Hewlett Packard Enterprise

HPE ProLiant ML30 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.

Table of contents

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

Component identification

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

Subtopics

Front panel components

4 LFF non-hot-plug drive model
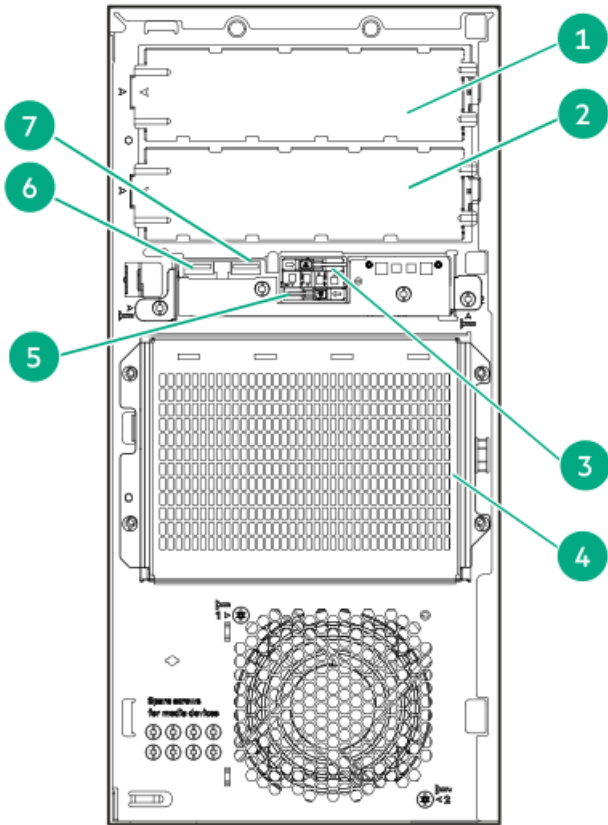
Item	Description
1	Media bay 1 [1]
2	Media bay 2 [1]
3	HPE NS204i-u Boot Device slot 1 (optional)
4	4 LFF non-hot-plug drive cage
5	HPE NS204i-u Boot Device slot 2 (optional)
6	USB 3.2 Gen 1 port
7	iLO service port

[1]   The media bays support a SATA optical drive or a USB RDX docking station.

4 LFF hot-plug drive model
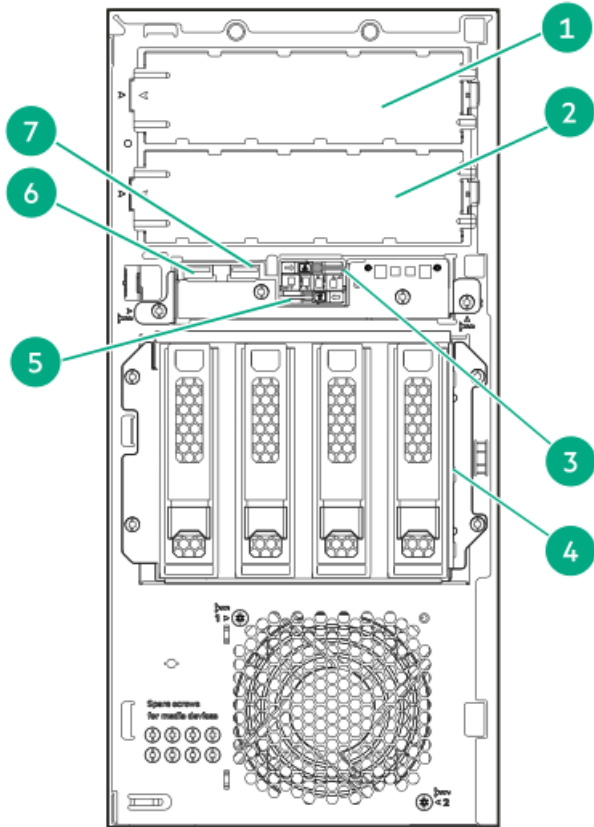
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8 SFF hot-plug drive model
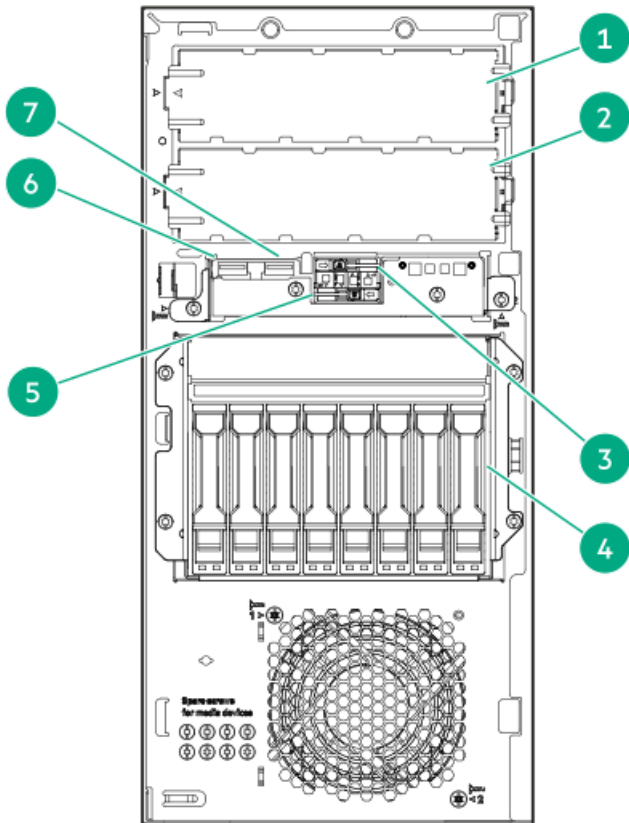
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4	8 SFF hot-plug drives
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7	iLO service port

[1]   The media bays support a SATA optical drive or a USB RDX docking station.

Subtopics

iLO Service Port

iLO Service Port

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

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.

Front panel LEDs and buttons

Item	Description	Status	Definition
1	UID button/LED [1]	Solid blue	Activated
		Flashing blue	- One 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
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 all LEDs flash simultaneously, a power fault has occurred. For more information, see **Front panel LED power fault codes**.

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

[3] Facility power is not present, power cord is not attached, no power supplies are installed, 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
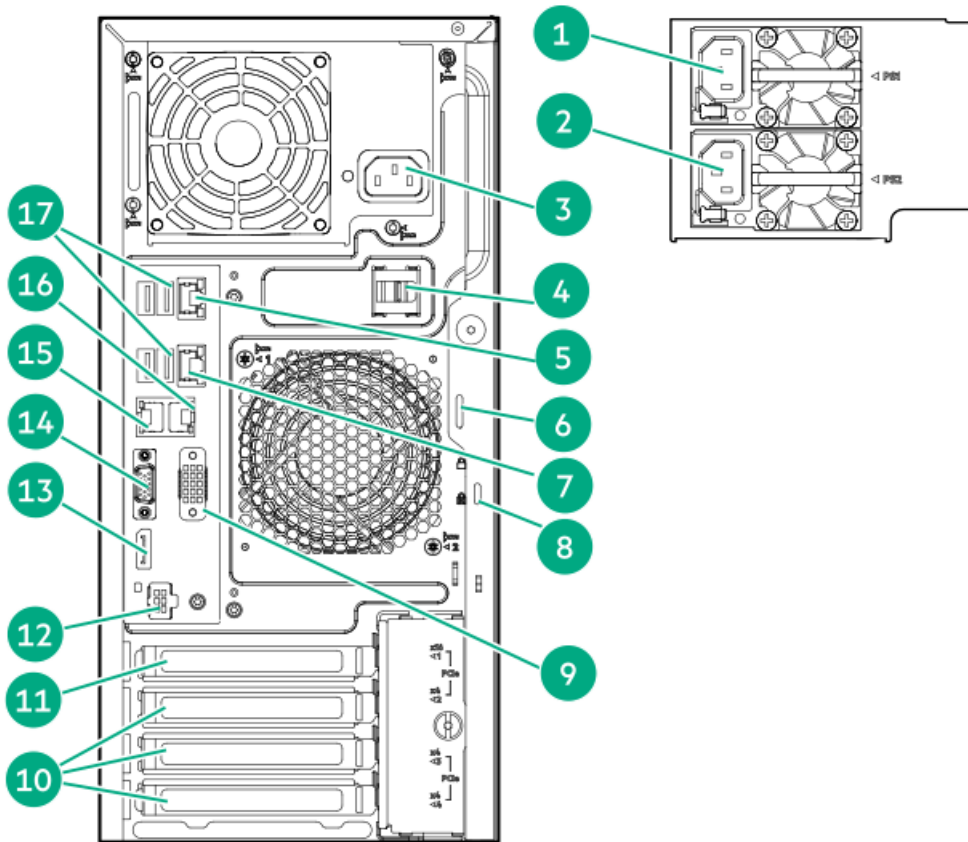
Item	Description
1	Flexible Slot power supply 1
2	Flexible Slot power supply 2 (optional)
3	Non-hot-plug power supply
4	Power cord clip (for non-hot-plug power supply)
5	NIC 1 / iLO shared port (1 GbE)
6	Padlock eye
7	NIC port 2 (1 GbE)
8	Kensington security slot
9	Serial port (optional)
10	Slots 2-4 PCIe4 x4
11	Slot 1 PCIe5 x16
12	iLO dedicated network port (optional)
13	DisplayPort 1.1a
14	VGA port
15	NIC port 4 (1 GbE)
16	NIC port 3 (1 GbE)
17	USB 3.2 Gen 1 ports [1]

[1] When the server is in standby mode, these USB ports will have no power. Connected devices will not charge nor be able to wake the server from standby mode.

Display device setup

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

- 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 PCIe4 x8 graphics card that supports this feature in the expansion slot.

Rear panel LEDs
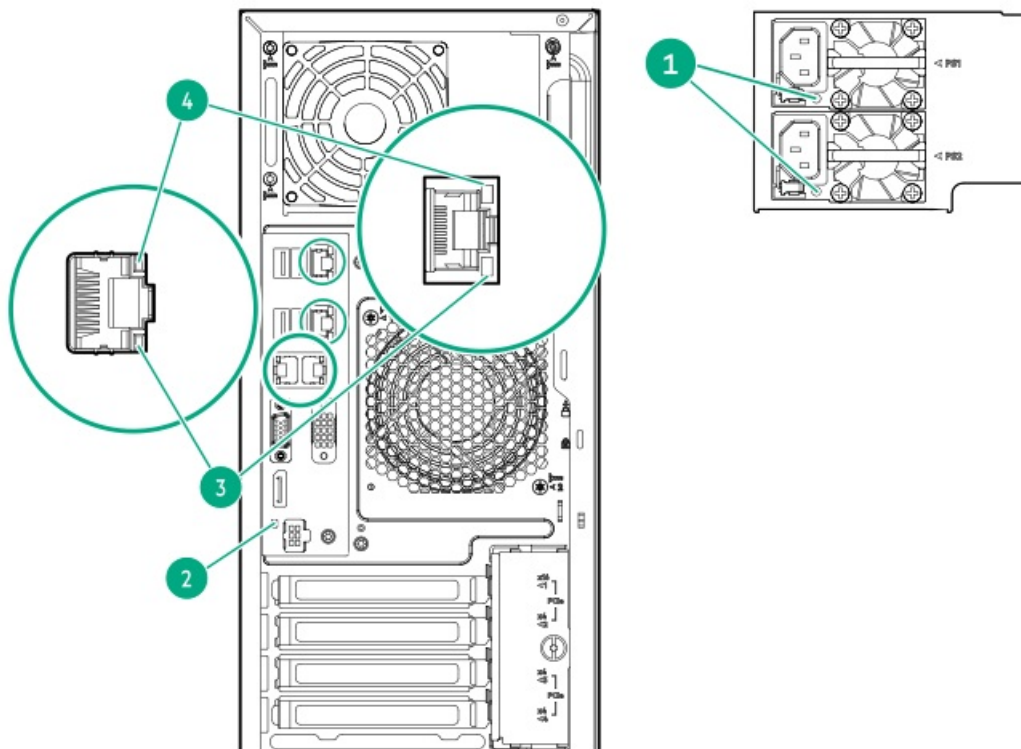
Item	Description	Status	Definition
1	Power supply	Solid green	The power supply is operating normally.
		Off	One or more of the following conditions exists: • Power is unavailable • Power supply failure • Power supply is in standby mode • Power supply error • Front I/O cable is disconnected
2	UID	Solid 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
3	NIC/iLO activity	Flashing green	Network active
		Off	No network activity
4	NIC/iLO link	Solid green	Network link speed is 1000 Mb/s.
		Solid amber	Network link speed is 10/100 Mb/s.
		Off	No network link

System board components
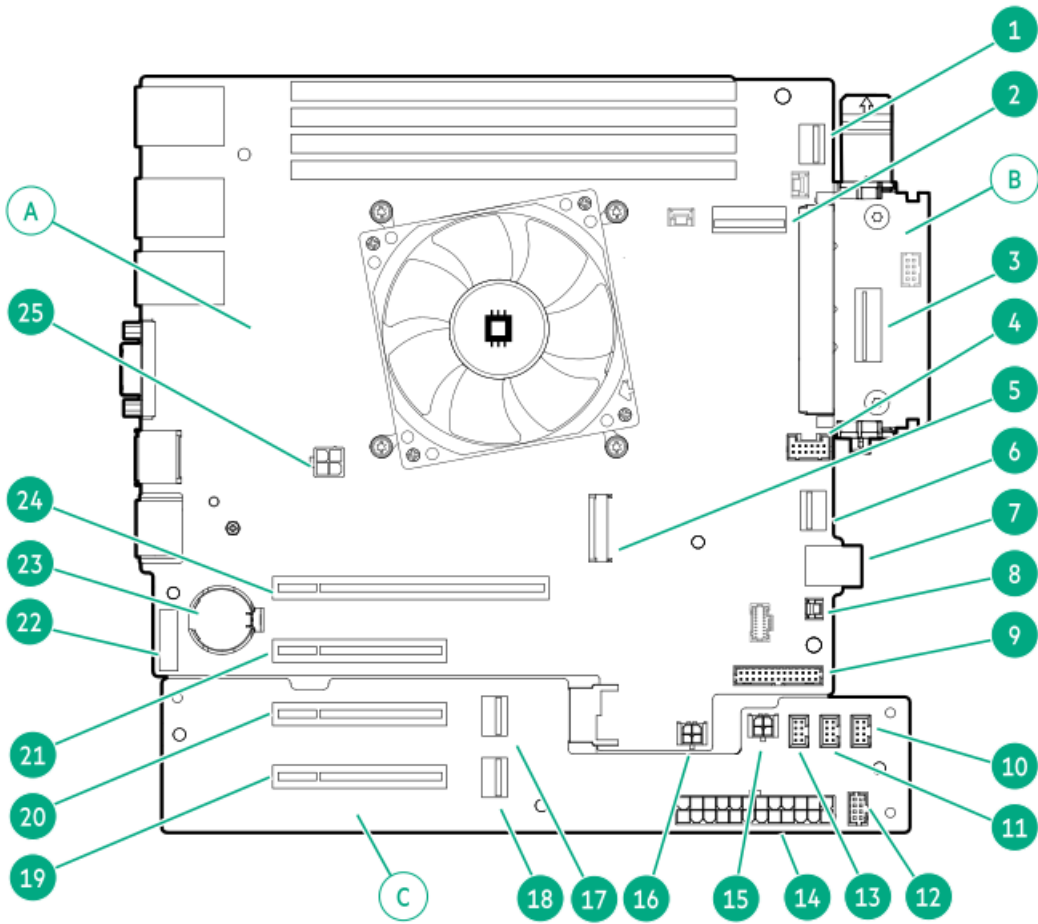
The system board comprises of three individual printed circuit assemblies (PCA):

Item	Board
A	Mainboard
B	Pass-through board (PTB) [1]
C	Power distribution board (PDB)

[1]   The PTB is connected to Slot 14 internal OCP PCIe4 x4.

Item	Description
1	Front I/O & USB 3.2 Gen 1 and iLO service port connector
2	SlimSAS x8 port 1
3	SlimSAS x8 port 3 [1]
4	Energy pack connector
5	M.2 slot [2]
6	SlimSAS x4 port 2
7	Stacked, internal dual USB 3.2 Gen 2 ports
8	Storage controller backup power connector
9	Power supply sideband connector
10	Fan connector 3 (PCIe fan)
11	Fan connector 2 (processor heatsink fan)
12	NS204i-u power connector
13	Fan connector 1 (system fan)
14	24-pin power supply connector
15	PDB: System power connector
16	Mainboard: System power connector
17	Slot 3 SimSAS x4 port 1
18	Slot 4 SlimSAS x4 port 2
19	Slot 4 PCIe4 x8 (4, 1)
20	Slot 3 PCIe4 x8 (4, 1)
21	Slot 2 PCIe4 x8 (4, 1)
22	**System maintenance switch**
23	System battery
24	Slot 1 PCIe5 x16
25	4-pin processor power connector

[1] This connector supports a maximum of four SATA devices or the HPE NS204i-u Boot Device .

[2] This M.2 slot does not support direct SSD installation. This slot instead supports the iLO-M.2 serial module option, which supports NVMe SSDs.

Subtopics

System maintenance switch descriptions

DIMM slot numbering

DIMM label identification

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 slot numbering

The arrow points to the front of the server.
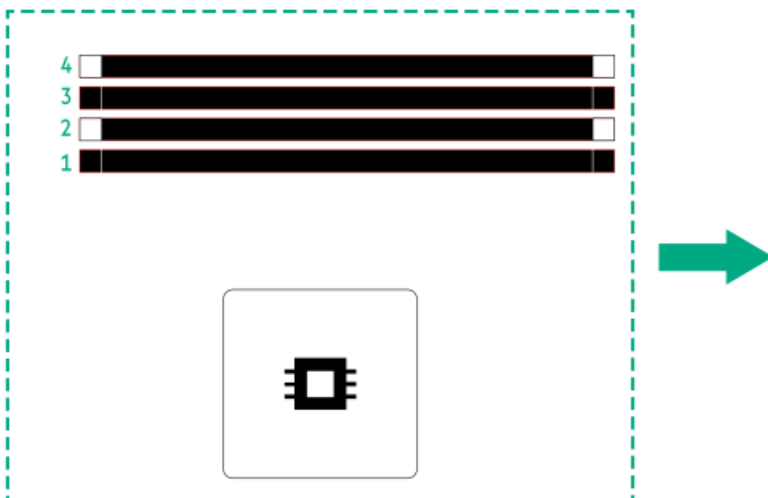
DIMM label identification

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

For more information about product features, specifications, options, configurations, and compatibility, see the HPE DDR5 SmartMemory QuickSpecs:

https://www.hpe.com/docs/server-memory
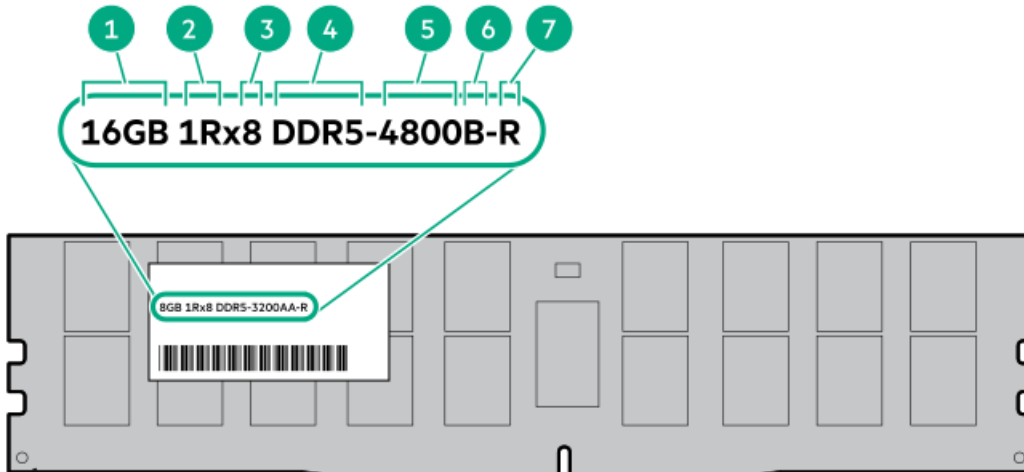
Item	Description	Example
1	Capacity [1]	16 GB
		32 GB
		64 GB
		128 GB
		256 GB
2	Rank	1R—Single rank
		2R—Dual rank
		4R—Quad rank
		8R—Octal rank
3	Data width on DRAM	x4—4-bit
		x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed [1]	4800 MT/s
6	CAS latency	B—42-42-42
		B—50-42-42 (for 128 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.

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.

1	2	3	4	5	6
8	SFF	24G	x4 NVMe/SAS	UBM3	BC

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.

HPE Basic Drive LED definitions

The HPE Basic drive carrier has the following LEDs:

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

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

LFF low-profile drive carrier

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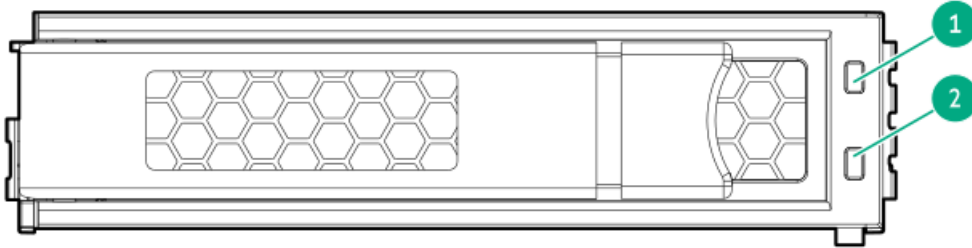
SFF basic drive carrier

The SFF basic drive carrier supports hot-plug SAS and SATA drives.
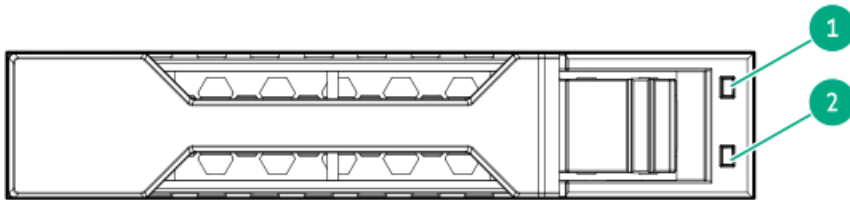
Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (1 flash per second)	The drive is doing one of the following: • 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.

PCIe expansion slot definitions

> ⓘ **IMPORTANT:** If an Intel Pentium processor is installed, the data transfer rate (throughput) of the PCIe5 expansion slot 1 switches down to PCIe4 speed.
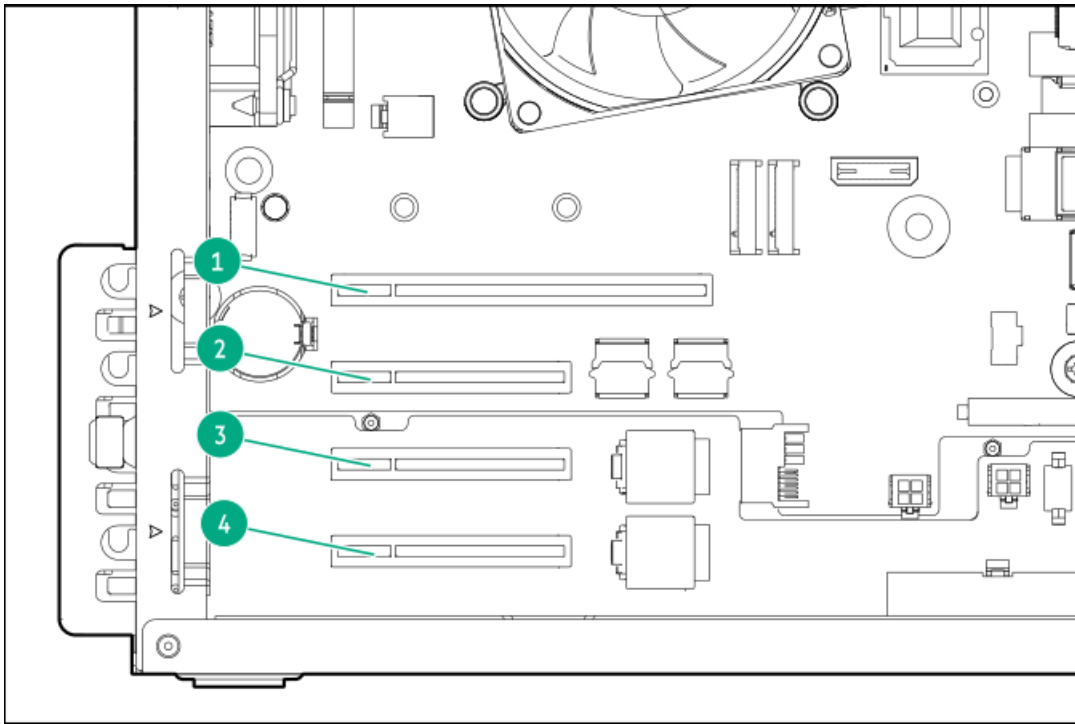
Slot number	Slot type	Slot power	Supported form factors
1	PCIe5 x16 (16, 8, 4, 1)	75 W	Full-height, full-length
2	PCIe4 x8 (4, 1)	25 W	Full-height, full-length
3	PCIe4 x8 (4, 1)	25 W	Full-height, half-length
4	PCIe4 x8 (4, 1)	25 W	Full-height, half-length

Drive bay numbering

⚠ **CAUTION:**

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

4 LFF non-hot-plug drive numbering

- SATA drives are supported.

- Onboard connection for Intel VROC SATA RAID support is through the SlimSAS x4 port 2.
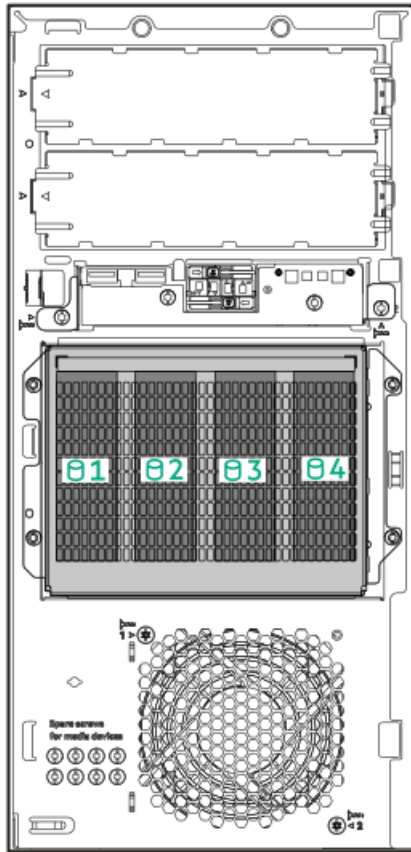
4 LFF hot-plug drive numbering

The 4 LFF hot-plug drive configuration supports the 4 LFF 12G x1 SAS/SATA UBM3 BC BP drive backplane. For more information on the drive backplane description, see <u>Drive backplane naming</u>.

- SAS and SATA drives are supported.

- Onboard connection for Intel VROC SATA RAID support is through the SlimSAS x4 port 2.
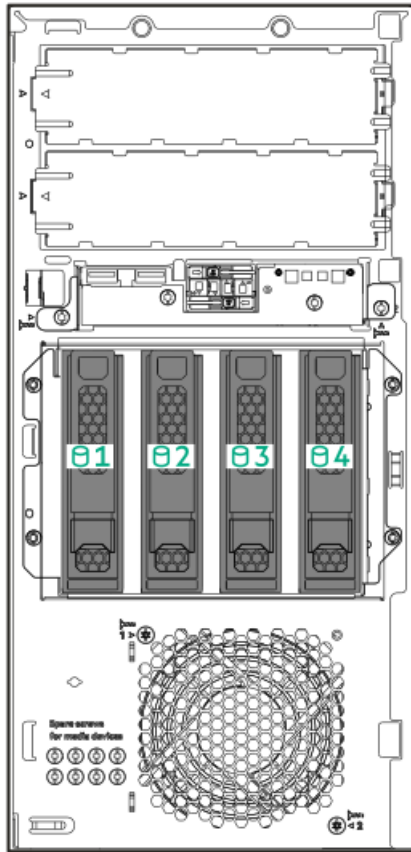
8 SFF hot-plug drive numbering

The 8 SFF hot-plug drive configuration supports the 8 SFF 12G x1 SAS/SATA UBM2 LP BP and the 8 SFF 12G x1 SAS UBM6 BC BP backplane option. For more information on the drive backplane description, see <u>Drive backplane naming</u>.

- SAS and SATA drives are supported.

- Onboard connection for Intel VROC SATA RAID support is through the SlimSAS x8 port 3 and SlimSAS x4 port 2.
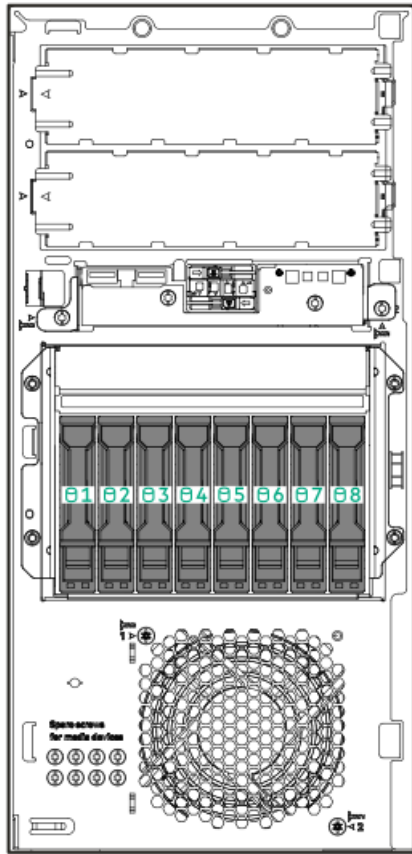
Fan numbering
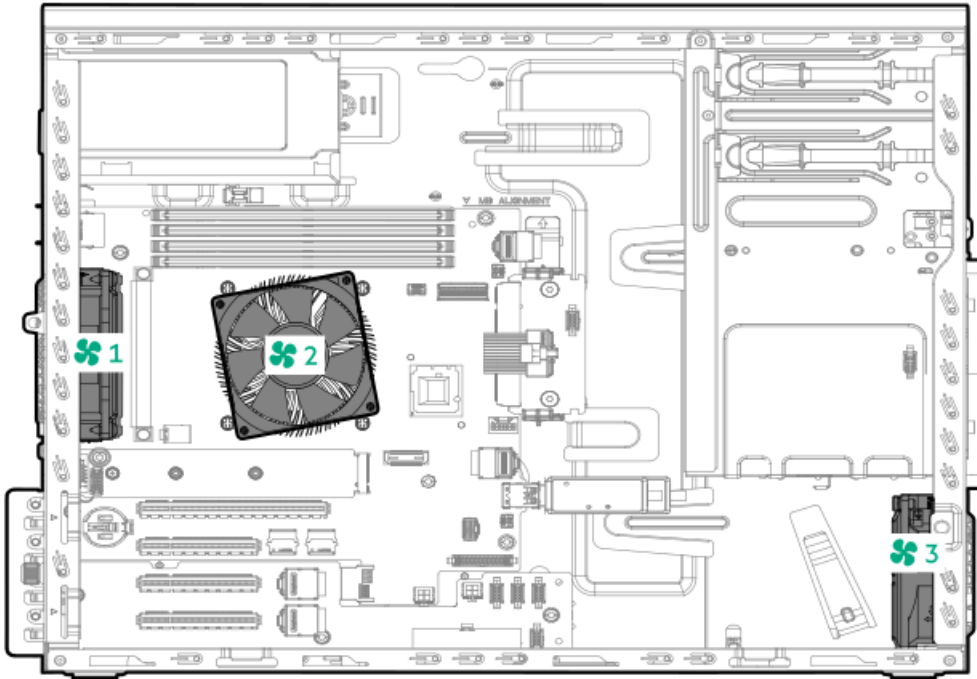
Fan number	Description
1	System fan
2	Heatsink fan
3	PCIe fan (optional)

Fan mode behavior

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

- The health LED flashes red.

- The operating system performs a graceful shutdown.

Media device screws
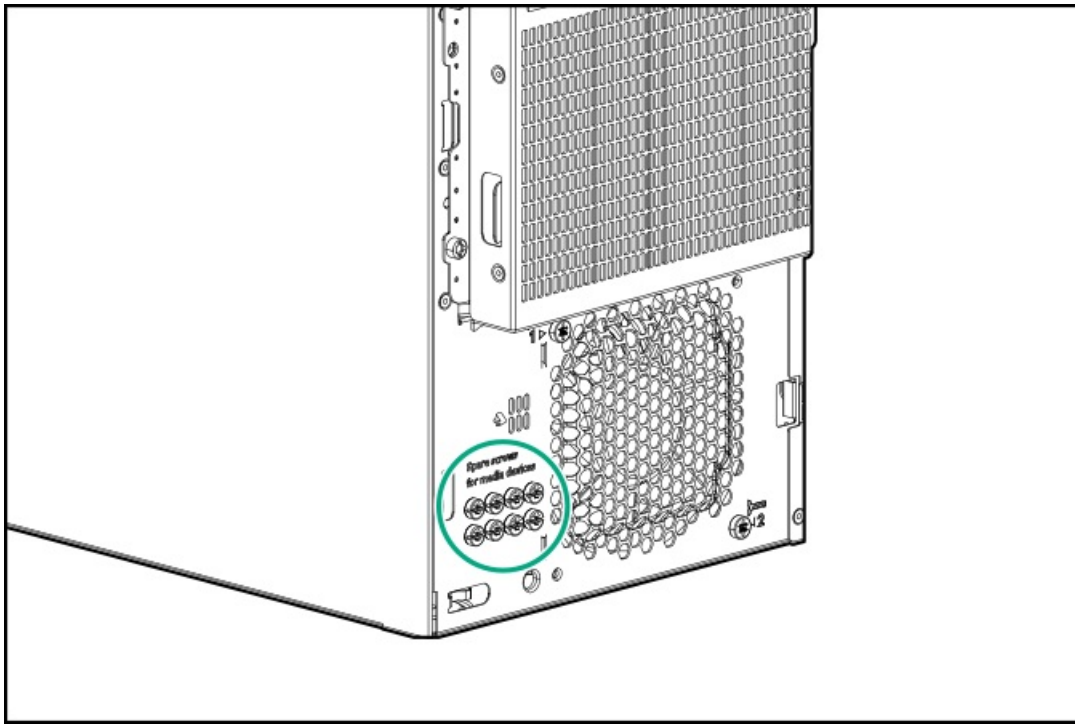
Trusted Platform Module 2.0

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:

    - In UEFI boot mode, the Trusted Platform Module operates in TPM 2.0 mode.

    - In legacy boot mode, the Trusted Platform Module operation is not supported.

- Use the UEFI System Utilities to configure the TPM. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options. For more information, see the UEFI user guide:

    https://www.hpe.com/support/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
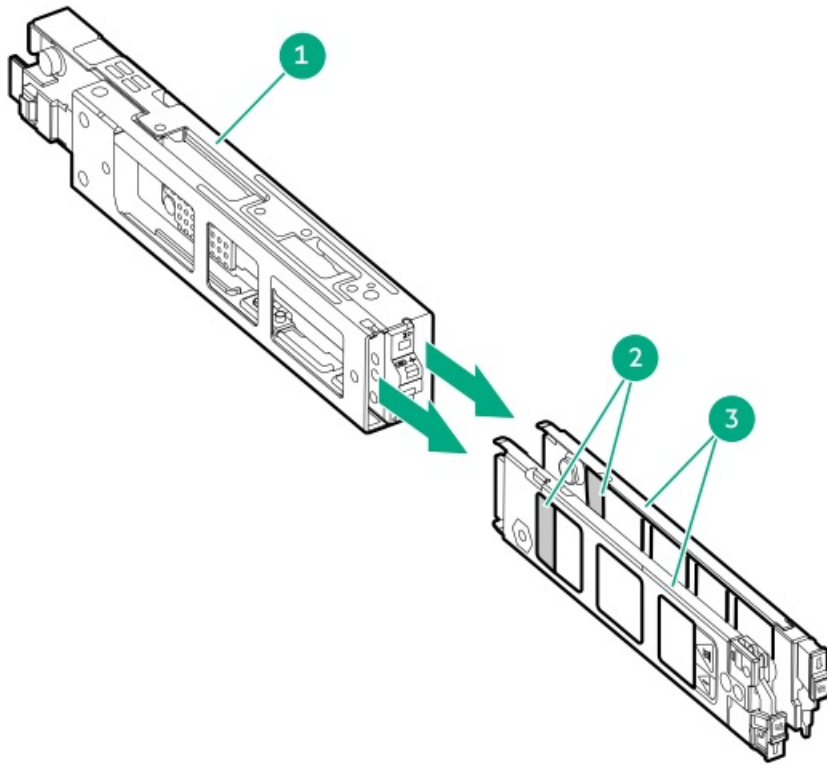
Item	Description
1	Boot device cage
2	M.2 slots
3	Boot device carriers

HPE NS204i-u Boot Device LED definitions
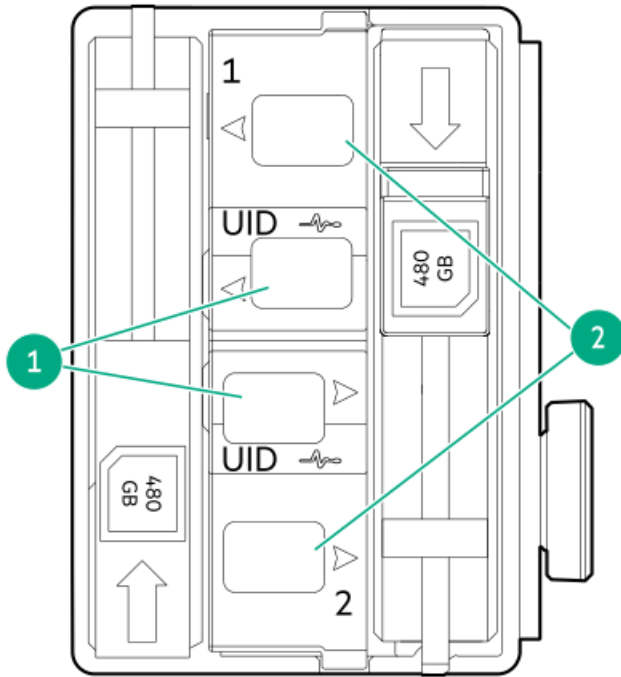
Item	LED	Status	Definition
1	Fault/Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	Drive has failed, or a predictive failure alert is received for the drive. 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

Initial system installation

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

- Ordering the HPE Installation Service

- Setting up the server

Subtopics

HPE Installation Service

Intel VROC support

Setting up the server

Setting up the server in tower mode

HPE Installation Service

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

The HPE Installation Service provides the following benefits:

- Installation by an HPE authorized technical specialist.

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

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

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

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

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

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

Intel VROC support

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

- Intel VROC provides RAID support for direct attached SATA SSDs.

- The Intel VROC driver is required. For the OS-specific driver download, see the following page:

  https://support.hpe.com/hpesc/public/docDisplay?docId=sd00002239en_us&page=GUID-249FA246-0985-4598-8D7E-

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

- Intel VROC RAID support is disabled by default. In the pre-OS environment, use UEFI System Utilities to enable Intel VROC and create a VROC RAID volume. These tasks are not supported in Intelligent Provisioning.

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

- Intel VROC supports RAID management 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 **Configuring storage controllers**.

Setting up the server

Prerequisites

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

  - HPE 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 **https://www.hpe.com/info/com-docs**.

  - Use the Firmware Update option in Intelligent Provisioning—Intelligent Provisioning is a server deployment tool embedded in HPE ProLiant servers. To access Intelligent Provisioning, during the server boot process, press **F10**. For more information, see the Intelligent Provisioning user guide at **https://www.hpe.com/info/intelligentprovisioning/docs**.

  - Download the Service Pack for ProLiant (SPP) —SPP is a comprehensive system software and firmware update solution that is delivered as a single ISO image. This solution uses Smart Update Manager (SUM) as the deployment tool.

    - The preferred method for downloading an SPP is by creating an SPP custom download at **https://www.hpe.com/servers/spp/custom**.

      This option reduces the size of the SPP by excluding firmware and drivers for OS and server models that are not needed.

    - The SPP is also available for download from the SPP download page at **https://www.hpe.com/servers/spp/download**.

- Verify that your OS or virtualization software is supported: **https://www.hpe.com/support/Servers-Certification-Matrices**

- This server supports type-p storage controller options. For onboard storage configuration, use either SATA AHCI (default) or Intel Virtual RAID on CPU (Intel VROC). If you plan to use Intel VROC, review these important information before setting up the server .

- Read the **Operational requirements** for the server.

- Read the safety and compliance information: **https://www.hpe.com/support/safety-compliance-enterpriseproducts**

Procedure

1. Unbox the server and verify the contents:

   - Server

   - Power cord

   - Rack-mounting hardware (optional)

- Documentation

2. (Optional) <u>Install the hardware options</u>.

3. Select the server orientation:

    - Tower orientation: <u>Connect the peripheral cables and power cord</u>.

    - Rack orientation: <u>Install the tower-to-rack conversion kit</u>.

4. Decide how to manage the server:

    - Locally: Use a KVM switch or a connect a keyboard, monitor, and mouse.

    - Remotely: Connect to the iLO web interface and run a remote console:

        a. Verify the following:
            - iLO is licensed to use the remote console feature.
              If iLO is not licensed, visit the HPE website:

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

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

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

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

            Note the following:

            - The iLO hostname is on the serial number/ iLO information label on the top side of the chassis.

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

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

            - The default login credentials are on the serial number/ iLO information label on the top side of the chassis.

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

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

5. Press the Power On/Standby button.

    For remote management, use the iLO virtual power button.

6. <u>Configure the initial server setup</u>.

7. <u>Set up the storage</u>.

8. <u>Deploy an OS or virtualization software</u>.

9. After the OS is installed, <u>update the drivers</u>.

Setting up the server in tower mode

Procedure

1. Return the server to an upright position.

2. Connect all peripheral cables to the server.

3. Connect each power cord to the server.

4. Connect each power cord to the power source.

5. If the server is using a non-hot-plug power supply, secure the power cord in the power cord clip on the rear panel.

    a. Press and hold the clip retainer, and then open the clip.

    b. Position the power cord inside the clip, and then close the clip.
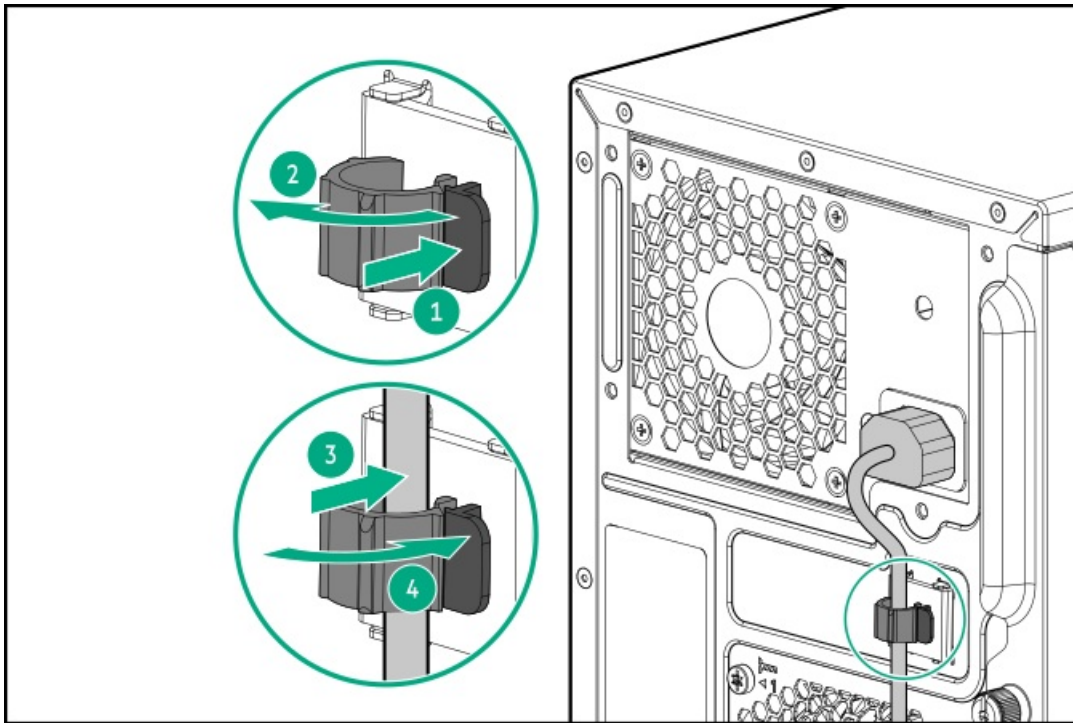
6. Power up the server.

Operational requirements

When preparing the site and planning the installation for the HPE ProLiant ML30 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

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 10.20 kg (22.5 lb). When all components are installed, the server can weigh up to 18.70 kg (41.20 lb).

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

⚠ **WARNING:**
The server is heavy. To reduce the risk of personal injury or damage to the equipment, do the following:
- Observe local occupational health and safety requirements and guidelines for manual material handling.

- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The server weighs more than 10.20 kg (22.5 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, observe the following precautions:
- The leveling jacks are extended to the floor.

- The full weight of the rack rests on the leveling jacks.

- The stabilizing feet are attached to the rack if it is a single-rack installation.

- The racks are coupled together in multiple-rack installations.

⚠ **WARNING:**
To reduce the risk of personal injury or equipment damage when unloading a rack:
- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and might become unstable when being moved on its casters.

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

⚠ **CAUTION:**

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

⚠ **CAUTION:**

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

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

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

Server warnings and cautions

⚠ **WARNING:**

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

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

⚠ **WARNING:**

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

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

- Do not short external contacts.

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

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

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

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

⚠ **CAUTION:**

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

⚠ **CAUTION:**

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

⚠ **CAUTION:**

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

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

Electrostatic discharge

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

To prevent electrostatic damage:

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

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

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

- Avoid touching pins, leads, or circuitry.

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

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

  - Use conductive field service tools.

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

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

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

Operations

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

- Rack warnings and cautions

- Server warnings and cautions

Subtopics

Power down the server

Extend the server from the rack

Remove the server from the rack

Remove the front bezel

Remove the access panel

Open the cable management arm

Remove the air baffle

Remove the PCIe blank retainer

Remove a media device

Install the PCIe blank retainer

Install the air baffle

Install the access panel

Install the front bezel

Install the server into the rack

Power up the server

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.
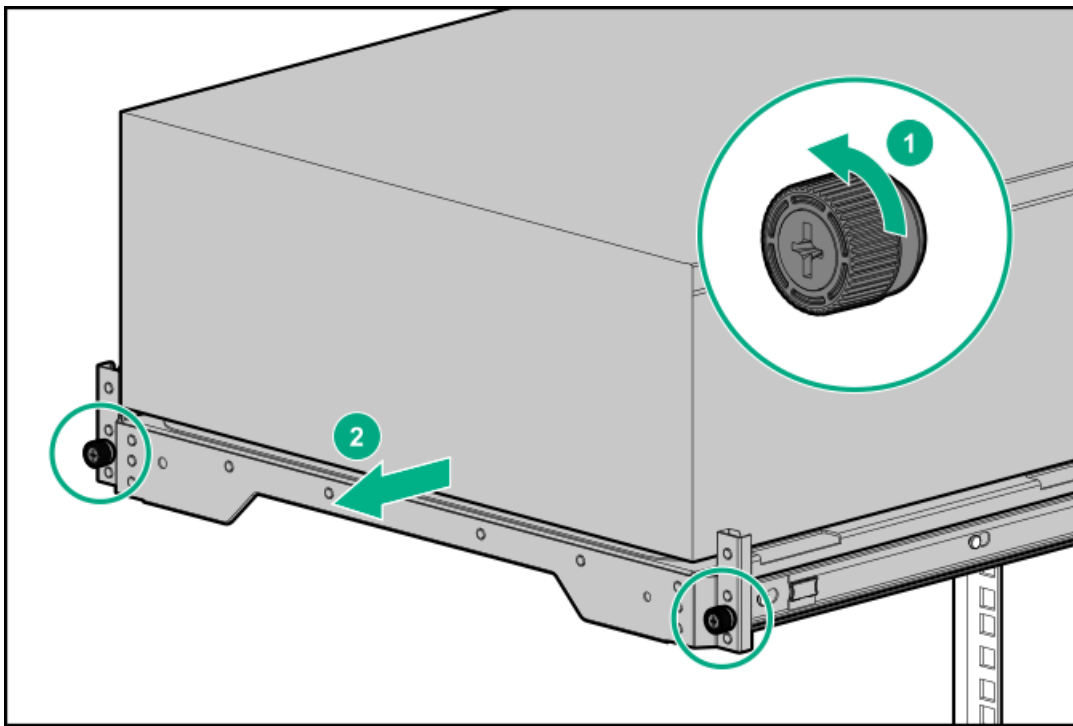
Remove the server from the rack

Prerequisites

- Get help to lift and stabilize the server server when removing the server from the rack. If the server is removed higher than chest level, an additional person might be required to help support the server weight when removing the server from the tray.

- Before you perform this procedure, review the:

  - Rack warnings and cautions

  - Server warnings and cautions

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

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. If installed, unlock and remove the security padlock and/or the Kensington security lock.

   For more information, see the lock documentation.

5. Slide the server tray out of the rack:

   a. Loosen the server tray thumbscrews.

   b. Grasp the tray notch and slide the server out of the rack.
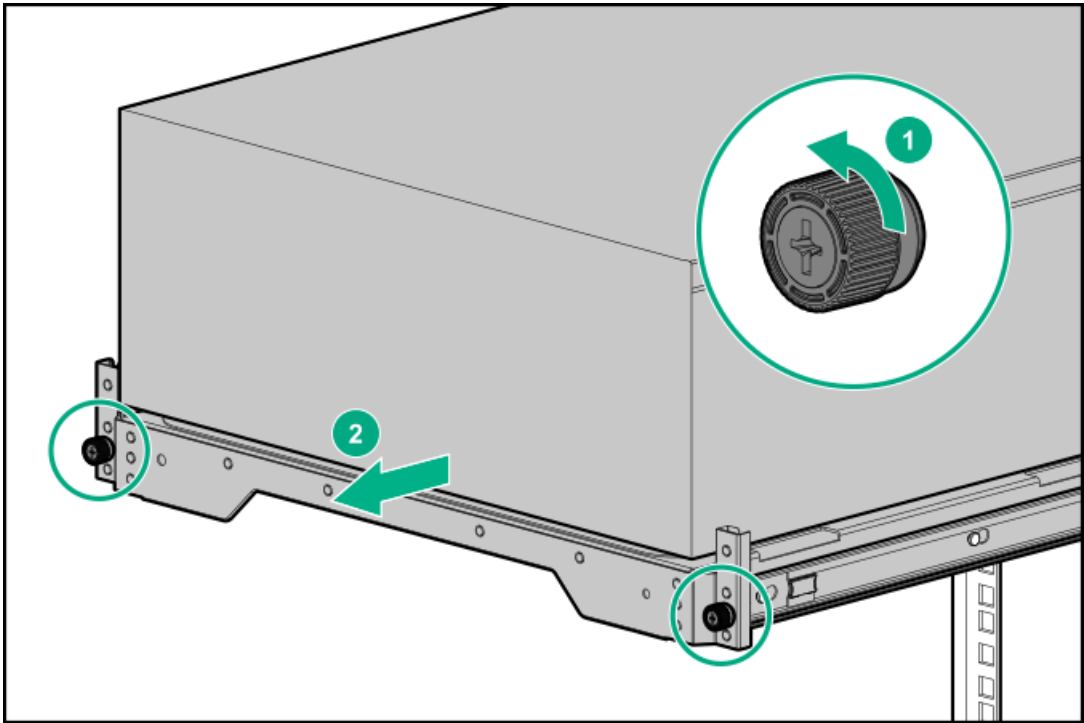
6. Remove the server from the tray.
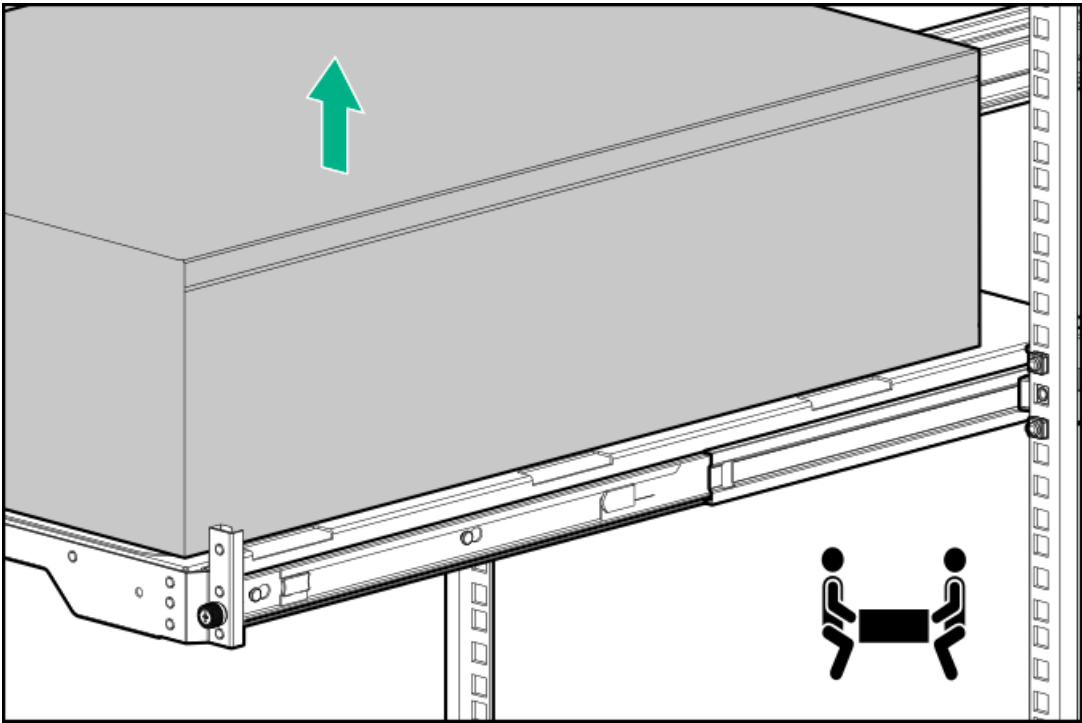
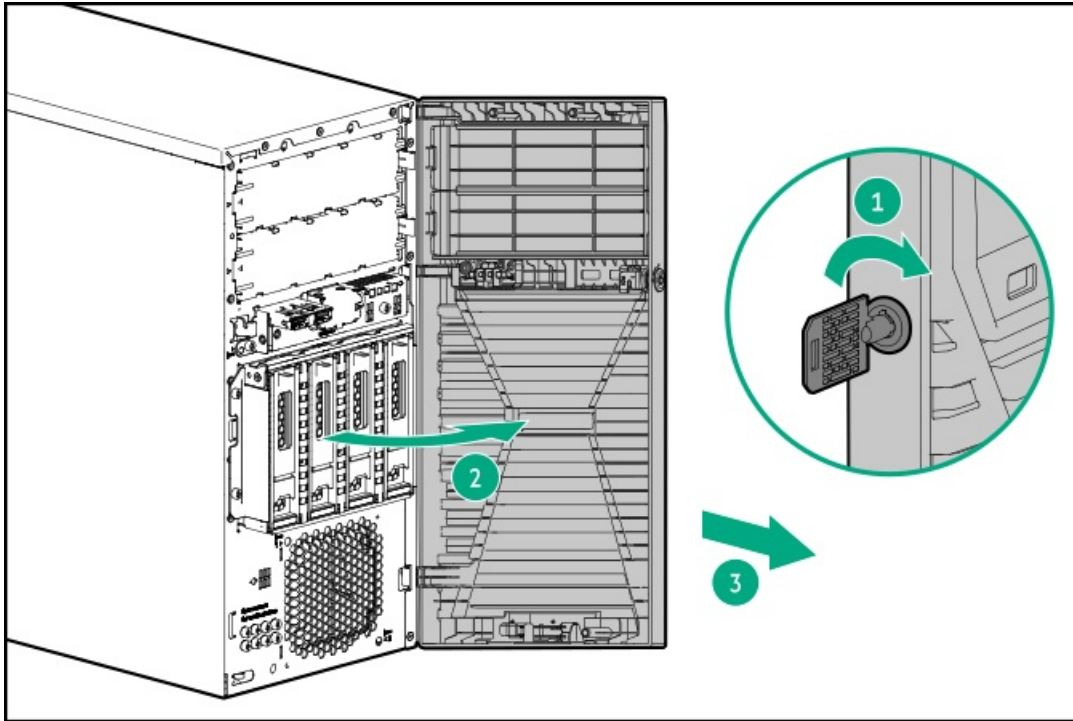7. Place the server on a flat, level surface with the access panel facing up.

Remove the front bezel

Procedure

1. Unlock the front bezel.

2. Open the front bezel.

3. Pull the front bezel away from the chassis.

Remove the access panel

Prerequisites

If the access panel thumbscrew is too tight, use a T-15 Torx screwdriver to loosen it.

About this task

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

⚠️ **CAUTION:**

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

⚠️ **CAUTION:**

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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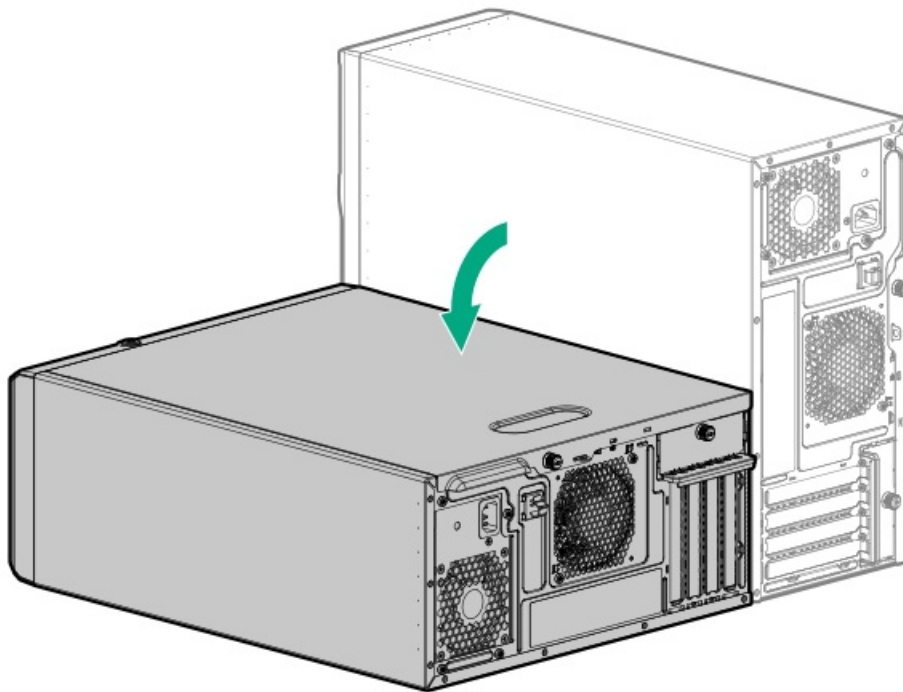
- If the server is in rack mode, <u>remove the server from the rack</u>.

5. <u>Unlock the front bezel</u>.

6. Remove the access panel:

   a. Loosen the access panel thumbscrew.

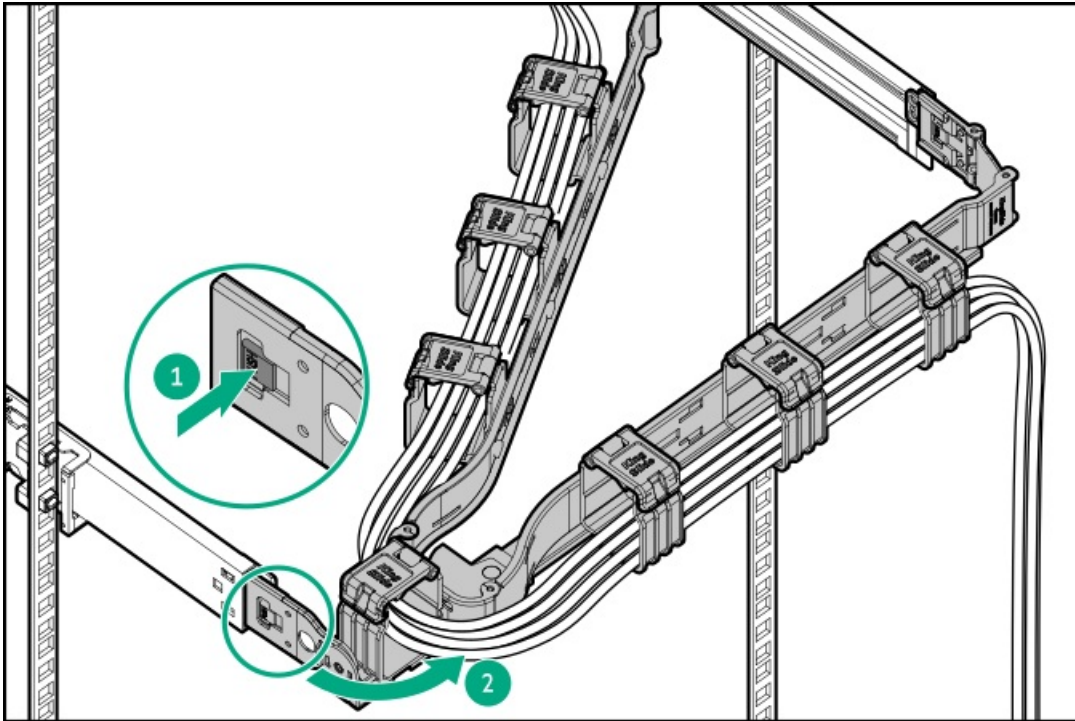   b. Slide the access panel toward the rear panel, and then lift it away from the chassis.
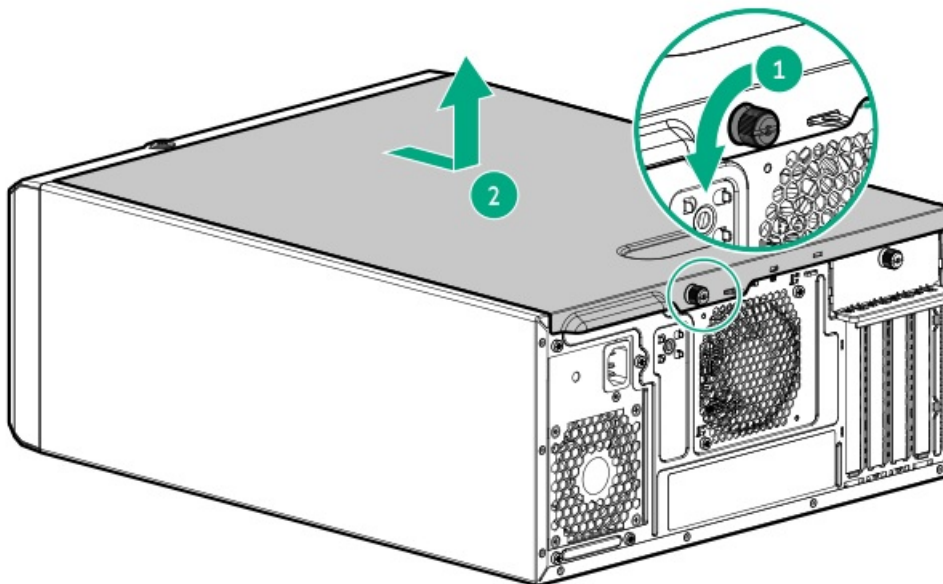
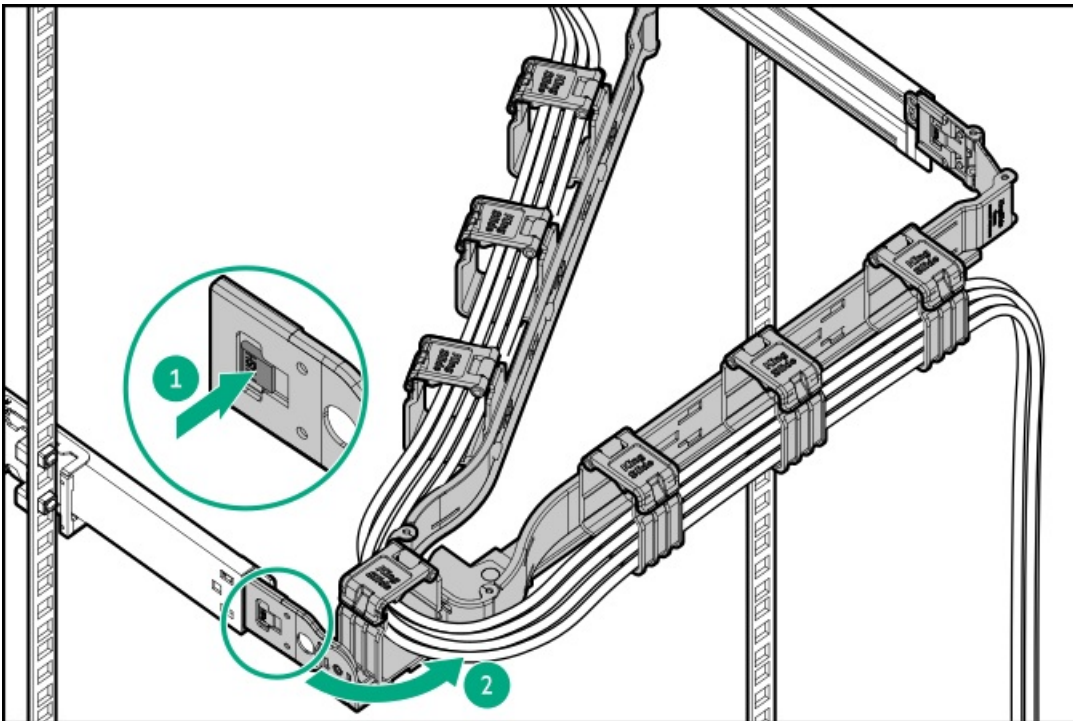# Open the cable management arm

Procedure

1. Open the cable management cable:

   a. Press and hold the blue **PUSH** button on the retention bracket.

   b. Swing the arm away from the rear panel.

2. Press and hold the blue **PUSH** button on the retention bracket.

3. Swing the arm away from the rear panel.

Remove the air baffle

About this task

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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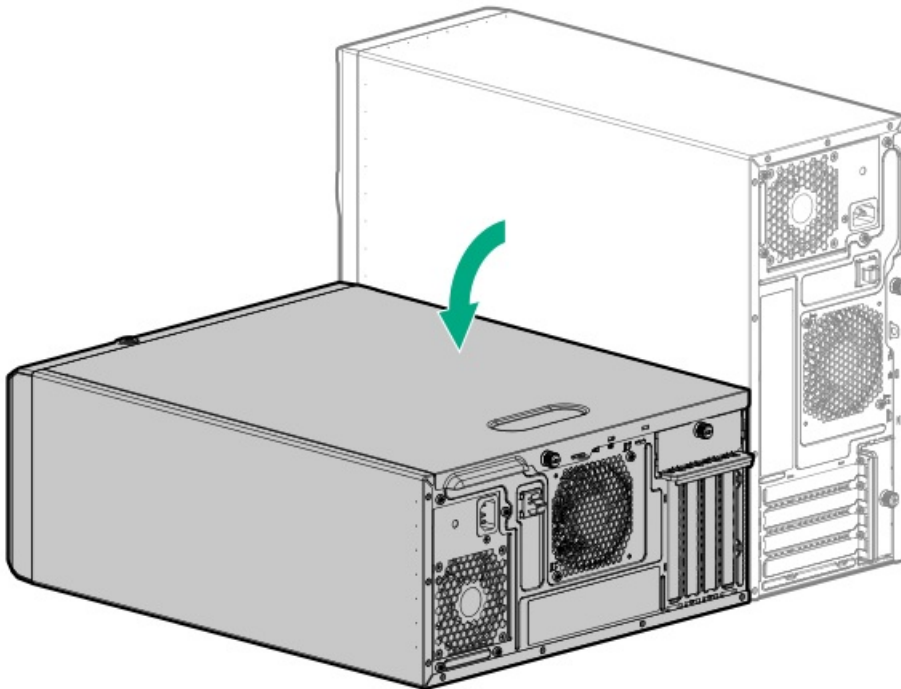
   - If the server is in rack mode, remove the server from the rack.

5. Remove the access panel.

6. Remove the air baffle:

   a. Lift the front end of the baffle from the chassis.

   b. Remove the baffle tabs from its rear chassis slots.
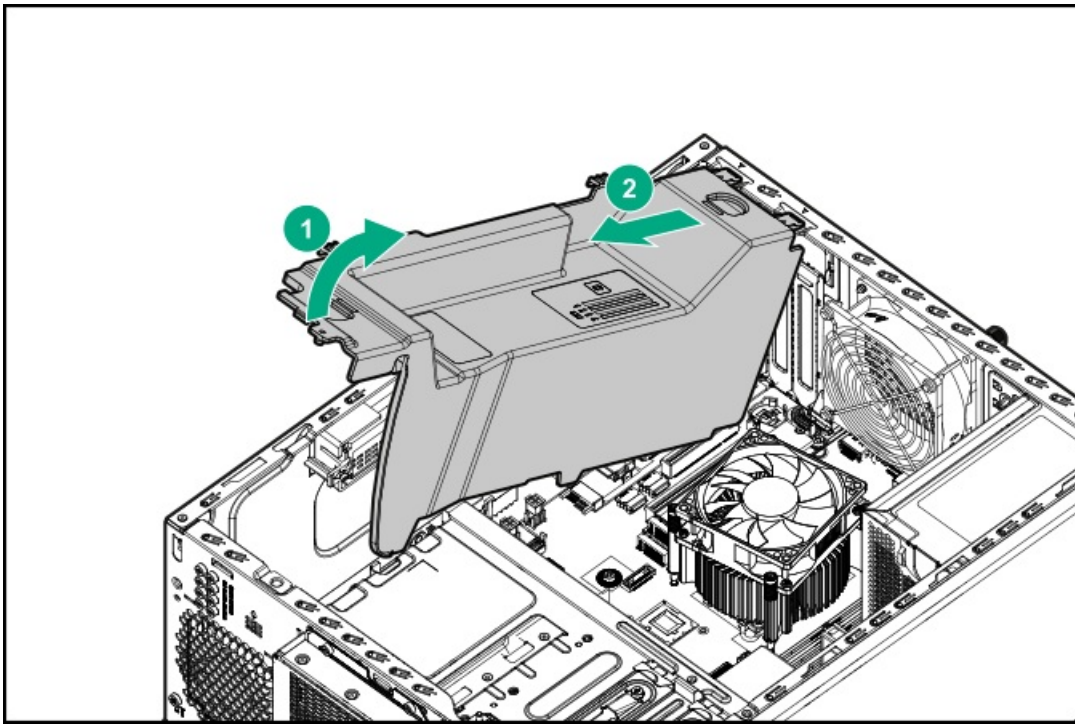
Remove the PCIe blank retainer

Procedure

1. Loosen the retainer thumbscrew.

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

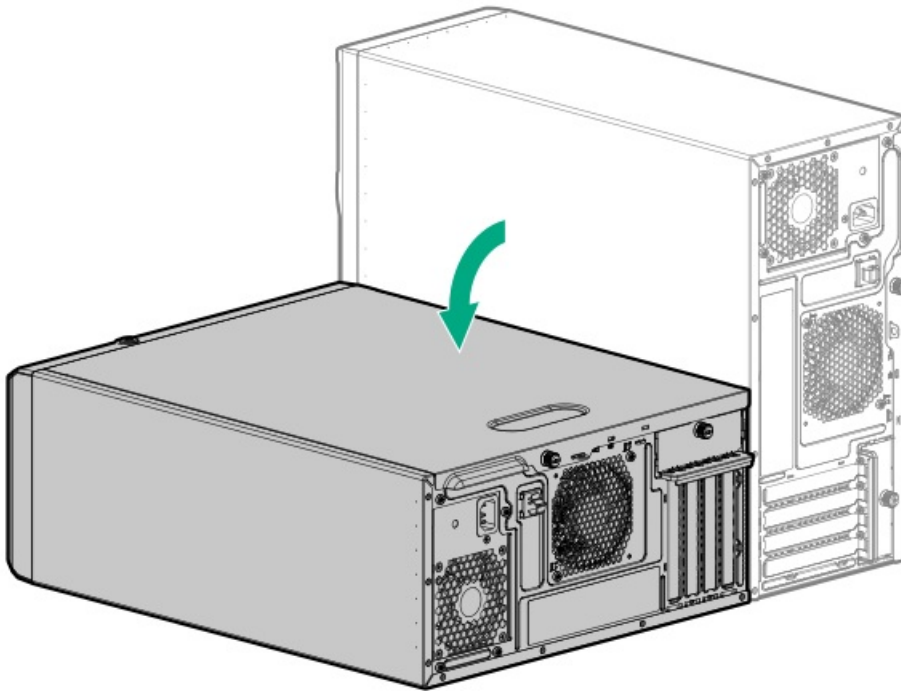
Remove a media device
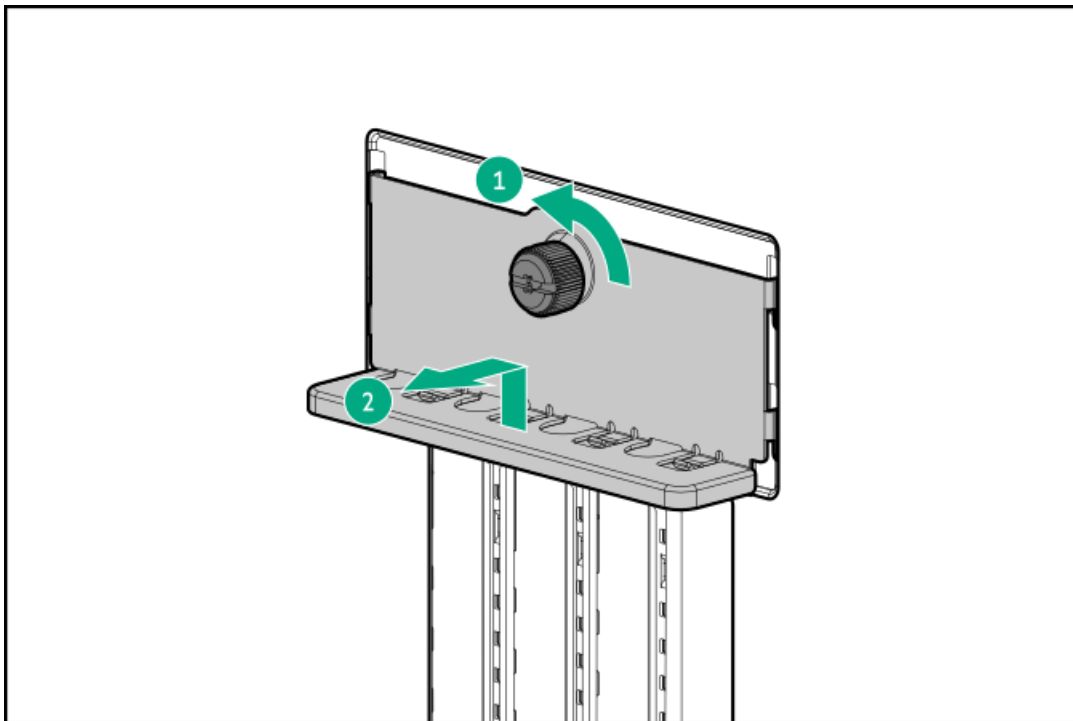
# Remove a media device

About this task

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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

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

5. Remove the front bezel.

6. Remove the access panel.

7. Disconnect all cables from the media device:

   - RDX backup system cabling

   - Optical drive cabling

8. Pull and hold the device release latch, and then slide the media device out of the bay.
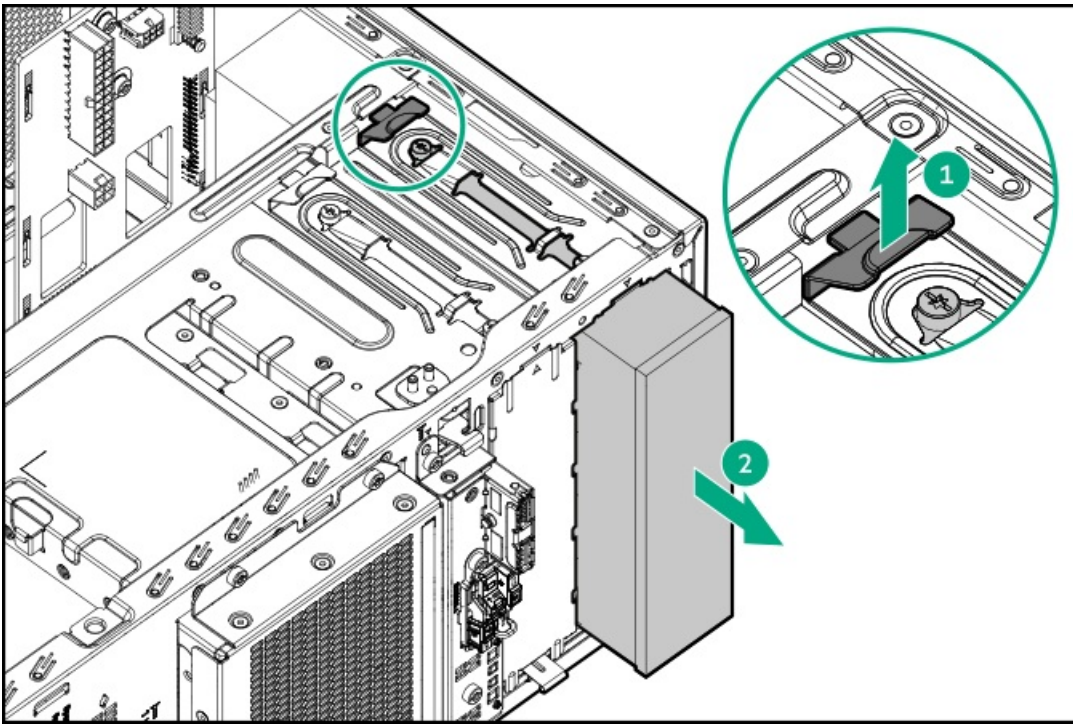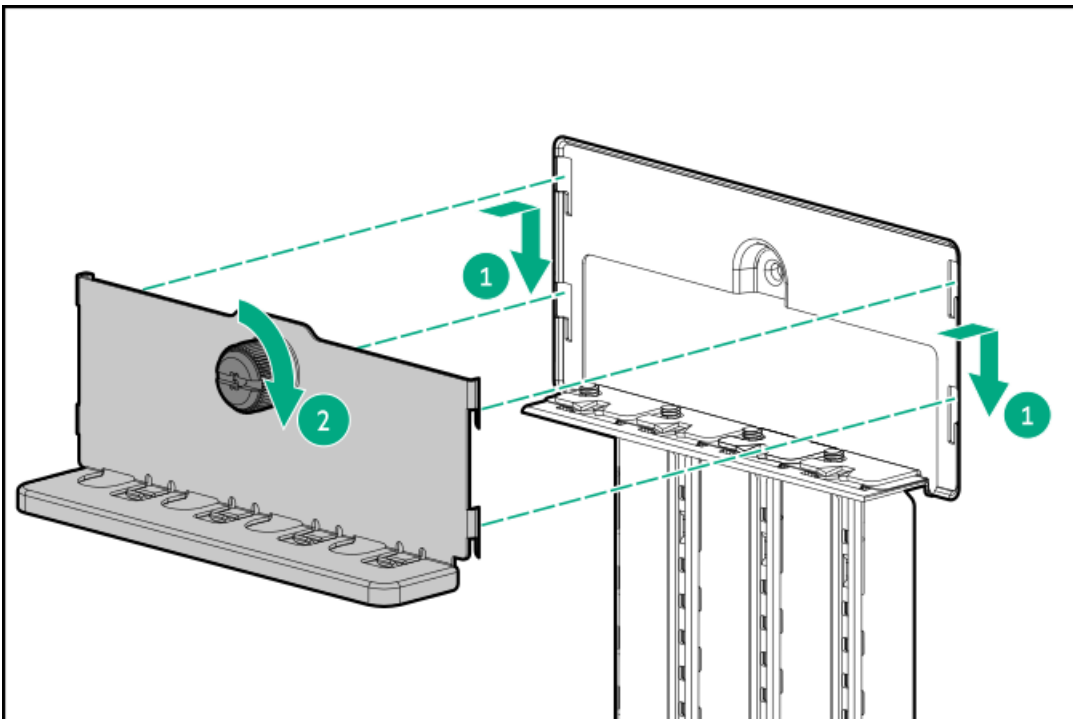
Install the PCIe blank retainer

Procedure

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

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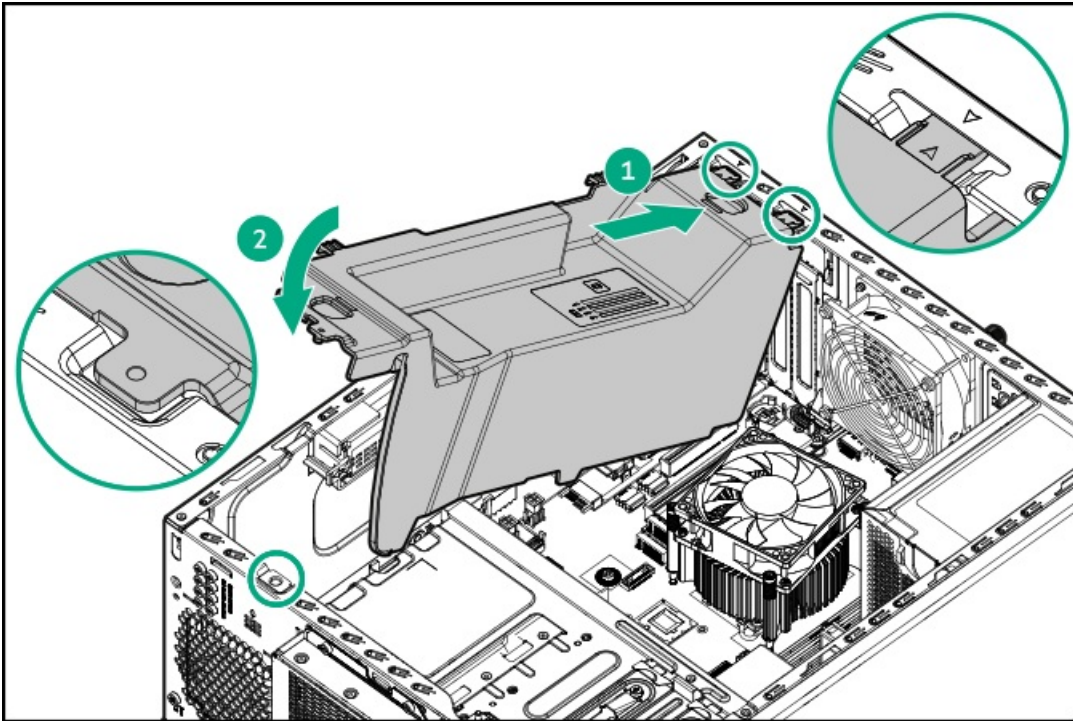
2. Tighten the retainer thumbscrew.

Install the air baffle

About this task

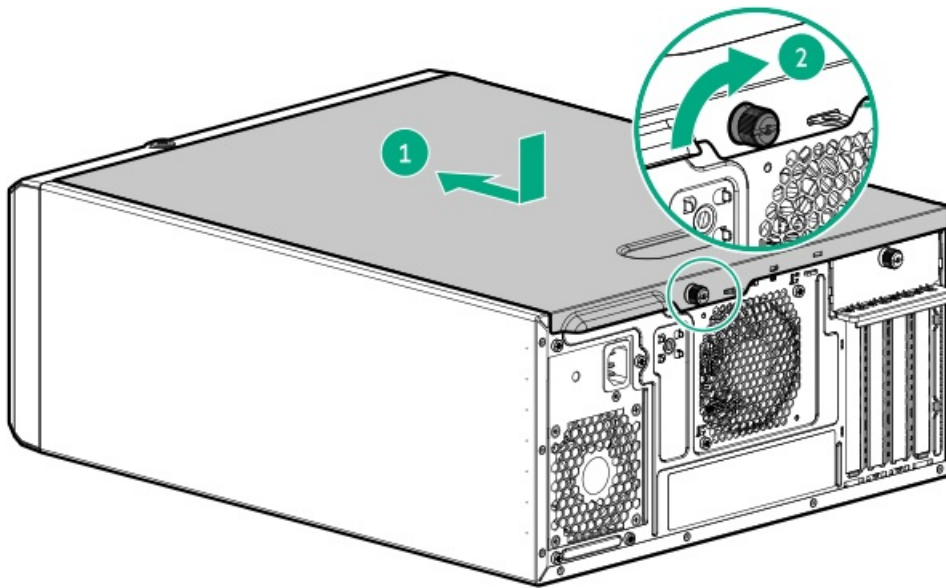The air baffle is part of the PCIe fan and air baffle option kit (P65106-B21).

Procedure

1. Insert the baffle tabs into the slots on the rear chassis.

2. Press the front end of the baffle into the chassis.

Install the access panel

Procedure

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

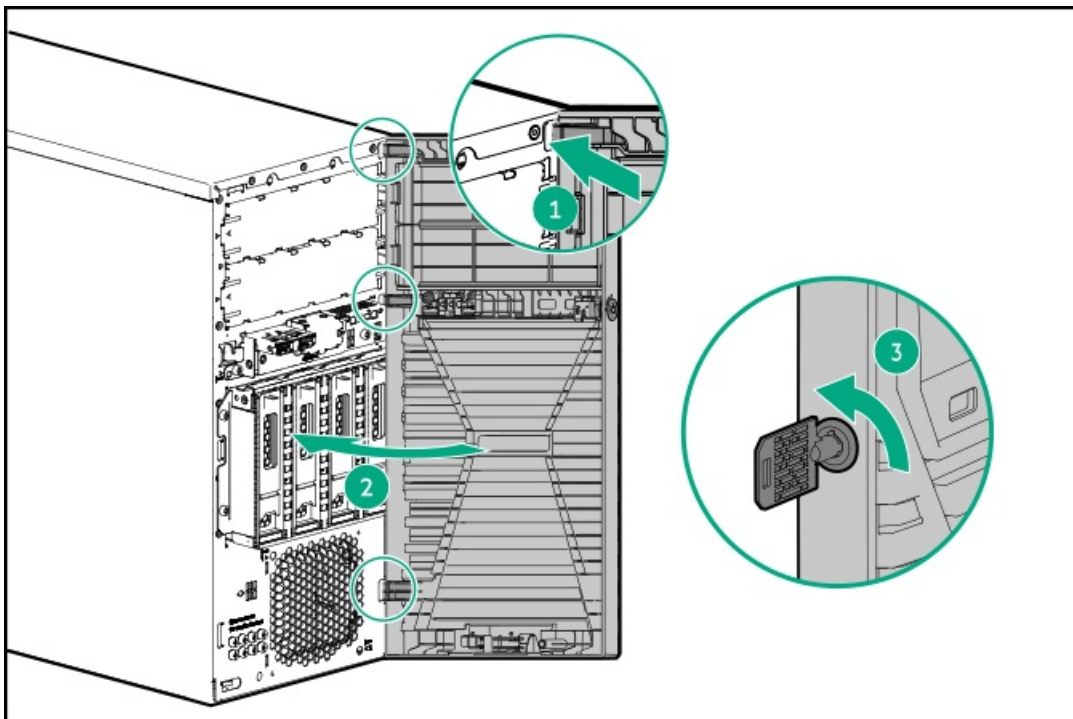2. Tighten the access panel thumbscrew.

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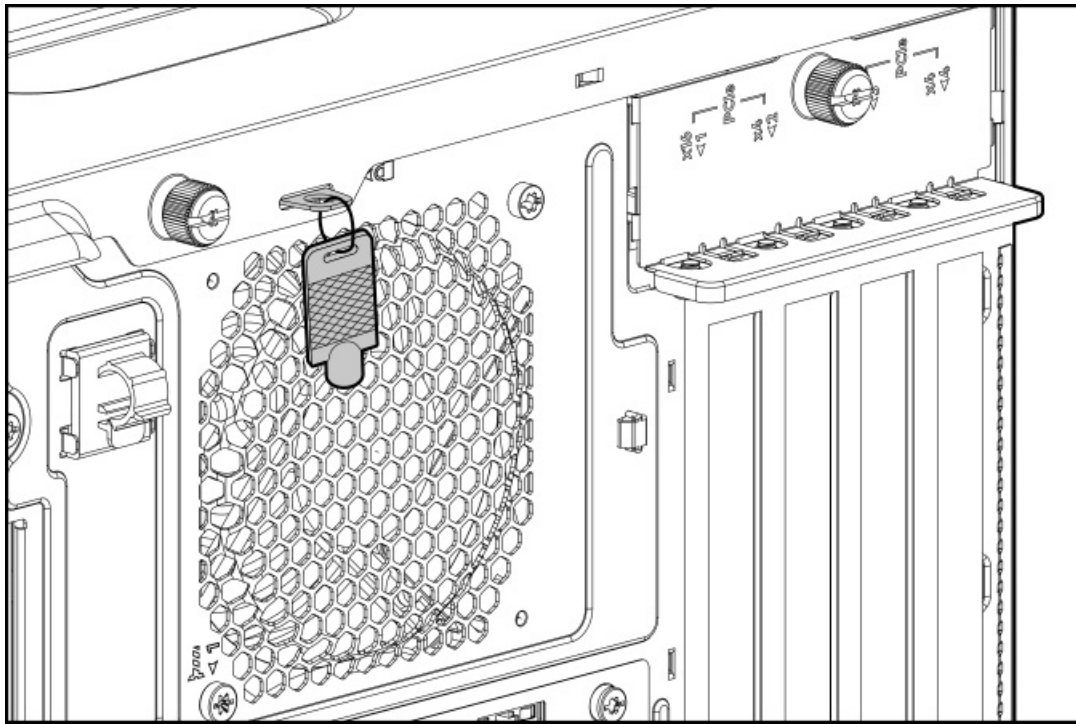
Install the front bezel

Procedure

1. Insert the front bezel hooks to the chassis.

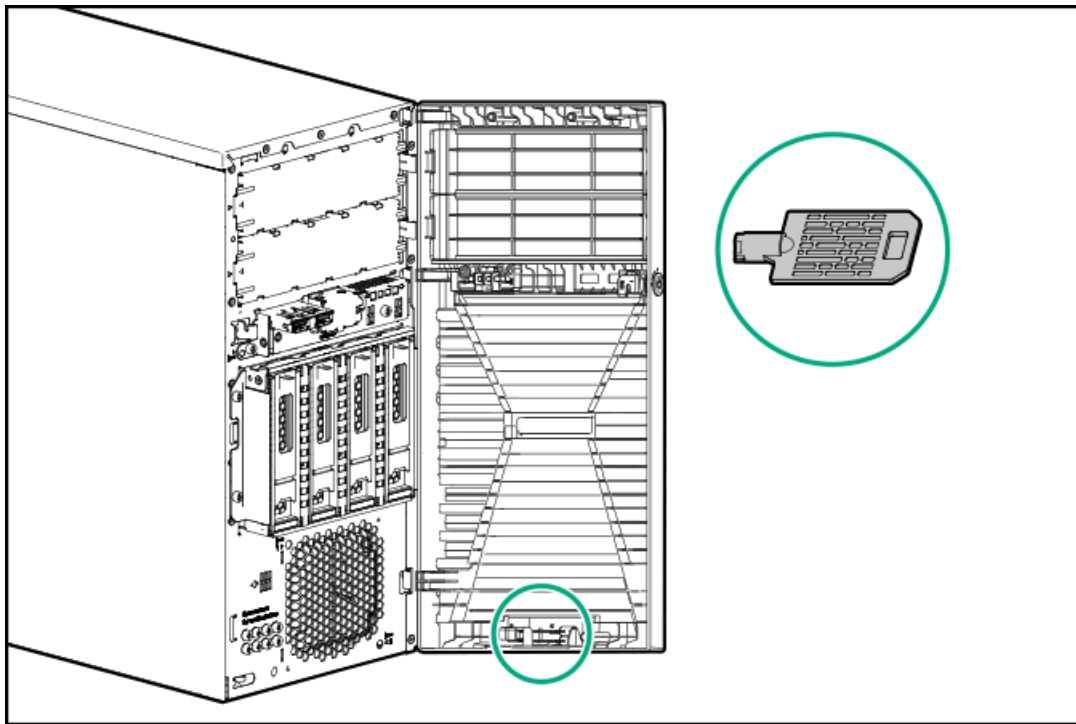2. Close the front bezel.

3. Lock the front bezel.

4. (Optional) To store the bezel keys:

   - Hang the bezel key on the padlock eye on the rear panel.

- Keep the extra bezel key on the key storage space on the front bezel.

Install the server into the rack

Prerequisites

- Get help to lift and stabilize the server server during rack installation. If the server is installed higher than chest level, an additional person might be required to help support the server weight when installing the server to the tray.

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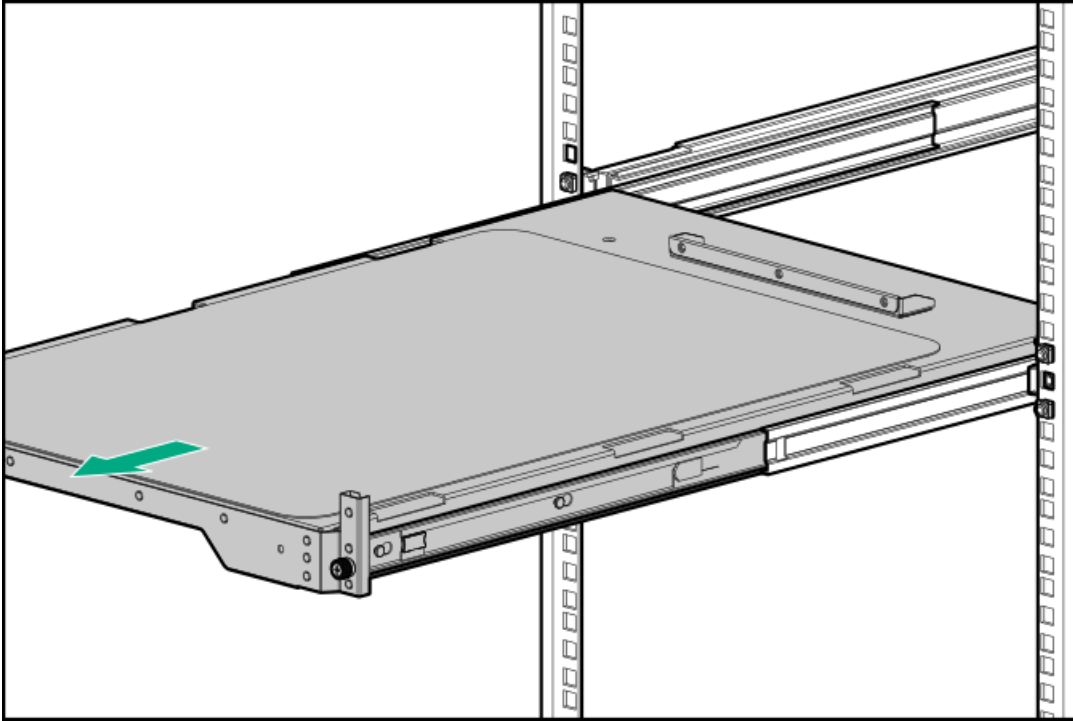
  - [Rack warnings and cautions](#)

- ◦ **Server warnings and cautions**

- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.

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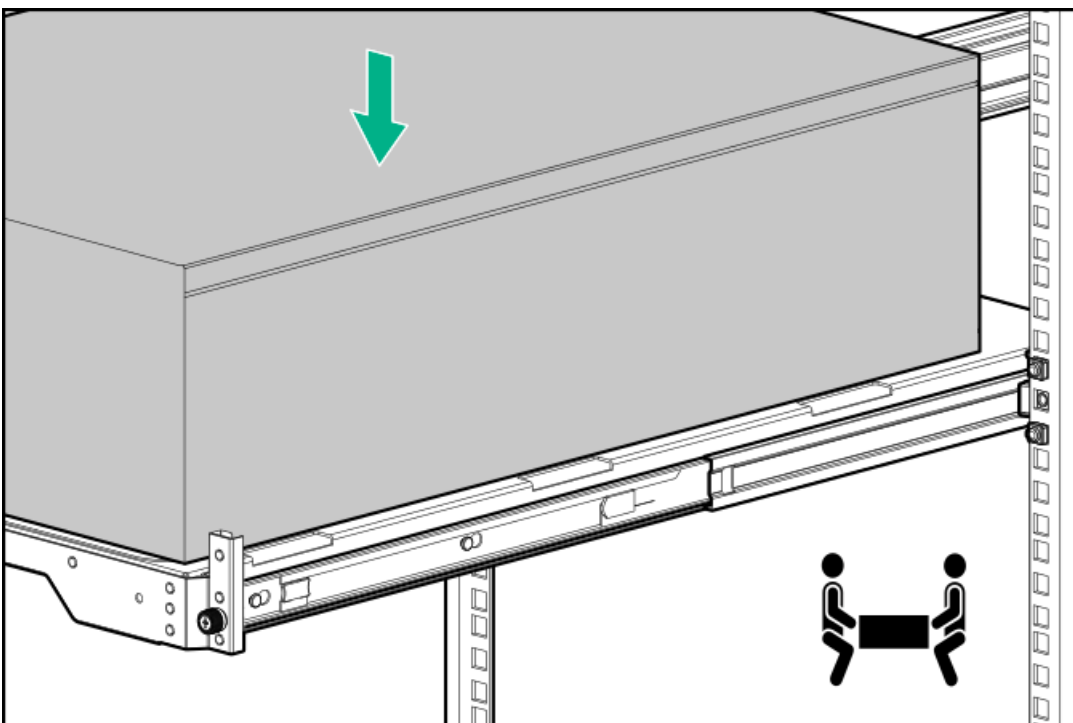
Procedure

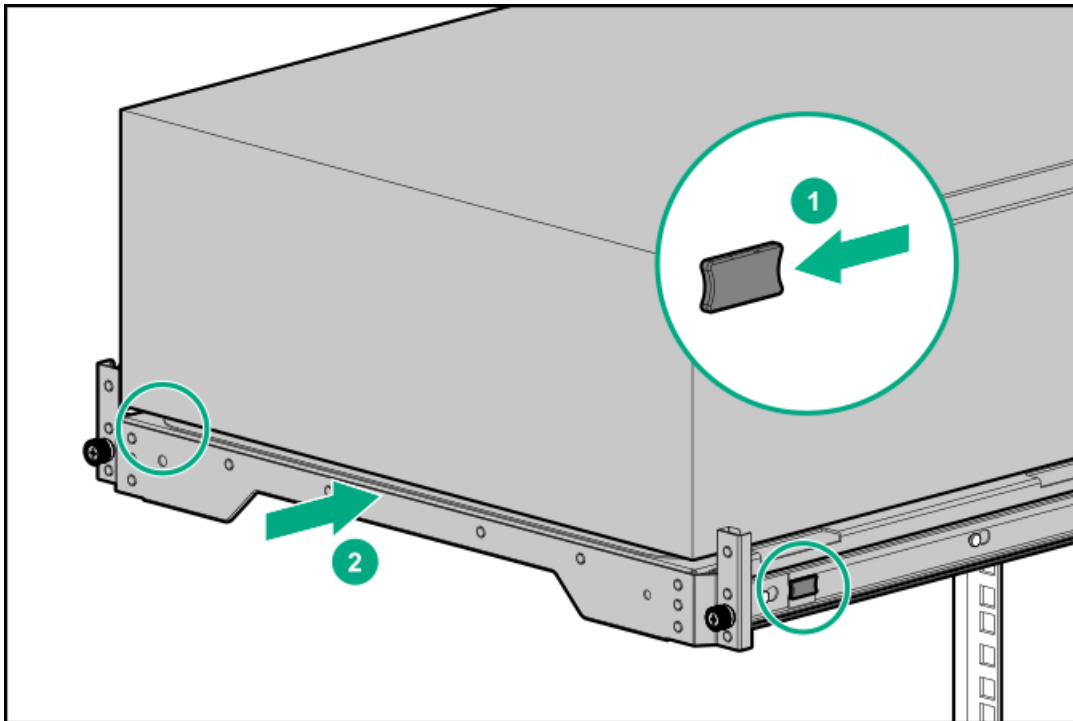1. Grasp the tray notch to slide the tray out of the rack.
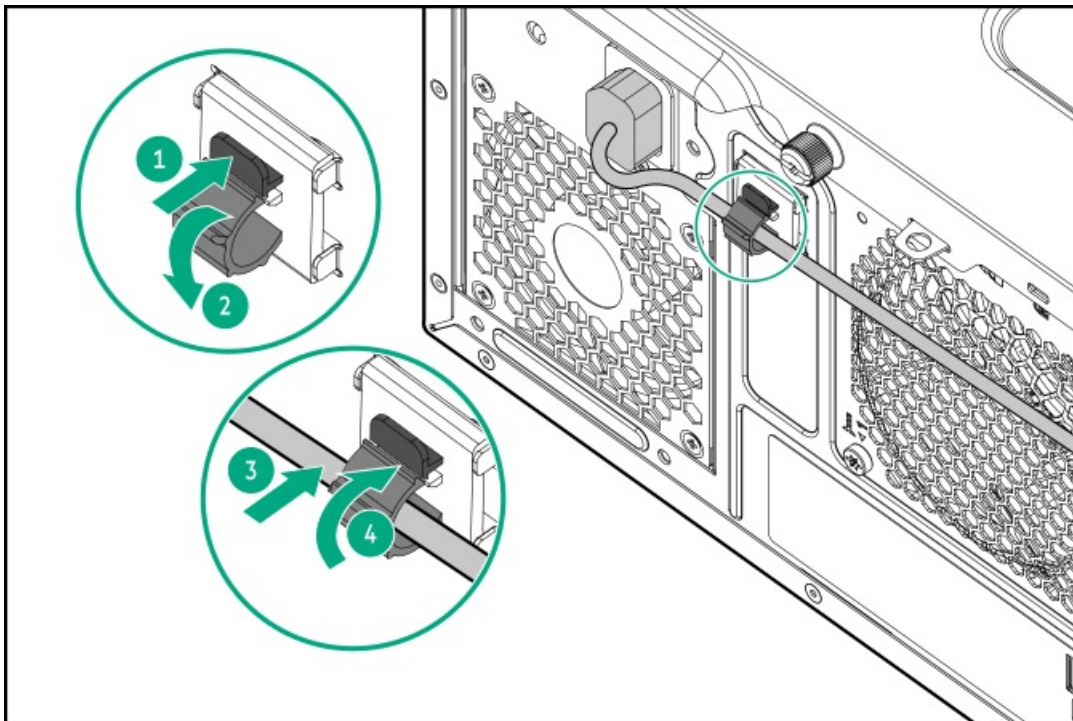

2. Place the server on the tray.

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

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

4. Connect all peripheral cables to the server.

5. Connect each power cord to the server.

6. If the server is using a non-hot-plug power supply, secure the power cord in the power cord clip on the rear panel.

   a. Press and hold the clip retainer, and then open the clip.

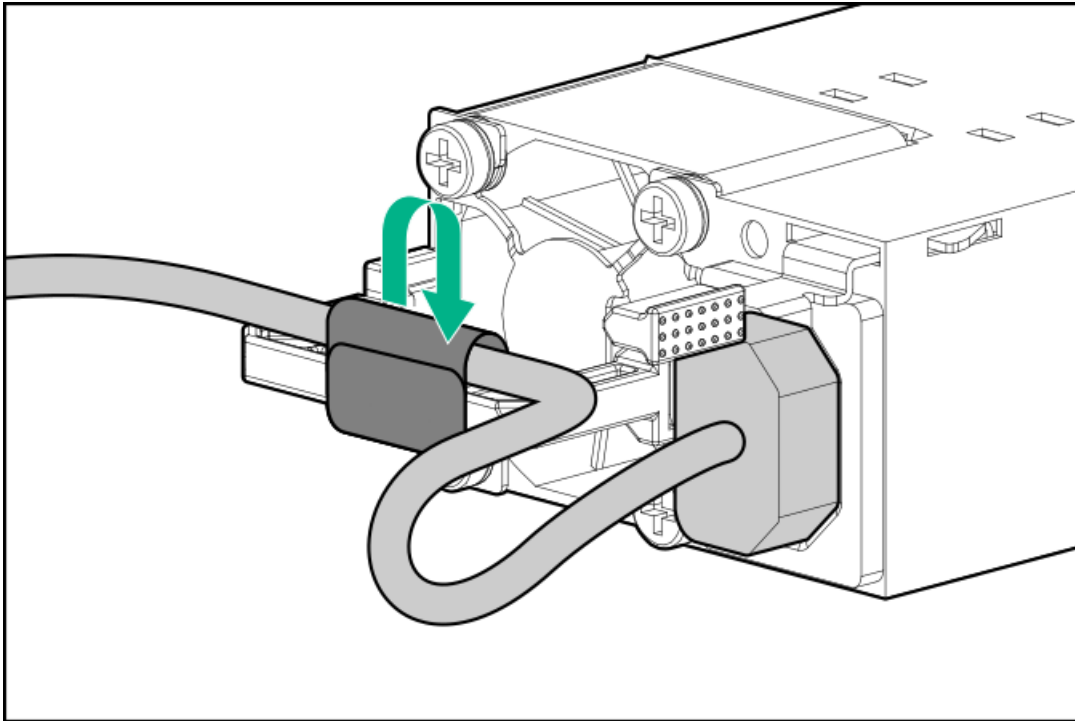   b. Position the power cord inside the clip, and then close the clip.

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

   a. Unwrap the strain relief strap from the power supply handle.

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

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

8. Connect each power cord to the power source.

9. Tighten the server tray thumbscrews.
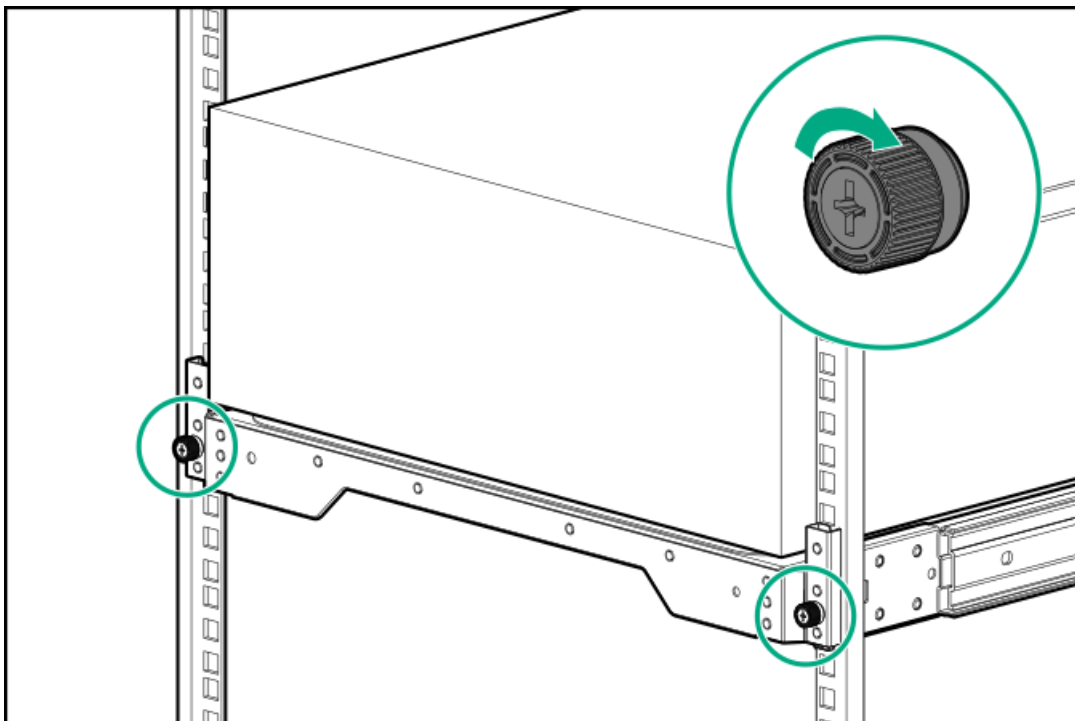
10. **Power up the server**.

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 ML30 Gen11 Server website:

https://buy.hpe.com/us/en/p/1014788890

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

Subtopics

Server data backup

Hardware option installation guidelines

Tower-to-rack conversion kit

Drive options

Power supply options

Media device options

PCIe fan and air baffle options

Storage controller options

Energy pack options

HPE NS204i-u Boot Device option

Expansion card options

Memory option

iLO-M.2-serial module option

M.2 SSD option

Internal USB device option

Server data backup

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

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

- User data files

- User account names and passwords

- Application settings and passwords

- Component drivers and firmware

- TPM recovery key/password

- BIOS configuration settings—Use the backup and restore function in UEFI System Utilities. For more information, see the UEFI user guide (https://www.hpe.com/info/UEFI-manuals).

    - Custom default system settings

    - Security passwords including those required for power-on and BIOS admin access, persistent memory, and Server Configuration Lock (for HPE Trusted Supply Chain servers)

    - Server serial number and the product ID

- iLO-related data—Use the iLO backup and restore function. For more information, see the iLO user guide (https://www.hpe.com/support/ilo6).

    - iLO license

    - Customer iLO user name, password, and DNS name

    - iLO configuration settings

- 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.

Tower-to-rack conversion kit

Use the tower-to-rack conversion kit to switch the tower server to rack mode operation. A rack-mounted server occupies 5U space in the rack and supports in-rack serviceability for all server components.

Kit contents

- Left and right rack rail assemblies

- Server tray

- Cable management arm

- Chassis rear bracket screws (3)[1]

Rack rail specifications

This server supports the HPE tower-to-rack conversion kit (874578-B21). which has the following specifications. This tower-to-rack conversion kit supports the following specifications:

- Type: Ball-bearing (stab-in)

- Minimum rail length: 727.50 mm (28.64 in)

- Rail adjustability range: 570.00–812.00 mm (22.50–32.00 in)

Subtopics

Installing the tower-to-rack conversion kit

[1] These screws are not for use in this server.

Installing the tower-to-rack conversion kit

About this task

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

Procedure

1. Power down the server.

2. Remove all power:

    a. Disconnect each power cord from the power source.

    b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. If installed, unlock and remove the security padlock and/or the Kensington security lock.

    For more information, see the lock documentation.

5. Install the rack rails and server tray.

6. Install the server into the rack.

7. Install the cable management arm

Results

The installation is complete.

Subtopics

Install the rack rails and server tray

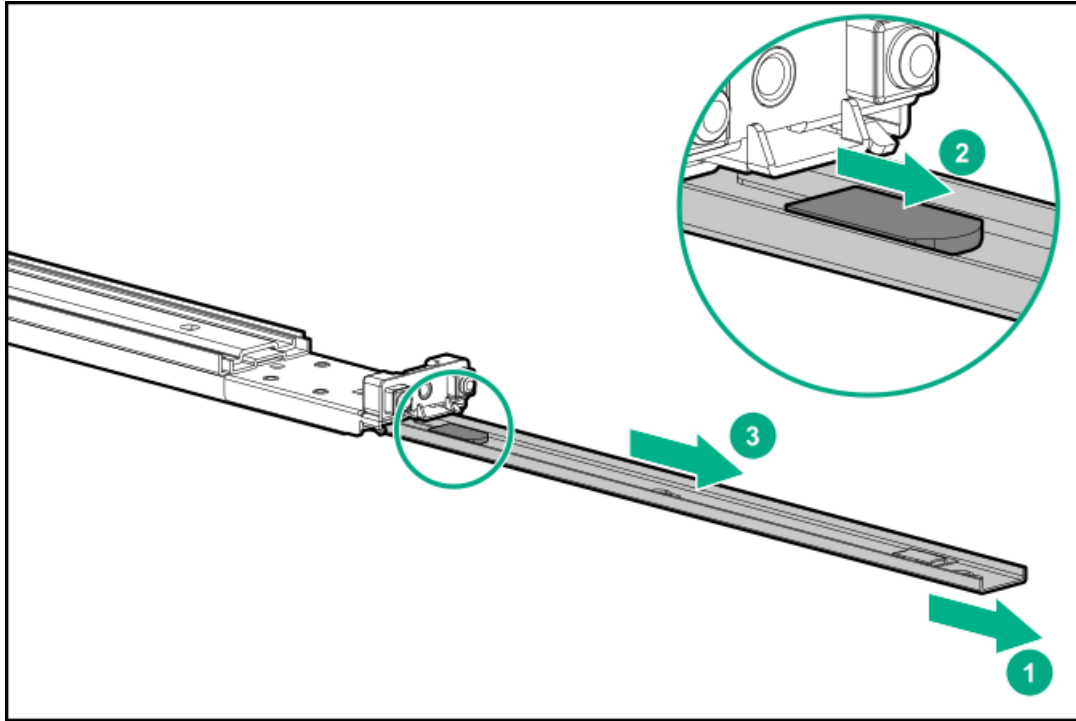Install the server into the rack

Install the cable management arm

# Install the rack rails and server tray

About this task

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

Procedure

1. Disassemble the rack rail assemblies:

   a. Pull out the inner sliding rail until it is fully extended.

   b. Slide and hold the white release tab in the direction shown, and then remove the sliding rail from the mounting rail.
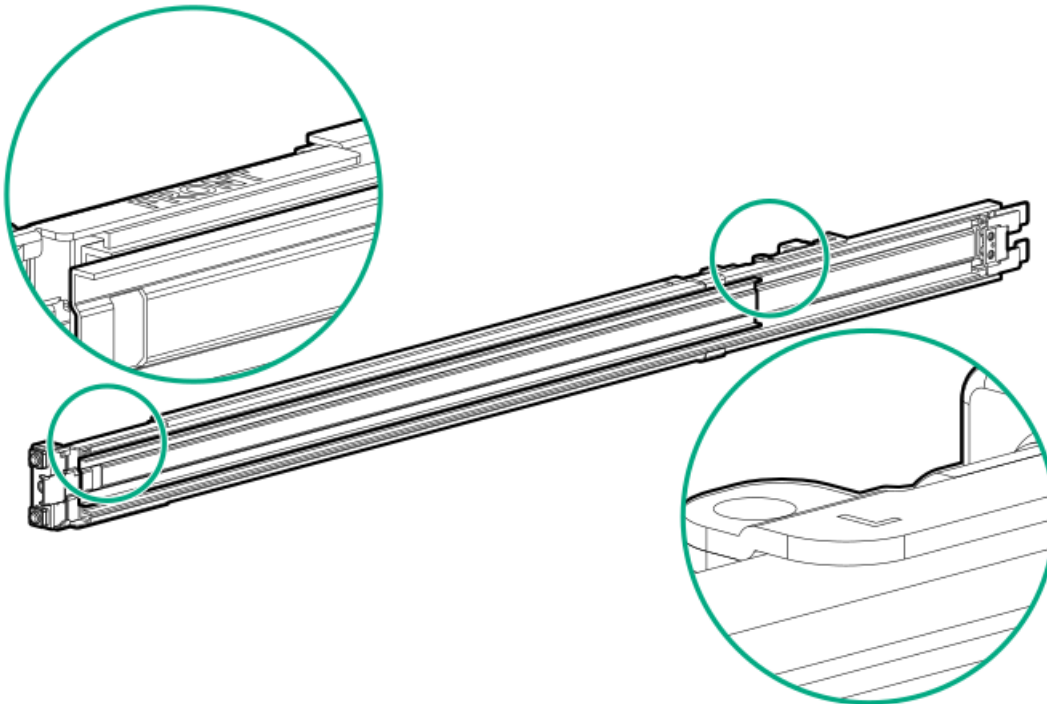

2. Install the sliding rails on the server tray:

   a. Insert the spools on the sides of the server tray through the notches on the rails.

   b. Slide the rail towards the rear of the tray to lock it into place.
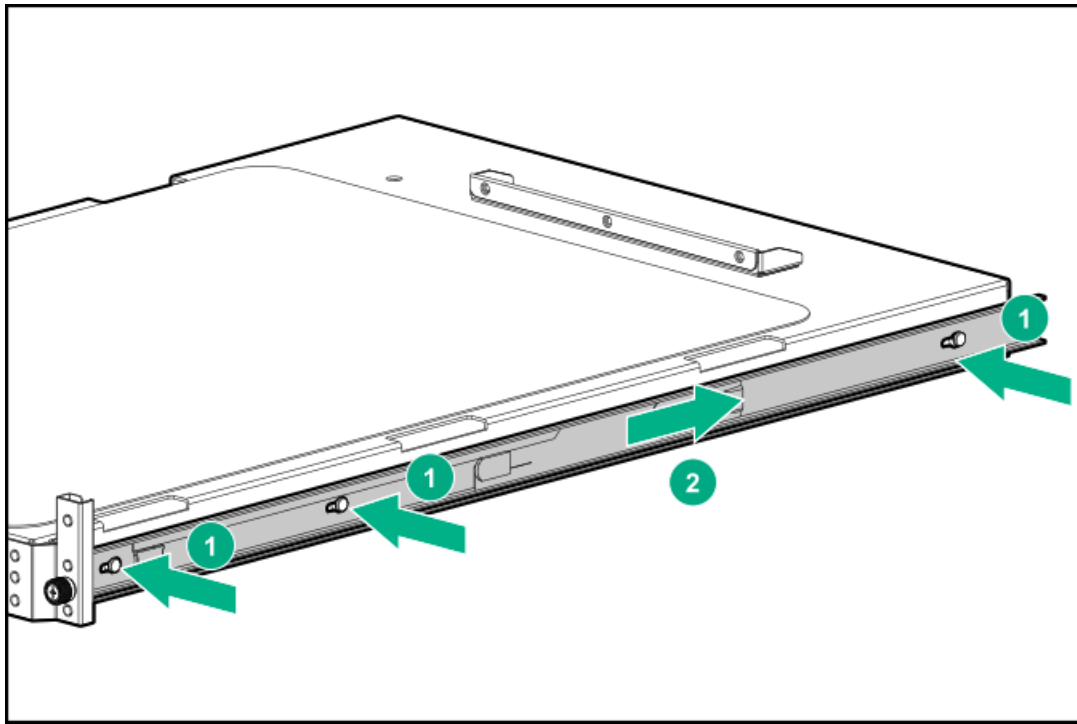
3. Locate the orientation markers on the mounting rails:
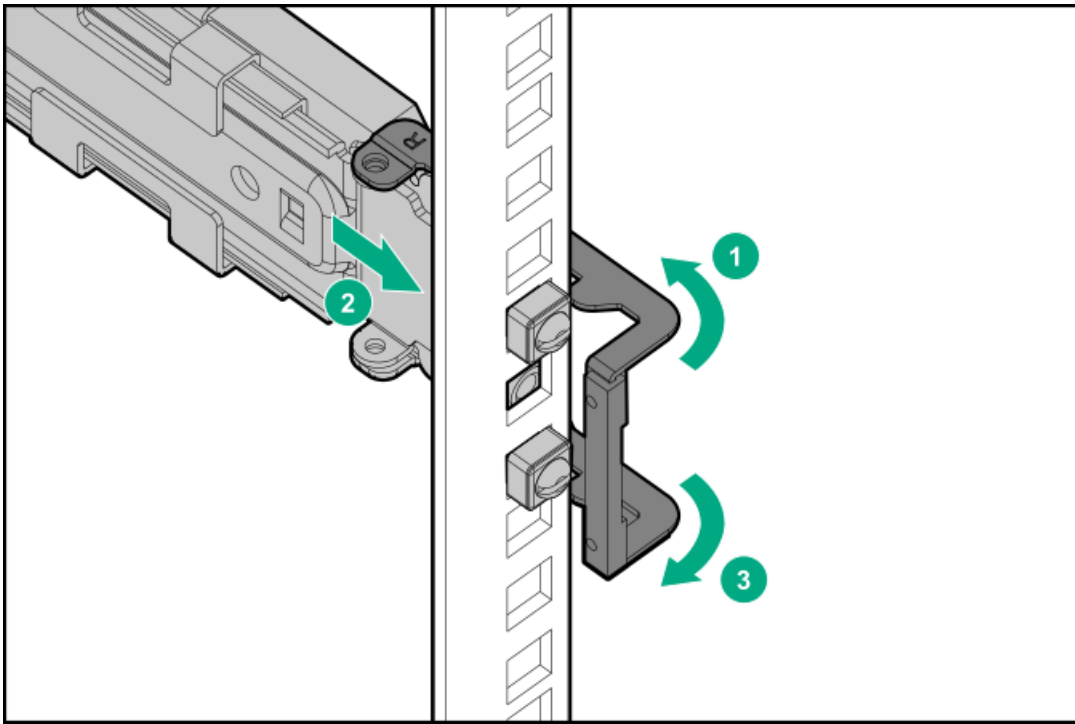
   - The front end of the rails is marked **FRONT**.

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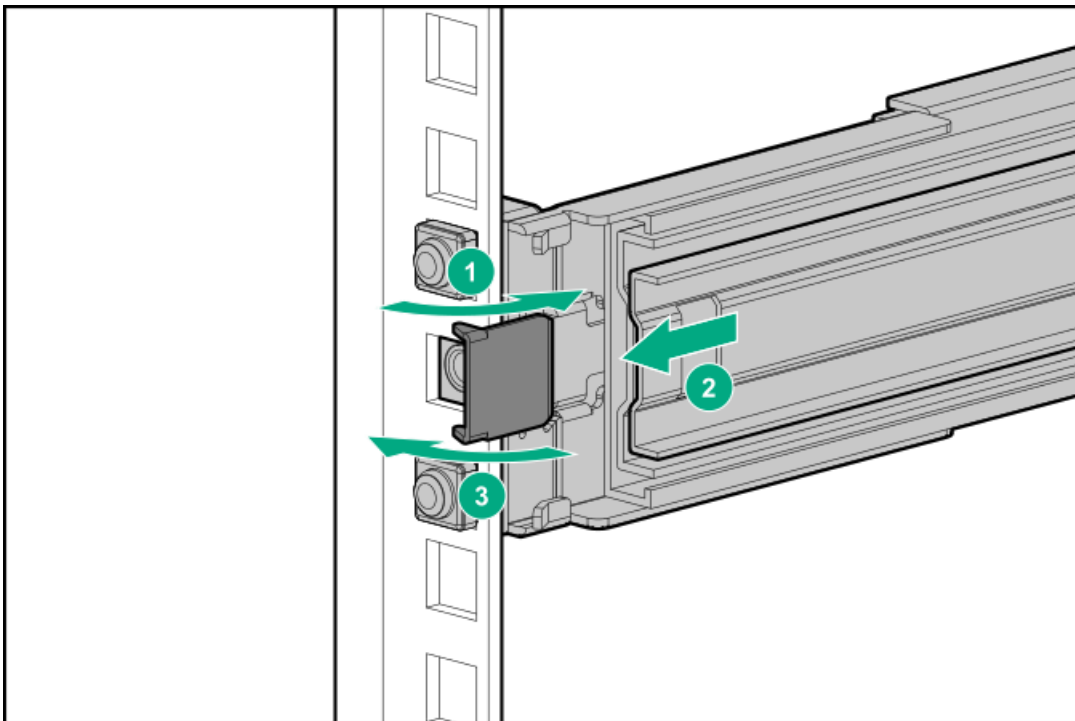

4. Fasten the mounting rails to the rack columns:

   a. Retract and hold the rear retention bracket.

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

   c. Release the rear retention bracket.
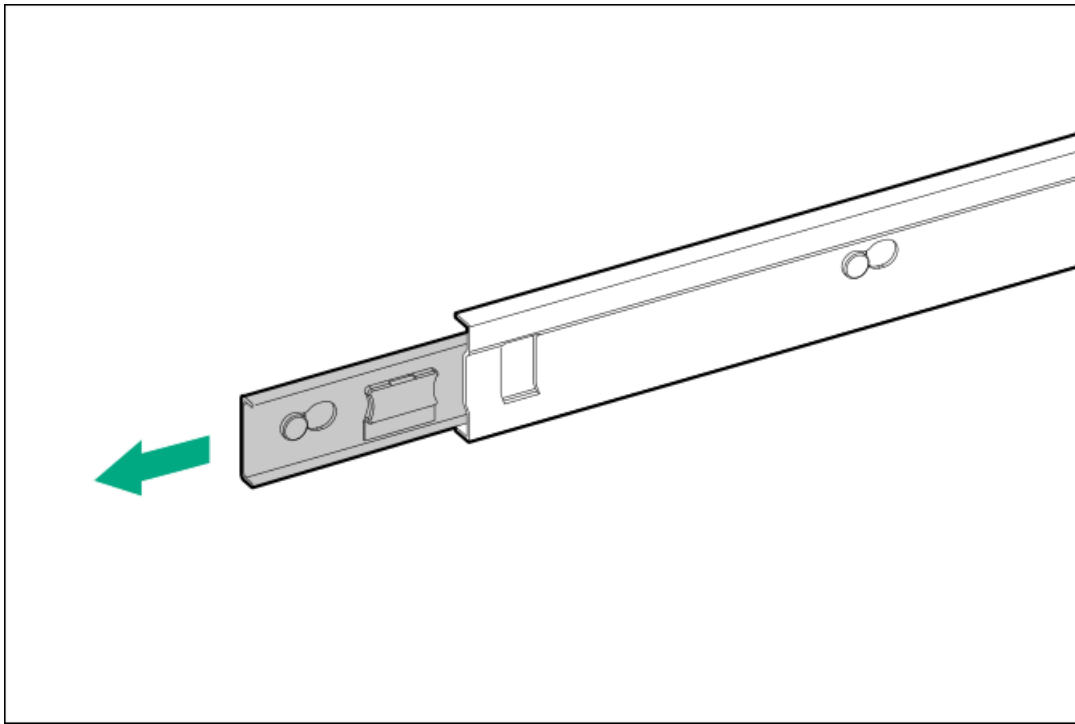
d. Retract and hold the front retention bracket.

e. Insert the pins on the mounting flange into the rack column holes.
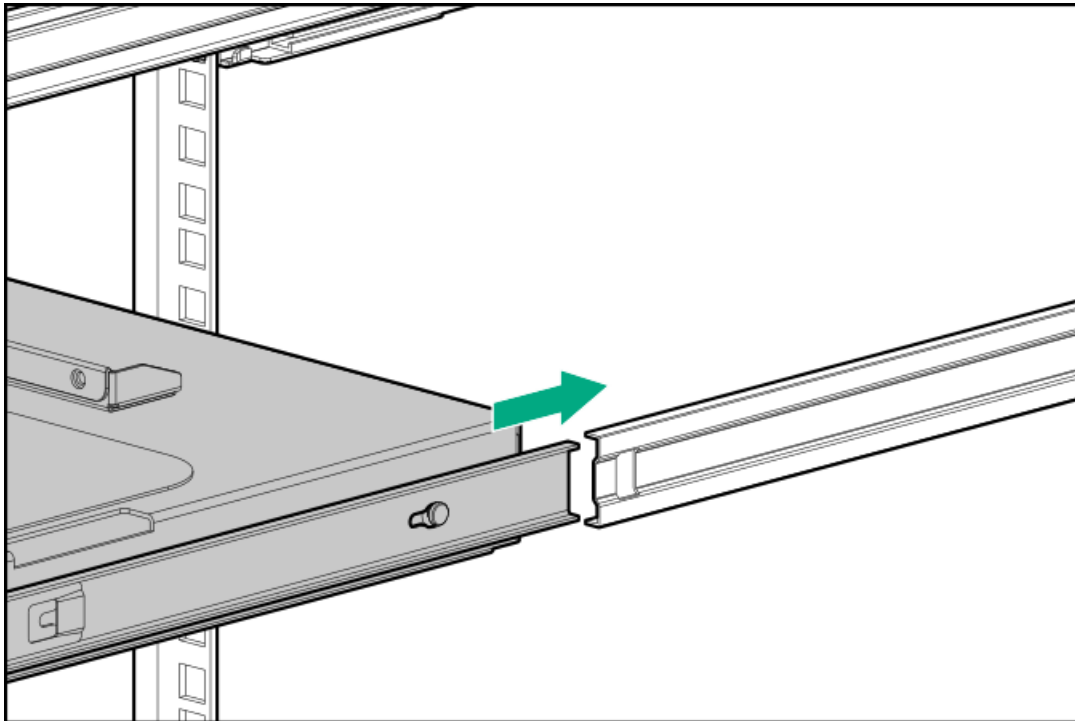
f. Release the front retention bracket.

5. Extend the inner rail.

6. Slide the server tray into the rack.

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

7. Install the server into the rack.

Install the server into the rack

Prerequisites

- Get help to lift and stabilize the server during rack installation. If the server is to be installed higher than chest level, an additional
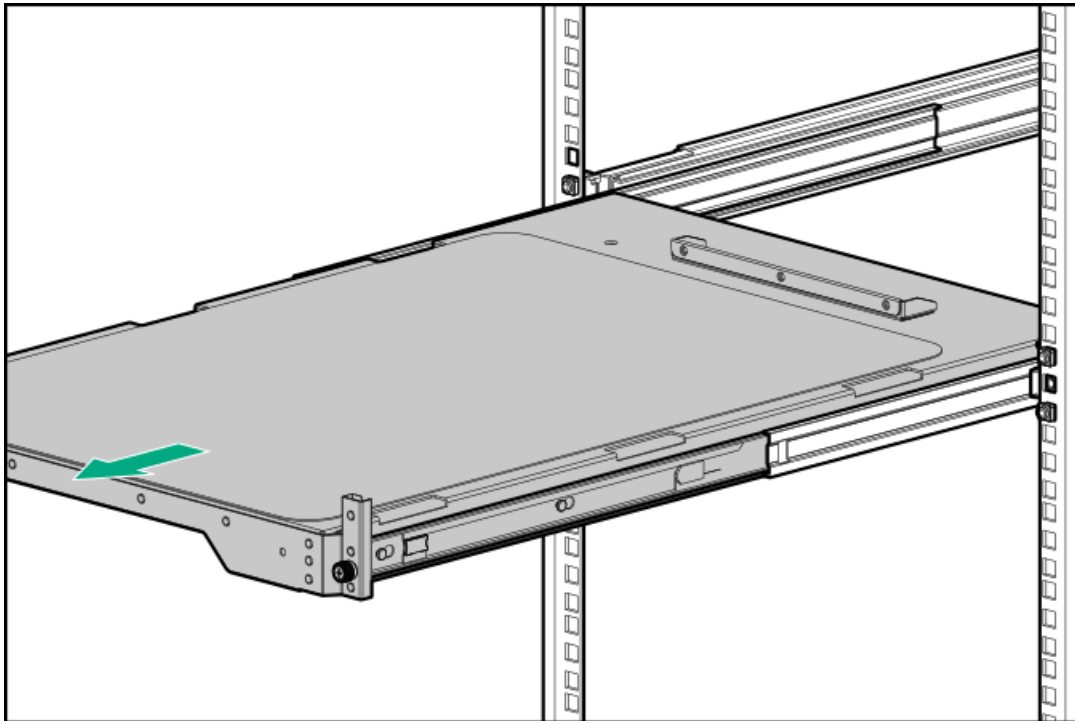
person might be required to help support the server weight when placing the server on the tray.

- Before you perform this procedure, review the:

  - <u>Space and airflow requirements</u>

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

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

- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.

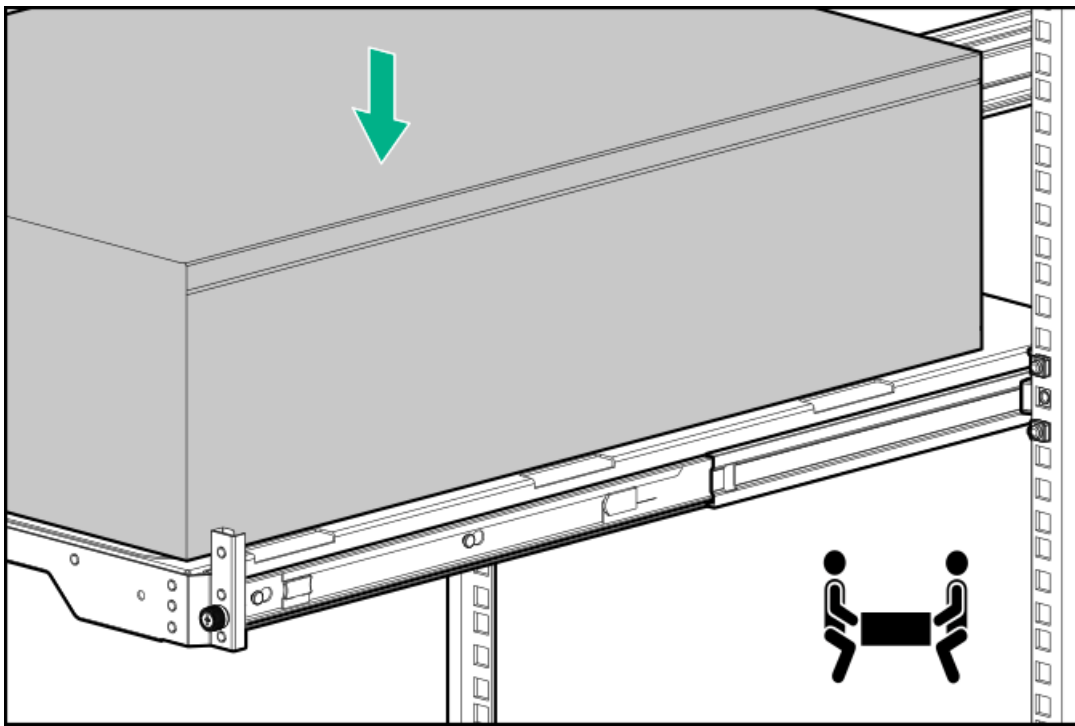- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

Procedure

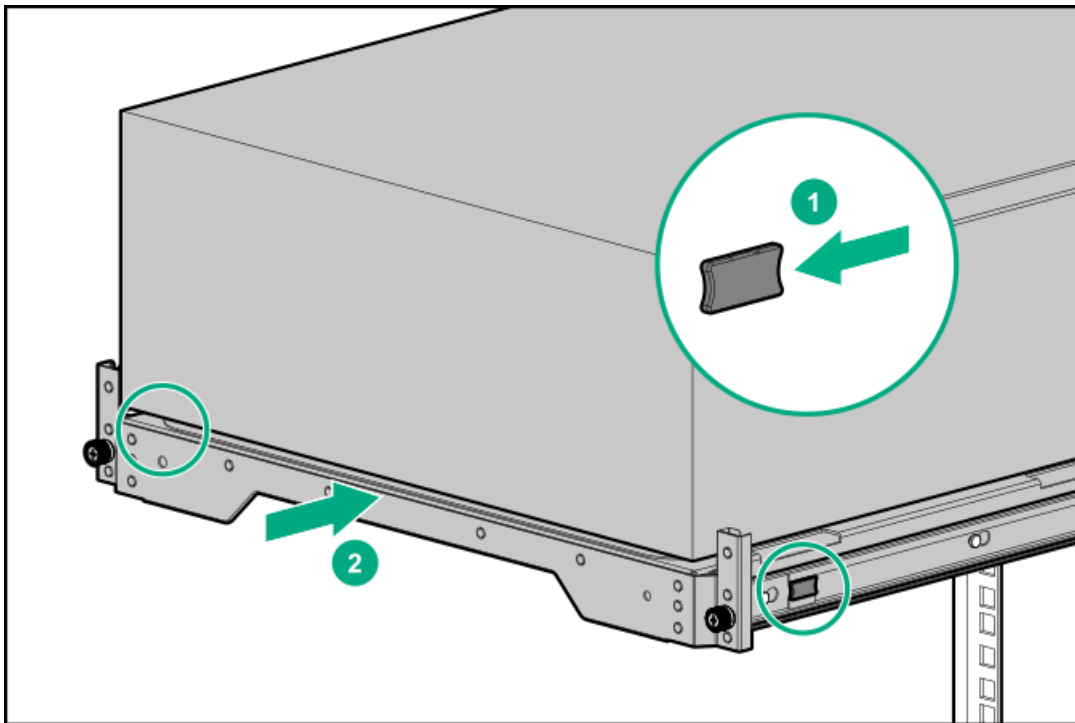1. Grasp the tray notch to slide the tray out of the   rack.

2. Place the server on the tray.

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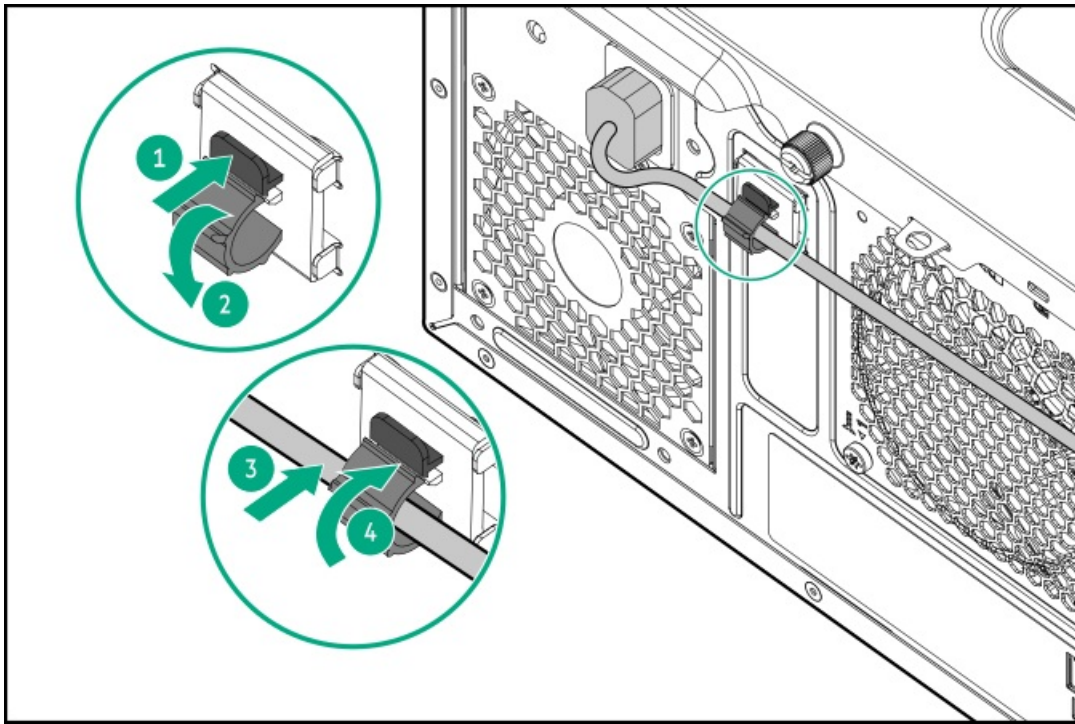
3. Press and hold the blue rail-release tabs, and then slide the tray back into the rack.

4. Connect all peripheral cables to the server.

5. Connect each power cord to the server.

6. If the server is using a non-hot-plug power supply, secure the power cord in the power cord clip on the rear panel.

   a. Press and hold the clip retainer, and then open the clip.

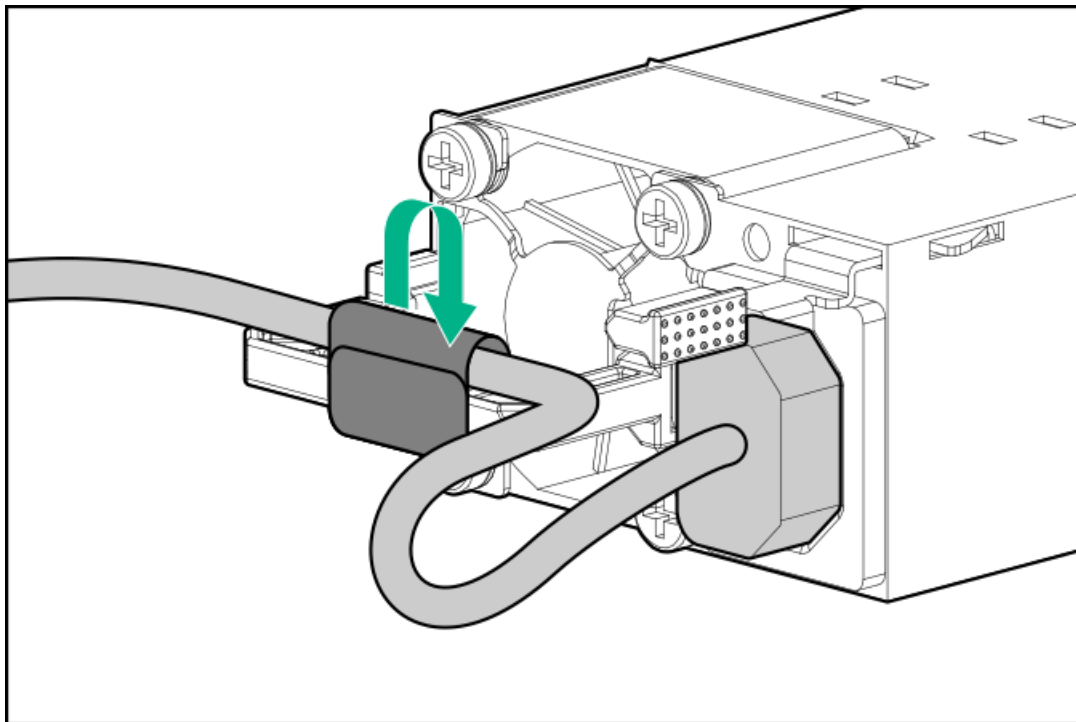   b. Position the power cord inside the clip, and then close the clip.

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

   a. Unwrap the strain relief strap from the power supply handle.

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

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


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

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

a. Fully extend the server tray out of the rack.

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

   Make sure that there is no cable binding or crimping.

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

9. Tighten the server tray thumbscrews.
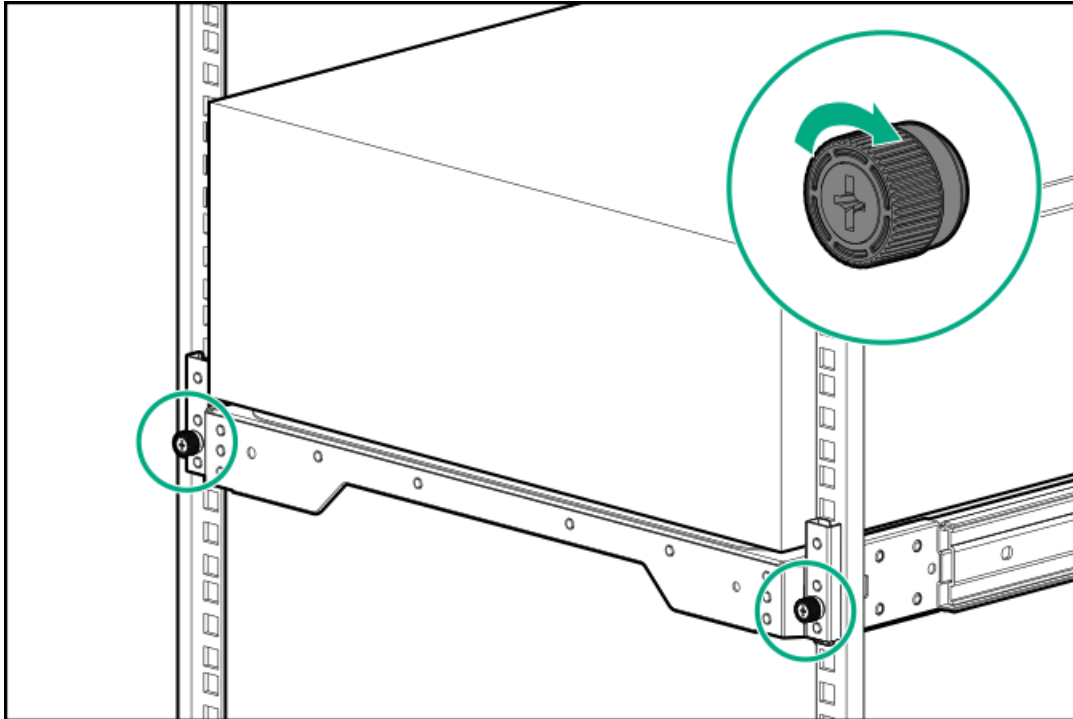
10. Connect each power cord to the power source.

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

Install the cable management arm

About this task

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

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

> ⚠ **CAUTION:**
>
> Support the CMA during the removal and replacement procedures. Do not allow the CMA to hang by its own weight during the procedure.

Procedure

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

   There will be an audible click to indicate that the bracket is locked in its adjusted position.
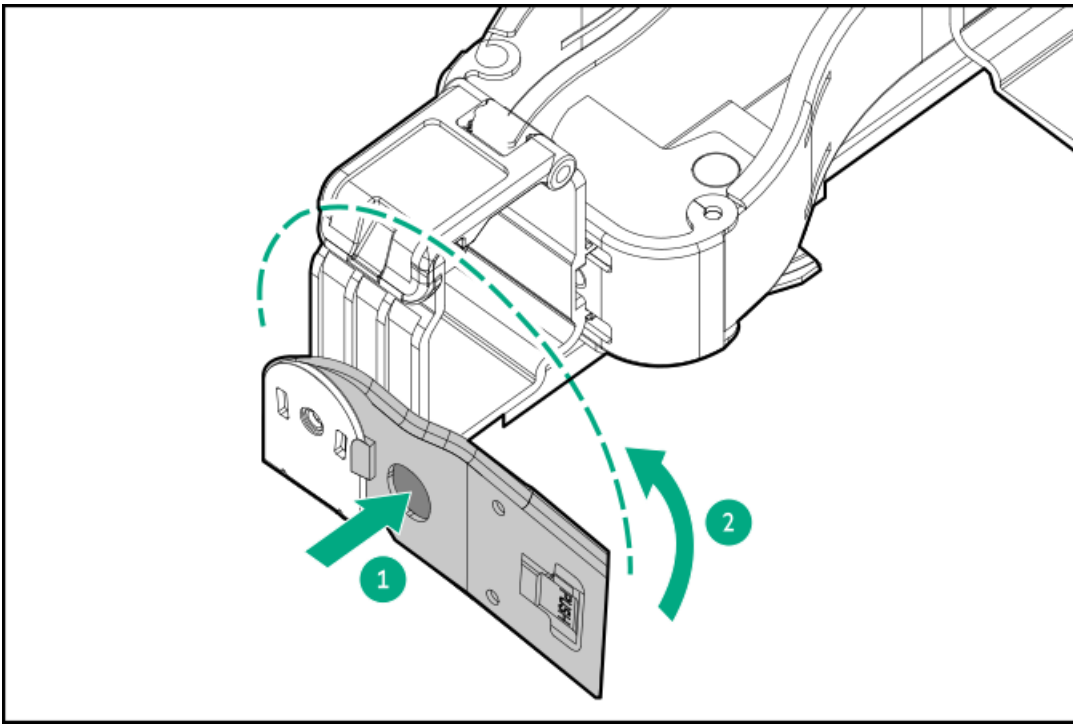
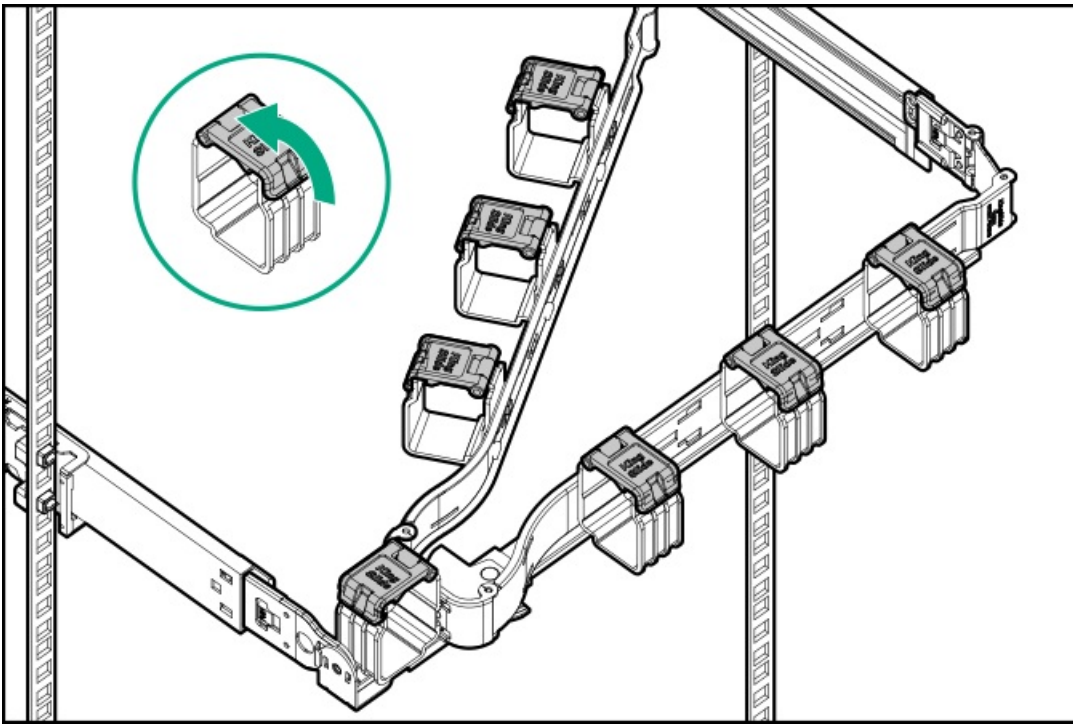2. Connect the CMA hinged tabs and retention bracket to the rack rails:

   a. Insert the inner tab into the slide rail.

   b. Insert the outer tab into the mounting rail.

   c. Insert the retention bracket into the opposite mounting rail.

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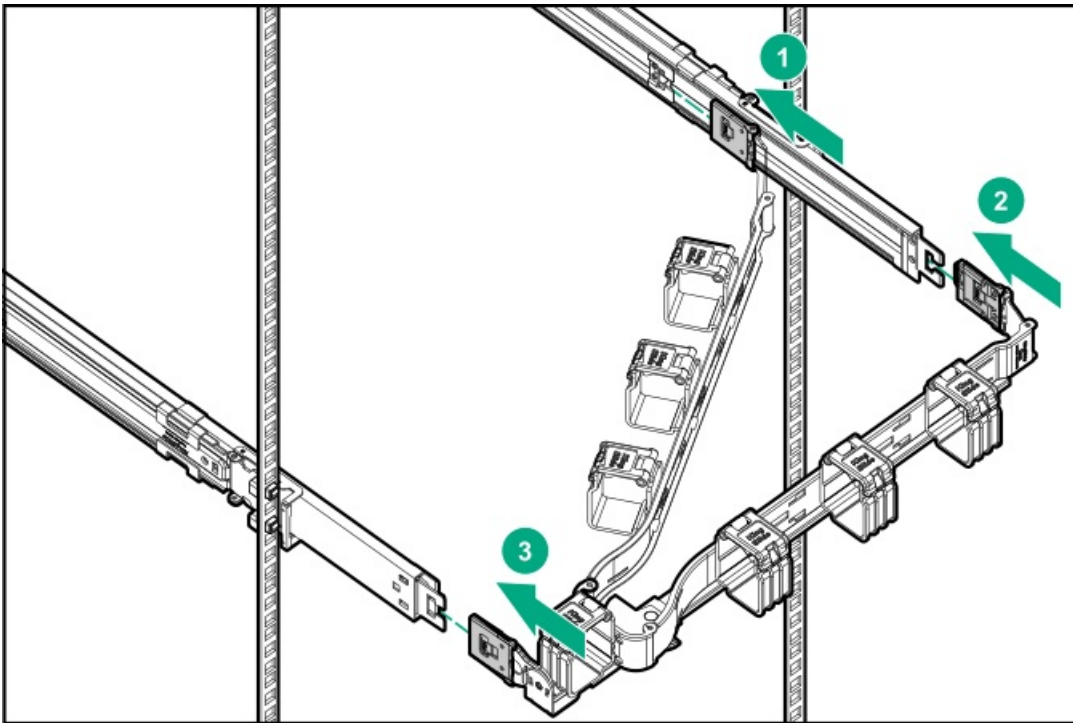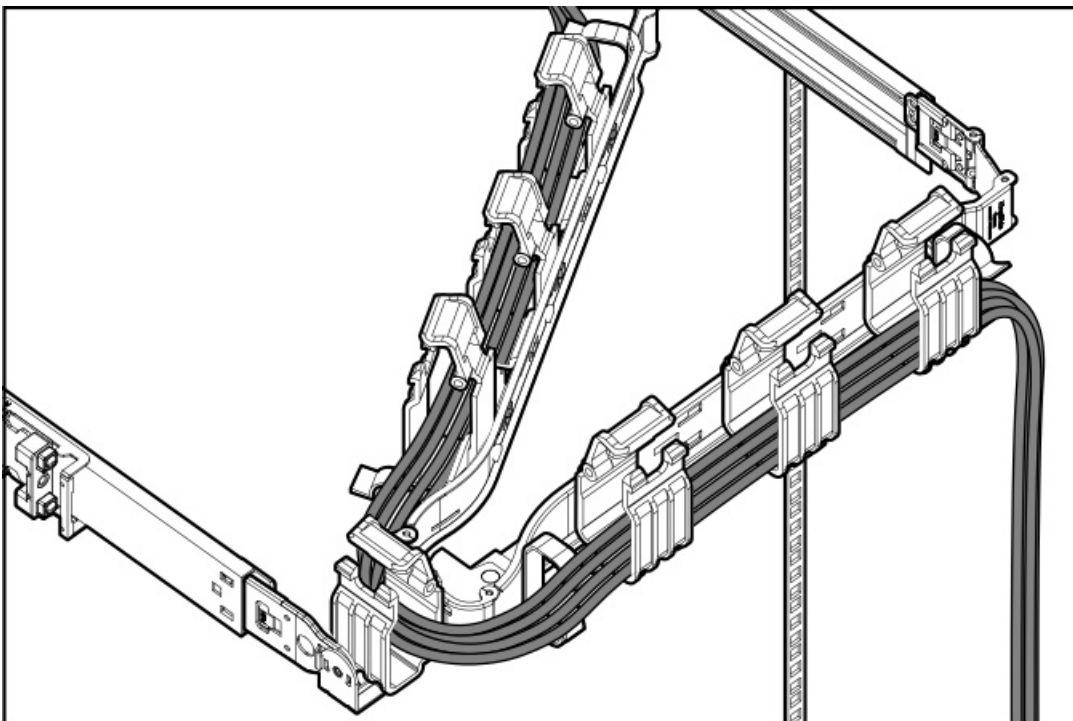

3. Open the cable clamps.

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

- Leave enough cable slack between the rear panel and the CMA to allow the full extension of the CMA when the server is extended out of the rack.

- However, there should be no excess cable slack inside the CMA; this might cause cable binding and could lead to cable damage.

- Make sure that the cables and power cords do not extend above the top or below the bottom of the server to which they are attached. Otherwise, the cables might snag on other equipment installed in the rack when the server is extended from or returned to the rack.

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

5. Close the cable clamps.
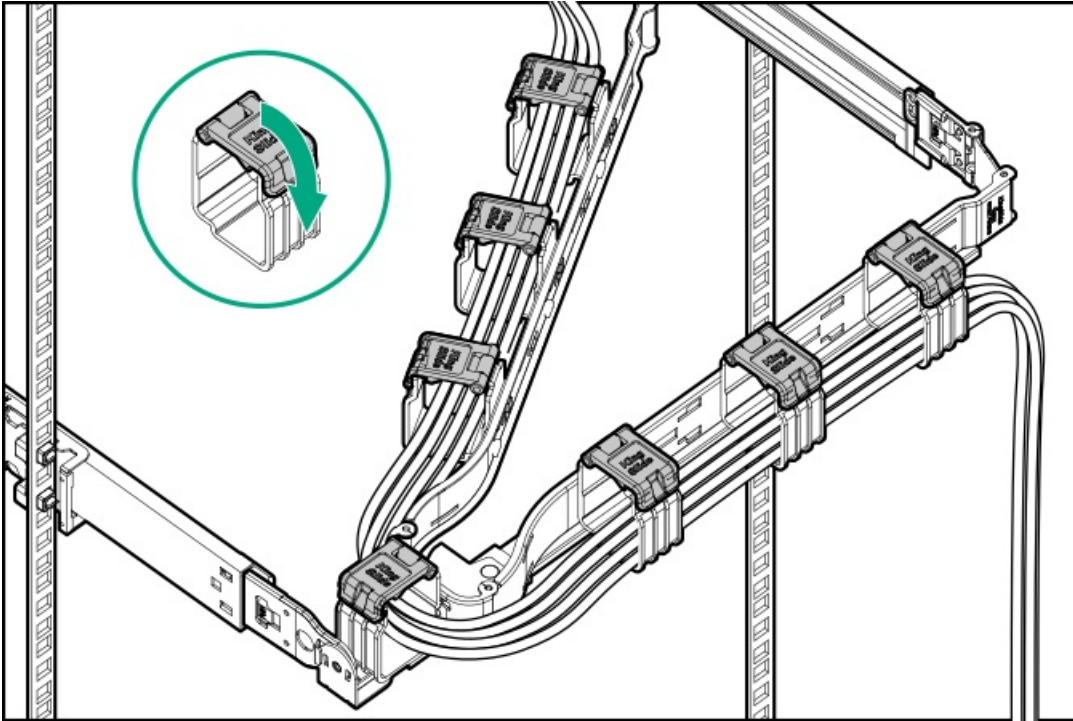
6. Verify that the peripheral cables and power cords are secured properly.

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

   a. Fully extend the server tray out of the rack.

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

      Make sure that there is no cable binding or crimping.

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

7. Tighten the server tray thumbscrews.
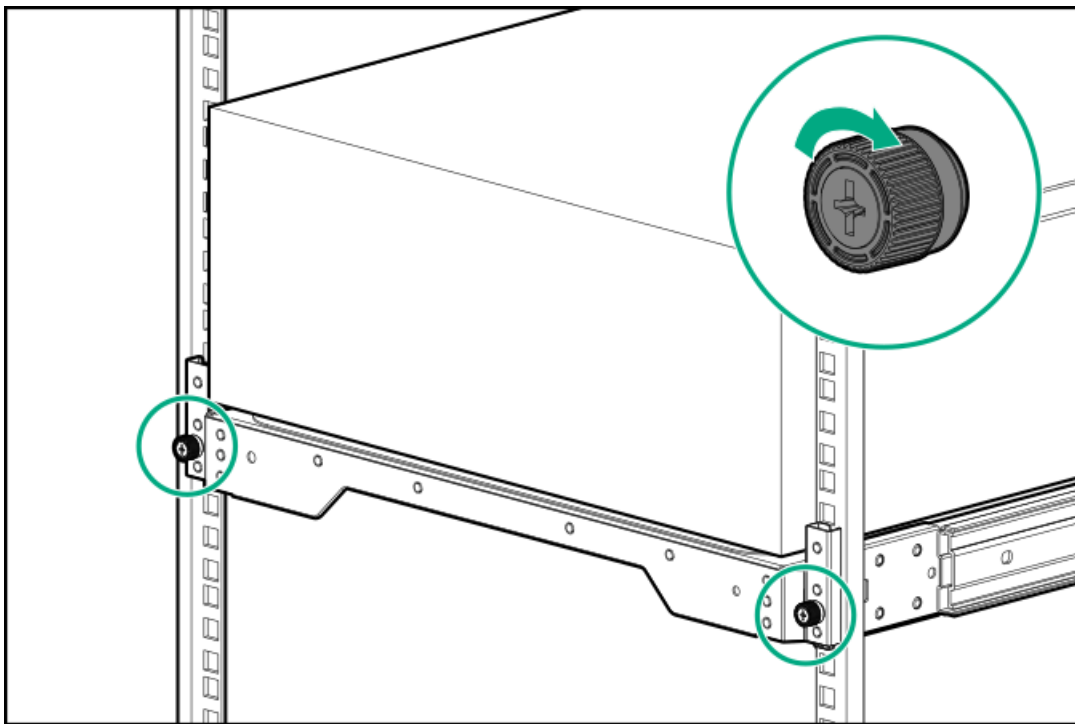
8. Connect each power cord to the power source.

9. **Power up the server**.

Results

The installation is complete.

Drive options

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

- Non-hot-plug LFF SATA drives

- Hot-plug LFF SATA and SAS drives

- Hot-plug SFF SATA and SAS drives

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

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

Subtopics

Drive installation guidelines

Installing a non-hot-plug LFF 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 <u>Drive bay numbering</u>.

- This server does not support mixed drive types in the same drive box.

- All drives grouped into the same drive array must meet the following criteria:

  - All drives must be either all hard drives or all solid-state drives.

  - All drives must be of the same capacity to provide the greatest storage space efficiency when drives are grouped into the same drive array.

Installing a non-hot-plug LFF 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 <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. 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.
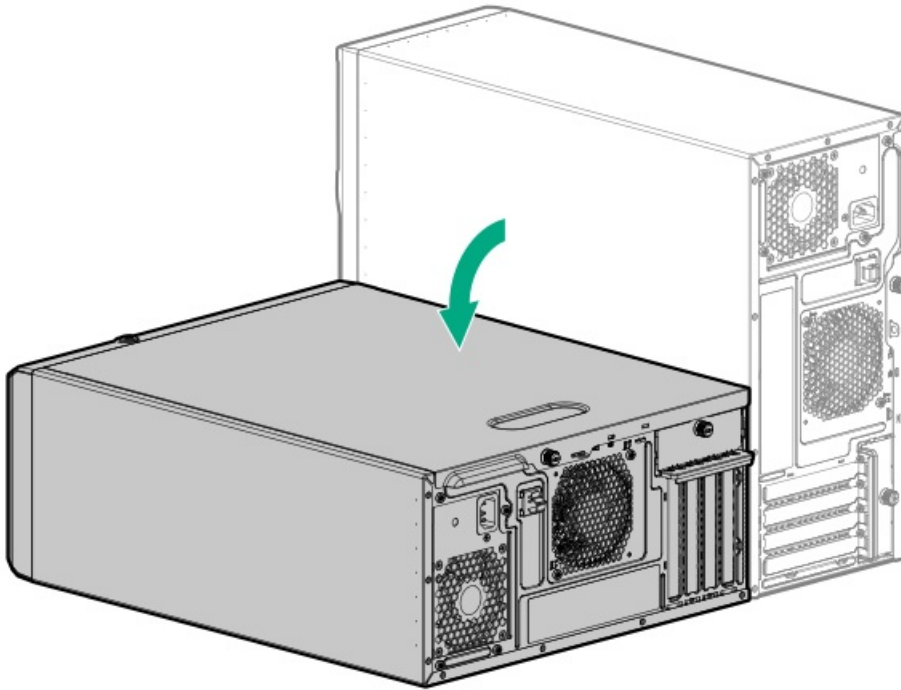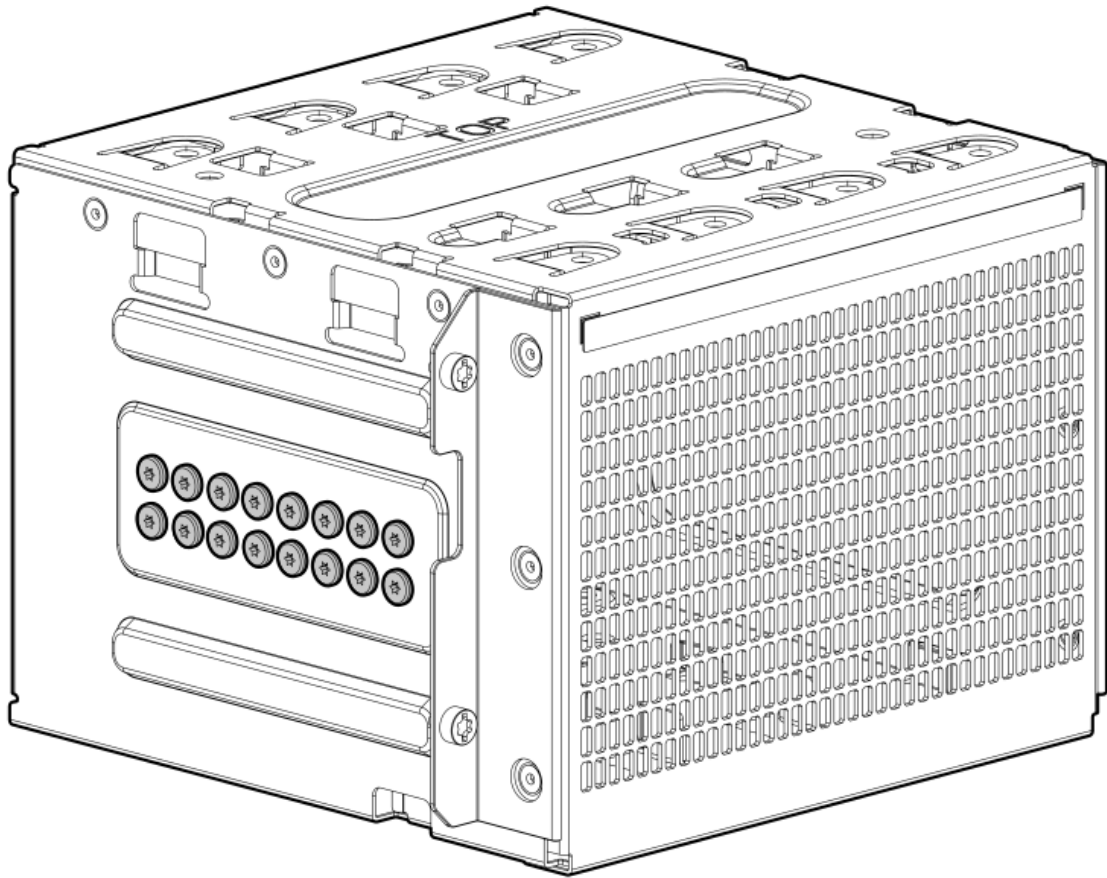
- If the server is in rack mode, remove the server from the rack.

6. Remove the front bezel.

7. Remove the access panel.

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

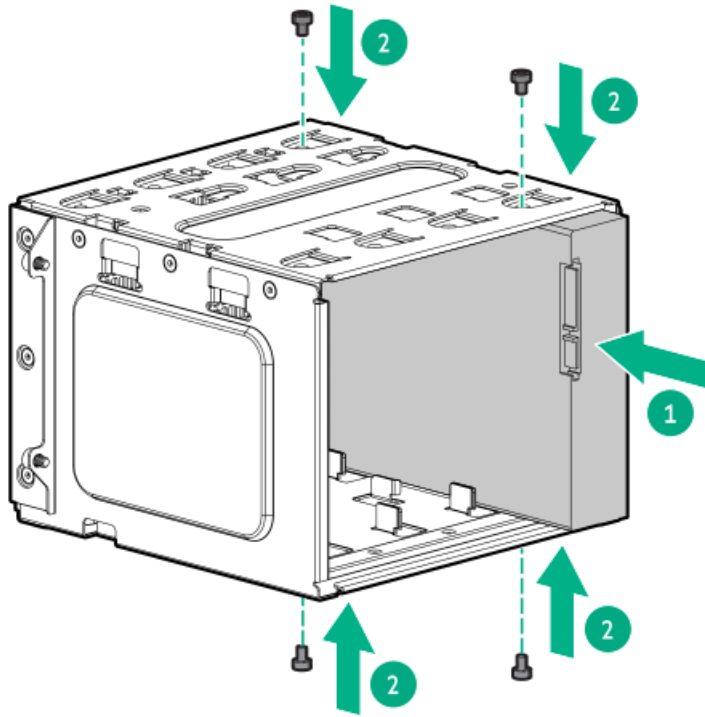9. Remove the non-hot-plug drive cage.
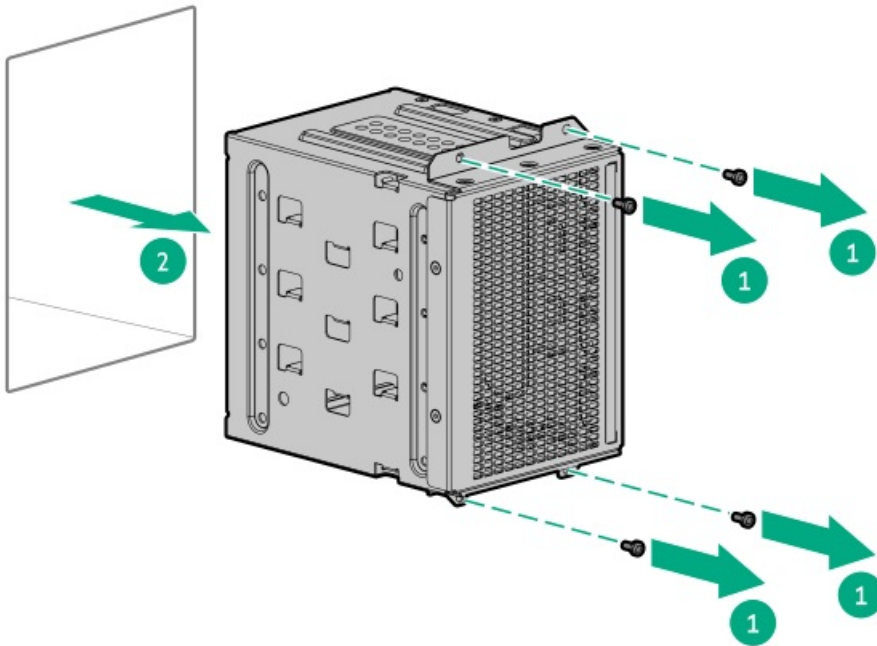
10. Remove the correct number of screws from the drive cage.

    Each drive requires four screws.
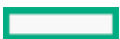
11. Install the non-hot-plug drive.

12. Install the non-hot-plug drive cage.
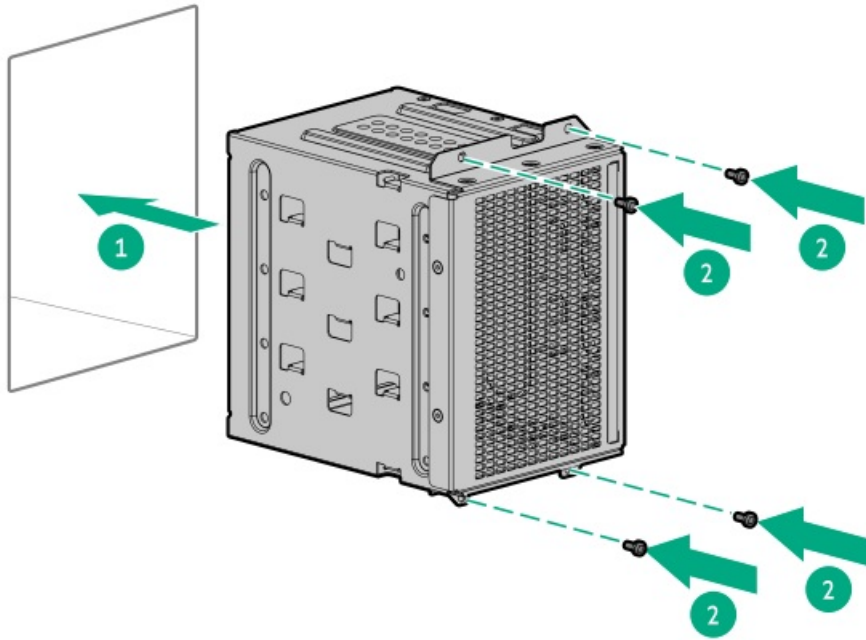
13. Connect the drive <u>power</u> and <u>SATA</u> cables.

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

15. <u>Install the front bezel</u>.

16. Do one of the following:
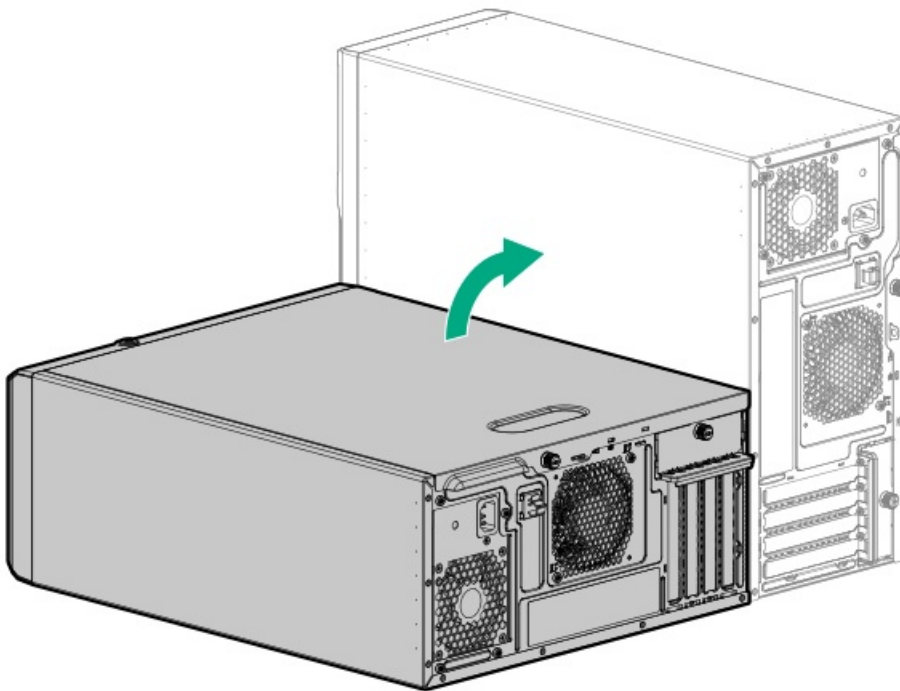
    - Orient the server back to tower mode.

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

17. Connect all peripheral cables to the server.

18. Connect each power cord to the server.

19. Connect each power cord to the power source.

20. Power up the server.

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

Results

The installation is complete.

Installing a hot-plug LFF/SFF drive

About this task

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

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

Procedure

1. Back up all server data.

2. Remove the front bezel.

3. Remove the drive blank.

- LFF drive blank
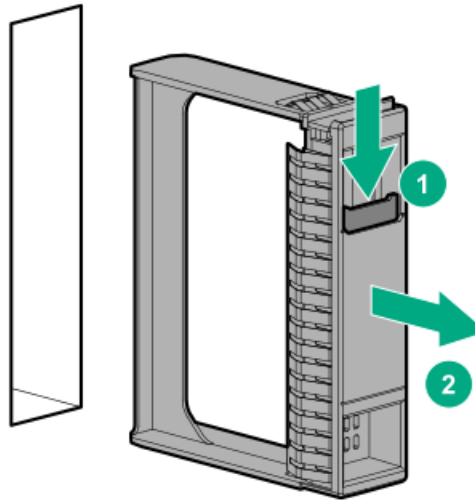
- SFF drive blank
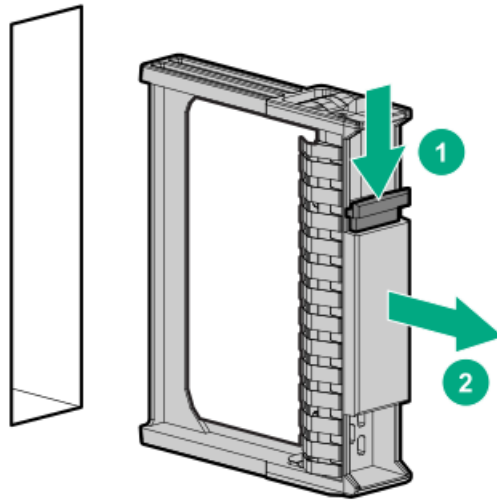
4. Prepare the drive.

- LFF drive
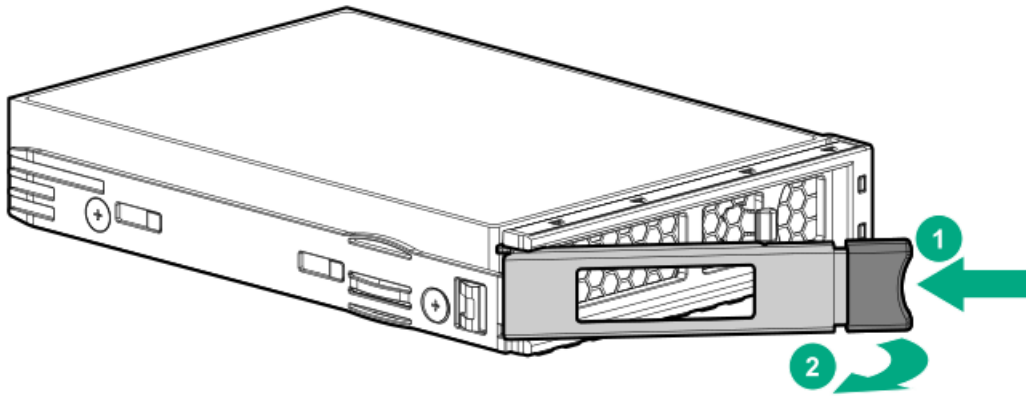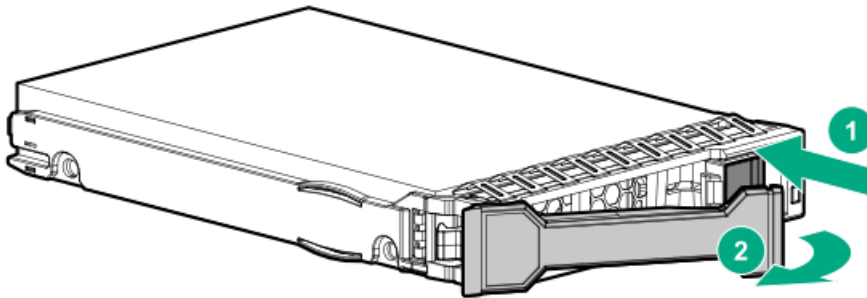
- SFF drive

5. Install the drive.

- LFF drive
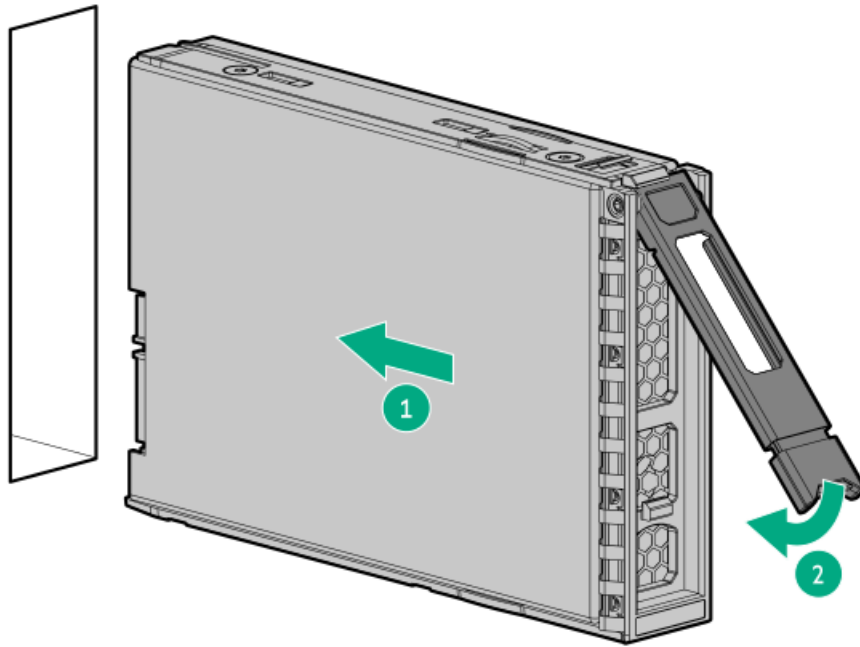
- SFF drive
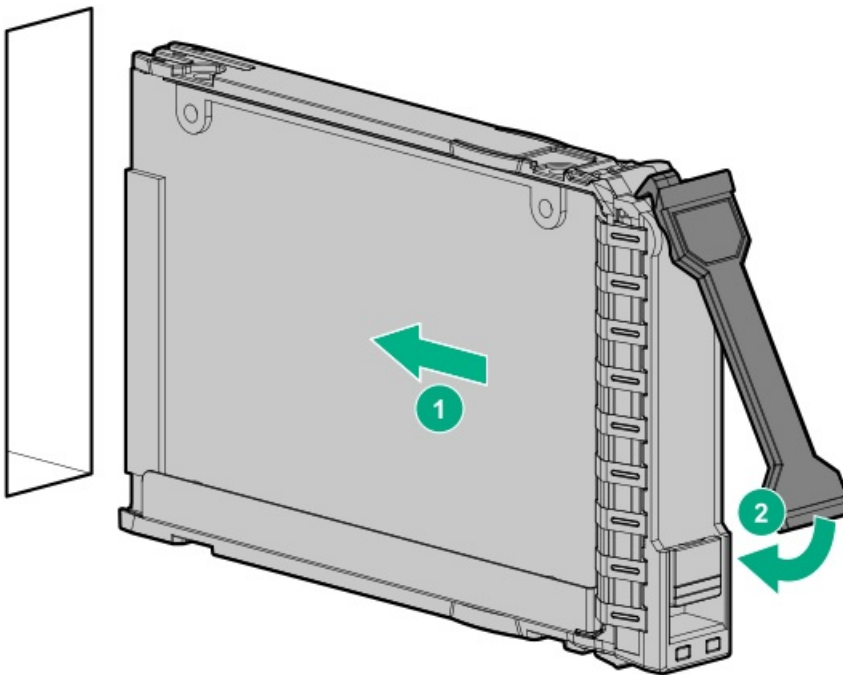
6. <u>Determine the status of the drive from the drive LED definitions</u> .

7. <u>Install the front bezel</u> .

8. To configure drive arrays, see the <u>relevant storage controller guide</u> .

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 <u>power supplies</u>.

Subtopics

<u>**Hot-plug power supply calculations**</u>

<u>**Power supply warnings and cautions**</u>

<u>**Redundant power supply enablement option**</u>

Hot-plug power supply calculations

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

Power supply warnings and cautions

⚠ **WARNING:**
To reduce the risk of electric shock or damage to the equipment:
- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.

- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

- Unplug the power cord from the power supply to disconnect power to the equipment.

- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

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

⚠ **CAUTION:** Mixing different types of power supplies in the same   server might:
- Limit or disable some power supply features including support for power redundancy.

- Cause the system to become unstable and might shut down.

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

Redundant power supply enablement option

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

Subtopics

<u>**Installing the RPS enablement option**</u>

<u>**Installing a Flexible Slot power supply**</u>

Installing the RPS enablement option

Prerequisites

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

About this task

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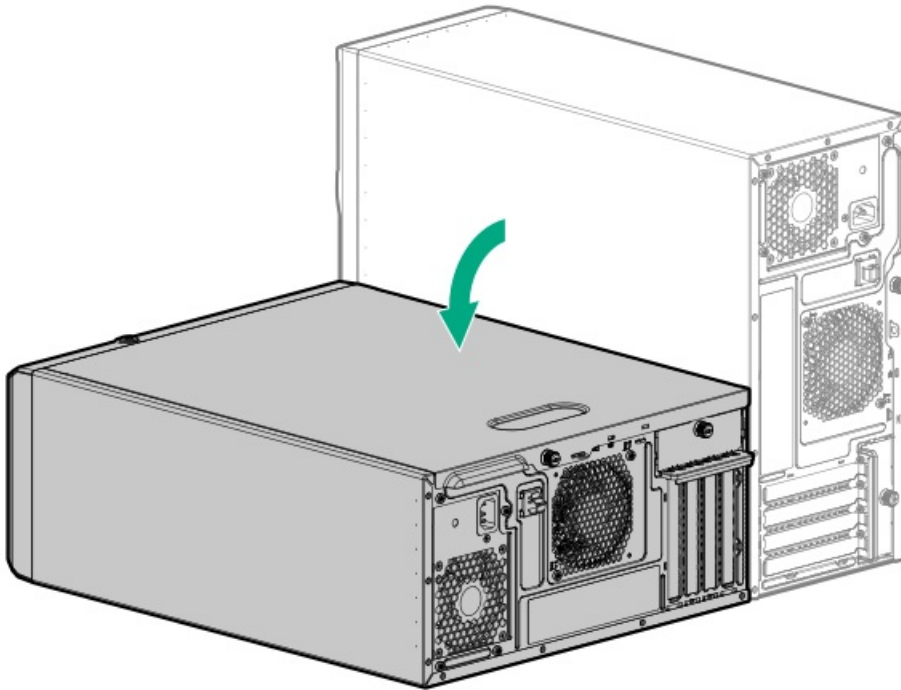
Procedure

1. **Power down the server**.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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

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

5. **Remove the access panel**.

6. If installed, **remove all media devices**.

7. **Disconnect all non-hot-plug power supply cables**.

8. Remove the non-hot-plug power supply:

   a. Remove the power supply screws.

b. Press and hold the release latch, and then remove the power supply.
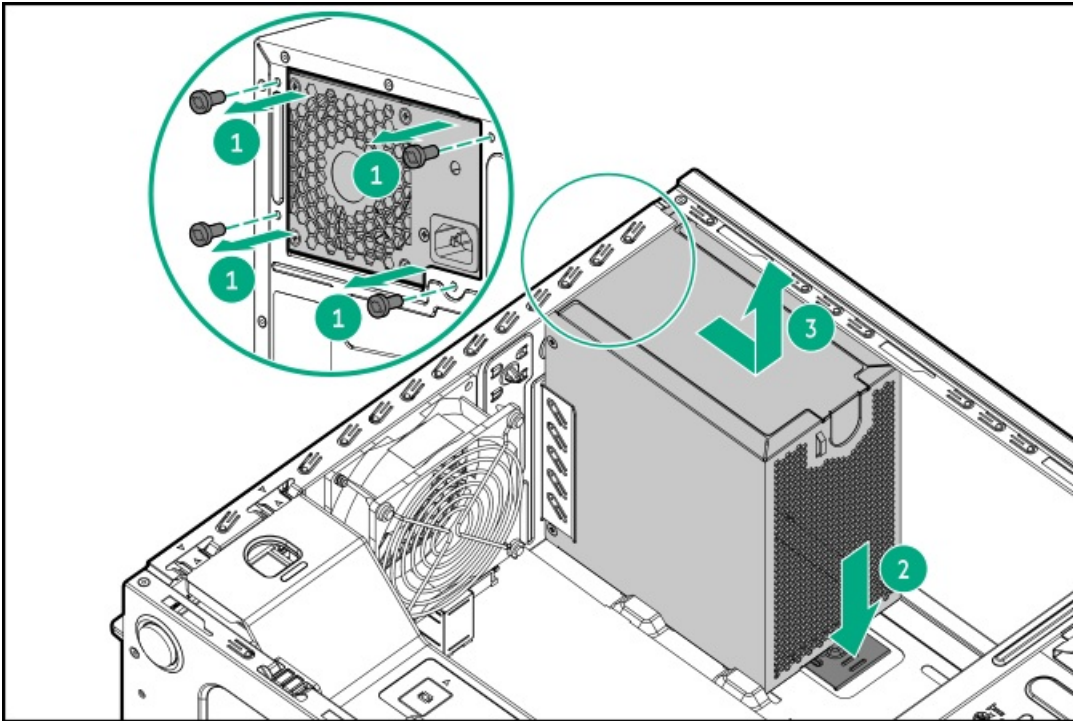
9. Install the RPS cage.
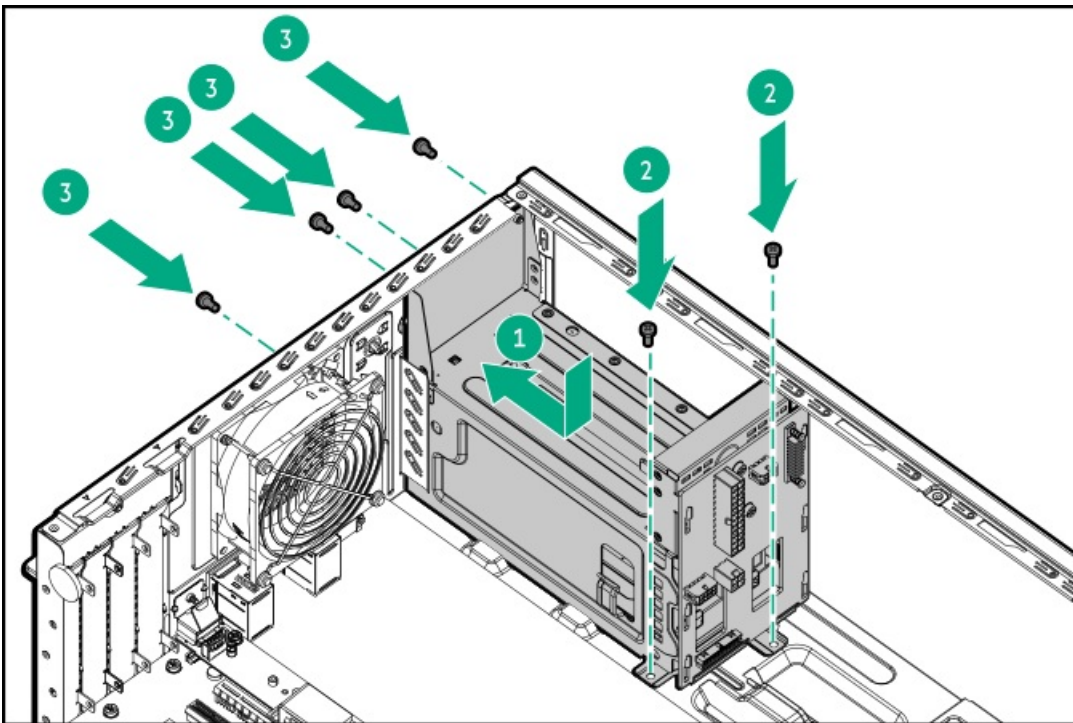
10. If only one power supply is going to be installed in the RPS cage, make sure that the blank in the power supply bay 2 is firmly secured.

11. Connect the RPS cables .

12. Install the access panel .

13. Do one of the following:

   - Orient the server back to tower mode.

- Install the server into the rack .

14. Install the Flexible Slot power supplies .

15. Connect all peripheral cables to the server.

16. Connect each power cord to the server.

17. Connect each power cord to the power source.

18. Power up the server.

Results

The installation is complete.
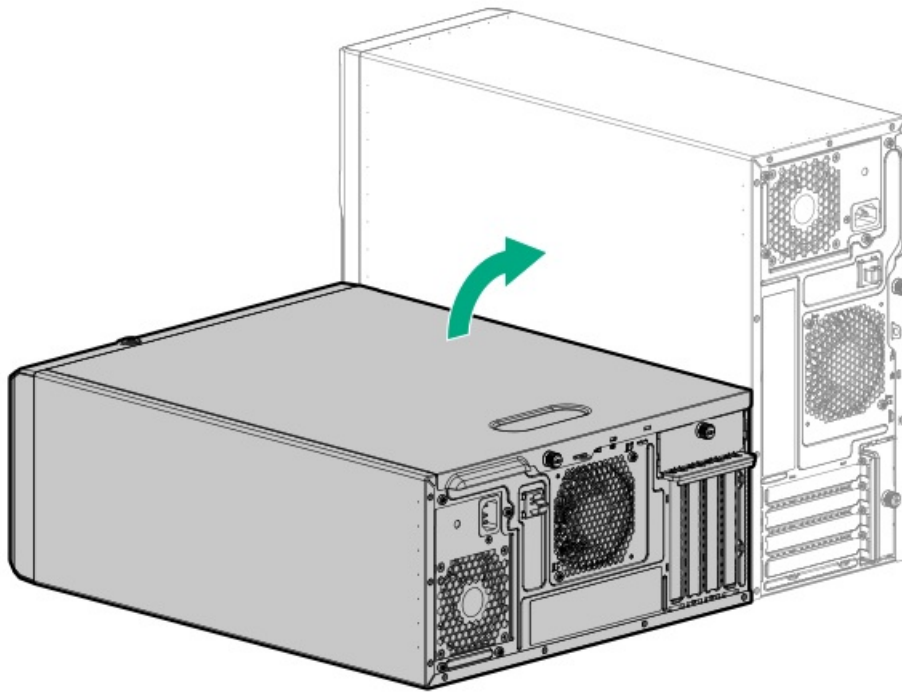
Installing a Flexible Slot power supply

Prerequisites

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

About this task

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

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

Procedure

1. If you are installing a power supply in the power supply bay 2, remove the power supply blank.
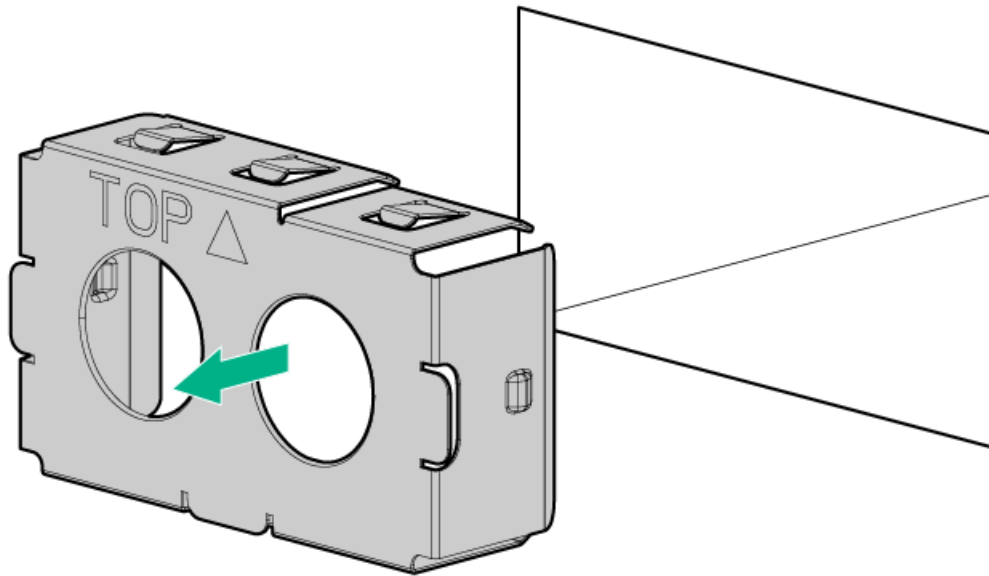
2. Immediately slide the power supply into the bay until it clicks into place.
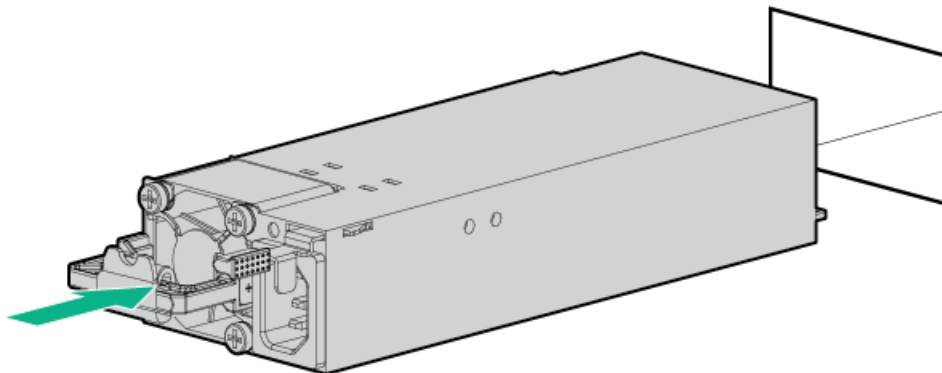
3. Connect the power cord to the power supply.

4. Secure the power cord in the strain relief strap attached to the power supply handle:

   a. Unwrap the strain relief strap from the power supply handle.

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

   b. Secure the power cord with the strain relief strap. Roll the extra length of the strap around the power supply handle.
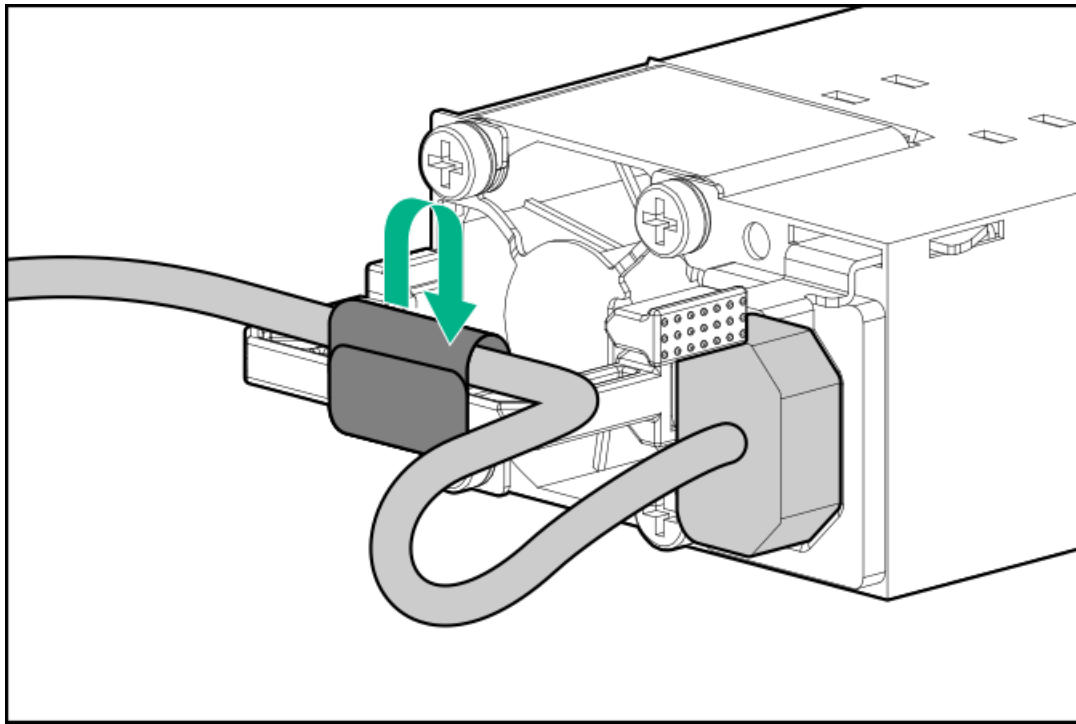
5. Connect each power cord to the power source.

6. Make sure that the power supply LED is green.

Results

The installation is complete.

Media device options

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

- Media bay 1—USB RDX docking station

- Media bay 2—SATA optical drive or USB RDX docking station

Subtopics

USB RDX backup system option

Optical drive 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
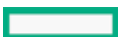
Installing a USB RDX docking station

Prerequisites

- Make sure that the internal, lower USB port is available .

- The LTO/RDX power extension cable (851615-B21) is required when installing a USB RDX docking station under the following conditions:

  - The server is using a non-hot-plug power supply.

  - The server is using a Flexible Slot power supply and the USB RDX docking station is installed in the media bay 2.

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

About this task

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

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

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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

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

5. Remove the front bezel.

6. Remove the access panel.

7. If installed, remove the air baffle.

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

   Retain the blank for future use.
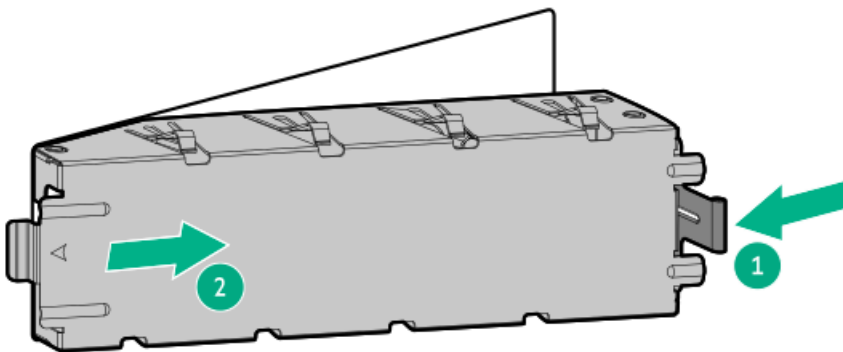
9. Install the RDX docking station screws.

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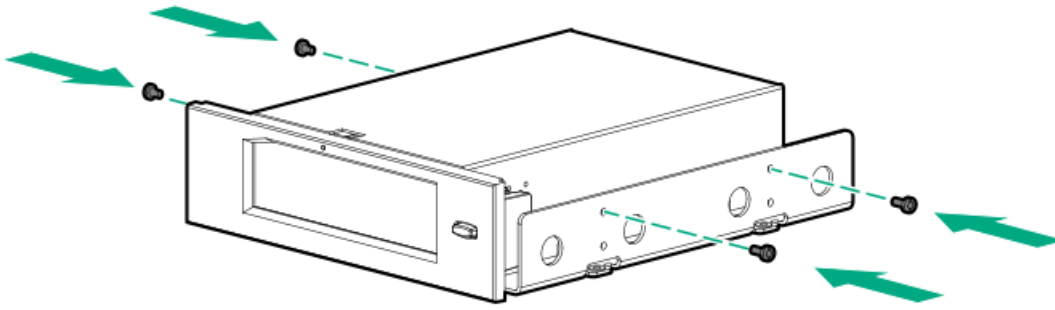
10. Slide the RDX docking station into the media bay.

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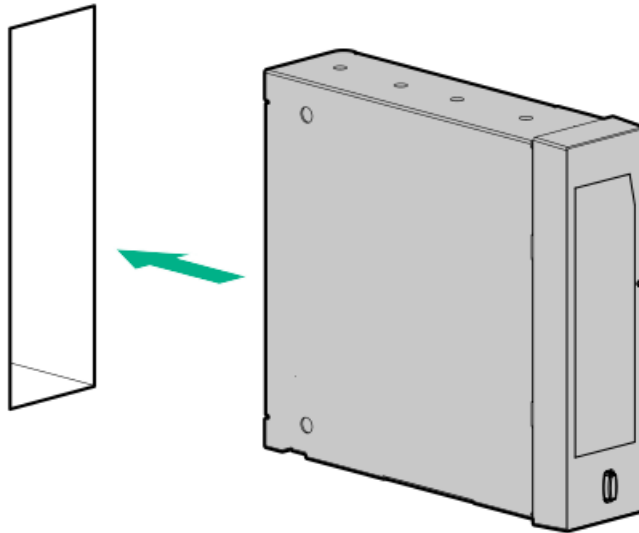
11. Connect the power and USB cables.

12. Install the air baffle.

13. Install the access panel.

14. Install the front bezel.

15. Do one of the following:

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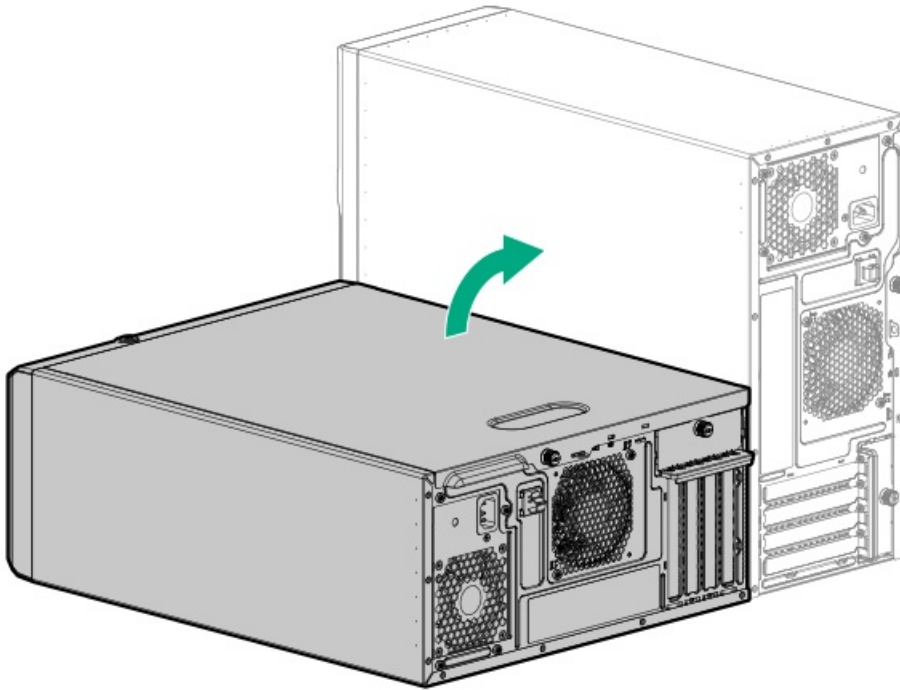
- Install the server into the rack.

16. Connect all peripheral cables to the server.

17. Connect each power cord to the server.

18. Connect each power cord to the power source.

19. Power up the server.

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

    For more information, see the RDX system documentation.

Results

The installation is complete.

Optical drive option

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

Subtopics

Installing an optical drive

Installing an optical drive

Prerequisites

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

- T-15 Torx screwdriver

- Phillips No. 1 screwdriver

About this task

Install an optical drive in media bay 2.

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

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

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

5. <u>Remove the front bezel</u>.

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

7. If installed, <u>remove the air baffle</u>.

8. If not installed, install the pass-through board:

   a. Install the pass-through board rail.
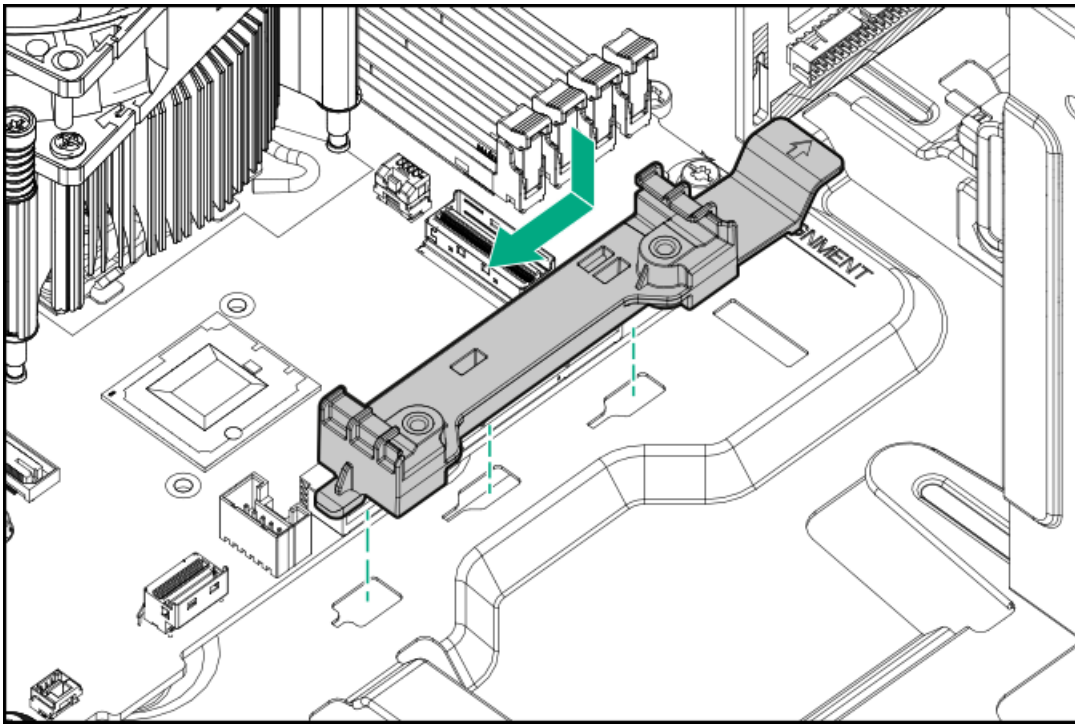
b. Install the pass-through board.
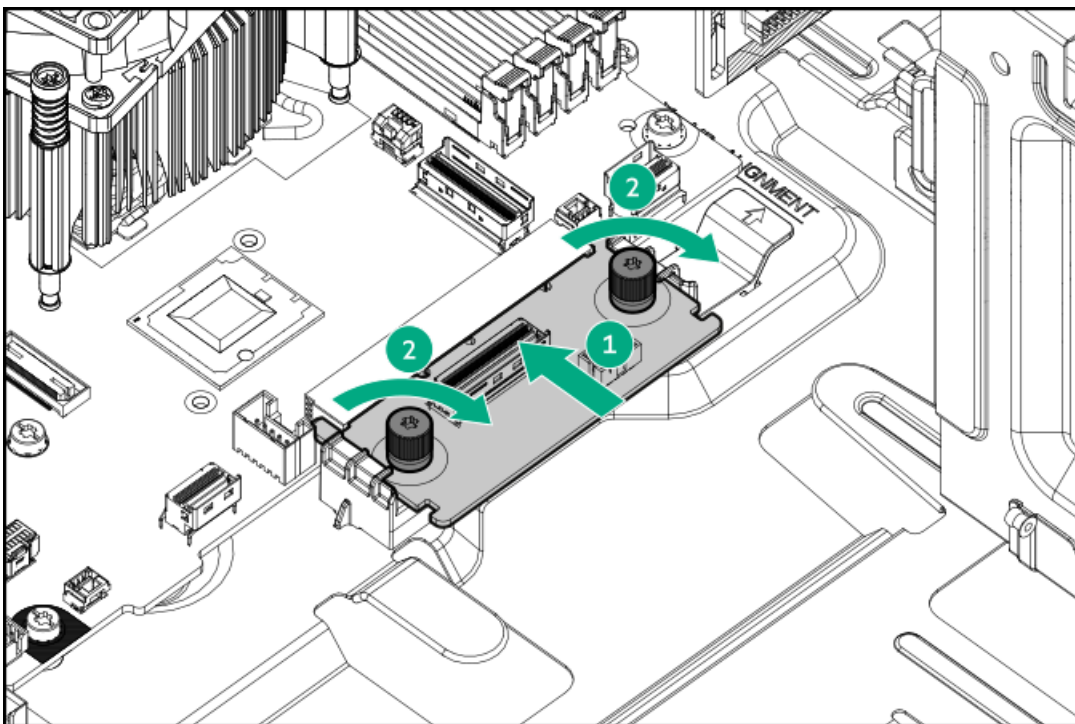
9. Press and hold the latch, and then pull out the blank from the bay.

Retain the blank for future use.
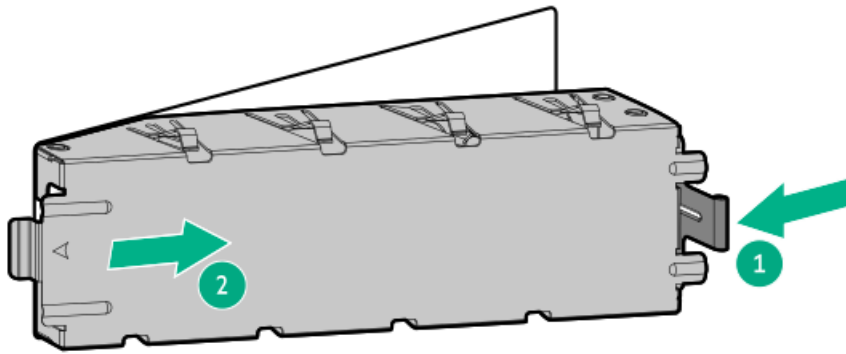
10. Install the optical drive bracket.
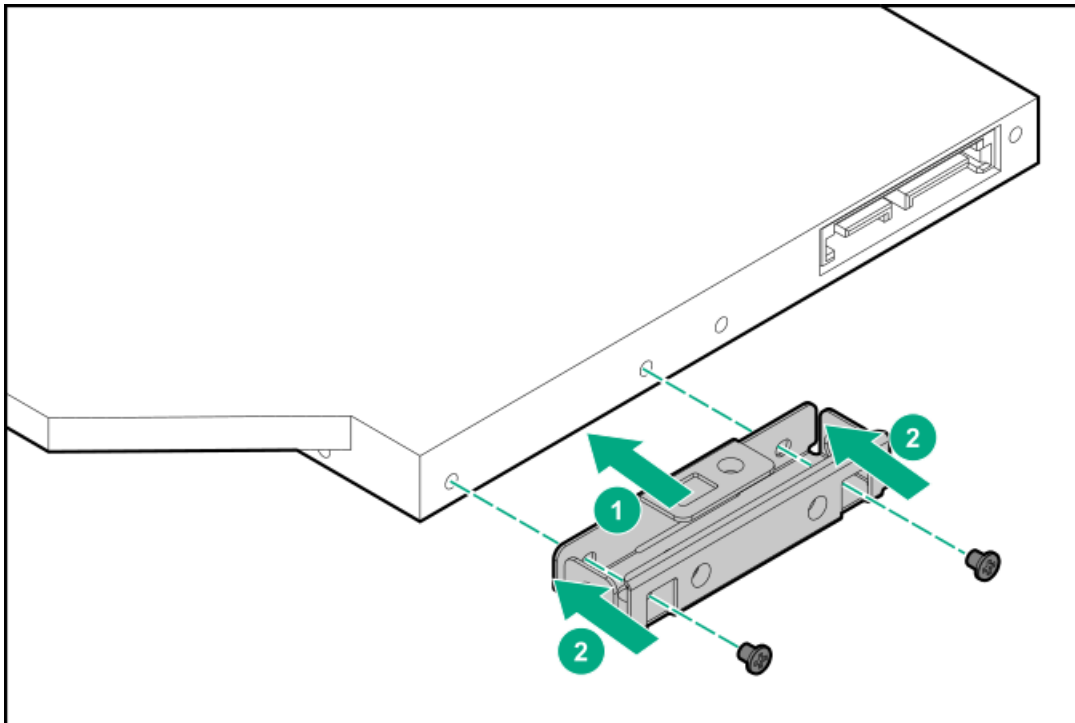


11. <u>Remove four media device screws from the front panel</u> .

12. Install the optical drive in the drive cage:

   a. Slide the optical drive into the optical drive cage (callout 1).

   b. Install the drive bracket screws (callout 2).

   c. Install the drive cage screws (callout 3).
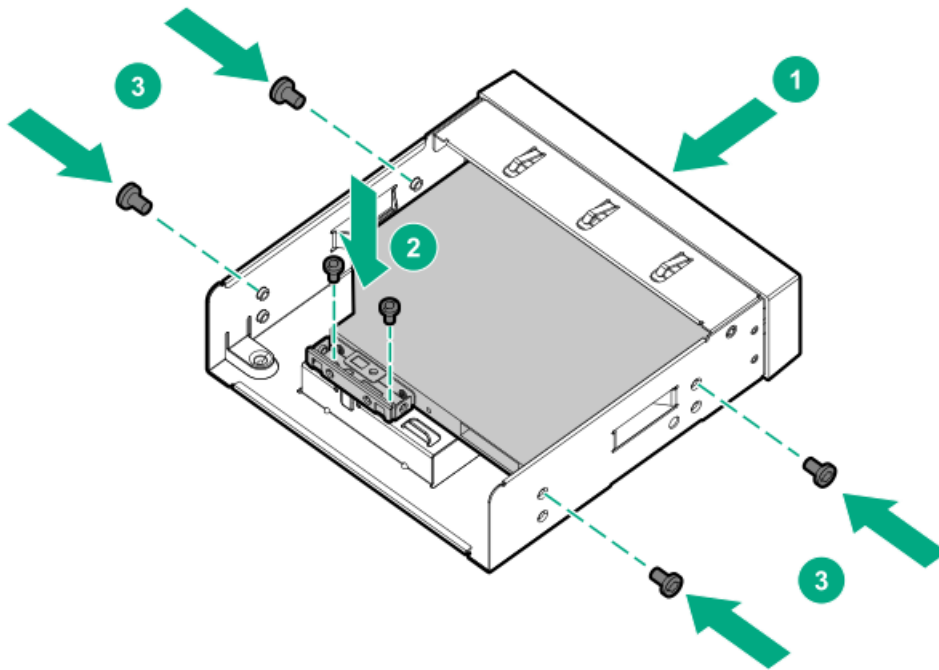
13. Connect the SATA-power Y-cable to the drive, and then route the cable through the clip on the optical drive cage.
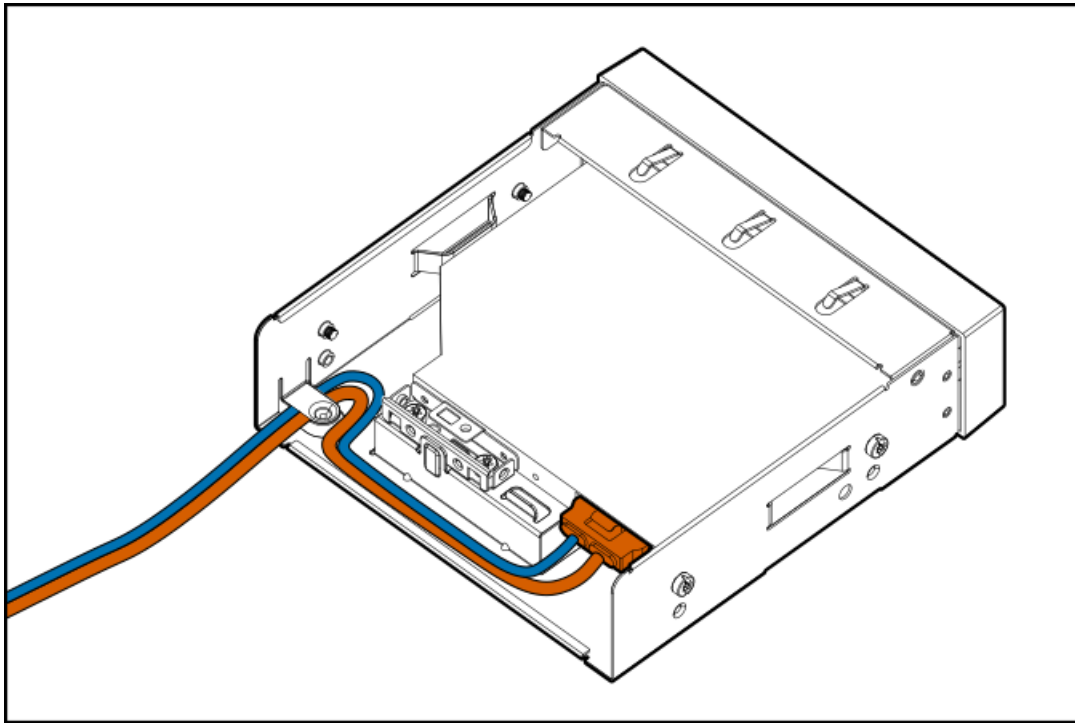
14. Slide the optical drive into the media bay until it clicks into place.
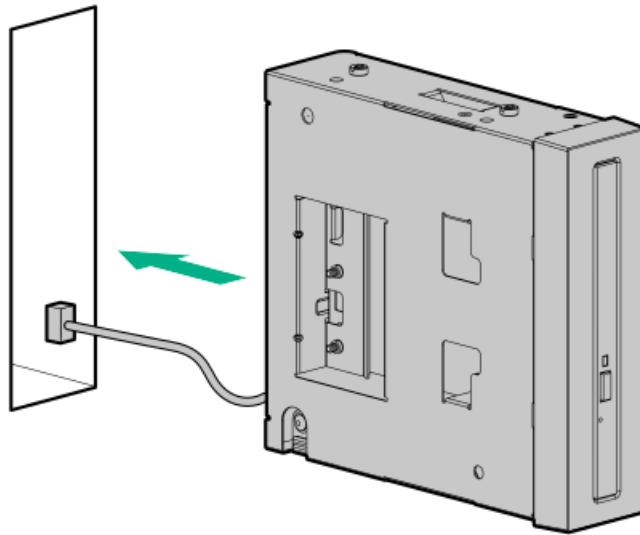
15. Connect the SATA-power Y-cable.

16. Install the air baffle.

17. Install the access panel.

18. Install the front bezel.

19. Do one of the following:

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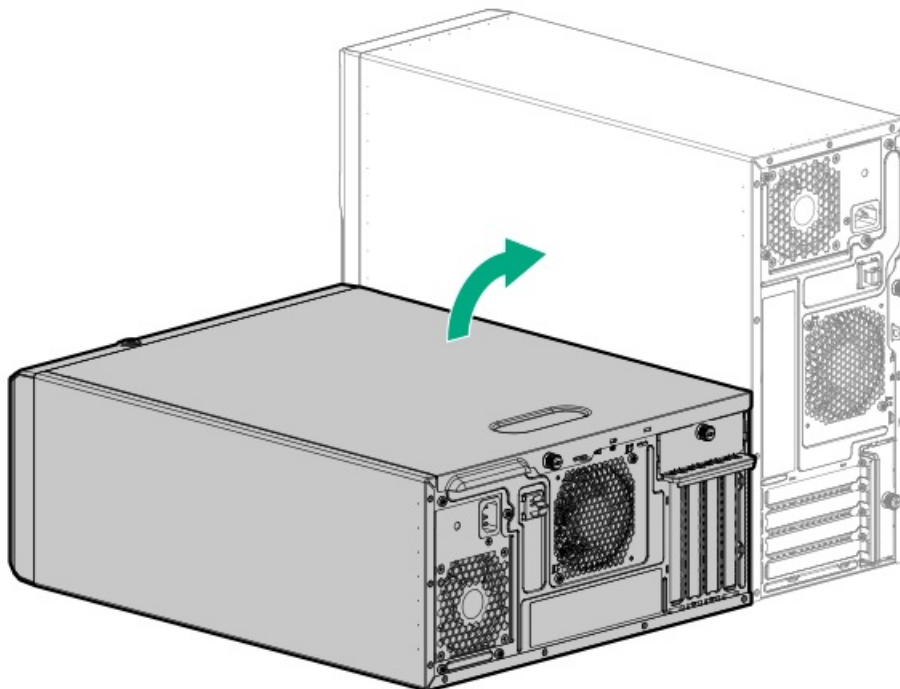
    ● Install the server into the rack.

20. Connect all peripheral cables to the server.

21. Connect each power cord to the server.

22. Connect each power cord to the power source.

23. Power up the server.

Results

The installation is complete.

PCIe fan and air baffle options

To meet the system cooling requirements, install the PCIe fan and air baffle when a PCIe expansion card is installed.

Subtopics

Installing the PCIe fan and air baffle

Installing the PCIe fan and air baffle

Prerequisites

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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

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

5. <u>Remove the front bezel</u>.

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

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

8. Remove the tape from the chassis.
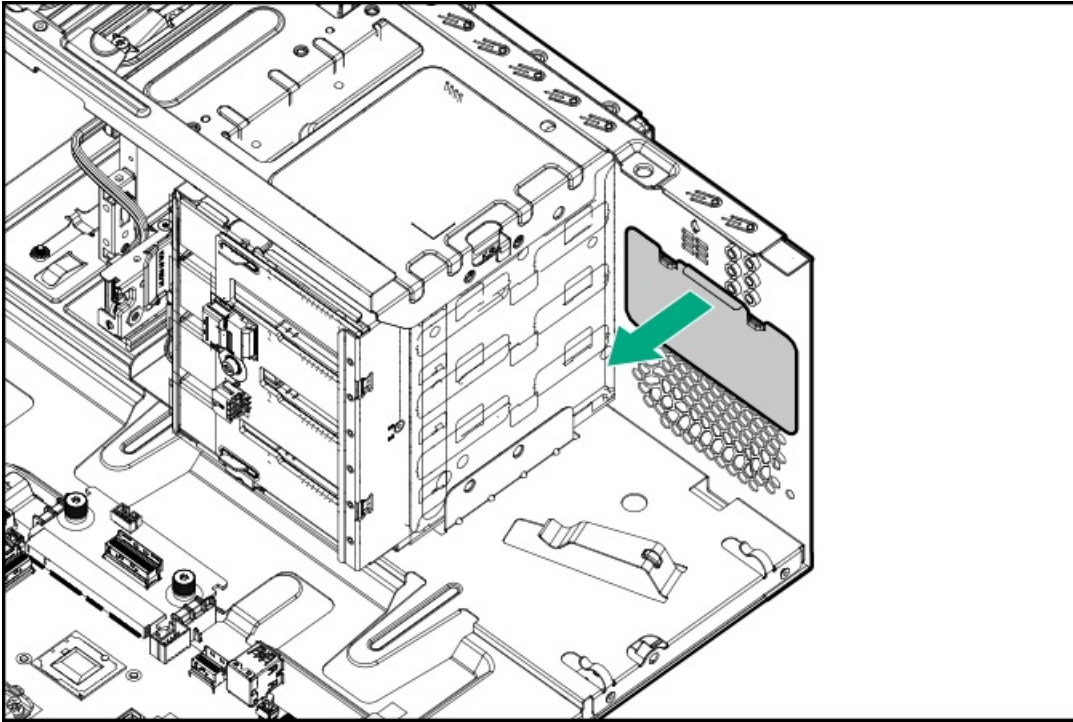
9. Install the PCIe fan:

   a. Align the spool on the chassis wall with the notches on the fan.

   b. Install the fan screws.

   c. Connect the PCIe fan cable.
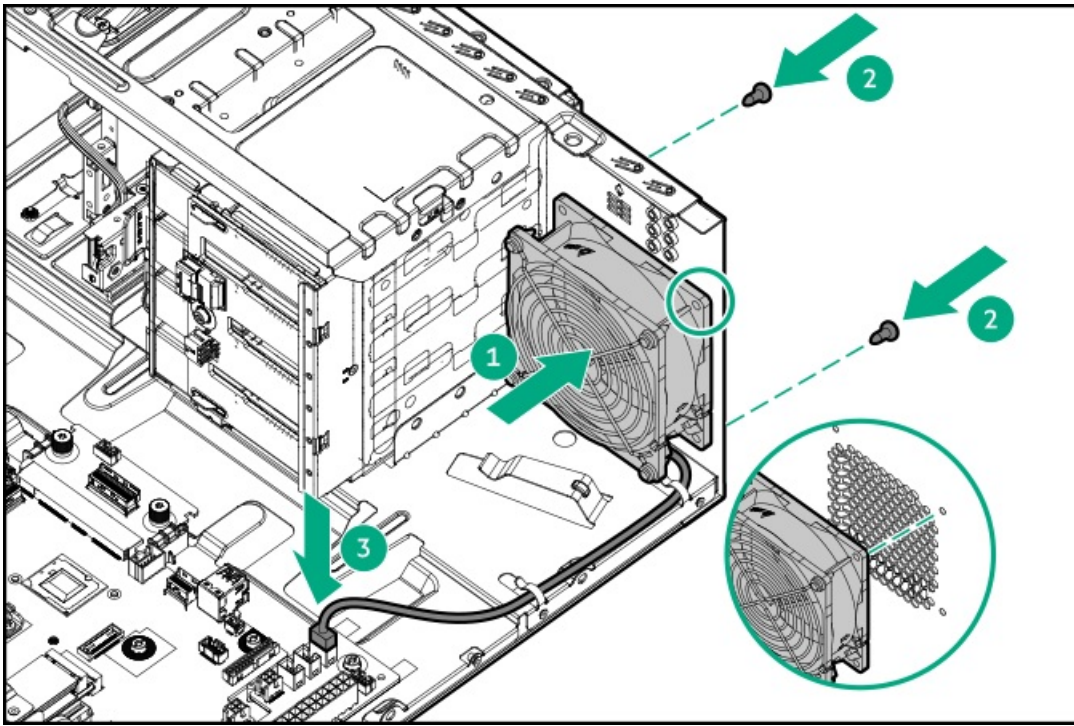
10. Reconnect any system cables that were disconnected in step 7.

11. Install the air baffle.

12. Install the access panel.

13. Install the front bezel.

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 each power cord to the server.

17. Connect each power cord to the power source.

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

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 SSDs.

- HPE Smart Array E208e-p SR Gen10 Controller

- HPE MR216i-p Gen11 Controller

For more information on drive array and storage controller configuration, see <u>Configuring storage controllers</u>.

Subtopics

<u>Preparing the server for storage controller installation</u>

<u>Installing a type-p PCIe plug-in controller option</u>

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 (<u>https://www.hpe.com/servers/spp/download</u>).

Procedure

1. If the server was previously configured:

   a. <u>Back up data on the system</u>.

   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, <u>update the firmware</u>.

3. If the new controller is the new boot device, <u>install the controller drivers</u>.

Installing a type-p PCIe plug-in controller option

Prerequisites

- Install the PCIe fan and air baffle .

- The flash-backed write cache (FBWC) feature of some storage controllers requires the energy pack option.

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

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

  - Compatible controller cable option

  - T-15 Torx screwdriver

About this task

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

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

Procedure

1. **Power down the server**.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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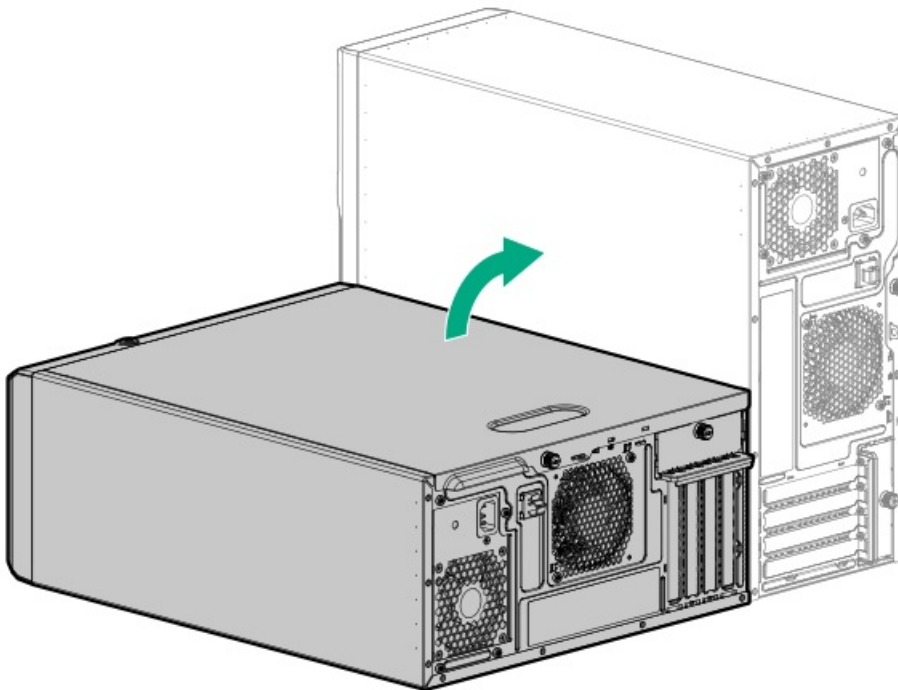

   - If the server is in rack mode, **remove the server from the rack** .

5. **Remove the access panel** .

6. **Remove the air baffle**.

7. **Identify the expansion slot compatible with the storage controller** .

8. **Remove the PCI blank retainer**.

9. Remove the blank opposite the selected expansion slot.

    Retain the blank for future use.
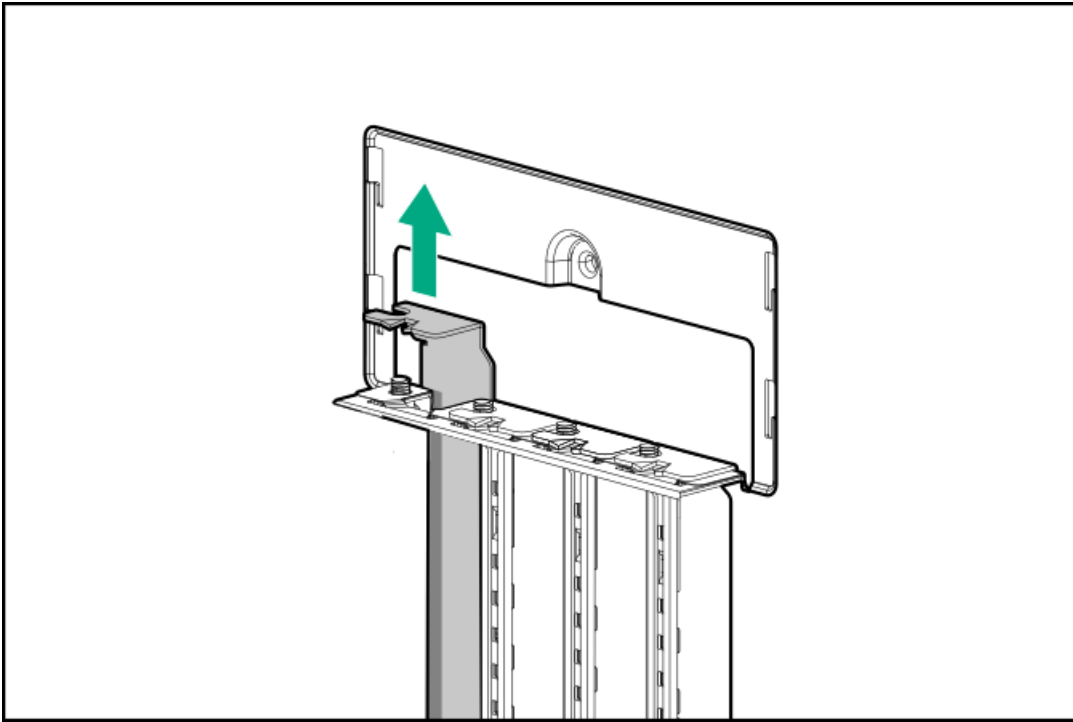
10. Install the storage controller.

    Make sure that the controller is seated firmly in the slot.
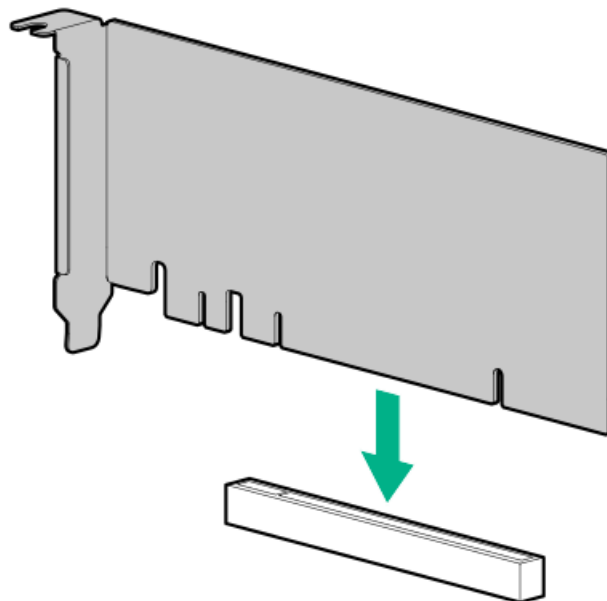
11. To enable the HPE SR SmartCache feature, **install an energy pack**.

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

12. **Install the PCI blank retainer**.

13. Install the controller.

14. Install the air baffle.

15. Install the access panel.

16. Do one of the following:

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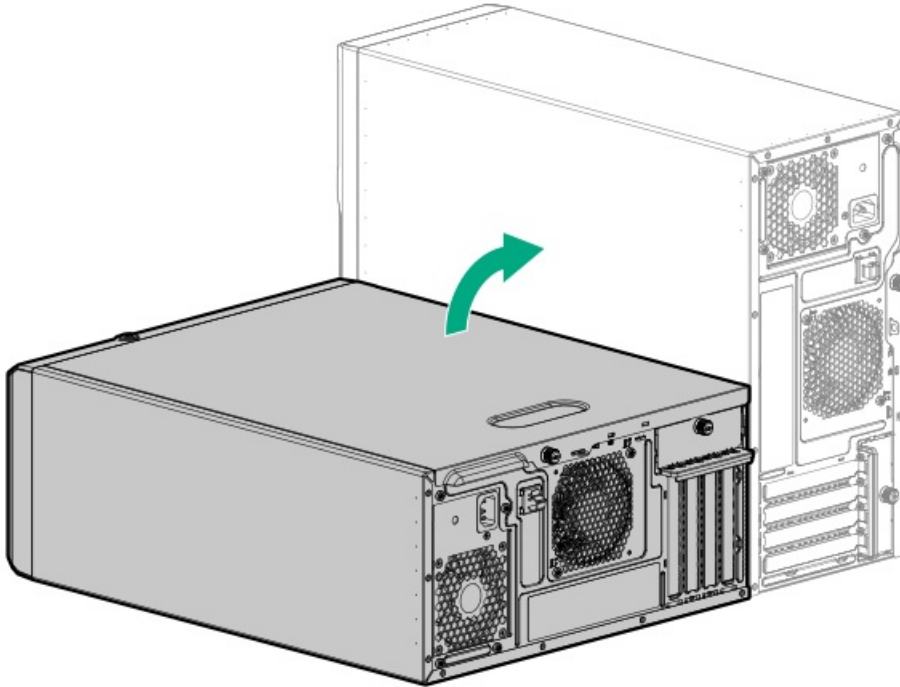
    - Install the server into the rack.

17. Connect all peripheral cables to the server.

18. Connect each power cord to the server.

19. Connect each power cord to the power source.

20. Power up the server.

21. To configure the controller, see the relevant storage controller guide.

Results

The installation 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:

Subtopics

HPE Smart Storage Battery

HPE Smart Storage Hybrid Capacitor

Installing an energy pack

HPE Smart Storage Battery

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

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

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

This server supports the 96 W HPE Smart Storage Battery with the 260 mm cable.

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

https://www.hpe.com/psnow/doc/a00028553enw.pdf?jumpid=in_pdp-psnow-qs

HPE Smart Storage Hybrid Capacitor

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

The capacitor pack can support up to three devices.

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

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

> (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.

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

https://www.hpe.com/psnow/doc/a00028553enw.pdf?jumpid=in_pdp-psnow-qs

Subtopics

Minimum firmware versions

Minimum firmware versions

Product	Minimum firmware version
Server system ROM	1.20
HPE MR type-o and type-p Gen11 controllers	52.22.3-4650
HPE SR900 series type-p Gen11 controllers	03.01.14.062

Installing an energy pack

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 air baffle.

7. Install the energy pack holders:

   a. Remove the tapes that cover the installation location for the energy pack holders.
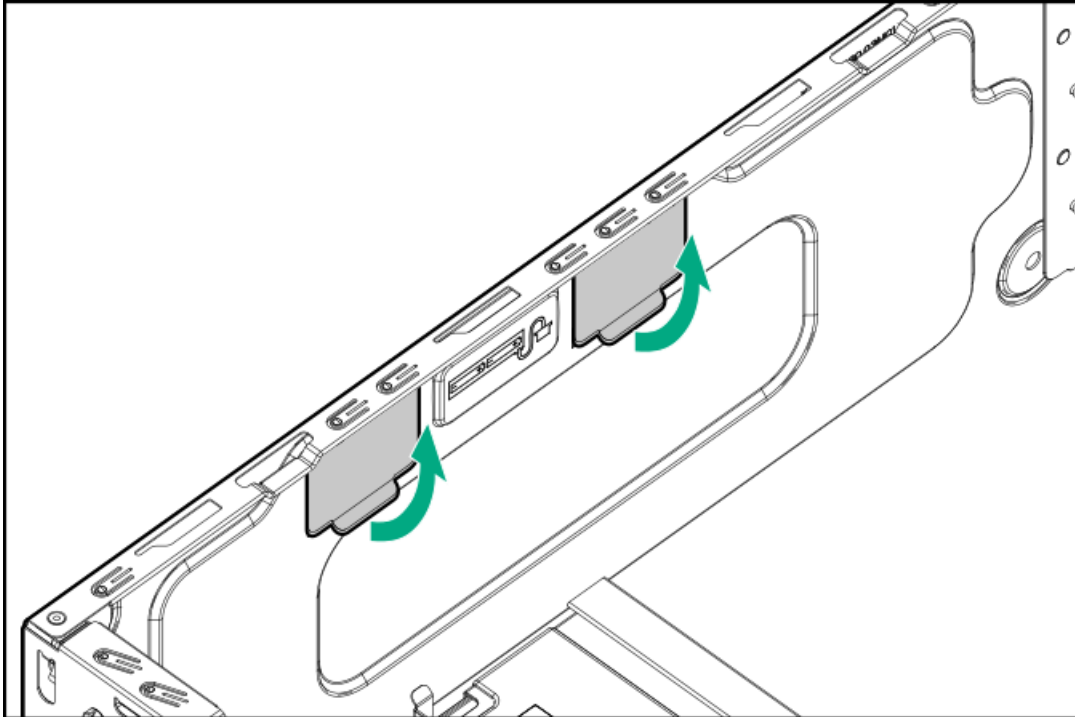
   b. Insert the holder tabs into their chassis slots.
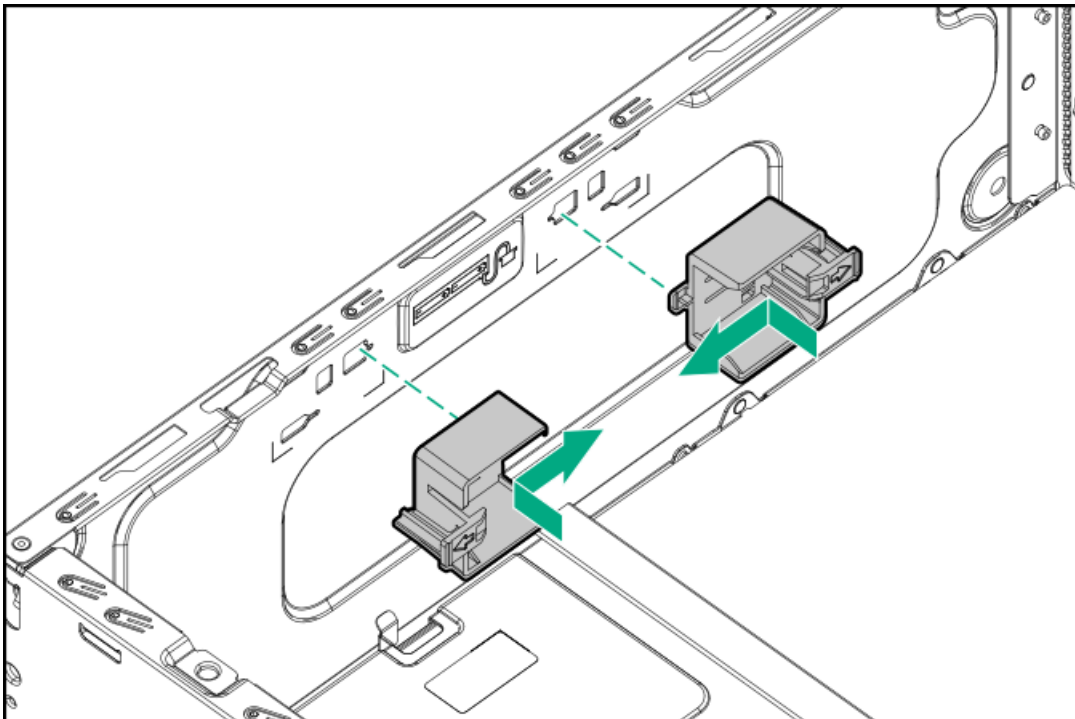
8. Install the energy pack.

   a. Insert the front end of the energy pack in the holder.

   b. Press and hold the rear latch, and then insert the rear end of the energy pack in the holder.

   c. Connect the energy pack cable.
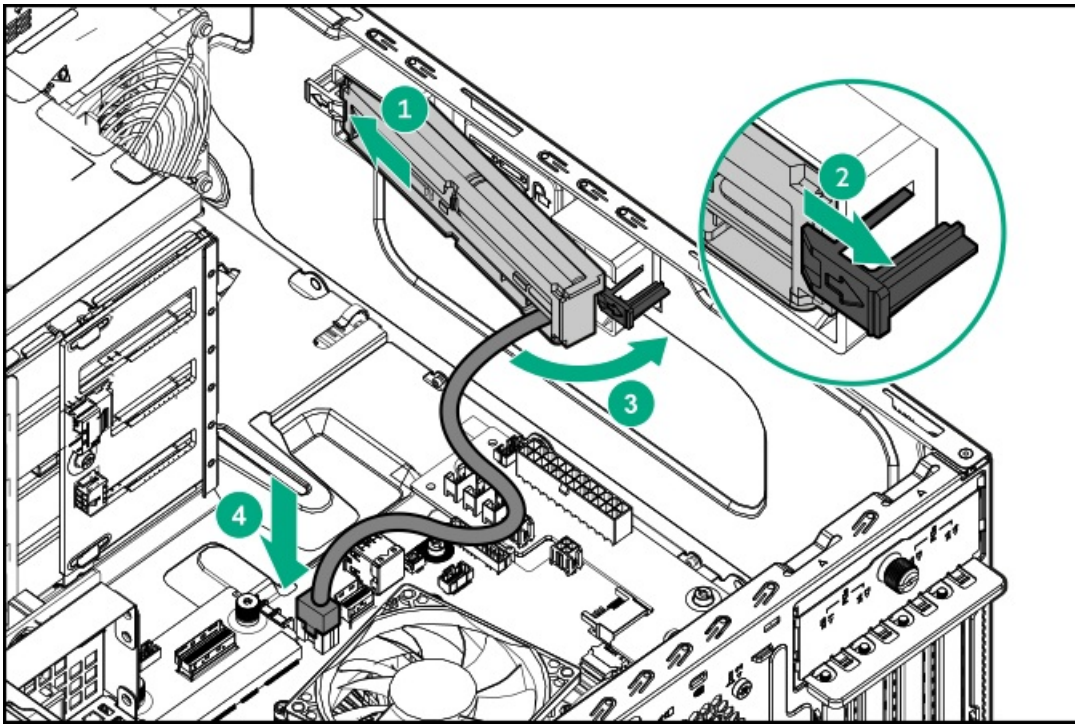
9. Connect the storage controller backup power cable .

10. Install the air baffle.

11. Install the access panel.

12. Do one of the following:

    ● Orient the server back to tower mode.

    ● Install the server into the rack .

13. Connect all peripheral cables to the server.

14. Connect each power cord to the server.

15. Connect each power cord to the power source.

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

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 is a PCIe4 x8 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

<u>Installing the HPE NS204i-u Boot Device option</u>

Installing the HPE NS204i-u Boot Device option

Prerequisites

- The server is updated with the <u>latest operating system firmware and drivers</u>.

- <u>Identify the HPE NS204i Boot Device components</u>.

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

  - T-10 Torx screwdriver

  - T-15 screwdriver—This tool is needed to install the PTB rail and board in the 4 LFF drive configuration.
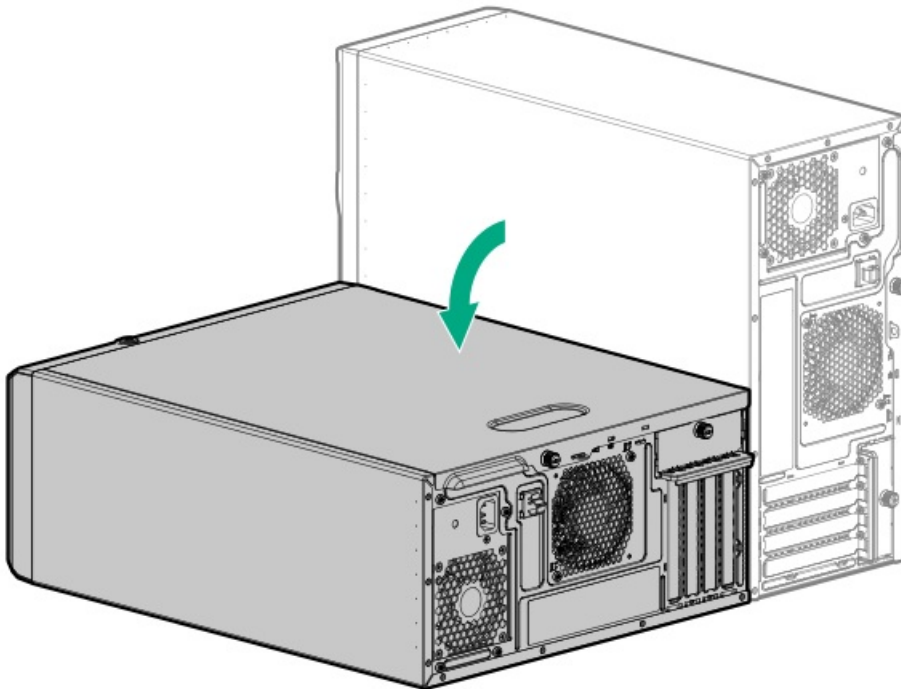
  - Phillips No. 1 screwdriver

About this task

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

⚠ **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

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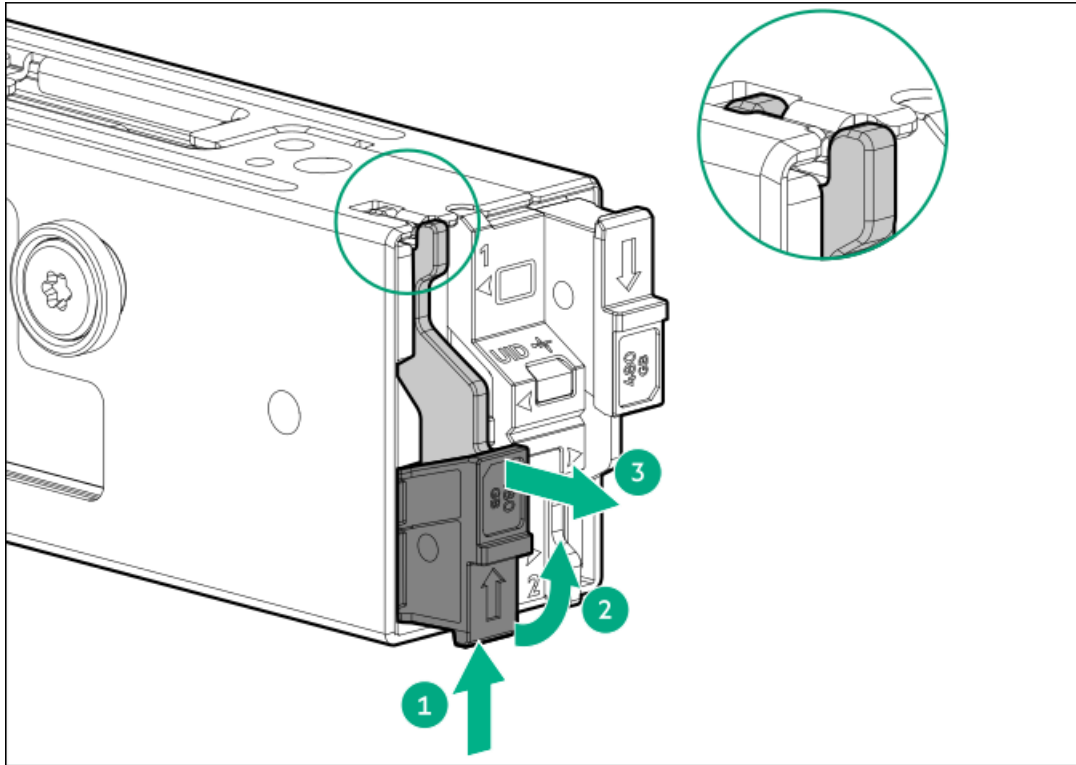
2. Install the SSD on the boot device carrier:

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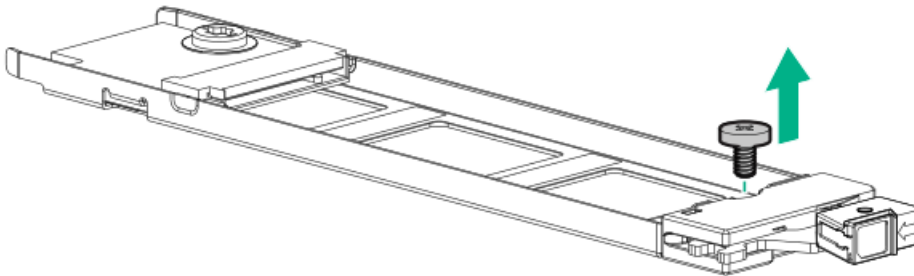
b. Insert the SSD into the M.2 slot at a 45° angle.

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

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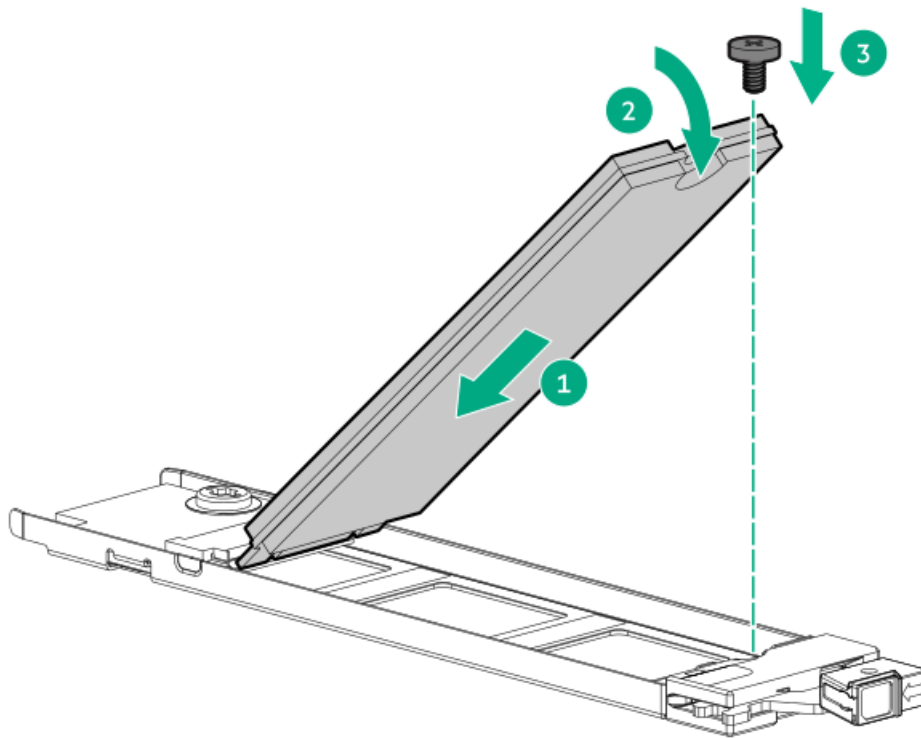
3. Install the boot device carriers:

    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.
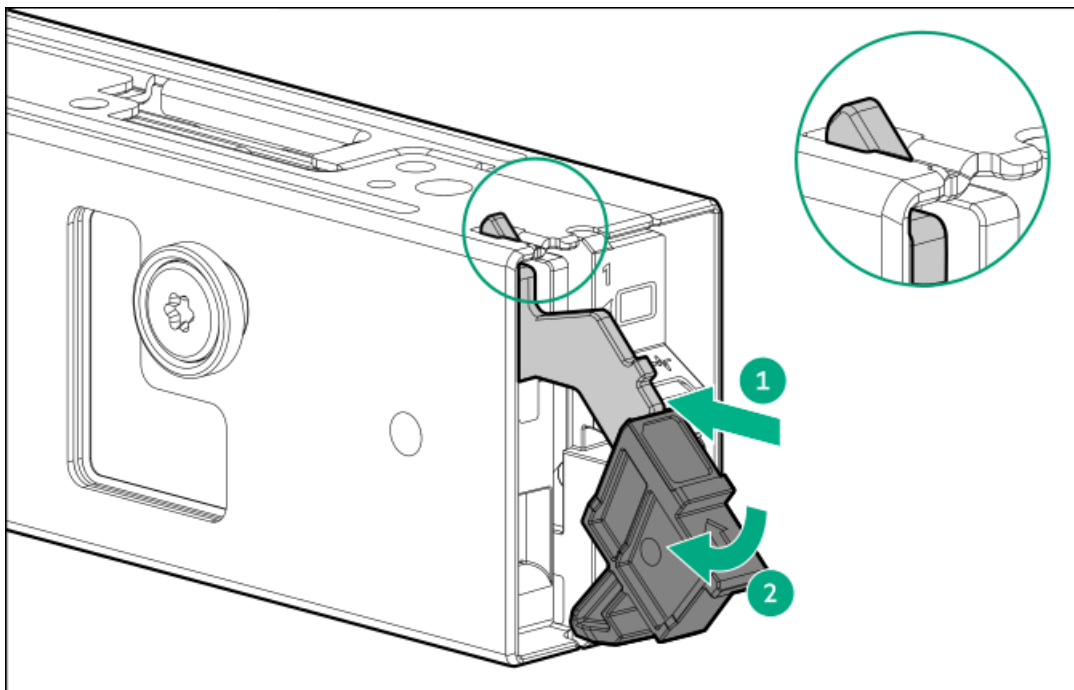
Installing the boot device

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

5. Remove all power:

    a. Disconnect each power cord from the power source.

    b.   Disconnect each power cord from the server.

6. Disconnect all peripheral cables from the server.

7. Do one of the following:

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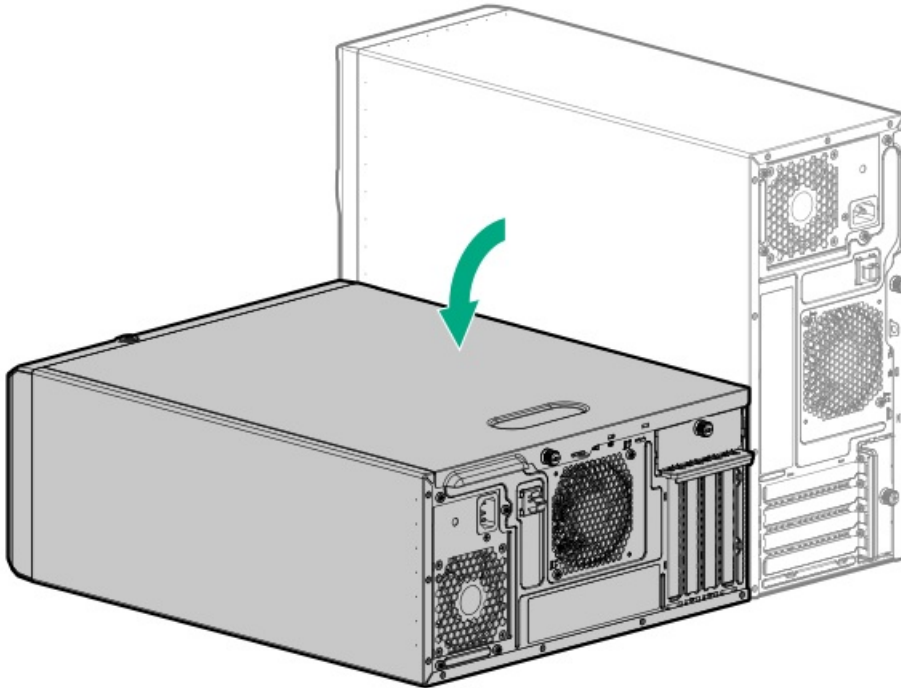
   - If the server is in rack mode, <u>remove the server from the rack</u>.

8. <u>Remove the front bezel</u>.

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

10. Remove the boot device blank.
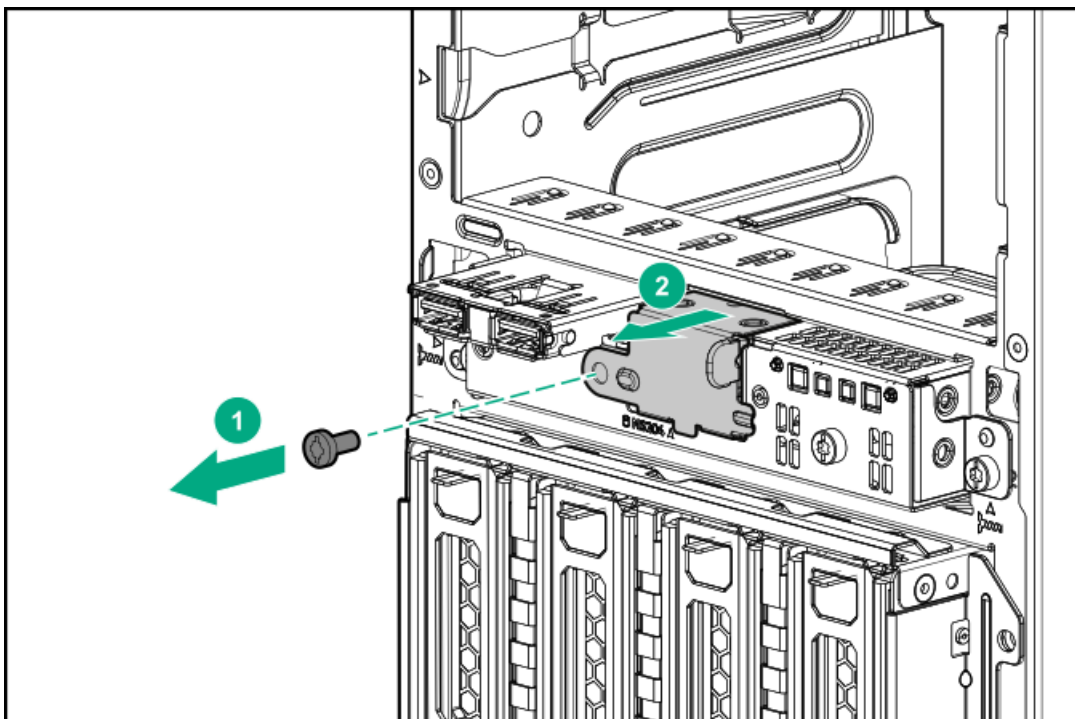
11. Install the pass-through board rail.
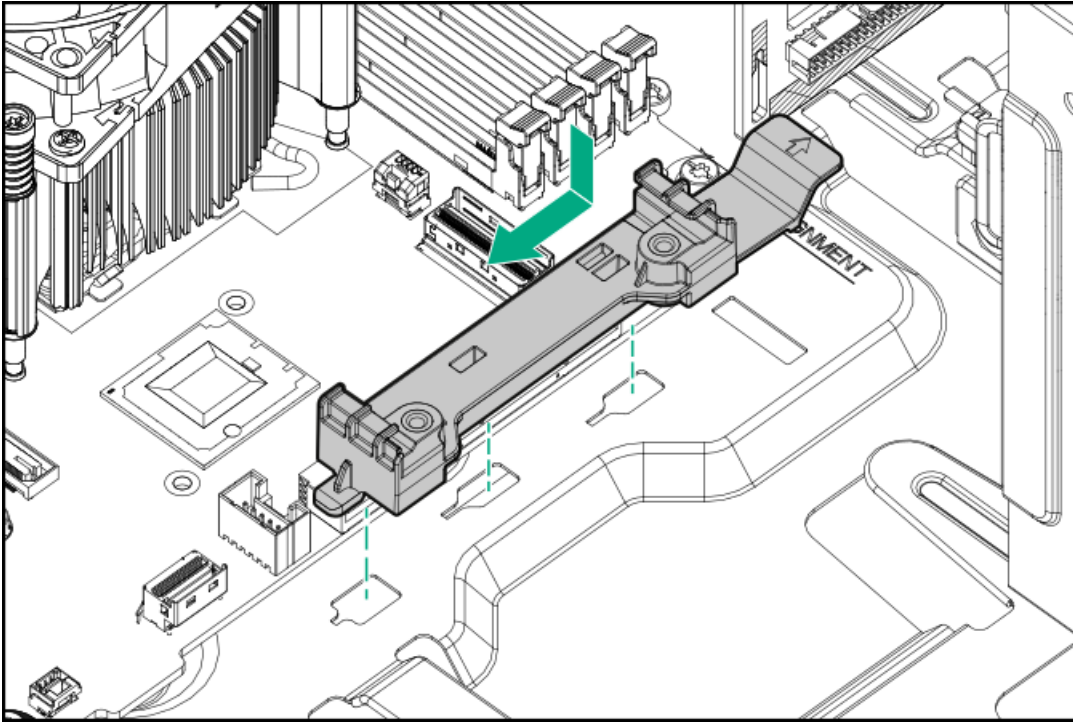
12. Install the pass-through board.
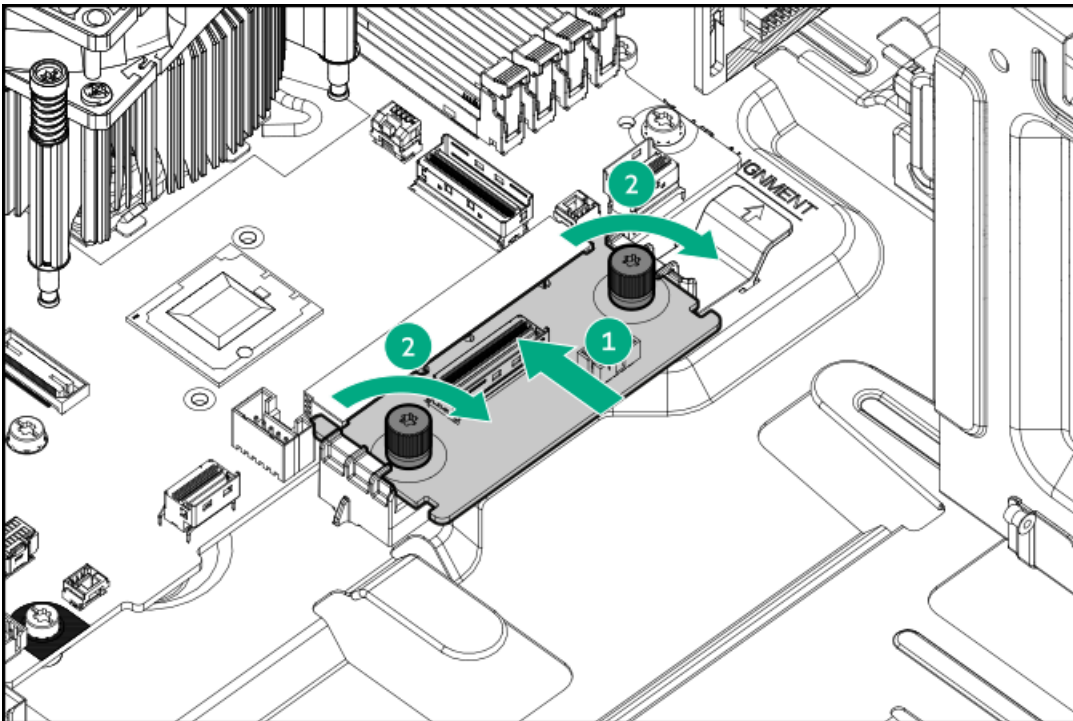
13. Slide the boot device into the bay.
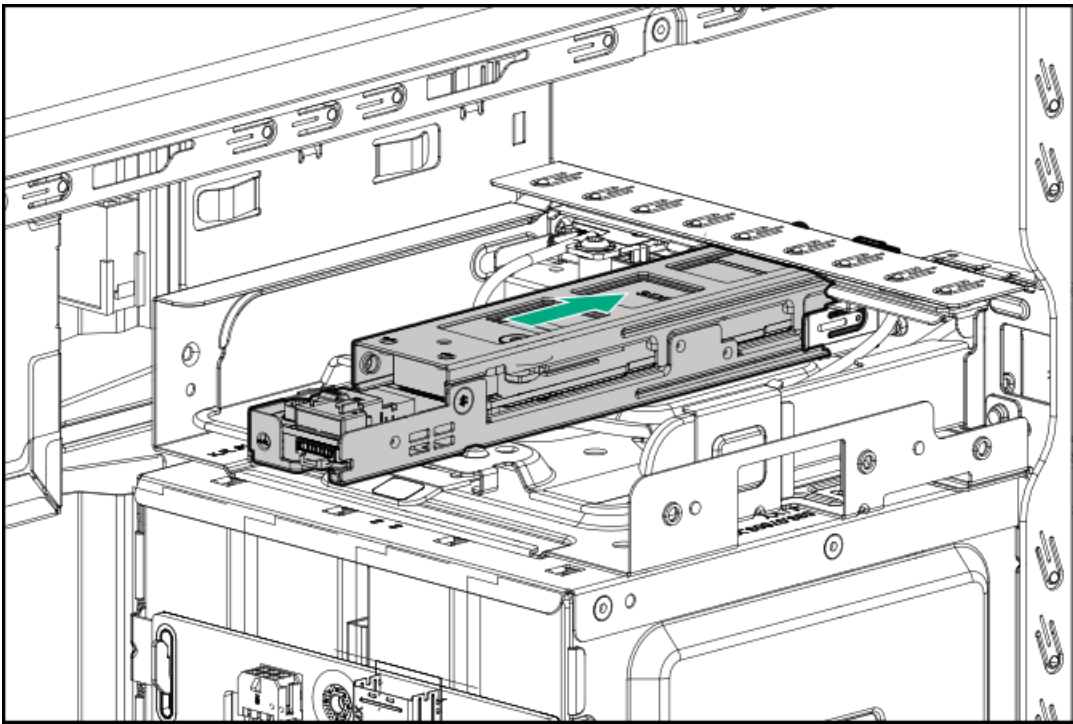
14. Cable the boot device to the system board.

15. Install the access panel.

16. Install the front bezel.

17. Do one of the following:

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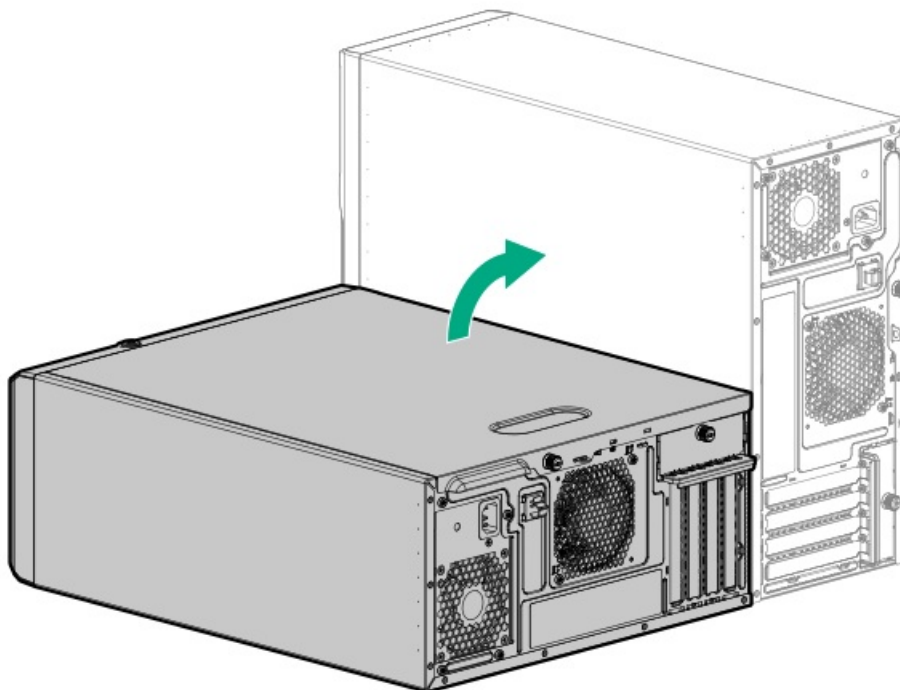
    ● Install the server into the rack.

18. Connect all peripheral cables to the server.

19. Connect each power cord to the server.

20. Connect each power cord to the power source.

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

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

- Fibre channel host bus adapter (FC HBA)

- Accelerator (workload, computational, or graphics accelerator)

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

https://buy.hpe.com/us/en/p/1014788890

Subtopics

<u>Installing an expansion card</u>

Installing an expansion card

Prerequisites

<u>Install the PCIe fan and air baffle</u>.

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 <u>antistatic precautions</u>.

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

Procedure

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

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

5. Remove the access panel.

6. If installed, remove the air baffle.

7. Identify the expansion slot compatible with the expansion card option.

8. Make sure that any switches or jumpers on the expansion card are set properly.

   For more information, see the documentation that ships with the option.

9. Remove the PCI blank retainer.

10. Remove the blank opposite the selected expansion slot.

    Retain the blank for future use.
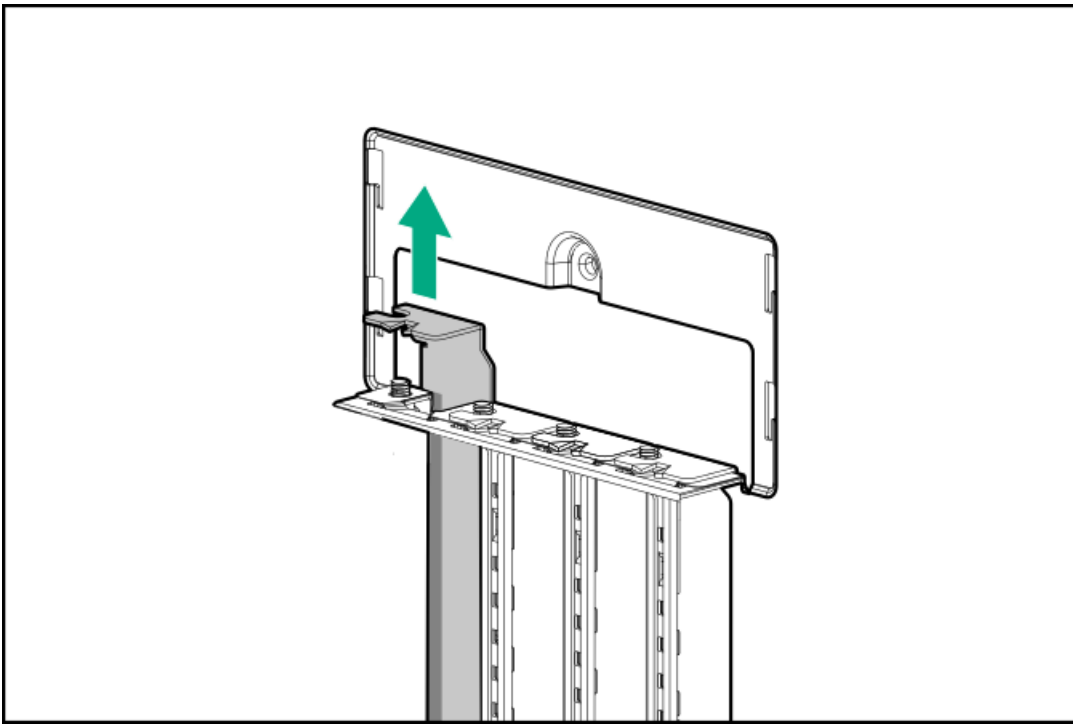
11. Install the expansion card.

    Make sure that the card is seated firmly in the slot.
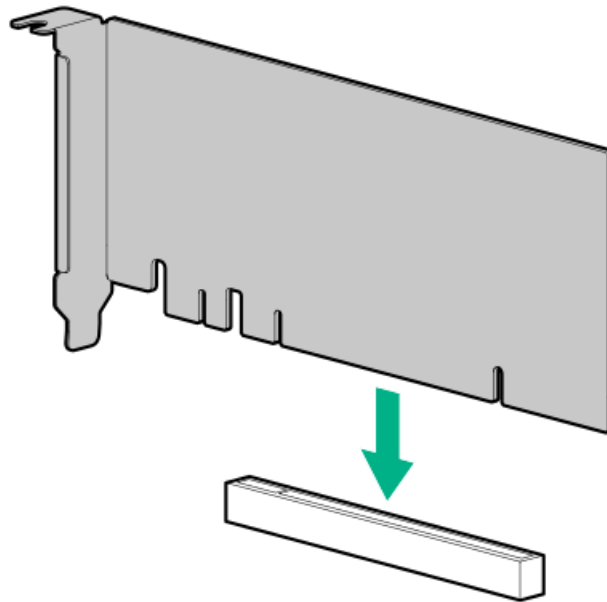
12. Connect all necessary internal cabling to the expansion card.

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

13. Install the PCI blank retainer.

14. Install the 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 each power cord to the server.

19. Connect each power cord to the power source.

20. Power up the server.

Results

The installation is complete.

Memory option

The server has four DIMM slots supporting HPE DDR5 UDIMM with ECC.

Subtopics

DIMM population information

DIMM installation guidelines

Installing a DIMM

DIMM population information

The arrow points to the front of the server.
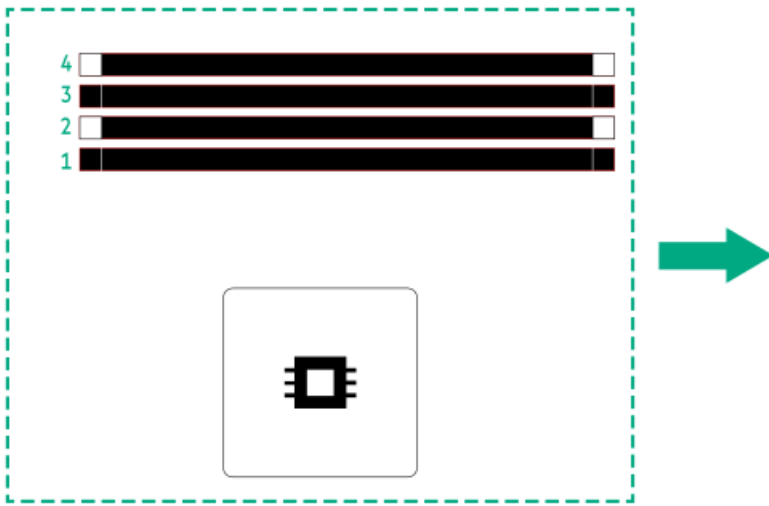
Number of DIMM(s) to populate	Slot 1	Slot 2	Slot 3	Slot 4
1		✔		
2		✔		✔
4	✔	✔	✔	✔

For detailed DIMM population and memory speed information, 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

Installing a DIMM

Prerequisites

Before you perform this procedure, review the:

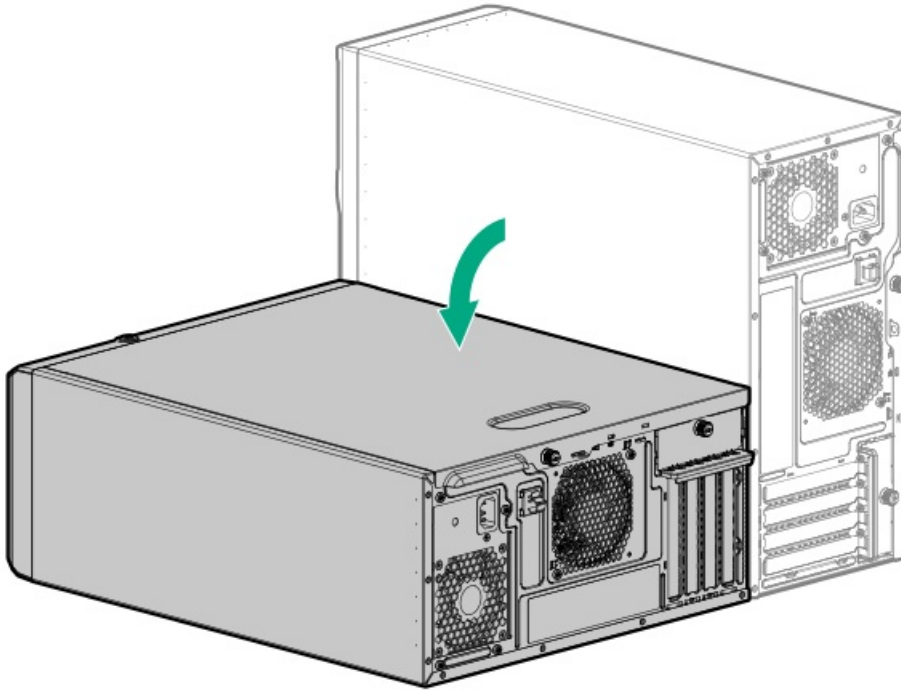- DIMM population information

- DIMM installation guidelines

About this task

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

Procedure

1. Power down the server.

2. Remove all power:

    a. Disconnect each power cord from the power source.

    b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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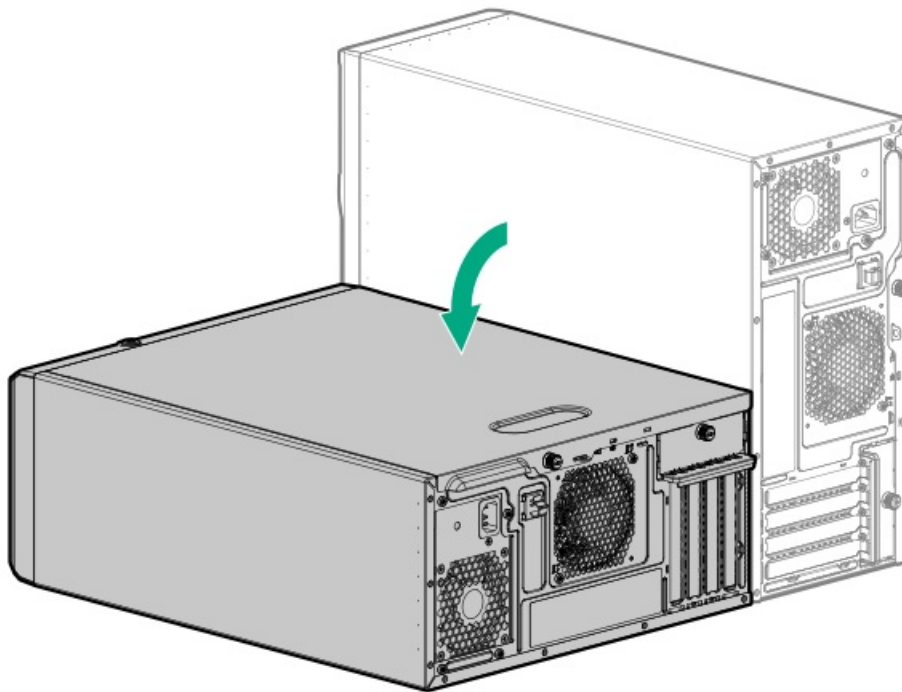
    - If the server is in rack mode, remove the server from the rack.

5. Remove the access panel.

6. Install the DIMM:

    a. Open the DIMM slot latches.

    b. Align the notch on the bottom edge of the DIMM with the keyed surface of the DIMM slot, and then fully press the DIMM into the slot until the latches snap back into place.

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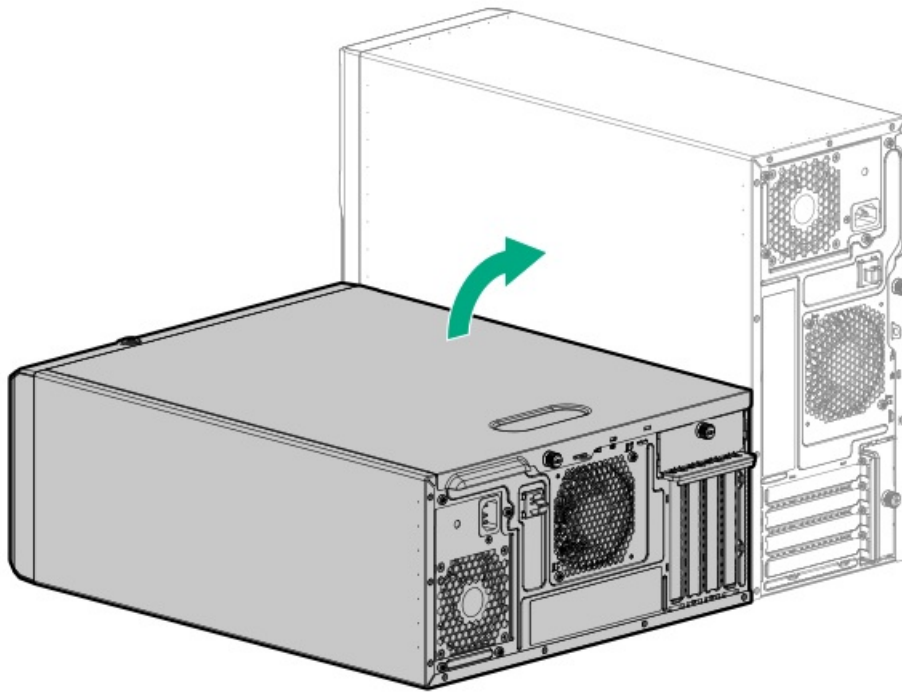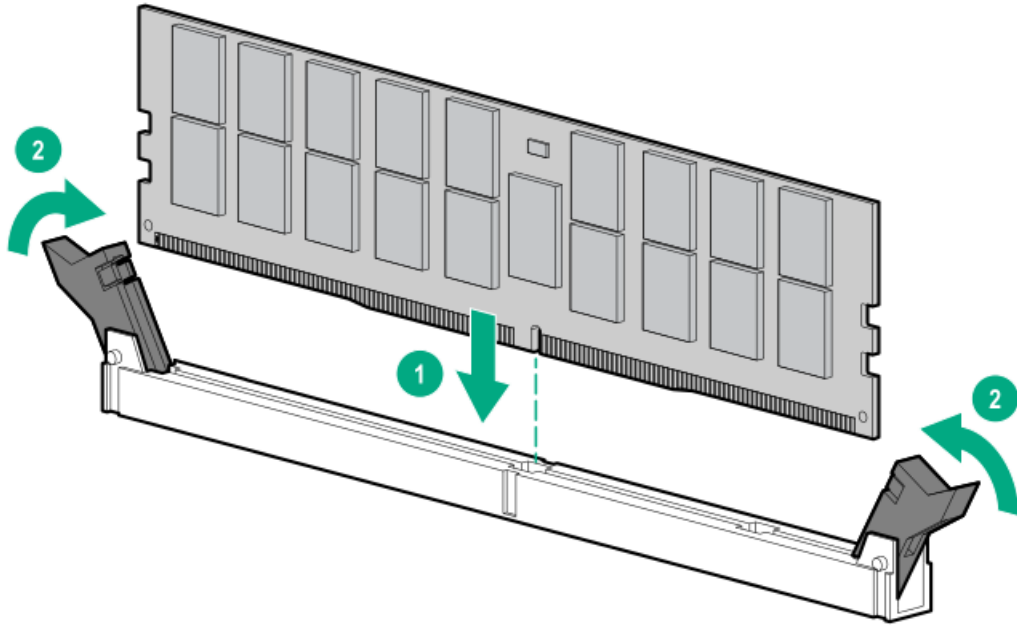

7. Install the access panel.

8. Do one of the following:

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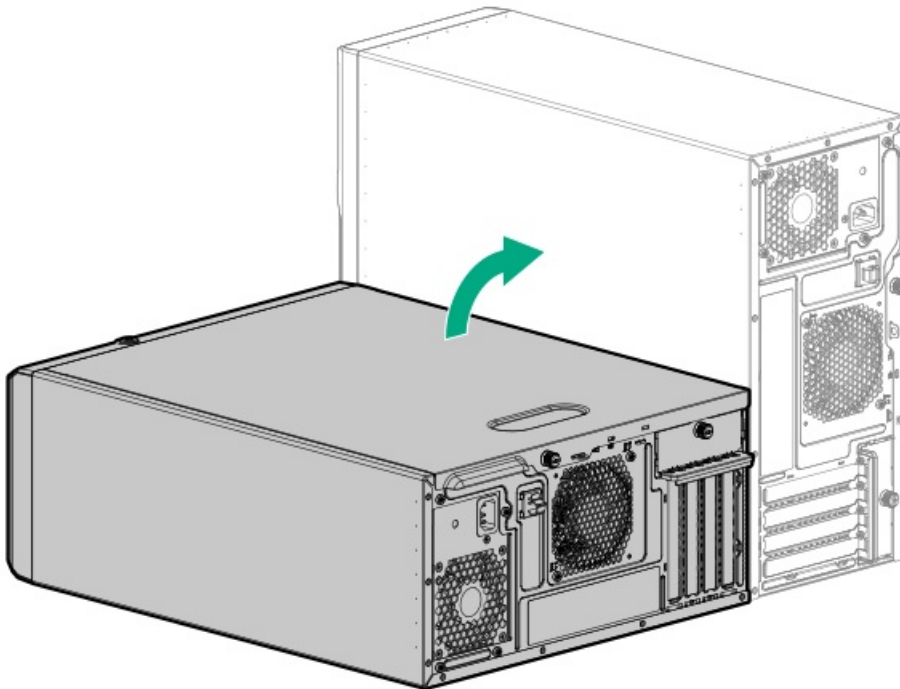
   • Install the server into the rack.

9. Connect all peripheral cables to the server.

10. Connect each power cord to the server.

11. Connect each power cord to the power source.

12. Power up the server.

13. To configure the memory settings:

    a. From the boot screen, press **F9** to access the UEFI System Utilities.

    b. From the System Utilities screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > Memory Options**.

Results

The installation is complete.

iLO-M.2-serial module option

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

- NVMe SSD in 2280 or 22110 form factors

- Serial port

- iLO dedicated network port

Subtopics

iLO-M.2-serial module components

Installing the iLO-M.2-serial module

iLO-M.2-serial module components
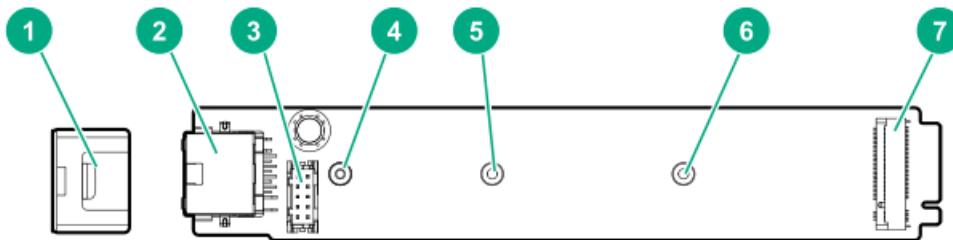
Item	Description
1	Module stabilizer
2	iLO dedicated network port
3	Serial port cable connector
4	Standoff for the M.2 22110 SSD
5	Standoff for the M.2 2280 SSD
6	Standoff for the M.2 2242 SSD [1]
7	M.2 slot

[1]   Not for use in this server

Installing the iLO-M.2-serial module

Prerequisites

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

- Spudger or any small prying tool

- Phillips No. 1 screwdriver

- T-15 Torx screwdriver

- 4.775 mm hex screwdriver—This tool is required for installing the serial port cable.

- 4.5 mm hex nut screwdriver—This tool is required when installing an M.2 SSD.

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 <u>antistatic precautions</u>.

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

Procedure

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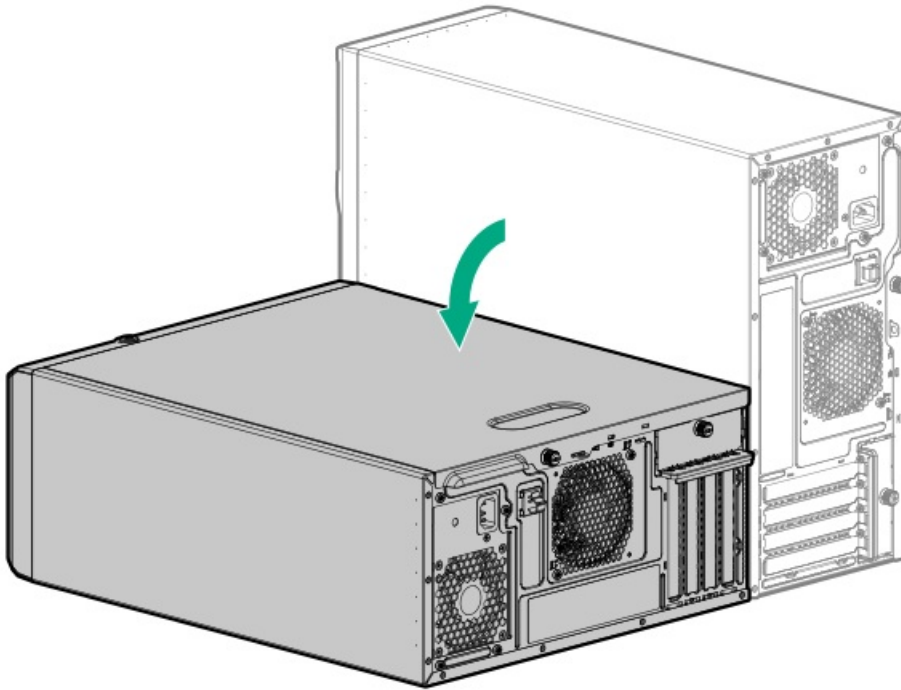
- If the server is in rack mode, remove the server from the rack.

5. Remove the access panel.

6. If installed, remove the air baffle.

Installing the iLO-M.2-serial module

7. Remove the iLO dedicated network port blank:

    a. Use a spudger to pry the blank from the chassis.

    b. Remove the blank.
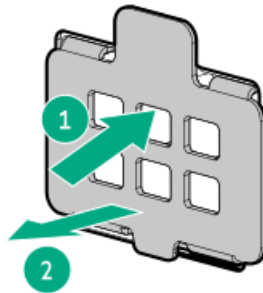
8. Remove the tape above the iLO dedicated network port opening.
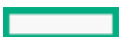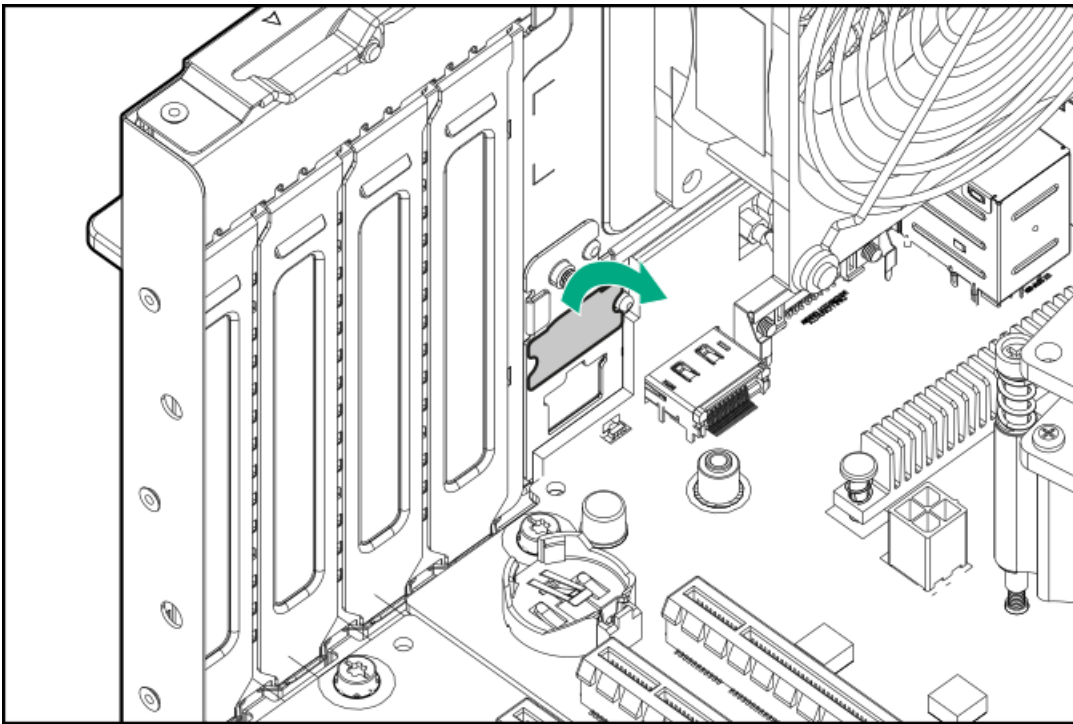
9. (Optional) Install an M.2 SSD on the module .

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

    a. Insert the module into the M.2 slot at a 45° angle.

    b. Carefully press the module down in a horizontal position.

    c. Install the module screw.
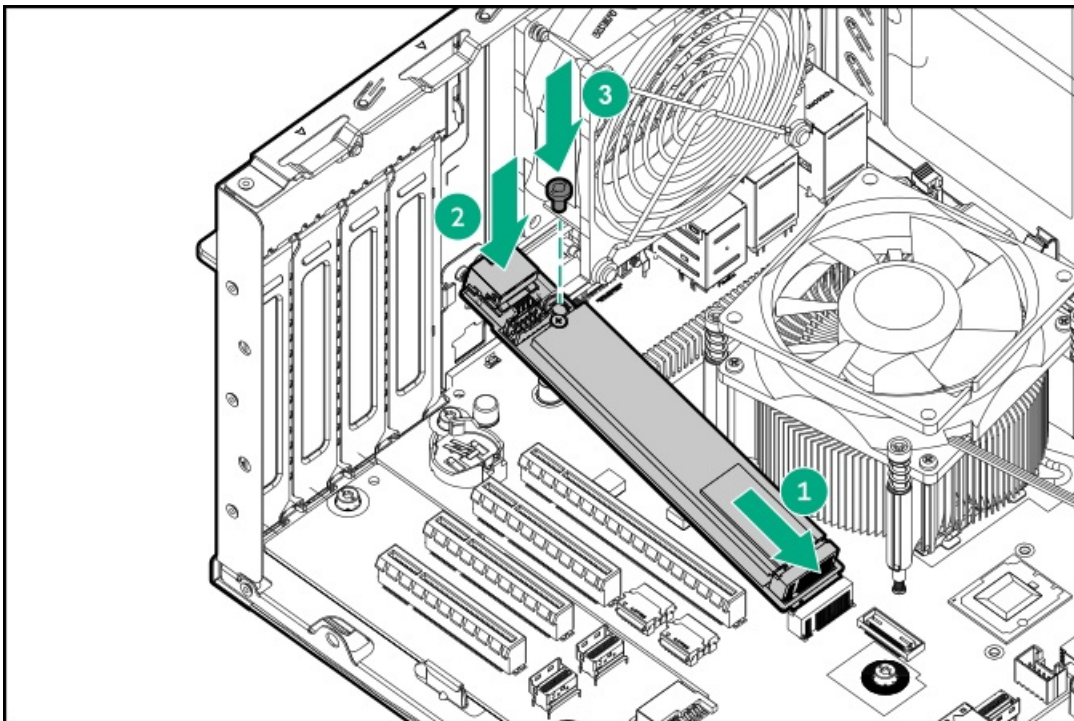
    d. Install the module stabilizer.
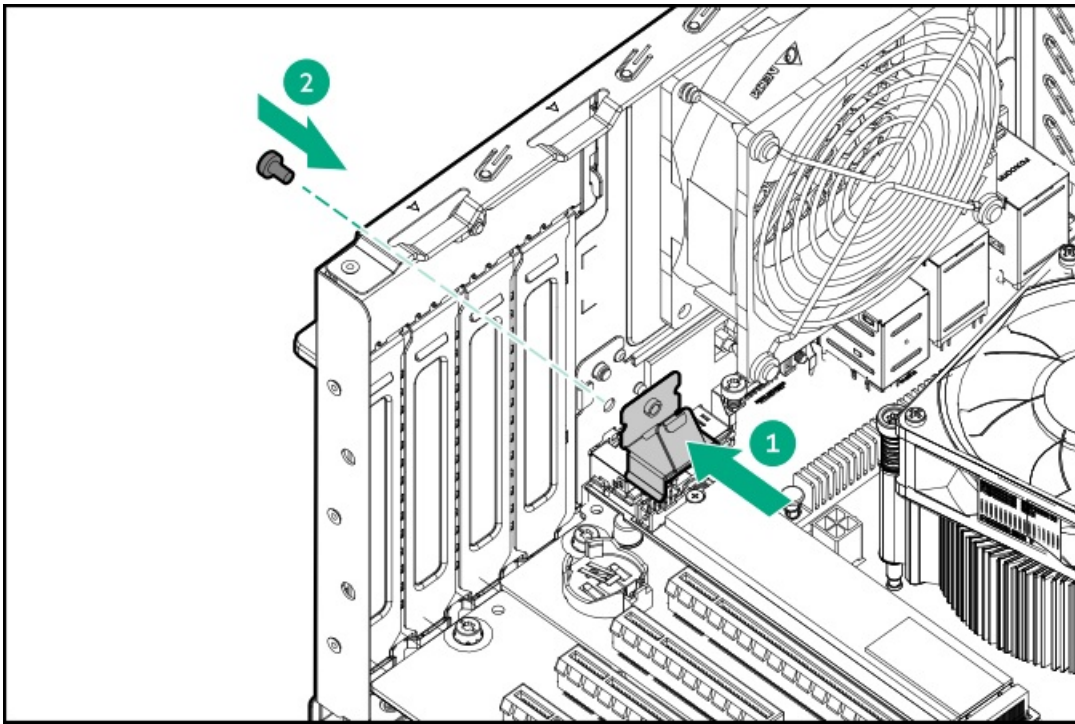
Installing the serial port

11. Remove the serial port blank.
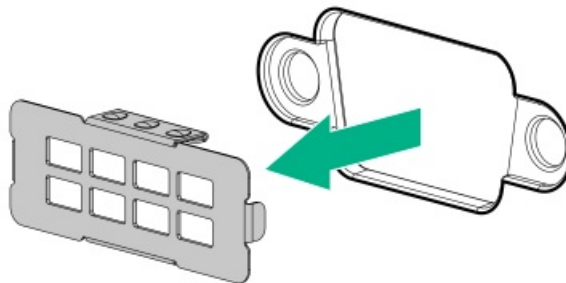
12. Install the serial port cable:

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

    b. Install the hex screws.
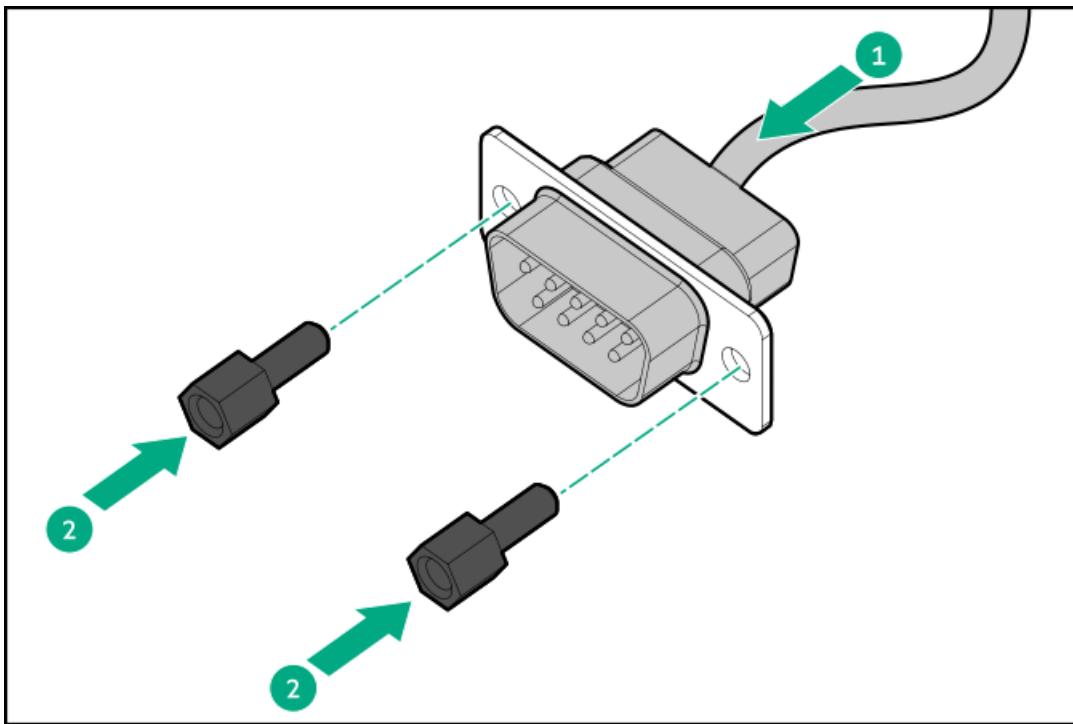
13. Connect the serial port cable to the iLO-M.2-serial module.

Completing the installation

14. Install the air baffle.

15. Install the access panel.

16. Do one of the following:

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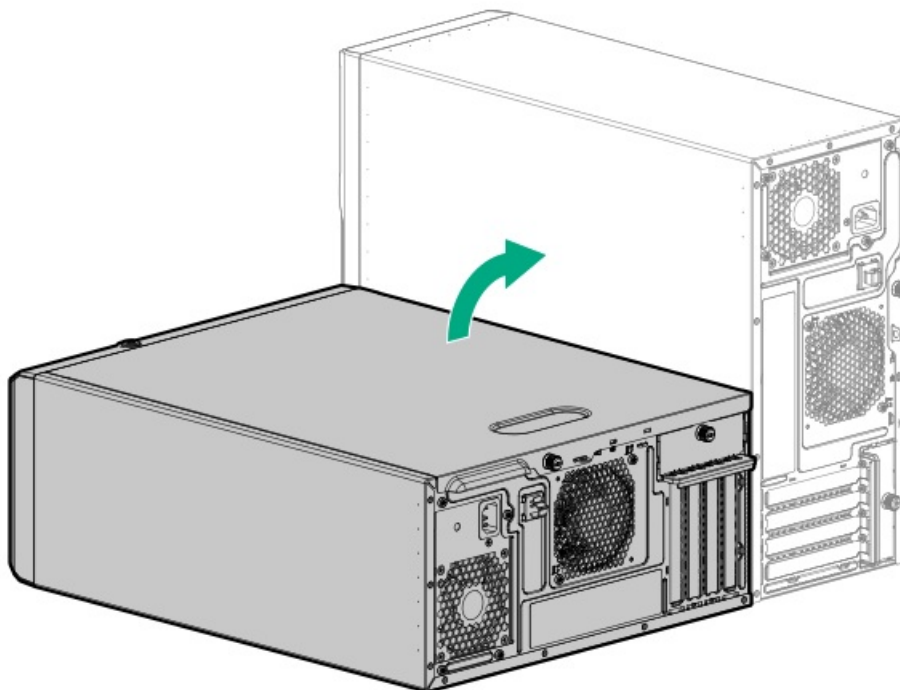
    - Install the server into the rack.

17. Connect all peripheral cables to the server.

18. Connect each power cord to the server.

19. Connect each power cord to the power source.

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

Enabling the iLO dedicated network port

21. (i) **IMPORTANT:**

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

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

   a. From the boot screen, press **F9** to access the UEFI System Utilities.

   b. From the System Utilities screen, select System Configuration > iLO 6 Configuration Utility > Network Options.

   c. Set the Network Interface Adapter field to ON, and then press **Enter**.

   d. Press **F10** to save your changes.

   e. Press **Enter** to reboot the iLO settings.

   f. Press **Esc** until the main menu is displayed.

   g. Select Reboot the System to exit the utility and resume the boot process.

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

Configuring the serial port

22. To configure the serial port setting:

   a. From the boot screen, press **F9** to access the UEFI System Utilities.

   b. From the System Utilities screen, select System Configuration > BIOS/Platform Configuration (RBSU) > System Options > Serial Port Options > Embedded Serial Port.

   c. Select a setting.

   d. Press **F12** key to save your selection.

   e. Click Yes-Save Changes.

   f. Click Reboot.

Results

The installation is complete.

M.2 SSD option

The M.2 slot on the system board does not support direct SSD installation. This slot instead supports the <u>iLO-M.2 serial module</u>. Use this module to install an NVMe SSD in 2280 or 22110 form factors .

Install an M.2 SSD for:

- Booting up from flash solution

- Data backup/redundancy

Subtopics

<u>Installing an M.2 SSD on the iLO-M.2-serial module</u>

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

Prerequisites

- The iLO-M.2 serial module is installed in the server.

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

  - Phillips No. 1 screwdriver

  - 4.5 mm hex nut screwdriver—This tool is required if you need to move the hex nut on the iLO-M.2 serial module to a different M.2 standoff position.

About this task

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

Procedure

1. Power down the server.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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

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

5. Remove the access panel.

6. If installed, <u>remove the air baffle</u>.

7. Based on the SSD form factor (length), verify that the hex nut from the iLO-M.2 serial module option kit is on the   <u>correct M.2 standoff position</u>. Move the hex nut if needed.

8. Install the SSD:

   a. Insert the SSD on the iLO-M.2 serial module at a 45° angle.

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

   c. Install the SSD mounting screw.
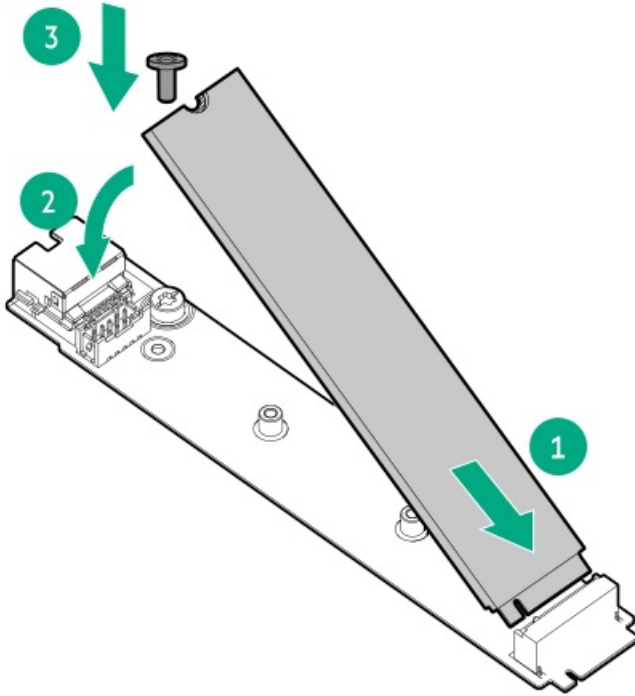

9. <u>Install the air baffle</u>.

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

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 each power cord to the server.

14. Connect each power cord to the power source.

15. Power up the server.

16. To configure the M.2 SSD, use the native OS NVMe driver. See the related OS documentation.

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 an internal USB device

Installing an internal USB device

Procedure

1. Power down the server.

2. Remove all power:

    a. Disconnect each power cord from the power source.

    b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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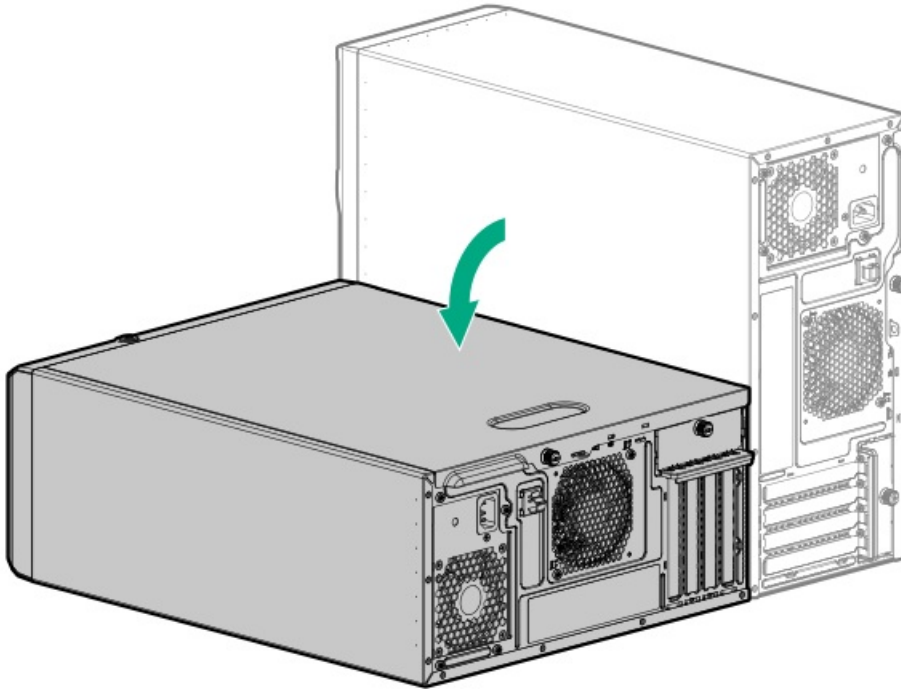
    - If the server is in rack mode, <u>remove the server from the rack</u>.

5. <u>Remove the front bezel</u>.

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

7. If installed, <u>remove the air baffle</u>.

8. <u>Locate the internal USB port</u>.

9. Plug in the USB device into the USB port.
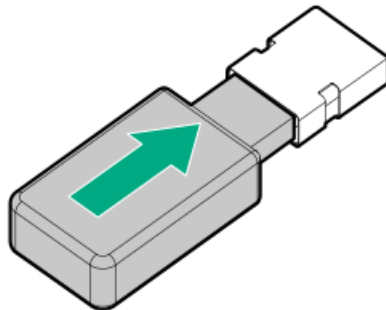
10. <u>Install the air baffle</u>.

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

12. <u>Install the front bezel</u>.

13. Do one of the following:
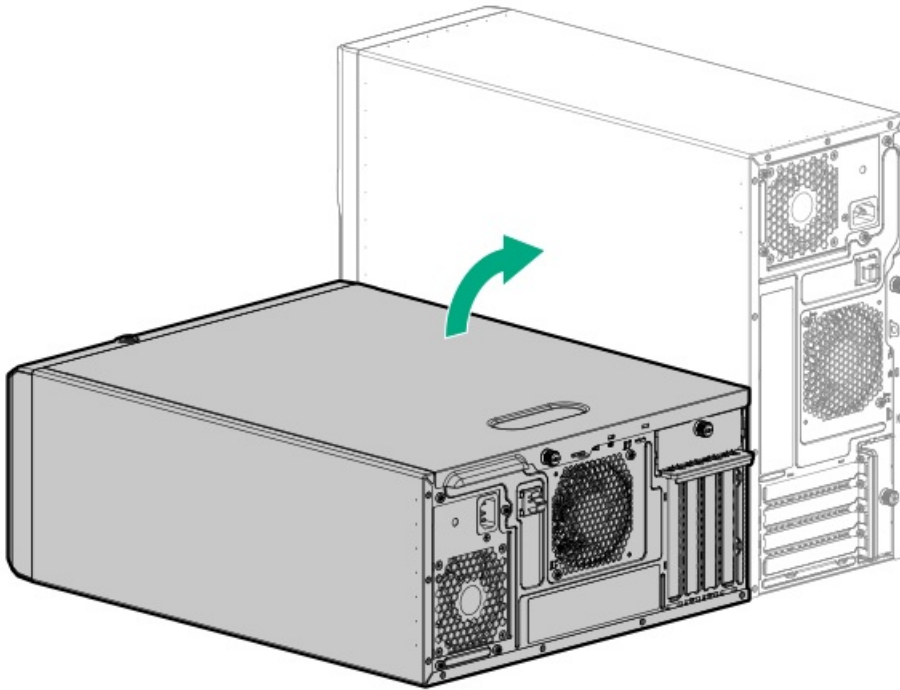
    - Orient the server back to tower mode.

- Install the server into the rack .

14. Connect all peripheral cables to the server.

15. Connect each power cord to the server.

16. Connect each power cord to the power source.

17. 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

Media device cabling

Fan cabling

HPE NS204i-u Boot Device cabling

Serial port cabling

PCIe x4 signal cabling for expansion slots 3 and 4

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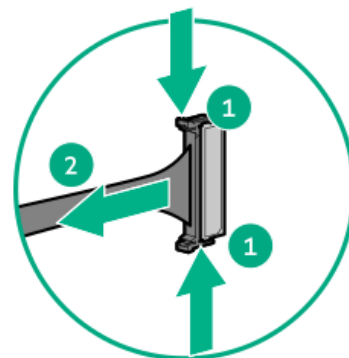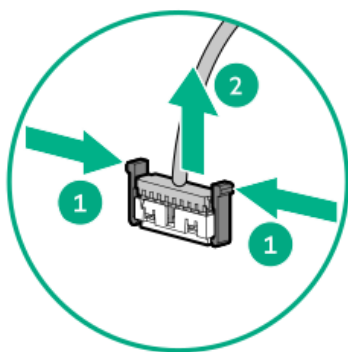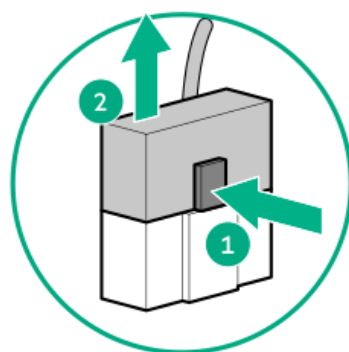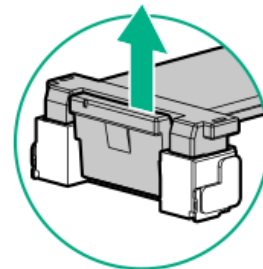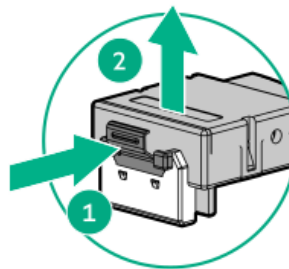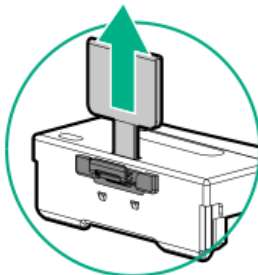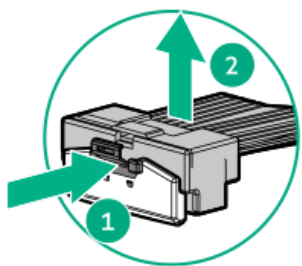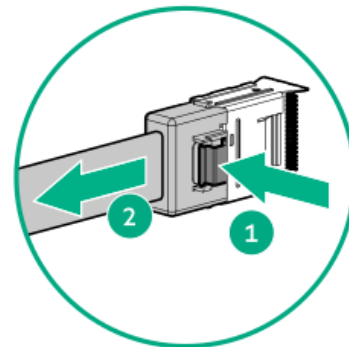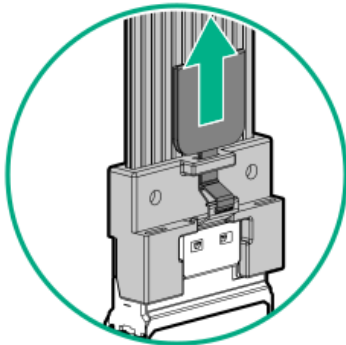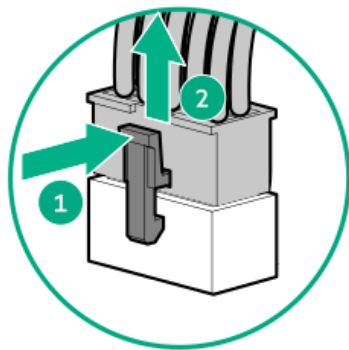
- Remove cables that are no longer being used. Retaining them inside the server can restrict airflow. If you intend to use the removed cables later, label and store them for future use.

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
Drive storage controller cabling	—
4 LFF non-hot-plug drive: Onboard SATA cabling	P62714-001

Component cabling	Cable part number
4 LFF hot-plug drive: Onboard SATA cabling	P63074-001
4 LFF hot-plug drive: Type-p controller cabling	P55530-001
8 SFF hot-plug drive: Onboard SATA cabling	• P62716-001 • P63074-001
8 SFF hot-plug drive: Type-p controller cabling	P45301-001
Drive power cabling	—
4 LFF non-hot-plug drive power cabling from the Flexible Slot power supply	• P45215-001 • P06327-001
4 LFF / 8 SFF hot-plug drive power cabling from the non-hot-plug power supply	P45230-001
4 LFF hot-plug drive power cabling from the Flexible Slot power supply	P45215-001
8 SFF hot-plug drive power cabling from the Flexible Slot power supply	P45215-001
Storage controller backup cabling	877850-001
Media device cabling	—
RDX backup system cabling with non-hot-plug power supply	• 848126-001 • 880289-001
RDX backup system cabling with Flexible Slot power supply	• P45215-001 • 848126-001 • 880289-001
Optical drive cabling with non-hot-plug power supply	P62715-001
Optical drive cabling with Flexible Slot power supply	• P45215-001 • P62715-001
HPE NS204i-u Boot Device cabling	• P54087-001 • P54089-001
Power supply cabling	—
Non-hot-plug power supply cabling	• P62710-001 • P63697-001
Flexible Slot power supply cabling	• P62711-001 • P63691-001 • P62713-001 • P63697-001
GPU auxiliary power cabling	P45218-001
Miscellaneous cabling	—
PCIe x4 signal cabling for expansion slots 3 and 4	P62709-001
Serial port cabling	P63693-001
Front I/O cabling	P63681-001

Internal cabling management
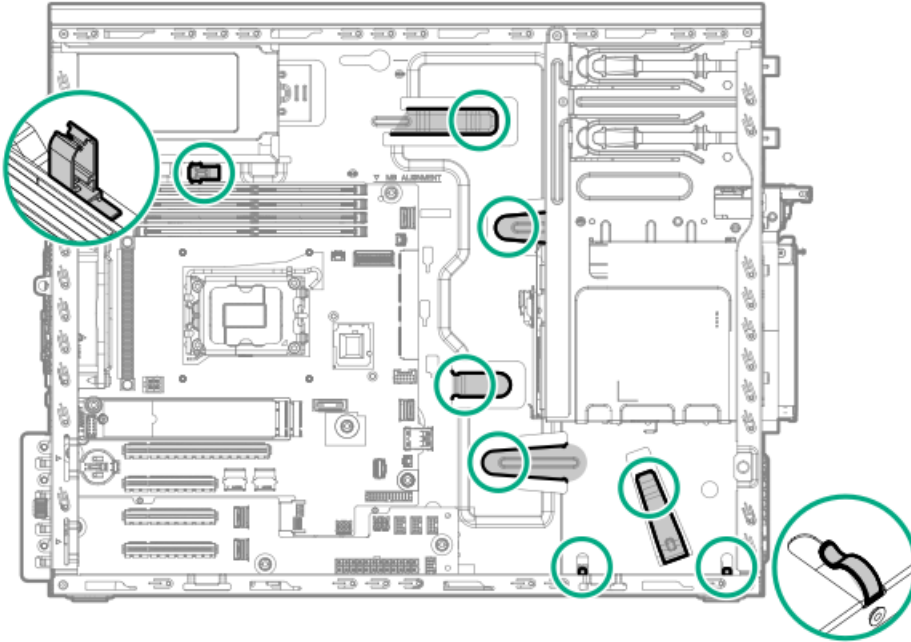
Storage cabling

Subtopics

Storage controller cabling

Drive power cabling

Energy pack cabling

Storage controller backup power cabling

Storage controller cabling

Subtopics

4 LFF drive controller cabling

8 SFF hot-plug drive controller cabling

4 LFF drive controller cabling

4 LFF non-hot-plug drive: Onboard SATA cabling
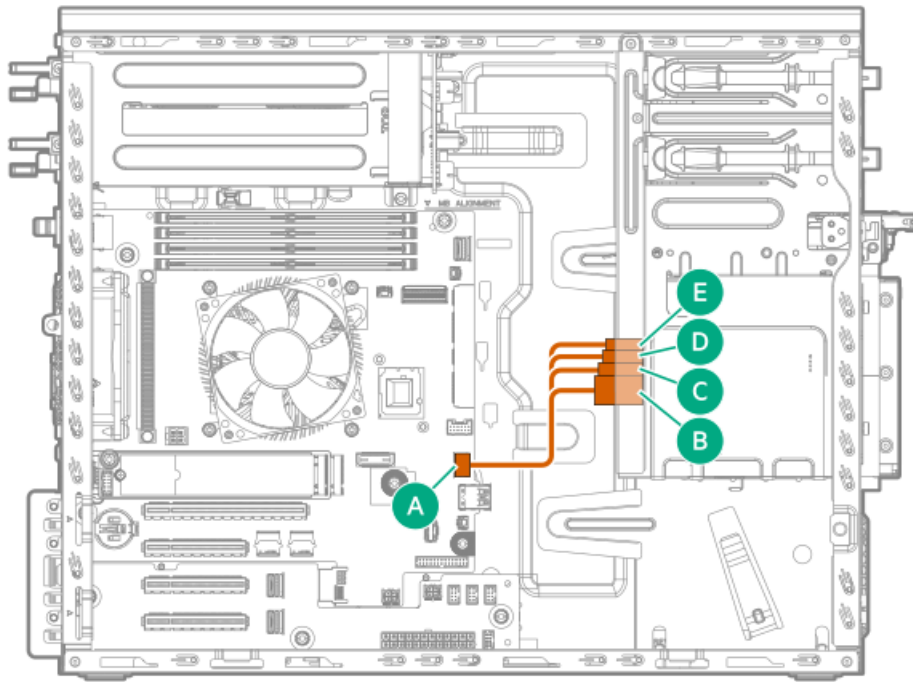
Cable part number	Color	From	To
P62714-001	Orange	SlimSAS x4 port 2	4 LFF non-hot-plug drives

4 LFF hot-plug drive: Onboard SATA cabling
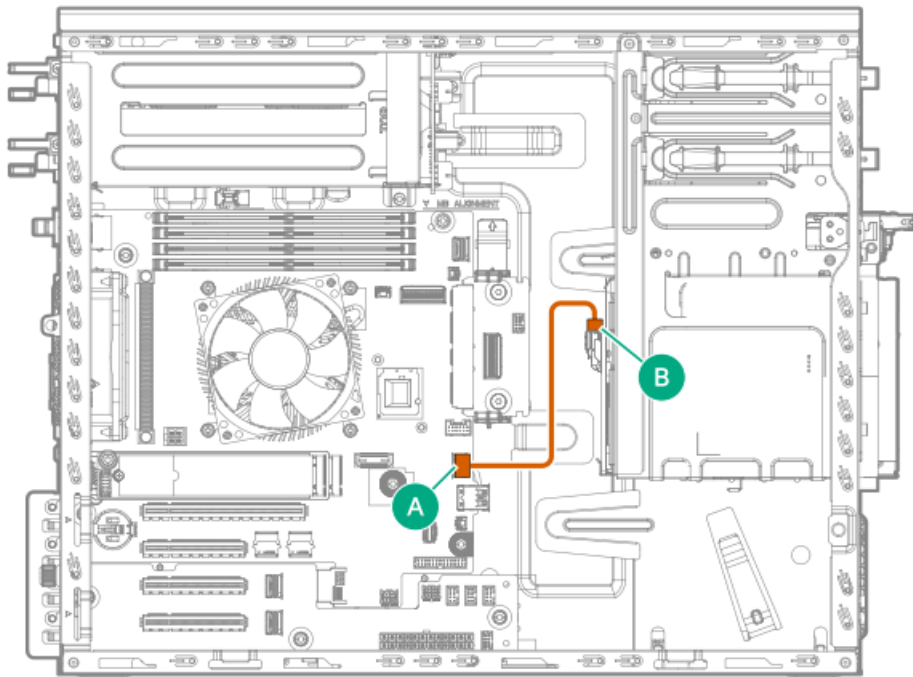
Cable part number	Color	From	To
P63074-001	Orange	SlimSAS x4 port 2	4 LFF drive backplane

4 LFF hot-plug drive: Type-p controller cabling
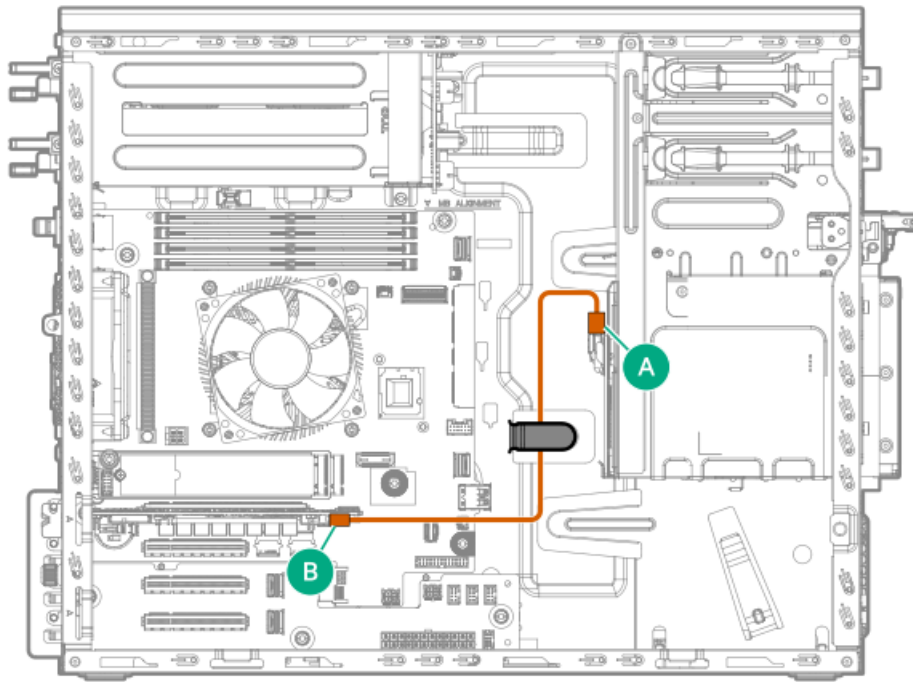
Cable part number	Color	From	To
P55530-001 [1]	Orange	4 LFF drive backplane	Type-p controller port 1

[1] Option kit: P57104-B21

8 SFF hot-plug drive controller cabling

8 SFF hot-plug drive: Onboard SATA cabling
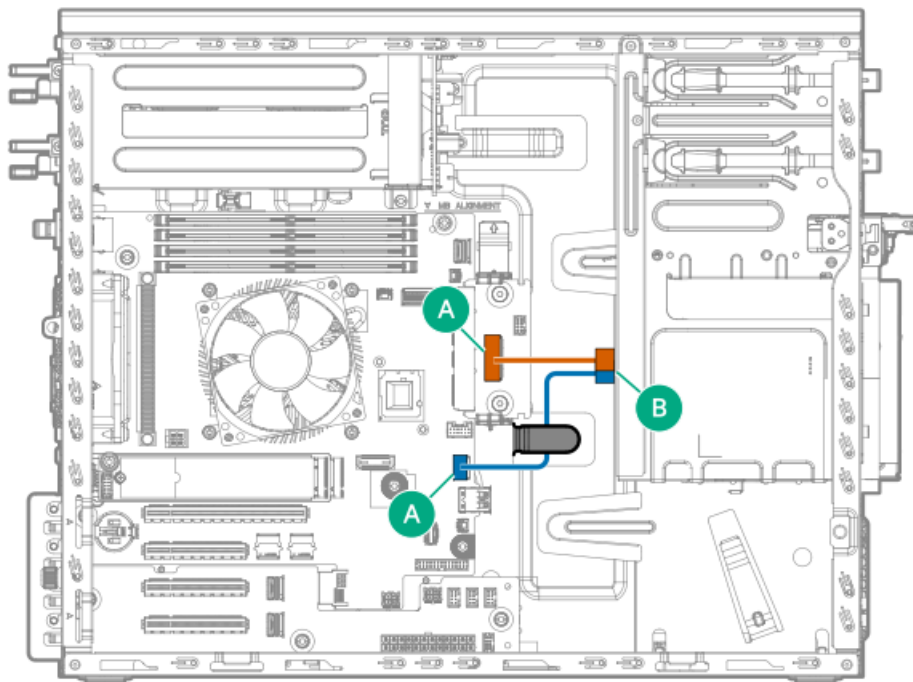
Cable part number	Color	From	To
P62716-001	Orange	SlimSAS x8 port 3	8 SFF drive backplane port 1
P63074-001	Blue	SlimSAS x4 port 2	8 SFF drive backplane port 2

8 SFF hot-plug drive: Type-p controller cabling
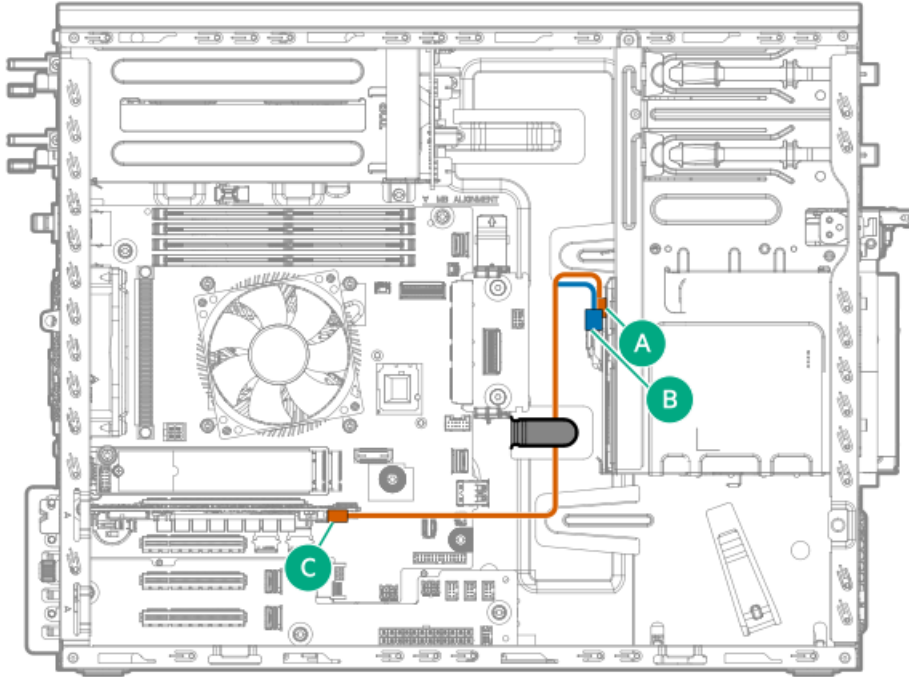
Cable part number	Color	From	To
P45301-001 [1]	Orange	Type-p controller port 1	8 SFF drive backplane port 2
	Blue		8 SFF drive backplane port 1

[1]   Option kit: P67850-B21

Drive power cabling

4 LFF non-hot-plug drive power cabling from the Flexible Slot power supply
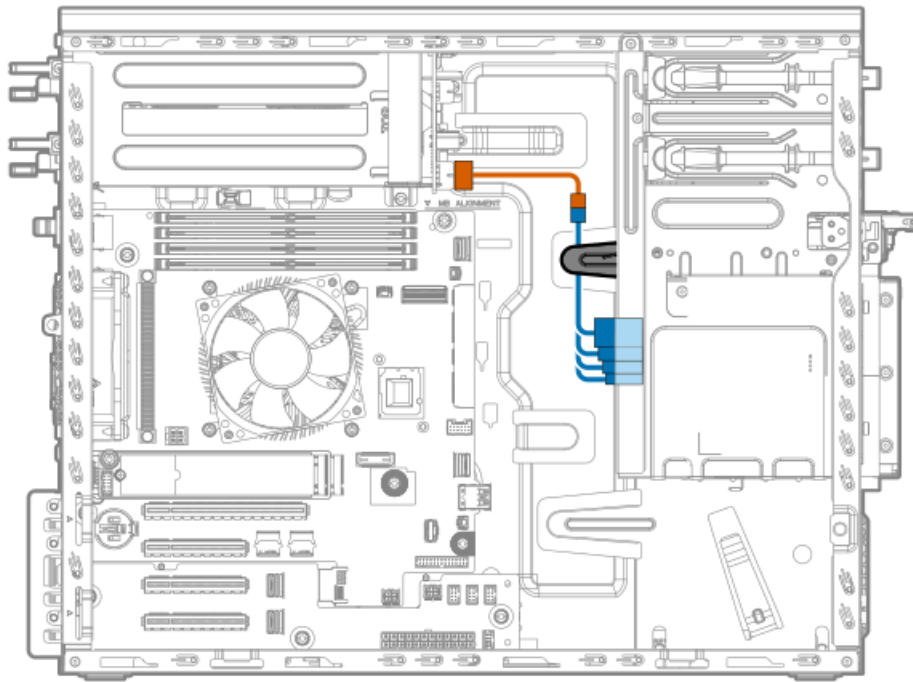
Cable part number	Color	From	To
P45215-001 [1]	Orange	Flexible Slot power supply HDD power connector	SATA drive power cable
P06327-001	Blue	P45215-001 cable connected to the Flexible Slot power supply HDD power connector	4 LFF non-hot-plug drives

[1]   Option kit: P65104-B21

4 LFF / 8 SFF hot-plug drive power cabling from the non-hot-plug power supply
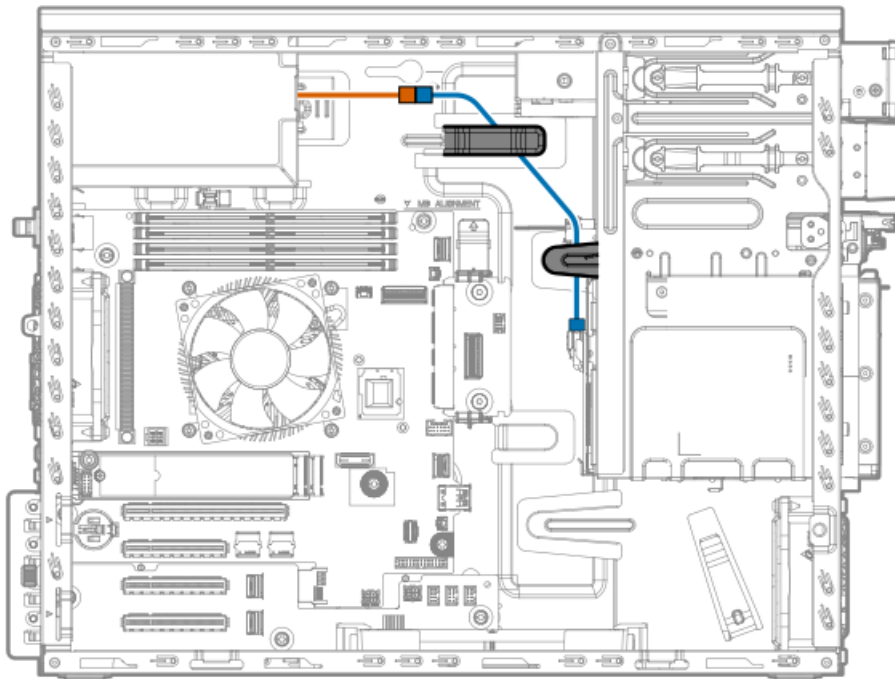
Cable part number	Color	From	To
—	Orange	Non-hot-plug power supply	4 LFF and 8 SFF drive backplane power cable
P45230-001 [1]	Blue	Non-hot-plug power supply cable	Drive backplane

[1]   Option kit: P57104-B21

4 LFF hot-plug drive power cabling from the Flexible Slot power supply
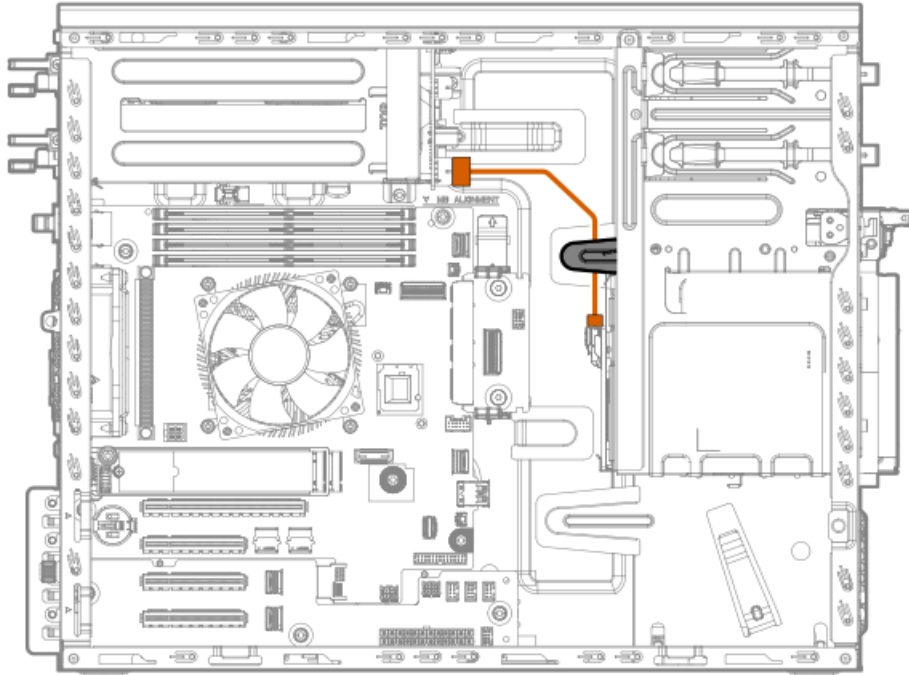
Cable part number	Color	From	To
P45215-001 [1]	Orange	Flexible Slot power supply HDD power connector	Drive backplane

[1]   Option kit: P65104-B21

8 SFF hot-plug drive power cabling from the Flexible Slot power supply
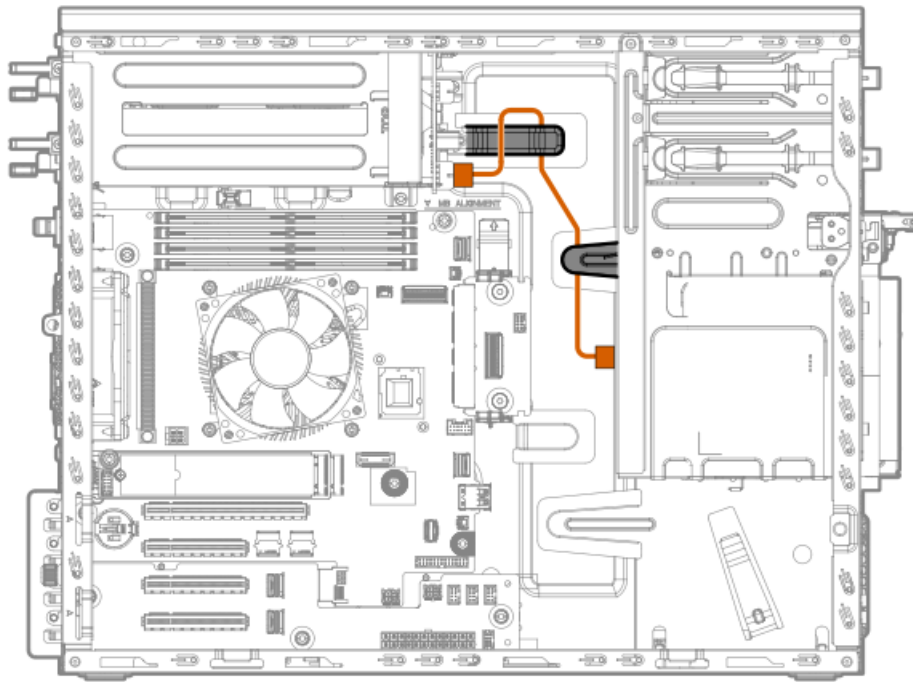
Cable part number	Color	From	To
P45215-001 [1]	Orange	Flexible Slot power supply HDD power connector	Drive backplane

[1]   Option kit: P65104-B21

Energy pack cabling
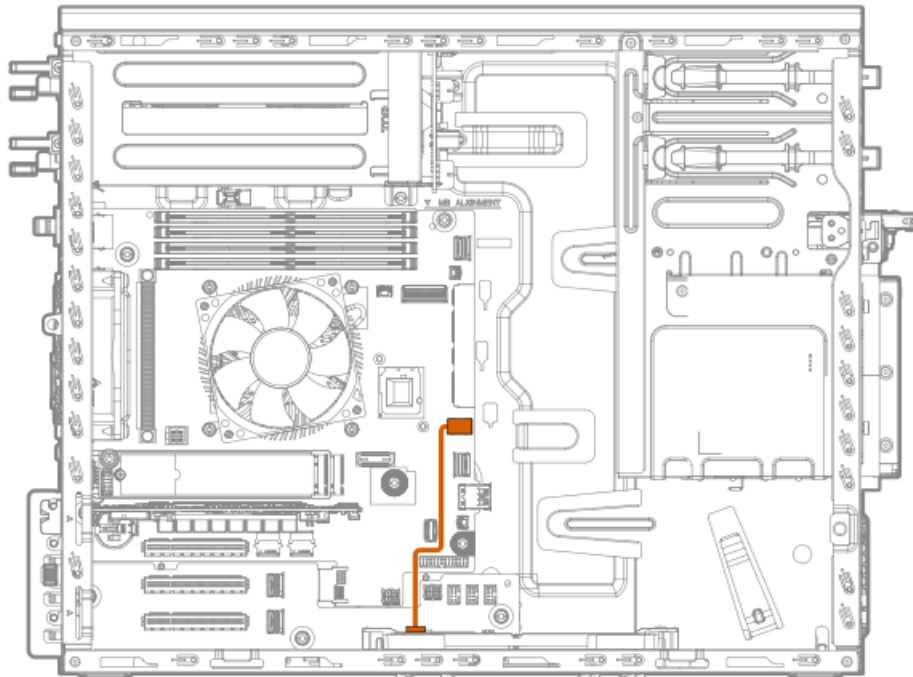
Storage controller backup power cabling

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

- The expansion slot where the controller is installed

- The location of the storage controller backup power connector on the controller

  Use the following diagram for reference only.
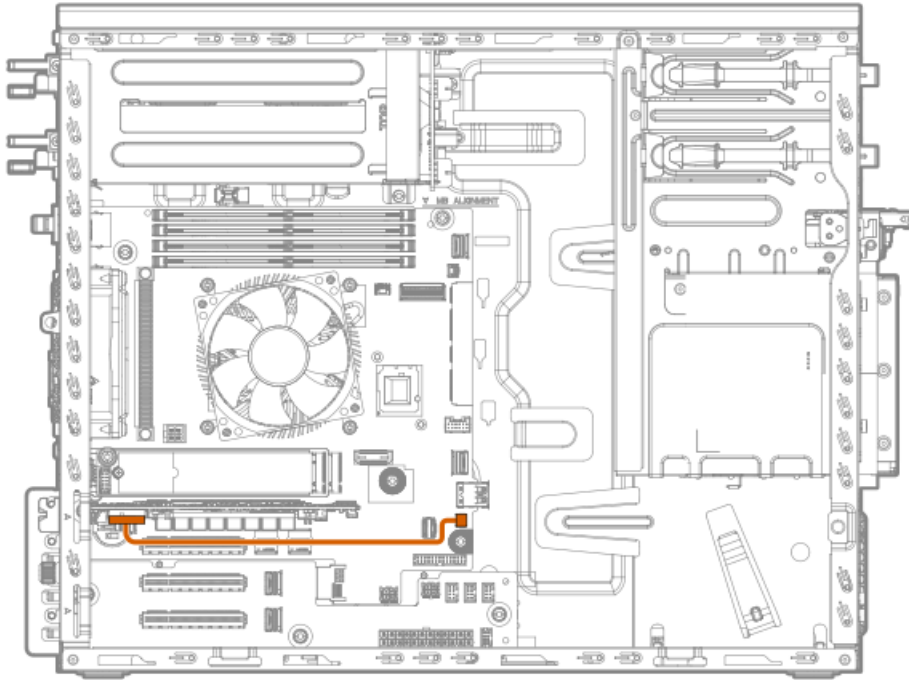
Cable part number	Color	From	To
877850-001	Orange	Type-p controller	Storage controller backup power connector

Media device cabling

Subtopics

RDX backup system cabling

Optical drive cabling

RDX backup system cabling

RDX backup system cabling with non-hot-plug power supply
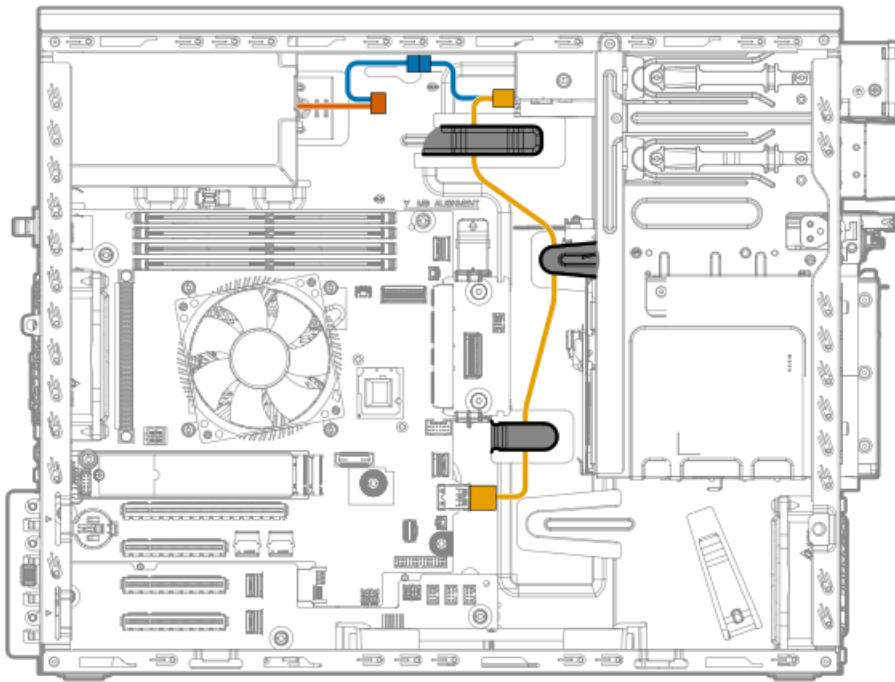
Cable part number	Color	From	To
—	Orange	P10 connector of the non-hot-plug power supply	LTO/RDX power extension cable to RDX drive power connector
848126-001 [1]	Blue	LTO/RDX power extension cable to RDX drive power connector	RDX
880289-001 [2]	Gold	Internal, lower USB port	RDX drive USB port

[1]   Option kit: 851615-B21
[2]   Option kit: P03819-B21

RDX backup system cabling with Flexible Slot power supply
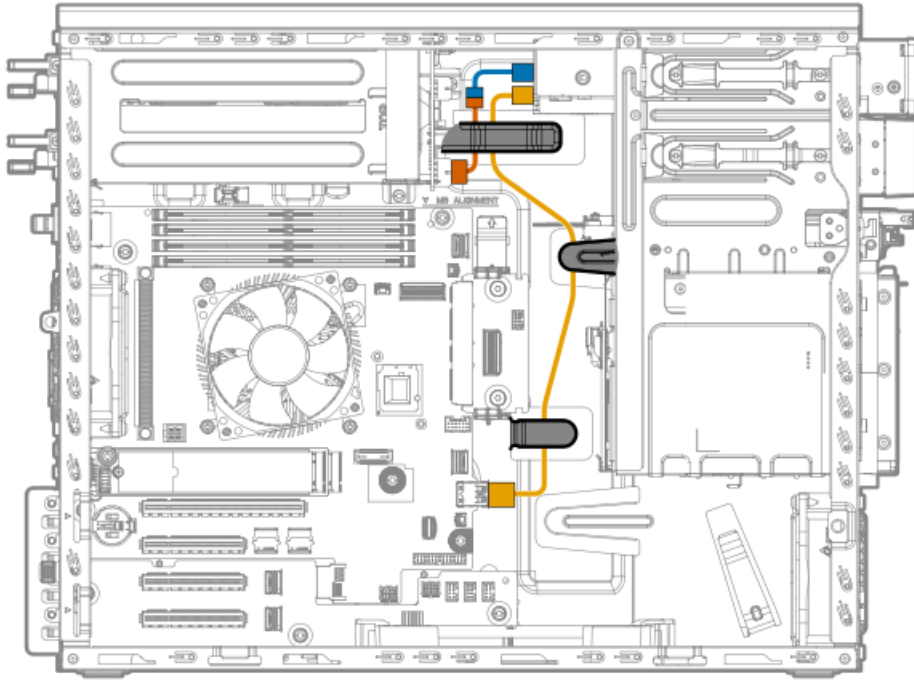
Cable part number	Color	From	To
P45215-001 [1]	Orange	Flexible Slot power supply HDD power connector	LTO/RDX power extension cable
848126-001 [2]	Blue	P2 or P4 connector of the Flexible Slot power supply cable	RDX drive power connector
880289-001 [3]	Gold	Internal, lower USB port	RDX drive USB port

[1] Option kit: P65104-B21
[2] Option kit: 851615-B21
[3] Option kit: P03819-B21

Optical drive cabling

Optical drive cabling with non-hot-plug power supply
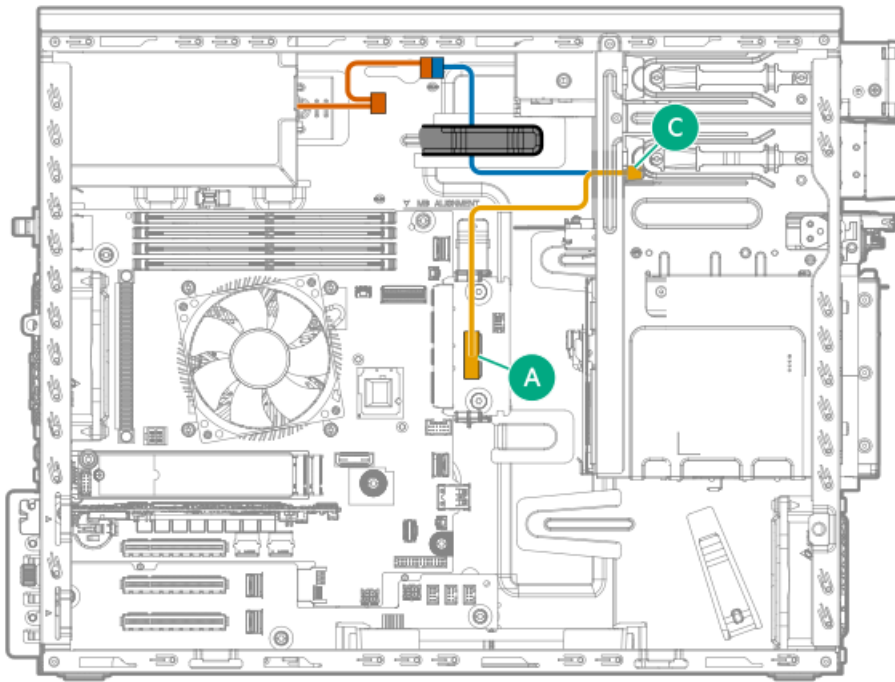
Cable part number	Color	From	To
—	Orange	Non-hot-plug power supply: P4 connector	Optical drive SATA-power Y-cable: 4-pin power connector
P62715-001 [1]	Blue	Non-hot-plug power supply: P4 connector	Optical drive SATA-power connector
	Gold	SlimSAS x8 port 3	Optical drive SATA-power connector

[1]   Option kit: P65102-B21

Optical drive cabling with Flexible Slot power supply
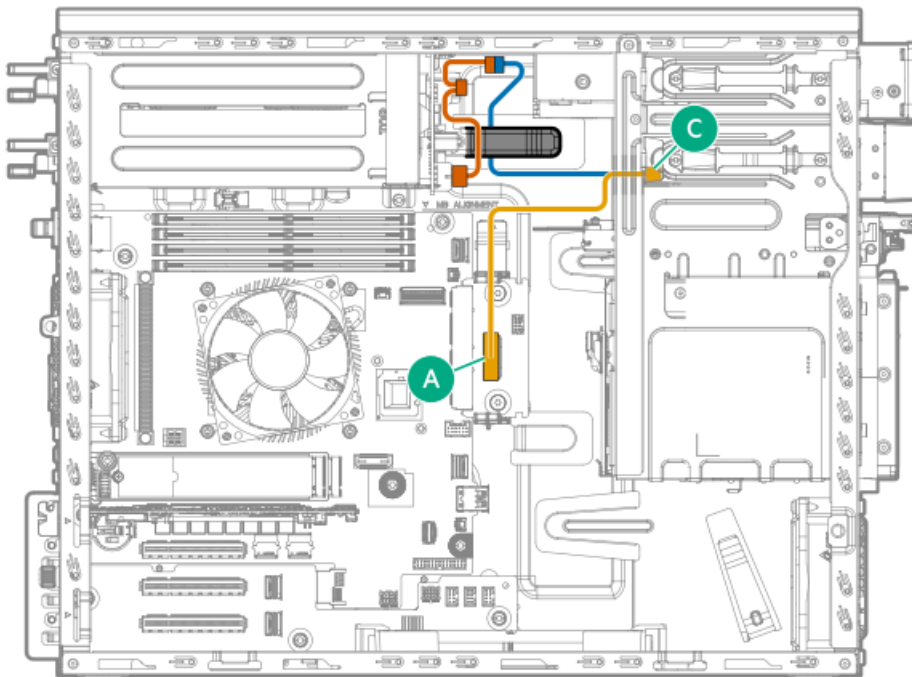
Cable part number	Color	From	To
P45215-001 [1]	Orange	Flex Slot PDB: HDD PWR connector	Optical drive SATA-power Y-cable: 4-pin power connector
P62715-001 [2]	Blue	Flex Slot power fan-out cable: ODD PWR connector	Optical drive SATA-power connector
	Gold	SlimSAS x8 port 3	Optical drive SATA-power connector

[1]   Option kit: P65104-B21
[2]   Option kit: P65102-B21

Fan cabling

Subtopics

PCIe fan cabling

System fan cabling

PCIe fan cabling
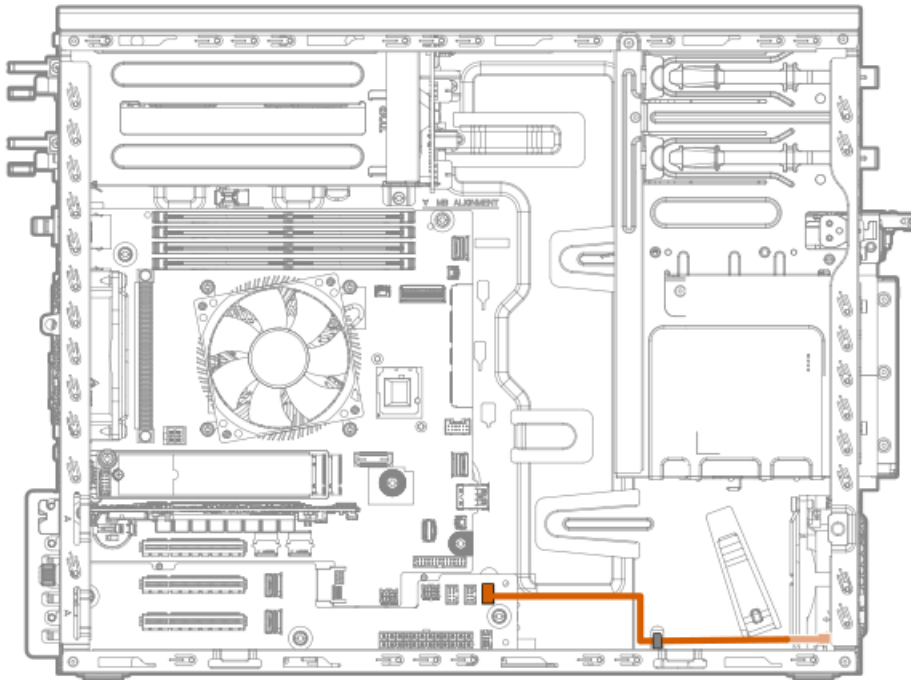
System fan cabling
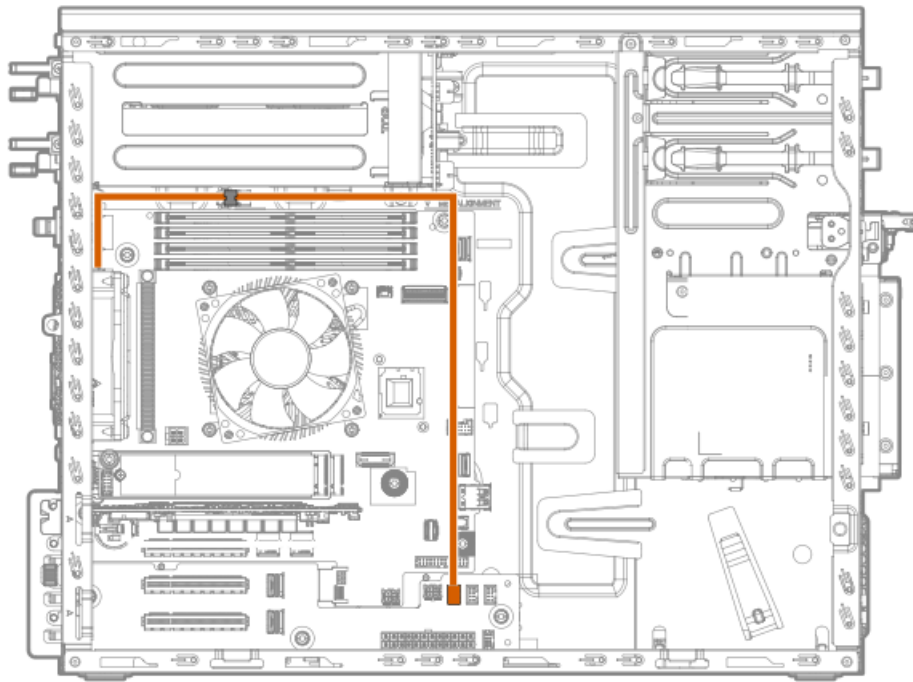
HPE NS204i-u Boot Device cabling
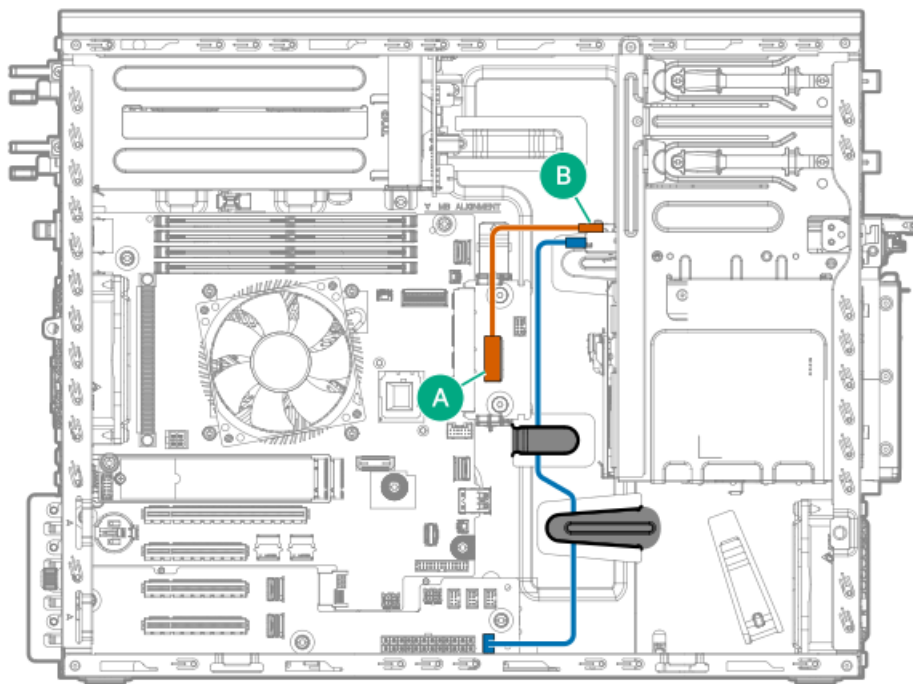
Cable part number	Color	From	To
P54087-001 [1]	Orange	SlimSAS x8 port 3	HPE NS204i-u Boot Device
P54089-001 [1]	Blue	HPE NS204i-u Boot Device	NS204i-u power connector

Option kit: P65099-B21

[1]

Serial port cabling
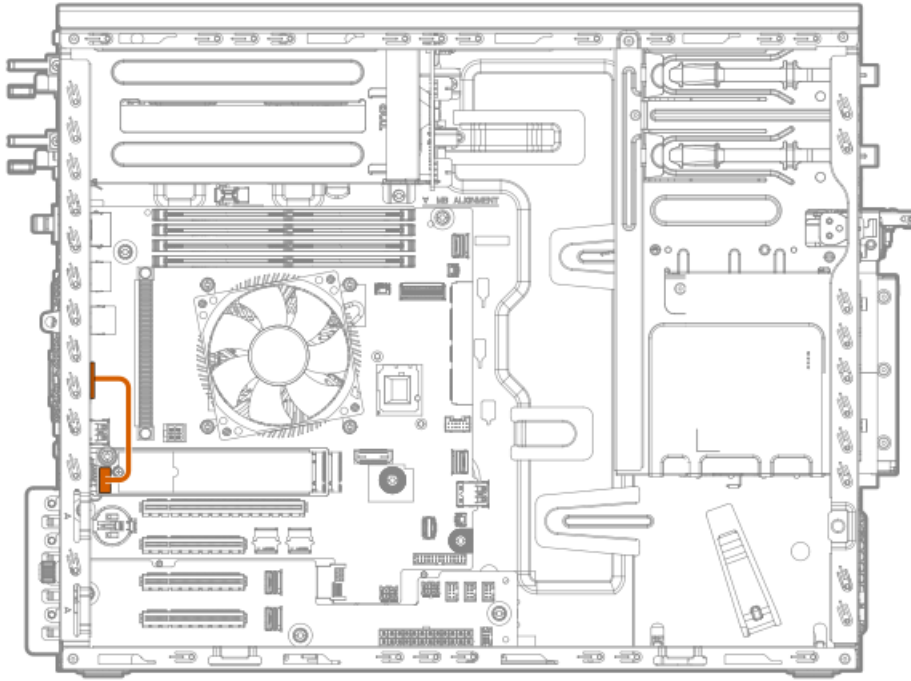
Cable part number	Color	From	To
P63693-001 [1]	Orange	iLO dedicated module	D89 connector on the iLO-M.2-serial module

[1]   Option kit: P65741-B21

PCIe x4 signal cabling for expansion slots 3 and 4
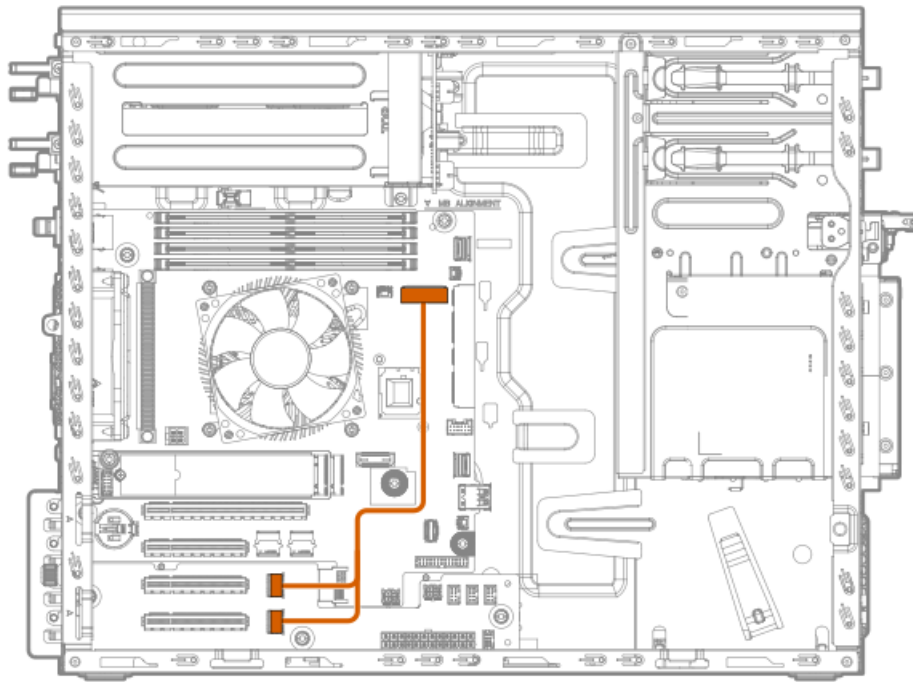
Cable part number	Color	From	To
P62709-001	Orange	SlimSAS x8 port 1	Slot 3 SimSAS x4 port 1 and Slot 4 SlimSAS x4 port 2

Front I/O cabling
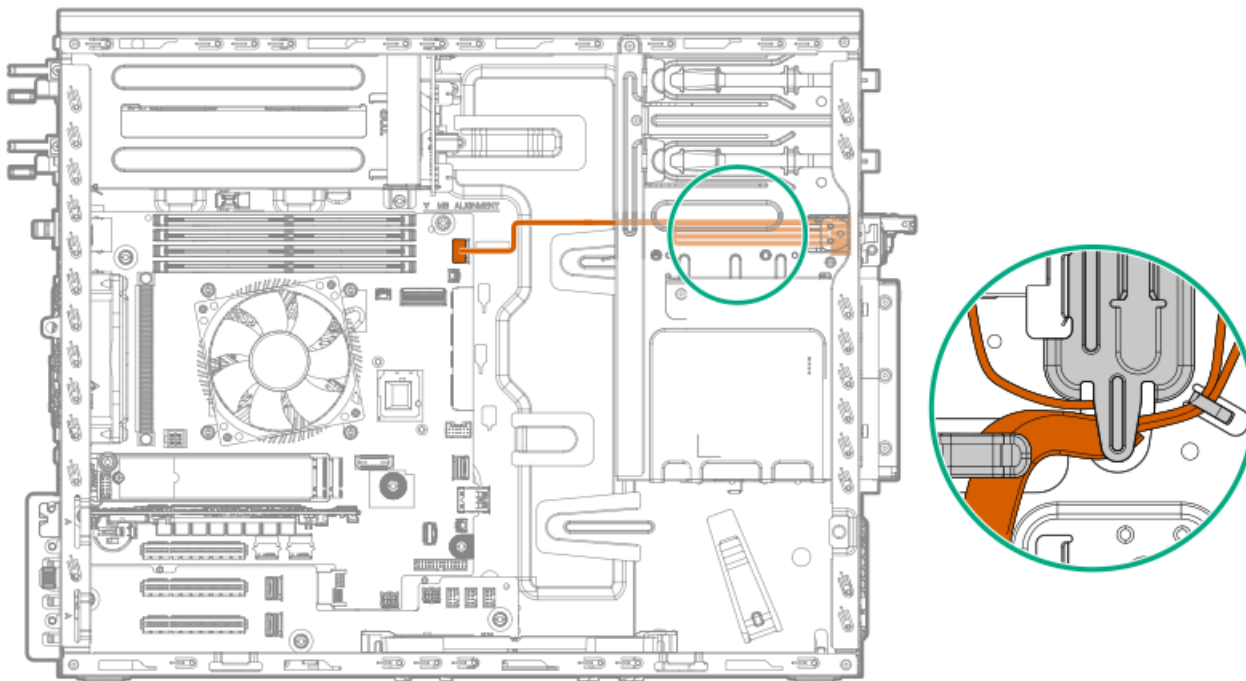
Cable part number	Color	From	To
P63681-001	Orange	Front I/O & USB 3.2 Gen 1 and iLO service port connector	Front I/O board

GPU auxiliary power cabling
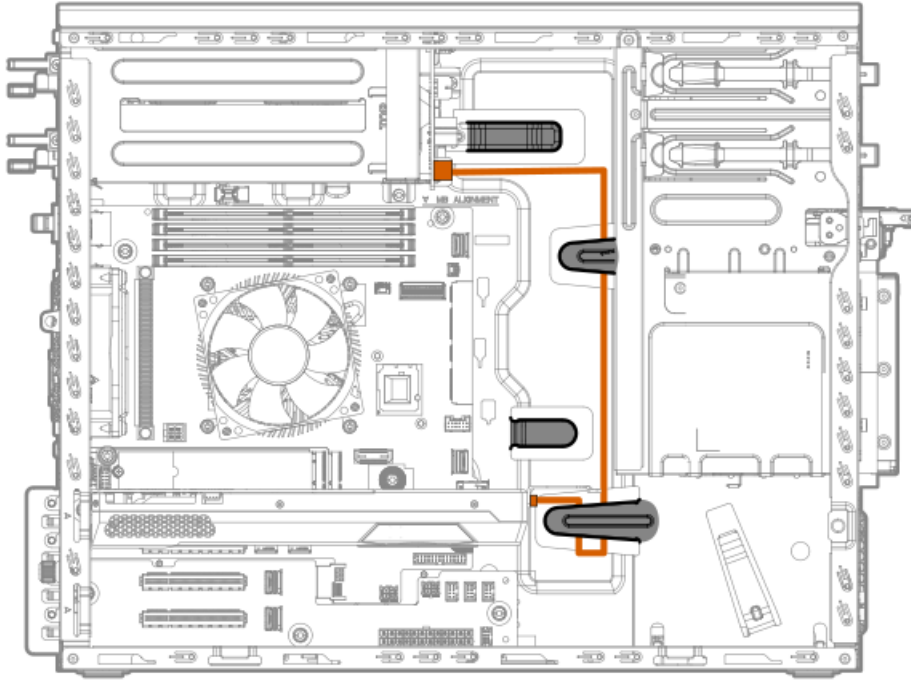
Cable part number	Color	From	To
P45218-001	Orange	GPU power connector	Graphics card power slot 1

Power supply cabling

Subtopics

Non-hot-plug power supply cabling

Flexible Slot power supply cabling

Non-hot-plug power supply cabling
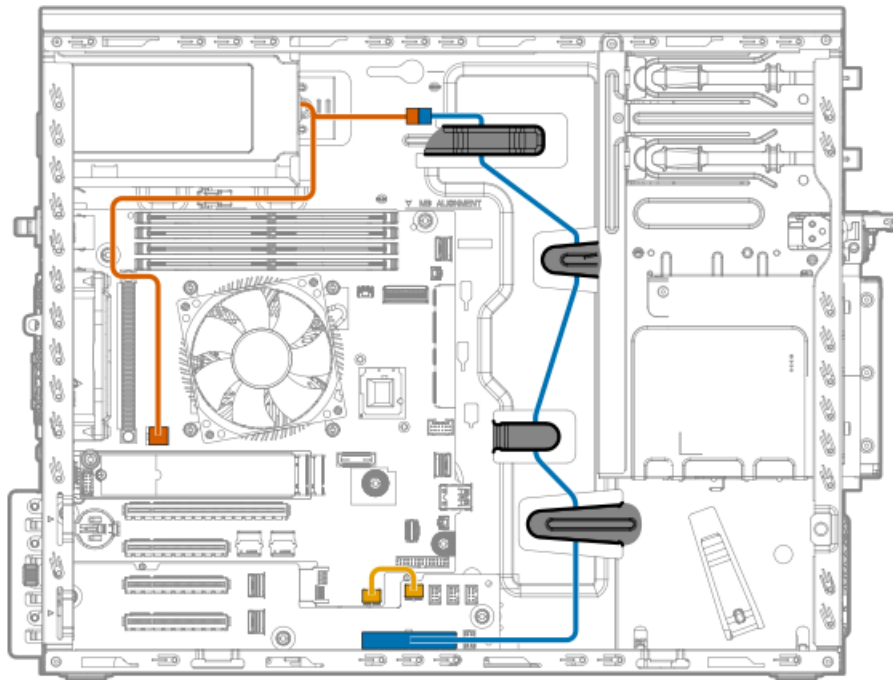
Cable part number	Color	From	To
—	Orange	Non-hot-plug power supply	4-pin processor power connector
P62710-001	Blue	4-pin processor power cable	24-pin power supply connector
P63697-001	Gold	Mainboard: System power connector	PDB: System power connector

Flexible Slot power supply cabling
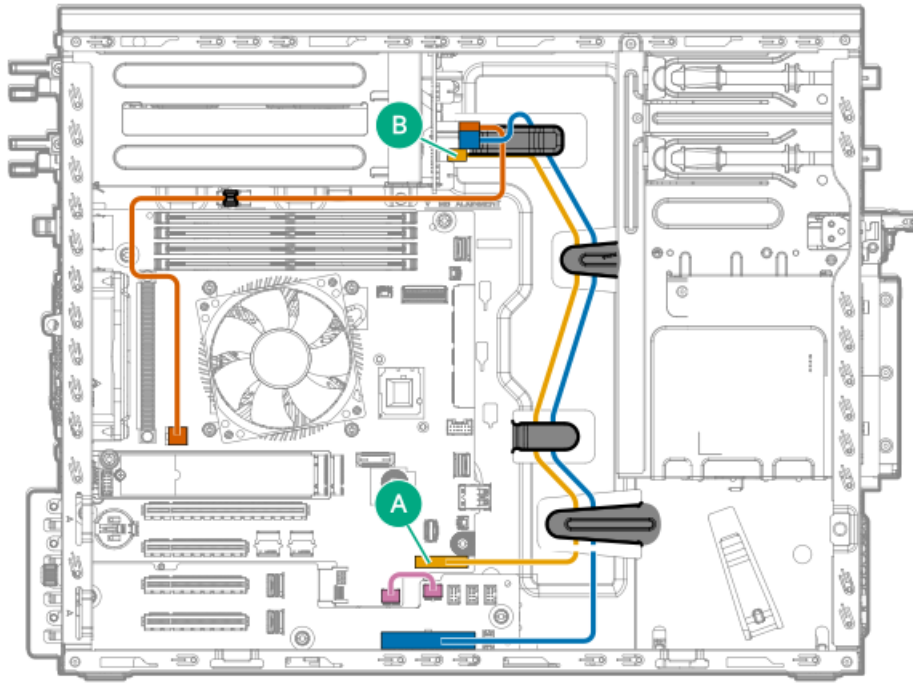
Cable part number	Color	From	To
P63691-001 [1]	Orange	CPU power connector	4-pin processor power connector
P62711-001 [1]	Blue	24P power connector	24-pin power supply connector
P62713-001 [1]	Gold	Sideband connector	Power supply sideband connector
P63697-001	Pink	Mainboard: System power connector	PDB: System power connector

[1]   Option kit: P65104-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/1014788890**).

- Products ordered from HPE Factory Express might have already been configured with some or all the configurations in this chapter. To determine if any additional setup is required, see your HPE Factory Express order.

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

Subtopics

Updating firmware or system ROM

Configuring the server

Configuring storage controllers

Managing the HPE NS204i-u Boot Device

Deploying an OS

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 SR Gen10 controllers	HPE Smart Array SR Controller Gen10 User Guide https://www.hpe.com/support/SR-Gen10-UG

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

Removing and replacing the system battery

About this task

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

Procedure

1. **Power down the server**.

2. Remove all power:

   a. Disconnect each power cord from the power source.

   b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.

4. Do one of the following:

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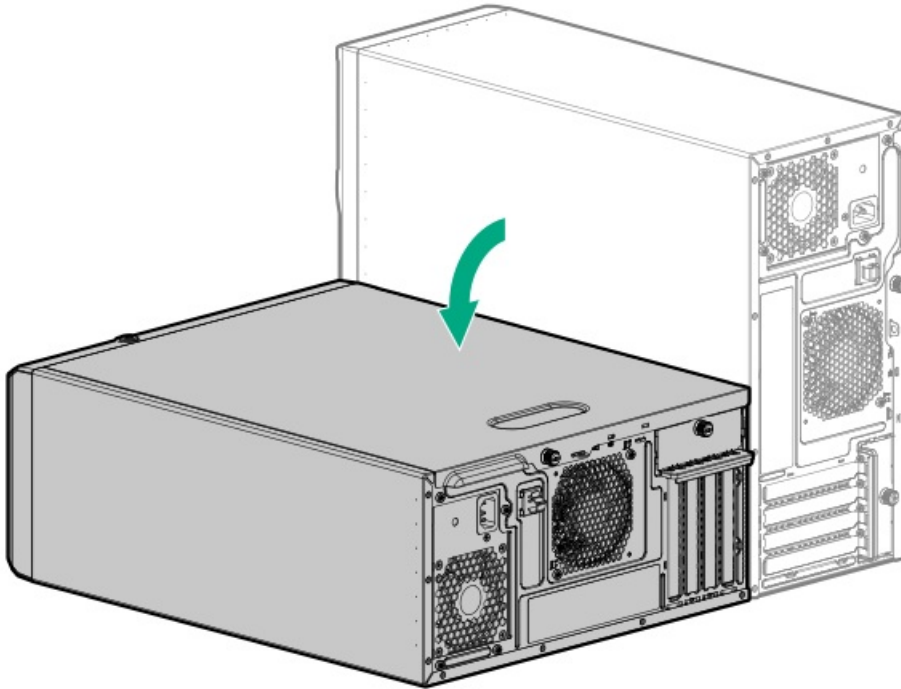
   - If the server is in rack mode, remove the server from the rack.

5. Remove the access panel.

6. If installed, remove the air baffle.

7. <u>Locate the battery on the system board</u>.

8. If an expansion card is installed on expansion slots 1 and 2, remove the card.
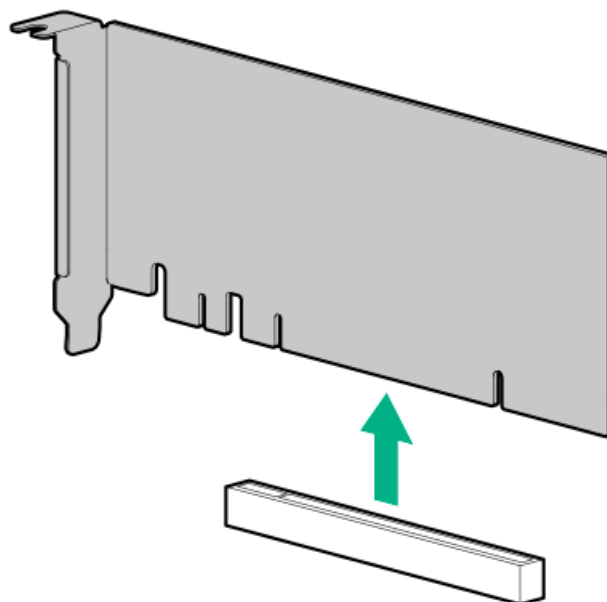
9. Remove the system battery:

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

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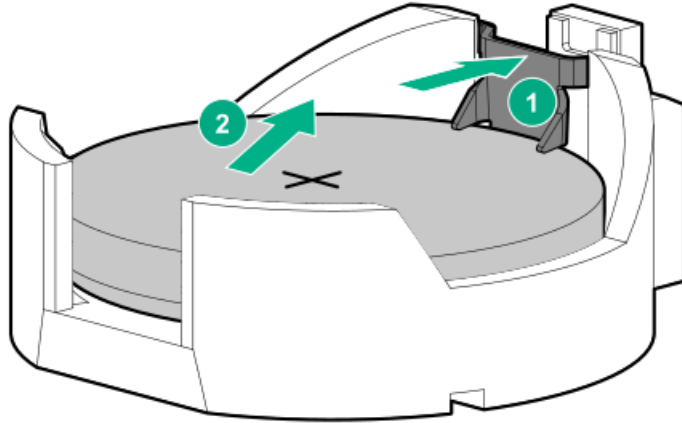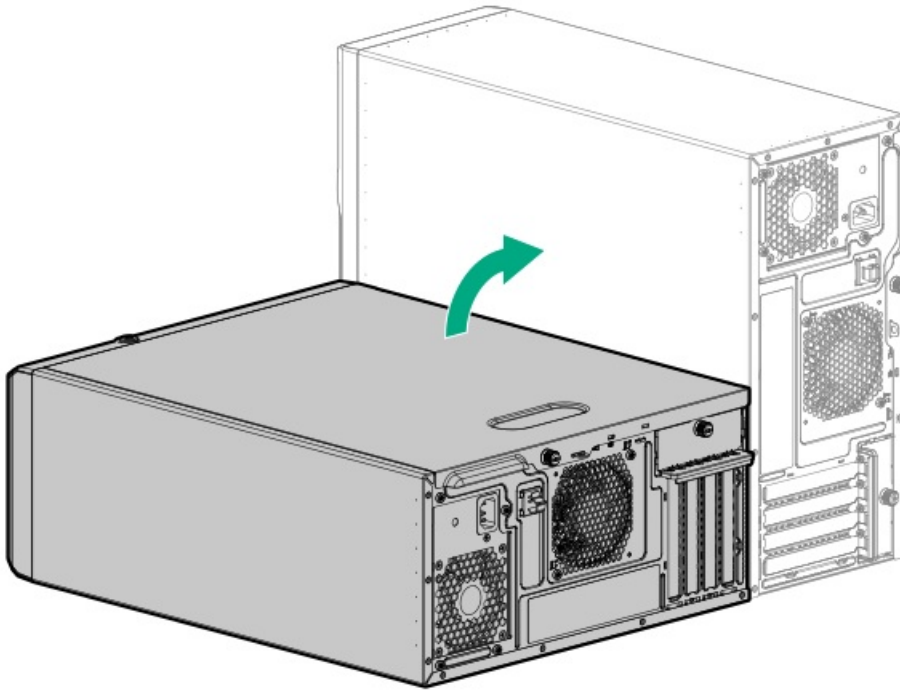
10. Install the system battery:

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.
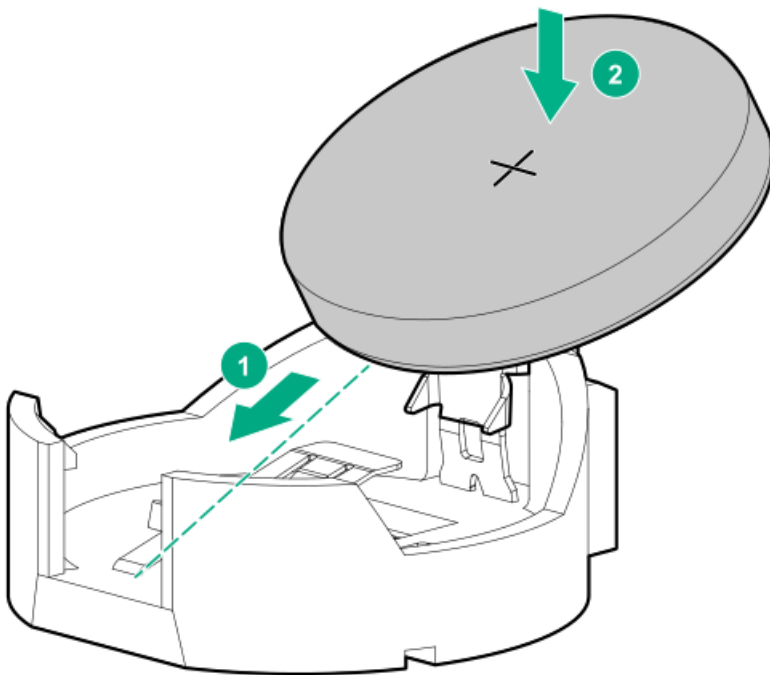
11. If removed, install the air baffle.

12. Install the access panel.

13. Do one of the following:

- Orient the server back in tower mode.

- Install the server into the rack .

14. Connect all peripheral cables to the server.

15. Connect each power cord to the server.

16. Connect each power cord to the power source.

17. Wait for 10 minutes for the server to reset and reinitialize the iLO configuration settings stored in SRAM.

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

18. **Power up the server**.

19. Properly dispose of the old battery.

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

Safety, warranty, and regulatory information

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**
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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

Specification	Value
Dimensions	—
Height	36.83 cm (14.50 in)
Depth	47.50 cm (18.70 in)
Width	17.53 cm (6.90 in)
Weight, approximate values	—
Minimum	10.20 kg (22.50 lb)
Maximum	18.70 kg (41.20 lb)

Power supply specifications

Depending on the installed options and the regional location where the server was purchased, the server can be configured with one of the following power supplies. For detailed power supply specifications, see the QuickSpecs on the **Hewlett Packard Enterprise website**.

Subtopics

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

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

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

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

HPE 1000 W Flex Slot Titanium Hot-plug Power Supply

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

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	6 A
Rated input power	400 W at 115 VAC 400 W at 230 VAC
Efficiency	At 115 VAC: No less than 87% at 100% load No less than 90% at 50% load No less than 87% at 20% load At 230 VAC: No less than 88% at 100% load No less than 92% at 50% load No less than 88% at 20% load
Power supply output	—
Rated steady-state power	350 W at 115 VAC 350 W at 230 VAC
Maximum peak power	385 W at 115 VAC 385 W at 230 VAC
Rated output power	350 W

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

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

HPE 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
Rated input frequency	50 Hz to 60 Hz
	Not applicable to 240 VDC
Rated input current	5.8 A at 100 VAC
	2.8 A at 200 VAC
	2.4 A at 240 VDC for China
Maximum rated input power	580 W at 100 VAC
	560 W at 200 VAC
	558 W at 240 VDC for China
BTUs per hour	1999 at 100 VAC
	1912 at 200 VAC
	1904 at 240 VDC for China
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
Maximum peak power	500 W at 100 VAC to 127 VAC input
	500 W at 100 VAC to 240 VAC input
	500 W at 240 VDC input for China

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

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

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
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

Websites

General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

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

Product white papers and analyst reports

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

For additional websites, see **Support and other resources**.

Product websites

HPE ProLiant ML30 Gen11 Server product page

https://buy.hpe.com/us/en/p/1014788890

HPE ProLiant ML30 Gen11 Server user documents

https://www.hpe.com/info/ml30gen11-docs

Support and other resources

Subtopics

Accessing Hewlett Packard Enterprise Support

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

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

HPE Complete Care

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

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, use the Feedback button and icons (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.