



HPE ProLiant DL20 Gen11 User Guide

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HPE ProLiant DL20 Gen11 User Guide

Abstract

This document is for the person who installs, administers, and troubleshoots servers and storage systems. Hewlett Packard Enterprise assumes you are qualified in the servicing of computer equipment and trained in recognizing hazards in products with hazardous energy levels, and are familiar with the weight and stability precautions for rack installations.

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Component identification

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

Subtopics

Front panel components

Front panel LEDs and buttons

Rear panel components

Rear panel LEDs

Component touchpoints

System board components

Riser board component

OCP slot population rules

PCIe5 slot description

HPE Basic Drive LED definitions

Drive bay numbering

Drive backplane naming

iLO-M.2-serial module components

Fan numbering

Fan mode behavior

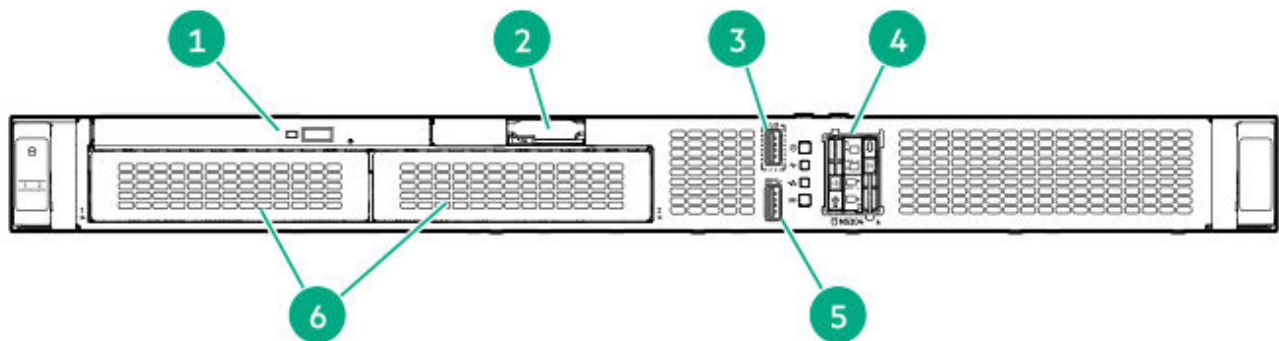
Trusted Platform Module 2.0

HPE NS204i-u Boot Device components

HPE NS204i-u Boot Device LED definitions

Front panel components

2 LFF non-hot-plug drive model

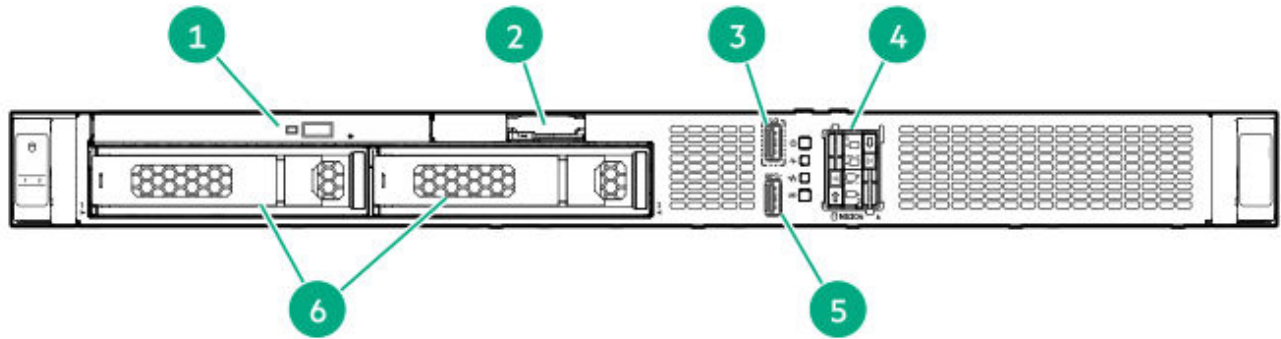


Item	Description
1	Optical drive (optional)
2	Serial number/iLO information pull tab ¹
3	iLO service port
4	HPE NS204i-u Boot Device (optional)
5	USB 3.2 Gen1 port
6	2 LFF non-hot-plug drive cage ²

¹ The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.

² The 2 LFF non-hot-plug drive cage supports SATA drives.

2 LFF hot-plug drive model

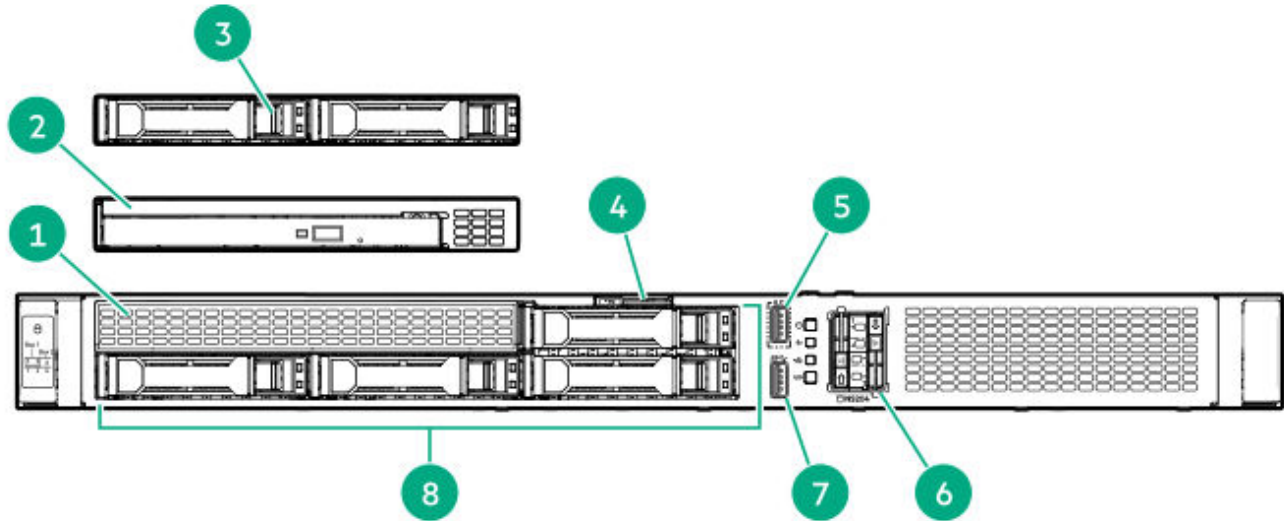


Item	Description
1	Optical drive (optional)
2	Serial number/iLO information pull tab ¹
3	iLO service port
4	HPE NS204i-u Boot Device (optional)
5	USB 3.2 Gen1 port
6	2 LFF hot-plug drives ²

¹ The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.

² The 2 LFF drive bays support SAS or SATA drives.

4 + 2 SFF hot-plug drive model



Item	Description
1	Media bay ¹
2	Optical drive (optional)
3	2 SFF hot-plug drive cage (optional) ²
4	Serial number/iLO information pull tab ³
5	iLO service port
6	HPE NS204i-u Boot Device (optional)
7	USB 3.2 Gen1 port
8	4 SFF hot-plug drives ⁴

¹ The media bay supports the optical drive cage or the 2 SFF drive cage option.

² The 2 SFF drive cage supports SAS, SATA, or U.3 NVMe drives.

³ The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.

⁴ The 4 SFF drive bays support SAS or SATA drives.

Subtopics

iLO Service Port

iLO Service Port

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

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

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

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

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

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

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

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

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

When you use the iLO Service Port:

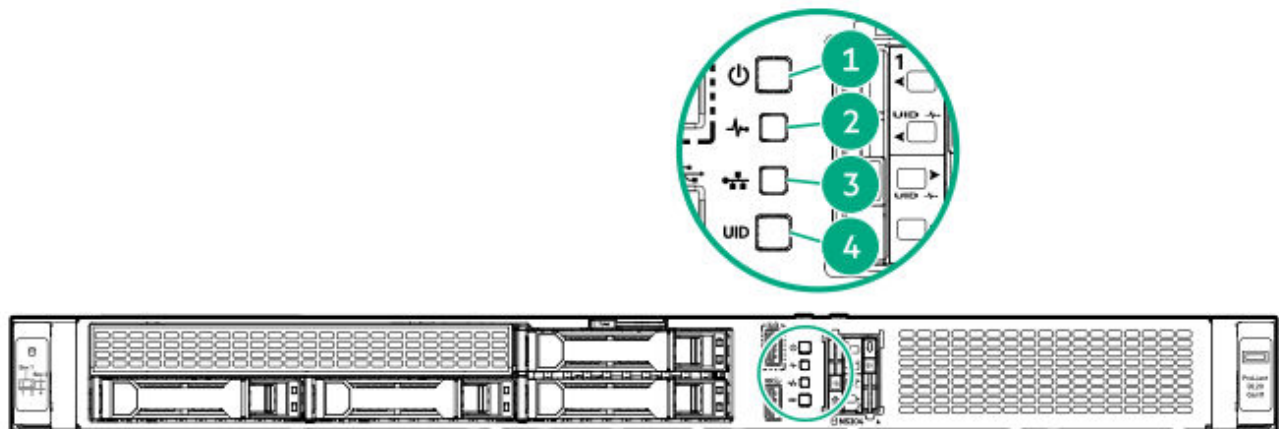
- Actions are logged in the iLO event log.
- The server UID flashes to indicate the Service Port status.

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

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

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

Front panel LEDs and buttons



Item	LED	Status	Definition
1	Power On/Standby button and system power LED <u>1</u>	Solid green	System on
		Flashing green	Performing power-on sequence
		Solid amber	System in standby
		Off	No power present <u>2</u>
2	Health LED <u>1</u>	Solid green	Normal
		Flashing green	iLO is rebooting
		Flashing amber	System degraded <u>3</u>
		Flashing red	System critical <u>3</u>
3	NIC status LED <u>1</u>	Solid green	Linked to network
		Flashing green	Network active
		Off	No network activity
4	UID button/LED <u>1</u>	Solid blue	Activated
		Flashing blue	<ul style="list-style-type: none"> 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
		Off	Deactivated

- 1 When all LEDs flash simultaneously, a power fault has occurred. For more information, see [Front panel LED power fault codes](#).
- 2 Facility power is not present, power cord is not attached, no power supplies are installed, or power supply failure has occurred.
- 3 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.

Subtopics

[Server UID LED](#)

[Viewing the Server Health Summary](#)

[Front panel LED power fault codes](#)

Server UID LED

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

Viewing 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

If the server does not power on, 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.

For more information, see the iLO troubleshooting guide on the [Hewlett Packard Enterprise website](#).

Procedure

1. Press and release the UID button.



CAUTION

Be sure to press and release the UID button. Pressing the UID button at any time for more than five seconds will initiate a graceful iLO reboot or a hardware iLO reboot. Data loss or NVRAM corruption might occur during a hardware iLO reboot.

The **Server Health Summary** screen displays on the external monitor.

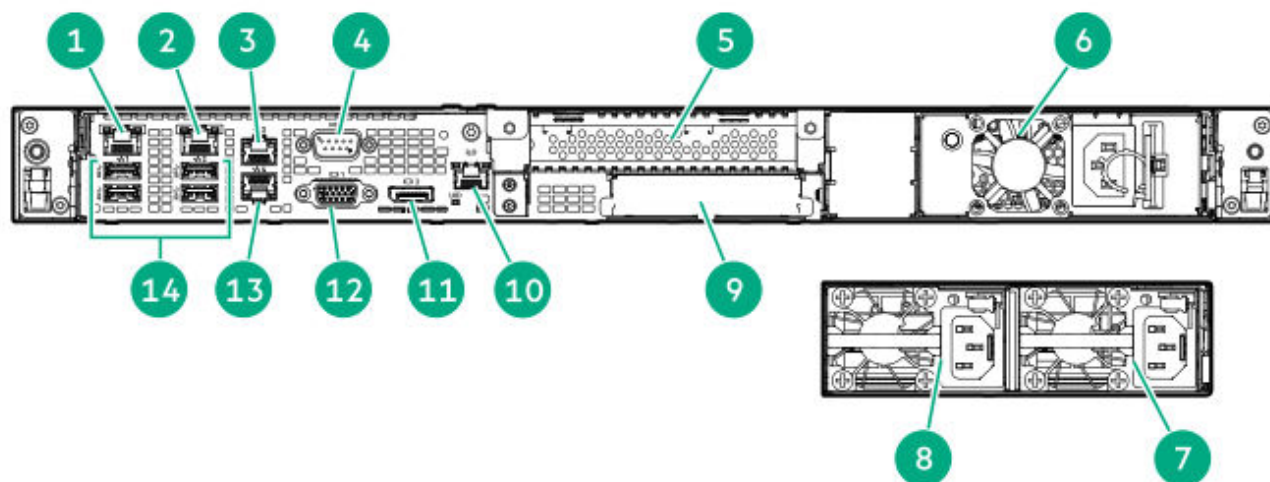
2. Press the UID button again to close the **Server Health Summary** screen.

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	NIC 1 / iLO shared port (1 GbE)
2	NIC port 2 (1 GbE)
3	NIC port 3 (1 GbE)
4	Serial port (optional)
5	Slot 1 PCIe5 x16 (16, 8, 4, 1)
6	ATX non-hot-plug power supply
7	Flexible Slot power supply 1
8	Flexible Slot power supply 2 (optional)
9	OCP 15 PCIe5 x4
10	iLO dedicated network port (optional)
11	<u>DisplayPort 1.1a</u>
12	<u>VGA port</u>
13	NIC port 4 (1 GbE)
14	USB 3.2 Gen1 ports (4) 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.

Subtopics

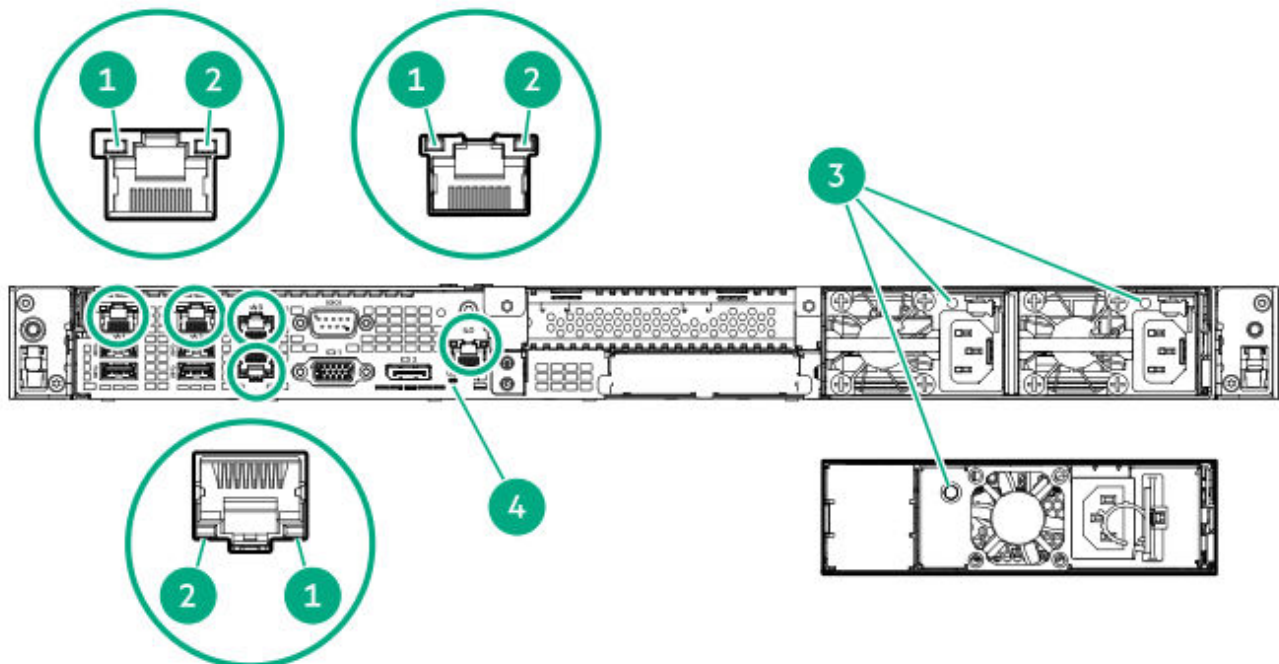
Monitor setup

Monitor setup

Before connecting a monitor, observe the following:

- The server supports both VGA port and DisplayPort 1.1a.
- If you connect two display devices to the server using both the VGA port and DisplayPort, the same image is mirrored on both devices.
- The embedded video controller in the iLO chipset does not support dual display or screen extension mode. To enable dual display, install a compatible graphics card.
- When using HDMI or DVI adapters for the DisplayPort, use an active-type adapter. Passive-type adapters marked with the DP++ symbol are not supported.
- Whenever possible, use the same display connection type. For example, if your monitor only has a VGA port, use the VGA port on the server. Using other adapters or converter cables or dongles might lead to decreased display quality or a lag over the connection.

Rear panel LEDs



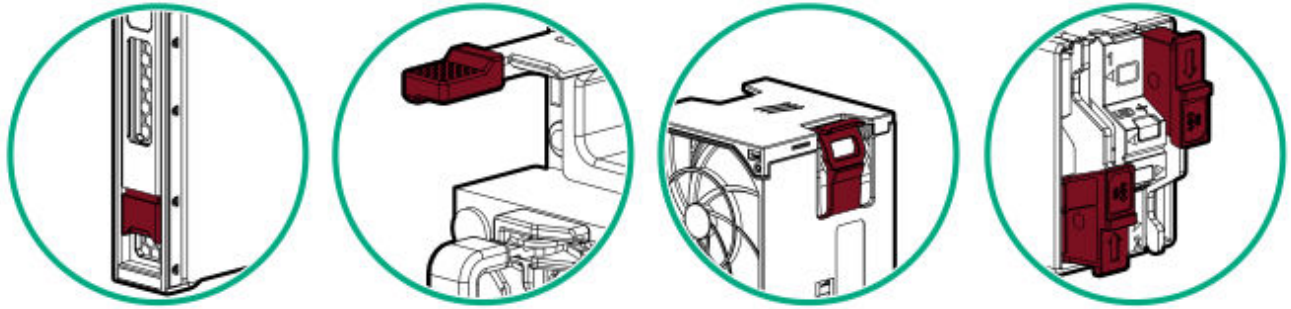
Item	LED	Status	Definition
1	NIC/iLO link	Solid green	Network link speed is 1000 Mb/s.
		Solid amber	Network link speed is 10/100 Mb/s.
		Off	No network link
2	NIC/iLO activity	Flashing green	Network active
		Off	No network activity
3	Power supply	Solid green	The power supply is operating normally
		Off	One or more of the following conditions exists: <ul style="list-style-type: none"> • Power is unavailable • Power supply failure • Power supply is in standby mode • Power supply error
4	UID	Solid blue	Activated
		Flashing blue	<ul style="list-style-type: none"> • 1 flash per second—Remote management or firmware upgrade in progress • 4 flashes per sec—iLO manual reboot sequence initiated • 8 flashes per sec—iLO manual reboot sequence in progress
		Off	Deactivated

Component touchpoints

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

The following diagrams are examples only.

HPE hot-plug red

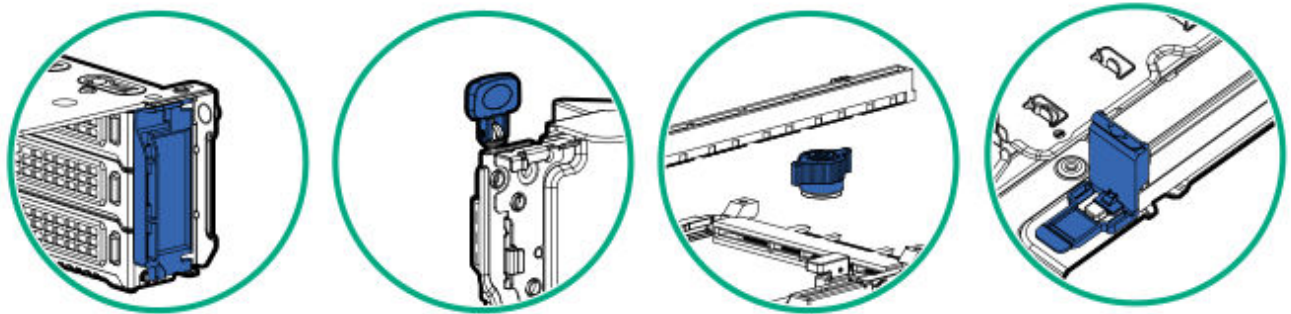


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

Component examples:

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

HPE touchpoint blue



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

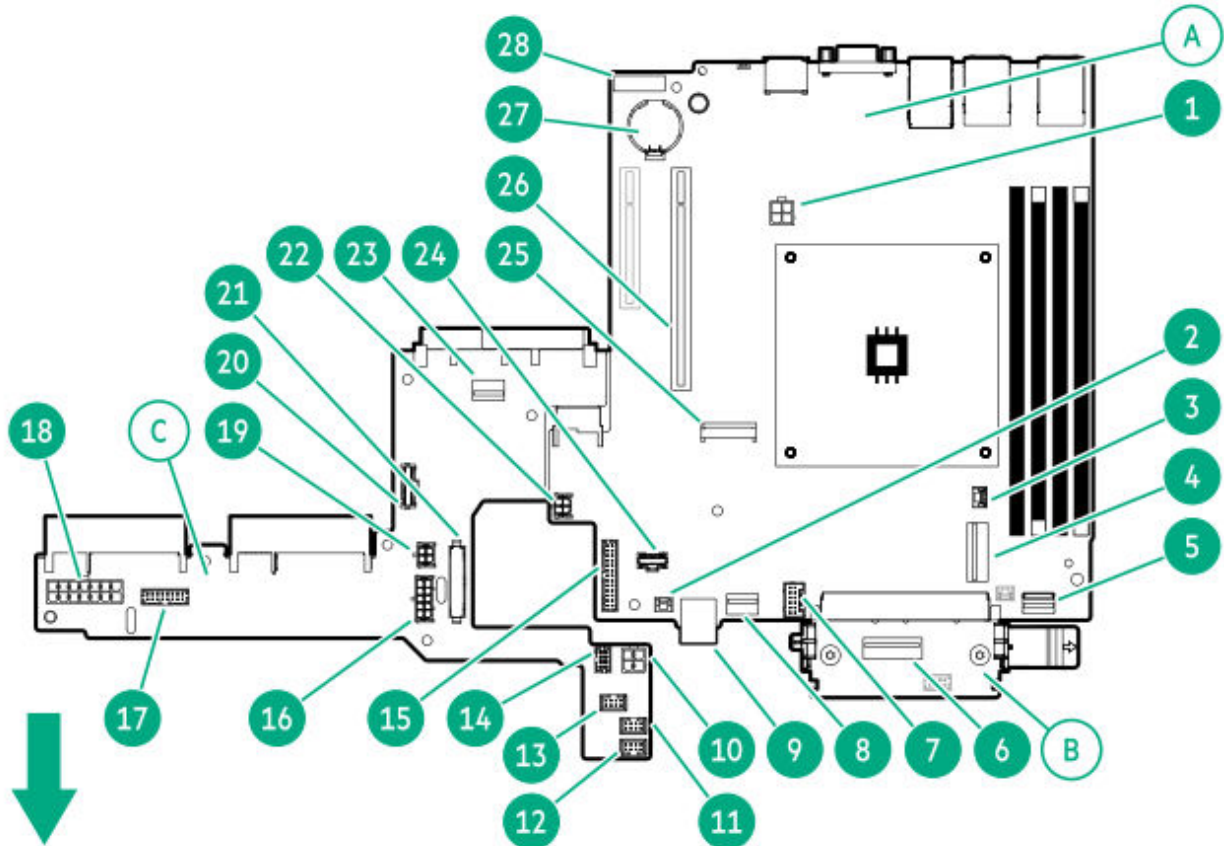
Component examples:

- Storage devices
- Fan cages
- System boards

- Energy packs

System board components

The arrow points to the front of the server.



The system board comprises 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. The Slot 15 external OCP PCIe4 x4 is accessible from the rear panel.

Item	Description
1	4-pin processor power connector
2	Storage controller backup power connector
3	Chassis intrusion detection switch connector
4	SlimSAS x8 port 1
5	Front I/O & USB 3.2 Gen 1 & iLO service port connector
6	SlimSAS x8 port 3 ¹ _—
7	Energy pack connector
8	SlimSAS x4 port 2
9	Stacked, internal dual USB 3.2 Gen 2 ports
10	4-pin processor power connector
11	System fan connector
12	Processor fan connector
13	PCIe fan connector
14	NS204i-u power connector
15	Mainboard: Power supply sideband connector
16	Drive backplane power connector
17	ATX sideband connector
18	14-pin ATX power supply connector
19	PDB: System power connector
20	PTB: Slot 15 external OCP sideband connector
21	PDB: Power supply sideband connector
22	Mainboard: System power connector
23	SlimSAS x4 port
24	Mainboard: Slot 15 external OCP sideband connector
25	M.2 slot 1 ² _—
26	Slot 1 PCIe5 x16
27	System battery
28	<u>System maintenance switch</u>

¹ For a SATA 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](#)

[DIMM label identification](#)

[DIMM slot numbering](#)

System maintenance switch

The system maintenance switch is a DIP switch on the system board used for service, troubleshooting, or other system configurations. Each switch is OFF by default and each ON position enables a specific function.

To locate the system maintenance switch on your server, see [System board components](#).

Position	Default	Function
S1 ¹ _—	Off	<ul style="list-style-type: none">Off—iLO 6 security is enabled.On—iLO 6 security is disabled.
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 ¹ _—	Off	<ul style="list-style-type: none">Off—Power-on password is enabled.On—Power-on password is disabled.
S6 ^{1, 2, 3} _{—, —, —}	Off	<ul style="list-style-type: none">Off—No functionOn—Restore default manufacturing settings
S7	Off	Reserved
S8	Off	Reserved
S9	Off	Reserved
S10	Off	Reserved
S11	Off	Reserved
S12	Off	Reserved

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

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

- ³ When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see [Configuring the server](#).

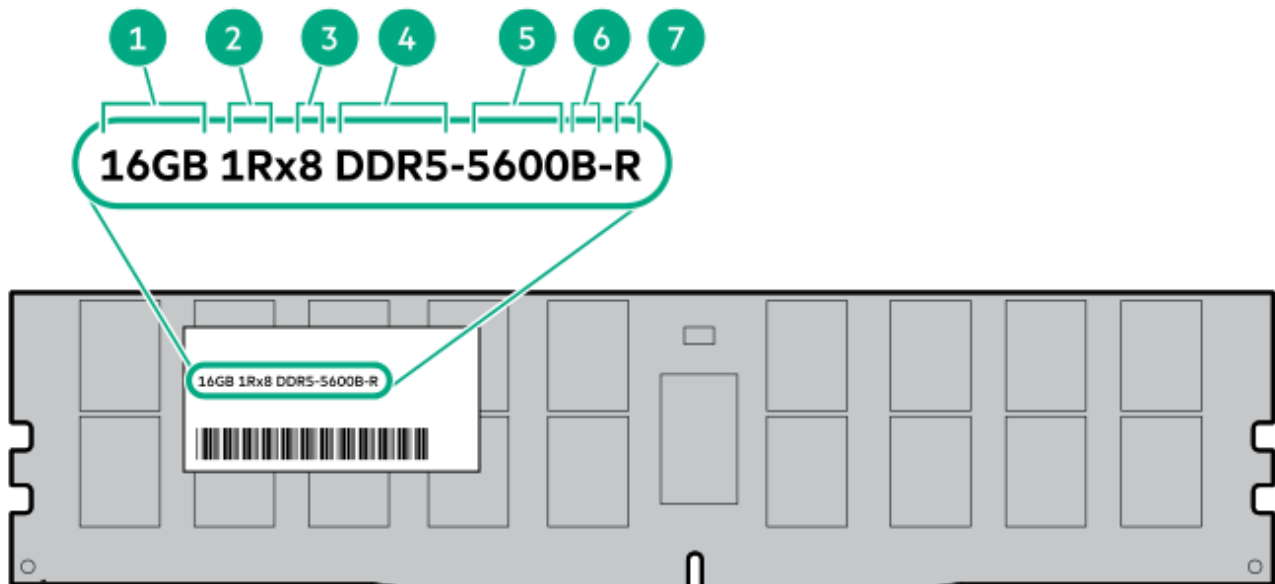
DIMM label identification

The label contains information about the DIMM. For additional information about DIMMs, including:

- Memory speeds and server-specific DIMM population rules
- Product features, specifications, options, configurations, and compatibility

See the website:

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



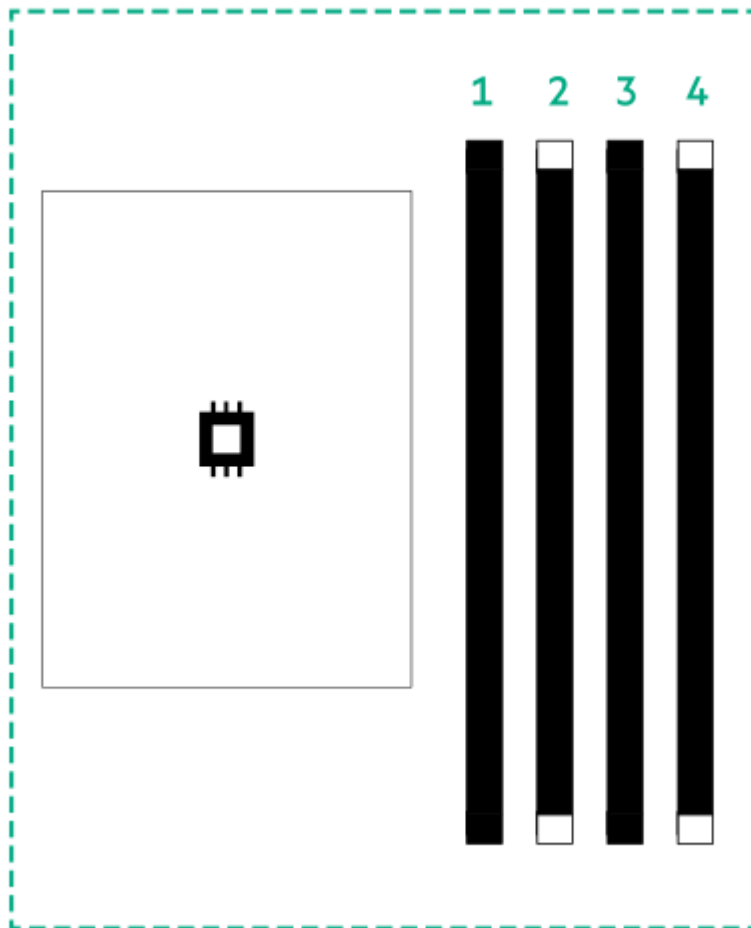
Item	Description	Example
1	Capacity $\frac{1}{-}$	16 GB 32 GB 64 GB 96 GB 128 GB 256 GB

Item	Description	Example
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 5600 MT/s 6400 MT/s
6	CAS latency	B—42-42-42 B—50-42-42 (for 128 GB and 256 GB capacities)
7	DIMM type	E—UDIMM (unbuffered with ECC) R—RDIMM (registered)

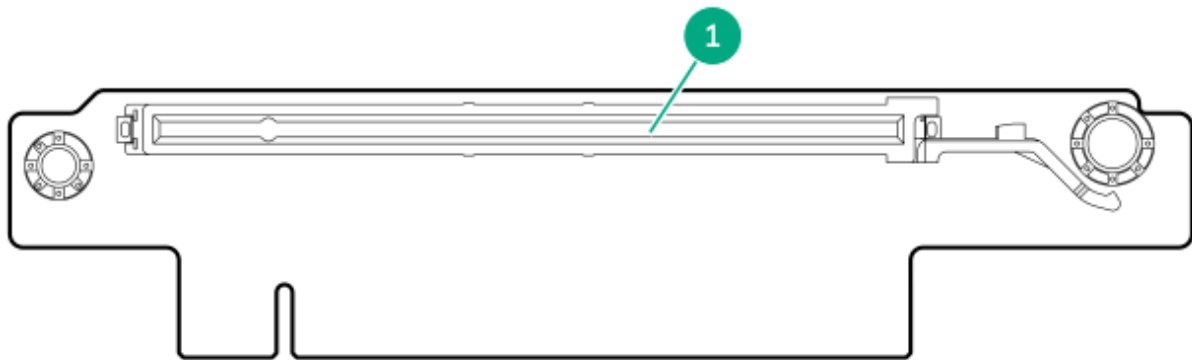
¹_— The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model.

DIMM slot numbering

The arrow points to the front of the server.

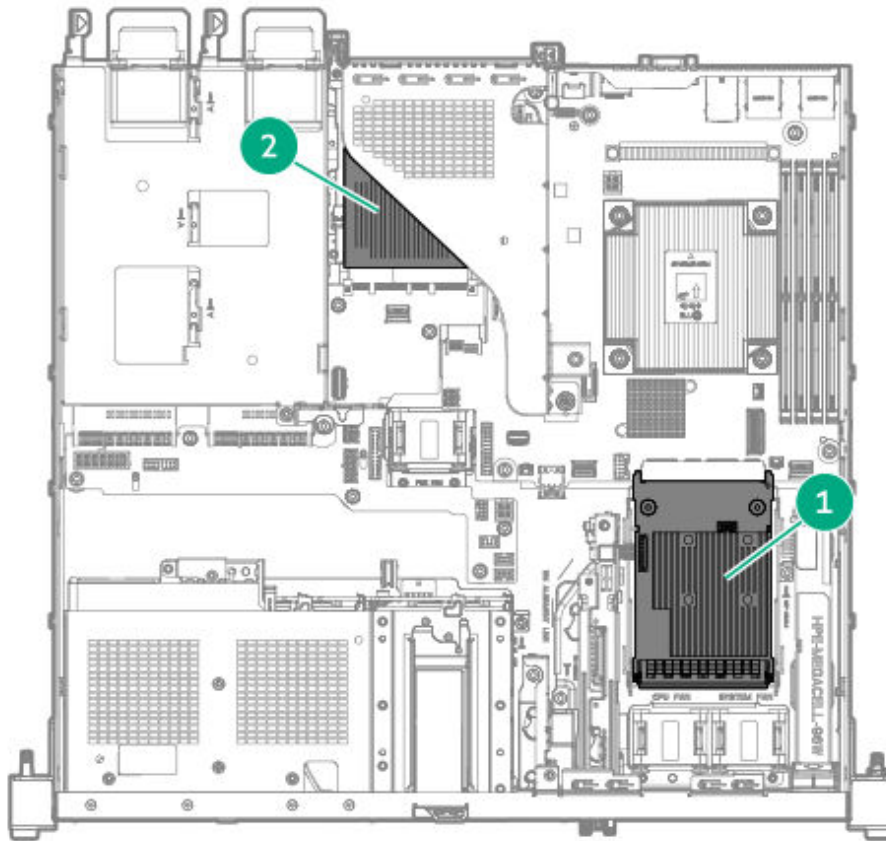


Riser board component



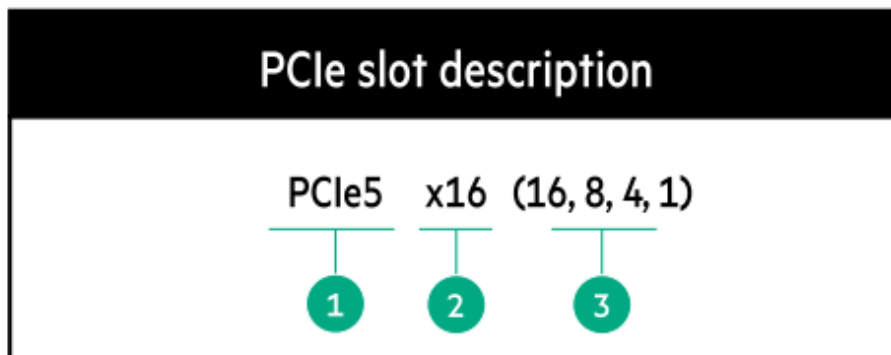
Slot number	Slot type	Slot power	Supported form factors
1	PCIe5 x16 (16, 8, 4, 1)	75 W	<ul style="list-style-type: none">• Full-height, half-length• Half-height, half-length (low-profile)

OCP slot population rules



Item	Slot number and description	Supported expansion options
1	Slot 14 OCP PCIe5 x4 (internal OCP)	Type-o storage controller
2	Slot 15 OCP PCIe5 x4 (external OCP)	OCP NIC 3.0 adapter

PCIe5 slot description



Item	Description	Definition
1	PCI Express version	<p>Each PCIe version corresponds to a specific data transfer rate between the processor and peripheral devices. Generally, a version update corresponds to an increase in transfer rate.</p> <ul style="list-style-type: none"> • PCIe 1.x • PCIe 2.x • PCIe 3.x • PCIe 4.x • PCIe 5.x <p>The PCIe technology is under constant development. For the latest information, see the PCI-SIG website.</p>
2	Physical connector link width	<p>PCIe devices communicate through a logical connection called an interconnect or link. At the physical level, a link is composed of one or more lanes. The number of lanes is written with an x prefix with x16 being the largest size in common use.</p> <ul style="list-style-type: none"> • x1 • x2 • x4 • x8 • x16

Item	Description	Definition
3	Negotiable link width	These numbers correspond to the maximum link bandwidth supported by the slot.

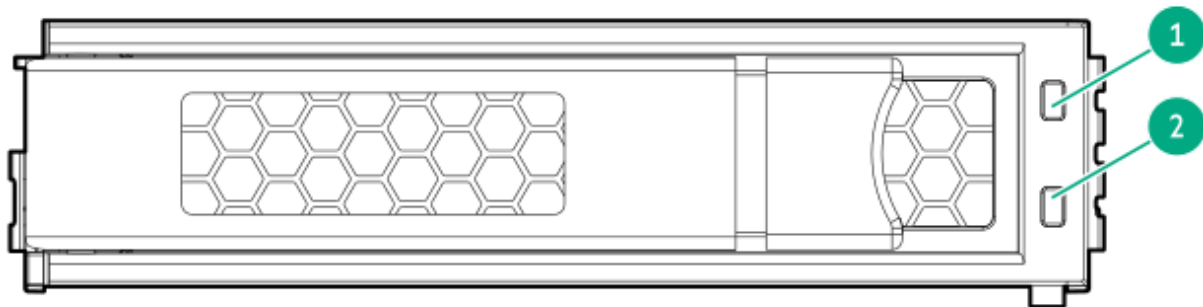
HPE Basic Drive LED definitions

The HPE Basic drive carrier has the following LEDs:

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

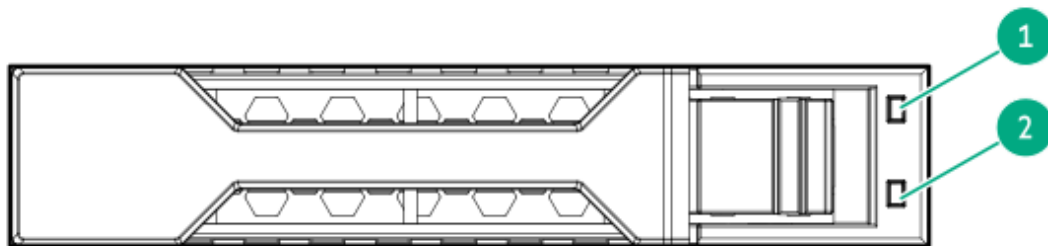
LFF low-profile drive carrier

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



SFF basic drive carrier

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



Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (1 flash per second)	The drive is doing one of the following: <ul style="list-style-type: none"> • Rebuilding or performing a RAID • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

Drive bay numbering

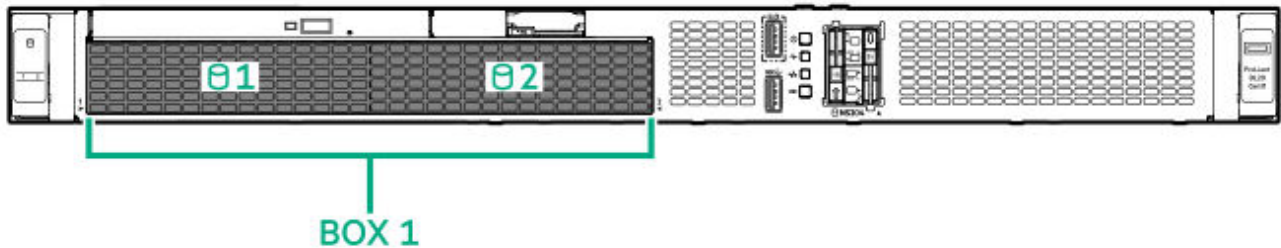


CAUTION

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

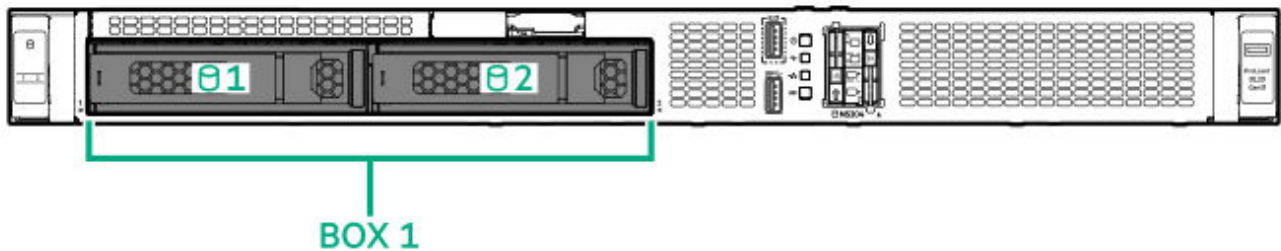
2 LFF non-hot-plug drive bay numbering

- SATA drives are supported.
- Onboard connection for the Intel VROC SATA RAID support is through the SlimSAS x4 port 2.



2 LFF hot-plug drive bay numbering

- The 2 LFF hot-plug drive box uses the 2 LFF 12G x1 SAS UBM3 LP BP drive backplane.
For more information on the drive backplane description, see [Drive backplane naming](#).
- SAS or SATA drives are supported.
- Onboard connection for the Intel VROC SATA RAID support is through the SlimSAS x4 port 2.

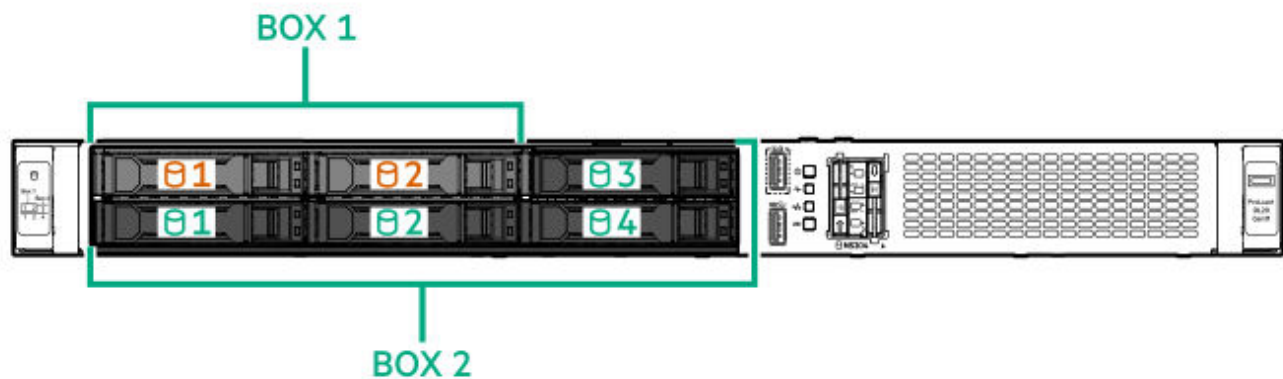


4 + 2 SFF hot-plug drive bay numbering

- The following drive backplanes are supported in 4 + 2 SFF hot-plug drive configuration:
 - Box 1: 2 SFF 24G x4 NVMe/SAS UBM3 BC BP
 - Box 2: 4 SFF 12G x1 SAS UBM3 BC BP

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

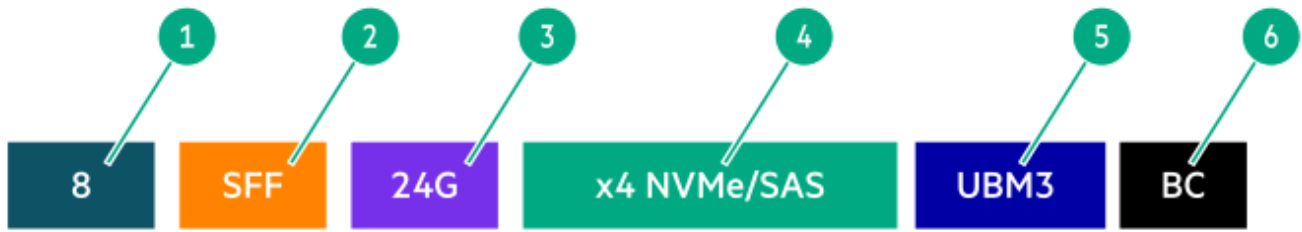
- Box 1 supports SAS, SATA, or U.3 NVMe drives.
- Box 1 for the Intel VROC SATA RAID support is through the SlimSAS x8 port 3.
- Box 2 supports SAS or SATA drives.
- Box 2 for the Intel VROC SATA RAID support is through SlimSAS x4 port 2.



Drive backplane naming

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

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



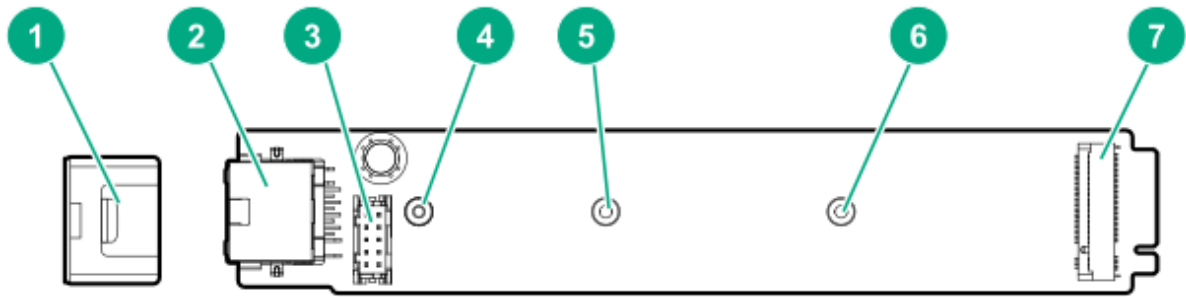
Item	Description	Values
1	Drive bay count	Number of drive bays supported by the backplane.
2	Drive form factor	LFF—Large Form Factor
		SFF—Small Form Factor
		E3S—Enterprise and Datacenter Standard Form Factor (EDSFF E3.S)
3	Maximum link rate per lane (GT/s)	12G
		16G
		24G
		32G
4	Port link width and interface	x1 NVMe/SAS—U.3 NVMe, SAS, or SATA ¹
		x4 NVMe/SAS—U.3 NVMe, SAS, or SATA ²
		x4 NVMe—NVMe ³
		x4 NVMe—E3.S
5	Universal backplane manager (UBM) model	The UBM model defines the UBM firmware used by the backplane. Examples of UBM models: UBM2, UBM3, and etc.
6	Drive carrier type	BC—Basic carrier (SFF)
		LP—Low-profile carrier (LFF)
		EC—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, x2 (via a splitter cable) U.3 NVMe, or x1 SAS and SATA drives.

³ CPU direct attach or tri-mode controller support for x4 NVMe drives.

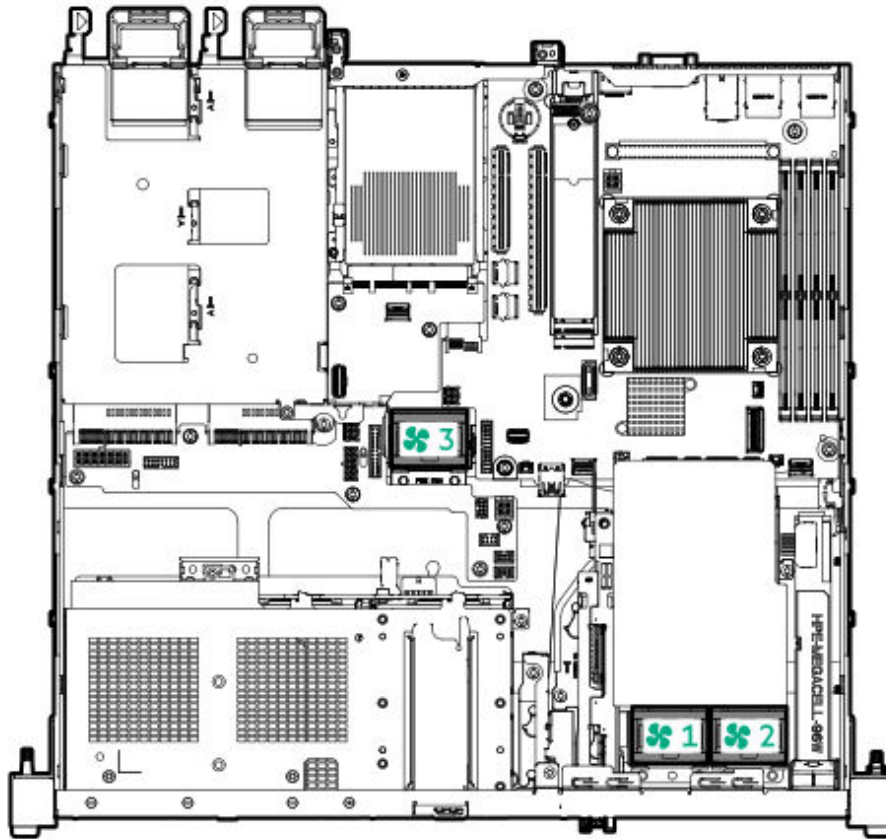
iLO-M.2-serial module components



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

Fan numbering



Fan number	Description
1	Processor fan
2	System fan
3	PCIe fan

Fan mode behavior

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

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

Trusted Platform Module 2.0

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

The TPM 2.0 is embedded on the server system board.

The TPM 2.0 is supported with specific operating system support such as Microsoft Windows Server 2012 R2 and later. For more information about operating system support, see the product QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/quickspecs>). For more information about Microsoft Windows BitLocker Drive Encryption feature, see the Microsoft website (<https://www.microsoft.com>).

Subtopics

[Trusted Platform Module 2.0 guidelines](#)

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

Trusted Platform Module 2.0 guidelines



CAUTION

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

- 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/hpeuefisystemutilities-quicklinks>

- When using the Microsoft Windows BitLocker Drive Encryption feature, always retain the recovery key or password. The recovery key or password is required to enter Recovery Mode after BitLocker detects a possible compromise of system integrity.

- HPE is not liable for blocked data access caused by improper TPM use. For operating instructions, see the documentation for the encryption technology feature provided by the operating system.

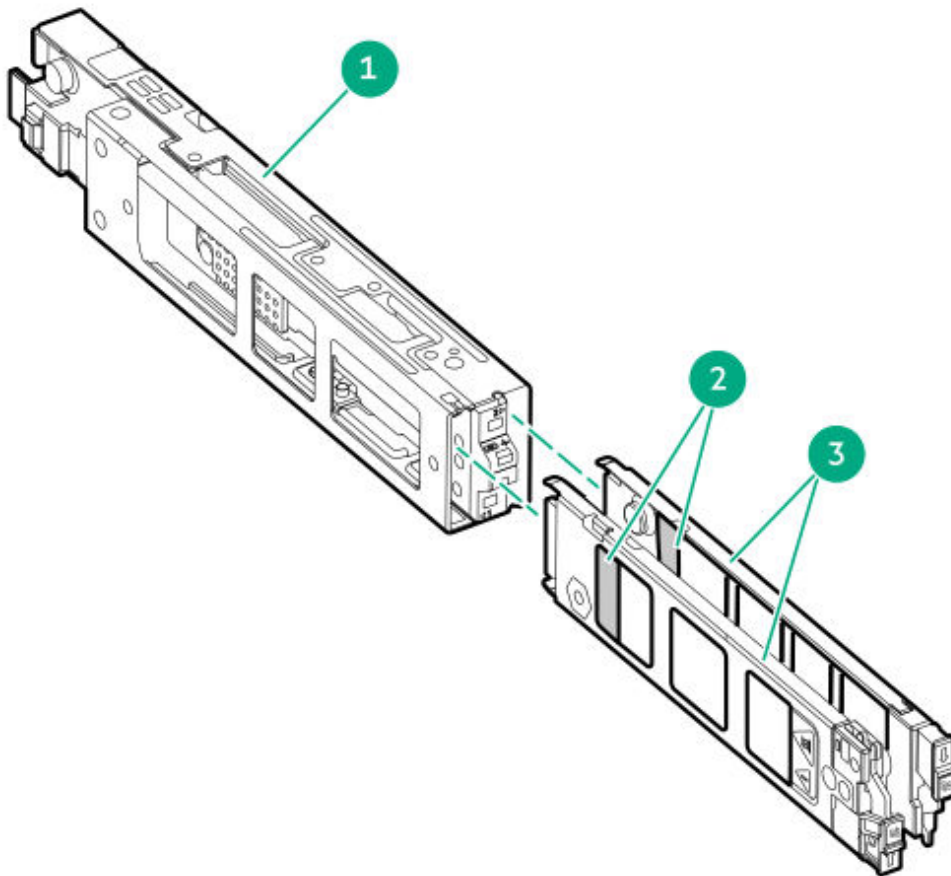
BitLocker recovery key/password retention guidelines

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

To help ensure maximum security, observe the following guidelines when retaining the recovery key/password:

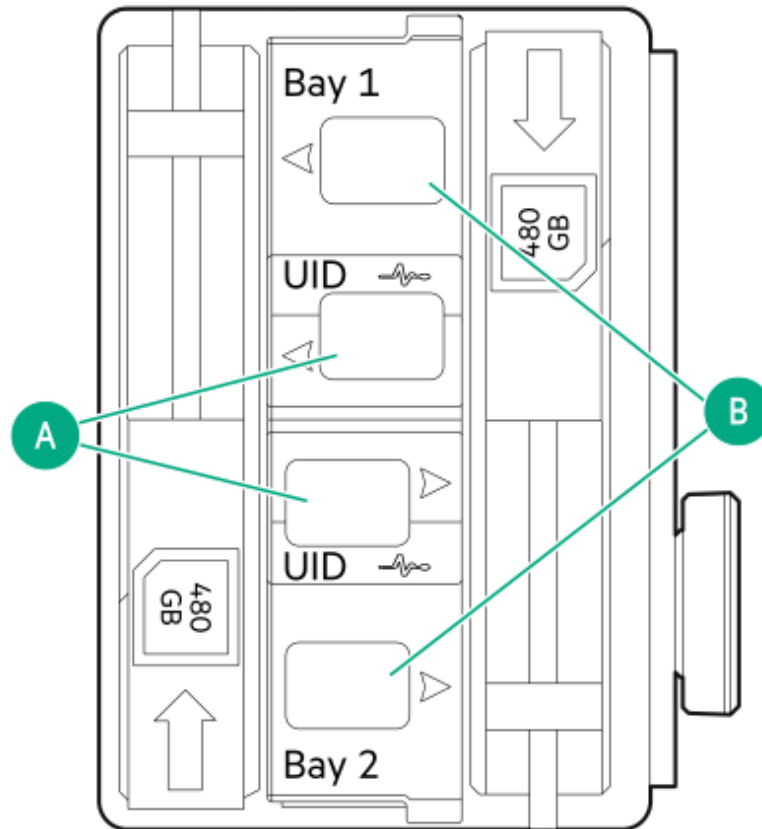
- Always store the recovery key/password in multiple locations.
- Always store copies of the recovery key/password away from the server.
- Do not save the recovery key/password on an encrypted drive.

HPE NS204i-u Boot Device components



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

HPE NS204i-u Boot Device LED definitions



NOTE

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

Item	LED	Status	Definition
A	Fault or Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally.
		Flashing amber or blue (one flash per second)	Drive has failed, or a predictive failure alert is received for the drive.
		Flashing amber (one flash per second)	Drive predictive failure alert is received. Replace the drive as soon as possible.
		Off	Drive is operating normally and is not identified by any application.
B	Online/Activity	Solid green	Drive is online and has no activity.

Item	LED	Status	Definition
		Flashing green (one flash per second)	Drive is doing one of the following: <ul style="list-style-type: none"> • 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.

Setup

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

Subtopics

Initial system installation

Operational requirements

Rack warnings and cautions

Server warnings and cautions

Electrostatic discharge

Initial system installation

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

- Ordering the HPE Installation Service
- Setting up the server

Subtopics

HPE Installation Service

Intel VROC support

Setting up the server

HPE Installation Service

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 Hybrid 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://www.hpe.com/support/VROC-installation>

- Intel VROC requires the server boot mode to be set to **UEFI Mode**.
- Intel VROC RAID support is disabled by default. In the pre-OS environment, use UEFI System Utilities to enable Intel VROC and create a VROC RAID volume. These tasks are not supported in Intelligent Provisioning.
- The VROC RAID volume must use drives of the same interface and form factor.
- Intel VROC supports RAID management through the following tools:
 - Non-OS specific: UEFI System Utilities

- Windows: Intel VROC GUI, Intel VROC CLI
- Linux: `mdadm` CLI

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

Setting up the server

Prerequisites

- As a best practice, Hewlett Packard Enterprise recommends installing the latest firmware, drivers, and system software before using the server for the first time. You have these options:
 - HPE Compute Ops Management is an advanced software-as-a-service platform that securely streamlines operations from edge-to-cloud and automates key life cycle tasks through a unified single browser-based interface. For more information on using HPE Compute Ops Management, see <https://www.hpe.com/info/com-quicklinks>.
 - 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/support/hpeintelligentprovisioning-quicklinks>.
 - 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-o and type-p storage controller options. For storage configuration, use either SATA AHCI (default) or Intel Hybrid RAID on CPU (Intel VROC). If you plan to use Intel VROC, [review these important information before setting up the server](#).
- Read the [Operational requirements](#) for the server.

- Read the safety and compliance information:
<https://www.hpe.com/support/safety-compliance-enterpriseproducts>
- Take note of the iLO hostname and default login credentials on the [serial number/iLO information pull tab](#).

Procedure

1. Unbox the server and verify the contents:

- Server
- Power cord
- Rack rail hook-and-loop strap
- Rack-mounting hardware (optional)
- Printed setup documentation

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

2. (Optional) [Install the hardware options](#).

3. [Install the server into the rack](#).

4. Decide how to manage the server:

- Locally: Use a KVM switch or connect a keyboard, monitor, and mouse.
- Remotely: Connect to the iLO web interface and run a remote console:

a. Verify the following:

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

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

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

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

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

Note the following:

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

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

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

5. Press the Power On/Standby button.

For remote management, use the iLO virtual power button.

6. [Configure the initial server setup.](#)
7. [Set up the storage.](#)
8. [Deploy an OS or virtualization software.](#)
9. After the OS is installed, [update the drivers.](#)
10. [Register the server.](#)

Operational requirements

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

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

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

Subtopics

[Space and airflow requirements](#)

[Temperature requirements](#)

[Power requirements](#)

[Electrical grounding requirements](#)

Space and airflow requirements

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

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

Observe the following:

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



CAUTION

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



CAUTION

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

- If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and prevent damage to the equipment:
 - Front and rear doors—If the 42U rack includes closing front and rear doors, you must allow 5,350 sq cm (830 sq in) of holes evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
 - Side—The clearance between the installed rack component and the side panels of the rack must be a minimum of 7.00 cm (2.75 in).

Temperature requirements

To ensure continued safe and reliable equipment operation, install or position the system in a well-ventilated, climate-controlled environment.

The maximum recommended ambient operating temperature (TMRA) for most server products is 35°C (95°F). The temperature in the room where the rack is located must not exceed 35°C (95°F).



CAUTION

To reduce the risk of damage to the equipment when installing third-party options:

- Do not permit optional equipment to impede airflow around the server or to increase the internal rack temperature beyond the maximum allowable limits.
- Do not exceed the manufacturer's TMRA.

Power requirements

Installation of this equipment must comply with local and regional electrical regulations governing the installation of information technology equipment by licensed electricians. This equipment is designed to operate in installations covered by NFPA 70, 1999 Edition (National Electric Code) and NFPA-75, 1992 (code for Protection of Electronic Computer/Data Processing Equipment). For electrical power ratings on options, refer to the product rating label or the user documentation supplied with that option.



WARNING

To reduce the risk of personal injury, fire, or damage to the equipment, do not overload the AC supply branch circuit that provides power to the rack. Consult the electrical authority having jurisdiction over wiring and installation requirements of your facility.



CAUTION

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

Electrical grounding requirements

The server must be grounded properly for proper operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, National Electric Code Article 250, as well as any local and regional building codes. In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code. In all other countries, you must install the equipment in

accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7. Furthermore, you must be sure that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices.

Because of the high ground-leakage currents associated with multiple servers connected to the same power source, Hewlett Packard Enterprise recommends the use of a PDU that is either permanently wired to the building's branch circuit or includes a nondetachable cord that is wired to an industrial-style plug. NEMA locking-style plugs or those complying with IEC 60309 are considered suitable for this purpose. Using common power outlet strips for the server is not recommended.

Rack warnings and cautions



WARNING

When all components are removed, the server weighs 9.00 kg (19.84 lb). When all components are installed, the server can weigh up to 12.00 kg (26.46 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 9.00 kg (19.84 lb), so at least two people must lift the server into the rack together. An additional person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack.
- Adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.



WARNING

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

- The rack has anti-tip measures in place. Such measures include floor-bolting, anti-tip feet, ballast, or a combination as specified by the rack manufacturer and applicable codes.
- The leveling jacks (feet) are extended to the floor.
- The full weight of the rack rests on the leveling jacks (feet).

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

Electrostatic discharge

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

To prevent electrostatic damage:

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

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

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

Operations

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

- [Rack warnings and cautions](#)

- [Server warnings and cautions](#)

Subtopics

[Remove the front bezel](#)

[Power down the server](#)

[Extend the server out of the rack](#)

[Remove the server from the rack](#)

[Remove the access panel](#)

[Remove the riser cage](#)

[Install the riser cage](#)

[Install the access panel](#)

[Install the server into the rack](#)

[Power up the server](#)

Remove the front bezel

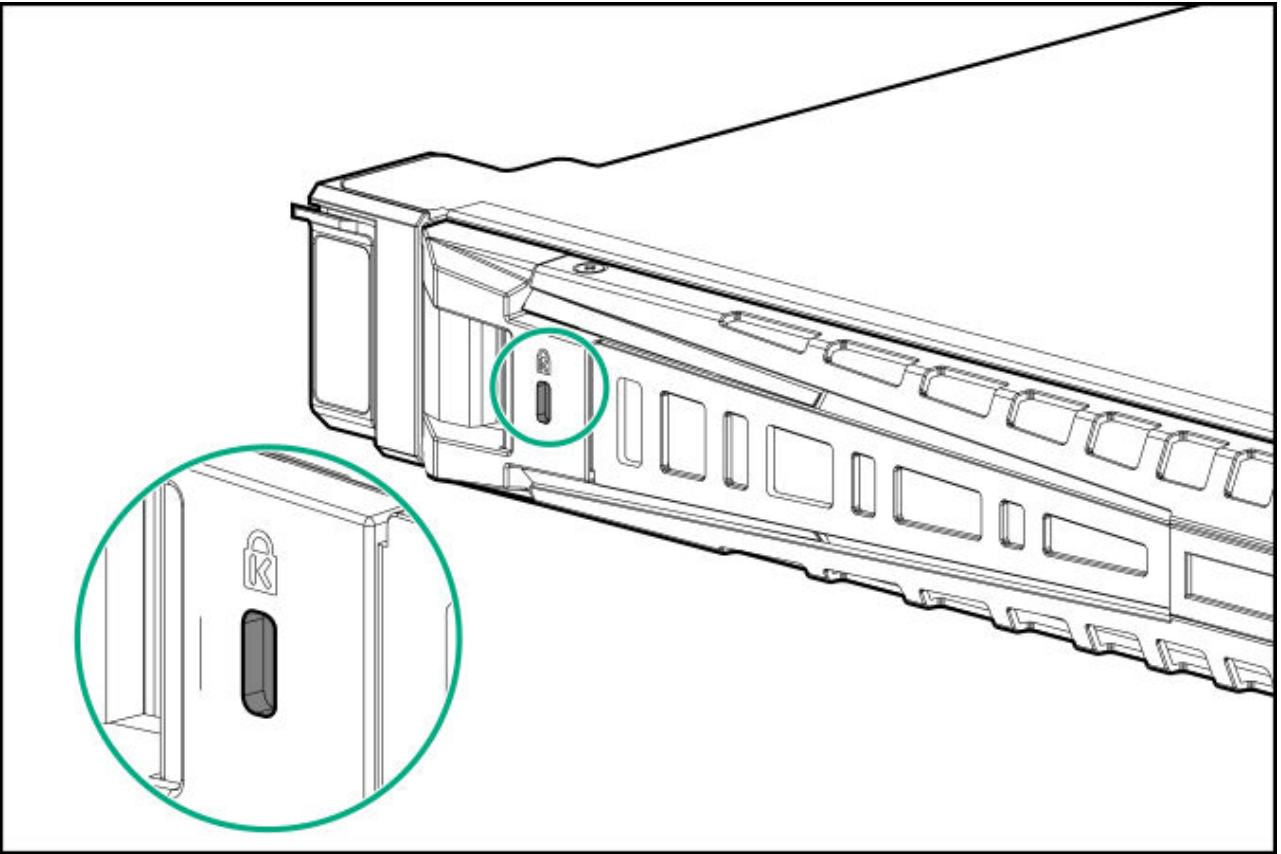
About this task

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

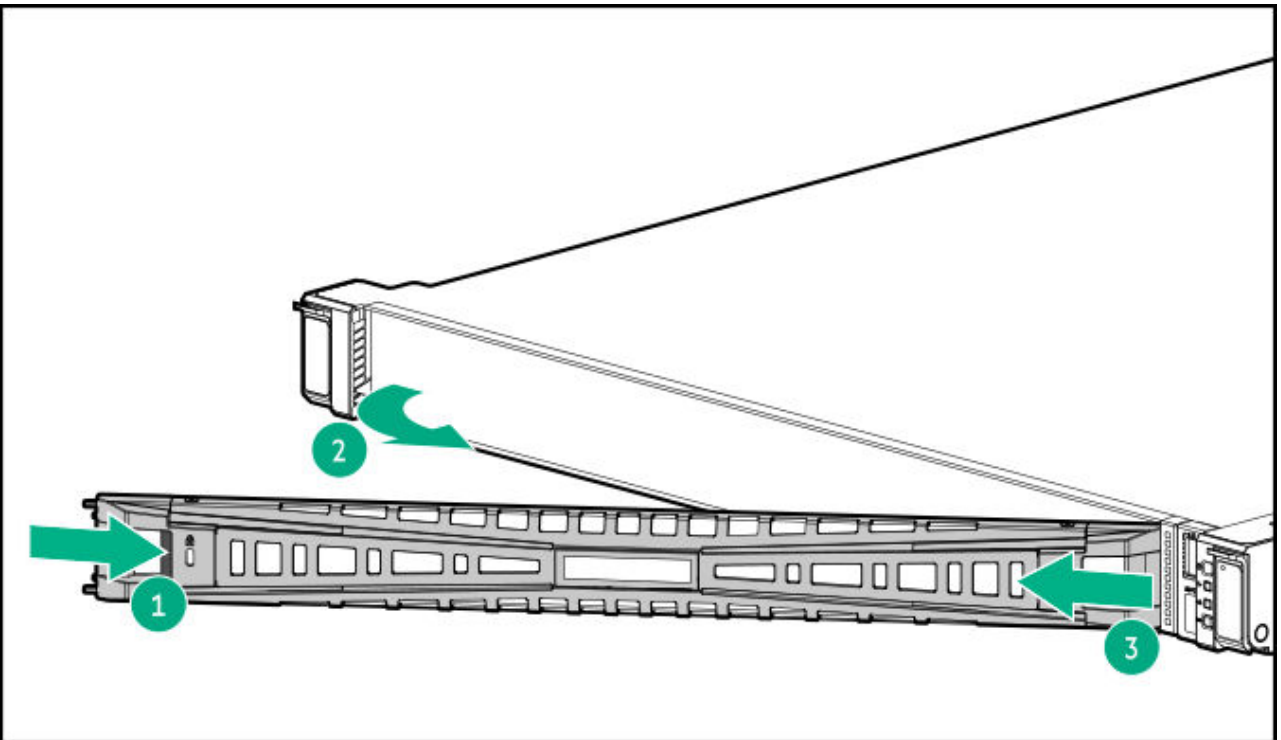
Procedure

1. If installed, remove the Kensington security lock.

For more information, see the lock documentation.



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



Power down the server

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



IMPORTANT

When the server is in standby mode, auxiliary power is still being provided to the system.

To power down the server, use one of the following methods:

- Press and release the Power On/Standby button.
This method activates a controlled shutdown of applications and the OS before the server enters standby mode. It can also activate a shutdown behavior governed by an OS configuration or policy.
- Press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode.
This method forces the server to enter standby mode without properly exiting applications and the OS. If an application stops responding, you can use this method to force a shutdown.
- Use a virtual power button selection through iLO 6.
This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

Before proceeding, verify that the server is in standby mode by observing that the system power LED is amber.

Extend the server out of the rack

Prerequisites

- Before you perform this procedure, review the Rack warnings and cautions.
- T-25 Torx screwdriver—This tool is required if the shipping screws located inside the chassis ears are secured.

About this task

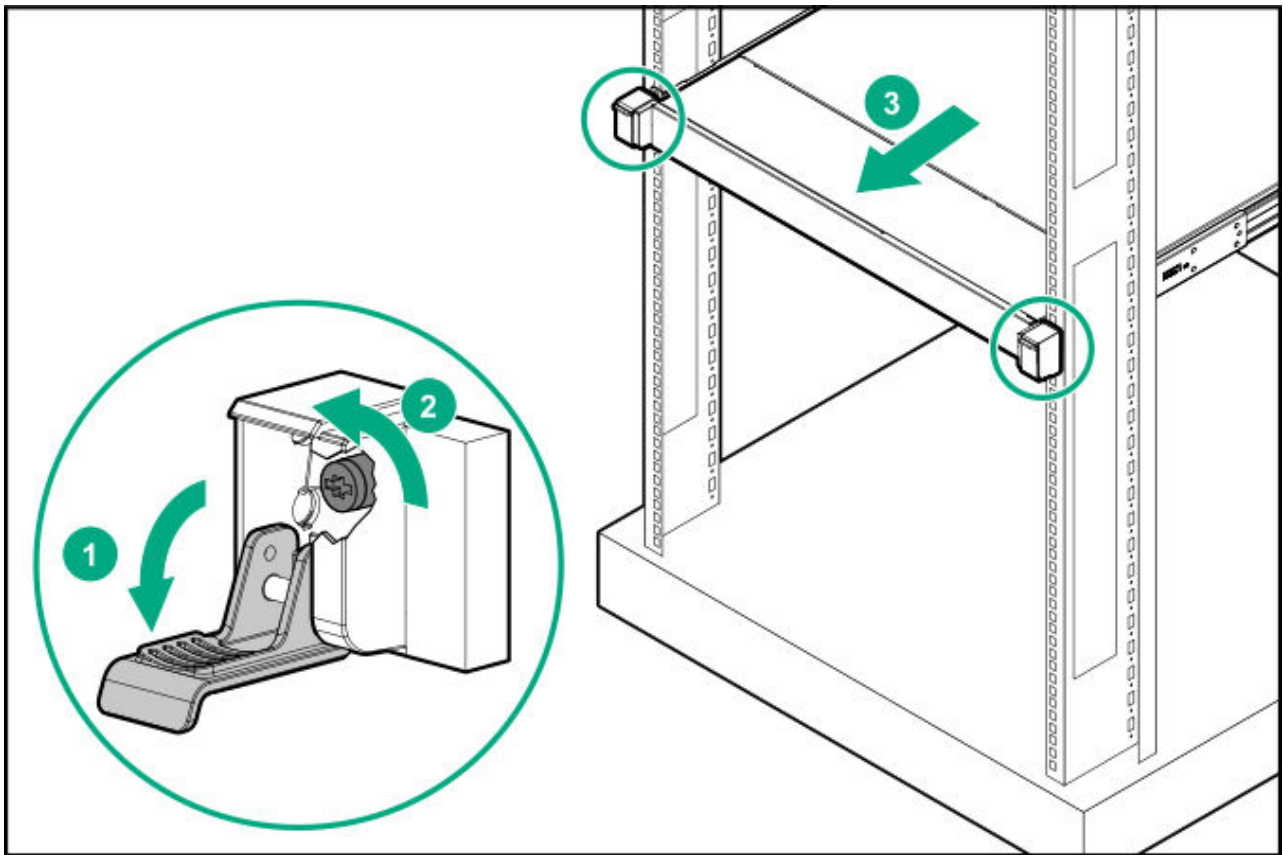


WARNING

To reduce the risk of personal injury, be careful when pressing the server rail-release latches. The inner rails could pinch your fingers.

Procedure

1. If needed, loosen the shipping screws, and then use the chassis ear latches to slide the server out of the rack until the rail-release latches are engaged.

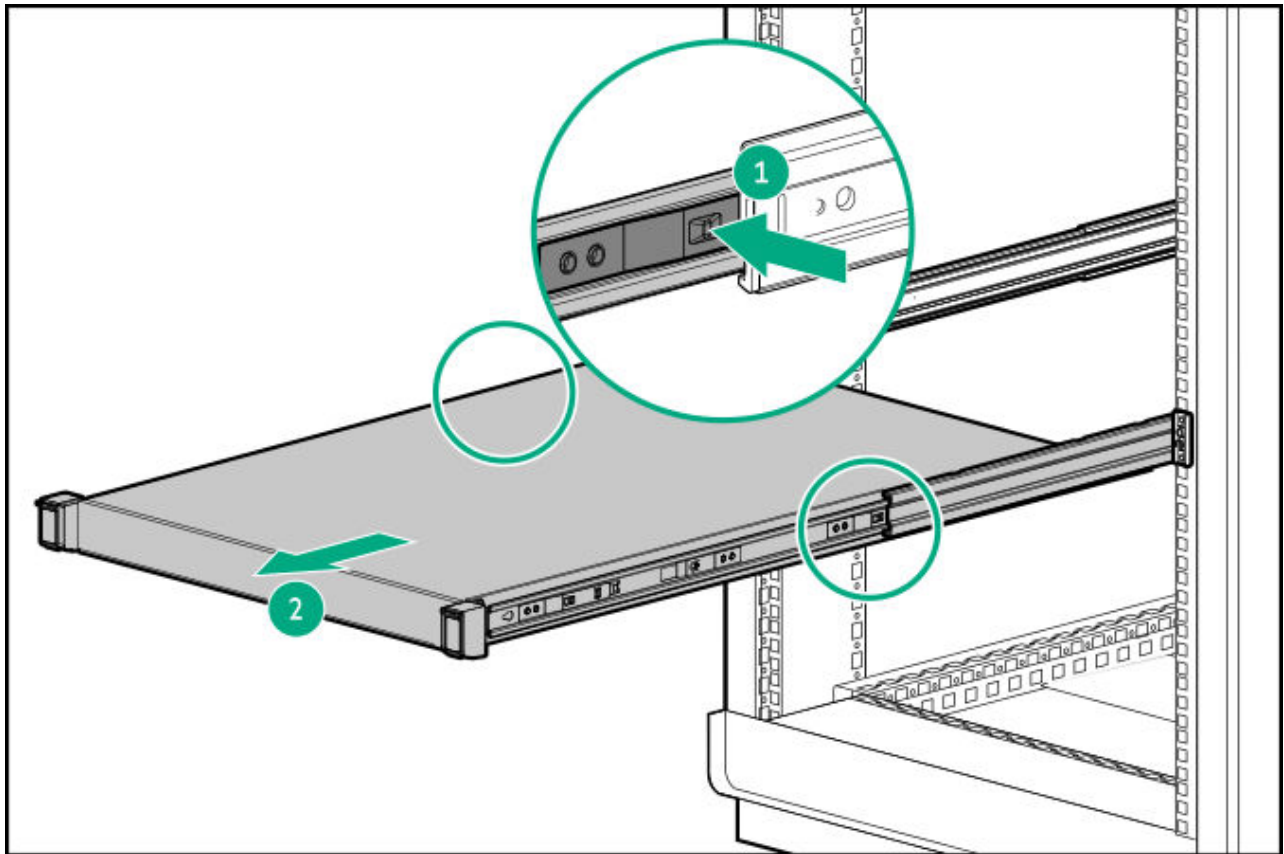


2. Press and hold the rear-end rail-release latches, and then slide the server out of the rack until it is fully extended.



WARNING

To reduce the risk of personal injury, be careful when pressing the server rail-release latches. The inner rails could pinch your fingers.



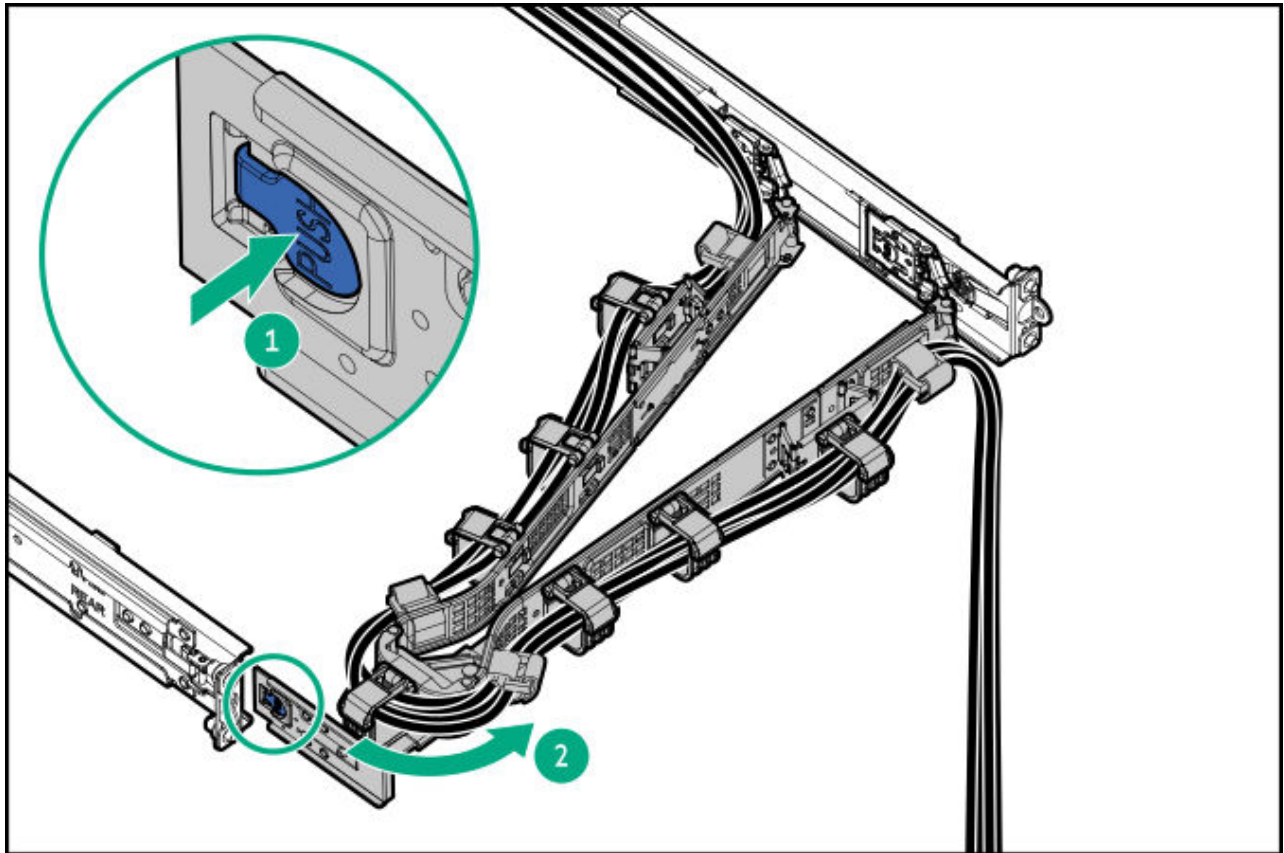
Remove the server from the rack

Prerequisites

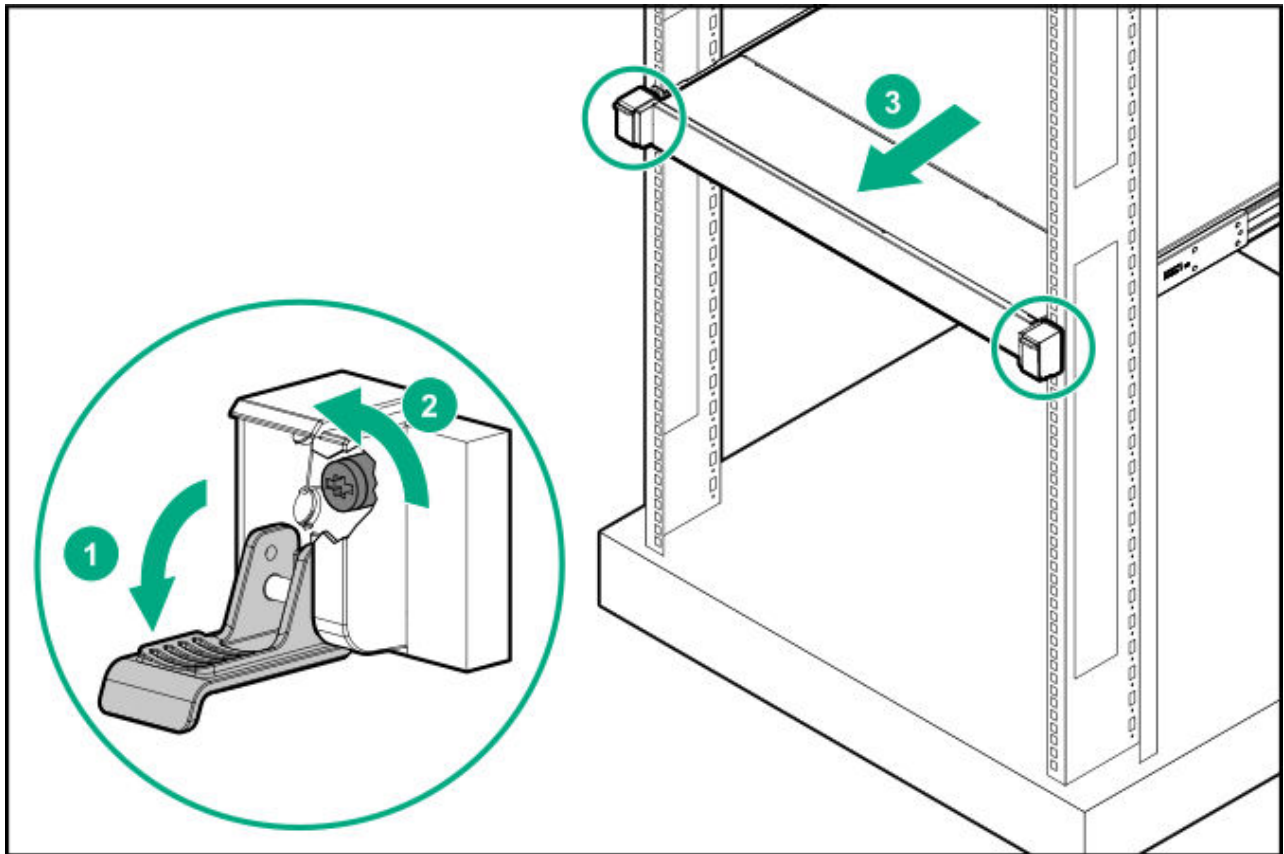
- Get help to lift and stabilize the server during removal from the rack. **If the server is installed higher than chest level, additional two people might be required to help remove the server:** One person to support the server weight, and the other two to slide the server out of the rack.
- Before you perform this procedure, review the:
 - [Rack warnings and cautions](#)
 - [Server warnings and cautions](#)
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external server components before removing the server from the rack.
- T-25 Torx screwdriver—This tool is required if the shipping screws located inside the chassis ears are secured.

Procedure

1. Power down the server.
2. Press and hold the blue **PUSH** button on the retention bracket.
3. Swing the arm away from the rear panel.



4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. If needed, loosen the shipping screws, and then use the chassis ear latches to slide the server out of the rack until the front-end rail-release latches are engaged.

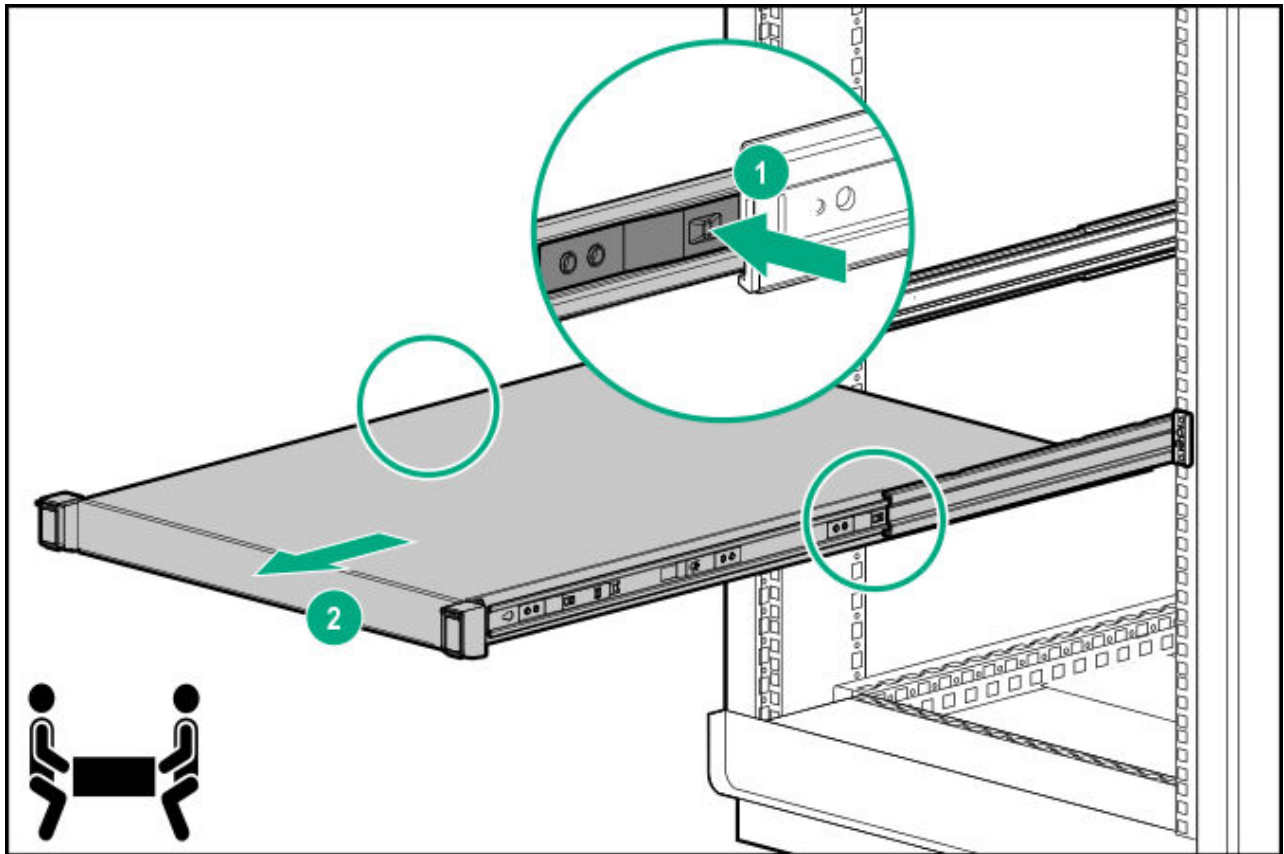


7. Press and hold the rear-end rail-release latches, and then slide the server out of the rack until it is fully extended.

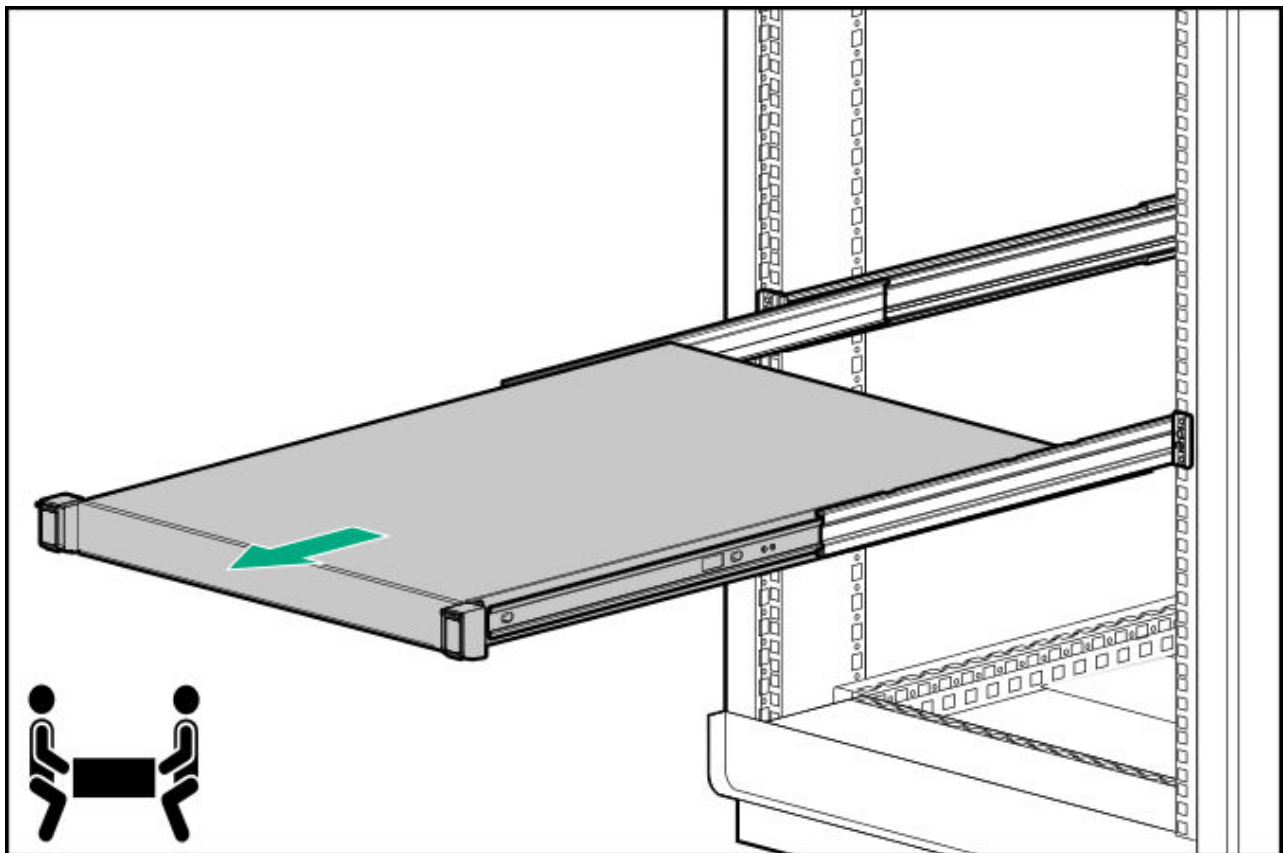


WARNING

To reduce the risk of personal injury, be careful when pressing the server rail-release latches. The inner rails could pinch your fingers.



8. Slide the server completely out of the rack.



9. Place the server on a flat, level work surface.

Remove the access panel

Prerequisites

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

About this task



WARNING

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



CAUTION

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

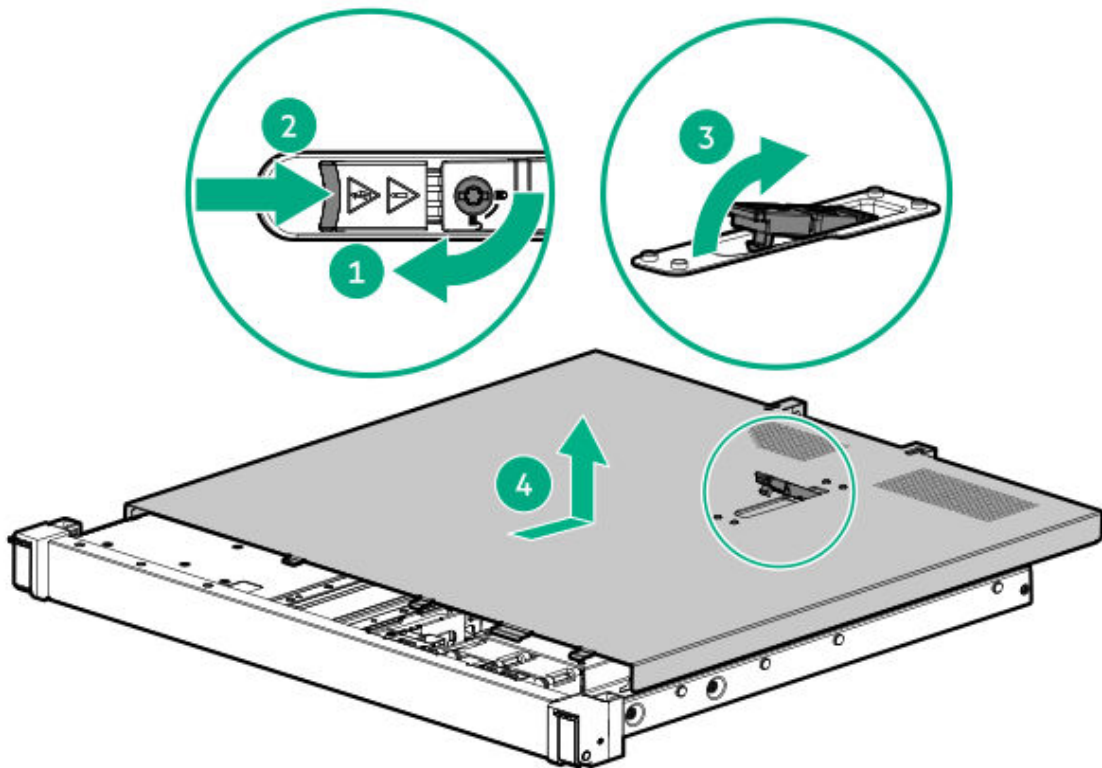
To maintain proper system cooling, do not operate the server for long period with the access panel open or removed. Operating the server in this manner results in an improper system airflow. For internal hot-plug component procedures, complete the procedure within 60 seconds. Failure to do so can cause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

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

Procedure

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

3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel:
 - a. If necessary, unlock the access panel latch.
 - b. To disengage the access panel from the chassis, press the release button and pull up the latch.
 - c. Lift the access panel.



Remove the riser cage

Prerequisites

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

About this task

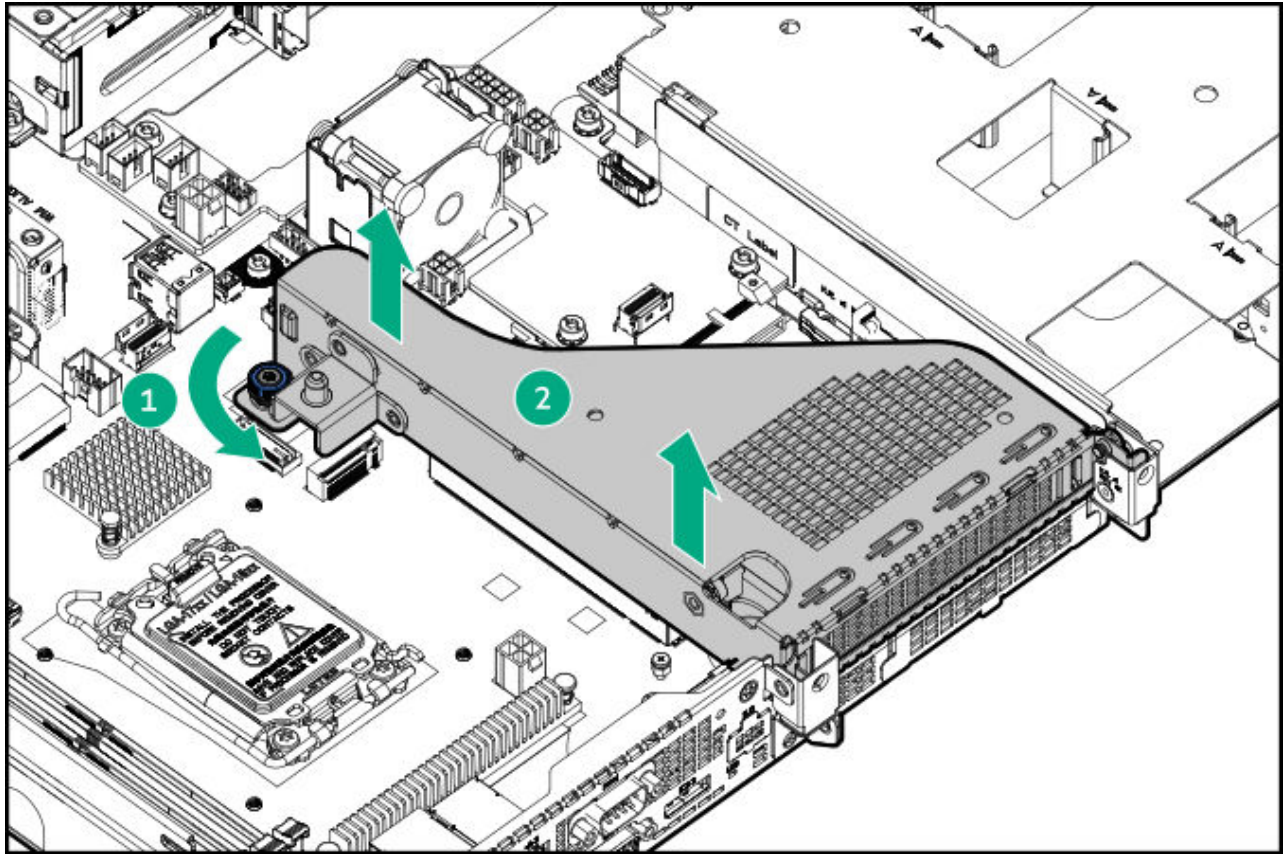


WARNING

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

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If an expansion card with internal cables is installed on the riser, disconnect the cables from the card.
8. Remove the riser cage:
 - a. Loosen the riser cage thumbscrew.
 - b. Lift the riser cage off the mainboard.



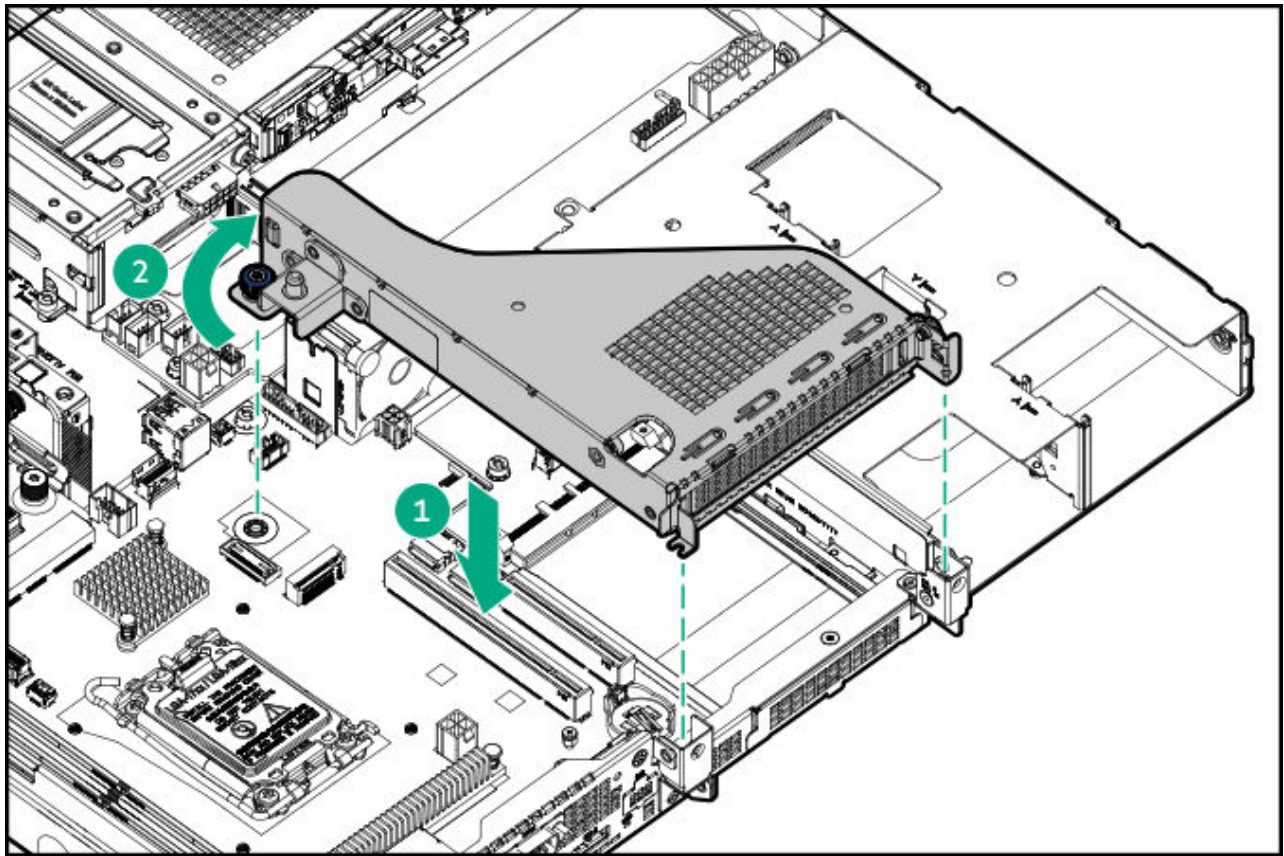
Install the riser cage

Prerequisites

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

Procedure

1. If an expansion card or its internal cabling was removed, reinstall these components.
2. Install the riser cage:
 - a. Carefully press the riser down on its mainboard connector.
Make sure that the riser board is firmly seated.
 - b. Tighten the riser cage thumbscrew.



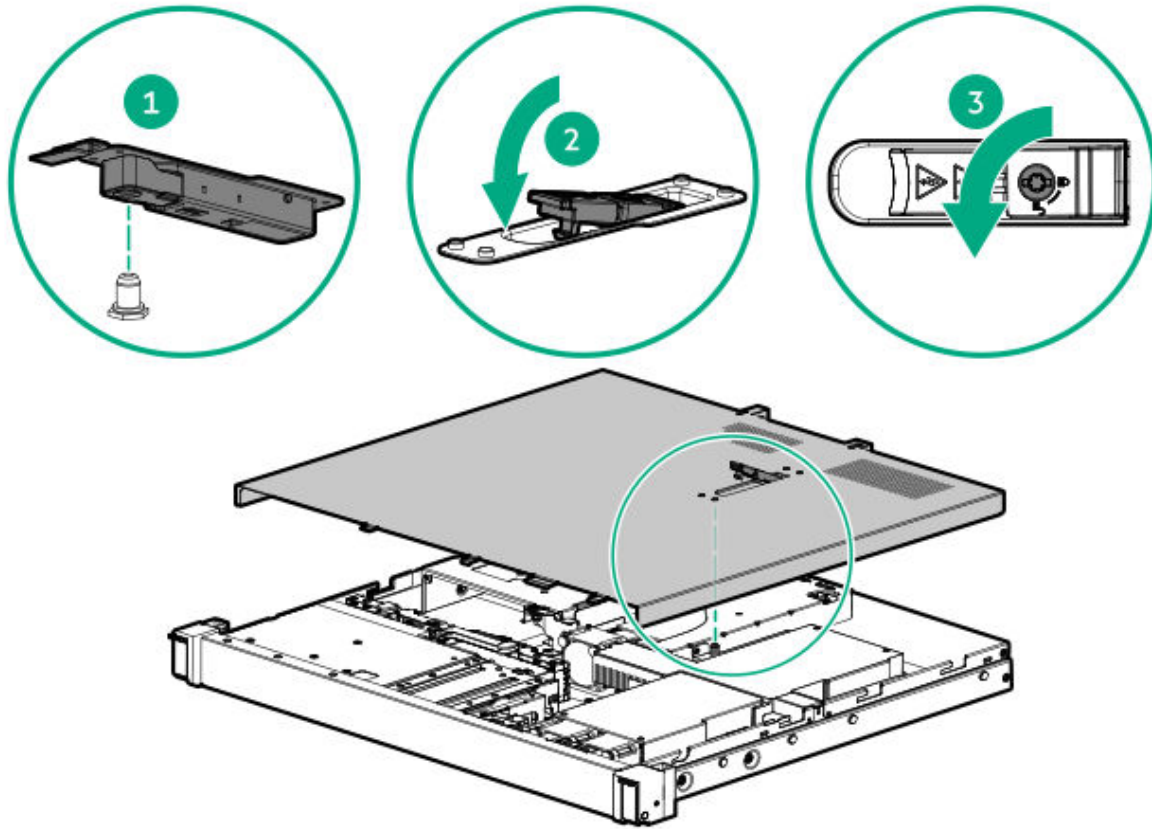
Install the access panel

Prerequisites

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

Procedure

1. With the access panel latch open, insert the guide pin on the chassis through the hole on the bottom side of the latch.
2. Close the access panel latch.
The access panel slides to the closed position.
3. Lock the access panel latch.



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

Install the server into the rack

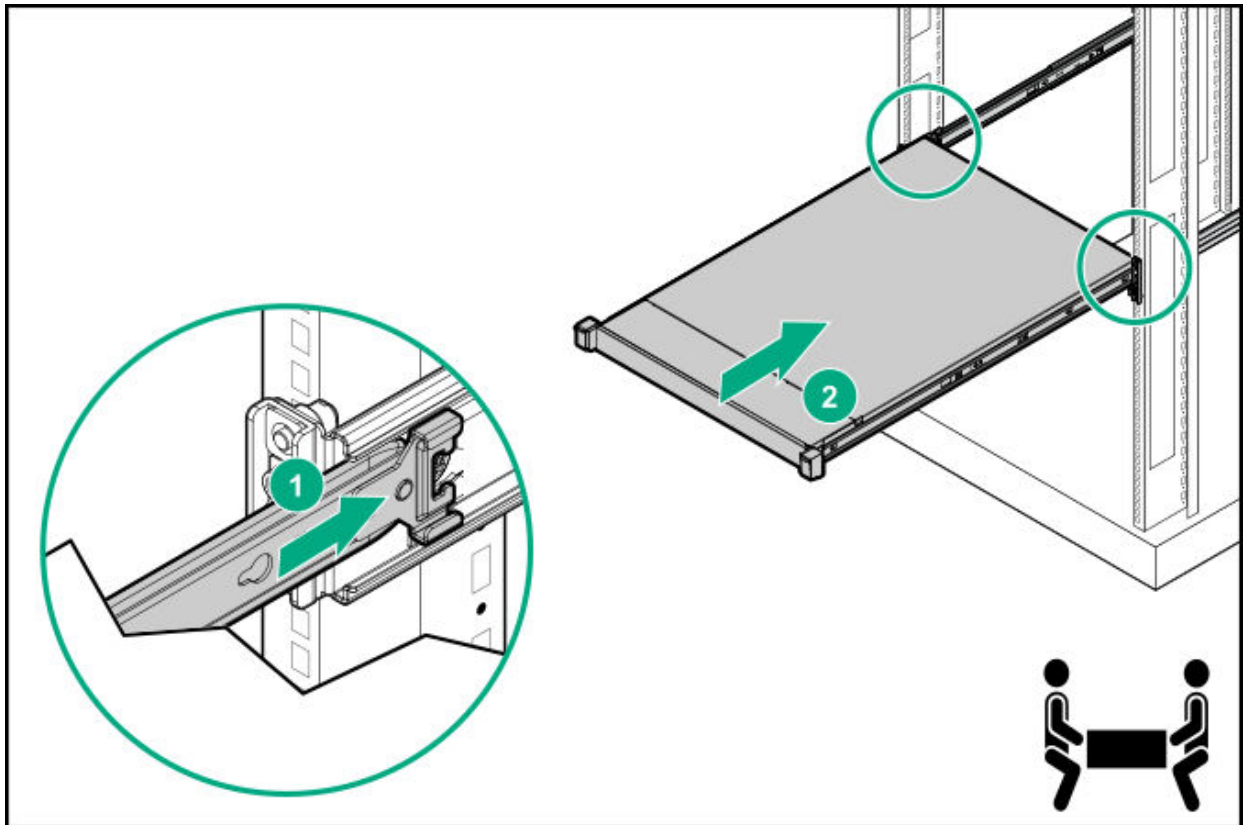
Prerequisites

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

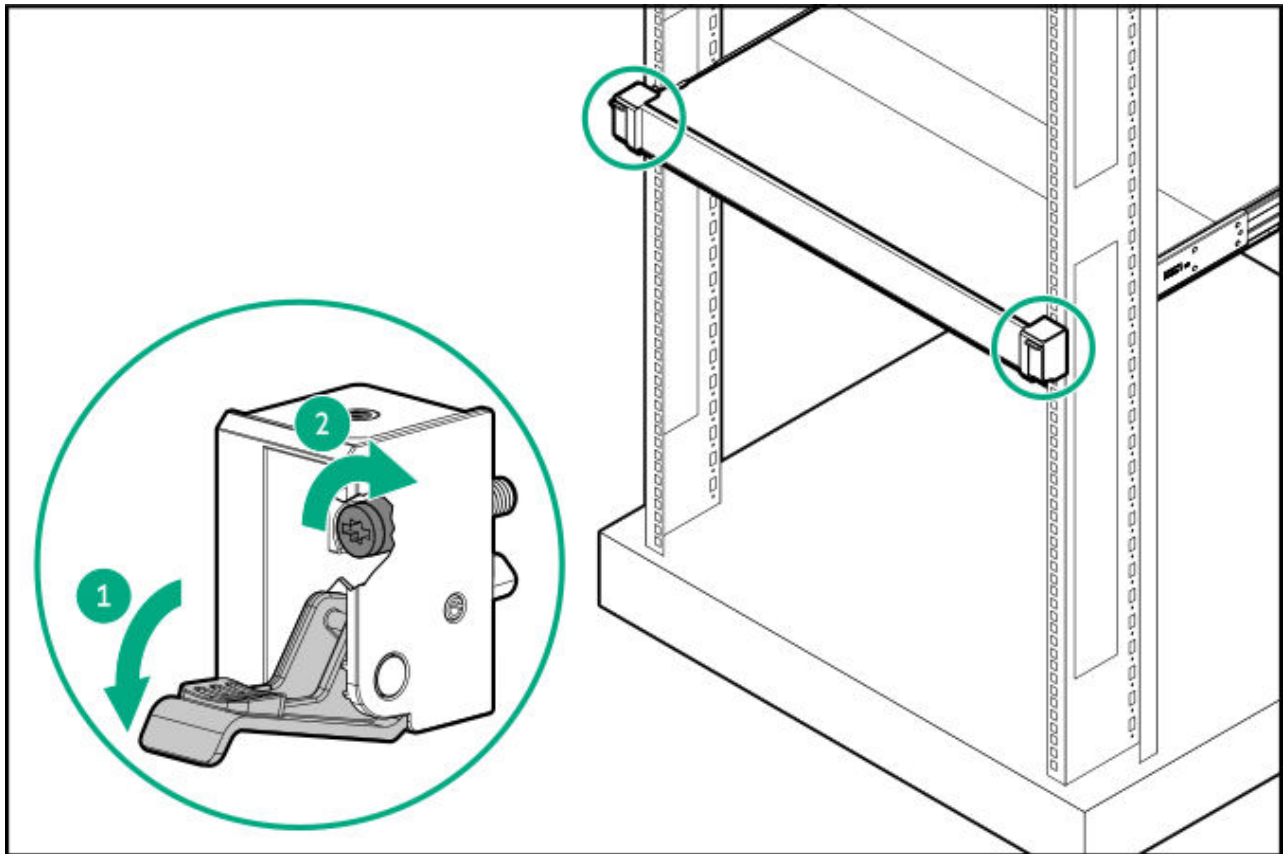
- T-25 Torx screwdriver—This tool is required if you intend to lock the shipping screws located inside the chassis ears.

Procedure

1. Install the server into the rack:
 - a. Insert the inner rails into the slide rails.
 - b. Slide the server into the rack until the chassis ears are flush against the rack posts.

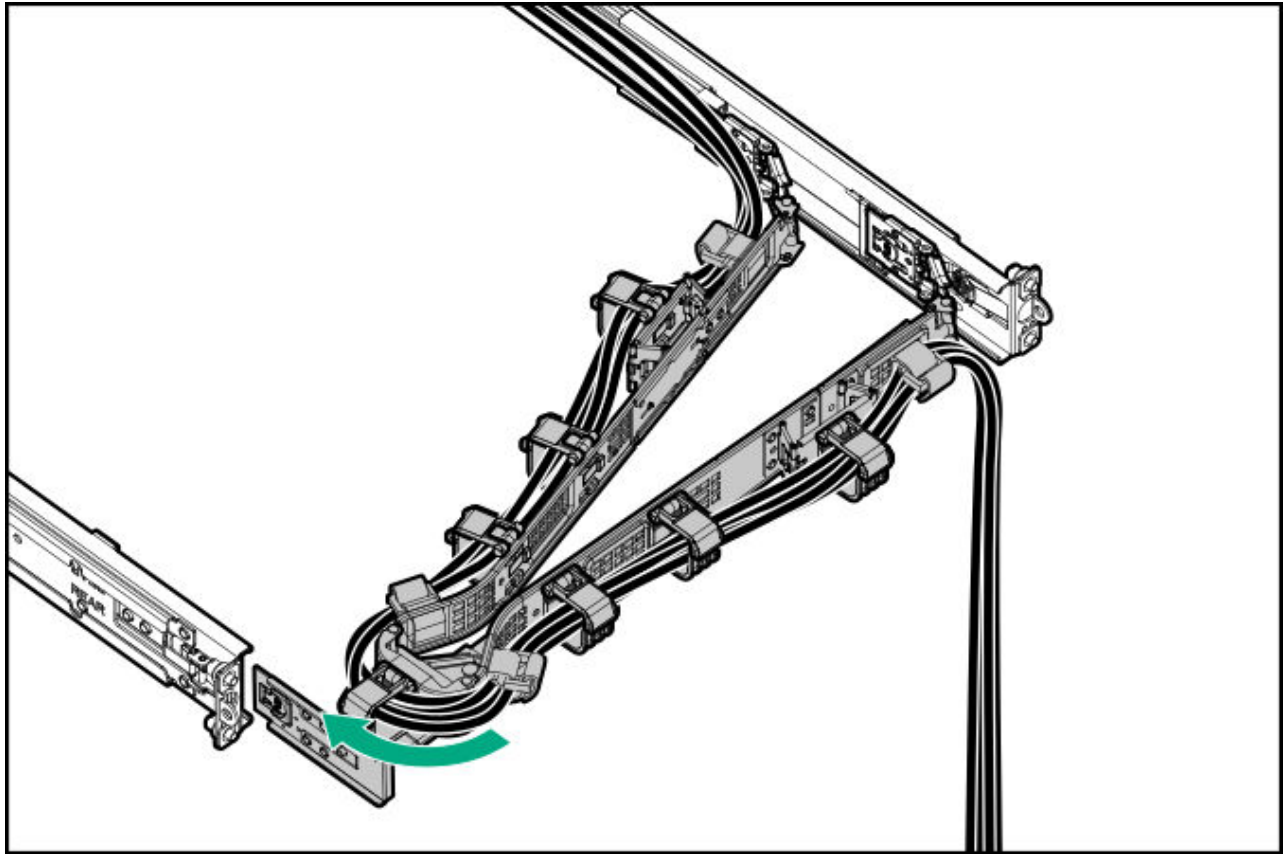


2. Open the chassis ears, and then tighten the shipping screws.



3. Connect all peripheral cables to the server.
4. Connect the power cords:
 - a. Connect each power cord to the server.
 - b. Connect each power cord to the power source.
5. If the cable management arm was opened, swing the arm back into the closed position and insert the CMA retention bracket to the mounting rail.

Make sure that an audible click to indicate that the bracket is locked into place.



Power up the server

Procedure

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

Hardware options installation

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

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

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

Subtopics

[Server data backup](#)

[Hardware option installation guidelines](#)

[Hewlett Packard Enterprise product QuickSpecs](#)

[Rack mounting options](#)

[Installing the front bezel option](#)

[Drive options](#)

[Power supply options](#)

[Transceiver option](#)

[Pass-through board option](#)

[Installing the two-bay SFF drive cage option](#)

[Optical drive option](#)

[Memory option](#)

[PCIe riser option](#)

[Storage controller options](#)

[Energy pack option](#)

[Expansion card options](#)

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

[OCP NIC 3.0 option](#)

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

[M.2 SSD option](#)

[Chassis intrusion detection switch option](#)

[Internal USB device options](#)

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/support/hpeuefisystemutilities-quicklinks>).
 - Custom default system settings
 - Security passwords including those required for power-on and BIOS admin access, persistent memory, and Server Configuration Lock (for HPE Trusted Supply Chain servers)
 - Server serial number and the product ID
- iLO-related data—Use the iLO backup and restore function. For more information, see the iLO user guide (<https://www.hpe.com/support/hpeilodocs-quicklinks>).
 - iLO license
 - Customer iLO user name, password, and DNS name
 - iLO configuration settings

Hardware option installation guidelines



WARNING

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



CAUTION

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



CAUTION

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

- Install any hardware options before initializing the server.
- If multiple options are being installed, read the installation instructions for all the hardware options to identify similar steps and streamline the installation process.

- If the hardware option installation involves internal cabling, review the [Cabling guidelines](#).

Hewlett Packard Enterprise product QuickSpecs

To learn more about your product, search the Hewlett Packard Enterprise website (<https://www.hpe.com/info/quickspecs>) for the product QuickSpecs:

- Supported options
- Supported configurations
- Component compatibility
- New features
- Specifications
- Part numbers

Rack mounting options

Use the quick-deploy, toolless HPE rack rail option to install the server in a standard four-post rack. The rail design supports installation on rack of [different mounting interfaces](#).

For cable management, the rack rail kit might include one or both of the following options:

- [Rack rail hoop-and-loop strap](#)
- [Cable management arm](#)

Subtopics

[Rail identification markers](#)

[Rack mounting interfaces](#)

[Rack rail option](#)

[Installing the server into the rack: Friction rack rail](#)

[Installing the rack rail hook-and-loop strap](#)

[Installing the cable management arm](#)

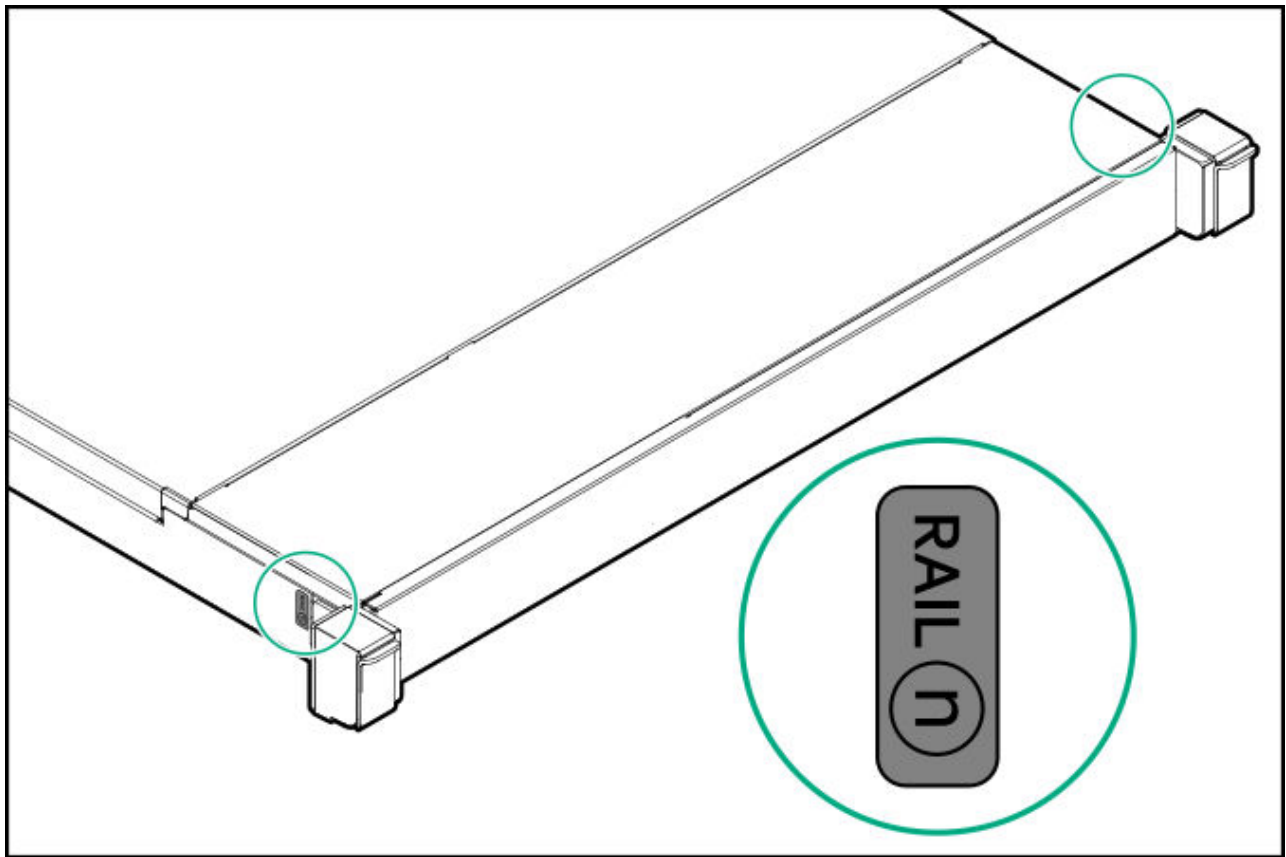
Rail identification markers

The rack rail option support is dependent on these two factors:

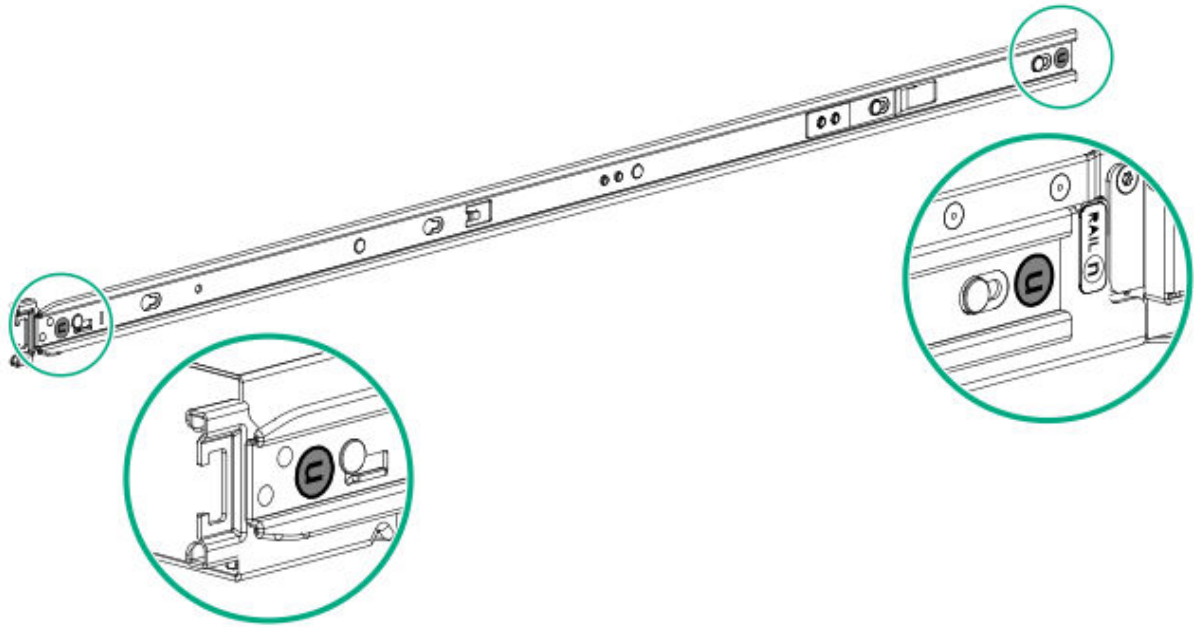
- The height and weight of the chassis as determined by the front- and rear-end server configurations.
- The depth of the chassis as measured from the edge of the front panel (without the front bezel) to the edge of the rear panel.

To ensure compatibility between the rack rails and the server, verify that the rail number labels on the chassis match the ones stamped on the rails.

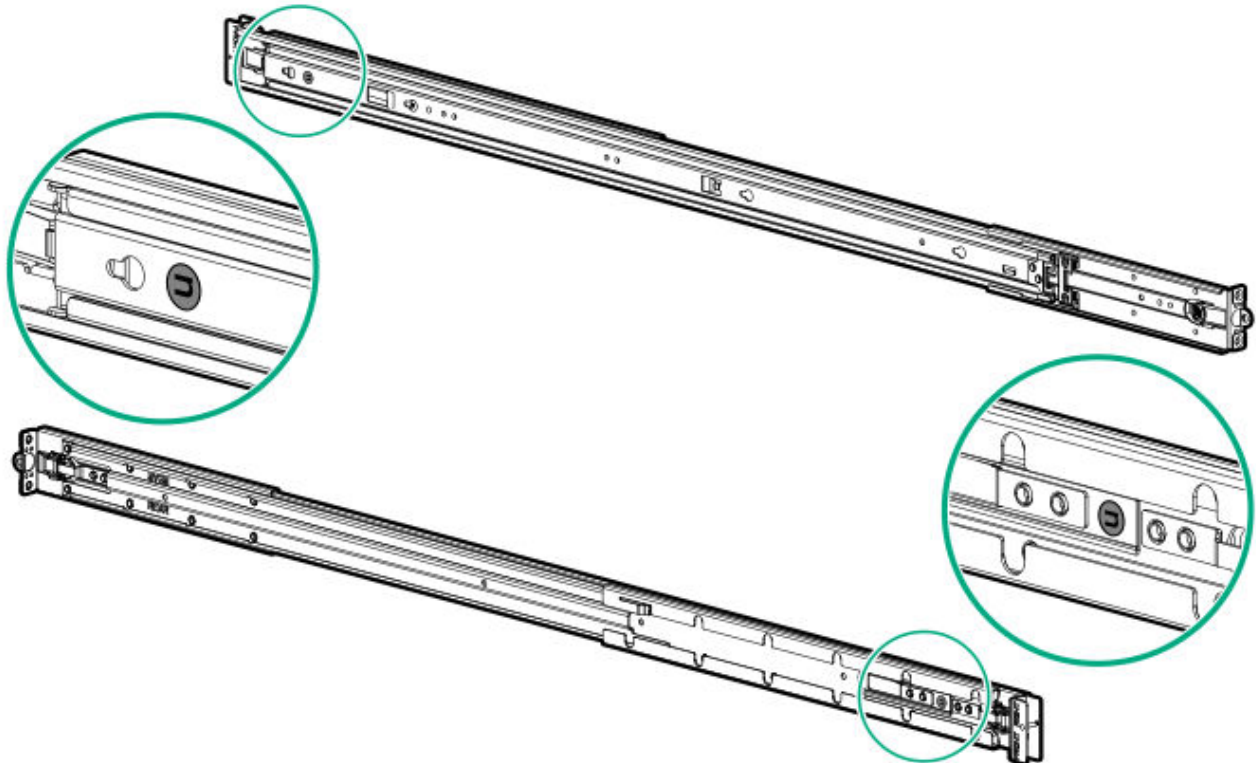
- Rail number labels on the chassis



- Rail identifier stamps on the inner rail of the friction rack rail

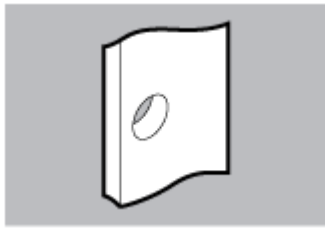


- Rail identifier stamps on the mounting rail of the friction rack rail

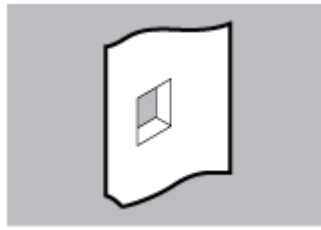


Rack mounting interfaces

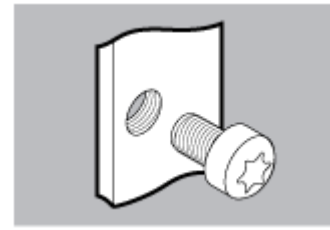
The rack rails can be installed in a rack that has the following mounting interfaces:



Round-hole



Square-hole



Threaded round-hole

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

Rack rail option

This server supports the HPE Easy Install rack rail option kit #12 (P64576-B21). This rail kit supports the following specifications:

- Type: Friction rack rail (stab-in)
- Minimum rail length: 613.80 mm (24.17 in)
- Rail adjustability range: 609.60–918.10 mm (24.00–36.15 in)

Subtopics

[Installing the friction rack rails](#)

Installing the friction rack rails

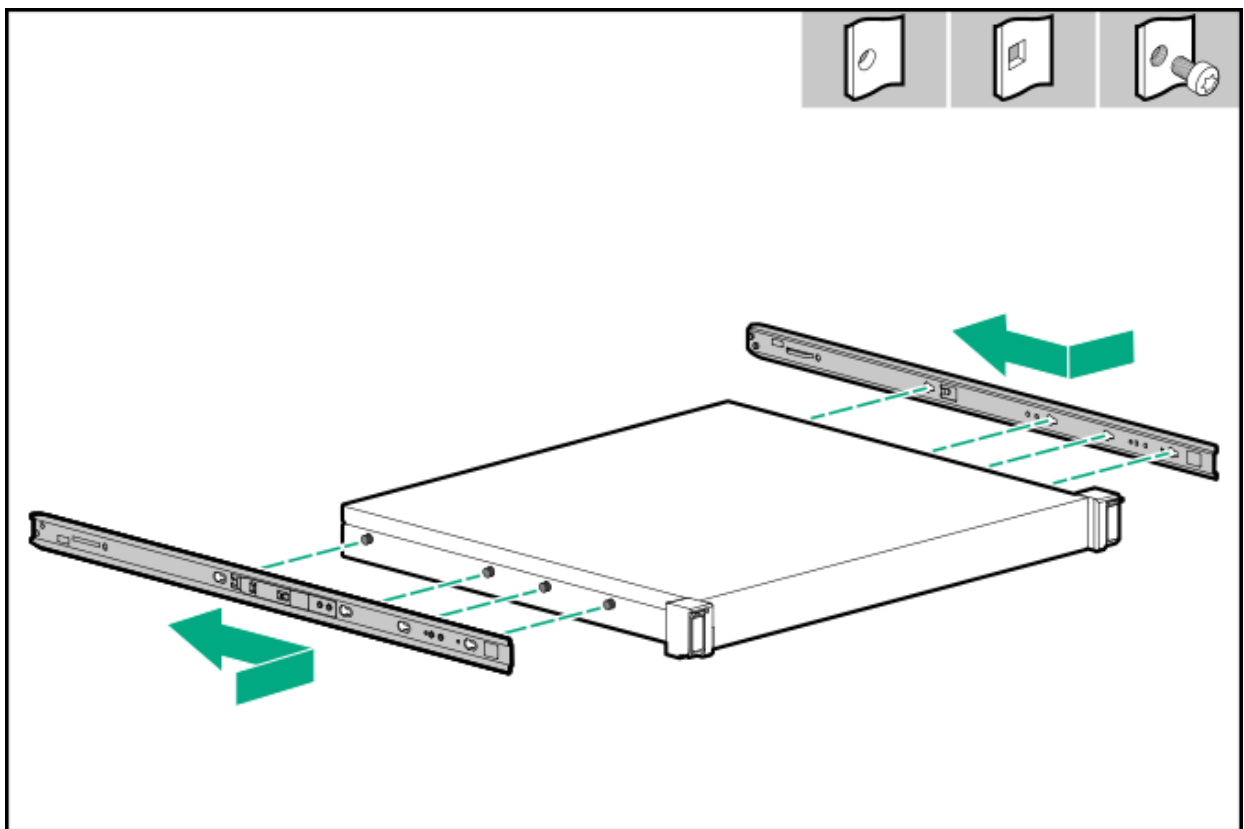
Prerequisites

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

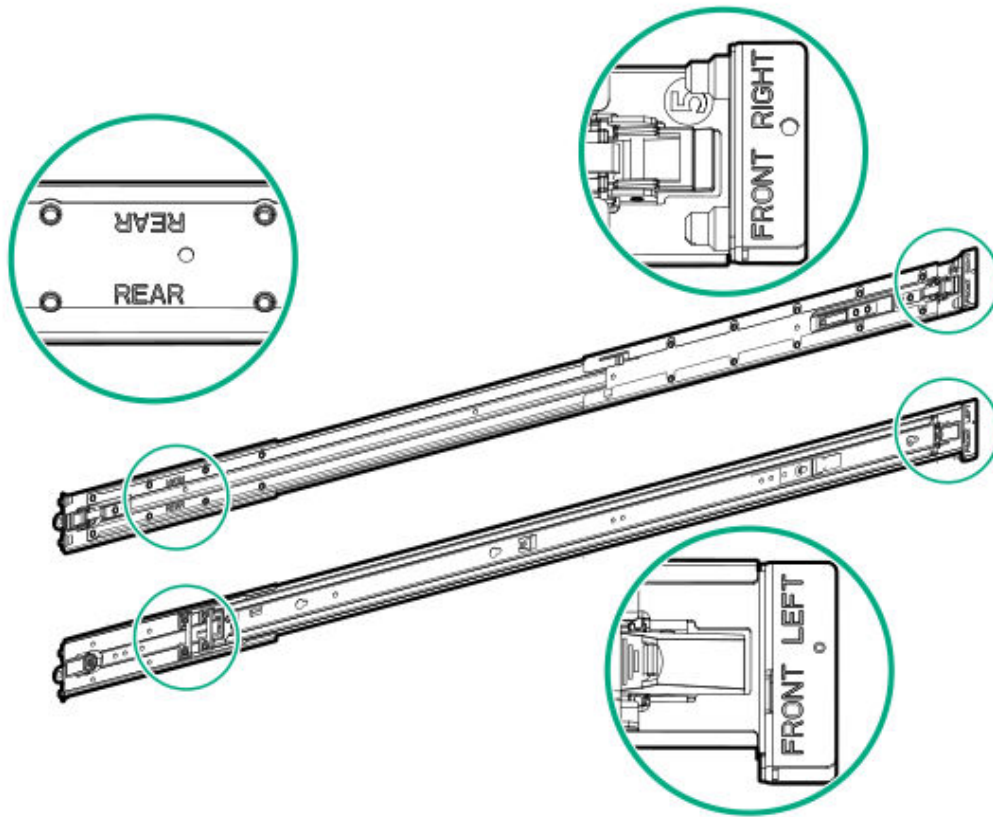
- [Server warnings and cautions](#)
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- Before you perform this procedure, make sure that you have a small slotted screwdriver—This tool is required if you intend to install the server in a threaded round-hole rack.

Procedure

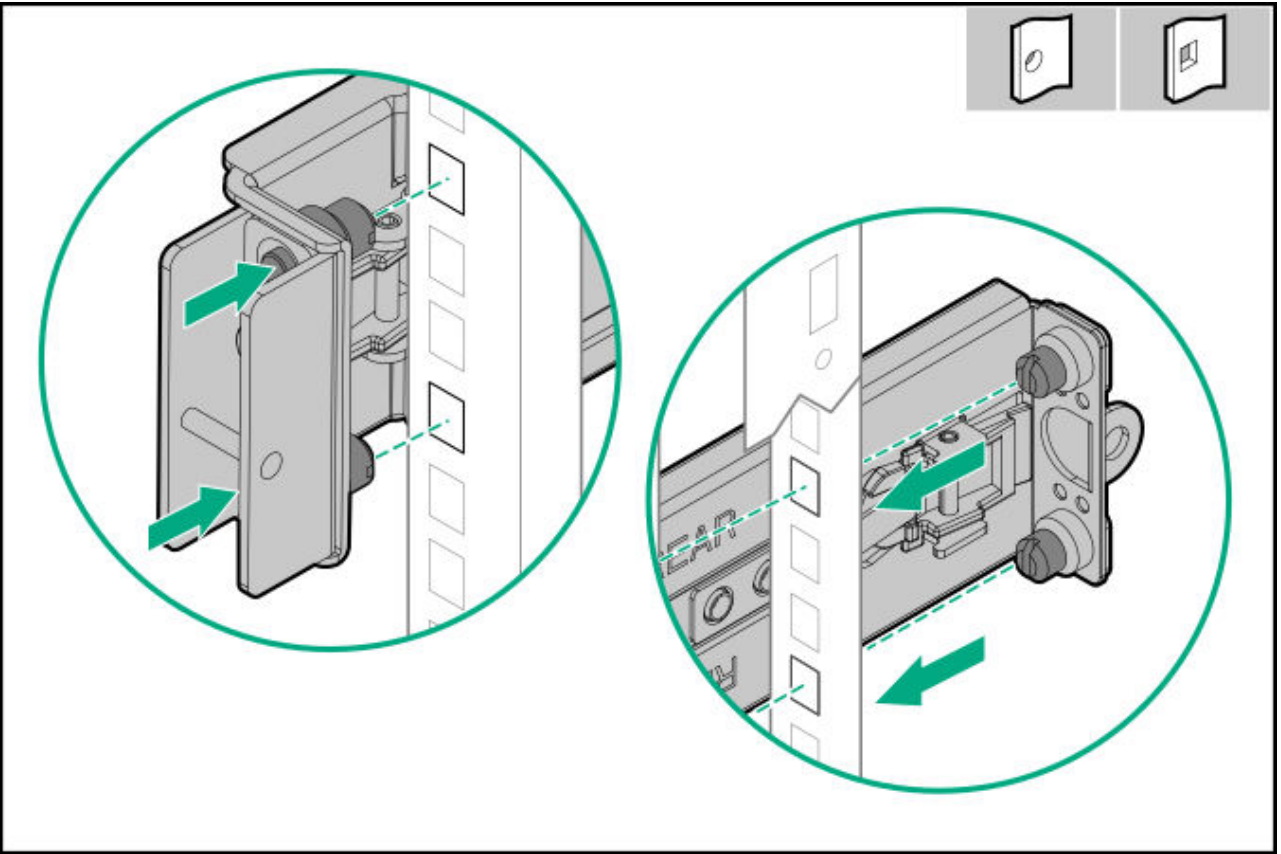
1. Attach the inner rails to the server:
 - a. Insert the spools on the sides of the server through the keyed slots on the rails.
 - b. Slide the rail towards the rear panel to lock it into place.



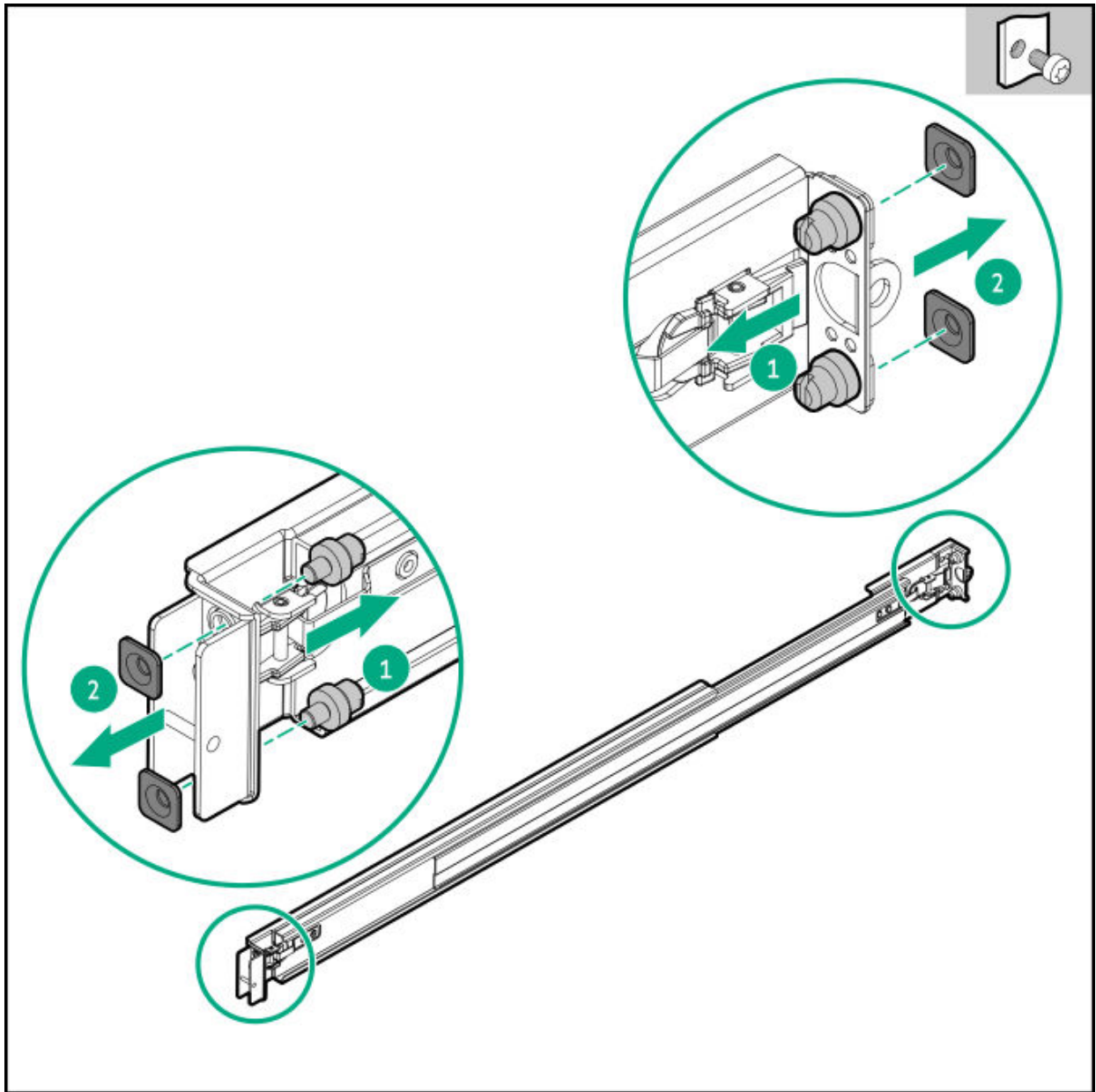
2. Locate the orientation markers on the mounting rails.
 - The front end of the rails is marked as **FRONT LEFT** or **FRONT RIGHT**.
 - The other end of the rails is marked as **REAR**.



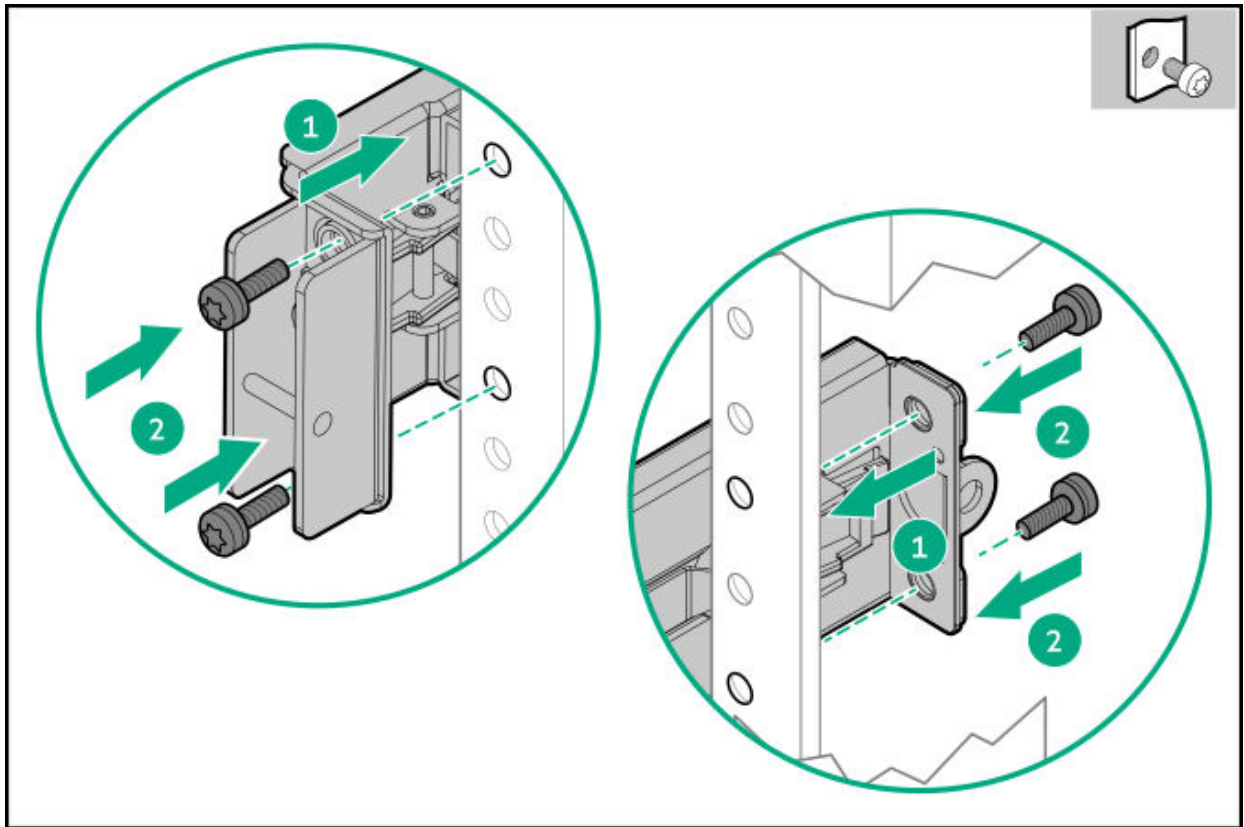
3. Extend the mounting rails to align with the depth of the rack.
4. To install the mounting rails in a round-hole or square-hole rack, insert the pins on the mounting flanges into the rack post holes.



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



- b. Position the holes on the mounting flanges against the threaded holes on the rack post.
- c. Install the rack mounting screws.



6. Install the server into the rack.

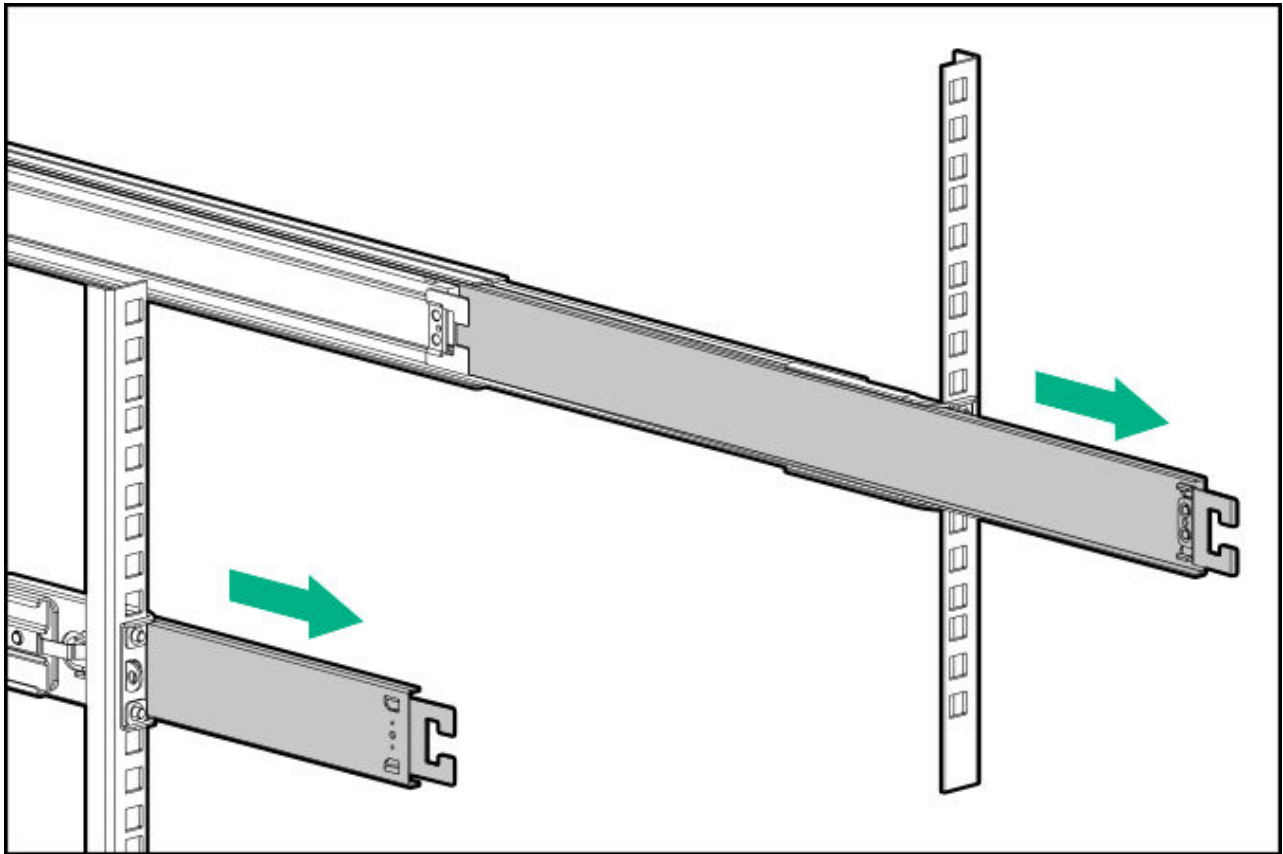
Installing the server into the rack: Friction rack rail

Prerequisites

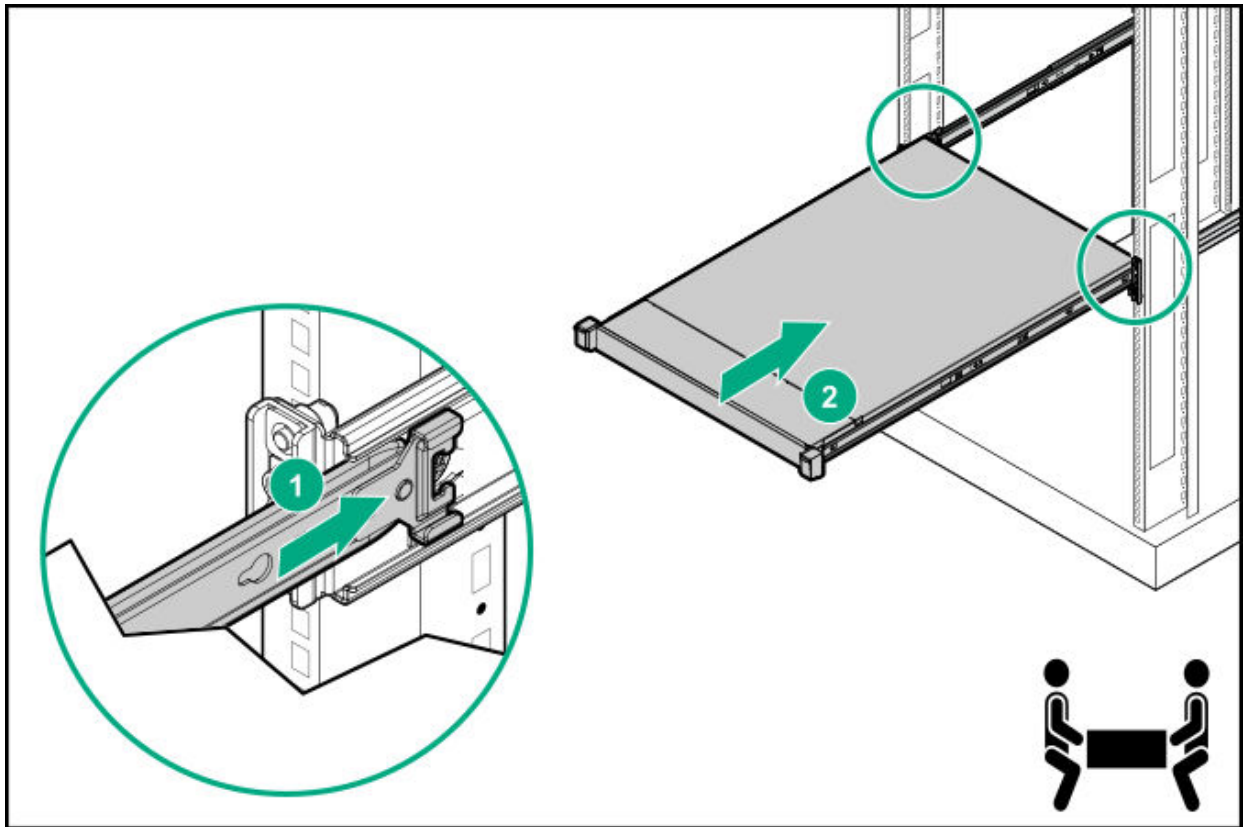
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

Procedure

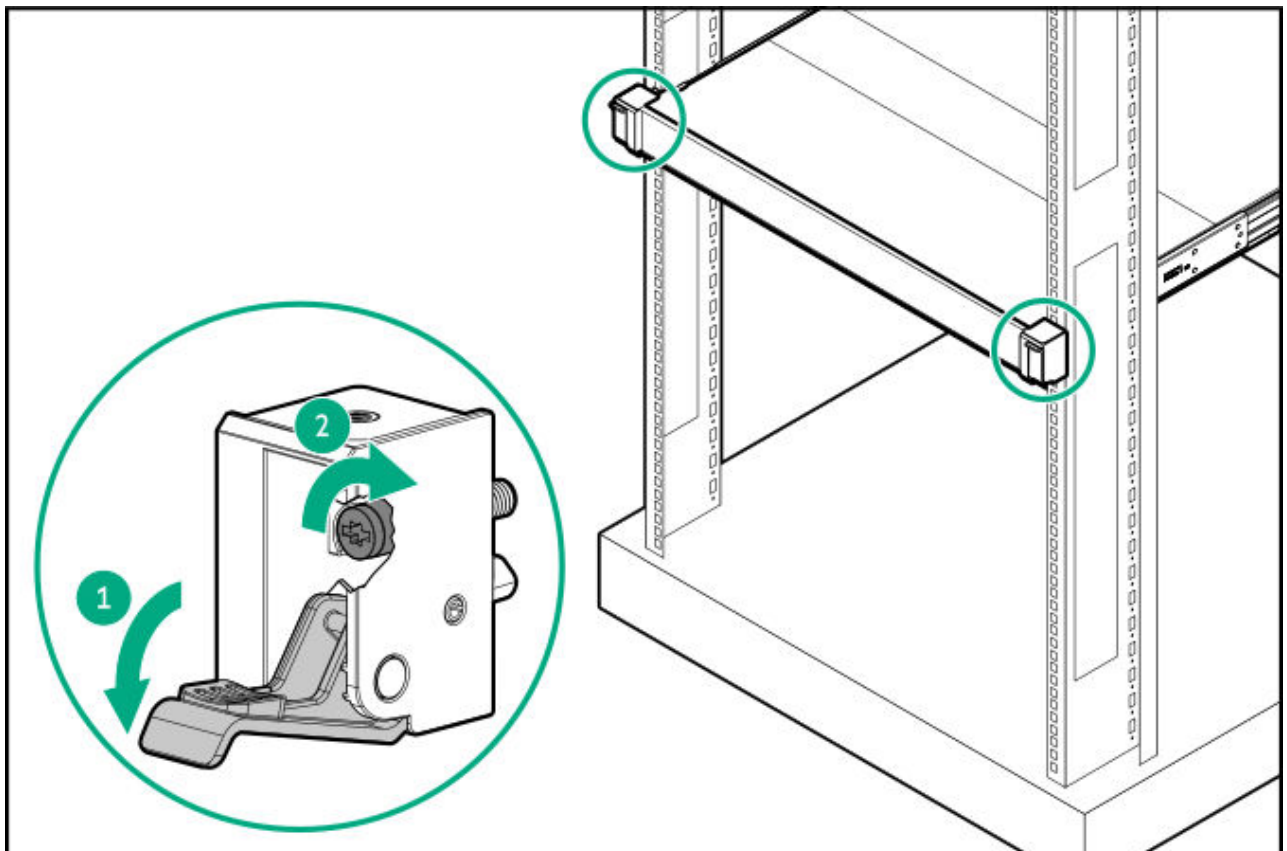
1. Extend the slide rails out on the mounting rails until they hit the internal stops and lock into place.



2. Install the server into the rack:
 - a. Insert the inner rails into the slide rails.
 - b. Slide the server into the rack until the chassis ears are flush against the rack posts.



3. Open the chassis ears, and then tighten the shipping screws.



4. Connect all peripheral cables to the server.
5. Connect each power cord to the server.
6. Do one of the following:
 - Install the rack rail hook-and-loop strap.
 - Install the cable management arm.
7. Connect each power cord to the power source.
8. Power up the server.

Results

The installation procedure is complete.

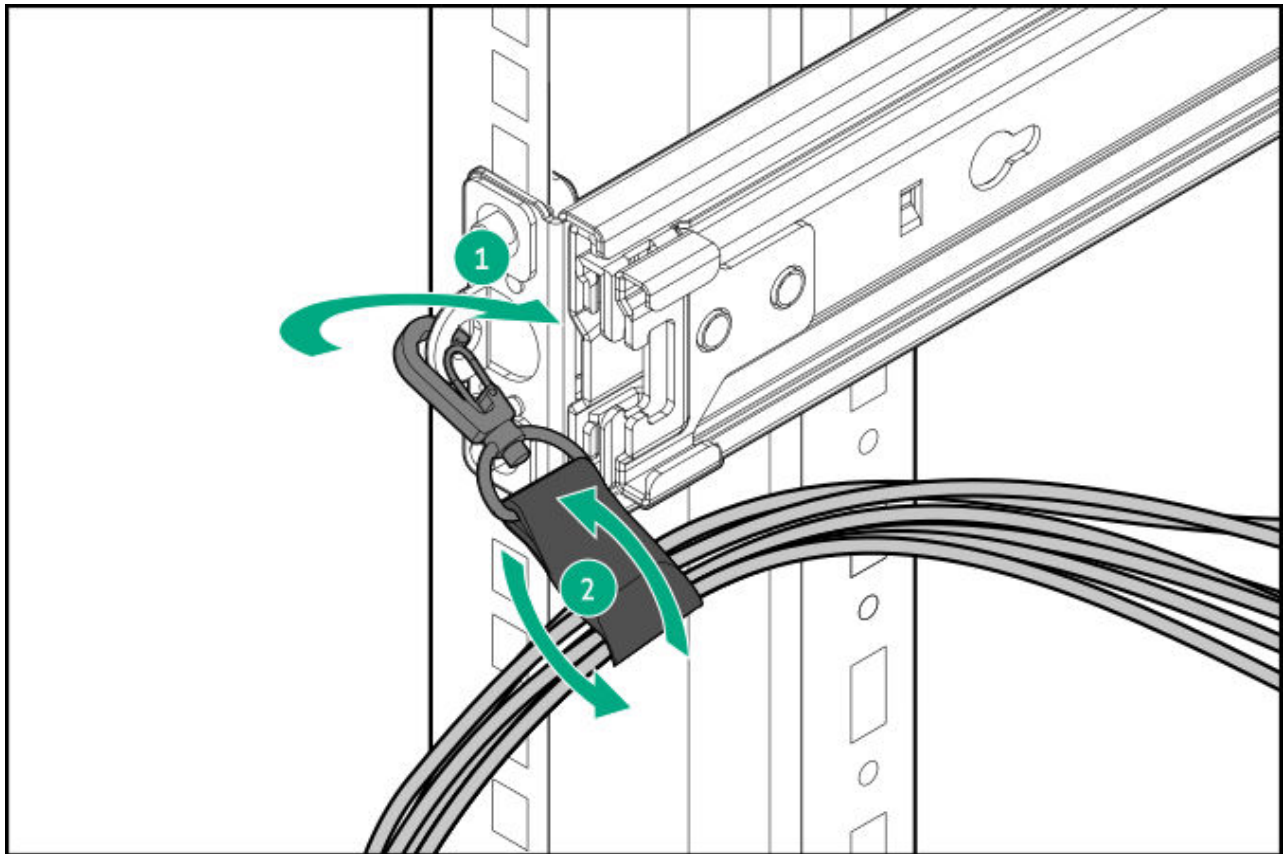
Installing the rack rail hook-and-loop strap

About this task

The hook-and-loop strap can be installed on either the left or right rail.

Procedure

1. Attach the strap carabiner to the rail.
2. Bundle the cords and cables, and then wrap the strap around the cables.



Results

The installation procedure is complete.

Installing the cable management arm

Prerequisites

- Two people might be needed for this procedure: one to slide the chassis in and out of the rack, and the other to observe the rear panel cables and power cords.
- Before you perform this procedure, review the [Rack warnings and cautions](#).
- T-25 Torx screwdriver—This tool is required if the shipping screws located inside the chassis ears need to be loosened or tightened.

About this task

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

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



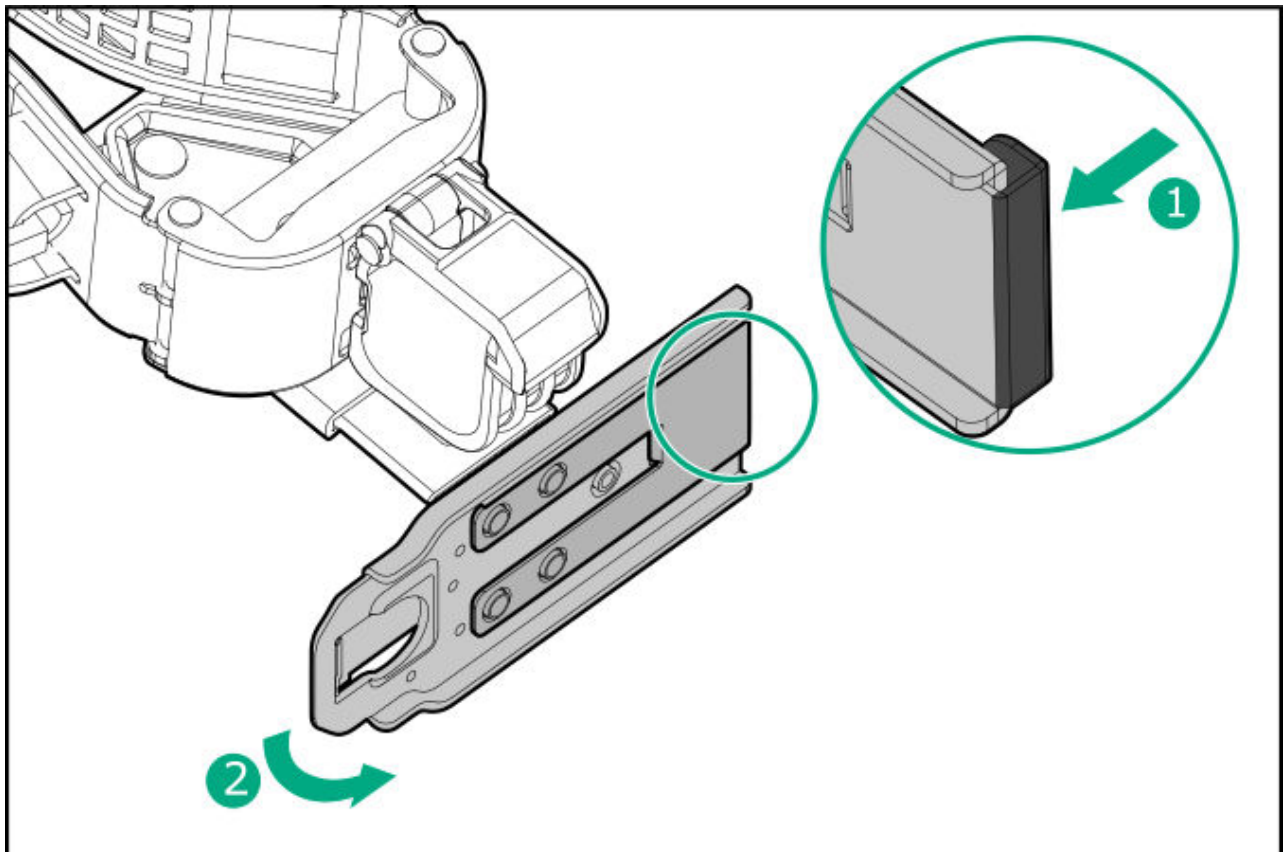
CAUTION

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

Procedure

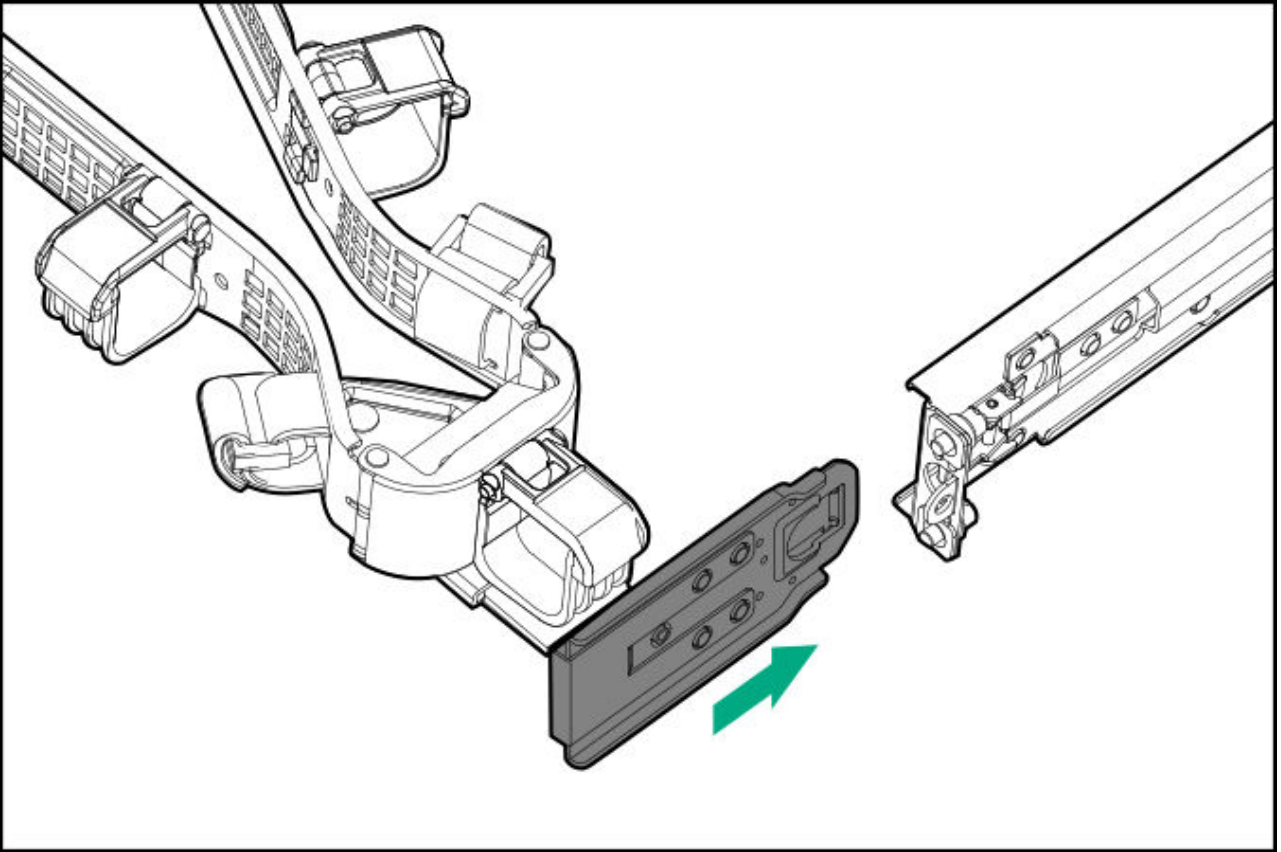
1. Connect and secure all peripheral cables and power cords to the rear panel.
2. (Optional) The CMA retention bracket can be rotated to fit a left- or right-hand CMA operation. Press and hold the rotate mechanism, and then rotate the bracket 180°.

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



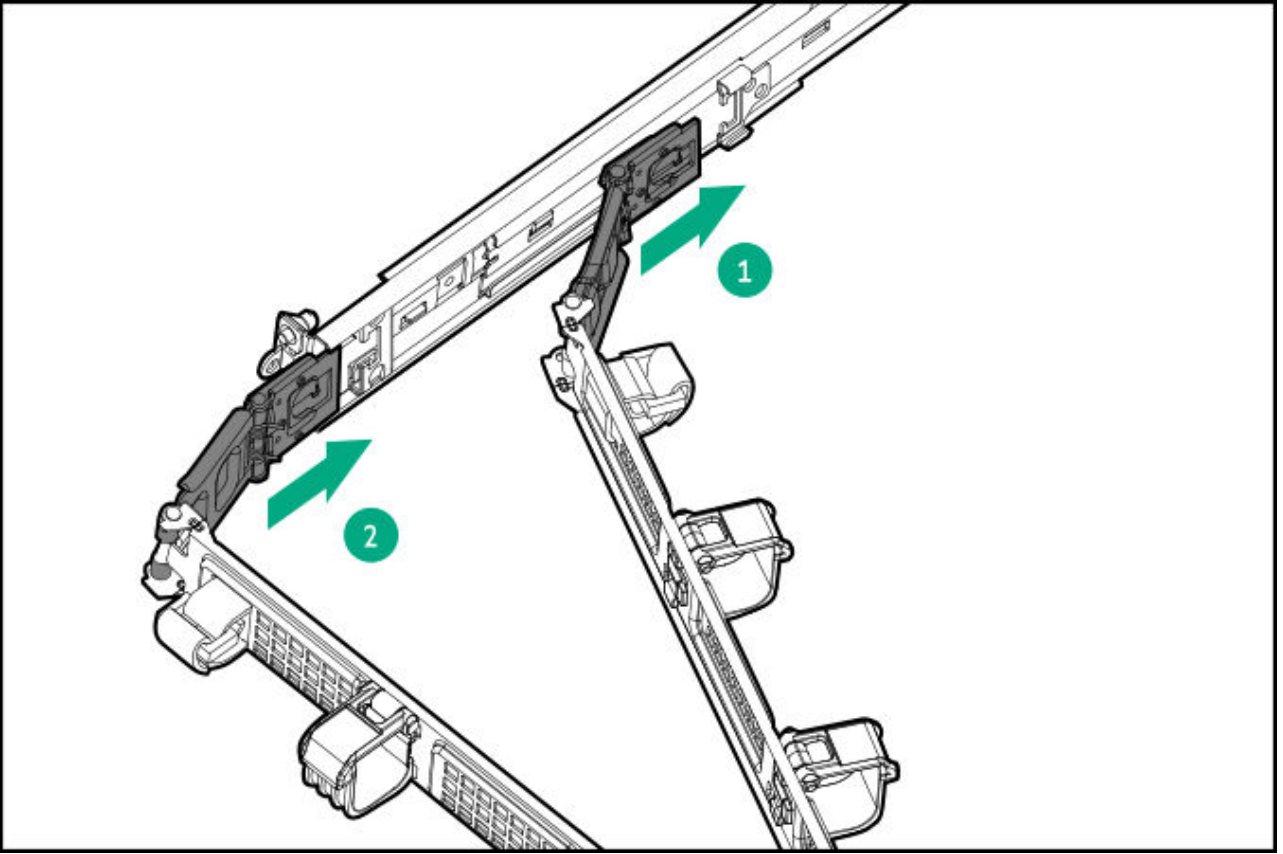
3. Install the CMA retention bracket in to the outer rail.

There will be an audible click to indicate that the bracket is locked in the outer rail.

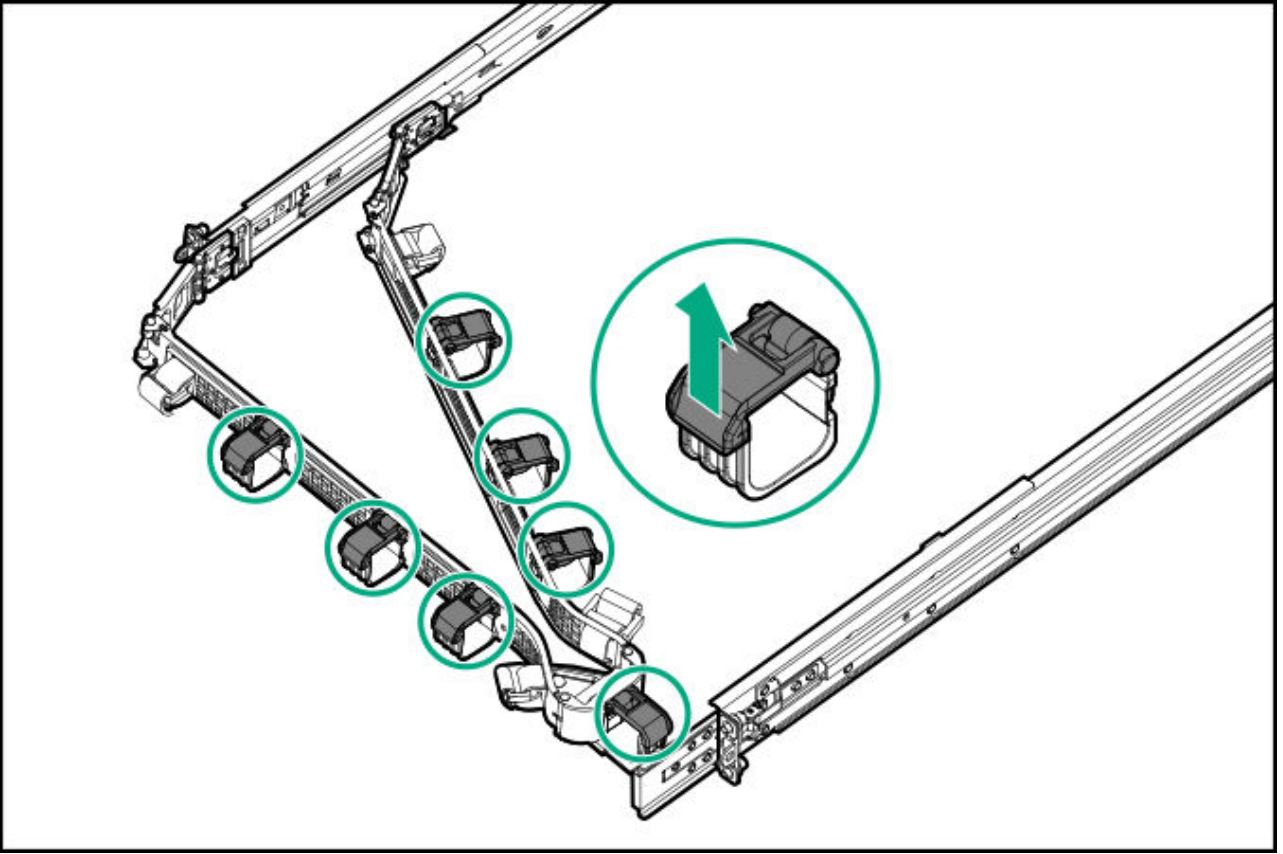


4. Install the CMA brackets in to the inner and outer rails.

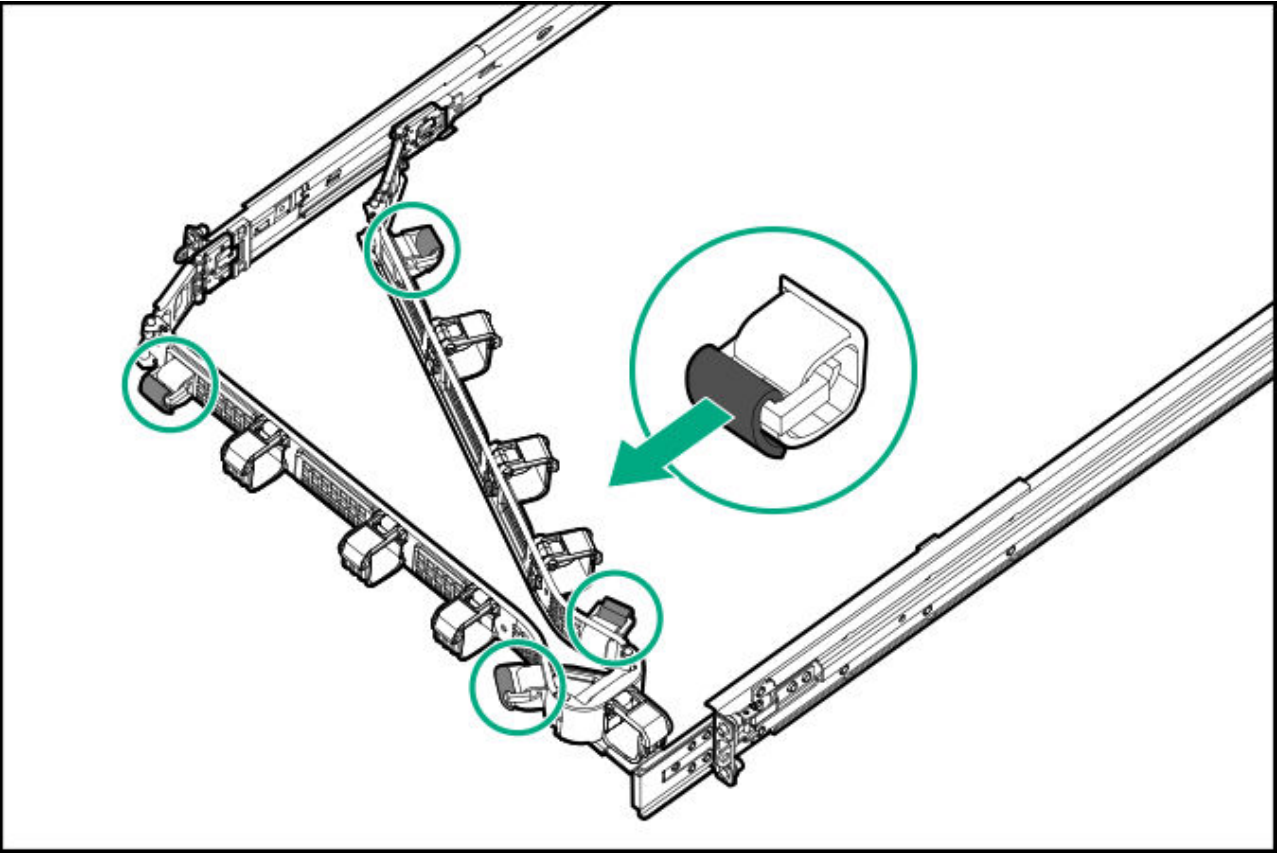
There will be an audible click to indicate that the brackets are locked in the rails.



5. Open the cable clamps.



6. Release the cable straps.



7.

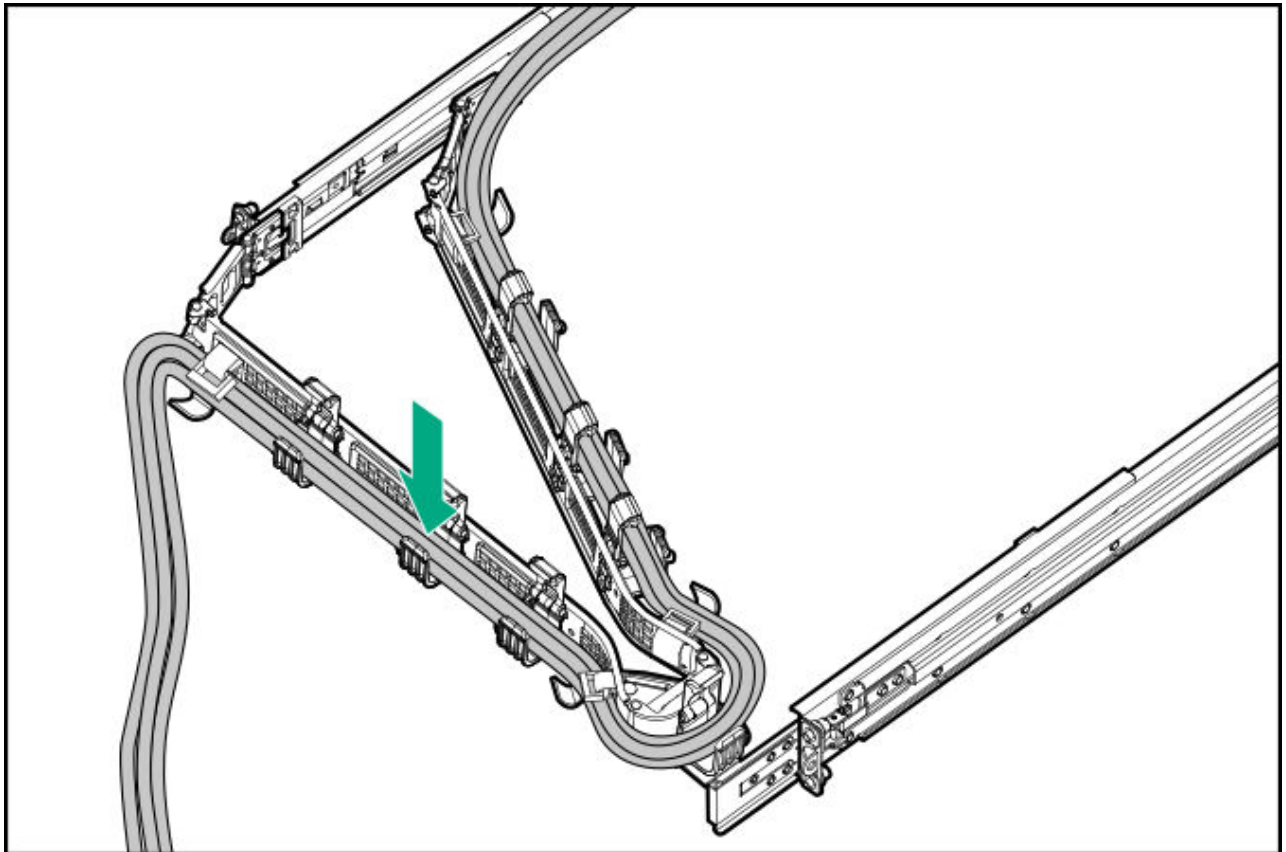


CAUTION

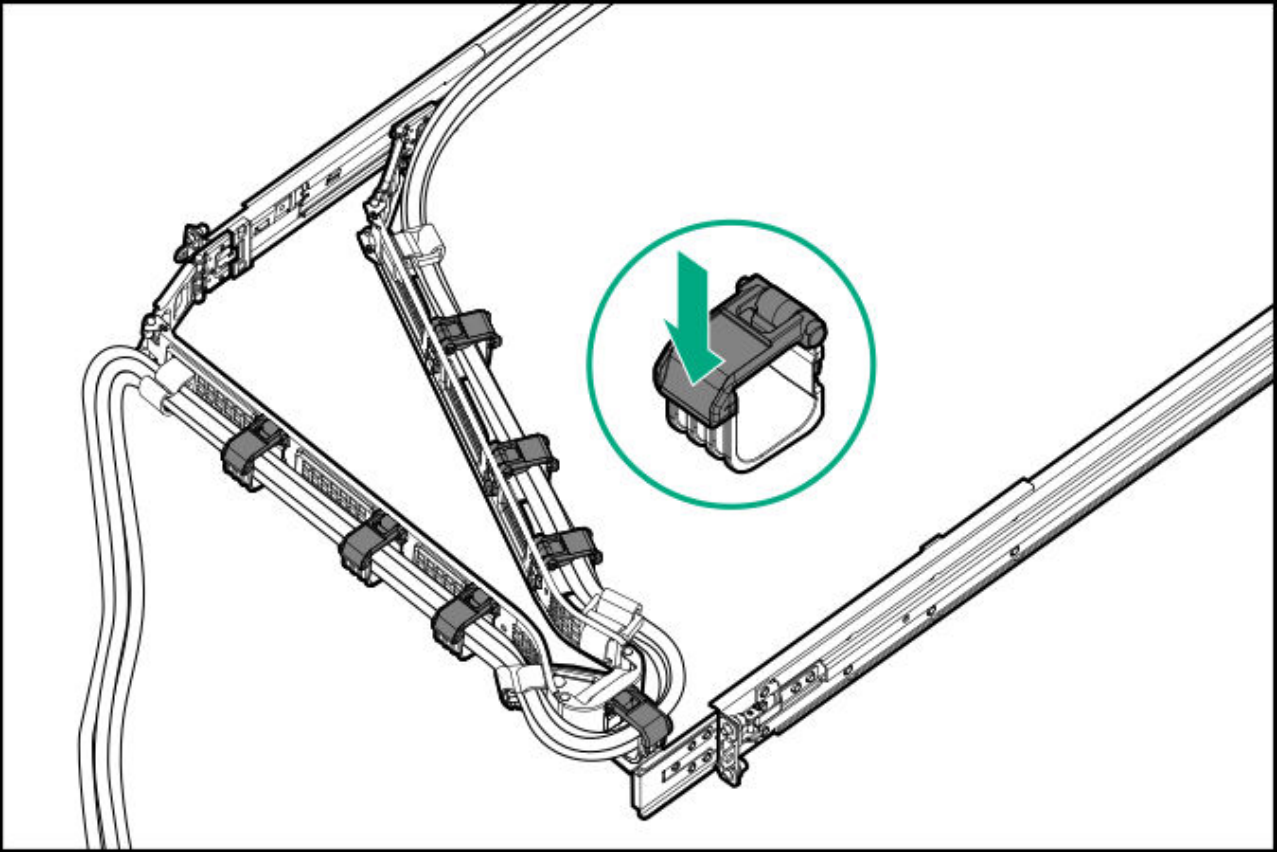
Employ industry best practices in managing peripheral cables and power cords secured in the CMA. These are some of the more important points:

- 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.

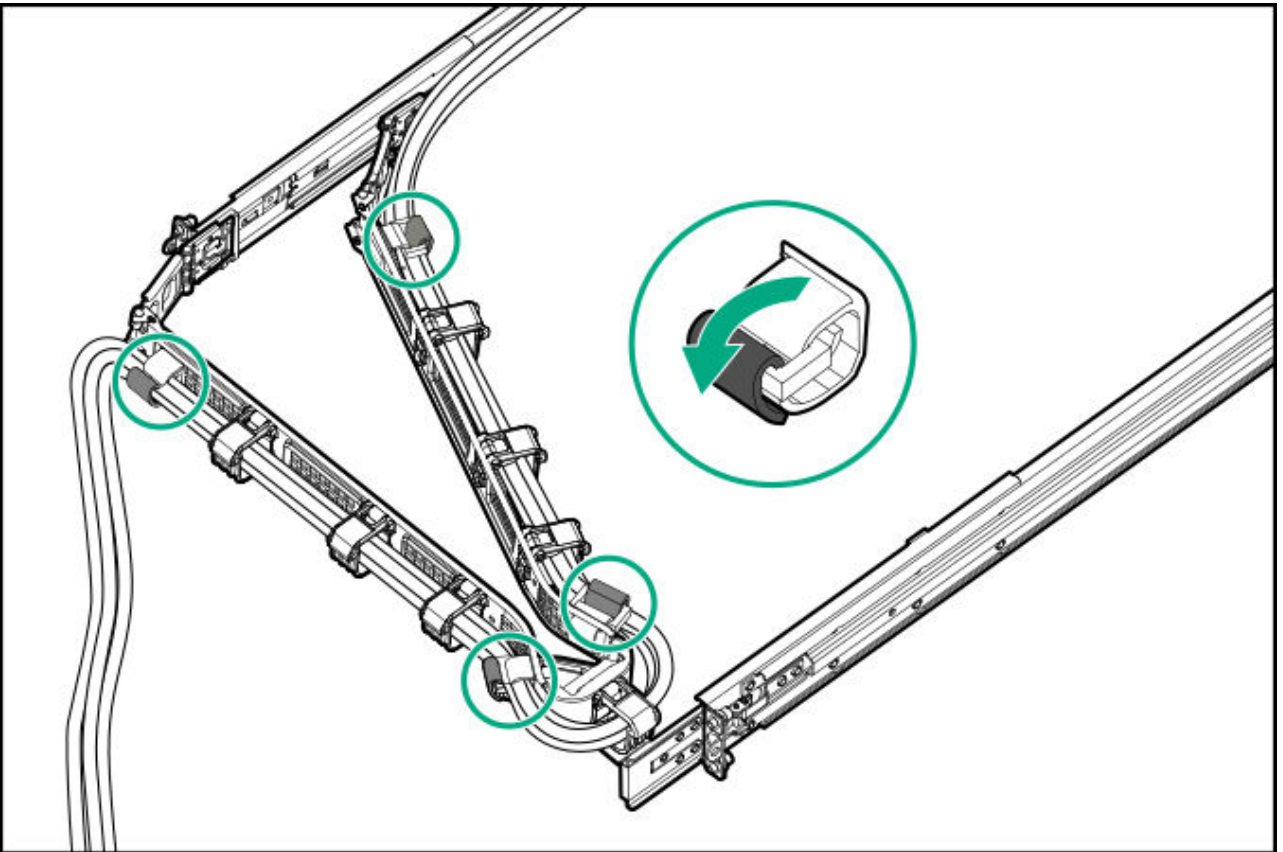
Route the peripheral cables and power cords through the cable clamps and straps.



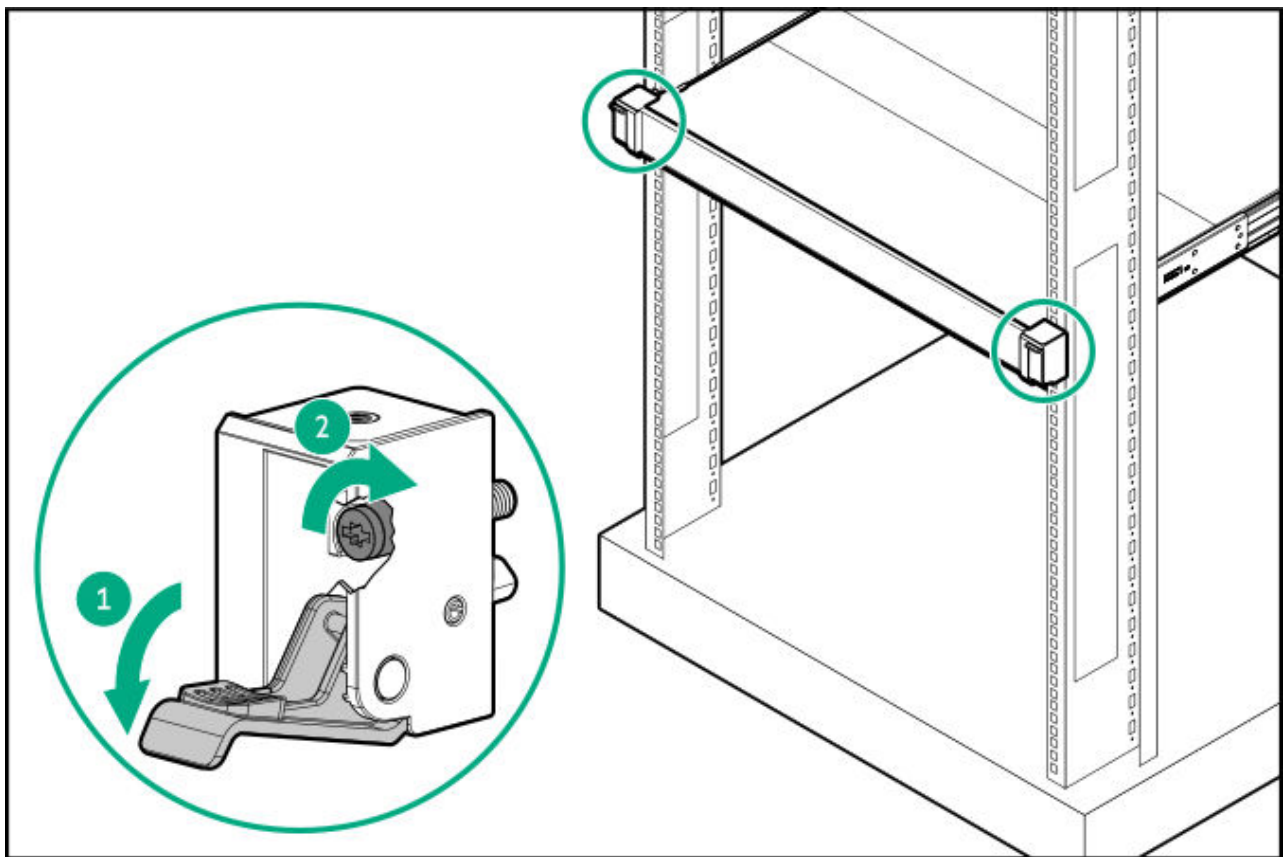
8. Close the cable clamps.



9. Fasten the cable straps.



- .0. Verify the operation of the rack rails:
 - a. Fully extend the chassis out of the rack.
 - b. Check that there is enough slack in the cables and cords for full extension of the chassis. Make sure that there is no cable binding or crimping.
 - c. To ensure that the cables and cords are secured properly, slide the chassis in and out of the rack. Make sure that there is no risk of accidental disconnection of the peripheral cables and power cords.
- .1. Slide the server into the rack until the chassis ears are flushed against the rack posts.
- .2. (Optional) Open the chassis ear latches, and then tighten the shipping screws.



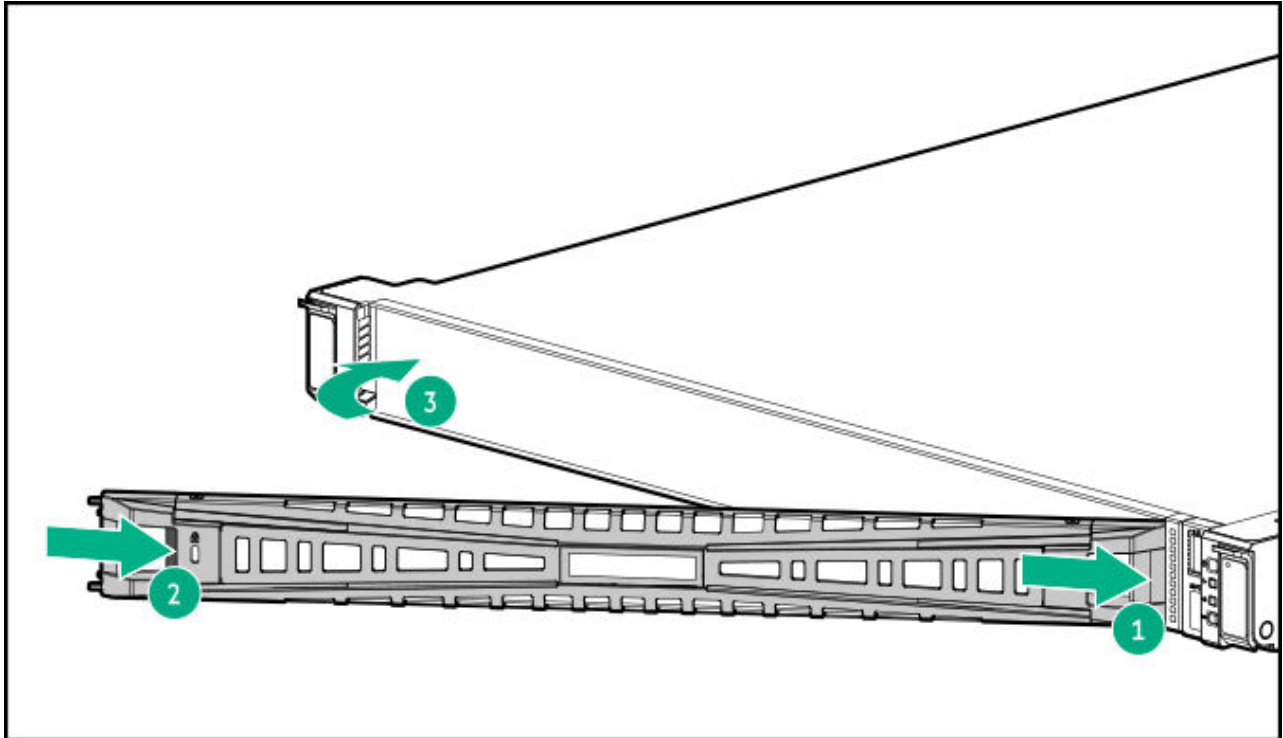
Results

The installation procedure is complete.

Installing the front bezel option

Procedure

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



4. (Optional) Install the Kensington security lock.
For more information, see the lock documentation.

Results

The installation procedure is complete.

Drive options

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

- Non-hot-plug LFF SATA drives
- Hot-plug LFF SAS or SATA drives

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

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

To support hardware RAID, [install a storage controller option](#).

Subtopics

Drive installation guidelines

Installing a non-hot-plug LFF drive

Installing a hot-plug LFF/SFF drive

Drive installation guidelines

Observe the following general guidelines:

- The system automatically sets all drive numbers.



CAUTION

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

- If only one drive is used, install it in the bay with the lowest drive number. For drive numbering, see [Drive bay numbering](#).
- This server does not support mixed drive types.
- When installing NVMe drives, install the same drive type. Mixed NVMe drives are not supported.
- All drives grouped into the same drive array must meet the following criteria:
 - They must be either all hard drives or all solid-state drives.
 - Drives must be the same capacity to provide the greatest storage space efficiency.

Installing a non-hot-plug LFF drive

Prerequisites

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

- T-10 Torx screwdriver
- T-15 Torx screwdriver

About this task

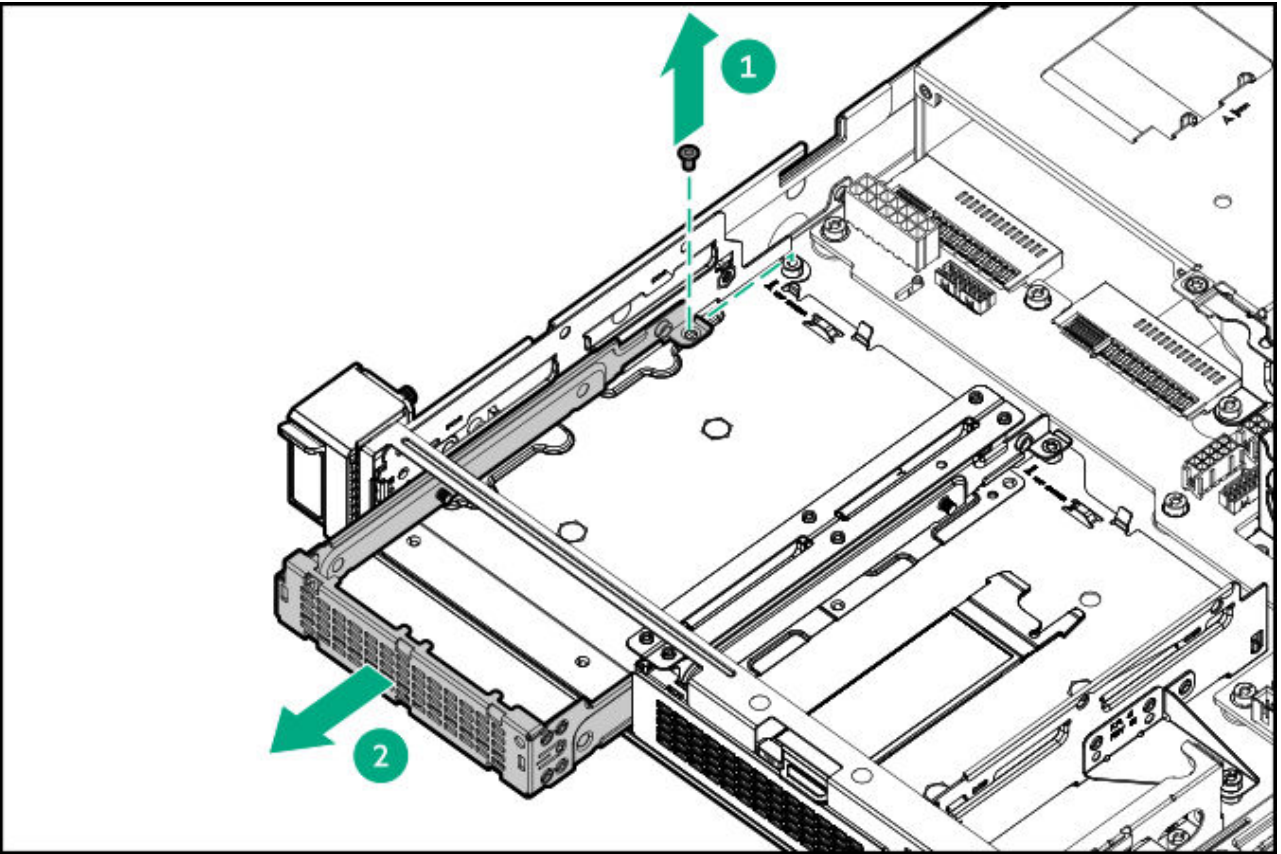


CAUTION

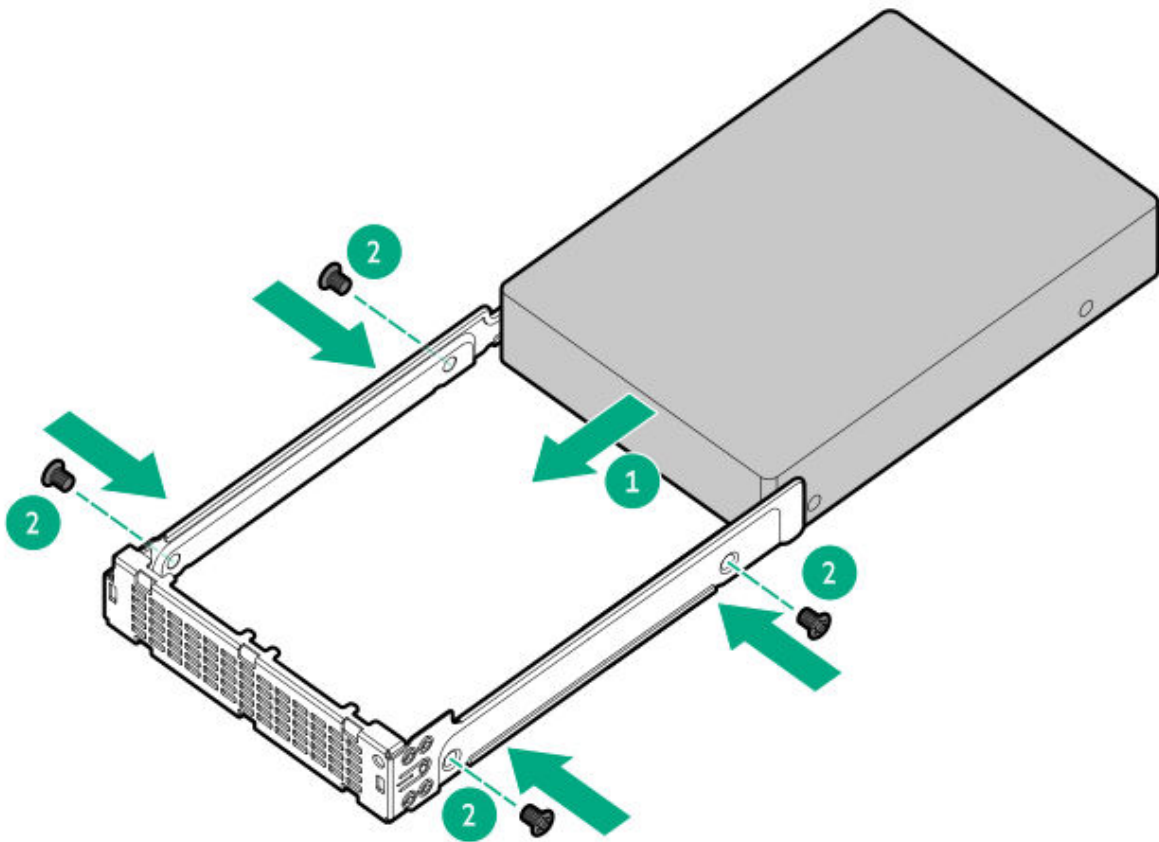
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

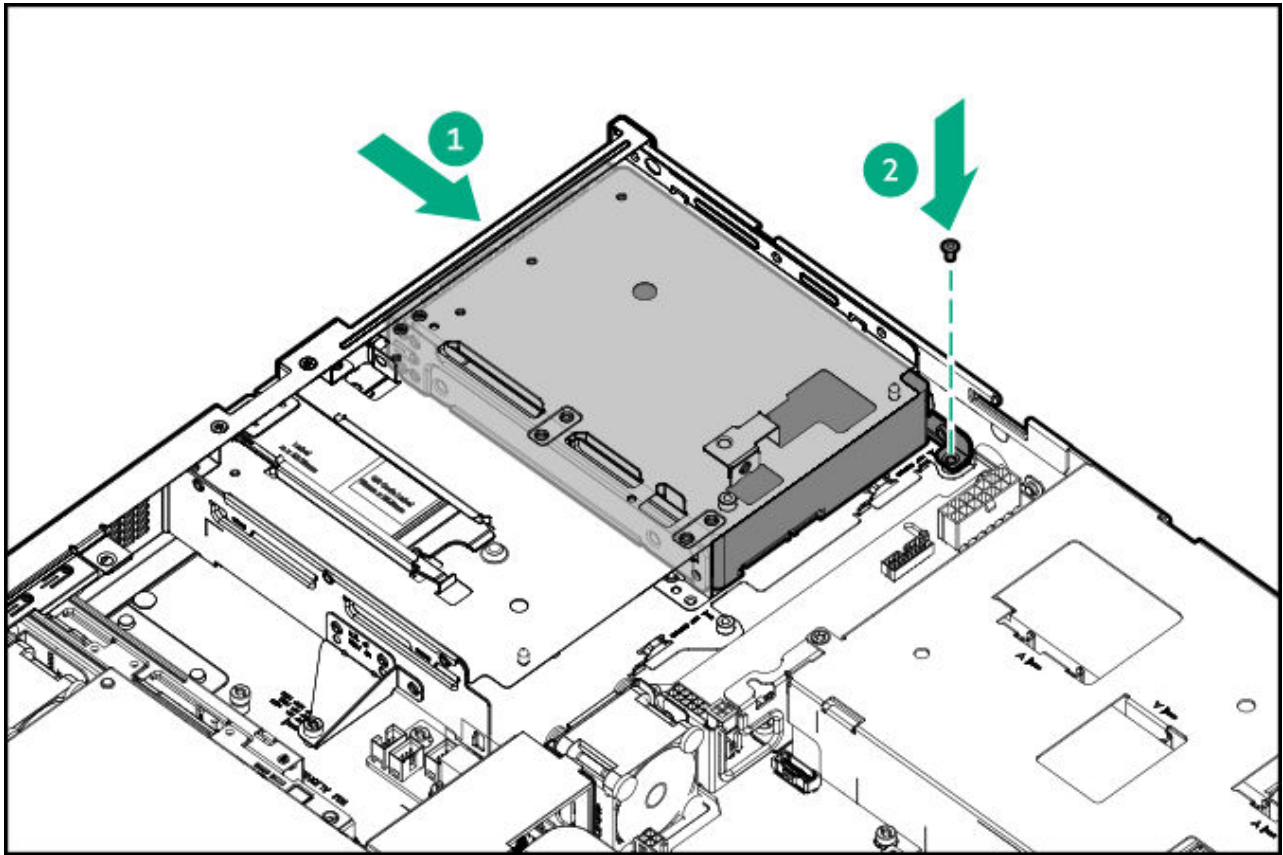
1. Back up all server data.
2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Remove the server from the rack.
7. Place the server on a flat, level work surface.
8. Remove the access panel.
9. Remove the non-hot-plug drive carrier from the server.



.0. Install the non-hot-plug drive on the drive carrier.



- .1. Install the non-hot-plug drive.



- .2. Connect the drive cables.
- .3. Install the access panel.
- .4. Install the server into the rack.
- .5. If removed, install the front bezel.
- .6. Connect all peripheral cables to the server.
- .7. Connect each power cord to the server.
- .8. Connect each power cord to the power source.
- .9. Power up the server.
- .10. To configure drive arrays, see the relevant storage controller guide.

Results

The installation procedure 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

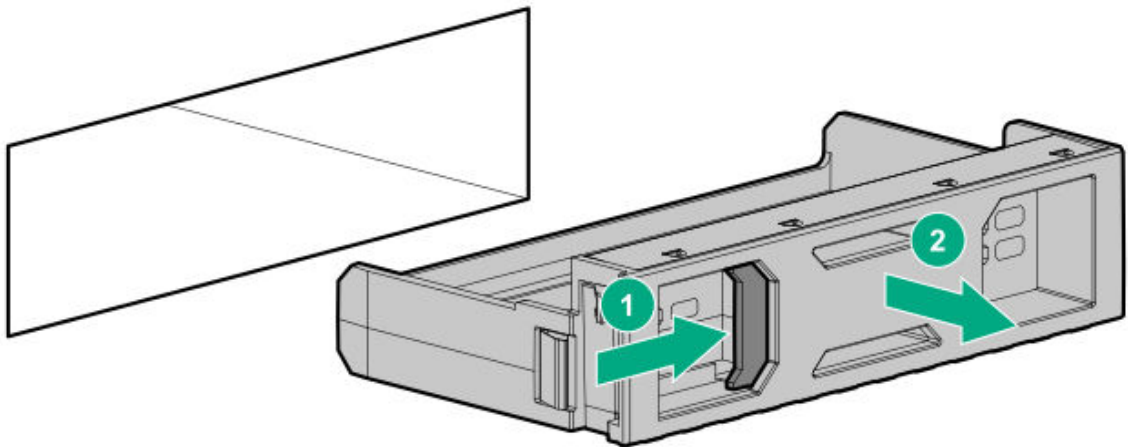
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

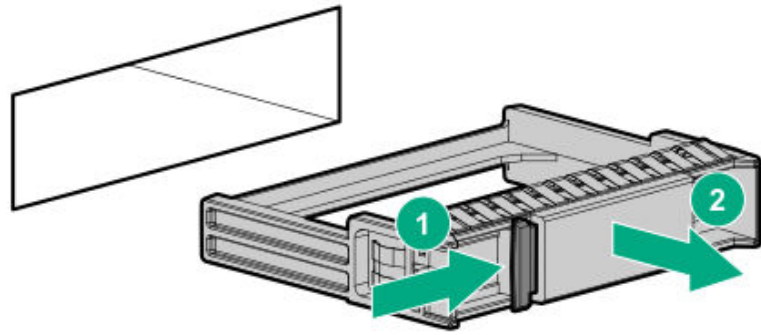
1. [Back up all server data](#).
2. If installed, [remove the front bezel](#).
3. Remove the drive blank.

Retain the blank for future use.

- LFF drive blank

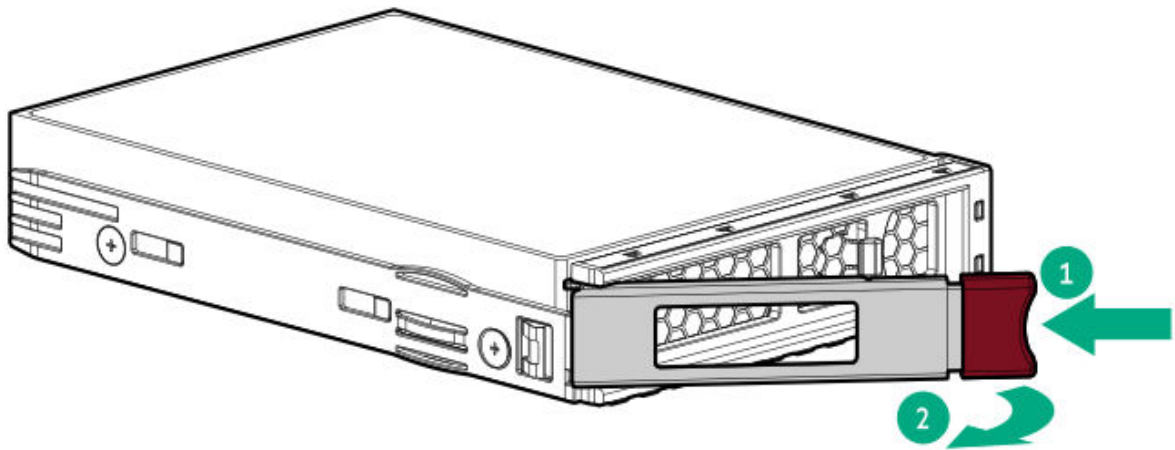


- SFF drive blank

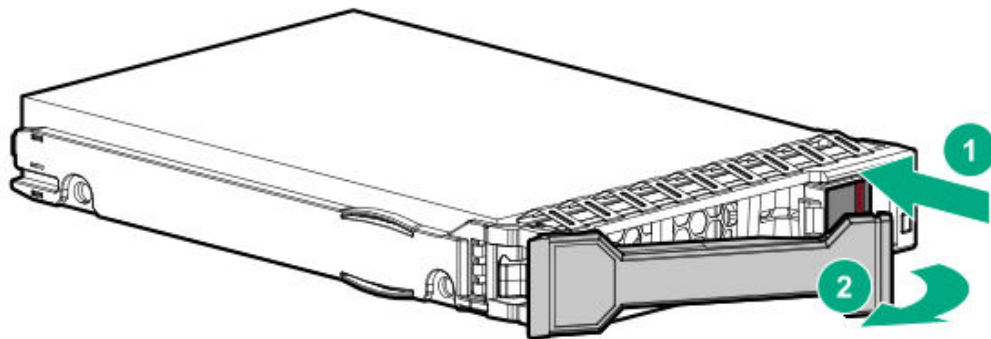


4. Prepare the drive.

- LFF drive

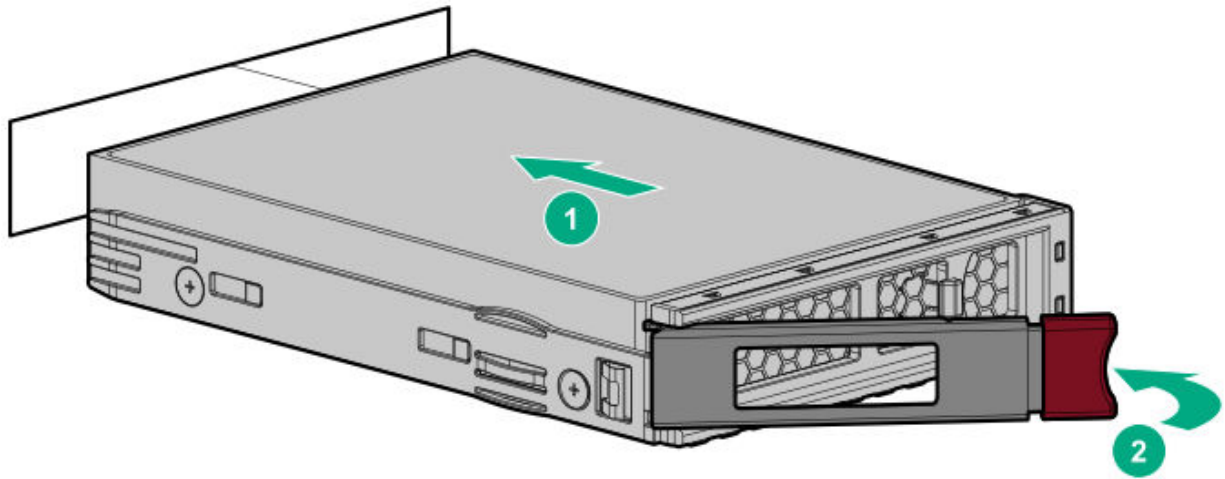


- SFF drive

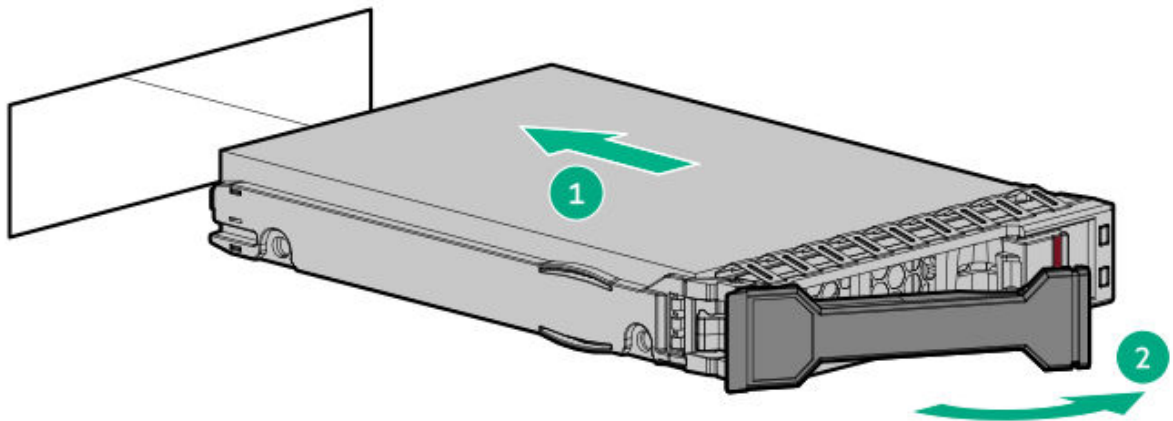


5. Install the drive.

- LFF drive



- SFF drive



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

Results

The installation procedure is complete.

Power supply options

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

Subtopics

- Hot-plug power supply calculations**
- Power supply warnings and cautions**
- DC power supply warnings and cautions**
- DC power supply wire colors**
- Installing an AC power supply**
- Installing a DC power supply**
- Connecting a DC power cable to a DC power source**

Hot-plug power supply calculations

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

Power supply warnings and cautions



WARNING

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

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



WARNING

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



CAUTION

Mixing different types of power supplies in the same server might:

- Limit or disable some power supply features including support for power redundancy.
- Cause the system to become unstable and might shut down.

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

DC power supply warnings and cautions



WARNING

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

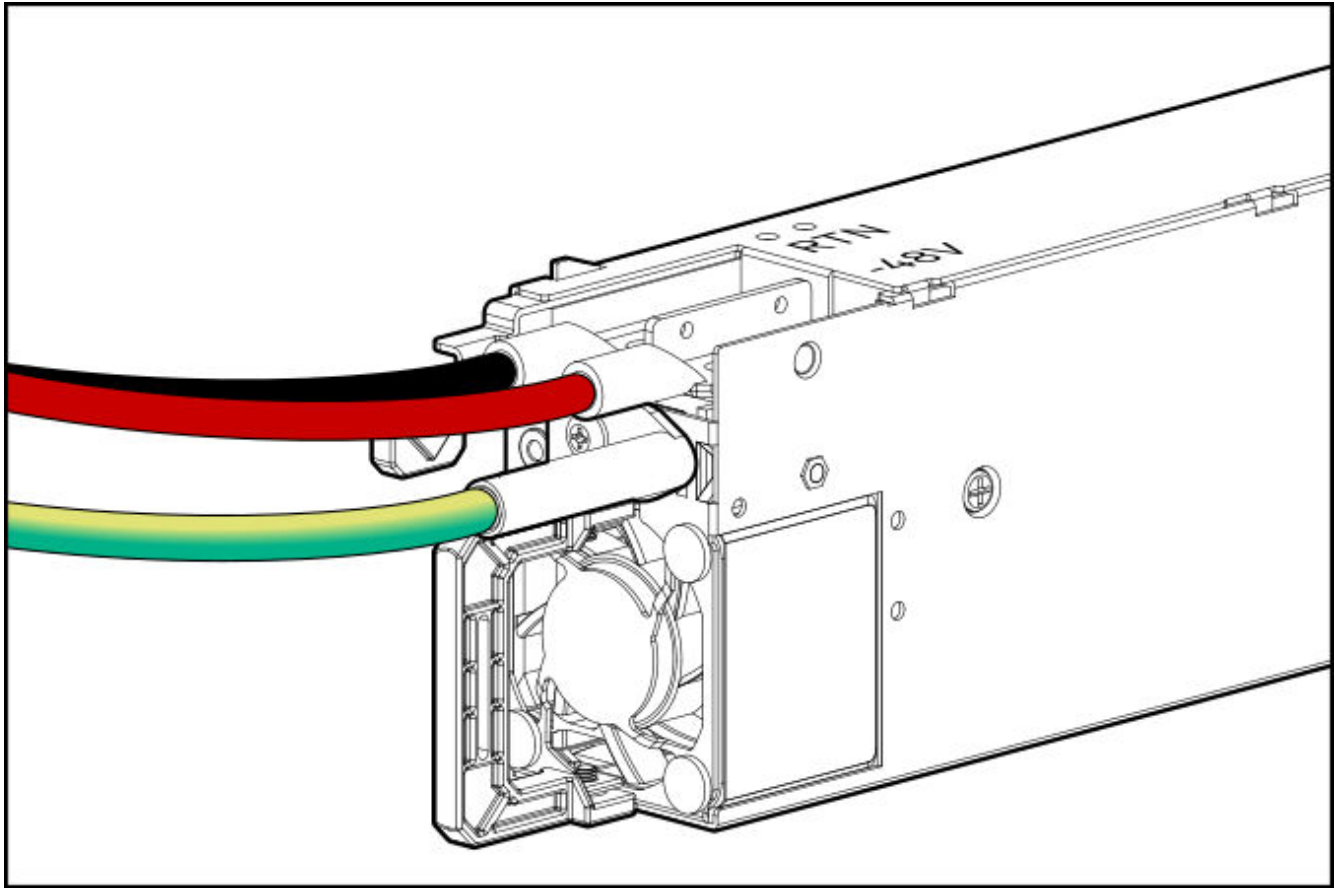


CAUTION

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all the following must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices must not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

DC power supply wire colors



Wire color	Description	Wire slot
Red	Line wire	-48V
Black	Return wire	Return
Green + Yellow	Ground wire	Safety ground

Installing an AC power supply

Prerequisites

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

About this task



WARNING

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



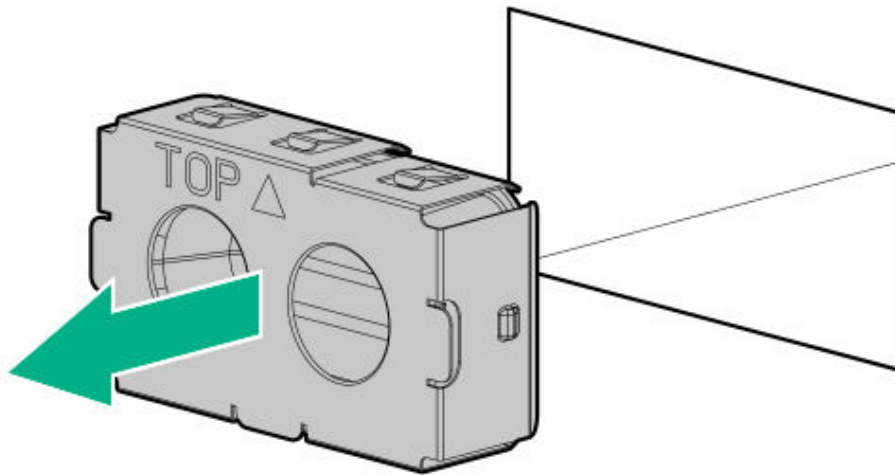
CAUTION

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

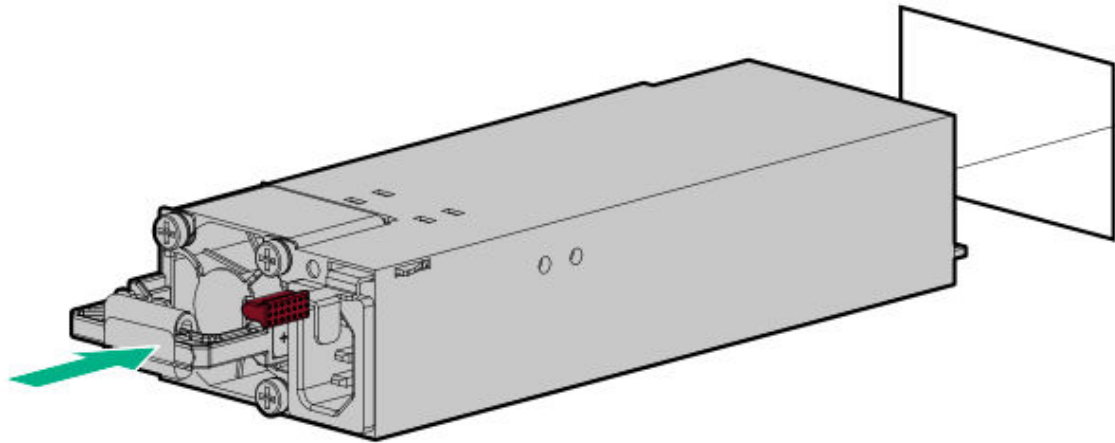
Procedure

1. Remove the power supply blank.

Retain the blank for future use.



2. Install the power supply.

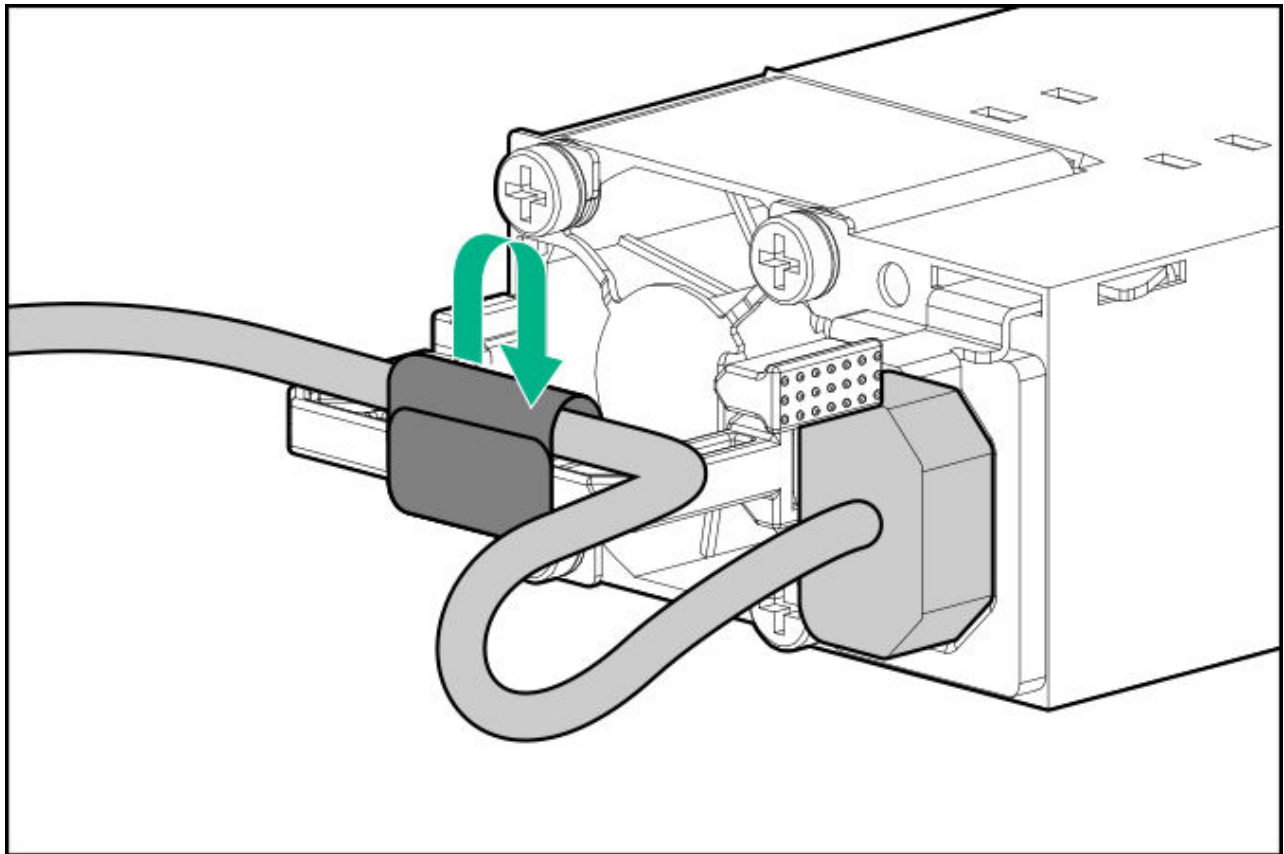


3. Connect the power cord to the power supply.
4. Secure the power cord.



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.



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

Results

The installation procedure is complete.

Installing a DC power supply

Prerequisites

- Before installing a power supply, review the following:
 - [Power supply warnings and cautions](#)
 - [DC power supply warnings and cautions](#)

- DC power supply wire colors
- Before you perform this procedure, make sure that you have a Phillips No. 2 screwdriver available.
- Before connecting the power cables, review the following:
 - The optional P36877-B21 HPE lug kit can be purchased from an authorized HPE reseller for use with customer-supplied power cables. (The power cable and lug kit listed below can only be used with the 1600 W -48 VDC power supply.)
 - If you are using an input power cord option, the P22173-B21 HPE 1600 W DC PSU power cable kit can be purchased from an authorized HPE reseller.
 - The DC power supply option kits do not ship with a Power Supply DC cable Kit and may not include a Power Supply Cable Lug kit. The optional DC Cable kit or the optional DC Cable Lug Kit may be purchased directly from Hewlett Packard Enterprise or an authorized HPE reseller. For additional information, see the power supply QuickSpecs at <https://www.hpe.com/info/fsps-qs>.

About this task

If you are not using an input power cord option, the power supply cabling must be made in consultation with a licensed electrician and be compliant with local code.



WARNING

To reduce the risk of electric shock, fire, and damage to the equipment, you must install this product in accordance with the following guidelines:

- The HPE 1600 W Flex Slot -48 VDC hot-plug power supply is intended only for installation in servers located in a restricted access location.
- The HPE 1600 W Flex Slot -48 VDC hot-plug power supply is not intended for direct connection to the DC supply branch circuit. Only connect this power supply to a power distribution unit (PDU) that provides an independent overcurrent-protected output for each DC power supply. Each output overcurrent-protected device in the PDU must be suitable for interrupting fault current available from the DC power source and must be rated no more than 45 A.
- The PDU output must have a shut-off switch or a circuit breaker to disconnect power for each power supply. To completely remove power from the power supply, disconnect power at the PDU. The end product may have multiple power supplies. To remove all power from the product, disconnect the power for each power supply.
- In accordance with applicable national requirements for Information Technology Equipment and Telecommunications Equipment, this power supply only connects to DC power sources that are classified as SELV or TNV. Generally, these requirements are based on the International Standard for Information Technology Equipment, IEC 60950-1/IEC 62368-1. In accordance with local and regional electric codes and regulations, the DC source must have one pole (Neutral/Return) reliably connected to earth ground.
- You must connect the power supply ground screw located on the front of the power supply to a suitable ground (earth) terminal. In accordance with local and regional electric codes and regulations, this terminal must be connected to a suitable building ground (earth) terminal. Do not rely on the rack or cabinet chassis to provide adequate ground (earth) continuity.

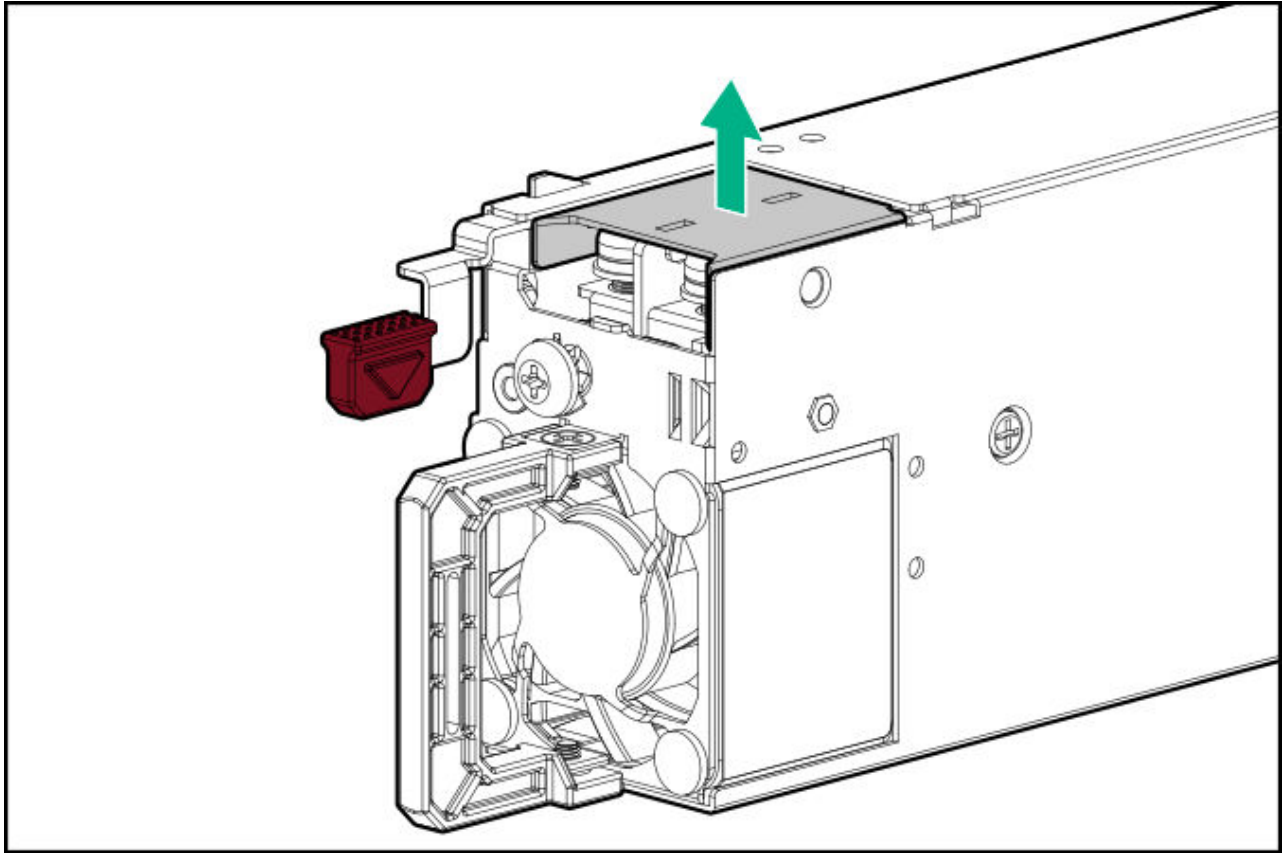


WARNING

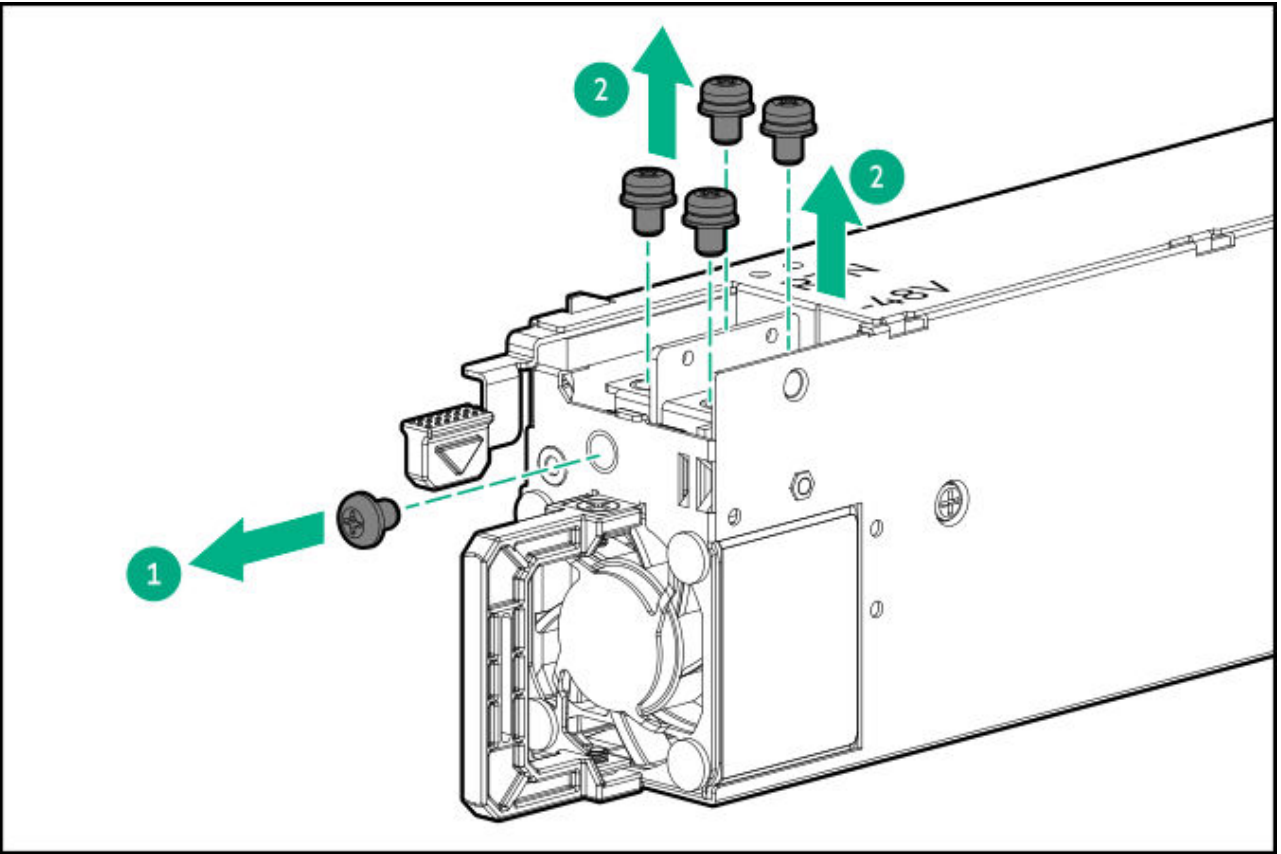
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

Procedure

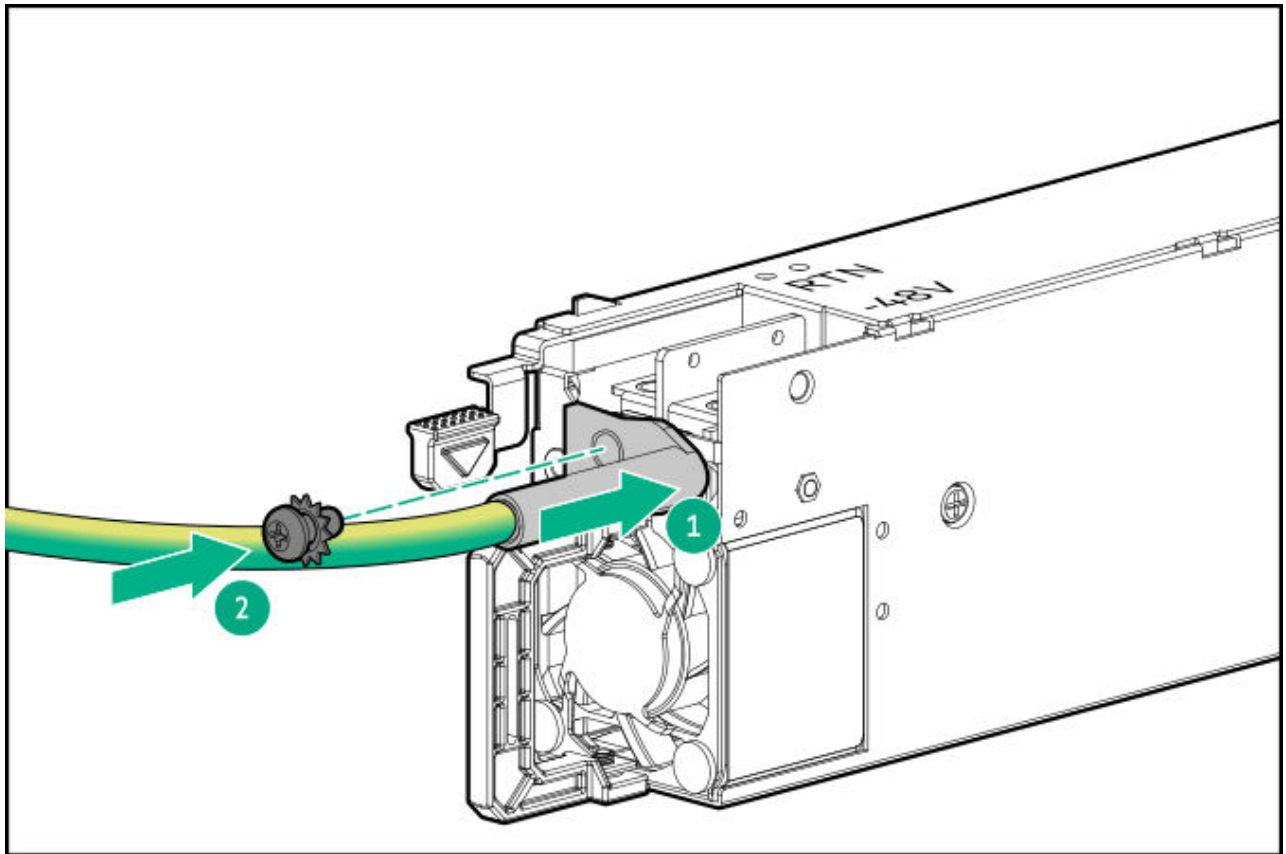
1. Remove the protective cover from the power supply.



2. Remove the ground wire screw, and then remove the return wire and line wire screws.

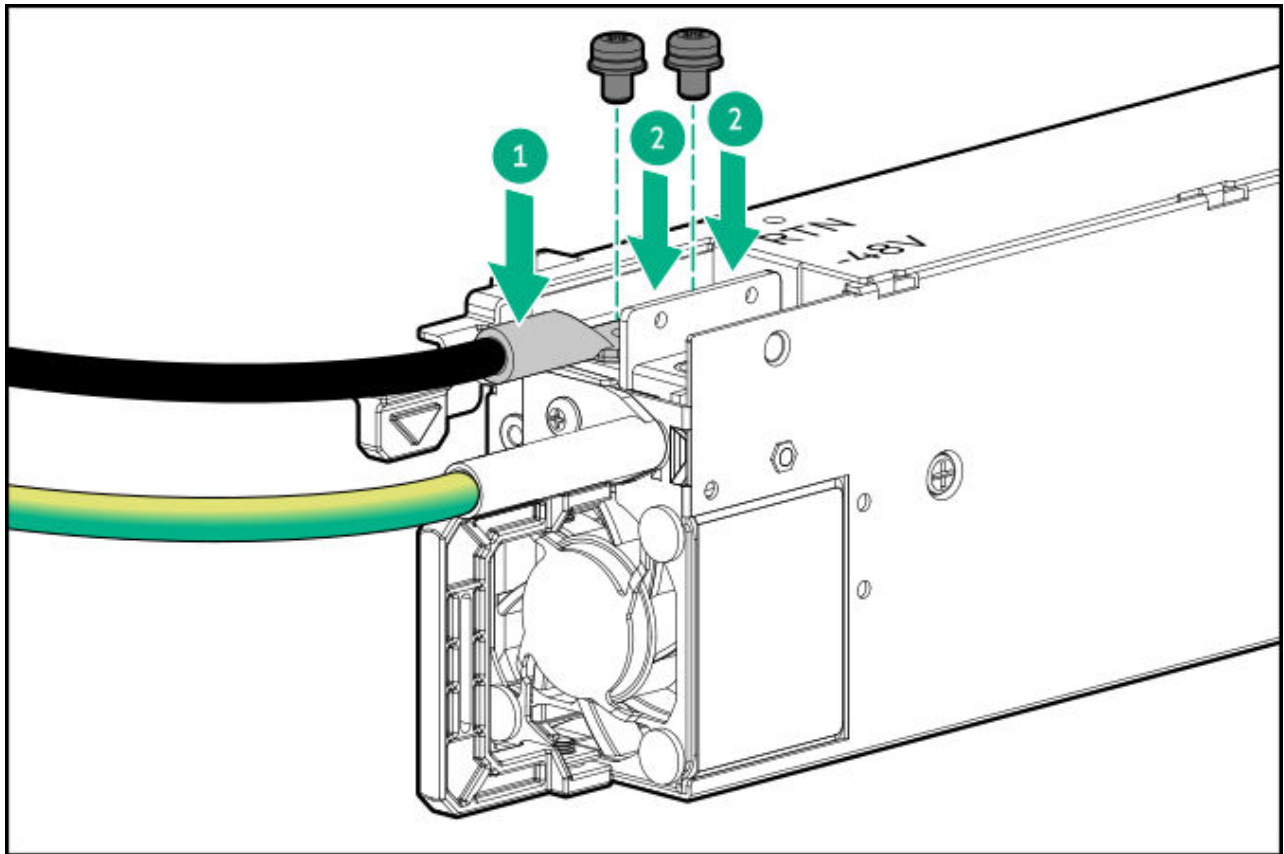


3. Attach the ground wire (green and yellow) to the DC power supply and tighten the screw and washer with 1.47 N-m (13 lbf-in).

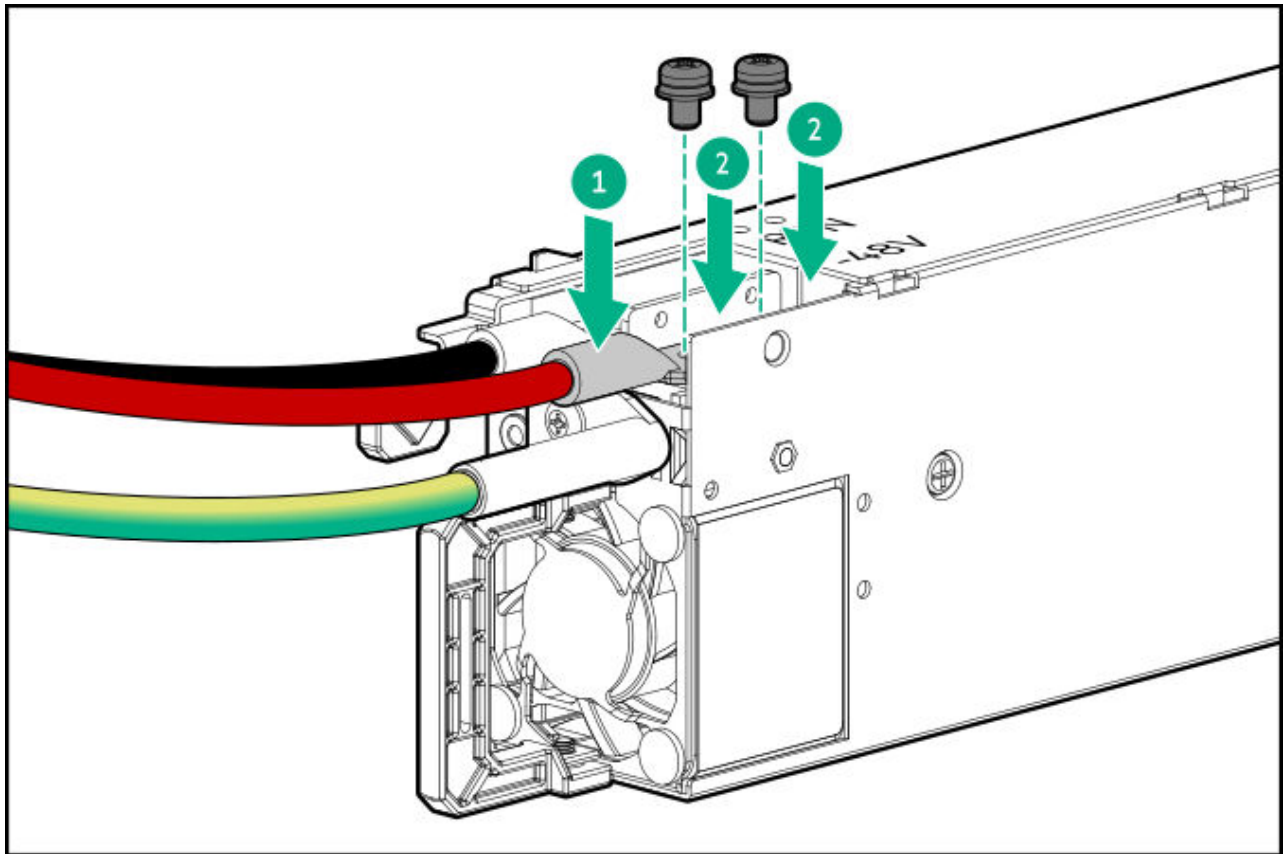


4. Install the return wire (black):

- a. Insert the return wire into the RTN slot on the DC power supply.
- b. Tighten the screw with 0.98 N-m (8.68 lbf-in).

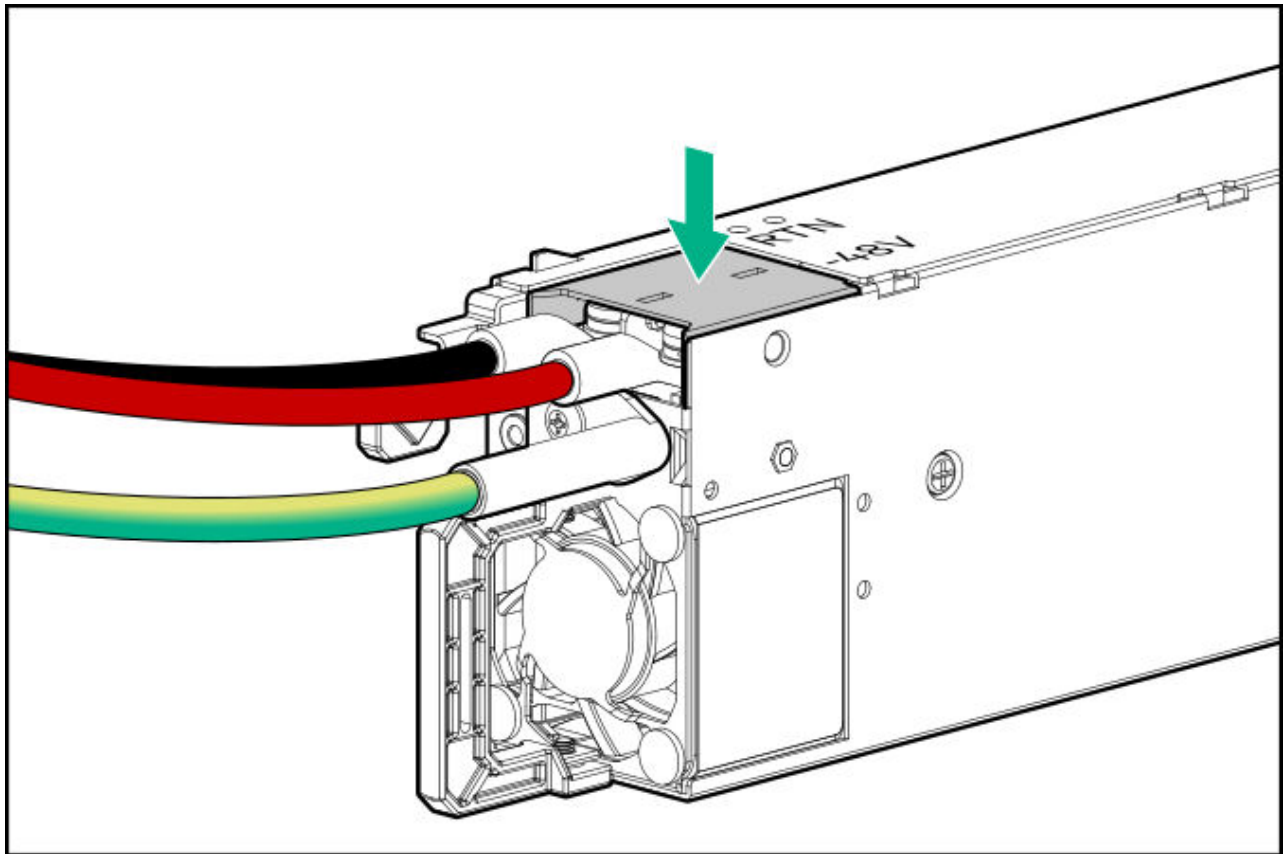


5. Install the line wire (red):
 - a. Insert the line wire into the -48V slot on the DC power supply.
 - b. Tighten the screw to 0.98 N-m (8.68 lbf-in).



6. Install the protective cover on the DC power supply.

Make sure that the protective cover is locked.

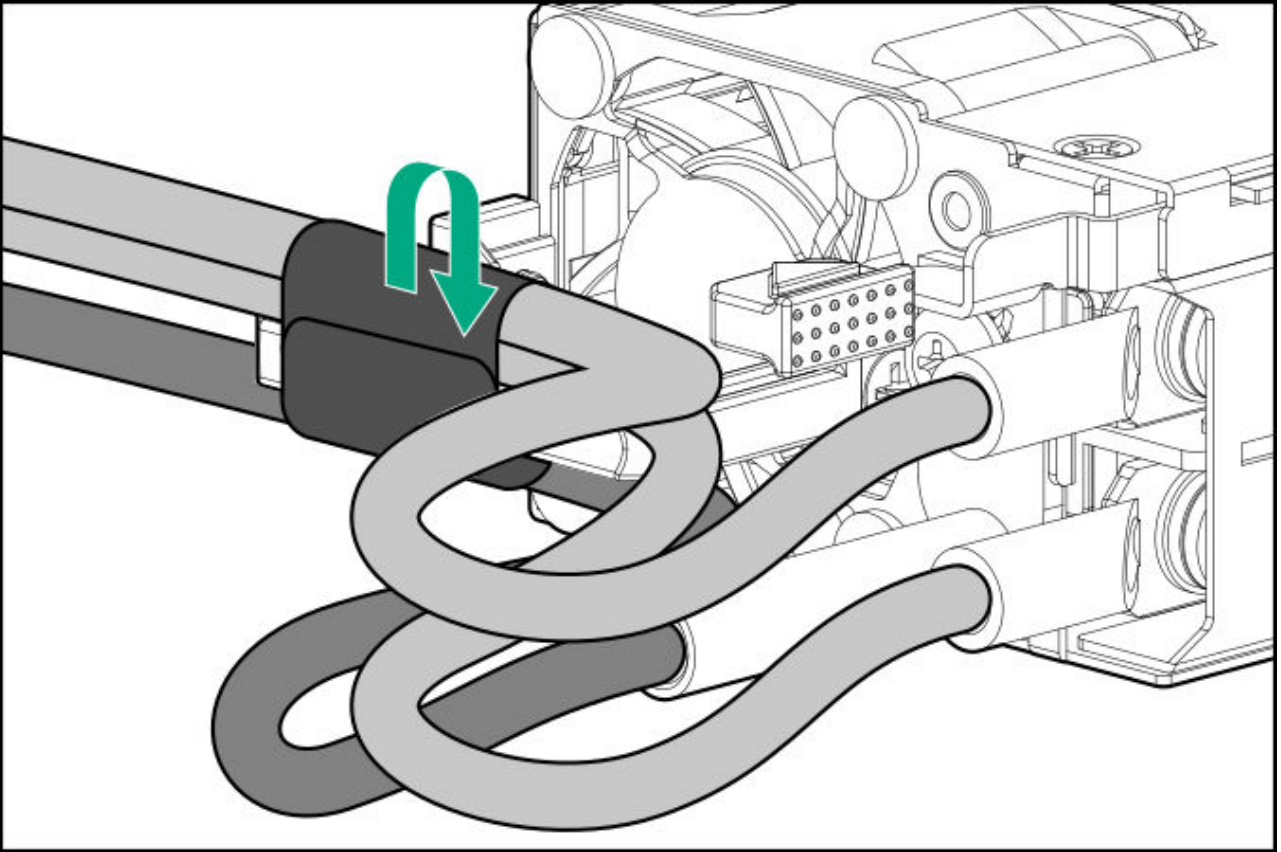


7. Secure the ground, positive return, and negative input wires in the strain relief strap.

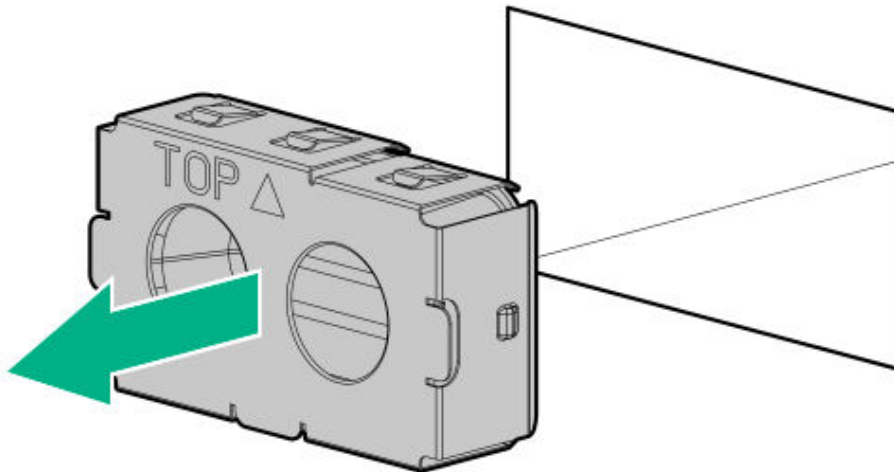


CAUTION

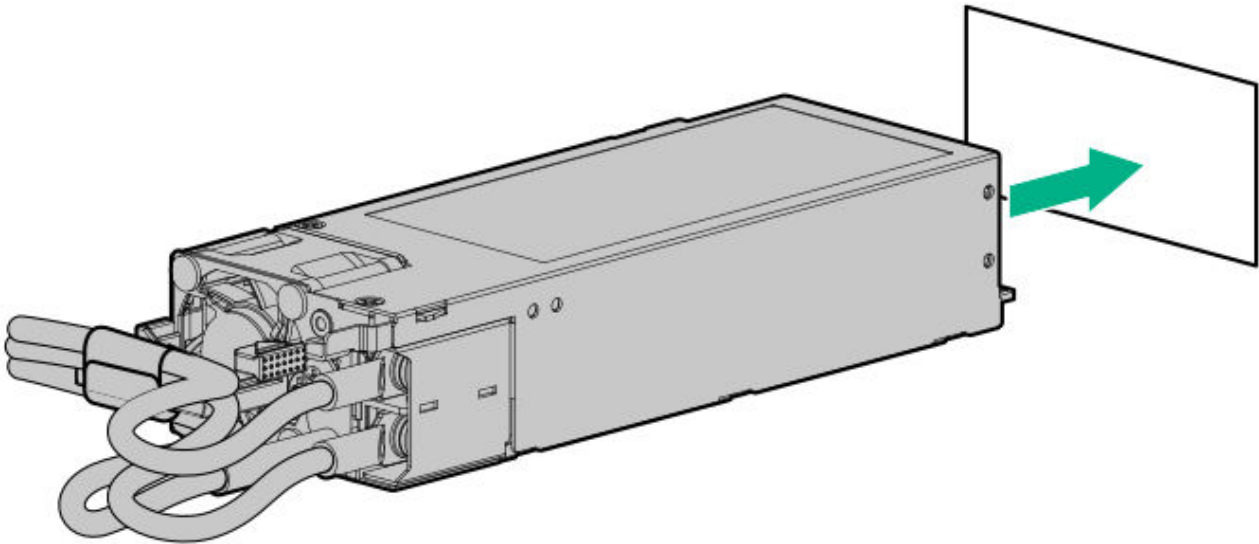
Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.



8. If you are installing a power supply in the power supply bay 2, remove the power supply blank.
Retain the blank for future use.



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



- .0. Make sure the -48 V DC power source is off or the PDU breaker is in the off position, and then connect the power cord to the -48 V DC power source or PDU.
- .1. Turn on the -48 V power source or switch the PDU breaker to the on position to supply -48 V to the power supply.
- .2. Connect a DC power cable to a DC power source.
- .3. Make sure that the power supply LED is green.

Results

The installation procedure is complete.

Connecting a DC power cable to a DC power source

Prerequisites

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

- Electrical wire cutter
- Hand crimp tool

About this task



WARNING

To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel and in accordance with local and regional electric codes and regulations
- Connect the equipment to a reliably grounded secondary circuit source. A secondary circuit has no direct connection to a primary circuit and derives its power from a transformer, converter, or equivalent isolation device.
- The overcurrent protection for the DC source must not exceed 45 A.



WARNING

When installing a DC power supply, the ground wire must be connected before the positive or negative leads.



WARNING

Remove power from the power supply before performing any installation steps or maintenance on the power supply.



CAUTION

The server equipment connects the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. For more information, see the documentation that ships with the power supply.



CAUTION

If a DC connection exists between the earthed conductor of the DC supply circuit and the earthing conductor at the server equipment, the following conditions must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- Locate the equipment in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed

Procedure

1. Cut the DC power cord ends no shorter than 150.00 cm (59.06 in).



IMPORTANT

The ring terminals must be UL approved and accommodate 6 AWG wires.



IMPORTANT

The minimum nominal thread diameter of a pillar or stud type terminal must be 3.50 mm (0.138 in). The diameter of a screw type terminal must be 5.00 mm (0.197 in).

2. If the power source requires ring tongues, use a crimping tool to install the ring tongues on the power cord wires and ground wire.
3. Stack each same-colored pair of wires and then attach them to the same power source.

For more information, see the documentation that ships with the power supply.

Transceiver option

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

Subtopics

Transceiver warnings and cautions

Installing a transceiver

Transceiver warnings and cautions



WARNING

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



CAUTION

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



CAUTION

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



CAUTION

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



IMPORTANT

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

Installing a transceiver

Prerequisites

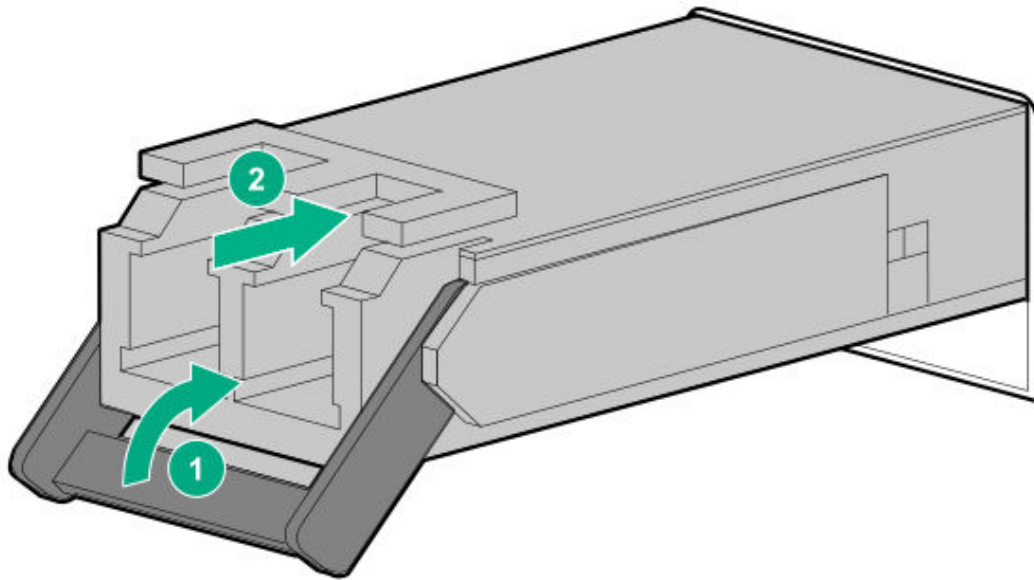
Before installing a transceiver option, review the following:

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

Procedure

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

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



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

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

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

Results

The installation procedure is complete.

Pass-through board option

In the 4 SFF hot-plug drive configuration, the pass-through board (PTB) is required when installing the following options:

- Two-bay SFF drive cage
- Optical drive—When the direct attached SATA SSDs are installed.

Subtopics

Installing the pass-through board (PTB)

Installing the pass-through board (PTB)

Prerequisites

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

About this task

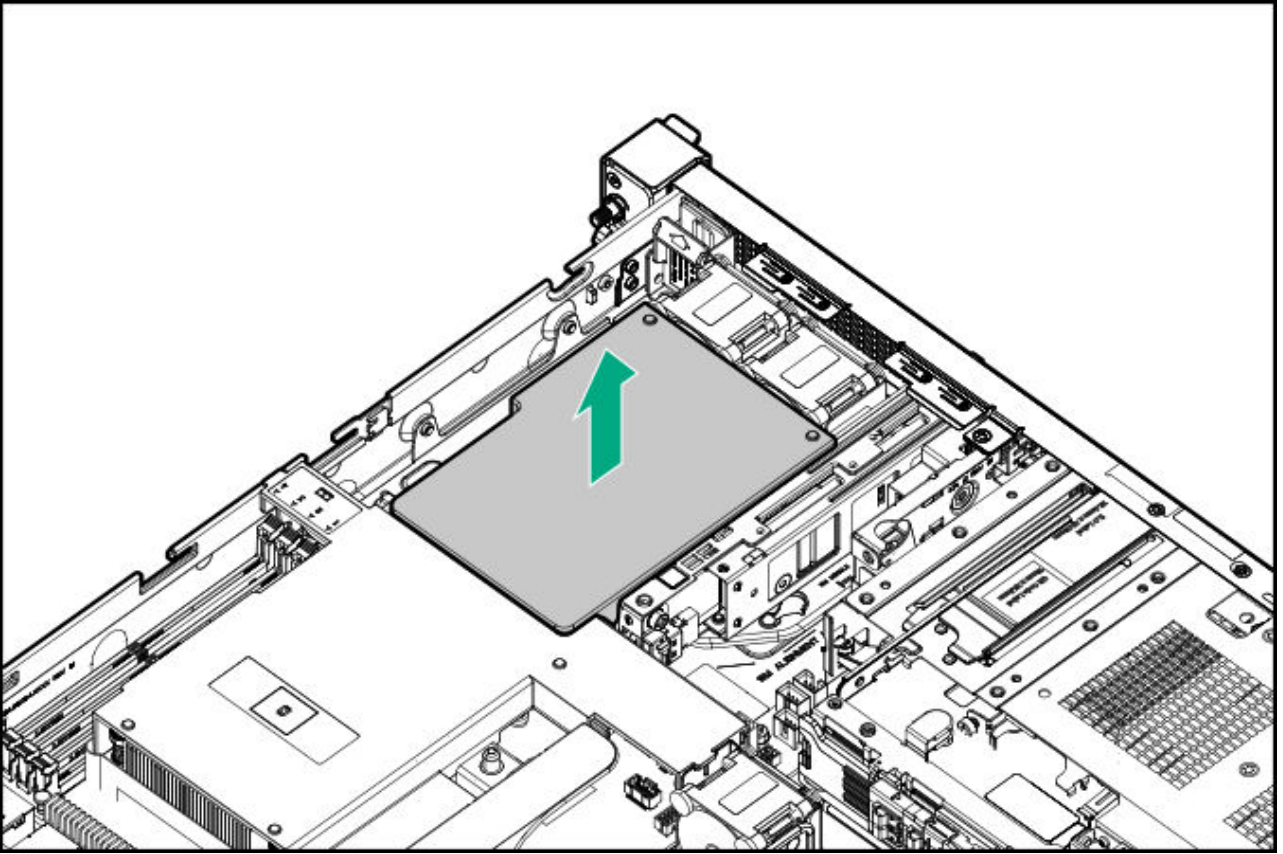


CAUTION

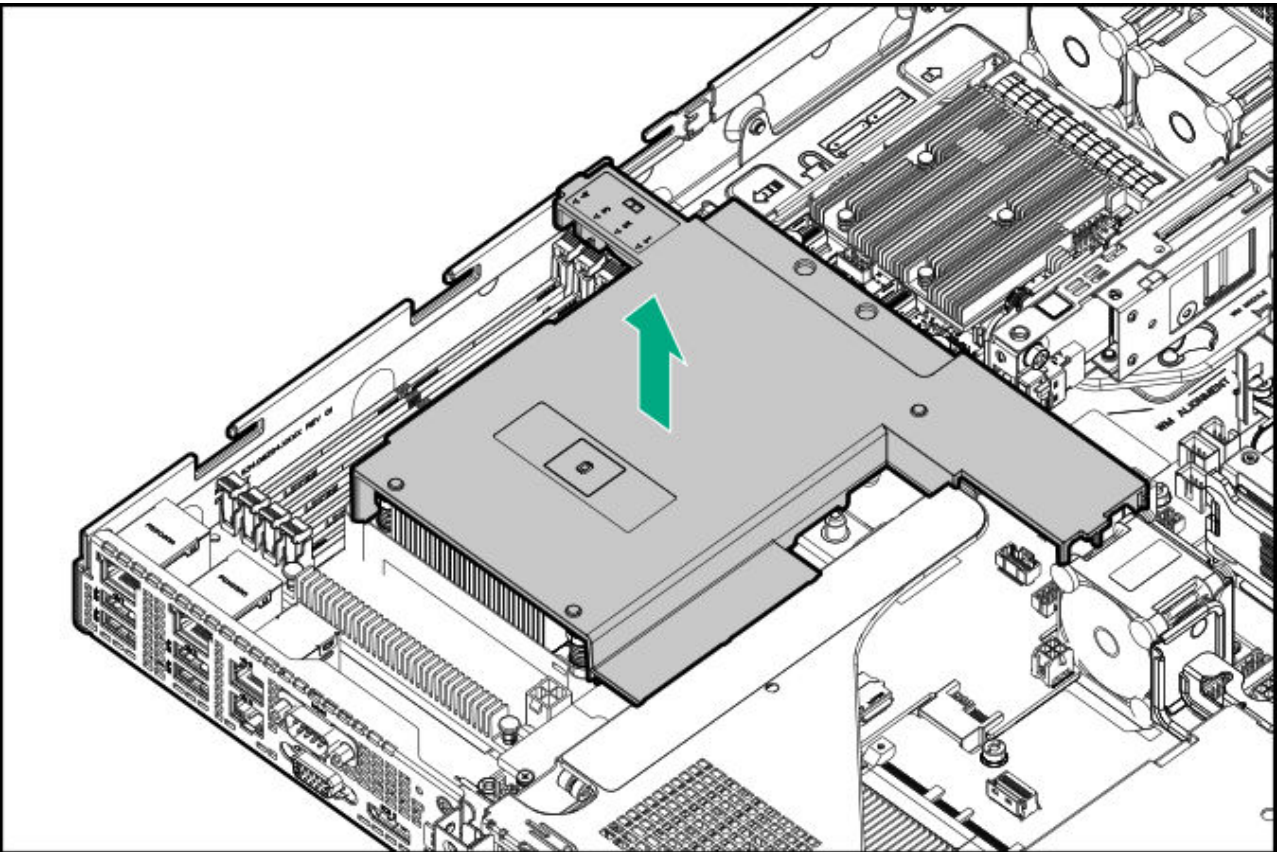
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

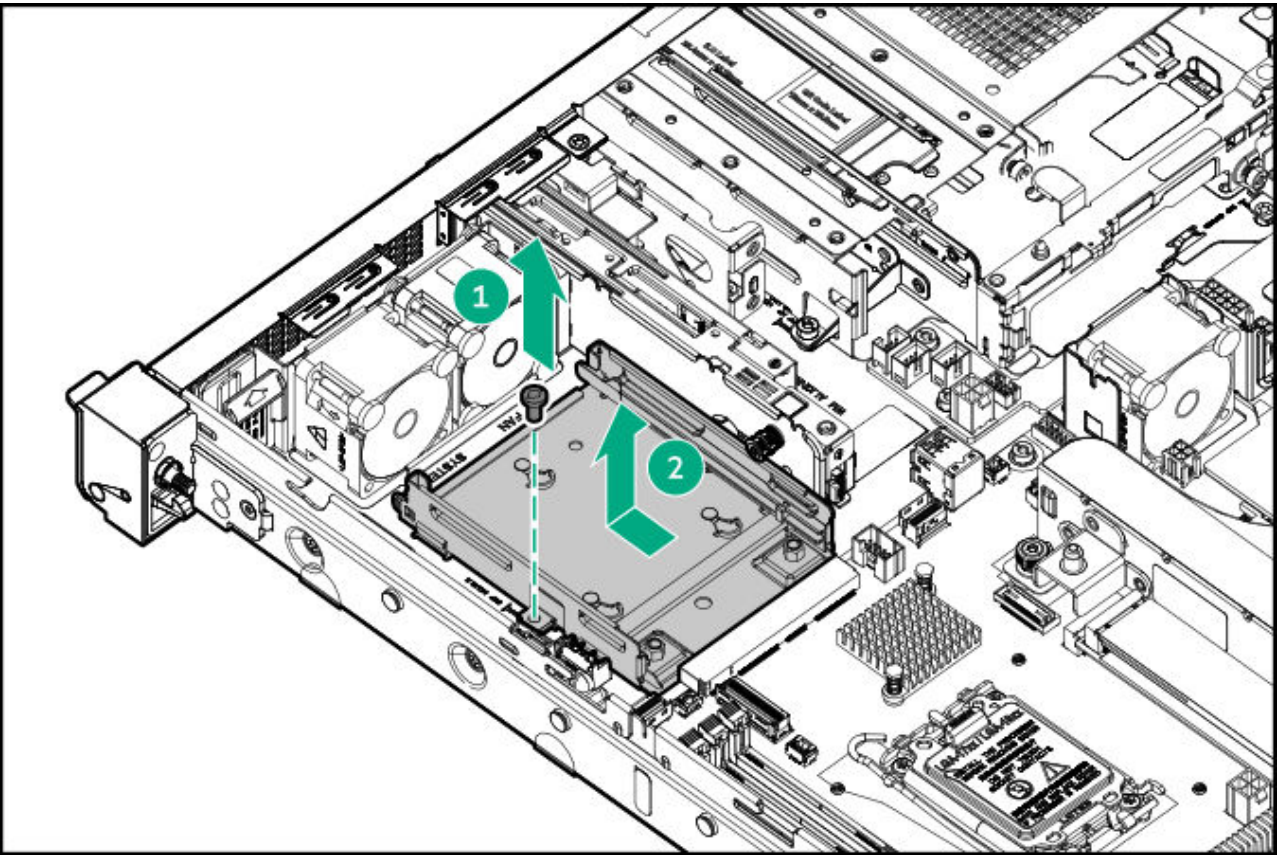
1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the OCP air baffle.



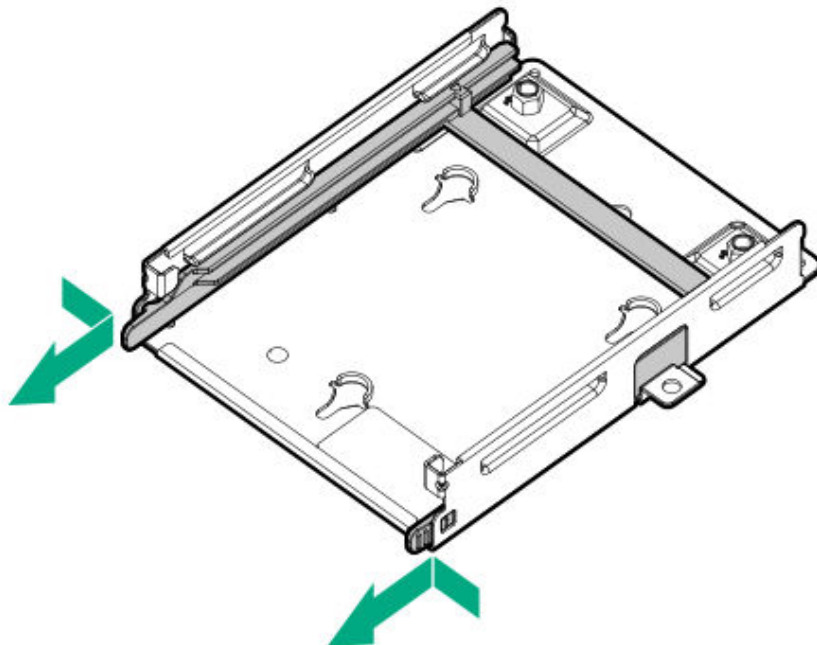
8. Remove the processor air baffle.



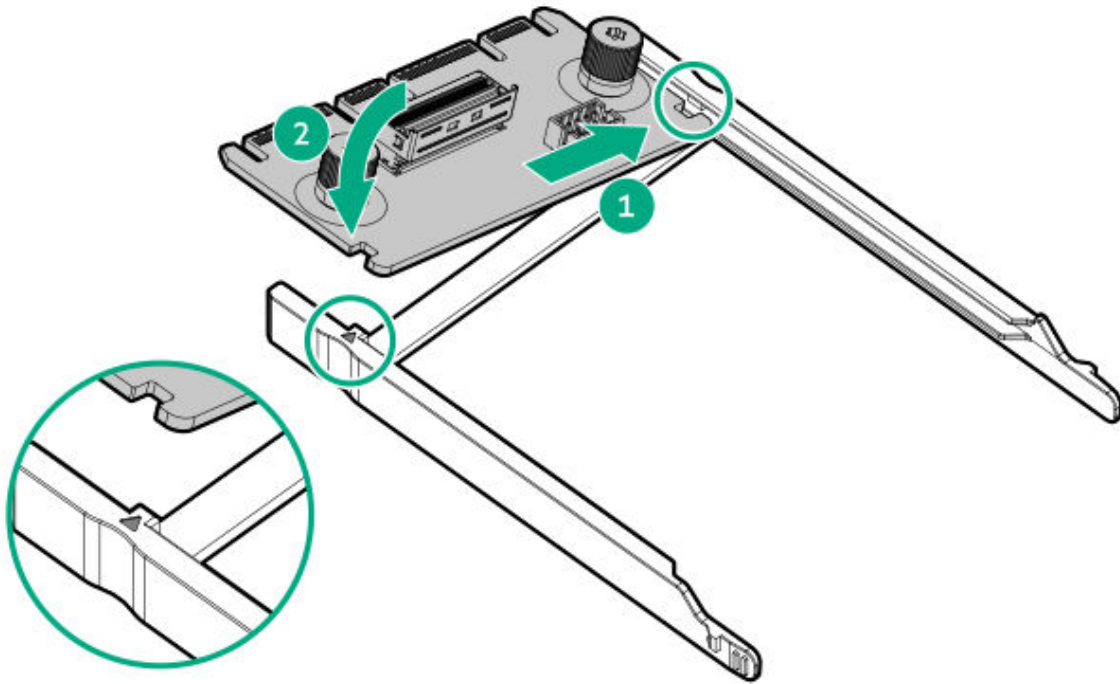
9. Remove the OCP cage.



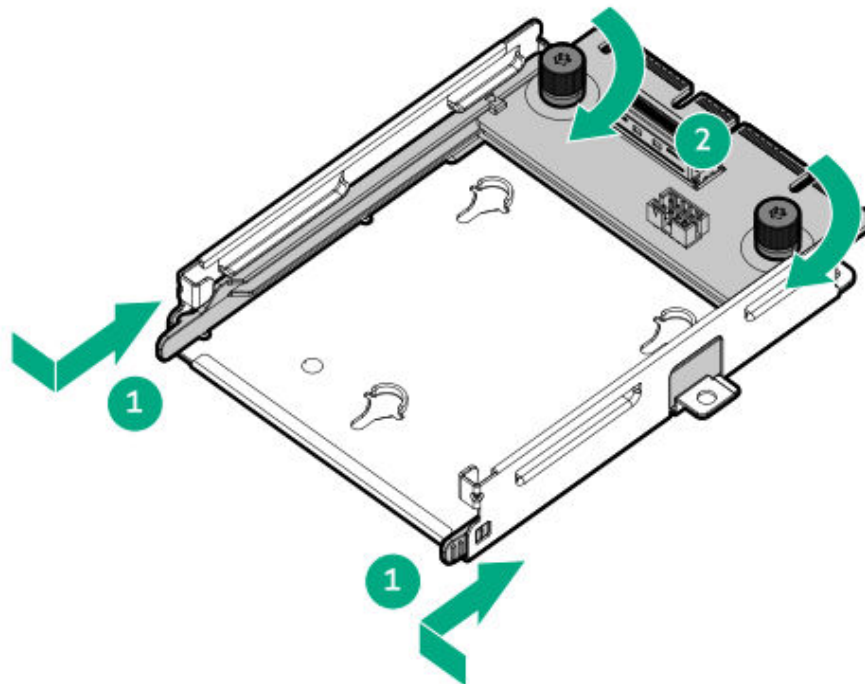
10. Remove the OCP cage rail.



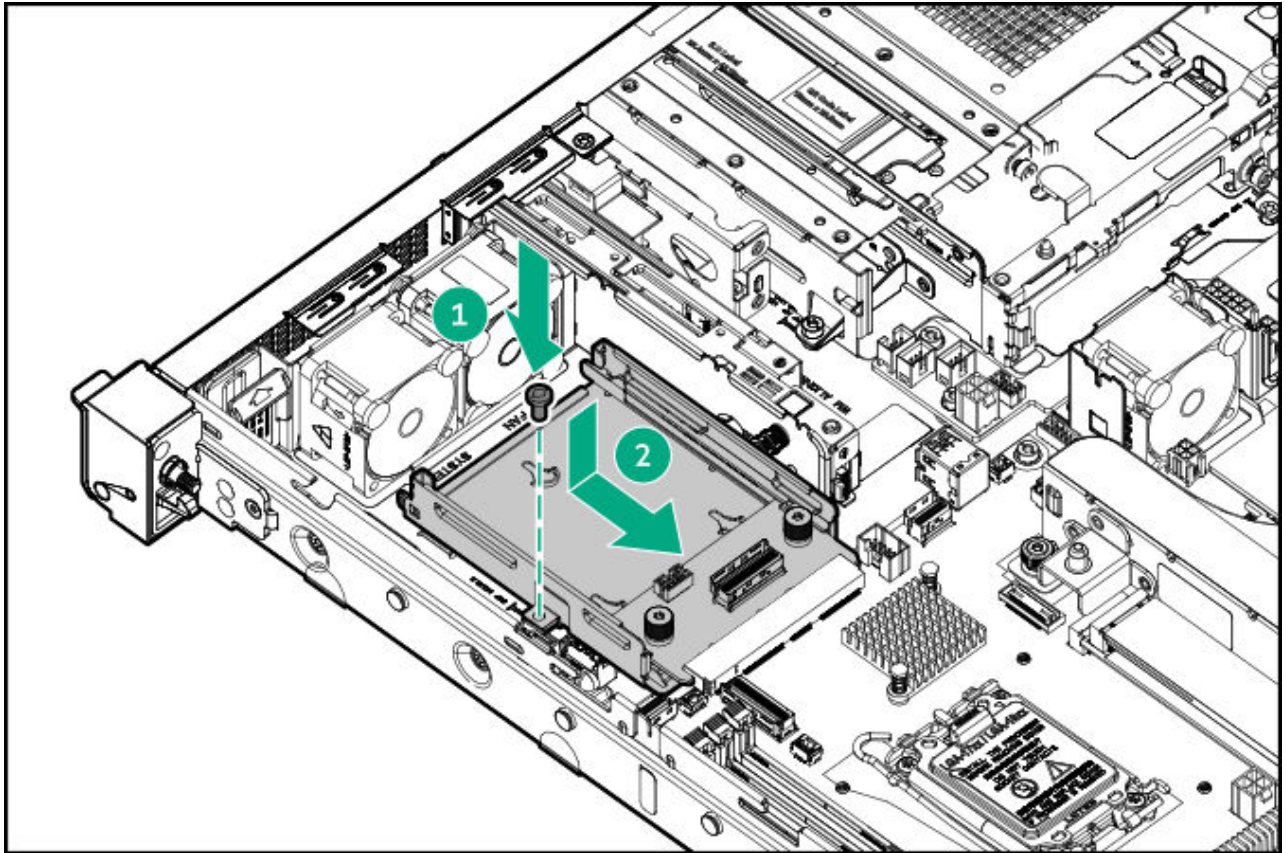
.1. Install the PTB on the OCP cage rail.



.2. Install the PTB in the OCP cage.



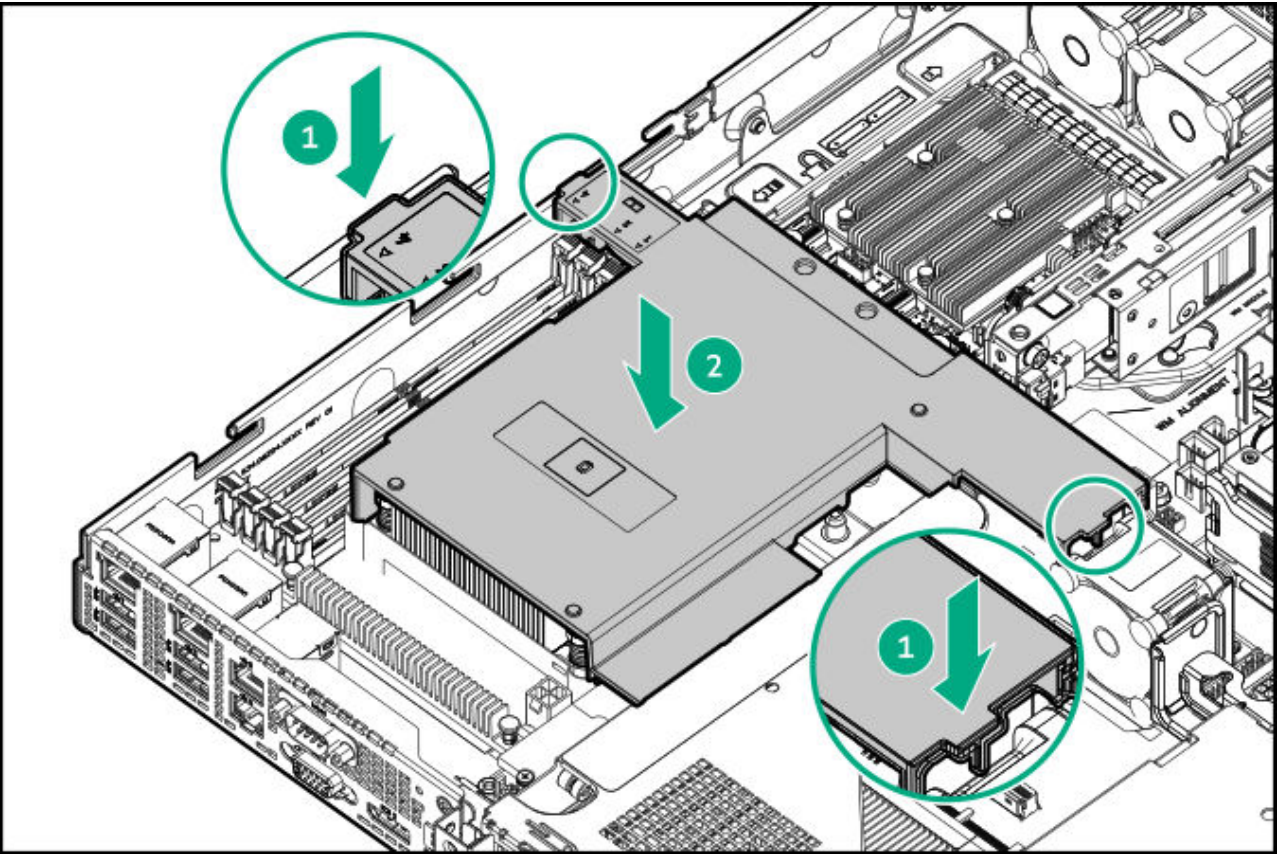
.3. Install the OCP cage.



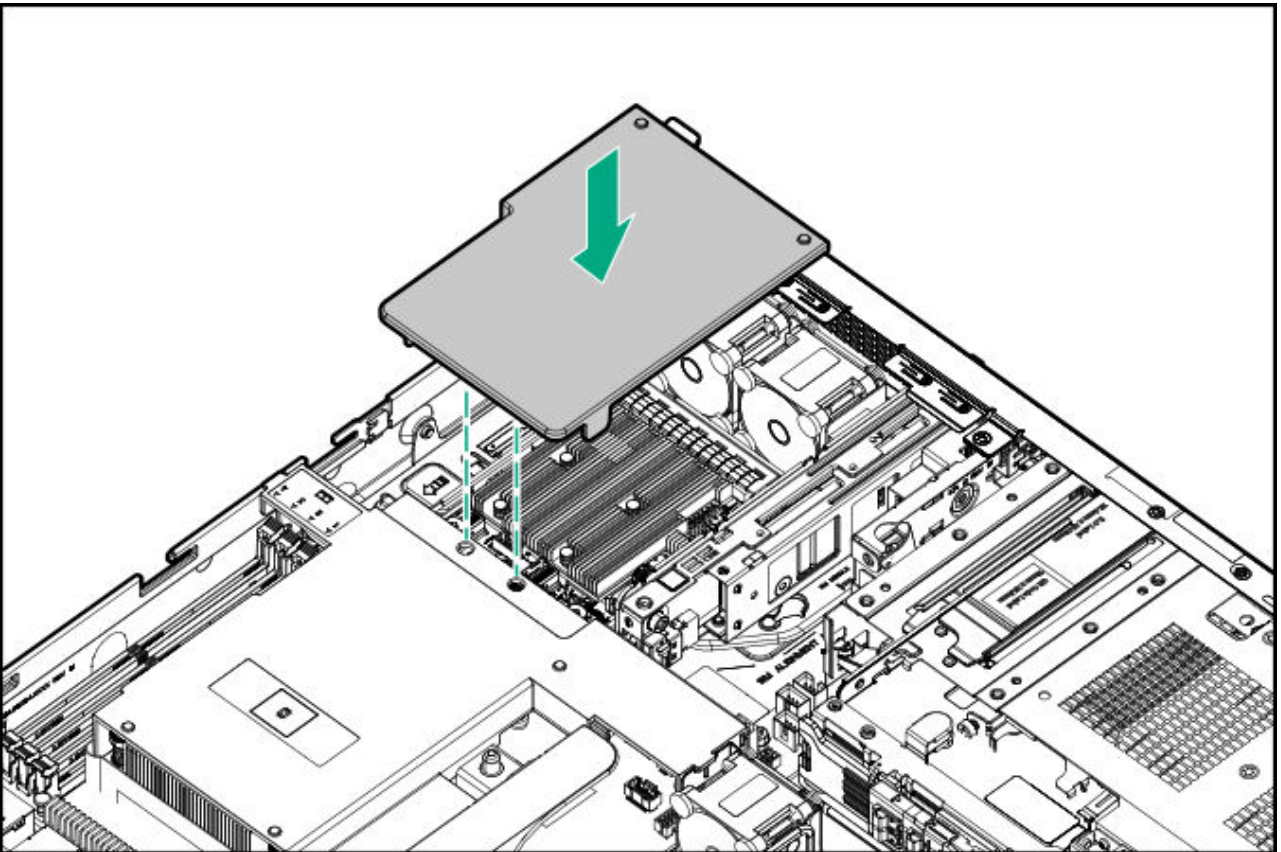
.4. Connect one of the following:

- 4 SFF hot-plug drive configuration: [Optical drive cable](#)
- 4 + 2 SFF drive configuration: [Drive box 1 onboard SATA cable](#)

.5. Install the processor air baffle.



.6. Install the OCP air baffle.



- .7. [Install the access panel.](#)
- .8. [Install the server into the rack.](#)
- .9. Connect all peripheral cables to the server.
- !0. Connect each power cord to the server.
- !1. Connect each power cord to the power source.
- !2. [Power up the server.](#)

Results

The installation procedure is complete.

Installing the two-bay SFF drive cage option

Prerequisites

- [A Flexible Slot power supply is required in 4 + 2 SFF hot-plug drive configuration.](#)
- [Make sure that the PTB is installed.](#)
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

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



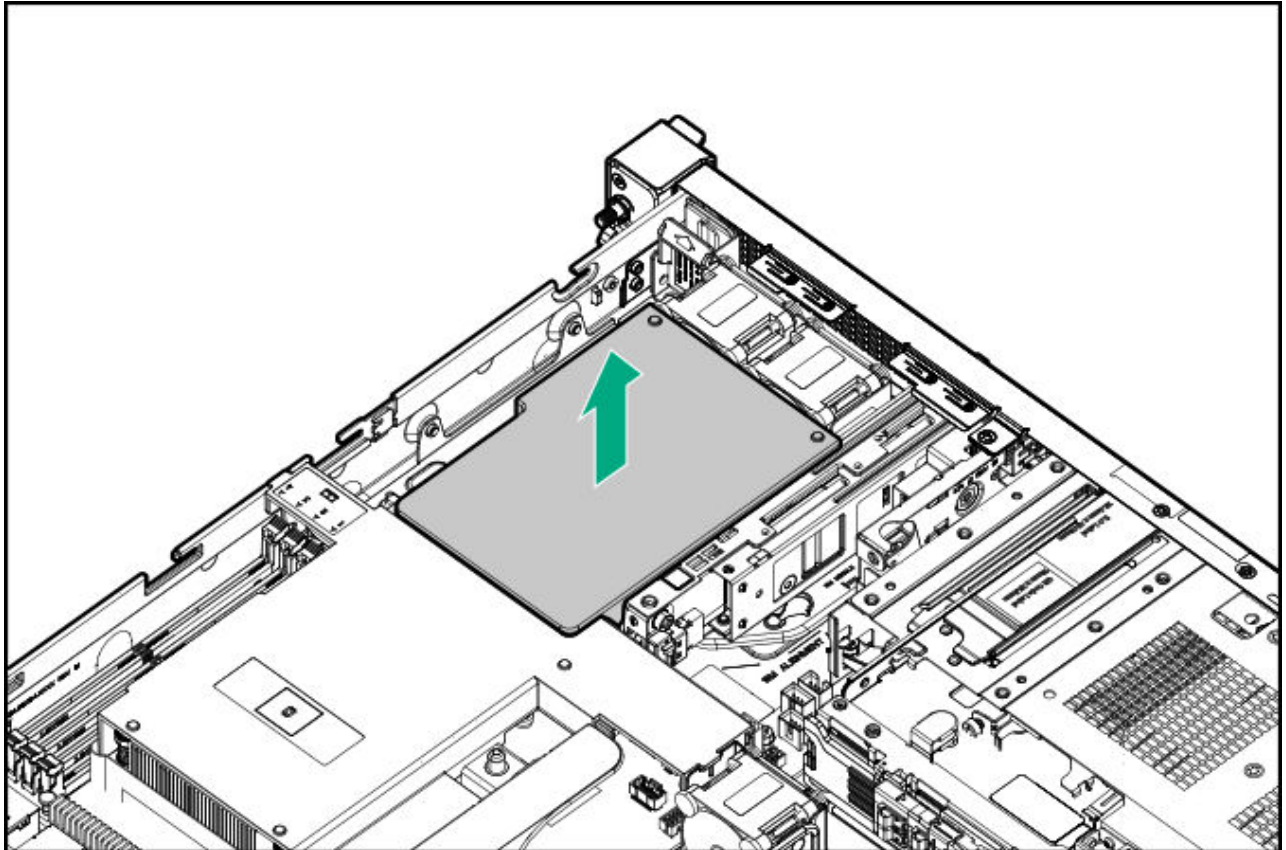
CAUTION

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

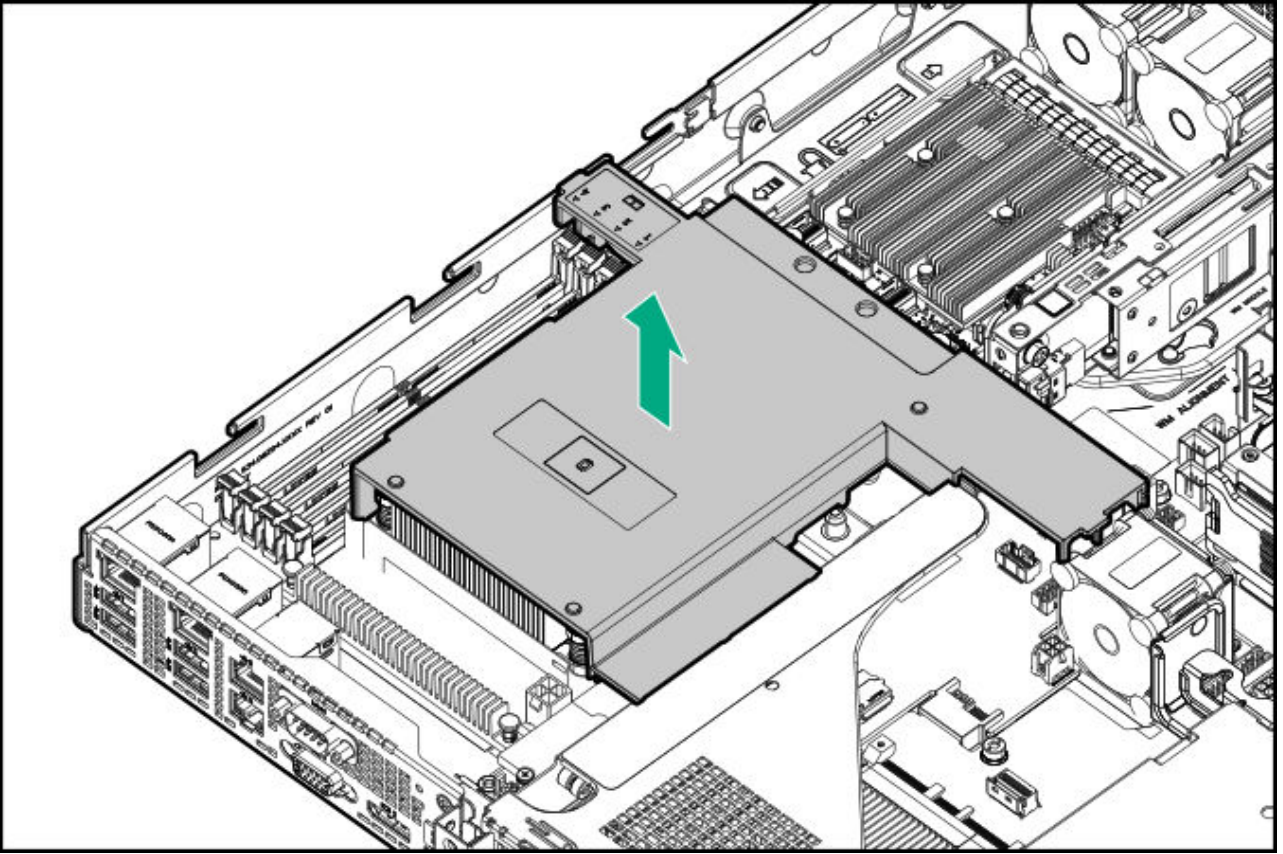
Procedure

1. If installed, [remove the front bezel](#).
2. [Power down the server](#).
3. Remove all power:
 - a. Disconnect each power cord from the power source.

- b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the OCP air baffle.



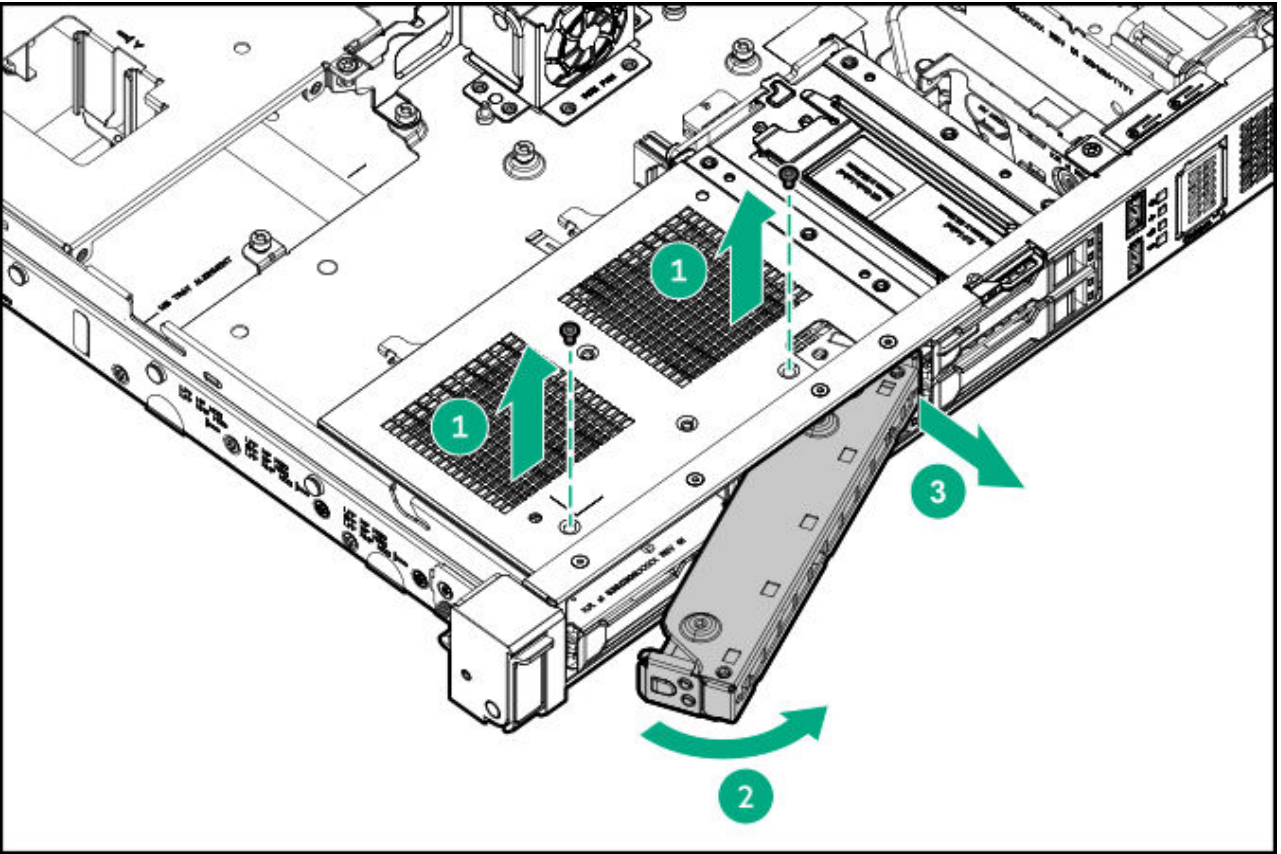
9. Remove the processor air baffle.



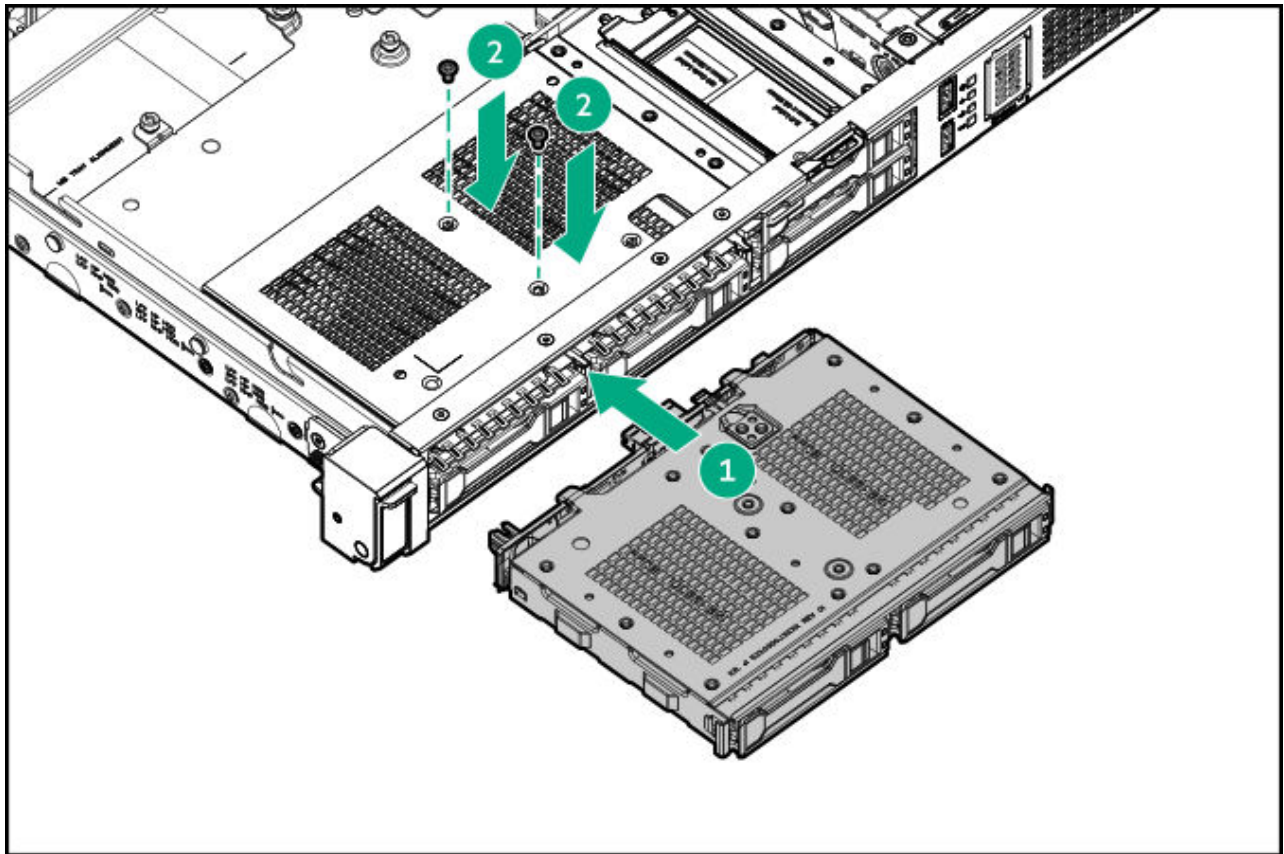
.0. Remove the media bay blank:

- a. Remove the media bay blank screws.
- b. Disengage the media bay blank.
- c. Remove the media bay blank.

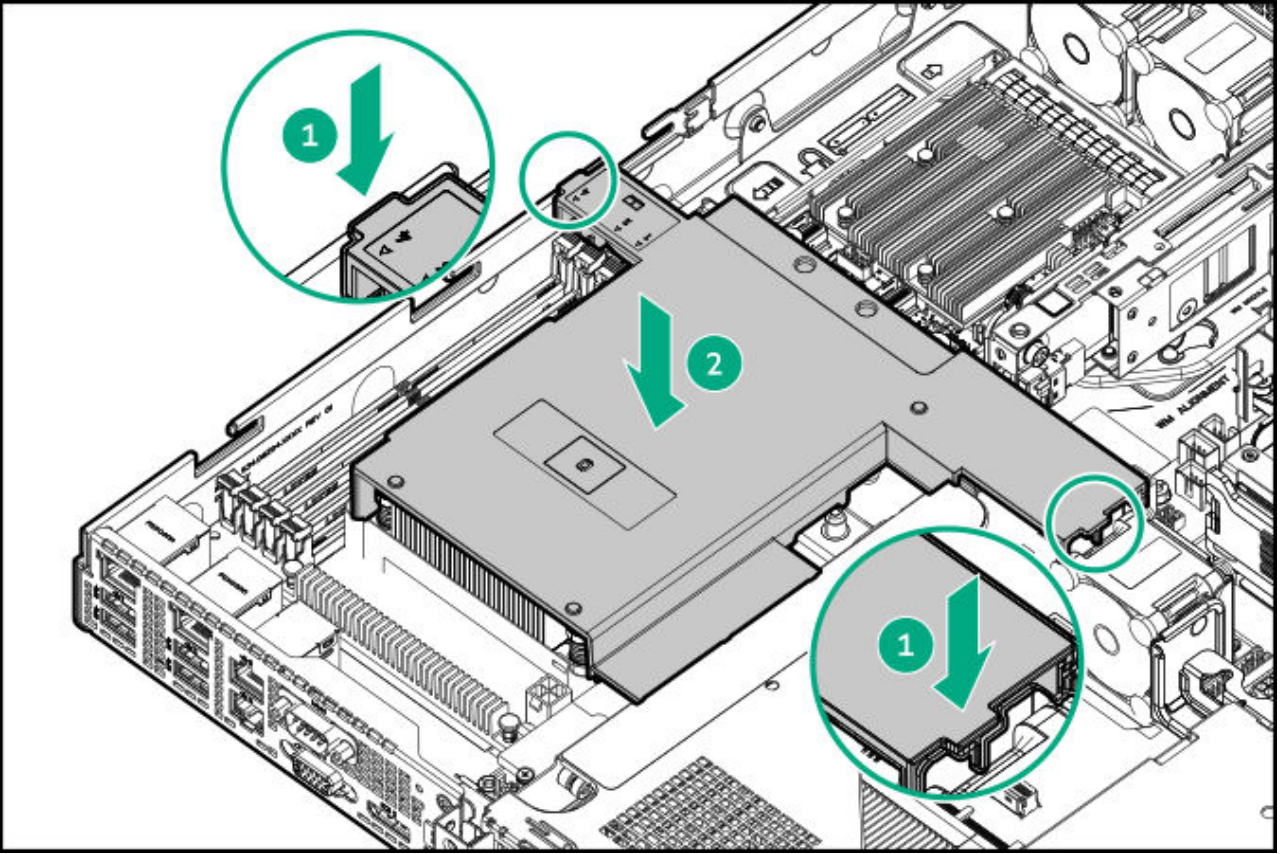
Retain the blank and its screws for future use.



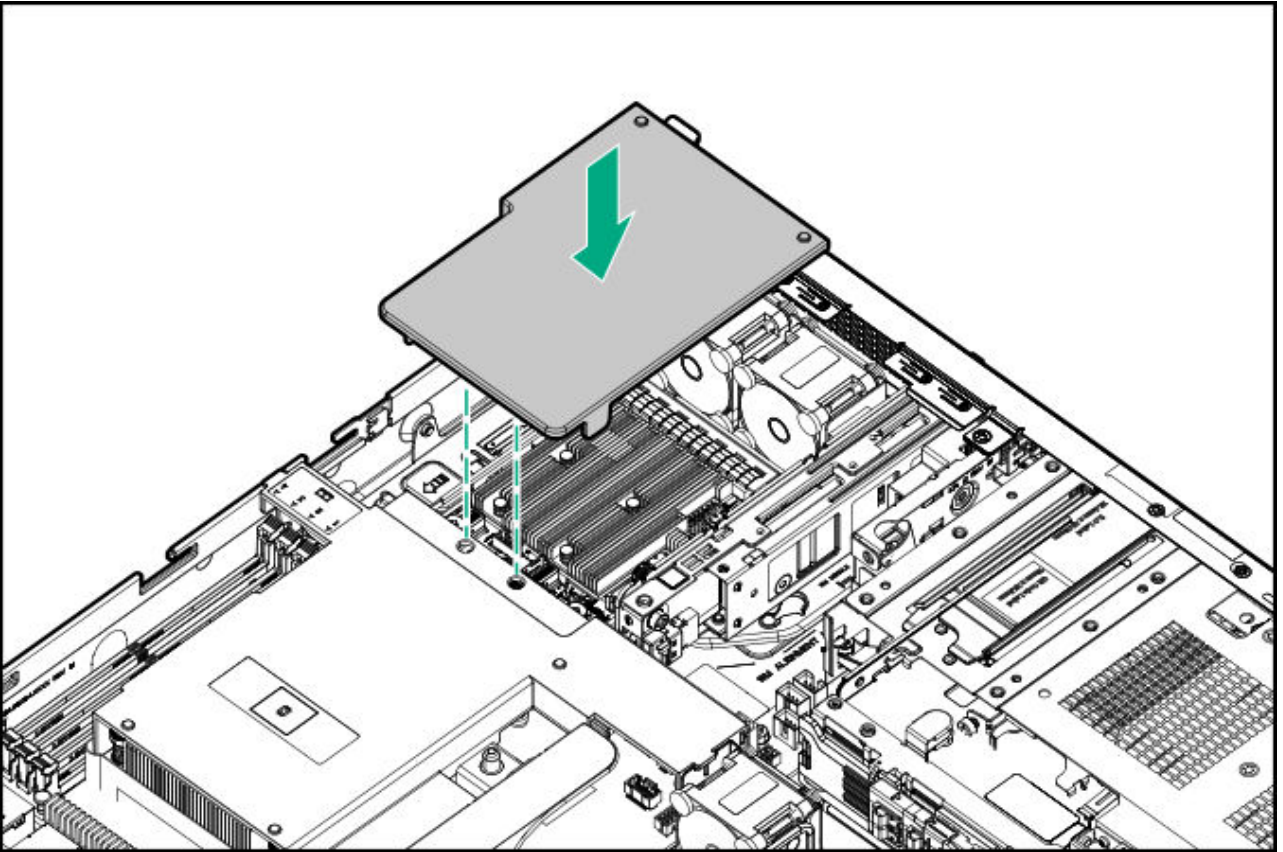
- .1. Install the 2 SFF hot-plug drive cage:
 - a. Slide the drive cage into the media bay (callout 1).
 - b. Secure the drive cage with the media bay screws (callout 2).



- .2. Connect the drive cables.
- .3. Install the processor air baffle.



4. Install the OCP air baffle.



- .5. Install the access panel.
- .6. Install the server into the rack.
- .7. If removed, install the front bezel.
- .8. Connect all peripheral cables to the server.
- .9. Connect each power cord to the server.
- !0. Connect each power cord to the power source.
- !1. Power up the server.
- !2. Install the drives.

Results

The installation procedure is complete.

Optical drive option

The server supports a slim-type SATA optical drive.

Subtopics

[Installing an optical drive in the LFF drive chassis](#)

[Installing an optical drive in the SFF drive chassis](#)

Installing an optical drive in the LFF drive chassis

Prerequisites

- In the LFF drive chassis, the optical drive installation requires the P71917-B21 optical drive splitter cable option.
- Before you perform this procedure, make sure that you have the following items available:
 - T-10 Torx screwdriver
 - Phillips No. 1 screwdriver

About this task

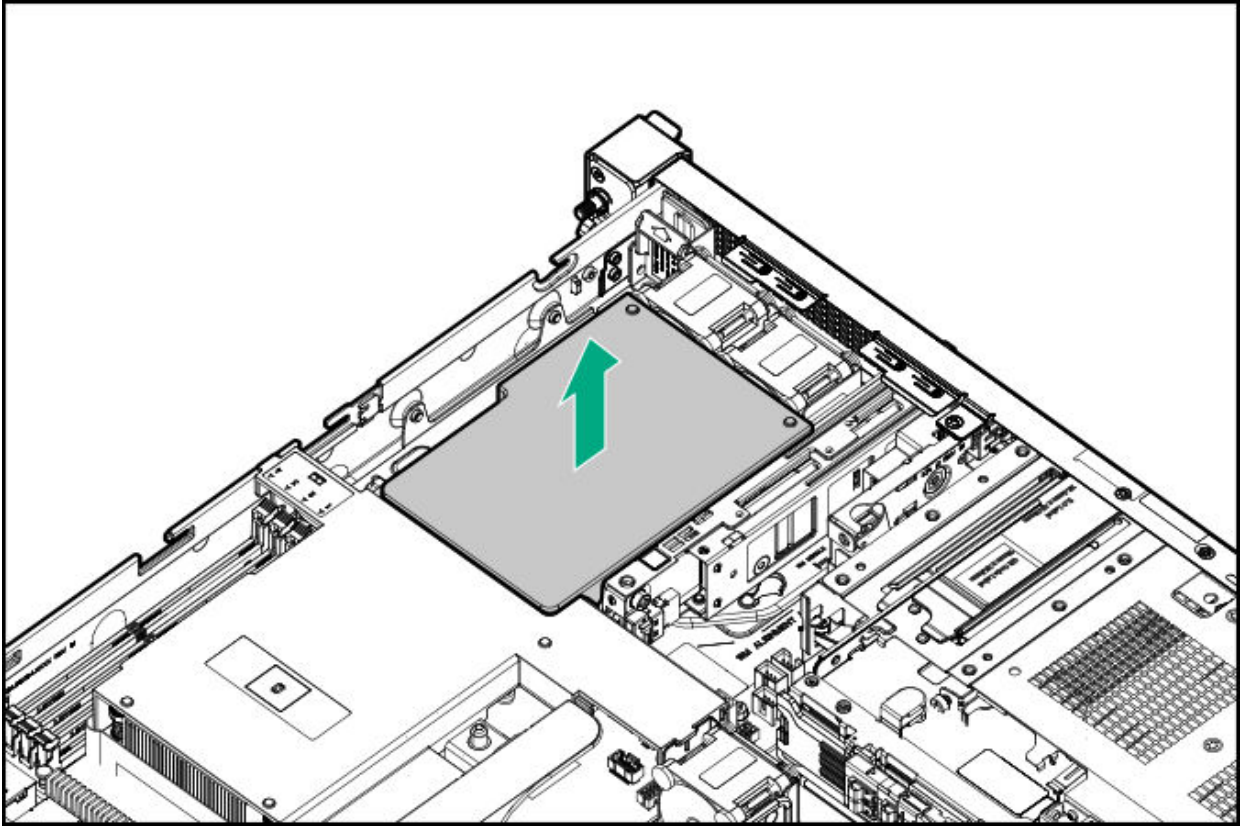


CAUTION

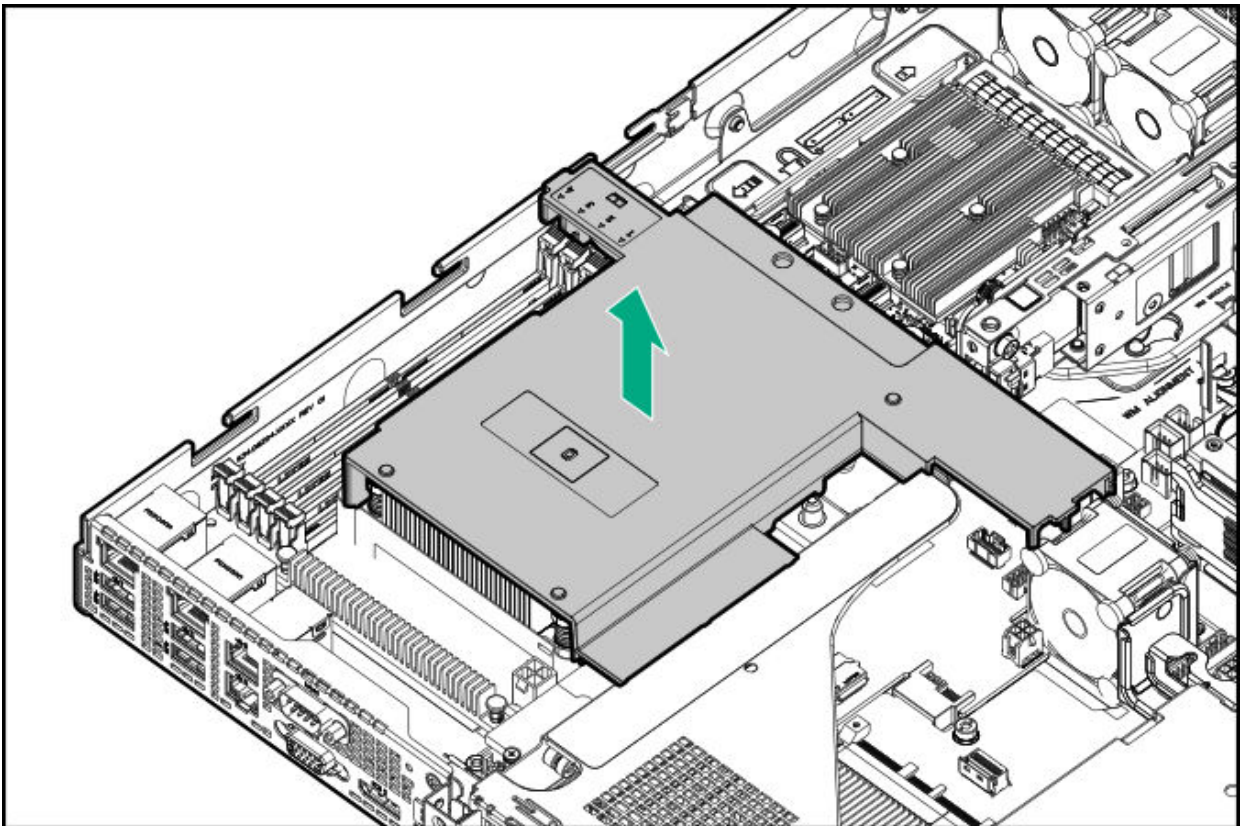
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

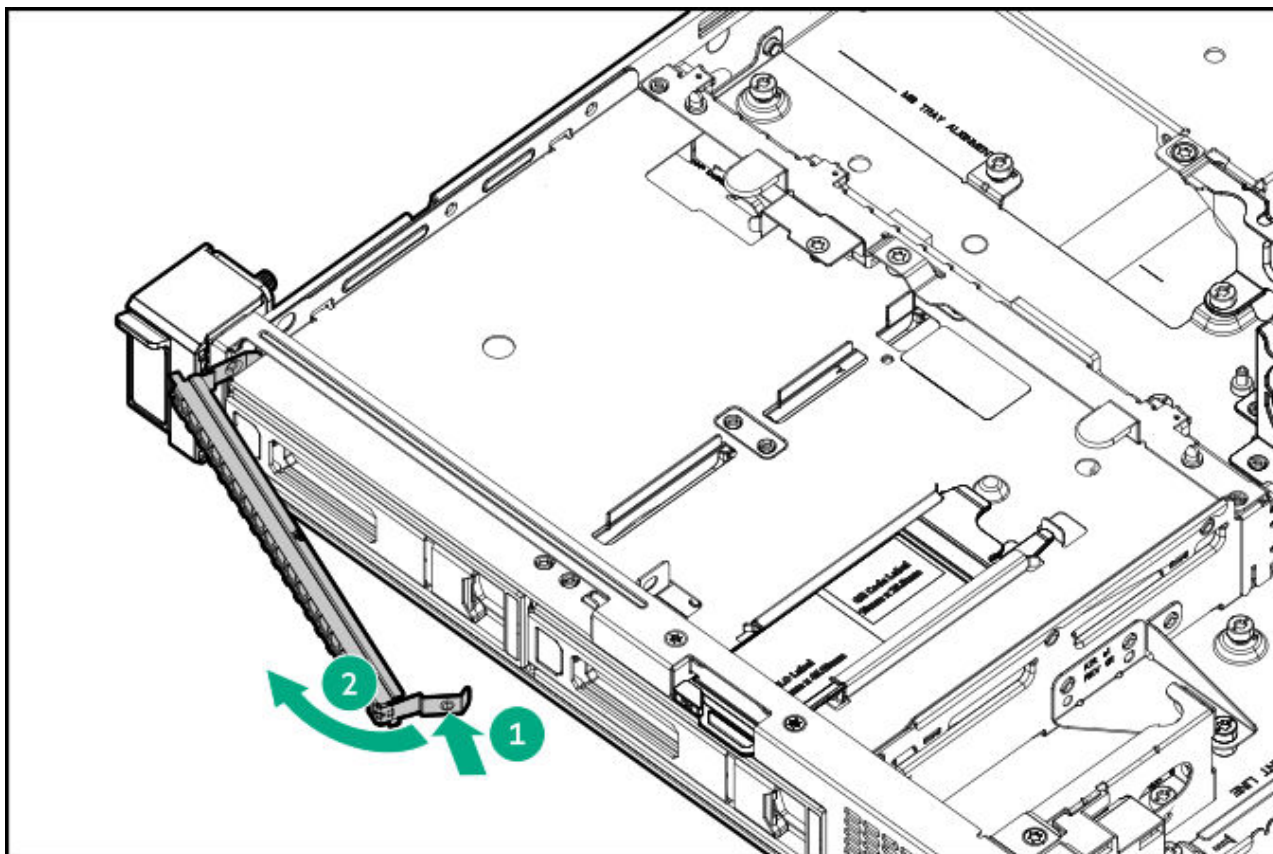
1. If installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. If a type-o or type-p controller is installed:
 - a. Remove the OCP air baffle.



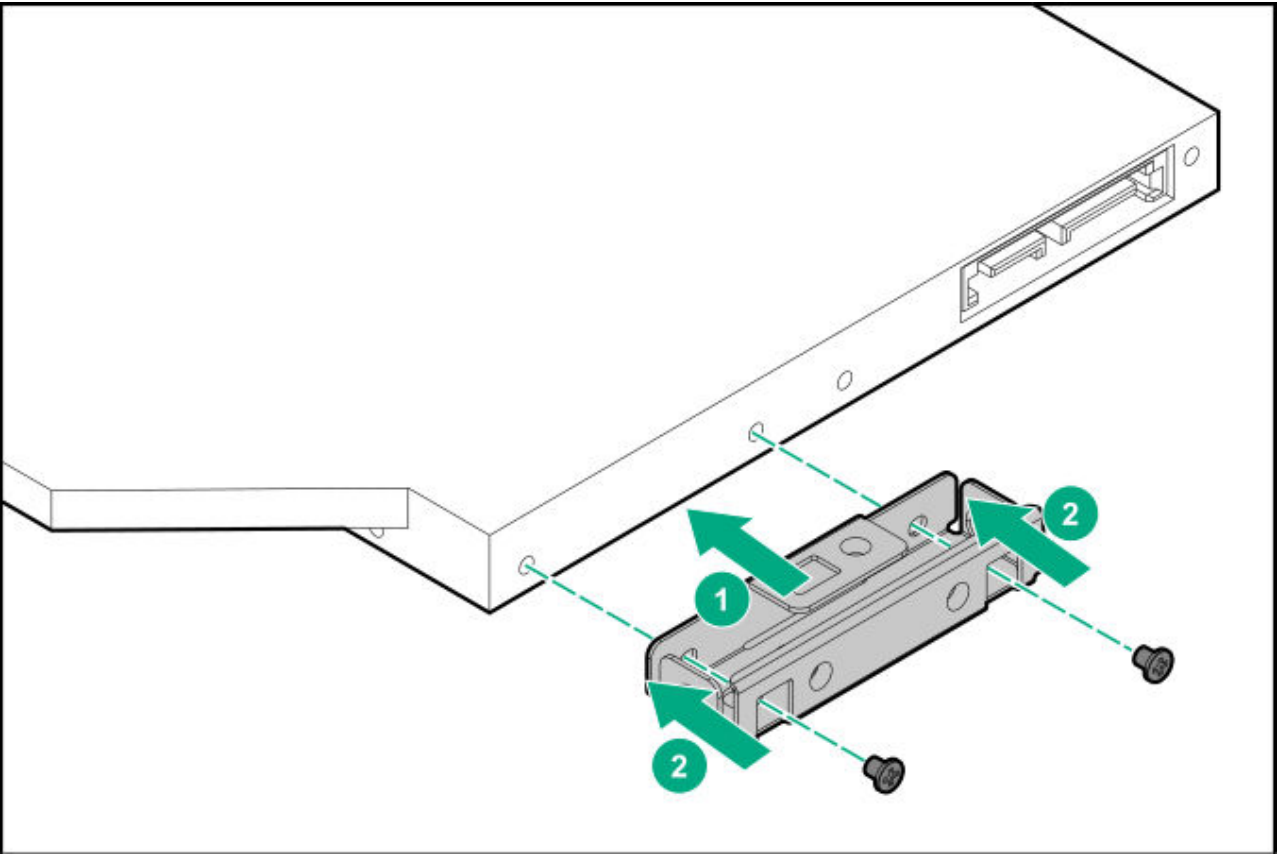
b. Remove the processor air baffle.



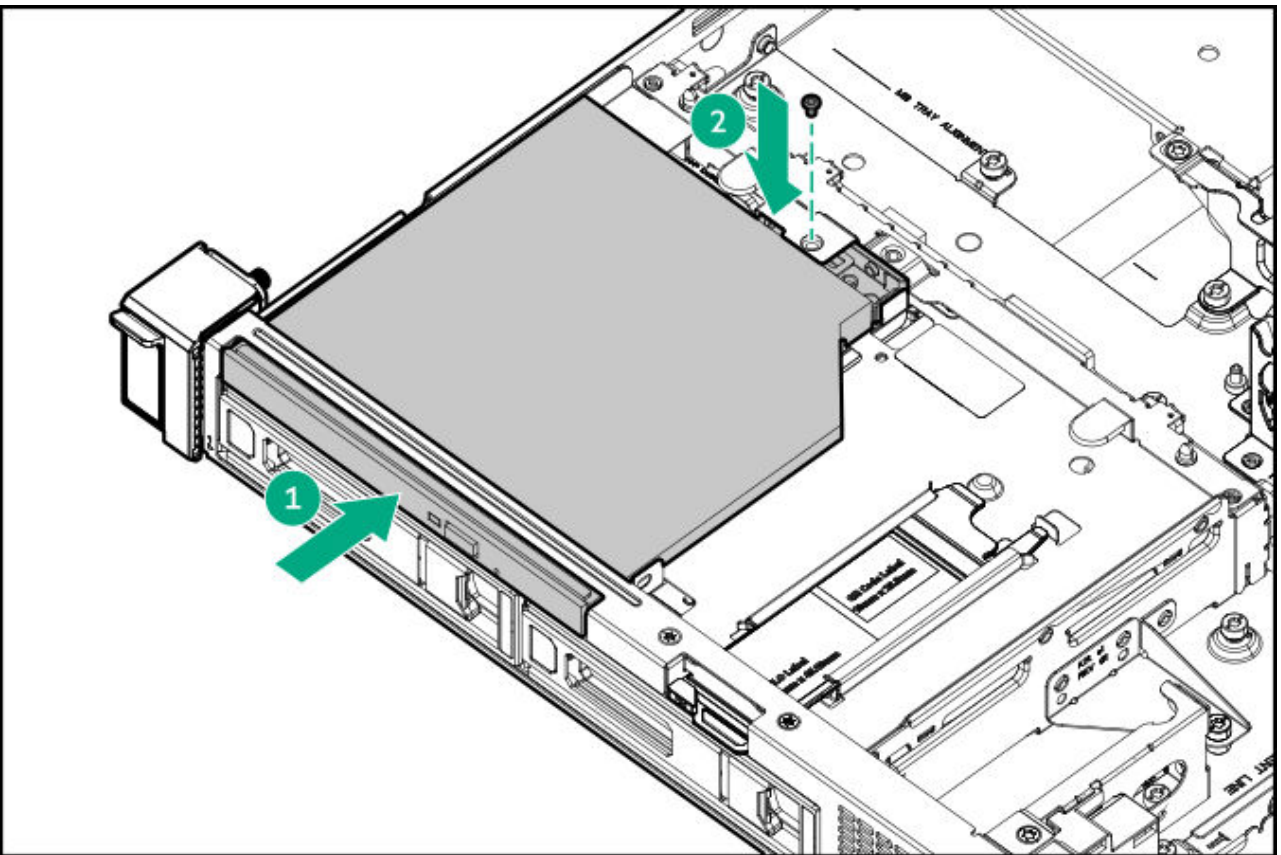
9. Remove the optical drive blank.



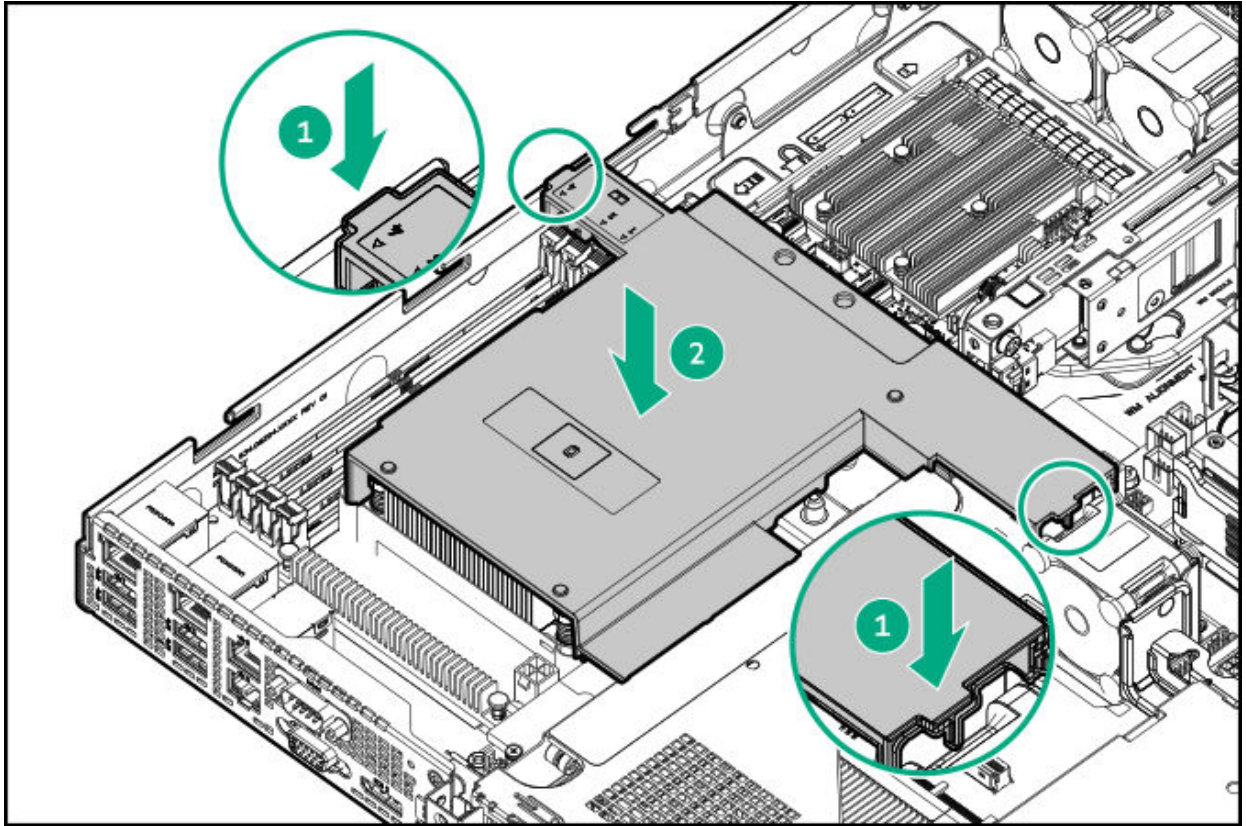
10. Install the optical drive bracket.



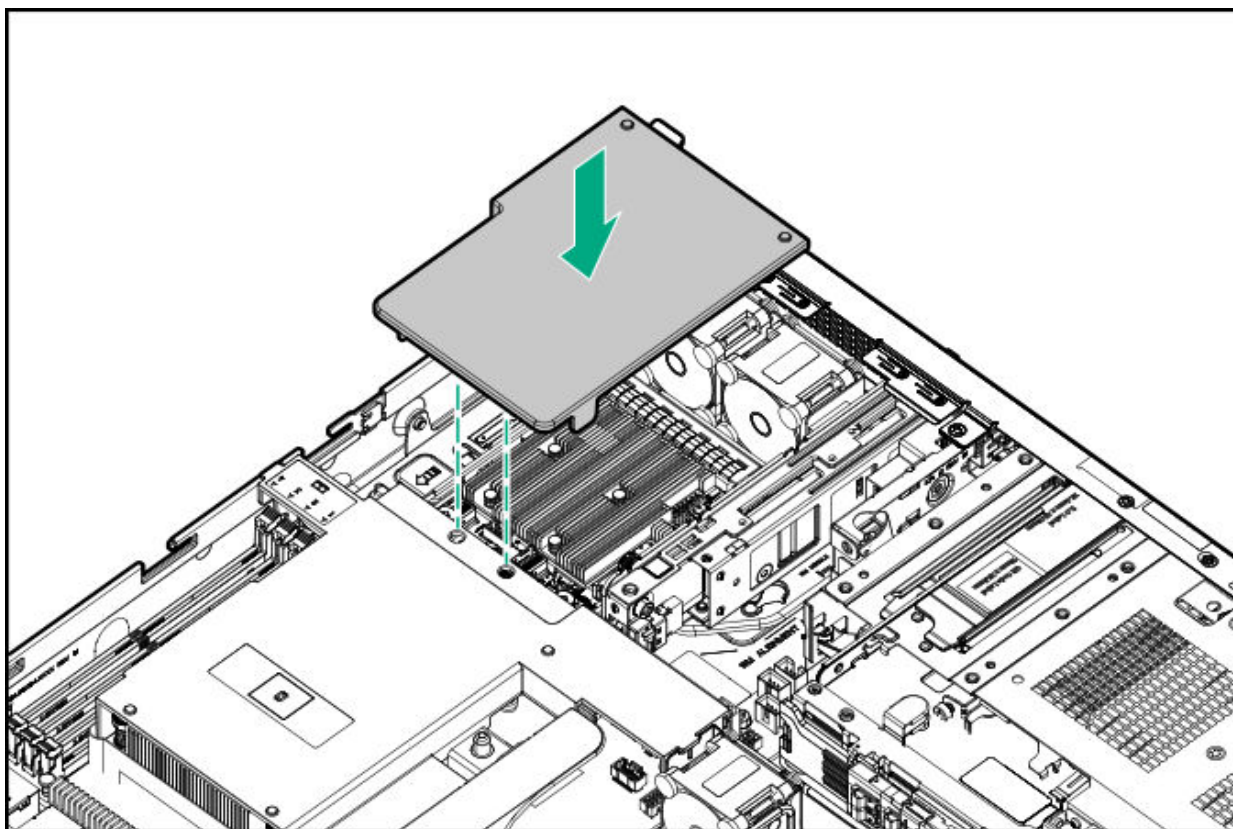
1. Install the optical drive.



- .2. Cable the optical drive.
- .3. If removed:
 - a. Install the processor air baffle.



- b. Install the OCP air baffle.



- .4. Install the access panel.
- .5. Install the server into the rack.
- .6. If removed, install the front bezel.
- .7. Connect all peripheral cables to the server.
- .8. Connect each power cord to the server.
- .9. Connect each power cord to the power source.
- !0. Power up the server.

Results

The installation procedure is complete.

Installing an optical drive in the SFF drive chassis

Prerequisites

- In the SFF drive chassis, the optical drive enablement option is required depending on the storage controller:
 - Intel VROC direct attached drive: P65417-B21
 - Type-p or type-o storage controller: P65418-B21
- Before you perform this procedure, make sure that you have the following items available:
 - T-10 Torx screwdriver
 - T-15 Torx screwdriver
 - Phillips No. 1 screwdriver

About this task

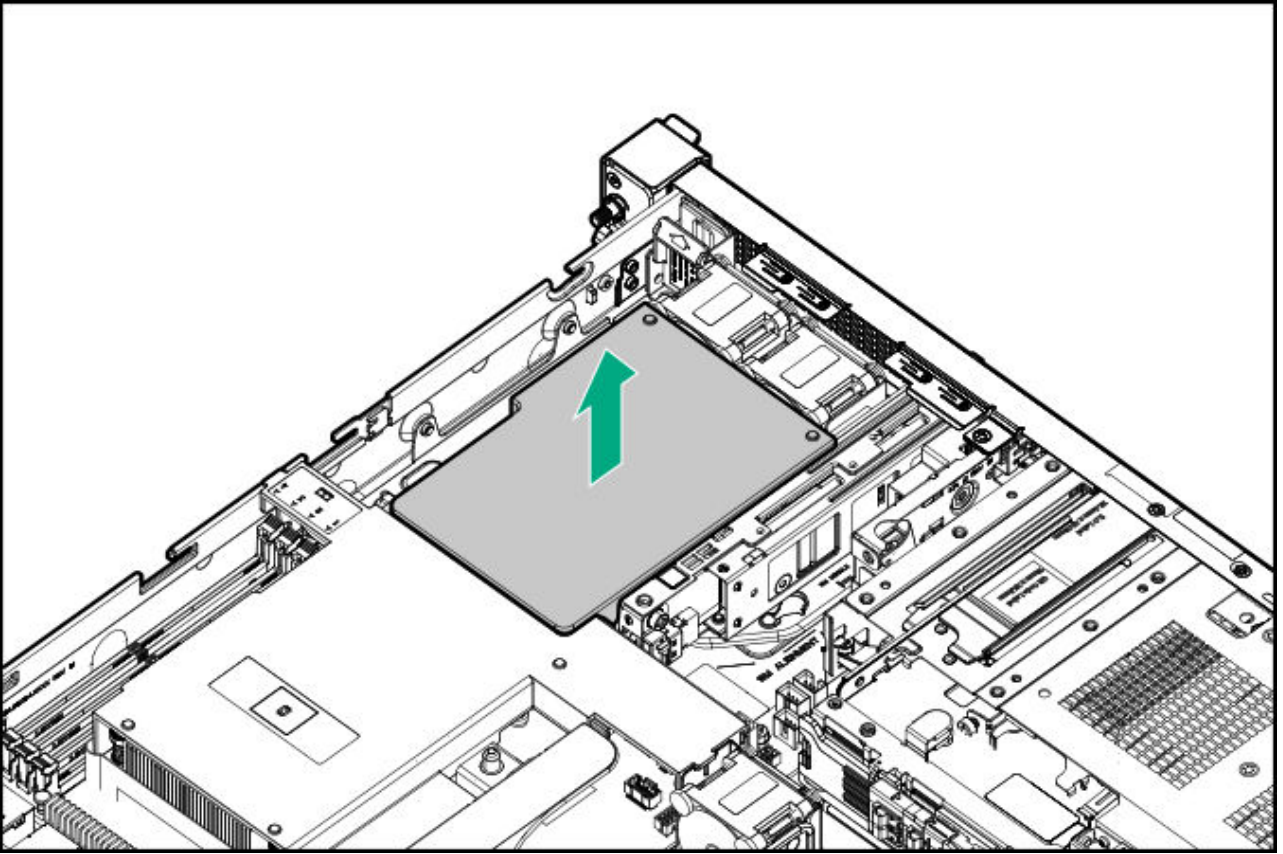


CAUTION

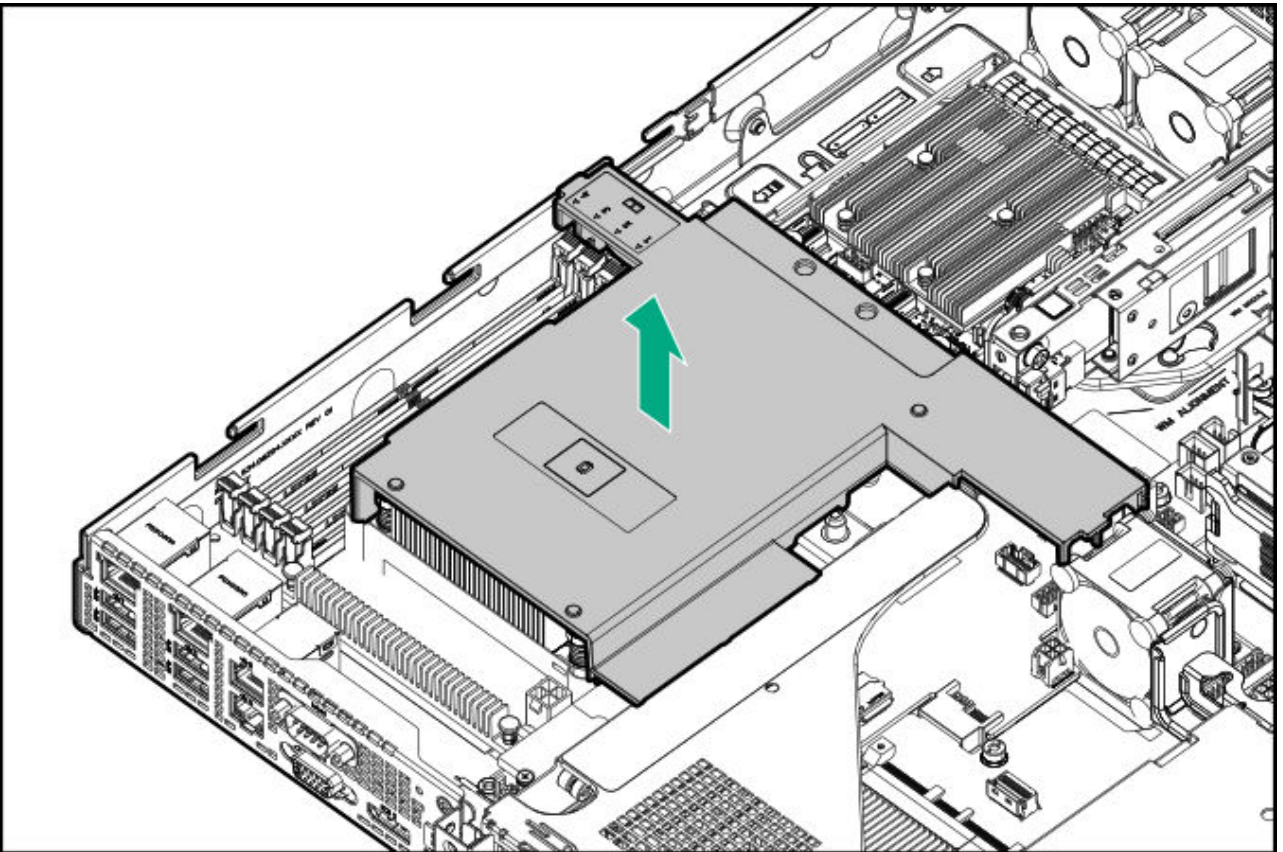
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. If installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the OCP air baffle.

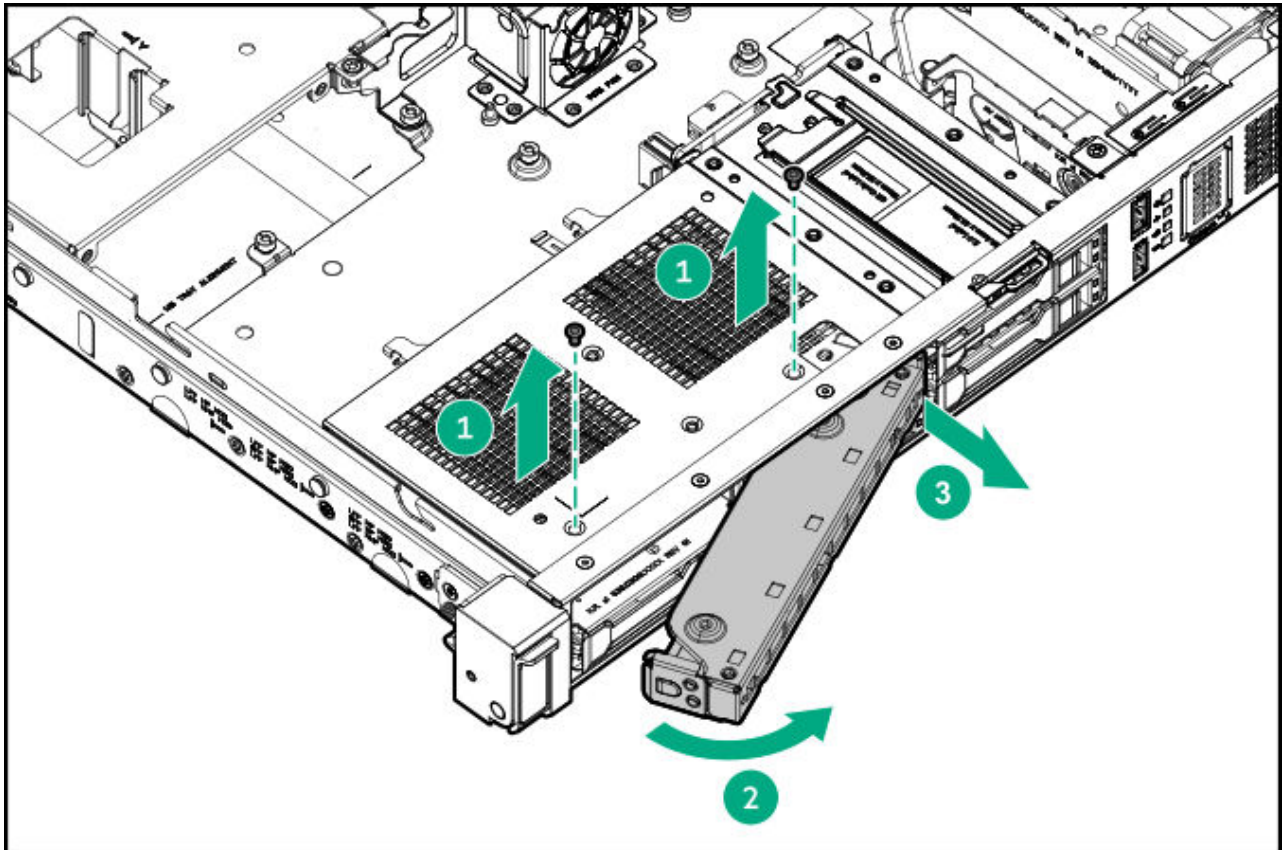


9. Remove the processor air baffle.

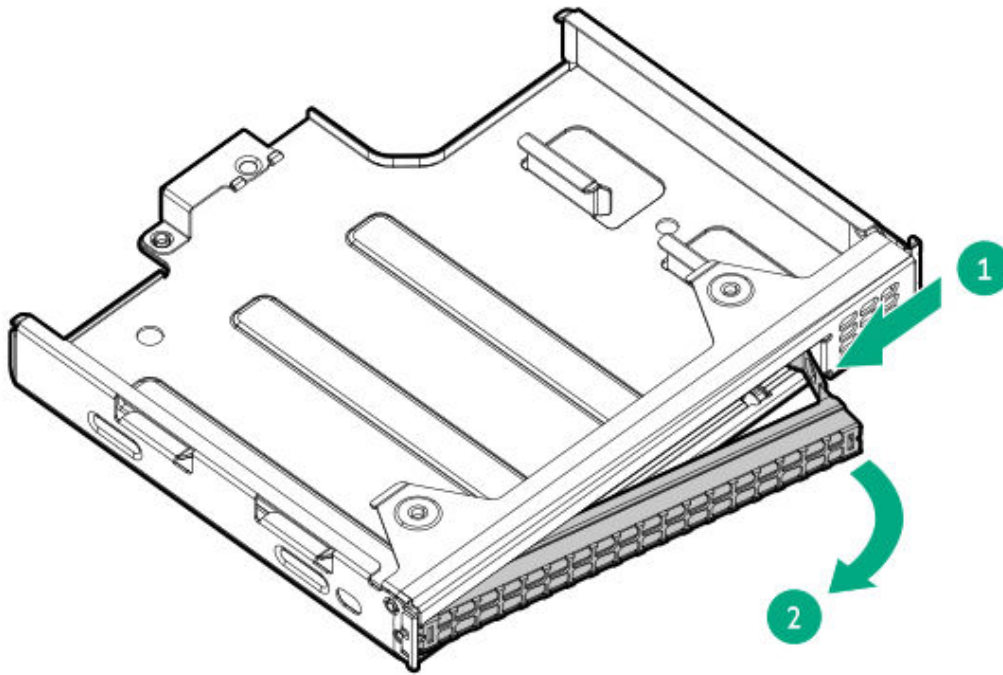


- .0. Remove the media bay blank:
 - a. Remove the media bay blank screws.
 - b. Disengage the media bay blank.
 - c. Remove the media bay blank.

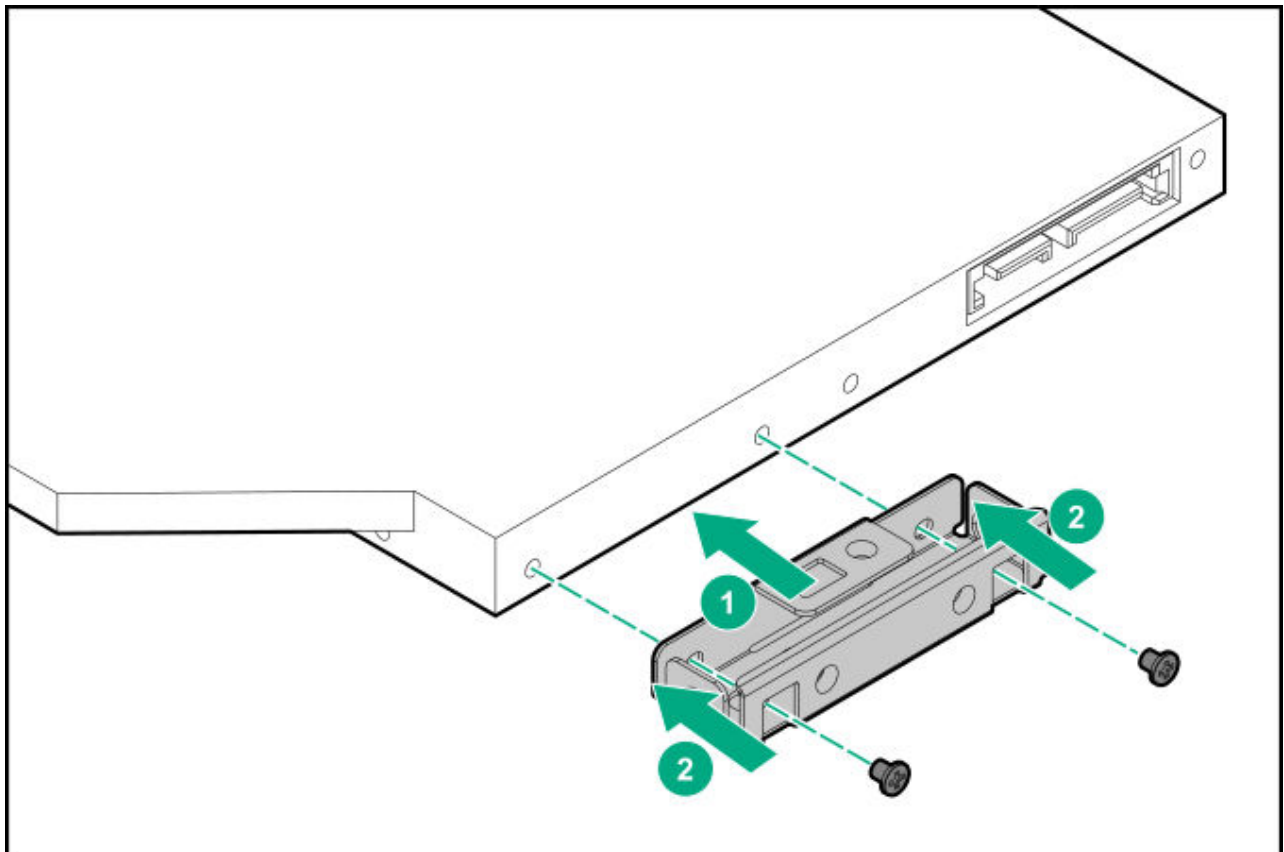
Retain the blank and its screws for future use.



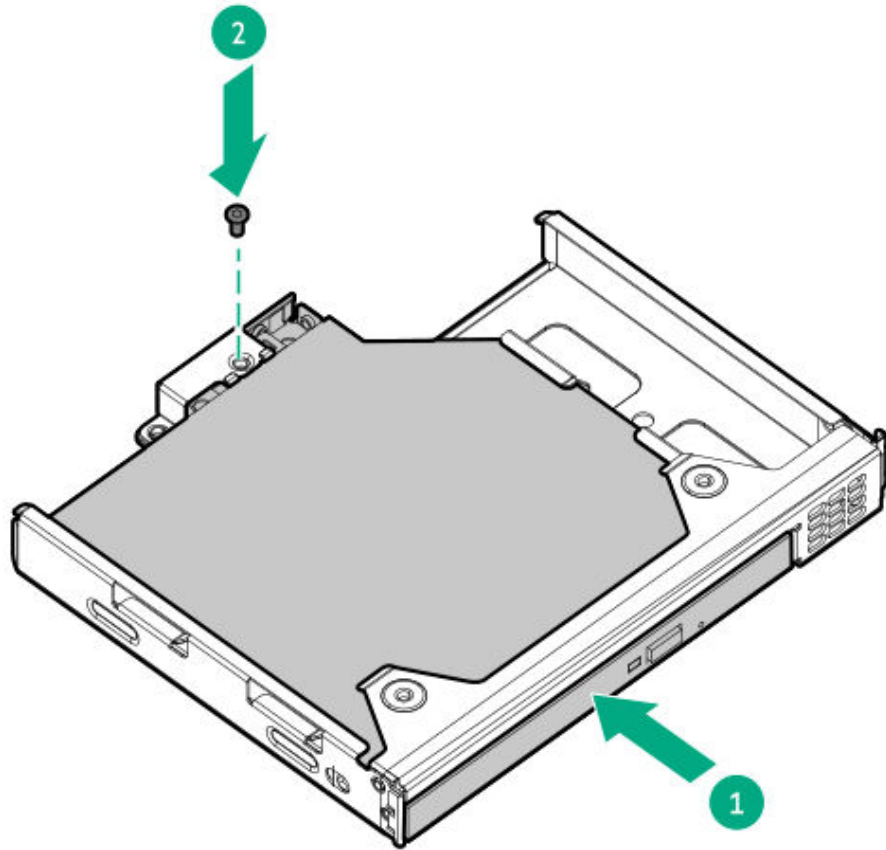
- .1. Remove the optical drive blank.



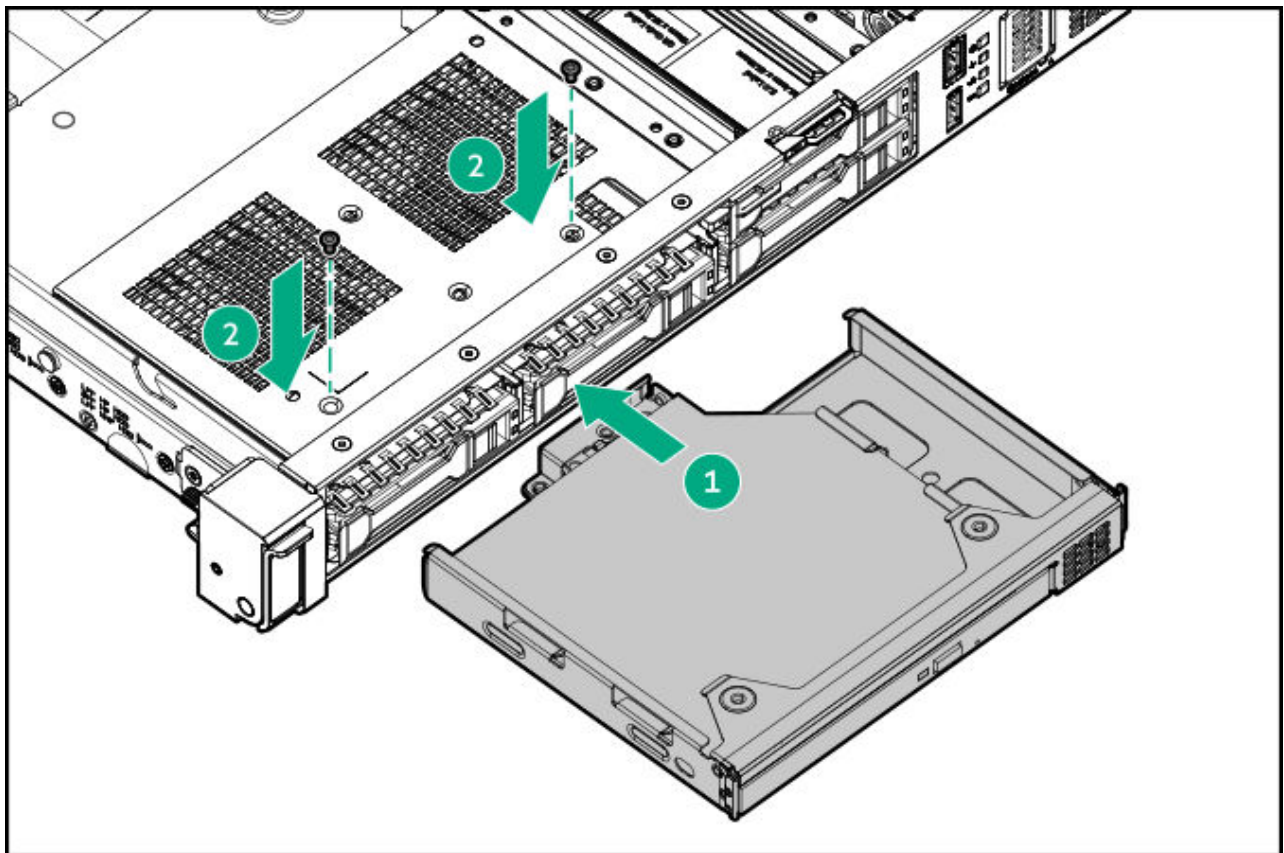
.2. Install the optical drive bracket.



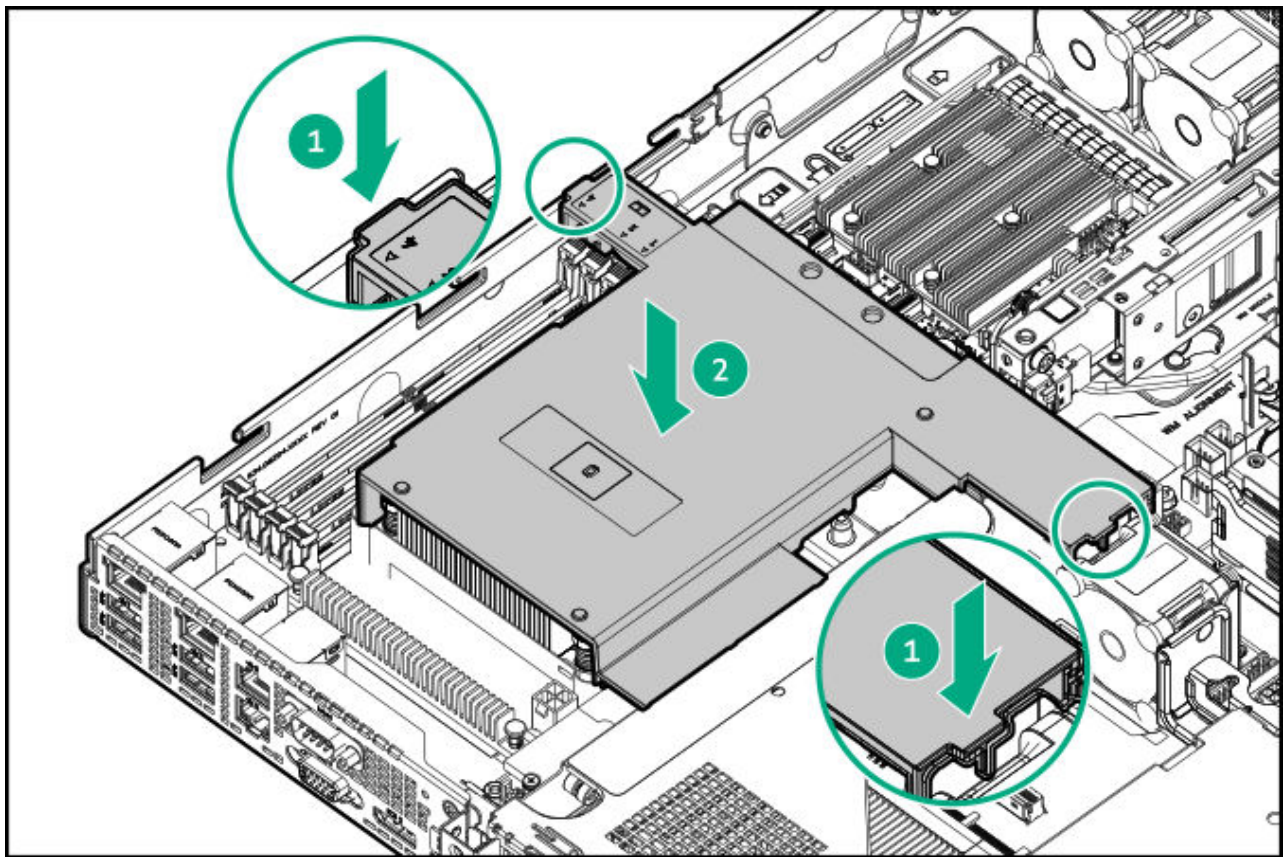
.3. Install the optical drive in the optical drive cage.



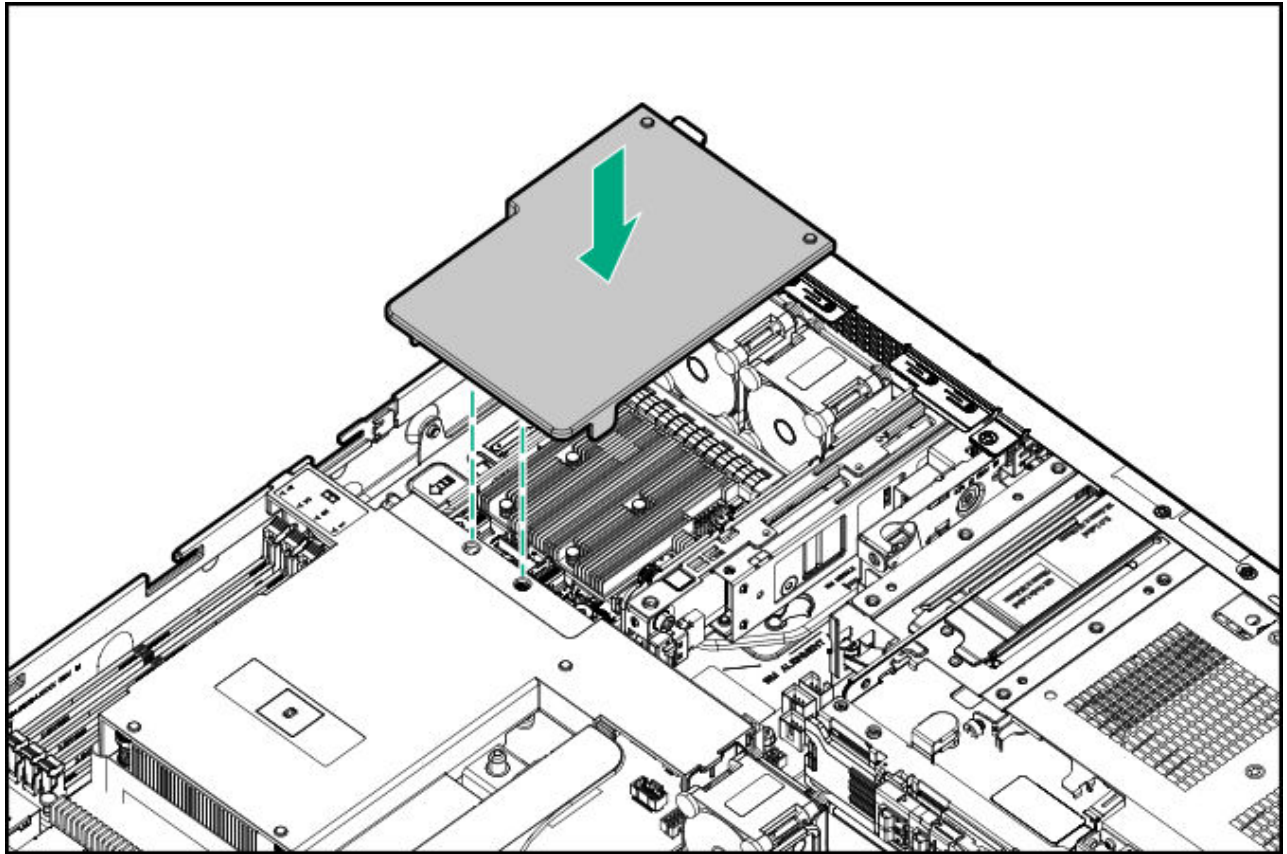
4. Install the optical drive cage in the media bay.



- .5. Cable the optical drive.
- .6. Install the processor air baffle.



- .7. Install the OCP air baffle.



- .8. Install the access panel.
- .9. Install the server into the rack.
- !0. If removed, install the front bezel.
- !1. Connect all peripheral cables to the server.
- !2. Connect each power cord to the server.
- !3. Connect each power cord to the power source.
- !4. Power up the server.

Results

The installation procedure is complete.

Memory option

The server has four DIMM slots supporting DDR5 UDIMM with ECC. Non-ECC UDIMM is not supported.

Subtopics

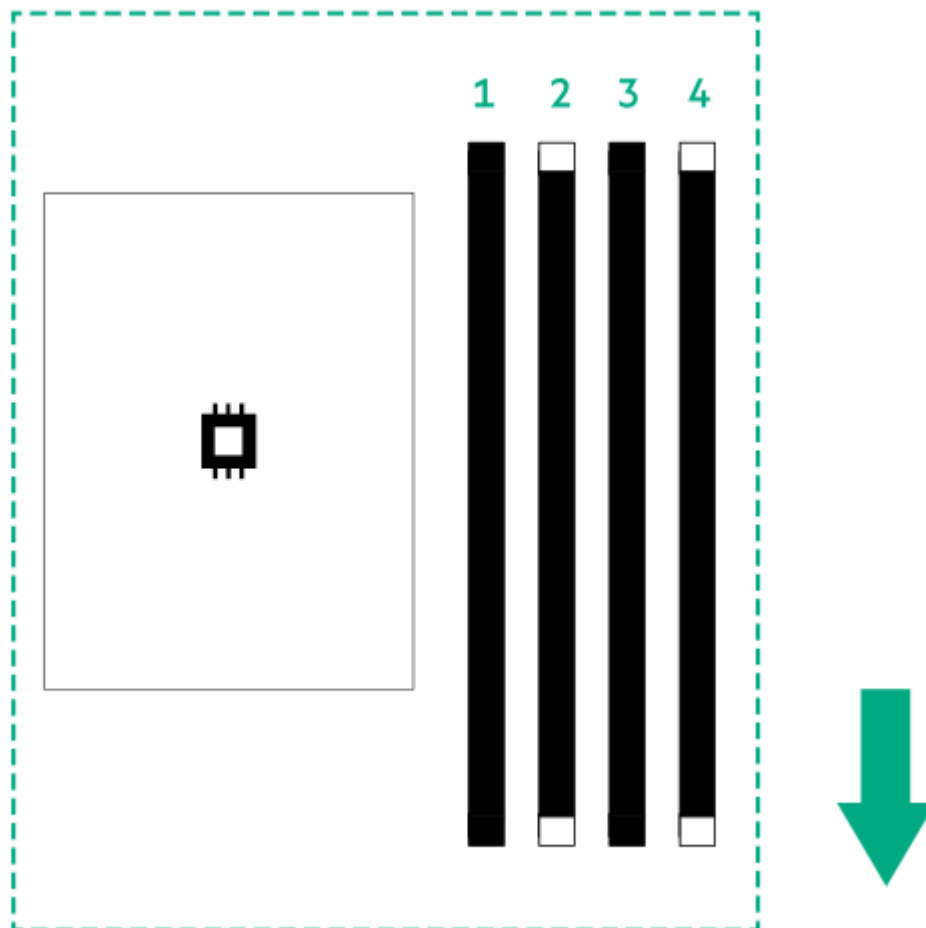
[DIMM population information](#)

[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

Prerequisites

Before you perform this procedure, review the:

- [DIMM population information](#)

- [DIMM installation guidelines](#)

About this task

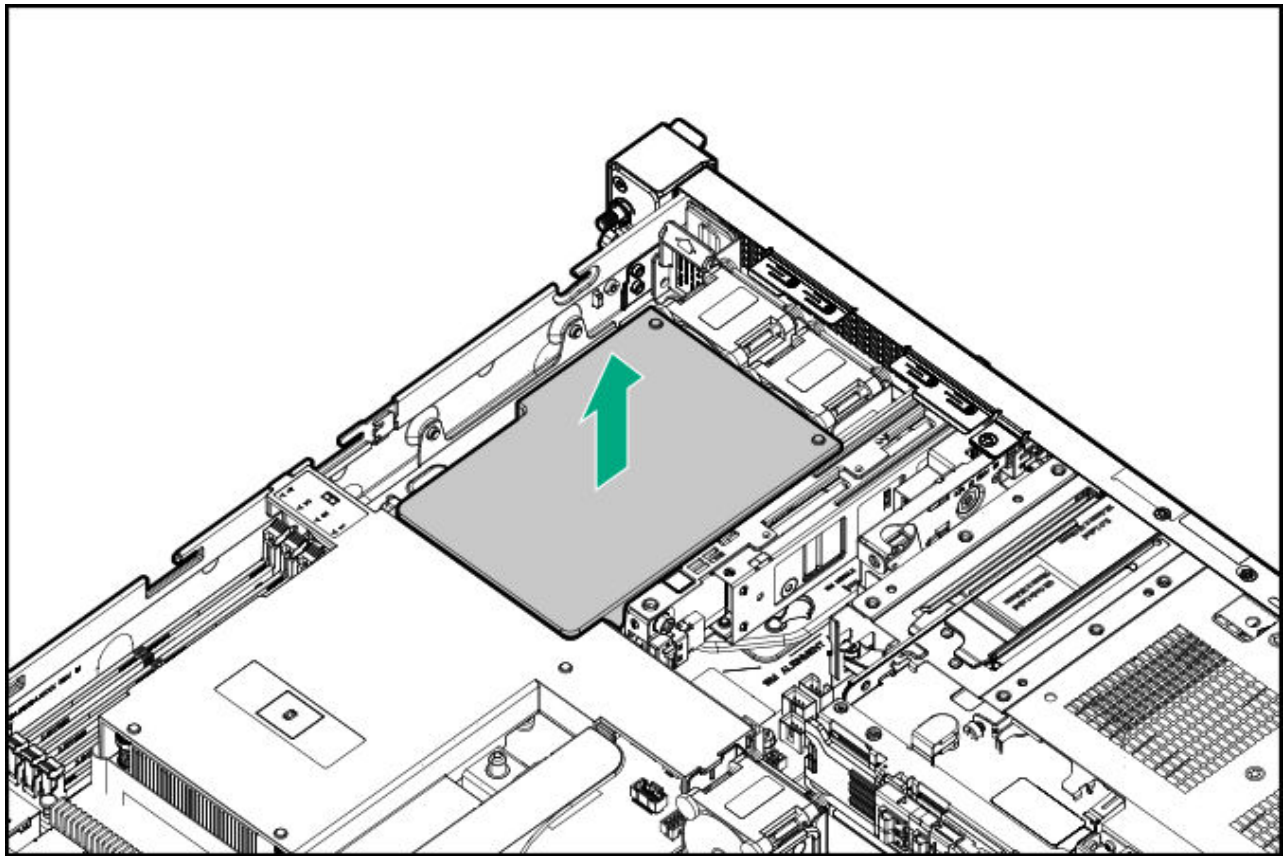


CAUTION

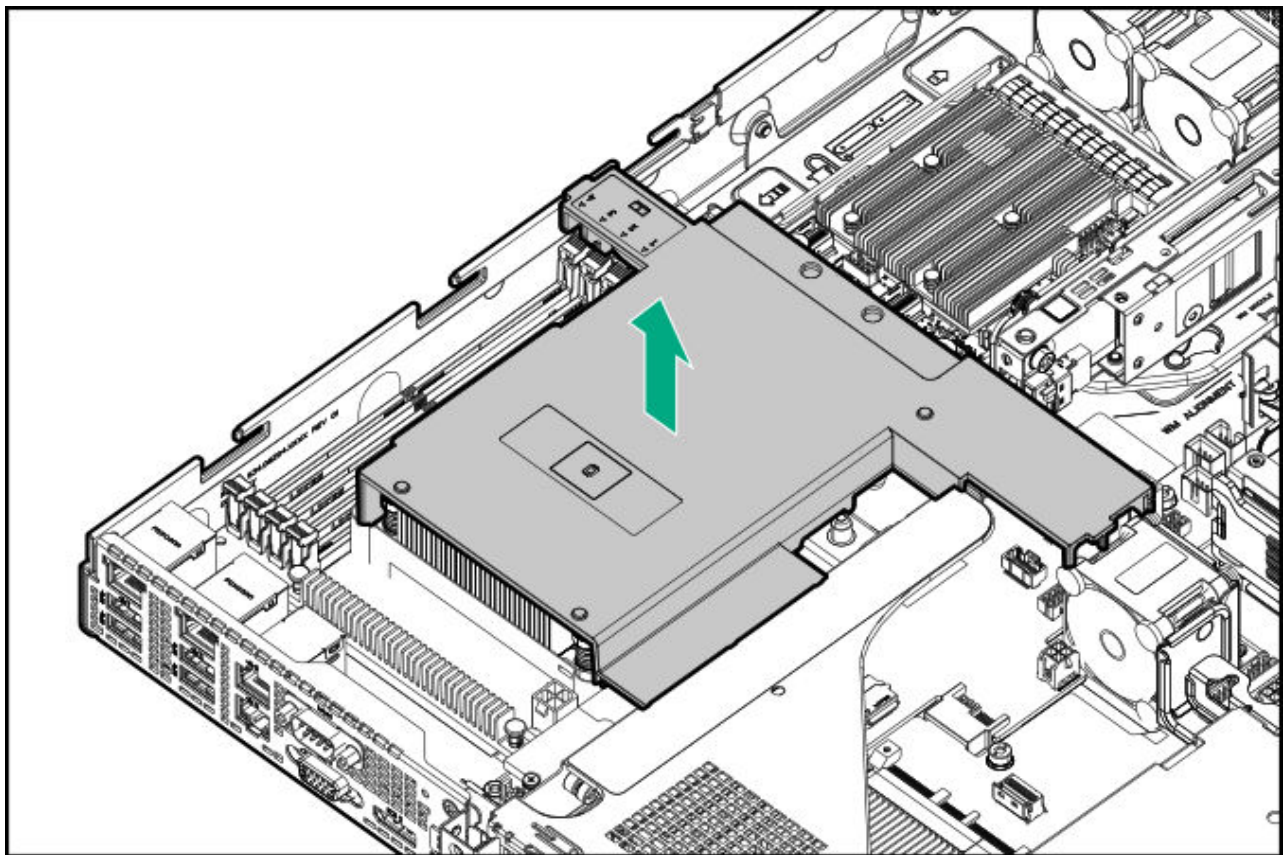
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

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. [Remove the server from the rack.](#)
5. Place the server on a flat, level work surface.
6. [Remove the access panel.](#)
7. Remove the OCP air baffle.



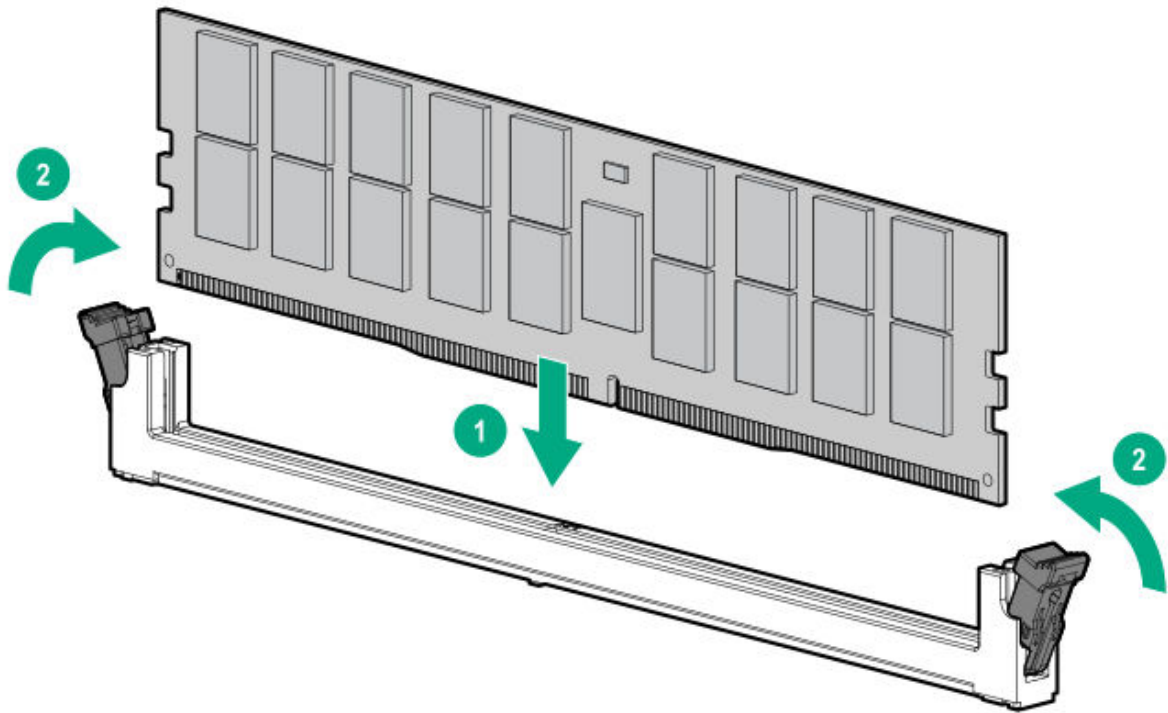
8. Remove the processor air baffle.



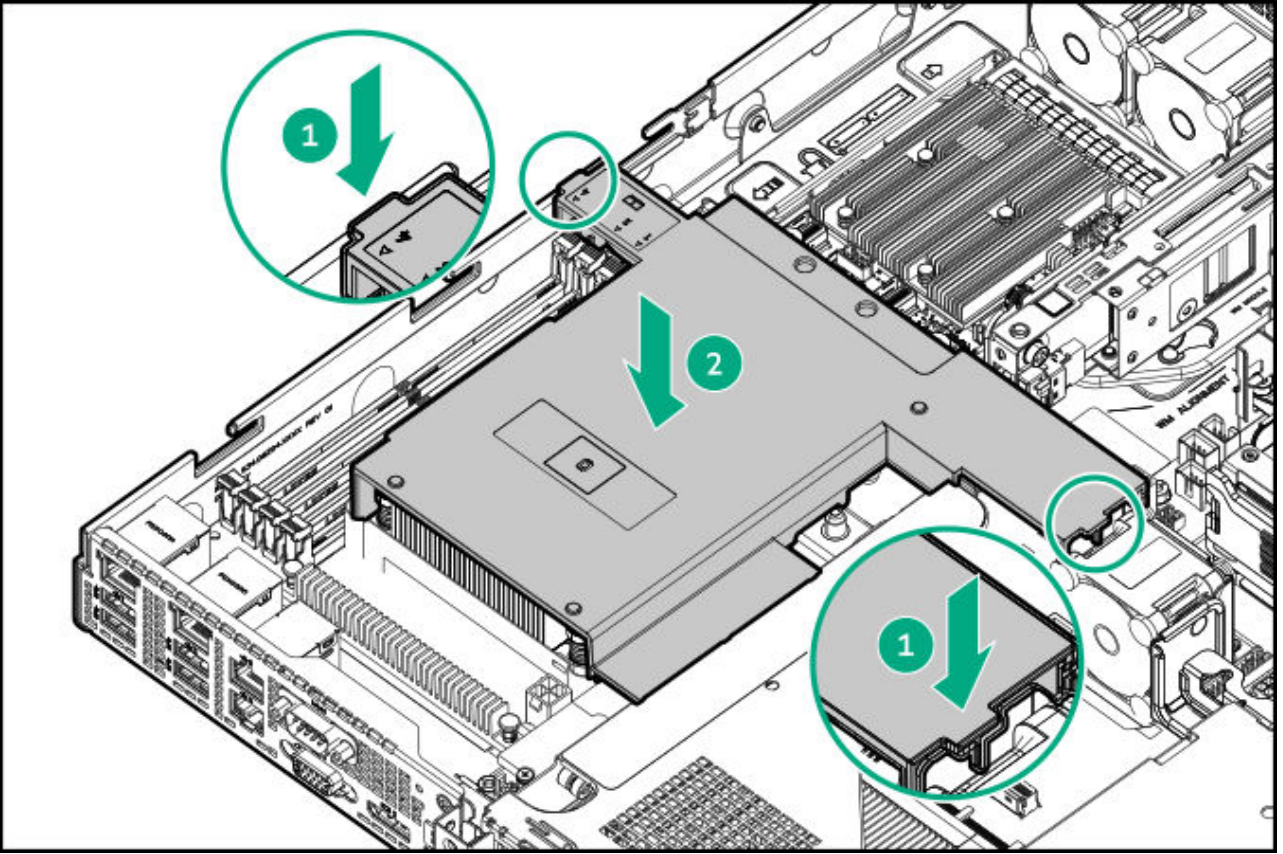
9. Install the DIMM:

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

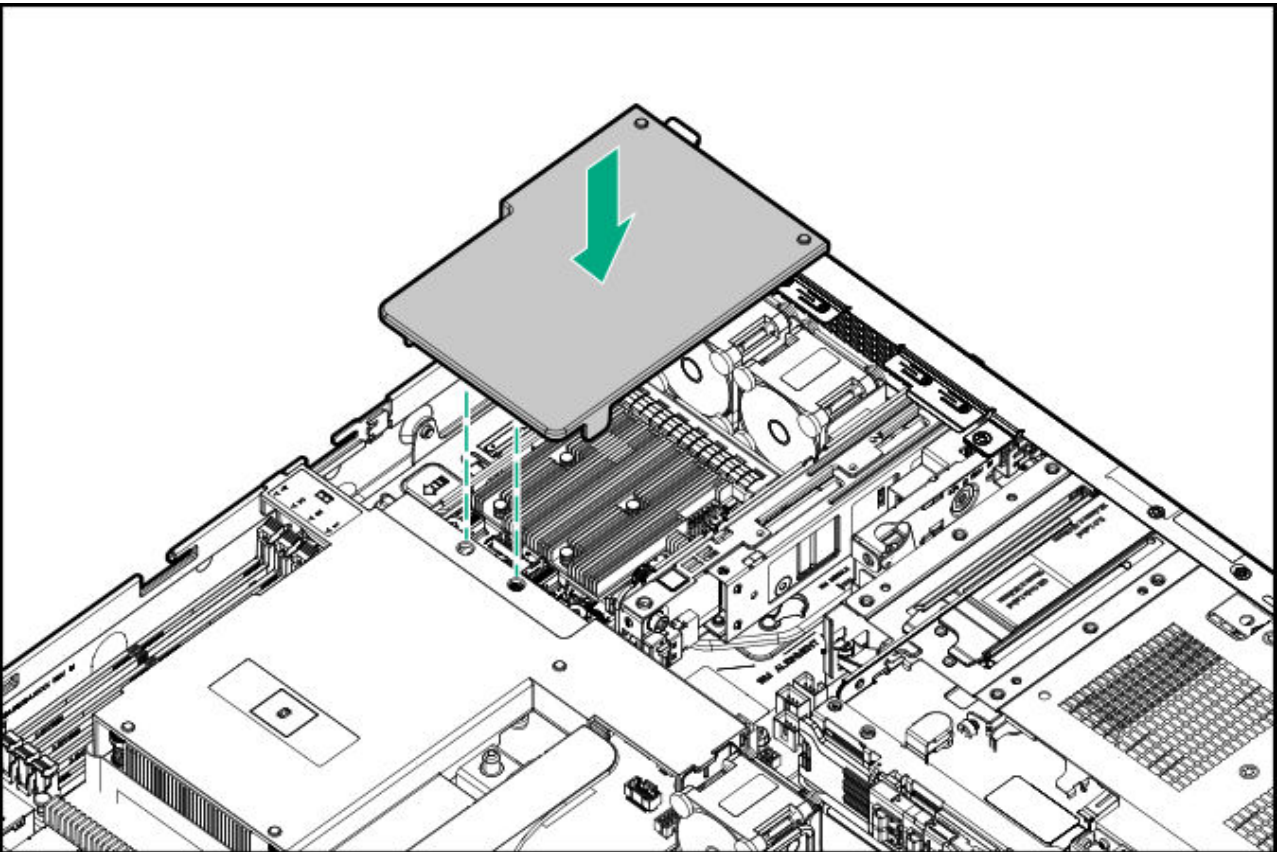
The DIMM slots are structured to ensure proper installation. If you try to insert a DIMM but it does not fit easily into the slot, you might have positioned it incorrectly. Reverse the orientation of the DIMM and insert it again.



10. Install the processor air baffle.



.1. Install the OCP air baffle.



- .2. [Install the access panel.](#)
- .3. [Install the server into the rack.](#)
- .4. Connect all peripheral cables to the server.
- .5. Connect each power cord to the server.
- .6. Connect each power cord to the power source.
- .7. [Power up the server.](#)
- .8. To configure the memory settings:
 - a. From the boot screen, press **F9** to access the UEFI System Utilities.
 - b. From the **System Utilities** screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > Memory Options.**

Results

The installation procedure is complete.

PCIe riser option

The server supports the PCIe5 x16 riser that supports expansion card options.

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

Subtopics

[Installing the riser](#)

Installing the riser

Prerequisites

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

About this task

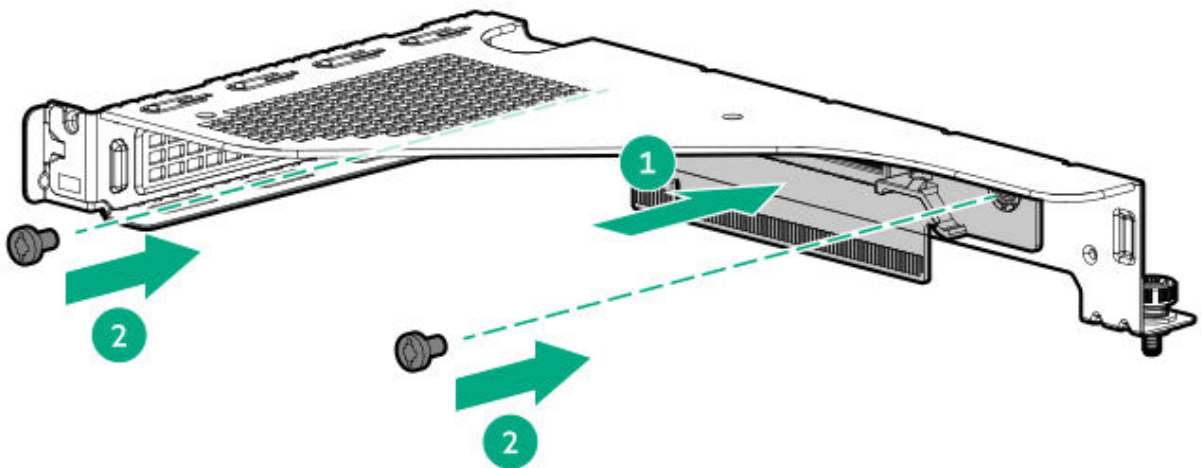


CAUTION

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the riser cage.
8. Install the riser on the riser cage.



9. Install the planned expansion option in the riser slot.
0. Install the riser cage.
1. Install the access panel.

- .2. Install the server into the rack.
- .3. Connect all peripheral cables to the server.
- .4. Connect each power cord to the server.
- .5. Connect each power cord to the power source.
- .6. Power up the server.

Results

The installation procedure is complete.

Storage controller options

The server supports the following storage controllers:

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

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

Subtopics

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

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

[Installing the type-p controller](#)

Preparing the server for storage controller installation

Prerequisites

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

Procedure

1. If the server was previously configured:

- a. Back up data on the system.
- b. Close all applications.
- c. Ensure that users are logged off and that all tasks are completed on the server.

**CAUTION**

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

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

Installing the type-o storage controller

Prerequisites

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

- Compatible controller cable
- T-10 Torx screwdriver

About this task

This server supports type-o storage controller installation in the OCP slot 14 (internal OCP).

**CAUTION**

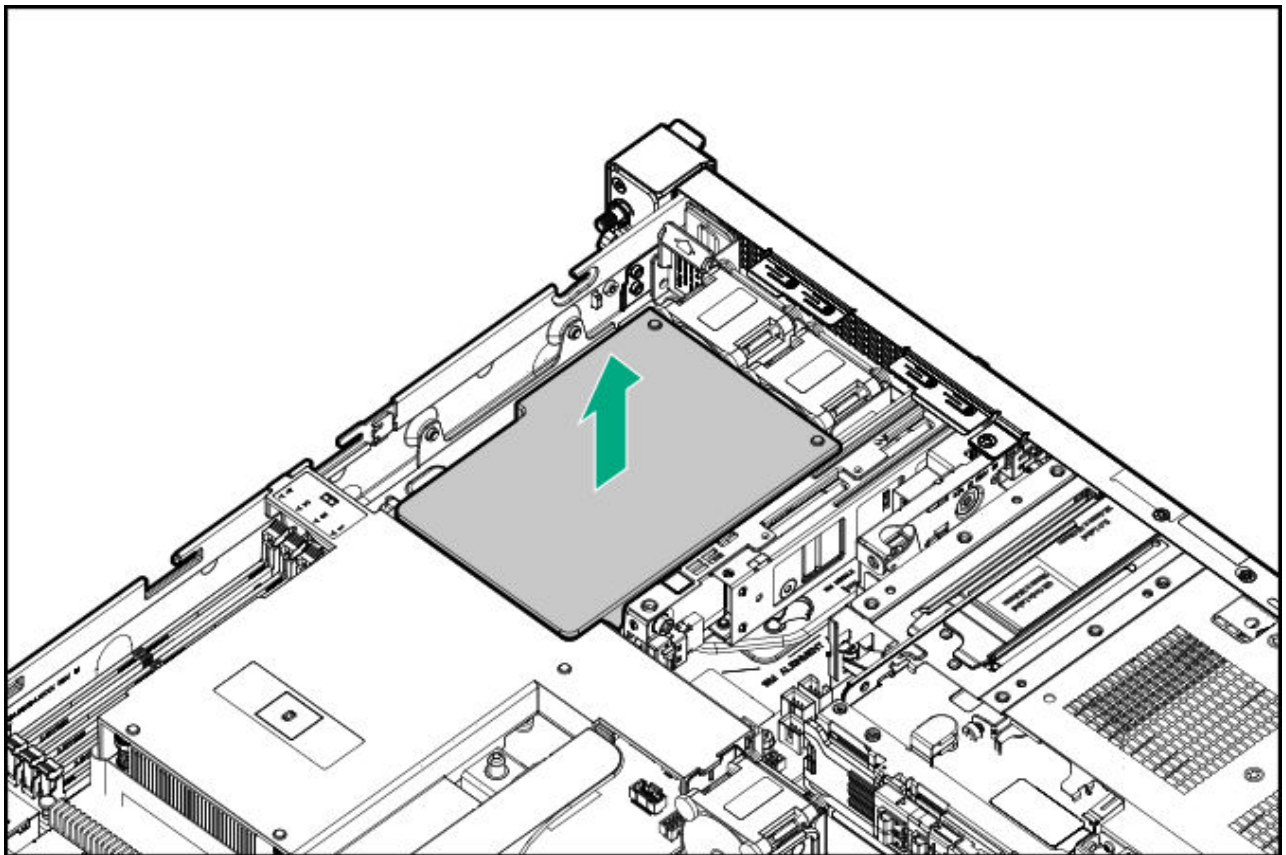
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

**CAUTION**

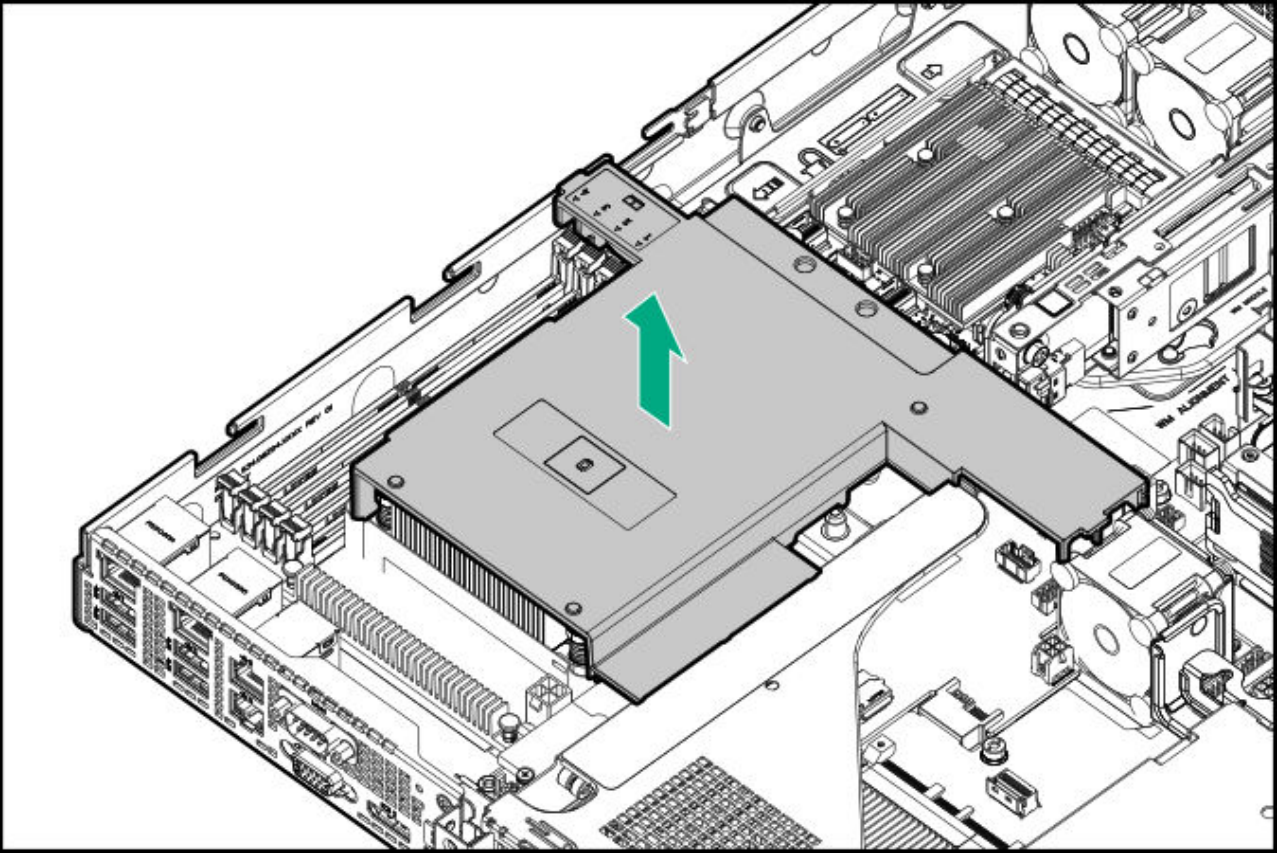
The port blank provides EMI shielding and helps maintain proper thermal status inside the server. Do not operate the server when a port blank is removed without the corresponding I/O port option installed.

Procedure

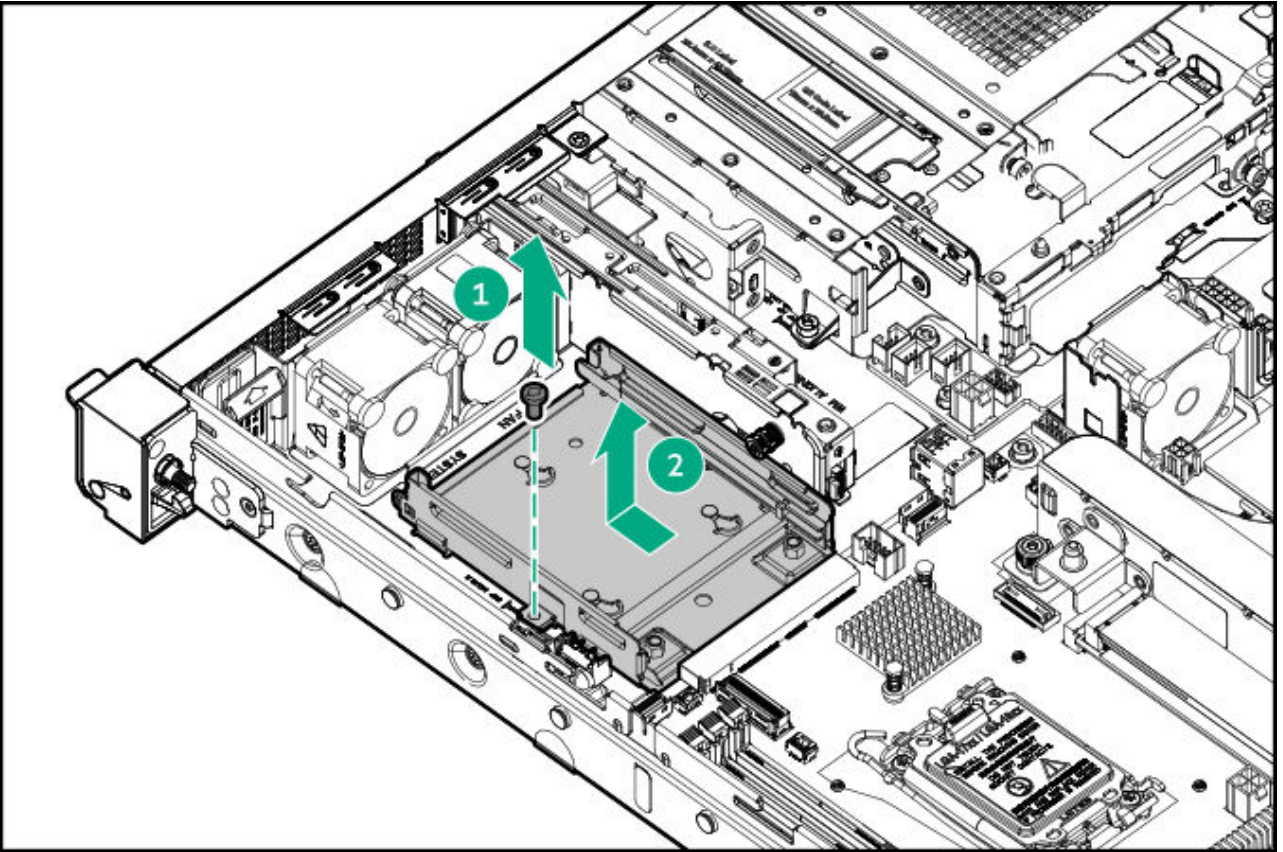
1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the OCP air baffle.



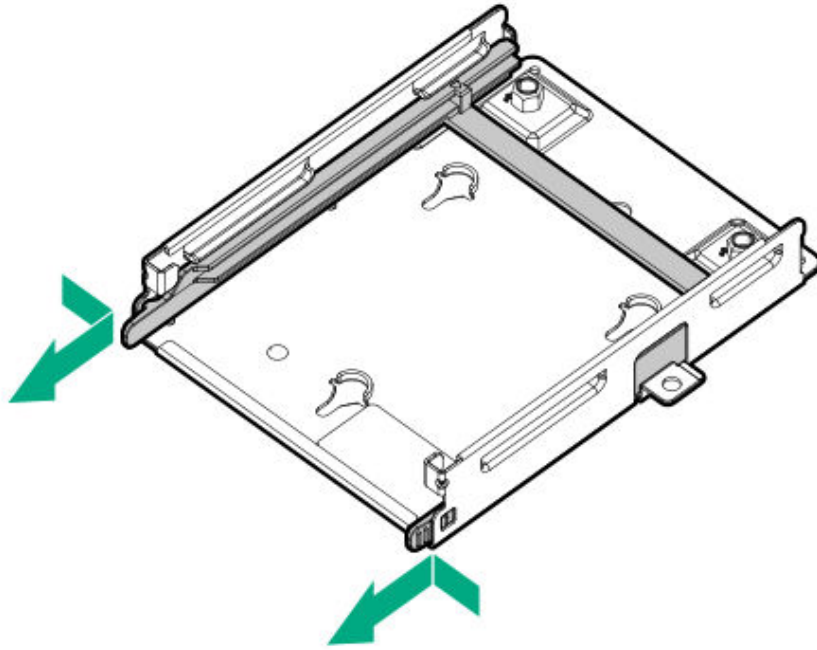
8. Remove the processor air baffle.



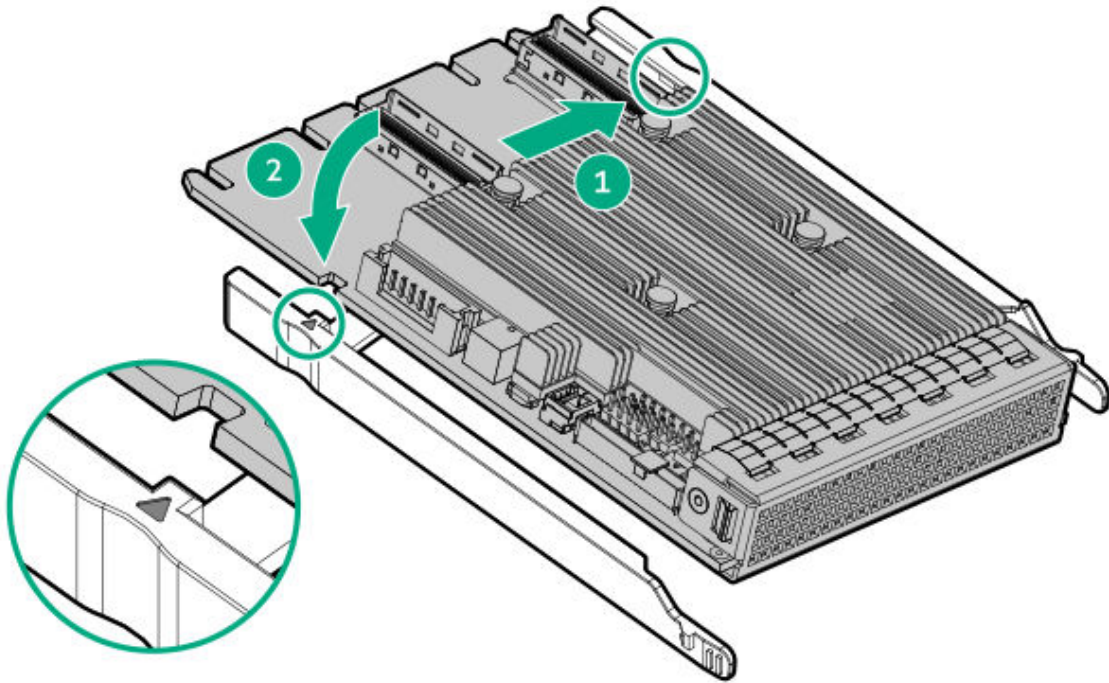
9. Remove the OCP cage.



.0. Remove the OCP cage rail.

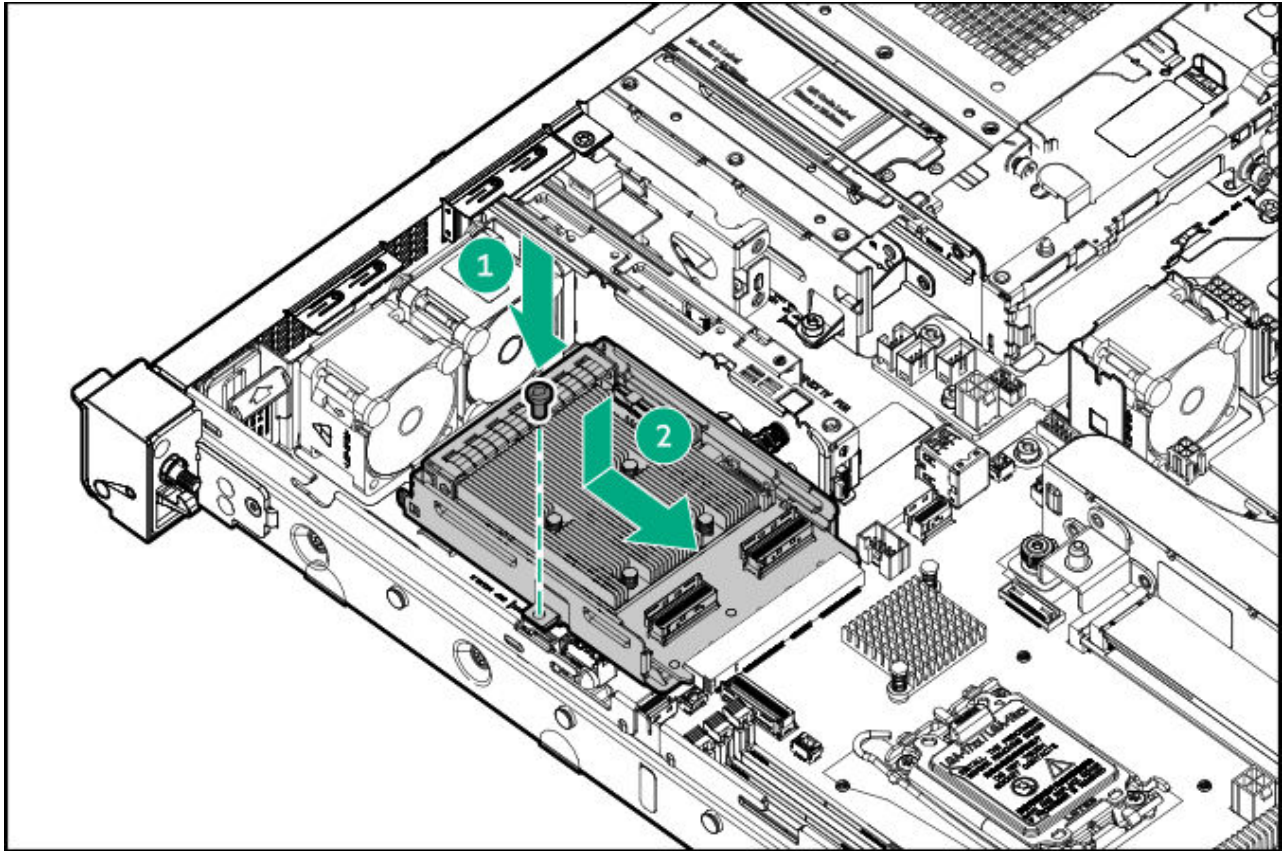


.1. Install the type-o controller on the OCP cage rail.



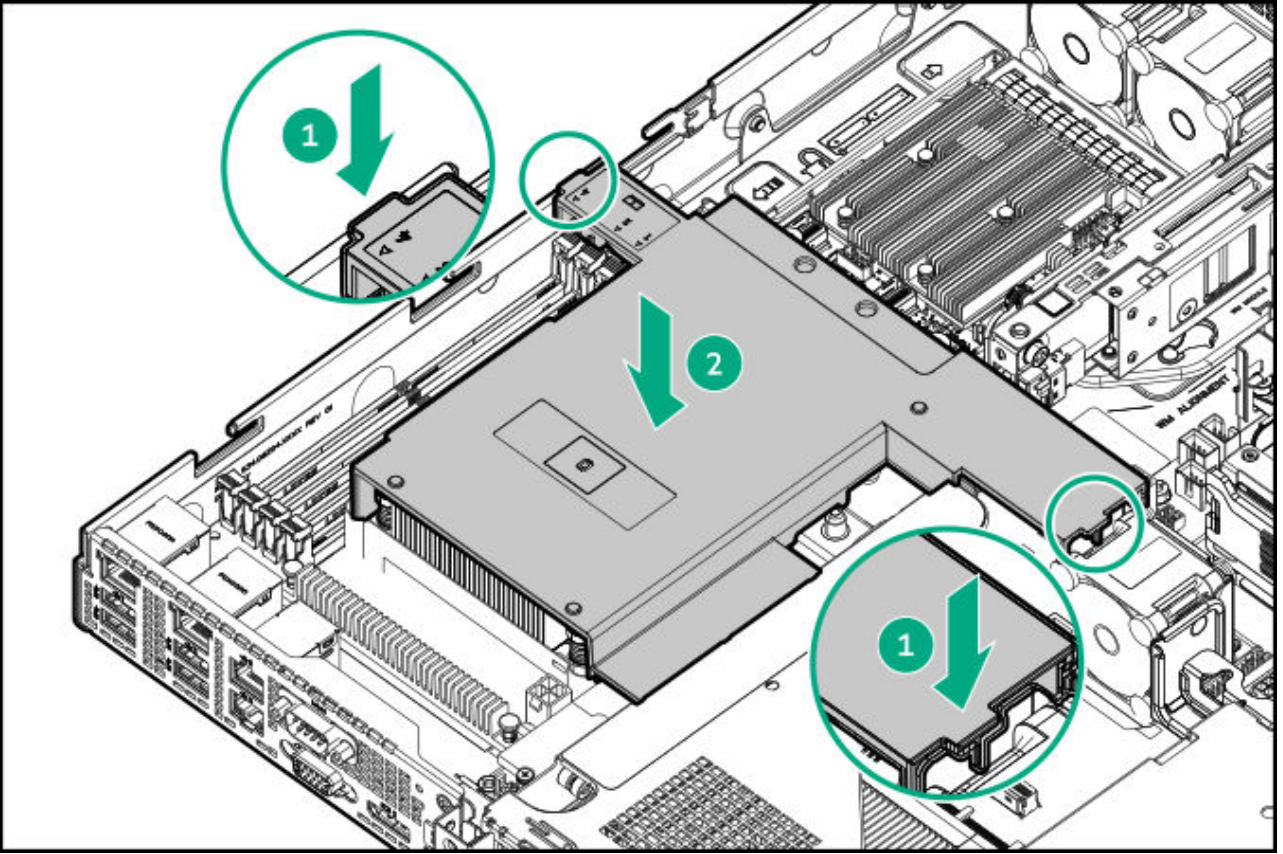
.2. Remove the OCP cage hex screws.

.4. Install the OCP cage.

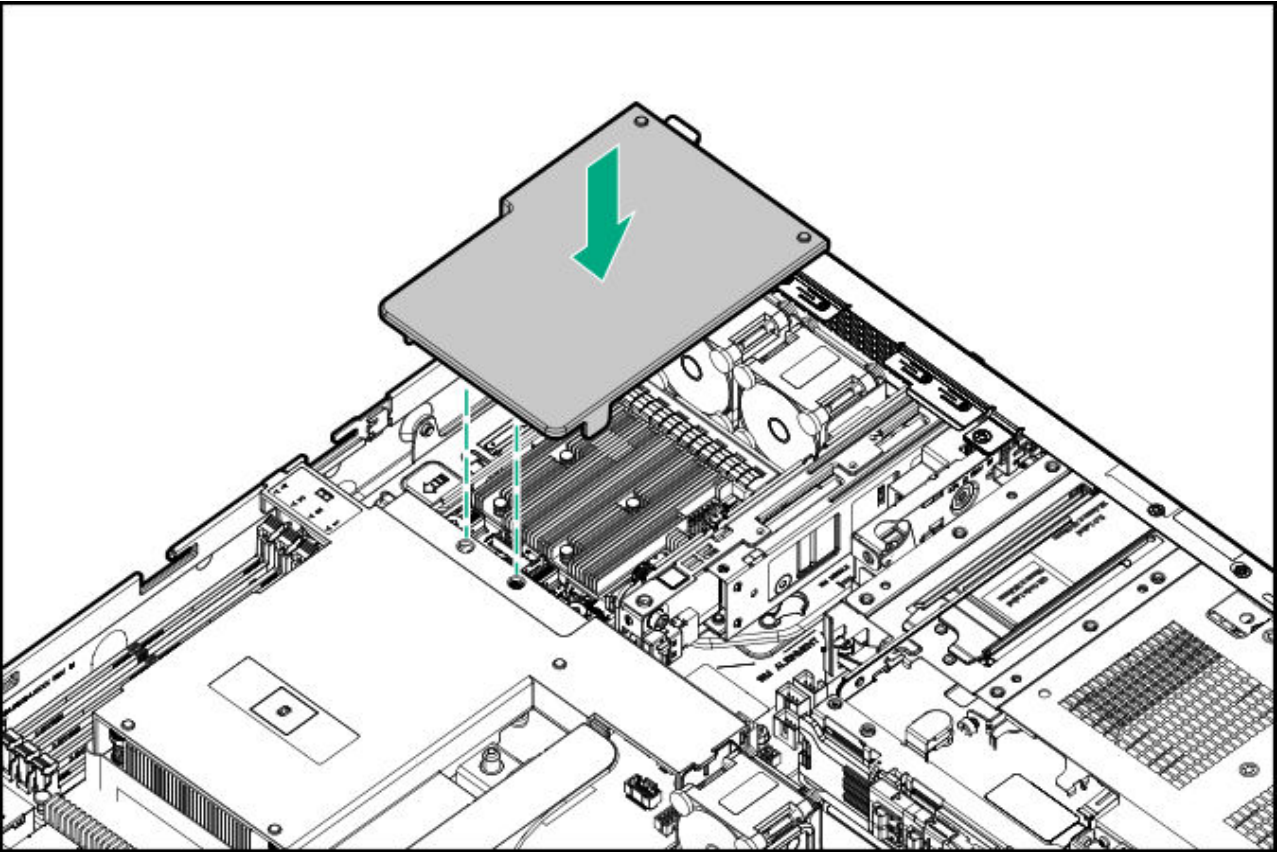


.5. Cable the type-o storage controller.

.6. Install the processor air baffle.



.7. Install the OCP air baffle.



- .8. Install the access panel.
- .9. Install the server into the rack.
- !0. Connect all peripheral cables to the server.
- !1. Connect each power cord to the server.
- !2. Connect each power cord to the power source.
- !3. Power up the server.
- !4. Update the server firmware if they are not the latest revision.
- !5. Configure the controller.

Results

The installation procedure is complete.

Installing the type-p controller

Prerequisites

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

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

- The flash-backed write cache (FBWC) feature of some storage controllers requires the installation of an energy pack option. For more information, see the controller QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/qs>).
- Before you perform this procedure, make sure that you have the following items available:
 - Compatible controller cable option
 - T-10 Torx screwdriver

About this task



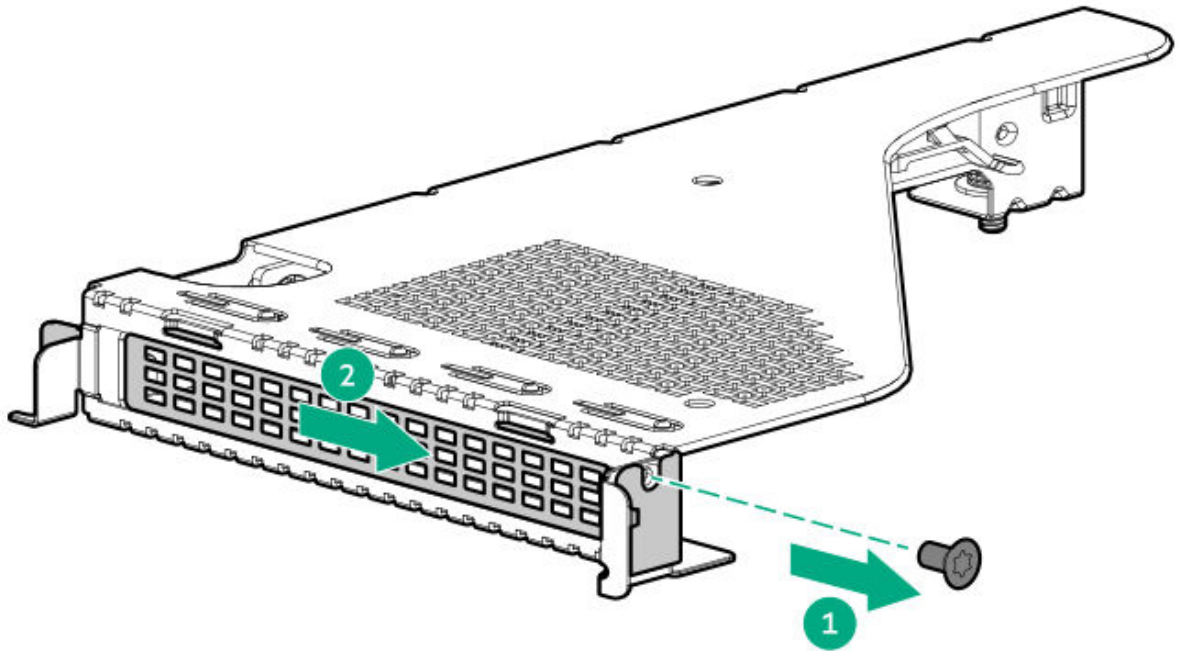
CAUTION

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

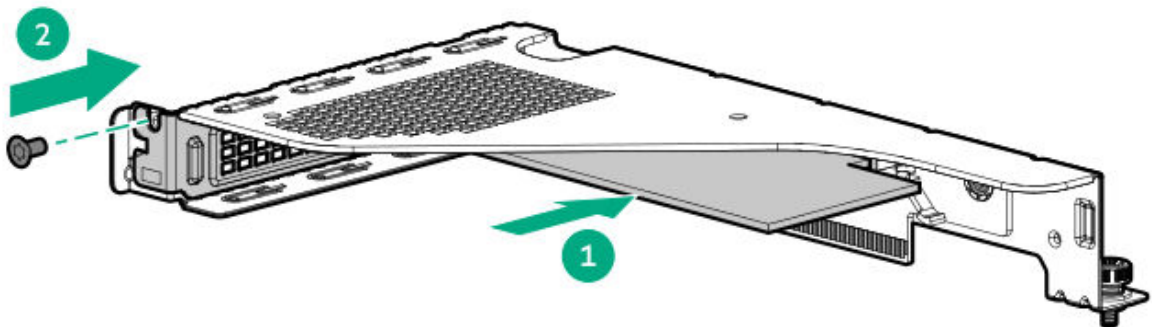
1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the riser cage.
8. (Optional) Install the riser on the riser cage.
9. Install the type-p controller:
 - a. Remove the riser slot screw and slot blank.

Retain the slot blank for future use.



b. Install the controller.

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



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

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

- .1. Install the riser cage.
- .2. Cable the controller.
- .3. Install the access panel.

- .4. Install the server into the rack.
- .5. Connect all peripheral cables to the server.
- .6. Connect each power cord to the server.
- .7. Connect each power cord to the power source.
- .8. Power up the server.
- .9. Update the server firmware if they are not the latest revision.
- .10. Configure the controller.

Results

The installation procedure is complete.

Energy pack option

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

After it is installed, the status of the energy pack appears in HPE iLO. For more information, see the iLO user guide on the Hewlett Packard Enterprise website (<https://www.hpe.com/support/hpeilodocs-quicklinks>).

Subtopics

HPE Smart Storage Battery

Installing an energy pack

HPE Smart Storage Battery

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

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

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

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

Installing an energy pack

Prerequisites

Before proceeding with installation, observe the following guideline:

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

About this task

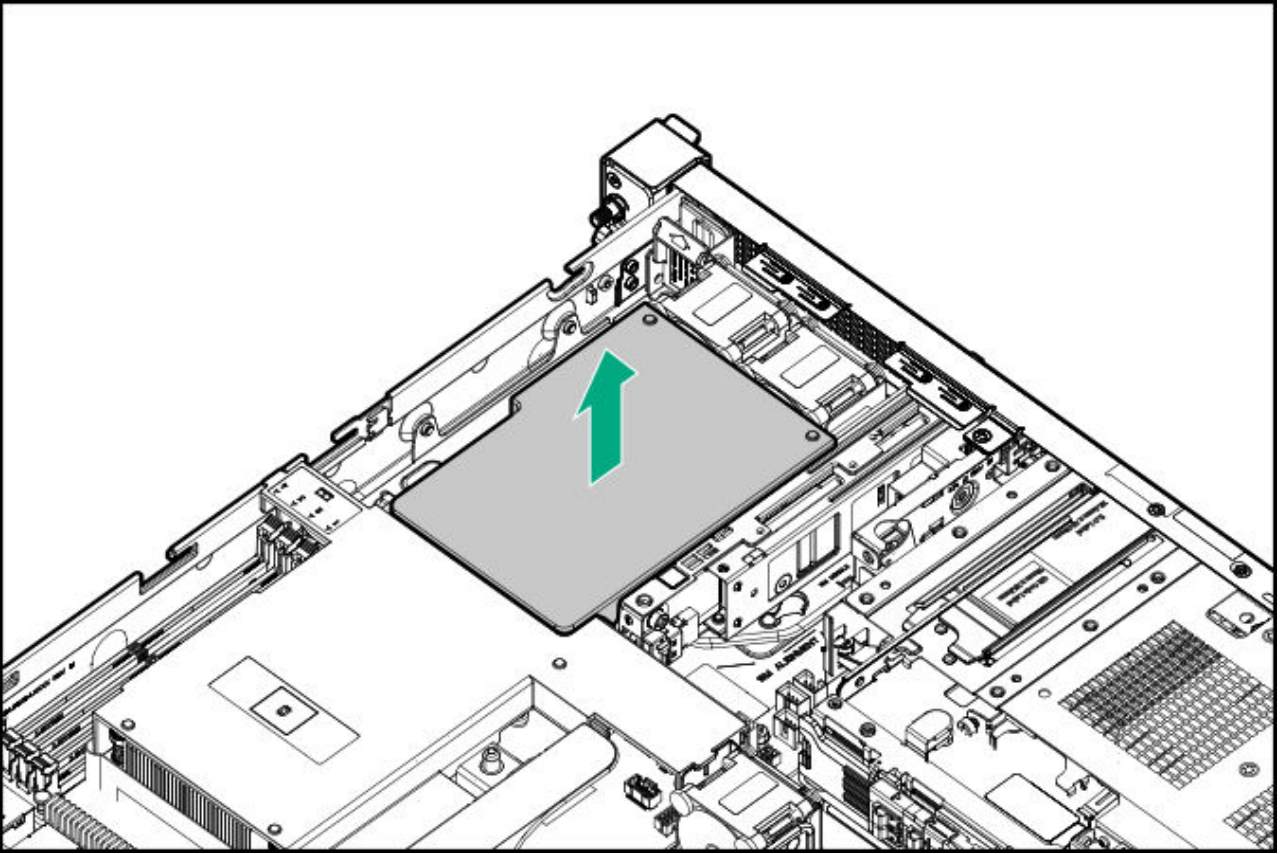


CAUTION

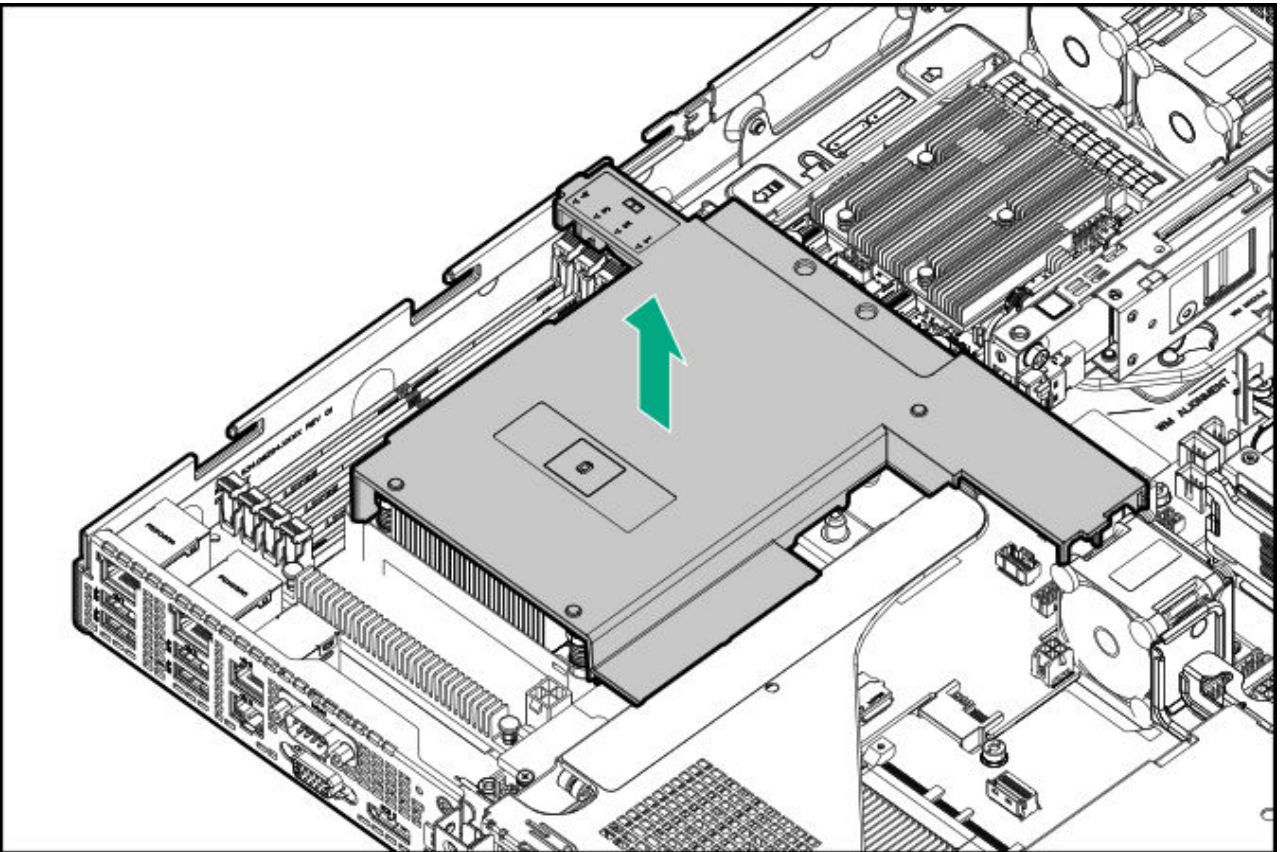
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the OCP air baffle.



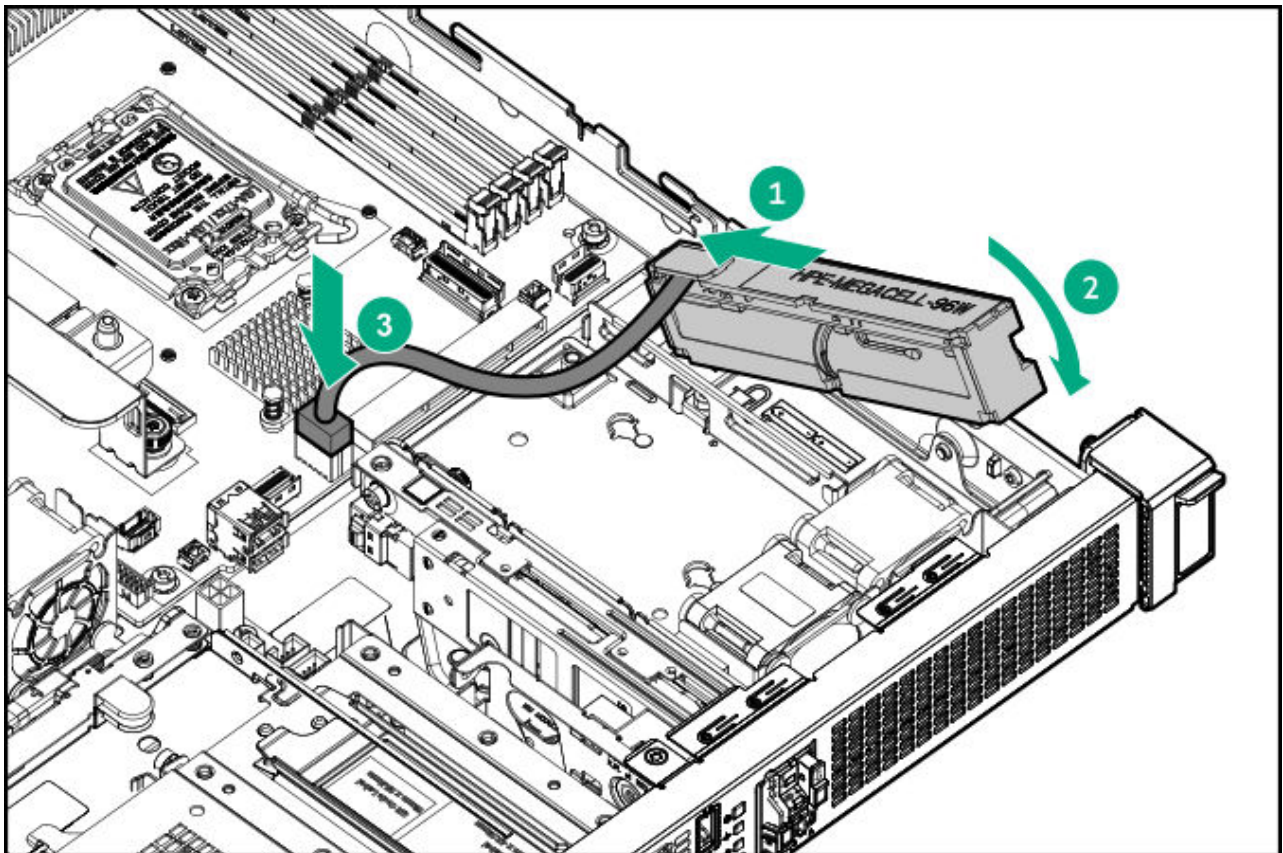
8. Remove the processor air baffle.



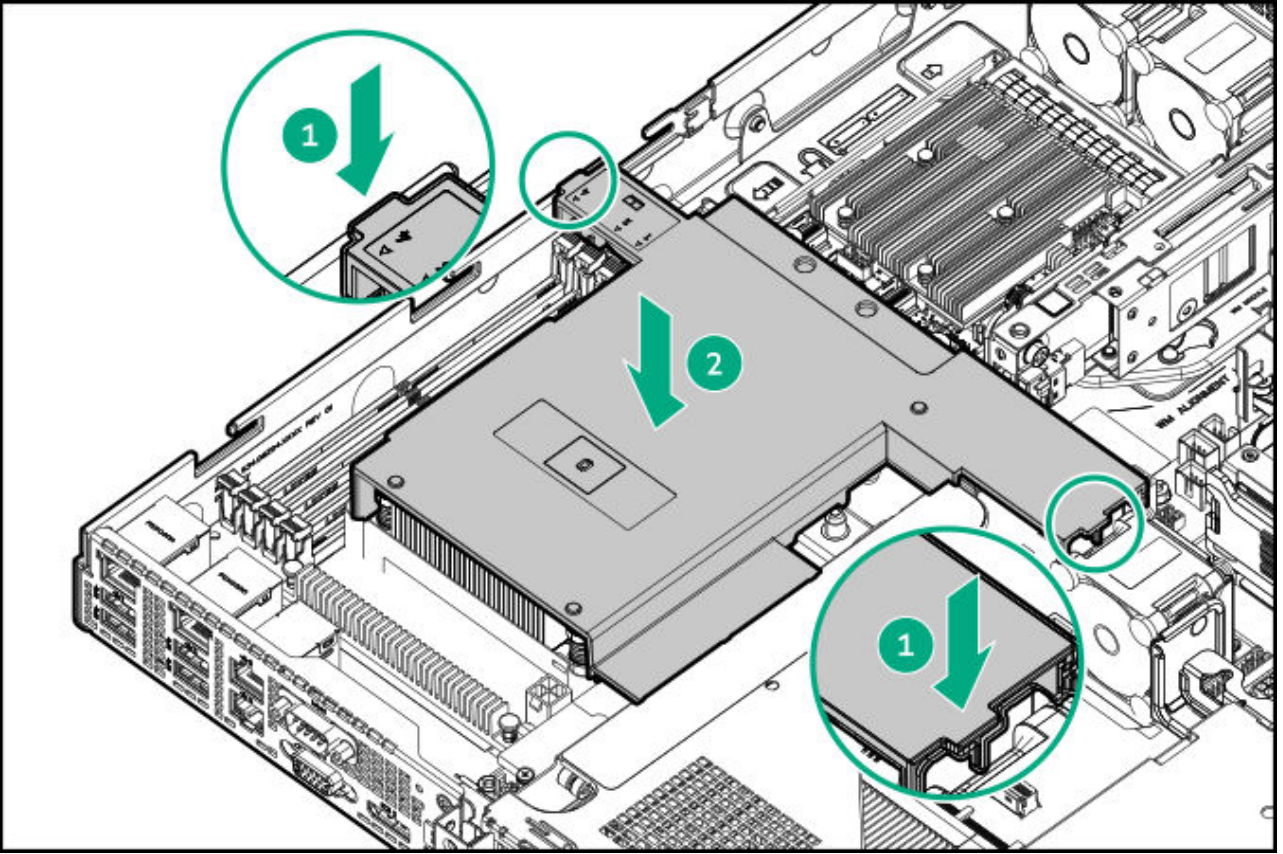
9. Install the energy pack:
 - a. Attach one end of the energy pack on the chassis.
 - b. Push the energy pack down from the other end.

Make sure that the energy pack is locked in the retention latch.

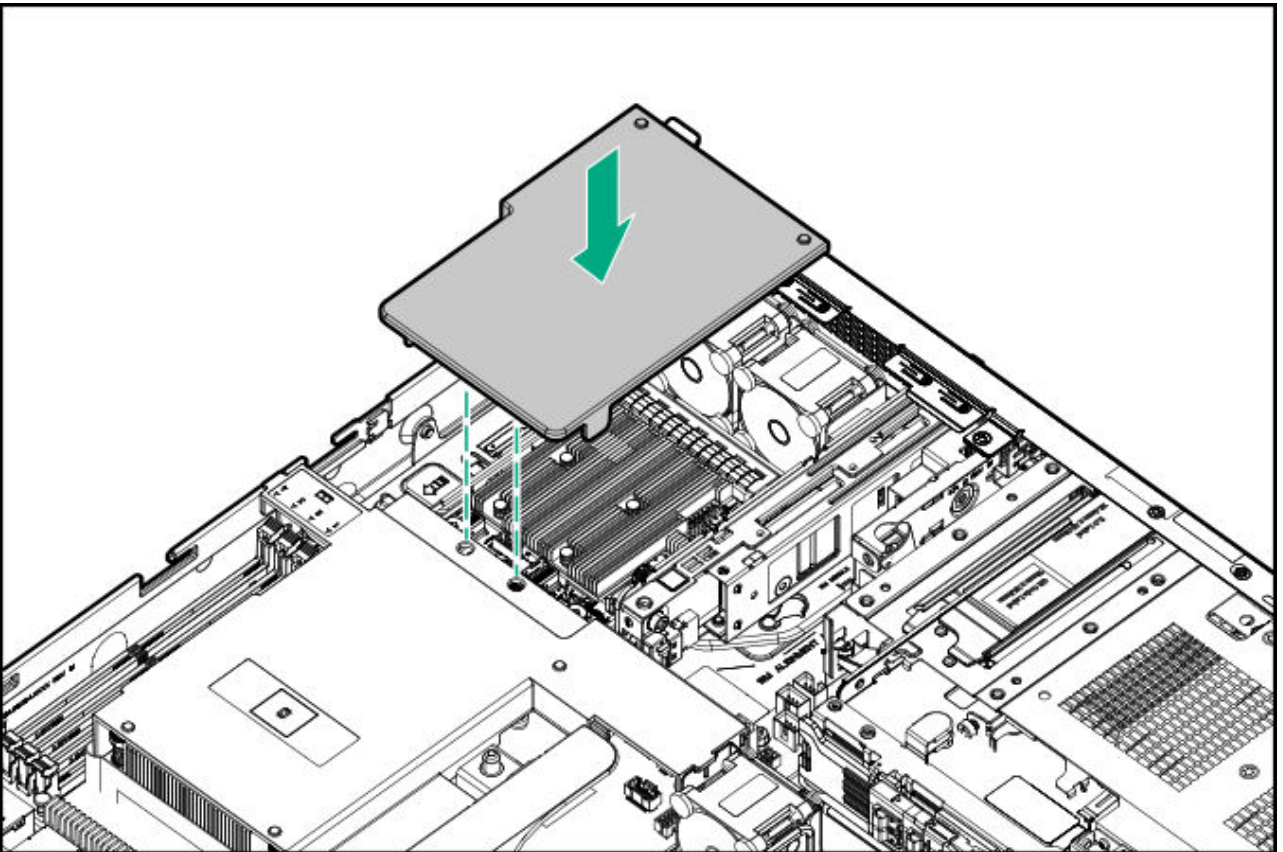
- c. Connect and route the energy pack cable.



- .0. Connect the storage controller backup power cable.
- .1. Install the processor air baffle.



.2. Install the OCP air baffle.



- .3. Install the access panel.
- .4. Install the server into the rack.
- .5. Connect all peripheral cables to the server.
- .6. Connect each power cord to the server.
- .7. Connect each power cord to the power source.
- .8. Power up the server.

Results

The installation procedure is complete.

Expansion card options

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

- HPE type-p storage controller
- Ethernet adapter
- HDR InfiniBand adapter

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

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

Subtopics

Installing an expansion card

Installing an expansion card

Prerequisites

- Observe the Riser board component.

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

About this task



CAUTION

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

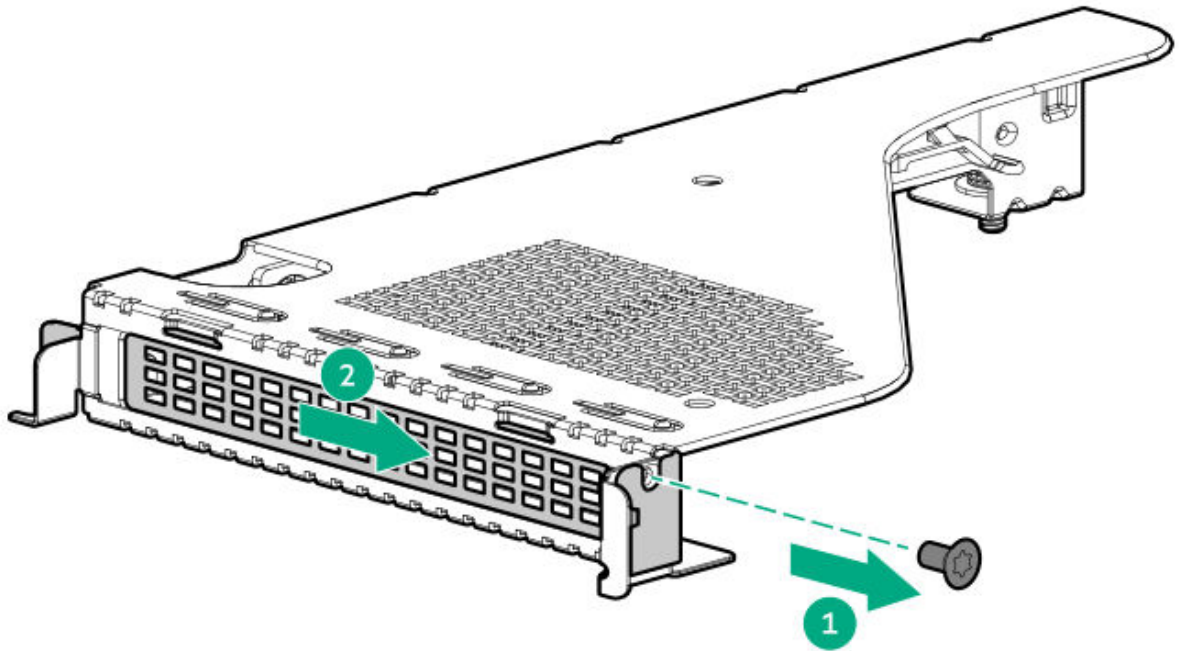


CAUTION

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

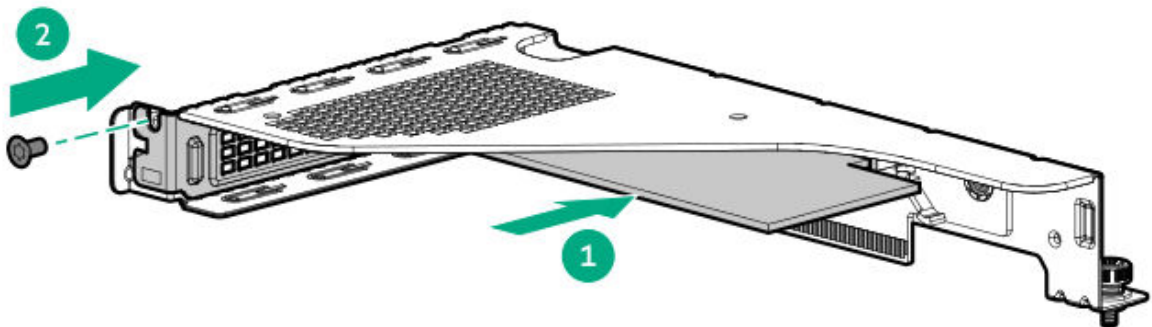
Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the riser cage.
8. (Optional) Install the riser on the riser cage.
9. 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.
10. Install the expansion card:
 - a. Remove the riser slot screw and slot blank.
Retain the slot blank for future use.



b. Install the expansion card.

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



- .1. Install the riser cage.
- .2. Connect all necessary internal cabling to the expansion card. For more information on these cabling requirements, see the documentation that ships with the option.
- .3. Install the access panel.
- .4. Install the server into the rack.
- .5. Connect all peripheral cables to the server.
- .6. Connect each power cord to the server.

.7. Connect each power cord to the power source.

.8. Power up the server.

Results

The installation procedure is complete.

HPE NS204i-u Boot Device option

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

- The HPE NS204i-u NVMe Hot Plug Boot Optimized Storage Device is a PCIe 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 RAID 1 volume during boot. This means the boot device does not require further RAID configuration.
- This boot device is compatible with the following native OS:
 - Windows
 - Linux
 - VMware
- This boot device uses native inbox OS NVMe drivers.

Subtopics

Installing the HPE NS204i-u Boot Device

Installing the HPE NS204i-u Boot Device

Prerequisites

- Verify that your OS or virtualization software is supported:
<https://www.hpe.com/support/Servers-Certification-Matrices>
- Verify that you are running the latest iLO firmware and server BIOS version.

- Identify the HPE NS204i Boot Device components.
- Before you perform this procedure, make sure that you have the following items available:
 - NS204i-u enablement option kit (P75284-B21)
 - T-10 Torx screwdriver
 - T-15 Torx screwdriver

About this task



CAUTION

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



CAUTION

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



IMPORTANT

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

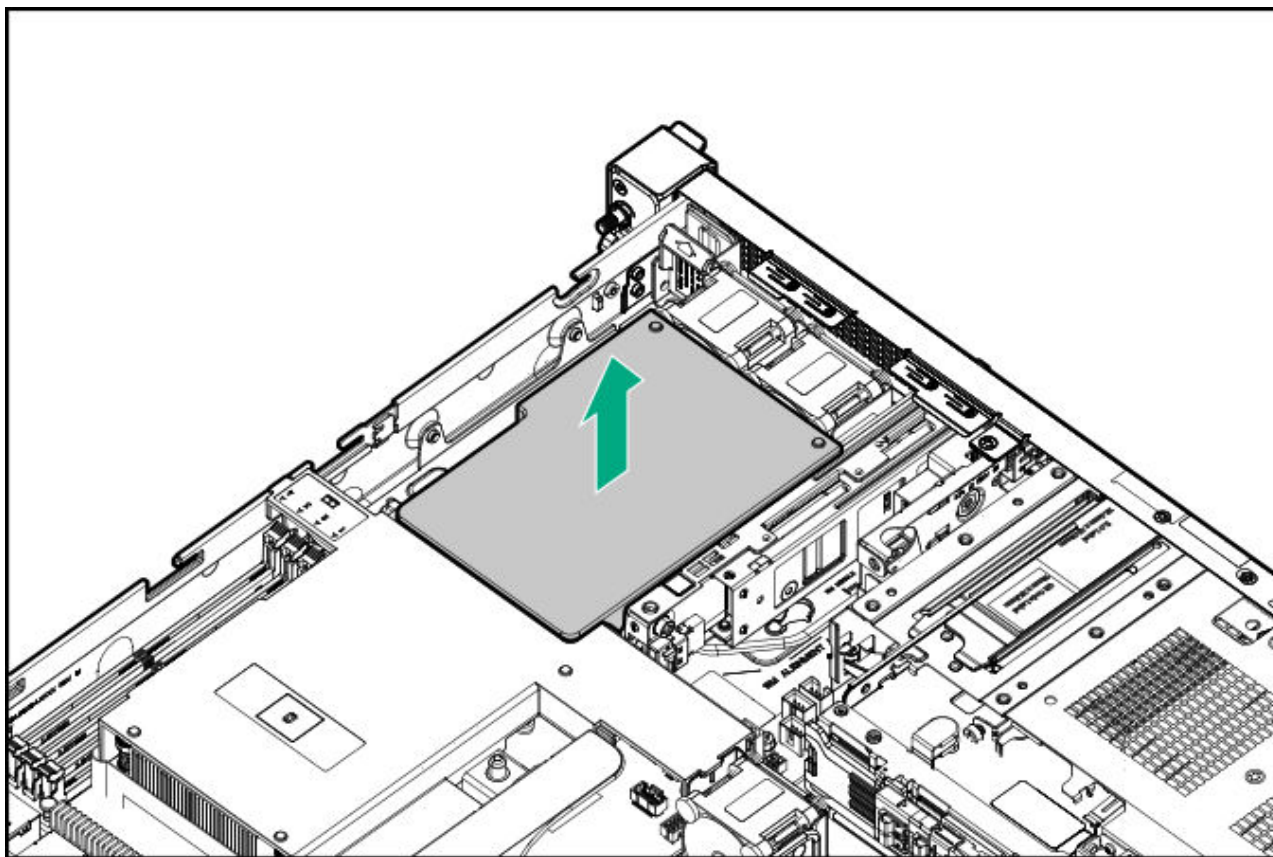
- In the iLO web interface, see the **Storage** page.
- In UEFI System Utilities, see **System Configuration > HPE NS204i Boot Controller > Physical Device Information**.

Configurations with SSDs from different manufacturers are not supported.

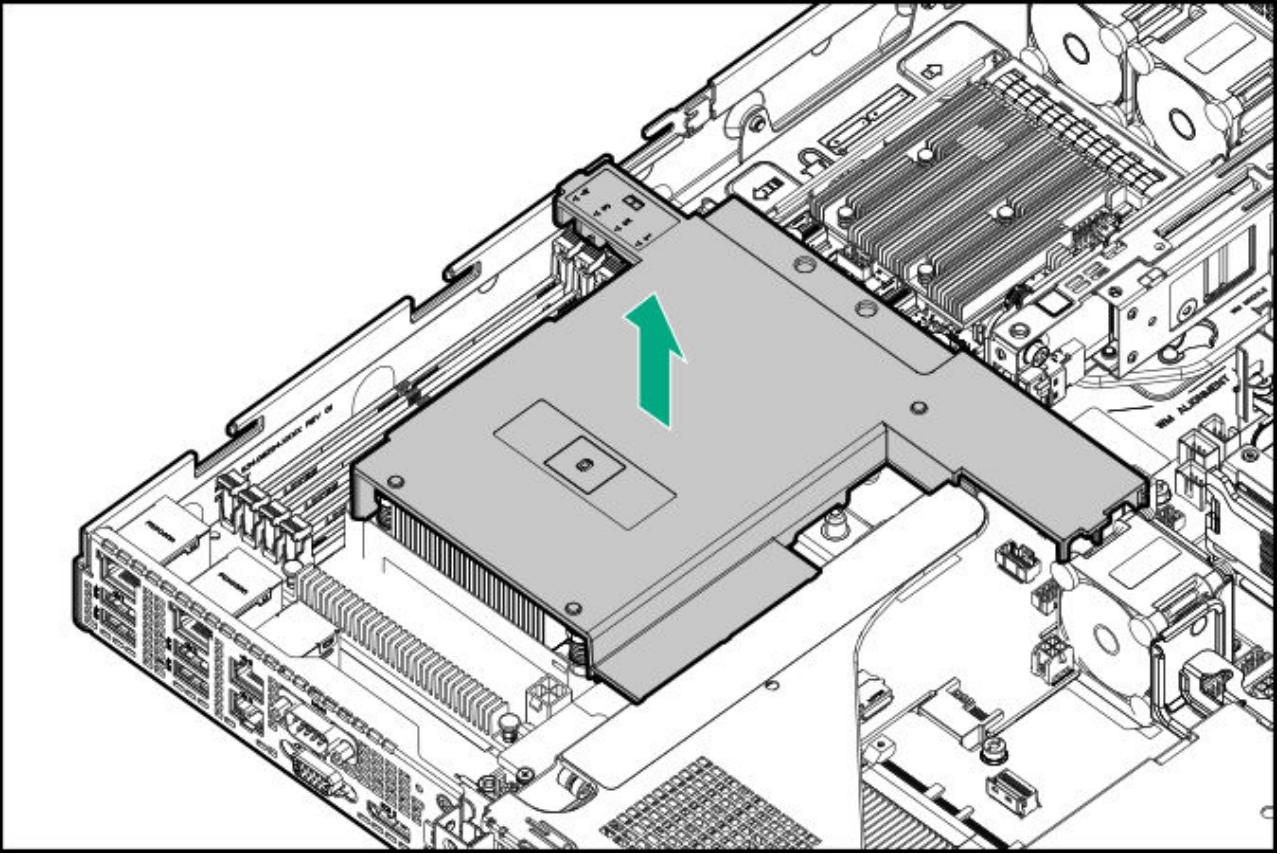
Procedure

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.

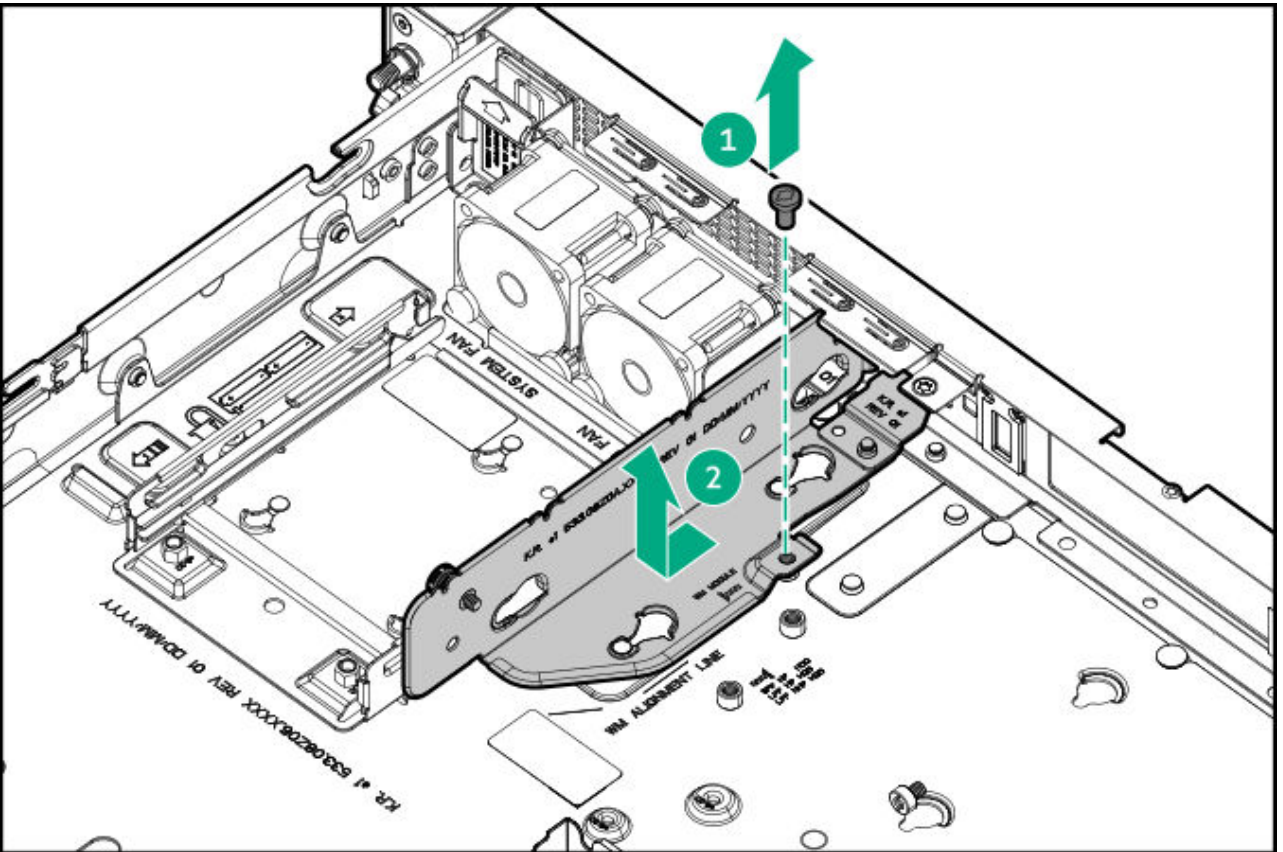
6. Remove the access panel.
7. Remove the OCP air baffle.



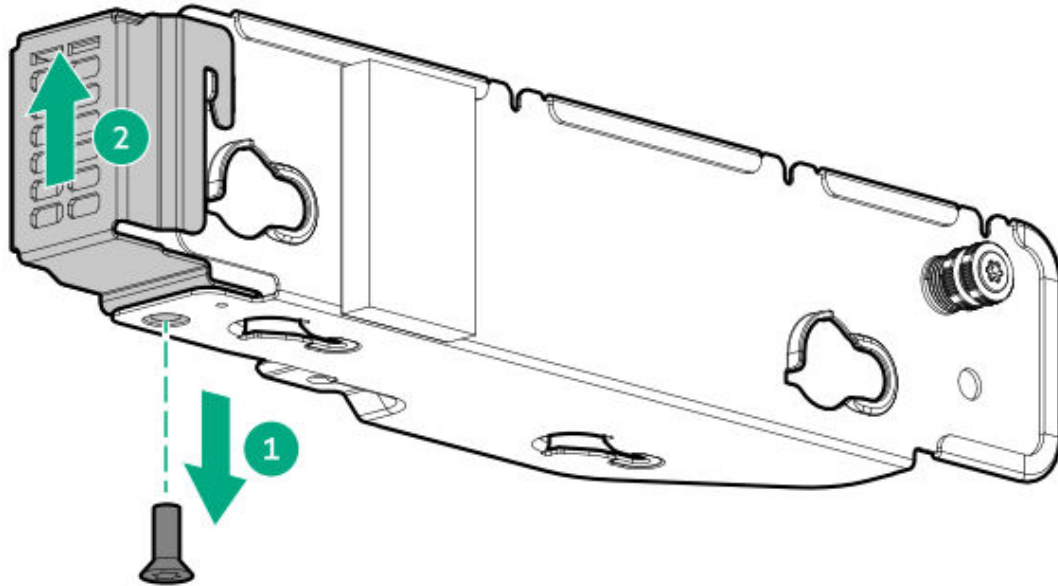
8. Remove the processor air baffle.



9. Remove the boot device bracket from the server.

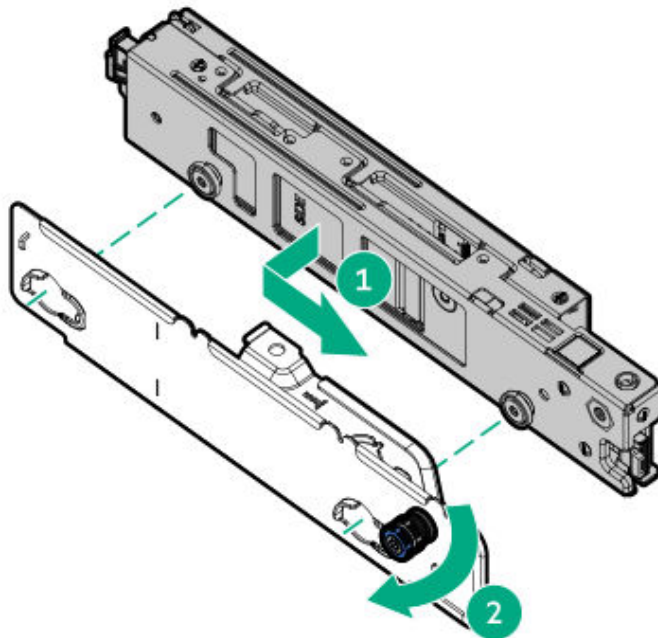


.0. Remove the boot device bracket blank.



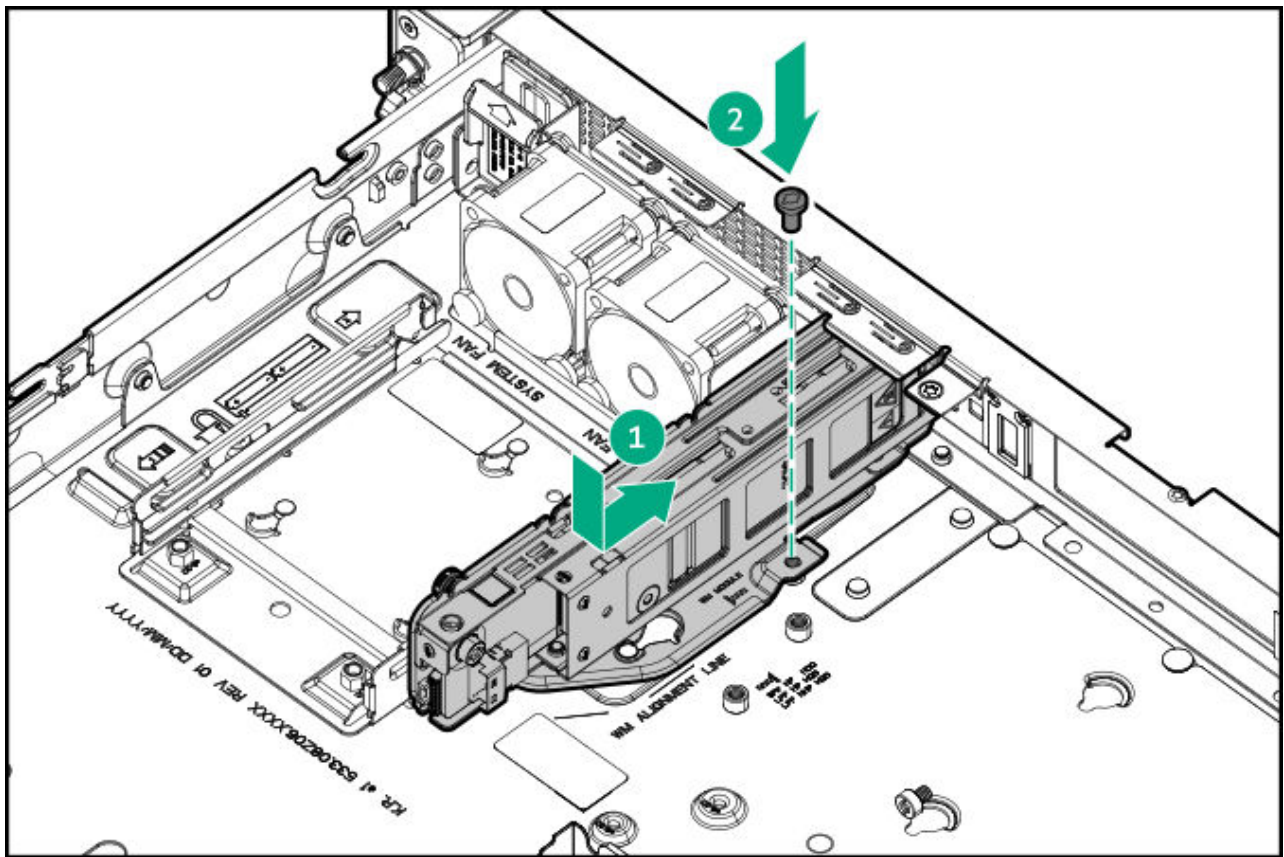
.1. Install the boot device bracket:

- a. Insert the spools on the boot device with the notches on the bracket.
- b. Tighten the bracket thumbscrew.

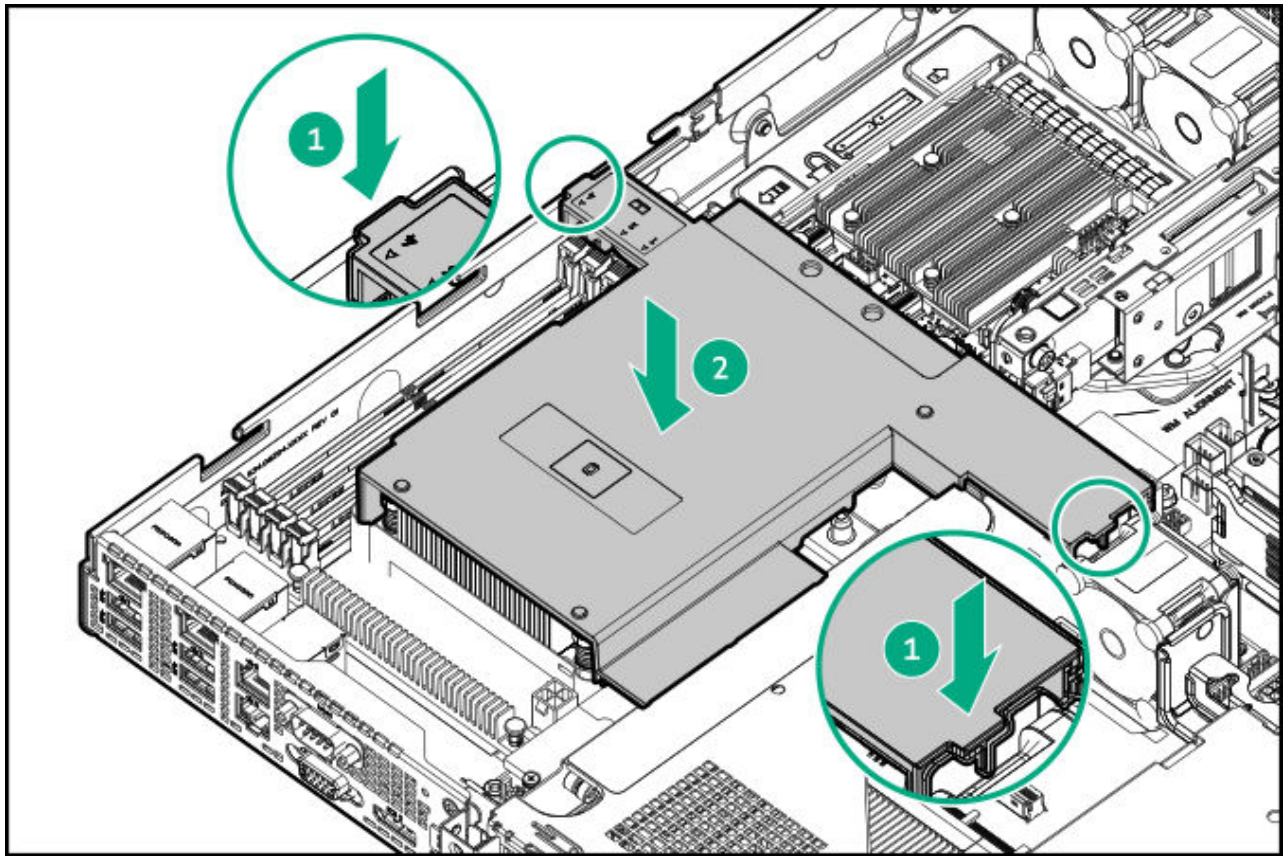


- .2. Connect the signal and power cables to the boot device.
- .3. Install the boot device.

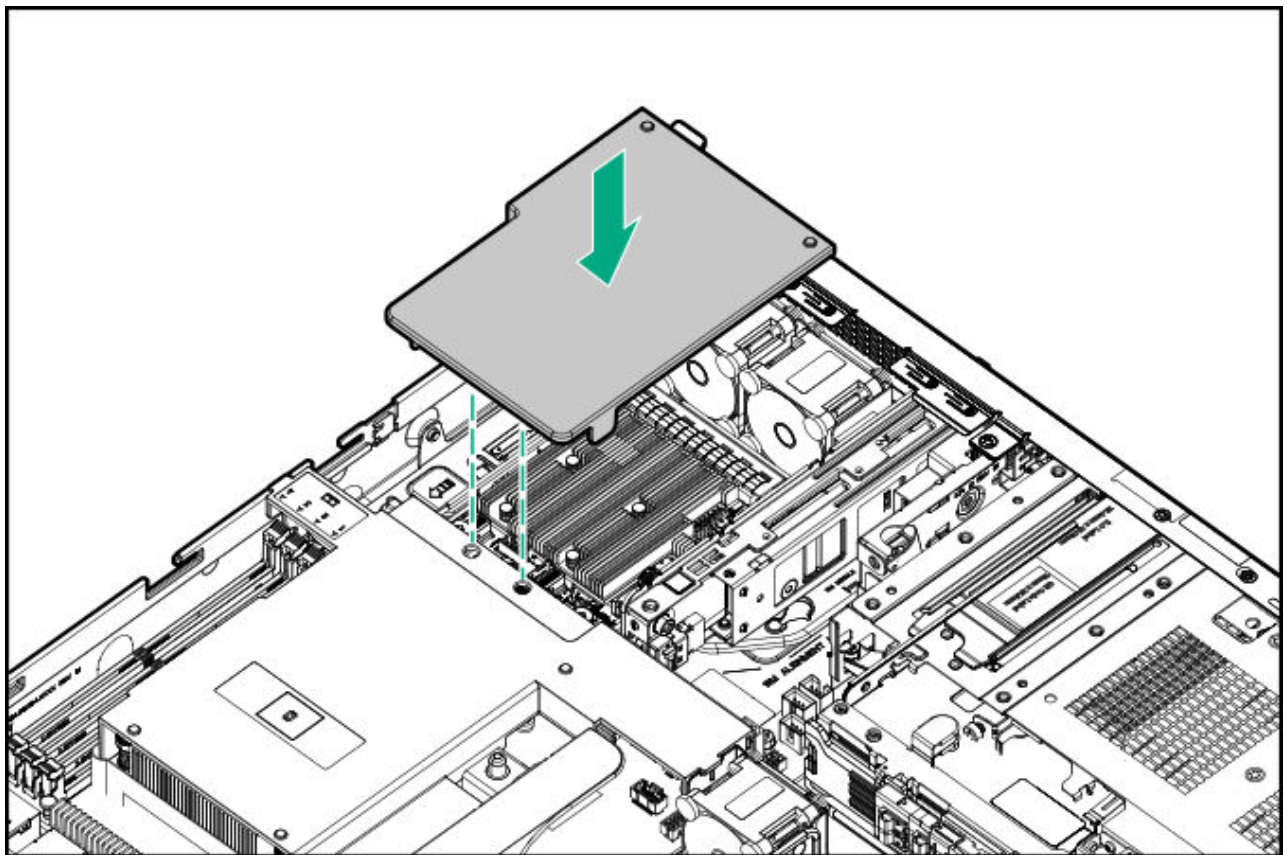
For clarity, the connected power and signal cables are not shown in the following image.



- .4. Connect the boot device signal and power cables to the PDB and mainboard.
- .5. Install the processor air baffle.



.6. Install the OCP air baffle.



- .7. [Install the access panel.](#)
- .8. [Install the server into the rack.](#)
- .9. Connect all peripheral cables to the server.
- !0. Connect each power cord to the server.
- !1. Connect each power cord to the power source.
- !2. [Power up the server.](#)
- !3. [Verify that the Online/Activity LEDs on the boot device are solid green.](#)
- !4. [Deploy a supported operating system to the boot device.](#)
- !5. After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

Proceed with normal system setup and operation.

Results

The installation procedure is complete.

OCP NIC 3.0 option

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

Subtopics

[Installing the OCP NIC 3.0 adapter](#)

Installing the OCP NIC 3.0 adapter

Prerequisites

- Review the [OCP slot population rules](#).
- Before you perform this procedure, make sure that you have the following items available:

- T-10 Torx screwdriver
- External OCP enablement cable option kit (P65411-B21)

About this task



CAUTION

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



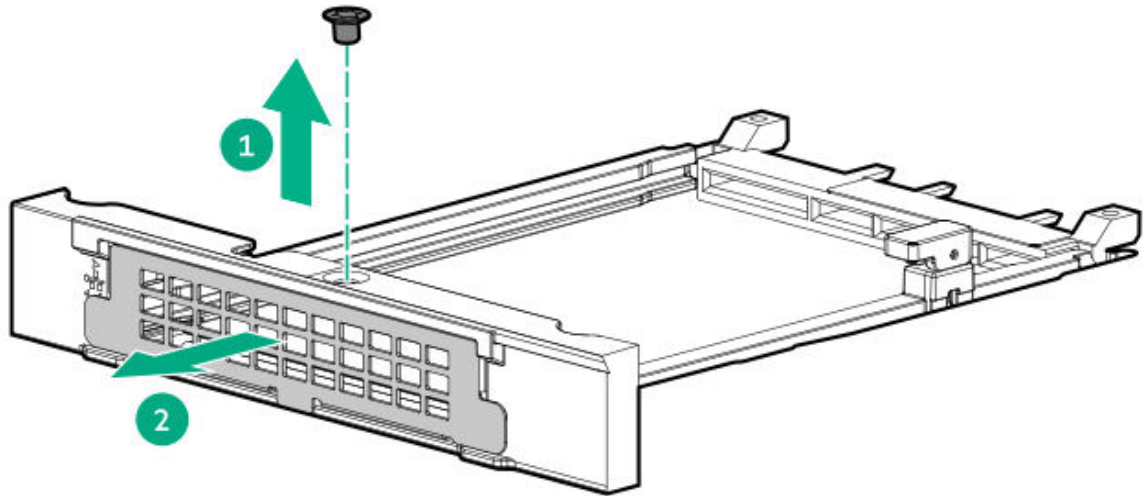
CAUTION

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

Procedure

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the riser cage.
8. Remove the OCP slot blank:
 - a. Remove the blank screw.
 - b. Remove the blank.

Retain the screw and blank for future use.

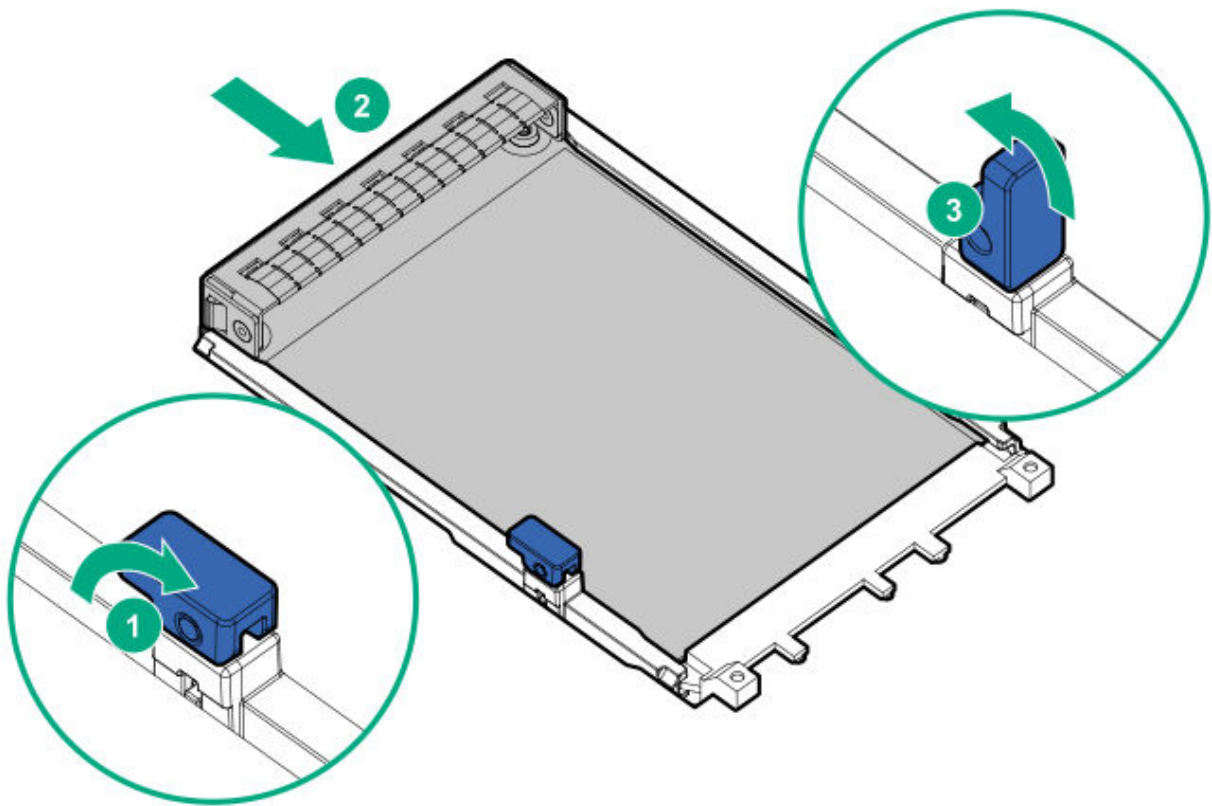


9. Install the OCP NIC:

- a. Rotate the locking pin to the open (vertical) position.
- b. Slide the OCP NIC into the bay until it clicks into place.

Ensure that the OCP NIC is seated firmly in the slot.

- c. Rotate the locking pin to the close (horizontal) position.



- .0. Connect the external OCP enablement cables.
- .1. Install the riser cage.
- .2. Install the access panel.
- .3. Install the server into the rack.
- .4. Connect all peripheral cables to the server.
- .5. Connect each power cord to the server.
- .6. Connect each power cord to the power source.
- .7. Power up the server.

Results

The installation procedure is complete.

iLO-M.2-serial module option

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

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

Subtopics

Installing the iLO-M.2-serial module

Installing the iLO-M.2-serial module

Prerequisites

- Identify the iLO-M.2-serial module components.
- Before you perform this procedure, make sure that you have the following items available:
 - Spudger or any small prying tool
 - T-15 Torx screwdriver
 - Phillips No. 1 screwdriver
 - 4.775 mm hex screwdriver—This tool is required for installing the serial port cable.
 - 4.5 mm hex nut screwdriver—The 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 antistatic precautions.

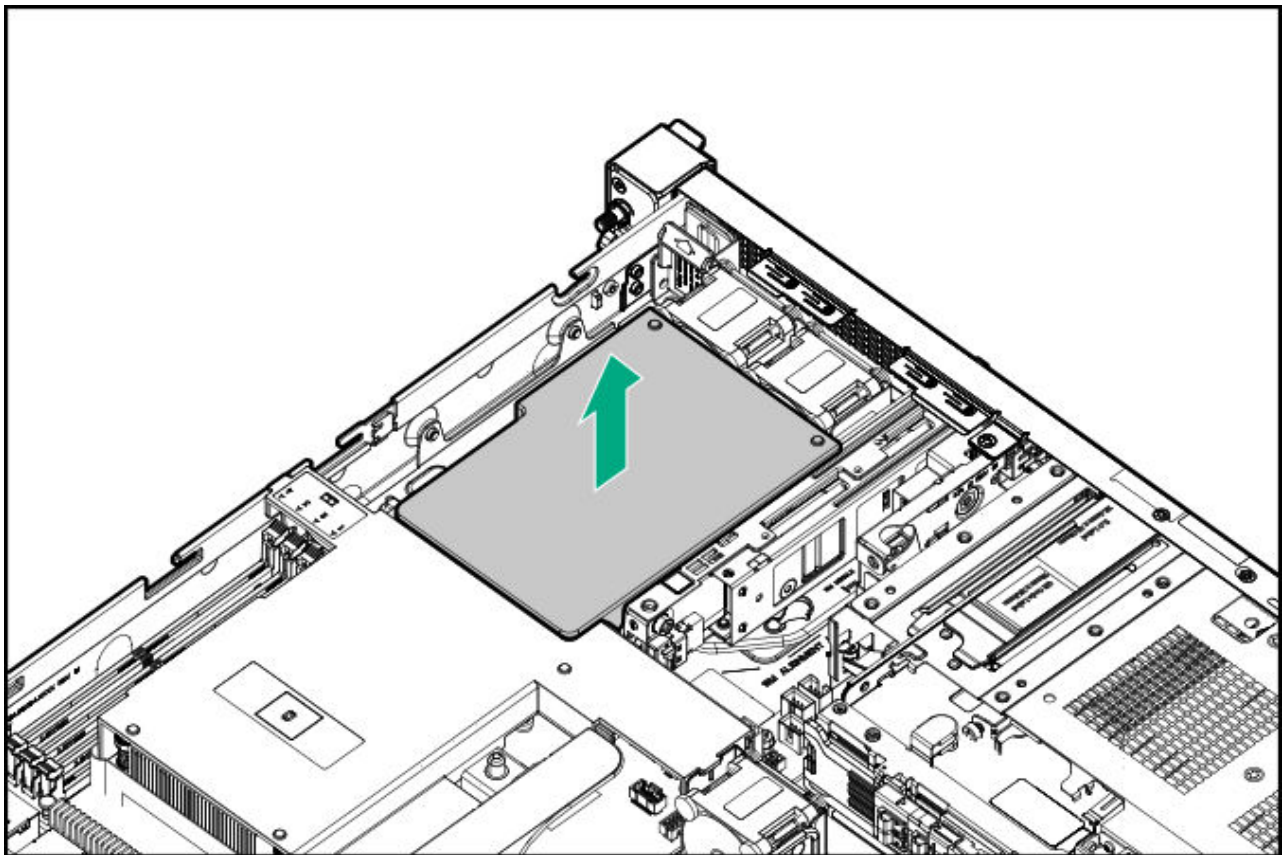


CAUTION

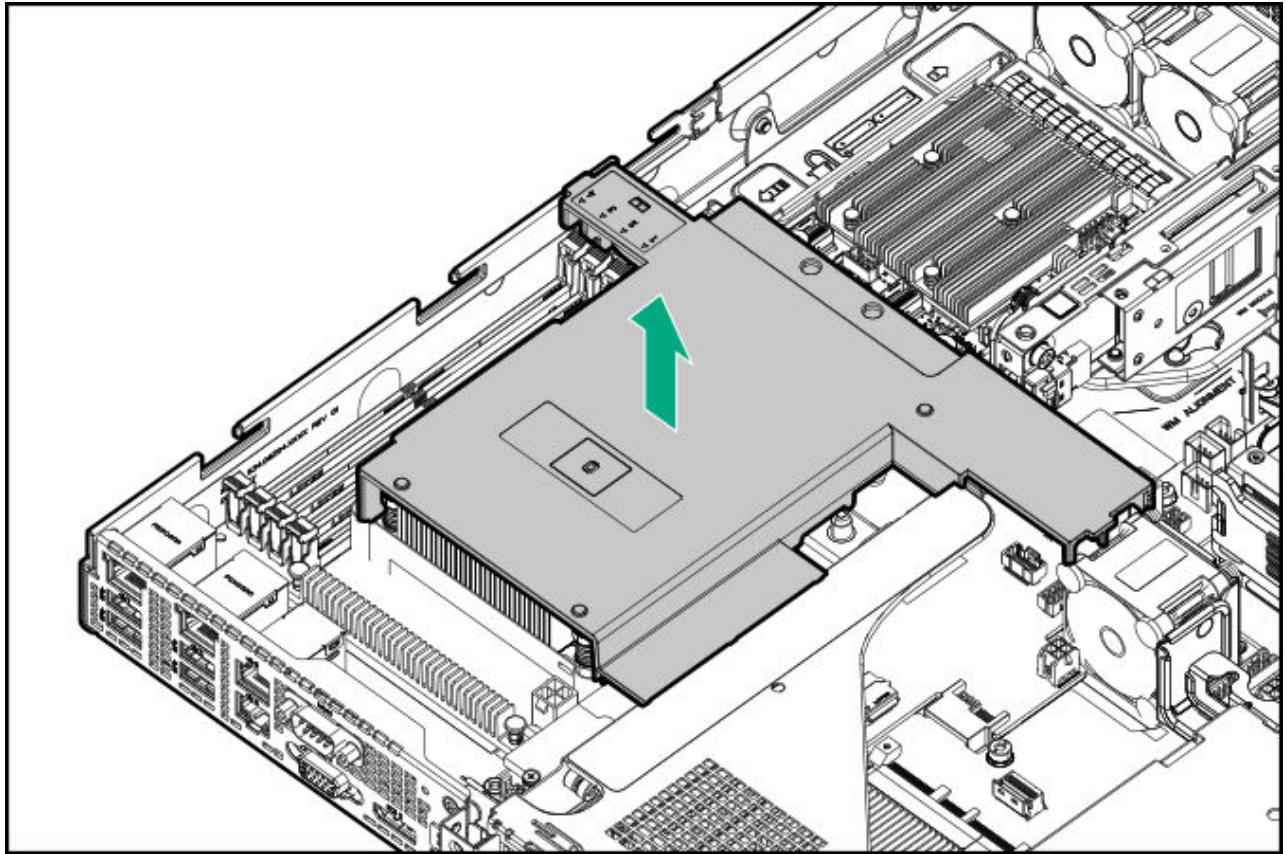
The port blank provides EMI shielding and helps maintain proper thermal status inside the server. Do not operate the server when a port blank is removed without the corresponding I/O port option installed.

Procedure

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the OCP air baffle.

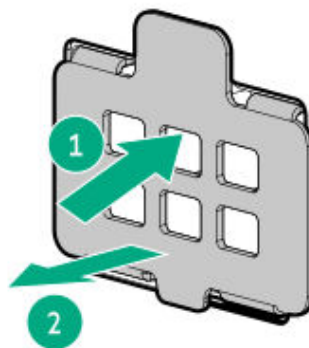


8. Remove the processor air baffle.

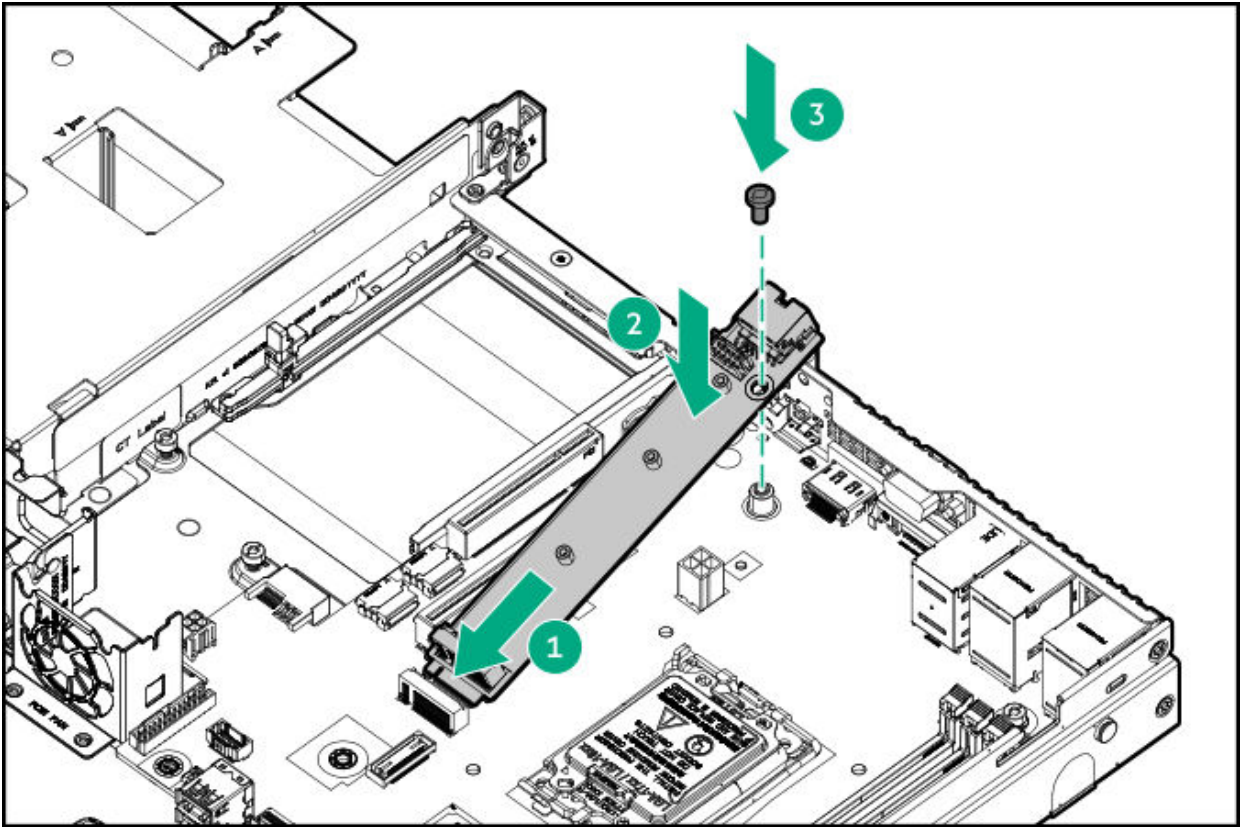


Installing the iLO-M.2-serial module

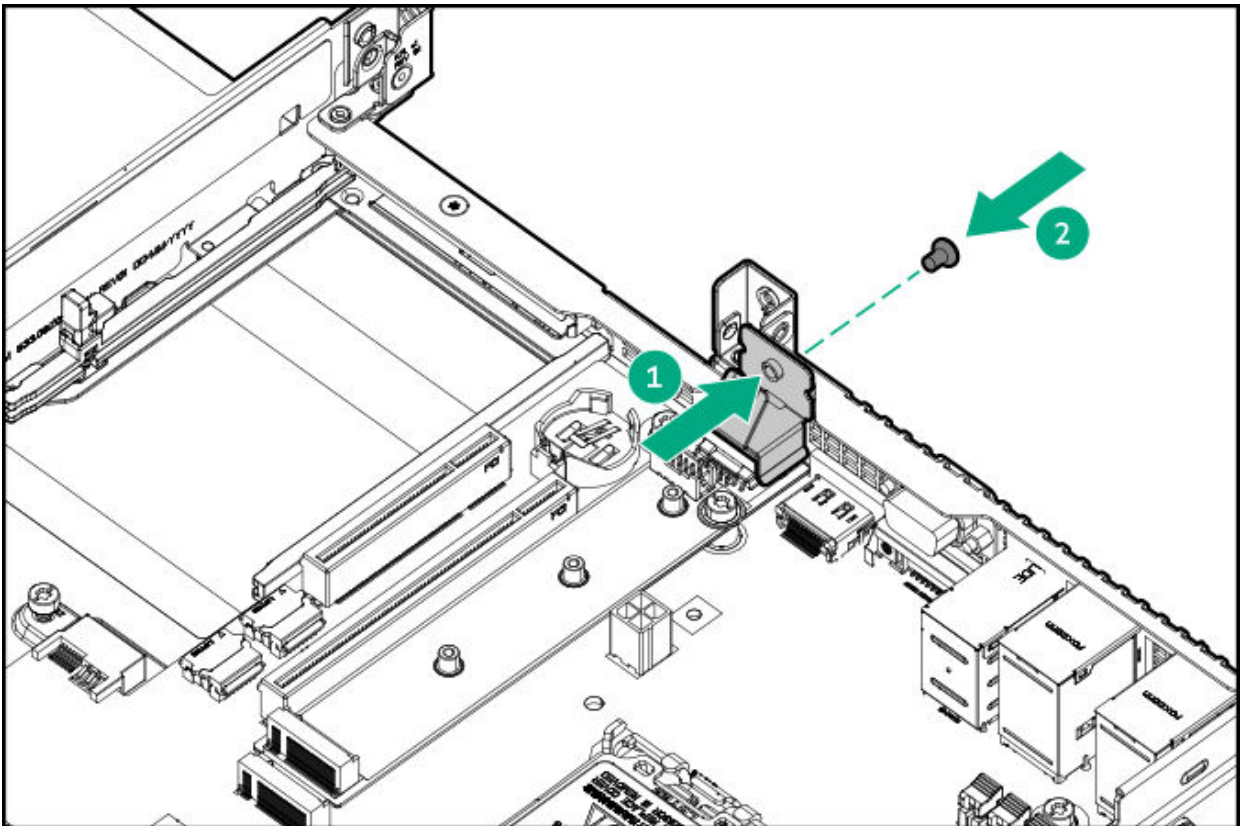
9. Remove the iLO dedicated network port blank:
 - a. Use a spudger to pry the blank from the chassis.
 - b. Remove the blank.



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 that is included in the module kit.



d. Install the module stabilizer.

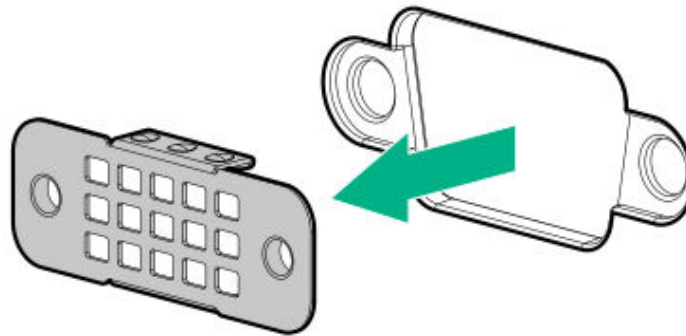


- .1. (Optional) Install an M.2 SSD on the module.

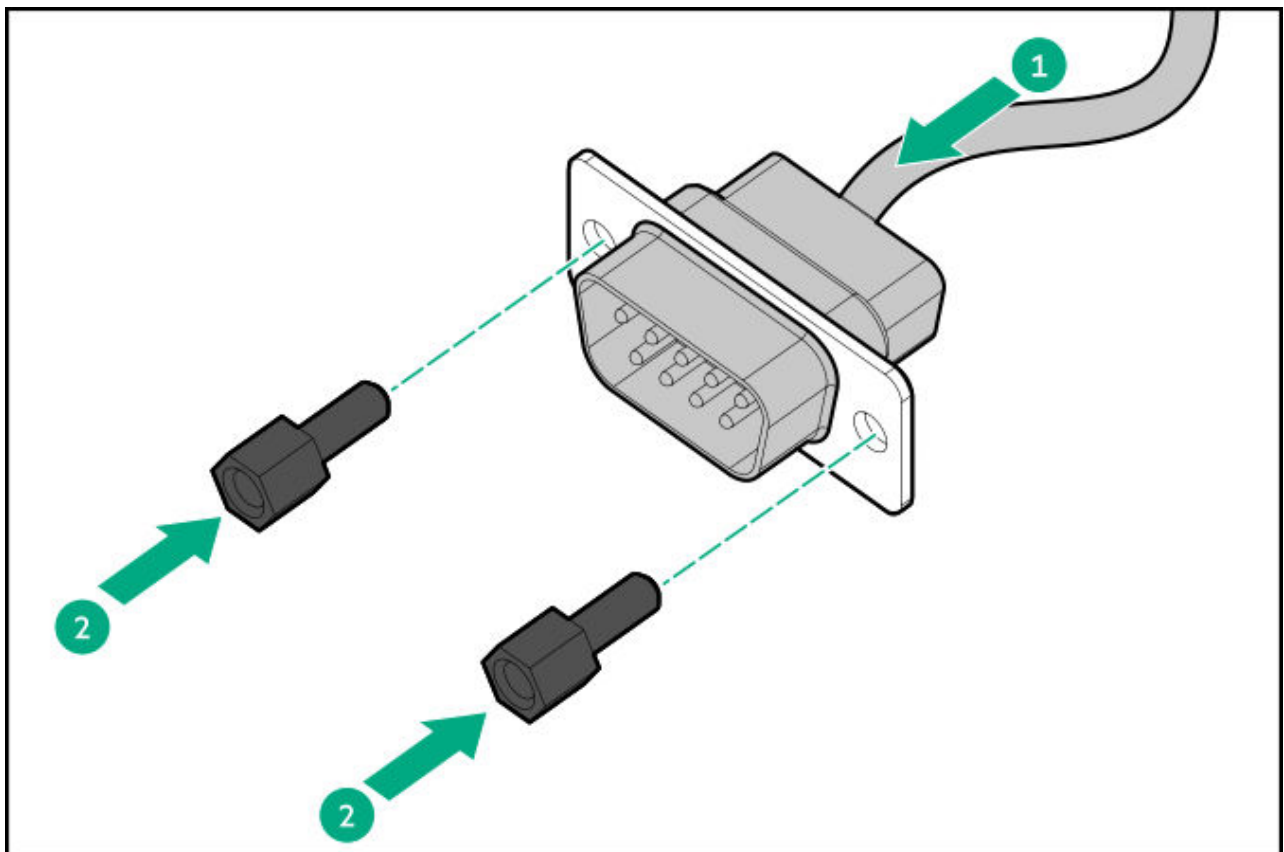
Installing the serial port

- .2. Remove the serial port blank.

Retain the blank for future use.



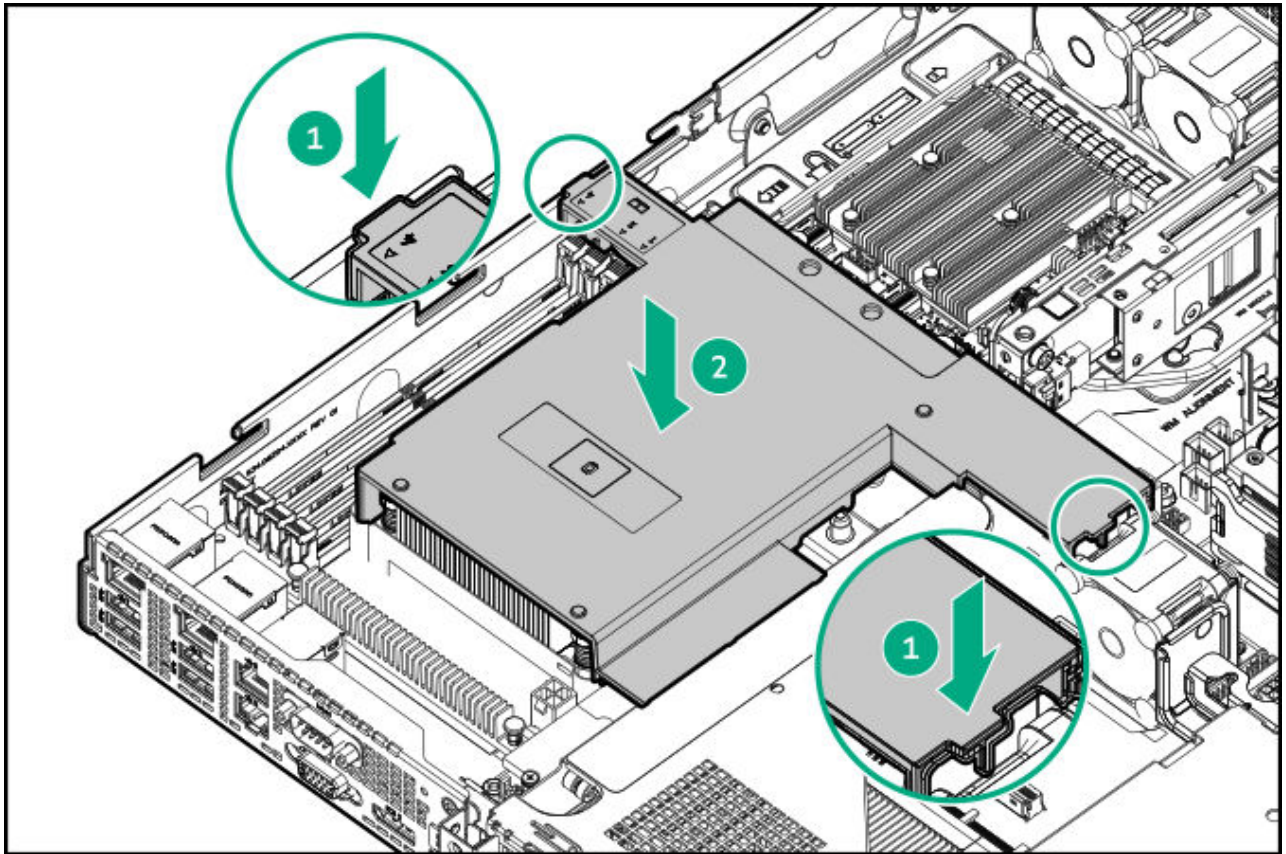
- .3. Install the serial port cable:
 - a. Insert the serial port into the rear panel opening.
 - b. Install the hex screws.



.4. Connect the serial port cable to the iLO-M.2-serial module.

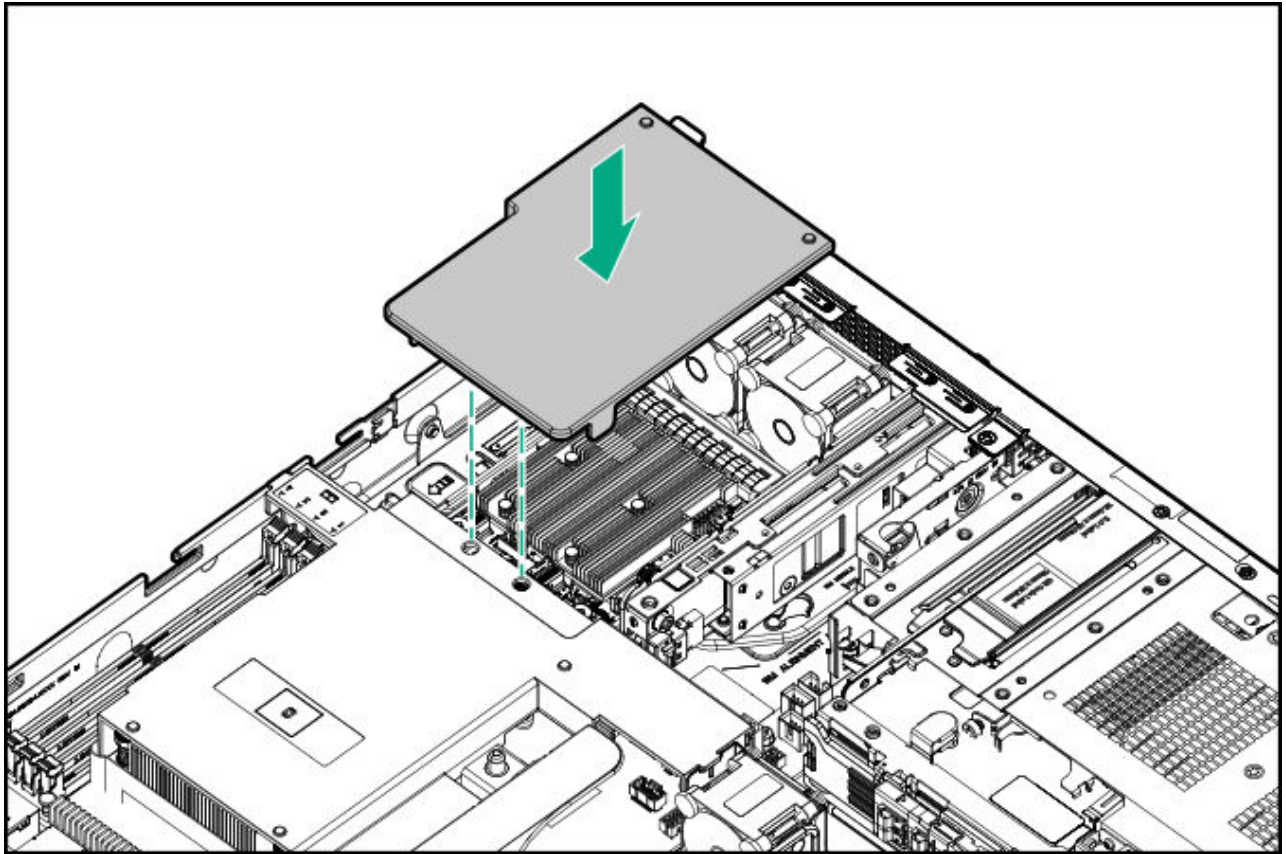
Completing the installation

.5. Install the processor air baffle.



.6. Install the OCP air baffle.

!3.



- .7. Install the access panel.
- .8. Install the server into the rack.
- .9. Connect all peripheral cables to the server.
- !0. Connect each power cord to the server.
- !1. Connect each power cord to the power source.
- !2. Power up the server.

Enabling the iLO dedicated network port



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

4. To configure the serial port setting:

- a. From the boot screen, press **F9** to access the UEFI System Utilities.
- b. From the **System Utilities** screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > System Options > Serial Port Options > Embedded Serial Port**.
- c. Select a setting.
- d. Press **F12** key to save your selection.
- e. Click **Yes-Save Changes**.
- f. Click **Reboot**.

Results

The installation procedure is complete.

M.2 SSD option

The M.2 slot on the mainboard does not support direct SSD installation. This slot instead supports the [iLO-M.2 serial module](#). Use this module to install an NVMe SSD in 2280 or 22110 form factor.

Install an M.2 SSD for:

- Booting up from flash solution
- Data backup/redundancy

Subtopics

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—The tool is required when installing an M.2 SSD.

About this task

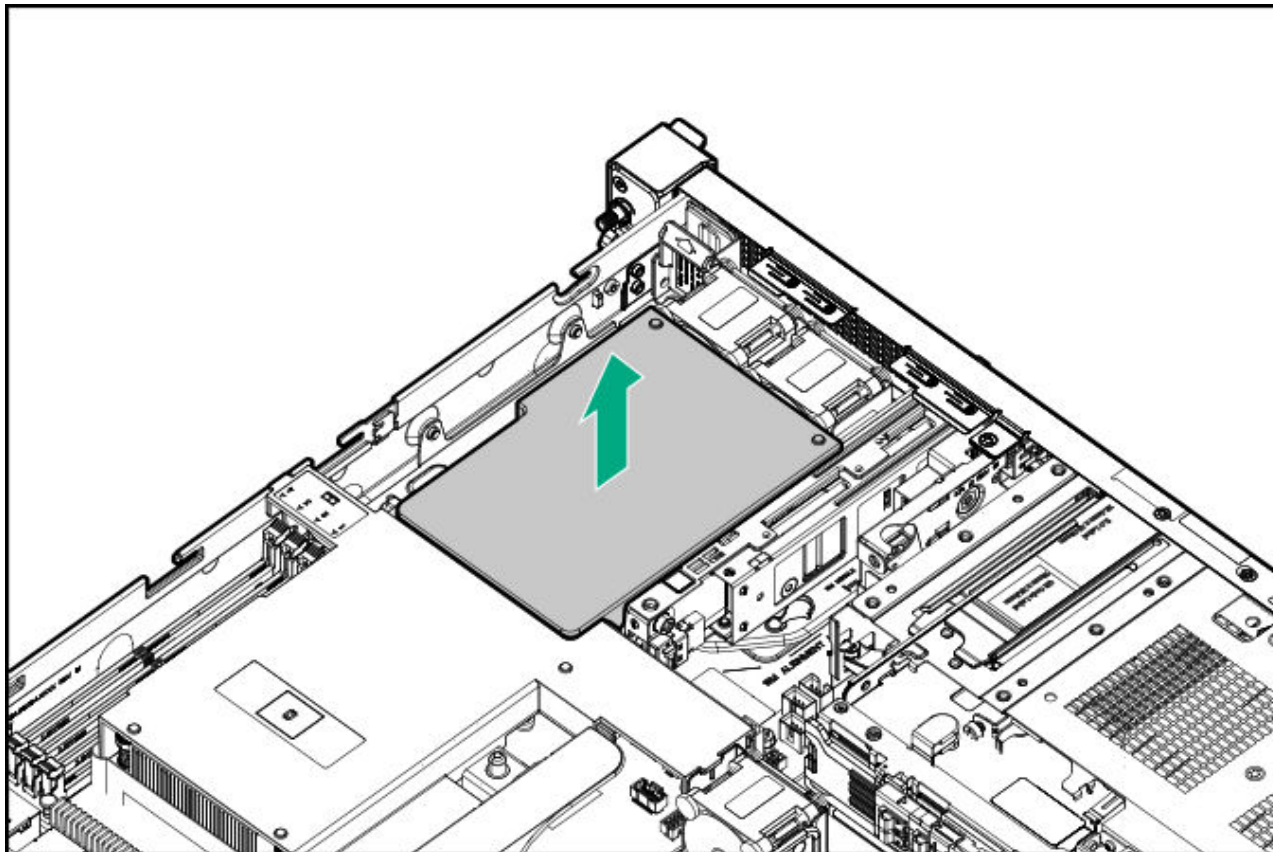


CAUTION

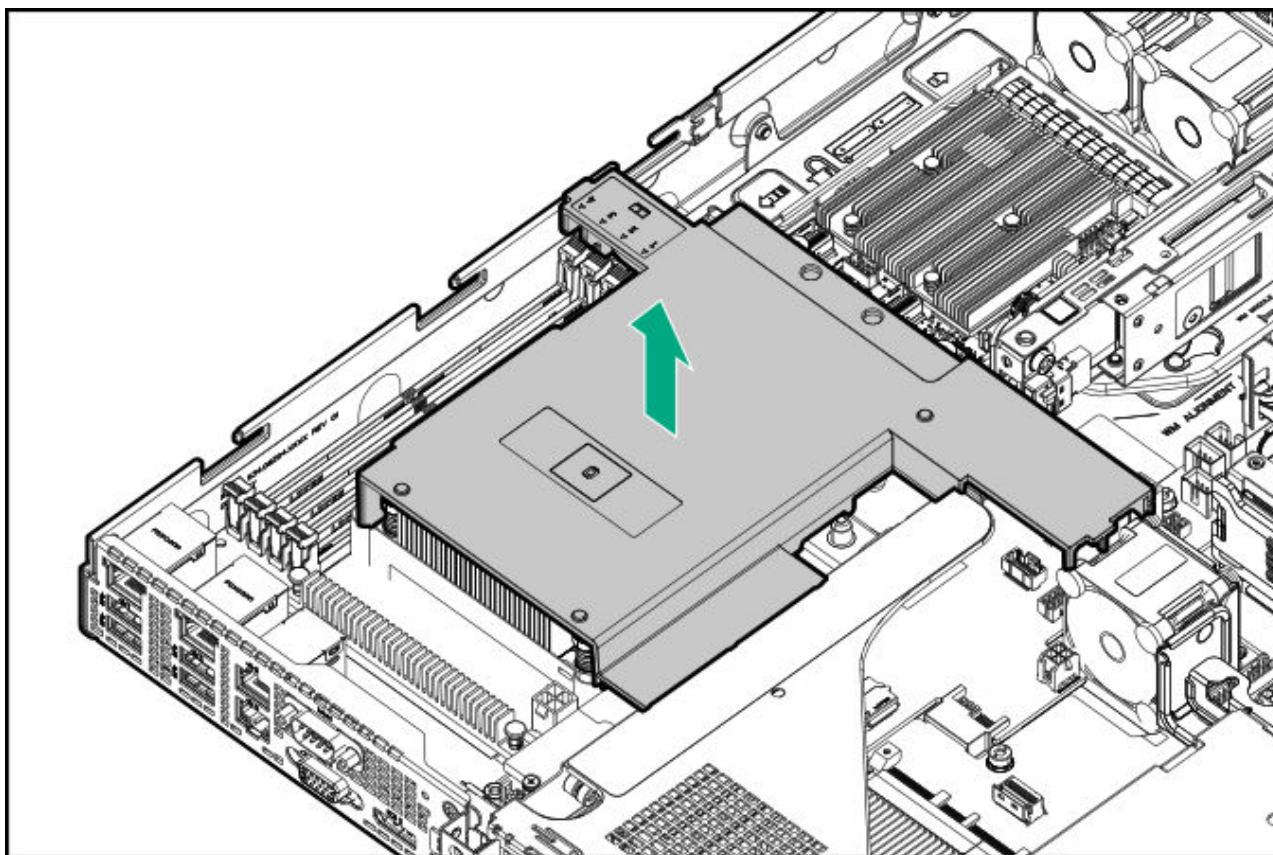
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the OCP air baffle.

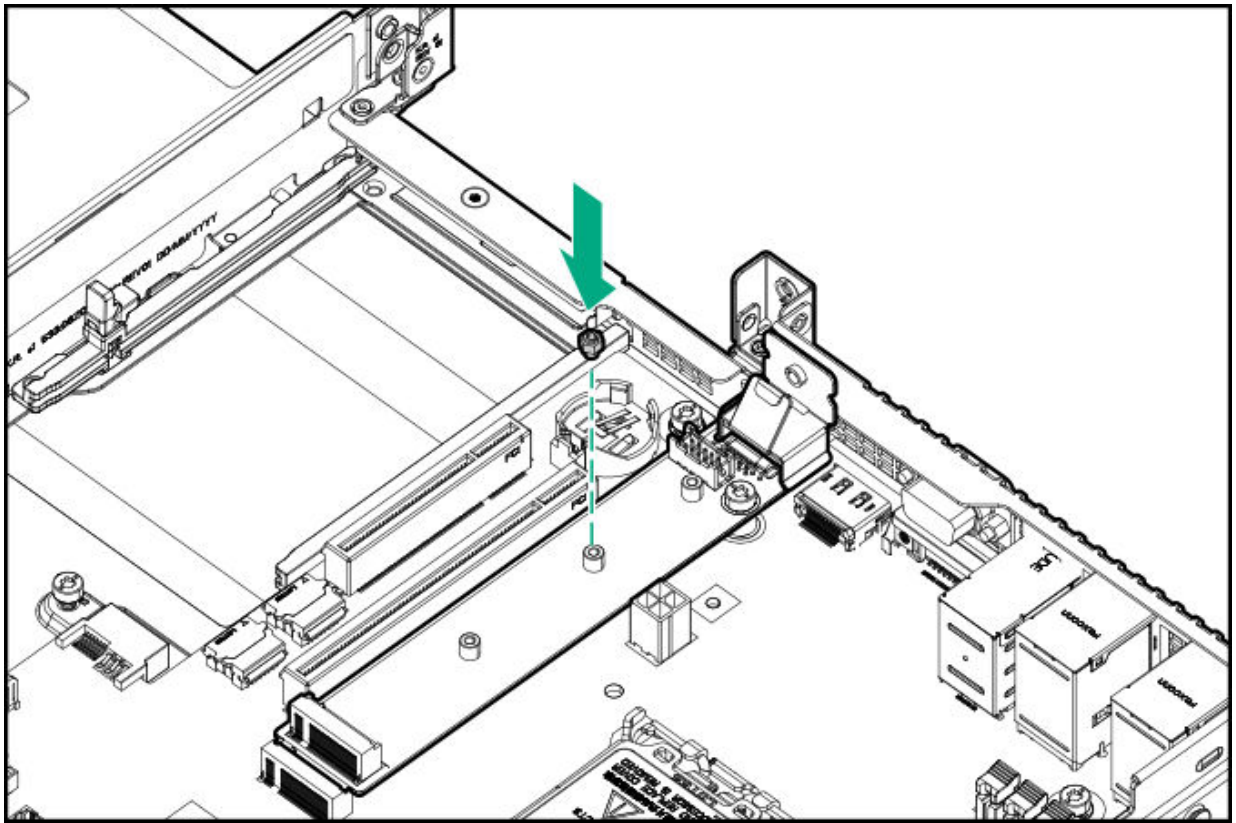


8. Remove the processor air baffle.

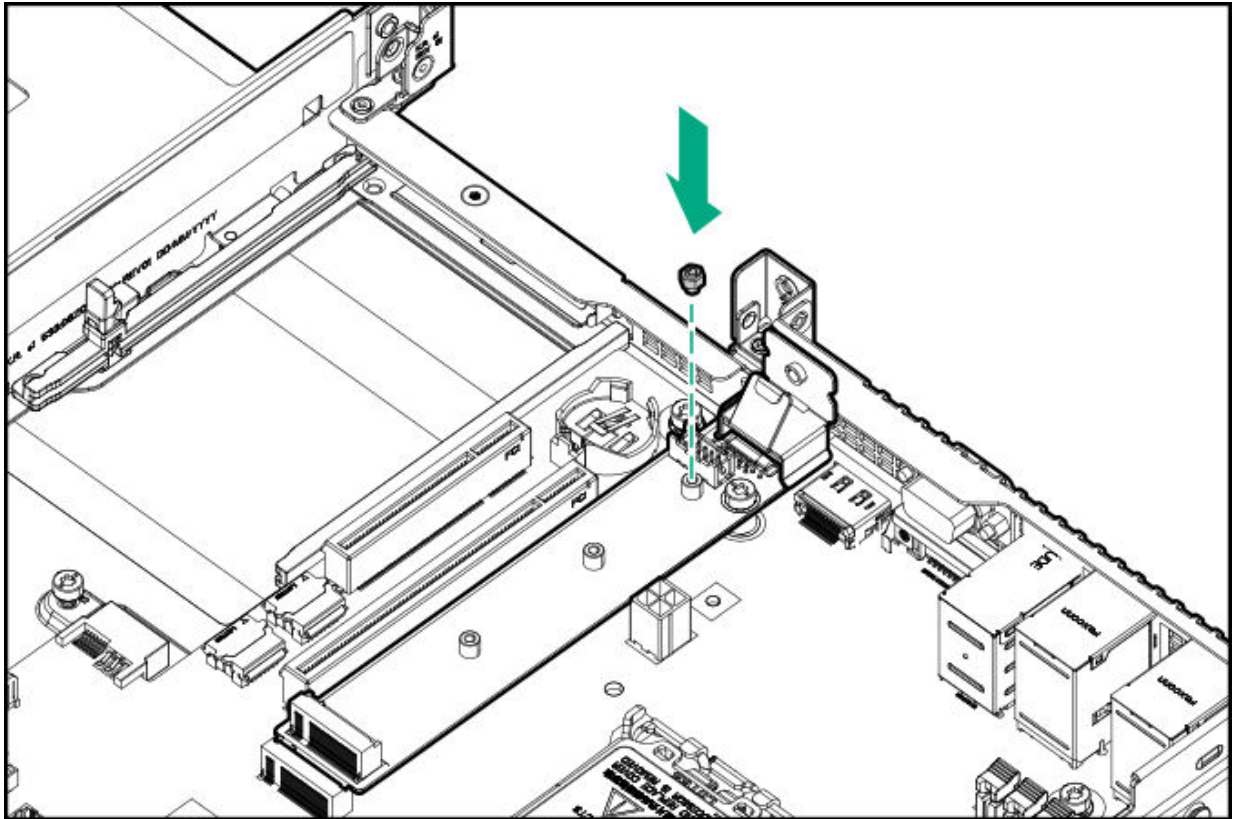


9. Install the hex nut from the iLO-M.2 serial module option kit on the M.2 standoff location.

- M.2 2280

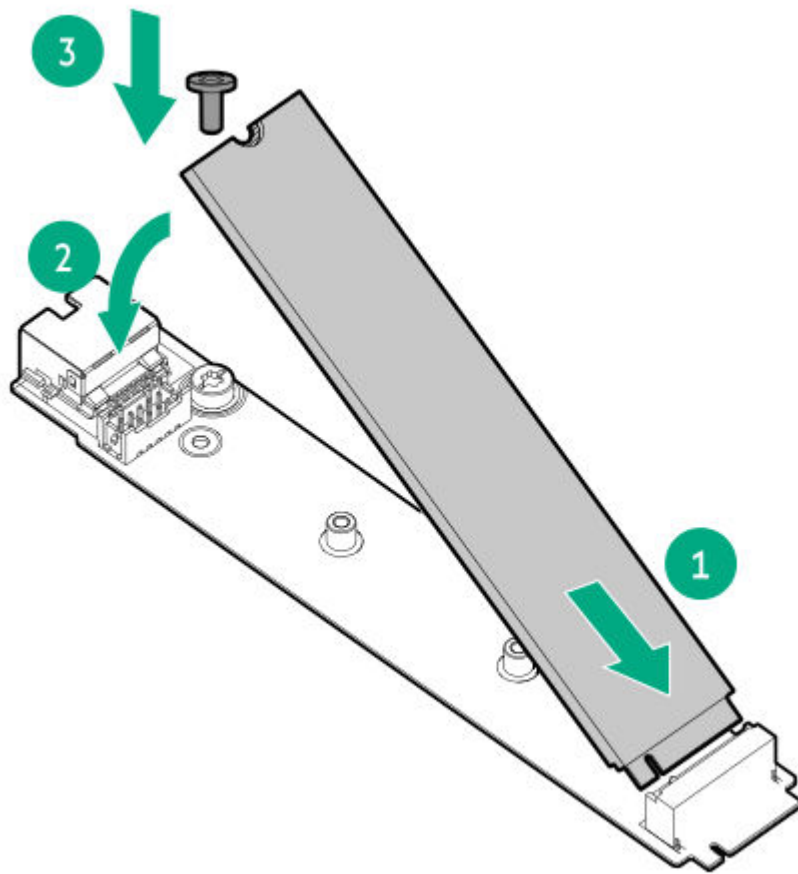


- M.2 22110

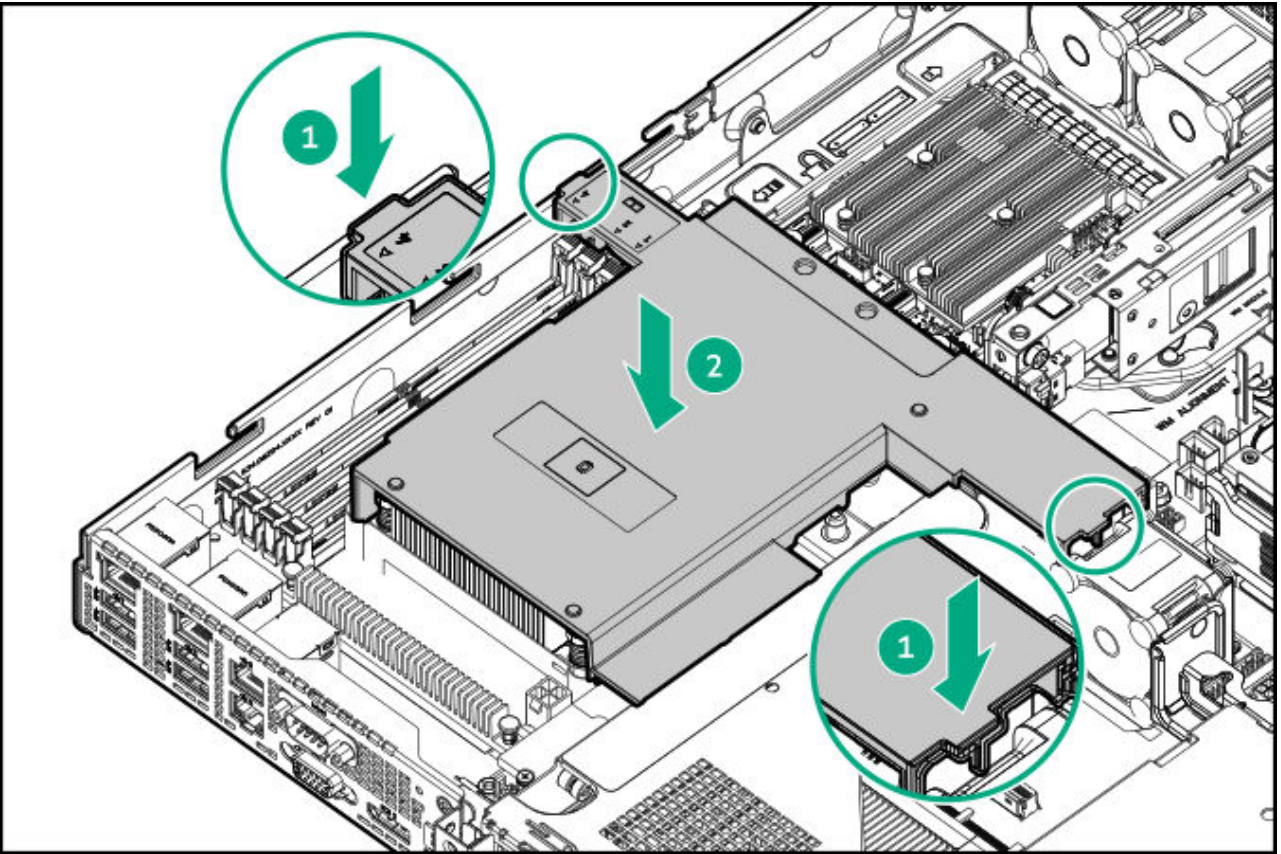


.0. Install the SSD:

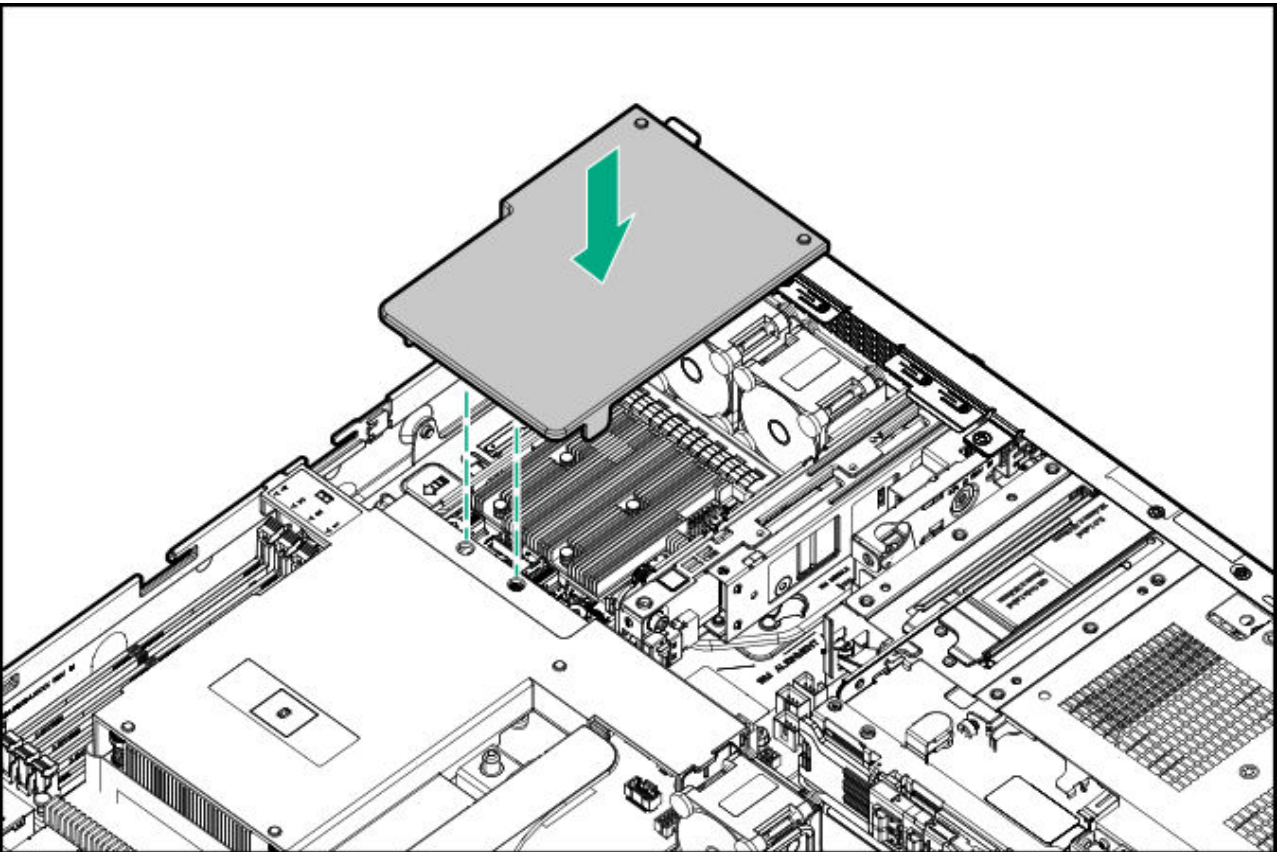
- a. Insert the SSD on the iLO-M.2 serial module at a 45° angle.
- b. Carefully press the SSD down to the horizontal position.
- c. Install the SSD mounting screw.



.1. Install the processor air baffle.



.2. Install the OCP air baffle.



- .3. [Install the access panel.](#)
- .4. [Install the server into the rack.](#)
- .5. Connect all peripheral cables to the server.
- .6. Connect each power cord to the server.
- .7. Connect each power cord to the power source.
- .8. [Power up the server.](#)
- .9. To configure the M.2 SSD, use the native OS NVMe driver. See the related OS documentation.

Results

The installation procedure is complete.

Chassis intrusion detection switch option

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

Subtopics

[Installing the chassis intrusion detection switch](#)

Installing the chassis intrusion detection switch

About this task



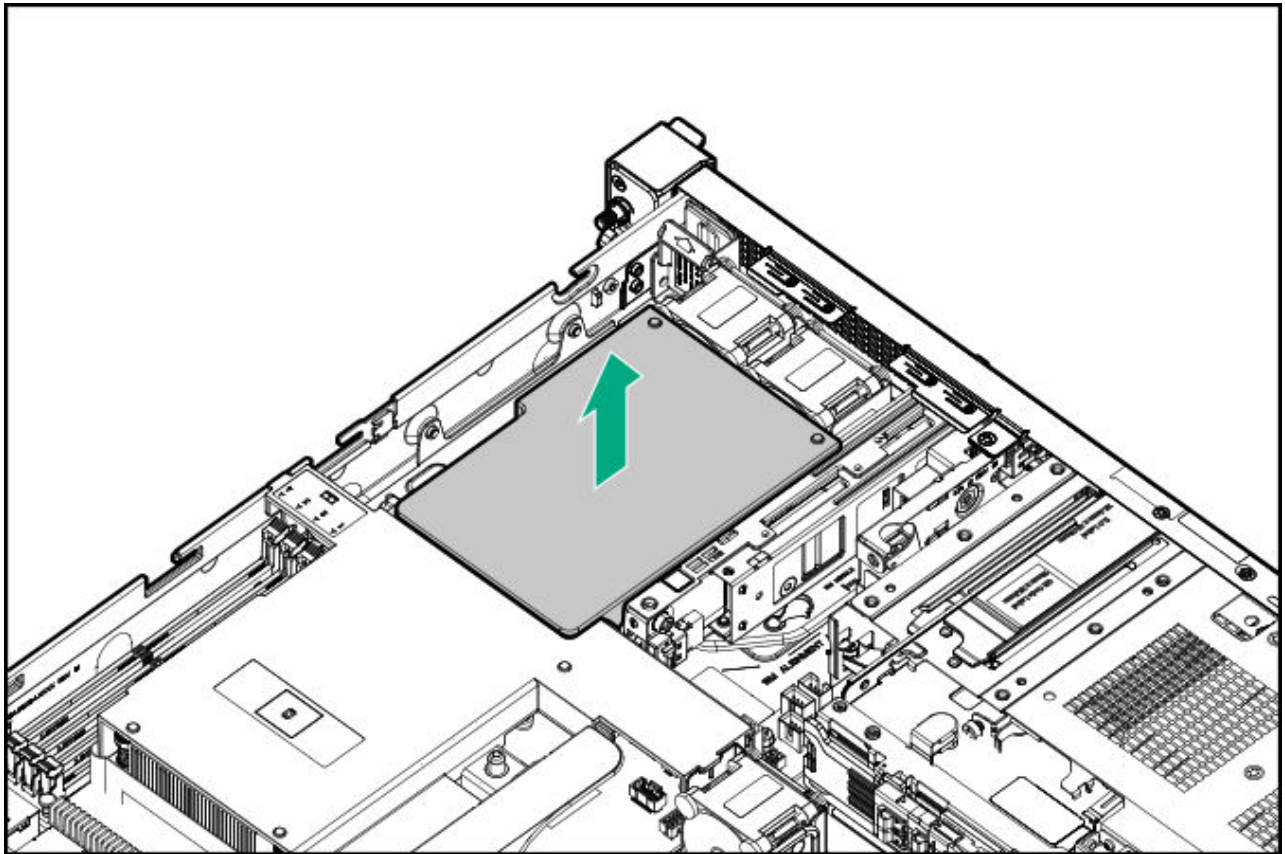
CAUTION

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

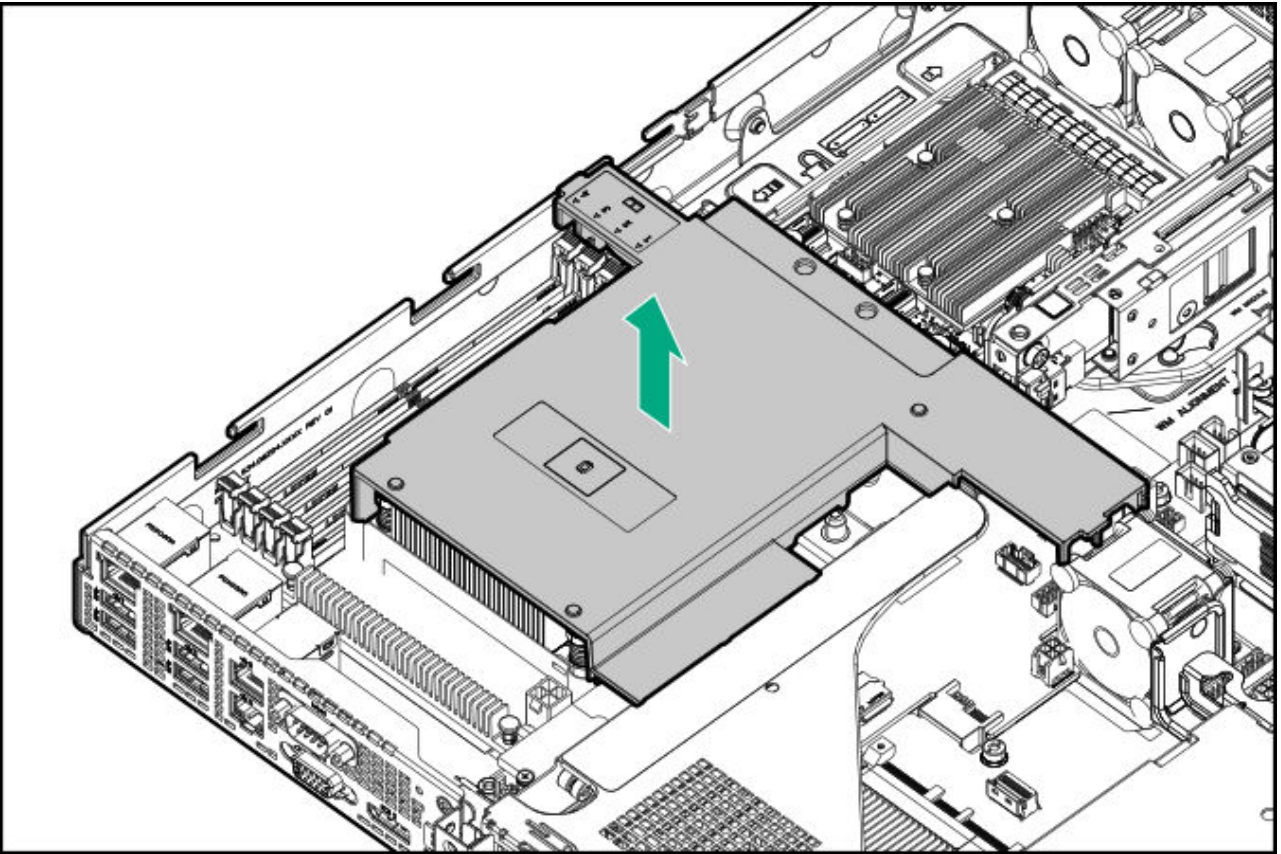
Procedure

1. [Power down the server.](#)

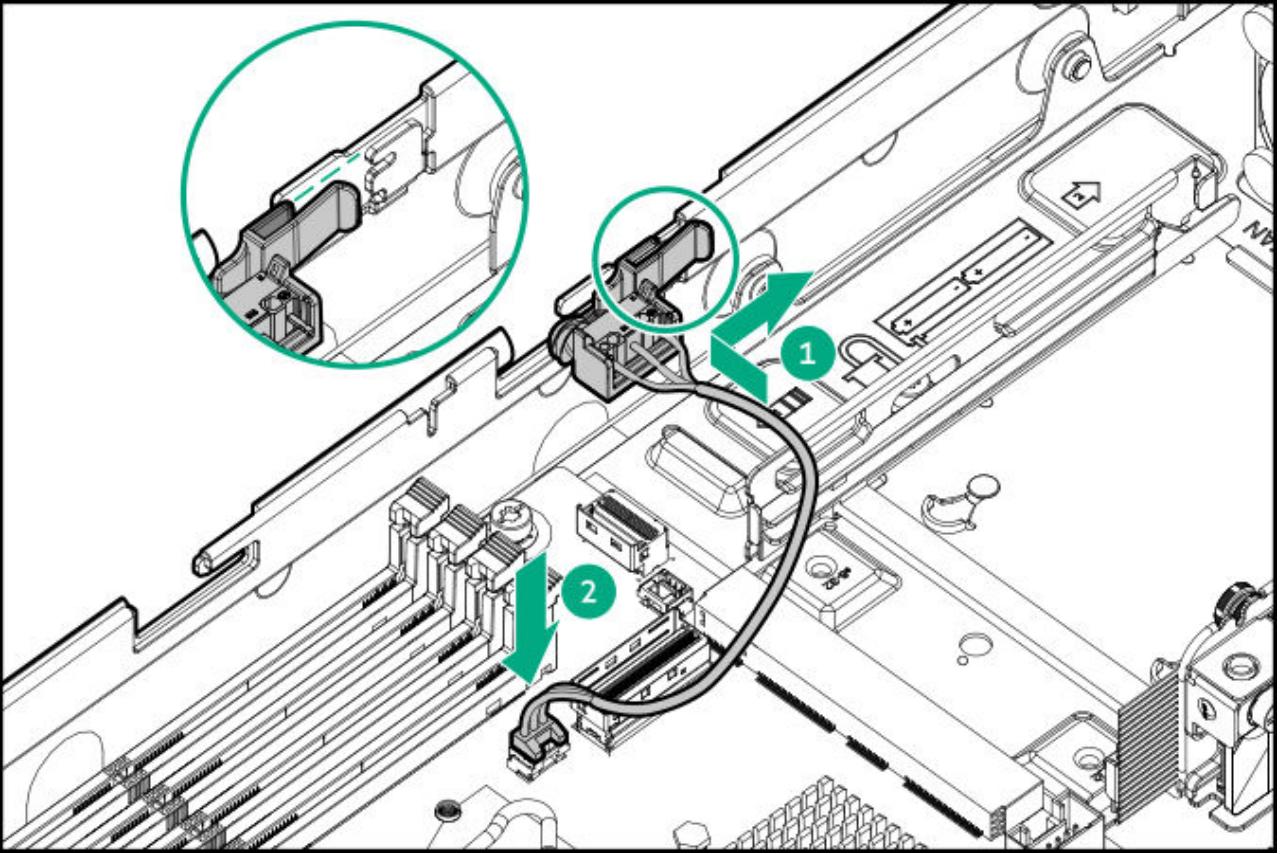
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the OCP air baffle.



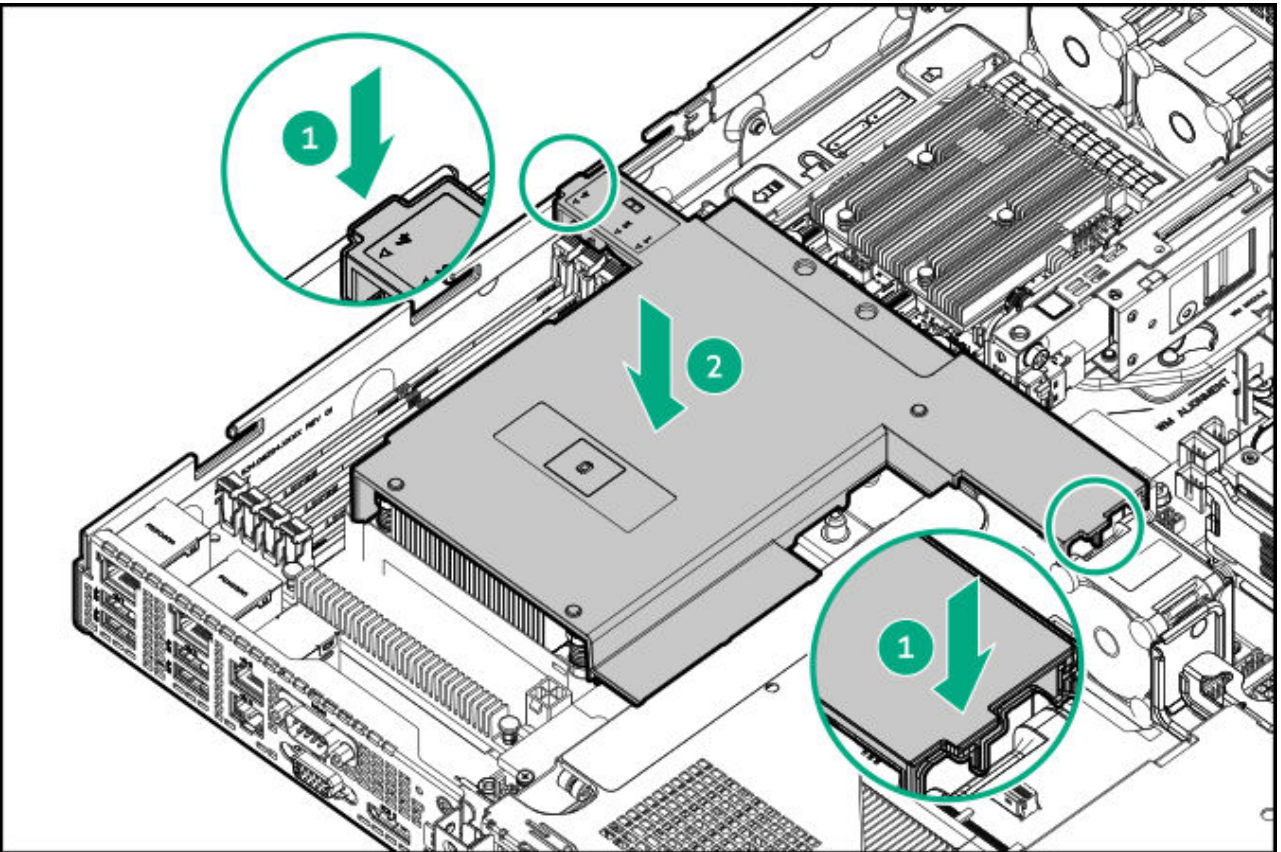
8. Remove the processor air baffle.



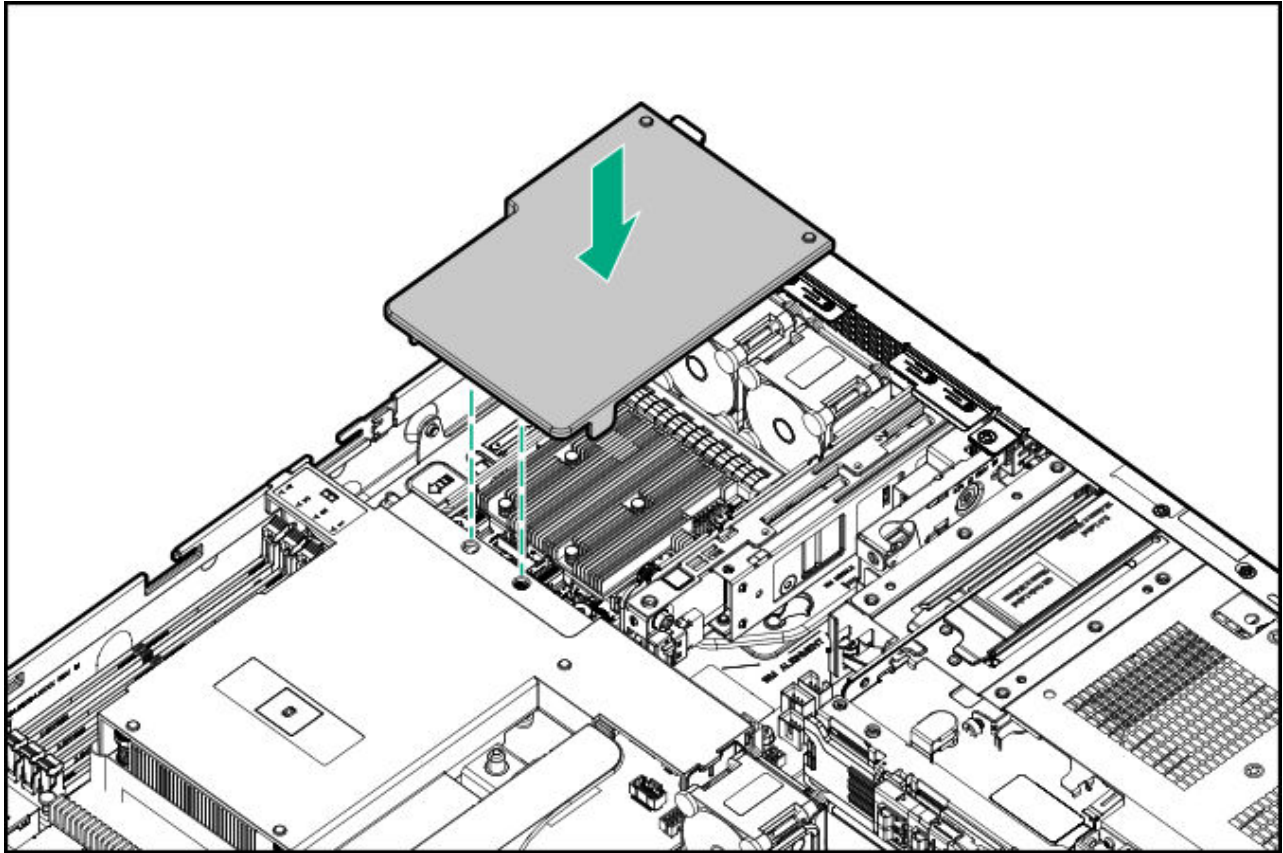
9. Install the chassis intrusion detection switch:
 - a. Insert the switch tab into the chassis slot until the switch clicks into place.
 - b. Connect the switch cable, and route the rest of the cable.



10. Install the processor air baffle.



- .1. Install the OCP air baffle.



- .2. Install the access panel.
- .3. Install the server into the rack.
- .4. Connect all peripheral cables to the server.
- .5. Connect each power cord to the server.
- .6. Connect each power cord to the power source.
- .7. Power up the server.

Results

The installation procedure is complete.

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

Internal USB device options

The server has stacked, internal dual USB 3.2 Gen 2 ports that you can use to install an internal USB flash media device for:

- booting up from flash solution
- data backup/redundancy

Subtopics

Installing an internal USB device

Installing an internal USB device

About this task



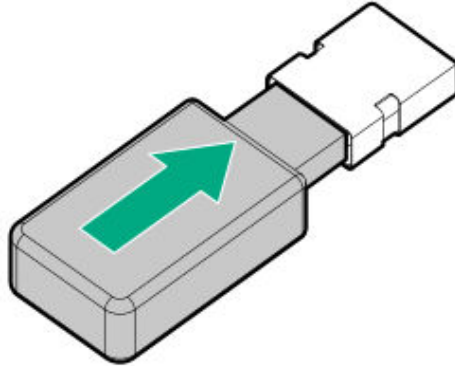
CAUTION

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

Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Locate the internal USB port.
8. To keep enough space for the internal USB, use a cable tie to secure the fan and front I/O cables that block the internal USB port.

9. Plug in the USB device into the USB port.



- .0. Install the access panel.
- .1. Install the server into the rack.
- .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. Power up the server.

Results

The installation procedure is complete.

Cabling

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

Subtopics

Cabling guidelines

Cabling diagrams

Internal cabling management

Storage cabling

Optical drive cabling

HPE NS204i-u Boot Device cabling

External OCP enablement cabling

Fan cabling

Chassis intrusion detection switch cabling

Serial port cabling

Front I/O cabling

System power cabling

Non-hot-plug power supply cabling

Cabling guidelines

Observe the following:



NOTE

The colors in the cabling diagrams are for illustration purposes only.



CAUTION

To avoid damaging connectors, avoid repeated installation and removal of cables. Excessive handling can shorten the lifespan of the cable.

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

Before connecting cables

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

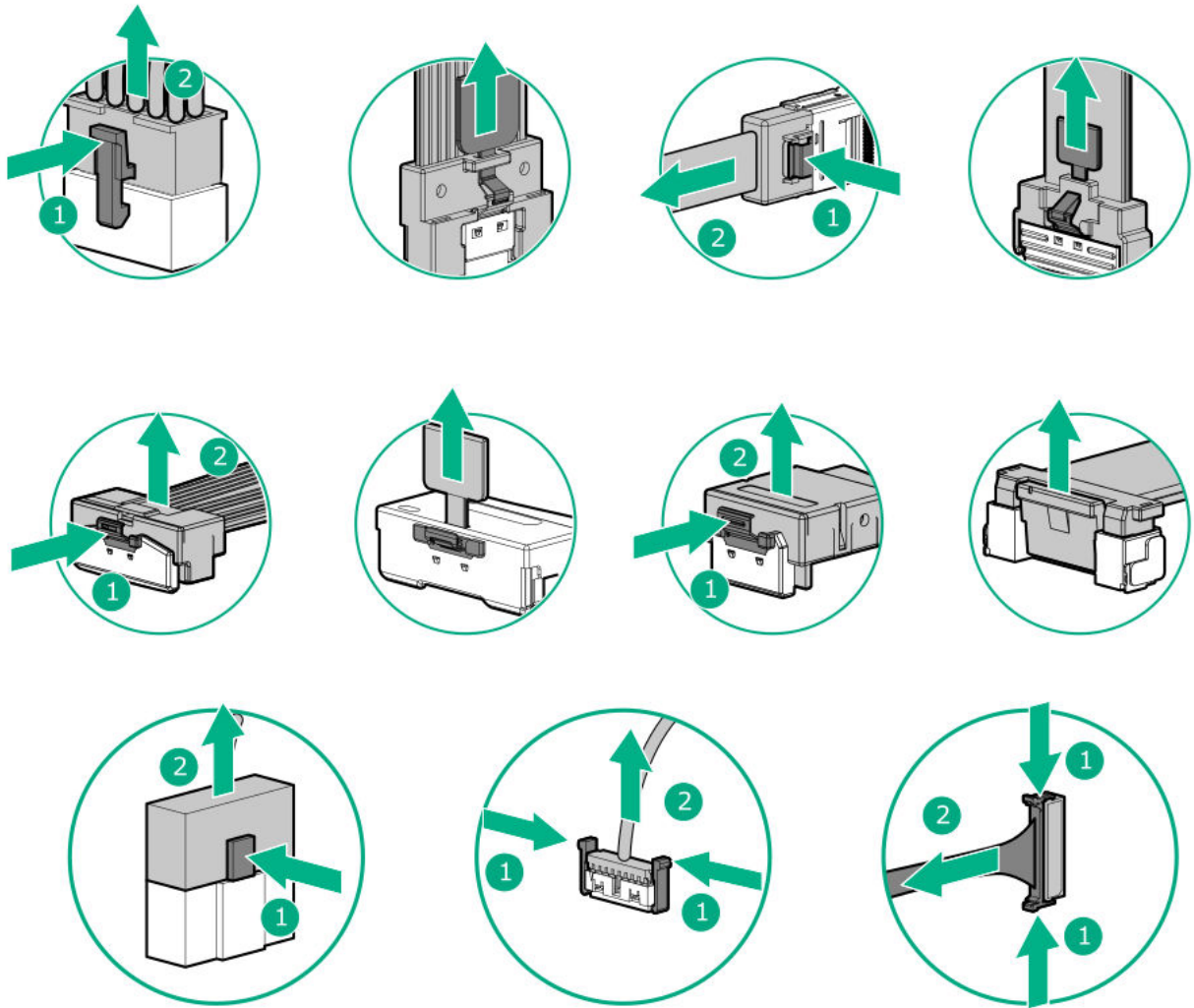
When connecting cables

- Before connecting a cable to a port, lay the cable in place to verify the length of the cable.
- Use the internal cable management features to properly route and secure the cables.
- Route cables so that they do not contact or rest on cooling components, including heatsinks. Ensure that cable routing does not obstruct airflow to or from heatsinks or ventilation openings
- 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.
- Before installing a new component or closing up the server, make sure that all cables are in their appropriate routing position. This cable check prevents component damage and potential signal interference.

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

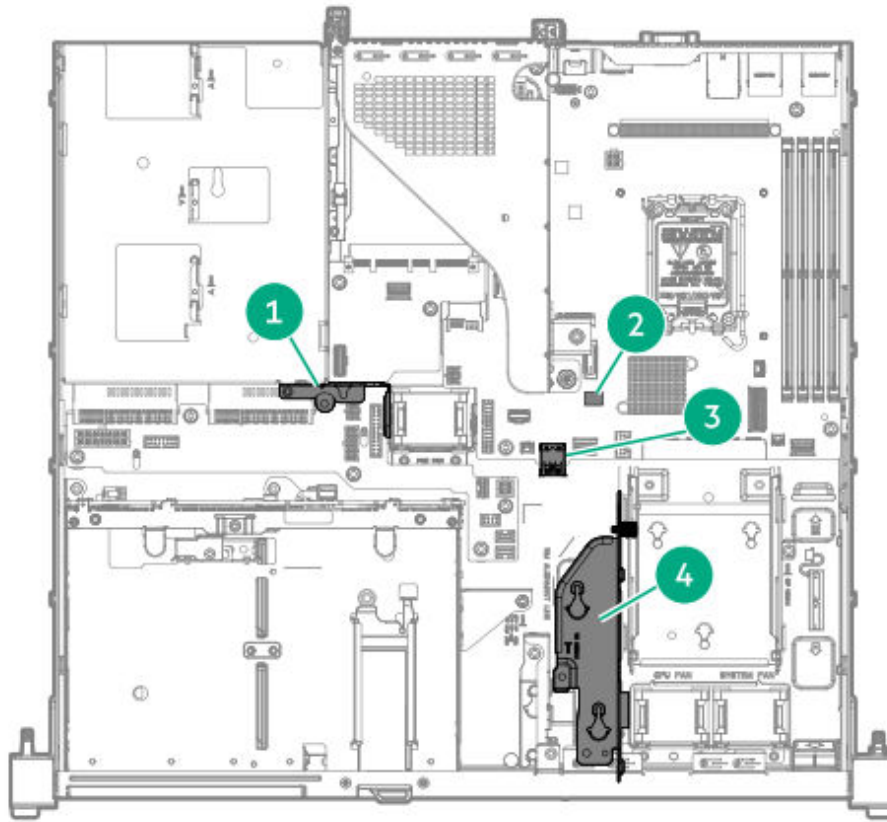
Observe the following:

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

Component cabling	Cable part number
2 LFF non-hot plug drive storage controller and power cable	<u>P63686-001</u>
2 LFF hot-plug drive storage controller cables	—
Onboard SATA cable	<u>P63692-001</u>
Type-o controller	<u>P63698-001</u>
Type-p controller	<u>P63695-001</u>
4 SFF hot-plug drive storage controller cables	—
Onboard SATA cable	<u>P63074-001</u>
Type-o controller cable	<u>P63698-001</u>
Type-p controller cable	<u>P63695-001</u>
4 + 2 SFF hot-plug drive storage controller cables	—
Box 1 drive onboard SATA cable	<u>P63074-001</u>
Box 2 drive onboard SATA cable	<u>P63694-001</u>
Boxes 1 and 2 cable to the single-port type-o controller	<u>P63699-001</u>
Box 1 cable to the dual-port type-o controller port 1	<u>P63700-001</u>
Box 2 cable to the dual-port type-o controller port 2	<u>P63698-001</u>
Box 1 cable to the type-p controller port 1	<u>P63696-001</u>
Box 2 cable to the type-p controller port 2	<u>P63695-001</u>
Drive power cables	—
2 LFF hot-plug drive power cable	<u>P63687-001</u>
4 SFF hot-plug drive power cable	<u>P63688-001</u>
4 + 2 drive power cables	—
Box 1	<u>P06066-001</u>
Box 2	<u>P63688-001</u>
Storage controller backup cable	<u>877850-001</u>
Optical drive cable: 2 LFF non-hot-plug drive configuration	—
Signal + power cable	<u>P63686-001</u>
Optical drive cable: 2 LFF hot-plug drive configuration	—
Drive onboard controller: Signal + power cable	<u>P63692-001</u>
Type-o or type-p controller: Signal cable	<u>P63702-001</u>
Type-o or type-p controller: Power extension cable	<u>P63687-001</u>
Optical drive cable: 4 SFF hot-plug drive configuration	—
Drive onboard controller: Signal cable	<u>P63701-001</u>

Component cabling	Cable part number
Drive onboard controller: Power extension cable	P63688-001
Type-o or type-p controller: Signal cable	P63702-001
Type-o or type-p controller: Power extension cable	P63688-001
HPE NS204i-u Boot Device cables	—
Power cable	P63685-001
Signal cable	P63684-001
External OCP cables	—
External OCP PCIe cable	P63683-001
External OCP sideband cable	P63690-001
Chassis intrusion detection switch cable	P47751-001
Serial port cable	P63693-001
Miscellaneous cables	—
Front I/O cable	P63681-001
4-pin processor power cable	P63691-001
Power supply sideband cable	P63689-001
4-pin PDB to system board power cable	P63697-001

Internal cabling management



Item	Description
1	Cable guard
2	Inductor
3	Stacked internal USB ports
4	HPE NS204i-u Boot Device bracket

Storage cabling

Subtopics

Storage controller cabling

Drive power cabling

Energy pack cabling

Storage controller backup power cabling

Storage controller cabling

Subtopics

2 LFF non-hot-plug drive cabling

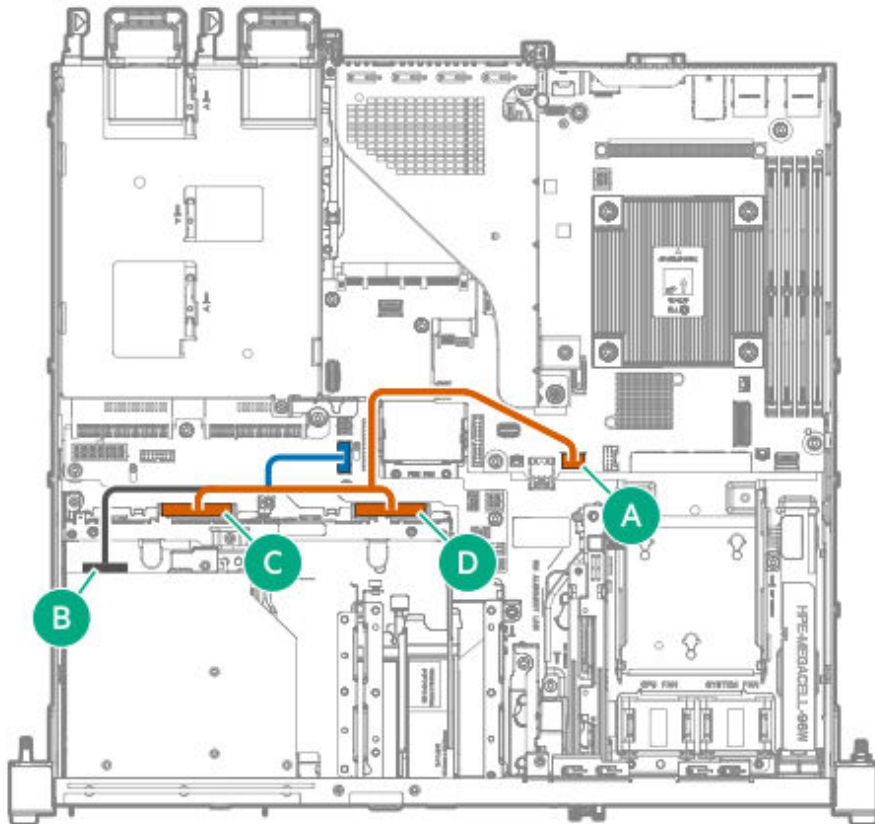
2 LFF hot-plug drive cabling

4 SFF hot-plug drive cabling

4 + 2 SFF hot-plug drive cabling

2 LFF non-hot-plug drive cabling

The 2 LFF non-hot-plug drive configuration uses a preinstalled single multiconnector cable for the drive-optical drive signal and power connections.

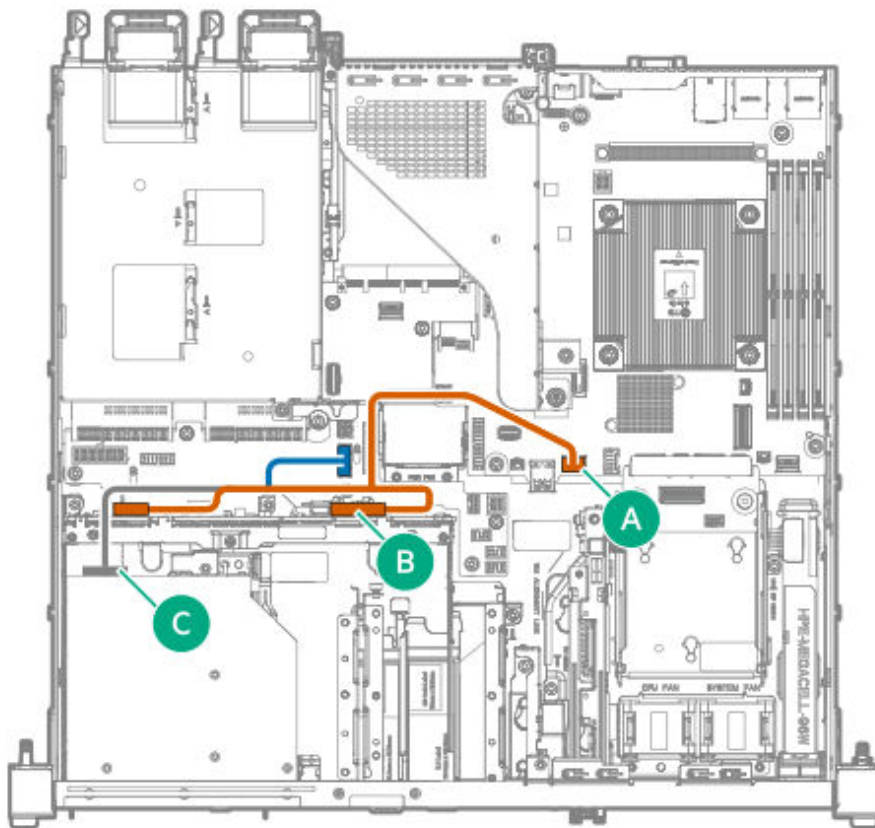


Cable part number	Color	From	To
P63686-001	Orange	<ul style="list-style-type: none"> • Drive 1 port • Drive 2 port 	SlimSAS x4 port 2
	Blue	—	Drive backplane power connector

2 LFF hot-plug drive cabling

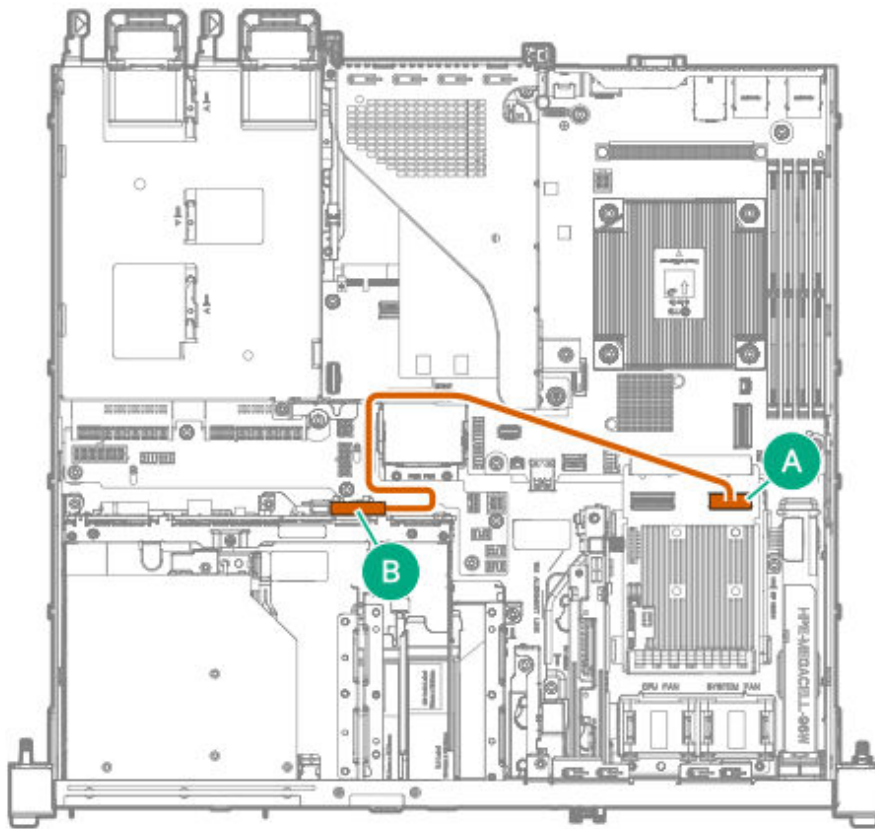
2 LFF drive: Onboard SATA cabling

The 2 LFF hot-plug drive configuration uses a preinstalled single multiconnector cable for the drive-optical drive signal and power connections.



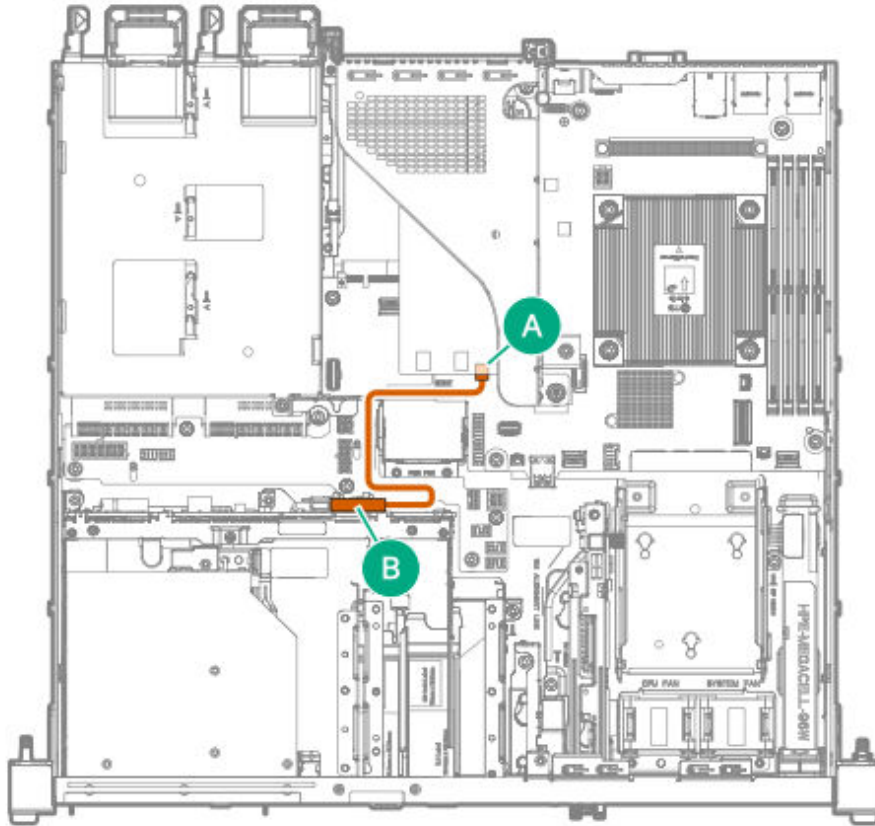
Cable part number	Color	From	To
P63692-001	Orange	<ul style="list-style-type: none"> Drive box 1 MiniSAS port Drive box 1 power connector 	SlimSAS x4 port 2
	Blue	—	Drive backplane power connector

2 LFF drive: Type-o controller cabling



Cable part number	Color	From	To
P63698-001	Orange	Drive box 1 MiniSAS port	Type-o controller port 2

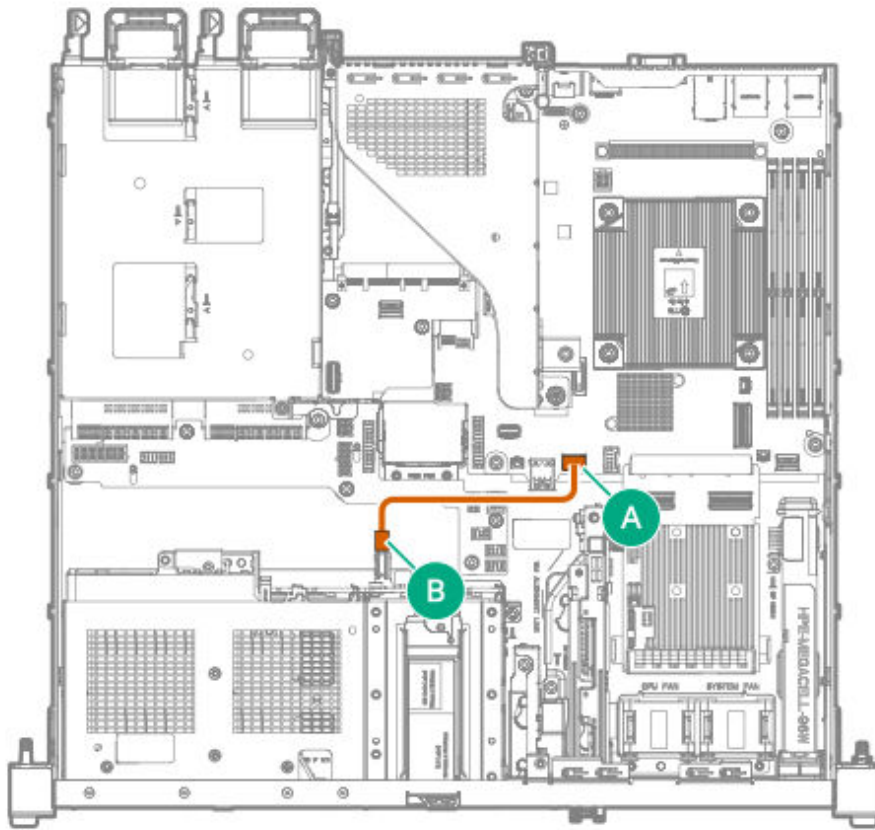
2 LFF drive: Type-p controller cabling



Cable part number	Color	From	To
P63695-001	Orange	Drive box 1 MiniSAS port	Type-p controller port 2

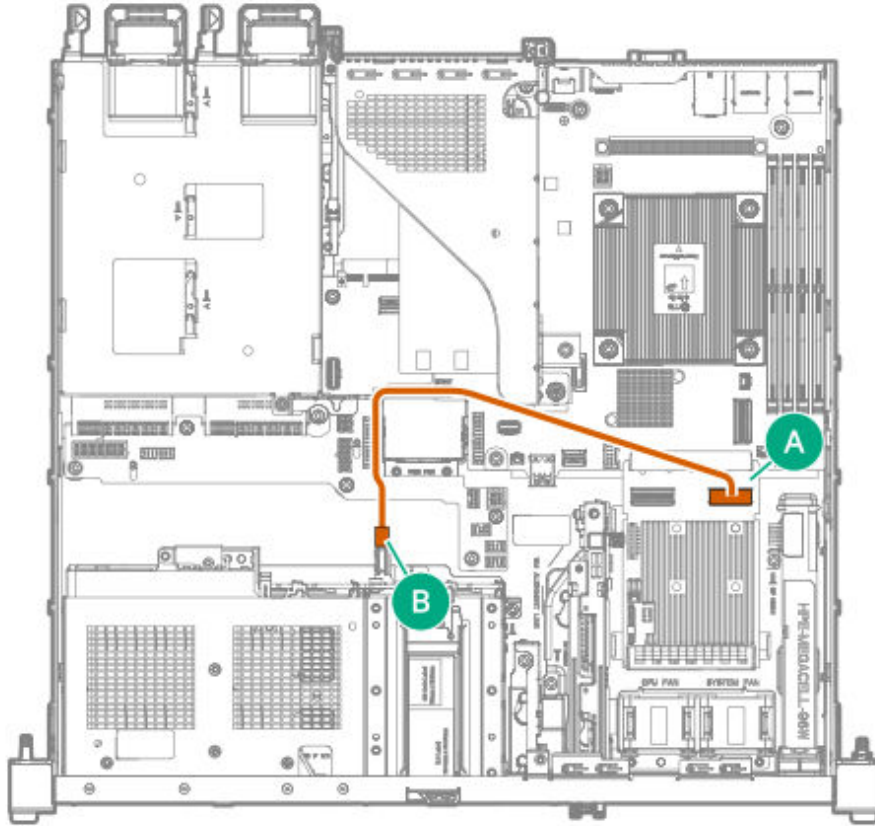
4 SFF hot-plug drive cabling

4 SFF drive: Onboard SATA cabling



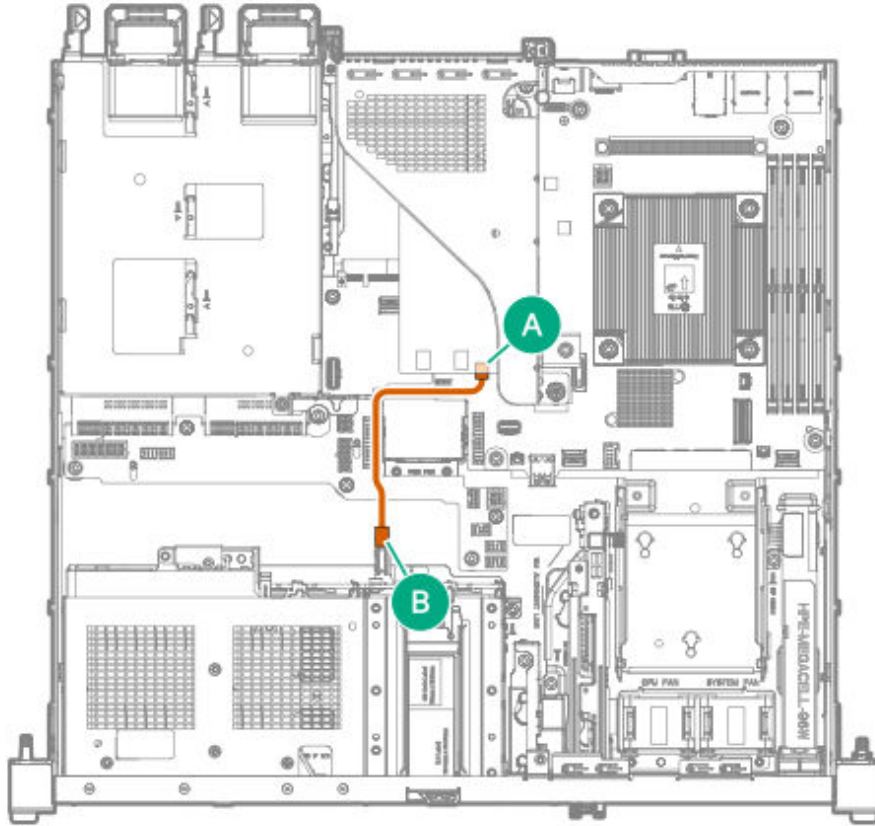
Cable part number	Color	From	To
P63074-001	Orange	Drive box 2 MiniSAS port	SlimSAS x4 port 2

4 SFF drive: Type-o controller cabling



Cable part number	Color	From	To
P63698-001	Orange	Drive box 2 MiniSAS port	Type-o controller port 2

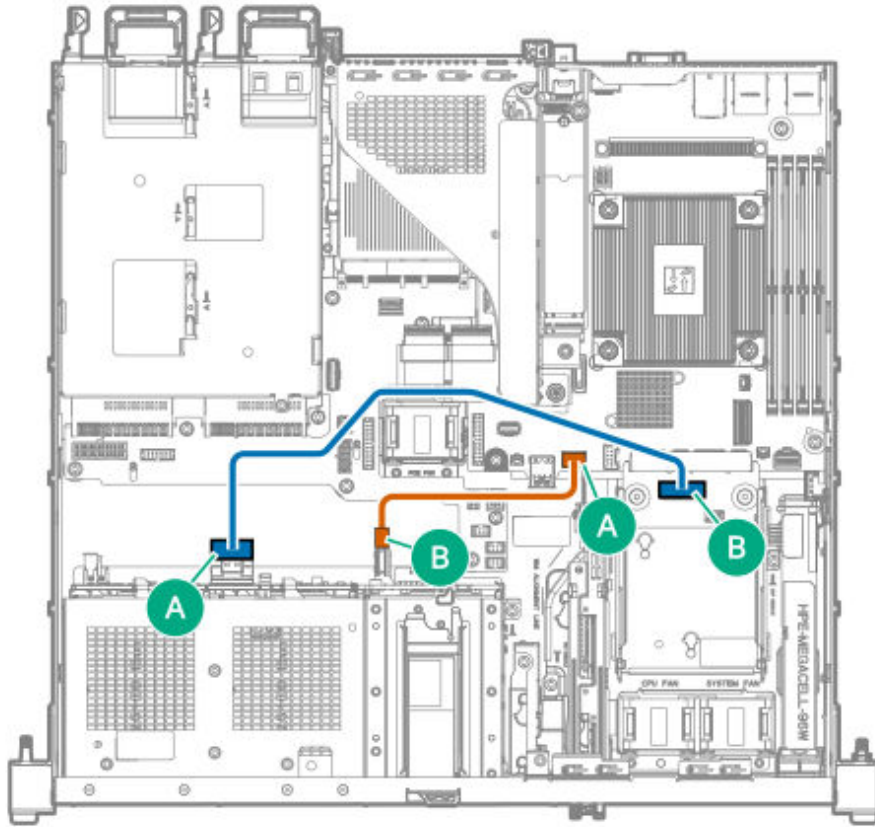
4 SFF drive: Type-p controller cabling



Cable part number	Color	From	To
P63695-001	Orange	Drive box 2 MiniSAS port	Type-p controller port 2

4 + 2 SFF hot-plug drive cabling

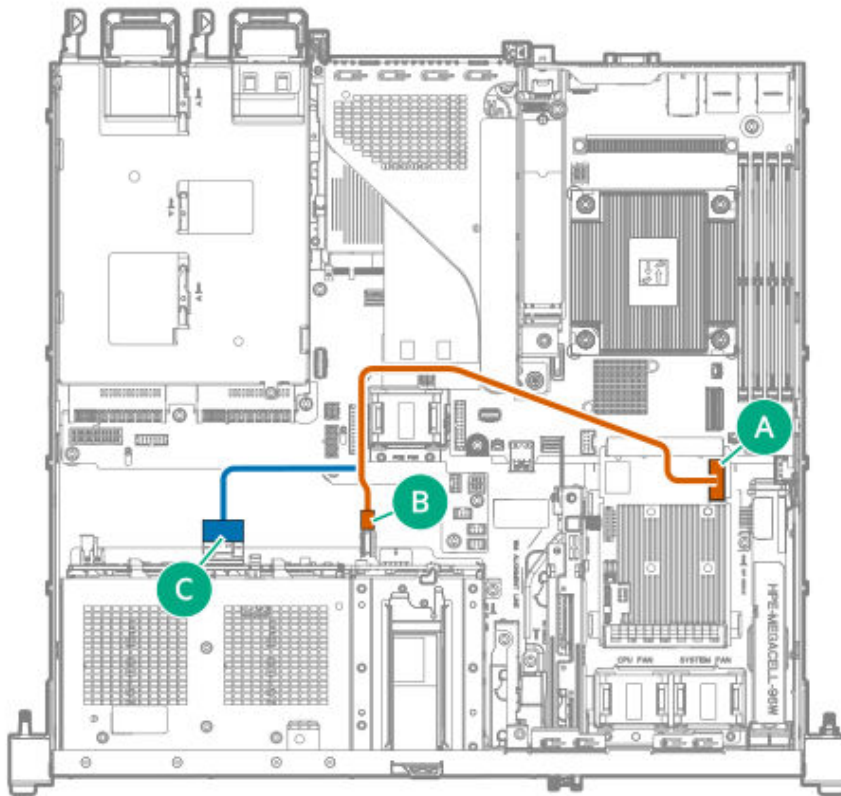
4 + 2 SFF drive: Onboard SATA cabling



Cable part number	Color	From	To
P63074-001	Orange	Drive box 2 MiniSAS port	SlimSAS x4 port 2
P63694-001	Blue	Drive box 1 port 1	SlimSAS x8 port 3

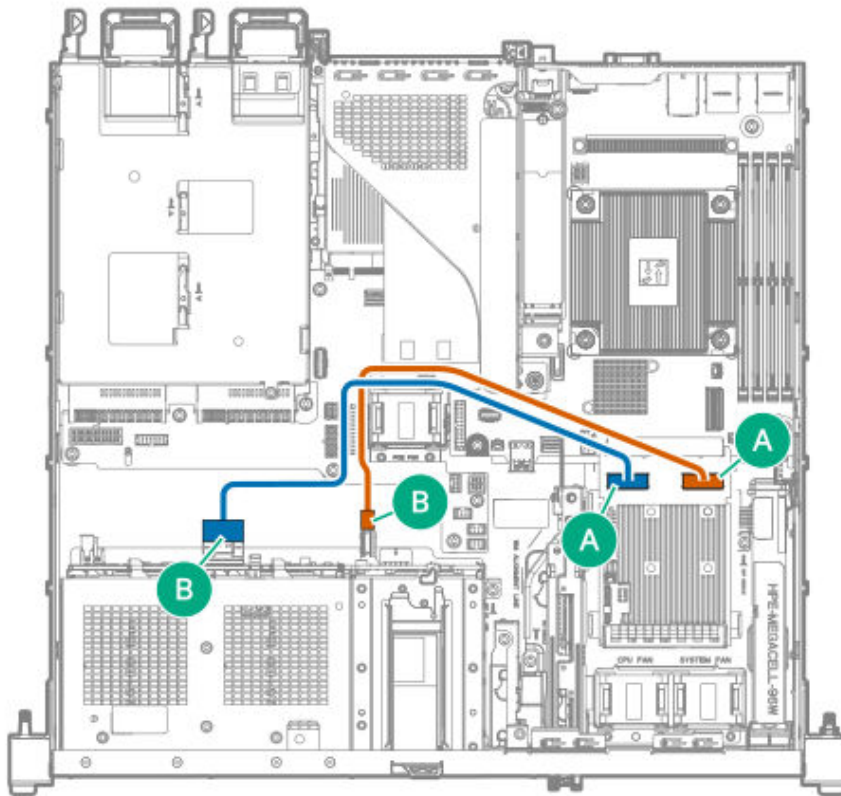
4 + 2 SFF drive: Type-o controller cabling

- Single-port type-o controller



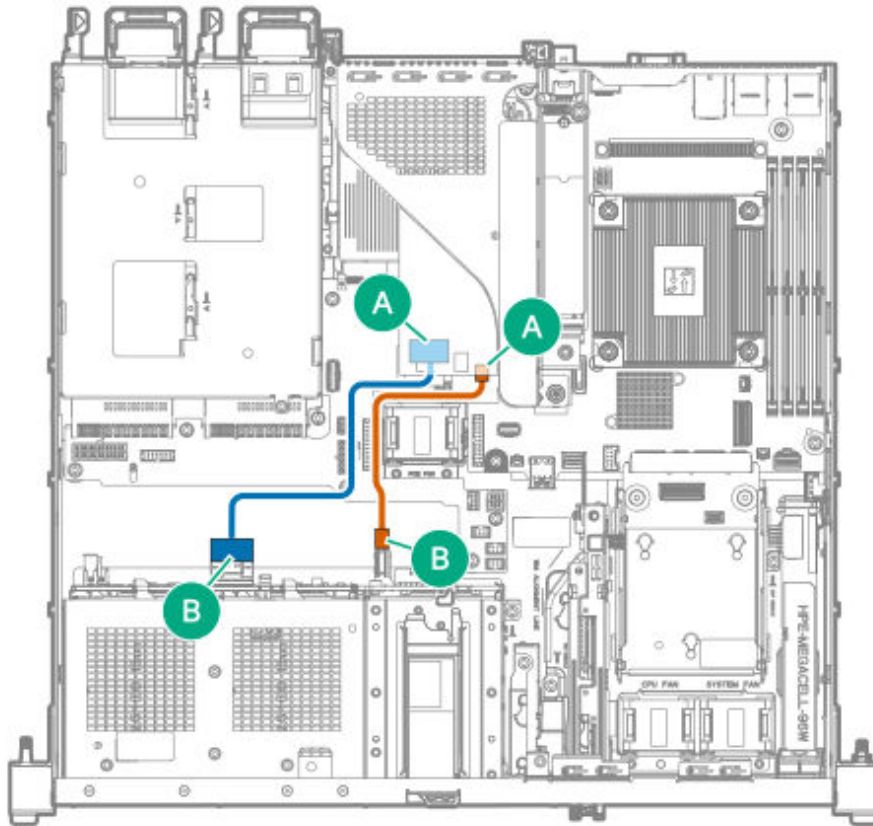
Cable part number	Color	From	To
P63699-001	Orange	Drive box 2 MiniSAS port	Type-o controller port 1
	Blue	Drive box 1 port 1	

- Dual-port type-o controller



Cable part number	Color	From	To
P63698-001	Orange	Drive box 2 MiniSAS port	Type-o controller port 2
P63700-001	Blue	Drive box 1 port 1	Type-o controller port 1

4 + 2 SFF drive: Type-p controller cabling



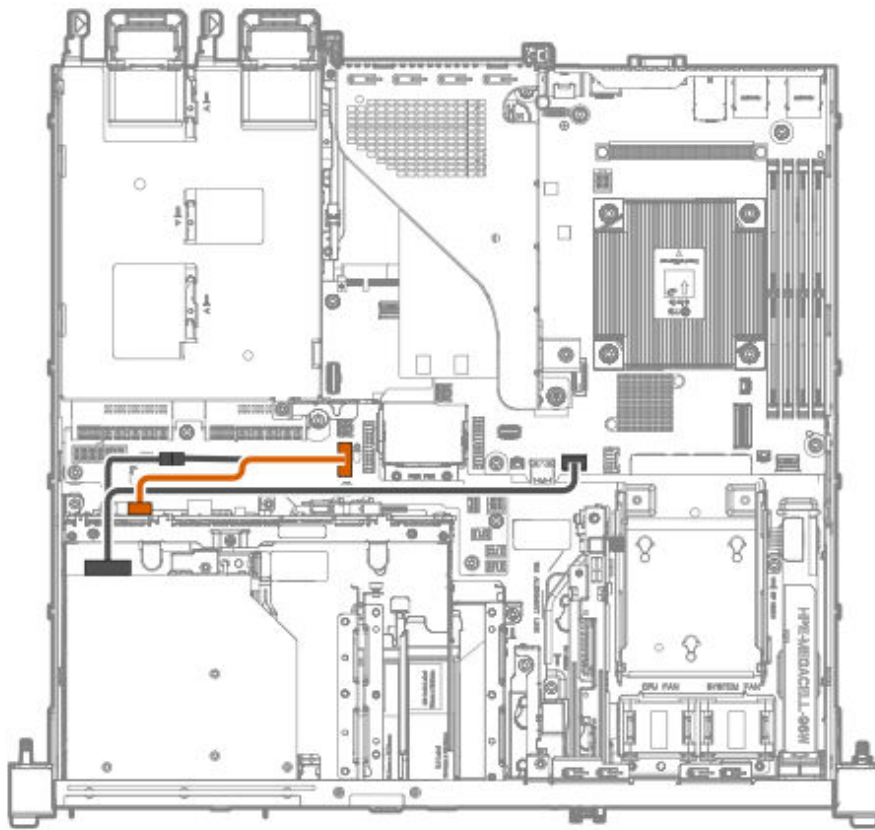
Cable part number	Color	From	To
P63695-001	Orange	Drive box 2 MiniSAS port	Type-p controller port 2
P63696-001	Blue	Drive box 1 port 1	Type-p controller port 1

Drive power cabling

Some drive power cables are either preinstalled in the server or structured under the relevant storage controller cable option kit.

2 LFF hot-plug drive

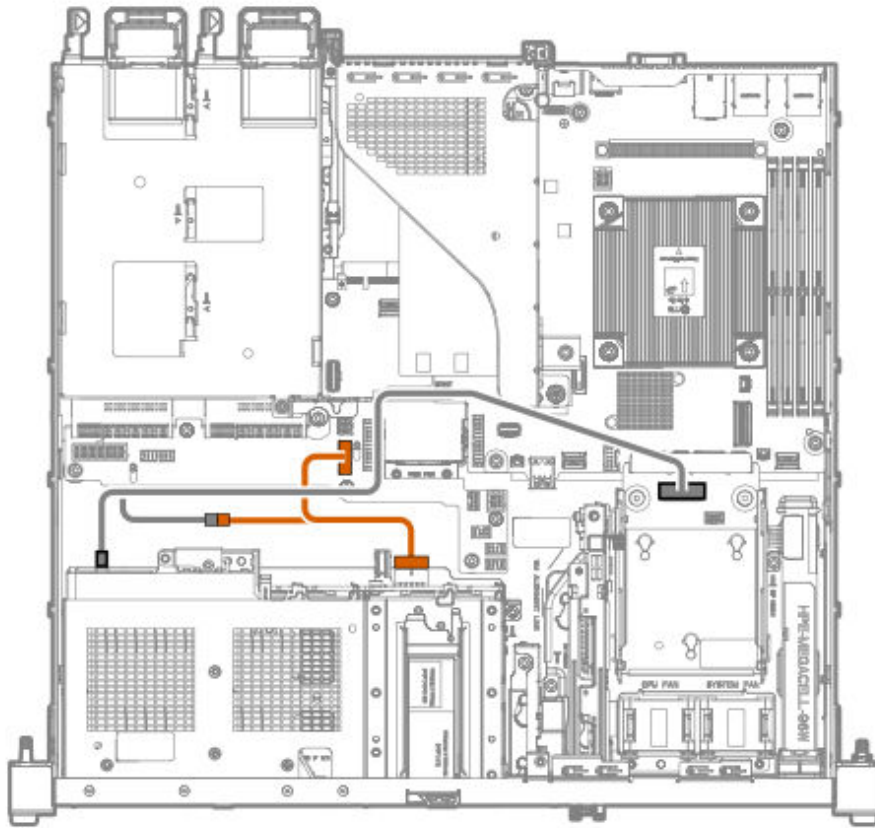
This splitter cable is used for drive and optical drive power connections when a type-o or type-p controller is installed.



Cable part number	Color	From	To
P63687-001	Orange	Drive box 1 power connector	Drive backplane power connector

4 SFF hot-plug drive

This Y-cable is used for drive and optical drive power connections.

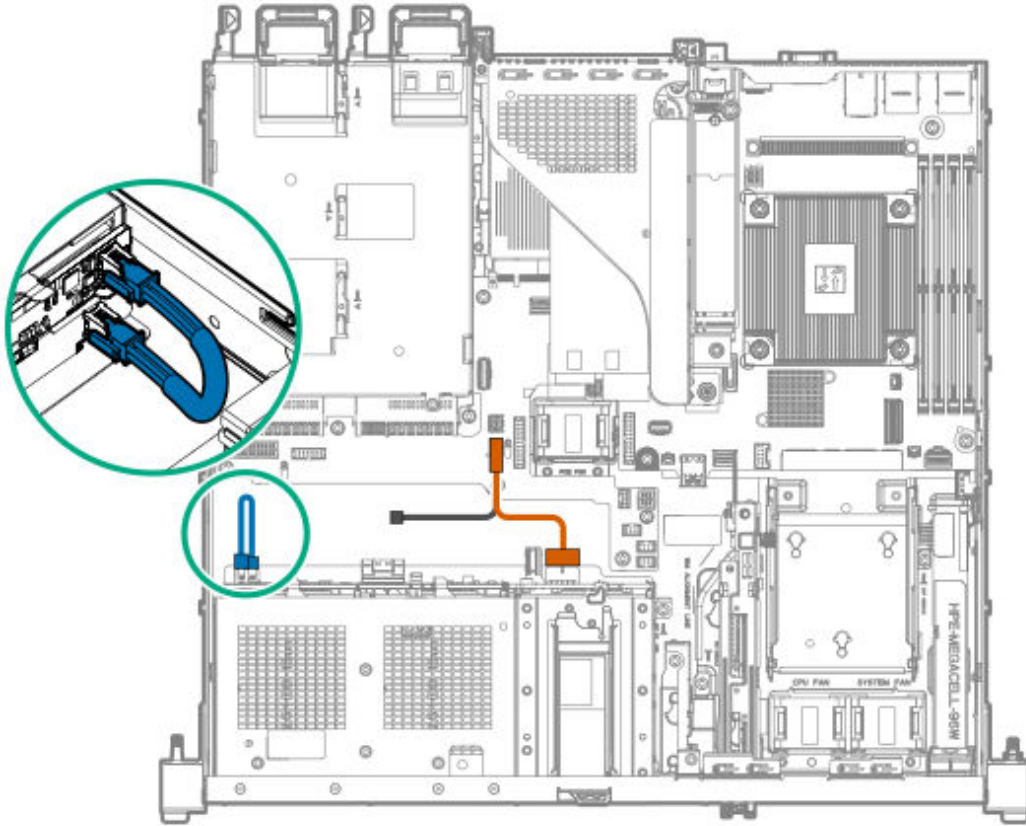


Cable part number	Color	From	To
P63688-001	Orange	<ul style="list-style-type: none"> Drive box 2 10-pin power connector (BP PWR CONN ¹) Optical drive cable 	Drive backplane power connector (HDD PWR ²)

¹ The enclosed text is the label on the drive power cable connector to the drive backplane.

² The enclosed text is the marker on the drive power cable connector to the mainboard.

4 + 2 SFF hot-plug drive

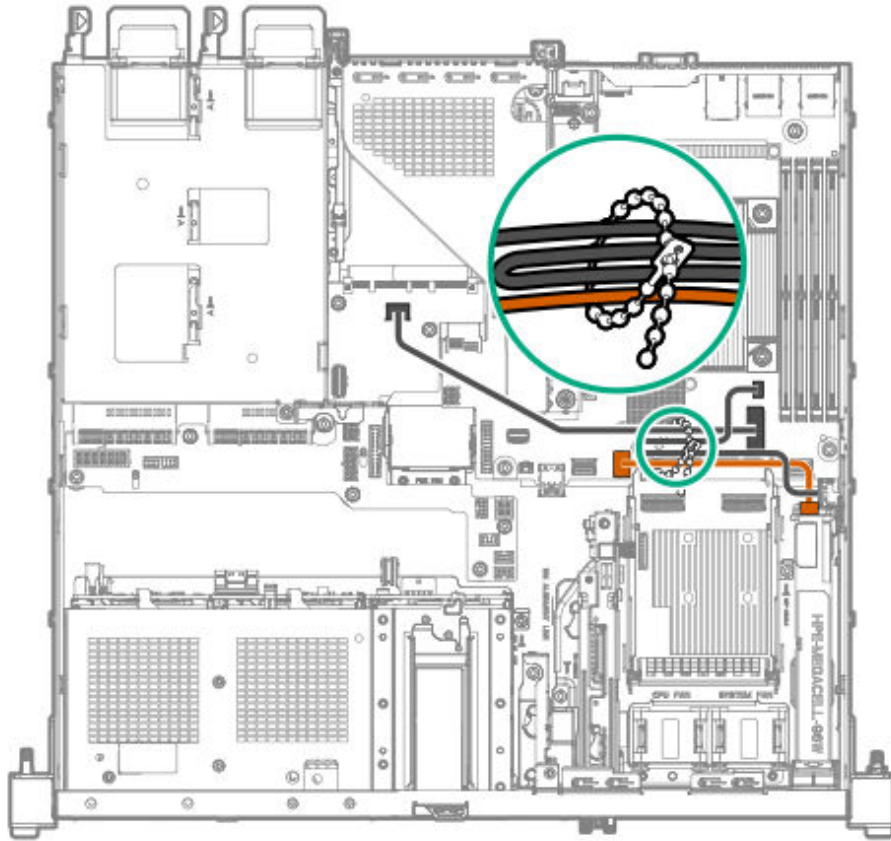


Cable part number	Color	From	To
P63688-001	Orange	Drive box 2 10-pin power connector (BP PWR CONN ¹)	Drive backplane power connector (HDD PWR ²)
P06066-001	Blue	Drive box 2 4-pin power connector	Drive box 1 power connector

¹ The enclosed text is the label on the drive power cable connector to the drive backplane.

² The enclosed text is the marker on the drive power cable connector to the mainboard.

Energy pack cabling



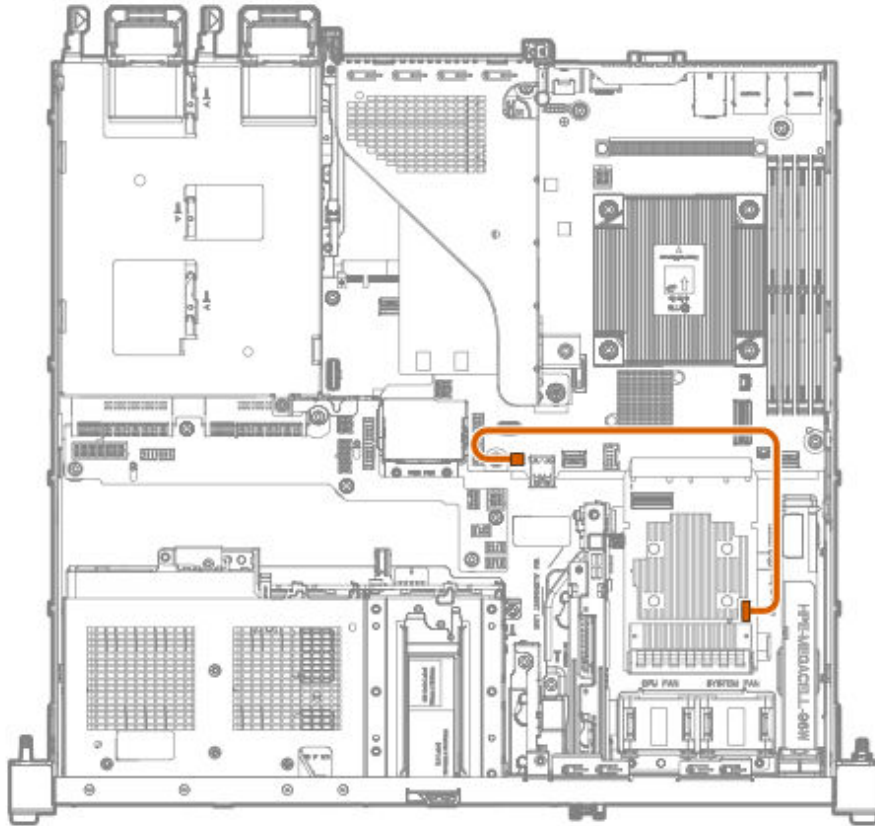
Storage controller backup power cabling

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

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

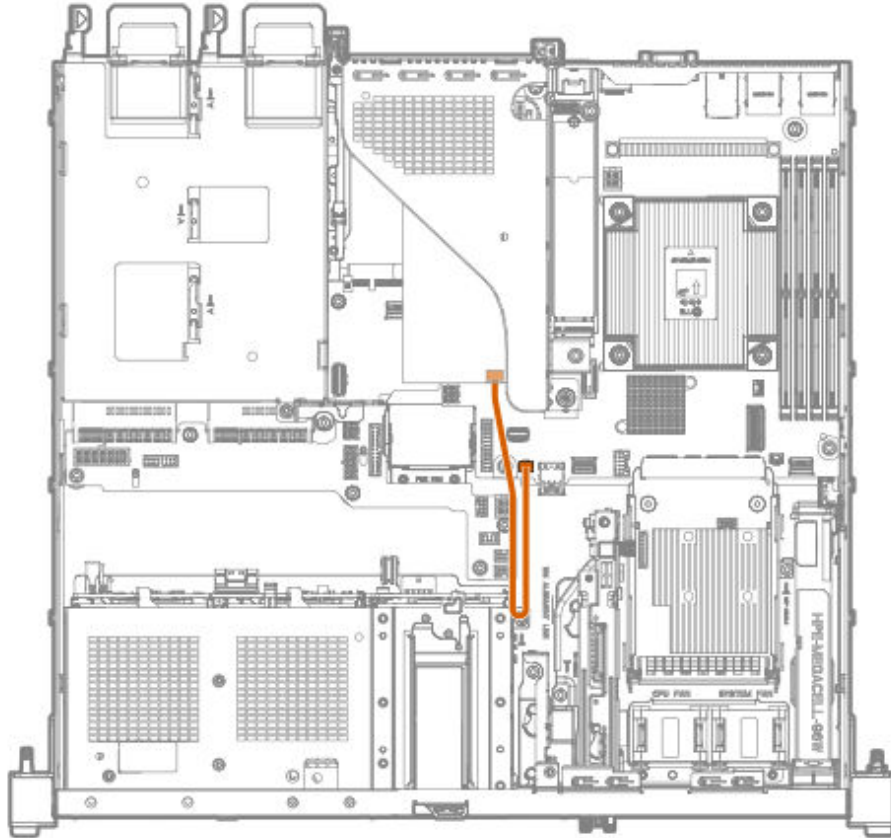
Use the following diagrams for reference only.

Type-o storage controller



Color	From	To
Orange	Type-o controller	Storage controller backup power connector

Type-p storage controller

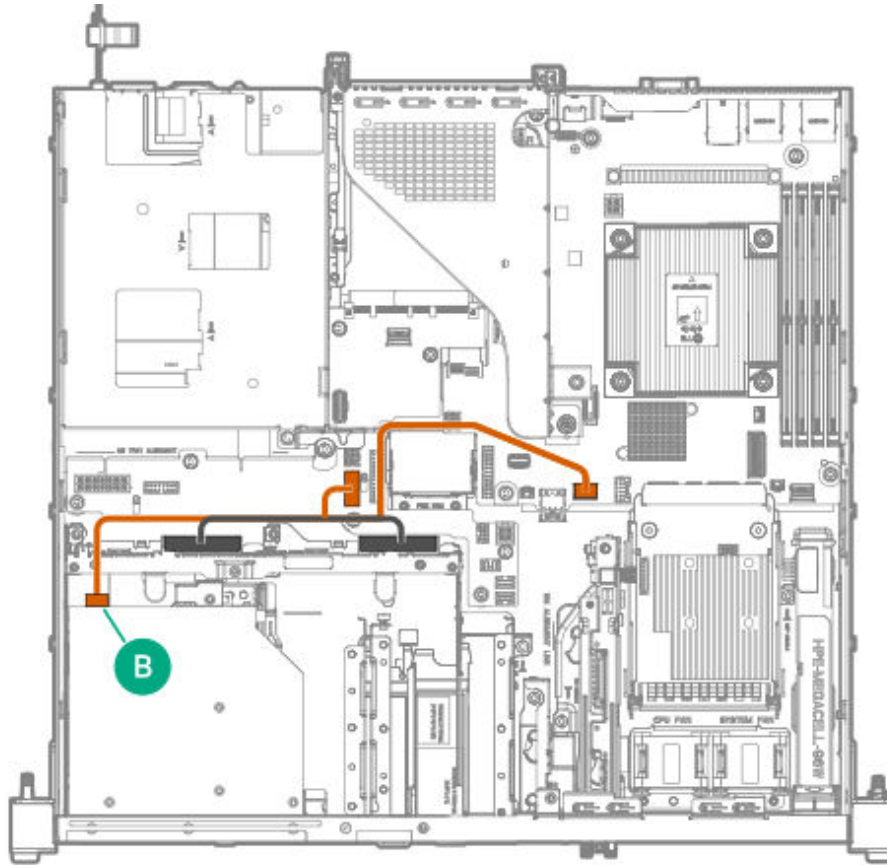


Cable part number	Color	From	To
877850-001	Orange	Type-p controller	Storage controller backup power connector

Optical drive cabling

2 LFF non-hot-plug drive configuration

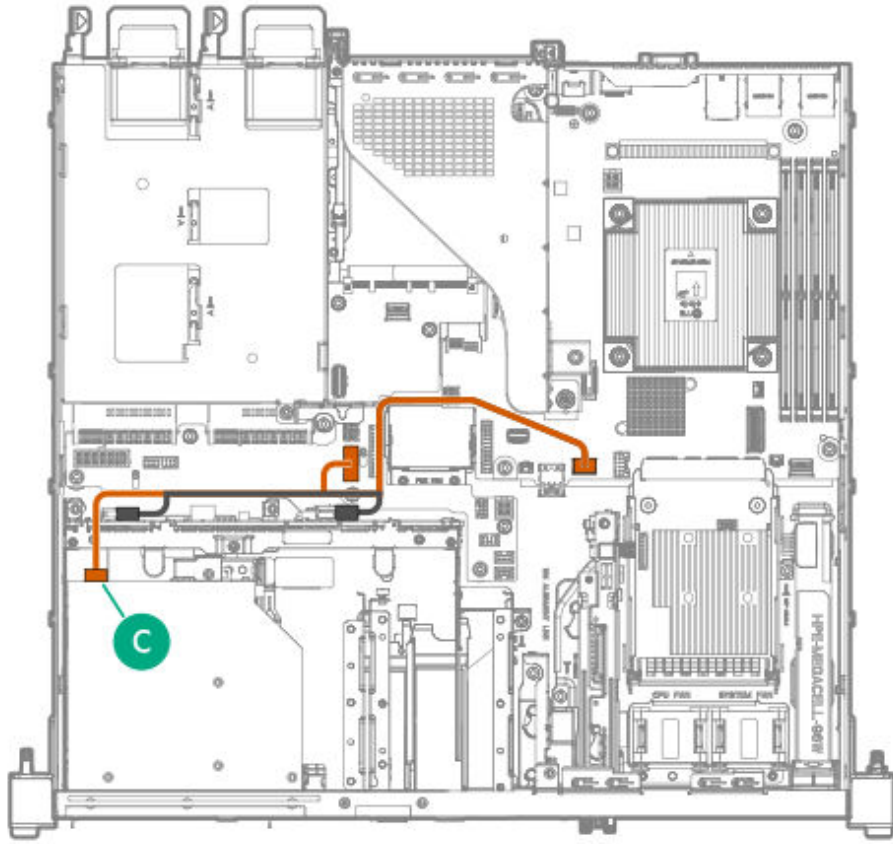
In the 2 LFF non-hot-plug drive configuration, the optical drive and non-hot-plug drives use a preinstalled single multiconnector cable for signal and power connections.



Cable part number	Color	From	To
P63686-001	Orange	Optical drive	<ul style="list-style-type: none"> • SlimSAS x4 port 2 • Drive backplane power connector

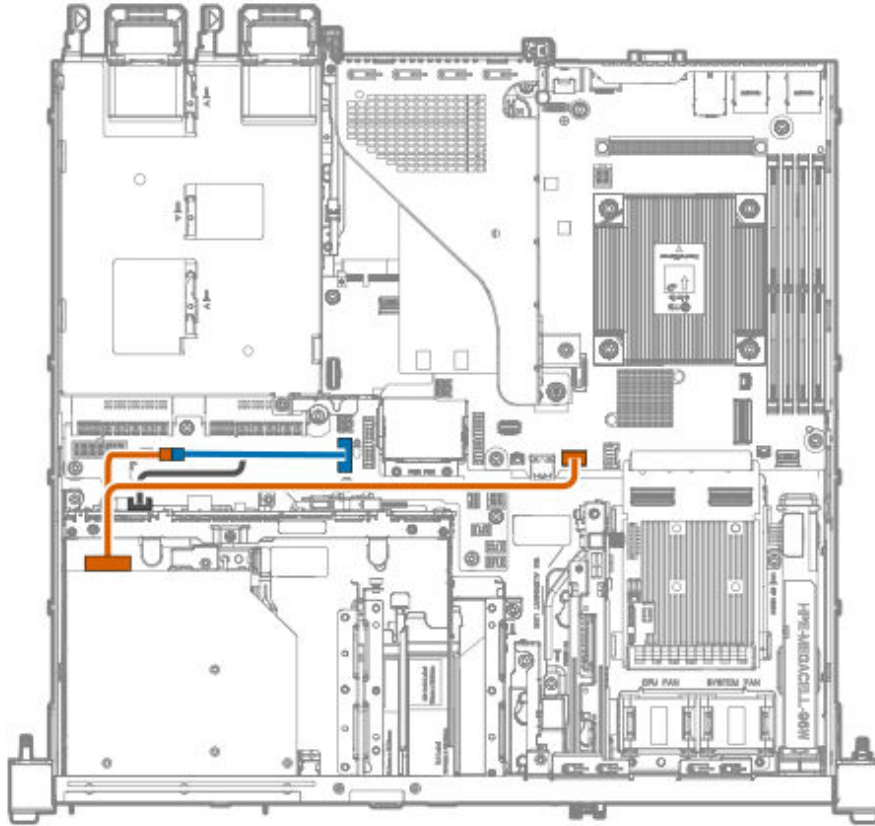
2 LFF hot-plug drive configuration: Drive onboard controller

In the 2 LFF hot-plug drive configuration, the optical drive and hot-plug drives use a preinstalled single multiconnector cable for signal and power connections.



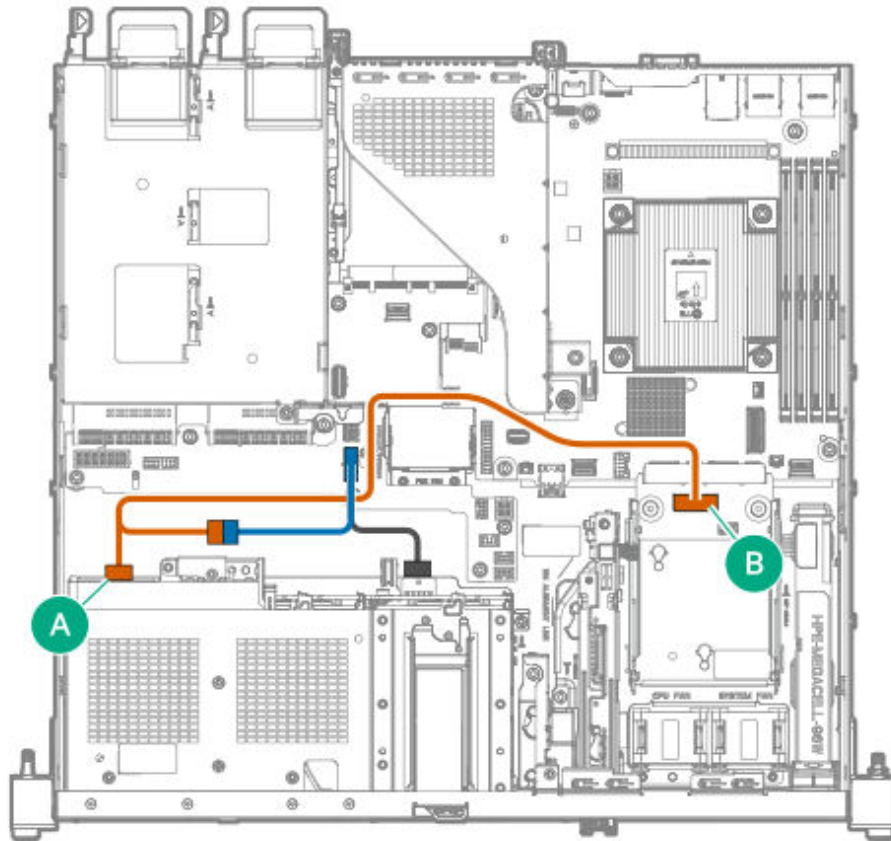
Cable part number	Color	From	To
P63692-001	Orange	Optical drive	<ul style="list-style-type: none"> • SlimSAS x4 port 2 • Drive backplane power connector

2 LFF hot-plug drive configuration: Type-o or type-p controller



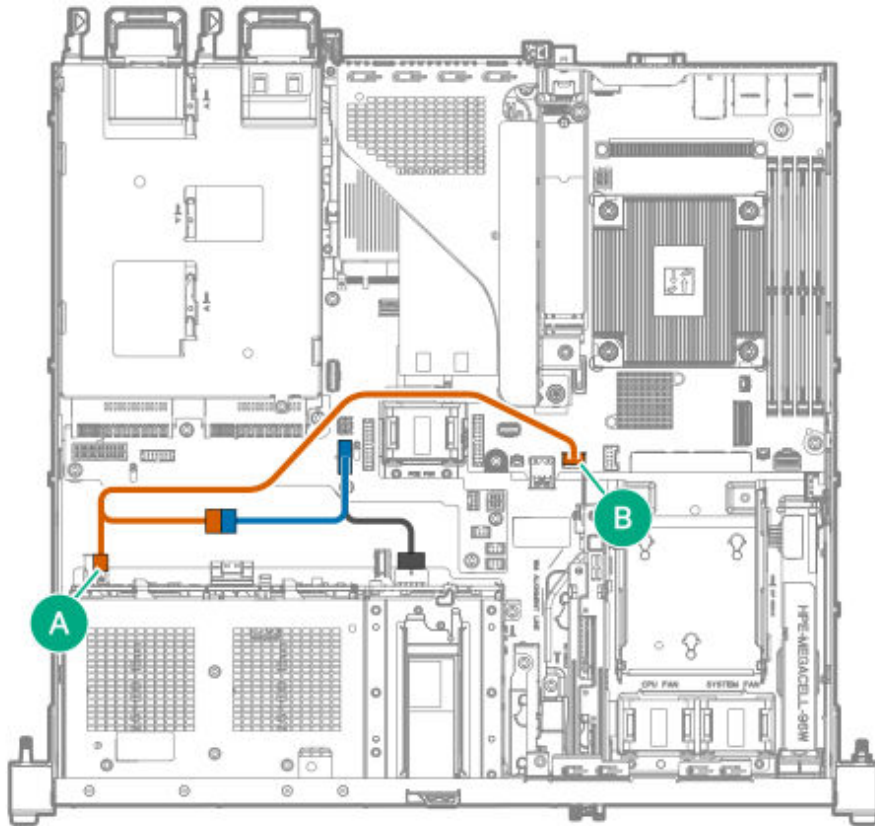
Cable part number	Color	From	To
P63702-001	Orange	Optical drive	<ul style="list-style-type: none"> • SlimSAS x4 port 2 • Drive power cable
P63687-001	Blue	Optical cable	Drive backplane power connector

4 SFF hot-plug drive configuration: Drive onboard controller



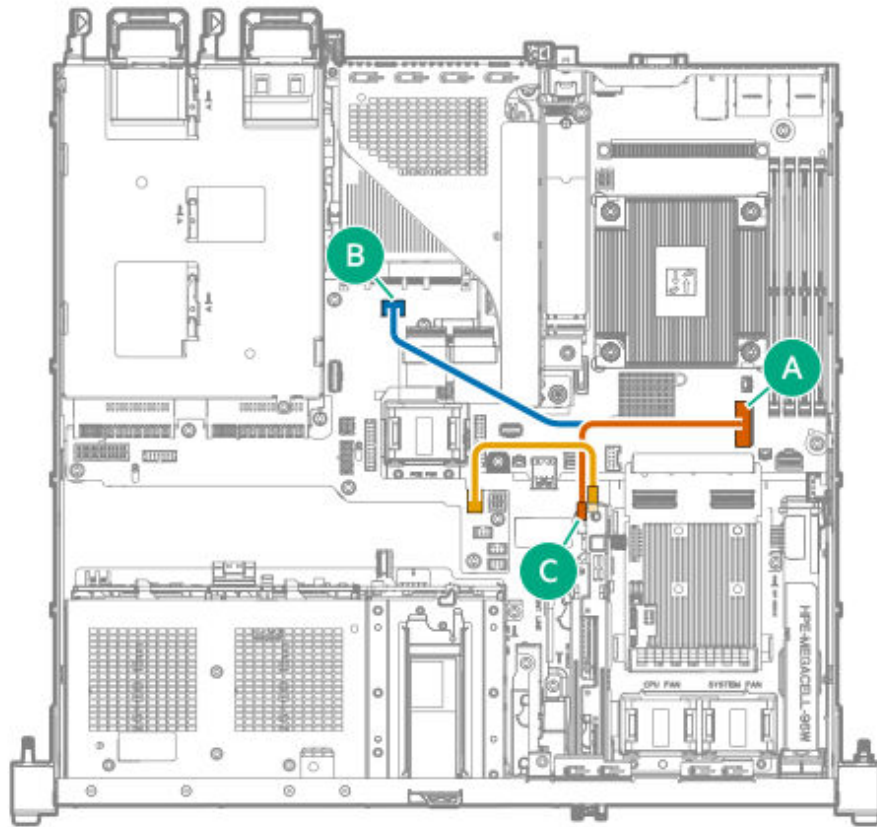
Cable part number	Color	From	To
P63701-001	Orange	Optical drive	<ul style="list-style-type: none"> • SlimSAS x8 port 3 • Drive power cable
P63688-001	Blue	Drive box 2 power connector	<ul style="list-style-type: none"> • Drive backplane power connector • Optical drive cable

4 SFF hot-plug drive configuration: Type-o or type-p controller



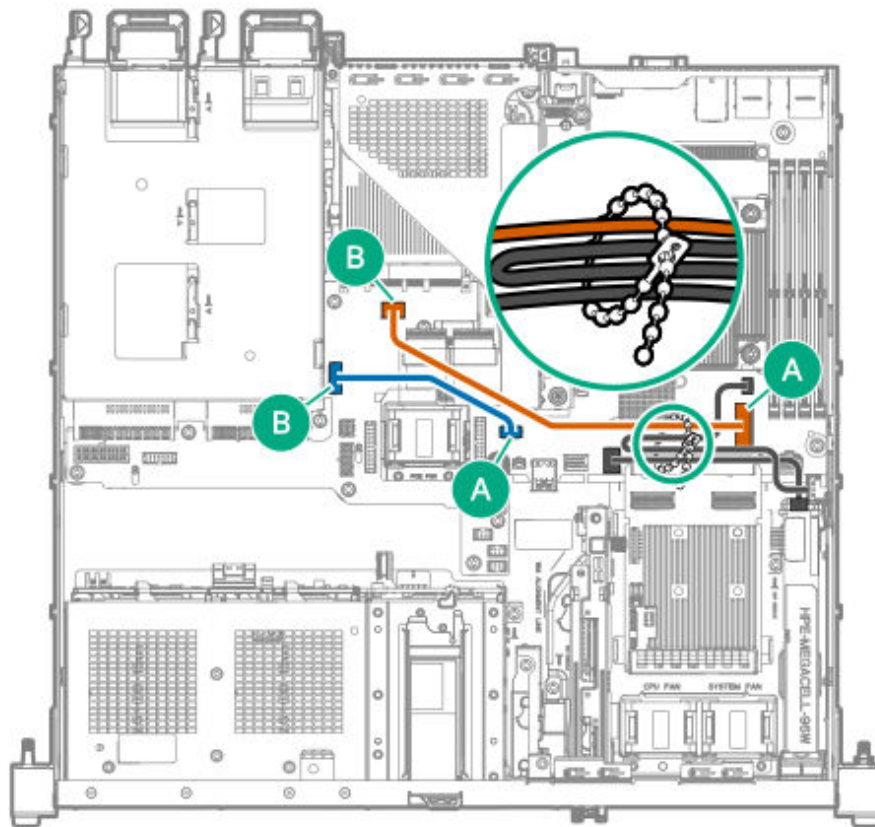
Cable part number	Color	From	To
P63702-001	Orange	Optical drive	<ul style="list-style-type: none"> SlimSAS x4 port 2 Drive power cable
P63688-001	Blue	Optical cable	Drive backplane power connector

HPE NS204i-u Boot Device cabling



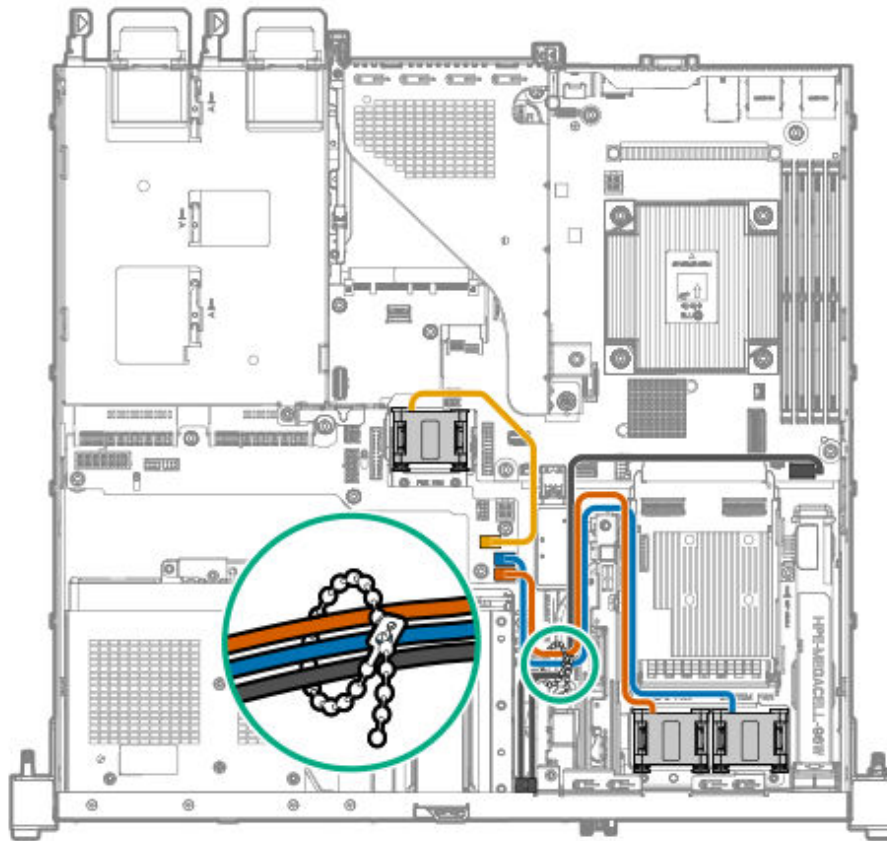
Cable part number	Color	From	To
P63684-001	Orange	Boot device signal connector	SlimSAS x8 port 1
	Blue		SlimSAS x4 port
P63685-001	Gold	Boot device power connector	NS204i-u power connector

External OCP enablement cabling



Cable part number	Color	From	To
P63683-001	Orange	SlimSAS x8 port 1	SlimSAS x4 port
P63690-001	Blue	PTB: Slot 15 external OCP sideband connector	Mainboard: Slot 15 external OCP sideband connector

Fan cabling



Cable part number	Color	From	To
P63538-001	Orange	Processor fan	Processor fan connector
	Blue	System fan	System fan connector
	Gold	PCIe fan	PCIe fan connector

Subtopics

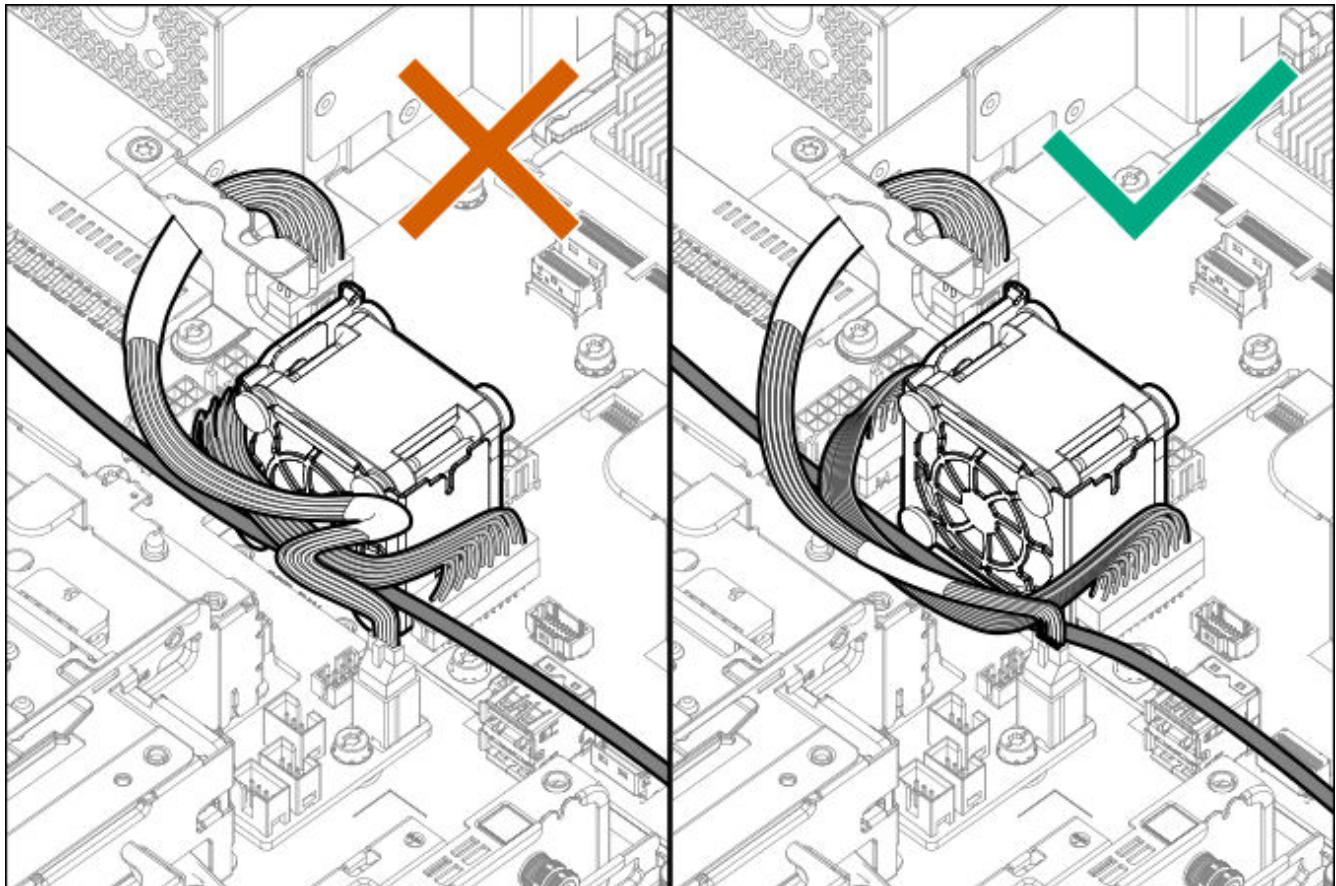
Cable routing in front of the PCIe fan

Cable routing in front of the PCIe fan

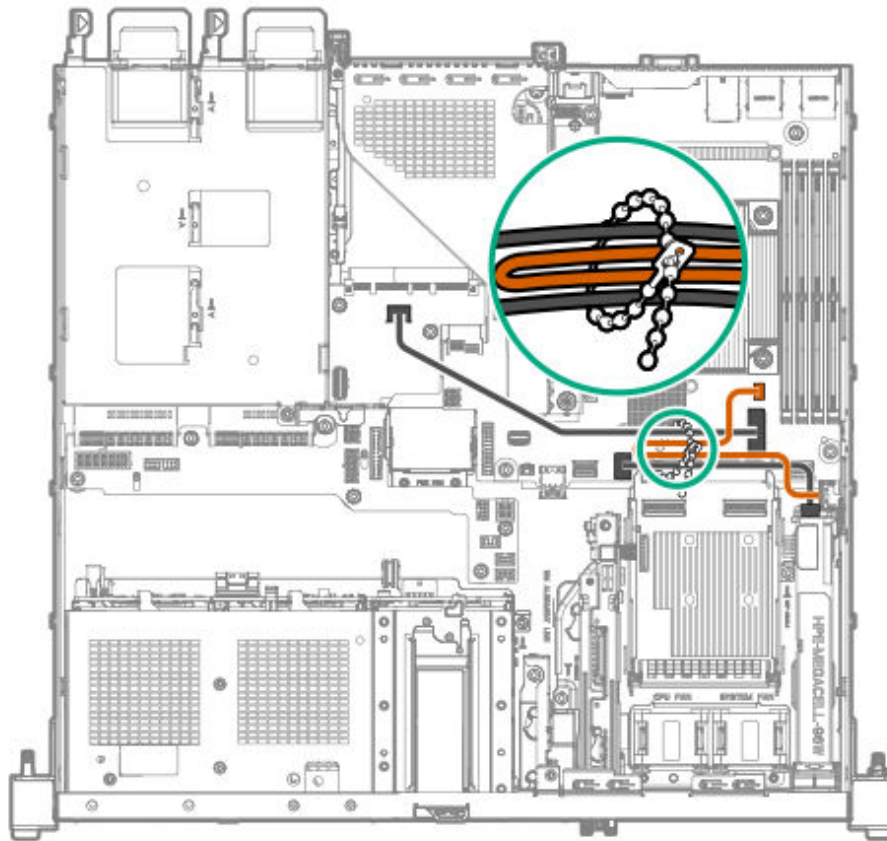


CAUTION

To prevent the cables in front of PCIe fan from blocking the fan airflow, route the cables beneath the PCIe fan outlet.

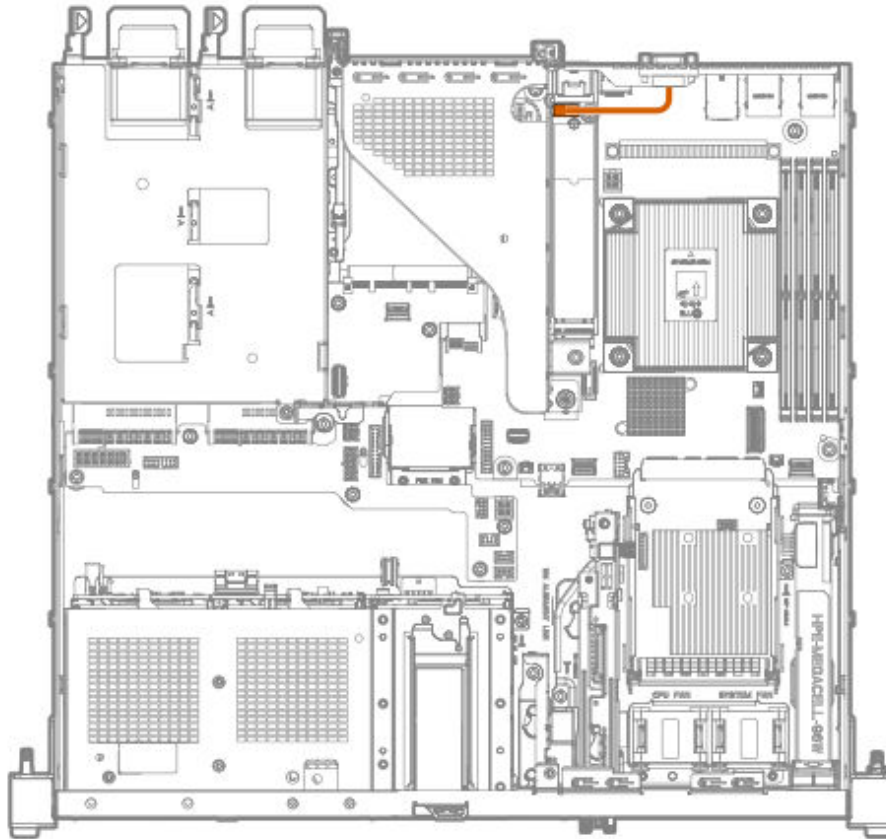


Chassis intrusion detection switch cabling



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

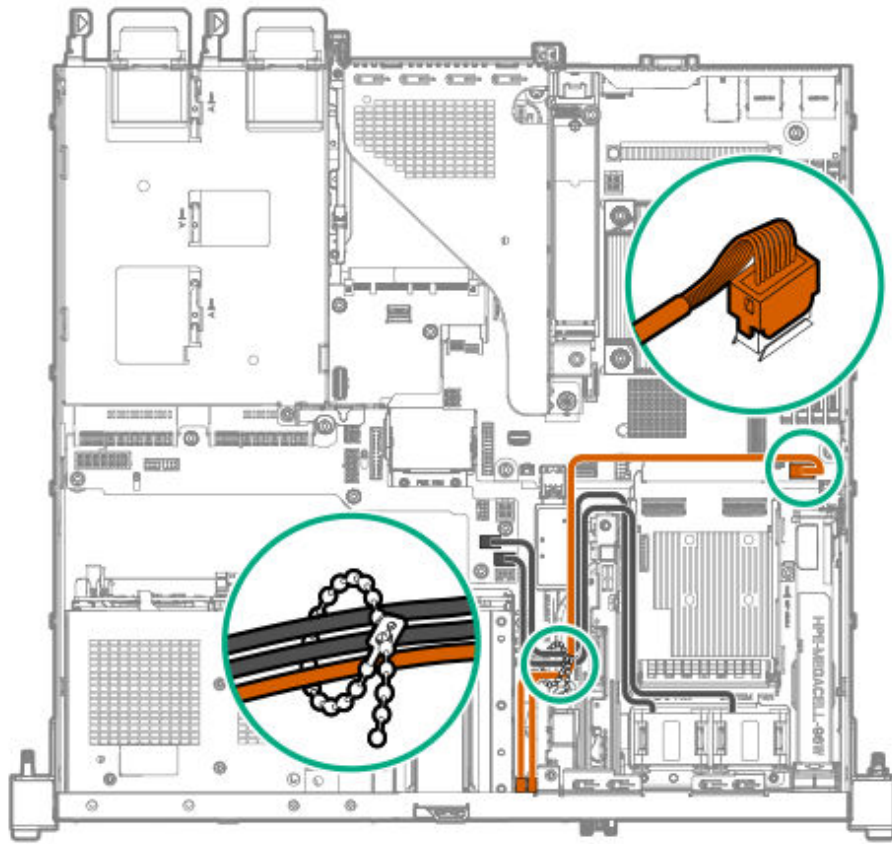
Serial port cabling



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

Front I/O cabling

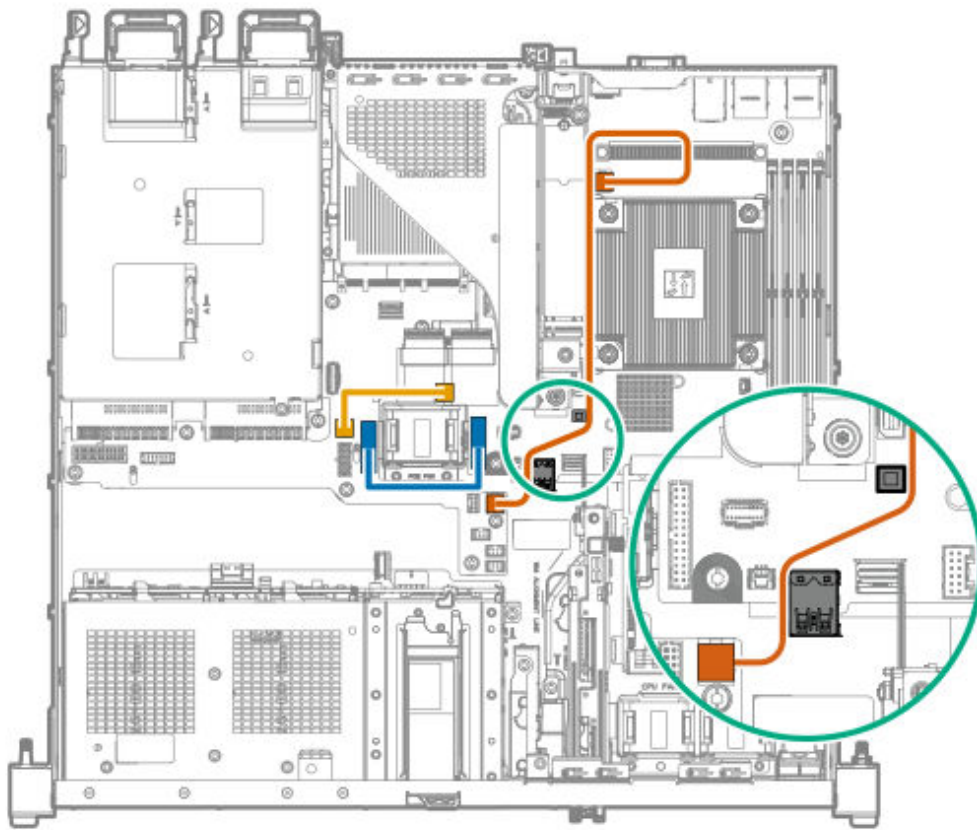
Front I/O cables are preinstalled in the server.



Cable part number	Color	From	To
P63681-001	Orange	<ul style="list-style-type: none"> iLO service port USB 3.2 Gen1 port 	Front I/O & USB 3.2 Gen 1 & iLO service port connector

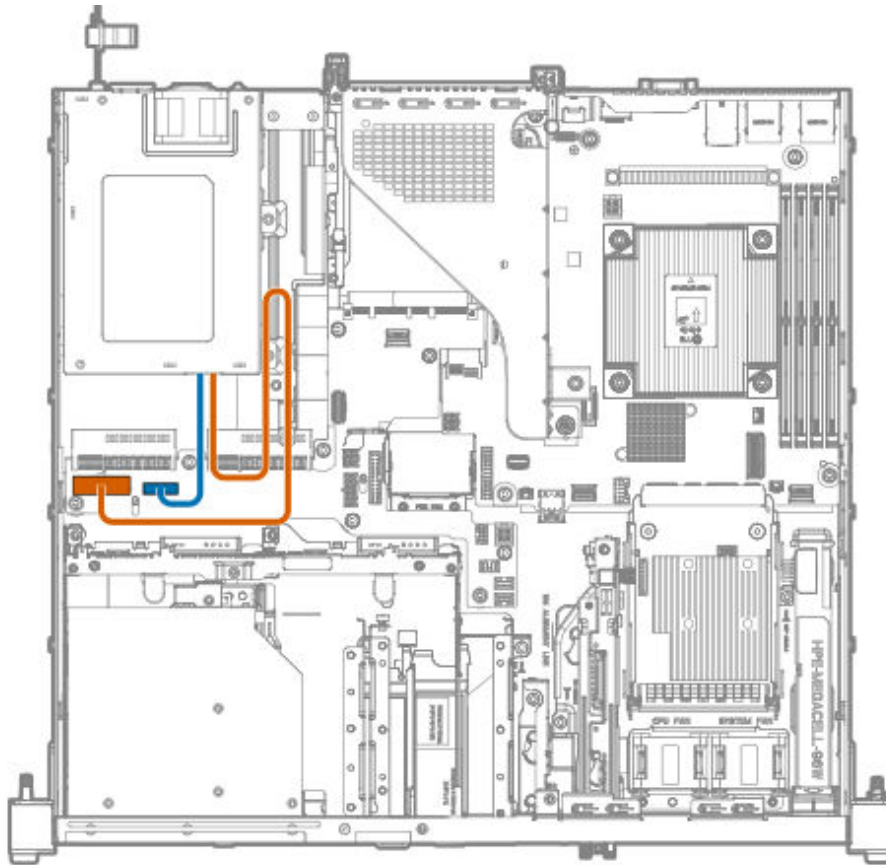
System power cabling

The power cables that connect the PDB to the mainboard are preinstalled in the server.



Cable part number	Color	From	To
P63691-001	Orange	4-pin processor power connector	4-pin processor power connector
P63689-001	Blue	Mainboard: Power supply sideband connector	PDB: Power supply sideband connector
P63697-001	Gold	Mainboard: System power connector	PDB: System power connector

Non-hot-plug power supply cabling



Color	Description	From	To
Orange	ATX power supply sideband cable	Non-hot-plug power supply	ATX sideband connector
Blue	14-pin power supply cable		14-pin power supply connector

Configuration resources

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

- Some utilities might not apply to your server. For information about server compatibility with the products listed in this chapter, see the product QuickSpecs (<https://www.hpe.com/info/quickspecs>).

- Products ordered from HPE Factory Express might have already been configured with some or all the configurations in this chapter. To determine if any additional setup is required, see your HPE Factory Express order.
- For one-stop access to version-specific software and firmware documentation, including the latest product release notes, see this quick links page:
<https://www.hpe.com/support/hpeproductdocs-quicklinks>

Subtopics

- [Updating firmware or system ROM](#)
- [Configuring the server](#)
- [Configuring storage controllers](#)
- [Deploying an OS](#)
- [Configuring security](#)
- [Server management](#)
- [Managing Linux-based high performance compute clusters](#)

Updating firmware or system ROM

To	Use
Download service packs	<ul style="list-style-type: none"> • Service Pack for ProLiant (SPP) https://www.hpe.com/servers/spp/download • Get an overview of SPP and its ecosystem https://www.hpe.com/support/SPP-overview-views-en
Deploy service packs to a single server	Smart Update Manager (SUM) https://www.hpe.com/support/hpesmartupdatemanager-quicklinks
Deploy service packs to multiple servers	HPE OneView https://www.hpe.com/support/hpeoneview-quicklinks
Updating iLO or system firmware in a single server or multiple servers	HPE iLO

To	Use
	https://www.hpe.com/support/hpeilodocs-quicklinks
<ul style="list-style-type: none"> • 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 	<p>HPE Compute Ops Management</p> <p>https://www.hpe.com/info/com-quicklinks</p>

Configuring the server

To configure	Use
Single server (GUI)	<ul style="list-style-type: none"> • Intelligent Provisioning https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks • iLO remote console or web interface https://www.hpe.com/support/hpeilodocs-quicklinks • UEFI System Utilities https://www.hpe.com/support/hpeuefisystemutilities-quicklinks • HPE Compute Ops Management https://www.hpe.com/info/com-quicklinks
Single server (scripting)	<ul style="list-style-type: none"> • RESTful Interface Tool

To configure

Use

<https://www.hpe.com/support/restfulinterface/docs>

- Python iLO Redfish Library (python-ilo-rest-library)

<https://github.com/HewlettPackard/python-ilo-rest-library>

- Scripting Tools for Windows Powershell

<https://www.hpe.com/info/powershell/docs>

- iLO RESTful API

<https://servermanagementportal.ext.hpe.com/>

- HPE Compute Ops Management API

<https://developer.greenlake.hpe.com/>

Multiple servers (either UI or scripting)

- HPE OneView ¹₁

<https://www.hpe.com/support/hpeoneview-quicklinks>

- HPE Compute Ops Management

<https://www.hpe.com/info/com-quicklinks>

- **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.

¹₁ For servers running HPE OneView, do not use another tool, such as iLO, to delete or change certain settings. For more information about using HPE OneView and iLO to manage the same server, see the iLO user guide at <https://www.hpe.com/support/hpeilodocs-quicklinks>.

Configuring storage controllers

Controller type	Documentation
HPE SR Gen10 controllers	<ul style="list-style-type: none">• HPE Smart Array SR Controller Gen10 User Guide https://www.hpe.com/support/SR-Gen10-UG• SR Gen10 controller RAID creation: https://www.hpe.com/support/SR-RAID-creation
HPE MR controller user guides	<ul style="list-style-type: none">• HPE MR Gen11 Controller User Guide https://hpe.com/support/MR-Gen11-UG<ul style="list-style-type: none">◦ MR Gen11 controller configuration: https://www.hpe.com/support/MR-Gen11-configuration◦ MR Gen11 controller RAID creation: https://www.hpe.com/support/MR-Gen11-RAID-creation
HPE MR controller configuration guides	<ul style="list-style-type: none">• HPE MR Storage Administrator User Guide https://www.hpe.com/support/MRSA• HPE StorCLI User Guide https://www.hpe.com/support/StorCLI• HPE StorCLI2 User Guide https://www.hpe.com/support/StorCLI2
Intel VROC for HPE Gen11	<ul style="list-style-type: none">• Intel Virtual RAID on CPU for HPE User Guide https://hpe.com/support/VROC-Gen11-UG• Intel VROC SATA RAID quick installation:

Controller type

Documentation

<https://www.hpe.com/support/VROC-SATA-RAID-installation>

OS-specific configuration guides:

- Intel Virtual RAID on CPU (Intel VROC) for Windows User Guide

https://docs.graidtech.com/vroc/User_Guides/000094004_Intel_Virtual_RAID_on_CPU_Intel_VROC_User_Guide_for_Windows/

- Intel Virtual RAID on CPU (Intel VROC) for Linux User Guide

https://docs.graidtech.com/vroc/User_Guides/000094694_Intel_Virtual_RAID_on_CPU_Intel_VROC_User_Guide_for_Linux/

- Intel Volume Management Device Driver for VMware ESXi User Guide

https://docs.graidtech.com/vroc/User_Guides/000094787_Intel_Virtual_RAID_on_CPU_Intel_VROC_User_Guide_for_VMware_ESXi/

Storage controller documents library

<https://www.hpe.com/support/hpestoragecontrollerdocs-quicklinks>

Deploying an OS

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

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

To

See

Deploy an OS using HPE Compute Ops Management HPE Compute Ops Management User Guide

<https://www.hpe.com/info/com-quicklinks>

Deploy an OS using Intelligent Provisioning

Intelligent Provisioning user guide

To	See
	https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks
Deploy an OS using iLO virtual media	iLO user guide https://www.hpe.com/support/hpeilodocs-quicklinks
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
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide https://www.hpe.com/info/boot-from-san-config-guide

Configuring security

To	See
Implement server security best practices.	<ul style="list-style-type: none"> 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

Server management

To monitor	See
Single server	HPE iLO https://www.hpe.com/support/hpeilodocs-quicklinks
Multiple servers	HPE OneView https://www.hpe.com/support/hpeoneview-quicklinks
Single or multiple servers	HPE Compute Ops Management https://www.hpe.com/info/com-quicklinks

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

An NMI crash dump enables administrators to create crash dump files when a system is not responding to traditional debugging methods.

An analysis of the crash dump log is an essential part of diagnosing reliability problems, such as hanging operating systems, device drivers, and applications. Many crashes freeze a system, and the only available action for administrators is to cycle the system power. Resetting the system erases any information that could support problem analysis, but the NMI feature preserves that information by performing a memory dump before a hard reset.

To force the OS to initiate the NMI handler and generate a crash dump log, the administrator can use the iLO Generate NMI feature.

Troubleshooting resources

Troubleshooting resources are available for HPE Gen11 server products in the following documents:

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

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

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

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

System battery 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.

Safety, warranty, and regulatory information

Subtopics

[Regulatory information](#)

[Warranty information](#)

Regulatory information

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

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

Additional regulatory information

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

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

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

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

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

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

Subtopics

[Notices for Eurasian Economic Union](#)

[Turkey RoHS material content declaration](#)

[Ukraine RoHS material content declaration](#)

Notices for Eurasian Economic Union



Manufacturer and Local Representative Information

Manufacturer information:

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

Local representative information Russian:

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

Local representative information Kazakh:

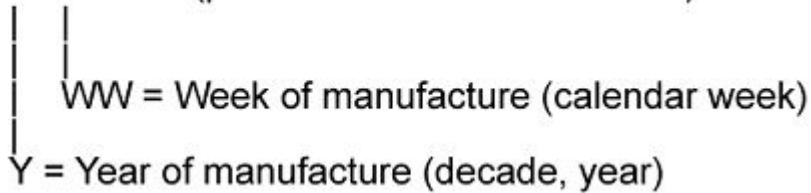
- **Russia**
ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**

ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандық ауданы, Әл-Фараби даңғылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (product serial number format)



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

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

Provides environmental, mechanical, and power supply specifications for the server.

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	4.28 cm (1.69 in)
Depth	38.74 cm (15.25 in)
Width	43.46 cm (17.11 in)
Weight, approximate values	—
Minimum	9.00 kg (19.84 lb)
Maximum	12.00 kg (26.46 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

[**ATX 290 W Non-hot-plug Power Supply \(92% efficiency\)**](#)

[**ATX 290 W Platinum Non-hot-plug Power Supply \(94% efficiency\)**](#)

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

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

HPE 800 W Flex Slot -48 VDC Hot-plug Low Halogen Power Supply

HPE 1000 W Flex Slot Titanium Hot-plug Power Supply

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

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

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

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	5.5 A
Rated input power	331 W at 115 VAC

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

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

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

Specification	Value
	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

Specification	Value
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 800 W Flex Slot -48 VDC Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	-40 VDC to -72 VDC -48 VDC nominal input
Rated input current	24.0 A at -40 VDC input 18.2 A at -48 VDC input, nominal input 12.0 A at -72 VDC input
Rated input power	874 W at -40 VDC input 865 W at -48 VDC input, nominal input 854 W at -72 VDC input
Rated input power (BTUs per hour)	2983 at -40 VDC input 2951 at -48 VDC input, nominal input 2912 at -72 VDC input
Power supply output	—
Rated steady-state power	800 W at -40 VDC to -72 VDC
Maximum peak power	800 W at -40 VDC to -72 VDC

Specification**Value**

Maximum peak power

800 W at -40 VDC to -72 VDC input

**WARNING**

To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel.
- Connect the equipment to a reliably grounded secondary circuit source. A secondary circuit has no direct connection to a primary circuit and derives its power from a transformer, converter, or equivalent isolation device.
- The branch circuit overcurrent protection must be rated 27 A.

**CAUTION**

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment.

If this connection is made, all of the following must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode conductor is connected.
- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices must not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

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

Websites provide links to HPE tools, resources, and product documentation.

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 DL20 Gen11 user documents

<https://www.hpe.com/info/dl20gen11-docs>

Support and other resources

Subtopics

[Accessing Hewlett Packard Enterprise Support](#)

[HPE product registration](#)

[Accessing updates](#)

[Customer self repair](#)

[Remote support](#)

[Documentation feedback](#)

Accessing Hewlett Packard Enterprise Support

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

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

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

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

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs

- Add-on products or components
- Third-party products or components

HPE product registration

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

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

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

Accessing updates

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

Hewlett Packard Enterprise Support Center

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

My HPE Software Center

<https://www.hpe.com/software/hpesoftwarecenter>

- To subscribe to eNewsletters and alerts:

<https://www.hpe.com/support/e-updates>

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:



IMPORTANT

Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Account set up with relevant entitlements.

Customer self repair

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

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

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which initiates a fast and accurate resolution based on the service level of your product. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

HPE Get Connected

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

HPE Tech Care Service

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

HPE Complete Care Service

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

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, click the **Feedback** button on the page of an opened document on the Hewlett Packard Enterprise Support Center portal (<https://www.hpe.com/support/hpesc>). Use this feature to send any errors, suggestions, or comments. This process captures all document information.