



# **HPE ProLiant DL345 Gen11 User Guide**

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# HPE ProLiant DL345 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 components**

**Riser slot numbering**

**HPE Basic Drive LED definitions**

**EDSFF SSD LED definitions**

**Drive bay numbering**

**Drive backplane naming**

**GPU numbering**

**PCIe switch board components**

**OCP retimer card components**

**Fan numbering**

**DLC module installation location**

**DLC module components**

**Trusted Platform Module 2.0**

**HPE NS204i-u Boot Device components**

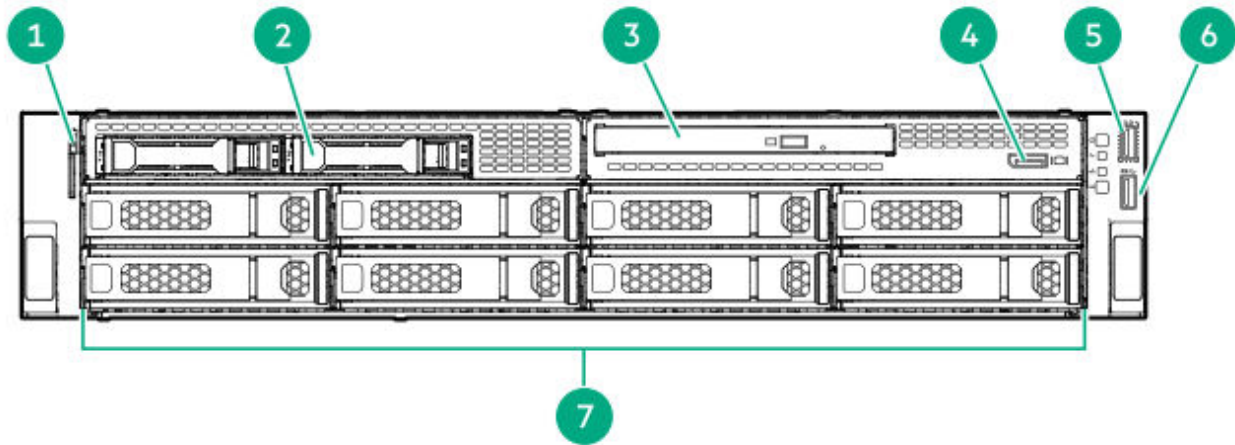
**HPE NS204i-u Boot Device LED definitions**

**M.2 SSD pass-through card components**

**DSC-25 2-port SFP28 card ports and LEDs**

# Front panel components

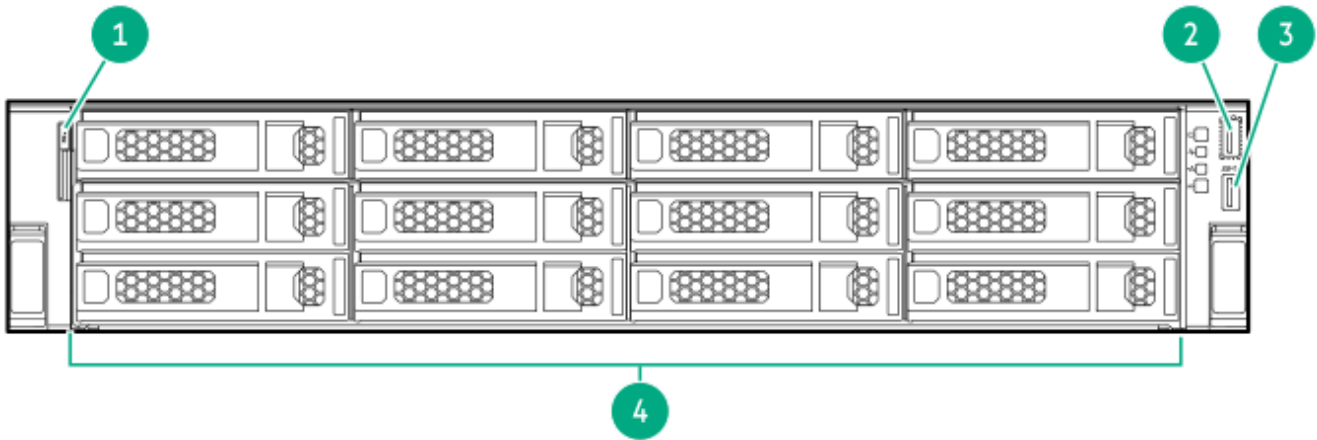
## 8 LFF drive configuration



Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	2 SFF side-by-side drives (optional) <sup>2</sup>
3	Optical drive (optional)
4	DisplayPort 1.1a (optional)
5	iLO service port
6	USB 3.2 Gen 1 port
7	LFF drives <sup>3</sup>

- <sup>1</sup> 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.
- <sup>2</sup> The 2 SFF side-by-side drive cage option supports SAS, SATA, or U.3 NVMe drives.
- <sup>3</sup> The server supports LFF SAS or SATA drives.

## 12 LFF drive configuration

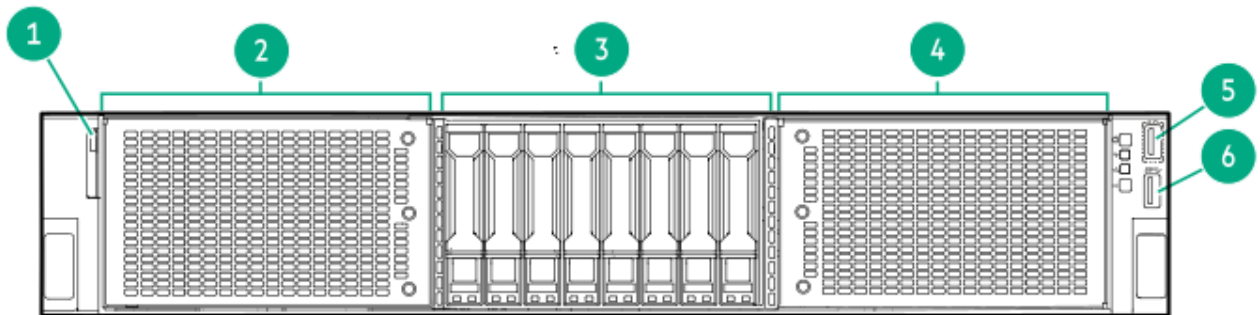


Item	Description
1	Serial number/iLO information pull tab <sup>1</sup> <sub>—</sub>
2	iLO service port
3	USB 3.2 Gen 1 port
4	LFF drives <sup>2</sup> <sub>—</sub>

<sup>1</sup> 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.

<sup>2</sup> The server supports LFF SAS or SATA drives.

## GPU-optimized 8 SFF drive configuration

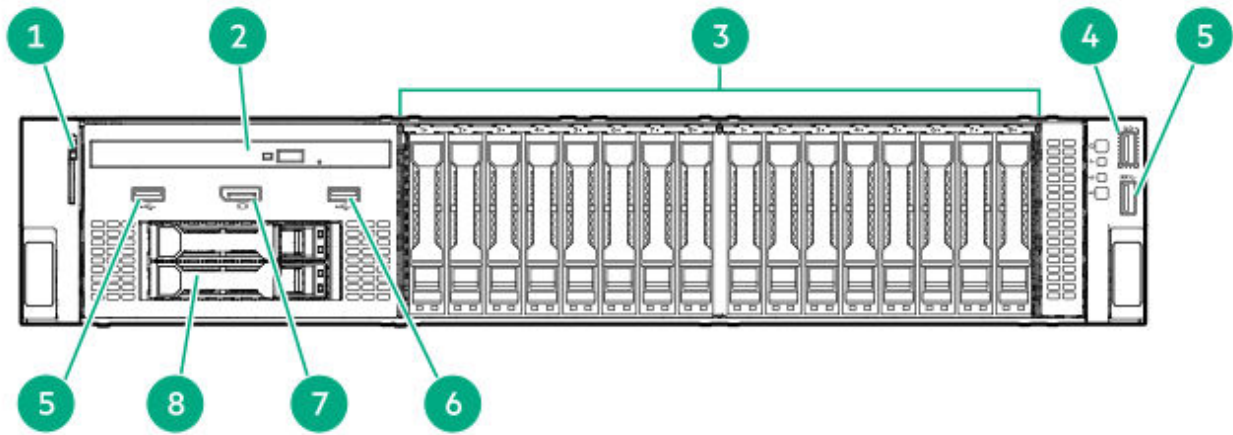


Item	Description
1	Serial number/iLO information pull tab <sup>1</sup> <sub>—</sub>
2	GPU riser cage 1
3	SFF drives <sup>2</sup> <sub>—</sub>

Item	Description
4	GPU riser cage 2
5	iLO service port
6	USB 3.2 Gen 1 port

- <sup>1</sup> 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.
- <sup>2</sup> Depending on the type of drive backplane installed, the front-end SFF drive boxes supports SAS, SATA, or U.3 NVMe drives.

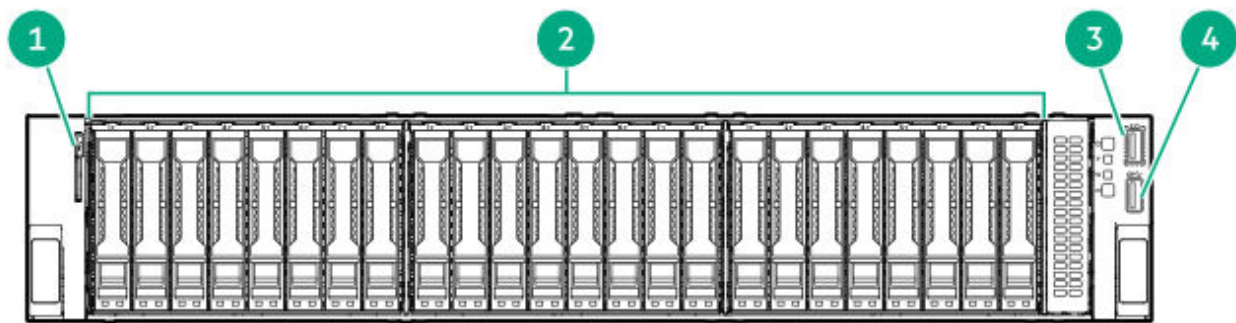
## 16 SFF drive configuration



Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	Optical drive (optional)
3	SFF drives <sup>2</sup>
4	iLO service port
5	USB 3.2 Gen 1 ports
6	USB 2.0 port
7	DisplayPort 1.1a (optional)
8	2 SFF stacked drives (optional) <sup>3</sup>

- <sup>1</sup> 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.
- <sup>2</sup> Depending on the type of drive backplane installed, the front-end SFF drive boxes supports SAS, SATA, or U.3 NVMe drives.
- <sup>3</sup> The 2 SFF stacked drive cage option supports SAS, SATA, or U.3 NVMe drives.

## 24 SFF drive configuration



Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	SFF drives <sup>2</sup>
3	iLO service port
4	USB 3.2 Gen 1 port

<sup>1</sup> 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.

<sup>2</sup> Depending on the type of drive backplane installed, the server supports SFF SAS, SATA, or U.3 NVMe drives.

## GPU-optimized 8 E3.S drive configuration

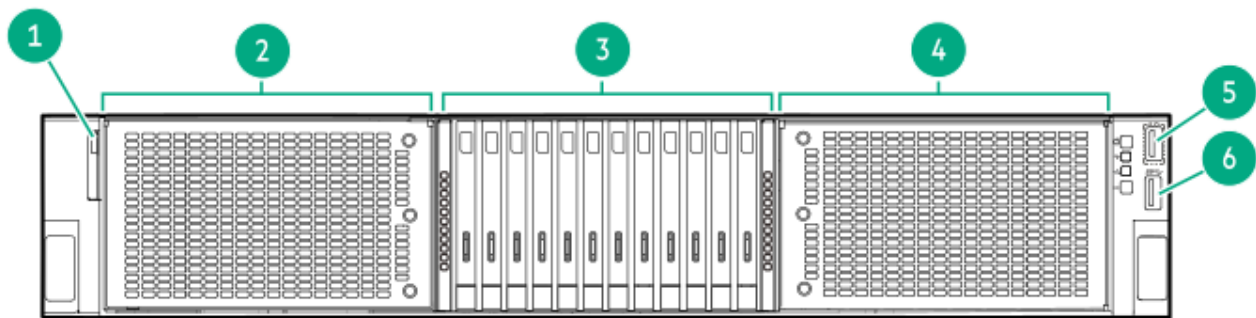


Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	GPU riser cage 1

Item	Description
3	E3.S drives
4	E3.S drive cage filler
5	GPU riser cage 2
6	<a href="#">iLO service port</a>
7	USB 3.2 Gen 1 port

<sup>1</sup> 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.

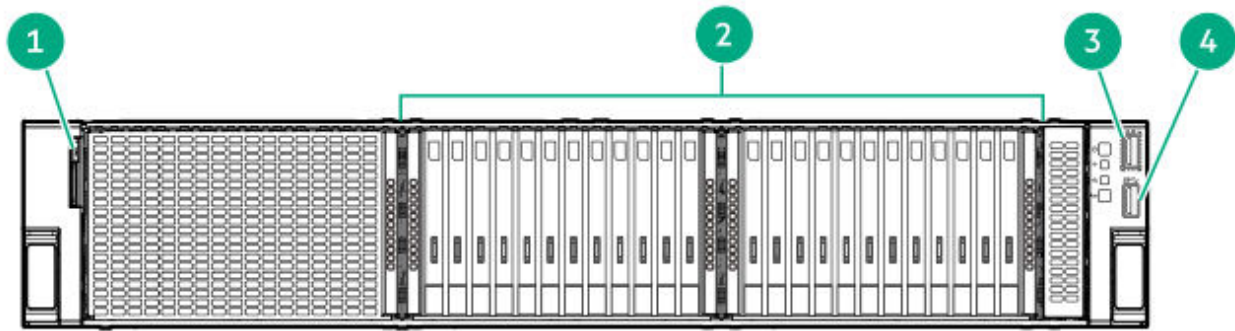
### GPU-optimized 12 E3.S drive configuration



Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	GPU riser cage 1
3	E3.S drives
4	GPU riser cage 2
5	<a href="#">iLO service port</a>
6	USB 3.2 Gen 1 port

<sup>1</sup> 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.

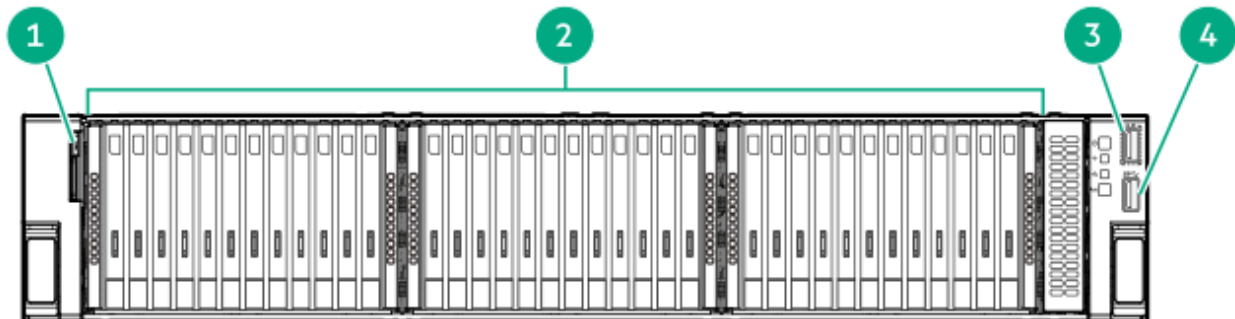
## 24 E3.S drive configuration



Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	E3.S drives
3	iLO service port
4	USB 3.2 Gen 1 port

<sup>1</sup> 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.

## 36 E3.S drive configuration



Item	Description
1	Serial number/iLO information pull tab <sup>1</sup>
2	E3.S drives
3	iLO service port

Item	Description
4	USB 3.2 Gen 1 port

- <sup>1</sup> 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.

## 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:

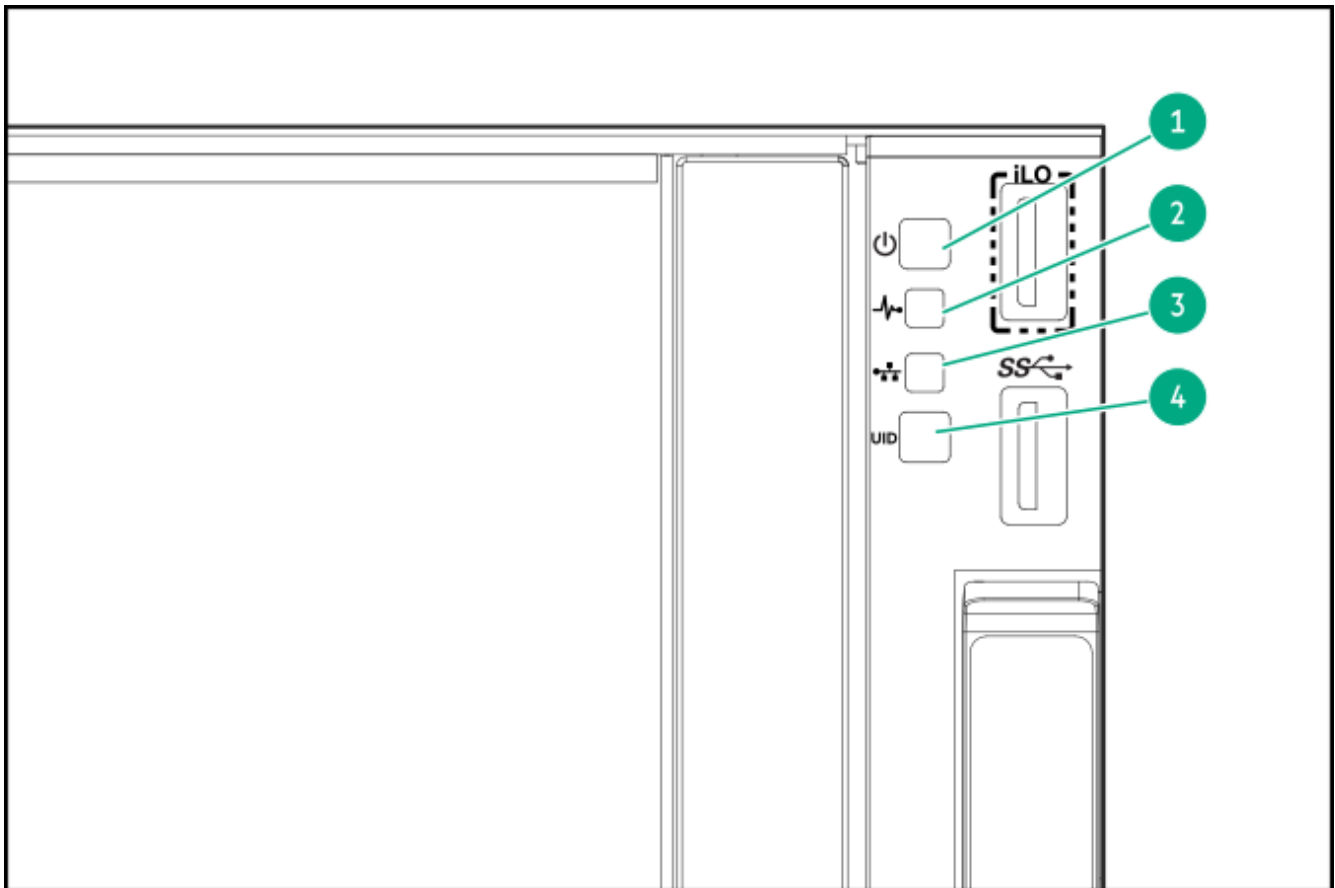
- Actions are logged in the iLO event log.
- The server UID flashes to indicate the Service Port status.

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	Description	Status	Definition
1	Power On/Standby button and system power LED <sup>1</sup> <sub>—</sub>	Solid green	System on
		Flashing green	Performing power-on sequence
		Solid amber	System in standby
		Off	No power present <sup>2</sup> <sub>—</sub>

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

<sup>1</sup><sub>—</sub> When all LEDs flash simultaneously, a power fault has occurred. For more information, see [Front panel LED power fault codes](#).

<sup>2</sup><sub>—</sub> Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the front I/O cable is disconnected.

<sup>3</sup><sub>—</sub> 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

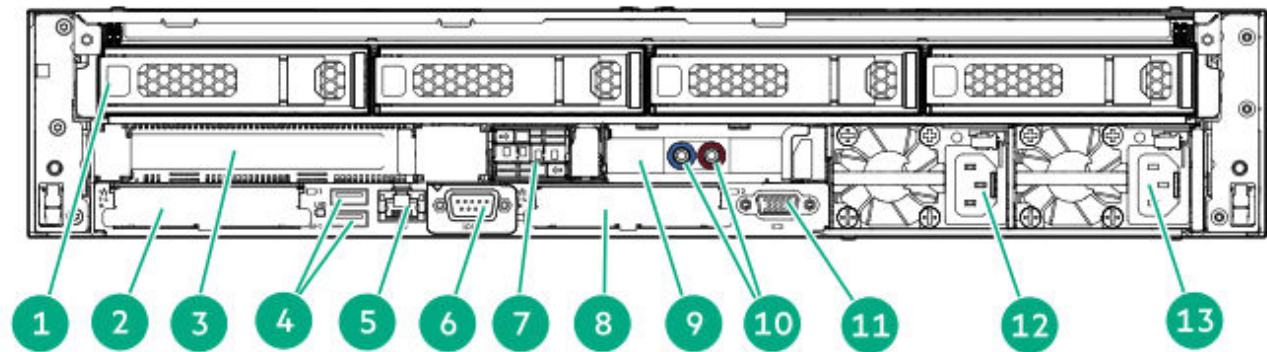
The following table provides a list of power fault codes, and the subsystems that are affected. Not all power faults are used by all servers.

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

### Rear panel with rear 4 LFF drives

The rear panel with 4 LFF drive configuration is only supported when the front-end drives are also LFF.



Item	Description
1	LFF drives $\frac{1}{2}$ (optional)

Item	Description
2	Slot 21 OCP PCIe5 x8 <sup>2</sup>
3	Slot 3 PCIe5 x16 base riser
4	USB 3.2 Gen 1 ports
5	iLO dedicated network port
6	Serial port (optional)
7	NS204i-u boot device <sup>3</sup> (optional)
8	Slot 22 OCP PCIe5 x8
9	Slot 6 PCIe5 x16 in low-profile riser <sup>4</sup>
10	Direct liquid cooling (DLC) quick connectors (optional)
11	VGA port
12	Flexible Slot power supply 2 (optional)
13	Flexible Slot power supply 1

<sup>1</sup> The server supports LFF SAS or SATA drives.

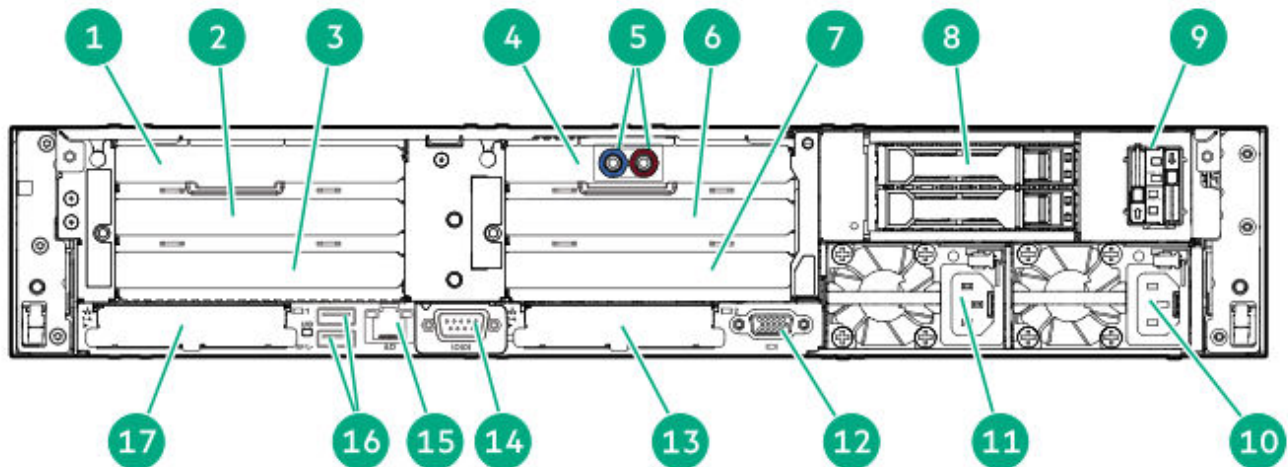
<sup>2</sup> In Slot 21 OCP, the [OCP bandwidth upgrade cable](#) is required to support a x16 OCP expansion option.

<sup>3</sup> This location also supports [DLC module P80876-B21 option](#).

<sup>4</sup> This location also supports [DLC module P80871-B21 option](#).

### Rear panel with rear 2 SFF stacked drives

The rear panel with 2 SFF stacked drive configuration is only supported when the front-end drives are also SFF.



Item	Description
1	Slot 1 PCIe5 x16 stacking riser

Item	Description
2	Slot 2 PCIe5 x16 free-height riser
3	Slot 3 PCIe5 x16 base riser
4	Slot 4 PCIe5 x16 stacking riser <sup>1</sup> <sub>—</sub>
5	Direct liquid cooling (DLC) quick connectors (optional)
6	Slot 5 PCIe5 x16 stacking riser
7	Slot 6 PCIe5 x16 base riser
8	2 SFF stacked drives <sup>2</sup> <sub>—</sub> (optional)
9	NS204i-u boot device (optional)
10	Flexible Slot power supply 1
11	Flexible Slot power supply 2 (optional)
12	<u>VGA port</u>
13	Slot 22 OCP PCIe5 x8
14	Serial port (optional)
15	iLO dedicated network port
16	USB 3.2 Gen 1 ports
17	Slot 21 OCP PCIe5 x8 <sup>3</sup> <sub>—</sub>

<sup>1</sup> This location also supports DLC module P80876-B21 option.

<sup>2</sup> The 2 SFF stacked drive cage option supports SAS, SATA, or U.3 NVMe drives.

<sup>3</sup> In Slot 21 OCP, the OCP bandwidth upgrade cable is required to support an x16 OCP expansion option.

## Subtopics

### Monitor setup

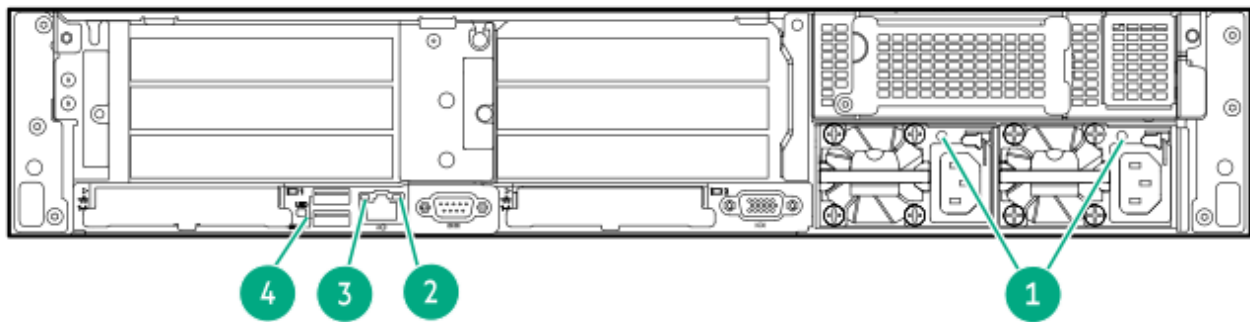
## Monitor setup

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

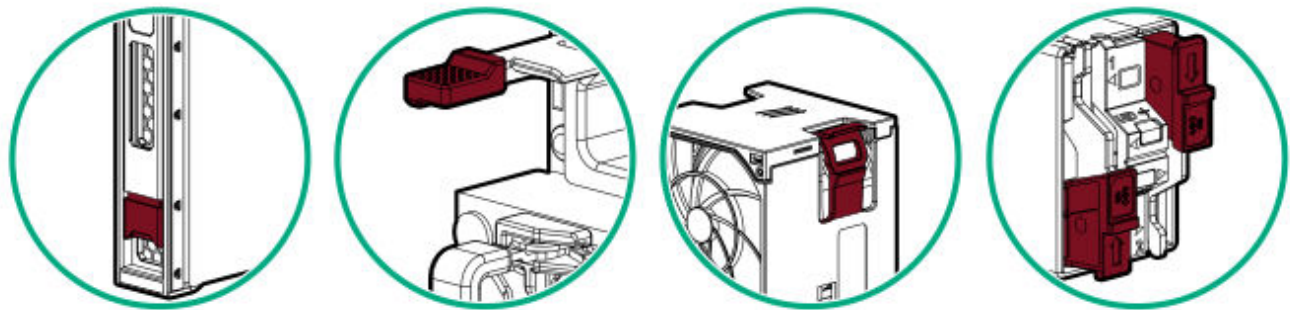
Item	LED	Status	Definition
		Flashing blue	<ul style="list-style-type: none"> <li>• 1 flash per sec—Remote management or firmware upgrade in progress</li> <li>• 4 flashes per sec—iLO manual reboot sequence initiated</li> <li>• 8 flashes per sec—iLO manual reboot sequence in progress</li> </ul>
		Off	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

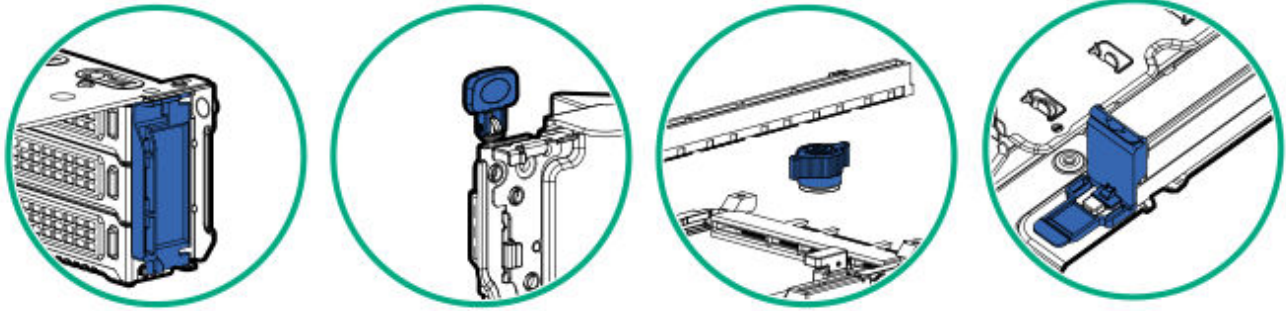


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

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.

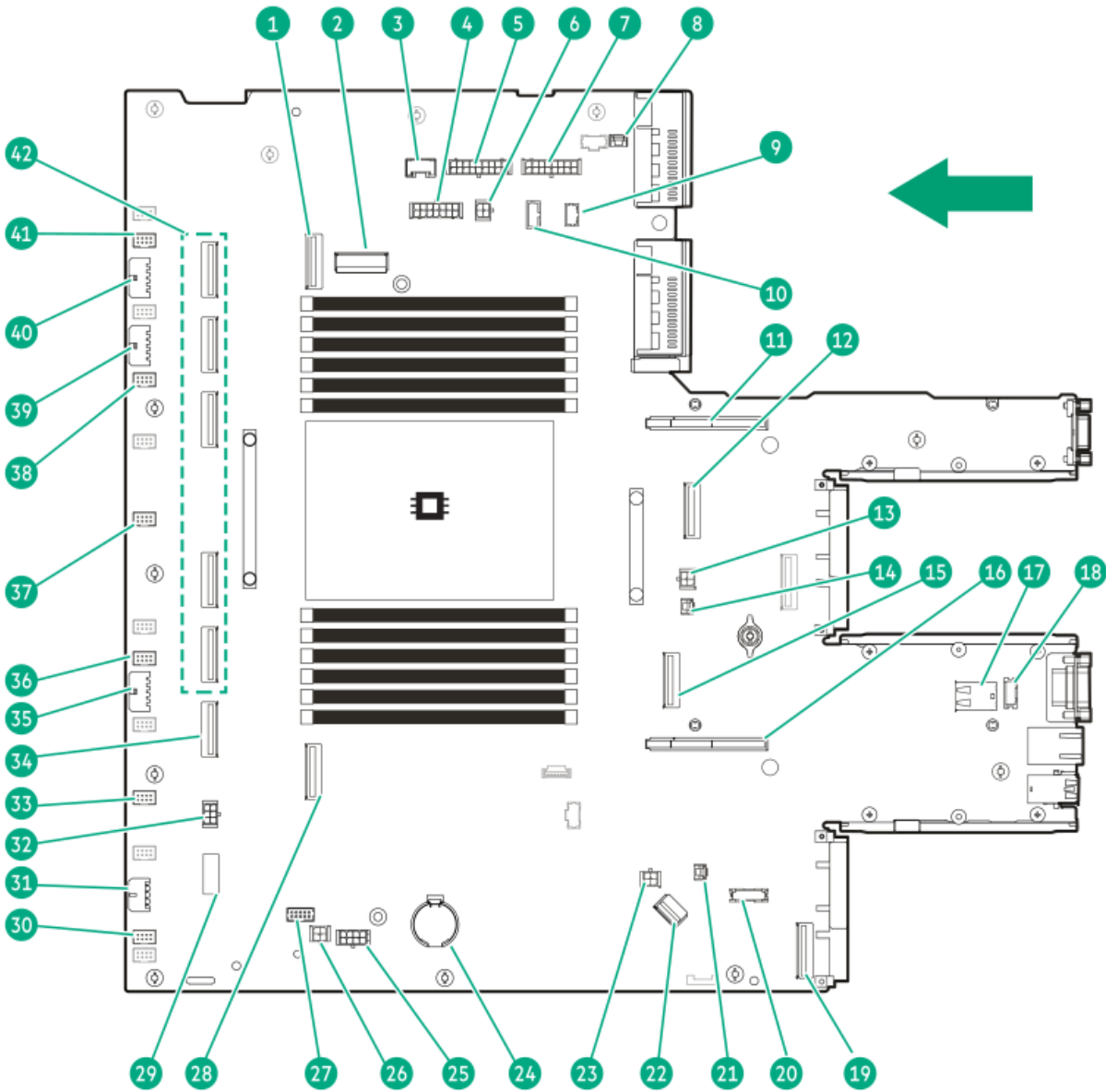
Component examples:

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

## System board components

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

The arrow points to the front of the server.



Item	Description
1	NVMe port 8A
2	NS204i-u signal connector
3	Energy pack connector
4	Rear drive backplane / Graphics card power connector C (J9019)
5	Drive backplane / Graphics card power connector A (J9017)
6	Auxiliary power connector for the free-height riser
7	Drive backplane / Graphics card power connector B (J9018)
8	Chassis intrusion detection switch connector

<b>Item</b>	<b>Description</b>
9	M.2 SSD power connector*
10	Front drive backplane power connector 2
11	Sideband connector for the free-height riser (secondary)
12	NVMe/SATA port 1B
13	SmartNIC auxiliary power connector
14	Slot 22 OROC storage backup power connector
15	NVMe port 9A
16	Primary riser connector
17	Stacked, dual USB 3.2 Gen 1 ports
18	Serial port connector
19	Slot 21 OCP x16 upgrade connector
20	Front USB and DisplayPort connector
21	Slot 21 OROC storage backup power connector
22	Front I/O connector
23	Power connector for the free-height riser
24	System battery
25	GPU riser power connector 1
26	Auxiliary power connector for the free-height riser
27	Sideband connector for the free-height riser (primary)
28	NVMe/SATA port 1A
29	<u>System maintenance switch</u>
30	Fan connector 6
31	GPU riser power connector 2
32	Optical drive power connector
33	Fan connector 5
34	NVMe/SATA port 2A
35	Front drive backplane power connector 3
36	Fan connector 4
37	Fan connector 3
38	Fan connector 2
39	Front drive backplane power connector 2
40	Front drive backplane power connector 1
41	Fan connector 1

Item	Description
42	NVMe ports 3A – 7A (right to left)

\* This power connector is either for the M.2 SSD pass-through card or the NS204i-u boot device options.

## Subtopics

**System maintenance switch**

**DIMM label identification**

**DIMM slot numbering**

**Processor and socket components**

## 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 <u>1</u>	Off	<ul style="list-style-type: none"> <li>Off—iLO 6 security is enabled.</li> <li>On—iLO 6 security is disabled.</li> </ul>
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 <u>1</u>	Off	<ul style="list-style-type: none"> <li>Off—Power-on password is enabled.</li> <li>On—Power-on password is disabled.</li> </ul>
S6 <u>1, 2, 3</u>	Off	<ul style="list-style-type: none"> <li>Off—No function</li> <li>On—Restore default manufacturing settings</li> </ul>
S7	Off	Reserved
S8	Off	Reserved
S9	Off	Reserved

Position	Default	Function
S10	Off	Reserved
S11	Off	Reserved
S12	Off	Reserved

- <sup>1</sup> To access the redundant ROM, set S1, S5, and S6 to On.
- <sup>2</sup> When the system maintenance switch position 6 is set to the On position, the system is prepared to restore all configuration settings to their manufacturing defaults.
- <sup>3</sup> When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see [Configuring the server](#).

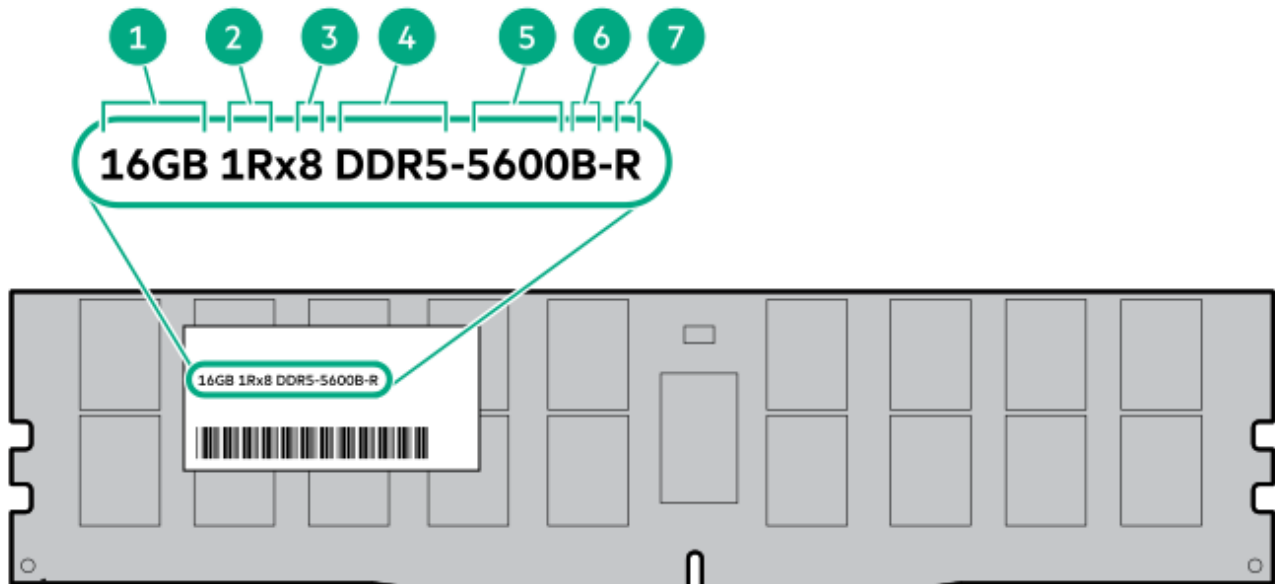
## DIMM label identification

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>

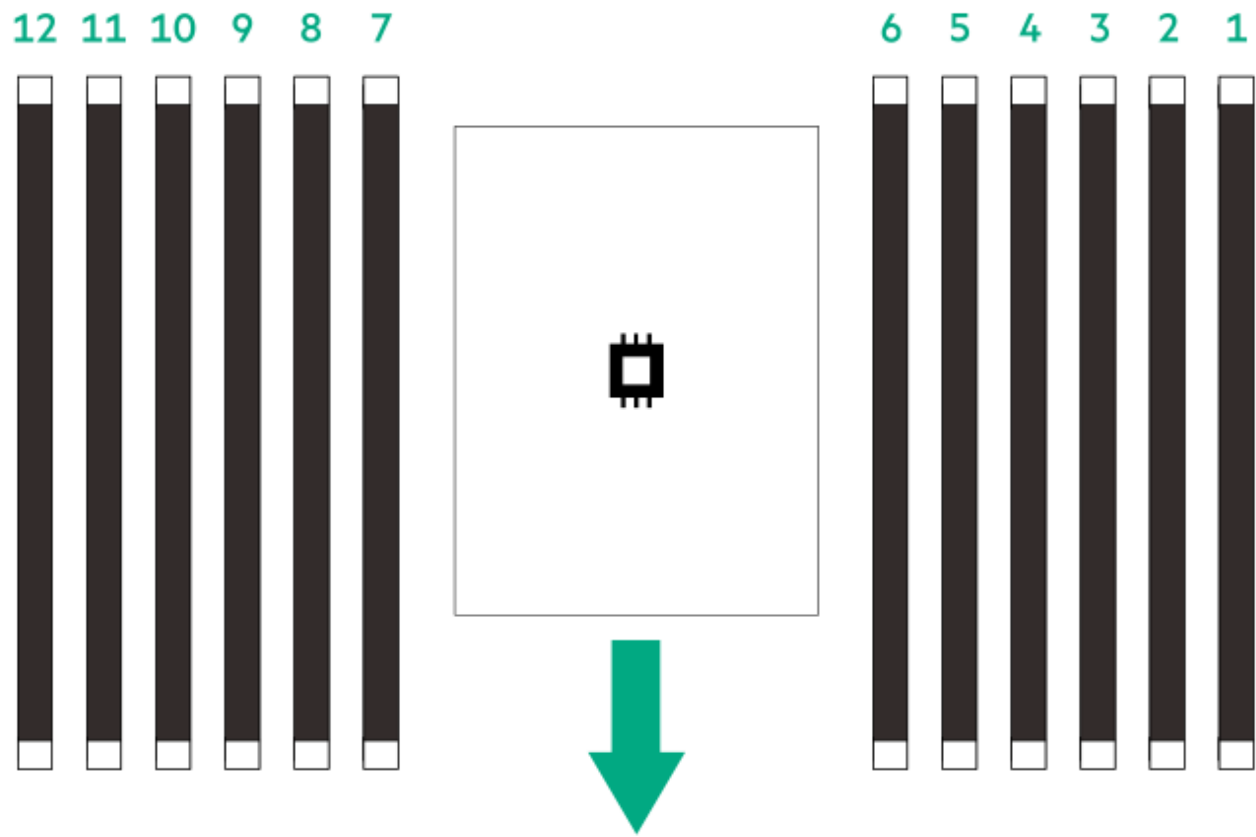


Item	Description	Example
1	Capacity <sup>1</sup> / <sub>—</sub>	16 GB 32 GB 64 GB 96 GB 128 GB 256 GB
2	Rank	1R—Single rank 2R—Dual rank 4R—Quad rank 8R—Octal rank
3	Data width on DRAM	x4—4-bit x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed <sup>1</sup> / <sub>—</sub>	4800 MT/s 5600 MT/s 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)

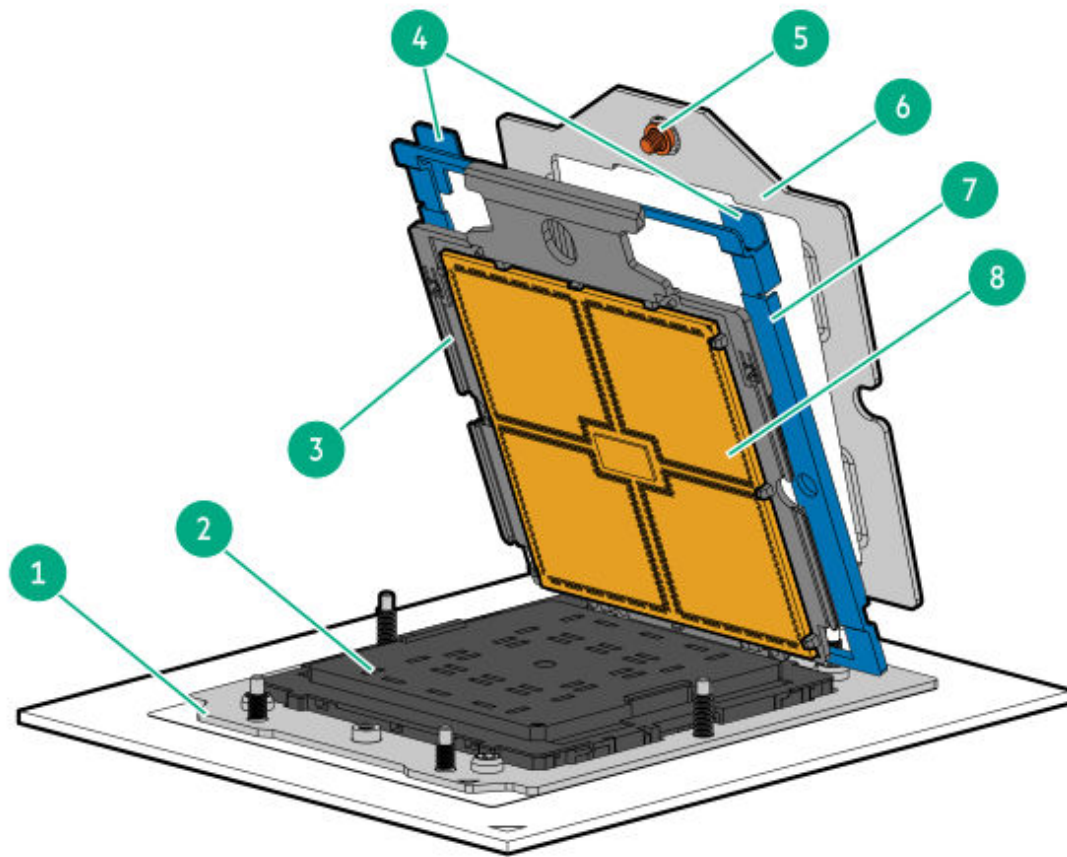
<sup>1</sup>/<sub>—</sub> The maximum memory speed and capacity is a function of the memory type, memory configuration, and processor model.

## DIMM slot numbering

The arrow points to the front of the server.



## Processor and socket components



Item	Description
1	Processor socket
2	Pin field cover cap
3	Processor carrier
4	Rail frame lift tabs
5	Retention frame screw (T-20)
6	Retention frame
7	Rail frame
8	Processor

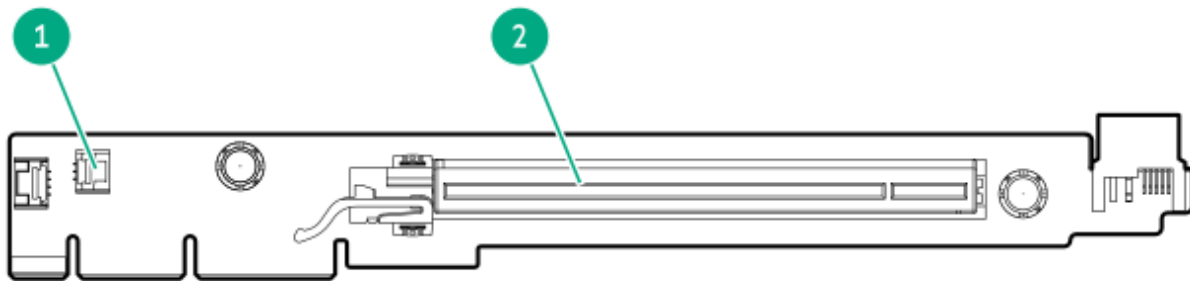
## Riser board components

This server support two general types of PCIe risers:

- Standard riser—This riser is a board-only riser that is directly installed on the riser connector on the system board. This riser type is used:
  - As a standalone riser in a single-slot riser cage.
  - As the base riser in a three-slot riser cage.
- Cabled riser—This riser type has its signal cable soldered on the board itself. This riser type is combined with a standard, base riser and another cabled riser in a three-slot riser cage.

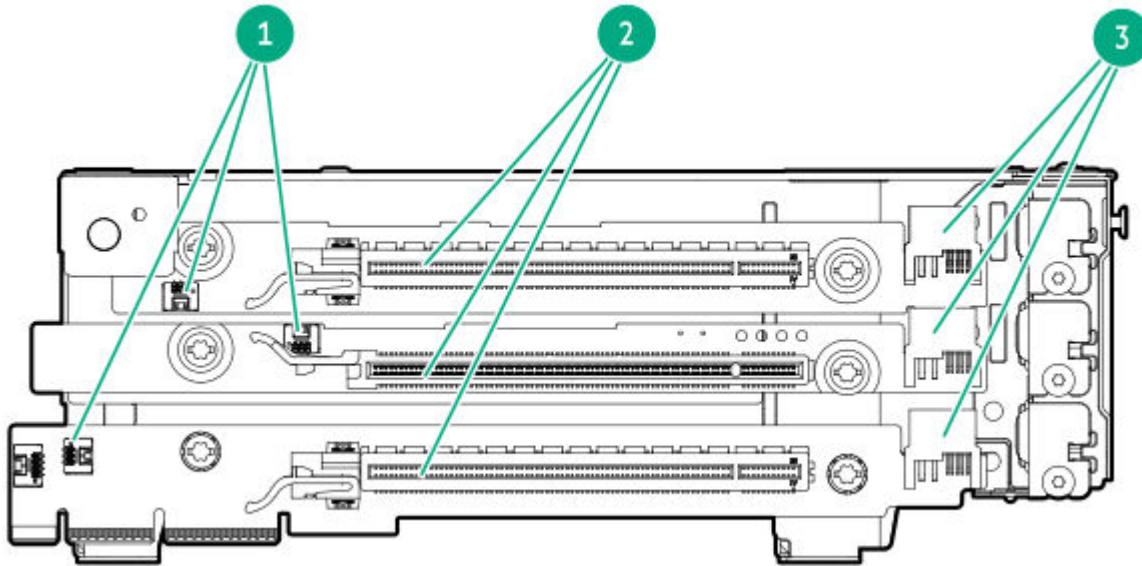
For clarity, the riser cage and the cables of the cabled risers are not shown in the following images.

### Standard riser components



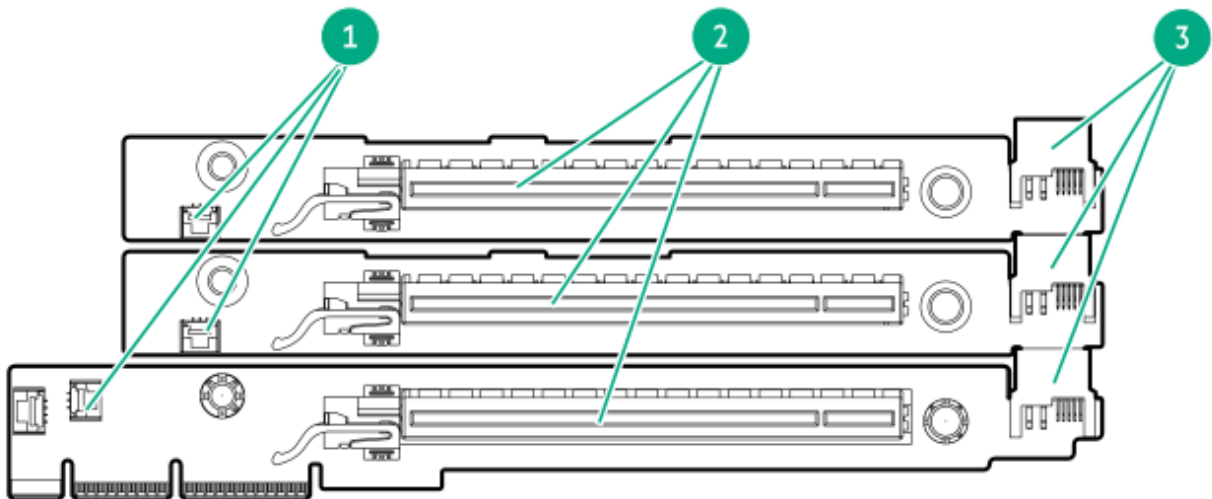
Item	Description
1	Storage controller backup power connector
2	PCIe5 x16 (16, 8, 4, 1) slot

### Primary cabled riser components



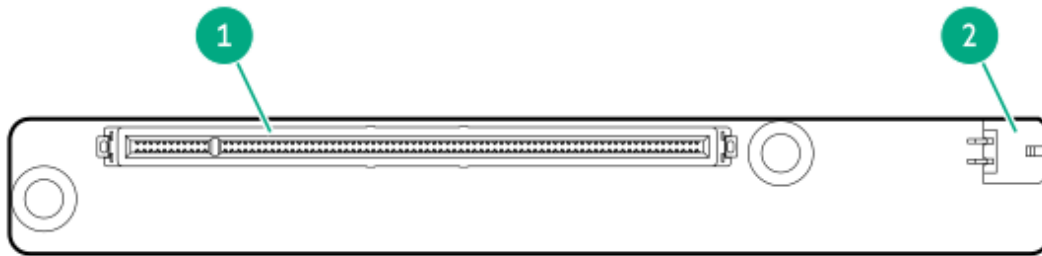
Item	Description
1	Storage controller backup power connectors
2	PCIe5 x16 (16, 8, 4, 1) slots
3	Riser power connectors

### Secondary cabled riser components



Item	Description
1	Storage controller backup power connectors
2	PCIe5 x16 (16, 8, 4, 1) slots
3	Riser power connectors

### GPU cabled riser components



Item	Description
1	PCIe5 x16 (16, 8, 4, 1) slot
2	Riser power connector

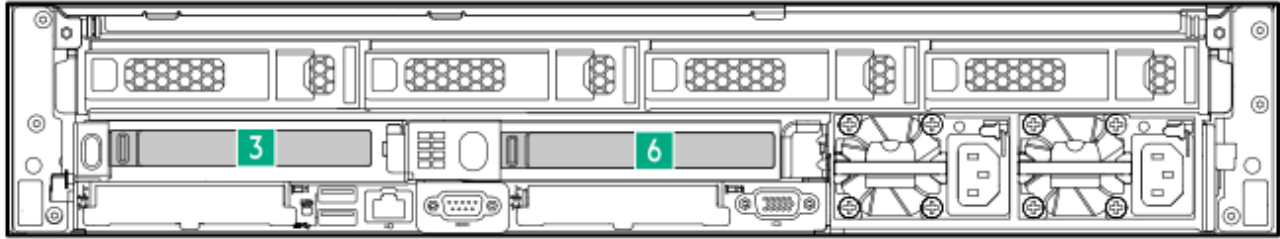
### Riser slot numbering

**CAUTION**

To maintain proper system cooling, do not install a 100 Gb or faster Ethernet/ InfiniBand/NVME-oF adapter in Slot 6.

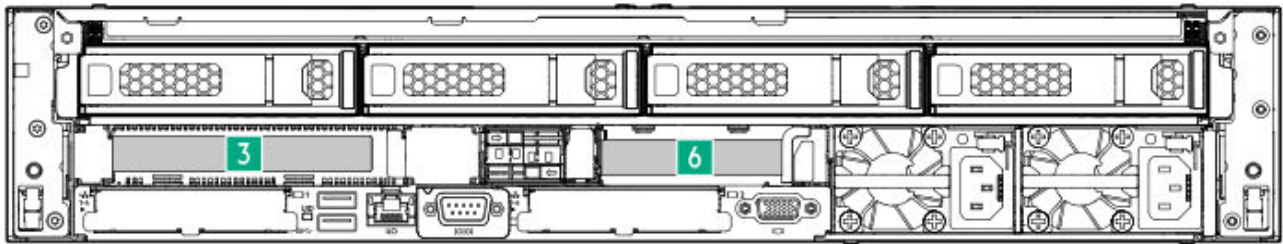
All riser slots are PCIe5 x16 (16, 8, 4, 1) and are rated for a maximum power draw of 75 W each.

## Two-slot riser configuration without HPE NS204i-u Boot Device



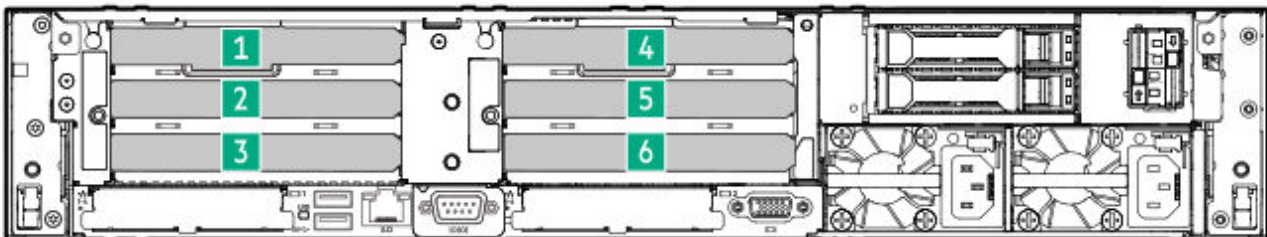
Slot number	Location	Supported form factors
3	Primary riser cage	<ul style="list-style-type: none"> <li>• Full-height, half-length</li> <li>• Half-height, half-length (low-profile)</li> </ul>
6	Secondary riser cage	

## Two-slot riser configuration with HPE NS204i-u Boot Device



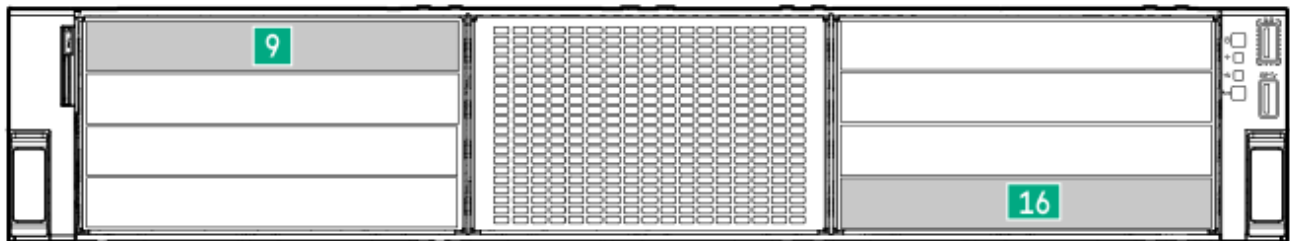
Slot number	Location	Supported form factors
3	Primary riser cage	<ul style="list-style-type: none"> <li>• Full-height, half-length</li> <li>• Half-height, half-length (low-profile)</li> </ul>
6	Secondary riser cage	

## Six-slot riser configuration



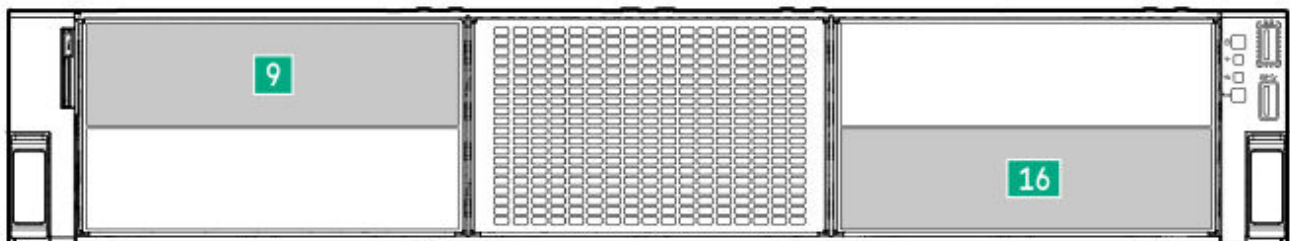
Slot number	Location	Description	Supported form factors
1	Primary riser cage	Stacking riser	<ul style="list-style-type: none"> <li>• Full-height, half-length</li> <li>• Half-height, half-length (low-profile)</li> </ul>
2		Free-height riser	
3		Base riser	
4	Secondary riser cage	Stacking riser	
5		Stacking riser	
6		Base riser	

### GPU cabled riser: 2 single-width GPU configuration



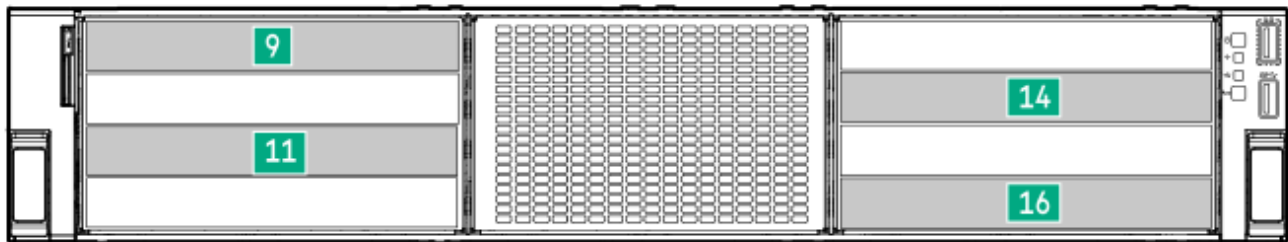
Slot number	Location	Supported form factors
9	GPU riser cage 1	Single-width, full- and half-height, length $\leq$ 10.50 in (26.67 cm)
16	GPU riser cage 2	

### GPU cabled riser: 2 double-width GPU configuration



Slot number	Location	Supported form factors
9	GPU riser cage 1	Double-width, full- and half-height, length ≤ 10.5 0 in (26.67 cm)
16	GPU riser cage 2	

### GPU cabled riser: 4 single-width GPU configuration



Slot number	Location	Supported form factors
9	GPU riser cage 1	Single-width, full- and half-height, length ≤ 10.5 0 in (26.67 cm)
11		
14	GPU riser cage 2	
16		

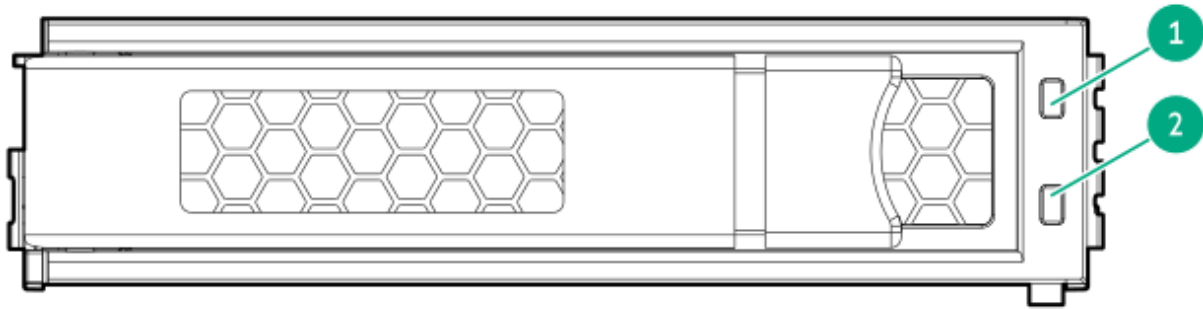
## HPE Basic Drive LED definitions

The HPE Basic drive carrier has the following LEDs:

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

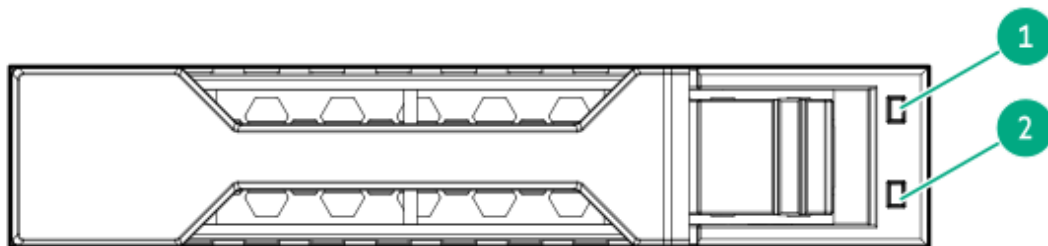
### LFF low-profile drive carrier

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



### SFF basic drive carrier

The SFF basic drive carrier supports hot-plug SAS, SATA, and U.3 PCIe4 NVMe drives.



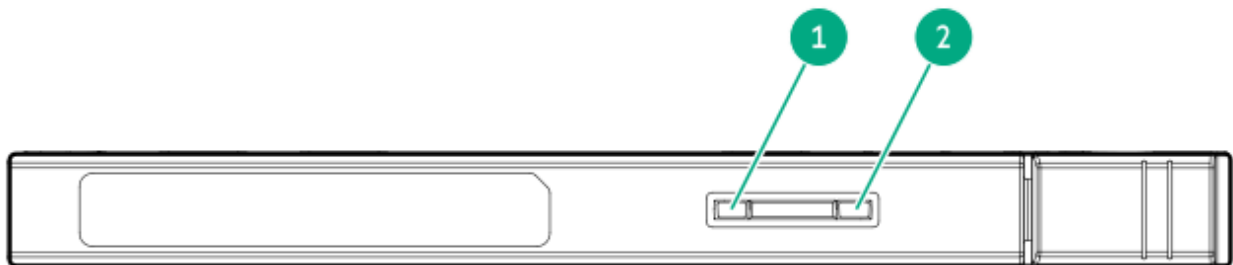
Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has 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.

Item	LED	State	Definition
		Flashing green (1 flash per second)	<p>The drive is doing one of the following:</p> <ul style="list-style-type: none"> <li>• Rebuilding or performing a RAID</li> <li>• Performing a stripe size migration</li> <li>• Performing a capacity expansion</li> <li>• Performing a logical drive extension</li> <li>• Erasing</li> <li>• Spare part activation</li> </ul>
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

## EDSFF SSD LED definitions

The EDSFF drive carrier has two 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.



Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.

Item	LED	State	Definition
		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 (4 flashes per second)	The drive is operating normally and has activity.
		Off	No power present.

## Drive bay numbering



### CAUTION

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

### Subtopics

[\*\*LFF drive bay numbering\*\*](#)

[\*\*SFF drive bay numbering\*\*](#)

[\*\*E3.S drive bay numbering\*\*](#)

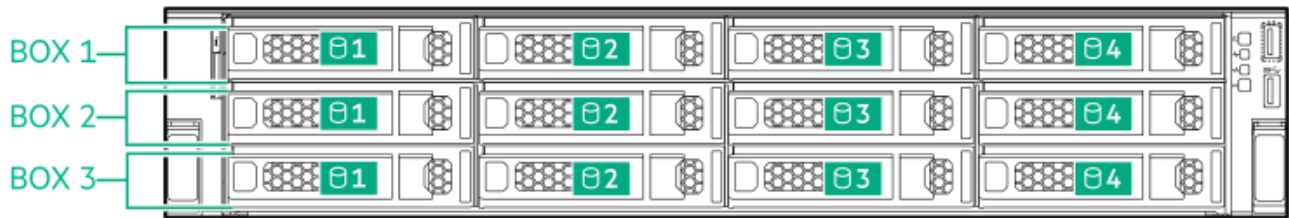
## LFF drive bay numbering

The following drive backplane options are supported in LFF drive configurations:

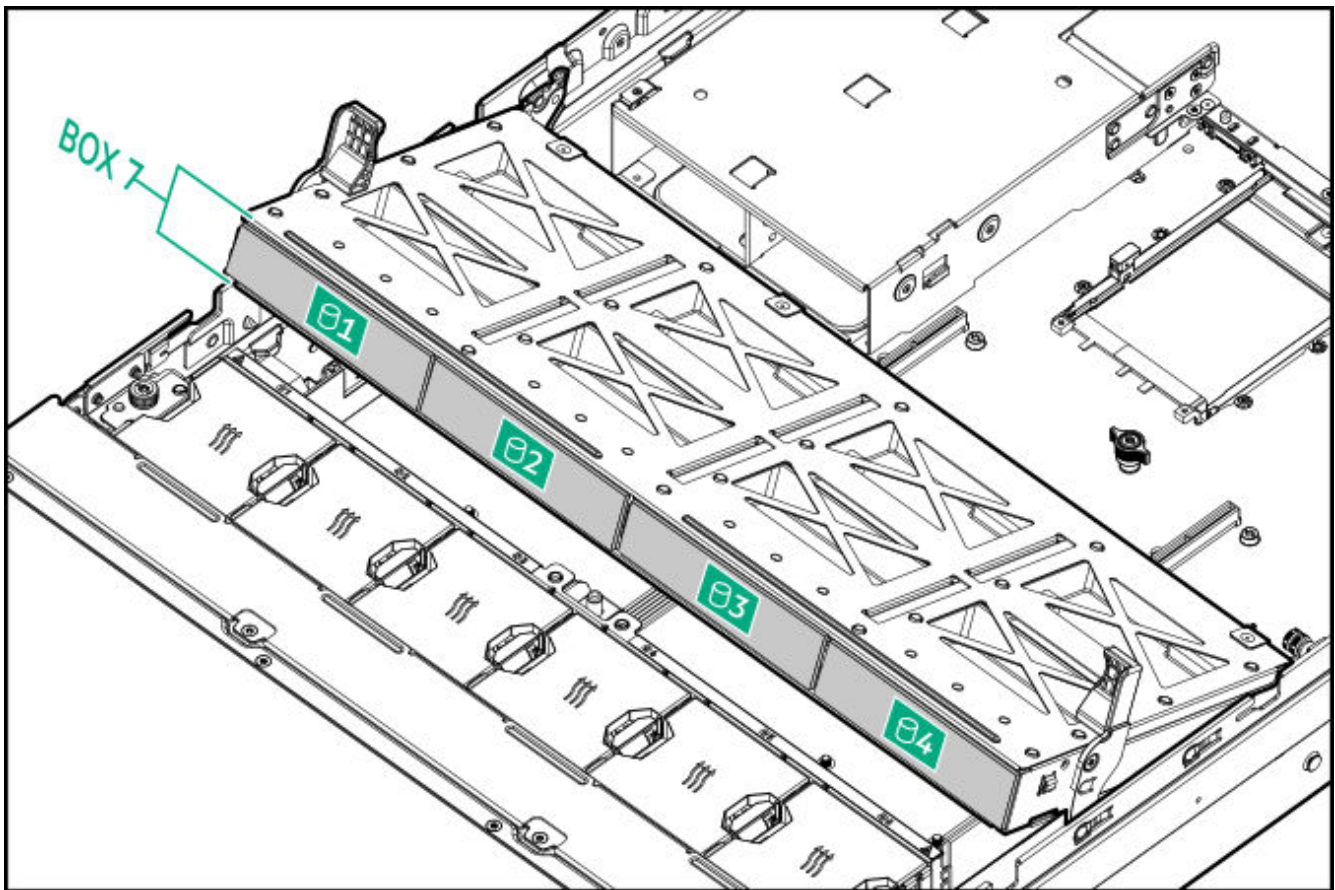
- 4 LFF 12G x1 SAS / SATA UBM2 LP
- 4 LFF 12G x1 SAS / SATA UBM6 LP

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

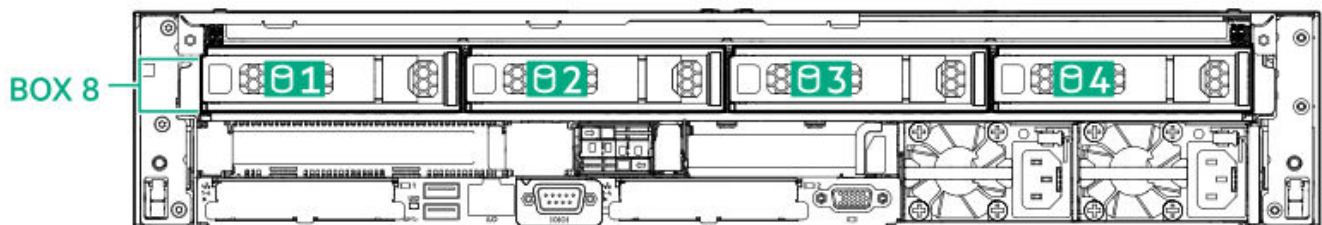
**Front: 12 LFF drive bay numbering**



**Midplane: 4 LFF drive bay numbering**



**Rear: 4 LFF drive bay numbering**



## SFF drive bay numbering

The following drive backplane options are supported in SFF drive configurations:

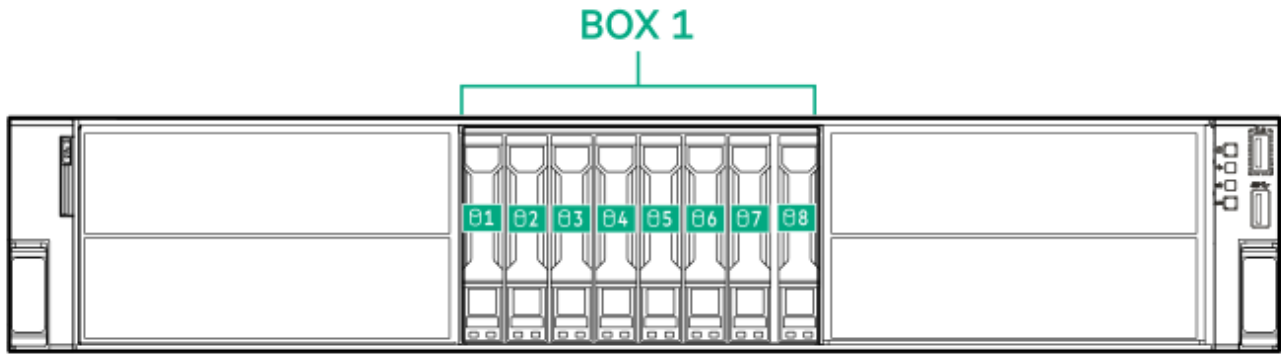
- Front-end: 2 SFF, side-by-side (LFF chassis only)
  - 2 SFF 24G x4 U.3 NVMe / SAS UBM3 BC
  - 2 SFF 24G x4 U.3 NVMe / SAS UBM6 BC
- Front- or rear-end: 2 SFF, stacked:
  - 24G x4 U.3 NVMe / SAS UBM3 BC
  - 24G x4 U.3 NVMe / SAS UBM6 BC
- Front-end: 8 SFF
  - 8 SFF 24G x1 U.3 NVMe / SAS UBM3 BC
  - 8 SFF 24G x1 U.3 NVMe / SAS UBM6 BC
  - 8 SFF 24G x4 U.3 NVMe / SAS UBM3 BC
  - 8 SFF 24G x4 U.3 NVMe / SAS UBM6 BC
- Midplane: 8 SFF
  - 8 SFF 24G x1 U.3 NVMe / SAS UBM3 BC
  - 8 SFF 24G x4 U.3 NVMe / SAS UBM3 BC

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

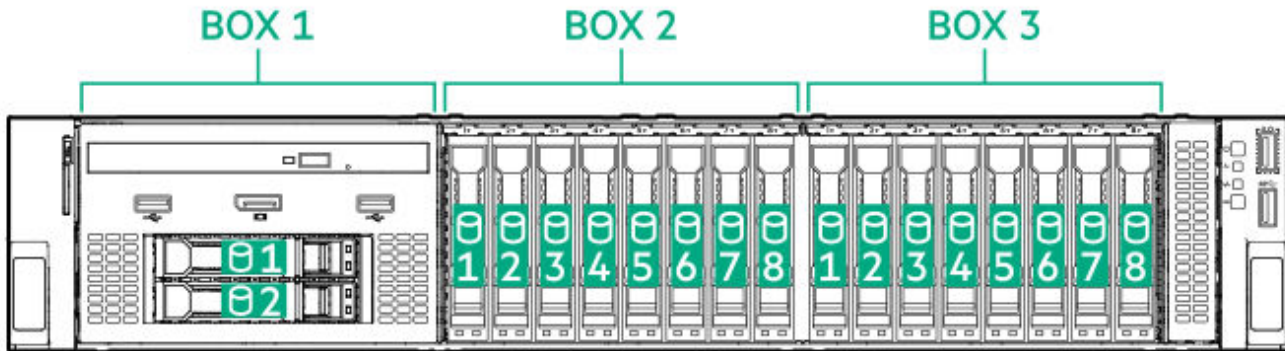
### Front: 8 LFF + 2 SFF drive bay numbering



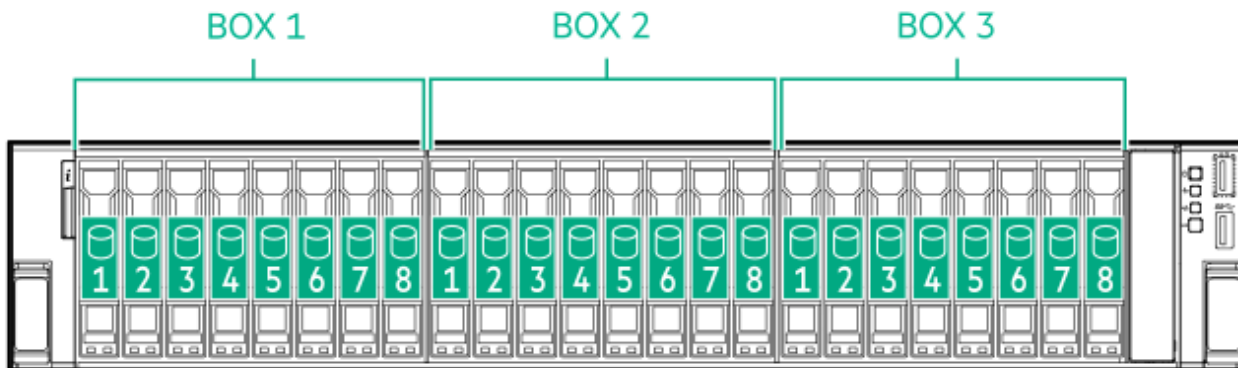
**Front: 8 SFF + GPUs drive bay numbering**



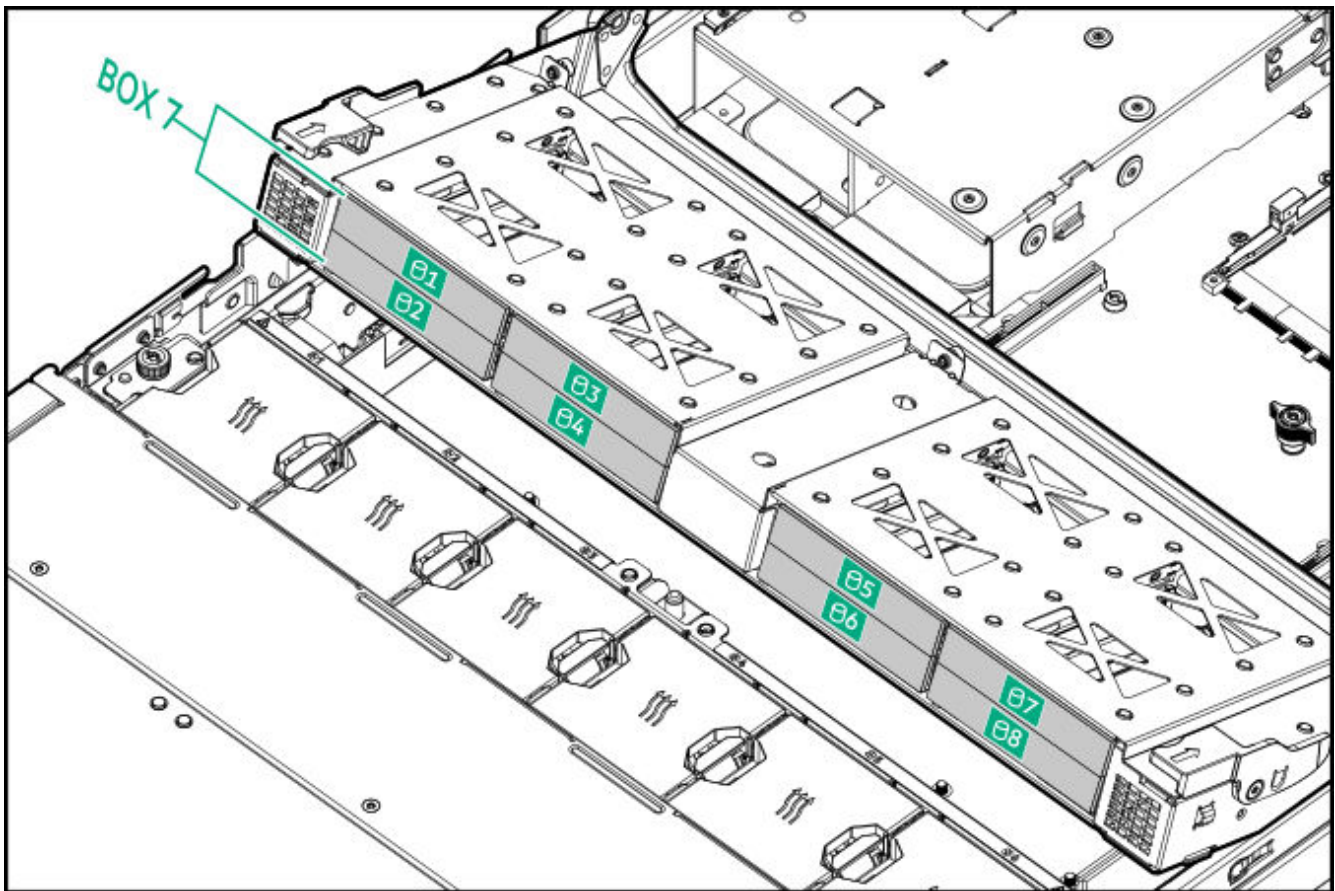
**Front: 16 SFF + 2 SFF drive bay numbering**



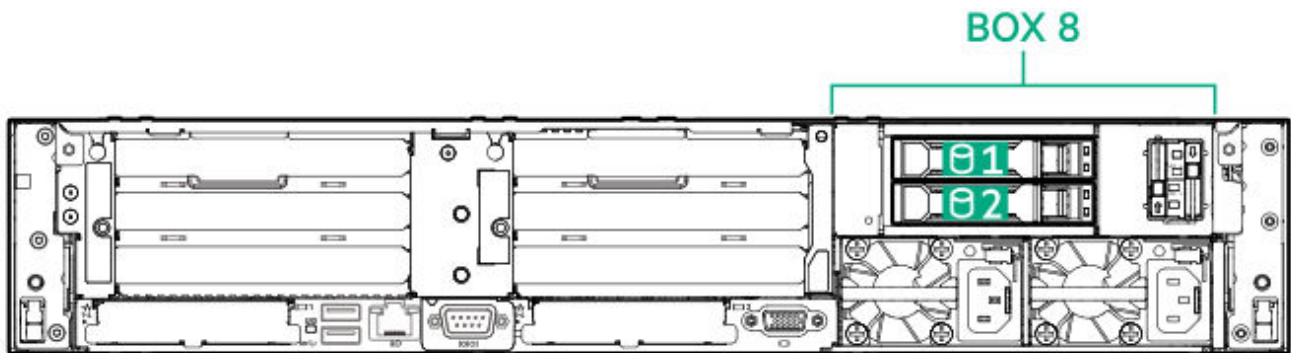
**Front: 24 SFF drive bay numbering**



### Midplane: 8 SFF drive bay numbering



### Rear: 2 SFF drive bay numbering



### E3.S drive bay numbering

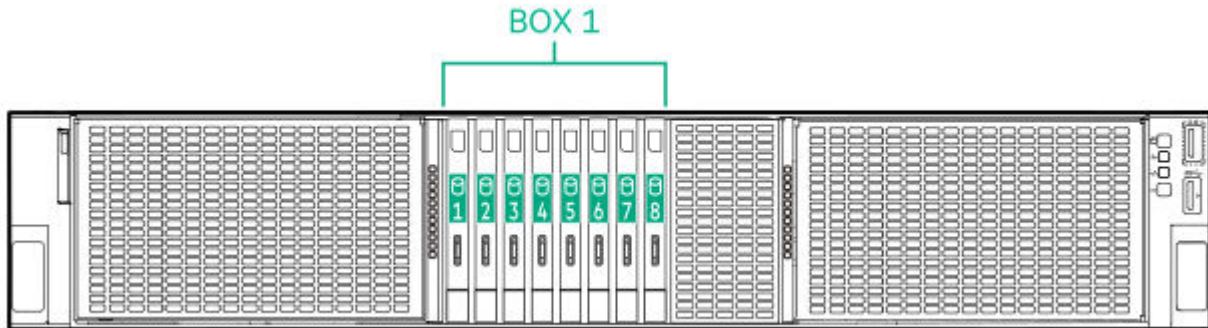
The following drive backplane options are supported in E3.S drive configurations:

- 12 E3.S 32G x4 NVMe UBM5 EC

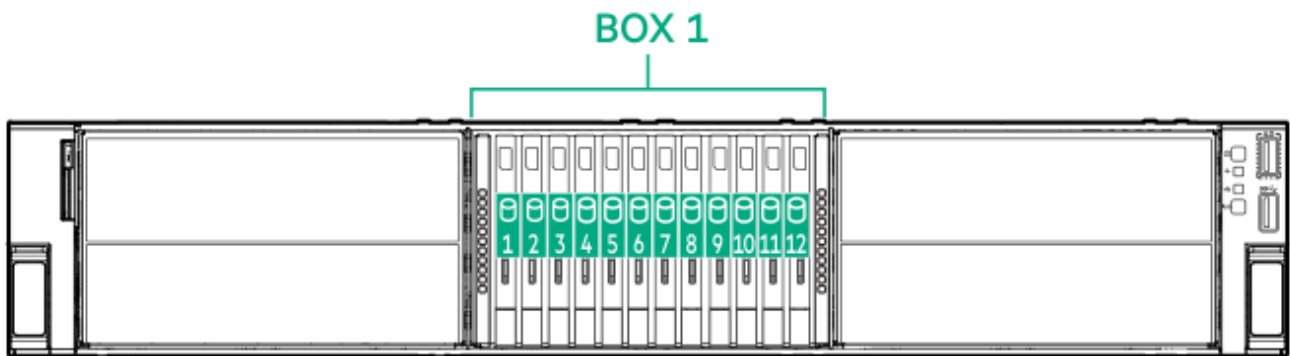
- 12 E3.S 32G x4 NVMe UBM7 EC

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

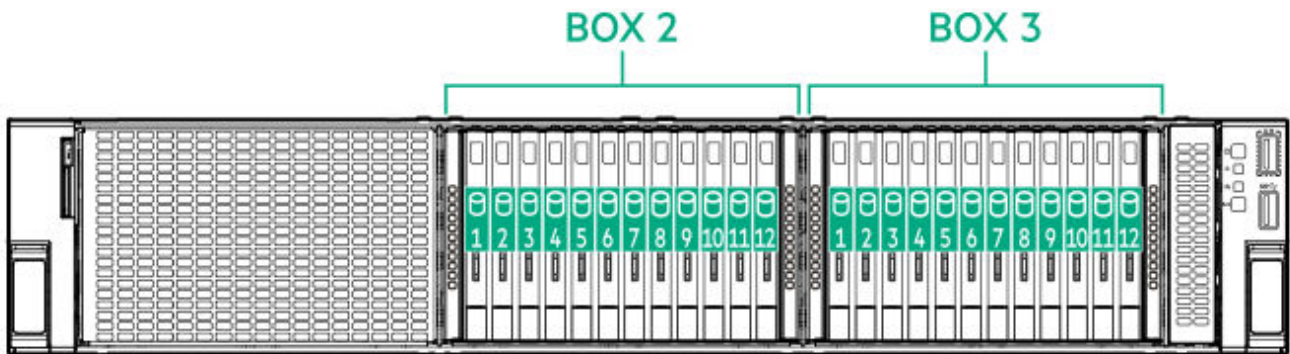
### 8 E3.S + GPUs drive bay numbering



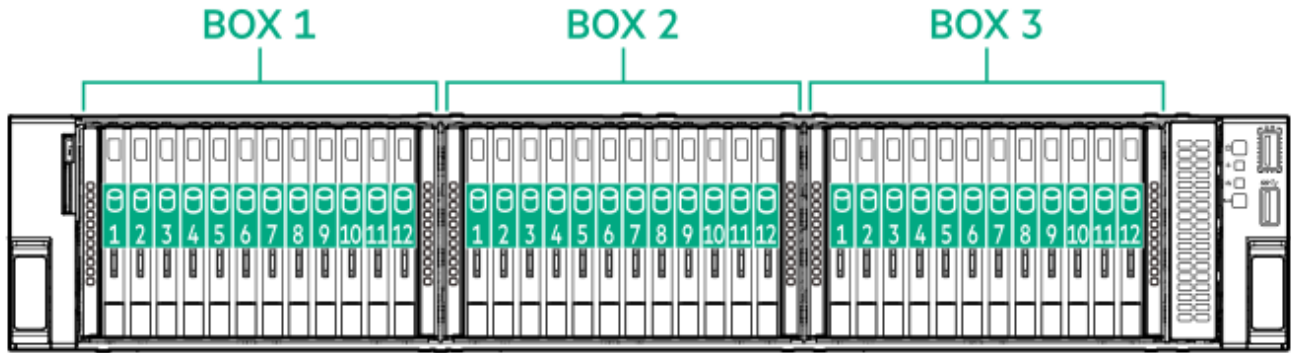
### 12 E3.S + GPUs drive bay numbering



### 24 E3.S drive bay numbering



### 36 E3.S drive bay numbering



### 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

Item	Description	Values
		16G
		24G
		32G
4	Port link width and interface	x1 NVMe/SAS—U.3 NVMe, SAS, or SATA <sup>1</sup> x4 NVMe/SAS—U.3 NVMe, SAS, or SATA <sup>2</sup> x4 NVMe—NVMe <sup>3</sup> x4 NVMe—E3.S
5	Universal backplane manager (UBM) model	The UBM model defines the UBM firmware used by the backplane. Examples of UBM models: UBM2, UBM3, and etc.
6	Drive carrier type	BC—Basic carrier (SFF) LP—Low-profile carrier (LFF) EC—E3.S carrier

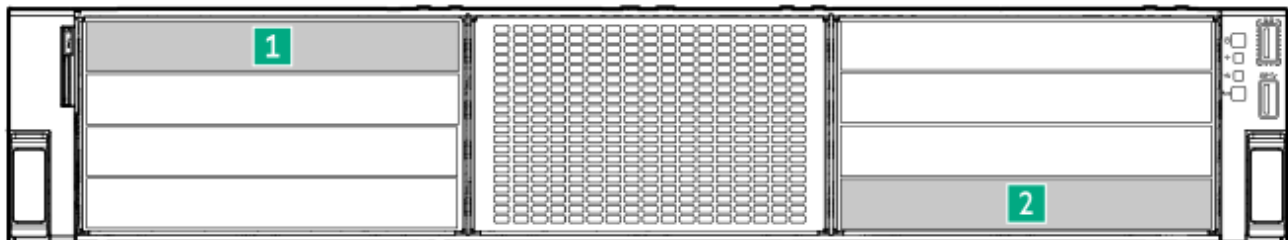
<sup>1</sup> Tri-mode controller support for x1 U.3 NVMe, SAS, and SATA drives. System board connection supports SATA drives only.

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

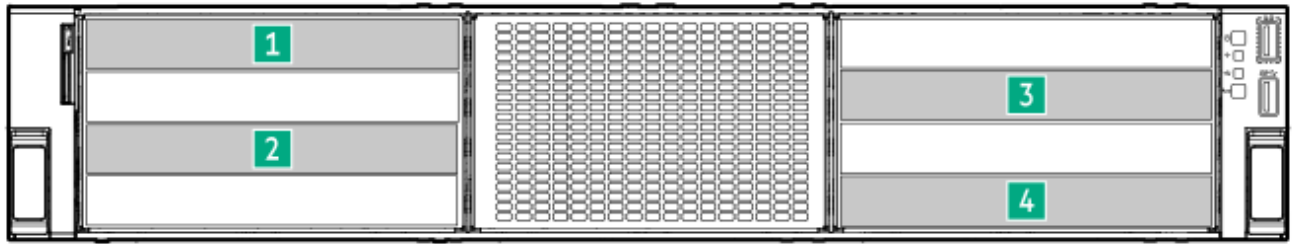
<sup>3</sup> CPU direct attach or tri-mode controller support for x4 NVMe drives.

## GPU numbering

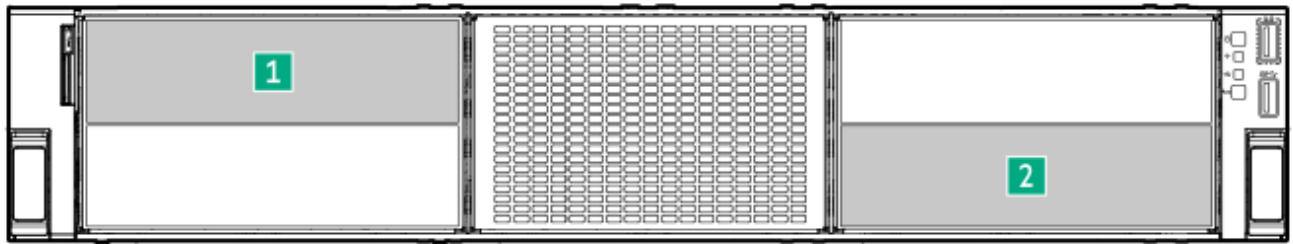
### 2 single-width GPUs



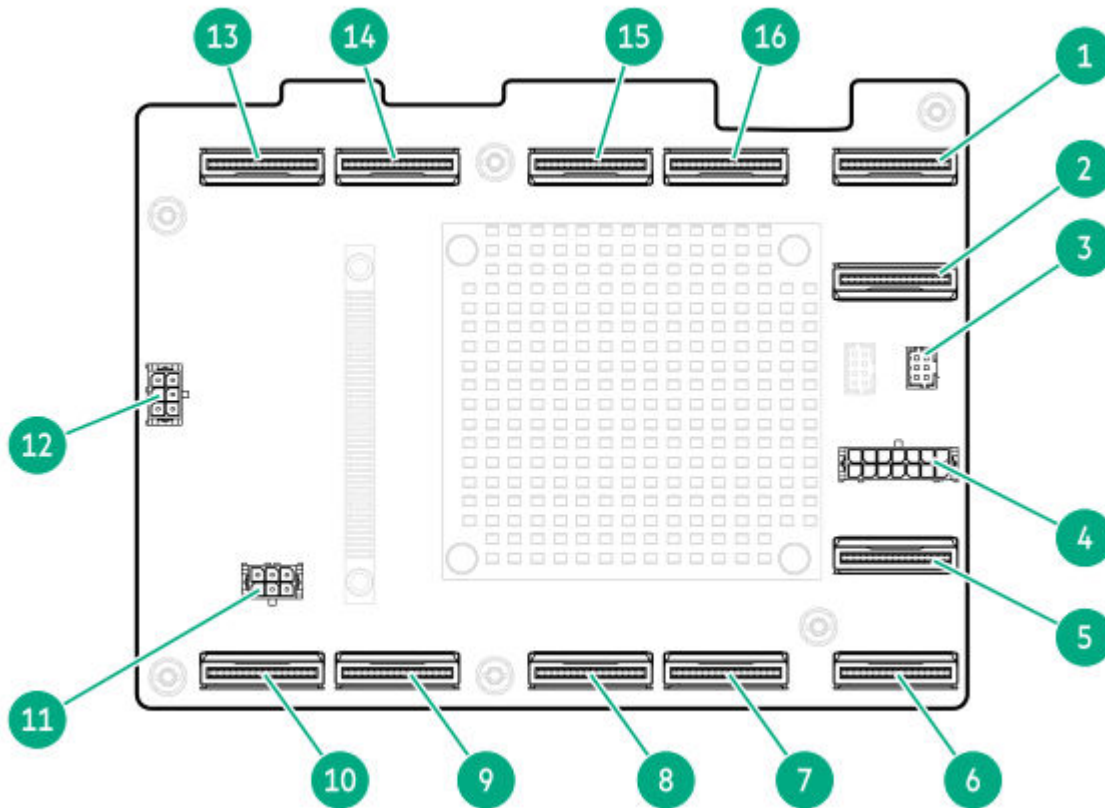
### 4 single-width GPUs



### 2 double-width GPUs



## PCIe switch board components



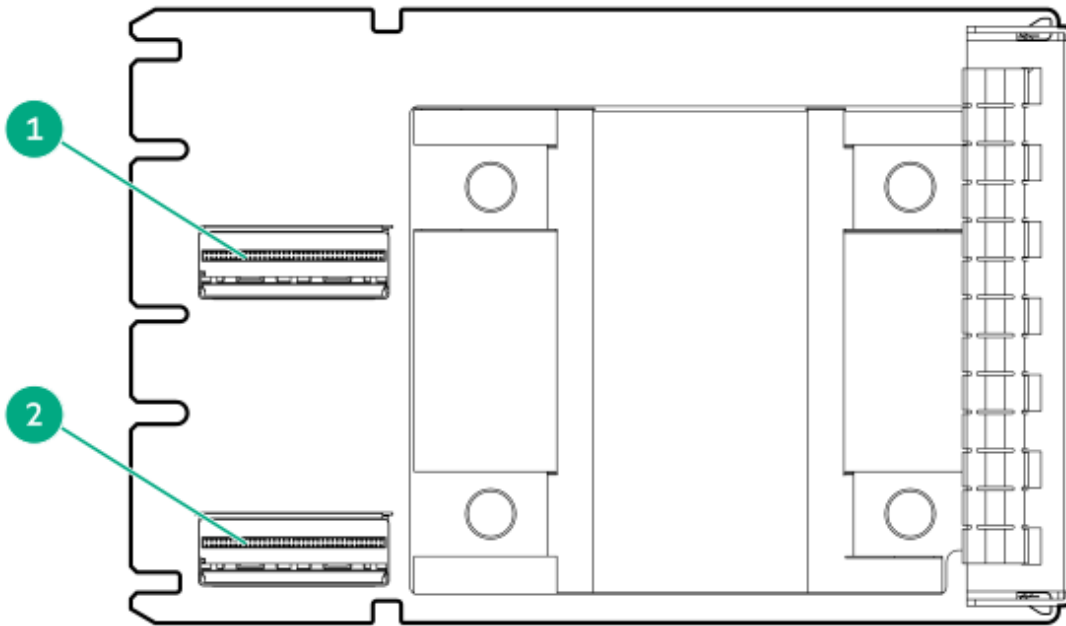
Item	Description	Connect to
1	PCIe switch board downstream port 1	NVMe port 8A
2	PCIe switch board downstream port 2	NVMe port 7A
3	PCIe switch board signal extension connector	Sideband connector for the free-height riser (secondary)
4	PCIe switch board power connector	GPU riser power connector 2 Drive backplane / Graphics card power connector B (J9018)
5	PCIe switch board downstream port 3	NVMe/SATA port 2A
6	PCIe switch board downstream port 4	NVMe/SATA port 1
7	GPU riser slot 16 MCIO connector (SEC) <sup>1</sup>	GPU riser slot 16

Item	Description	Connect to
8	GPU riser slot 16 MCIO connector (PRIM) <u>1</u>	
9	GPU riser slot 14 MCIO connector (SEC) <u>1</u>	GPU riser slot 14
10	GPU riser slot 14 MCIO connector (PRIM) <u>1</u>	
11	GPU riser slot 14 and 16 power connector	GPU riser slot 14 (P2) <u>2</u> GPU riser slot 16 (P3) <u>2</u>
12	GPU riser slot 9 and 11 power connector	GPU riser slot 9 (P3) <u>2</u> GPU riser slot 11 (P2) <u>2</u>
13	GPU riser slot 9 MCIO connector (SEC) <u>1</u>	GPU riser slot 9
14	GPU riser slot 9 MCIO connector (PRIM) <u>1</u>	
15	GPU riser slot 11 MCIO connector (SEC) <u>1</u>	GPU riser slot 11
16	GPU riser slot 11 MCIO connector (PRIM) <u>1</u>	

1 The enclosed text (PRIM / SEC) refers to the marker on the GPU riser signal cable connector.

2 The enclosed text (P#) refers to the marker on the power cable connector.

## OCP retimer card components

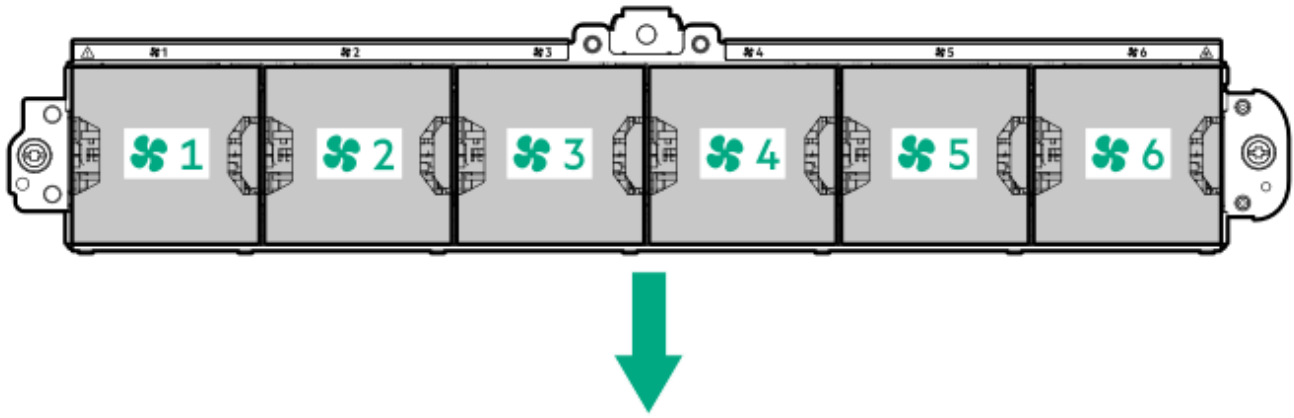


Item	Description
1	LP SlimSAS port 1
2	LP SlimSAS port 2 <sup>1</sup>

<sup>1</sup> Not for use in this server.

## Fan numbering

To provide sufficient airflow to the system, the server is by default populated by six fans. The fans can either be standard, single-rotor fans (P58464-B21) or high performance, dual-rotor fans (P58465-B21). Mixed fan configuration is not supported.



The arrow points to the front of the server.

## Subtopics

### Cooling component requirements

## Cooling component requirements



### CAUTION

To maintain proper system cooling, install the correct fan and heatsink types required for specific hardware configurations.



### CAUTION

When a 10/25 Gb 4-port, 100 Gb, or faster Ethernet / InfiniBand / NVMe-oF adapter is installed in any configuration, high performance fans are required.

### Non-GPU-optimized configuration

The information in this section is valid for up to the maximum 12 LFF, 24 SFF, and 36 E3.S front-end drive configurations.

Midplane drive	Rear drive	Processor TDP	Fan type	Heatsink type
Not installed	Not installed	≤ 240 W	Standard fans <sup>1</sup> <sub>1</sub>	Standard heatsink <sup>2</sup> <sub>2</sub>
Not installed		> 240 W	Standard fans <sup>1</sup> <sub>1</sub>	High performance heatsink <sup>3</sup> <sub>3</sub>
Not installed	2 SFF or 4 LFF	≤ 240 W	High performance fans <sup>4</sup> <sub>4</sub>	Standard heatsink <sup>2</sup> <sub>2</sub>

Midplane drive	Rear drive	Processor TDP	Fan type	Heatsink type
		> 240 W	High performance fans <sup>4</sup>	High performance heatsink <sup>3</sup>
4 LFF or 8 SFF	None, 2 SFF, or 4 LFF	≤ 300 W	High performance fans <sup>4</sup>	Midplane cage heatsink <sup>5</sup>
Not installed, 4 LFF, or 8 SFF	None, 2 SFF, or 4 LFF	All	Standard <sup>1</sup> or High performance <sup>4</sup> fans	DLC cold plate

<sup>1</sup> Option kit: P58464-B21

<sup>2</sup> Option kit: P58458-B21

<sup>3</sup> Option kit: P58459-B21

<sup>4</sup> Option kit: P58465-B21

<sup>5</sup> Option kit: P58457-B21

### GPU-optimized configuration

This configuration requires that all high performance fans (option kit: P58465-B21) are installed.

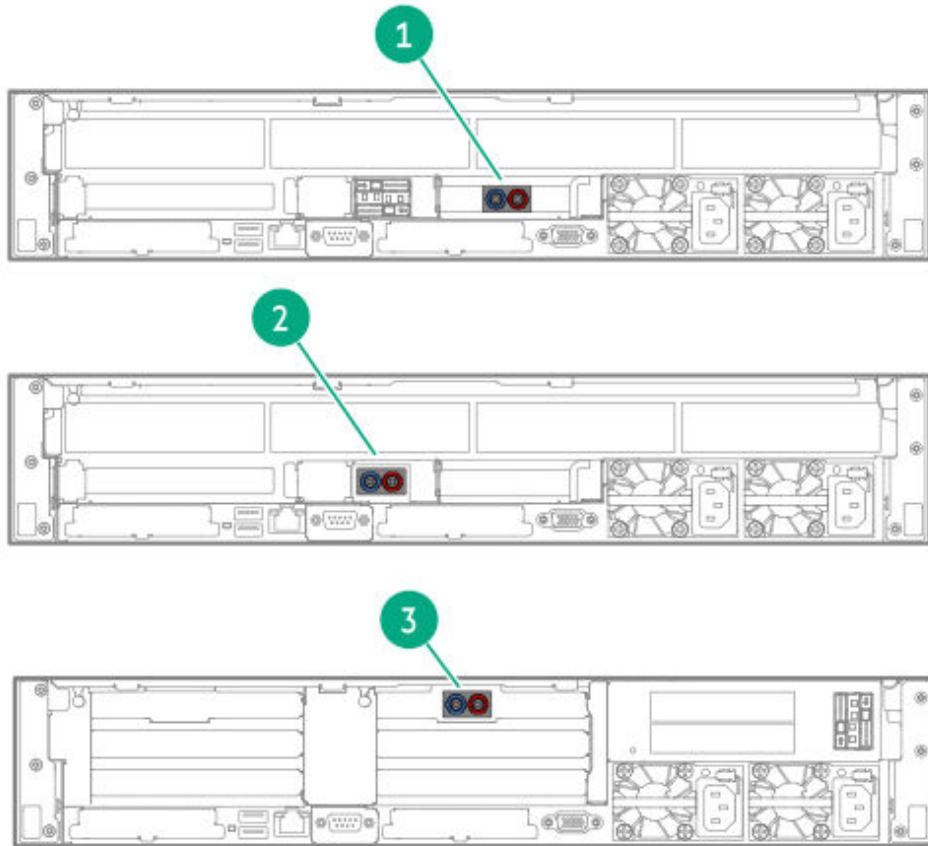
Midplane drive	Rear drive	Processor TDP	Heatsink type
Not supported	None, 2 SFF, or 4 LFF	≤ 240 W	Standard heatsink <sup>1</sup>
		> 240 W	High performance heatsink <sup>2</sup>
		All	DLC cold plate

<sup>1</sup> Option kit: P58458-B21

<sup>2</sup> Option kit: P58459-B21

## DLC module installation location

This server supports two DLC module options that can be installed in the following rear panel locations:

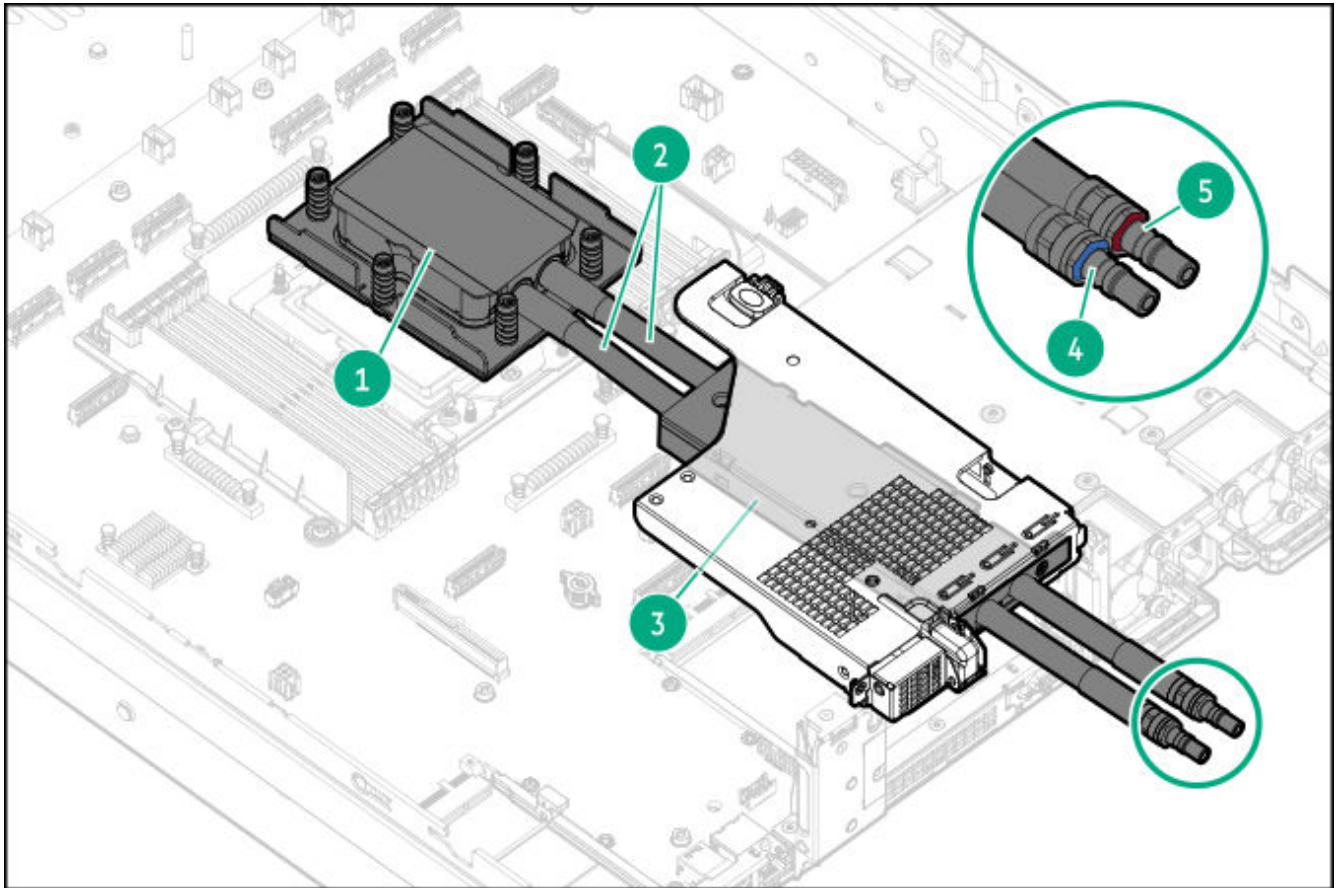


Item	DLC module option	DLC module location	Rear drive support	Boot device support
1	DLC module P80871 -B21 option	Slot 6 on NS204i-u + secondary low-profile riser cage	4 LFF drives	NS204i-u slot
2	DLC module P80876 -B21 option	NS204i-u slot on NS204i-u + secondary low-profile riser cage		Not supported
3		Slot 4 on secondary riser cage	None or 2 SFF stacked drives	NS204i-u slot

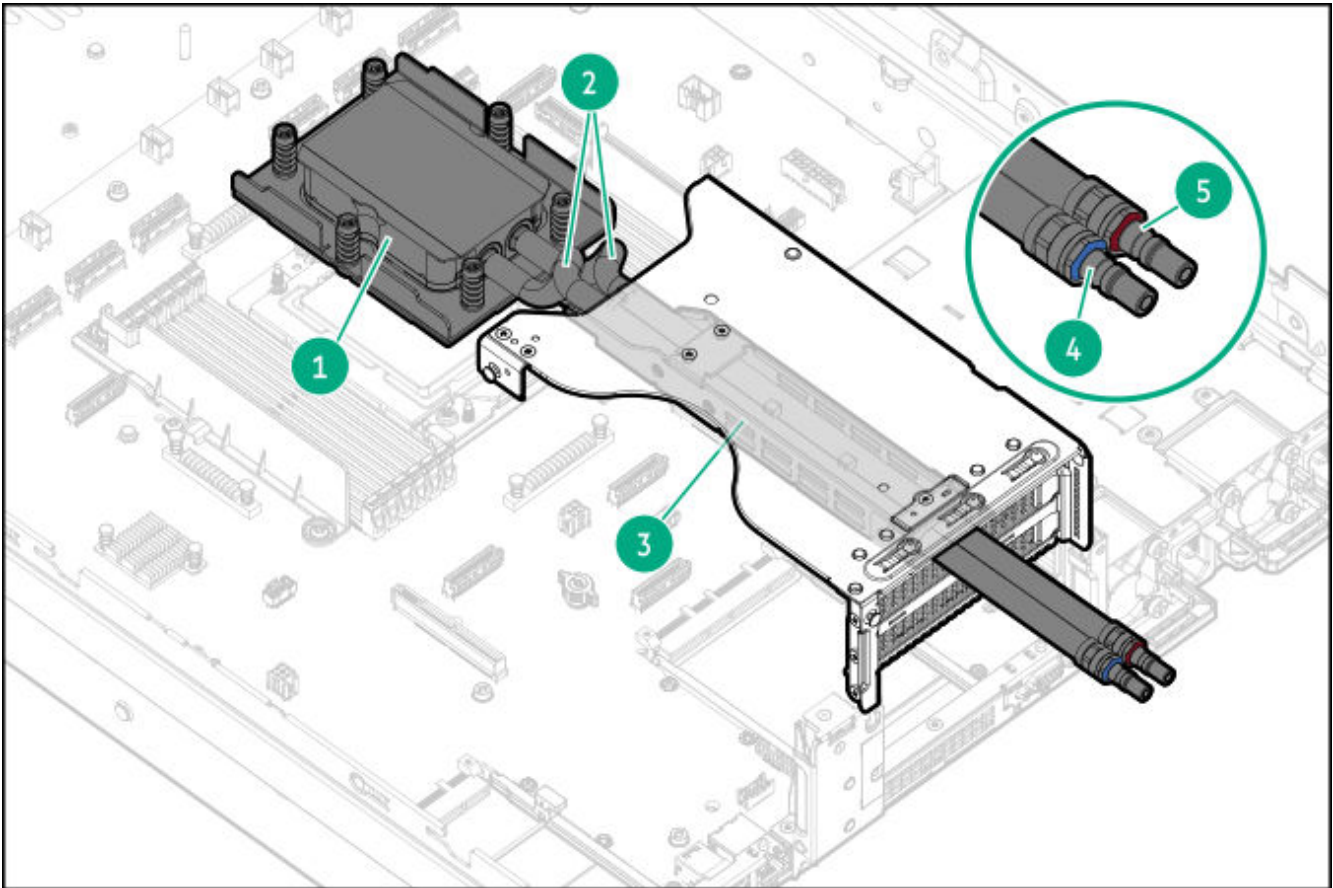
## DLC module components

For more information, see the [Direct liquid cooling guidelines](#).

DLC module P80871-B21 option



## DLC module P80876-B21 option



Item	Description
1	Cold plate
2	Coolant hoses
3	DLC hose holder
4	Coolant supply quick plug connector
5	Coolant return quick plug connector

### Subtopics

#### Direct liquid cooling guidelines

## Direct liquid cooling guidelines

The direct liquid cooling (DLC) module is a preinstalled option.

## Storage temperature

When storing a server with a DLC module, maintain a temperature of -10°C to 60°C (14°F to 140°F). Allowing the DLC module coolant to freeze can damage its metallic microstructures.

## Facility water supply temperature

To maintain optimal cooling performance and prevent equipment damage from overheating:

- Do not allow the facility water supply temperature to exceed 40°C (104°F).
- Monitor environmental conditions year-round to anticipate temperature fluctuations.
- Install insulated plumbing as needed to ensure the water supply remains at or below 40°C (104°F).

## 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.

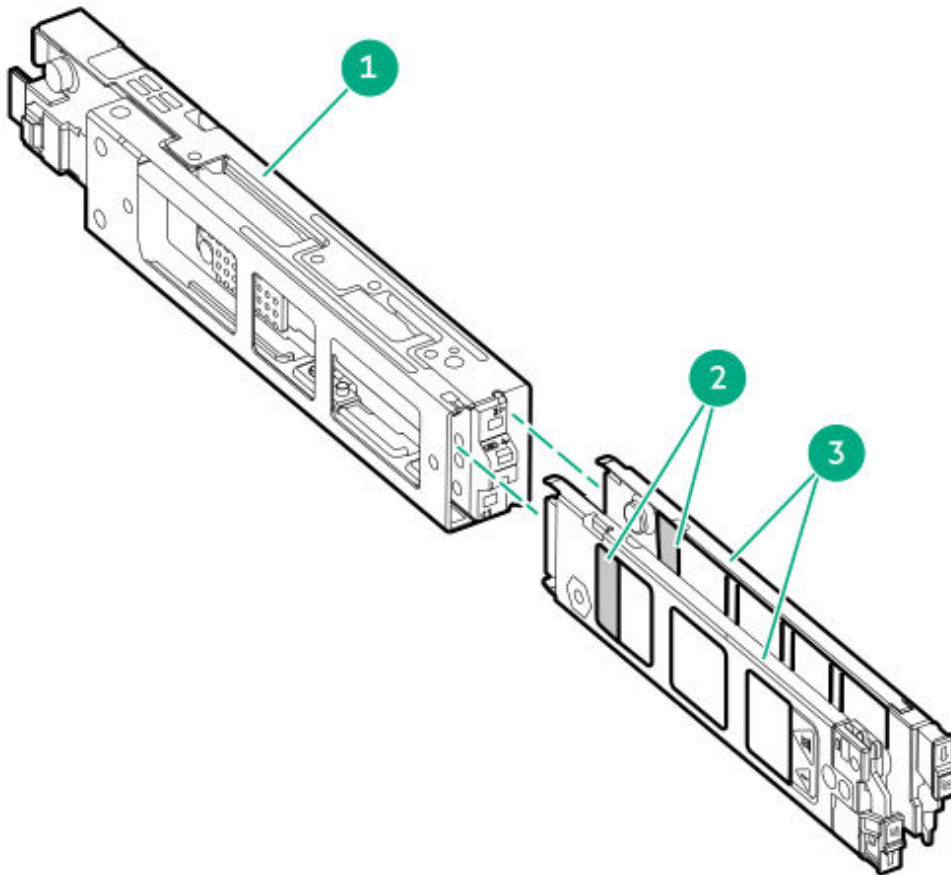
## BitLocker recovery key/password retention guidelines

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:

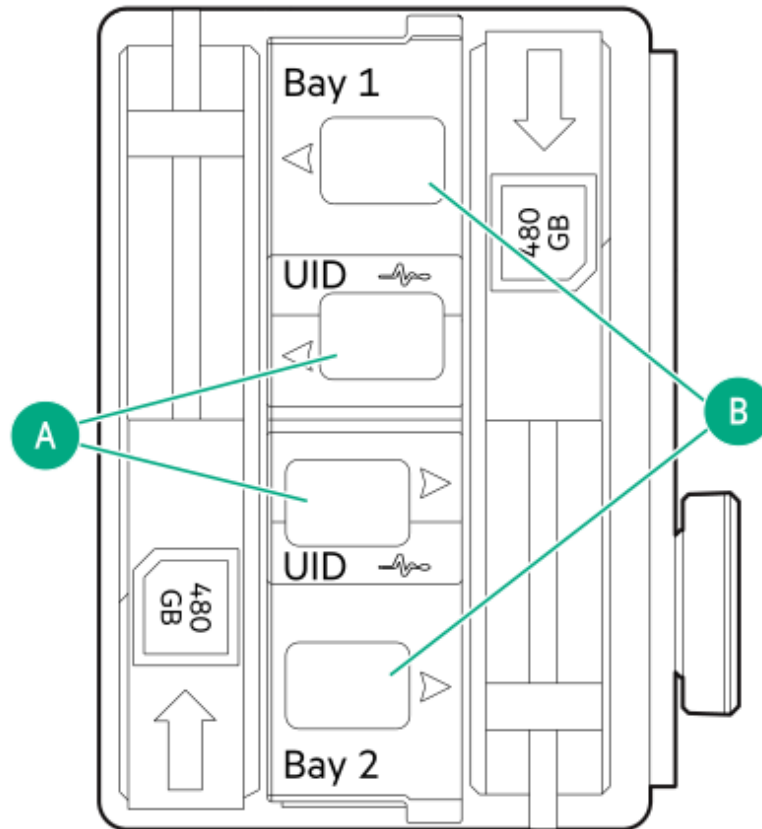
- Always store the recovery key/password in multiple locations.
- Always store copies of the recovery key/password away from the server.
- Do not save the recovery key/password on an encrypted drive.

## 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



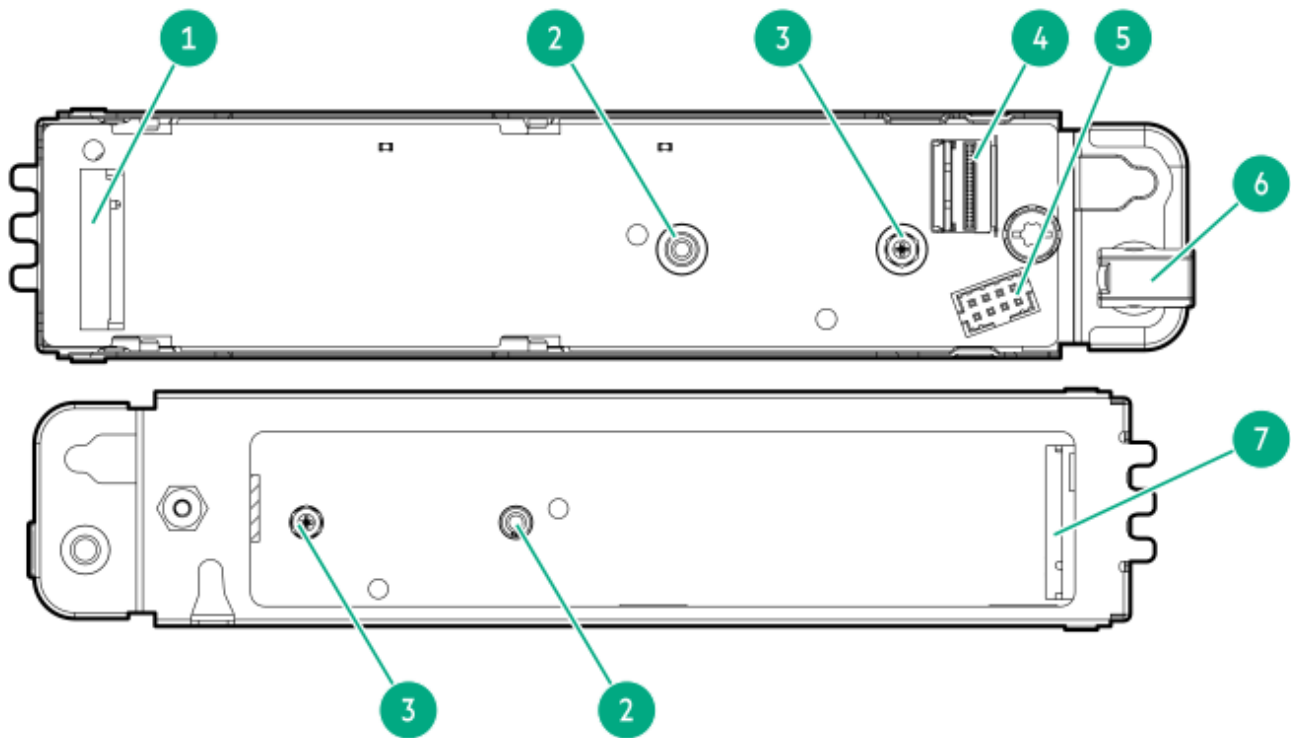
### NOTE

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"> <li>Rebuilding or performing a RAID</li> <li>Erasing</li> </ul>
		Flashing green (4 flashes per second)	Drive is operating normally and has activity.
		Off	Drive is not configured by a RAID controller.

## M.2 SSD pass-through card components

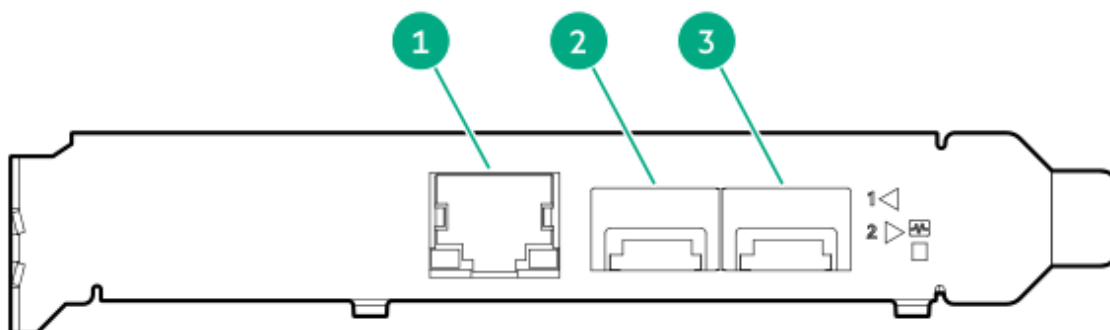


Item	Description
1	M.2 SSD slot 1
2	2280 standoff
3	22110 standoff
4	SlimSAS port
5	Power connector

Item	Description
6	Retaining latch
7	M.2 SSD slot 2

## DSC-25 2-port SFP28 card ports and LEDs

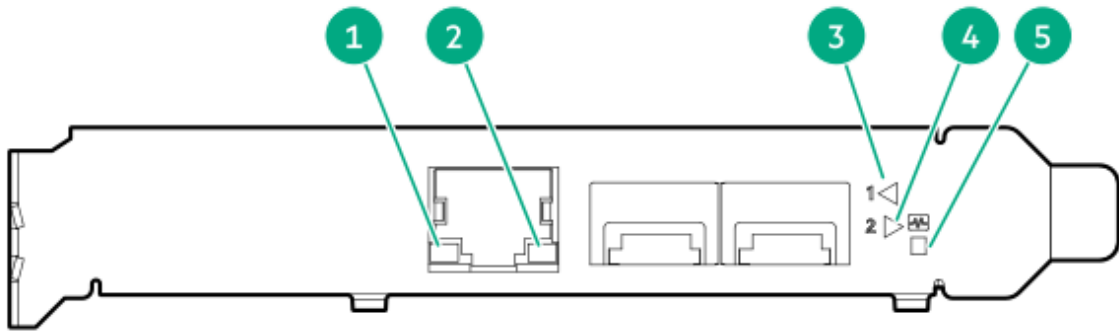
### Ports



Item	Port	Description
1	Management port	1GbE RJ45
2	Network interface port	10/25G SFP+ based
3	Network interface port	10/25G SFP+ based

### LEDs

The HPE for Pensando DSP DSC-25 2p SFP28 card is a dual-port, single-slot, half-height, half-length (HHHL) SFP28 network adapter. It has LEDs for Link (L) and Activity (A) for each port. A half-height bracket is shown in the following illustration with SFP28 ports and LEDs.



Item	LED	Status	Description
1	Management Port Activity LED	Off	No activity
		Flashing	Passing traffic; flashing frequency indicates traffic intensity
2	Management Port Link LED	Off	A link has not been established
		Solid green	Valid Ethernet link
3	SFP Port 1 Link/Activity LED	Off	A link has not been established
		Solid green	Valid Ethernet link
		Flashing green	Passing traffic; flashing frequency indicates traffic intensity
		Solid amber	Link fault
4	SFP Port 2 Link/Activity LED	Off	A link has not been established
		Solid green	Valid Ethernet link
		Flashing green	Passing traffic; flashing frequency indicates traffic intensity
		Solid amber	Link fault
5	System status LED	Off	System is not powered
		Solid amber	Power is up, software has not booted yet
		Solid green	System is up and fully operational

# 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](#)**

**[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>

## 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>
- Read the [Operational requirements](#) for the server.

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

## Procedure

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

- Server
- Power cord
- Rack mounting hardware (optional)
- 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. [Installing the server into the rack: Friction rack rail](#)

### 4. Decide how to manage the server:

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

#### a. Verify the following:

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

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

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

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

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

Note the following:

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

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

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

### 5. Press the Power On/Standby button.

For remote management, use the iLO virtual power button.

6. [Configure the initial server setup.](#)
7. [Set up the storage.](#)
8. [Deploy an OS or virtualization software.](#)
9. After the OS is installed, [update the drivers.](#)
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 16.12 kg (35.53 lb). When all components are installed, the server can weigh up to 35.67 kg (78.63 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 16.12 kg (35.53 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\*\*](#)

[\*\*Remove a hot-plug E3.S drive\*\*](#)

[\*\*Power down the server\*\*](#)

[\*\*Open the cable management arm\*\*](#)

[\*\*Disconnect the DLC extension hose\*\*](#)

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

[\*\*Remove the server from the rack\*\*](#)

[\*\*Remove the access panel\*\*](#)

[\*\*Remove the air baffle\*\*](#)

[\*\*Remove the fan cage\*\*](#)

[\*\*Remove the midwall bracket\*\*](#)

[\*\*Remove the middle cover\*\*](#)

[\*\*Remove the LFF drive backplane bracket\*\*](#)

[\*\*Remove the E3.S drive cage\*\*](#)

[\*\*Remove the midplane drive cage\*\*](#)

[\*\*Remove the riser cage\*\*](#)

[\*\*Remove the secondary riser cage when DLC module is installed\*\*](#)

[\*\*Remove the rear 4 LFF drive cage\*\*](#)

[\*\*Install the E3.S drive cage\*\*](#)

[\*\*Install the rear 4 LFF drive cage\*\*](#)

[\*\*Install the secondary riser cage when DLC module is installed\*\*](#)

[\*\*Install the riser cage\*\*](#)

[\*\*Install the LFF drive backplane bracket\*\*](#)

[\*\*Install the middle cover\*\*](#)

[\*\*Install the midwall bracket\*\*](#)

[\*\*Install the fan cage\*\*](#)

[\*\*Install the air baffle\*\*](#)

[\*\*Install the access panel\*\*](#)

[\*\*Install the server into the rack\*\*](#)

[\*\*Connect the DLC extension hose\*\*](#)

[\*\*Power up the server\*\*](#)

## Remove the front bezel

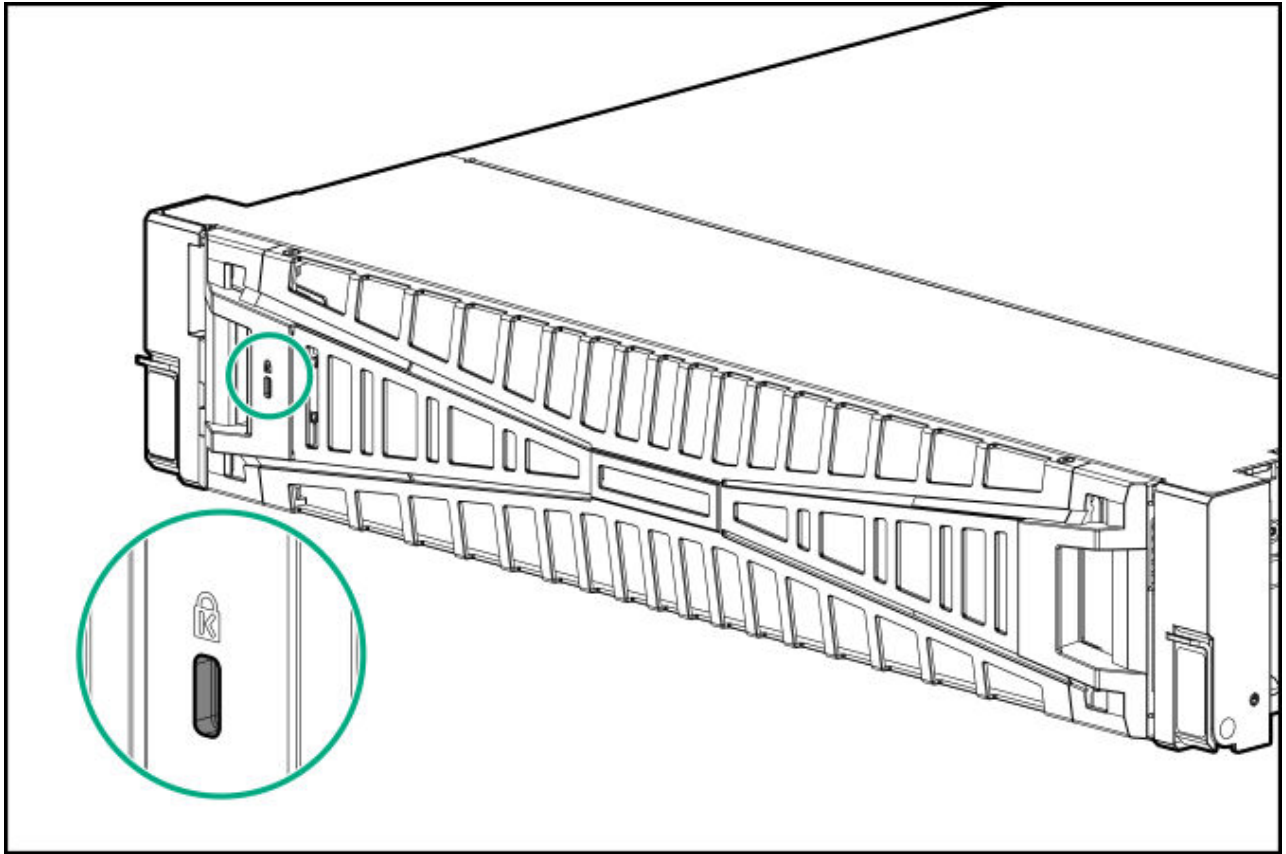
### About this task

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.

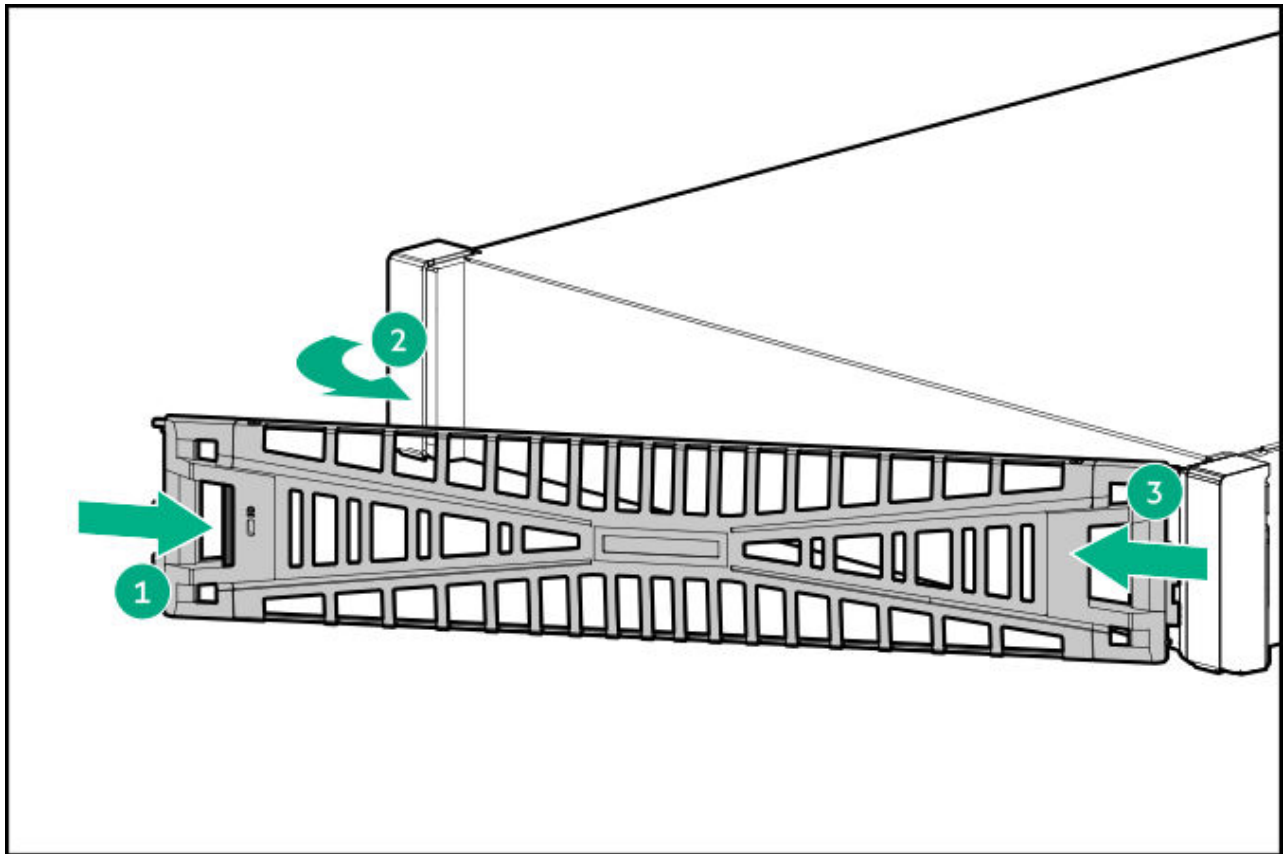
## Procedure

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.



## Remove a hot-plug E3.S 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](#).



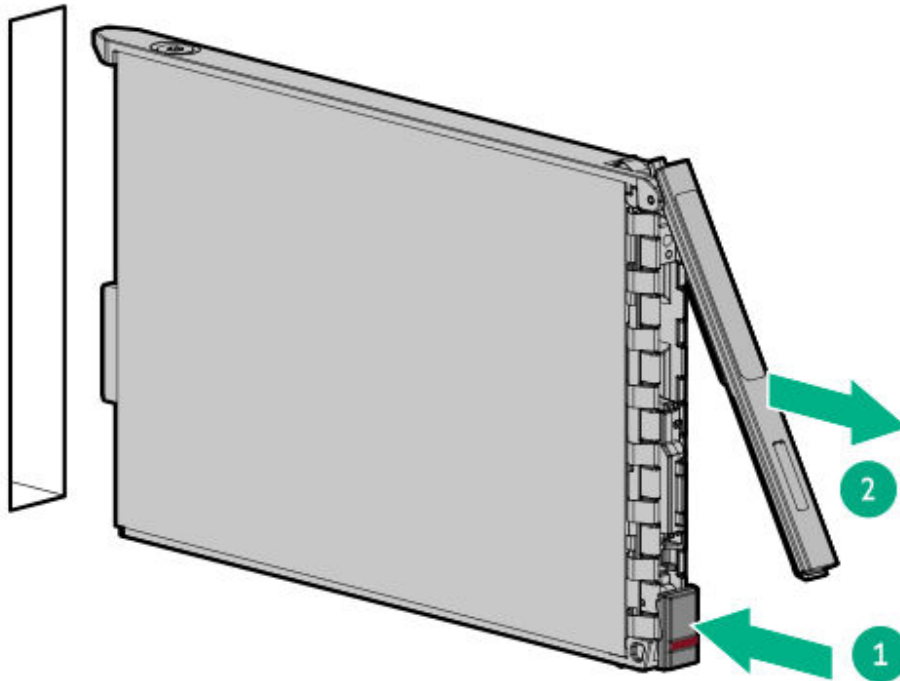
#### CAUTION

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. Observe the drive LED status and determine if the drive can be removed.
4. Remove the drive.



## 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.

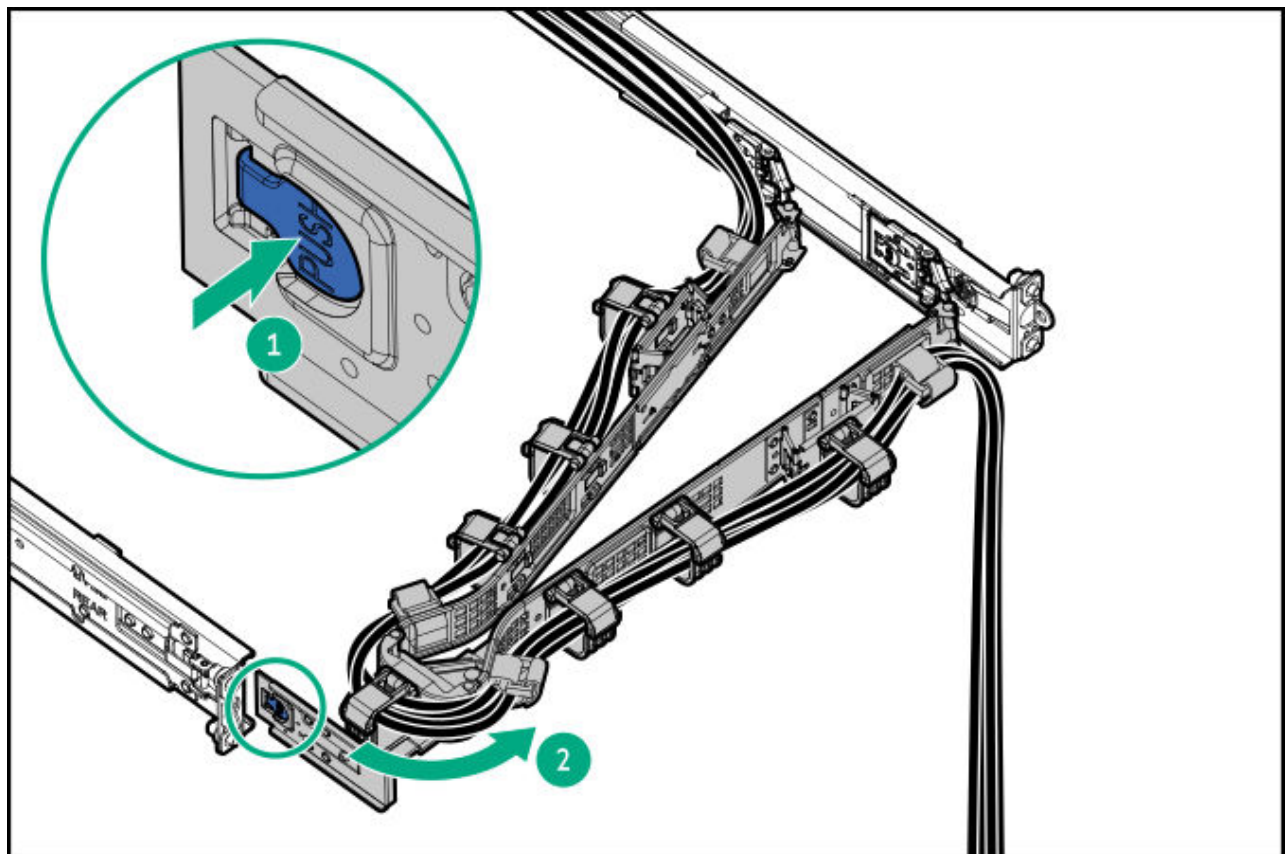
- Use a virtual power button selection through iLO 6.  
This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

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

## Open the cable management arm

### Procedure

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



## Disconnect the DLC extension hose

### Prerequisites

- Review the [DLC module components](#).

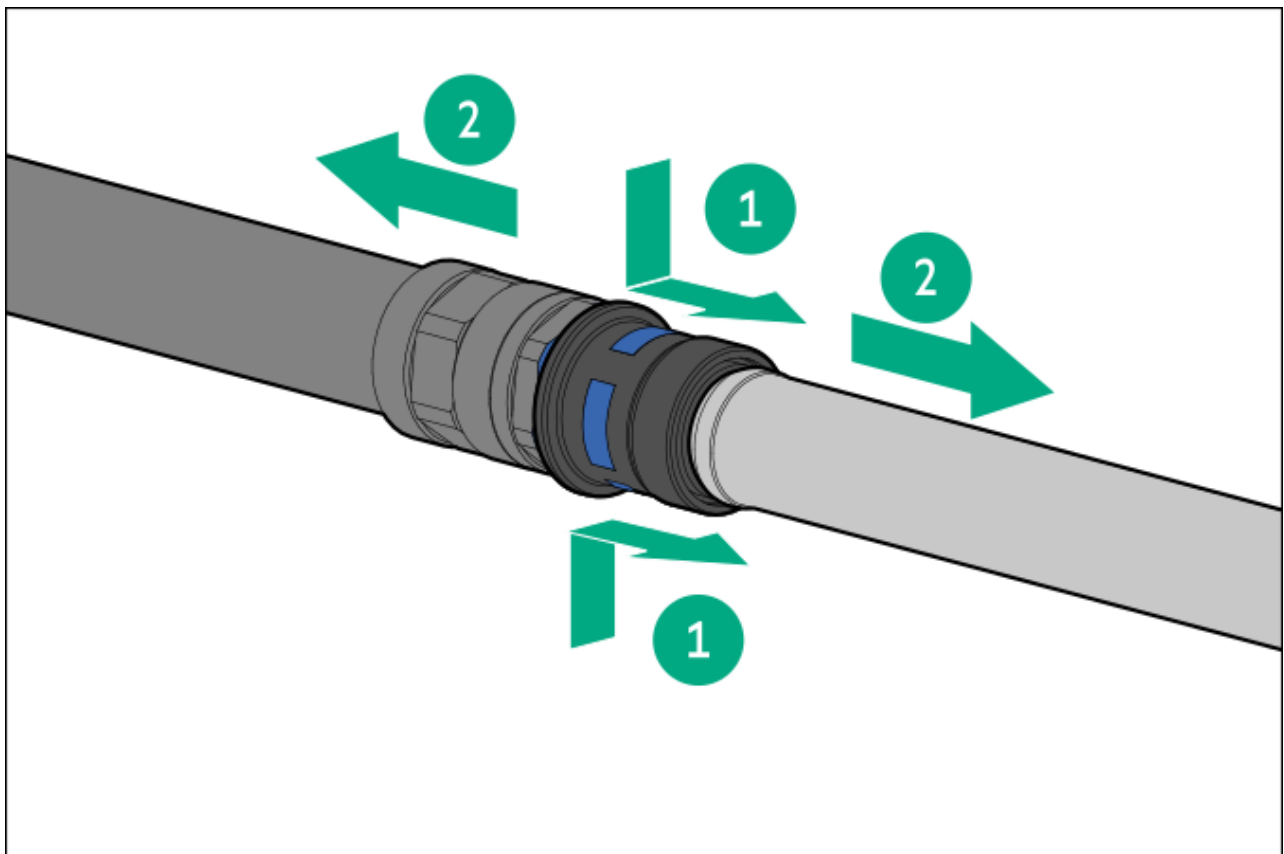
Before you perform this procedure, make sure that you have a small hand towel or container to catch any coolant from the DLC system.

### About this task

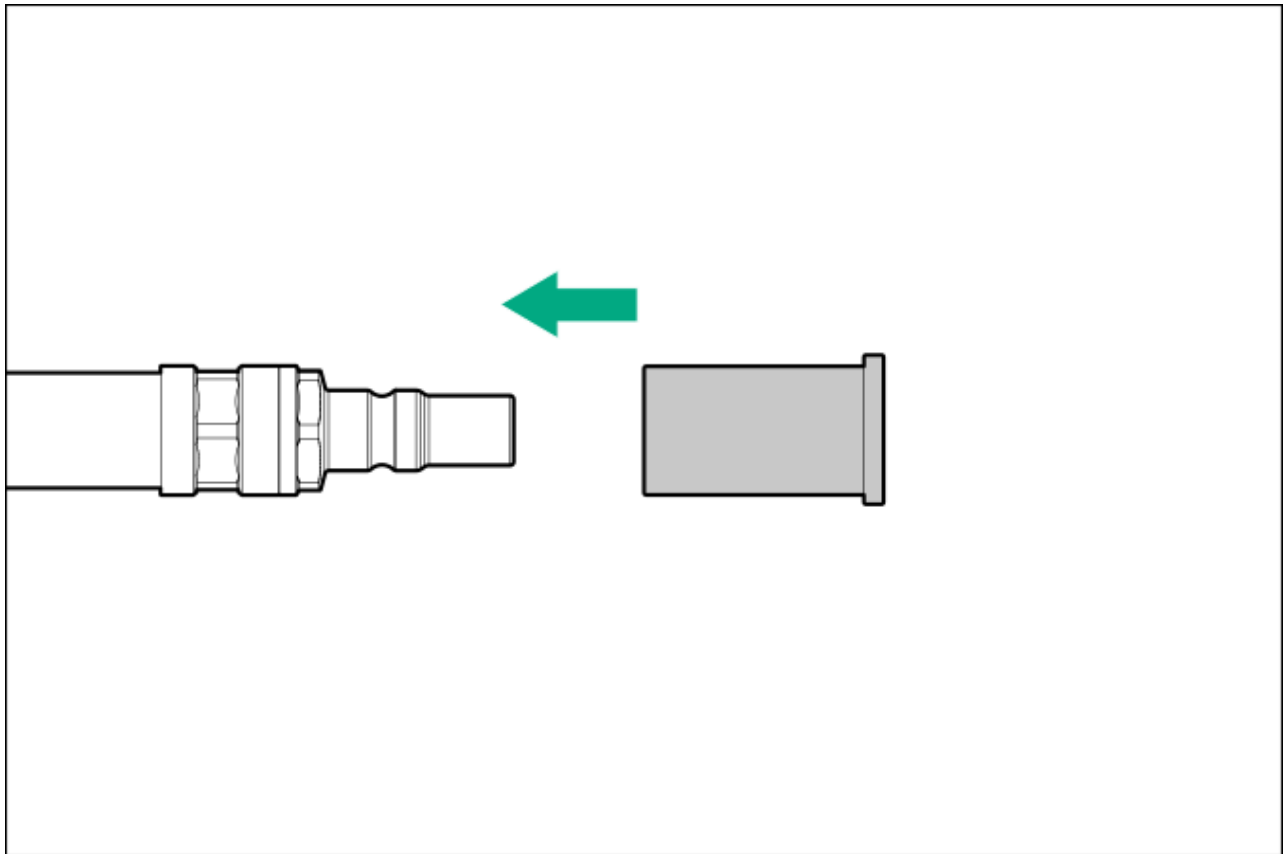
For more information, see the HPE Cray XD Direct Liquid Cooling System Site Preparation, User, and Maintenance Guide at <https://www.hpe.com/info/xdDLCguide>.

### Procedure

1. [Power down the server](#).
2. [Locate the DLC module](#) from the rear of the server.
3. Position some towels or a container under the extension hoses to catch any spilled coolant.
4. Press and pull the extension hose quick socket connector to disengage it from the DLC module coolant hose.



5. Install the coolant quick connector caps.



## 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

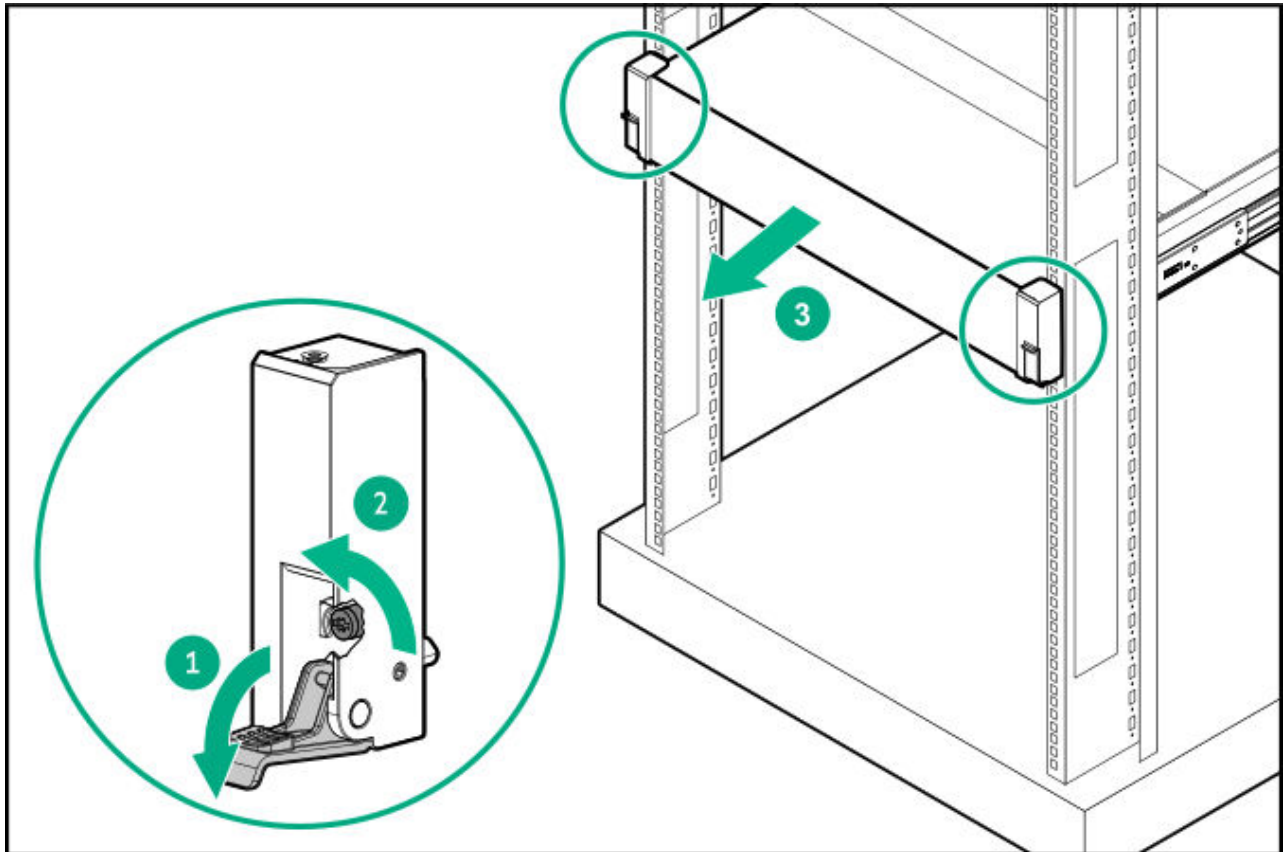


#### **WARNING**

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. Power down the server.
2. If installed, disconnect the DLC extension hoses from the DLC module.
3. 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.



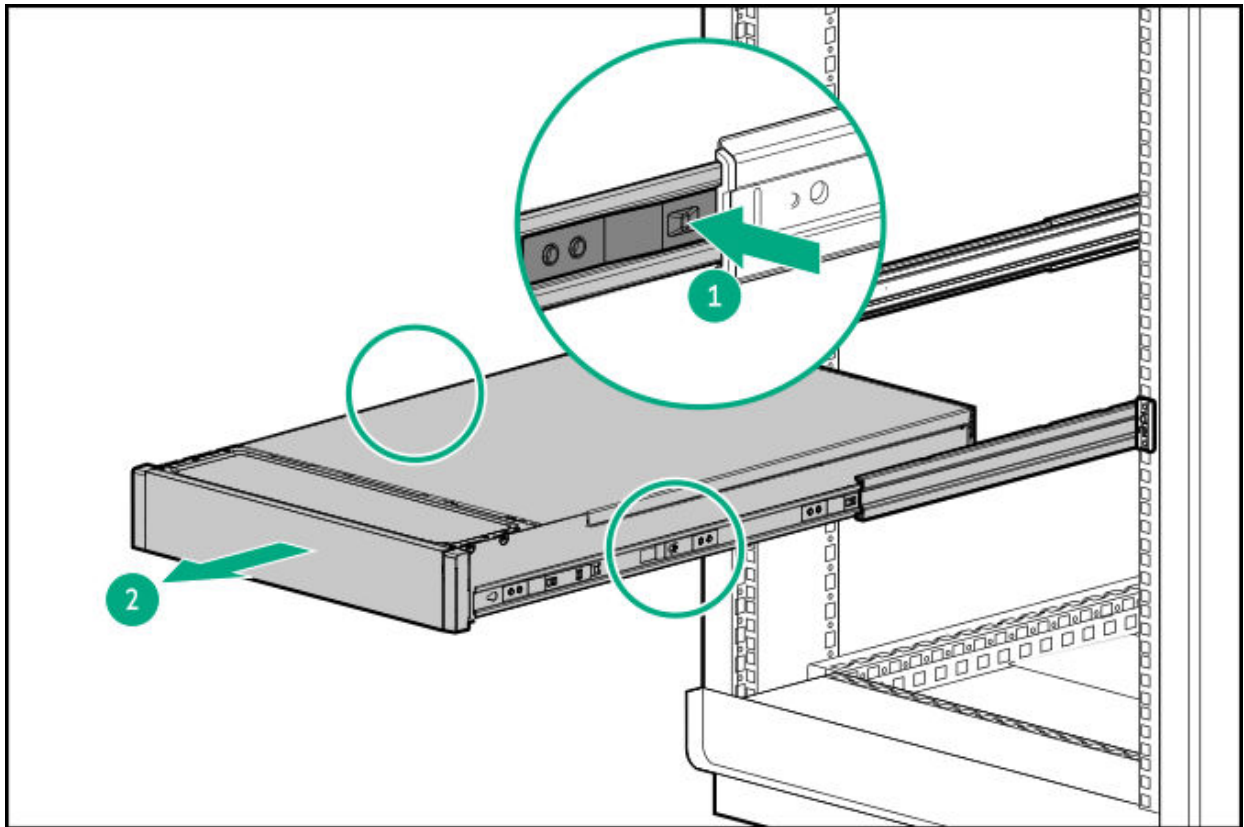
4. If the friction rack rail is installed, do the following:



### **WARNING**

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

- a. Press and hold the rail-release latches.
- b. Slide the server out of the rack until it is fully extended.



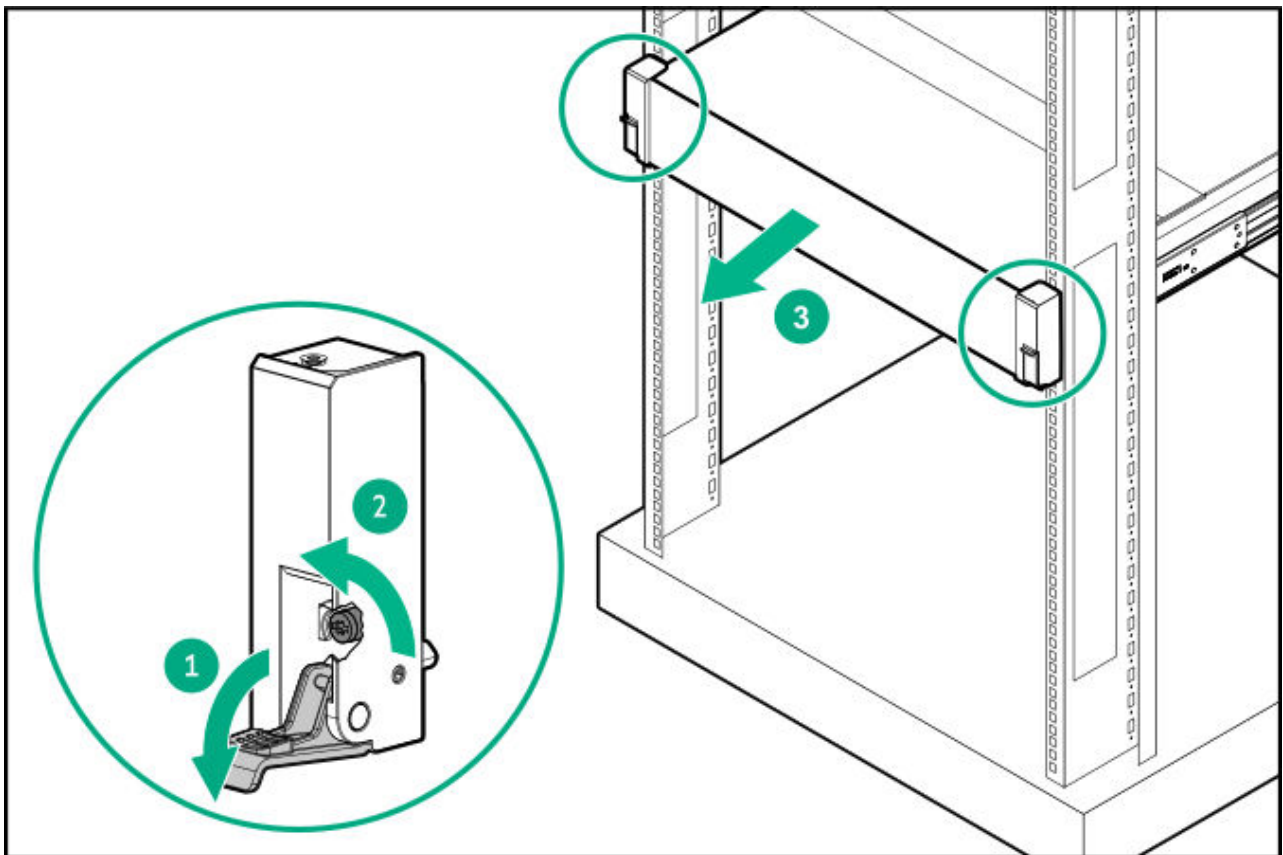
## Remove the server from the rack

### Prerequisites

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

## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If installed, disconnect the DLC extension hoses from the DLC module.
5. 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.



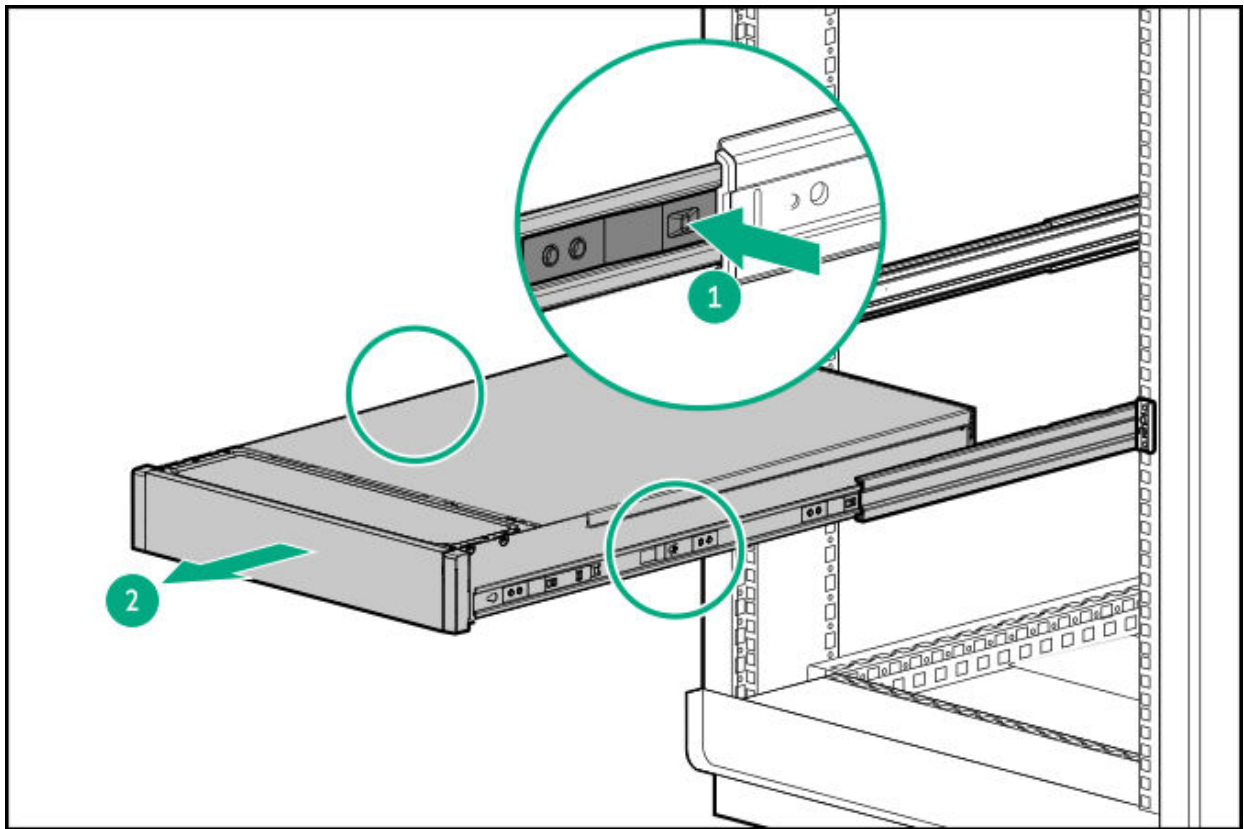
6. If the friction rack rail is installed, do the following:



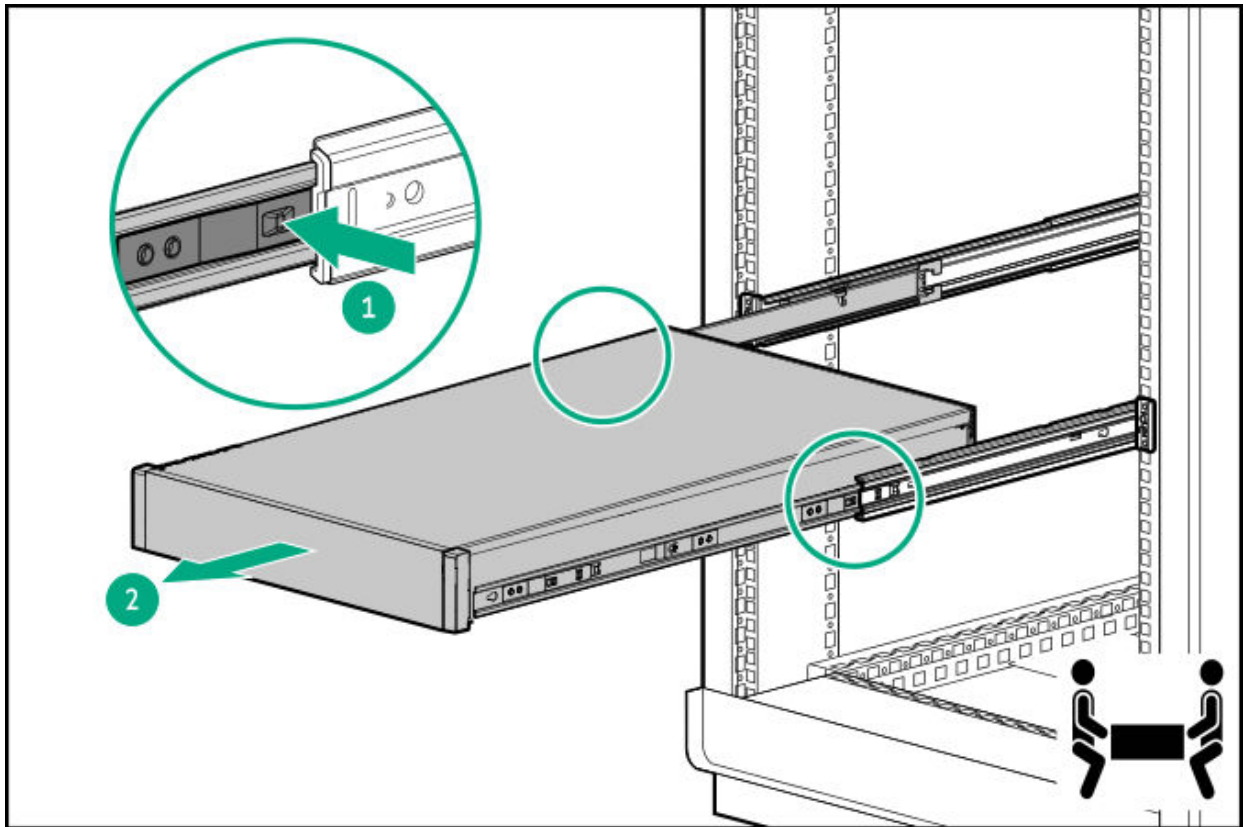
### **WARNING**

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

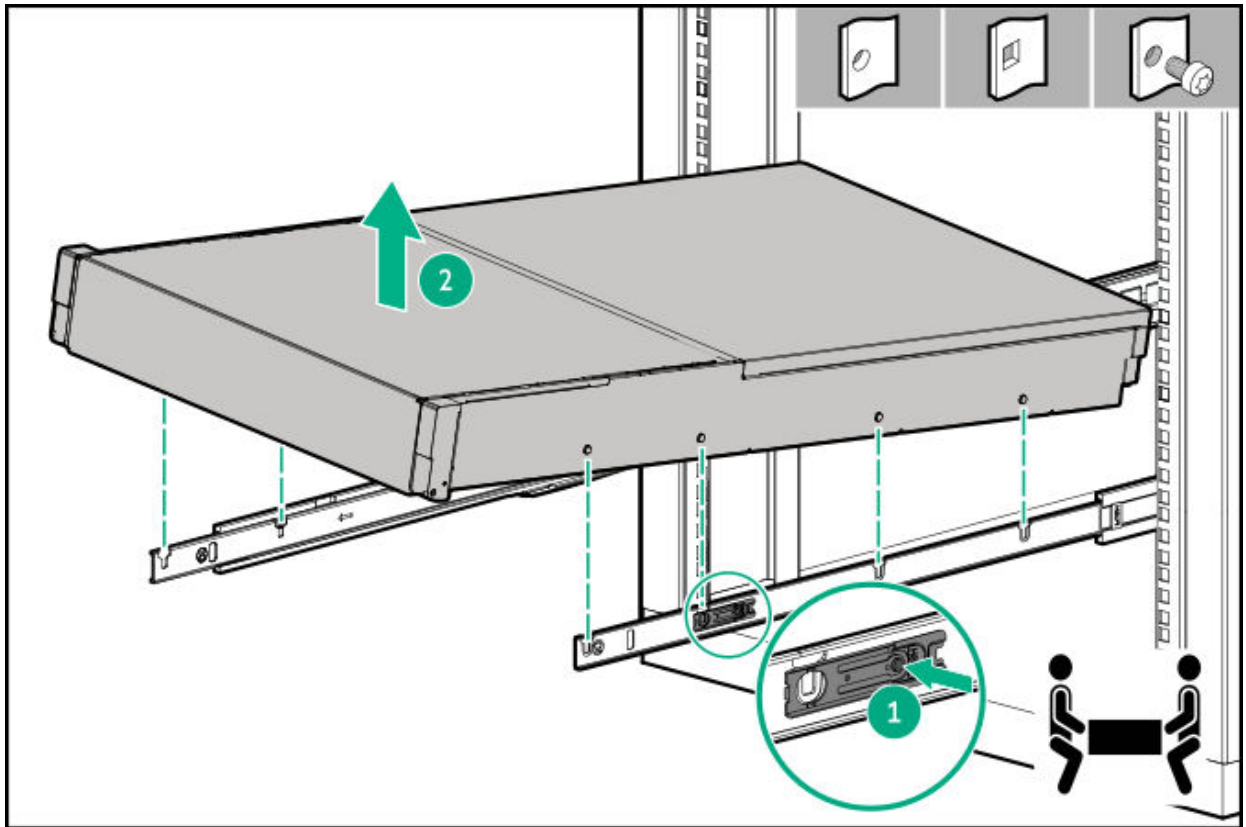
- a. Press and hold the rail-release latches.
- b. Slide the server out of the rack until it is fully extended.



7. To remove the server from the friction rack rail:
  - a. Press and hold the rear-end server-release latches.
  - b. Slide the server completely out of the rack.



8. To remove the server from the ball-bearing rack rail:
  - a. Press and hold the server-release latches.
  - b. Lift the serve from the rack rail.



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.



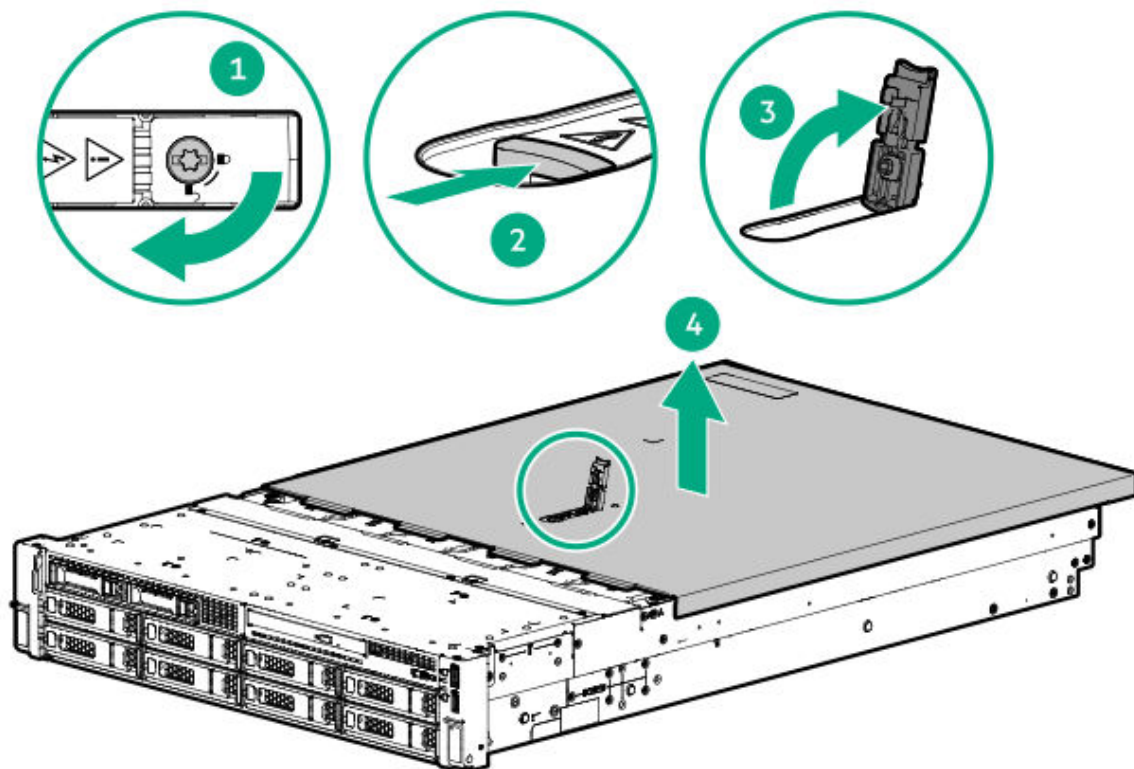
### CAUTION

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. Do one of the following:
  - Extend the server from the rack.
  - Remove the server from the rack.
5. 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 air baffle

### About this task



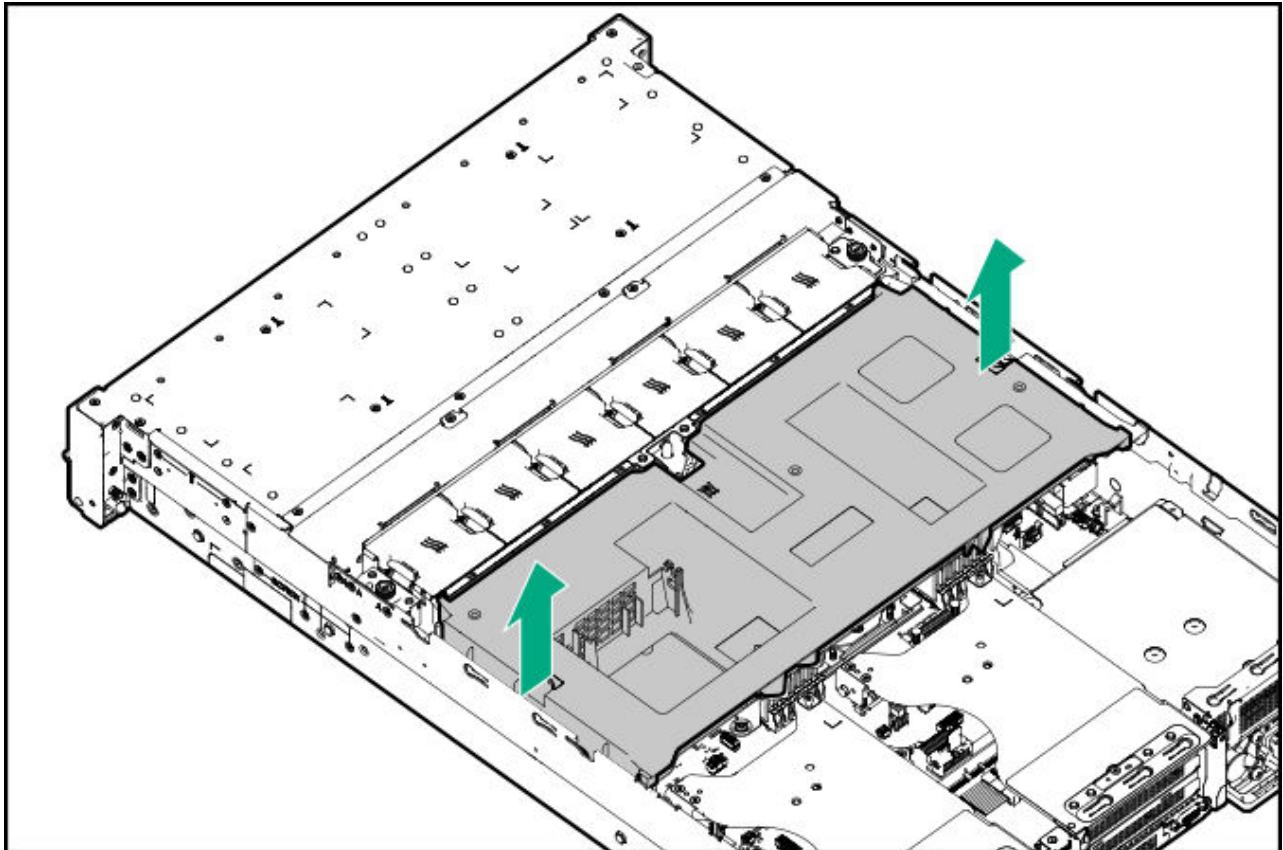
#### CAUTION

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

### Procedure

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

4. Do one of the following:
  - Extend the server from the rack.
  - Remove the server from the rack.
5. Remove the access panel.
6. Use the blue finger hooks to lift the air baffle away from the chassis.



## Remove the fan cage

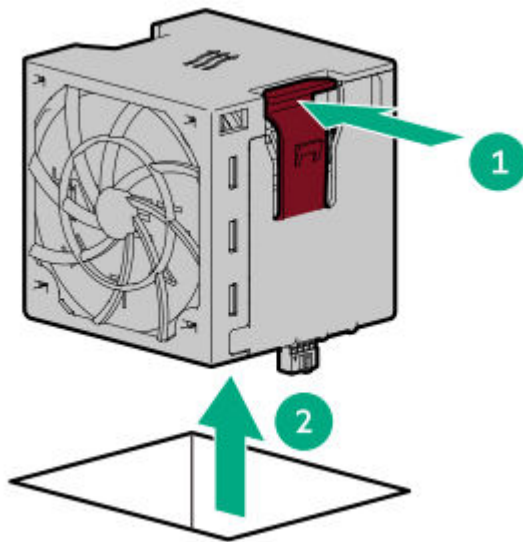
### Prerequisites

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

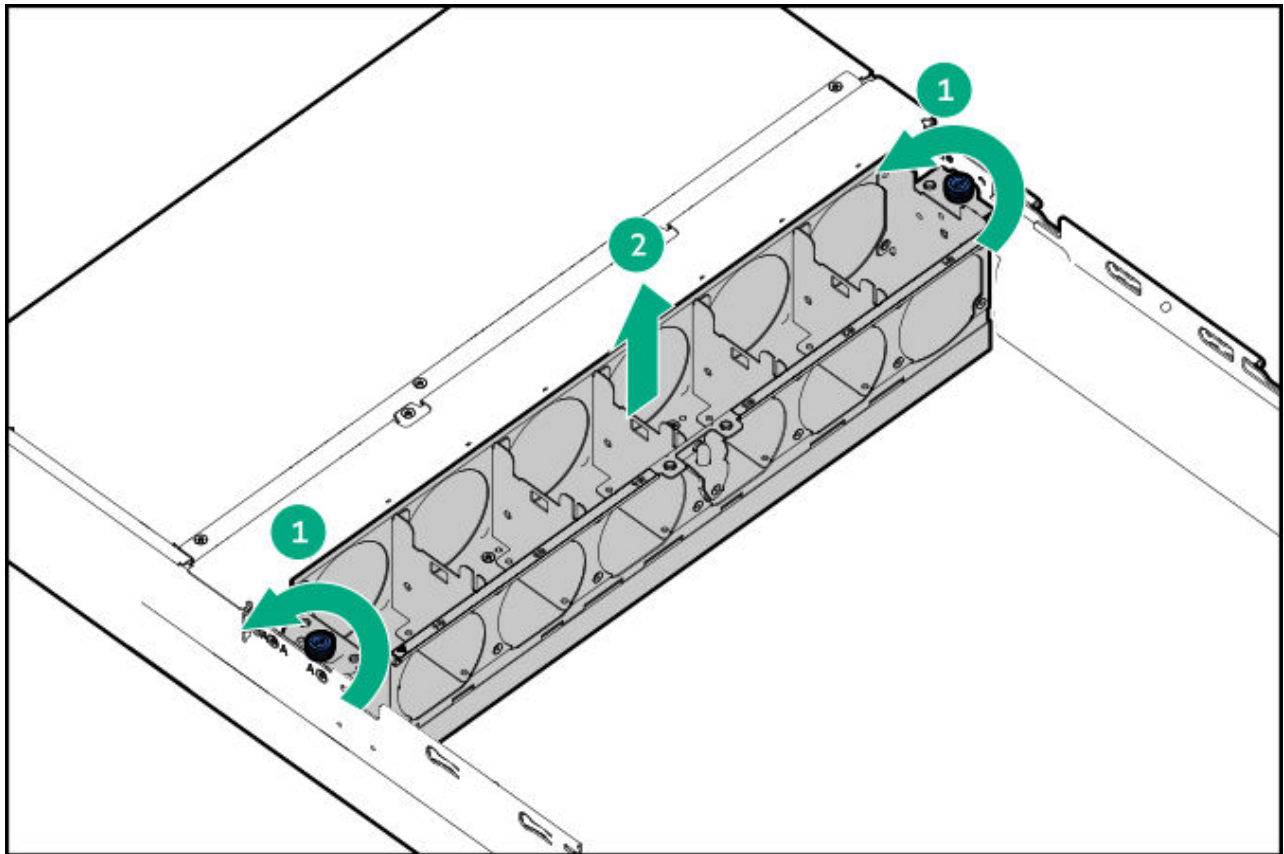
### Procedure

1. Power down the server.
2. Remove all power:

- a. Disconnect each power cord from the power source.
- b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the existing fans:
  - a. Press and hold the latch.
  - b. Lift the fan from the fan cage.



8. Remove the fan cage:
  - a. Loosen the captive screws.
  - b. Lift the fan cage away from the chassis.



## Remove the midwall bracket

### Prerequisites

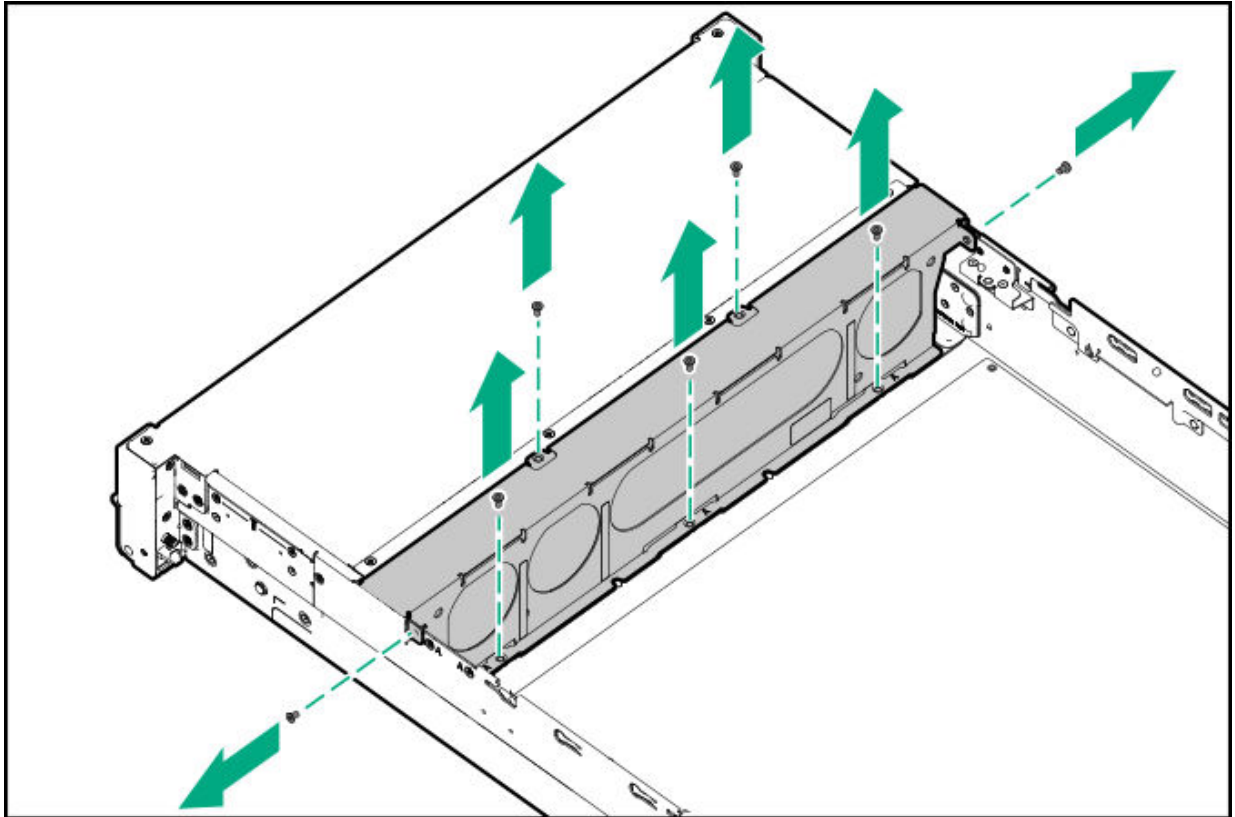
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

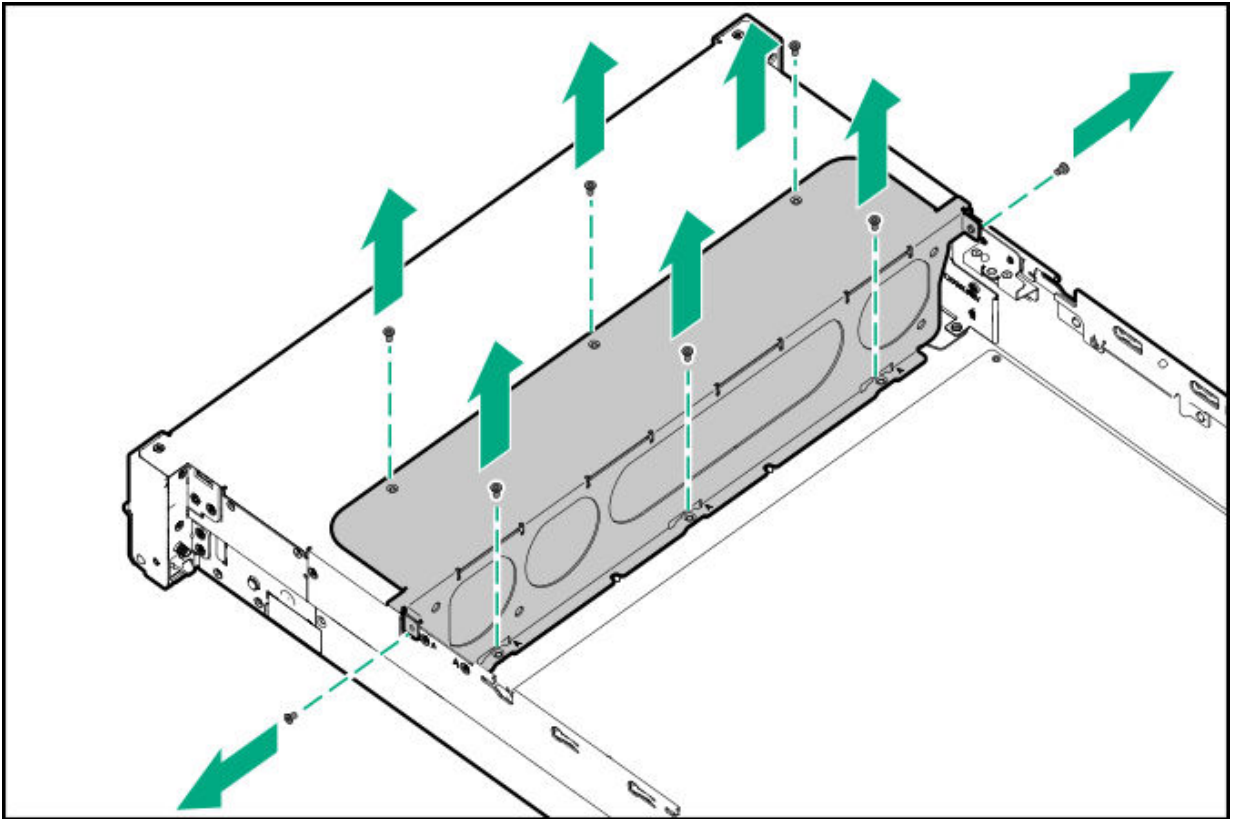
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.

6. Remove the access panel.
7. Remove the fan cage.
8. Remove the midwall bracket screws.

- LFF chassis

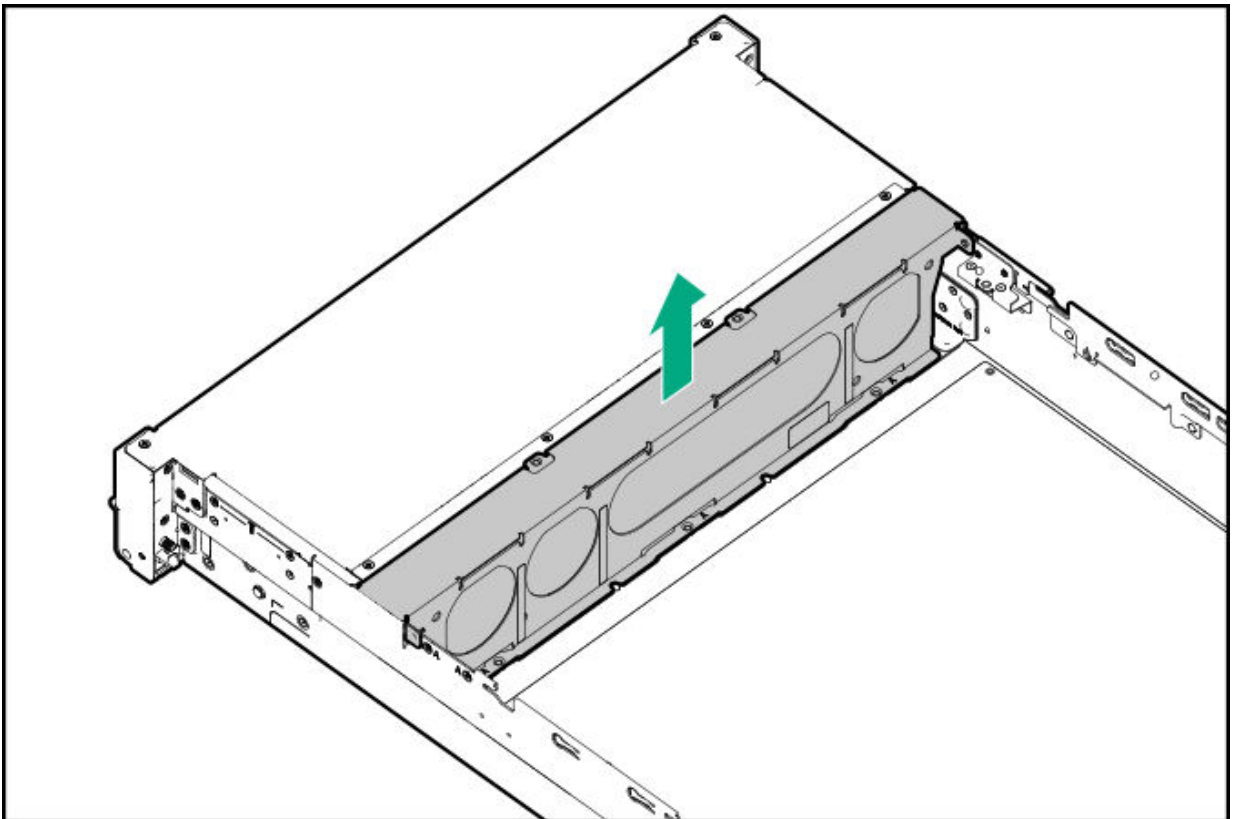


- SFF chassis

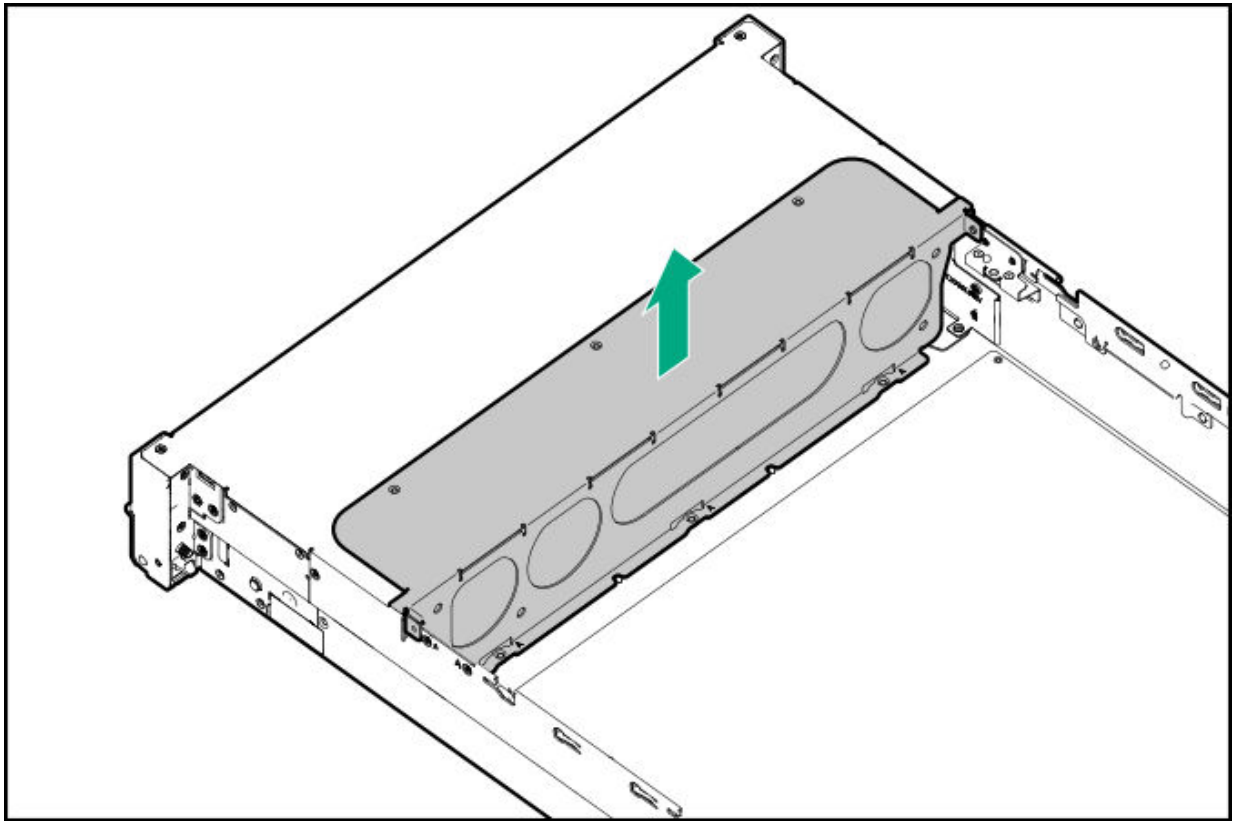


9. Lift the midwall bracket away from the chassis.

- LFF chassis



- SFF chassis



## Remove the middle cover

### About this task



#### CAUTION

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

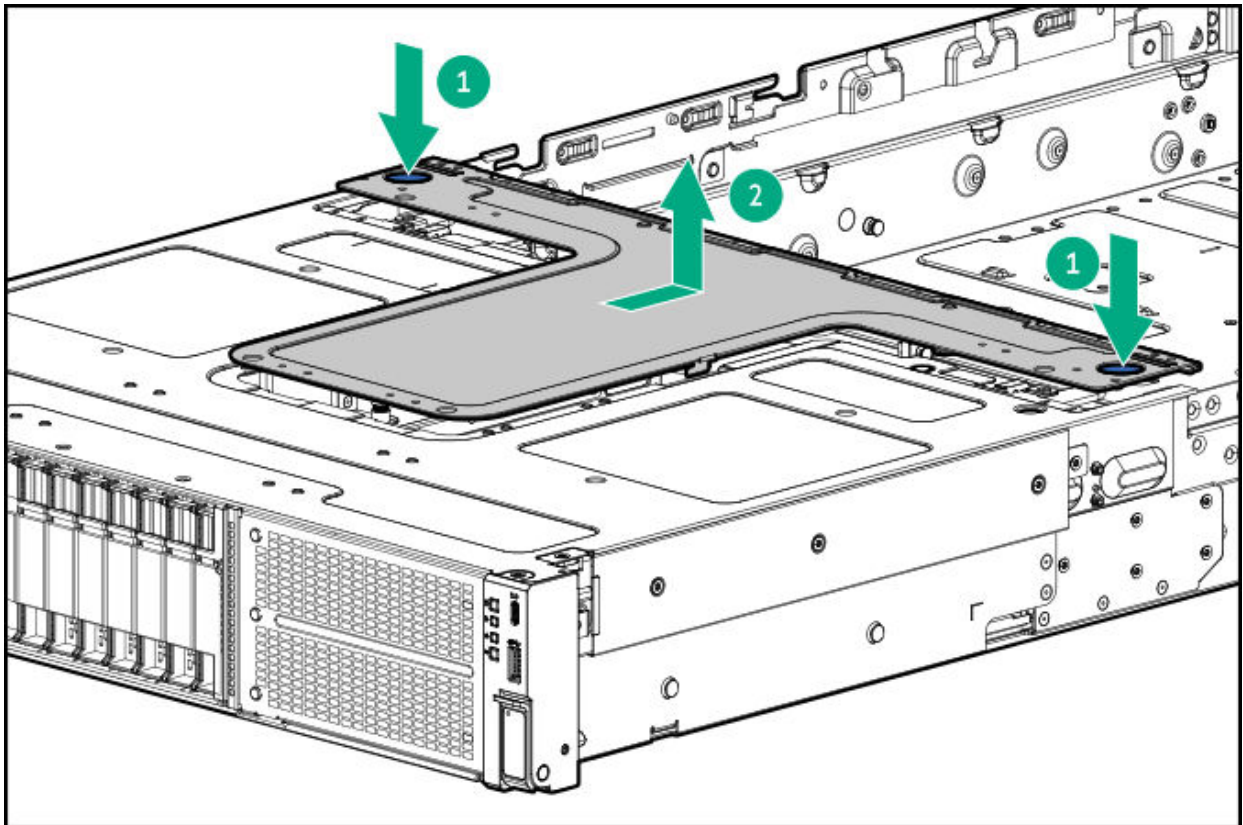


#### CAUTION

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

## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
  - Extend the server out of the rack.
  - Remove the server from the rack.
5. Remove the access panel.
6. Remove the middle cover:
  - a. Press and hold the release buttons.
  - b. Disengage the cover from the front cage.



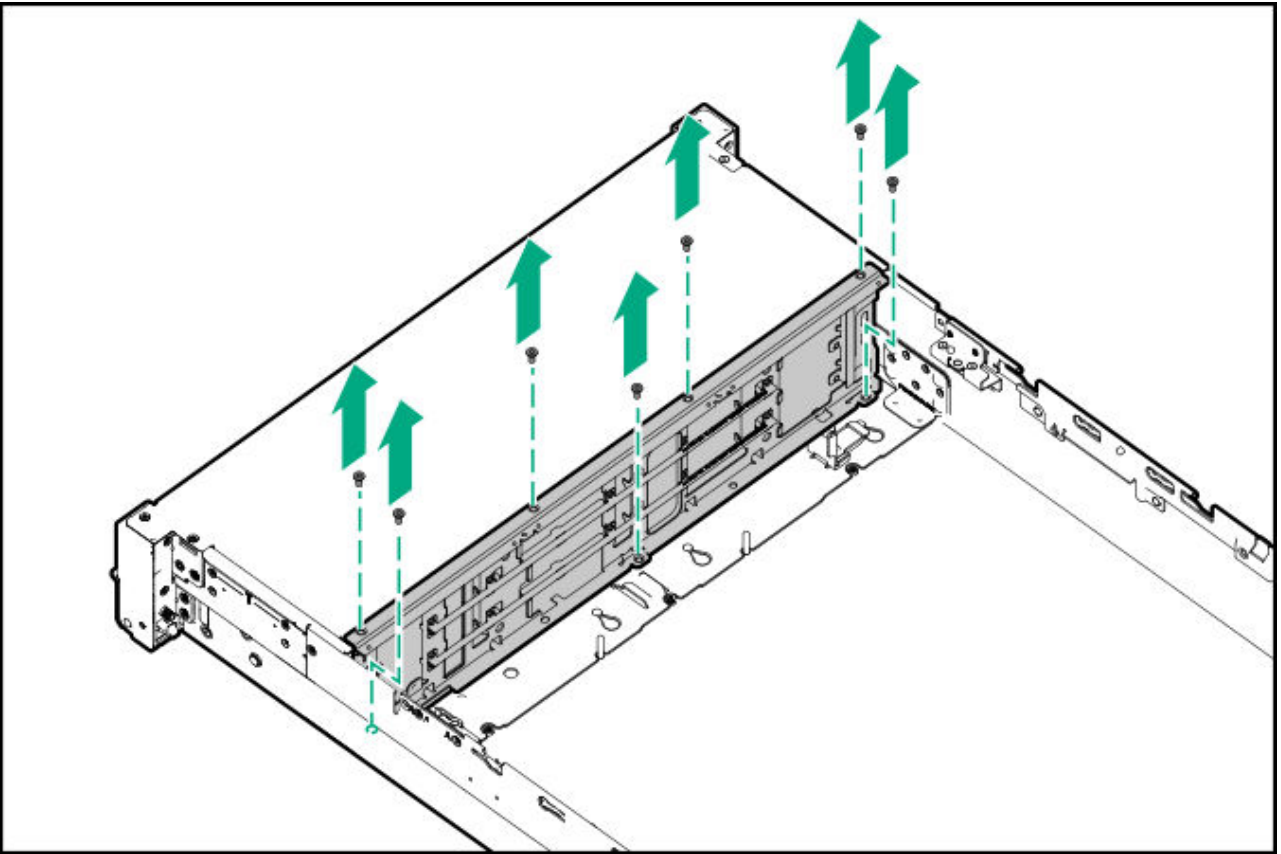
# Remove the LFF drive backplane bracket

## Prerequisites

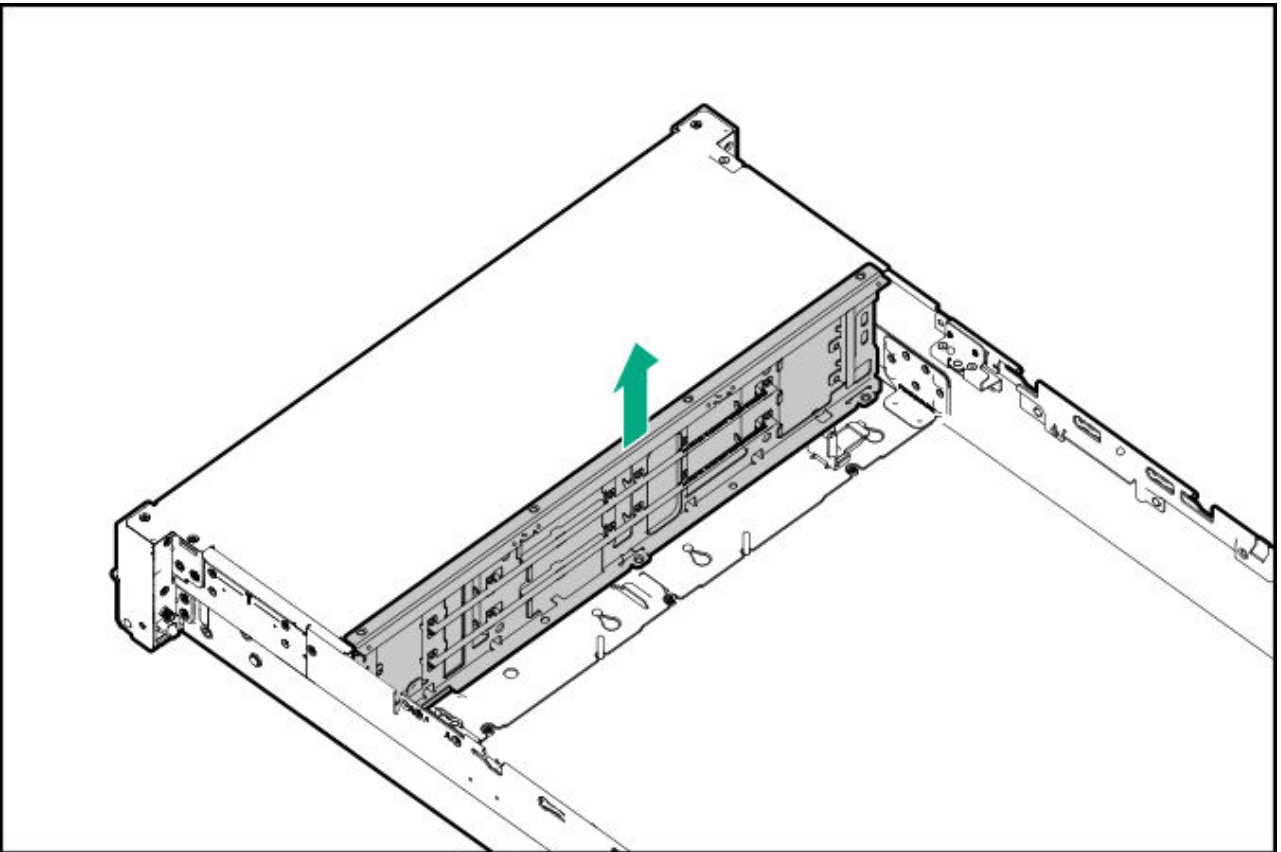
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the fan cage.
8. Remove the midwall bracket.
9. Disconnect all cables from the drive backplanes.
10. Remove the drive backplane bracket screws.



.1. Remove the drive backplane bracket from the server.



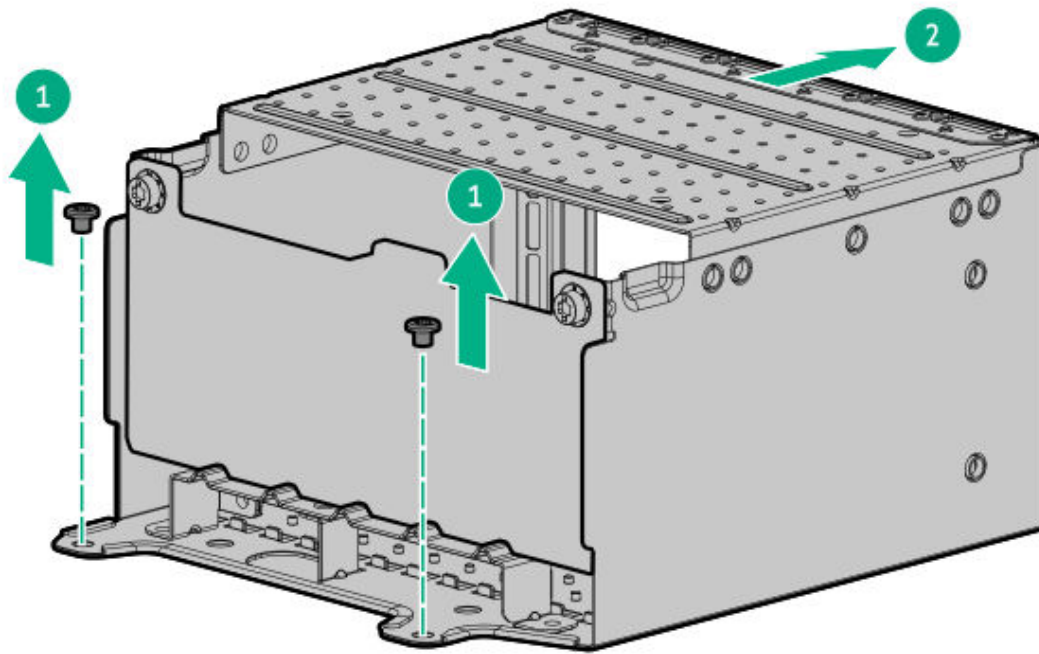
# Remove the E3.S drive cage

## Prerequisites

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

## Procedure

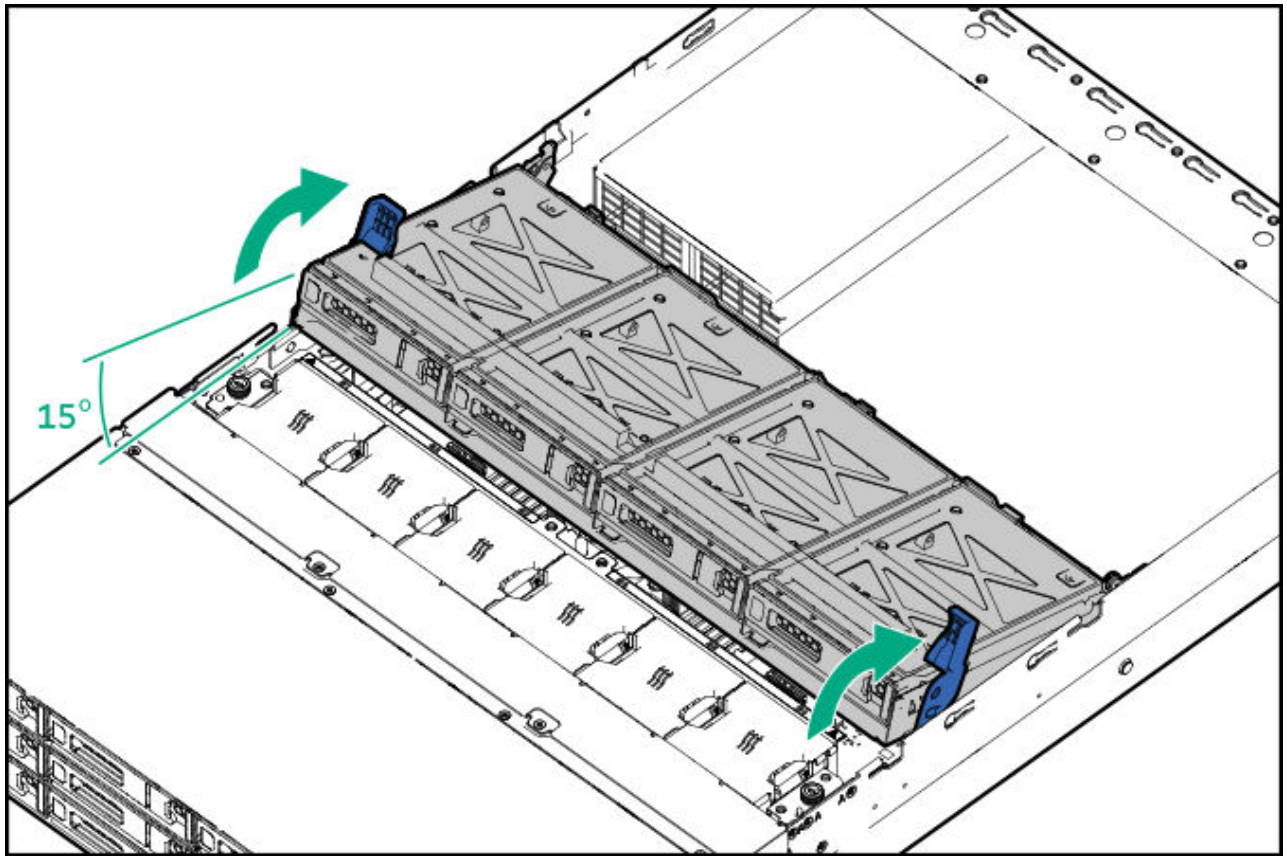
1. Remove all E3.S drive.
2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Remove the server from the rack.
7. Place the server on a flat, level work surface.
8. Remove the access panel.
9. Remove the fan cage.
- .0. Do one of the following:
  - In the SFF / E3.S drive configuration, remove the midwall bracket.
  - In the GPU-optimized configuration, remove the middle cover.
- .1. Disconnect all cables from the drive backplanes.
- .2. Remove the E3.S drive cage.



## Remove the midplane drive cage

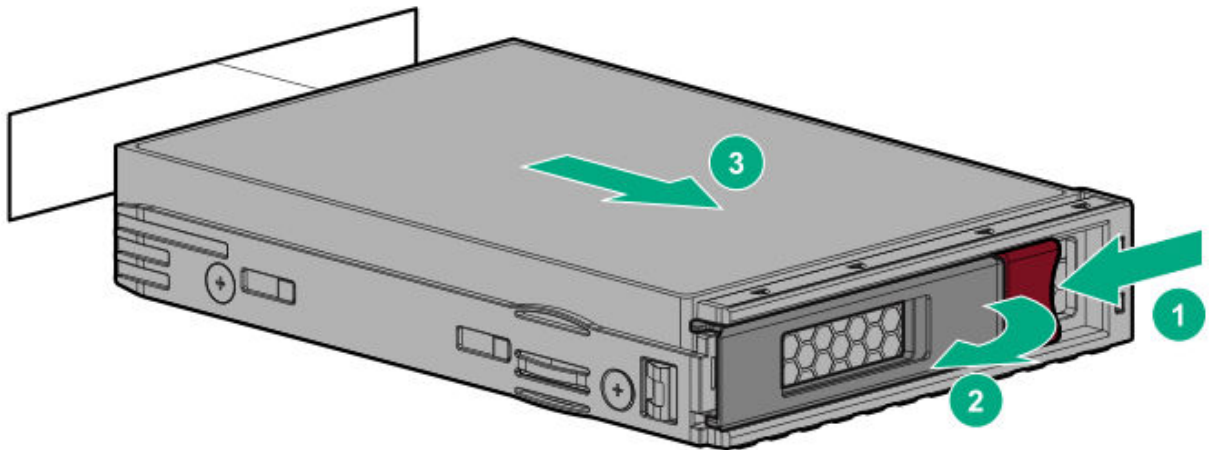
### Procedure

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. Disconnect all midplane drive backplane cables.
8. Open the drive cage latches to lift the front side of the cage to about 15° angle.

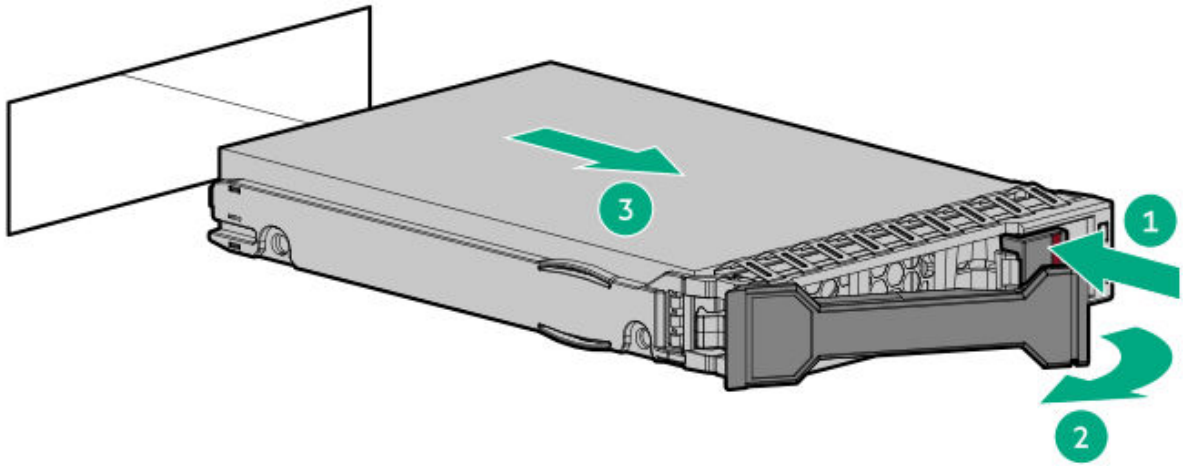


9. Remove all midplane drives.

- LFF drive

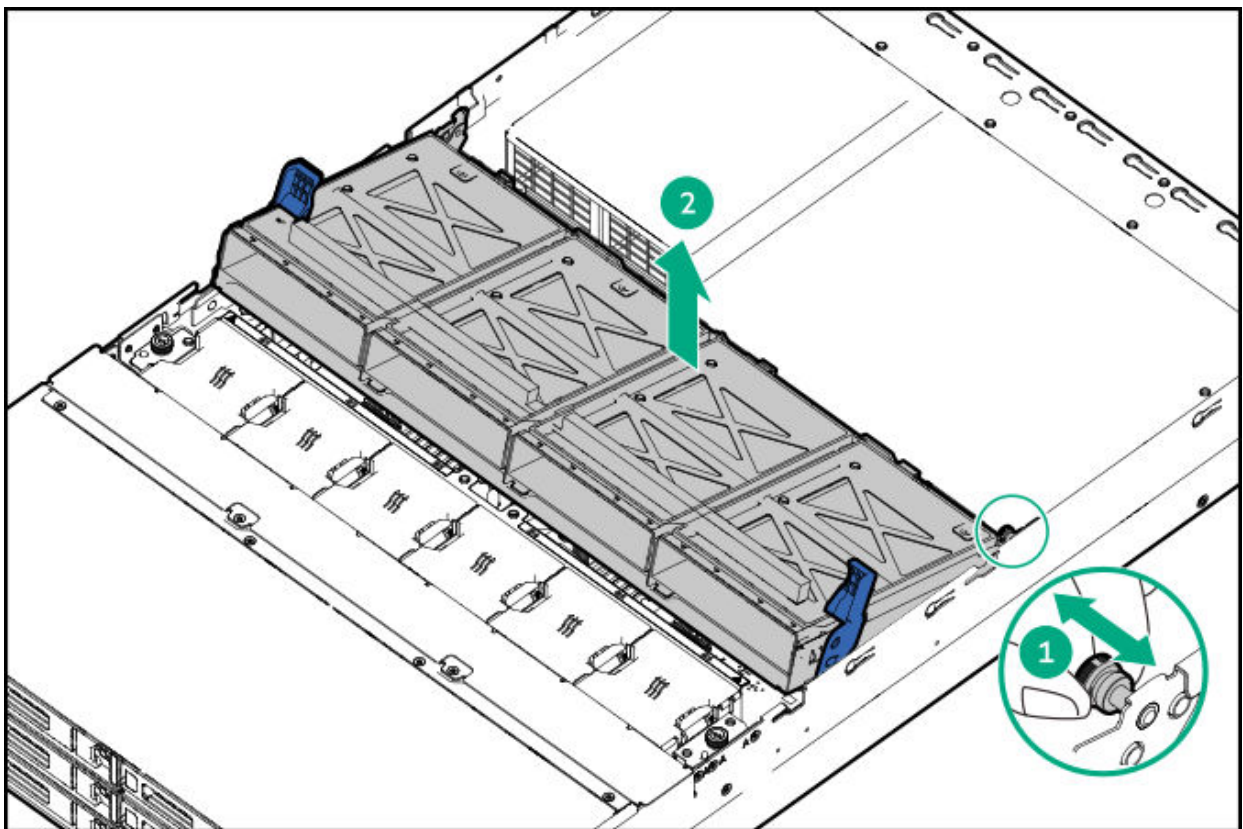


- SFF drive



.0. Remove the midplane drive cage:

- a. Pull the plunger pin on the rear right side of the drive cage.
- b. Use the drive cage latches to lift the cage out of the server.



# Remove the riser cage

## Prerequisites

If removing the three-slot riser cage, make sure that you have a T-15 Torx screwdriver available.

## About this task

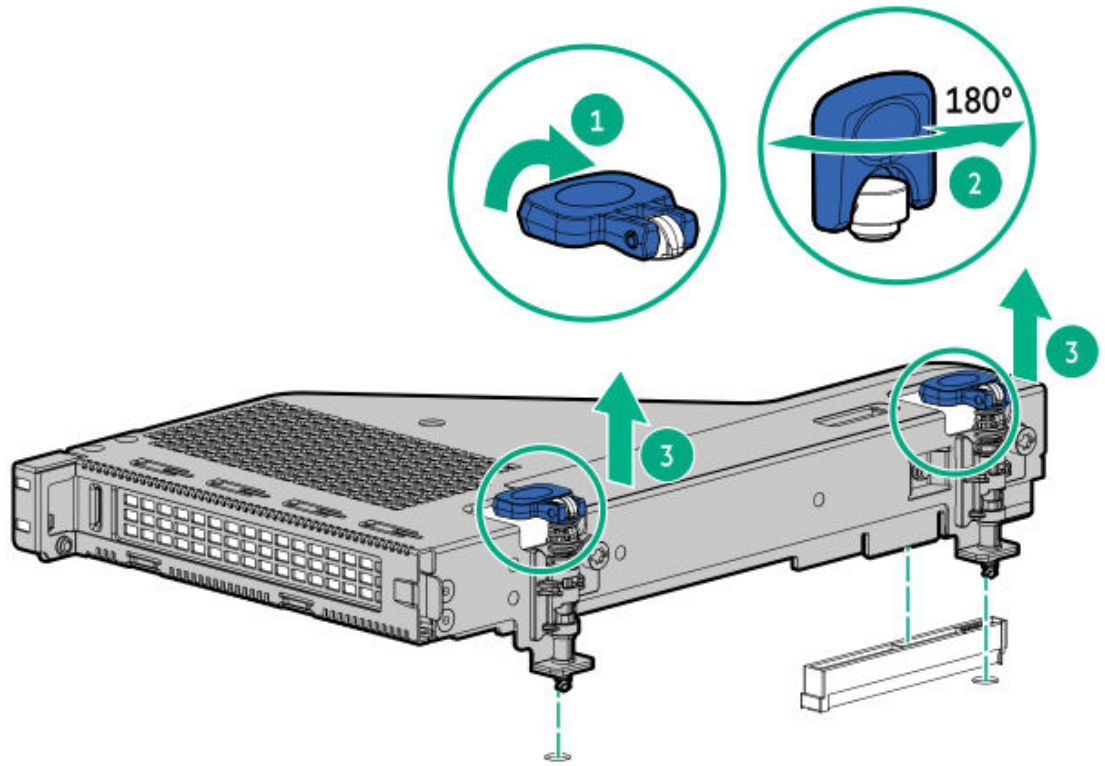


### WARNING

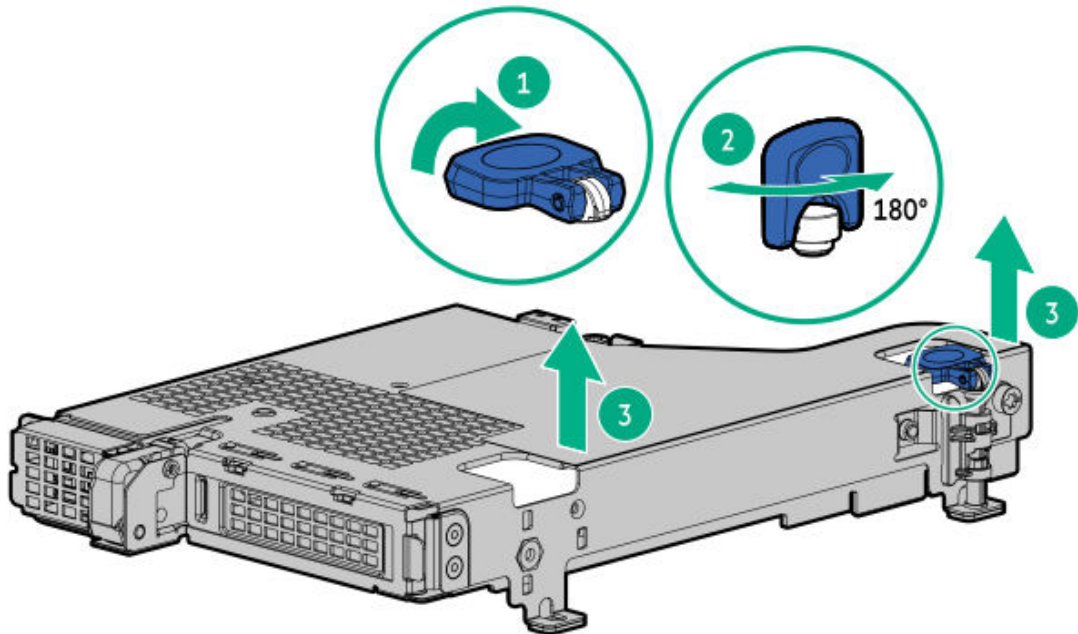
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

## 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 installed, remove the rear 4 LFF drive cage.
8. If an expansion card with internal cables is installed on the riser, disconnect the cables from the card.
9. Remove the one-slot riser cage:
  - a. Release the half-turn spring latch.
  - b. Lift the riser cage off the system board.
    - One-slot primary/secondary riser cage

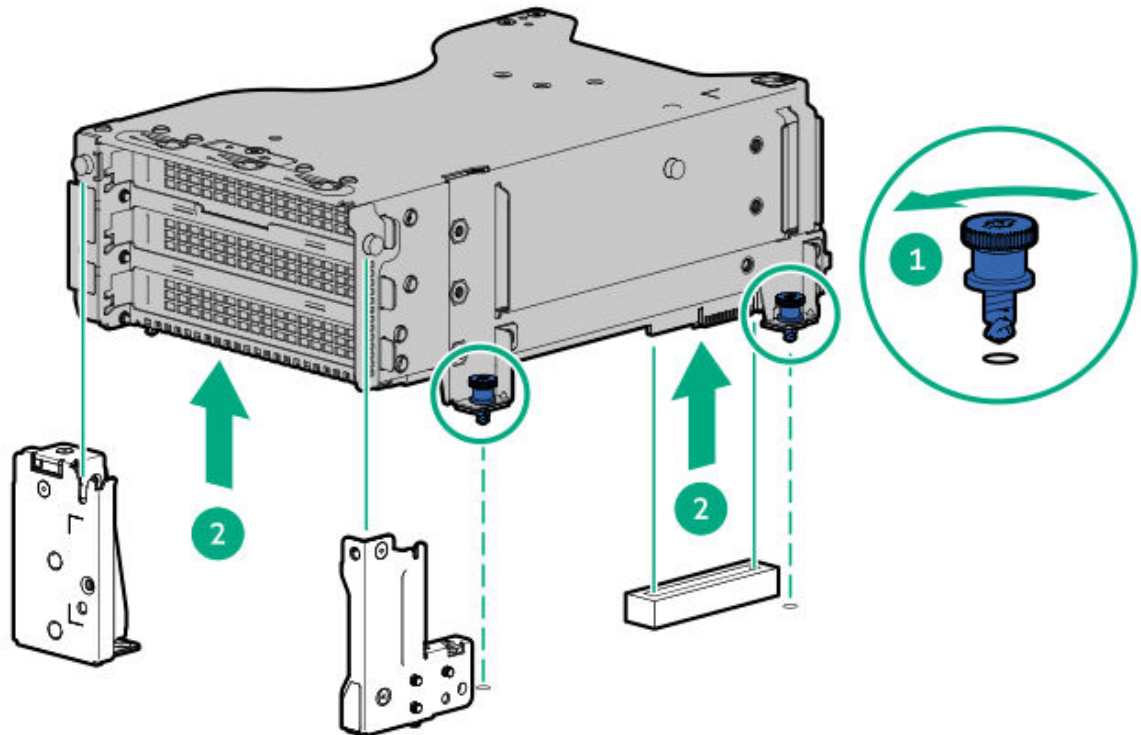


- NS204i-u + secondary low-profile riser cage



0. Remove the three-slot riser cage:
  - a. Loosen the captive screws.

b. Lift the riser cage off the system board.



## Remove the secondary riser cage when DLC module is installed

### Prerequisites

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

- T-15 Torx screwdriver—This is required to release the three-slot riser cage.
- ESD foam—This is required only if a DLC module is installed in the NS204i-u + secondary low-profile riser cage.

### About this task



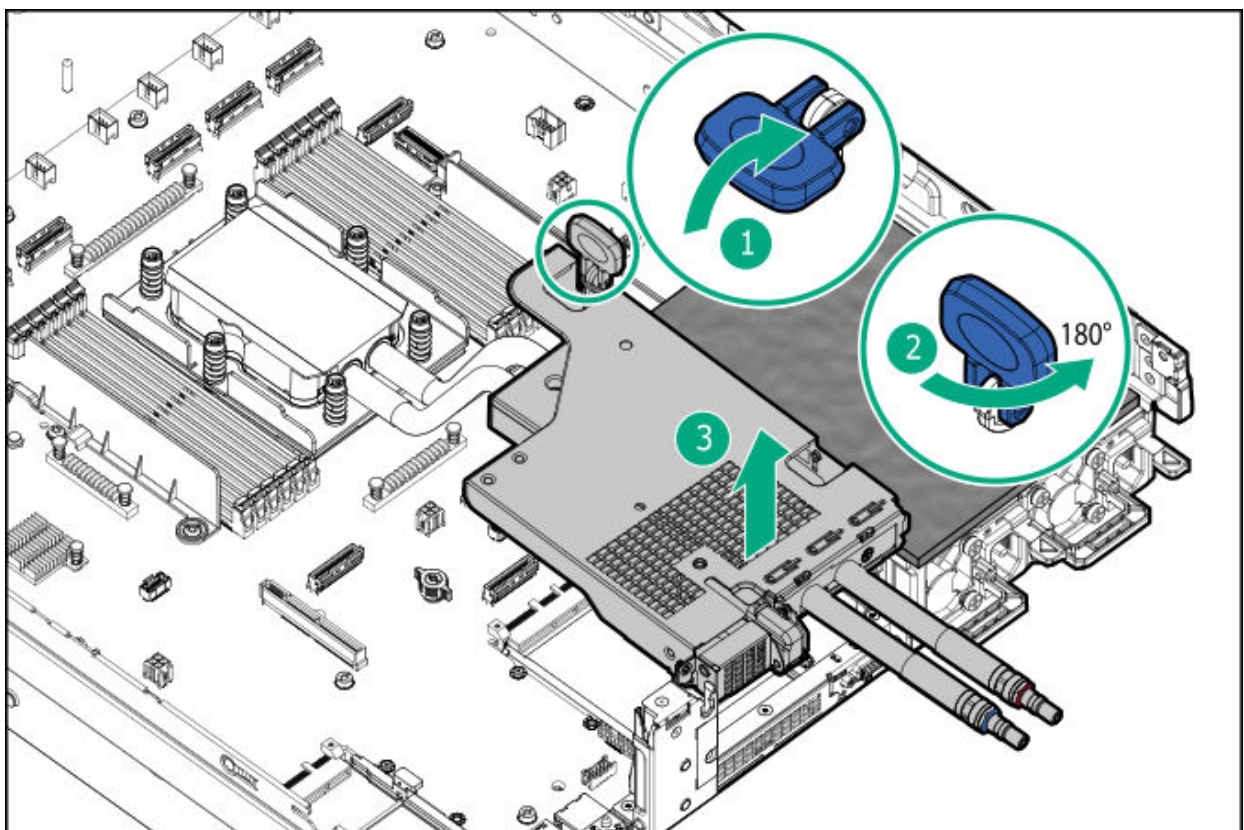
#### **WARNING**

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

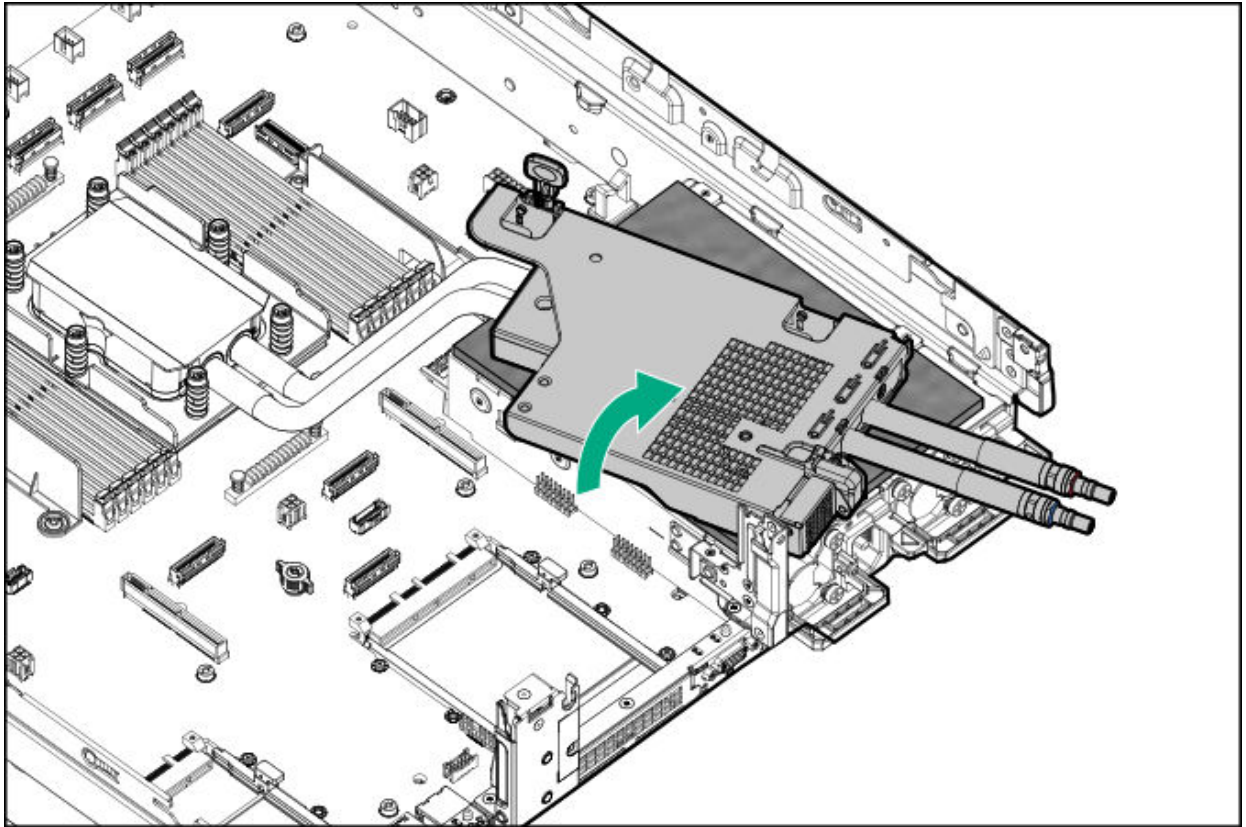
### Procedure

1. Power down the server.

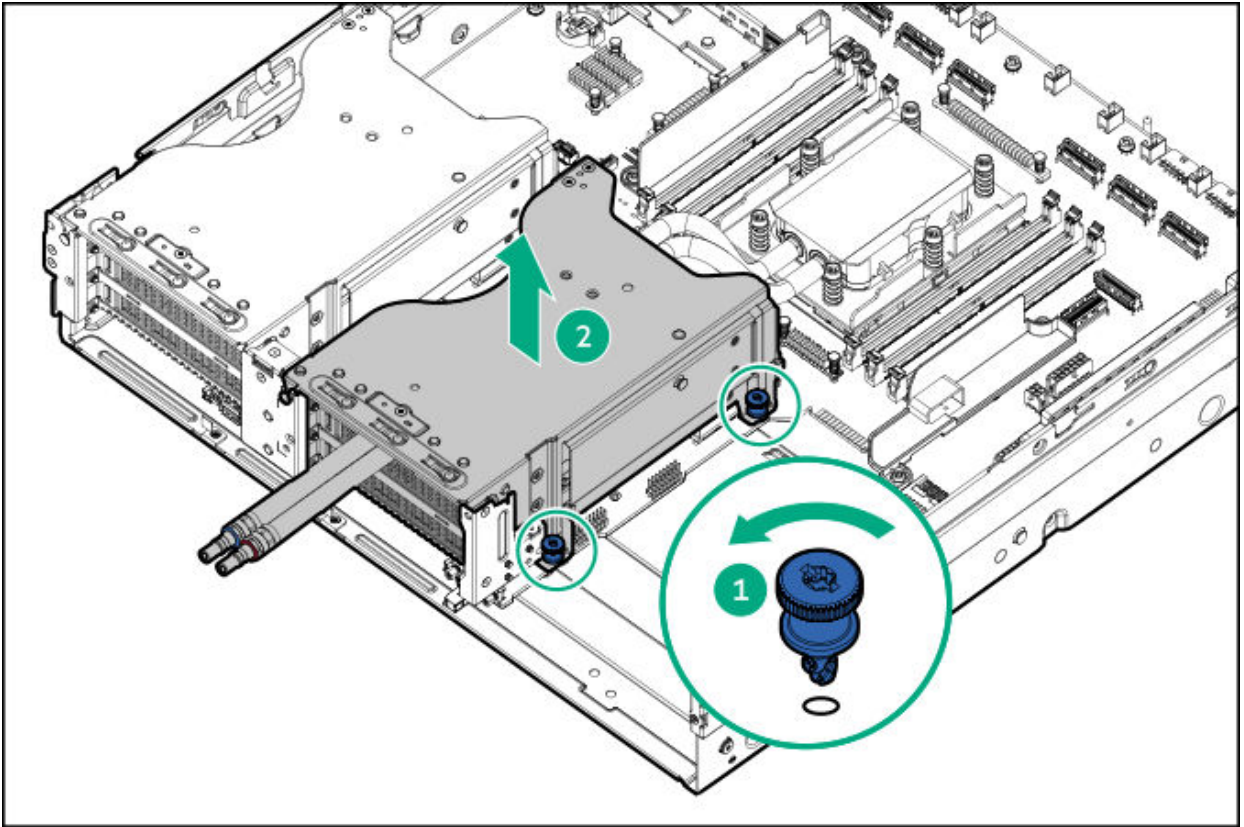
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If installed, remove the rear 4 LFF drive cage.
8. If a DLC module is installed in the NS204i-u + low-profile riser cage, release the riser cage that supports the DLC module hoses:
  - a. To protect the edge connector of the riser board, place an adequately sized ESD foam on top of the power supply cage.  
  
Make sure that the ESD foam protects the contacts on the riser board.
  - b. Release the half-turn spring latch, and then gently lift the riser cage off the system board.



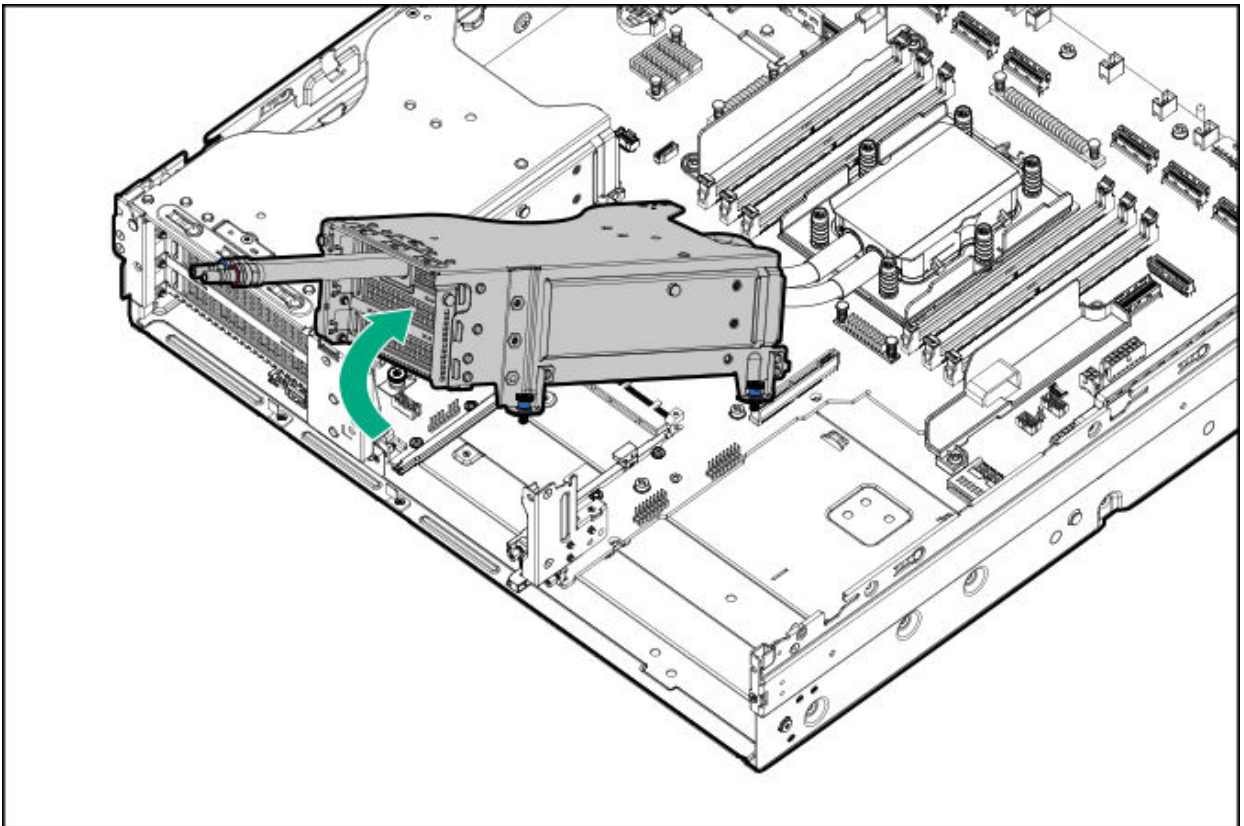
- c. Carefully set it on top of the power supply cage.



9. If a DLC module is installed in the 3-slot riser cage, release the riser cage that supports the DLC module hoses:
  - a. Loosen the captive screws and gently lift the riser cage off the system board.



b. Carefully lift and hold the riser cage to keep it out of the Slot 22.



# Remove the rear 4 LFF drive cage

## Prerequisites

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

## About this task



### CAUTION

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



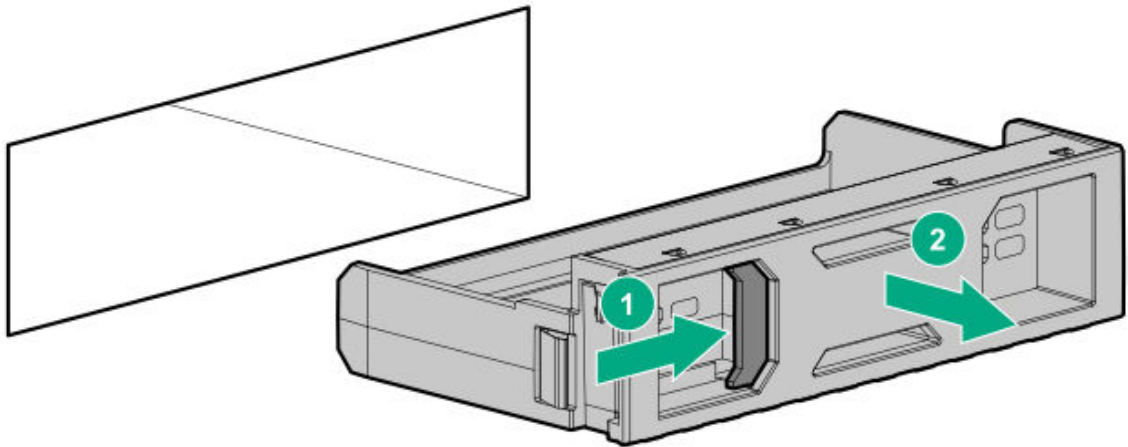
### CAUTION

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

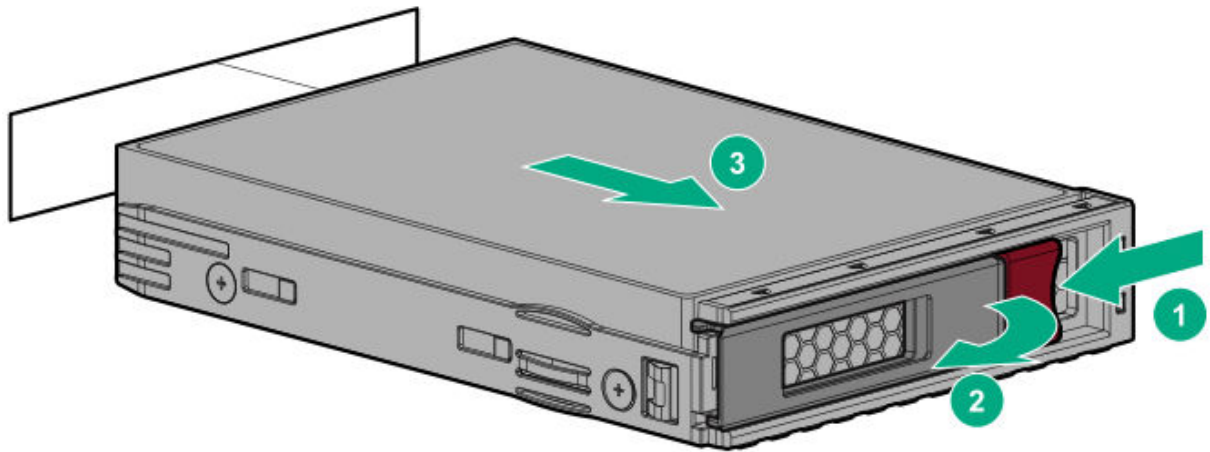
## Procedure

1. Remove all drives or drive blanks.

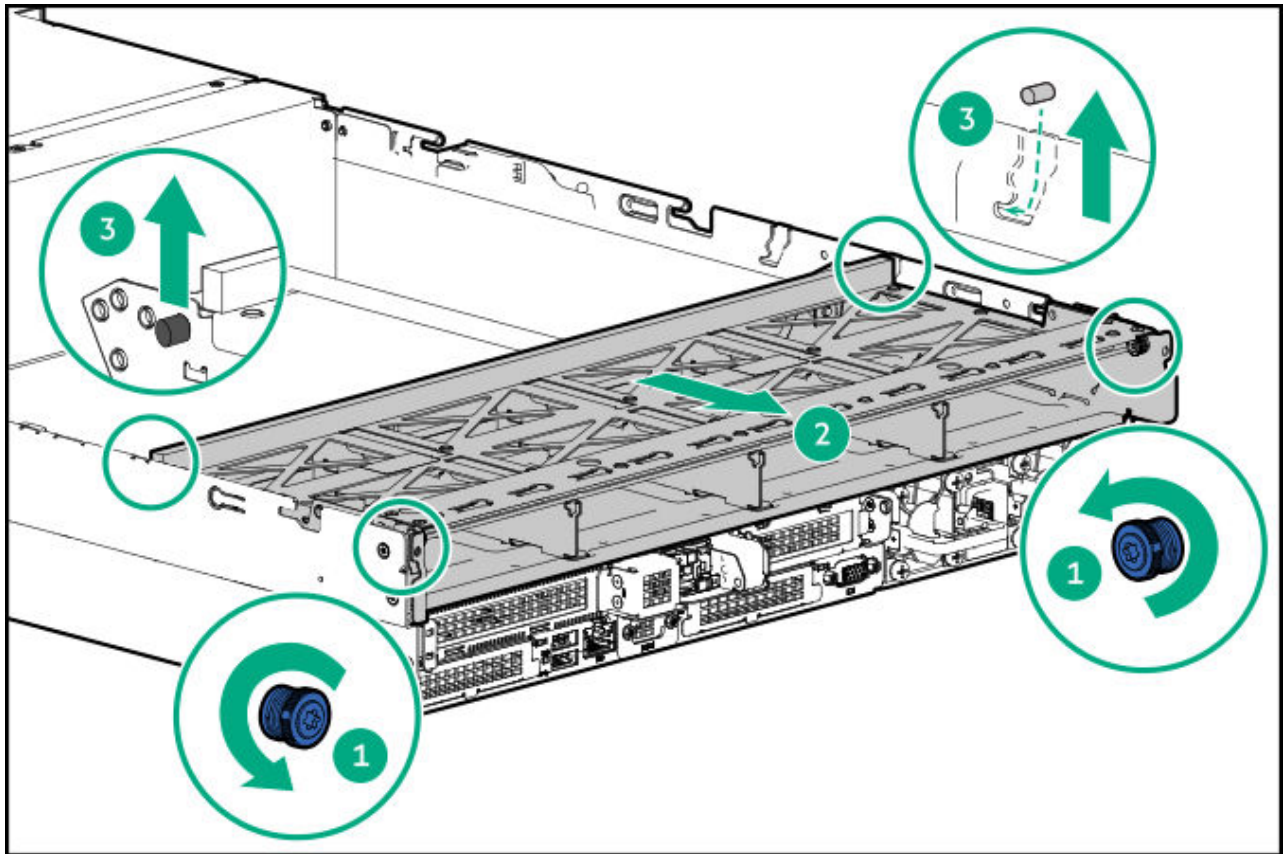
- Drive blank



- Drive



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. Disconnect all cables from the rear 4 LFF drive cage.
9. Remove the rear 4 LFF drive cage:
  - a. Loosen the captive screws, and then pull the rear 4 LFF drive cage into place.
  - b. Lift the rear 4 LFF drive cage.



## Install the E3.S drive cage

### Prerequisites

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

### About this task



#### CAUTION

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

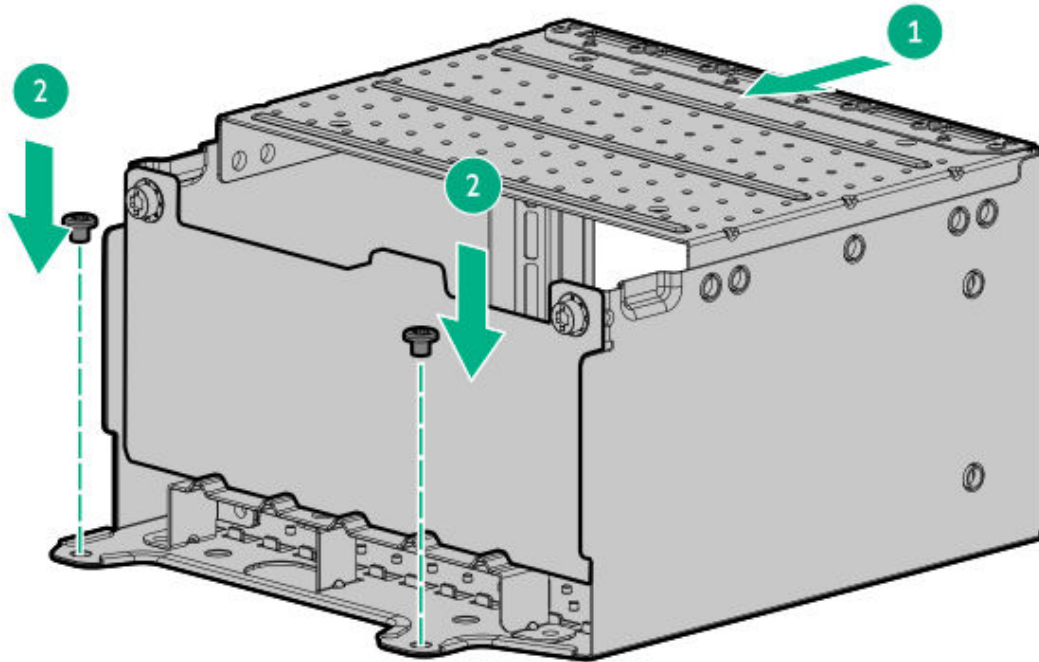


#### CAUTION

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. Install the E3.S drive cages.



2. Cable the E3.S drive:

- [Drive power cable](#)
- [Storage controller cable](#)

3. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the E3.S drive cage.

## Install the rear 4 LFF drive cage

### Prerequisites

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

## About this task



### CAUTION

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

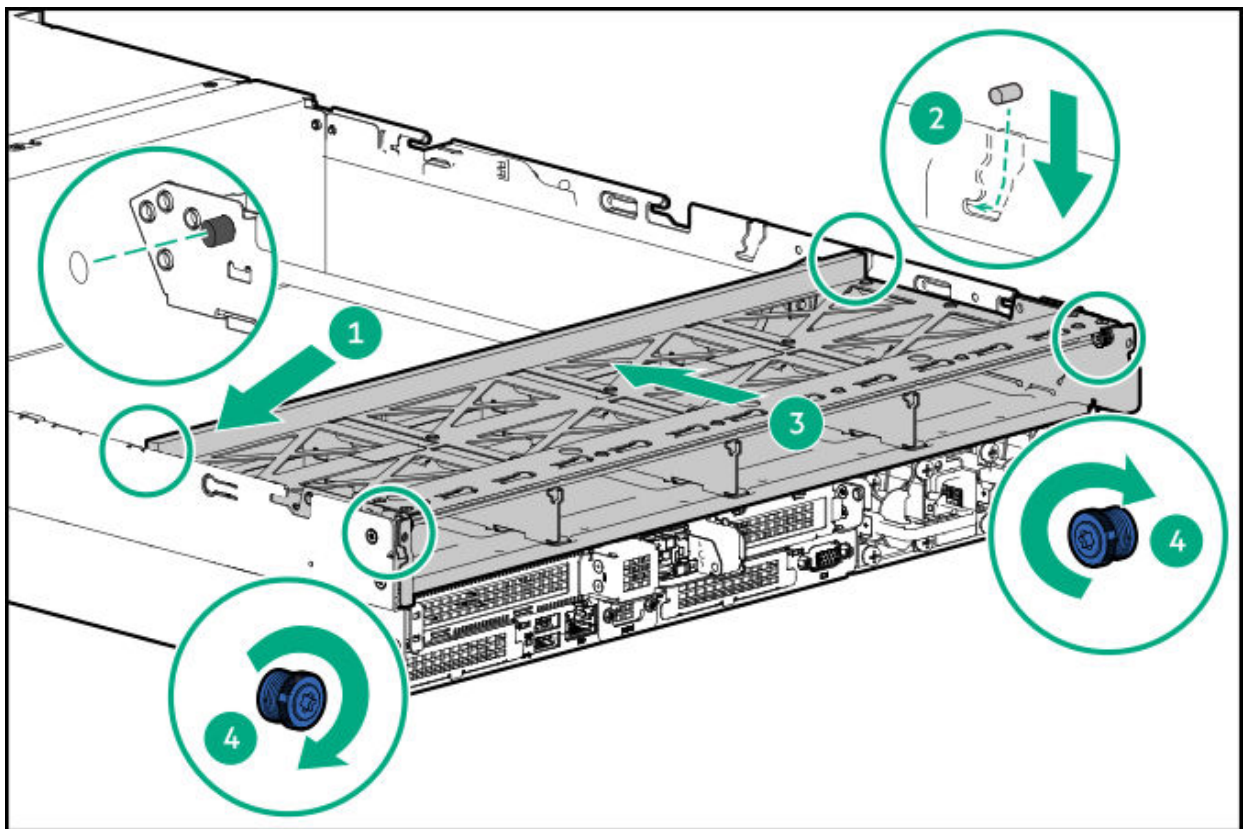


### CAUTION

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

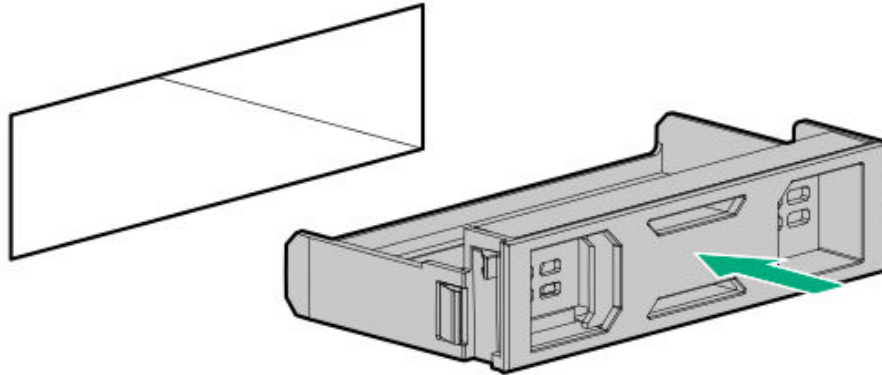
## Procedure

1. Install the rear 4 LFF drive cage:
  - a. Align the pin on the rear left of the drive cage to the server and then insert the pin.
  - b. Lower the rear right of the drive cage to insert the pin into the server.
  - c. Install the rear 4 LFF drive cage into the place, and then tighten the captive screws.

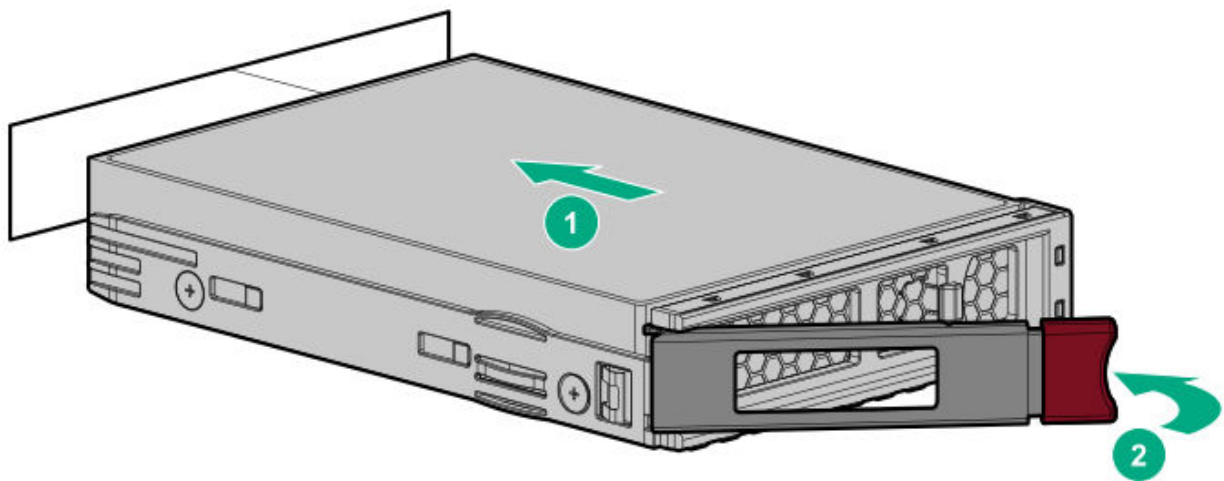


2. Connect all cables to the rear 4 LFF drive cage.
3. Install all drives or drive blanks.

- Drive blank



- Drive



4. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the rear 4 LFF drive cage.

## Install the secondary riser cage when DLC module is installed

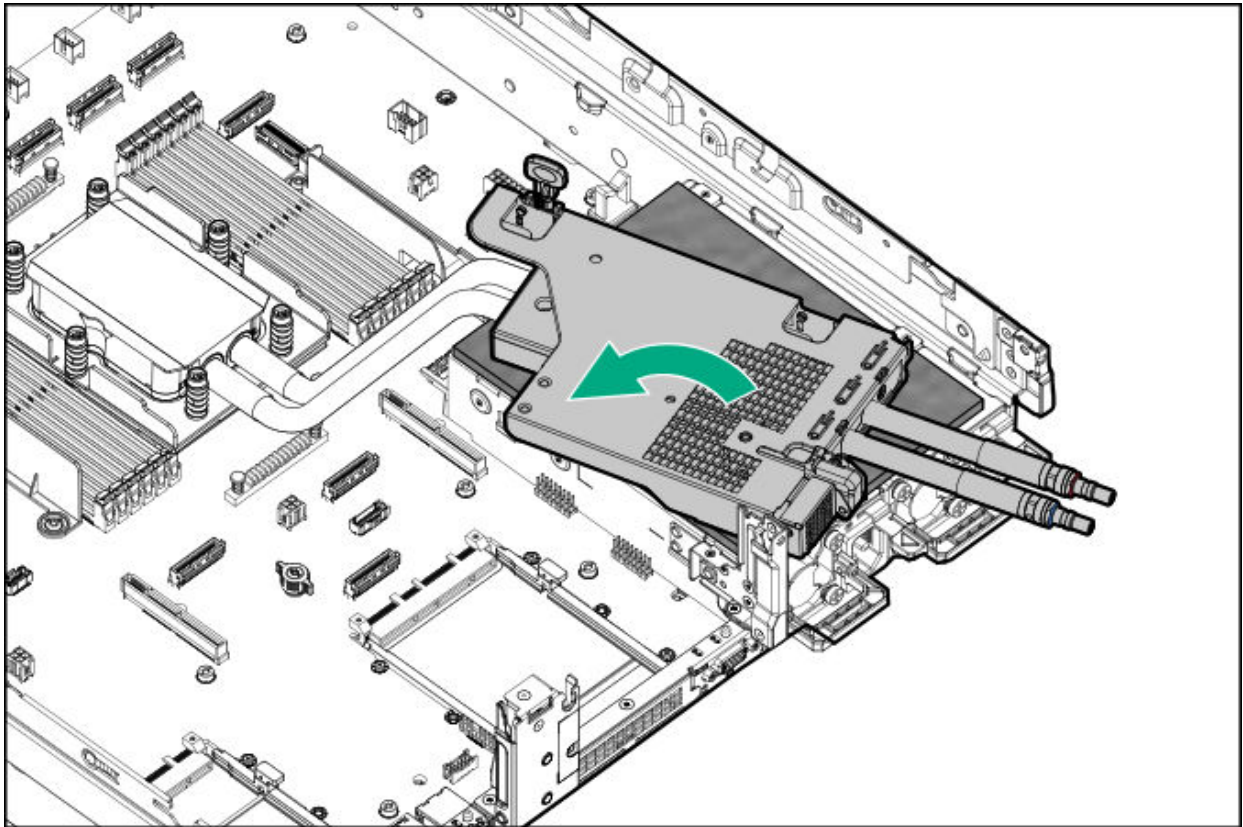
### Prerequisites

If installing the three-slot riser cage, make sure that you have a T-15 Torx screwdriver available.

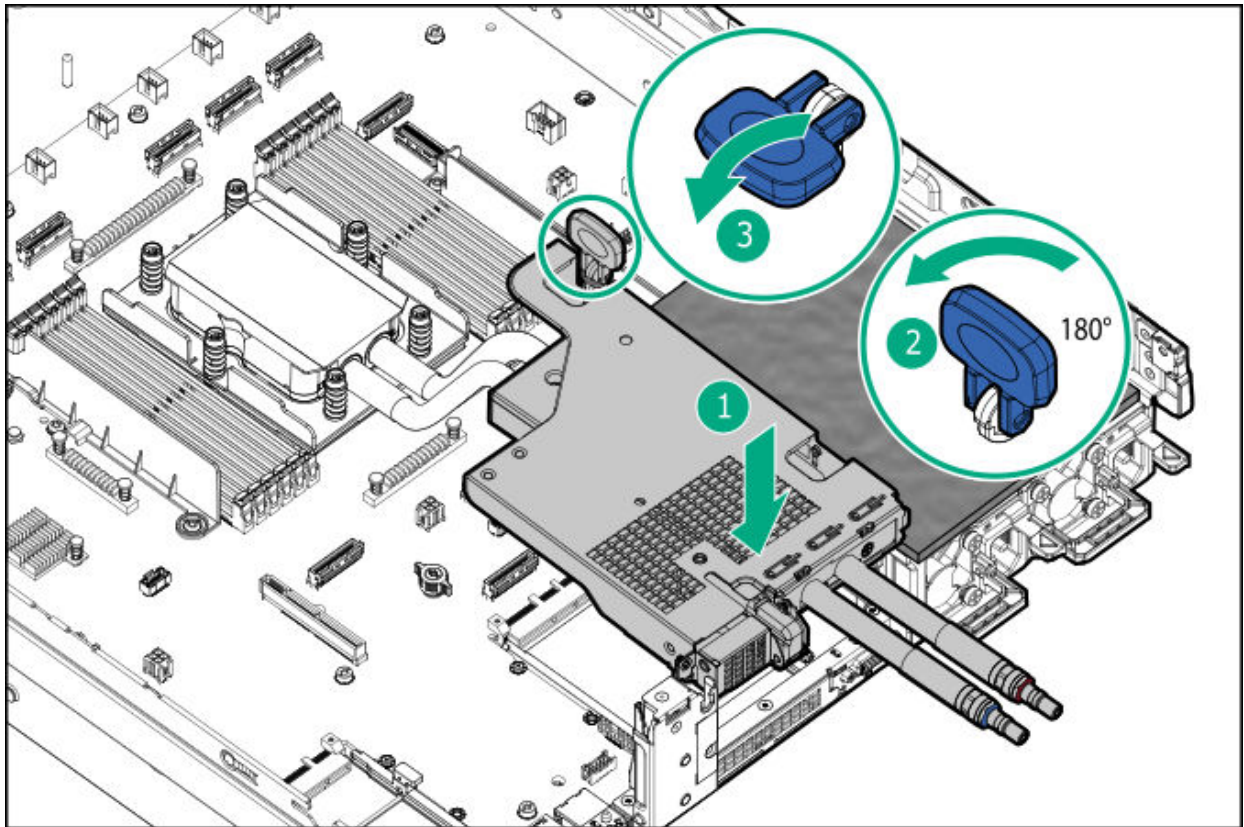
### Procedure

1. If an expansion card or its internal cabling was removed, reinstall these components.

2. To install the DLC module with NS204i-u + low-profile riser cage:
  - a. Carefully lift the NS204i-u + low-profile riser cage from top of the power supply cage.



- b. Carefully press the riser down on its system board connector.  
Make sure that the riser board is firmly seated.
- c. Simultaneously push and rotate the half-turn spring latch to 180°.
- d. Close the spring latch.



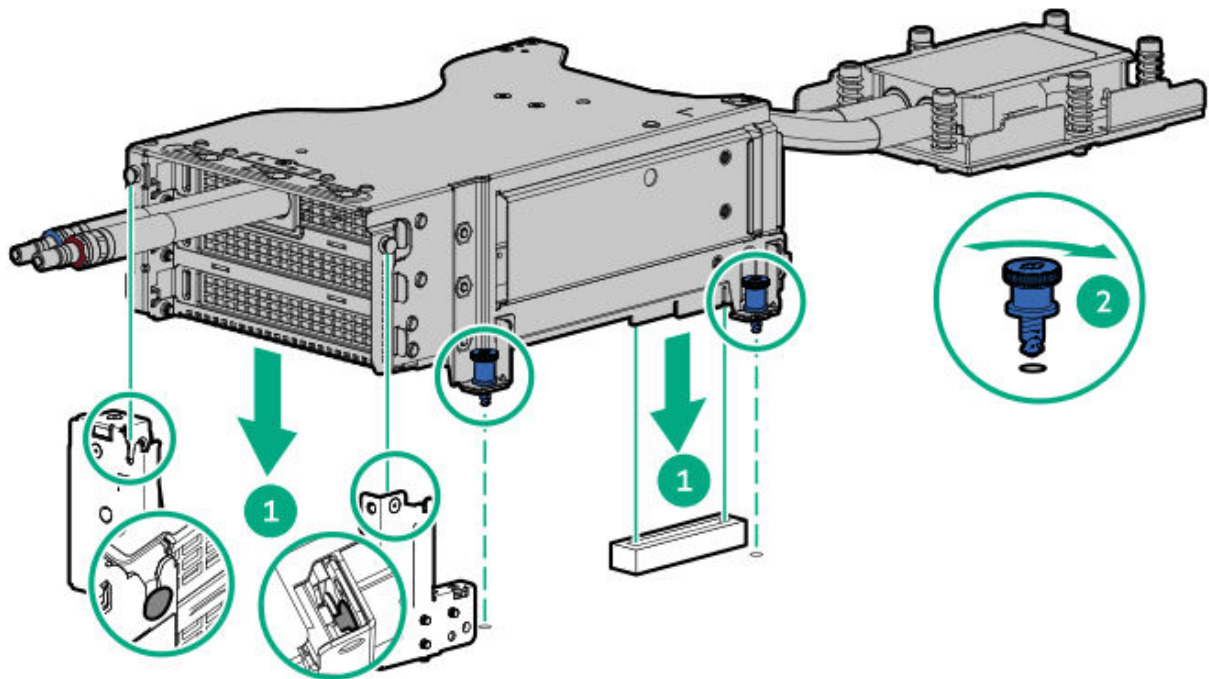
e. Remove the ESD foam from the top of the power supply cage.

3. To install the DLC module with the 3-slot riser cage:

a. Align the spools on the riser cage with cutouts on the chassis, and then carefully press the riser cage down on its system board connector.

Make sure that the riser board is firmly seated.

b. Tighten the captive screws.



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

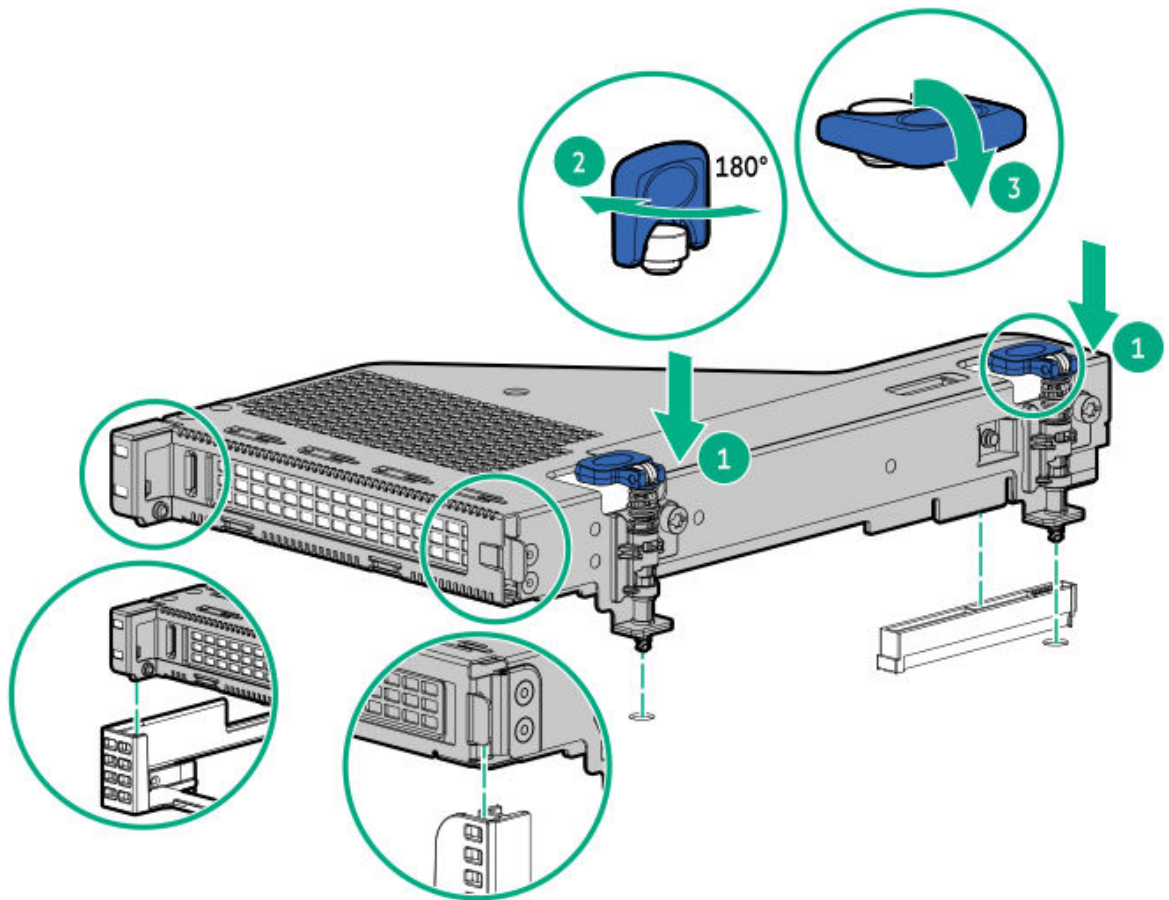
## Install the riser cage

### Prerequisites

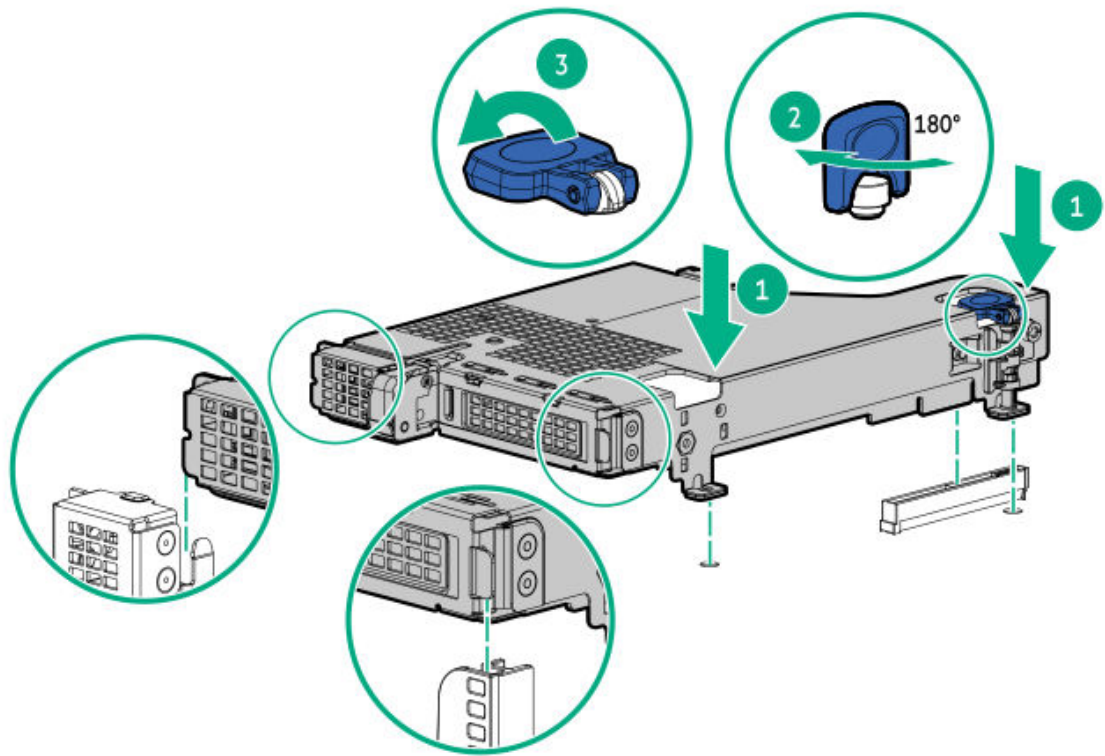
If installing the three-slot riser cage, make sure that you have a T-15 Torx screwdriver available.

### Procedure

1. If an expansion card or its internal cabling was removed, reinstall these components.
2. Install the one-slot riser cage:
  - a. Carefully press the riser down on its system board connector.  
Make sure that the riser board is firmly seated.
  - b. Simultaneously push and rotate the half-turn spring latch to 180°.
  - c. Close the spring latch.
    - One-slot secondary riser cage



- NS204i-u + secondary low-profile riser cage

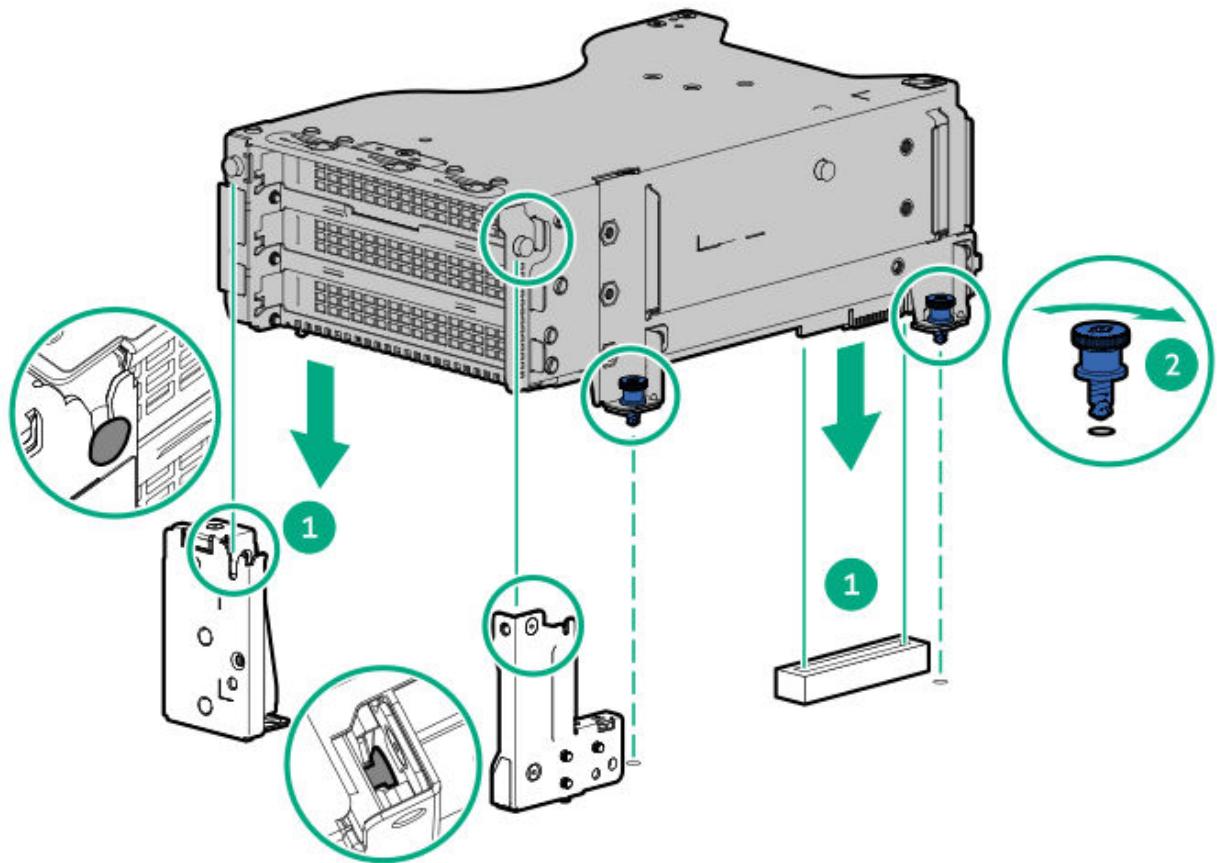


3. Install the three-slot riser cage:

- a. Align the spools on the riser cage with cutouts on the chassis, and then carefully press the riser cage down on its system board connector.

Make sure that the riser board is firmly seated.

- b. Tighten the captive screws.



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

## Install the LFF drive backplane bracket

### Prerequisites

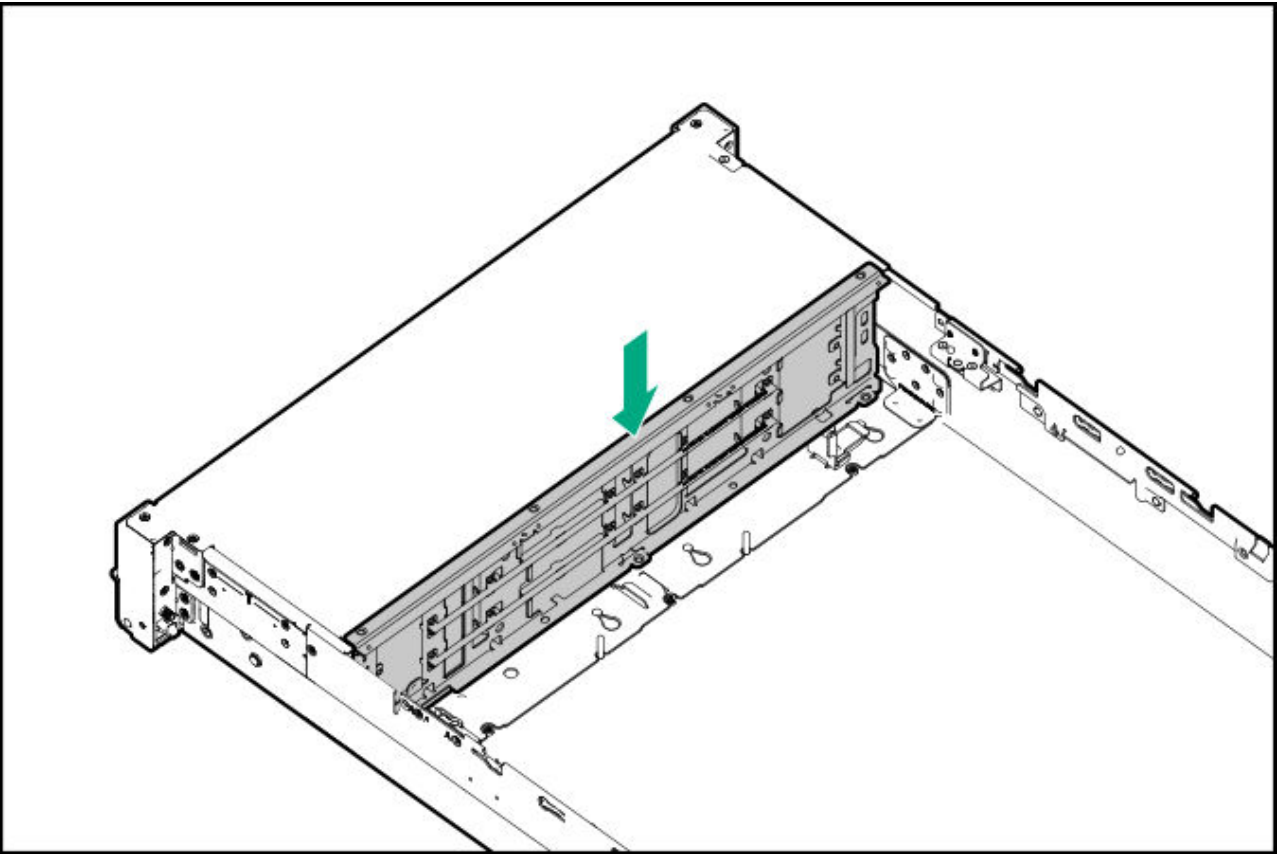
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### About this task

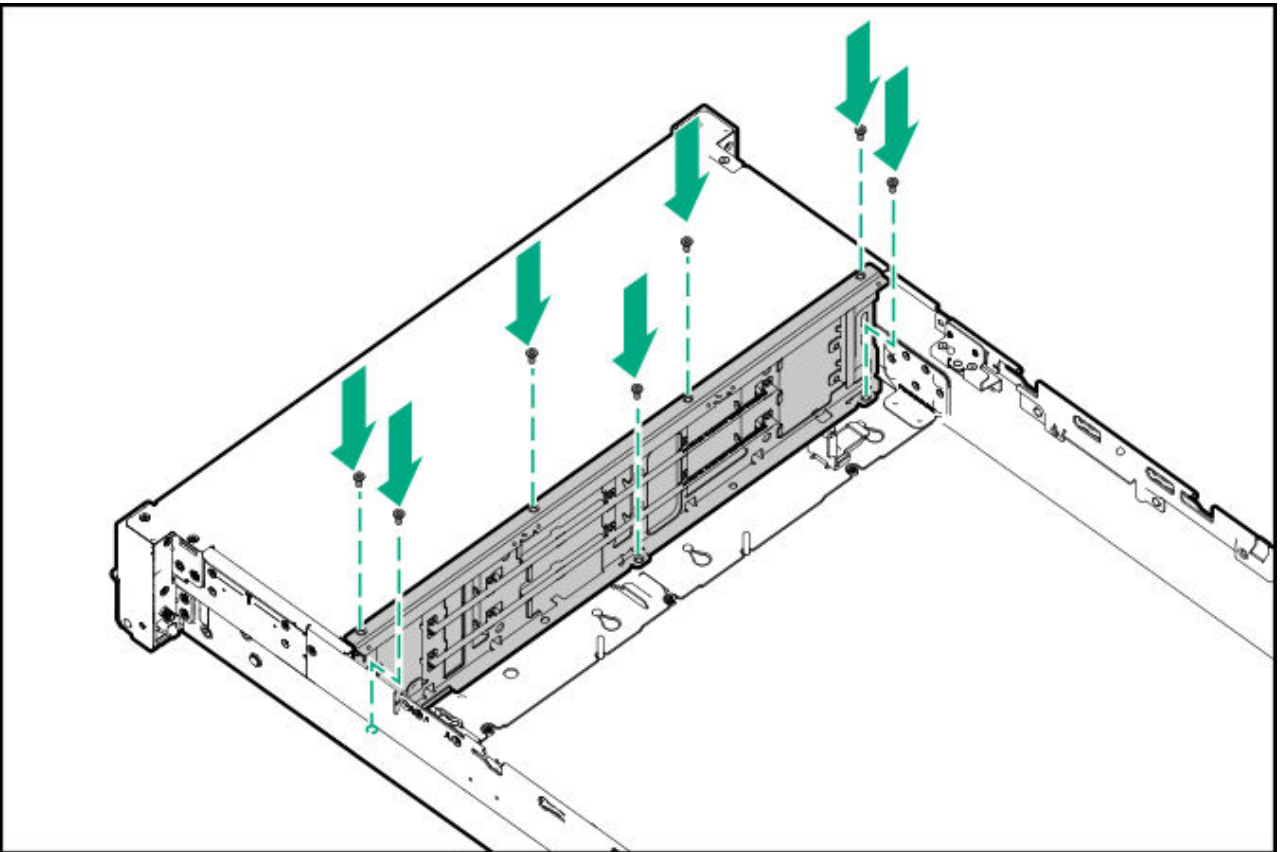
The drive backplane bracket is only present in LFF drive configurations.

### Procedure

1. Fit the drive backplane bracket behind the drive cage.



2. Install the drive backplane bracket screws.



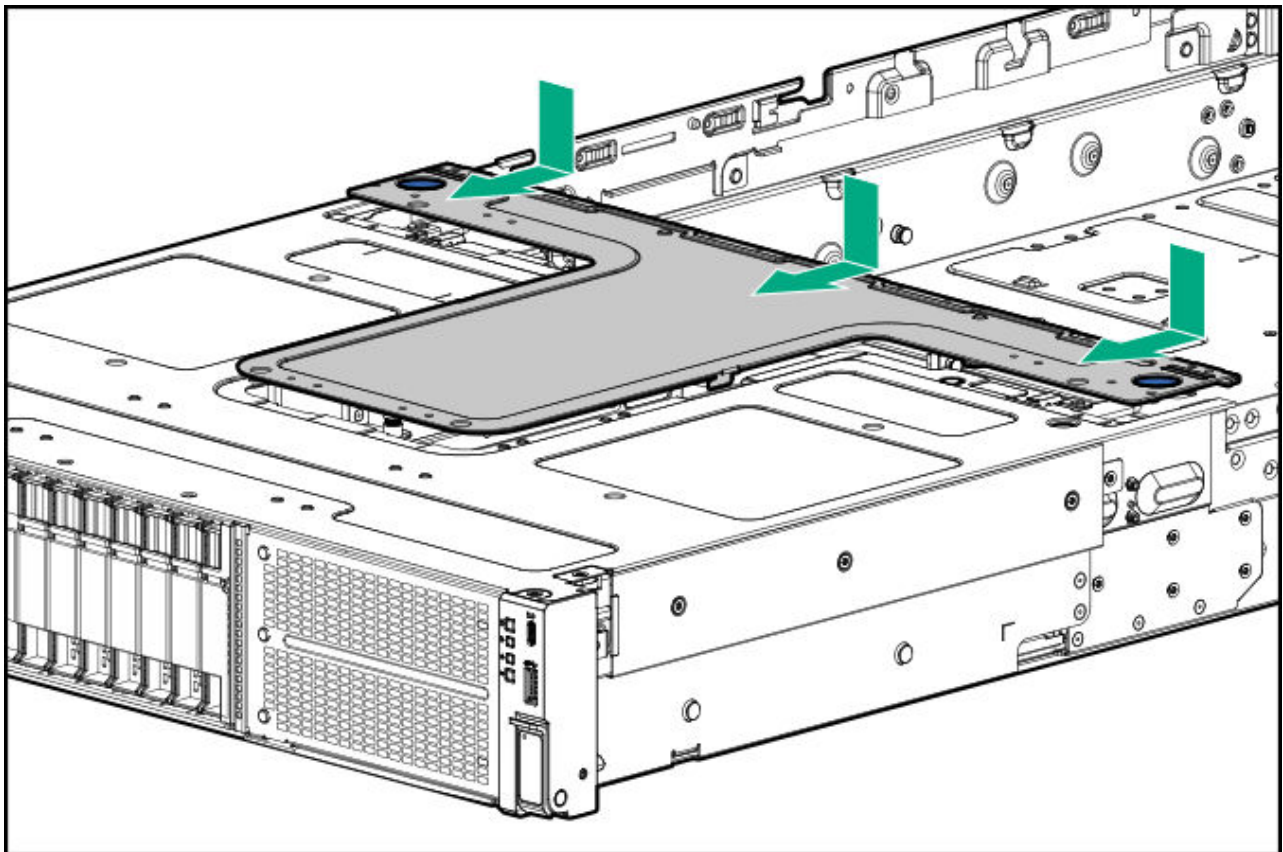
3. Connect all drive backplane cables.
4. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the drive backplane bracket.

## Install the middle cover

### Procedure

1. Install the middle cover.

A click sound indicates that the cover is properly engaged with the front cage.



2. Install the access panel.
3. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the middle cover.

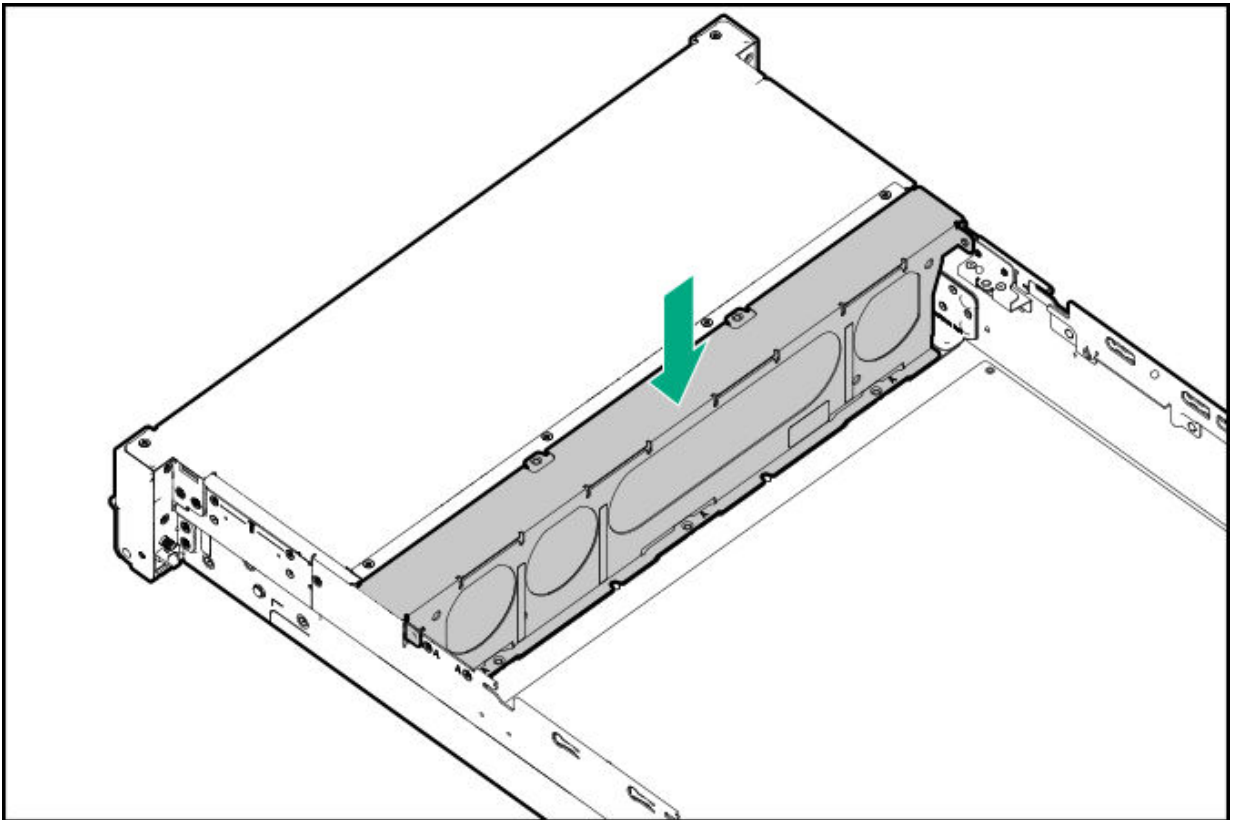
## Install the midwall bracket

### Prerequisites

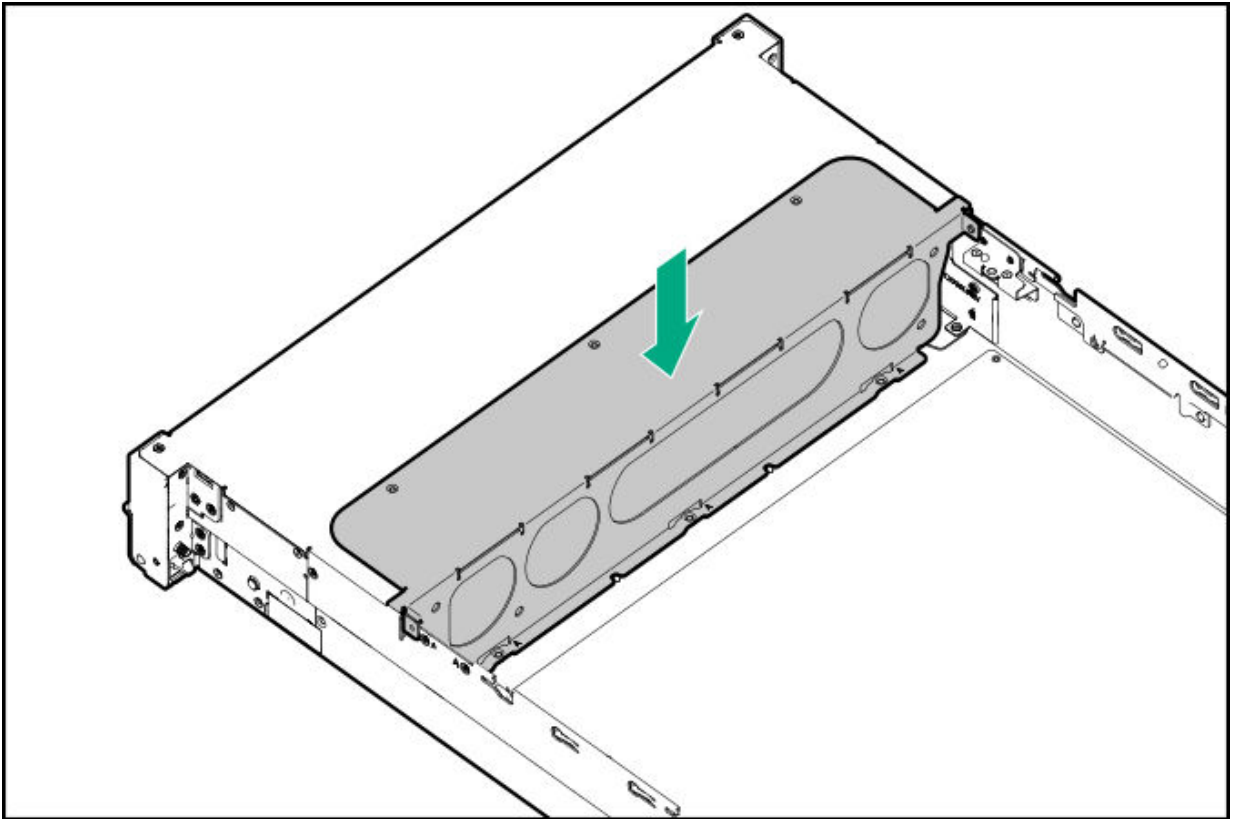
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

1. Make sure that all drive backplane cables have been properly routed and will not interfere with the midwall bracket installation.
2. Lower the midwall bracket into the chassis.
  - LFF chassis

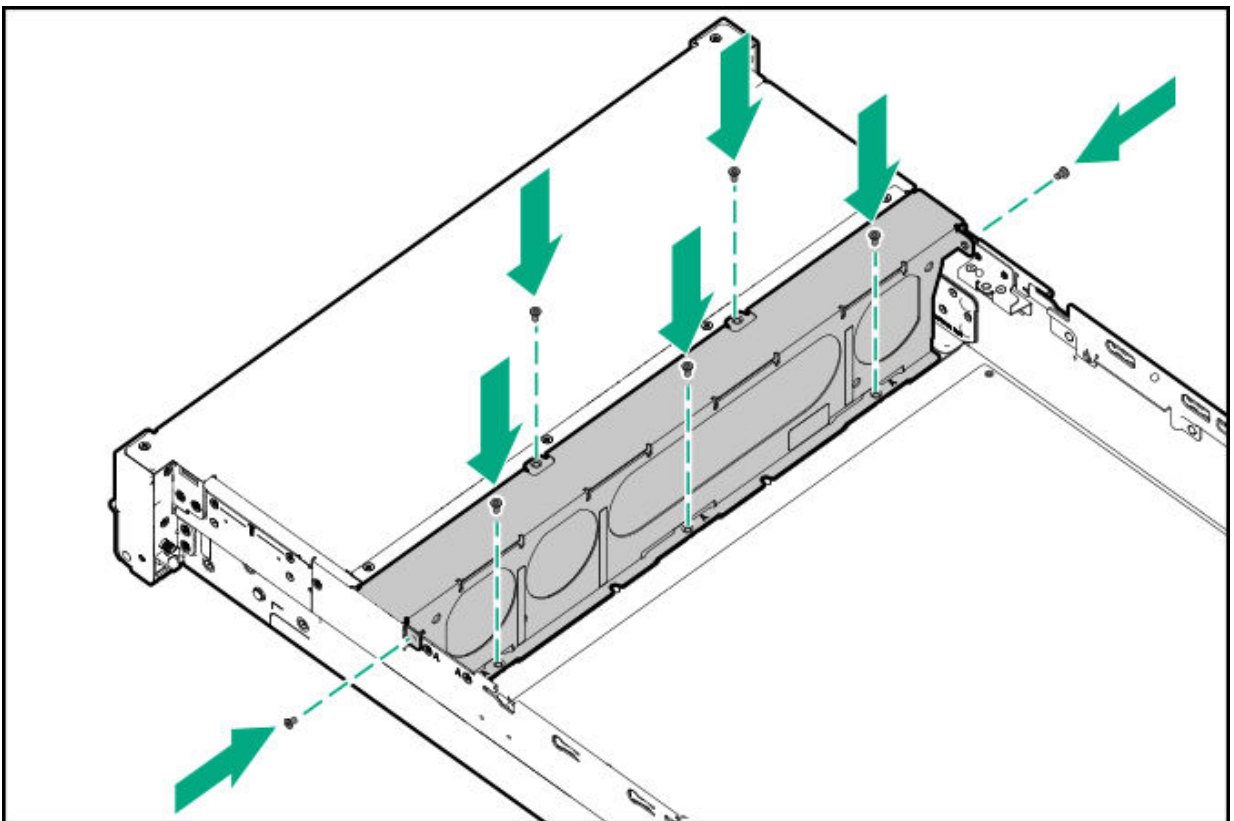


- SFF chassis

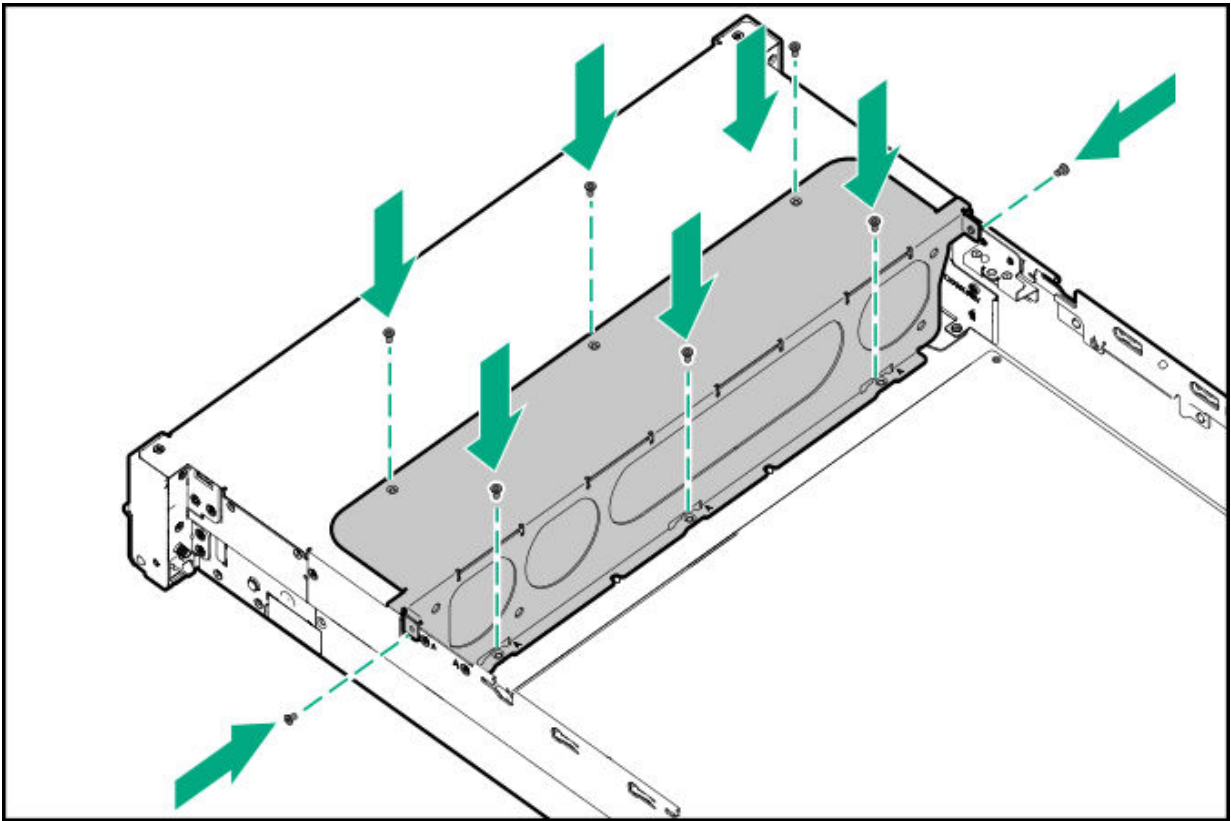


3. Install the midwall bracket screws.

- LFF chassis



- SFF chassis



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

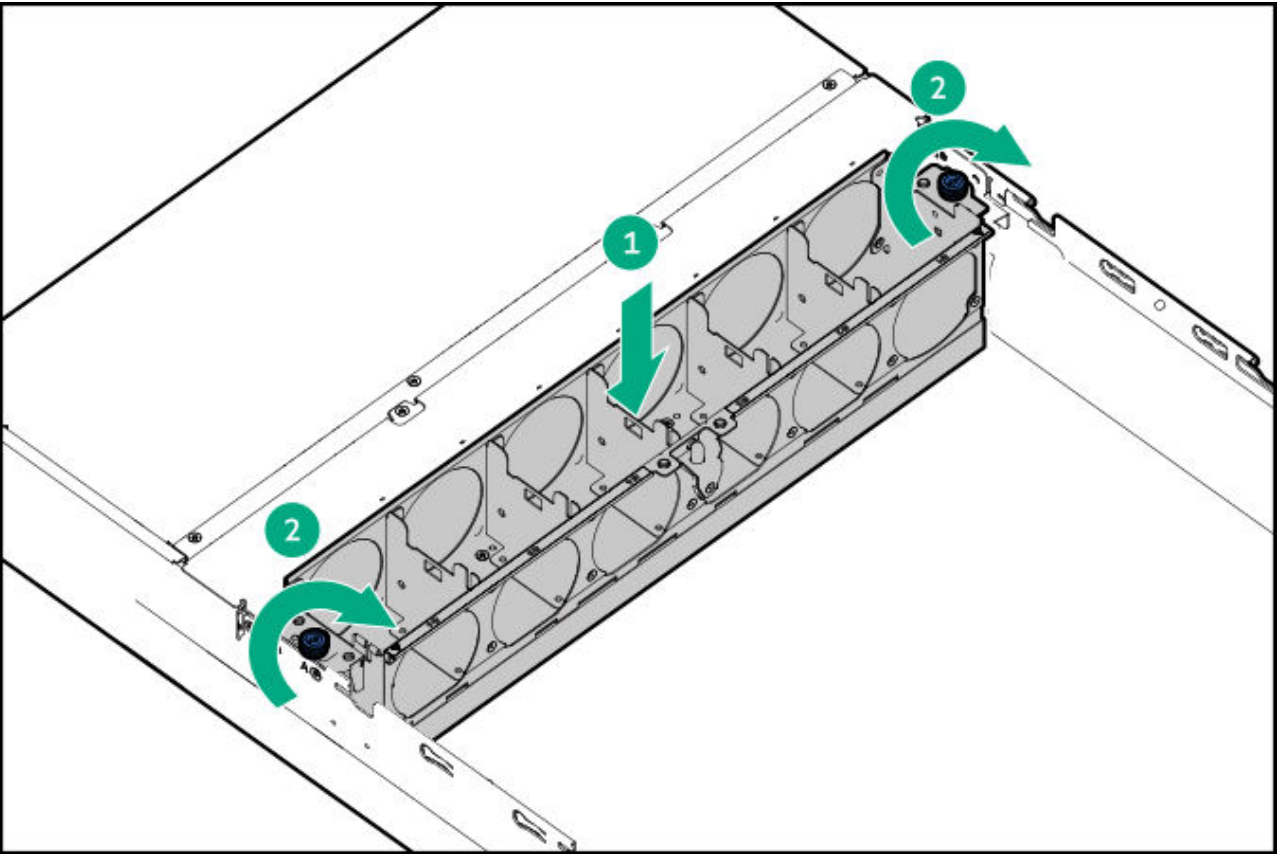
## Install the fan cage

### Prerequisites

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

### Procedure

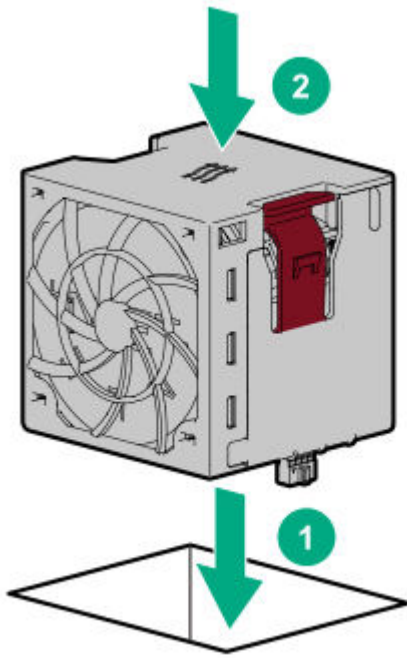
1. Install the fan cage:
  - a. Lower the fan cage into the chassis.
  - b. Tighten the captive screws.



2. Install all fans:

- a. Lower the fan into the fan bay.
- b. Press down on the fan to make sure that it is seated firmly in the bay.

A click sound indicates that the fan is properly engaged.

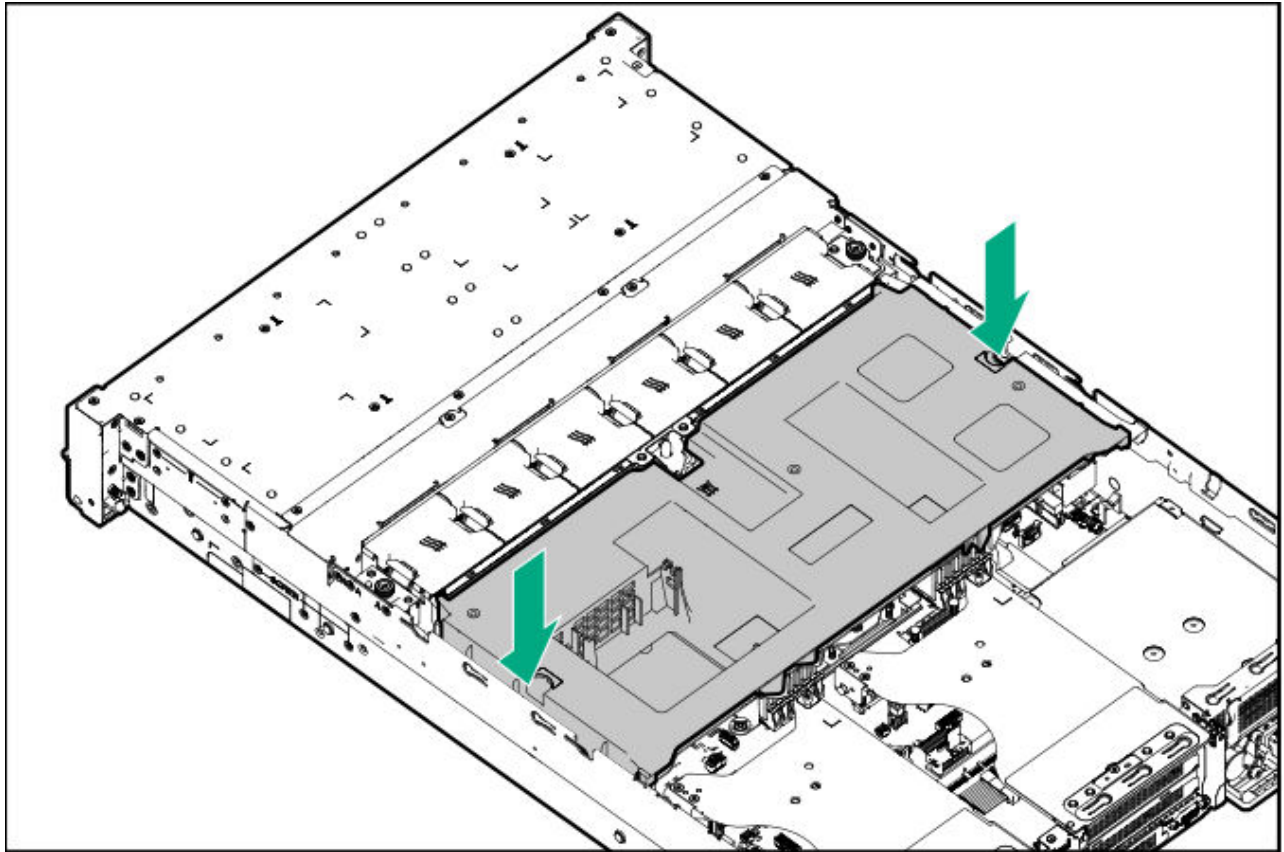


3. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the fan cage.

## Install the air baffle

### Procedure

1. Make sure that all internal cables have been properly routed and will not interfere with the air baffle installation.
2. Lower the air baffle into the chassis and make sure that it fits properly into place.



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

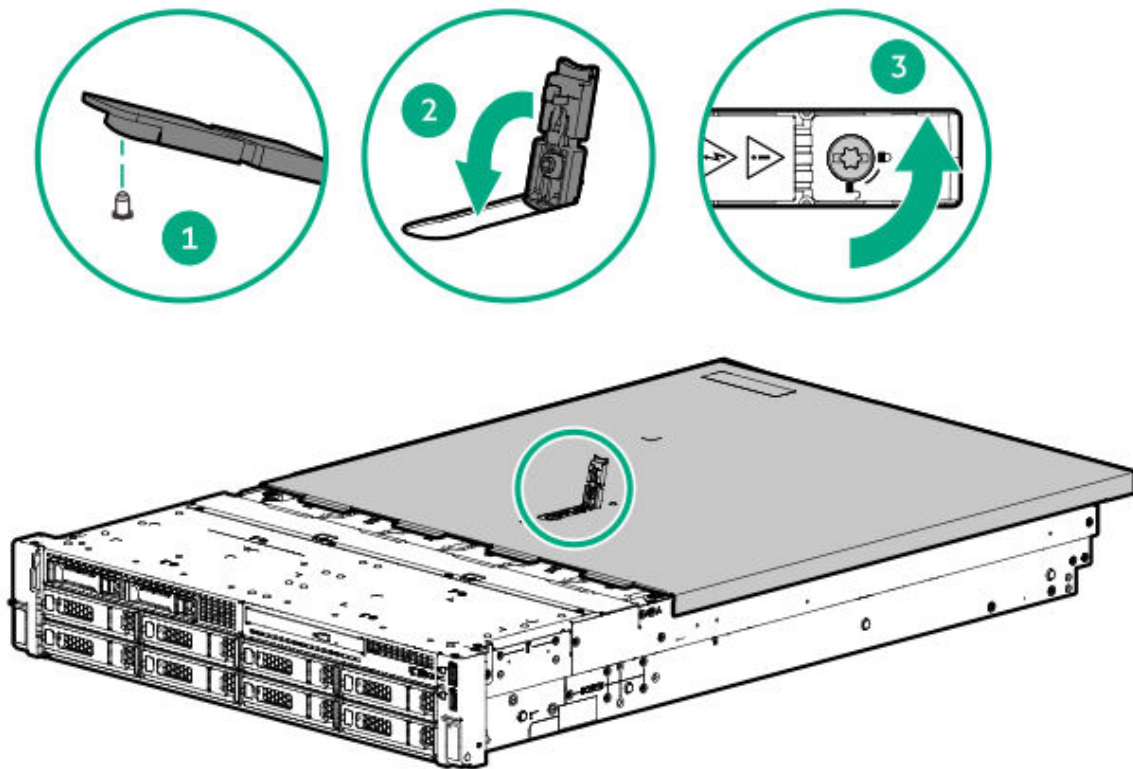
## Install the access panel

### 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

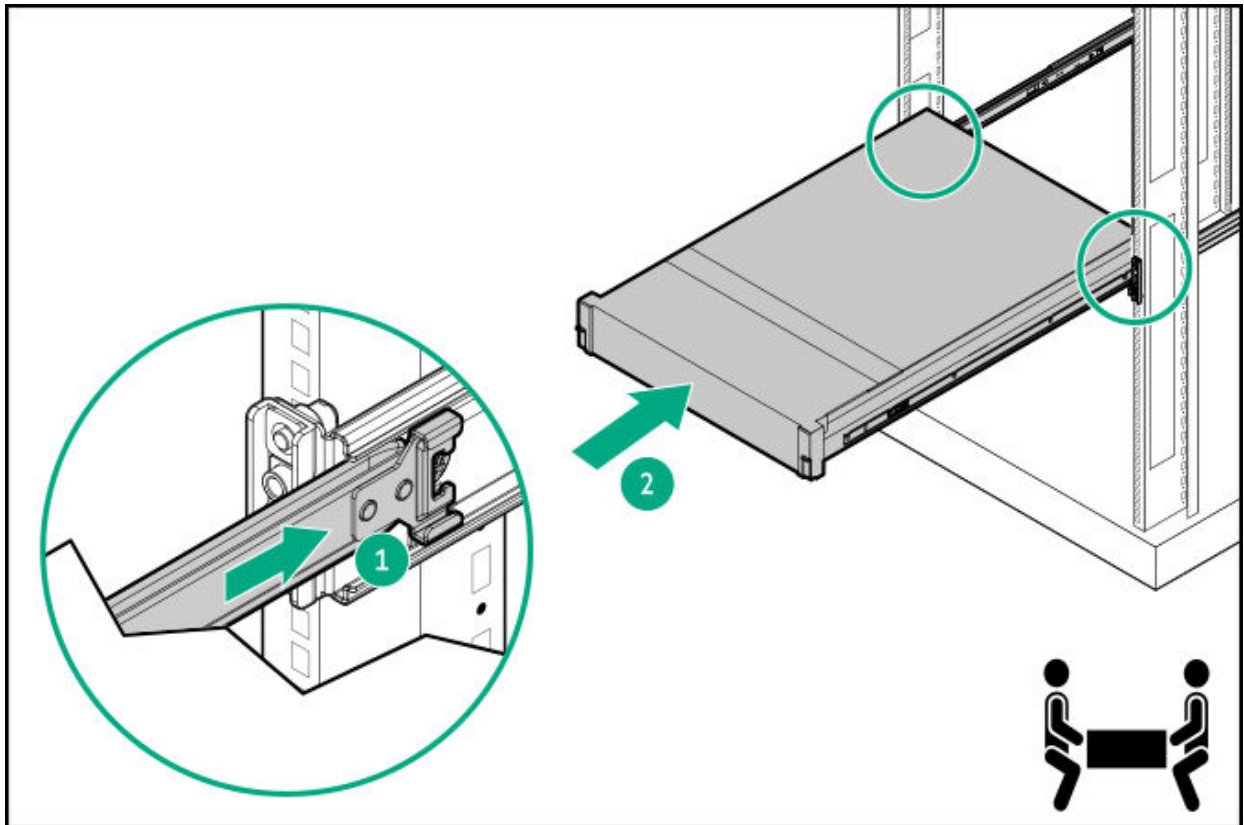
### Prerequisites

- 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 installing the server into a rack.

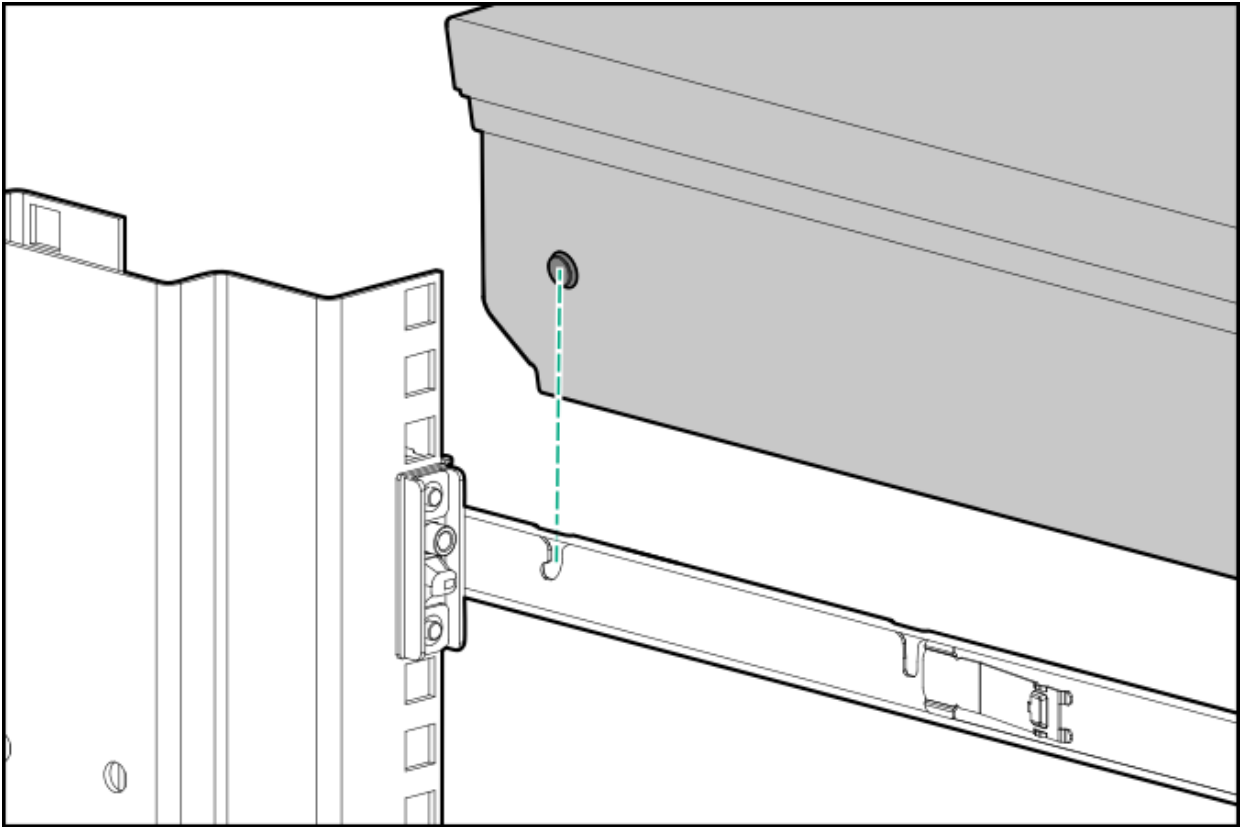
- T-25 Torx screwdriver—This tool is required if you intend to lock the shipping screws located inside the chassis ears.

### Procedure

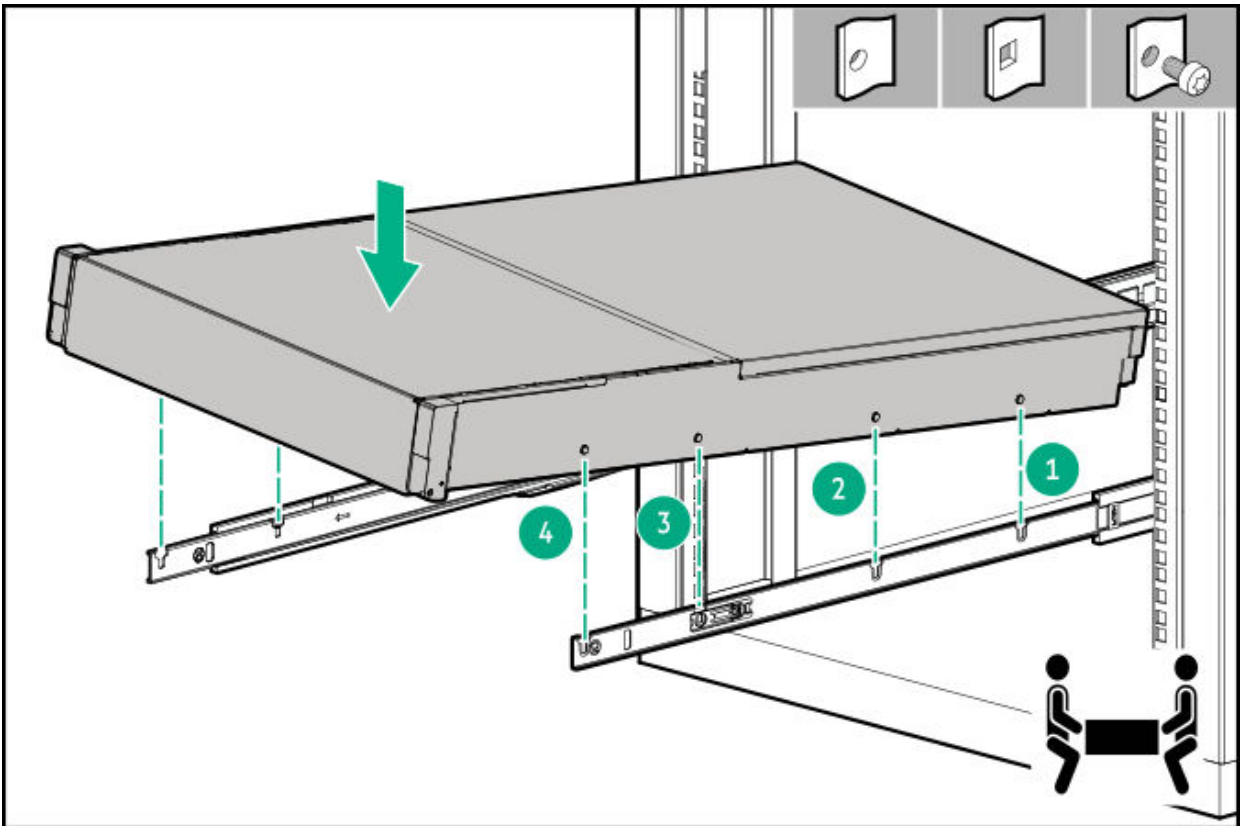
1. To install the server into the friction rack rails:
  - a. Insert the inner rails into the slide rails.
  - b. Slide the server into the rack until the chassis ears are flush against the rack posts.



2. To install the server into the ball-bearing rack rails:
  - a. Install the rear of the server into the J-slots.



b. Install each spool to the rail.



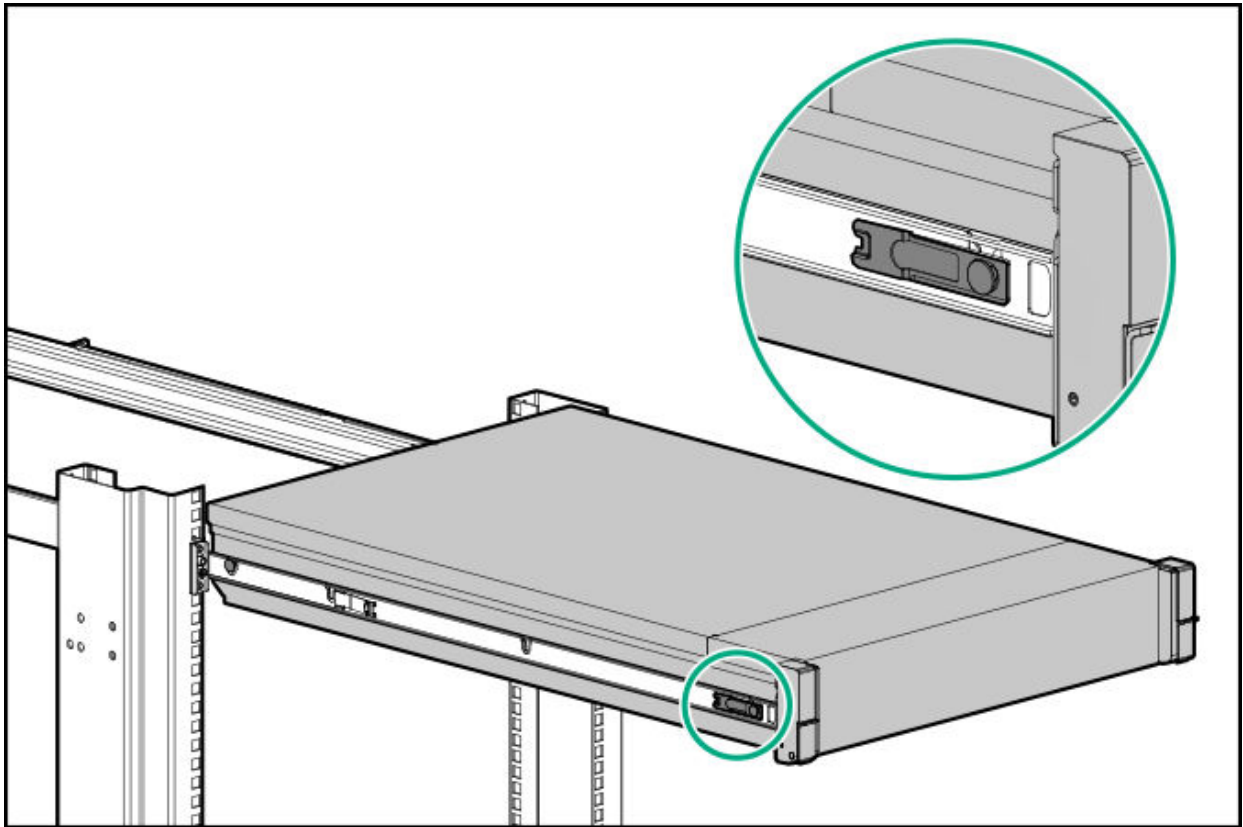
- c. Install the front of the server.

Be sure that the front spool engages the locking tab.

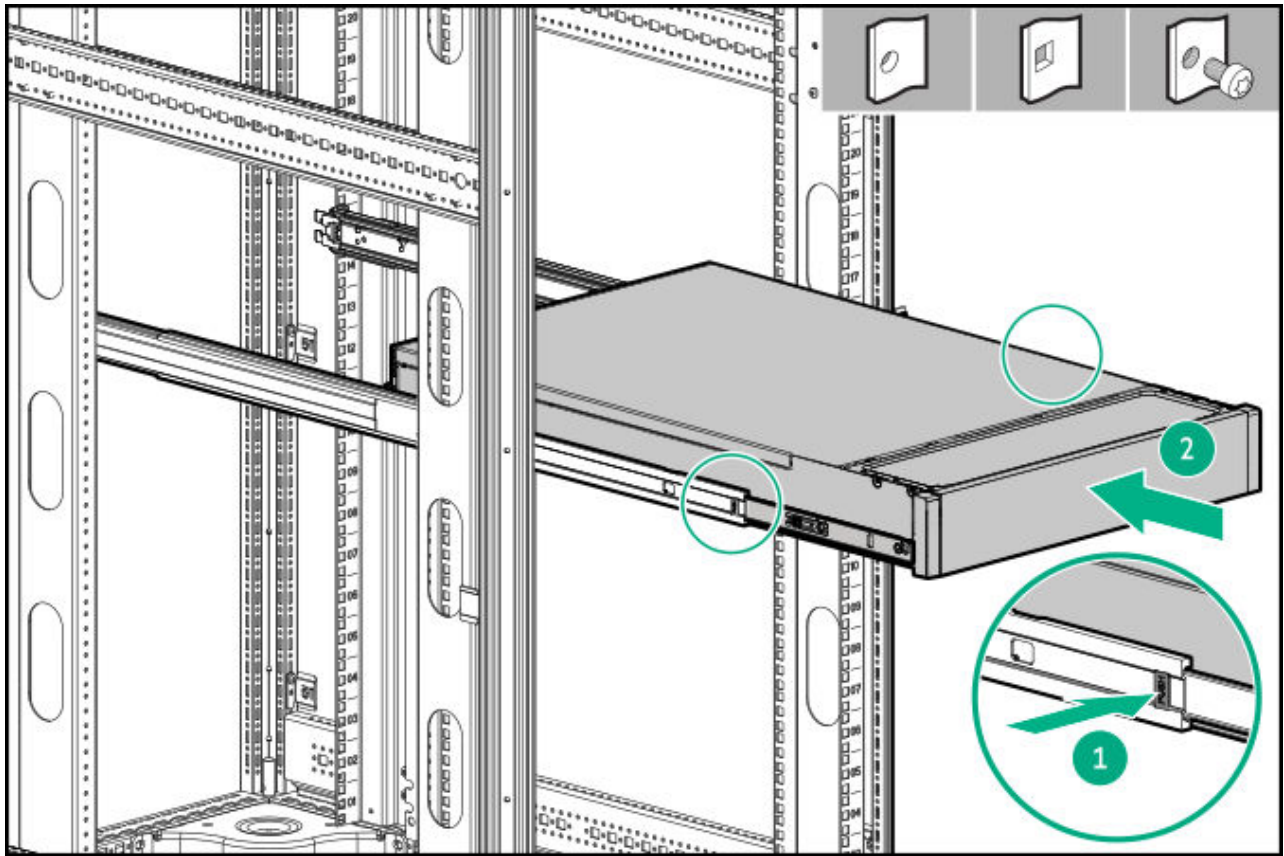


**CAUTION**

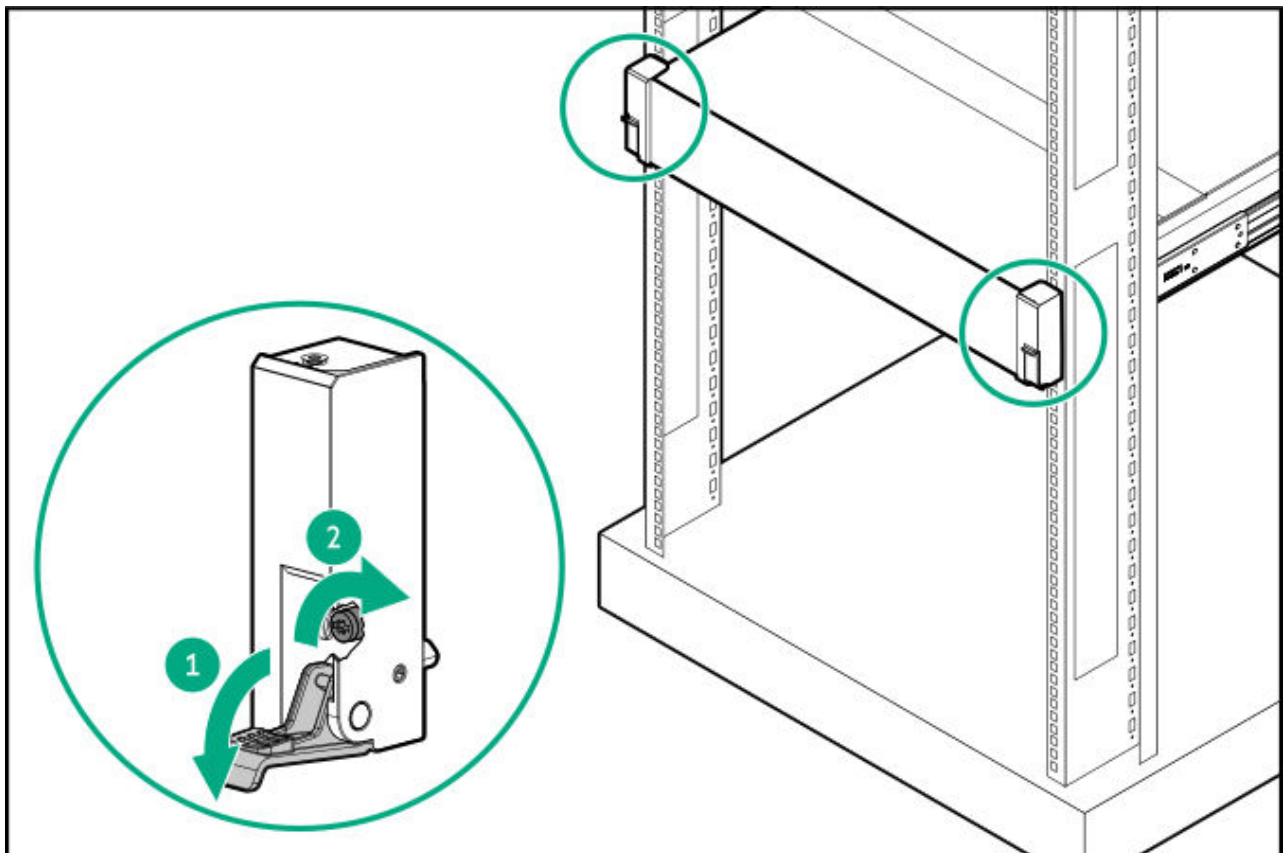
To prevent damage to the rack rails when installing the server into the rack, make sure that all spools on the server are firmly seated on the notches on the rails.



- 3. Install the server into the rack.



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



5. Connect all peripheral cables to the server.
6. Connect the power cords:
  - a. Connect each power cord to the server.
  - b. Connect each power cord to the power source.
7. If removed, installed the cable management arm.

## Connect the DLC extension hose

### Prerequisites

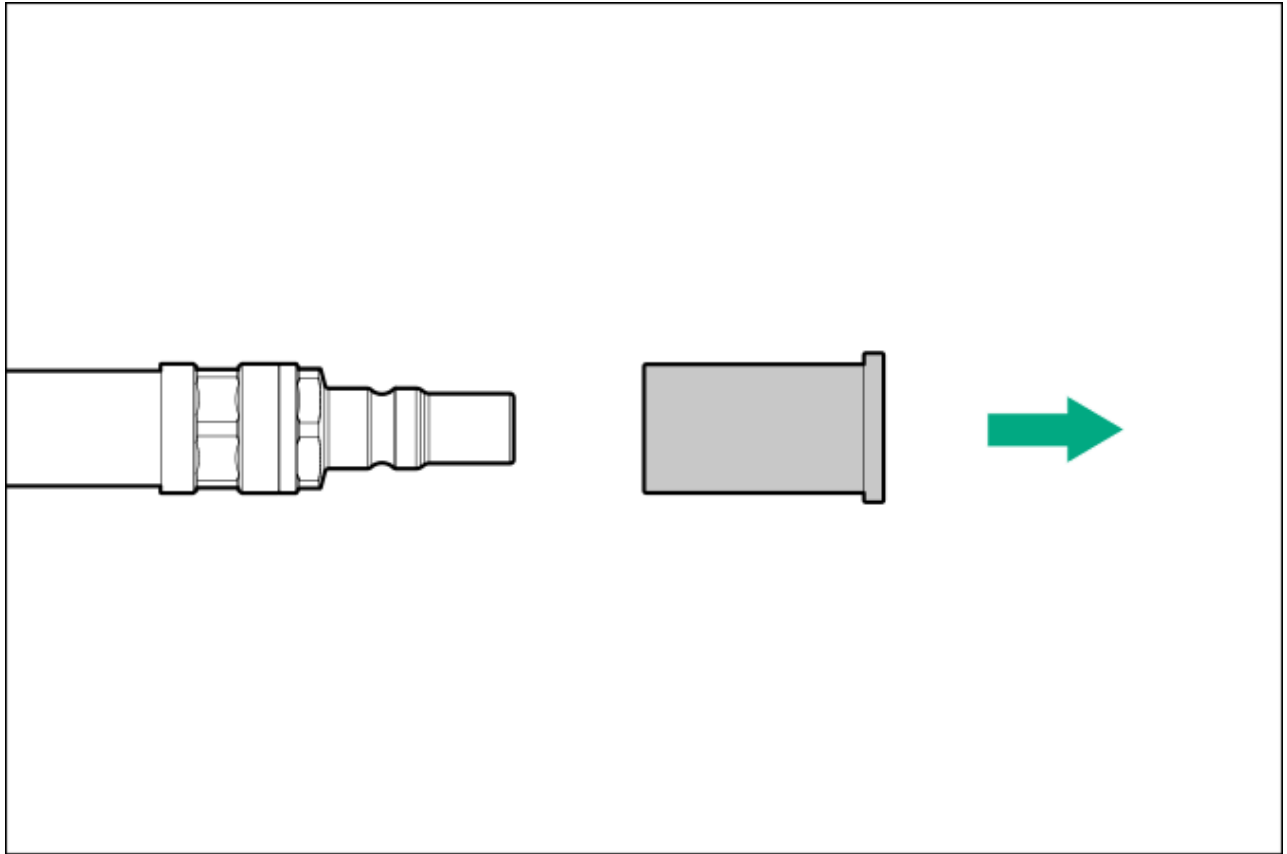
- Review the [DLC module components](#).
- Make sure that the DLC extension hose set (P62042-B21/P62046-B21) is installed on the manifold rack.

### About this task

For more information, see the HPE Cray XD Direct Liquid Cooling System Site Preparation, User, and Maintenance Guide at <https://www.hpe.com/info/xdDLCguide>.

### Procedure

1. [Locate the DLC module](#) from the rear of the server.
2. Remove the coolant quick connector caps.



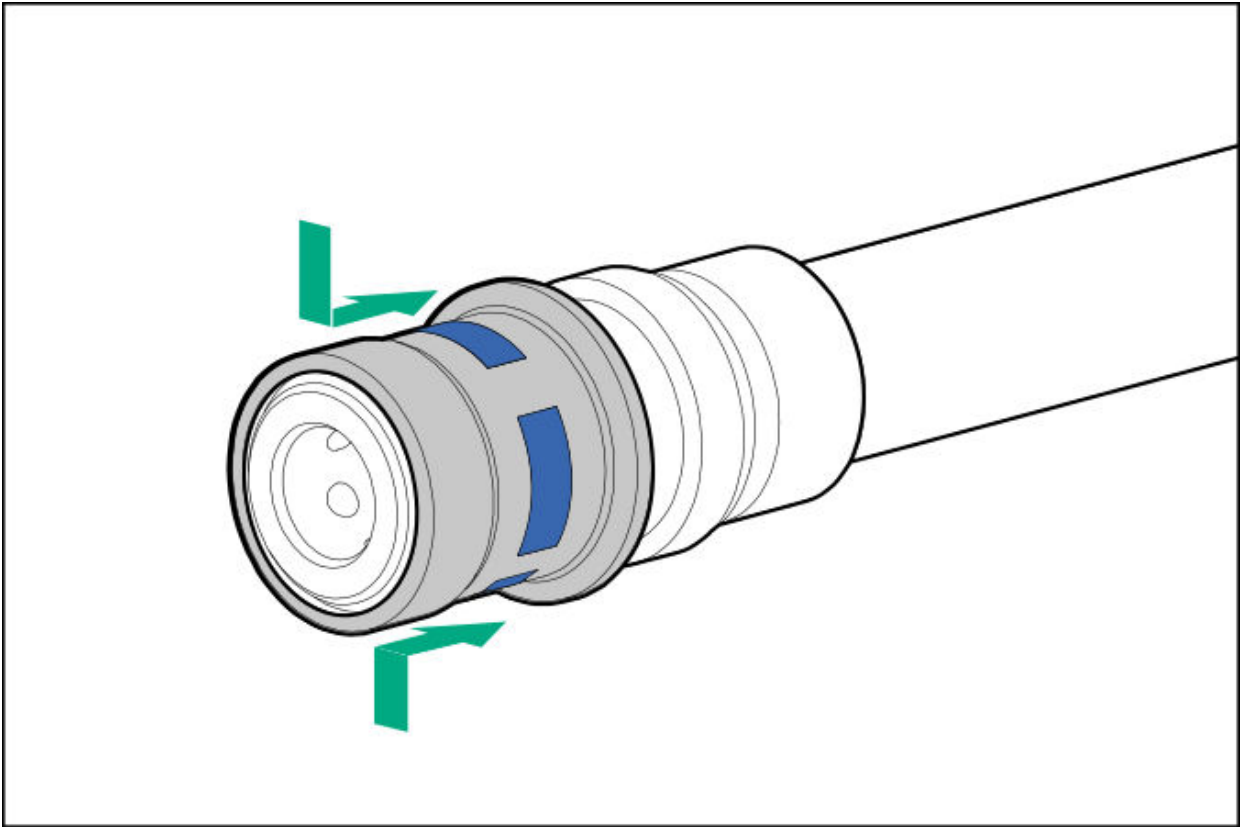
3. Connect the DLC module from the DLC manifold to the server:



**WARNING**

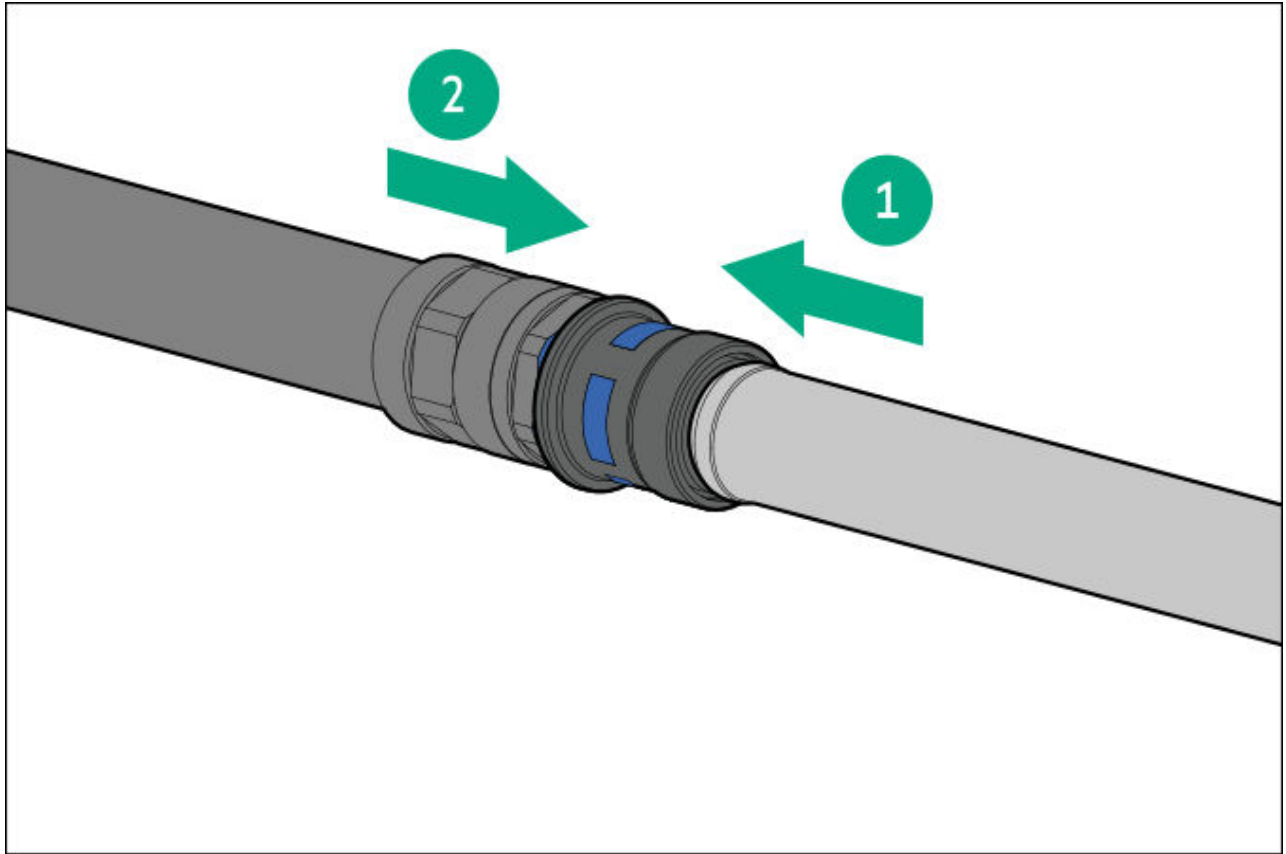
To prevent improper system cooling, connect each same-colored pair of coolant quick connectors and extension hoses.

- a. Align the DLC extension hose quick socket connector to the DLC module coolant hose quick plug connector.
- b. Press and pull the DLC extension hose quick socket connector.



- c. Connect the DLC module coolant hose plug connector to the extension hose quick socket connector, and then release the quick socket connector.

A click sound indicates that the quick connectors are properly engaged.



## 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](#)

[Power supply options](#)

[Transceiver option](#)

[Drive options](#)

[Upgrading from 8 LFF to 12 LFF drive configuration](#)

[Universal media bay options](#)

[Drive cage options](#)

[Optical drive option](#)

[GPU options](#)

[Fan options](#)

[Memory option](#)

[NS204i-u + low-profile riser cage option](#)

[Stacking and free-height riser options](#)

[Storage controller options](#)

[Energy pack options](#)

[Expansion card options](#)

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

[M.2 SSD pass-through card option](#)

[OCP NIC 3.0 option](#)

[Chassis intrusion detection switch option](#)

[Serial port 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](#)**

**[CMA components](#)**

**[Rack rail options](#)**

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

**[Installing the server into the rack: Ball-bearing rack rail](#)**

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

**[Installing the cable management arm](#)**

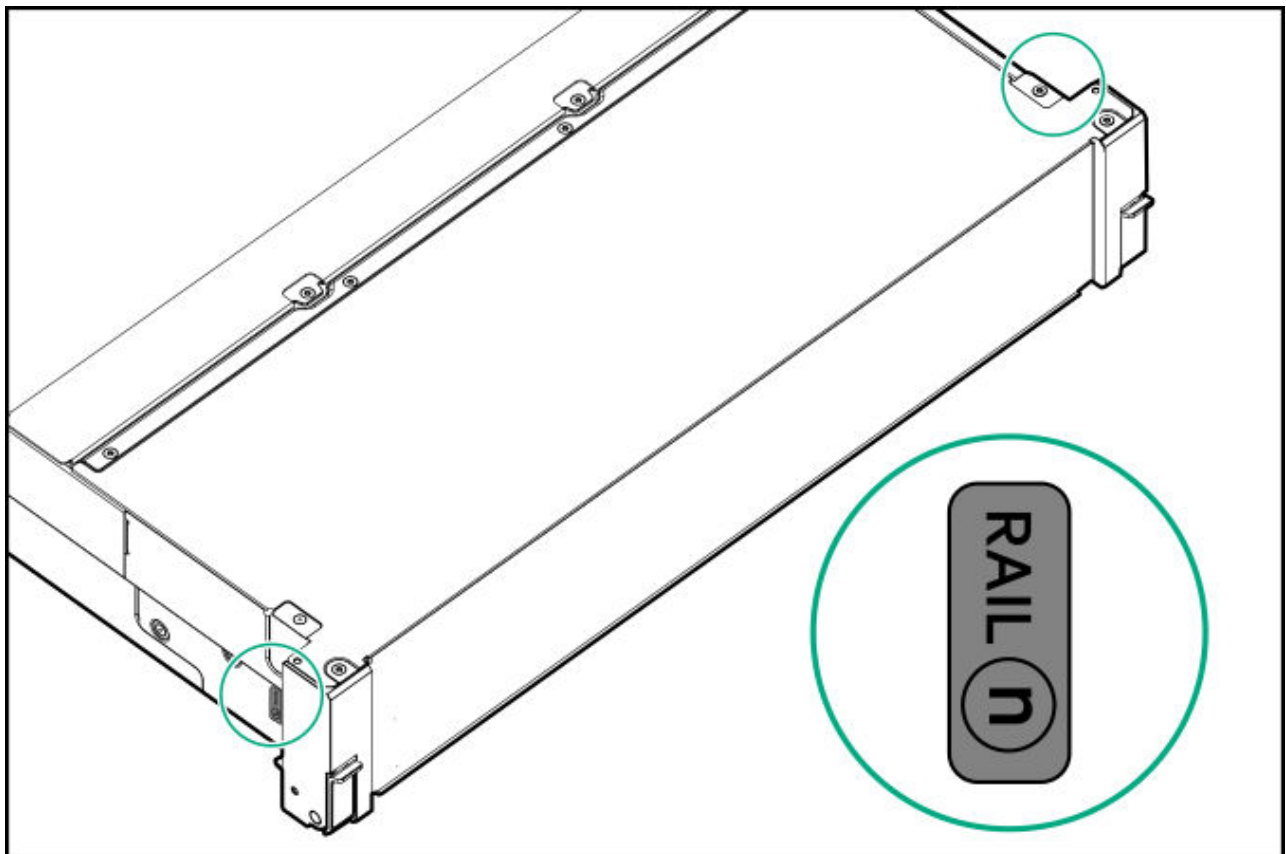
## Rail identification markers

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

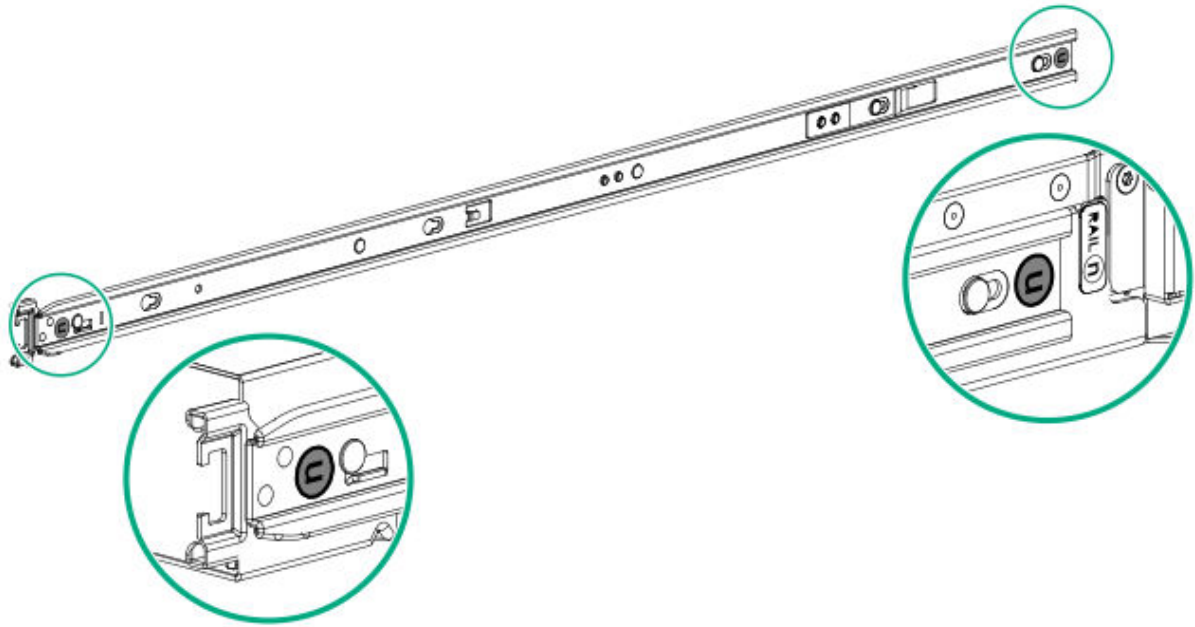
- The height and weight of the chassis as determined by the front- and rear-end server configurations.
- The depth of the chassis as measured from the edge of the front panel (without the front bezel) to the edge of the rear panel.

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.

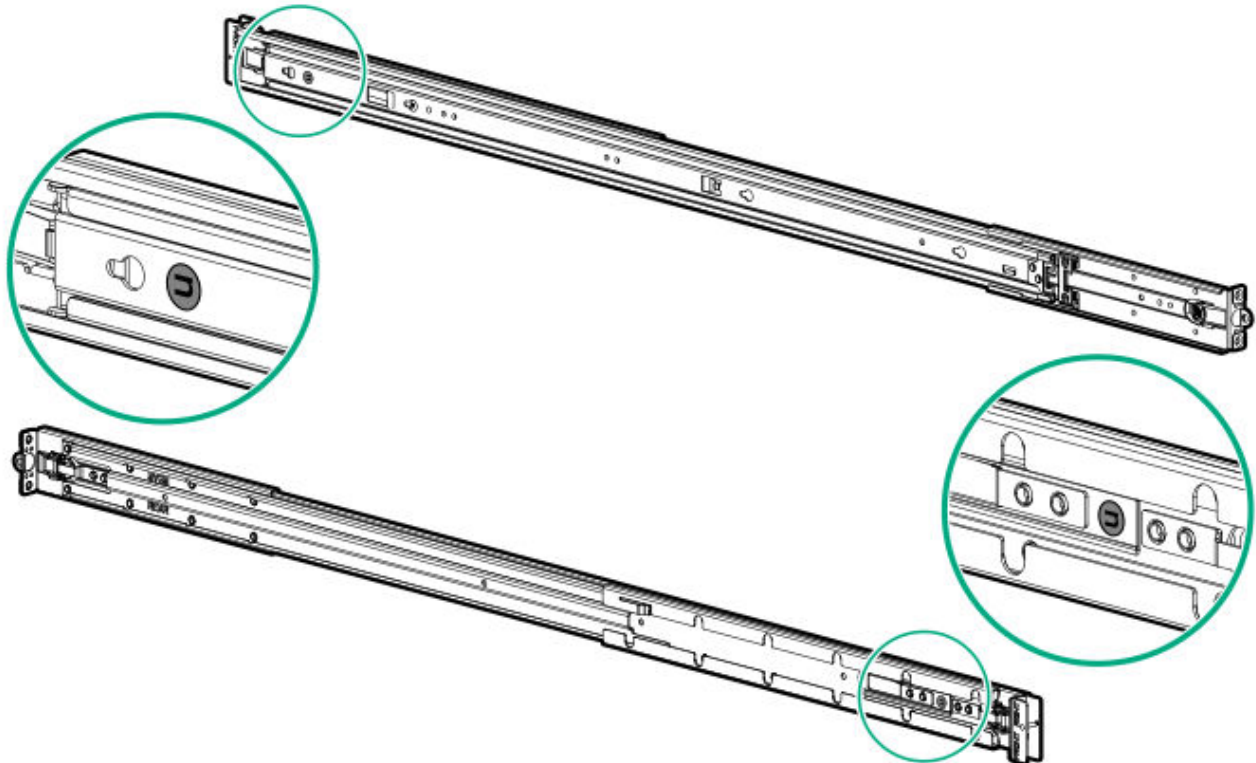
- Rail number labels on the chassis



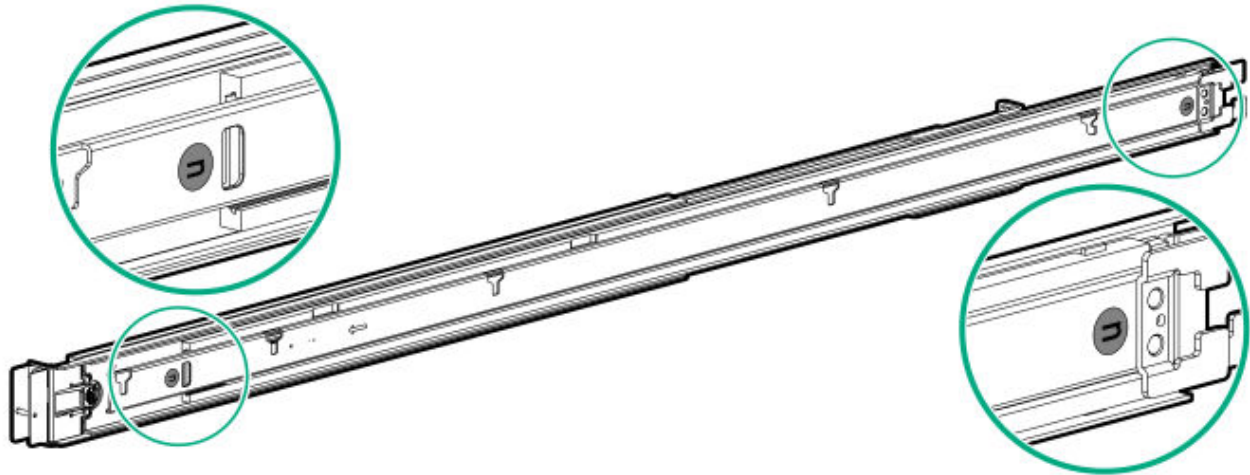
- Rail identifier stamps on the inner rail of the friction rack rail



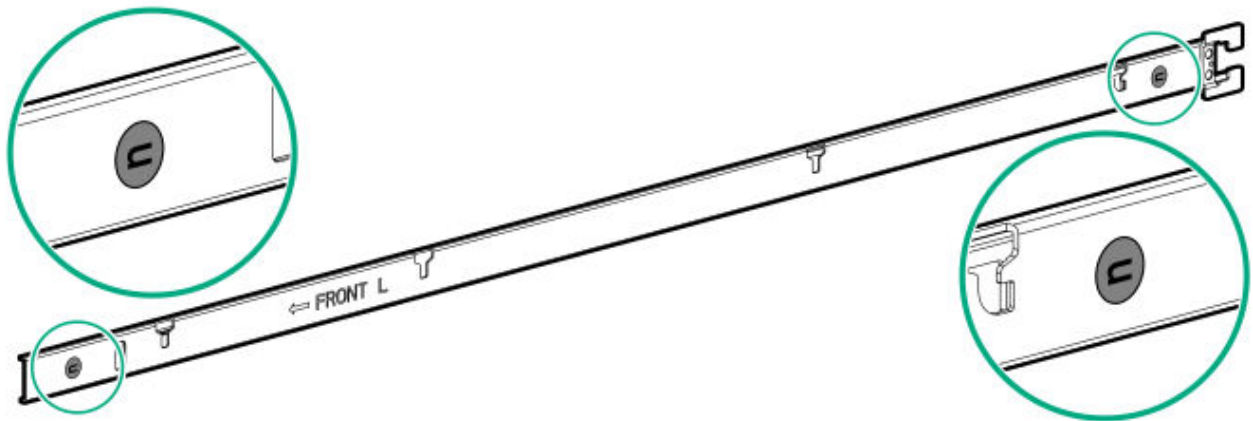
- Rail identifier stamps on the mounting rail of the friction rack rail



- Rail identifier stamps on the short ball-bearing rail

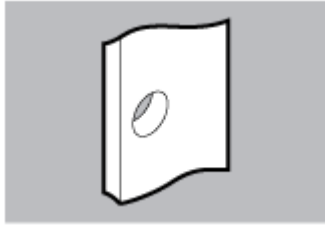


- Rail identifier stamps on the long ball-bearing rail

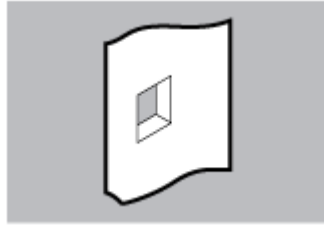


## Rack mounting interfaces

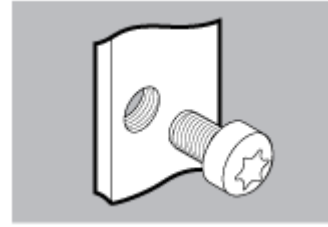
The rack rails can be installed in a rack that has the following mounting interfaces:



Round-hole



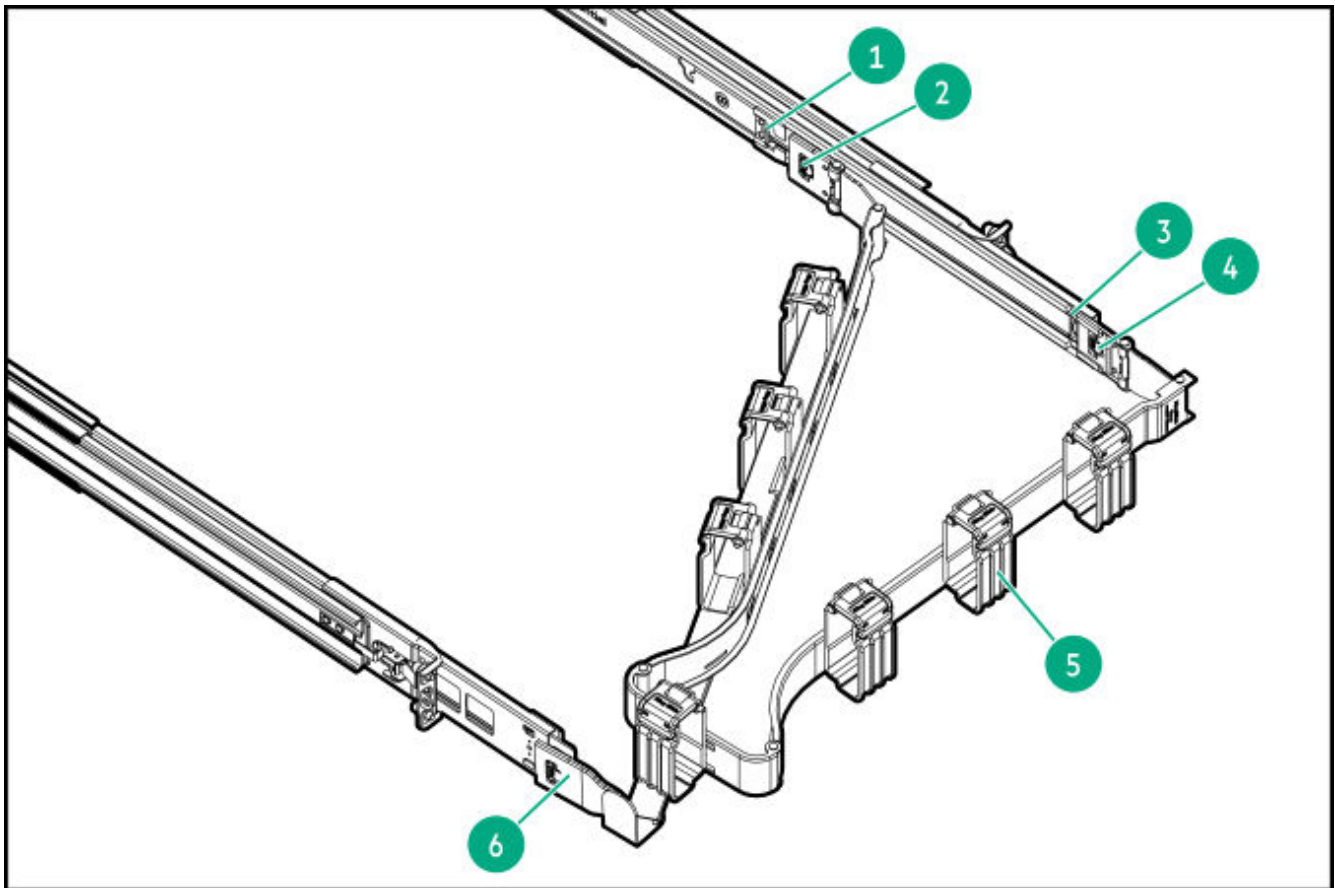
Square-hole



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.

## CMA components



Item	Description
1	Inner rail
2	CMA inner rail bracket
3	Outer rail
4	CMA outer rail bracket
5	Cable basket
6	CMA elbow bracket

## Rack rail options

This server supports the following rack rail options:

Server configuration	Rack rail option	Type	Minimum rail length	Adjustable rail range
LFF/SFF/E3.S drive	Rail option #2 (P52351-B21)	Friction rack rail (s tab-in)	714.32 mm (28.12 in)	609.60 mm to 918.10 mm (24.00 in to 36.15 in)
GPU-optimized	Rail option #8 (P52345-B21)	Ball-bearing rack rail (drop-in)	852.91 mm (33.58 in)	

### Subtopics

[Installing the friction rack rails](#)

[Installing the ball-bearing rack rails](#)

## Installing the friction rack rails

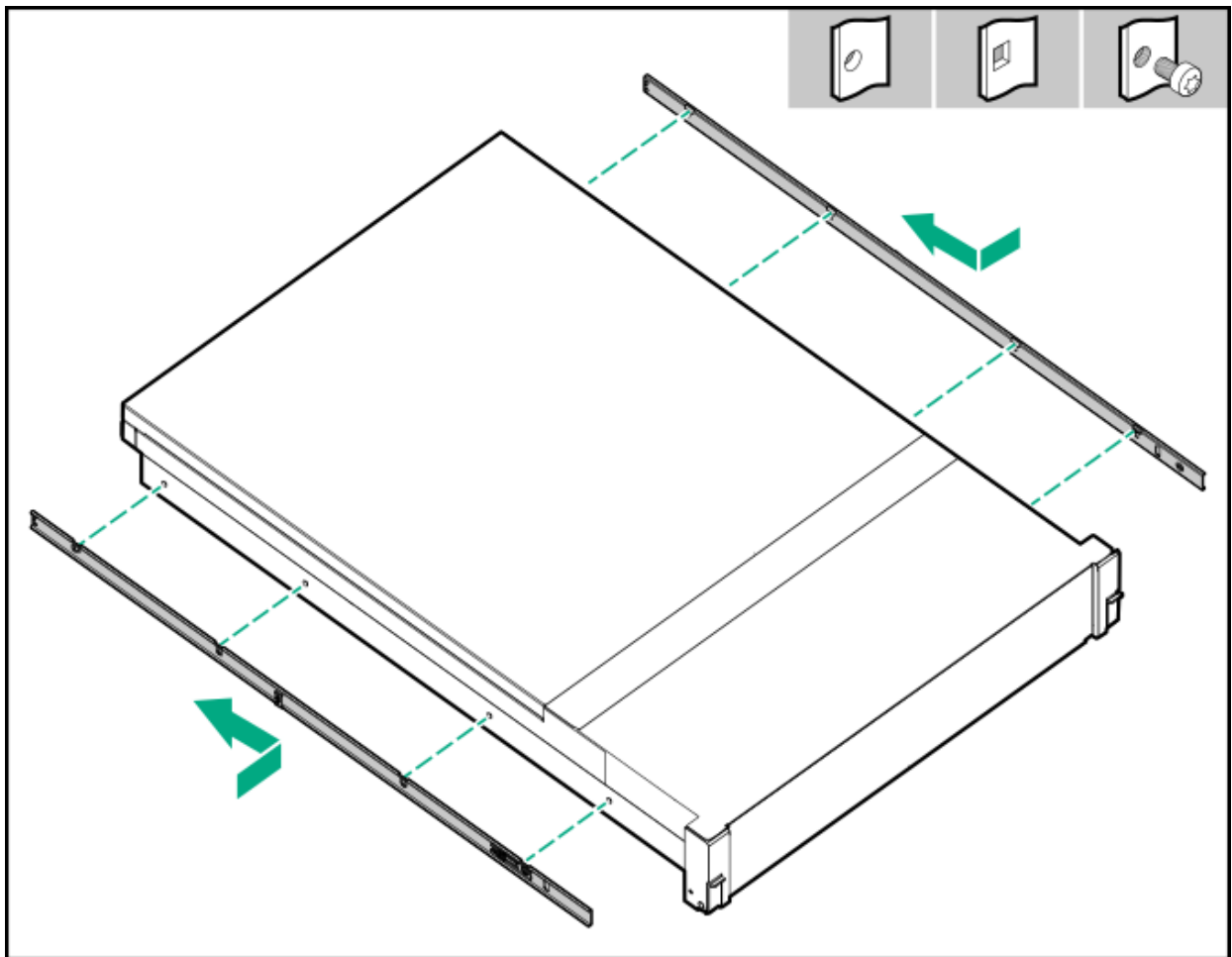
### Prerequisites

- [Make sure that the rail option is compatible with the server configuration.](#)
- 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.

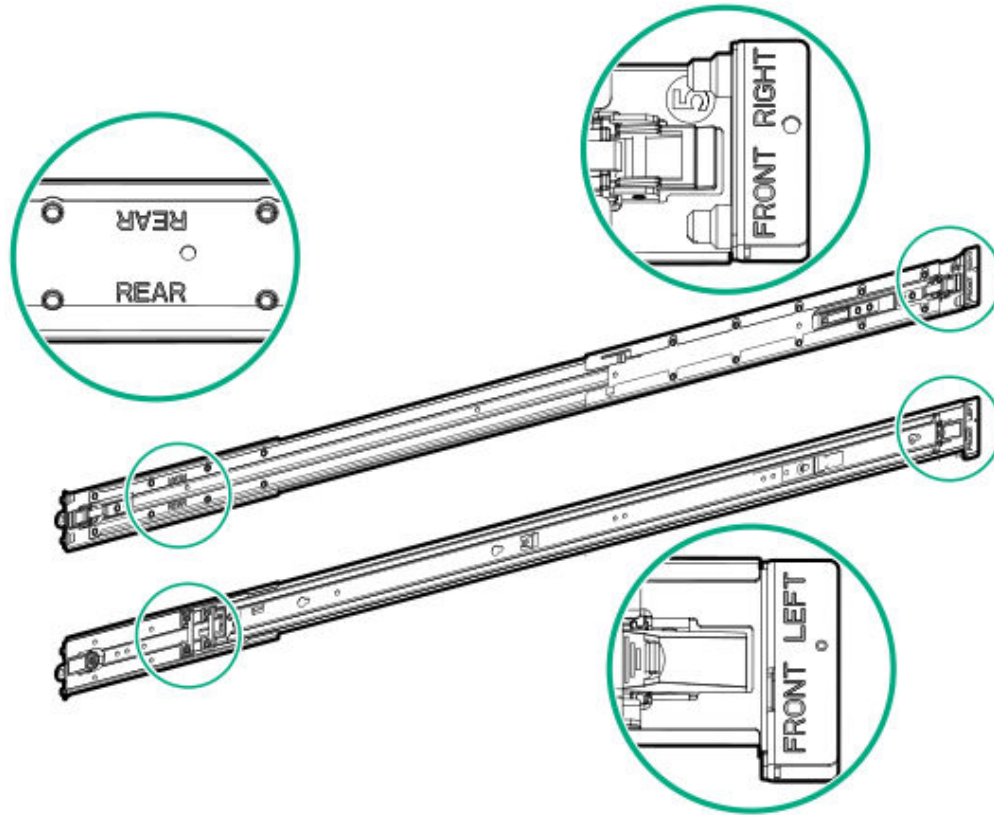
## Procedure

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.

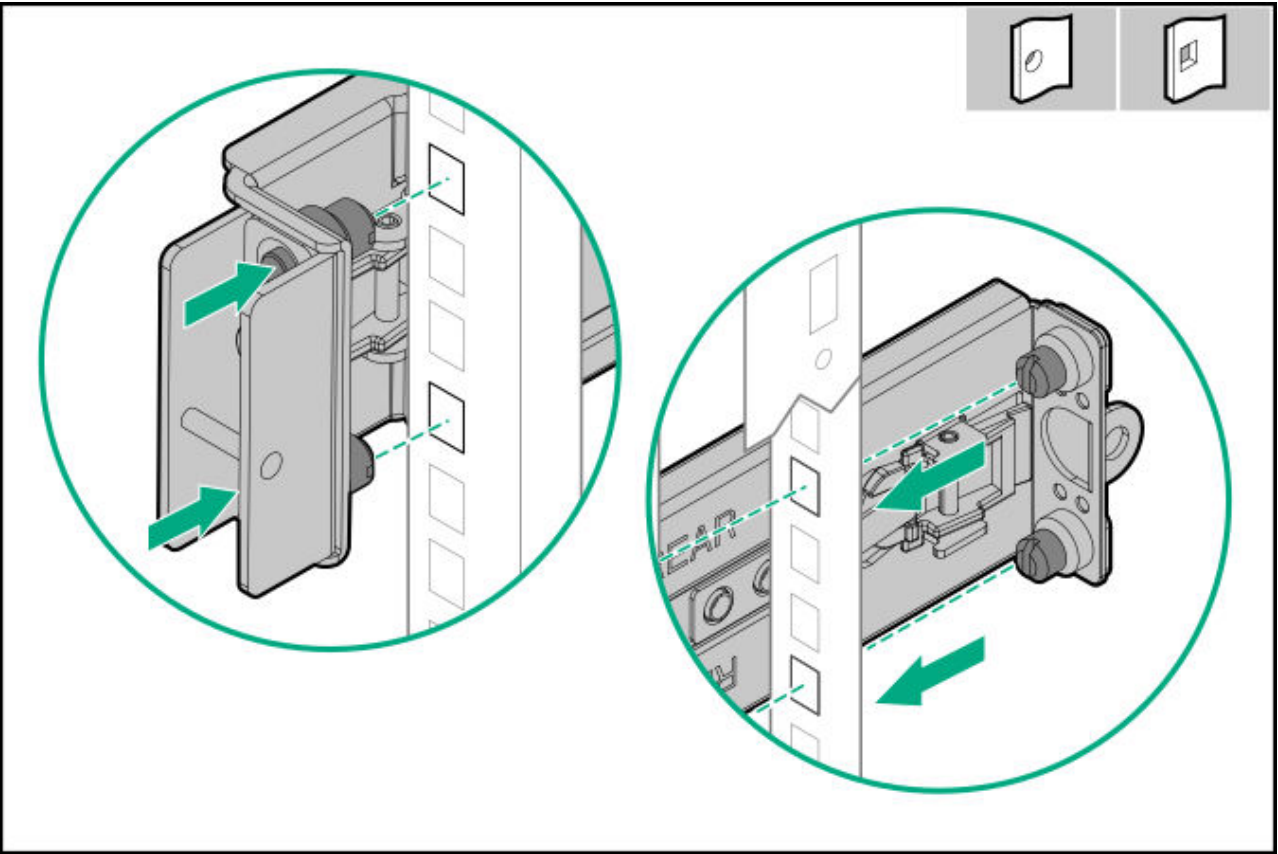


2. Locate the orientation markers on the mounting rails.
  - The front end of the rails is marked as **FRONT LEFT** or **FRONT RIGHT**.

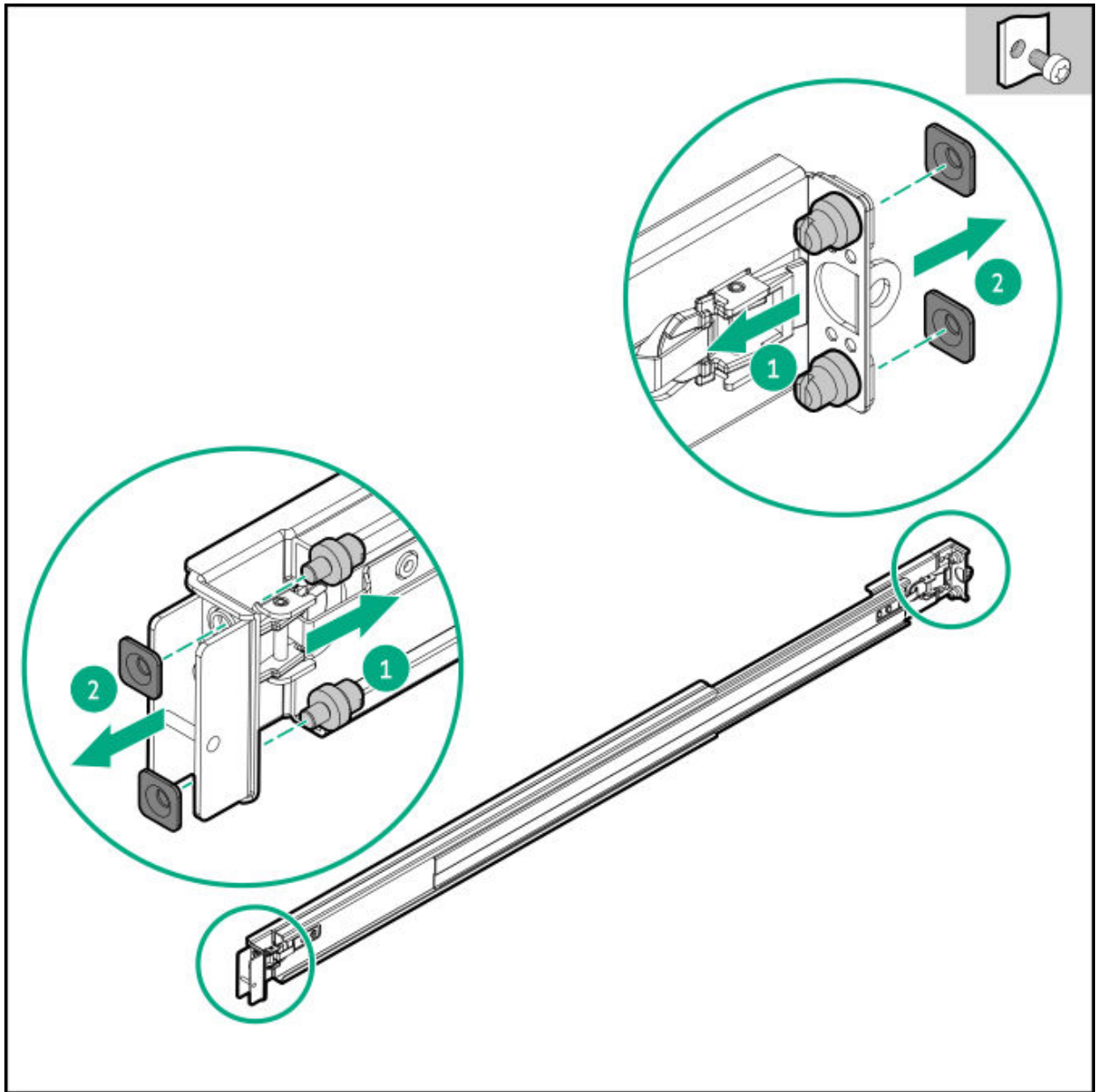
- The other end of the rails is marked as **REAR**.



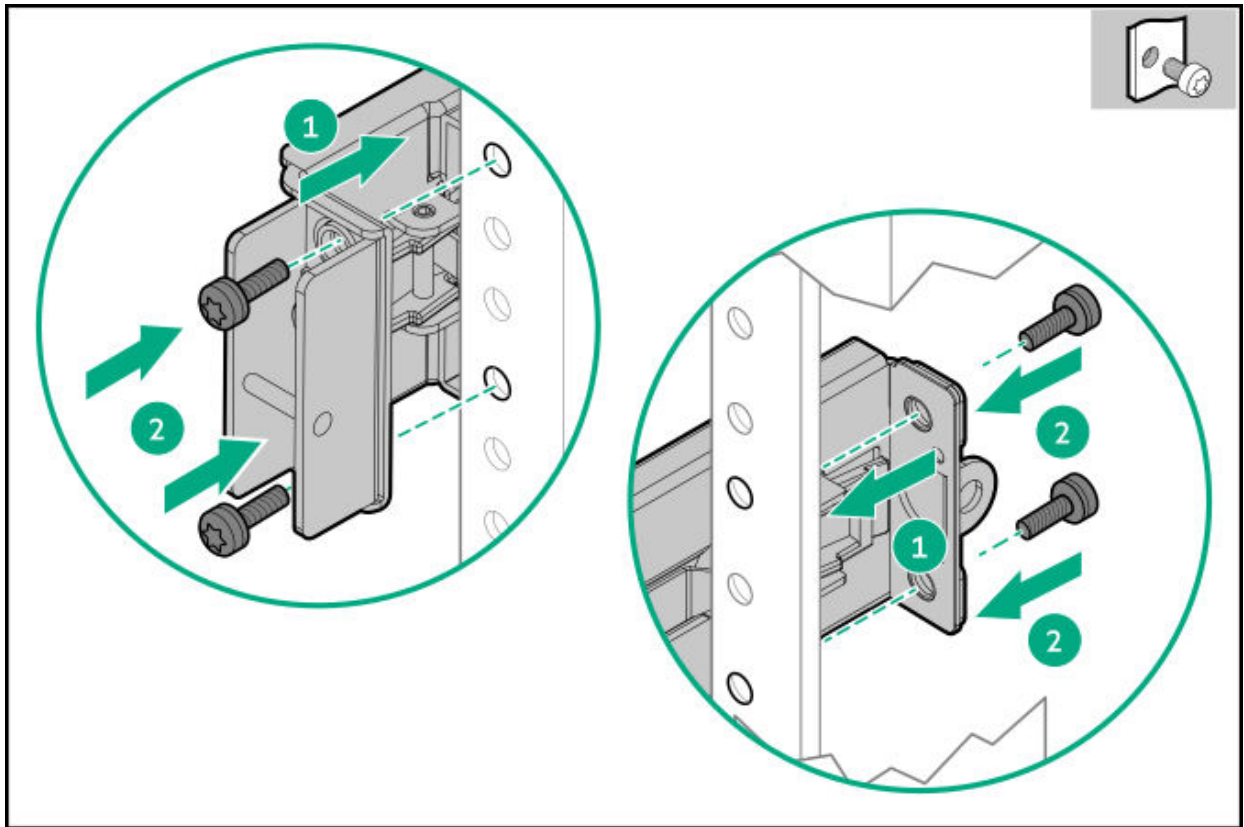
3. Extend the mounting rails to align with the depth of the rack.
4. To install the mounting rails in a round-hole or square-hole rack, insert the pins on the mounting flanges into the rack post holes.



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.

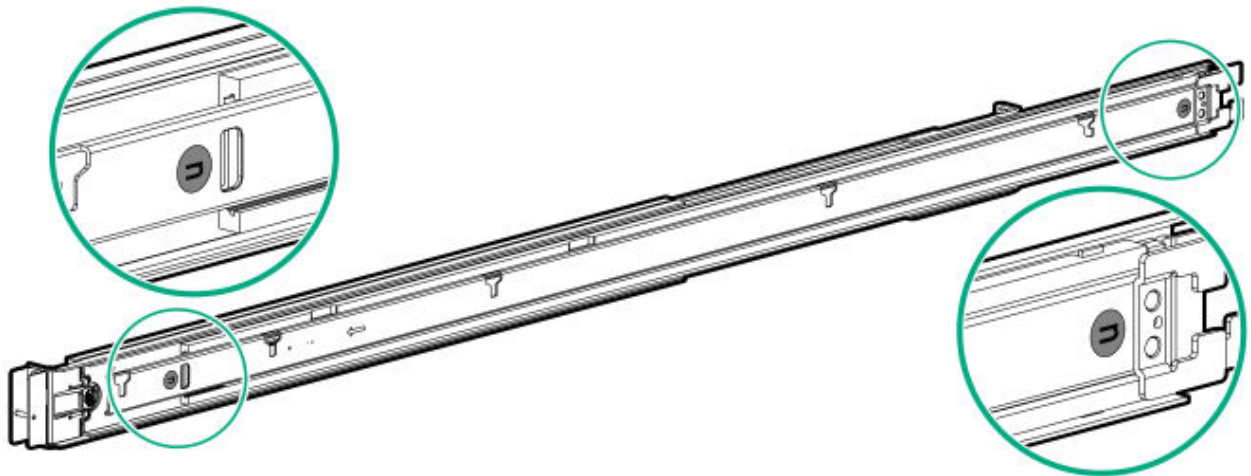
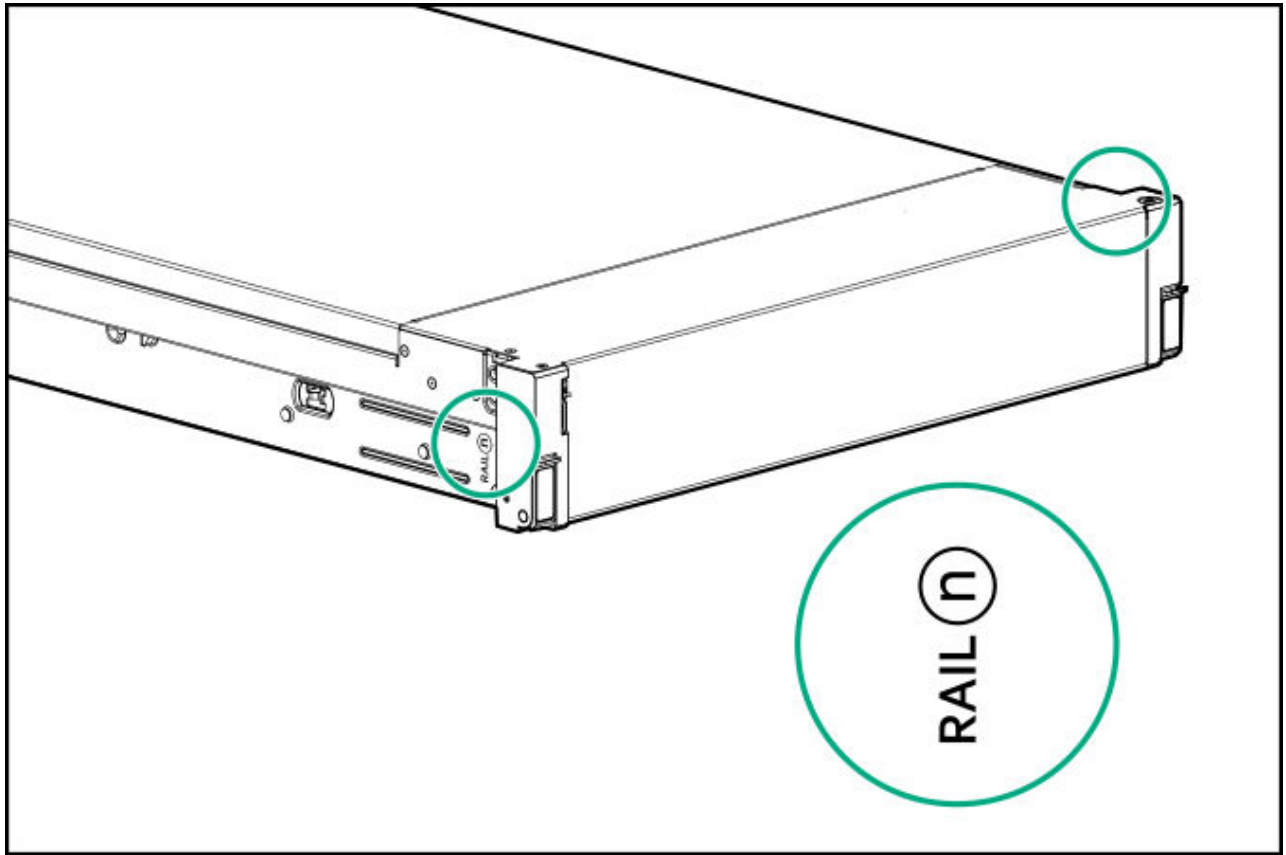
## Installing the ball-bearing rack rails

### Prerequisites

- Make sure that the rail option is compatible with the server configuration.
- 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.

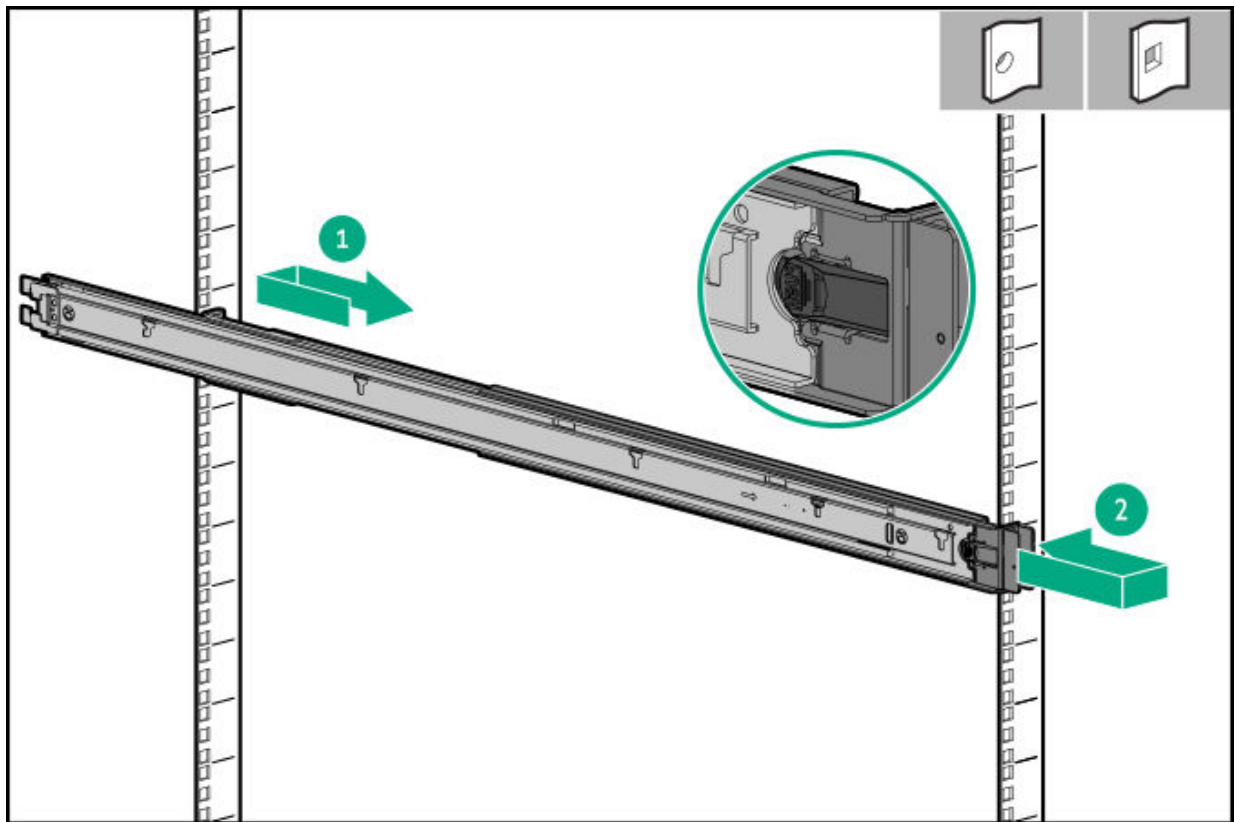
## Procedure

1. Verify the rail identifiers match on the server and rails.

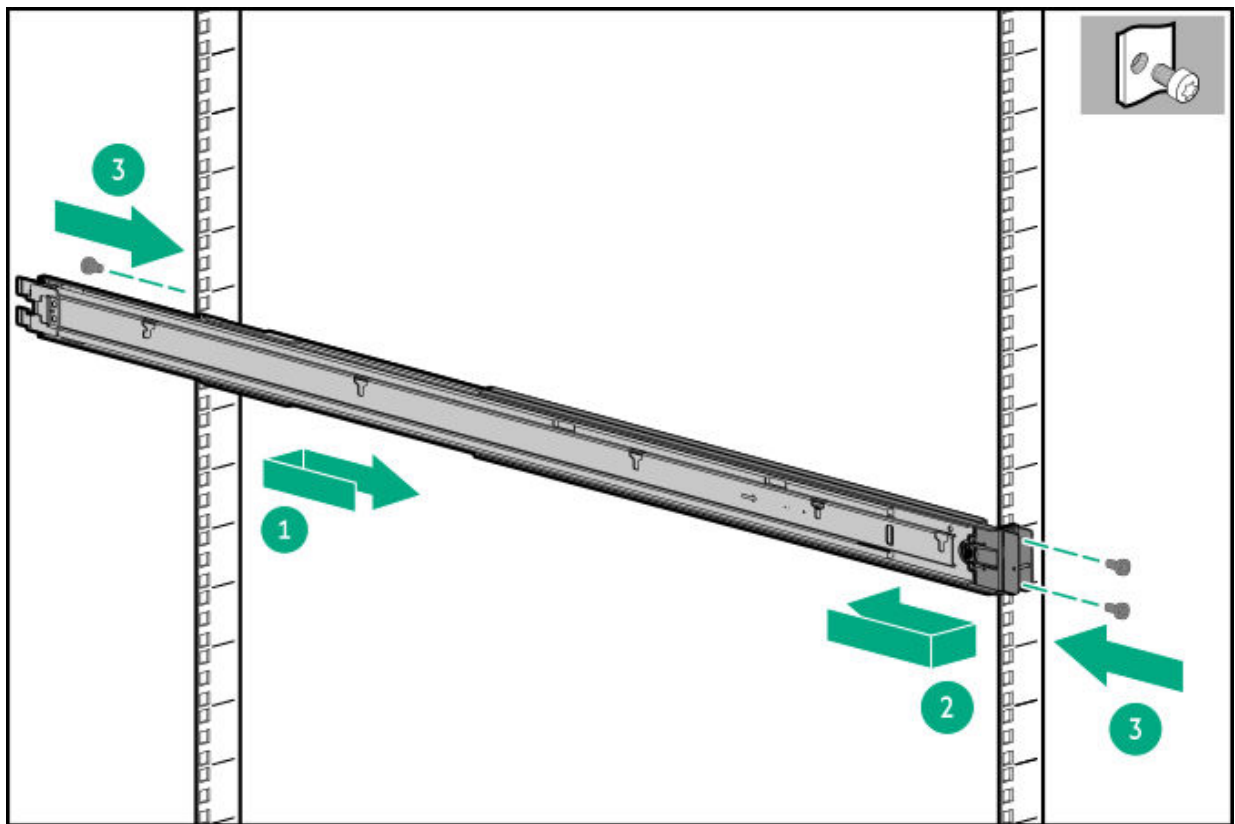
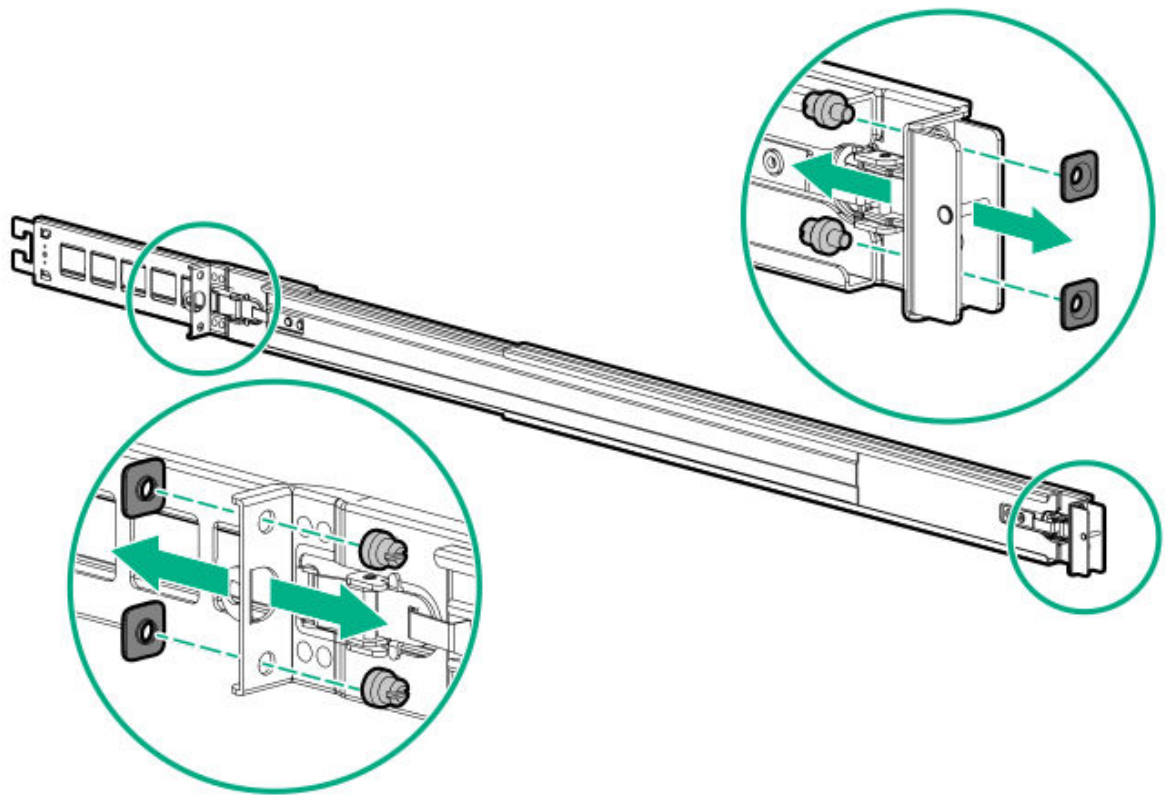


2. Install the rack rails.

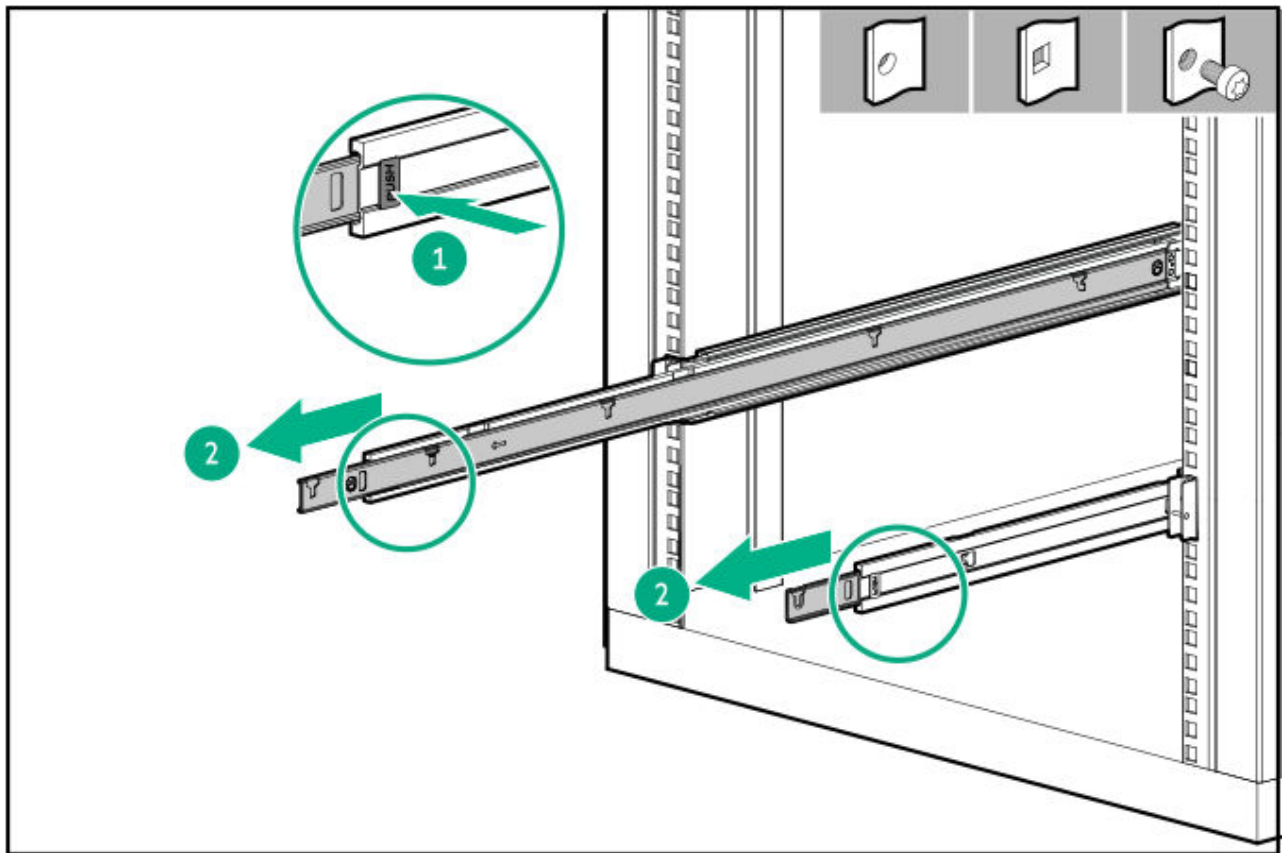
- For round and square-hole racks



- For threaded-hole racks



3. Fully extend the rails to the locked position.



4. Install the server into the rack.

## Installing the server into the rack: Friction rack rail

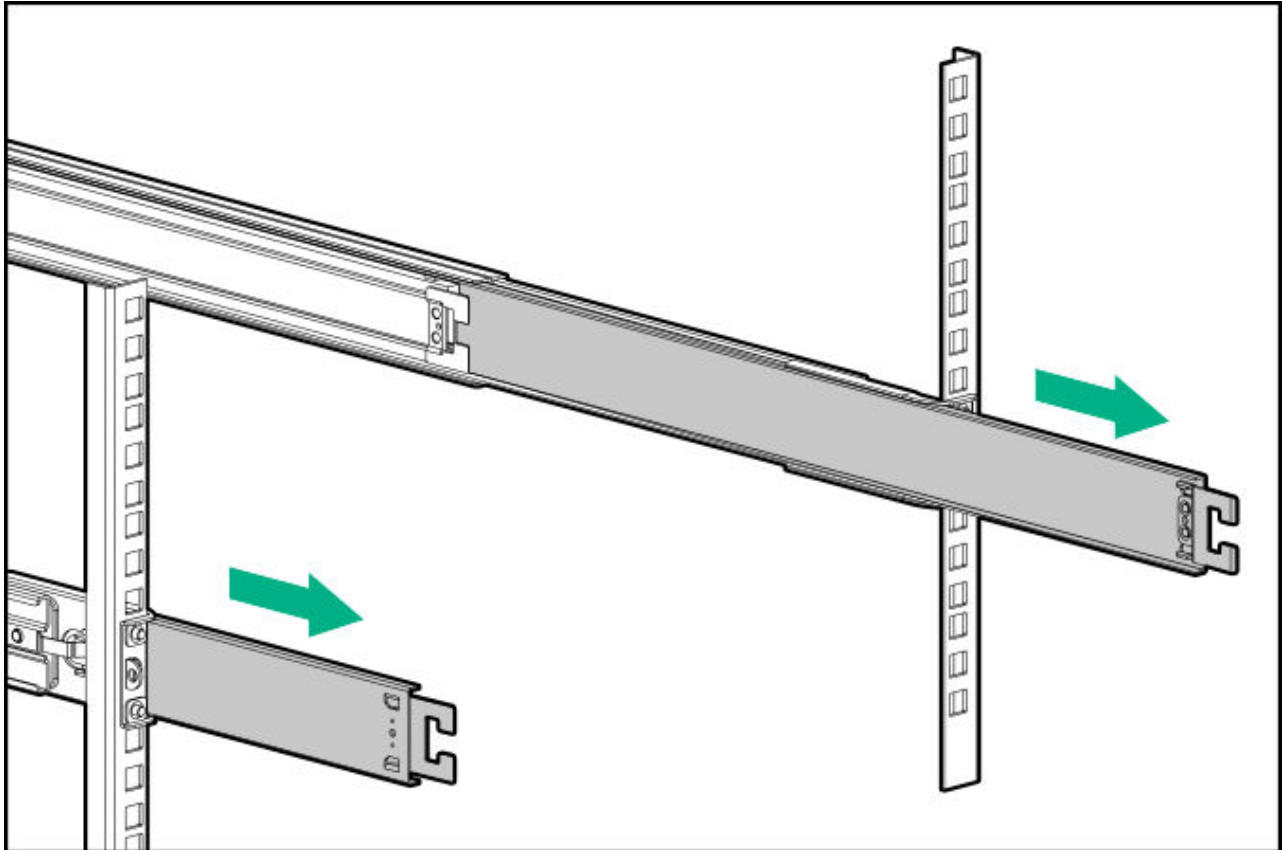
### Prerequisites

- 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](#)

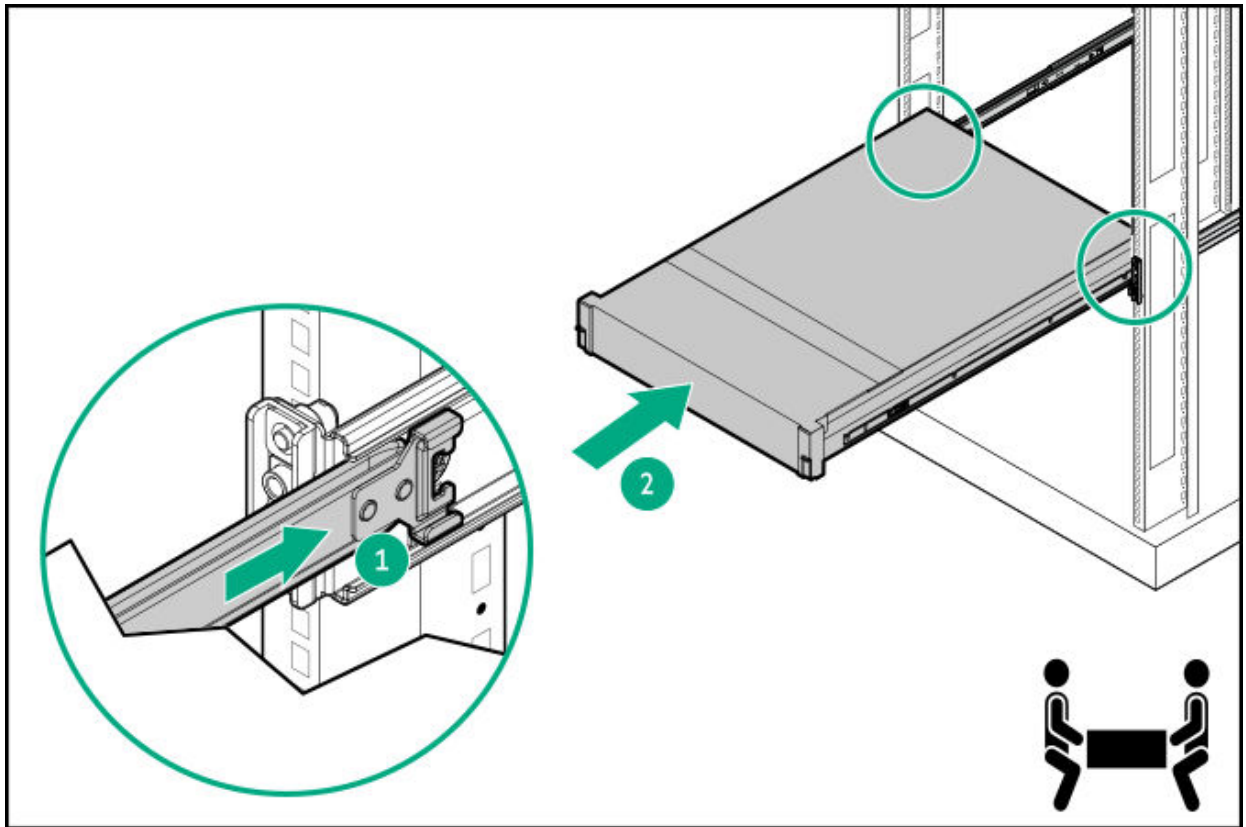
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- Before you perform this procedure, make sure that you have a T-25 Torx screwdriver available.

### Procedure

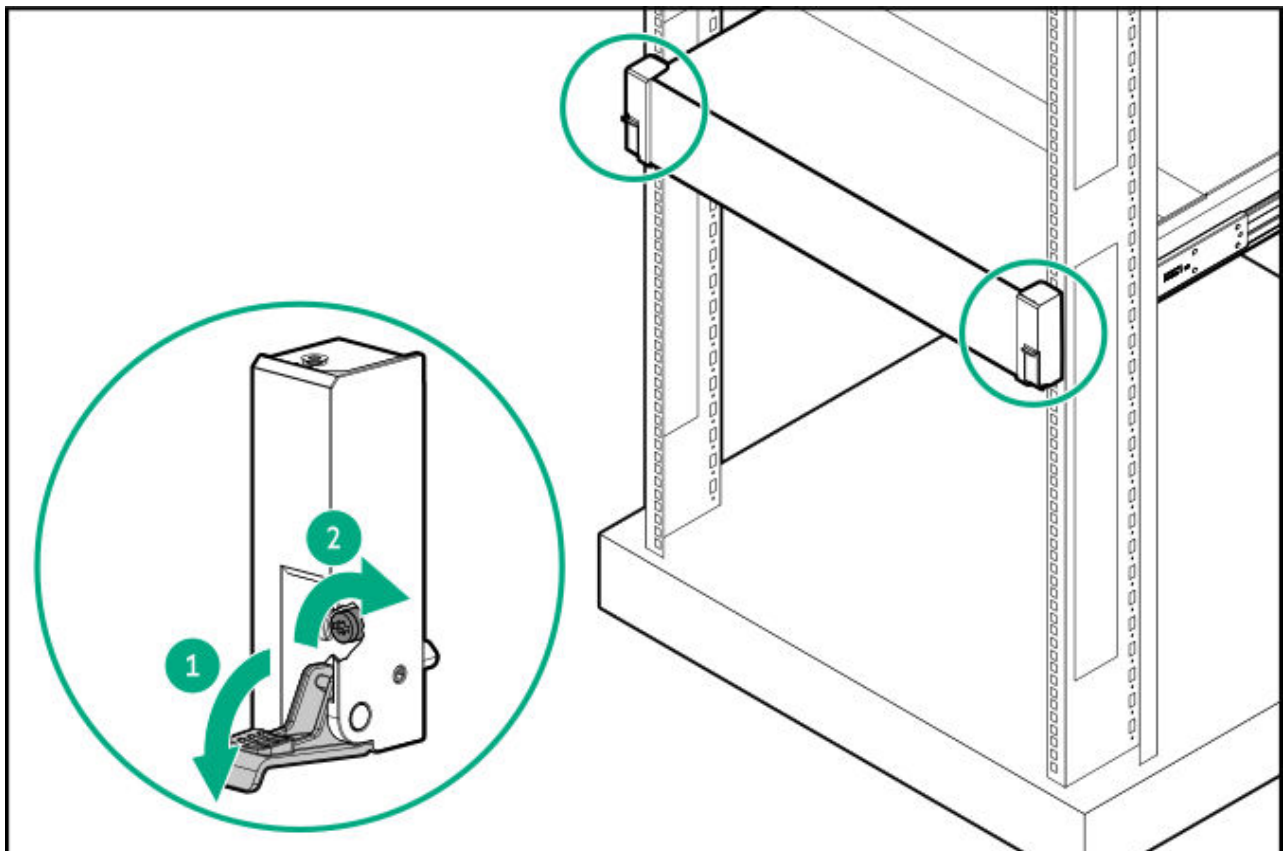
1. Extend the slide rails out on the mounting rails until they hit the internal stops and lock into place.



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.

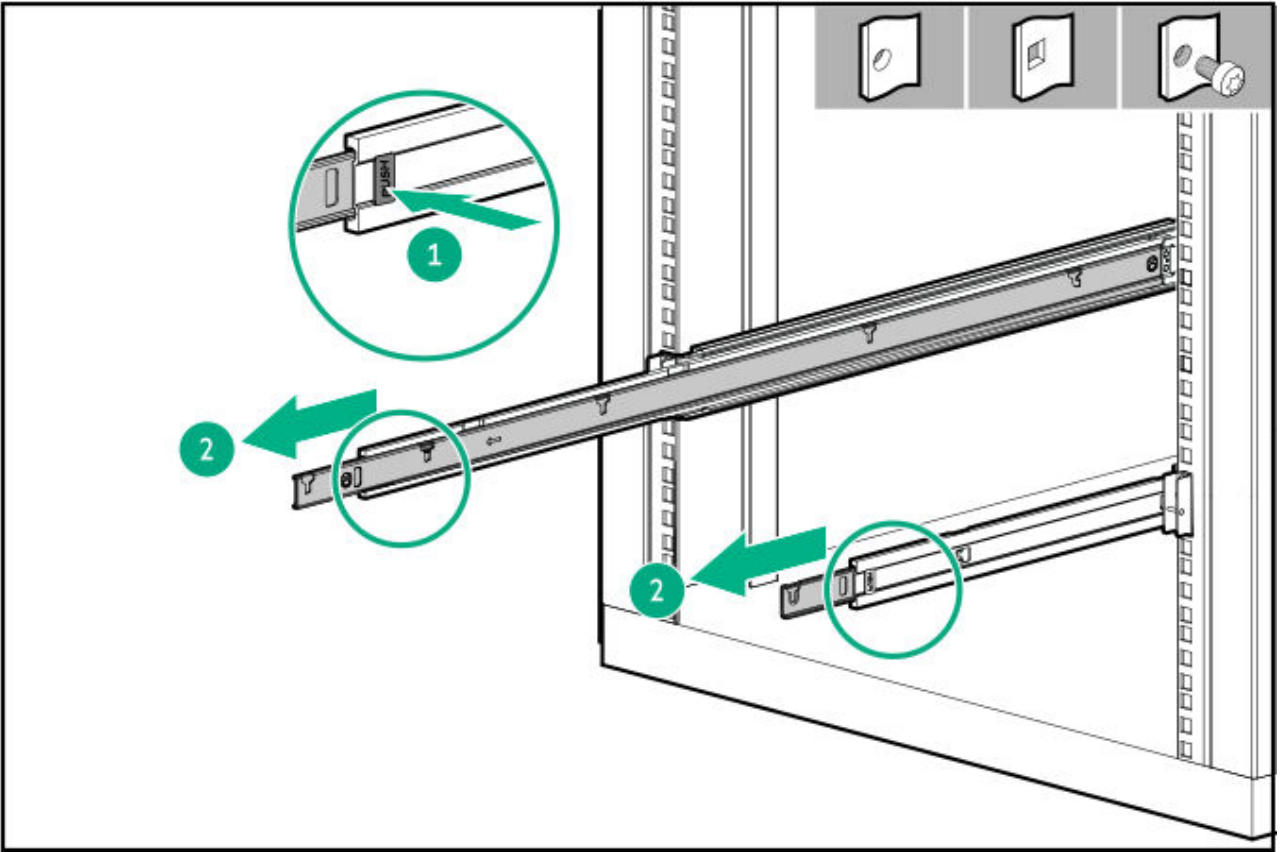
# Installing the server into the rack: Ball-bearing rack rail

## Prerequisites

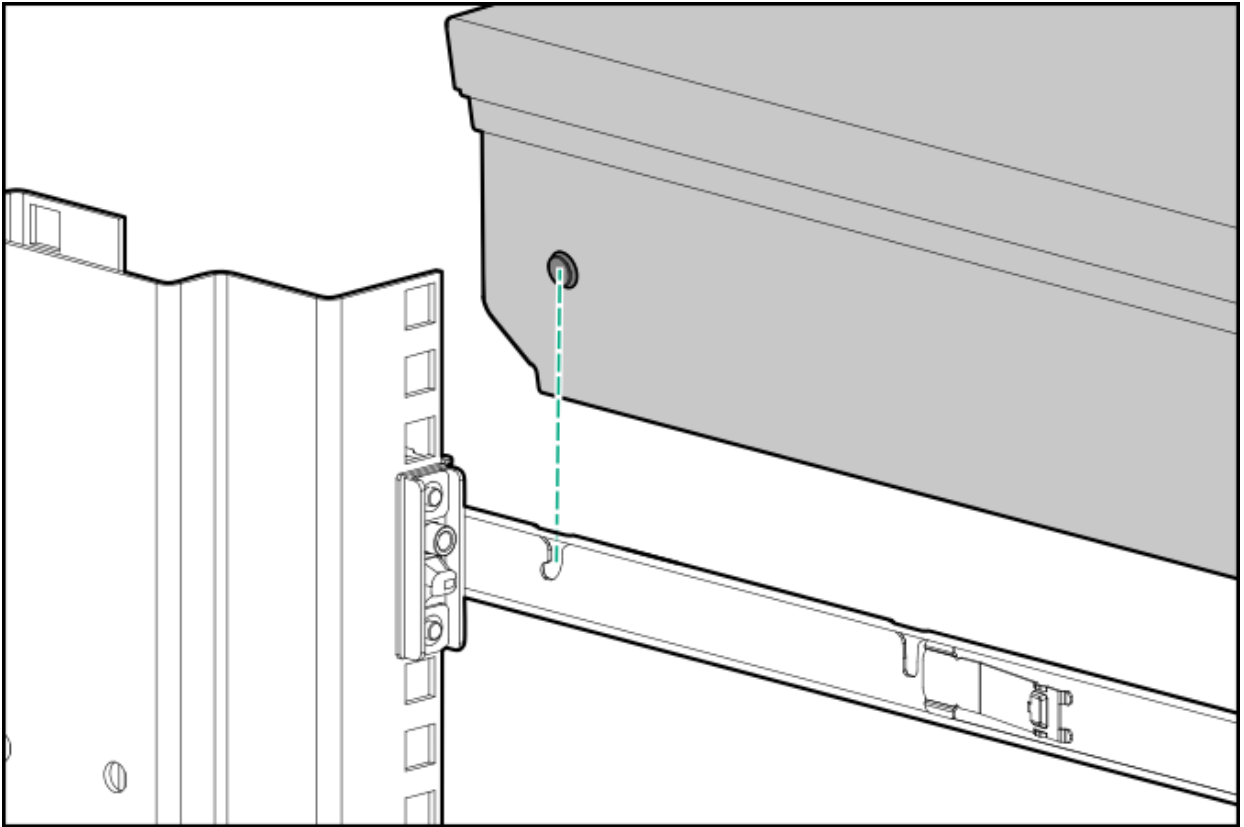
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

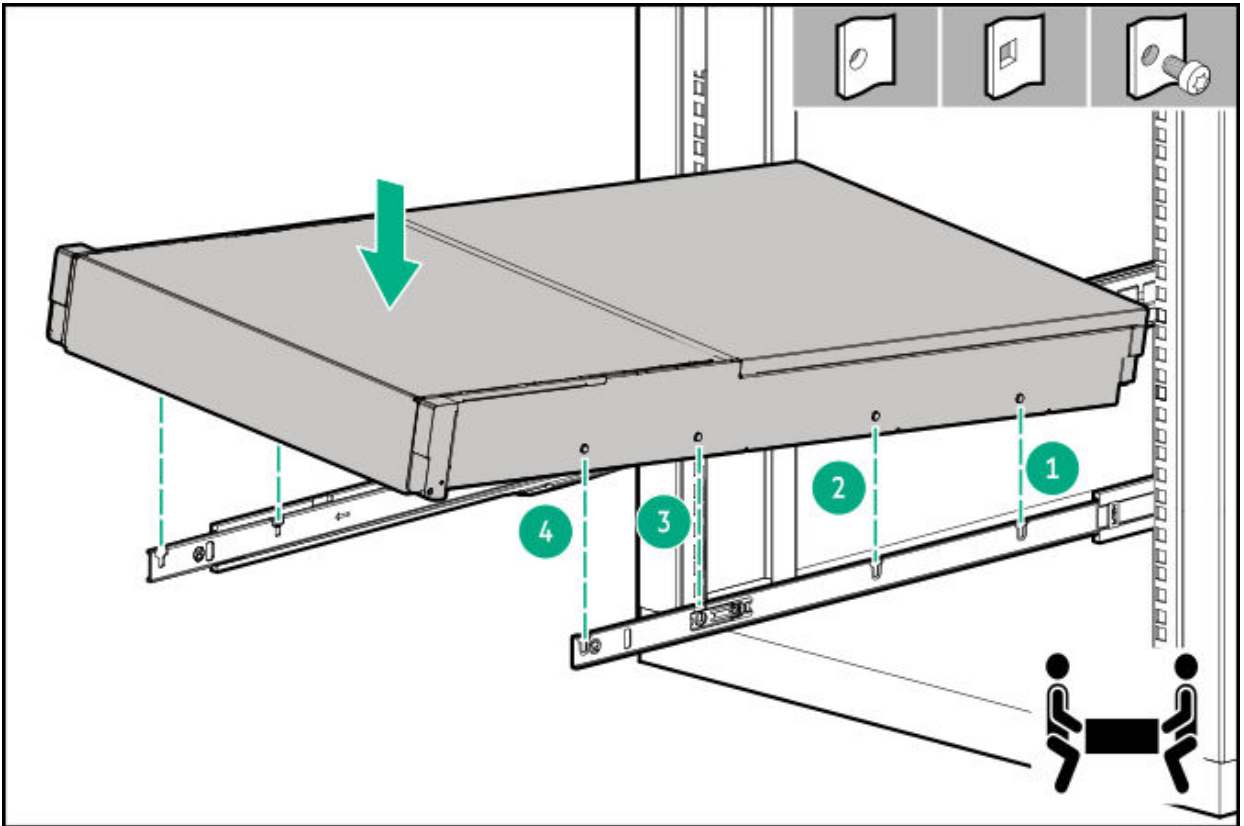
1. Fully extend the rails to the locked position.



2. Install the server into the rails.
  - a. Install the rear of the server into the J-slots.

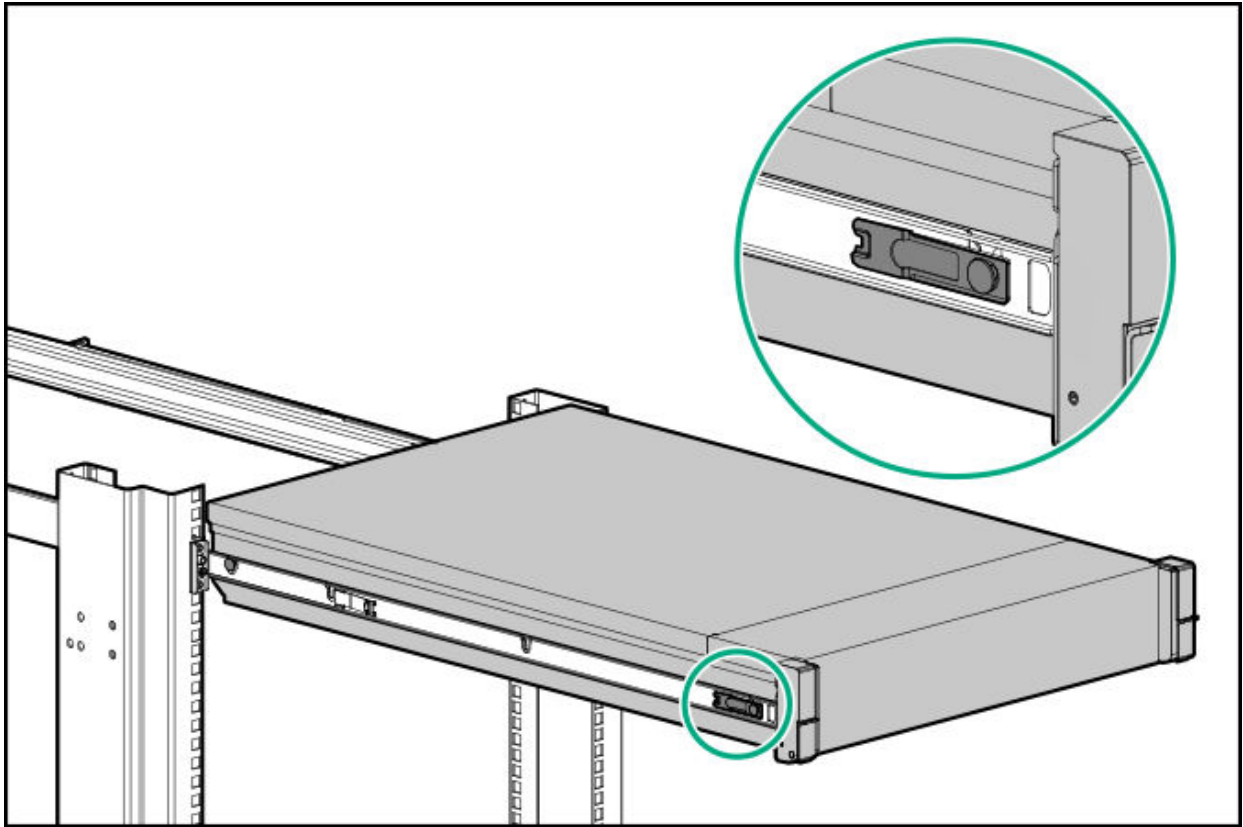


b. Install each spool to the rail.



c. Install the front of the server.

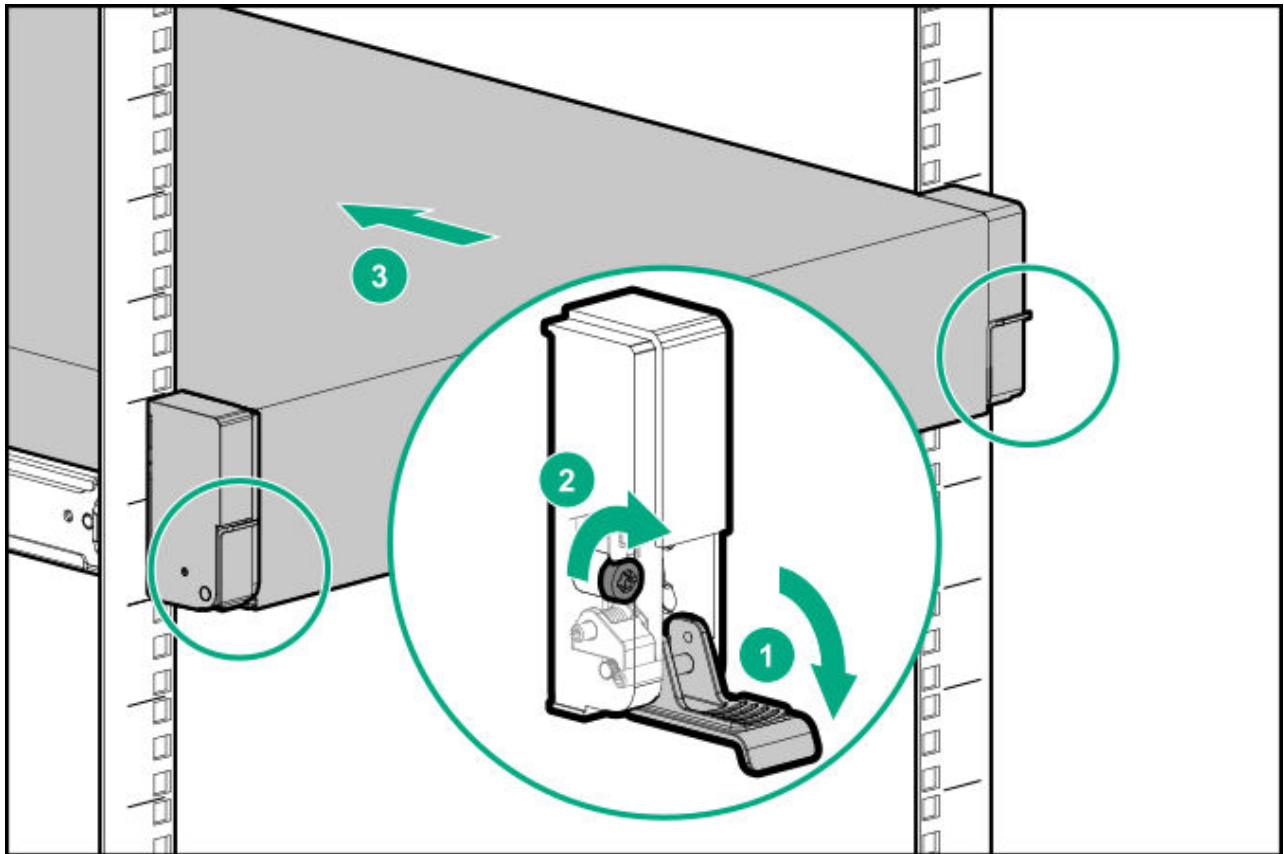
Be sure the front spool engages the locking tab.



**CAUTION**

To prevent damage to the rack rails when installing the server into the rack, make sure that all spools on the server are firmly seated on the notches on the rails.

3. Install the server into the rack, 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.

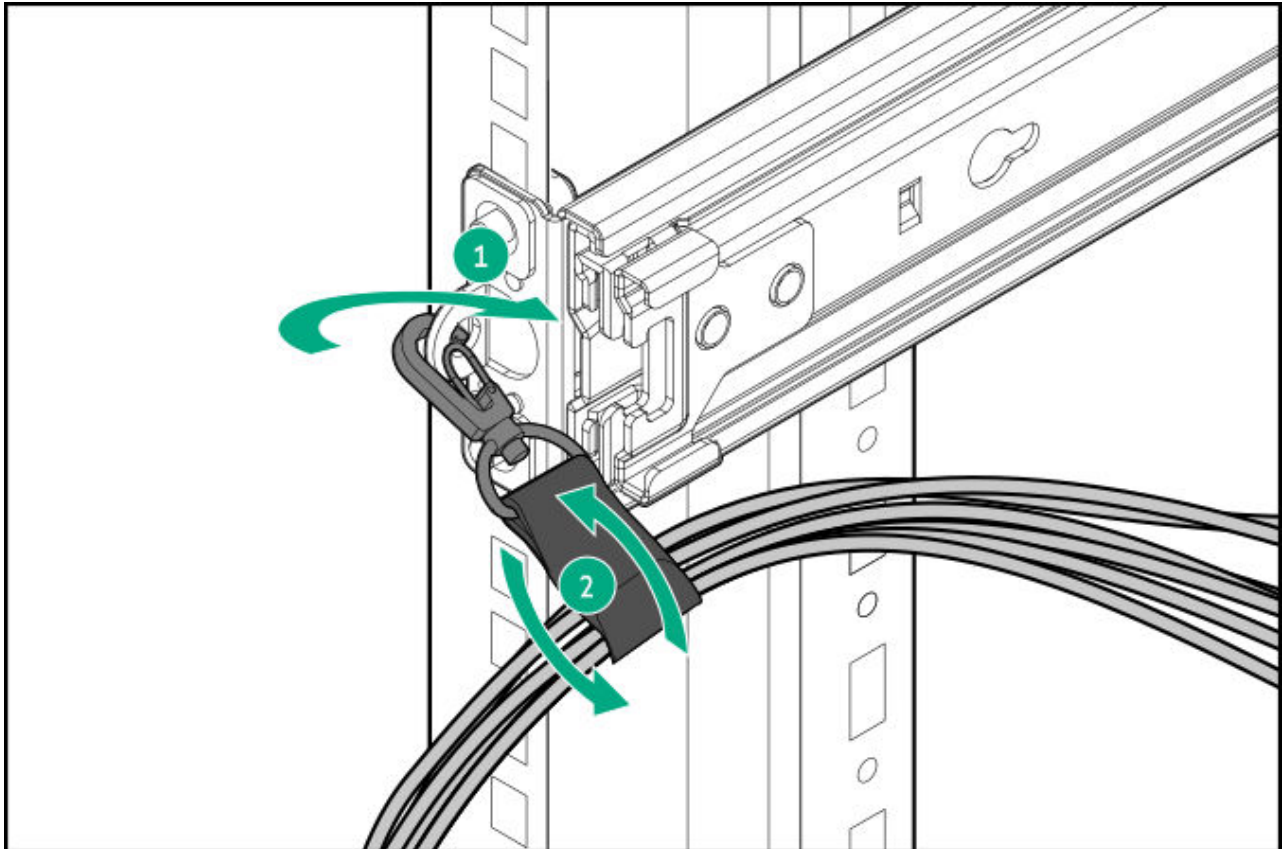
## Installing the rack rail hook-and-loop strap

### 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

Before installing the management arm:

- Identify the part number.



**IMPORTANT**

Some management arms are designed to hold extra weight:

- P26489-B21
- P22020-B21
- P18546-B21

For these management arms, the angle of the brackets requires the outer bracket to be removed before installing the elbow bracket.

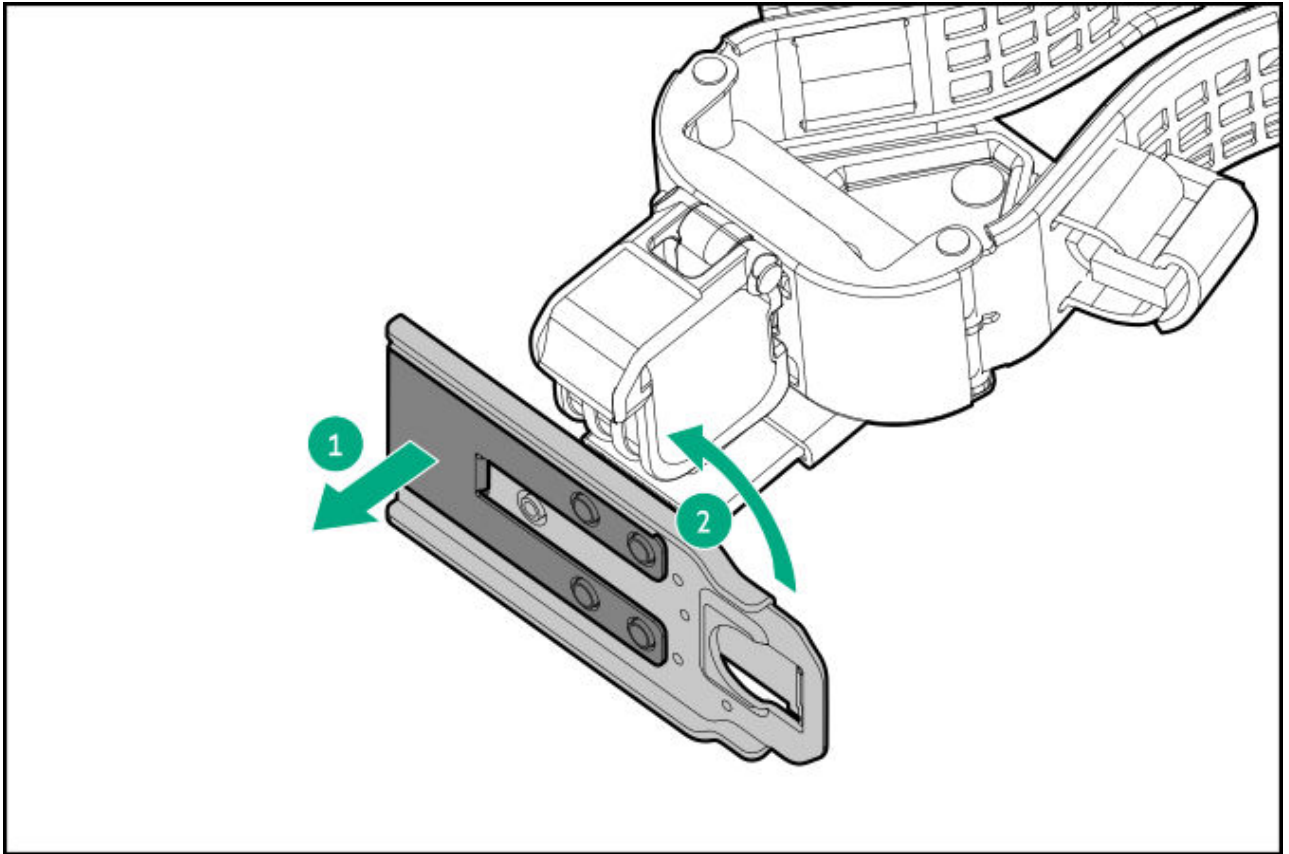
- Prepare the management arm.

The management arm can be installed to swing out from the left or right side of the rack. Before installing, rotate the elbow bracket according to your configuration.



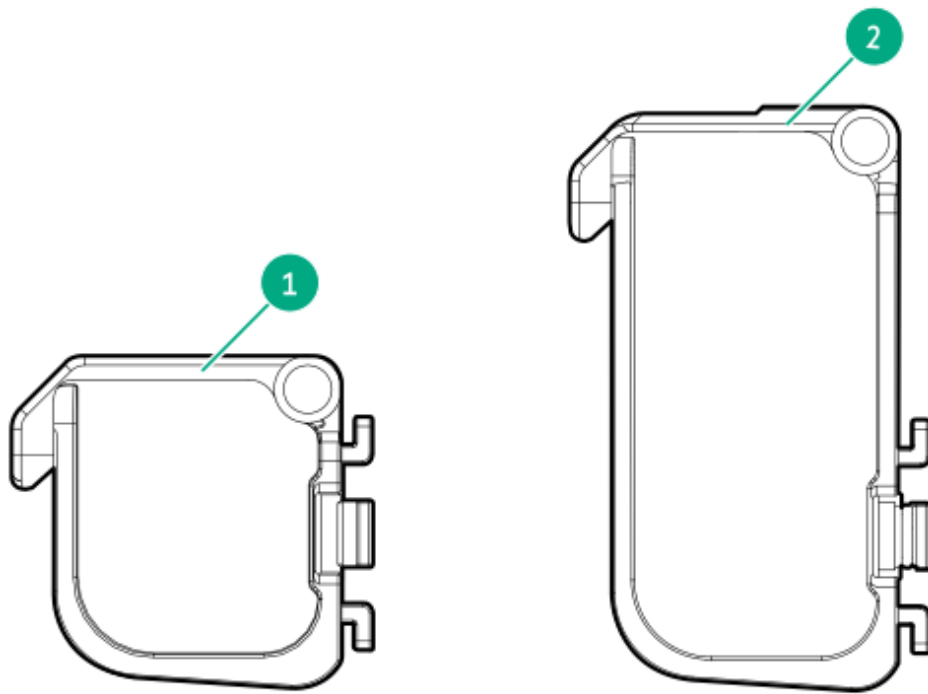
**NOTE**

Your bracket might look different than the image below, but the procedure is the same.



**About this task**

Your management arm might look slightly different, but the procedures are the same.



Item	Description
1	1U CMA cable basket
2	2U CMA cable basket

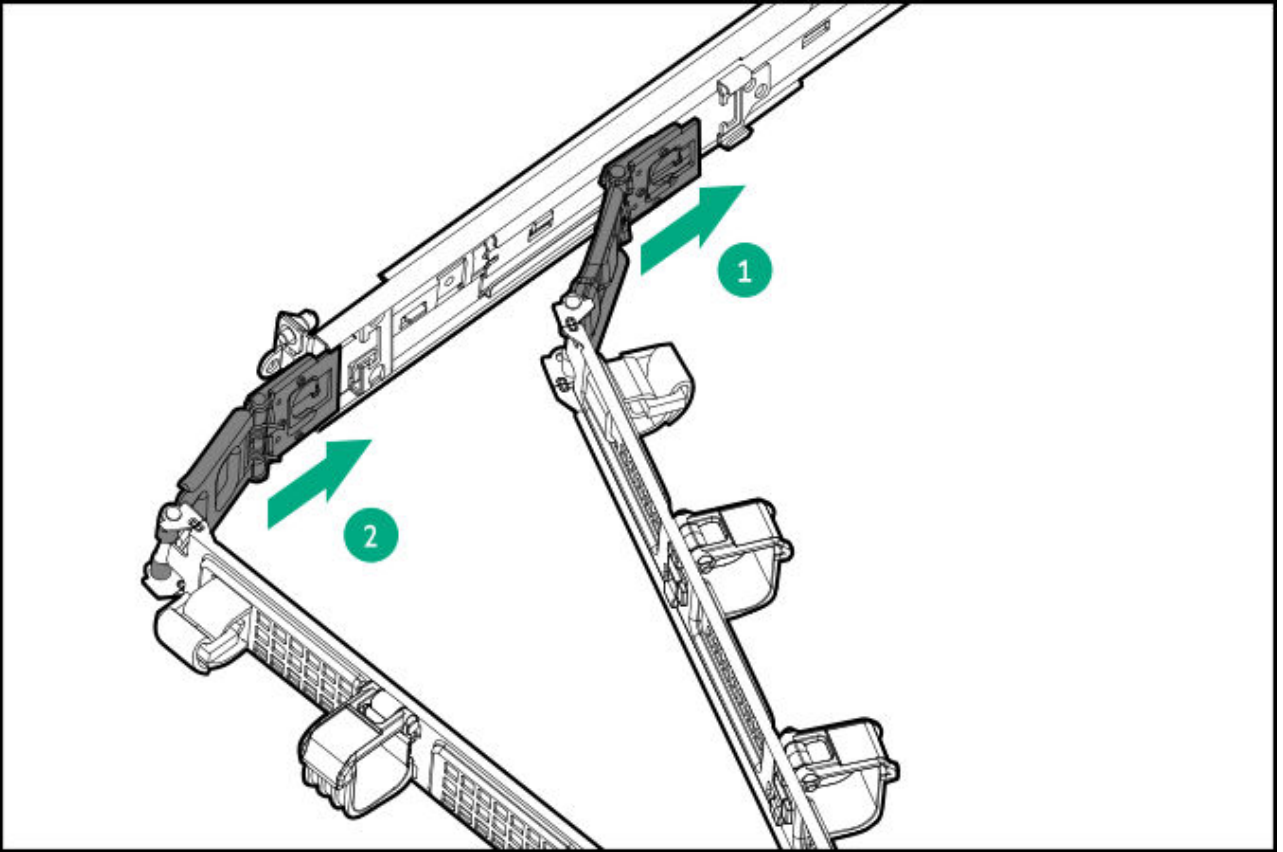


**CAUTION**

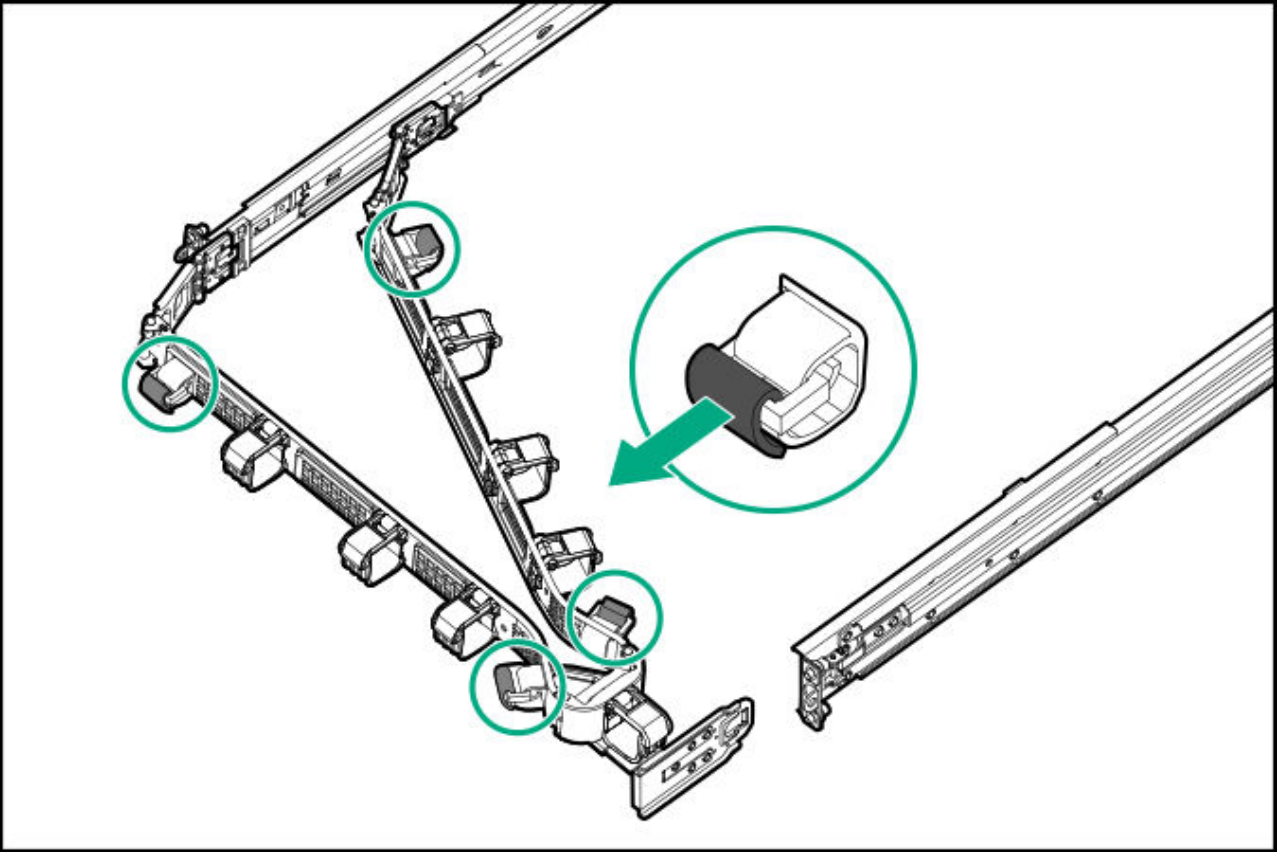
To reduce the risk of personal injury, be careful when pressing the cable management or rail-release latches. The rails or latches could pinch your fingers.

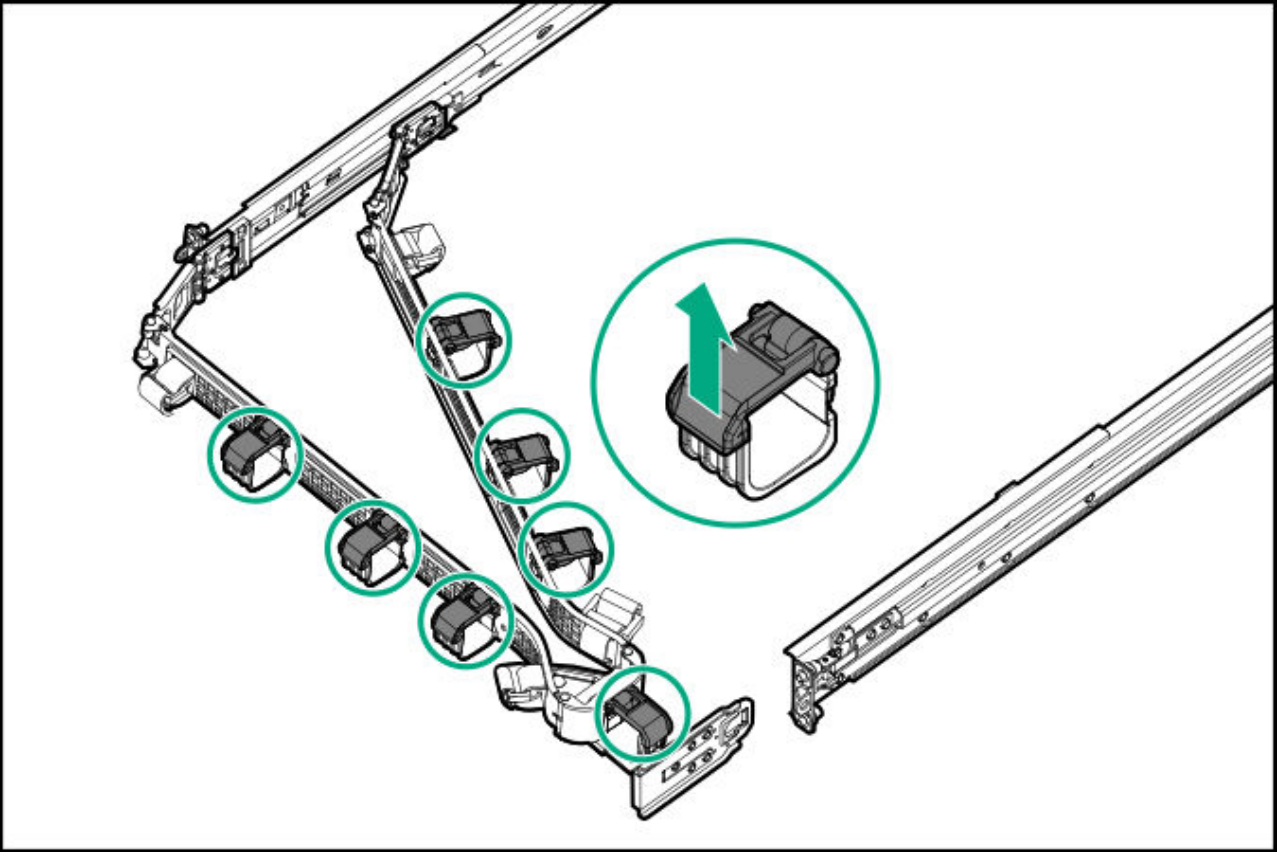
**Procedure**

1. Connect any cables and power cords to the rear of the server.
2. Install the CMA brackets to the inner and outer rails.

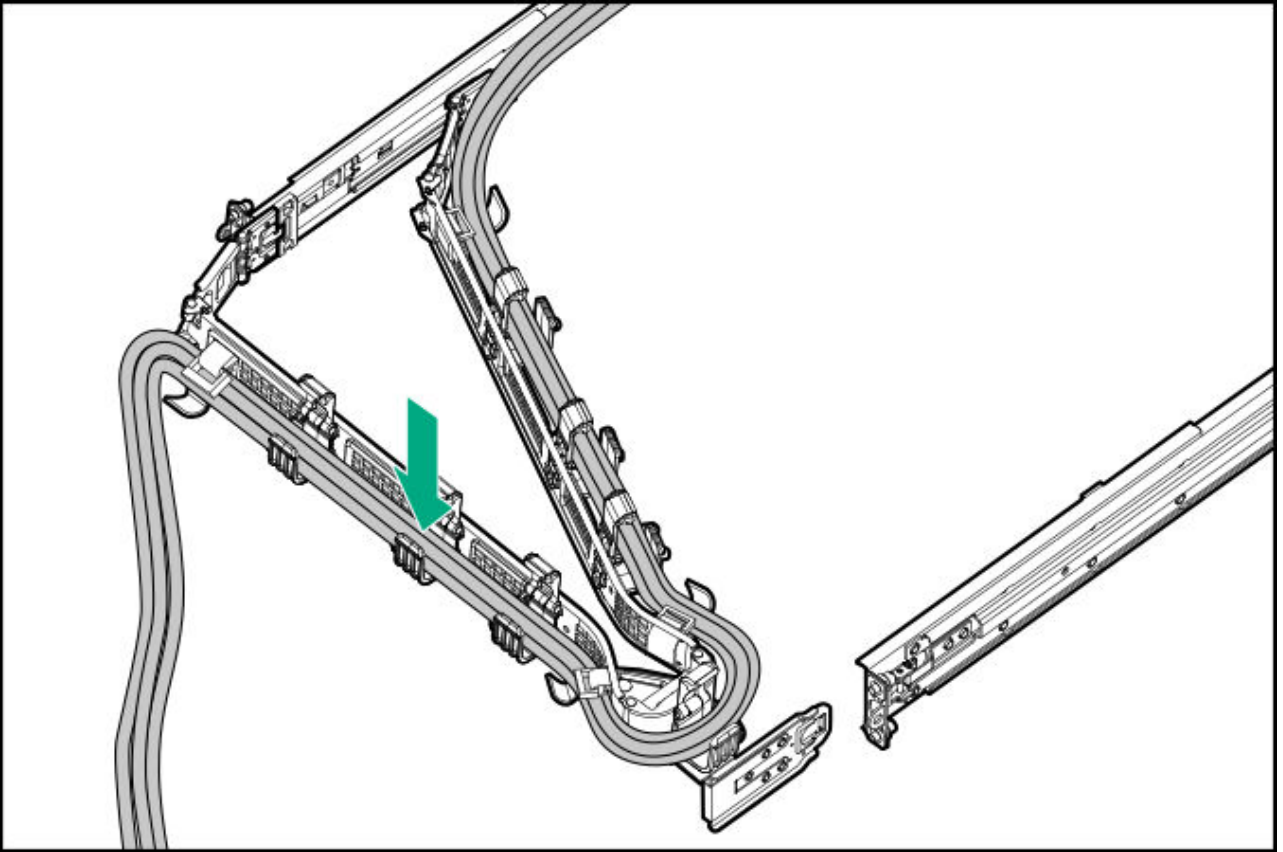


3. Open the straps and cable baskets.

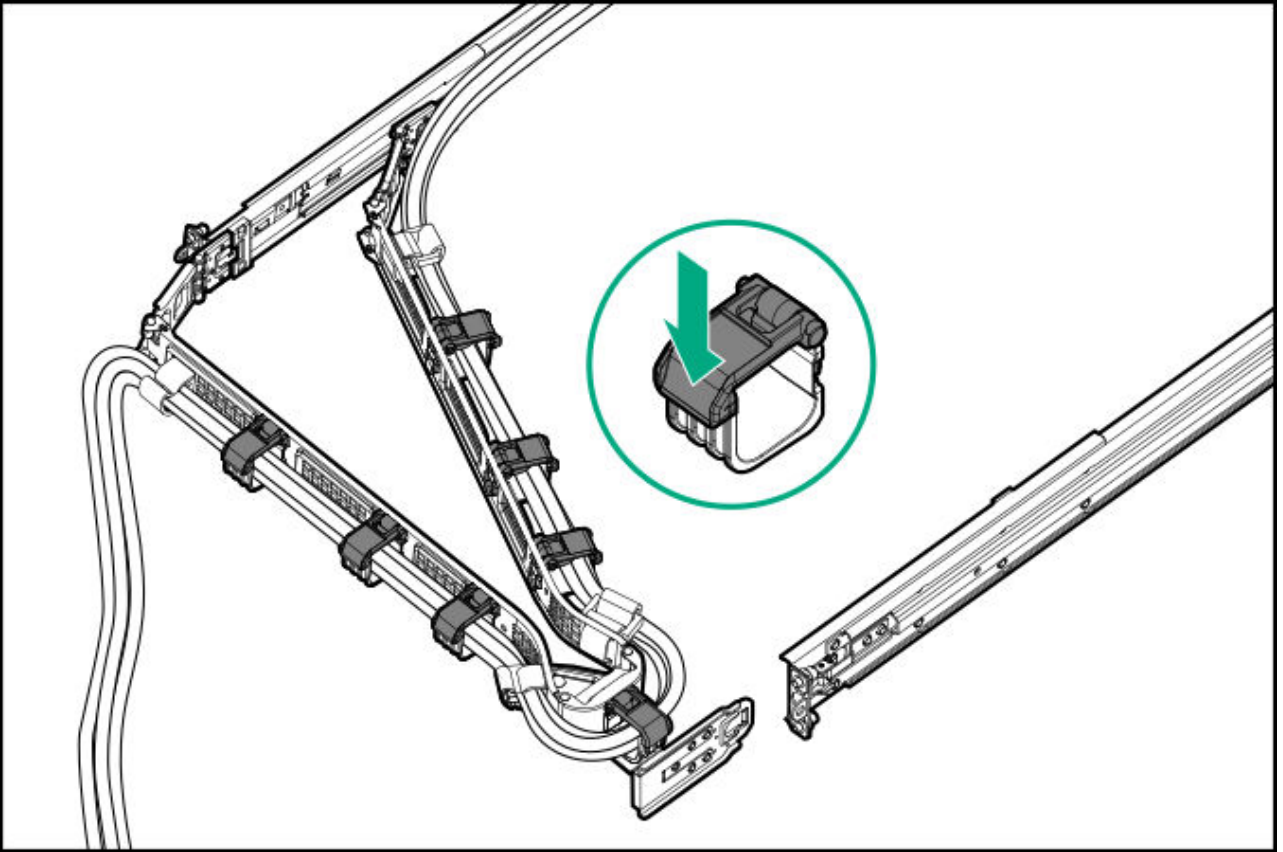




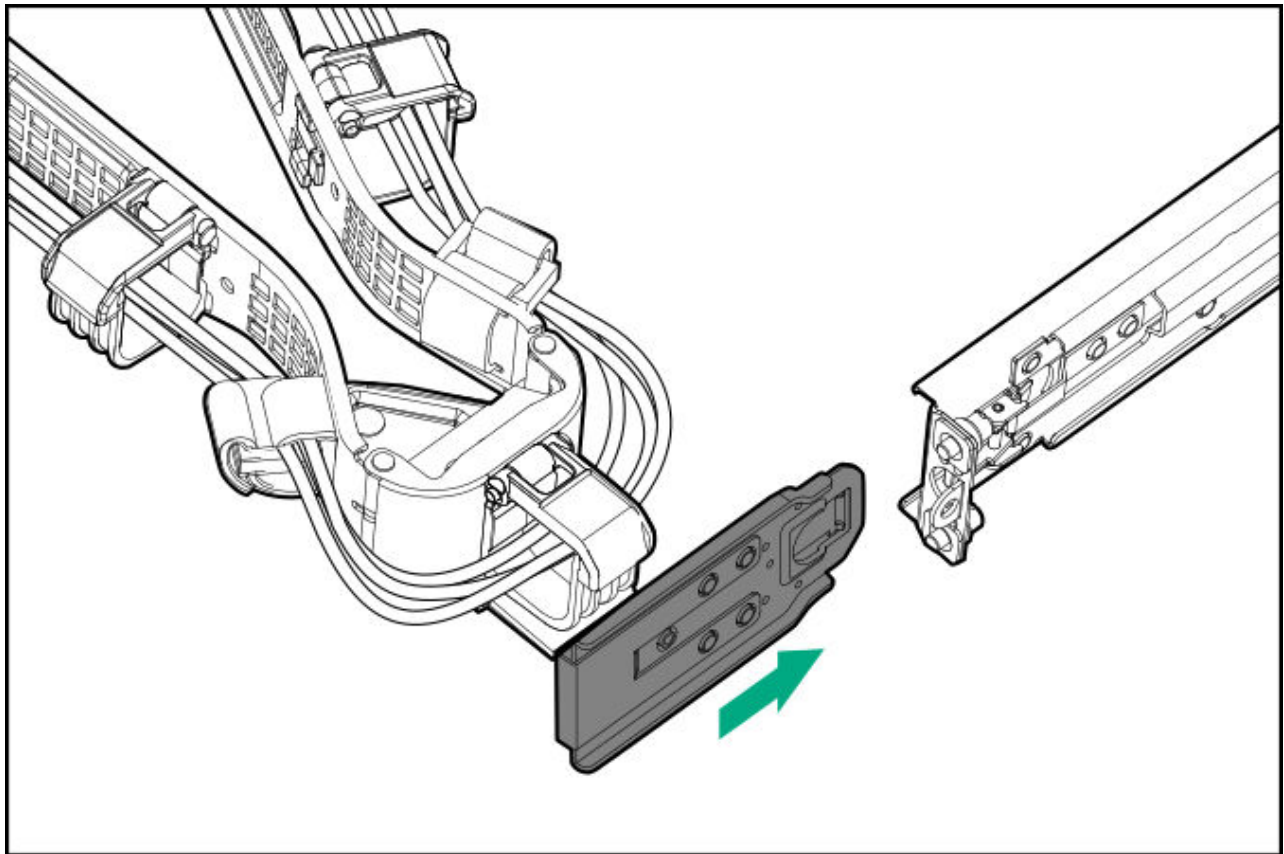
4. Install the cables.



5. Close the baskets and secure the straps.



6. Install the elbow bracket to the outer rail.



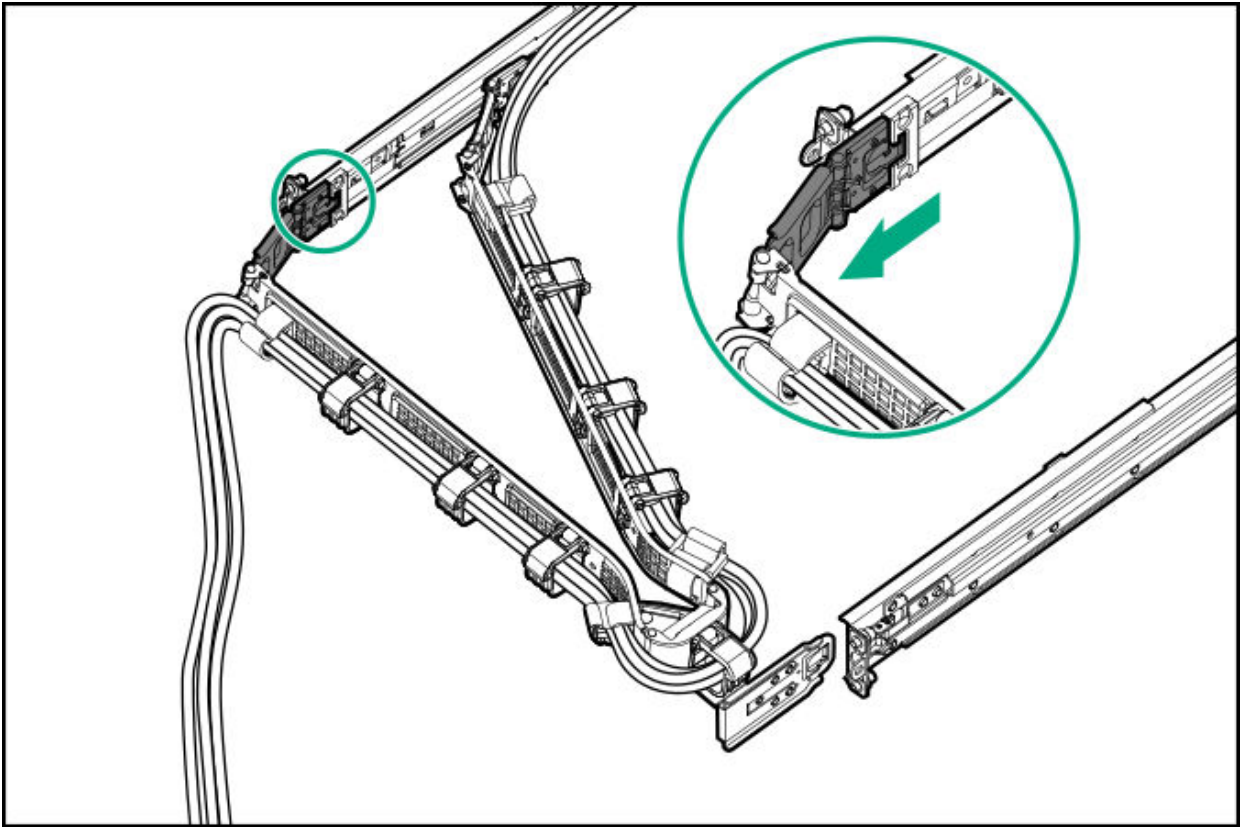
### **IMPORTANT**

Some management arms are designed to hold extra weight:

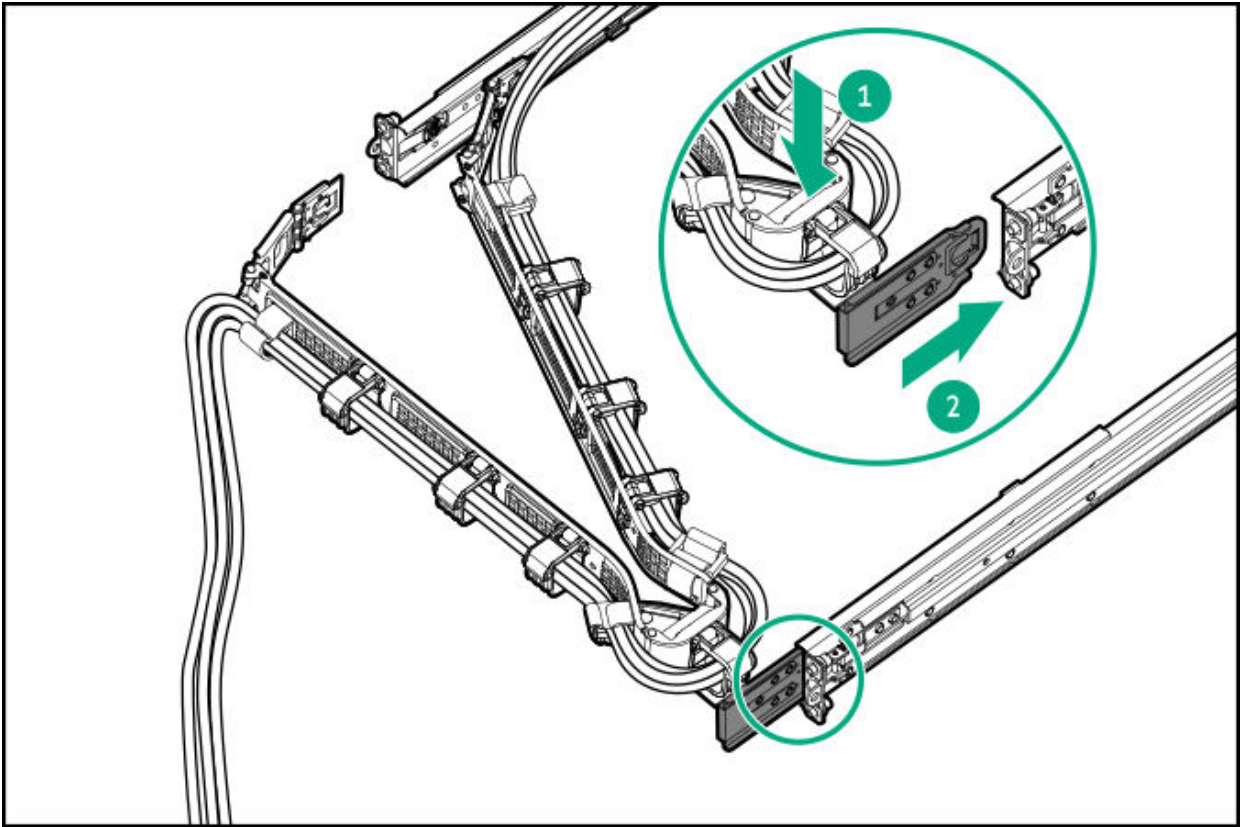
- P26489-B21
- P22020-B21
- P18546-B21

The angle of the brackets requires the outer bracket to be removed before installing the elbow bracket.

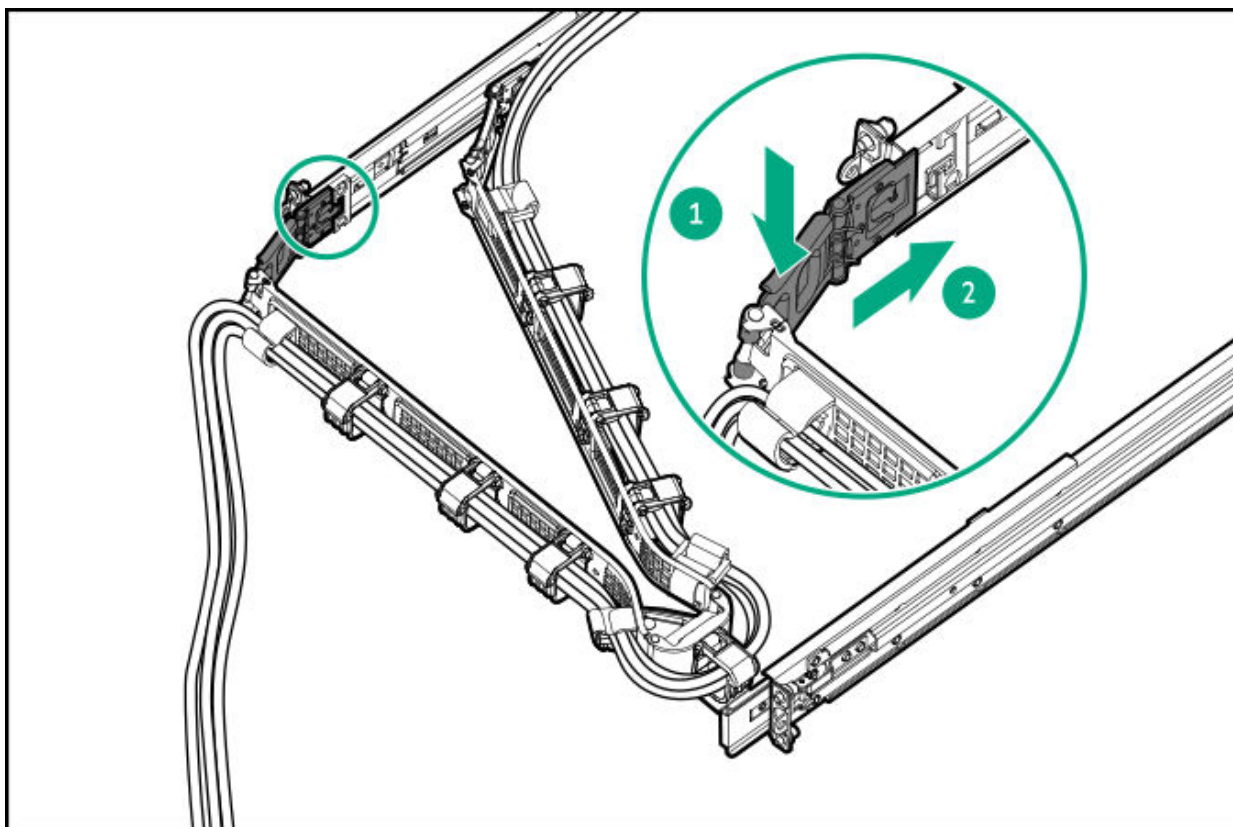
- a. Remove the outer bracket.



b. Align and install the elbow bracket.



c. Install the outer bracket.



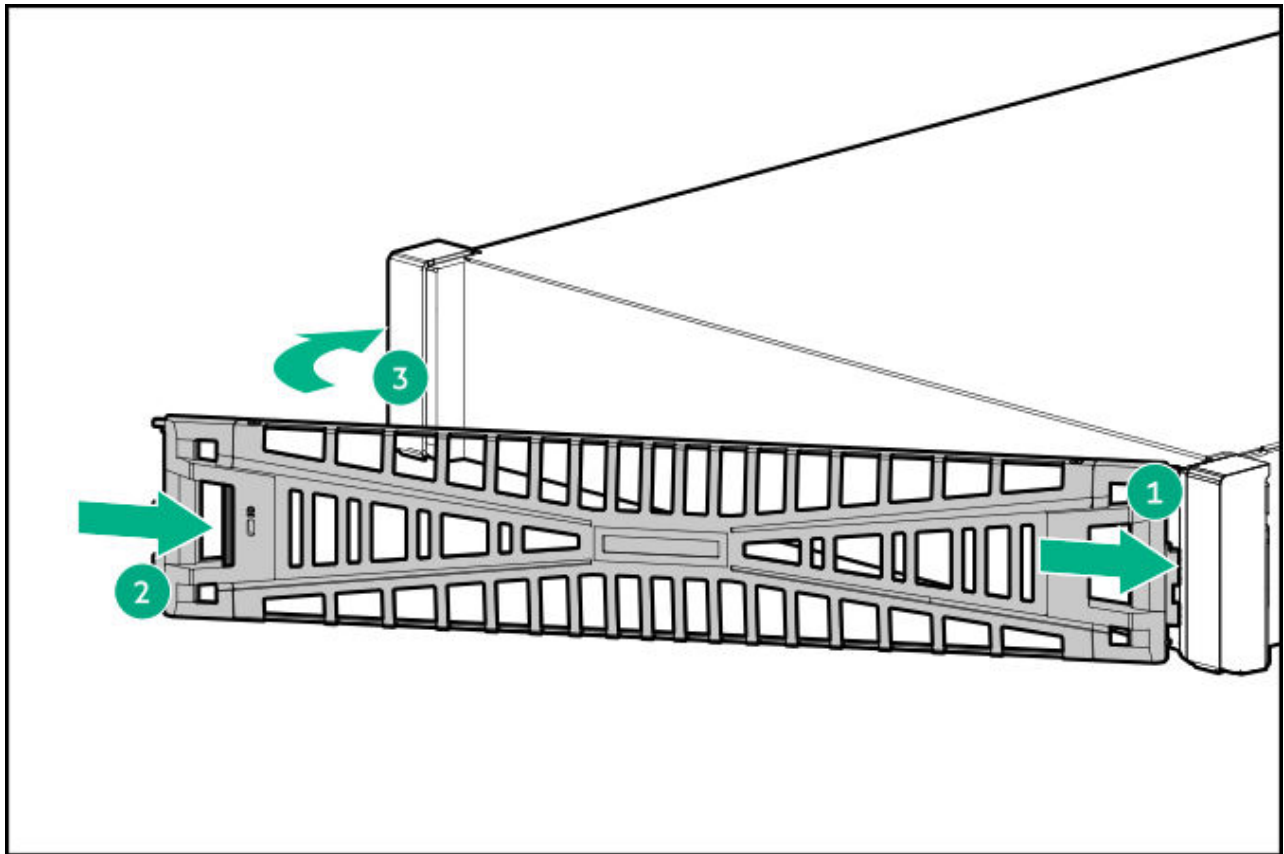
## Results

The installation 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.

## 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](#)**

## 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 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.



### 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.

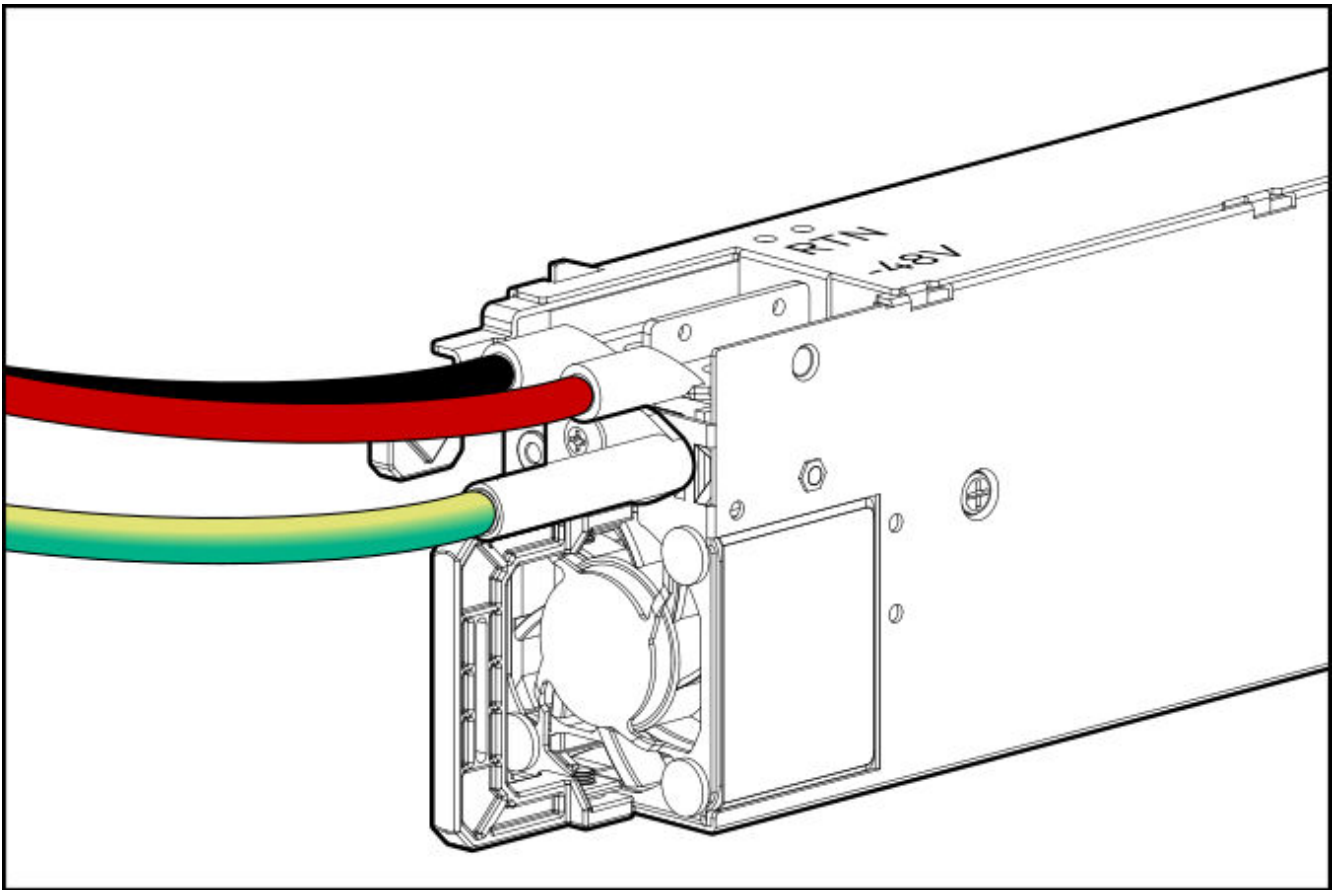


### CAUTION

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.



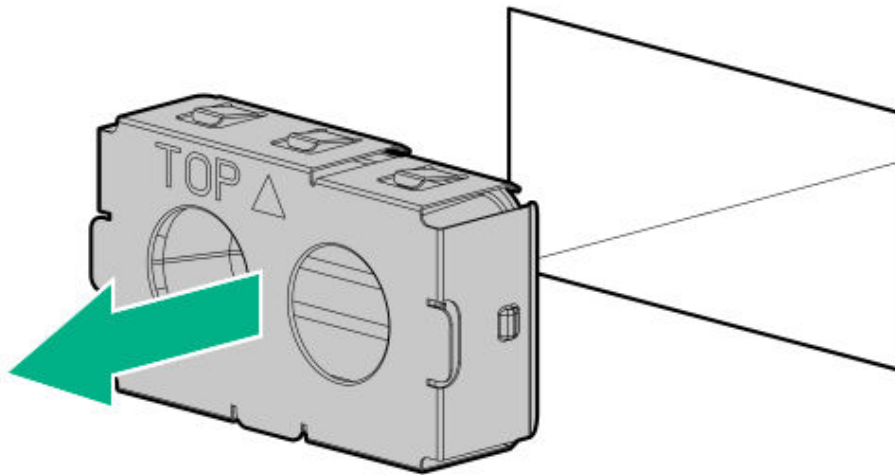
### CAUTION

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

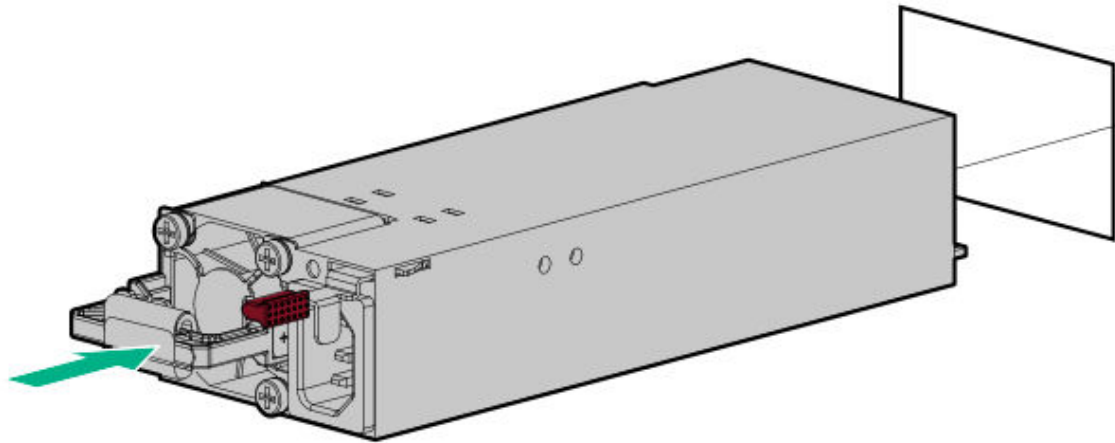
## Procedure

1. Remove the power supply blank.

Retain the blank for future use.



2. Install the power supply.

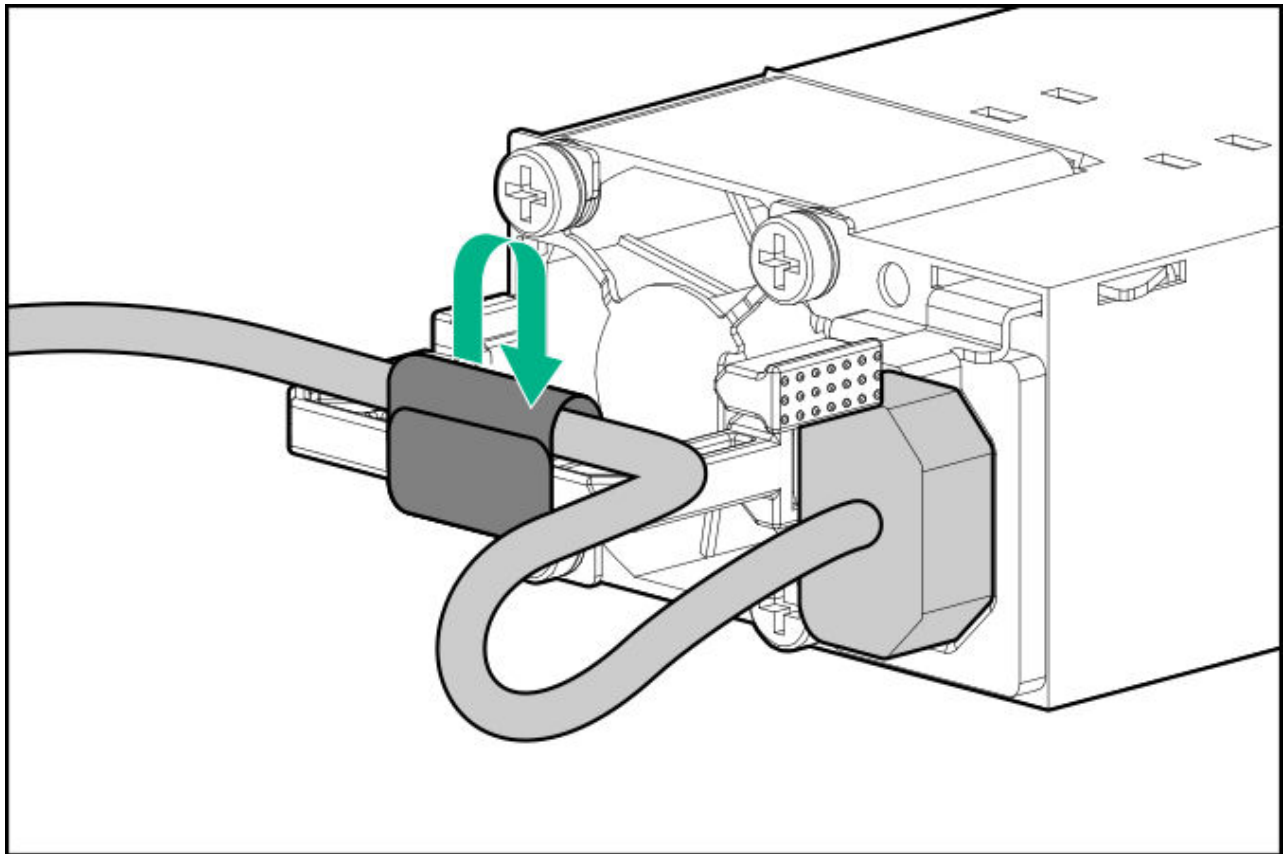


3. Connect the power cord to the power supply.
4. Secure the power cord.



**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.

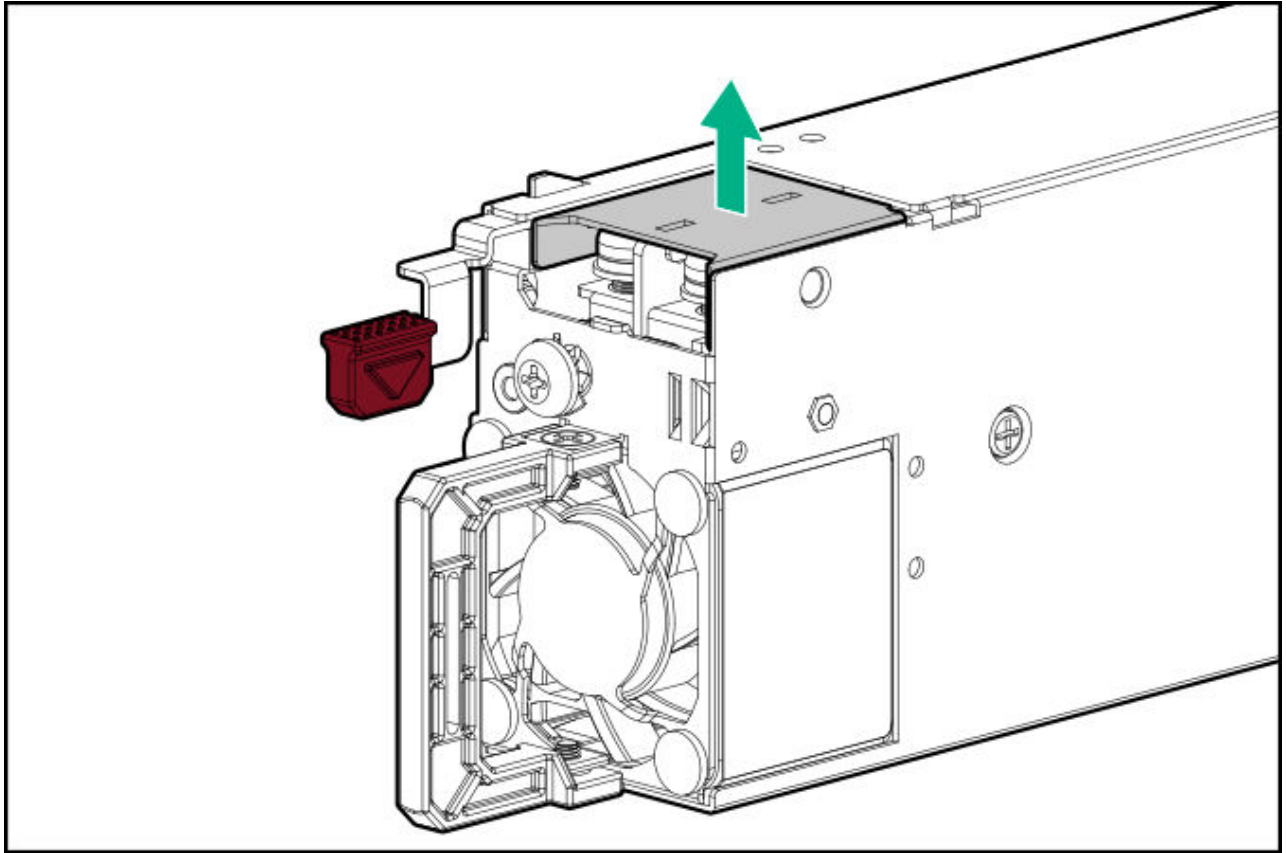


### WARNING

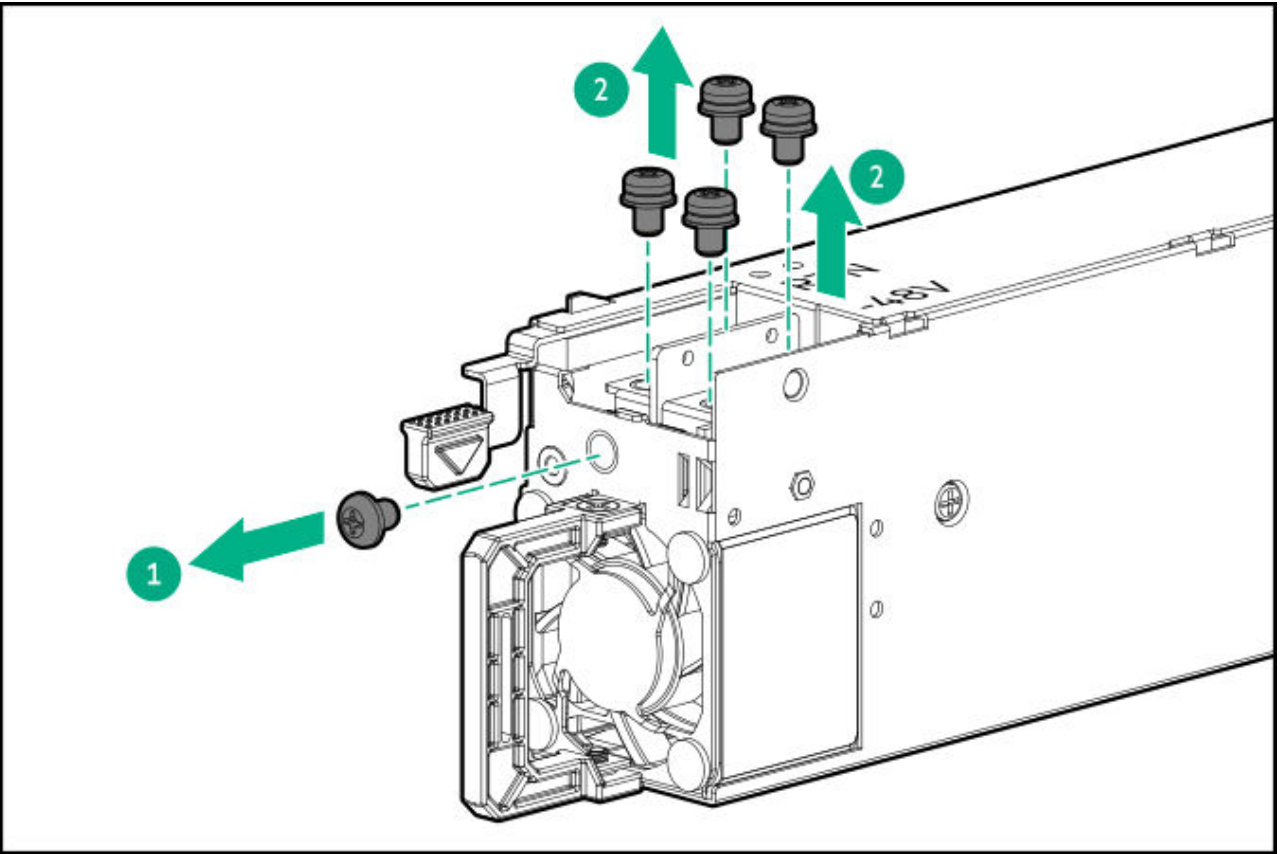
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

## Procedure

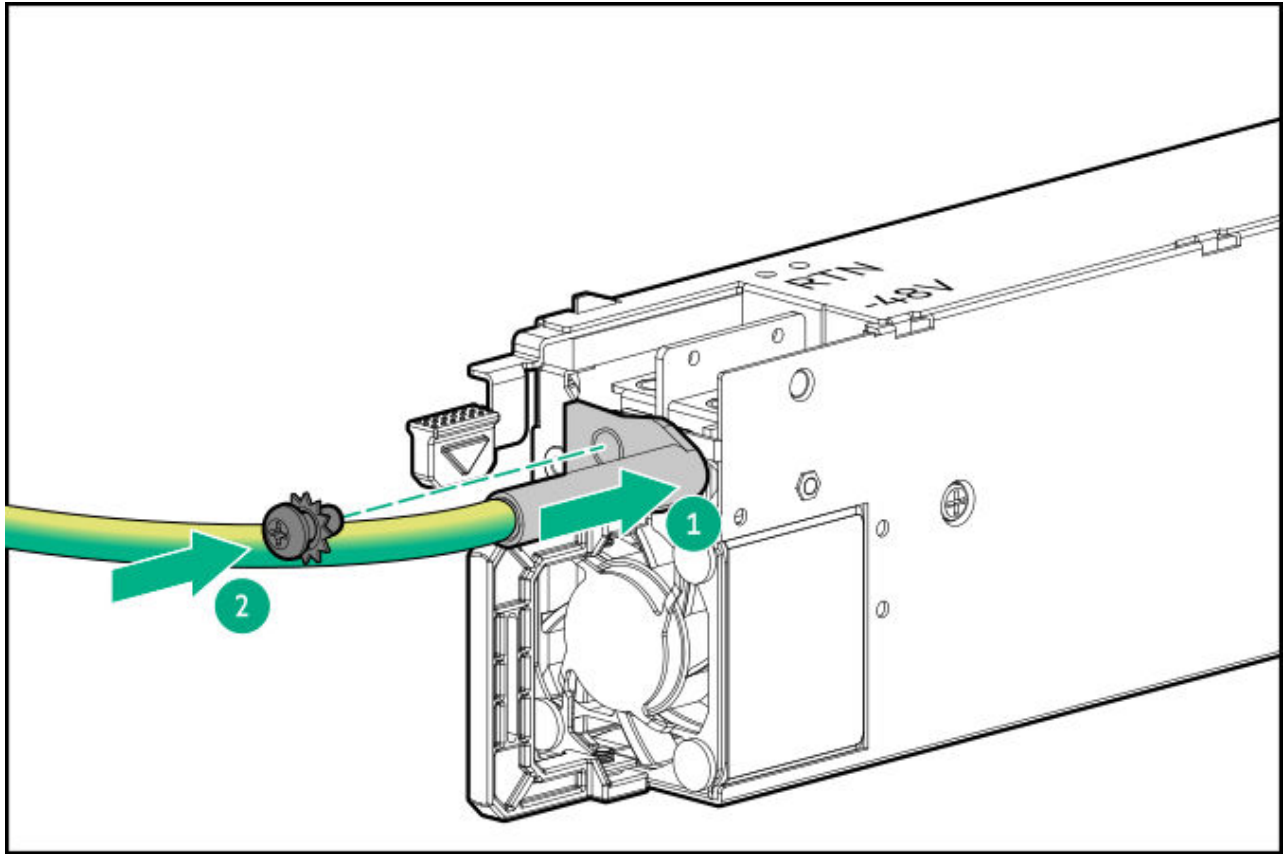
1. Remove the protective cover from the power supply.



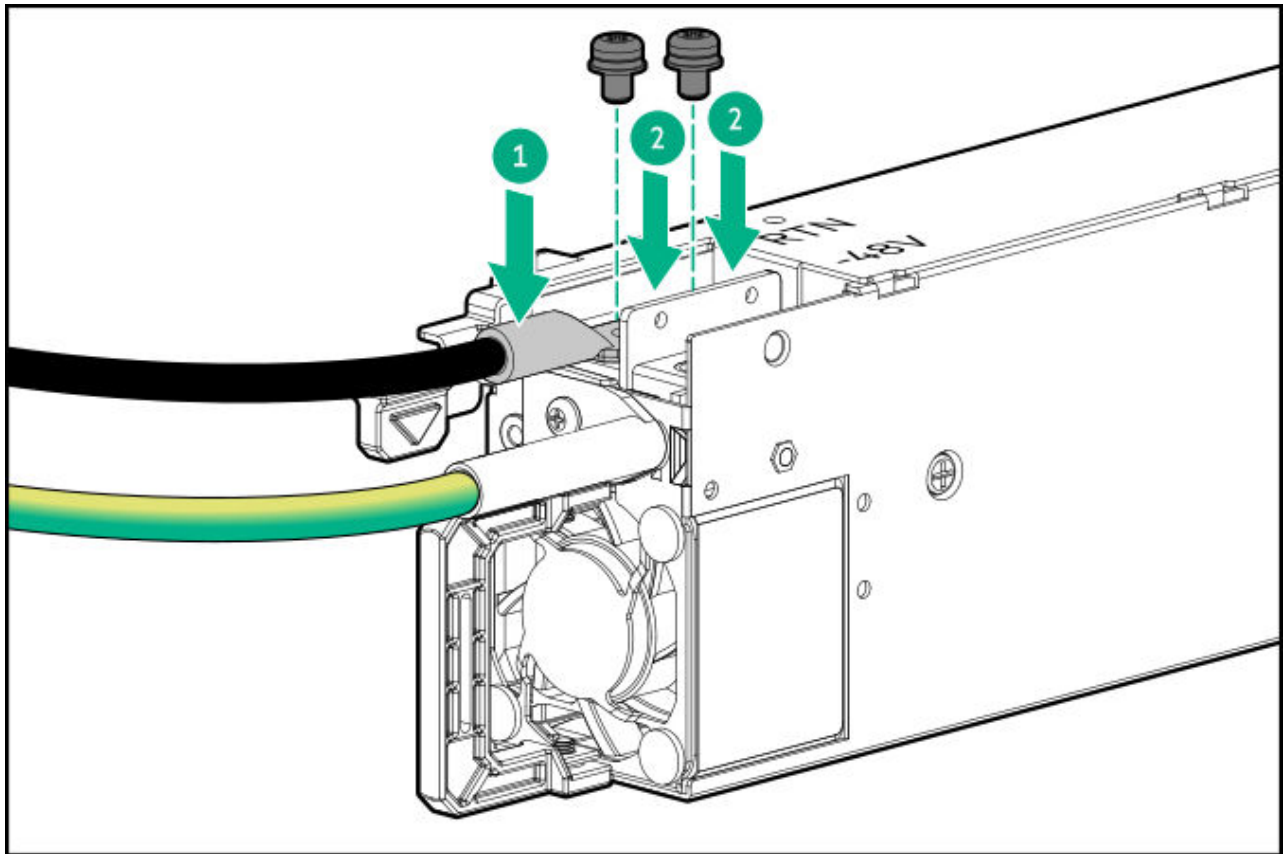
2. Remove the ground wire screw, and then remove the return wire and line wire screws.



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 ).

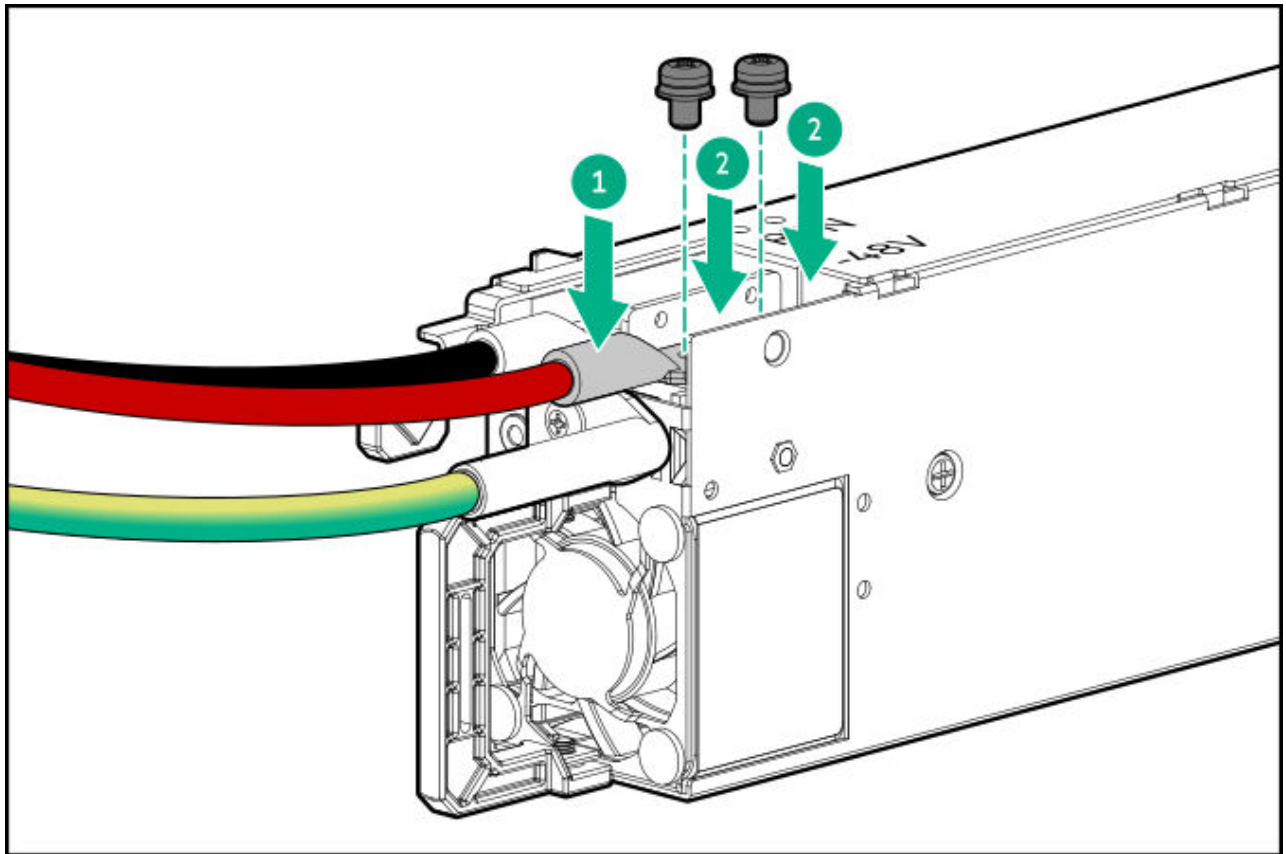


4. Install the return wire (black):
  - a. Insert the return wire into the RTN slot on the DC power supply.
  - b. Tighten the screw with 0.98 N-m (8.68 lbf-in).



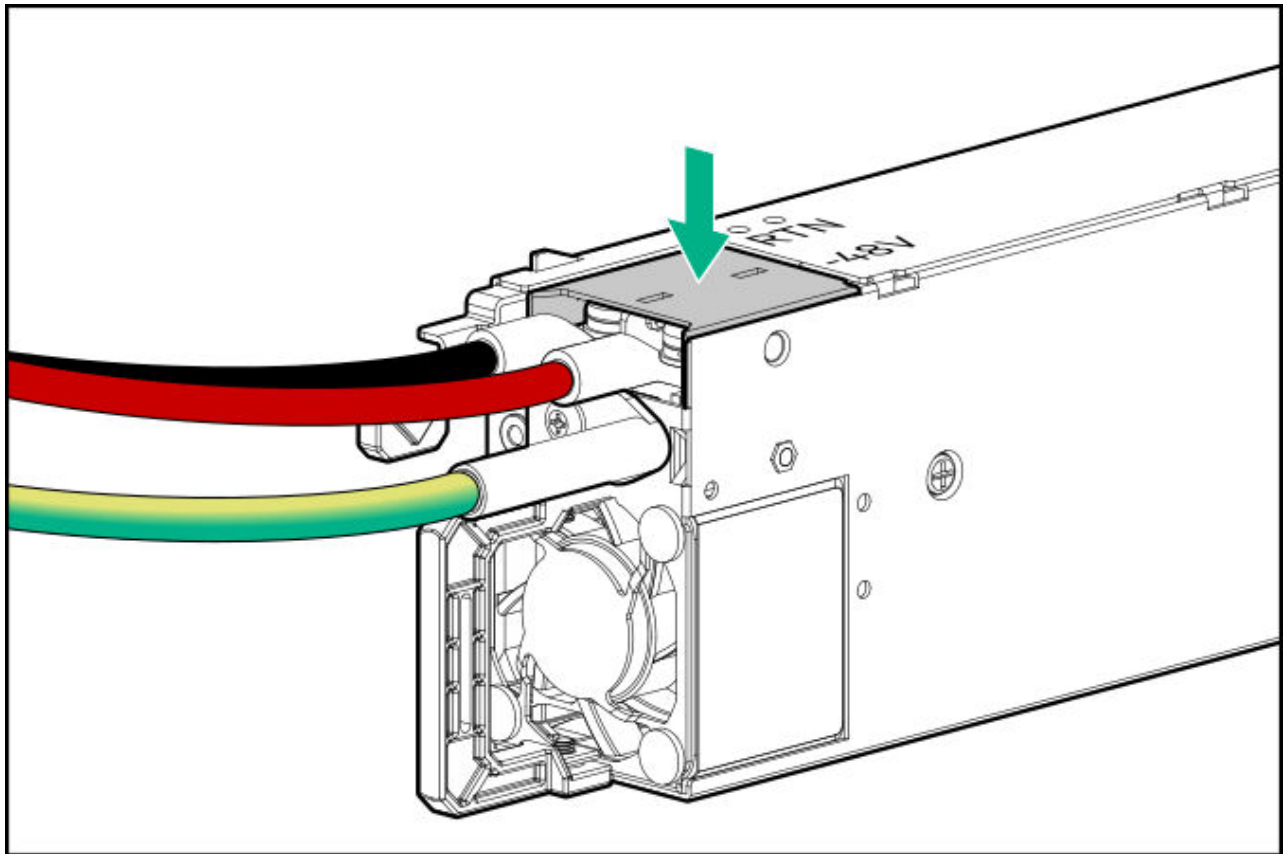
5. Install the line wire (red):

- 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.

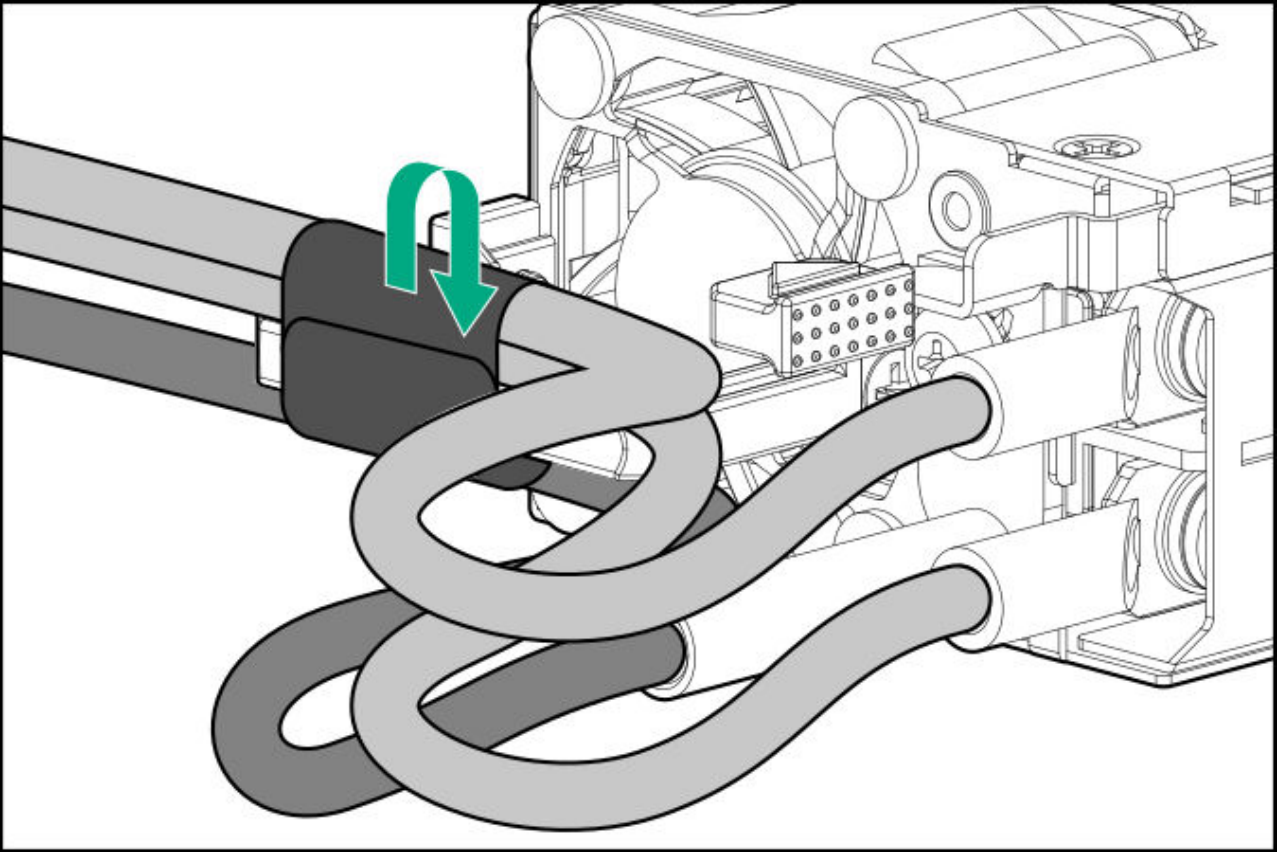


7. Secure the ground, positive return, and negative input wires in the strain relief strap.

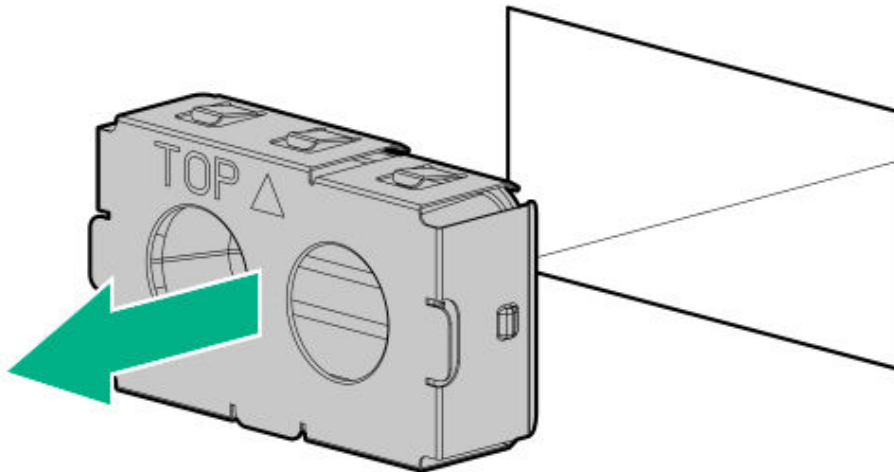


**CAUTION**

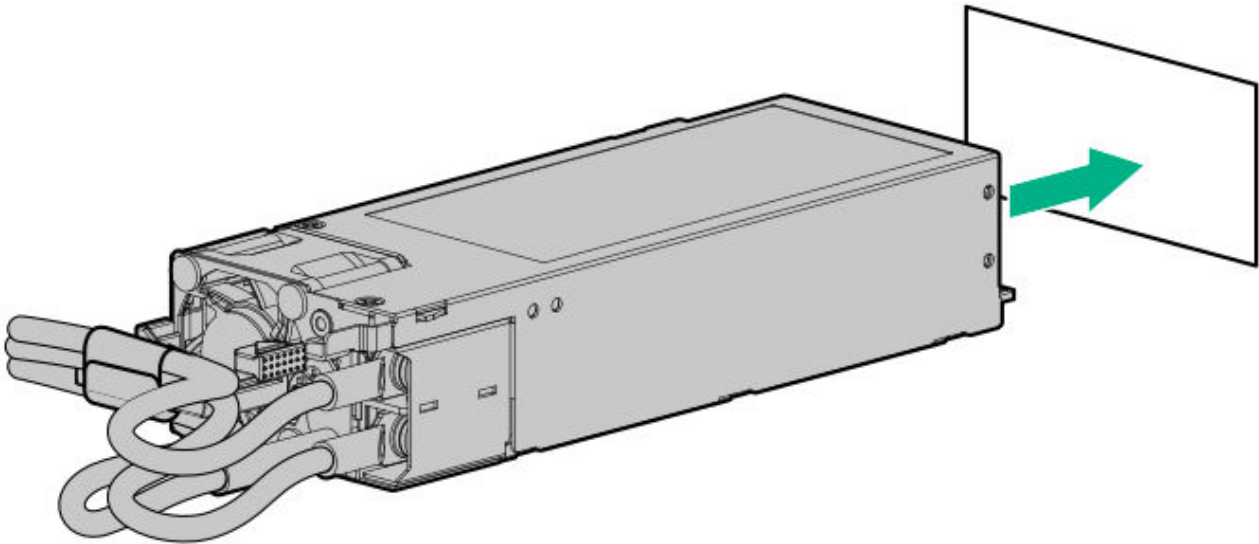
Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.



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

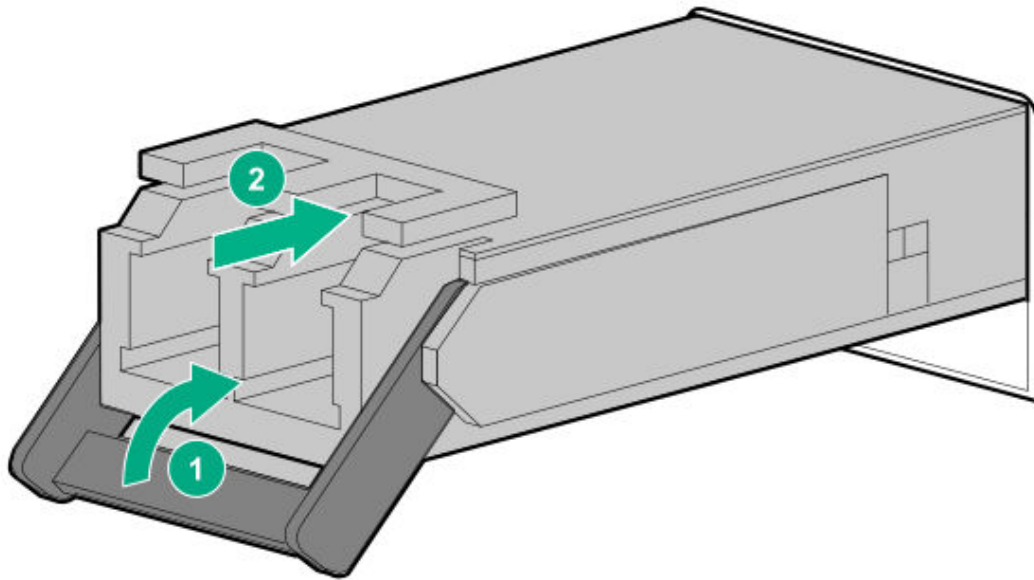
Before installing a transceiver option, review the following:

- [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.

## Drive options

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

- Hot-plug LFF SAS and SATA drives
- Hot-plug SFF SAS, SATA, and U.3 PCIe4 NVMe drives
- Hot-plug E3.S PCIe5 NVMe SSDs

This server has no embedded software RAID support. Direct attached SATA drives operate in AHCI mode.

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

### Subtopics

#### **Drive installation guidelines**

#### **Installing a hot-plug LFF/SFF drive in the front drive cage**

#### **Installing a hot-plug LFF/SFF drive in the midplane drive cage**

#### **Installing an E3.S 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 hot-plug LFF/SFF drive in the front drive cage

## Prerequisites

The following drive configurations require the presence of high performance fans:

- 4 LFF or 8 SFF midplane drive configuration
- Rear 4 LFF or 2 SFF drive configuration

For more information, see the [Cooling component requirements](#).

## About this task



### CAUTION

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



### CAUTION

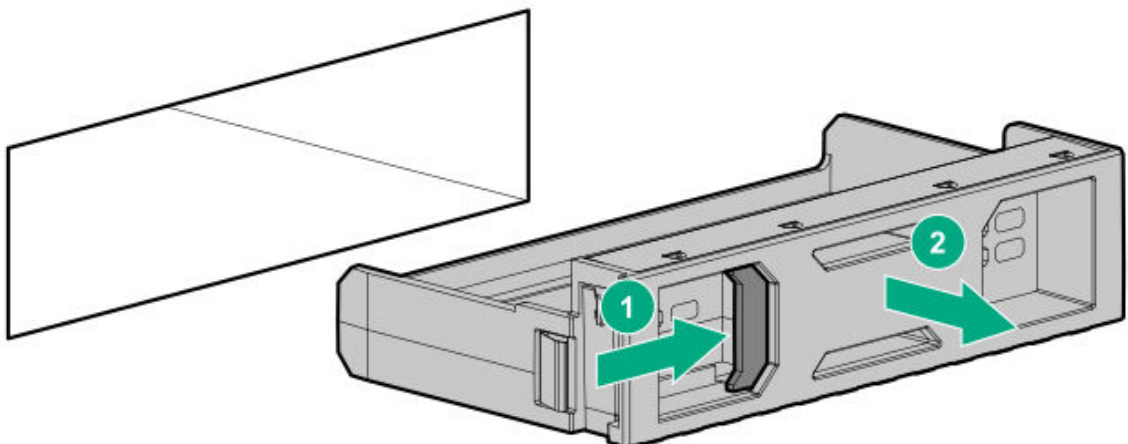
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

## Procedure

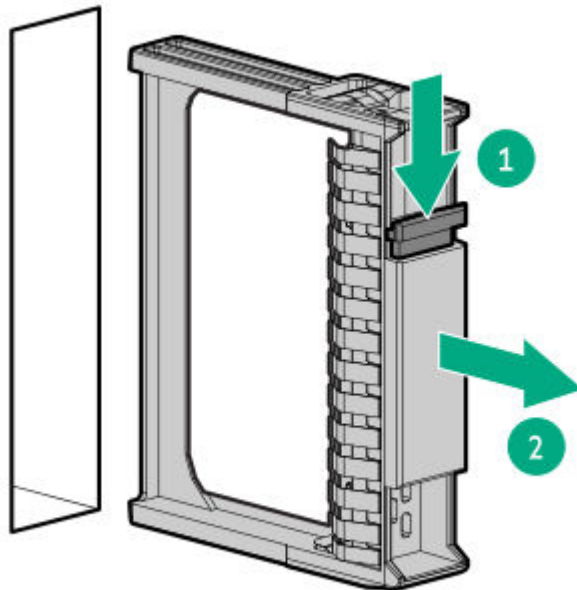
1. If installed, [remove the front bezel](#).
2. Remove the drive blank.

Retain the blank for future use.

- LFF drive blank

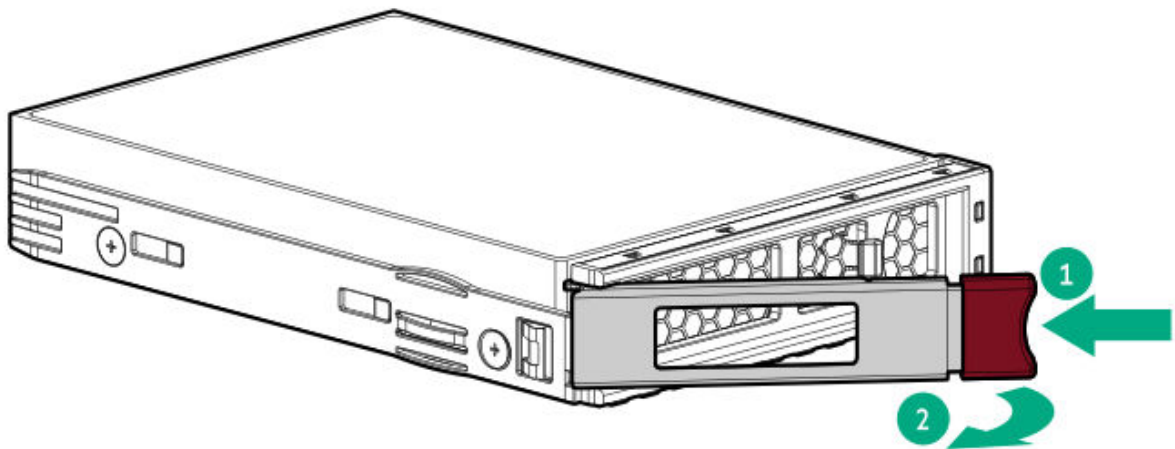


- SFF drive blank

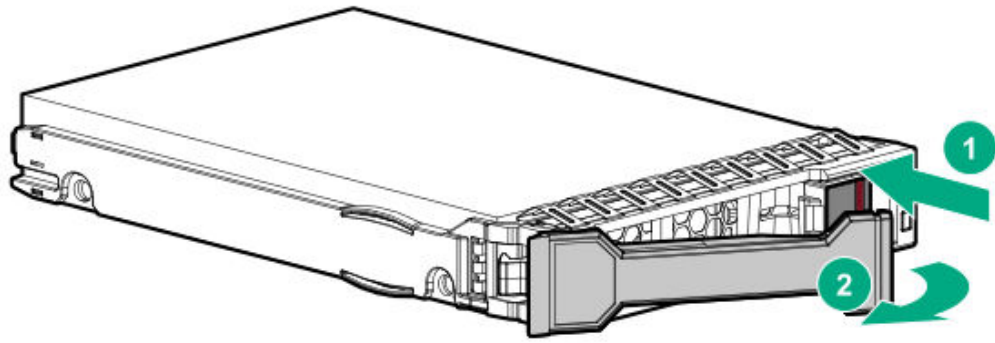


3. Prepare the drive.

- LFF drive

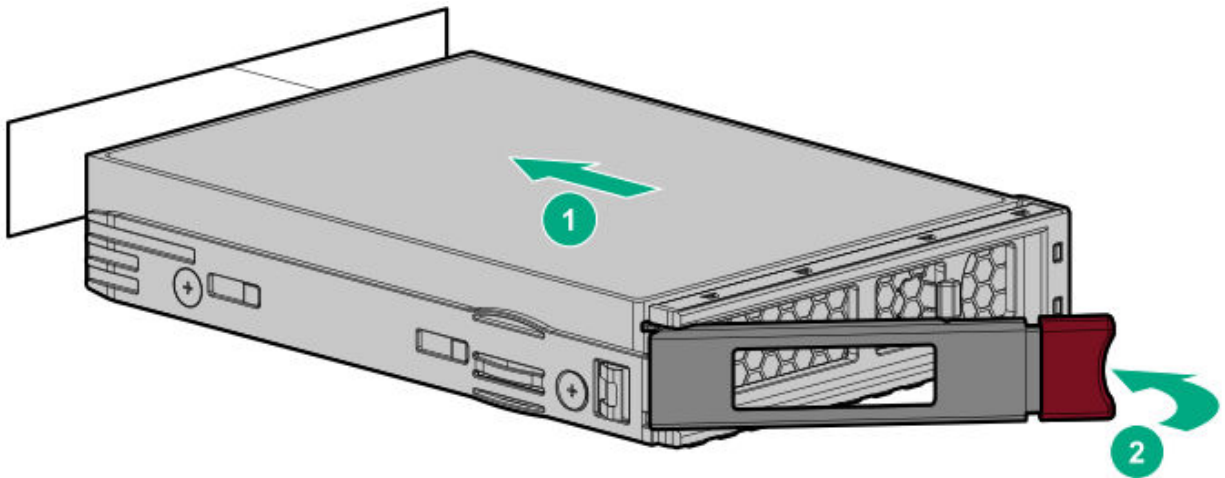


- SFF drive

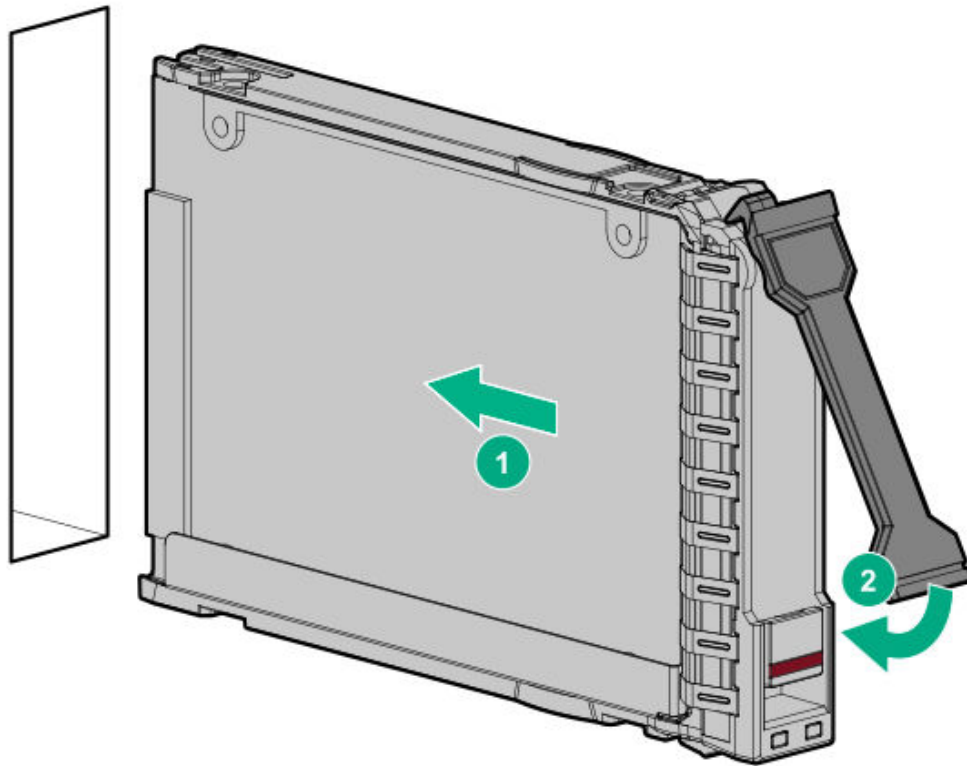


4. Install the drive.

- LFF drive



- SFF drive



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

### **Results**

The installation procedure is complete.

# Installing a hot-plug LFF/SFF drive in the midplane drive cage

## About this task



### 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.



### 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.

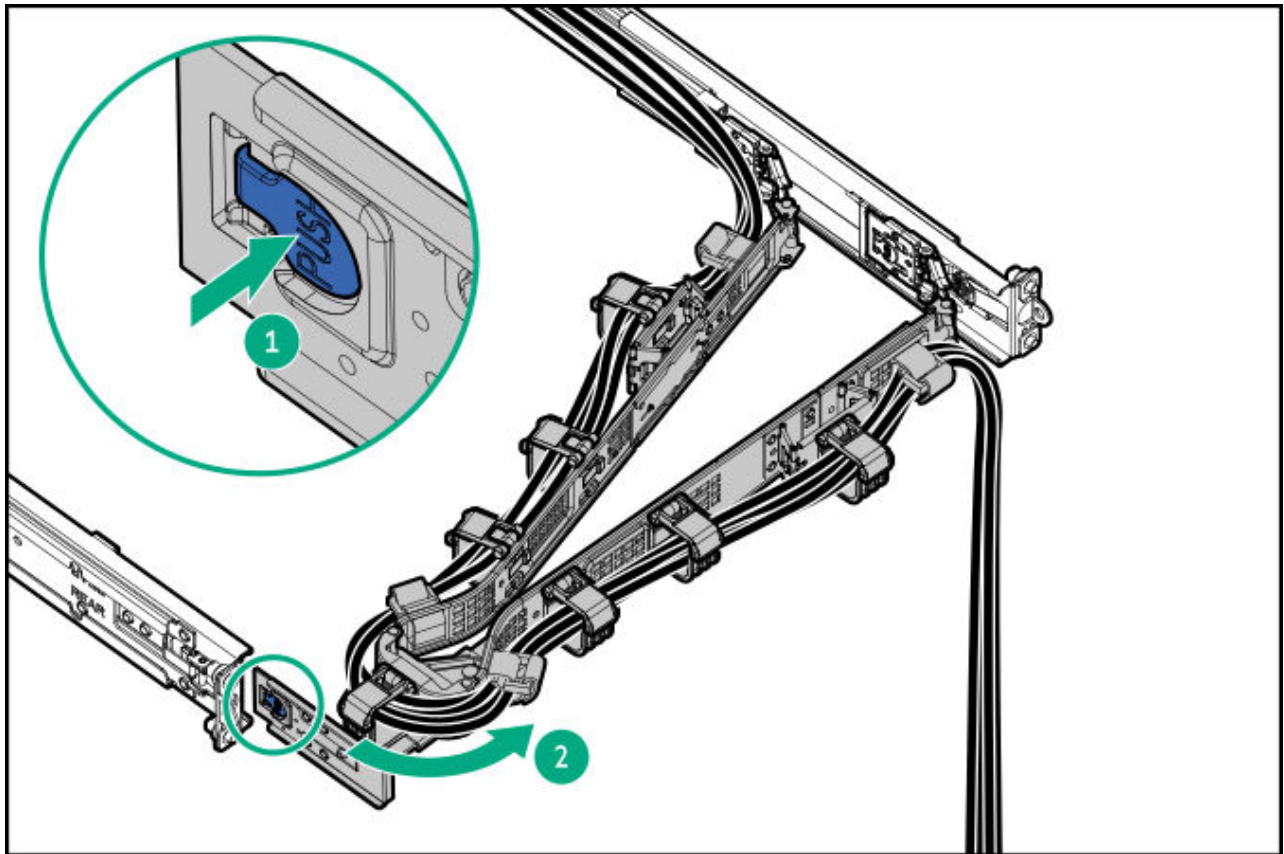


### CAUTION

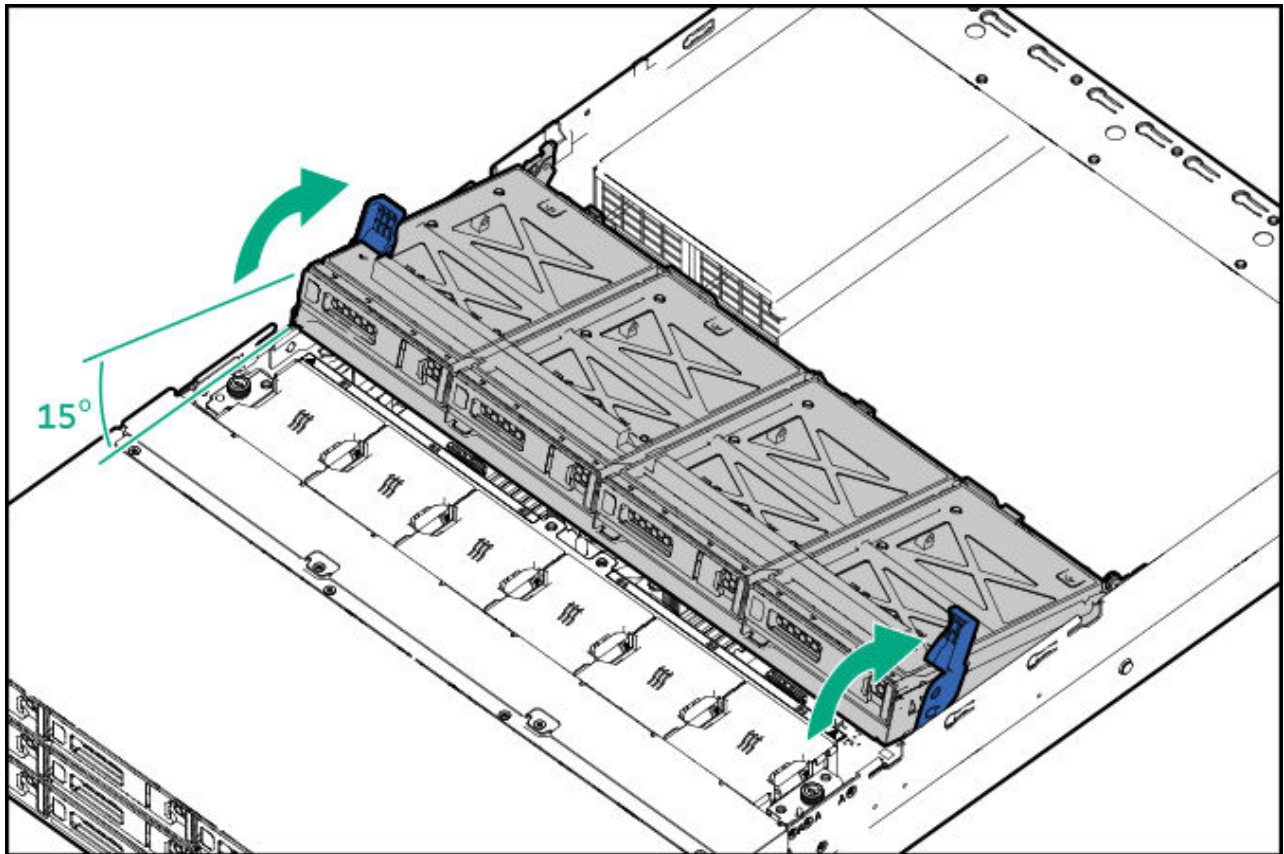
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

## Procedure

1. If installed, open the cable management arm.



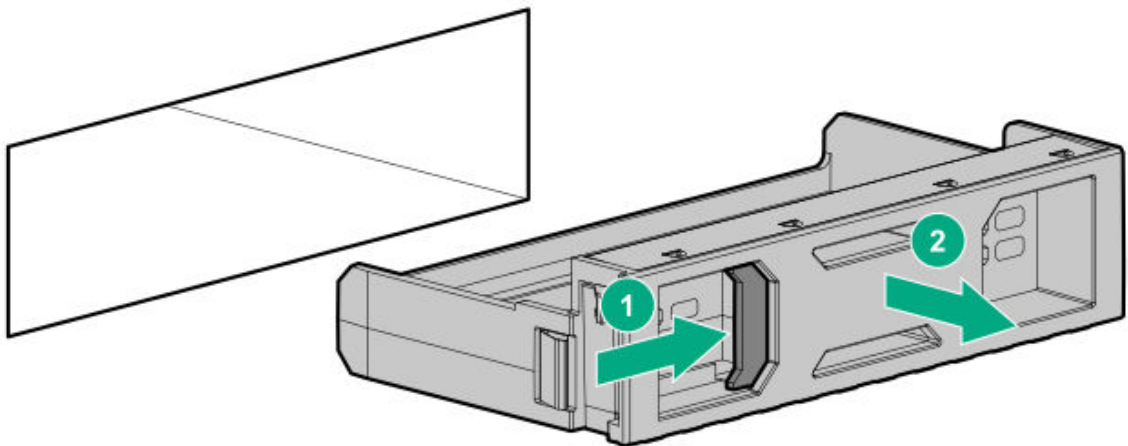
2. Extend the server from the rack.
3. Remove the access panel.
4. Open the drive cage latches to lift the front side of the cage to about 15° angle.



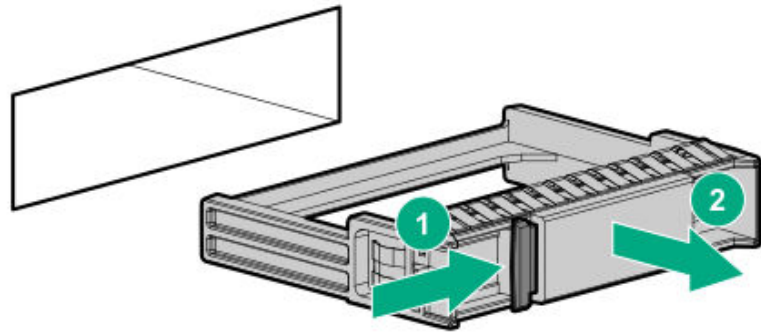
5. Remove the drive blank.

Retain the blank for future use.

- LFF drive blank

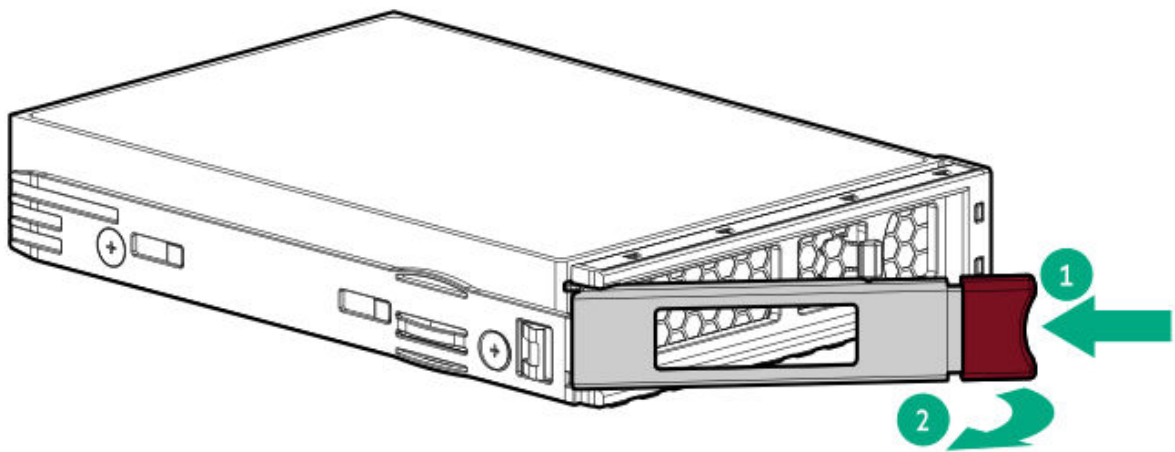


- SFF drive blank

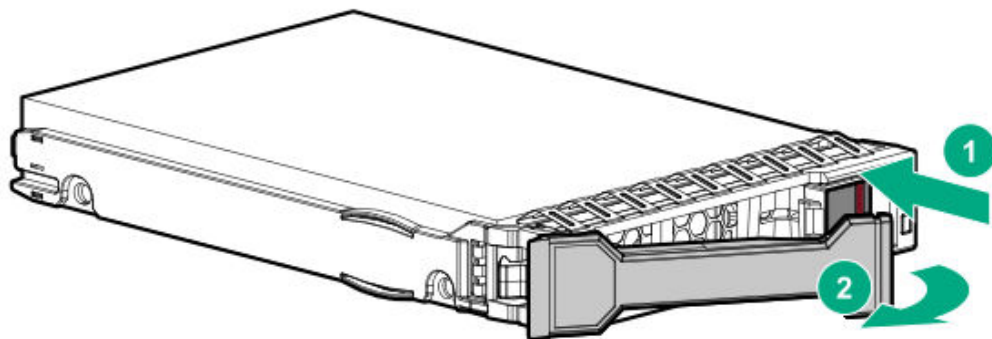


6. Prepare the drive.

- LFF drive

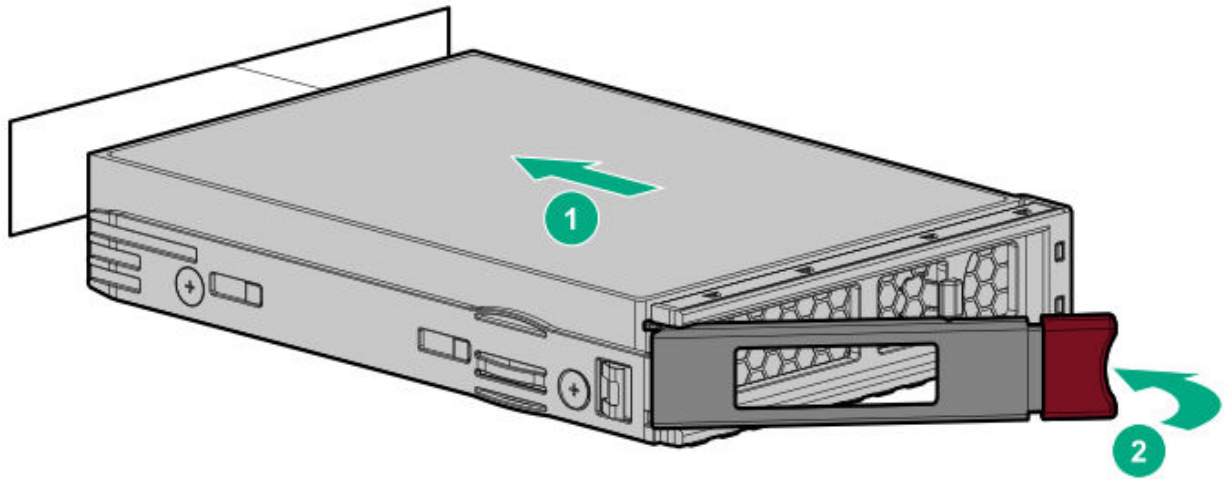


- SFF drive

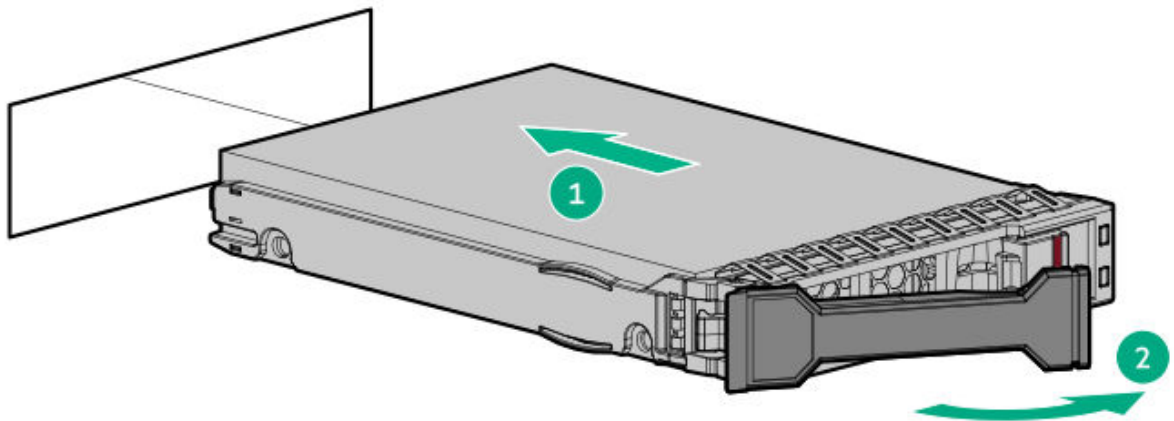


7. Install the drive.

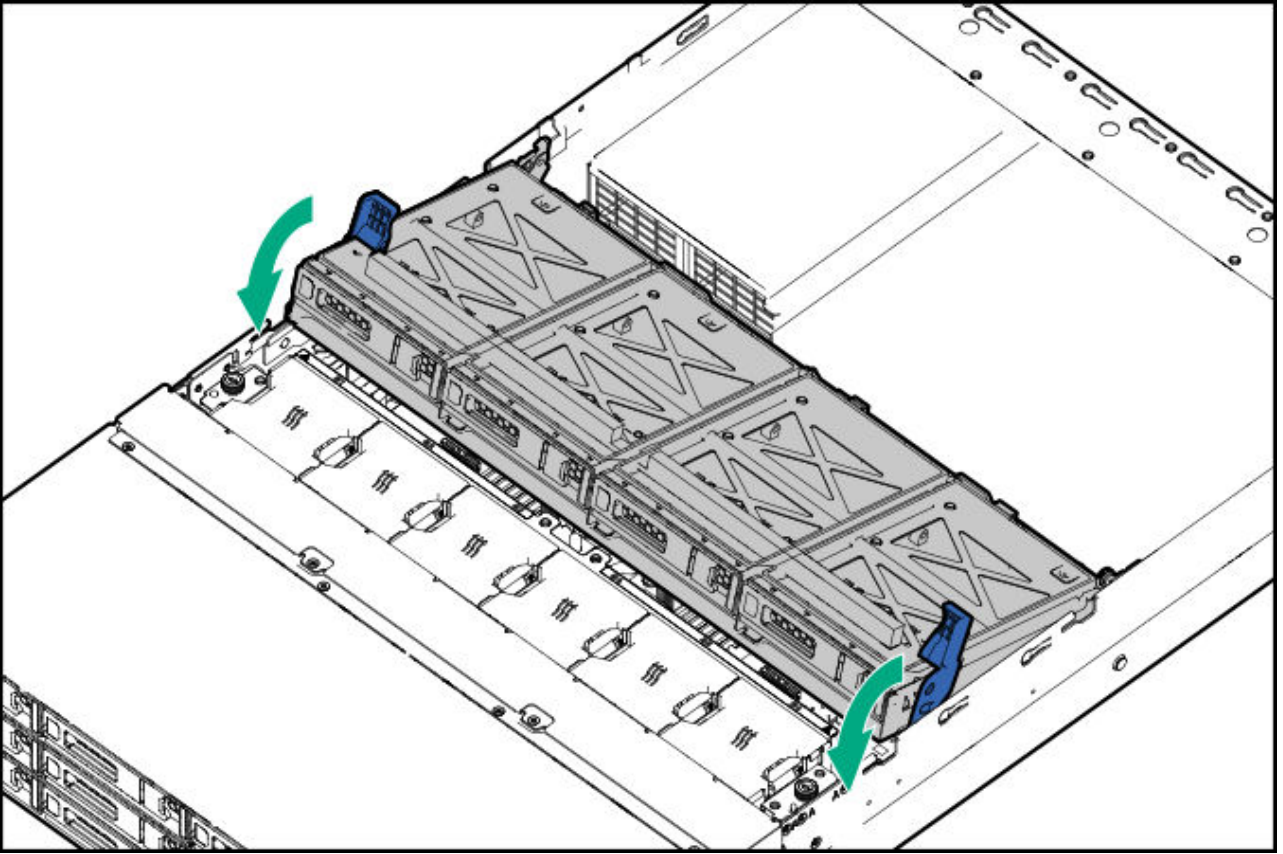
- LFF drive



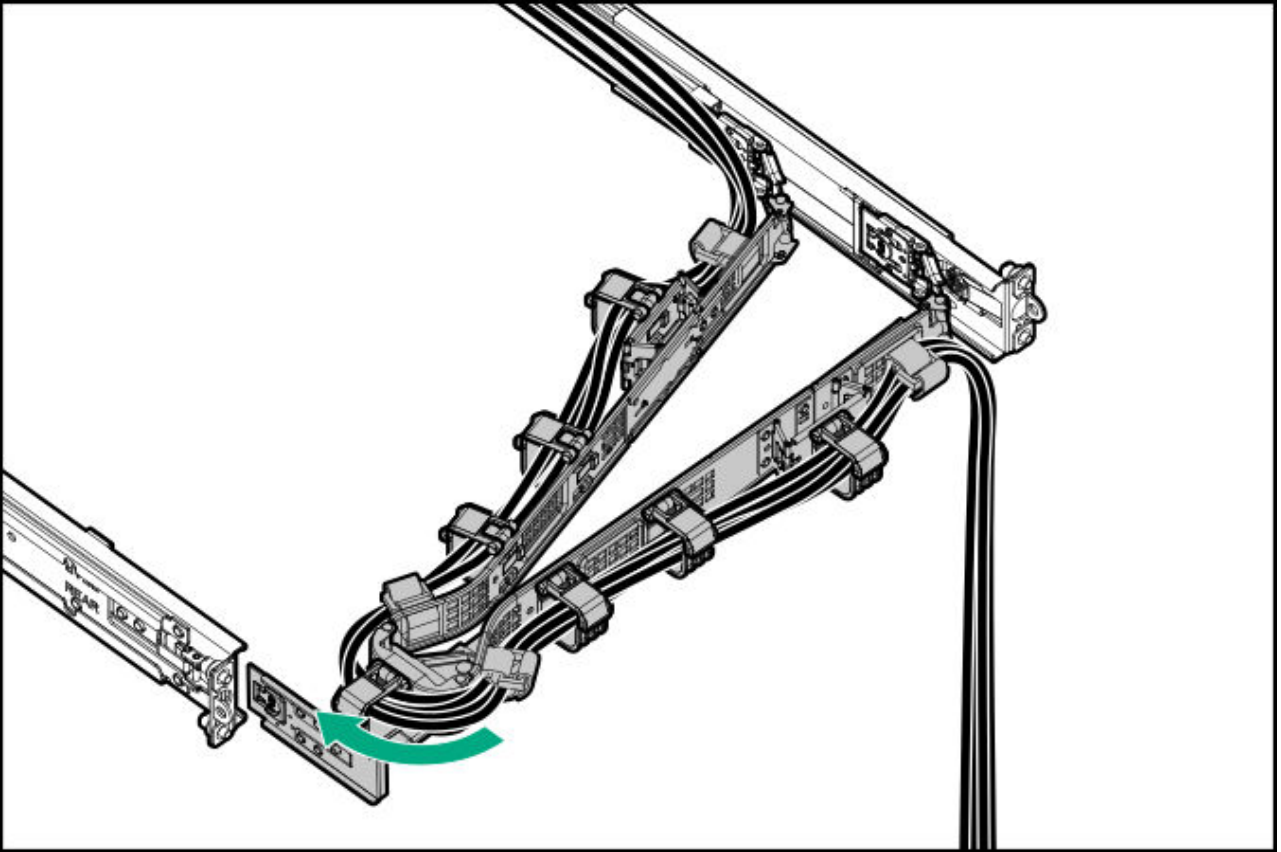
- SFF drive



8. Push down on the latches to lower the midplane drive cage into place.



9. Install the access panel.
0. Install the server into the rack.
1. If installed, close the cable management arm.



- .2. [Determine the status of the drive from the drive LED definitions.](#)
- .3. To configure drive arrays, see the [relevant storage controller guide.](#)

### **Results**

The installation procedure is complete.

# Installing an E3.S 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.



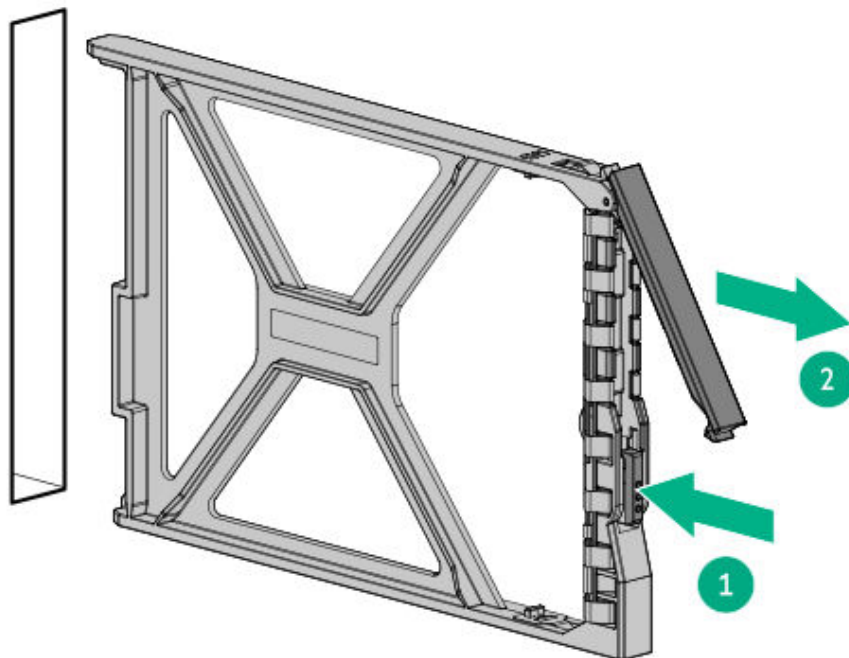
### CAUTION

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

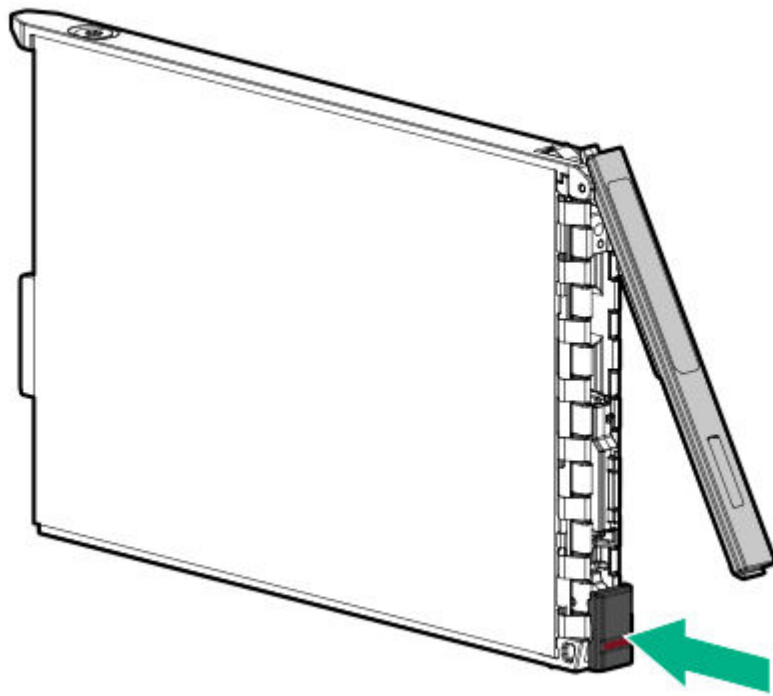
## Procedure

1. If installed, remove the front bezel.
2. Observe the drive LED status and determine if the drive can be removed.
3. Remove the drive blank.

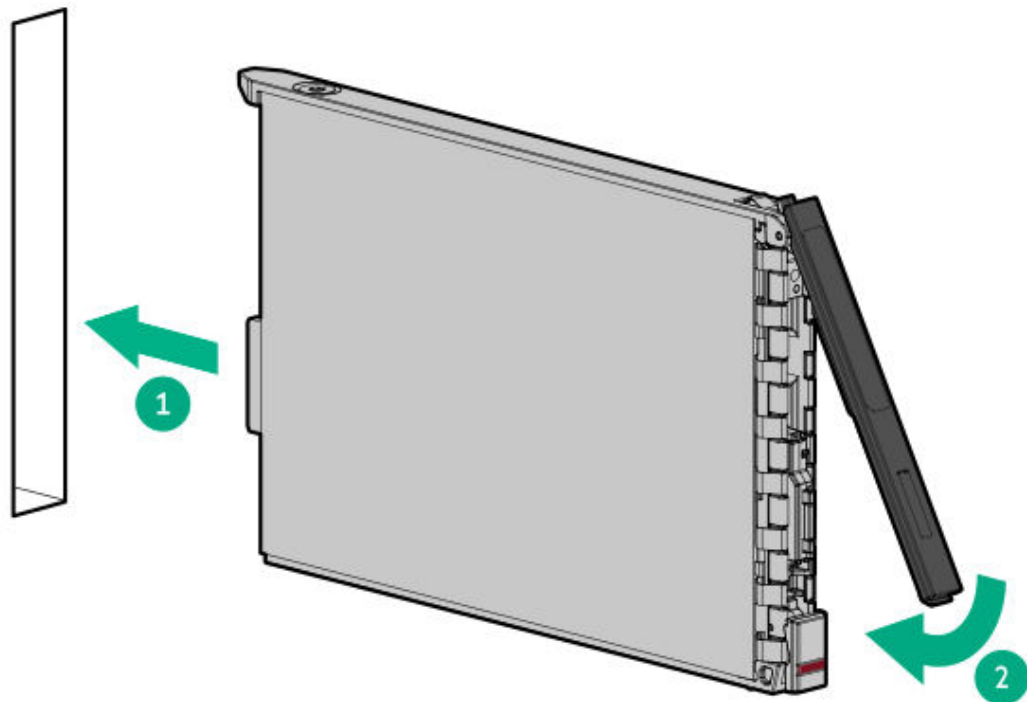
Retain the blank for future use.



4. Prepare the drive.



5. Install the drive.



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

## Results

The installation procedure is complete.

# Upgrading from 8 LFF to 12 LFF drive configuration

## Prerequisites

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

- 12 LFF upgrade backplane option kit (P57114-B21)
- T-15 Torx screwdriver
- Spudger or any small prying tool

## 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.



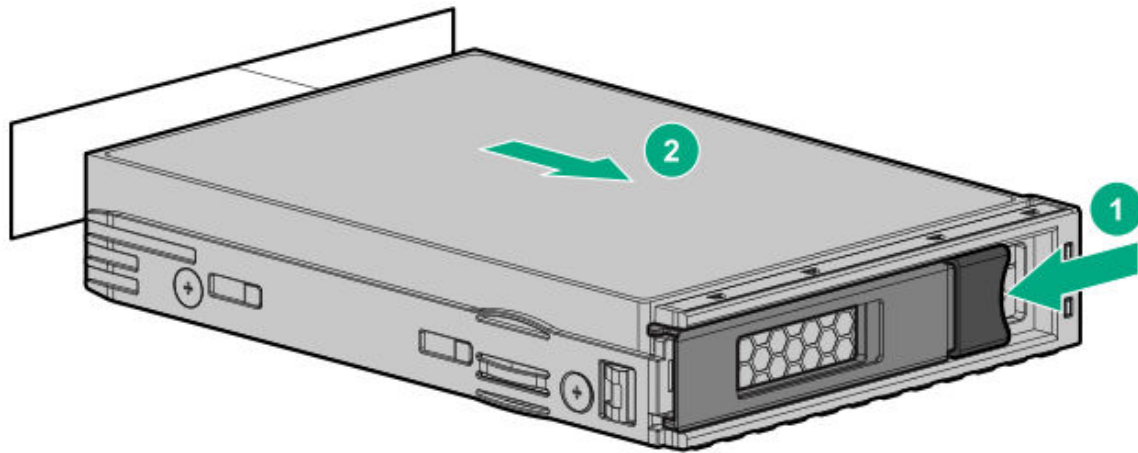
### CAUTION

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

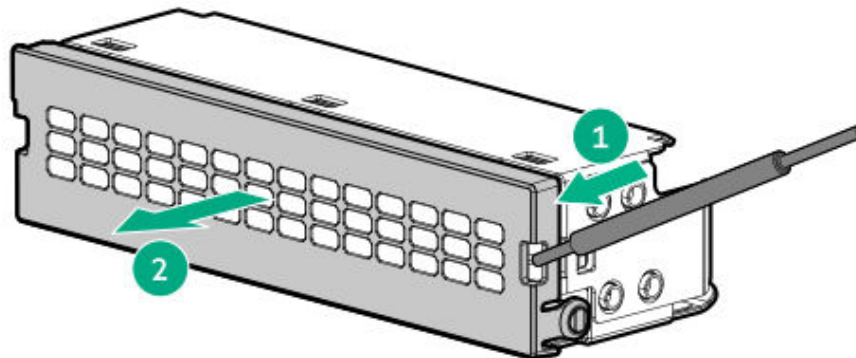
## Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Remove the drive:
  - a. Press the latch to open the release lever.

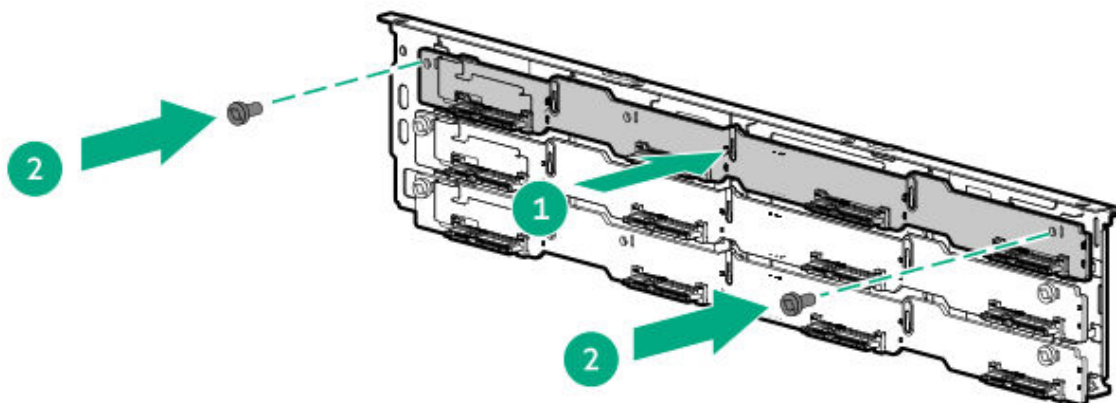
- b. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



4. Power down the server.
5. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
6. Disconnect all peripheral cables from the server.
7. Remove the server from the rack.
8. Place the server on a flat, level work surface.
9. Use a plastic spudger to pry one side of the blank from the chassis.



- .0. Remove the access panel.
- .1. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
- .2. Remove the fan cage.
- .3. Remove the midwall bracket.
- .4. Disconnect the drive cables from the drive backplanes.
- .5. Remove the drive backplane bracket.
- .6. Install the 4 LFF drive backplane:
  - a. Install the drive backplane on the drive backplane bracket.
  - b. Install the backplane screws.



- .7. Install the drive backplane bracket.
- .8. Connect the drive cables to the drive backplanes:
  - Drive power cables
  - Storage controller cables
- .9. Install the midwall bracket
- .10. Install the fan cage.
- .11. Do one of the following:
  - Install the air baffle.

- [Install the midplane drive cage.](#)
- !2. [Install the access panel.](#)
  - !3. [Install the server into the rack.](#)
  - !4. [Install the additional LFF drives.](#)
  - !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.](#)
  - !0. [Determine the status of the drive from the drive LED definitions.](#)
  - !1. To configure drive arrays, see the [relevant storage controller guide.](#)

## Results

The installation procedure is complete.

## Universal media bay options

In either LFF or SFF drive configuration, the universal media bay is populated in Box 1.

### Subtopics

[\*\*Installing the universal media bay in the LFF chassis\*\*](#)

[\*\*Installing the universal media bay in the SFF chassis\*\*](#)

## Installing the universal media bay in the LFF chassis

### Prerequisites

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

## About this task



### CAUTION

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



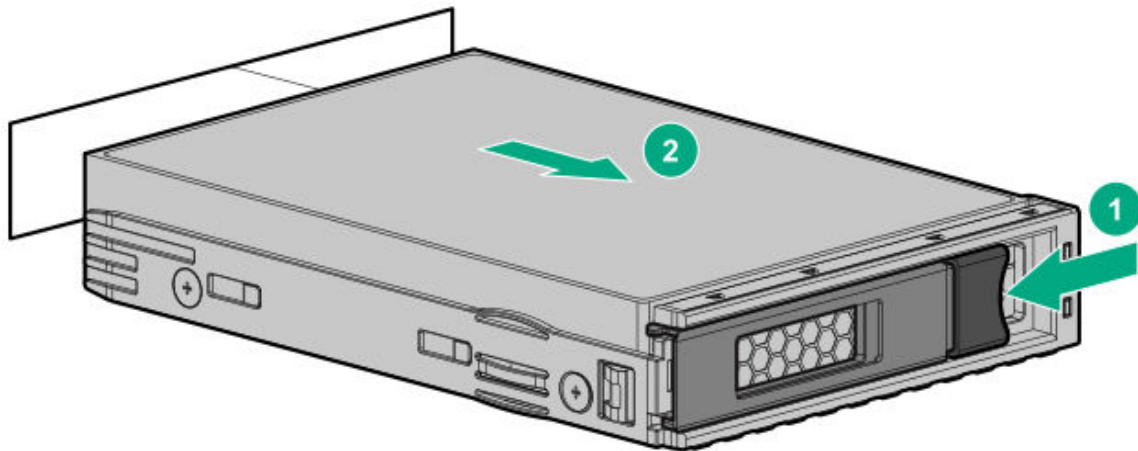
### CAUTION

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

The LFF chassis supports the universal media bay option with an optical drive bay and DisplayPort 1.1a.

## Procedure

1. Back up all server data.
2. If installed, remove the front bezel.
3. Remove the drive:
  - a. Press the latch to open the release lever.
  - b. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



4. Power down the server.
5. Remove all power:
  - a. Disconnect each power cord from the power source.

- .5. b. Disconnect each power cord from the server.
6. Disconnect all peripheral cables from the server.
7. Remove the server from the rack.
8. Place the server on a flat, level work surface.
9. Remove the access panel.
- .0. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
- .1. Remove the fan cage.
- .2. Remove the midwall bracket.
- .3. Disconnect the drive cables from the drive backplanes.
- .4. Remove the drive backplane bracket.

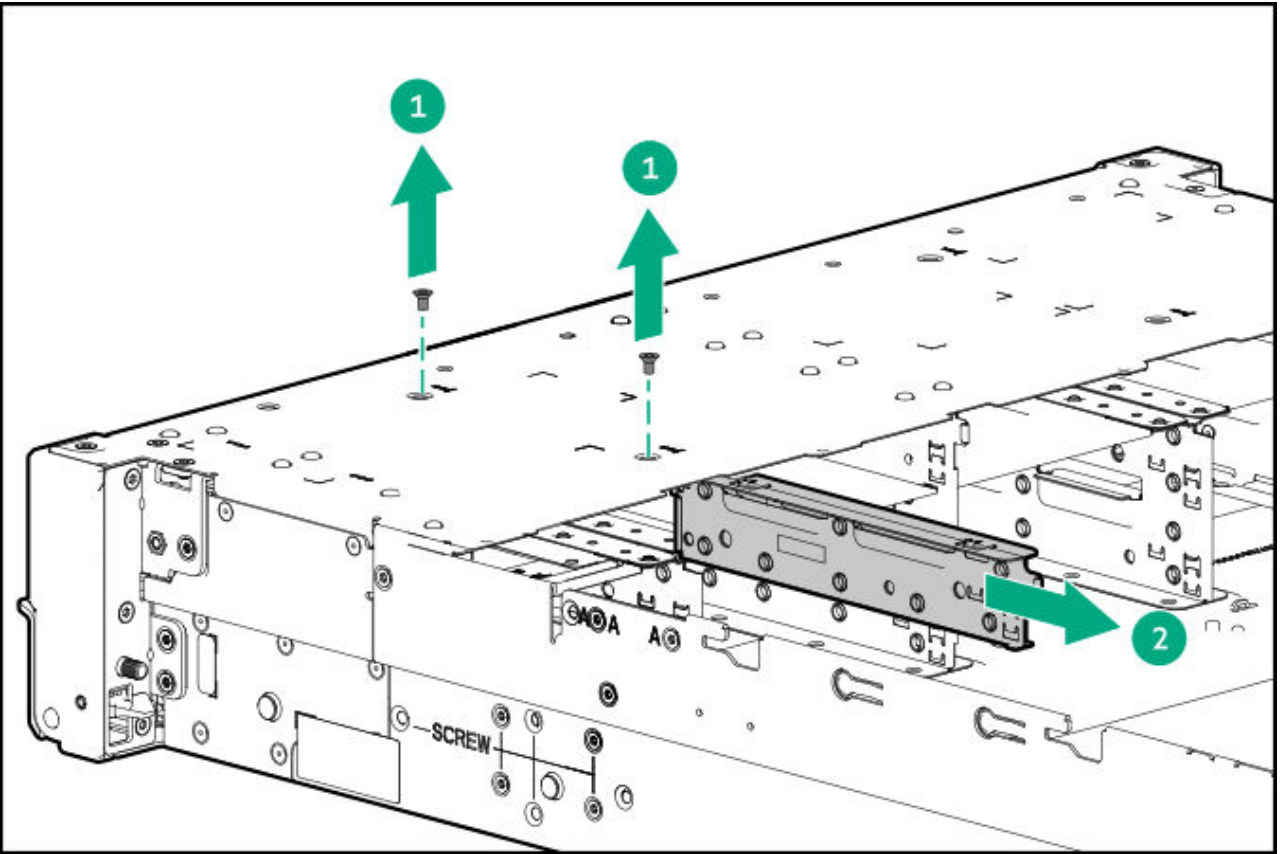


**IMPORTANT**

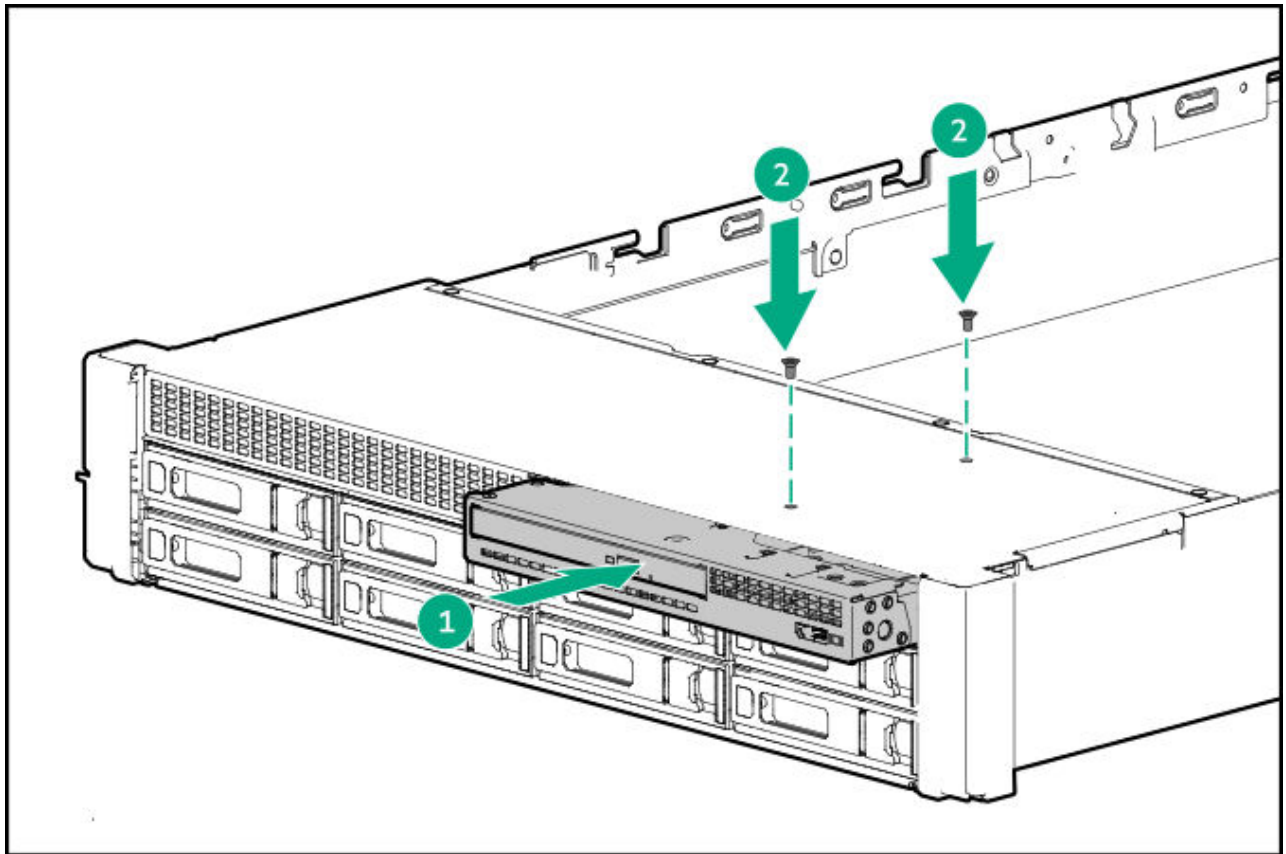
Retain the removed partitions to revert to the 12 LFF drive configuration.

Remove the right partition:

- a. Remove the partition screws.
- b. Remove the partition.



- .6. (Optional) Install the optical drive into the universal media bay.
- .7. Install the universal media bay:
  - a. Install the universal media bay in the server.
  - b. Install the universal media bay screws.



- .8. [Connect the DisplayPort cable to the system board.](#)
- .9. [Install the drive backplane bracket.](#)
- !0. Connect the drive cables to the drive backplanes:
  - [Drive power cables](#)
  - [Storage controller cables](#)
- !1. [Install the midwall bracket](#)
- !2. [Install the fan cage.](#)
- !3. Do one of the following:
  - [Install the air baffle.](#)
  - [Install the midplane drive cage.](#)
- !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 the universal media bay in the SFF chassis

## 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](#).



### CAUTION

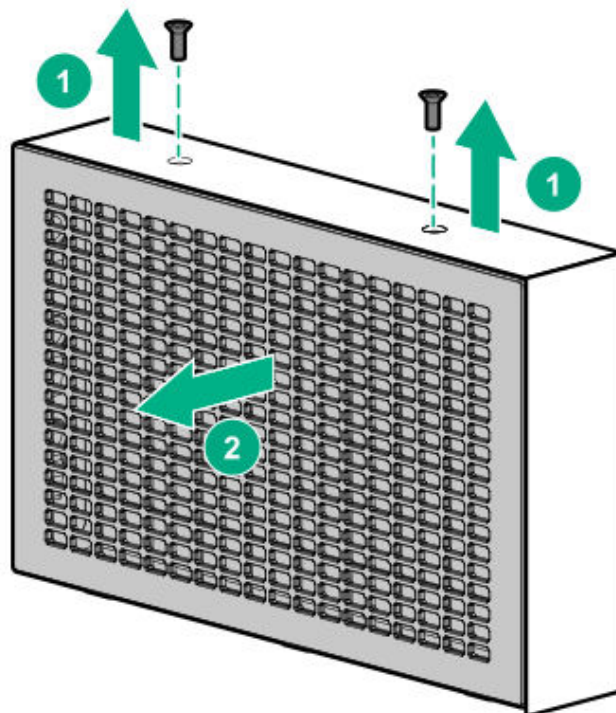
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

The SFF chassis supports the universal media bay option with an optical drive bay, one USB 2.0 port, one USB 3.2 Gen 1 port, DisplayPort 1.1a, and front 2 SFF stacked drive cage.

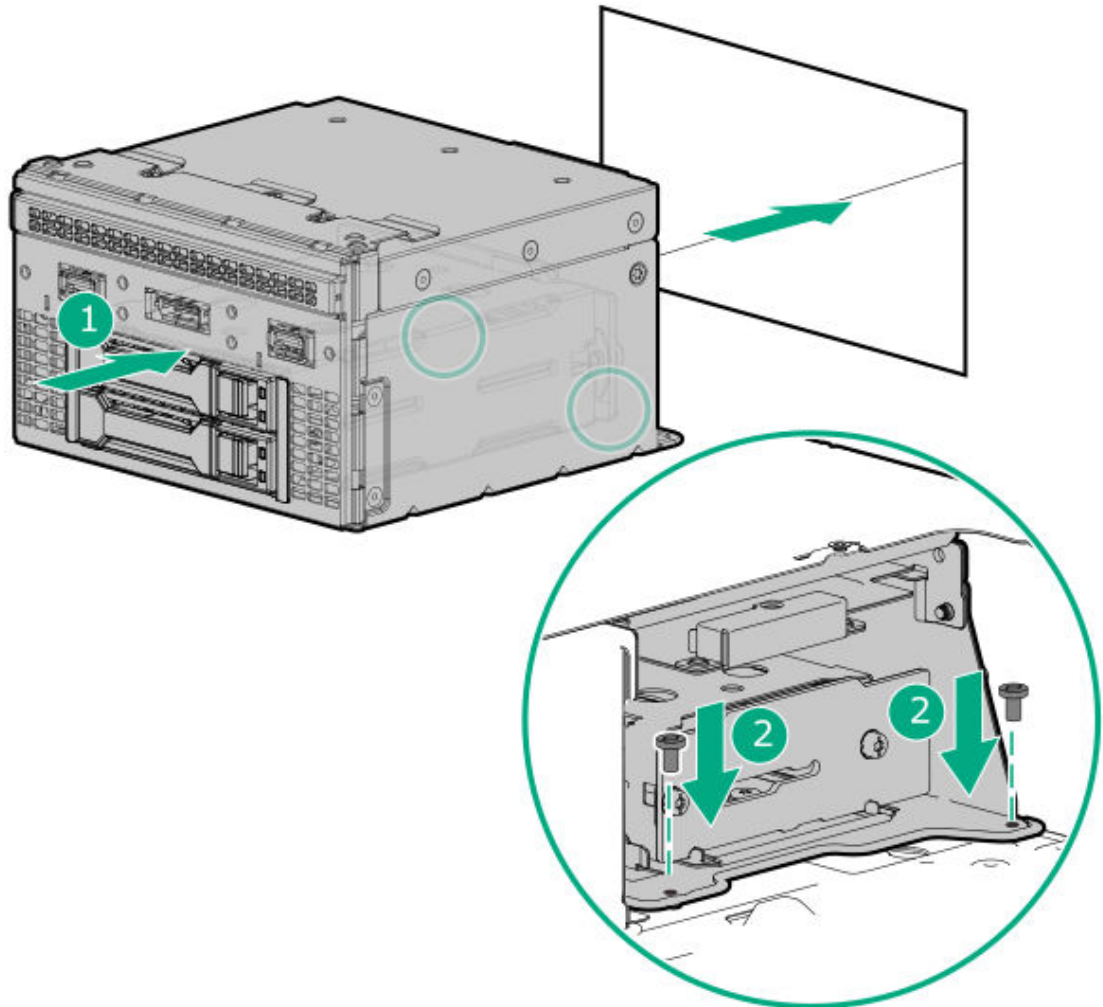
## Procedure

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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
- .0. Remove the fan cage.
- .1. Remove the midwall bracket.
- .2. (Optional) Install the front 2 SFF stacked drive cage in the universal media bay.
- .3. Remove the drive box blank:
  - a. Remove the drive box blank screws.
  - b. Remove the drive box blank.



- .4. Install the universal media bay:
  - a. Install the universal media bay in the server.
  - b. Install the universal media bay screws.



- .5. Connect the following cables:
  - [USB 2.0 / DisplayPort Y-cable](#)
  - [USB 3.2 Gen 1 port cable](#)
- .6. (Optional) [Install the optical drive.](#)
- .7. [Install the midwall bracket](#)
- .8. [Install the fan cage.](#)
- .9. Do one of the following:

- [Install the air baffle.](#)
- [Install the midplane drive cage.](#)

- !0. [Install the access panel.](#)
- !1. [Install the server into the rack.](#)
- !2. If removed, [install the front bezel.](#)
- !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.

## Drive cage options

### Subtopics

[\*\*Installing the front 2 SFF side-by-side drive cage\*\*](#)

[\*\*Installing the front 2 SFF stacked drive cage\*\*](#)

[\*\*Installing a front 8 SFF drive cage\*\*](#)

[\*\*Installing a E3.S drive cage\*\*](#)

[\*\*Installing the midplane drive cage\*\*](#)

[\*\*Installing the rear 2 SFF stacked drive cage\*\*](#)

## Installing the front 2 SFF side-by-side drive cage

### Prerequisites

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

## About this task

The LFF chassis supports the front 2 SFF side-by-side drive cage option. This drive cage supports SAS, SATA, and U.3 PCIe4 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.

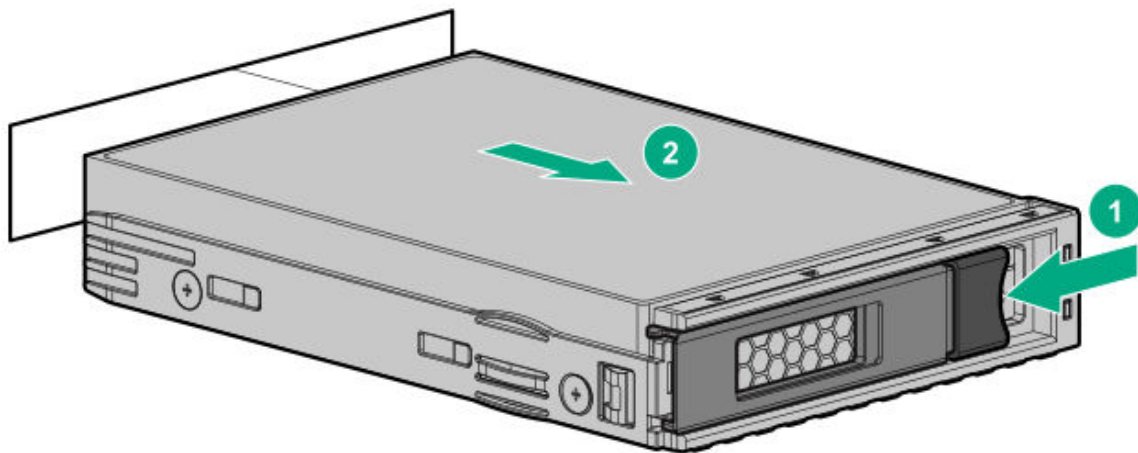


### CAUTION

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

## Procedure

1. If installed, remove the front bezel.
2. Remove the drive:
  - a. Press the latch to open the release lever.
  - b. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
0. Remove the fan cage.
1. Remove the midwall bracket.
2. Disconnect the drive cables from the drive backplanes.
3. Remove the drive backplane bracket.

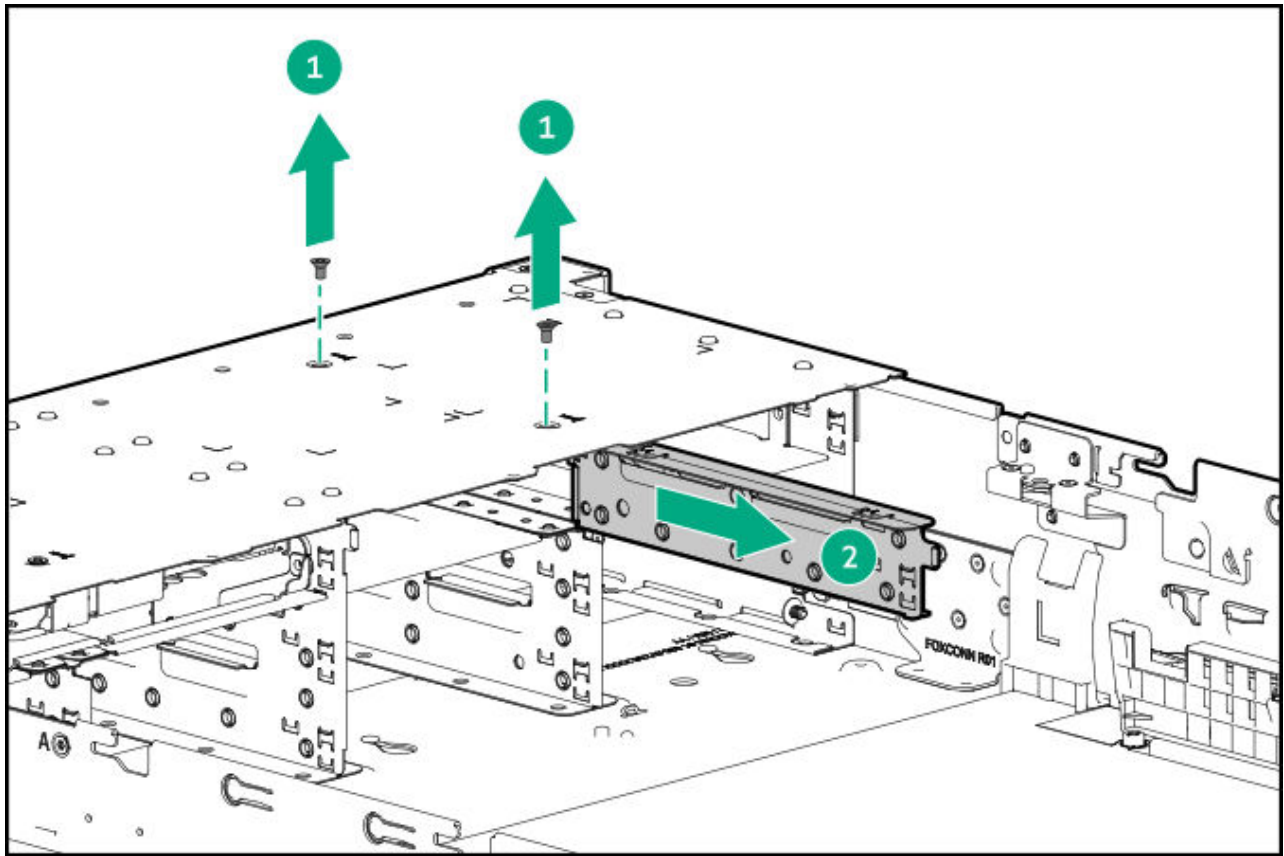


**IMPORTANT**

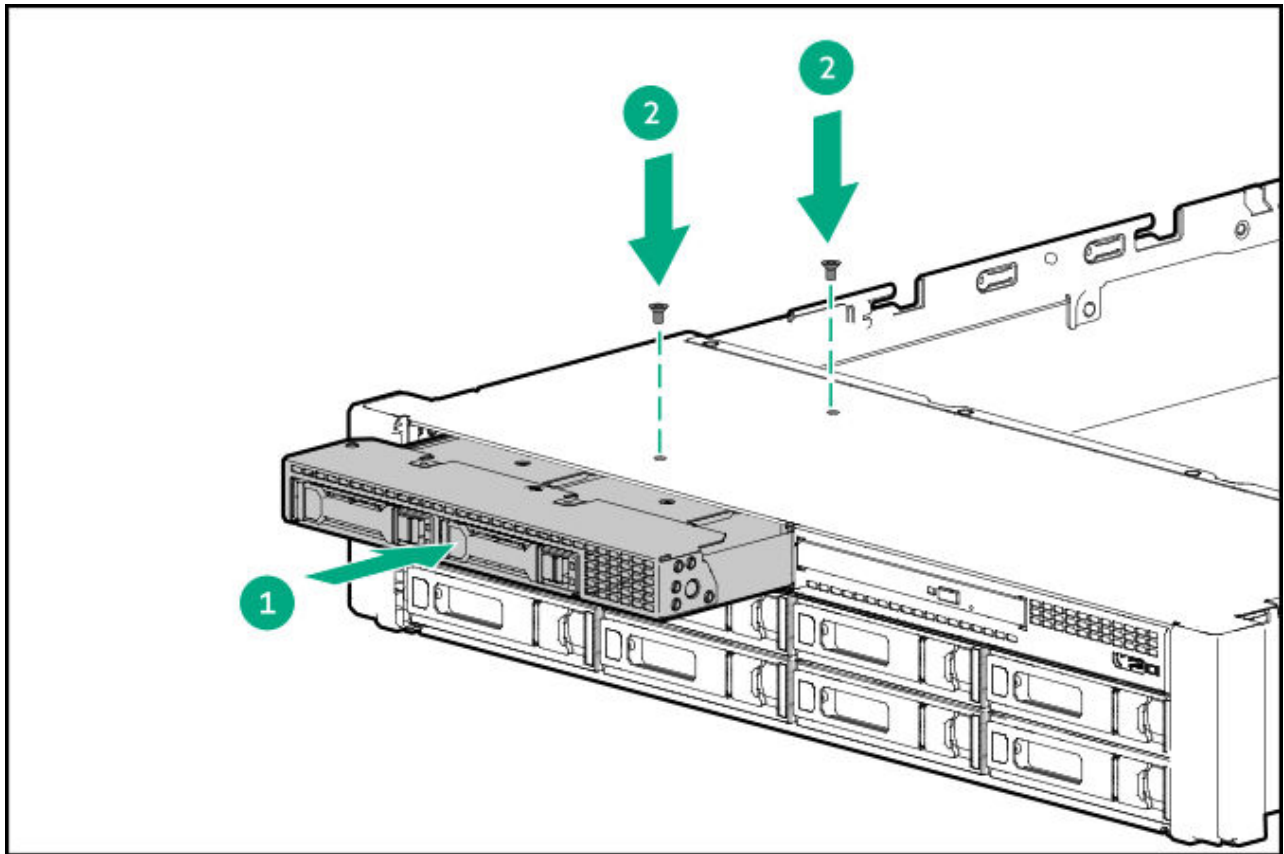
Retain the removed partitions to revert to the 12 LFF drive configuration.

Remove the left partition:

- a. Remove the partition screws.
- b. Remove the partition.



- .5. Install the front 2 SFF side-by-side drive cage:
  - a. Install the front 2 SFF side-by-side drive cage in the server.
  - b. Install the drive cage screws.



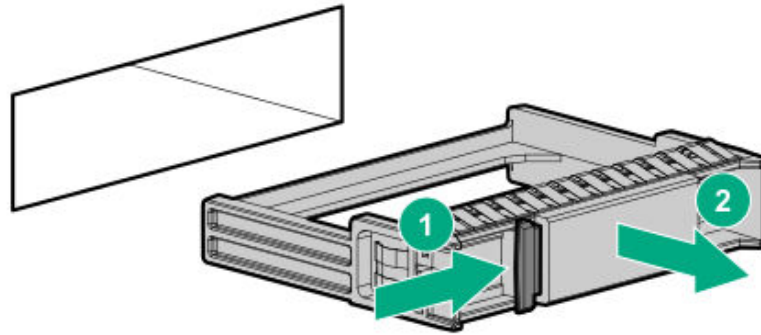
- .6. Install the drive backplane bracket.
- .7. Connect the drive cables to the drive backplanes:
  - Drive power cables
  - Storage controller cables
- .8. Cable the front 2 SFF side-by-side drive:
  - Drive power cable
  - Storage controller cable
- .9. Install the midwall bracket
- .10. Install the fan cage.
- .11. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .12. Install the access panel.

!3. Install the server into the rack.

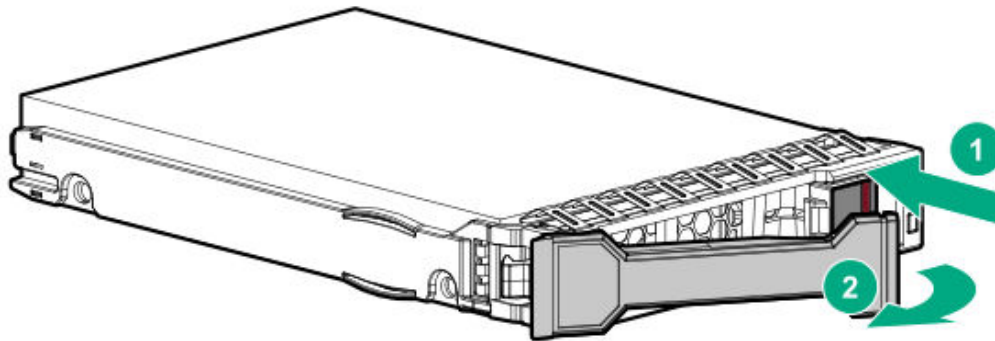
!4. Install the drive:

a. Remove the drive blank.

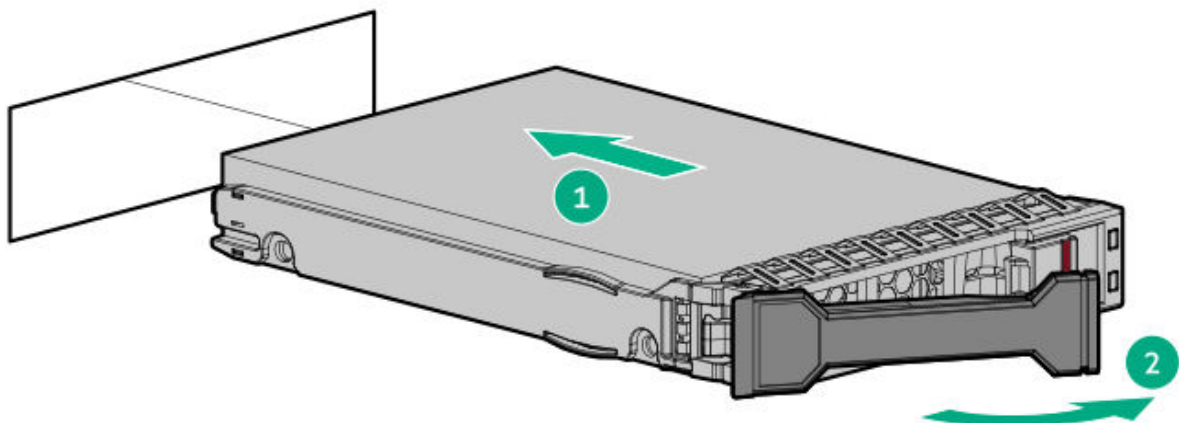
Retain the blank for future use.



b. Prepare the drive.



c. Install the drive.



- !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.

## Results

The installation procedure is complete.

# Installing the front 2 SFF stacked drive cage

## Prerequisites

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

## About this task

The SFF chassis supports the front 2 SFF stacked drive cage option. This drive cage supports SAS, SATA, and U.3 PCIe4 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.



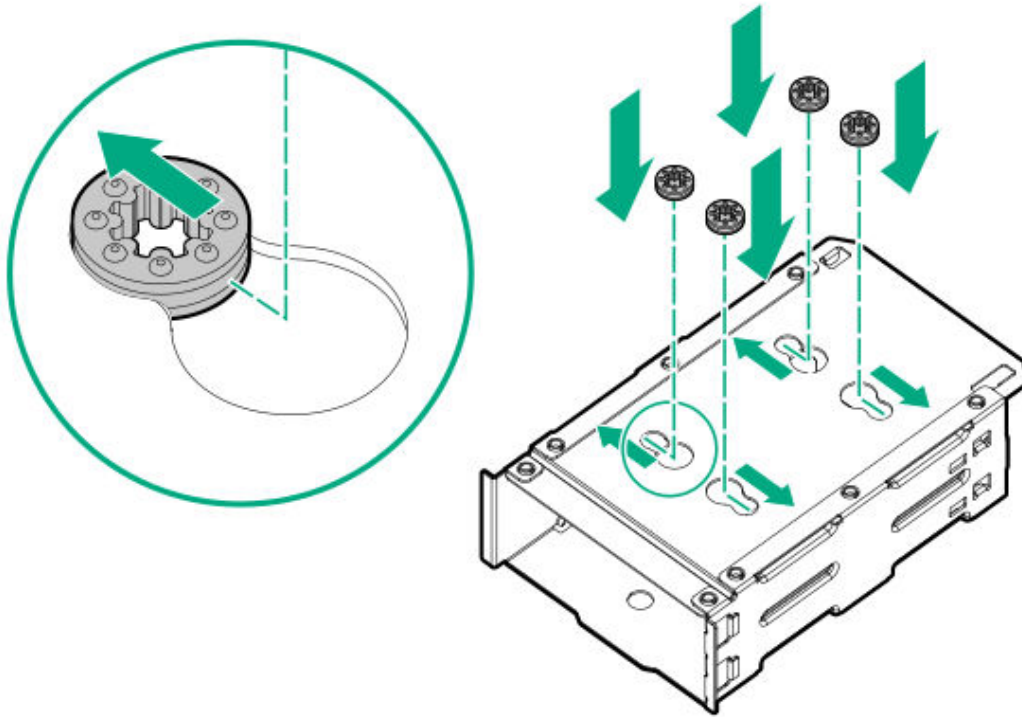
### CAUTION

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

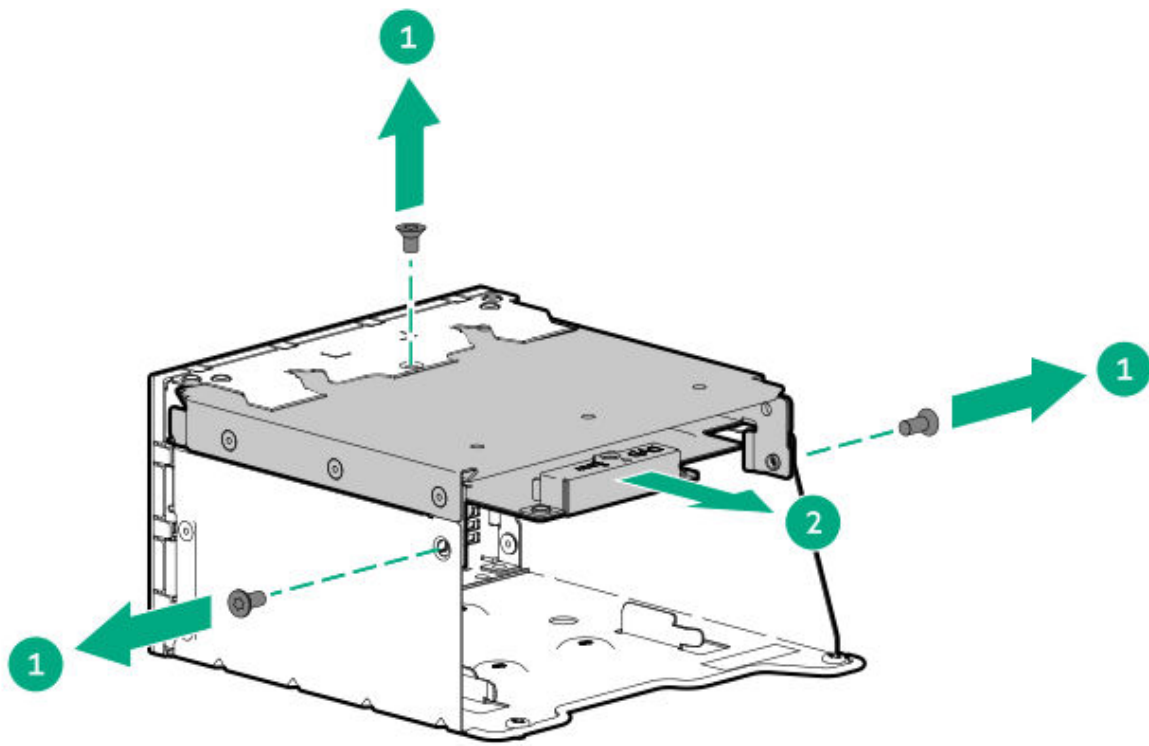
## Procedure

### Installing the front 2 SFF stacked drives in the universal media bay

1. Install the grommets onto the underside of the stacked drive cage.

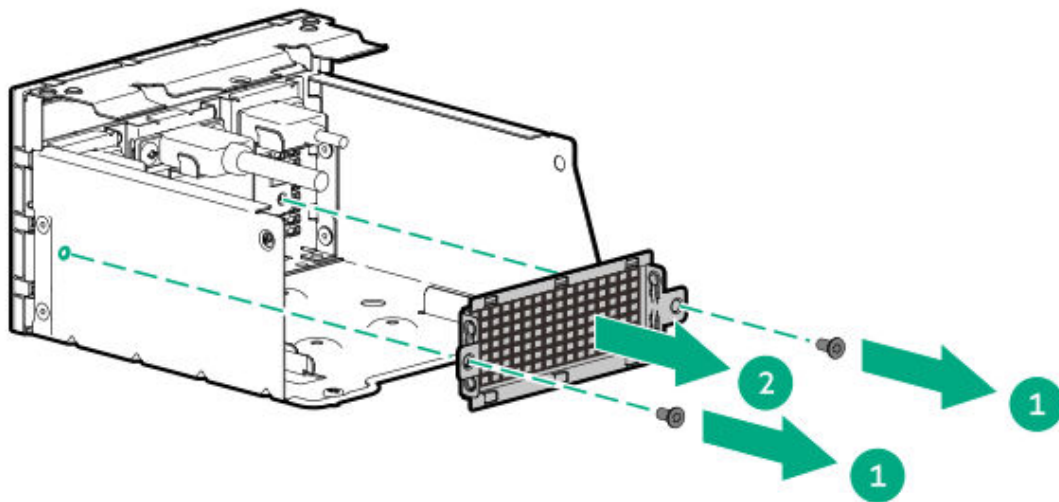


2. Remove the optical drive tray:
  - a. Remove the optical drive tray screws.
  - b. Remove the optical drive tray from universal media bay.



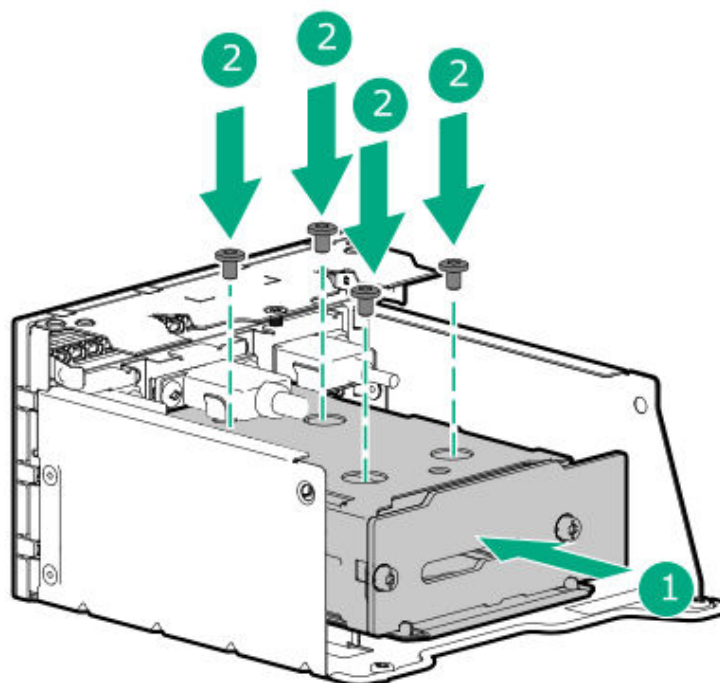
3. Remove the 2 SFF drive blank:

- a. Remove the blank screws.
- b. Remove the drive blank from universal media bay.

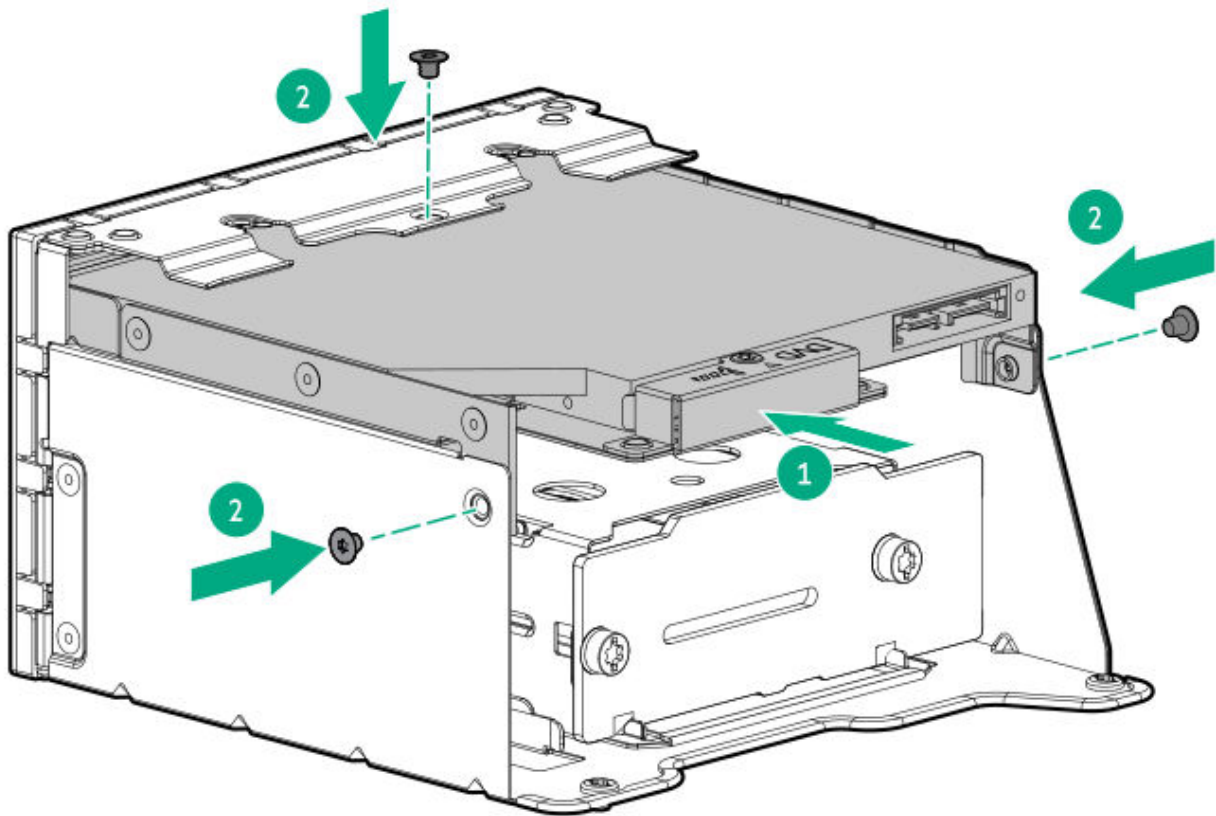


4. Install the front 2 SFF stacked drive cage:

- a. Install the 2 SFF stacked drive cage in the universal media bay.
- b. Install the stacked drive cage screws.



5. Install the optical drive tray:
  - a. Install the optical drive bay on the universal media bay.
  - b. Install the optical drive bay screws.



### Installing the universal media bay in the server

6. If installed, remove the front bezel.
7. Power down the server.
8. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
9. Disconnect all peripheral cables from the server.
10. Remove the server from the rack.
11. Place the server on a flat, level work surface.
12. Remove the access panel.
13. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
14. Remove the fan cage.

- .5. Remove the midwall bracket.
- .6. Install the universal media bay in the server.
- .7. Cable the front 2 SFF stacked drive:
  - Drive power cable
  - Storage controller cable
- .8. Connect the SFF universal media bay cables to the system board.
- .9. Install the midwall bracket
- !0. Install the fan cage.
- !1. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- !2. Install the access panel.
- !3. Install the server into the rack.
- !4. Install the drives in the front 2 SFF stacked drive cage.
- !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.

## **Results**

The installation procedure is complete.

## **Installing a front 8 SFF drive cage**

### **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

This server supports several front 8 SFF drive cage options with different backplanes.



#### 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.



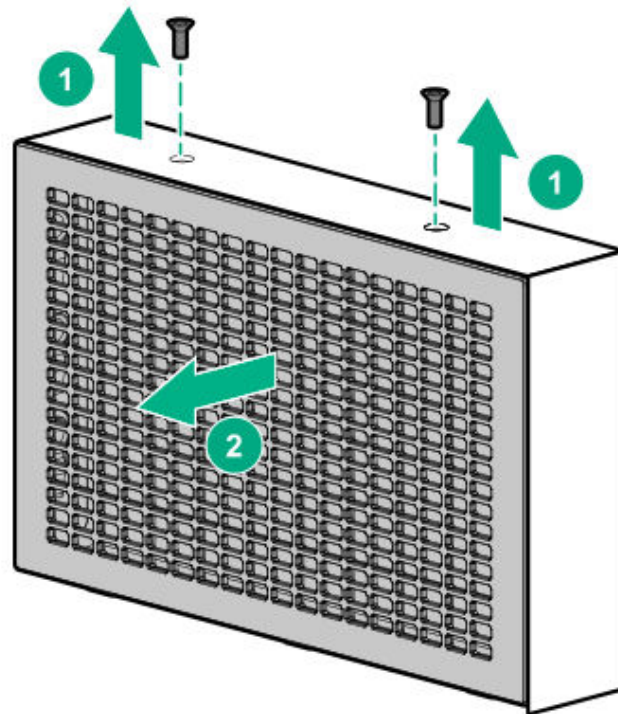
#### CAUTION

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

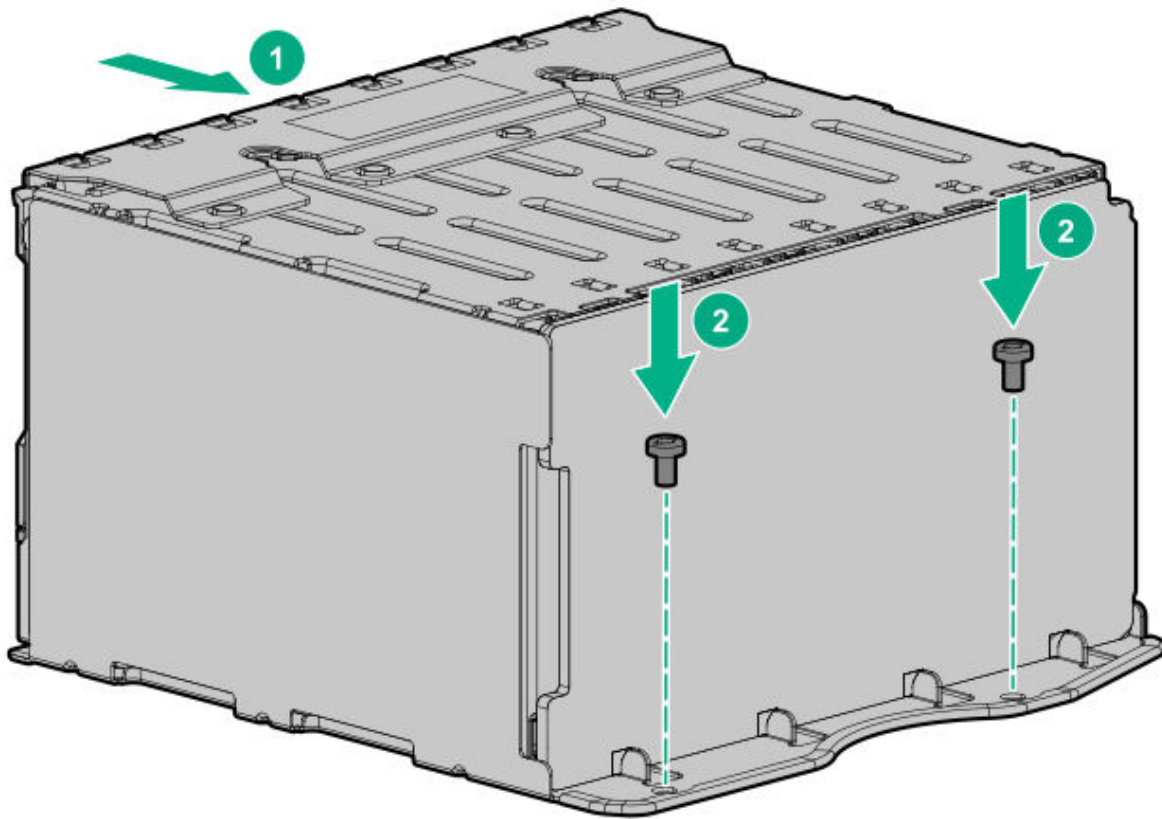
### Procedure

1. 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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
9. Remove the fan cage.
0. Do one of the following:
  - In the SFF / E3.S drive configuration, remove the midwall bracket.
  - In the GPU-optimized configuration, remove the middle cover.
- .1. Remove the drive box blank:

- a. Remove the drive box blank screws.
- b. Remove the drive box blank.



- .2. Install the 8 SFF drive cage:
  - a. Install the 8 SFF drive cage in the server.
  - b. Install the drive cage screws.



- .3. Cable the front 8 SFF drive:
  - [Drive power cable](#)
  - [Storage controller cable](#)
- .4. Do one of the following:
  - [Install the midwall bracket.](#)
  - [Install the middle cover.](#)
- .5. [Install the fan cage.](#)
- .6. Do one of the following:
  - [Install the air baffle.](#)
  - [Install the midplane drive cage.](#)
- .7. [Install the access panel.](#)
- .8. [Install the server into the rack.](#)
- .9. [Install the drives in the 8 SFF drive cage.](#)

- !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.

## Installing a E3.S drive cage

### Prerequisites

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

### About this task



#### CAUTION

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



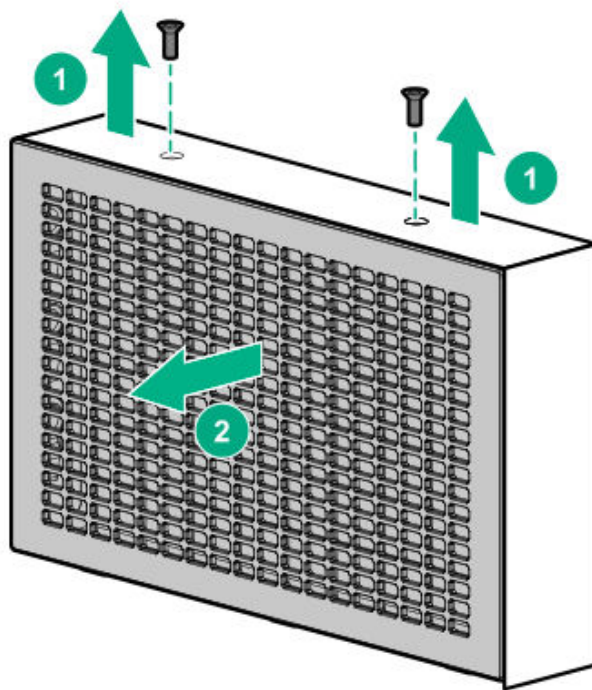
#### CAUTION

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

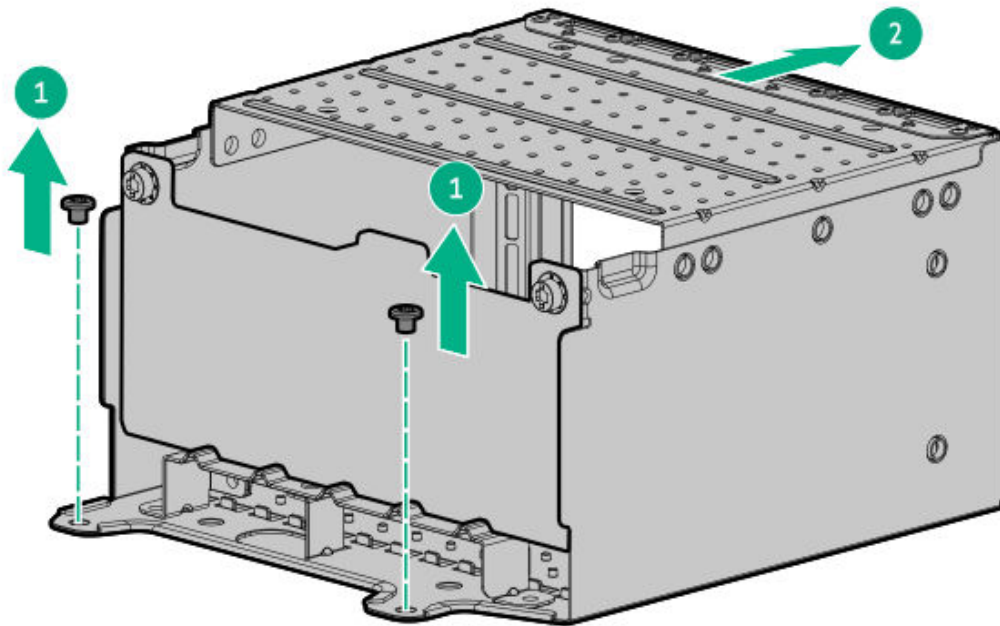
### Procedure

1. If installed, remove the front bezel.
2. Remove all E3.S drive.
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.

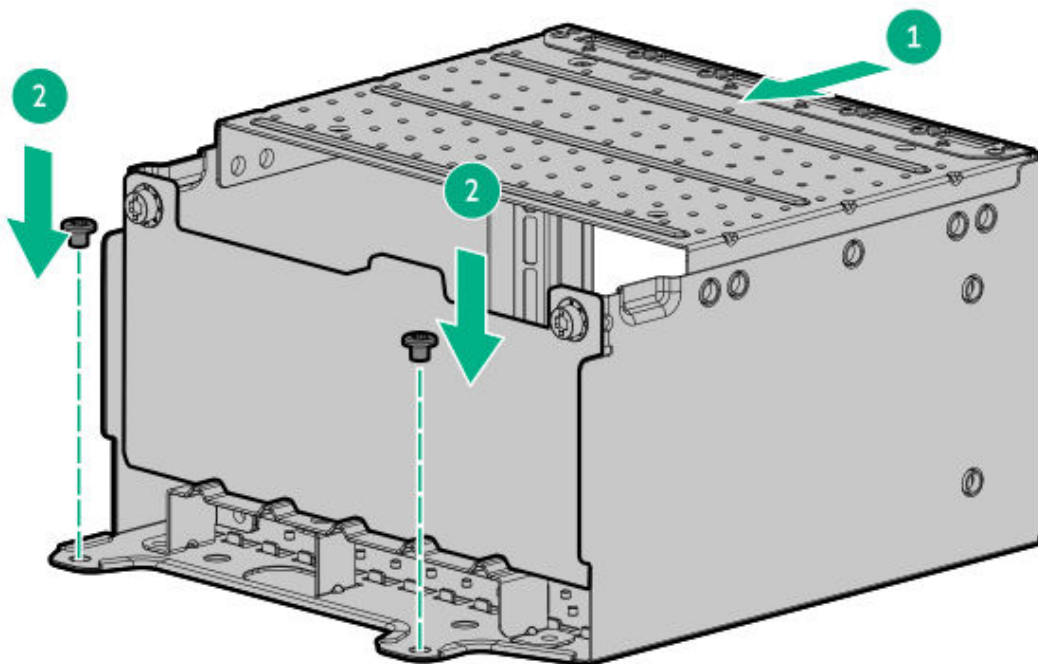
5. Disconnect all peripheral cables from the server.
6. Remove the server from the rack.
7. Place the server on a flat, level work surface.
8. Remove the access panel.
9. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
0. Remove the fan cage.
1. Do one of the following:
  - In the SFF / E3.S drive configuration, remove the midwall bracket.
  - In the GPU-optimized configuration, remove the middle cover.
2. Disconnect all cables from the drive backplanes.
3. Do one of the following:
  - Remove the drive box blank.



- Remove the existing E3.S drive cage.



.4. Install the E3.S drive cages.



.5. Cable the E3.S drive:

- [Drive power cable](#)

- Storage controller cable
- .6. Do one of the following:
    - Install the midwall bracket.
    - Install the middle cover.
  - .7. Install the fan cage.
  - .8. Do one of the following:
    - Install the air baffle.
    - Install the midplane drive cage.
  - .9. Install the access panel.
  - .10. Install the server into the rack.
  - .11. Connect all peripheral cables to the server.
  - .12. Connect each power cord to the server.
  - .13. Connect each power cord to the power source.
  - .14. Power up the server.
  - .15. Install the removed E3.S drives.
  - .16. If removed, install the front bezel.

## Results

The installation procedure is complete.

## Installing the midplane drive cage

### Prerequisites

- To maintain proper system cooling when a midplane drive cage is installed, the high performance, dual-rotor fans are required.
- Before you perform this procedure, make sure that you have the following items available:
  - Midplane cage heatsink (PN: P51295-001)
  - The following tools are required for installing the midplane cage heatsink:

- T-20 Torx screwdriver or a bit driver with T-20 Torx bit
- Alcohol wipe

### About this task

This server supports either a 4 LFF or an 8 SFF midplane cage option. The drive form factor on the front and midplane drive cages should match: either all LFF or all SFF drives. The installation procedure for both the LFF and SFF midplane drive cages is the same.

- The 4 LFF midplane drive cage supports SAS and SATA drives.
- The 8 SFF midplane drive cage supports SAS, SATA, and U.3 PCIe4 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.



#### CAUTION

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

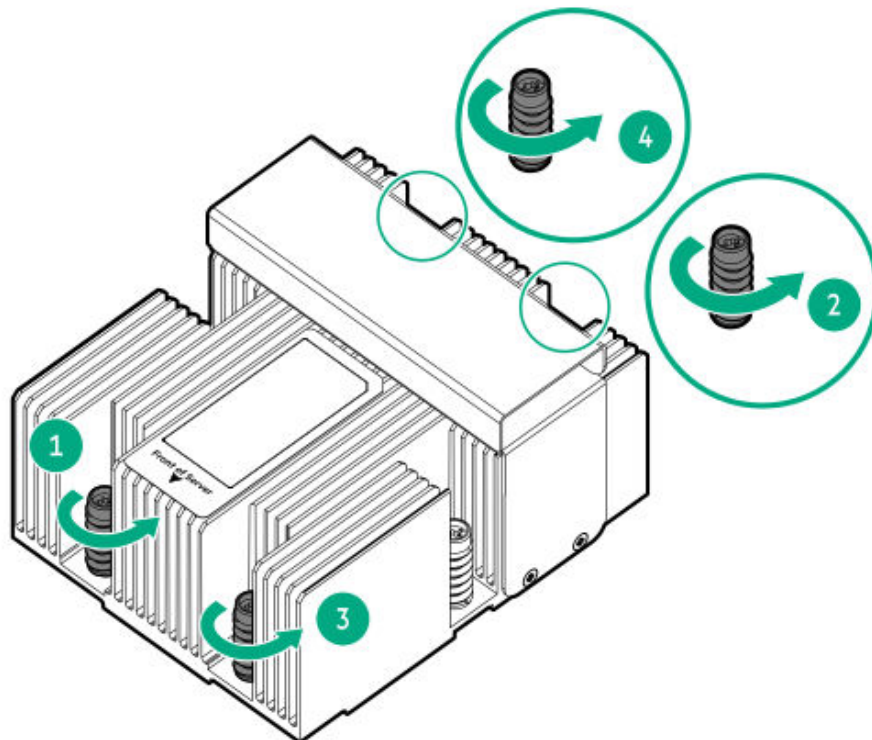
### Procedure

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

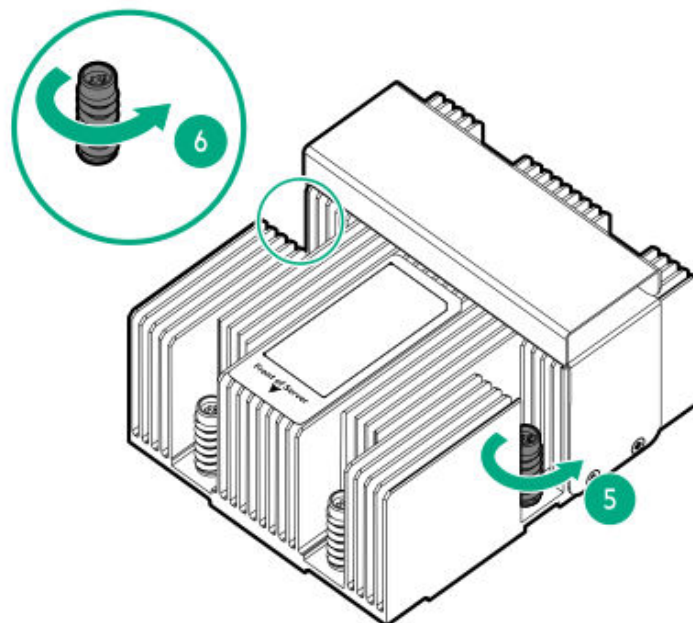
### Installing the midplane cage heatsink

8. Allow all internal system components to cool before continuing.
9. Remove the standard heatsink:
  - a. Review the heatsink screw numbering on the heatsink label.

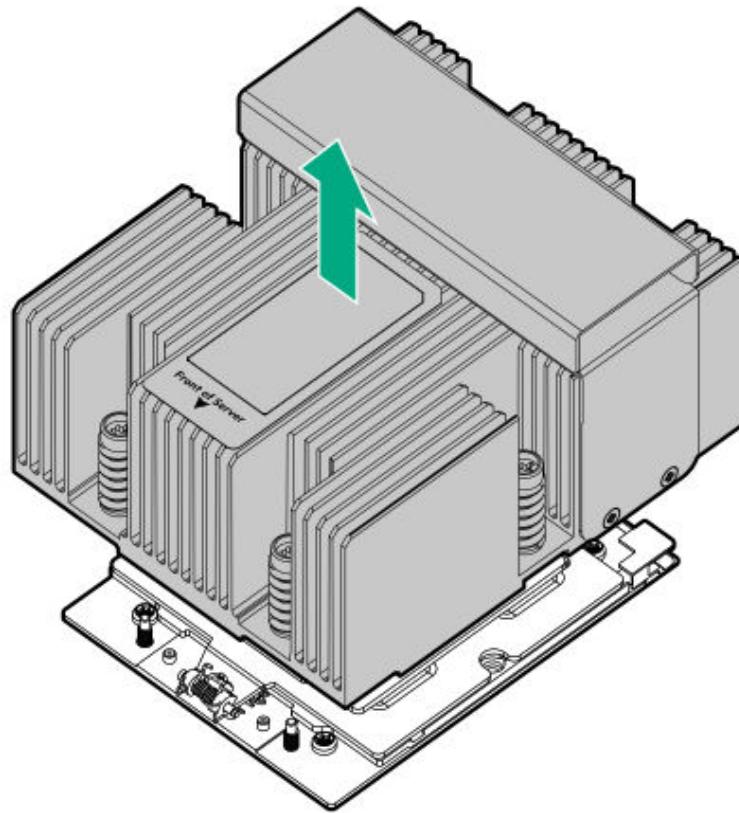
b. Loosen the heatsink screw numbers 6, 5, 4, and 3 in a diagonal manner (callouts 1 to 4).



c. Loosen the heatsink screw numbers 2 and 1 (callouts 5 and 6).



.0. Lift the standard heatsink away from the processor socket.



- .1. Place the heatsink on a flat work surface with its contact side facing up.
- .2. Use an alcohol wipe to remove the existing thermal grease from the heatsink and processor.  
Allow the alcohol to evaporate before continuing.
- .3. Remove the thermal interface protective cover from the new heatsink.

4. Install the midplane cage heatsink:



**CAUTION**

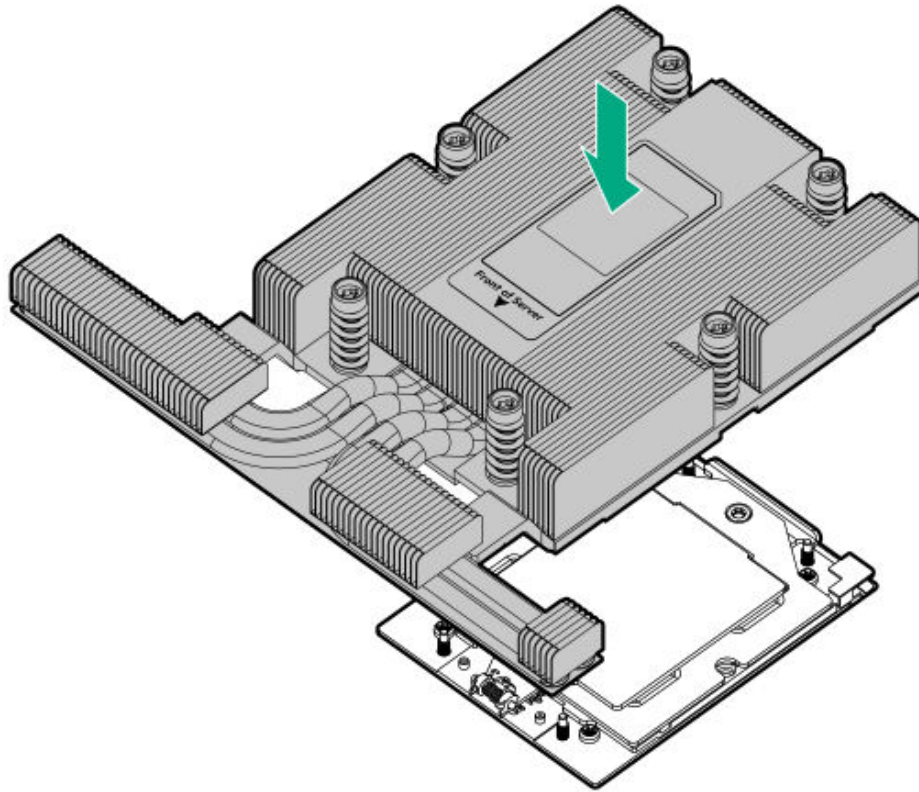
To prevent mechanical damage or depositing oil on your hands or other contaminants to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.



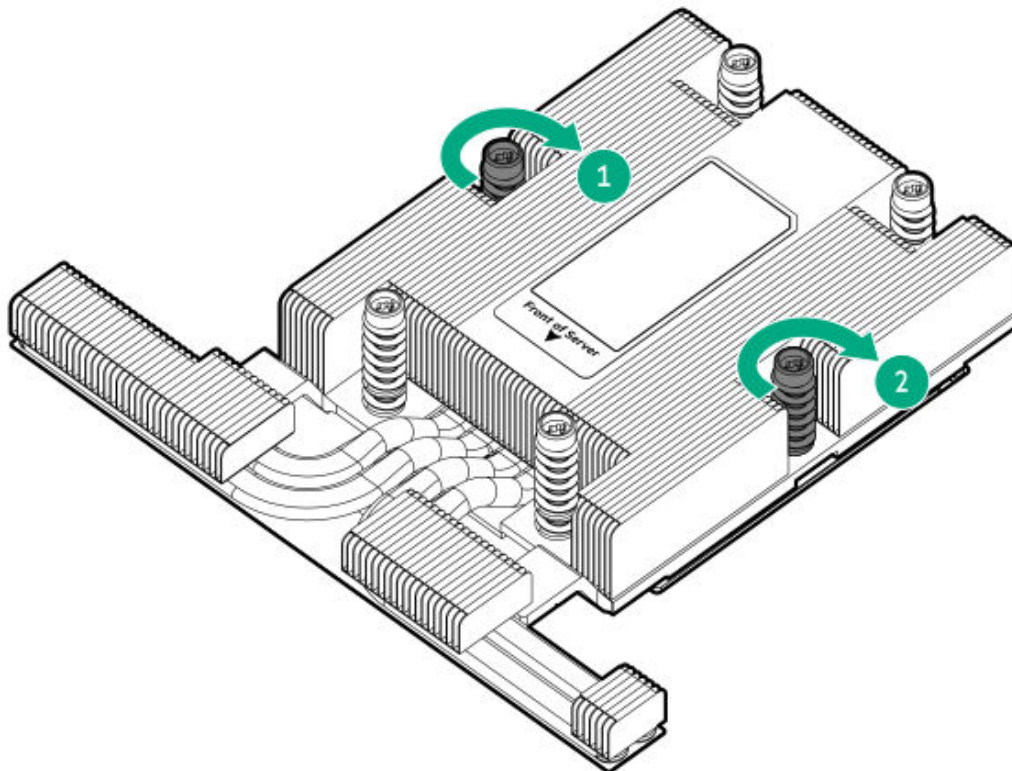
**CAUTION**

To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the processor.

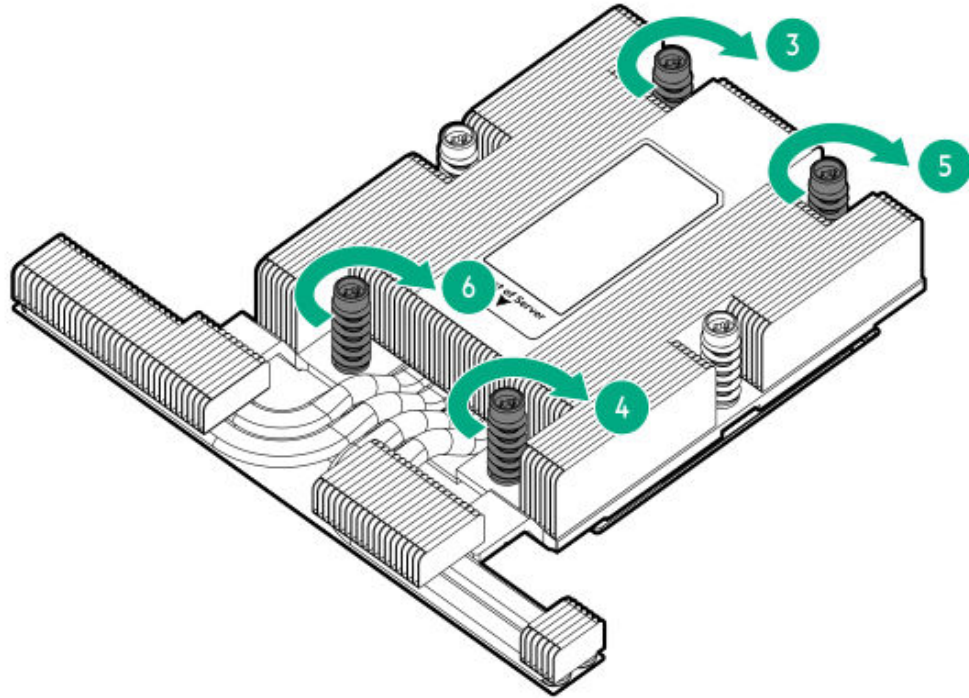
- a. When using a torque screwdriver to tighten the heatsink screws, set a torque between 1.24 N-m (11 lbf-in) to 1.47 N-m (13 lbf-in).
- b. Note the **Front of server** text on the heatsink label to correctly orient the heatsink over the processor socket.
- c. Position the heatsink on top of the processor, ensuring that it is properly seated before securing the screws.



d. Tighten the heatsink screw numbers 1 and 2 (callouts 1 and 2).

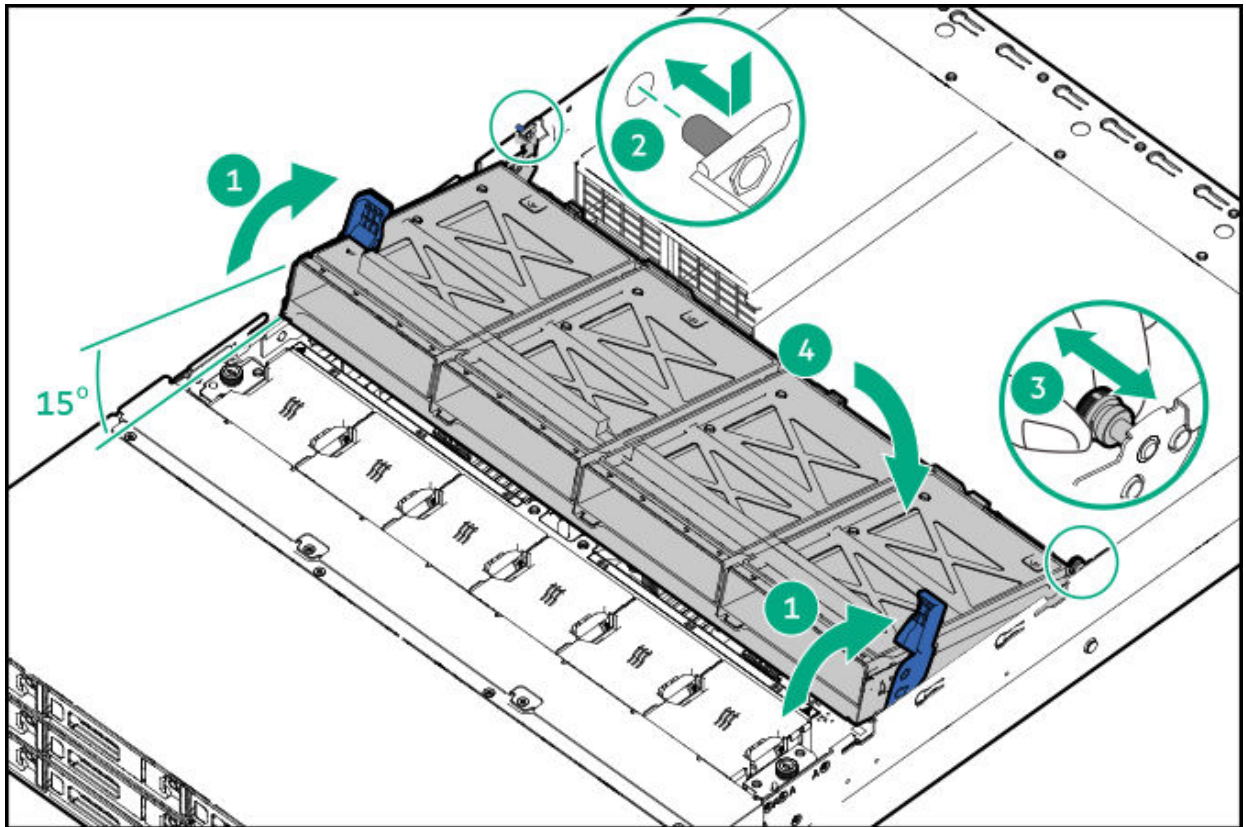


- e. Tighten the heatsink screw numbers 3, 4, 5, and 6 in a diagonal manner (callouts 3 to 6).

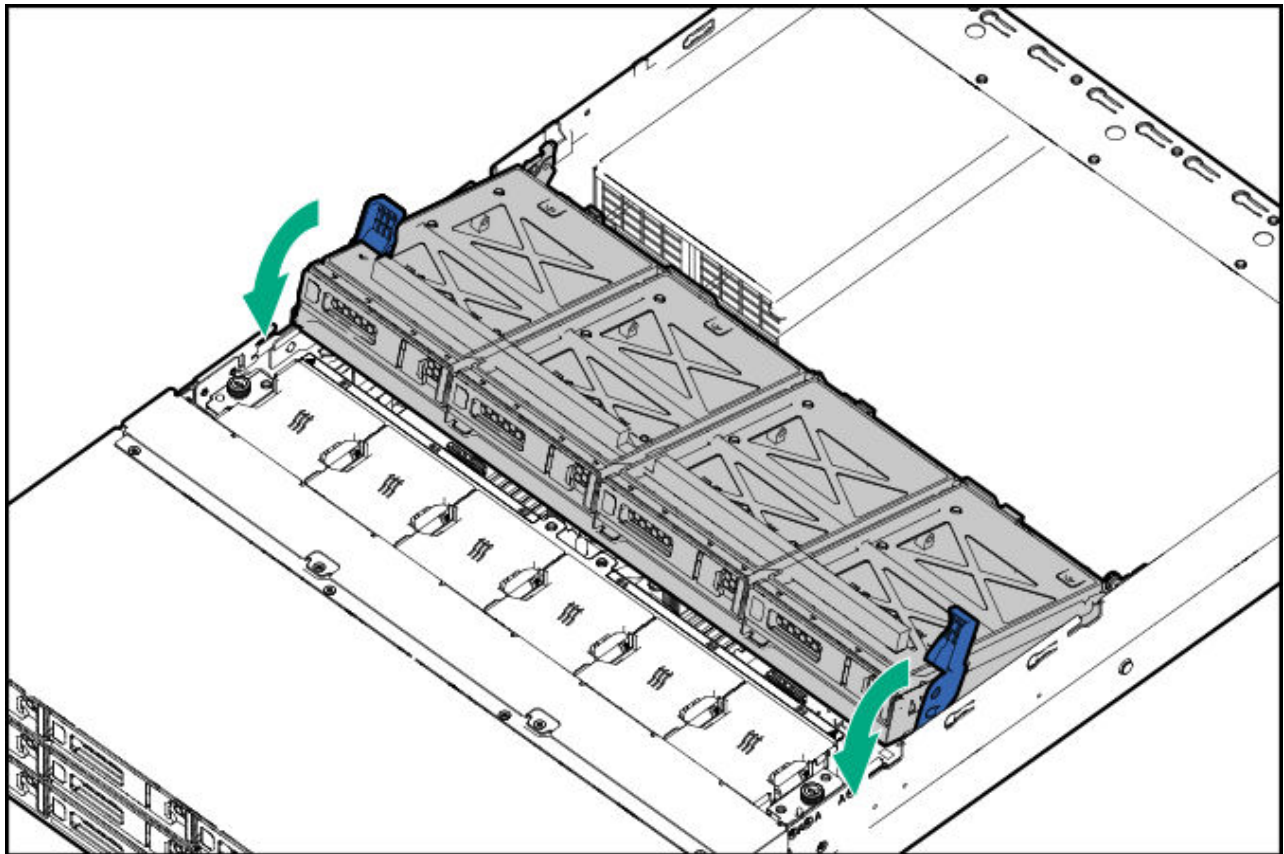


### Installing the midplane drive cage

5. Install the midplane drive cage:
  - a. Lift the latches on the midplane drive cage.
  - b. Align the pin on the rear left of the drive cage to the server and then insert the pin.
  - c. Pull the plunger pin on the rear right of the drive cage, and then lower the drive cage until the plunger pin engages.



- .6. Install the drives in the midplane drive cage.
- .7. Push down on the latches to lower the midplane drive cage into place.



- .8. Cable the midplane drive:
  - [Drive power cable](#)
  - [Storage controller cable](#)
- .9. [Install the access panel.](#)
- !0. [Install the server into the rack.](#)
- !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.

# Installing the rear 2 SFF stacked drive cage

## Prerequisites

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

## About this task

Both the LFF and SFF chassis support the rear 2 SFF side-by-side drive cage option. This drive cage supports SAS, SATA, and U.3 PCIe4 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](#).

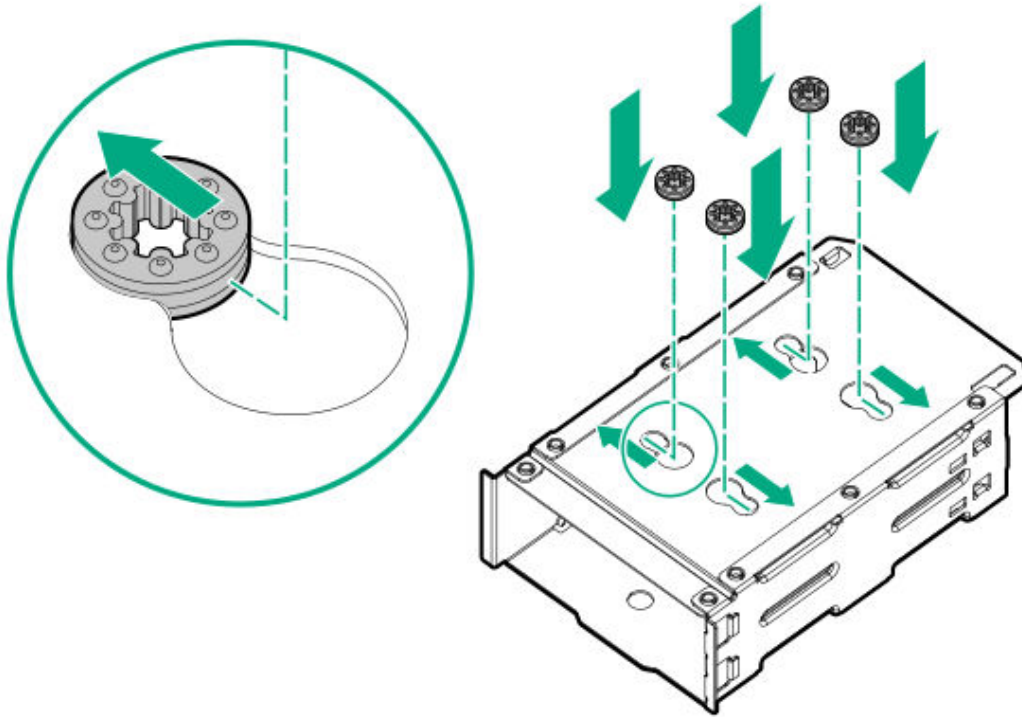


### CAUTION

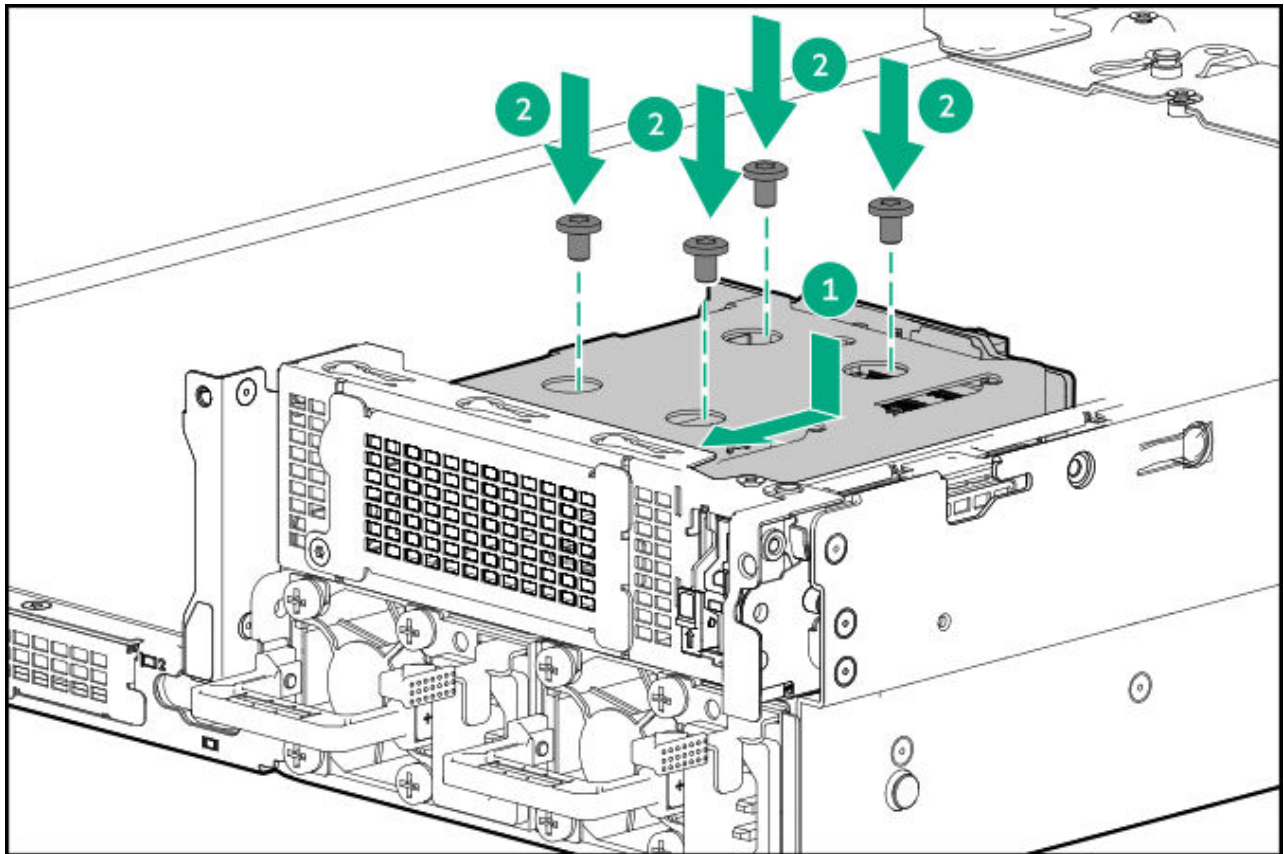
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

## Procedure

1. [Power down the server](#).
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. [Remove the server from the rack](#).
5. Place the server on a flat, level work surface.
6. [Remove the access panel](#).
7. Do one of the following:
  - [Remove the air baffle](#).
  - [Remove the midplane drive cage](#).
8. Install the grommets onto the underside of the stacked drive cage.



9. Install the rear 2 SFF stacked drive cage:
  - a. Install the 2 SFF stacked drive cage on top of the power supply cage.
  - b. Install the stacked drive cage screws.



.0. Cable the rear 2 SFF stacked drive:

- [Drive power cable](#)
- [Storage controller cable](#)

.1. Do one of the following:

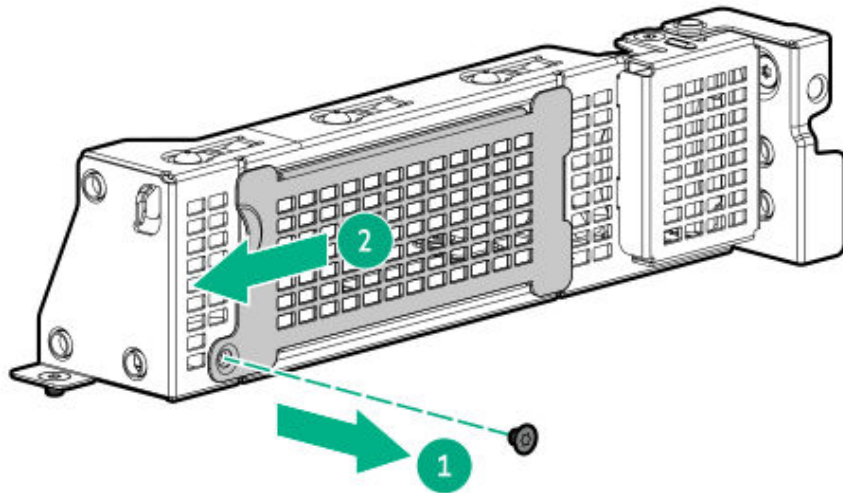
- [Install the air baffle.](#)
- [Install the midplane drive cage.](#)

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

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

.4. Remove the stacked drive bay blank:

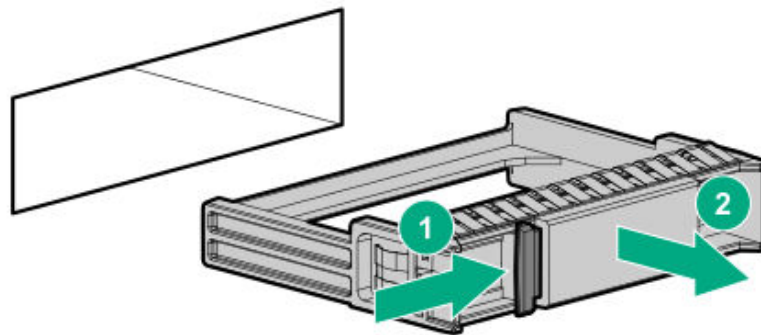
- a. Remove the blank screw.
- b. Remove the blank.



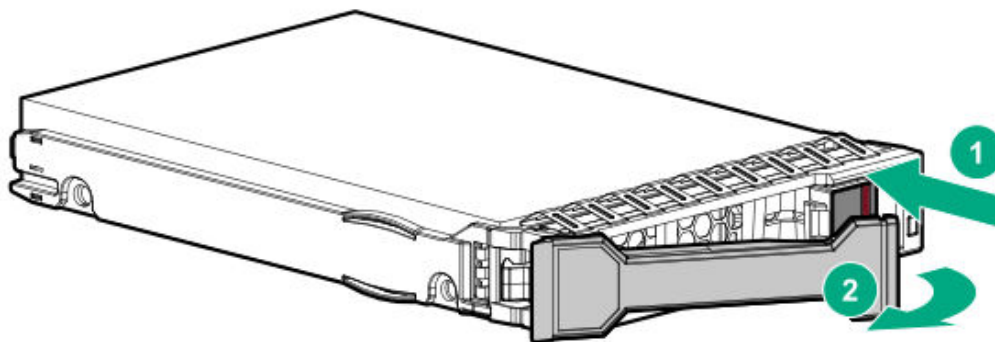
5. Install the drive:

a. Remove the drive blank.

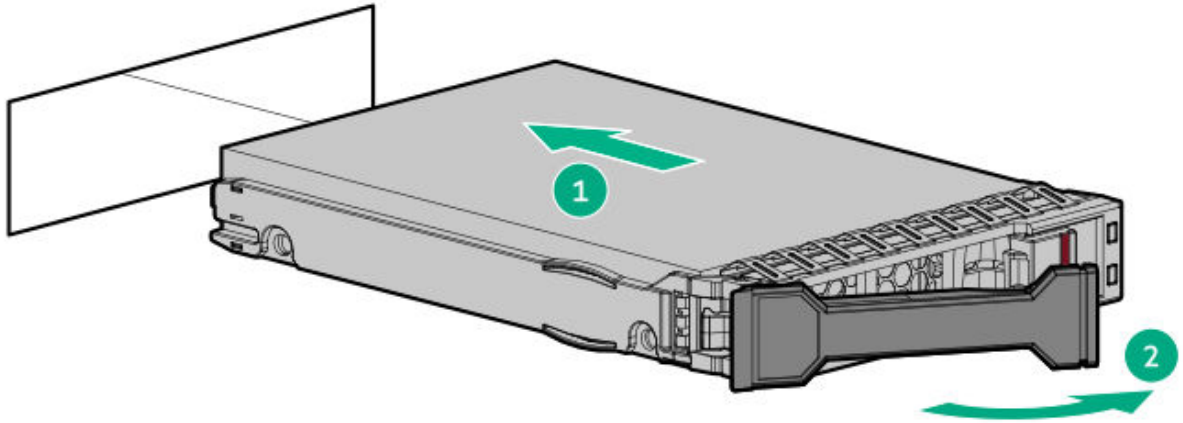
Retain the blank for future use.



b. Prepare the drive.



c. Install the drive.



- .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.

### Results

The installation procedure is complete.

## Optical drive option

The server supports a slim-type SATA optical drive.

### Subtopics

[Installing the optical drive in the LFF universal media bay](#)

[Installing the optical drive in the SFF universal media bay](#)

## Installing the optical drive in the LFF universal media bay

### Prerequisites

- The optical drive installation requires the optical drive SATA-power Y-cable option (P59116-001).

- 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.



#### CAUTION

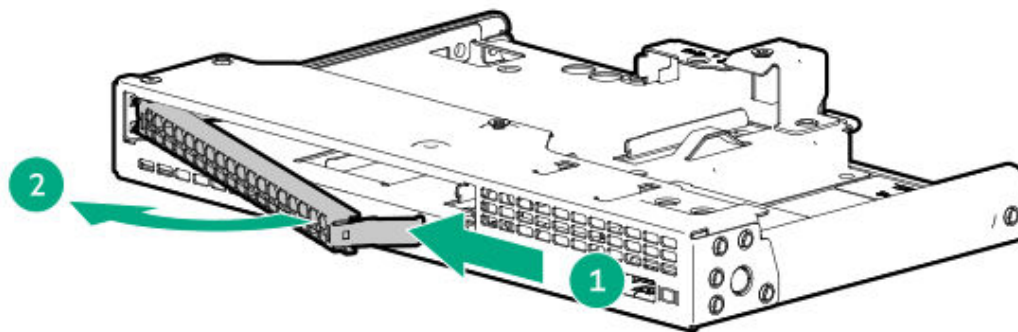
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

### Procedure

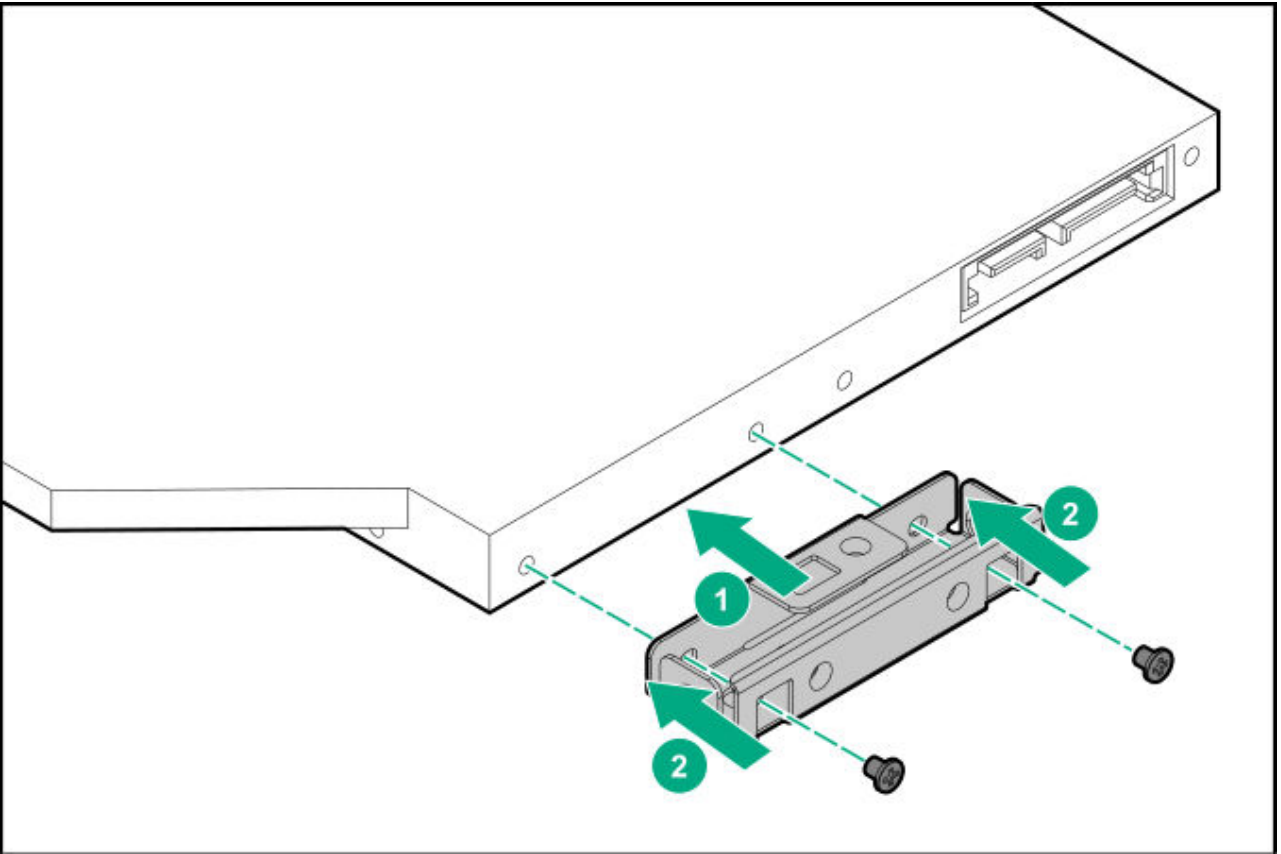
#### Installing the optical drive in the universal media bay

1. Remove the optical drive blank from the universal media bay.

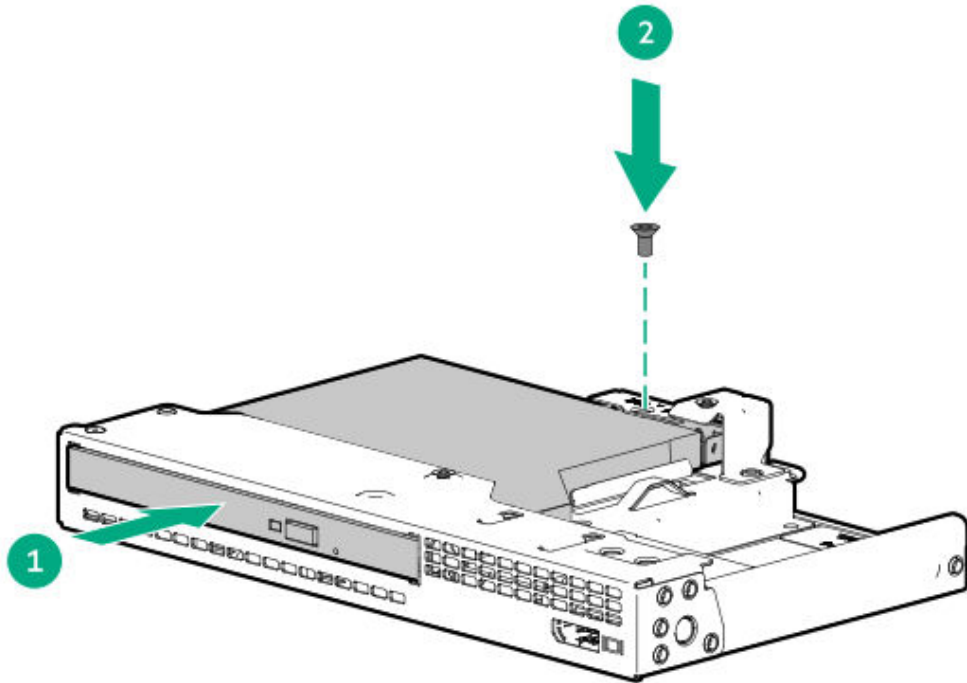
Retain the blank for future use.



2. Install the optical drive bracket.



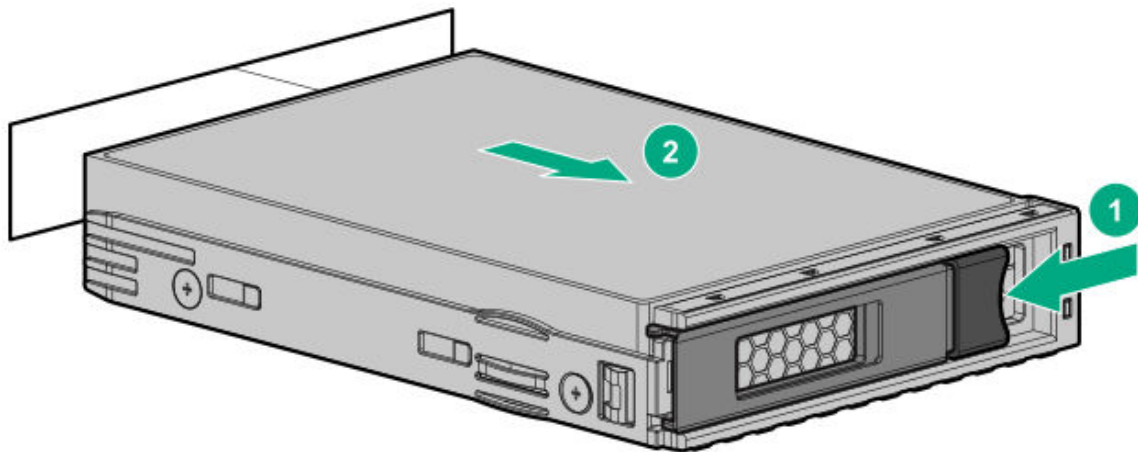
3. Install the optical drive in the universal media bay, and then install the screw.



4. Connect the SATA-power Y-cable to the optical drive.

### **Installing the universal media bay in the server**

5. If installed, remove the front bezel.
6. Remove the drive:
  - a. Press the latch to open the release lever.
  - b. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



7. Power down the server.
8. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
9. Disconnect all peripheral cables from the server.
10. Remove the server from the rack.
11. Place the server on a flat, level work surface.
12. Remove the access panel.
13. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.

4. Remove the fan cage.
5. Remove the midwall bracket.
6. Remove the drive backplane bracket.

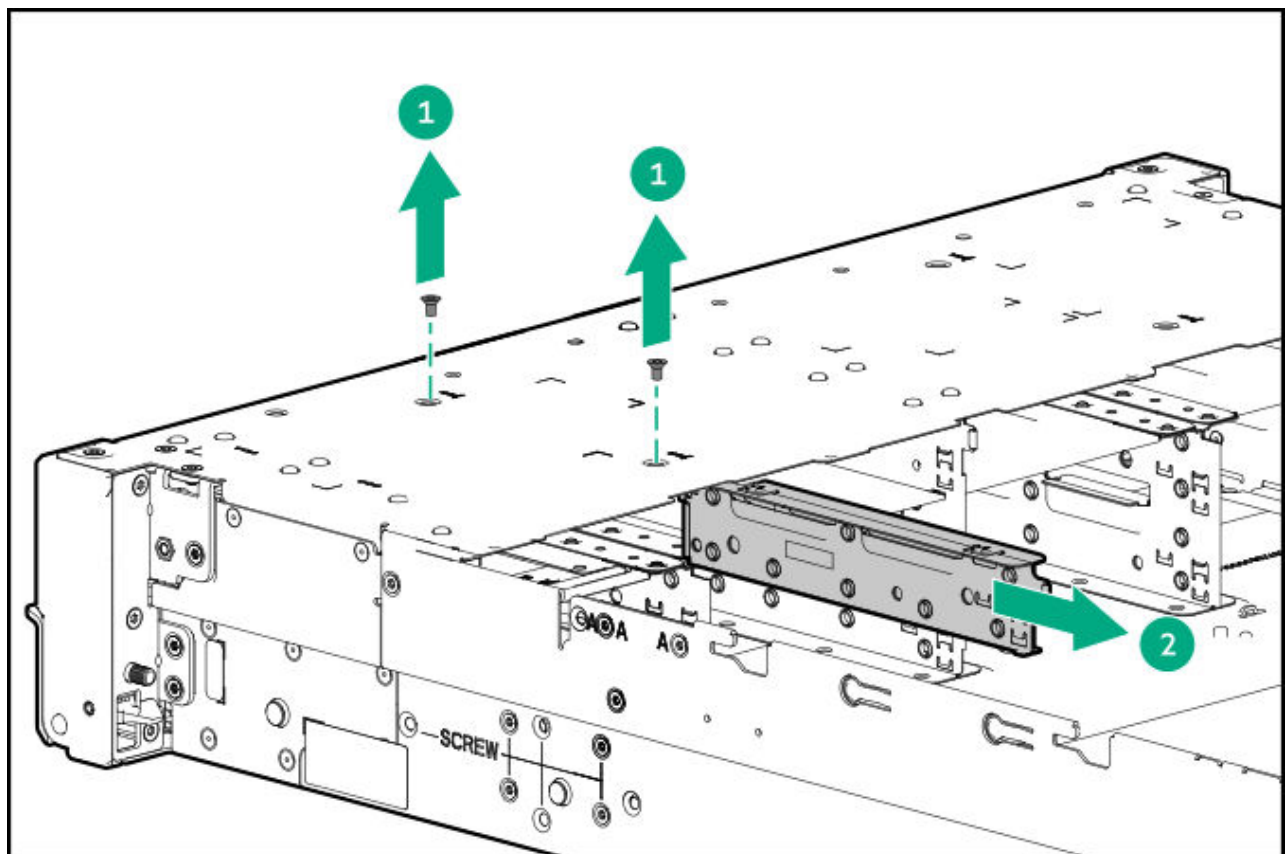


**IMPORTANT**

Retain the removed partitions to revert to the 12 LFF drive configuration.

Remove the right partition:

- a. Remove the partition screws.
- b. Remove the partition.



8. Install the universal media bay in the server.
9. If connected, disconnect the M.2 SSD pass-through signal cable from the system board.
10. Connect the SATA-power Y-cable to the system board.
11. Install the drive backplane bracket.
12. Install the midwall bracket

- !3. Install the fan cage.
- !4. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- !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.

## Results

The installation procedure is complete.

## Installing the optical drive in the SFF universal media bay

### Prerequisites

- The optical drive installation requires the optical drive SATA-power Y-cable option (P59116-001).
- 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.

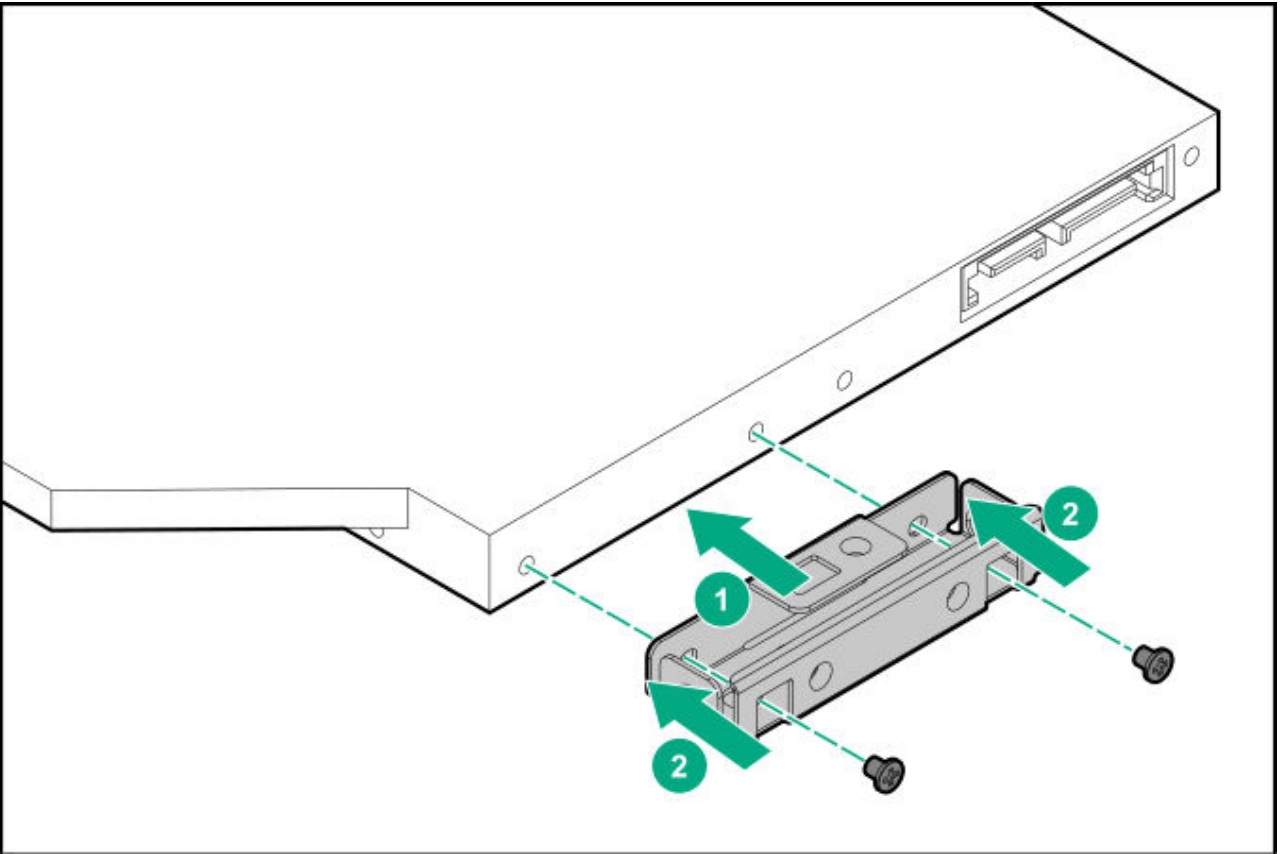


### CAUTION

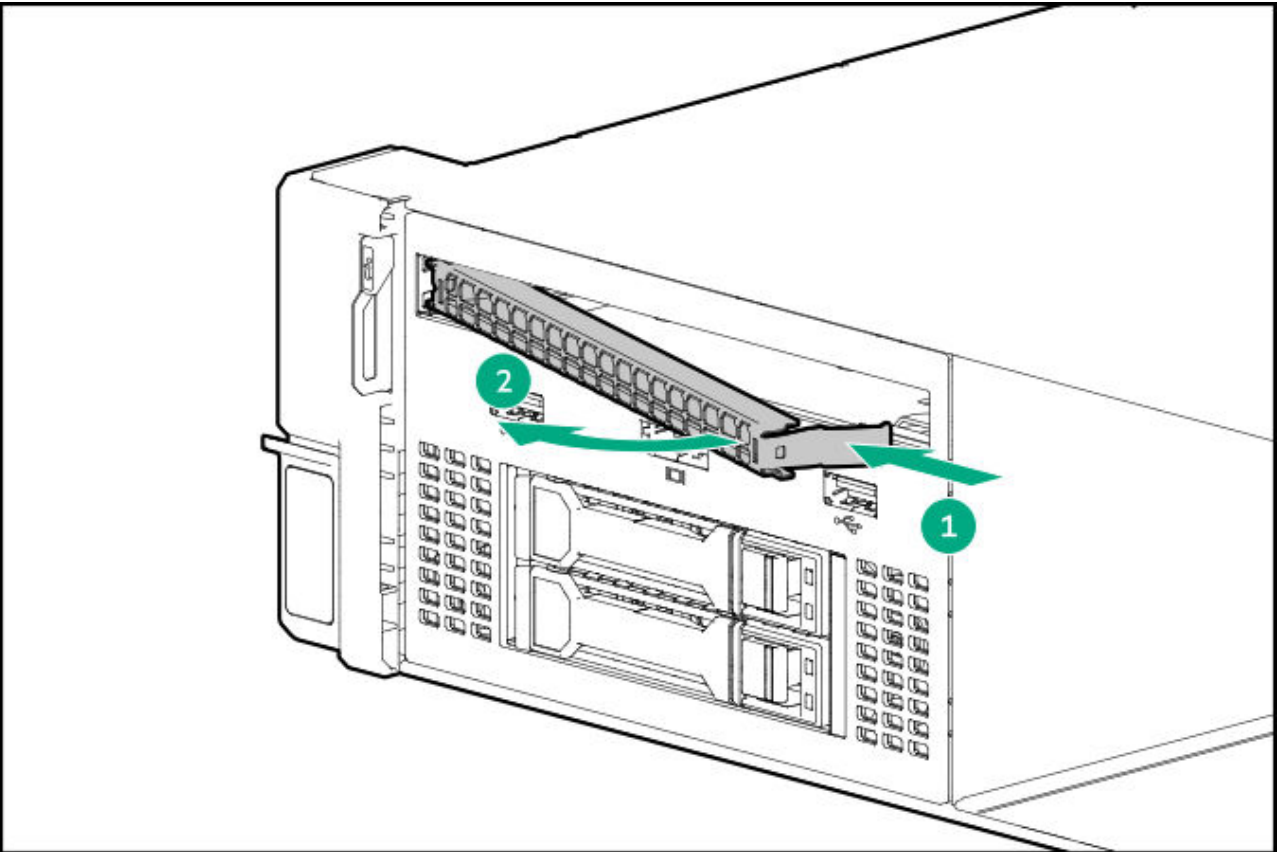
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

## Procedure

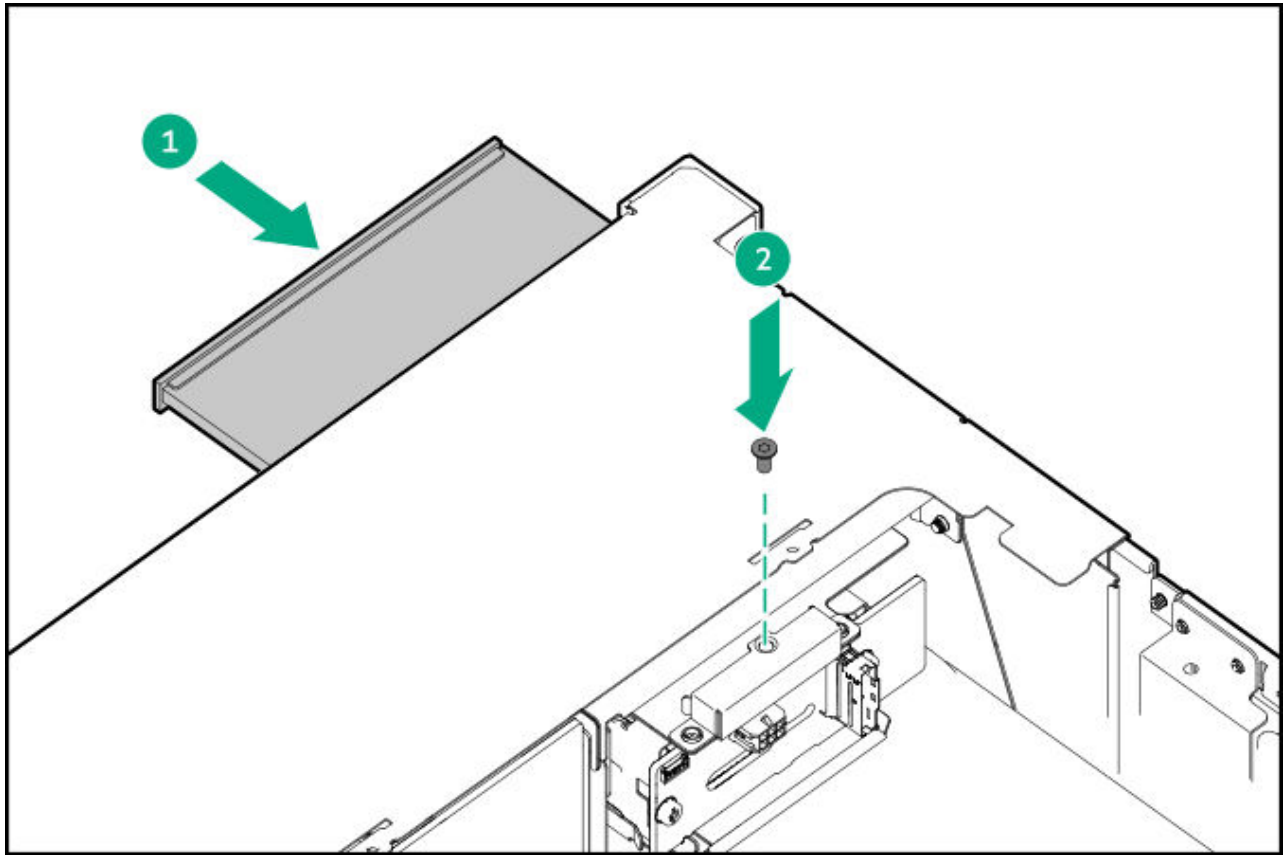
1. If installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
9. Remove the fan cage.
0. Remove the midwall bracket.
- .1. Install the universal media bay in the server.
- .2. Install the optical drive bracket.



3. Remove the optical drive blank from the universal media bay.



4. Install the optical drive in the universal media bay, and then install the screw.



5. If connected, disconnect the M.2 SSD pass-through signal cable from the system board.
6. Connect the SATA-power Y-cable to the optical drive and the system board.
7. Install the midwall bracket
8. Install the fan cage.
9. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
10. Install the access panel.
11. Install the server into the rack.
12. If removed, install the front bezel.
13. 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.

## GPU options

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

### Subtopics

#### GPU installation guidelines

#### Installing an GPU

## GPU installation guidelines

- To support high power GPUs (> TDP 75 W), the CPU 8-pin auxiliary power cable option (P64382-B21) is required.
- To maintain proper system cooling, all six high performance fans are required for GPU installation.
- The limited operating inlet ambient temperatures required for GPUs vary based on the model and the server drive configuration. For more information, see the server QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/quickspecs>).



### IMPORTANT

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

# Installing an GPU

## Prerequisites

- If you are installing the high power GPUs (> TDP 75 W), the CPU 8-pin auxiliary power cable option (P64382-B21) is required.
- Review the GPU installation guidelines.
- Before you perform this procedure, make sure that you have the following items available:
  - T-15 Torx screwdriver
  - T-10 Torx screwdriver

## About this task



### CAUTION

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



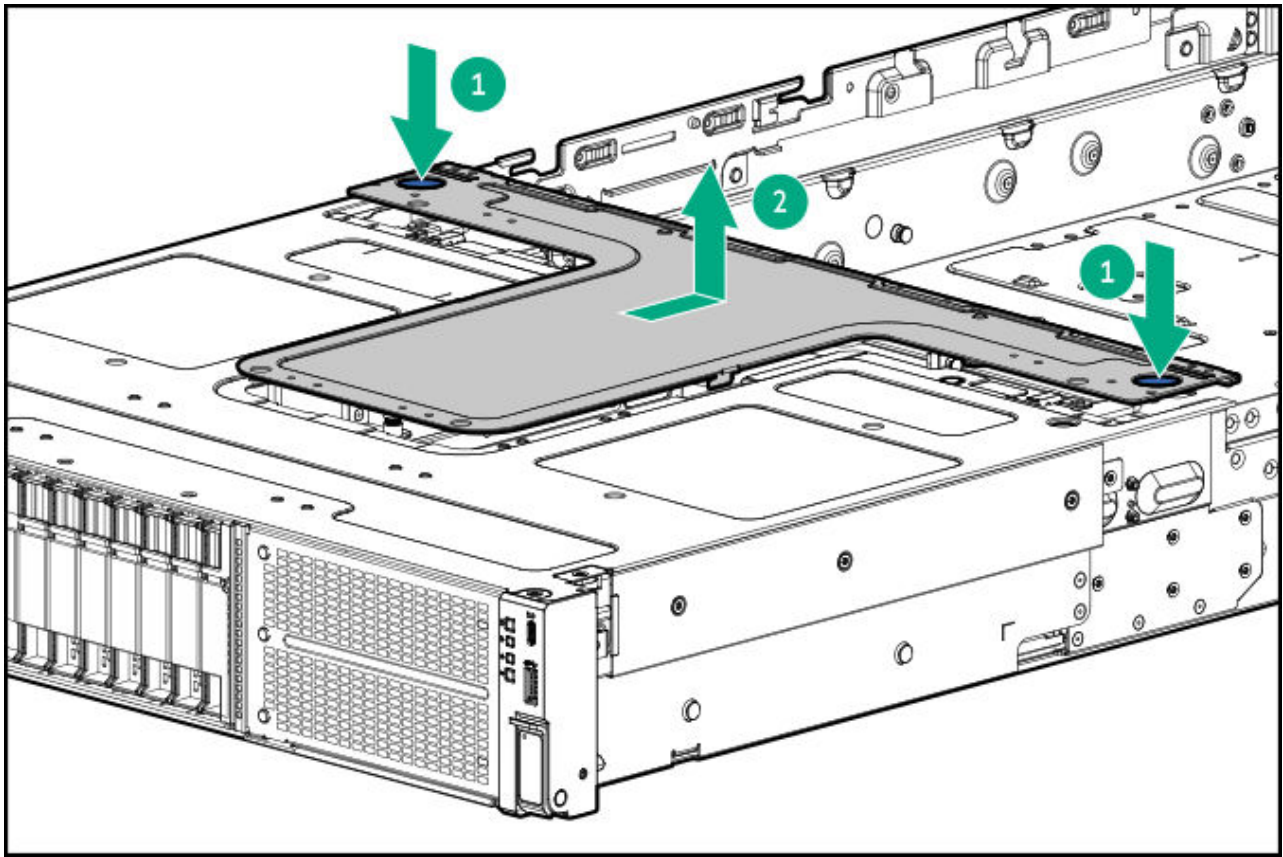
### CAUTION

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

## Procedure

1. 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 air baffle.
9. Remove the fan cage.

.0. Remove the middle cover.



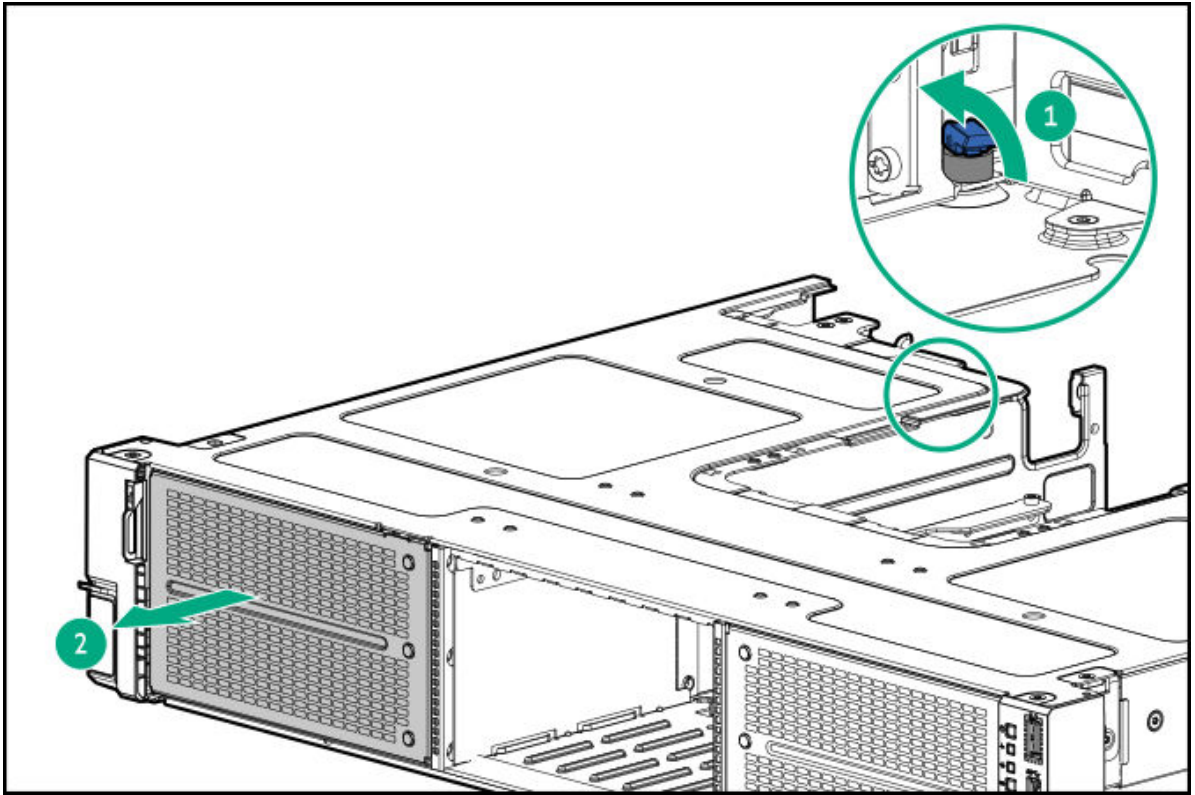
.1. Disconnect the GPU riser cables from the system board.

.2. Remove a GPU riser cage:

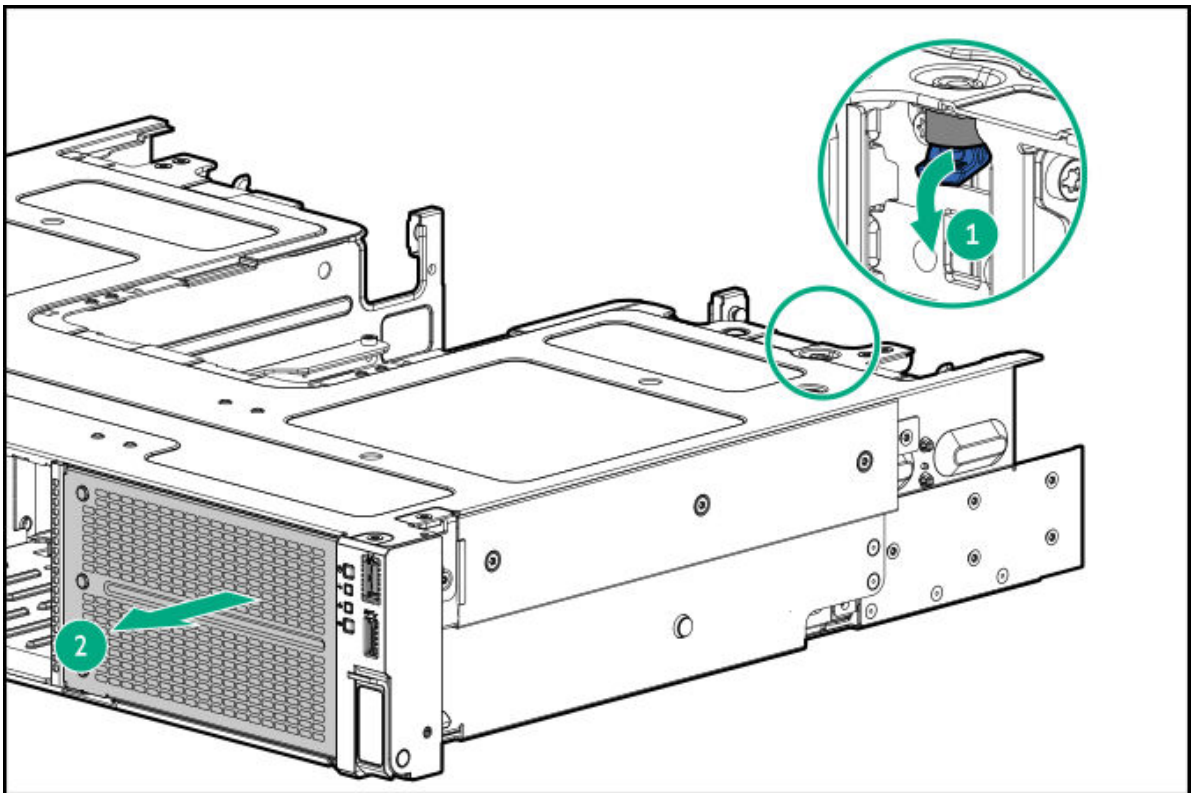
- a. Rotate the locking pin to the open (vertical) position.
- b. Remove the GPU riser cage from the server.

Carefully feed the riser cables through the cable channel.

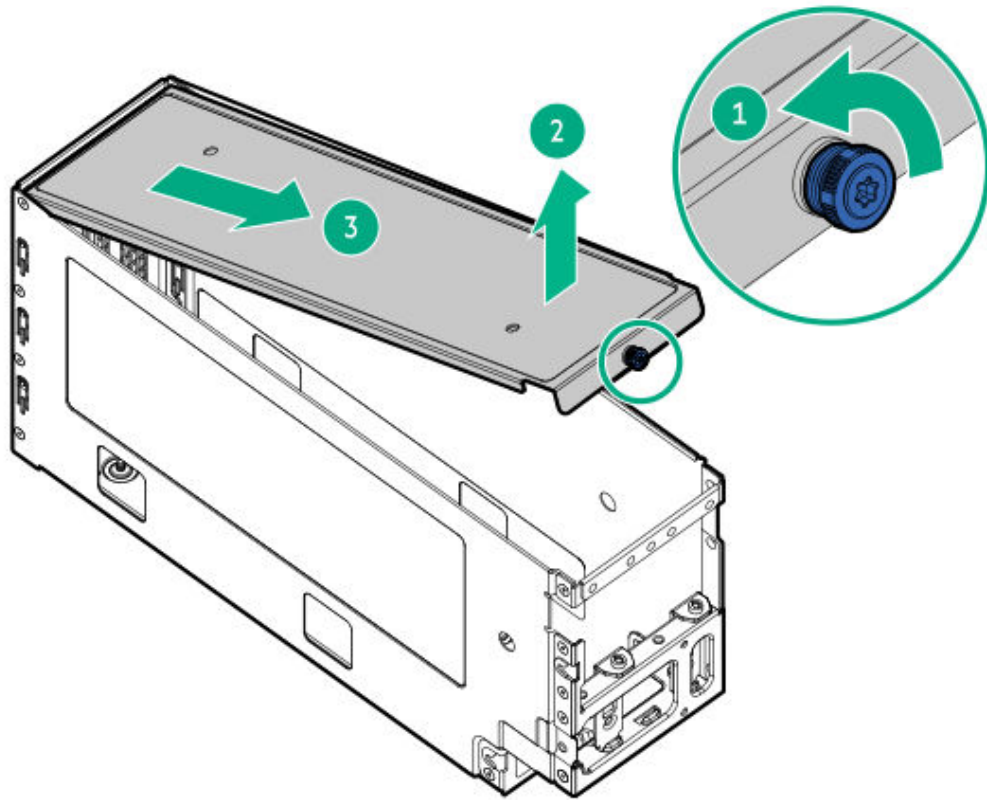
- GPU riser cage 1



- GPU riser cage 2

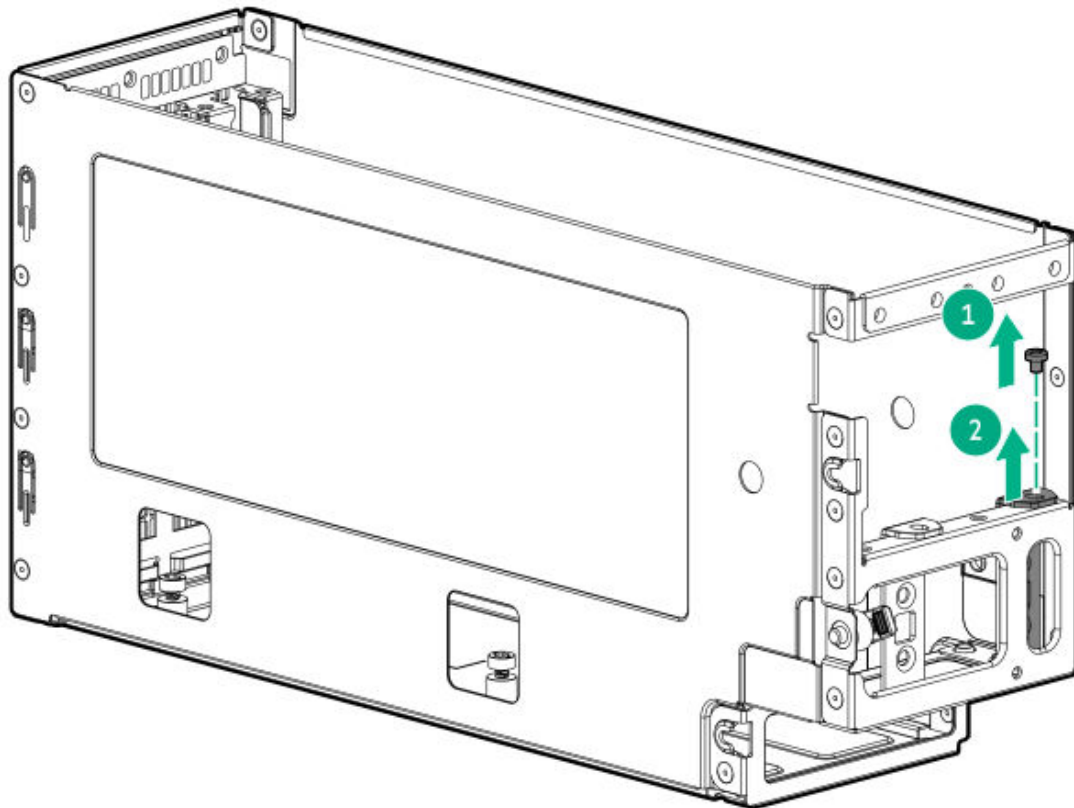


.3. Remove the GPU riser cage cover.

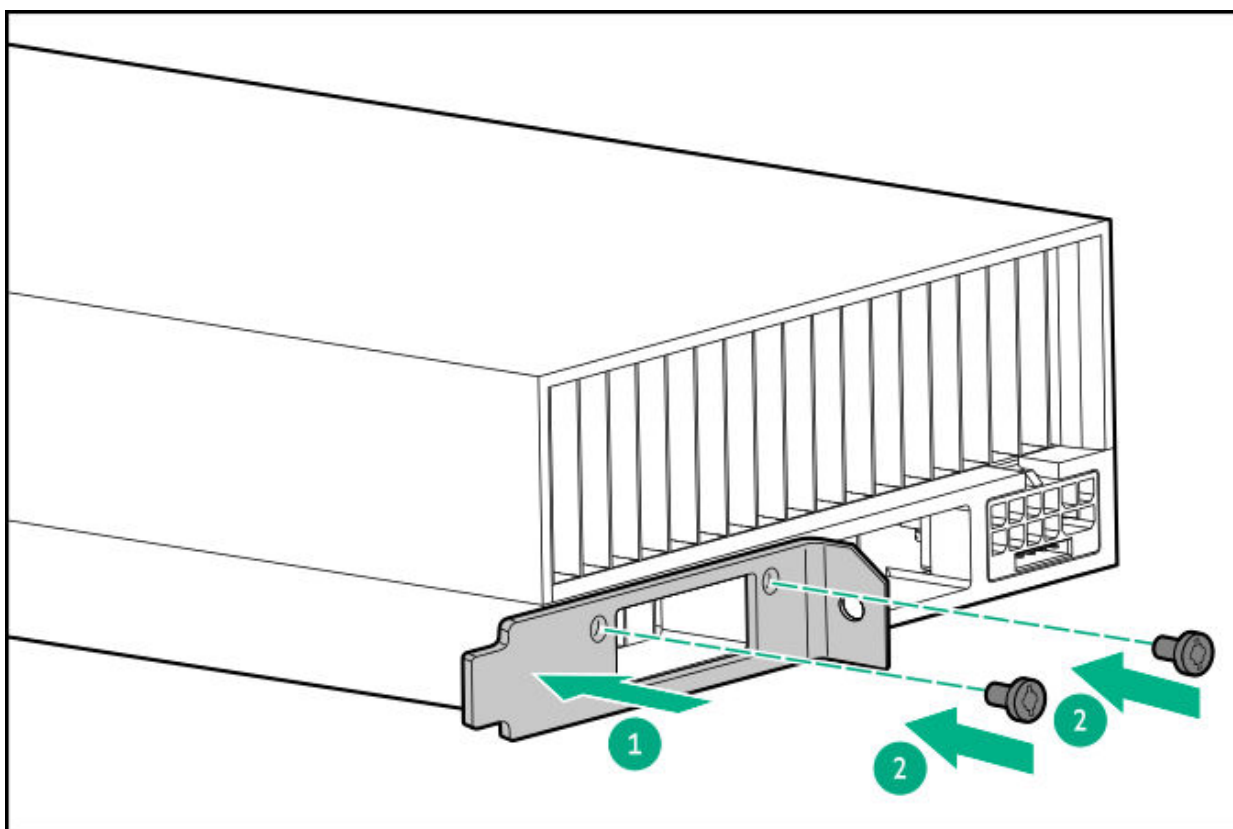


4. If installing a double-width GPU:

- a. Remove the GPU support bracket from the GPU riser cage.

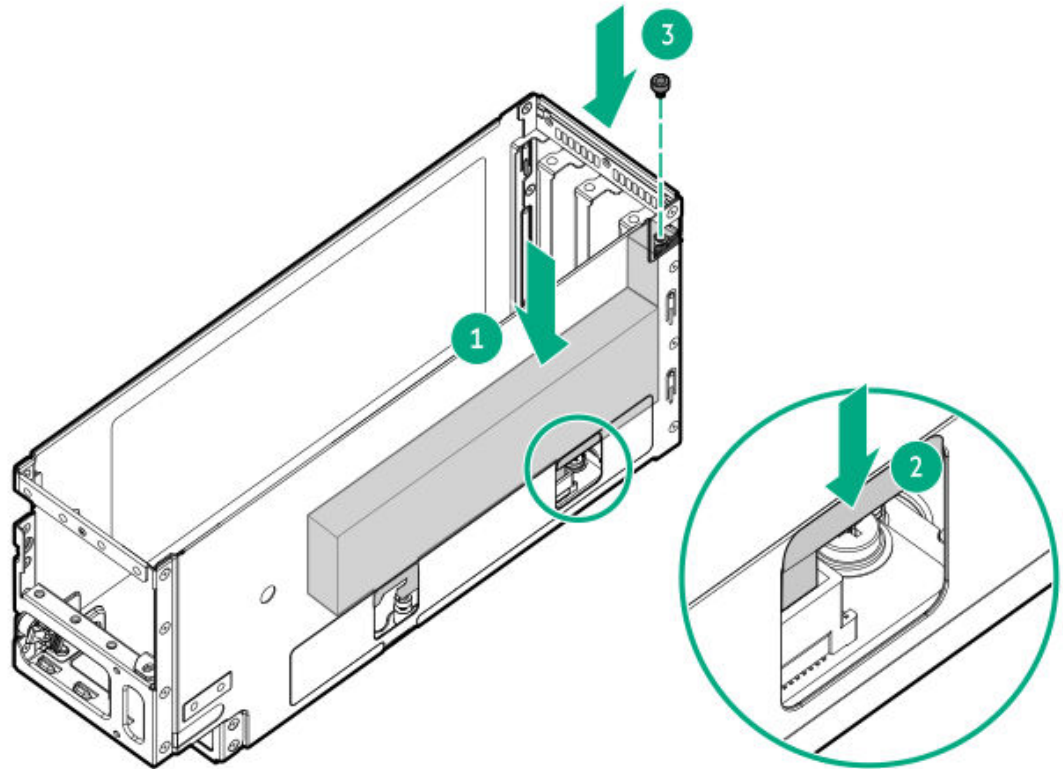


b. Install the support bracket on the double-width GPU.

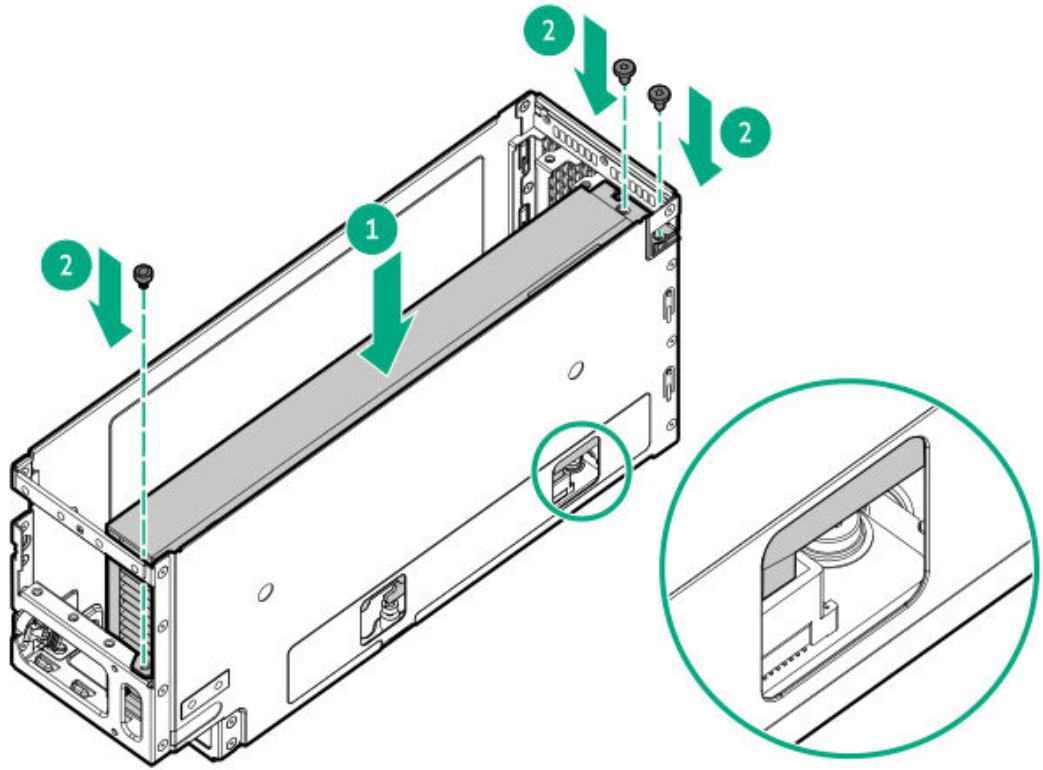


- .5. Install the GPU in the GPU riser cage:
  - a. Install the GPU to make sure that it is seated firmly on the GPU riser.

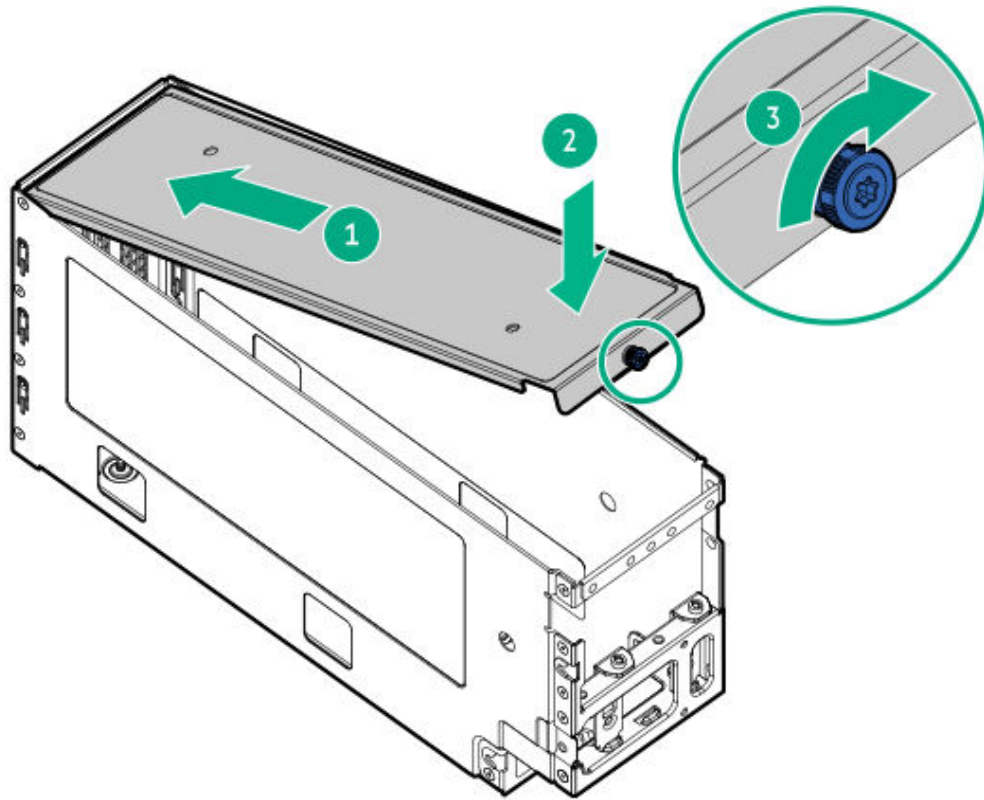
A click sound indicates that the GPU is properly engaged.
  - b. Install the screws.
    - Single-width GPU



- Double-width GPU



- .6. If installing a high power GPU, connect the auxiliary power cable to the GPU.
- .7. Install the GPU riser cage cover.



.8. Install the GPU riser cage:

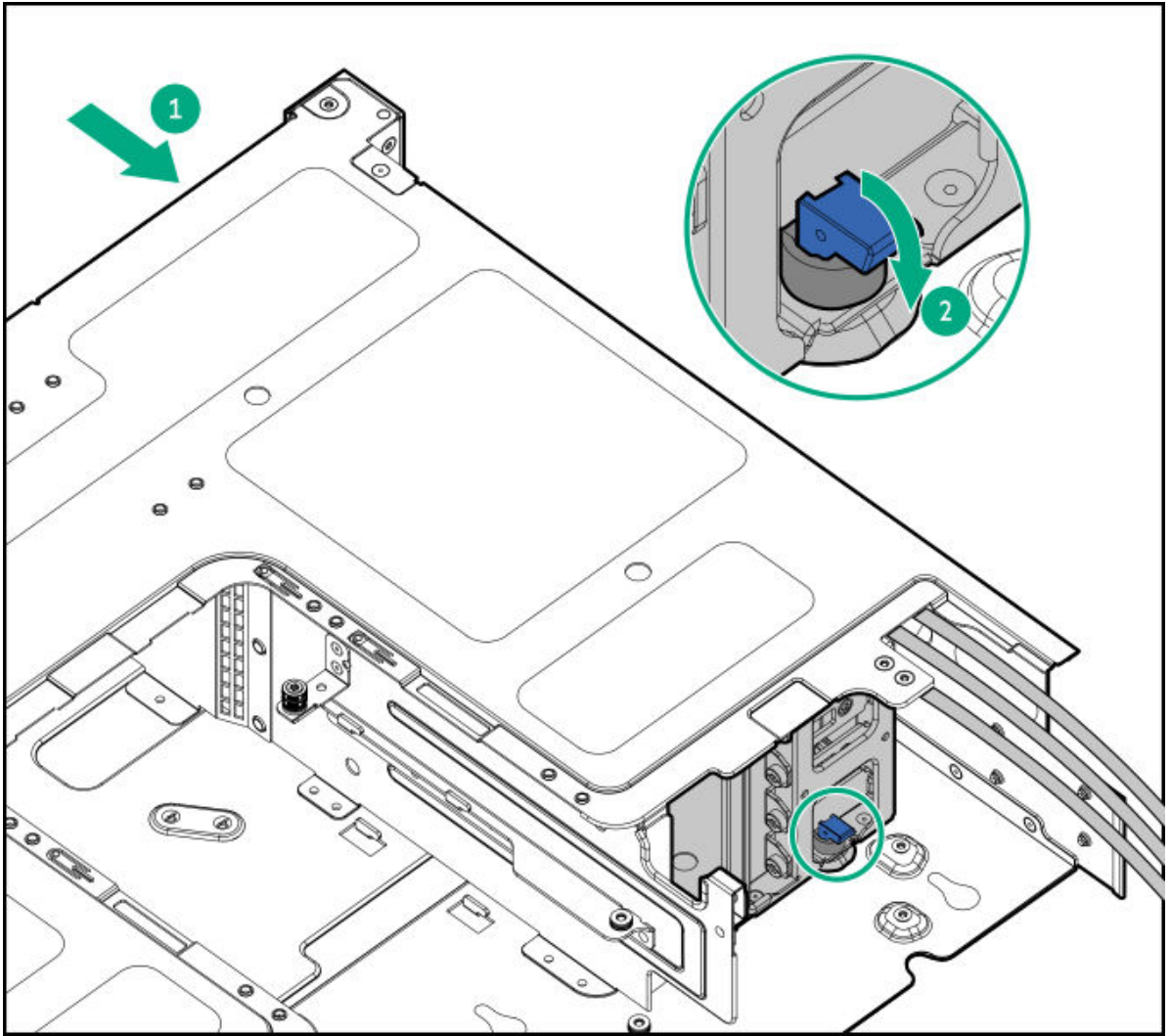
- a. Slide the GPU riser cage into the server.

Feed the riser cables through the channel nearest to the chassis wall.

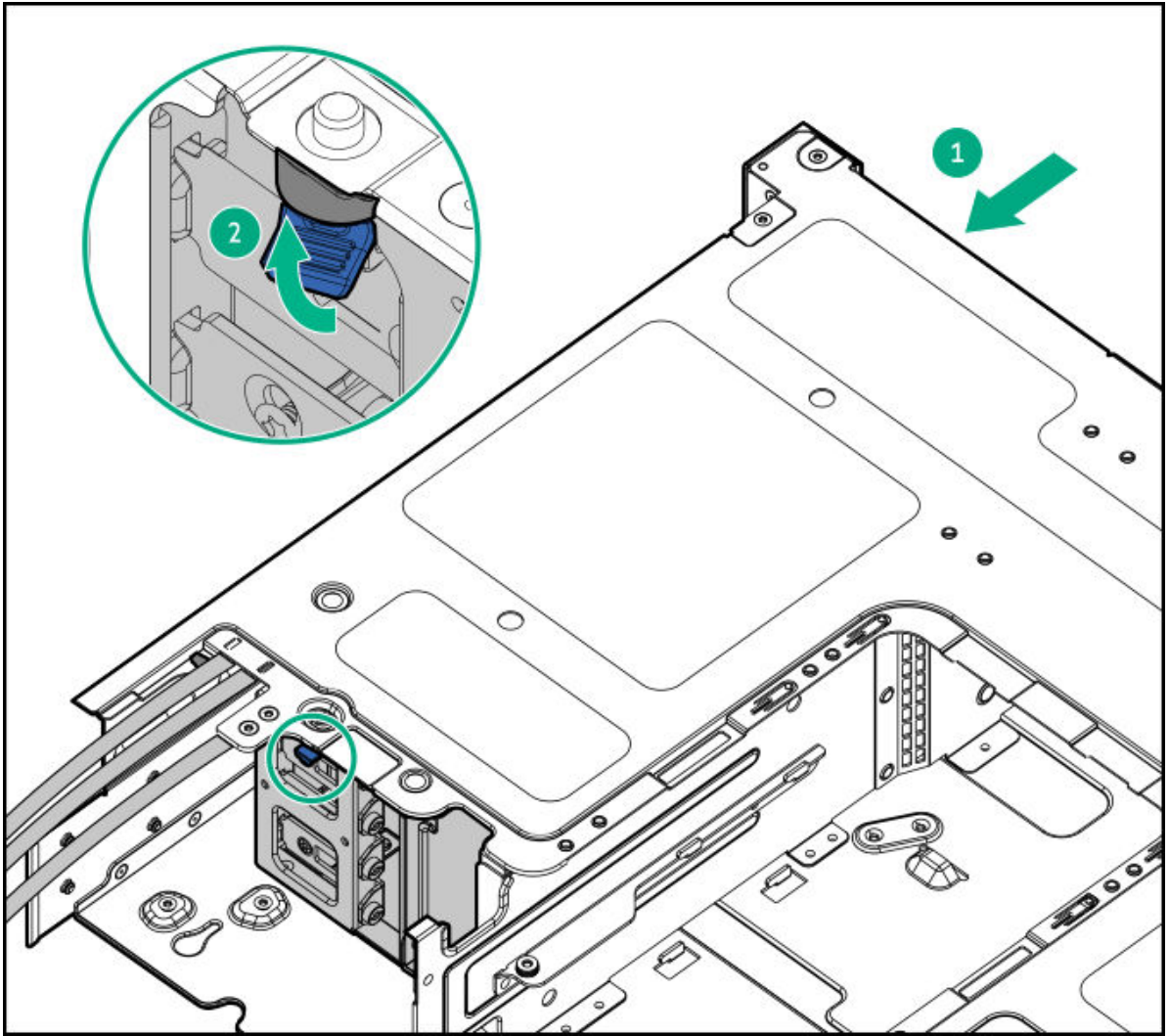
- b. Rotate the locking pin to the close (horizontal) position.

Make sure that the locking pin is locked on the chassis.

- GPU riser cage 1



- GPU riser cage 2

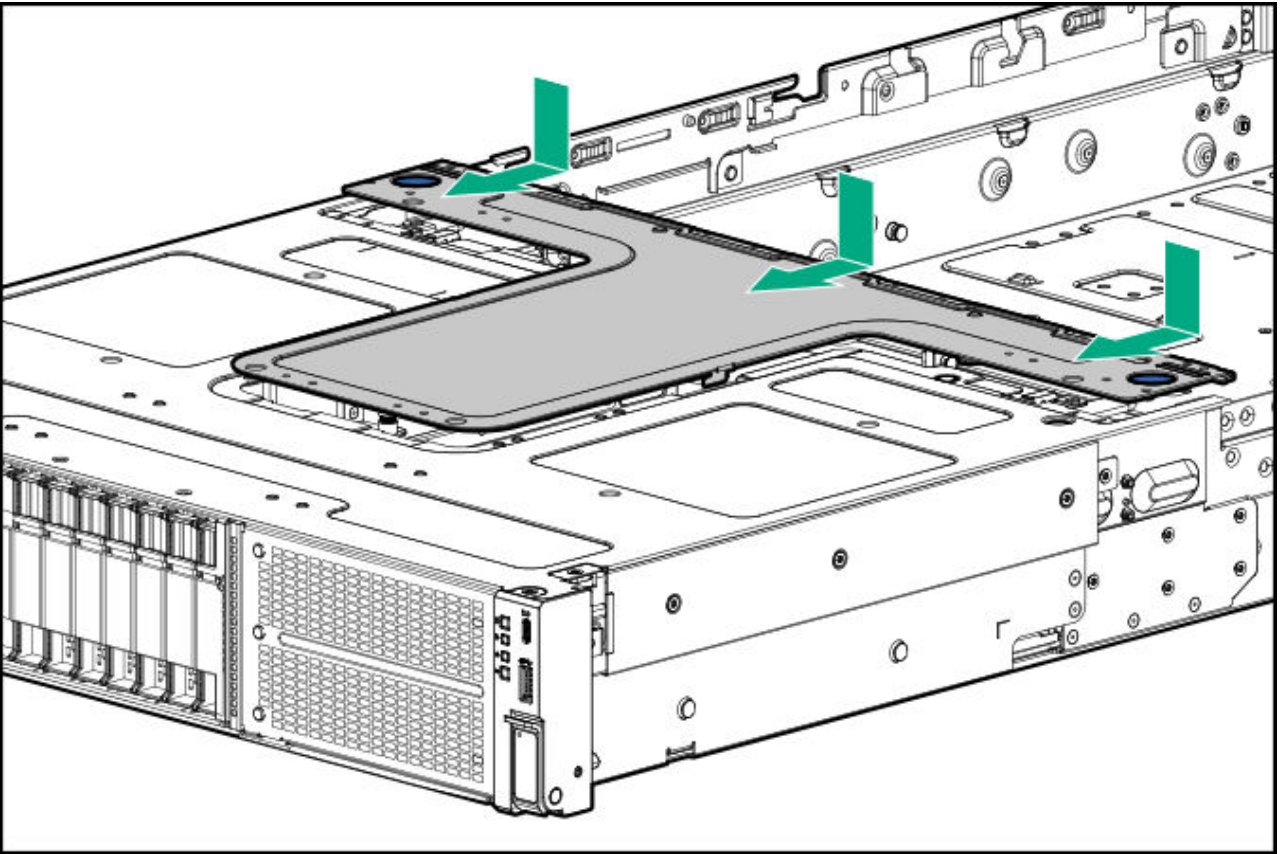


9. Connect the GPU riser cables to the system board.

If the cables are not connected correctly, the system will not power on.

10. If a high power GPU is installed, connect the GPU auxiliary power cable.

11. Install the middle cover.



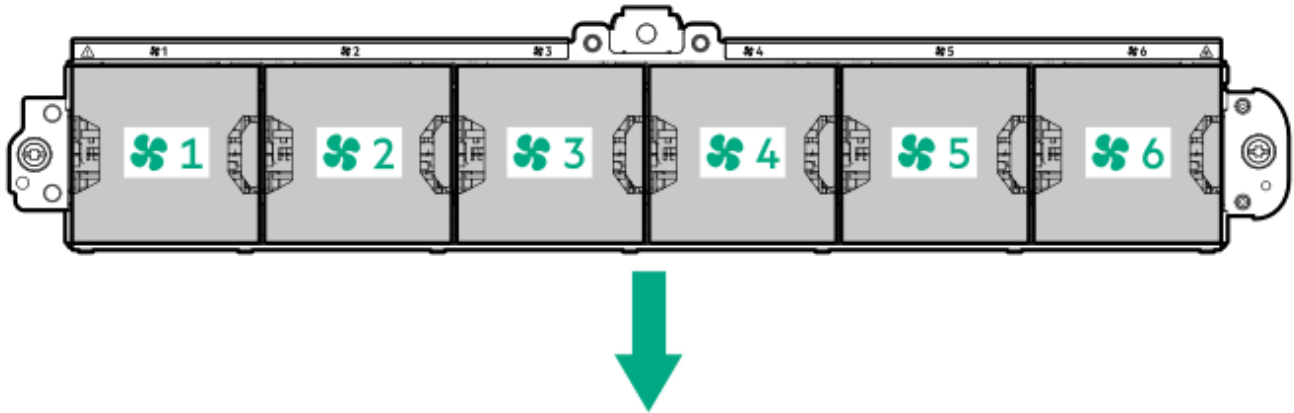
- !2. Install the fan cage.
- !3. Install the air baffle.
- !4. Install the access panel.
- !5. Install the server into the rack.
- !6. If removed, install the front bezel.
- !7. Connect all peripheral cables to the server.
- !8. Connect each power cord to the server.
- !9. Connect each power cord to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

### **Results**

The installation procedure is complete.

## Fan options

To provide sufficient airflow to the system, the server is by default populated by six fans. The fans can either be standard, single-rotor fans (P58464-B21) or high performance, dual-rotor fans (P58465-B21). Mixed fan configuration is not supported.



The arrow points to the front of the server.

### Subtopics

#### Fan mode behavior

#### Installing a fan

## Fan mode behavior

The default six fan configuration provides redundant fan support. In redundant fan mode, if a fan rotor fails or is missing:

- The system switches to nonredundant fan mode. The system continues to operate in this mode.
- The system health LED flashes amber.

If a second fan rotor failure or a missing fan occurs, the operating system gracefully shuts down.

## Installing a fan

### Prerequisites

Review the fan and heatsink requirements for specific hardware configurations.

## About this task

The installation and removal procedures for the standard and high performance fans are the same.

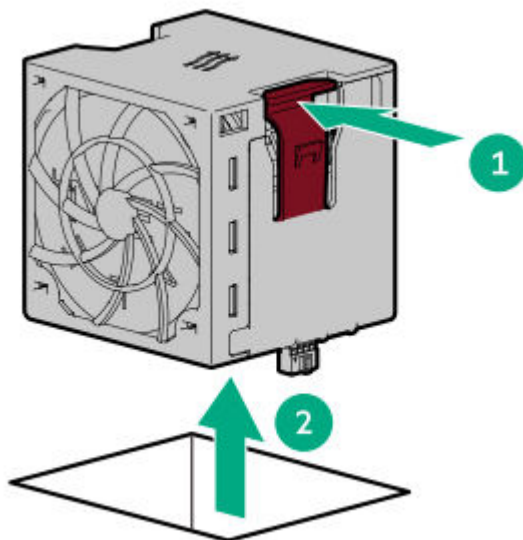


### IMPORTANT

Do not mix standard and high performance fans in the same server.

## Procedure

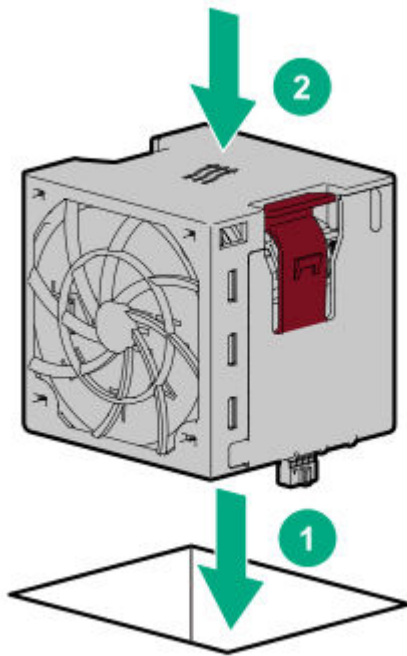
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the existing fans:
  - a. Press and hold the latch.
  - b. Lift the fan from the fan cage.



8. Install new fans:

- a. Lower the fan into the fan bay.
- b. Press down on the fan to make sure that it is seated firmly in the bay.

A click sound indicates that the fan is properly engaged.



9. Install the access panel.
10. Install the server into the rack.
11. Connect all peripheral cables to the server.
12. Connect each power cord to the server.
13. Connect each power cord to the power source.
14. Power up the server.

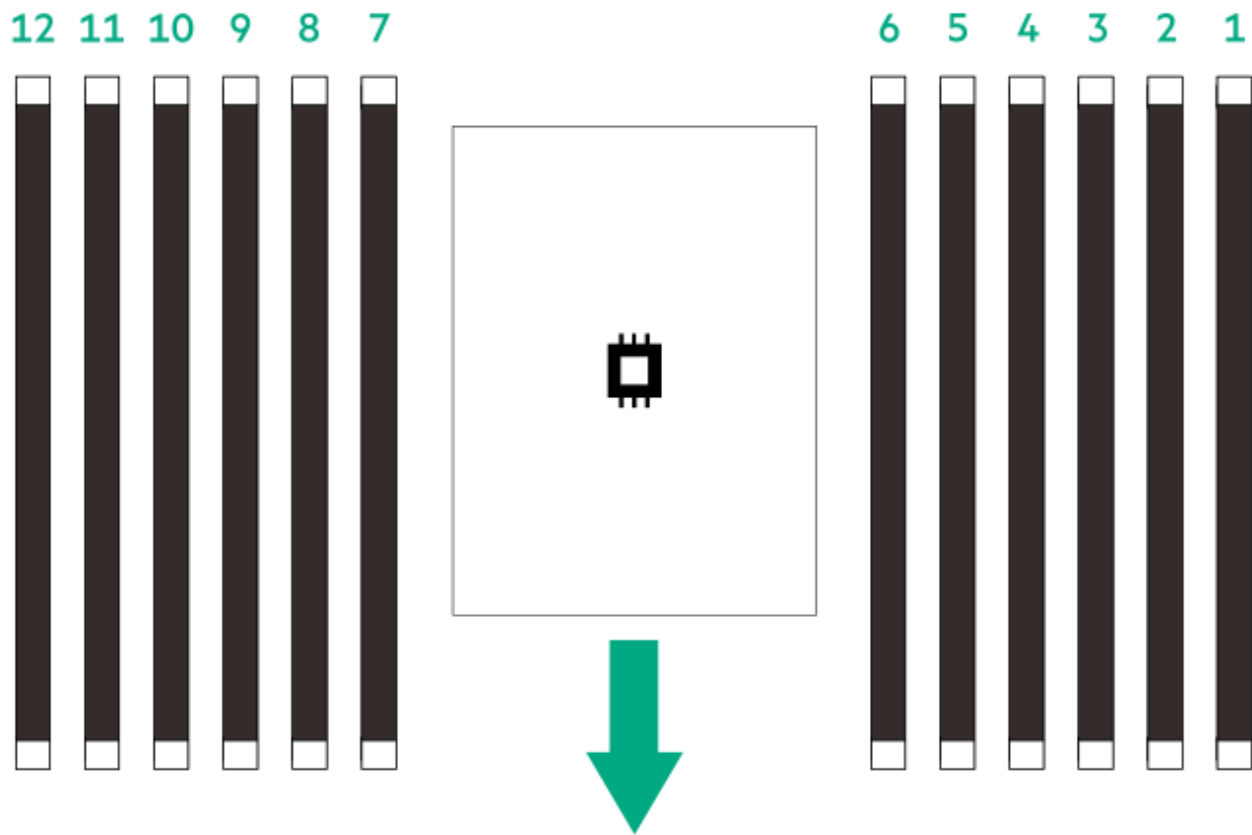
### Results

The installation procedure is complete.

## Memory option

The server has 12 DIMM slots supporting HPE DDR5 SmartMemory (RDIMM).

The arrow points to the front of the server.



## Subtopics

[HPE SmartMemory speed and population information](#)

[DIMM installation guidelines](#)

[Installing a DIMM](#)

## HPE SmartMemory speed and population information

For information about memory speed and server-specific DIMM population rules for HPE servers using 4th and 5th Gen AMD EPYC 9004/9005 Series Processors, 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

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



#### CAUTION

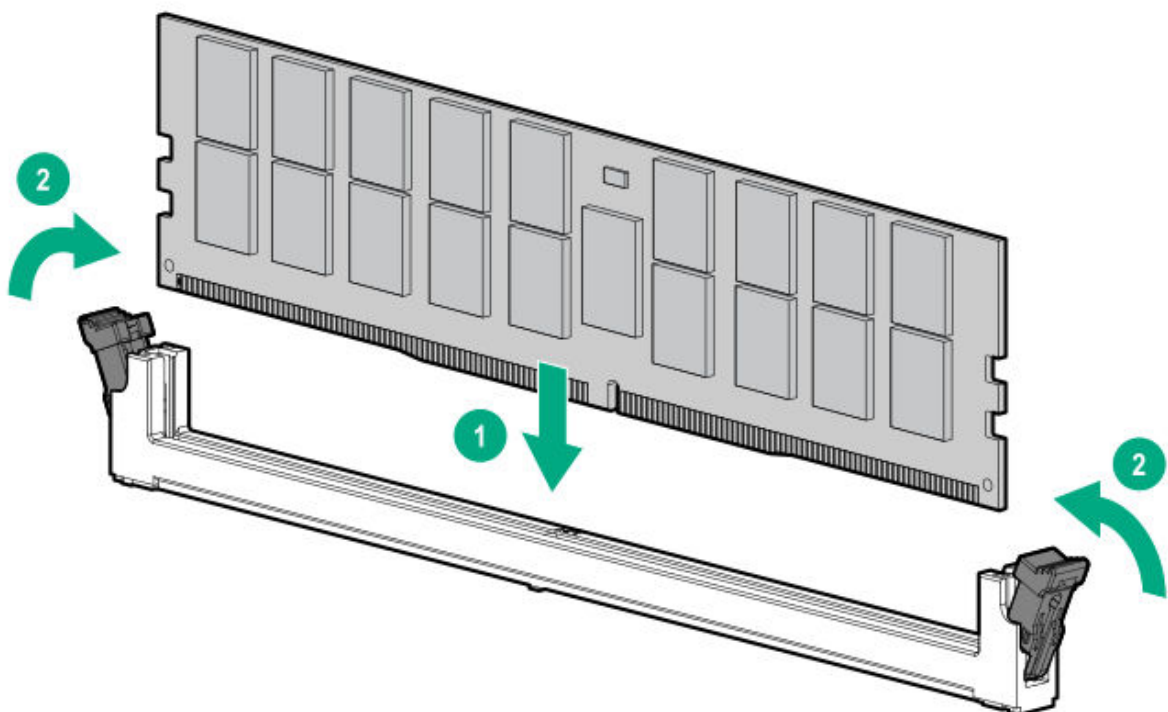
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe [antistatic precautions](#).

### Procedure

1. [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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. 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.



9. Do one of the following:
  - [Install the air baffle.](#)
  - [Install the midplane drive cage.](#)
- .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.](#)
- .6. 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.

## NS204i-u + low-profile riser cage option

The server supports the NS204i-u + low-profile riser cage with a PCIe5 x16 riser board that connects to secondary riser connector.

- The PCIe5 x16 riser board supports a half-height, half-length (low-profile) expansion card.
- The riser cage supports the [HPE NS204i Boot Device](#).

## Subtopics

### [Installing the NS204i-u + low-profile riser cage](#)

# Installing the NS204i-u + low-profile riser cage

## Prerequisites

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

- T-10 Torx screwdriver
- Hex screwdriver

## About this task



### CAUTION

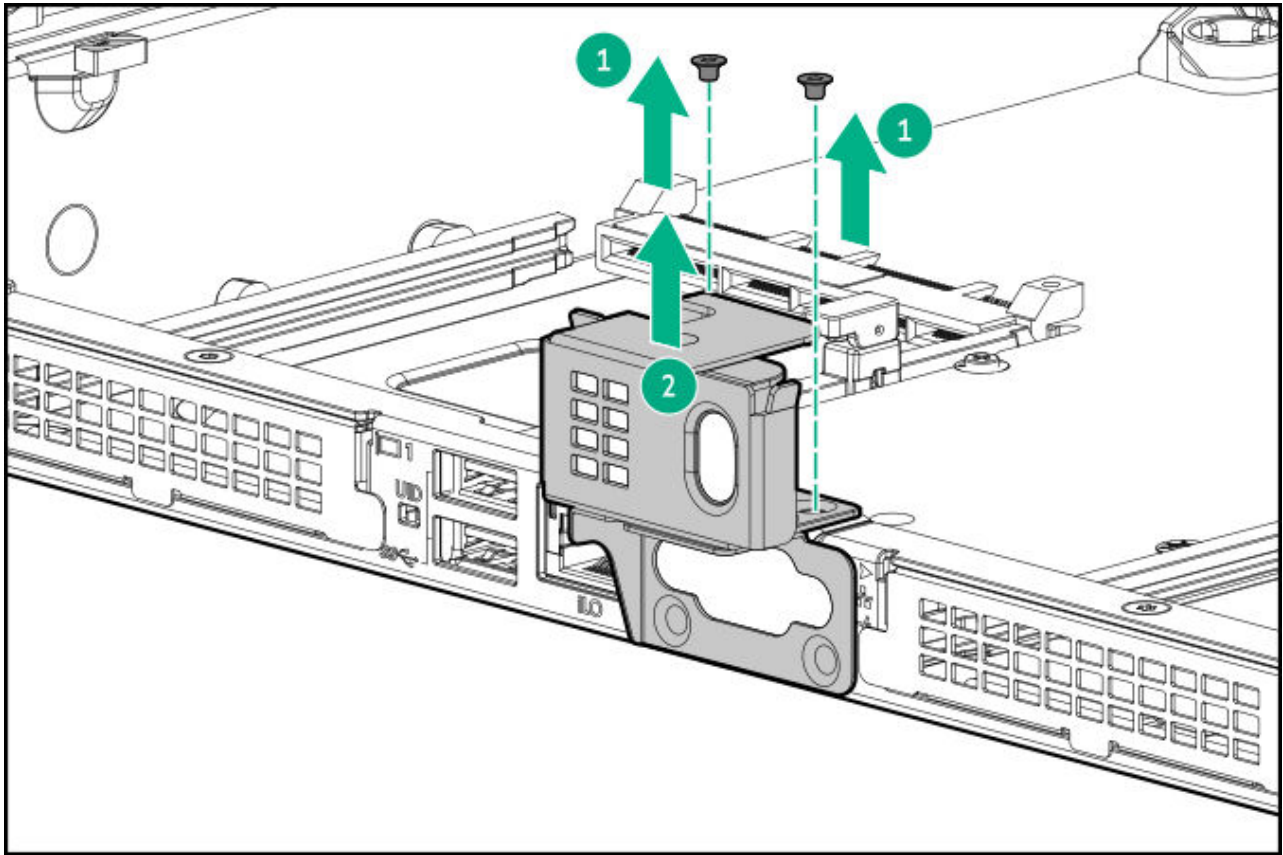
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

## Procedure

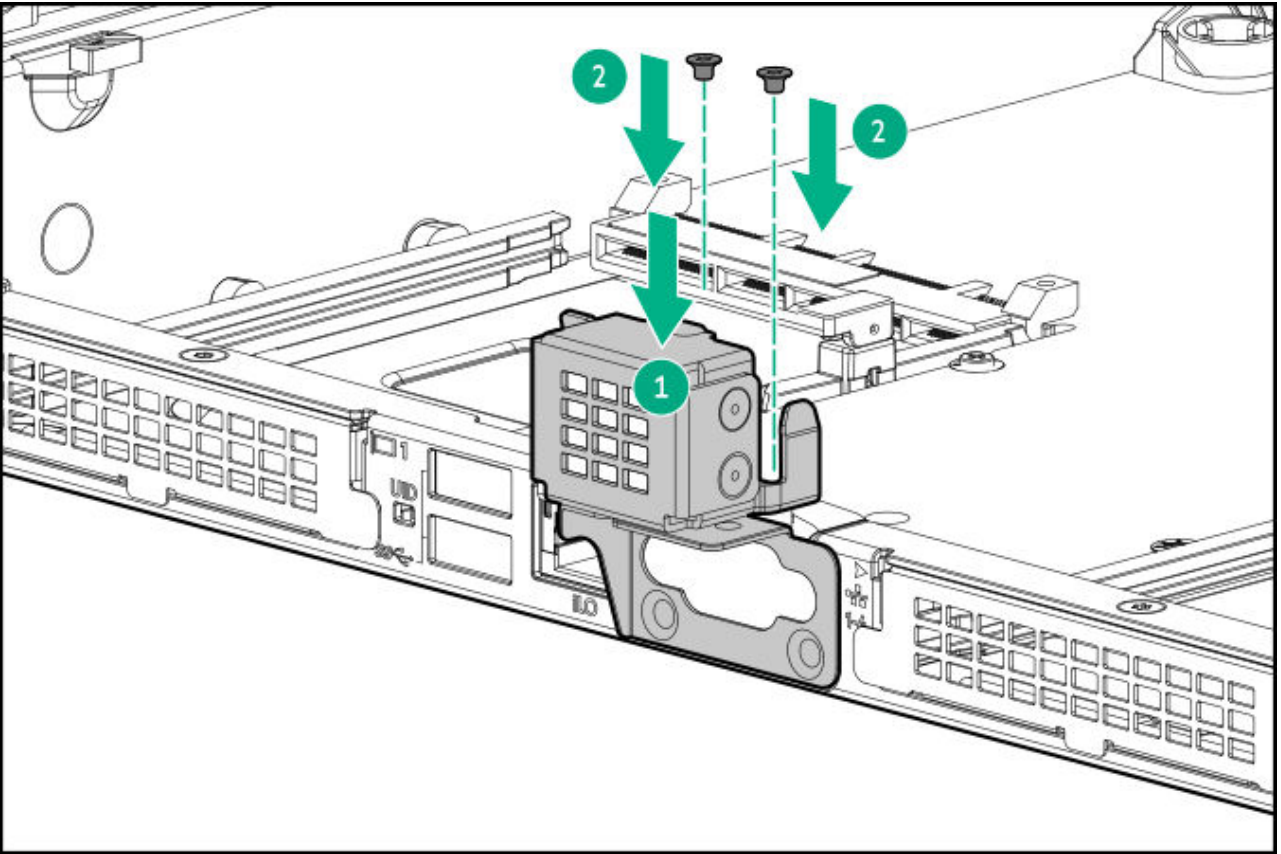
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Remove the rear 4 LFF drive cage.
9. (Optional) Install the HPE NS204i-u Boot Device on the riser cage.
0. (Optional) Install the expansion card.
- .1. Do the following:
  - Remove the primary riser cage

- Remove the secondary riser cage

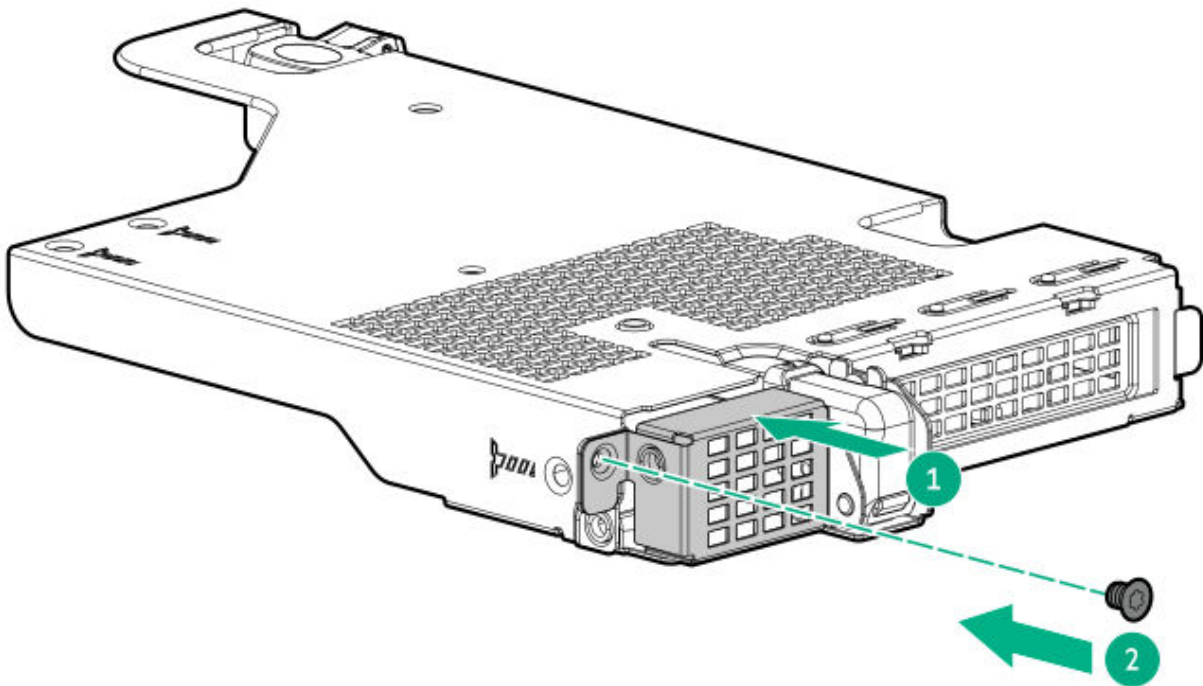
.2. Remove the default secondary riser cage bracket.



.3. Install the NS204i-u + secondary low-profile riser cage bracket.



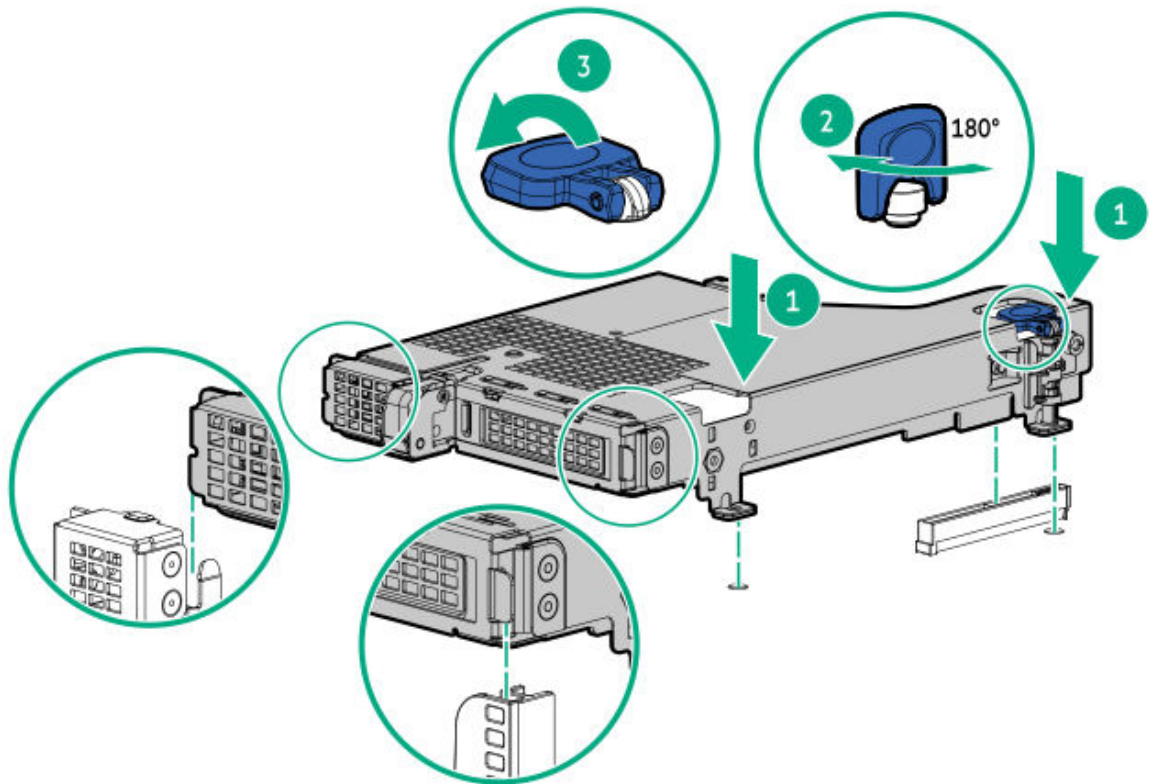
4. If the boot device is not installed in the riser cage, install the boot device blank.



- .5. Install the NS204i-u + secondary low-profile riser cage:
  - a. Carefully press the riser down on its system board connector.

Make sure that:

- The riser cage is aligned with the rear chassis.
  - The riser board is firmly seated on the system board.
- b. Simultaneously push and rotate the half-turn spring latch to 180°.
  - c. Close the spring latch.



- .6. (Optional) Connect all necessary internal cabling to the expansion card.

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

- .7. Install the primary riser cage.
- .8. Install the rear 4 LFF drive cage.
- .9. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.

- !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.

## Stacking and free-height riser options

Two types of risers are supported in the three-slot primary/secondary riser cage to add PCIe riser slots.

- Stacking riser:
  - Supports a stacking feature that allows multiple risers to be connected on top of each other.
  - Features a docking connector that supplies power.
- Free-height riser:
  - Does not have a docking connector that can connect on top of another riser.
  - Can be connected on top of a stacking riser.
  - Has a power cable that connects to the power connector for the free-height riser on the system board.

Both risers have their assembled cables that connect to NVMe ports on the system board.

For detailed information on riser option configurations, see the product QuickSpecs on <https://www.hpe.com/info/quickspecs>.

## Subtopics

### Installing the riser

# Installing the riser

## Prerequisites

- To expand to four PCIe riser slots, the riser option kit (P57116-B21) for slots 1-2 on the primary riser cage is required. The option kit includes:
  - Free-height riser (riser part number: P50364-002)
  - Stacking riser (riser part number: P51472-001)
- To expand to six PCIe riser slots, the riser option kit (P57117-B21) for slots 1-2 on the primary riser cage and slots 4-5 on the secondary riser cage is required. The option kit includes:
  - Free-height riser (riser part number: P50364-002)
  - Stacking riser (riser part number: P50365-001)
- 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](#).

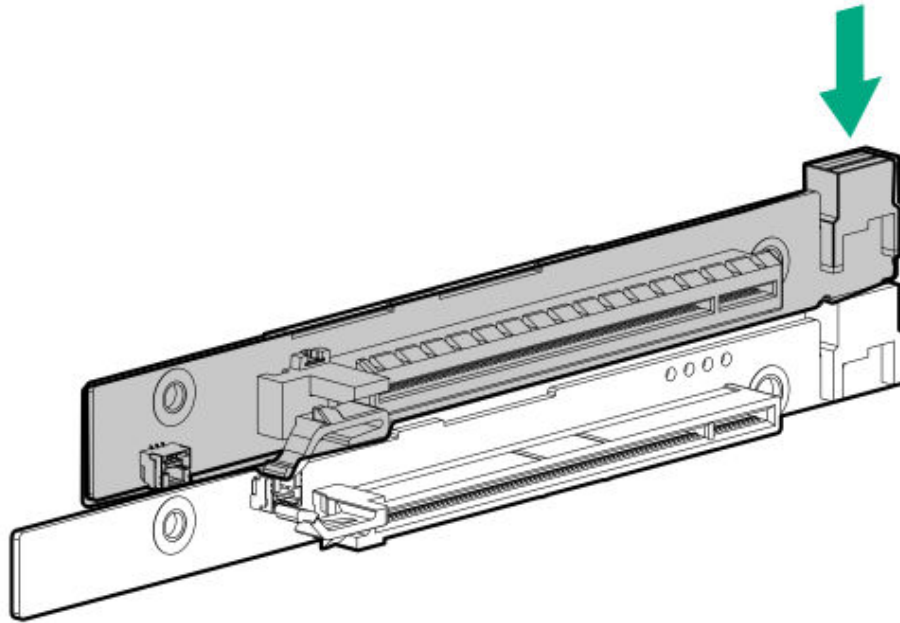
## Procedure

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. Do one of the following:
  - [Remove the air baffle.](#)
  - [Remove the midplane drive cage.](#)

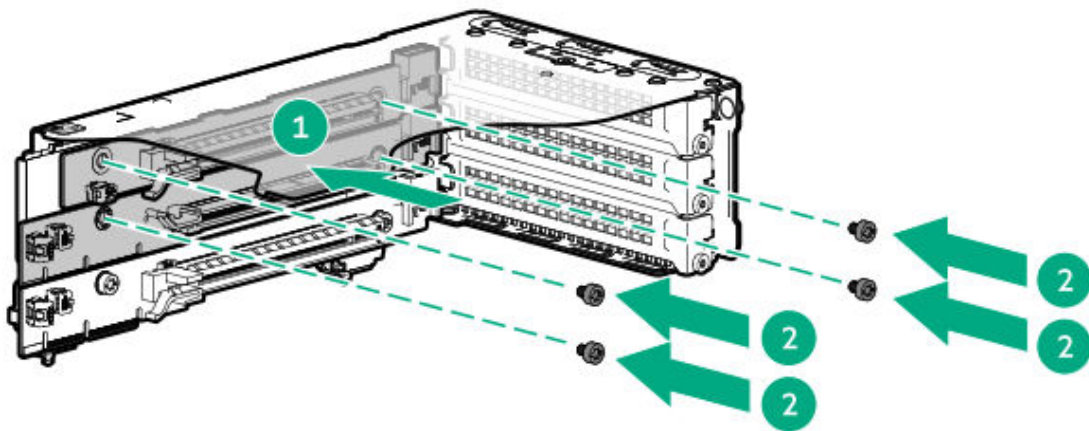
8. Remove the riser cage.

### Installing the risers on PCIe slots 1-2

9. Connect the free-height riser to the stacking riser.

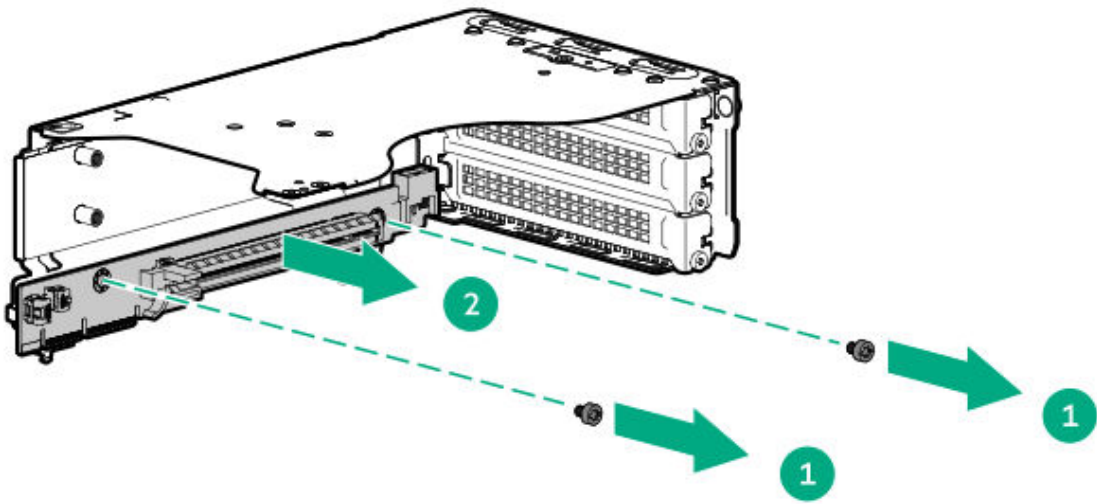


10. Install the risers on the riser cage.

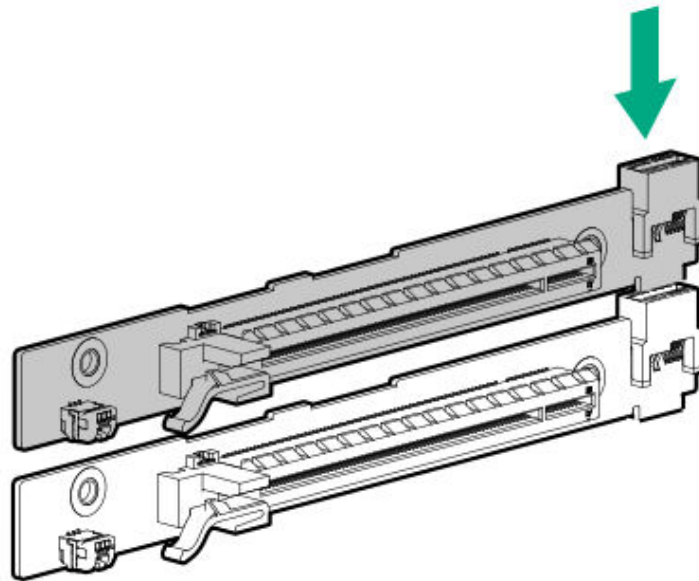


### Installing the risers on PCIe slots 4-5

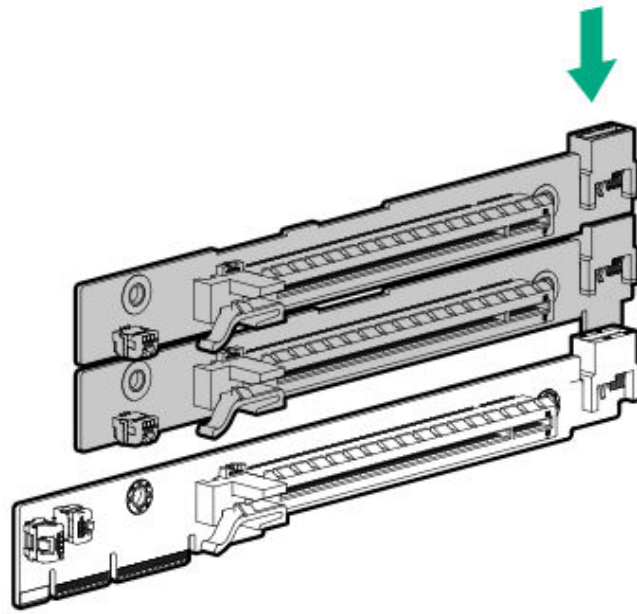
11. Remove the base riser from the riser cage.



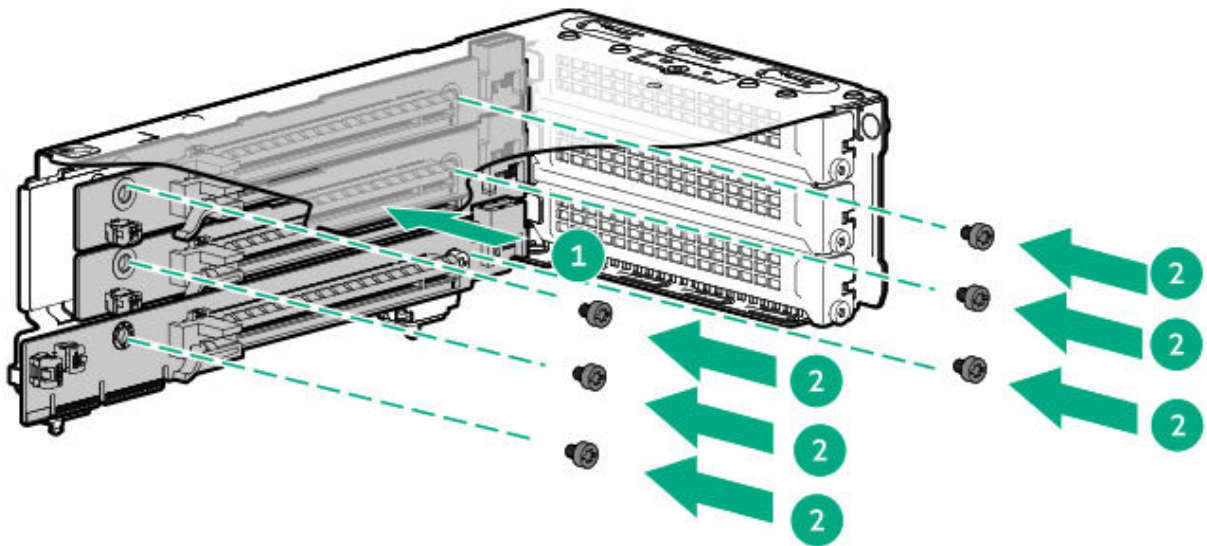
.2. Connect the stacking risers.



.3. Connect the stacking risers on the base riser.



4. Install the risers on the riser cage:
  - a. Install the risers on the riser cage.
  - b. Install the riser screws.



5. (Optional) Install the expansion card.

- .6. [Install the riser cage.](#)
- .7. Do one of the following:
  - [Install the air baffle.](#)
  - [Install the midplane drive cage.](#)
- .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.](#)

## Results

The installation procedure is complete.

## Storage controller options

This server has no embedded software RAID support. Direct attached SATA drives operate in AHCI mode.

To support hardware RAID, install a storage controller option:

- HPE MR type-o and type-p Gen11 controllers
- HPE SR type-p Gen11 controllers

When a tri-mode storage controller option is used together with a U.3 drive backplane, the system will support mixed drive configuration.

## Subtopics

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

**[Installing a type-p storage controller on a rear single-slot riser cage](#)**

**[Installing a type-p storage controller on a rear three-slot riser cage](#)**

**[Installing a type-o storage controller](#)**

# Preparing the server for storage controller installation

## Prerequisites

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

## Procedure

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



### CAUTION

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

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

# Installing a type-p storage controller on a rear single-slot riser cage

## Prerequisites

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

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

- Before you perform this procedure, make sure that you have the following items available:
  - Compatible controller cable
  - T-10 Torx screwdriver

## About this task



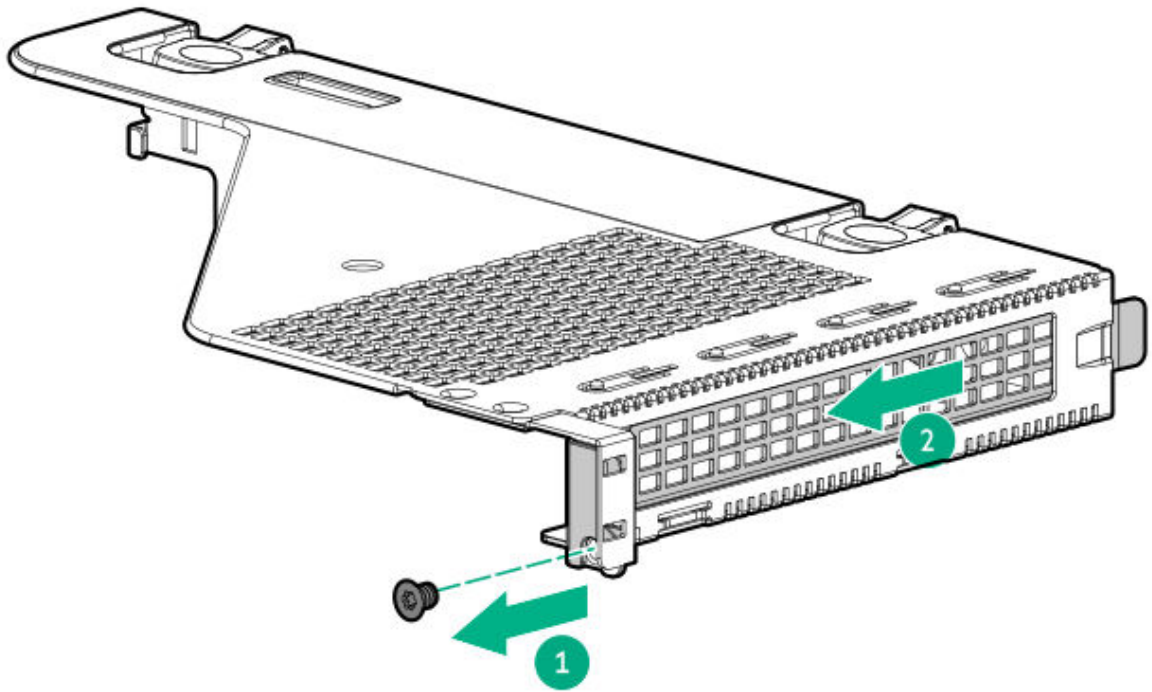
### CAUTION

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

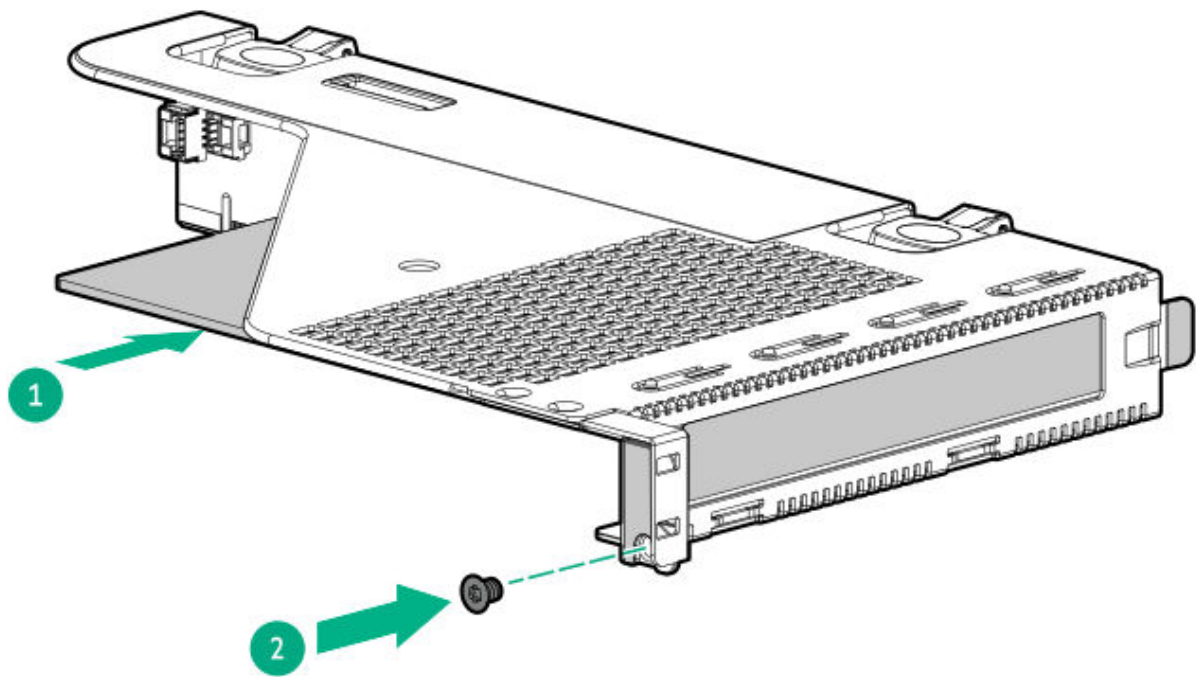
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Remove the rear 4 LFF drive cage.
9. Remove the riser cage.
- .0. Identify the riser slot compatible with the storage controller.
- .1. Remove the riser slot blank.

Retain the screw and blank. This screw will be used to secure the new type-p storage controller.



.2. Install the type-p storage controller.

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



.3. Install the riser cage.

- .4. Cable the type-p storage controller.
- .5. To enable the FBWC feature of the storage controller, install an energy pack.
- .6. Install the rear 4 LFF drive cage.
- .7. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .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. To configure the controller, see the relevant storage controller guide.

## Results

The installation procedure is complete.

# Installing a type-p storage controller on a rear three-slot riser cage

## 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>).

- If installing a type-p controller in the 24 E3.S drive configuration, make sure that two 12 E3.S drive cages in the option kit P70438-B21 are installed.
- Before you perform this procedure, make sure that you have the following items available:
  - Compatible controller cable
  - T-10 Torx screwdriver

## About this task

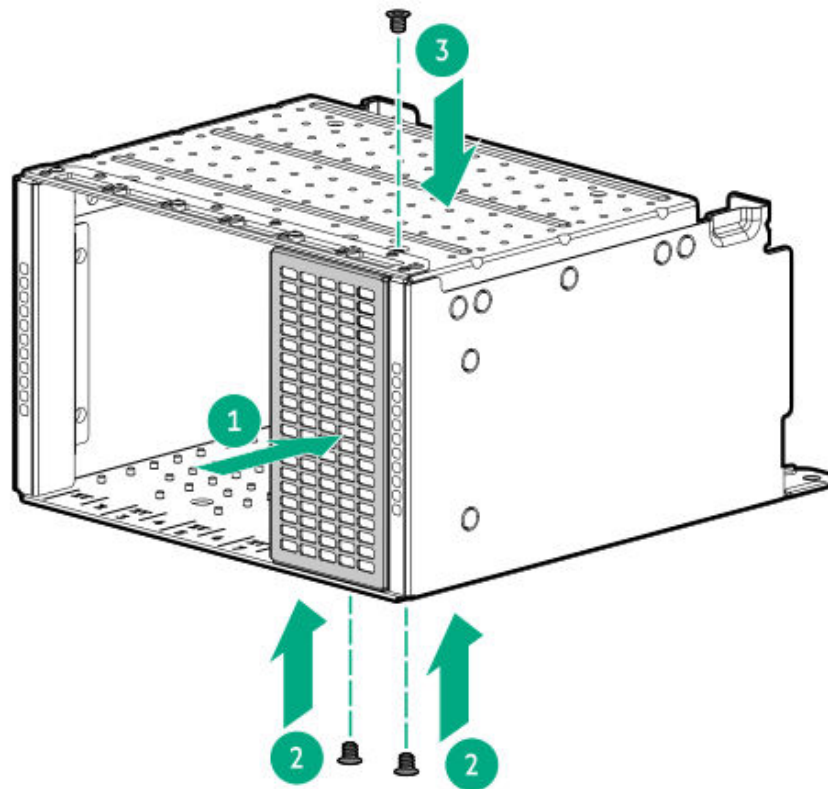


### CAUTION

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. If installing a type-p controller in the GPU-optimized 8 E3.S drive configuration, remove all E3.S drive.
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 installing a type-p controller in the GPU-optimized 8 E3.S drive configuration, install the drive cage filler:
  - a. Remove the 12 E3.S drive cage.
  - b. Install the E3.S drive cage filler in the drive bays 9-12.



c. Install the 12 E3.S drive cage.

9. Do one of the following:

- Remove the air baffle.
- Remove the midplane drive cage.

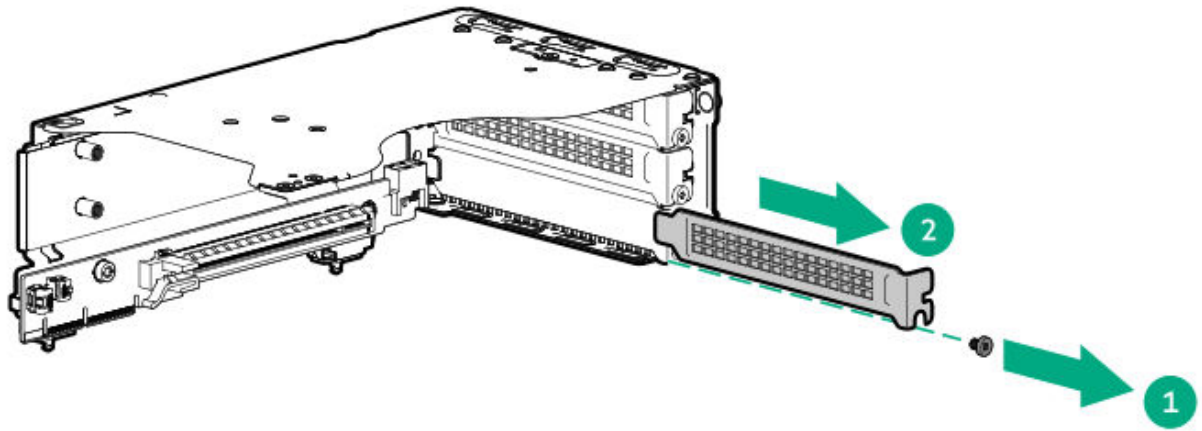
.0. Remove the riser cage.

.1. (Optional) Install the risers.

.2. Install the type-p controller:

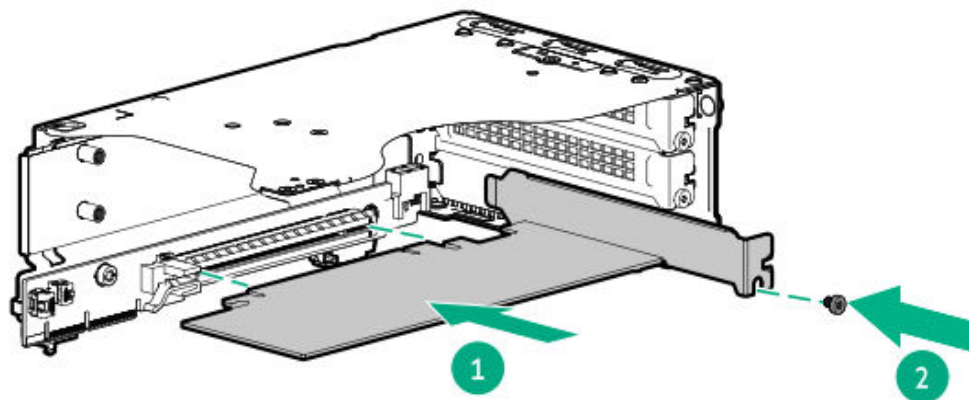
a. Remove the riser slot blank.

Retain the screw and blank. This screw will be used to secure the new type-p storage controller.



b. Install the storage controller

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



- .3. Install the riser cage.
- .4. Cable the type-p storage controller.
- .5. To enable the FBWC feature of the storage controller, install an energy pack.
- .6. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.

- .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. If removed, [install the E3.S drives.](#)
- !4. If removed, [install the front bezel](#)
- !5. To configure the controller, see the [relevant storage controller guide.](#)

## Results

The installation procedure is complete.

# Installing a 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 22.



### 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](#).

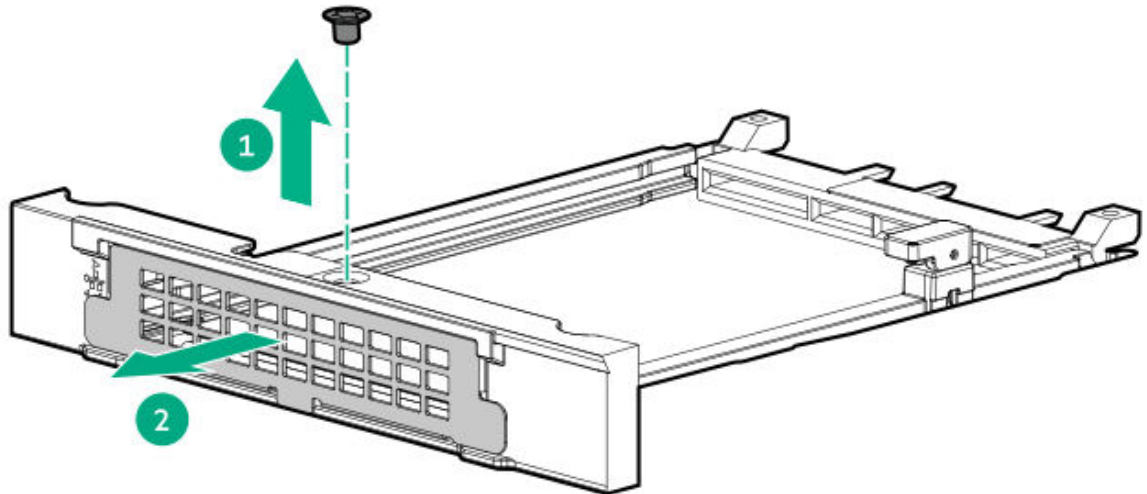


### CAUTION

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.

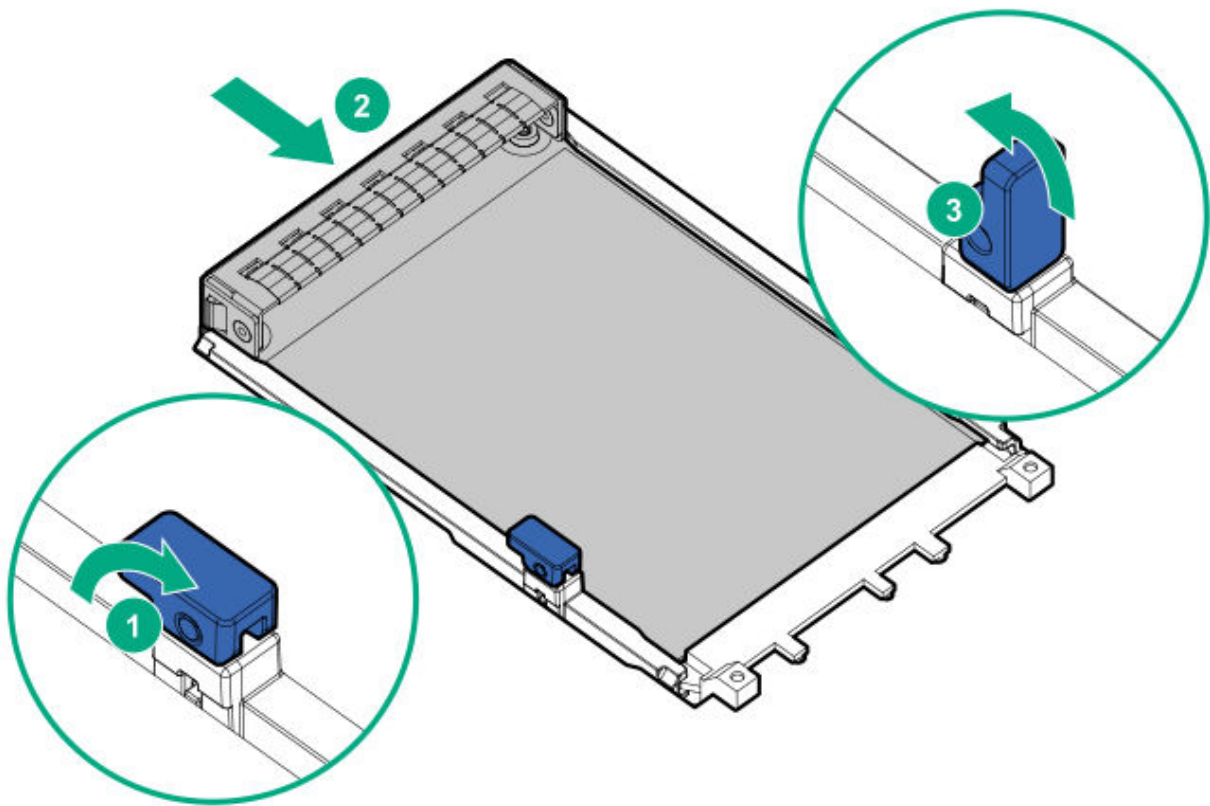
## Procedure

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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. If installed, remove the rear 4 LFF drive cage.
9. Do one of the following:
  - If no DLC module is installed in the secondary riser cage, remove the secondary riser cage.
  - If the DLC module is installed in the secondary riser cage, release the secondary riser cage.
10. Remove the OCP slot 22 blank:
  - a. Remove the blank screw.
  - b. Use a plastic spudger to pry the top side of the blank from the chassis.
  - c. Remove the blank.



.1. Install the type-o storage controller:

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



- .2. Cable the type-o storage controller.
- .3. Do one of the following:
  - If no DLC module is installed in the secondary riser cage, install the secondary riser cage.
  - If the DLC module is installed in the secondary riser cage, install the secondary riser cage with DLC module.
- .4. If removed, install the rear 4 LFF drive cage.
- .5. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .6. Install the access panel.
- .7. Install the server into the rack.
- .8. Connect all peripheral cables to the server.
- .9. Connect each power cord to the server.
- .10. Connect each power cord to the power source.

1. [Power up the server.](#)
2. To configure the controller, see the [relevant storage controller guide](#).

## Results

The installation procedure is complete.

## Energy pack options

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

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

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

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

### Subtopics

[HPE Smart Storage Battery](#)

[HPE Smart Storage Hybrid Capacitor](#)

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

# HPE Smart Storage Hybrid Capacitor

The capacitor pack can support up to three devices.

This server supports the 12 W or 16 W HPE Smart Storage Hybrid Capacitor with the 145 mm cable.

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



## IMPORTANT

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

The capacitor pack is fully charged after the system boots.

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

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

## Subtopics

### Minimum firmware versions

## Minimum firmware versions

Product	Minimum firmware version
Server system ROM	1.12
HPE MR type-o and type-p Gen11 controllers	52.24.3-4948
HPE SR900 series type-p Gen11 controllers	03.01.14.062

## Installing an energy pack

### Prerequisites

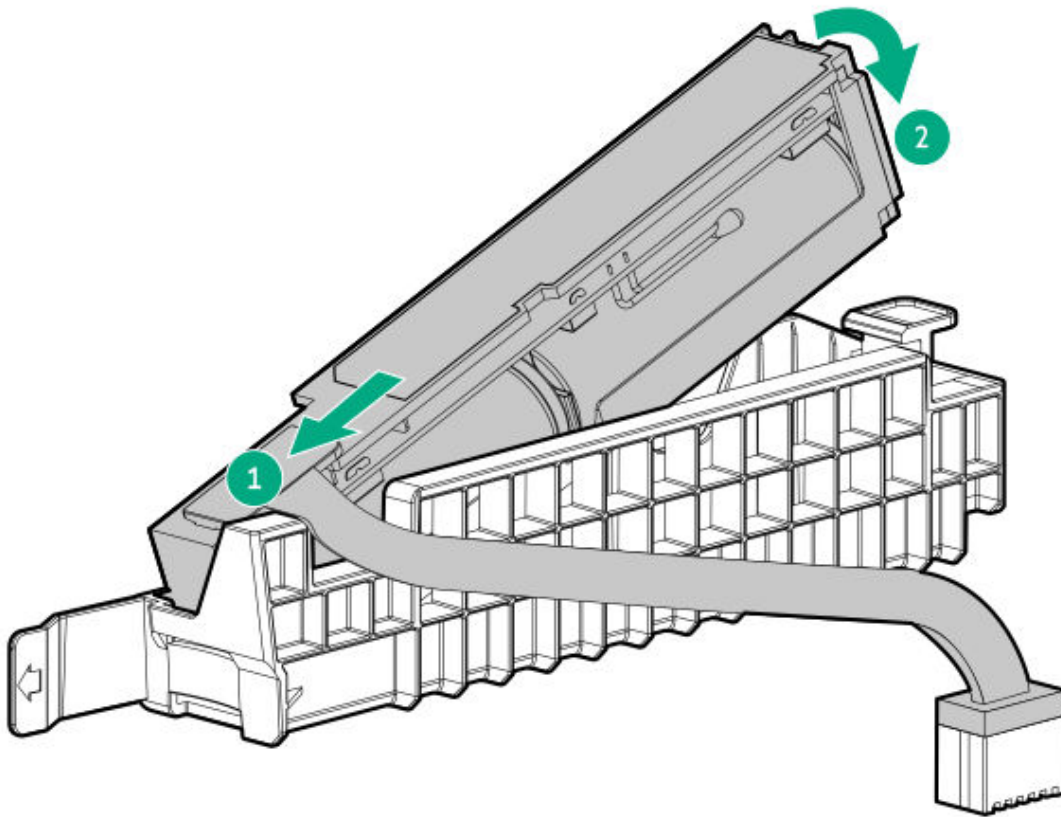
- Make sure that you have the following items available:
  - Storage controller backup power cable (ships with the storage controller)
  - Energy pack extension cable (P56659-B21)—When installing the energy pack in the retention latch.

- If you are installing the HPE Smart Storage Hybrid Capacitor, verify that the system meets the minimum firmware requirements.

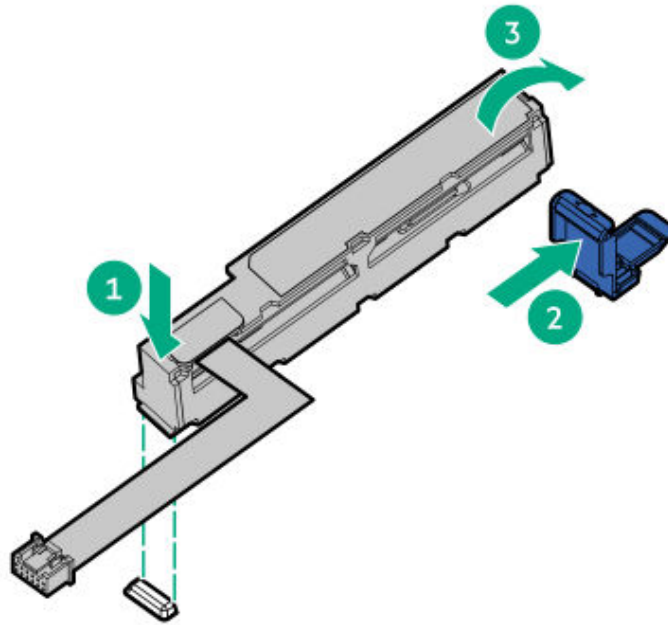
## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. If you are installing the energy pack in the retention latch, remove the midwall bracket.
9. To install the energy pack in the holder:
  - a. Insert the energy pack at an angle.
  - b. Push the energy pack down from the other end.

Make sure that the energy pack is locked in the holder.
  - c. Connect the energy pack cable.



- .0. To install the energy pack in the retention latch:
  - a. Attach one end of the energy pack on the chassis.
  - b. Press and hold the retention latch.
  - c. Pivot the energy pack downward and release the retention latch.Make sure that the energy pack is locked in the retention latch.



- .1. To cable the energy pack installed in the retention latch:
  - a. Connect the energy pack extension cable to the energy pack cable.
  - b. Connect the energy pack extension cable to the system board.
- .2. Connect the storage backup power cable.
- .3. If removed, install the midwall bracket.
- .4. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .5. Install the access panel.
- .6. Install the server into the rack.
- .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.

## Expansion card options

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

- HPE type-p storage controller
- Ethernet adapter
- HDR InfiniBand adapter
- Fibre channel host bus adapter (FC HBA)
- GPU (workload, computational, or graphics GPU)

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

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

### Subtopics

[Installing an expansion card on the slot 3/6 PCIe5 x16 base riser](#)

[Installing an expansion card on the slot 6 PCIe5 x16 low-profile riser](#)

[Installing an expansion card on three-slot primary/secondary riser cages](#)

## Installing an expansion card on the slot 3/6 PCIe5 x16 base riser

### Prerequisites

- [Determine the fan requirement for the expansion option that you are installing.](#)
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

## About this task



### CAUTION

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



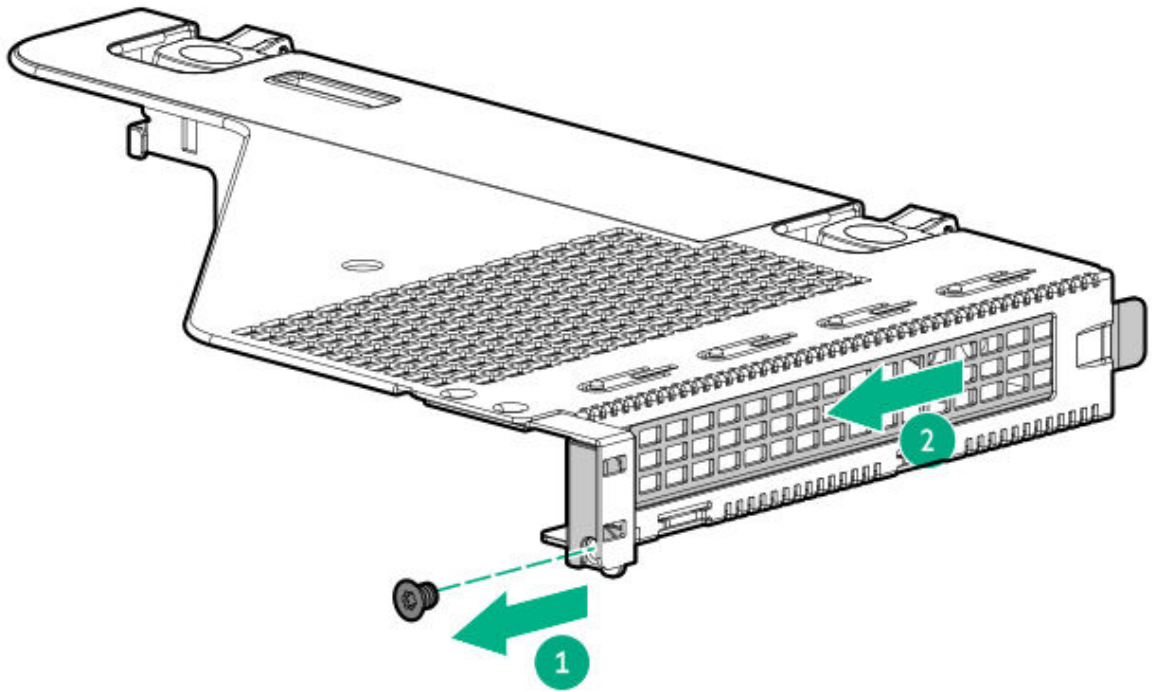
### CAUTION

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

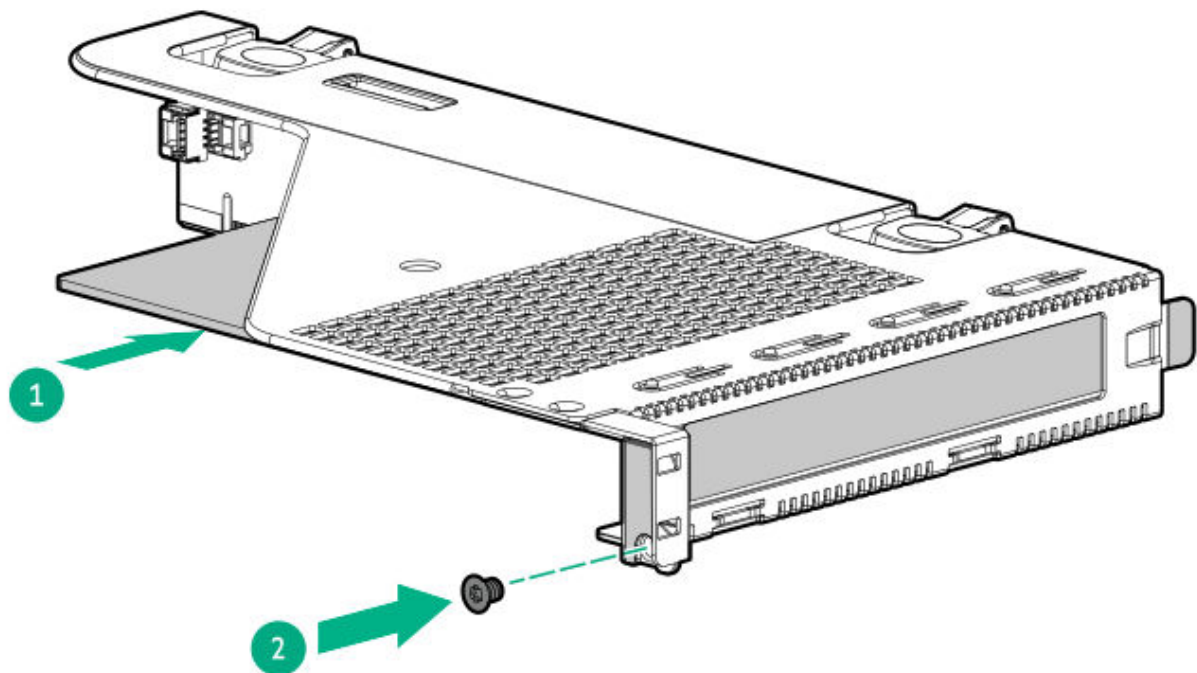
## Procedure

1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Remove the rear 4 LFF drive cage.
9. Remove the riser cage.
0. Remove the riser slot blank.

Retain the screw and blank. The screw will be used to secure the new expansion card.



- .1. Make sure that any switches or jumpers on the expansion card are set properly.  
For more information, see the documentation that ships with the expansion card option.
- .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 expansion card:  
Make sure that the expansion card is seated firmly in the slot.



- .4. Install the riser cage.
- .5. Install the rear 4 LFF drive cage.
- .6. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .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 an expansion card on the slot 6 PCIe5 x16 low-profile riser

## Prerequisites

- Determine the fan requirement for the expansion option that you are installing.
- 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.



### CAUTION

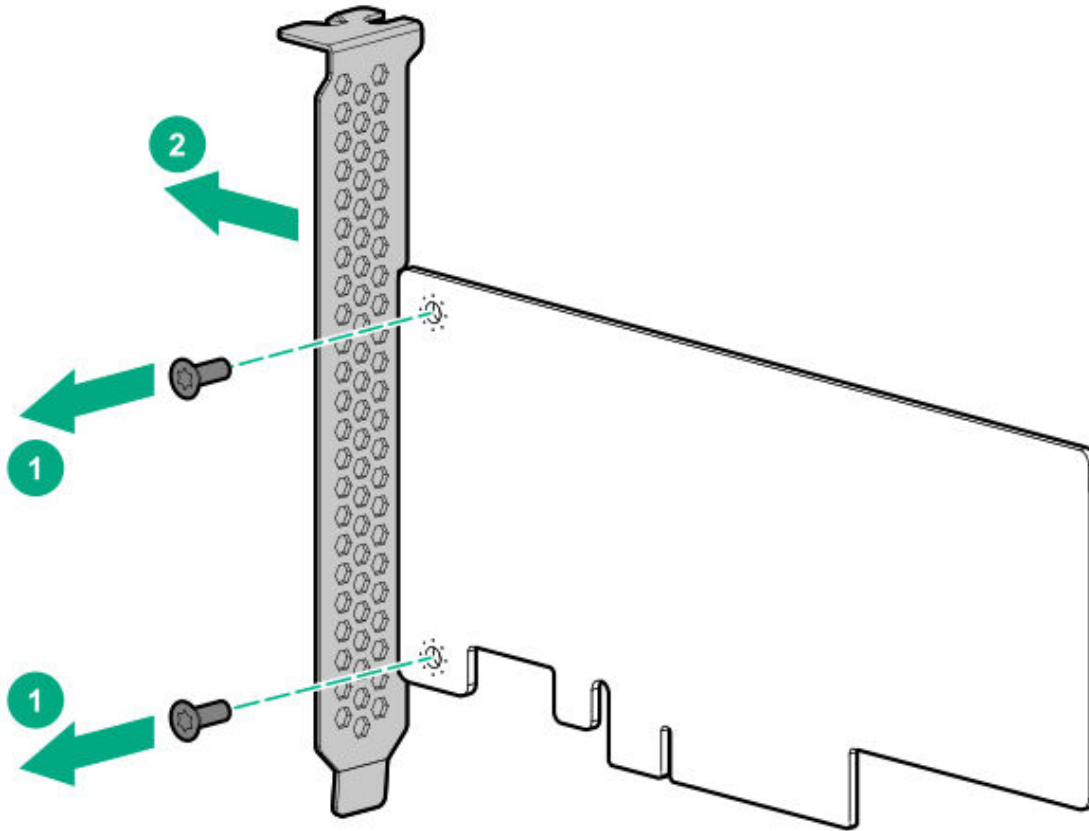
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either a riser slot blank or an expansion card installed.

## Procedure

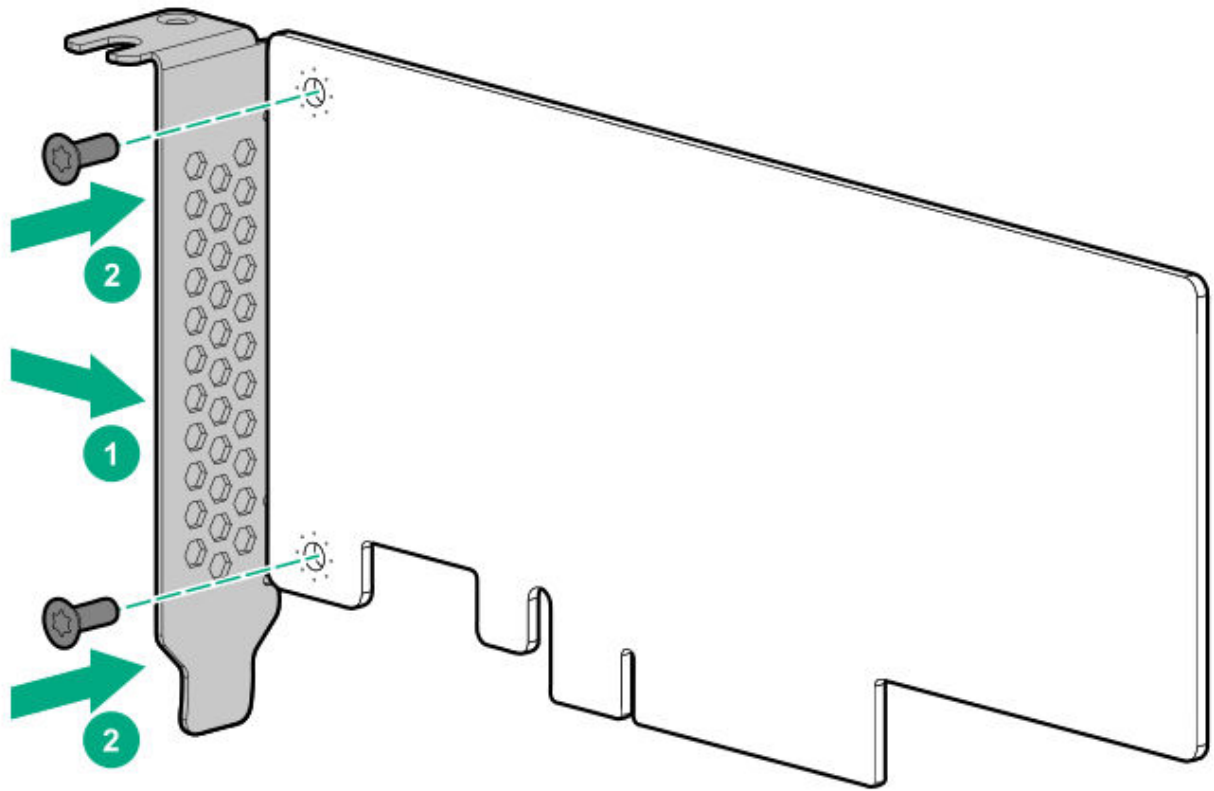
1. Power down the server.
2. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Remove the rear 4 LFF drive cage.

9. If installed, remove the riser cage.
10. If installed, remove the full-height bracket from the expansion card.

Retain the screws and bracket. The screws will be used to secure the low-profile bracket on the expansion card.

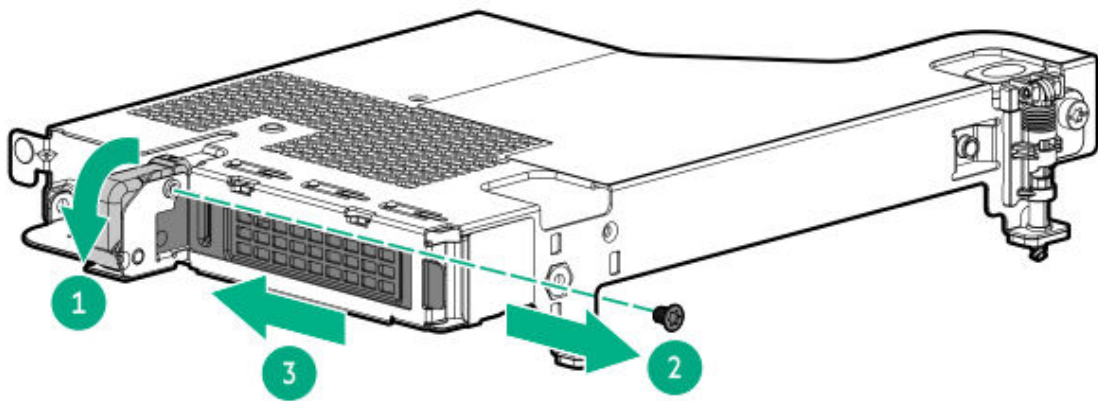


1. Install the low-profile bracket on the expansion card.



- .2. Remove the riser slot blank.

Retain the screw and blank. The screw will be used to secure the new expansion card.

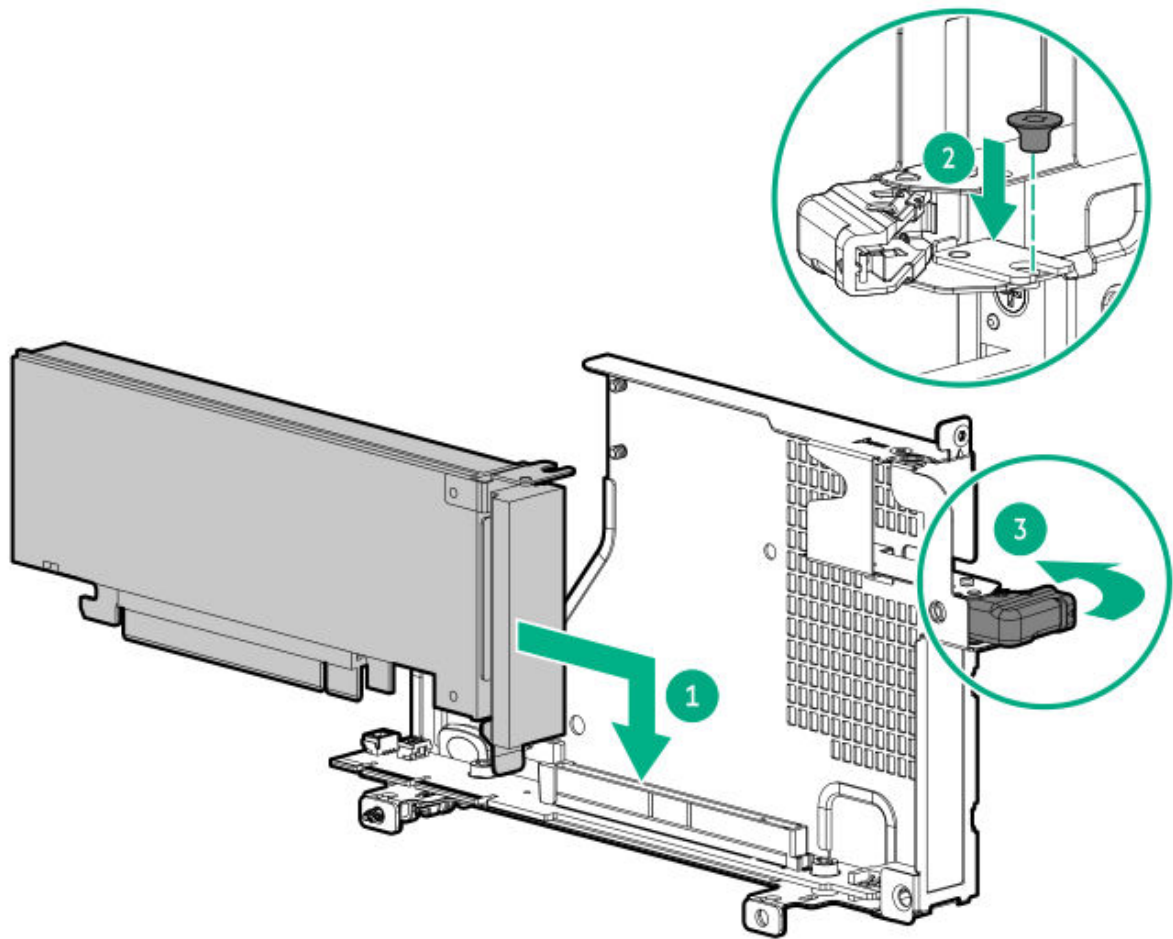


- .3. Install the expansion card:

- a. Install the expansion card.

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

- b. Close the retention latch.



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

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

5. Install the riser cage.

6. Install the rear 4 LFF drive cage.

7. Do one of the following:

- Install the air baffle.
- Install the midplane drive cage.

8. Install the access panel.

9. Install the server into the rack.

10. Connect all peripheral cables to the server.

11. Connect each power cord to the server.

12. Connect each power cord to the power source.

3. Power up the server.

## Results

The installation procedure is complete.

# Installing an expansion card on three-slot primary/secondary riser cages

## Prerequisites

- Determine the fan requirement for the expansion option that you are installing.
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

## About this task



### CAUTION

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



### CAUTION

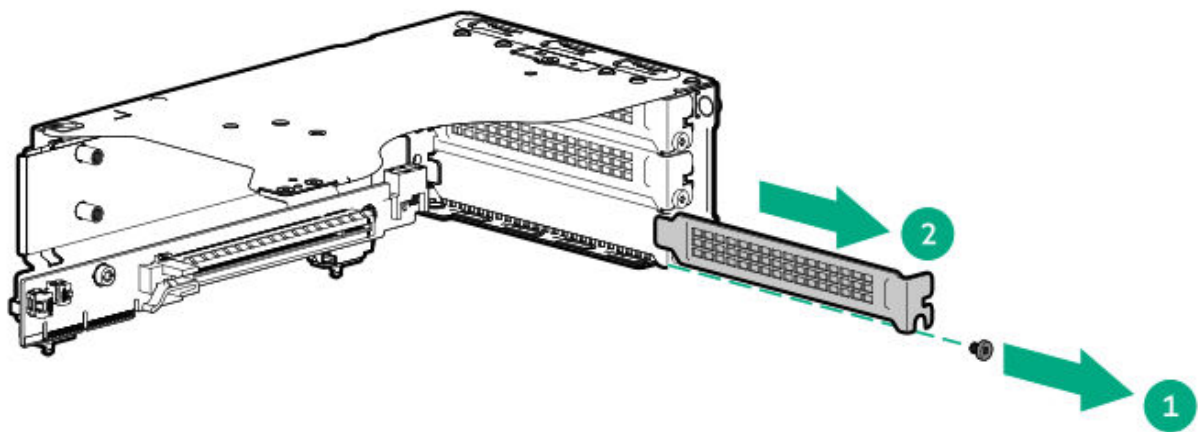
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either a riser slot blank or an expansion card installed.

## Procedure

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

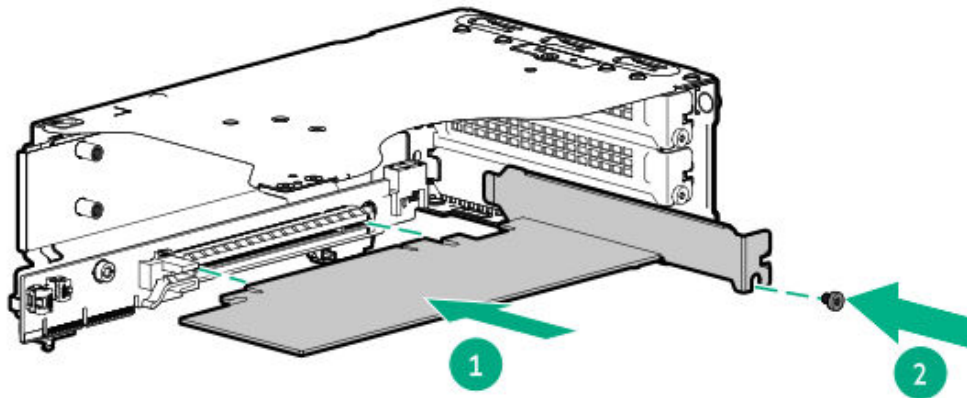
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Remove the riser cage.
9. (Optional) Install the risers.
10. Install the expansion card:
  - a. Remove the riser slot blank.

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



- 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. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .4. Install the access panel.
- .5. Install the server into the rack.
- .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.

## 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.
  - The HPE NS204i-u Boot Device (P48183-B21) is for servers that use 4th Gen AMD EPYC Processors.
  - The HPE NS204i-u Boot Device (P78279-B21) is for servers that use 5th Gen AMD EPYC Processors.
- 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

### **NS204i-u enablement option**

### **Installing the HPE NS204i-u Boot Device on the NS204i-u + secondary low-profile riser cage**

### **Installing the HPE NS204i-u Boot Device on top of the power supply cage**

## NS204i-u enablement option

The installation of NS204i-u boot device requires the NS204i-u enablement option kit (P57013-B21).

This kit includes:

- Boot device SlimSAS and power cables
- Boot device bracket—This bracket is required only if installing the boot device on top of the power supply cage.

The NS204i-u boot device can be installed in different locations based on the rear drive configuration:

- When the rear 4 LFF drive cage is present, install the boot device in the NS204i-u + secondary low-profile riser cage.
- When the rear 2 SFF stacked drive cage is present, install the boot device on top of the power supply cage.

# Installing the HPE NS204i-u Boot Device on the NS204i-u + secondary low-profile riser cage

## 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-u Boot Device components.
- Before you perform this procedure, make sure that you have the following items available:
  - NS204i-u enablement option kit
  - T-10 Torx screwdriver

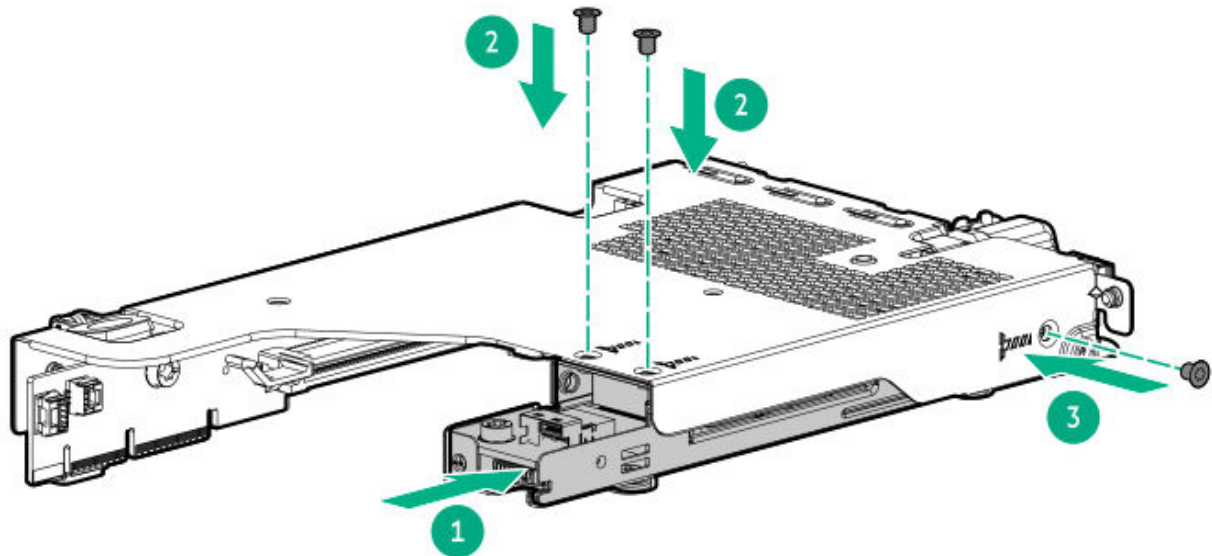
## About this task

In the DLC configuration, the boot device option can be supported only when the DLC module P80871-B21 option is 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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Remove the rear 4 LFF drive cage.

9. Remove the secondary riser cage.
10. Install the boot device in the riser cage:
  - a. Position the latch end of the boot device on the rear side of the riser cage.
  - b. Install the boot device screws.



1. Connect the signal and power cables to the boot device.
2. Install the NS204i-u + secondary low-profile riser cage.
3. Connect the boot device signal and power cables to the system board.
4. Install the rear 4 LFF drive cage.
5. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
6. Install the access panel.
7. Installing the server into the rack: Friction rack rail.
8. Connect all peripheral cables to the server.
9. Connect each power cord to the server.
10. Connect each power cord to the power source.
11. Power up the server.

- !2. Verify that the Online/Activity LEDs on the boot device are solid green.
- !3. Deploy a supported operating system to the boot device.
- !4. 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.

# Installing the HPE NS204i-u Boot Device on top of the power supply cage

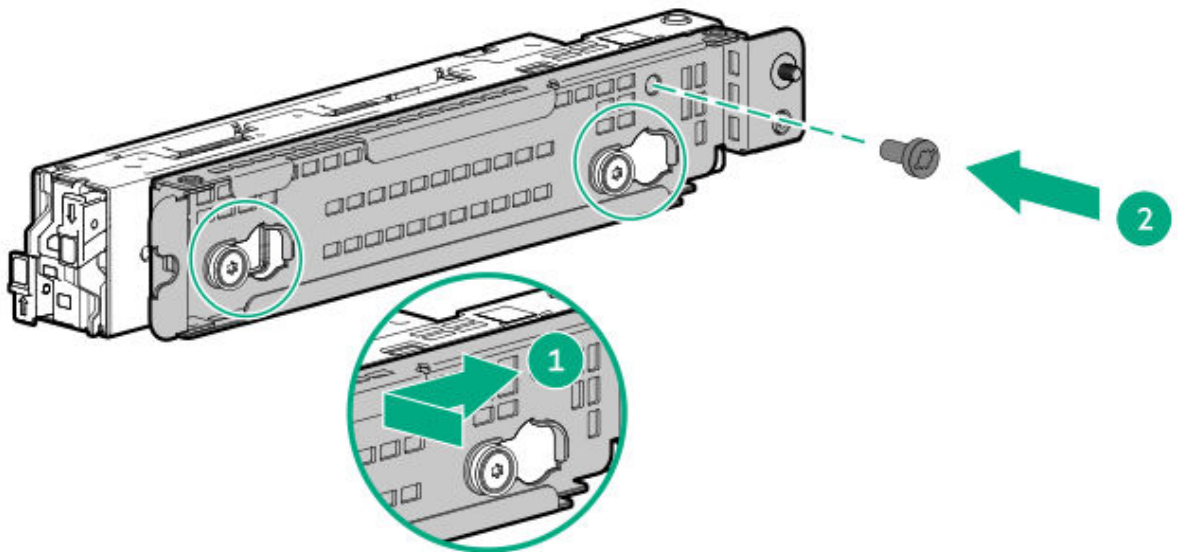
## Prerequisites

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

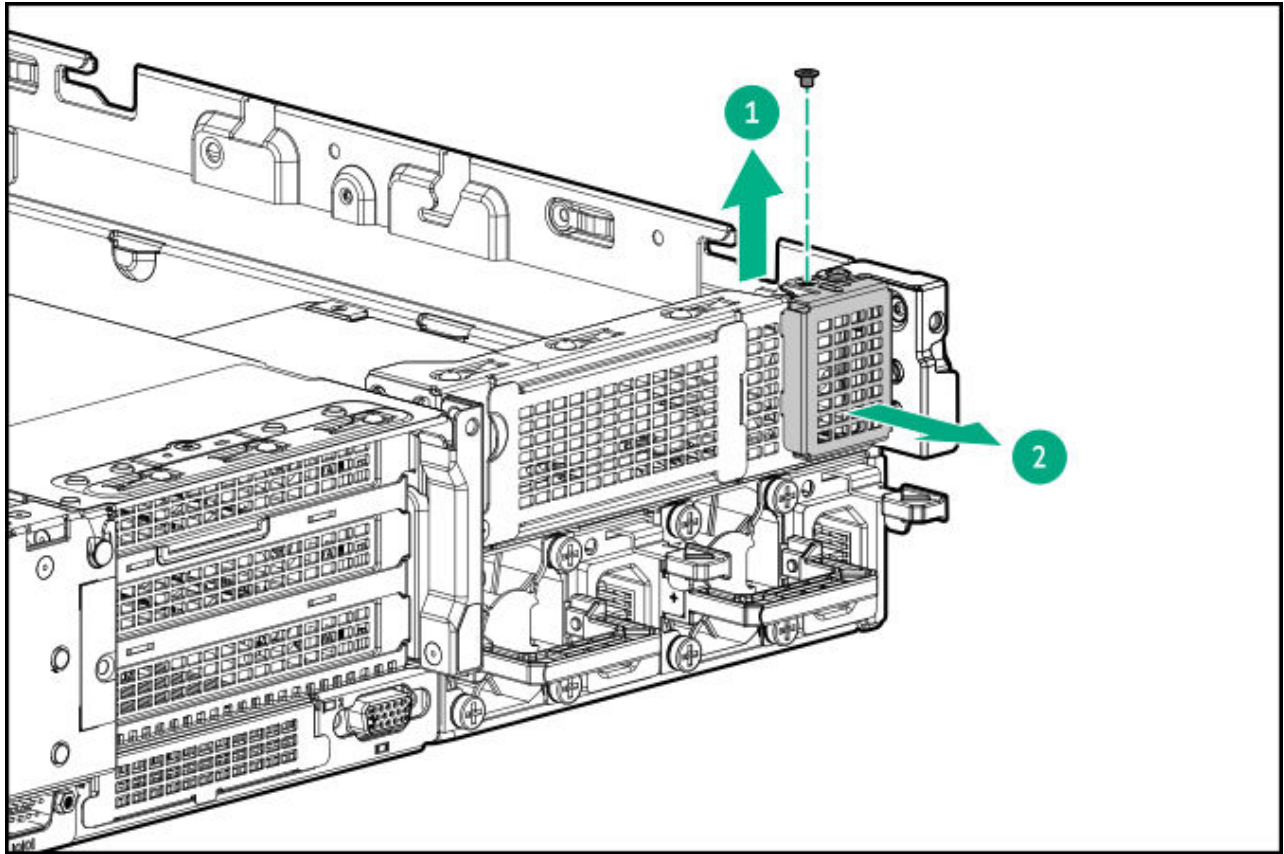
## Procedure

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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Connect the signal and power cables to the boot device.
9. Install the boot device bracket on the boot device:
  - a. Insert the spools on the boot device with the notches on the bracket.
  - b. Install the bracket screw.



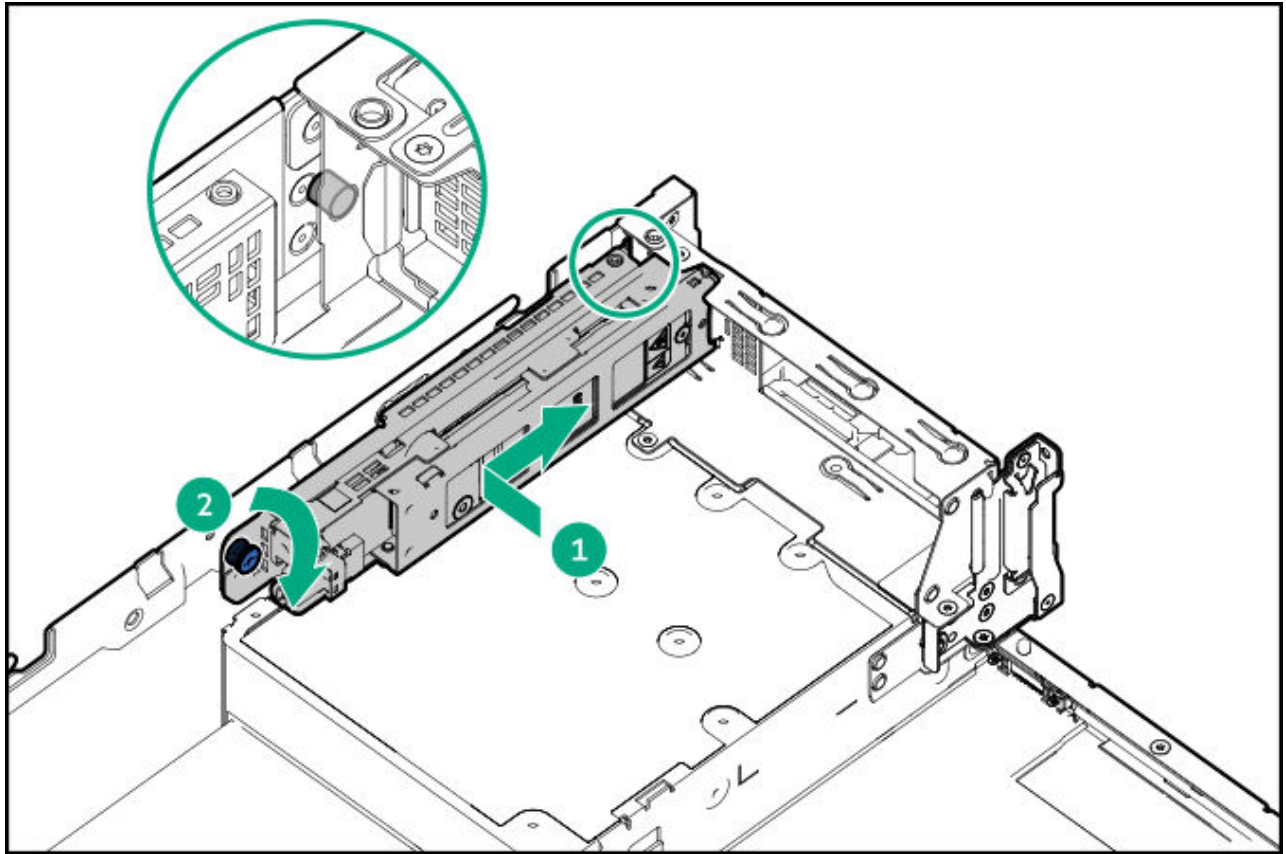
- .0. Remove the blank.



.1. Install the boot device on top of the power supply cage:

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

- a. Position the boot device against the chassis side wall, with the rear end of the device flushed against the wall pin.
- b. Tighten the bracket thumbscrew.



- .2. Connect the boot device signal and power cables to the system board.
- .3. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .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.
- !1. Verify that the Online/Activity LEDs on the boot device are solid green.
- !2. Deploy a supported operating system to the boot device.

3. 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.

## M.2 SSD pass-through card option

Install the dual-slot M.2 SSD pass-through card to support SATA or NVMe SSDs in 2280 or 22110 form factors.

- Mixed SSD type installation is not supported.
- Software RAID for NVMe SSDs is not supported.

## Subtopics

### Installing the M.2 SSD pass-through card

## Installing the M.2 SSD pass-through card

### Prerequisites

- Identify the M.2 SSD pass-through card components
- Before you perform this procedure, make sure that you have the following items available:
  - Phillips No. 1 screwdriver
  - 1/4" slotted screwdriver

### About this task

The following non-GPU-optimized drive configurations support this option:

- 8/12 LFF drive
- 8/16 SFF SAS/SATA drive
- 8/16/24 SFF x2 NVMe drive
- 36 E3.S x2 NVMe drive

- Rear 4 LFF drive



### CAUTION

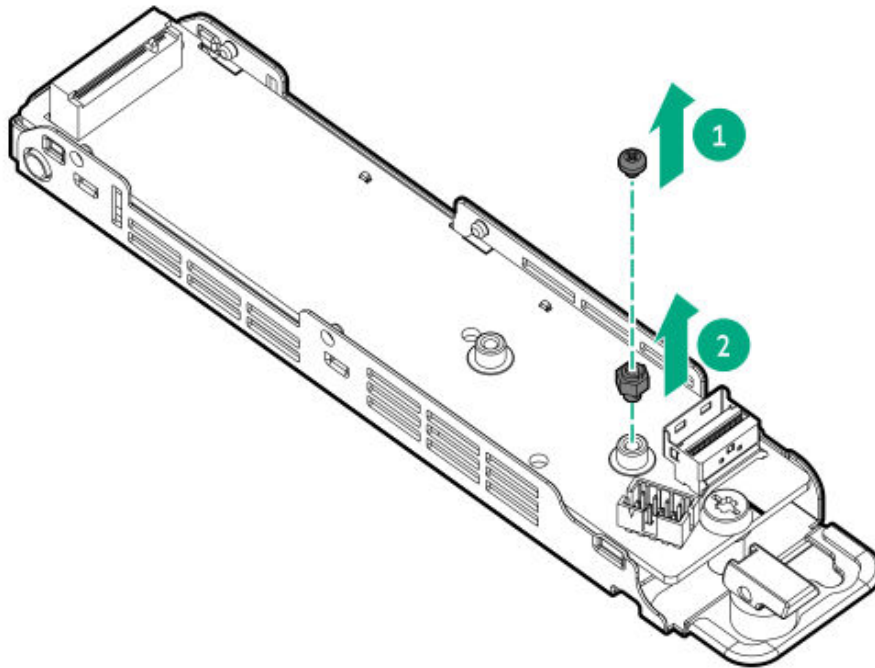
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

## Procedure

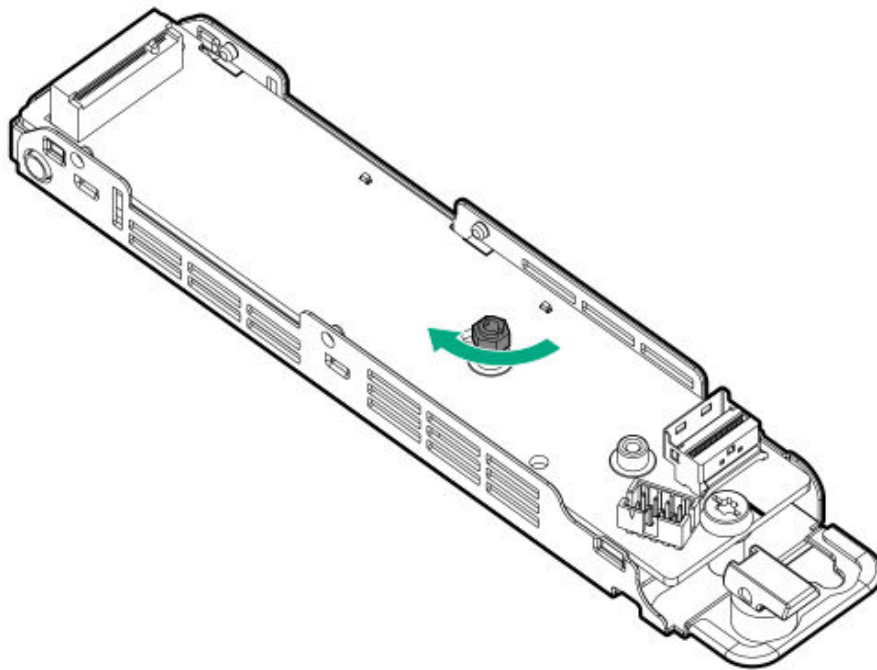
### Installing the M.2 SSD on the pass-through card

1. If you are installing M.2 2280 SSD on the pass-through card slot 1:
  - a. Remove the SSD mounting screw and the hex screw from the 22110 standoff.

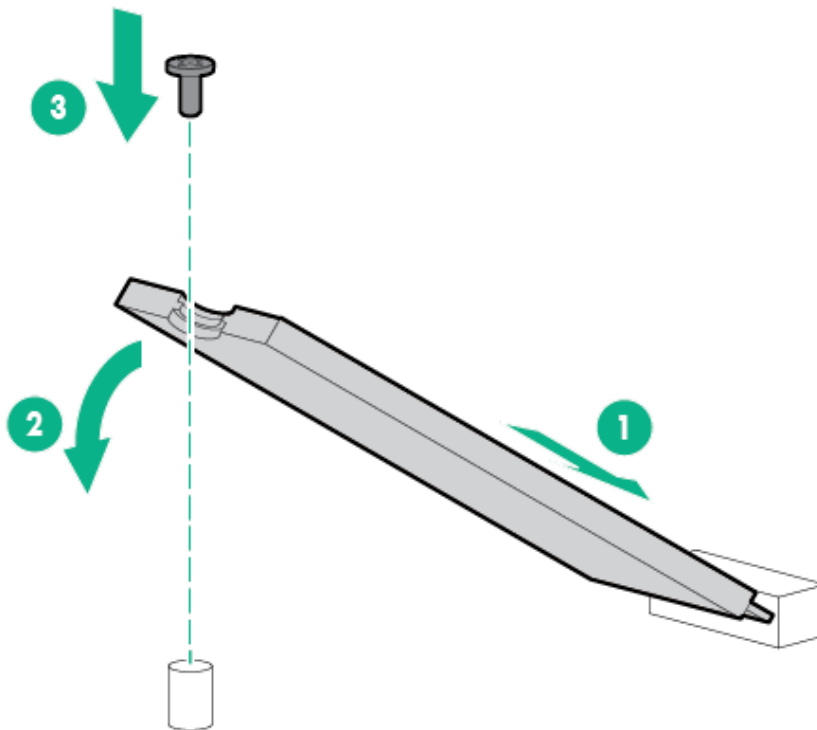
Retain the screws. These screws will be used to secure the M.2 2280 SSD.



- b. Install the hex screw on the 2280 standoff.



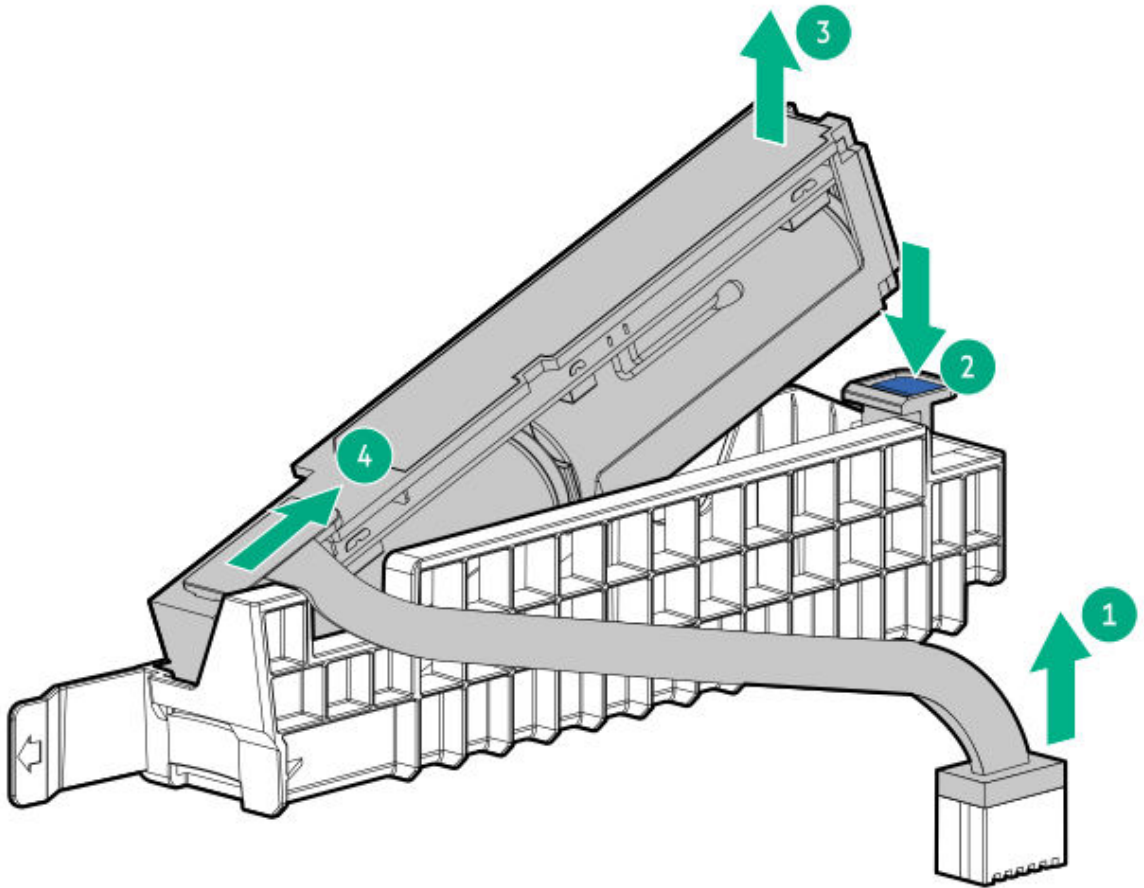
2. Insert the SSD into the M.2 slot at a 45° angle.
3. Carefully press the SSD down to the horizontal position.
4. Install the SSD mounting screw.



5. If you are installing a second M.2 SSD, repeat steps 2–4 on the slot 2.

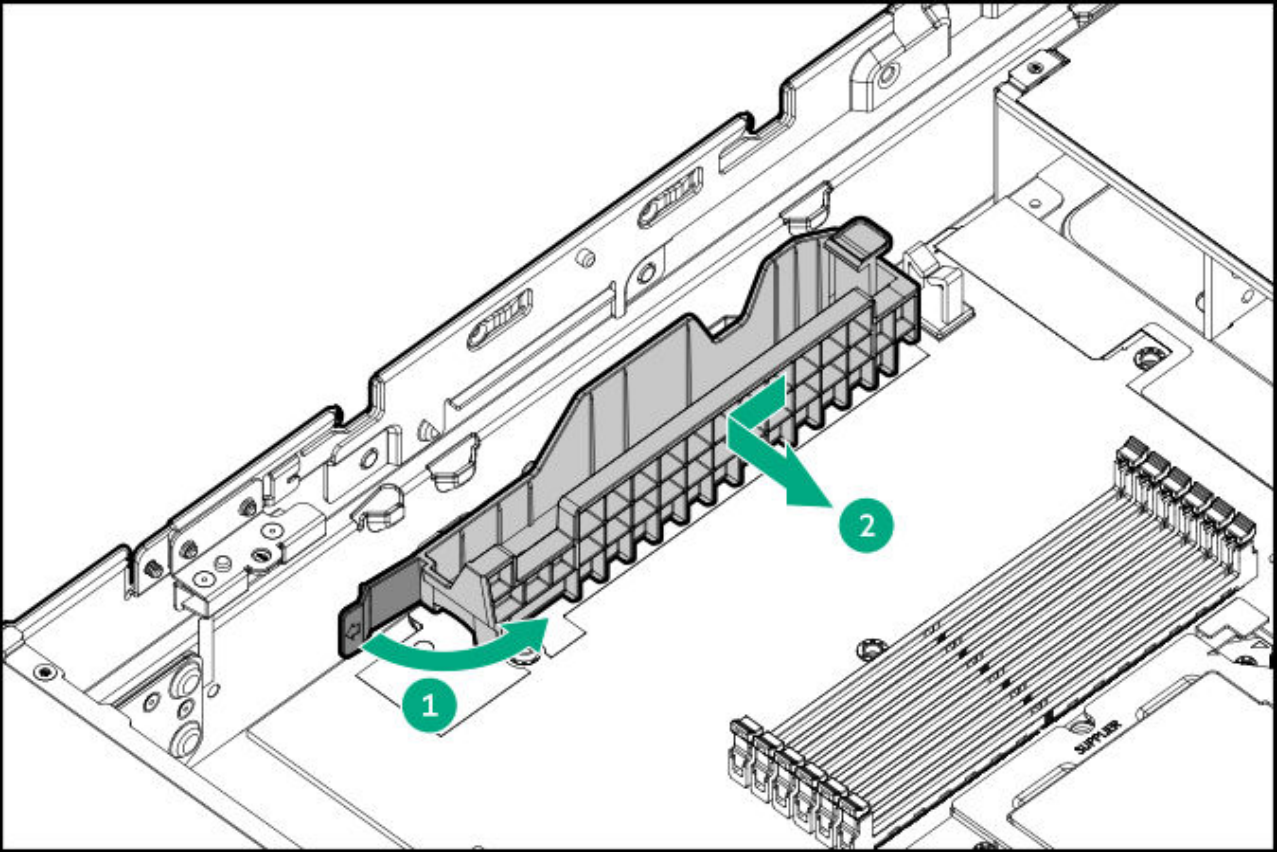
### **Installing the M.2 pass-through card**

6. Power down the server.
7. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
8. Disconnect all peripheral cables from the server.
9. Remove the server from the rack.
- .0. Place the server on a flat, level work surface.
- .1. Remove the access panel.
- .2. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
- .3. If installed, remove the energy pack.



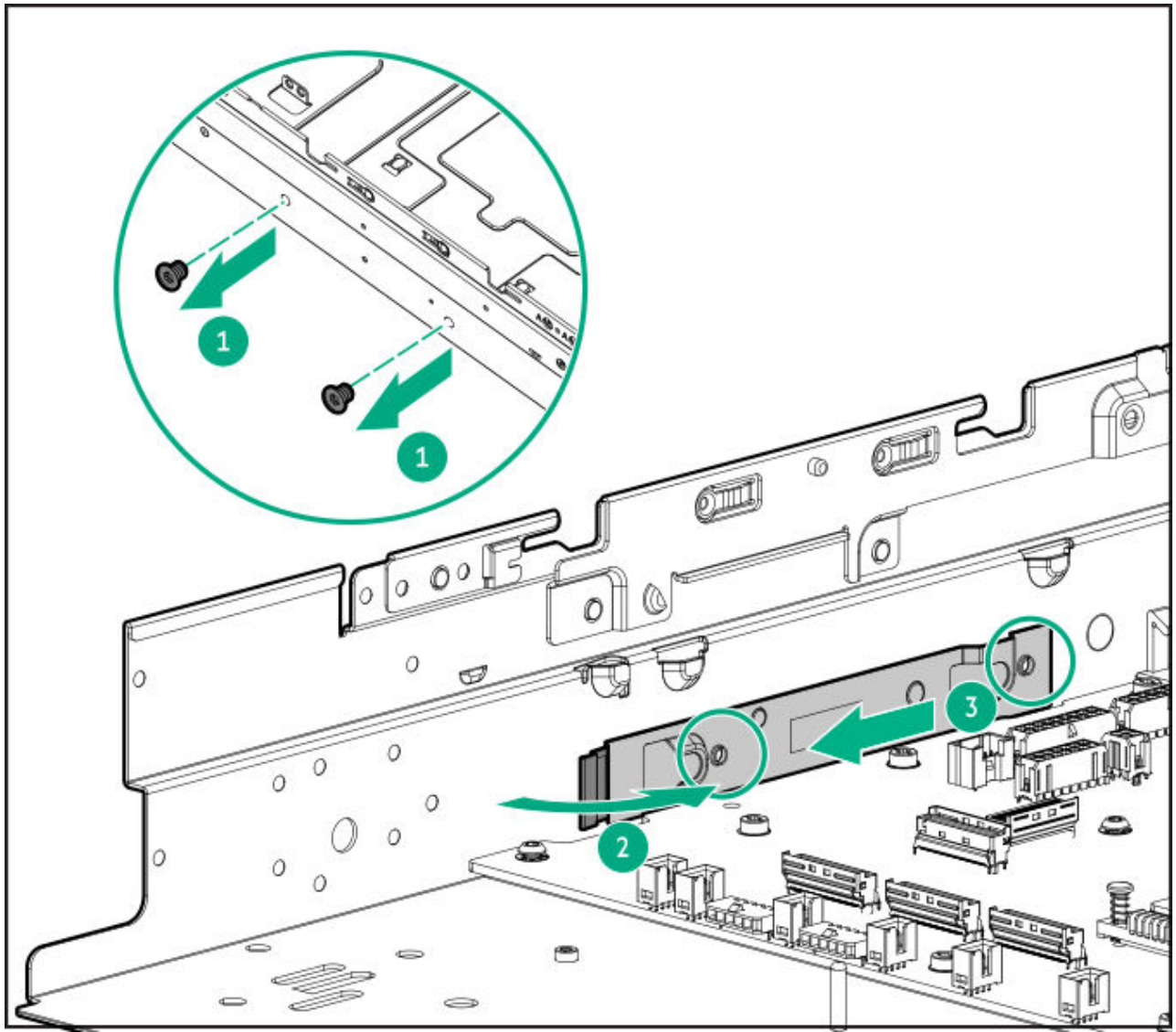
4. Remove the energy pack holder:

- a. Pull and hold the release latch on the holder.
- b. Pull the holder towards the front panel to disengage from the chassis.

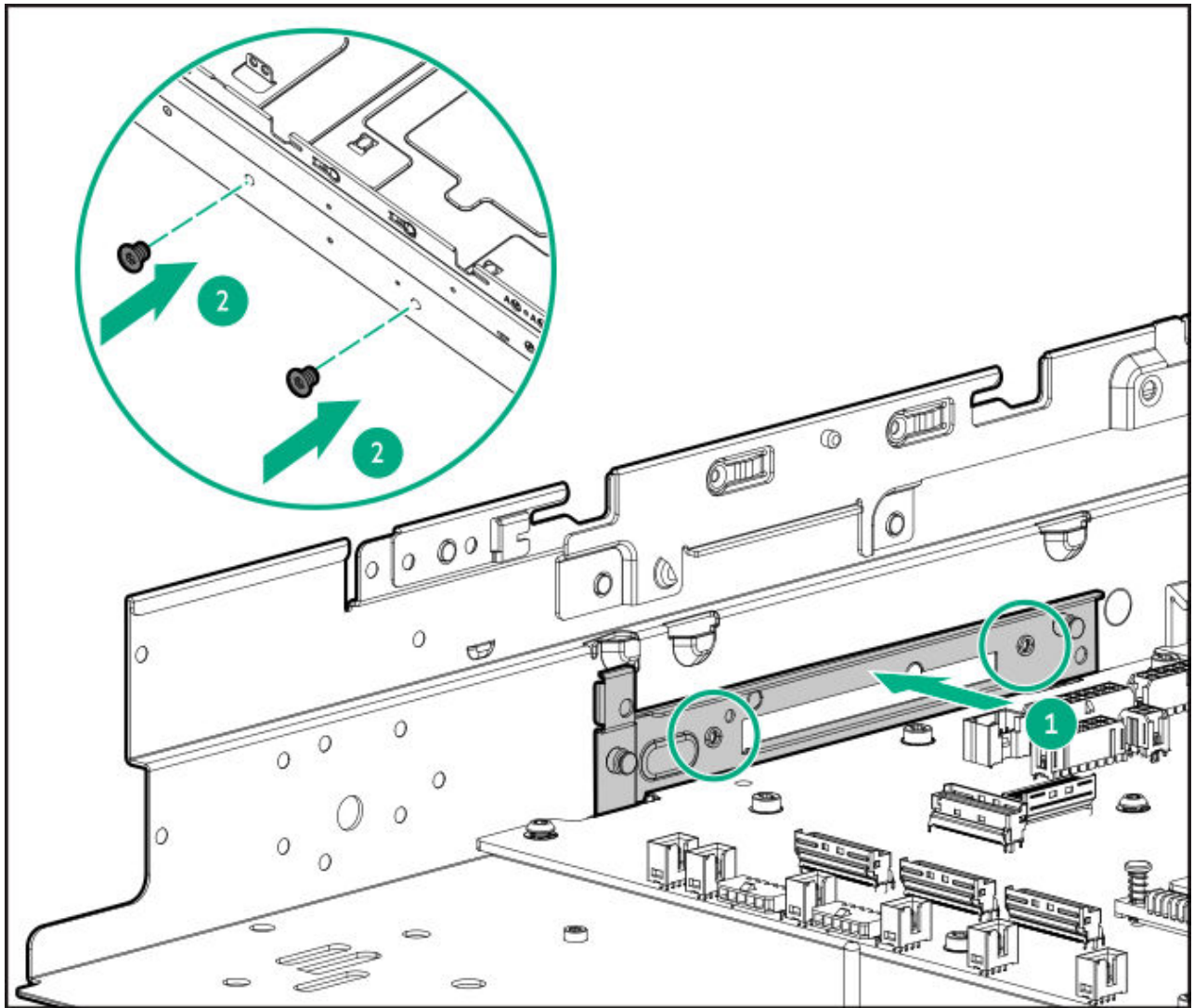


.5. Remove the holder bracket.

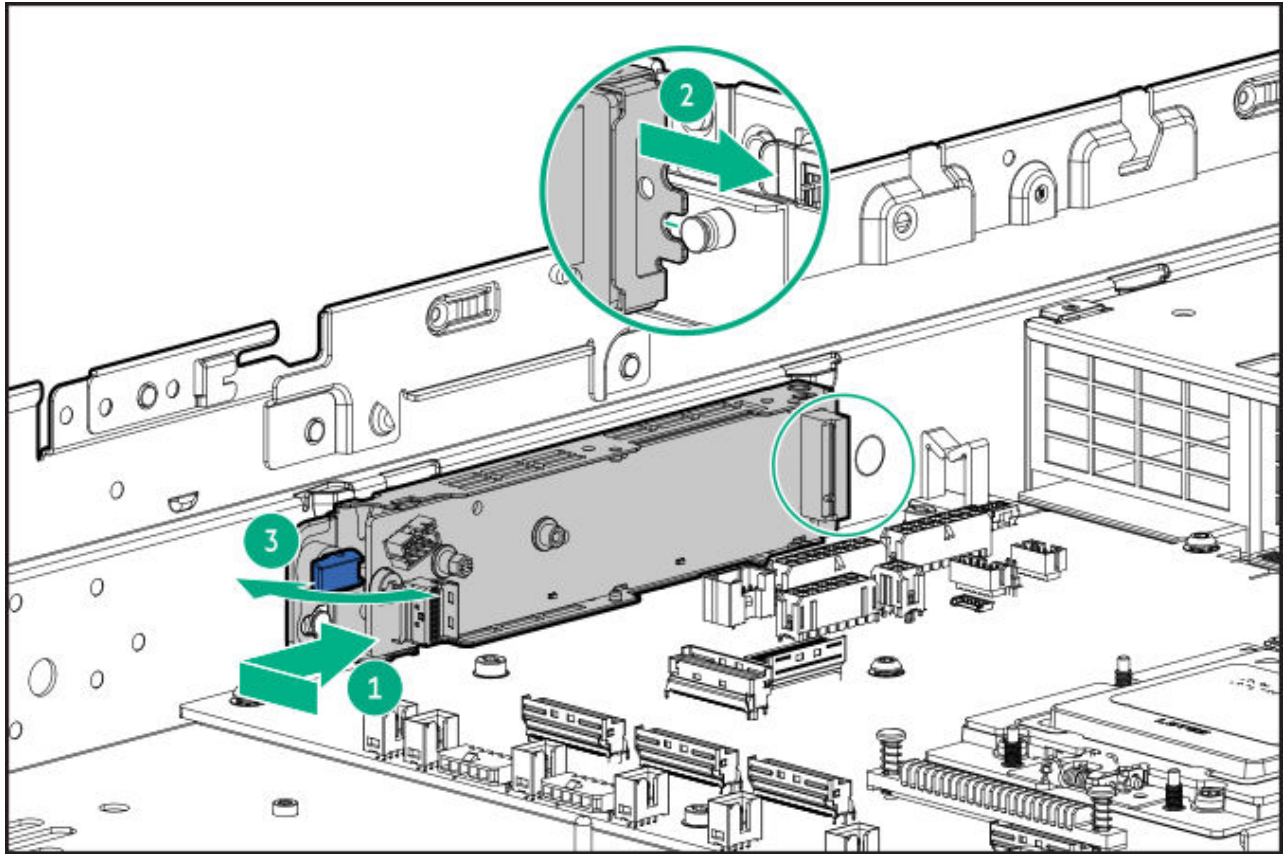
Retain the screws. These screws will be used to secure the M.2 pass-through card bracket.



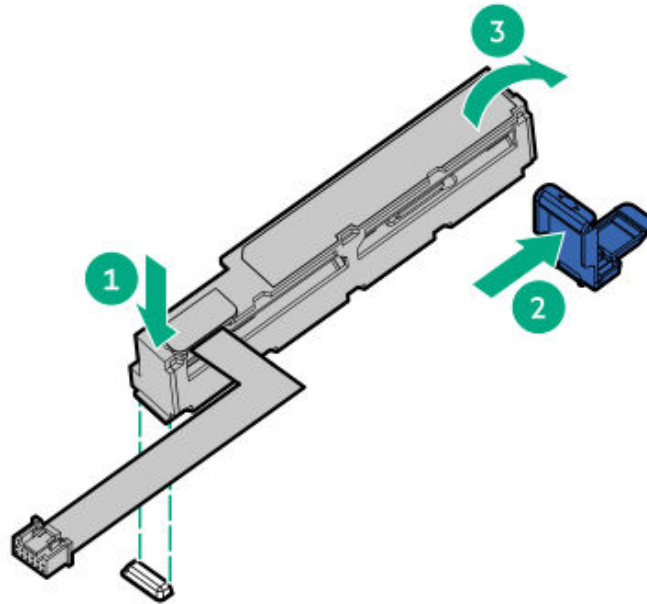
.6. Install the M.2 pass-through card bracket.



- .7. Connect the signal and power cables to the M.2 pass-through card.
- .8. Install the M.2 pass-through card:
  - a. With the retaining latch in the open position, insert the spool on the side of the chassis through the notch on the card bracket.
  - b. Slide the pass-through card towards the rear panel.
  - c. Close the retaining latch.



9. If connected, disconnect the optical drive cable from the system board.
10. Connect the M.2 SSD pass-through signal and power cables to the system board.
11. If an energy pack was removed from the left chassis wall, do the following:
  - a. Remove the midwall bracket.
  - b. Secure the energy pack in the retention latch located on the rear side of the drive cage.



c. Connect the energy pack extension power cable to the system board and energy pack cable.

d. Install the midwall bracket.

!2. Do one of the following:

- Install the air baffle.
- Install the midplane drive cage.

!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.

# OCP NIC 3.0 option

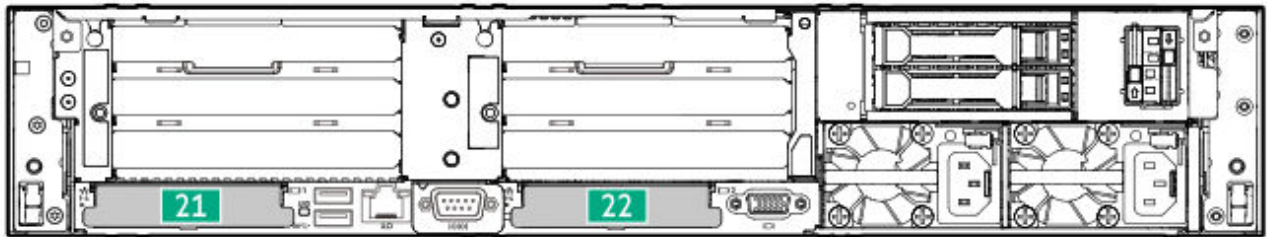
The server supports SFF dual-port and quad-port OCP NIC 3.0 options with various interfaces and advanced interconnect features for high-bandwidth applications.

## Subtopics

**OCP slot population rules**

**Installing the OCP NIC**

## OCP slot population rules



Slot number	Supported hardware components
Slot 21 OCP PCIe5 x8 <sup>1</sup> <sub>—</sub>	<ul style="list-style-type: none"><li>• OCP NIC</li><li>• OCP retimer card</li></ul>
Slot 22 OCP PCIe5 x8	<ul style="list-style-type: none"><li>• Type-o storage controller</li><li>• OCP NIC with speed less than 100 Gb</li><li>• OCP retimer card</li></ul>

<sup>1</sup><sub>—</sub> When installing a single OCP NIC, install it in Slot 21.

To see a list of validated OCP options, see the server QuickSpecs on the Hewlett Packard Enterprise website:

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

# Installing the OCP NIC

## Prerequisites

- Review the [OCP slot population rules](#).
- If you are installing a 100 Gb or faster OCP NIC, the [high performance fans are required](#).
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - OCP bandwidth upgrade cable (P56658-B21)—This cable is required only if you are installing an OCP NIC x16 in the OCP slot 21.

## 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](#).



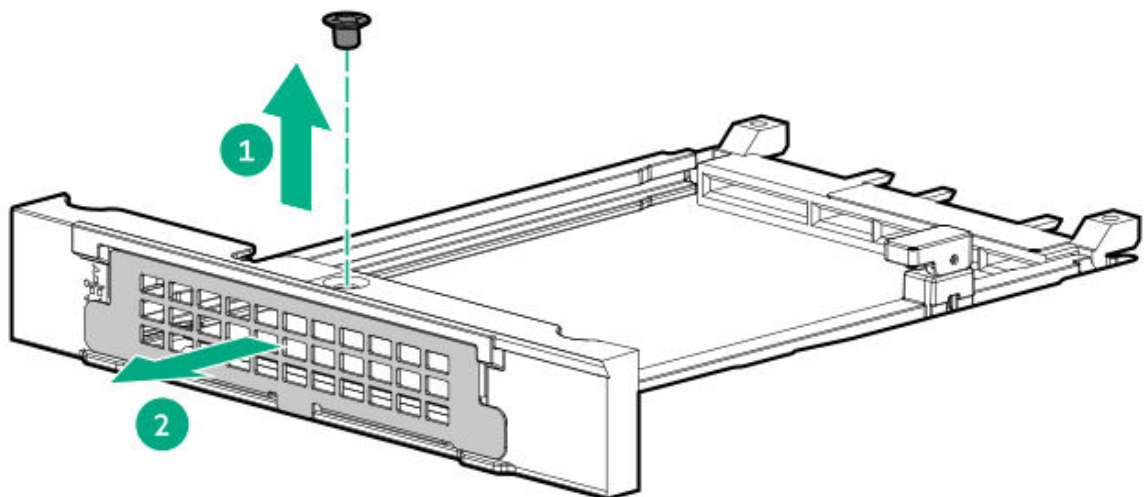
### CAUTION

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.

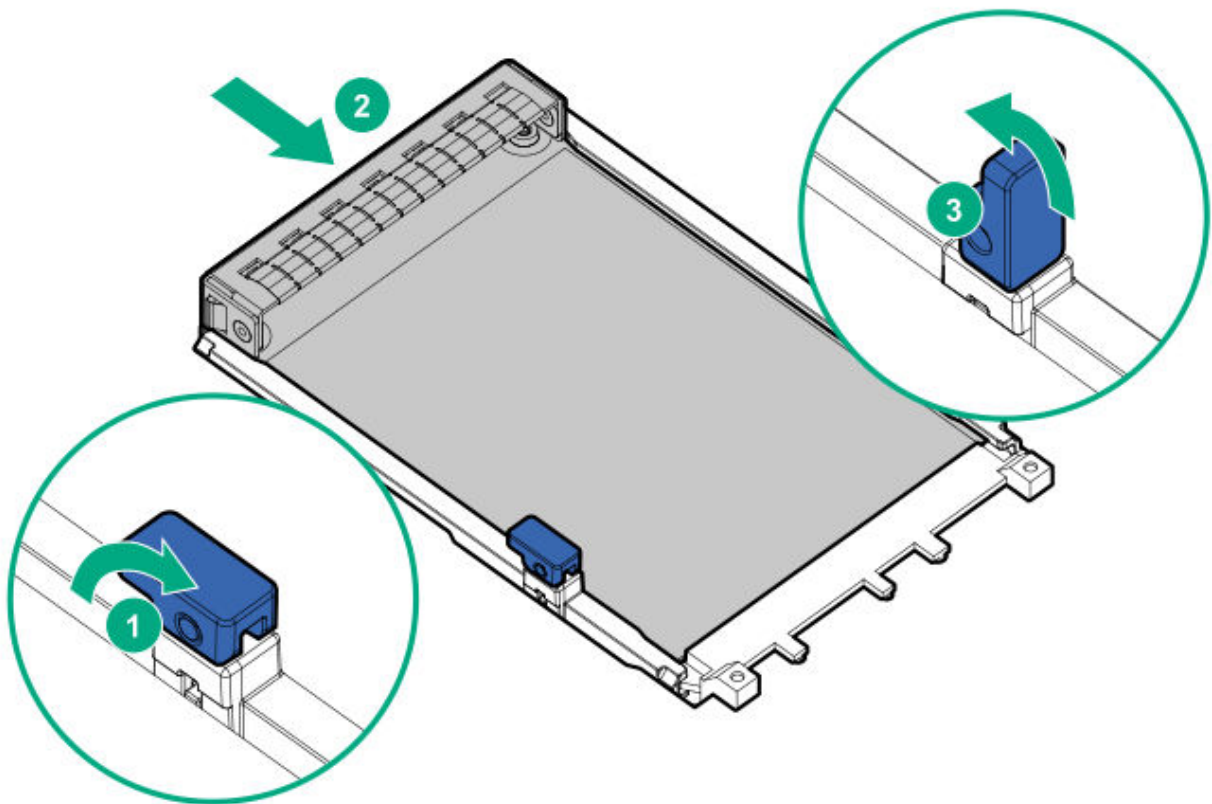
## Procedure

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. Do one of the following:
  - [Remove the air baffle](#).

- Remove the midplane drive cage.
8. If installed, remove the rear 4 LFF drive cage.
  9. If installing an OCP NIC in Slot 21, remove the primary riser cage.
  10. If installing an OCP NIC in Slot 22, do one of the following:
    - If no DLC module is installed in the secondary riser cage, remove the secondary riser cage.
    - If the DLC module is installed in the secondary riser cage, release the secondary riser cage.
  11. Remove the OCP slot blank:
    - a. Remove the blank screw.
    - b. Remove the blank.Retain the screw and blank for future use.



12. 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.



- .3. If you are installing an OCP NIC x16, connect the OCP bandwidth upgrade cable.
- .4. If the OCP NIC installed in Slot 21, install the primary riser cage.
- .5. If the OCP NIC installed in Slot 22, do one of the following:
  - If no DLC module is installed in the secondary riser cage, install the secondary riser cage.
  - If the DLC module is installed in the secondary riser cage, install the secondary riser cage with DLC module.
- .6. Do one of the following:
  - Install the air baffle.
  - Install the midplane drive cage.
- .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.

## 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



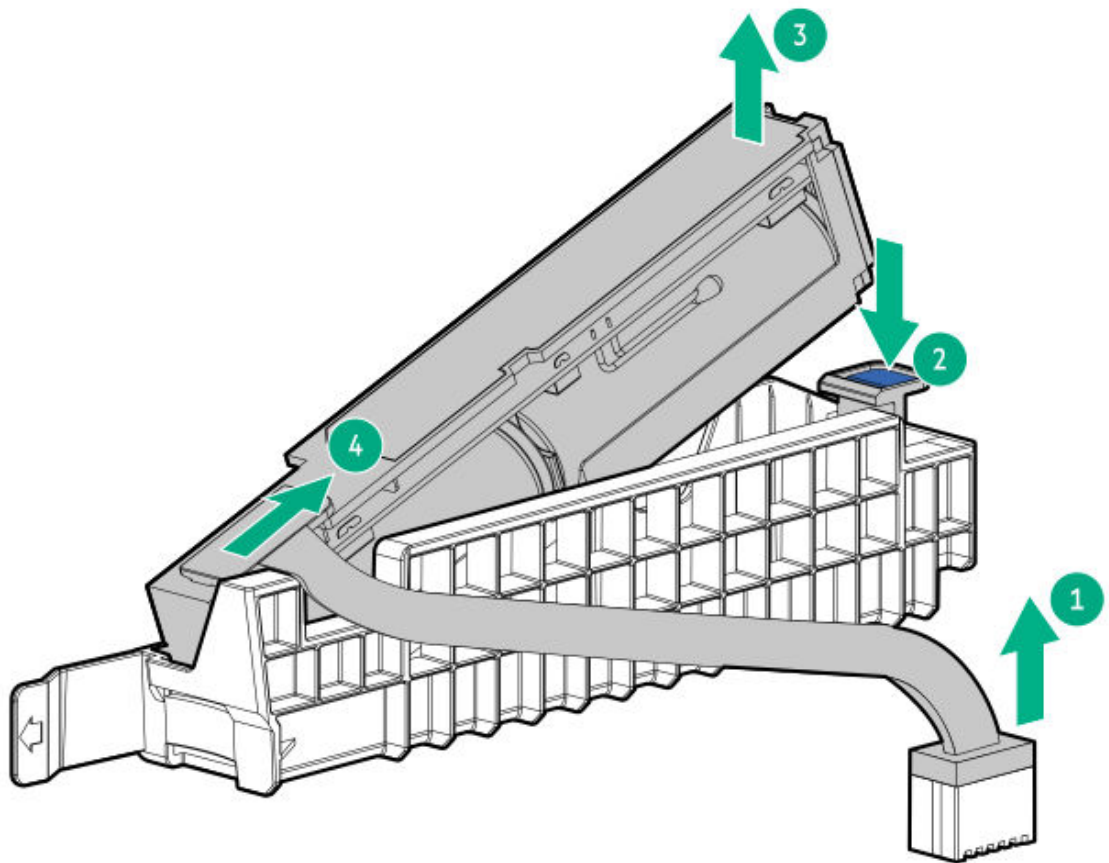
#### CAUTION

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.

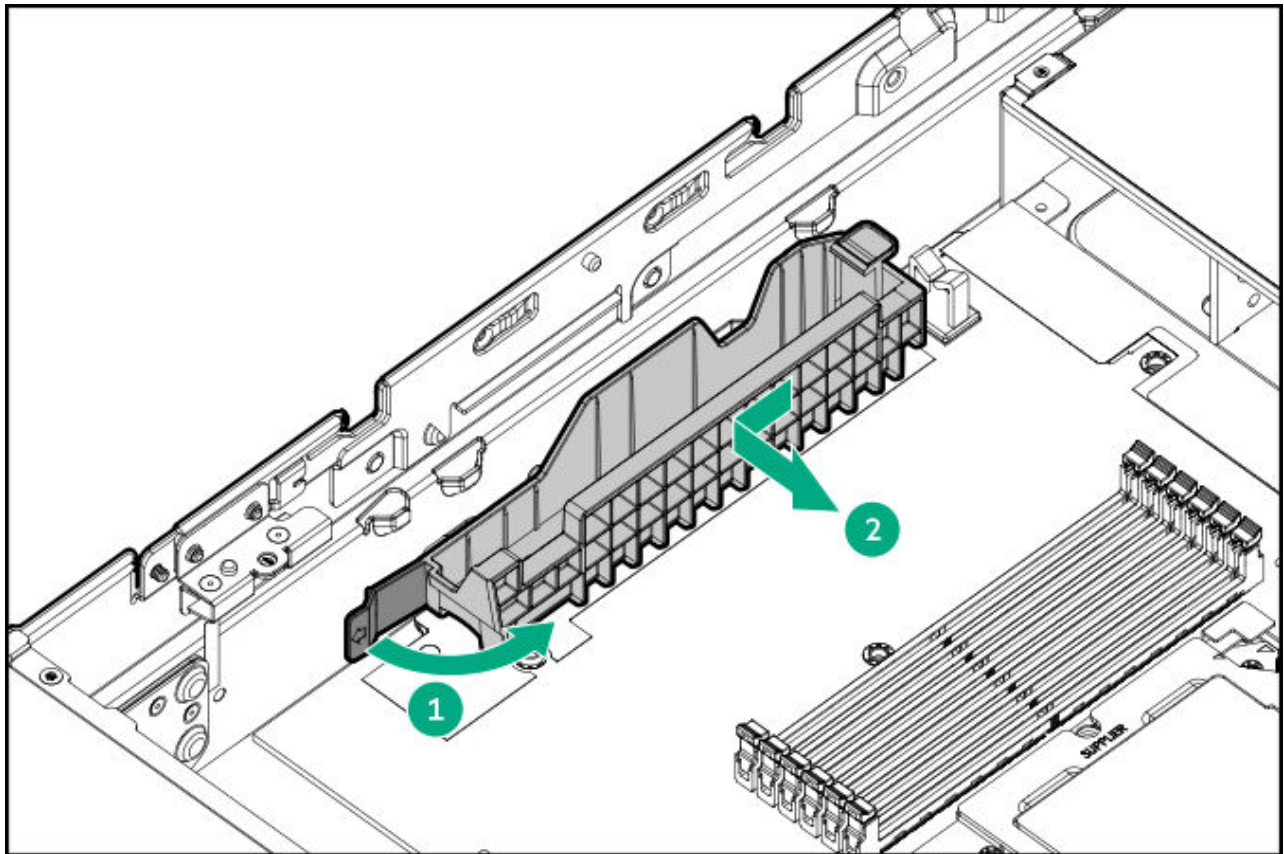
### Procedure

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.

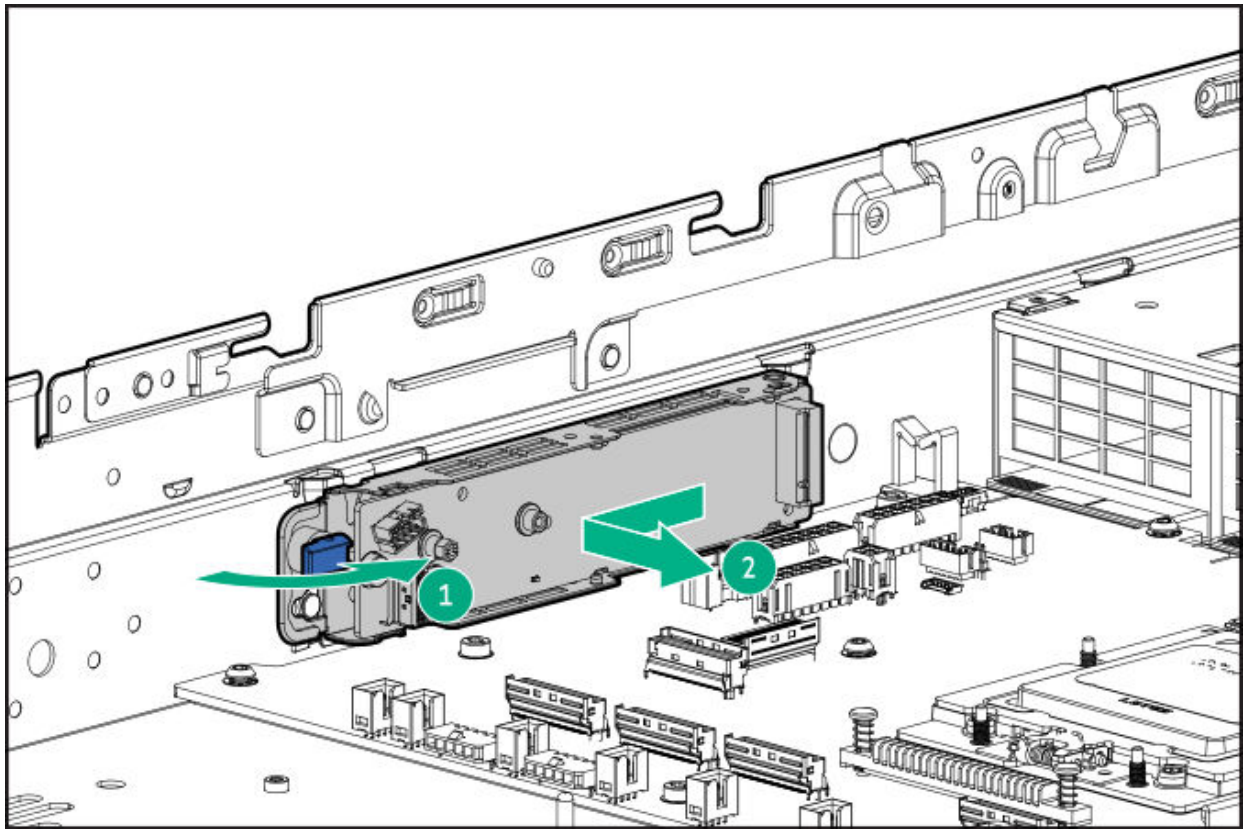
7. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. If installed, remove the energy pack:
  - a. Disconnect the cable.
  - b. Press and hold the release latch.
  - c. Lift one end of the energy pack and release it from the holder.



9. Remove the energy pack holder:
  - a. Pull and hold the release latch on the holder.
  - b. Pull the holder towards the front panel to disengage from the chassis.



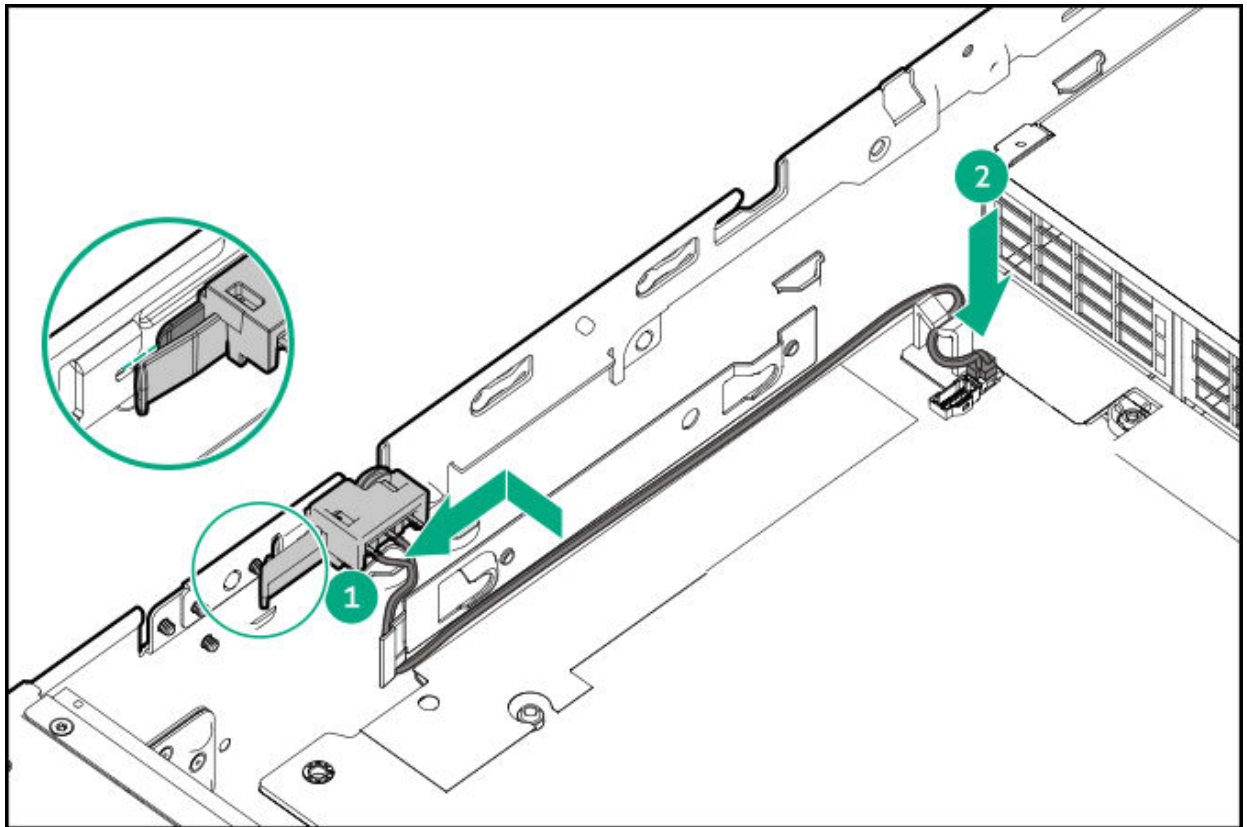
- .0. If installed, remove the M.2 SSD pass-through card:
  - a. Rotate the locking pin to the open (vertical) position.
  - b. Detach the M.2 pass-through card from the chassis.



.1. Install the chassis intrusion detection switch:

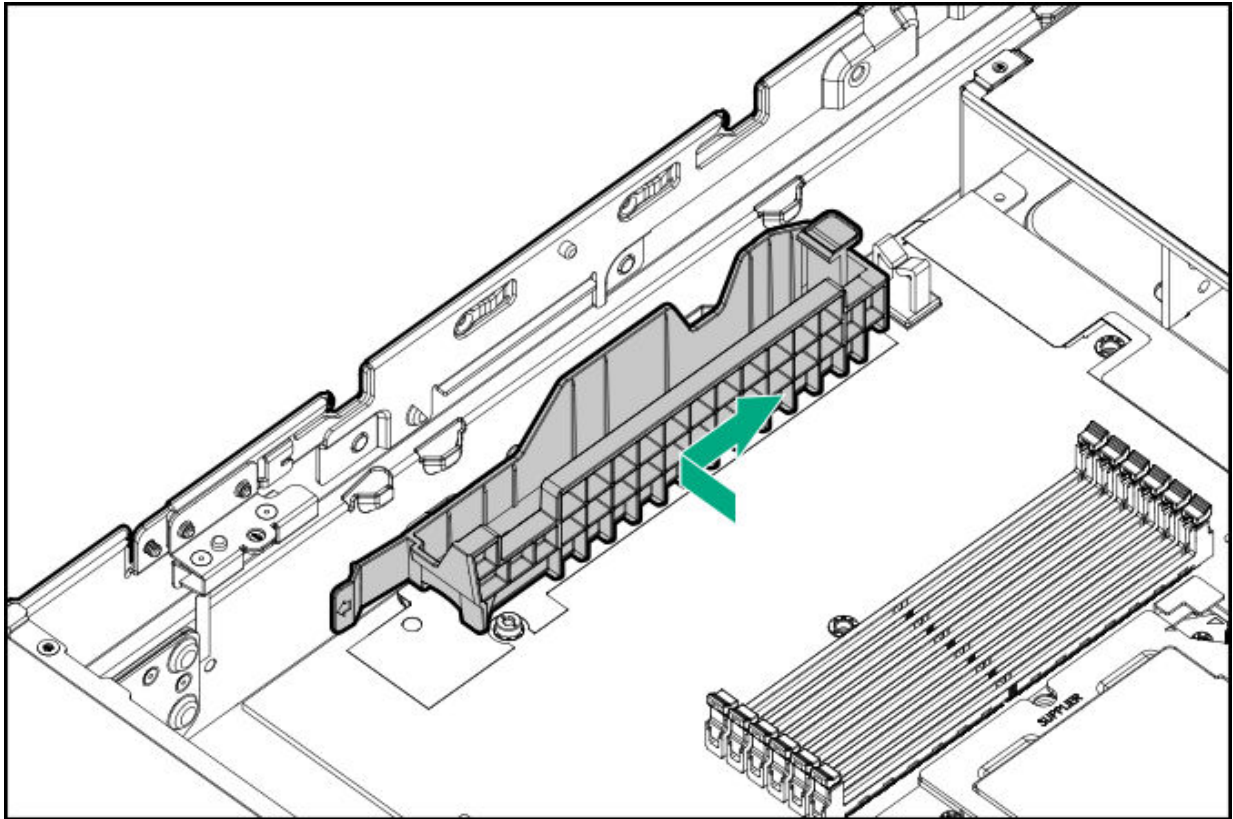
The chassis intrusion detection switch is located behind the energy pack holder.

- a. Insert the switch tab into the chassis slot until the switch clicks into place.
- b. Connect the switch cable and secure it in the cable clamp.



.2. If removed, install the following:

- Energy pack holder



- [Energy pack](#)
- [M.2 SSD pass-through card](#)

.3. Do one of the following:

- [Install the air baffle.](#)
- [Install the midplane drive cage.](#)

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

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

.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.](#)

## Results

The installation procedure is complete.

# Serial port option

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

## Subtopics

### Installing the serial port

## Installing the serial port

### Prerequisites

Before you perform this procedure, make sure that you have a hex screwdriver available.

### About this task



#### CAUTION

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



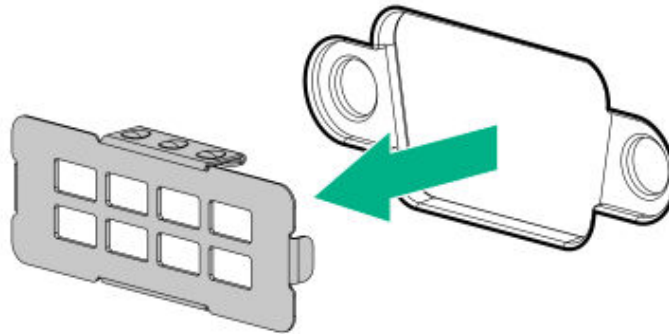
#### CAUTION

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.

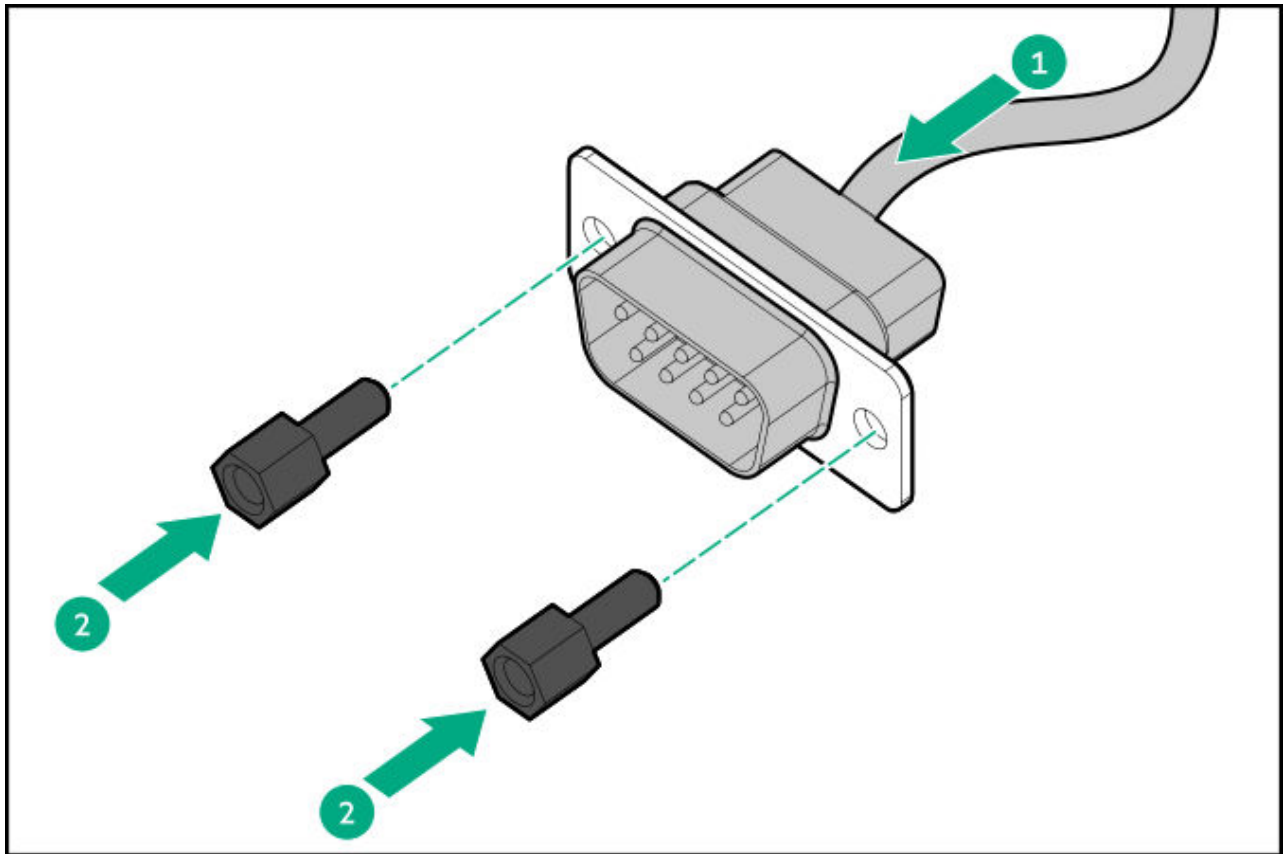
### Procedure

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. If installed, remove the rear 4 LFF drive cage.
8. Remove the secondary riser cage.
9. Do one of the following:
  - If no DLC module is installed in the secondary riser cage, remove the secondary riser cage.
  - If the DLC module is installed in the secondary riser cage, release the secondary riser cage.
10. Remove the serial port blank.



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



- .2. Connect the serial port cable to the system board.
- .3. Do one of the following:
  - If no DLC module is installed in the secondary riser cage, install the secondary riser cage.
  - If the DLC module is installed in the secondary riser cage, install the secondary riser cage with DLC module.
- .4. If removed, install the rear 4 LFF drive cage.
- .5. Install the access panel.
- .6. Install the server into the rack.
- .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.

### **Configuring the serial port**

- !1. To configure the serial port setting:

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

## Results

The installation procedure is complete.

## Internal USB device options

The server has stacked, internal dual USB 3.2 Gen 1 ports that you can use to install an internal USB flash media device for:

- booting up from flash solution
- data backup/redundancy

## Subtopics

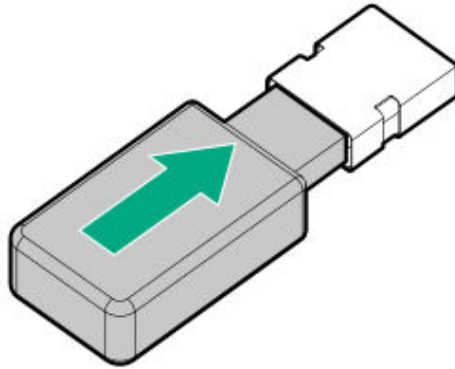
### Installing an internal USB device

## Installing an internal USB device

### 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 installed, remove the rear 4 LFF drive cage.
8. Plug in the USB device into the USB port.



9. If removed, install the rear 4 LFF drive cage.
10. Install the access panel.
11. Install the server into the rack.
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

## **Results**

The installation procedure is complete.

## **Cabling**

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

### **Subtopics**

**Cabling guidelines**

**Cabling diagrams**

**Internal cabling management**

## **Stacking and free-height riser cabling**

### **GPU cabling**

### **Storage cabling**

### **Optical drive cabling**

### **Universal media bay cabling**

### **HPE NS204i-u Boot Device cabling**

### **M.2 SSD pass-through card cabling**

### **Fan cabling**

### **OCP bandwidth upgrade cabling**

### **Serial port cabling**

### **Chassis intrusion detection switch cabling**

### **Front I/O 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.

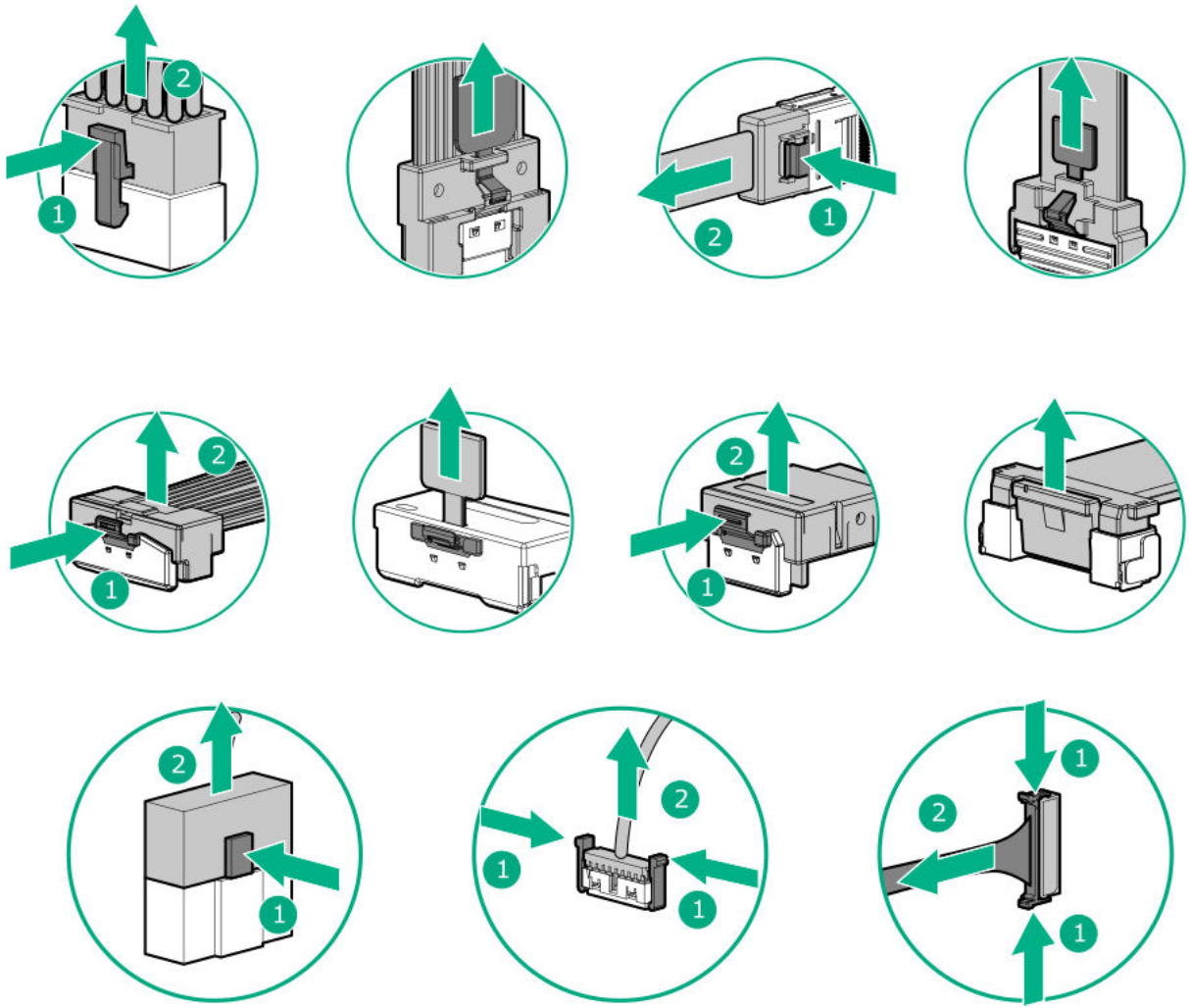
### **When connecting cables**

- 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.

<b>Component cabling</b>	<b>Cable part number</b>
<b>Stacking riser and free-height riser cabling</b>	—
Primary free-height cabled riser	<a href="#"><u>P50364-002</u></a>
Primary stacking cabled riser	<a href="#"><u>P51472-001</u></a>
Primary/secondary stacking cabled riser	<a href="#"><u>P50365-001</u></a>
<b>GPU cabling</b>	—
GPU cabled riser	<a href="#"><u>P44002-001</u></a>
	<a href="#"><u>P55910-001</u></a>
GPU riser power cable	<a href="#"><u>P59112-002</u></a>
	<a href="#"><u>P59113-001</u></a>
CPU 8-pin auxiliary power cable	<a href="#"><u>P59110-001</u></a>
	<a href="#"><u>P59111-001</u></a>
PCIe switch board cable	<a href="#"><u>P59098-001</u></a>
	<a href="#"><u>P59099-001</u></a>
	<a href="#"><u>P59100-001</u></a>
	<a href="#"><u>P59101-001</u></a>
	<a href="#"><u>P58046-001</u></a>
	<a href="#"><u>P59109-002</u></a>
<b>Front drive storage controller cabling: Non-GPU-optimized configuration</b>	—
8/12 LFF drive onboard SATA cable	<a href="#"><u>P57187-001</u></a>
	<a href="#"><u>P58865-001</u></a>
8/16 SFF drive onboard SATA cable	<a href="#"><u>P57194-001</u></a>
	<a href="#"><u>P57196-001</u></a>
8/16/24 SFF x2 NVMe drive direct attach cable	<a href="#"><u>P57220-001</u></a>
	<a href="#"><u>P57222-001</u></a>
	<a href="#"><u>P57224-001</u></a>
8 SFF x4 NVMe drive direct attach cable	<a href="#"><u>P57205-001</u></a>
	<a href="#"><u>P57215-001</u></a>

<b>Component cabling</b>	<b>Cable part number</b>
8/16/24 SFF x4 NVMe drive direct attach cable	<a href="#"><u>P57212-001</u></a>
	<a href="#"><u>P57214-001</u></a>
	<a href="#"><u>P57216-001</u></a>
	<a href="#"><u>P57205-001</u></a>
	<a href="#"><u>P57215-001</u></a>
24 E3.S x4 NVMe drive direct attach cable	<a href="#"><u>P59478-001</u></a>
	<a href="#"><u>P59476-001</u></a>
	<a href="#"><u>P59473-001</u></a>
	<a href="#"><u>P59474-001</u></a>
24 E3.S x4 NVMe drive controller cable: Type-p controllers in the primary and secondary risers	<a href="#"><u>P57076-001</u></a>
	<a href="#"><u>P58126-001</u></a>
	<a href="#"><u>P62388-001</u></a>
	<a href="#"><u>P58125-001</u></a>
36 E3.S x2 NVMe drive direct attach cable	<a href="#"><u>P59118-001</u></a>
	<a href="#"><u>P59120-001</u></a>
	<a href="#"><u>P59094-001</u></a>
	<a href="#"><u>P59121-001</u></a>
8 LFF SAS/SATA drive controller cable: Type-o controller in Slot 21	<a href="#"><u>P58101-001</u></a>
8 LFF SAS/SATA drive controller cable: Type-p controller in the primary riser	<a href="#"><u>P58063-001</u></a>
4 LFF Box 1 SAS/SATA drive controller cable: Type-p controller in the primary riser	<a href="#"><u>P57188-001</u></a>
8/12 LFF SAS/SATA drive controller cable: Type-p controller in the primary riser	<a href="#"><u>P57188-001</u></a>
	<a href="#"><u>P58063-001</u></a>
8 SFF Box 1 SAS/SATA controller cable: Type-o controller in Slot 22	<a href="#"><u>P58016-001</u></a>
8/16 SFF SAS/SATA controller cable: Type-p controller in the primary riser	<a href="#"><u>P58018-001</u></a>
	<a href="#"><u>P58020-001</u></a>

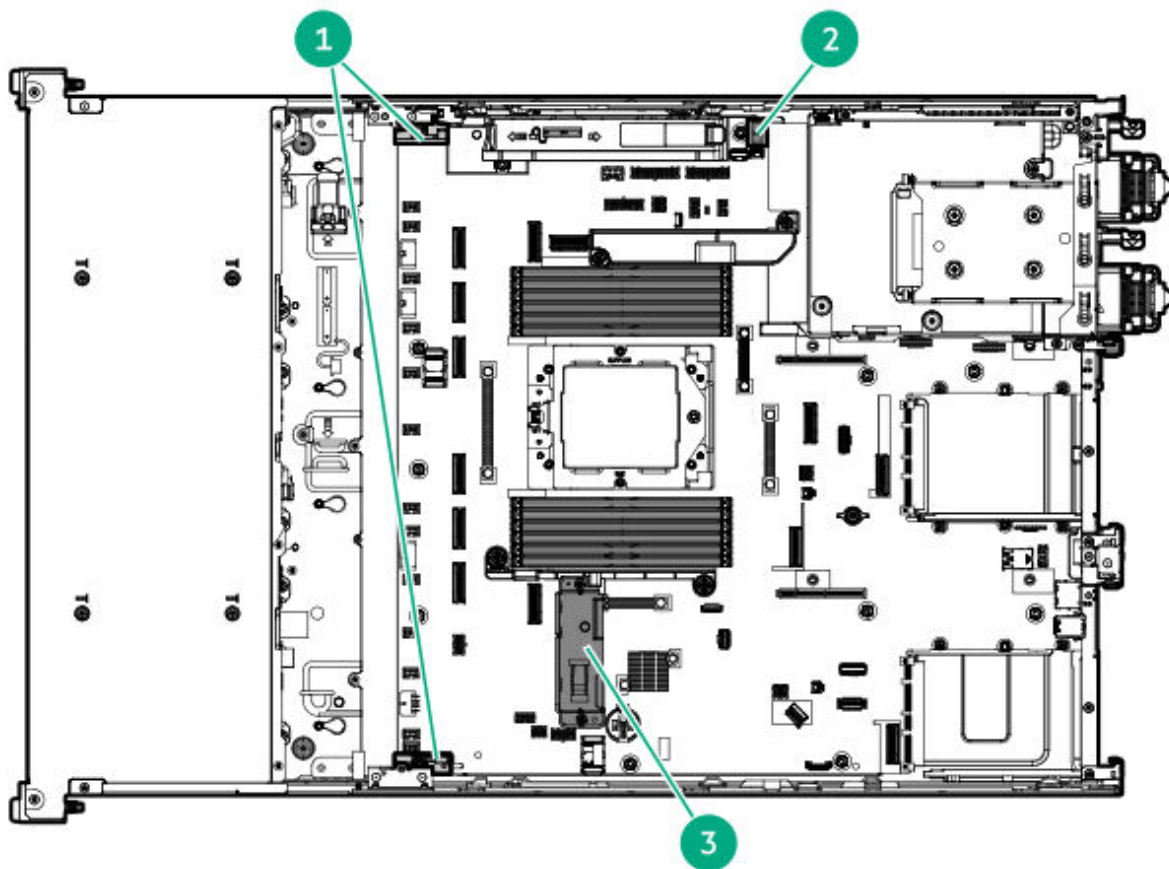
<b>Component cabling</b>	<b>Cable part number</b>
8/16/24 SFF SAS/SATA controller cable: Type-p controller in the primary riser	<a href="#">P58018-001</a> <a href="#">P58019-001</a> <a href="#">P58020-001</a>
8 SFF Box 1 x2 NVMe drive storage controller cable: Type-o controller in Slot 22	<a href="#">P58075-001</a> <a href="#">P58076-001</a>
8/16 SFF x2 NVMe drive storage controller cable: Type-p controller in the primary riser	<a href="#">P58123-001</a> <a href="#">P58127-001</a>
8 SFF Box 1 x2 NVMe drive storage controller cable: Type-p controller in the secondary riser	<a href="#">P58124-001</a>
8 SFF Box 3 x4 NVMe drive storage controller cable: Type-p controller in the primary riser	<a href="#">P58120-001</a>
8 SFF Box 2 x4 NVMe drive storage controller cable: Type-p controller in the primary riser	<a href="#">P58122-001</a>
8 SFF Box 1 x4 NVMe drive storage controller cable: Type-p controller in the secondary riser	<a href="#">P58114-001</a>
Front 2 SFF side-by-side drive controller cable: Type-o controller	<a href="#">P58145-001</a>
Front 2 SFF stacked drive controller cable: Type-o controller	<a href="#">P58145-001</a>
<b>Front drive storage controller cabling: GPU-optimized configuration</b>	
8 SFF x4 NVMe drive direct attach cable	<a href="#">P59106-001</a> <a href="#">P59107-001</a> <a href="#">P59104-001</a> <a href="#">P59105-001</a>
8 SFF x2 NVMe drive cable: Type-o controller	<a href="#">P57334-002</a>
8 SFF x4 NVMe drive cable: Type-p controller	<a href="#">P57057-002</a>
12 E3.S x4 NVMe drive direct attach cable	<a href="#">P59106-001</a> <a href="#">P59107-001</a> <a href="#">P59104-001</a>

<b>Component cabling</b>	<b>Cable part number</b>
	<a href="#"><u>P59105-001</u></a>
	<a href="#"><u>P59103-001</u></a>
	<a href="#"><u>P59102-001</u></a>
<b>Midplane drive storage controller cabling</b>	—
8 SFF midplane x2 NVMe drive direct attach cable	<a href="#"><u>P57207-001</u></a>
	<a href="#"><u>P59467-001</u></a>
4 LFF x1 SAS midplane drive controller cable: SR932 i-p storage controller in the primary riser	<a href="#"><u>P57188-001</u></a>
8 SFF midplane SAS/x1 NVMe drive controller cable: Type-p controller	<a href="#"><u>P58089-001</u></a>
8 SFF midplane x4 NVMe drive storage controller cable: Type-p controller in the secondary riser	<a href="#"><u>P58095-001</u></a>
	<a href="#"><u>P58094-001</u></a>
<b>Rear drive storage controller cabling</b>	—
Rear 4 LFF drive: Onboard SATA cable	<a href="#"><u>P57184-001</u></a>
Rear 4 LFF x1 SAS drive controller cable: Type-o controller in Slot 22	<a href="#"><u>P58098-001</u></a>
Rear 4 LFF x1 SAS drive controller cable: SR932i-p storage controller in the primary riser	<a href="#"><u>P57183-001</u></a>
Rear 2 SFF SAS / x4 NVMe drive stacked drive controller cable: Type-o controller	<a href="#"><u>P58149-001</u></a>
<b>Front drive power cabling: Non-GPU-optimized configuration</b>	—
8/12 LFF drive power cable	<a href="#"><u>P58035-001</u></a>
	<a href="#"><u>P58036-001</u></a>
	<a href="#"><u>P58867-001</u></a>
8/16/24 SFF drive power cable	<a href="#"><u>P57198-001</u></a>
	<a href="#"><u>P58023-001</u></a>
	<a href="#"><u>P57209-001</u></a>
36 E3.S drive power cable	<a href="#"><u>P58822-001</u></a>
	<a href="#"><u>P59122-001</u></a>

<b>Component cabling</b>	<b>Cable part number</b>
2 SFF side-by-side drive power cable	<a href="#">P58036-001</a>
2 SFF stacked drive power cable	<a href="#">P57198-001</a>
<b>Front drive power cabling: GPU-optimized configuration</b>	—
8 SFF drive power cable	<a href="#">P58023-001</a>
8/12 E3.S drive power cable	<a href="#">P58034-001</a>
<b>Midplane drive power cabling</b>	—
4 LFF midplane drive power cable	<a href="#">P57182-001</a>
8 SFF midplane SAS / NVMe x1 drive power cable	<a href="#">P57177-001</a>
8 SFF midplane NVMe drive x4 power cable	<a href="#">P57201-001</a>
<b>Rear drive power cabling</b>	—
Rear 4 LFF drive power cable	<a href="#">P57185-001</a>
Rear 2 SFF stacked drive power cable	<a href="#">P57178-001</a>
<b>Energy pack cabling</b>	—
Energy pack	<a href="#">P01366-B21</a> <a href="#">P02377-B21</a>
Energy pack extension power cable	<a href="#">P56688-001</a>
Storage controller backup power cable	<a href="#">877850-001</a>
<b>Optical drive cabling</b>	—
Optical drive cable in the LFF universal media bay	<a href="#">P59116-001</a>
Optical drive cable in the SFF universal media bay	<a href="#">P59116-001</a>
<b>Universal media bay cabling</b>	—
LFF universal media bay cable: DisplayPort cable	<a href="#">869808-001</a>
SFF universal media bay cables: USB 2.0 / DisplayPort Y-cable	<a href="#">P14314-001</a>
SFF universal media bay cables: USB 3.2 Gen 1 port cable	<a href="#">P57248-001</a>
<b>HPE NS204i-u Boot Device cabling</b>	—

<b>Component cabling</b>	<b>Cable part number</b>
HPE NS204i-u Boot Device power cable	<a href="#"><u>P54088-001</u></a>
HPE NS204i-u Boot Device signal cable	<a href="#"><u>P54087-001</u></a>
<b>M.2 SSD pass-through card cabling</b>	—
M.2 SSD pass-through card power cable	<a href="#"><u>P56689-001</u></a>
M.2 SSD pass-through card SATA SSD signal cable	<a href="#"><u>P56690-001</u></a>
M.2 SSD pass-through card NVMe SSD signal cable	<a href="#"><u>P56691-001</u></a>
<b>Miscellaneous component cabling</b>	—
OCP bandwidth upgrade cable for OCP slot 21	<a href="#"><u>P56686-001</u></a>
Serial port cable	<a href="#"><u>P47752-001</u></a>
Chassis intrusion detection switch cable	<a href="#"><u>P54901-001</u></a>
Front I/O cable	<a href="#"><u>P43727-001</u></a>

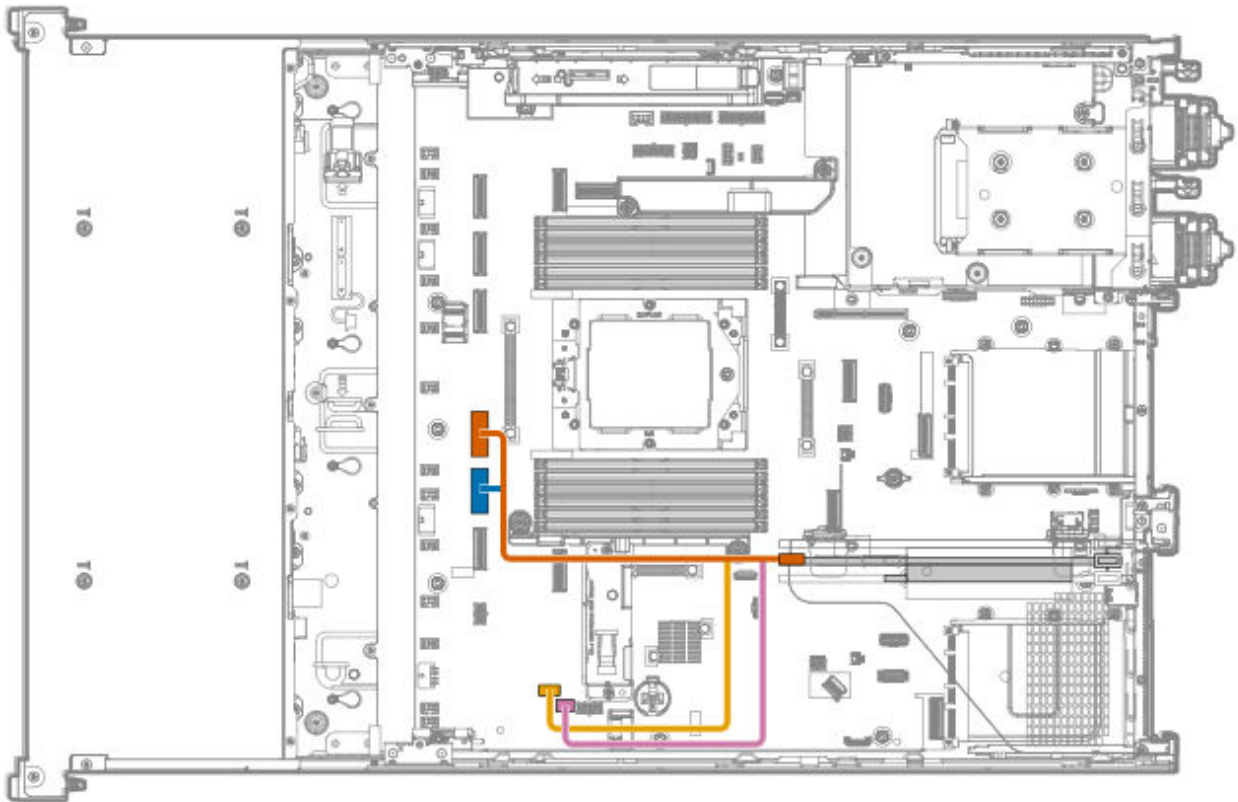
## Internal cabling management



Item	Description
1	Cable guards
2	Cable clip
3	Full-length card stabilizer

# Stacking and free-height riser cabling

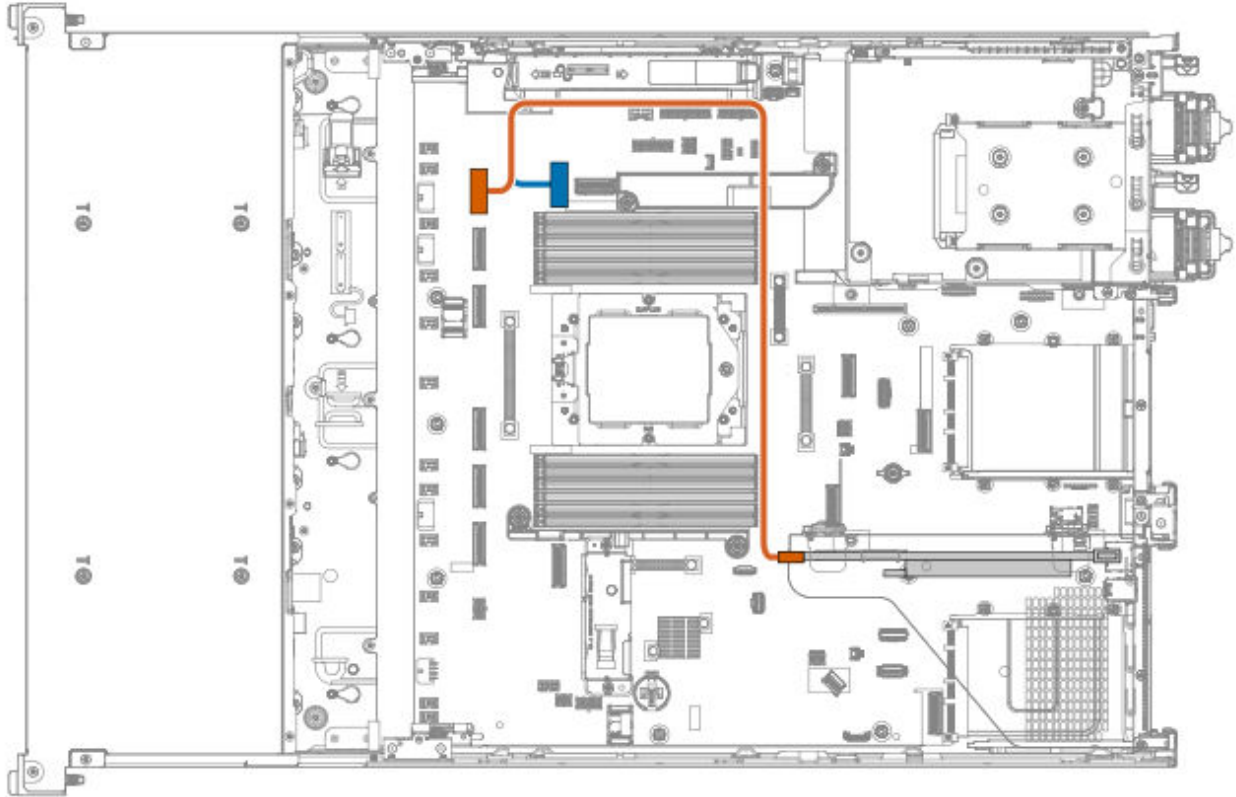
## Primary free-height riser cabling



Riser part number	Color	From	To
P50364-002	Orange	Primary free-height riser on Slot 2	NVMe port 4A (SEC) <sup>1</sup> <sub>—</sub>
	Blue		NVMe port 3A (PRIM) <sup>1</sup> <sub>—</sub>
	Gold		Sideband connector for the primary free-height riser
	Pink		Auxiliary power connector for the free-height riser

<sup>1</sup><sub>—</sub> This enclosed text (PRIM/SEC) refers to the marker on the free-height riser cable connector.

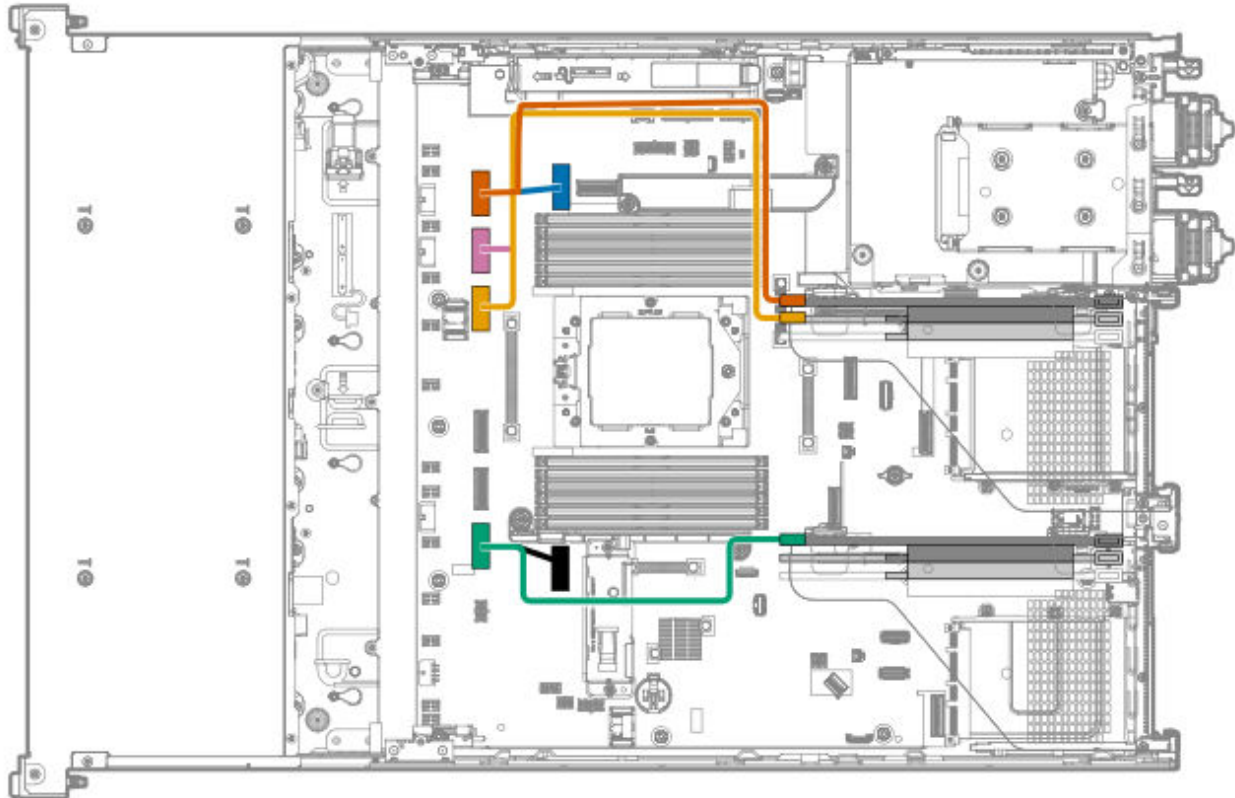
## Primary stacking riser cabling



Riser part number	Color	From	To
P51472-001	Orange	Primary stacking riser on	NVMe port 7A (PRIM) <sup>1</sup> / <sub>—</sub>
	Blue	Slot 1	NVMe port 8A (SEC) <sup>1</sup> / <sub>—</sub>

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

## Primary/secondary stacking riser cabling



Riser part number	Color	From	To
P50365-001	Orange	Secondary stacking riser on Slot 4	NVMe port 7A (PRIM) <sup>1</sup> <sub>—</sub>
	Blue		NVMe port 8A (SEC) <sup>1</sup> <sub>—</sub>
	Gold	Secondary stacking riser on Slot 5	NVMe port 5A (PRIM) <sup>1</sup> <sub>—</sub>
	Pink		NVMe port 6A (SEC) <sup>1</sup> <sub>—</sub>
	Green	Primary stacking riser on Slot 1	NVMe/SATA port 2A (SEC) <sup>1</sup> <sub>—</sub>
	Black		NVMe/SATA port 1A (PRIM) <sup>1</sup> <sub>—</sub>

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

## GPU cabling

## Subtopics

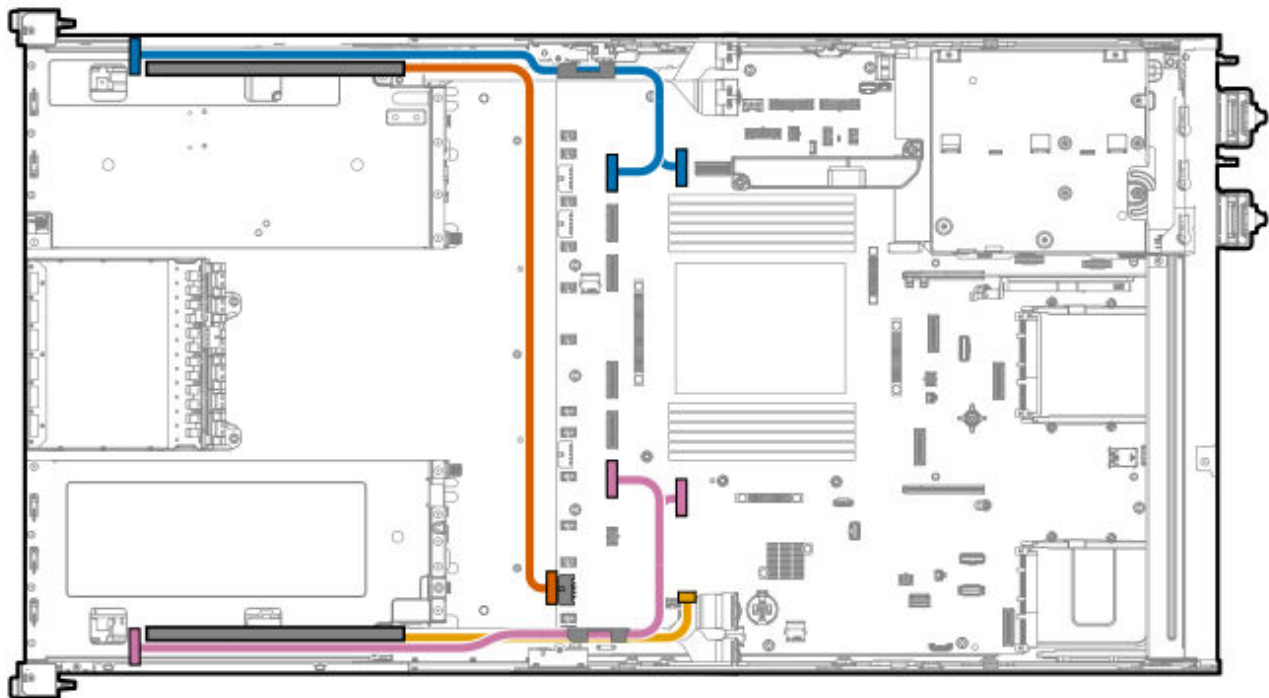
[GPU riser cabling](#)

[GPU auxiliary power cabling](#)

[PCIe switch board cabling](#)

## GPU riser cabling

2 double-width / 2 single-width GPUs

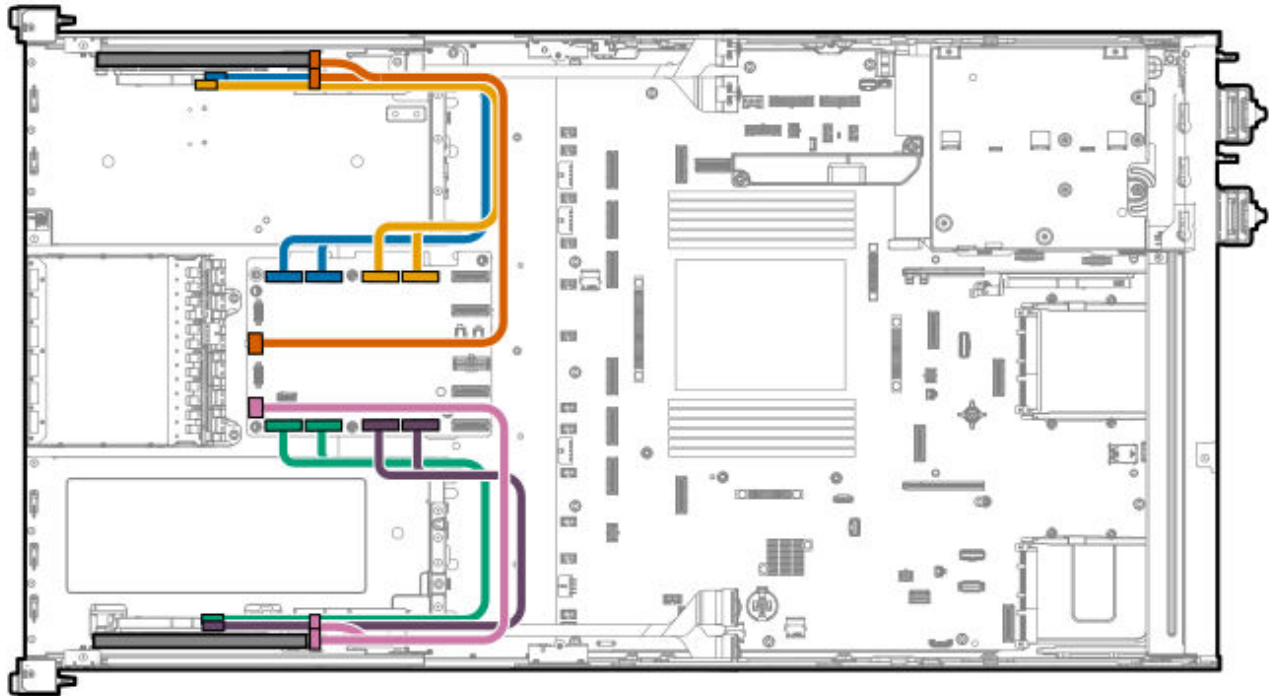


Component part number	Color	From	To
P44002-001	Blue	GPU riser in the GPU riser cage 1	NVMe ports 7A (PRIM) <u>1</u> / 8A (SEC) <u>1</u>
P59112-002	Orange	GPU riser 1 power connector	GPU riser power connector 2
P44002-001	Pink	GPU riser in the GPU riser cage 2	NVMe/SATA ports 1A (PRIM) <u>1</u> / 2A (SEC) <u>1</u>

Component part number	Color	From	To
P59113-001	Gold	GPU riser 2 power connector	GPU riser power connector 1

1 This enclosed text (PRIM/SEC) refers to the marker on the cable connector.

#### 4 single-width GPUs



Component part number	Color	From (PCIe switch board) To
P54887-001	Orange	GPU riser slot 9 and 11 power connector <ul style="list-style-type: none"> <li>GPU riser slot 9 (P3) <u>1</u></li> <li>GPU riser slot 11 (P2) <u>1</u></li> </ul>
P55910-001	Blue	GPU riser slot 9 <ul style="list-style-type: none"> <li>GPU riser slot 9 MCI/O connector (SEC) <u>2</u></li> <li>GPU riser slot 9 MCIO connector (PRIM) <u>2</u></li> </ul>

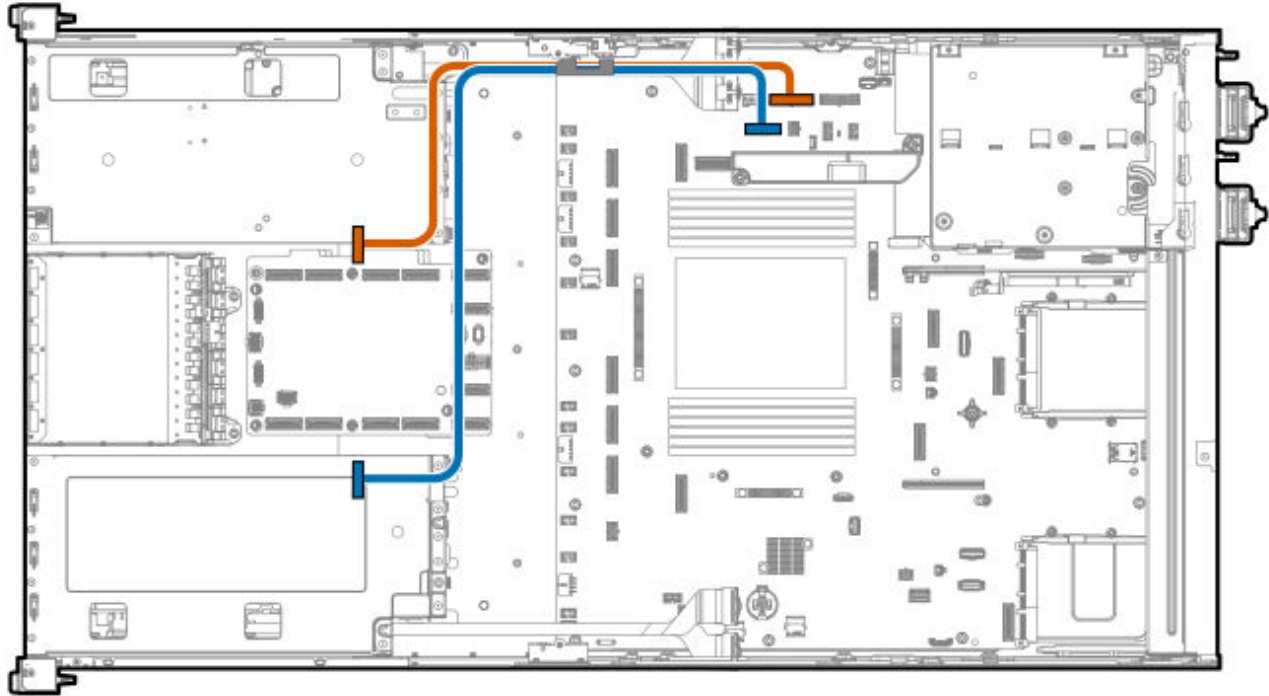
Component part number	Color	From (PCIe switch board)	To
P55910-001	Gold	<ul style="list-style-type: none"> <li>GPU riser slot 11 MCI O connector (SEC) <sup>2</sup><sub>—</sub></li> <li>GPU riser slot 11 M CIO connector (PRIM) <sup>2</sup><sub>—</sub></li> </ul>	GPU riser slot 11
P54887-001	Pink	GPU riser slot 14 and 16 power connector	<ul style="list-style-type: none"> <li>GPU riser slot 14 (P2) <sup>1</sup><sub>—</sub></li> <li>GPU riser slot 16 (P3) <sup>1</sup><sub>—</sub></li> </ul>
P55910-001	Green	<ul style="list-style-type: none"> <li>GPU riser slot 14 MCI O connector (SEC) <sup>2</sup><sub>—</sub></li> <li>GPU riser slot 14 M CIO connector (PRIM) <sup>2</sup><sub>—</sub></li> </ul>	GPU riser slot 14
P55910-001	Dark purple	<ul style="list-style-type: none"> <li>GPU riser slot 16 MCI O connector (SEC) <sup>2</sup><sub>—</sub></li> <li>GPU riser slot 16 M CIO connector (PRIM) <sup>2</sup><sub>—</sub></li> </ul>	GPU riser slot 16

<sup>1</sup> This enclosed text (P#) refers to the marker on the power cable connector.

<sup>2</sup> This enclosed text (PRIM / SEC) refers to the marker on the GPU riser signal cable connector.

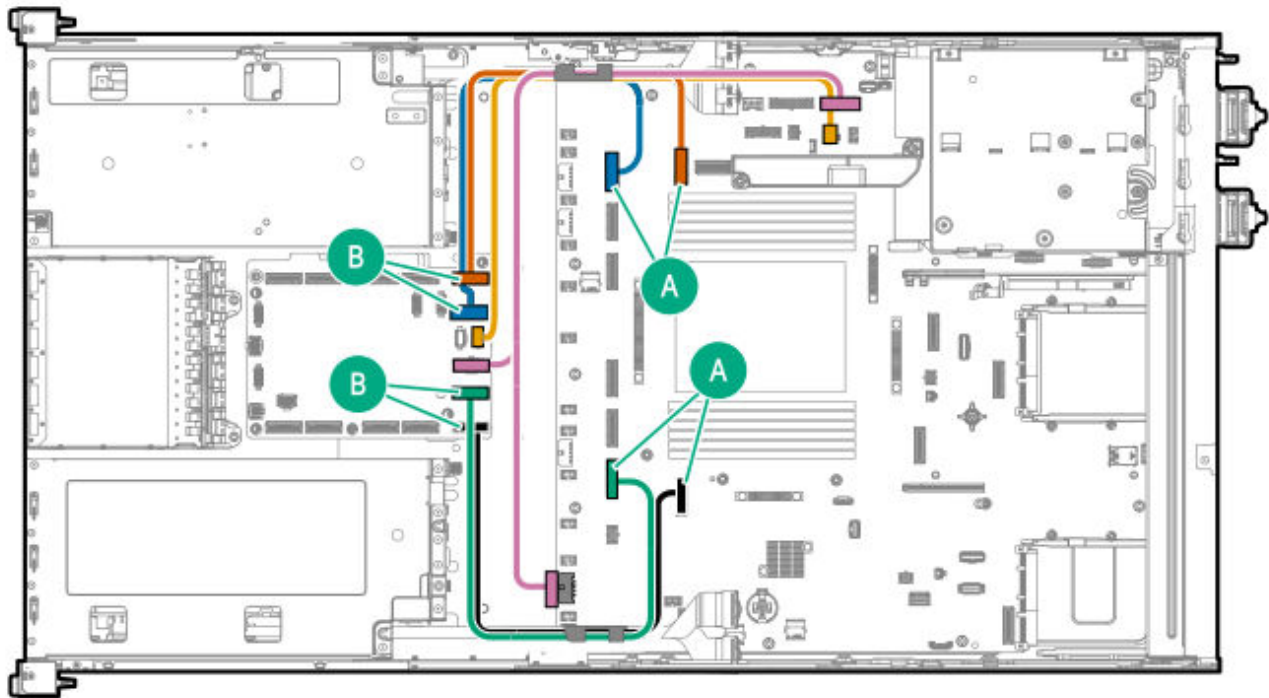
# GPU auxiliary power cabling

## CPU 8-pin GPU auxiliary power cabling: Double-width GPUs



Cable part number	Color	From	To
P59110-001	Orange	Double-width GPU 1	Drive backplane / Graphics card power connector A (J9017)
P59111-001	Blue	Double-width GPU 2	Rear drive backplane / Graphics card power connector C (J9019)

## PCIe switch board cabling



Component part number	Color	From	To
P59099-001	Orange	PCIe switch board down stream port 1	NVMe port 8A
P59098-001	Blue	PCIe Switch board down stream port 2	NVMe port 7A
P58046-001	Gold	PCIe switch board signal extension connector	Sideband connector for the free-height riser (secondary)
P59109-002	Pink	PCIe switch board power connector	<ul style="list-style-type: none"> <li>GPU riser power connector 2</li> <li>Drive backplane / Graphics card power connector B (J9018)</li> </ul>
P59101-001	Green	PCIe switch board down stream port 3	NVMe/SATA port 2A

<b>Component part number</b>	<b>Color</b>	<b>From</b>	<b>To</b>
P59100-001	Purple	PCIe switch board down stream port 4	NVMe/SATA port 1

## Storage cabling

### Subtopics

[Storage controller cabling](#)

[Drive power cabling](#)

[Energy pack cabling](#)

[Storage controller backup power cabling](#)

## Storage controller cabling

### Subtopics

[Front drive storage controller cabling: Non-GPU-optimized configuration](#)

[Front drive storage controller cabling: GPU-optimized configuration](#)

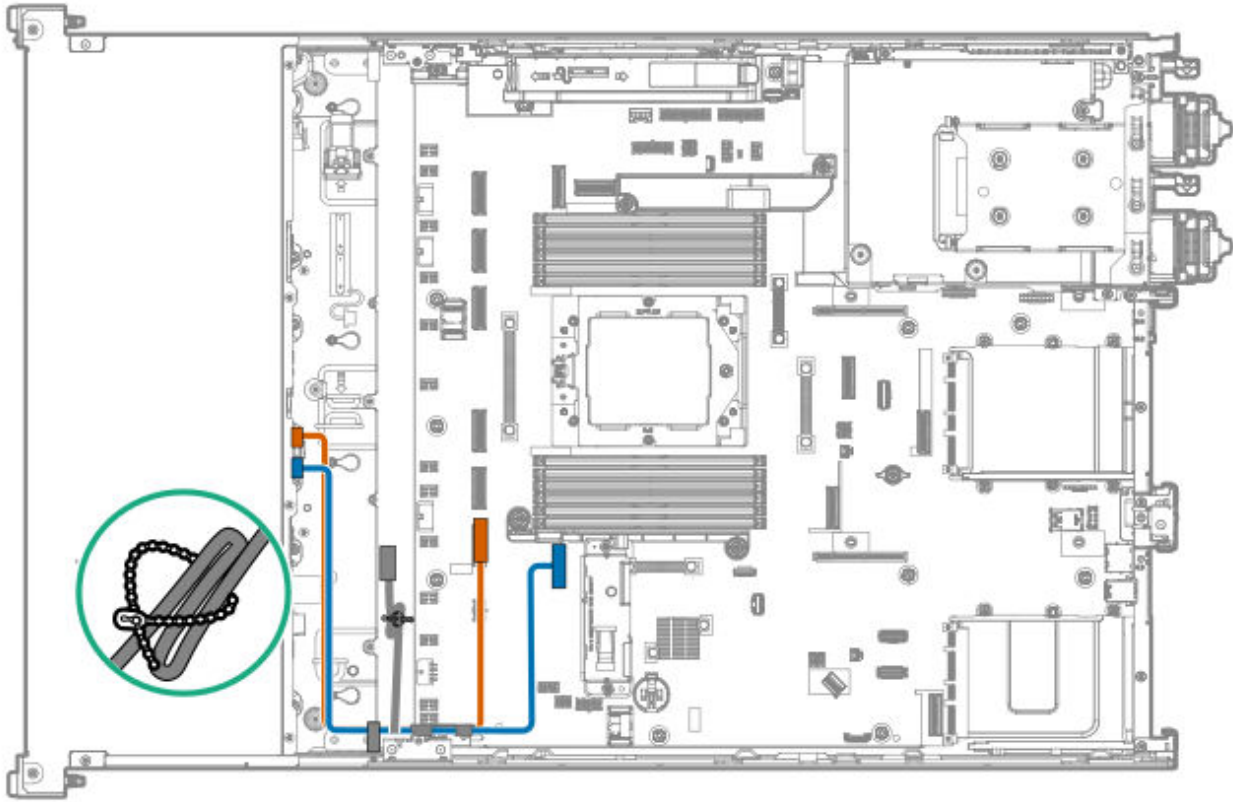
[Midplane drive storage controller cabling](#)

[Rear drive storage controller cabling](#)

## Front drive storage controller cabling: Non-GPU-optimized configuration

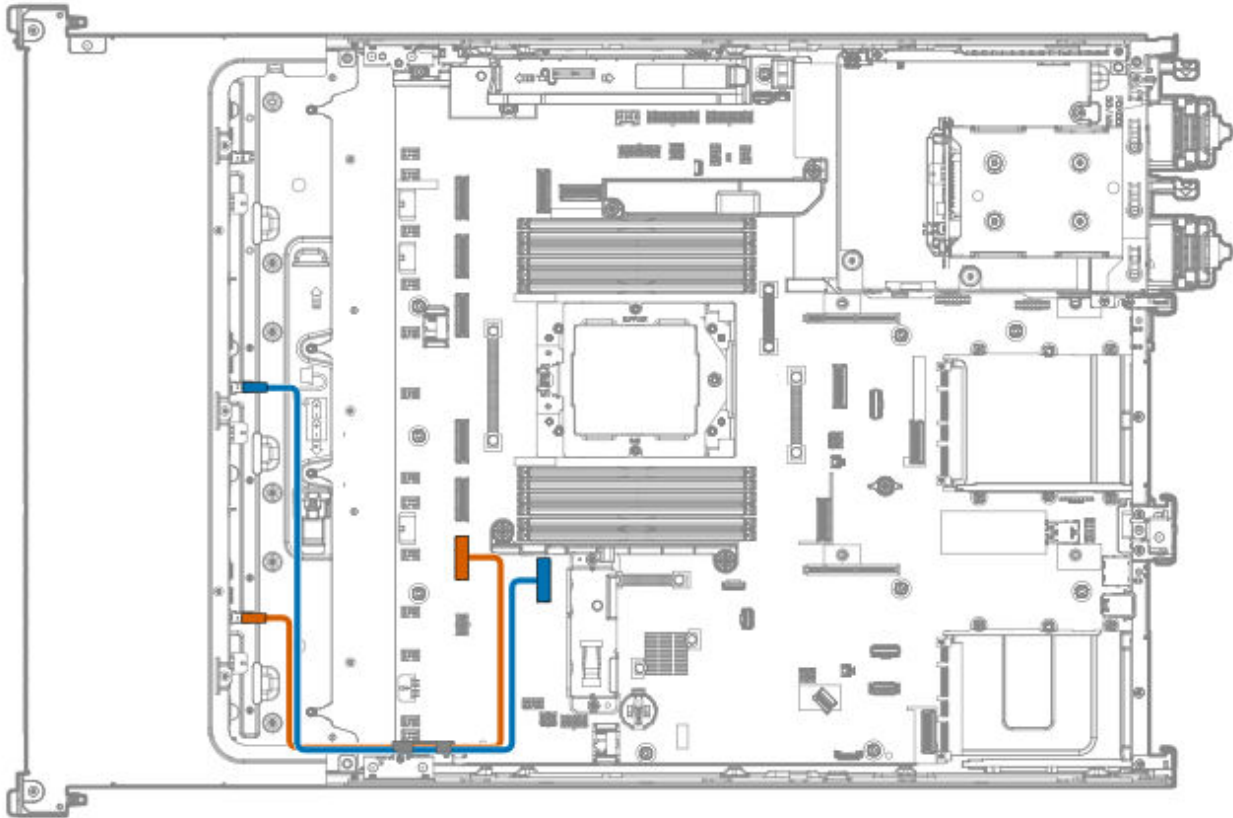
### 8/12 LFF drive: Onboard SATA cabling

If the 4 LFF midplane drive cage is not installed, use the cable tie that ships with cable kit to secure the cable to the midplane drive cage by the drive backplane bracket.



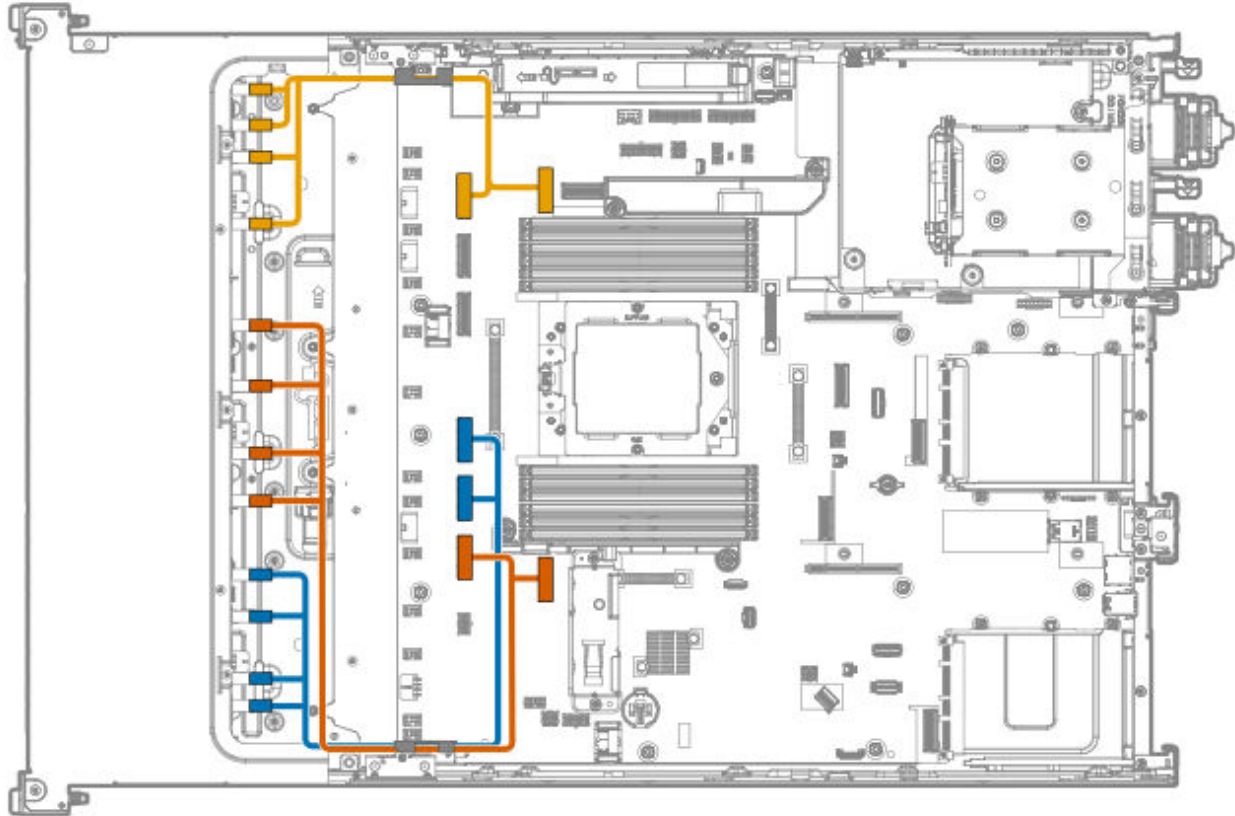
Cable part number	Color	From	To
P57187-001	Orange	Box 1 port 1	NVMe/SATA port 2A
P58865-001	Blue	Box 2 port 1	NVMe/SATA port 1A
	Gold	Box 3 port 1	

## 8/16 SFF drive: Onboard SATA cabling



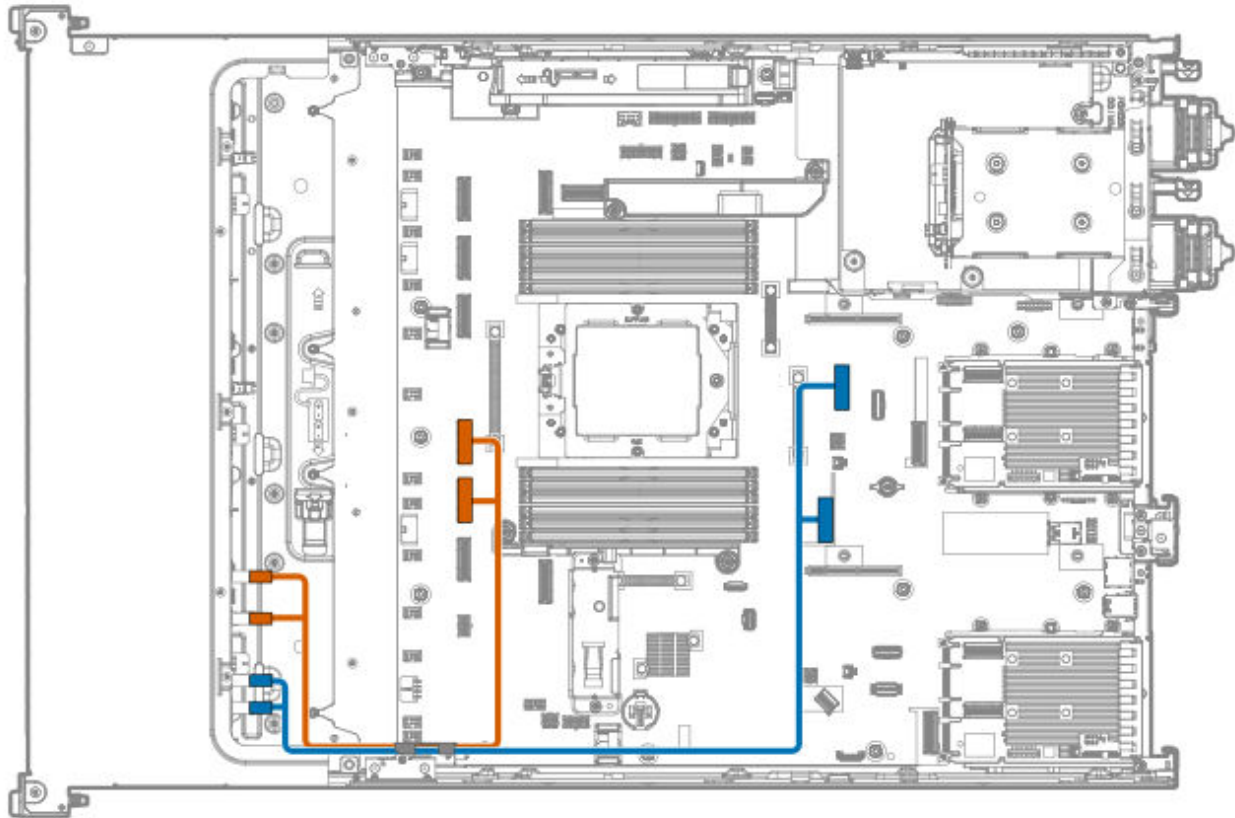
Cable part number	Color	From	To
P57194-001	Blue	Box 2 port 1	NVMe/SATA port 1A
P57196-001	Orange	Box 3 port 1	NVMe/SATA port 2A

## 8/16/24 SFF x2 NVMe drive direct attach cabling



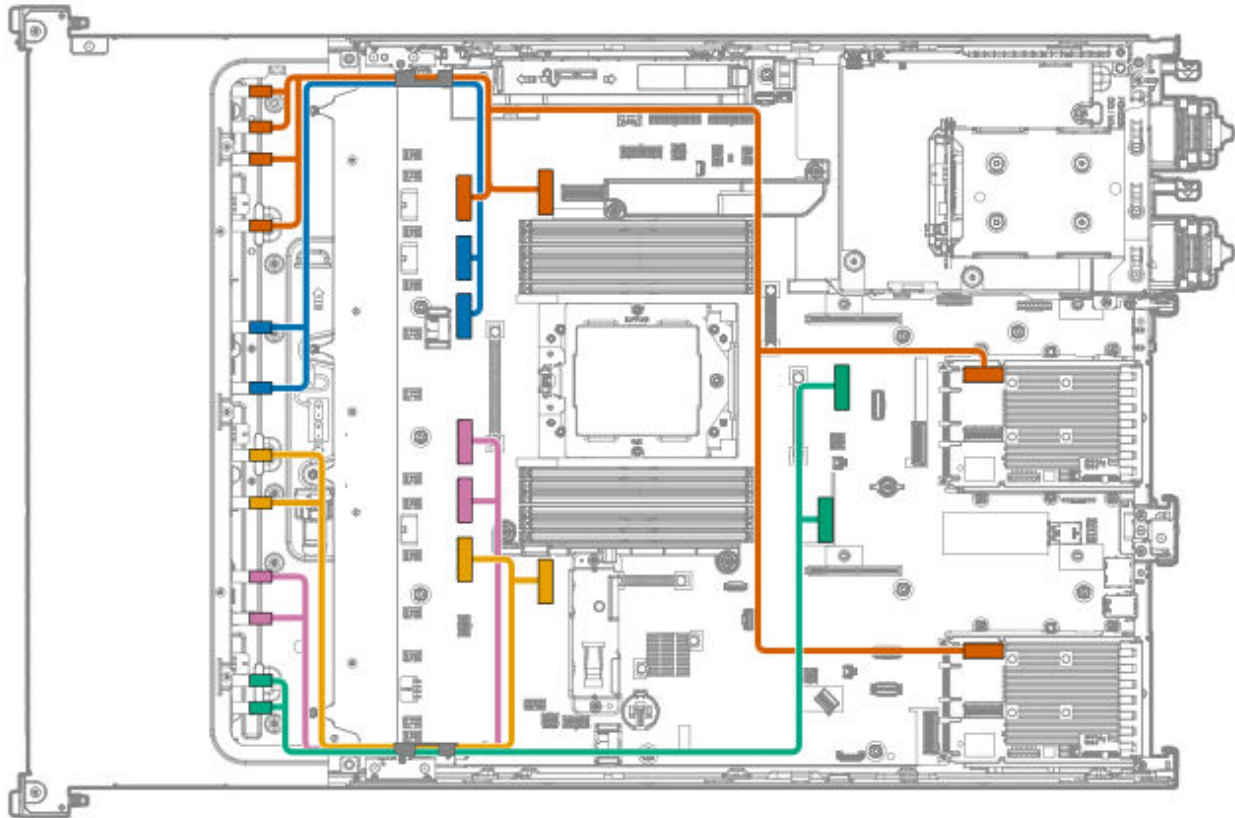
Cable part number	Color	From	To
P57224-001	Gold	Box 1 port 1 and port 2	NVMe port 7A
		Box 1 port 3 and port 4	NVMe port 8A
P57222-001	Orange	Box 2 port 1 and port 2	NVMe/SATA port 1A
		Box 2 port 3 and port 4	NVMe/SATA port 2A
P57220-001	Blue	Box 3 port 1 and port 2	NVMe port 3A
		Box 3 port 3 and port 4	NVMe port 4A

## 8 SFF x4 NVMe drive direct attach cabling



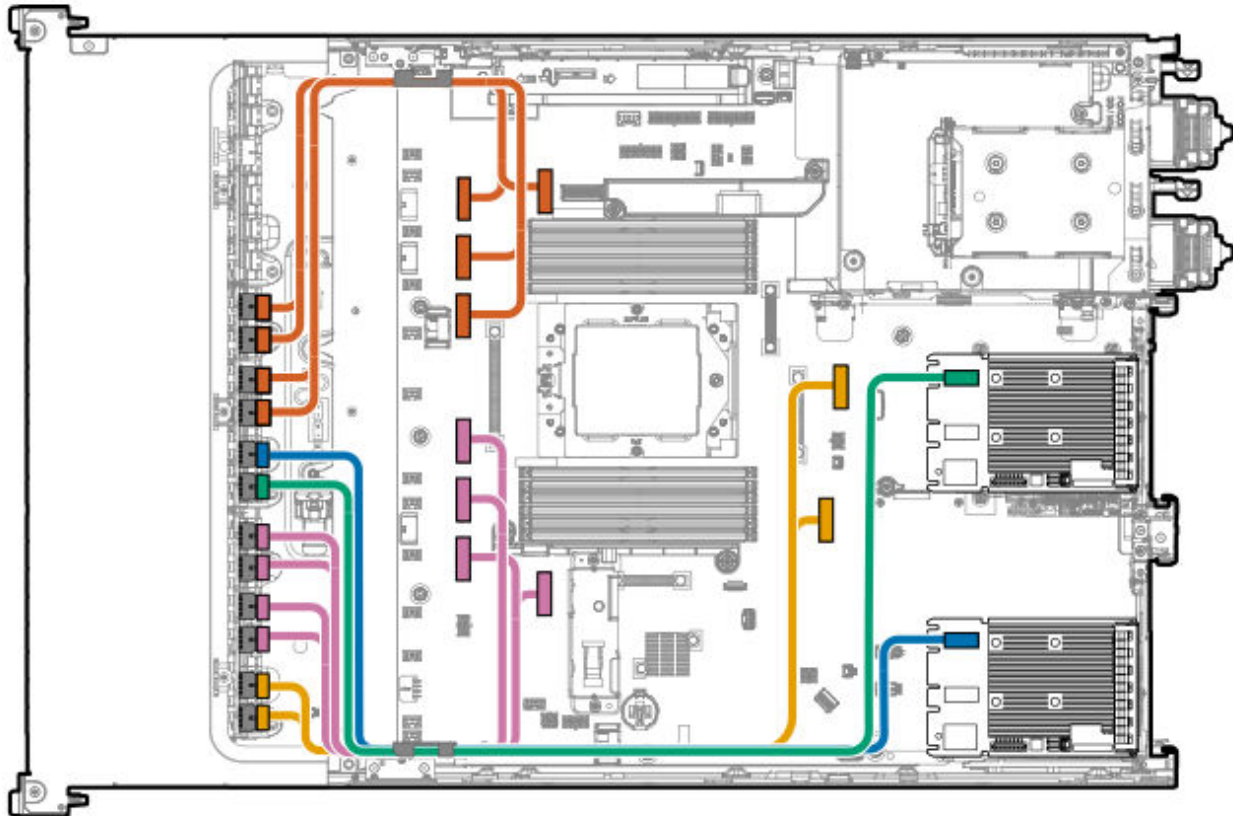
Cable part number	Color	From	To
P57205-001	Orange	Box 3 port 1 and port 2	NVMe port 3A NVMe port 4A
P57215-001	Blue	Box 3 port 3 and port 4	NVMe/SATA port 1B NVMe port 9A

## 8/16/24 SFF x4 NVMe drive direct attach cabling



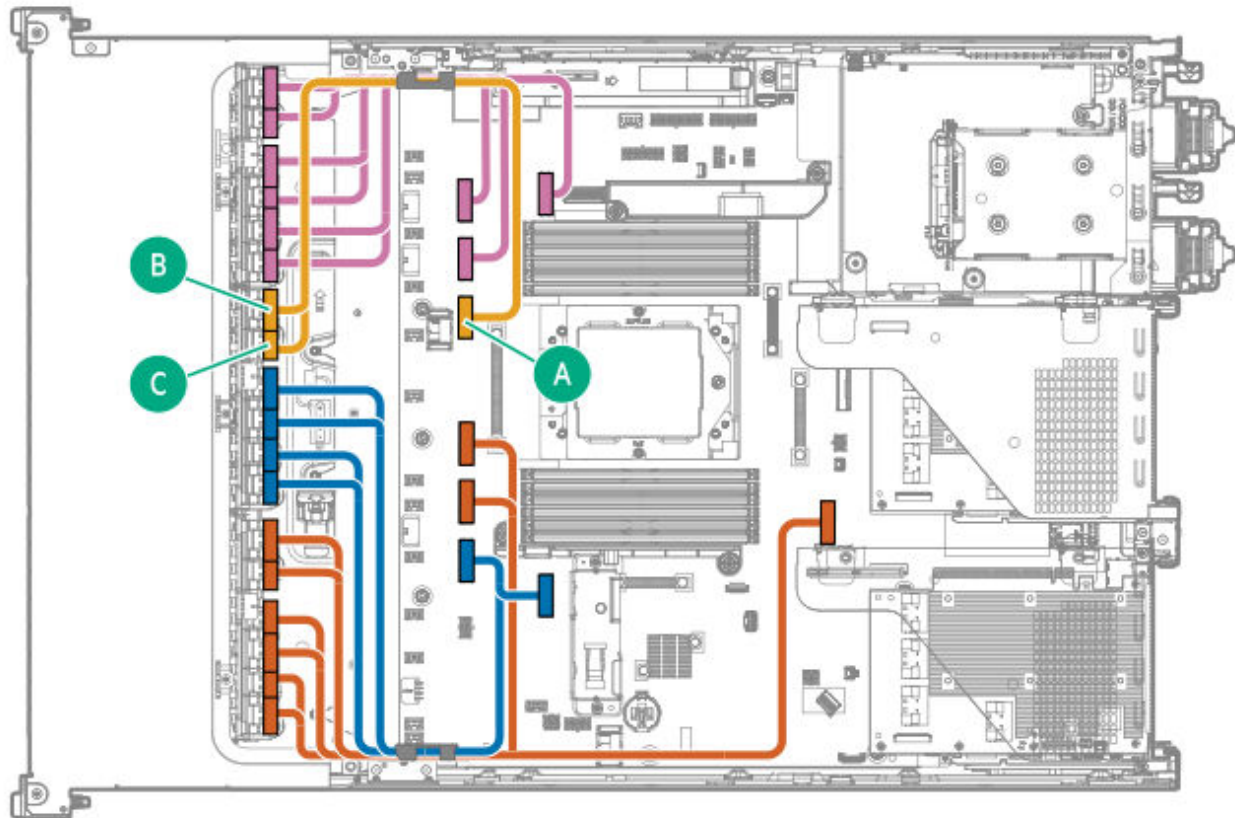
Cable part number	Color	From	To
P57216-001	Orange	Box 1 port 1	MCIO port 1 on the OCP retimer card in Slot 21
		Box 1 port 2	MCIO port 1 on the OCP retimer card in Slot 22
		Box 1 port 3	NVMe port 7A
		Box 1 port 4	NVMe port 8A
P57214-001	Blue	Box 2 port 1	NVMe port 5A
		Box 2 port 2	NVMe port 6A
P57212-001	Gold	Box 2 port 3	NVMe/SATA port 1A
		Box 2 port 4	NVMe/SATA port 2A
P57205-001	Pink	Box 3 port 1	NVMe port 3A
		Box 3 port 2	NVMe port 5A
P57215-001	Green	Box 3 port 3	NVMe port 9A
		Box 3 port 4	NVMe/SATA port 1B

## 24 E3.S x4 NVMe drive direct attach cabling



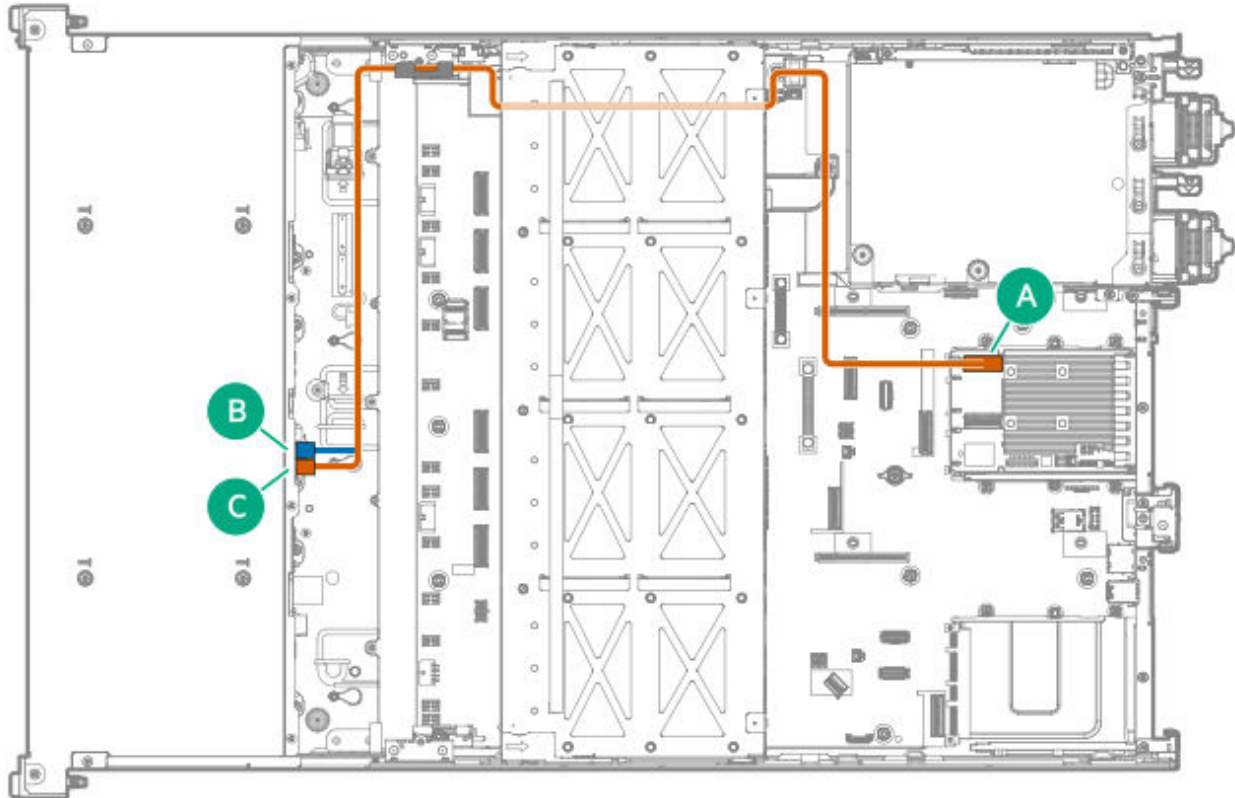
Cable part number	Color	From	To
P59478-001	Orange	Box 2 ports 1–4	NVMe ports 5A/6A/7A/8A
P59476-001	Blue	Box 2 port 5	MCIO port 1 on the OCP retimer card in Slot 21
	Green	Box 2 port 6	MCIO port 1 on the OCP retimer card in Slot 22
P59473-001	Pink	Box 3 ports 1–4	NVMe/SATA ports 1A/2A NVMe ports 3A/4A
P59474-001	Gold	Box 3 ports 5–6	NVMe/SATA port 1B NVMe port 9A

### 36 E3.S x2 NVMe drive direct attach cabling



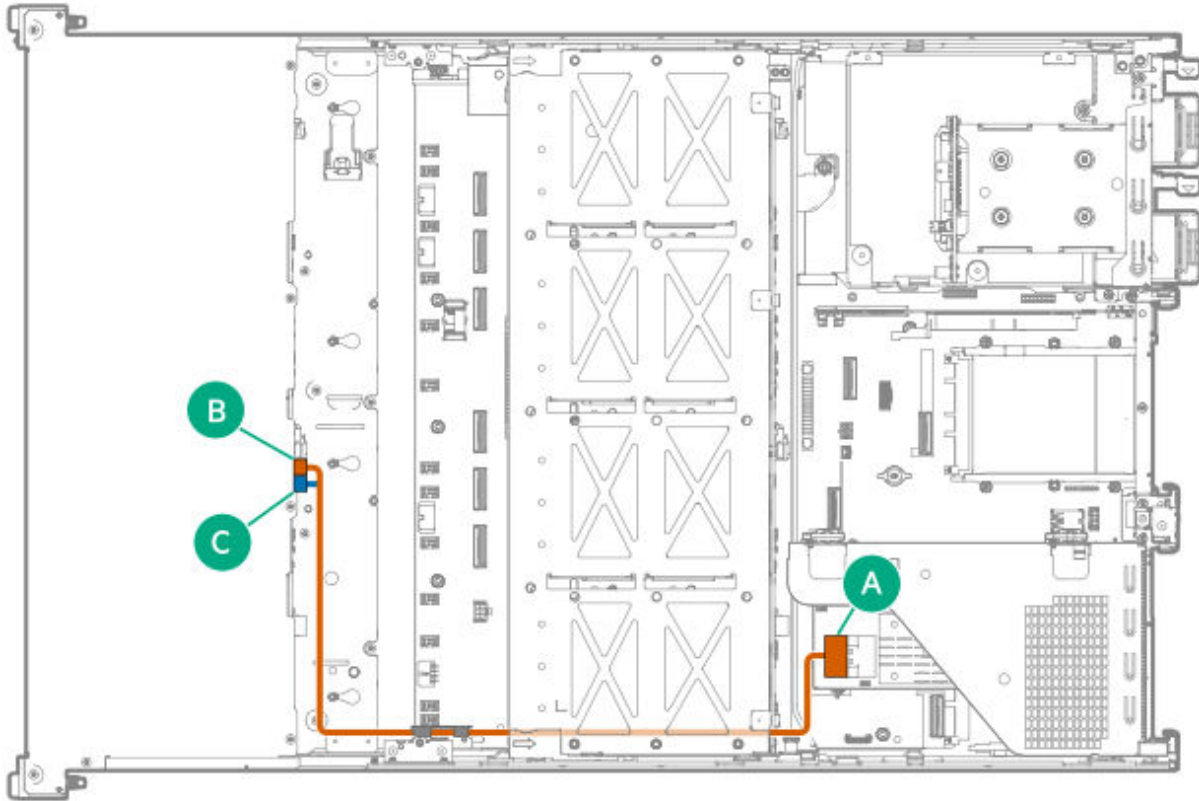
Cable part number	Color	From	To
P59118-001	Orange	Box 3 ports 1-2	NVMe port 3A
		Box 3 ports 3-4	NVMe port 4A
		Box 3 ports 5-6	NVMe port 9A
P59120-001	Blue	Box 2 ports 3-4	NVMe/SATA port 1A
		Box 2 ports 5-6	NVMe/SATA port 2A
P59094-001	Gold	Box 2 ports 1-2	NVMe port 5A
P59121-001	Pink	Box 1 ports 1-2	NVMe port 8A
		Box 1 ports 3-4	NVMe port 7A
		Box 1 ports 5-6	NVMe port 6A

**8 LFF SAS/SATA drive controller cable: Type-o controller in Slot 22**



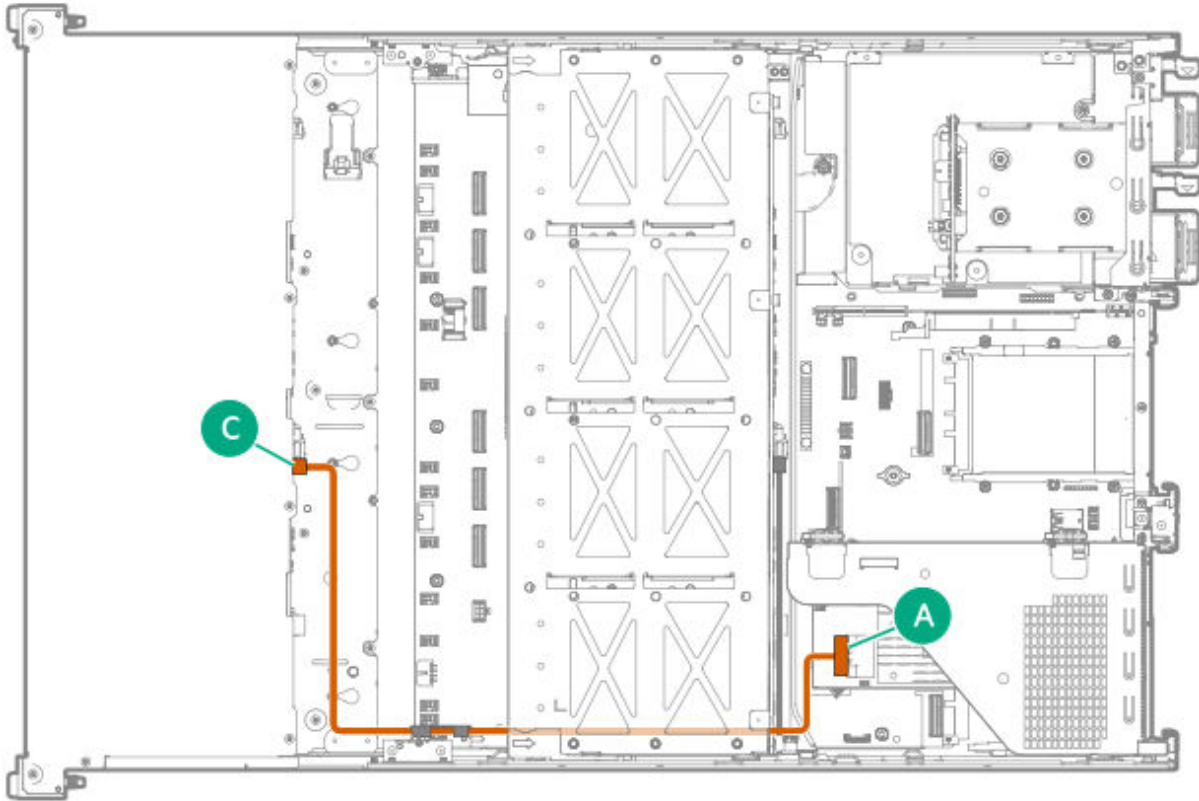
Cable part number	Color	From	To
P58101-001	Blue	Box 2 port 1	Type-o storage controller port 1 in Slot 22
	Orange	Box 3 port 1	

## 8 LFF SAS/SATA drive controller cabling: Type-p controller in the primary riser



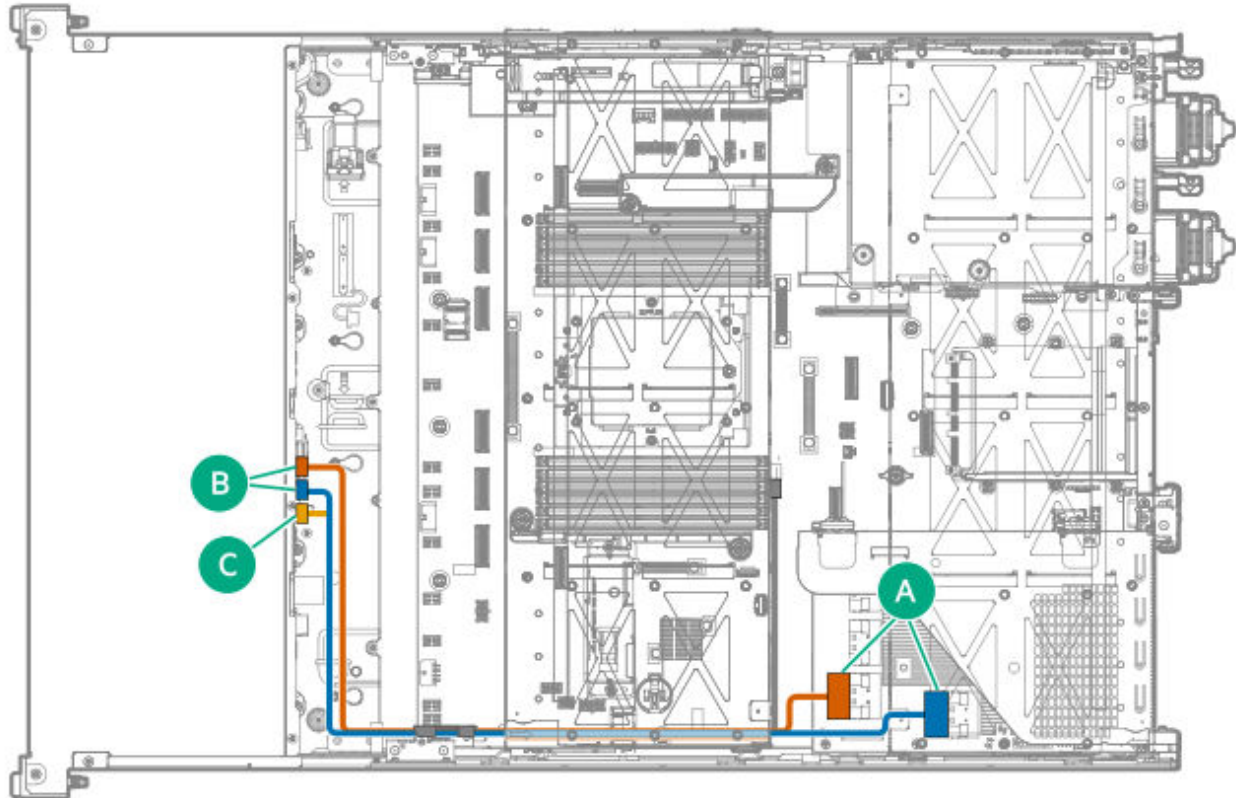
Cable part number	Color	From	To
P58063-001	Orange	Box 2 port 1	Primary type-p storage controller port 1
	Blue	Box 3 port 1	

**4 LFF Box 1 SAS/SATA drive controller cabling: Type-p controller in the primary riser**



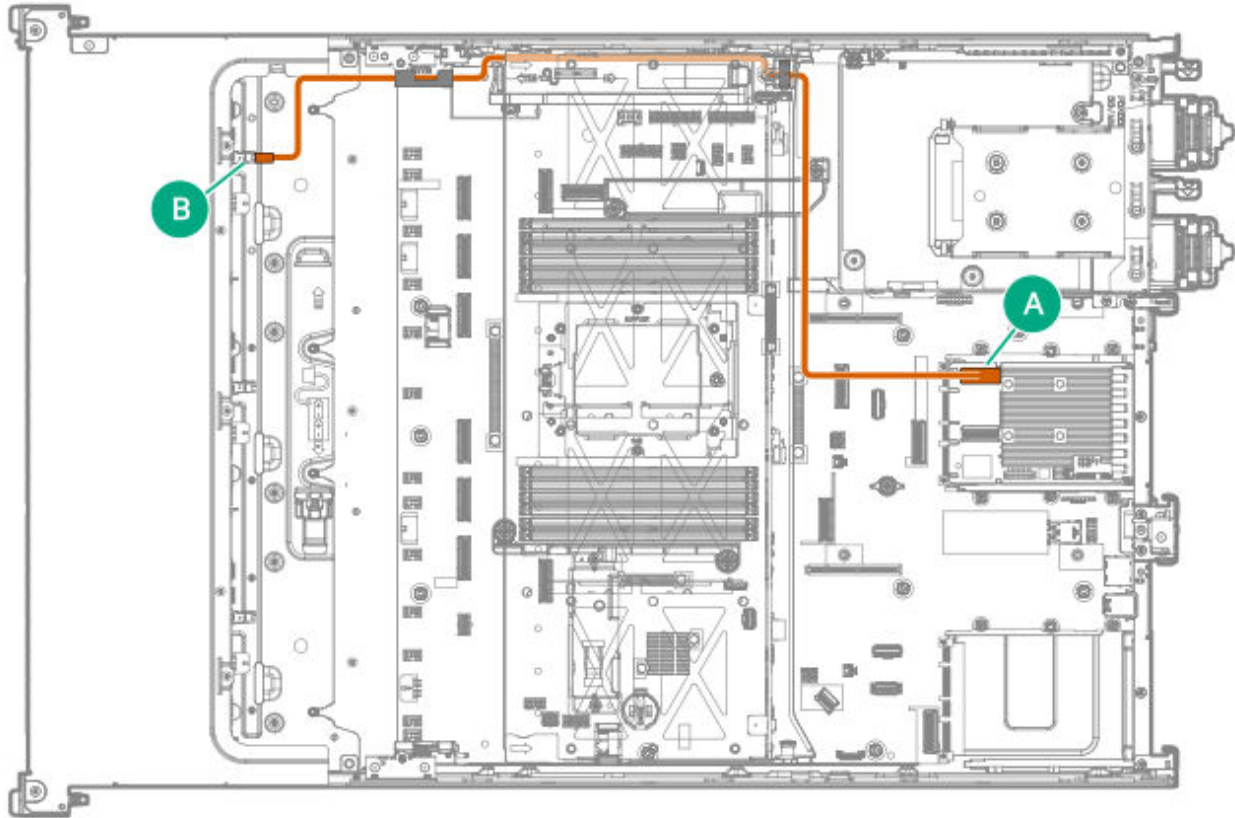
Cable part number	Color	From	To
P57188-001	Orange	Box 1 port 1	Primary type-p storage controller port 1

## 8/12 LFF SAS/SATA drive controller cabling: Type-p storage controller in the primary riser



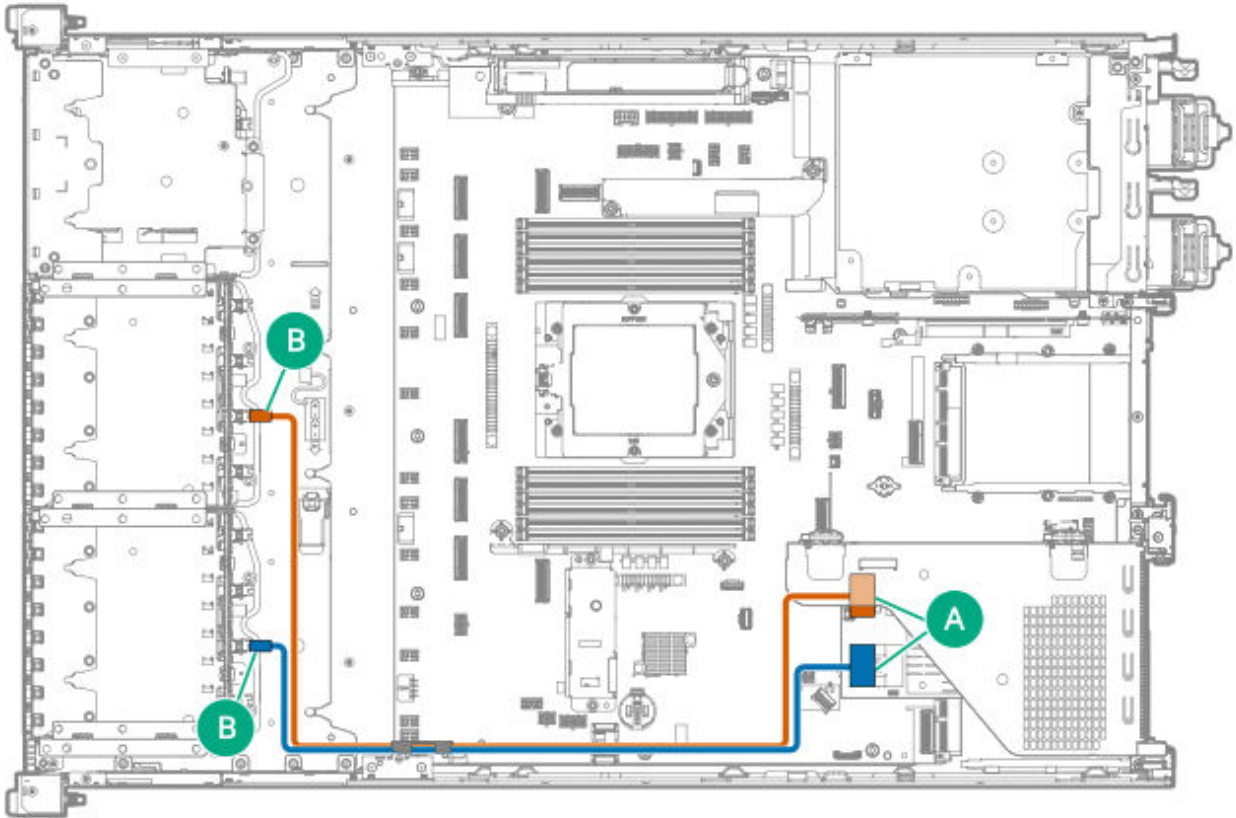
Cable part number	Color	From	To
P57188-001	Orange	Box 1 port 1	Primary type-p storage controller port 2
P58063-001	Blue	Box 2 port 1	Primary type-p storage controller port 1
	Gold	Box 3 port 1	

**8 SFF Box 1 SAS/SATA drive controller cabling: Type-o controller in the Slot 22**



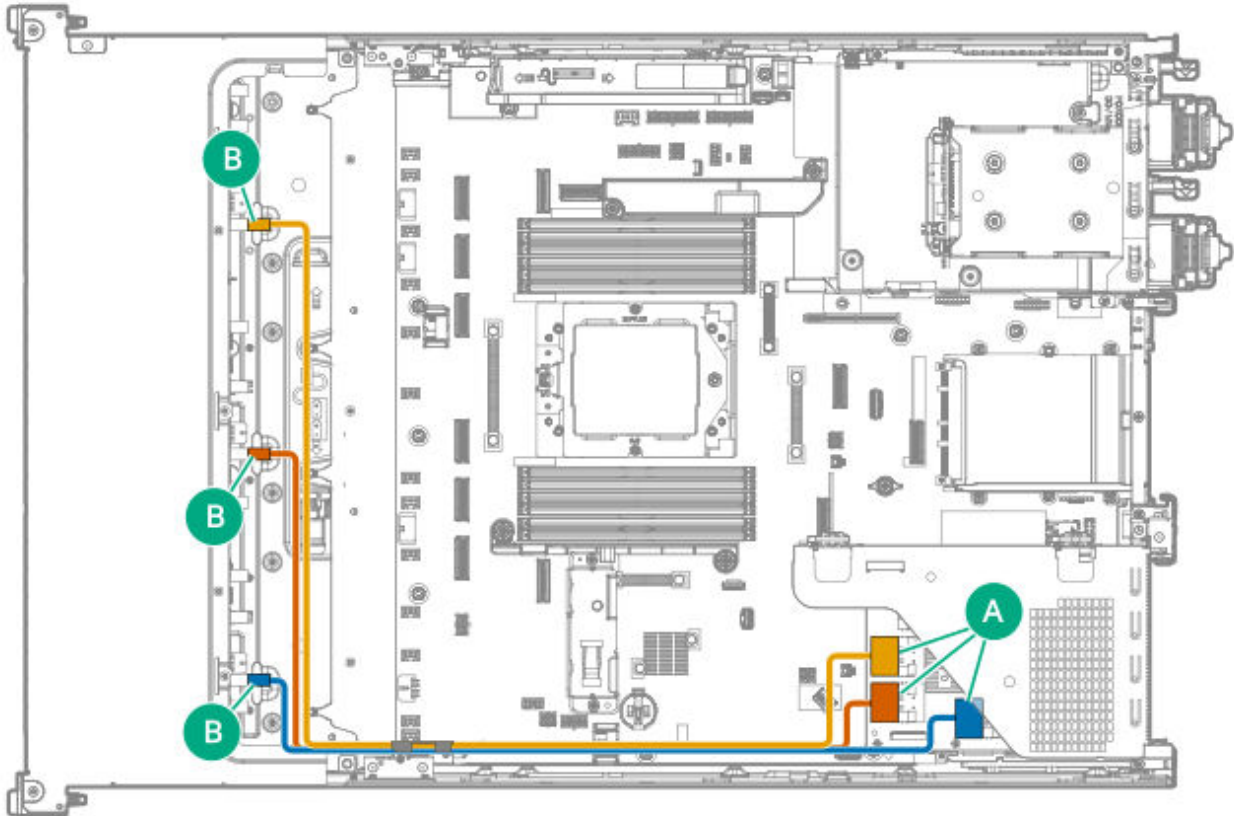
Cable part number	Color	From	To
P58016-001	Orange	Box 1 port 1	Type-o storage controller port 1 in Slot 22

**8/16 SFF SAS/SATA drive controller cabling: Type-p controller in the primary riser**



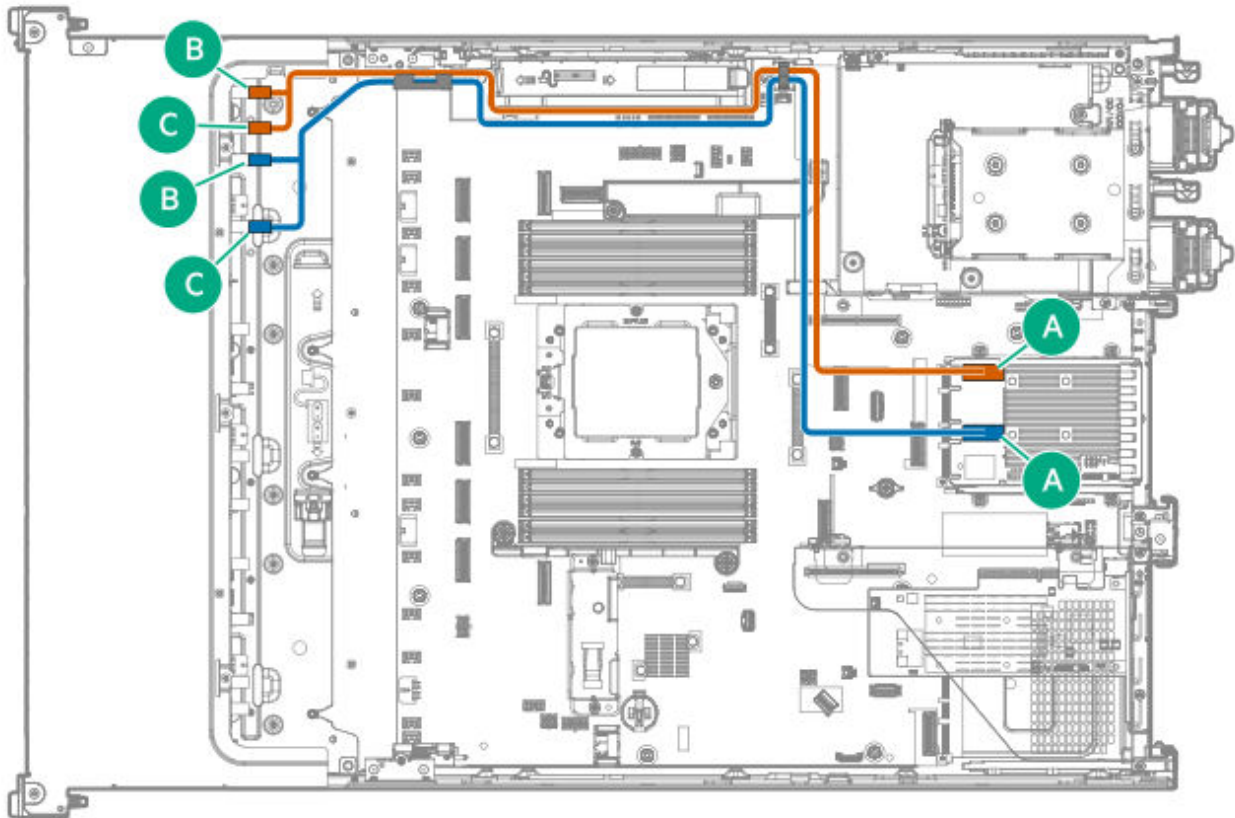
<b>Cable part number</b>	<b>Color</b>	<b>From</b>	<b>To</b>
P58020-001	Orange	Box 2 port 1	Primary type-p storage controller port 2
P58018-001	Blue	Box 3 port 1	Primary type-p storage controller port 1

**8/16/24 SFF SAS/SATA drive controller cabling: Type-p controller in the primary riser**



<b>Cable part number</b>	<b>Color</b>	<b>From</b>	<b>To</b>
P58019-001	Gold	Box 1 port 1	Primary type-p storage controller port 3
P58020-001	Orange	Box 2 port 1	Primary type-p storage controller port 2
P58018-001	Blue	Box 3 port 1	Primary type-p storage controller port 1

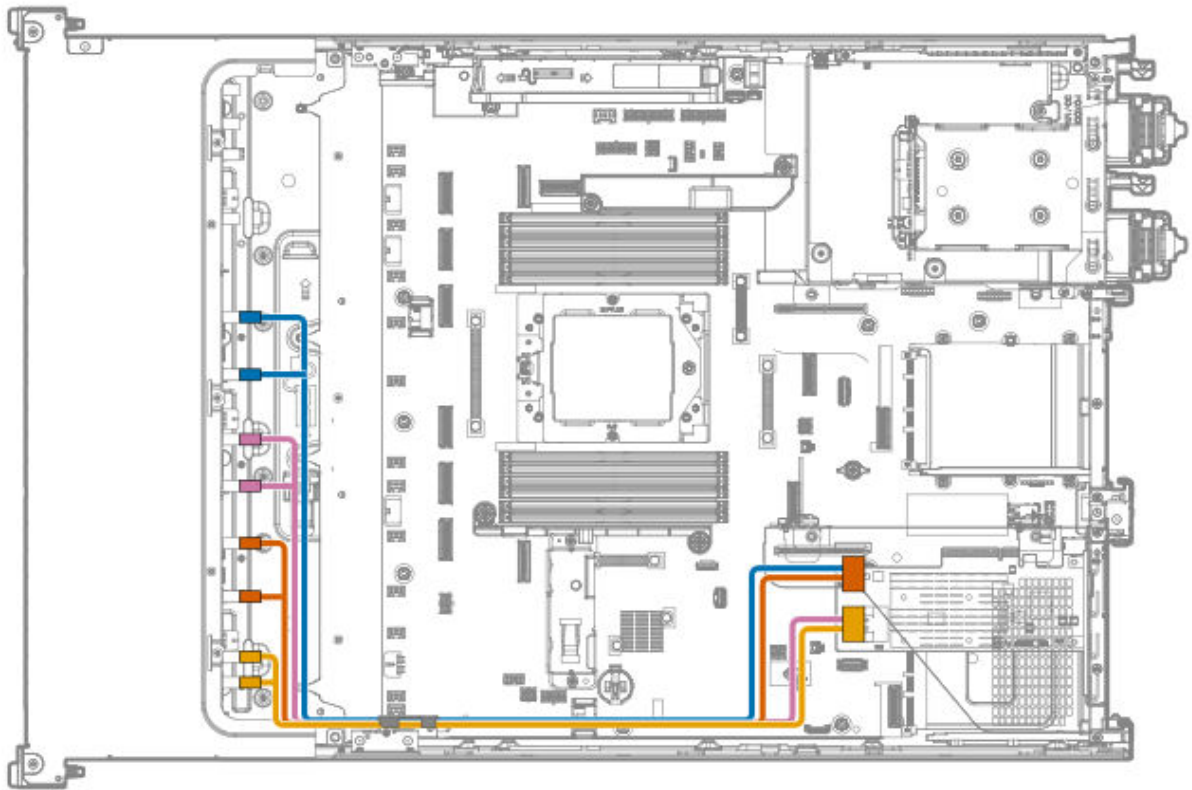
### 8 SFF Box 1 x2 NVMe drive controller cabling: Type-o controller in Slot 22



Cable part number	Color	From	To
P58075-001	Orange	Box 1 port 3 and port 4	Type-o controller port 2 in Slot 22
P58076-001	Blue	Box 1 port 1 and port 2	Type-o storage controller port 1 in Slot 22

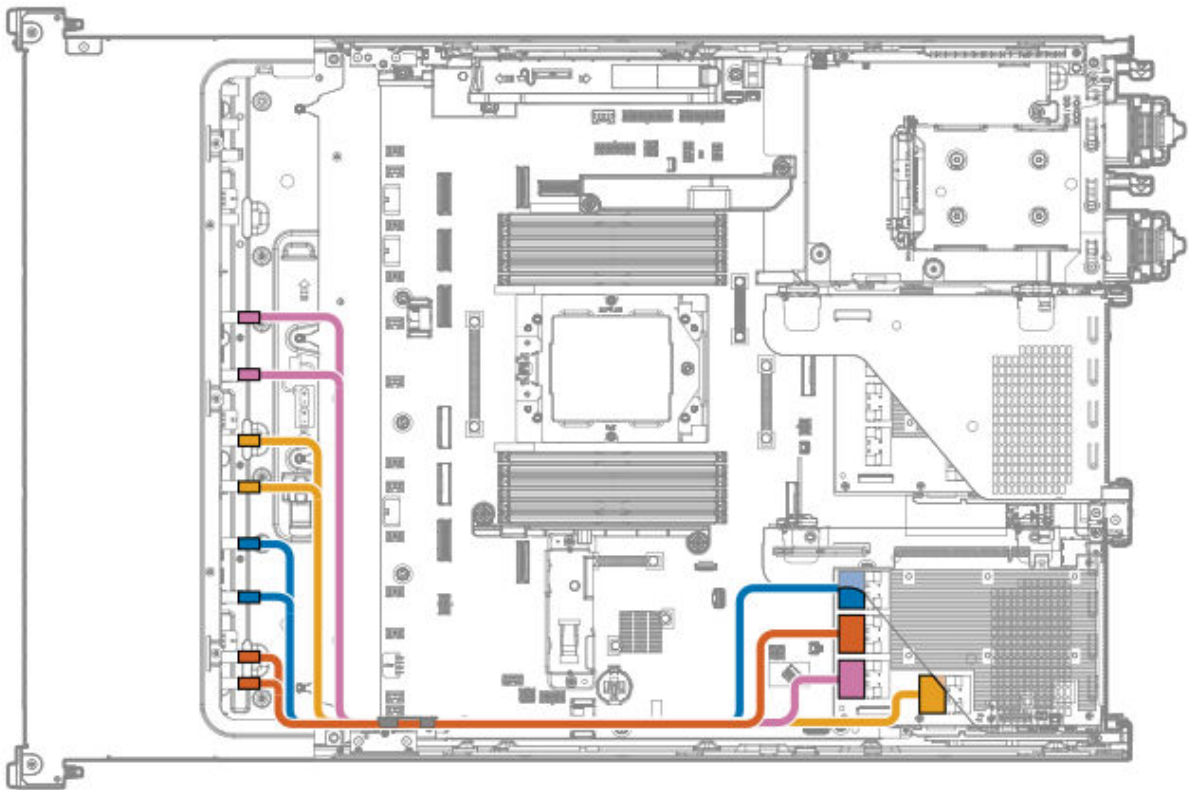
### 8/16 SFF x2 NVMe drive controller cabling: Type-p controller in the primary riser

- MR416i-p controller



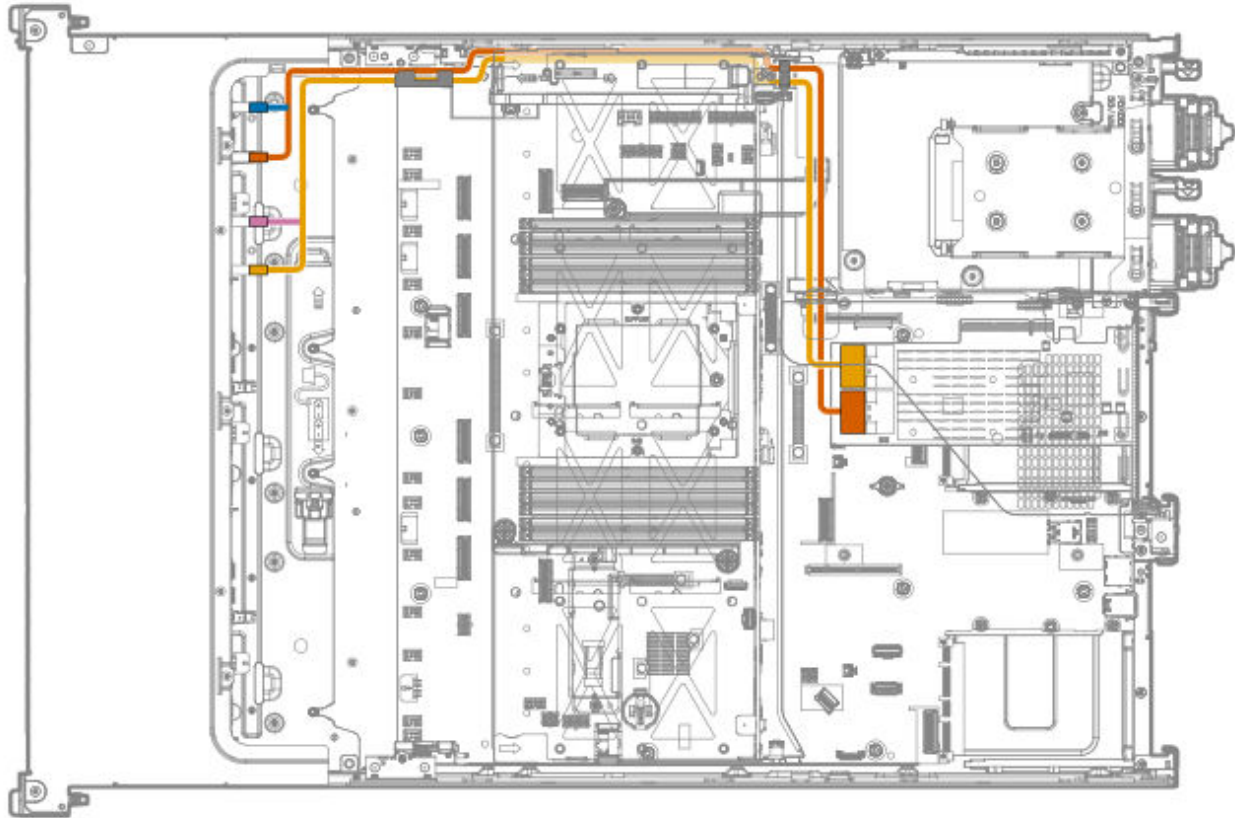
Cable spare part	Color	From	To
P58123-001	Blue	Box 2 port 1 and port 2	Primary type-p storage controller port 2
	Pink	Box 2 port 3 and port 4	Primary type-p storage controller port 1
P58127-001	Orange	Box 3 port 1 and port 2	Primary type-p storage controller port 2
	Gold	Box 3 port 3 and port 4	Primary type-p storage controller port 1

- SR932i-p controller



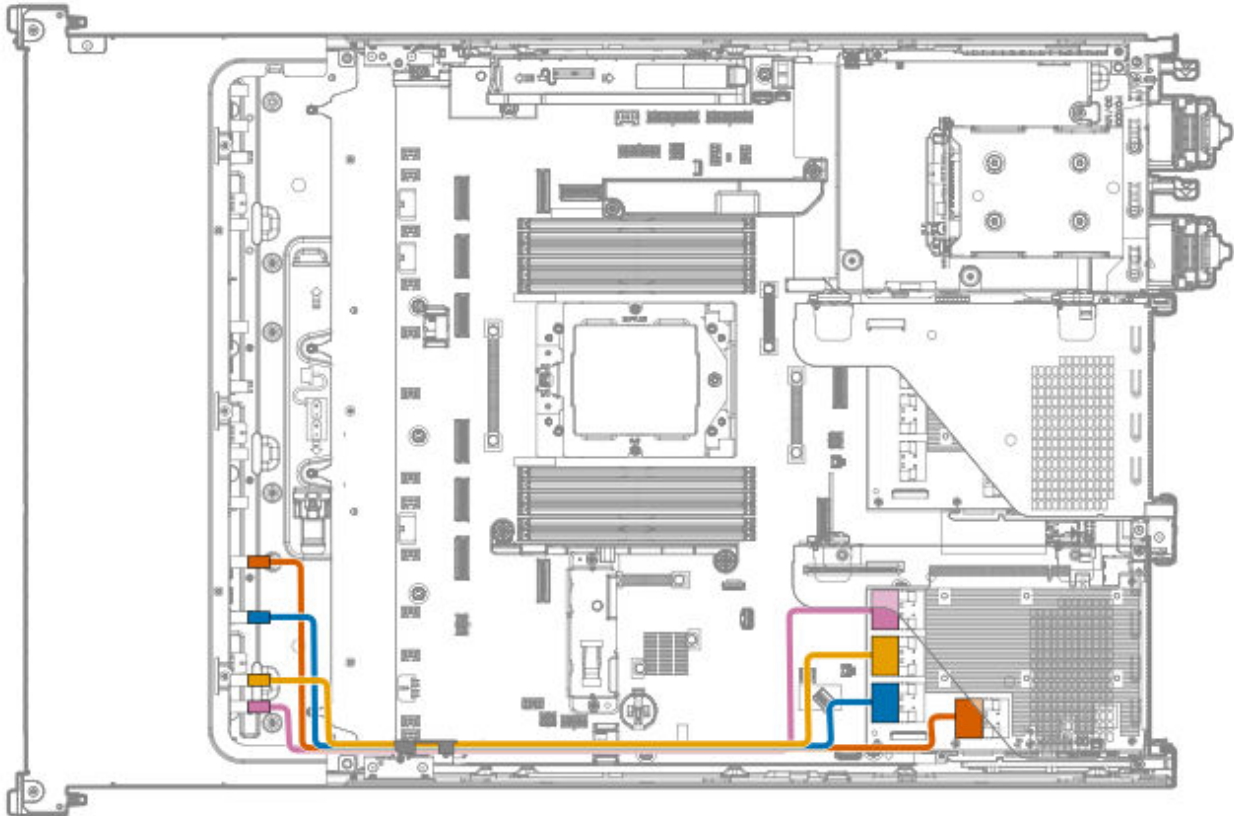
Cable spare part	Color	From	To
P58127-001	Blue	Box 3 port 1 and port 2	Primary type-p storage controller port 4
	Orange	Box 3 port 3 and port 4	Primary type-p storage controller port 3
P58123-001	Pink	Box 2 port 1 and port 2	Primary type-p storage controller port 2
	Gold	Box 2 port 3 and port 4	Primary type-p storage controller port 1

**8 SFF Box 1 x2 NVMe drive controller cabling: Type-p controller in the secondary riser**



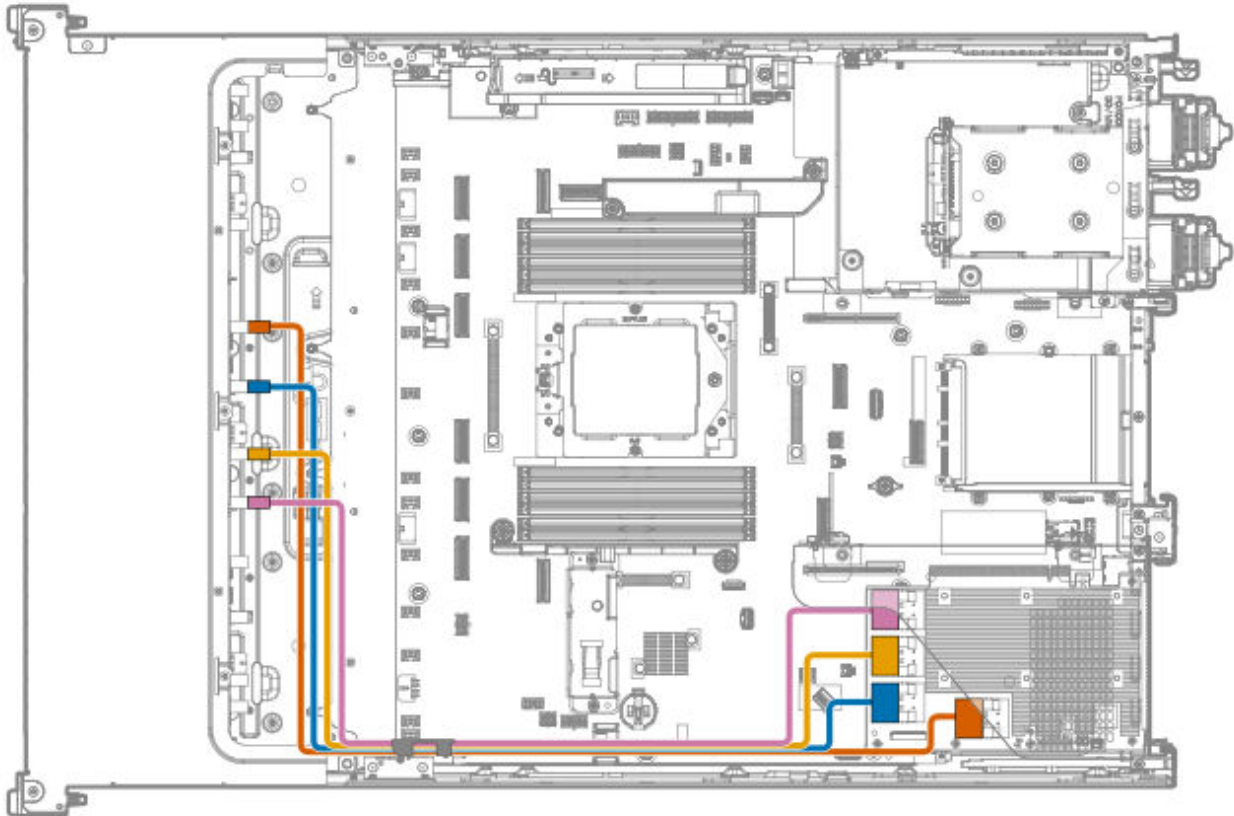
Cable part number	Color	From	To
P58124-001	Blue	Box 1 port 1	Secondary type-p storage controller port 1
	Orange	Box 1 port 2	
	Pink	Box 1 port 3	Secondary type-p storage controller port 2
	Gold	Box 1 port 4	

## 8 SFF Box 3 x4 NVMe drive controller cabling: Type-p controller in the primary riser



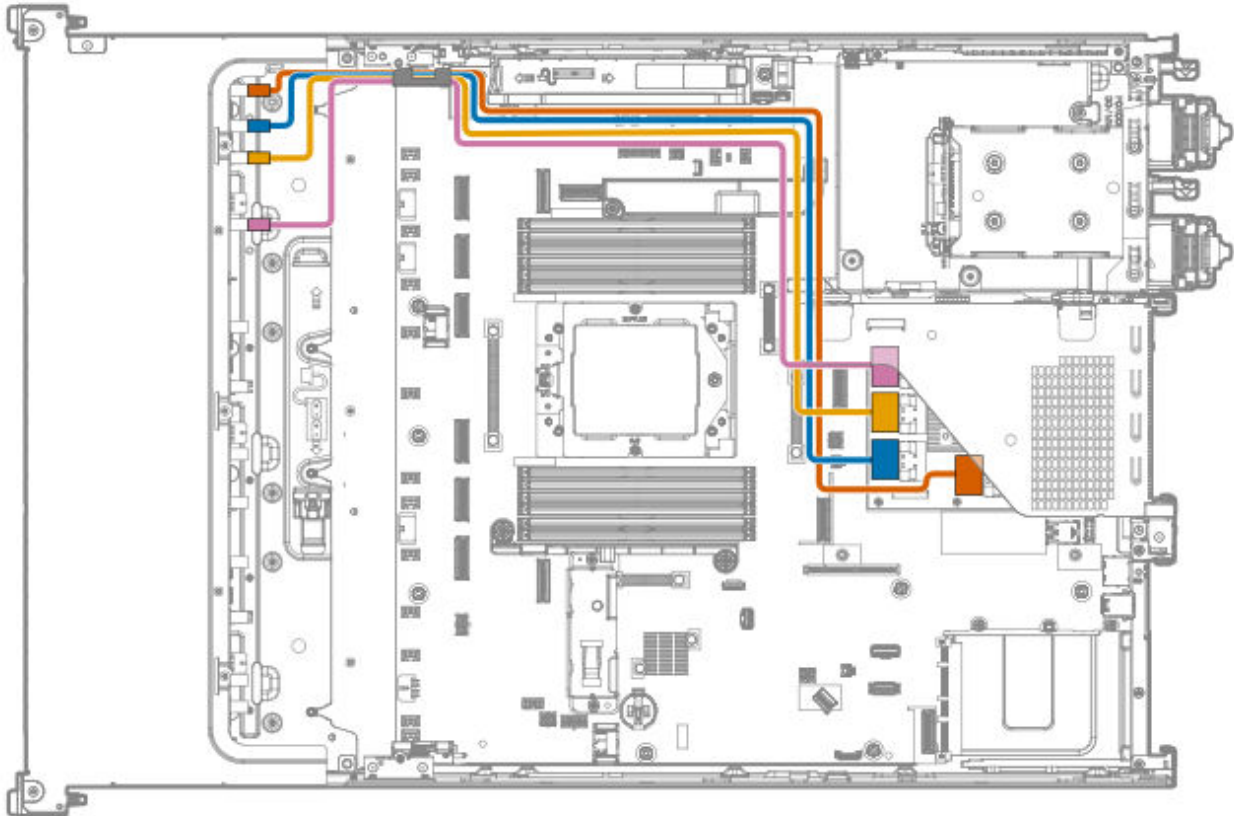
Cable part number	Color	From	To
P58120-001	Orange	Box 3 port 1	Primary type-p storage controller port 1
	Blue	Box 3 port 2	Primary type-p storage controller port 2
	Gold	Box 3 port 3	Primary type-p storage controller port 3
	Pink	Box 3 port 4	Primary type-p storage controller port 4

## 8 SFF Box 2 x4 NVMe drive controller cabling: Type-p controller in the primary riser



Cable part number	Color	From	To
P58122-001	Orange	Box 2 port 1	Primary type-p storage controller port 1
	Blue	Box 2 port 2	Primary type-p storage controller port 2
	Gold	Box 2 port 3	Primary type-p storage controller port 3
	Pink	Box 2 port 4	Primary type-p storage controller port 4

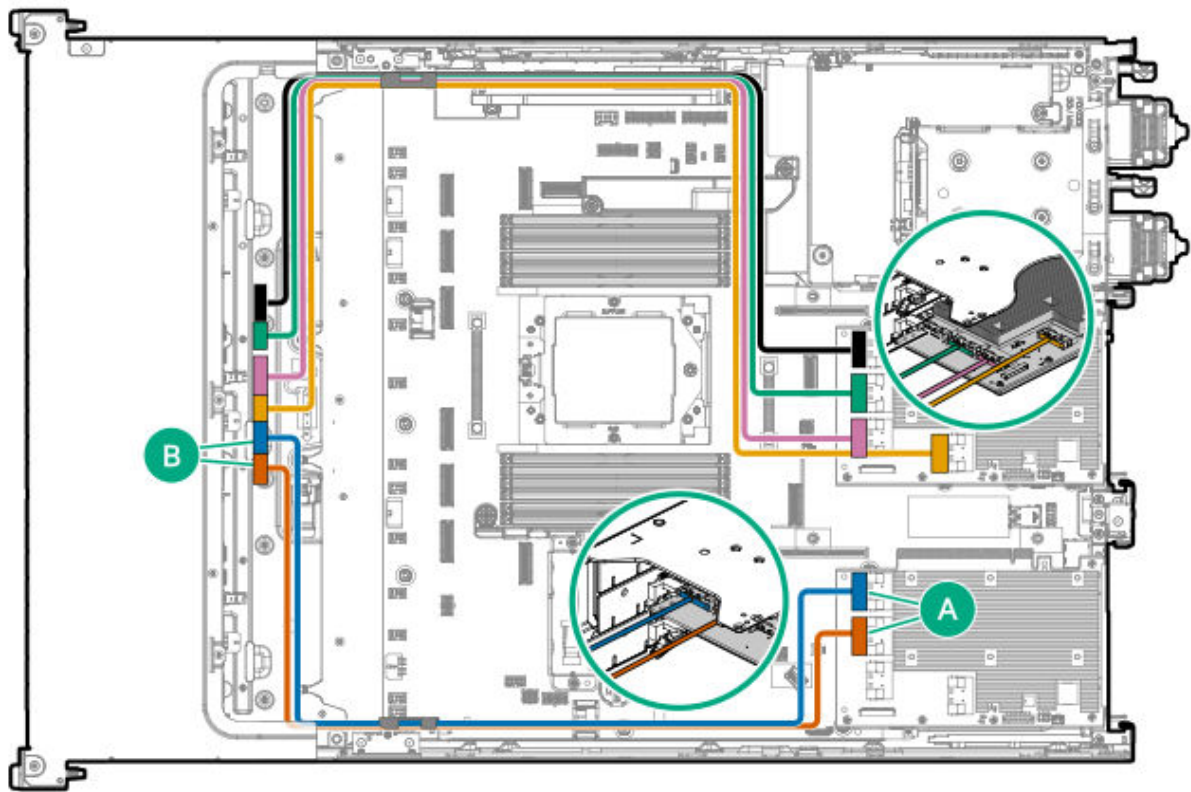
## 8 SFF Box 1 x4 NVMe drive controller cabling: Type-p controller in the secondary riser



Cable part number	Color	From	To
P58114-001	Orange	Box 1 port 1	Secondary type-p storage controller port 1
	Blue	Box 1 port 2	Secondary type-p storage controller port 2
	Gold	Box 1 port 3	Secondary type-p storage controller port 3
	Pink	Box 1 port 4	Secondary type-p storage controller port 4

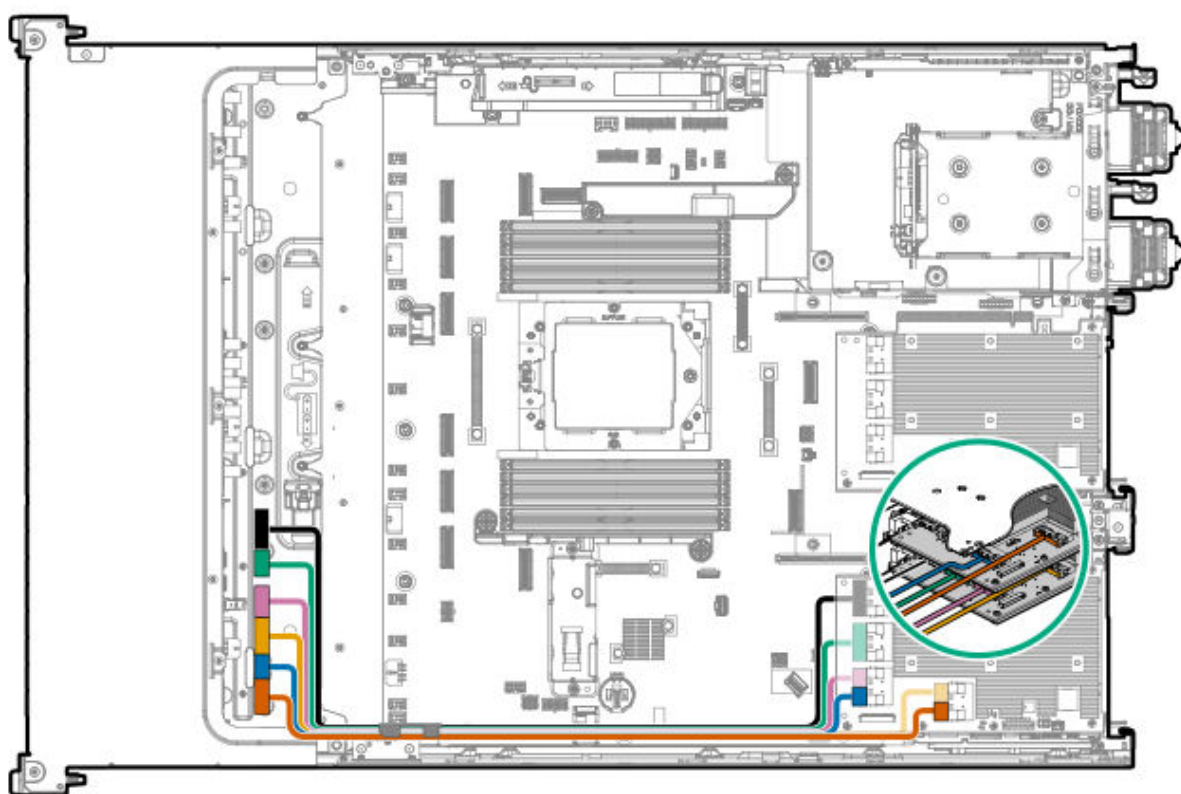
## 24 E3.S x4 NVMe drive controller cabling: Type-p controllers

- Box 2



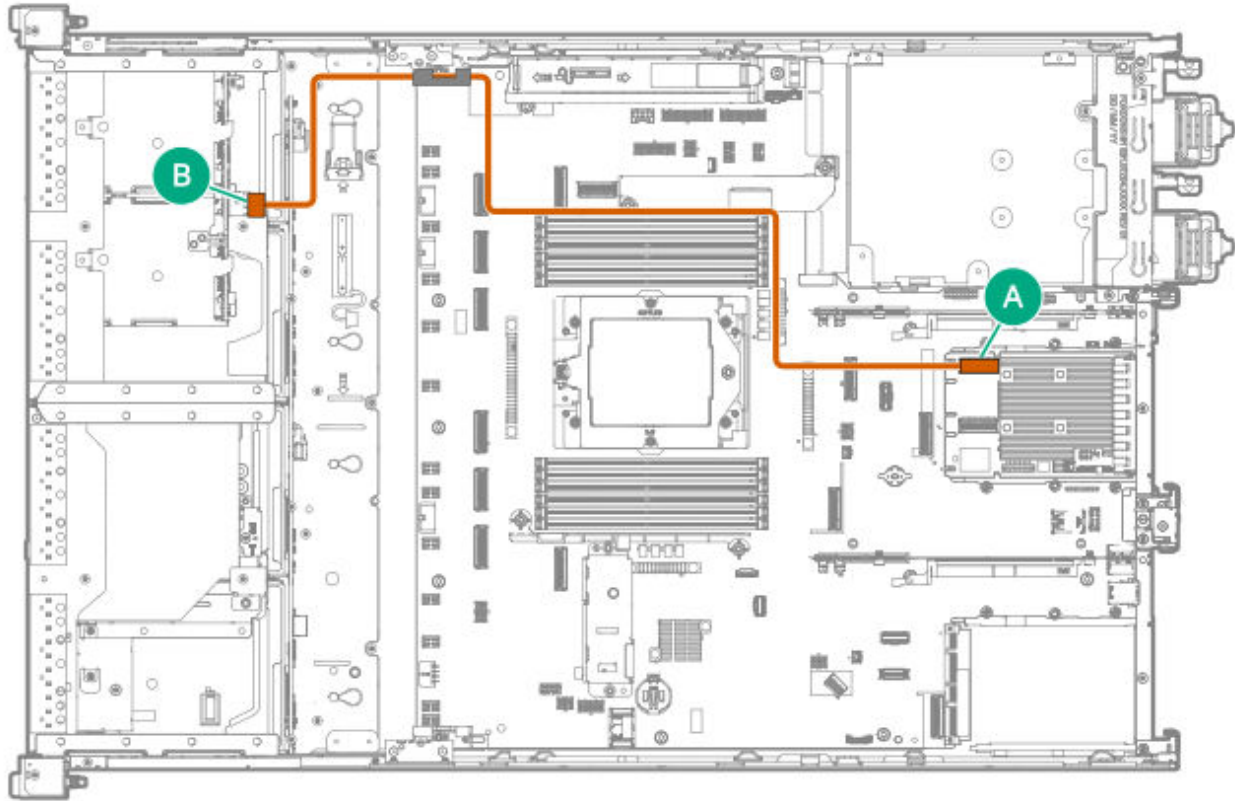
Cable part number	Color	From	To
P57076-001	Orange	Box 2 port 6	Primary slot 2 type-p storage controller port 4
	Blue	Box 2 port 5	Primary slot 2 type-p storage controller port 3
P58126-001	Gold	Box 2 port 4	Secondary type-p storage controller port 1
	Pink	Box 2 port 3	Secondary type-p storage controller port 2
	Green	Box 2 port 2	Secondary type-p storage controller port 3
	Black	Box 2 port 1	Secondary type-p storage controller port 4

- Box 3



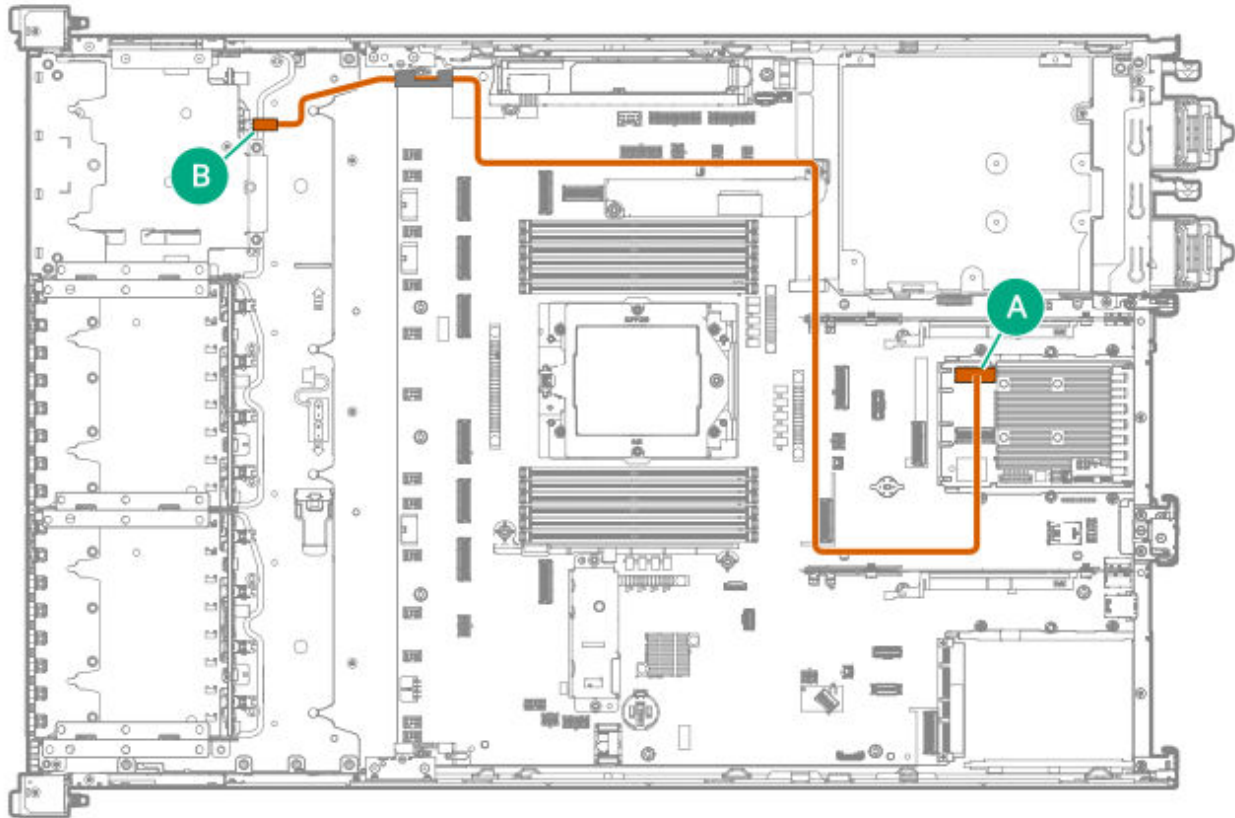
Cable part number	Color	From	To
P62388-001	Orange	Box 3 port 6	Primary slot 2 type-p storage controller port 1
	Blue	Box 3 port 5	Primary slot 2 type-p storage controller port 2
P58125-001	Gold	Box 3 port 4	Primary slot 3 type-p storage controller port 1
	Pink	Box 3 port 3	Primary slot 3 type-p storage controller port 2
	Green	Box 3 port 2	Primary slot 3 type-p storage controller port 3
	Black	Box 3 port 1	Primary slot 3 type-p storage controller port 4

**Front 2 SFF side-by-side drive controller cabling: Type-o controller**



Cable part number	Color	From	To
P58145-001	Orange	Box 1 port 1	Type-o storage controller port 1 in Slot 22

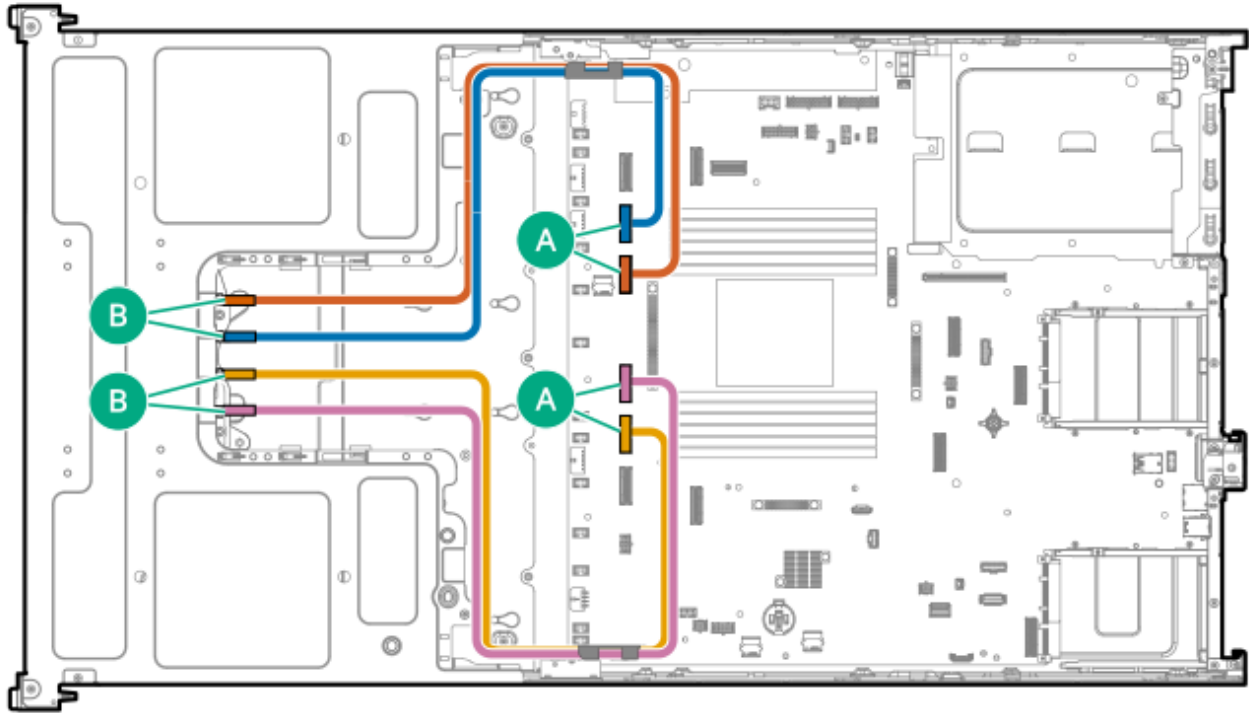
## Front 2 SFF stacked drive controller cabling: Type-o controller



Cable part number	Color	From	To
P58145-001	Orange	Box 1 port 1	Type-o storage controller port 1 in Slot 22

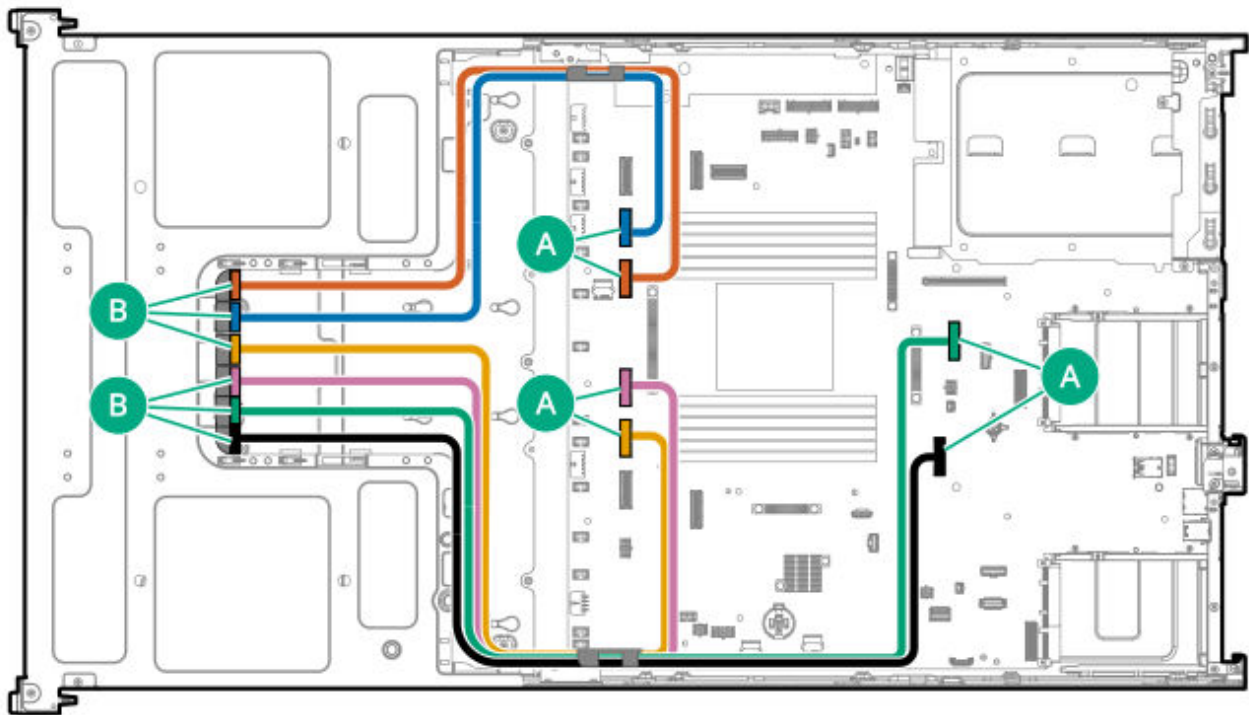
# Front drive storage controller cabling: GPU-optimized configuration

## 8 SFF x4 NVMe drive direct attach cabling



Cable part number	Color	From	To
P59106-001	Orange	Box 1 port 1	NVMe port 5A
P59107-001	Blue	Box 1 port 2	NVMe port 6A
P59104-001	Gold	Box 1 port 3	NVMe port 3A
P59105-001	Pink	Box 1 port 4	NVMe port 4A

## 12 E3.S x4 NVMe drive direct attach cabling



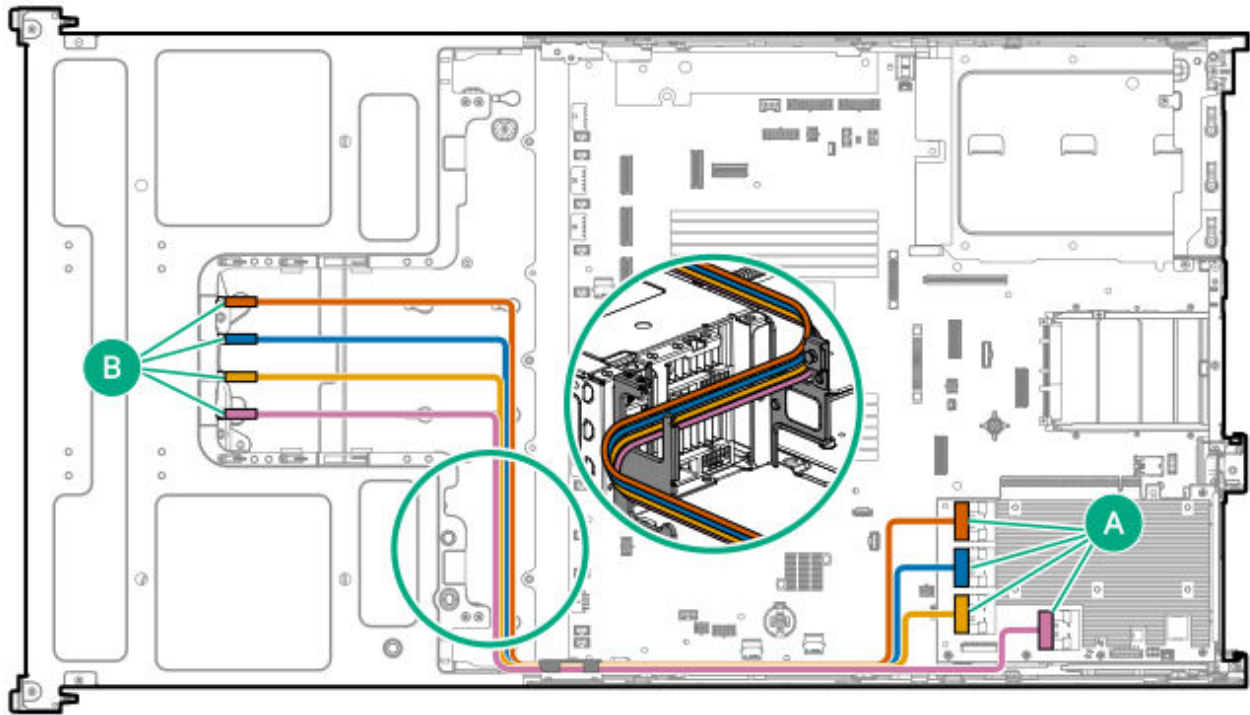
Cable part number	Color	From	To
P59106-001	Orange	Box 1 port 1	NVMe port 5A
P59107-001	Blue	Box 1 port 2	NVMe port 6A
P59104-001	Gold	Box 1 port 3	NVMe port 3A
P59105-001	Pink	Box 1 port 4	NVMe port 4A
P59103-001	Green	Box 1 port 5	NVMe/SATA port 1B
P59102-001	Black	Box 1 port 6	NVMe port 9A

## 8 SFF x2 NVMe drive cabling: Type-o controller



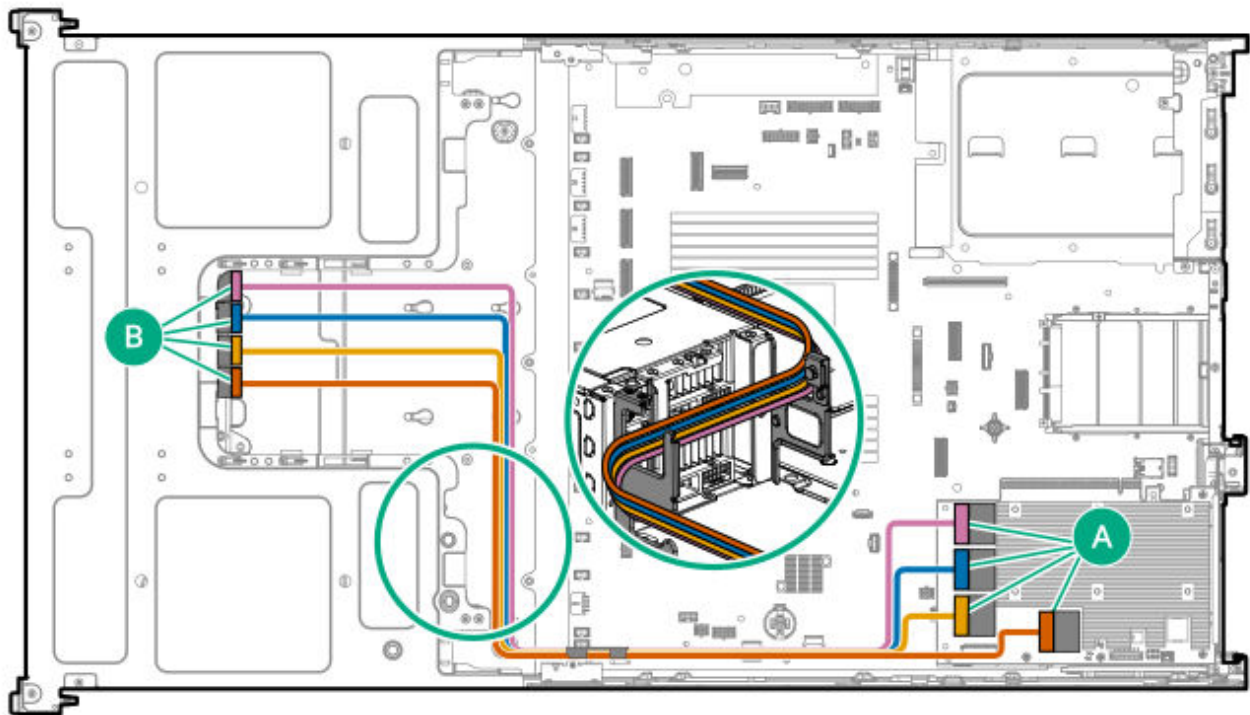
Cable part number	Color	From	To
P57334-002	Orange	Box 1 ports 1 and 2	Type-o storage controller port 1 in Slot 22
	Blue	Box 1 ports 3 and 4	Type-o storage controller port 2 in Slot 22

## 8 SFF x4 NVMe drive cabling: Type-p controller



Cable part number	Color	From	To
P57057-002	Orange	Box 1 port 4	Primary type-p storage controller port 1
	Blue	Box 1 port 3	Primary type-p storage controller port 2
	Gold	Box 1 port 2	Primary type-p storage controller port 3
	Pink	Box 1 port 1	Primary type-p storage controller port 4

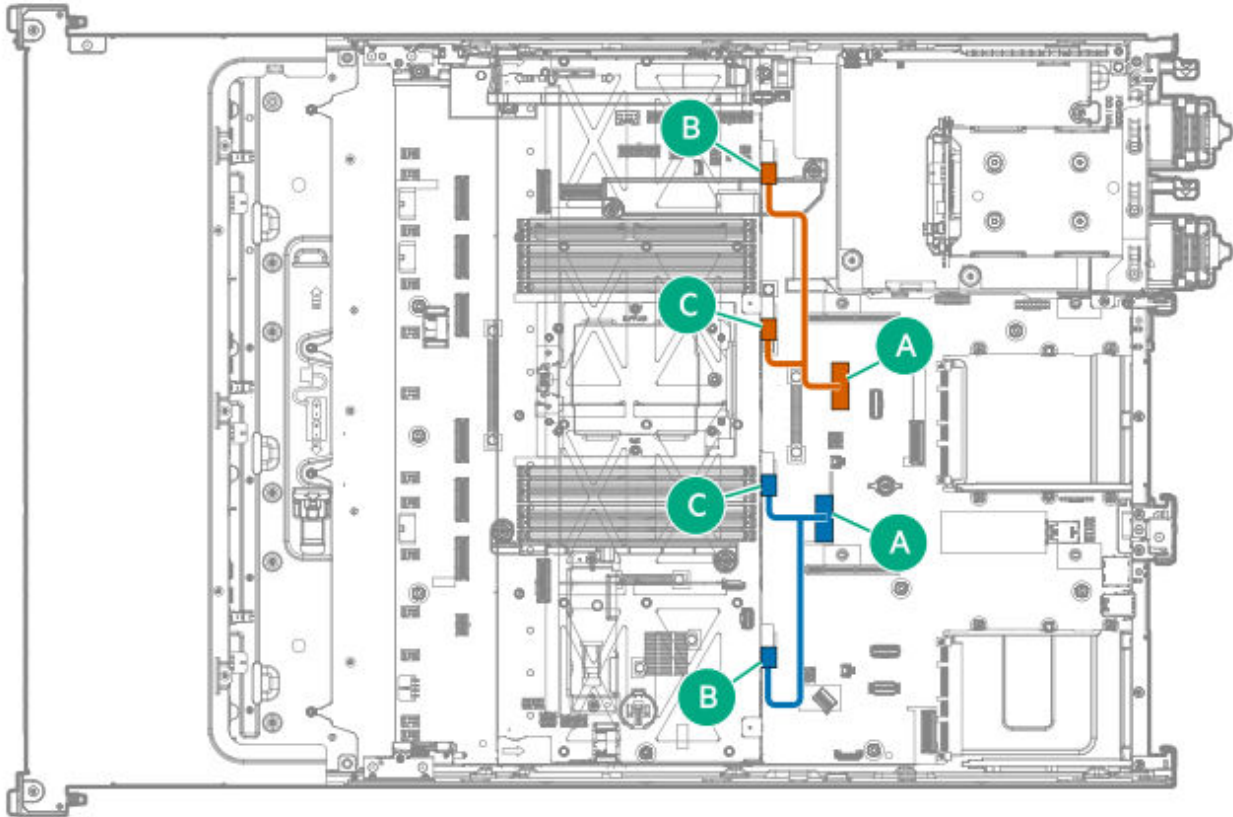
## 8 E3.S x4 NVMe drive controller cabling: Type-p controller



Cable part number	Color	From	To
P57057-002	Orange	Box 1 port 4	Primary type-p storage controller port 1
	Blue	Box 1 port 3	Primary type-p storage controller port 2
	Gold	Box 1 port 2	Primary type-p storage controller port 3
	Pink	Box 1 port 1	Primary type-p storage controller port 4

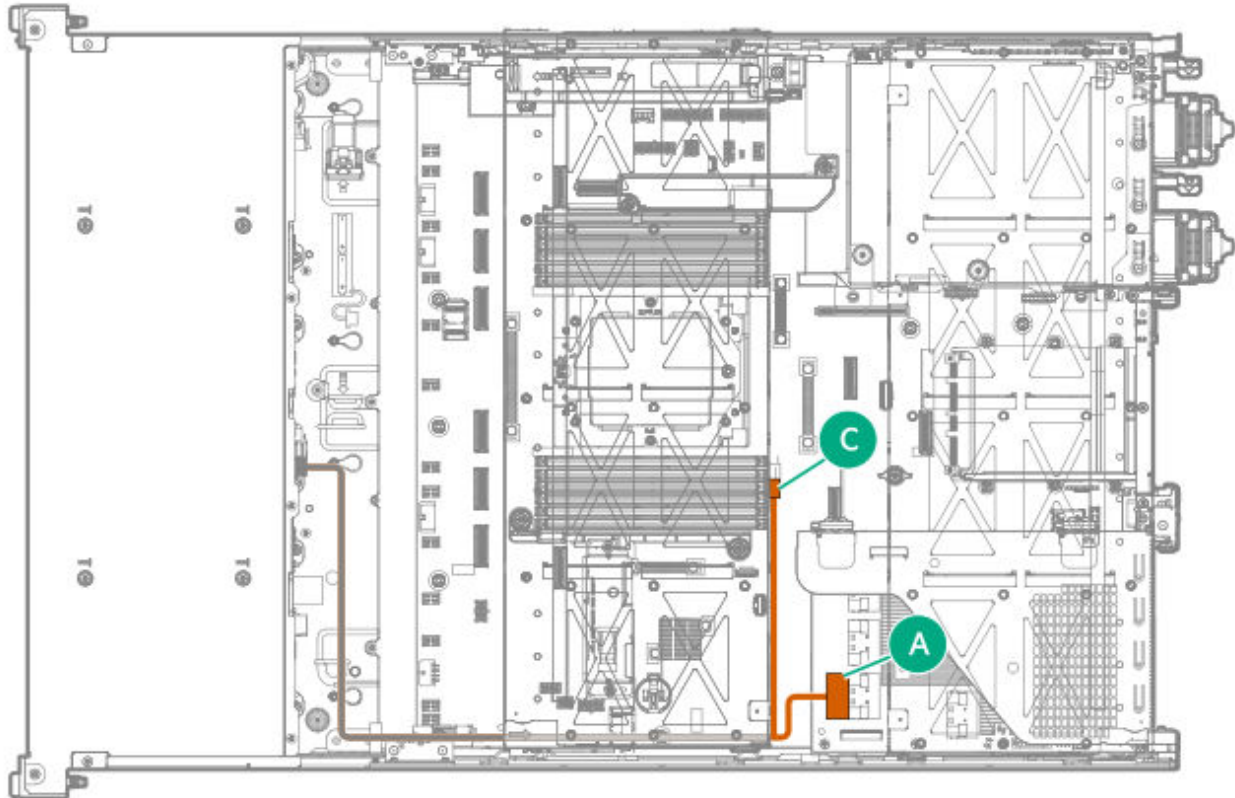
# Midplane drive storage controller cabling

## 8 SFF midplane x2 NVME drive direct attach



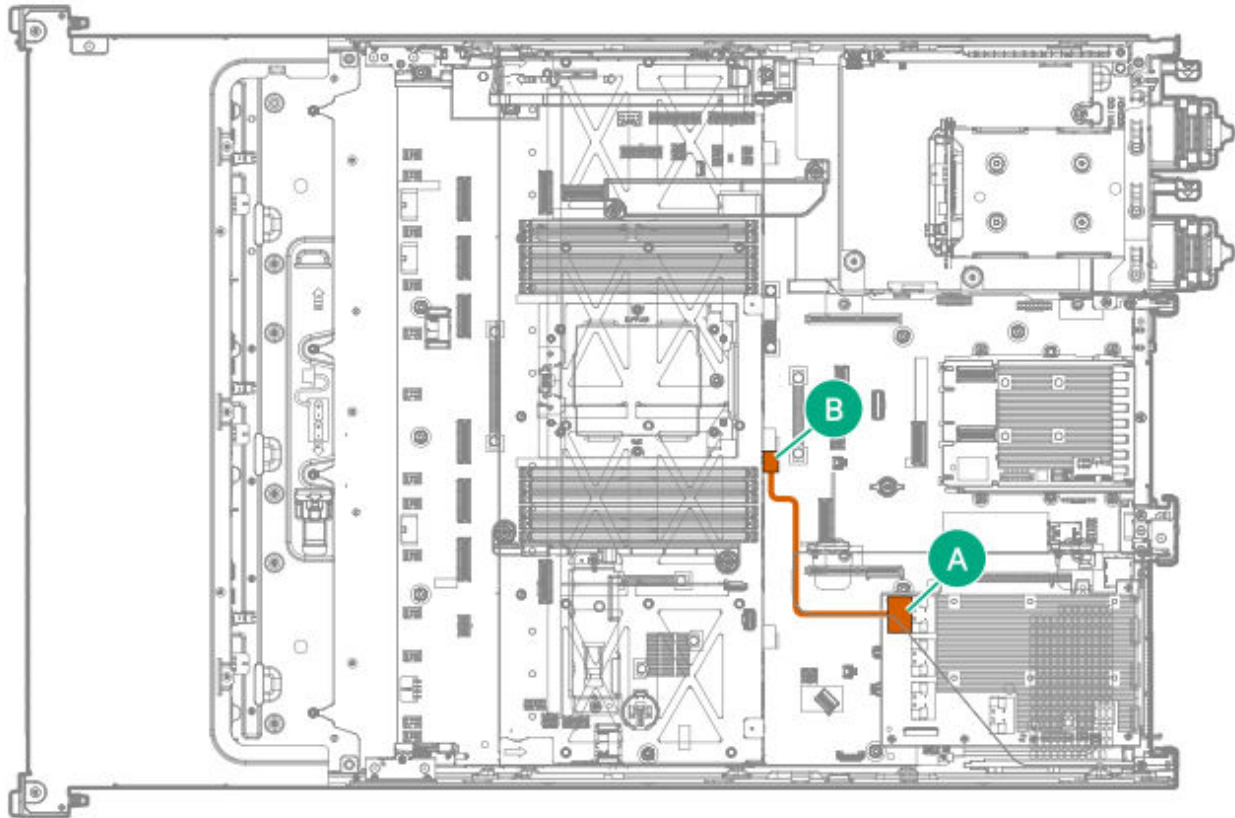
Cable part number	Color	From	To
P57207-001	Orange	Box 7 port 1 and port 2	NVMe/SATA port 1B
P59467-001	Blue	Box 7 port 3 and port 4	NVMe port 9A

**4 LFF x1 SAS midplane drive controller cabling: type-p storage controller in the primary riser**



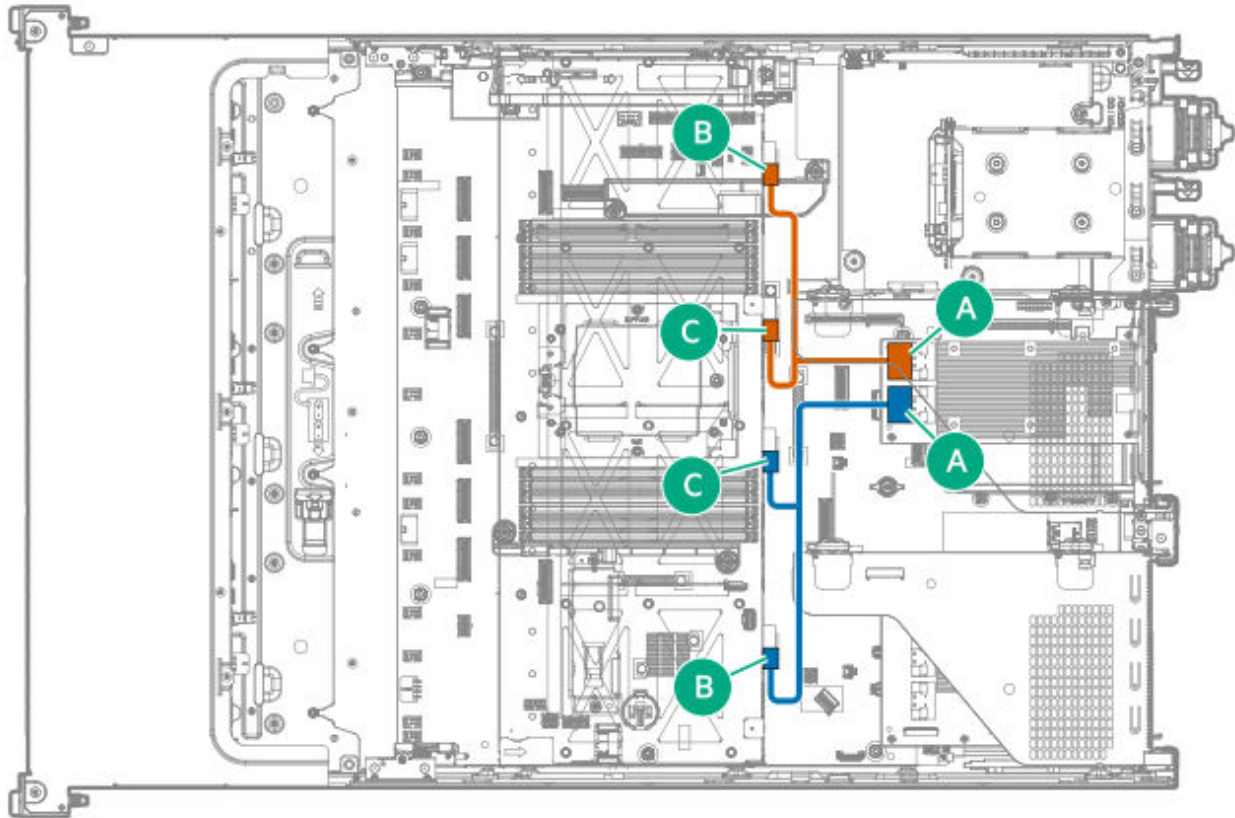
Cable part number	Color	From	To
P57188-001	Orange	Box 7 port 1	Primary type-p storage controller port 2

## 8 SFF midplane SAS x1 NVMe drive controller cabling: type-p storage controller



Cable part number	Color	From	To
P58089-001	Orange	Box 7 port 1	Primary type-p storage controller port 4

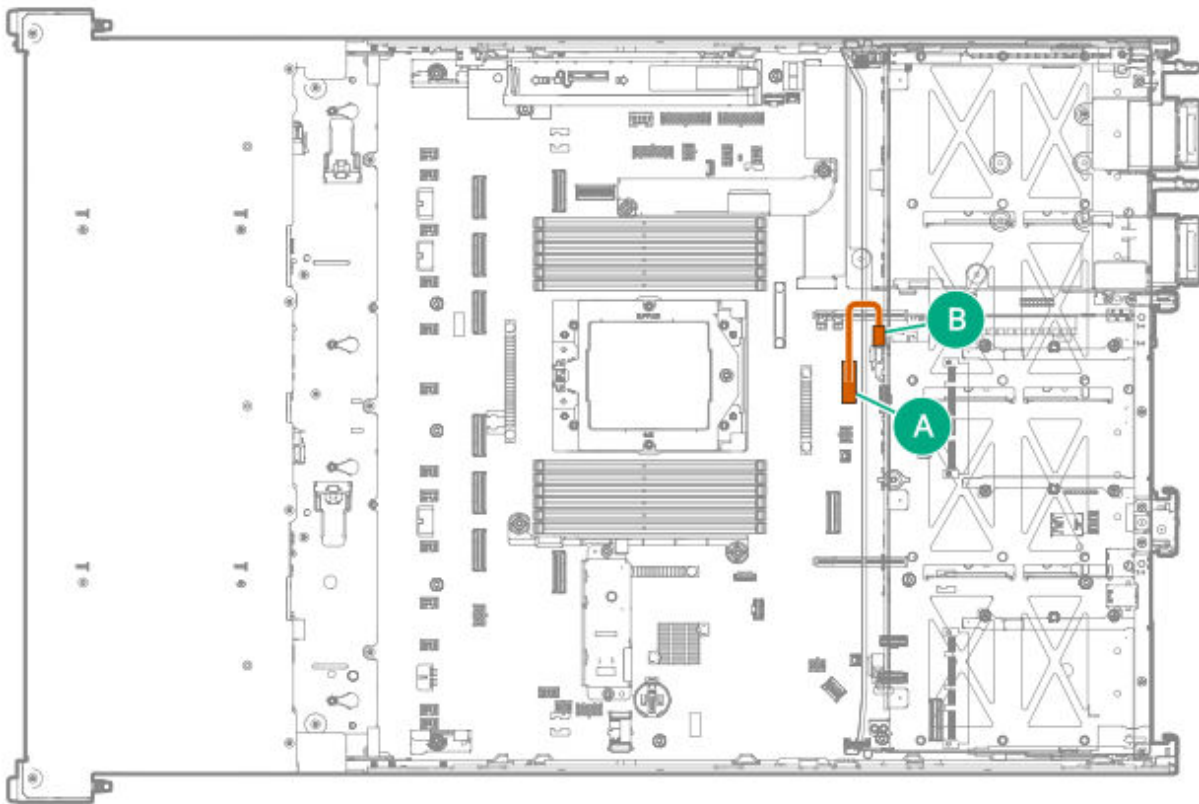
## 8 SFF midplane x4 NVMe storage controller cabling: type-p storage controller in the secondary riser



Cable spare part	Color	From	To
P58095-001	Orange	Box 7 port 1 and port 2	Primary type-p storage controller port 2
P58094-001	Blue	Box 7 port 3 and port 4	Primary type-p storage controller port 1

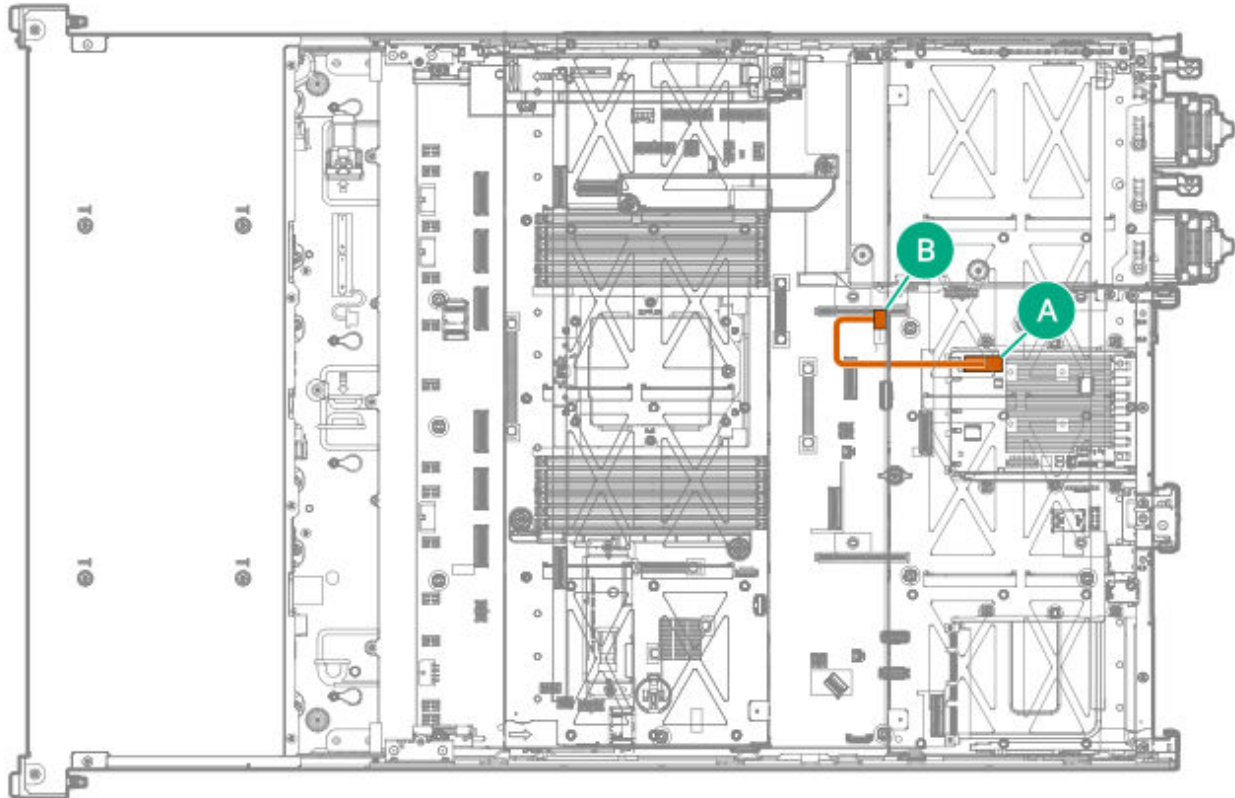
# Rear drive storage controller cabling

## Rear 4 LFF drive: onboard SATA cabling



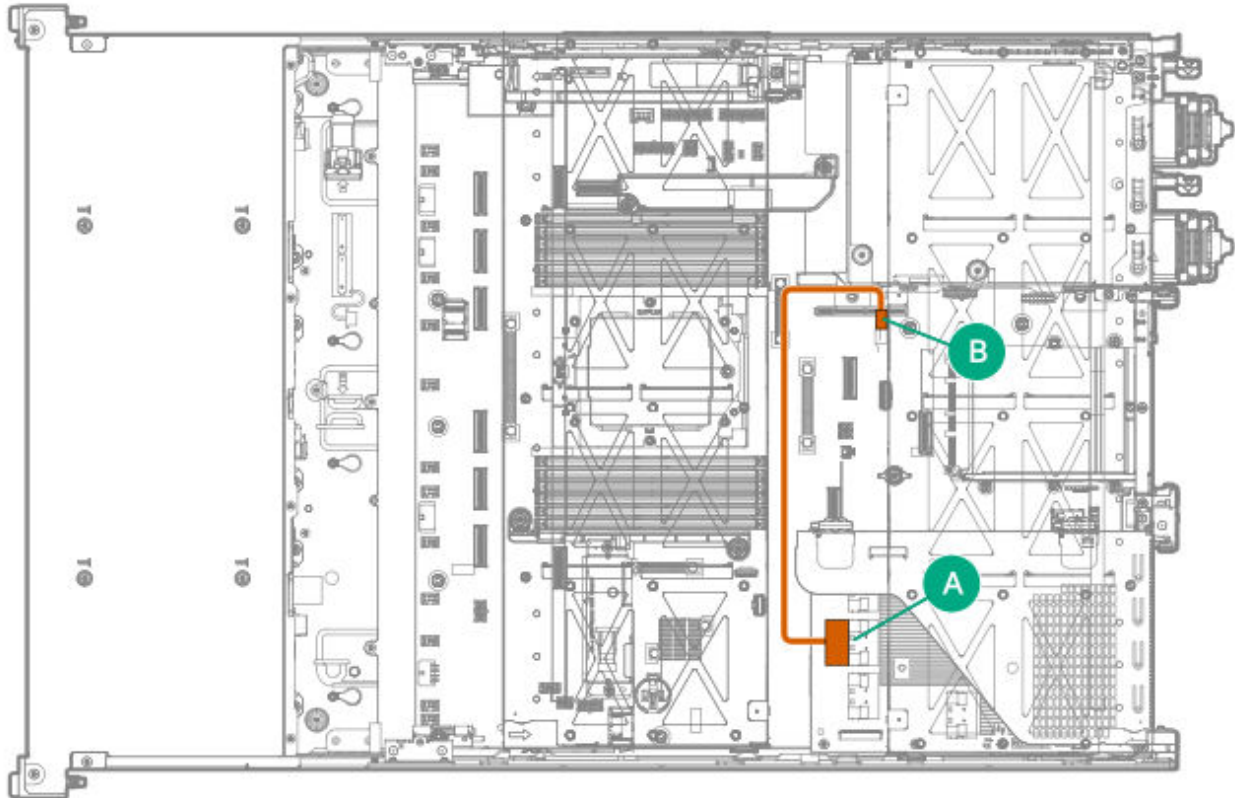
Cable part number	Color	From	To
P57184-001	Orange	Box 8 port 1	NVMe/SATA port 1B

**Rear 4 LFF x1 SAS drive controller cabling: type-o storage controller in Slot 22**



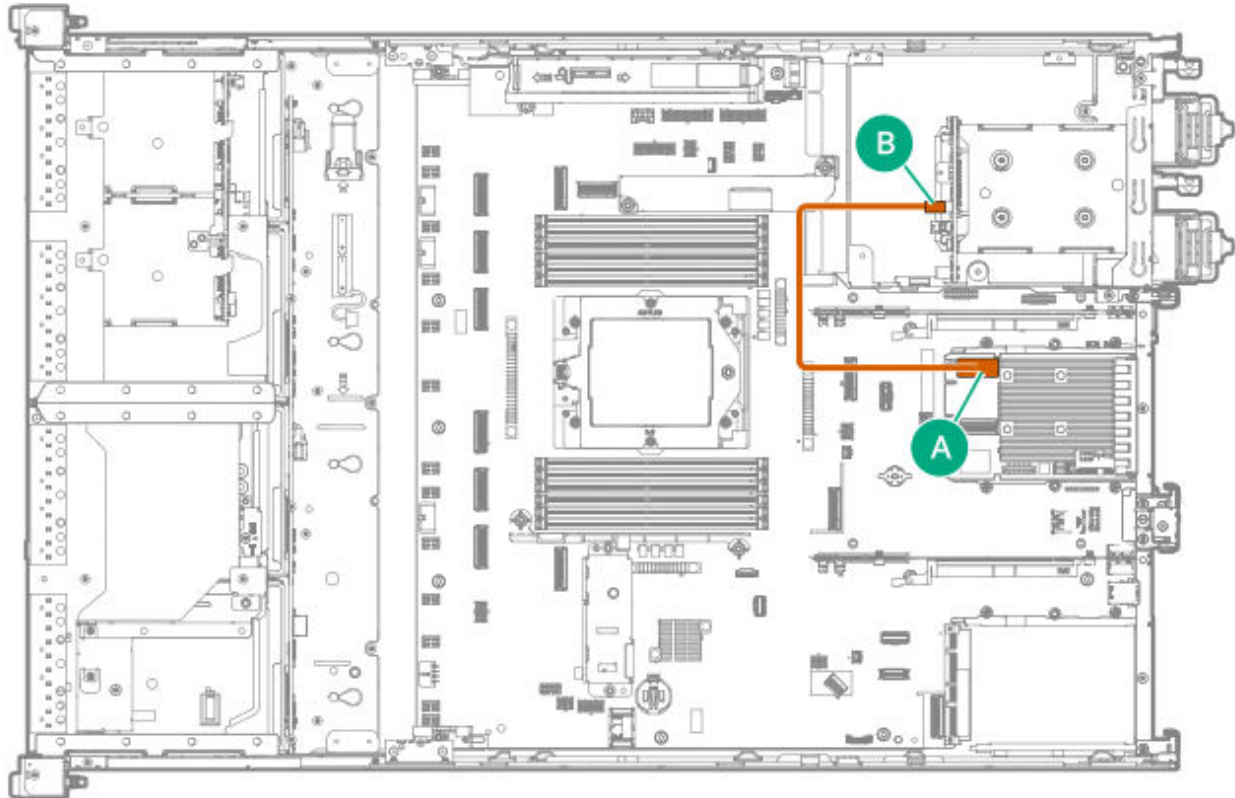
Cable part number	Color	From	To
P58098-001	Orange	Box 8 port 1	type-o storage controller port 1 in Slot 21

**Rear 4 LFF x1 SAS drive controller cabling: type-p storage controller in the primary riser**



Cable part number	Color	From	To
P57183-001	Orange	Box 8 port 1	Primary SR932i-p storage controller port 3

## Rear 2 SFF SAS x4 NVMe stacked drive controller cabling: type-o storage controller



Cable part number	Color	From	To
P58149-001	Orange	Box 8 port 1	type-o storage controller port 1 in Slot 22

## Drive power cabling

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

### Subtopics

**Front drive power cabling: Non-GPU-optimized configuration**

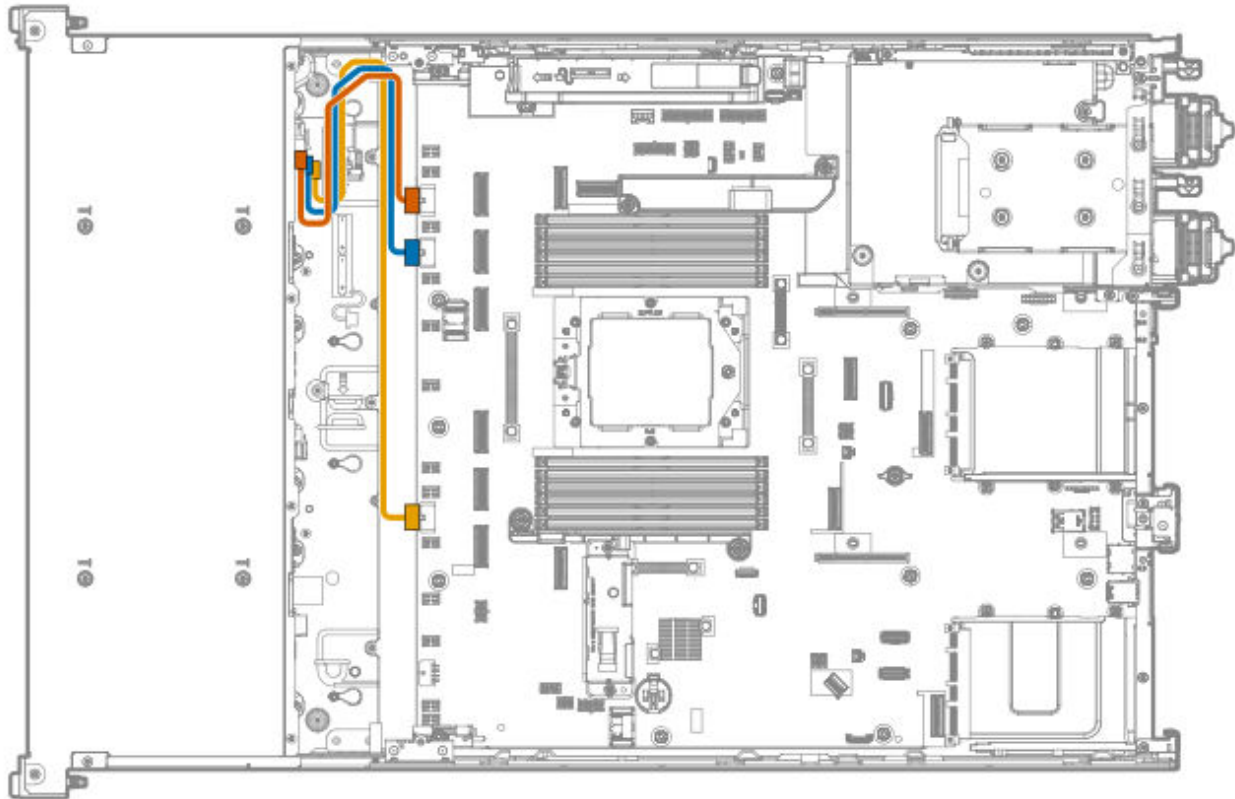
**Front drive power cabling: GPU-optimized configuration**

**Midplane drive power cabling**

**Rear drive power cabling**

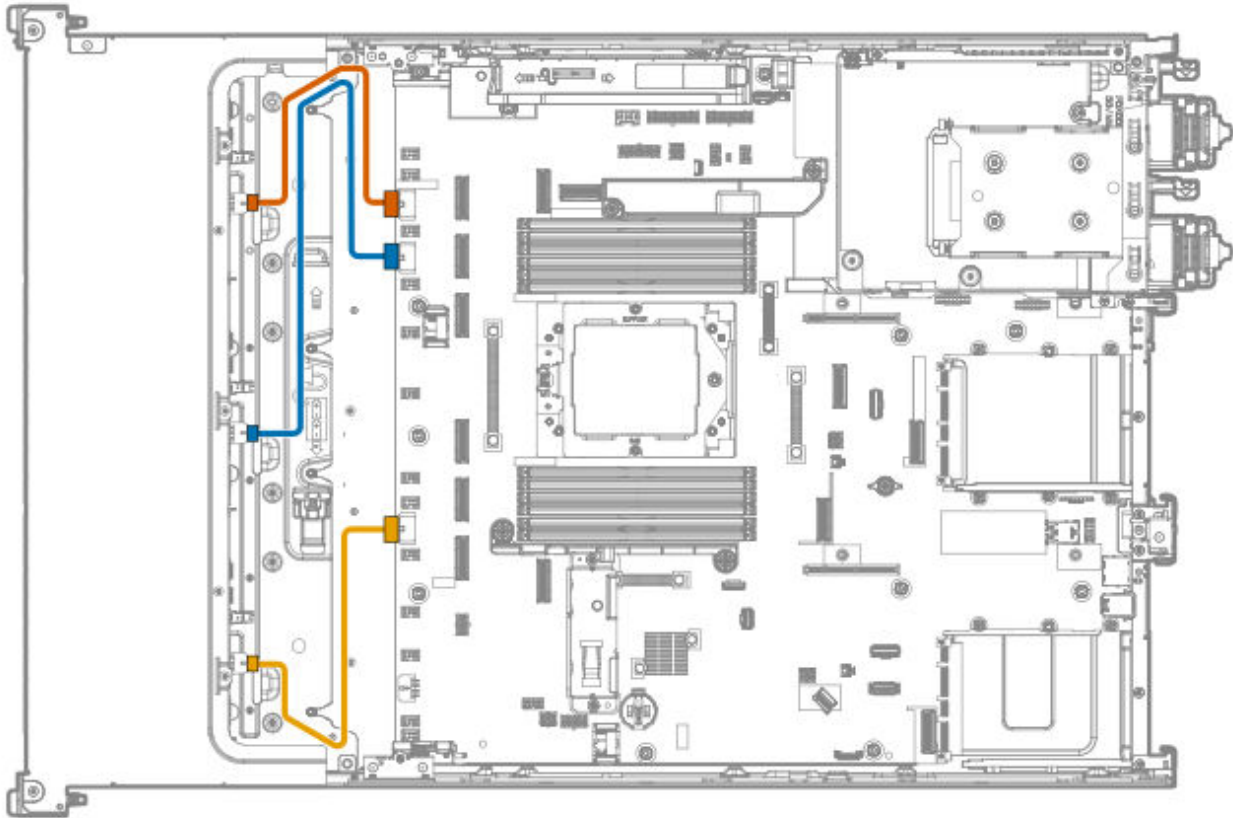
# Front drive power cabling: Non-GPU-optimized configuration

## 8/12 LFF drive power cabling



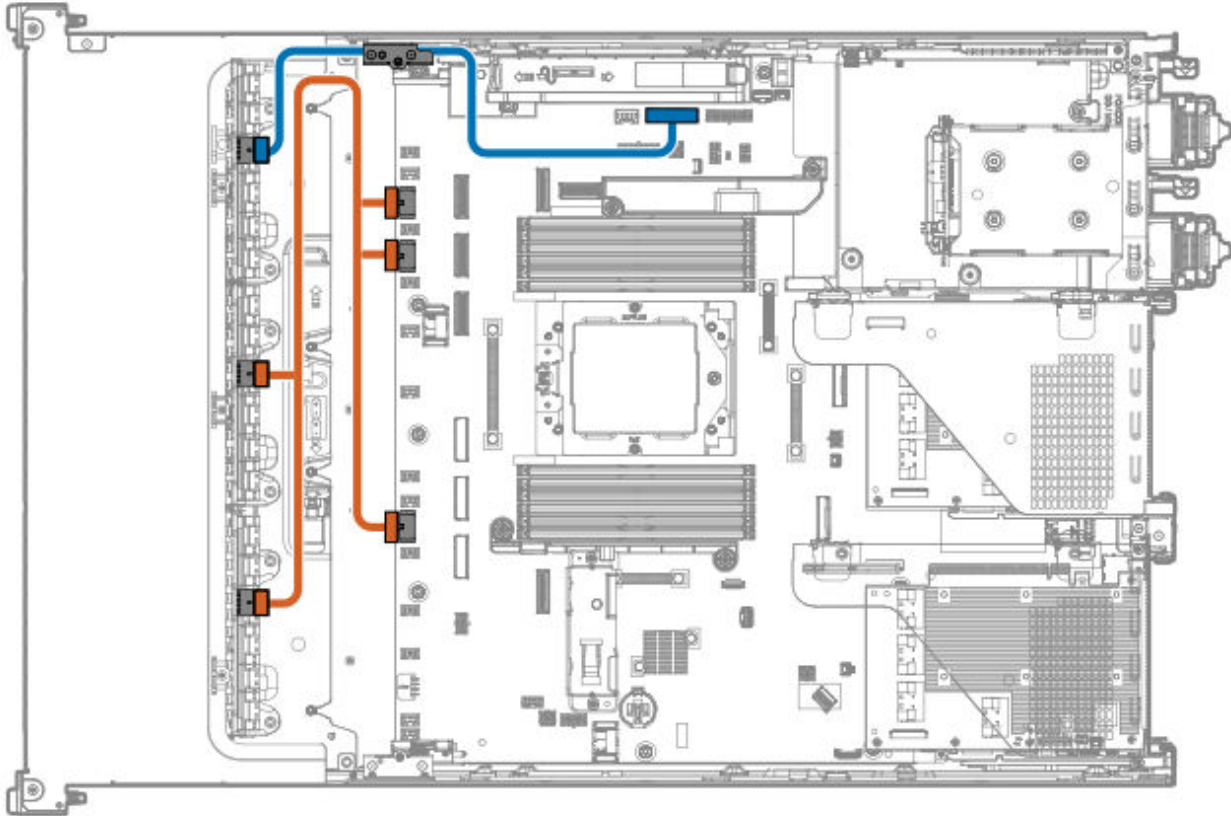
Cable part number	Color	From	To
P58035-001	Orange	Box 1 power connector	Front drive backplane power connector 1
P58036-001	Blue	Box 2 power connector	Front drive backplane power connector 2
P58867-001	Yellow	Box 3 power connector	Front drive backplane power connector 3

## 8/16/24 SFF drive power cabling



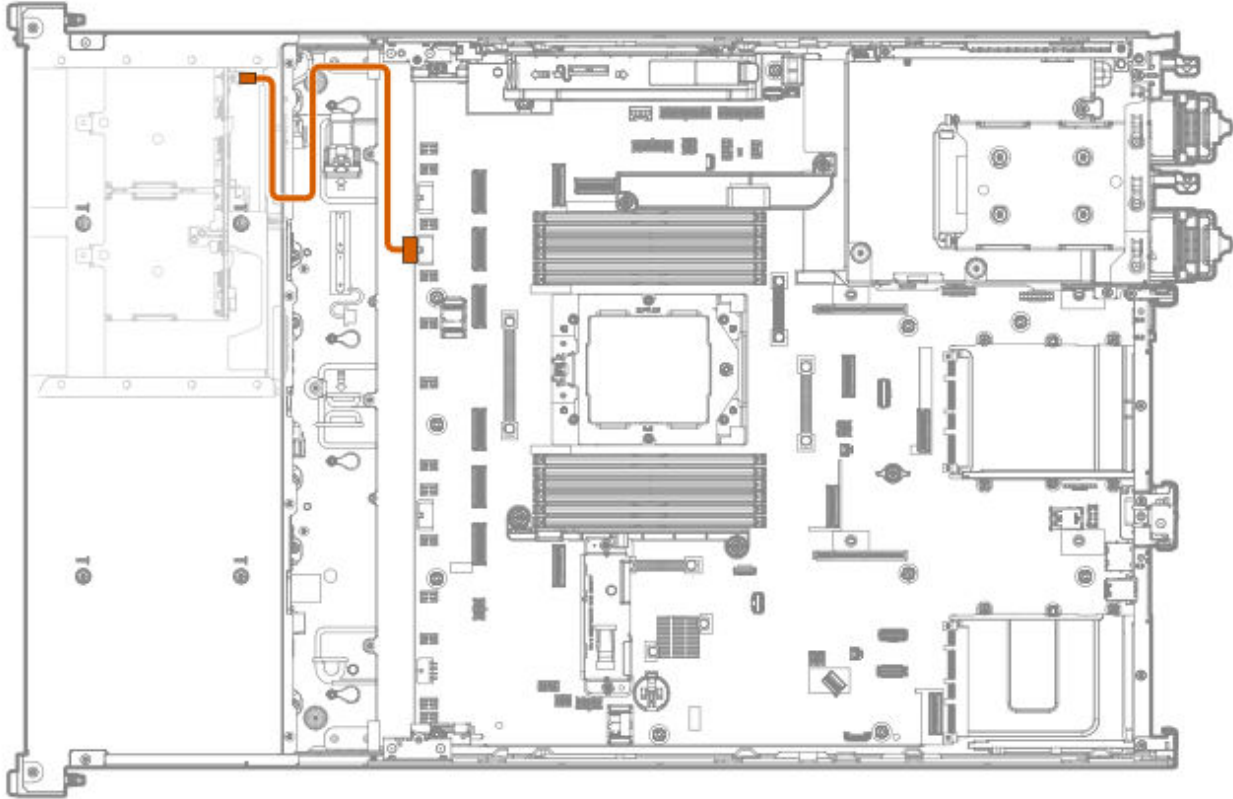
Cable part number	Color	From	To
P57198-001	Orange	Box 1 power connector	Front drive backplane power connector 1
P58023-001	Blue	Box 2 power connector	Front drive backplane power connector 2
P57209-001	Gold	Box 3 power connector	Front drive backplane power connector 3

### 36 E3.S drive power cabling



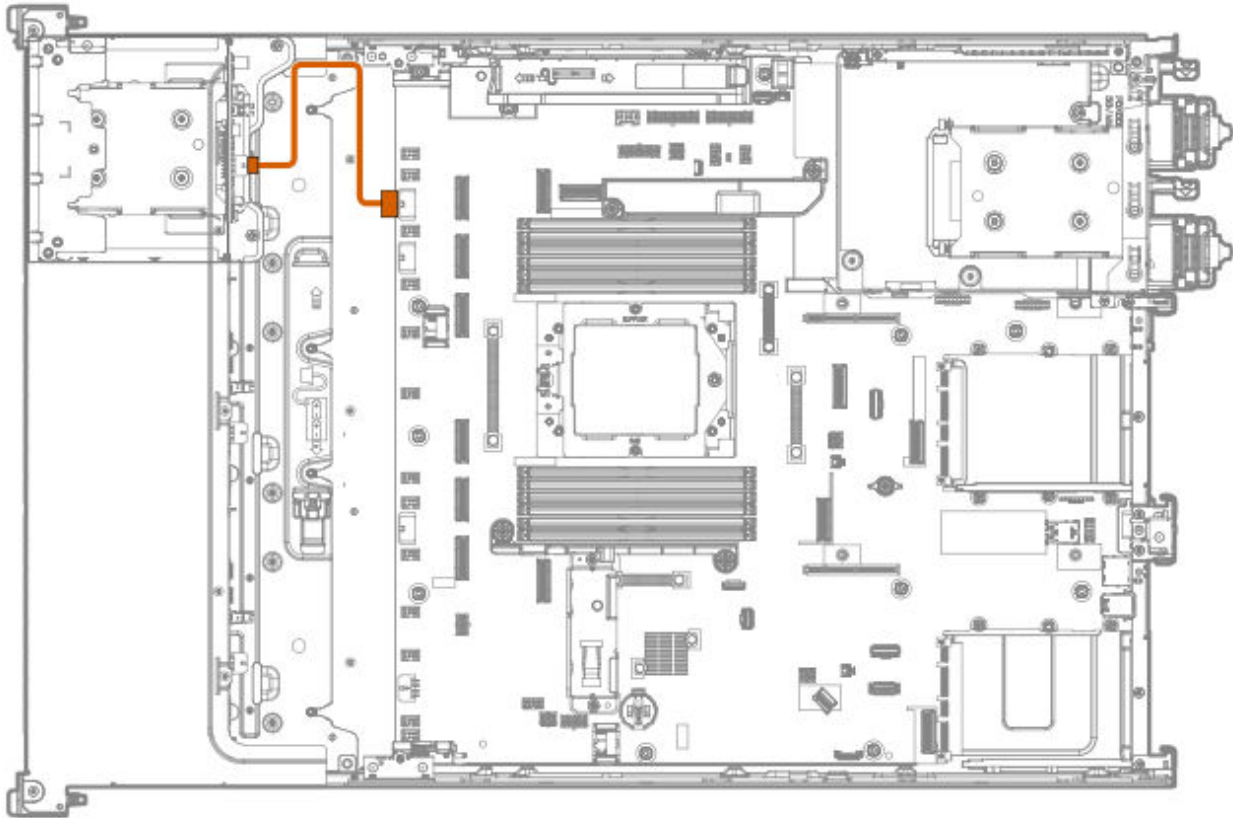
Cable part number	Color	From	To
P58822-001	Orange	Box 2-3 power connectors	Front drive backplane power connectors 1-3
P59122-001	Blue	Box 1 power connector	Drive backplane / Graphics card power connector A (J9017)

## Front 2 SFF side-by-side drive power cabling



Cable part number	Color	From	To
P59122-001	Orange	2 SFF side-by-side drive backplane power connector	Front drive backplane power connector 2

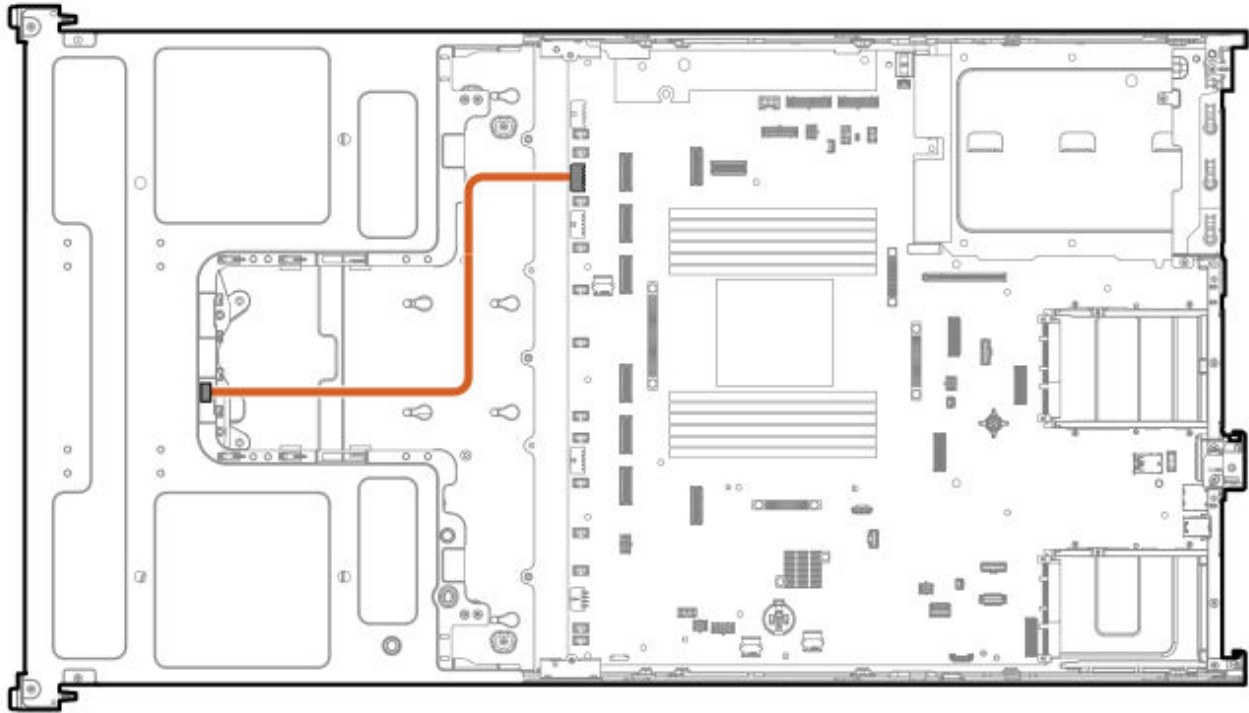
## Front 2 SFF stacked drive power cabling



Cable part number	Color	From	To
P57198-001	Orange	Box 1 power connector	Front drive backplane power connector 1

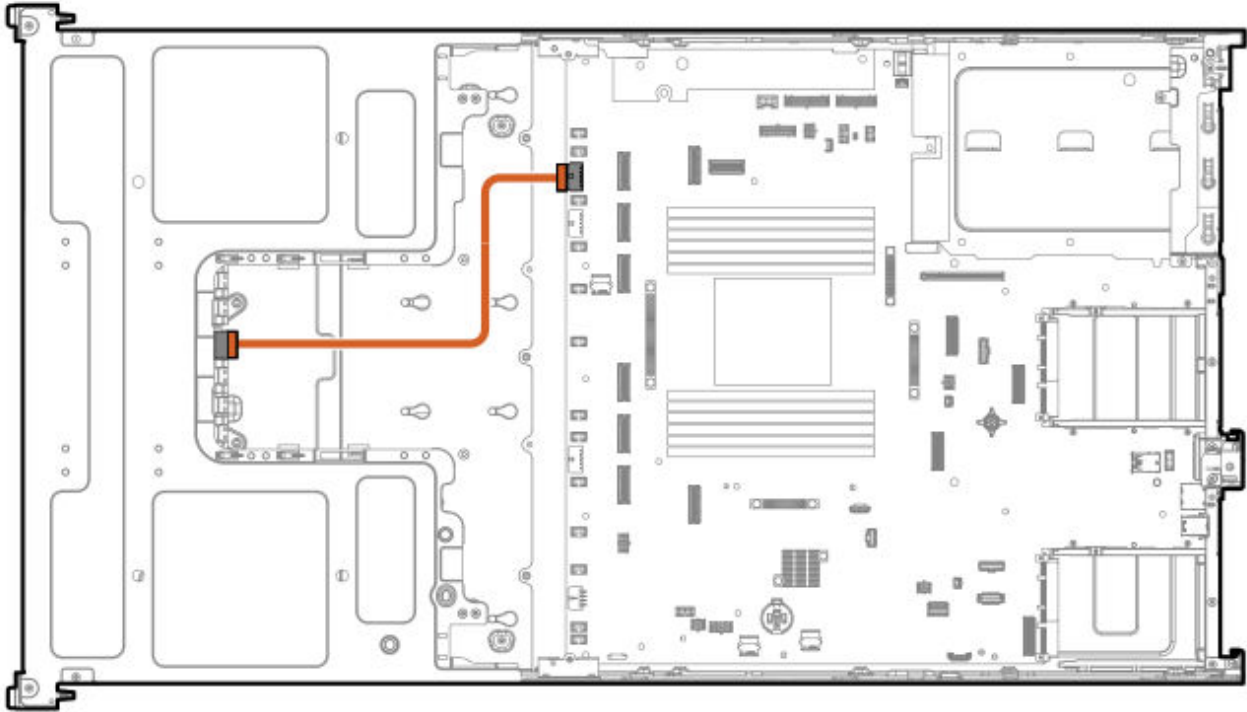
# Front drive power cabling: GPU-optimized configuration

## 8 SFF drive power cabling



Cable part number	Color	From	To
P58023-001	Orange	Box 1 power connector	Front drive backplane power connector 1

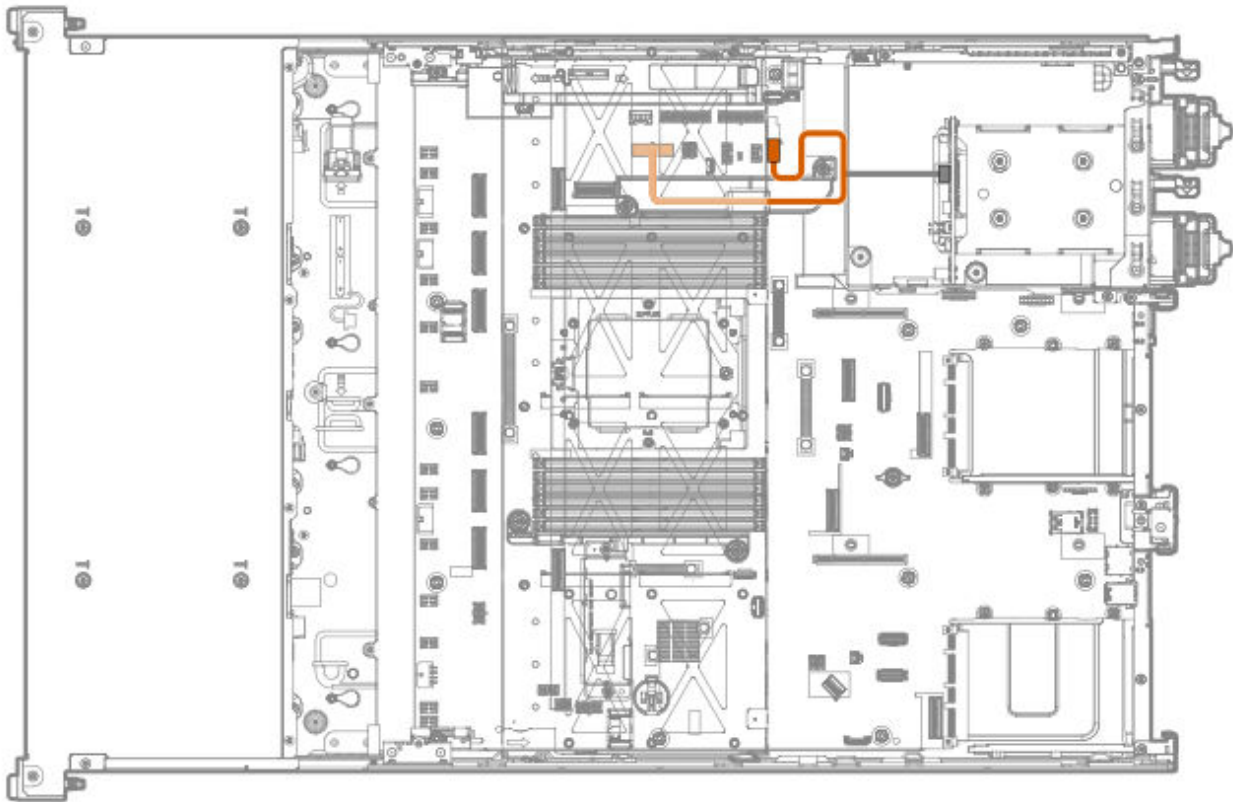
## 12 E3.S drive power cabling



Cable part number	Color	From	To
P58034-001	Orange	Box 1 power connector	Front drive backplane power connector 1

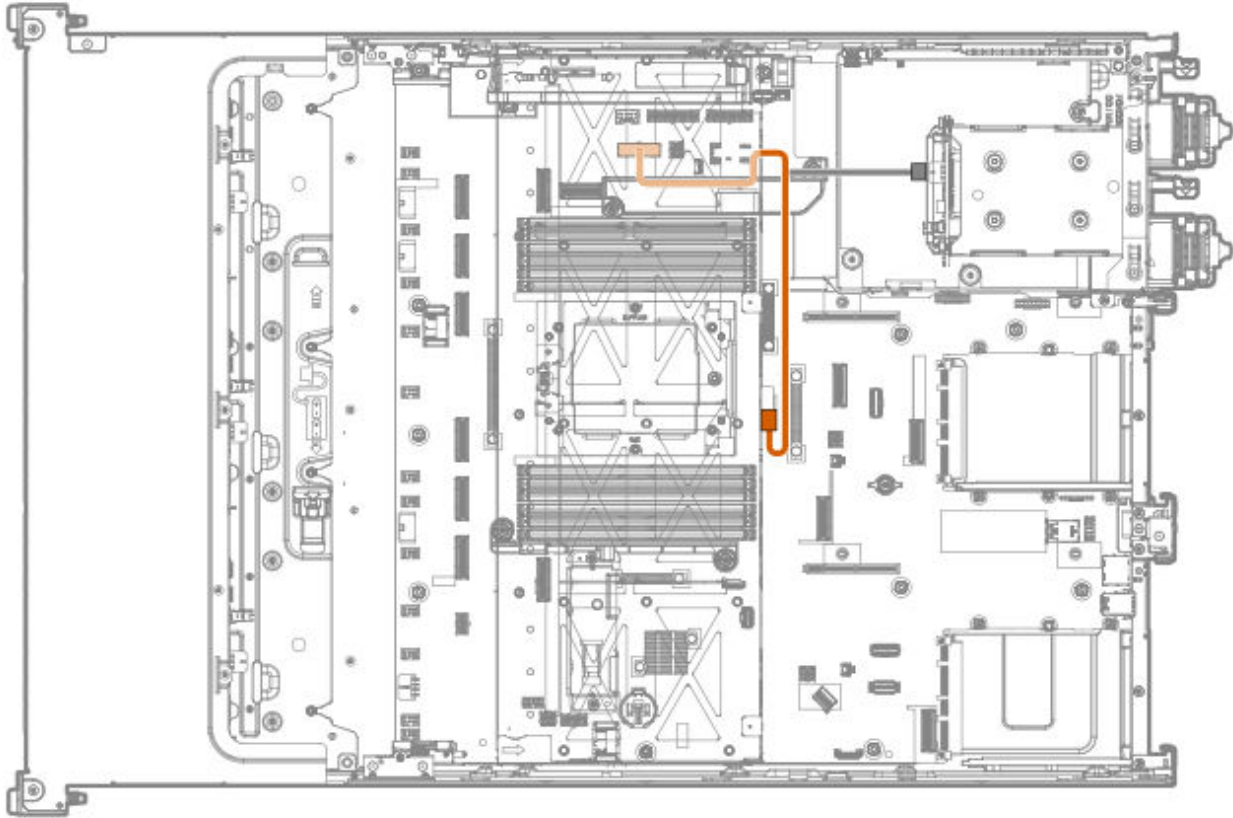
# Midplane drive power cabling

## 4 LFF midplane drive power cabling



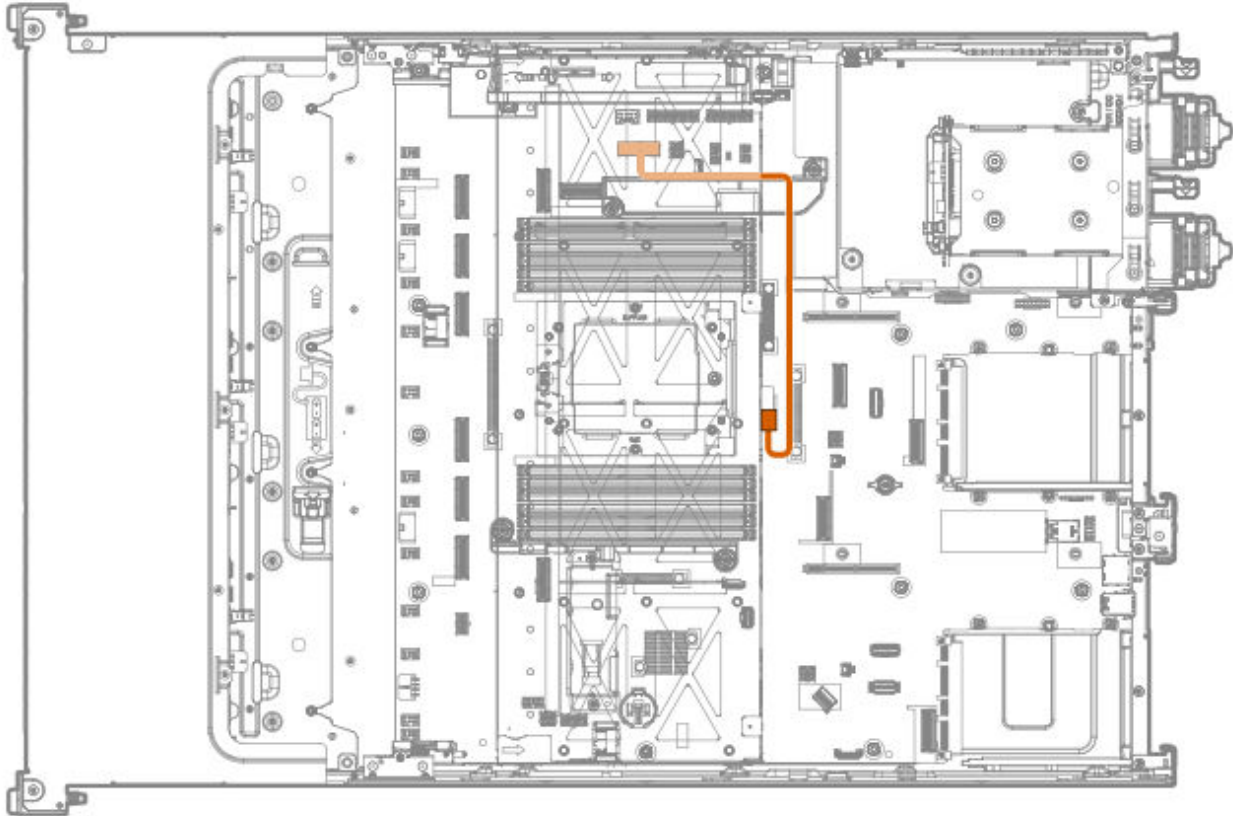
Cable spare part	Color	From	To
P57182-001	Orange	Box 7 power connector	Rear drive backplane / Graphics card power connector C (J9019)

## 8 SFF midplane SAS/NVMe x1 drive power cabling



Cable part number	Color	From	To
P57177-001	Orange	Box 7 power connector	Rear drive backplane / Graphics card power connector C (J9019)

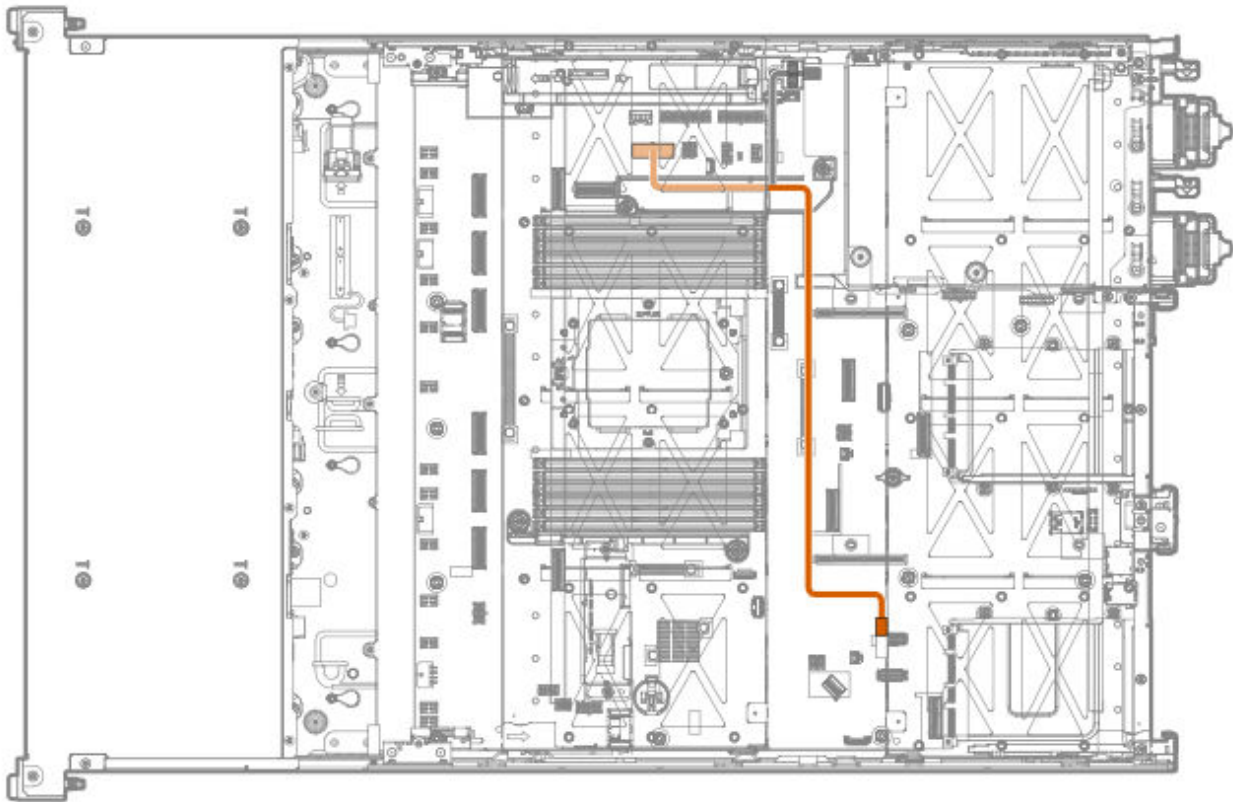
## 8 SFF midplane NVMe x4 power cabling



Cable part number	Color	From	To
P57201-001	Orange	Box 7 power connector	Rear drive backplane / Graphics card power connector C (J9019)

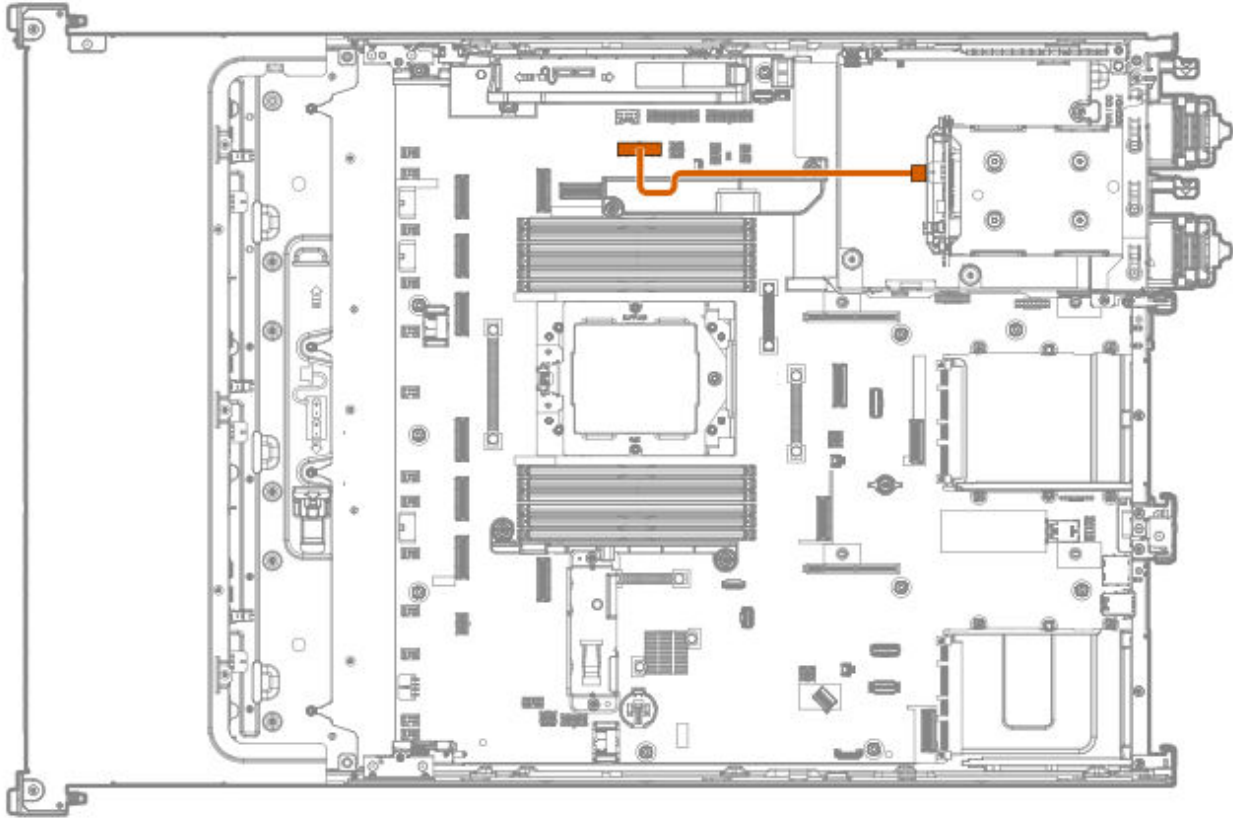
# Rear drive power cabling

## Rear 4 LFF drive power cabling



Cable part number	Color	From	To
P57185-001	Orange	Box 8 power connector	Rear drive backplane / Graphics card power connector C (J9019)

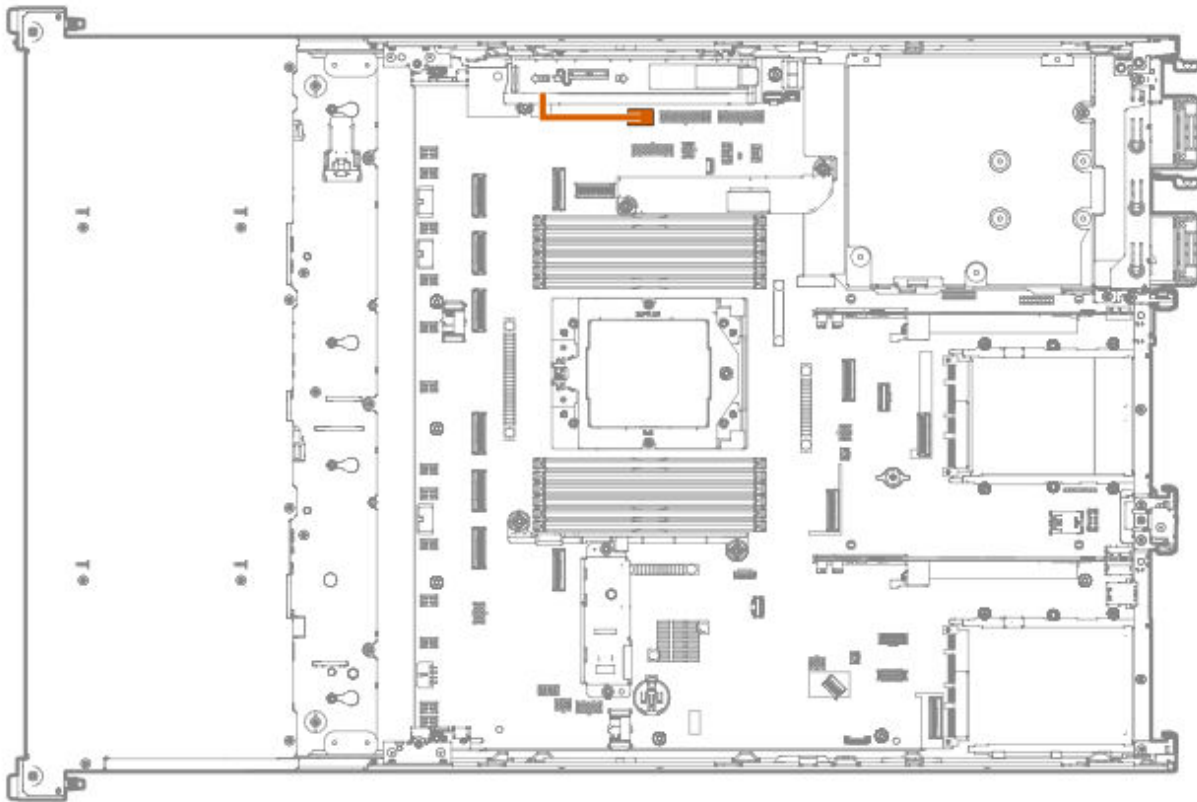
## Rear 2 SFF stacked drive power cabling



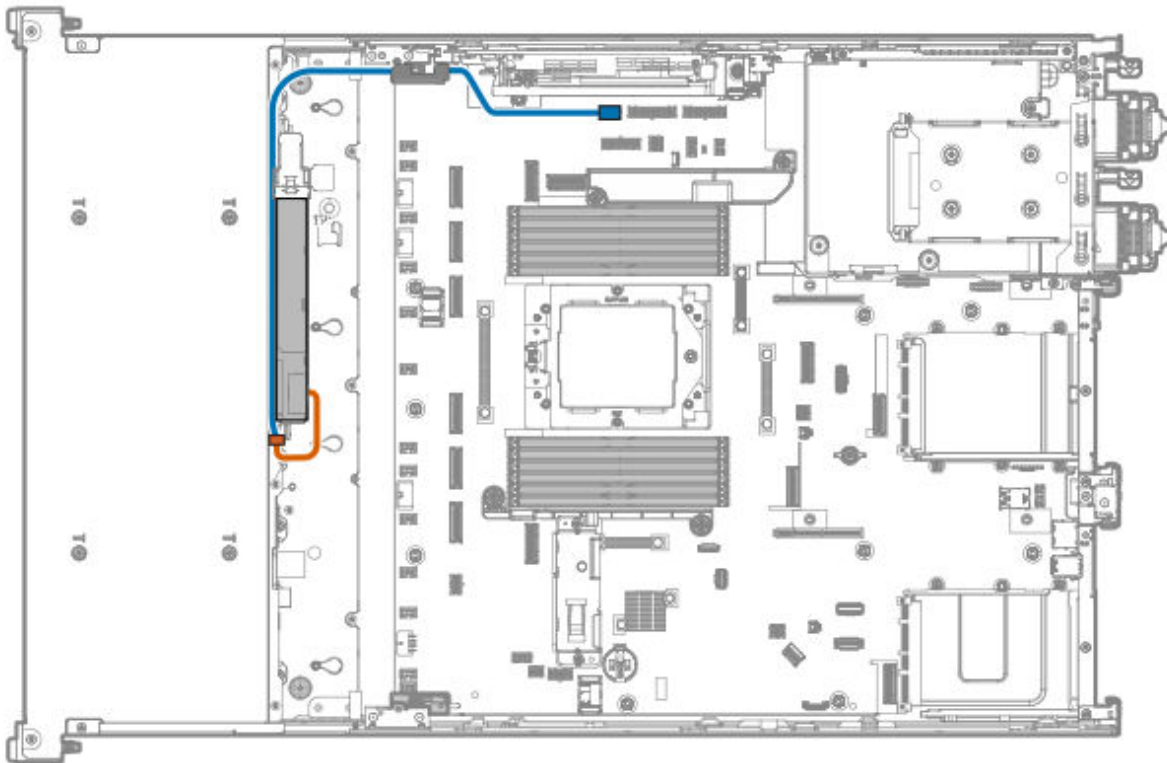
Cable part number	Color	From	To
P57178-001	Orange	Box 8 power connector	Rear drive backplane / Graphics card power connector C (J9019)

# Energy pack cabling

## Energy pack cabling without the M.2 SSD pass-through card



## Energy pack cabling with the M.2 SSD pass-through card



Cable part number	Cable color	From	To
P56688-001	Blue	Energy pack	Energy pack connector

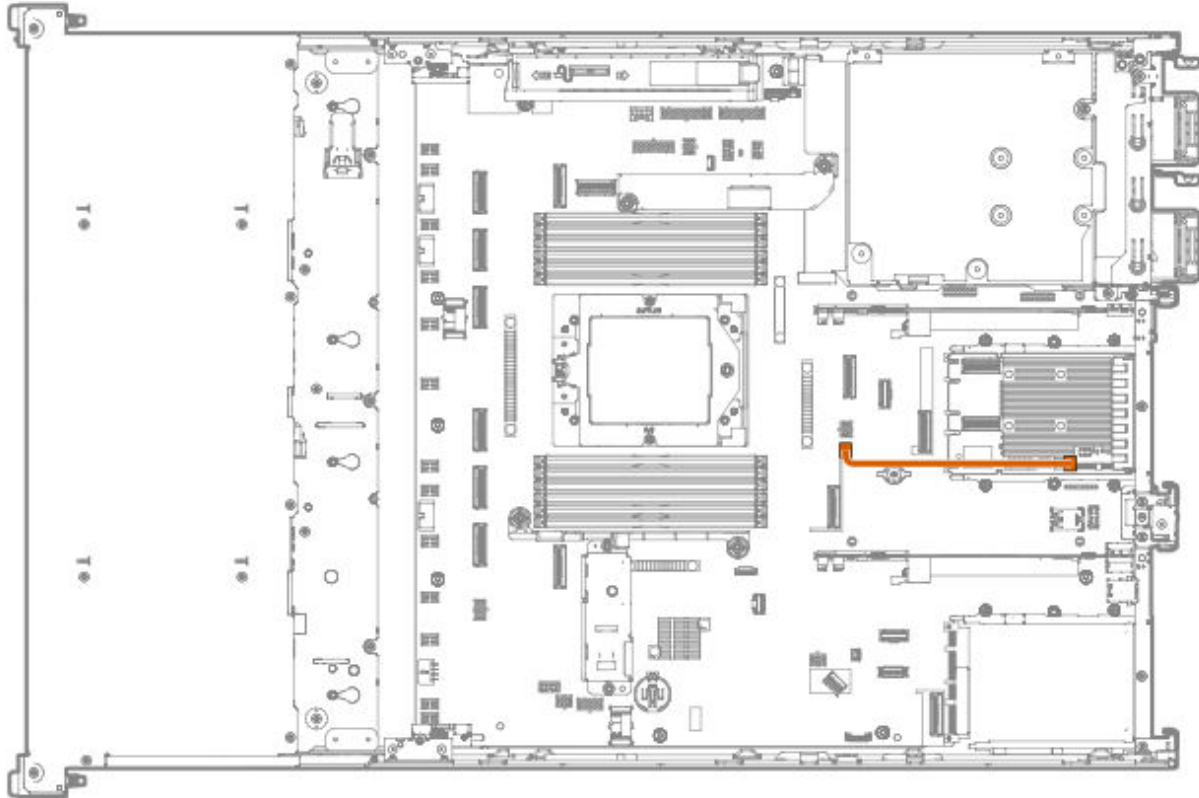
## Storage controller backup power cabling

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

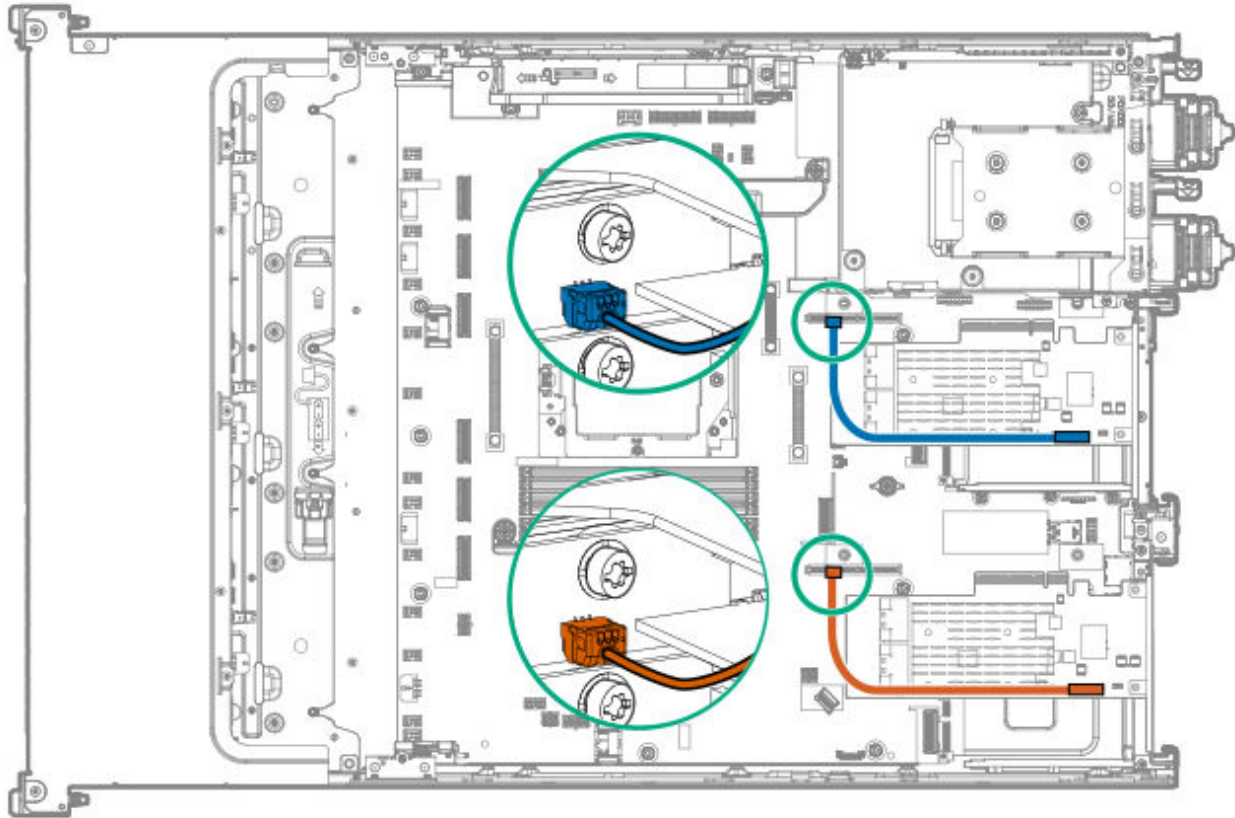
Use the following diagrams for reference only.

## Type-o controller



Color	From	To
Orange	Type-o controller in the Slot 22	Slot 22 OROC storage backup power connector on the system board

## Type-p controller

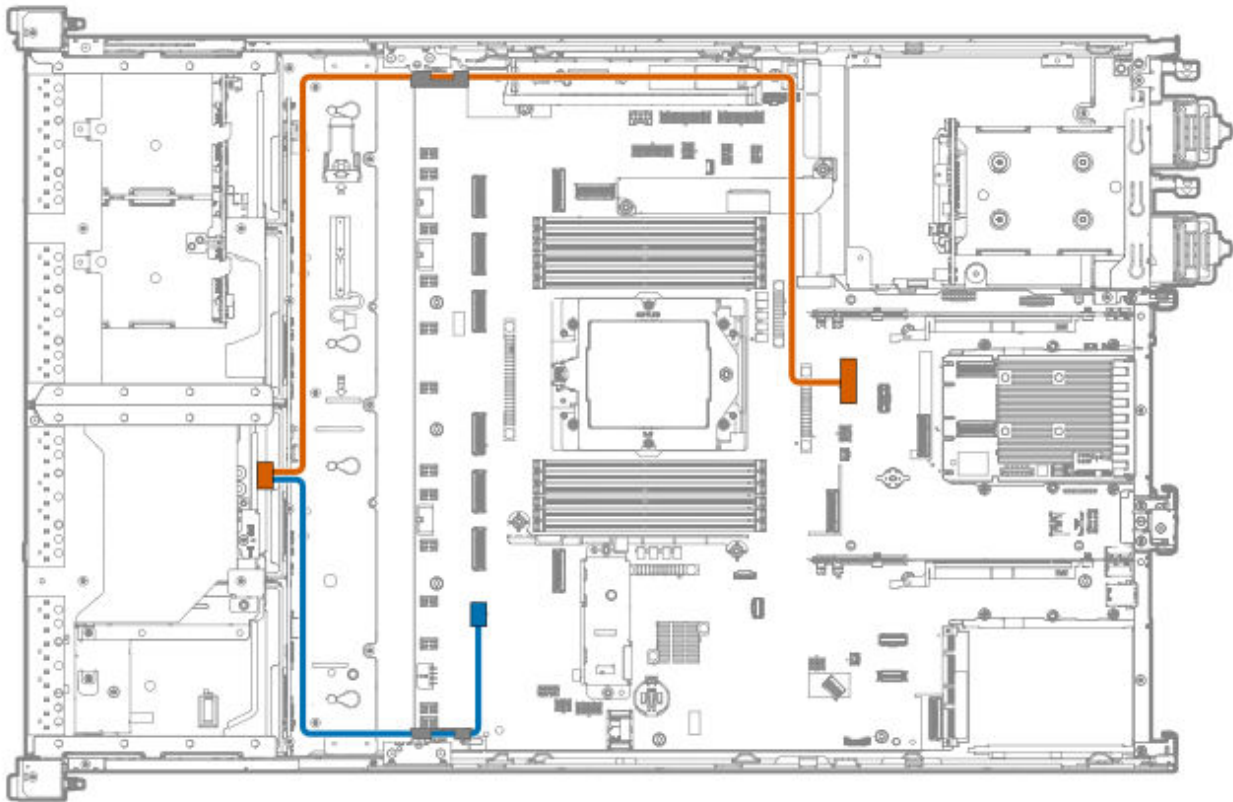


Cable part number	Color	From	To
877850-001 <sup>1</sup> / <sub>1</sub>	Orange	Type-p controller	Storage controller backup power connector on the riser board
	Blue		

<sup>1</sup>/<sub>1</sub> This is the cable part number of the SR932-p controller.

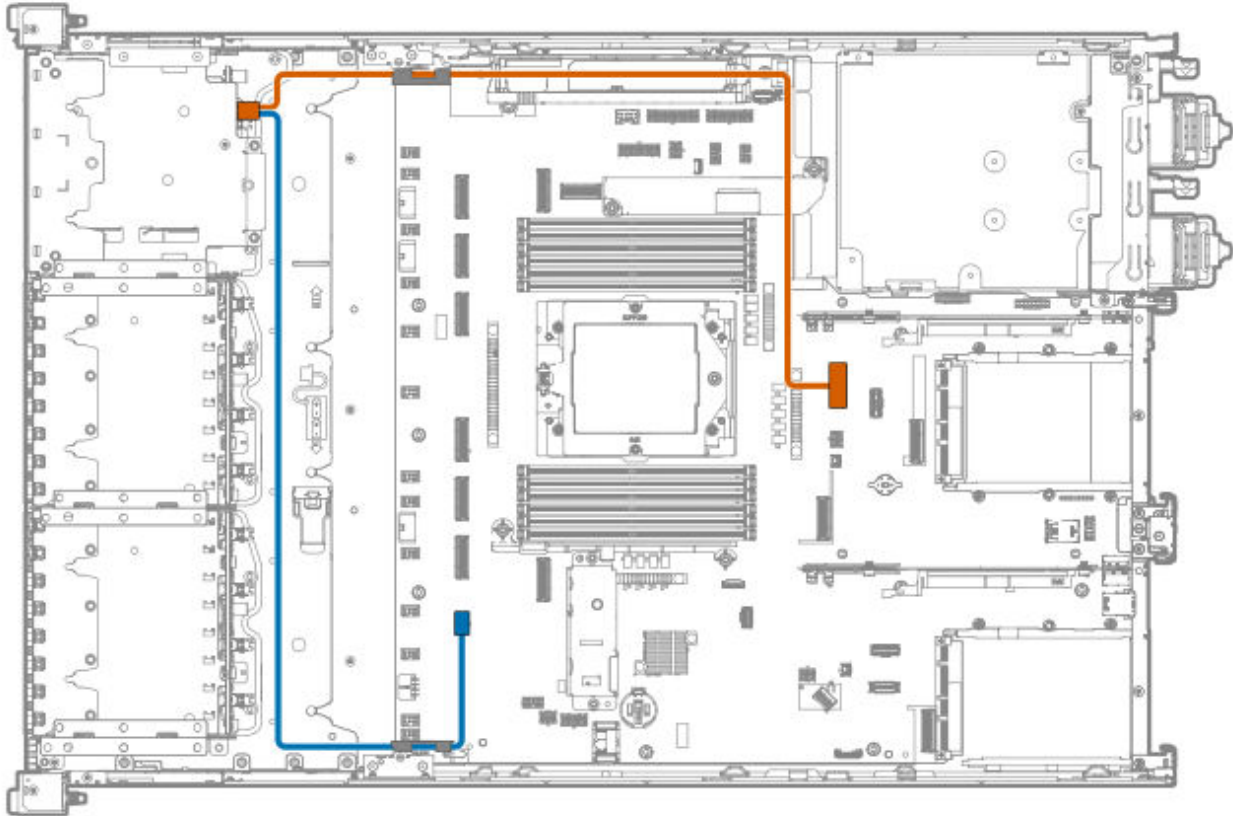
# Optical drive cabling

## Optical drive cabling in the LFF universal media bay



Cable part number	Color	From	To
P59116-001	Orange	LFF universal media bay	NVMe/SATA port 1B
	Blue		Optical drive power connector

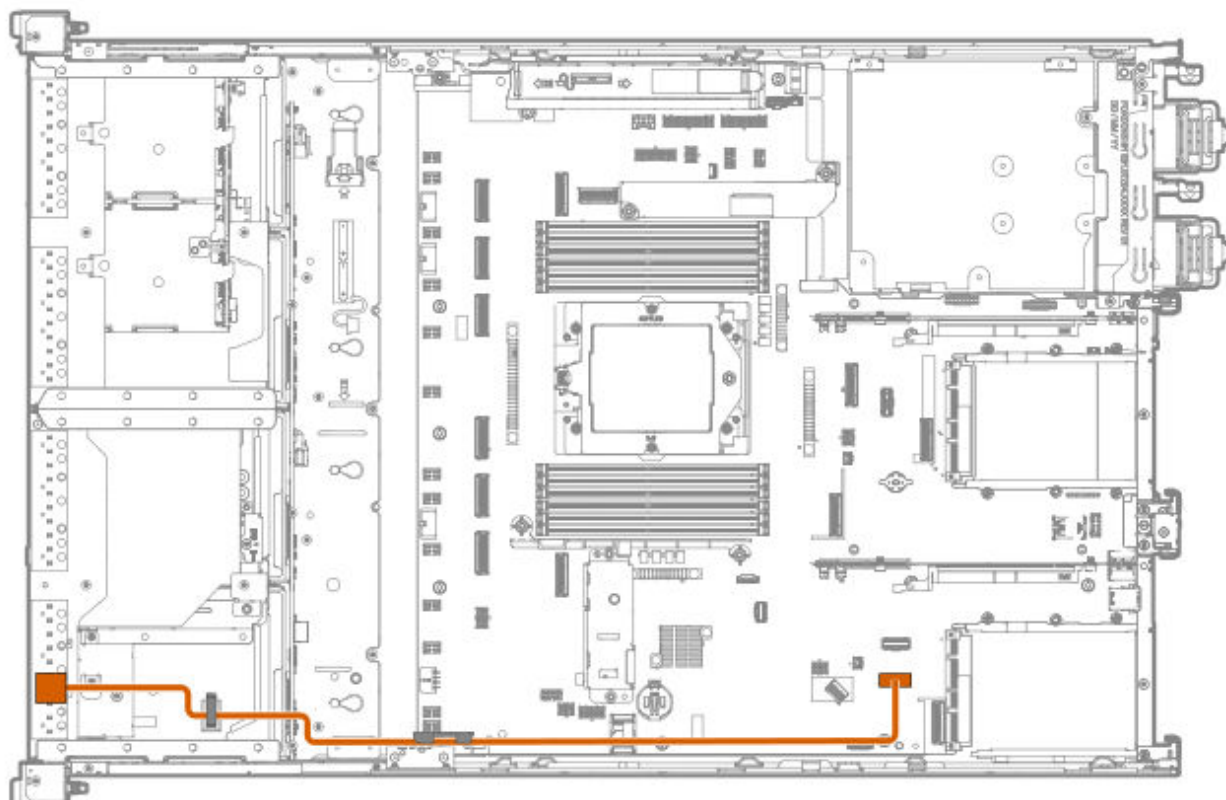
## Optical drive cabling in the SFF universal media bay



Cable part number	Color	From	To
P59116-001	Orange	SFF universal media bay	NVMe/SATA port 1B
	Blue		Optical drive power connector

# Universal media bay cabling

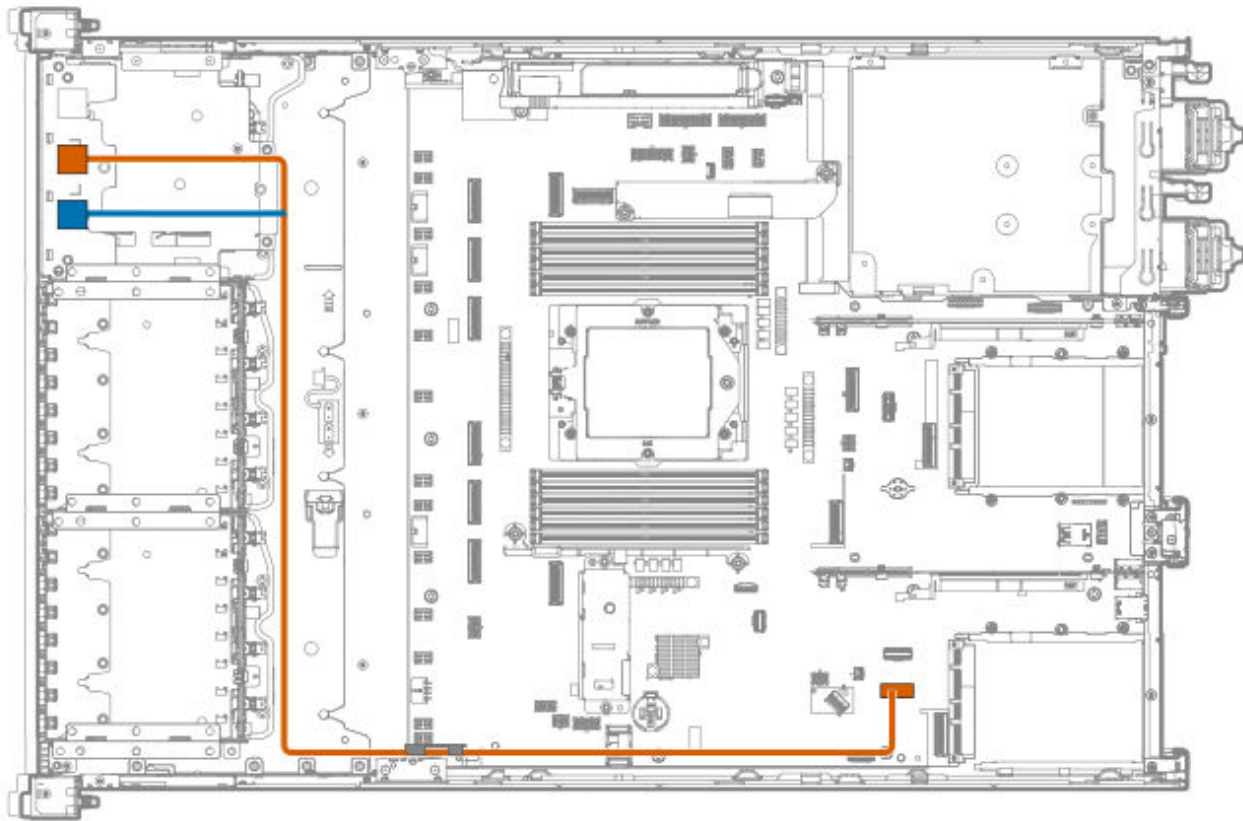
## LFF universal media bay cabling: DisplayPort cable



Cable spare part	Color	From	To
869808-001	Orange	LFF universal media bay	Front USB and DisplayPort connector

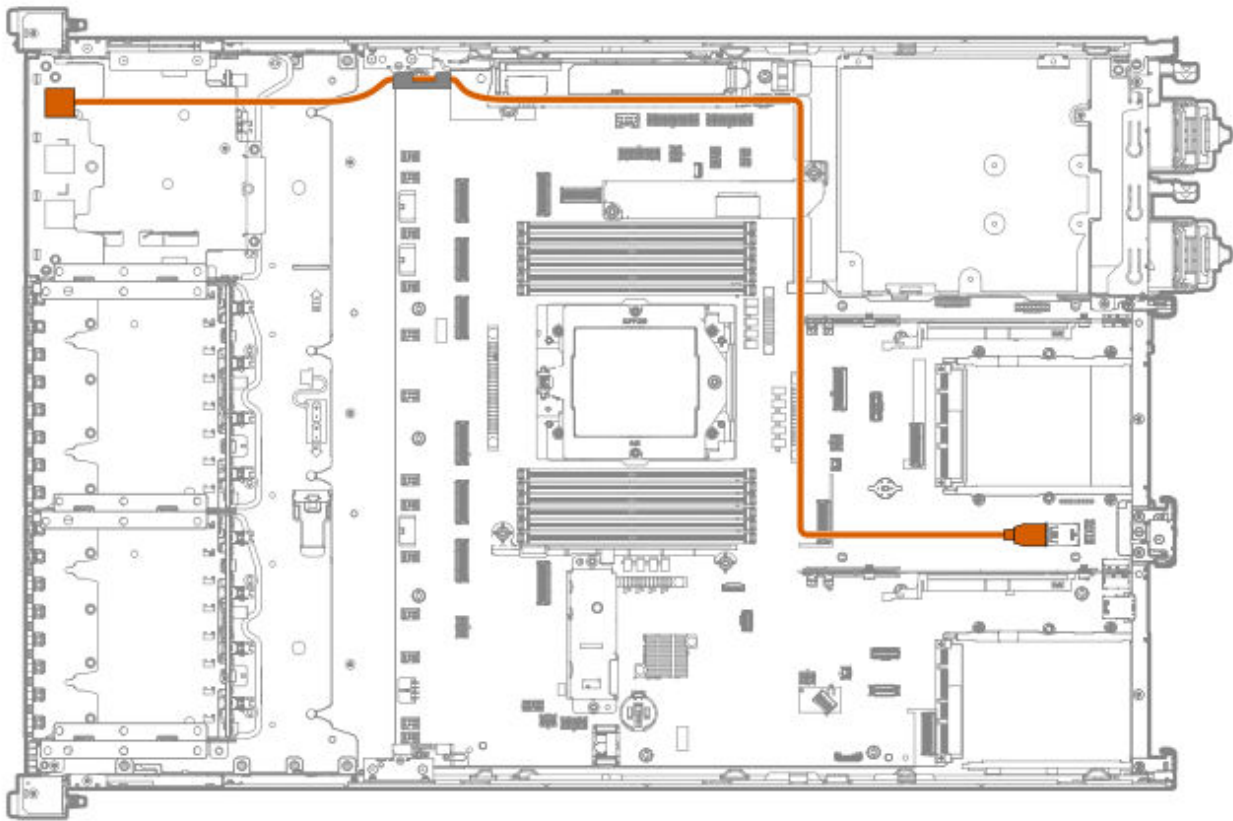
## SFF universal media bay cabling

USB 2.0 / DisplayPort Y-cable



Cable part number	Color	From	To
P14314-001	Orange	SFF universal bay	Front USB and DisplayPort connector
	Blue		

USB 3.2 Gen 1 port cable

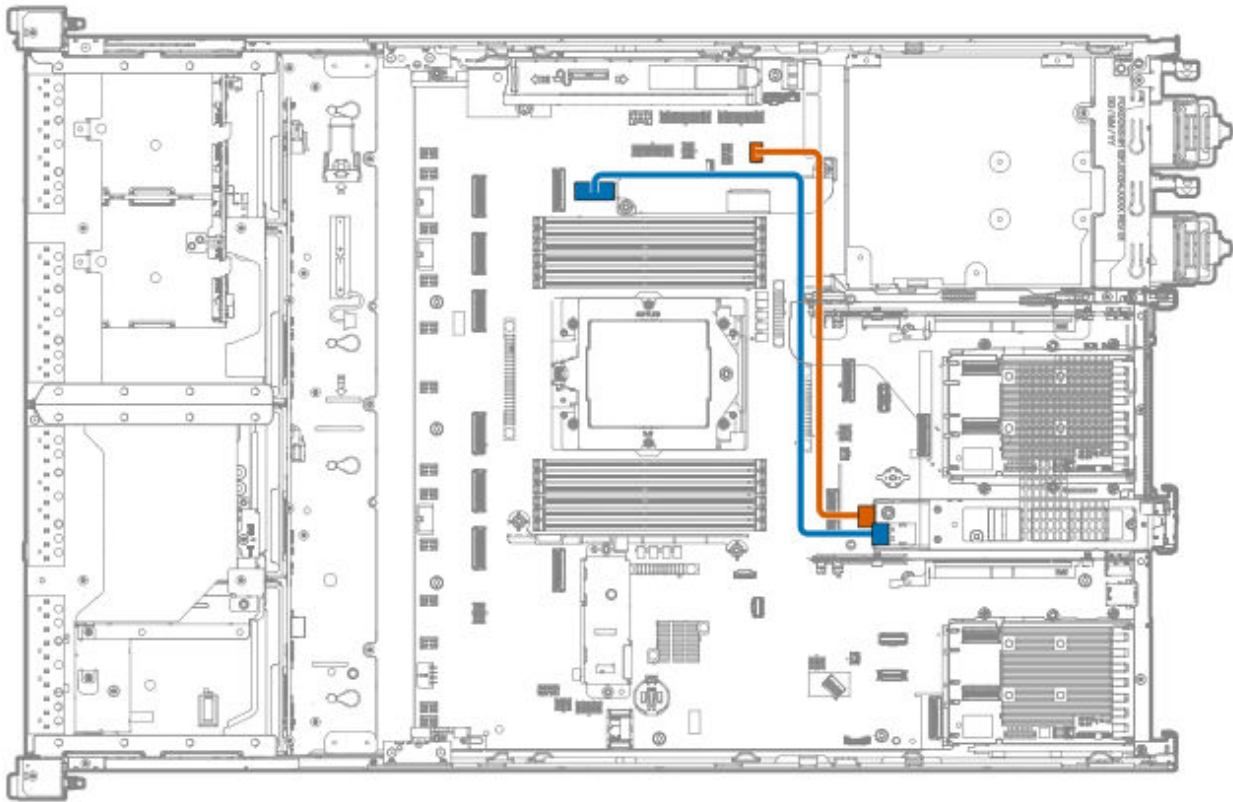


Cable spare part	Color	From	To
P57248-001	Orange	SFF universal media bay	Stacked, dual USB 3.2 Gen 1 ports

## HPE NS204i-u Boot Device cabling

### HPE NS204i-u Boot Device on the NS204i-u + secondary low-profile riser cage

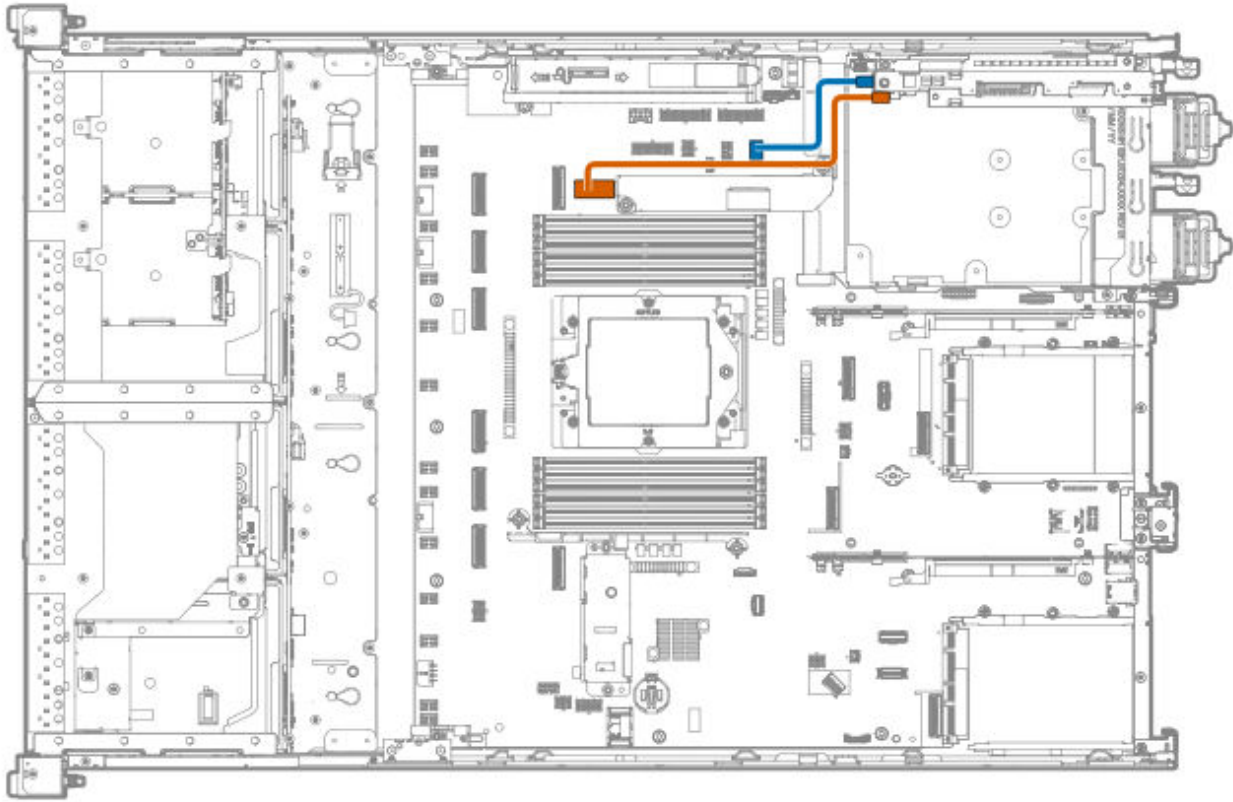
The boot device on the NS204i-u + secondary low-profile riser cage is only supported when the rear 4 LFF drive cage is installed.



Cable part number	Color	From	To
P54088-001	Orange	Boot device power connector	M.2 SSD power connector
P54087-001	Blue	Boot device signal connector	NS204i-u signal connector

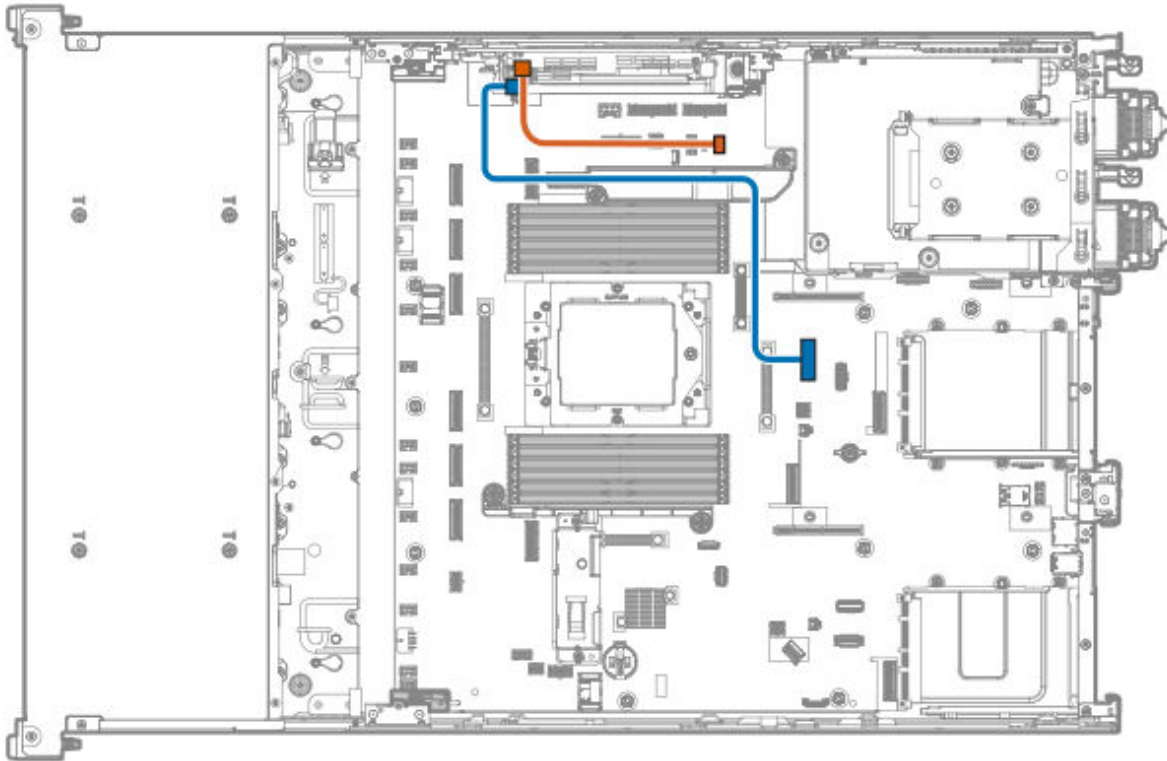
### HPE NS204i-u Boot Device on top of the power supply cage

The boot device on the top of the power supply cage is only supported when the rear 2 SFF stacked drive cage is installed.



Cable part number	Color	From	To
P54088-001	Blue	Boot device power connector	M.2 SSD power connector
P54087-001	Orange	Boot device signal connector	NS204i-u signal connector

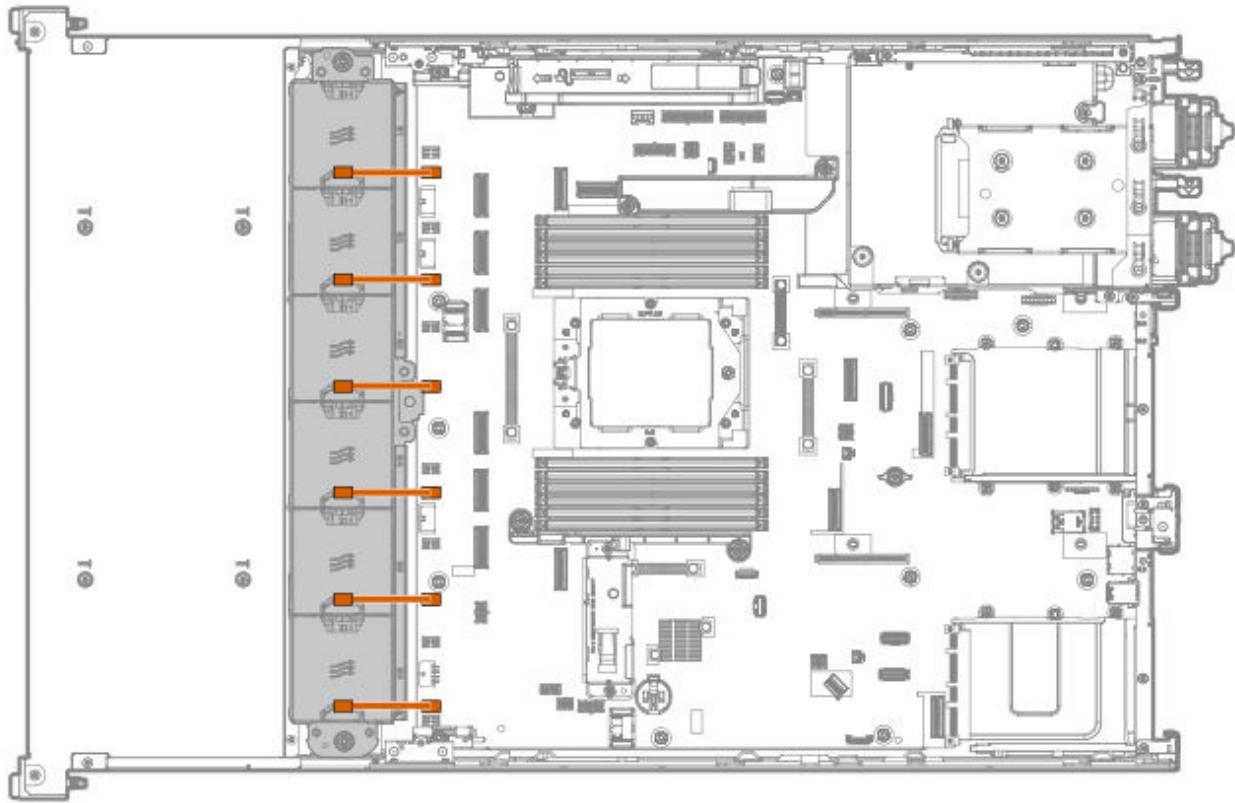
## M.2 SSD pass-through card cabling



Cable part number	Cable color	From	To
P56689-001	Orange	M.2 SSD pass-through card	M.2 SSD power connector
P56690-001 <sup>1</sup> / <sub>—</sub>	Blue		NVMe / SATA port 1B
P56691-001 <sup>1</sup> / <sub>—</sub>			

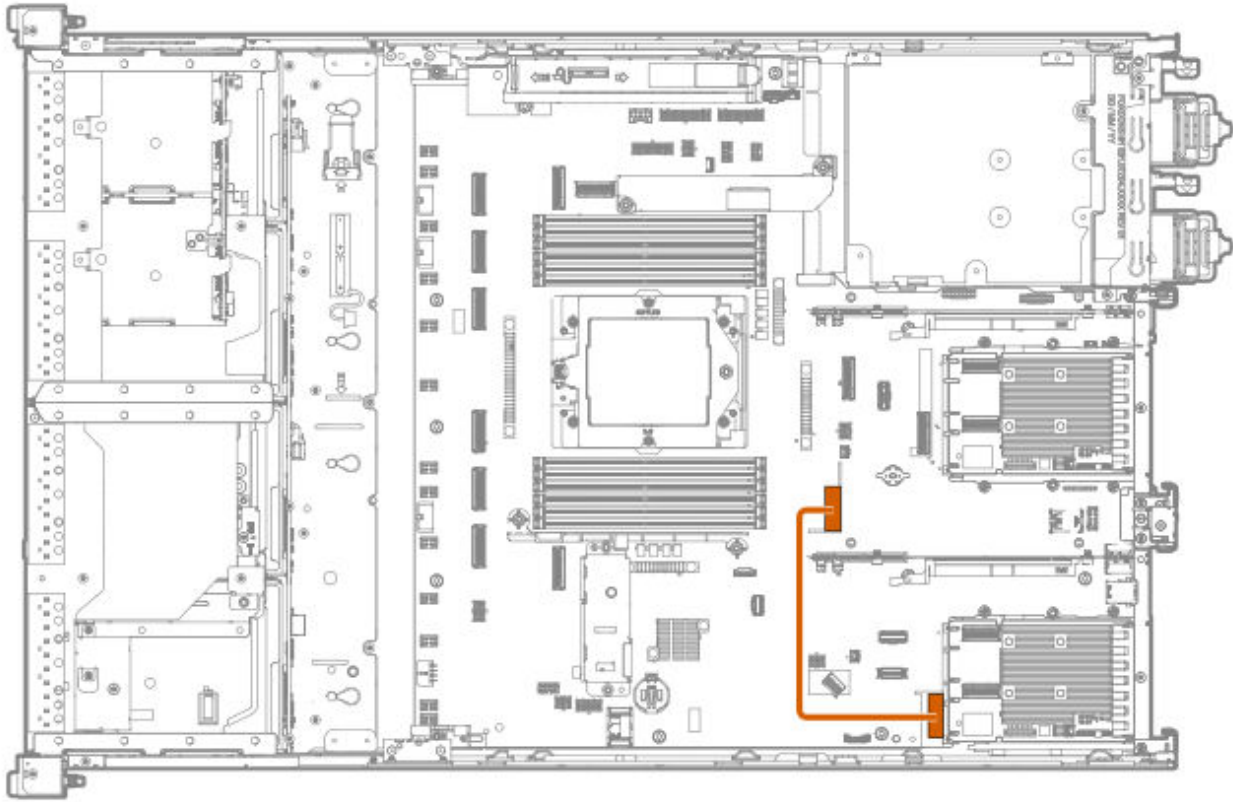
<sup>1</sup>/<sub>—</sub> The P56690-001 cable is for SATA SSDs while the P56691-001 cable is for NVMe SSDs.

## Fan cabling



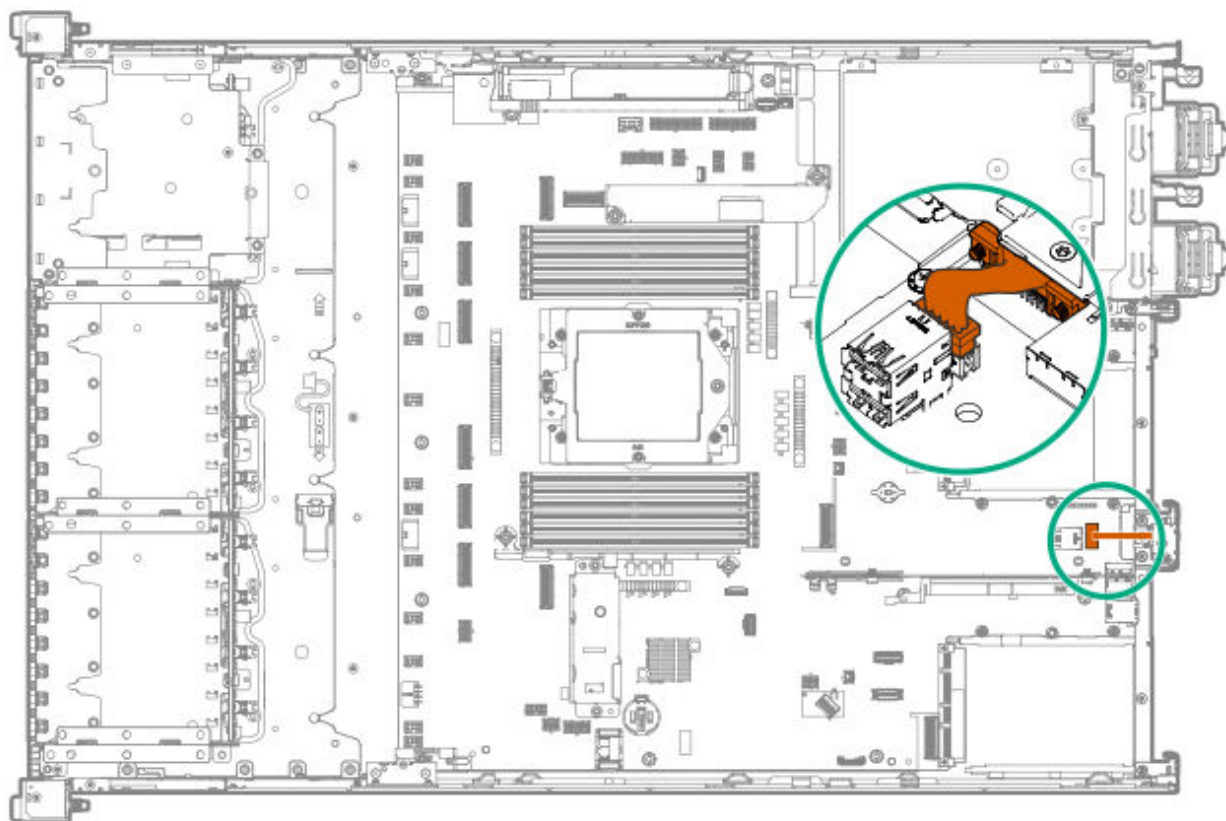
## OCP bandwidth upgrade cabling

In Slot 21 OCP, the OCP bandwidth upgrade cable is required to support a x16 OCP expansion option.



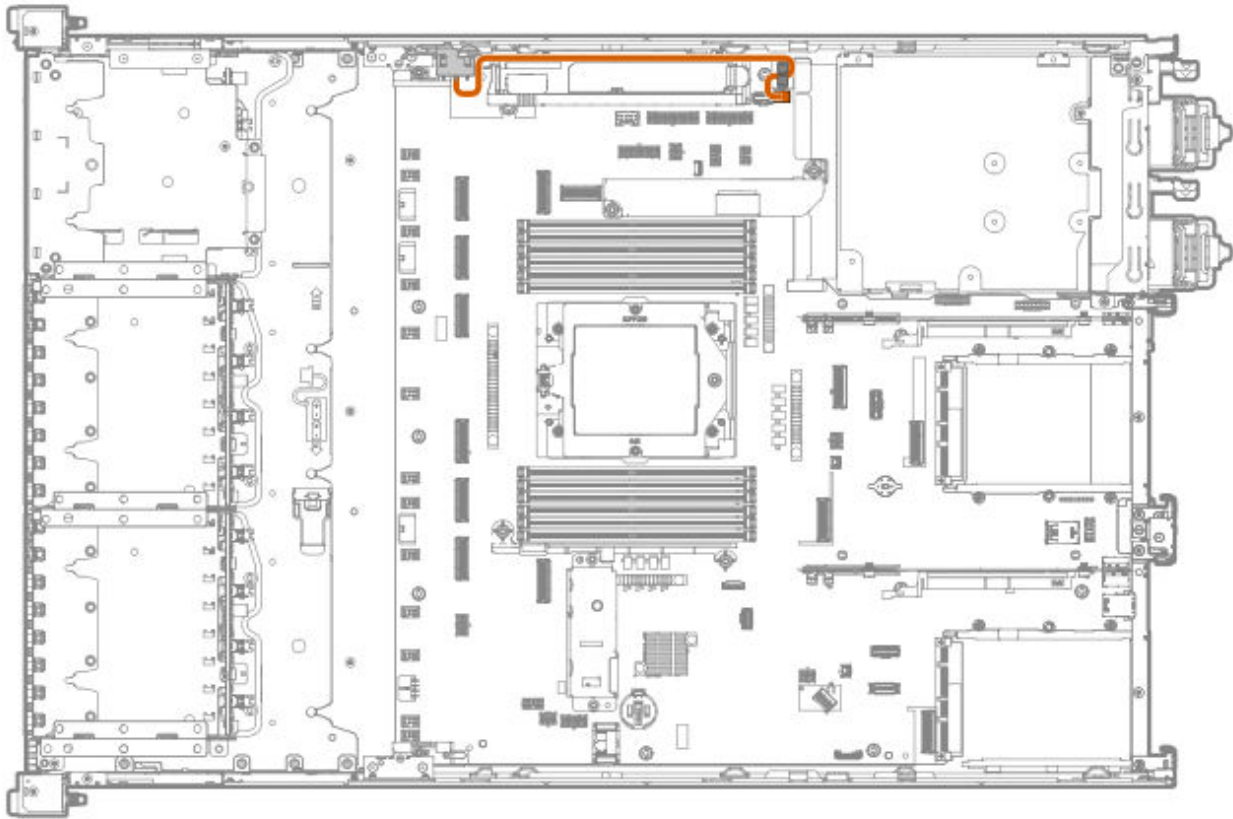
Cable part number	Color	From	To
P56686-001	Orange	Slot 21 OCP x16 upgrade connector	NVMe port 9A

## Serial port cabling



Cable part number	Color	From	To
P47752-001	Orange	Serial port	Serial port connector

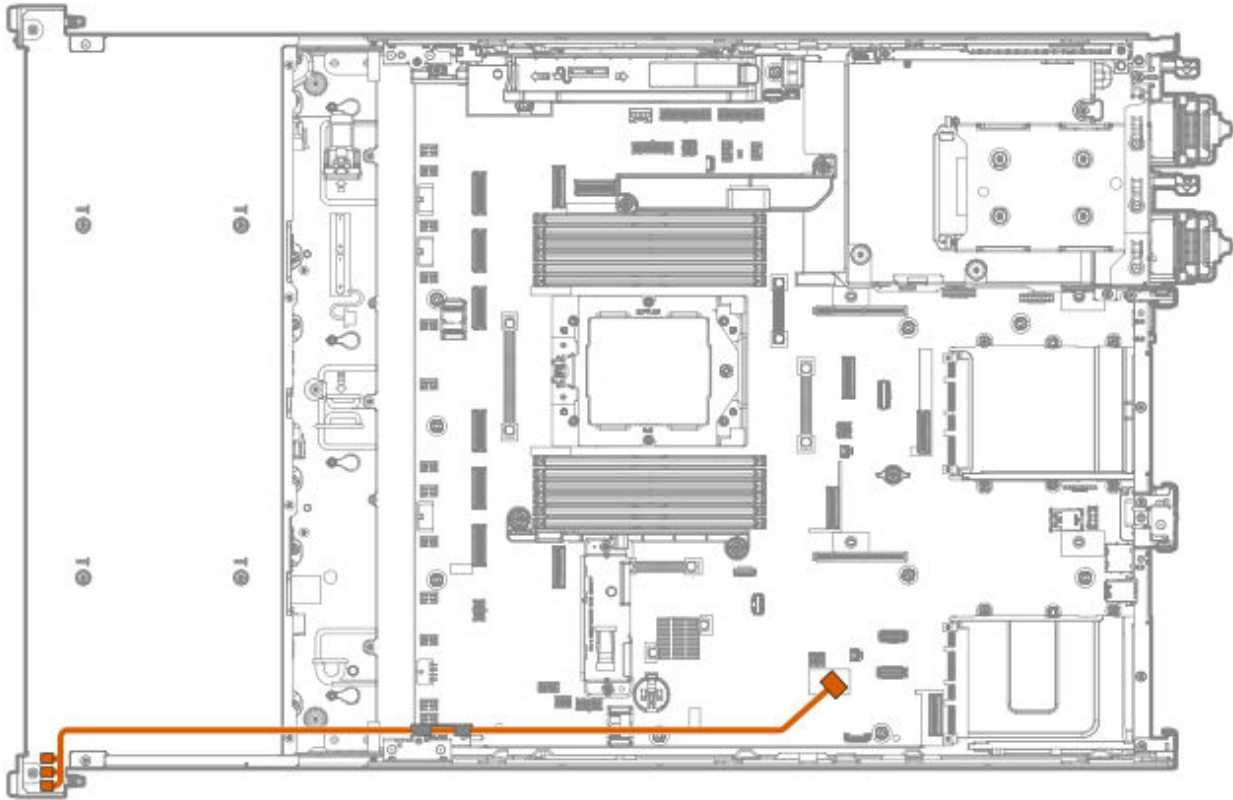
## Chassis intrusion detection switch cabling



Cable part number	Color	From	To
P54901-001	Orange	Chassis intrusion detection switch	Chassis intrusion detection switch connector

## Front I/O cabling

Front I/O cables are preinstalled in the server.



Cable part number	Color	From	To
P43727-001	Orange	Right chassis ear	Front USB and DisplayPort 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"><li>Service Pack for ProLiant (SPP) <a href="https://www.hpe.com/servers/spp/download"><u>https://www.hpe.com/servers/spp/download</u></a></li><li>Get an overview of SPP and its ecosystem <a href="https://www.hpe.com/support/SPP-overview-views-en"><u>https://www.hpe.com/support/SPP-overview-views-en</u></a></li></ul>
Deploy service packs to a single server	Smart Update Manager (SUM) <a href="https://www.hpe.com/support/hpesmartupdatemanager-quicklinks"><u>https://www.hpe.com/support/hpesmartupdatemanager-quicklinks</u></a>
Deploy service packs to multiple servers	HPE OneView <a href="https://www.hpe.com/support/hpeoneview-quicklinks"><u>https://www.hpe.com/support/hpeoneview-quicklinks</u></a>
Updating iLO or system firmware in a single server or multiple servers	HPE iLO <a href="https://www.hpe.com/support/hpeilodocs-quicklinks"><u>https://www.hpe.com/support/hpeilodocs-quicklinks</u></a>
<ul style="list-style-type: none"><li>Enable policy-based management of server or server group firmware for distributed server infrastructure</li></ul>	HPE Compute Ops Management <a href="https://www.hpe.com/info/com-quicklinks"><u>https://www.hpe.com/info/com-quicklinks</u></a>

To	Use
	<ul style="list-style-type: none"> <li>• Monitor server compliance with a configured firmware baseline</li> <li>• Receive automatic iLO firmware updates</li> <li>• Receive baseline update alerts</li> </ul>

## Configuring the server

To configure	Use
Single server (GUI)	<ul style="list-style-type: none"> <li>• Intelligent Provisioning <a href="https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks">https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks</a></li> <li>• iLO remote console or web interface <a href="https://www.hpe.com/support/hpeilodocs-quicklinks">https://www.hpe.com/support/hpeilodocs-quicklinks</a></li> <li>• UEFI System Utilities <a href="https://www.hpe.com/support/hpeuefisystemutilities-quicklinks">https://www.hpe.com/support/hpeuefisystemutilities-quicklinks</a></li> <li>• HPE Compute Ops Management <a href="https://www.hpe.com/info/com-quicklinks">https://www.hpe.com/info/com-quicklinks</a></li> </ul>
Single server (scripting)	<ul style="list-style-type: none"> <li>• RESTful Interface Tool <a href="https://www.hpe.com/support/restfulinterface/docs">https://www.hpe.com/support/restfulinterface/docs</a></li> <li>• Python iLO Redfish Library (python-ilorest-library) <a href="https://github.com/HewlettPackard/python-ilorest-library">https://github.com/HewlettPackard/python-ilorest-library</a></li> <li>• Scripting Tools for Windows Powershell</li> </ul>

## To configure

## Use

<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/>

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Multiple servers (either UI or scripting)

- HPE OneView <sup>1</sup>

<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.

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

## Configuring storage controllers

### Controller type

### Documentation

HPE SR Gen11 controllers

- HPE SR Gen11 Controller User Guide

<https://hpe.com/support/SR-Gen11-UG>

## Controller type

## Documentation

- SR Gen11 controller RAID creation:

[\*\*https://www.hpe.com/support/SR-RAID-creation\*\*](https://www.hpe.com/support/SR-RAID-creation)

Configuration guides:

- HPE Smart Storage Administrator GUI User Guide

[\*\*https://www.hpe.com/support/SSA-UG\*\*](https://www.hpe.com/support/SSA-UG)

- HPE Smart Storage Administrator CLI User Guide

[\*\*https://www.hpe.com/support/SSACLI-UG\*\*](https://www.hpe.com/support/SSACLI-UG)

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HPE MR controller user guides

- HPE MR Gen11 Controller User Guide

[\*\*https://hpe.com/support/MR-Gen11-UG\*\*](https://hpe.com/support/MR-Gen11-UG)

- MR Gen11 controller configuration:

[\*\*https://www.hpe.com/support/MR-Gen11-configuration\*\*](https://www.hpe.com/support/MR-Gen11-configuration)

- MR Gen11 controller RAID creation:

[\*\*https://www.hpe.com/support/MR-Gen11-RAID-creation\*\*](https://www.hpe.com/support/MR-Gen11-RAID-creation)

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HPE MR controller configuration guides

- HPE MR Storage Administrator User Guide

[\*\*https://www.hpe.com/support/MRSA\*\*](https://www.hpe.com/support/MRSA)

- HPE StorCLI User Guide

[\*\*https://www.hpe.com/support/StorCLI\*\*](https://www.hpe.com/support/StorCLI)

- HPE StorCLI2 User Guide

[\*\*https://www.hpe.com/support/StorCLI2\*\*](https://www.hpe.com/support/StorCLI2)

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Storage controller documents library

[\*\*https://www.hpe.com/support/hpestoragecontrollerdocs-quicklinks\*\*](https://www.hpe.com/support/hpestoragecontrollerdocs-quicklinks)

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## Deploying an OS

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

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

To	See
Deploy an OS using HPE Compute Ops Management	HPE Compute Ops Management User Guide <a href="https://www.hpe.com/info/com-quicklinks">https://www.hpe.com/info/com-quicklinks</a>
Deploy an OS using Intelligent Provisioning	Intelligent Provisioning user guide <a href="https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks">https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks</a>
Deploy an OS using iLO virtual media	iLO user guide <a href="https://www.hpe.com/support/hpeilodocs-quicklinks">https://www.hpe.com/support/hpeilodocs-quicklinks</a>
Configure the server to boot from a PXE server	UEFI System Utilities User Guide for HPE ProLiant Gen11 Servers and HPE Synergy <a href="https://www.hpe.com/support/UEFIGen11-UG-en">https://www.hpe.com/support/UEFIGen11-UG-en</a>
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide <a href="https://www.hpe.com/info/boot-from-san-config-guide">https://www.hpe.com/info/boot-from-san-config-guide</a>

## Configuring security

To	See
Implement server security best practices.	<ul style="list-style-type: none"><li>HPE Compute Security Reference Guide <a href="https://www.hpe.com/info/server-security-reference-en">https://www.hpe.com/info/server-security-reference-en</a></li><li>HPE iLO 6 Security Technology Brief</li></ul>

To	See
	<a href="https://www.hpe.com/support/ilo6-security-en">https://www.hpe.com/support/ilo6-security-en</a>
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy <a href="https://www.hpe.com/info/server-config-lock-UG-en">https://www.hpe.com/info/server-config-lock-UG-en</a>

## Server management

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

## Managing Linux-based high performance compute clusters

To	Use
Provision, manage, and monitor clusters.	HPE Performance Cluster Manager <a href="https://www.hpe.com/support/hpcm_manuals">https://www.hpe.com/support/hpcm_manuals</a>
Optimize your applications.	HPE Performance Analysis Tools

To

Use

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

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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>

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## Troubleshooting

### Subtopics

[NMI functionality](#)

[Troubleshooting resources](#)

## NMI functionality

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

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

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

## Troubleshooting resources

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

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

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

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

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

## System battery replacement

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

### Subtopics

[System battery information](#)

[Removing and replacing the system battery](#)

## System battery information

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



### **WARNING**

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

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

# Removing and replacing the system battery

## Prerequisites

Before you perform this procedure, make sure that you have a small flat-bladed, nonconductive tool available.

## About this task

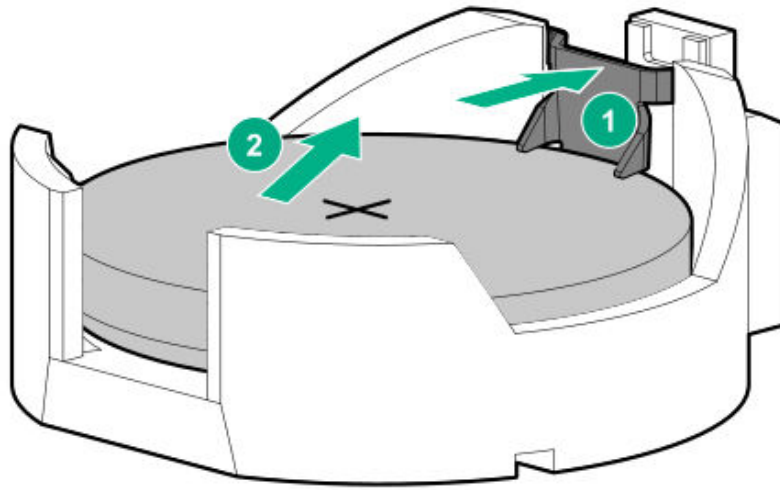


### IMPORTANT

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

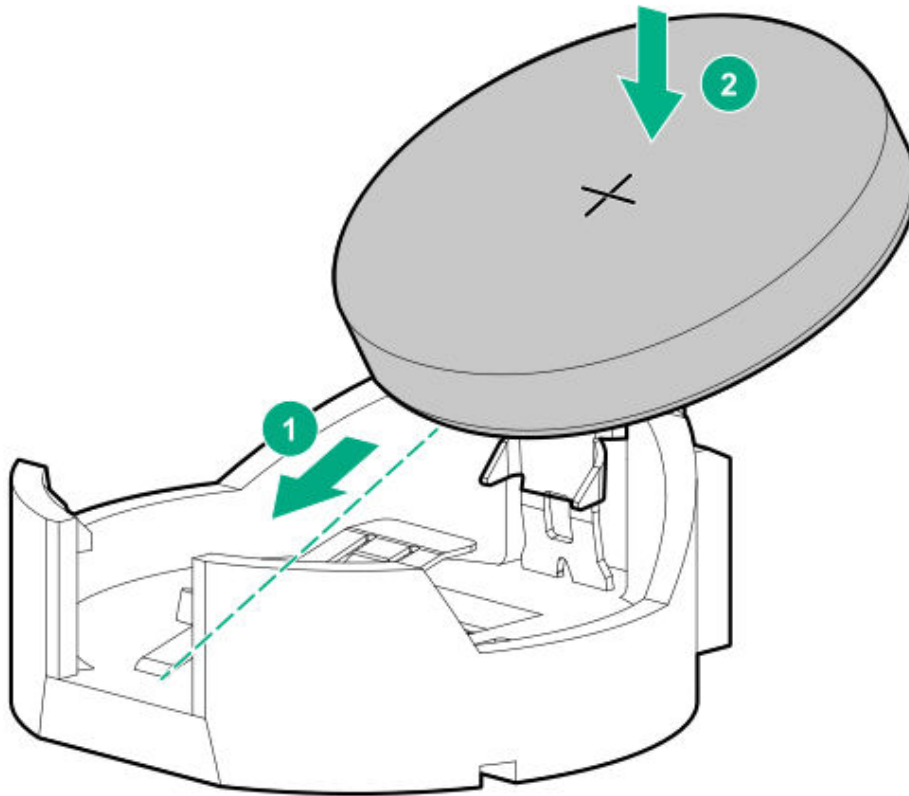
## Procedure

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. Do one of the following:
  - Remove the air baffle.
  - Remove the midplane drive cage.
8. Locate the battery on the system board.
9. Remove the system battery:
  - a. Use a small flat-bladed, nonconductive tool to press the battery latch.
  - b. Remove the system battery from the socket.



.0. Install the system battery:

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



.1. Do one of the following:

- Install the air baffle.
  - Install the midplane drive cage.
- .2. Install the 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. Wait for 10 minutes for the server to reset and reinitialize the iLO configuration settings stored in SRAM.



#### **IMPORTANT**

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

- .9. Power up the server.
- !0. Properly dispose of the old battery.

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

#### **Results**

The replacement procedure is complete.

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

### **Subtopics**

**Regulatory information**

**Warranty information**

## Regulatory information

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

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

### Additional regulatory information

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

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

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

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

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

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

### Subtopics

[Notices for Eurasian Economic Union](#)

[Turkey RoHS material content declaration](#)

[Ukraine RoHS material content declaration](#)

## Notices for Eurasian Economic Union



### Manufacturer and Local Representative Information

#### Manufacturer information:

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

#### Local representative information Russian:

- **Russia**

ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677

- **Kazakhstan**

ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

**Local representative information Kazakh:**

- **Russia**

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

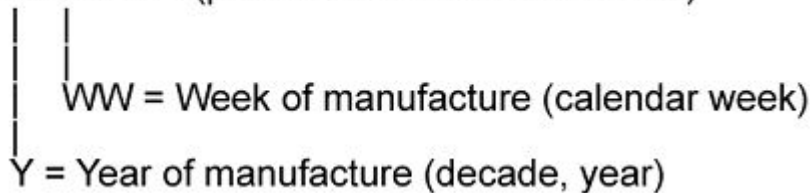
- **Kazakhstan**

ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандык 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](mailto:tre@hpe.com).

## Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

# Ukraine RoHS material content declaration

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

## Warranty information

To view the warranty information for your product, see the [warranty check tool](#).

## Specifications

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

### Subtopics

[Environmental specifications](#)

[Mechanical specifications](#)

[Power supply specifications](#)

## Environmental specifications

Specifications	Value
<b>Temperature range</b>	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-30°C to 60°C (-22°F to 140°F)
<b>Relative humidity (noncondensing)</b>	—
Operating	8% to 90% 28°C (82.4°F) maximum wet bulb temperature, noncondensing

Specifications	Value
Nonoperating	5% to 95% 38.7°C (101.7°F) maximum wet bulb temperature, noncondensing
<b>Altitude</b>	—
Operating	3050 m (10,000 ft) This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
Nonoperating	9144 m (30,000 ft) Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).

### Standard operating support

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

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

### Extended ambient operating support

For approved hardware configurations, the supported system inlet range is extended to be:

- 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2,953 ft) to a maximum of 3050 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3,050 m (10,000 ft).

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

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

## Mechanical specifications

### Non-GPU-optimized configuration

Specification	Value
<b>Dimensions</b>	—
Height	8.75 cm (3.44 in)

<b>Specification</b>	<b>Value</b>
Depth, SFF	64.64 cm (25.45 in)
Depth, LFF	66.31 cm (26.10 in)
Width	44.80 cm (17.63 in)
<b>Weight, approximate values</b>	—
Minimum, SFF	16.12 kg (35.53 lb)
Maximum, SFF	27.16 kg (59.87 lb)
Minimum, LFF	18.38 kg (40.52 lb)
Maximum, LFF	35.67 kg (78.63 lb)

### GPU-optimized configuration

<b>Specification</b>	<b>Value</b>
<b>Dimensions</b>	—
Height	8.75 cm (3.44 in)
Depth	79.80 cm (31.44 in)
Width	44.80 cm (17.63 in)
<b>Weight, approximate values</b>	—
Minimum	20.31 kg (44.78 lb)
Maximum	27.16 kg (59.88 lb)

## Power supply specifications

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

### Subtopics

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

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

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

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

[\*\*HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply\*\*](#)

[\*\*HPE 1800-2200 W Flex Slot Titanium Power Supply\*\*](#)

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

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

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

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

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

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

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

Specification	Value
<b>Input requirements</b>	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz

<b>Specification</b>	<b>Value</b>
Rated input current	8.7 A at 200 VAC
	7.5 A at 230 VAC
	7.2 A at 240 VDC
Maximum rated input power	1734 W at 200 VAC
	1720 W at 240 VAC
BTUs per hour	5918 at 200 VAC
	5891 at 230 VAC
<b>Power supply output</b>	—
Rated steady-state power	1600 W at 200 VAC to 240 VAC input
	1600 W at 240 VDC input
Maximum peak power	1600 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

## HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply

<b>Specification</b>	<b>Value</b>
<b>Input requirements</b>	—
Rated input voltage	-40 VDC to -72 VDC
Rated input frequency	DC
Nominal input current	45 A DC at -40 VDC input
	36.6 A DC at -48 VDC input
	24.4 A DC at -72 VDC input
Maximum Rated Input Wattage Rating	1798 W at -40 VDC input
	1758 W at -48 VDC input
	1755 W at -72 VDC input
BTUs per hour	6026 at -40 VDC input
	6000 at -48 VDC input

Specification	Value
	5989 at -72 VDC input
<b>Power supply output</b>	—
Rated steady-state power	1600 W at -40 VDC to -72 VDC
Maximum peak power	1600 W at -40 VDC to -72 VDC

## HPE 1800-2200 W Flex Slot Titanium Power Supply

Specification	Value
<b>Input requirements</b>	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	10 A at 200 VAC 10 A at 240 VAC 10 A at 240 VDC for China only
Maximum rated input power	1946 W at 200 VAC 2375 W at 240 VAC 2375 W at 240 VDC for China only
BTUs per hour	6497 at 200 VAC 7962 at 240 VAC
<b>Power supply output</b>	—
Rated steady-state power	1800 W at 200 VAC 2200 W at 240 VAC
Maximum peak power	2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

## 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 DL345 Gen11 user documents

<https://www.hpe.com/info/dl345gen11-docs>

## Support and other resources

### Subtopics

[Accessing Hewlett Packard Enterprise Support](#)

[HPE product registration](#)

[Accessing updates](#)

[Customer self repair](#)

[Remote support](#)

[Documentation feedback](#)

## Accessing Hewlett Packard Enterprise Support

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

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

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

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

## Information to collect

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

## HPE product registration

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

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

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

## Accessing updates

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

**Hewlett Packard Enterprise Support Center**

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

## My HPE Software Center

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

- To subscribe to eNewsletters and alerts:

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

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

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



### **IMPORTANT**

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

## Customer self repair

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

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

## Remote support

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

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

### **HPE Get Connected**

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

HPE Tech Care Service

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

HPE Complete Care Service

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

## 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.