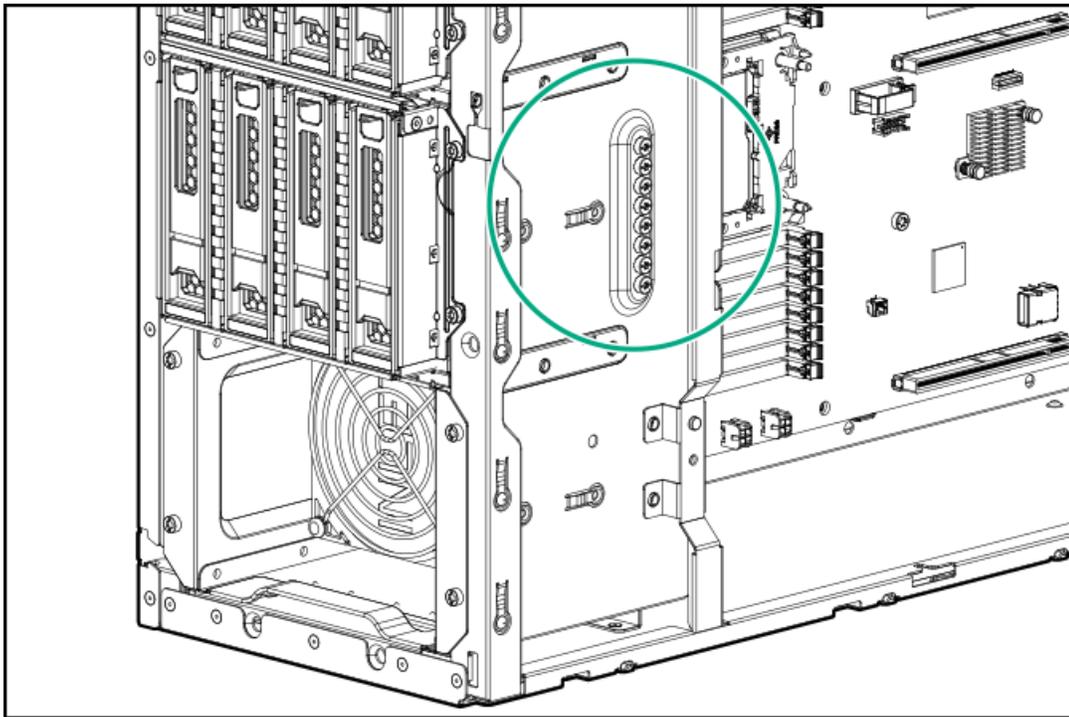
**Fan number Description**

1 and 2	PCI fan
3 and 4	System fan

**Media device screws**

There are 8 T-15 Torx screws on the server chassis. These screws are provided as 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.

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

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

- When the embedded TPM is enabled, the Trusted Platform Module operates in TPM 2.0 mode.
- 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/UEFIgen11-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

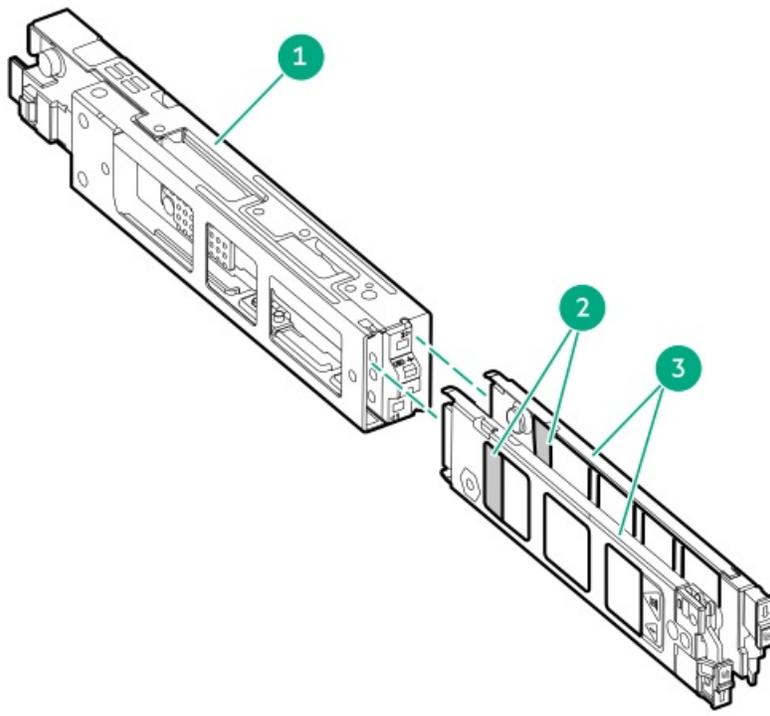
The recovery key/password is generated during BitLocker setup, and can be saved and printed after BitLocker is enabled. When using BitLocker, always retain the recovery key/password. The recovery key/password is required to enter Recovery Mode after BitLocker detects a possible compromise of system integrity.

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.

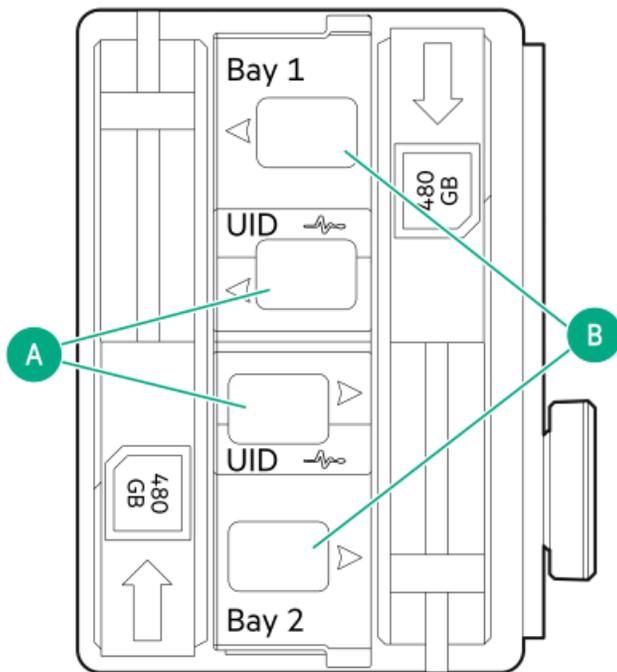
## HPE NS204i-u Boot Device components





Item	Description
1	Boot device cage
2	M.2 slots
3	Boot device carriers

### HPE NS204i-u Boot Device LED definitions



**NOTE**

The bay number can be found on the SSD carrier handle.

Item	LED	Status	Definition
A	Fault or Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally.
		Flashing amber or blue (one flash per second)	Drive has failed, or a predictive failure alert is received for the drive.
		Flashing amber (one flash per second)	Drive predictive failure alert is received. Replace the drive as soon as possible.
		Off	Drive is operating normally and is not identified by any application.
B	Online/Activity	Solid green	Drive is online and has no activity.
		Flashing green (one flash per second)	Drive is doing one of the following: <ul style="list-style-type: none"> <li>Rebuilding or performing a RAID</li> <li>Erasing</li> </ul>
		Flashing green (4 flashes per second)	Drive is operating normally and has activity.
		Off	Drive is not configured by a RAID controller.

## 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](#)

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 SATA and 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 and type-o (OROC) 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>
- Take note of the iLO hostname and default login credentials on the [serial number / iLO information pull tab](#).

## Procedure

### 1. Unbox the server and verify the contents:

- Server
- Power cord
- Rack mounting hardware (optional)
- Printed setup documentation

The server does not ship with OS media. All system software and firmware is preloaded on the server.

### 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 the iLO is not licensed, visit the HPE website:

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

- The iLO dedicated network 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:

- o If a DHCP server assigns the IP address, the IP address appears on the boot screen.
  - o If a static IP address is assigned, use that IP address.
  - 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.](#)

## 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 20.10 kg (44.31 lb). When all components are installed, the server can weigh up to 33.20 kg (73.19 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 20.10 kg (44.31 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, be sure that:

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

**WARNING**

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

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

**CAUTION**

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

**CAUTION**

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

- You must fully understand the static and dynamic load carrying capacity of the rack and be sure that it can accommodate the weight of the server.
- Be sure sufficient clearance exists for cabling, installation and removal of the server, and movement of the rack doors.

## Server warnings and cautions

**WARNING**

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

**WARNING**

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





### WARNING

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

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

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



### CAUTION

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



### CAUTION

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



### CAUTION

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



### CAUTION

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

## Electrostatic discharge

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

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:
  - Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm  $\pm$ 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 down the server](#)

[Extend the server from the rack](#)

[Remove the server from the rack](#)

[Remove the front bezel](#)

[Position the tower server for hardware configuration](#)

[Remove the access panel](#)

[Remove the system air baffle](#)

[Remove the riser cage](#)

[Install the system air baffle](#)

[Install the access panel](#)

[Position the tower server for operation](#)

[Install the front bezel](#)

[Install the server into the rack](#)

[Power up the server](#)

## 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 6.  
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.

## Extend the server from the rack

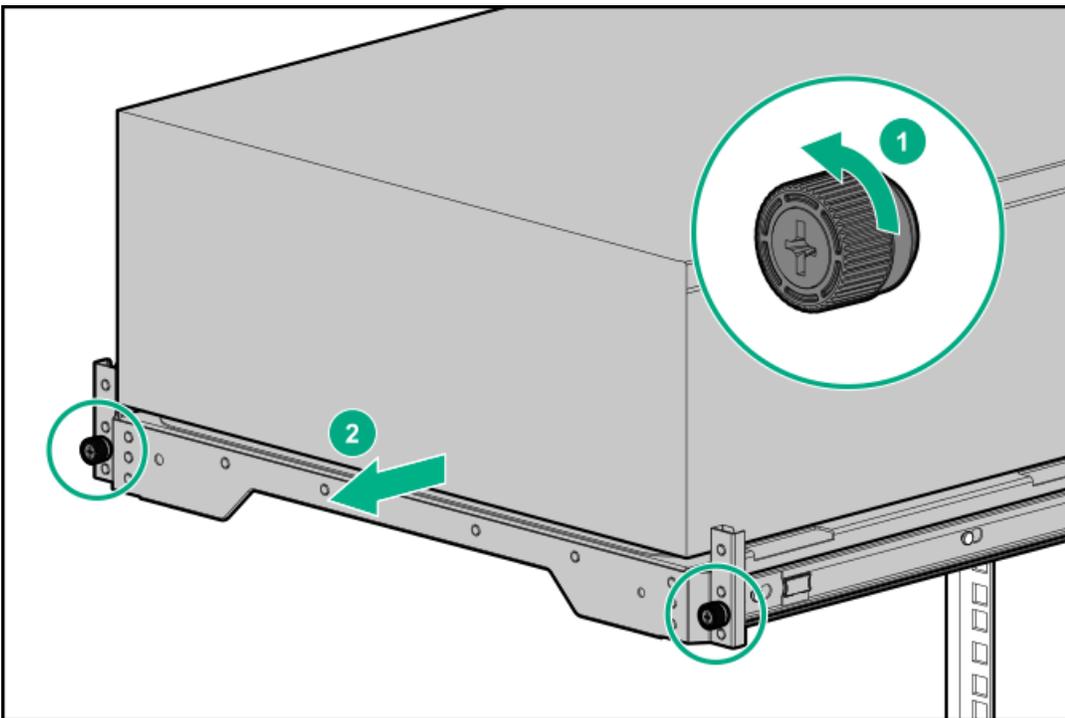
### Prerequisites

Before you perform this procedure, review the [Rack warnings and cautions](#).

### Procedure

Slide the server tray out of the rack:

1. Loosen the server tray thumbscrews.
2. Grasp the tray notch and slide the server out of the rack.



## Remove the server from the rack

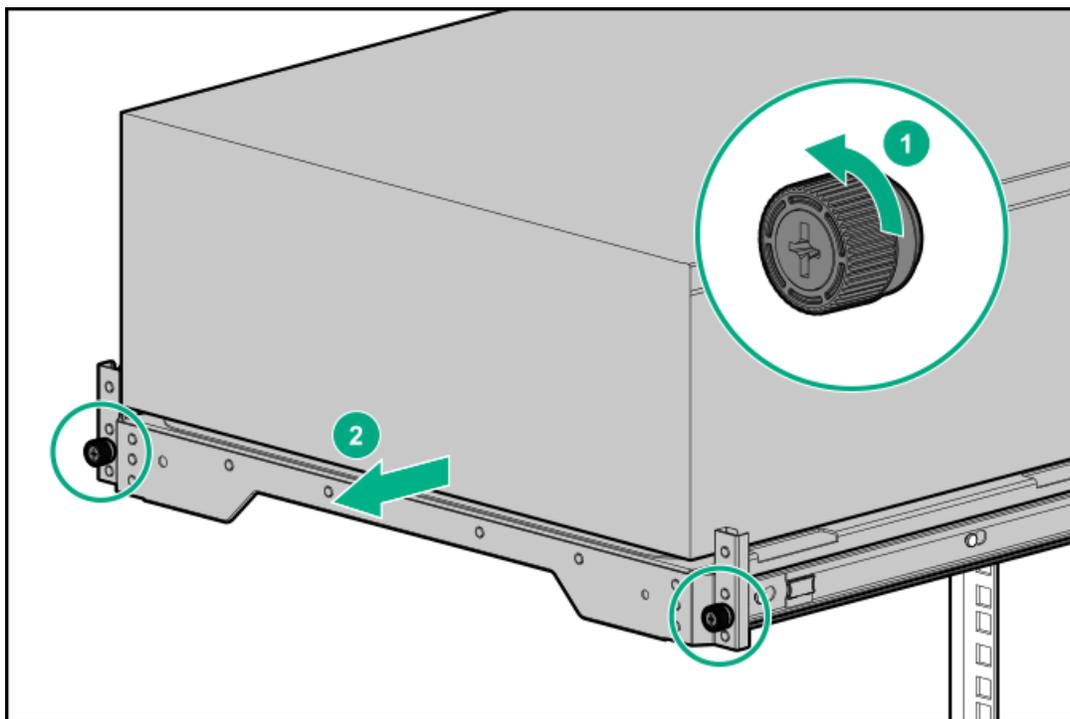
### Prerequisites

- Get help to lift and stabilize the server during removal from the rack. **If the server is installed higher than chest level, additional two people might be required to help remove the server:** One person to support the server weight, and the other two to slide the server out of the rack.
- Before you perform this procedure, review the:
  - [Rack warnings and cautions](#)
  - [Server warnings and cautions](#)
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external server components before removing the server from the rack.

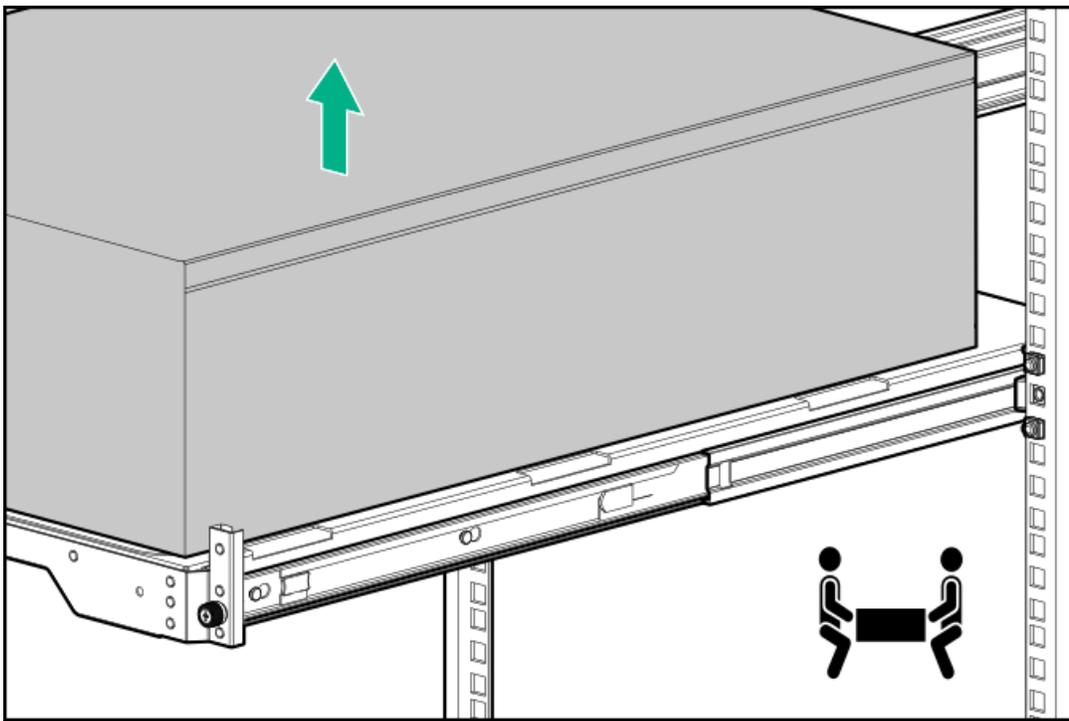
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

## 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. 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.



5. Remove the server from the tray.



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

## Remove the front bezel

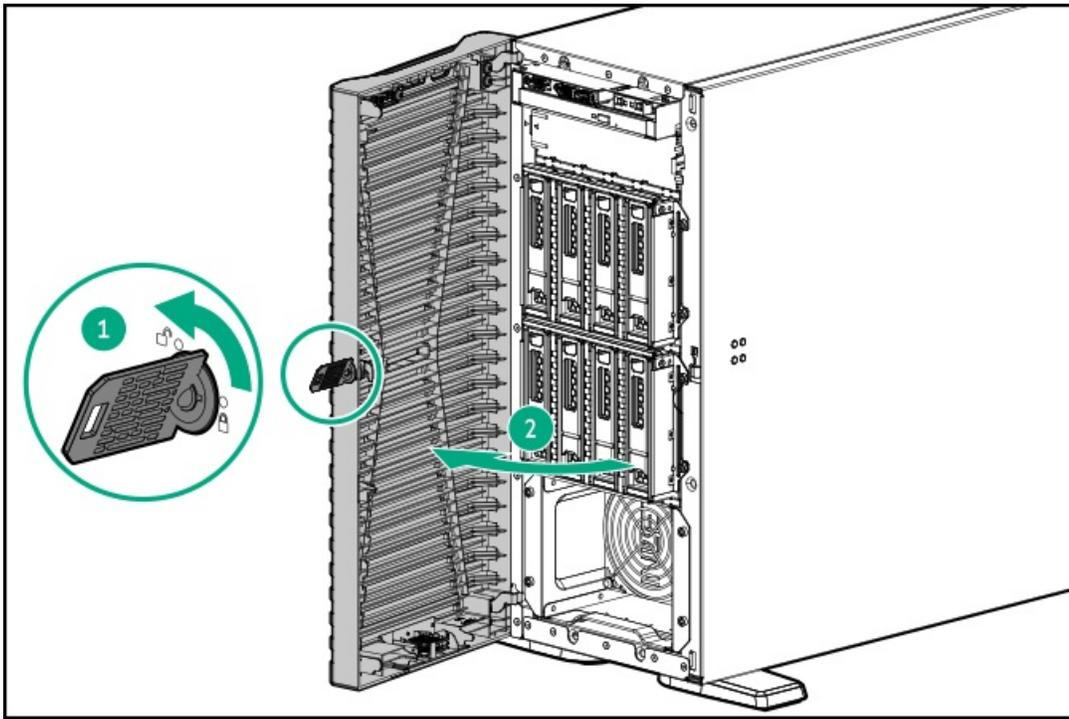
### About this task

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

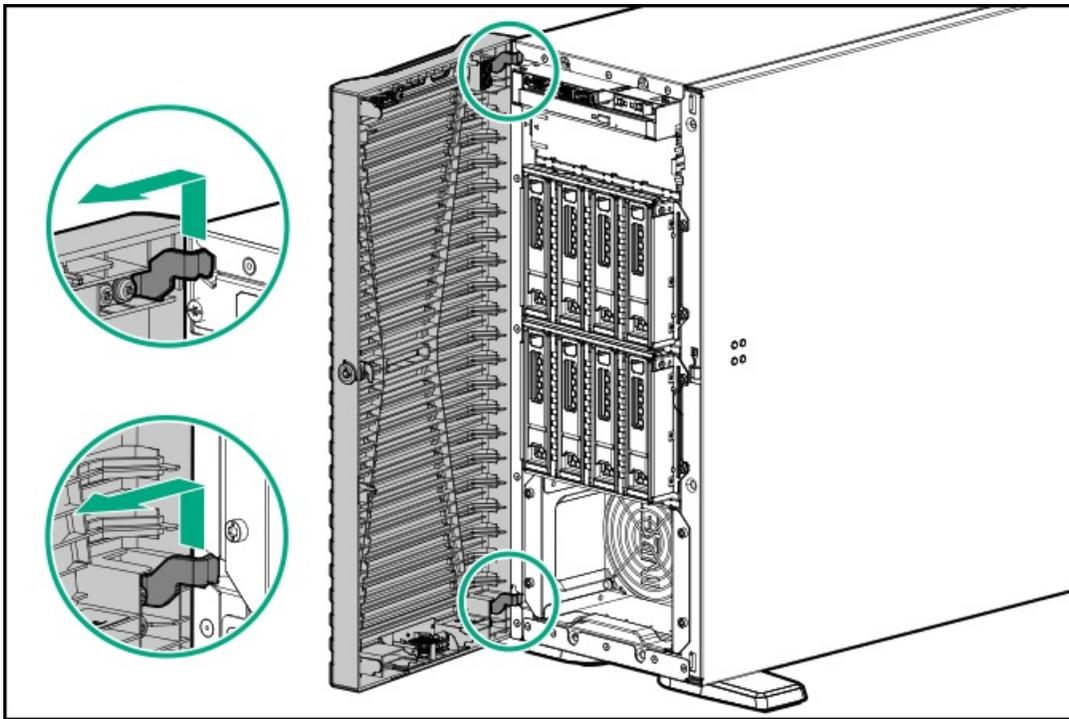
### Procedure

1. Unlock the front bezel.
2. Open the front bezel.





3. Release the bezel hooks from the front panel.

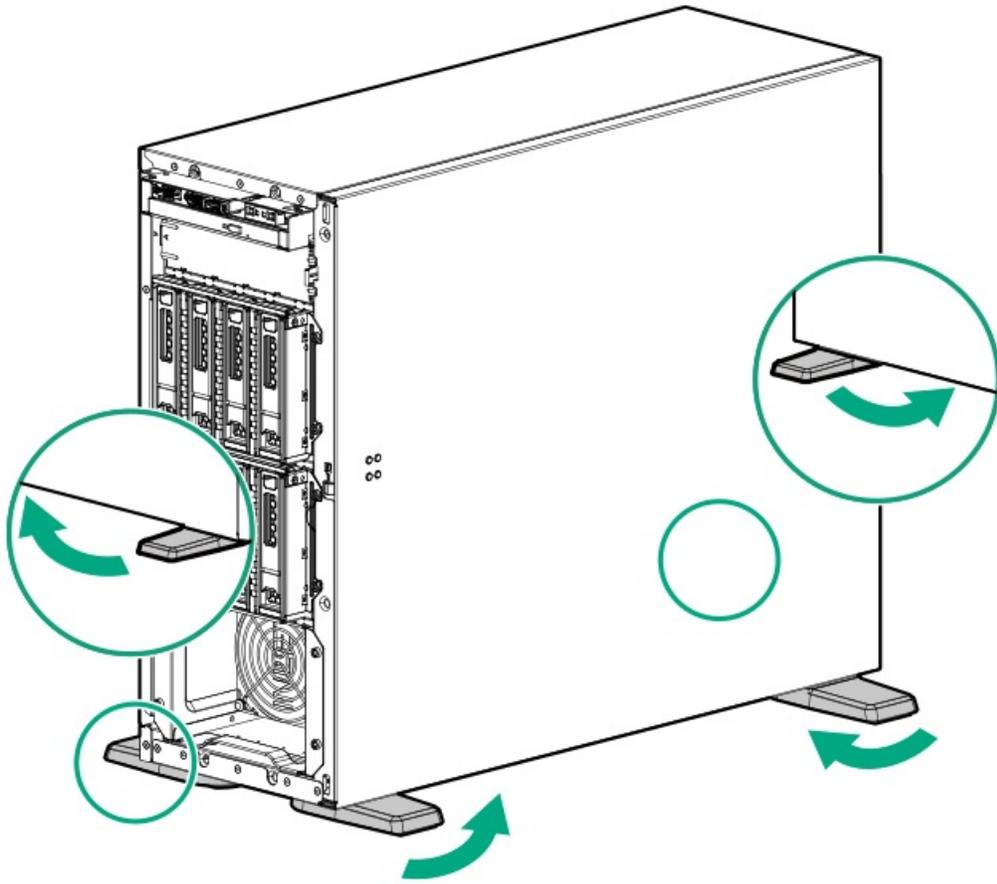


## Position the tower server for hardware configuration

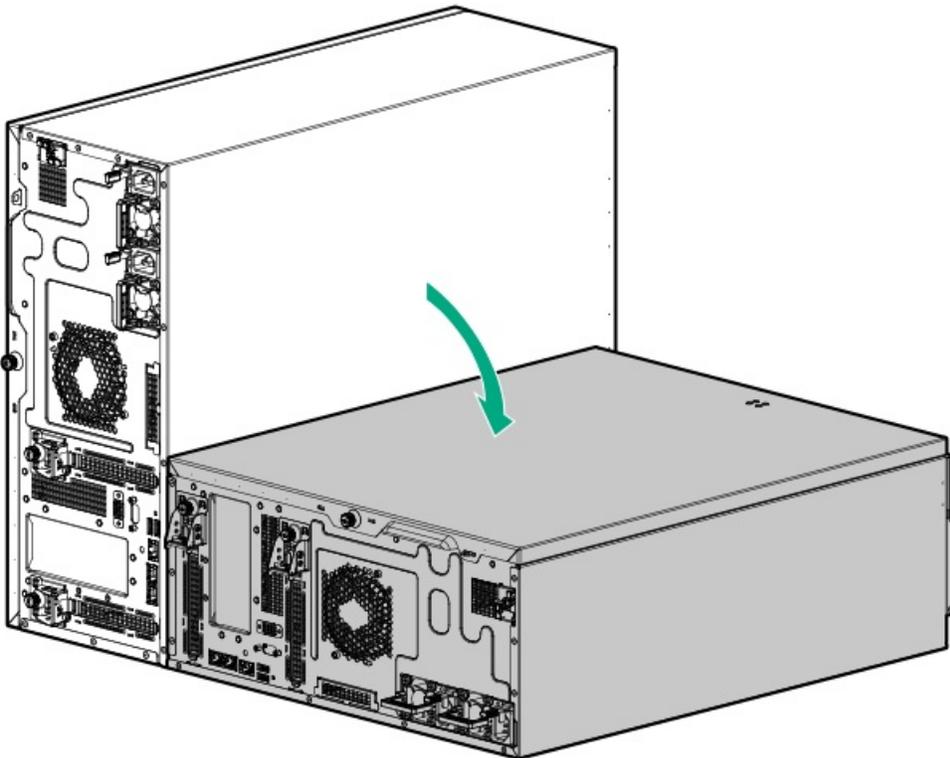
### Procedure

1. Rotate the chassis feet inward.





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



# Remove the access panel

## Prerequisites

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

## 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

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

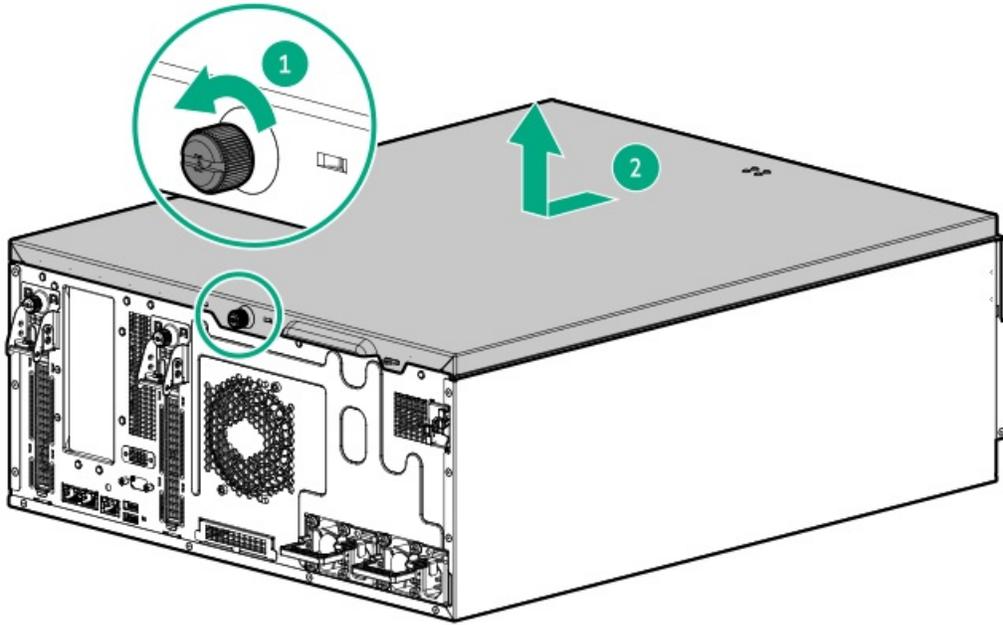
To maintain proper system cooling, do not operate the server for long period with the access panel open or removed. Operating the server in this manner results in an improper system airflow. For internal hot-plug component procedures, complete the procedure within 60 seconds. Failure to do so can cause the system temperature to increase and trip the safety threshold. When this happens:

- The health LED flashes amber.
- The operating system gracefully shuts down.

## 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. [Unlock the front bezel](#).
5. 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](#).
6. Remove the access panel:
  - a. Loosen the access panel thumbscrew.
  - b. Slide the access panel toward the rear panel, and then lift it away from the chassis.





## Remove the system air baffle

### About this task



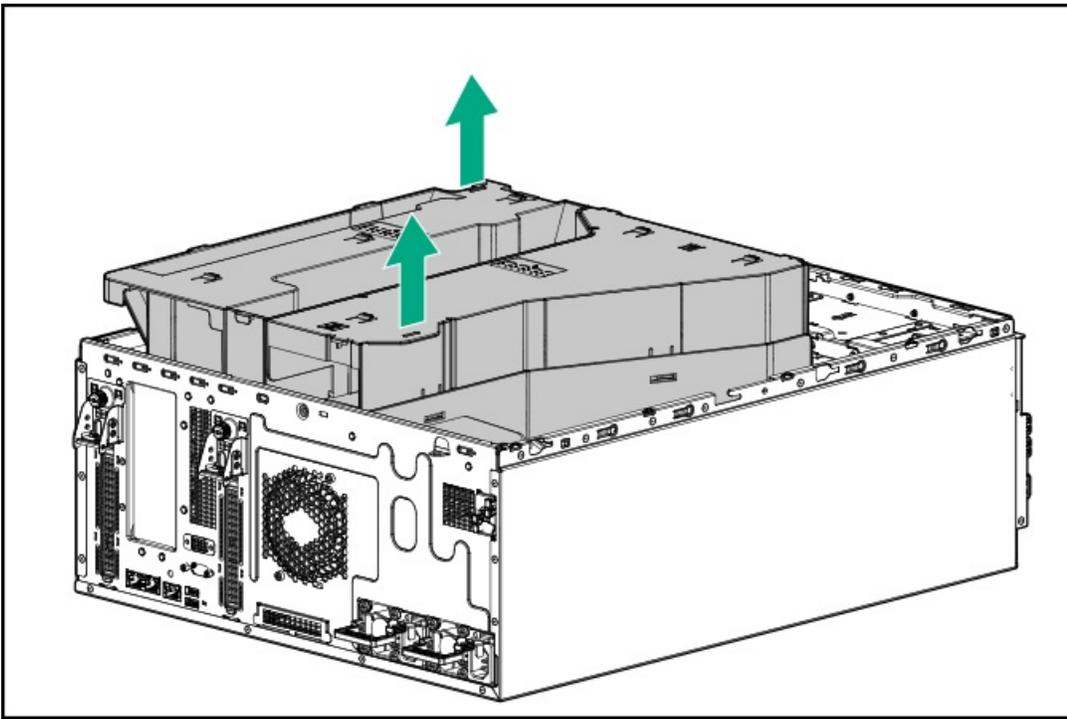
#### CAUTION

For proper cooling, do not operate the server without the access panel, baffles, 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 system air baffle.





## Remove the riser cage

### 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.

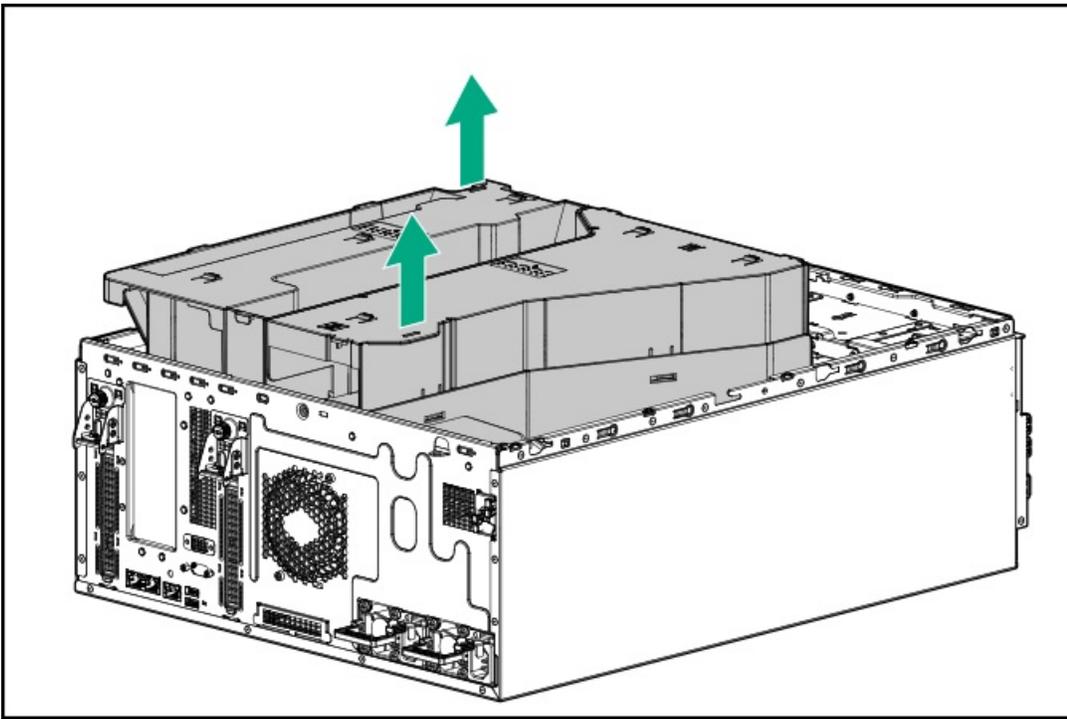


#### CAUTION

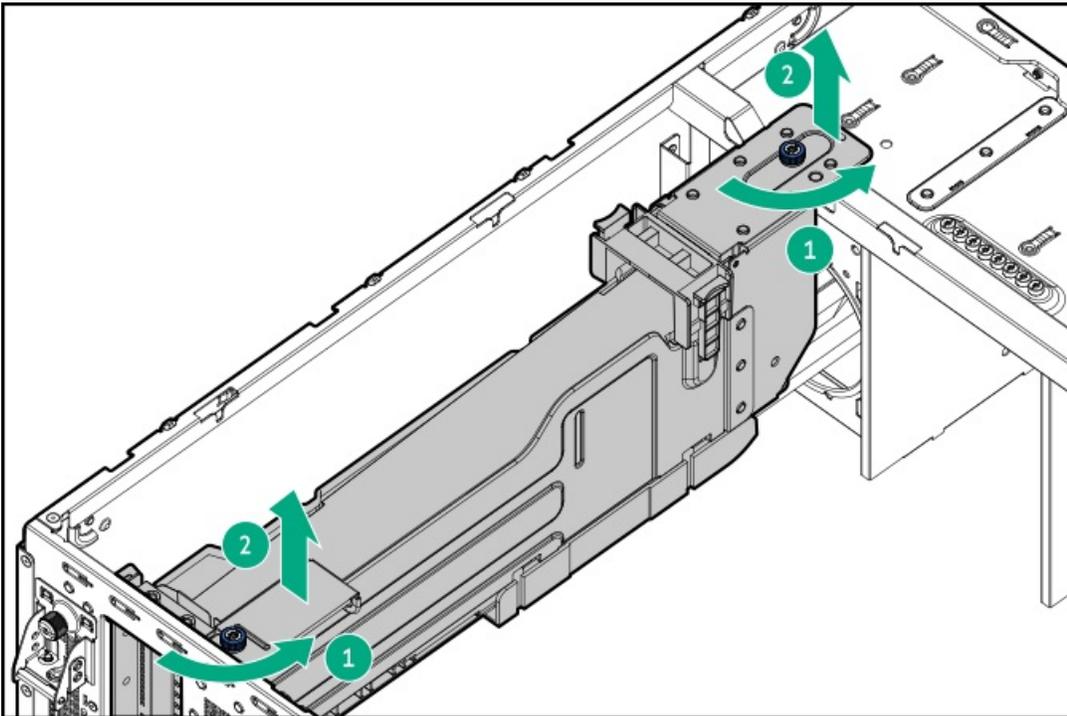
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

1. [Back up all server data.](#)
2. [Power down the server.](#)
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. 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.](#)
6. [Remove the access panel.](#)
7. Remove the system air baffle.



8. Remove the riser cage:
  - a. Loosen the captive screws.
  - b. Simultaneously pull the front and rear riser cage out from the chassis.



9. Disconnect all riser cables from the system board.

## Install the system air baffle

### About this task





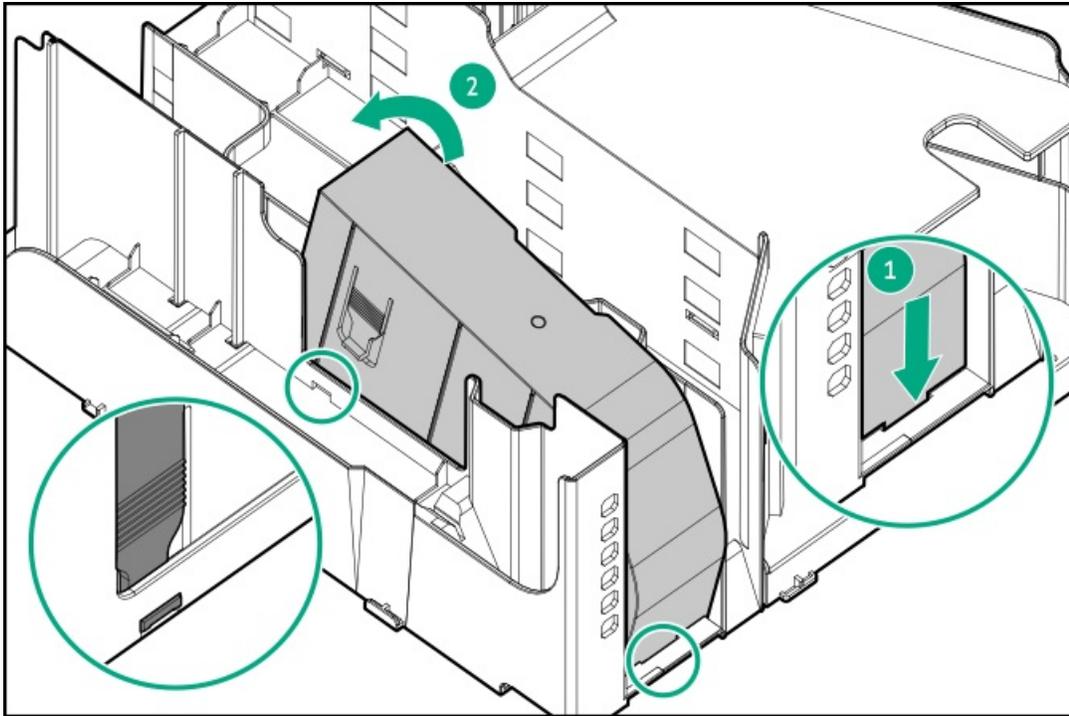
### CAUTION

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

## Procedure

1. If the riser cage is not installed, reassemble the DIMM air baffle in the system air baffle:
  - a. Attach the DIMM air baffle on the system air baffle.
  - b. Pivot the DIMM air baffle.

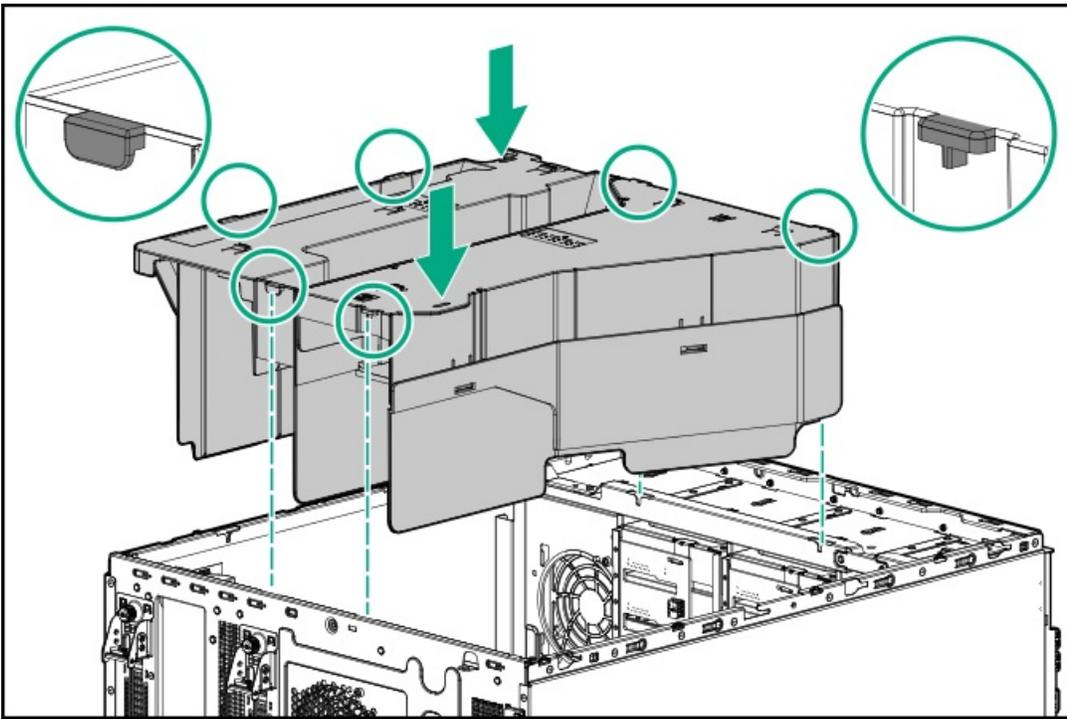
Make sure that the DIMM air baffle latches are locked on the system air baffle.



2. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
3. Install the system air baffle.

Make sure that the alignment hooks are locked on the chassis.





## Install the access panel

### Prerequisites

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

### About this task

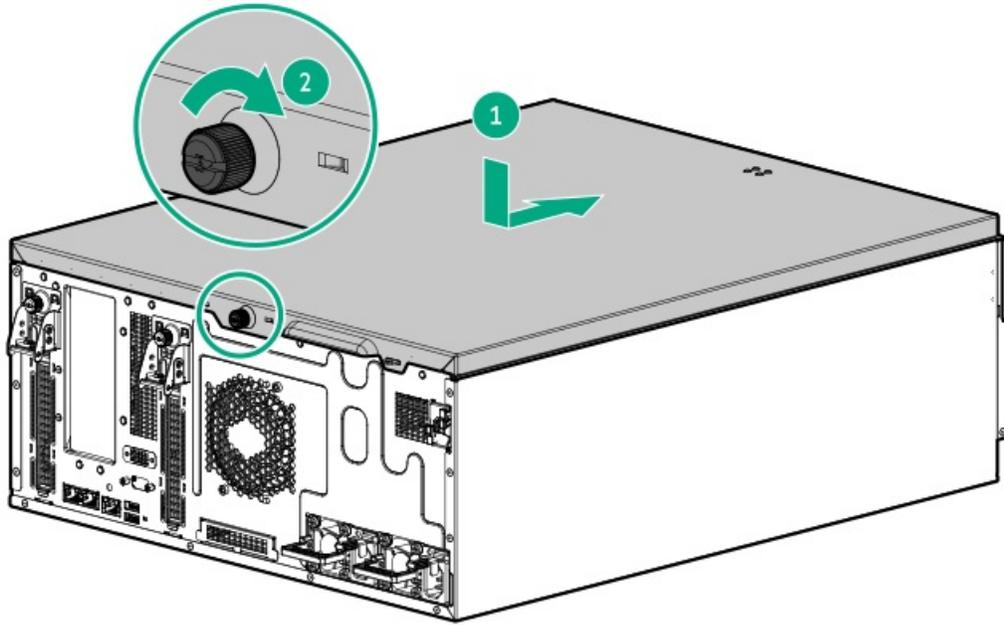


#### CAUTION

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

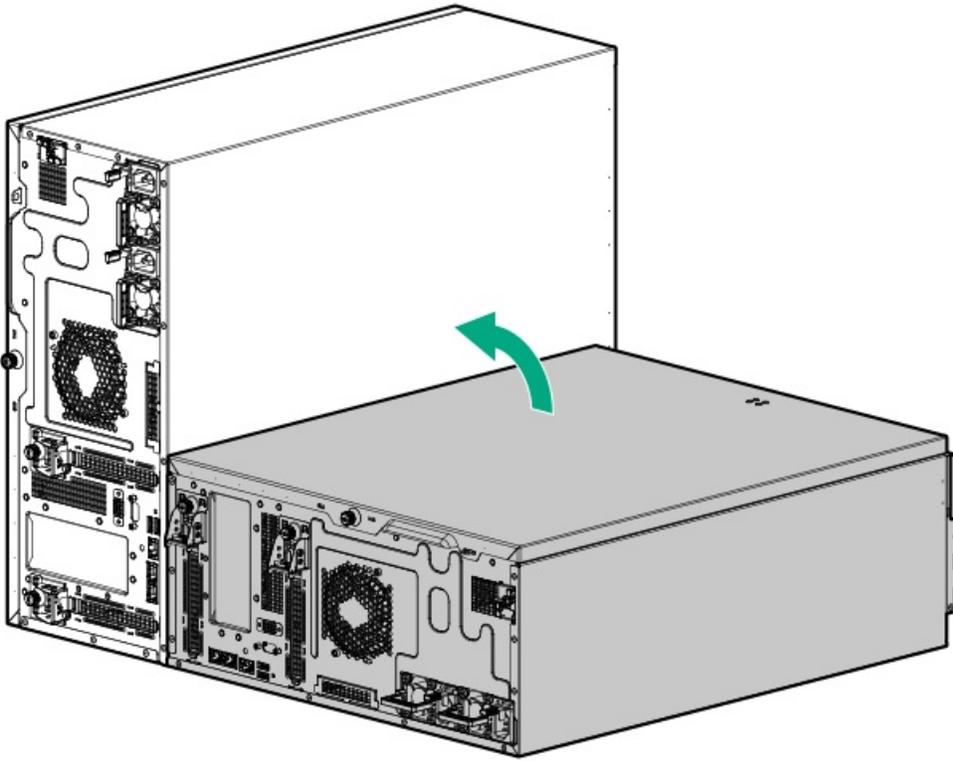


3. Perform the post-installation or maintenance steps required by the procedure that required the removal of the access panel.

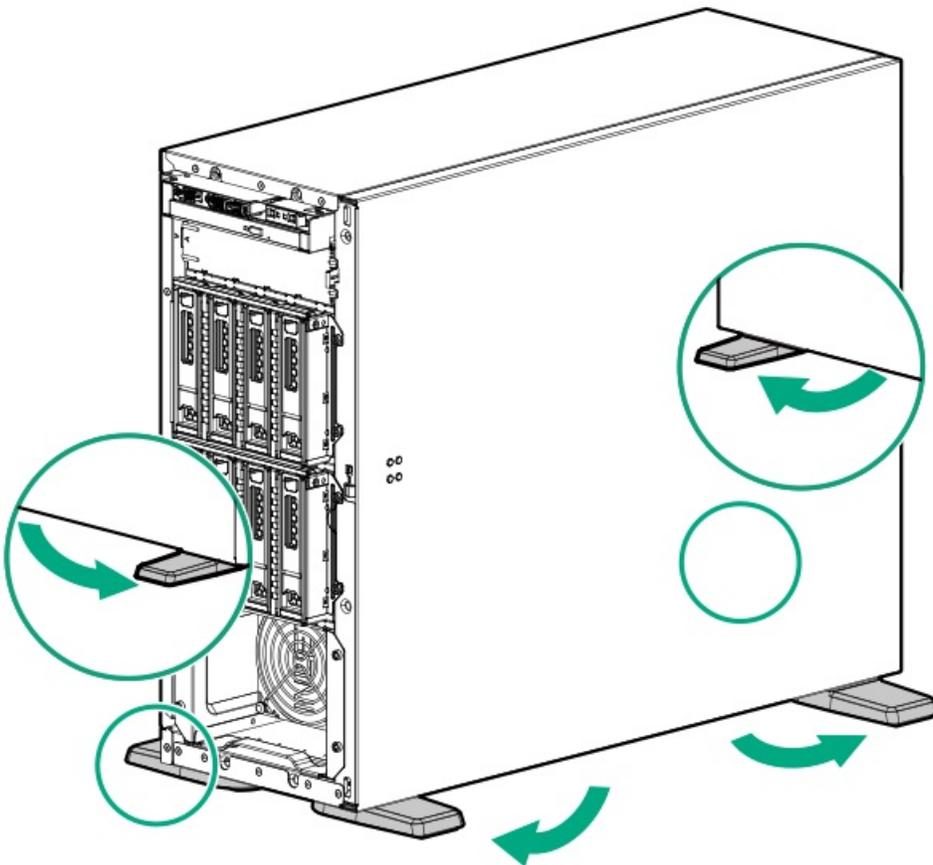
## Position the tower server for operation

### Procedure

1. Return the server to an upright position.



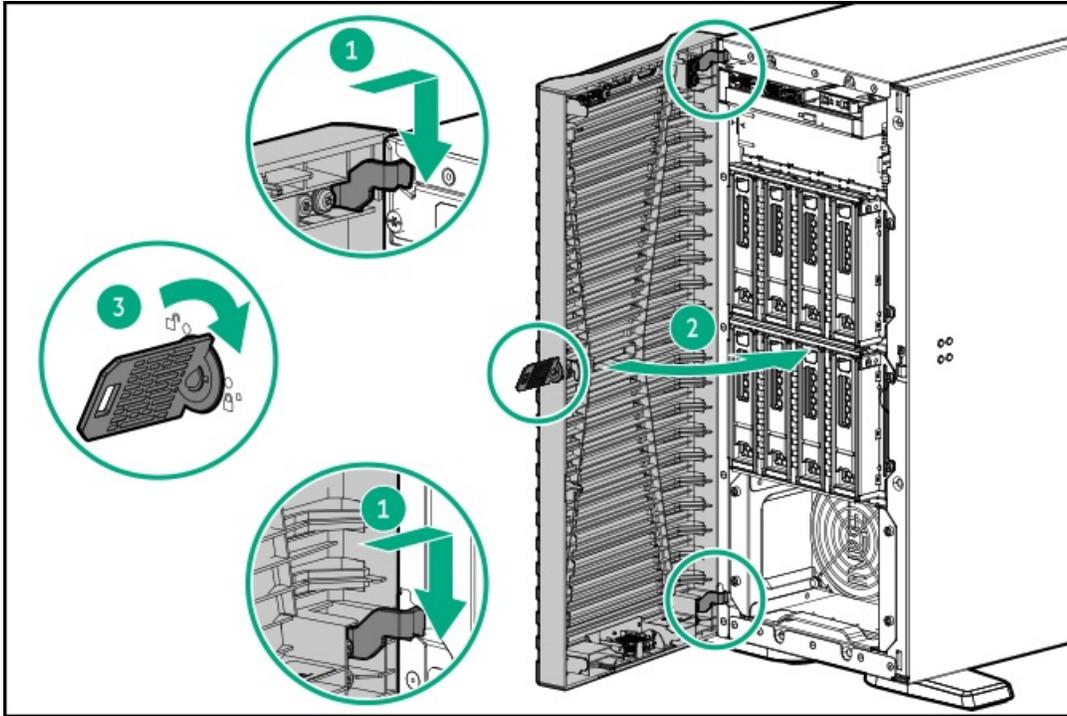
2. Rotate the chassis feet outward to stabilize the server.



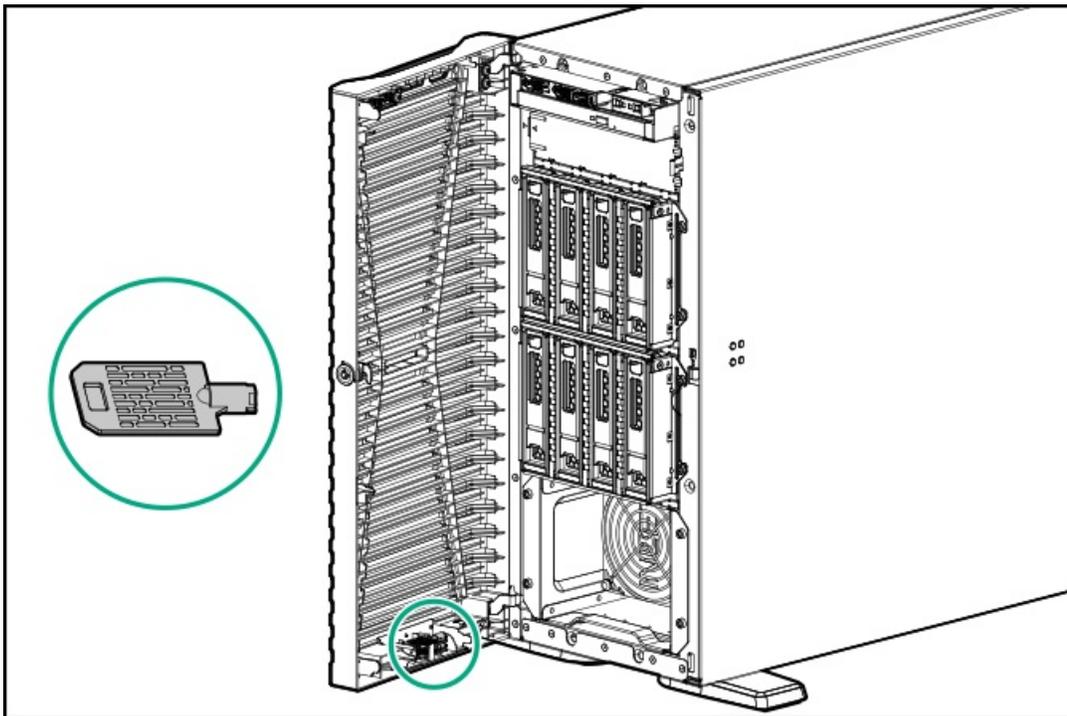
## Install the front bezel

### Procedure

1. Insert the front bezel hooks to the chassis.
2. Close the front bezel.
3. While pressing the key against the lock, rotate the key to the lock position.



4. (Optional) For later use, store the front bezel keys inside the front bezel.



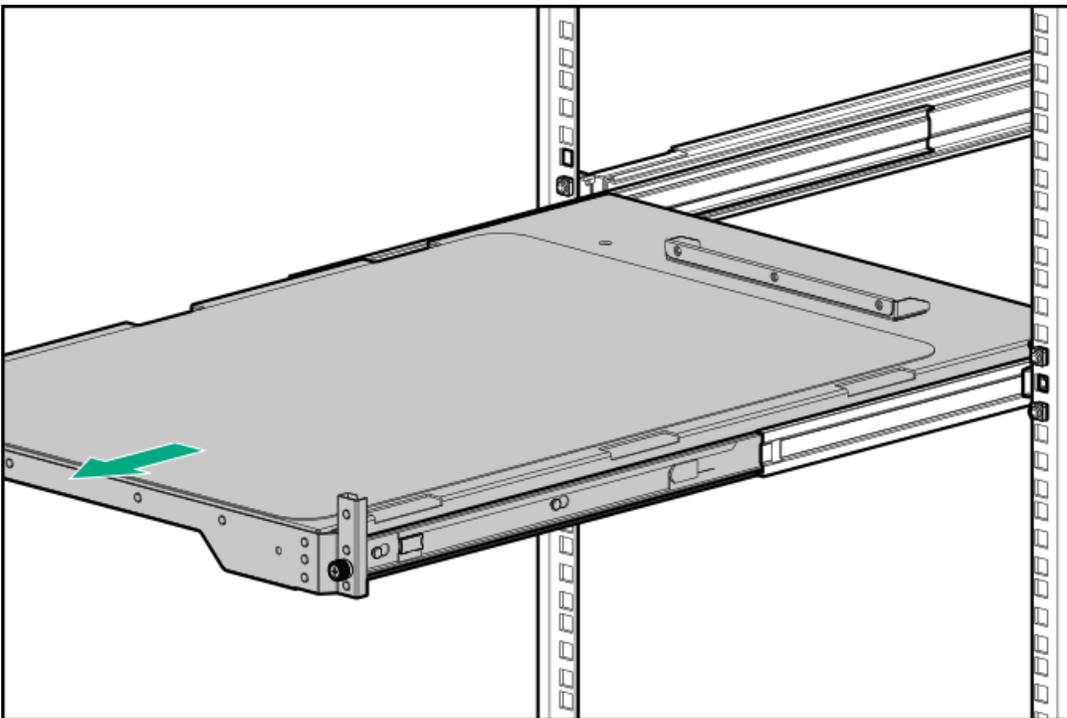
# Install the server into the rack

## Prerequisites

- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you perform this procedure, review the:
  - [Rack warnings and cautions](#)
  - [Server warnings and cautions](#)
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before removing the server from the rack.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

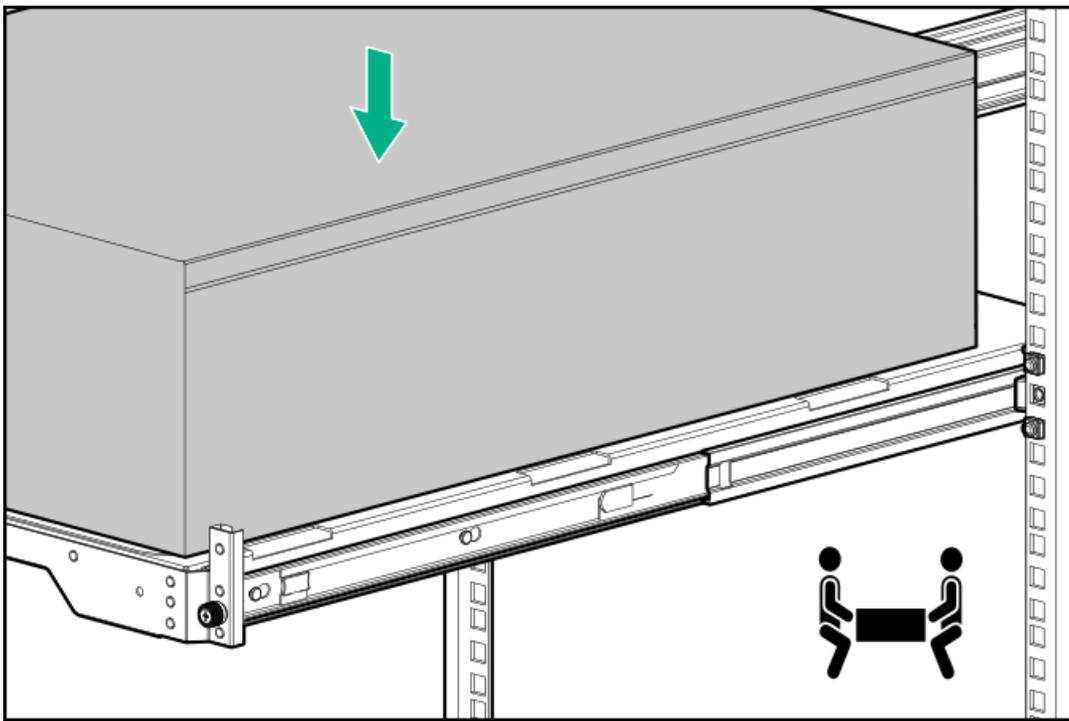
## Procedure

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

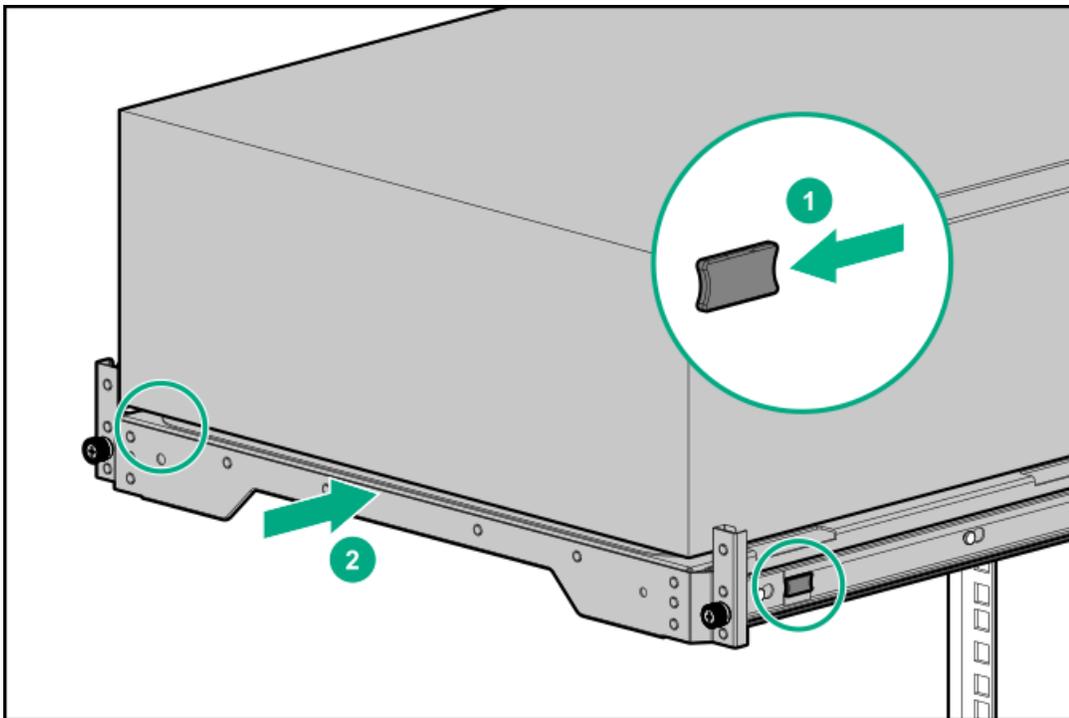


2. Place the server on the tray.

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

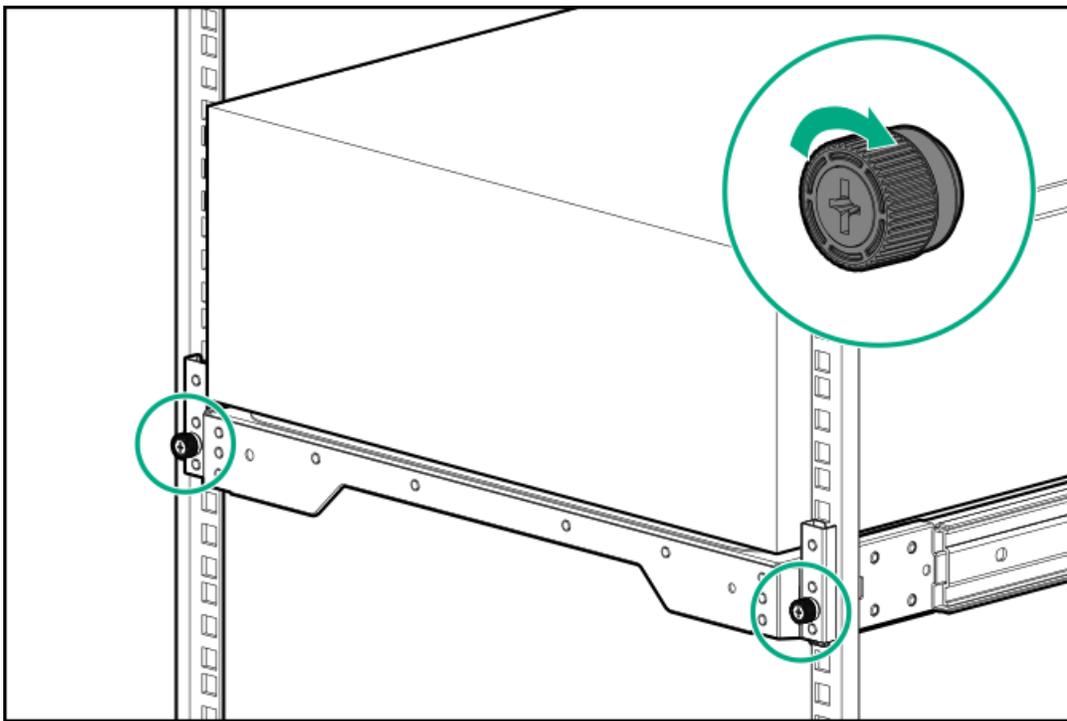


3. Press and hold the blue rail-release tabs, and then slide the tray back into the rack.



4. Tighten the server tray thumbscrews.





5. If the front bezel is installed and you are planning to install the hot-pluggable component on the front panel, extend the server with sufficient space for opening the front bezel.
6. Connect all peripheral cables to the server.
7. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
8. Power up the server.

## Power up the server

### Procedure

- Press the Power On/Standby button.
- Use the virtual power button through iLO 6.

## 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](#)  
[Drive cage options](#)  
[Media device options](#)  
[Transceiver option](#)  
[M.2 SSD options](#)  
[Redundant fan option](#)  
[Memory option](#)  
[Riser cage and secondary riser option](#)  
[Storage controller options](#)  
[Energy pack options](#)  
[Expansion card options](#)  
[GPU options](#)  
[HPE NS204i-u Boot Device option](#)  
[OCP NIC 3.0 adapter option](#)  
[Chassis intrusion detection switch option](#)  
[Serial port option](#)  
[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/ilo6>).
  - 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 5.5 U space in the rack and supports in-rack serviceability for all server components.

### Kit contents

- 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)

\* Not for use in this server.

### Rack rail specifications

This server supports the HPE tower-to-rack conversion kit (P47394-B21) which has the following specifications:

- Type: Ball-bearing (stab-in)
- Minimum rail length: 727.50 mm (28.64 in)
- Rail adjustable range: 570.00–812.00 mm (22.50–32.00 in)

## Subtopics

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

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

[Install the server into the rack](#)

[Install the cable management arm](#)

## Installing the tower-to-rack conversion kit

### Prerequisites

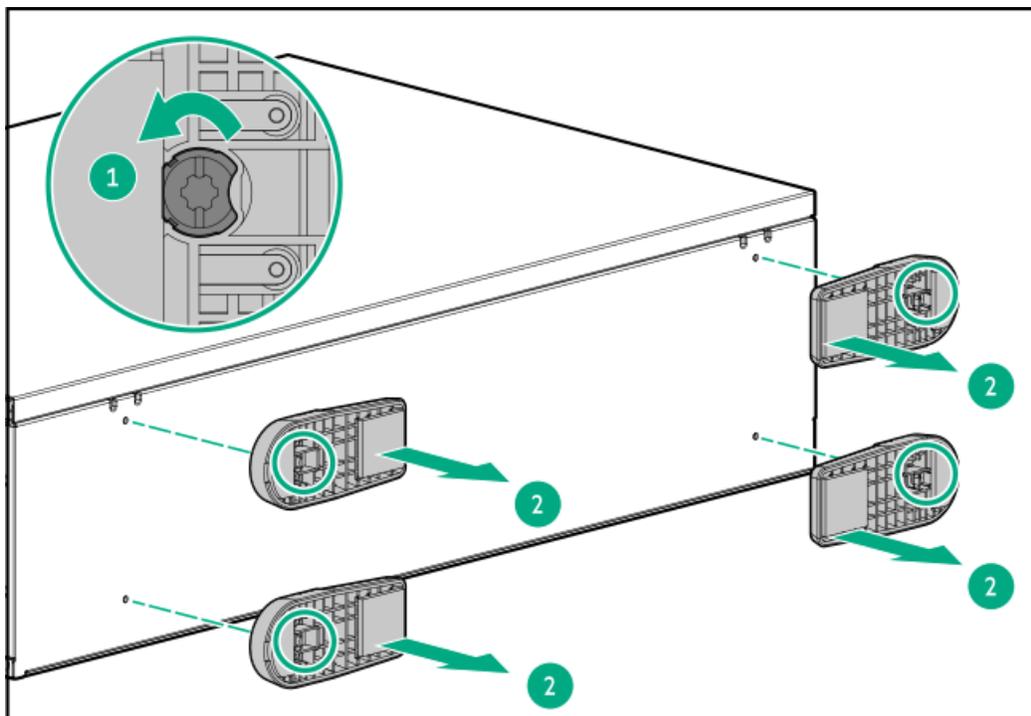
Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

### 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 the server is in tower mode, [place the server on a flat, level surface with the access panel facing up.](#)
5. Remove the chassis feet:
  - a. Loosen the screws on the chassis.
  - b. Detach the chassis feet.



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

7. Install the server into the rack.
8. Install the cable management arm.

## Results

The installation procedure is complete.

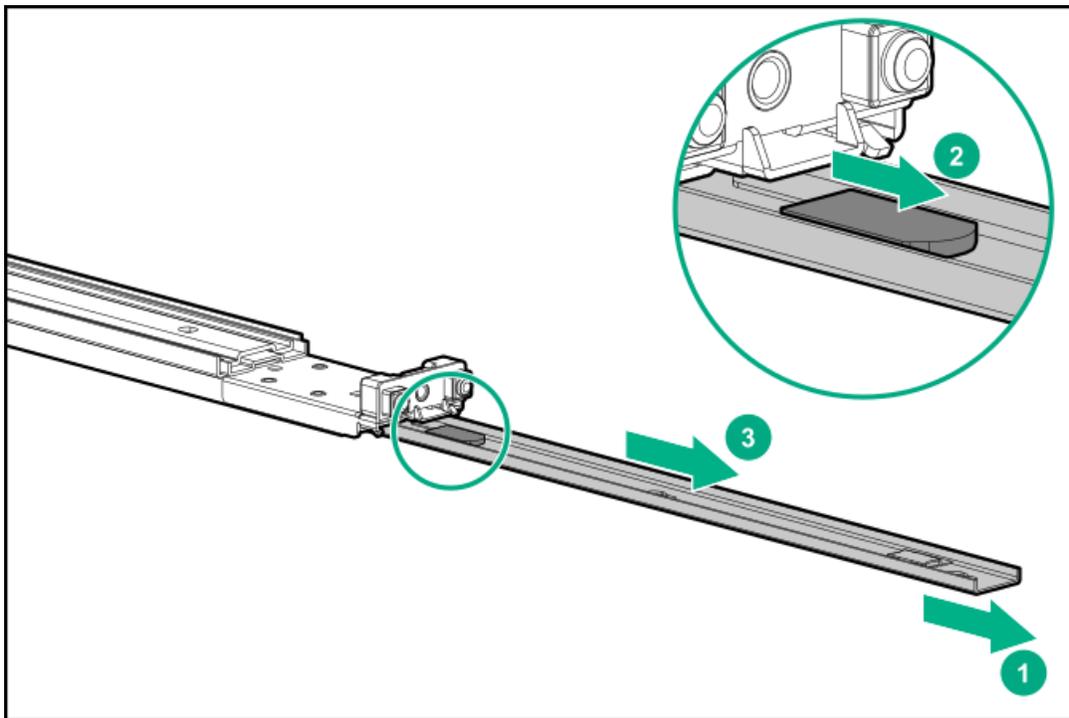
## Install the rack rails and server tray

### About this task

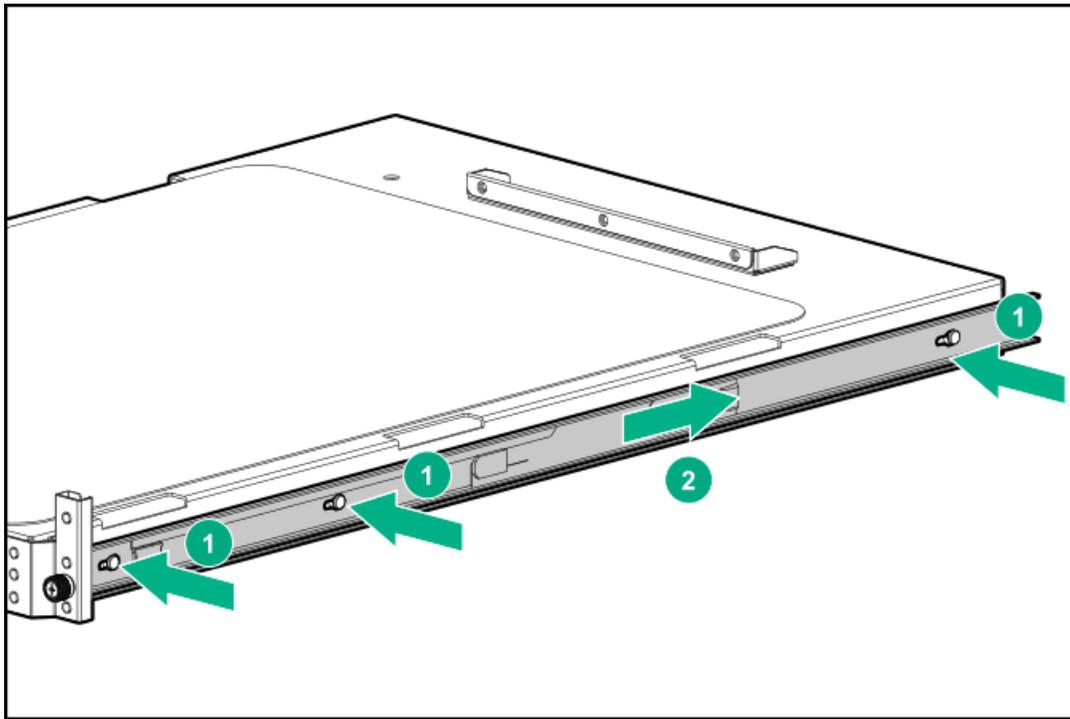
The rack rails can be installed in a round-hole or a square-hole racks. The rack rails occupy 1U space in the rack.

### 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.

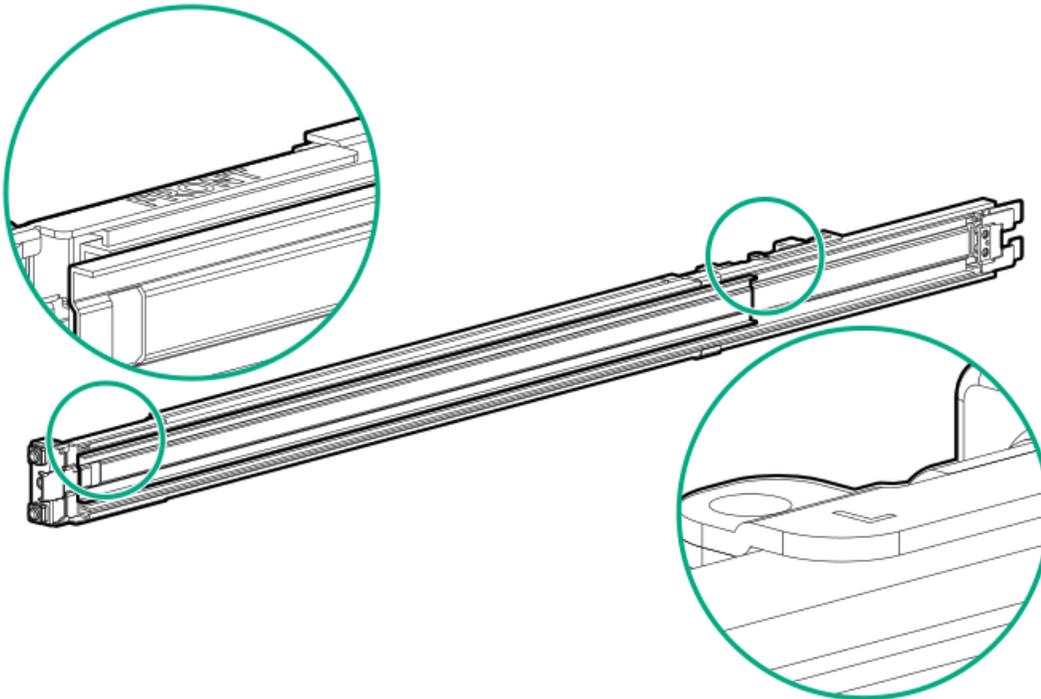


2. Install the sliding rails on the server tray:
  - a. Insert the spools on the sides of the server tray through the notches on the rails.
  - b. Slide the rail towards the rear of the tray to lock it into place.



3. Locate the orientation markers on the mounting rails:

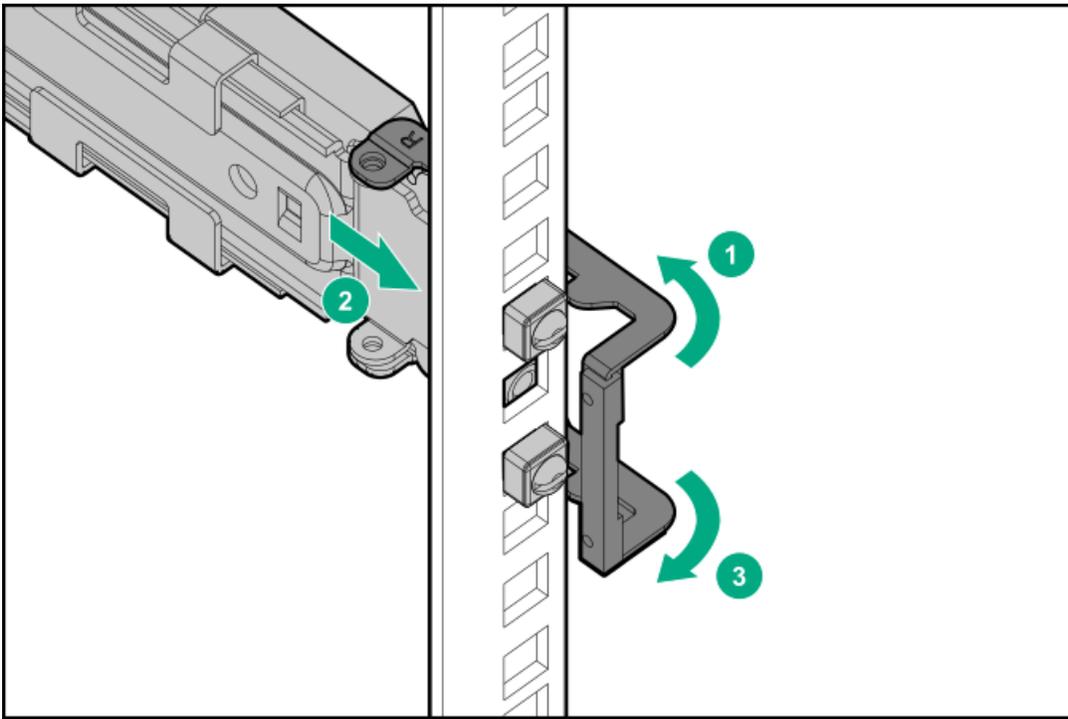
- The front end of the rails is marked **FRONT**.
- The rear end of the rail is marked with **L** for left and **R** for right.



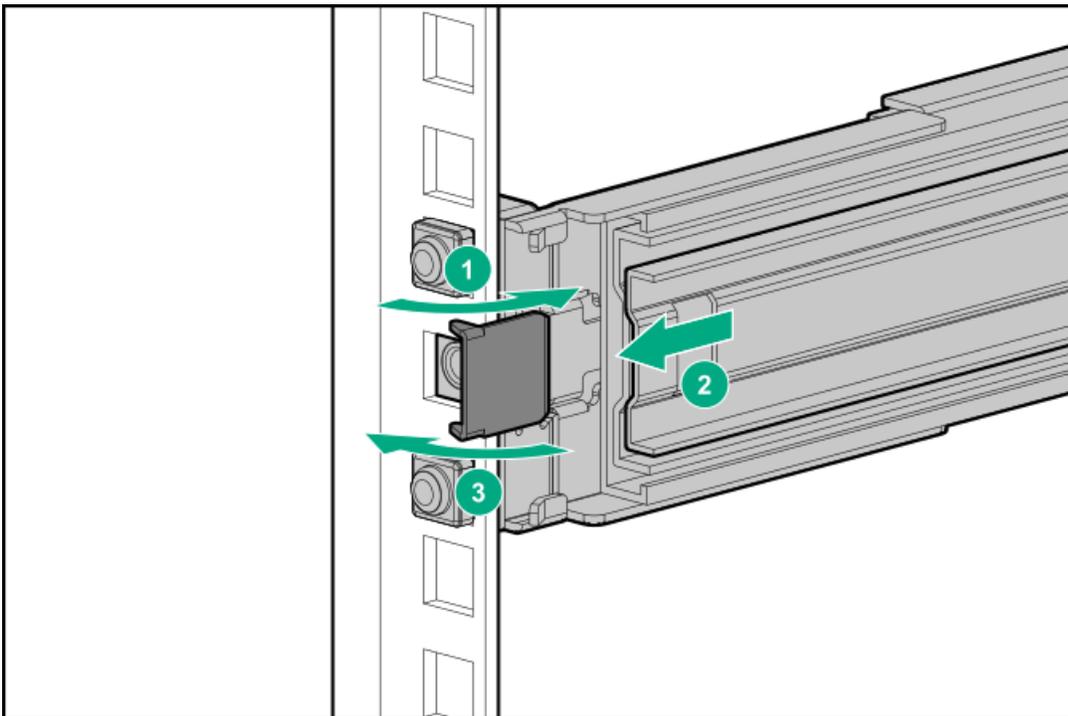
4. Fasten the mounting rails to the rack columns:

- 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.



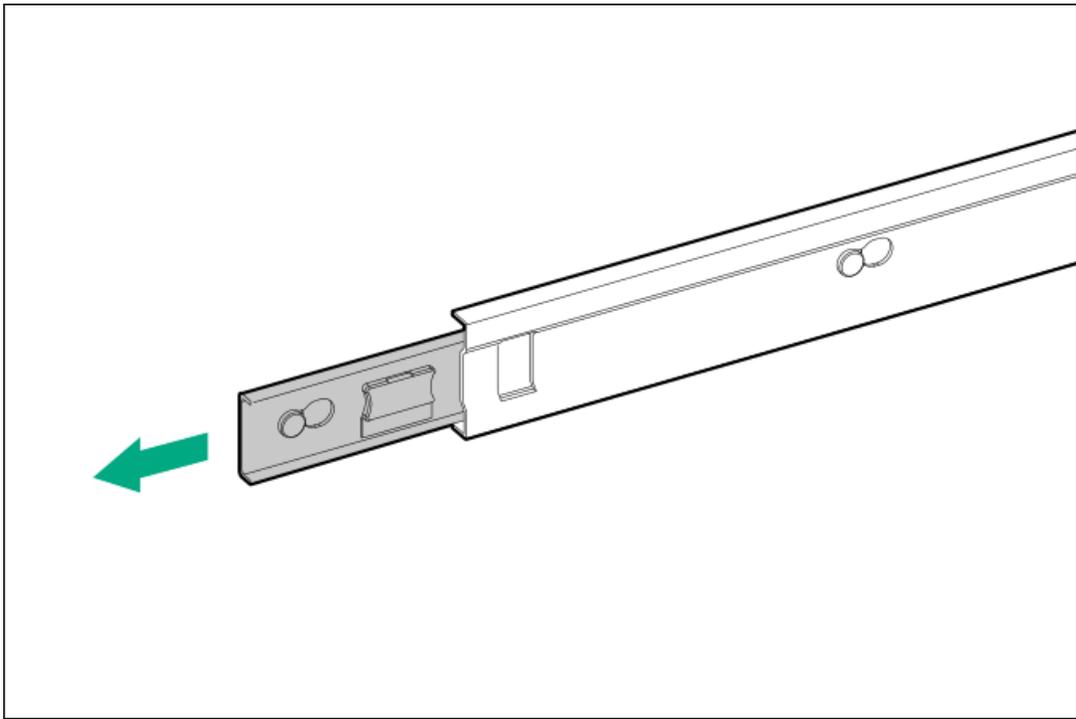


- d. Retract and hold the front retention bracket.
- e. Insert the pins on the mounting flange into the rack column holes.
- f. Release the front retention bracket.



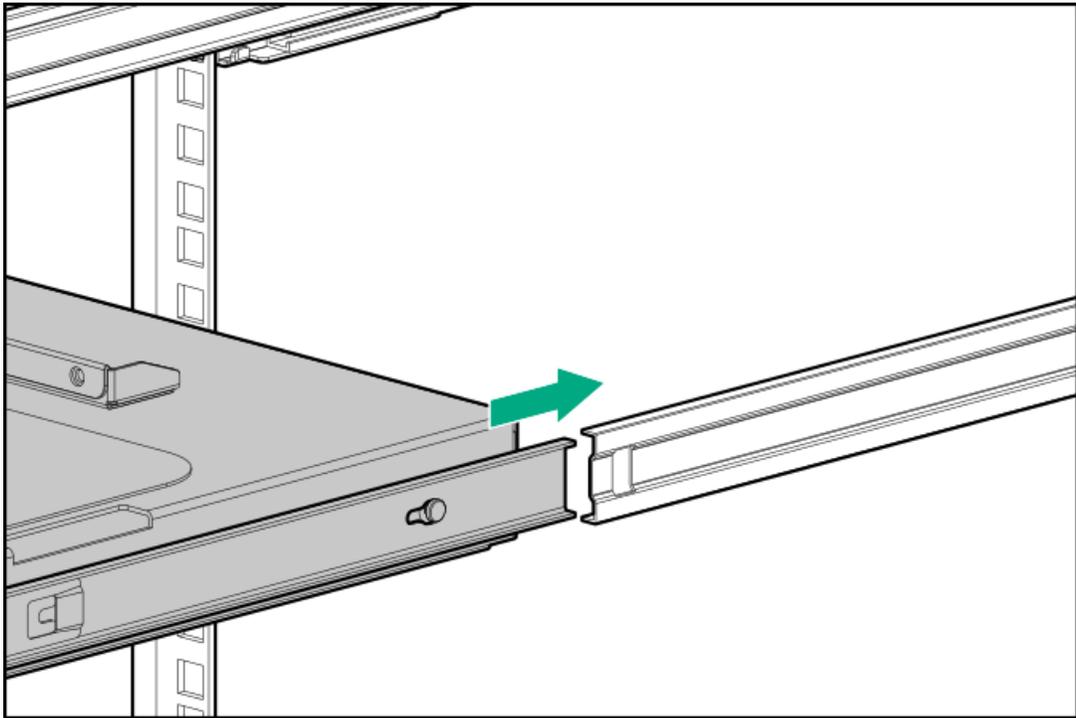
- 5. Extend the inner rail.





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

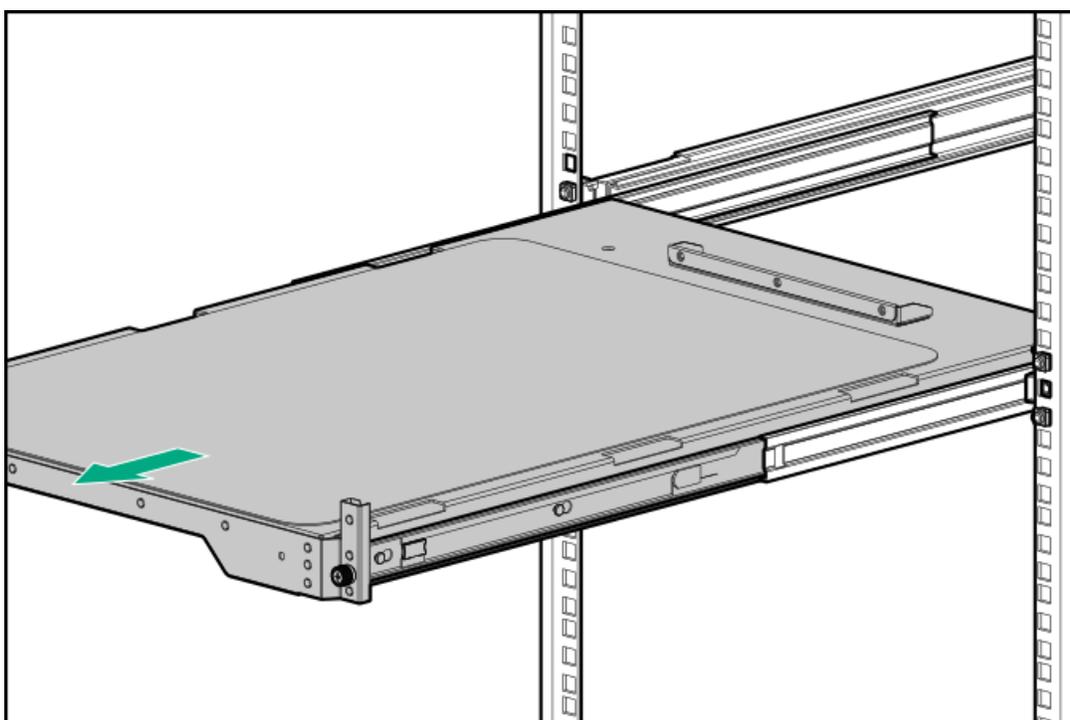
### Prerequisites



- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you perform this procedure, review the:
  - [Rack warnings and cautions](#)
  - [Server warnings and cautions](#)
  - [Space and airflow requirements](#)
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

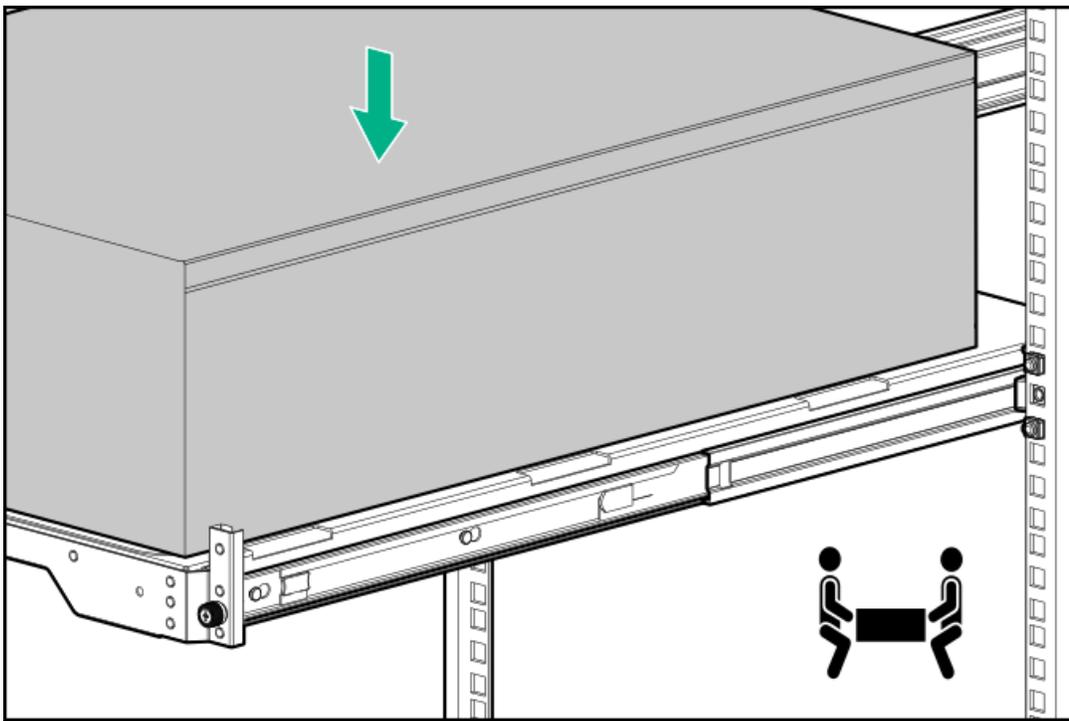
## Procedure

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

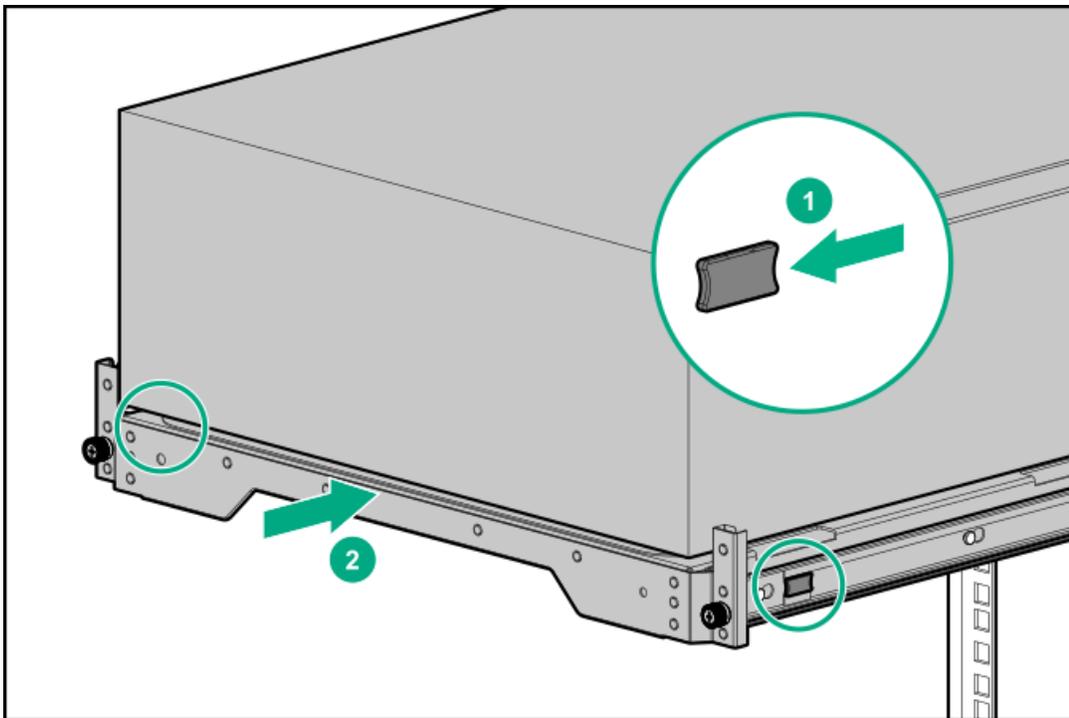


2. Place the server on the tray.

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

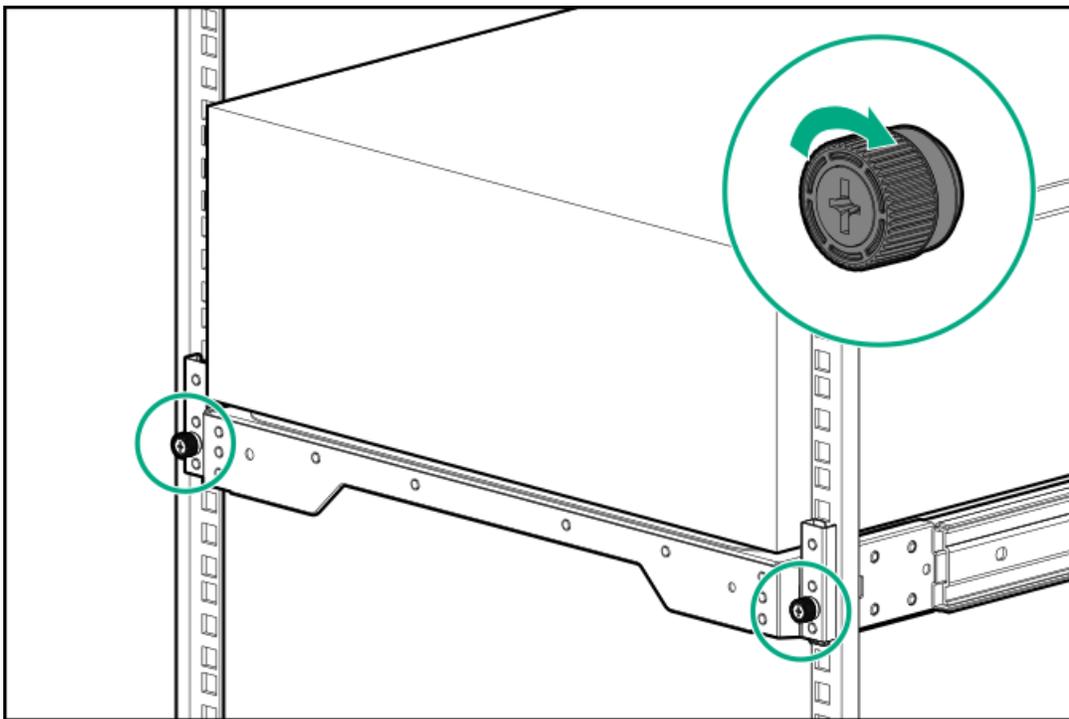


3. Press and hold the blue rail-release tabs, and then slide the tray back into the rack.



4. Connect all peripheral cables to the server.
5. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
6. Tighten the server tray thumbscrews.





## Results

The installation procedure is complete.

## Install the cable management arm

### About this task

The cable management arm (CMA) allows the server to be fully extended from the rack without the need to power off the system or disconnect any rear panel cables. This CMA is designed for ambidextrous implementation.

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



#### CAUTION

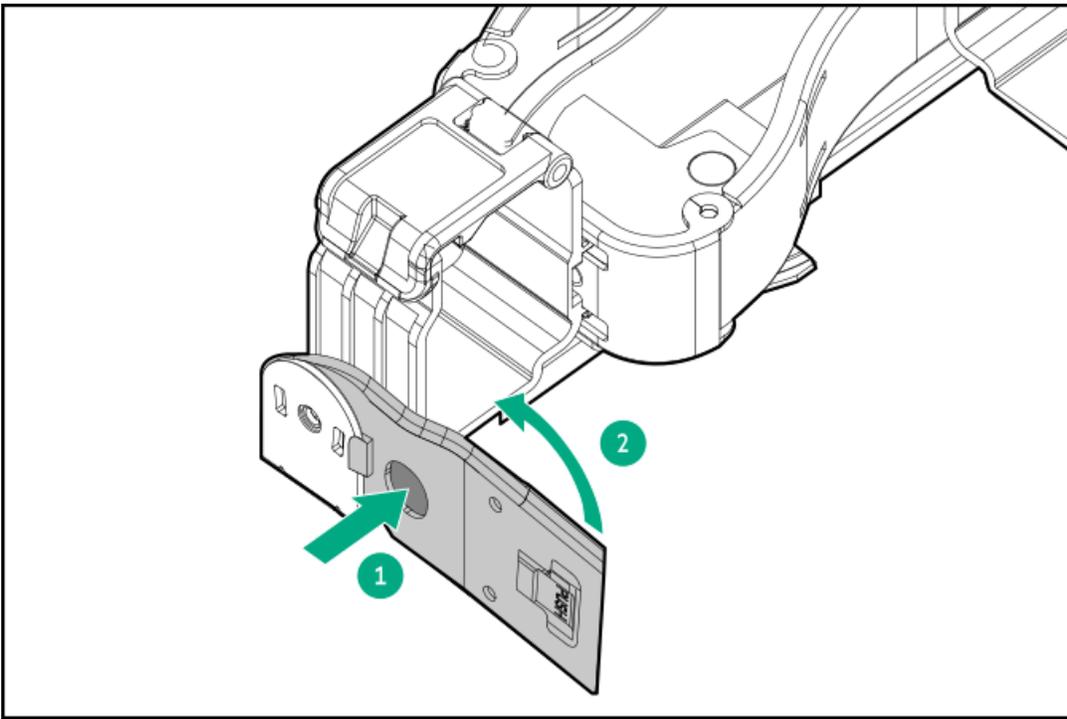
Support the CMA during the removal and replacement procedures. Do not allow the CMA to hang by its own weight during the procedure.

### Procedure

1. (Optional) The CMA retention bracket can be rotated to fit a left- or right-hand CMA operation. Press and hold the rotate mechanism, and then rotate the bracket 180°.

There will be an audible click to indicate that the bracket is locked in its adjusted position.

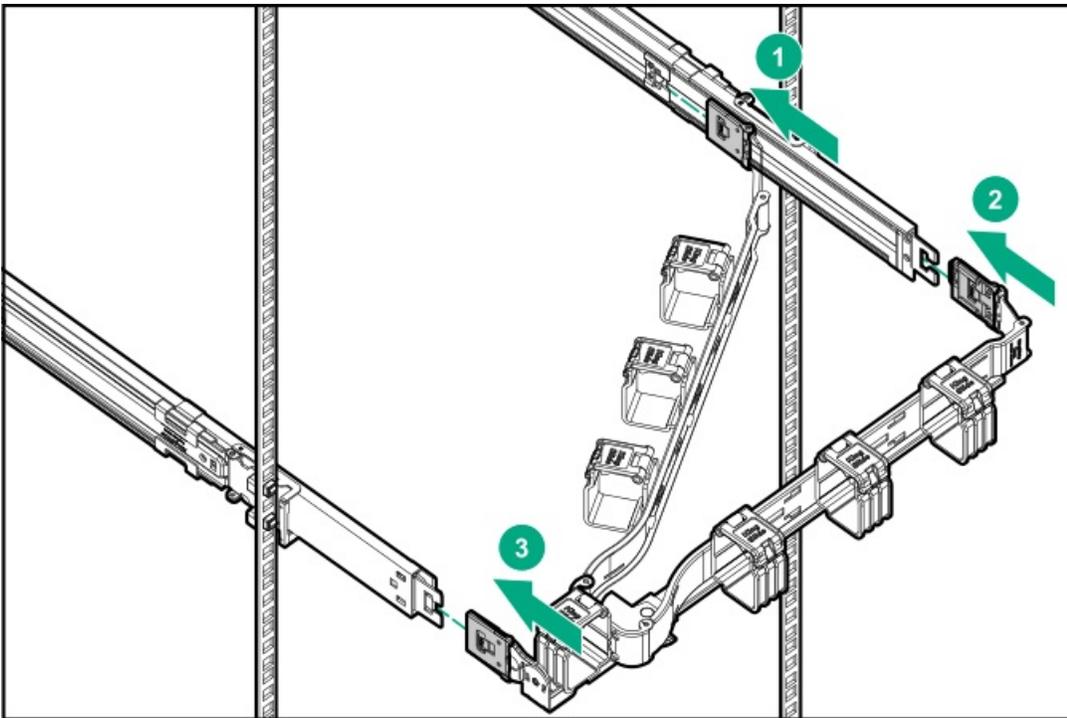




2. Connect the CMA hinged tabs and retention bracket to the rack rails:

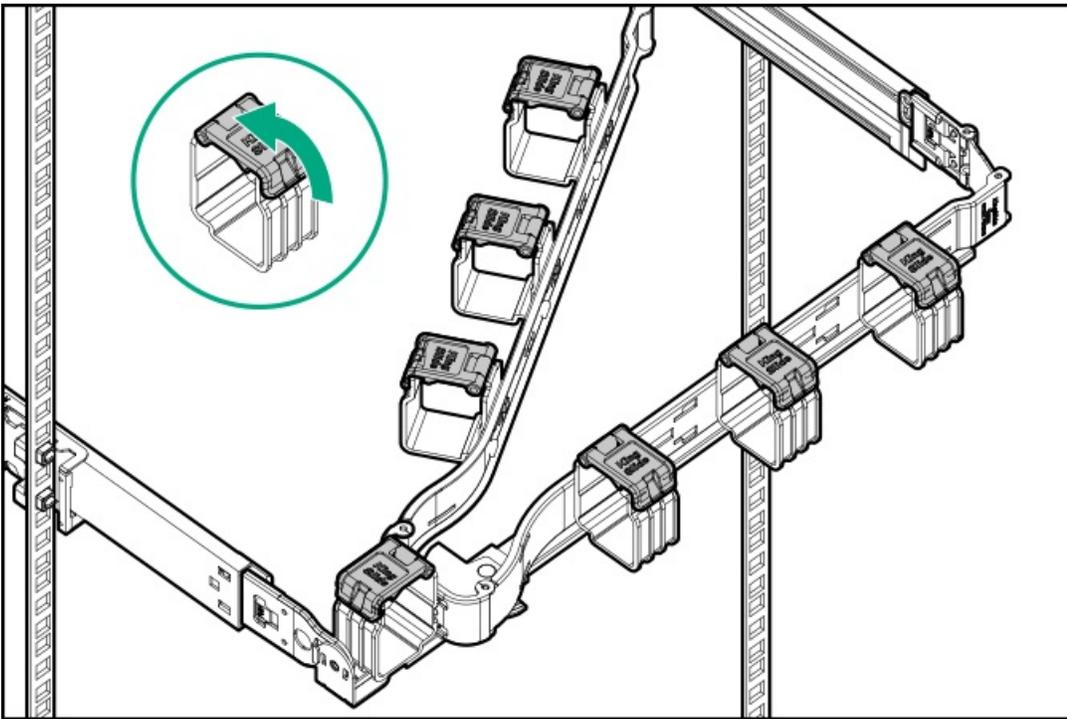
- a. Insert the inner tab into the slide rail.
- b. Insert the outer tab into the mounting rail.
- c. Insert the retention bracket into the opposite mounting rail.

There will be an audible click to indicate that the tabs and bracket are locked into place.



3. Open the cable clamps.





4.

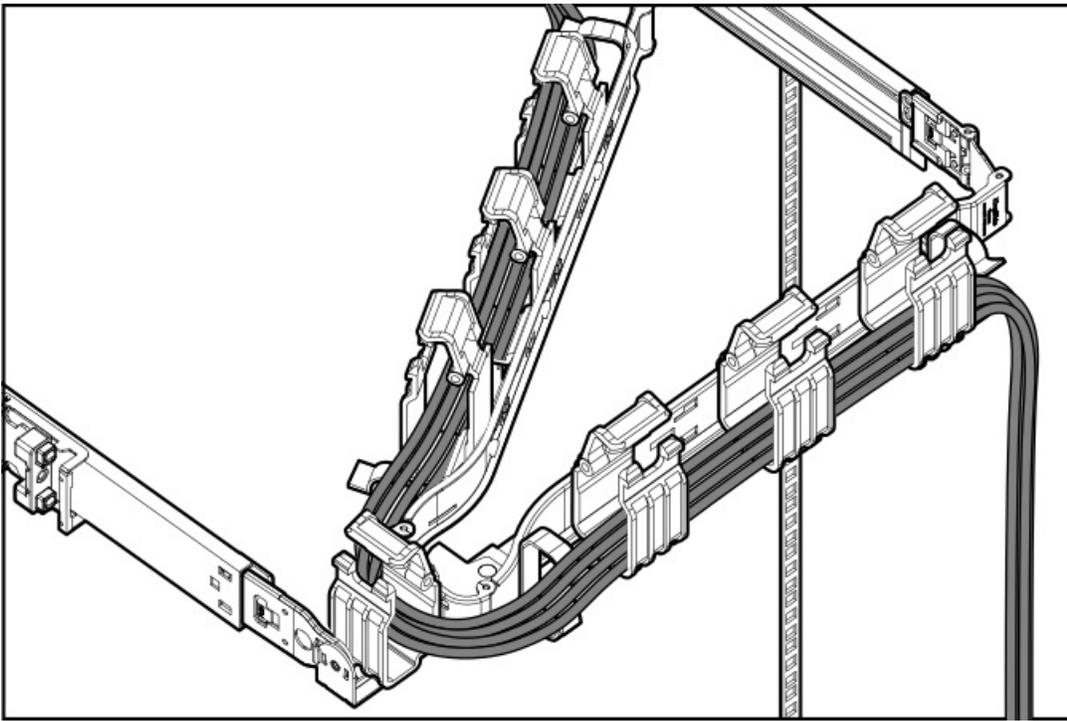


#### CAUTION

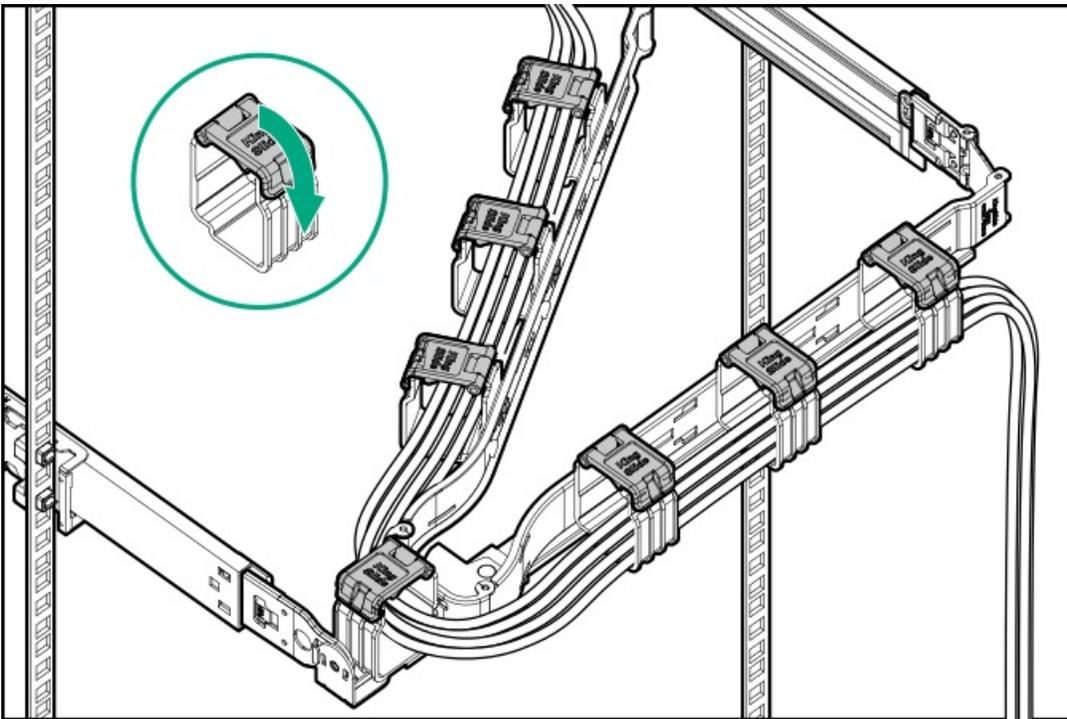
Employ industry best practices in managing peripheral cables and power cords secured in the CMA. These are some of the more important points:

- Leave enough cable slack between the rear panel and the CMA to allow the full extension of the CMA when the server is extended out of the rack.
- However, there should be no excess cable slack inside the CMA; this might cause cable binding and could lead to cable damage.
- Make sure that the cables and power cords do not extend above the top or below the bottom of the server to which they are attached. Otherwise, the cables might snag on other equipment installed in the rack when the server is extended from or returned to the rack.

Route the peripheral cables and power cords through the cable clamps.



5. Close the cable clamps.



6. 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.

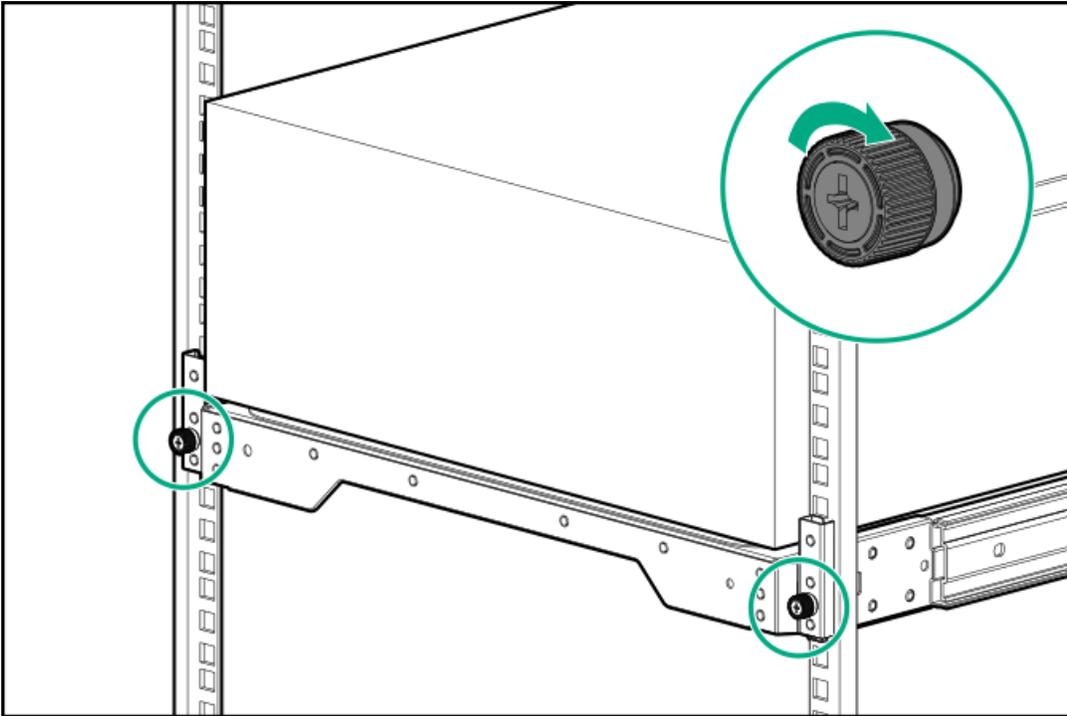
- a. Fully extend the server tray out of the rack.
- b. Make sure that there is enough slack in the cables and cords for a full extension of the rack rails.

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.



7. Tighten the server tray thumbscrews.



8. Connect each power cord to the power source.

9. Power up the server.

## Results

The installation procedure is complete.

## Drive options

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

- Hot-plug LFF SAS or SATA drives
- Hot-plug SFF SAS or SATA drives

The embedded Intel VROC for HPE Gen11 (Intel VROC) supports software RAID for direct attached SATA.

To support hardware RAID, install a storage controller option.

### Subtopics

[Drive installation guidelines](#)

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

[Installing a hot-plug LFF / SFF 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.
- All drives grouped into the same drive array must meet the following criteria:
  - They must be either all hard drives or all solid-state drives.
  - Drives must be the same capacity to provide the greatest storage space efficiency.

## Installing a non-hot-plug LFF 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.

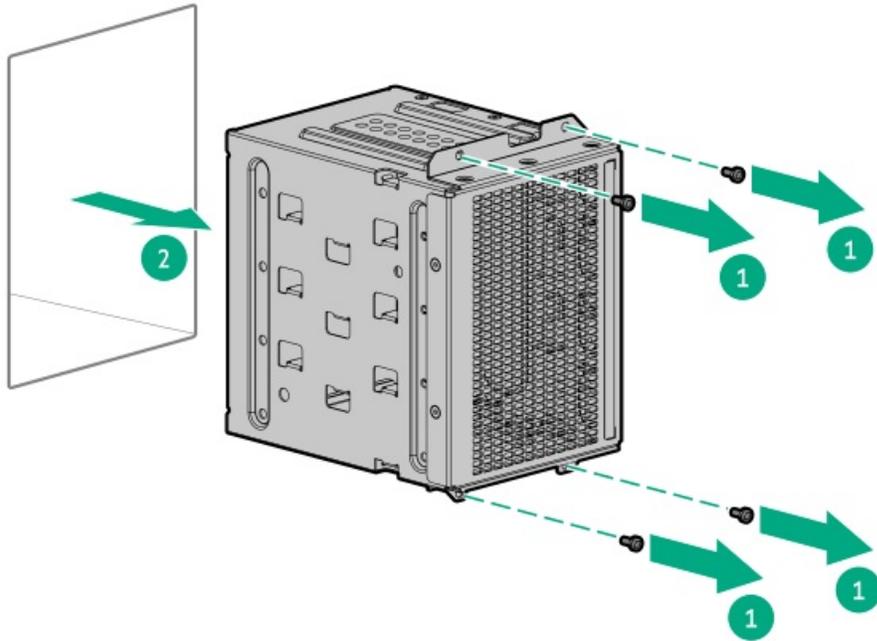


#### CAUTION

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](#).

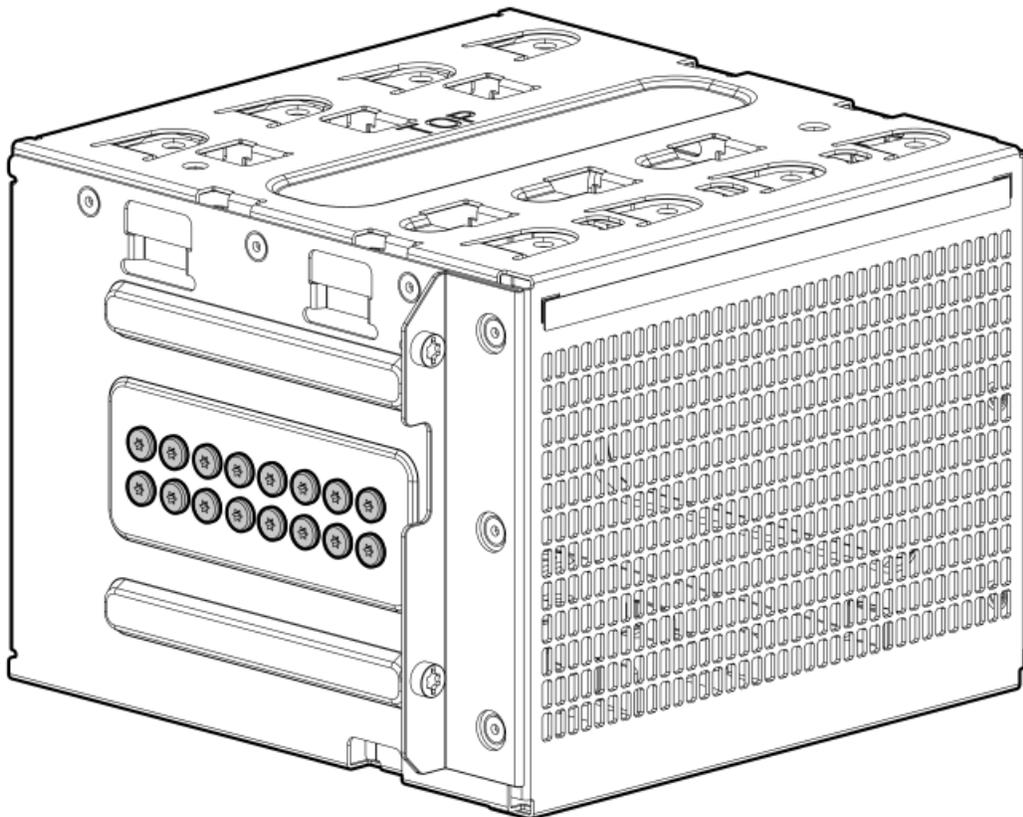
### Procedure

1. [Back up all server data](#).
2. [Power down the server](#).
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. 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](#).
6. If installed, [remove the front bezel](#).
7. [Remove the access panel](#).
8. [Remove the system air baffle](#).
9. If a non-hot-plug drive is already installed, disconnect the drive power and SATA cables from the drive.
10. Remove the non-hot-plug drive cage.



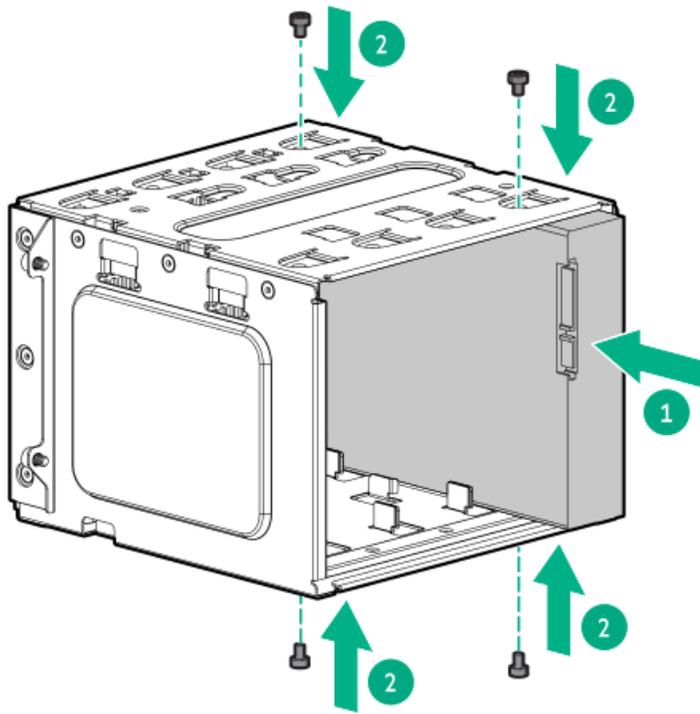
11. Remove the correct number of screws from the drive cage.

Each drive requires four screws.

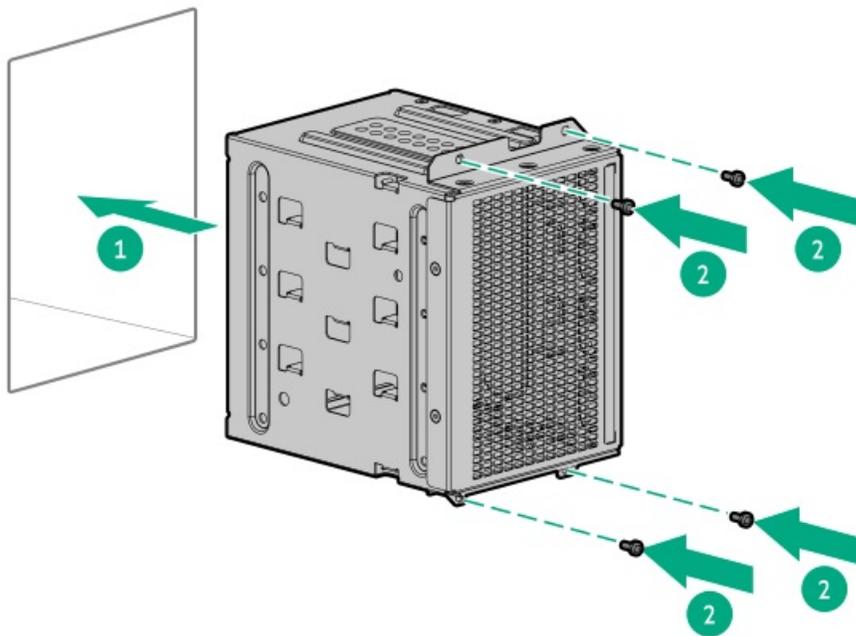


12. Install the non-hot-plug drive.





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



14. Connect the drive power and SATA cables.

15. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

16. Install the system air baffle.

17. Install the access panel.

18. Do one of the following:

- Orient the server back to tower mode.
- Install the server into the rack.

19. Install the front bezel.



20. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
21. Power up the server.
22. To configure drive arrays, see the relevant storage controller guide.

## Results

The installation procedure is complete.

## Installing a hot-plug LFF / SFF drive

### Prerequisites

The redundant fan kit is required when installing SFF drives with the following specifications:

- 15K RPM hard disk drives
- 24G SAS-4 solid state drives

### About this task



#### 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.

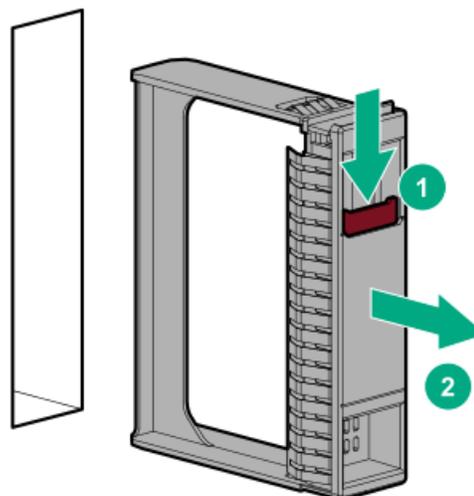


#### CAUTION

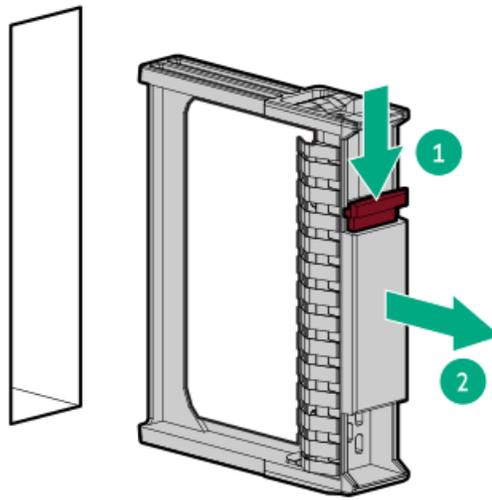
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

### Procedure

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

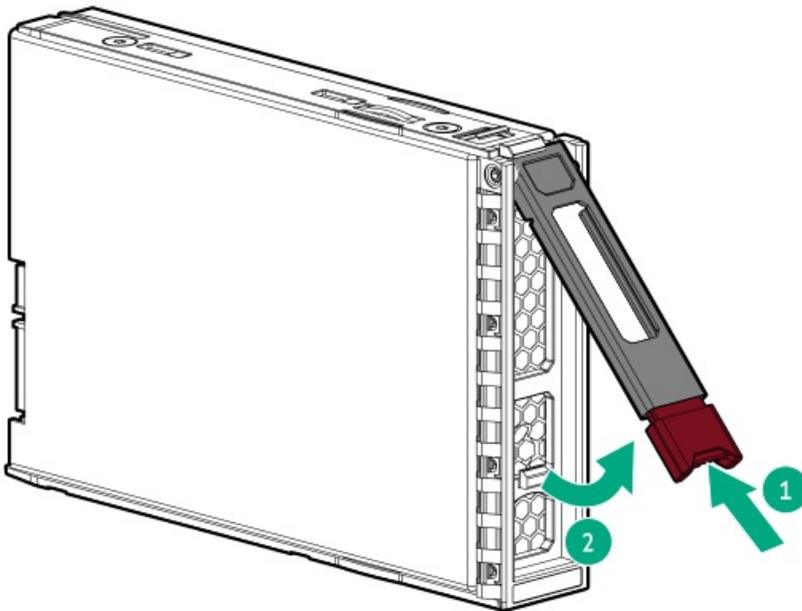


- SFF drive blank



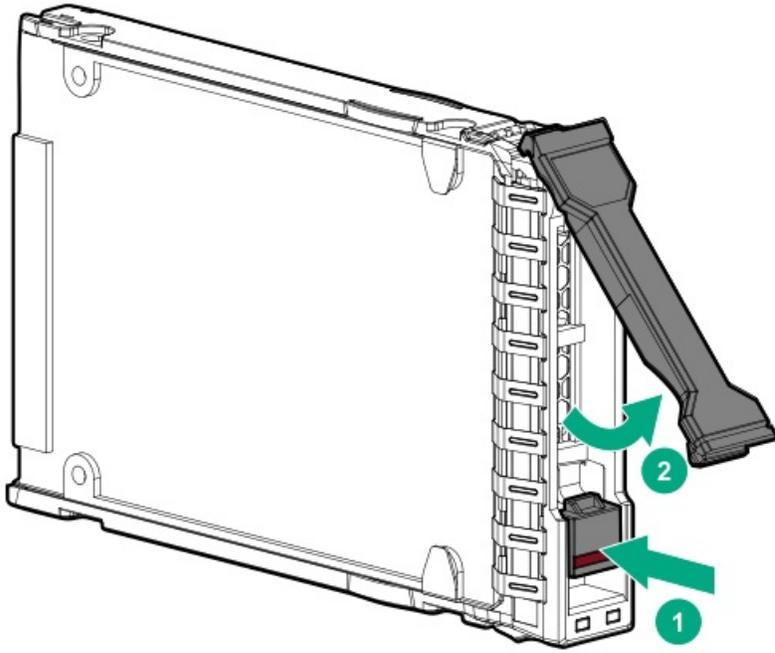
3. Prepare the drive.

- LFF drive



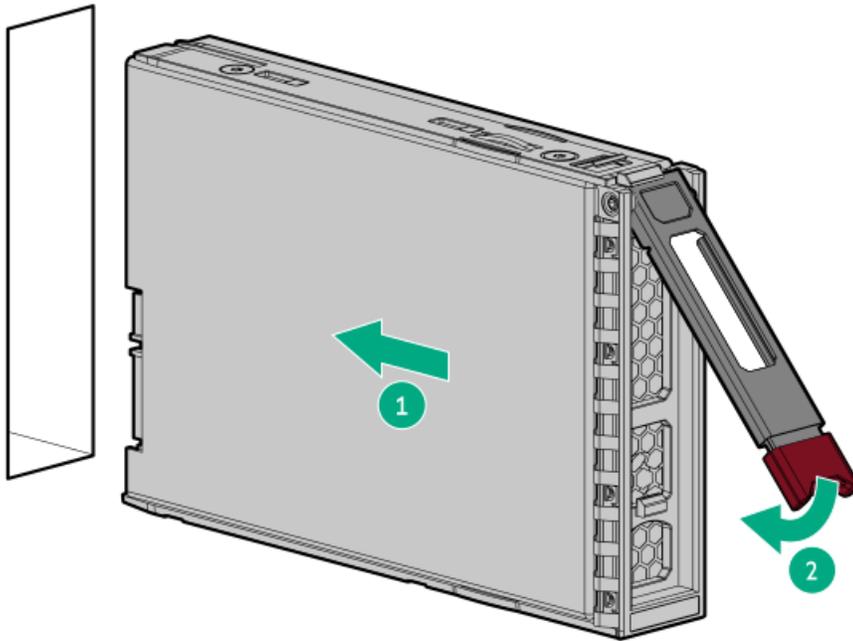
- SFF drive





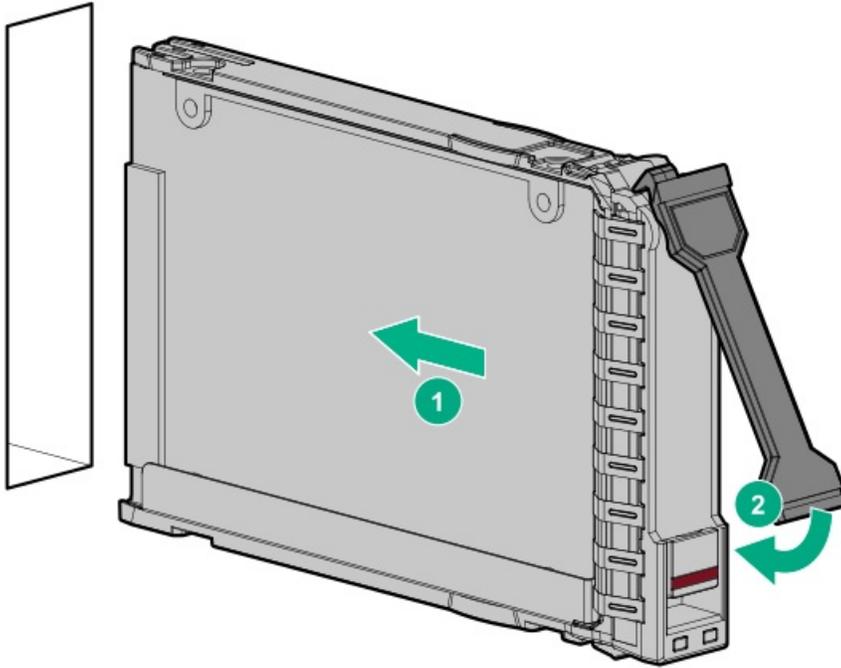
4. Install the drive.

- 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 an AC power supply](#)

## Hot-plug power supply calculations

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

## 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 an AC 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.

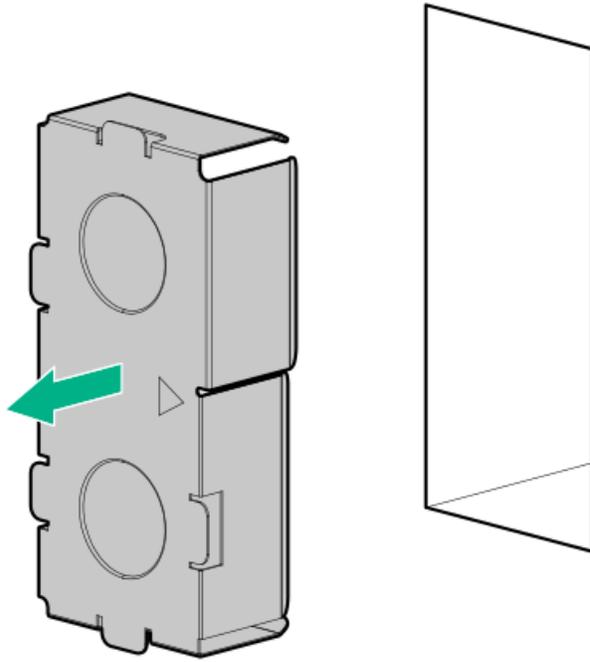
### Procedure

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

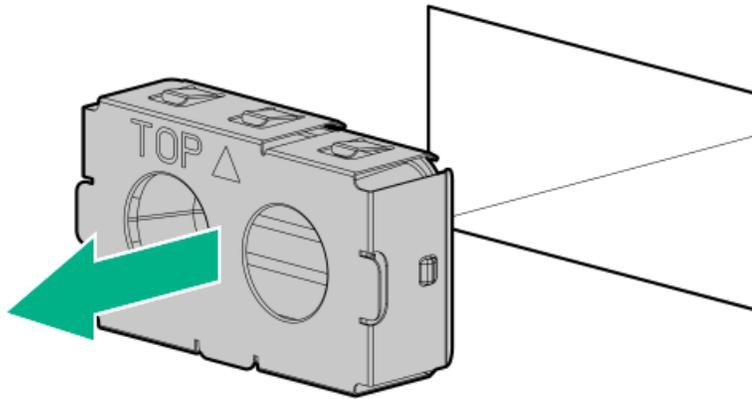
Retain the blank for future use.

- Tower mode



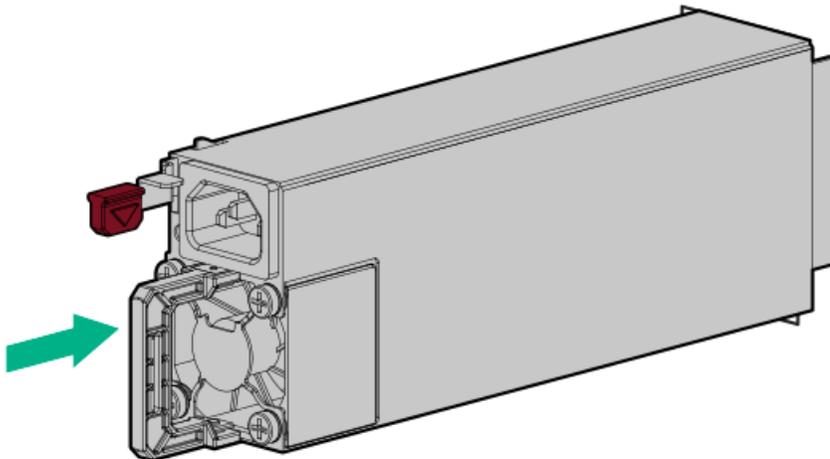


- Rack mode

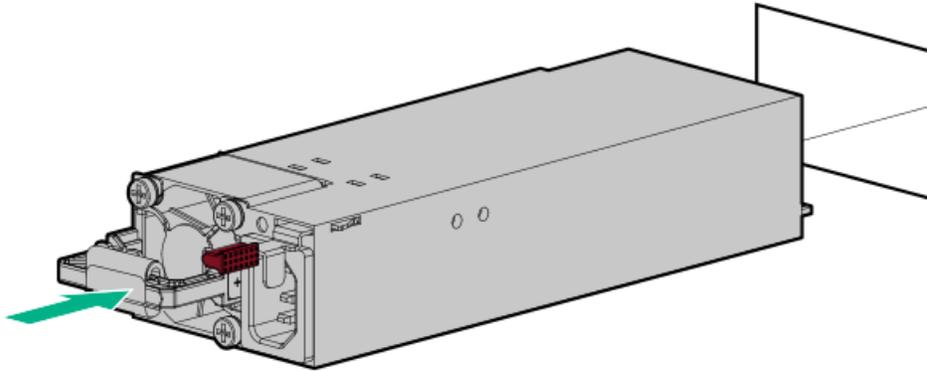


2. Immediately slide the power supply into the bay until it clicks into place.

- Tower mode



- Rack mode



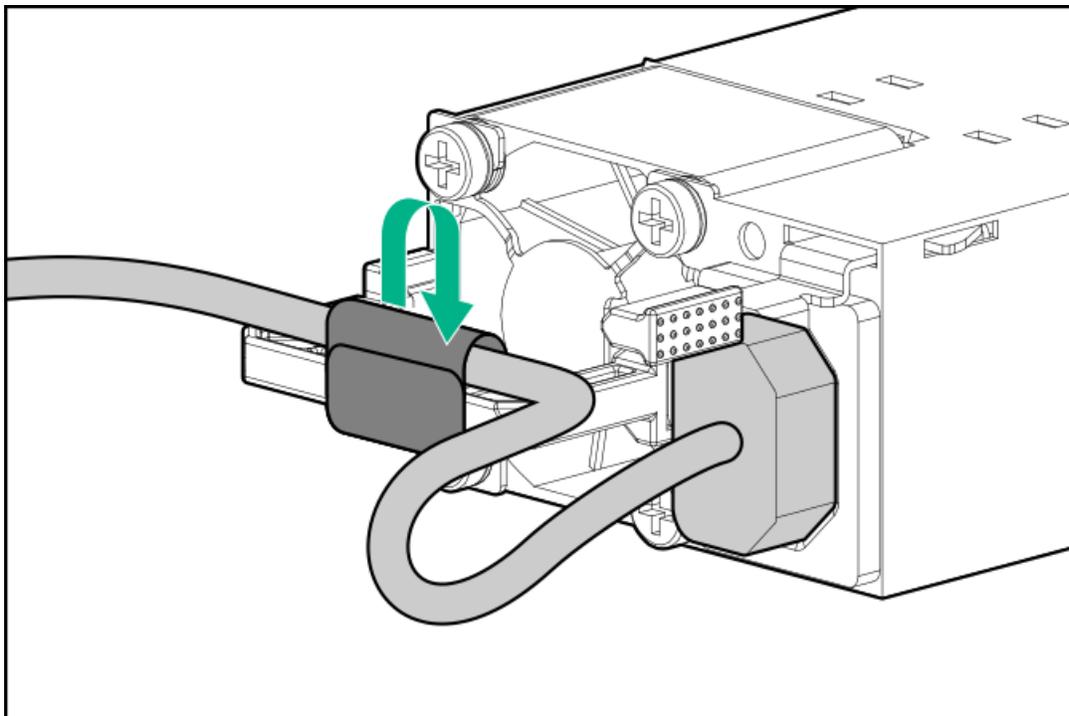
3. Connect the power cord to the power supply.
4. Secure the power cord in the strain relief strap attached to the power supply handle:
  - a. Unwrap the strain relief strap from the power supply handle.



**CAUTION**

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

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



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



## Results

The installation procedure is complete.

## Drive cage options

The server supports the following drive cage options:

- 4 LFF non-hot-plug drive cage
- 4 LFF hot-plug drive cage
- 8 SFF hot-plug drive cage

When installing a drive cage, always populate from drive box 1.

This server supports mixed hot-plug drive configuration—4 LFF drives in box 1 and 8 SFF drives in box 2.

Mixing non-hot-plug and hot-plug drive cages in this server is not supported.

### Subtopics

[Installing the 4 LFF non-hot-plug drive cage](#)

[Installing the 4 LFF hot-plug drive cage](#)

[Installing the 8 SFF hot-plug drive cage](#)

## Installing the 4 LFF non-hot-plug drive cage

### Prerequisites

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

### About this task



#### 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.



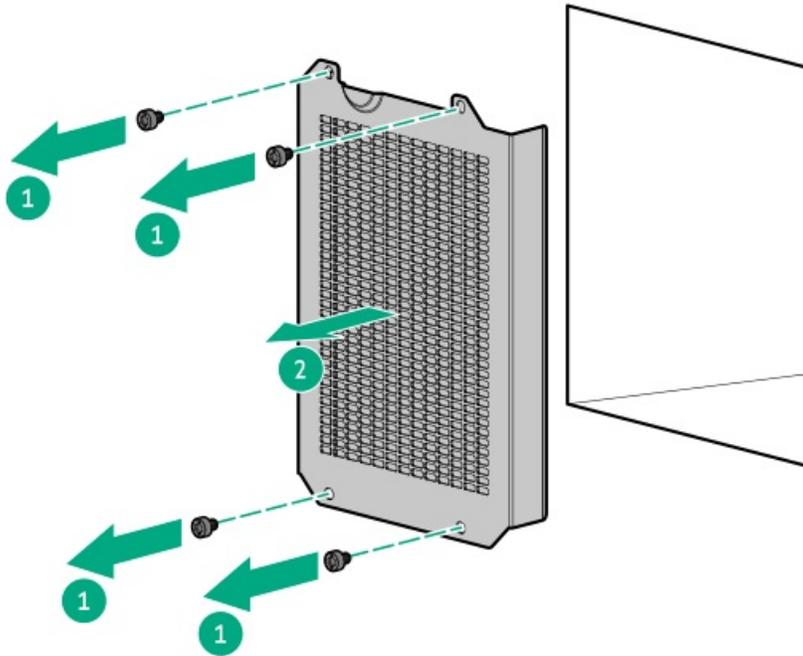
#### CAUTION

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](#).

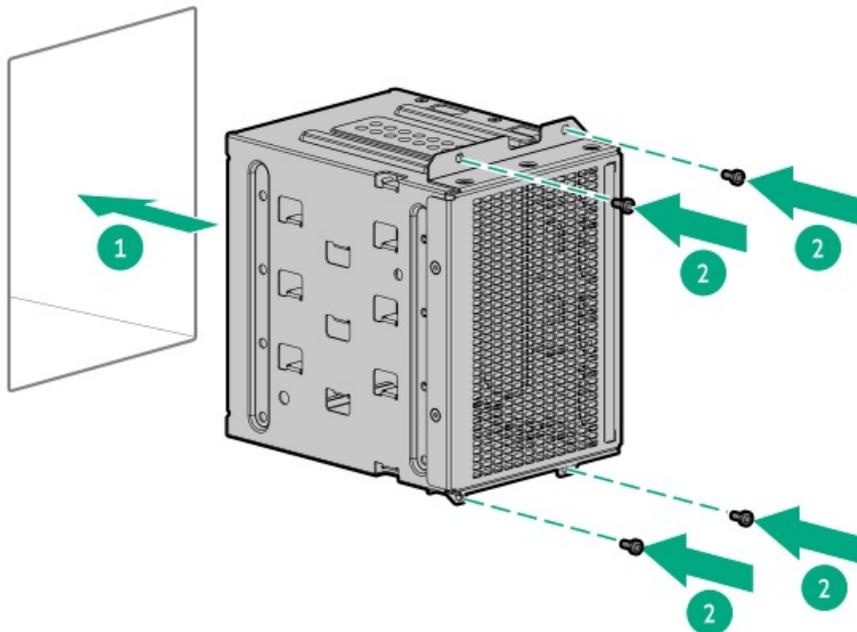
### Procedure

1. [Back up all server data](#).
2. [Power down the server](#).
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. If installed, [remove the front bezel](#).

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 system air baffle.
9. Remove the drive cage blank.



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



12. Connect the non-hot-plug drive cables.



13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
14. [Install the system air baffle.](#)
15. [Install the access panel.](#)
16. Do one of the following:
  - [Orient the server back to tower mode.](#)
  - [Install the server into the rack.](#)
17. [Install the front bezel.](#)
18. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
19. [Power up the server.](#)

## Results

The installation procedure is complete.

## Installing the 4 LFF hot-plug drive cage

### Prerequisites

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

### About this task

The 4 LFF hot-plug drive cage option:

- Can be installed in box 1 or 2.
- [Can be installed together with the 8 SFF hot-plug drive cage option.](#)



#### 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.



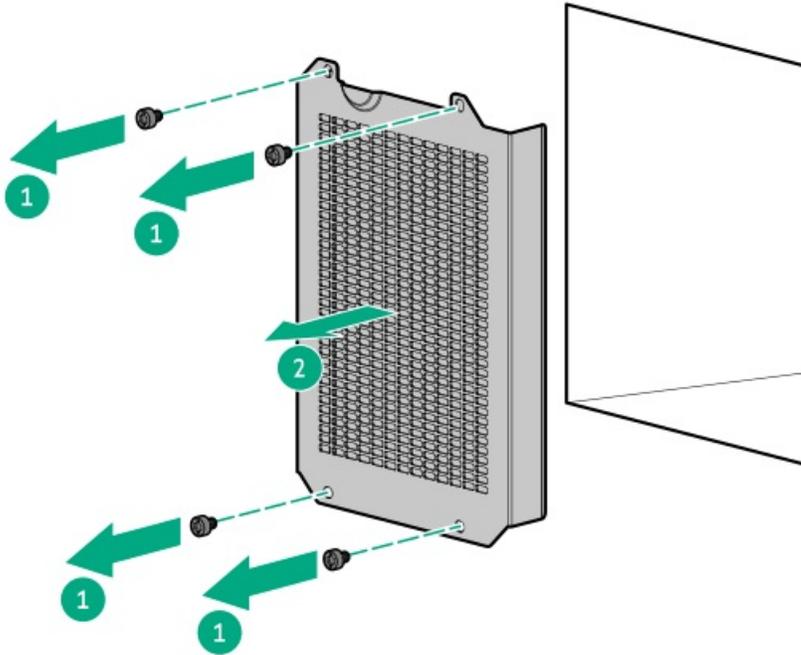
#### CAUTION

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](#).

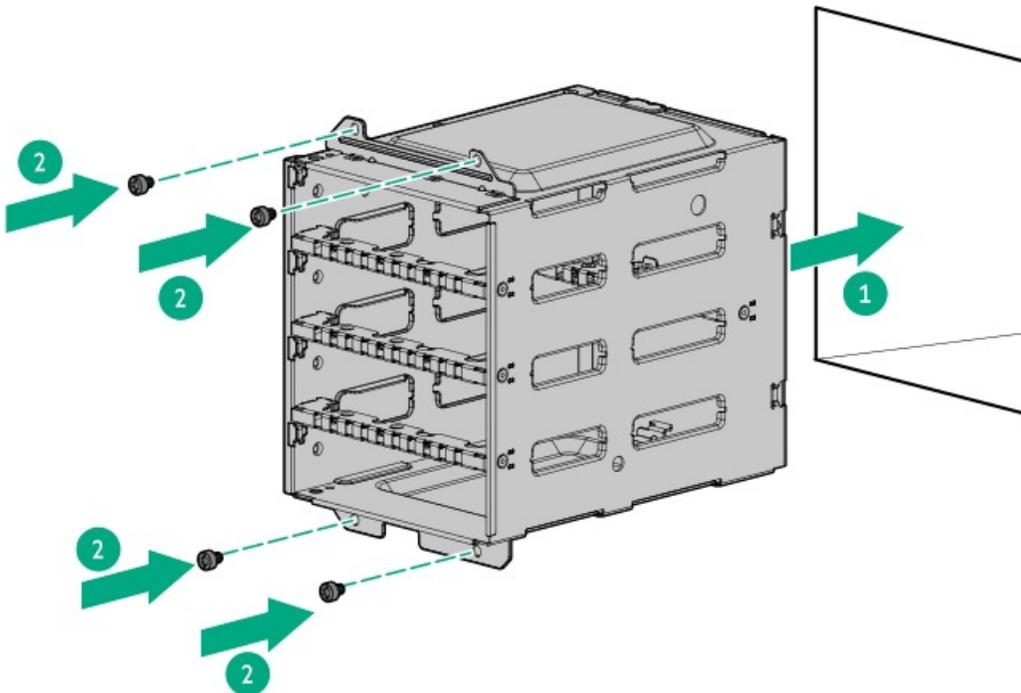
## Procedure

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

5. If installed, remove the front bezel.
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 system air baffle.
9. Remove the drive cage blank.



10. Install the 4 LFF hot-plug drive cage in the drive box, and then secure it with the screws.



11. Connect the following drive cables:



- [LFF hot-plug drive controller cables](#)
  - [Drive power cable](#)
12. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
  13. [Install the system air baffle.](#)
  14. [Install the access panel.](#)
  15. Do one of the following:
    - [Orient the server back to tower mode.](#)
    - [Install the server into the rack.](#)
  16. [Install the LFF hot-plug drive.](#)
  17. [Install the front bezel.](#)
  18. Connect the power cords:
    - a. Connect each power cord to the server.
    - b. Connect each power cord to the power source.
  19. [Power up the server.](#)

## Results

The installation procedure is complete.

## Installing the 8 SFF hot-plug drive cage

### Prerequisites

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

### About this task

The 8 LFF hot-plug drive cage option:

- Can be installed in box 1 or 2.
- [Can be installed together with the 4 LFF hot-plug drive cage option.](#)



#### 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.



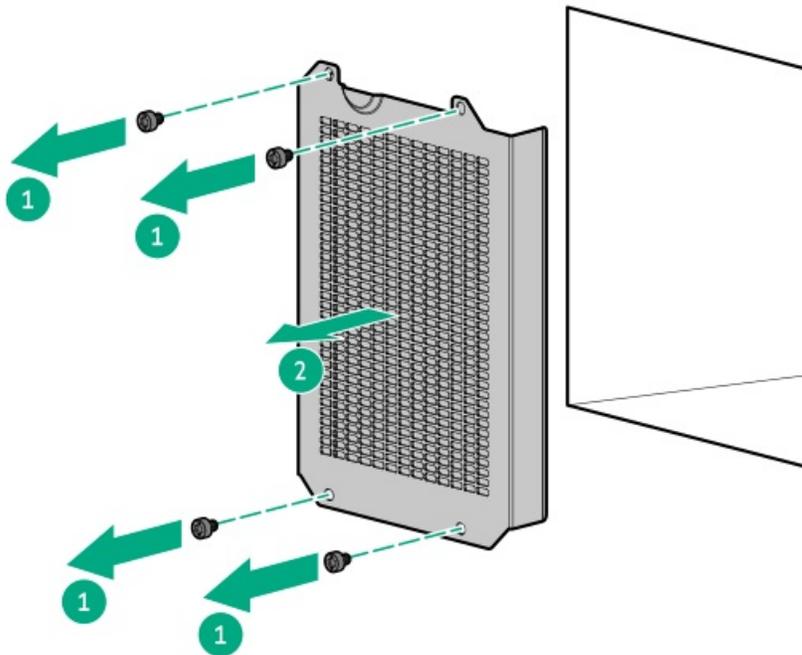
#### CAUTION

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](#).

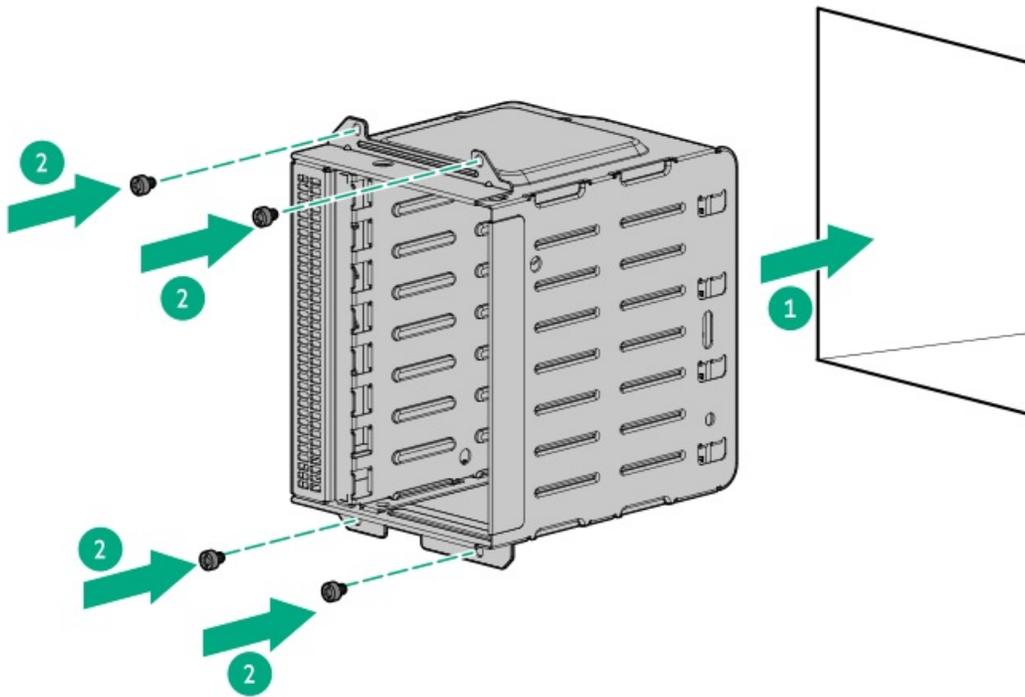
### Procedure

1. [Back up all server data.](#)
2. [Power down the server.](#)
3. Remove all power:

- a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
  5. If installed, remove the front bezel.
  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 system air baffle.
  9. Remove the drive cage blank.



10. Install the 8 SFF hot-plug drive cage in the drive box, and then secure it with the screws.



11. Connect the following drive cables:
  - [SFF hot-plug drive controller cables](#)
  - [Drive power cable](#)
12. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
13. [Install the system air baffle.](#)
14. [Install the access panel.](#)
15. Do one of the following:
  - [Orient the server back to tower mode.](#)
  - [Install the server into the rack.](#)
16. [Install the SFF hot-plug drive.](#)
17. [Install the front bezel.](#)
18. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
19. [Power up the server.](#)

## Results

The installation procedure is complete.

## Media device options

The server supports the following media device options:



- Optical drive bay—Slim-type SATA optical drive
- Media bay—USB RDX docking station, or SAS LTO tape drive

#### Subtopics

[Optical drive option](#)

[USB RDX backup system option](#)

[SAS LTO tape drive option](#)

## Optical drive option

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

#### Subtopics

[Installing the optical drive option](#)

## Installing the optical drive option

### Prerequisites

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

- Optical drive SATA-power cable that ships with the optical drive option
- T-15 Torx screwdriver
- Phillips No. 1 screwdriver
- Spudger or any small prying tool

### About this task



#### 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.



#### CAUTION

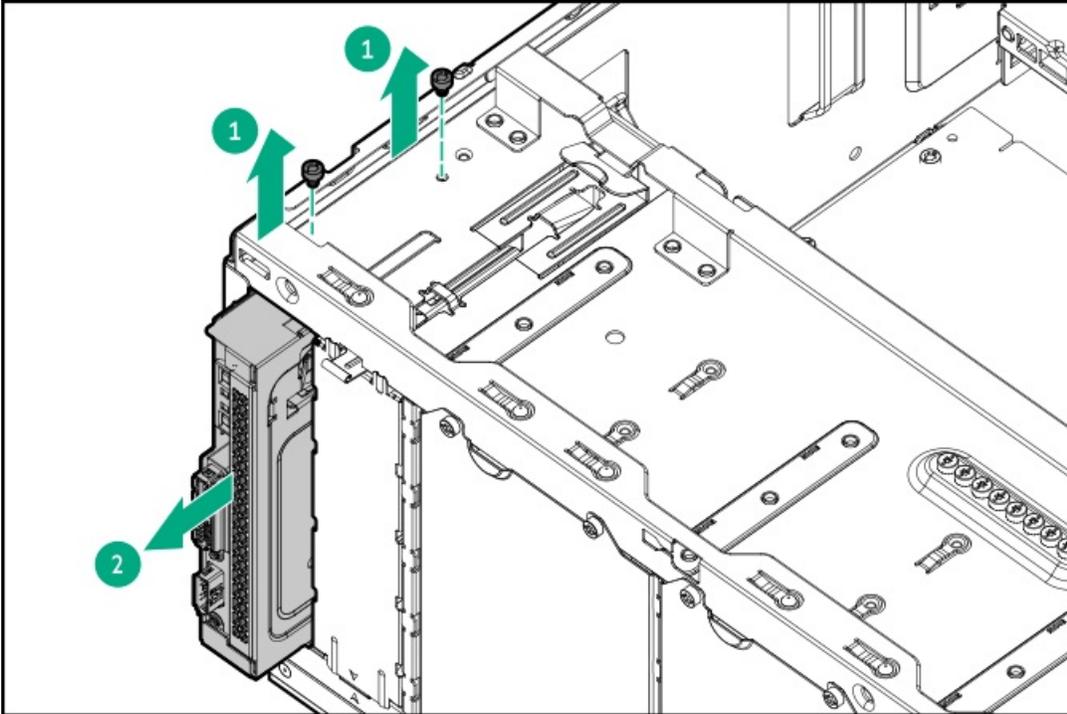
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

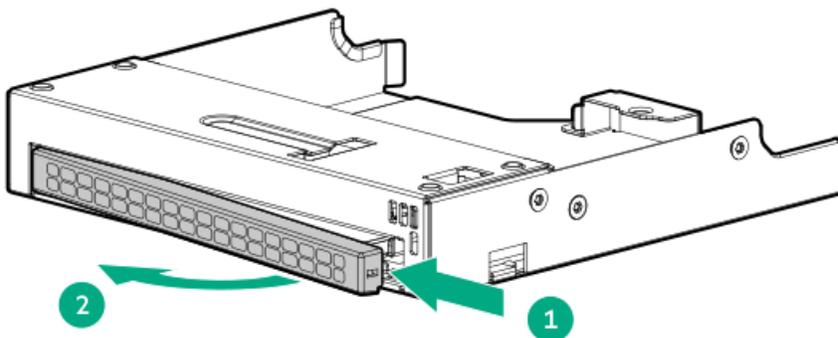
1. [Back up all server data](#).
2. [Power down the server](#).
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. If installed, [remove the front bezel](#).



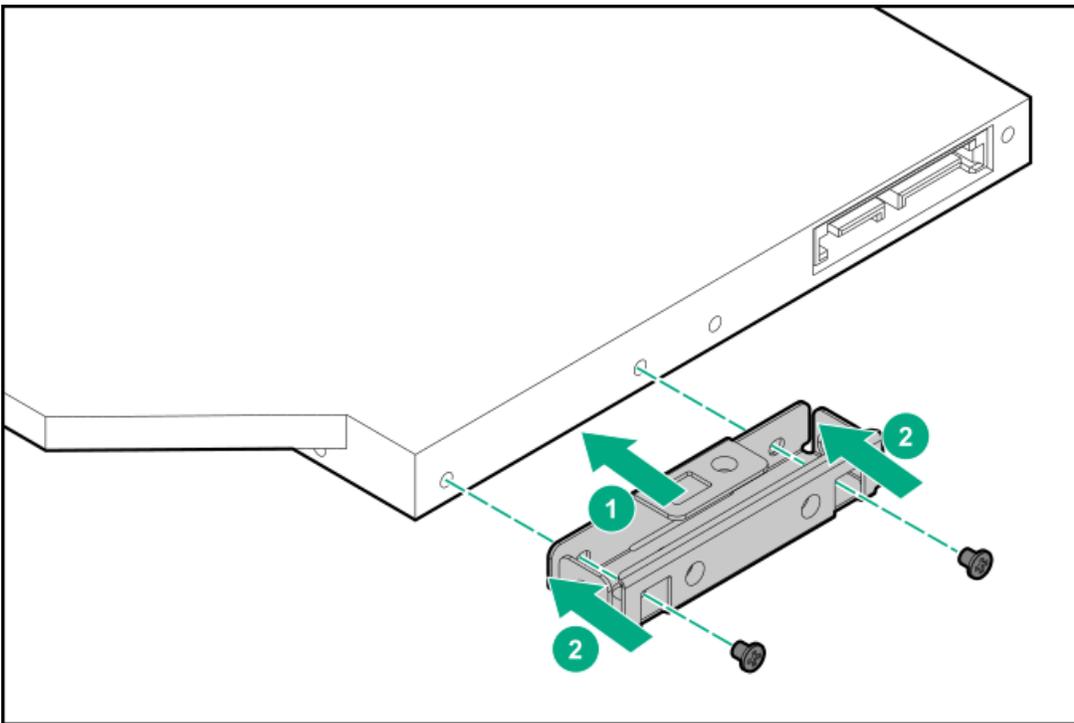
6. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.
  - If the server is in rack mode, remove the server from the rack.
7. Remove the access panel.
8. Remove the system air baffle.
9. Disconnect the front I/O cables from the system board.
10. Remove the front I/O cage:
  - a. Remove the front I/O cage screws.
  - b. Slide the front I/O cage out of the server.



11. Remove the optical drive bay blank:
  - a. Use a plastic spudger to pry one side of the blank.
  - b. Remove the optical drive bay blank from the front I/O cage.

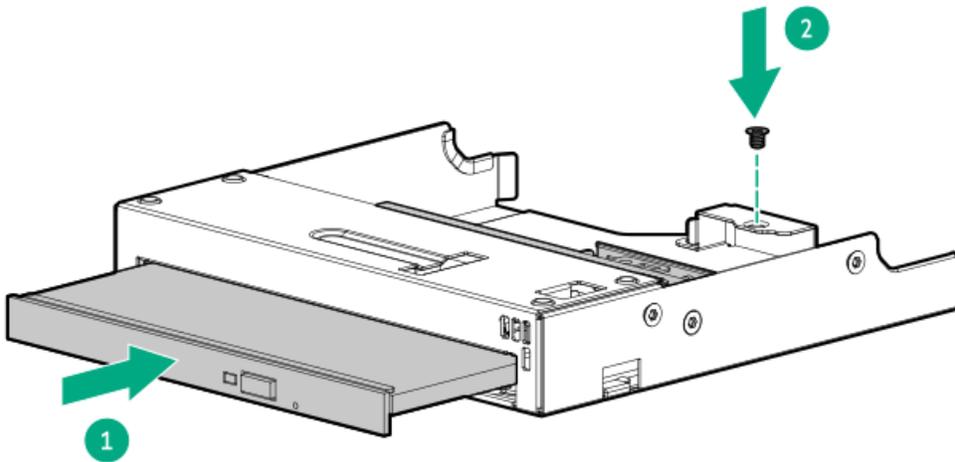


12. Install the optical drive bracket.



13. Install the optical drive in the front I/O cage:

- a. Slide the optical drive into the front I/O cage.
- b. Install the drive bracket screw.

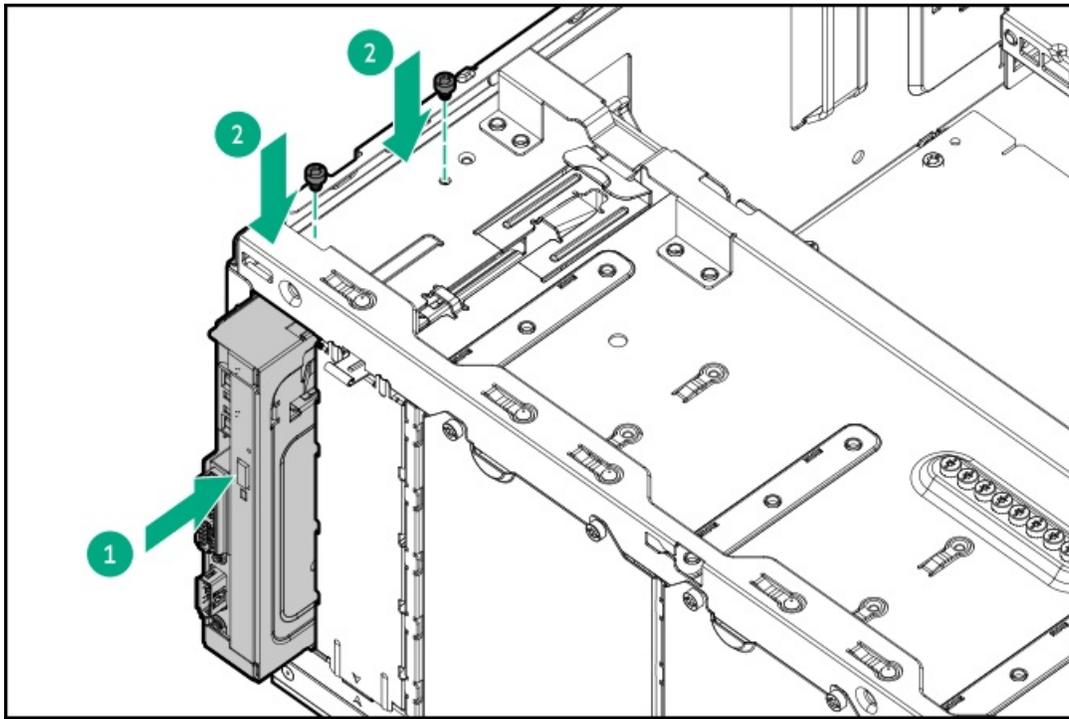


14. Connect the SATA-power cable to the optical drive.

15. Install the front I/O cage:

- a. Slide the front I/O cage into the server until it clicks into place.
- b. Install the front I/O cage screws.





16. Connect all the following cables to the system board:

- [Optical drive cable](#)
- [Front I/O cable](#)
- [DisplayPort cable](#)

17. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

18. [Install the system air baffle.](#)

19. [Install the access panel.](#)

20. Do one of the following:

- [Orient the server back to tower mode.](#)
- [Install the server into the rack.](#)

21. [Install the front bezel.](#)

22. Connect the power cords:

- a. Connect each power cord to the server.
- b. Connect each power cord to the power source.

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

## 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:

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

### Subtopics

[Installing the internal USB RDX docking station](#)

[Enable the increased cooling mode](#)

## Installing the internal USB RDX docking station

### Prerequisites

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

- RDX cable option kit (P53491-B21)—This option kit includes:
  - RDX USB cable
  - LTO/RDX power splitter cable
- T-15 Torx screwdriver

### About this task



#### 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.



#### CAUTION

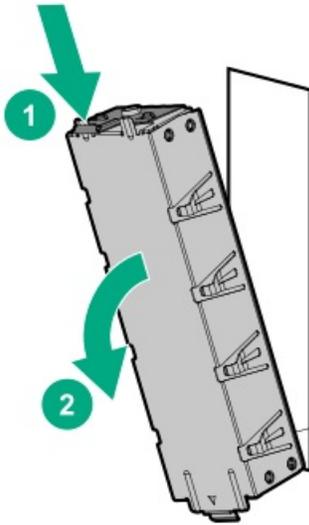
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

1. [Back up all server data.](#)
2. [Power down the server.](#)
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. If installed, [remove the front bezel.](#)
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 system air baffle.](#)

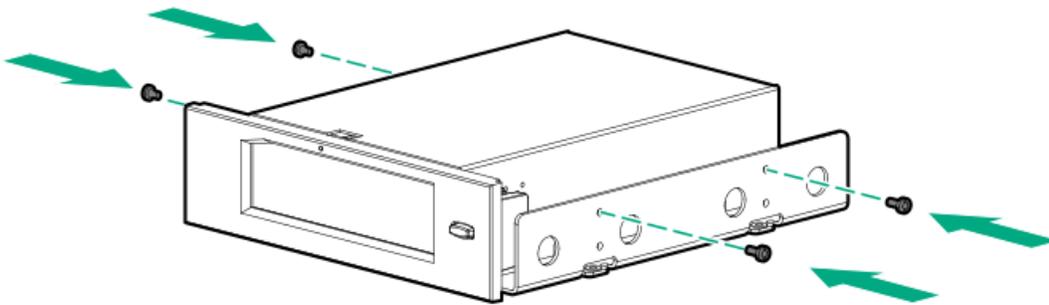


9. Remove the media bay blank.

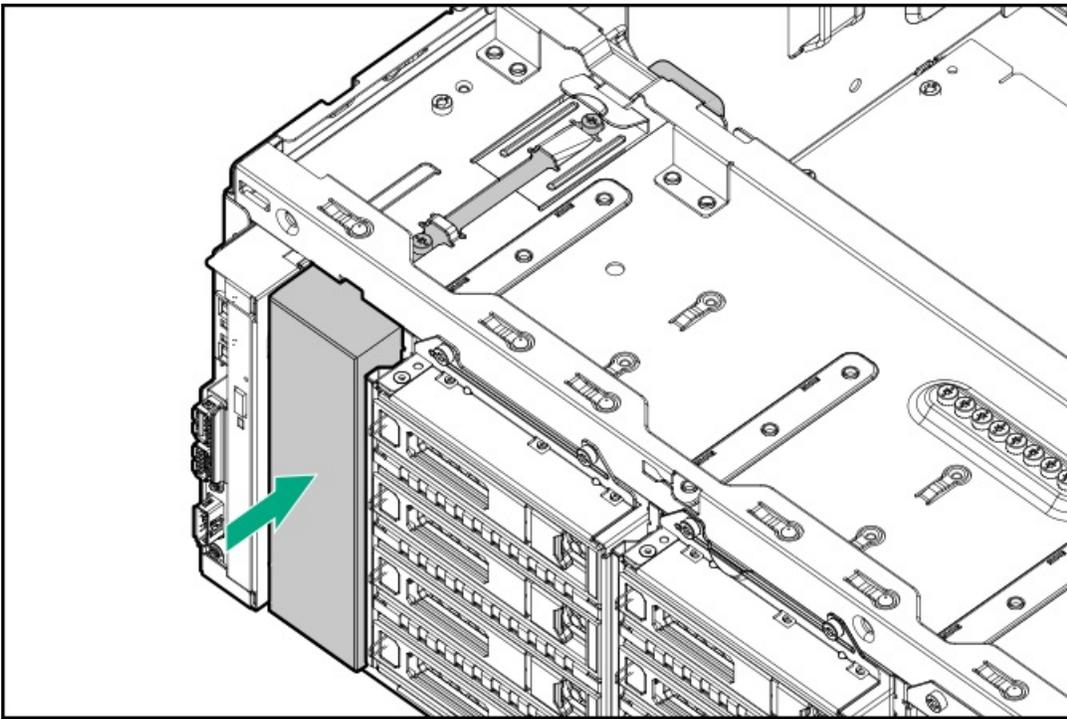


10. Install the RDX docking station screws.

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](#).



11. Slide the RDX docking station into the media bay until it clicks into place.



12. [Connect the USB RDX docking station power and signal cables.](#)

Secure the unconnected power cable in the [front cable clamps](#).

13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

14. [Install the system air baffle.](#)

15. [Install the access panel.](#)

16. Do one of the following:

- [Orient the server back to tower mode.](#)
- [Install the server into the rack.](#)

17. [Install the front bezel.](#)

18. Connect the power cords:

- a. Connect each power cord to the server.
- b. Connect each power cord to the power source.

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

20. [Enable the increased cooling mode.](#)

21. Perform the configuration procedure required by the RDX system.

For more information, see the RDX system documentation.

## Results

The installation procedure is complete.

1

The USB and/or power cables that ship with the drive option will not be used in this server.

## Enable the increased cooling mode

## About this task

Some components might generate more heat than others. To maintain proper cooling, increase the fan speed.

## Procedure

1. To enable the increased cooling mode in the UEFI System Utilities:
  - a. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Fan and Thermal Options > Thermal Configuration.
  - b. Select **Increased Cooling**.
  - c. Save your setting.
  - d. Reboot the server. A reboot is required after the setting is saved.
2. To enable the increased cooling mode in the iLO web interface:
  - a. From the iLO web interface, select Power & Thermal > Fans.
  - b. Click  next to the Summary category.  
The Fan Settings page opens.
  - c. Select **Increased Cooling**.
  - d. Click **OK**.

## 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 the SAS LTO tape drive](#)

## Installing the SAS LTO tape drive

### Prerequisites

Before you perform this procedure:

- [Make sure that a Smart Array controller board option is installed](#).
- Make sure that you have the following items available:
  - LTO tape drive option—The SAS and/or power cables that ship with the drive option will not be used in this server.
  - LTO cable kit (P62356-B21)—The option kit includes:
    - SAS LTO cable: Type-o controller
    - SAS LTO cable: Type-p controller

- LTO/RDX power splitter cable
- 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](#).

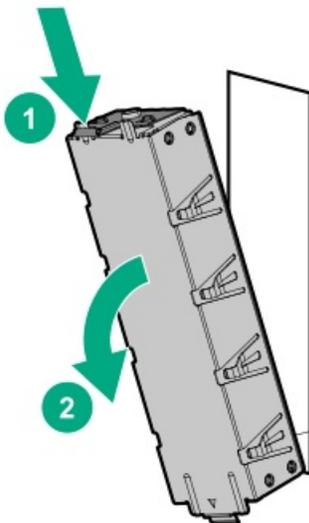


### CAUTION

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

## Procedure

1. [Back up all server data](#).
2. [Power down the server](#).
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. If installed, [remove the front bezel](#).
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 system air baffle](#).
9. Remove the media bay blank.

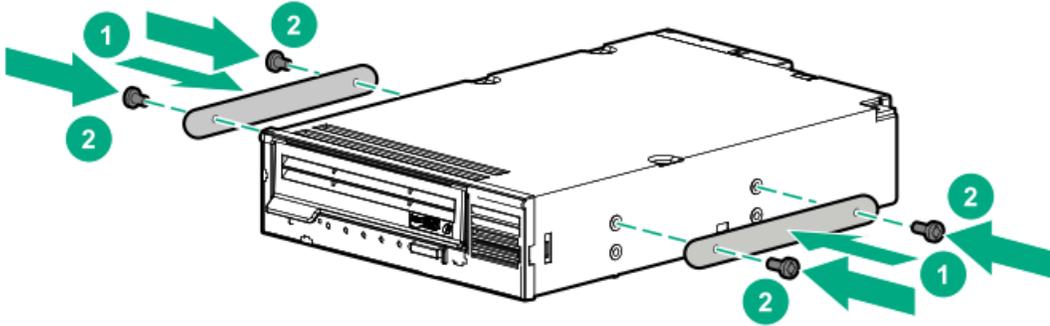


10. Install the metal shims on the SAS LTO tape drive.

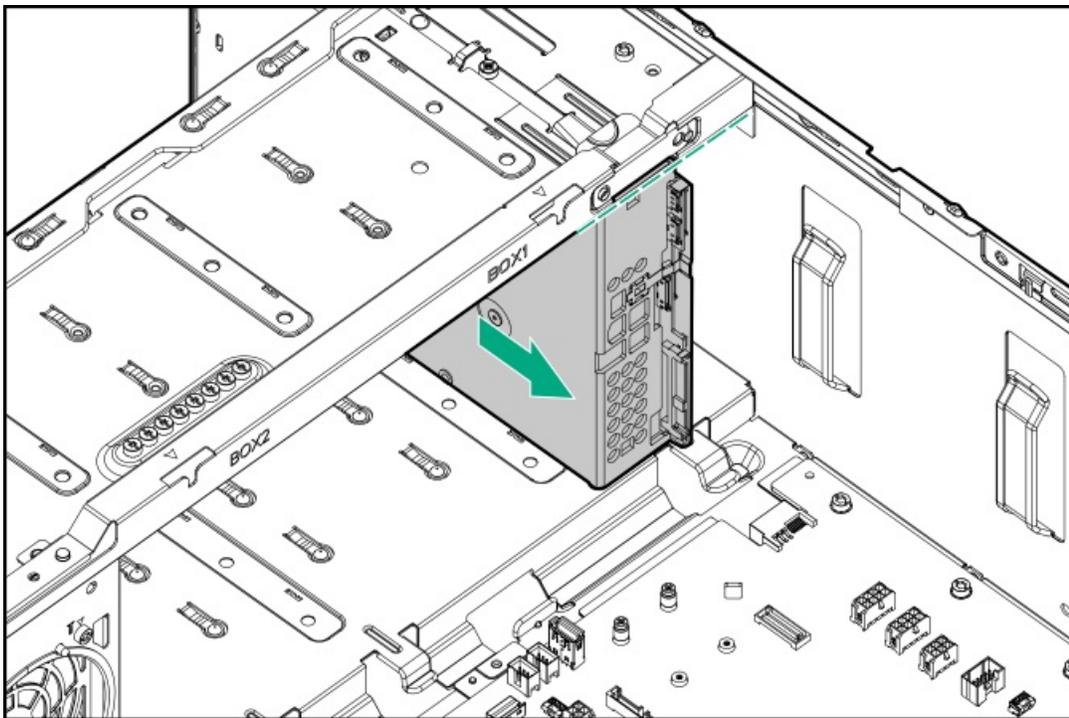


The shims and the T-15 Torx screws are included in the SAS LTO tape drive option kit.

If you are installing the SAS LTO tape drive that does not include its own mounting screws, use the preinstalled [media drive spare screws](#).

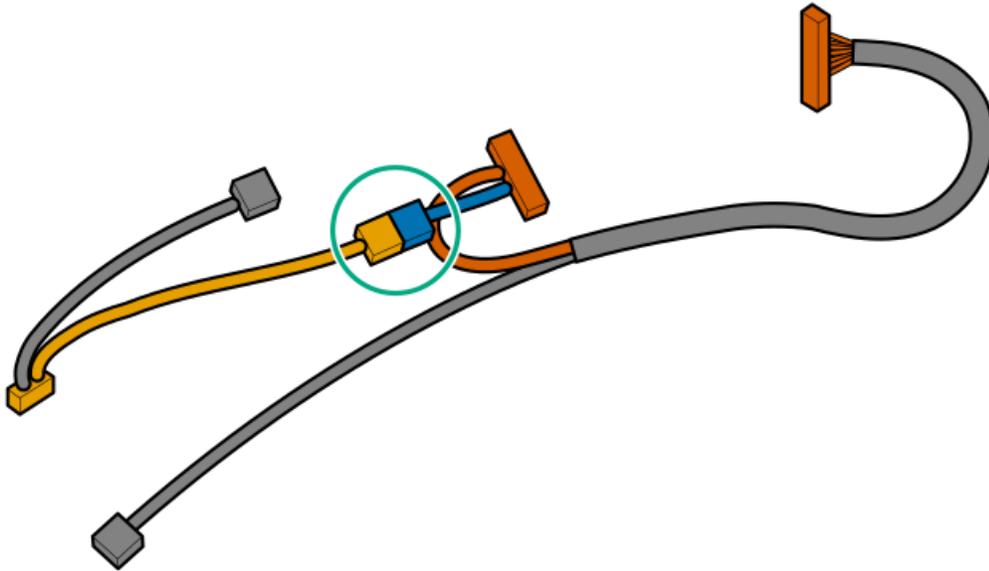


11. Slide the SAS LTO tape drive into the media bay until the rear edge of the drive is aligned with the rear edge of the media bay.



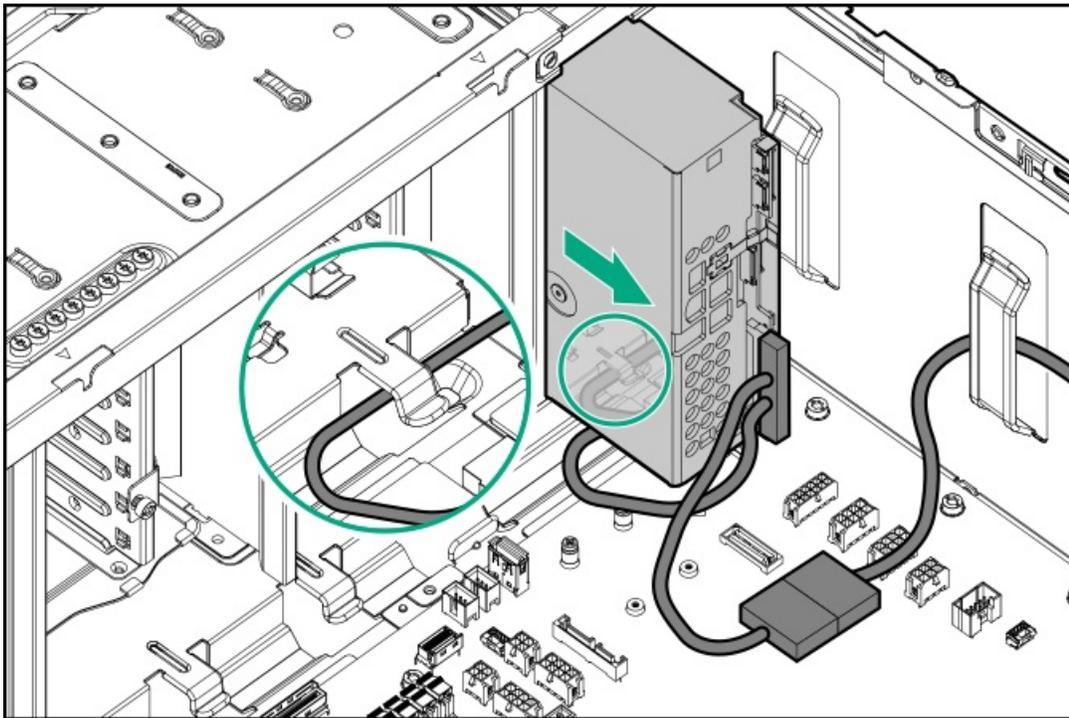
12. Connect the LTO/RDX power splitter cable to the SAS LTO drive power cable.





Cable color	Description
Orange	SAS LTO drive signal cable
Blue	SAS LTO drive power cable
Gold	LTO/RDX power splitter cable

13. Connect the SAS LTO tape drive cables.
14. Slide the SAS LTO tape drive fully into the media bay until it clicks into place.



15. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
16. Install the system air baffle.



17. [Install the access panel.](#)
18. Do one of the following:
  - [Orient the server back to tower mode.](#)
  - [Install the server into the rack.](#)
19. [Install the front bezel.](#)
20. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
21. [Power up the server.](#)
22. [Enable the increased cooling mode.](#)
23. Perform the configuration procedure required by the SAS LTO tape drive.

For more information, see the SAS LTO tape drive documentation.

## Results

The installation procedure is complete.

## Transceiver option

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

### Subtopics

[Transceiver warnings and cautions](#)

[Installing a transceiver](#)

## Transceiver warnings and cautions



### WARNING

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



### CAUTION

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



### CAUTION

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



### CAUTION

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



### IMPORTANT

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

## Installing a transceiver

### Prerequisites

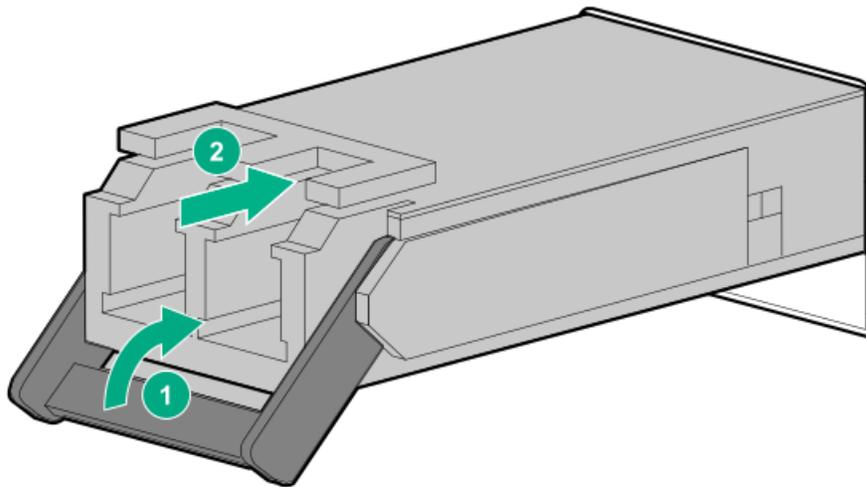
Before installing a transceiver option, review the following:

- [Transceiver warnings and cautions](#)
- Transceiver documentation for specific operational and cabling requirements

### Procedure

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

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



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

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

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

### Results

The installation procedure is complete.



## M.2 SSD options

The server has two M.2 slots on the system board. These slots support NVMe and SATA SSDs in 2280 and 22110 form factors. Install an M.2 SSD option for:

- Booting up from flash solution
- Data backup/redundancy

### Subtopics

[Installing an M.2 SSD](#)

## Installing an M.2 SSD

### Prerequisites

- Use Intel VROC to configure M.2 SSDs.
- If you are installing M.2 NVMe SSDs, the Intel VROC Standard license is required to support the RAID 0/1 configuration. For more information on Intel VROC licenses, see the product QuickSpecs:

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

- Before beginning installation, make sure that the server is updated with the latest operating system firmware and drivers.
- Before you perform this procedure, make sure that you have a Phillips No. 1 screwdriver available.

### About this task



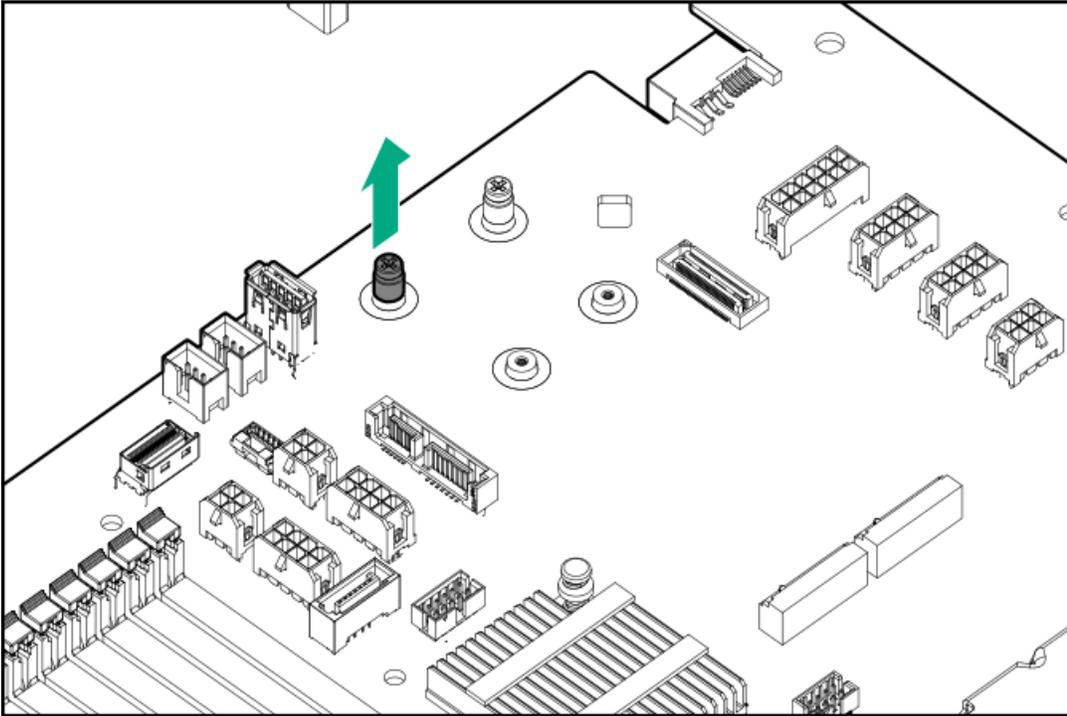
#### CAUTION

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.

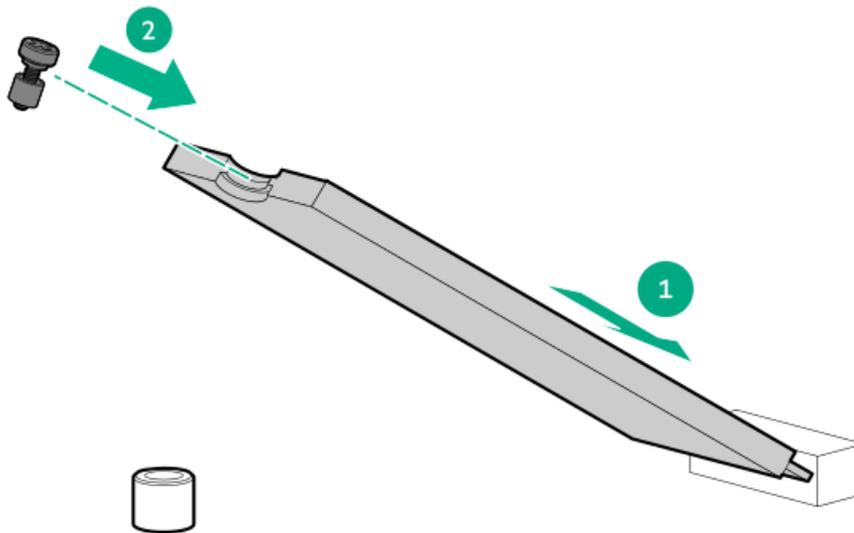
### Procedure

1. Back up all server data.
2. Power down the server.
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. 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.
6. If installed, remove the front bezel.
7. Remove the access panel.
8. Remove the system air baffle.

9. Remove the SSD jack screw from the M.2 location where you intend to install the new SSD.

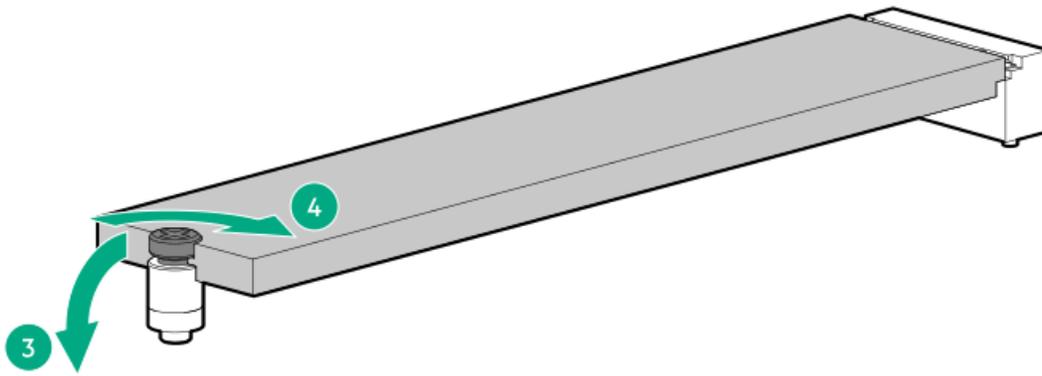


10. Install the M.2 SSD:
- a. Insert the SSD into the M.2 slot.
  - b. Position the jack screw on the SSD notch.



- c. Carefully press the SSD down to the horizontal position.
- d. Tighten the SSD jack screw.





11. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
12. Install the system air baffle.
13. Install the access panel.
14. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
15. If removed, install the front bezel.
16. Connect all peripheral cables to the server.
17. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
18. Power up the server.
19. To configure the M.2 SSDs, see the Intel Virtual RAID on CPU for HPE User Guide at <https://hpe.com/support/VROC-Gen11-UG>.

## Results

The installation procedure is complete.

## Redundant fan option



### CAUTION

To avoid damage to the equipment, do not operate the server for extended periods of time if the server does not have the optimal number of fans installed. Although the server might boot, Hewlett Packard Enterprise does not recommend operating the server without the required fans installed and operating.

The redundant fan option contains the redundant system and PCI fans. Mixed default and redundant fans configuration is not supported.

Redundant fan mode is required to meet the system thermal requirements under the following conditions:

- Server with the following options installed:
  - SFF SAS 15K RPM hard disk drives
  - SFF 24G SAS-4 solid state drives

When SFF 24G SAS-4 SSDs are installed, the operating inlet ambient system temperature is 25°C (77°F).

- HPE NS204i-u Boot Device
- Passive GPU
- 35°C (95 °F) to 45°C (113°F) ambient system temperature

## Subtopics

[Fan mode behavior](#)

[Installing the redundant fan](#)

## Fan mode behavior

- In redundant fan mode:
  - A fan rotor failure will switch the system to nonredundant fan mode.  
This change is indicated by the Health LED flashing amber. The system continues to operate normally in this mode.
  - A second fan rotor failure or a missing fan causes the operating system to orderly shutdown.
- In nonredundant fan mode, a fan rotor failure or a missing fan causes:
  - The system Health LED to flash red.
  - The operating system to orderly shutdown.

## Installing the redundant fan

### Prerequisites

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

### About this task



#### CAUTION

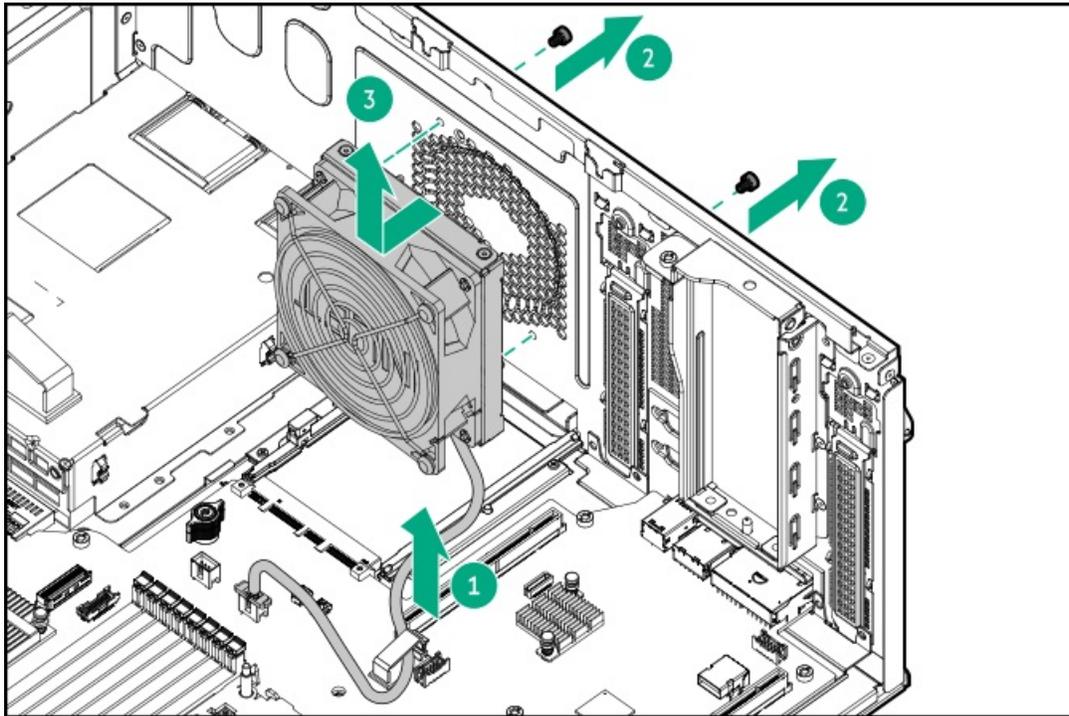
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

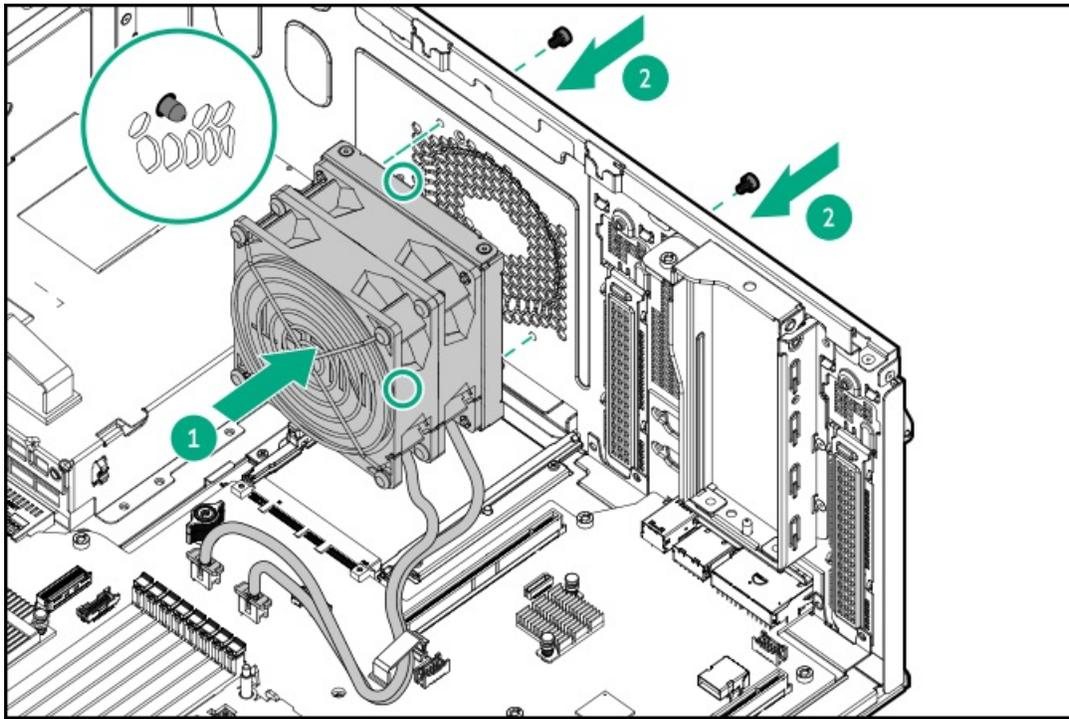
1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, [place the server on a flat,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



5. If installed, remove the front bezel.
6. Remove the access panel.
7. Remove the system air baffle.
8. If installed, remove the riser cage.
9. Disconnect the default fan cable from the system board.
10. To remove the default system fan, do the following:
  - a. Release the fan cable from the cable clamp.
  - b. Remove the screws.  
  
Retain the screws. These screws will be used to install the redundant system fan.
  - c. Detach the fan from the chassis.

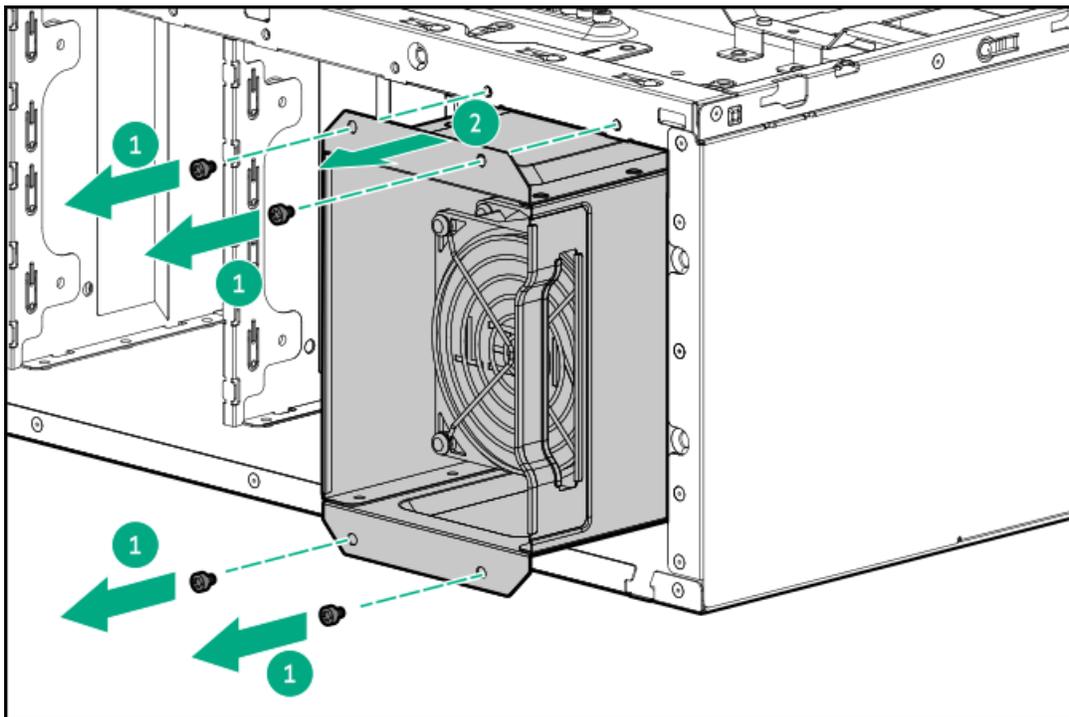


11. To install the redundant system fan, do the following:
  - a. Thread the fan to the chassis.
  - b. Tighten the screws on the chassis.



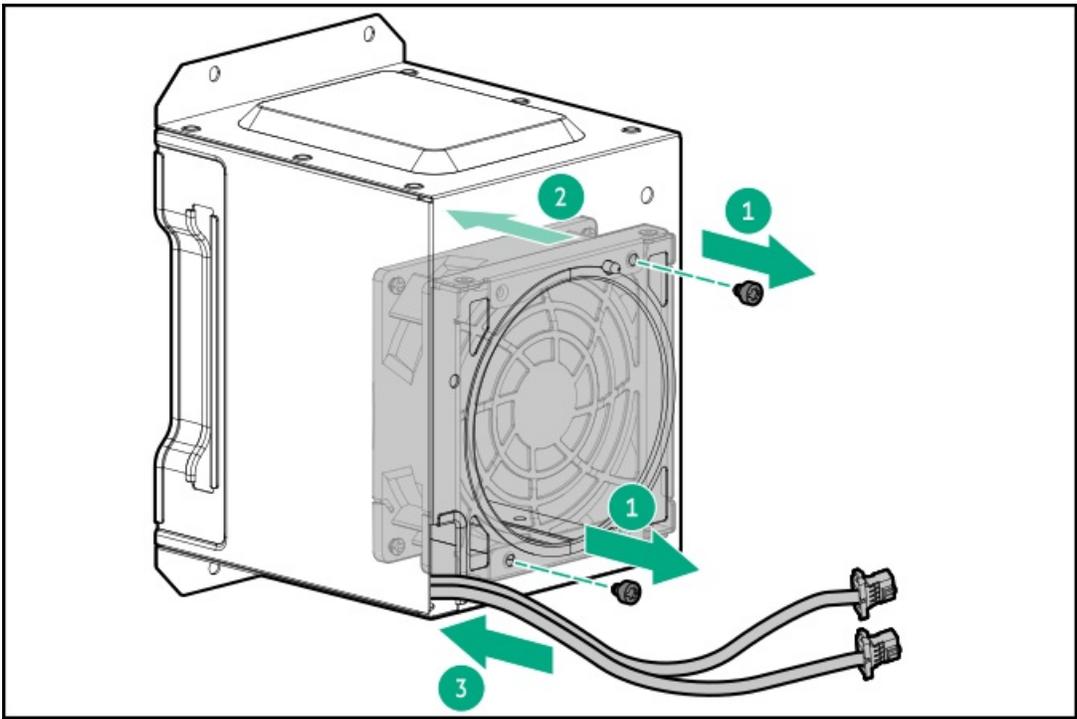
12. To remove the default PCI fans, do the following:

- a. Release all fan cables from the front cable channel metal tabs.
- b. Remove the PCI fan cage.

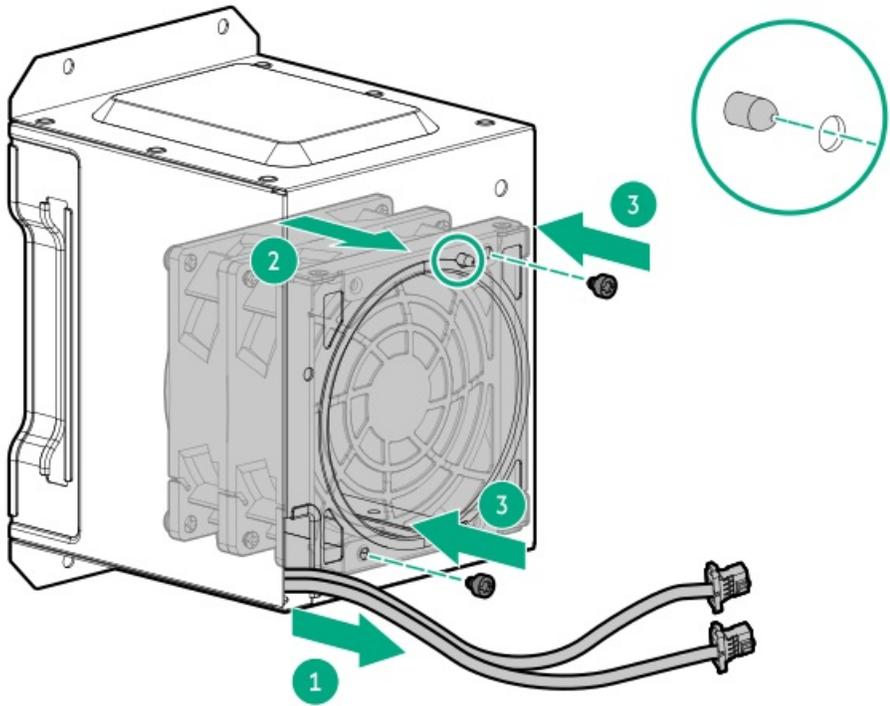


- c. Remove the fan screws from the fan cage.  
Retain all screws. These screws will be used to install the redundant PCI fan.
- d. Detach the fan from the fan cage.
- e. Thread the fan cable through the fan cage compartment.



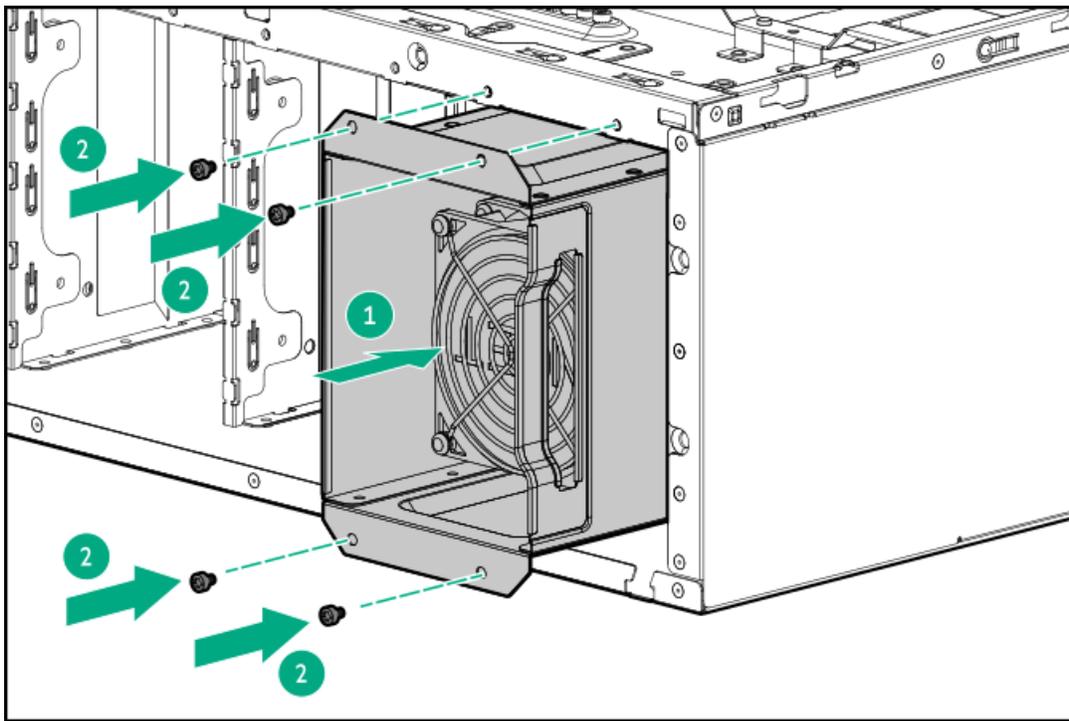


13. To install the redundant PCI fan, do the following:
- a. Thread the fan cable through the fan cage compartment.
  - b. Attach the fan to the fan cage.
  - c. Install the fan screws.



- d. Install the PCI fan cage.





14. Connect the redundant fan cables to the system board.

Make sure that the redundant fan cables are secured in the cable clip.

15. Install the riser cage.

16. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

17. Install the system air baffle.

18. Install the access panel.

19. Do one of the following:

- Orient the server back to tower mode.
- Install the server into the rack.

20. If removed, install the front bezel.

21. Connect all peripheral cables to the server.

22. Connect the power cords:

- a. Connect each power cord to the server.
- b. Connect each power cord to the power source.

23. Power up the server.

## Results

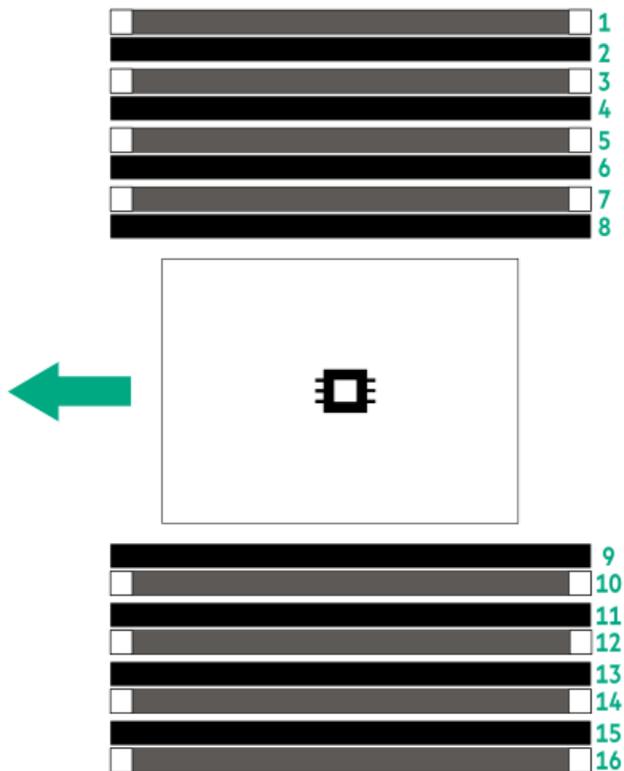
The installation procedure is complete.

## Memory option

The server has 16 DIMM slots supporting HPE DDR5 SmartMemory (RDIMM).



The arrow points to the front of the server.



#### Subtopics

[HPE SmartMemory speed and population information](#)

[DIMM installation guidelines](#)

[Installing a DIMM](#)

## HPE SmartMemory speed and population information

For information about memory speed and server-specific DIMM population rules for HPE servers using 4th and 5th Gen Intel Xeon Scalable Processor, see the relevant memory technical paper in:

<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:

- [HPE SmartMemory speed and population information](#)
- [DIMM installation guidelines](#)

### About this task



#### CAUTION

Do not install ×4 and ×8 DRAM widths in the same server. All memory installed in the server must be of the same type. Installing different DIMM types can cause the server to halt during BIOS initialization.



#### CAUTION

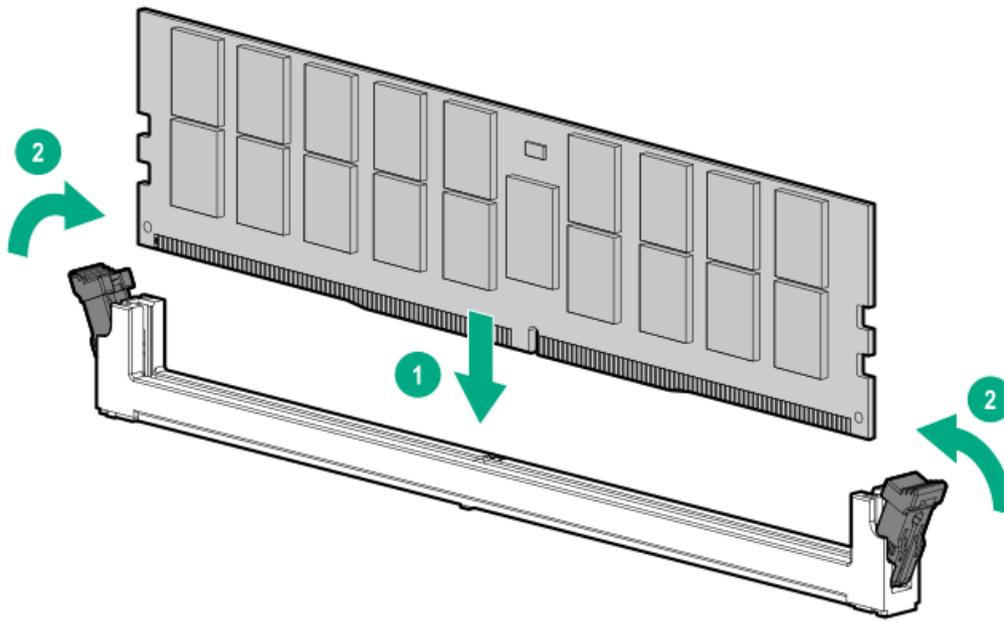
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

1. [Back up all server data.](#)
2. [Power down the server.](#)
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. 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](#).
6. [Remove the access panel.](#)
7. [Remove the system air baffle.](#)
8. If you are installing the DIMM on the DIMM slots 9–16, [remove the riser cage](#).
9. 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.



10. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
11. Install the system air baffle.
12. Install the access panel.
13. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
16. Power up the server.
17. To configure the memory settings:
  - a. From the boot screen, press **F9** to access UEFI System Utilities.
  - b. From the System Utilities screen, select **System Utilities > System Configuration > BIOS/Platform Configuration (RBSU) > Memory Options.**

## Results

The installation procedure is complete.

## Riser cage and secondary riser option

This server supports one riser cage option for standard and high-power expansion card options.



The riser cage option supports two PCIe5 x16 riser boards.

For more information on the riser slot, see [Riser board components](#).

## Subtopics

[Installing the riser cage option](#)

[Installing the secondary riser](#)

# Installing the riser cage option

## Prerequisites

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

## About this task



### CAUTION

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



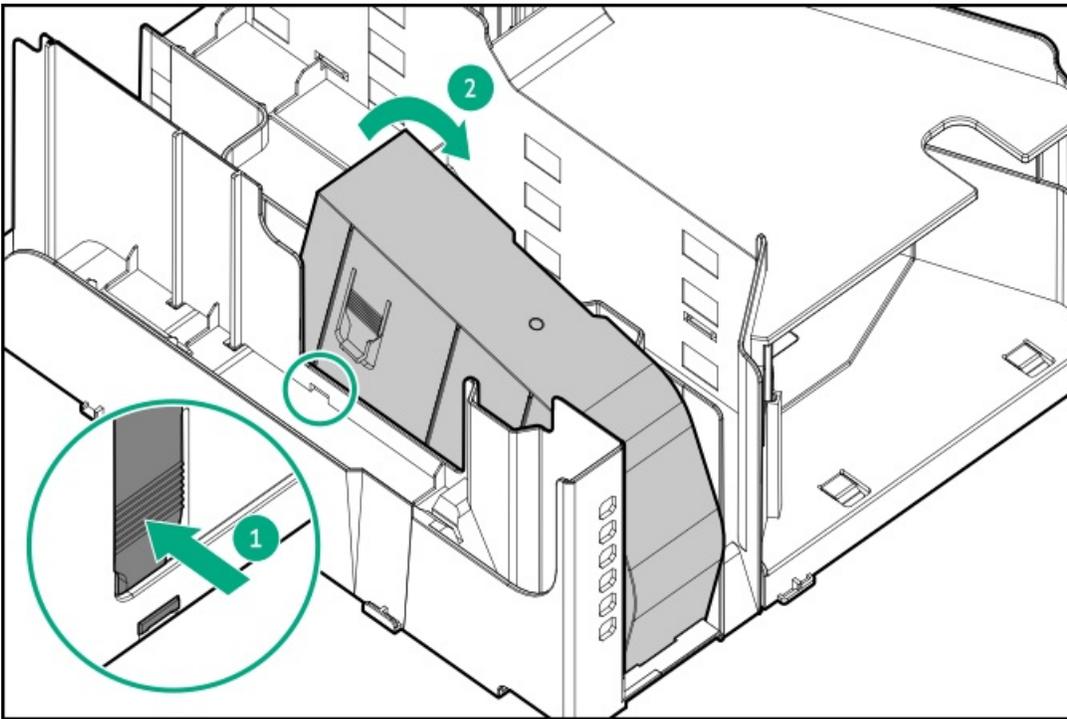
### CAUTION

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

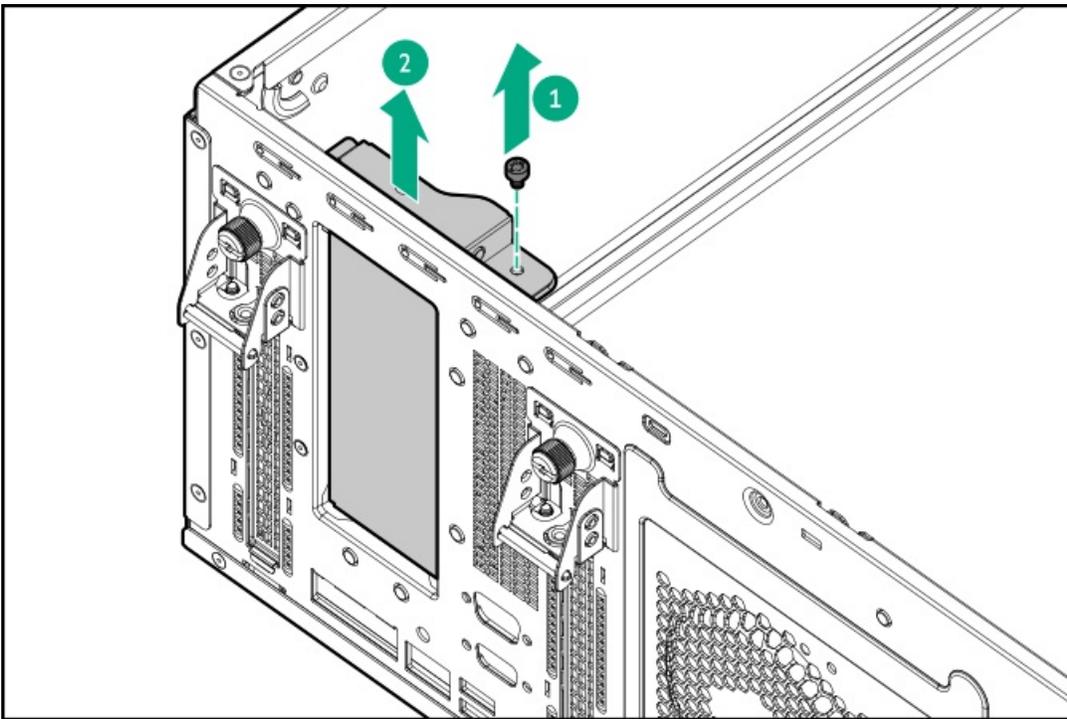
## Procedure

1. [Back up all server data](#).
2. [Power down the server](#).
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. 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](#).
6. [Remove the access panel](#).
7. [Remove the system air baffle](#).
8. Remove the DIMM air baffle:
  - a. Press and hold the release latches on the DIMM air baffle.
  - b. Remove the DIMM air baffle.





9. Remove the riser cage blank.



10. Install the following options on the riser cage:

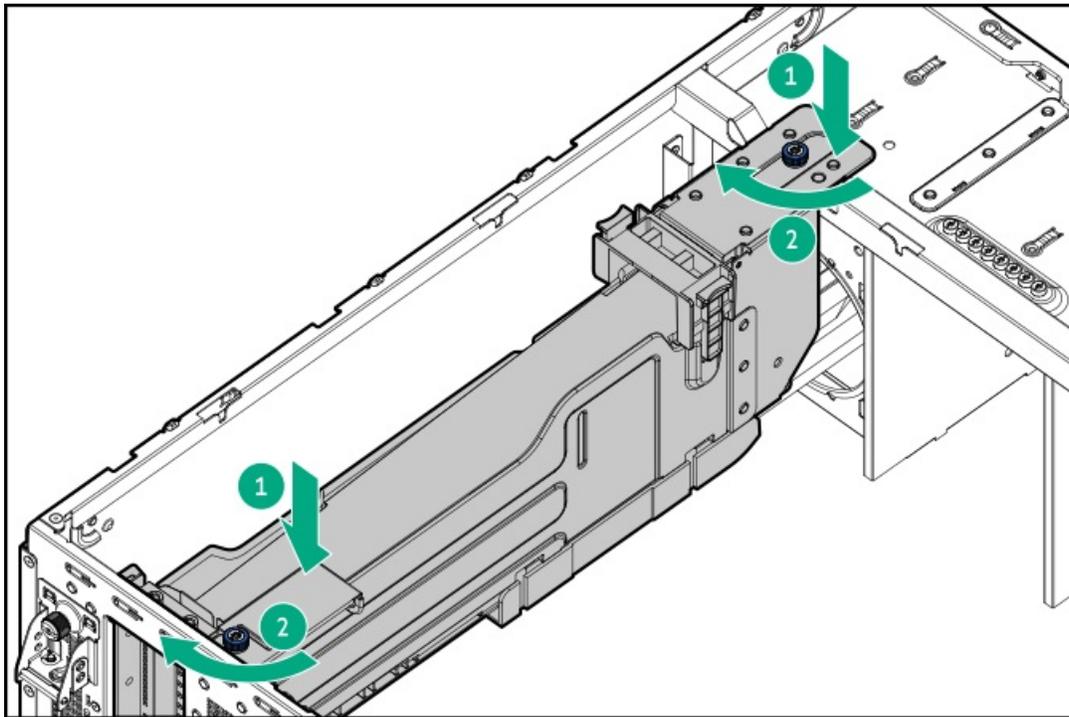
- [Secondary riser](#)
- [Expansion card](#)
- [GPU](#)

11. [Connect the riser cables to the system board.](#)

12. Install the riser cage:

- a. Simultaneously align the front and rear of the riser cage on to the chassis.
- b. Tighten the captive screws on the riser cage.





13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
14. Install the system air baffle.
15. Install the access panel.
16. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
17. Connect all peripheral cables to the server.
18. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
19. Power up the server.

## Results

The installation procedure is complete.

## Installing the secondary riser

### Prerequisites

Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### About this task



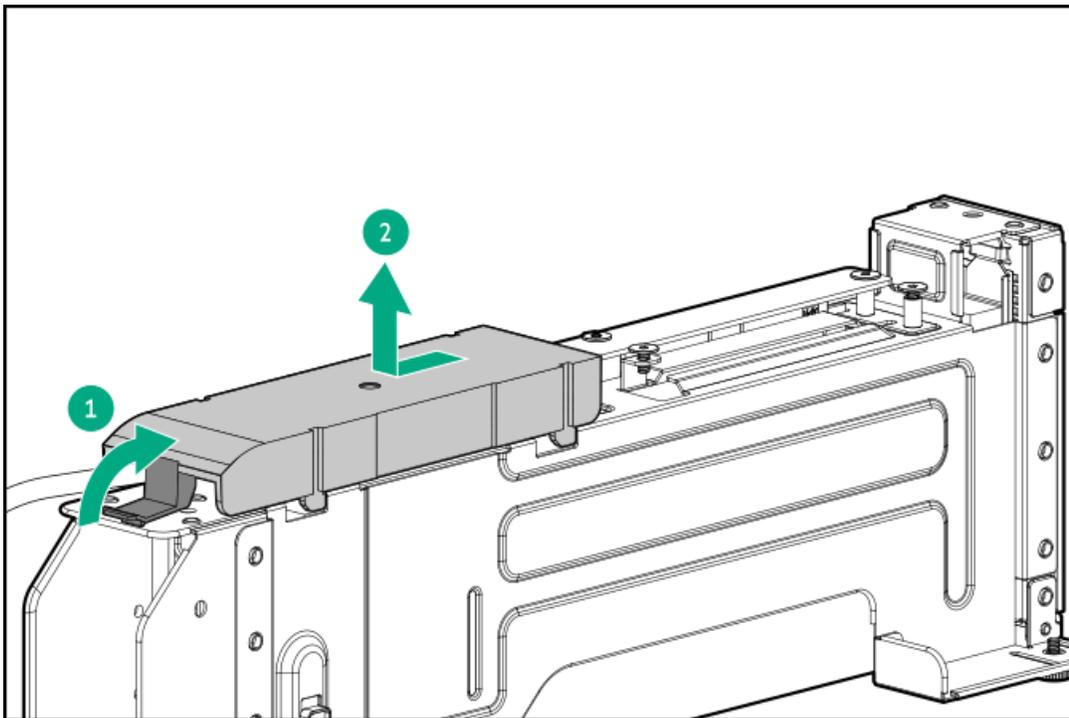


## CAUTION

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.

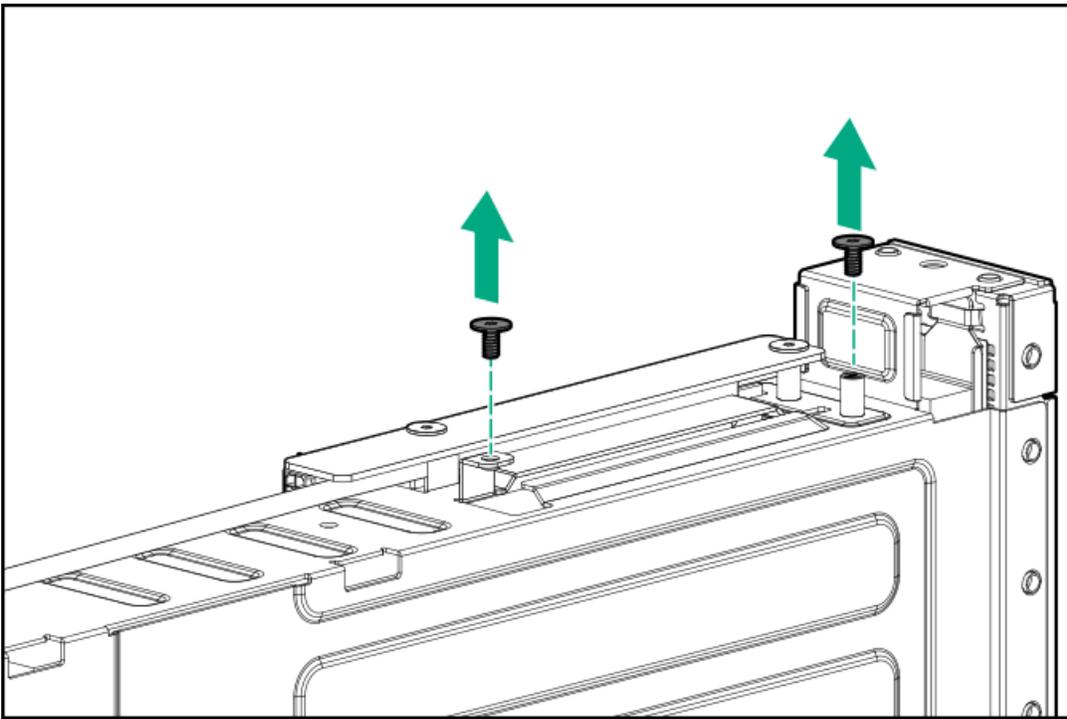
## Procedure

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 system air baffle.
7. If installed, remove the riser cage.
8. Remove the riser board cover.



9. Remove the secondary riser board screws.

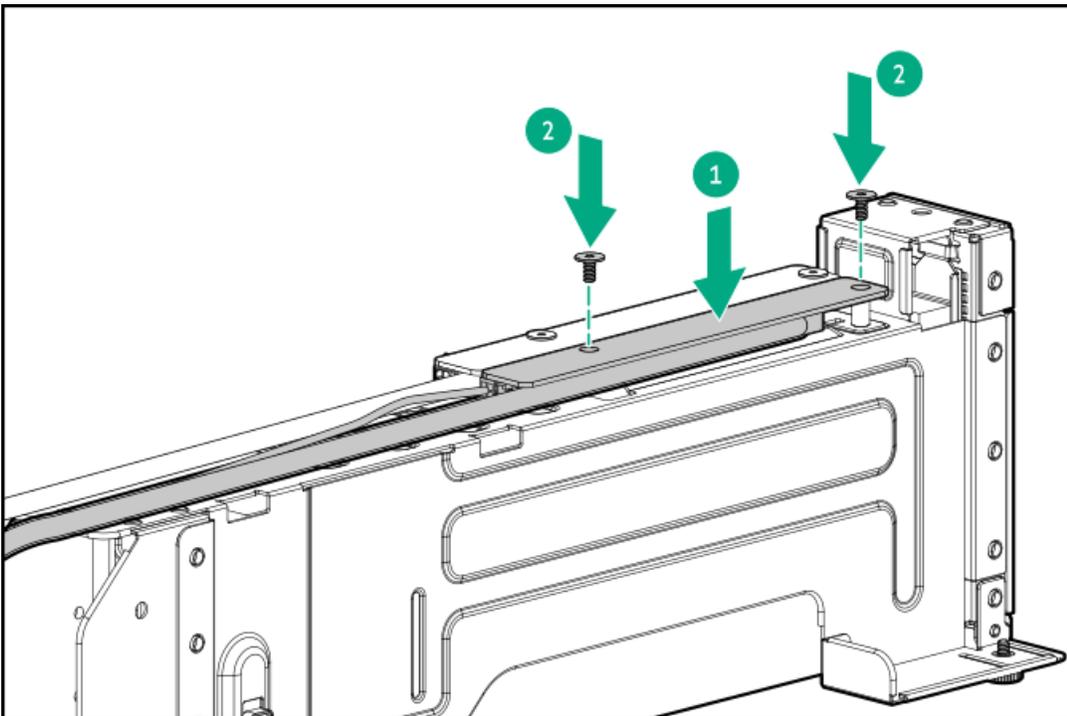
Retain the screws. These screws will be used to install the new secondary riser board.



10. Connect the riser power cable to the secondary riser board.

11. Install the secondary riser board:

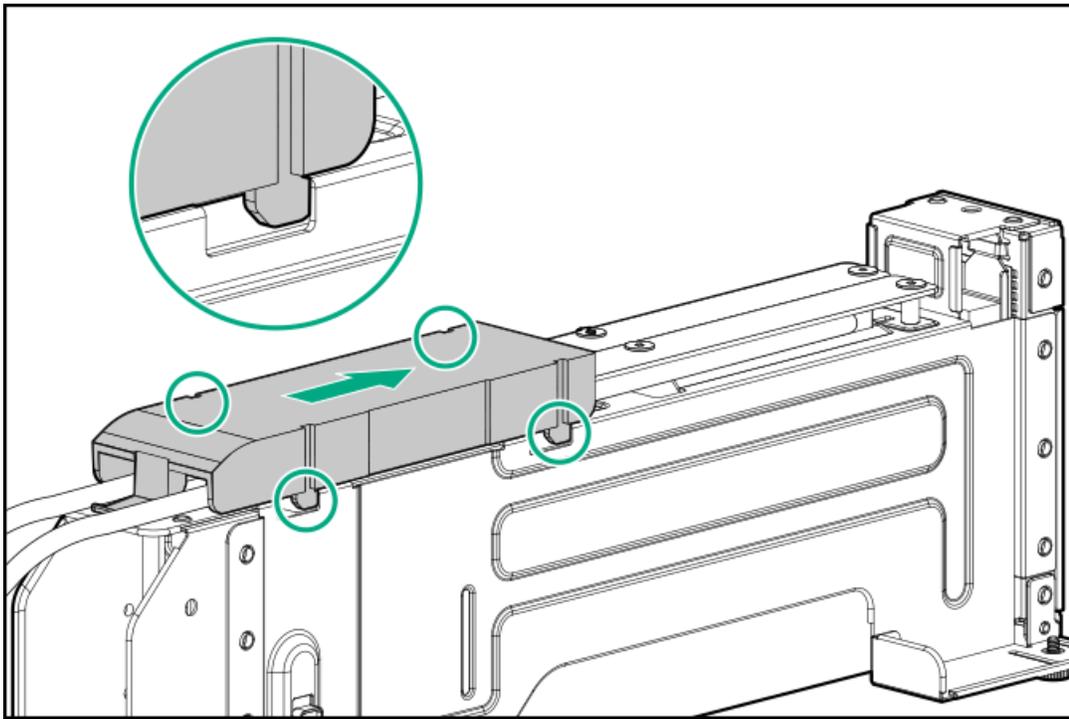
- a. Attach the secondary riser board to the riser cage.
- b. Install the screws on the riser board.



12. Install the riser board cover.

Make sure that the cover is locked on the riser cage with a click sound.





13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
14. Install the riser cage.
15. Install the system air baffle.
16. Install the access panel.
17. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
18. Connect all peripheral cables to the server.
19. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
20. Power up the server.

## Results

The installation procedure is complete.

## Storage controller options

The server supports the following storage controllers:

- Intel VROC for HPE Gen11 (Intel VROC)—Provides enterprise-level hybrid RAID support for direct attached SATA and NVMe SSD.
- HPE MR type-o and type-p Gen11 controllers
- HPE Smart Array E208e-p SR Gen10 Controller



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

## Subtopics

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

[Installing the type-p storage controller](#)

[Installing the type-o storage controller](#)

## 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 the type-p storage controller

### Prerequisites

- To enable the flash-backed write cache (FBWC) feature of a storage controller option, [install an energy pack](#).

For more information on the controller caching feature, see the controller QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/qs>).

- Before you perform this procedure, make sure that you have the following items available:
  - [Compatible controller cable](#)
  - T-15 Torx screwdriver

### About this task



#### CAUTION

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



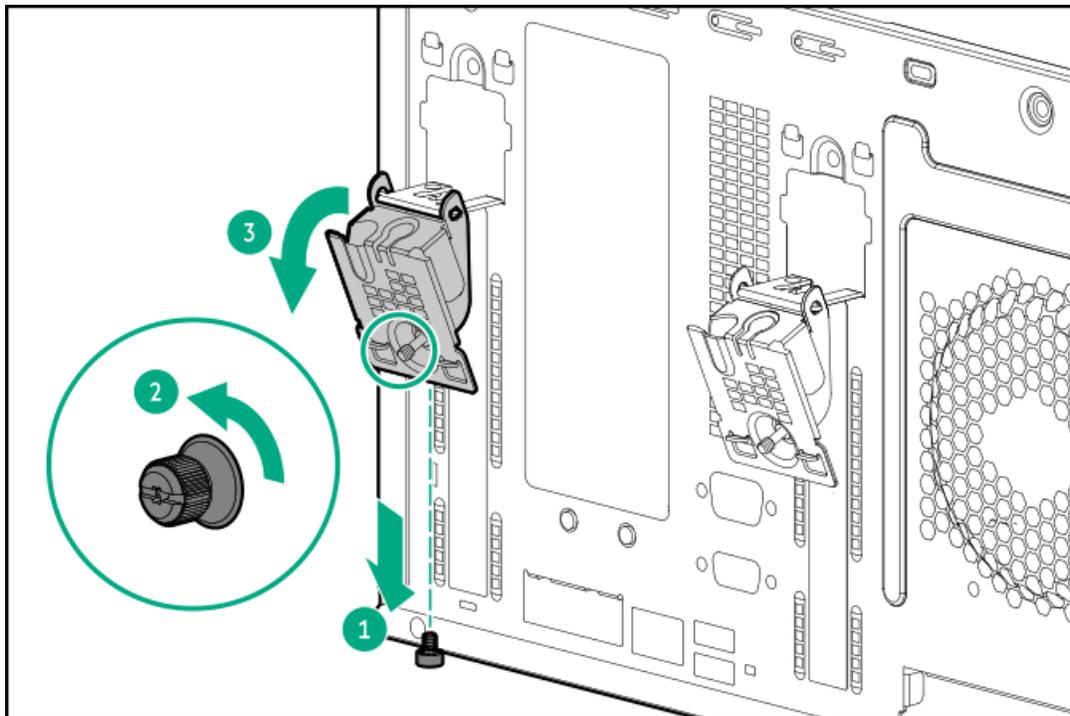
## CAUTION

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

## Procedure

1. Back up all server data.
2. Power down the server.
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. 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.
6. Remove the access panel.
7. Remove the system air baffle.
8. If you are installing the type-p storage controller in slot 1 and the riser cage is installed, remove the riser cage.
9. Install the type-p storage controller:
  - a. Open the riser slot retainer.

Retain the screw. This screw will be used to install the type-p storage controller.



- b. Remove the riser slot blank.

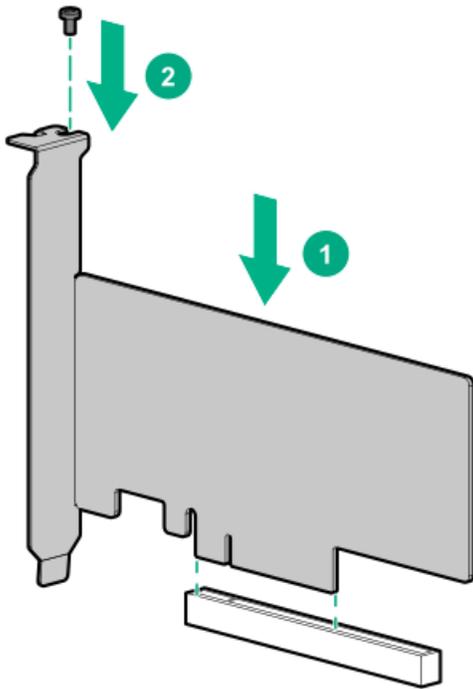




c. Install the type-p storage controller.

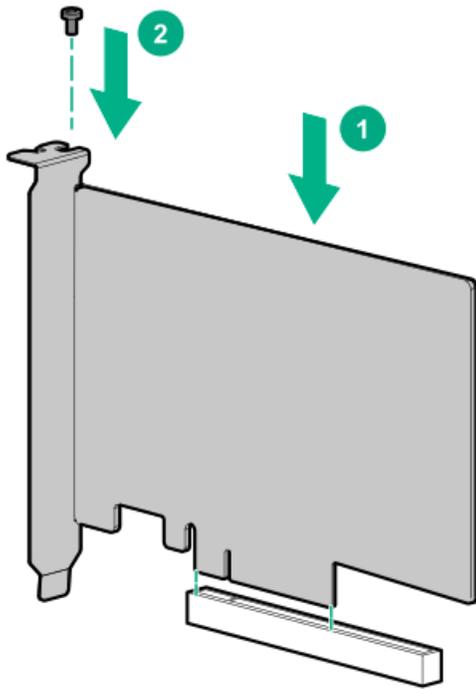
Make sure that the type-p storage controller is firmly seated in the riser.

- Half-height, half-length (low-profile) type-p storage controller

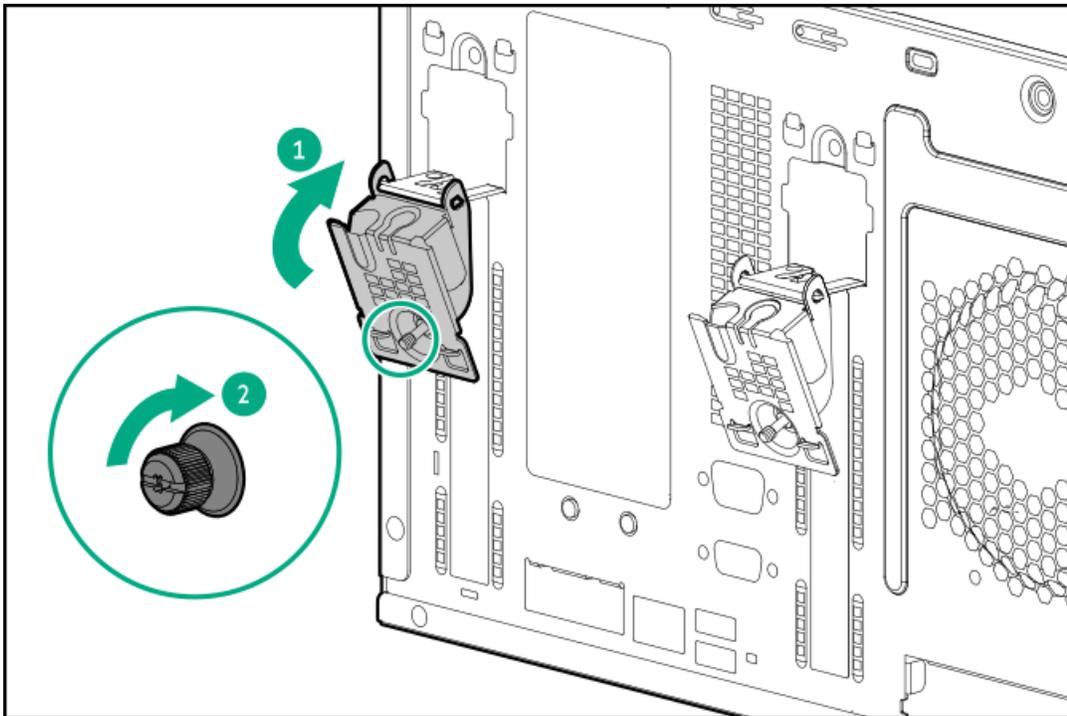


- Full-height, half-length type-p storage controller





10. Cable the type-p storage controller.
11. Close the riser slot retainer.



12. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
13. Install the system air baffle.
14. Install the access panel.
15. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.



16. Connect all peripheral cables to the server.
17. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
18. Power up the server.
19. Update the server and controller firmware if they are not the latest revision .
20. Configure the controller.

## Results

The installation procedure is complete.

## Installing the type-o storage controller

### Prerequisites

- To enable the flash-backed write cache (FBWC) feature of a storage controller option, install an energy pack.  
For more information on the controller caching feature, see the controller QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/qs>).
- Before you perform this procedure, make sure that you have the following items available:
  - Compatible controller cable
  - T-10 Torx screwdriver
  - T-15 Torx screwdriver
  - Spudger or any small prying tool

### About this task



#### 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.



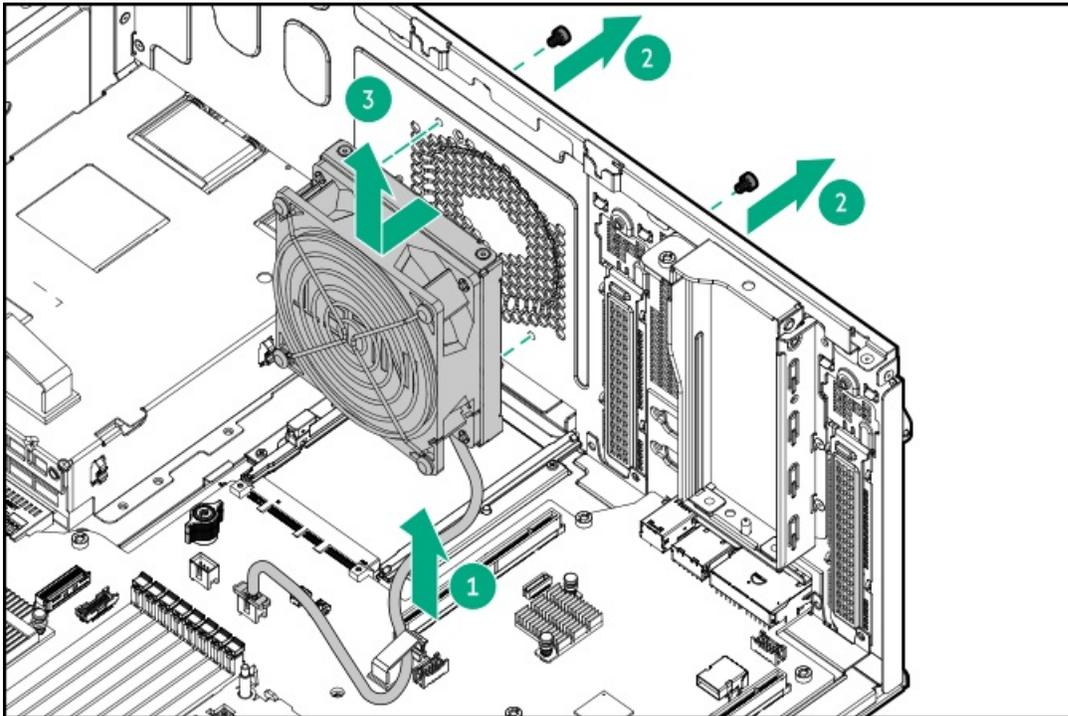
#### CAUTION

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.

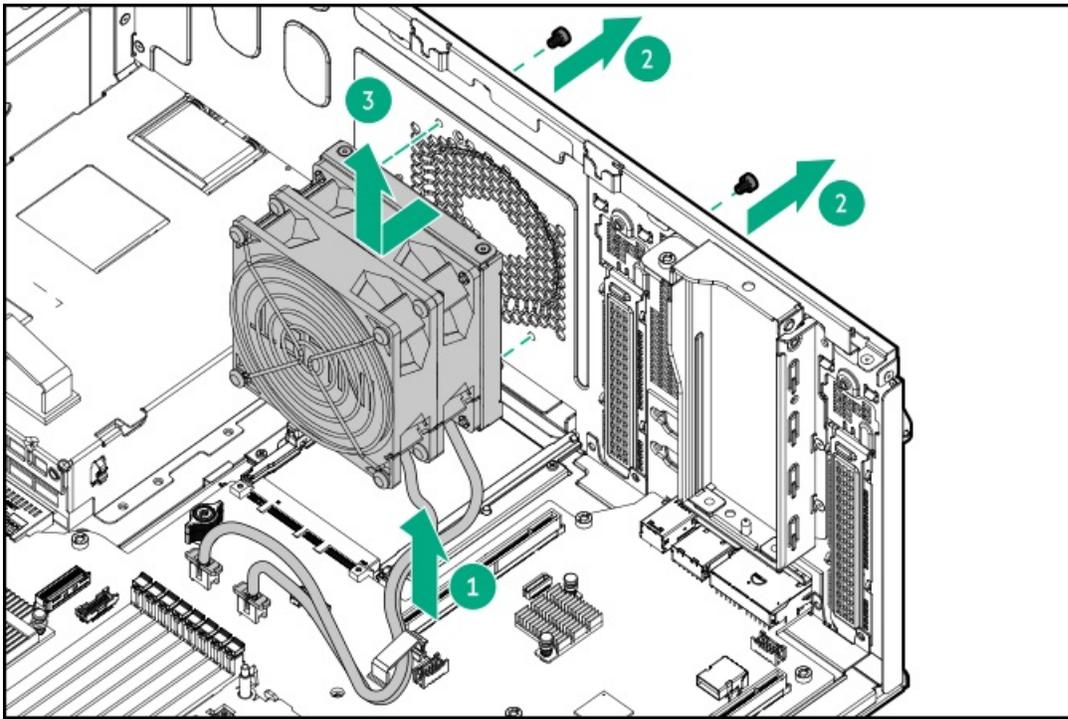
### Procedure

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

5. 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.
6. Remove the access panel.
7. Remove the system air baffle.
8. Remove the system fan, do the following:
  - a. Release the fan cable from the cable clamp.
  - b. Remove the screws.
  - c. Detach the system fan from the chassis.
    - Default system fan

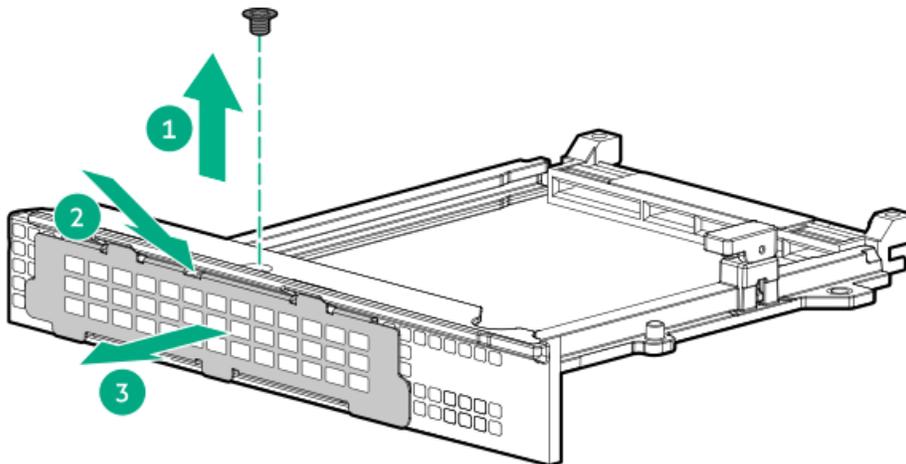


- redundant system fan



9. Remove the OCP slot blank:

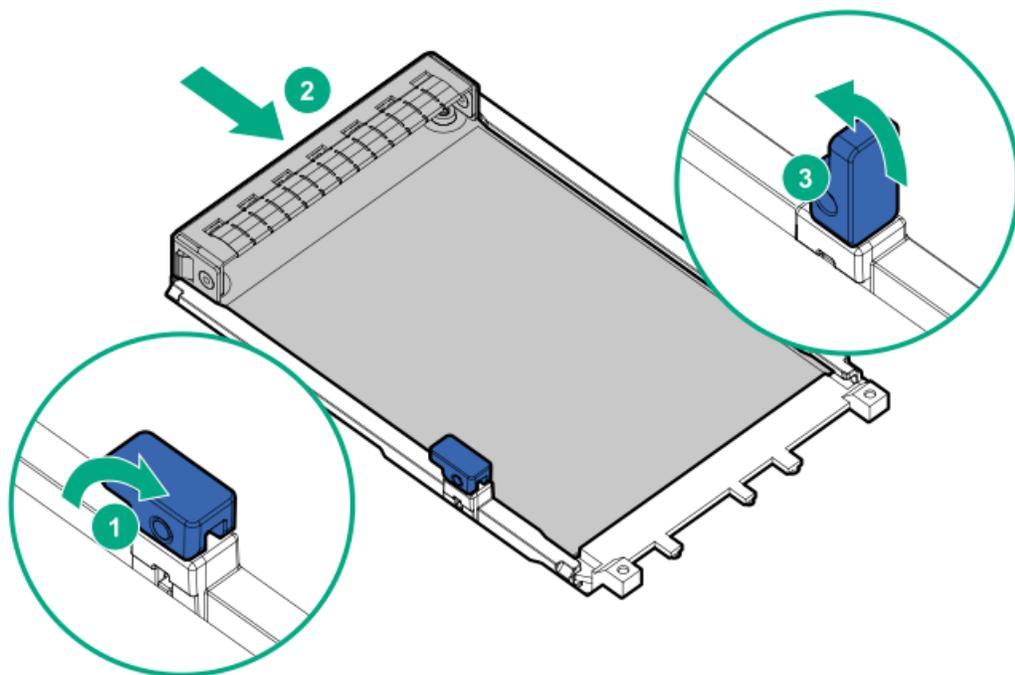
- a. Remove the blank screw.
- b. Use a plastic spudger to pry the top side of the blank from the chassis.
- c. Remove the blank.



10. Install the type-o storage controller:

- a. Rotate the locking pin to the open (vertical) position.
- b. Slide the controller into the bay until it clicks into place.  
Make sure that the controller is seated firmly in the slot.
- c. Rotate the locking pin to the close (horizontal) position.



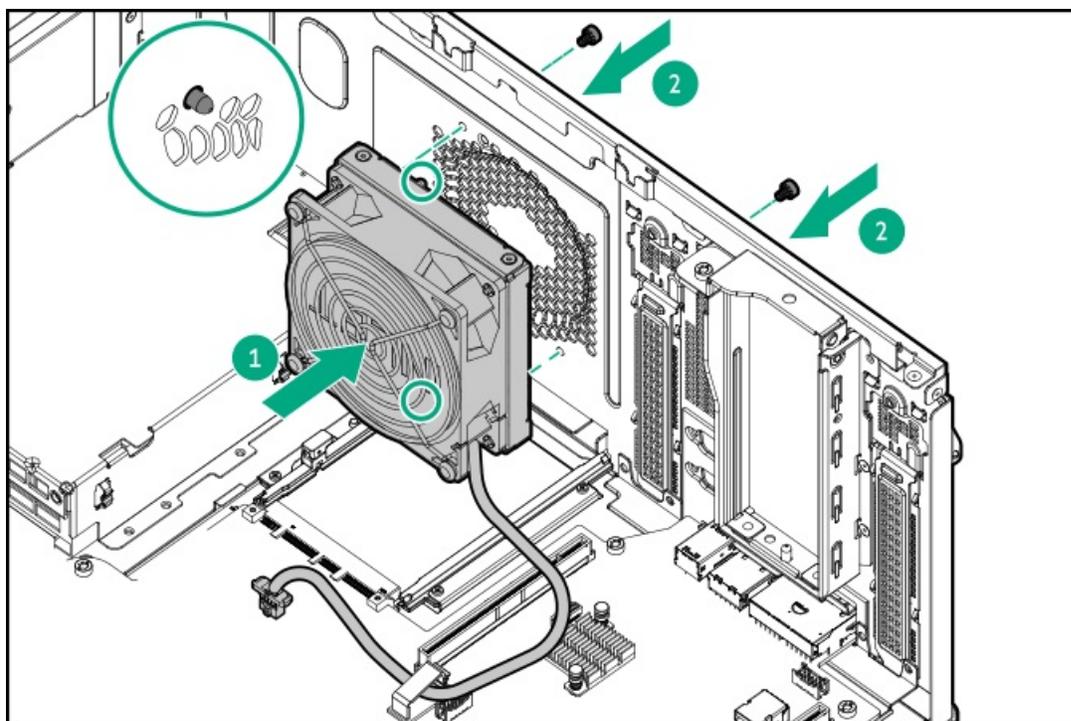


11. Cable the type-o storage controller.

12. Install the system fan:

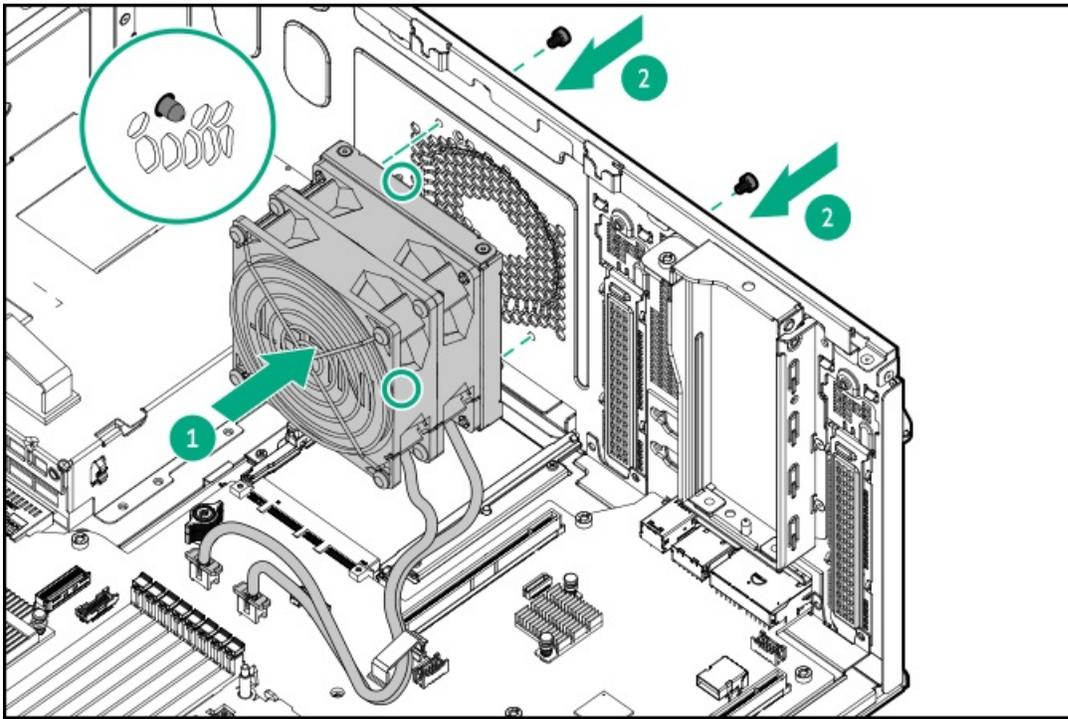
- a. Insert the fan guard pins into the chassis openings.
- b. Tighten the screws on the chassis.

- Default system fan



- redundant system fan





13. Connect the system fan cable.
14. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
15. Install the system air baffle.
16. Install the access panel.
17. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
18. Connect all peripheral cables to the server.
19. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
20. Power up the server.
21. Update the server and controller firmware if they are not the latest revision.
22. Configure the controller.

## Results

The installation procedure is complete.

## Energy pack options

If there is an unplanned server power outage, the flash-backed write cache (FBWC) feature of HPE storage controllers requires a centralized backup power source to back up the write cache data in a flash device. This server supports the following power options—collectively known as energy pack:



- [HPE Smart Storage Battery](#)
- [HPE Smart Storage Hybrid Capacitor](#)

One energy pack supports multiple devices. After it is installed, the status of the energy pack appears in HPE iLO. For more information, see the iLO user guide:

<https://www.hpe.com/support/ilo6>

#### Subtopics

[HPE Smart Storage Battery](#)

[HPE Smart Storage Hybrid Capacitor](#)

[Installing an energy pack](#)

## HPE Smart Storage Battery

The HPE Smart Storage Battery supports both HPE SR and MR storage 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 260 mm cable.

For more information, see HPE Smart Storage Batteries and Hybrid Capacitors QuickSpecs:

[https://www.hpe.com/psnow/doc/a00028553enw.pdf?jumpid=in\\_pdp-psnow-qs](https://www.hpe.com/psnow/doc/a00028553enw.pdf?jumpid=in_pdp-psnow-qs)

## HPE Smart Storage Hybrid Capacitor

The HPE Smart Storage Hybrid Capacitor supports both HPE SR and MR storage controllers.

The capacitor pack can support up to three devices.

This server supports the HPE Smart Storage Hybrid Capacitor with the 260 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.

For more information, see HPE Smart Storage Batteries and Hybrid Capacitors QuickSpecs:

[https://www.hpe.com/psnow/doc/a00028553enw.pdf?jumpid=in\\_pdp-psnow-qs](https://www.hpe.com/psnow/doc/a00028553enw.pdf?jumpid=in_pdp-psnow-qs)

#### Subtopics

[Minimum firmware versions](#)

## Minimum firmware versions



Product	Minimum firmware version
Server system ROM	1.30
HPE MR type-o and type-p Gen11 controllers	52.22.3-4650
HPE SR900 series type-p Gen11 controllers	03.01.14.062

## Installing an energy pack

### Prerequisites

- Make sure that the following components are installed:
  - [Compatible storage controller](#)
  - [Storage controller backup power cable](#)
- If you are installing the HPE Smart Storage Hybrid Capacitor, [verify that the system meets the minimum firmware requirements](#) .

### About this task

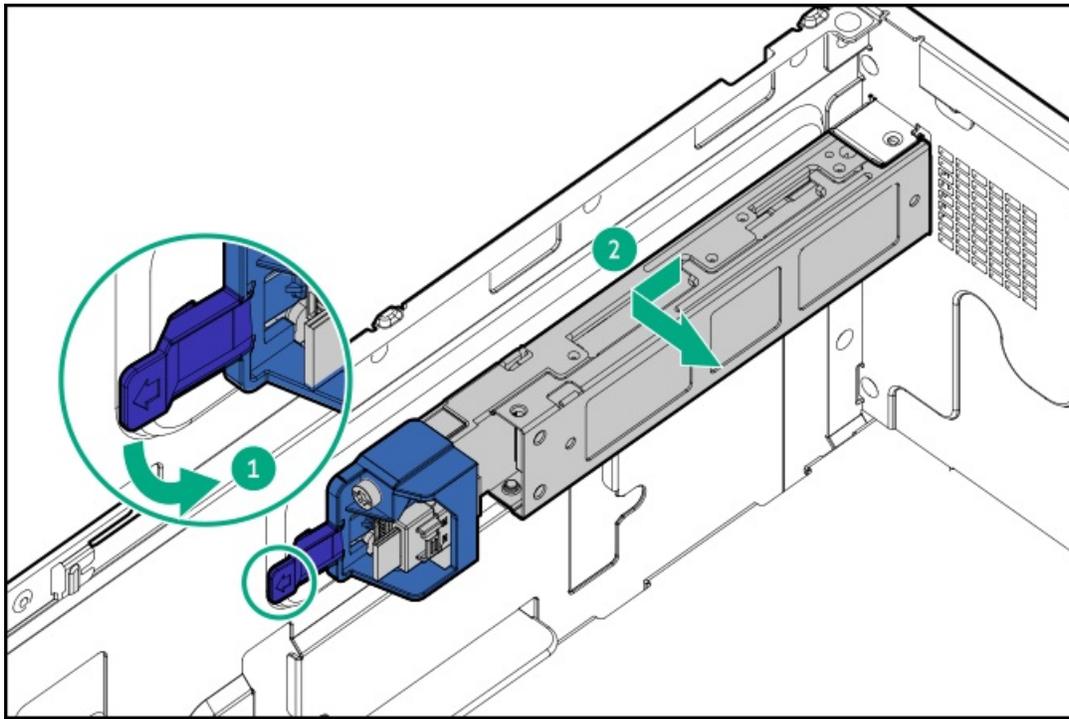


#### CAUTION

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

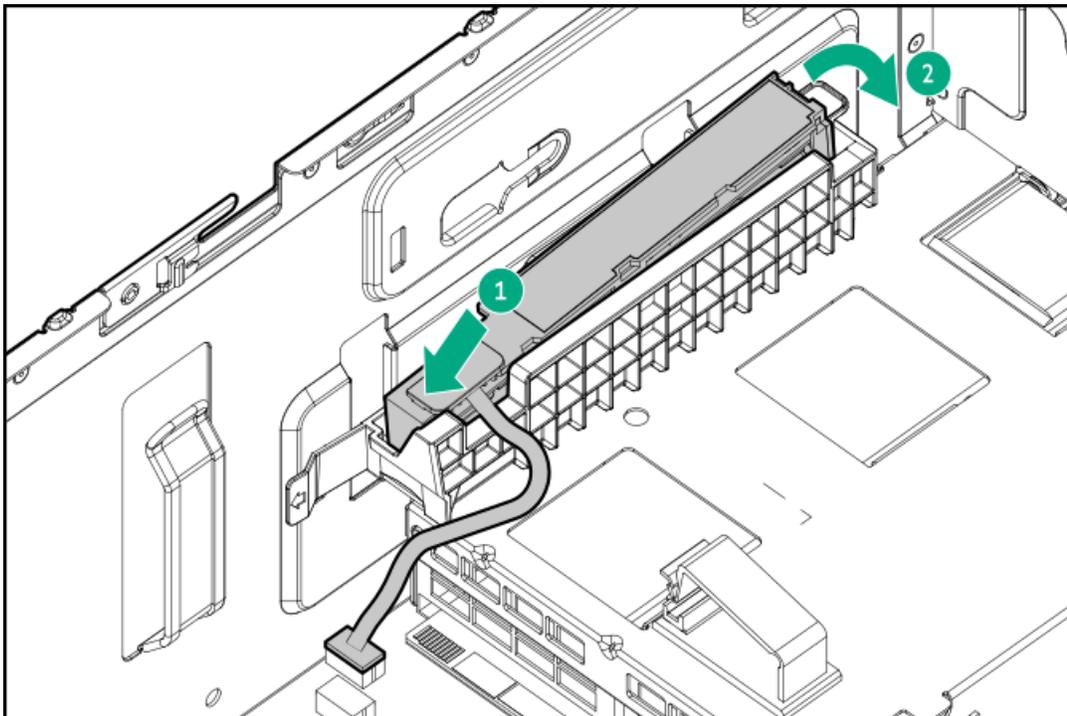
1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - If the server is in tower mode, [place the server on a flat, 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. [Remove the system air baffle](#).
7. If the HPE NS204i-u Boot Device is installed, do the following:
  - a. Disconnect the HPE NS204i-u Boot Device cables from the system board.
  - b. Remove the HPE NS204i-u Boot Device.



8. Install the energy pack:

- a. Insert the energy pack at an angle in the holder.
- b. Pivot the energy pack.

Make sure that the energy pack is locked in the holder.



9. Connect the energy pack cable to the system board and secure it in the cable clamp.

10. If removed, install the HPE NS204i-u Boot Device.
11. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
12. Install the system air baffle.



13. Install the access panel.
14. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
15. Connect all peripheral cables to the server.
16. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
17. Power up the server.

## 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
- HDR InfiniBand adapter
- GPU (workload, computational, or graphics GPU)

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 on the system board](#)

[Installing an expansion card in the riser cage](#)

## Installing an expansion card on the system board

### Prerequisites

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

### About this task



#### CAUTION

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





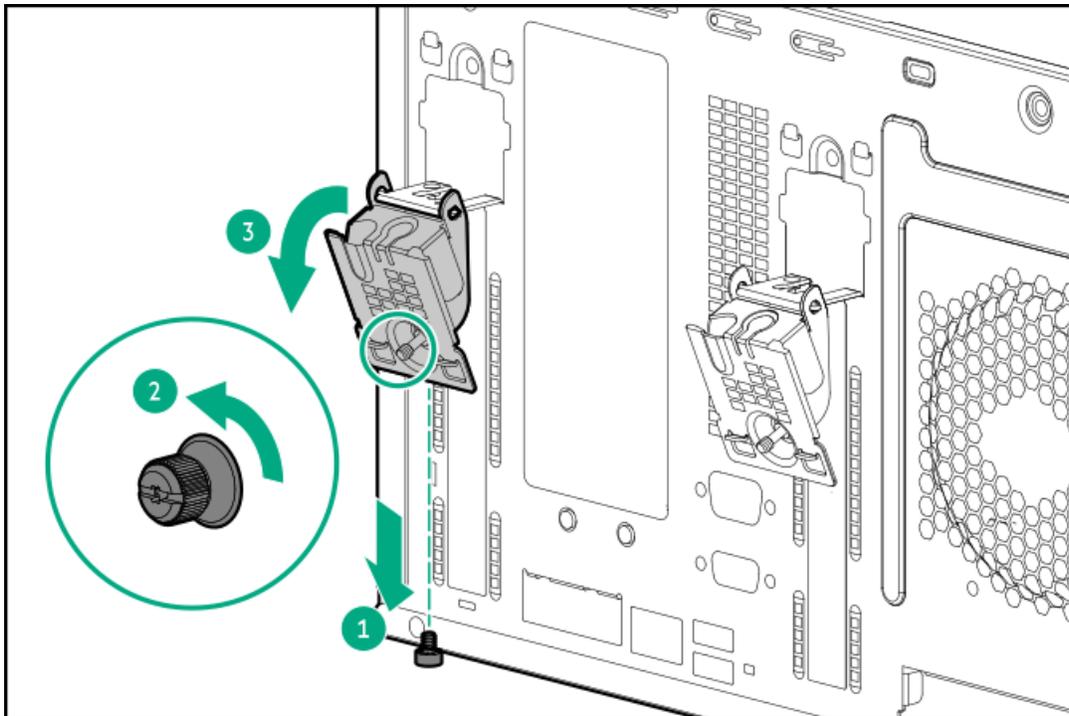
## CAUTION

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

## 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 system air baffle.
7. If you are installing the expansion card in slot 1 and the riser cage is installed, remove the riser cage.
8. Install the expansion card:
  - a. Open the riser slot retainer.

Retain the screw. This screw will be used to install the expansion card.



- b. Remove the riser slot blank.

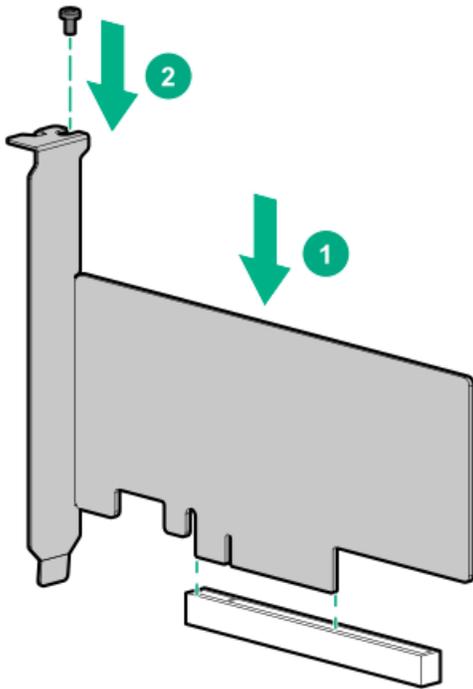




c. Install the expansion card.

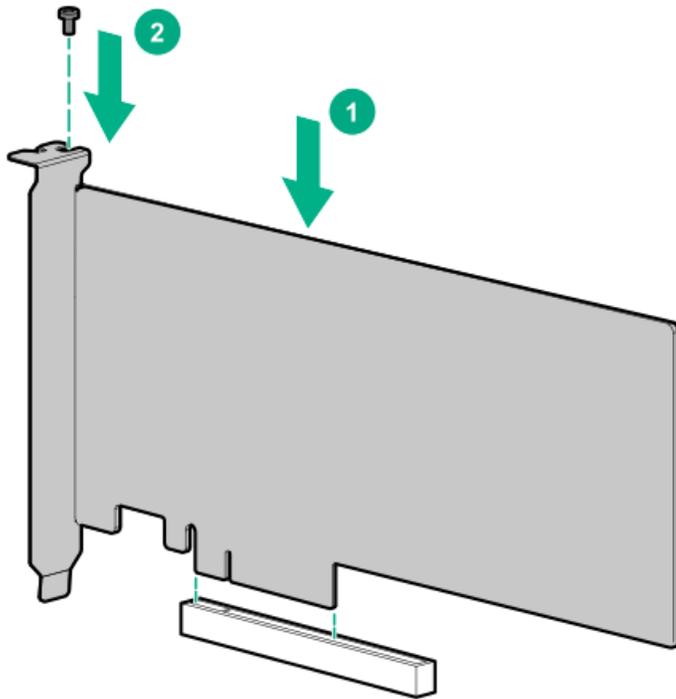
Make sure that the expansion card is firmly seated in the riser.

- Half-height, half-length (low-profile) expansion card

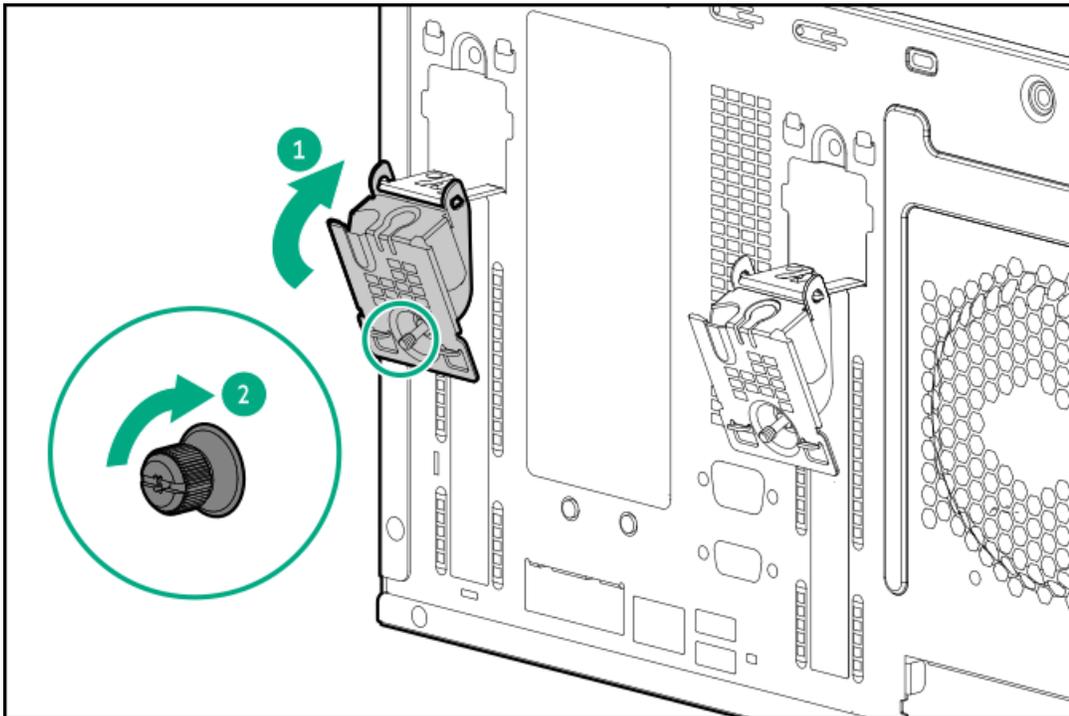


- Full-height, full-length expansion card





9. Connect all necessary internal cabling to the expansion card. For more information on these cabling requirements, see the documentation that ships with the option.
10. Close the riser slot retainer.



11. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
12. Install the system air baffle.
13. Install the access panel.
14. Do one of the following:
  - Orient the server back to tower mode.



- Install the server into the rack.
15. Connect all peripheral cables to the server.
  16. Connect the power cords:
    - a. Connect each power cord to the server.
    - b. Connect each power cord to the power source.
  17. Power up the server.

## Results

The installation procedure is complete.

## Installing an expansion card in the riser cage

### Prerequisites

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

### About this task



#### CAUTION

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



#### CAUTION

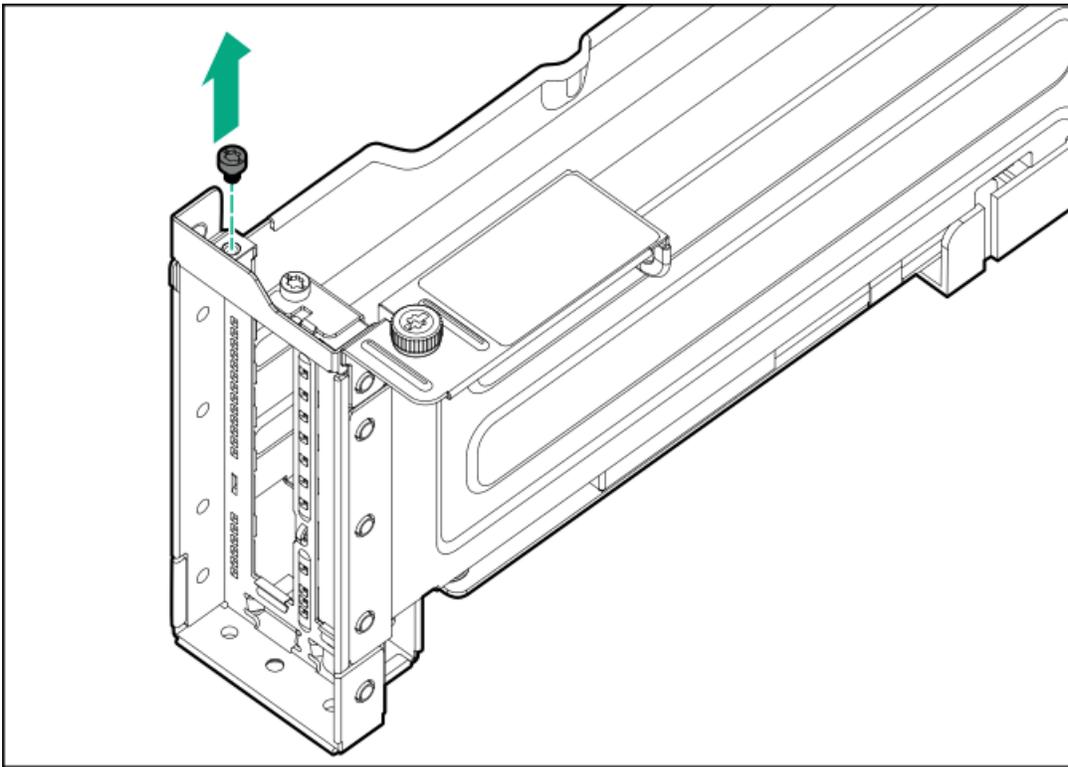
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

### 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 system air baffle.
7. If you are installing a second expansion card, install the secondary riser option.
8. To install the expansion card in the riser cage, do the following:
  - a. Remove the riser slot 2 screw.

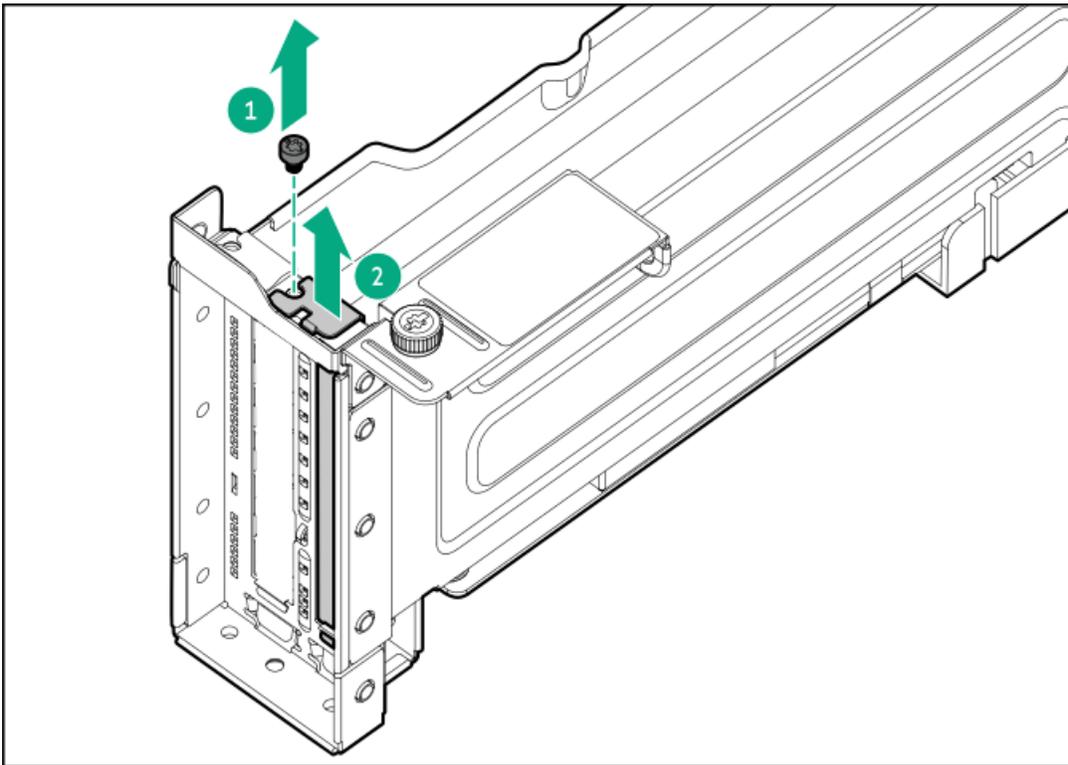
Retain the screw. This screw will be used to install the expansion card.





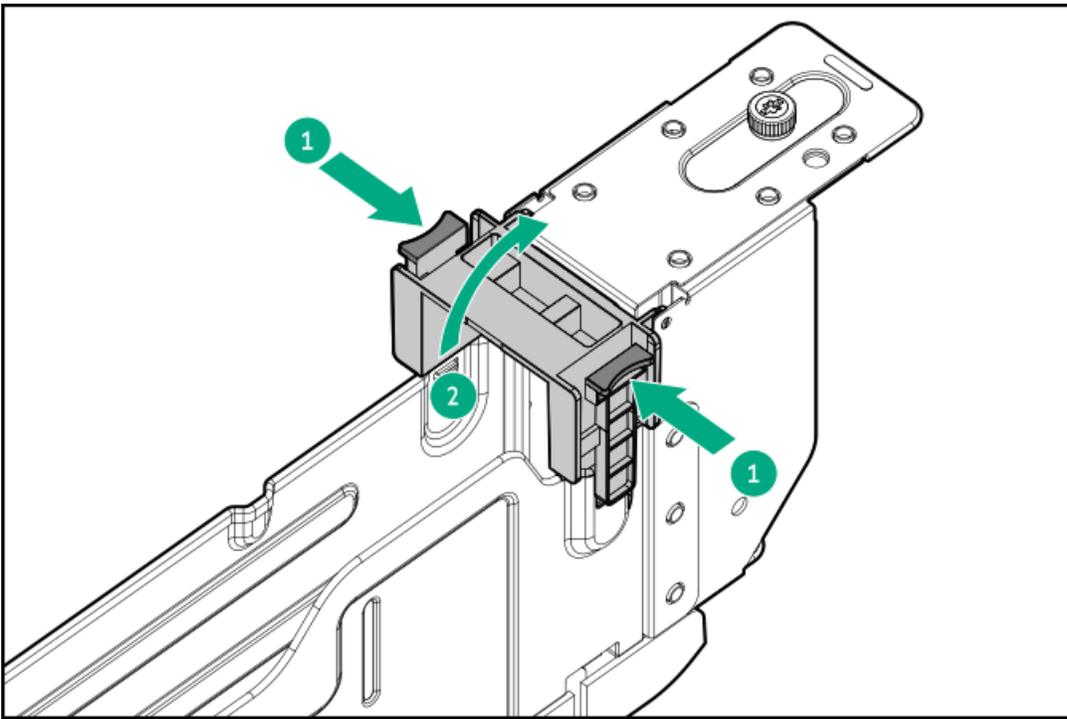
- b. If you are installing the expansion card in the riser slot 3, remove the riser slot blank from the riser cage.

Retain the screw. This screw will be used to install the expansion card.



- 9. If you are installing a full-height, full-length expansion card, open the expansion card holder.

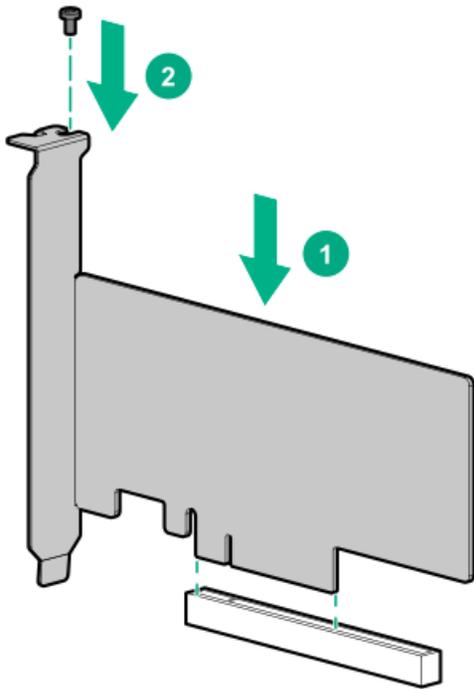




10. Install the expansion card.

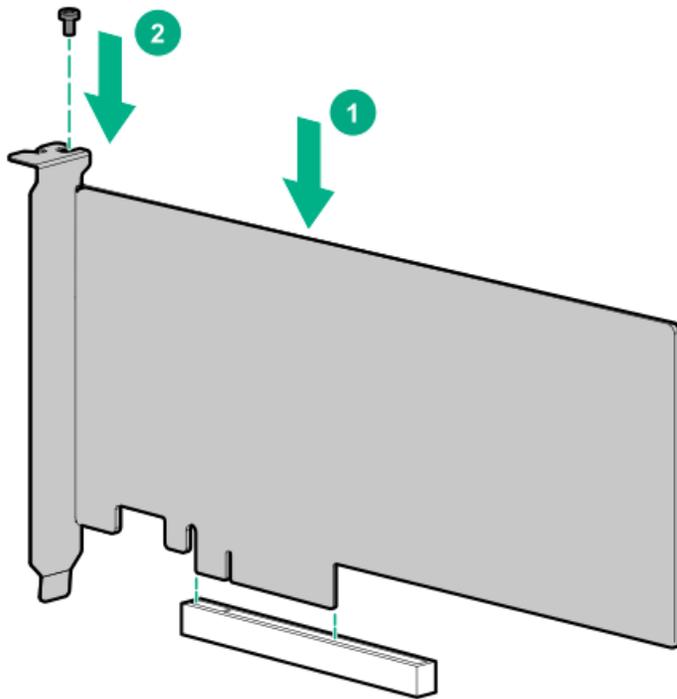
Make sure that the expansion card is firmly seated in the riser.

- Half-height, half-length (low-profile) expansion card

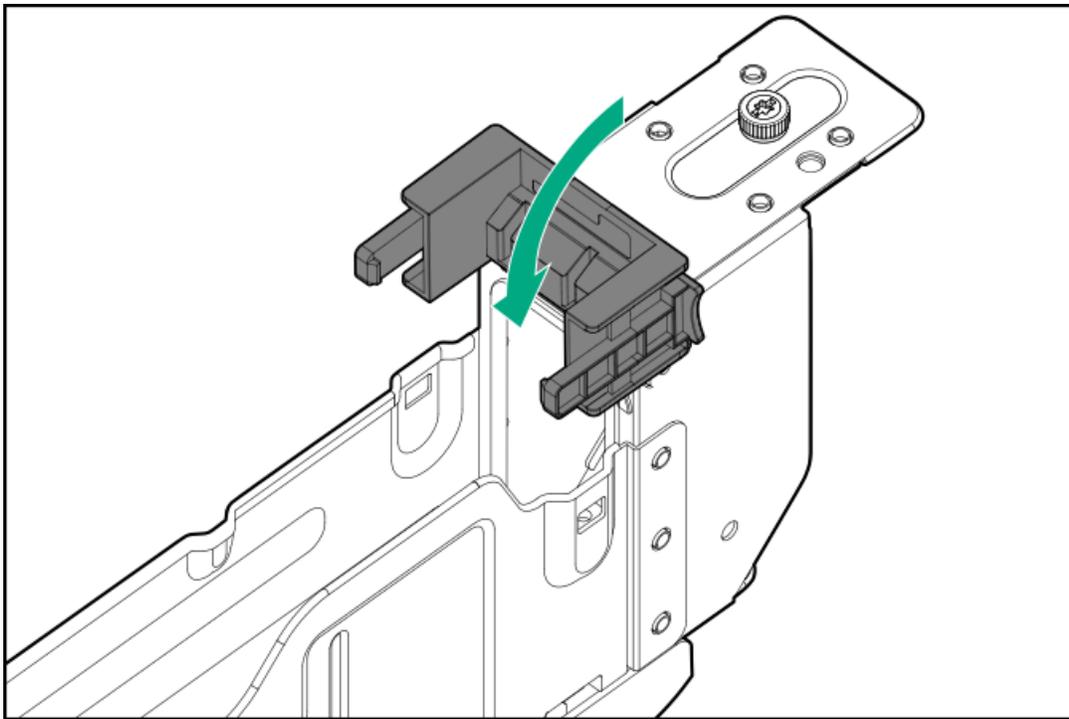


- Full-height, full-length expansion card





11. Close the expansion card holder.



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 riser cage.
14. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
15. Install the system air baffle.
16. Install the access panel.
17. Do one of the following:



- Orient the server back to tower mode.
  - Install the server into the rack.
18. Connect all peripheral cables to the server.
  19. Connect the power cords:
    - a. Connect each power cord to the server.
    - b. Connect each power cord to the power source.
  20. Power up the server.

## Results

The installation procedure is complete.

## GPU options

This server supports various GPU options to meet your computational and graphics workload requirements. For a list of supported GPU models, see the server QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/quickspecs>).

- PCIe workload GPUs—These options are PCIe card-based, direct-attach solutions that use solid-state storage technology directly on the PCI bus to boost I/O performance and reduce latency to scale in line with your processing requirements.
- Computational and graphics GPUs—These options deliver accelerated compute performance for a range of deep learning, high-performance computing (HPC), and graphics-intensive applications.

### Subtopics

[GPU installation guidelines](#)

[Installing a GPU in the riser slot 1](#)

[Installing a GPU in the riser cage](#)

## GPU installation guidelines

- This server does not support the installation of different GPU models in the same system.
- To maintain proper system cooling, the [redundant fan option](#) is required for GPU installation.
- To support high power GPU (> TDP 75 W), the PCIe 16-pin GPU power cable (P70544-B21) is required.
- The limited operating inlet ambient temperatures required for GPUs vary based on the model and the server drive configuration. For more information, see the server QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/quickspecs>).



### IMPORTANT

Workloads for high performance GPUs with passive cooling can cause the fans to operate at high speeds to maintain optimum system cooling. Hewlett Packard Enterprise does not recommend installing GPUs with passive cooling in or near a site where there is a reasonable expectation for a quiet environment.

## Installing a GPU in the riser slot 1

## Prerequisites

- Before installing a GPU, review the [GPU installation guidelines](#).
- When installing a high power GPU with TDP > 75 W, make sure you have the PCIe 16-pin GPU auxiliary power cable option (P70544-B21).
- When installing the NVIDIA L4 Tensor Core GPU, make sure that:
  - A processor with TDP ≤ 150 W is installed.
  - The P66618-B21 option kit is installed. This kit includes the:
    - PCI air baffle
    - 15 DIMM blanks
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

## About this task

The riser slot 1 support a full-height, full-length GPU.



### CAUTION

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



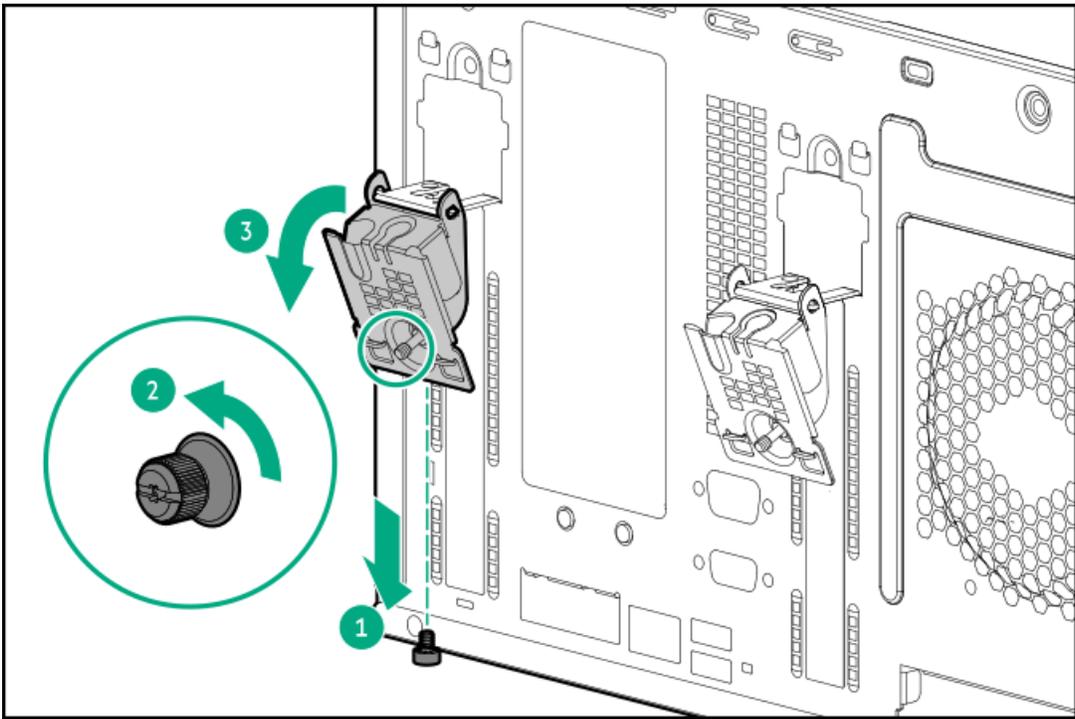
### CAUTION

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

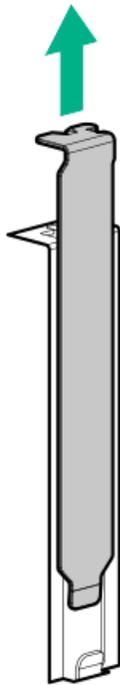
## Procedure

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 system air baffle](#).
7. If installed, [remove the riser cage](#).
8. Install the GPU in riser slot 1:
  - a. Open the riser slot retainer.

Retain the screw. This screw will be used to install the GPU.



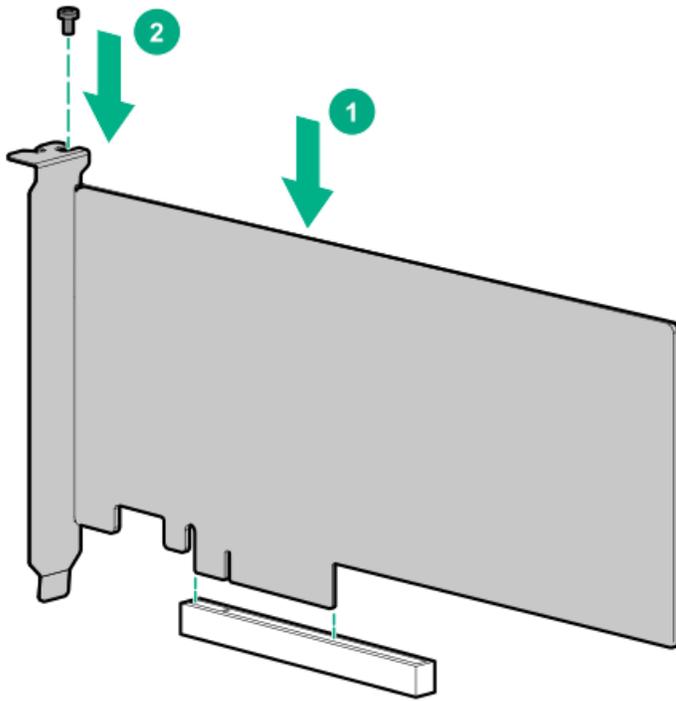
b. Remove the riser slot blank.



c. Install the GPU.

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





9. If you have installed a high power GPU, connect the auxiliary power cable to the GPU.
10. Install the redundant fan option.
11. Install the riser cage.
12. Connect the GPU auxiliary power cable to the system board .
13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
14. Install the system air baffle.
15. Install the access panel.
16. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
17. Connect all peripheral cables to the server.
18. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
19. Power up the server.

## Results

The installation procedure is complete.

## Installing a GPU in the riser cage



## Prerequisites

- Before installing a GPU option, observe the [GPU installation guidelines](#).
- When installing a high power GPU with TDP > 75 W, make sure you have the PCIe 16-pin GPU auxiliary power cable option (P70544-B21).
- If an NVIDIA L4 Tensor Core GPU is installed, observe the following:
  - Processor with TDP equal or less than 150 W.
  - The following GPU support option kit (P66618-B21) is installed:
    - PCI air baffle
    - 15 DIMM blanks
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

## About this task



### CAUTION

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



### CAUTION

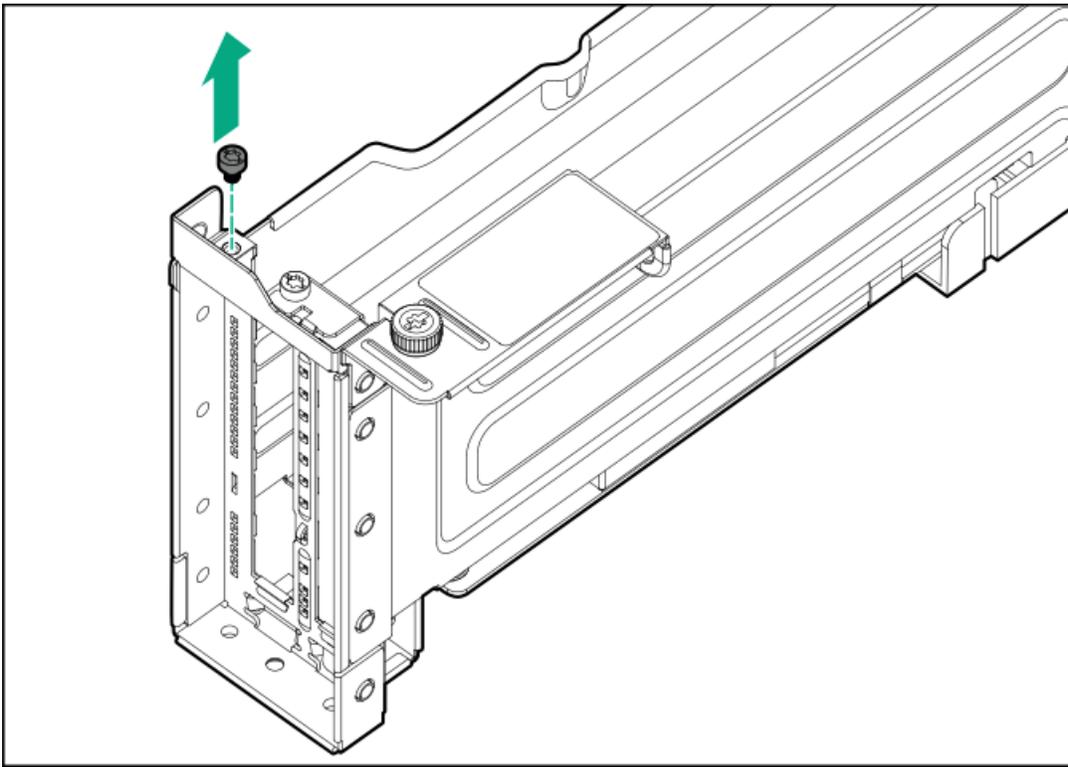
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

## 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 system air baffle](#).
7. If installed, [remove the riser cage](#).
8. Install the GPU in the riser cage:
  - a. Remove the riser slot 2 screw.

Retain the screw. This screw will be used to install the PCI air baffle/GPU.

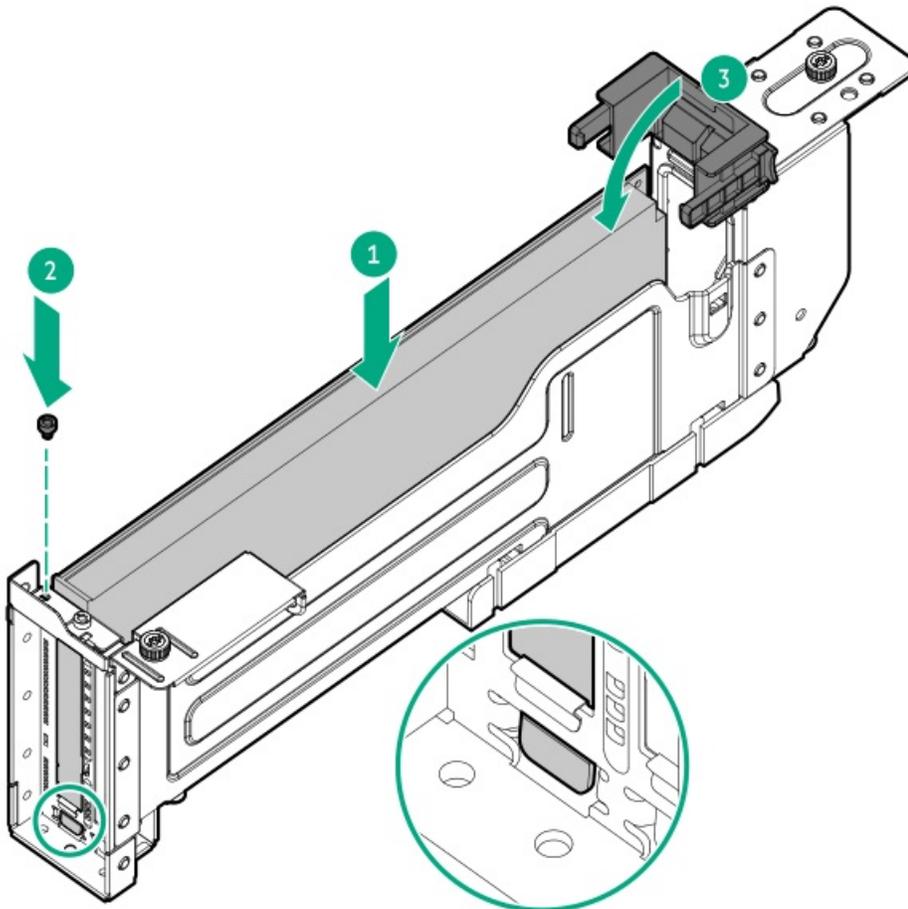




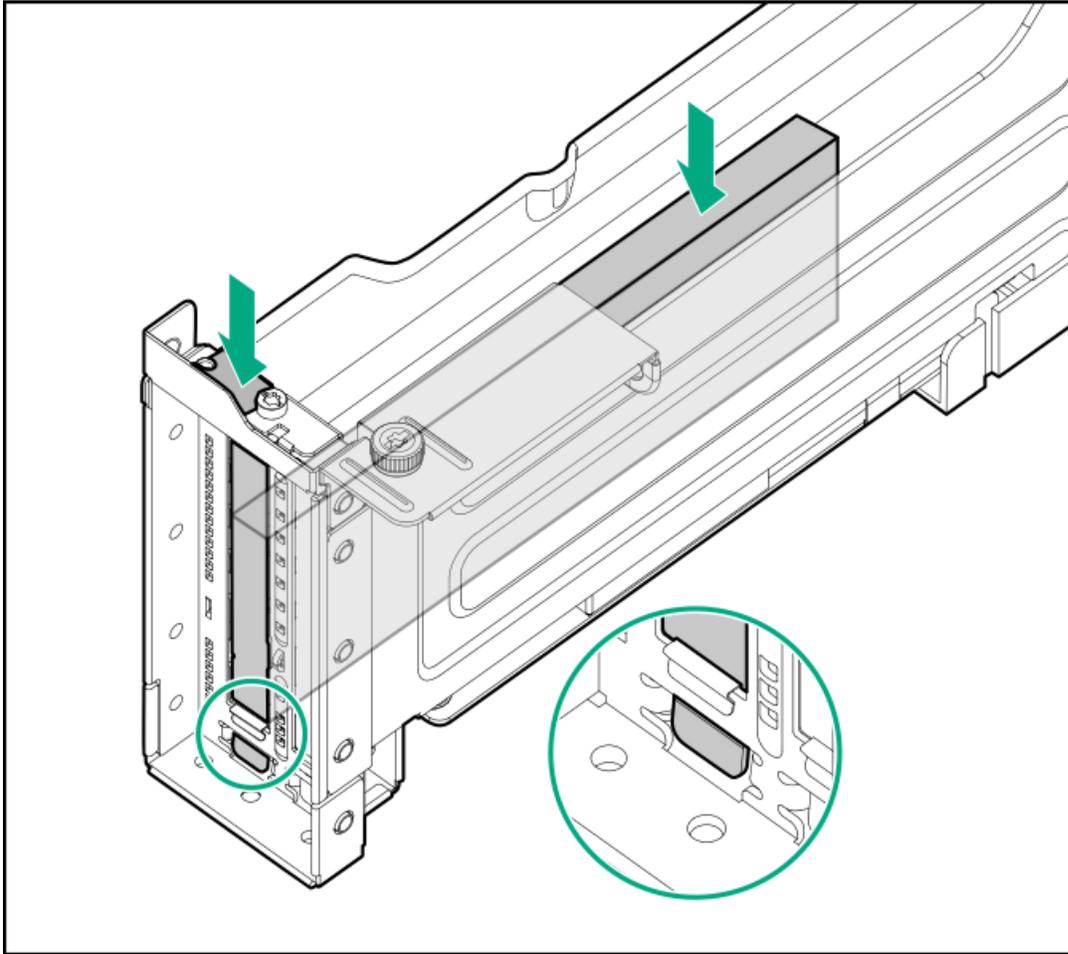
b. Install the GPU in the riser slot 2.

Make sure that the GPU is firmly seated in the riser.

- Full-height, full-length GPU

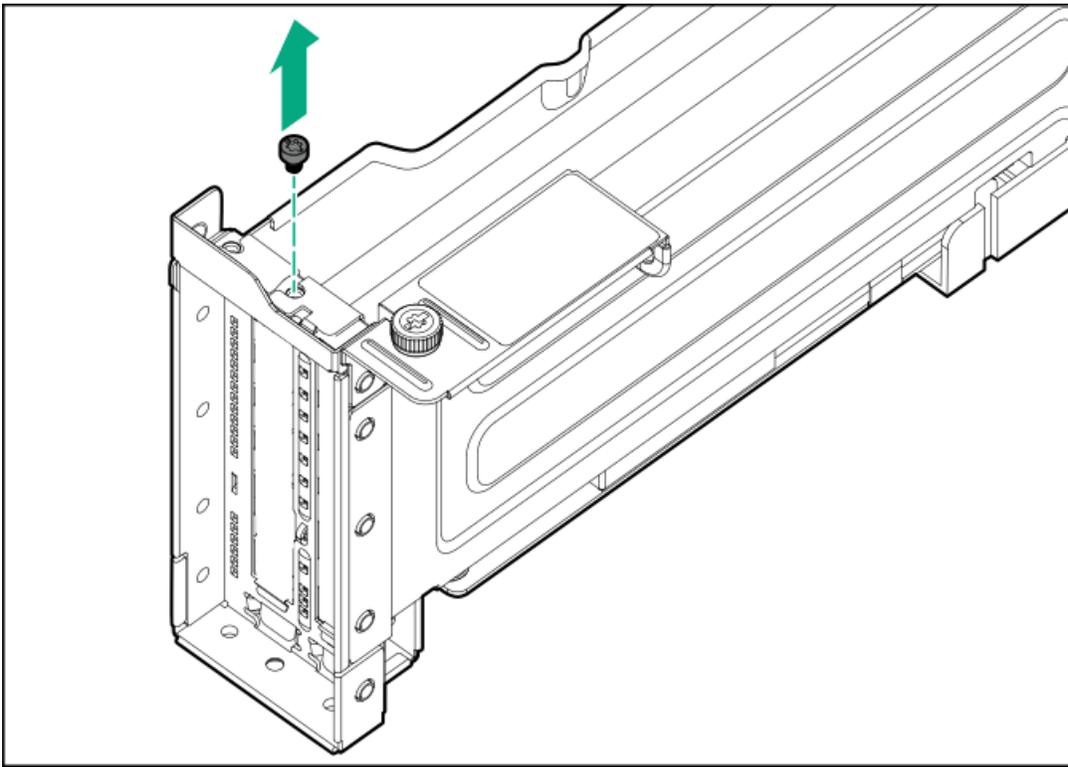


- Half-height, half-length GPU

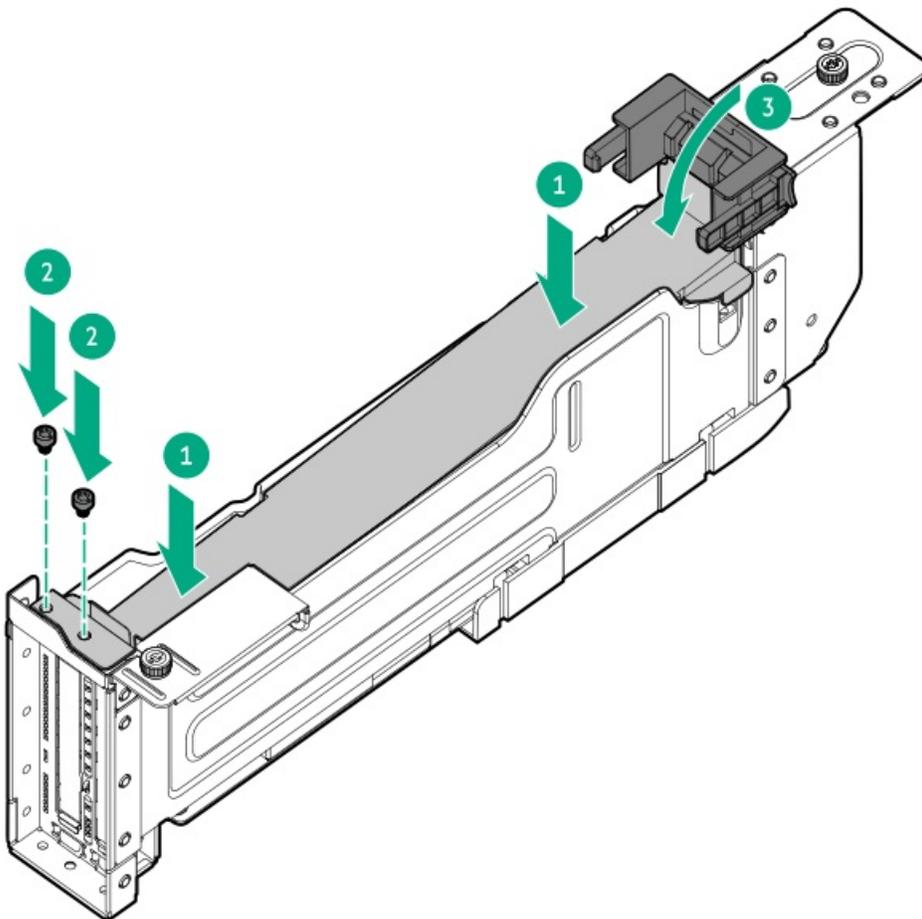


9. Connect the GPU auxiliary power cable to the GPU.
10. If the L4 Tensor Core GPU is installed, install the P66618-B21 support kit:
  - a. Remove the screw from the riser slot 3.



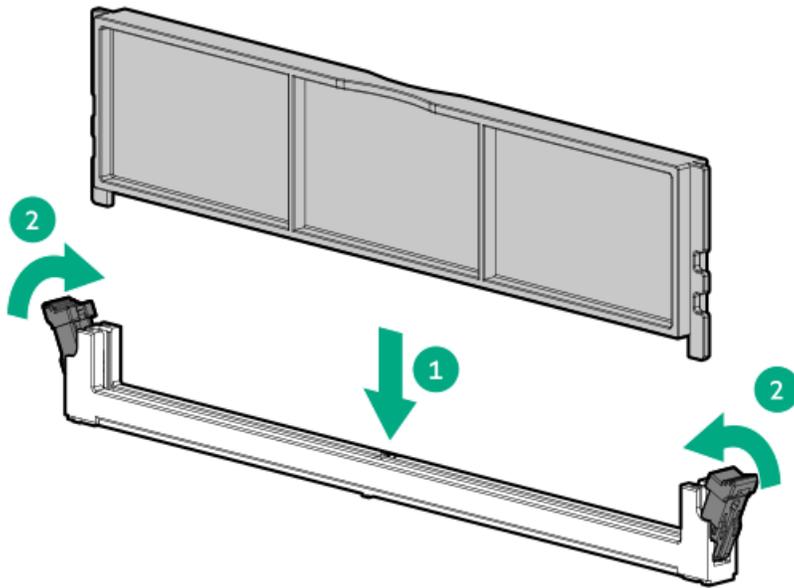


b. Install the PCI air baffle.



c. Install DIMM blanks on all empty DIMM slots.





11. [Install the redundant fan option.](#)
12. [Install the riser cage.](#)
13. [Connect the GPU auxiliary power cable.](#)
14. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
15. [Install the system air baffle.](#)
16. [Install the access panel.](#)
17. Do one of the following:
  - [Orient the server back to tower mode.](#)
  - [Install the server into the rack.](#)
18. Connect all peripheral cables to the server.
19. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
20. [Power up the server.](#)

## Results

The installation procedure is complete.

## HPE NS204i-u Boot Device option

Note the following information about the HPE NS204i-u Boot Device option:

- The HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device is a PCIe5 custom form factor module that includes two hot-pluggable 2280 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 RAID1 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 HPE NS204i-u Boot Device](#)

## Installing the HPE NS204i-u Boot Device

### Prerequisites

- Before you perform this procedure, make sure about the following:
  - [The redundant fan option](#) is installed.
  - [The server is updated with the latest operating system firmware and drivers](#) .
  - [Identify the HPE NS204i-u Boot Device components](#).
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver



#### **CAUTION**

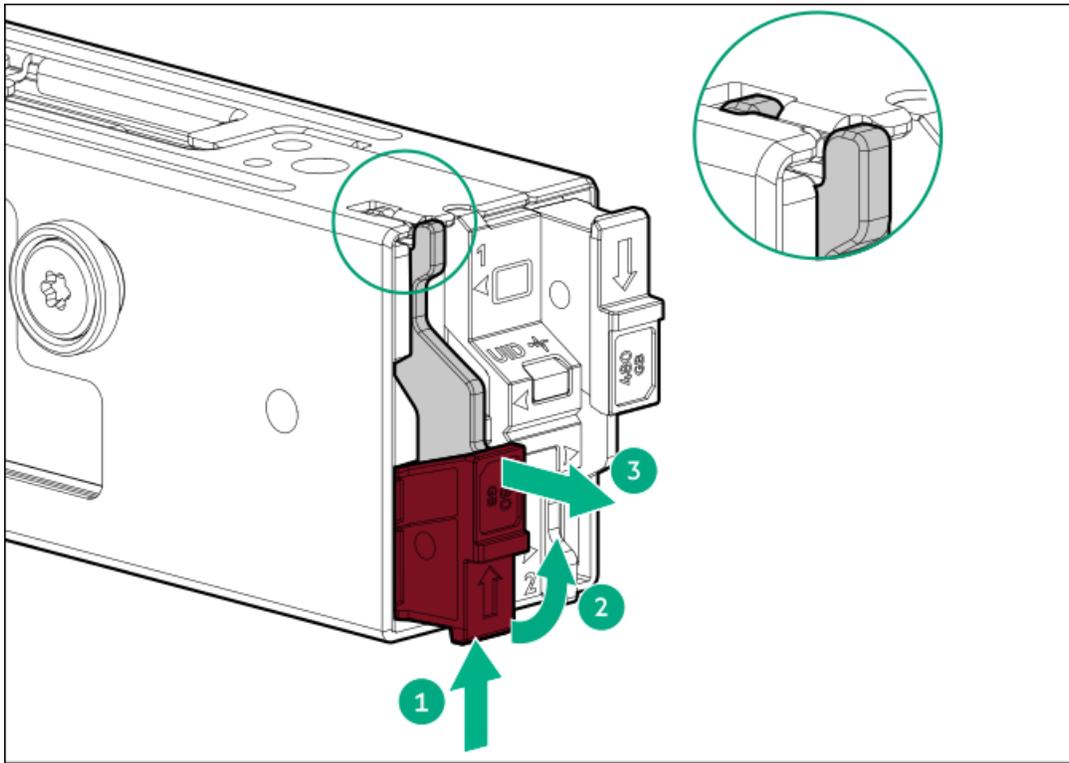
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

## Procedure

### Installing drives onto the boot device

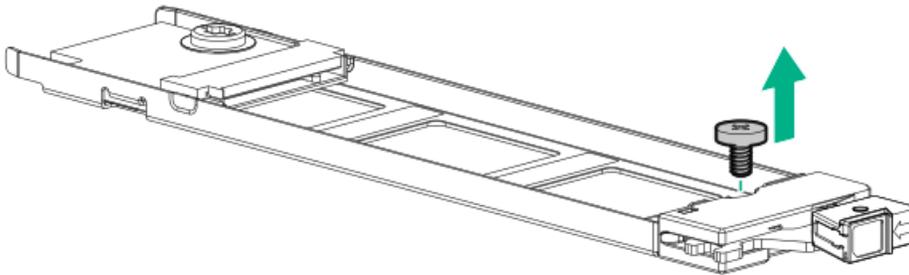
1. Remove the boot device carrier:
  - a. Press and hold the carrier latch.
  - b. Pivot the latch to open.
  - c. Slide the carrier out from the boot device cage.



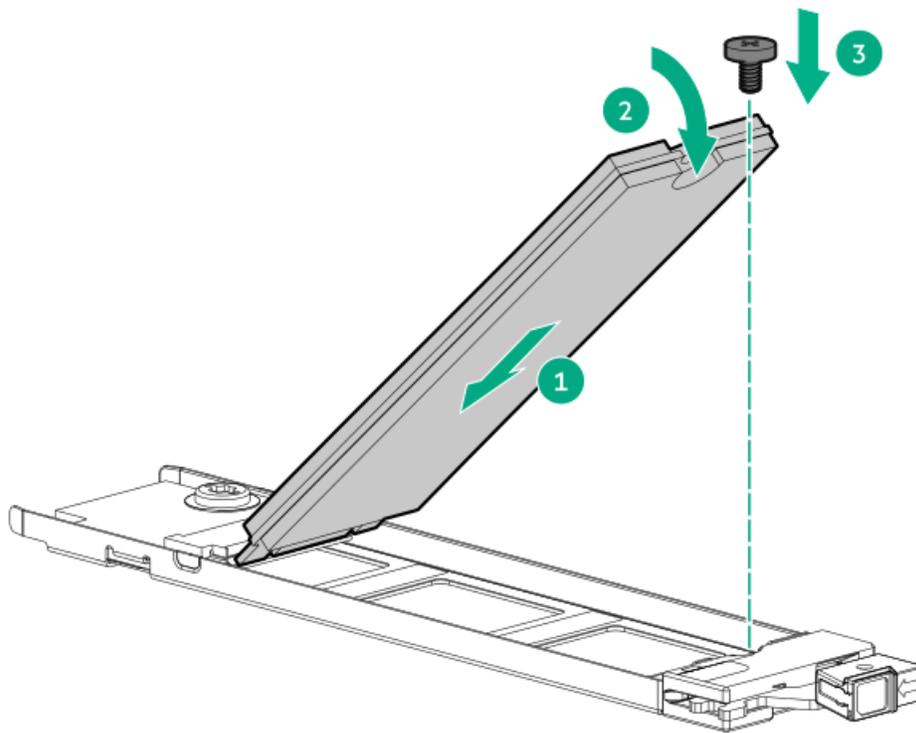


2. Install the SSD on the boot device carrier:

- a. Remove the SSD mounting screw.



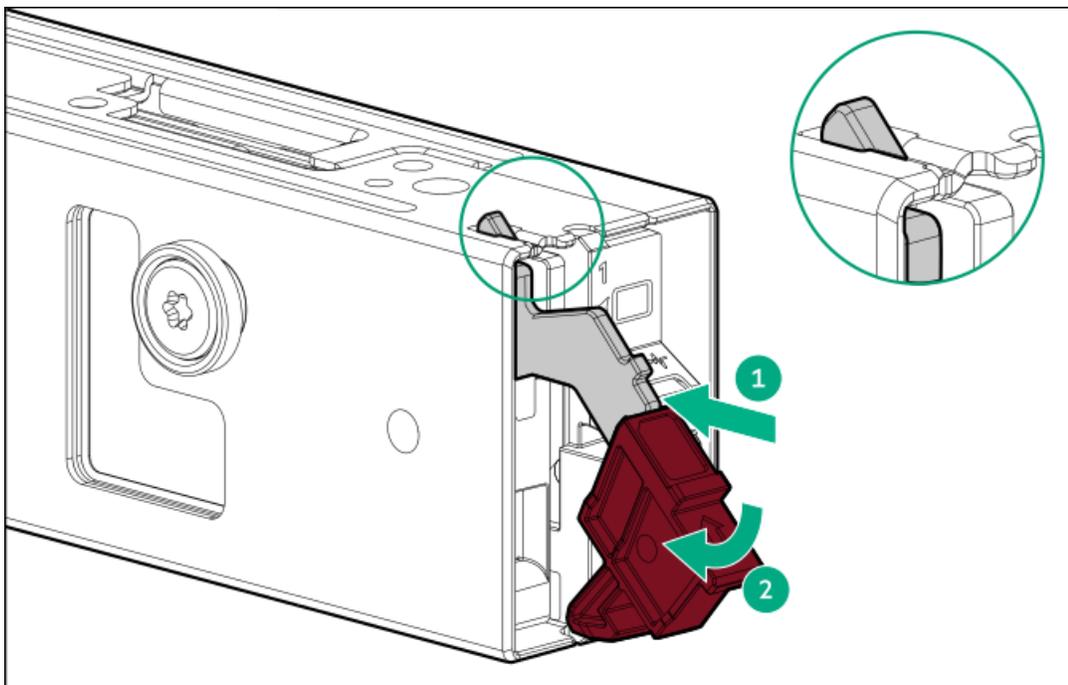
- b. Insert the SSD into the M.2 slot at a 45° angle.  
c. Carefully press the SSD down to the horizontal position.  
d. Install the SSD mounting screw.



3. Install the boot device carriers:

- a. If closed, pivot the carrier latch to open.
- b. Slide the carrier into the boot device cage.
- c. Pivot the latch to close.

Make sure that the carrier latch is locked on the boot device cage.

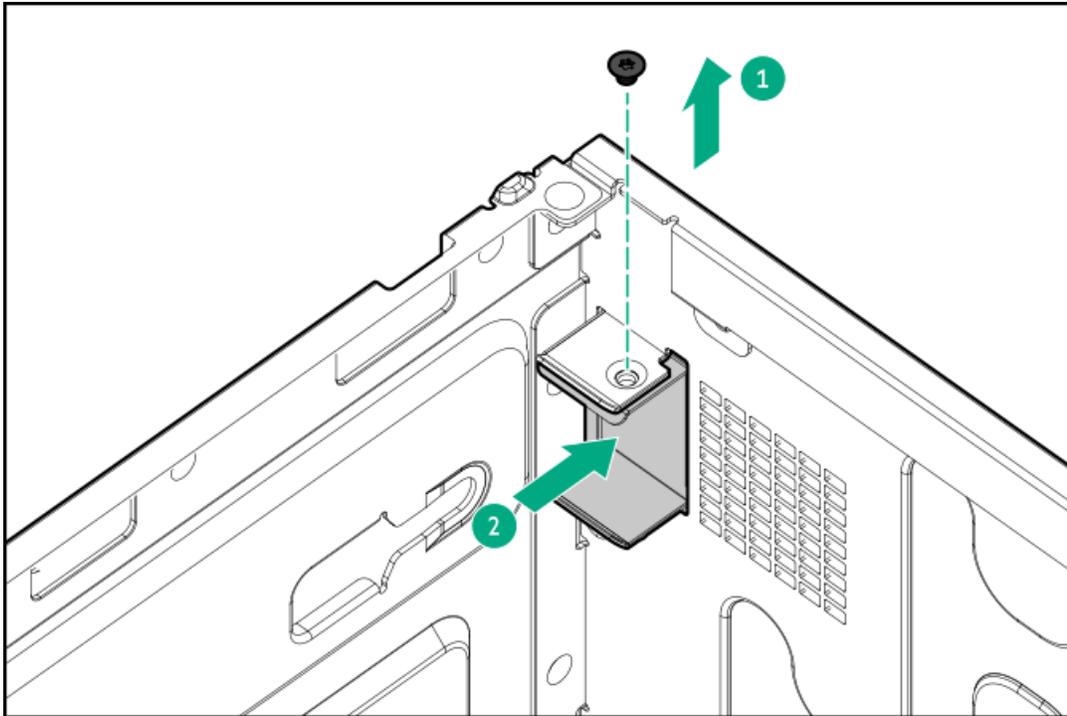


**Installing the boot device**

- 4. Back up all server data.
- 5. Power down the server.
- 6. Remove all power:

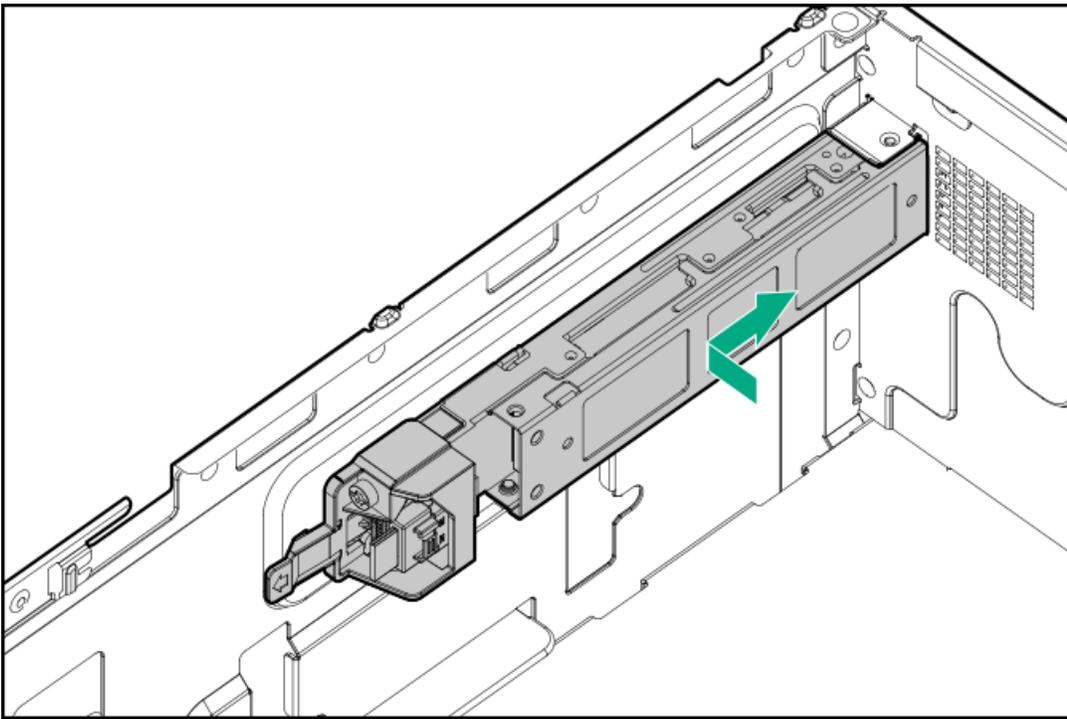


- a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
7. Disconnect all peripheral cables from the server.
8. Do one of the following:
- If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.
  - If the server is in rack mode, remove the server from the rack.
9. Remove the access panel.
10. Remove the system air baffle.
11. Remove the boot device cover.



12. Connect the SlimSAS signal and power cables to the boot device.
13. Install the HPE NS204i-u Boot Device cage assembly.

Make sure that the HPE NS204i-u Boot Device cage assembly and the release latch are locked on the chassis with the click sound.



14. Connect the boot device signal and power cables to the system board.
15. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
16. Install the system air baffle.
17. Install the access panel.
18. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
19. Connect all peripheral cables to the server.
20. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
21. Power up the server.

## Results

The installation procedure is complete.

## OCP NIC 3.0 adapter option

The server supports SFF dual-port and quad-port OCP NIC 3.0 adapter options with various interfaces and advanced interconnect features for high-bandwidth applications.

### Subtopics

[Installing the OCP NIC 3.0 adapter](#)

# Installing the OCP NIC 3.0 adapter

## Prerequisites

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

- T-10 Torx screwdriver
- T-15 Torx screwdriver
- Spudger or any small prying tool

## About this task



### 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.



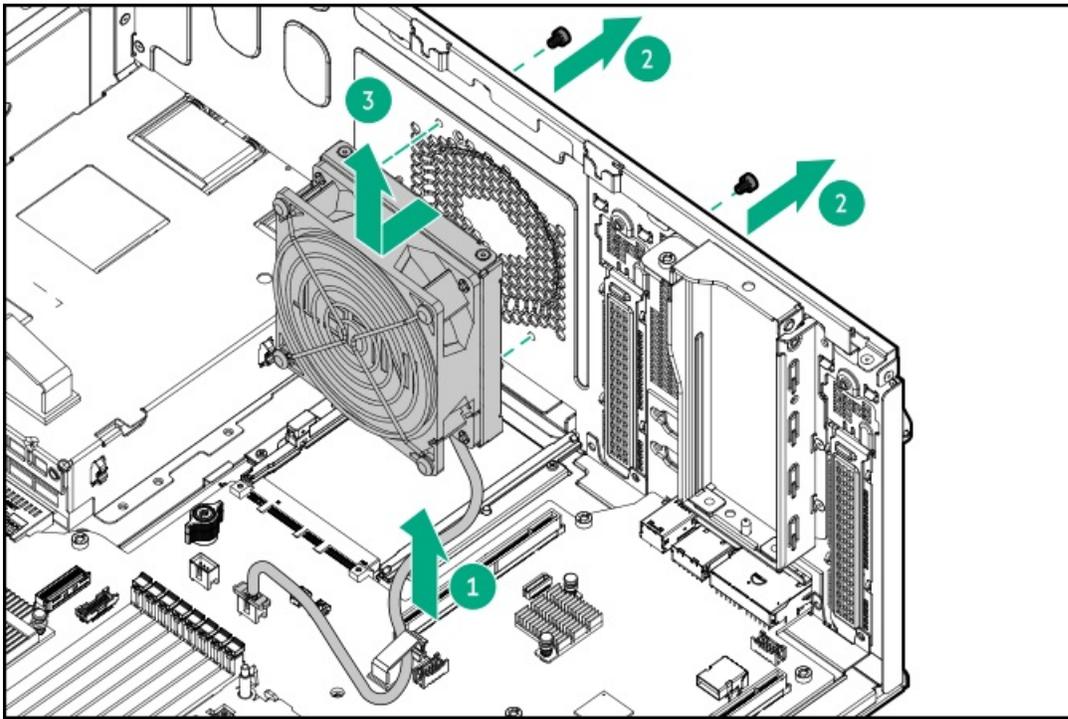
### CAUTION

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](#).

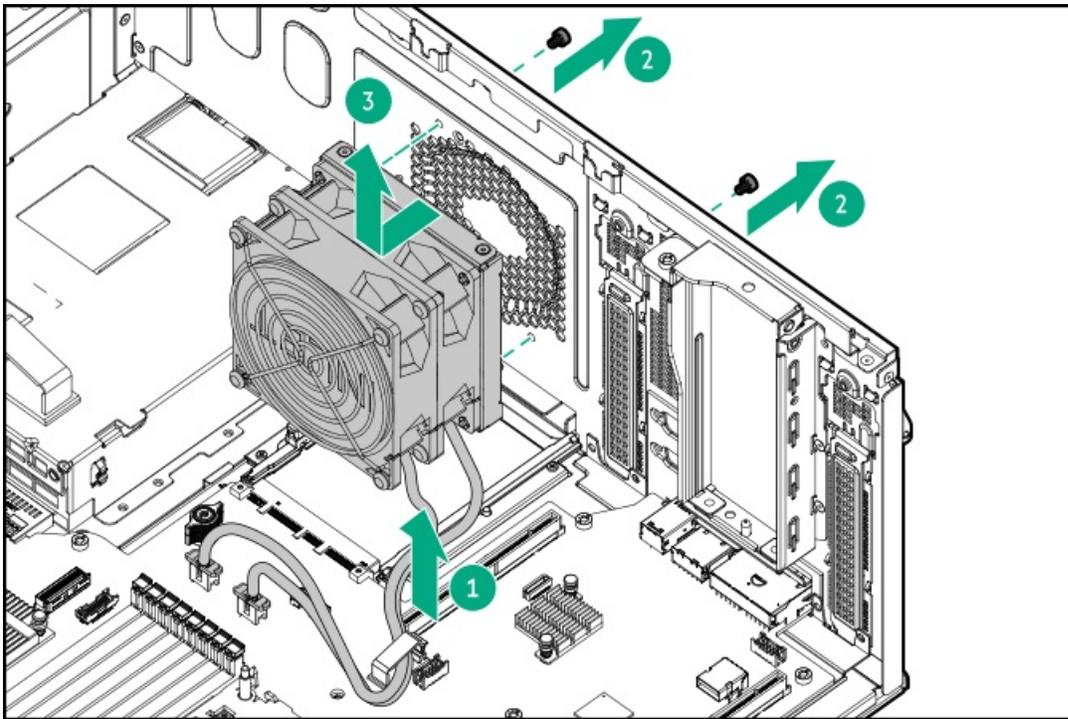
## Procedure

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 system air baffle.
7. Remove the system fan, do the following:
  - a. Release the fan cable from the cable clamp.
  - b. Remove the screws.
  - c. Detach the system fan from the chassis.
    - Default system fan





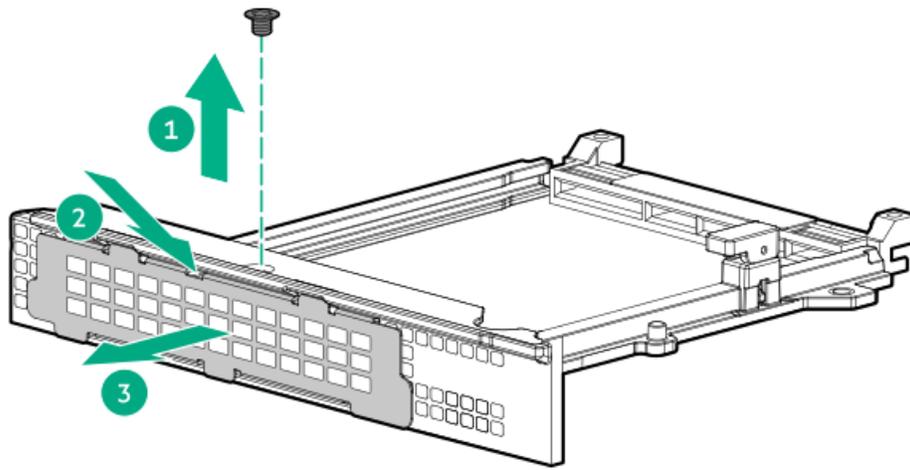
- redundant system fan



8. Remove the OCP slot blank:

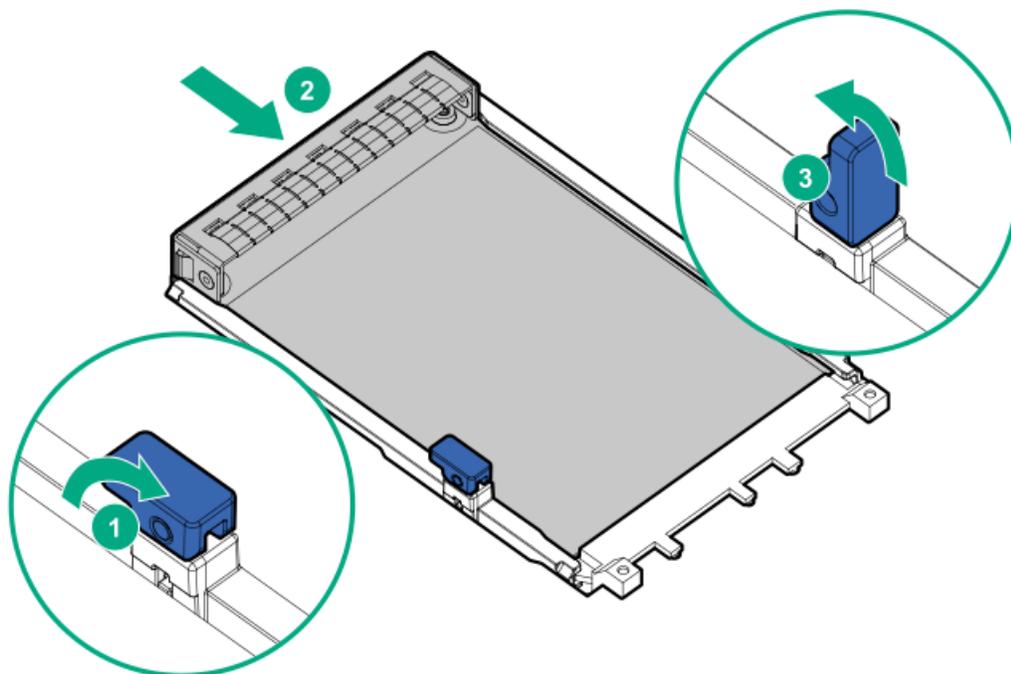
- Remove the blank screw.
- Use a plastic spudger to pry the top side of the blank from the chassis.
- Remove the blank.





9. Install the OCP NIC 3.0 adapter:

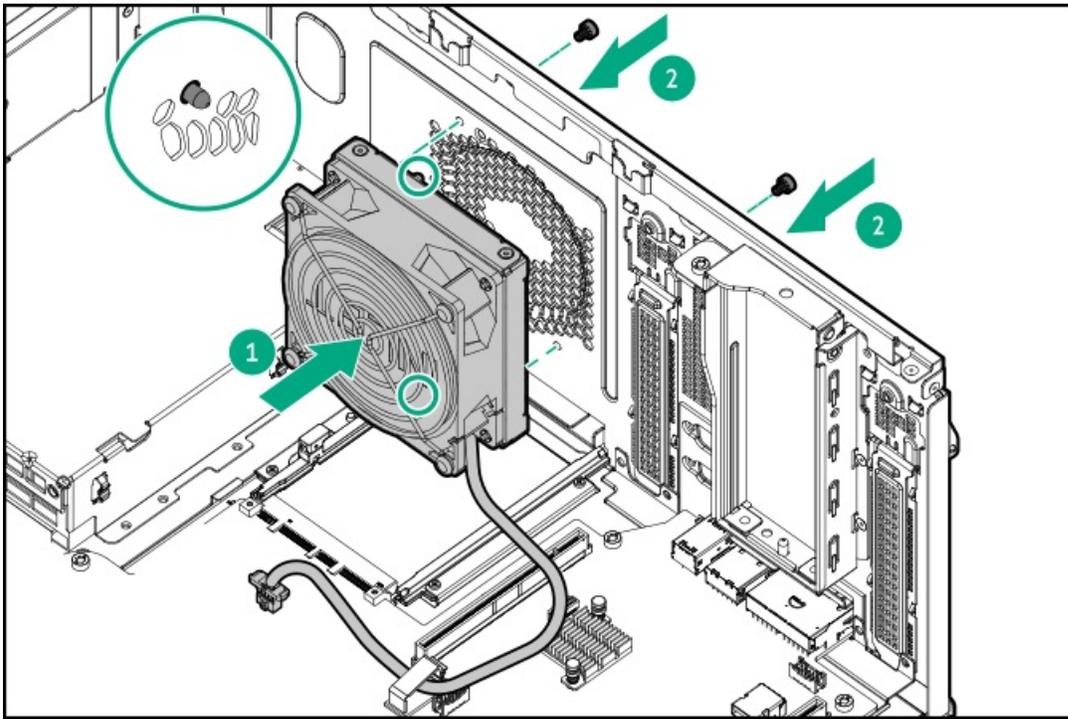
- a. Rotate the locking pin to the open (vertical) position.
- b. Slide the adapter into the bay until it clicks into place.  
Ensure that the adapter is seated firmly in the slot.
- c. Rotate the locking pin to the close (horizontal) position.



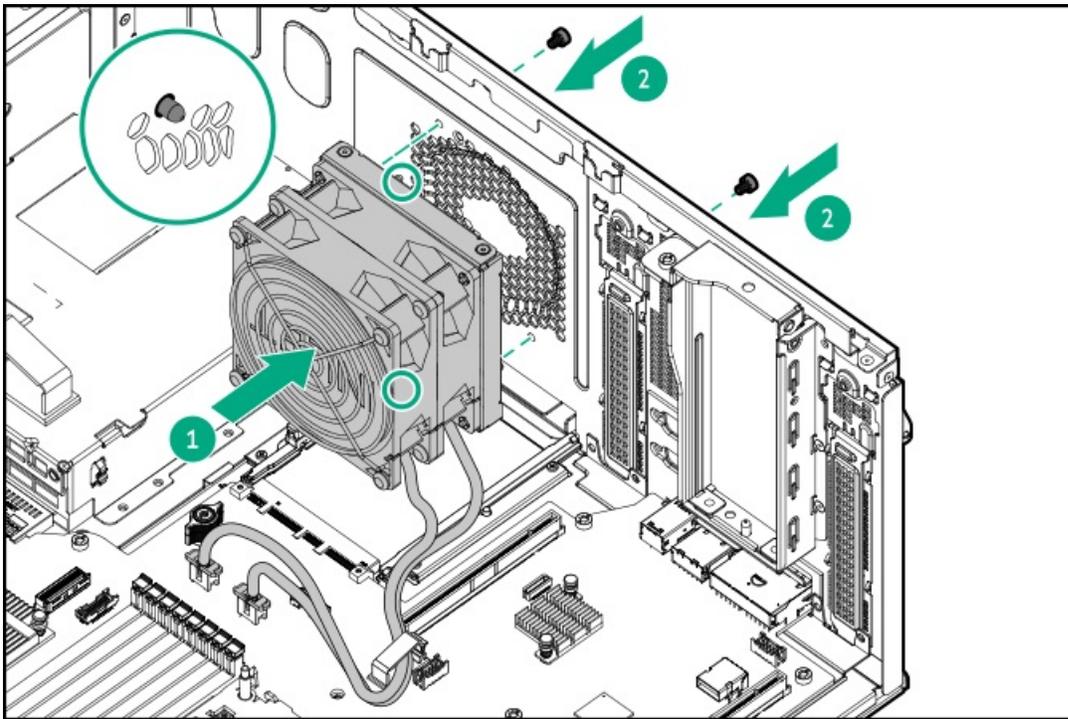
10. Install the system fan:

- a. Insert the fan guard pins into the chassis openings.
- b. Tighten the screws on the chassis.
  - Default system fan





- redundant system fan



11. Connect the system fan cable.
12. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
13. Install the system air baffle.
14. Install the access panel.
15. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.



16. Connect all peripheral cables to the server.
17. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
18. Power up the server.

## Results

The installation procedure is complete.

## Chassis intrusion detection switch option

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

### Subtopics

#### Installing the chassis intrusion detection switch

## Installing the chassis intrusion detection switch

### About this task

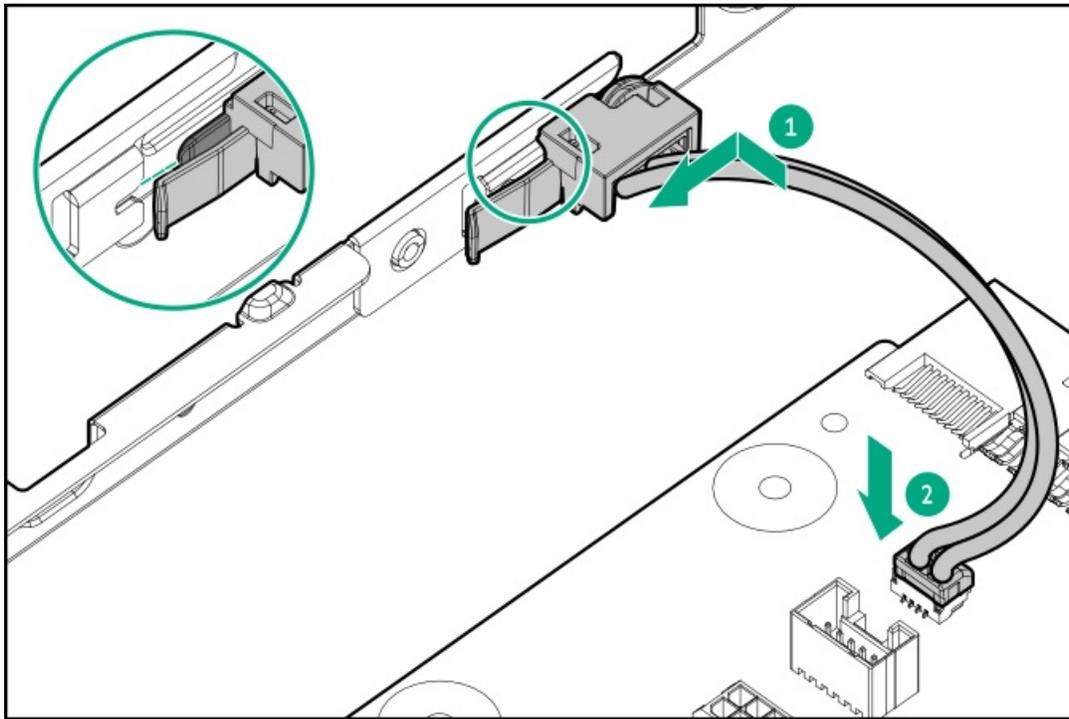


#### CAUTION

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. Remove the system air baffle.
7. Install the chassis intrusion detection switch:
  - a. Insert the switch tab into the chassis slot until the switch clicks into place.
  - b. Connect the switch cable.



8. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
9. Install the system air baffle.
10. Install the access panel.
11. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
12. Connect all peripheral cables to the server.
13. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
14. Power up the server.

## Results

The installation procedure is complete.

## Serial port option

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

### Subtopics

#### Installing a serial port



# Installing a serial port

## Prerequisites

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

- Hex screwdriver
- Spudger or any small prying tool

## About this task



### 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.

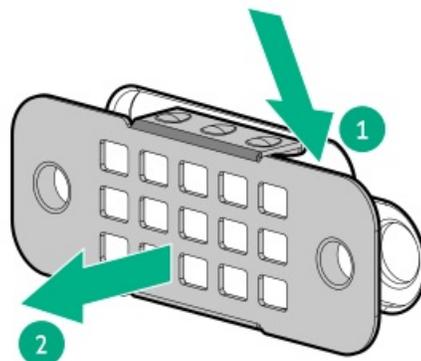


### CAUTION

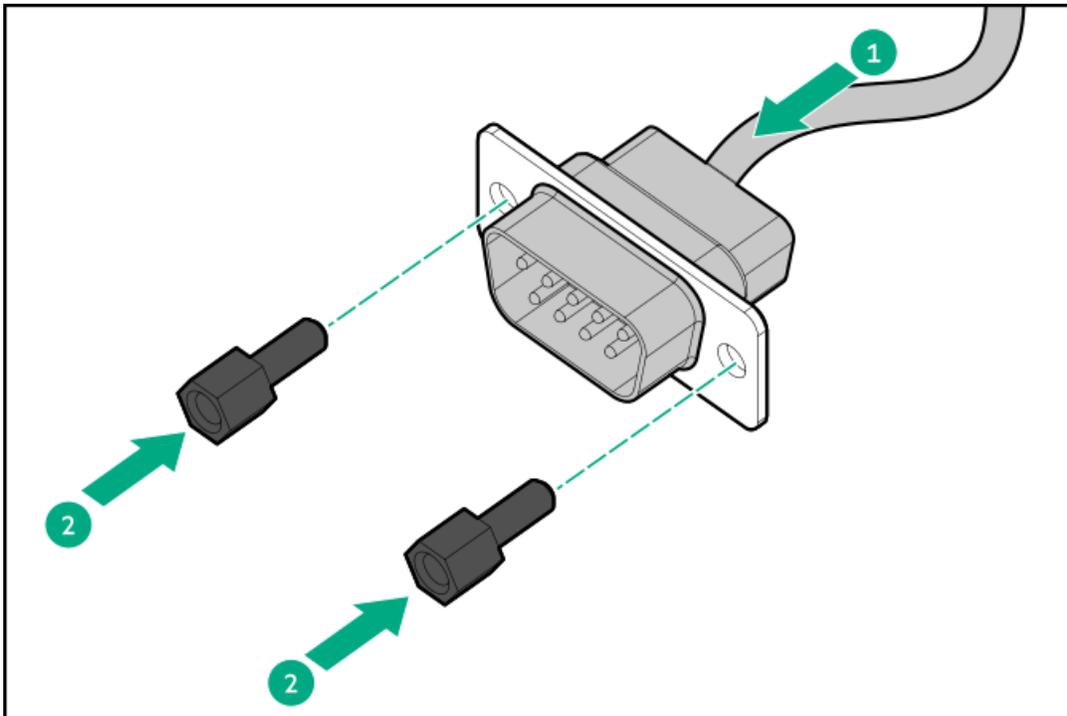
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

## 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 system air baffle.
7. If installed, remove the riser cage.
8. Remove the serial port blank:
  - a. Use a plastic spudger to pry the blank from the rear panel.
  - b. Remove the blank.



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



10. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
11. [Install the riser cage.](#)
12. [Install the system air baffle.](#)
13. [Install the access panel.](#)
14. Do one of the following:
  - [Orient the server back to tower mode.](#)
  - [Install the server into the rack.](#)
15. Connect all peripheral cables to the server.
16. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
17. [Power up the server.](#)

#### Configuring the serial port

18. 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.

## Internal USB device option

The server has an internal USB 3.2 Gen 1 port to install a USB device that can be used as a flash boot media or for data backup/redundancy.

### Subtopics

#### [Installing the internal USB device](#)

## Installing the internal USB device

### About this task



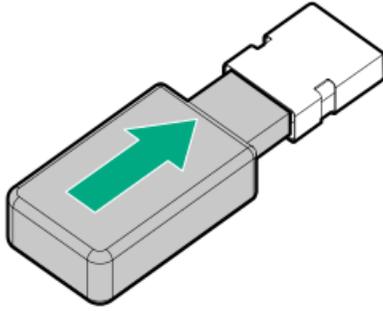
#### CAUTION

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. [Remove the system air baffle](#).
7. If installed, [remove the riser cage](#).
8. Plug in the USB device into the USB port.





9. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
10. [Install the riser cage.](#)
11. [Install the system air baffle.](#)
12. [Install the access panel.](#)
13. Do one of the following:
  - [Orient the server back to tower mode.](#)
  - [Install the server into the rack.](#)
14. Connect all peripheral cables to the server.
15. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
16. [Power up the server.](#)

## Results

The installation procedure is complete.

## Cabling

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

### Subtopics

[Cabling guidelines](#)

[Cabling diagrams](#)

[Internal cabling management](#)

[Storage cabling](#)

[Media device cabling](#)

[Riser board cabling](#)

[GPU auxiliary power cabling](#)

[HPE NS204i-u Boot Device cabling](#)

[Fan cabling](#)

[Chassis intrusion detection switch cabling](#)

[Serial port cabling](#)

[VGA port cabling](#)

[Front I/O cabling](#)

## Cabling guidelines

Observe the following:

- For cable option kits, see the product QuickSpecs.
- For cable spare part numbers, see the Illustrated parts catalog in the maintenance and service guide.
- Some diagrams show alphabetical callouts such as A, B, C, etc. These callouts correspond to labels near the connectors on the cable.
- Some cables have more than one connector, such as a Y-cable, but not all connectors are used.
- The cable colors in the cabling diagrams used in this chapter are for illustration purposes only.
- Observe all guidelines when working with server cables.

### Before connecting cables

- Note the port labels on the PCA components. Not all these components are used by all servers:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion board ports (controllers, retimers, 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.

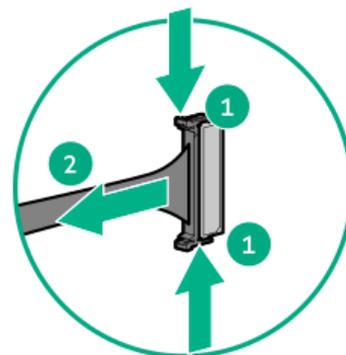
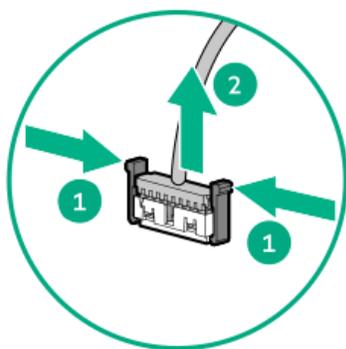
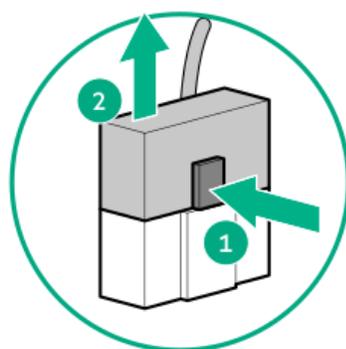
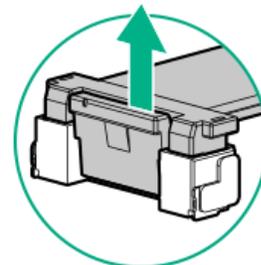
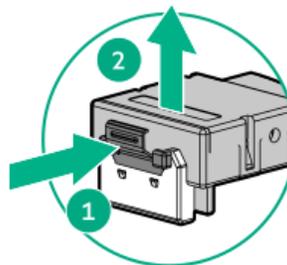
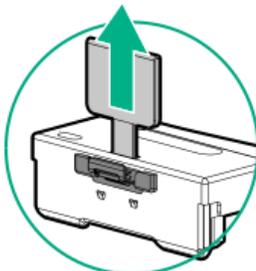
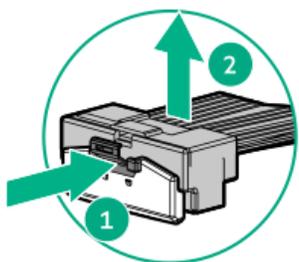
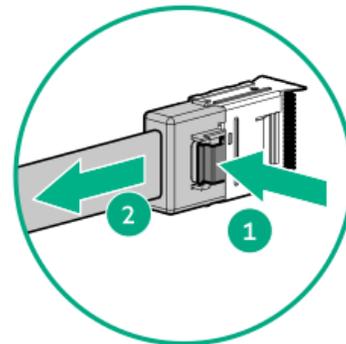
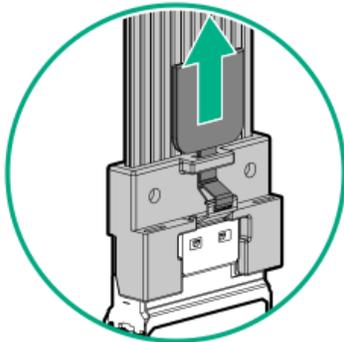
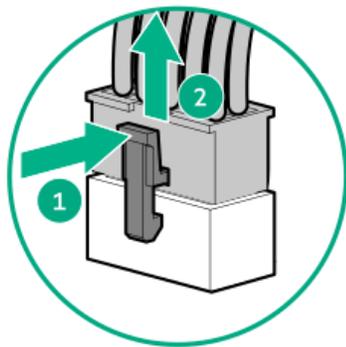
### When connecting cables

- 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 after hardware installation/maintenance.

### When disconnecting cables

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





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

## Cabling diagrams

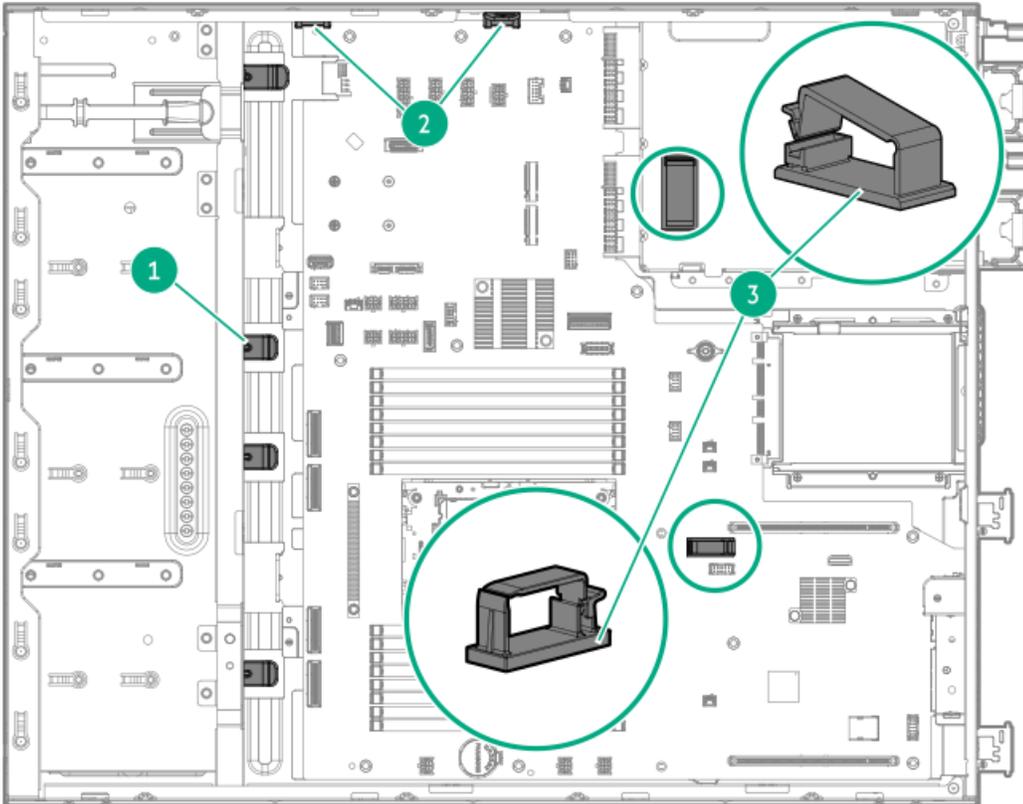
Observe the following:

- Before cabling components, see the [Cabling guidelines](#).
- Use the cable part number or search feature to find your diagram.



Component cabling	Cable part number
<b>Drive storage controller cabling</b>	—
8 LFF non-hot-plug drive cable: Onboard SATA	<a href="#">P60268-001</a>
8 LFF hot-plug drive cable: Onboard SATA	<a href="#">P60269-001</a>
8 LFF hot-plug drive cable: Type-o controller	<a href="#">P60269-001</a>
8 LFF hot-plug drive cable: Type-p controller	<a href="#">P45301-001</a>
8 SFF hot-plug drive cable: Onboard SATA	<a href="#">P60270-001</a>
8 SFF hot-plug drive cable: Type-o controller	<a href="#">P60270-001</a>
8 SFF hot-plug drive cable: Type-p controller	<a href="#">P60271-001</a>
16 SFF hot-plug drive cable: Type-o controller	<a href="#">P60270-001</a>
16 SFF hot-plug drive cable: Type-p controller	<a href="#">P60271-001</a>
16 SFF hot-plug drive cable: Slots 1 and 4 type-p controllers	<a href="#">P60271-001</a>
<b>Drive power cabling</b>	—
LFF hot-plug drive box 1 power cable	<a href="#">P60266-001</a>
LFF hot-plug drive box 2 power cable	
SFF hot-plug drive box 1 power cable	<a href="#">P60267-001</a>
SFF hot-plug drive box 2 power cable	
<b>Media bay device cabling</b>	—
Optical drive cable	<a href="#">756914-001</a>
Internal USB RDX docking station USB cable	<a href="#">876507-002</a>
SAS LTO tape drive cable: Type-o controller	<a href="#">P49007-001</a>
SAS LTO tape drive cable: Type-p controller	<a href="#">P49006-001</a>
LTO/RDX power splitter cable	<a href="#">P45303-001</a>
<b>Riser cabling</b>	—
PCIe Slot 2 riser signal cable	<a href="#">P44002-001</a>
PCIe Slot 3 riser signal cable	
PCIe Slot 2 riser power cable	<a href="#">P60272-001</a>
PCIe Slot 3 riser power cable	
<b>GPU auxiliary power cabling</b>	—
PCIe 16-pin GPU auxiliary power cable	<a href="#">P71242-001</a>
<b>HPE NS204i-u Boot Device cabling</b>	—
HPE NS204i-u Boot Device SlimSAS cable	<a href="#">P54087-001</a>
HPE NS204i-u Boot Device power cable	<a href="#">P54088-001</a>
<b>Fan cabling</b>	
Default system fan	<a href="#">P49989-001</a>
Default PCI fan	
Redundant system fan	<a href="#">P49986-001</a>
Redundant PCI fan	
<b>Chassis intrusion detection switch cabling</b>	<a href="#">P47751-001</a>
<b>Serial port cabling</b>	<a href="#">873747-001</a>
<b>VGA port cabling</b>	<a href="#">P53987-001</a>
<b>Front I/O cabling</b>	<a href="#">P45292-001</a>

## Internal cabling management



Item	Description
1	Front cable channel metal tabs
2	Front cable clamps
3	Cable clamps

## Storage cabling

### Subtopics

[Storage controller cabling](#)

[Drive power cabling](#)

[Energy pack cabling](#)

[Storage controller backup power cabling](#)

## Storage controller cabling

### Subtopics

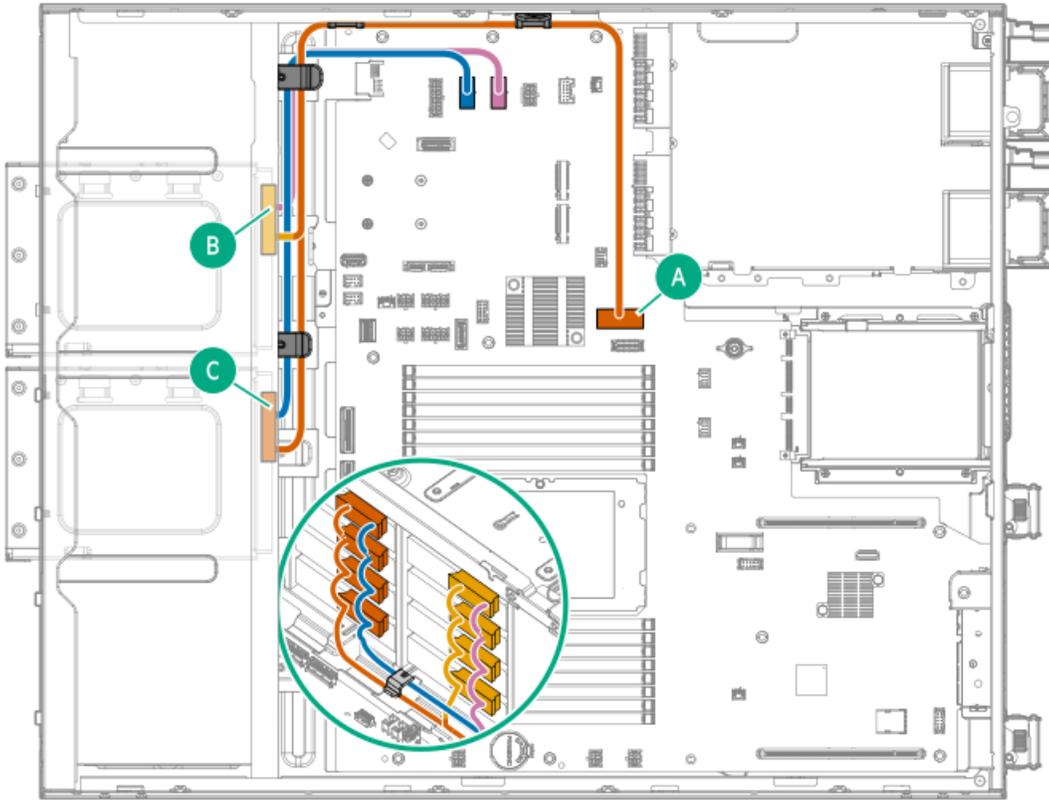
[8 LFF drive controller cabling](#)

[8 SFF drive controller cabling](#)

[16 SFF drive controller cabling](#)

## 8 LFF drive controller cabling

### 8 LFF non-hot-plug drive: Onboard SATA cabling



Cable part number	Color	From	To
P60268-001	Orange	Box 2	SlimSAS x8 port
	Blue	4 LFF non-hot-plug drives	Drive box 2 power connector
	Gold	Box 1	SlimSAS x8 port
	Pink	4 LFF non-hot-plug drives	Drive box 1 power connector

### 8 LFF hot-plug drive: Onboard SATA cabling





Cable part number	Color	From	To
P60269-001	Orange	Box 2 4 LFF drive backplane	SlimSAS x8 port
	Blue	Box 1 4 LFF drive backplane	

### 8 LFF hot-plug drive: Type-o controller cabling





Cable part number	Color	From	To
P60269-001	Orange	Box 2 4 LFF drive backplane	Type-o controller port 1
	Blue	Box 1 4 LFF drive backplane	

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





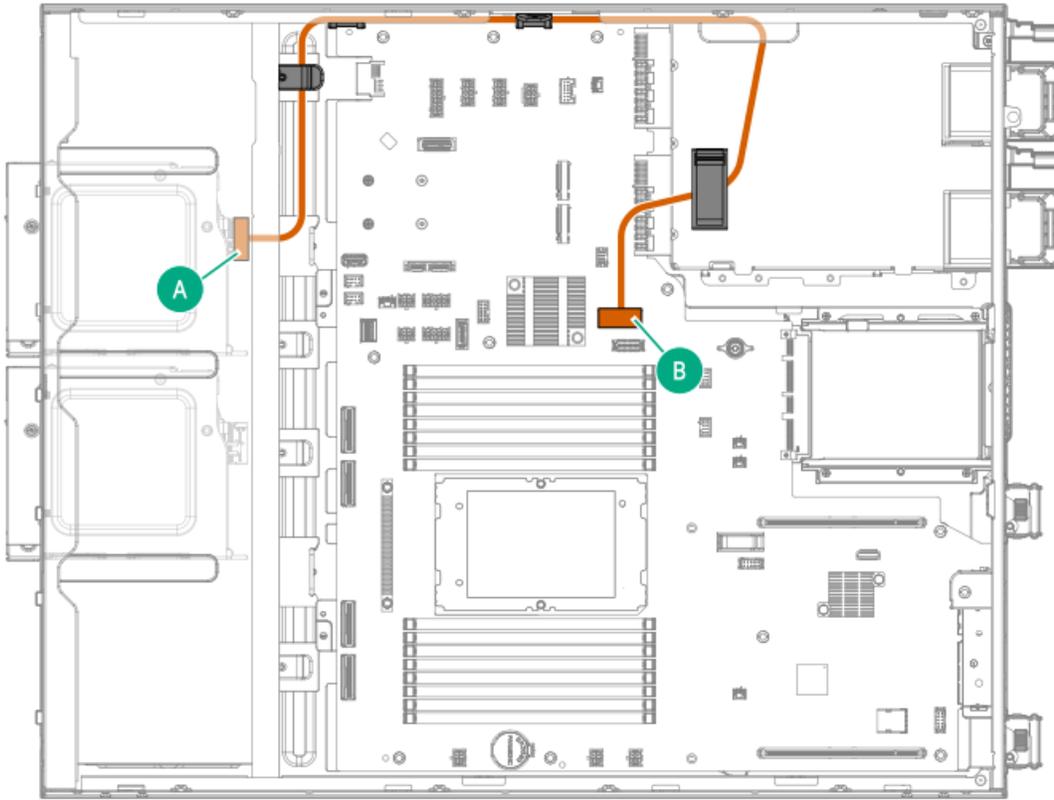
Cable part number	Color	From	To
P45301-001	Orange	Box 2 4 LFF drive backplane	Type-p controller port 1
	Blue	Box 1 4 LFF drive backplane	

## 8 SFF drive controller cabling

### 8 SFF hot-plug drive: Onboard SATA cabling

- Box 1

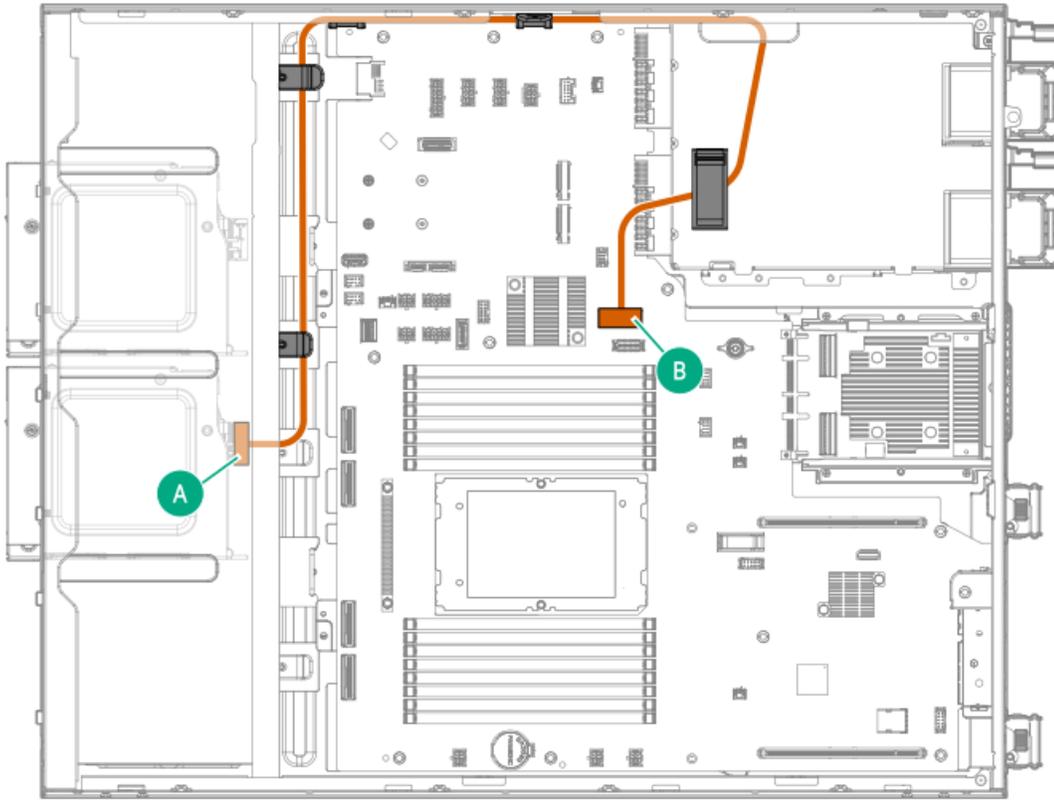




Cable part number	Color	From	To
P60270-001	Orange	Box 1 8 SFF drive backplane	SlimSAS x8 port

- Box 2



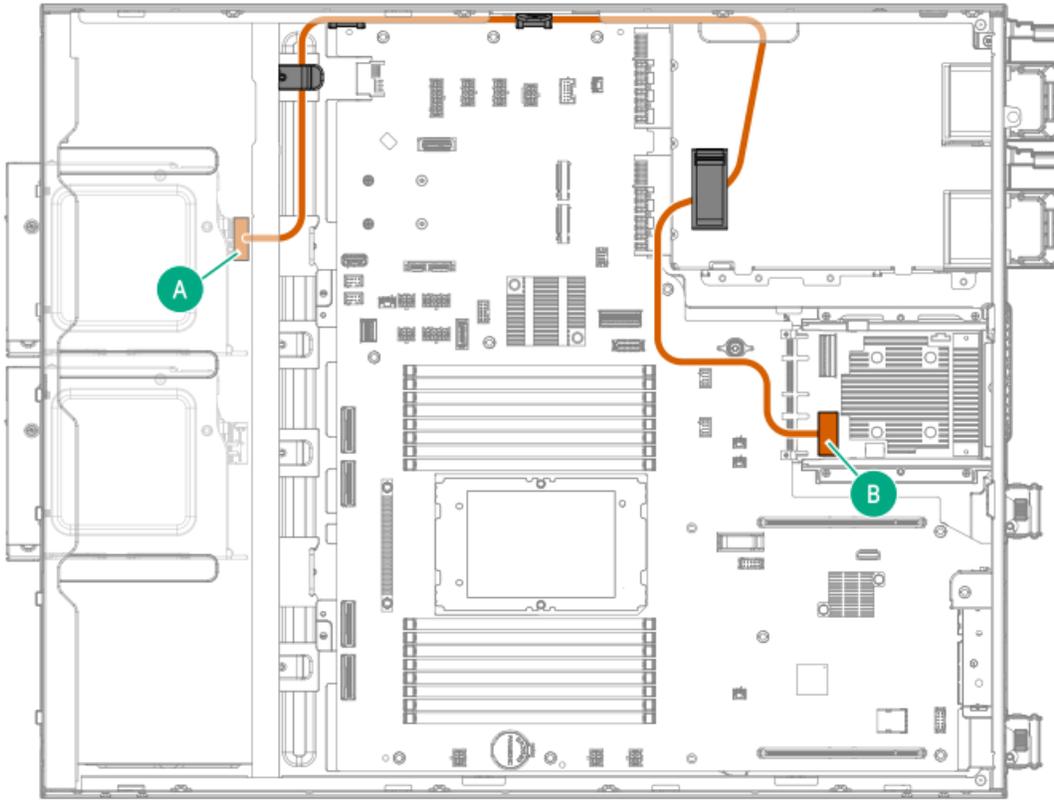


Cable part number	Color	From	To
P60270-001	Orange	Box 2 8 SFF drive backplane	SlimSAS x8 port

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

- Box 1

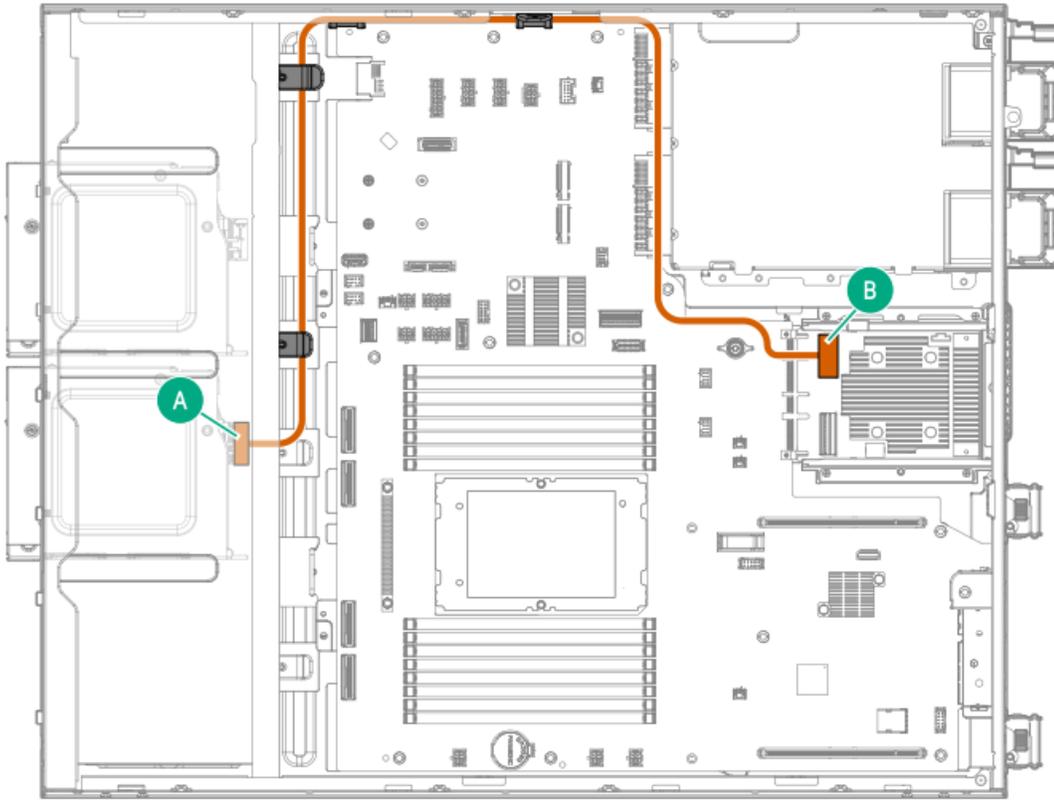




Cable part number	Color	From	To
P60270-001	Orange	Box 1 8 SFF drive backplane	Type-o controller port 1

- Box 2



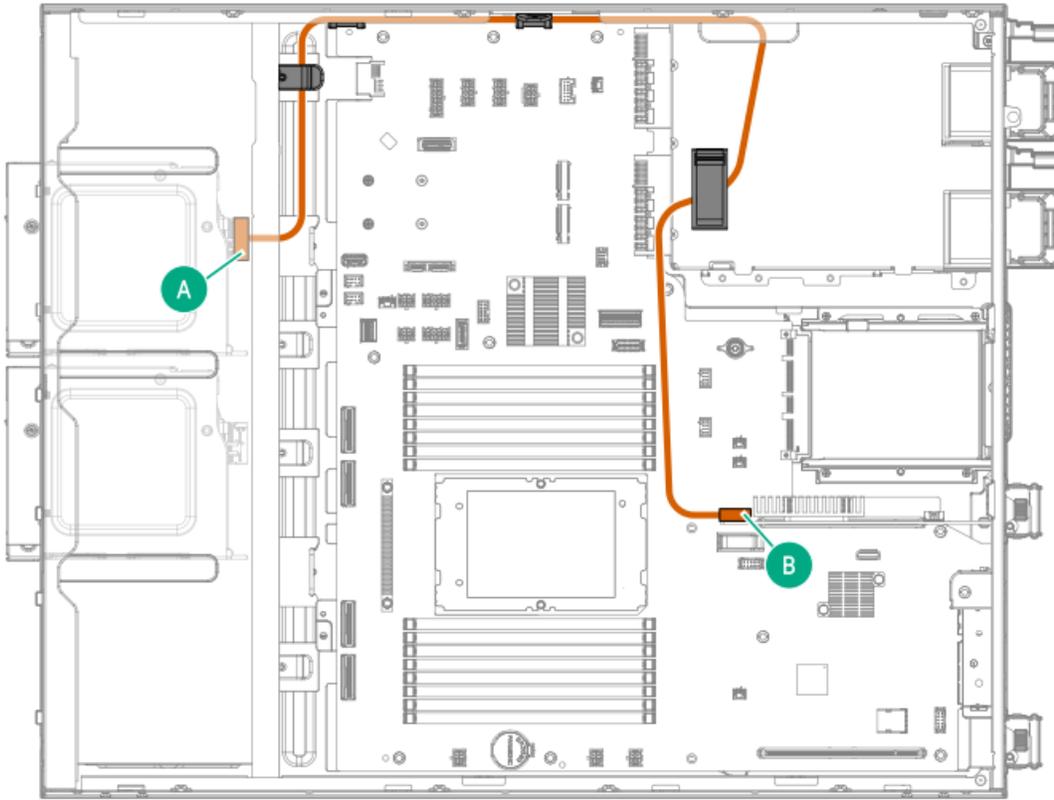


Cable part number	Color	From	To
P60270-001	Orange	Box 2 8 SFF drive backplane	Type-o controller port 2

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

- Box 1





Cable part number	Color	From	To
P60271-001	Orange	Box 1 8 SFF drive backplane	Type-p controller port 1

- Box 2



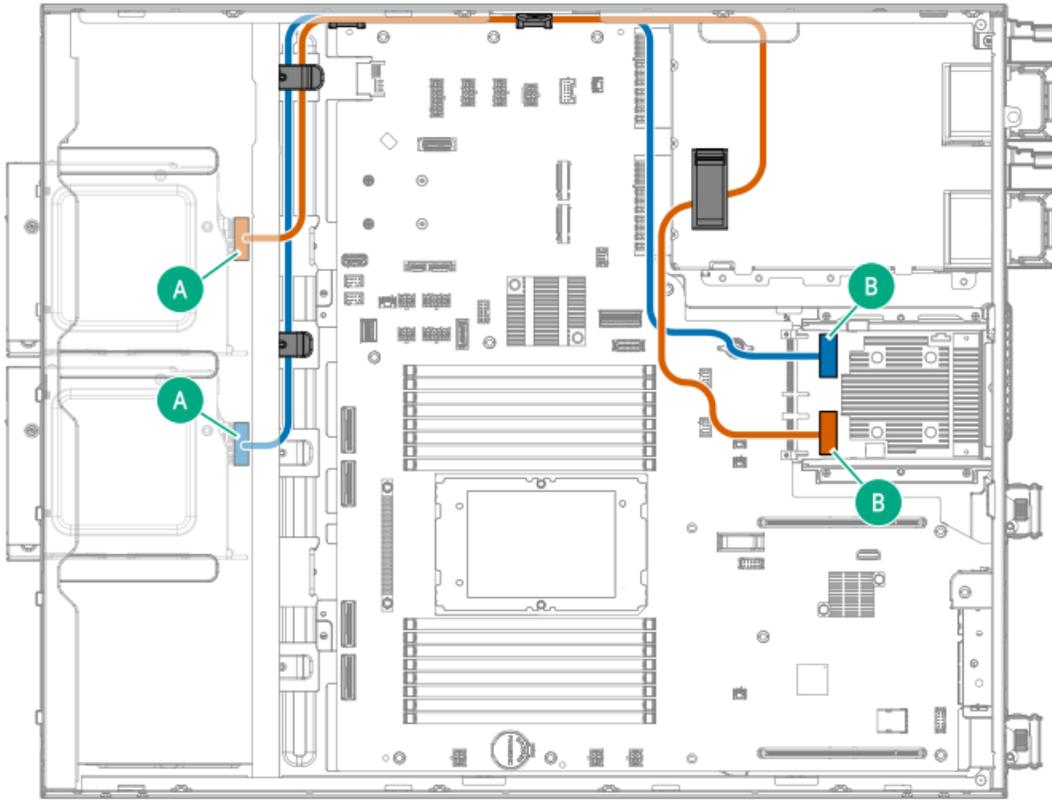


Cable part number	Color	From	To
P60271-001	Orange	Box 2 8 SFF drive backplane	Type-p controller port 2

## 16 SFF drive controller cabling

16 SFF hot-plug drive: Type-o controller cabling

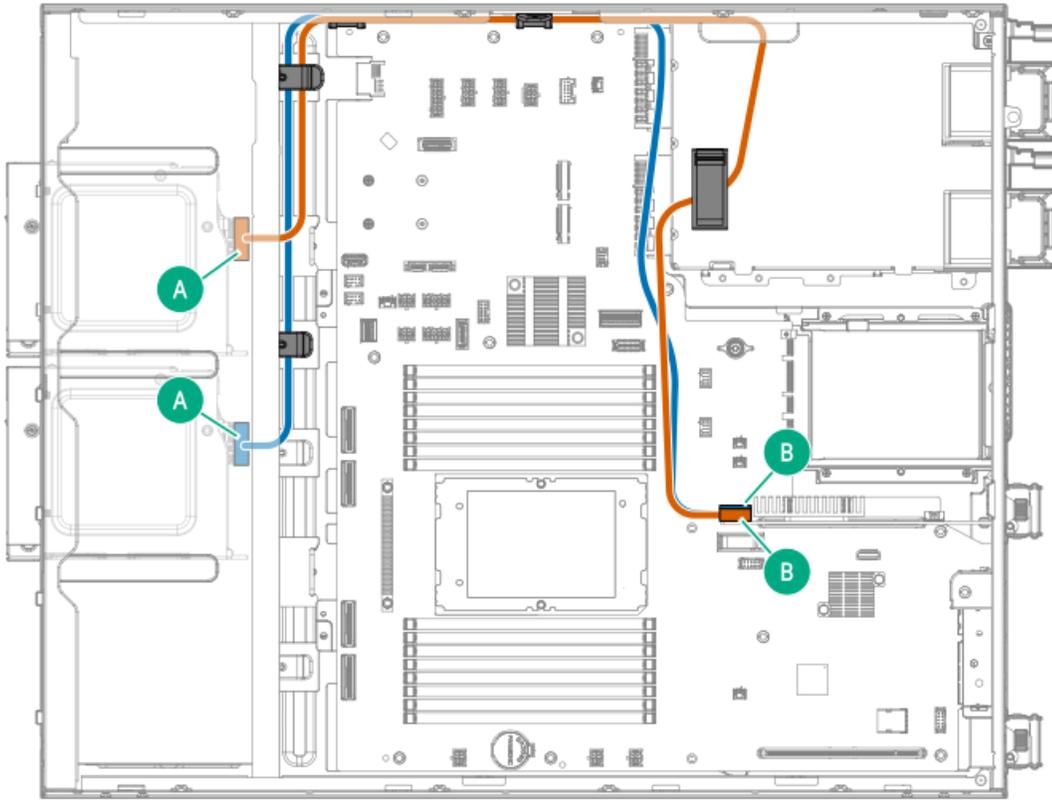




Cable part number	Color	From	To
P60270-001	Orange	Box 1 8 SFF drive backplane	Type-o controller port 1
P60270-001	Blue	Box 2 8 SFF drive backplane	Type-o controller port 2

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

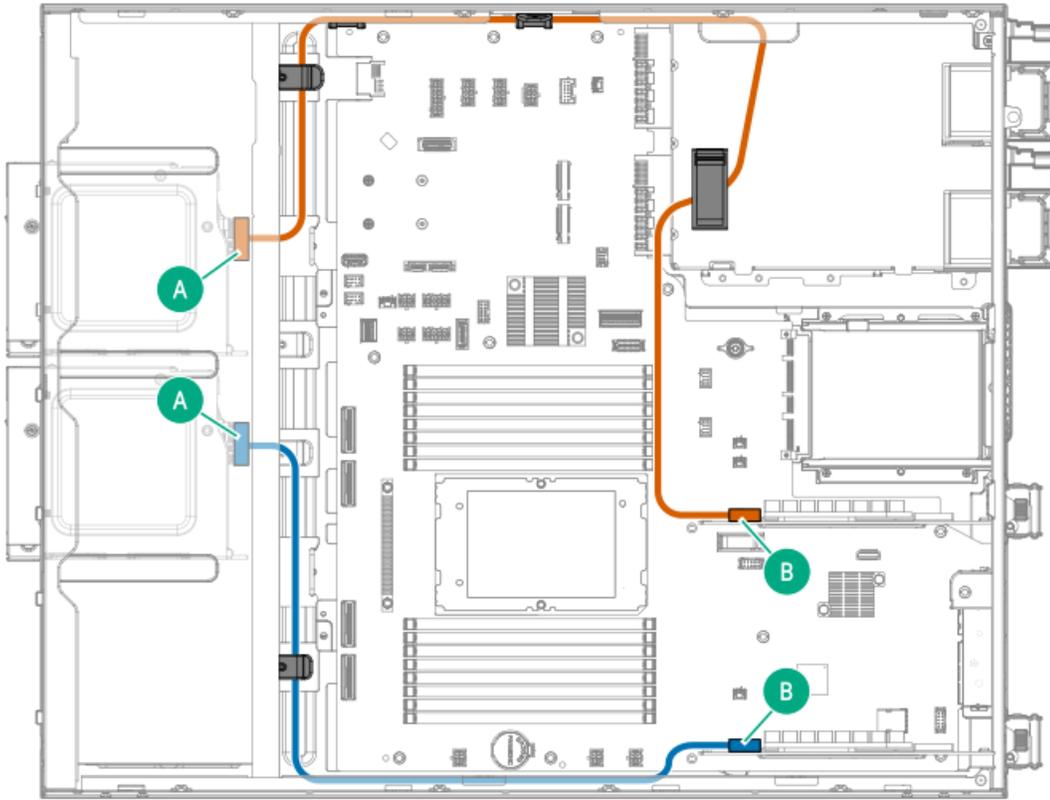




Cable part number	Color	From	To
P60271-001	Orange	Box 1 8 SFF drive backplane	Type-p controller port 1
P60271-001	Blue	Box 2 8 SFF drive backplane	Type-p controller port 2

**16 SFF hot-plug drive: Slots 1 and 4 type-p controllers cabling**



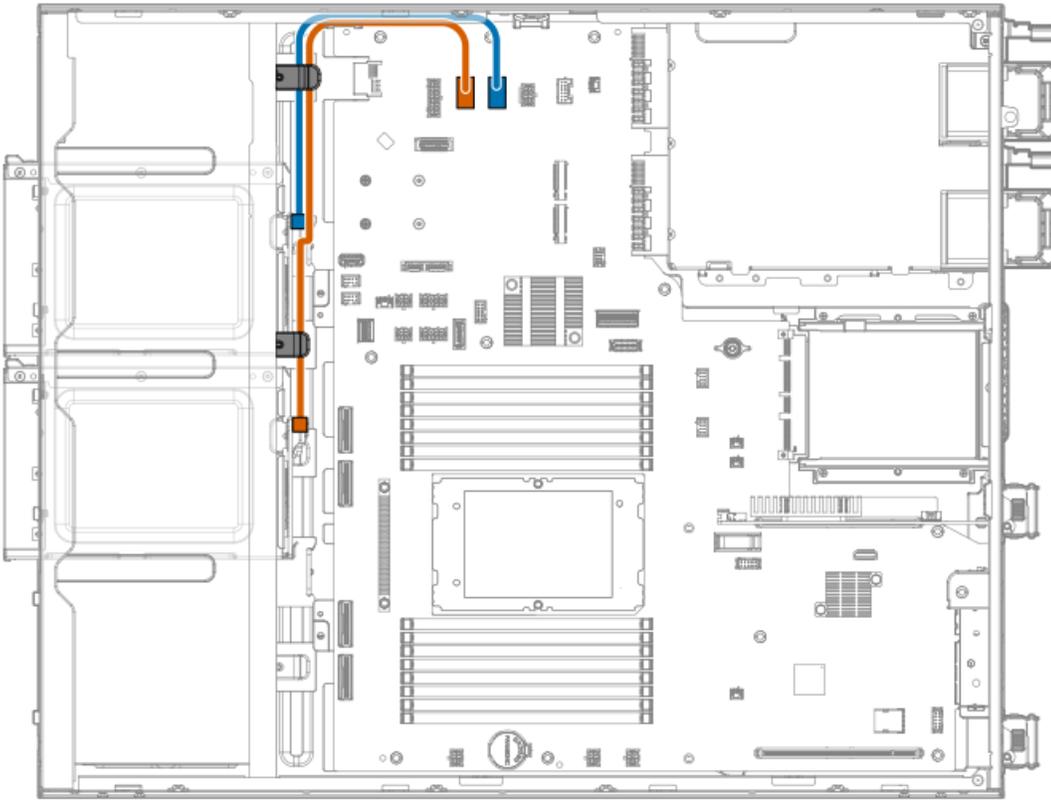


Cable part number	Color	From	To
P60271-001	Orange	Box 1 8 SFF drive backplane	Slot 4 type-p controller port 1
P60271-001	Blue	Box 2 8 SFF drive backplane	Slot 1 type-p controller port 1

## Drive power cabling

### LFF hot-plug drive power cabling

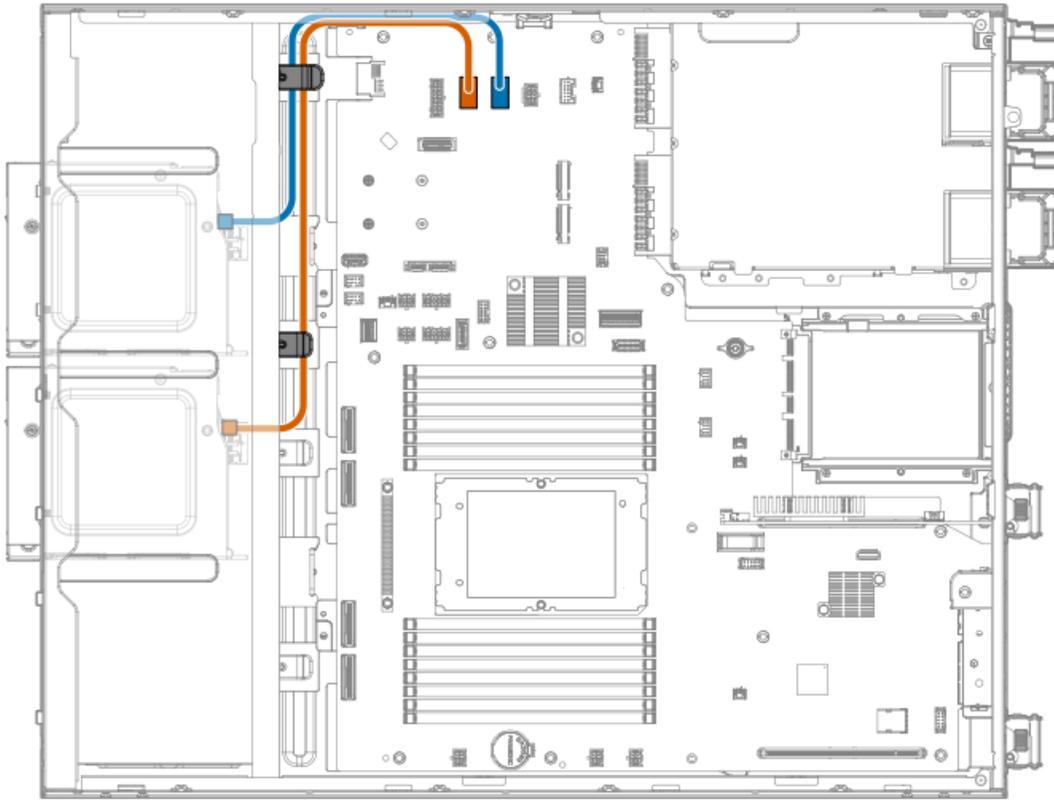




Cable part number	Color	From	To
P60266-001	Orange	Box 2 drive backplane	Drive box 2 power connector
	Blue	Box 1 drive backplane	Drive box 1 power connector

**SFF hot-plug drive power cabling**

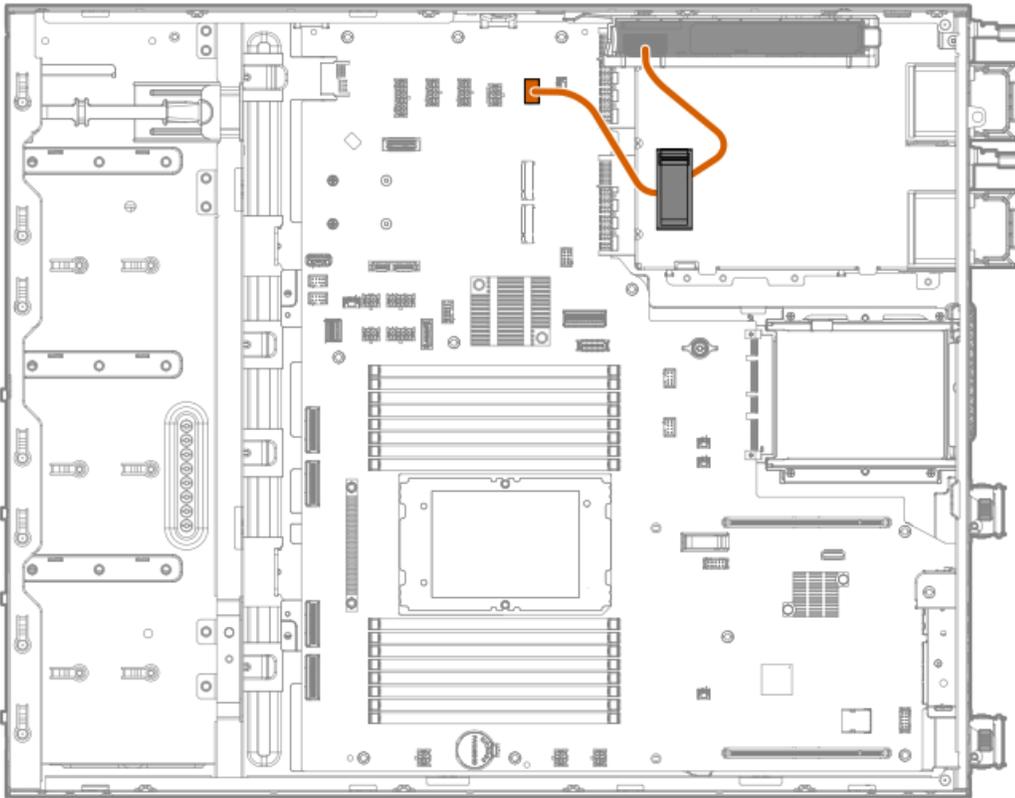




Cable part number	Color	From	To
P60267-001	Orange	Box 2 drive backplane	Drive box 2 power connector
	Blue	Box 1 drive backplane	Drive box 1 power connector

## Energy pack cabling





Option part number	Color	From	To
P01367-B21	Orange	HPE Smart Storage Battery 96 W	Energy pack connector
P02381-B21		HPE Smart Storage Hybrid Capacitor	

## Storage controller backup power cabling

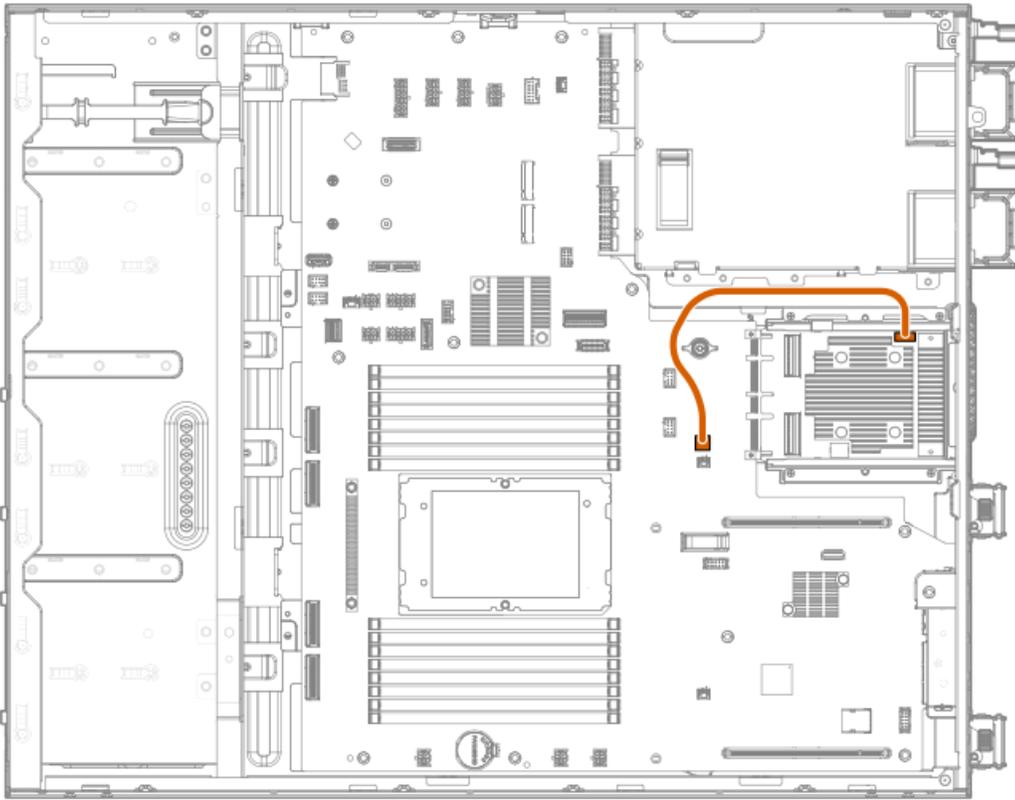
The exact route of the storage controller backup power cabling will depend on:

- The PCIe or OCP slot where the controller is installed
- The location of the storage controller backup power connector on the controller

Use the following diagrams for reference only.

### Slot 14: Type-o storage controller backup power cabling





**Color**

**From**

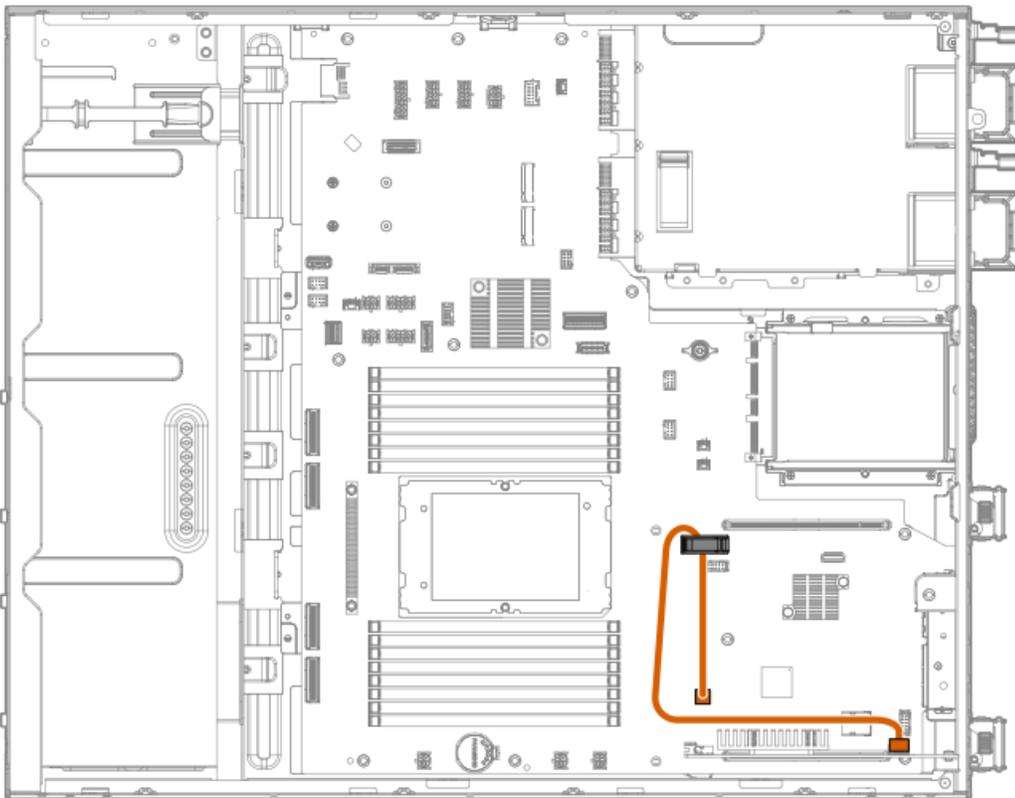
**To**

Orange

Slot 14 type-o storage controller

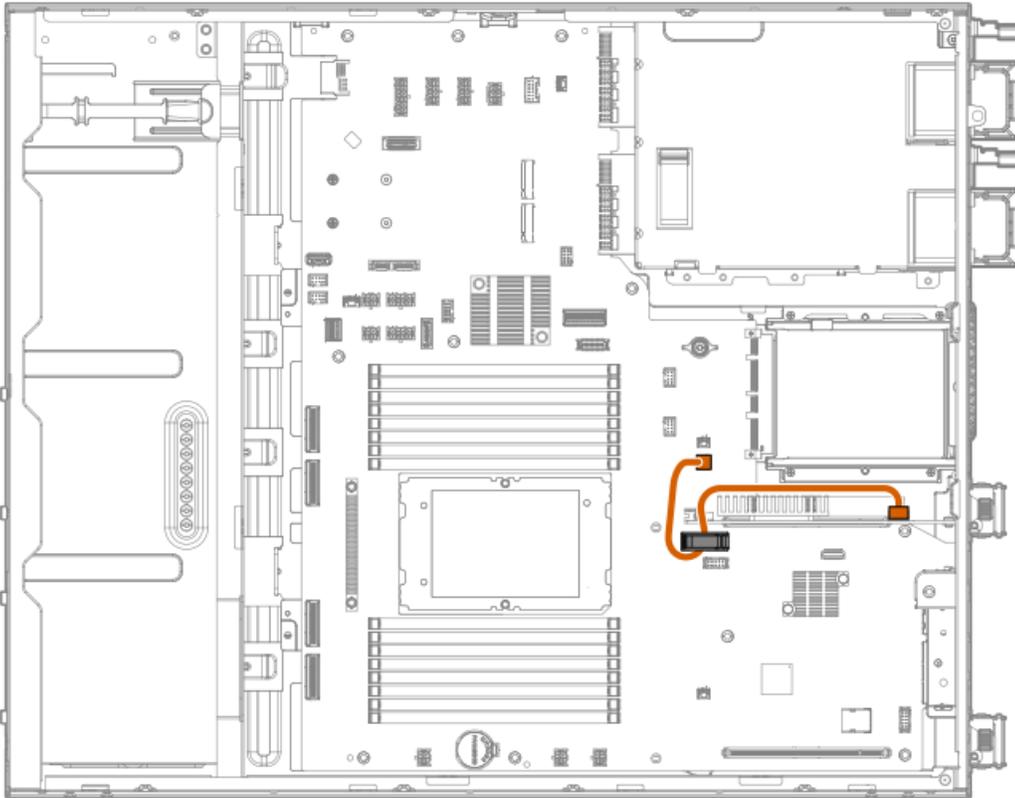
Slot 14 OROC storage backup power connector

### Slot 1: Type-p storage controller backup power cabling



Color	From	To
Orange	Slot 1 type-p storage controller	Slot 1 storage controller backup power connector

### Slot 4: Type-p storage controller backup power cabling



Color	From	To
Orange	Slot 4 type-p storage controller	Slot 4 storage controller backup power connector

## Media device cabling

### Subtopics

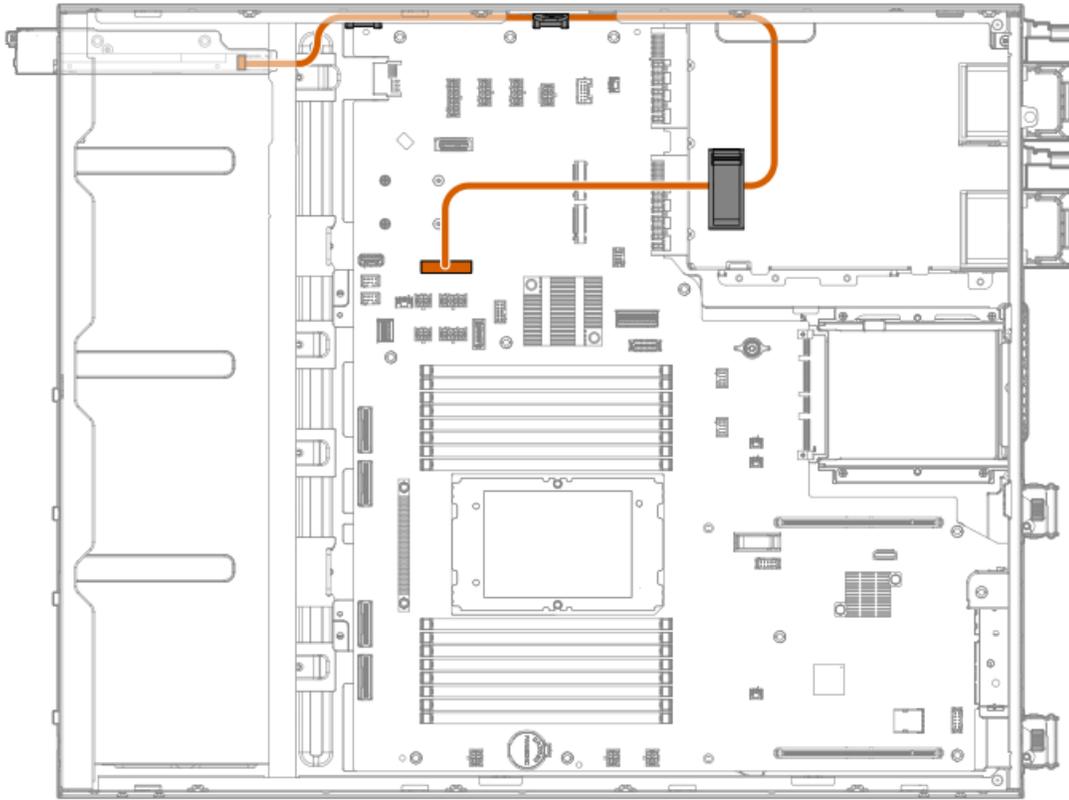
[Optical drive cabling](#)

[Internal USB RDX docking station cabling](#)

[SAS LTO tape drive cabling](#)

## Optical drive cabling



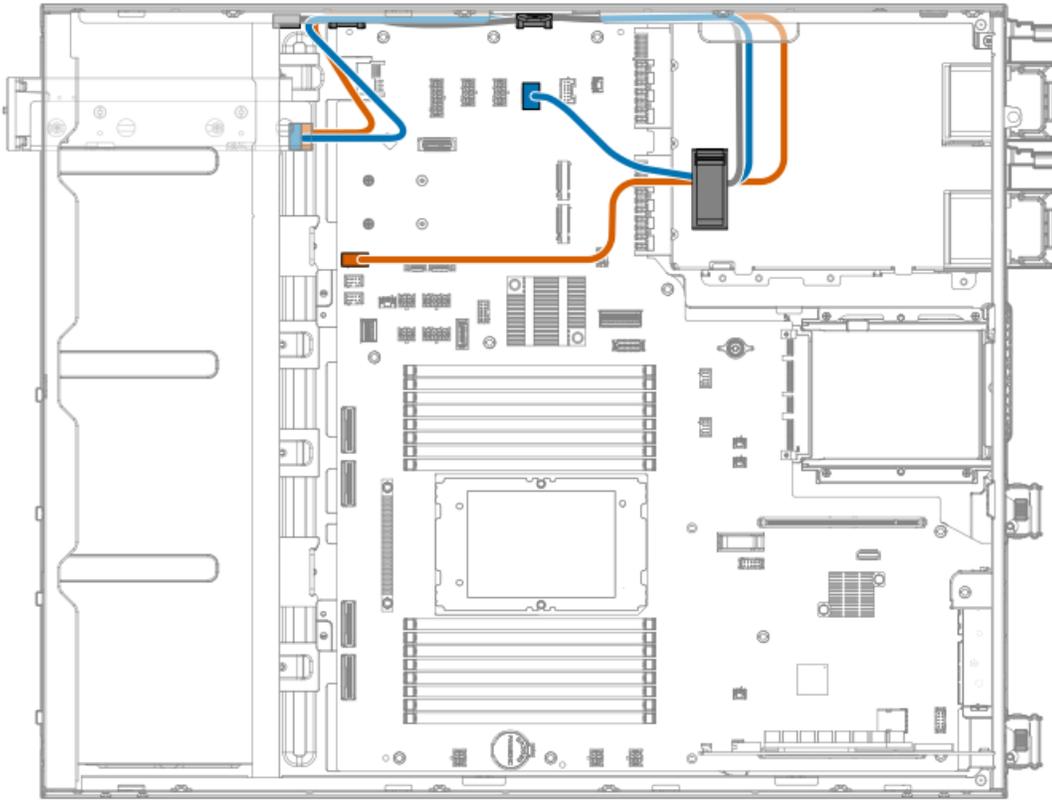


Cable part number	Color	From	To
756914-001 <sup>1</sup>	Orange	Optical drive	Optical drive SATA-power connector

<sup>1</sup> This cable ships with the optical drive option.

## Internal USB RDX docking station cabling



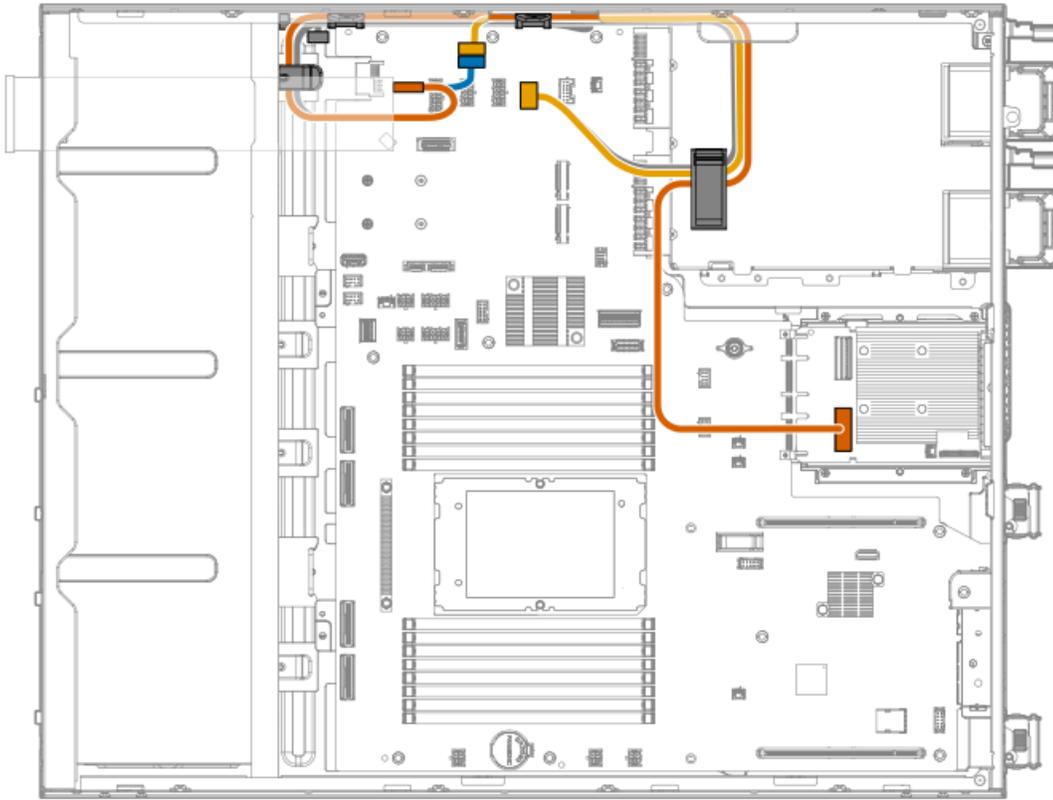


Cable part number	Color	From	To
876507-002	Orange	Internal USB RDX docking station	USB 3.2 Gen 1 port
P45303-001	Blue	LTO/RDX power splitter cable	Media drive power connector

## SAS LTO tape drive cabling

### Type-o controller cabling



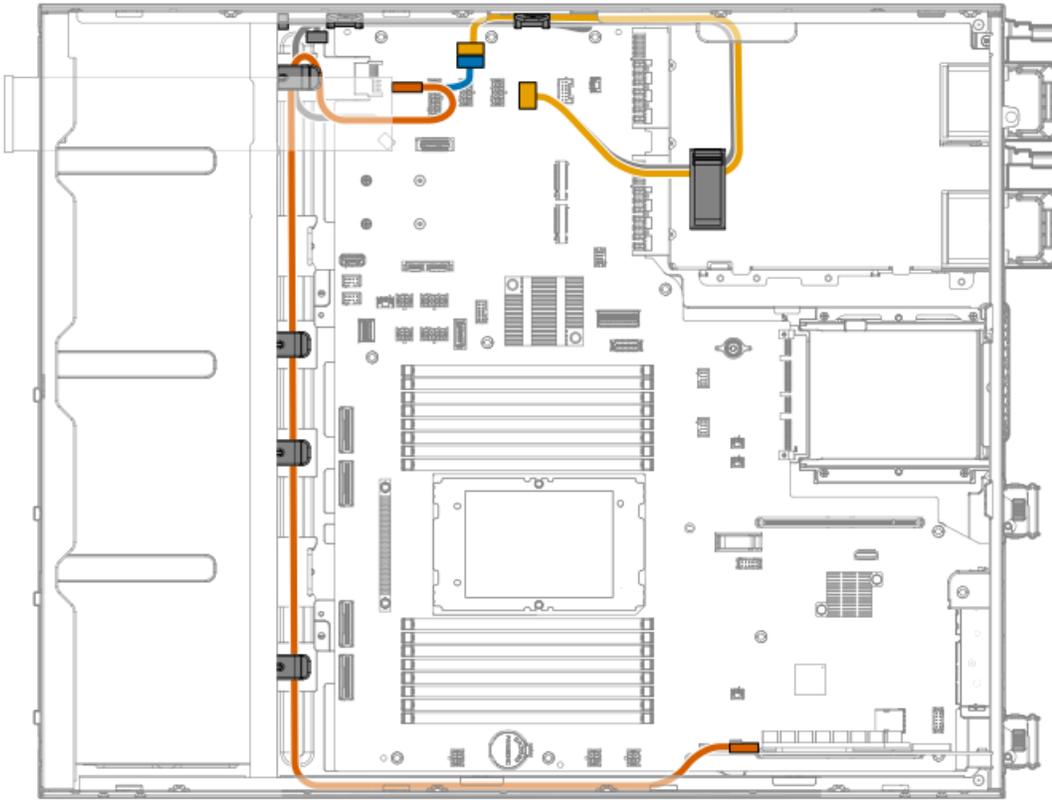


Cable part number	Cable color	From	To
P49007-001	Orange	SAS LTO tape drive	Slot 14 Port 1
	Blue		LTO/RDX power splitter cable
P45303-001	Gold	SAS LTO tape drive SAS-power cable	Media drive power connector

### Type-p controller cabling

- Slot 1

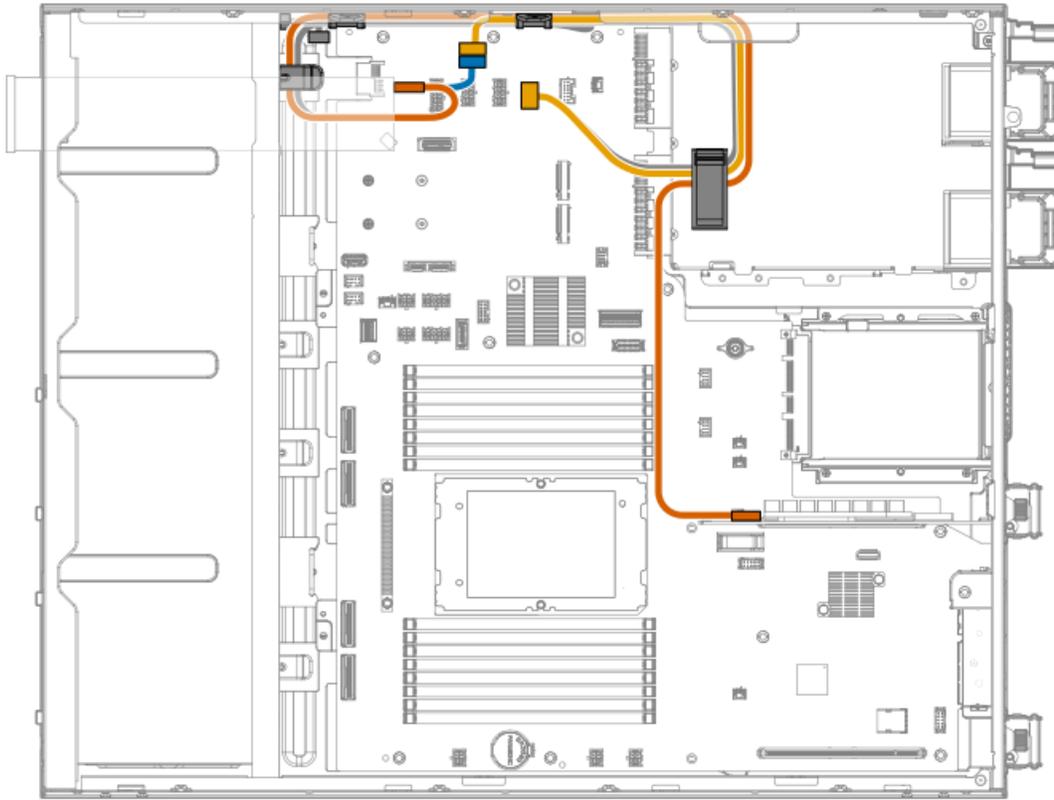




Cable part number	Cable color	From	To
P49006-001	Orange	SAS LTO tape drive	Slot 1 Port 1
	Blue		LTO/RDX power splitter cable
P45303-001	Gold	SAS LTO tape drive SAS-power cable	Media drive power connector

- Slot 4

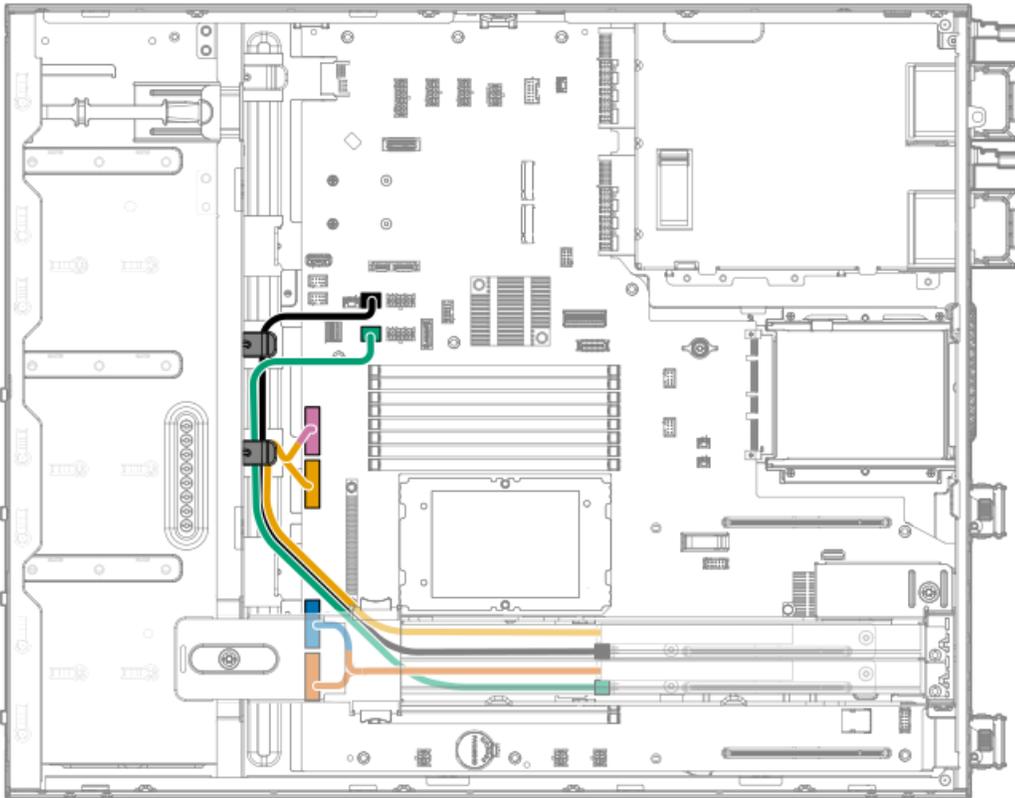




Cable part number	Cable color	From	To
P49006-001	Orange	SAS LTO tape drive	Slot 4 Port 1
	Blue		LTO/RDX power splitter cable
P45303-001	Gold	SAS LTO tape drive SAS-power cable	Media drive power connector

## Riser board cabling





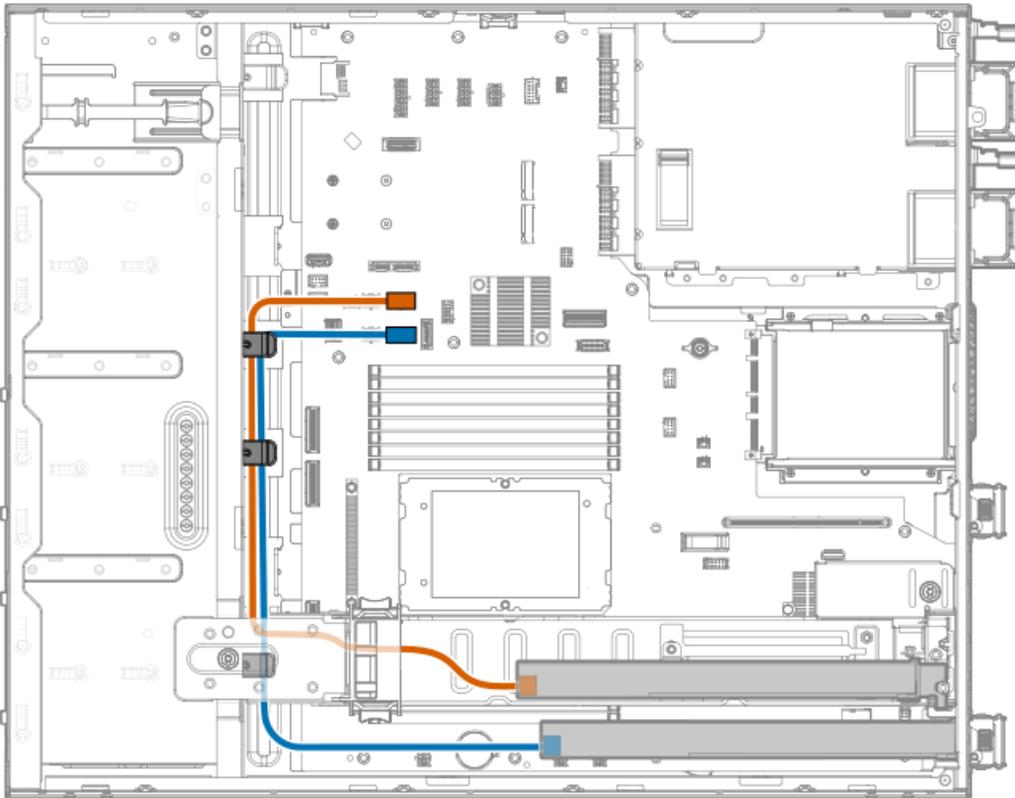
Cable part number	Color	From	To
P44002-001	Orange	PCIe Slot 2 riser board	MCIO port 1 for the riser slot 2 (PRIM) <sup>1</sup>
	Blue		MCIO port 2 for the riser slot 2 (SEC) <sup>1</sup>
	Gold	PCIe Slot 3 riser board	MCIO port 3 for the riser slot 3 (PRIM) <sup>1</sup>
	Pink		MCIO port 4 for the riser slot 3 (SEC) <sup>1</sup>
P60272-001	Green	PCIe Slot 2 riser board	Power connector for the riser slot 2
	Black	PCIe Slot 3 riser board	Power connector for the riser slot 3

<sup>1</sup> This enclosed text (PRIM / SEC) refers to the marker on the riser signal cable connector.

## GPU auxiliary power cabling

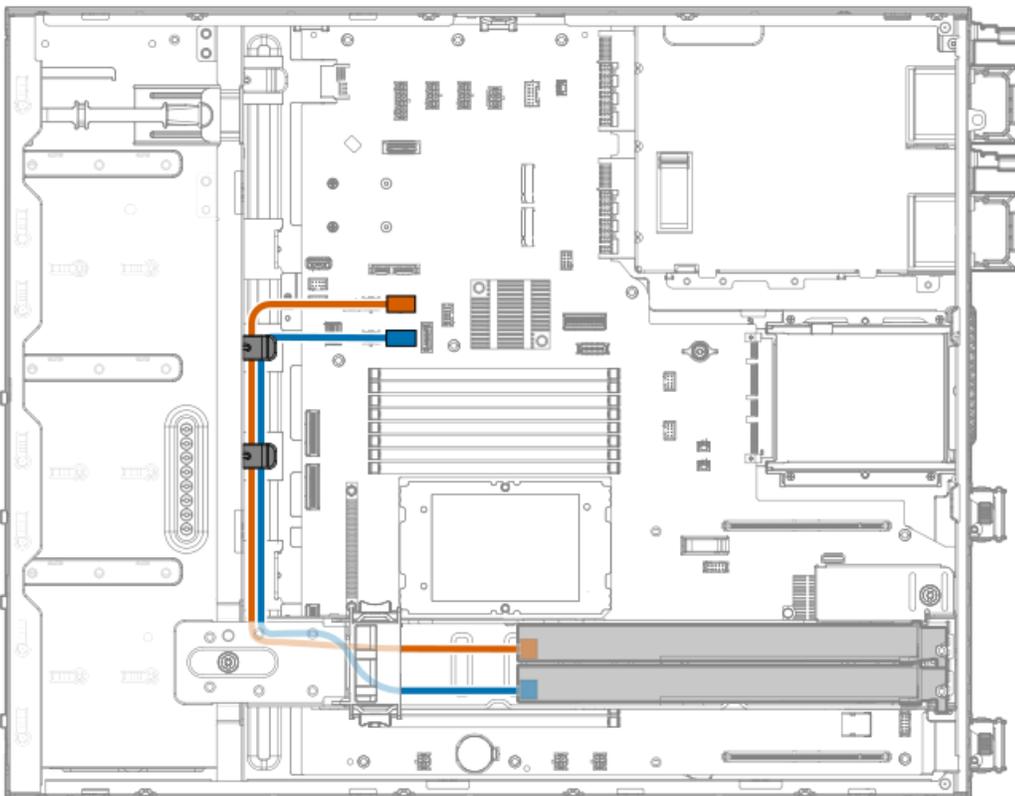
### PCIe 16-pin GPU auxiliary power cabling: Slots 1 and 2





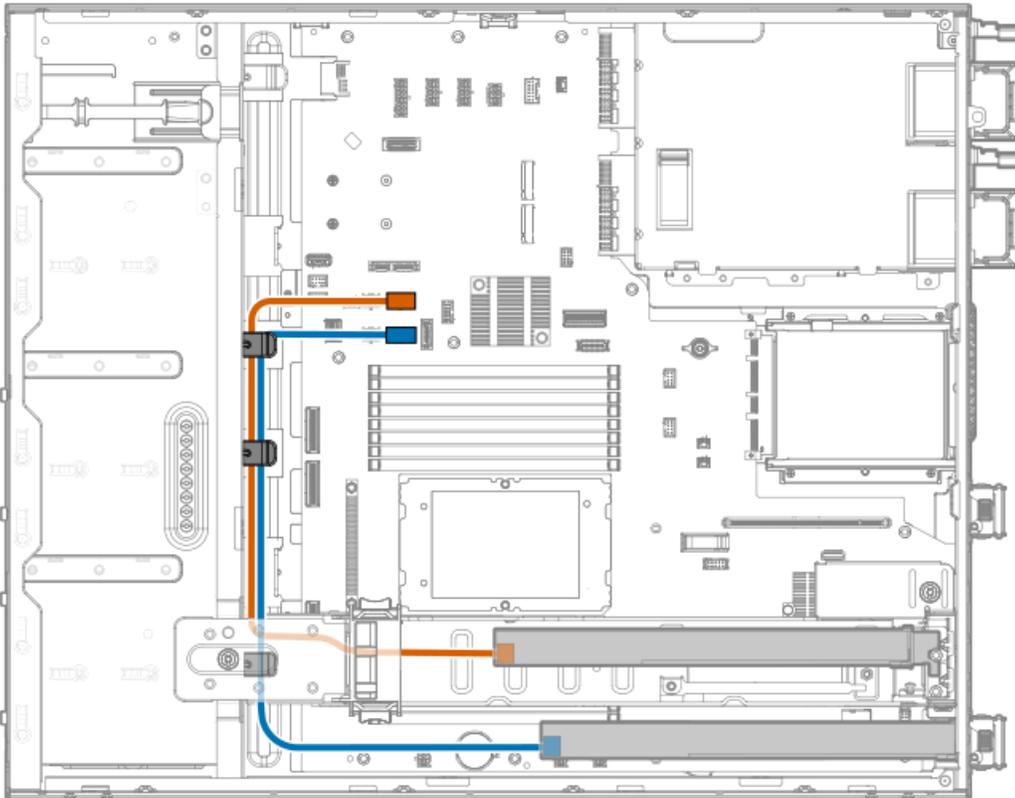
Cable part number	Color	From	To
P71242-001	Orange	Slot 2 GPU	GPU auxiliary power connector 1
P71242-001	Blue	Slot 1 GPU	GPU auxiliary power connector 2

### PCIe 16-pin GPU auxiliary power cabling: Slots 2 and 3



Cable part number	Color	From	To
P71242-001	Orange	Slot 3 GPU	GPU auxiliary power connector 1
P71242-001	Blue	Slot 2 GPU	GPU auxiliary power connector 2

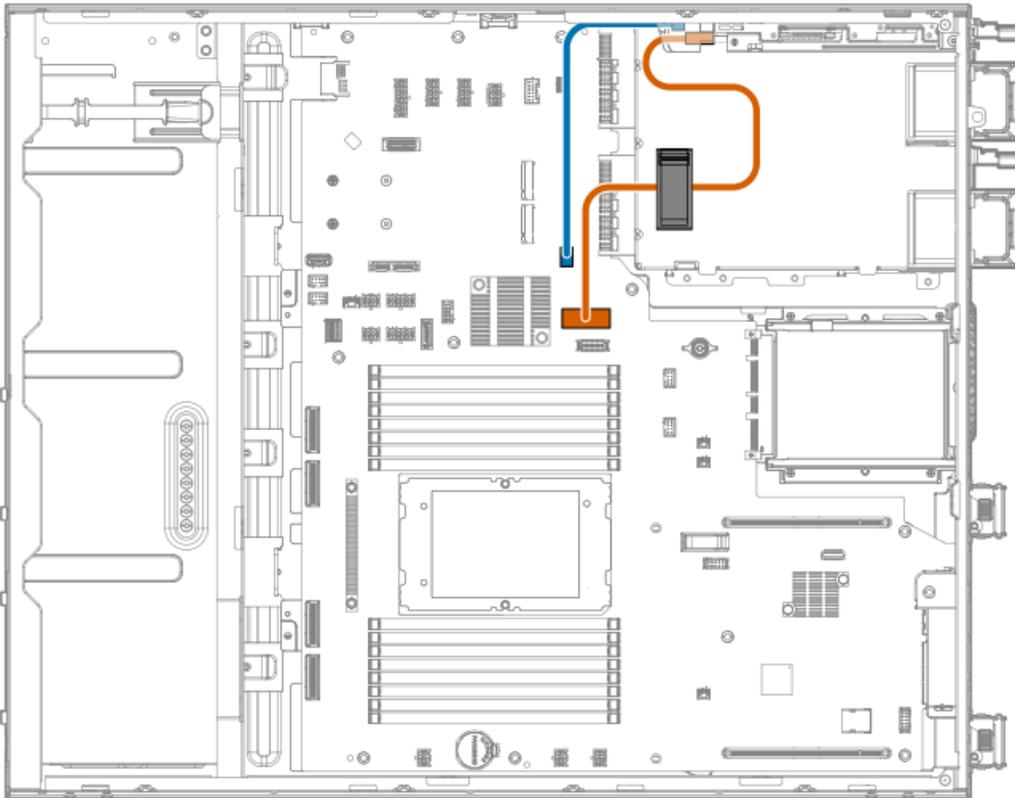
### PCIe 16-pin GPU auxiliary power cabling: Slots 1 and 3



Cable part number	Color	From	To
P71242-001	Orange	Slot 3 GPU	GPU auxiliary power connector 1
P71242-001	Blue	Slot 1 GPU	GPU auxiliary power connector 2

### HPE NS204i-u Boot Device cabling



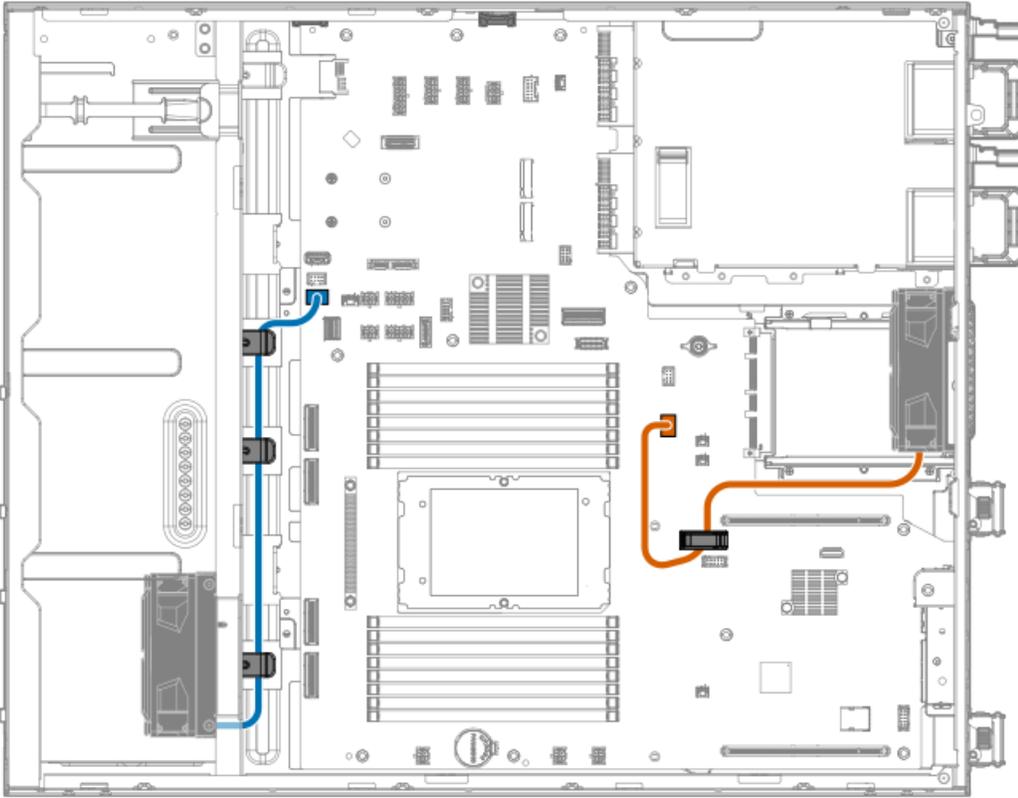


Cable part number	Color	From	To
P54087-001	Orange	Boot device signal connector	SlimSAS x8 port
P54088-001	Blue	Boot device power connector	NS204i-u power connector

## Fan cabling

- Default system and PCI fans

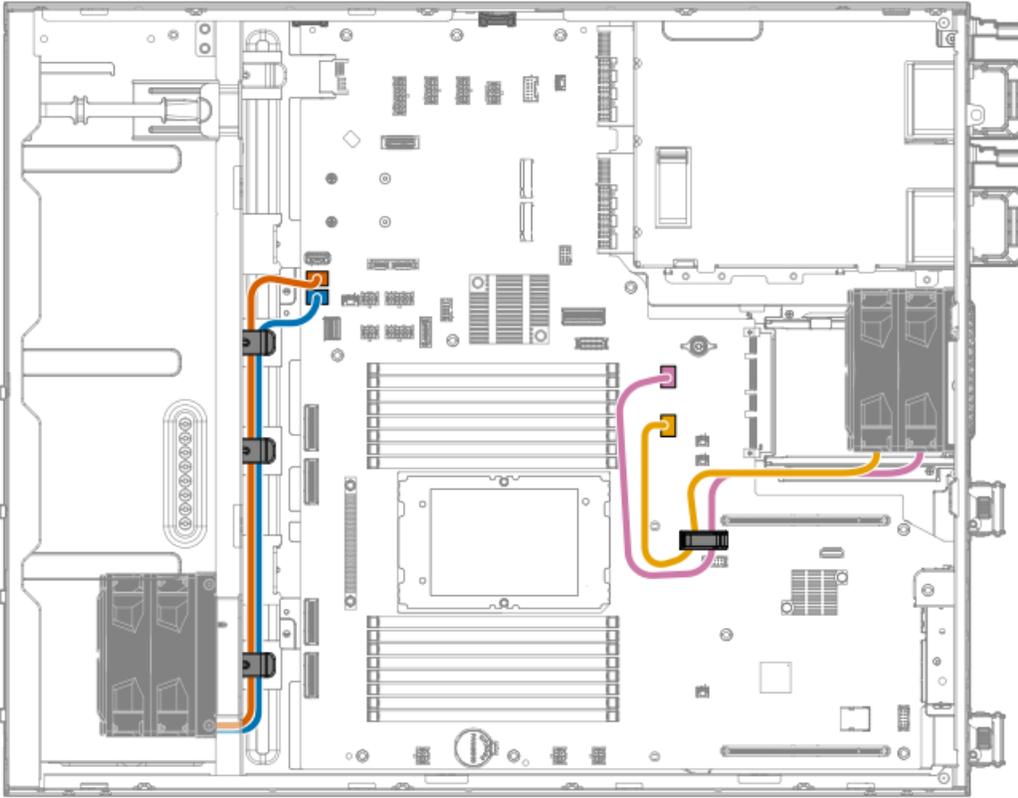




Option part number	Color	From	To
P49989-001	Orange	Default system fan	Fan connector 3
	Blue	Default PCI fan	Fan connector 1

- Redundant system and PCI fans

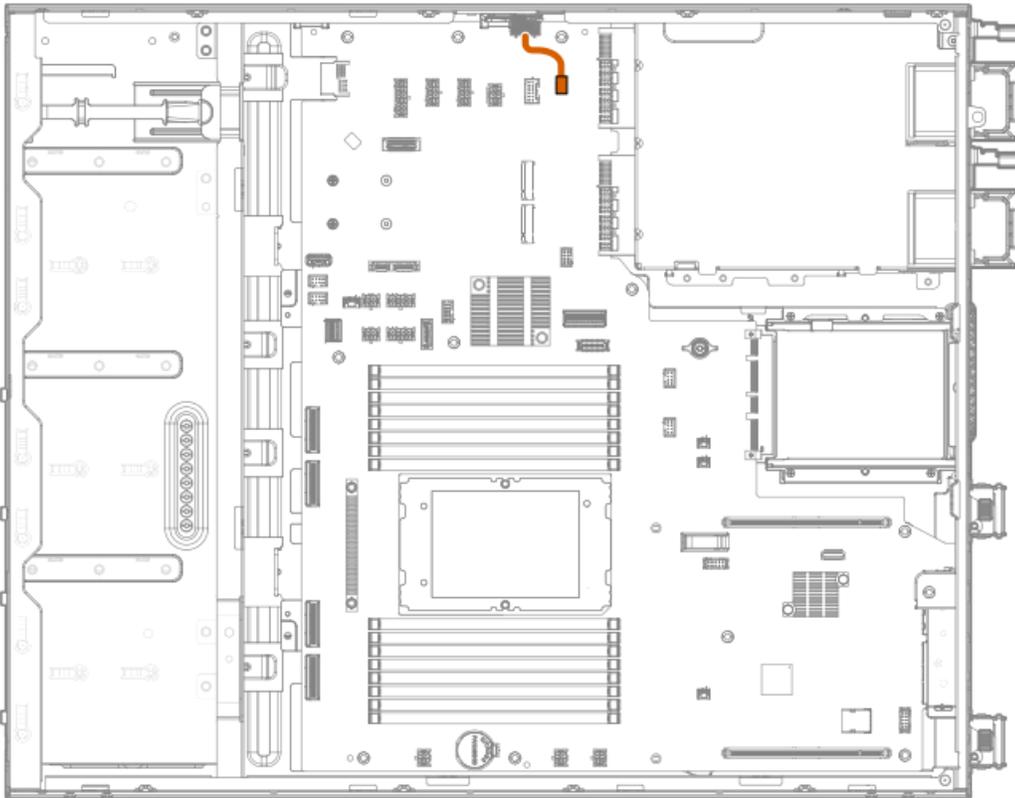




Option part number	Color	From	To
P49986-001	Orange	Redundant PCI fan	Fan connector 2
	Blue		Fan connector 1
	Gold	Redundant system fan	Fan connector 3
	Pink		Fan connector 4

### Chassis intrusion detection switch cabling

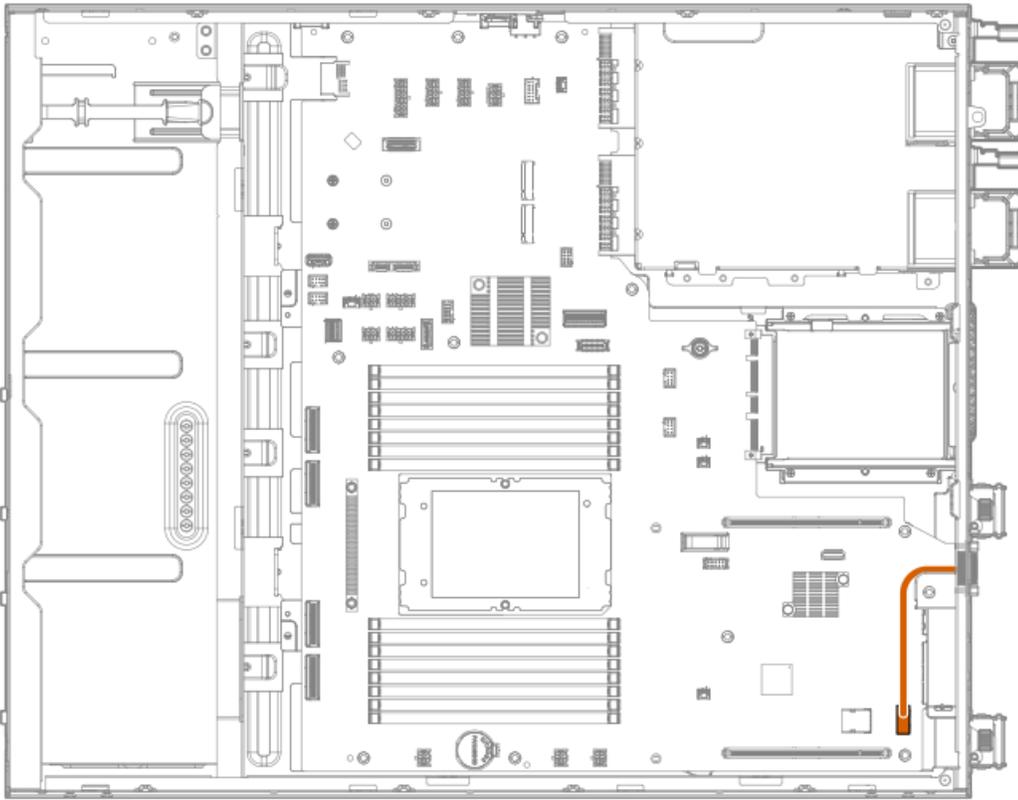




Cable part number	Color	From	To
P47751-001	Orange	Chassis intrusion detection switch	Chassis intrusion detection switch connector

### Serial port cabling

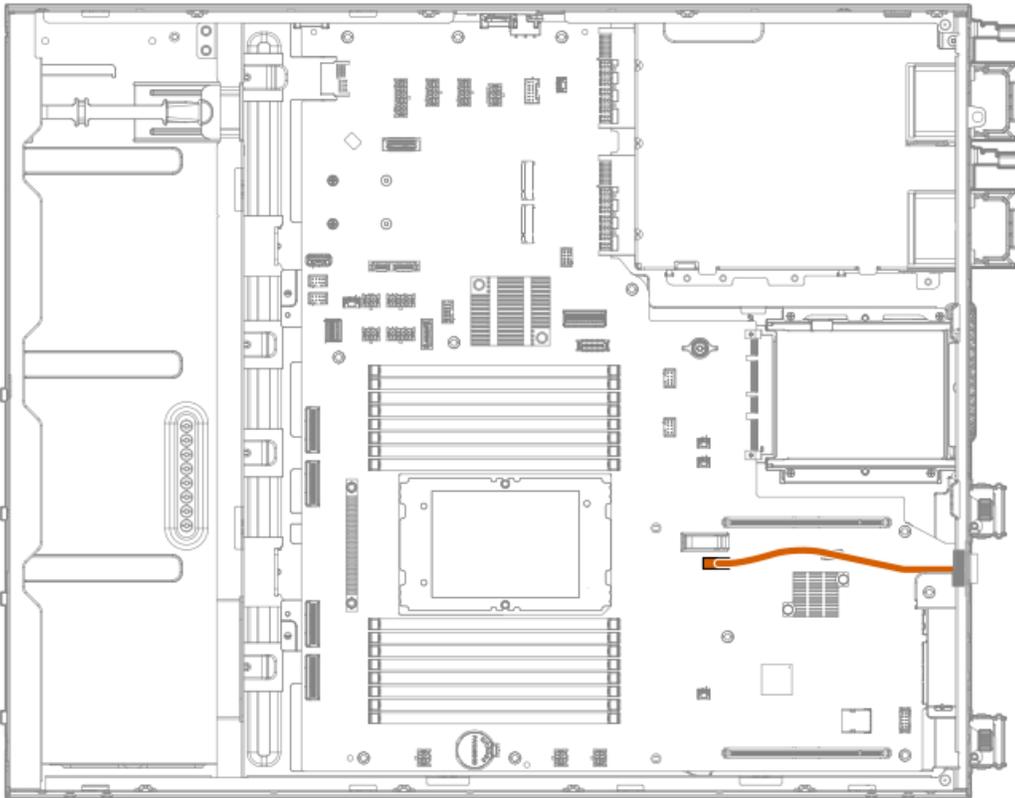




Cable part number	Color	From	To
873747-001	Orange	Serial port connector	Serial port

### VGA port cabling

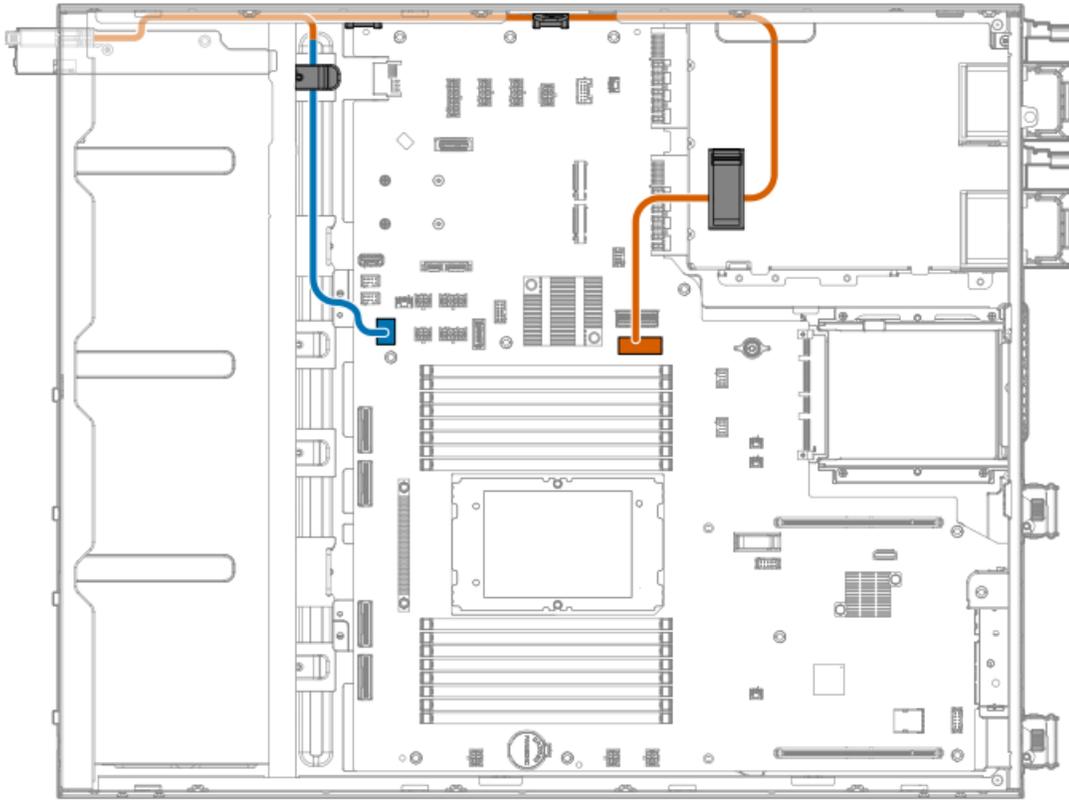




Cable part number	Color	From	To
P53987-001	Orange	VGA port connector	VGA port

## Front I/O cabling





Cable part number	Color	From	To
P45292-001	Orange	DisplayPort 1.1a	DisplayPort connector
	Blue	<ul style="list-style-type: none"> <li>• Front LEDs and buttons</li> <li>• iLO service port</li> <li>• USB 3.2 Gen 1</li> </ul>	Front I/O connector

## 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 the most recent changes, feature enhancements, and bug fixes, see the latest product release notes.

### Subtopics

[Updating firmware or system ROM](#)

[Configuring the server](#)

[Configuring storage controllers](#)

[Managing the HPE NS204i-u Boot Device](#)

[Deploying an OS](#)

[Configuring security](#)

[Server management](#)

[Managing Linux-based high performance compute clusters](#)

## Updating firmware or system ROM

To	Use
Download service packs	Service Pack for ProLiant (SPP) <a href="https://www.hpe.com/servers/spp/download">https://www.hpe.com/servers/spp/download</a>
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	iLO user guide <a href="https://www.hpe.com/support/ilo6">https://www.hpe.com/support/ilo6</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

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### Single server (GUI)

- Intelligent Provisioning  
<https://www.hpe.com/info/intelligentprovisioning/docs>
- iLO remote console or web interface  
<https://www.hpe.com/support/ilo6>
- UEFI System Utilities  
<https://www.hpe.com/info/UEFI-manuals>
- HPE Compute Ops Management  
<https://www.hpe.com/info/com-docs>

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### Single server (scripting)

- RESTful Interface Tool  
<https://www.hpe.com/support/restfulinterface/docs>
- Python iLO Redfish Library (python-iloest-library)  
<https://github.com/HewlettPackard/python-iloest-library>
- Scripting Tools for Windows Powershell  
<https://www.hpe.com/info/powershell/docs>
- iLO RESTful API  
<https://servermanagementportal.ext.hpe.com/docs/redfishservices/ilos/ilo6/>
- HPE Compute Ops Management API  
<https://developer.greenlake.hpe.com/>

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### Multiple servers (either UI or scripting)

- HPE OneView <sup>1</sup>  
<https://www.hpe.com/support/oneview-docs>
- HPE Compute Ops Management  
<https://www.hpe.com/info/com-docs>
  - **Server settings:** Define server-specific parameters such as firmware baselines, and then apply them to server groups.
  - **Server groups:** 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.

<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/ilo6>.

## Configuring storage controllers

Controller type	Documentation
HPE SR Gen10 controllers	<p>HPE Smart Array SR Controller Gen10 User Guide</p> <p><a href="https://www.hpe.com/support/SR-Gen10-UG">https://www.hpe.com/support/SR-Gen10-UG</a></p>
HPE MR Gen11 controllers	<p>HPE MR Gen11 Controller User Guide</p> <p><a href="https://hpe.com/support/MR-Gen11-UG">https://hpe.com/support/MR-Gen11-UG</a></p> <p>Configuration guides:</p> <ul style="list-style-type: none"> <li>HPE MR Storage Administrator User Guide <a href="https://www.hpe.com/support/MRSA">https://www.hpe.com/support/MRSA</a></li> <li>HPE StorCLI User Guide <a href="https://www.hpe.com/support/StorCLI">https://www.hpe.com/support/StorCLI</a></li> </ul>
Intel VROC for HPE Gen11	<p>Intel Virtual RAID on CPU for HPE User Guide</p> <p><a href="https://hpe.com/support/VROC-Gen11-UG">https://hpe.com/support/VROC-Gen11-UG</a></p> <p>OS-specific configuration guides:</p> <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>

## Managing the HPE NS204i-u Boot Device

For more information on supported features and maintenance information for the HPE NS204i-u Boot Device, see the HPE NS204i-u Boot Device User Guide:

<https://www.hpe.com/support/NS204-UG>

## 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
Deploy an OS using HPE Compute Ops Management	HPE Compute Ops Management User Guide <a href="https://www.hpe.com/info/com-docs">https://www.hpe.com/info/com-docs</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>
Deploy an OS using iLO virtual media	iLO user guide <a href="https://www.hpe.com/support/ilo6">https://www.hpe.com/support/ilo6</a>
Configure the server to boot from a PXE server	UEFI System Utilities User Guide for HPE ProLiant Gen11 Servers and HPE Synergy <a href="https://www.hpe.com/support/UEFIGen11-UG-en">https://www.hpe.com/support/UEFIGen11-UG-en</a>
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>

## 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 6 Security Technology Brief <a href="https://www.hpe.com/support/ilo6-security-en">https://www.hpe.com/support/ilo6-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 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>

## Server management

To monitor	See
Single server	HPE iLO <a href="https://www.hpe.com/support/ilo6">https://www.hpe.com/support/ilo6</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 Gen11 server products in the following documents:

- Troubleshooting Guide for HPE ProLiant Gen11 servers provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance.

<https://www.hpe.com/info/gen11-troubleshooting>

- Integrated Management Log Messages for HPE ProLiant Gen10, Gen10 Plus, and Gen11 servers and HPE Synergy provides IML messages and associated troubleshooting information to resolve critical and cautionary IML events.

<https://www.hpe.com/info/Troubleshooting-IML-en>

## System battery replacement

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

## Subtopics

### System battery information

#### Removing and replacing the system battery

## System battery information

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



### **WARNING**

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

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

## Removing and replacing the system battery

### Prerequisites

Before you perform this procedure, make sure that you have a spudger or any small prying tool available.

### About this task



### **IMPORTANT**

After replacing the system battery and applying power, wait for 10 minutes before powering on the server. This lead time is required for the server to reset and reinitialize the iLO configuration settings stored in SRAM.



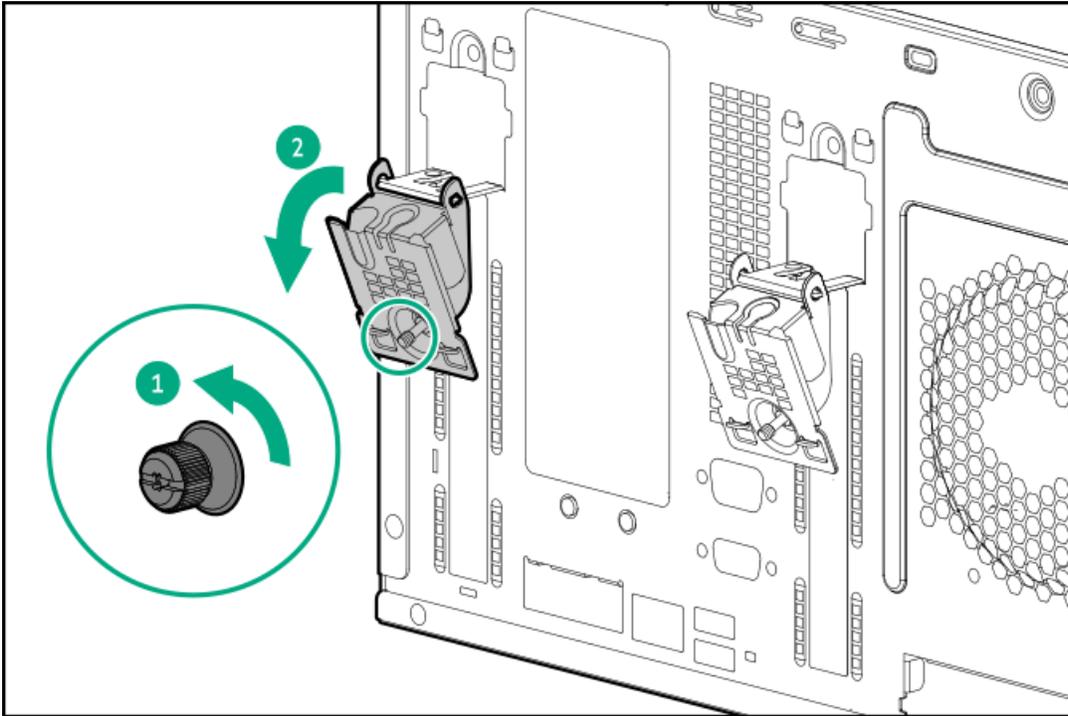
### **CAUTION**

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](#).

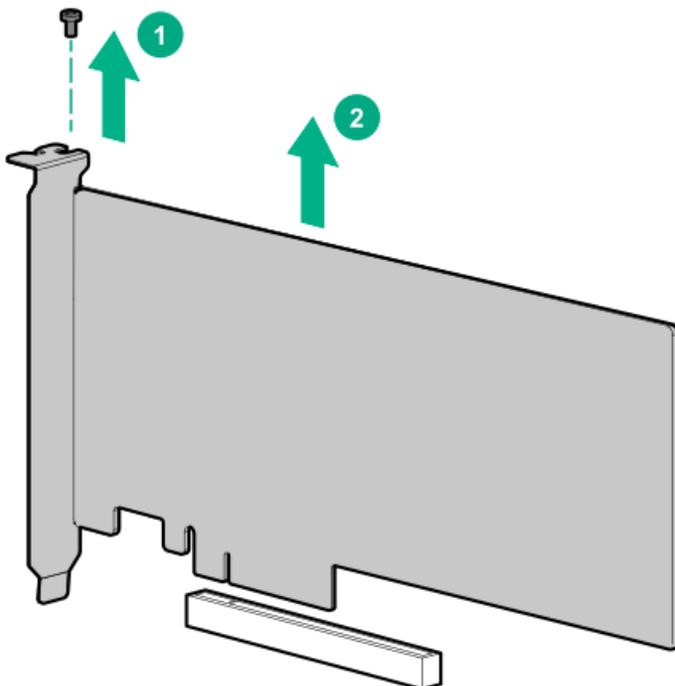
## Procedure

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.

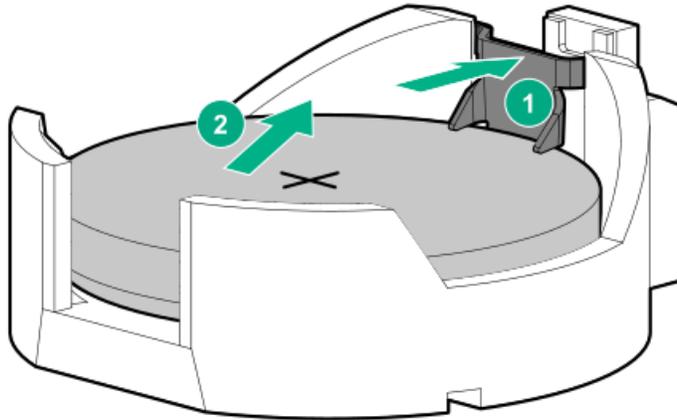
4. Do one of the following:
  - If the server is in tower mode, place the server on a flat, level surface with the access panel facing up.
  - If the server is in rack mode, remove the server from the rack.
5. Remove the access panel.
6. Remove the system air baffle.
7. If installed, remove the riser cage.
8. If installed, remove the full-height full-length expansion card from the PCIe slot 1, do the following:
  - a. Open the riser slot retainer.



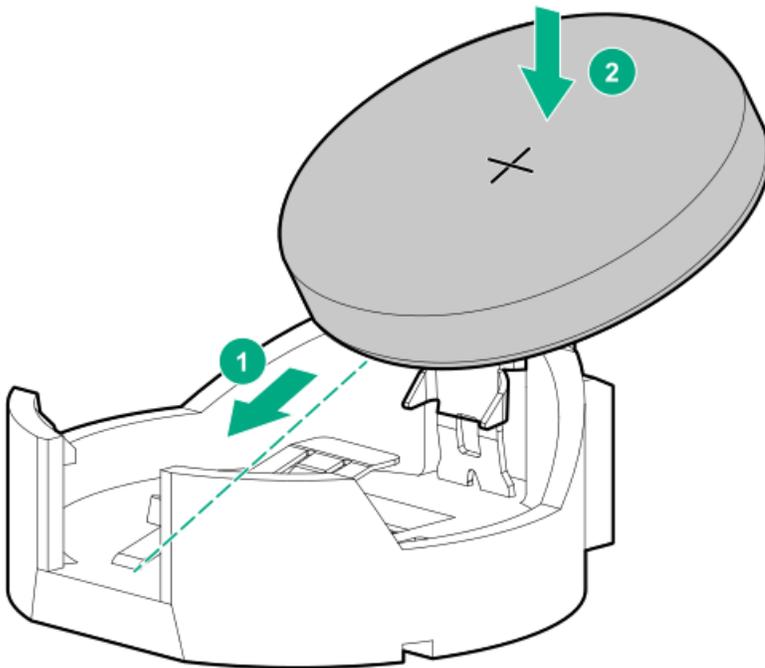
- b. Remove the expansion card.



9. Remove the system battery:
  - a. Use a small flat-bladed, nonconductive tool to press the battery latch.
  - b. Remove the system battery from the socket.



10. Install the system battery:
  - a. With the side of the battery showing the "+" sign facing up, insert the battery into the socket.
  - b. Press the system battery down until it clicks into place.



11. Install the full-height full-length expansion card.
12. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.
13. Install the riser cage.
14. Install the system air baffle.
15. Install the access panel.



16. Do one of the following:
  - Orient the server back to tower mode.
  - Install the server into the rack.
17. Connect all peripheral cables to the server.
18. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
19. Wait for 10 minutes for the server to reset and reinitialize the iLO configuration settings stored in SRAM.



#### **IMPORTANT**

If iLO security is disabled, the configuration will not be restored. To restore the configuration manually, see <https://www.hpe.com/support/ilo6>.

20. Power up the server.
21. Properly dispose of the old battery.

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

## **Results**

The procedure is complete.

## **Safety, warranty, and regulatory information**

### **Subtopics**

[Regulatory information](#)

[Warranty information](#)

## **Regulatory information**

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

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

### **Additional regulatory information**

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

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

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

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

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

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



## 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

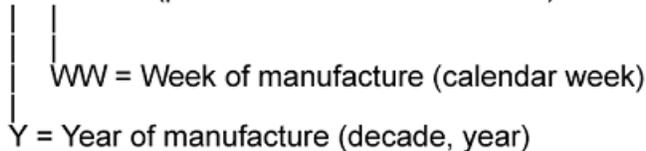
#### Local representative information Kazakh:

- **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-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

#### 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 (2953 ft) to a maximum of 3,050 m (10,000 ft).

The approved hardware configurations for this system are listed in the Extended Ambient Temperature Guidelines for Gen11 HPE ProLiant servers:

<https://www.hpe.com/support/ASHRAEGen11>

## Mechanical specifications

### Dimensions

Tower orientation	Value
Height (with chassis feet)	46.20 cm (18.19 in)
Depth (with front bezel)	58.70 cm (23.11 in)
Width	19.50 cm (7.68 in)

Rack orientation	Value
Height	19.50 cm (7.68 in)
Depth (with front bezel)	58.70 cm (23.11 in)
Width	44.50 cm (17.52 cm)

### Weight (approximate values)

SFF drive configuration	Value
Minimum	20.10 kg (44.31 lb)
Maximum	30.30 kg (66.80 lb)

LFF drive configuration	Value
Minimum	20.40 kg (44.97 lb)
Maximum	33.20 kg (73.19 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 500 W Flex Slot Platinum Hot-plug Low Halogen Power Supply](#)

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

[HPE 1000 W Flex Slot Titanium Hot-plug Power Supply](#)

[HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply](#)

## 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 Platinum Hot-plug Low Halogen Power Supply



Specification	Value
<b>Input requirements</b>	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	9.4 A at 100 VAC 4.5 A at 200 VAC 3.8 A at 240 VDC for China only
Maximum rated input power	940 W at 100 VAC 900 W at 200 VAC 897 W at 240 VDC for China only
BTUs per hour	3067 at 100 VAC 2958 at 200 VAC 2949 at 240 VAC for China only
<b>Power supply output</b>	—
Rated steady-state power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only

## HPE 1000 W Flex Slot Titanium Hot-plug Power Supply



Specification	Value
<b>Input requirements</b>	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz
Rated input current	11.3 A at 100 VAC 6.1 A at 200 VAC
Maximum rated input power	1130 W at 100 VAC 1090 W at 200 VAC
BTUs per hour	3764 at 100 VAC 3629 at 200 VAC
<b>Power supply output</b>	—
Rated steady-state power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC input
Maximum peak power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC

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

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



## 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 ML110 Gen11 Server user documents

<https://www.hpe.com/info/ml110gen11-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.

