Hewlett Packard Enterprise

HPE ProLiant ML110 Gen11 Server User Guide

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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.

Notices

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LFF hot-plug drive configuration
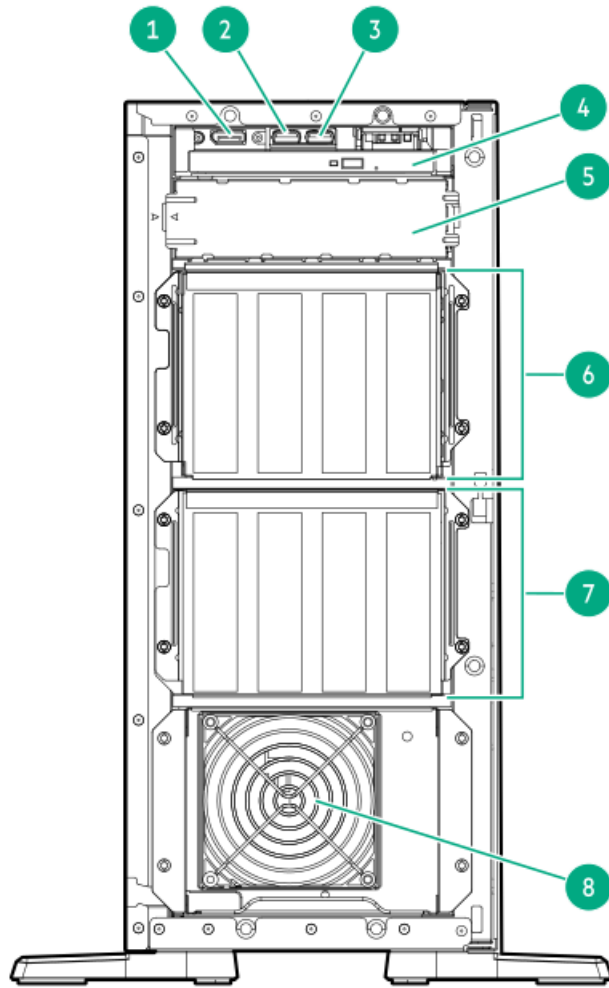
SFF hot-plug drive configuration
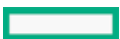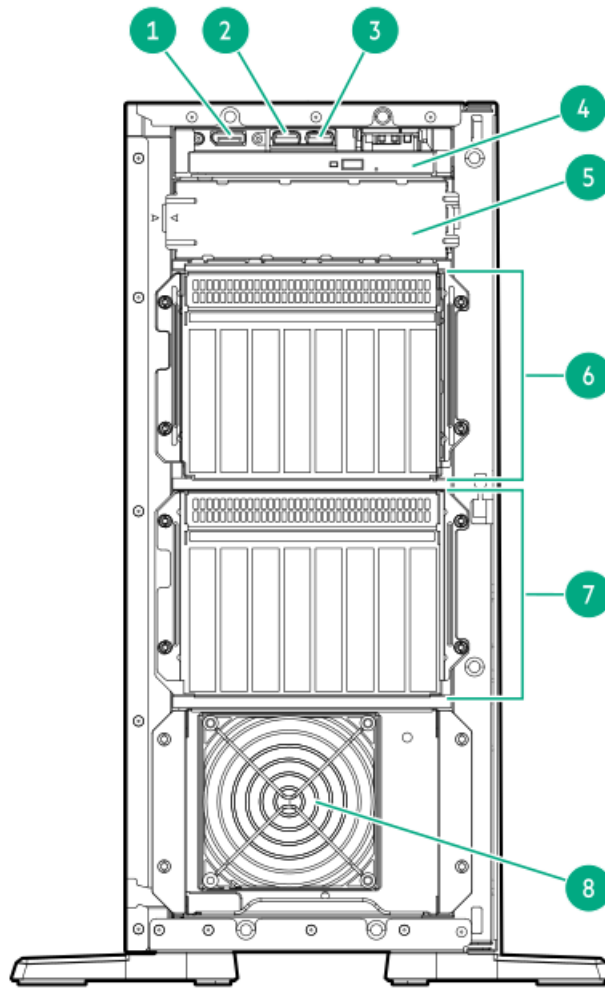
Item	Description
1	DisplayPort 1.1a
2	USB 3.2 Gen1 port
3	iLO service port
4	Optical drive (optional)
5	Media bay [1]
6	Box 1
7	Box 2
8	PCI fan

[1] The media bay supports the internal USB RDX docking station.

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:

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 [1]	Solid blue	Activated
		Flashing blue	1 flash per second—Remote management or firmware upgrade in progress 4 flashes per second—iLO manual reboot sequence initiated 8 flashes per second—iLO manual reboot sequence in progress
		Off	Deactivated
2	NIC status LED [1]	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity
3	Health LED [1]	Solid green	Normal
		Flashing green	iLO is rebooting
		Flashing amber	System degraded [2]
		Flashing red	System critical [2]
4	Power On/Standby button and system power LED [1]	Solid green	System on
		Flashing green	Performing power-on sequence
		Solid amber	System in standby
		Off	No power present [3]

[1] When the four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see Front panel LED power fault codes.

[2] If the health LED indicates a degraded or critical state, review the system Integrated Management Log (IML) or use HPE iLO to review the system health status.

[3] Facility power is not present, power cord is not attached, no power supplies are installed, 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 is used to locate a particular server when it is deployed in a dense rack with other equipment. Activating the UID LED helps an on-site technician to quickly identify a server for maintenance tasks.

Using the UID button to view the Server Health Summary

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
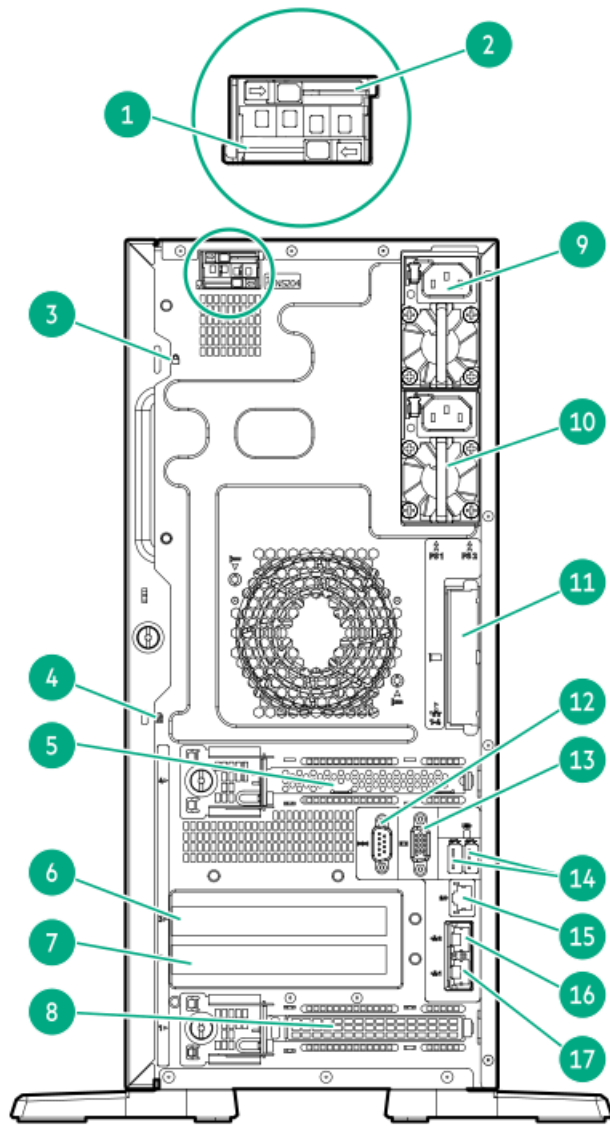
Item	Description
1	HPE NS204i-u Boot Device slot 1 [1]
2	HPE NS204i-u Boot Device slot 2 [1]
3	Padlock eye
4	Kensington slot
5	Slot 4 PCIe5 x16 (16, 8, 4)
6	Slot 3 PCIe5 x16 (16, 8, 4) [1]
7	Slot 2 PCIe5 x16 (16, 8, 4) [1]
8	Slot 1 PCIe5 x16 (16, 8, 4)
9	Flexible Slot power supply 1
10	Flexible Slot power supply 2 [1]
11	Slot 14 OCP PCIe5 x16
12	Serial port [1]
13	VGA port
14	USB 3.2 Gen1 ports
15	iLO dedicated network port
16	NIC port 2
17	NIC 1 / iLO shared port (1 GbE)

[1]   Optional

Subtopics

Display device setup

Display device setup

This server supports both VGA port and DisplayPort 1.1a. Before connecting a display device to this server, review the information below.

- Whenever possible, use the same display connection type. For example, if your PC or monitor only has a VGA output, connect it to the server VGA port. Use of any kind of adapter or converter cable or dongle might lead to decreased display quality or a lag over the connection.

- DisplayPort connection: When connecting an HDMI or DVI display to the DisplayPort, use an active type adapter. Passive type adapter—marked with the DP++ symbol—is not supported.

- Display output modes:
  - If you connect two display devices to the VGA port and DisplayPort, the same image is shown on both devices—screen mirroring mode.

  - The embedded video controller in the iLO 6 chipset does not support dual display or screen extension mode. To enable dual display mode, install a compatible PCIe5 graphics card that supports this feature in the slots 2 and 3.

Rear panel LEDs
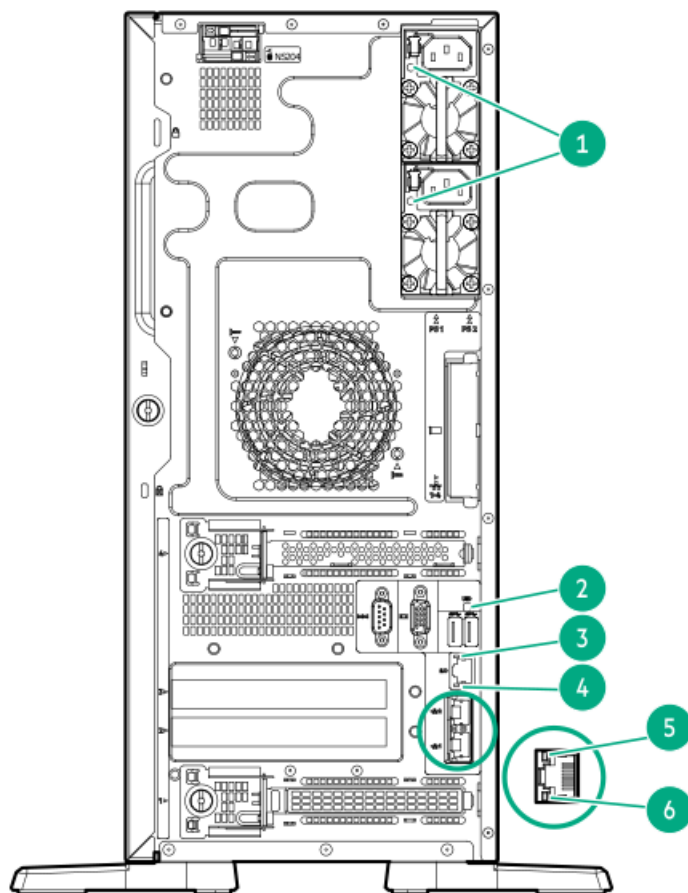
Item	Description	Status	Definition
1	Power supply LED	Solid green	Normal
		Off	One or more of following conditions exists: • Power is unavailable. • Power supply failed • Power supply is in standby mode. • Power supply error
2	UID LED	Solid blue	Activated
		Flashing blue	System is being managed remotely.
		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

System board components
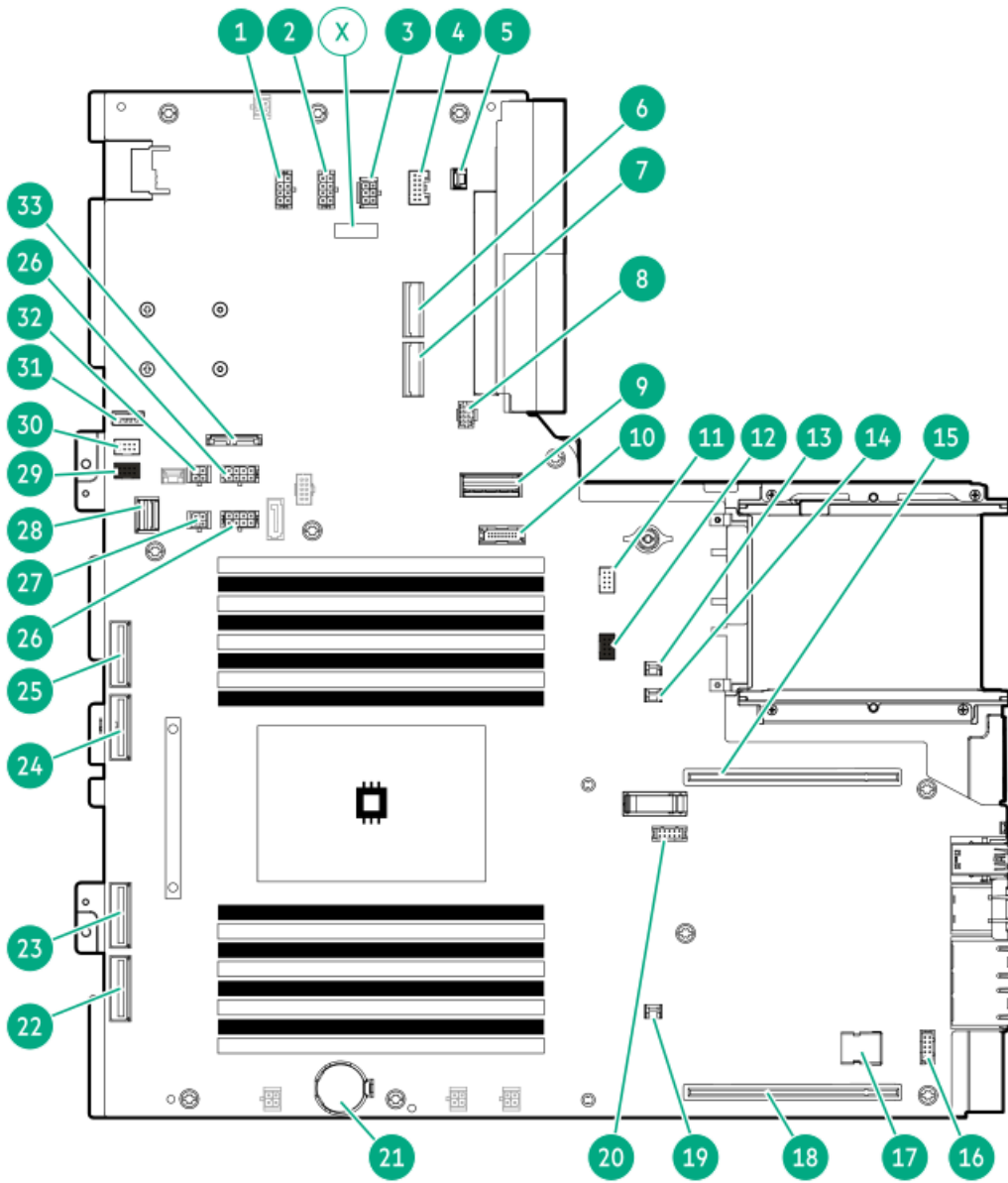
Item	Description
1	Drive box 2 power connector
2	Drive box 1 power connector
3	Media drive power connector
4	Energy pack connector
5	Chassis intrusion detection switch connector
6	M.2 slot 2
7	M.2 slot 1
8	NS204i-u power connector
9	x8 SlimSAS port
10	DisplayPort connector
11	Fan connector 4
12	Fan connector 3
13	Slot 14 OROC storage backup power connector
14	Slot 4 storage controller backup power connector
15	Slot 4 PCIe5 x16 (16, 8, 4)
16	Serial port connector
17	USB 2.0 port
18	Slot 1 PCIe5 x16 (16, 8, 4)
19	Slot 1 storage controller backup power connector
20	VGA connector
21	System battery
22	MCIO port 1 for the riser slot 2
23	MCIO port 2 for the riser slot 2
24	MCIO port 3 for the riser slot 3
25	MCIO port 4 for the riser slot 3
26	Accelerator auxiliary power connectors
27	Power connector for the riser slot 2
28	Front I/O connector
29	Fan connector 1
30	Fan connector 2
31	USB 3.2 Gen1 port
32	Power connector for the riser slot 3
33	Optical drive SATA-power connector
X	System maintenance switch

Subtopics

System maintenance switch descriptions

DIMM label identification

DIMM slot numbering

Heatsink and processor socket components

System maintenance switch descriptions

Position	Default	Function
S1 [1]	Off	• Off—iLO 6 security is enabled. • On—iLO 6 security is disabled.
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 [1]	Off	• Off—Power-on password is enabled. • On—Power-on password is disabled.
S6 [1], [2], [3]	Off	• Off—No function • On—Restore default manufacturing settings
S7	Off	Reserved
S8	Off	Reserved
S9	Off	Reserved
S10	Off	Reserved
S11	Off	Reserved
S12	Off	Reserved

[1] To access the redundant ROM, set S1, S5, and S6 to On.

[2] When the system maintenance switch position 6 is set to the On position, the system is prepared to restore all configuration settings to their manufacturing defaults.

[3] When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see Configuring 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
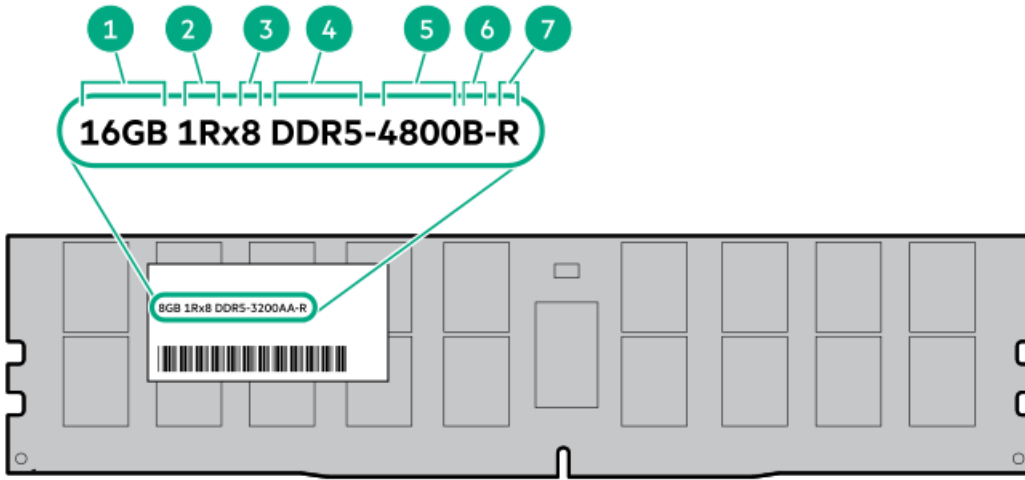
Item	Description	Example
1	Capacity [1]	16 GB
		32 GB
		64 GB
		128 GB
		256 GB
2	Rank	1R—Single rank
		2R—Dual rank
		4R—Quad rank
		8R—Octal rank
3	Data width on DRAM	x4—4-bit
		x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed [1]	4800 MT/s
6	CAS latency	B—42-42-42
		B—50-42-42 (for 128 GB and 256 GB capacities)
7	DIMM type	E—UDIMM (unbuffered with ECC)
		R—RDIMM (registered)

[1] The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model.

DIMM slot numbering
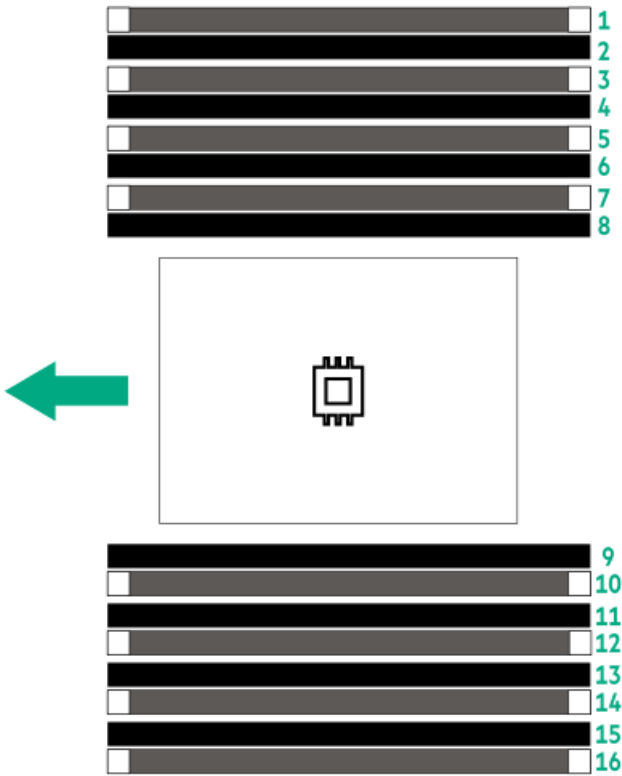
The arrow points to the front of the server.

Heatsink and processor socket components

A standard heatsink is shown, your heatsink might look different.
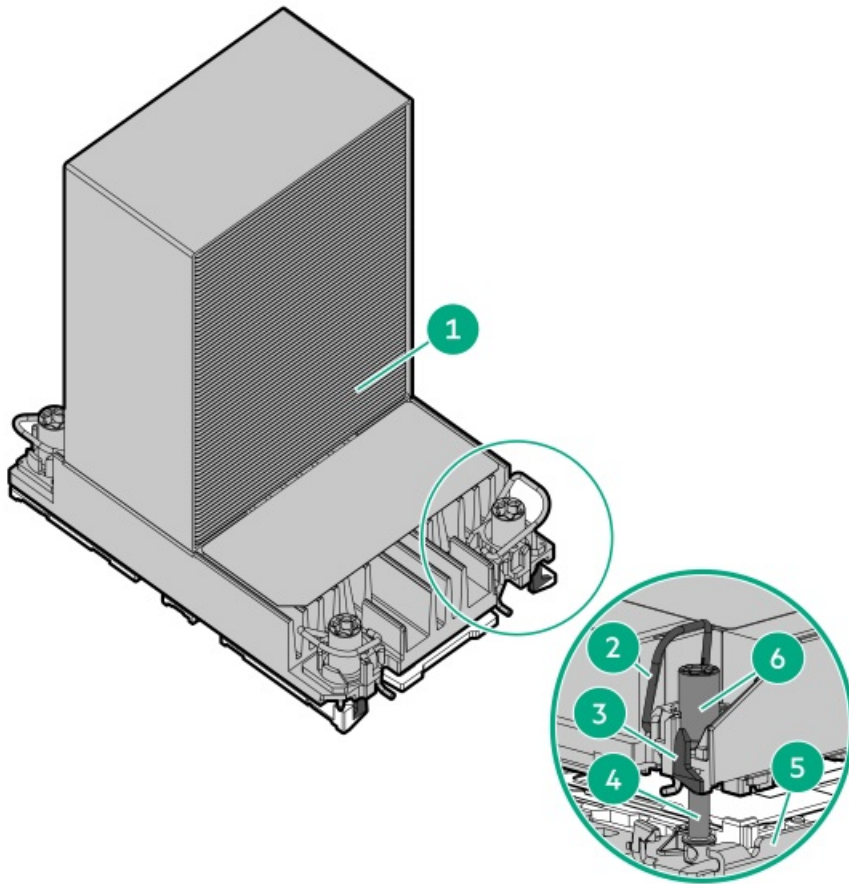
Item	Description
1	Processor-heatsink module [1]
2	Anti-tilt wires
3	Processor carrier release tabs
4	Bolster plate guide posts
5	Bolster plate
6	Heatsink screws

[1]   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.
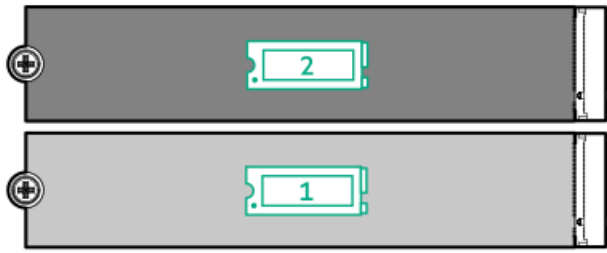
The arrow points to the front of the server.

Riser board components

All riser slots are PCIe5 x16 (16, 8, 4) and are rated for a maximum power draw of 75 W each.
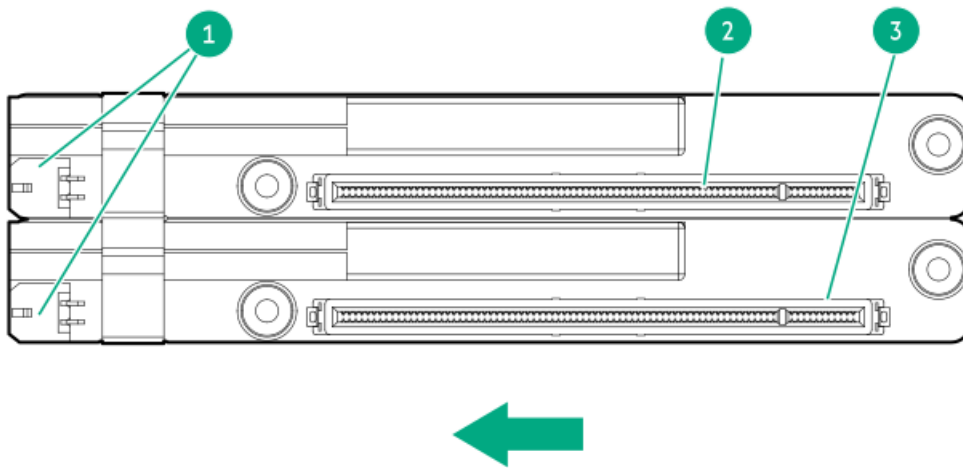
The arrow points to the front of the server.

Item	Description	Supported form factors
1	Riser power connectors	—
2	Slot 3 PCIe5 x16 (16, 8, 4) [1]	• Full-height, full-length
3	Slot 2 PCIe5 x16 (16, 8, 4) [2]	• Full-height, half-length
		• Half-height, half-length (low-profile)

[1] Slot 3 supports a single-width accelerator.
[2] Slot 2 supports a single-width or double-width accelerator.

PCIe5 slot description

PCIe slot description

PCIe5   x16   (16, 8, 4, 1)

   1   2   3
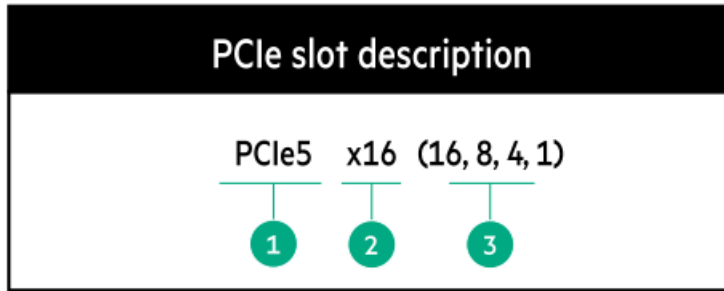
Item	Description	Definition
1	PCI Express version	Each PCIe version corresponds to a specific data transfer rate between the processor and peripheral devices. Generally, a version update corresponds to an increase in transfer rate. • PCIe 1.x • PCIe 2.x • PCIe 3.x • PCIe 4.x • PCIe 5.x The PCIe technology is under constant development. For the latest information, see the **PCI-SIG website**.
2	Physical connector link width	PCIe devices communicate through a logical connection called an interconnect or link. At the physical level, a link is composed of one or more lanes. The number of lanes is written with an x prefix with x16 being the largest size in common use. • x1 • x2 • x4 • x8 • x16
3	Negotiable link width	These numbers correspond to the maximum link bandwidth supported by the slot.

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.
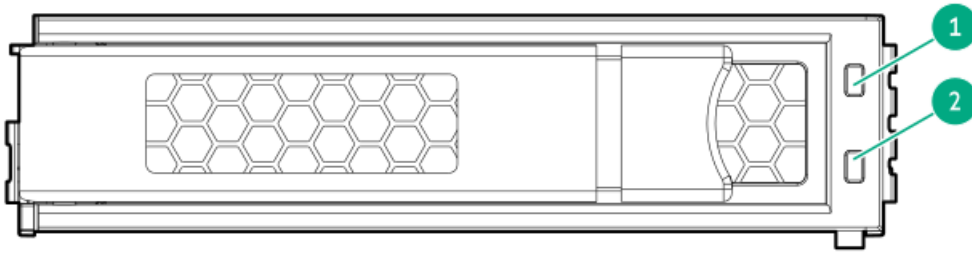
SFF basic drive carrier

The SFF basic drive carrier supports hot-plug SAS or SATA drives.
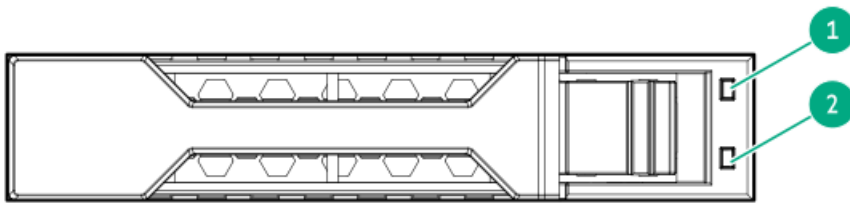
Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has 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: • Rebuilding or performing a RAID • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Flashing green (4 flashes per second)	The drive is 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
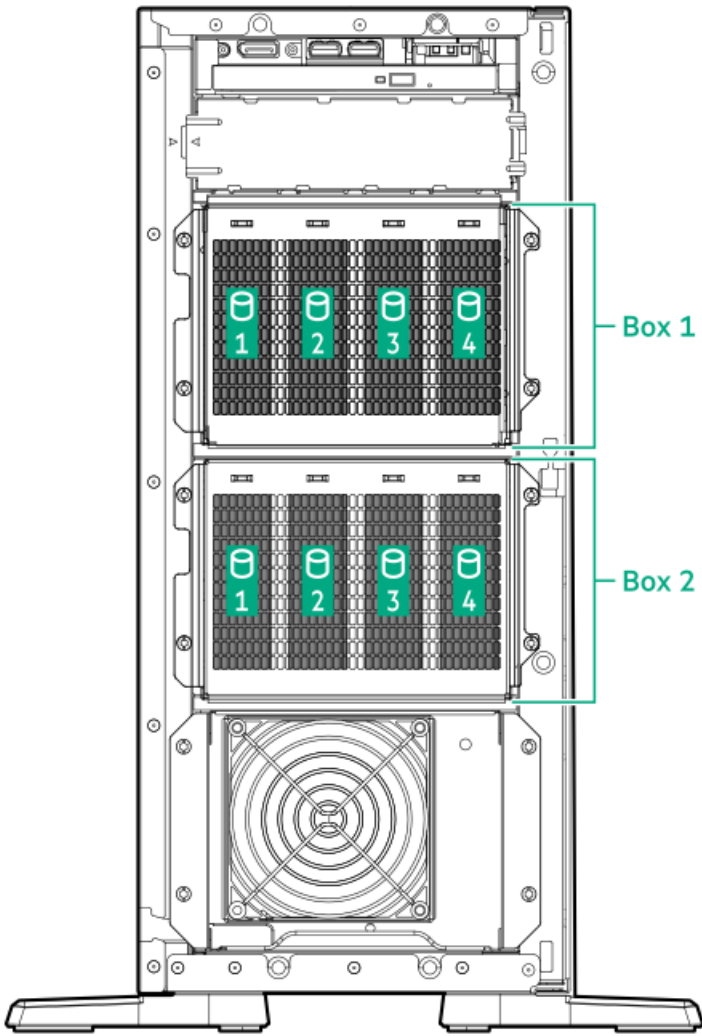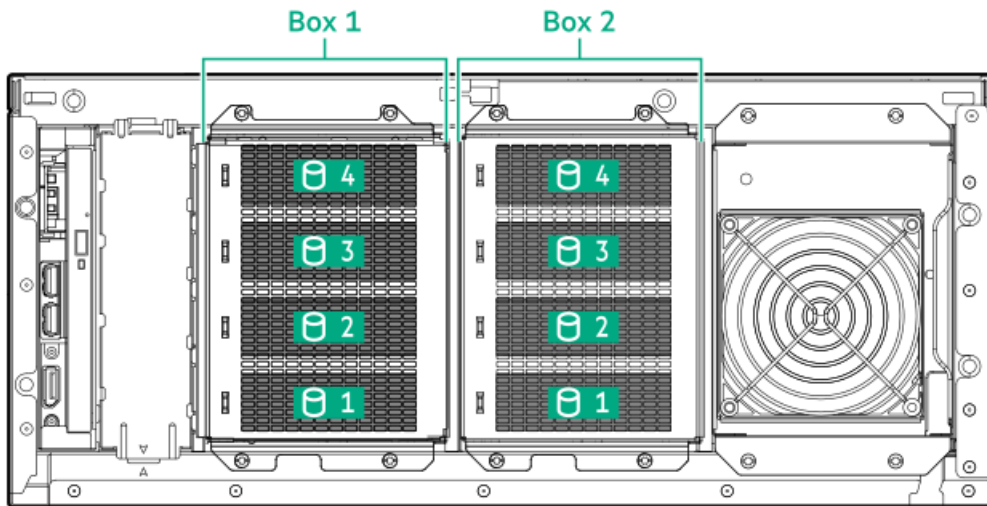
Rack orientation

LFF hot-plug drive bay numbering

LFF hot-plug drive 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.
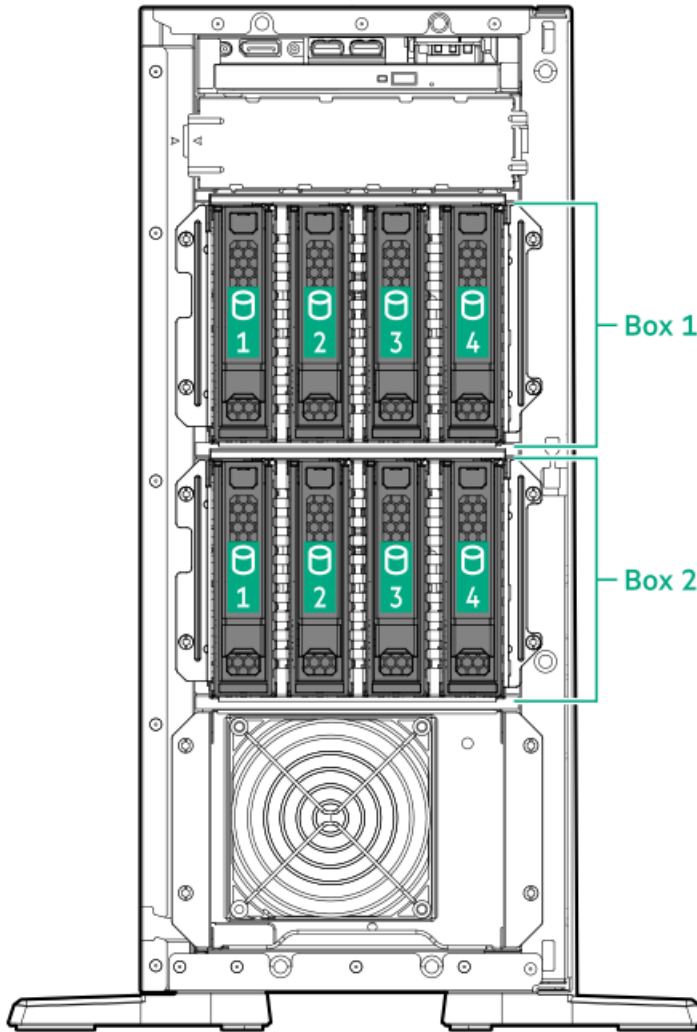
Tower orientation

Rack orientation
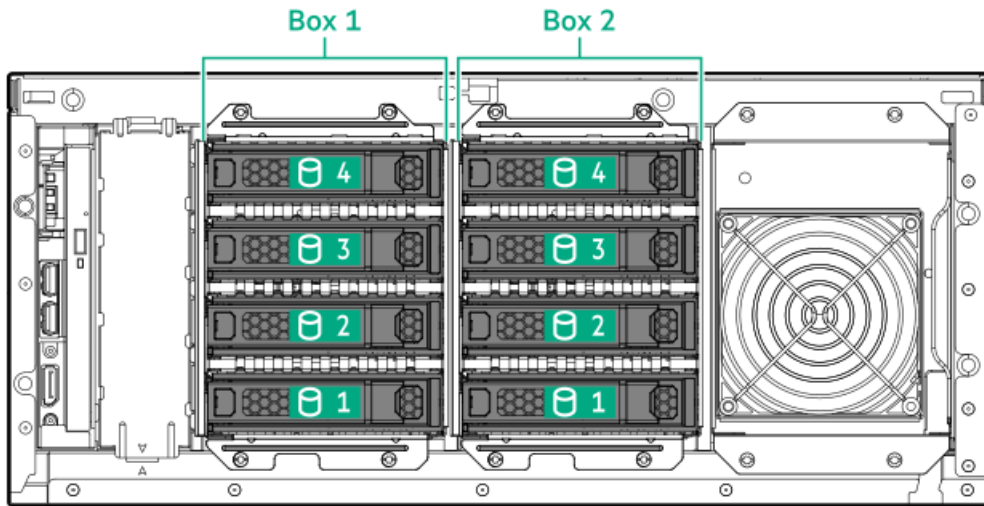
SFF hot-plug drive bay numbering

The following drive backplane options are supported in 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.
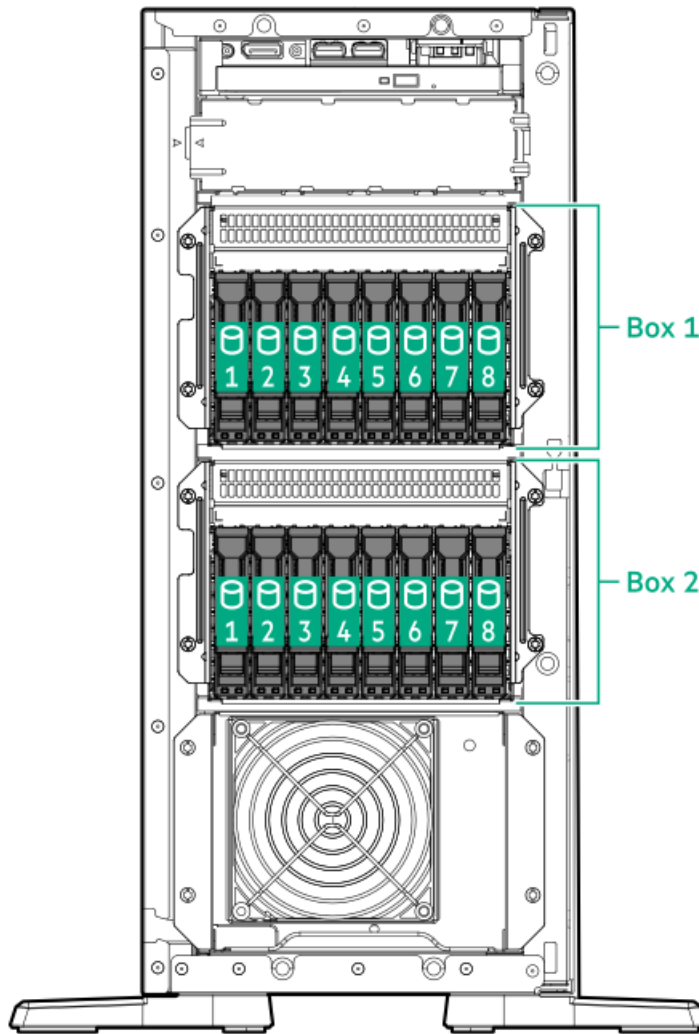
Tower orientation

Rack orientation

Mixed hot-plug drive bay numbering

This server supports one mixed hot-plug drive configuration with the LFF drive CTO server option:

- Box 1 — 4 LFF hot-plug drive

- Box 2 — 8 SFF hot-plug drive

Tower orientation
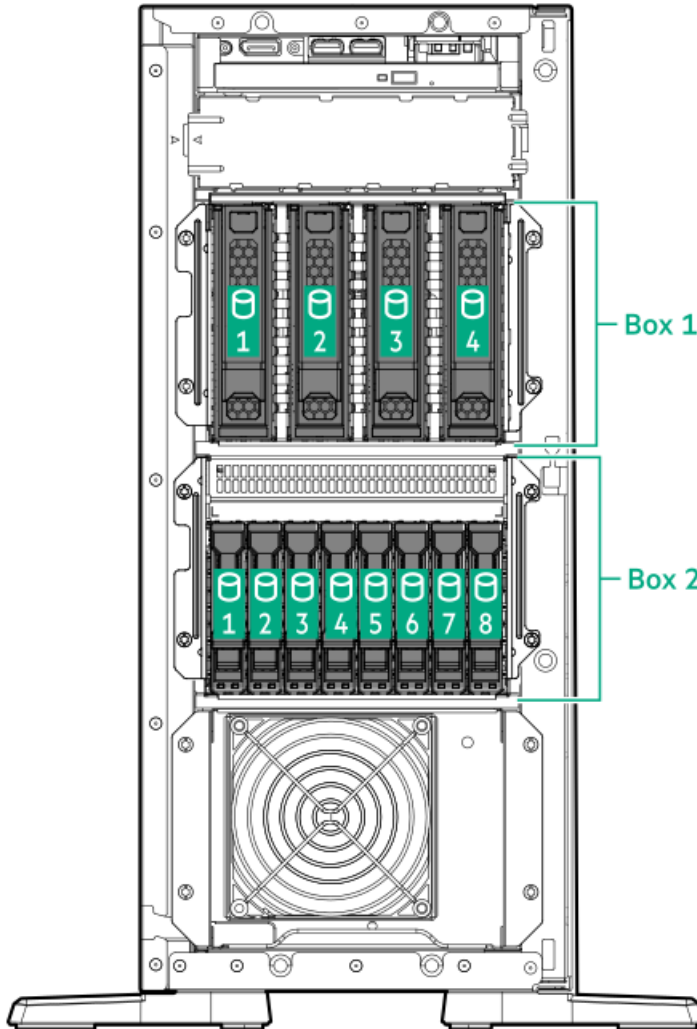
Rack orientation
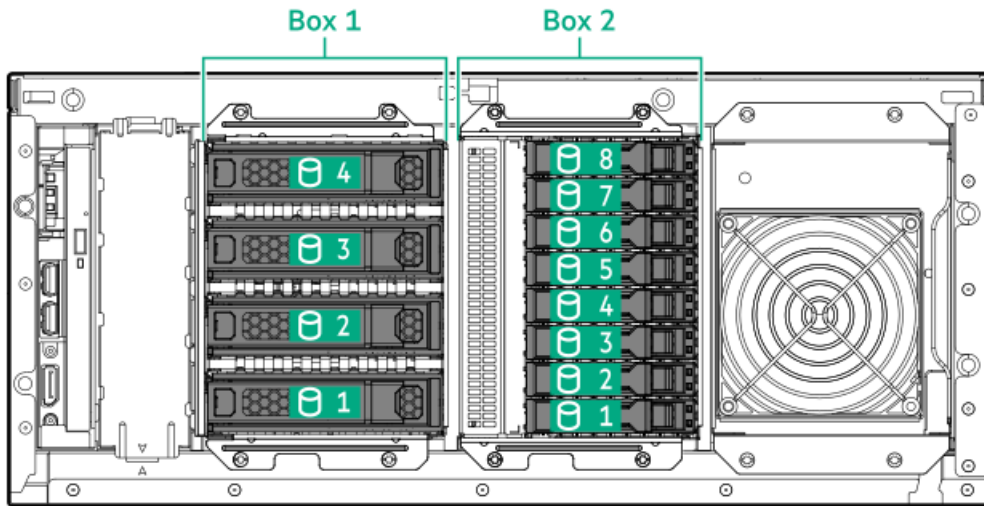
Drive backplane naming

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
		E3.S—Enterprise and Datacenter Standard Form Factor (EDSFF)
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 [1]
		x4 NVMe/SAS—U.3 NVMe, SAS, or SATA [2]
		x4 NVMe—U.2 NVMe [3]
		x4 NVMe—E3.S
5	Universal backplane manager (UBM) options	UBM2—Segregated SAS/SATA
		UBM3 or UBM6—Converged
		UBM4 or UBM6—Segregated U.2 NVMe
		UBM5 or UBM7—EDSFF
6	Drive carrier type	BC—Basic carrier (SFF)
		LP—Low-profile carrier (LFF)
		EC1—E3.S carrier

[1] Tri-mode controller support for x1 U.3 NVMe, SAS, and SATA drives. System board connection supports SATA drives only.
[2] CPU direct attach or tri-mode controller support for x4 U.3 NVMe or x1 SAS and SATA drives.
[3] CPU direct attach or tri-mode controller support for x4 U.2 NVMe drives.

Fan numbering
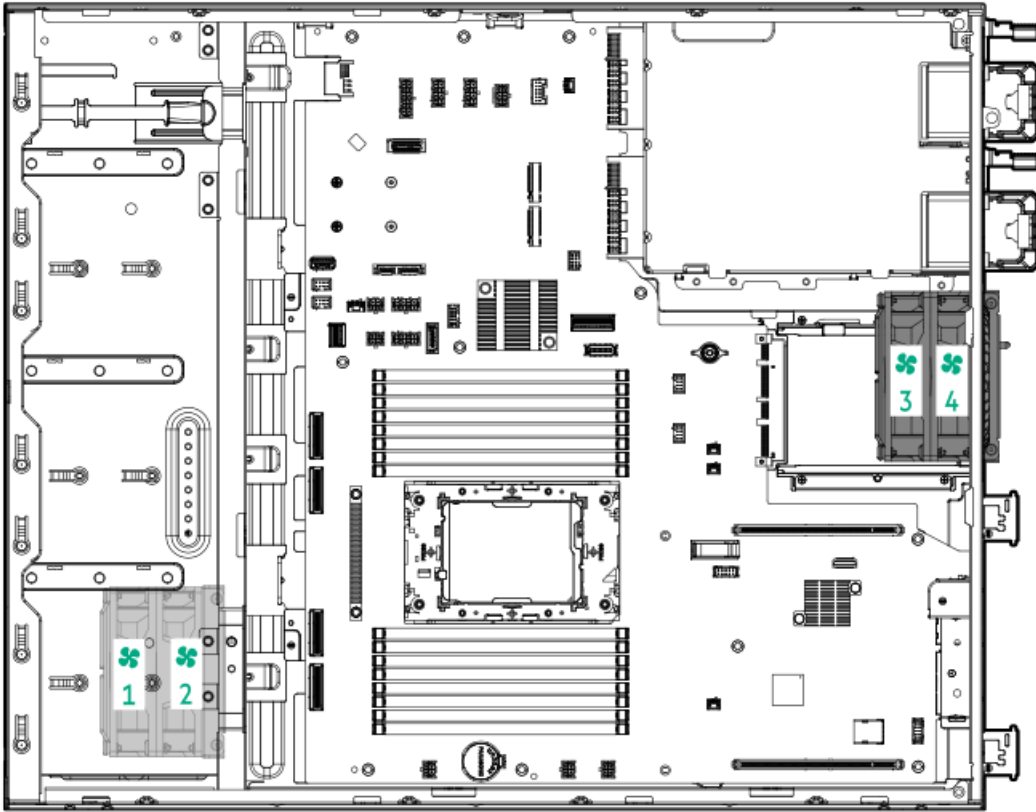
Fan number	Description
1	Default PCI fan
3	Default system fan
1 and 2	Redundant PCI fan
3 and 4	Redundant system fan

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.
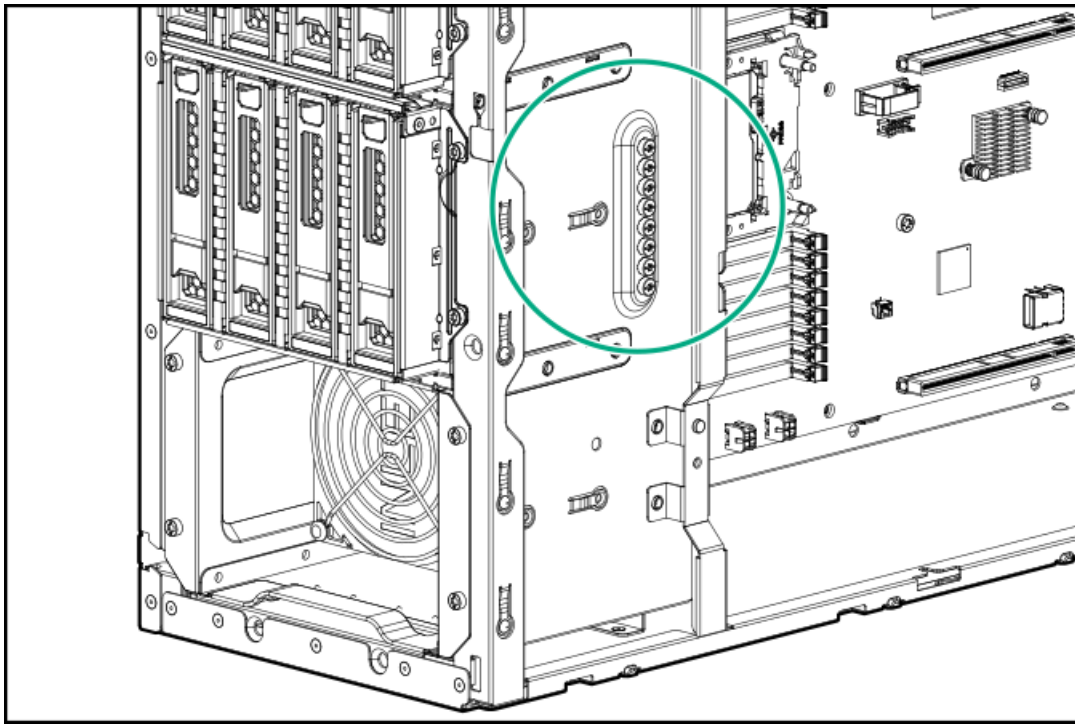
Trusted Platform Module 2.0

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/qs**). 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
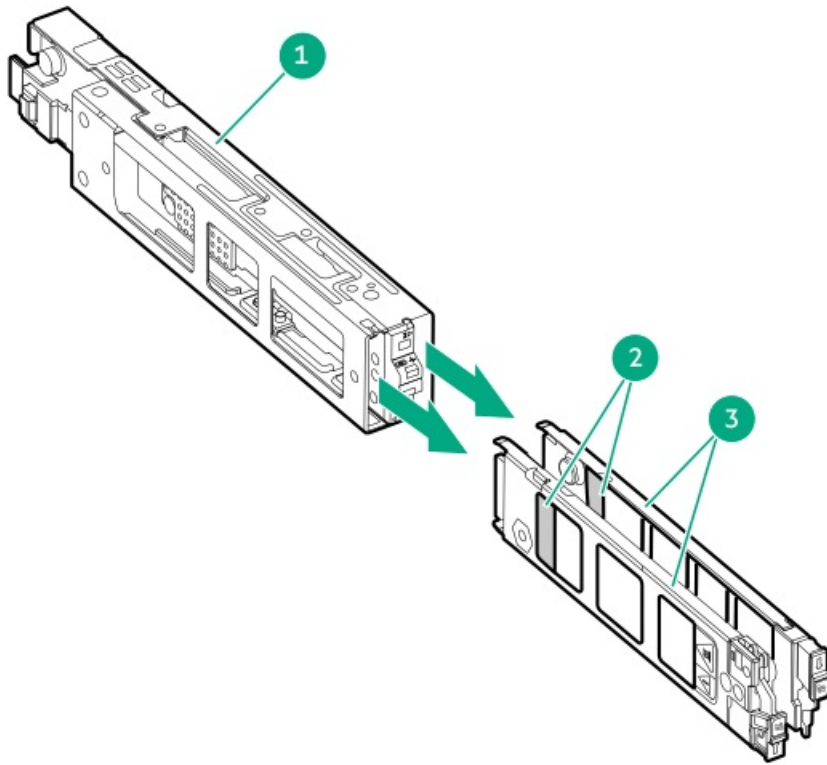
Item	Description
1	Boot device cage
2	M.2 slots
3	Boot device carriers

HPE NS204i-u Boot Device LED definitions
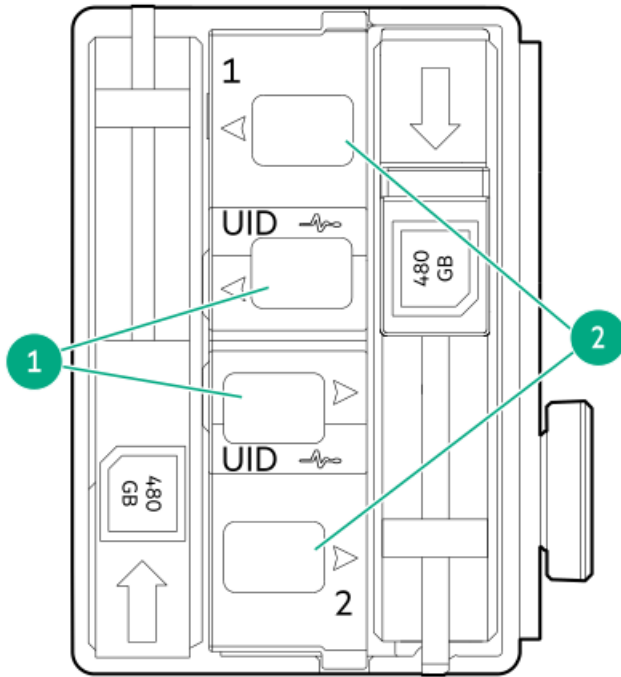
Item	LED	Status	Definition
1	Fault/Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	Drive has failed, or a predictive failure alert is received for the drive. The drive has also been identified by a management application.
		Flashing amber (1 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 a management application.
2	Online/Activity	Solid green	Drive is online and has no activity.
		Flashing green (1 flash per second)	Drive is doing one of the following: • Rebuilding or performing a RAID • Erasing
		Flashing green (4 flashes per second)	Drive is operating normally and has activity.
		Off	Drive is not configured by a RAID controller or is a spare drive.

Setup

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

Subtopics

Initial system installation

Operational requirements

<u>**Rack warnings and cautions**</u>

<u>**Server warnings and cautions**</u>

<u>**Electrostatic discharge**</u>

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:

- <u>Ordering the HPE Installation Service</u>

- <u>Setting up the server</u>

Subtopics

<u>**HPE Installation Service**</u>

<u>**Setting up the server**</u>

HPE Installation Service

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

The HPE Installation Service provides the following benefits:

- Installation by an HPE authorized technical specialist.

- Verification prior to installation that all service prerequisites are met.

- Delivery of the service at a mutually scheduled time convenient to your organization.

- Allows your IT resources to stay focused on their core tasks and priorities.

- Full coverage during the warranty period for products that require installation by an HPE authorized technical specialist.

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

<u>**https://www.hpe.com/support/installation-service**</u>

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 GreenLake for 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 GreenLake for Compute Ops Management , see <u>**https://www.hpe.com/info/com-docs**</u>.

  - 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**

- The embedded 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 SSDs.

  - ○ The VROC RAID volume must use drives of the same form factor.

  - ○ Intel VROC requires the server boot mode to be set to UEFI Mode.

  - ○ In the pre-OS environment, use UEFI System Utilities to enable Intel VROC and create a VROC RAID volume. This task is not supported in Intelligent Provisioning.

  - ○ Intel VROC supports RAID management though 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 the Intel Virtual RAID on CPU for HPE Gen11 User Guide:

  https://hpe.com/support/VROC-Gen11-UG

- 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:

     - If a DHCP server assigns the IP address, the IP address appears on the boot screen.

     - If a static IP address is assigned, use that IP address.

  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.

Operational requirements

When preparing the site and planning the installation for the HPE ProLiant ML110 Gen11 Server, be sure to observe the following general operational requirements:

- Space and airflow requirements

- Temperature requirements

- Power requirements

- Electrical grounding requirements

For server-specific environmental requirements, see Environmental specifications.

Subtopics

Space and airflow requirements

Temperature requirements

Power requirements

Electrical grounding requirements

Space and airflow 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 additional airflow requirements:

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

- To prevent improper cooling and damage to the equipment, do not block the ventilation openings.

- When the vertical space in the rack is not filled by a server or rack component, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow. 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 stabilized the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
>
> - Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.

> **WARNING:**
> To reduce the risk of personal injury or damage to the equipment, be sure that:
> - The rack has anti-tip measures in place. Such measures include floor-bolting, anti-tip feet, ballast, or a combination as specified by the rack manufacturer and applicable codes.
>
> - The leveling jacks (feet) are extended to the floor.
>
> - The full weight of the rack rests on the leveling jacks (feet).
>
> - The stabilizing feet are attached to the rack if it is a single-rack installation.
>
> - The racks are coupled together in multiple rack installations.

WARNING:

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

- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and might become unstable when being moved on its casters.

- Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.

CAUTION:

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

CAUTION:

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

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

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

Server warnings and cautions

WARNING:

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

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

WARNING:

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

- Do not disassemble, crush, or puncture the energy pack.

- Do not short external contacts.

- Do not dispose of the energy pack in fire or water.

- Do not expose the energy pack to low air pressure as it might lead to explosion or leakage of flammable liquid or gas.

- Do not expose the energy pack to temperatures higher than 60°C (140°F).

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

CAUTION:

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

CAUTION:

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

⚠ **CAUTION:**

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

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

Electrostatic discharge

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

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.

- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.

- Place parts on a grounded surface before removing them from their containers.

- Avoid touching pins, leads, or circuitry.

- Always be properly grounded when touching a static-sensitive component or assembly. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:
  - Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ±10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.

  - Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.

  - Use conductive field service tools.

  - Use a portable field service kit with a folding static-dissipating work mat.

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

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

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:

- <u>Rack warnings and cautions</u>

- <u>Server warnings and cautions</u>

Subtopics

<u>Power down the server</u>

<u>Extend the server from the rack</u>

<u>Remove the server from the rack</u>

<u>Remove the front bezel</u>

Power down the server

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

> (i) **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.
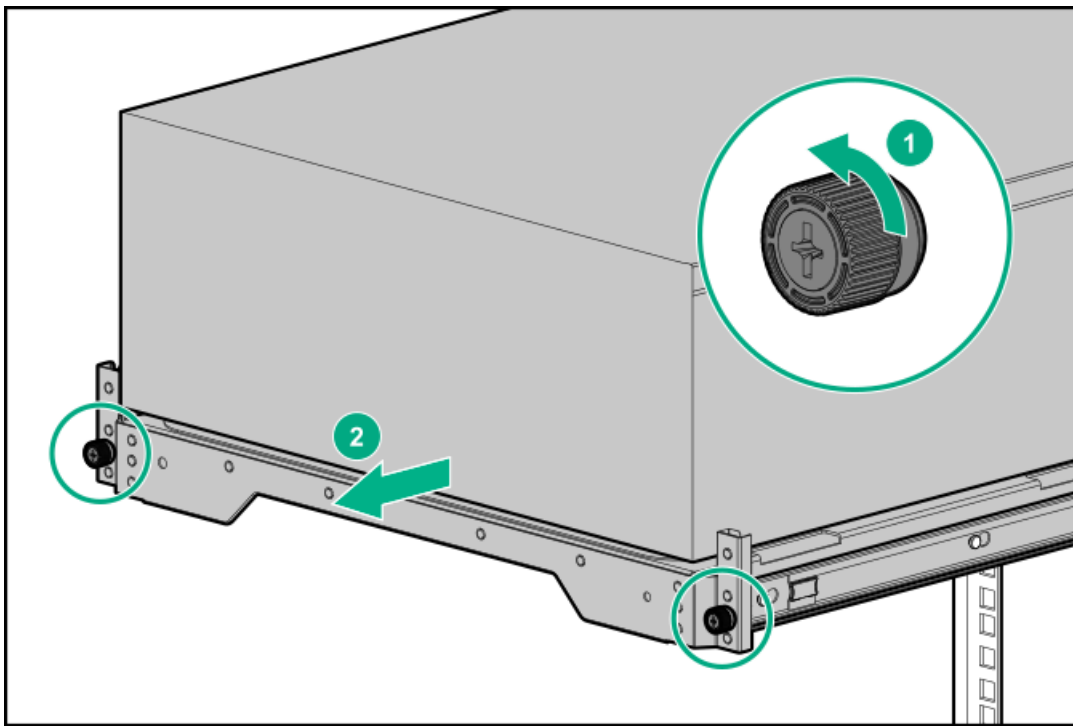
Extend the server from the rack

Prerequisites

Before you perform this procedure, review the <u>Rack warnings and cautions</u>.

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.
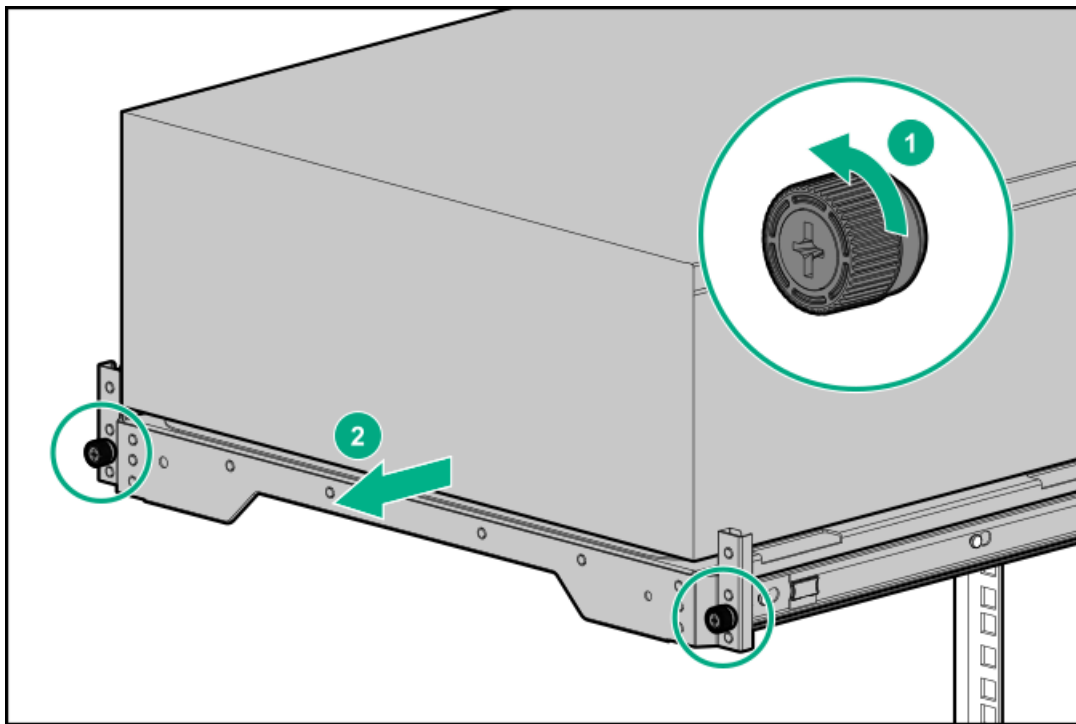
Remove the server from the rack

Prerequisites

- Get help to lift and stabilize the server during removal from the rack. **If the server is installed higher than chest level, an additional person might be required to help remove the server:** One person to support the server weight, and the other to slide the server out of the rack.

- Before you perform this procedure, review the:

  - Rack warnings and cautions

  - Server warnings and cautions

- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external server components before removing the server from the rack.

- Before you perform this procedure, make sure that you have a T-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.
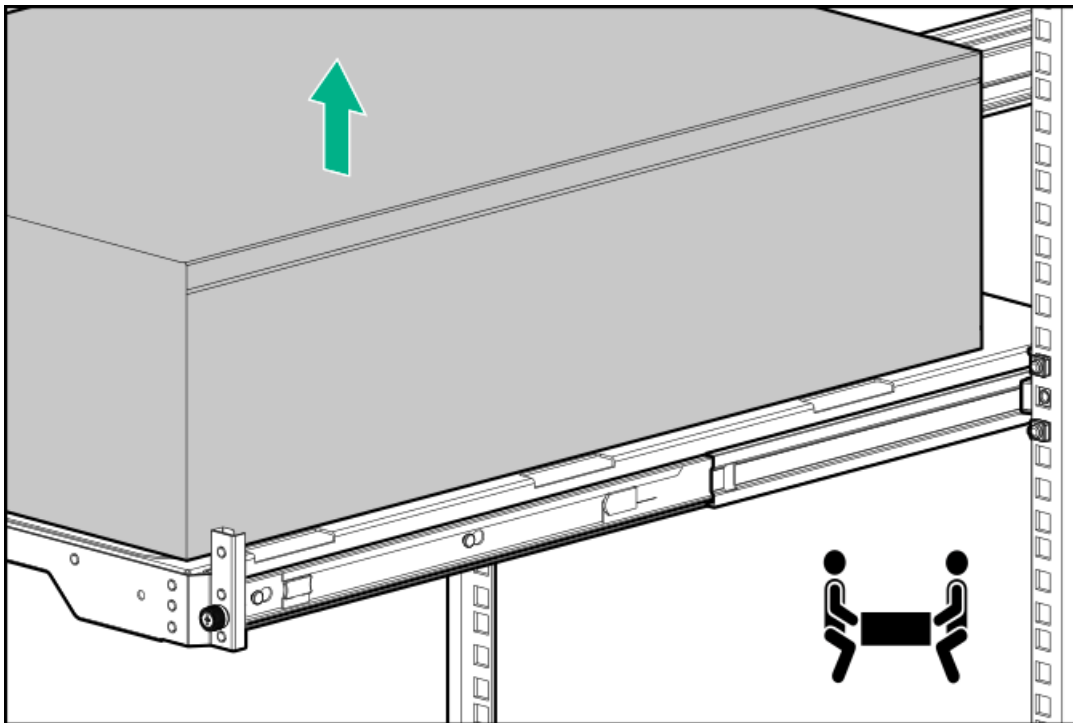
6. Place the server on a flat, level surface with the access panel facing up.
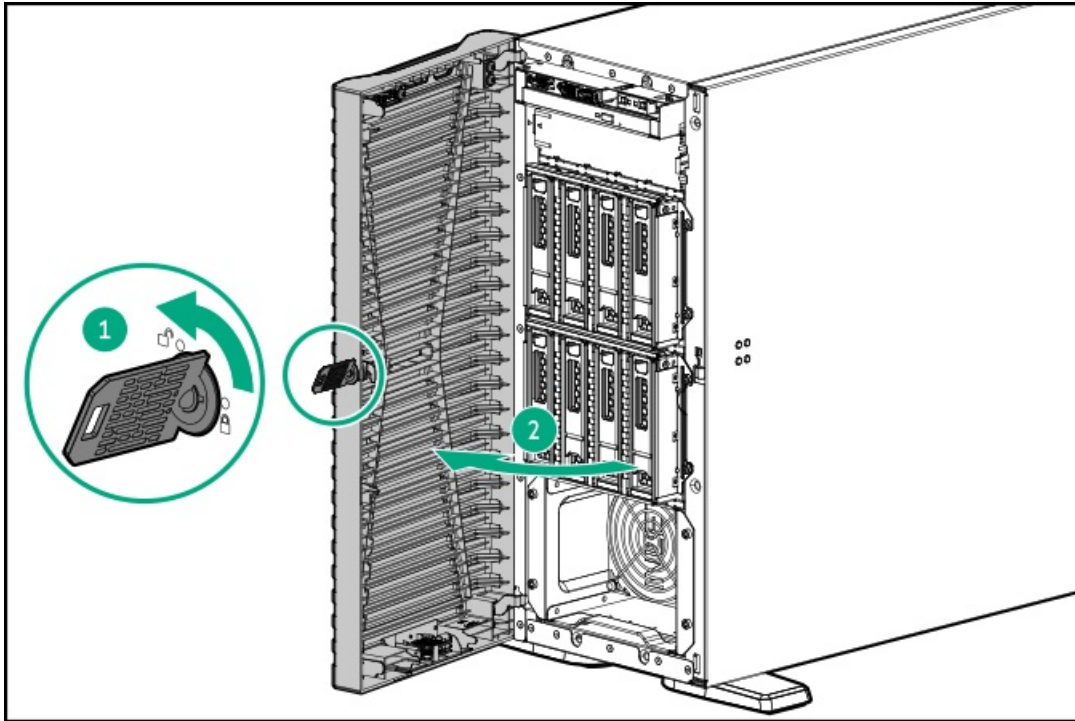
Remove the front bezel

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.
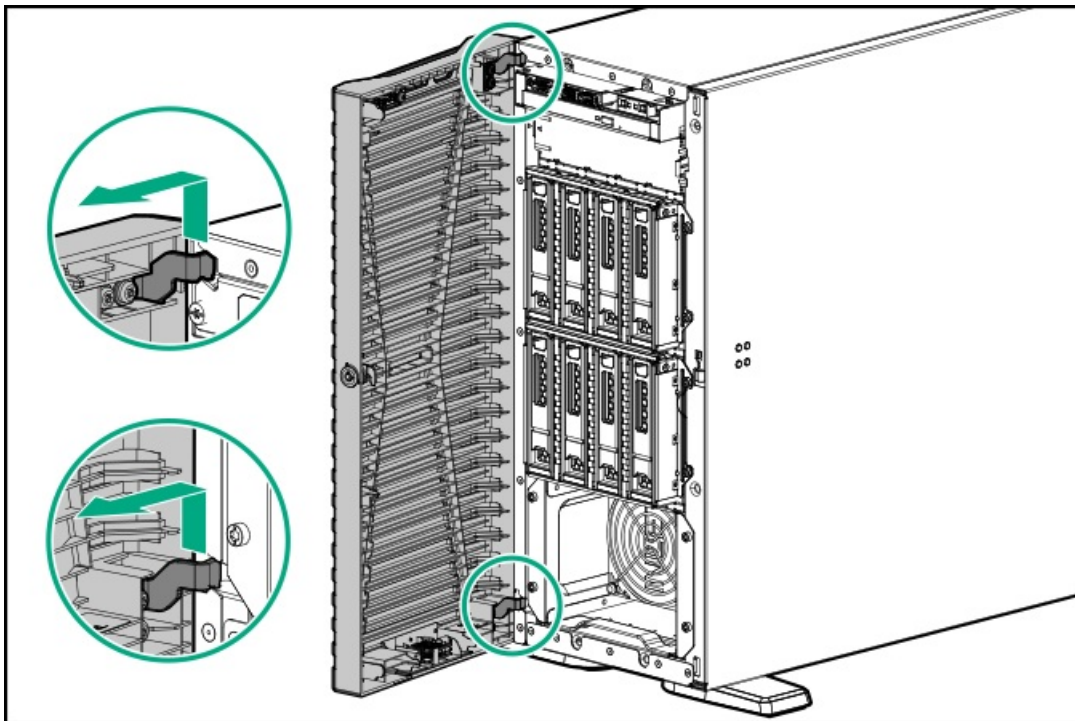
Procedure

1. Unlock the front bezel.

2. Open the front bezel.

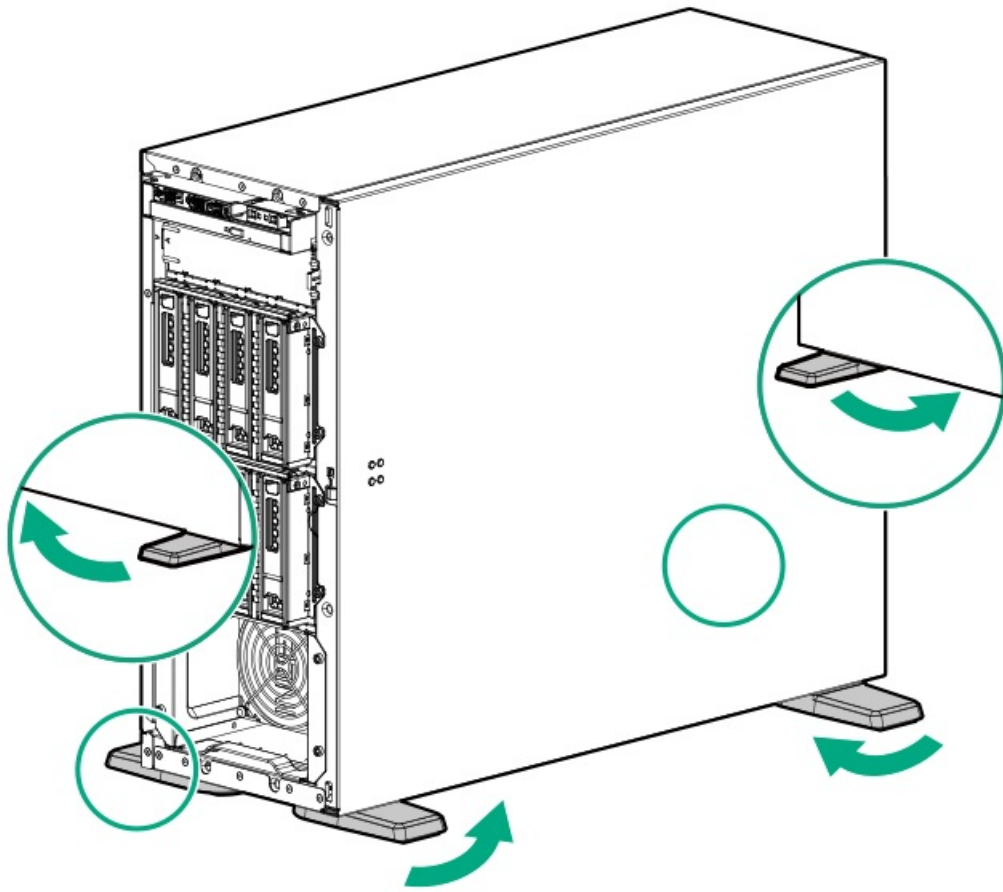3. Release the bezel hooks from the front panel.

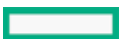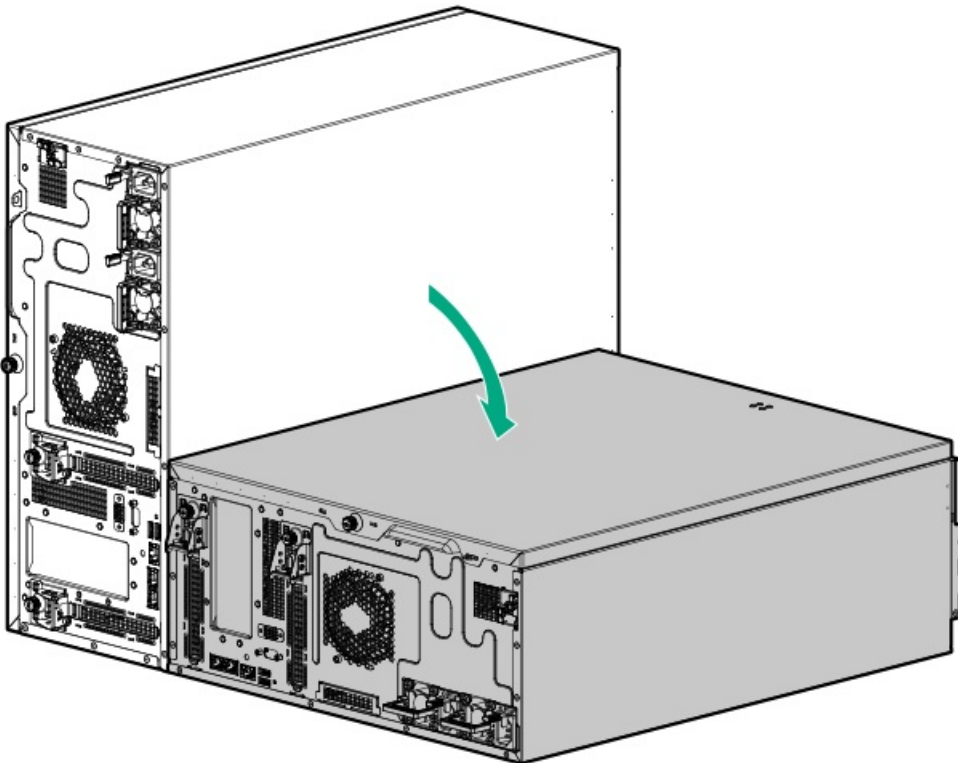

Position the tower server for hardware configuration

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.
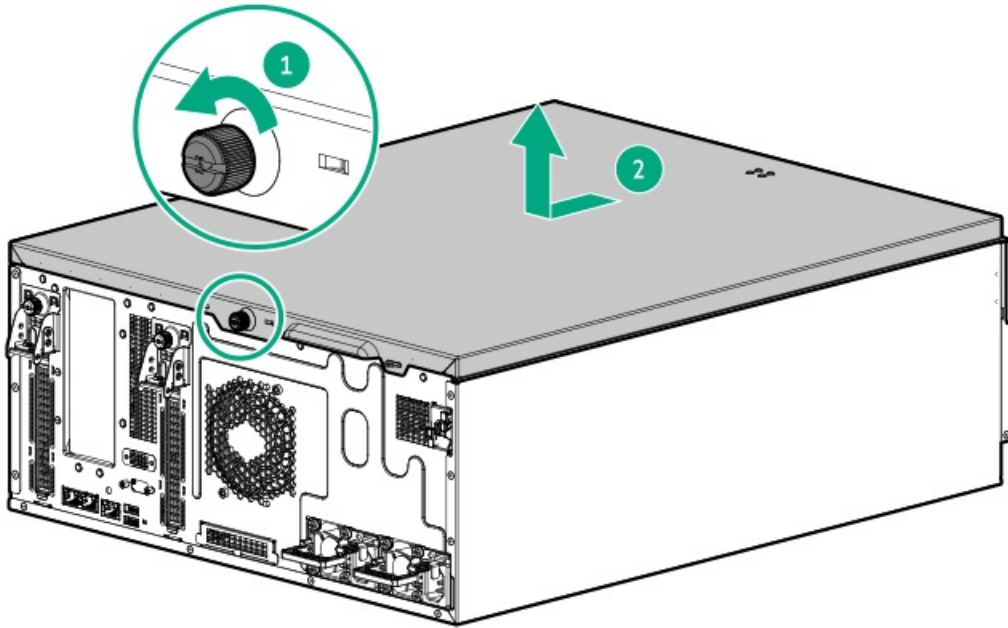
Remove the system air baffle

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.
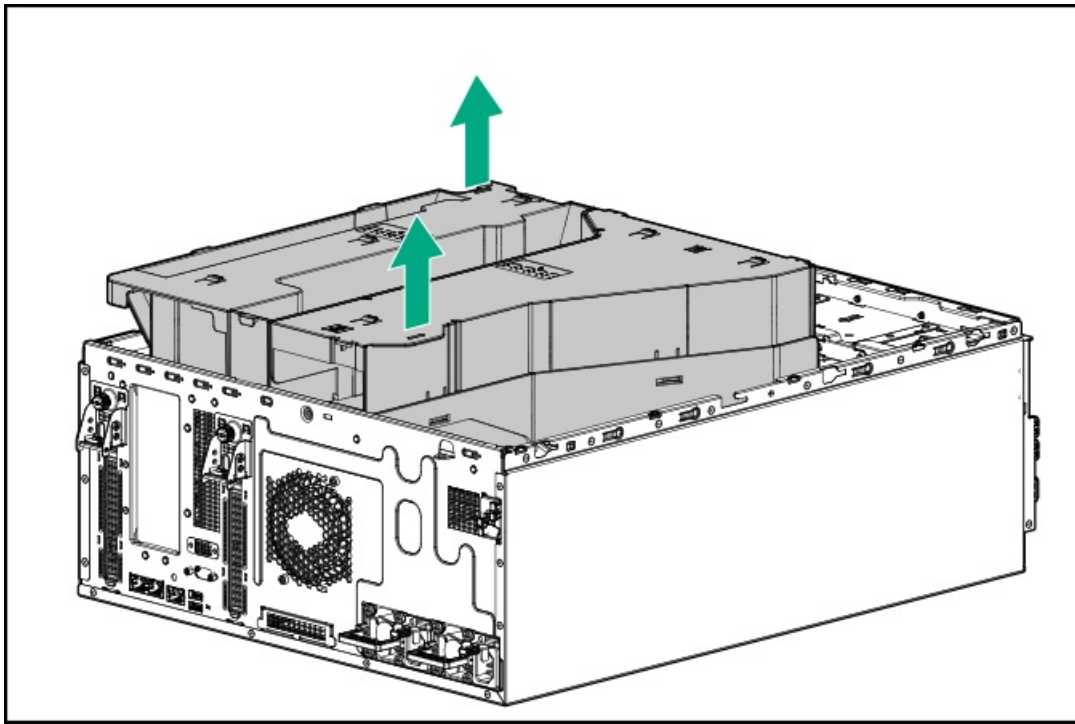
Remove the riser cage
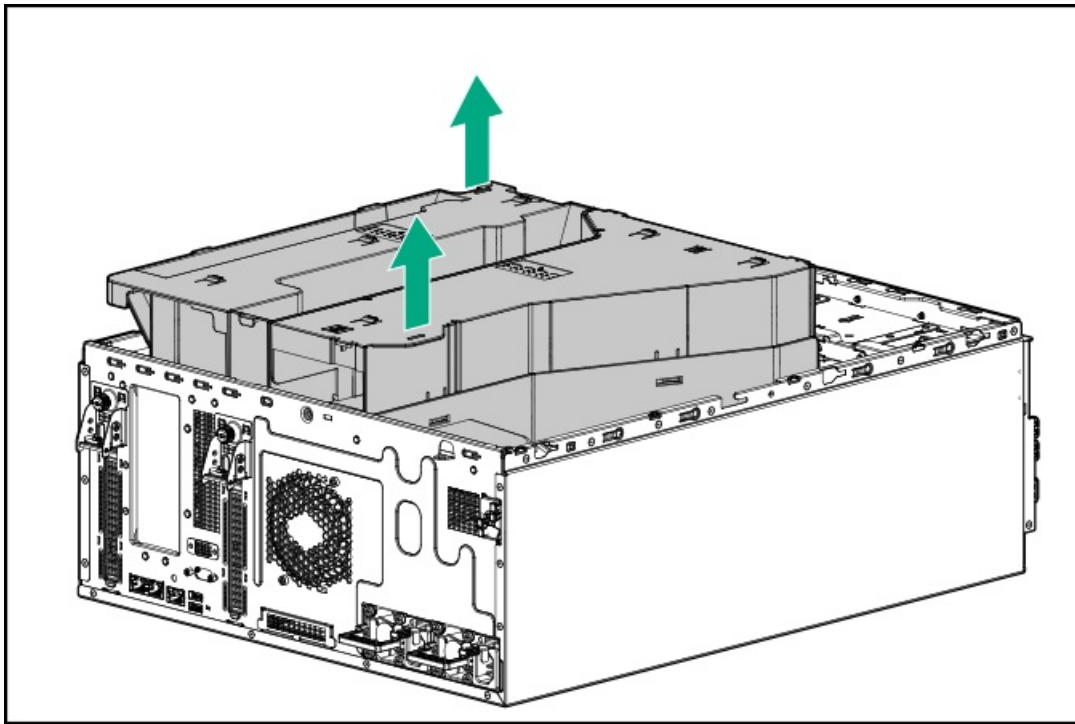
About this task

> ⚠️ **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.
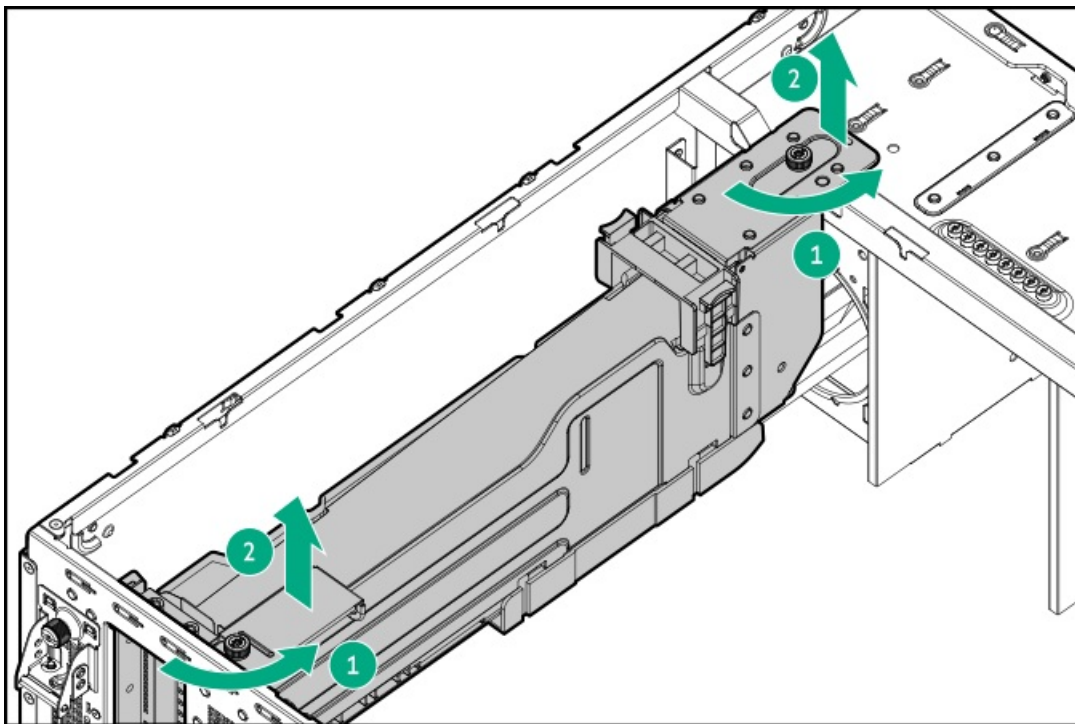
9. Disconnect all riser cables from the system board .

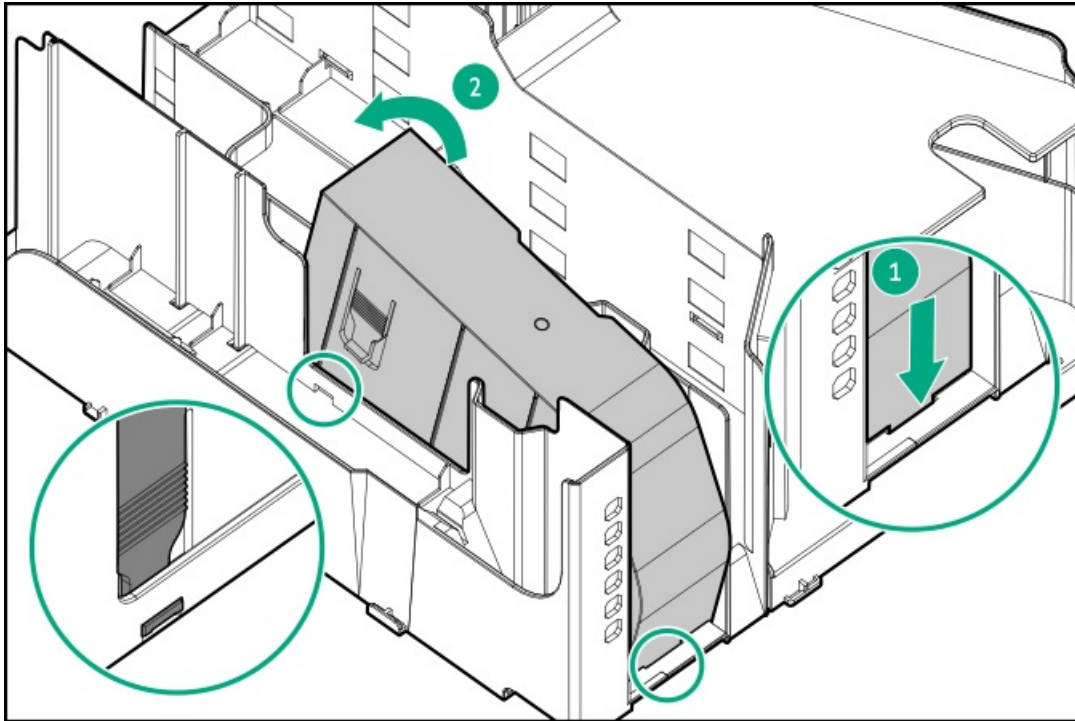## Install the system air baffle

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.
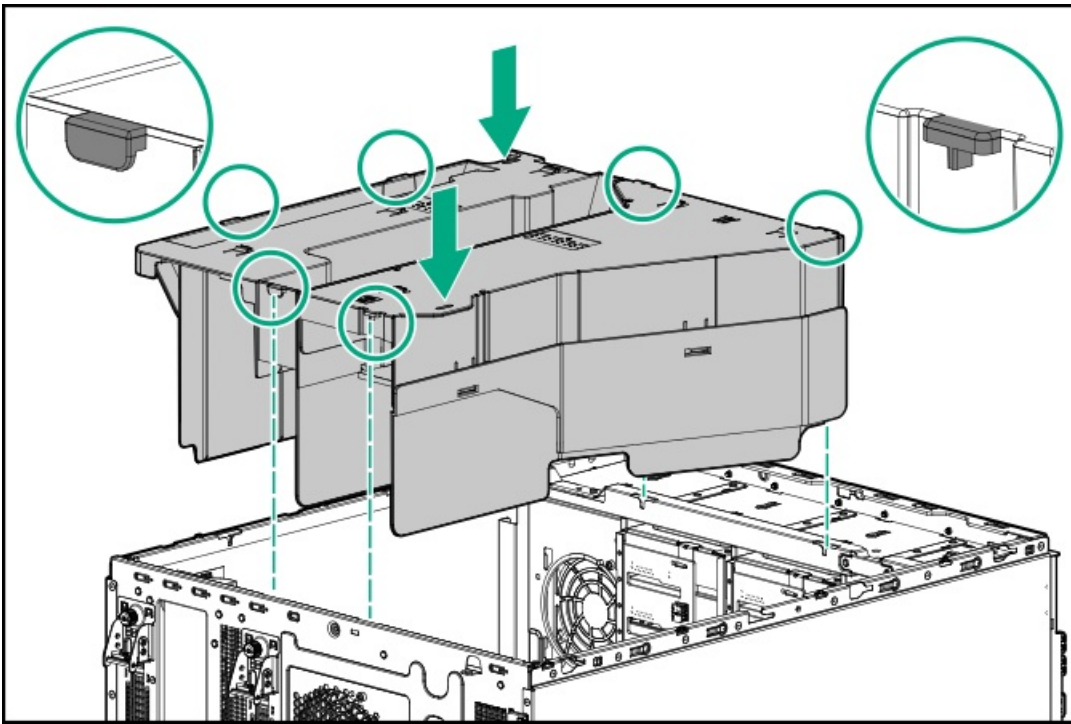
Install the access panel

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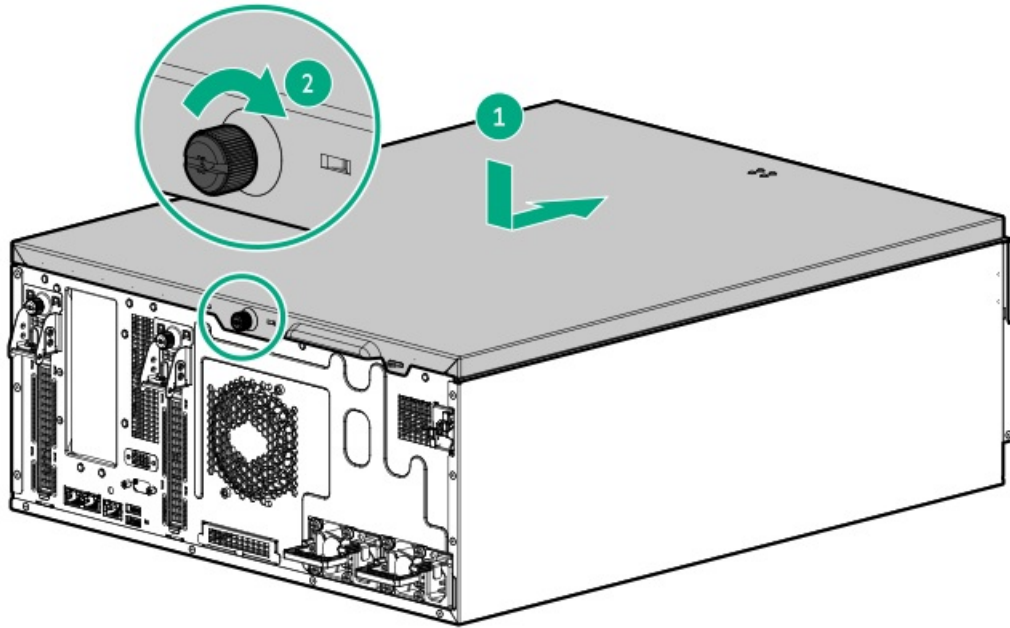
3. Perform the post-installation or maintenance steps required by the procedure that required the removal of the access panel.

Position the tower server for operation

Procedure

1. Return the server to an upright position.
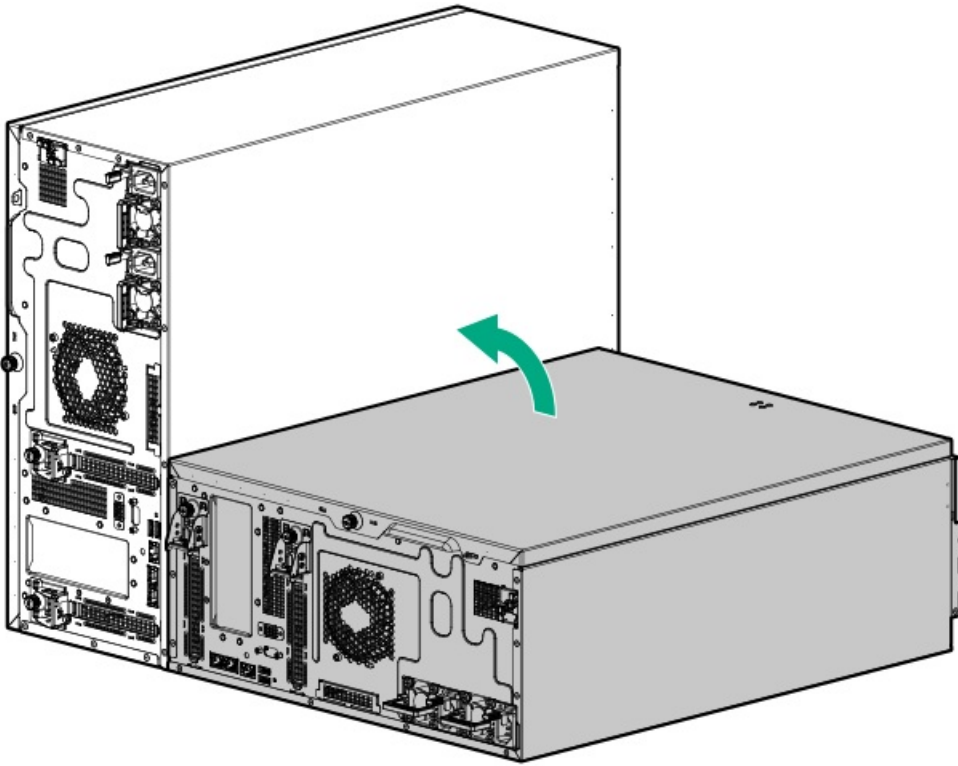
2. Rotate the chassis feet outward to stabilize the server.
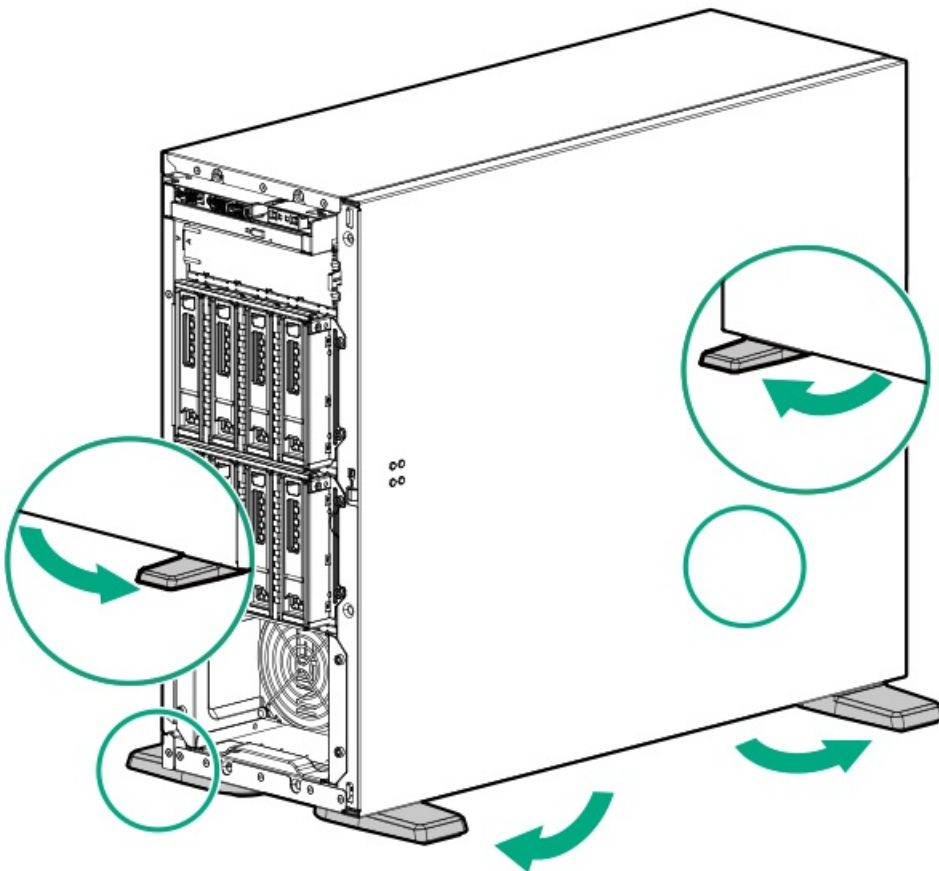
Install the front bezel

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

Install the server into the rack

Prerequisites

- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, an additional person might be required to help install the server:** One person to support the server weight, and the other to slide the server into the rack.

- Before you perform this procedure, review the:

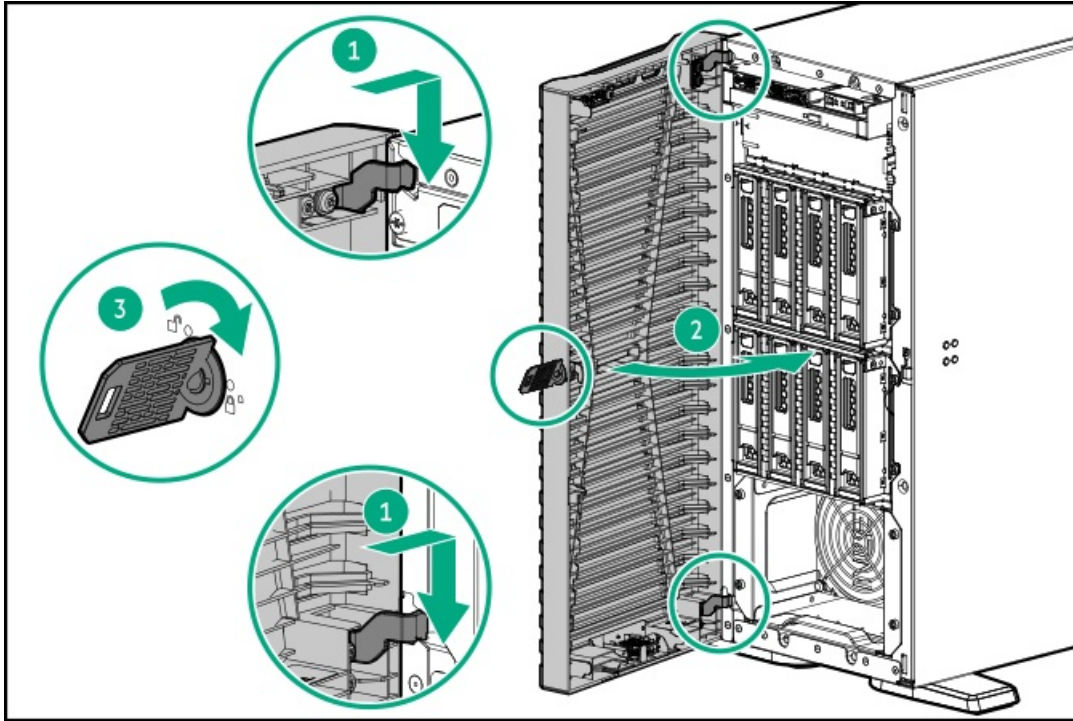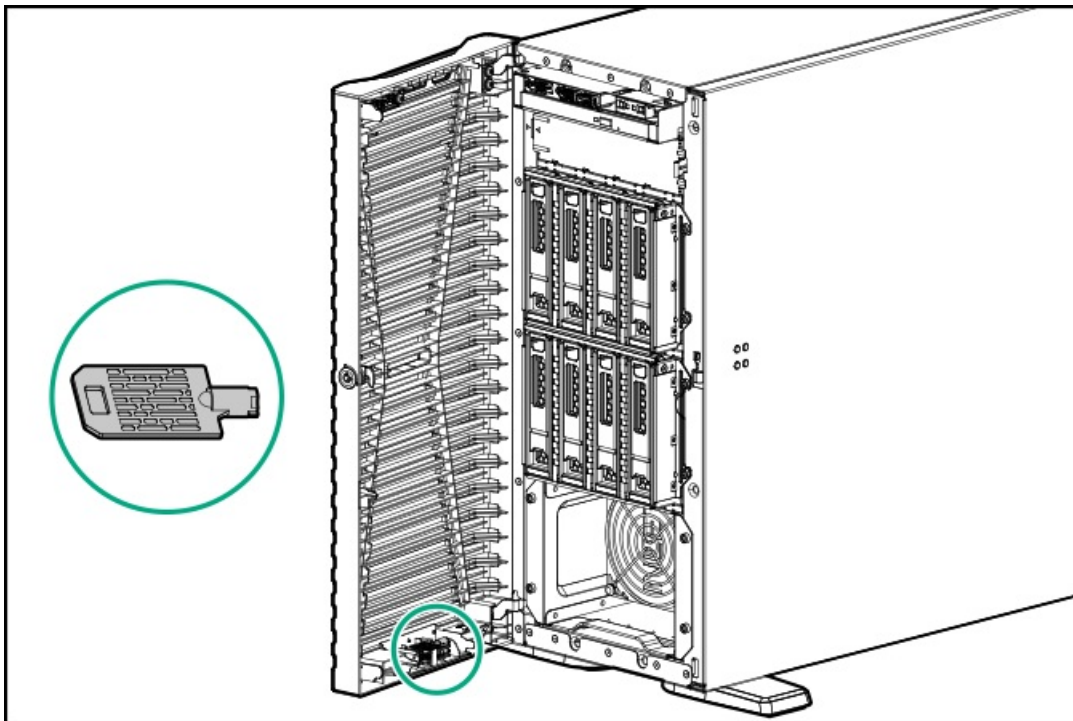 - Rack warnings and cautions

  - Server warnings and cautions

- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before 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.
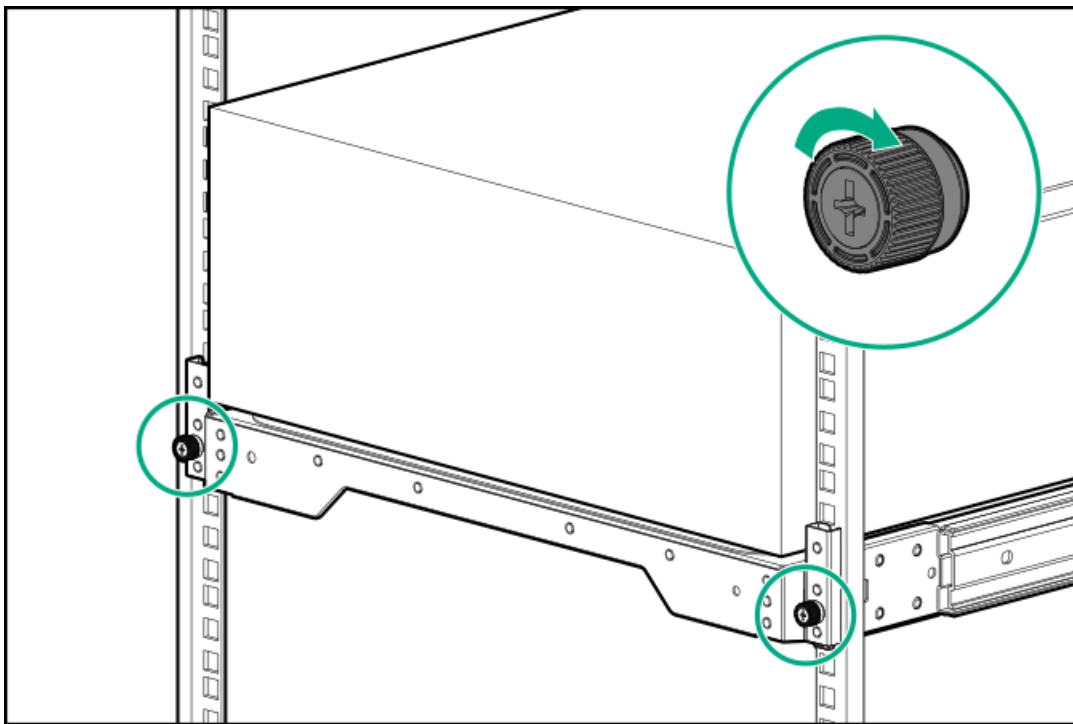
5. If the front bezel is installed and you are planning to install the hot-pluggable component on the front panel, extend the server with sufficient space for opening the front bezel.
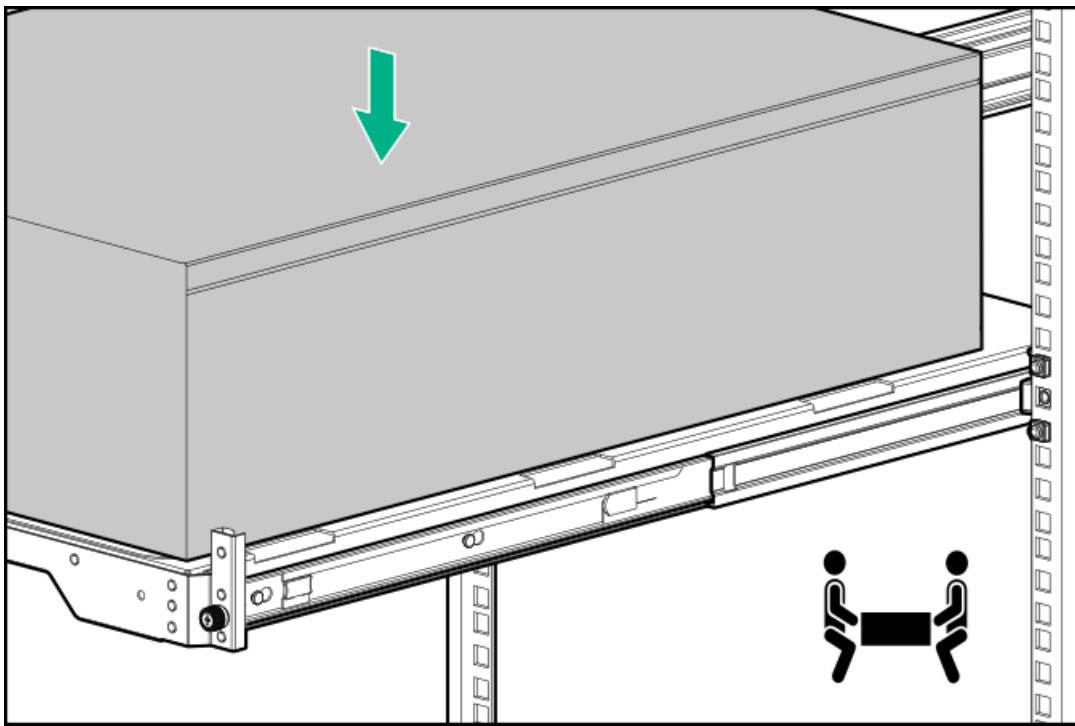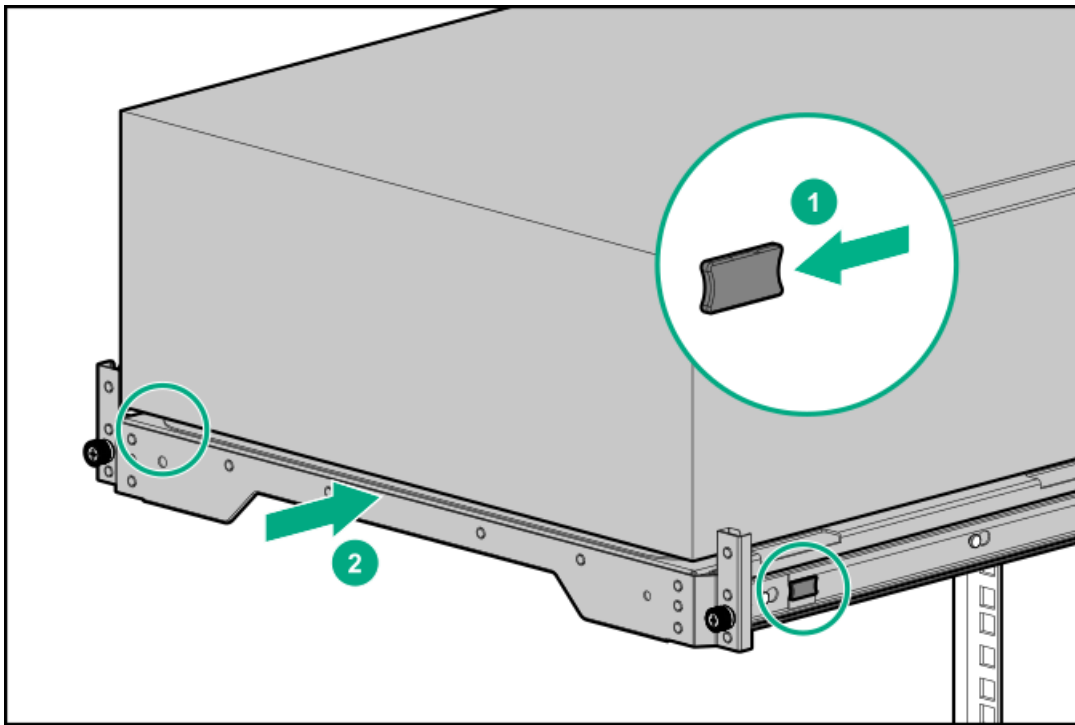
6. Connect all peripheral cables to the server.

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 ProLiant ML110 Gen11 Server website:

https://buy.hpe.com/us/en/p/1014705725

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

Subtopics

Server data backup

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

- For servers managed by HPE GreenLake for Compute Ops Management, make sure that you have your HPE GreenLake account ID. For more information, see HPE GreenLake for Compute Ops Management Getting Started Guide.

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.

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 in the same drive box.

- 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.
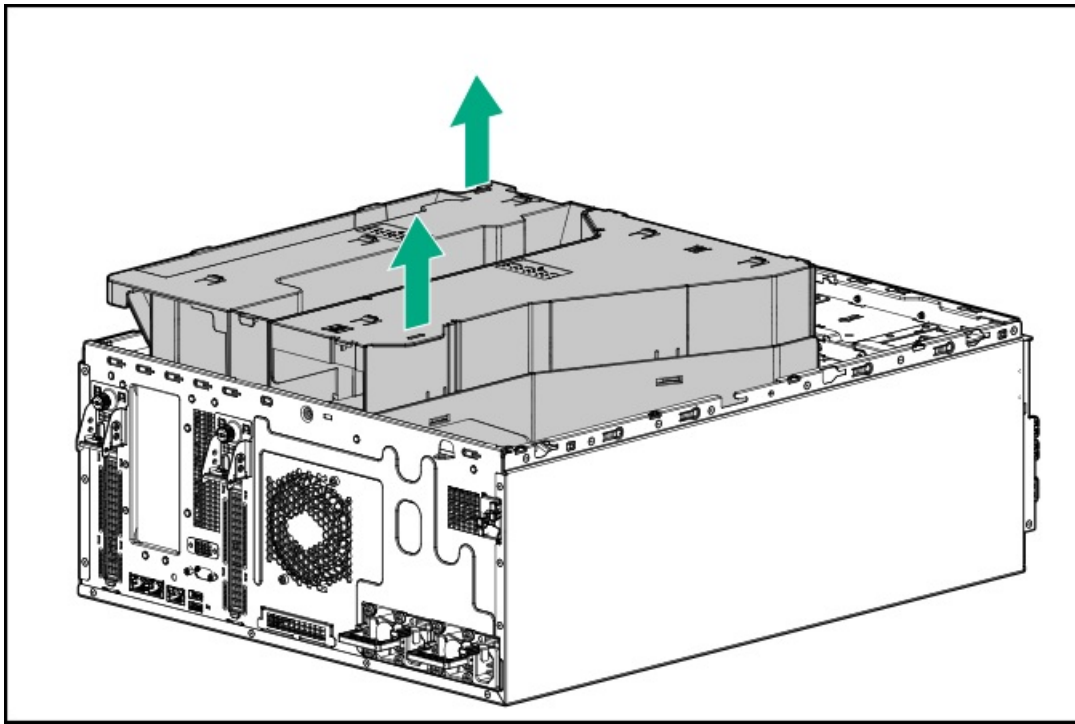
9. If a non-hot-plug drive is already installed, disconnect the drive power and SATA cables from the drive.

10. Remove the non-hot-plug drive cage.
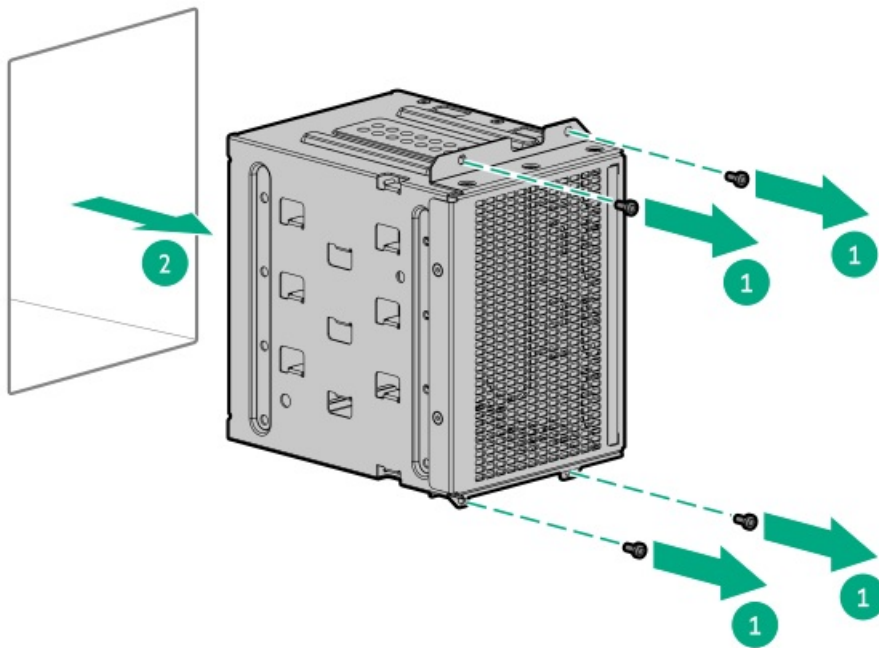
11. Remove the correct number of screws from the drive cage.

Each drive requires four screws.
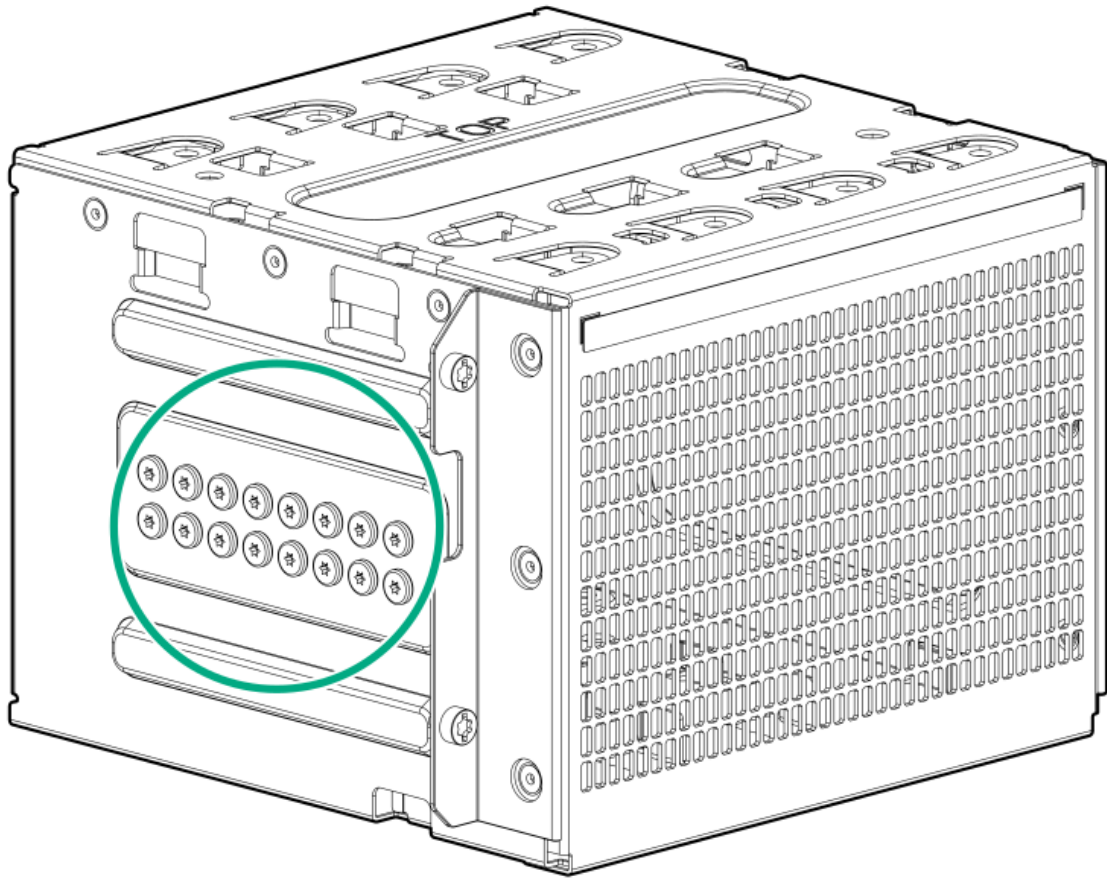
12. Install the non-hot-plug drive.
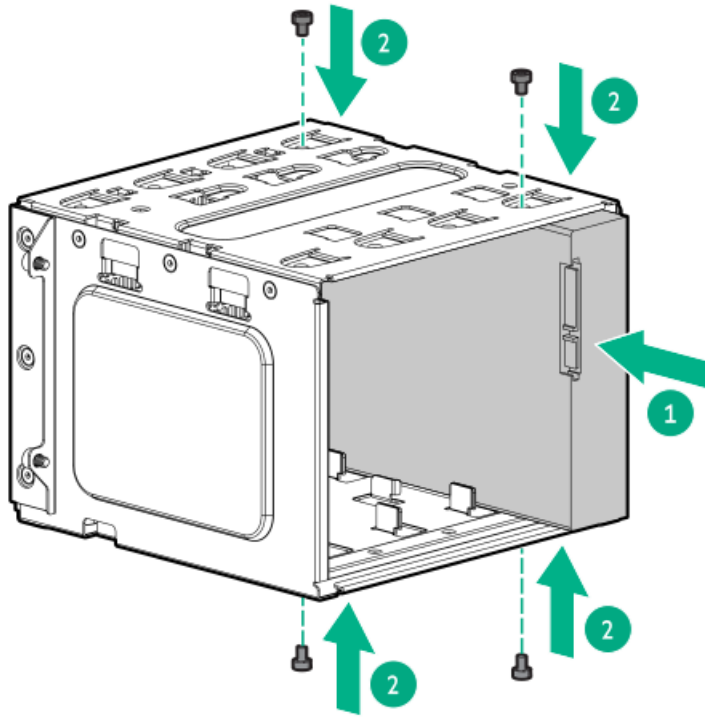
13. Install the non-hot-plug drive cage.
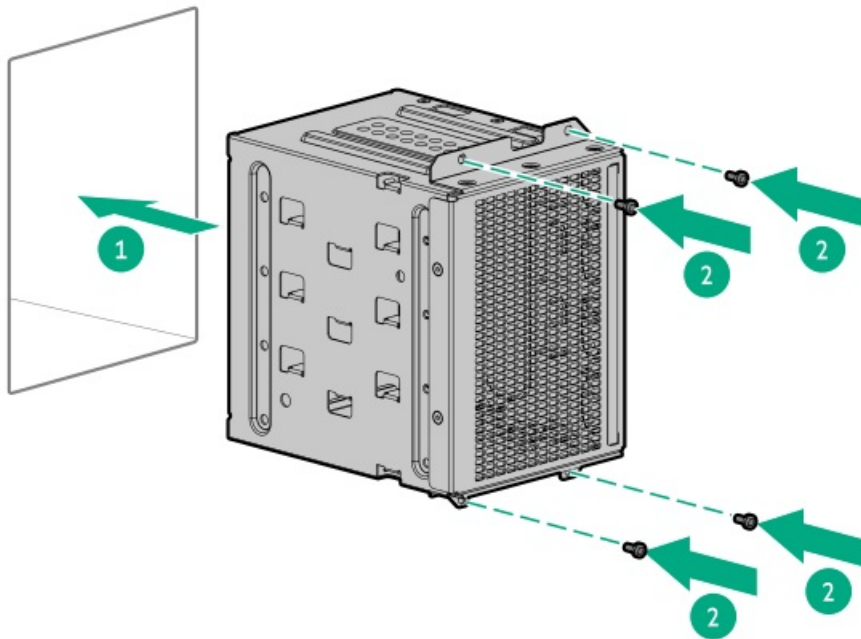
14. Connect the drive power and SATA cables .

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 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
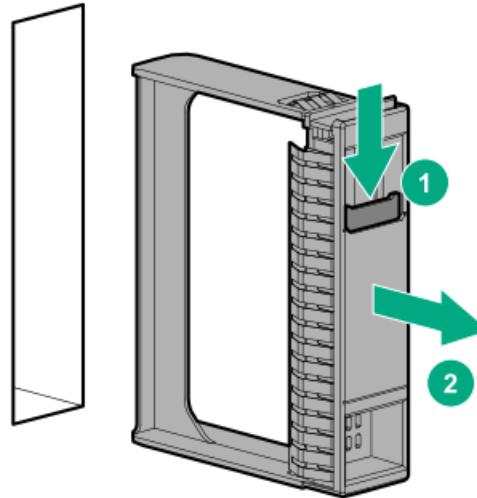
   - SFF drive blank
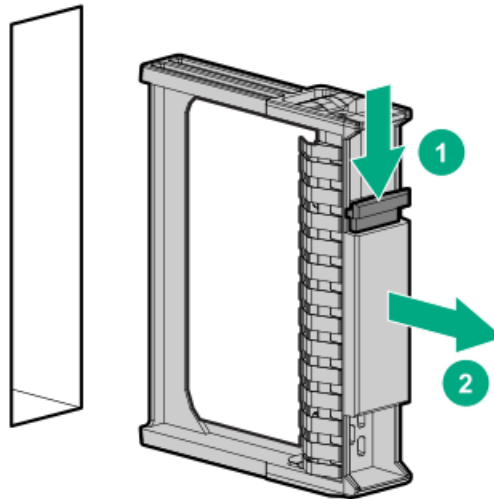
3. Prepare the drive.

   - LFF drive
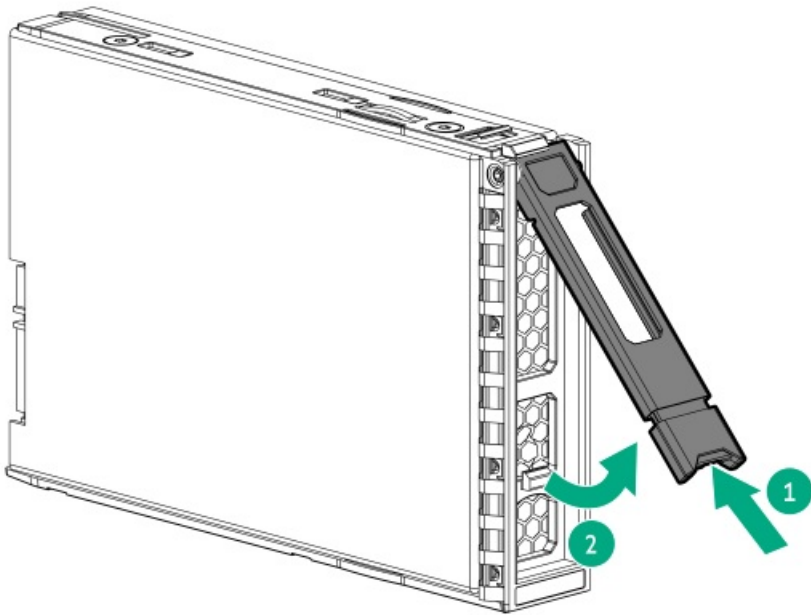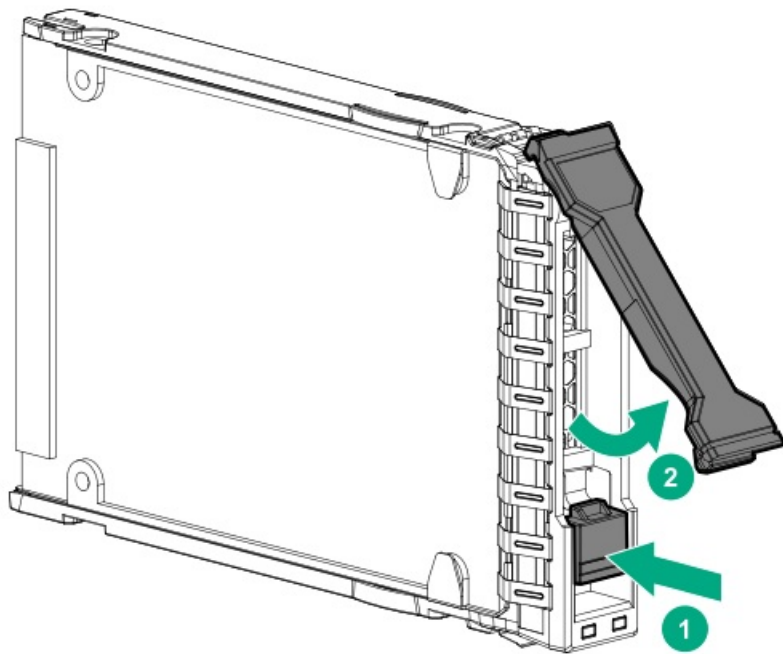
- SFF drive

4. Install the drive.

    - LFF drive
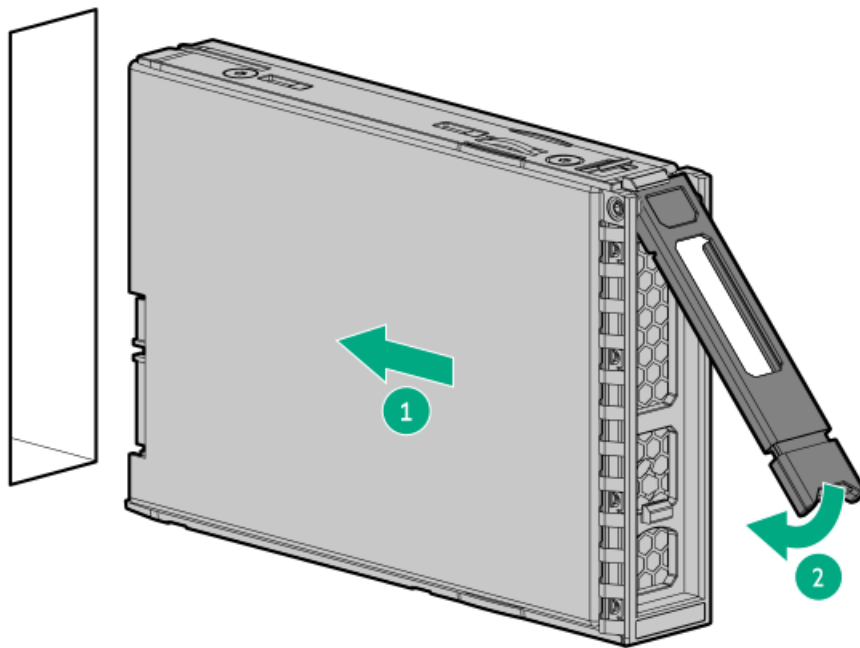
- SFF drive
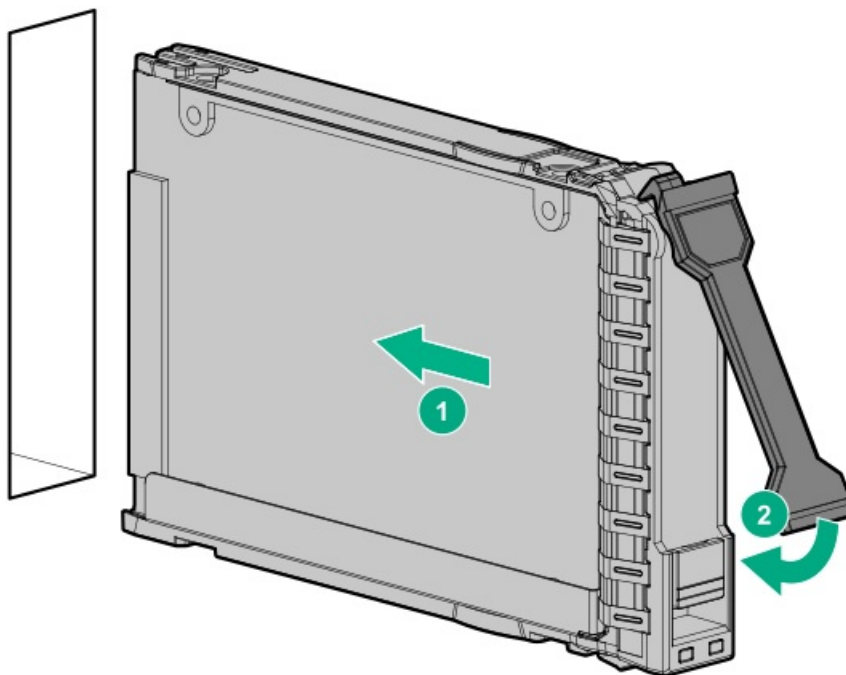
5. Determine the status of the drive from the drive LED definitions .

6. Install the front bezel .

7. To configure drive arrays, see the relevant storage controller guide .

Results

The installation is complete.

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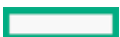
Depending on the installed options and the regional location where the server was purchased, the server can be configured with one of the supported underline power supplies.

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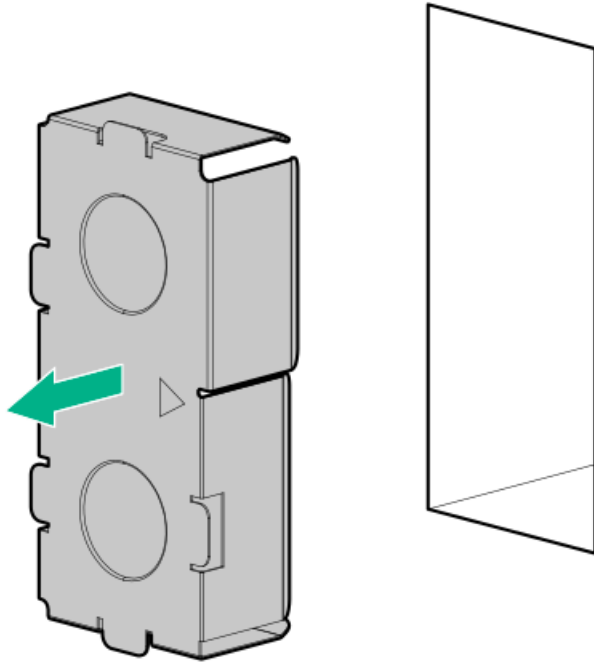
   - Rack mode
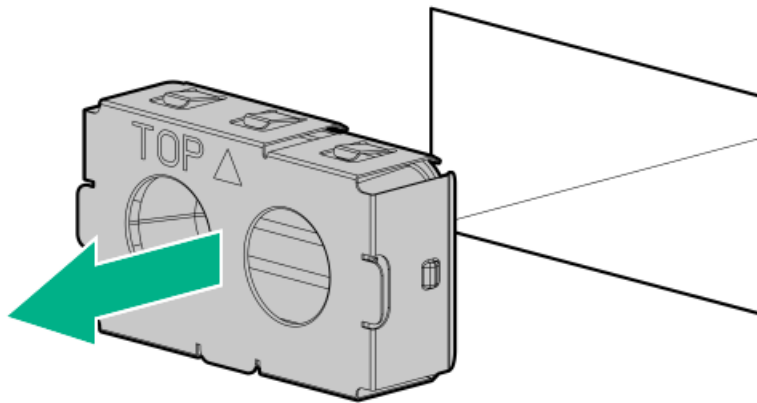
2. Immediately slide the power supply into the bay until it clicks into place.

   - Tower mode
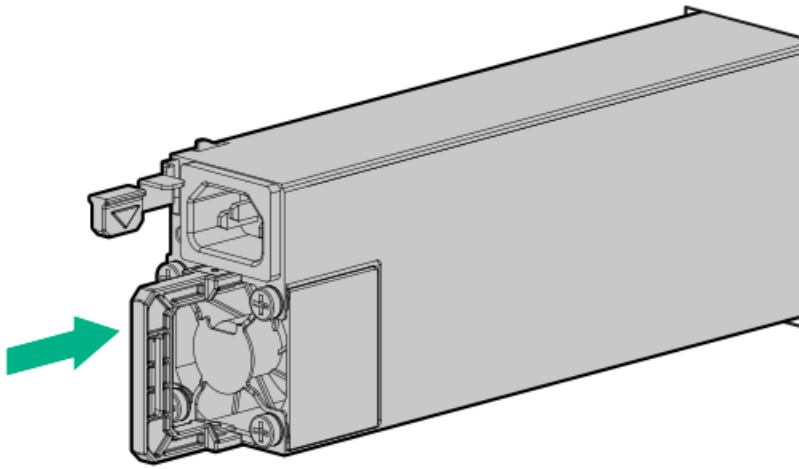
- Rack mode
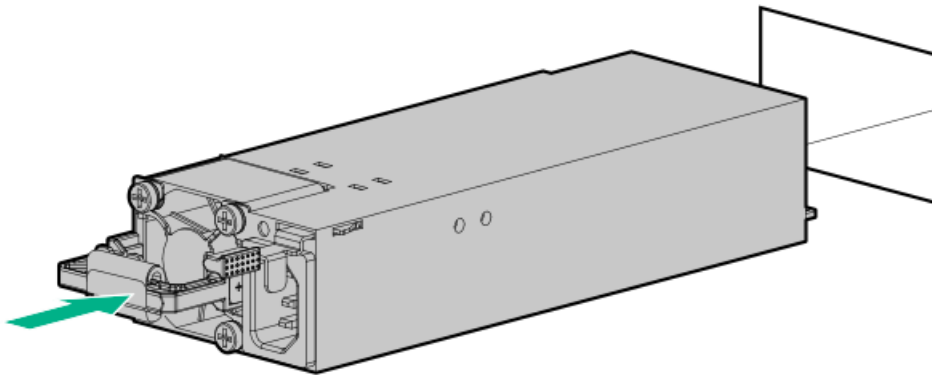
3. Connect the power cord to the power supply.

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.
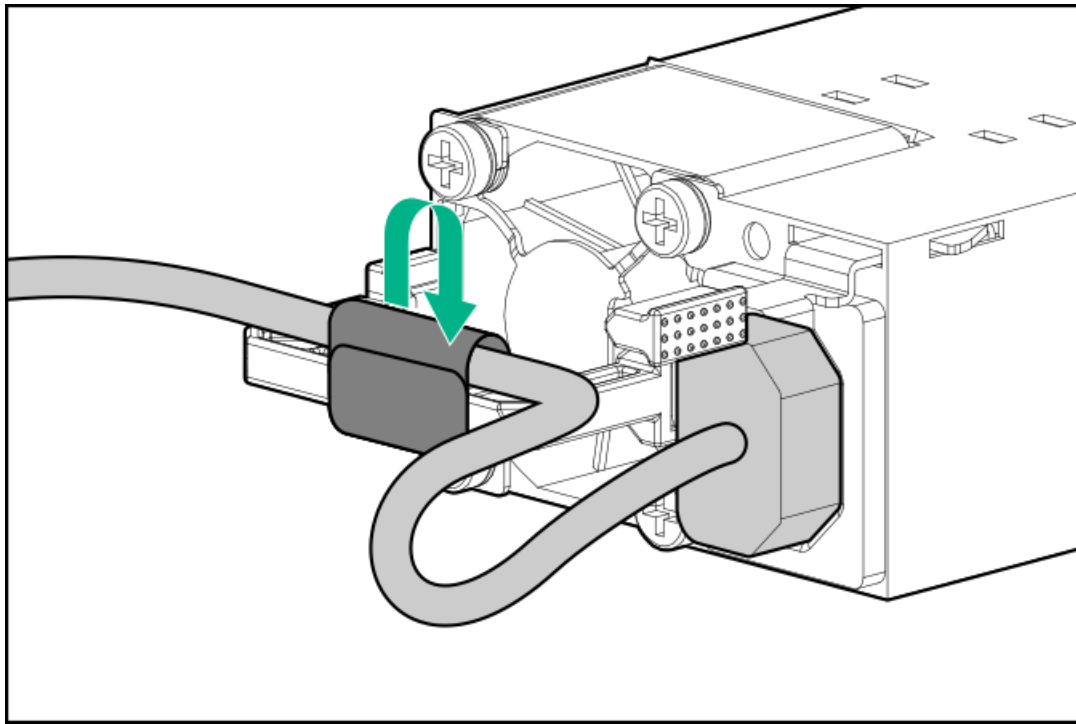
5. Connect the power cords:

   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 is complete.

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

Rack rail specifications

This server supports the HPE tower-to-rack conversion kit (874578-B211) 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

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.
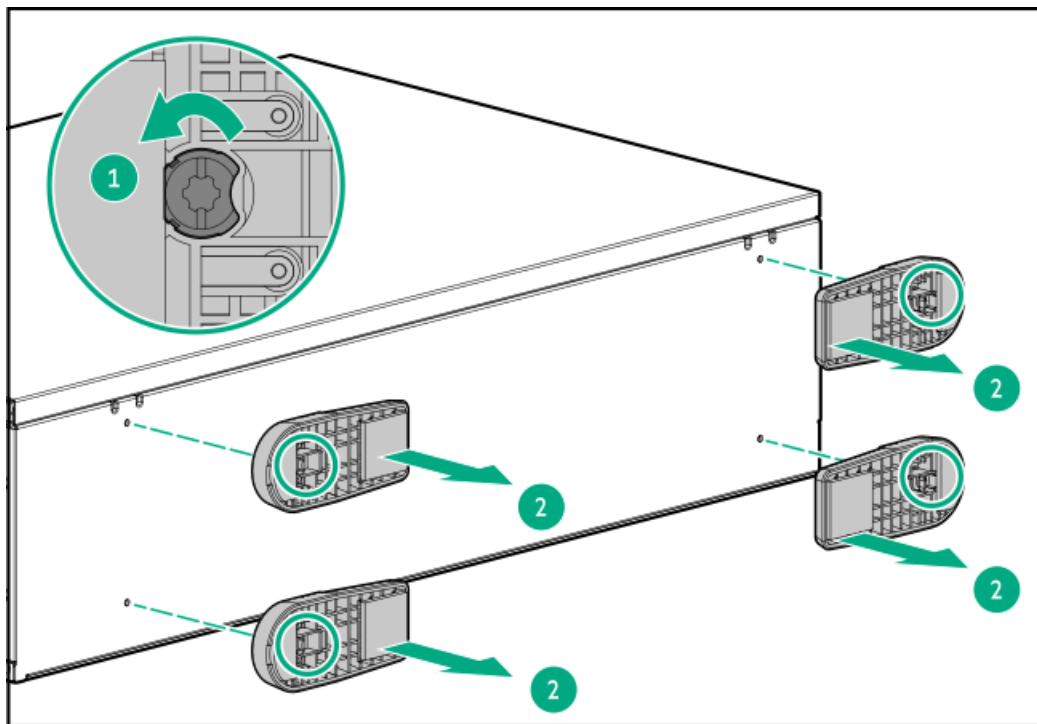
6. Install the rack rails and server tray.

7. Install the server into the rack.

8. Install the cable management arm.

Results

The installation 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.
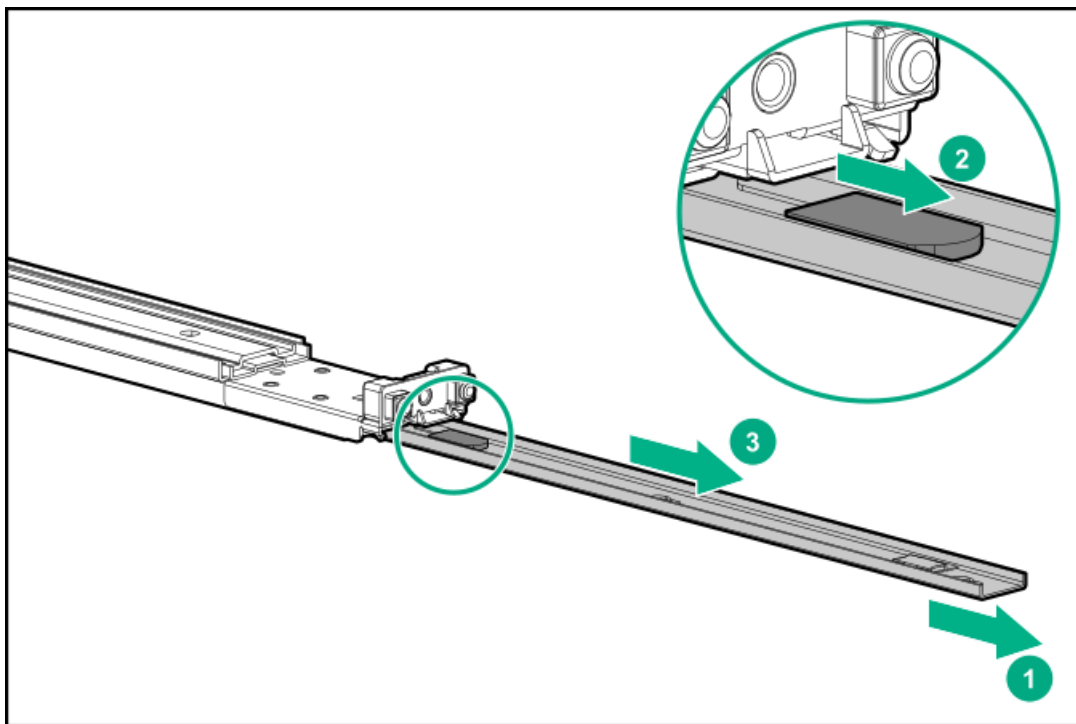
2. Install the sliding rails on the server tray:

    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.
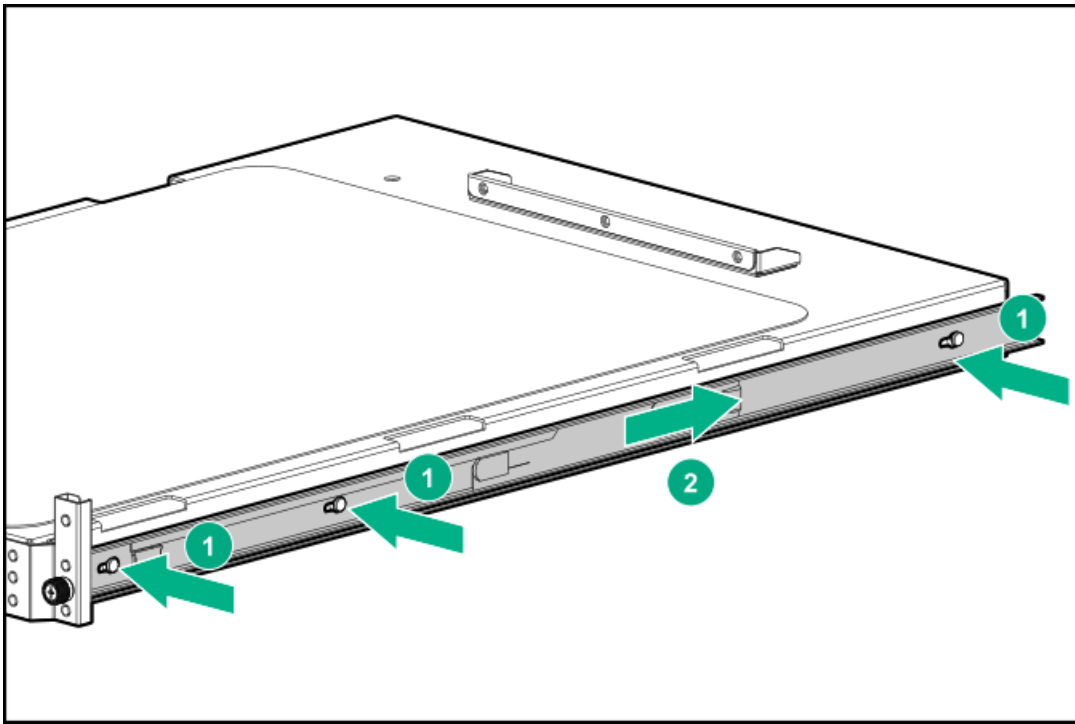
3. Locate the orientation markers on the mounting rails:

   - 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.
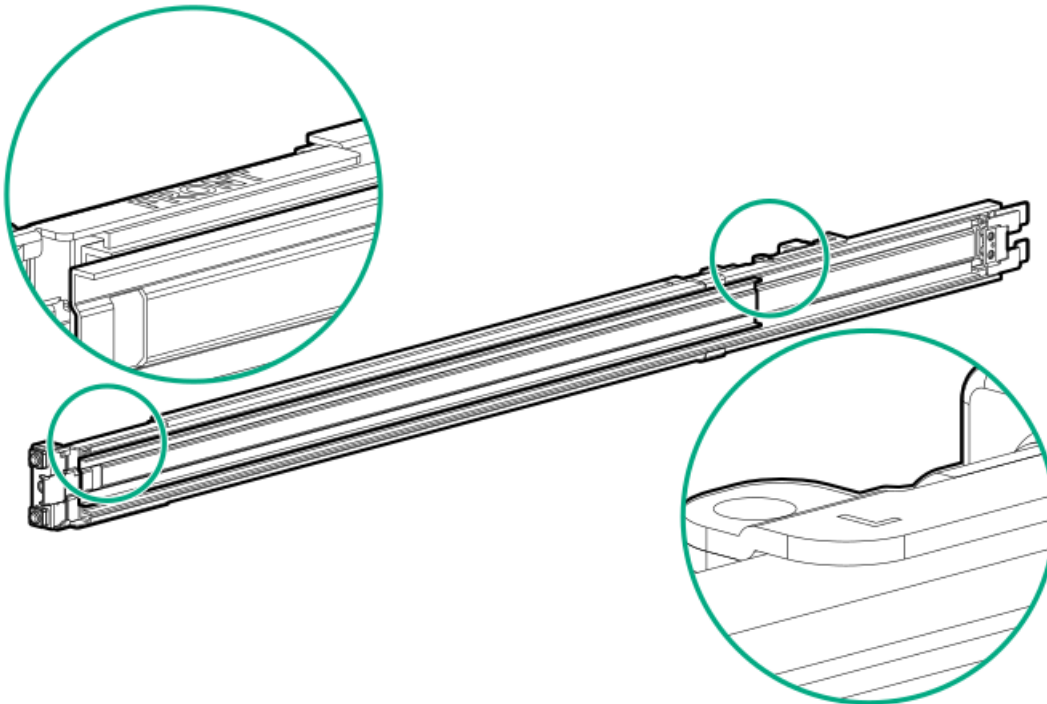
4. Fasten the mounting rails to the rack columns:

   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.
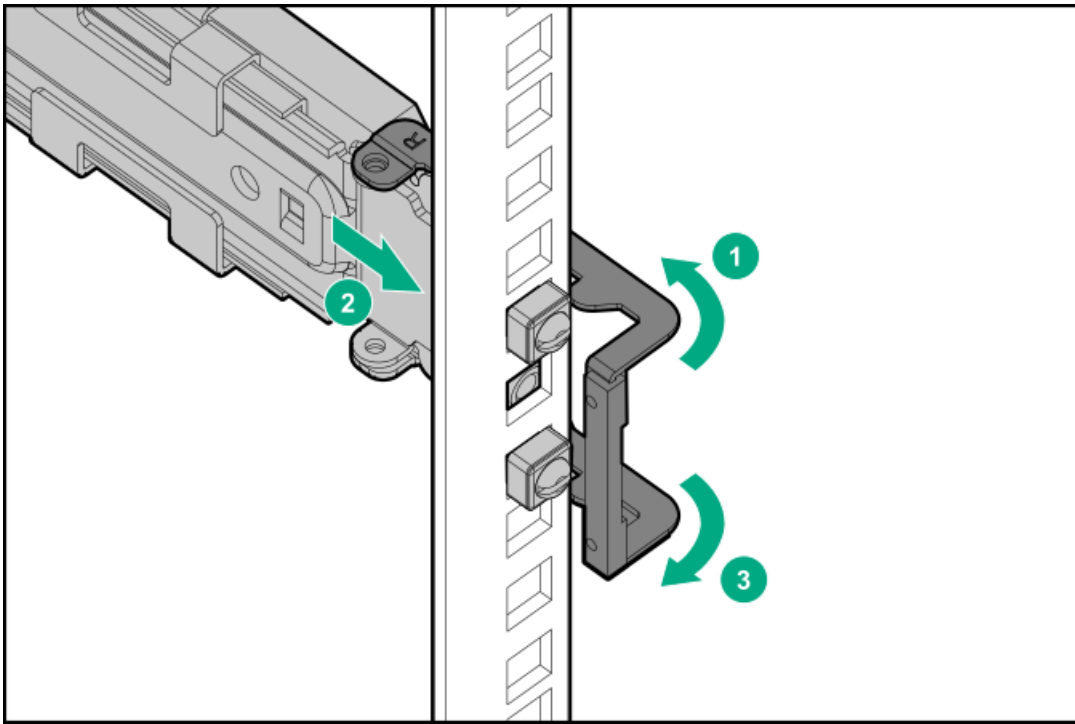
d. Retract and hold the front retention bracket.

e. Insert the pins on the mounting flange into the rack column holes.

f. Release the front retention bracket.
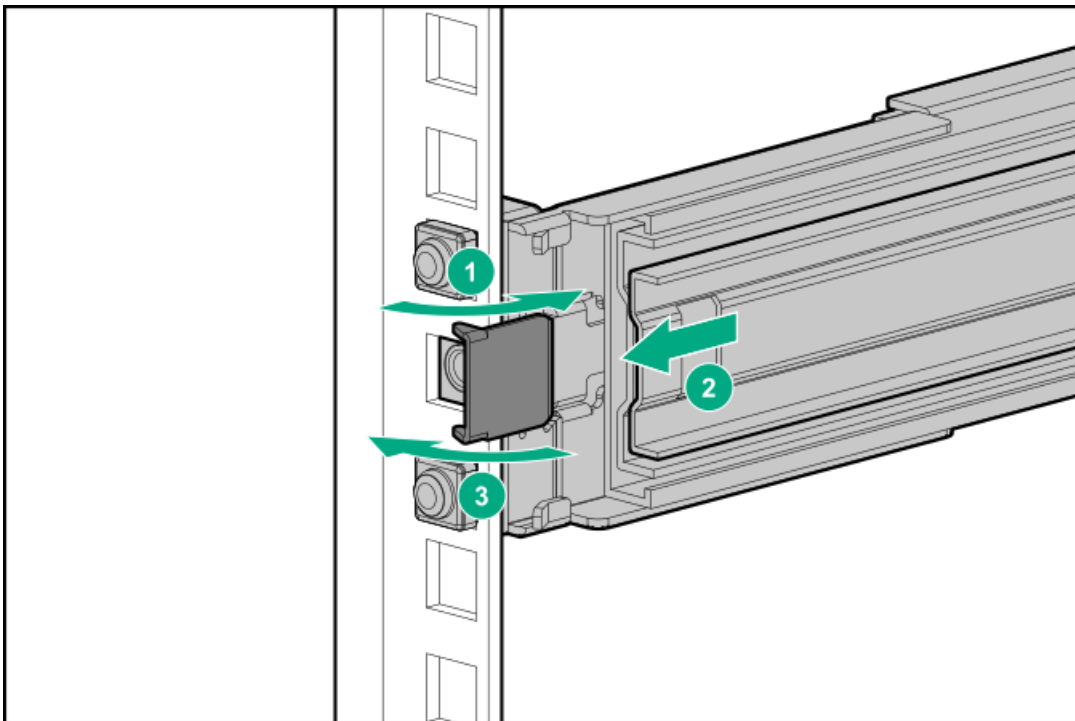
5. Slide the server tray into the rack.

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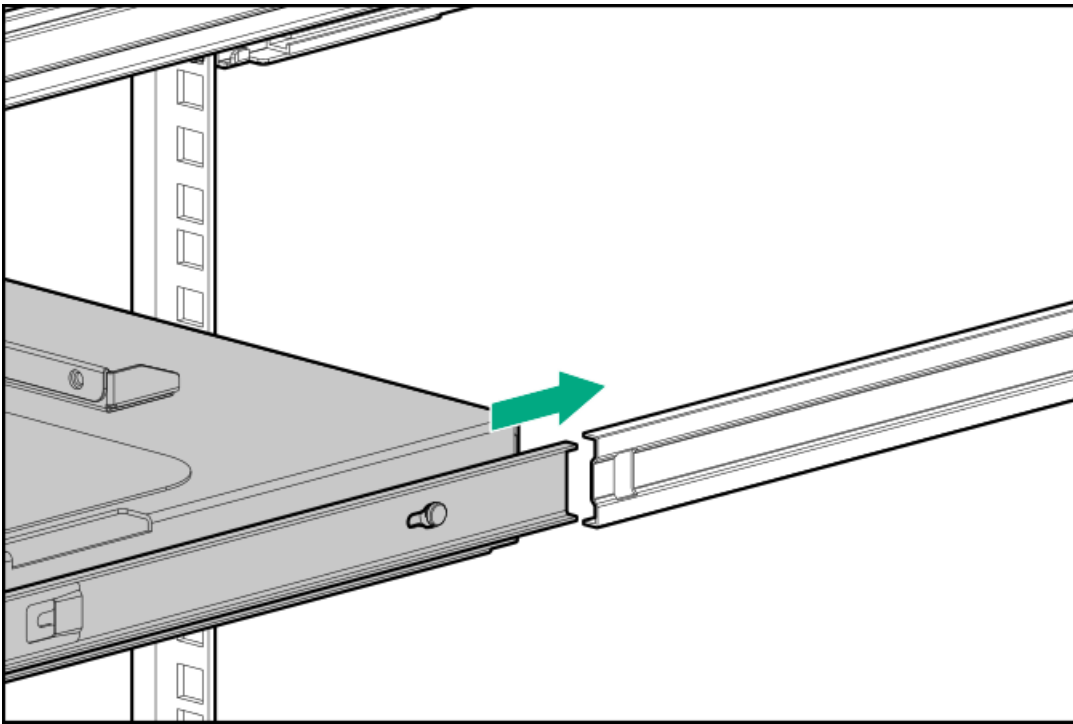
6. Install the server into the rack.

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, an additional person might be required to help install the server:** One person to support the server weight, and the other to slide the server into the rack.

- Before you perform this procedure, review the:

    - Rack warnings and cautions

    - Server warnings and cautions

    - 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.
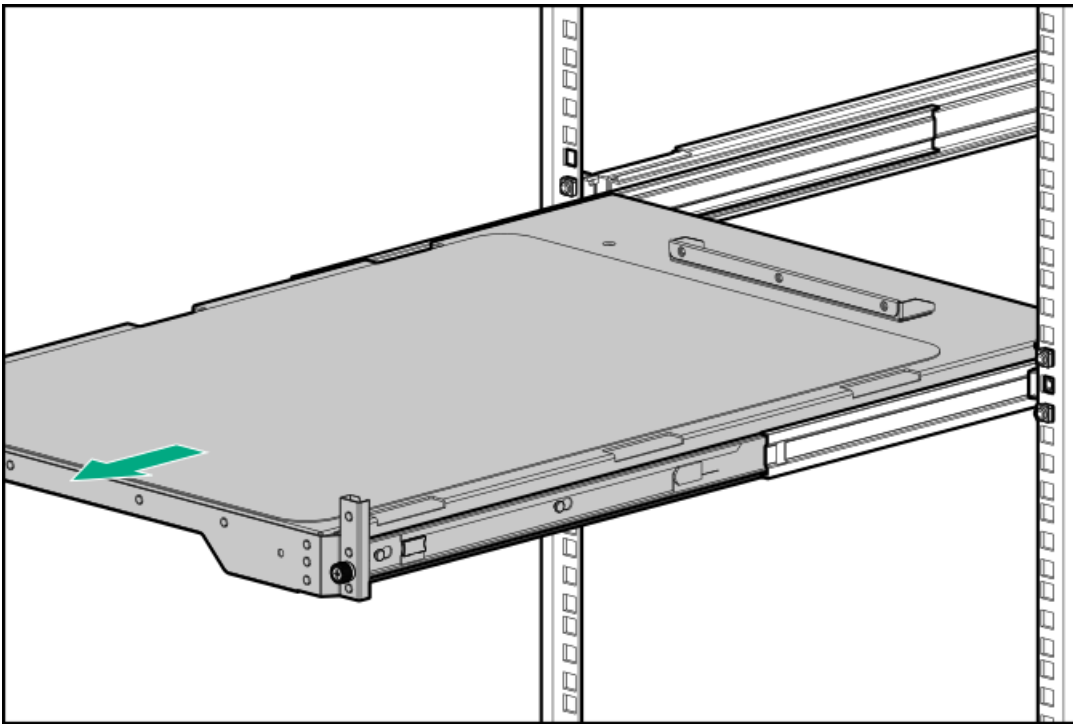
2. Place the server on the tray.

   Verify that the front panel of the server is aligned with the front of the tray.
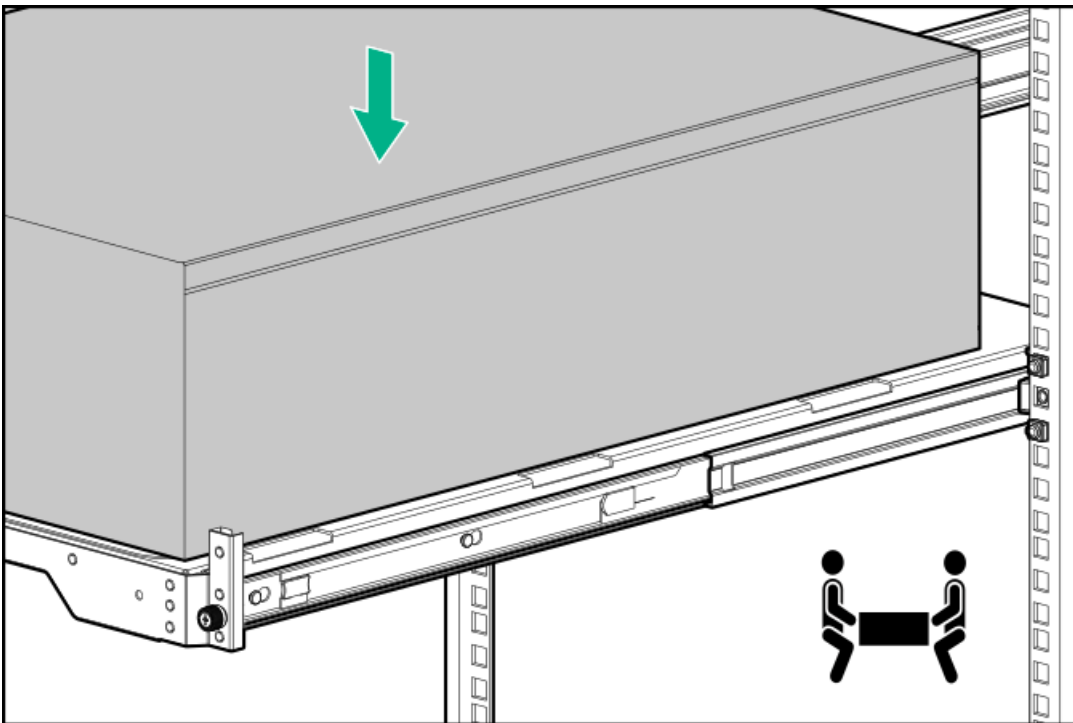
3. Press and hold the blue rail-release tabs, and then slide the tray back into the rack.
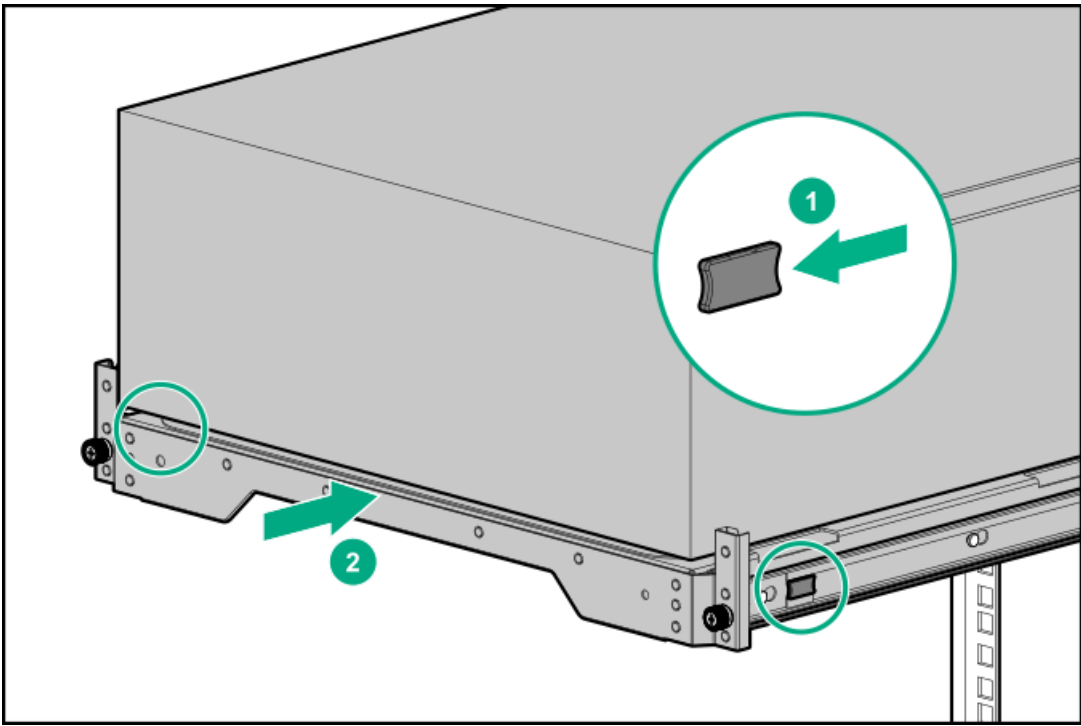
4. Connect all peripheral cables to the server.

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.
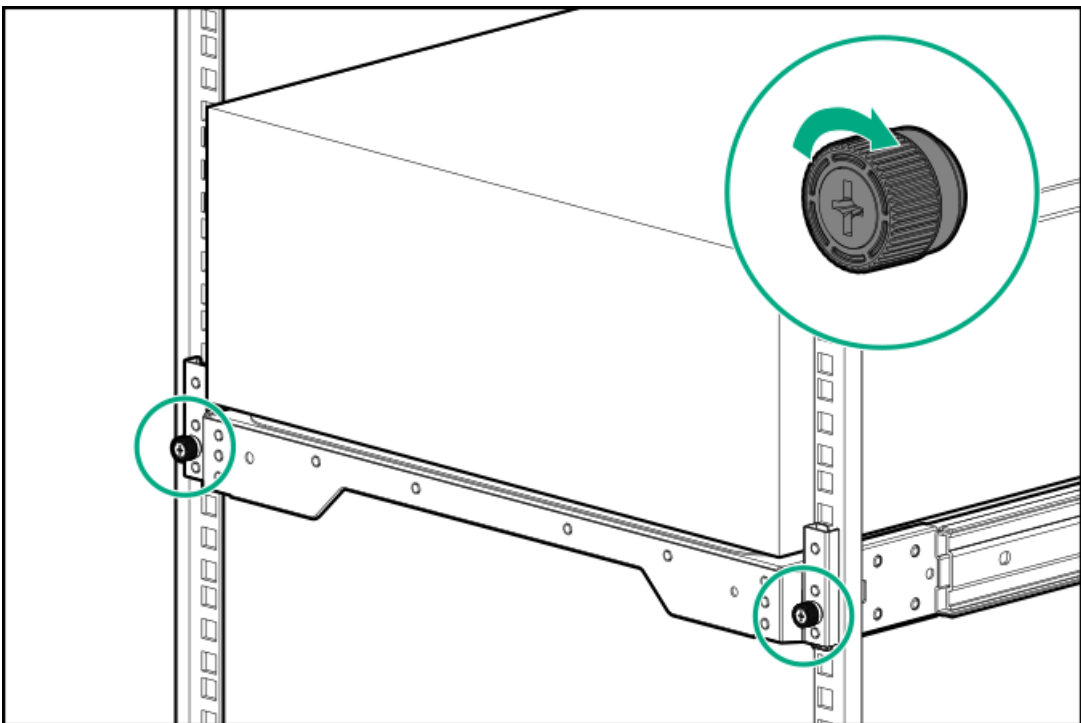
Install the cable management arm

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. Connect and secure all peripheral cables and power cords to the rear panel.

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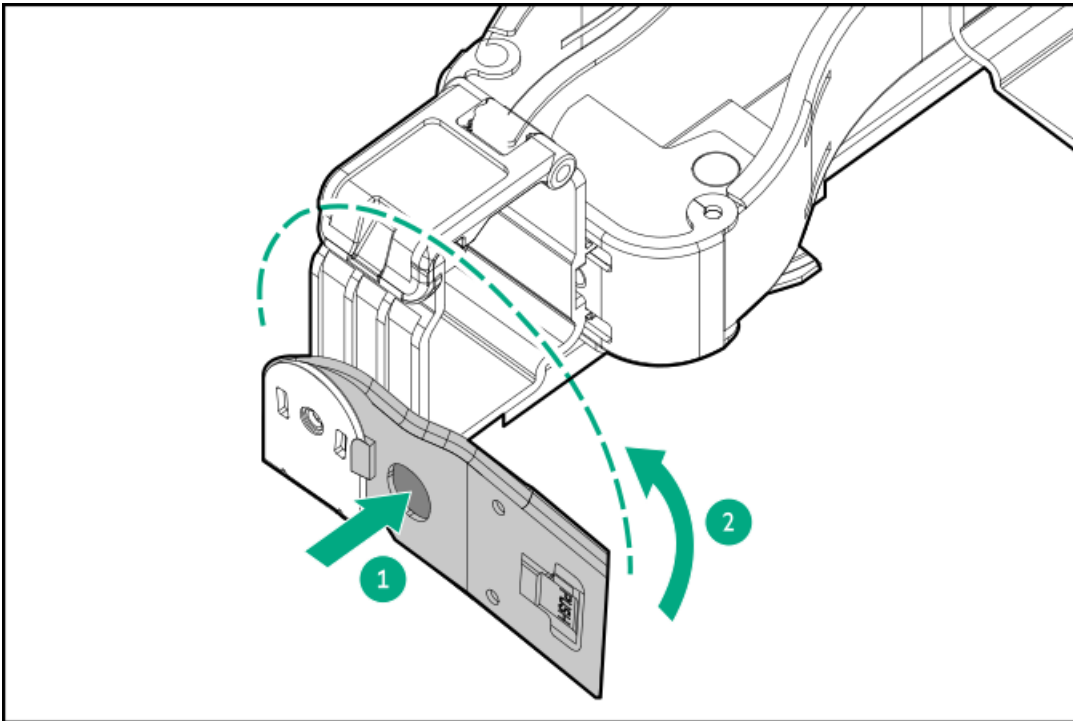
3. Connect the CMA hinged tabs and retention bracket to the rack rails:

   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.
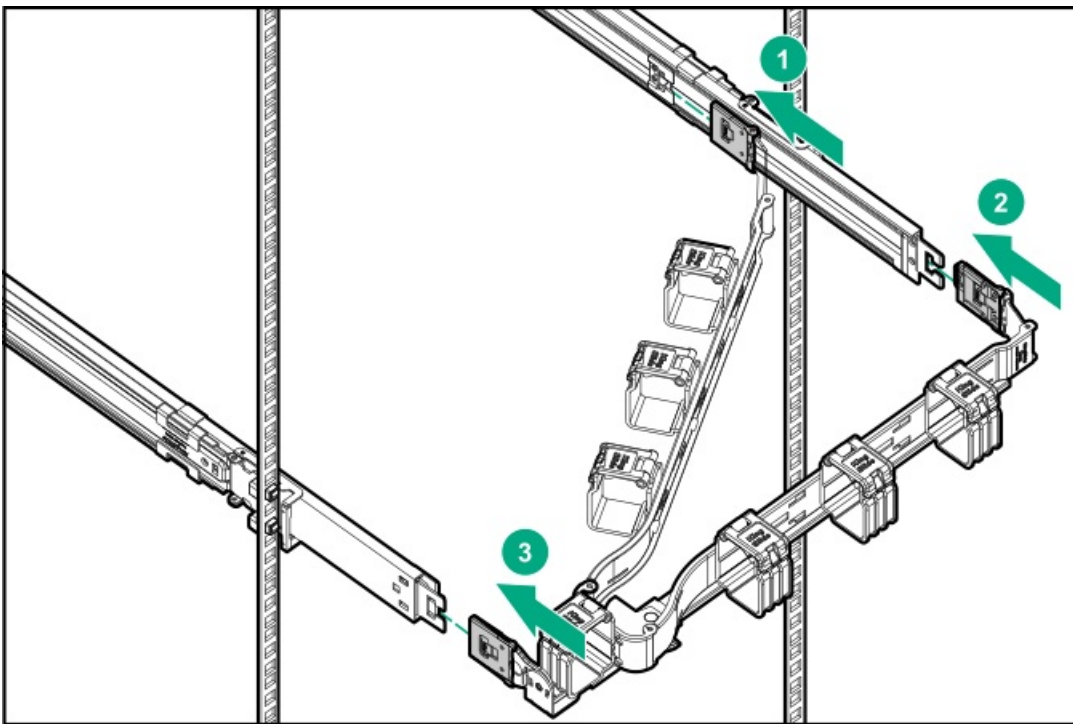
4. Open the cable clamps.
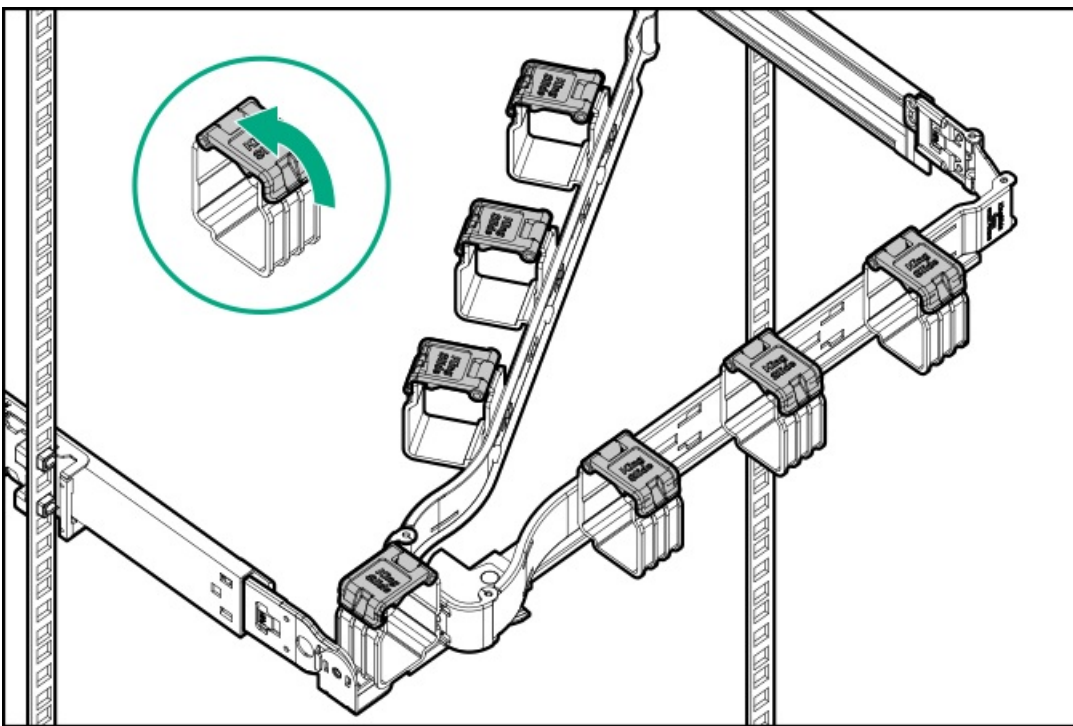
5. ⚠ **CAUTION:** Employ industry best practices in managing peripheral cables and power cords secured in the CMA. These are some of the more important points:

   - 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.
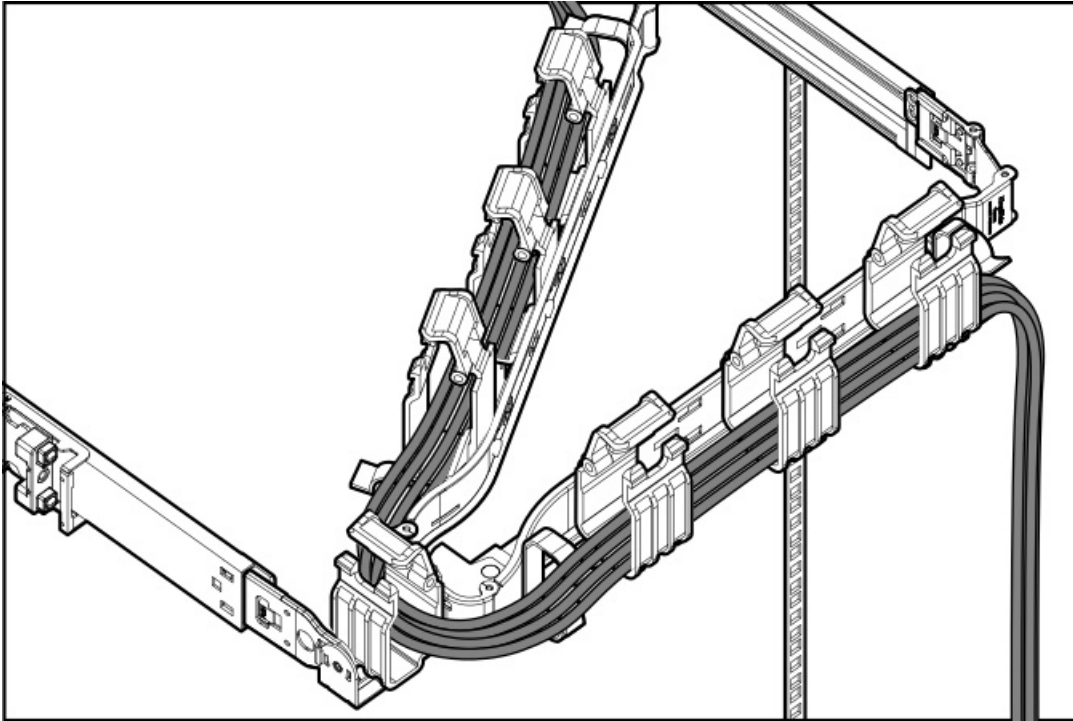
6. Close the cable clamps.
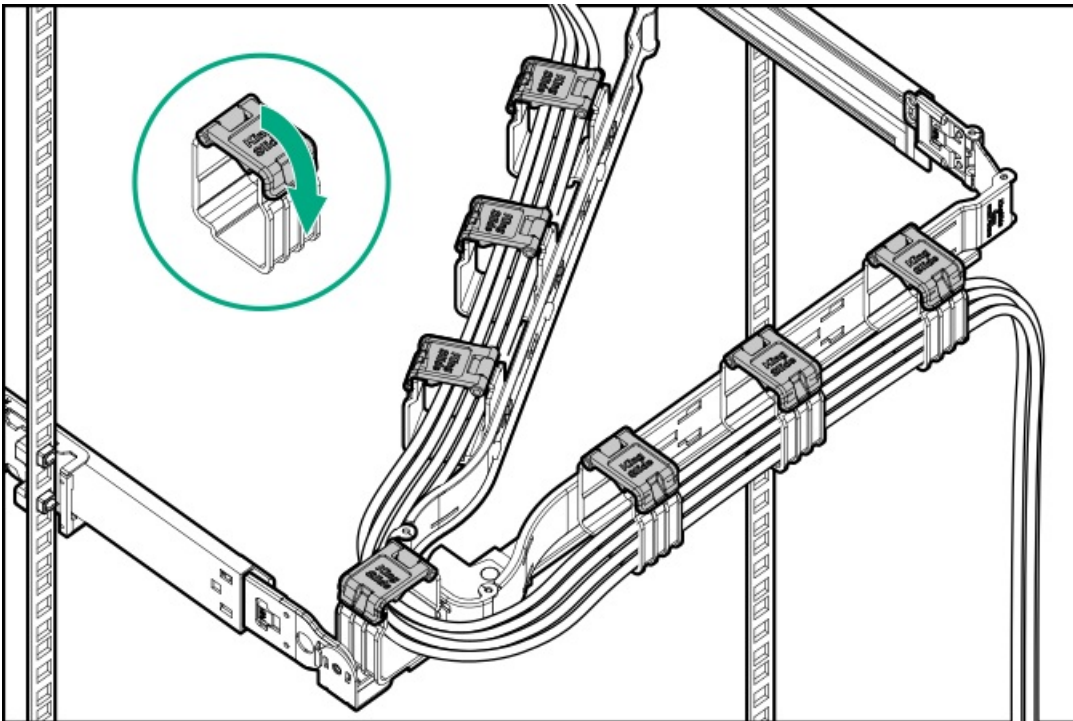
7. Verify the operation of the rack rails:

   Two people might be needed for this procedure: one to slide the chassis in and out of the rack, and the other to observe the rear panel cables and power cords.

   a. Fully extend the chassis out of the rack.

   b. Check that there is enough slack in the cables and cords for full extension of the chassis. Make sure that there is no cable binding or crimping.

   c. To ensure that the cables and cords are secured properly, slide the chassis in and out of the rack. Make sure that there is no risk of accidental disconnection of the peripheral cables and power cords.

Results

The installation 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 install the drive cage, always populate from the box 1.

This server supports one mixed hot-plug drive cage configuration—4 LFF drive cage in the box 1 with 8 SFF drive cage in the box 2.

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

Subtopics

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

Installing the 4 LFF hot-plug drive cage option

Installing the 8 SFF hot-plug drive cage option

Installing the 4 LFF non-hot-plug drive 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 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.
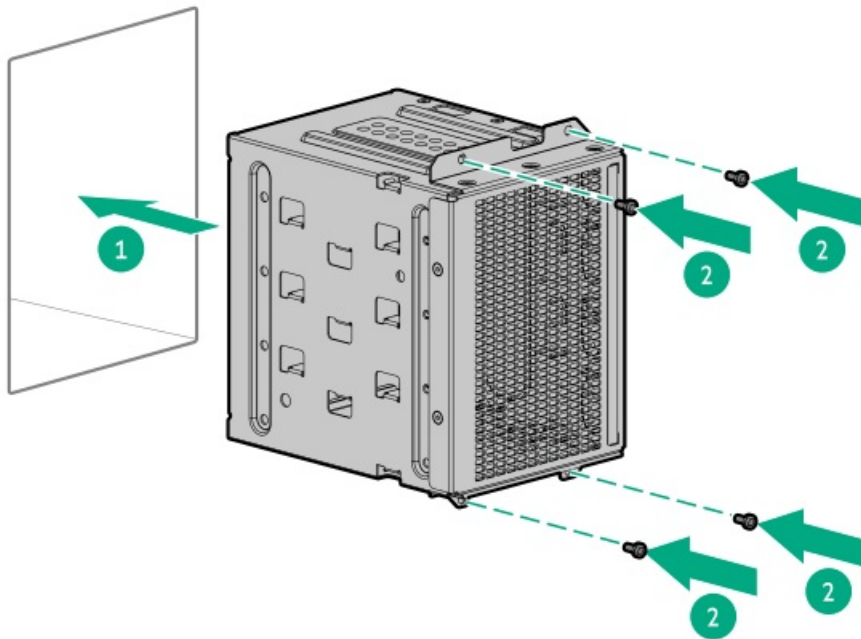
12. If you are installing the second 4 LFF non-hot-plug drive cage option, repeat steps 10 to 12 on the Box 2.

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

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. Install the front bezel.

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 is complete.

Installing the 4 LFF hot-plug drive cage option

Prerequisites

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

About this task

The server supports the 4 LFF hot-plug drive cage option. This option:

- Can be installed in boxes 1 or 2

- Can be installed together with the 8 SFF hot-plug drive cage option

- Supports one SAS / SATA drive backplane 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:

    a. Install the drive cage in the drive box bay.

    b. Install the drive cage screws.
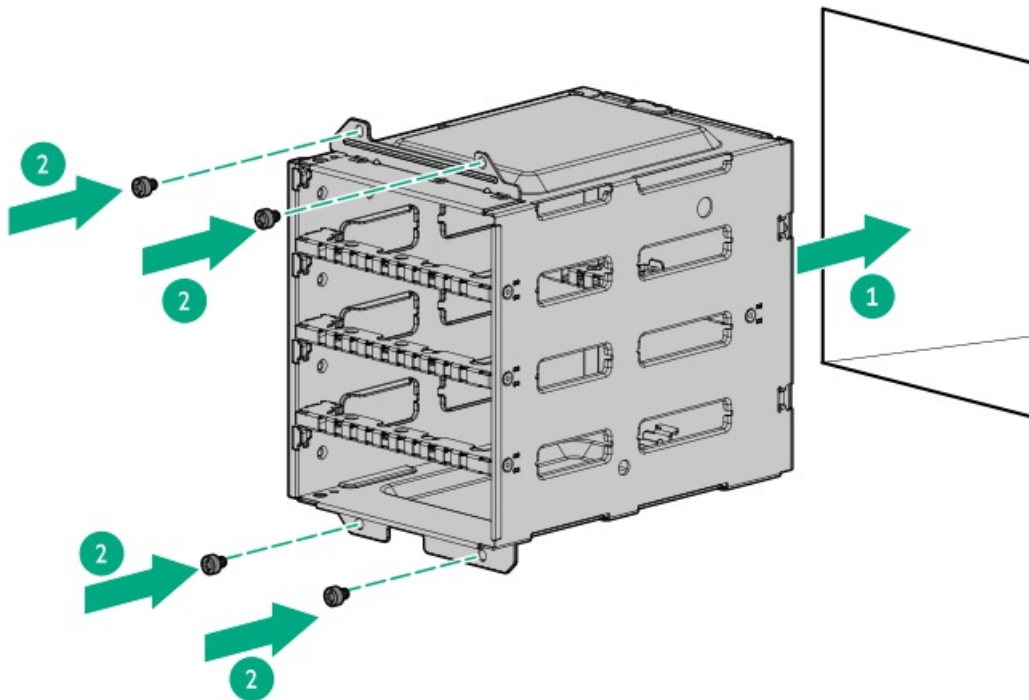
11. If you are installing the second 4 LFF hot-plug drive cage option, repeat steps 10 and 11 on the Box 2.

12. Connect all following drive cables:

    - LFF hot-plug drive controller cables

    - Drive power cable

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 LFF hot-plug drive.

18. Install the front bezel.

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 is complete.

Installing the 8 SFF hot-plug drive cage option

Prerequisites

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

About this task

The server supports the 8 LFF hot-plug drive cage option. This option:

- Can be installed in boxes 1 or 2

- Can be installed together with the 4 LFF hot-plug drive cage option

- Supports different SAS / SATA drive backplane options

> ⚠ **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, <u>place the server on a flat, level surface with the access panel facing up</u>.
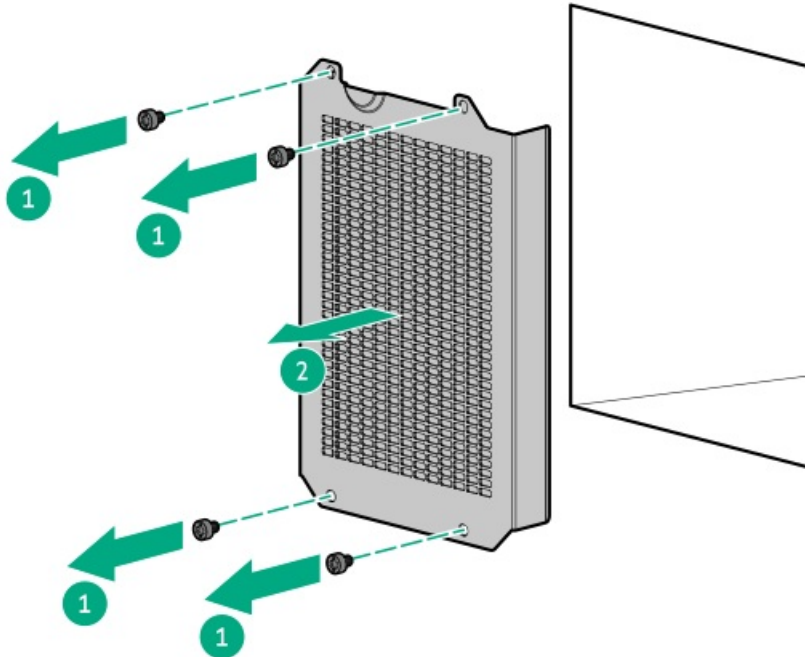
- If the server is in rack mode, <u>remove the server from the rack</u>.

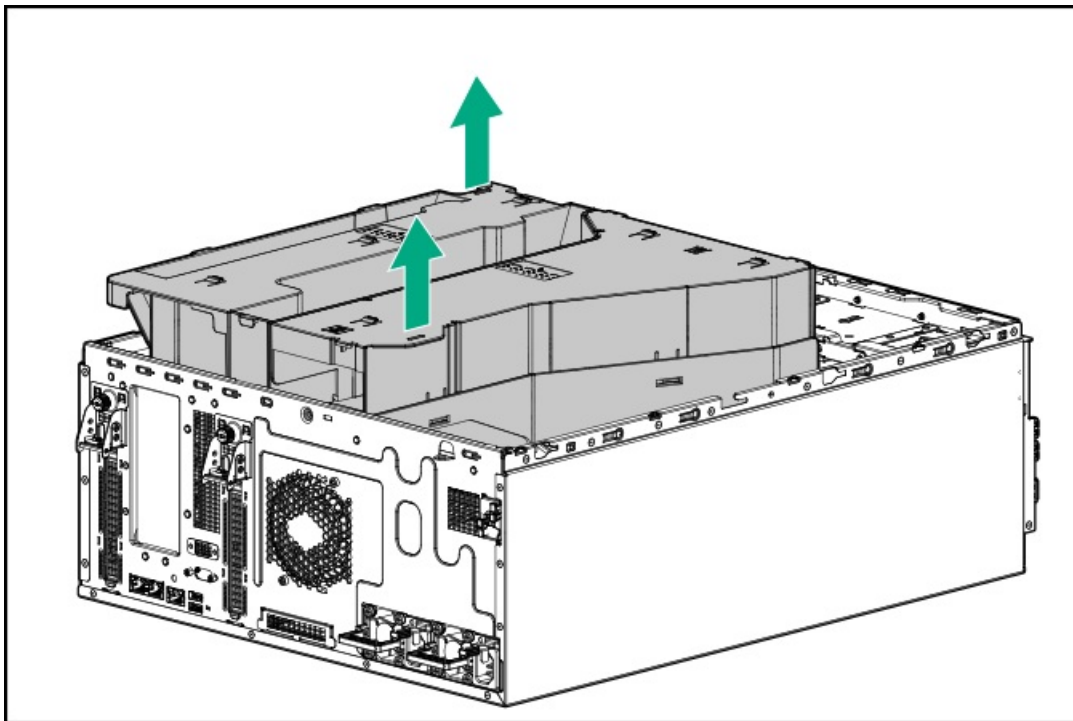7. <u>Remove the access panel</u>.

8. Remove the system air baffle.

9. Remove the drive cage blank.

10. Install the 8 SFF hot-plug drive cage:

   a. Install the drive cage in the drive box bay.

   b. Install the drive cage screws.
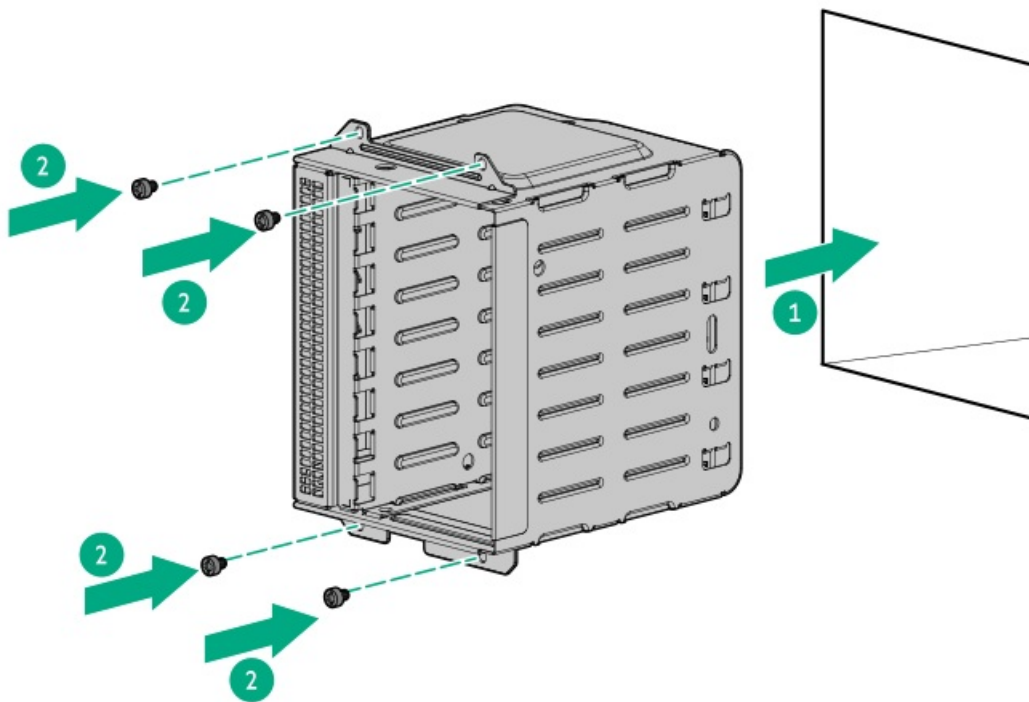
11. If you are installing the second 8 SFF hot-plug drive cage option, repeat steps 10 and 11 on the Box 2.

12. Connect all following drive cables:

   - SFF hot-plug drive controller cables

   - Drive power cable

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 SFF hot-plug drive.

18. Install the front bezel.

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 is complete.

Media device options

The server supports one USB RDX docking station in the media bay.

Subtopics

 USB RDX backup system option

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

Installing the internal USB RDX docking station

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.
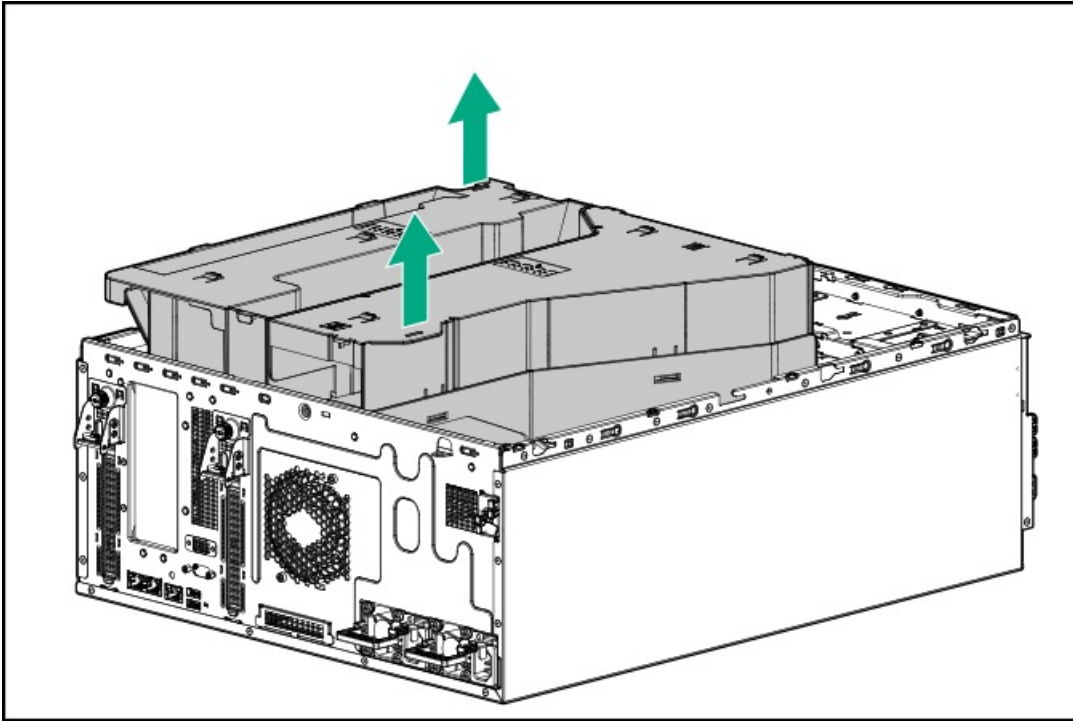
Procedure

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.
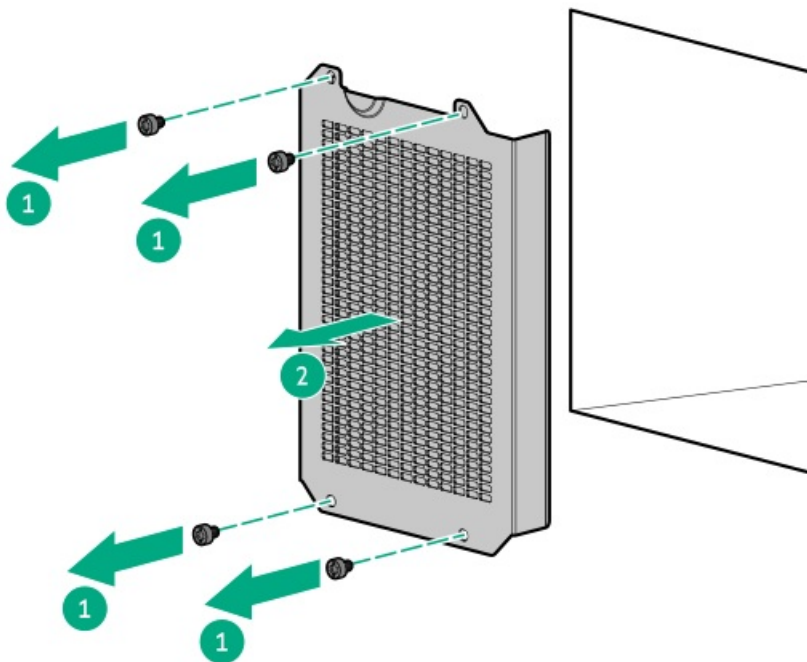
6. Do one of the following:

   - 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. Install the RDX docking station screws.

   These screws are included in the RDX docking station option kit. If the option kit does not include screws, use the   media device screws on the front panel.
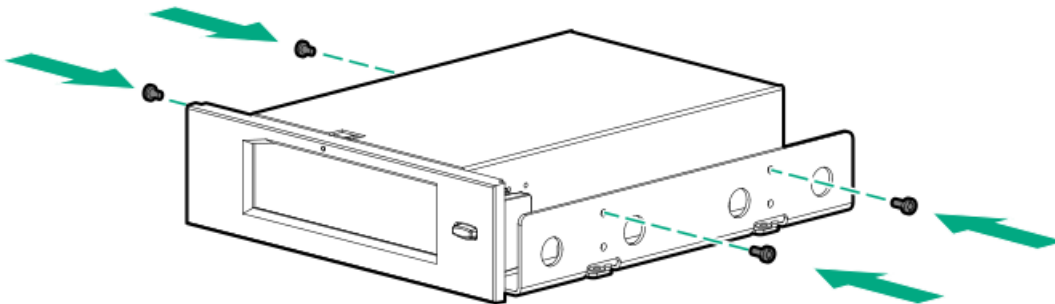
10. Remove the media bay blank.
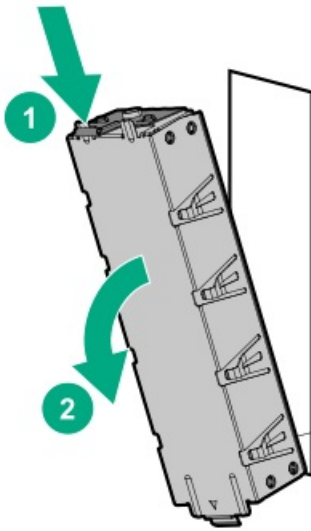
11. Slide the RDX docking station into the media bay until it clicks into place.
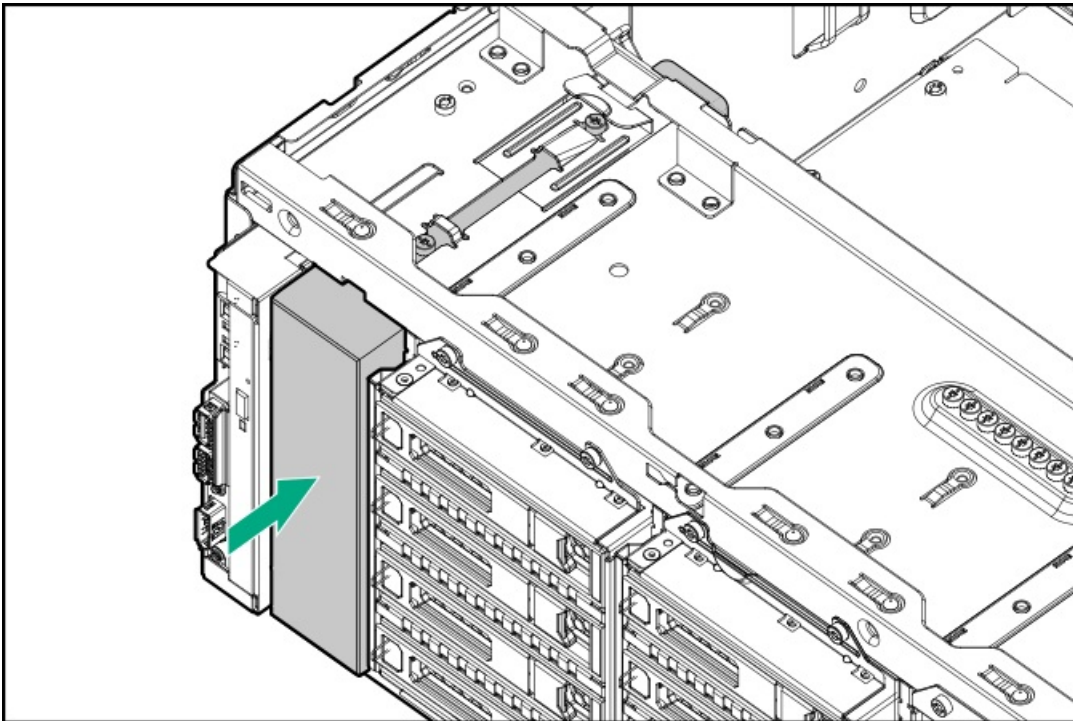
12. Connect the USB RDX docking station power and signal cables .

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. <u>Power up the server</u>.

Results

The installation is complete.

Optical drive option

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

Subtopics

<u>Installing the optical drive option</u>

Installing the optical drive option

Prerequisites

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

- <u>Optical drive cable option (756914-001)</u>

- 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.
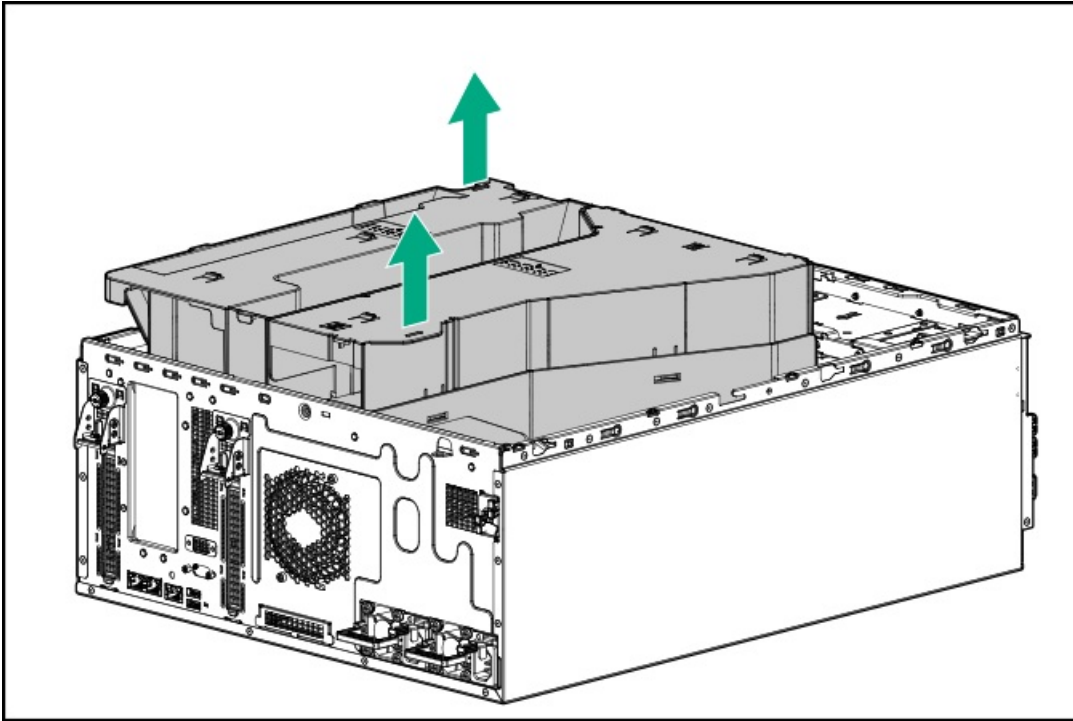
⚠ **CAUTION:** A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe <u>antistatic precautions</u>.

Procedure

1. <u>Back up all server data</u>.

2. <u>Power down the server</u>.

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, <u>remove the front bezel</u>.

6. Do one of the following:

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

    - If the server is in rack mode, <u>remove the server from the rack</u>.

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 optical drive cage:

   a. Remove the optical drive cage screws.

   b. Slide the optical drive cage out of the server.
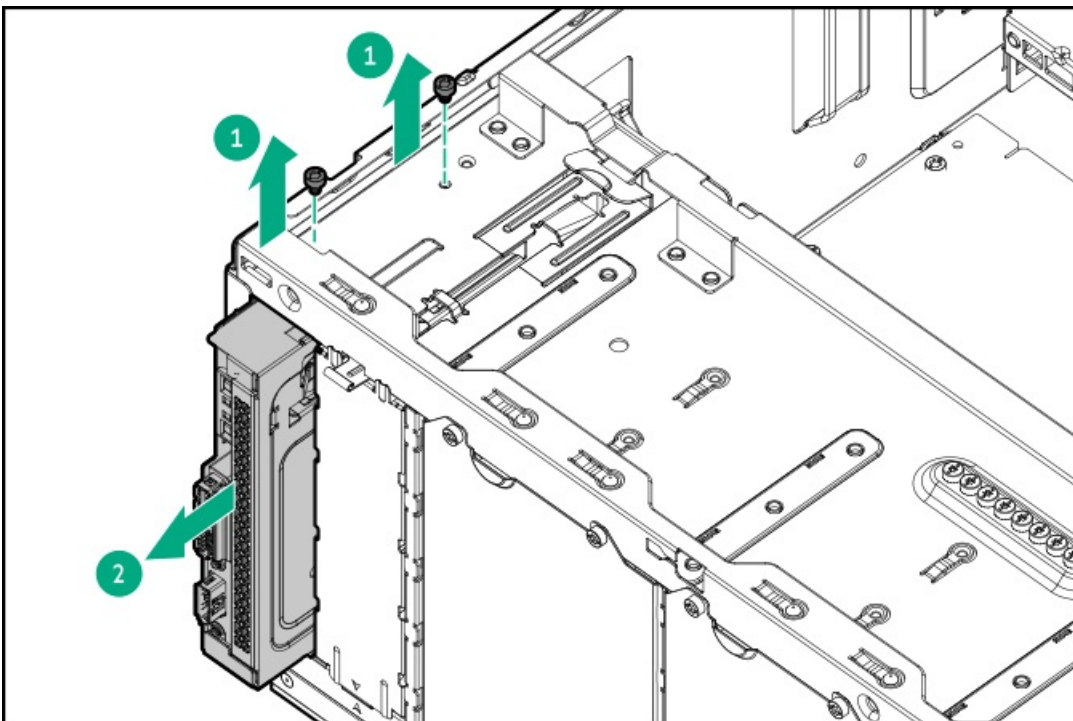
11. Remove the optical drive blank:

   a. Use a plastic spudger to pry one side of the blank.

   b. Remove the optical drive blank from the optical drive cage.
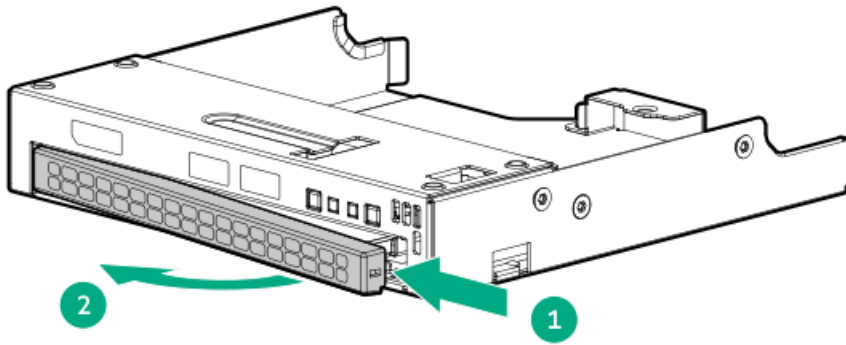
12. Install the optical drive bracket.
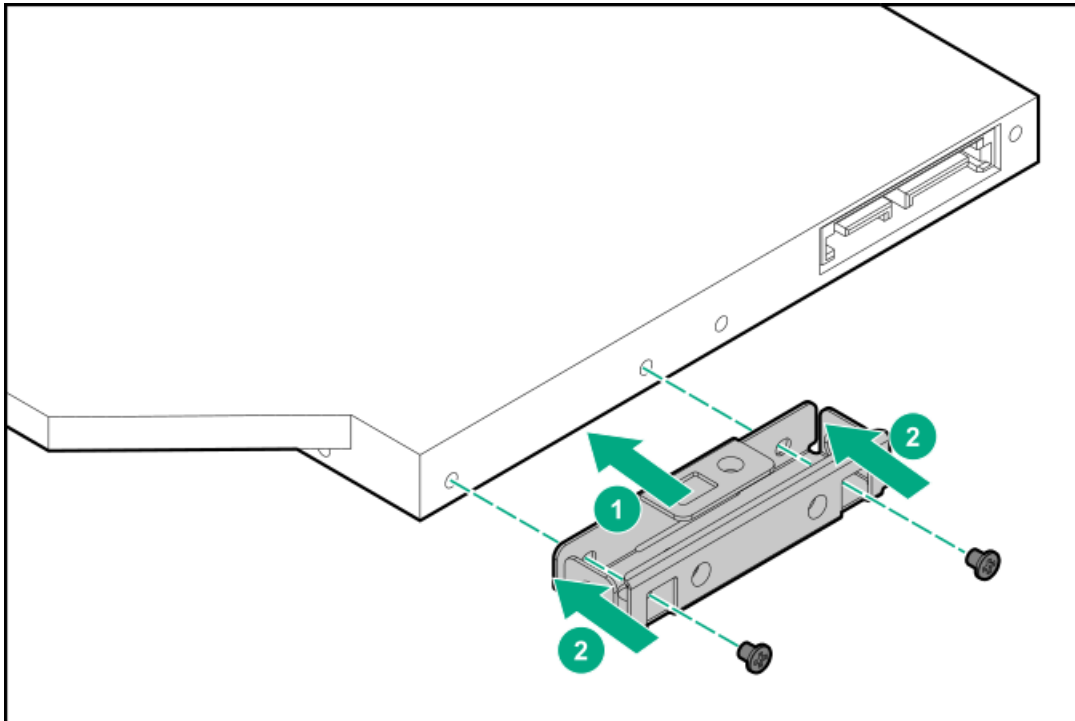
13. Install the optical drive in the optical drive cage:

   a. Slide the optical drive into the optical drive cage.

   b. Install the drive bracket screw.
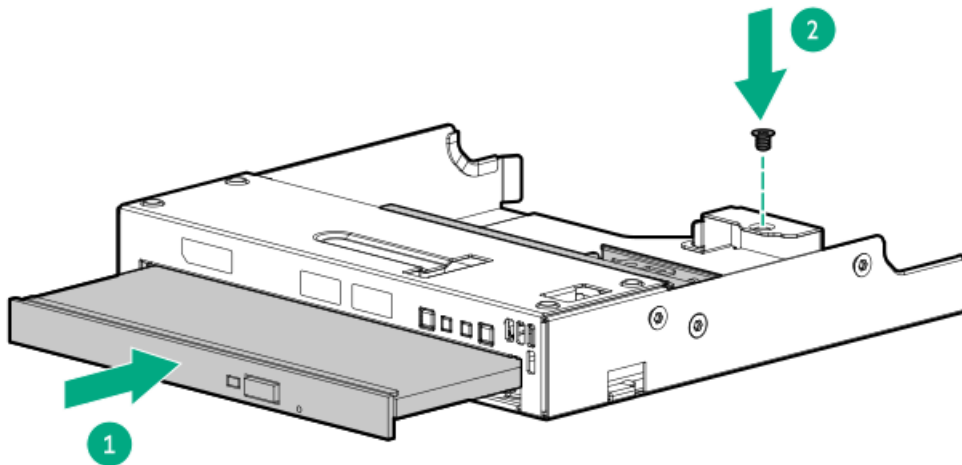
14. Connect the SATA-power cable to the optical drive.

15. Install the optical drive cage:

    a. Slide the optical drive cage into the optical drive bay until it clicks into place.

    b. Install the optical drive cage screws.
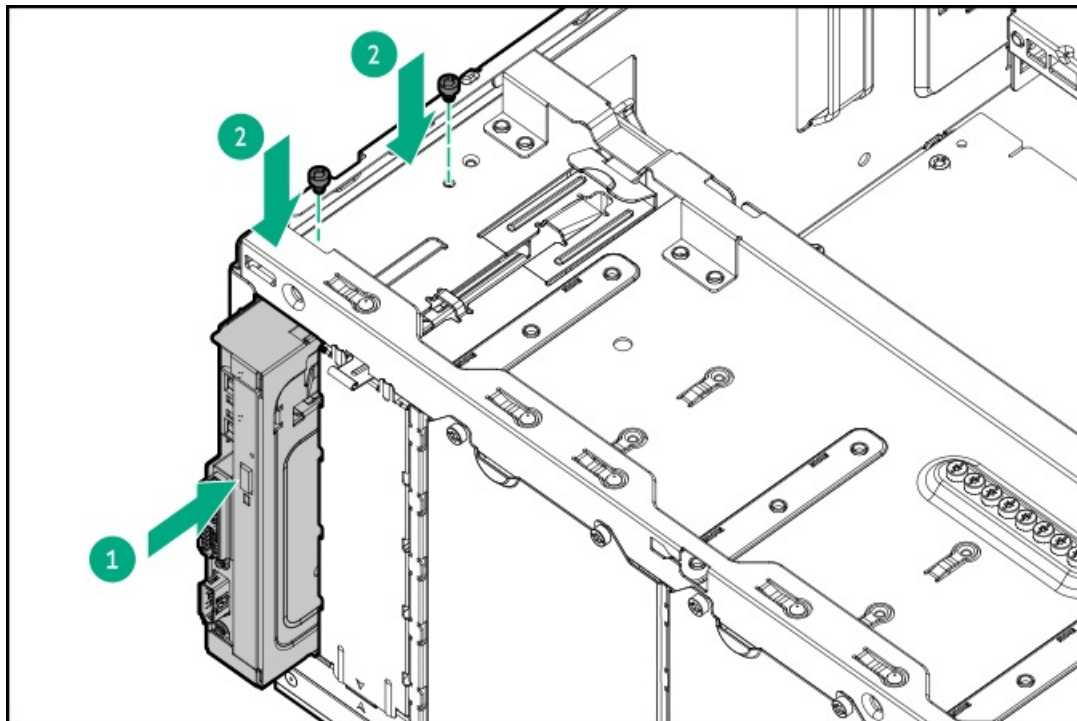
16. Connect all following cables to the system board:

    - Optical drive cable

    - Front I/O 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 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.
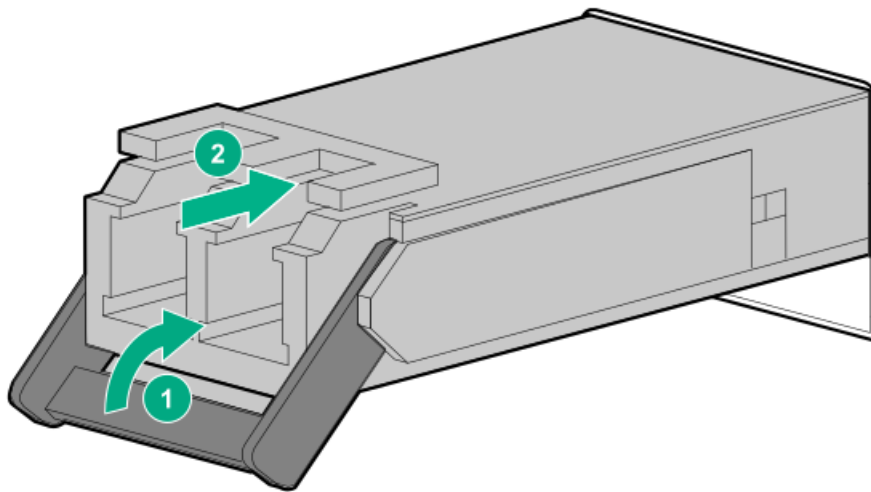
2. Remove the dust plug or protective cover from the transceiver.

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 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:
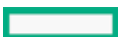
- Booting up from flash solution

- 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://buy.hpe.com/us/en/p/1014705725

- 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. Remove the access panel .

7. Remove the system air baffle.

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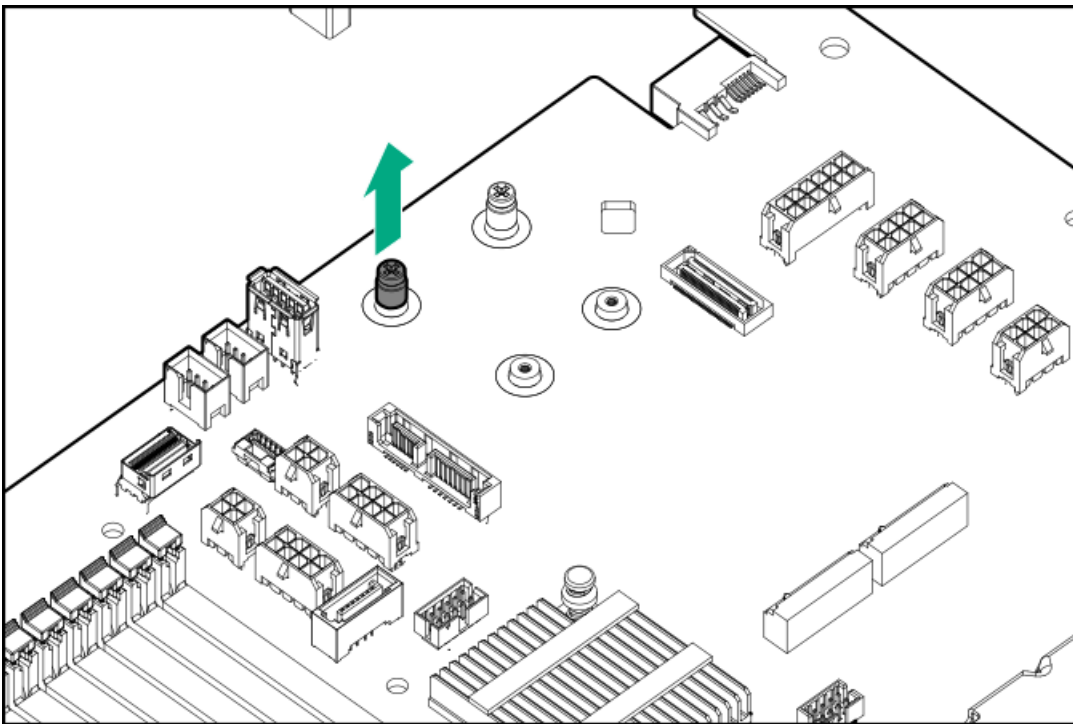
9. Install the M.2 SSD:

   a. Insert the SSD into the M.2 slot.

   b. Position the jack screw on the SSD notch.
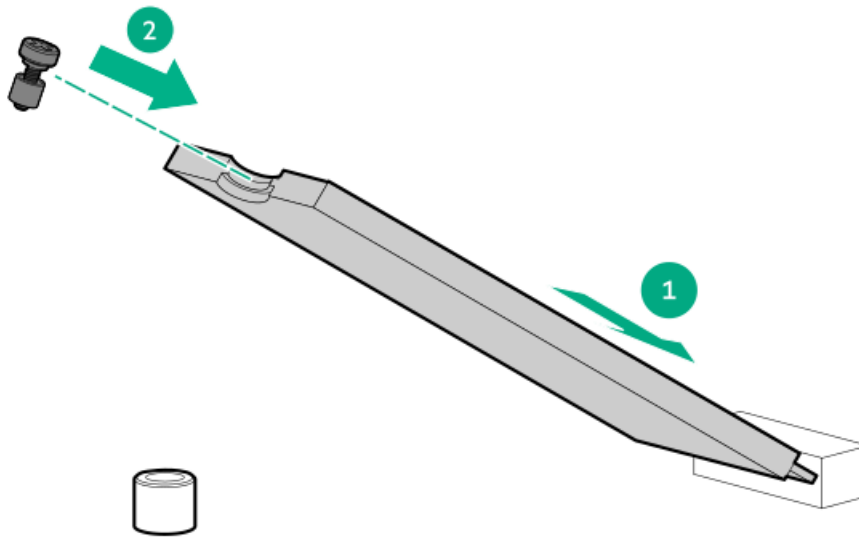
c. Carefully press the SSD down to the horizontal position.

d. Tighten the SSD jack screw.
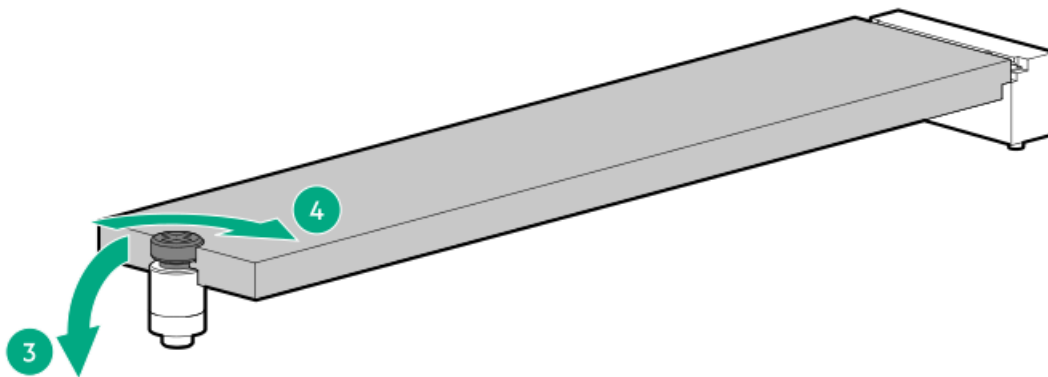
10. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

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 M.2 SSDs, see the Intel Virtual RAID on CPU for HPE Gen11 User Guide at **https://hpe.com/support/VROC-Gen11-UG**.

Results

The installation is complete.

Redundant fan option kit

> **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 kit contains the redundant system and PCI fans. Mixed default and redundant fan 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 graphics accelerator

- 35°C (95 °F) to 45°C (113°F) ambient system temperature

Subtopics

Fan mode behavior

Installing the redundant fan option kit

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 option kit

Prerequisites

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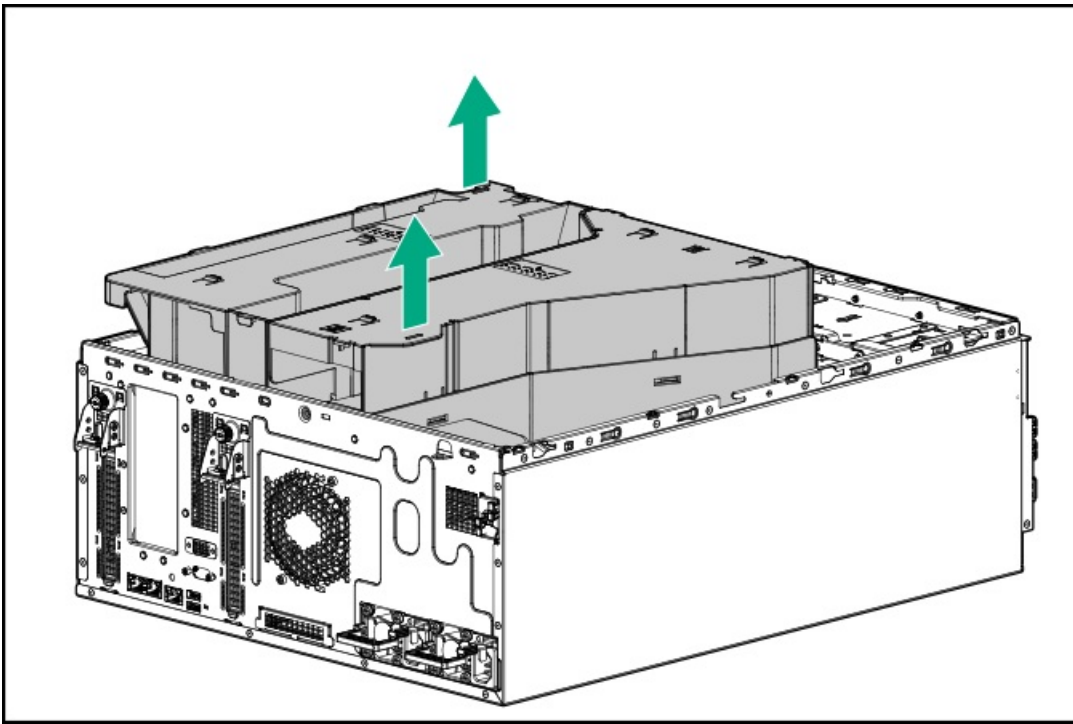
About this task

> **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 you are installing the redundant system fan, remove the front bezel.

6. Remove the access panel.

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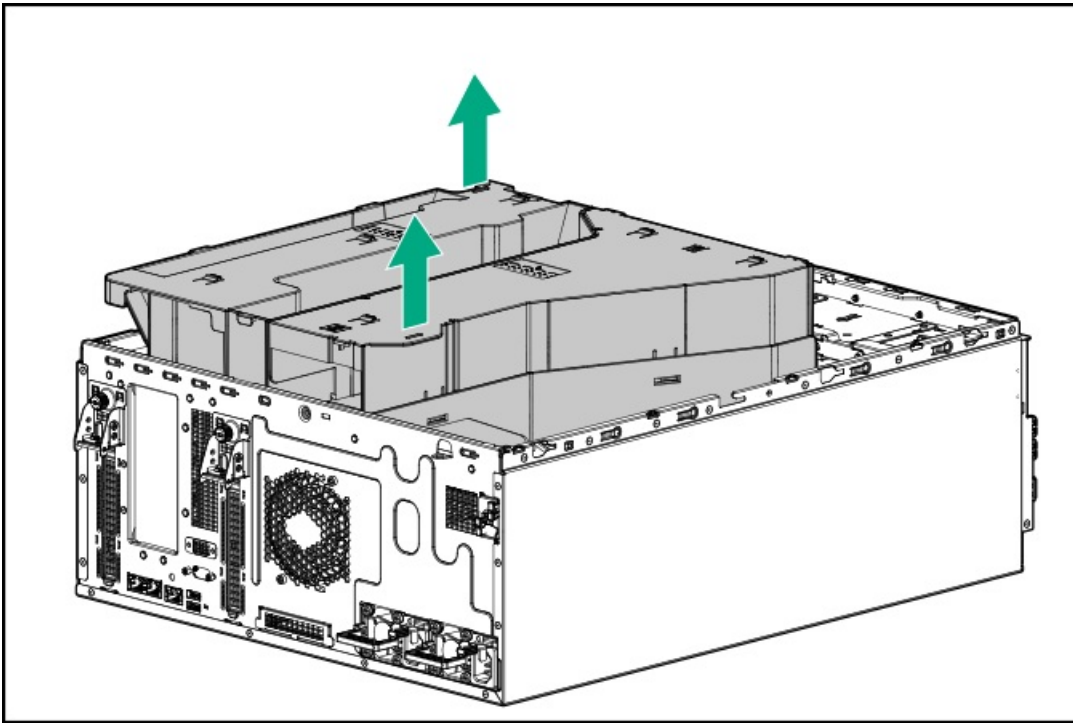
8. If installed, remove the riser cage.

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.
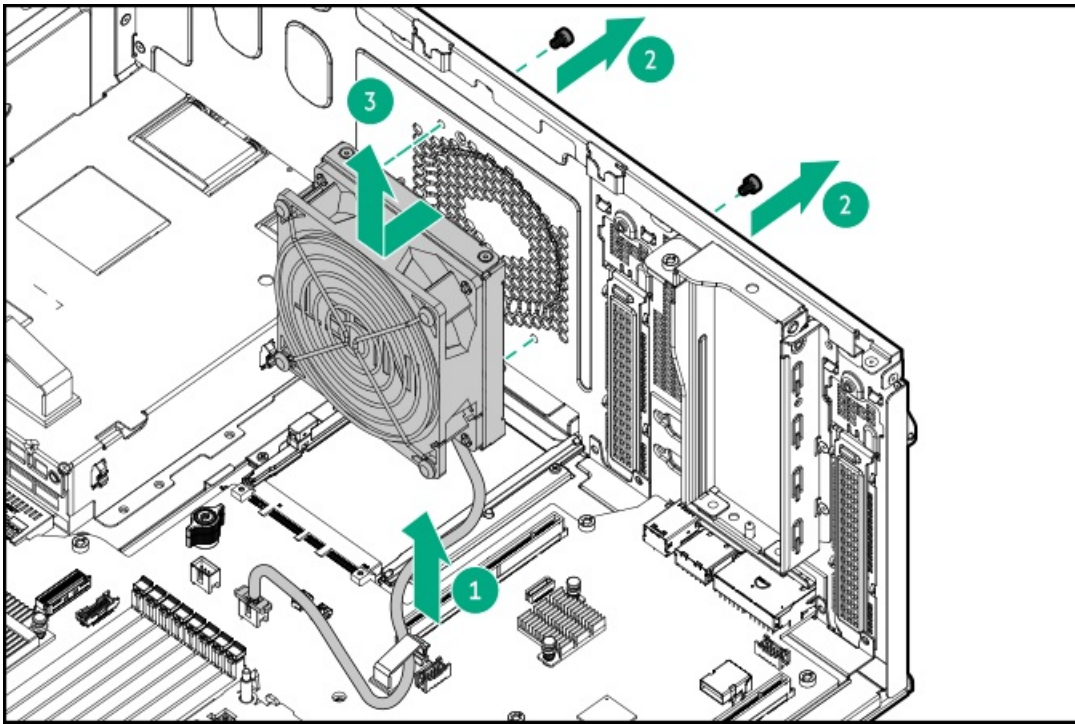
11. To install the redundant system fan, do the following:

    a. Attach the fan to the chassis.

    b. Tighten the screws on the chassis.
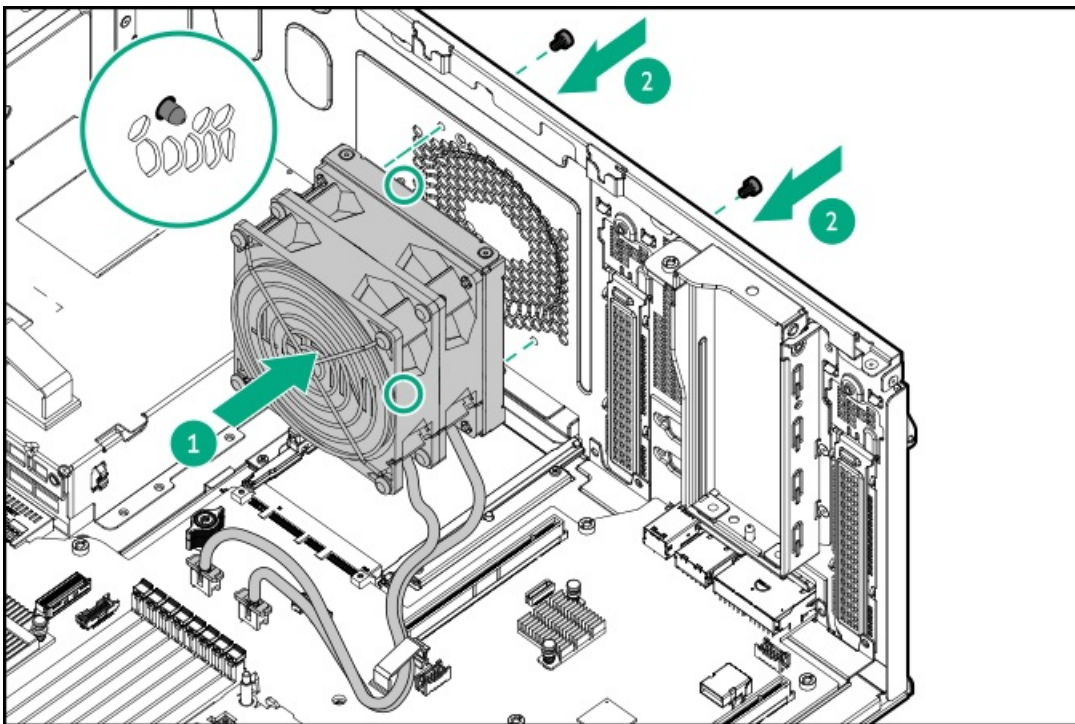
12. To remove the default PCI fan, do the following:

    a. Release all fan cables from the front cable channel metal tabs.

    b. Remove the PCI fan cage.
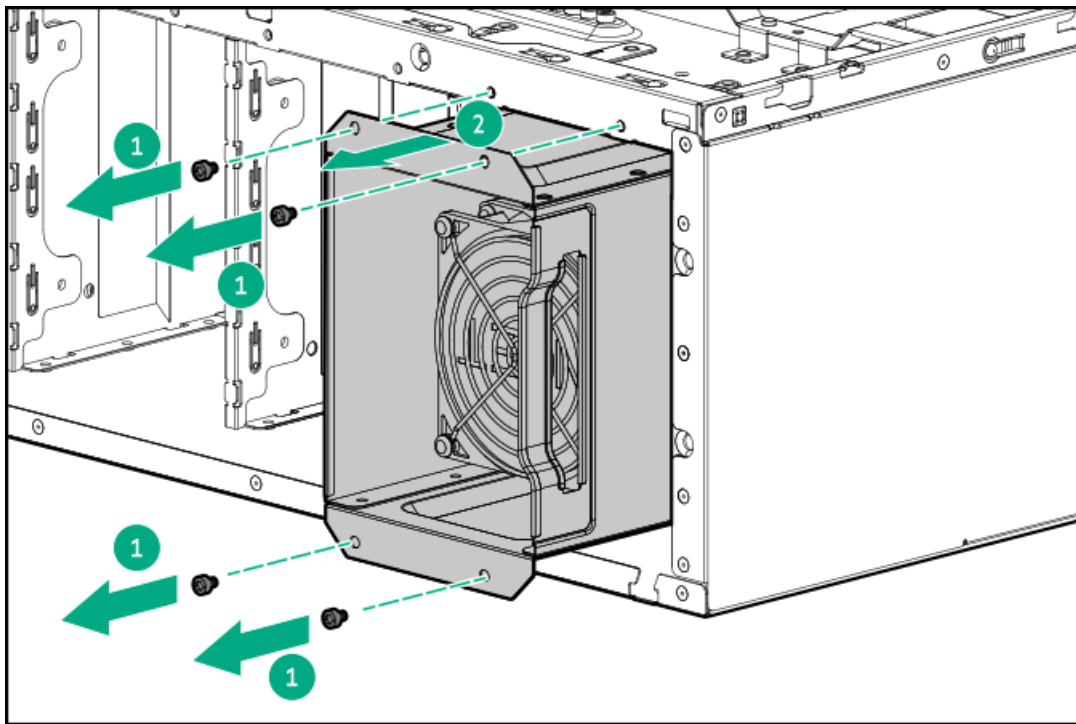
c. Remove the fan screws from the fan cage.

   Retain all screws. These screws would be used to install the redundant PCI fan.

d. Detach the fan from the fan cage.

e. Route the fan cable through the fan cage compartment.
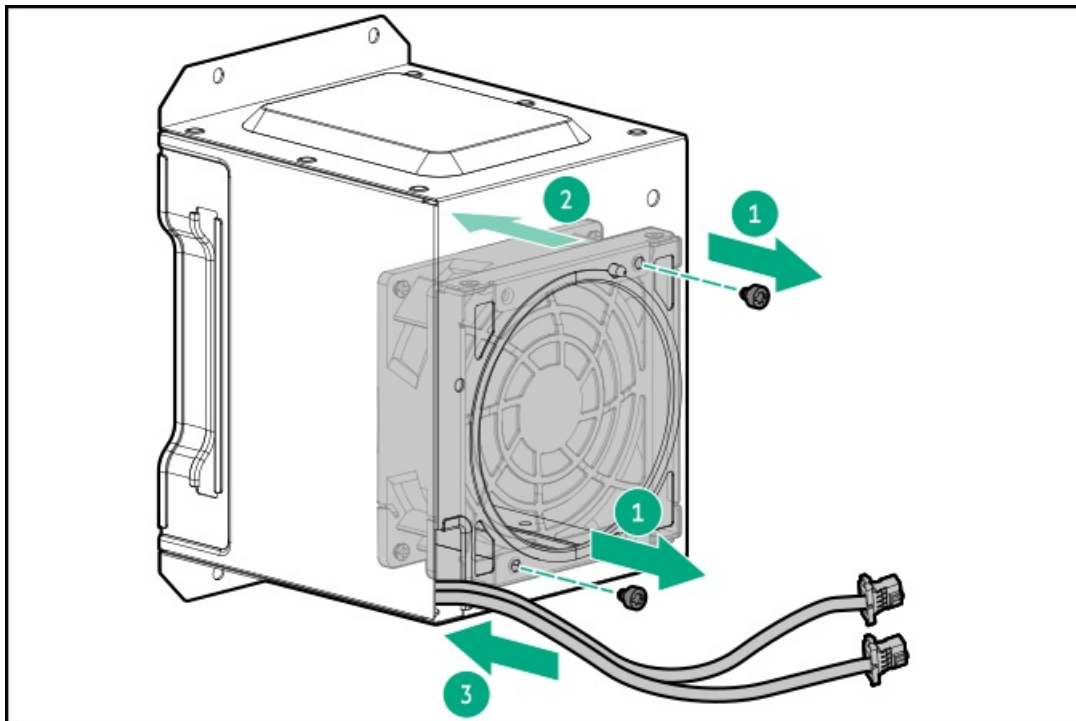
13. To install the redundant PCI fan, do the following:

   a. Route the fan cable through the fan cage compartment.

   b. Attach the fan to the fan cage.

   c. Install the fan screws.
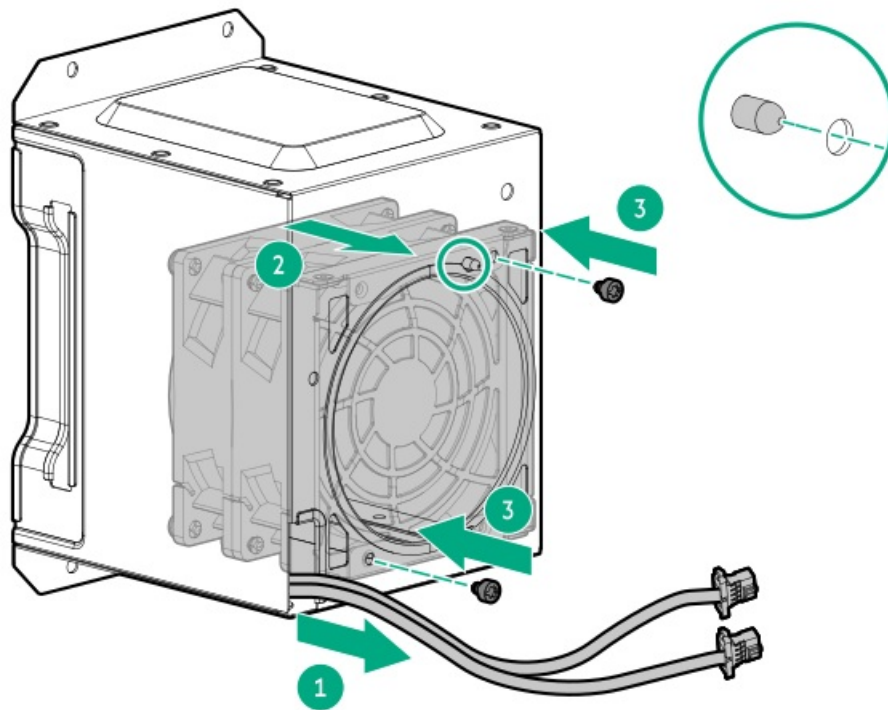
    d. Install the PCI fan cage.
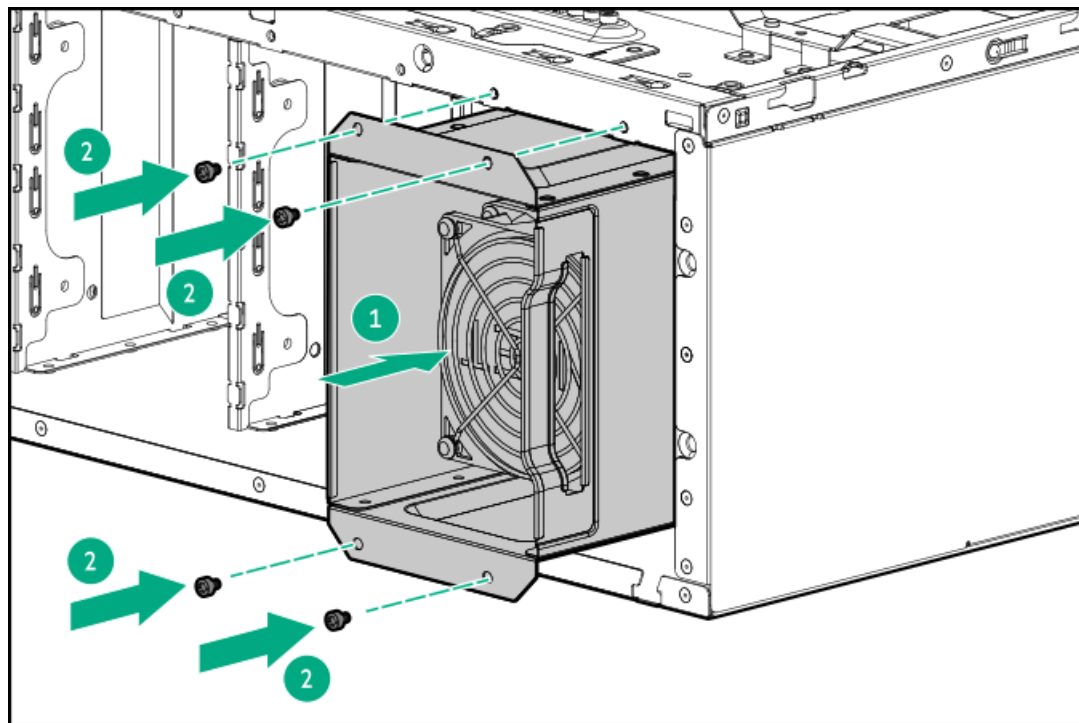
14. Connect the redundant fan cables to the system board .

    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 is complete.

Memory option

The server has 16 DIMM slots supporting HPE DDR5 SmartMemory (RDIMM).
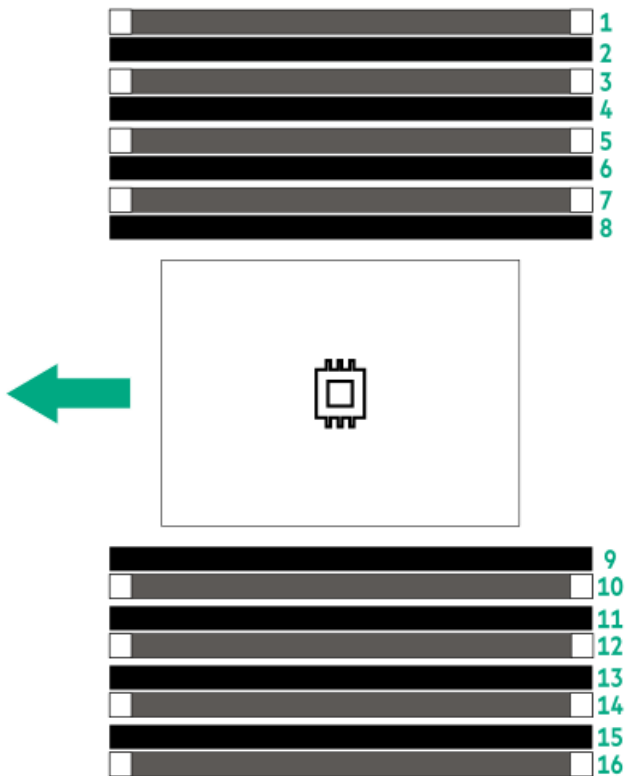
The arrow points to the front of the server.

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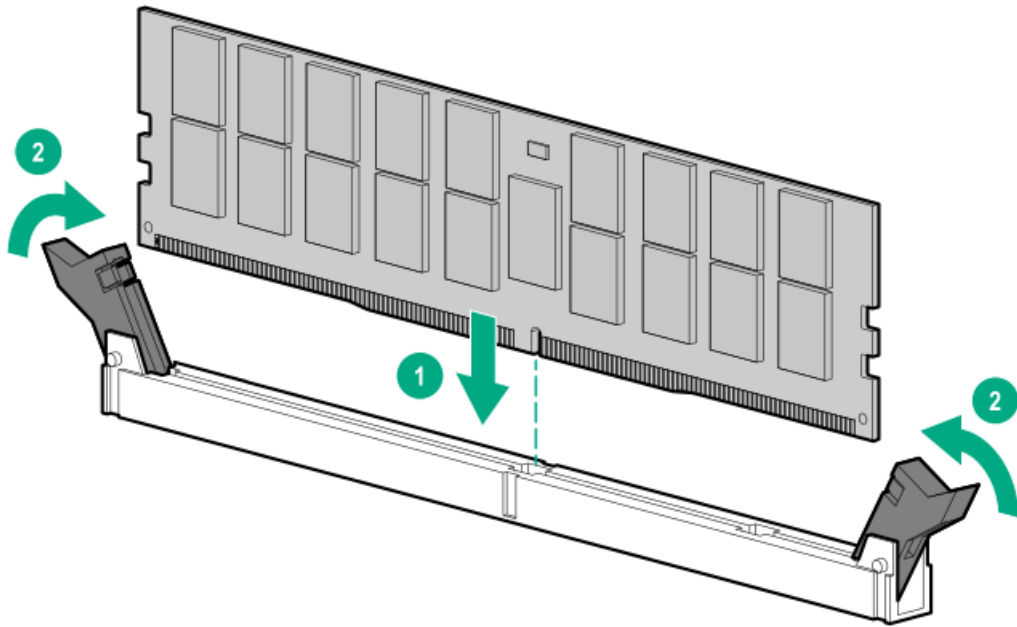
10. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

11. <u>Install the system air baffle</u>.

12. <u>Install the access panel</u>.

13. Do one of the following:

    - <u>Orient the server back to tower mode</u>.

    - <u>Install the server into the rack</u>.

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. <u>Power up the server</u>.

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 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 <u>Riser board components</u>.

Subtopics

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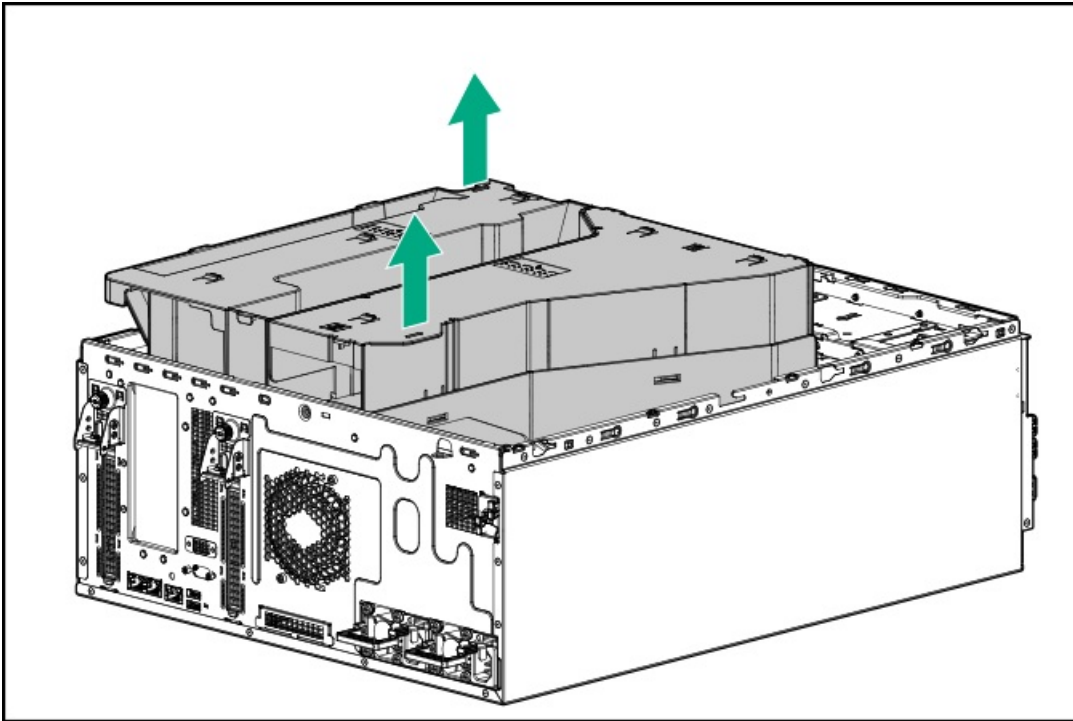
⚠ **CAUTION:** A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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.
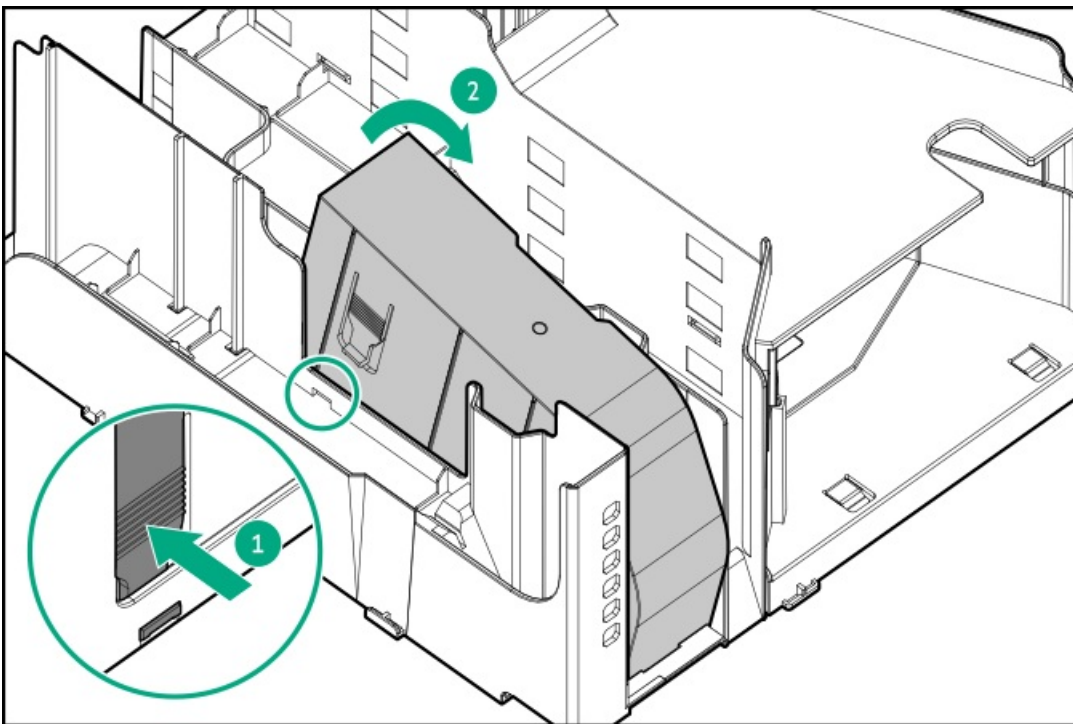
9. Remove the riser cage blank.
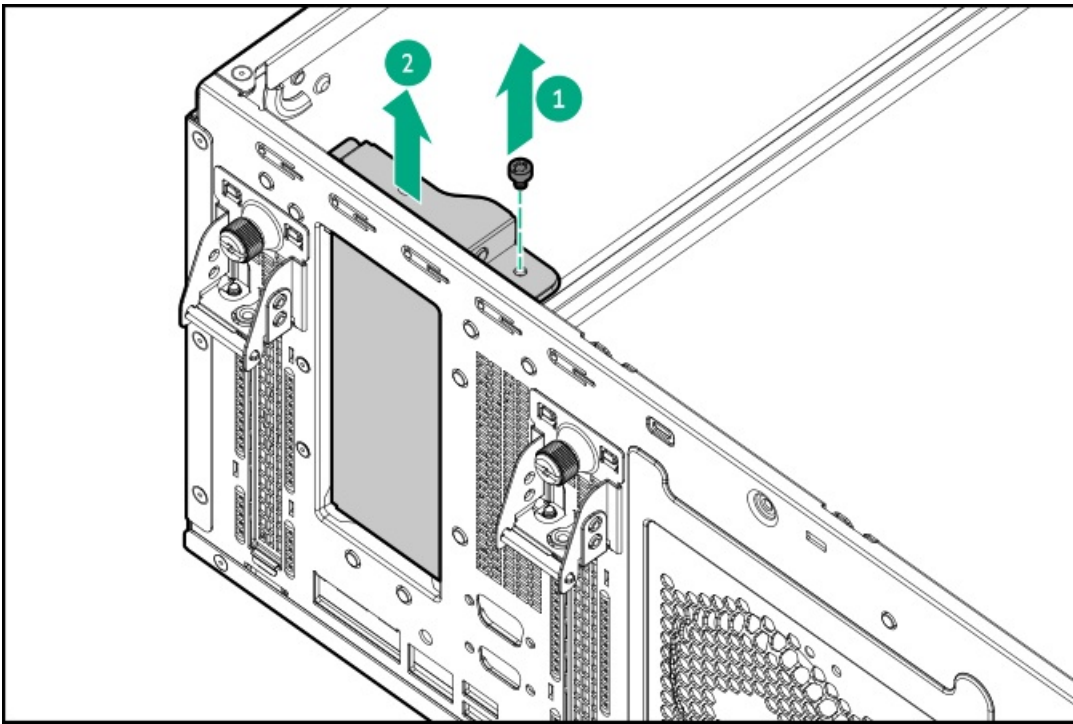
10. Install the following options on the riser cage:

    - Secondary riser

    - Expansion card

    - Accelerator

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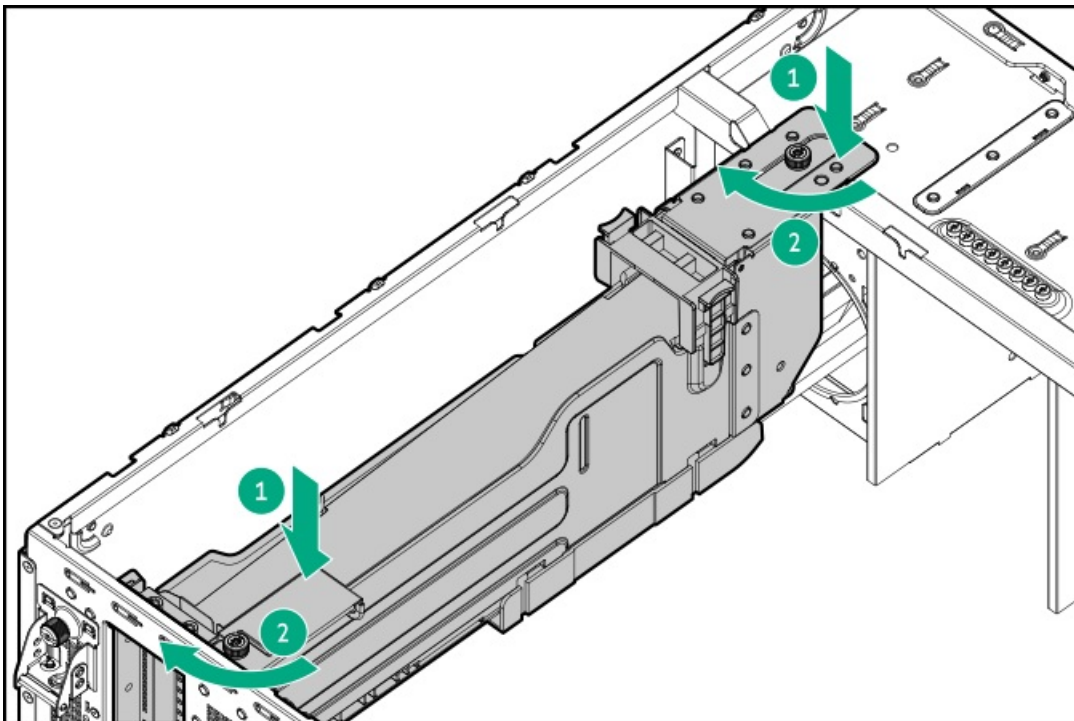
13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and

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 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.
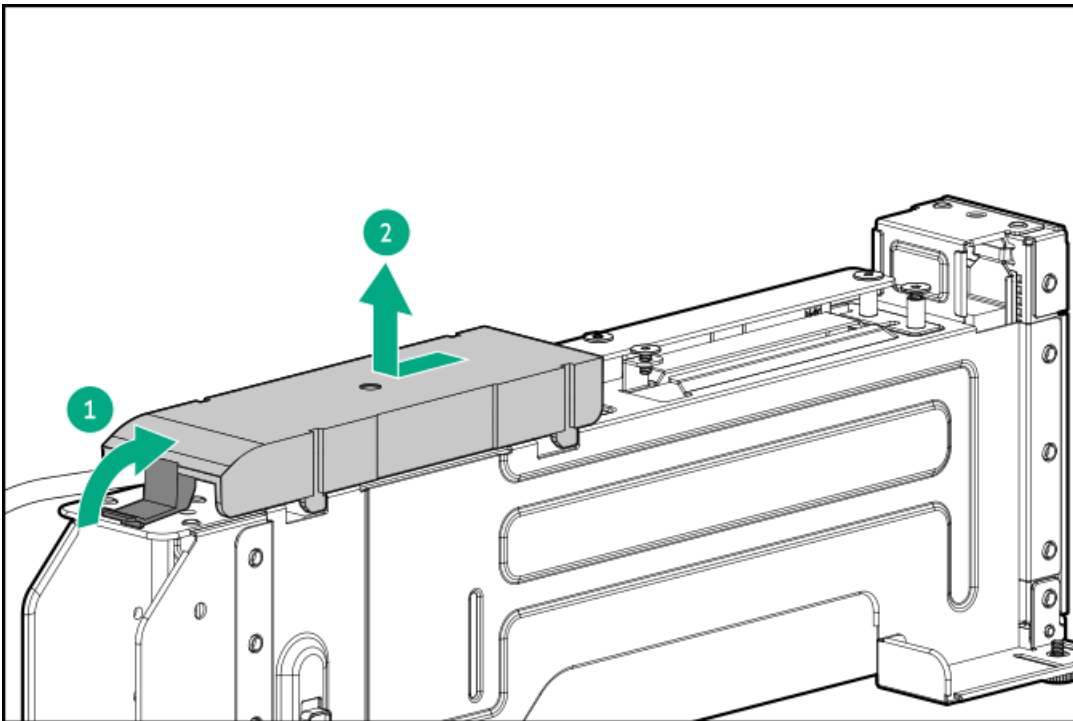
9. Remove the secondary riser board screws.

   Retain the screws. These screws will be used to install the new secondary riser board.
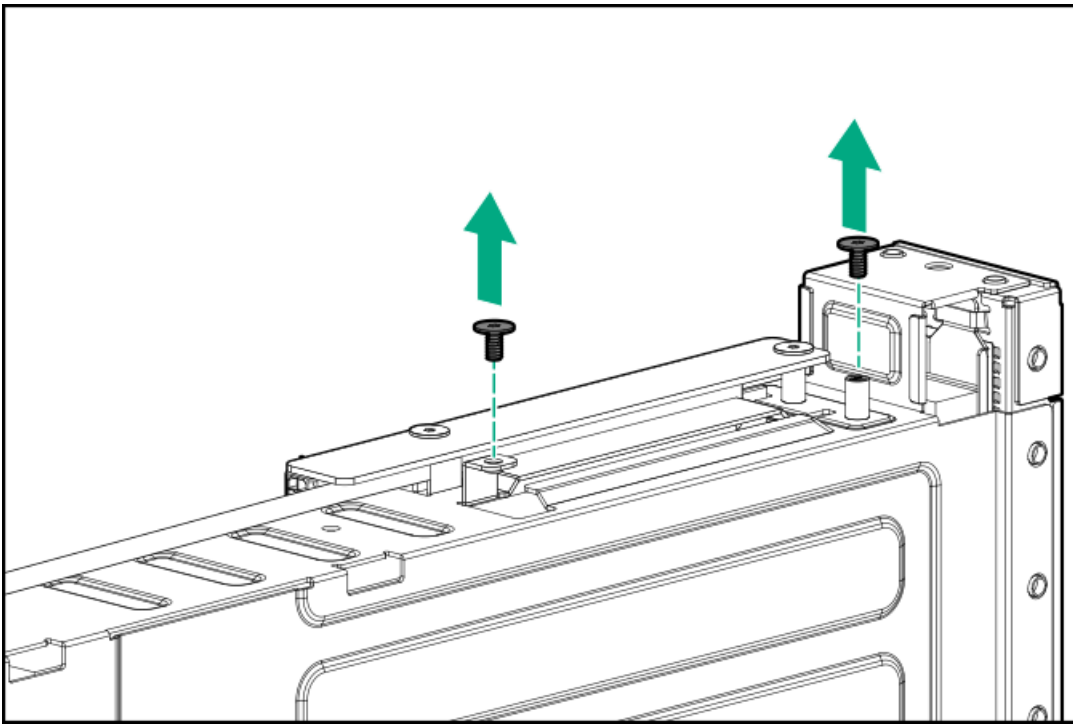
10. Connect the riser power cable to the secondary riser board.

11. Install the secondary riser board:

    a. Attach the secondary riser board on the riser cage.

    b. Install the screws on the riser board.
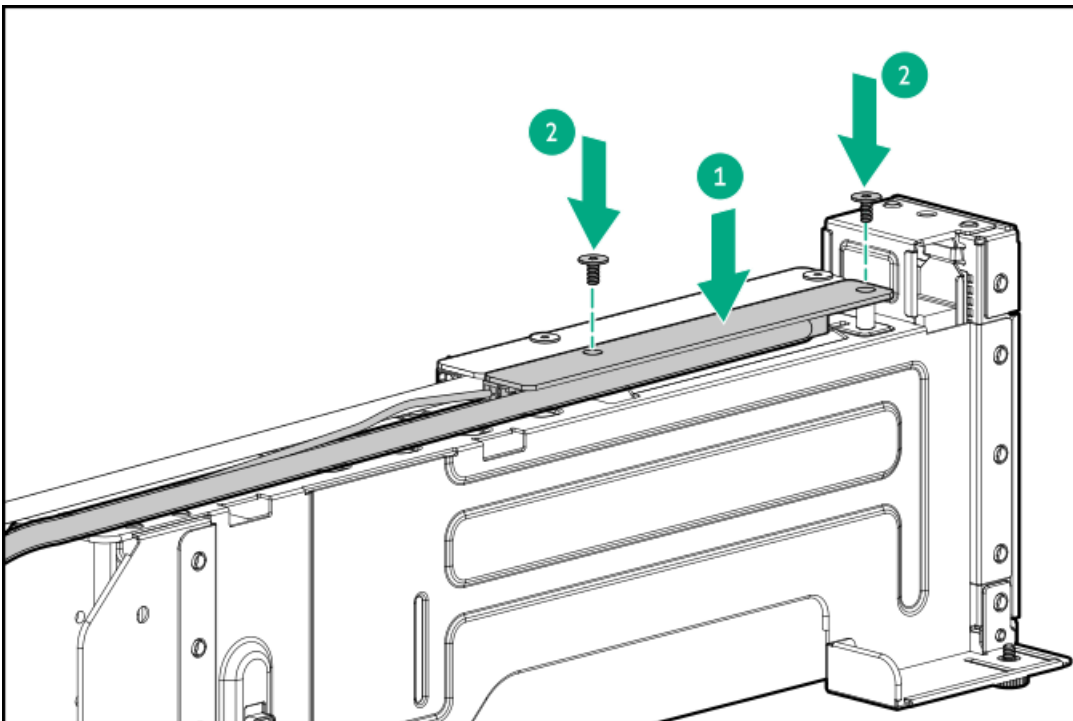
12. Install the riser board cover.

    Make sure that the cover is locked on the riser cage with a click sound.
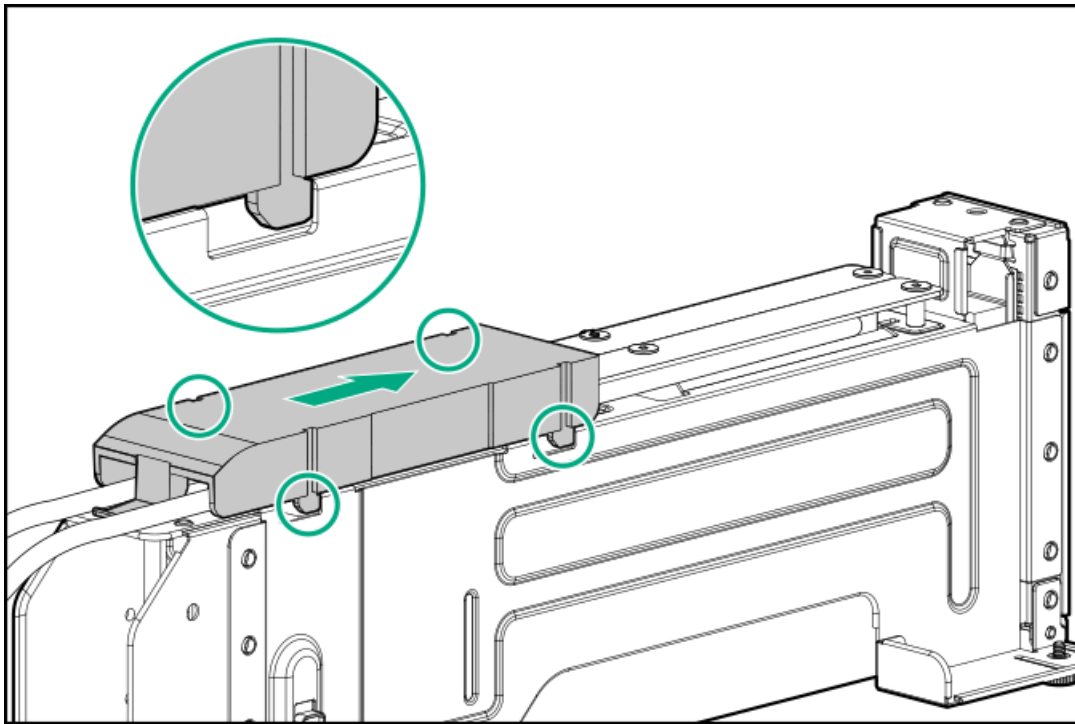
13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

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 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

For more information on drive array and storage controller configuration, see Configuring storage controllers.
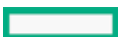
Subtopics

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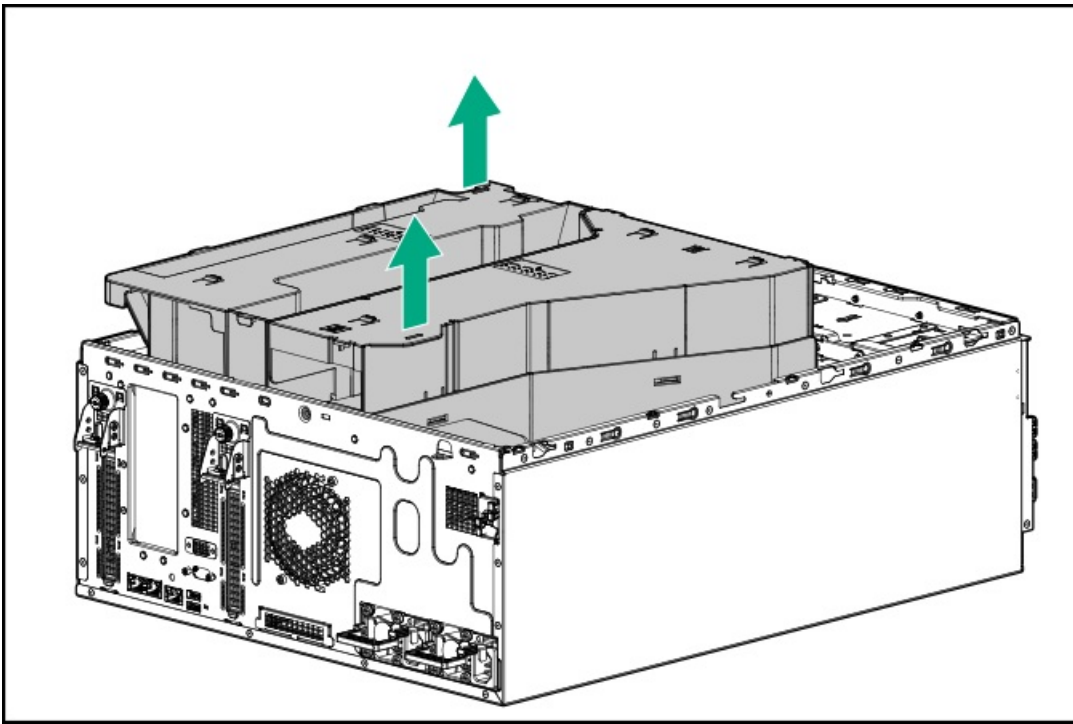
> ⚠ **CAUTION:** A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

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 the slot 1, remove the existing rise 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.
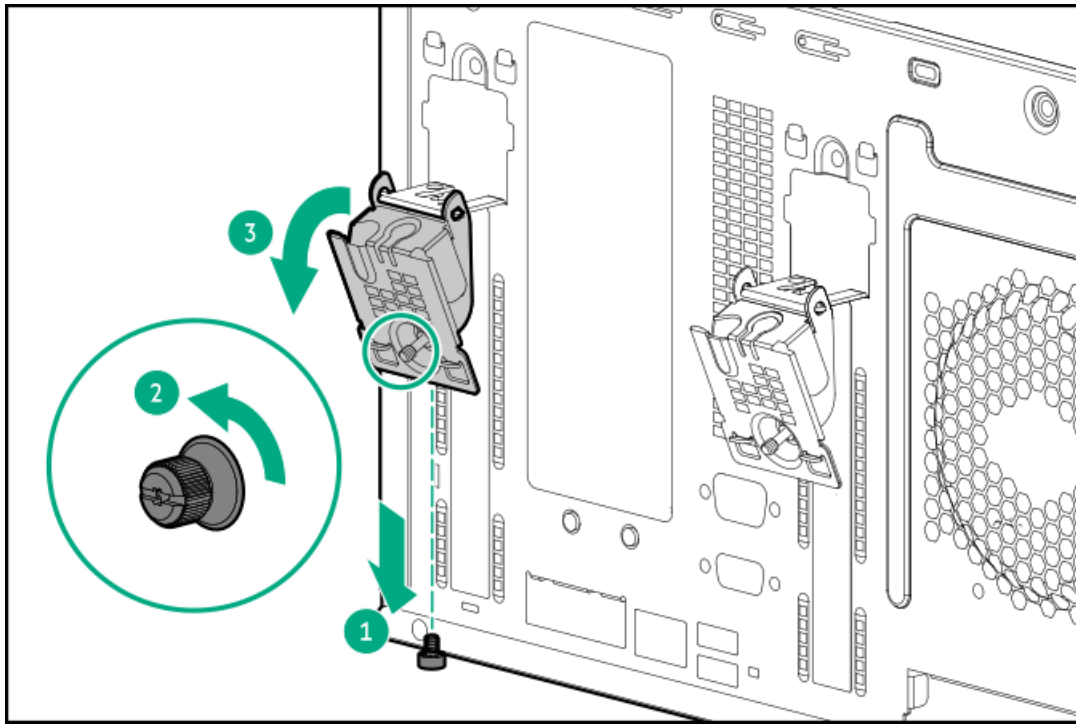
b. Remove the riser slot blank.

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
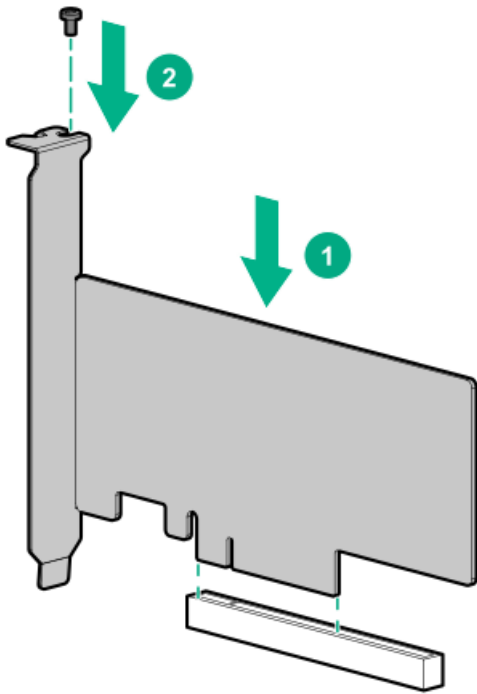
- Full-height half-length type-p storage controller
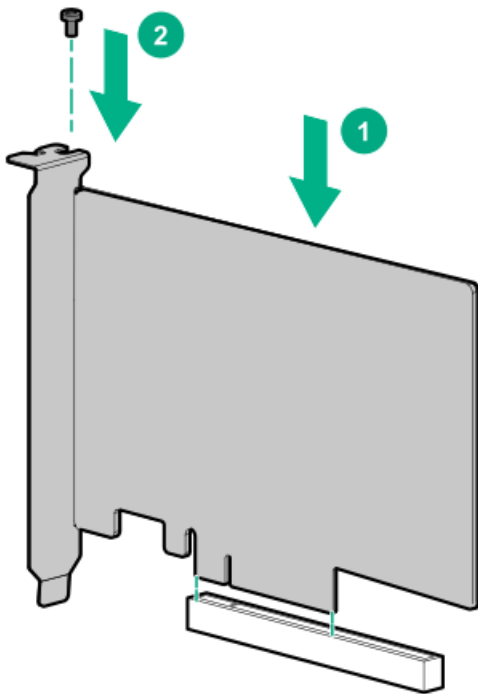
10. Cable the type-p storage controller .

11. To enable the FBWC feature of the storage controller, install an energy pack.

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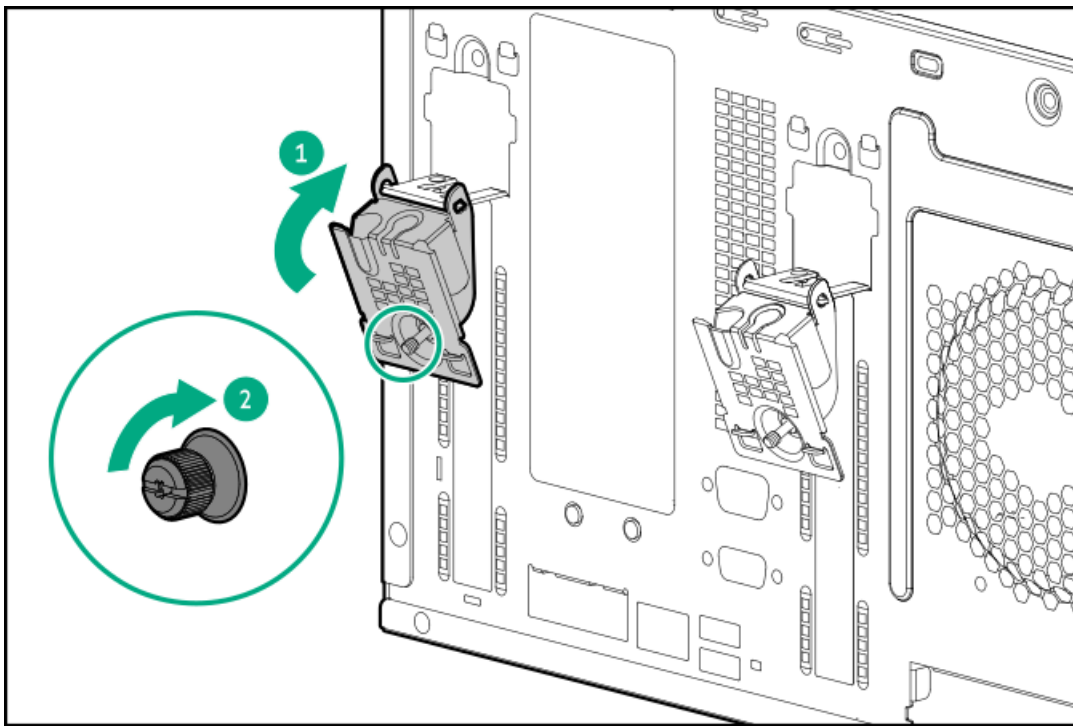
13. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

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.

20. Update the server and controller firmware if they are not the latest revision.

21. Configure the controller.

Results

The installation 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:

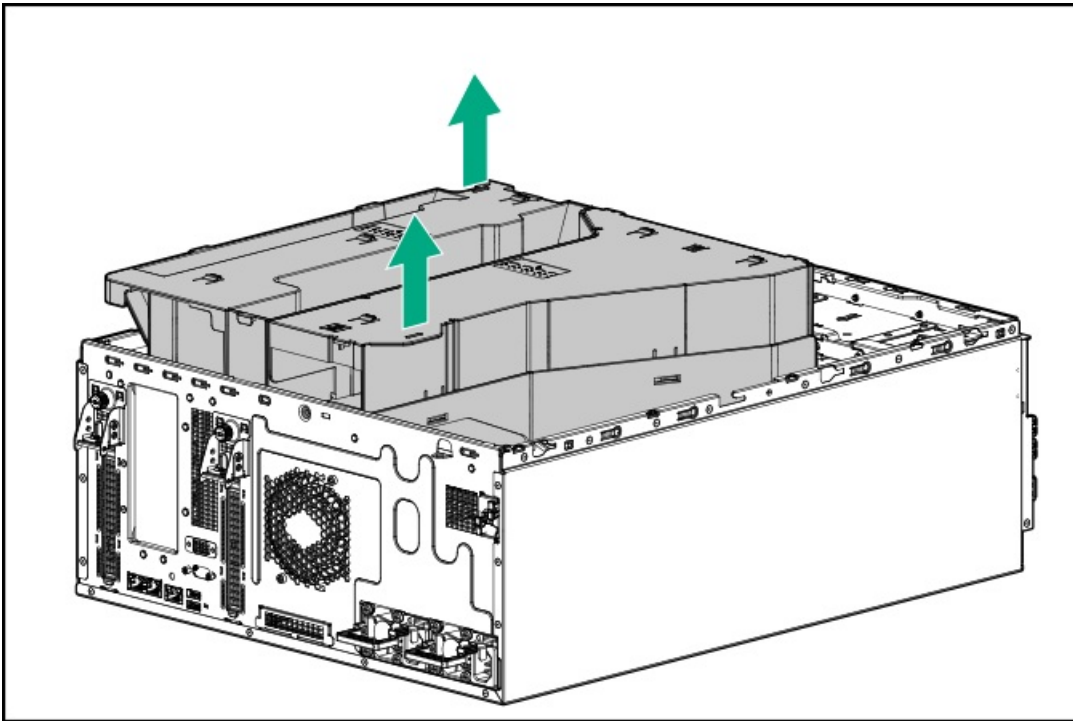 - Compatible controller cable

  - 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:

   a. Release the fan cable from the cable clamp.

   b. Remove the screws.

   c. Detach the default 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.
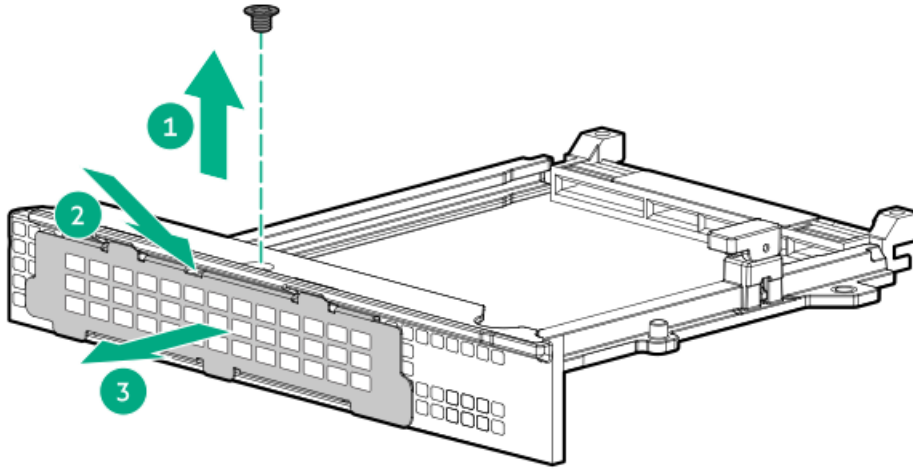
10. Install the type-o storage controller:

    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.
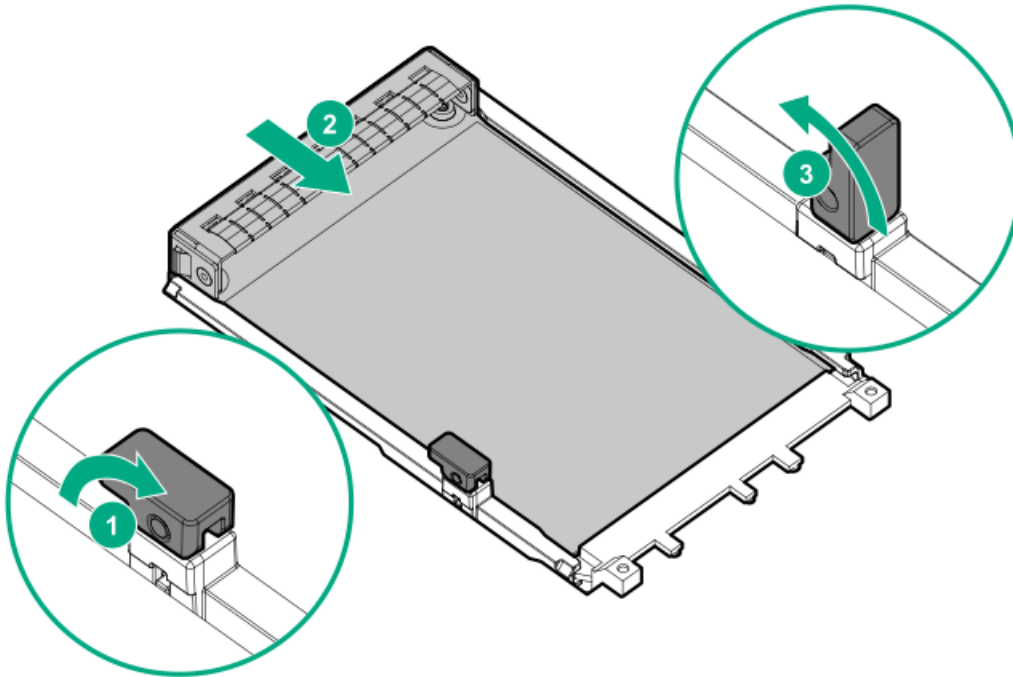
11. Cable the type-o storage controller .

12. To enable the FBWC feature of the storage controller, install an energy pack.

13. Install the system fan:

    a. Insert the fan guard pins into the chassis openings.

    b. Tighten the screws on the chassis.

       ● Default system fan
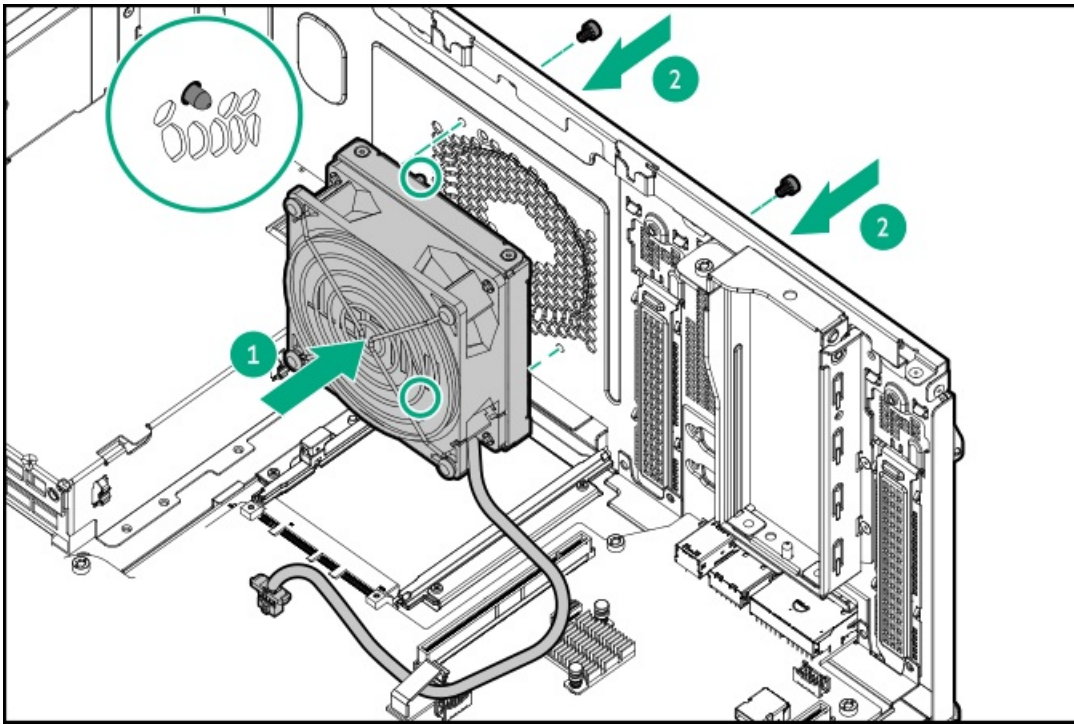
- Redundant system fan
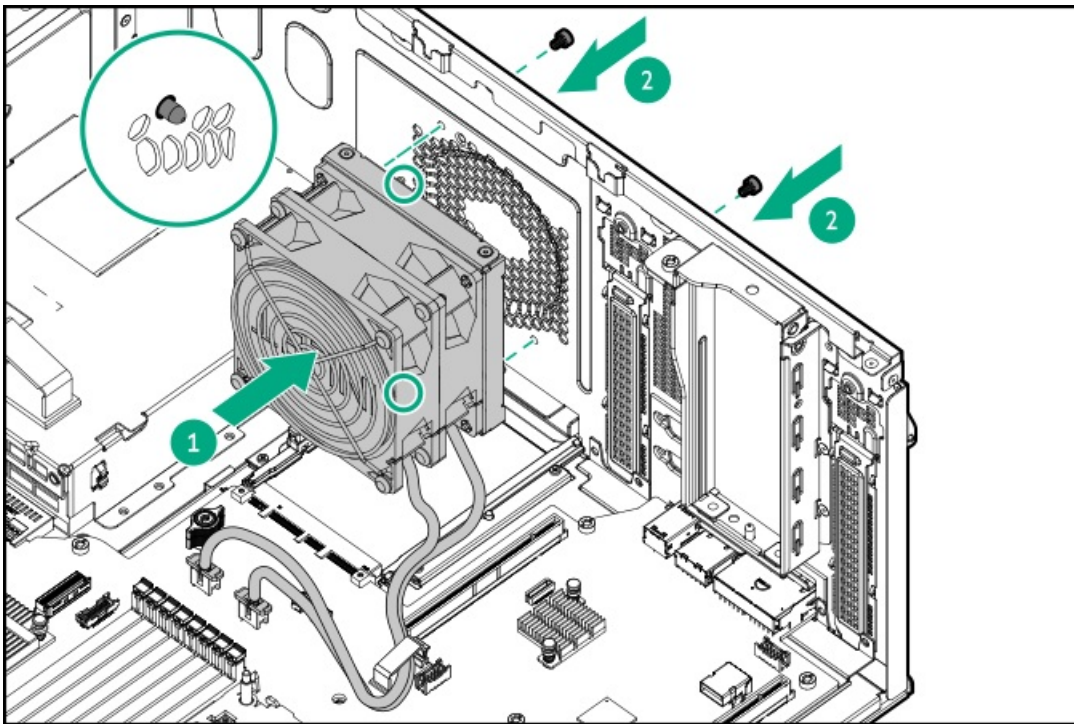
14. Connect the system fan cable.

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.

22. Update the server and controller firmware if they are not the latest revision .

23. Configure the controller.

Results

The installation 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

 Energy pack specifications

 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.

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 two 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.

> (i) **IMPORTANT:**
> If the system BIOS or controller firmware is older than the minimum recommended firmware versions, the capacitor pack will only support one device.

The capacitor pack is fully charged after the system boots.

Subtopics

Minimum firmware versions

Minimum firmware versions

Product	Minimum firmware version
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

Energy pack specifications

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

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

Installing an energy pack

Prerequisites

- 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.
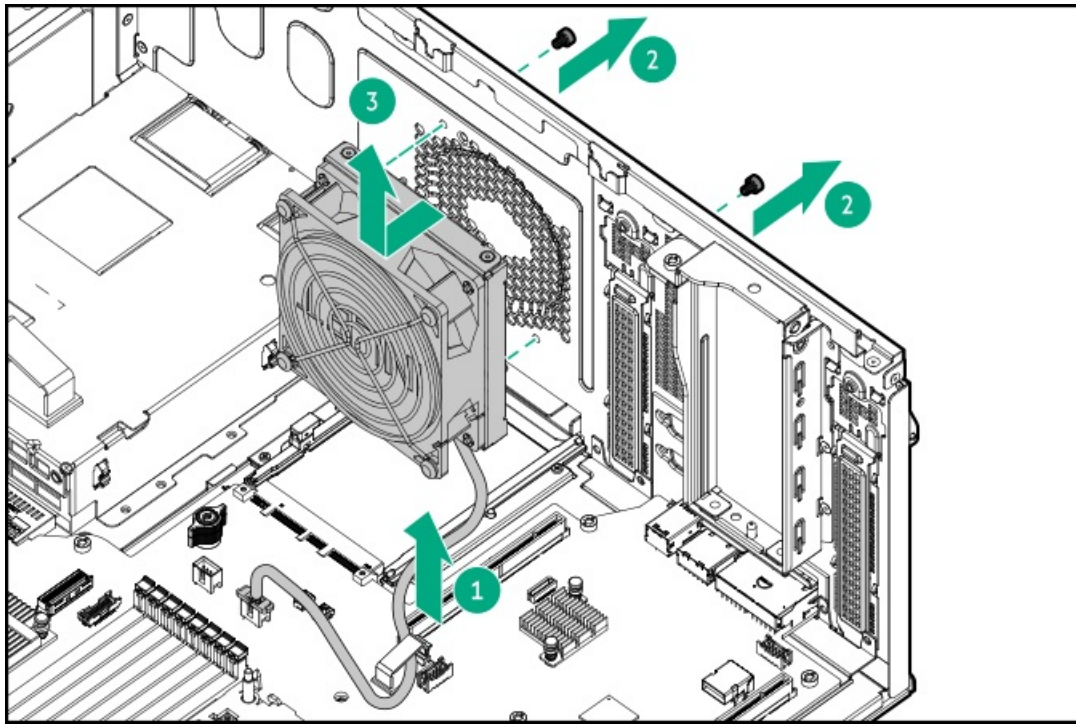
Procedure

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.
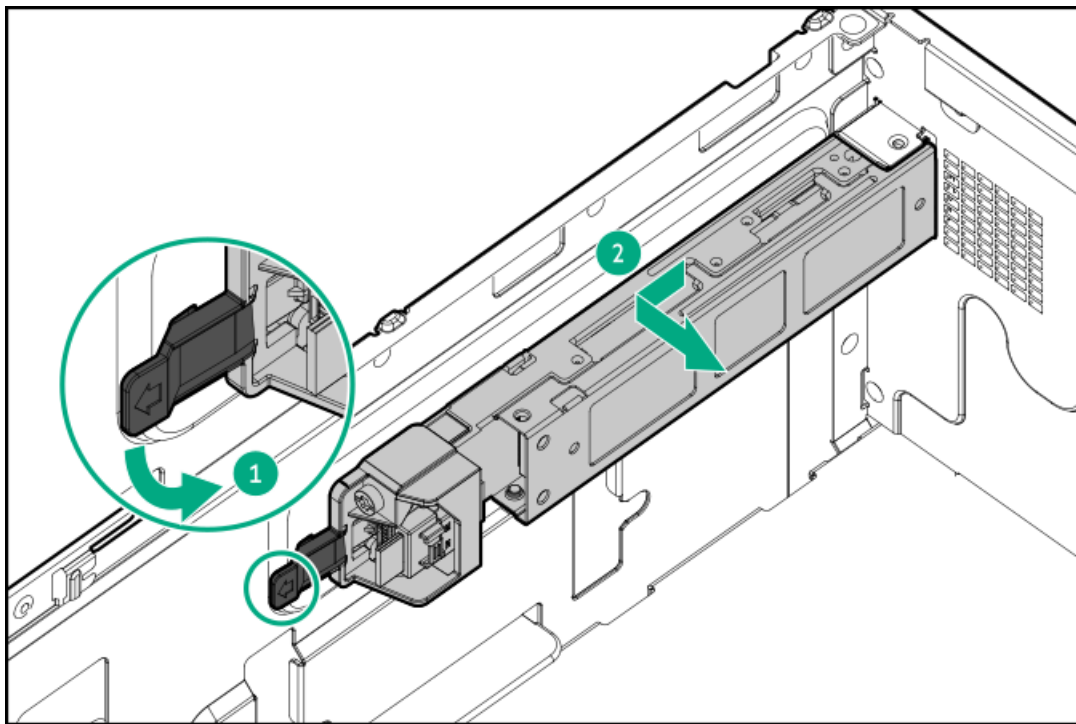
8. Install the energy pack:

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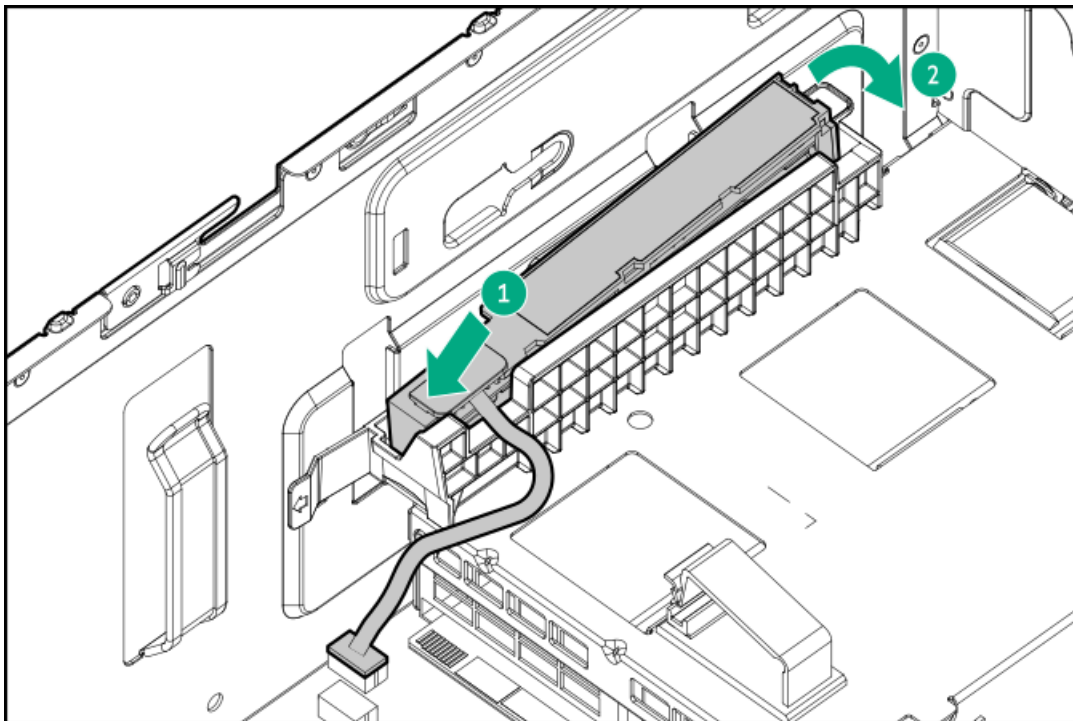
9. Connect the energy pack cable to the system board and secure it in the cable clamp .

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 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

- Accelerator (workload, computational, or graphics accelerator)

For more information on the expansion options supported by the server, see the server QuickSpecs on the Hewlett Packard Enterprise website:

https://buy.hpe.com/us/en/p/1014705725

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 the slot 1, remove the existing rise 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.
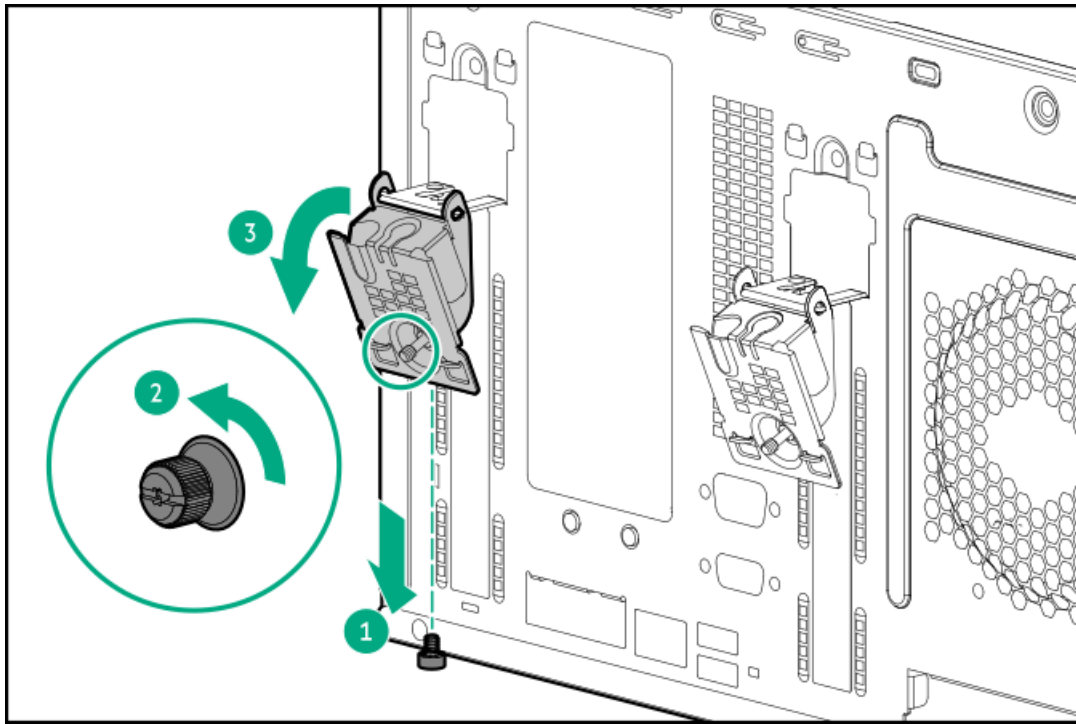
b. Remove the riser slot blank.
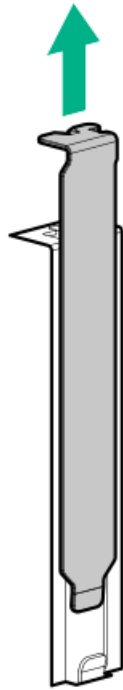
c. Install the expansion card.

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

- Half-height half-length (low-profile) expansion card
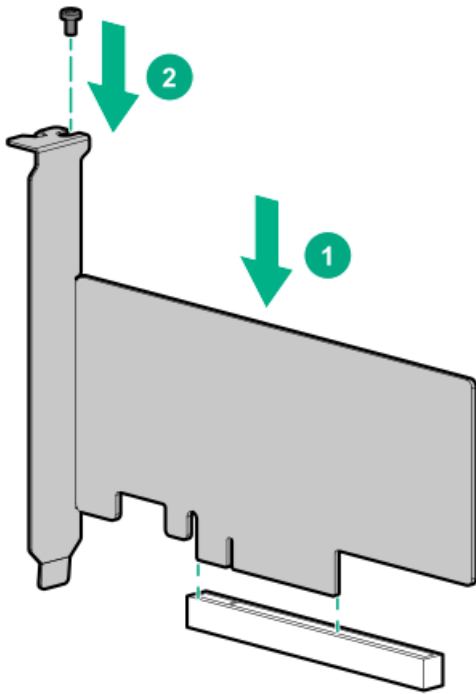
- Full-height full-length expansion card
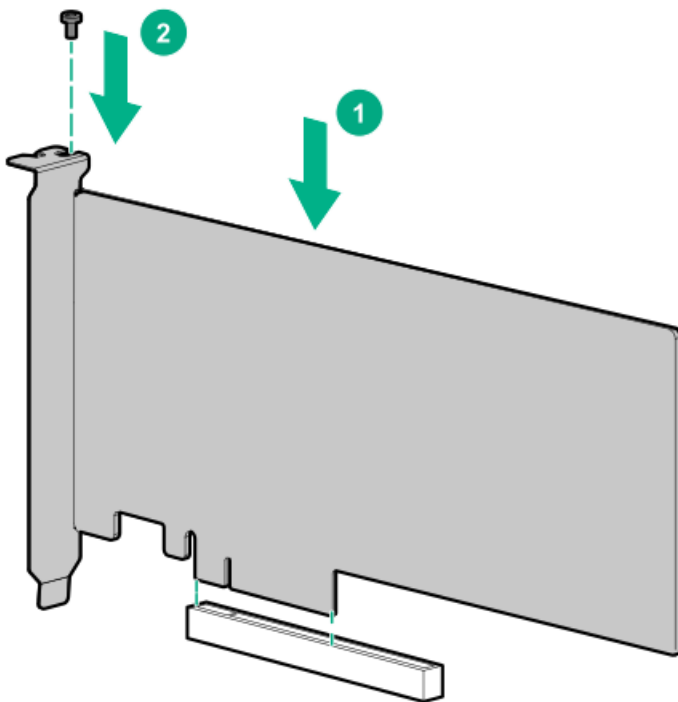
9. Connect all necessary internal cabling to the expansion card. For more information on these cabling requirements, see the documentation that ships with the option.

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 is complete.

Installing an expansion card in the riser cage

Prerequisites

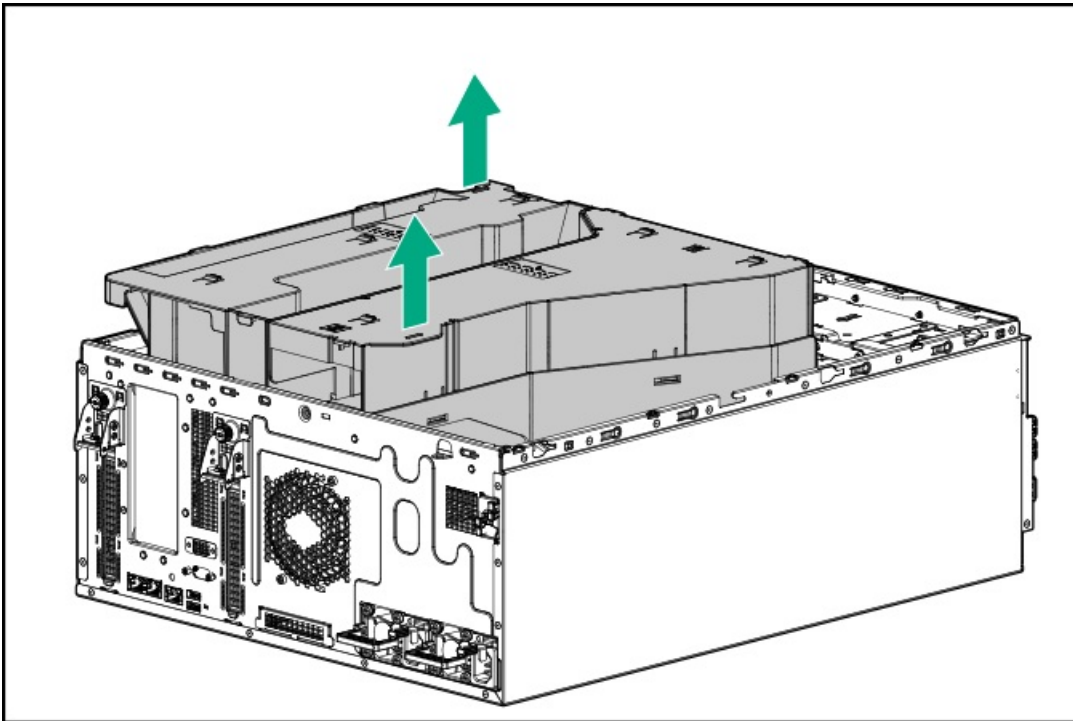Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

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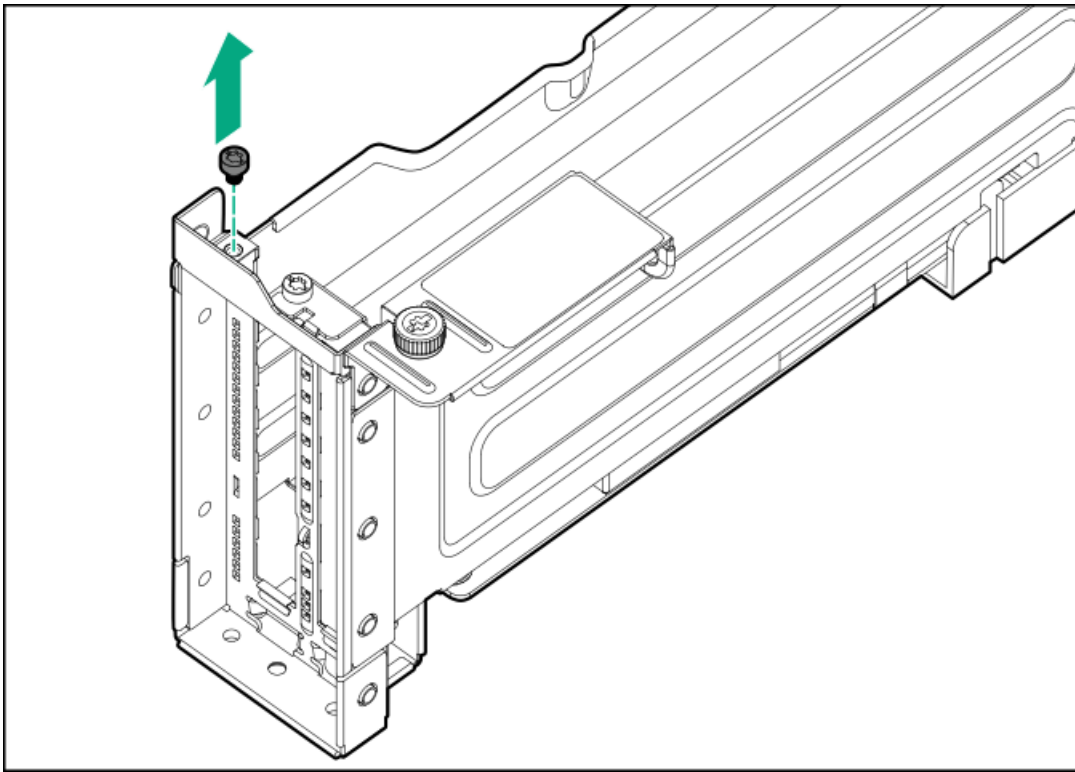
b.   If you are installing the expansion card in the riser slot 3, remove the riser slot blank from the riser cage.

     Retain the screw. This screw will be used to install the expansion card.
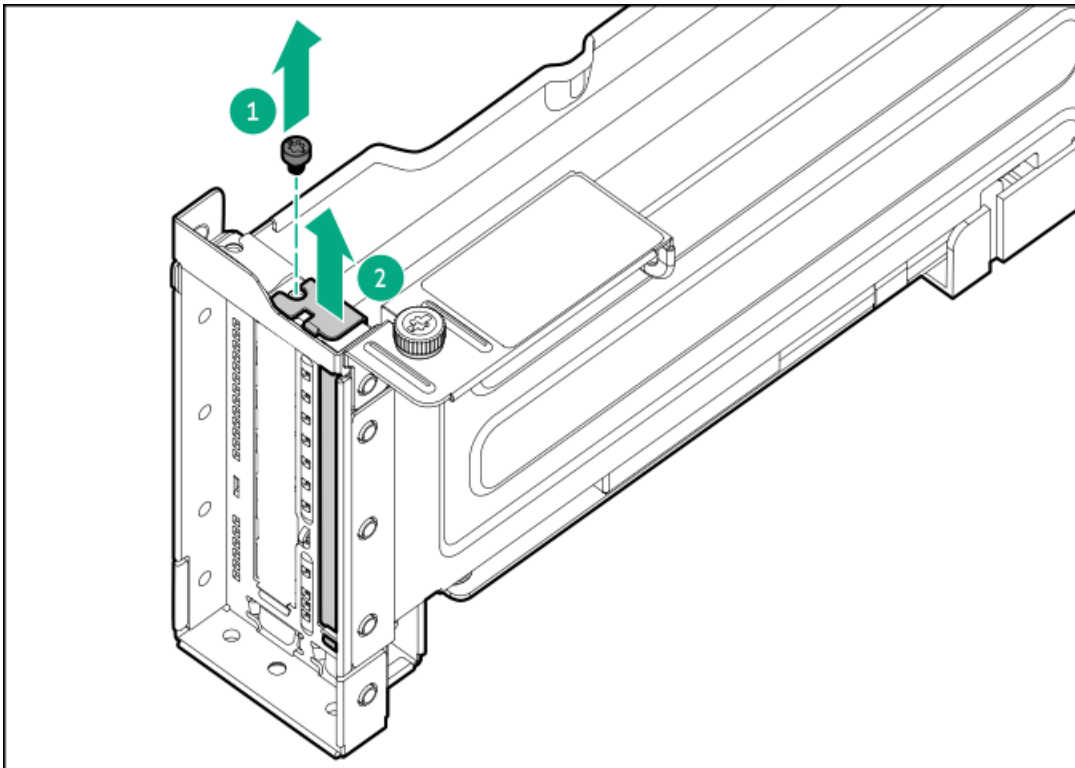
9.   If you are installing the full-height full-length expansion card, open the expansion card holder.
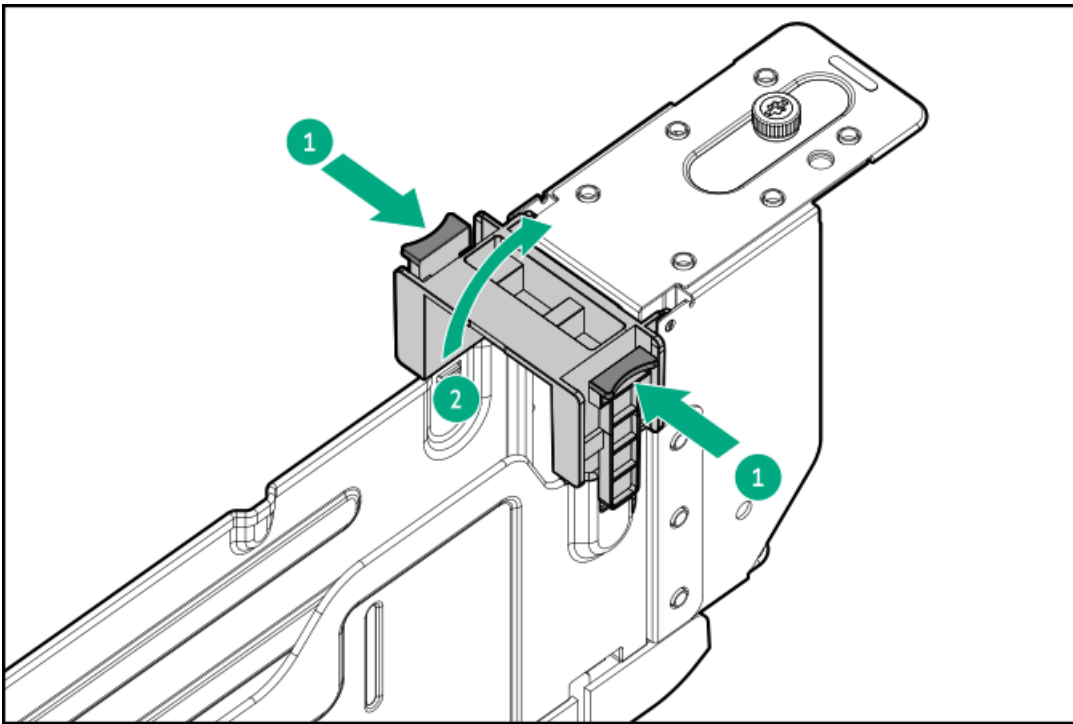
10. Install the expansion card.

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

    ● Half-height half-length (low-profile) expansion card
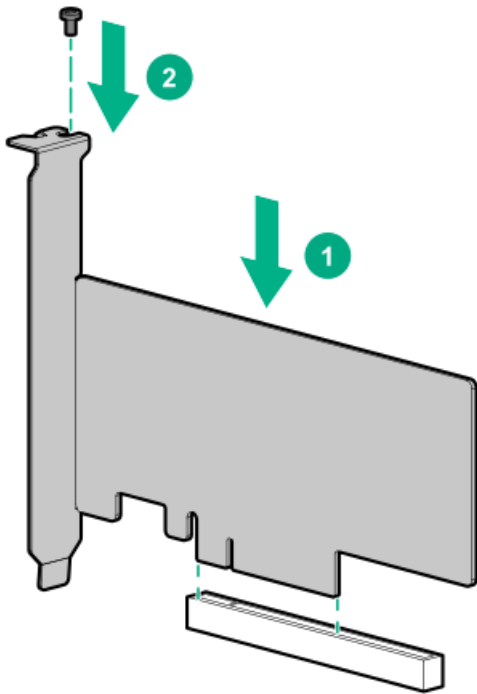
    ● Full-height full-length expansion card
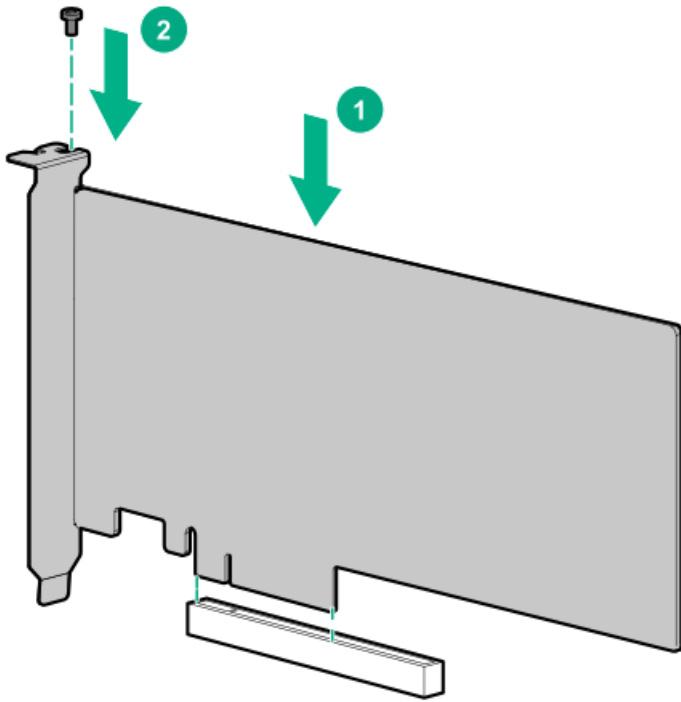
11. Close the expansion card holder.
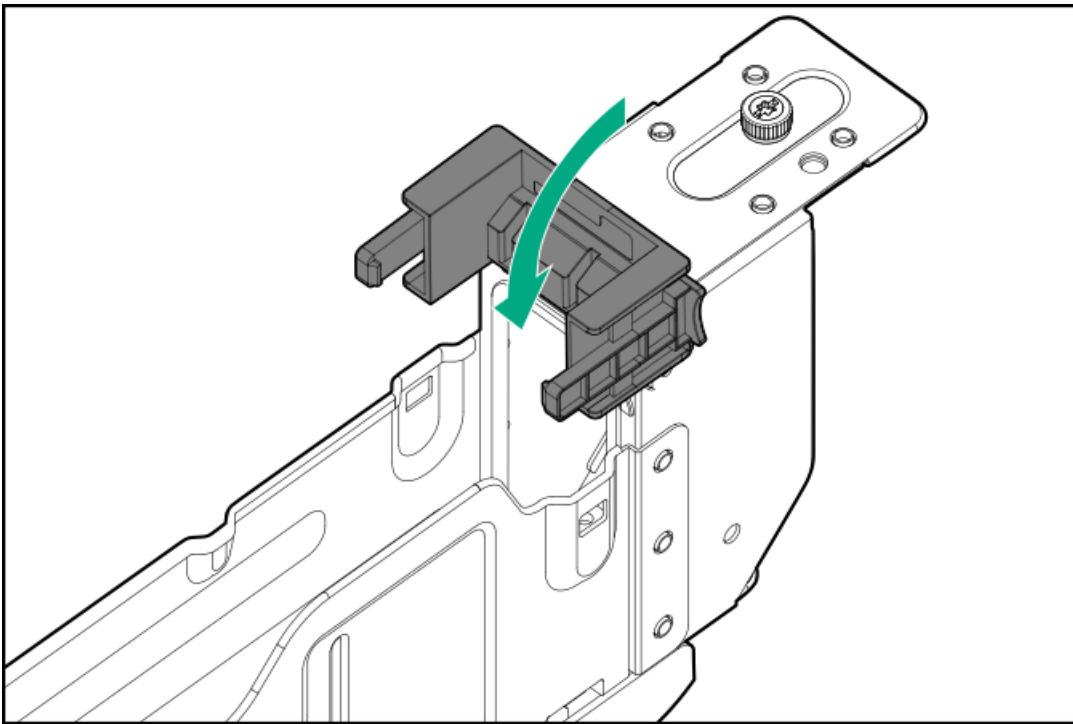
12. Connect all necessary internal cabling to the expansion card. For more information on these cabling requirements, see the documentation that ships with the option.

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 is complete.

Accelerator options

This server supports various accelerator options to meet your computational and graphics workload requirements. For a list of supported accelerator models, see the server QuickSpecs on the Hewlett Packard Enterprise website (https://buy.hpe.com/us/en/p/1014705725).

- PCIe workload accelerators—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 accelerators—These options deliver accelerated compute performance for a range of deep learning, high–performance computing (HPC), and graphics–intensive applications.

Subtopics

Accelerator installation guidelines

Installing an accelerator option in the riser cage

Accelerator installation guidelines

- This server does not support the installation of different accelerator models in the same system.

- To maintain proper system cooling, the redundant fan option kit is required for accelerator installation.

- If an NVIDIA L4 Tensor Core graphic accelerator is installed, observe the following:

    ○ Processor with TDP equal or less than 150 W.

    ○ Accelerator support option kit (P66618-B21) is installed.

- The limited operating inlet ambient temperatures required for accelerators vary based on the model and the server drive configuration. For more information, see the server QuickSpecs on the Hewlett Packard Enterprise website (https://buy.hpe.com/us/en/p/1014705725).

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

Installing an accelerator option in the riser cage

Prerequisites

Before installing an accelerator option, observe the following:

- Review the Accelerator installation guidelines.

- Make sure that you have a T-15 Torx screwdriver available.

- If you are installing the L4 Tensor Core graphic accelerator, the accelerator support option kit is required (P66618-B21).

- The L4 Tensor Core graphic accelerator support option kit includes one PCI air baffle and 15 DIMM blanks.

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, <u>remove the riser cage</u>.

8. If you are installing the second single-width accelerator, <u>install the secondary riser option on the riser cage</u>.

9. To install the first accelerator 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 PCI air baffle.
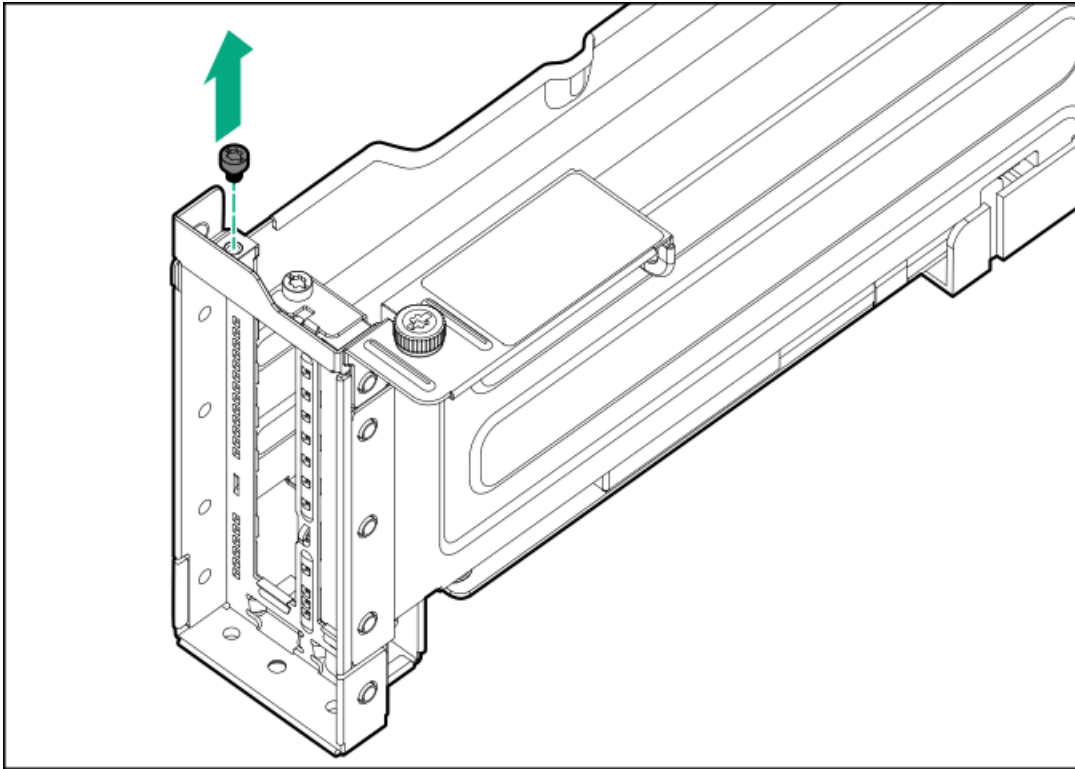
   b. Install the first accelerator in the riser slot 2.

   Make sure that the accelerator is firmly seated in the riser.
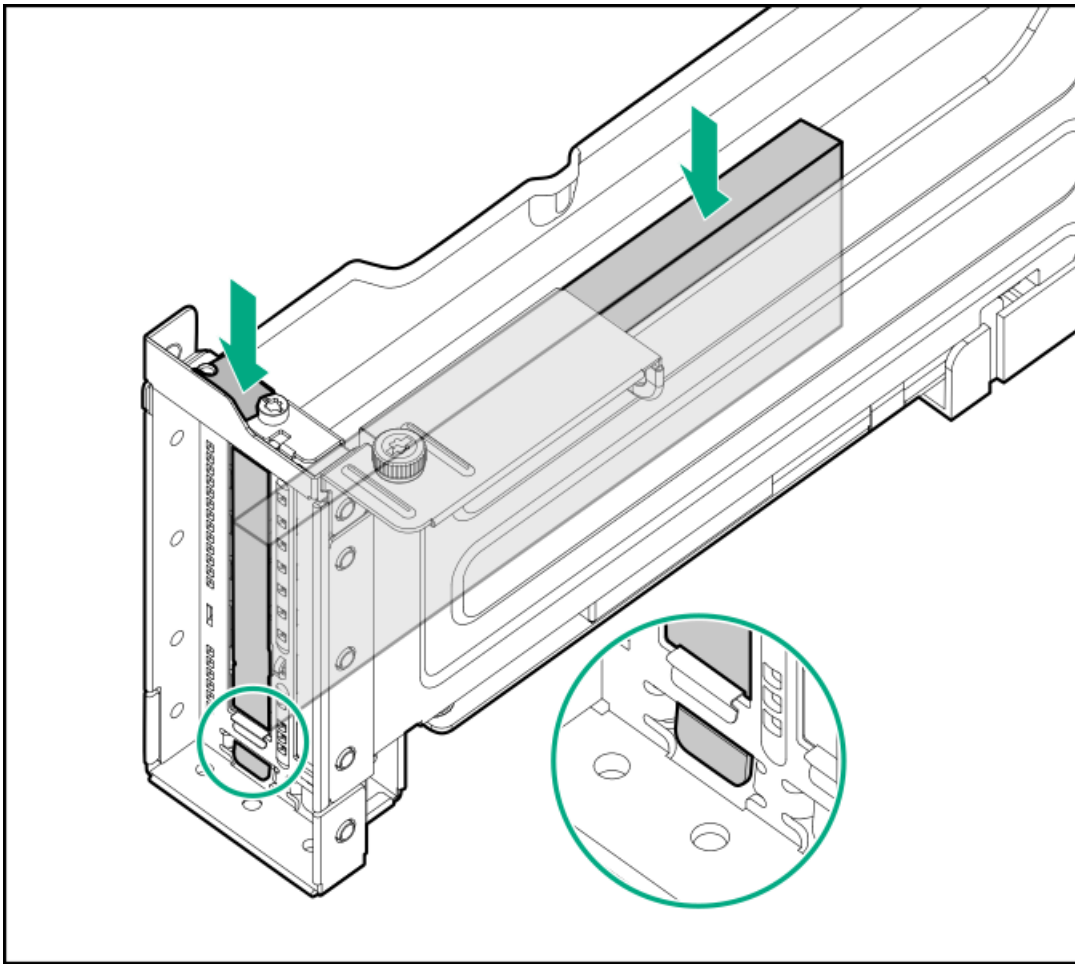
10. If you are installing the second accelerator in the riser slot 3, remove the riser slot screw and blank from the riser cage.

Retain the screw. This screw will be used to secure the PCI air baffle.
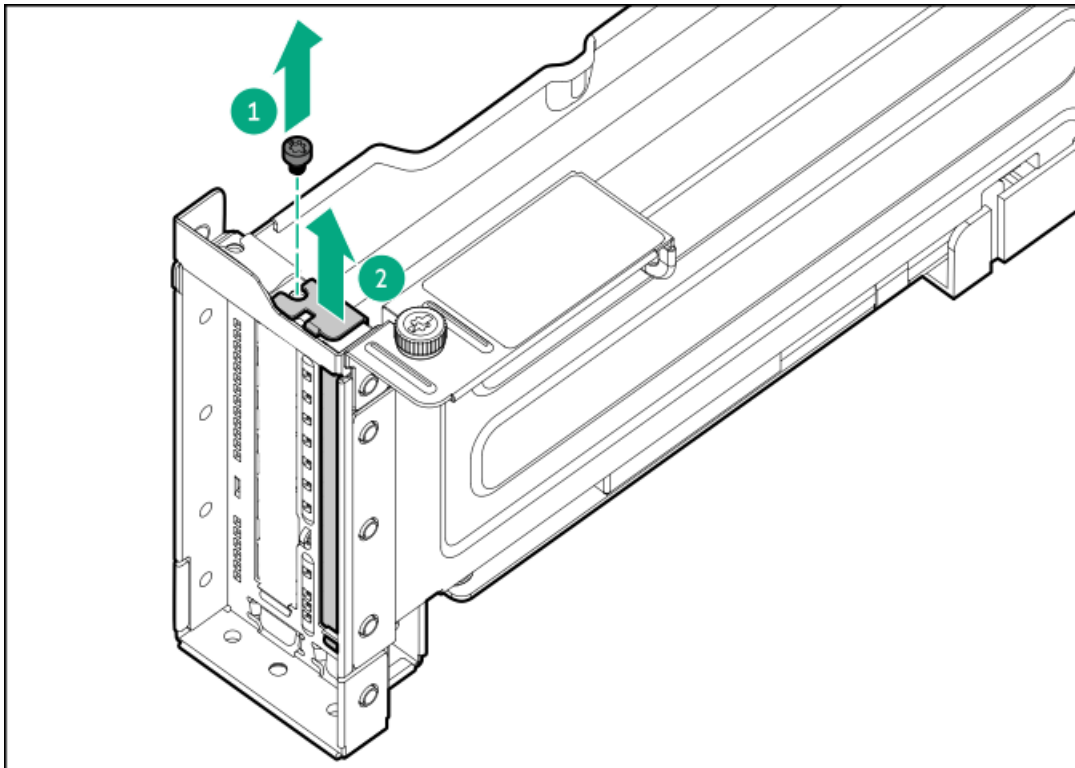
11. If the L4 Tensor Core graphic accelerator is installed, install the accelerator support option kit:

a. Install the PCI air baffle.
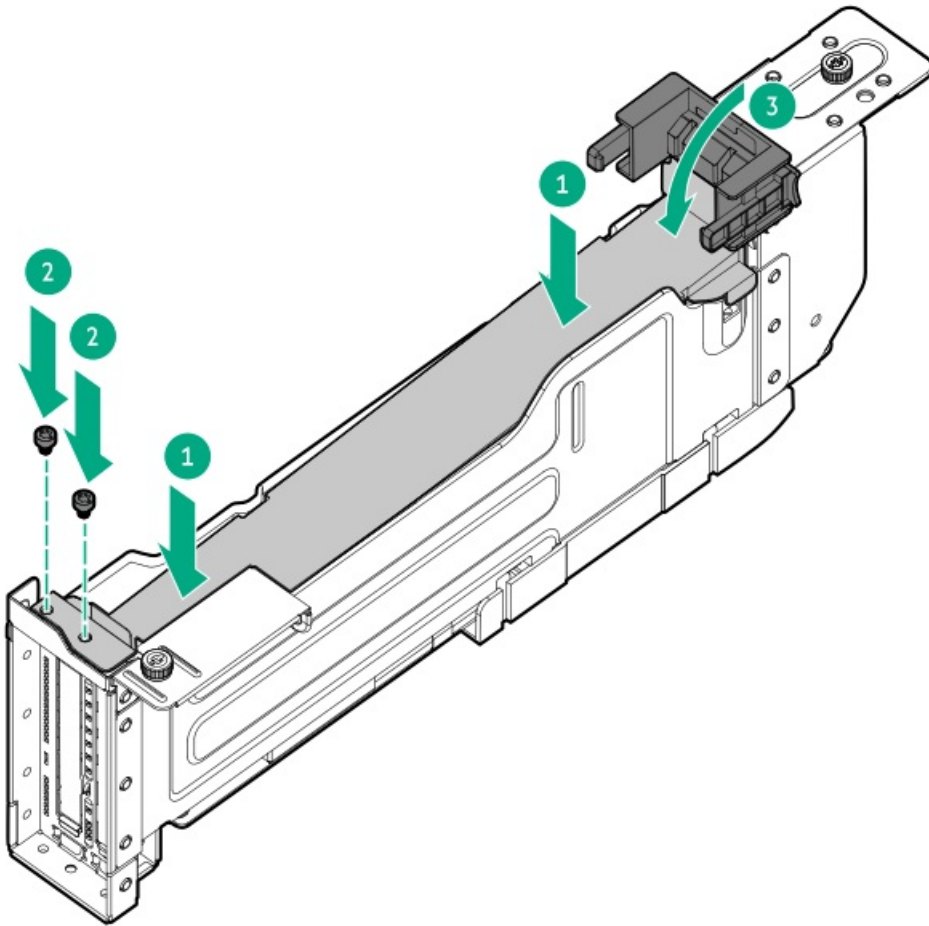
b. Install the DIMM blanks on all empty DIMM slots.
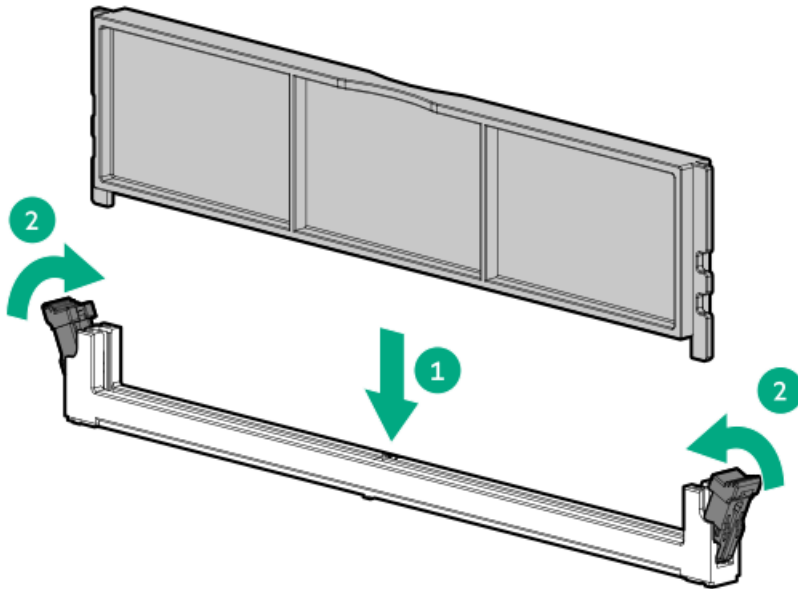
12. <u>Install the redundant fan option kit</u>.

13. <u>Install the riser cage</u>.

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 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 (NS204i-u) 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 kit 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 <u>antistatic precautions</u>.

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.
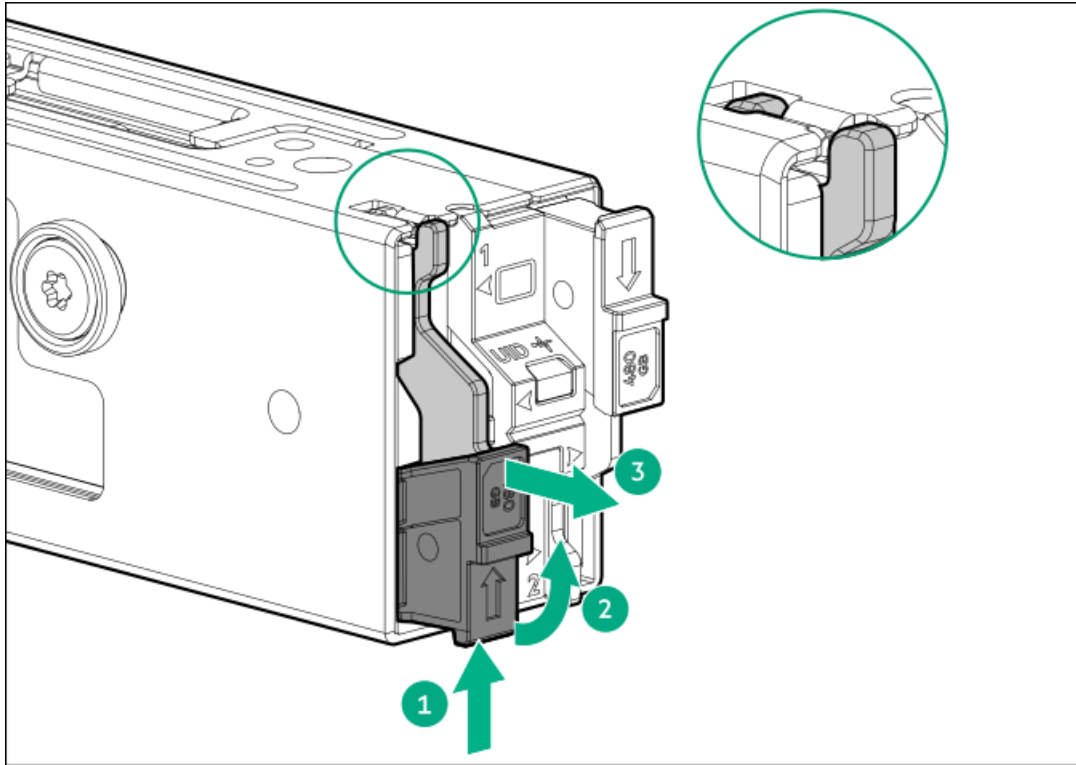
2. Install the SSD on the boot device carrier:

   a. Remove the SSD mounting screw.
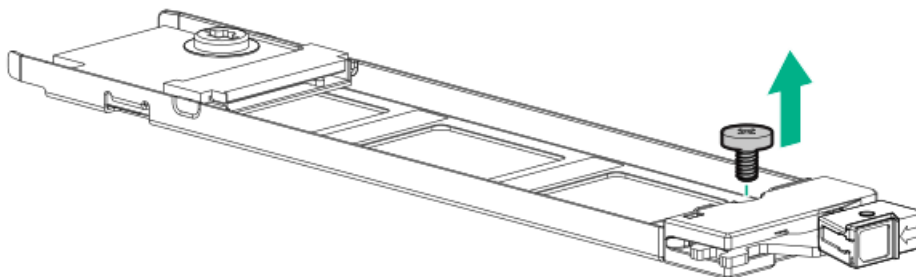
   b. Insert the SSD into the M.2 slot at a 45° angle.

   c. Carefully press the SSD down to the horizontal position.

   d. Install the SSD mounting screw.
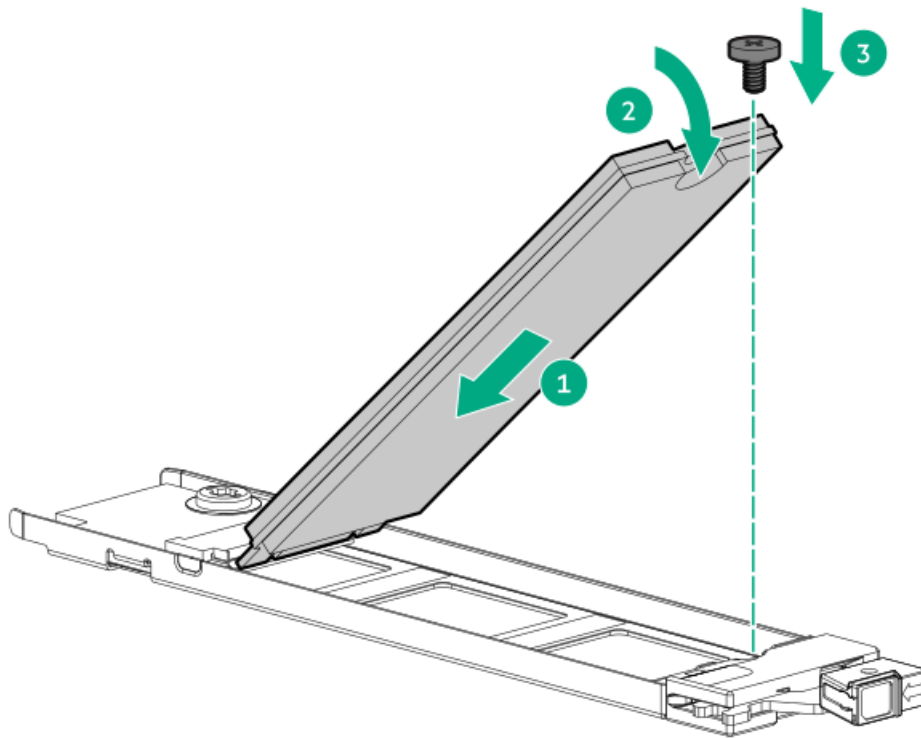
3. Install the boot device carriers:

    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.
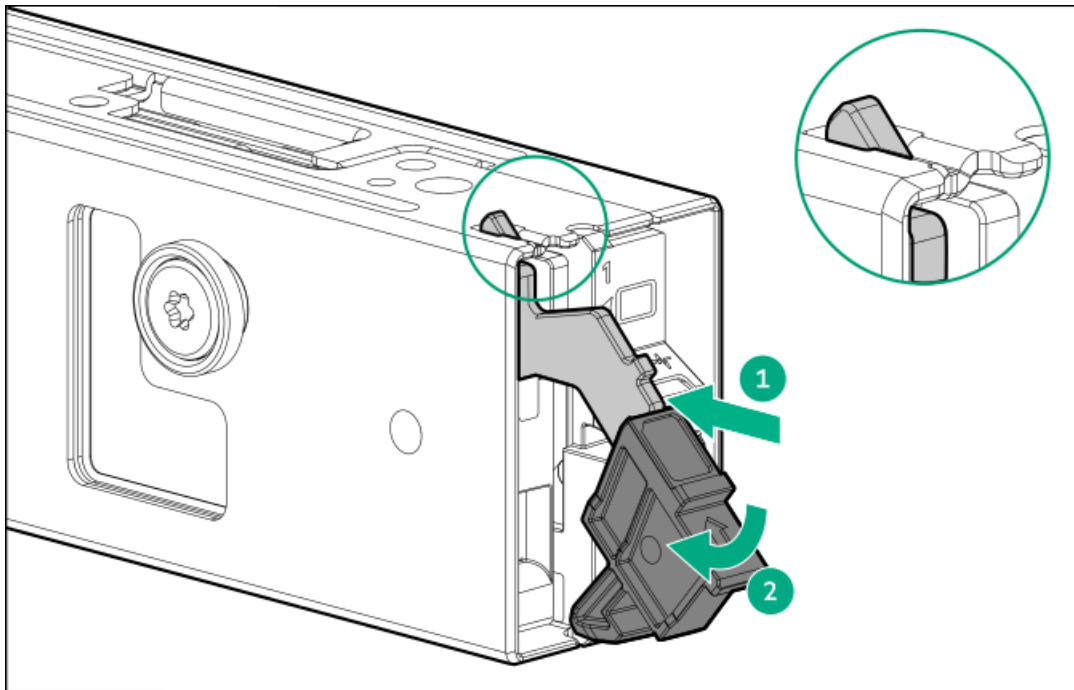
Installing the boot device
4. Back up all server data.

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.
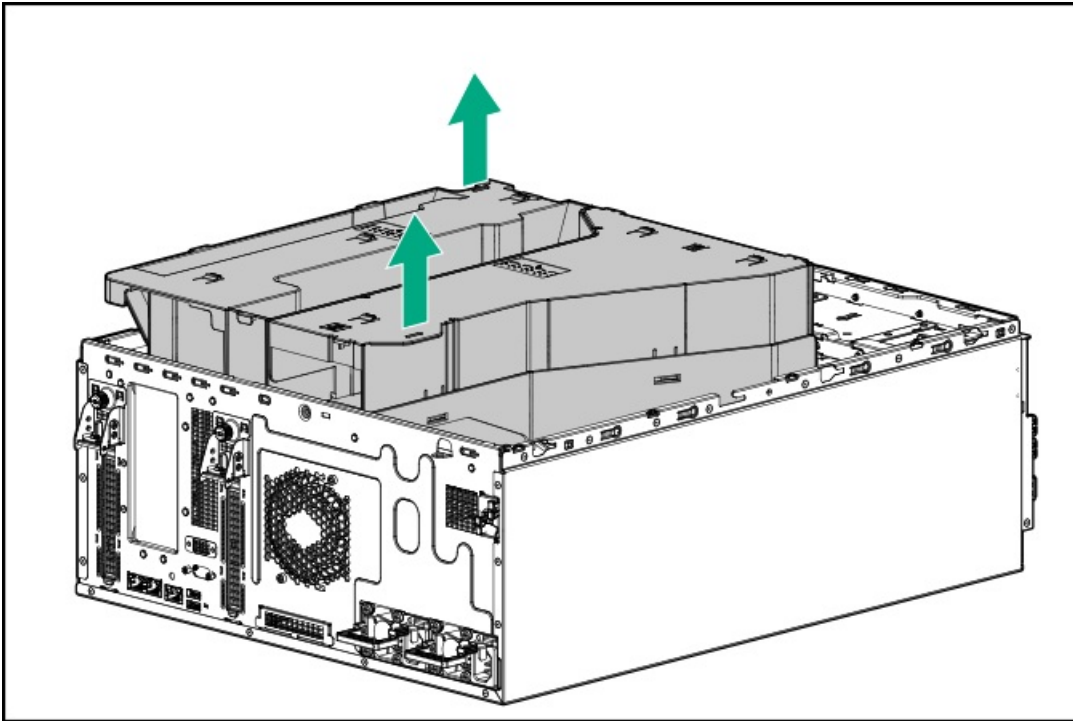
11. Remove the boot device cover.
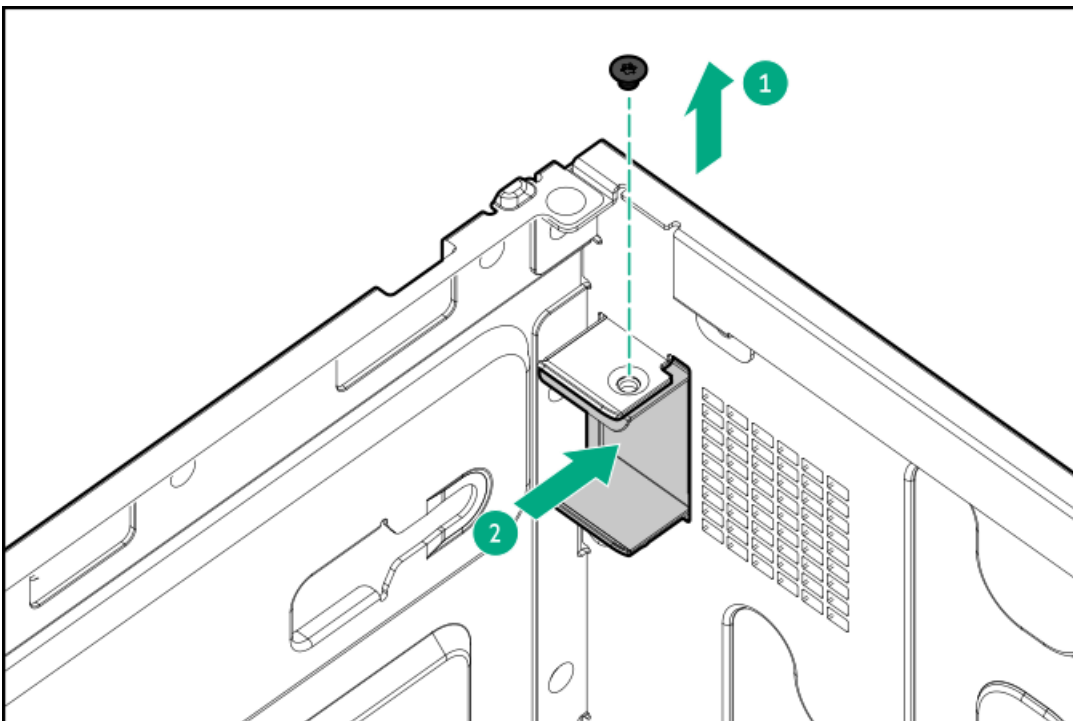
12. Connect the signal and power cables to the boot device.

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.
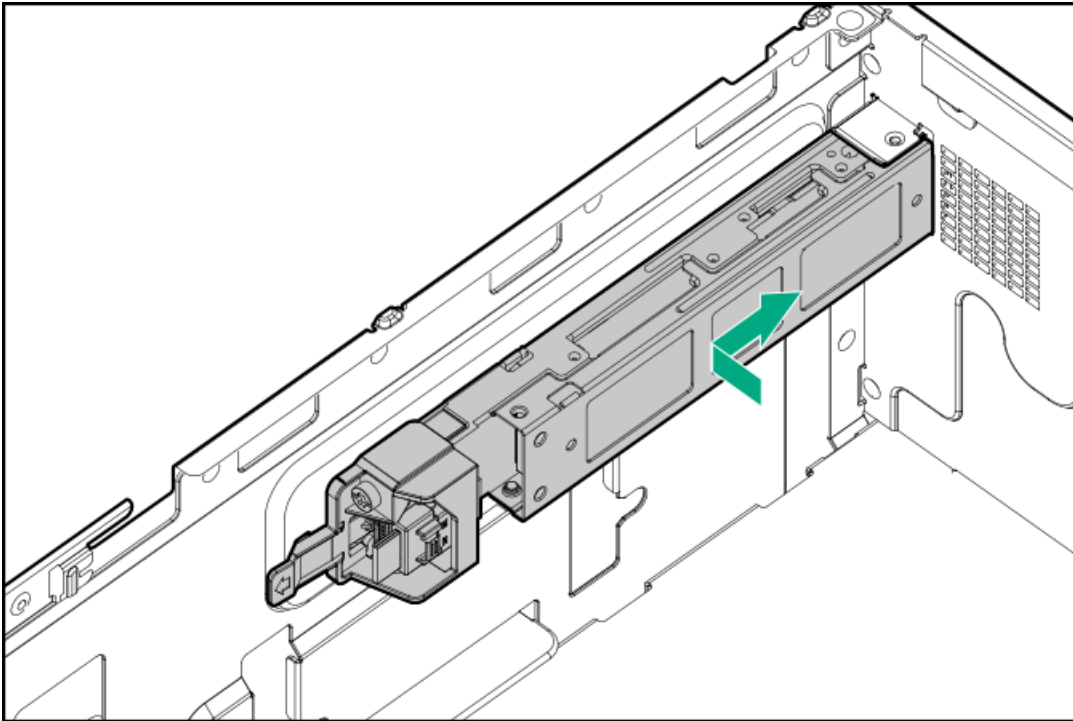
14. Connect the boot device signal and power cables to the system board .

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 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

<u>Installing the OCP NIC 3.0 adapter</u>

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 <u>antistatic precautions</u>.

Procedure

1. <u>Power down the server</u>.

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, <u>place the server on a flat, level surface with the access panel facing up</u> .

   - If the server is in rack mode, <u>remove the server from the rack</u>.

5. <u>Remove the access panel</u>.

6. Remove the system air baffle.

7. Remove the system fan:

   a. Release the fan cable from the cable clamp.

   b. Remove the screws.

   c. Detach the default system fan from the chassis.

   - Default system fan
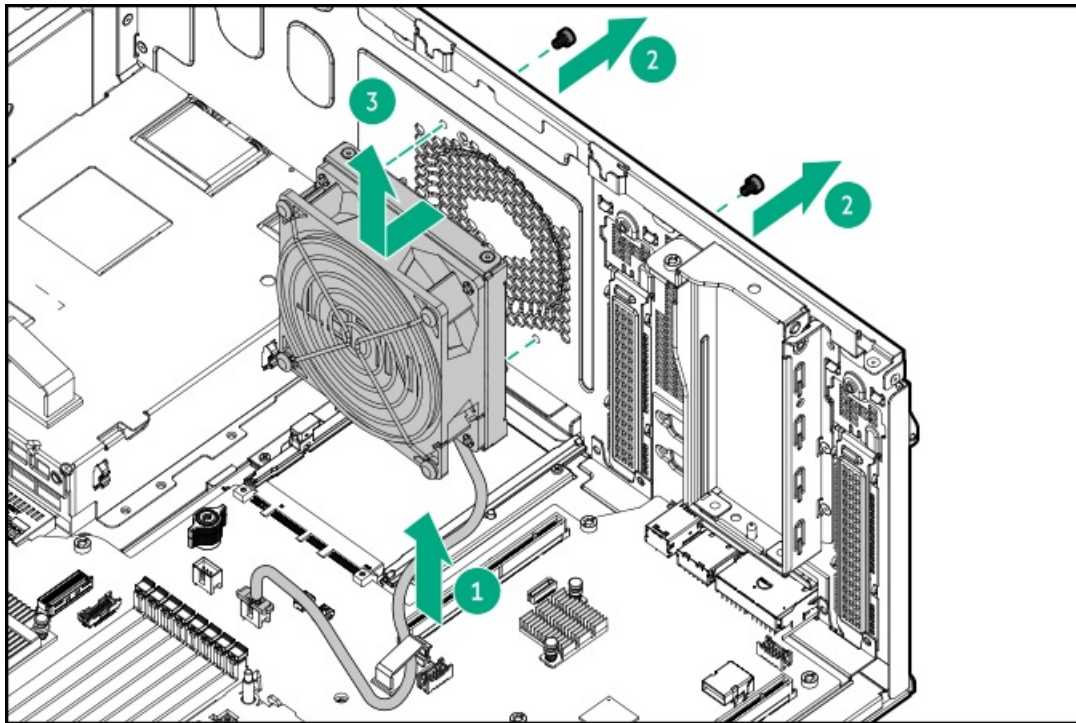
   - Redundant system fan
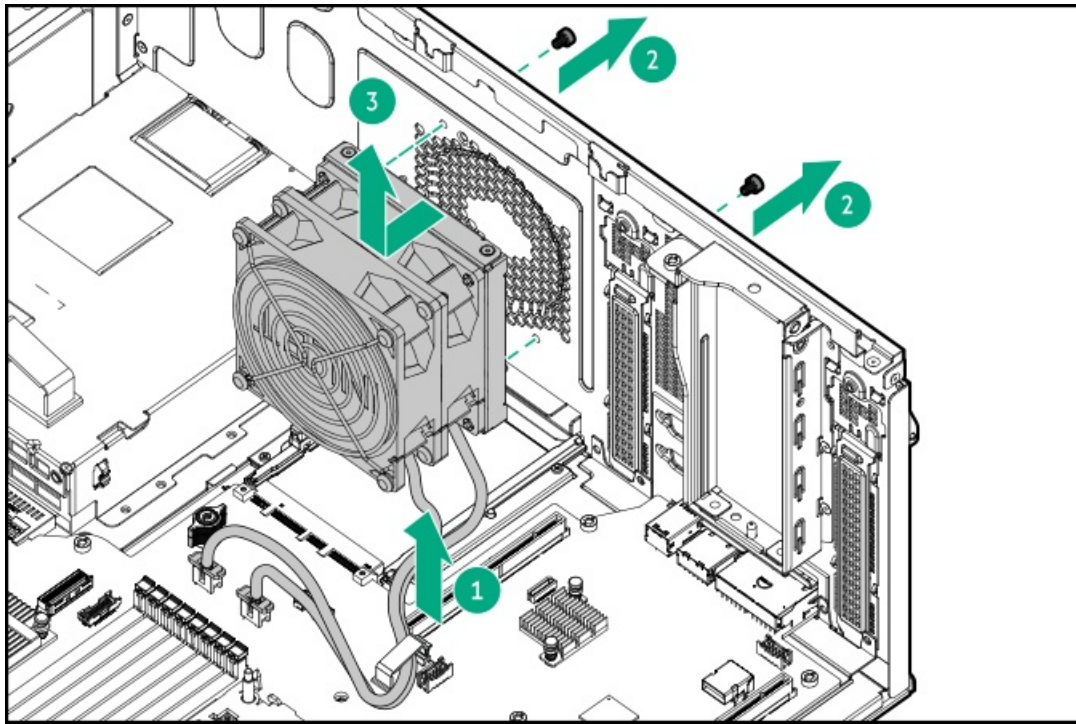
8. Remove the OCP slot blank:

    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.
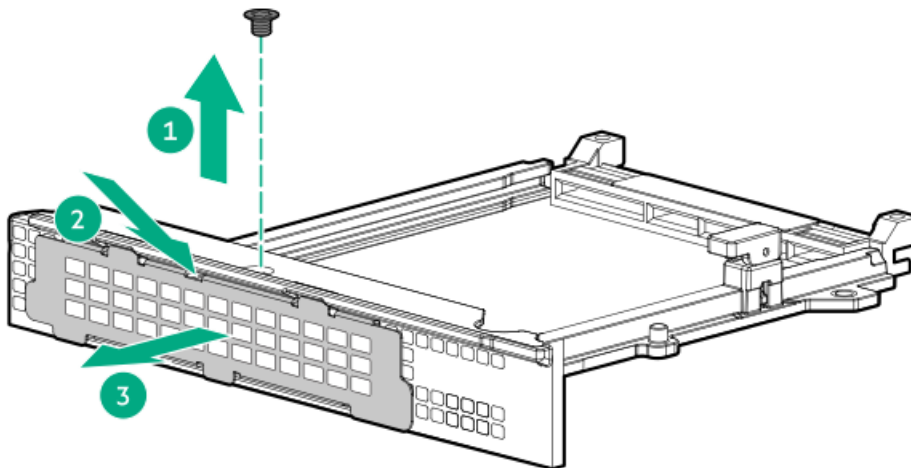
9. Install the OCP NIC 3.0 adapter:

    a. Rotate the locking pin to the open (vertical) position.

    b. Slide the adapter into the bay until it clicks into place.

        Make sure that the adapter is seated firmly in the slot.
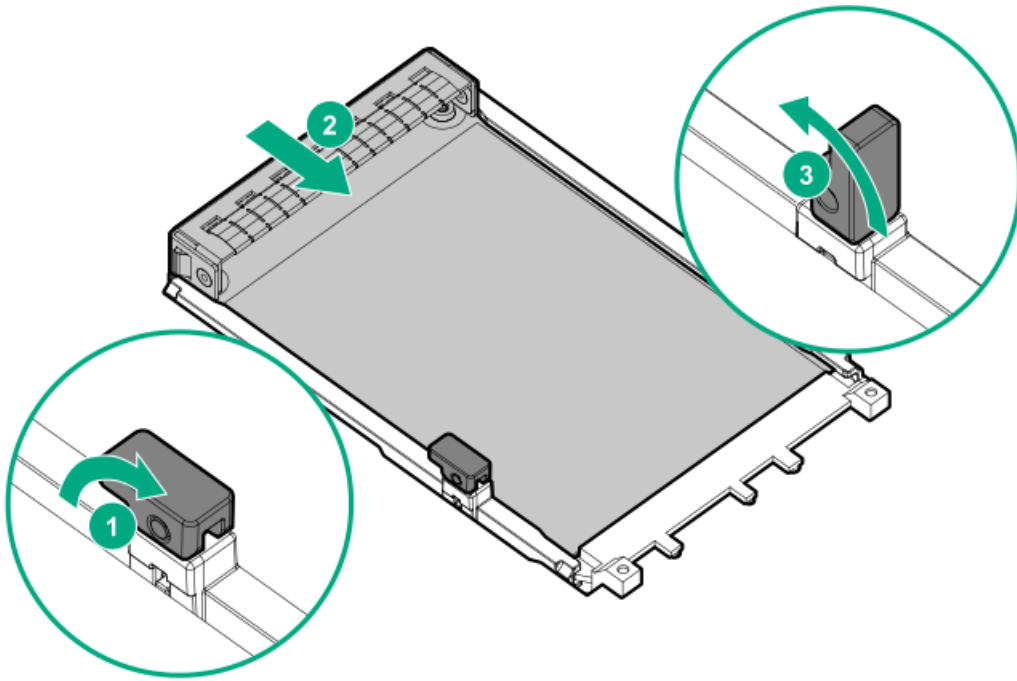
    c. Rotate the locking pin to the close (horizontal) position.

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
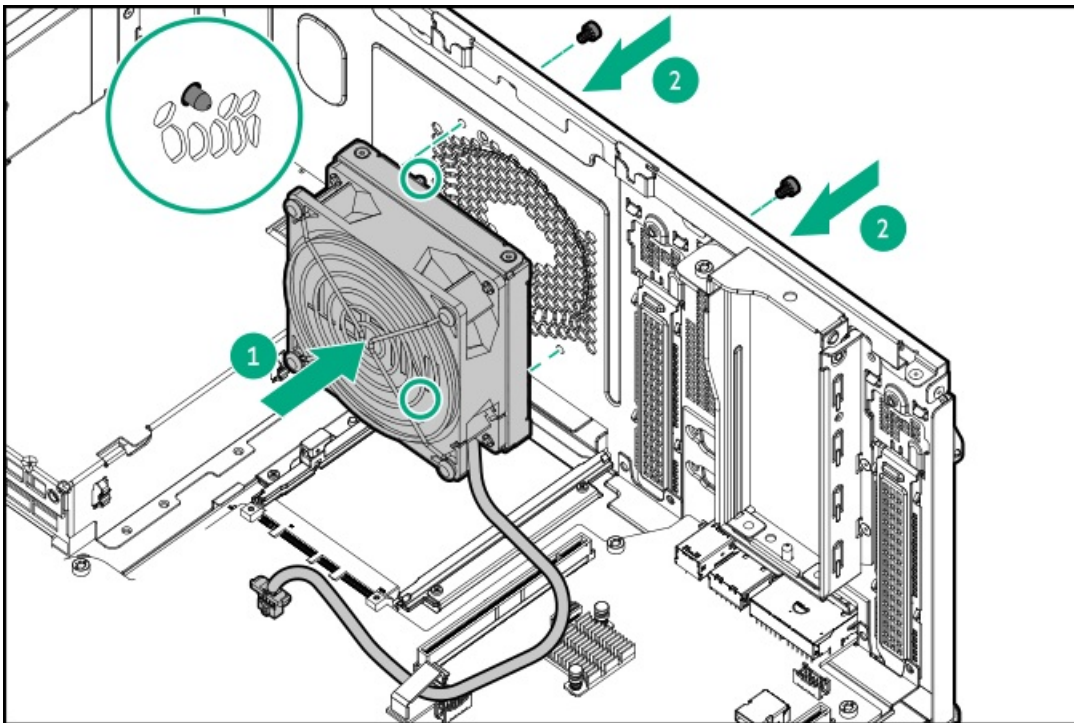
    ● Redundant system fan
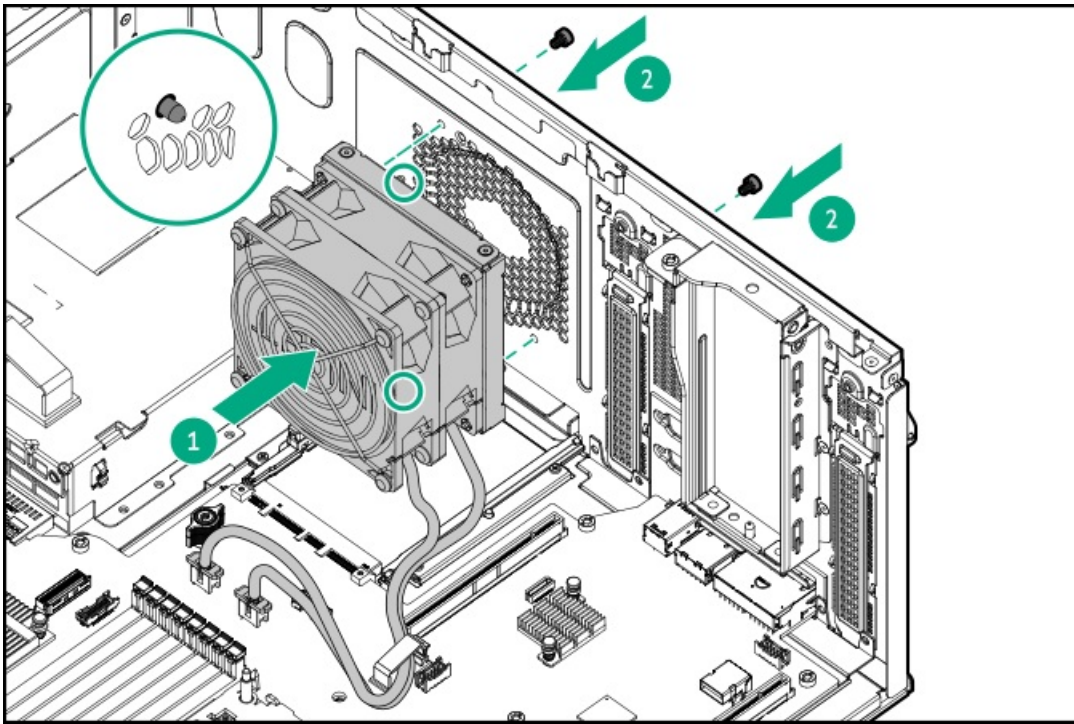
11. Connect the system fan cable.

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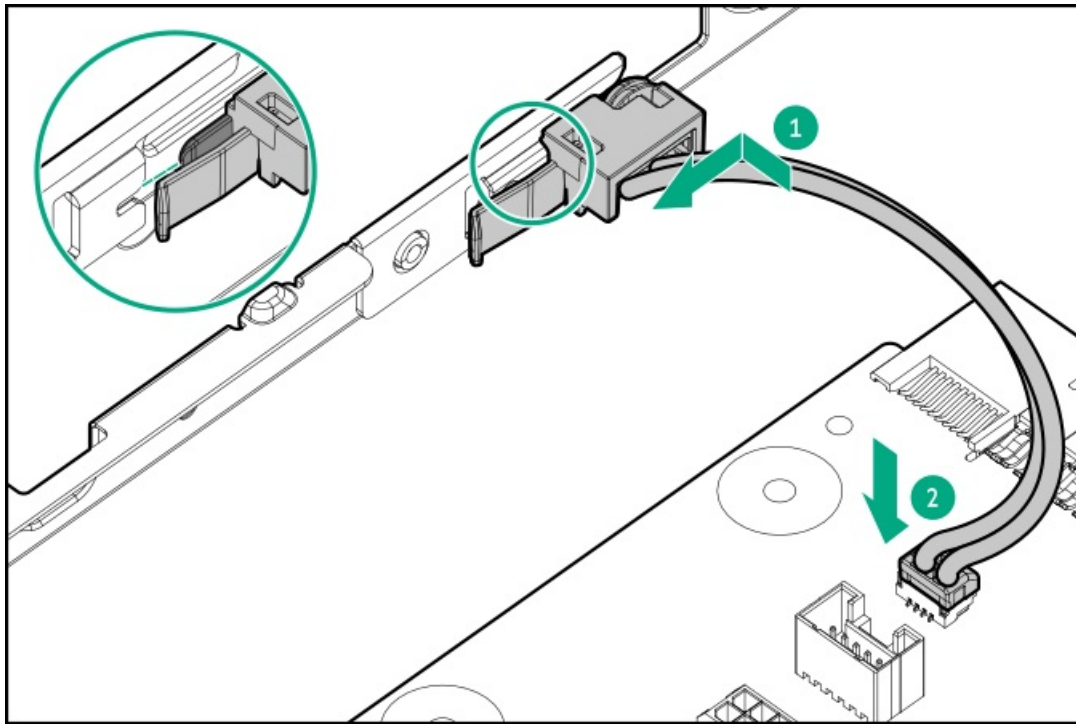
8. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

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 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
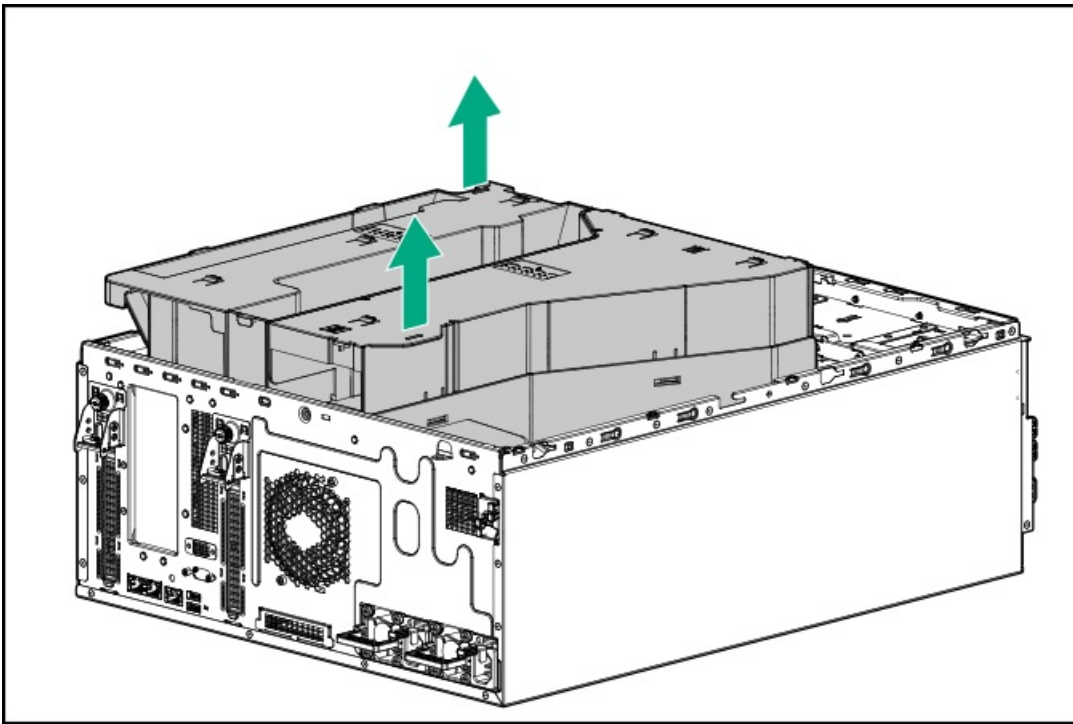
About this task

> **⚠ 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.
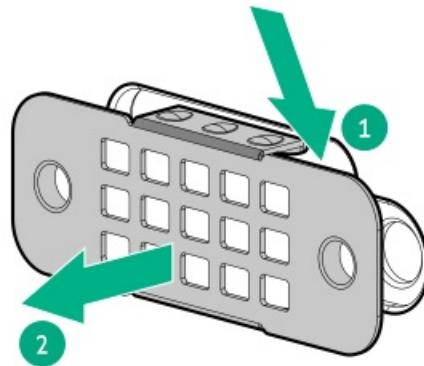
9. Install the serial port:

   a. Insert the serial port into the rear panel opening.

   b. Install the hex screws.
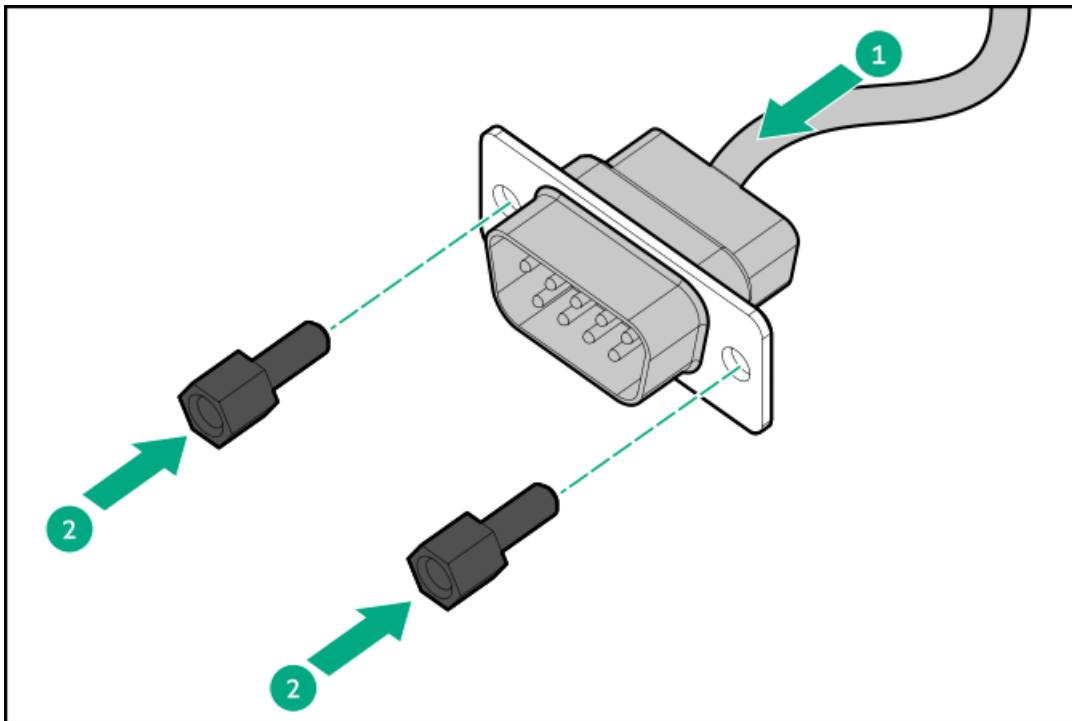
10. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

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.

Results

The installation is complete.

Internal USB device option

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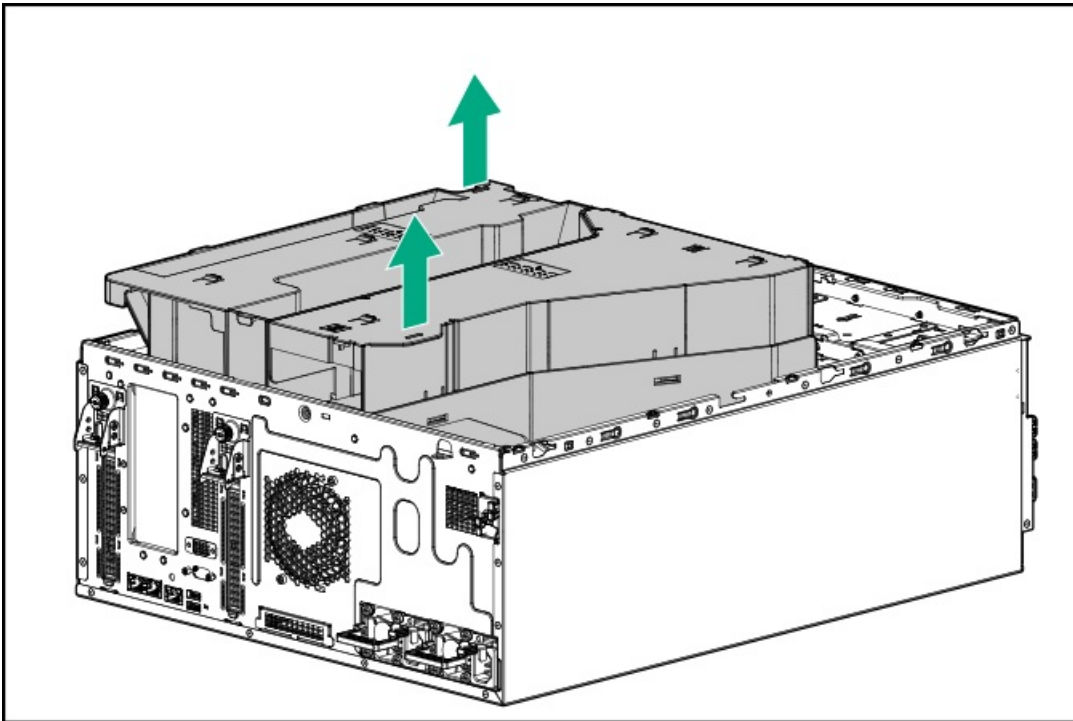
Subtopics

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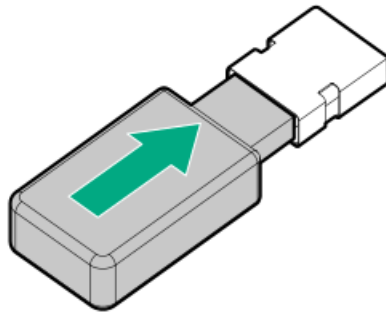
9. Make sure that all the system cables that are routed through the front cable channel are properly secured in the metal cable tabs and cable clamps.

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 is complete.

Cabling

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

Subtopics

Cabling guidelines

Cabling diagrams

Internal cabling management

Storage cabling

Internal USB RDX docking station cabling

Riser board cabling

HPE NS204i-u Boot Device cabling

Fan cabling

Optical drive SATA-power cabling

Chassis intrusion detection switch cabling

Serial port cabling

VGA cabling

Front I/O module cabling

Cabling guidelines

Observe the following:

- Some diagrams show alphabetical callouts A, B, C, etc. These callouts correspond to labels near the connectors on the cable.

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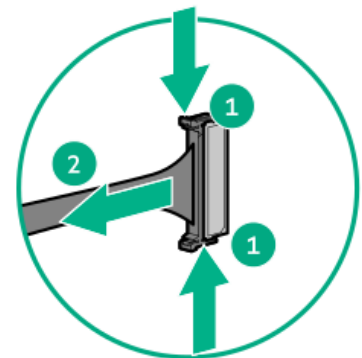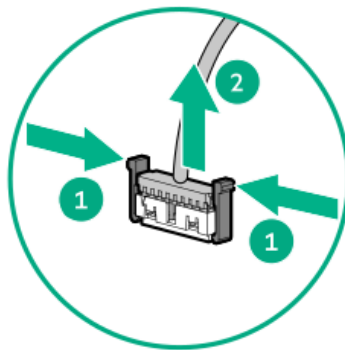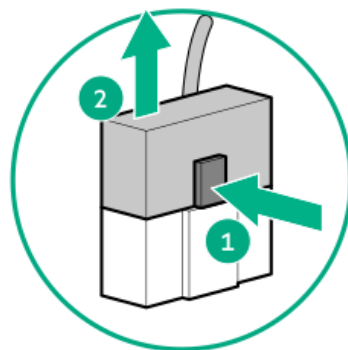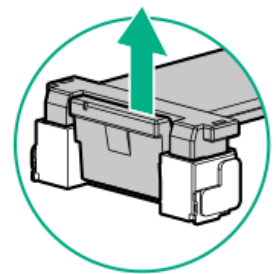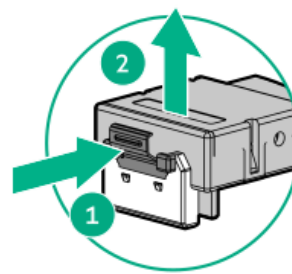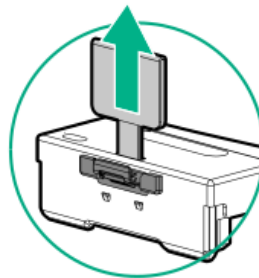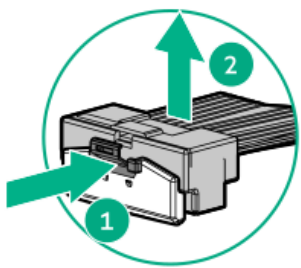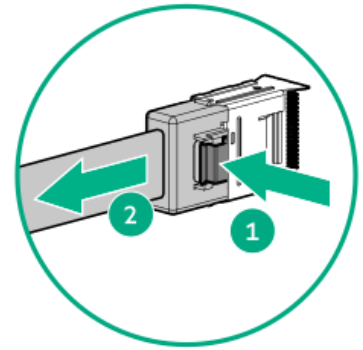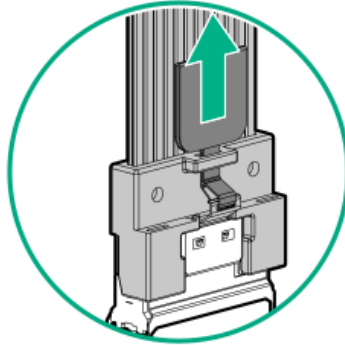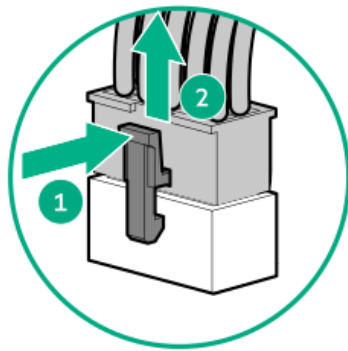
- Remove cables that are no longer being used. Retaining them inside the server can restrict airflow. If you intend to use the removed cables later, label and store them for future use.

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
8 LFF non-hot-plug drives controller cable	—
Onboard Intel VROC SATA cable	P60268-001
8 LFF hot-plug drives controller cables	—
Onboard Intel VROC SATA cable	P60269-001
Slot 14 type-o Gen11 controller cable	P60269-001
Slot 4 type-p Gen11 controller cable	P45301-001
8 SFF hot-plug drives controller cables	—
Onboard Intel VROC SATA cable	P60270-001
Slot 14 type-o Gen11 controller cable	P60270-001
Slot 4 type-p Gen11 controller cable	P60271-001
16 SFF hot-plug drives controller cable	—
Slot 14 type-o Gen11 controller cables	P60270-001
Slot 4 type-p Gen11 controller cables	P60271-001
Slots 1 and 4 type-p Gen11 controller cables	P60271-001
Drive power cables	—
LFF hot-plug drive box 1 power cable	P60266-001
LFF hot-plug drive box 2 power cable	
SFF hot-plug drive box 1 power cable	P60267-001
SFF hot-plug drive box 2 power cable	
Media bay device cables	—
Internal USB RDX docking station signal cable	876507-002
Internal USB RDX docking station power cable	P45303-001
Riser cables	—
PCIe Slot 2 riser signal cable	P44002-001
PCIe Slot 3 riser signal cable	
PCIe Slot 2 riser power cable	P60272-001
PCIe Slot 3 riser power cable	
HPE NS204i-u Boot Device cables	—
HPE NS204i-u Boot Device SlimSAS cable	P54087-001
HPE NS204i-u Boot Device power cable	P54088-001
Miscellaneous component cables	—
HPE Smart Storage Battery 96 W, 260 mm cable	P01367-B21

Component cabling	Cable part number
HPE Smart Storage Hybrid Capacitor, 260 mm cable	P02381-B21
Default system fan	P49989-001
Default PCI fan	
Redundant system fan	P49986-001
Redundant PCI fan	
Optical drive SATA-power cable	756914-001
Chassis intrusion detection switch	P47751-001
Serial port	873747-001
VGA	P53987-001
Front I/O module cable	P45292-001

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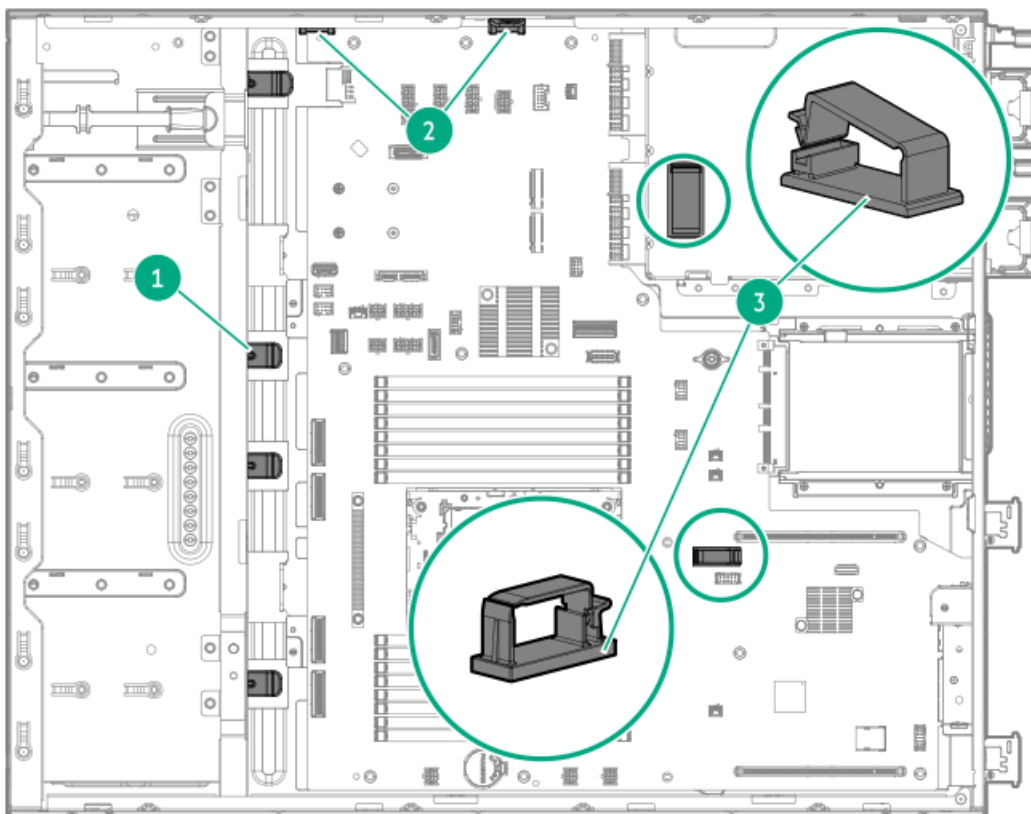
Item	Description
1	Front cable channel metal tabs
2	Front cable clamps
3	Cable clamps

Storage cabling

Subtopics

[Storage controller cabling](#)

[Hot-plug drive power cabling](#)

[Energy pack cabling](#)

[Storage backup power cabling](#)

Storage controller cabling

Subtopics

[8 LFF non-hot-plug drive controller cabling](#)

[8 LFF hot-plug drive controller cabling](#)

[8 SFF hot-plug drive controller cabling](#)

[16 SFF hot-plug drive controller cabling](#)

8 LFF non-hot-plug drive controller cabling

8 LFF drive: Onboard Intel VROC SATA cabling

Cable part number	Cable color	From	To
P60268-001 [1]	Orange	Box 2	x8 SlimSAS port
	Blue		Drive box 2 power connector
	Gold	Box 1	x8 SlimSAS port
	Pink		Drive box 1 power connector

[1]   Option kit: P57363-B21

8 LFF hot-plug drive controller cabling

8 LFF drive: Onboard Intel VROC SATA cabling
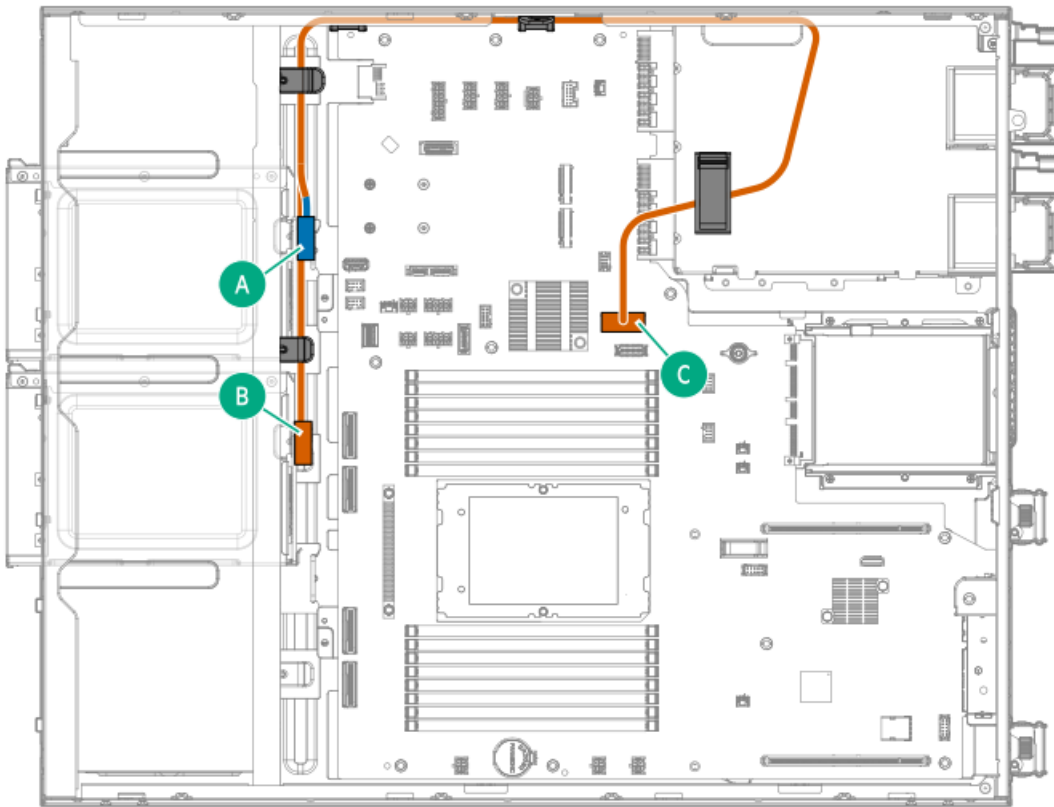
Cable part number	Cable color	From	To
P60269-001 [1]	Orange	Box 2, Port 1	x8 SlimSAS port
	Blue	Box 1, Port 1	

[1]   Option kit: P54045-B21

8 LFF drive: Slot 14 type-o Gen11 controller cabling
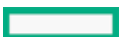
Cable part number	Cable color	From	To
P60269-001 [1]	Orange	Box 2, Port 1	Port 1
	Blue	Box 1, Port 1	

[1]   Option kit: P54045-B21

8 LFF drive: Slot 4 type-p Gen11 controller cabling

Cable part number	Cable color	From	To
P45301-001 [1]	Orange	Box 2, Port 1	Port 1
	Blue	Box 1, Port 1	

[1]   Option kit: P53484-B21

8 SFF hot-plug drive controller cabling

8 SFF drive: Onboard Intel VROC SATA cabling

- Box 1
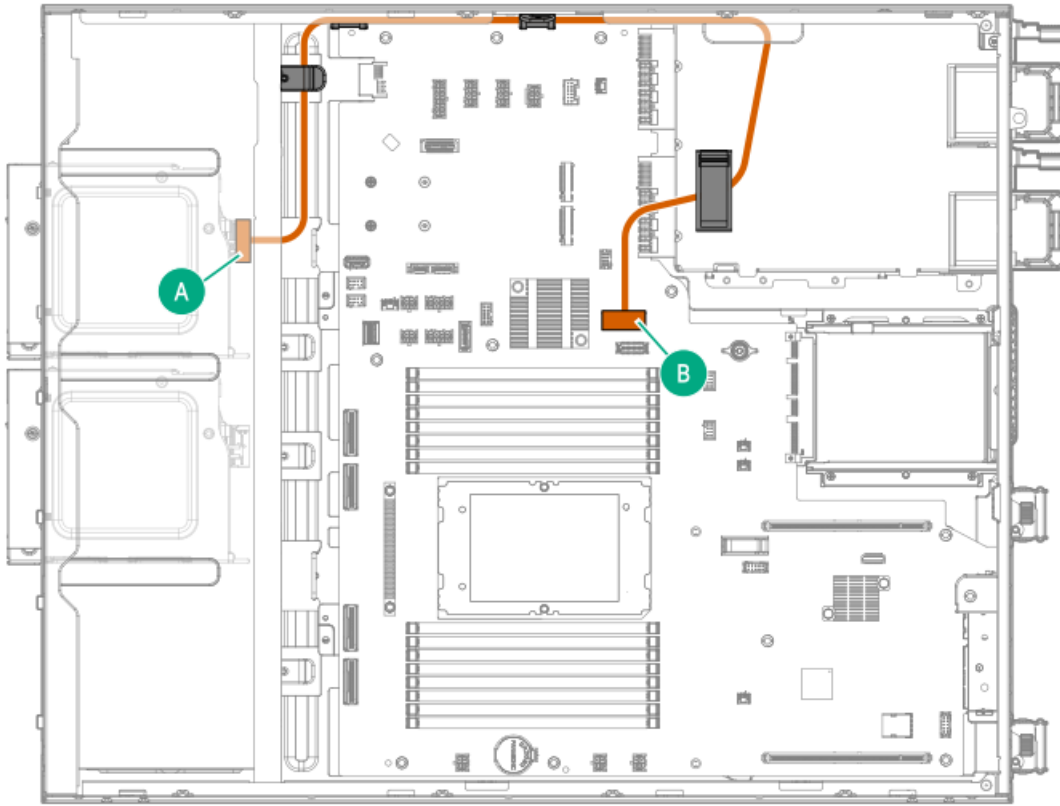
Cable part number	Cable color	From	To
P60270-001 [1]	Orange	Box 1, Port 1	x8 SlimSAS port

[1]   Option kit: P53485-B21

- Box 2

Cable part number	Cable color	From	To
P60270-001 [1]	Orange	Box 2, Port 1	x8 SlimSAS port

[1] Option kit: P53485-B21

8 SFF drive: Slot 14 type-o Gen11 controller cabling

- Box 1

Cable part number	Cable color	From	To
P60270-001 [1]	Orange	Box 1, Port 1	Port 1

[1]   Option kit: P53485-B21
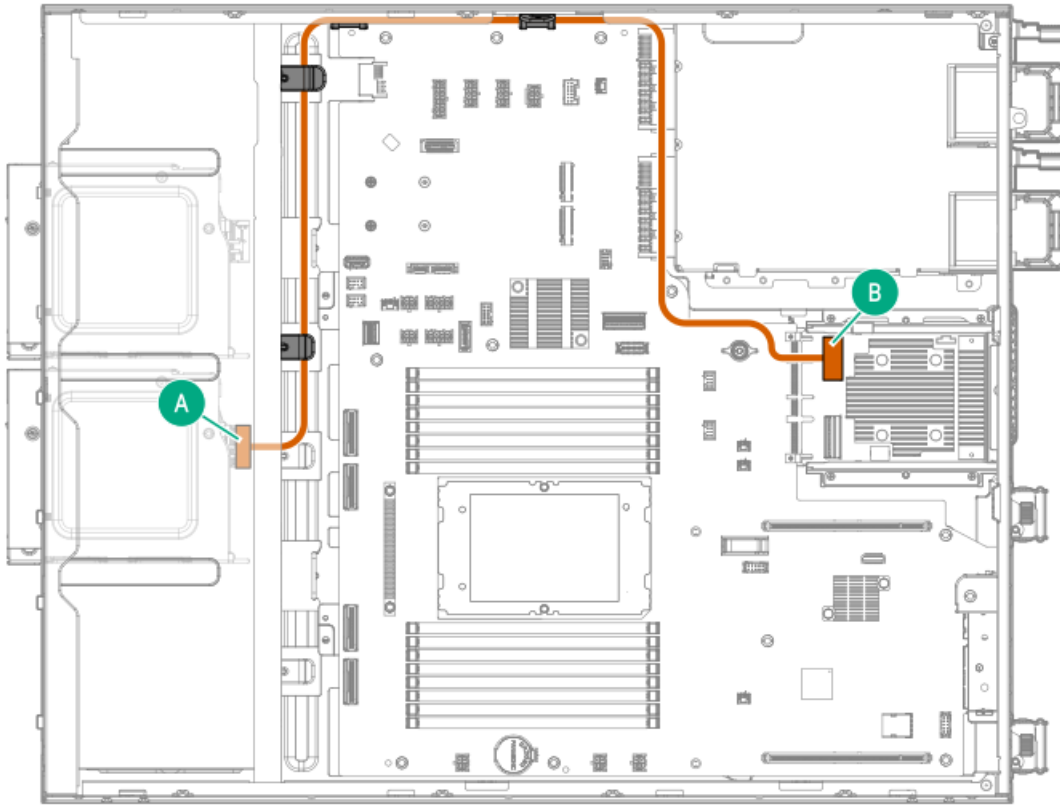
- Box 2

Cable part number	Cable color	From	To
P60270-001 [1]	Orange	Box 2, Port 1	Port 2

[1] Option kit: P53485-B21

8 SFF drive: Slot 4 type-p Gen11 controller cabling
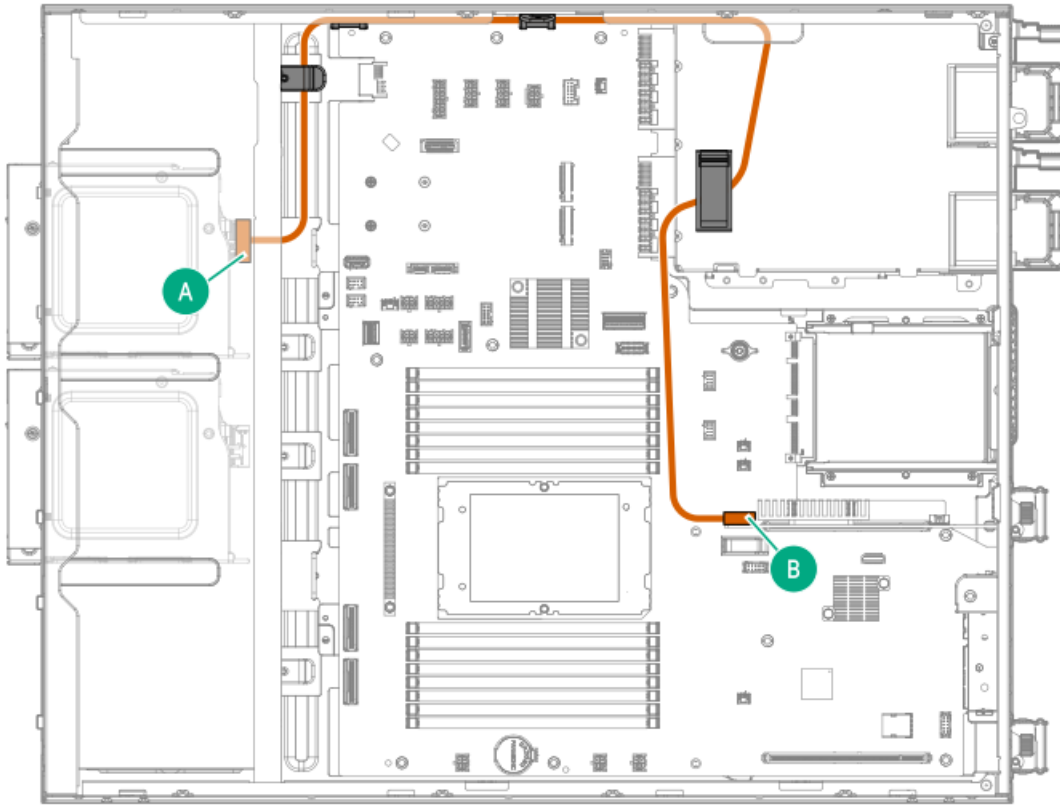
- Box 1

Cable part number	Cable color	From	To
P60271-001 [1]	Orange	Box 1, Port 1	Port 1

[1] Option kit: P55859-B21

- Box 2
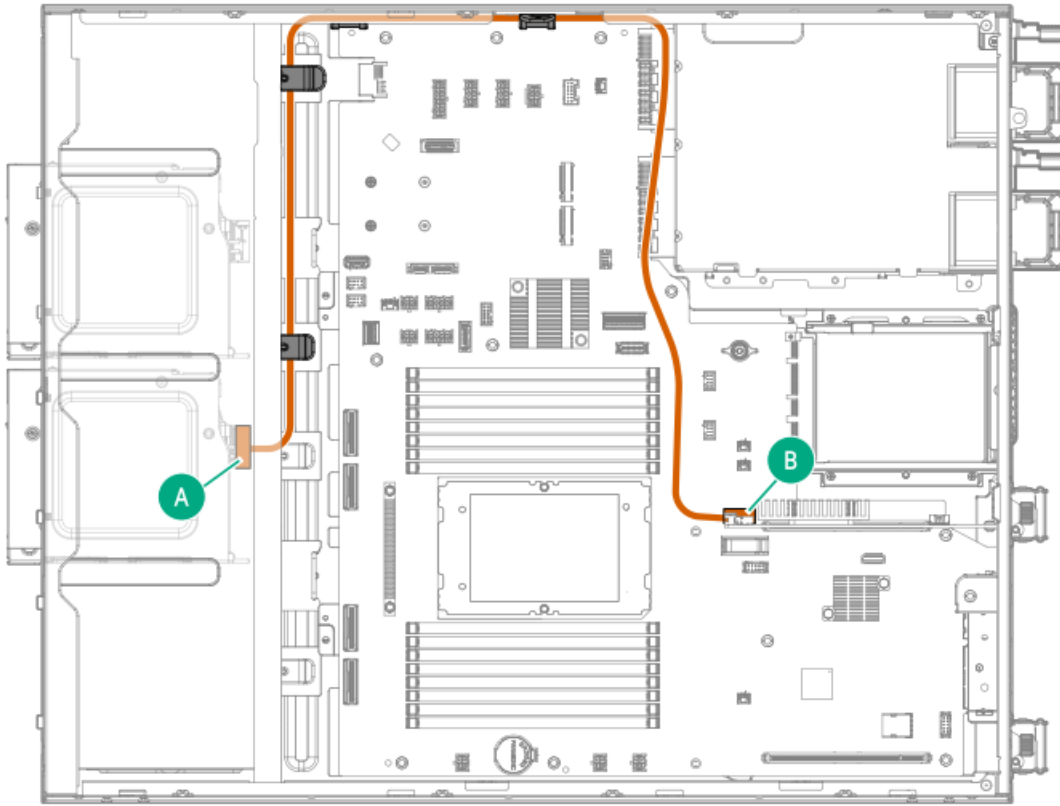
Cable part number	Cable color	From	To
P60271-001 [1]	Orange	Box 2, Port 1	Port 2

[1] Option kit: P55859-B21

16 SFF hot-plug drive controller cabling

16 SFF drive: Slot 14 type-o Gen11 controller cabling
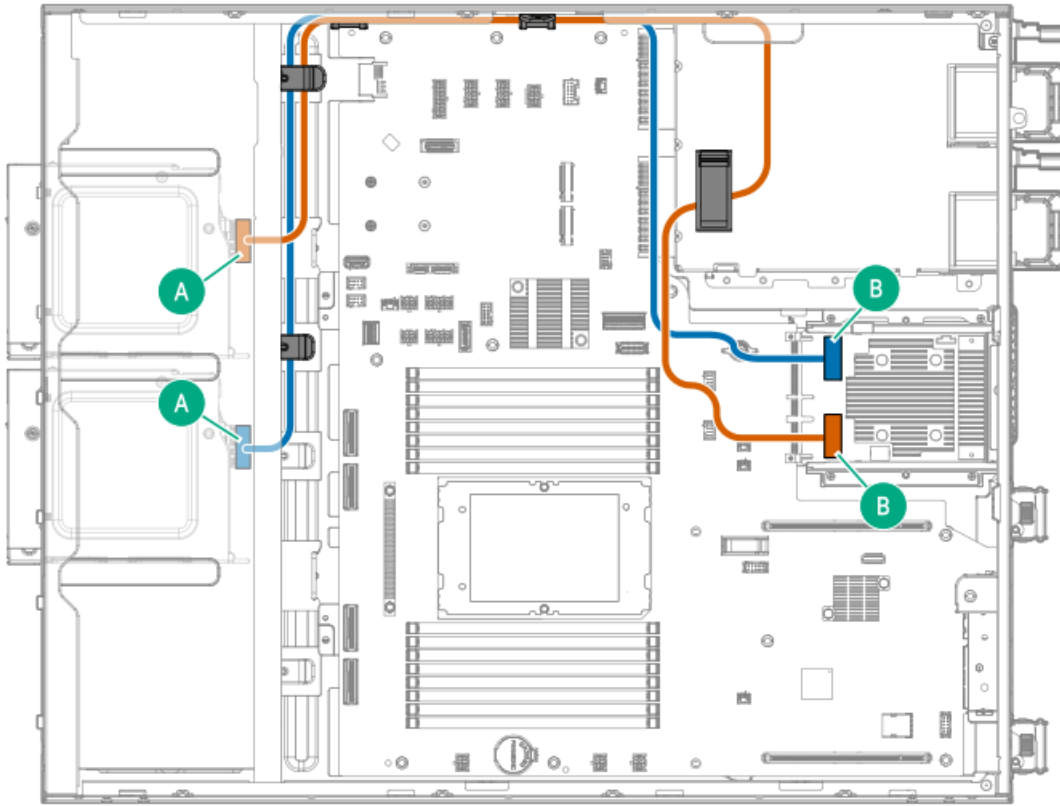
Cable part number	Cable color	From	To
P60270-001 [1]	Orange	Box 1, Port 1	Port 1
P60270-001 [1]	Blue	Box 2, Port 1	Port 2

[1]   Option kit: P53485-B21

16 SFF drive: Slot 4 type-p Gen11 controller cabling
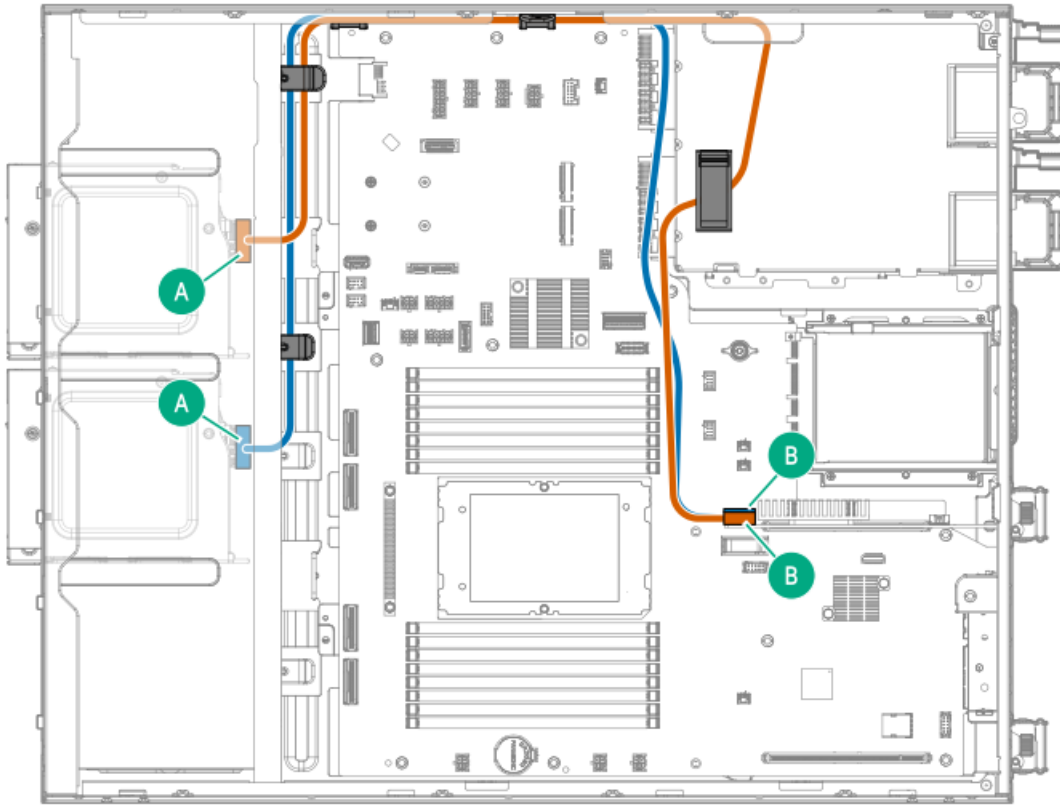
Cable part number	Cable color	From	To
P60271-001 [1]	Orange	Box 1, Port 1	Port 1
P60271-001 [1]	Blue	Box 2, Port 1	Port 2

[1]   Option kit: P55859-B21

16 SFF drive: Slots 1 and 4 type-p Gen11 controllers cabling
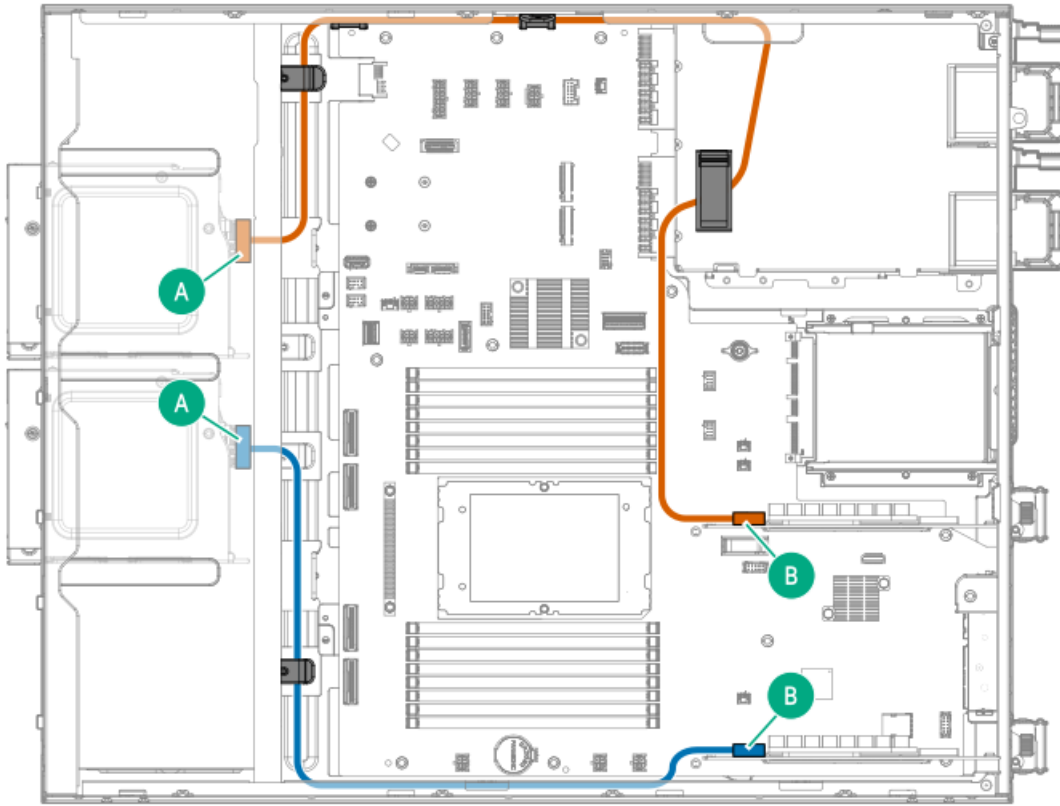
Cable part number	Cable color	From	To
P60271-001 [1]	Orange	Box 1, Port 1	Slot 4 Port 1
P60271-001 [1]	Blue	Box 2, Port 1	Slot 1 Port 1

[1]   Option kit: P55859-B21

Hot-plug drive power cabling

LFF hot-plug drive power cabling
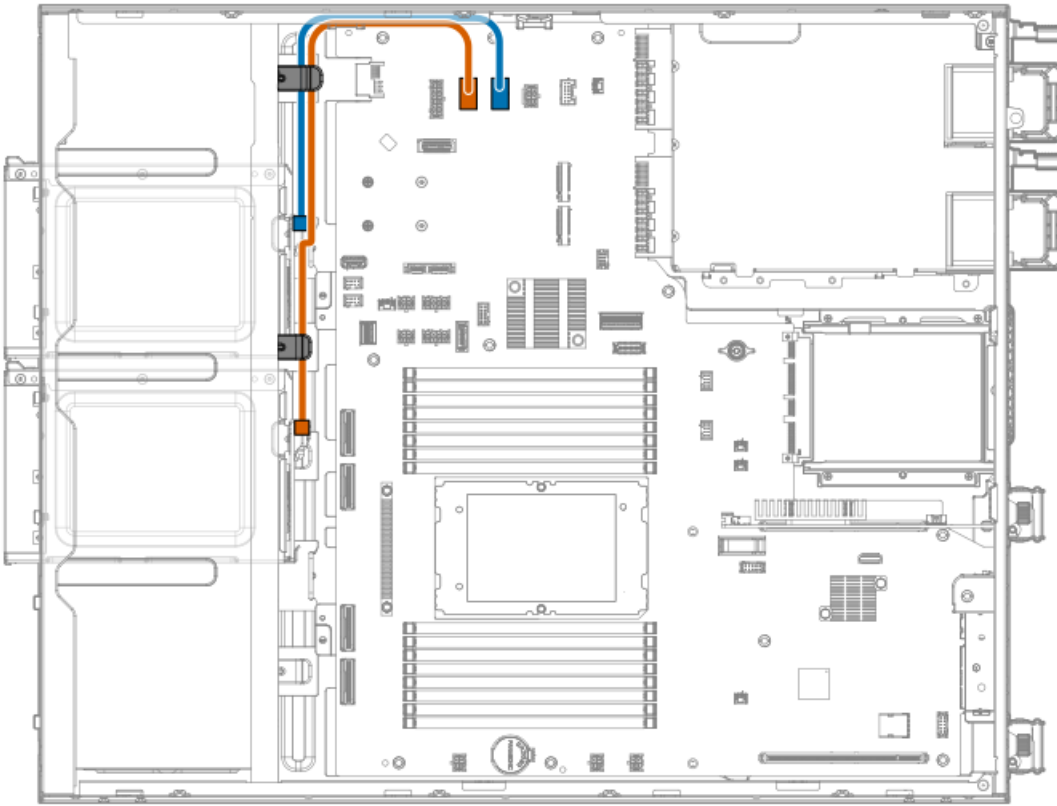
Cable part number	Cable color	From	To
P60266-001 [1]	Orange	Box 2	Drive box 2 power connector
	Blue	Box 1	Drive box 1 power connector

[1]   Option kit: P54045-B21

SFF hot-plug drive power cabling
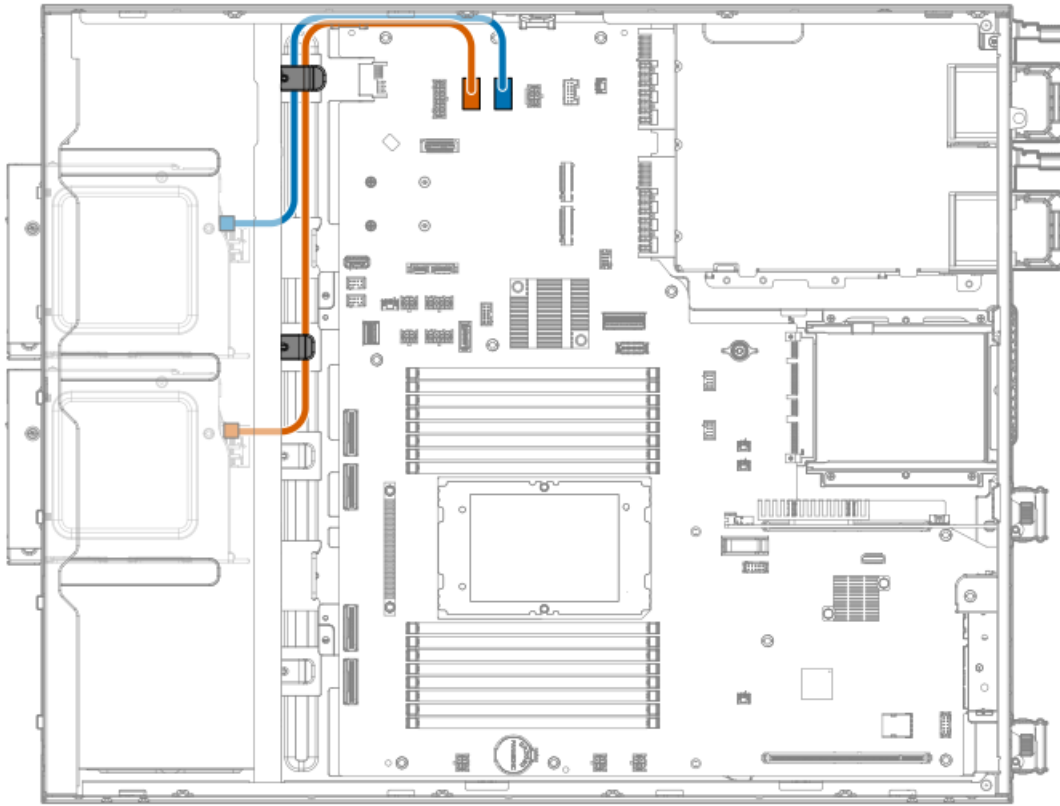
Cable part number	Cable color	From	To
P60267-001 [1]	Orange	Box 2	Drive box 2 power connector
	Blue	Box 1	Drive box 1 power connector

[1]   Option kit: P63974-B21

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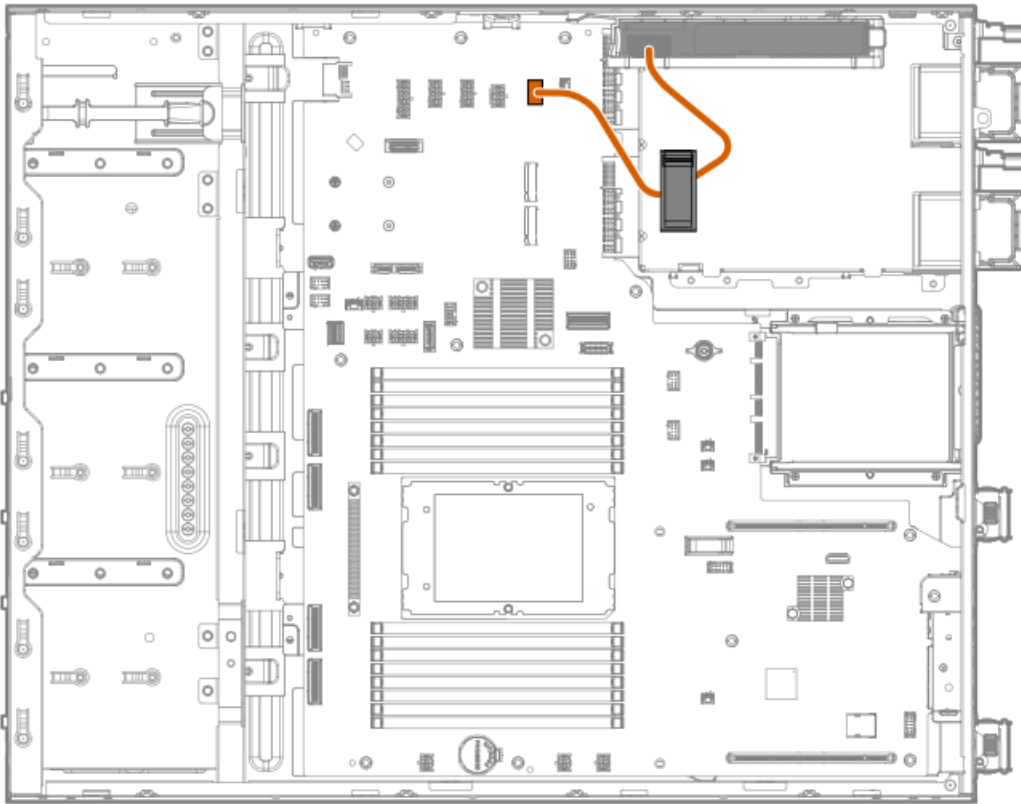
Option part number	Cable color	From	To
P01367-B21	Orange	HPE Smart Storage Battery 96 W	Energy pack connector
P02381-B21		HPE Smart Storage Hybrid Capacitor	

Storage 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 Gen11 storage backup power cabling
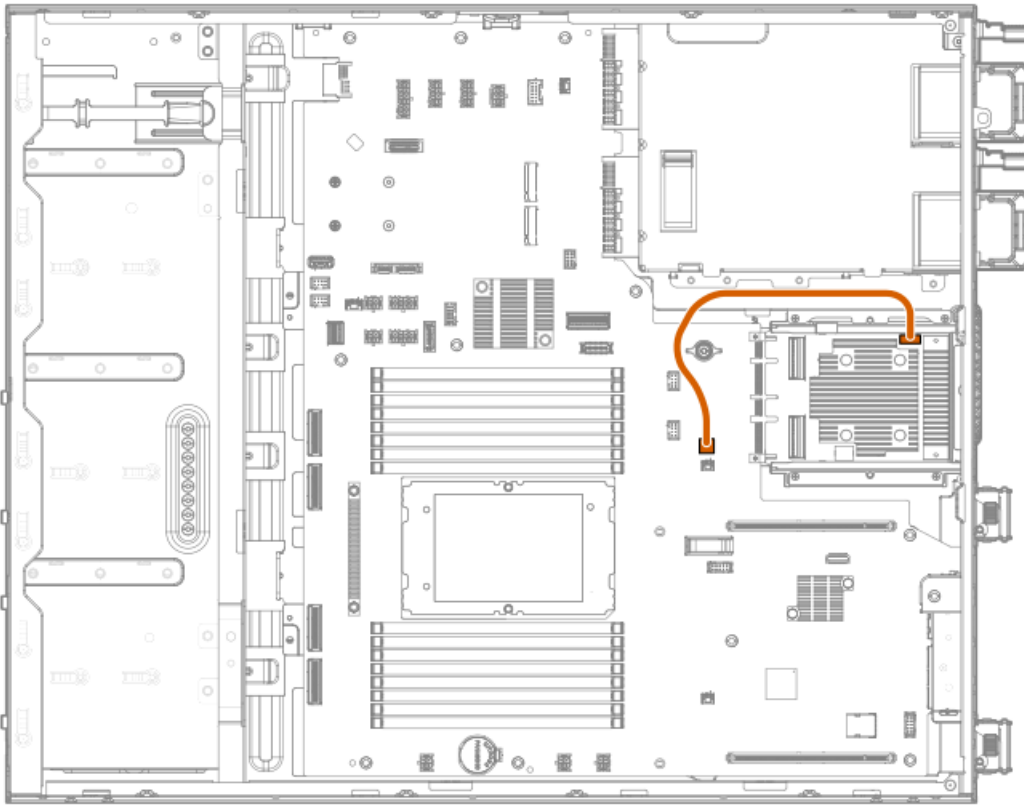
Cable color	From	To
Orange	Slot 14 type-o Gen11 storage controller	Slot 14 OROC storage backup power connector

Slot 1: Type-p Gen11 storage backup power cabling
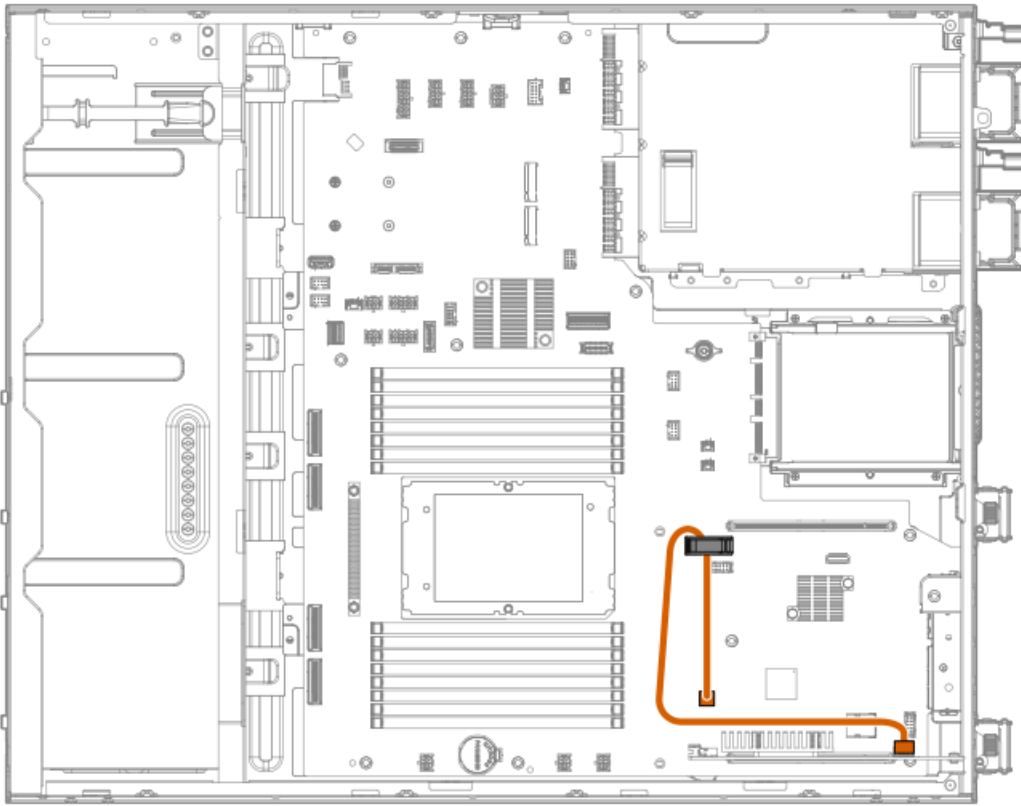
Cable color	From	To
Orange	Slot 1 type-p Gen11 storage controller	Slot 1 storage controller backup power connector

Slot 4: Type-p Gen11 storage backup power cabling
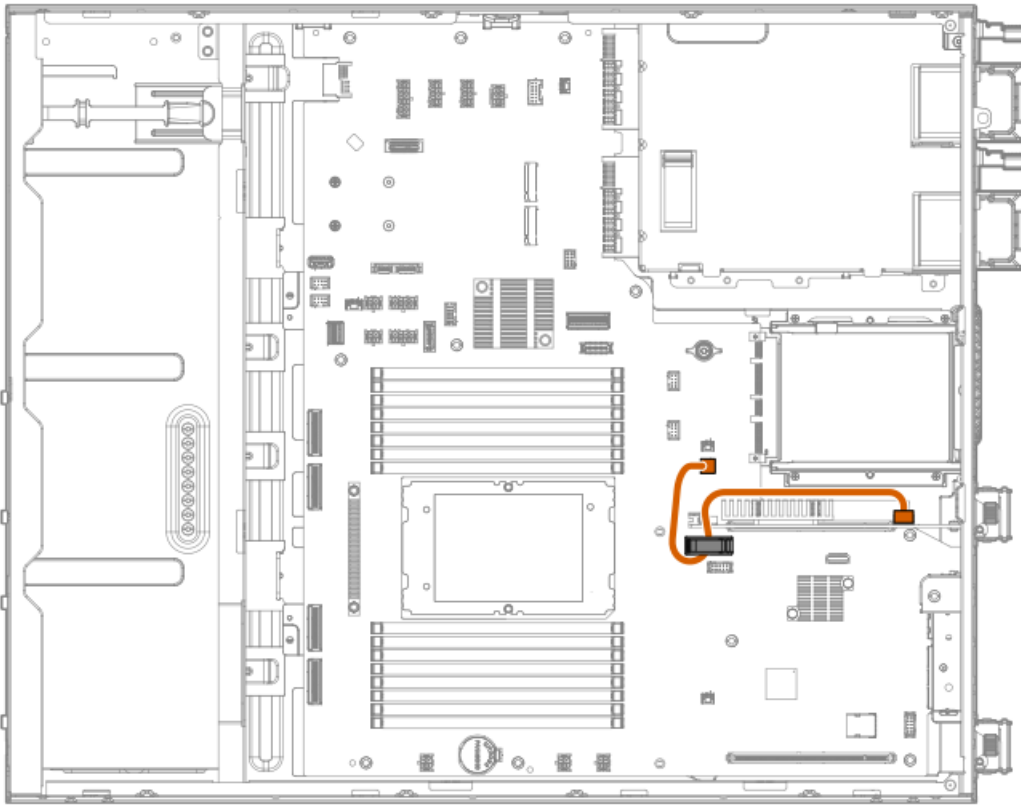
Cable color	From	To
Orange	Slot 4 type-p Gen11 storage controller	Slot 4 storage controller backup power connector

Internal USB RDX docking station cabling
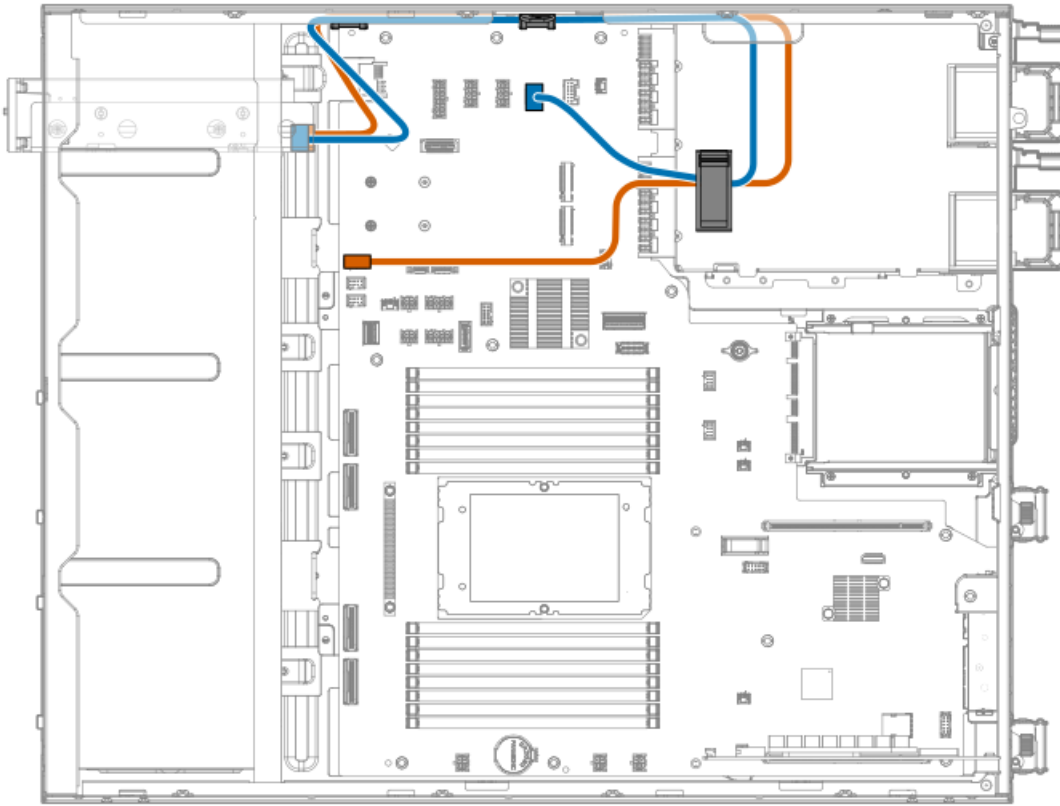
Cable part number	Cable color	From	To
876507-002 [1]	Orange	Internal USB RDX docking station	USB 3.2 Gen 1 port
P45303-001 [1]	Blue		Media drive power connector

[1]   Option kit: P53491-B21

Riser board cabling
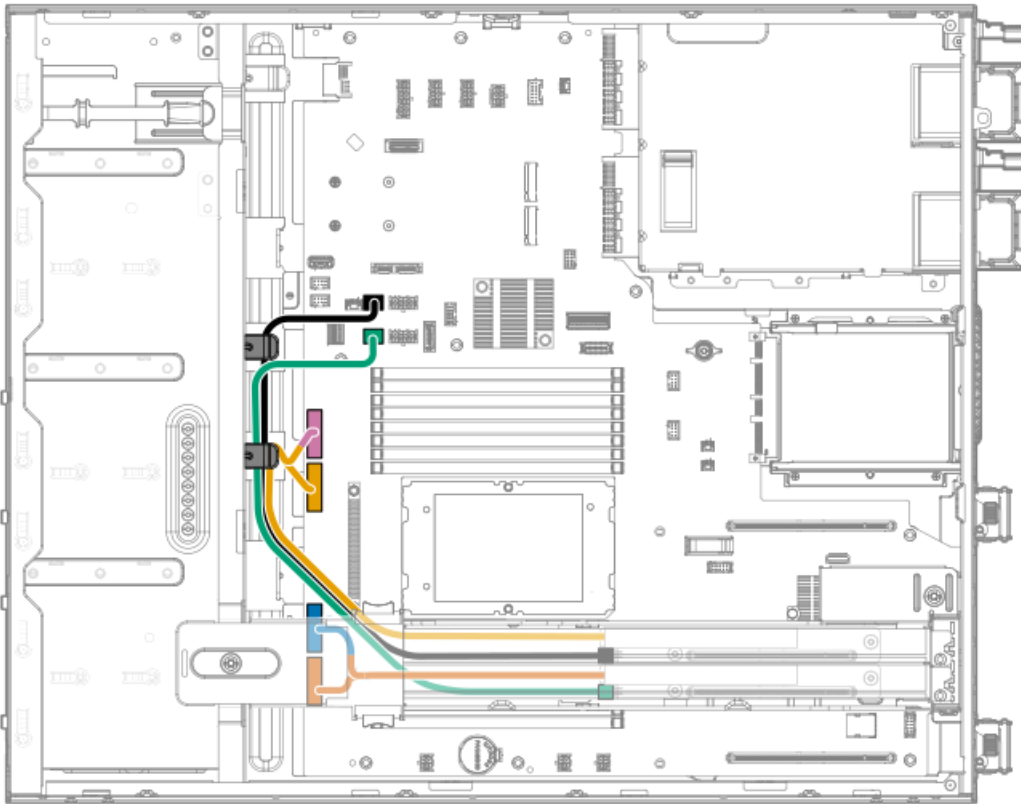
Cable part number	Cable color	From	To
P44002-001 [1]	Orange	PCIe Slot 2 riser board	MCIO port 1 for the riser slot 2 (PRIM) [2]
	Blue		MCIO port 2 for the riser slot 2 (SEC) [2]
	Gold	PCIe Slot 3 riser board	MCIO port 3 for the riser slot 3 (PRIM) [2]
	Pink		MCIO port 4 for the riser slot 3 (SEC) [2]
P60272-001 [1]	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

[1]   Option kit: P53487-B21

[2]   This enclosed text (PRIM / SEC) refers to the marker on the riser signal cable connector.

HPE NS204i-u Boot Device cabling
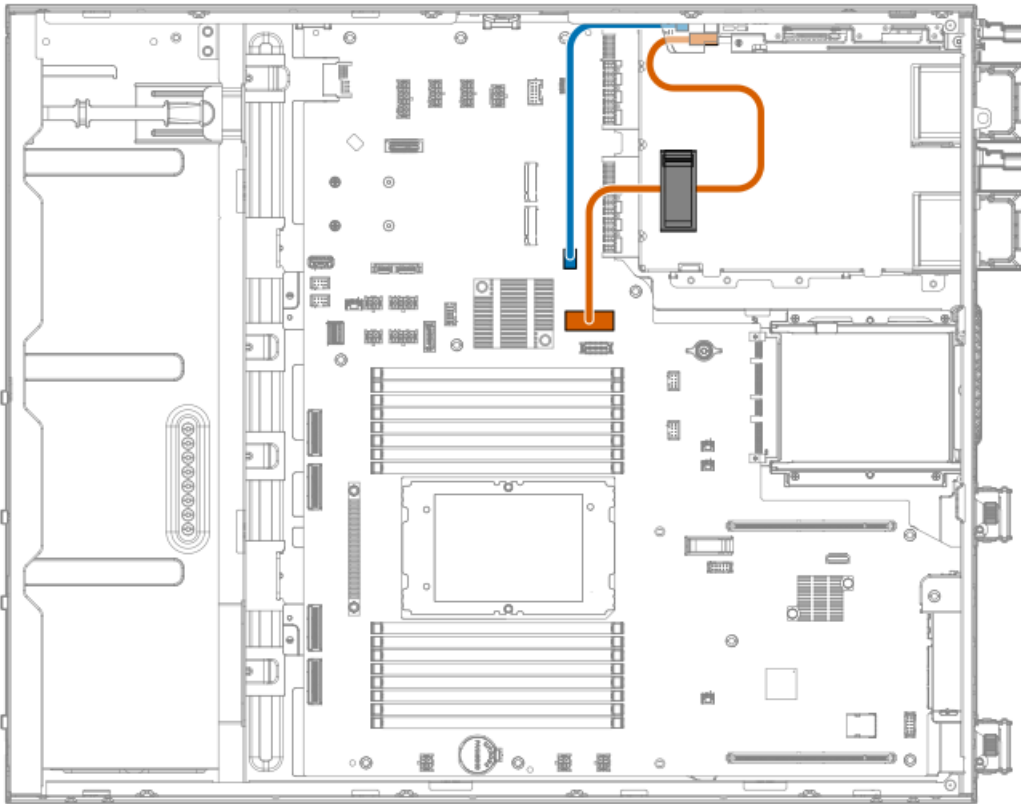
Cable part number	Cable color	From	To
P54087-001 [1]	Orange	HPE NS204i-u Boot Device	x8 SlimSAS port
P54088-001 [1]	Blue		NS204i-u power connector

[1]   Option kit: P61742-B21

Fan cabling

- Default system and PCI fans
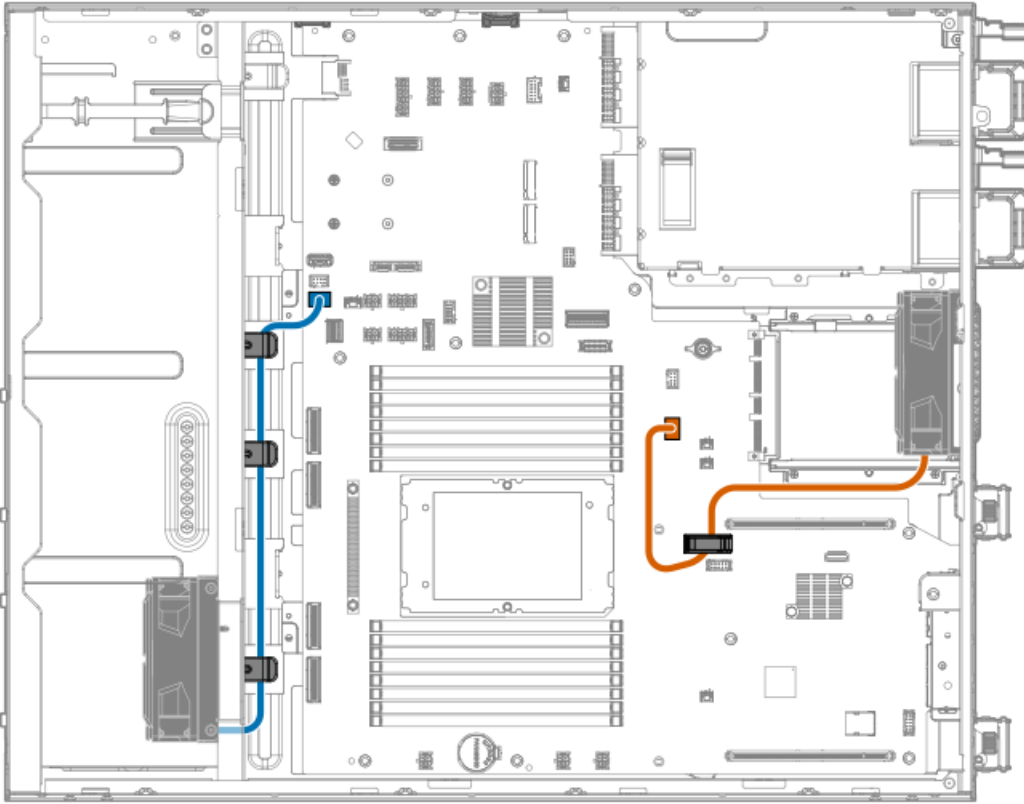
Option part number	Cable color	From	To
P49989-001 [1]	Orange	Default system fan	Fan connector 3 [2]
	Blue	Default PCI fan	Fan connector 1 [2]

[1]   Option kit: P49992-B21

[2]   This is a black power connector on the system board.

- Redundant system and PCI fans
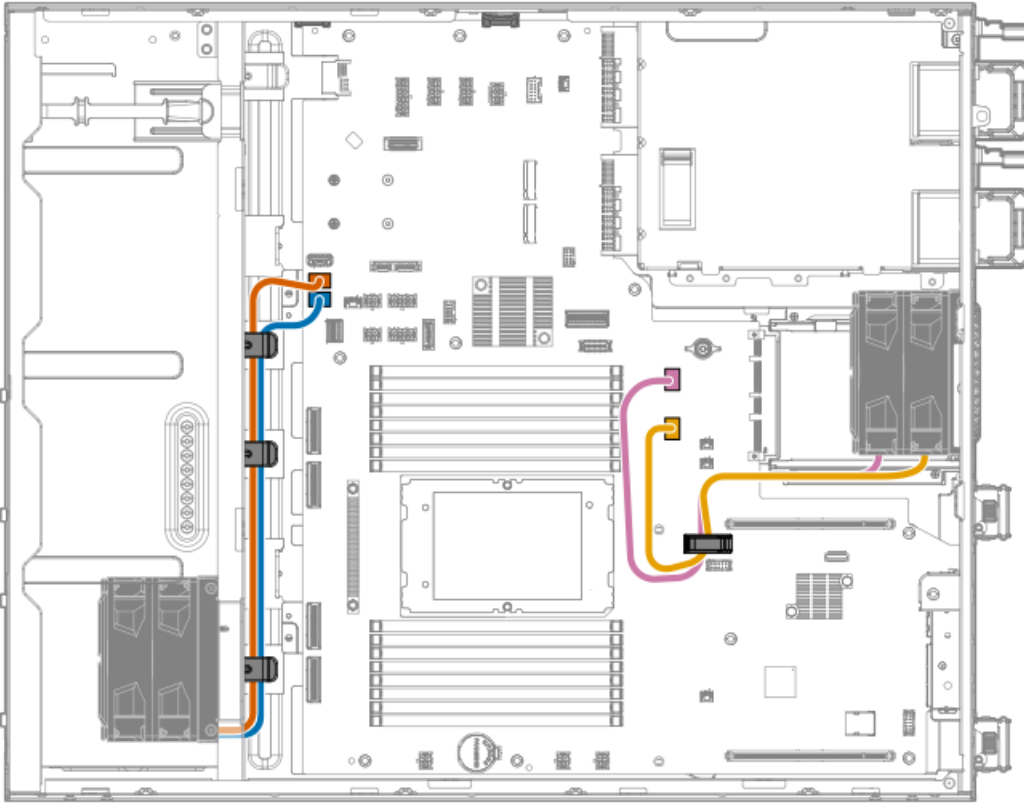
Option part number	Cable color	From	To
P49986-001 [1]	Orange	Redundant PCI fan	Fan connector 2 [2]
	Blue		Fan connector 1 [3]
	Gold	Redundant system fan	Fan connector 3 [3]
	Pink		Fan connector 4 [2]

[1]   Option kit: P49984-B21

[2]   This is a white power connector on the system board.

[3]   This is a black power connector on the system board.

Optical drive SATA-power cabling
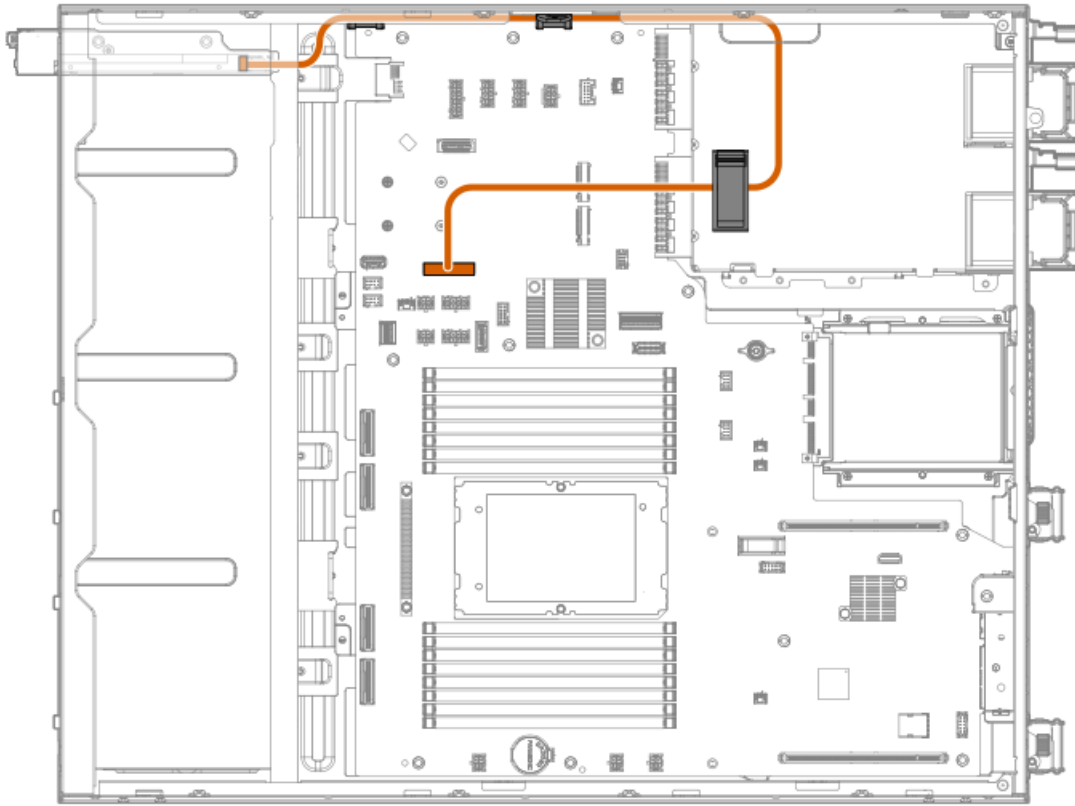
Cable part number	Cable color	From	To
756914-001 [1]	Orange	Optical drive	Optical drive SATA-power connector

[1]   Option kit: P57364-B21

Chassis intrusion detection switch cabling
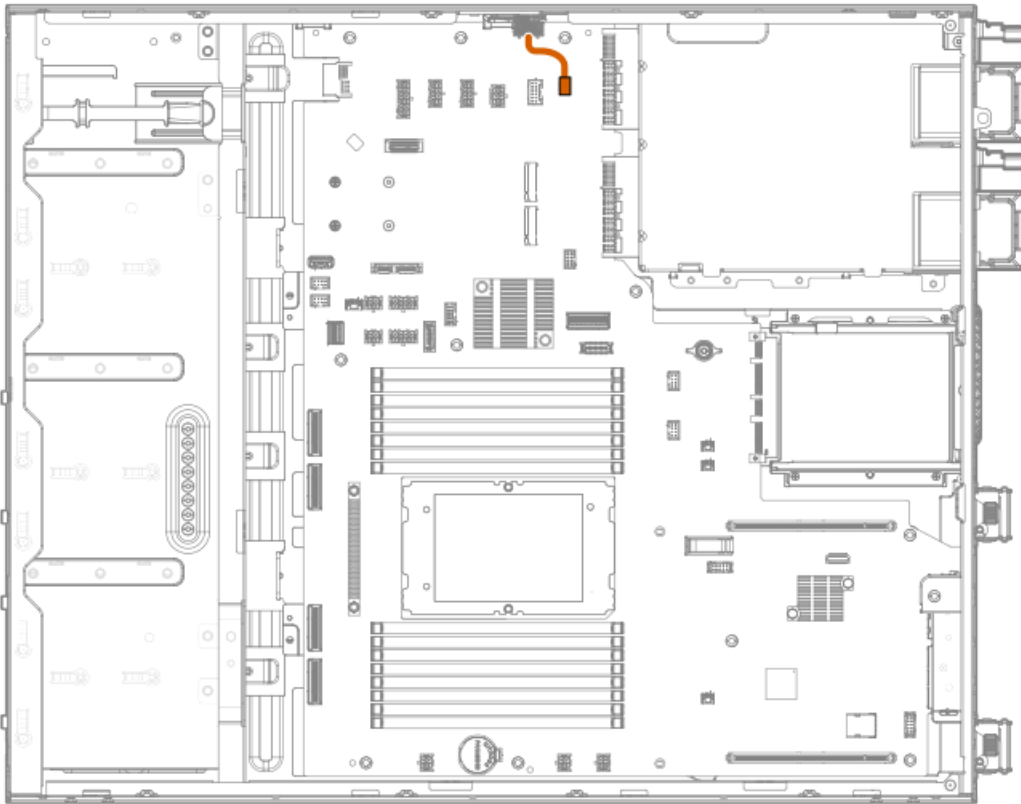
Cable part number	Cable color	From	To
P47751-001 [1]	Orange	Chassis intrusion detection switch	Chassis intrusion detection switch connector

[1] Option kit: P47226-B21

Serial port cabling
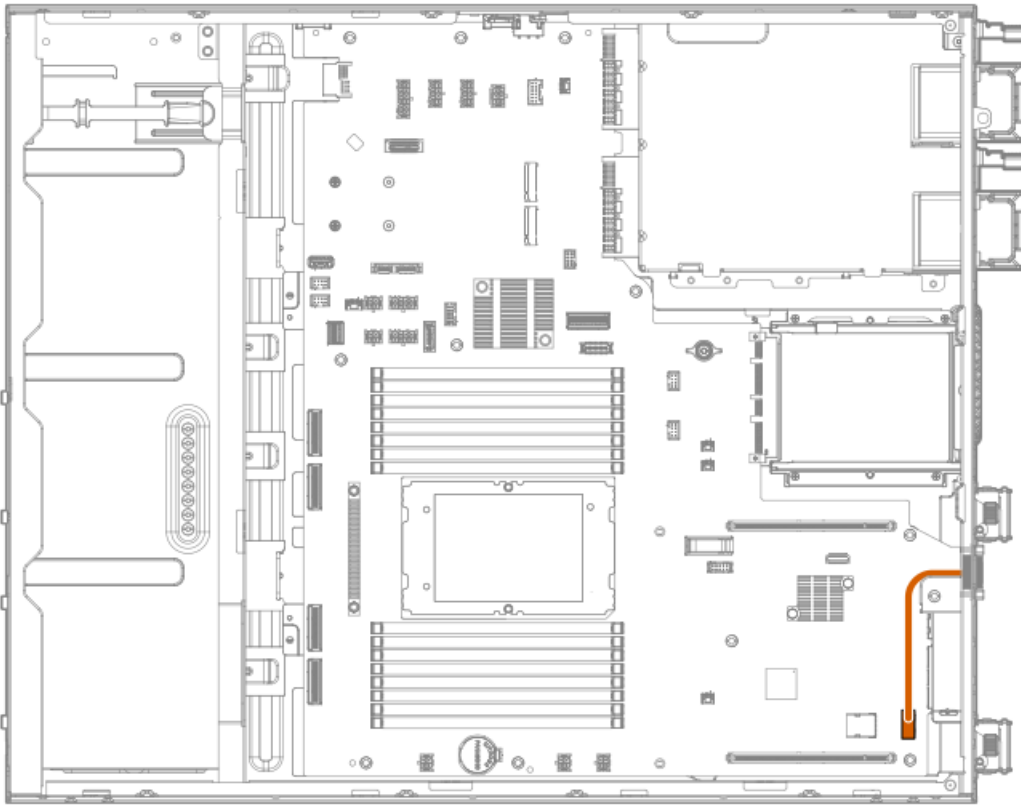
Cable part number	Cable color	From	To
873747-001 [1]	Orange	Serial port	Serial port connector

[1]   Option kit: P53489-B21

VGA cabling
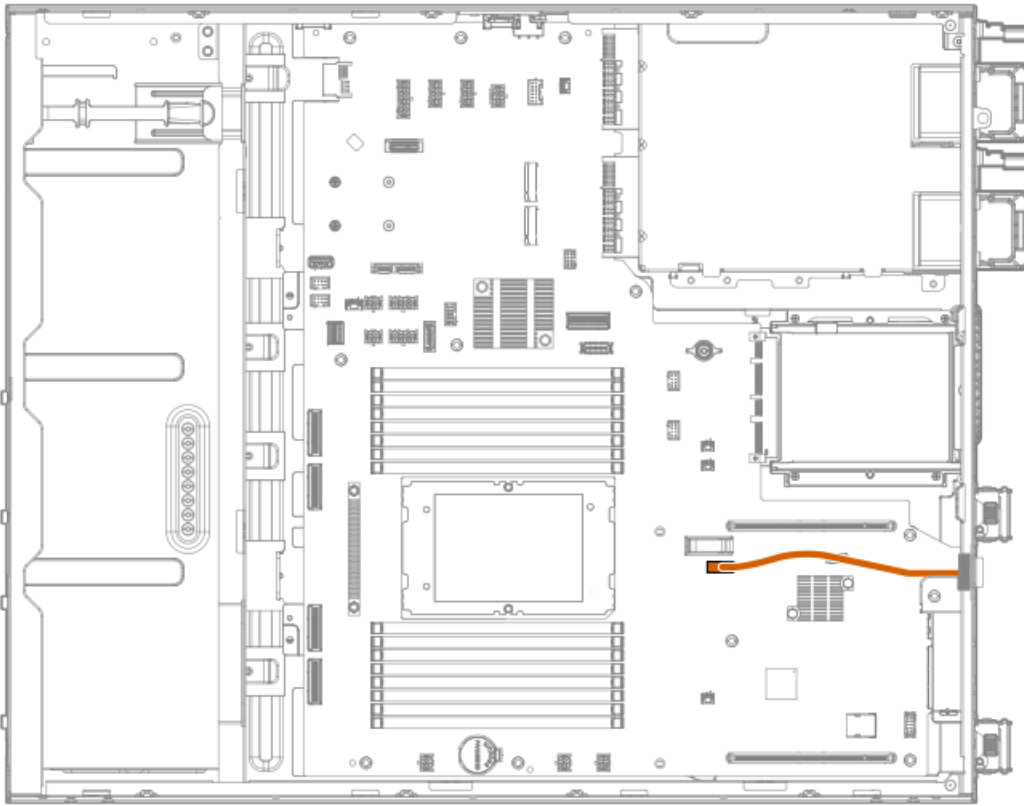
Cable part number	Cable color	From	To
P53987-001 [1]	Orange	VGA	VGA connector

[1]   Option kit: P49992-B21

Front I/O module cabling
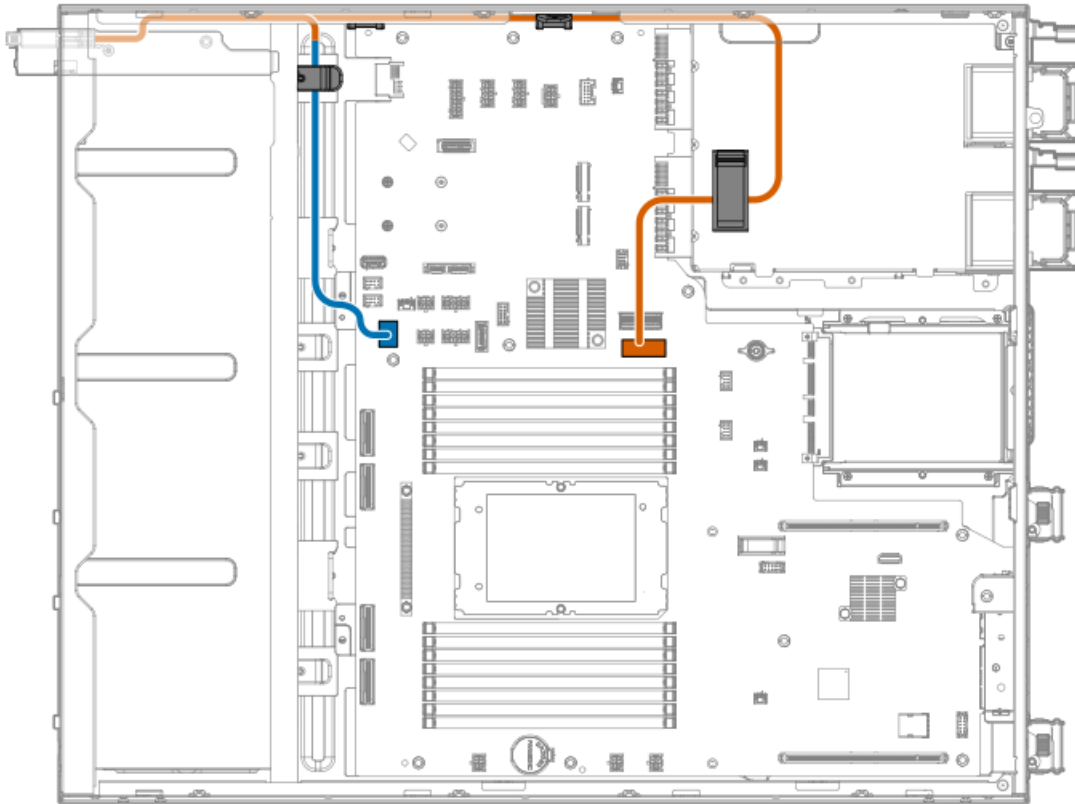
Cable part number	Cable color	From	To
P45292-001 [1]	Orange	DisplayPort 1.1a	DisplayPort connector
	Blue	Front I/O module, includes: • Front LEDs and buttons • iLO service port • USB 3.2 Gen1	Front I/O connector

[1]   Option kit: P49992-B21

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://buy.hpe.com/us/en/p/1014705725).

- 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

Updating firmware or system ROM

To	Use
Download service packs	Service Pack for ProLiant (SPP) https://www.hpe.com/servers/spp/download
Deploy service packs to a single server	Smart Update Manager (SUM) https://www.hpe.com/info/sum-docs
Deploy service packs to multiple servers	HPE OneView https://www.hpe.com/support/oneview-docs
• Enable policy-based management of server or server group firmware for distributed server infrastructure • Monitor server compliance with a configured firmware baseline • Receive automatic iLO firmware updates • Receive baseline update alerts	HPE GreenLake for Compute Ops Management https://www.hpe.com/info/com-docs

Configuring the server

To configure	Use
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 GreenLake for Compute Ops Management **https://www.hpe.com/info/com-docs**
Single server (scripting)	- RESTful Interface Tool **https://www.hpe.com/support/restfulinterface/docs** - Python iLO Redfish Library (python-ilorest-library) **https://github.com/HewlettPackard/python-ilorest-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 GreenLake for Compute Ops Management API **https://developer.greenlake.hpe.com/**
Multiple servers (either UI or scripting)	- HPE OneView [1] **https://www.hpe.com/support/oneview-docs** - HPE GreenLake for 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.

[1] For servers running HPE OneView, do not use another tool, such as iLO, to delete or change certain settings. For more information about using HPE OneView and iLO to manage the same server, see the iLO user guide at **https://www.hpe.com/support/ilo6**.

Configuring storage controllers

Controller type	Documentation

HPE MR Gen11 controllers	HPE MR Gen11 Controller User Guide
	
	https://hpe.com/support/MR-Gen11-UG
	
	Configuration guides:
	
	- HPE MR Storage Administrator User Guide
	
	  https://www.hpe.com/support/MRSA
	
	- HPE StorCLI User Guide
	
	  https://www.hpe.com/support/StorCLI

Intel VROC for HPE Gen11	Intel Virtual RAID on CPU for HPE Gen11 User Guide
	
	https://hpe.com/support/VROC-Gen11-UG
	
	OS-specific configuration guides:
	
	- Intel Virtual RAID on CPU (Intel VROC) for Windows User Guide
	
	  https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/338065_Intel_VROC_UserGuide_Windows.pdf
	
	- Intel Virtual RAID on CPU (Intel VROC) for Linux User Guide
	
	  https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/linux-intel-vroc-userguide-333915.pdf
	
	- Intel Volume Management Device Driver for VMware ESXi User Guide
	
	  https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/ESXi-Intel-VROC-UserGuide.pdf

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
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide
	https://www.hpe.com/info/boot-from-san-config-guide
Configure the server to boot from a PXE server	UEFI System Utilities User Guide for HPE ProLiant Gen11 Servers and HPE Synergy
	https://www.hpe.com/support/UEFIGen11-UG-en
Deploy an OS using iLO virtual media	iLO user guide
	https://www.hpe.com/support/ilo6
Deploy an OS using Intelligent Provisioning	Intelligent Provisioning user guide
	https://www.hpe.com/info/intelligentprovisioning/docs

Configuring security

To	See
Implement server security best practices.	• HPE Compute Security Reference Guide
	https://www.hpe.com/info/server-security-reference-en
	• HPE iLO 6 Security Technology Brief
	https://www.hpe.com/support/ilo6-security-en
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy
	https://www.hpe.com/info/server-config-lock-UG-en

Optimizing the server

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

Server management

To monitor	See
Single server	HPE iLO https://www.hpe.com/support/ilo6
Multiple servers	HPE OneView https://www.hpe.com/support/oneview-docs
Single or multiple servers	HPE GreenLake for Compute Ops Management https://www.hpe.com/info/com-docs

Managing Linux-based high performance compute clusters

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

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

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.

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

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

System battery replacement

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

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 the 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 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

> ⚠ **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.
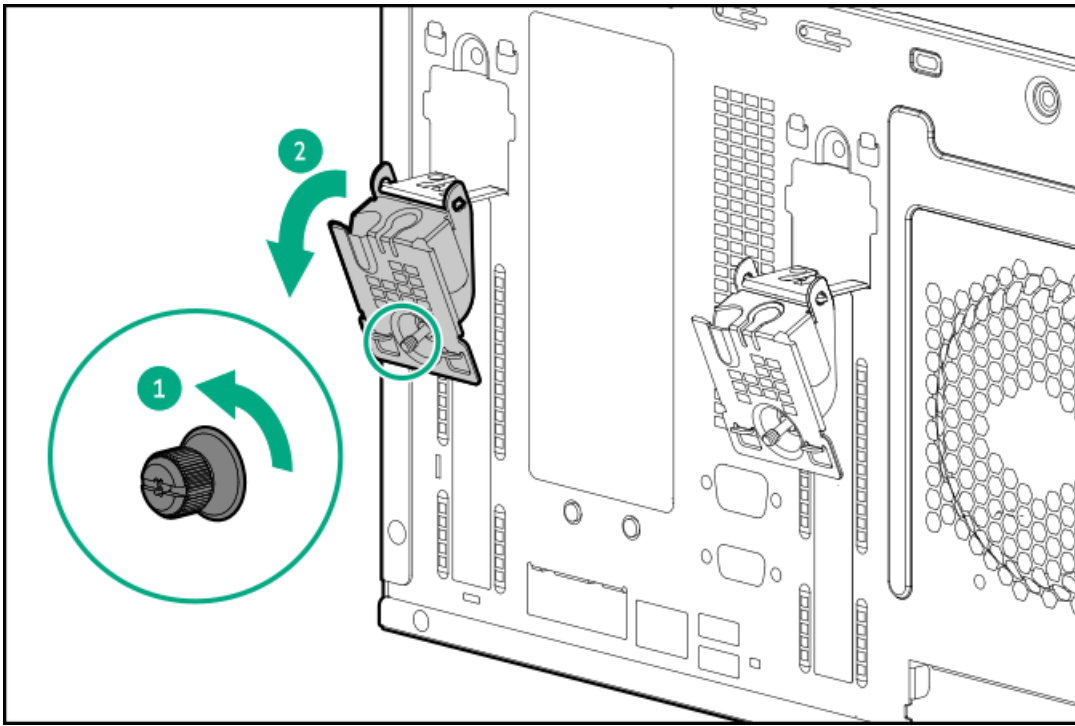
b. Remove the expansion card.
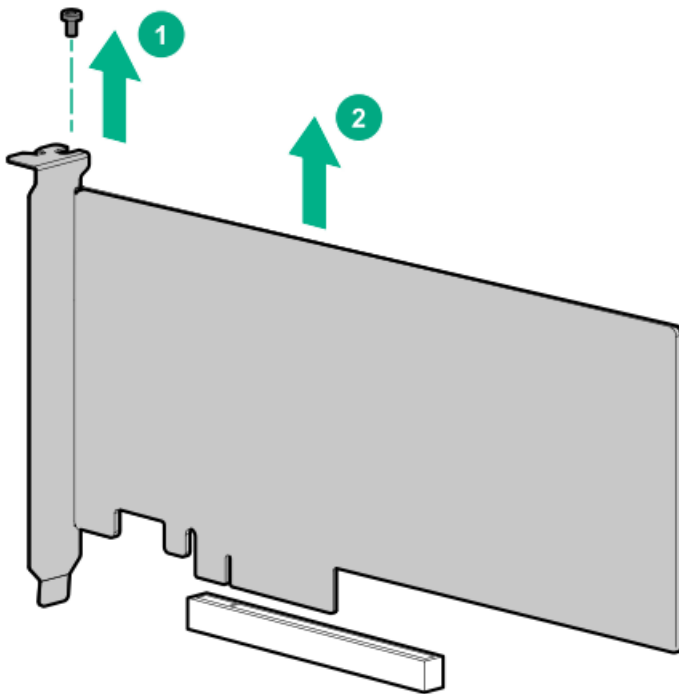
9. Remove the system battery:

   a. Use a small flat-bladed, nonconductive tool to press the battery latch.

   b. Remove the system battery from the socket.
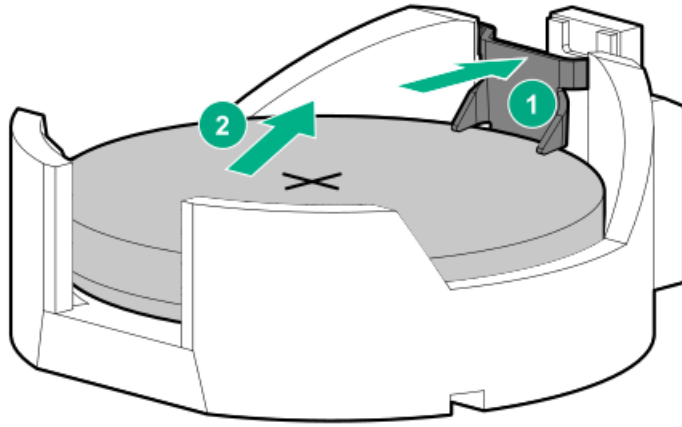
10. Install the system battery:

    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.
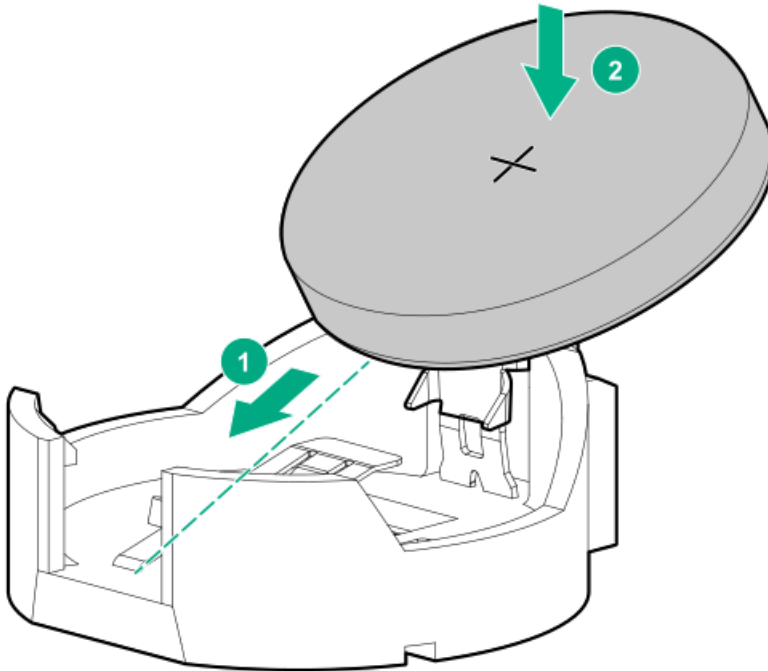
11. Install the full-height full-length expansion card.

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. Power up the server.

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

EAC

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 к., Бостандык ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.

```
CCSYWWZZZZ (product serial number format)
       | |
       | |
       |  WW = Week of manufacture (calendar week)
       |
       Y = Year of manufacture (decade, year)
```
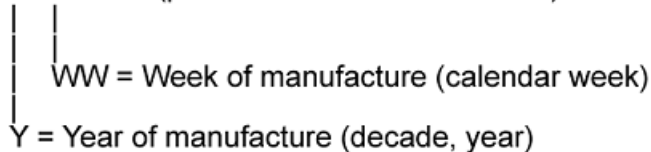
If you need help identifying the manufacturing date, contact tre@hpe.com.

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

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

Warranty information

To view the warranty information for your product, see the warranty check tool.

Specifications

Subtopics

Environmental specifications

Mechanical specifications

Power supply specifications

Environmental specifications

Specifications	Value
Temperature range*	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (noncondensing)	—
Operating	8% to 90% 28°C (82.4°F) maximum wet bulb temperature, noncondensing
Nonoperating	5% to 95% 38.7°C (101.7°F) maximum wet bulb temperature, noncondensing
Altitude	—
Operating	3050 m (10,000 ft) This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
Nonoperating	9144 m (30,000 ft) Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).

Standard operating support

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

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

Extended ambient operating support

For approved hardware configurations, the supported system inlet range is extended to be:
- 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2,953 ft) to a maximum of 3050 m (10,000 ft).

- 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
Input requirements	—
Rated input voltage	100 VAC to 240 VAC
	240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
	Not applicable to 240 VDC
Rated input current	5.8 A at 100 VAC
	2.8 A at 200 VAC
	2.4 A at 240 VDC for China only
Maximum rated input power	580 W at 100 VAC
	560 W at 200 VAC
	558 W at 240 VDC for China only
BTUs per hour	1999 at 100 VAC
	1912 at 200 VAC
	1904 at 240 VDC for China only
Power supply output	—
Rated steady-state power	500 W at 100 VAC to 127 VAC input
	500 W at 100 VAC to 240 VAC input
	500 W at 240 VDC input for China only
Maximum peak power	500 W at 100 VAC to 127 VAC input
	500 W at 100 VAC to 240 VAC input
	500 W at 240 VDC input for China only

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

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC
	200 VAC to 240 VAC
	240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
	Not applicable to 240 VDC
Rated input current	9.4 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
Power supply output	—
Rated steady-state power	800 W at 100 VAC to 127 VAC input
	800 W at 100 VAC to 240 VAC input
	800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input
	800 W at 100 VAC to 240 VAC input
	800 W at 240 VDC input for China only

HPE 1000 W Flex Slot Titanium Hot-plug Power Supply

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC
	200 VAC to 240 VAC
	240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
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
Power supply output	—
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
Input requirements	—
Rated input voltage	200 VAC to 240 VAC
	240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.7 A at 200 VAC
	7.2 A at 240 VAC
Maximum rated input power	1734 W at 200 VAC
	1725 W at 240 VAC
BTUs per hour	5918 at 200 VAC
	5884 at 240 VAC
Power supply output	—
Rated steady-state power	1600 W at 200 VAC to 240 VAC input
	1600 W at 240 VDC input
Maximum peak power	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 product page

https://buy.hpe.com/us/en/p/1014705725

HPE ProLiant ML110 Gen11 Server user documents

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

Support and other resources

Subtopics

Accessing Hewlett Packard Enterprise Support

Accessing updates

Customer self repair

Remote support

Documentation feedback

Accessing Hewlett Packard Enterprise Support

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

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

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

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

Information to collect

- Technical support registration number (if applicable)

- Product name, model or version, and serial number

- Operating system name and version

- Firmware version

- Error messages

- Product-specific reports and logs

- Add-on products or components

- Third-party products or components

Accessing updates

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

- To download product updates:

  Hewlett Packard Enterprise Support Center

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

  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

  (i) **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

HPE Complete Care

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.