Hewlett Packard
Enterprise

HPE ProLiant Compute DL380a Gen12 User Guide

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HPE ProLiant Compute DL380a Gen12 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 button
- Rear panel components
- Rear panel LEDs
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- Internal components
- System board components
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- Riser board components
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- PCIe riser slot numbering
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- OCP retimer card components
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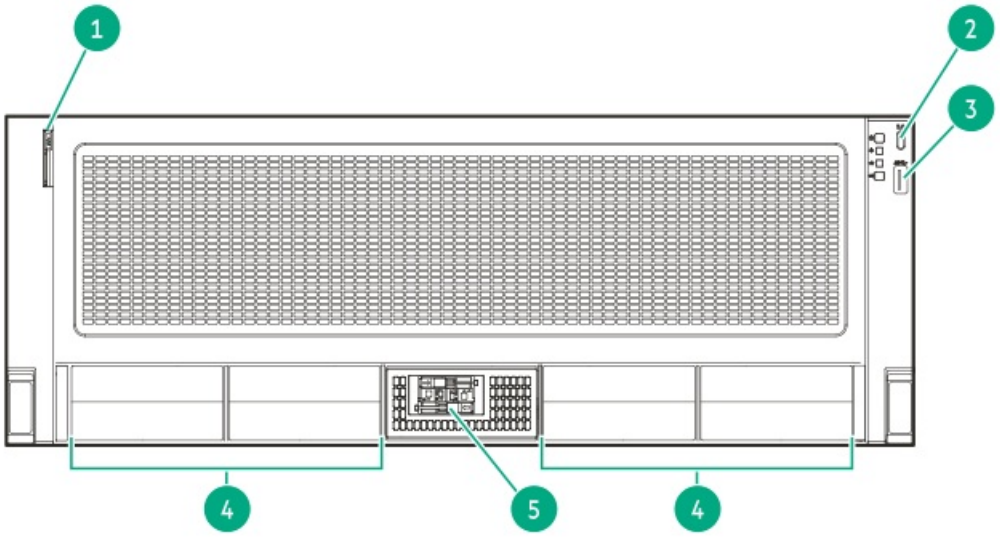
- Internal fan numbering
- External front fan numbering
- Direct liquid cooling module components
- HPE NS204i-u Boot Device V2 components
- HPE NS204i-u Boot Device V2 LED definitions
- Heatsink and processor socket components

Front panel components

SFF drive configuration

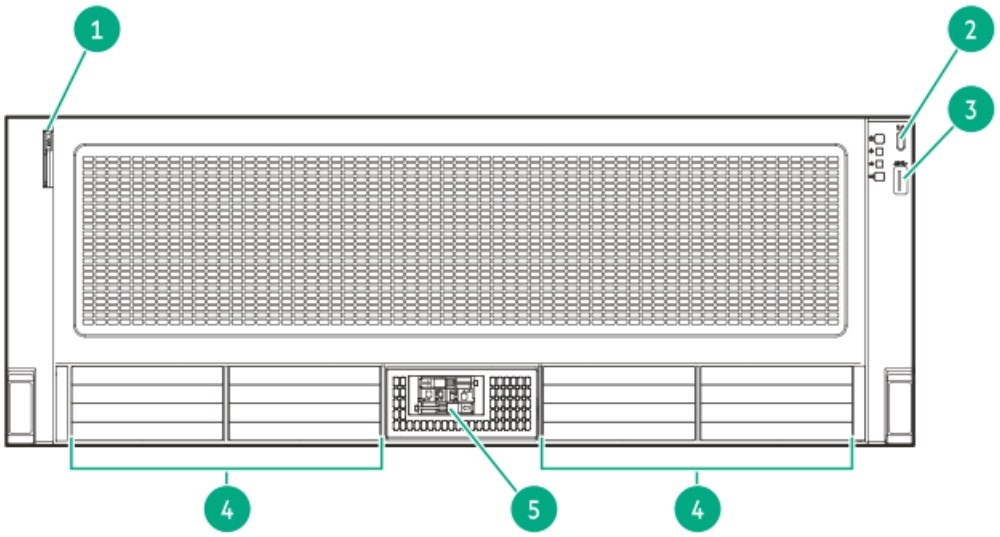


Item	Description
1	Serial number/iLO information pull tab [1]
2	iLO service port
3	USB 3.2 Gen 1 port
4	SFF drives [2]
5	NS204i-u boot device (optional)

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

[2] The server supports the U.3 NVMe drive.

E3.S drive configuration



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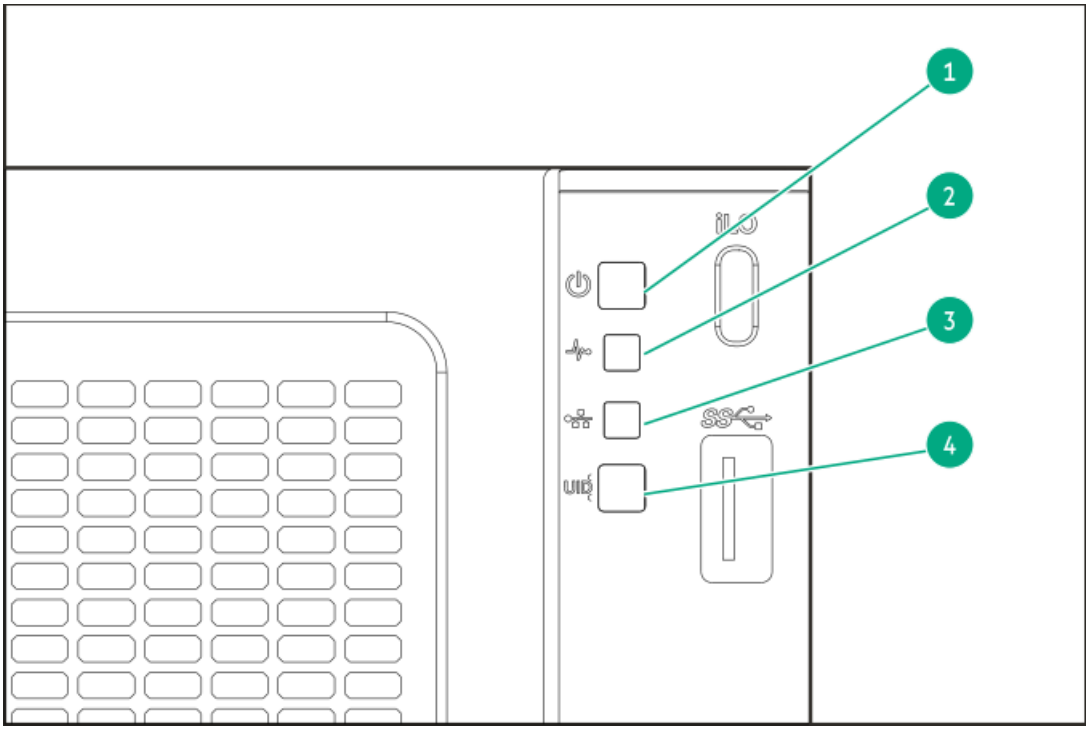
1 The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.

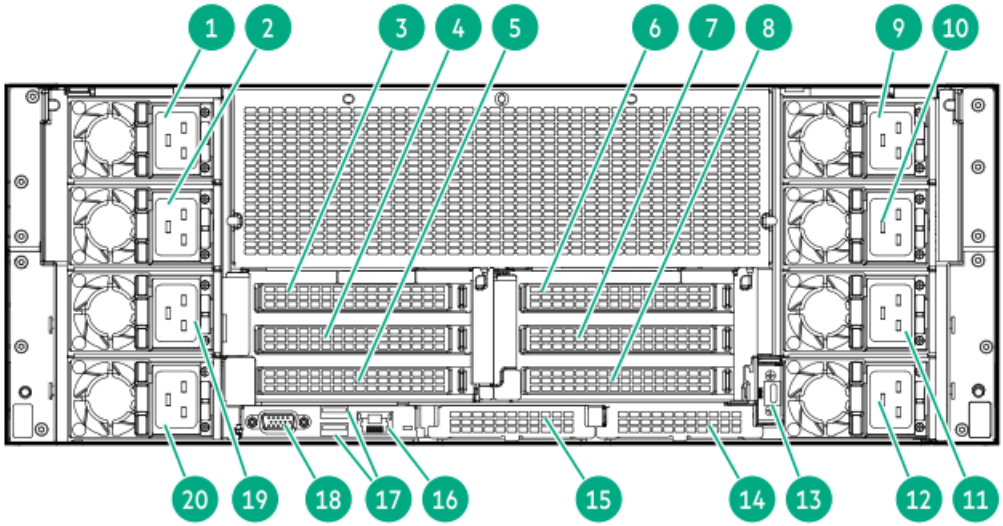
Front panel LEDs and button



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

1 When all LEDs flash simultaneously, a power fault has occurred. For more information, see Front panel LED power fault codes.
2 Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the front I/O cable is disconnected.
3 If the health LED indicates a degraded or critical state, review the system Integrated Management Log (IML) or use HPE iLO to review the system health status.

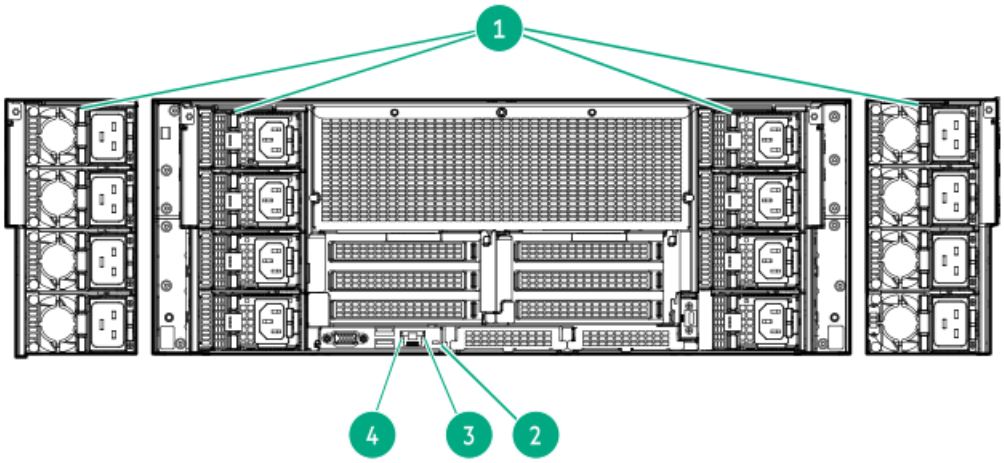
Rear panel components



Item	Description
1	M-CRPS [1] 8
2	M-CRPS 6
3	Slot 1 PCIe5 ×16 [2]
4	Slot 2 PCIe5 ×16
5	Slot 3 PCIe5 ×16
6	Slot 4 PCIe5 ×16
7	Slot 5 PCIe5 ×16
8	Slot 6 PCIe5 ×16
9	M-CRPS 7
10	M-CRPS 5
11	M-CRPS 3
12	M-CRPS 1
13	ix port [3] (optional)
14	Slot 28 OCP B PCIe5 ×8/×16 [4]
15	Slot 27 OCP A PCIe5 ×8/×16 [5]
16	iLO dedicated network port [6]
17	USB 3.2 Gen 1 ports [6]
18	VGA port [6]
19	M-CRPS 4
20	M-CRPS 2

1 Modular hardware system common redundant power supply
2 Slot 1 supports the DLC module option.
3 The ix port connects to an external serial port dongle.
4 By default, slot 28 operates at ×8 bandwidth speed. To enable ×16 configuration, install the OCP bandwidth enablement cable option .
5 Slot 27 requires the OCP ×8 or ×16 bandwidth enablement cable option .
6 These components are on the DC-SCM option.

Rear panel LEDs



Item	LED	Status	Definition
1	Power supply	Solid green	The power supply is operating normally.
		Flashing green	• 1 flash per sec—Power supply is in standby mode • 2 flashes per sec—Power supply firmware is updating
		Solid amber	One or more of the following conditions exists: • Power supply failure • Power supply error
		Off	One or more of the following conditions exists: • Power is unavailable • The power cord is disconnected.
2	UID [1]	Solid blue	Activated
		Flashing blue	• 1 flash per sec—Remote management or firmware upgrade in progress • 4 flashes per sec—iLO manual reboot sequence initiated • 8 flashes per sec—iLO manual reboot sequence in progress
		Off	Deactivated
3	iLO status [1]	Solid green	Lined to network
		Flashing green	Network active
		Off	No network activity
4	iLO link [1]	Solid green	Network link
		Off	No network link

[1] These components are on the DC-SCM option.

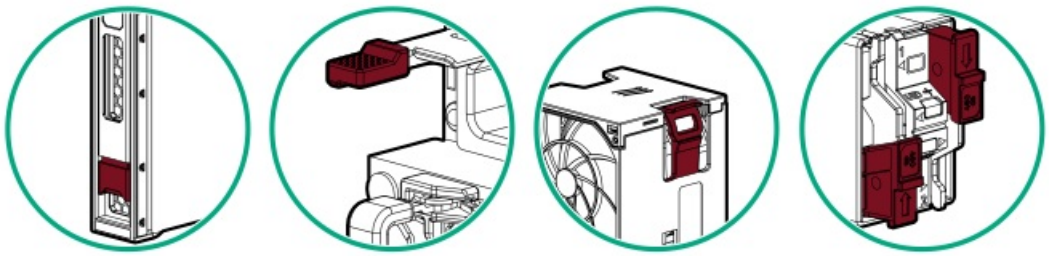
Component touchpoints

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

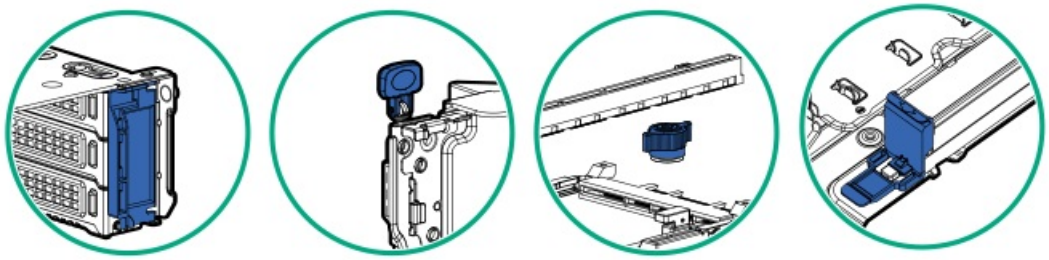


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

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

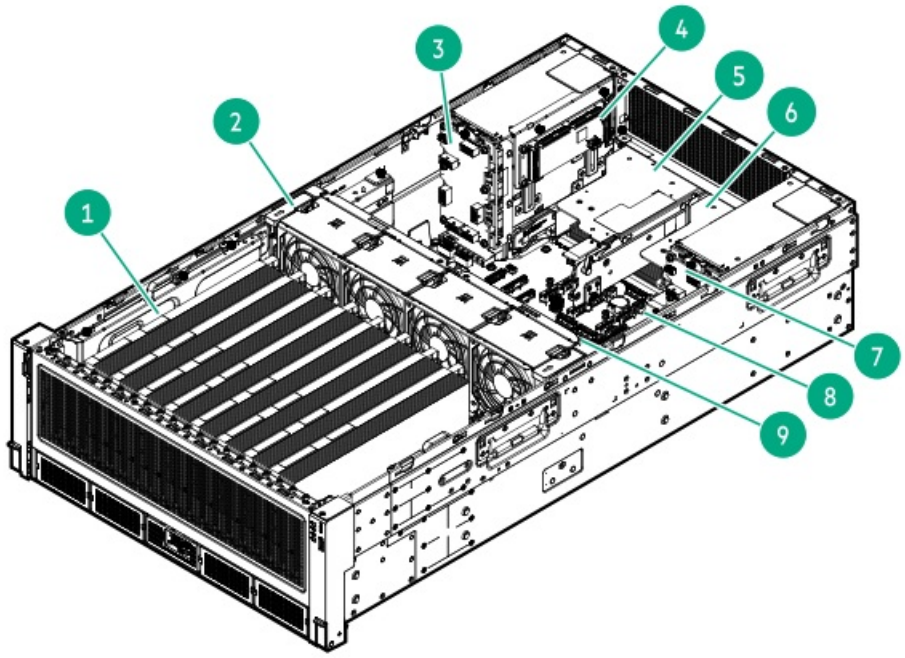


Touchpoint blue indicates cold-pluggable components. These components require a system shutdown. Failure to do so might result in system failure or data loss. Cold-pluggable components might also indicate touchpoints on non-electrical components.

Component examples:

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

Internal components

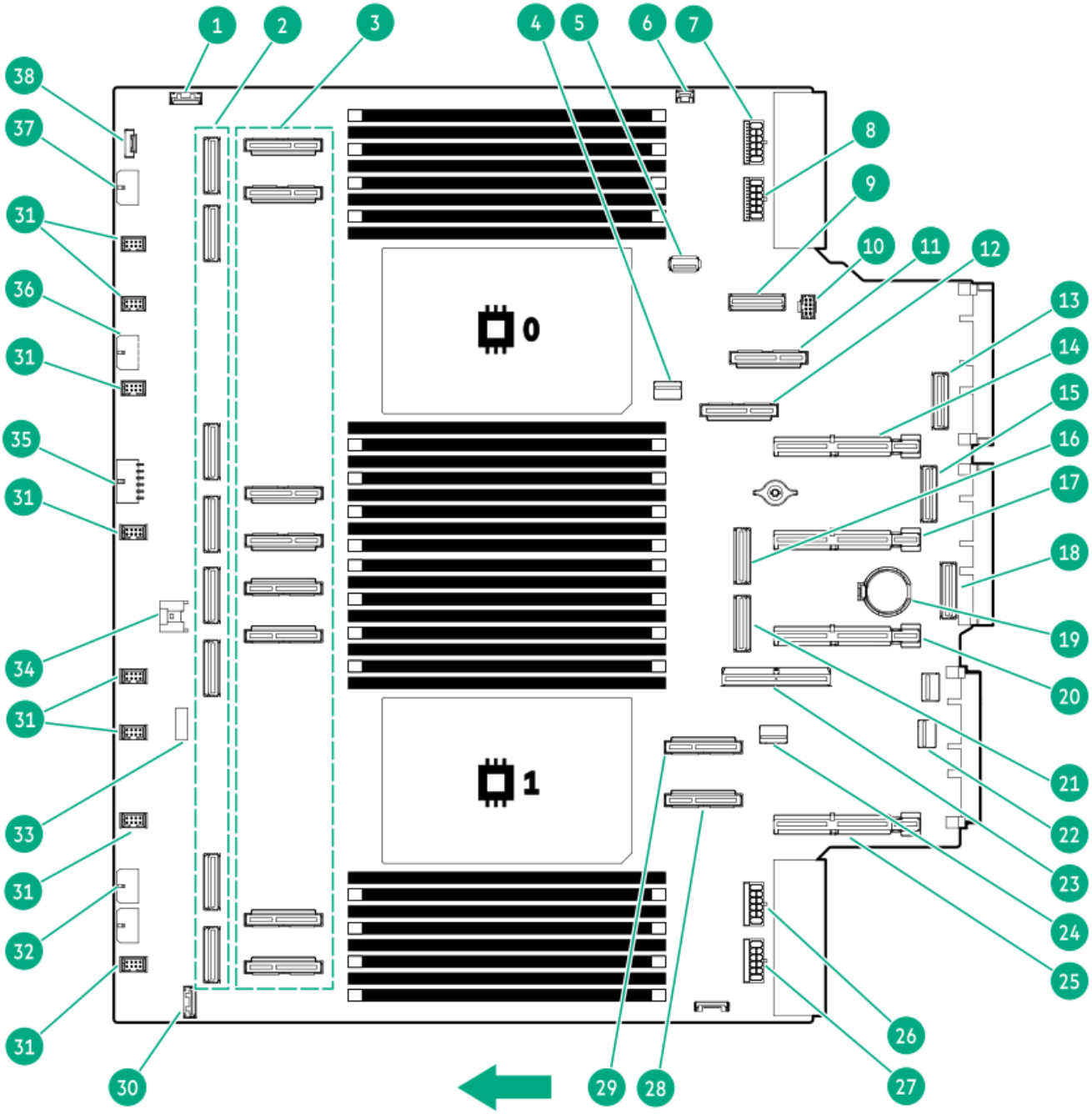


Item	Description
1	GPU cage
2	Internal fan cage
3	PDB 1
4	Sideband board
5	Secondary riser cage
6	Primary riser cage
7	PDB 2
8	System board
9	DIMM

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.


0
1

Item	Description
1	Storage backup power connector 1
2	M-XIO ports [1]
3	UPI connectors [2]
4	NS204i-u signal connector
5	USB 3.2 Gen 1 port
6	Chassis intrusion detection switch connector
7	M-PIC power connector 1
8	M-PIC power connector 2
9	M-XIO port 12
10	NS204i-u power connector
11	UPI connector 1
12	UPI connector 2
13	M-XIO OCP port B
14	PCIe5 x16 riser connector 2
15	M-XIO OCP port A-1
16	M-XIO port 17
17	PCIe5 x16 riser connector 3
18	M-XIO OCP port A-2
19	System battery
20	PCIe5 x16 riser connector 4
21	M-XIO port 13
22	Front I/O connector
23	Sideband signal connector 1
24	Sideband signal connector 2
25	PCIe5 x16 riser connector 6
26	M-PIC power connector 3
27	M-PIC power connector 4
28	UPI connector 8
29	UPI connector 7
30	Storage backup power connector 2
31	Fan connectors 1–8 (top to bottom)
32	Box 3: Drive backplane power connector
33	System maintenance switch
34	Energy pack connector
35	M-PIC power connector 5
36	Boxes 2 and 4: Drive backplane power connector
37	Box 1: Drive backplane power connector
38	Front fan cage / Liquid cooling connector

[1] The M-XIO ports are numbered 4, 6, 2, 0, 5, 7, 3, and 1 from top to bottom.
[2] The Intel UPI connectors are numbered 5, 6, 3, 4, 11, 12, 9, and 10 from top to bottom.

Subtopics

System maintenance switch descriptions
DIMM label identification
DIMM slot numbering

System maintenance switch descriptions

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

1 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.

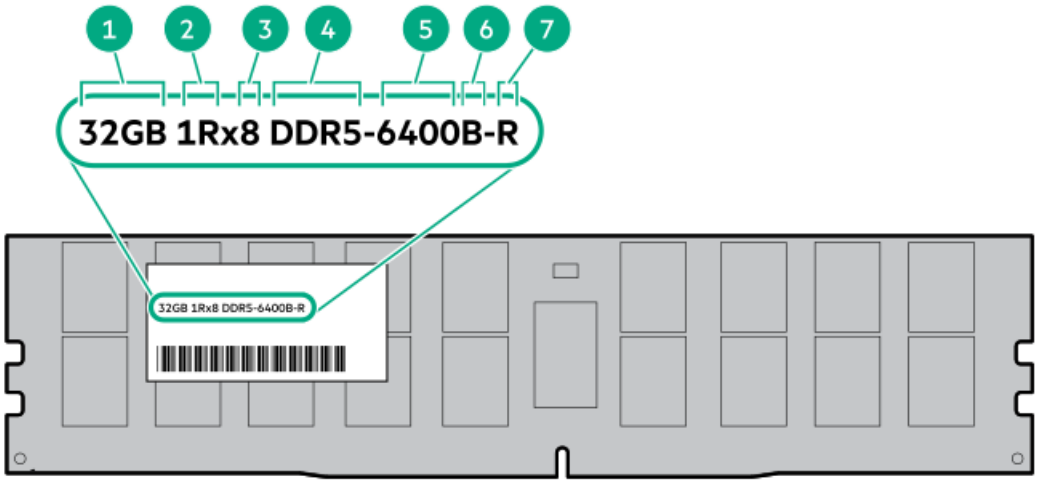
2 When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see Configuring the server.

DIMM label identification

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

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

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

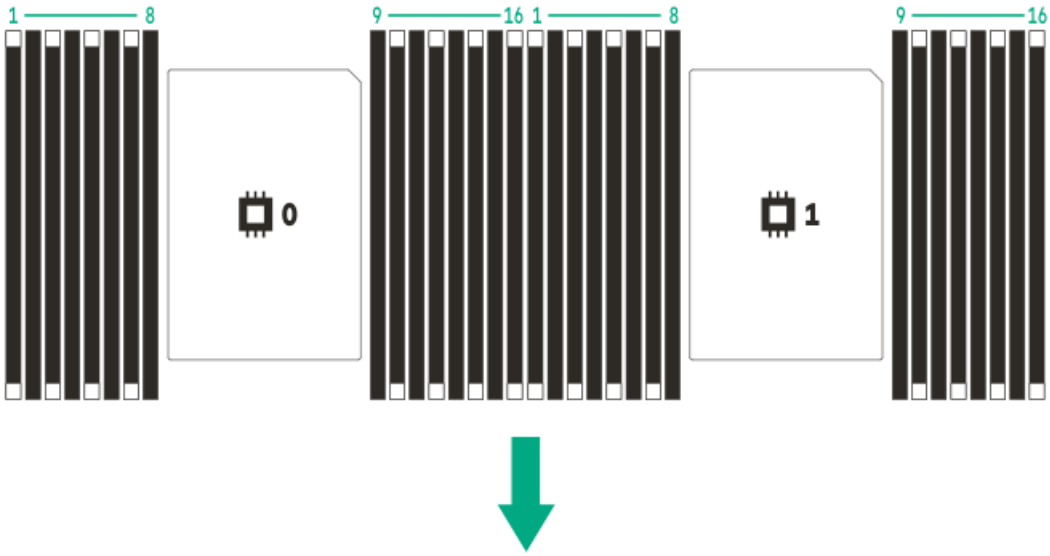


Item	Description	Example
1	Capacity*	16 GB
		32 GB
		64 GB
		96 GB
		128 GB
		256 GB
2	Rank	1R—Single rank
		2R—Dual rank
		4R—Quad rank
3	Data width on DRAM	x4—4-bit
		x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed*	6400 MT/s
6	CAS latency	B—42-42-42
7	DIMM type	R—RDIMM (registered)

* 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.

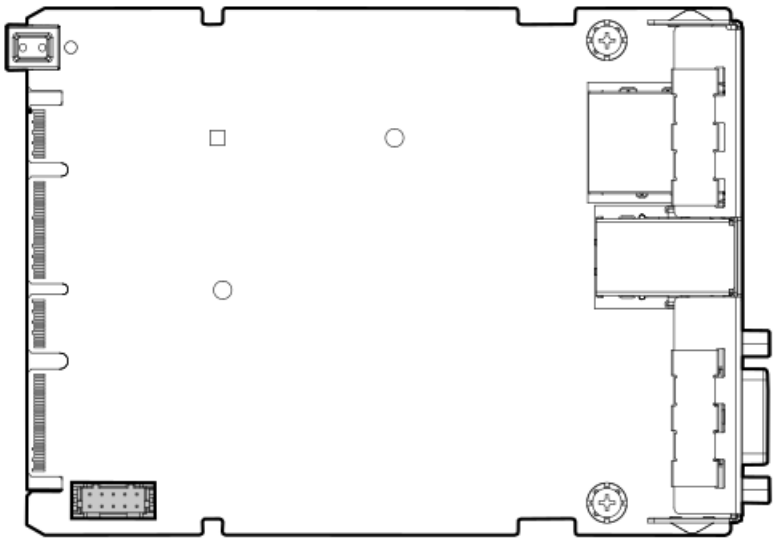


Datacenter Secure Control Module components

This server is a Datacenter Modular Hardware System (DC-MHS)-based product.

- The processors and DIMMs on the system board provide the compute function. The system board serves as the Host Processor Module (HPM).
- The iLO and the Trusted Platform Module 2.0 (TPM 2.0) chipsets embedded on the Datacenter Secure Control Module (DC-SCM) provide this server's manageability and security functions. This module also has the connector for the serial port option.

Depending on the SKU number, this server supports specific HPM and DC-SCM version.



Riser board components

This servers support two general types of PCIe risers:

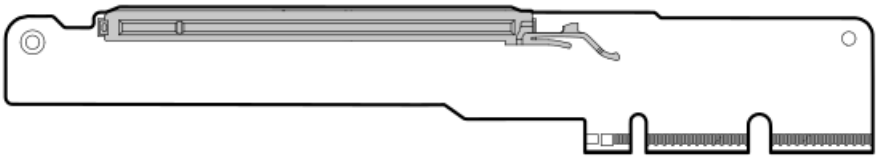
- One-slot PCIe x16 base riser—This riser is a board-only riser that is directly installed on the riser connector on the system board. This riser type is used as the base riser in the riser cage as primary riser slot 3 and secondary riser slot 6.
- Two-slot PCIe x16 captive riser—This riser type has its signal cable option that attaches a PCIe slot. Each riser supports up to two slots.

  The PCIe x16 captive riser is installed in different locations:

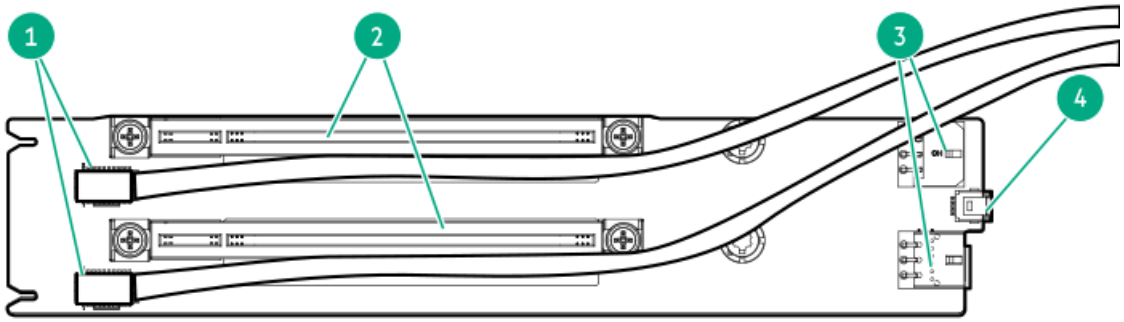
  - GPU cage
  - Riser cage

One-slot PCIe x16 base riser components

Both slots are PCIe 5 x16 (16, 8, 4, 2) and support full-height, half-length, or half-height, half-length (low-profile) expansion cards.



Two-slot PCIe x16 captive riser



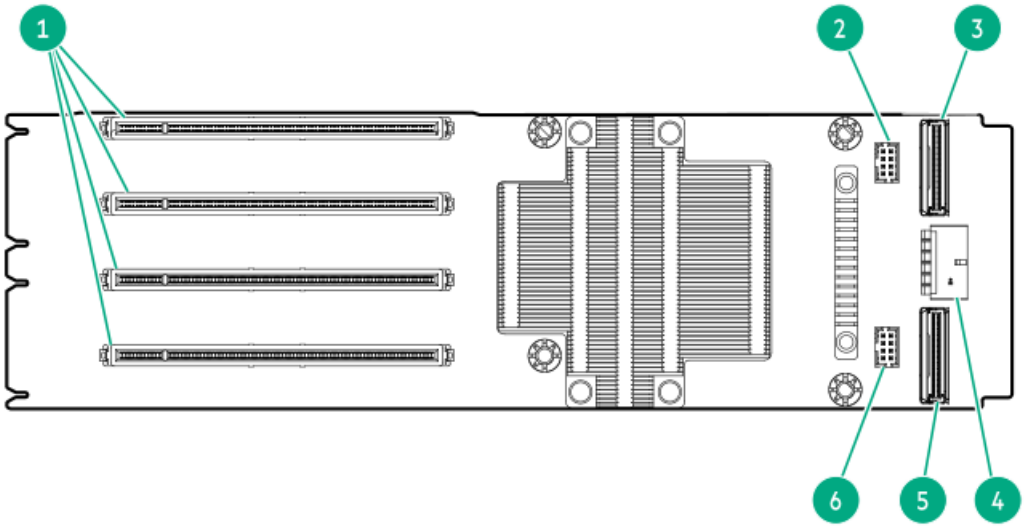
Item	Description	Supported form factors
1	PCIe slots sideband signal connectors	—

2	PCIe5 x16 (16, 8, 4, 2)	• In the GPU cage: Double-width, full-height, full-length
		• On the riser cage:
		  ◦ Full-height, half-length
		  ◦ Half-height, half-length (low-profile)

3	Captive riser power connectors	—
4	GPU sideband connector	—

Four-slot PCIe x16 switch board components

The four-slot PCIe x16 switch board is installed in the GPU cage.



Item	Description
1	PCIe5 x16 (16, 8, 4, 1) slots
2	PCIe switch board cascade signal connector
3	Upstream secondary MCIO
4	PCIe switch board power connector
5	Upstream primary MCIO
6	PCIe switch board sideband signal connector

GPU riser slot numbering

Subtopics

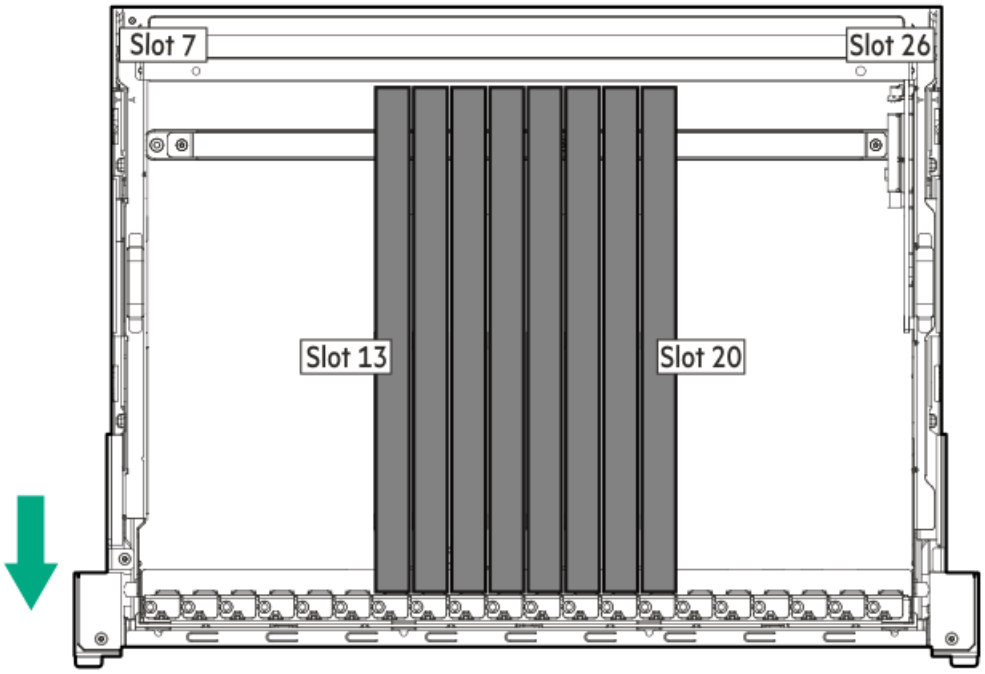
Single-width GPU riser slot numbering
Double-width GPU riser slot numbering

Single-width GPU riser slot numbering

All riser slots are PCIe5 x16 (16, 8, 4, 2) and are rated for a maximum power draw of 75 W each.

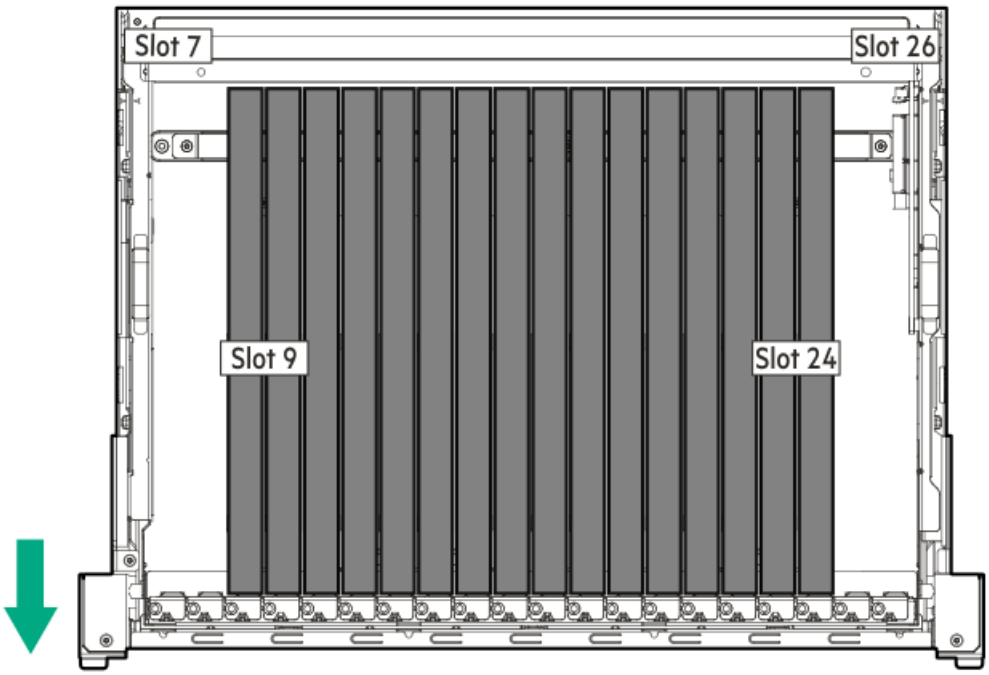
8 single-width GPU configuration

- The GPU cage has two four-slot PCIe x16 switch boards. Each switch board supports four GPUs.
- The GPUs are located in slots 13–20.



16 single-width GPU configuration

- The GPU cage has four four-slot PCIe x16 switch boards. Each switch board supports four GPUs.
- The GPUs are located in slots 9–24.

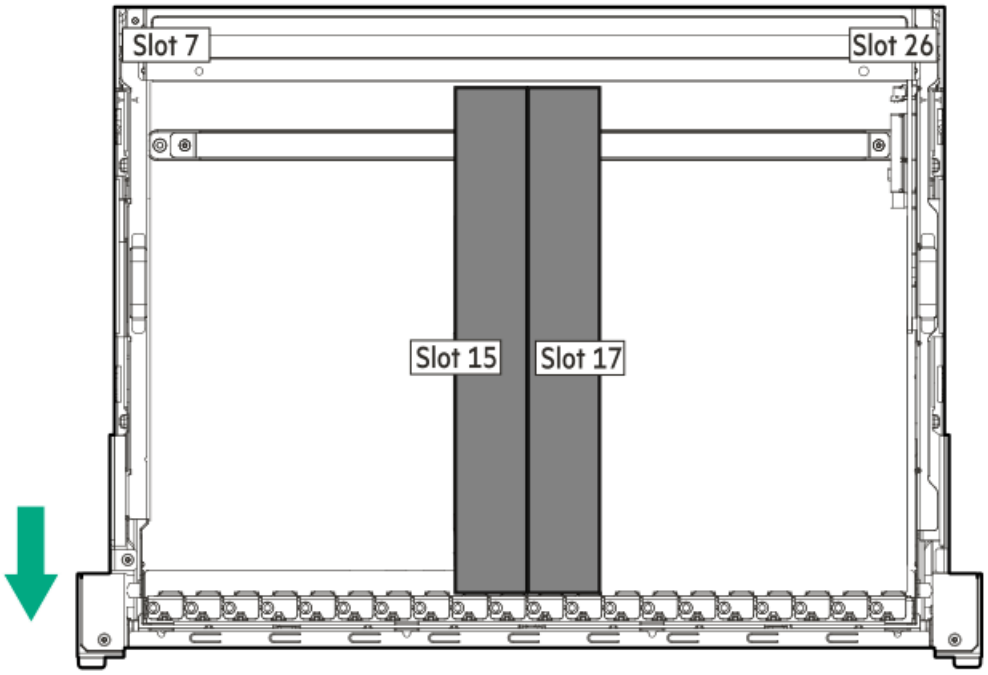


Double-width GPU riser slot numbering

All riser slots are PCIe5 x16 (16, 8, 4, 2) and are rated for a maximum power draw of 75 W each.

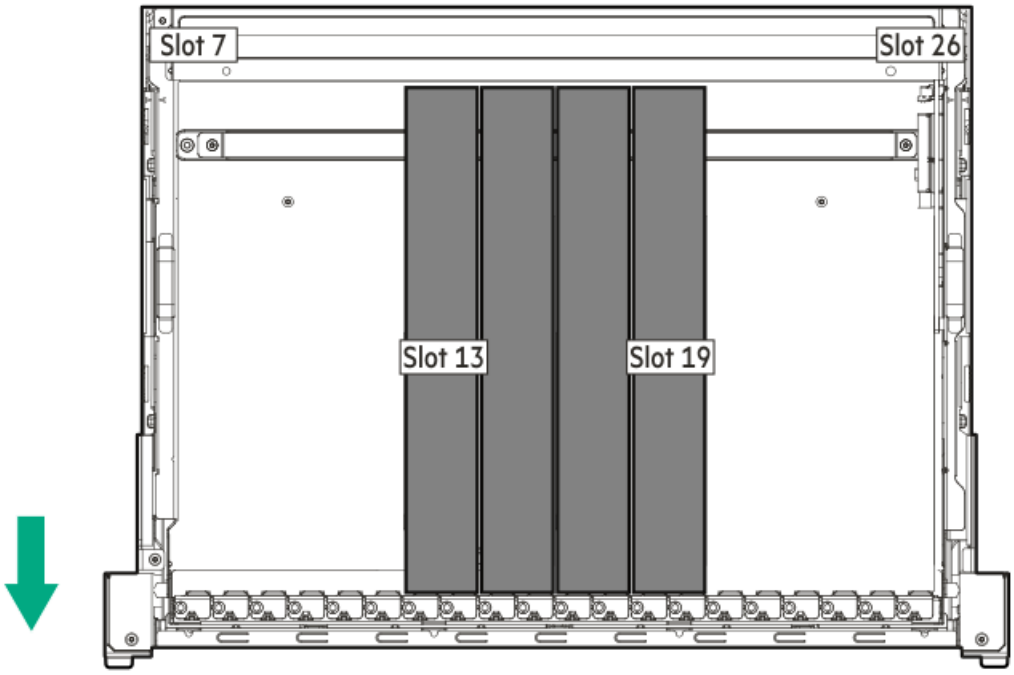
2 double-width GPU configuration

- The GPU cage has two PCIe x16 captive risers. Each captive riser supports one GPU.
- The GPUs are installed in slots 15 and 17.



4 double-width GPU configuration

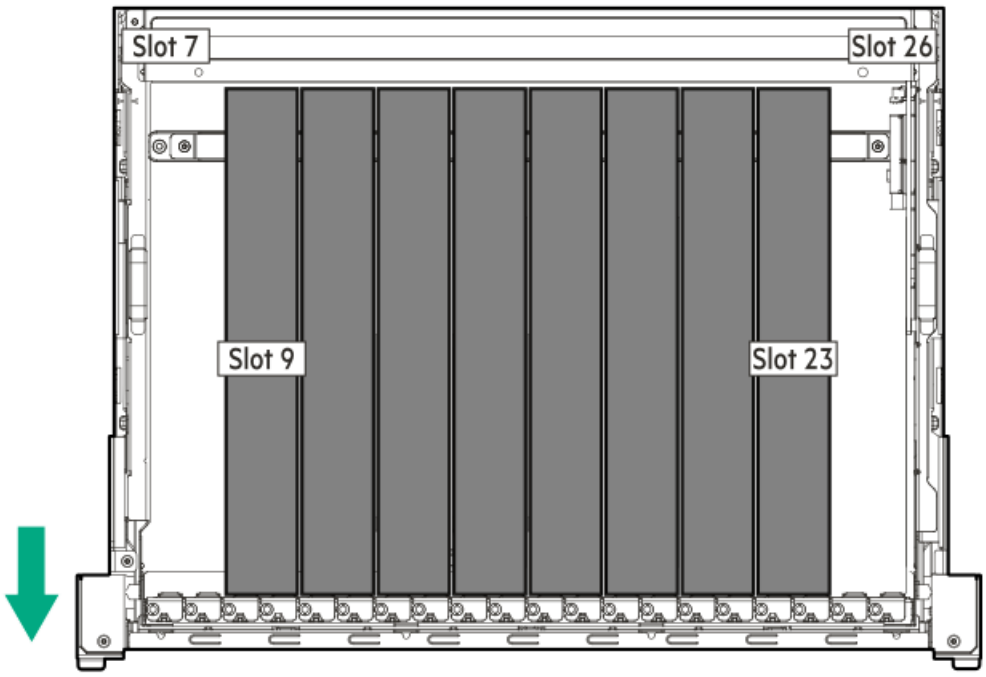
- The GPU cage has four PCIe x16 captive risers. Each captive riser supports one GPU.
- The GPUs are installed in slots 13, 15, 17, and 19.



8 double-width GPU configuration

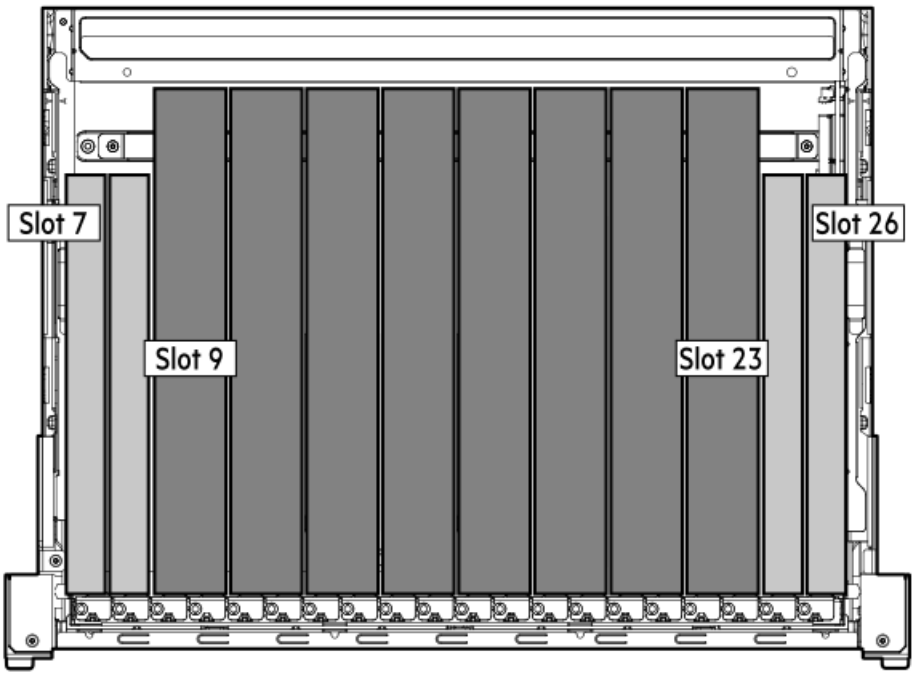
- The GPU cage has four four-slot PCIe x16 switch boards. Each switch board supports two GPUs.

- The GPUs are installed in slots 9, 11, 13, 15, 17, 19, 21, and 23.



8 double-width GPU and front NIC configuration

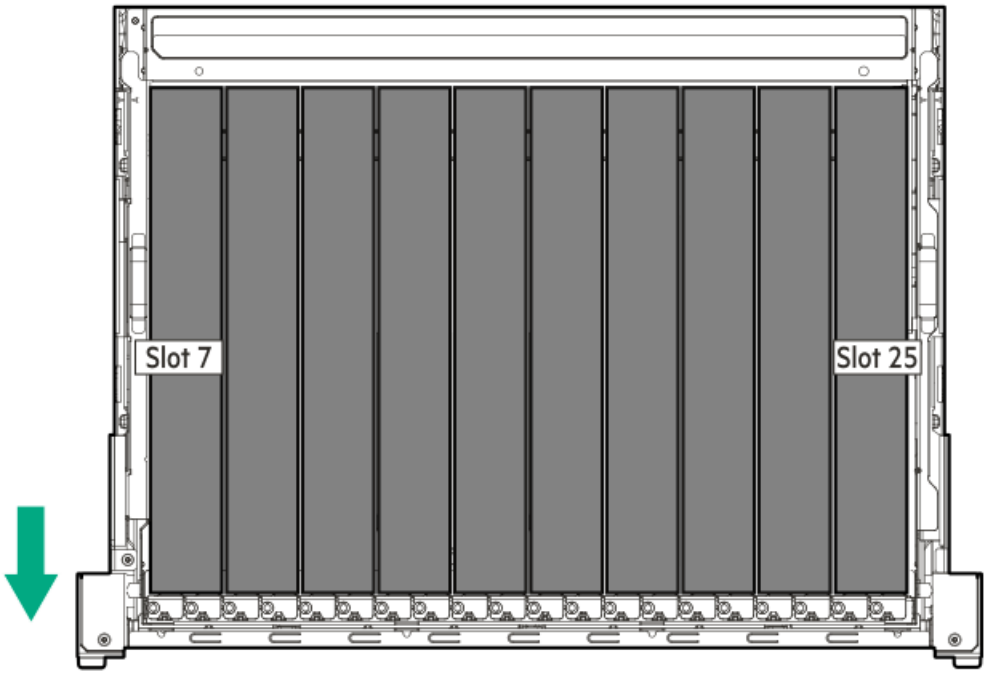
- The GPU cage has four four-slot PCIe x16 switch boards and two PCIe x16 captive risers.
- Each switch board supports two GPUs. The GPUs are installed in slots 9, 11, 13, 15, 17, 19, 21, and 23.
- The captive riser slots 7, 8, 25, and 26 support the installation of a PCIe expansion card.



10 double-width GPU configuration

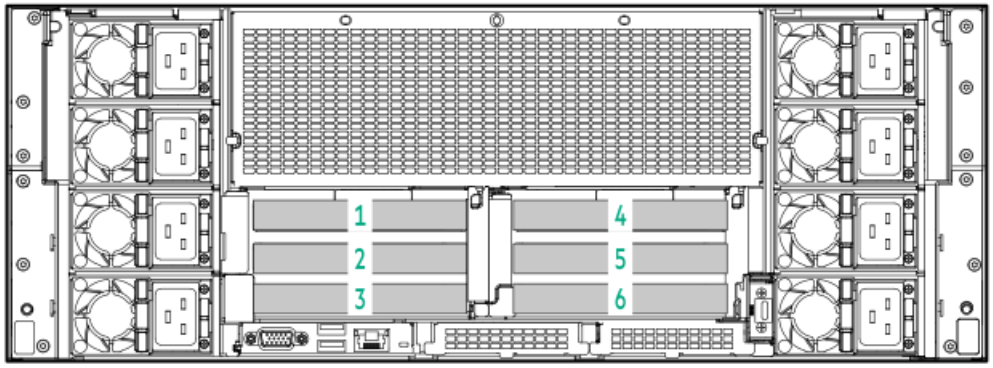
- The GPU cage has four four-slot PCIe x16 switch boards and two PCIe x16 captive risers.

- Each switch board supports two GPUs, and each captive riser support one GPU.
- The GPUs are installed in slots 7, 9, 11, 13, 15, 17, 19, 21, 23, and 25.



PCIe riser slot numbering

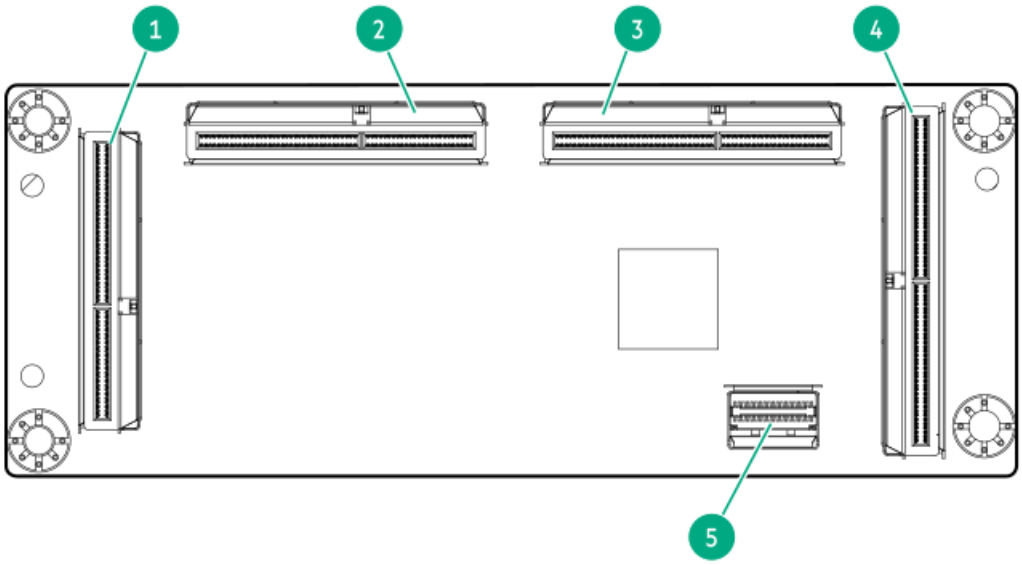
All riser slots are PCIe5 x16 (16, 8, 4, 2) and are rated for a maximum power draw of 75 W each.



Slot number	Location	Description	Supported form factors
1	Primary riser cage	Two-slot PCIe x16 captive riser	• Full-height, half-length • Half-height, half-length (low-profile)
2			
3		One-slot PCIe x16 base riser	
4	Secondary riser cage	Two-slot PCIe x16 captive riser	
5			
6		One-slot PCIe x16 base riser	

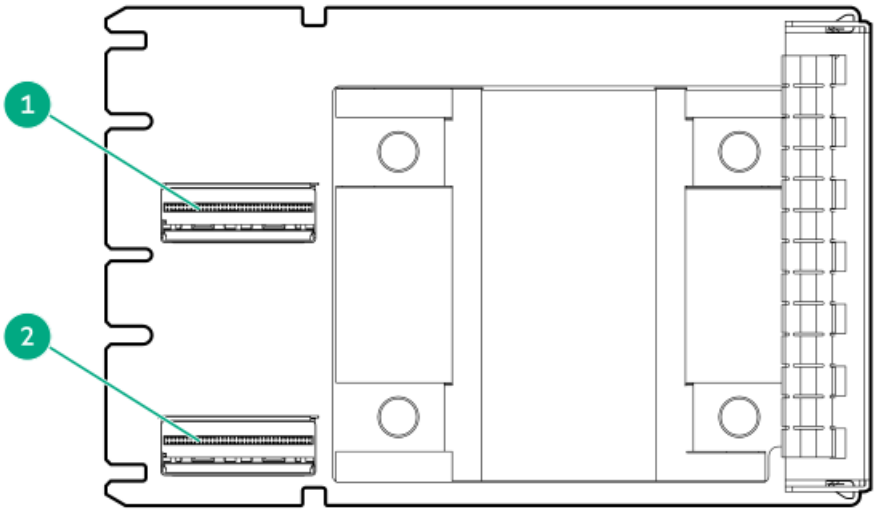
Sideband board components

All connectors on the sideband board are sideband signal connectors.



Item	Silkscreen marker
1	CB3 SB
2	CB2 SB
3	CB1 SB
4	HPM SB1
5	HPM SB2

OCP retimer card components



Item	Description
1	LP SlimSAS port 1
2	LP SlimSAS port 2 [1]

[1] Not for use in this server.

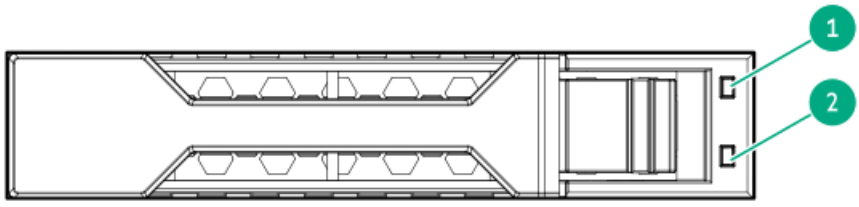
HPE Basic Drive LED definitions

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.

SFF basic drive carrier

The SFF basic drive carrier supports hot-plug U.3 PCIe4 NVMe drives.

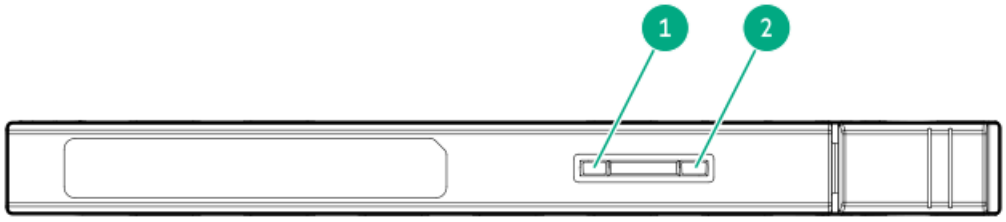


Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has 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.
		Flashing green (1 flash per second)	The drive is doing one of the following: • Rebuilding or performing a RAID • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

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.
		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

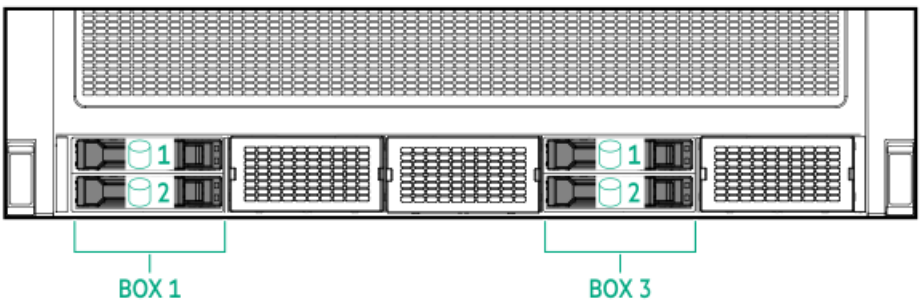
SFF drive bay numbering
E3.S drive bay numbering

SFF drive bay numbering

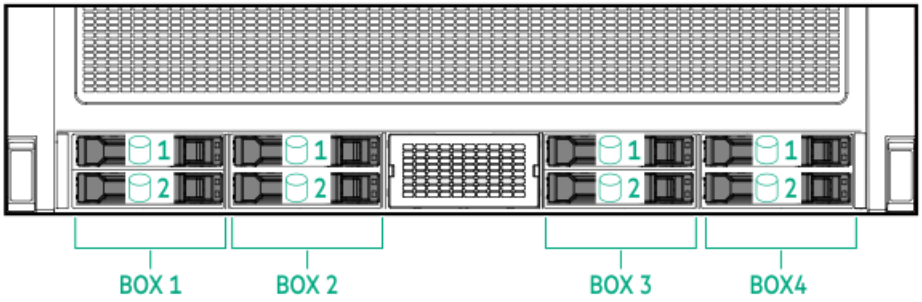
The SFF hot-plug drive box uses the 2 SFF 24G x4 U.3 NVMe / SAS UBM10 BC drive backplane.

For more information on the drive backplane description, see Drive backplane naming.

4 SFF drive bay numbering



8 SFF drive bay numbering

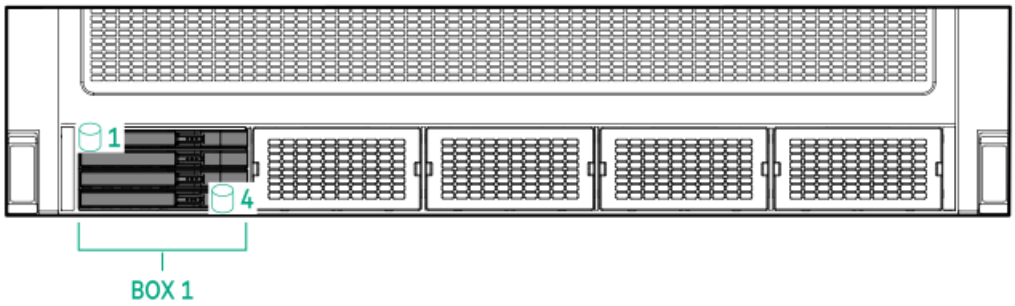


E3.S drive bay numbering

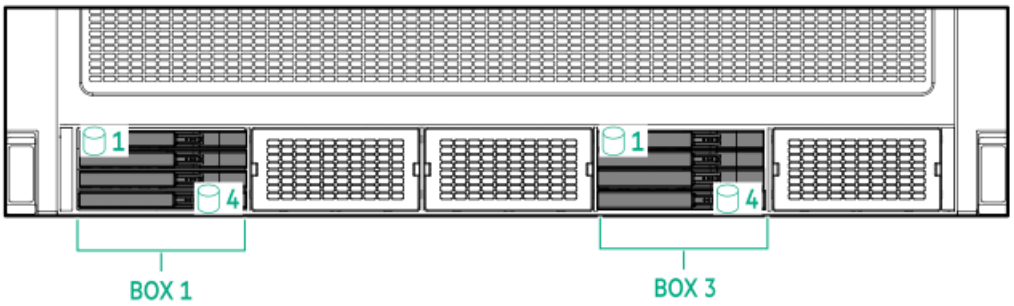
The E3.S hot-plug drive box uses the 4 E3.S 32G x4 NVMe UBM10 EC drive backplane.

For more information on the drive backplane description, see Drive backplane naming.

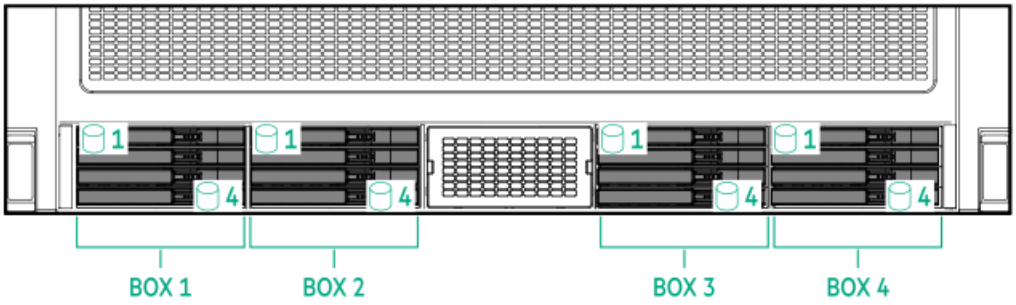
4 E3.S drive bay numbering



8 E3.S drive bay numbering



16 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:

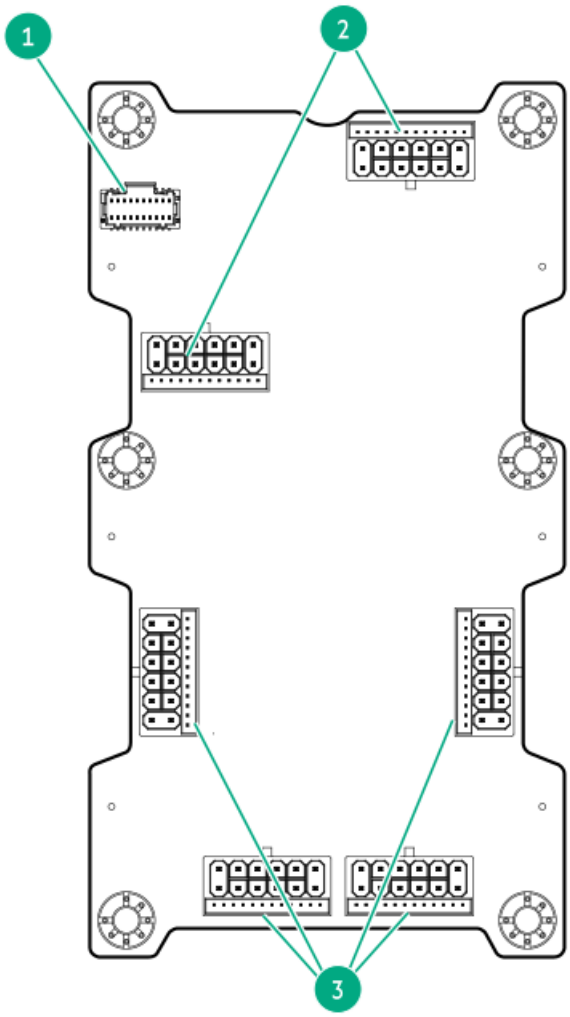
- Drive backplane support, see Drive bay numbering.
- Drive backplane cabling, see Storage cabling.

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

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

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

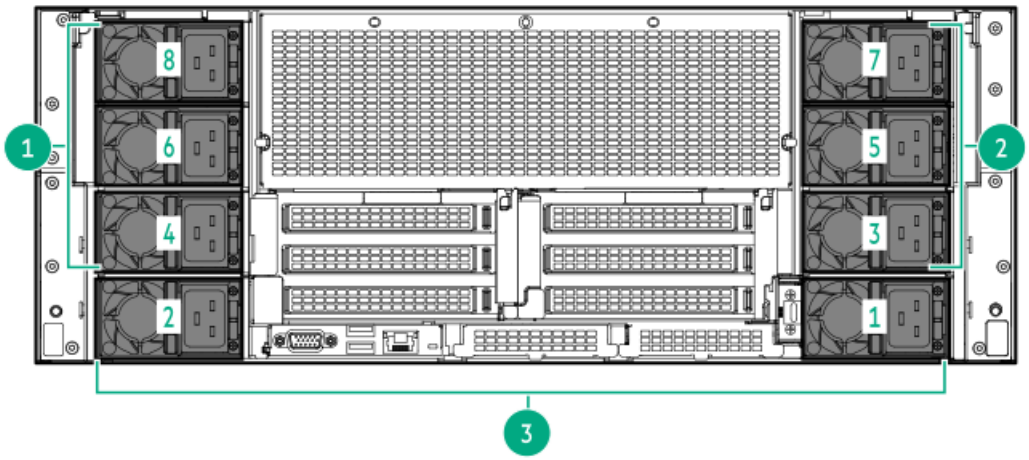
PDB components



Item	Description
1	PDB signal connector
2	M-PIC power connectors for switch board
3	M-PIC power connectors for GPU

Power supply numbering

The server supports five (bays 1, 2, 3, 5, and 7) or eight (bays 1-8) modular hardware system common redundant power supplies (M-CRPS) assigned multiple power domains.



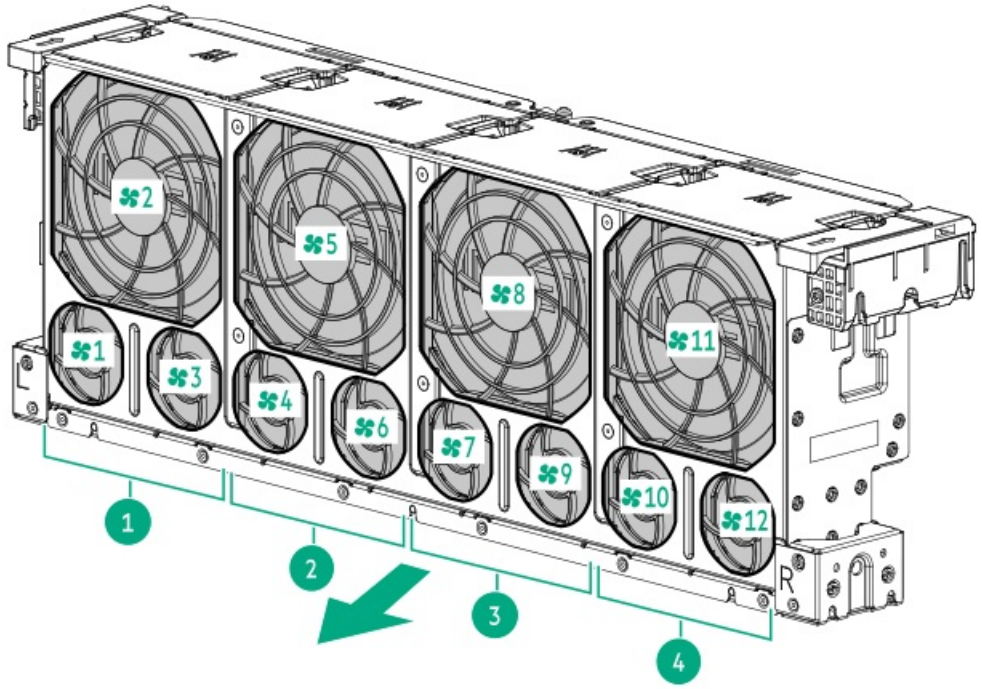
Item	Domain description	Power supply number
1	GPU domain 2 (optional)	• M-CRPS 4 • M-CRPS 6 • M-CRPS 8
2	GPU domain 1	• M-CRPS 3 • M-CRPS 5 • M-CRPS 7
3	System domain	• M-CRPS 1 • M-CRPS 2

Internal fan numbering

To provide sufficient airflow to the system, the server has four internal fan modules. The fan modules can either be 90 W performance system fan modules (P74095-B21) or 110 W max system fan modules (P80098-B21). Mixed fan module configuration is not supported.

Each fan module has one 92 x 56 mm dual-rotor fan and two 40 x 28 mm single-rotor fans.

The arrow points to the front of the server.



Item	Description
1	Fan module 1
2	Fan module 2
3	Fan module 3
4	Fan module 4

Subtopics

Internal fan mode behavior

Internal fan mode behavior

The internal fan modules provide redundant fan support. In redundant fan mode, if a fan rotor fails:

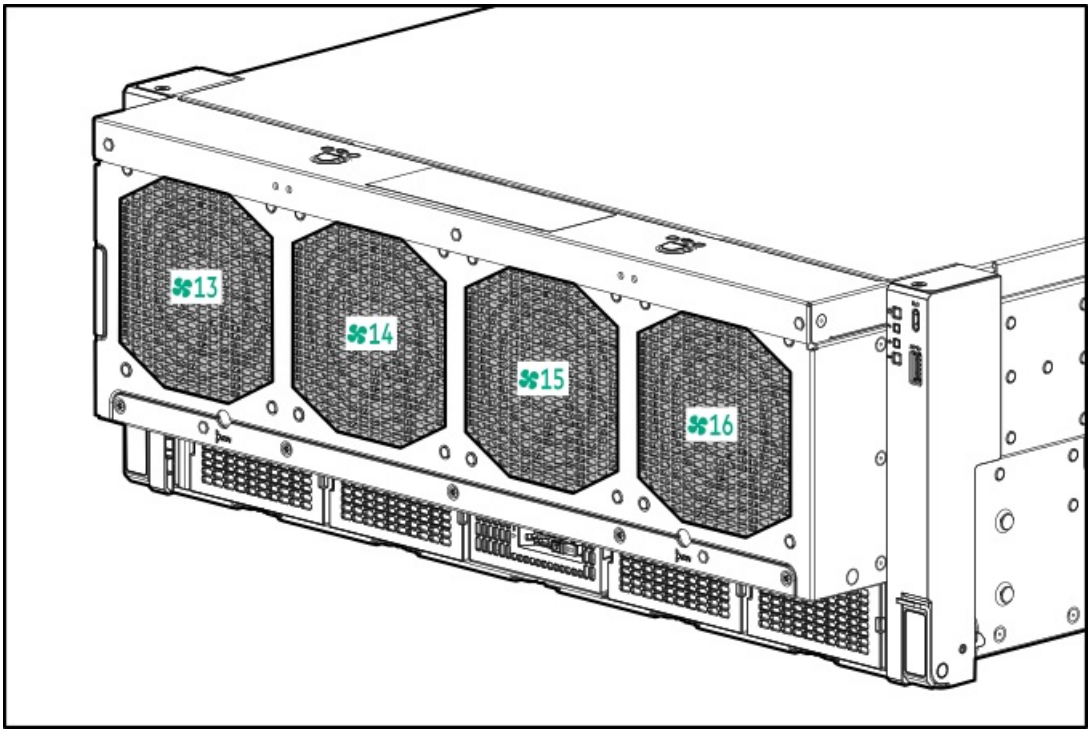
- The system switches to nonredundant fan mode. The system continues to operate in this mode.
- The system health LED flashes amber.

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

External front fan numbering

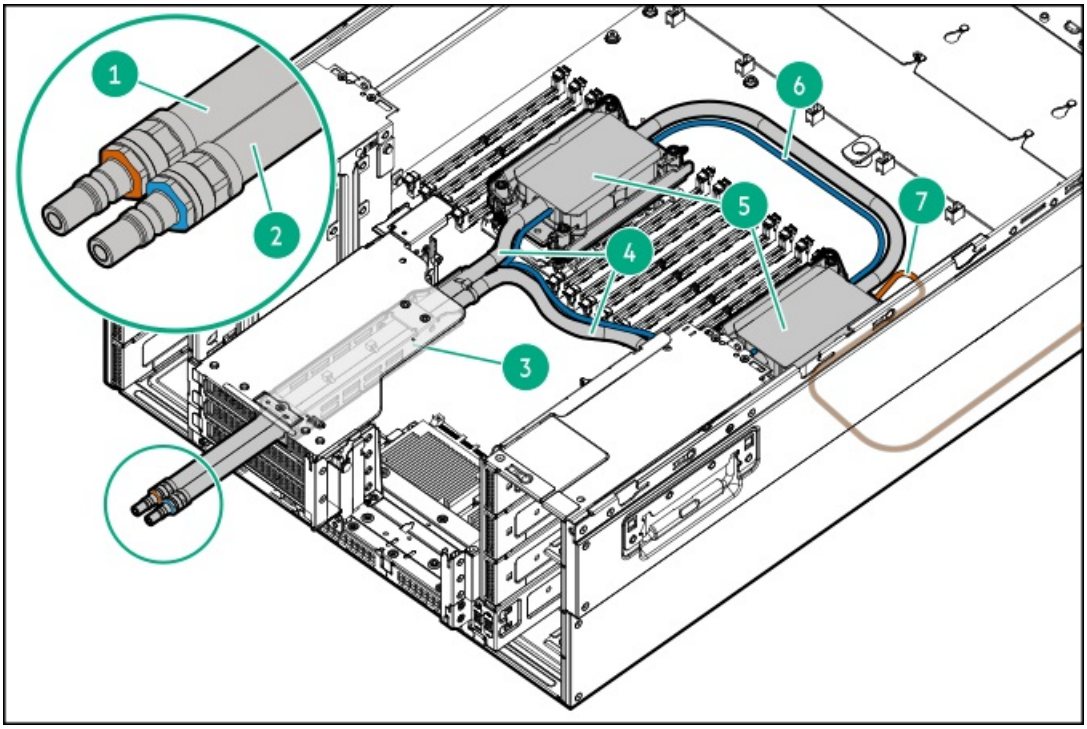
To support high power server configurations, the external front fan cage option is required. This cage supports four fans.

The front fan cage does not support redundant fan mode. If a fan fails, the system health LED flashes red, and the operating system gracefully shuts down.



Direct liquid cooling module components

For more information, see the Direct liquid cooling guidelines.



Item	Description
1	Coolant return quick connector
2	Coolant supply quick connector
3	DLC hose holder
4	Coolant hoses
5	Cold plates
6	Coolant leakage detection cable
7	Power and signal cable

Subtopics

Direct liquid cooling guidelines

Direct liquid cooling guidelines

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

In this server, the DLC module is available for server models that use the system ROM version U72.

Coolant leakage detection

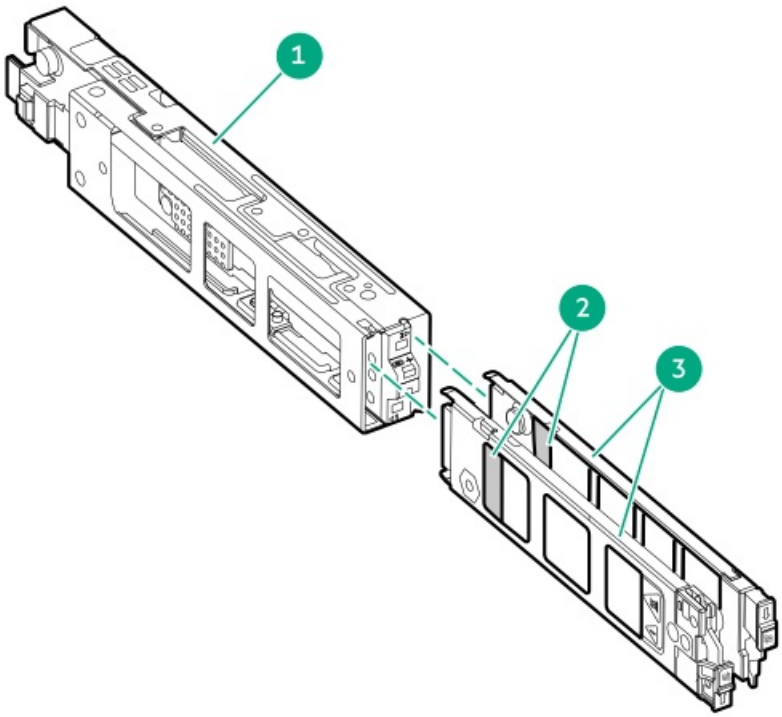
The DLC module coolant is fed into the hoses through the rack manifolds. If a coolant leakage occurs, the system events occur:

- iLO automatically detects the leakage and:
  - Sends an iLO REST alert and Simple Network Management Protocol (SNMP) trap
  - Records the event in the Integrated Management Log (IML)
- The system initiates an immediate shutdown. The system will not power on until the leakage event is cleared, and a REST API operation for system recovery is performed.
- Follow the recommended procedure in Appendix I: Server coolant spill response of the server maintenance guide (**https://www.hpe.com/info/dl380agen12-msg**).

Storage temperature

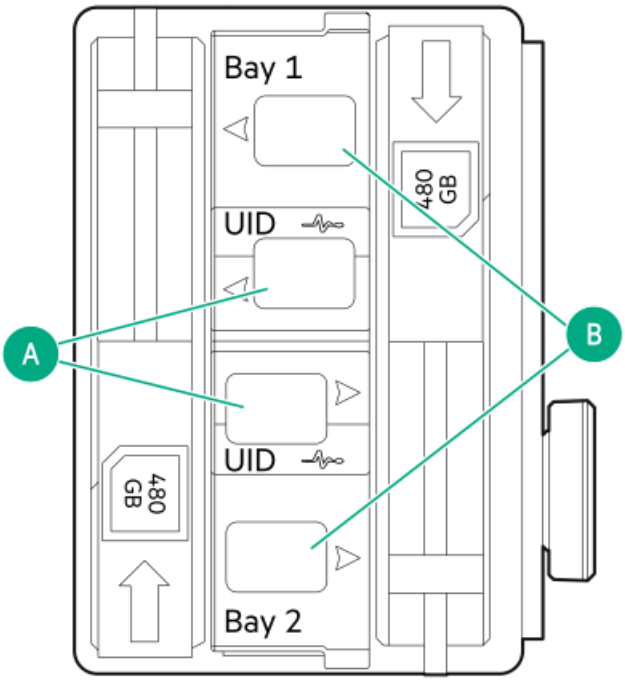
When storing a server with a DLC module, maintain a temperature of -10°C to 60°C (14°F to 140°F). Allowing the DLC module coolant to freeze can damage its metallic microstructures.

HPE NS204i-u Boot Device V2 components



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

HPE NS204i-u Boot Device V2 LED definitions



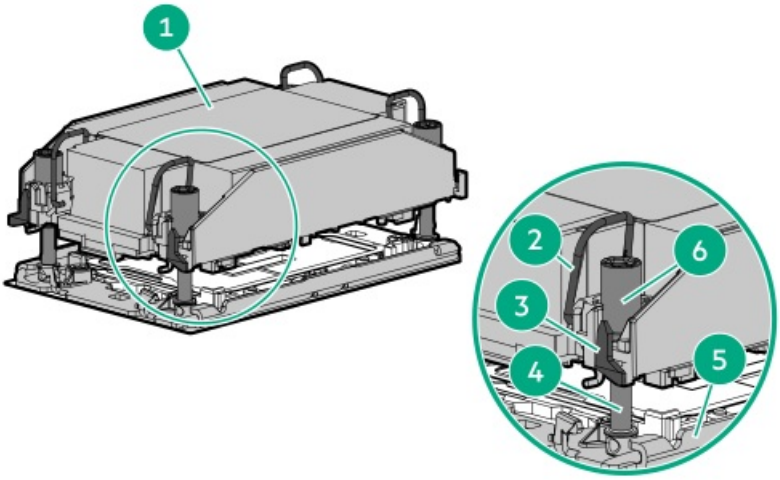
NOTE

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

Item	LED	Status	Definition
A	Fault or Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally.
		Flashing amber or blue (one flash per second)	Drive has failed, or a predictive failure alert is received for the drive.
		Flashing amber (one flash per second)	Drive predictive failure alert is received. Replace the drive as soon as possible.
		Off	Drive is operating normally and is not identified by any application.
B	Online/Activity	Solid green	Drive is online and has no activity.
		Flashing green (one flash per second)	Drive is doing one of the following: • Rebuilding or performing a RAID • Erasing
		Flashing green (4 flashes per second)	Drive is operating normally and has activity.
		Off	Drive is not configured by a RAID controller.

Heatsink and processor socket components

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



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

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

Setup

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

Subtopics

HPE Installation Service
Setting up the server
Operational requirements
Rack warnings and cautions
Server warnings and cautions
Electrostatic discharge

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-docs**.
  - Use the Firmware Update option in Intelligent Provisioning—Intelligent Provisioning is a server deployment tool embedded in HPE ProLiant servers. To access Intelligent Provisioning, during the server boot process, press **F10**. For more information, see the Intelligent Provisioning user guide at **https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks**.
  - Download the Service Pack for ProLiant—SPP is a comprehensive system software and firmware update solution that is delivered as a single ISO image. This solution uses Smart Update Manager as the deployment tool.

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

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

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

- Verify that your OS or virtualization software is supported:
  https://www.hpe.com/support/Servers-Certification-Matrices
- This server supports type-o and type-p storage controller options. For storage configuration, use Intel Virtual RAID on CPU (Intel VROC). If you plan to use Intel VROC, review this important information before setting up the server .
- Read the Operational requirements for the server.
- Read the safety and compliance information:
  https://www.hpe.com/support/safety-compliance-enterpriseproducts

Procedure

1. Unbox the server and verify the contents:
   - Server
   - Power cord
   - Rackmounting 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. Install the server into the rack .
4. If the DLC is preinstalled, connect the DLC module .
5. 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 management port is connected to a secure network.

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

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

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

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

     d. In the navigation tree, click the Remote Console & Media link, and then launch a remote console.
6. Press the Power On/Standby button.

   For remote management, use the iLO virtual power button.

7. Configure the initial server setup.
8. Set up the storage.
9. Deploy an OS or virtualization software.
10. After the OS is installed, update the drivers.
11. 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 37.51 kg (82.70 lb). When all components are installed, the server can weigh up to 60.24 kg (132.80 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 37.51 kg (82.70 lb), so at least two people must lift the server into the rack together. An additional person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack.
- Adequately stabilized the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.

WARNING

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

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

WARNING

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

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

CAUTION

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

CAUTION

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

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

Server warnings and cautions

WARNING

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

WARNING

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

WARNING

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

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

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

CAUTION

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

CAUTION

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

CAUTION

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

CAUTION

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

Electrostatic discharge

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

To prevent electrostatic damage:

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

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

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

Operations

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

- Rack warnings and cautions
- Server warnings and cautions

Subtopics

iLO service port
Intel VROC support
Server UID LED
Display device setup
Trusted Platform Module 2.0
Trusted Platform Module 2.0 guidelines
System battery information

iLO service port

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

When you have physical access to a server, you can use the iLO service port to:

- 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 OS.
- Connect a host system (Windows/Mac/Linux laptop or desktop) using either a standard USB Type A-to-Type C cable or USB Type C-to-Type C cable to access the:
  - iLO web interface
  - Remote console
  - iLO RESTful API
  - CLI

When you use the iLO service port:

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

  You can also retrieve the iLO service port status by using a REST client and the iLO RESTful API.
- You cannot use the iLO service port to boot any device within the server, or the server itself.
- You cannot access the server by connecting to the iLO service port.
- You cannot access the connected device from the server.

For more information about the iLO service port, see the iLO user guide:

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

Intel VROC support

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

- Intel VROC provides RAID support for direct attached NVMe SSD.

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

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

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

For more information on Intel VROC features and configuration, see Configuring storage controllers.

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.

Subtopics

Viewing the Server Health Summary

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.

Display device setup

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

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

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

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 DC-SCM.

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**).

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.

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.**

Hardware options

Subtopics

Hewlett Packard Enterprise product QuickSpecs
Hardware option installation guidelines
Pre-installation procedures
Post-installation procedures
Cooling
Drives
Energy packs
GPUs
Management
Memory
Networking
OS boot device
Power supplies
Processors and heatsinks
Rack mounting options
Riser
Security
Storage
Storage controllers

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

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.

Pre-installation procedures

Subtopics

Server data backup
Power down the server
Extend the server out of the rack
Remove the front bezel
Remove the server from the rack
Remove the power supply
Remove the access panel
Remove the GPU
Remove the GPU cage
Lift and hold the GPU cage
Remove the front vented panel
Remove the air baffle
Remove the internal fan cage
Remove the internal fan cable assembly
Remove the cable trough cover
Remove the cable trough

Remove the rear vented panel
Remove the riser cage

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

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.
  This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

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

Extend the server out of the rack

Prerequisites

- 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.

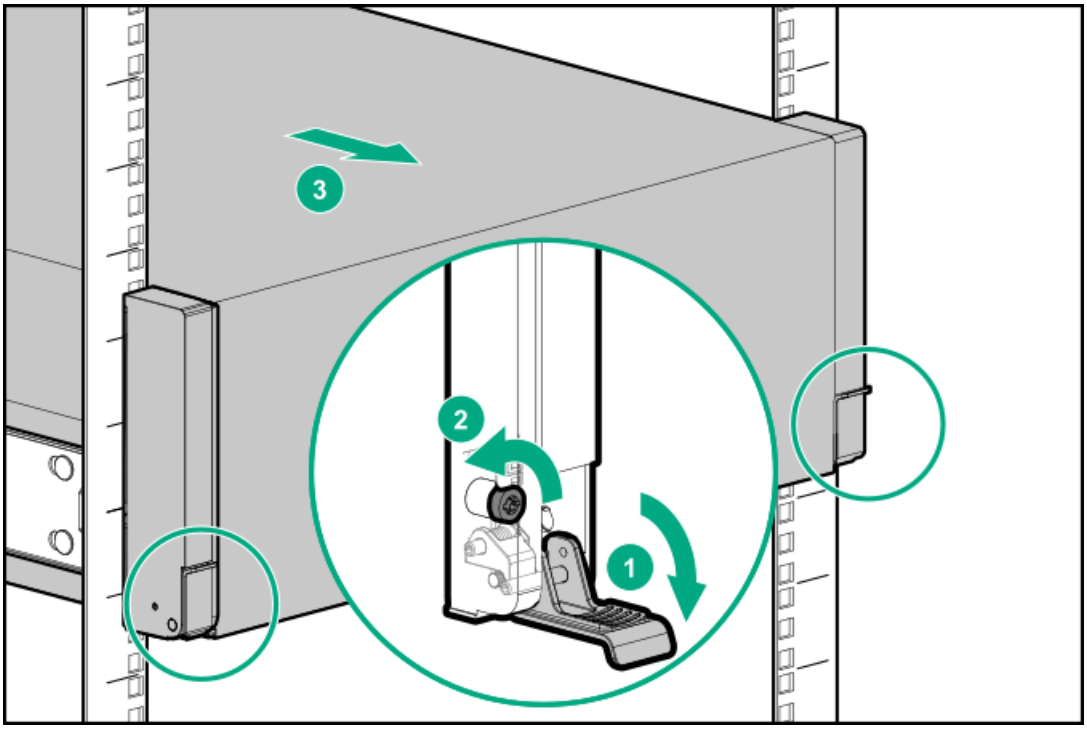
About this task

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

If needed, loosen the shipping screws, and then use the chassis ear latches to slide the server out of the rack until it is fully extended.



Remove the front bezel

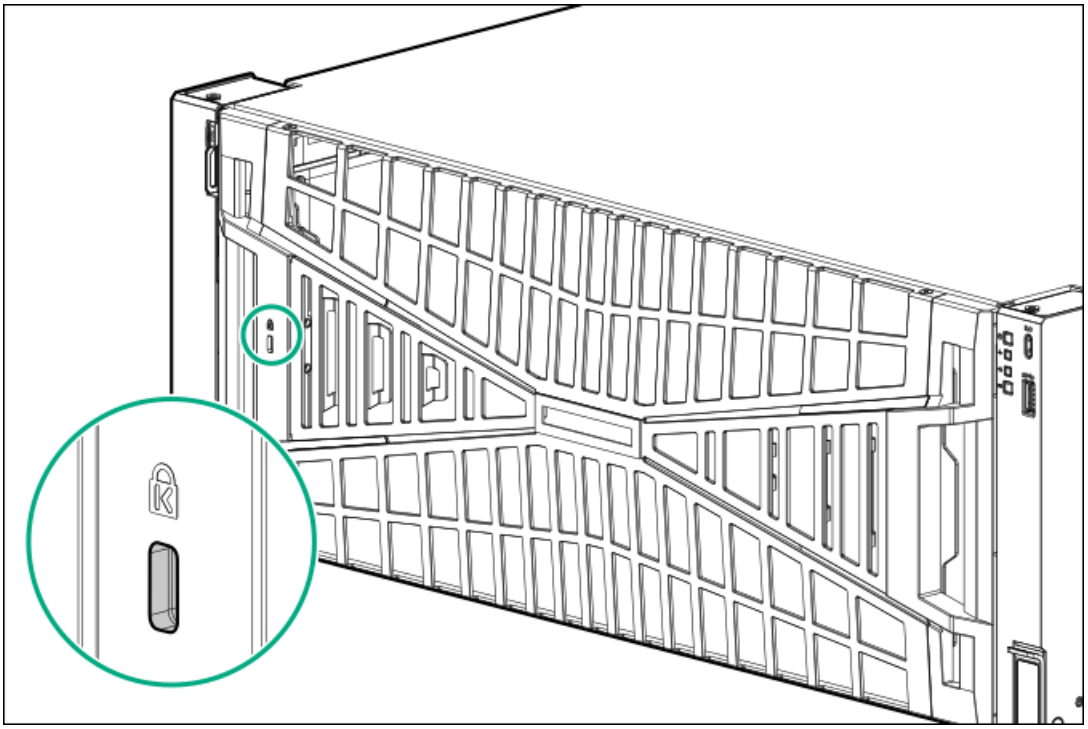
About this task

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.

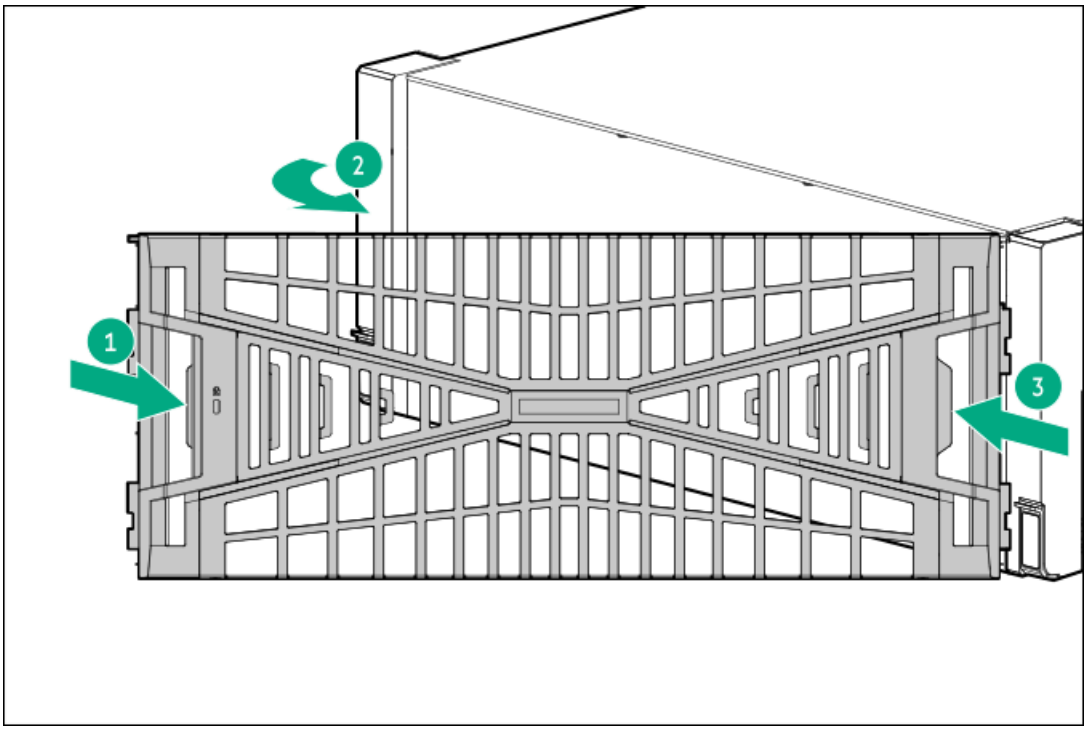
Procedure

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 the server from the rack

Prerequisites

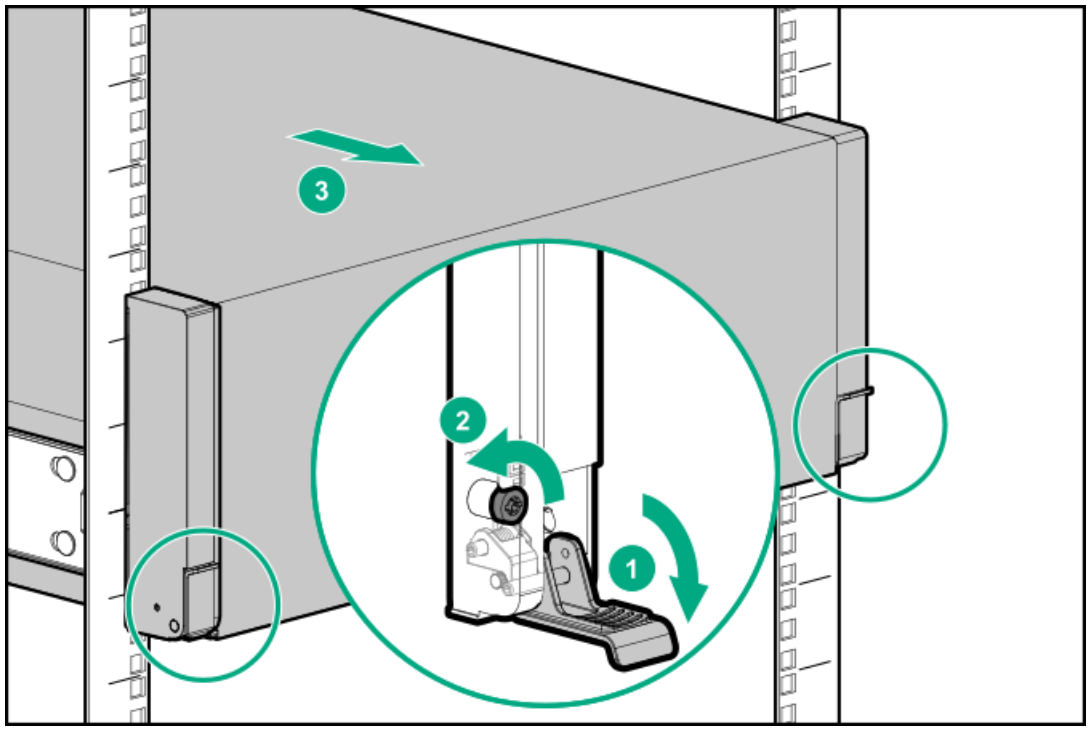
- Get help to lift and stabilize the server during removal from the rack. **If the server is installed higher than chest level, additional two**

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

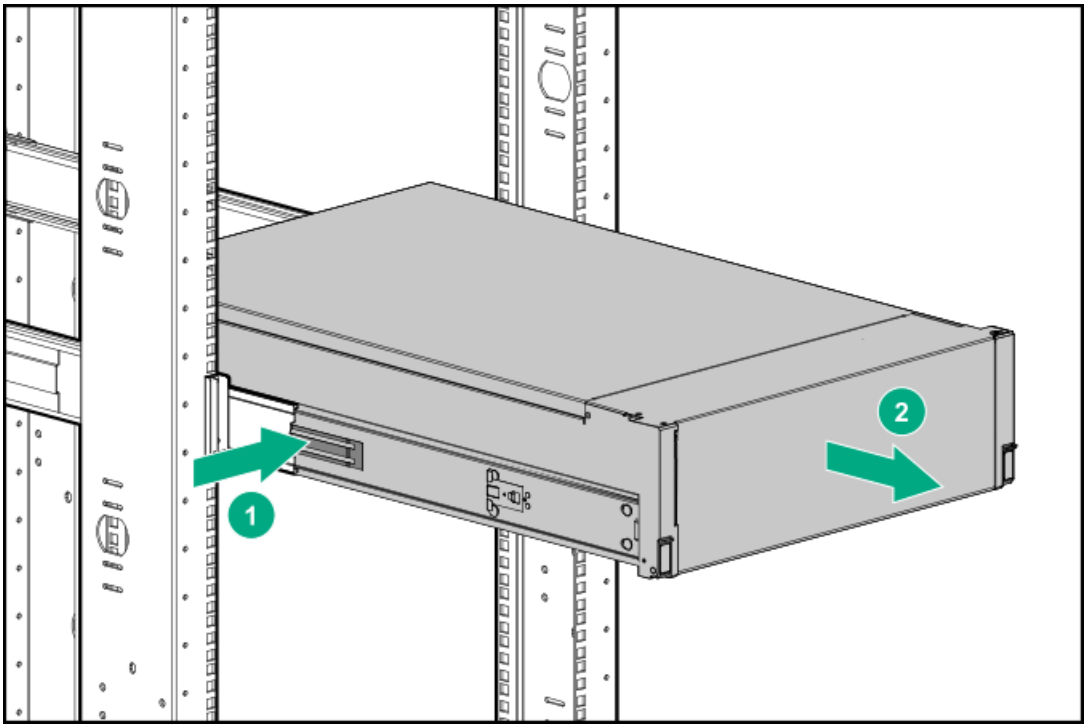
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If needed, loosen the shipping screws, and then use the chassis ear latches to slide the server out of the rack until it is fully extended.



5. Press and hold the rear-end rail-release latches, and then slide the server completely out of the rack.

WARNING

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



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

Remove the power supply

About this task

WARNING

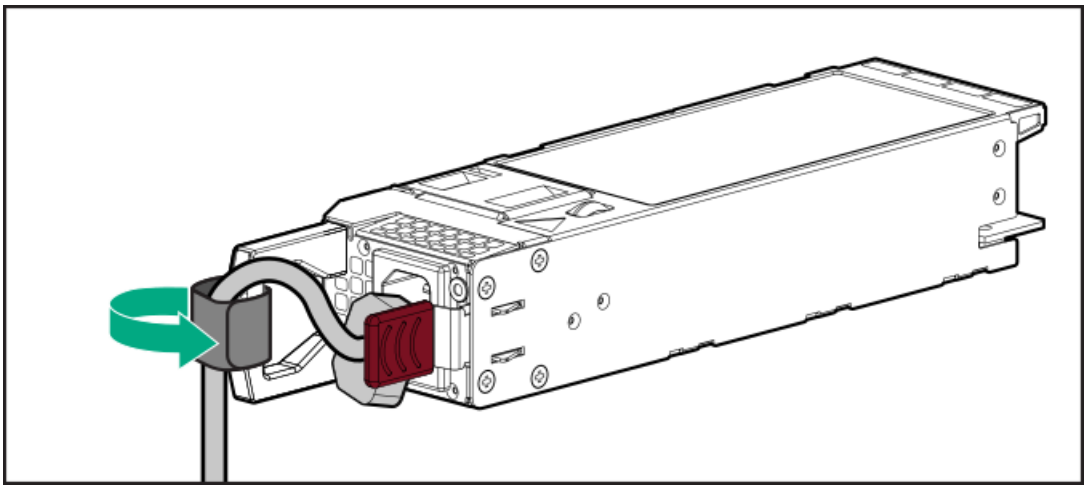
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

CAUTION

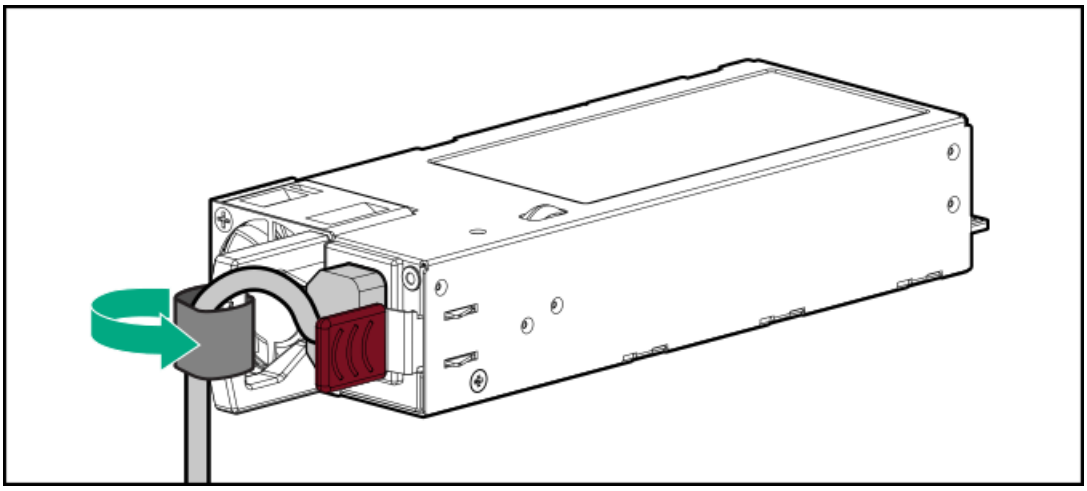
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

1. Power down the server.
2. Remove the power supply:
   a. Release the power cords, wires, and cables from the strain relief strap.
      - 60-mm M-CRPS

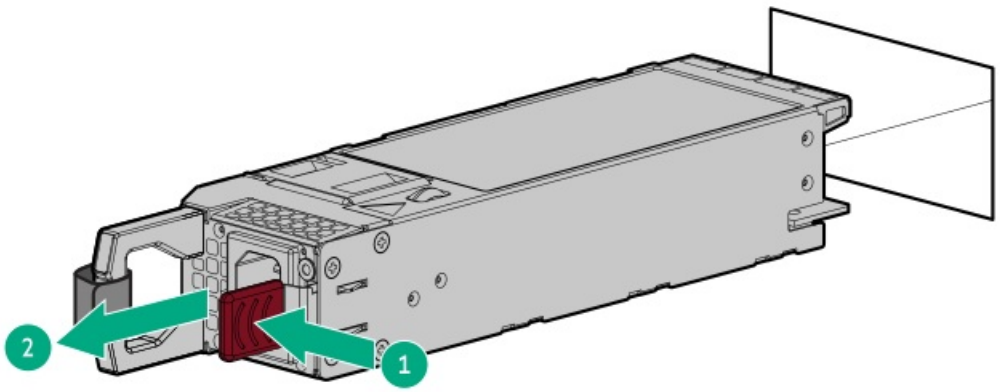


- 73.5-mm M-CRPS

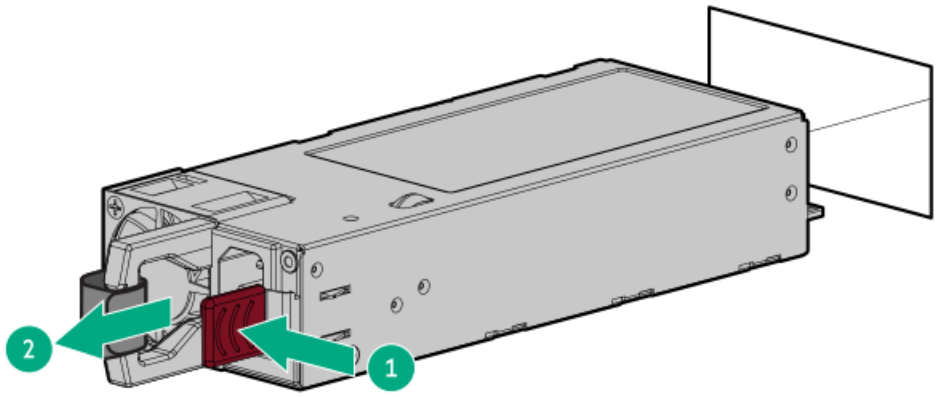


b. Press and hold the release latch, and then remove the power supply.

- 60-mm M-CRPS



- 73.5-mm M-CRPS



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:

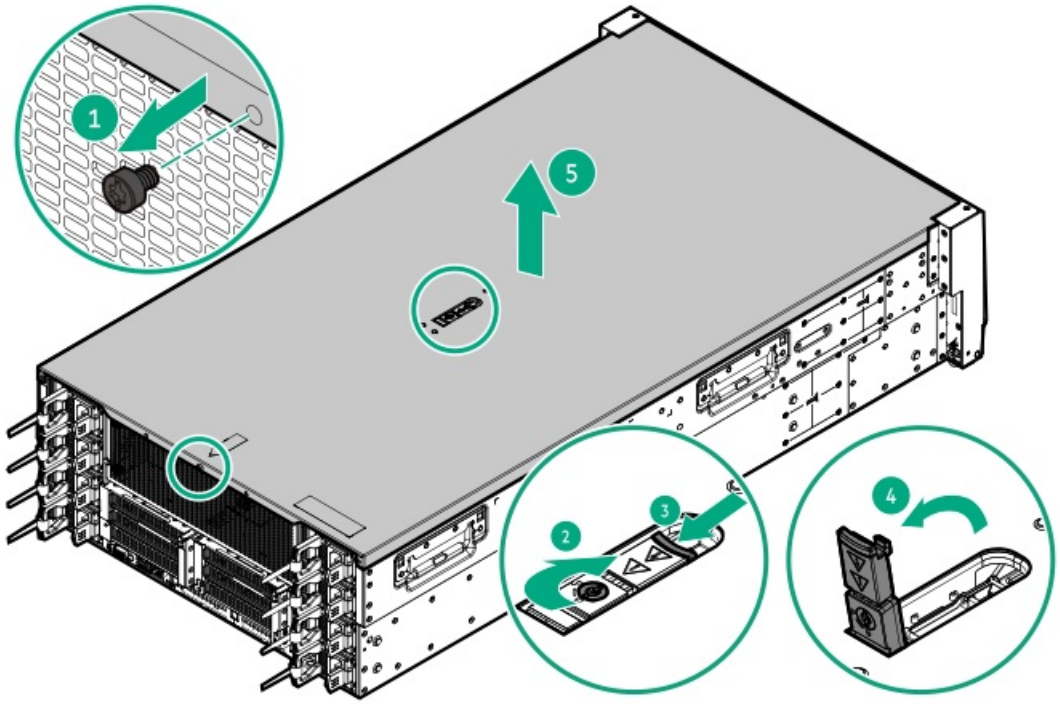
- The health LED flashes amber.
- The operating system gracefully shuts down.

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. Remove the access panel screw.
   b. If necessary, unlock the access panel latch.
   c. To disengage the access panel from the chassis, press the release button and pull up the latch.
   d. Lift the access panel.



Remove the GPU

Prerequisites

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

About this task

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

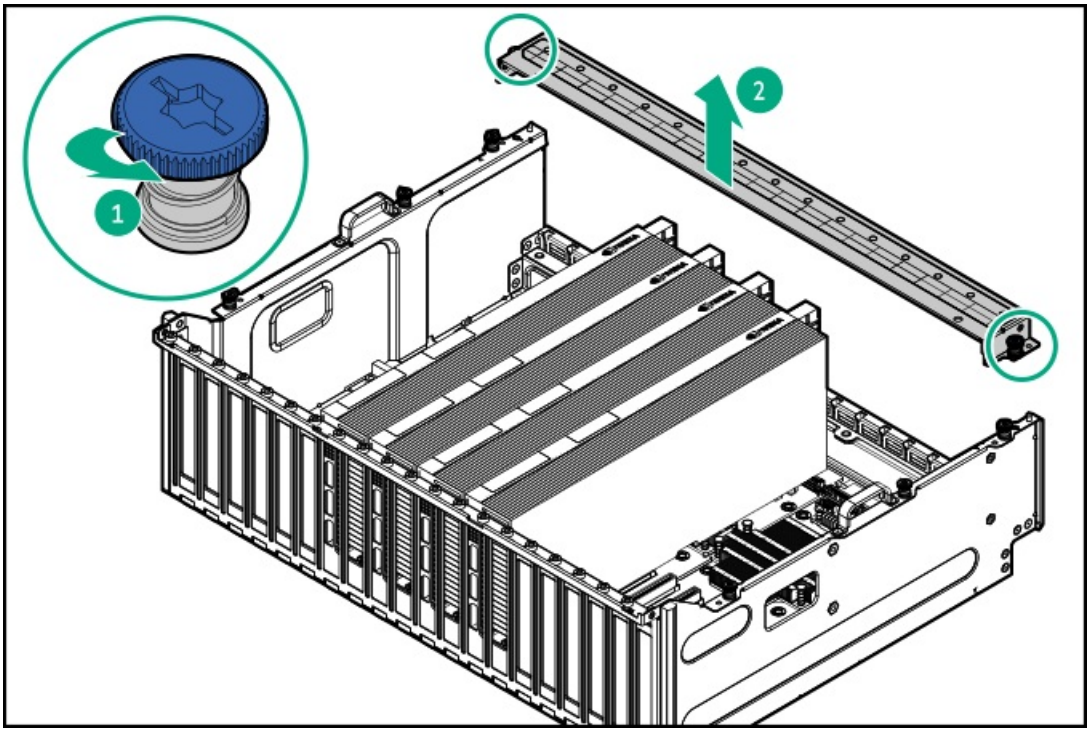
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

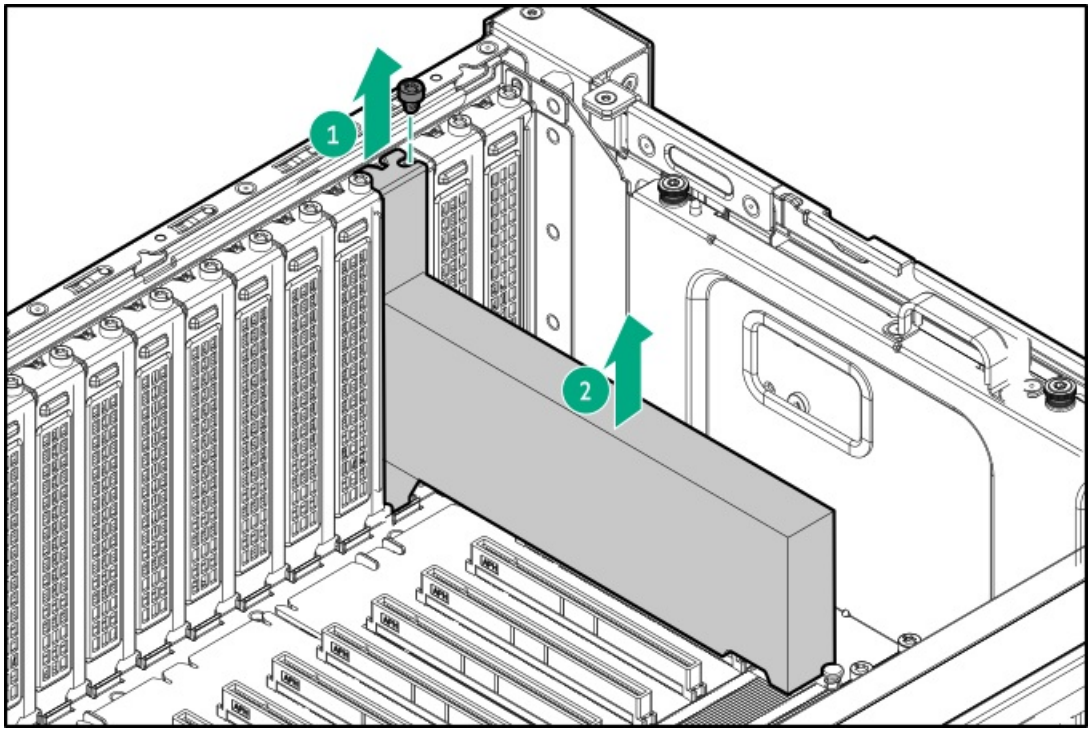
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

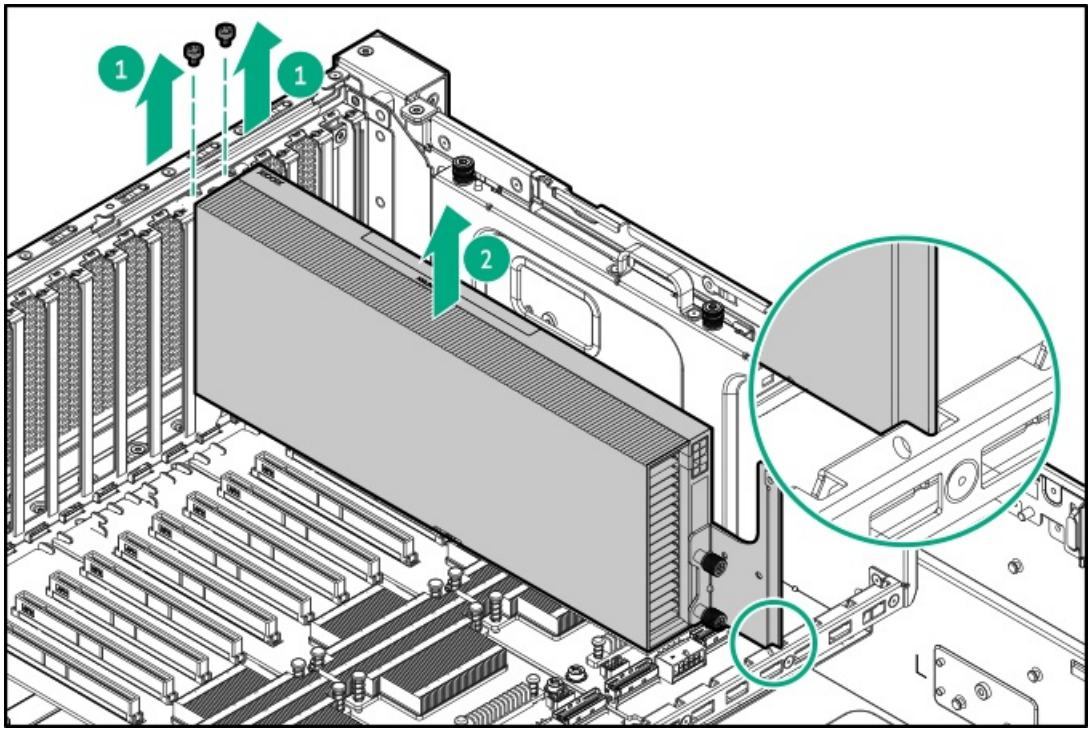
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Loosen the captive screws, and then remove the GPU top bracket.



8. If removing the high power GPU, disconnect the GPU auxiliary power cable from the GPU.
9. Remove the GPU.
   - Single-width GPU



- Double-width GPU



Remove the GPU cage

Prerequisites

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

About this task

This procedure is only for the GPU cage equipped with four-slot PCIe x16 switch boards.

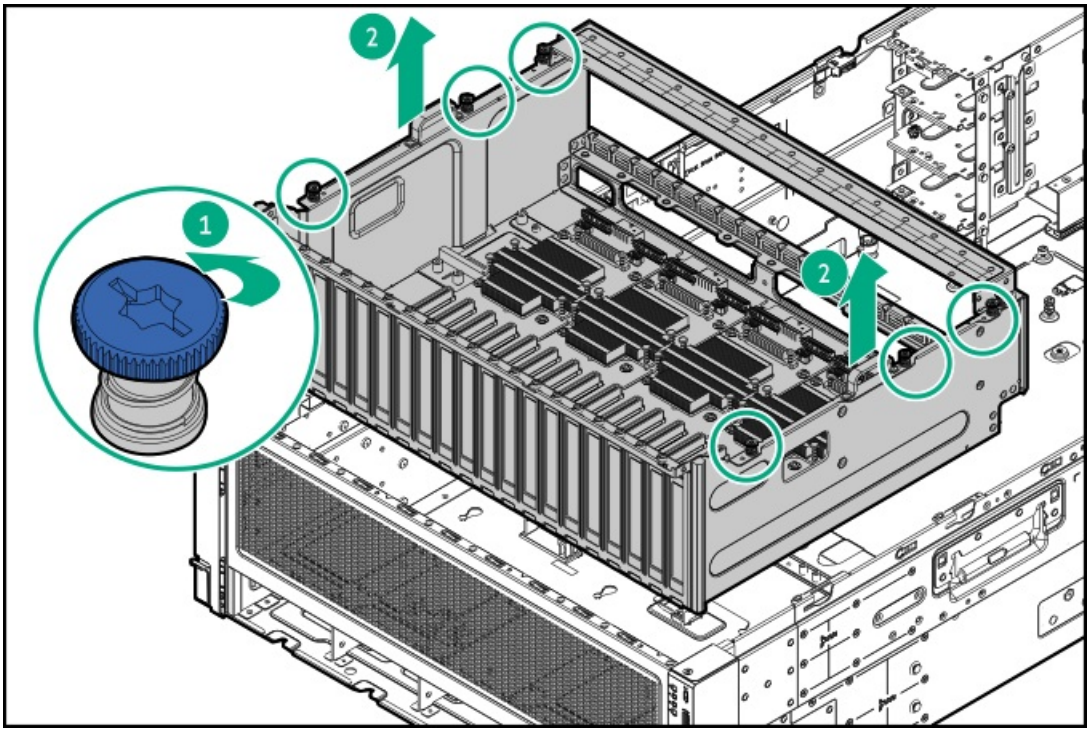
WARNING
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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.

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.
8. Remove the internal fan cage.
9. Remove all GPUs from the GPU cage .
10. Disconnect all cables from the PCIe x16 switch boards .
11. Loosen the captive screws, and then remove the GPU cage.



Lift and hold the GPU cage

Prerequisites

- Get help to lift and stabilize the GPU cage during removal from the server. An additional person is required to support the GPU cage weight when lifting and holding it.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

About this task

This procedure is only for the GPU cage equipped with PCIe x16 captive risers.

WARNING

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

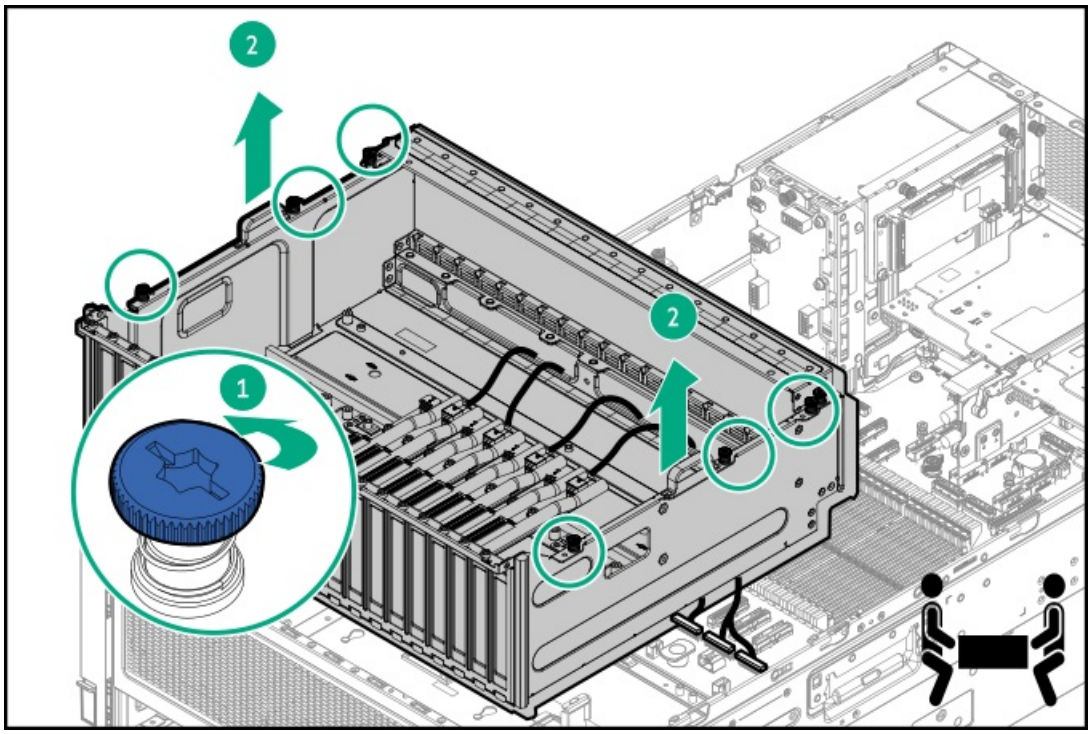
CAUTION

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

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.
8. Remove the internal fan cage.
9. Remove all GPUs from the GPU cage.
10. To install or remove the components located under the GPU cage:
    a. Loosen the captive screws.
    b. Lift and hold the GPU cage to a height where the bottom of the cage is positioned above the front end of the chassis.

       Make sure that the captive riser signal cables remain connected to the system board.



Remove the front vented panel

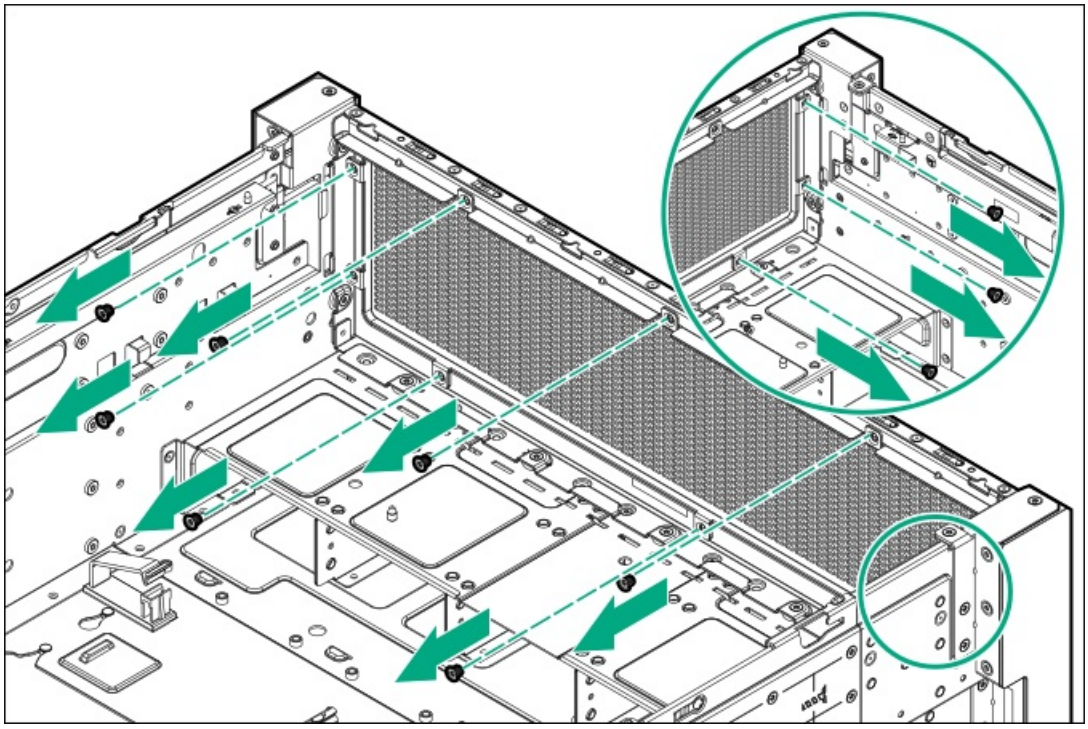
Prerequisites

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

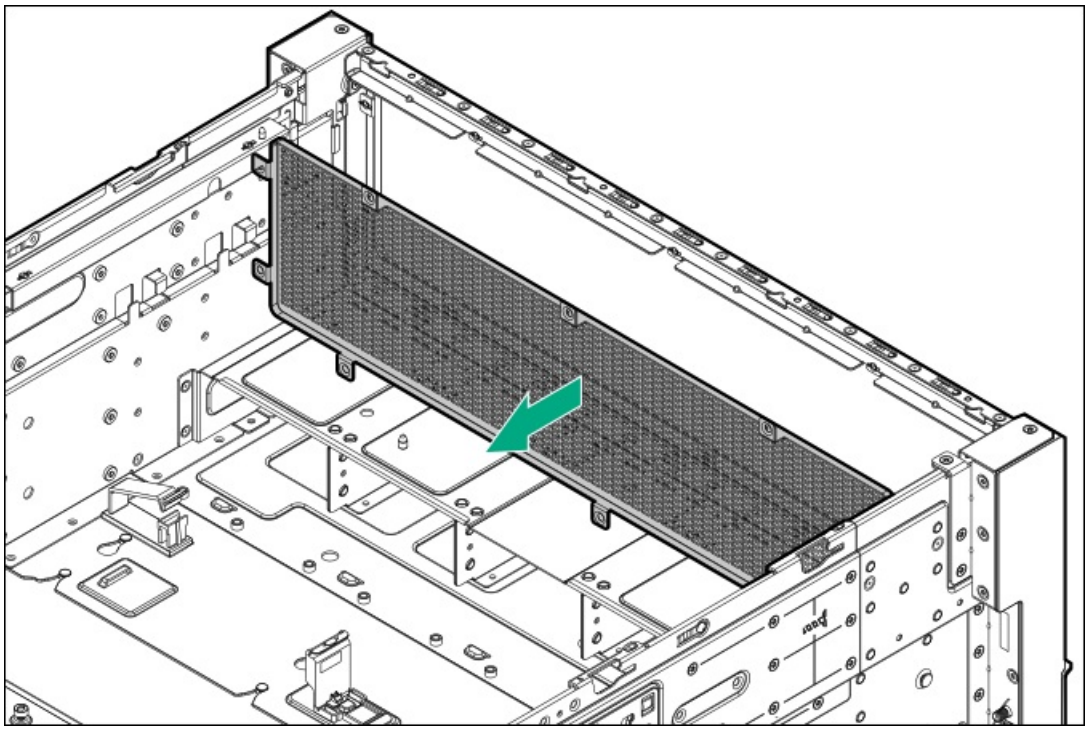
Procedure

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 air baffle.
8. Remove the internal fan cage.
9. Remove all GPUs from the GPU cage.
10. Do one of the following:
    - If captive risers are installed in the GPU cage, lift and hold the GPU cage above the front end of the chassis.

      Three people are required: Two people to lift and hold the GPU cage above the front end of the chassis, and another person to remove the front vented panel.
    - If switch boards are installed in the GPU cage, remove the GPU cage.
11. Remove the front vented panel:
    a. Remove the front vented panel screws.



    b. Remove the front vented panel.



Retain the front vented panel for future use.

12. Install the GPU cage.
13. If removed, install the following components:
    - GPU
    - PCIe NIC

Remove the air baffle

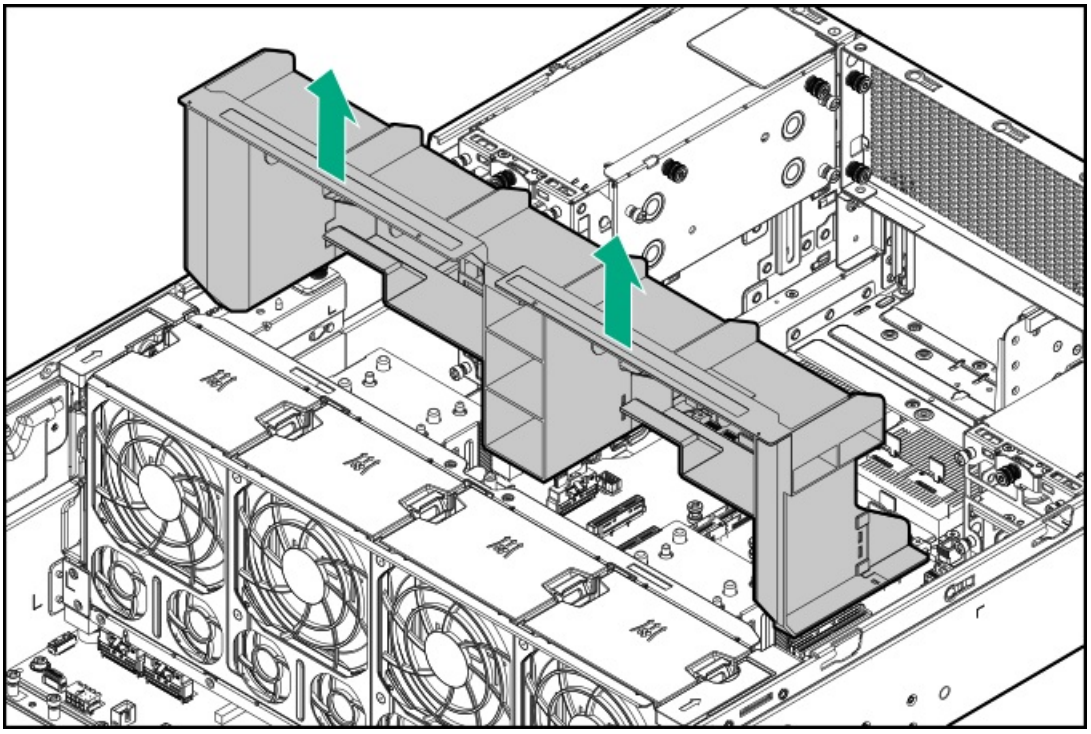
About this task

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.

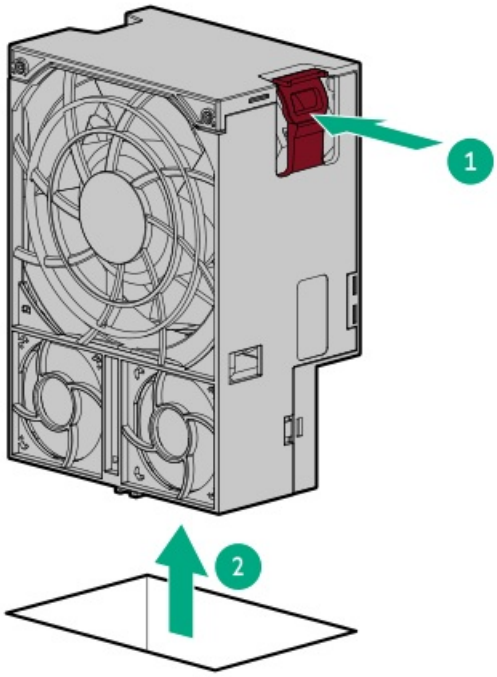
5. Remove the access panel.
6. Remove the air baffle.



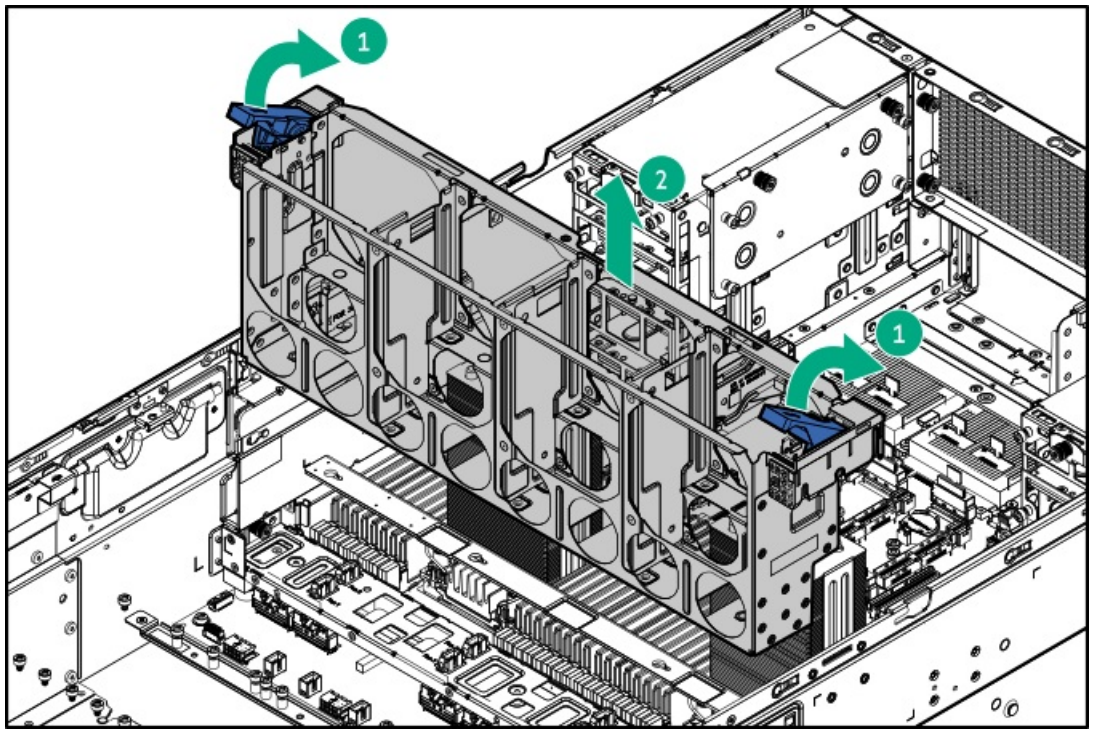
Remove the internal fan cage

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. Remove the air baffle.
8. Remove all fan modules.



9. Remove the internal fan cage.
   a. Open the latches.
   b. Lift the fan cage away from the chassis.



Remove the internal fan cable assembly

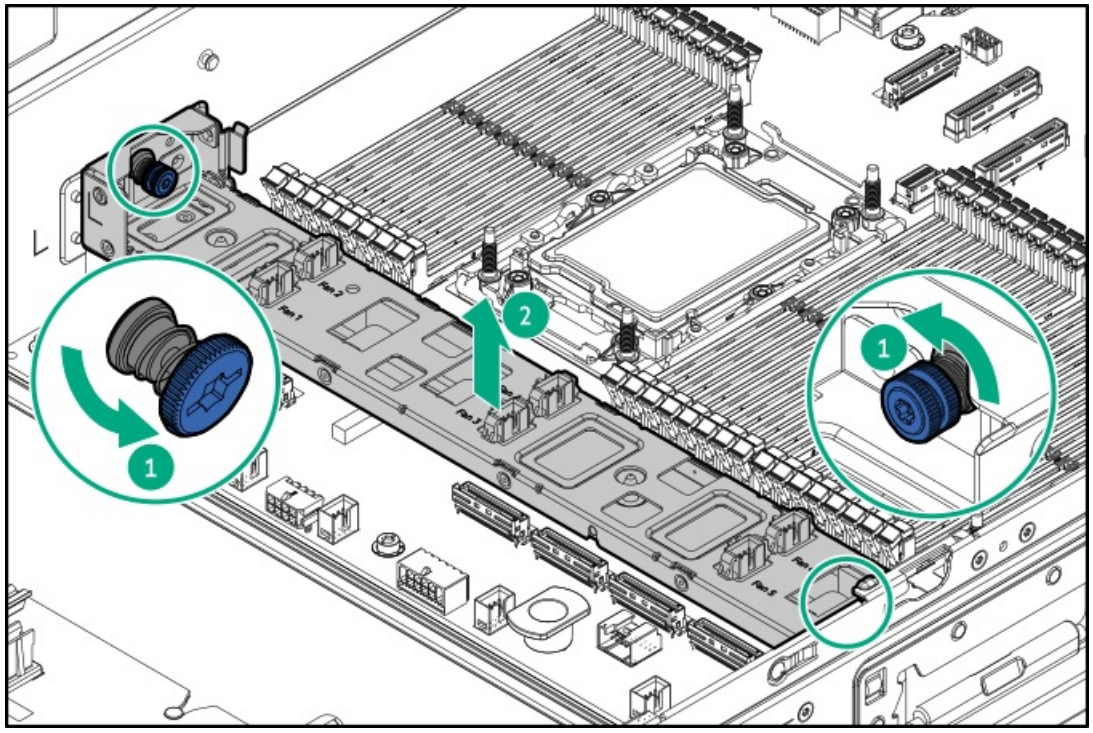
Prerequisites

- 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 air baffle.
8. Remove the internal fan cage.
9. Remove all GPUs from the GPU cage.
10. Do one of the following:
    - If captive risers are installed in the GPU cage, lift and hold the GPU cage above the front end of the chassis.

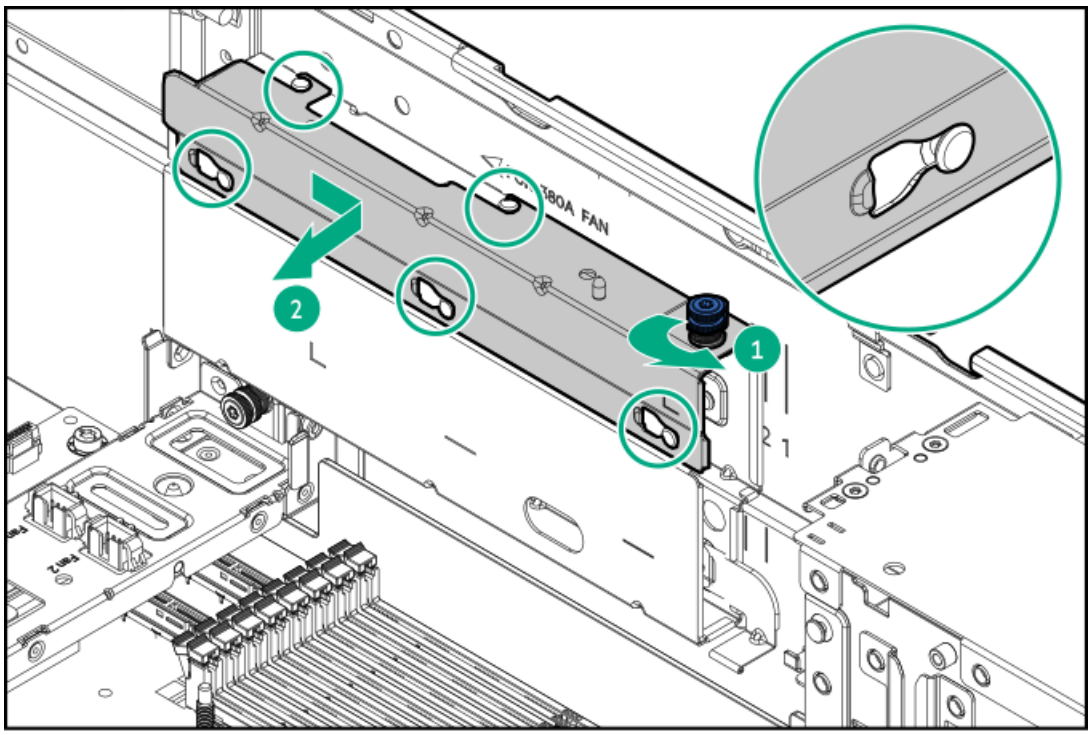
      Three people are required: Two people to lift and hold the GPU cage above the front end of the chassis, and another person to remove the internal fan cable assembly from the server.
    - If switch boards are installed in the GPU cage, remove the GPU cage.
11. Disconnect all fan cables from the system board.
12. Remove the internal fan cable assembly.



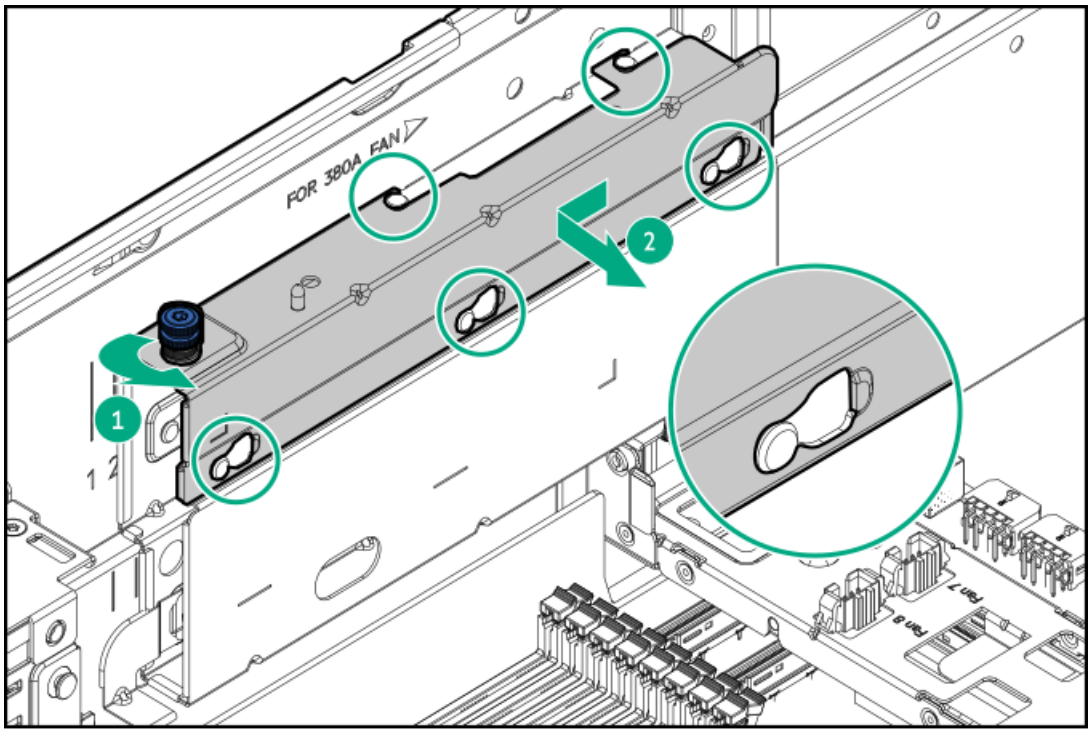
Remove the cable trough cover

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.
8. Remove the internal fan cage.
9. Remove the cable trough cover.
   - Right



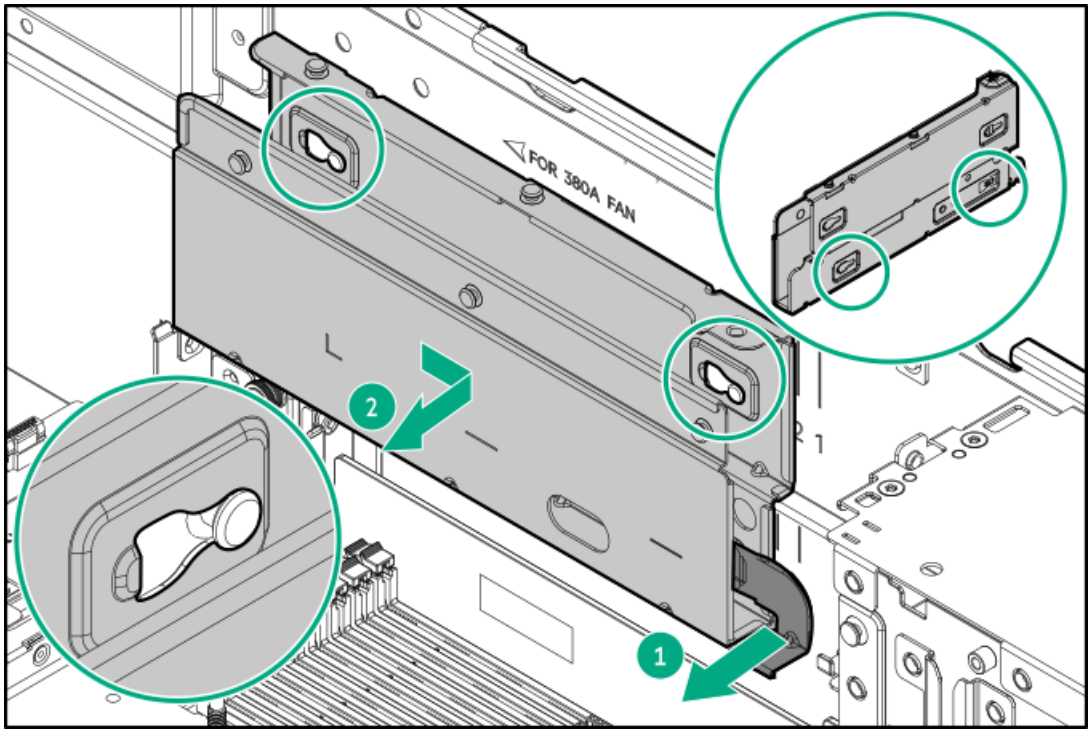
   - Left



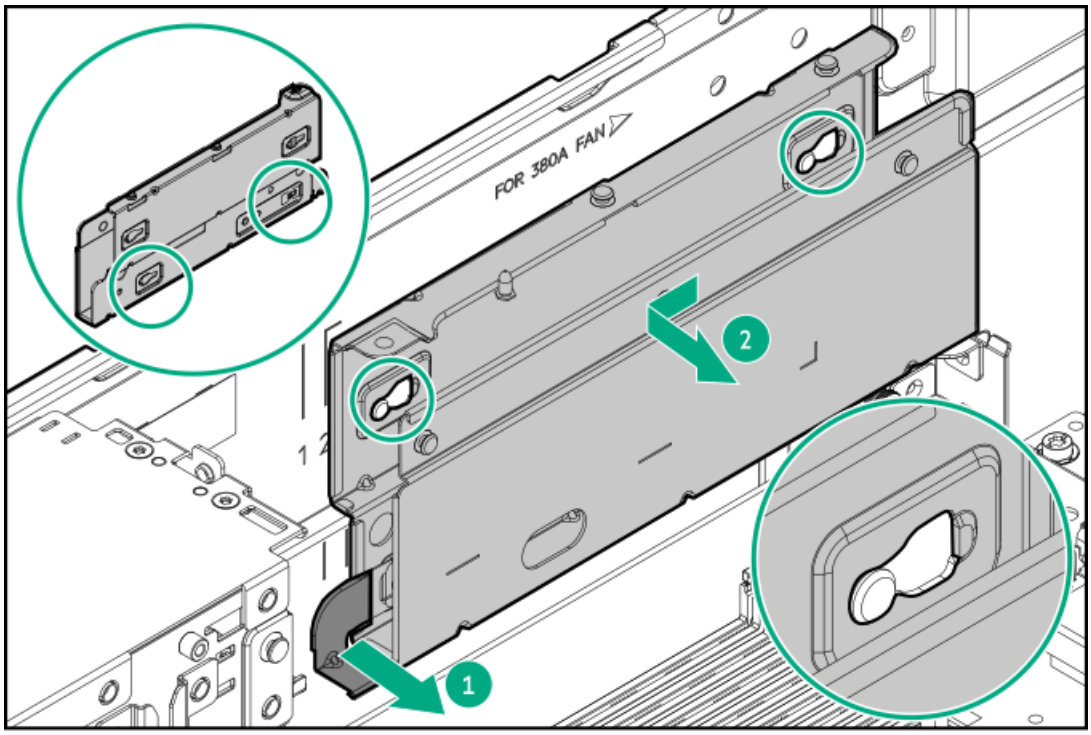
Remove the cable trough

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.
8. Remove the internal fan cage.
9. Remove the cable trough cover.
10. Remove the cable trough.
    - Left



- Right



Remove the rear vented panel

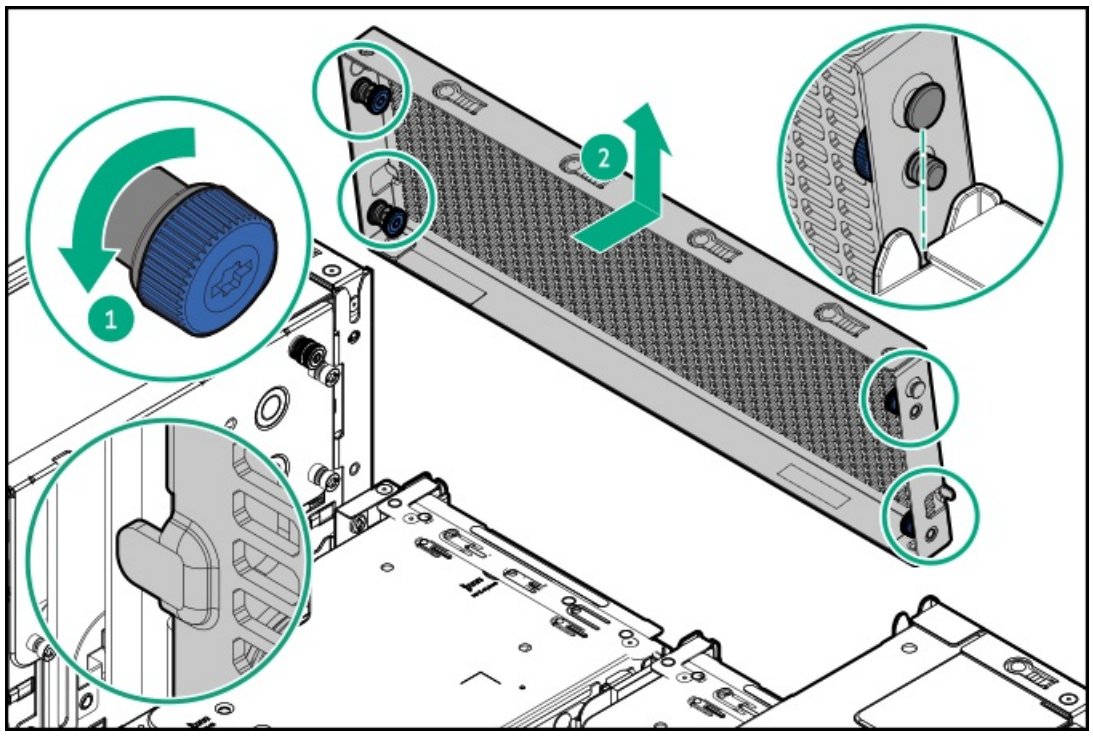
Prerequisites

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 rear vented panel:
   a. Loosen the captive screws.
   b. Tilt the bottom of rear vented panel away, and then pull up the panel from the server.



Remove the riser cage

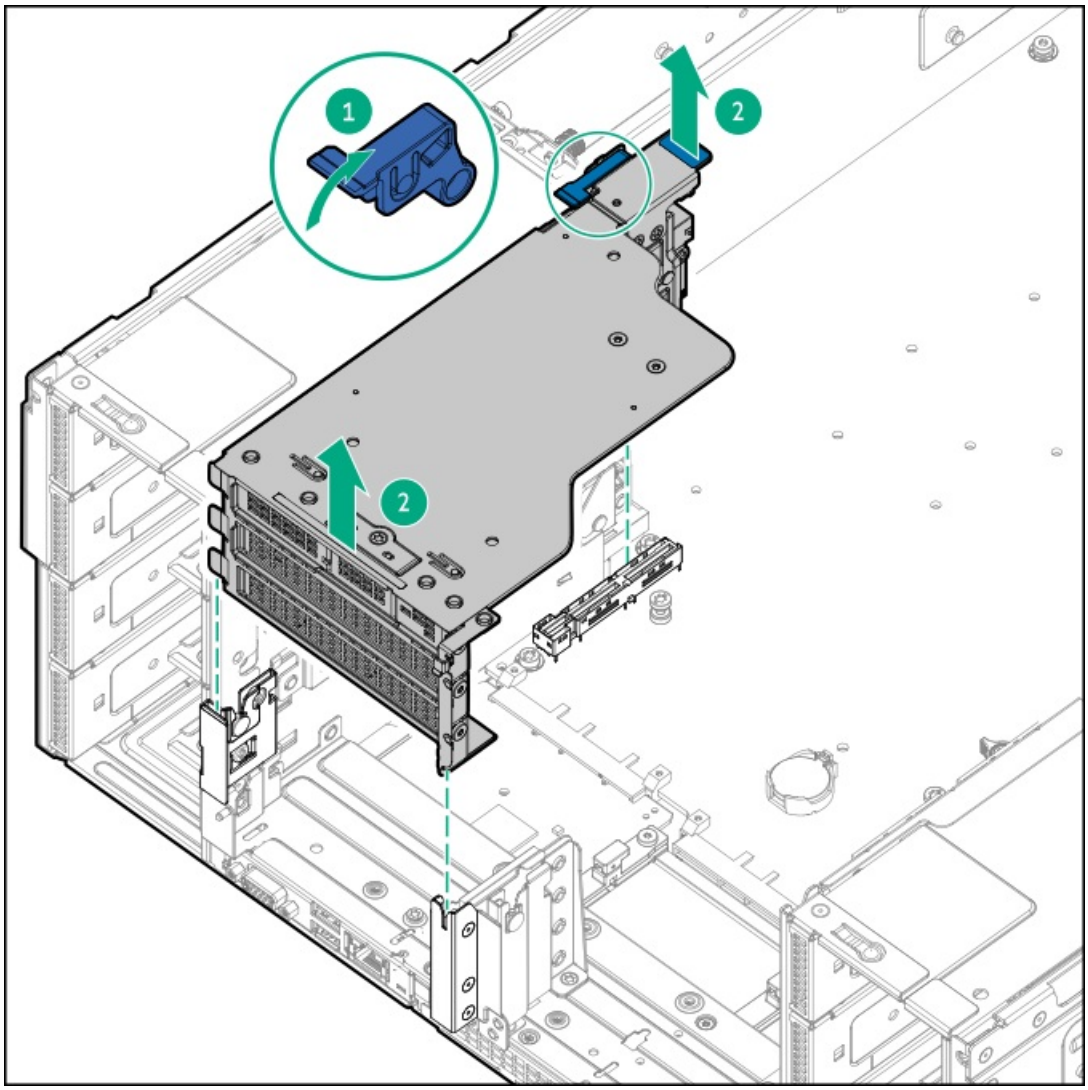
About this task

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

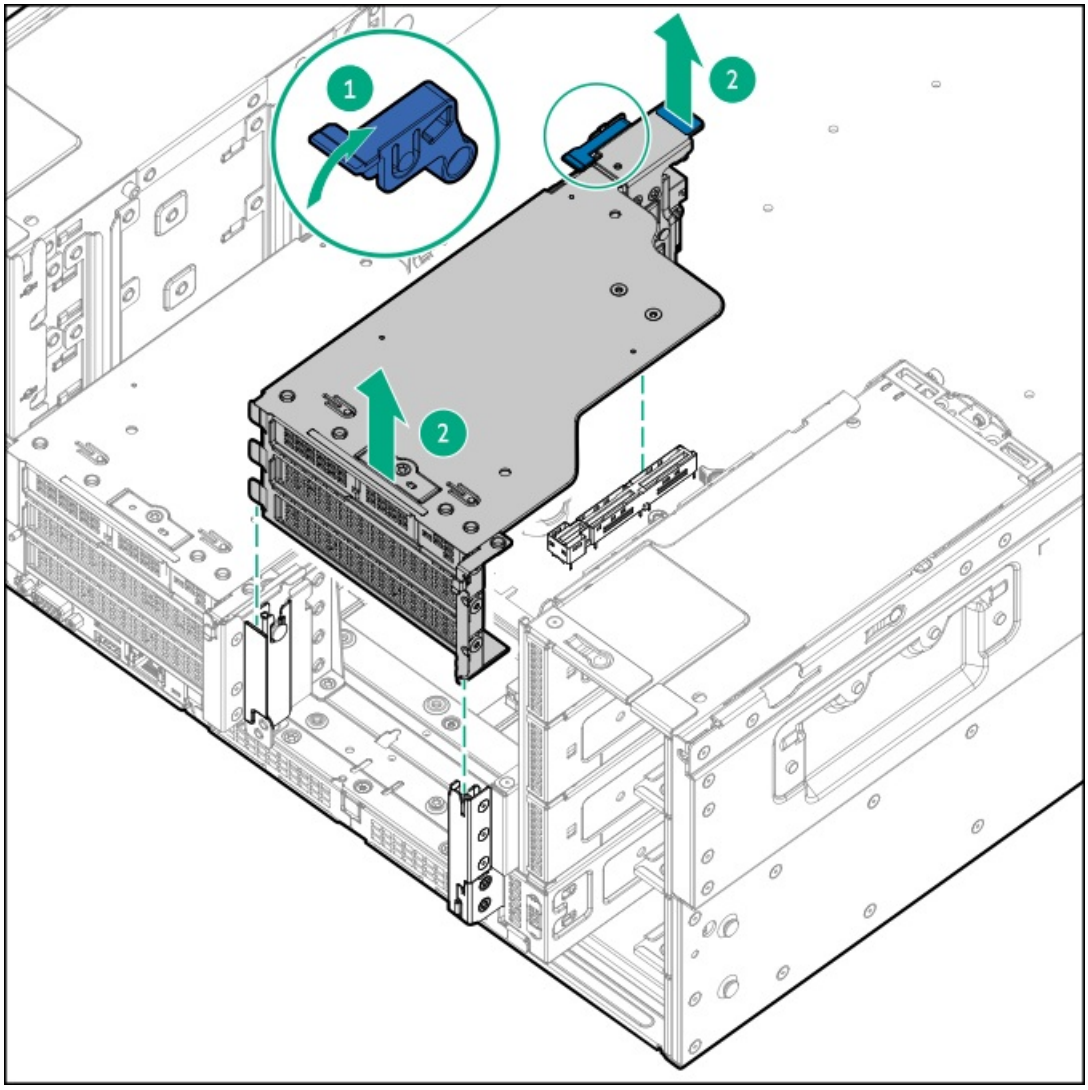
Procedure

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 rear vented blank.
8. If an expansion card with internal cables is installed on the riser, disconnect the cables from the card.
9. Open the latch, and then remove the riser cage from the server.
   - Primary riser cage



   - Secondary riser cage



Post-installation procedures

Subtopics

- Install the riser cage
- Install the rear vented panel
- Install the cable trough cover
- Install the internal fan cage
- Install the air baffle
- Install the GPU cage and GPU
- Install the access panel
- Install the server into the rack
- Power up the server

Install the riser cage

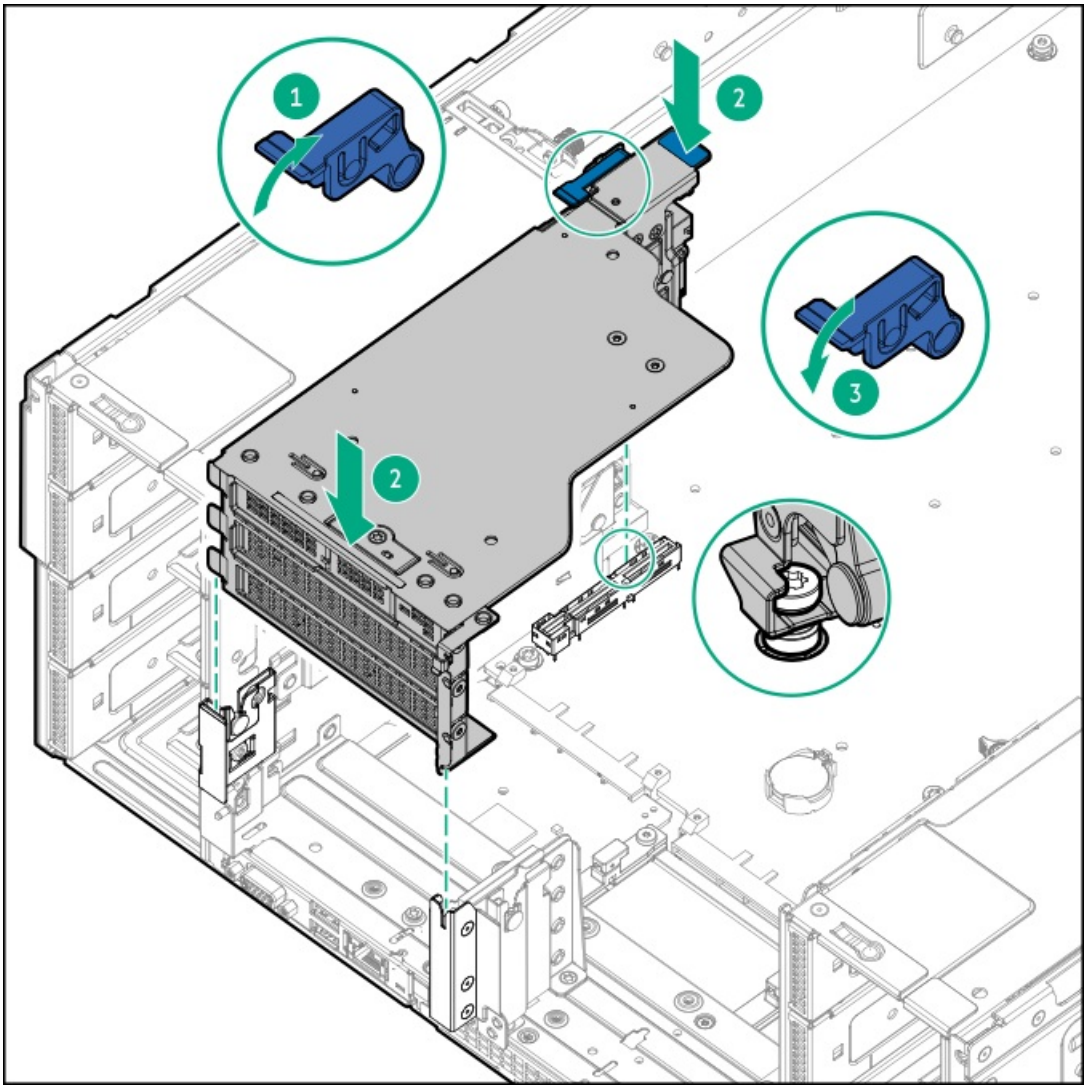
Procedure

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

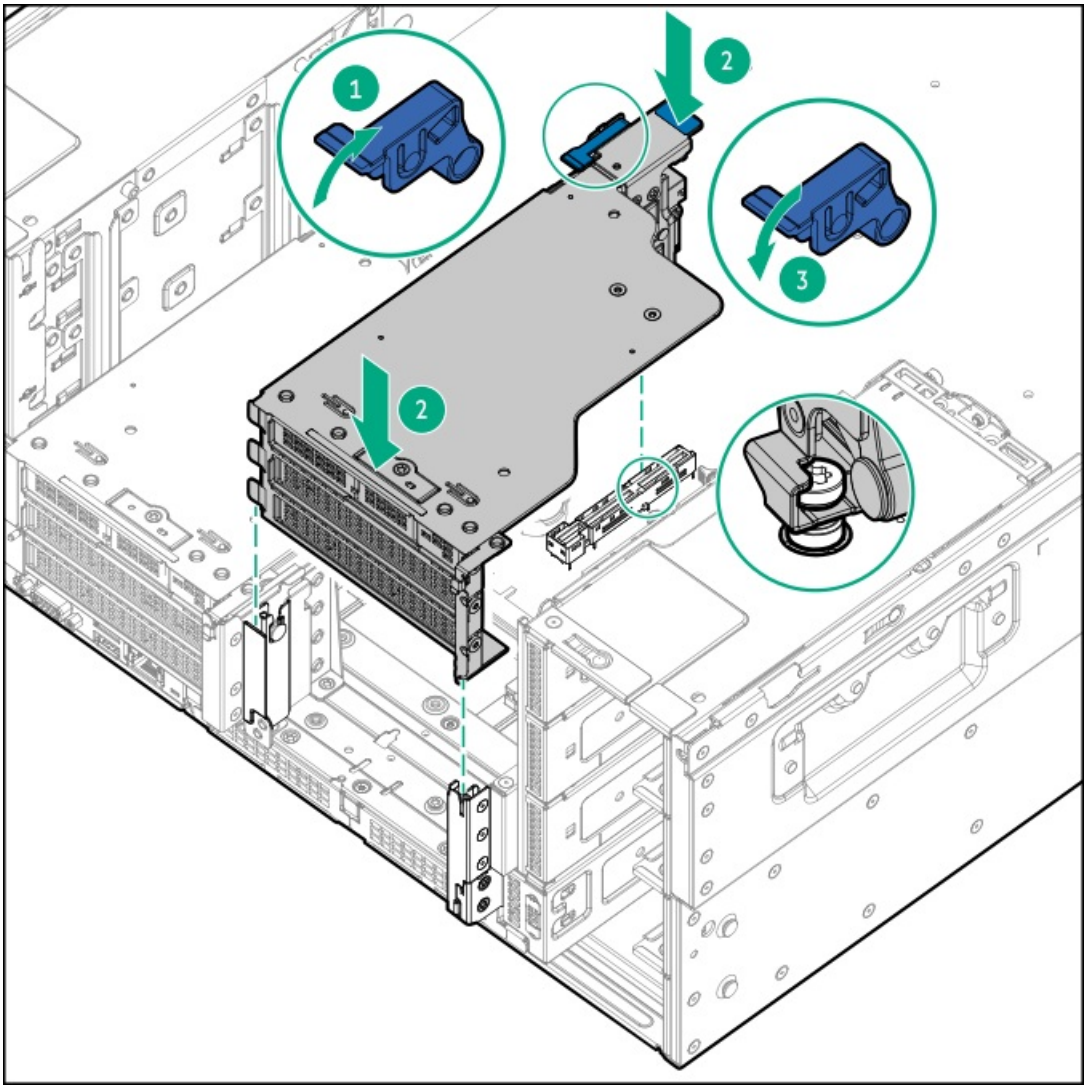
2. Install the riser cage in the server, and then close the latch.
   a. Open the latch.
   b. Install the riser cage in the server, and then close the latch.

      Make sure that the hook of the riser cage is engaged with the spool on the system board.

      - Primary riser cage



      - Secondary riser cage



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

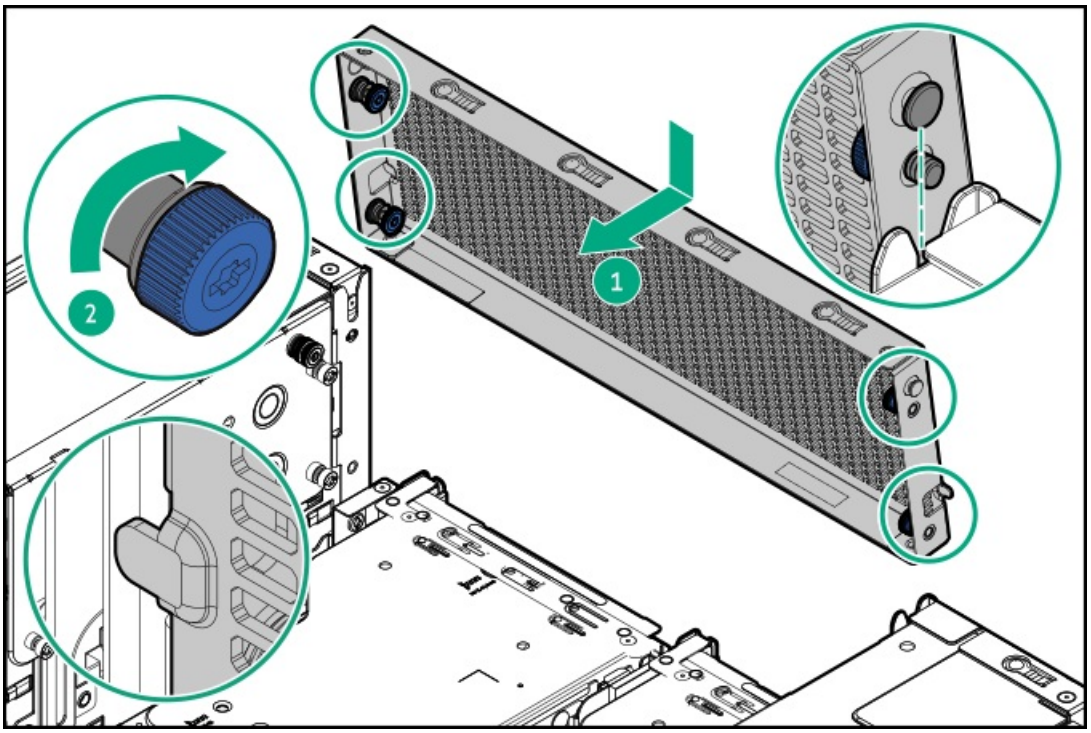
Install the rear vented panel

Prerequisites

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

Procedure

1. Install the rear vented panel:
   a. Align the tabs on the rear vented panel with the notches on the rear panel.
   b. Tilt the bottom of the rear vented panel and install on the rear panel.
   c. Tighten the captive screw.

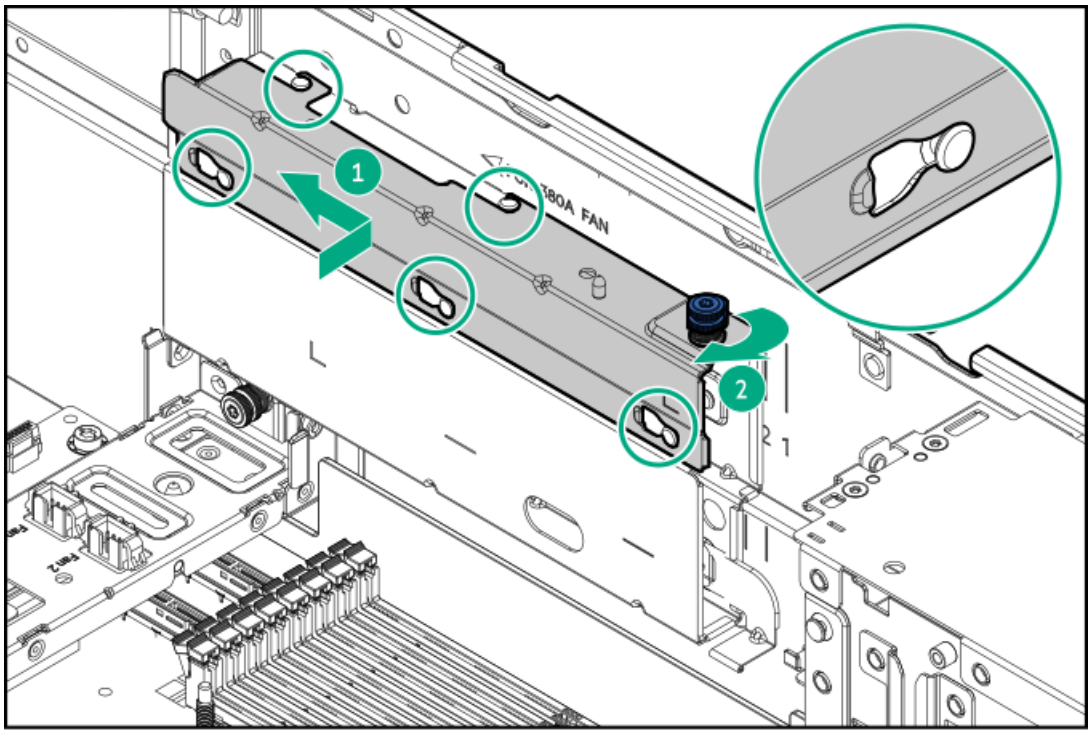


2. Install the access panel.
3. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the rear vented panel.

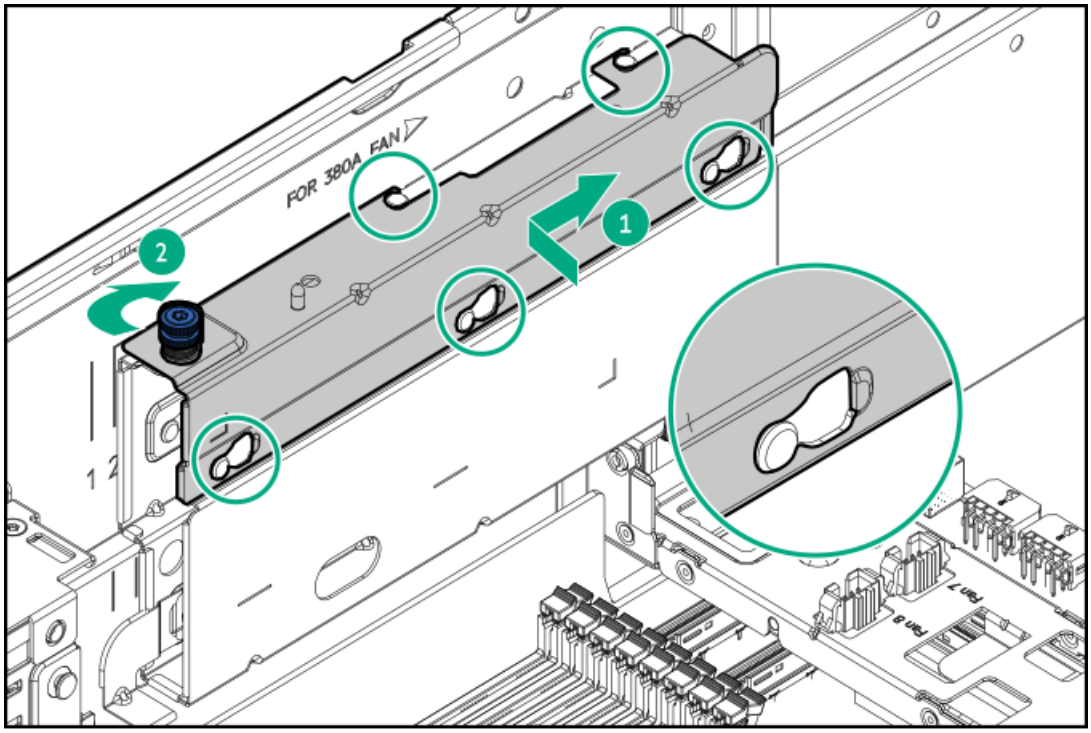
Install the cable trough cover

Procedure

1. Install the cable trough cover.
   - Right



- Left

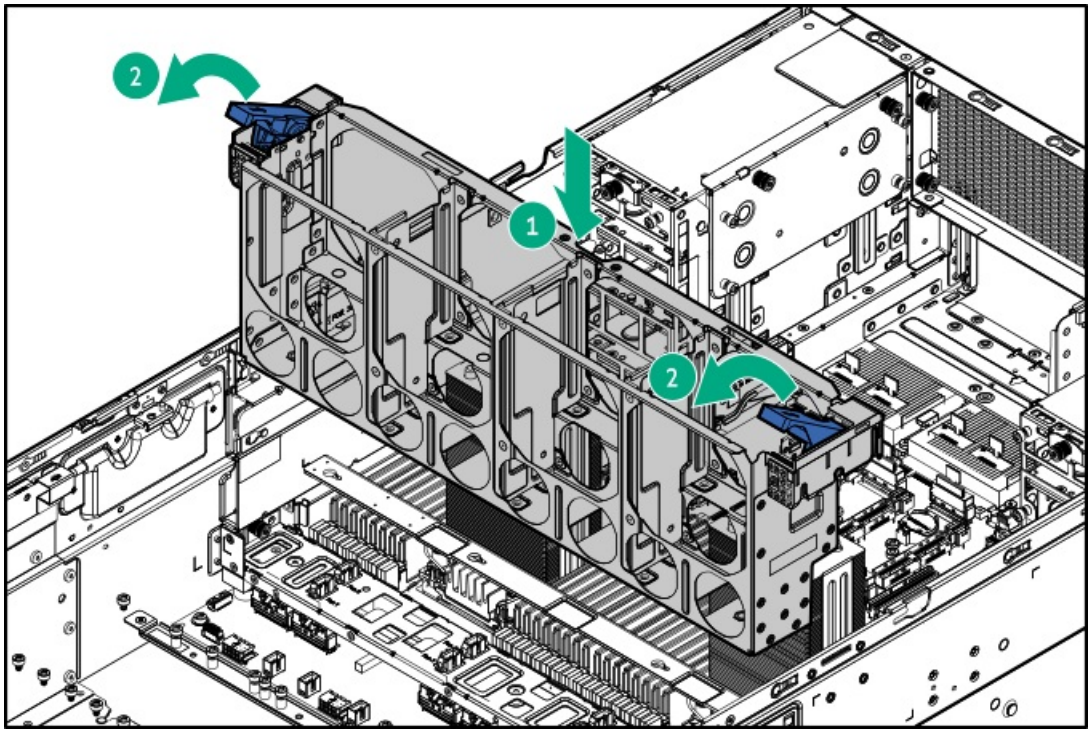


2. Install the internal fan cage.
3. Install the air baffle.
4. Install the access panel.
5. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the cable trough cover.

Install the internal fan cage

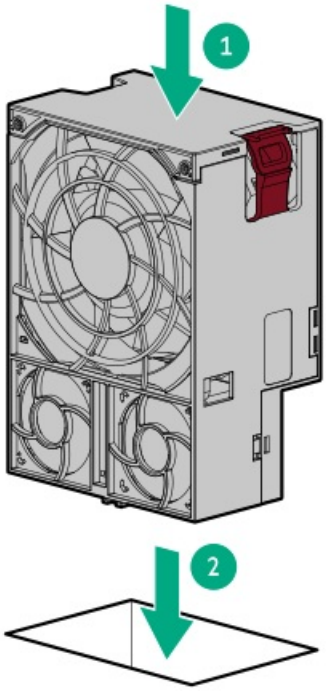
Procedure

1. Install the internal fan cage.
   a. Lower the fan cage into the chassis.
   b. Close the latches.



2. Install all fan modules.
   a. Lower the fan module into the fan bay.
   b. Press down on the fan module to make sure that it is seated firmly in the bay.

      A click sound indicates that the fan is properly engaged.



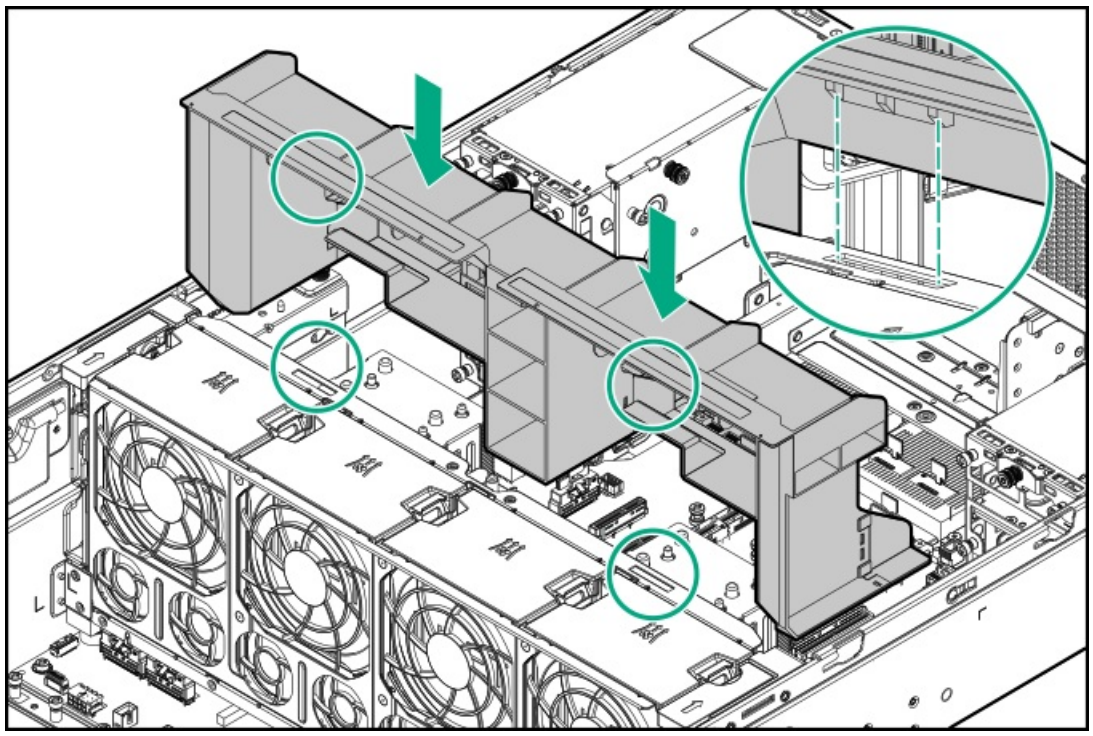
3. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the internal fan cage.

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. Align the guides on the air baffle with the slots on the internal fan cage to install the air baffle into the chassis.

   Make sure that the air baffle 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 GPU cage and GPU

About this task

- Get help to lift and stabilize the GPU cage during installation in the server. An additional person is required to support the GPU cage weight when installing it.
- Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

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

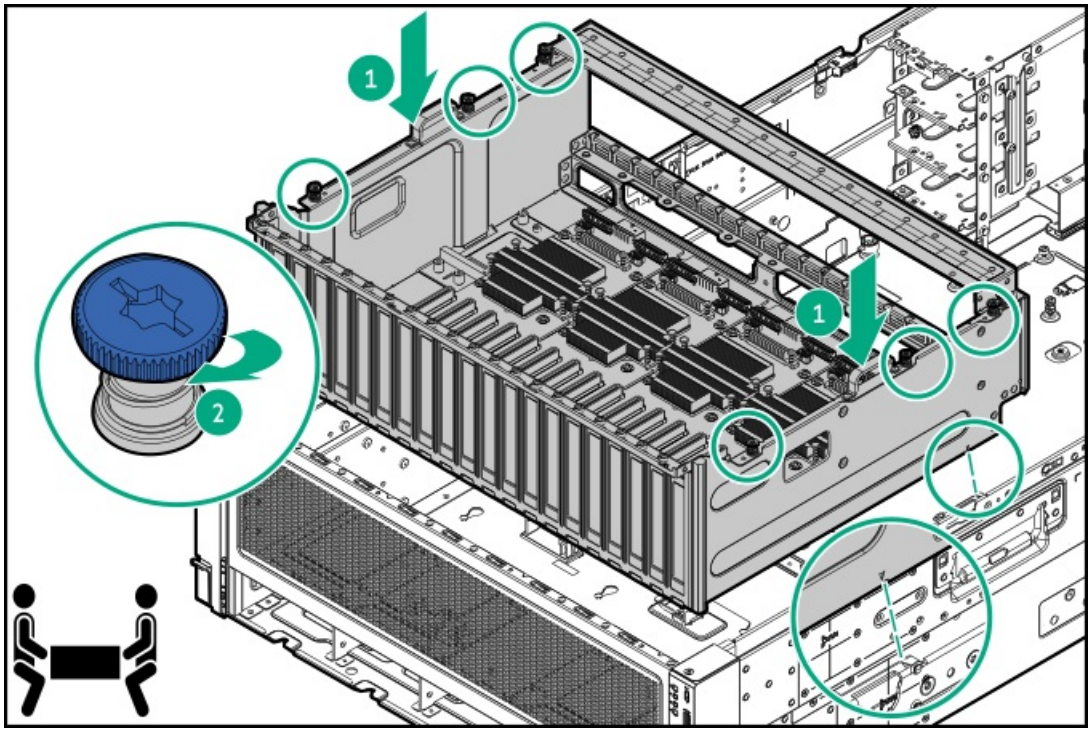
To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Procedure

1. Install the GPU cage:

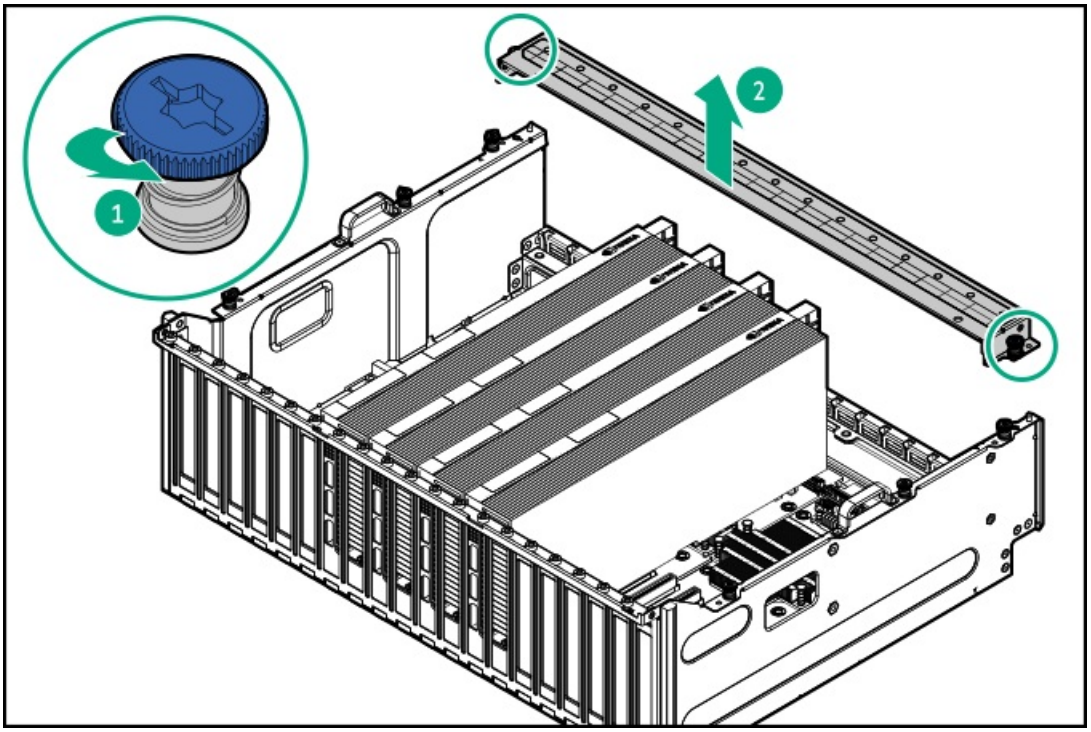
   a. Align the triangle on the GPU cage with the corresponding triangle on the server, and then install the GPU cage into the server.

b. Tighten the captive screws.



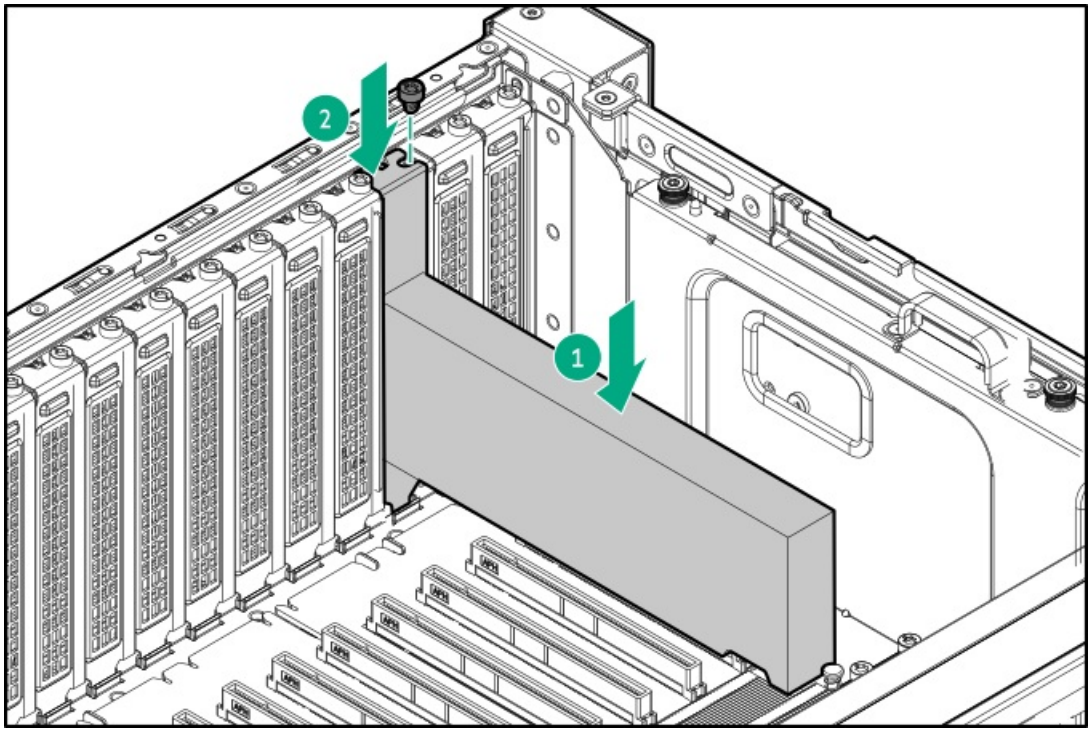
2. If disconnected, connect all cables to the PCIe x16 switch boards .

3. Loosen the captive screws, and then remove the GPU top bracket.

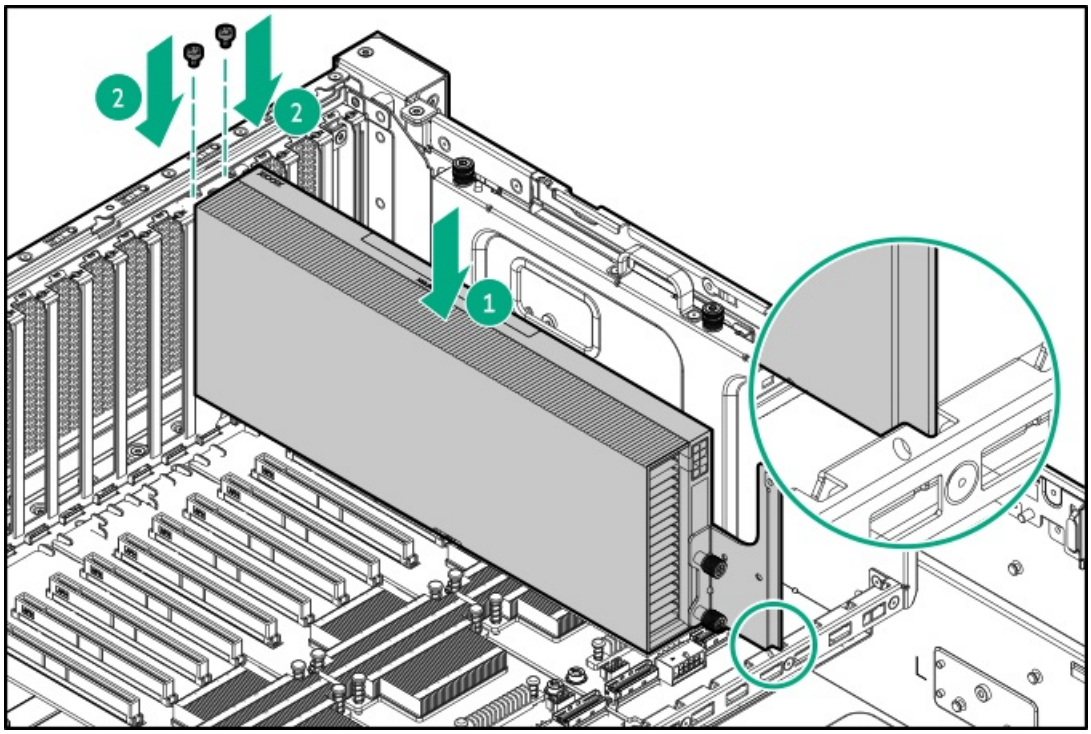


4. Install all GPUs.

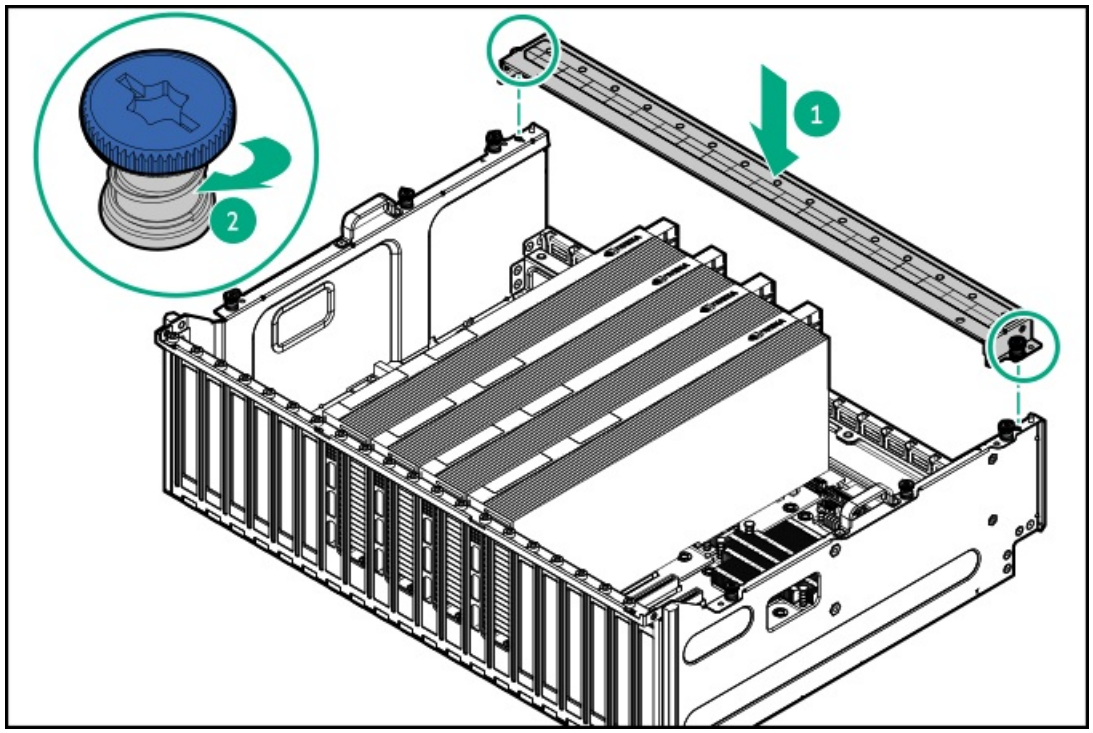
- Single-width GPU



- Double-width GPU



5. To connect the GPU auxiliary power cable:
   a. Remove the cable trough cover .
   b. Connect the GPU auxiliary power cable .
   c. Route the GPU auxiliary power cable in the cable trough, and then install the cable trough cover .
6. Install the GPU top bracket, and then tighten the captive screws.



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

Install the access panel

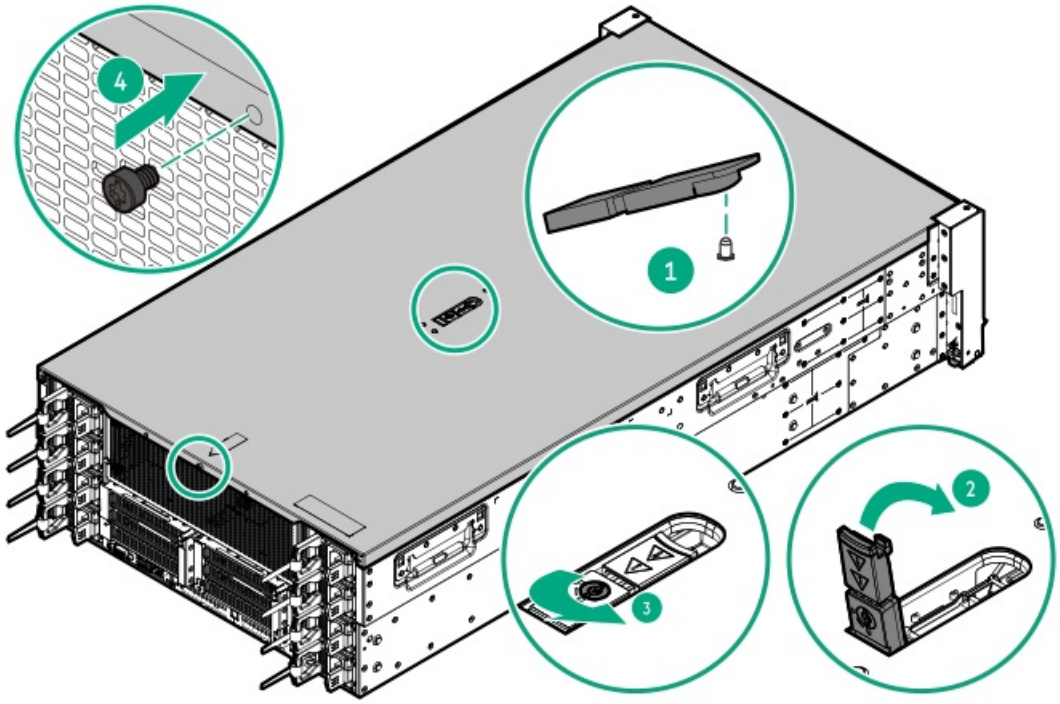
Prerequisites

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. Install the rear screw.



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

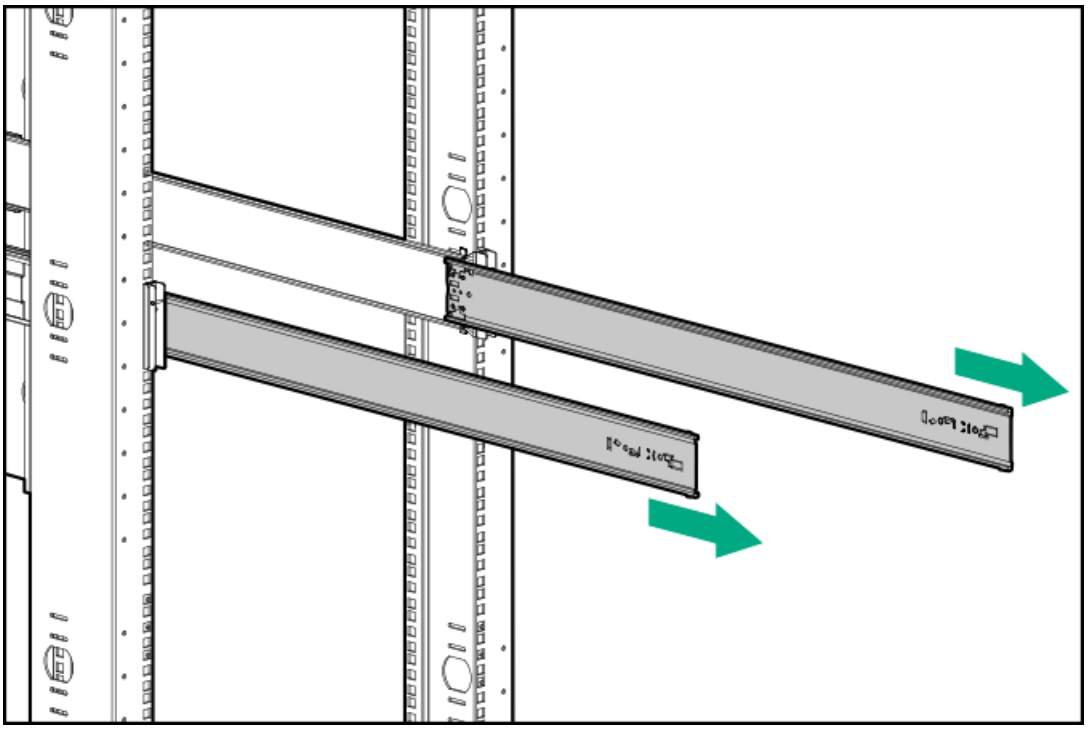
Install the server into the rack

Prerequisites

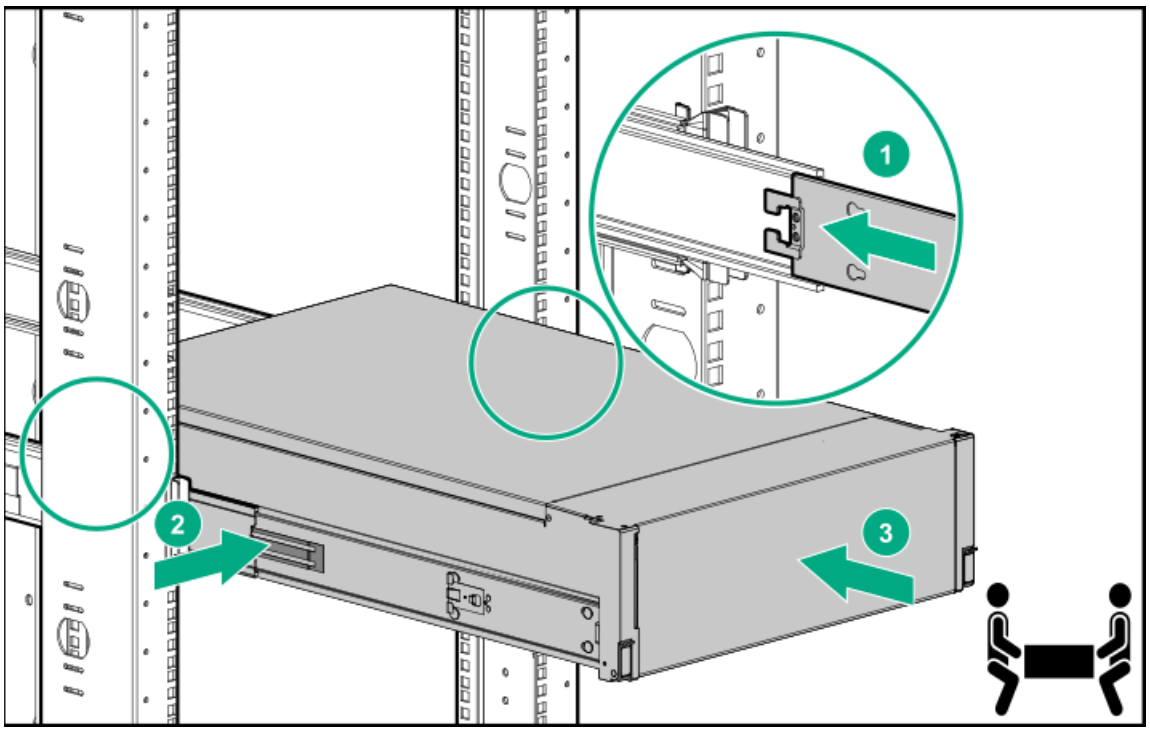
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

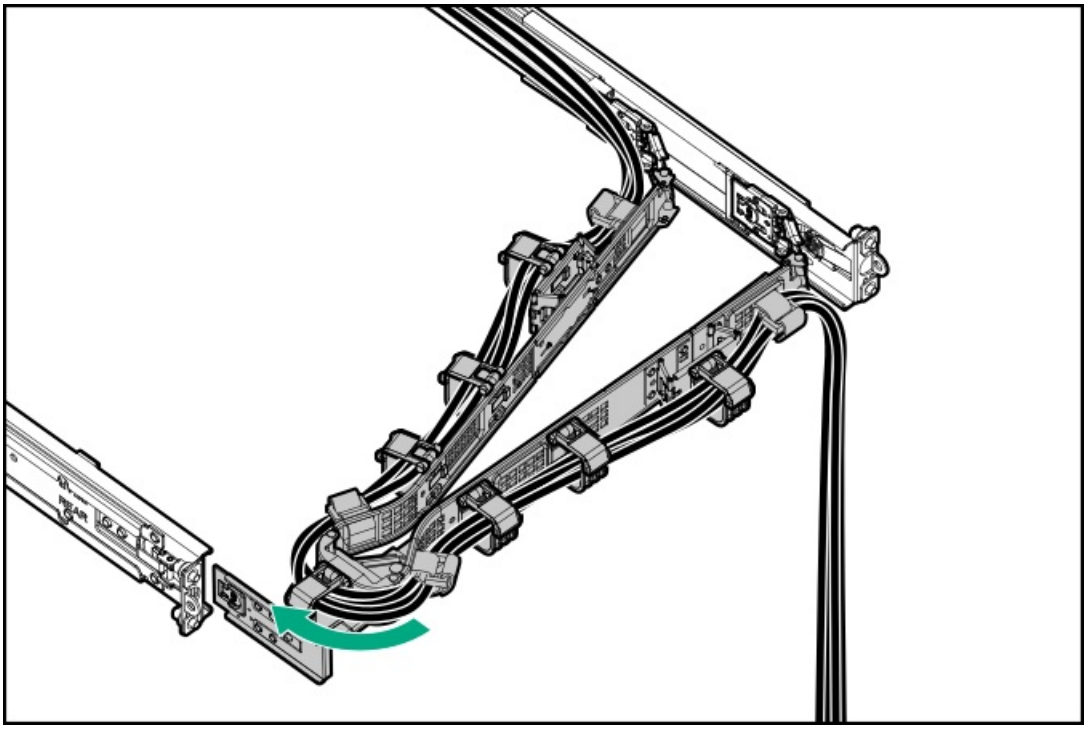


2. Install the server into the rack:
   a. Insert the inner rails into the slide rails.
   b. Press and hold the rear-end rail-release latches, and slide the server into the rack until the chassis ears are flush against the rack posts.



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. If the cable management arm was opened, swing the arm back into the closed position and insert the CMA retention bracket into the mounting rail.

There will be an audible click to indicate that the bracket is locked into place.



Power up the server

Procedure

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

Cooling

Subtopics

Installing the internal max system fan modules
Installing the external front fans
Installing the PCIe fan
Connecting the DLC module in a preconfigured server

Installing the internal max system fan modules

About this task

CAUTION

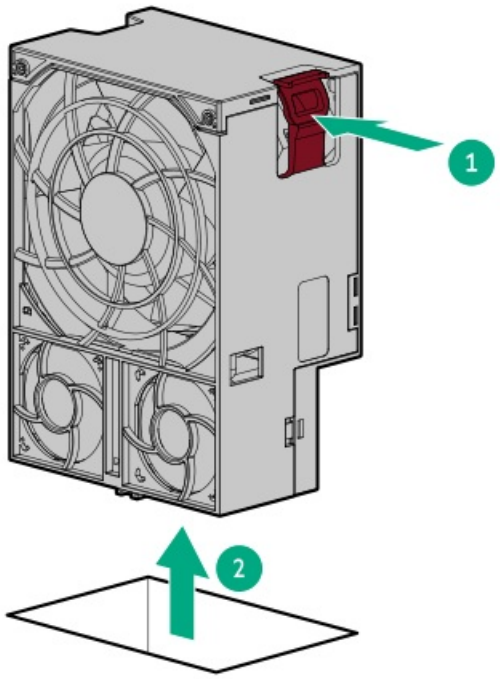
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

NOTE

Do not mix performance and max system fan modules in the same server.

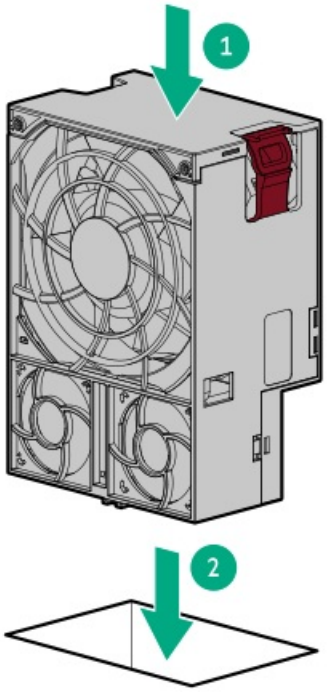
Procedure

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Remove the access panel.
6. Remove all performance system fan modules.
   a. Press and hold the latch.
   b. Lift the fan module from the fan cage.



7. Install all max system fan modules.
   a. Lower the fan module into the bay.
   b. Press down on the fan module to make sure that it is seated firmly in the bay.

      A click sound indicates that the fan is properly engaged.



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 power source.
12. Connect each power cord to the server.
13. Power up the server.

Results

The installation procedure is complete.

Installing the external front fans

Prerequisites

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

About this task

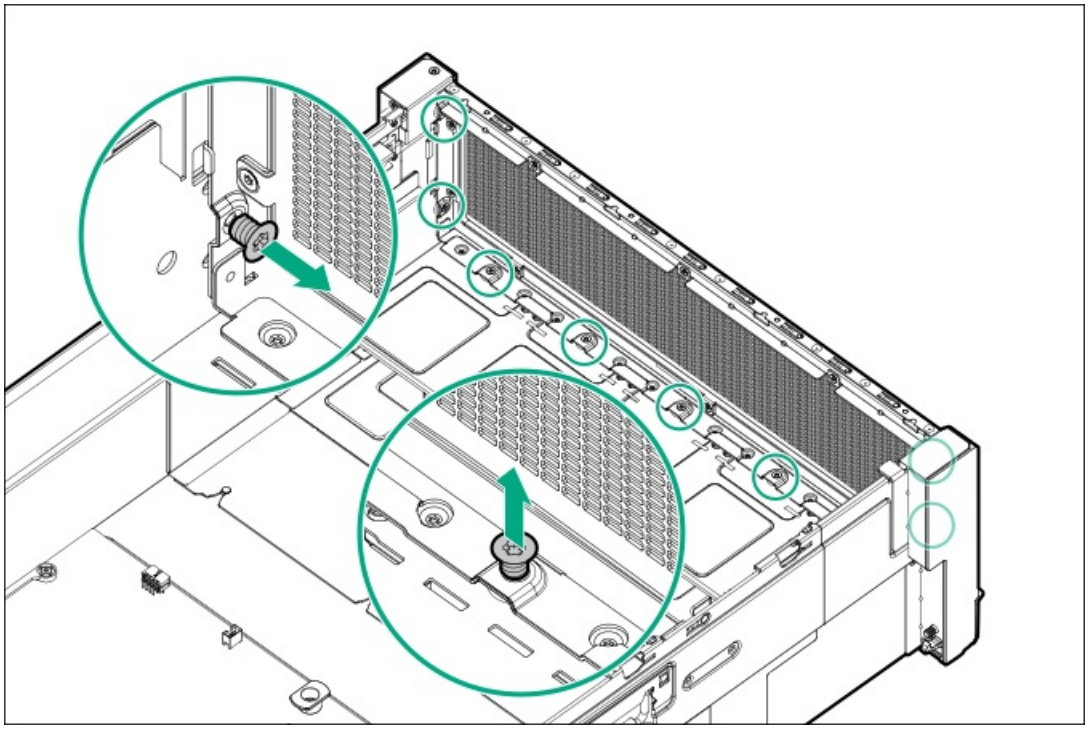
The 10 double-width GPU configuration requires the external front fan module option (P79656-B21).

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.

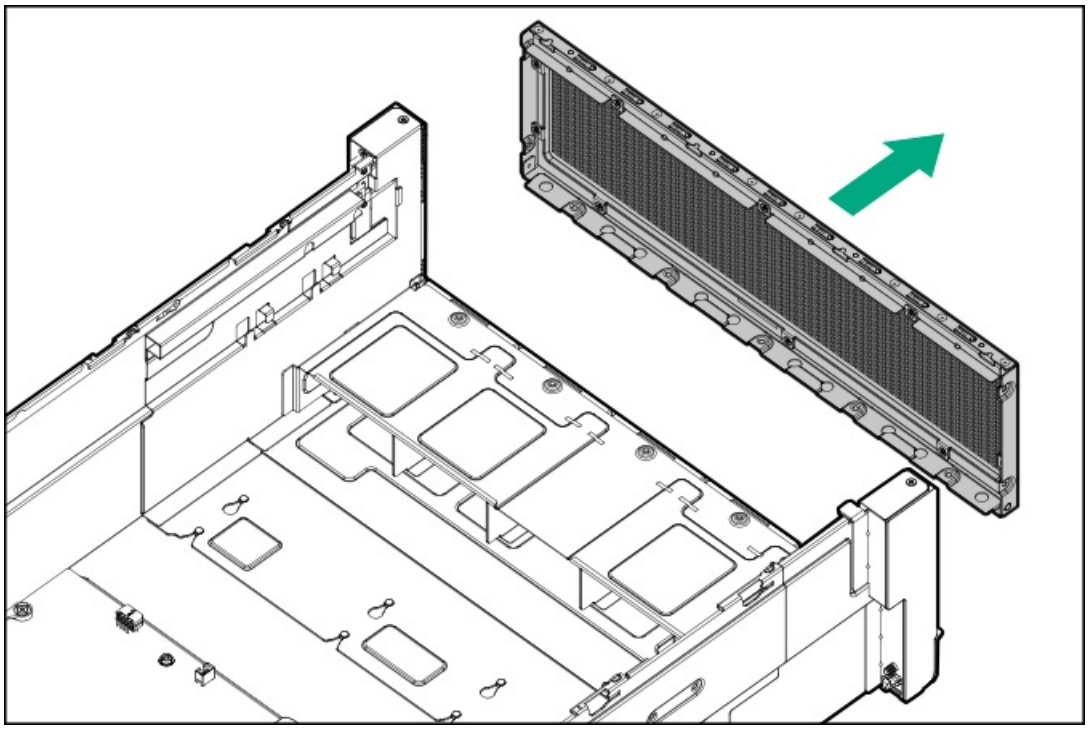
Procedure

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. Remove the access panel.
7. Remove the air baffle.
8. Remove the internal fan cage.
9. If captive risers are installed in the GPU cage:
   a. Lift and hold the GPU cage above the front end of the chassis .
   b. Disconnect all captive riser power cables from the PDBs .
   c. Remove the cable trough.
   d. Remove the internal fan cable assembly.
   e. Disconnect all captive riser signal cables from the system board .
   f. Place the GPU cage on a flat, level work surface.
10. If switch boards are installed in the GPU cage, remove the GPU cage.
11. Remove the front access panel:
    a. Remove the front access panel screws.

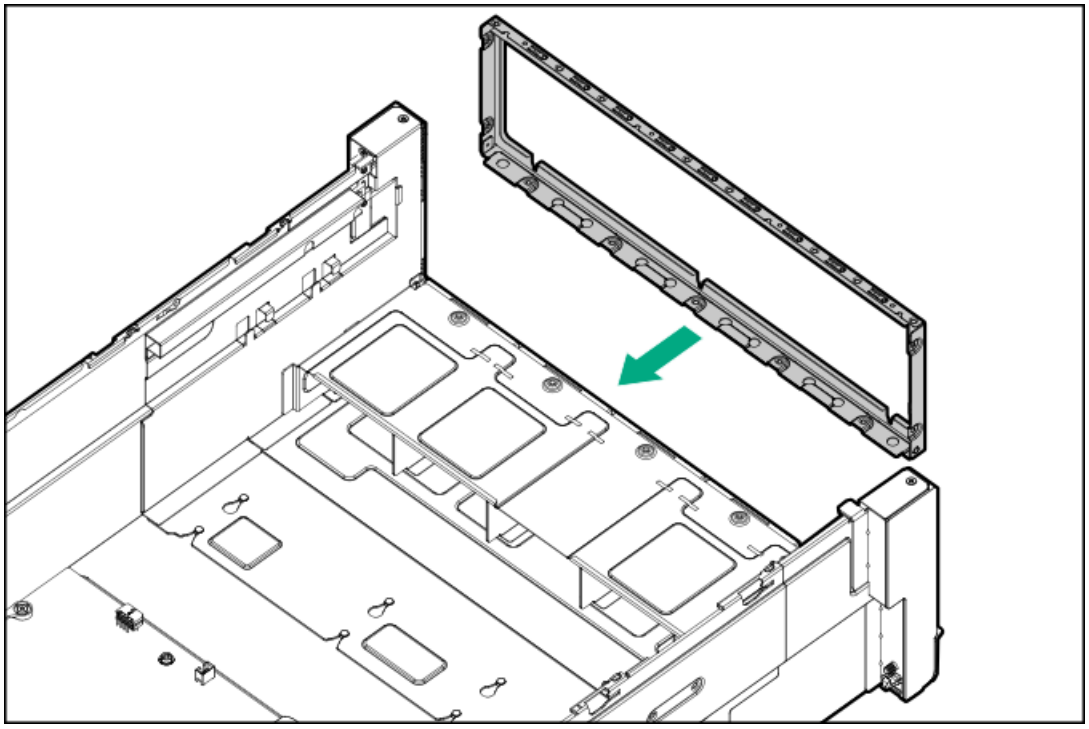


    b. Remove the front access panel.

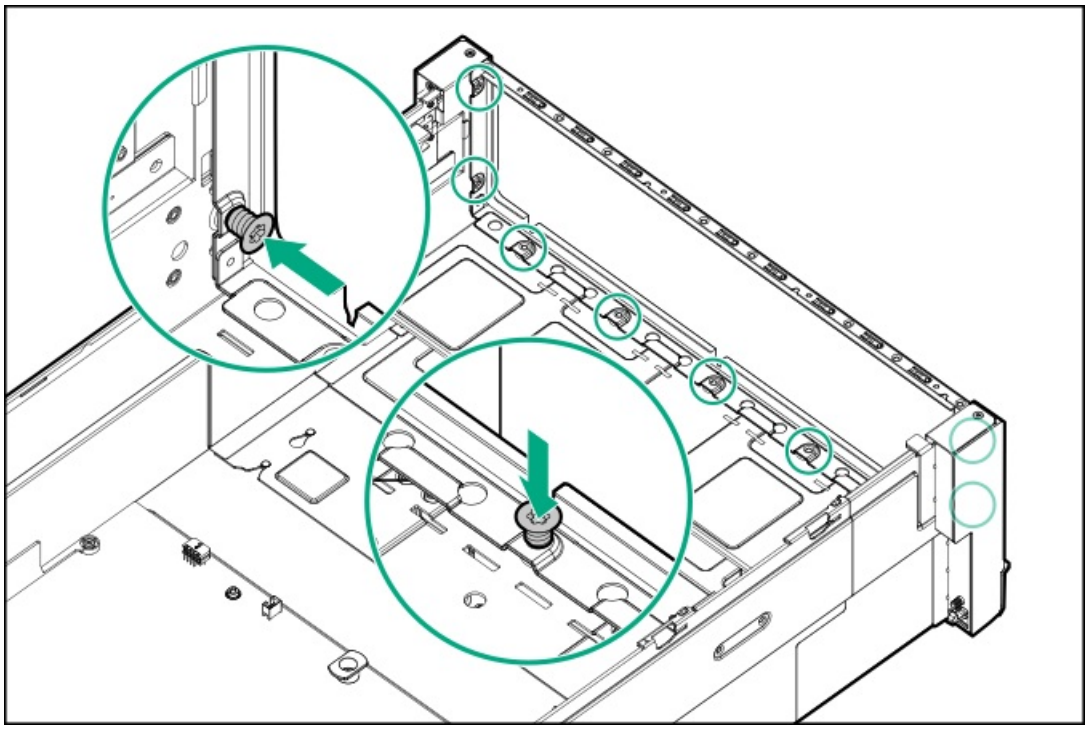


12. Install the front access panel frame:

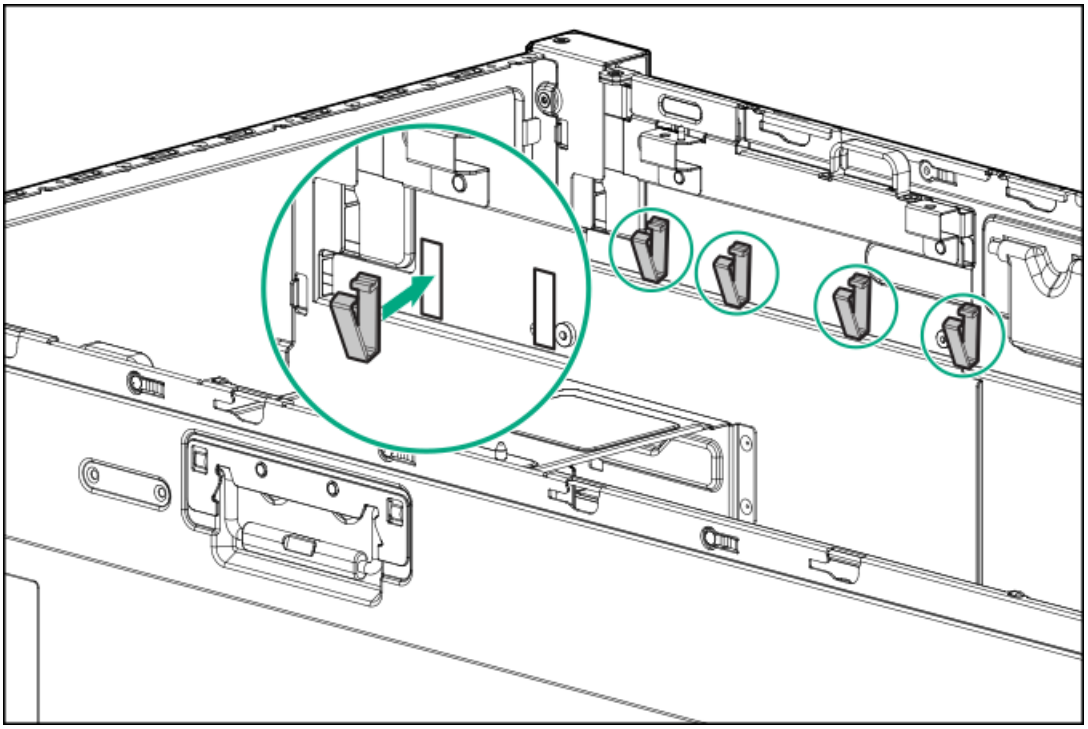
    a. Install the front access panel frame.



    b. Install the frame screws.



13. Install the front fan cable clips.

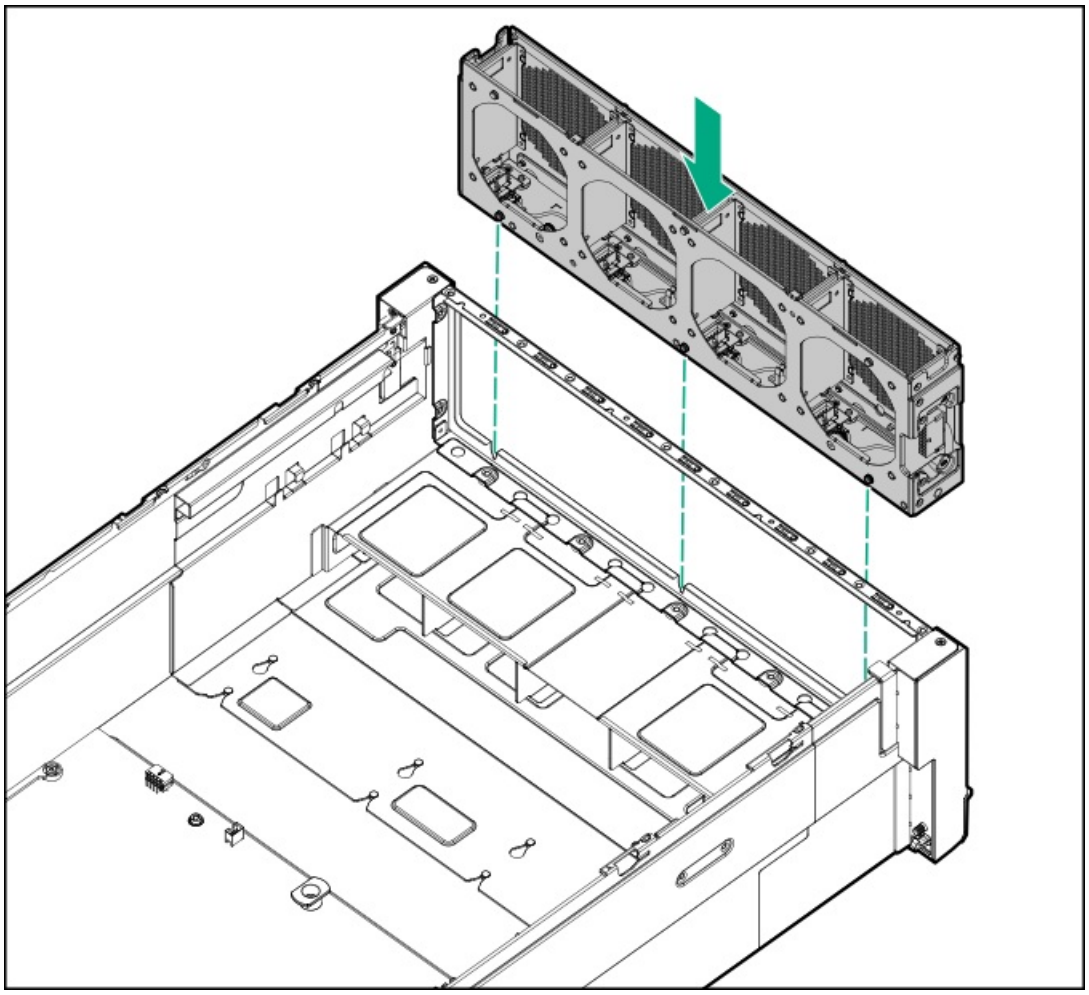


14. Connect the P79781-001 front fan power Y-cable to the system board .

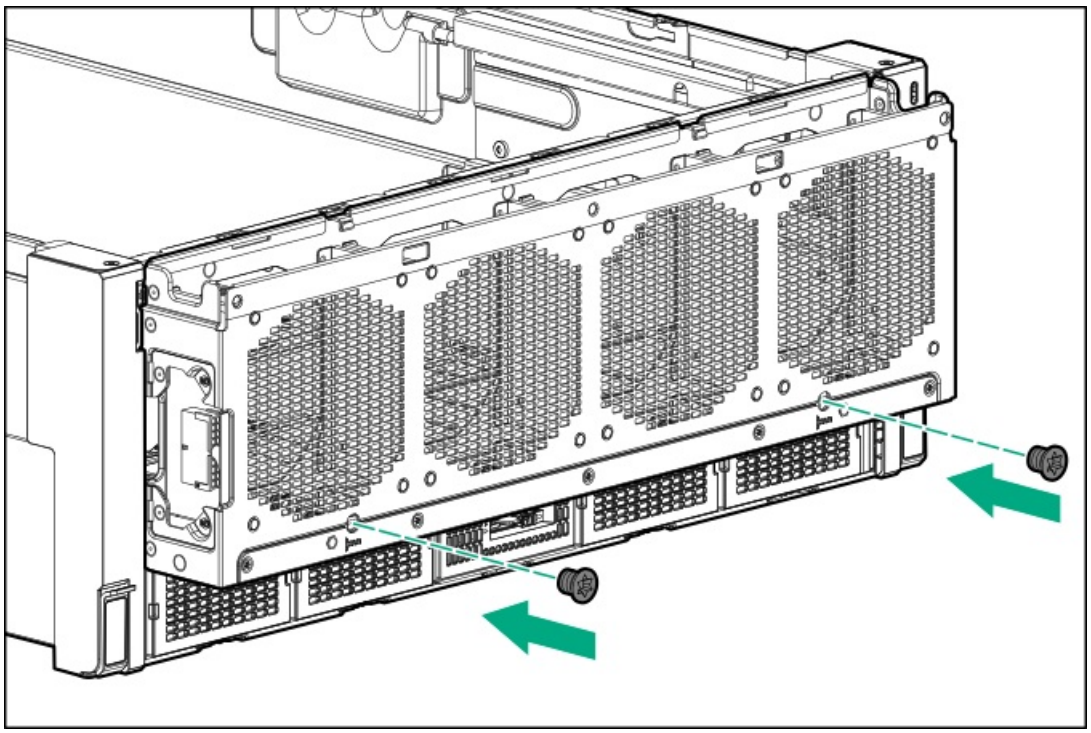
    Use the cable clips to secure the cable to the chassis wall.

15. Install the front fan cage:

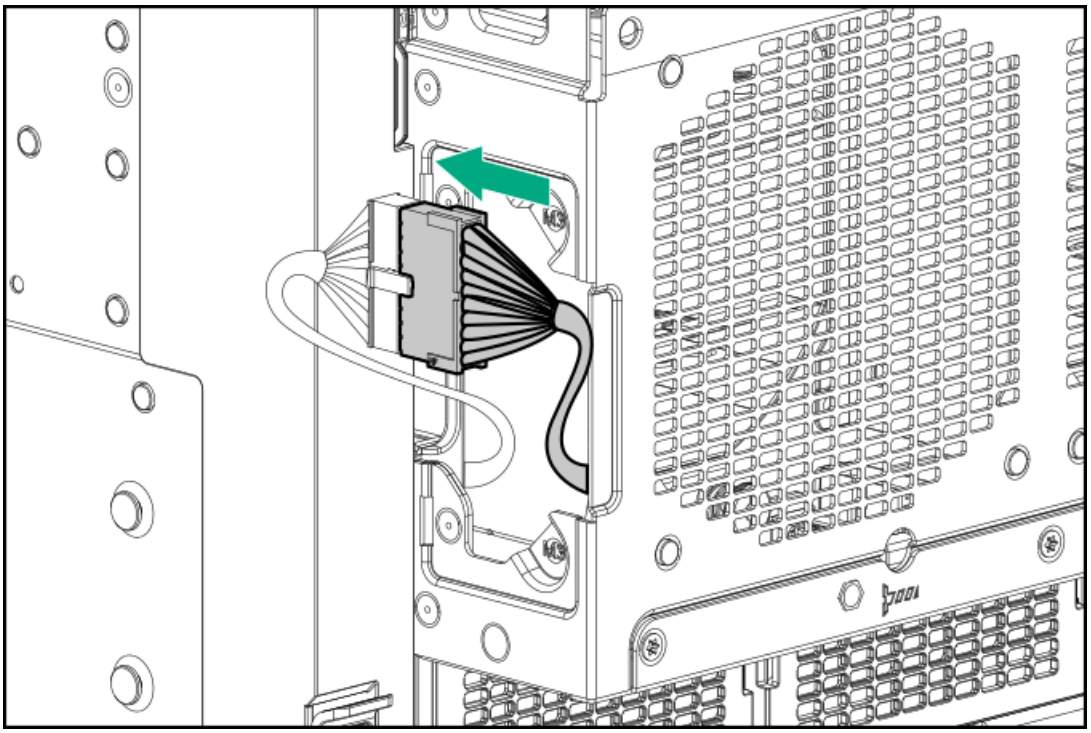
    a. Insert the spools on the fan cage into the notches on the chassis.



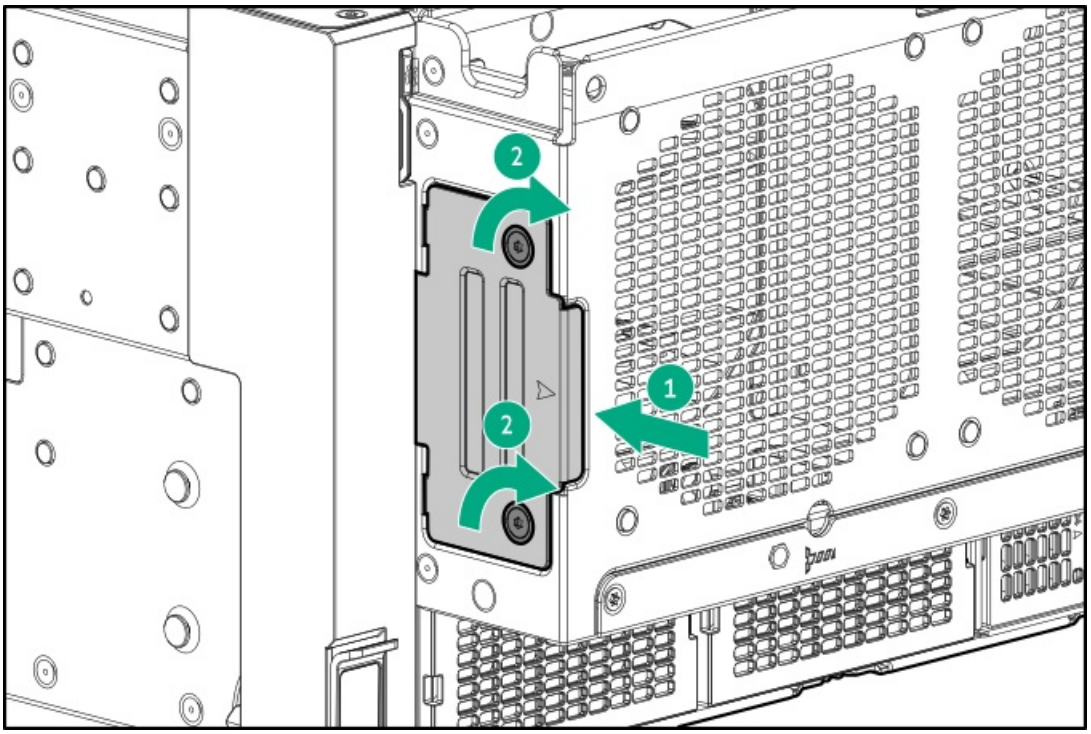
b. Install the front fan cage screws.



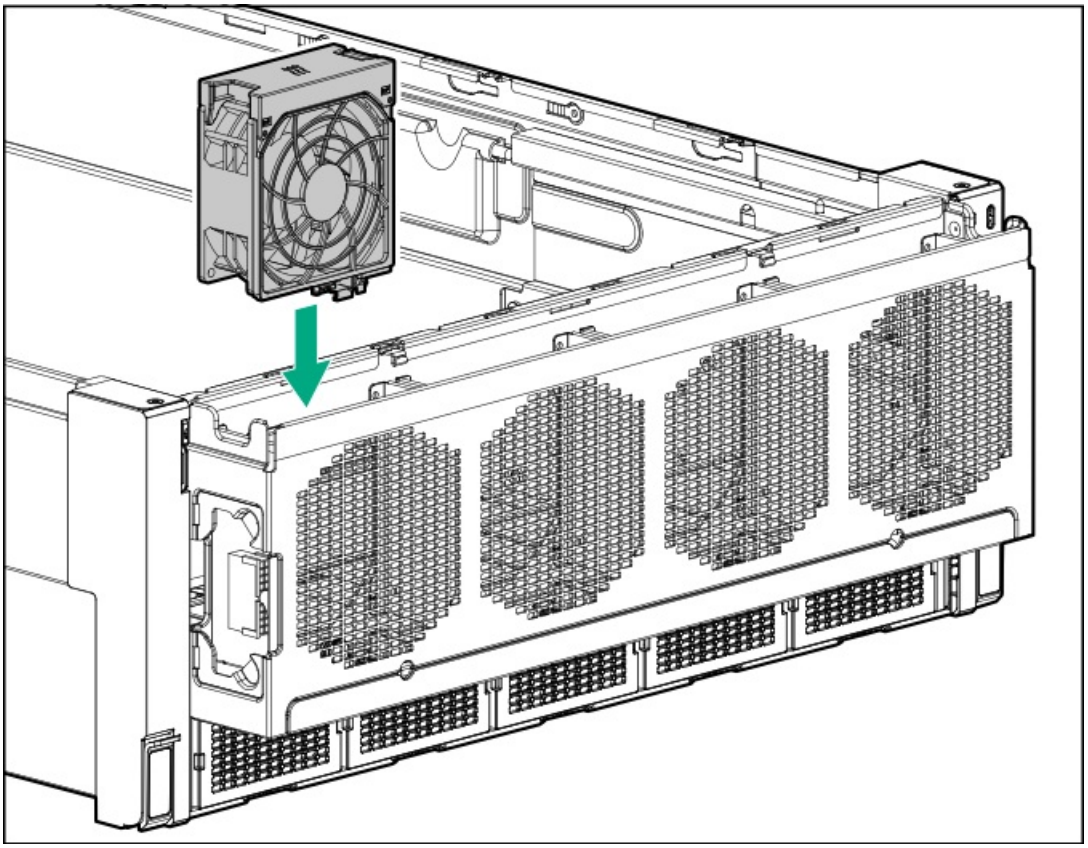
16. Connect the P79781-001 fan power cable on the fan cage to the P79782-001 fan power Y-cable secured in the chassis wall.



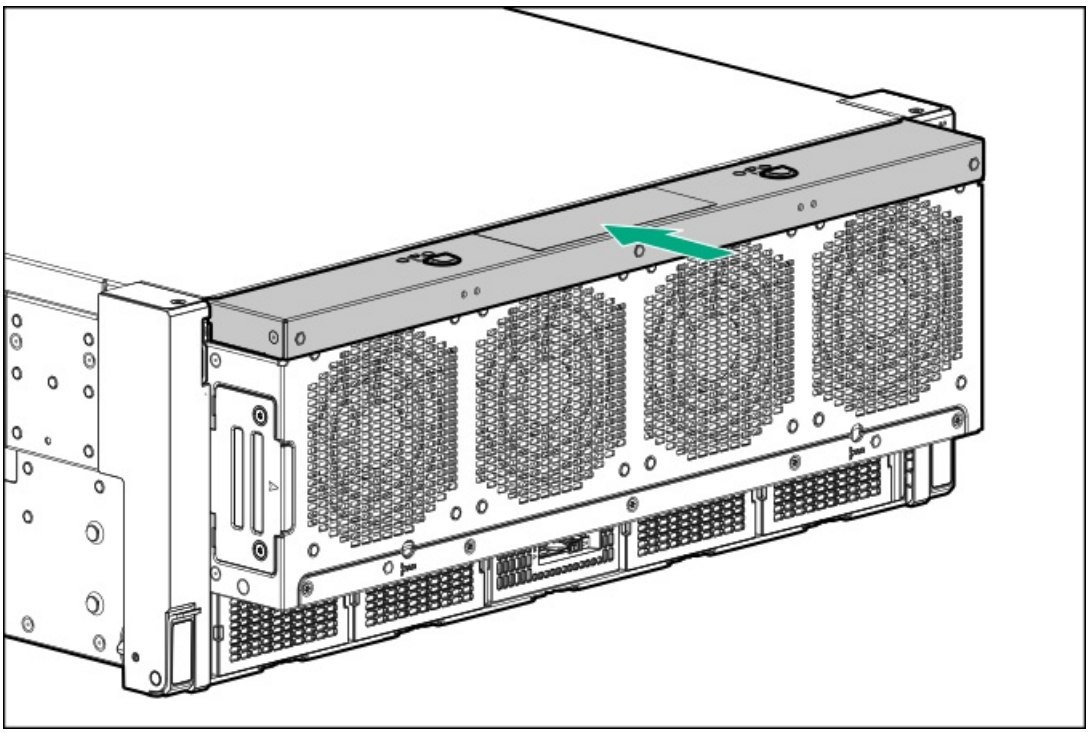
17. Install the front fan cage side cover.



18. Install all front fans.



19. Install the front fan cage top cover.



20. Install the GPU cage and GPUs.
21. Install the internal fan cage.
22. Install the air baffle.
23. Install the access panel.
24. Install the server into the rack .

25. Connect all peripheral cables to the server.
26. Connect each power cord to the server.
27. Connect each power cord to the power source.
28. Power up the server.

Results

The installation procedure is complete.

Installing the PCIe fan

Prerequisites

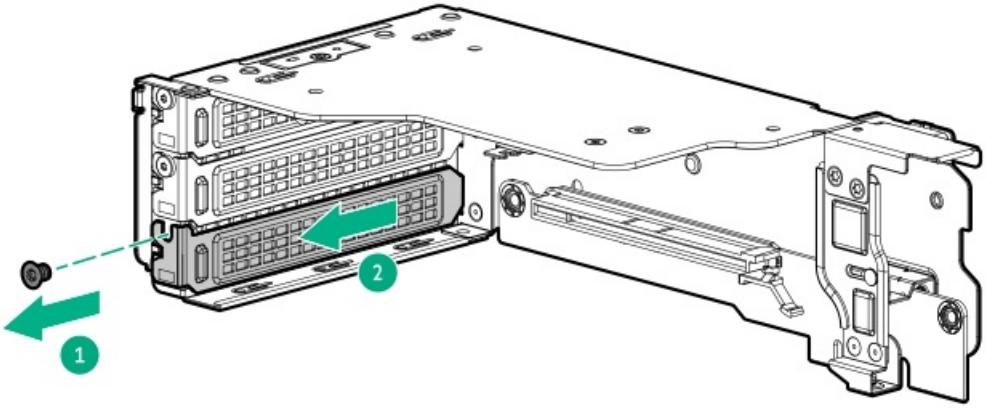
- T-15 Torx screwdriver
- T-10 Torx screwdriver

About this task

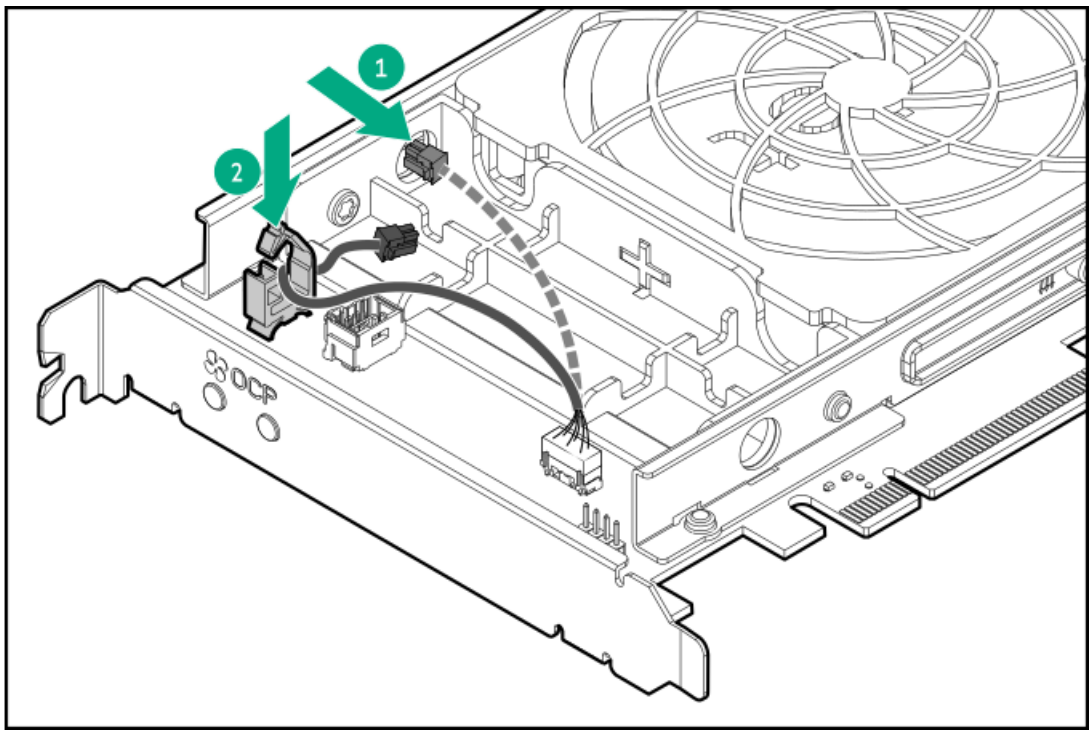
CAUTION
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

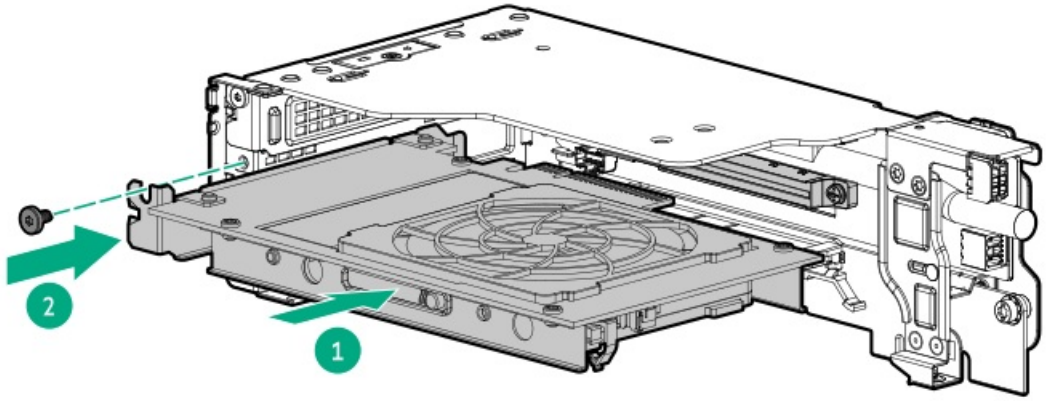
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Do the following:
   a. Disconnect the PCIe x16 captive riser signal cable from the system board.
   b. Disconnect the PCIe x16 captive riser power cable from the captive riser.
9. Remove the riser cage.
10. Install the rear PCIe 5-slot cable kit.
11. Remove the riser slot blank.



12. Install the DPU.
13. Disconnect the PCIe fan speed control cable, and then route the cable into the cable clip.



14. Install the PCIe fan.



15. Install the riser cage.
16. Connect the DPU cables:
    - Slot 1 DPU cabling
    - Slot 4 DPU cabling
17. Install the rear vented panel.
18. Install the air baffle.
19. Install the server into the rack.
20. Connect all peripheral cables to the server.
21. Connect each power cord to the server.
22. Connect each power cord to the power source.
23. Power up the server.

Results

The installation procedure is complete.

Connecting the DLC module in a preconfigured server

Prerequisites

- Review the Direct liquid cooling module components.
- Make sure that the DLC extension hose set (P62042-B21) is installed on the rack.

About this task

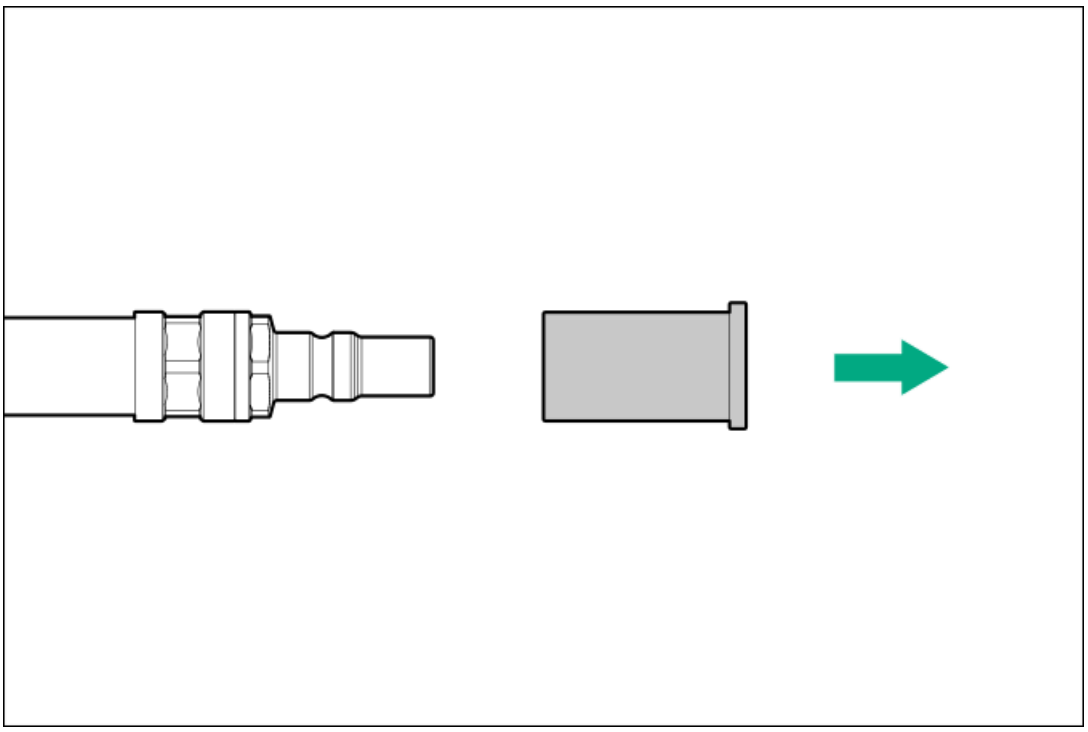
This procedure is required when setting up a preconfigured server that ships with the DLC module already installed in the primary riser cage slot 1. The hose set connects the DLC manifold to the processor cold plates.

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**.

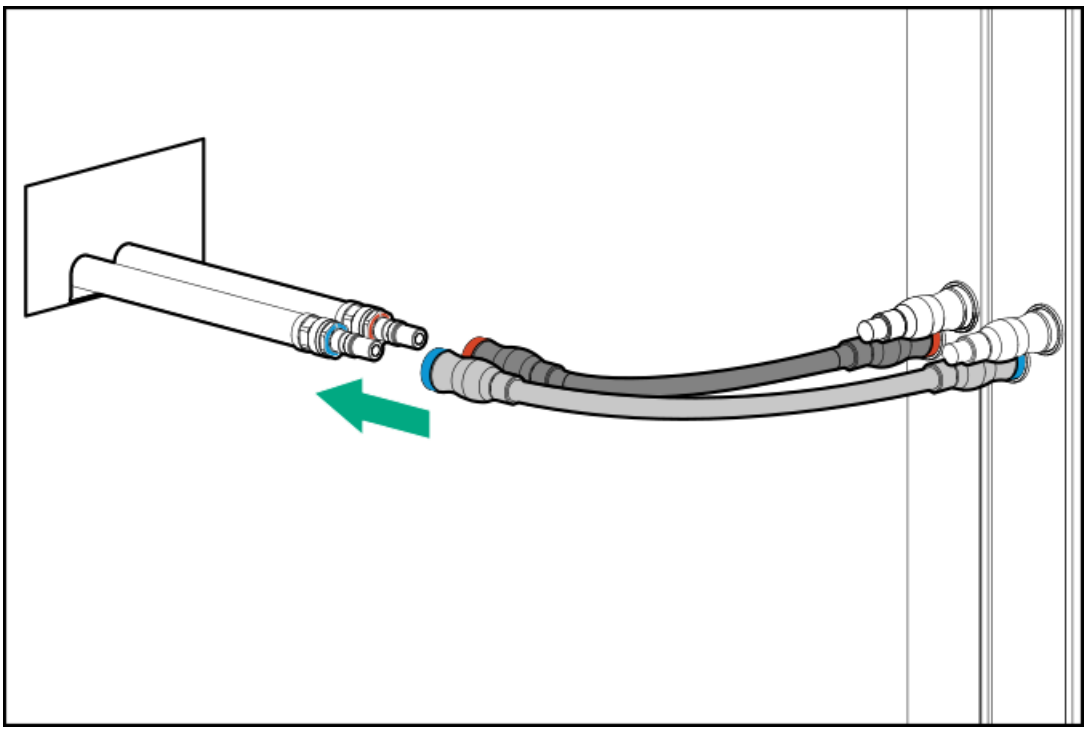
Procedure

1. Install the server into the rack.
2. Locate the quick connectors from the rear of the server.

3. Remove the quick connector caps.



4. Connect the DLC module from the DLC manifold to the server.



Drives

Subtopics

Drive installation guidelines
Installing an SFF NVMe drive
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 an SFF NVMe drive

About this task

CAUTION

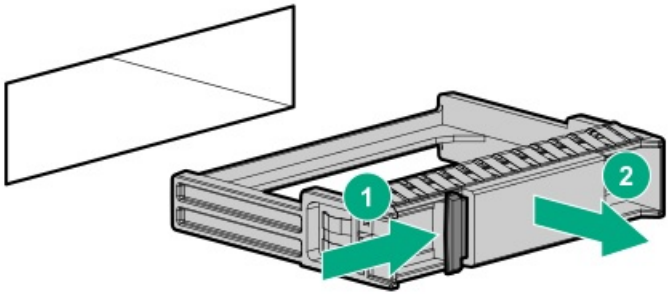
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

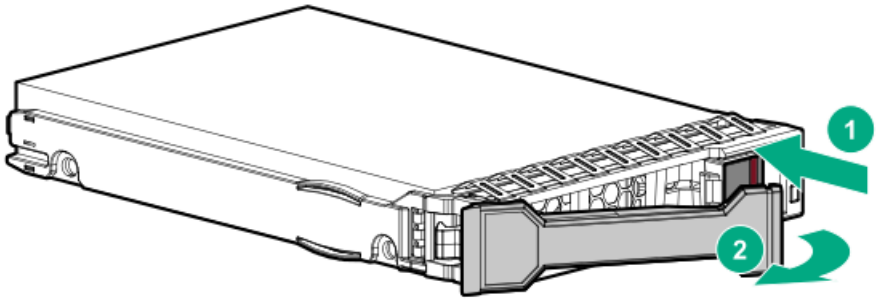
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

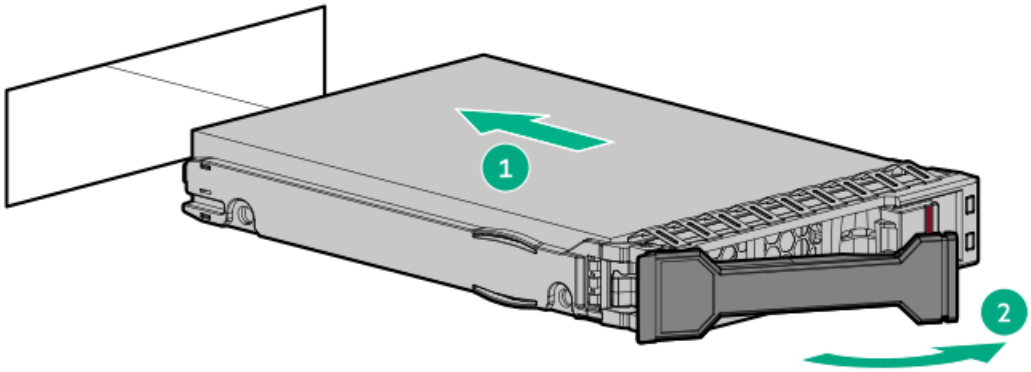
1. If installed, remove the front bezel.
2. Remove the drive blank.



3. Prepare the drive.



4. Install the 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 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.

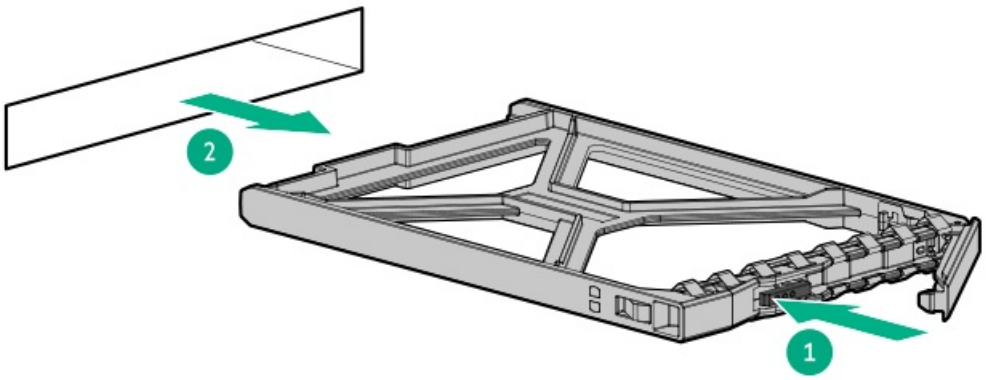
CAUTION

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

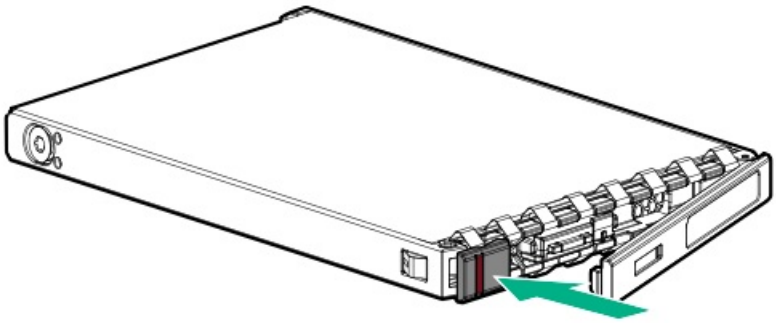
Procedure

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

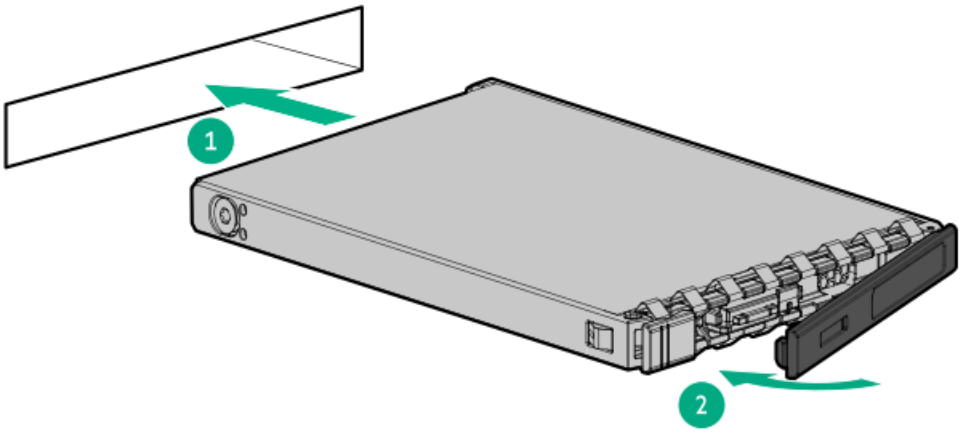
   Retain the blank for future use.



3. Prepare the drive.



4. Install the drive.



NOTE

To make sure that the drive has installed successfully, make sure that the latch is engaged with the drive cage.

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.

Energy packs

Subtopics

HPE Smart Storage Battery
HPE Smart Storage Hybrid Capacitor
Installing the 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 260 mm cable.

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

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

HPE Smart Storage Hybrid Capacitor

The capacitor pack can support up to three devices.

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

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

IMPORTANT

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

The capacitor pack is fully charged after the system boots.

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

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

Subtopics

Minimum firmware versions

Minimum firmware versions

Product	Minimum firmware version
Server system ROM	1.20
HPE MR type-o and type-p Gen11 controllers	52.24.3-4948

Installing the energy pack

About this task

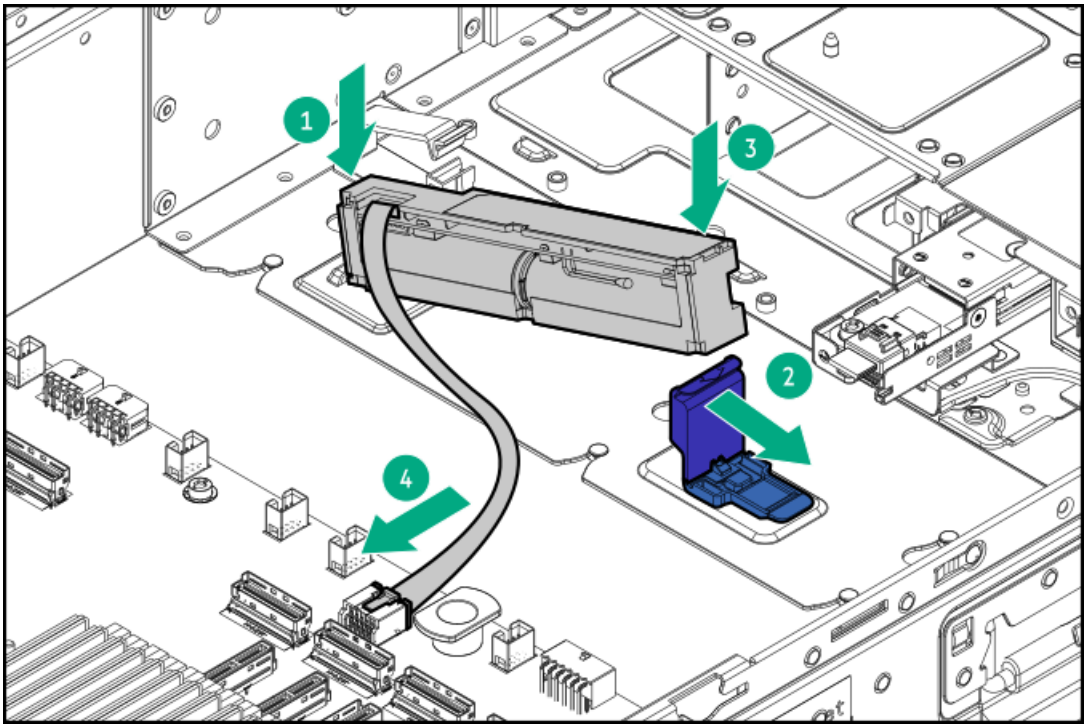
CAUTION

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

Procedure

1. Back up all server data.
2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Remove the access panel.
7. Remove the air baffle.
8. Remove the internal fan cage.
9. Remove all GPUs from the GPU cage.
10. Do one of the following:
    - If captive risers are installed in the GPU cage, lift and hold the GPU cage above the front end of the chassis.

      Three people are required: Two people to lift and hold the GPU cage above the front end of the chassis, and another person to install the energy pack in the server.
    - If switch boards are installed in the GPU cage, remove the GPU cage.
11. Install the energy pack.



12. Install the GPU cage and GPUs.
13. Install the internal fan cage.
14. Install the air baffle.
15. Install the access panel.
16. Install the server into the rack .
17. Connect all peripheral cables to the server.
18. Connect each power cord to the server.
19. Connect each power cord to the power source.
20. Power up the server.

Results

The installation procedure is complete.

GPUs

Subtopics

GPU installation guidelines
Installing a GPU
Connecting the GPU I/O port cables in a preconfigured server
Upgrading from 4 to 8 double-width GPU configuration

GPU installation guidelines

- To ensure optimal GPU application performance and prevent performance bottlenecks, observe these guidelines:

- GPUs are best deployed in pairs. In this server, 8 and 16 single-width and 2, 4, 8, and 10 double-width GPU configurations are supported, with the GPUs evenly distributed across the processor sockets.
- System memory:
  - Minimum: At least 1.5 times greater than the total GPU memory.
  - Recommendation: At least 2.0 times greater than the total GPU memory.

- This server does not support the installation of different GPU models in the same system.
- To maintain proper system cooling, observe the following fan requirements:
  - All GPU configurations require that all four internal fan modules are installed.
  - When installing GPUs with a TDP > 400 W, all four internal 110 W max system fan modules (P80098-B21) are required.
  - The 10 double-width GPU configuration requires the external front fan option (P79656-B21).
- All GPU configurations require a minimum of five power supplies (M-CRPS 1, 2, 3, 5, and 7).
- Some GPUs require power supplies with a higher wattage rating. To determine if the GPU that you plan to install requires a higher wattage power supplies, see the server QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/quickspecs**).
- The limited operating inlet ambient temperatures required for GPUs vary based on the model and the server drive configuration. For more information, see the Extended Ambient Temperature Guidelines for HPE Gen12 Servers:

  https://www.hpe.com/support/ASHRAEGen12

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

Installing a GPU

Prerequisites

- Review the GPU installation guidelines.
- To support high power GPUs with a TDP > 75 W, a GPU auxiliary power cable option is required:
  - 8-pin GPU auxiliary power cable option (P74698-B21)
  - 16-pin GPU auxiliary power cable option (P74700-B21)
- In the 8 double-width GPU configuration, make sure that the PDB 2 is installed.
- 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

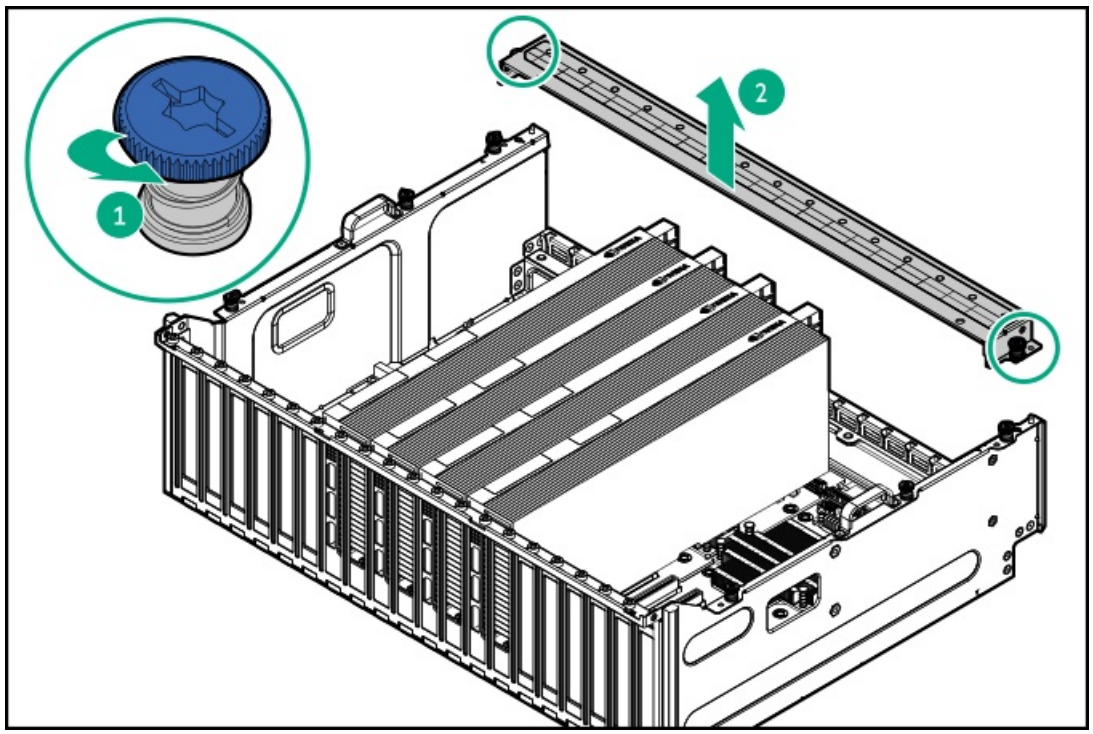
CAUTION
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either a riser slot blank or an expansion card installed.

CAUTION

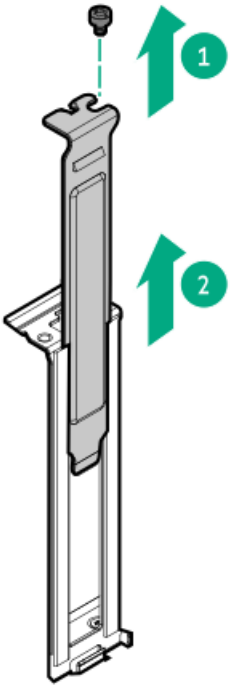
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

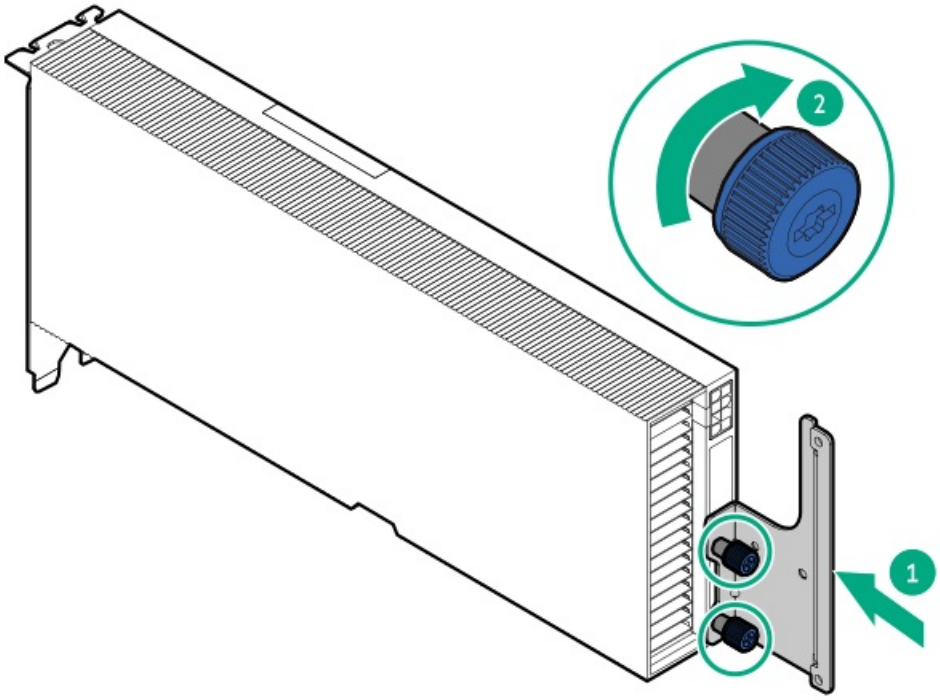
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. (Optional) To connect the GPU I/O port cables, remove the front vented panel.
8. Loosen the captive screws, and then remove the GPU top bracket.



9. Remove the GPU slot blank.

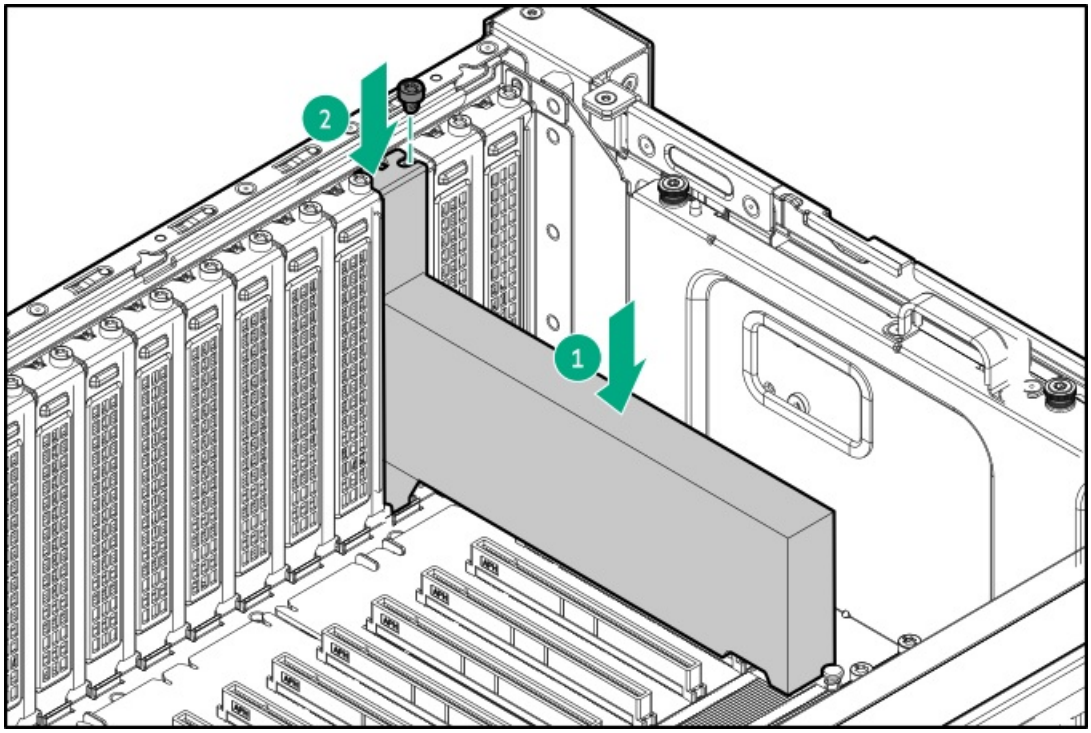


10. If installing the double-width GPU, install the GPU support bracket.

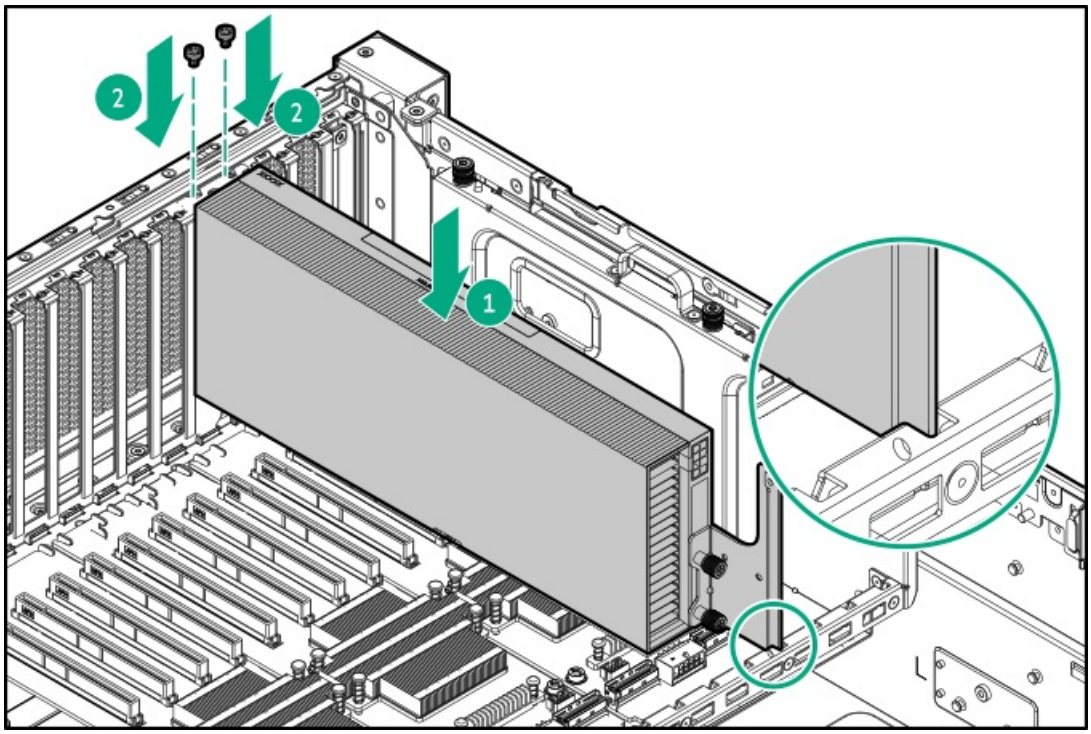


11. Install the GPU.

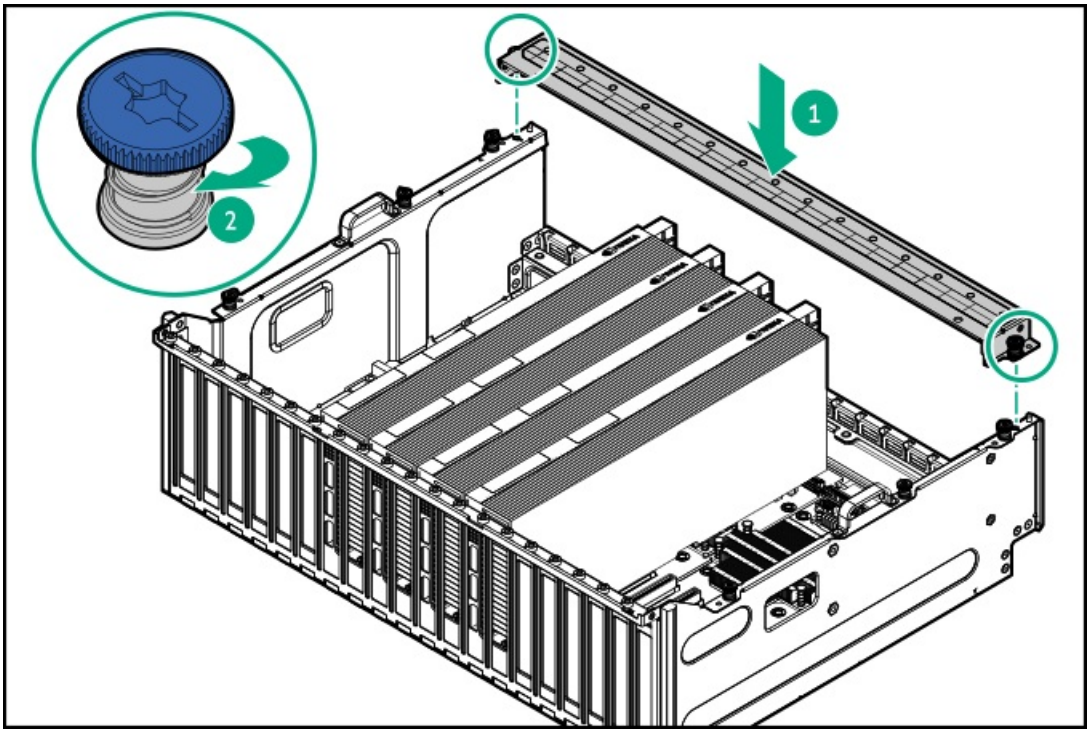
- Single-width GPU



- Double-width GPU



12. To connect the GPU auxiliary power cable:
    a. Remove the cable trough cover .
    b. Connect the GPU auxiliary power cable .
    c. Route the GPU auxiliary power cable in the cable trough, and then install the cable trough cover .
13. Install the GPU top bracket, and then tighten the captive screws.



14. Install the access panel.
15. Install the server into the rack.
16. Connect all peripheral cables to the server.
17. Connect each power cord to the server.
18. Connect each power cord to the power source.
19. (Optional) Connect the GPU I/O port cables.

    For more information, see the GPU documentation.
20. Power up the server.

Results

The installation procedure is complete.

Connecting the GPU I/O port cables in a preconfigured server

Prerequisites

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

About this task

The I/O ports that the GPU supports vary based on the GPU model. For more information, see the GPU documentation.

Procedure

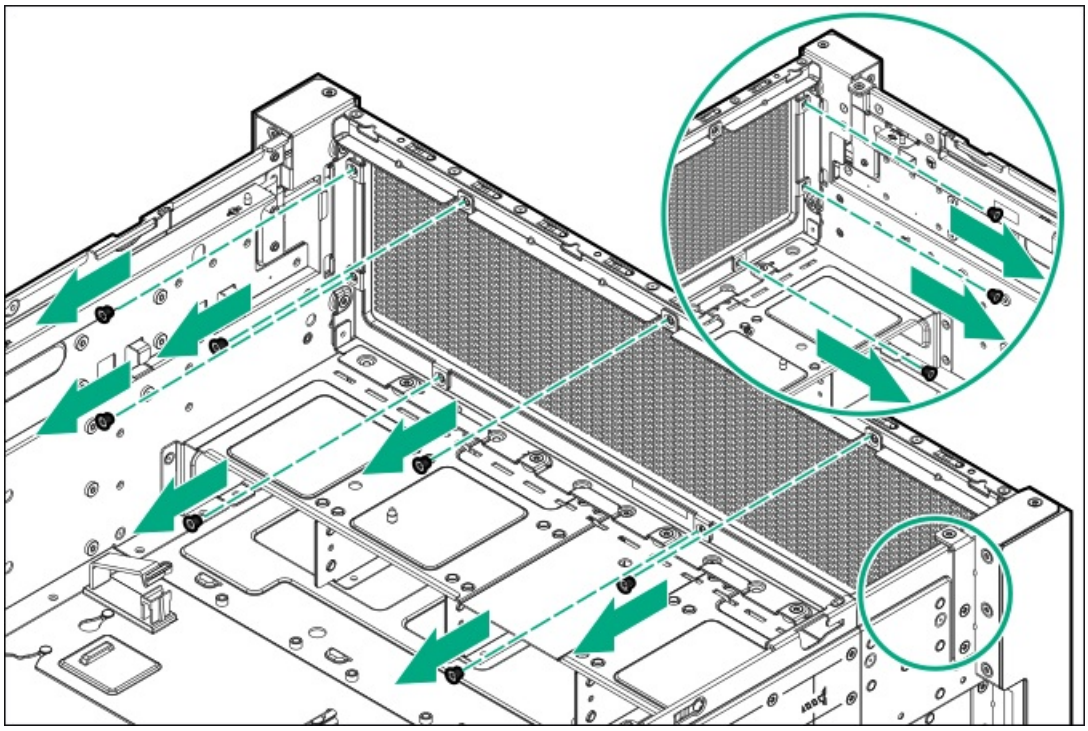
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

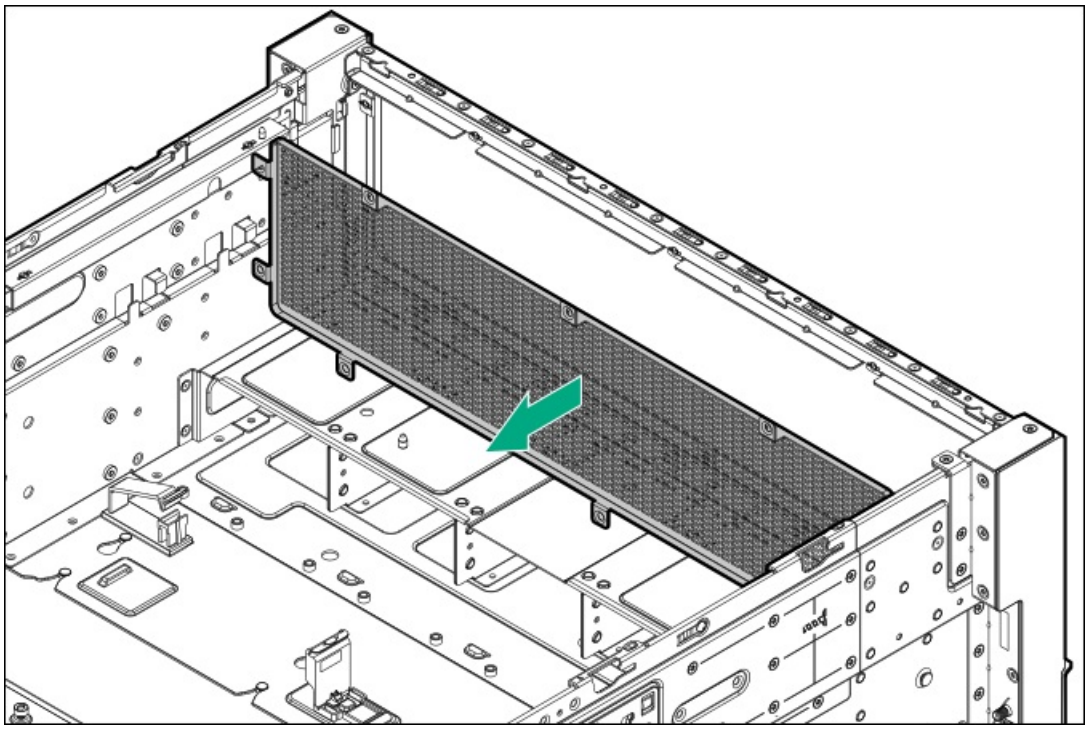
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. If installed, remove the front bezel.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the internal fan cage.
10. Remove all GPUs from the GPU cage.
11. Do one of the following:
    - If captive risers are installed in the GPU cage, lift and hold the GPU cage above the front end of the chassis.

      Three people are required: Two people to lift and hold the GPU cage above the front end of the chassis, and another person to remove the front vented panel.
    - If switch boards are installed in the GPU cage, remove the GPU cage.
12. Remove the front vented panel.

    a. Remove the front vented panel screws.



    b. Remove the front vented panel.



Retain the front vented panel for future use.

13. Install the GPU cage and GPUs.
14. Install the internal fan cage.
15. Install the air baffle.
16. Install the access panel.
17. Install the server into the rack.
18. Connect all peripheral cables to the server.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. Connect the GPU I/O port cables.

    For more information, see the GPU documentation.
22. Power up the server.

Results

The installation procedure is complete.

Upgrading from 4 to 8 double-width GPU configuration

Prerequisites

- Make sure that the PDB 2 is installed.
- Before you perform this procedure, make sure that you have the following items available:
  - GPU upgrade option kit (P81677-B21)
  - T-15 Torx screwdriver

- T-10 Torx screwdriver

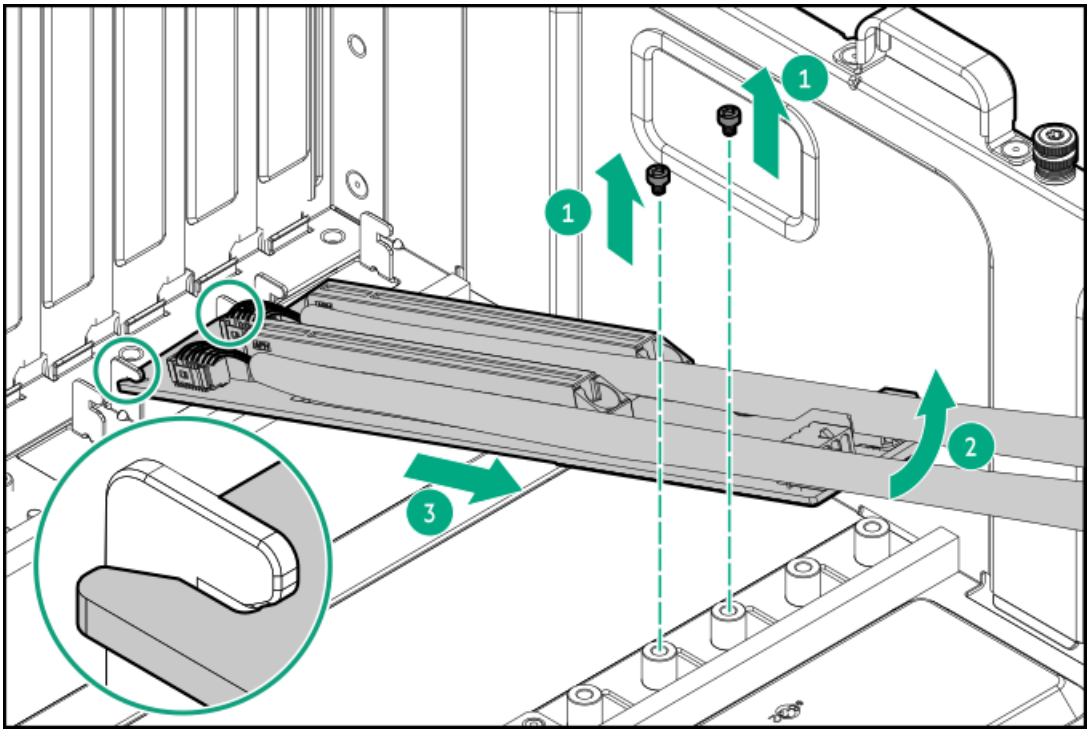
About this task

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.

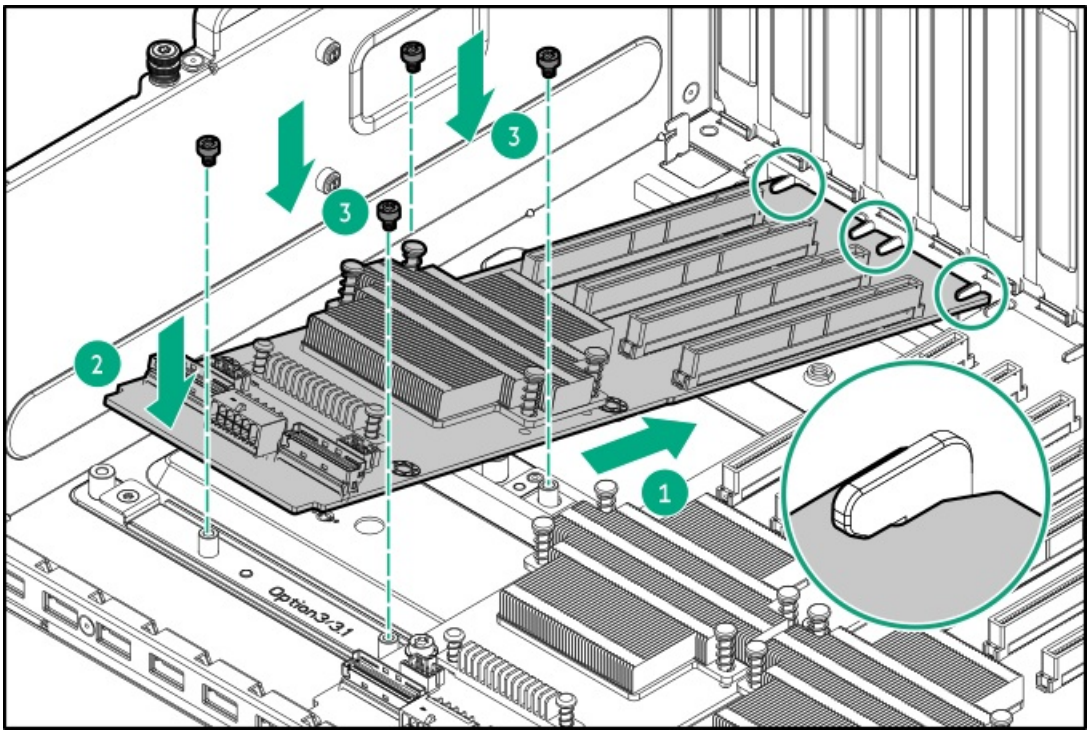
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. 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.
8. Remove the internal fan cage.
9. Remove all GPUs from the GPU cage.
10. Lift and hold the GPU cage above the front end of the chassis.
11. Disconnect all captive riser power cables from the PDBs.
12. Remove the cable trough.
13. Remove the internal fan cable assembly.
14. Disconnect all captive riser signal cables from the system board.
15. Place the GPU cage on a flat, level work surface.
16. Remove all PCIe x16 captive risers.



17. Install the PCIe ×16 sIwtch boards.



18. Install the GPU cage and GPU.
19. Connect all cables to the PCIe x16 switch board .
20. Install the GPUs.
21. Install the internal fan cage.
22. Install the air baffle.
23. Install the access panel.
24. Install the server into the rack .
25. Connect all peripheral cables to the server.

26. Connect each power cord to the server.
27. Connect each power cord to the power source.
28. Power up the server.

Results

The installation procedure is complete.

Management

Subtopics

Serial port option

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 cable

Installing the serial port cable

Prerequisites

- T-10 Torx screwdriver
- Spudger or any small prying tool
- 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
The port blank provides EMI shielding and helps maintain proper thermal status inside the server. Do not operate the server when a port blank is removed without the corresponding I/O port option installed.

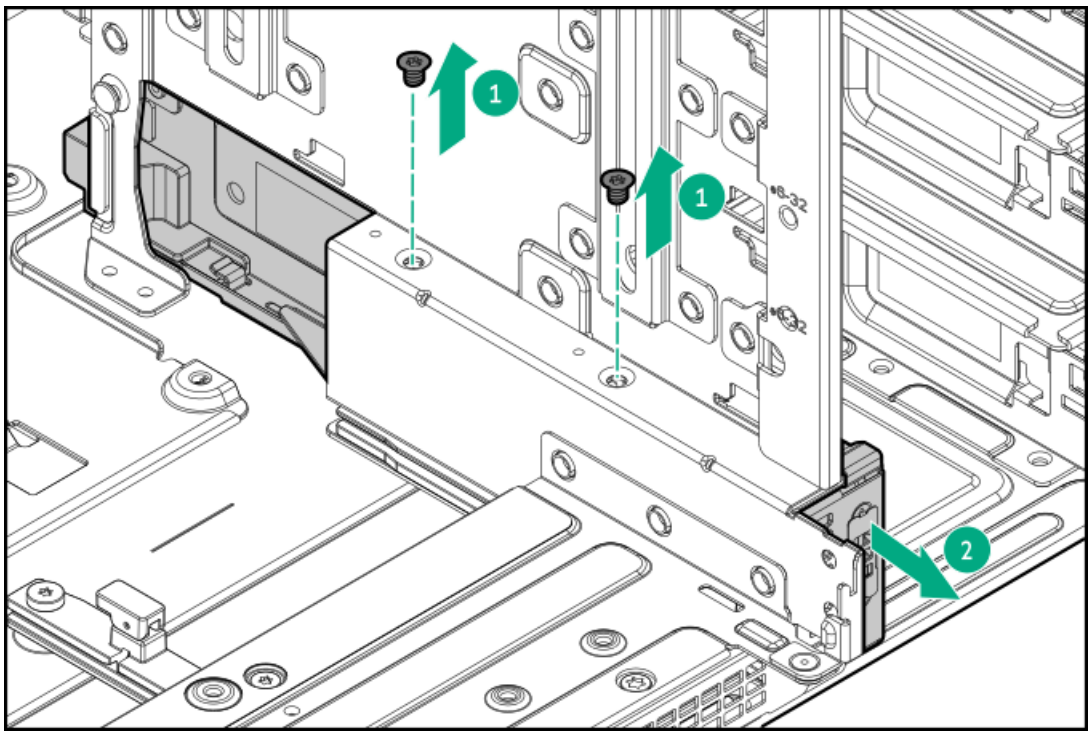
Procedure

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

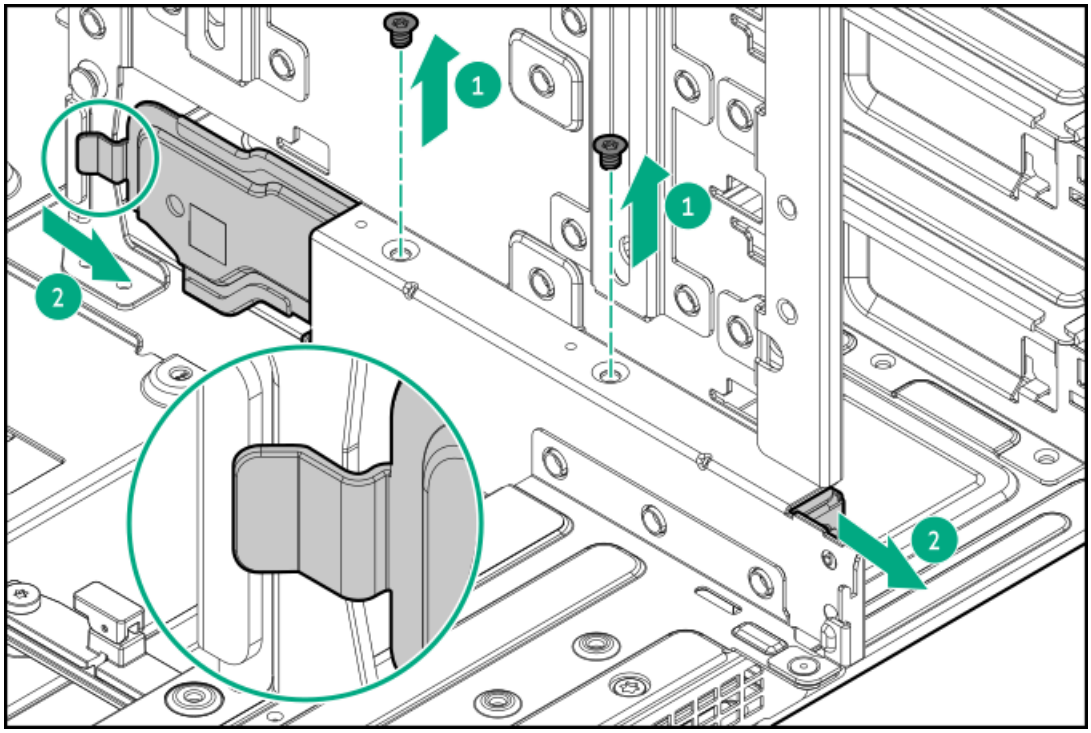
b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Remove the primary and secondary riser cages.
9. Remove the power supplies from power supply bays 1 and 3.
10. Remove the ix port bracket.

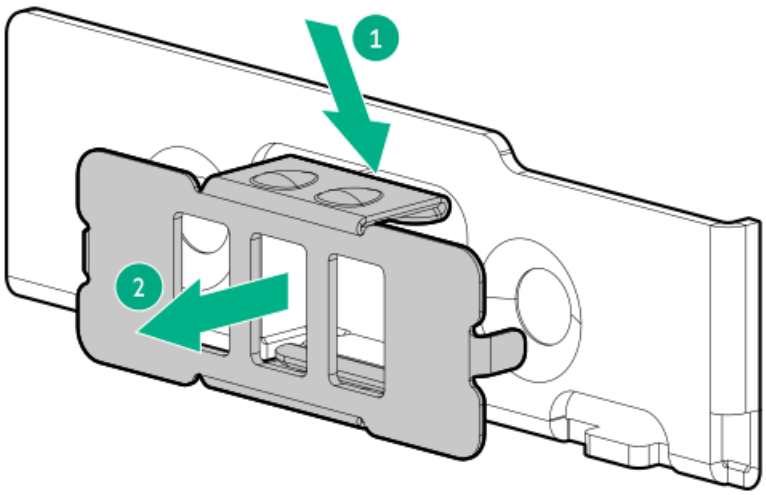
- 60-mm M-CRPS



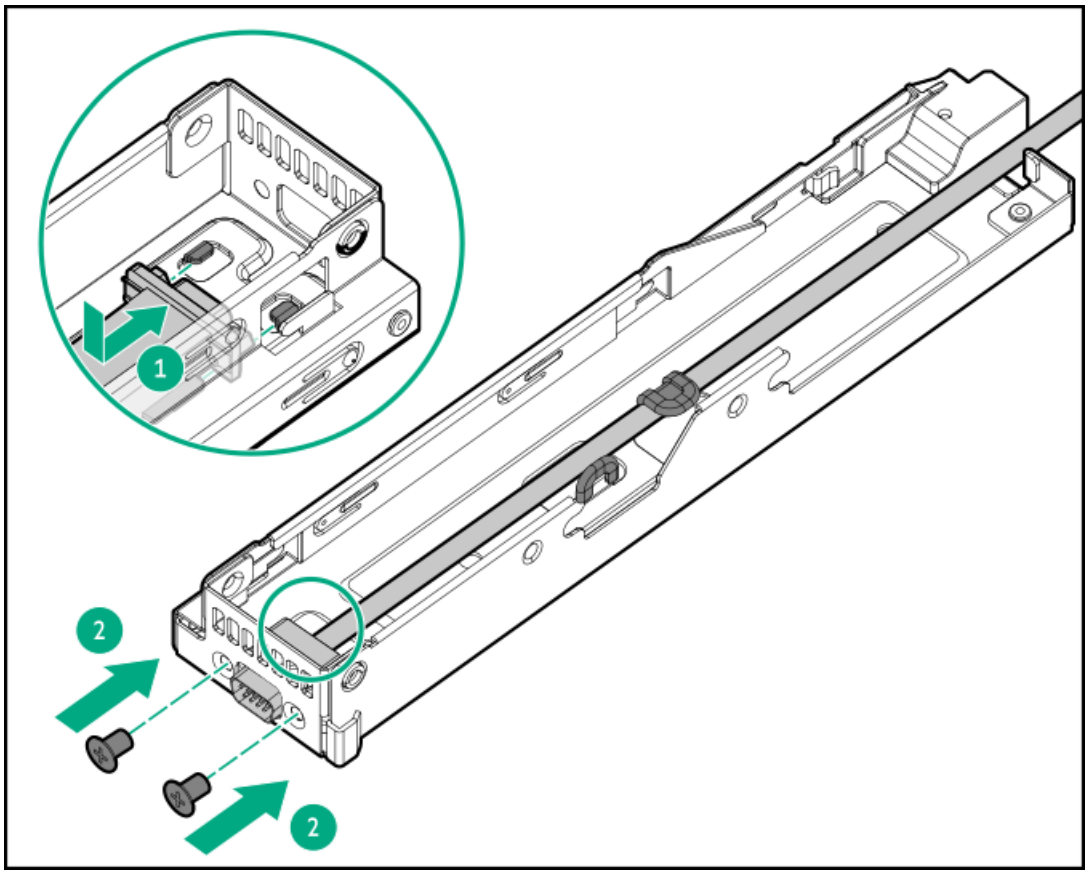
- 73.5-mm M-CRPS



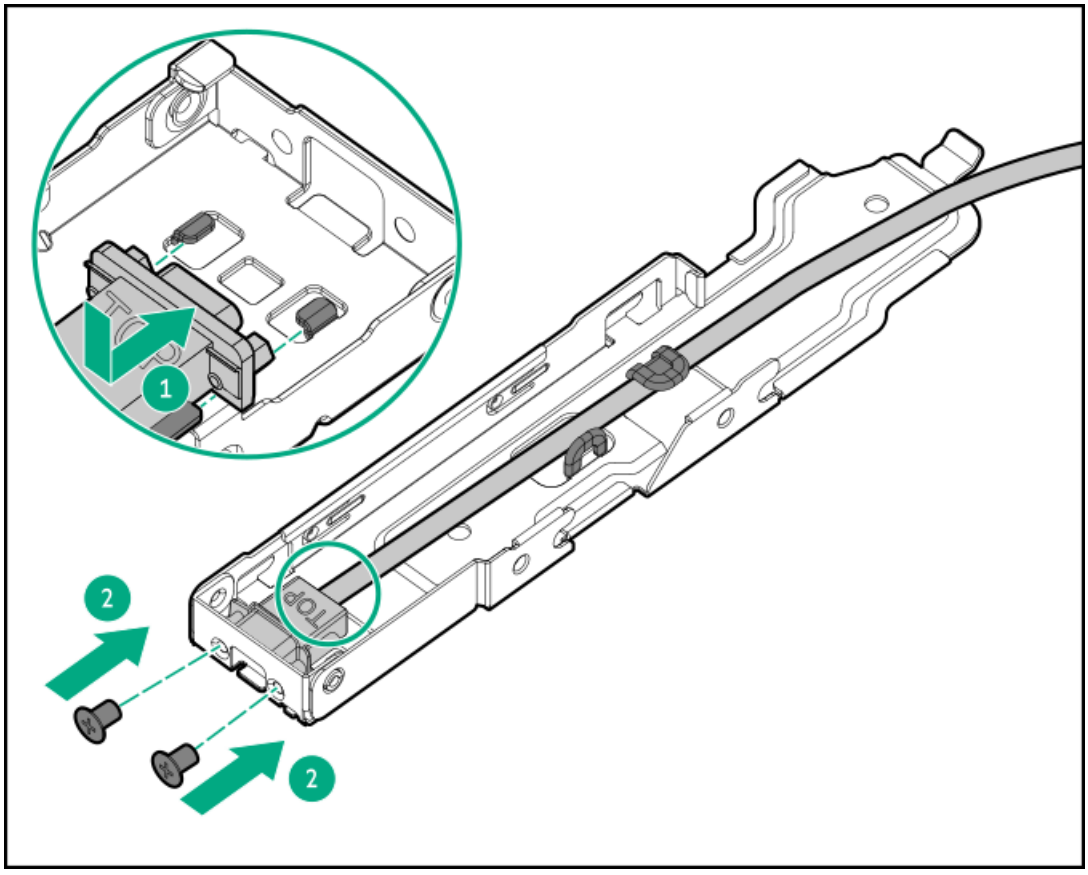
11. Remove the ix port blank.



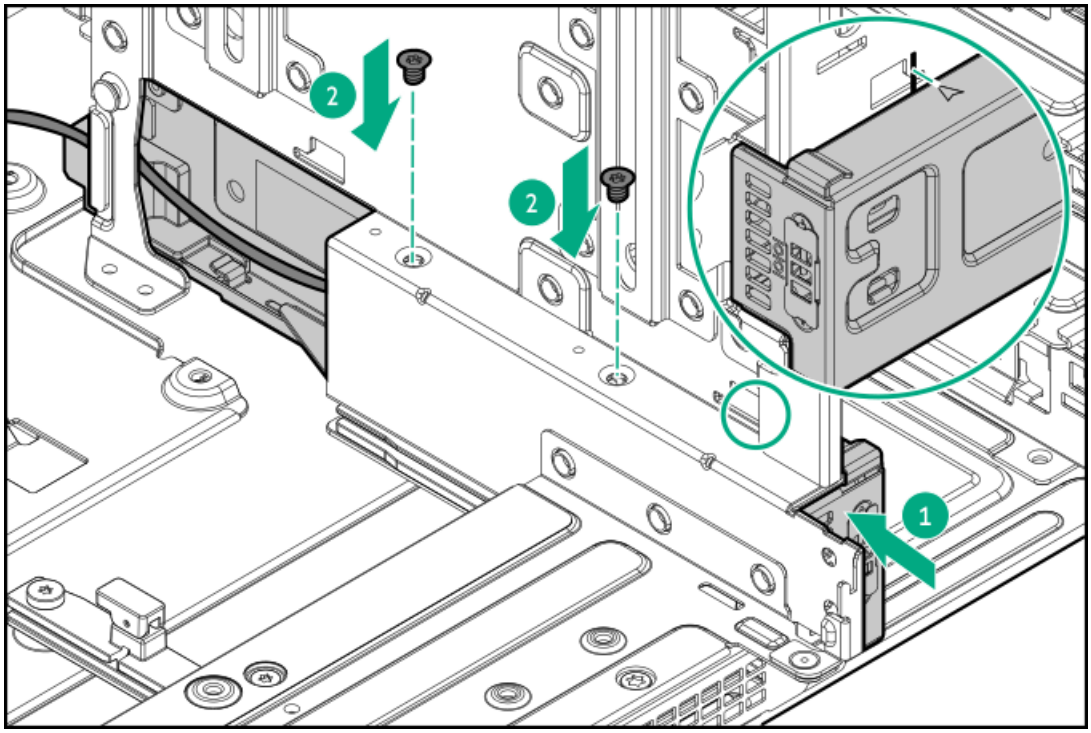
12. Slide the ix port in the tabs, and then secure the ix port on the bracket.
    - 60-mm M-CRPS



- 73.5-mm M-CRPS

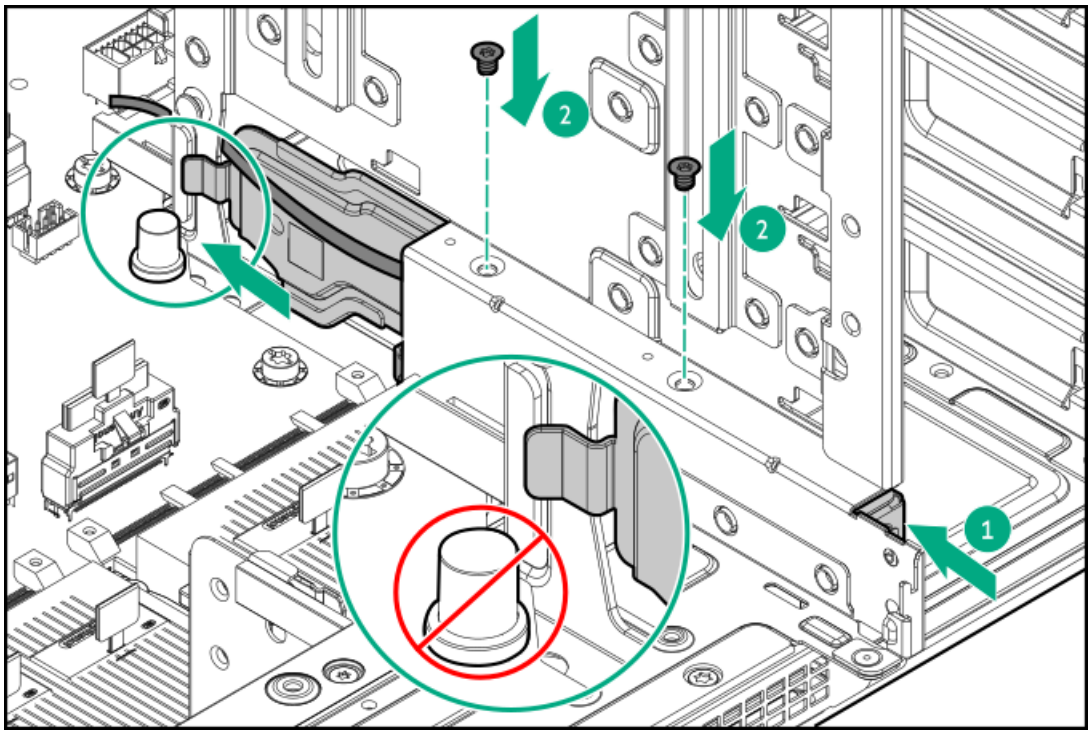


13. Install the ix port cable bracket in the power supply bay 1.
    - 60-mm M-CRPS



- 73.5-mm M-CRPS

> **CAUTION**
>
> When installing the ix port cable bracket in the 73.5-mm M-CRPS configuration, make sure that the bracket tab does not touch the system board capacitor located in front of it.



14. Connect the ix port cable to the DC-SCM.
15. Install the power supplies into power supply bays 1 and 3 .
16. Install the primary and secondary riser cages.
17. Install the rear vented panel .

18. Install the access panel.
19. Install the server into the rack.
20. Connect all peripheral cables to the server.
21. Connect each power cord to the server.
22. Connect each power cord to the power source.
23. Connect the serial port dongle to the ix port.
24. Power up the server.

Configuring the serial port

25. 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.

Memory

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 Intel Xeon 6 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

To prevent improper cooling and thermal damage, do not operate the server unless all DIMM slots have either a DIMM or a DIMM blank installed.

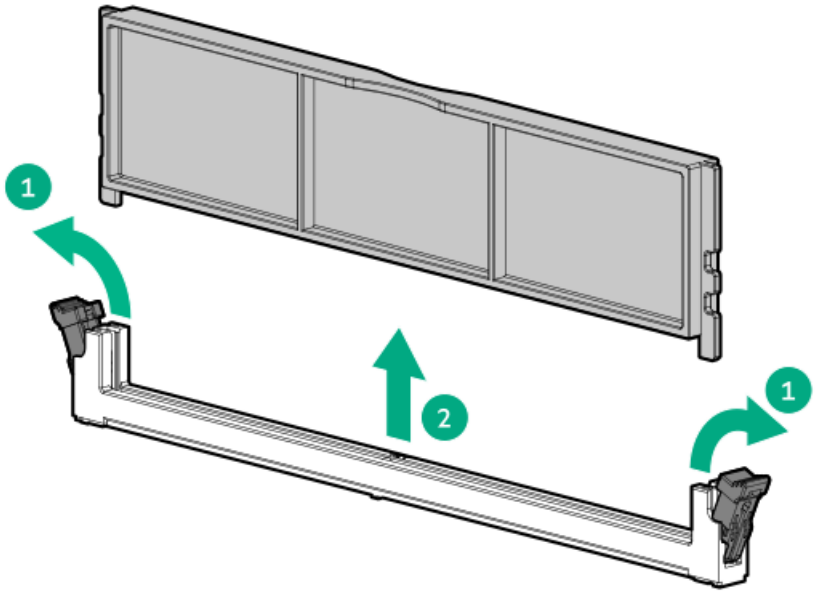
CAUTION

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

Procedure

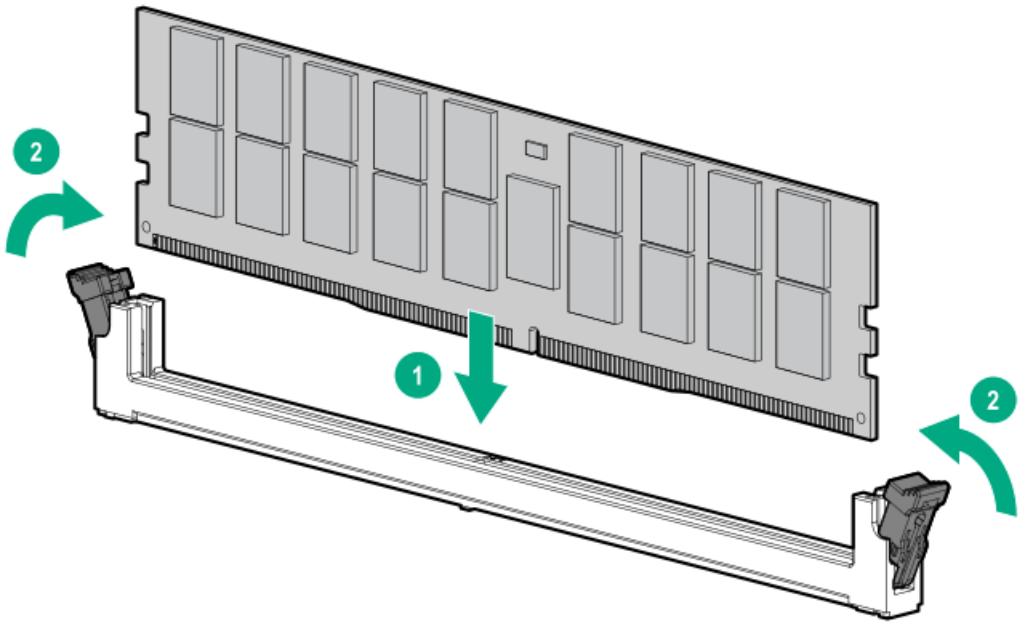
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Remove the access panel.
6. Remove the air baffle.

7. Remove the internal fan cage.
8. Remove the DIMM blank.



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

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



10. Install the internal fan cage.
11. Install the air baffle.
12. Install the access panel.

13. Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect each power cord to the power source.
16. Connect each power cord to the server.
17. Power up the server.
18. 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

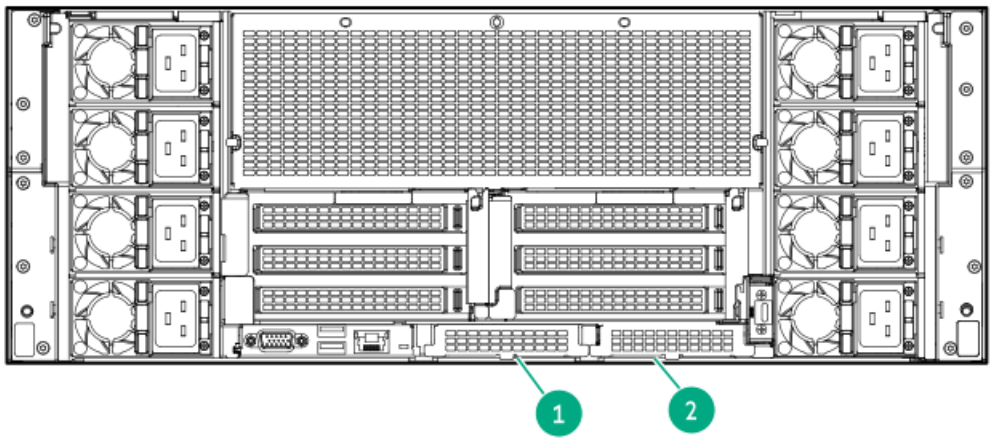
The installation procedure is complete.

Networking

Subtopics

OCP slot population rules
PCIe NIC population rules

OCP slot population rules



Item	Slot number	Supported components
1	Slot 27 OCP A PCIe5 ×8/×16	• Type-o storage controller • OCP NIC adapter
2	Slot 28 OCP B PCIe5 ×8 [1]/×16	• Type-o storage controller • OCP NIC adapter • OCP retimer card

[1] This slot supports ×8 network bandwidth by default.

Subtopics

Installing an OCP NIC adapter

Installing an OCP NIC adapter

Prerequisites

- Review the OCP slot population rules.
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - OCP bandwidth upgrade cable kit:
    - For Slot 27 OCP A PCIe5 ×8 or ×16 configuration—P74694-B21
    - For Slot 28 OCP B PCIe5 from ×8 to ×16 configuration—P74696-B21

About this task

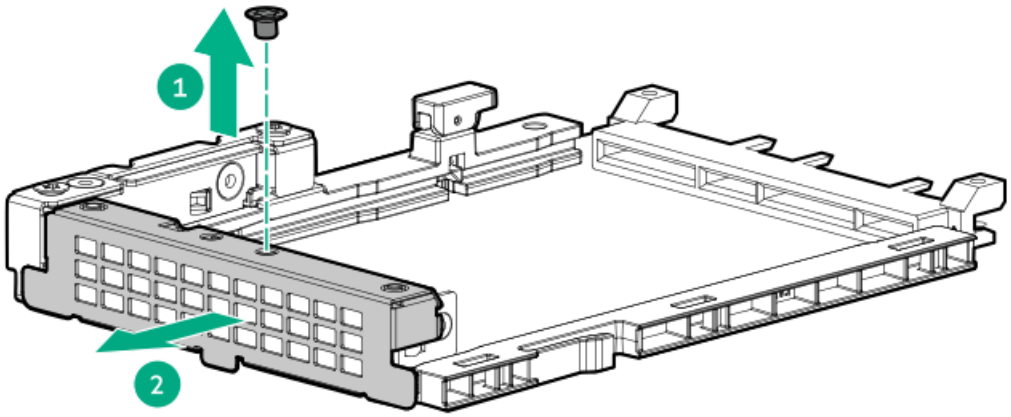
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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

Procedure

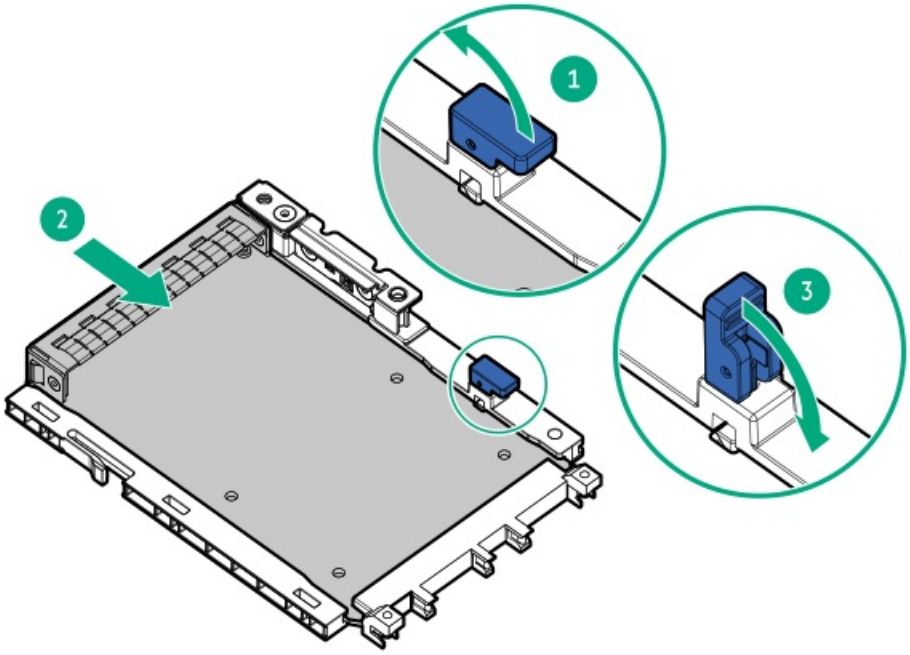
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.

6. Remove the access panel.
7. Remove the rear vented panel.
8. Remove the secondary riser cage.
9. If installing the adapter on Slot 27 OCP A, remove the primary riser cage.
10. Remove the screw, and then remove the OCP slot blank.



11. Install the OCP NIC 3.0 adapter:
    a. Rotate the locking pin to the open (vertical) position.
    b. Slide the adapter into the slot until it clicks into place.

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



12. Connect the OCP bandwidth upgrade cables.

13. If removed, install the primary cage
14. Install the secondary riser cage.
15. Install the rear vented panel.
16. Install the access panel.
17. Install the server into the rack.
18. Connect all peripheral cables to the server.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. Power up the server.

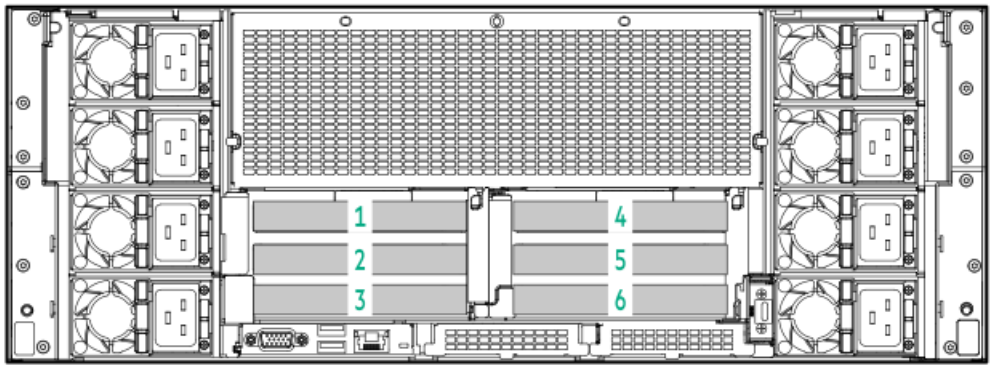
Results

The installation procedure is complete.

PCIe NIC population rules

To maintain proper system cooling, install PCIe NIC and DPU options in the GPU cage and riser cage slots specified for each GPU configuration.

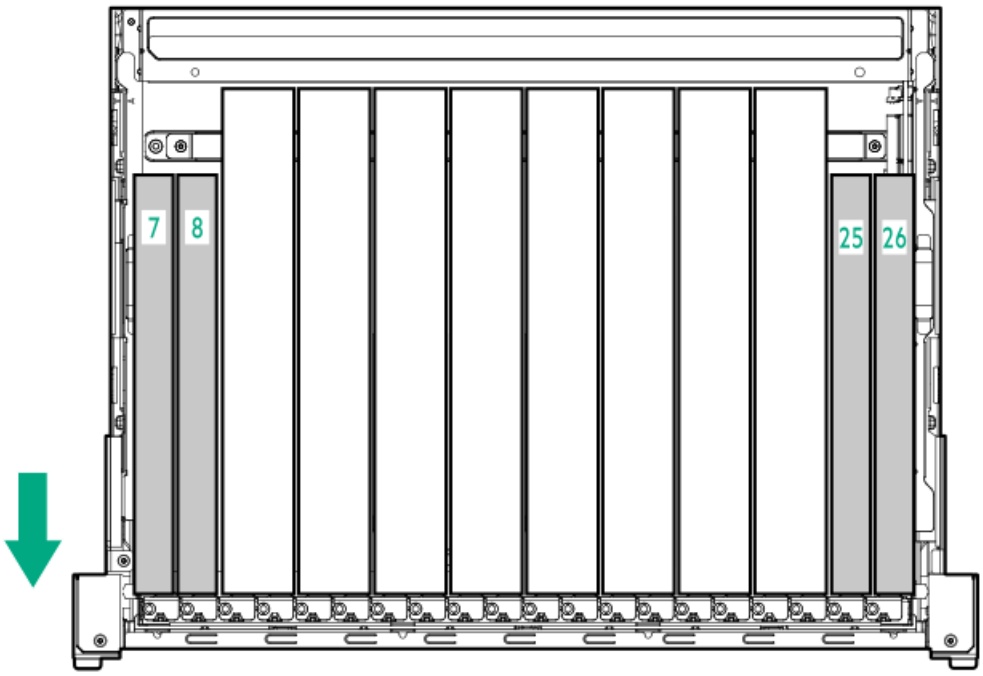
PCIe NIC population in the 8 double-width GPU configuration



Slot numbering	Supported components
1–3	ConnectX-7 SmartNIC
4	DPU
5	PCIe fan
6	ConnectX-7 SmartNIC

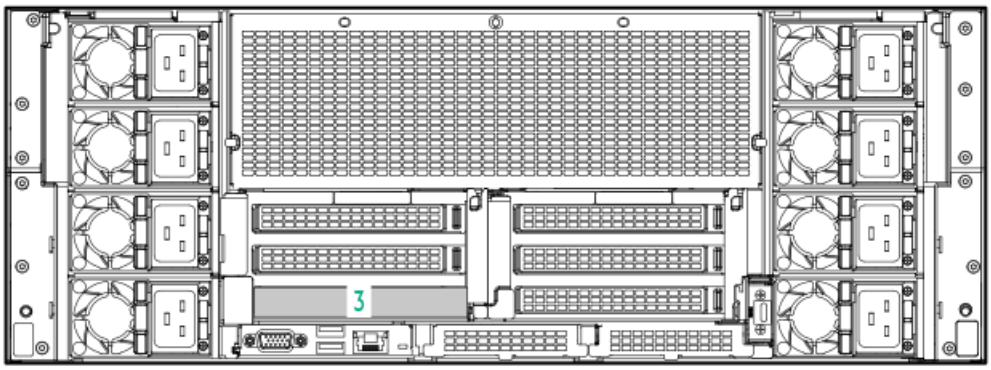
PCIe NIC population in the 8 double-width GPU configuration

- PCIe NIC in the GPU cage



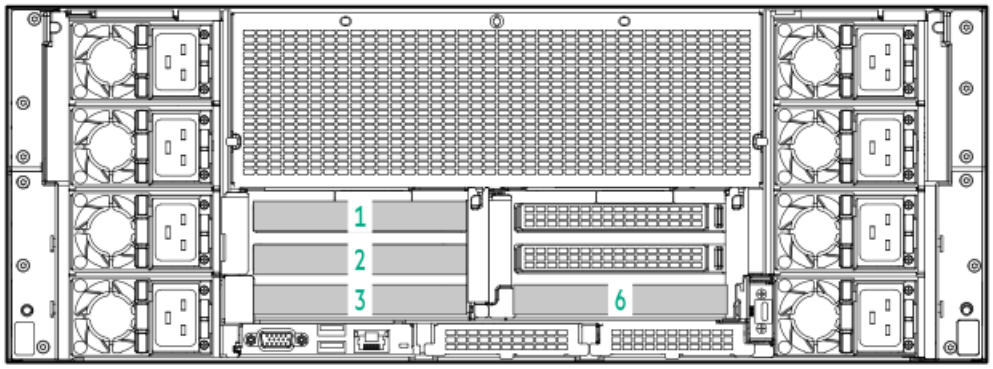
Slot numbering	Supported components
7, 8	ConnectX-7 SmartNIC
25	DPU
26	ConnectX-7 SmartNIC

- PCIe NIC in the riser cage



Slot numbering	Supported components
1–2	—
3	ConnectX-7 SmartNIC
4–6	—

PCIe NIC population in the 10 double-width GPU configuration



Slot numbering	Supported components
1	DPU
2	PCIe fan
3 and 6	ConnectX-7 SmartNIC
4–5	—

Subtopics

Installing a PCIe NIC in the riser cage
Installing a PCIe NIC in the GPU cage

Installing a PCIe NIC in the riser cage

Prerequisites

- Review PCIe NIC population rules .
- If you are installing a DPU in the riser cage, make sure that you have the following items available:
  - Rear PCIe 5-slot cable option kit (P74722-B21)
  - PCIe fan (P28727-B21)
  - T-10 Torx screwdriver

About this task

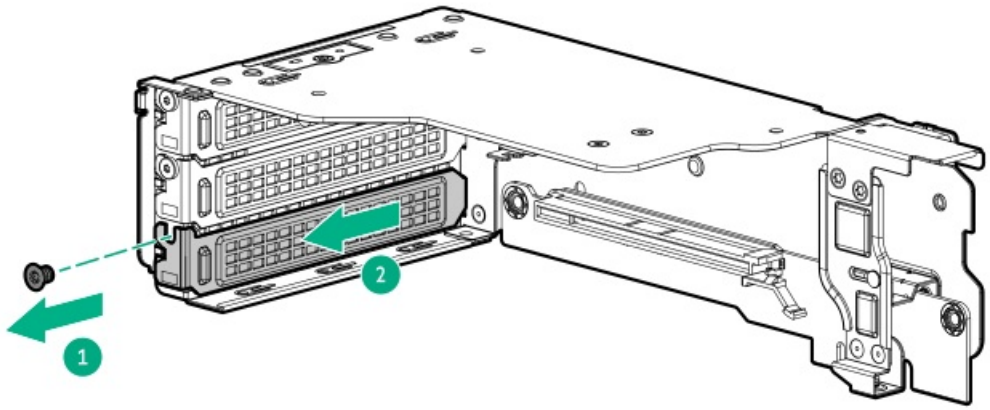
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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

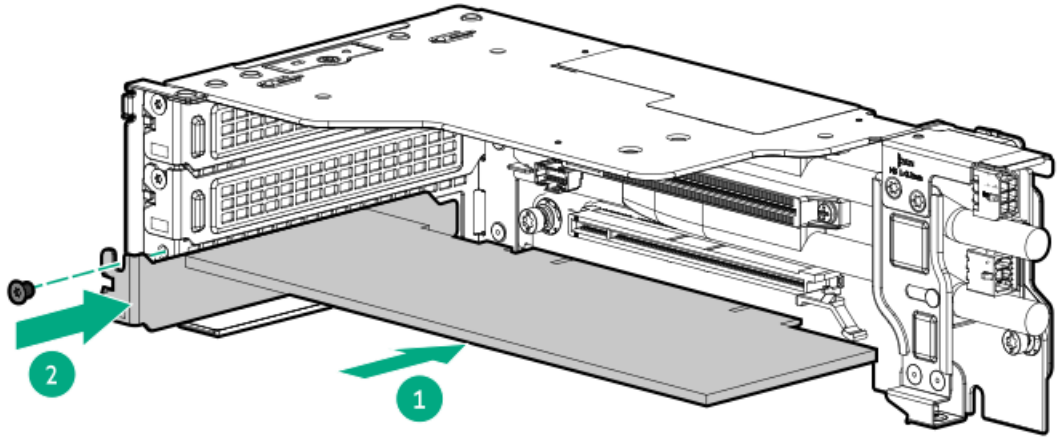
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Do the following:
   a. Disconnect the PCIe x16 captive riser signal cable from the system board.
   b. Disconnect the PCIe x16 captive riser power cable from the captive riser.
9. Remove the riser cage.
10. If installing a DPU, install the rear PCIe 5-slot cable kit.
11. Remove the riser slot blank.



12. 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.
13. Install the PCIe NIC, and then secure the screw.

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



14. Connect all necessary internal cabling to the PCIe NIC.
15. If installing a DPU:
    a. Connect the DPU auxiliary power cable.
    b. Install the PCIe fan.
16. Install the riser cage.
17. Do the following:
    a. Connect the PCIe x16 captive riser power cable to the captive riser.
    b. Connect the PCIe x16 captive riser signal cable to the system board.
18. Connect the DPU signal cables:
    - DPU on slot 1
    - DPU on slot 4
19. Install the rear vented panel.
20. Install the air baffle.
21. Install the server into the rack.
22. Connect all peripheral cables to the server.
23. Connect each power cord to the server.
24. Connect each power cord to the power source.
25. Power up the server.

Results

The installation procedure is complete.

Installing a PCIe NIC in the GPU cage

Prerequisites

- Review PCIe NIC population rules .
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

About this task

CAUTION

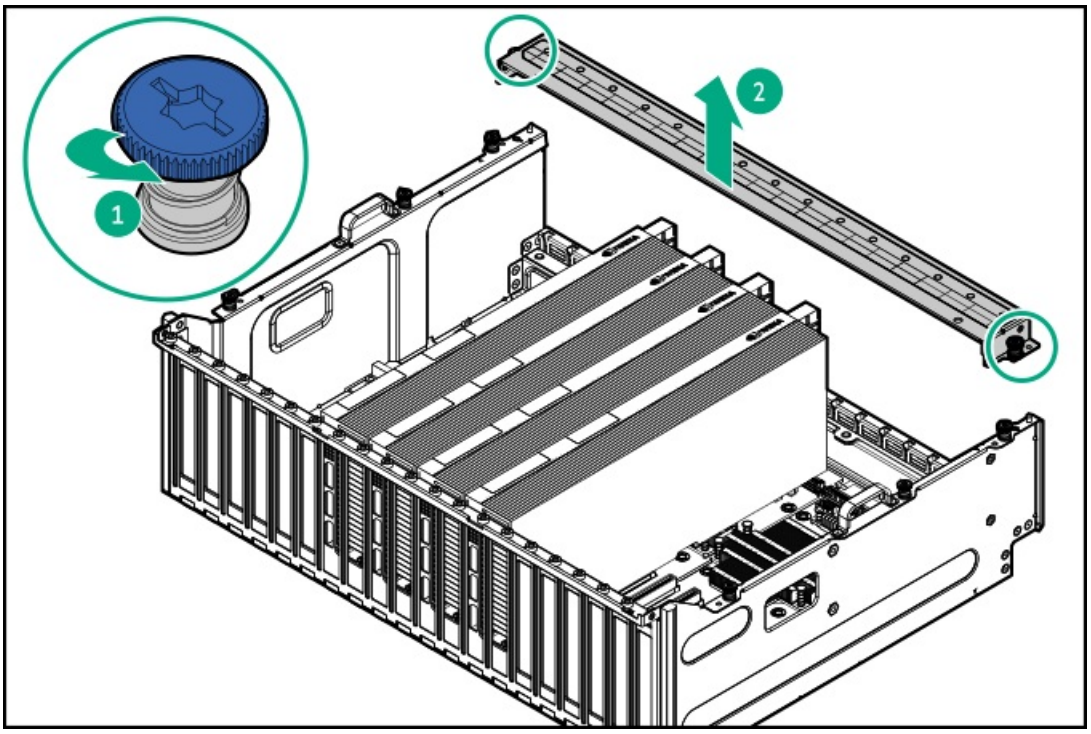
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

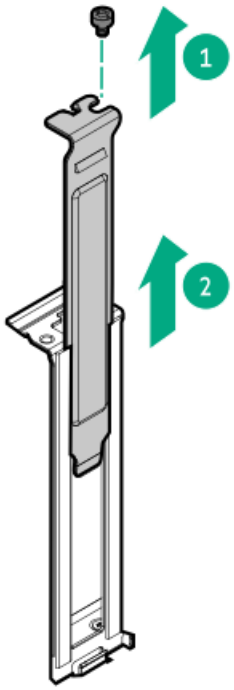
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either a riser slot blank or an expansion card installed.

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. (Optional) To connect the NIC port cables, remove the front vented panel .
8. Loosen the captive screws, and then remove the GPU top bracket.

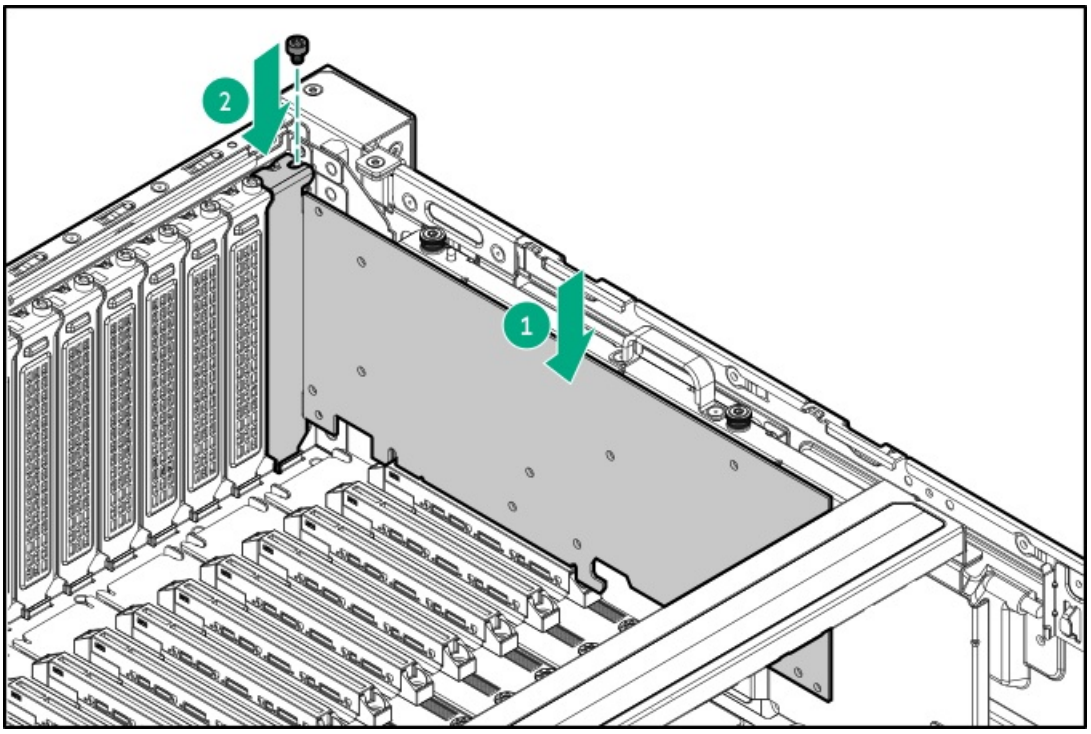


9. Remove the slot blank.

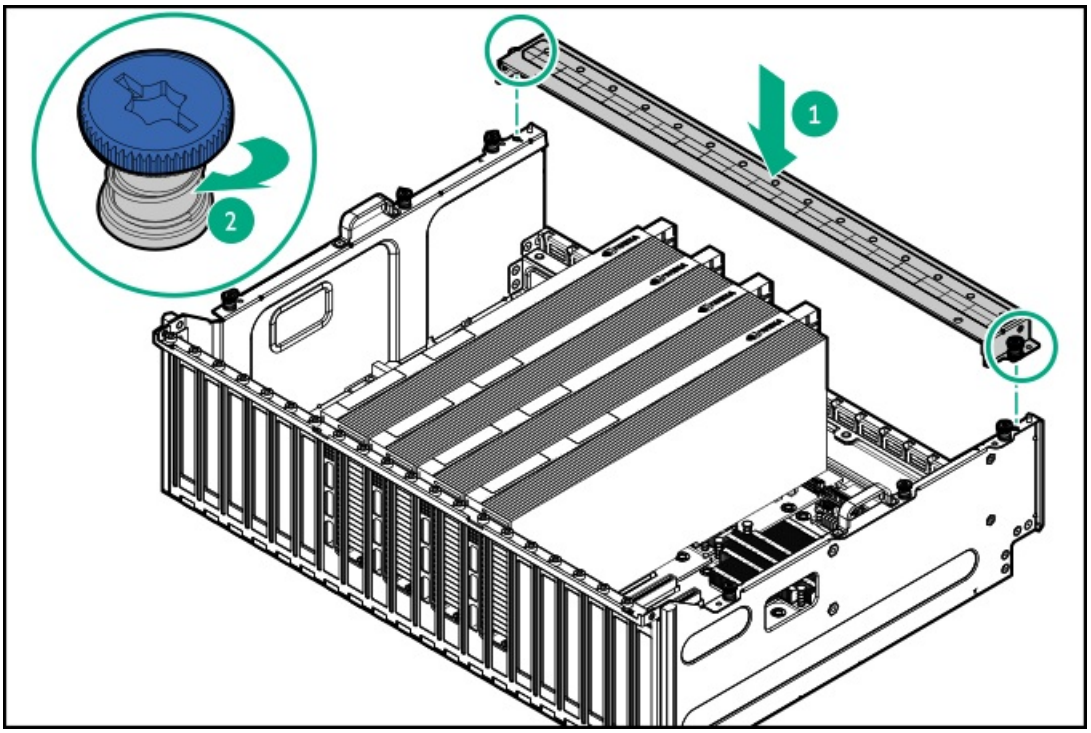


10. Install the PCIe NIC in the GPU cage.

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



11. Connect all necessary internal cabling to the PCIe NIC.
12. Install the GPU top bracket, and then tighten the captive screws.



13. Install the access panel.
14. Install the server into the rack.
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server.

Results

The installation procedure is complete.

OS boot device

Subtopics

HPE NS204i-u Boot Device V2 option

HPE NS204i-u Boot Device V2 option

Note the following information about the HPE NS204i-u Boot Device V2 option:

- The HPE NS204i-u V2 NVMe Hot Plug Boot Optimized Storage Device is a PCIe custom form factor module that includes two hot-pluggable 2280 M.2 NVMe SSDs.
- This boot device enables the deployed OS to be mirrored through a dedicated hardware RAID 1.
- The boot device auto-creates a RAID 1 volume during boot. This means the boot device does not require further RAID configuration.
- This boot device is compatible with the following native OS:

- Windows
- Linux
- VMware

- This boot device uses native inbox OS NVMe drivers.

Subtopics

Installing the HPE NS204i-u Boot Device V2

Installing the HPE NS204i-u Boot Device V2

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 V2 components.
- Before you perform this procedure, make sure that you have the following items available:
  - NS204i-u enablement option kit (P75284-B21)
  - T-10 Torx screwdriver
  - T-15 Torx screwdriver

About this task

CAUTION

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

CAUTION

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

IMPORTANT

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

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

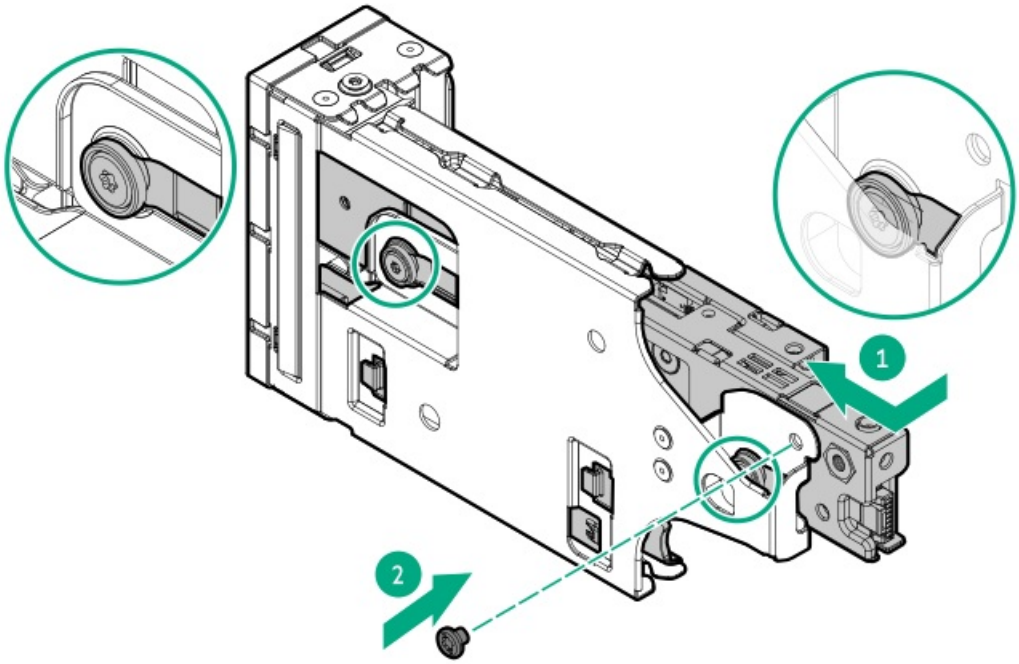
Configurations with SSDs from different manufacturers are not supported.

Procedure

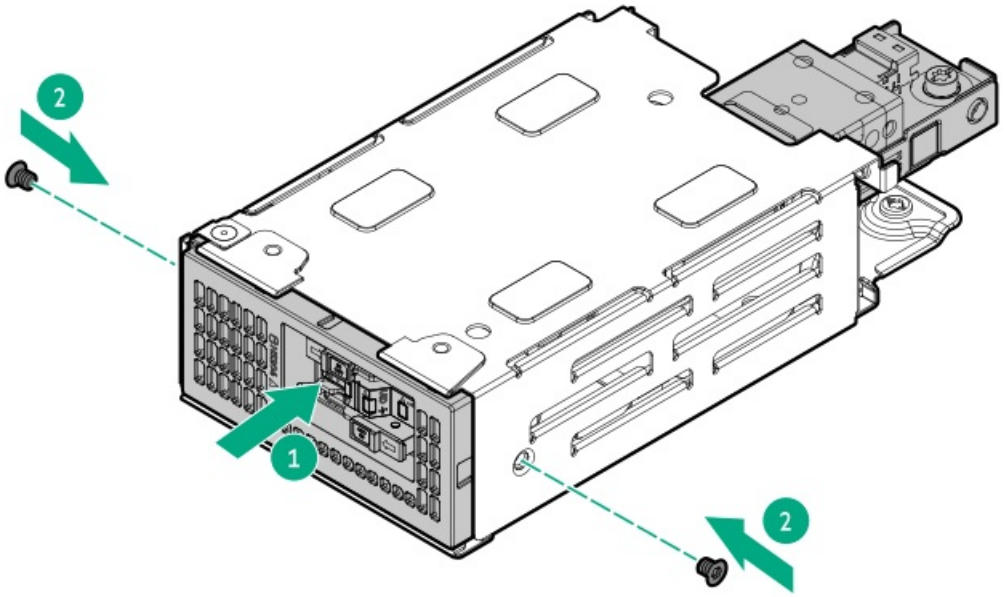
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. If installed, remove the front bezel.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the internal fan cage.
10. Remove the left cable trough cover.
11. Remove all GPUs from the GPU cage.
12. Install the boot device on the bracket.



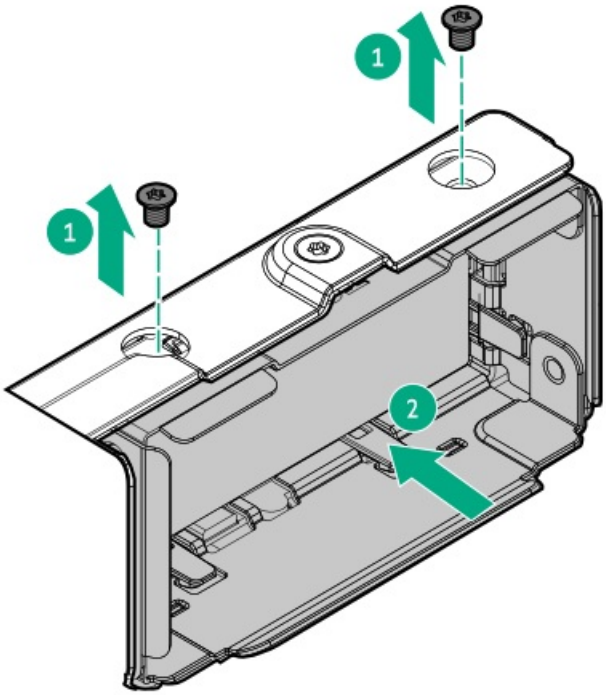
13. Install the boot device bracket into the multipurpose cage.



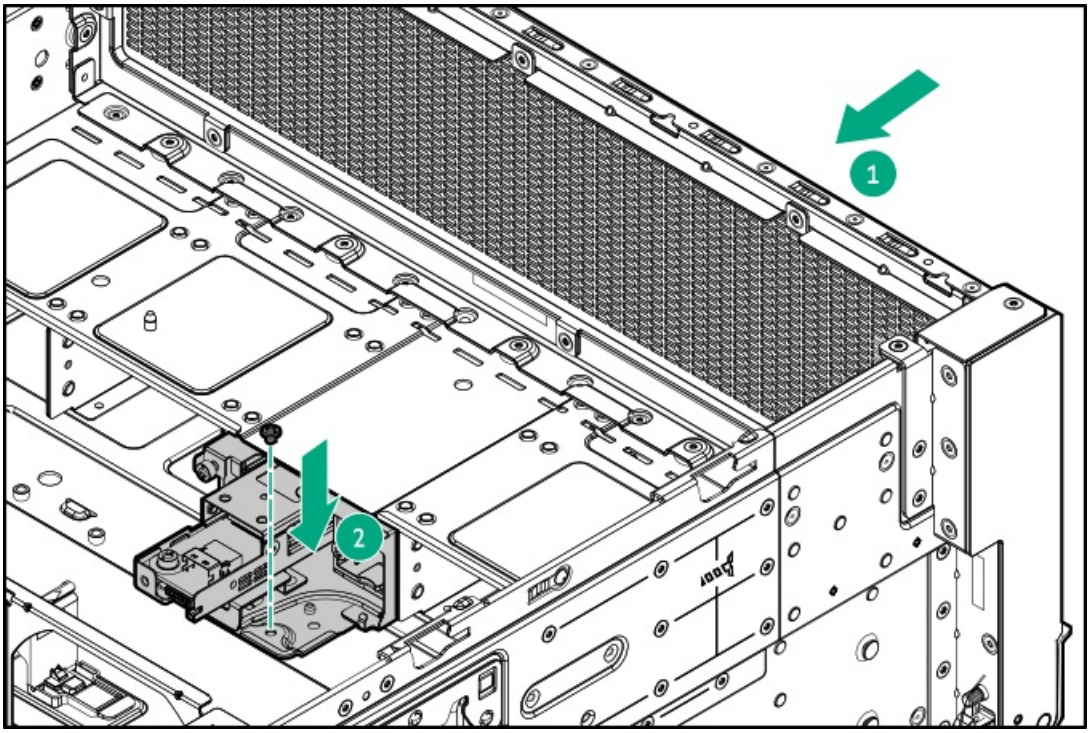
14. Connect the signal and power cables to the boot device.
15. Do one of the following:
    - If captive risers are installed in the GPU cage, lift and hold the GPU cage above the front end of the chassis .

      Three people are required: Two people to lift and hold the GPU cage above the front end of the chassis, and another person to install the multipurpose cage in the server.

    - If switch boards are installed in the GPU cage, remove the GPU cage.
16. Remove the two screws, and then remove the drive box blank.



17. Install the multipurpose cage in the server.



18. Connect the boot device signal and power cables to the system board.
19. Route the boot device signal and power cables in the cable troughs, and then install the left cable trough cover.
20. Install the GPU cage and GPUs.
21. Install the internal fan cage.
22. Install the air baffle.
23. Install the access panel.
24. Install the server into the rack.
25. Connect all peripheral cables to the server.
26. Connect each power cord to the server.
27. Connect each power cord to the power source.
28. Power up the server.
29. Verify that the Online/Activity LEDs on the boot device are solid green.
30. Deploy a supported operating system to the boot device.
31. 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.

Power supplies

Subtopics

Power distribution board
Power supply options

Power distribution board

The server has two power distribution boards (PDB) that control the GPU power domains.

Subtopics

Installing the PDB 2

Installing the PDB 2

Prerequisites

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

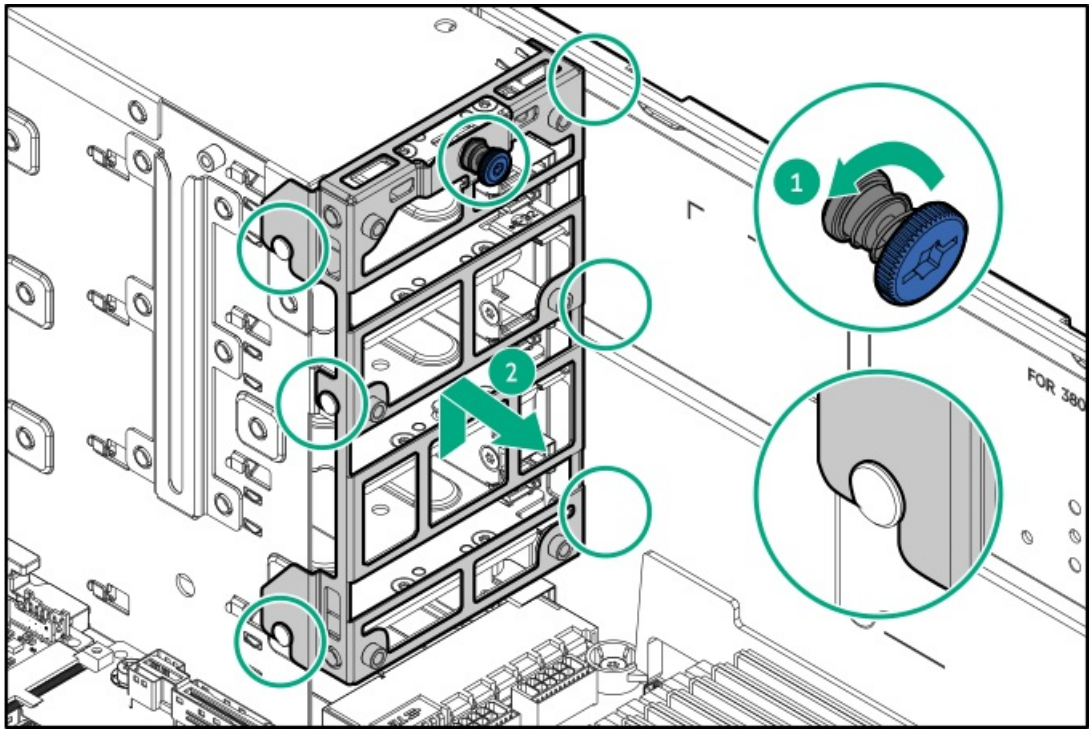
About this task

This server supports two PDBs. PDB 1 is the default PDB. The 16 single-width and 8 double-width GPU configurations require the PDB 2 option.

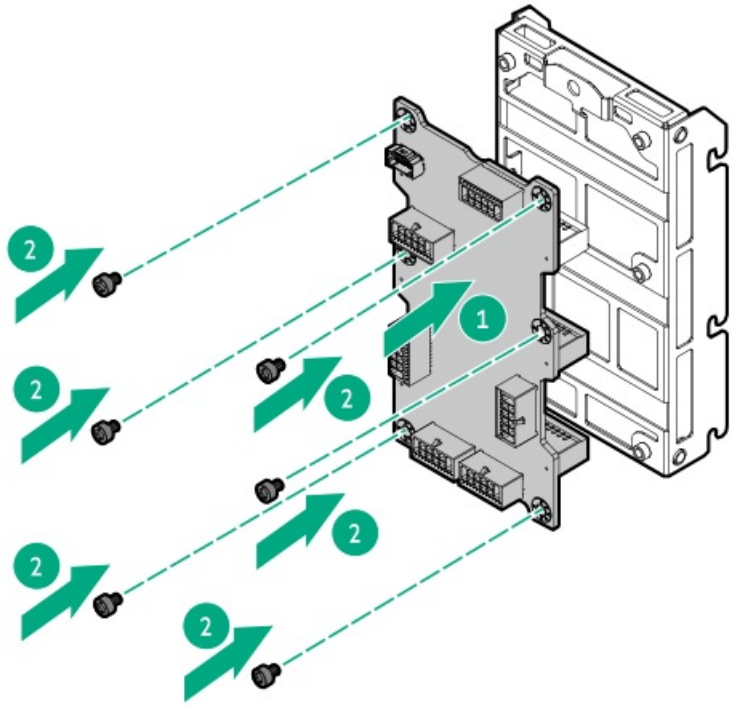
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

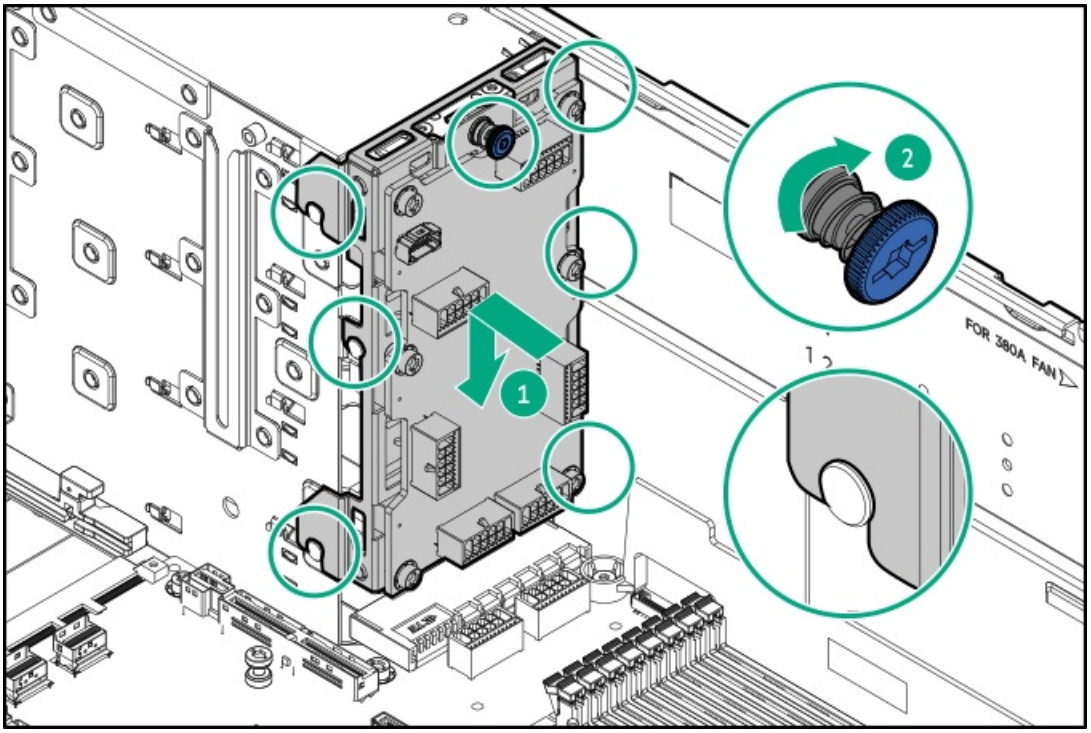
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Remove the primary riser cage.
9. Remove the PDB bracket.



10. Install the PDB on the bracket.



11. Install the PDB in the server.



12. Install the M-CRPS 2, 4, 6, and 8 .
13. Connect the following cables to the PDB 2:
    a. Remove the cable trough cover .
    b. Connect the GPU auxiliary power cable .
    c. Connect the PCIe x16 switch board power cables .
    d. Route the GPU auxiliary power and switch board power cables in the cable trough, and then install the cable trough cover .
    e. Connect the sideband signal cable .
14. Install the primary riser cage .
15. Install the rear vented panel .
16. Install the access panel .
17. Install the server into the rack .
18. Connect all peripheral cables to the server.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. Power up the server .

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
Power supply guidelines
Installing a 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.

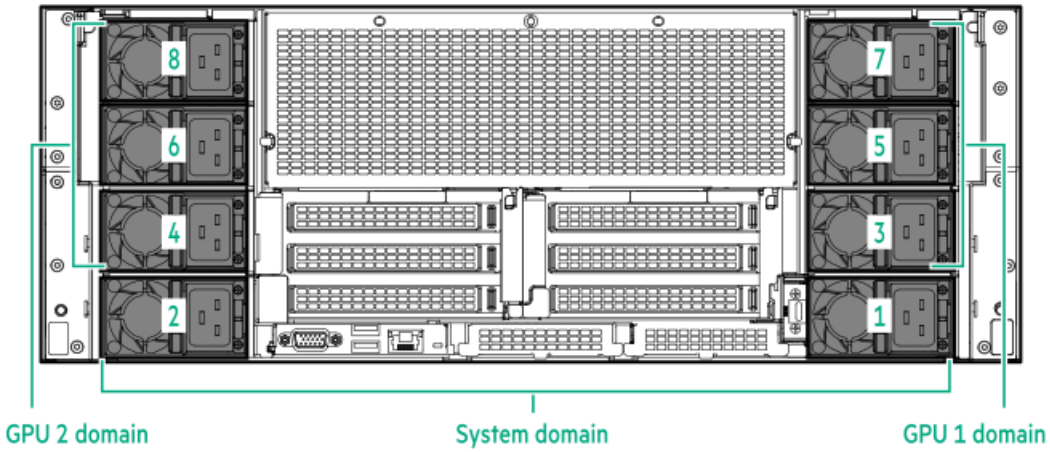
CAUTION

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.

Power supply guidelines



In this server, three power supply domains are configured to support power redundancy. The server supports installation of five or eight power supplies.

- System domain has two power supplies that support 1 + 1 redundancy. If one power supply fails:
  - The system switches to nonredundant power mode. The system continues to operate in this mode.
  - The system health LED flashes amber.

  If the second power supply failure occurs, the system health LED flashes red, and then the operating system immediately shuts down.
- GPU domains 1 or 2 has three power supplies that support 2 + 1 redundancy. If one power supply fails:
  - The system switches to nonredundant power mode. The system continues to operate in this mode.
  - The system health LED flashes amber.

  If the second power supply failure occurs, the system health LED flashes red.

Power supply redundancy in the different domain is independent of each other.

Installing a power supply

Prerequisites

Before installing a power supply option, review the following:

- Power supply warnings and cautions
- Power supply guidelines

About this task

The installation procedure for the 60-mm and 73.5-mm modular hardware system common redundant power supplies (M-CRPS) is the same.

WARNING

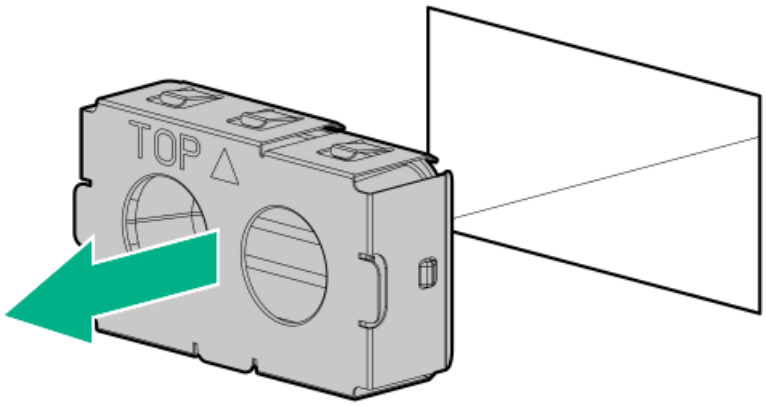
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

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.

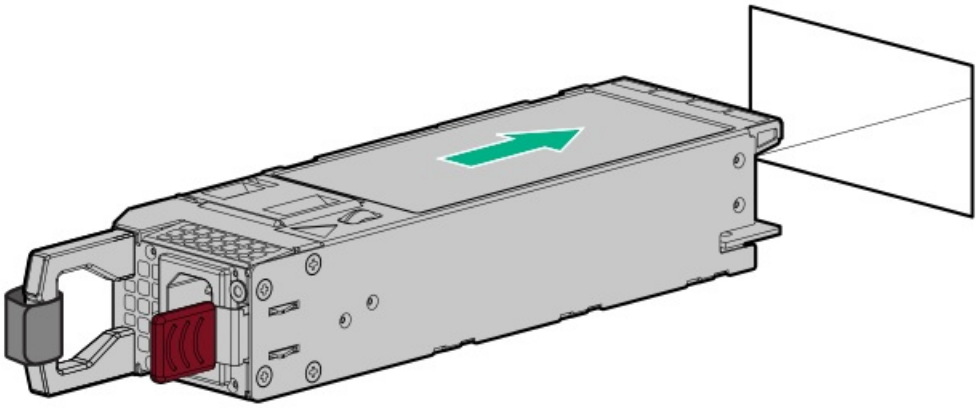
Procedure

1. Remove the power supply bay blank.

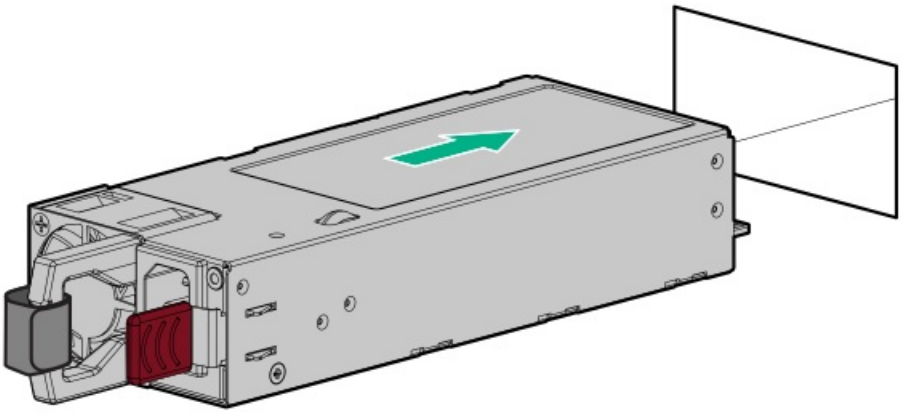


2. Immediately slide the power supply into the bay until it clicks into place.

   - 60-mm M-CRPS



   - 73.5-mm M-CRPS



3. Connect the power cord to the power supply.

> **WARNING**
>
> To reduce the risk of electric shock or damage to the equipment, do not connect the power cord to the power supply until the power supply is installed.

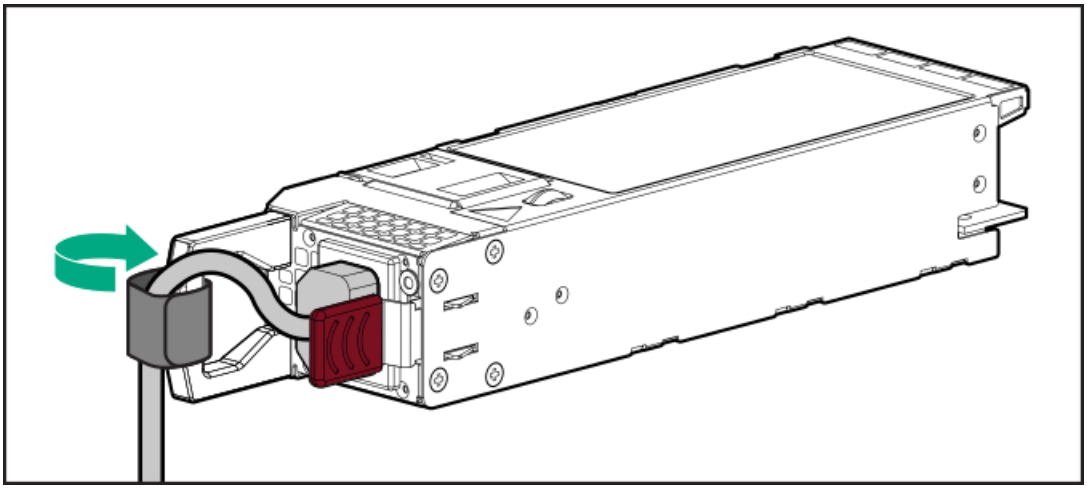
> **IMPORTANT**
>
> Make sure that the facility power phases are balanced. An imbalance can result in circuit breakers tripping.

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

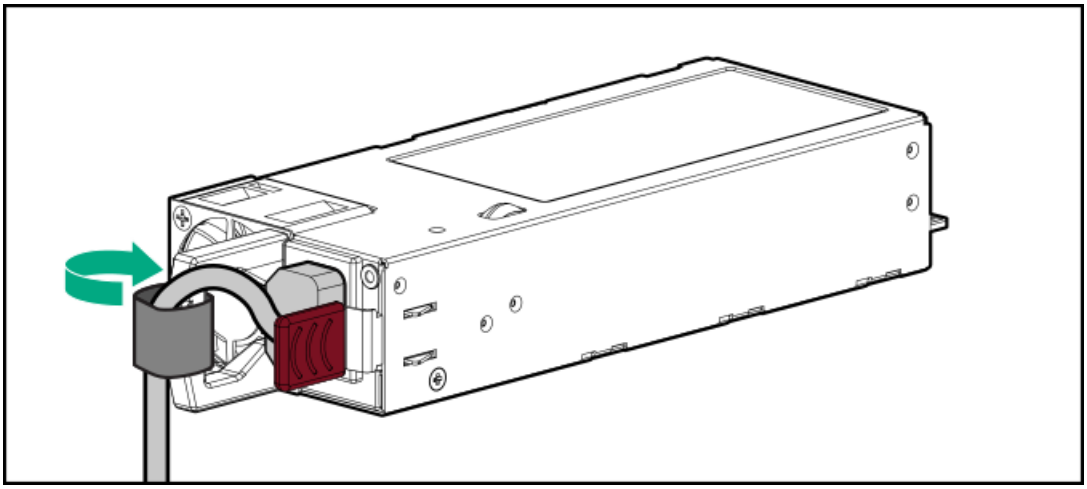
> **CAUTION**
>
> Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.

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

- 60-mm M-CRPS



- 73.5-mm M-CRPS



5. Connect each power cord to the server.
6. Connect each power cord to the power supply .

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

Results

The installation procedure is complete.

Processors and heatsinks

Subtopics

Processor cautions
Installing the processor heatsink assembly

Processor cautions

CAUTION

To avoid damage to the processor or system board, only authorized personnel should attempt to replace or install the processor in this server.

CAUTION

To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.

CAUTION

The pins on the processor socket and on the processor are very fragile and easily damaged . To avoid component damage, **do not touch these pins**. Any damage to them might require replacing the system board and/or processor.

IMPORTANT

Processor socket 1 must be populated at all times or the server does not function.

IMPORTANT

If installing a processor with a faster speed, update the system ROM before installing the processor. To download firmware, see Updating firmware or system ROM .

Installing the processor heatsink assembly

Prerequisites

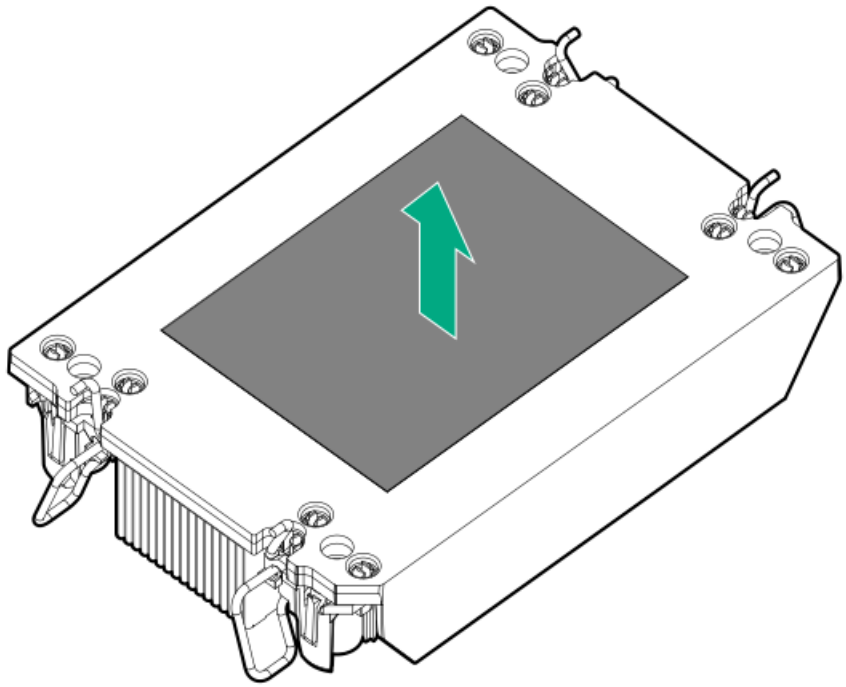
- Identify the heatsink and processor socket components .
- Review the processor cautions .
- Before you perform this procedure, make sure that you have a T-30 Torx screwdriver or a torque screwdriver with T-30 Torx bit available.

Procedure

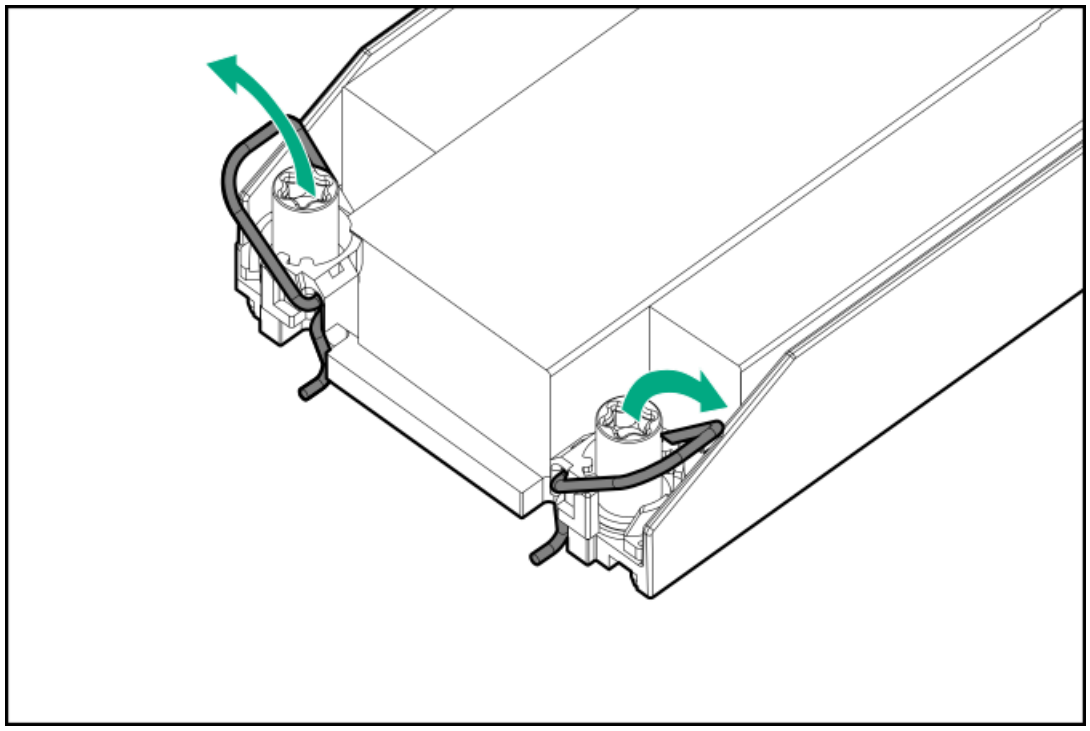
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the air baffle.
8. Remove the internal fan cage.
9. Remove the protective film from the thermal interface material.

CAUTION

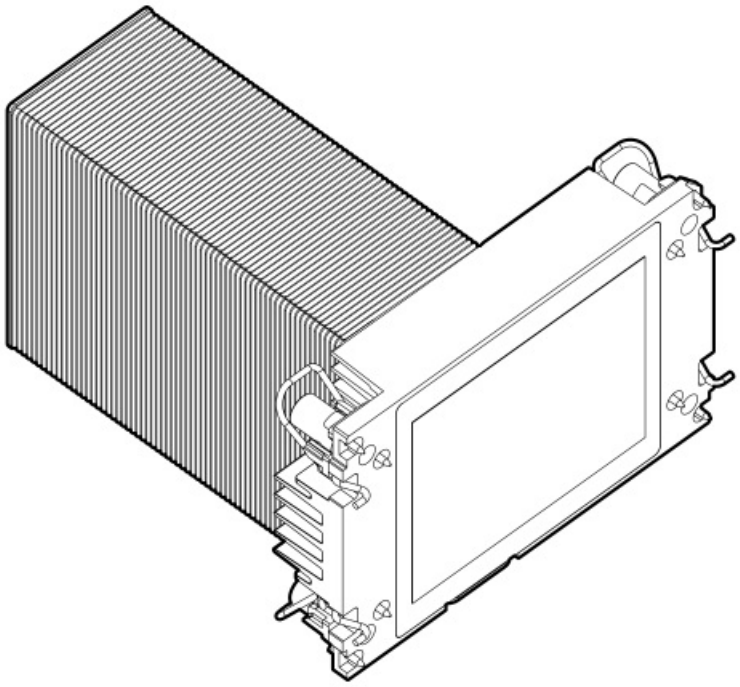
To prevent mechanical damage or depositing oil on your hands or other contaminants to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.



10. Set the anti-tilt wires to the locked position.

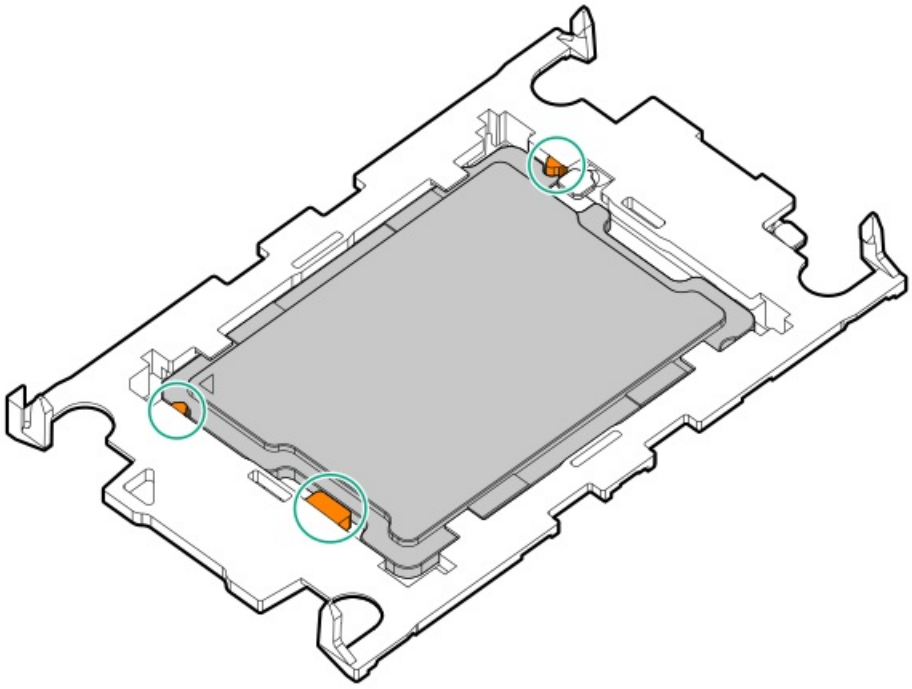


11. Place the processor-heatsink module on a flat work surface with its long side facing up.



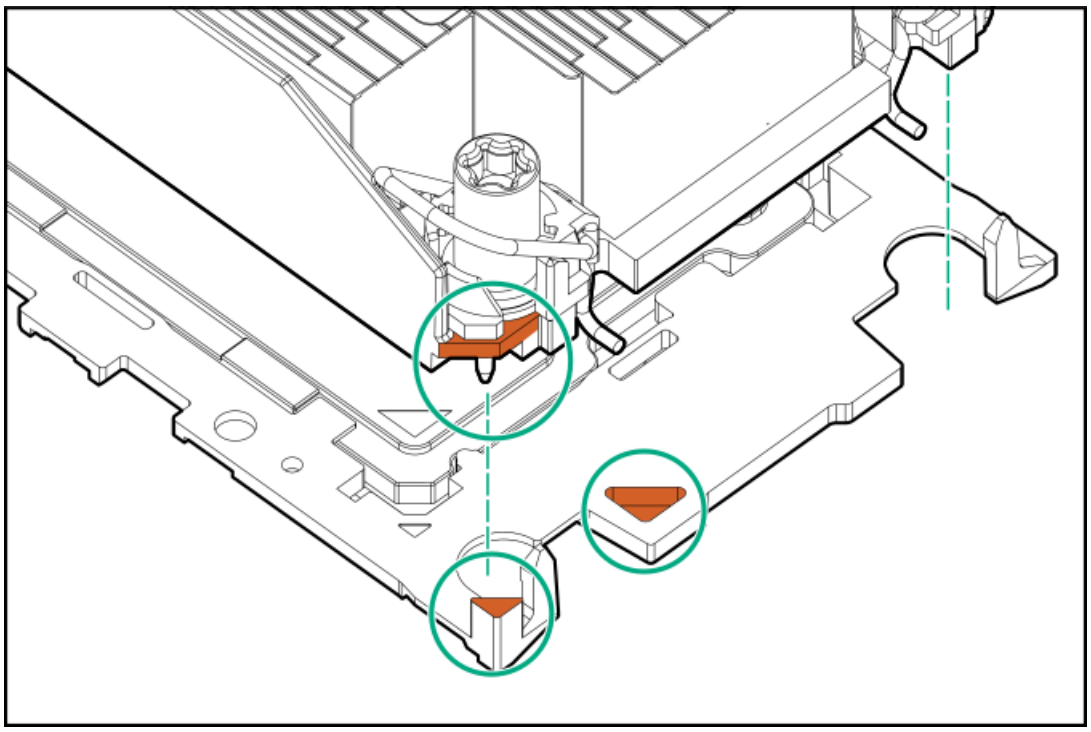
12. Verify that the processor is securely latched to the processor carrier.

    The following illustration calls out the keying feature tabs that secure the processor. Different processor carriers will have these tabs in different locations.



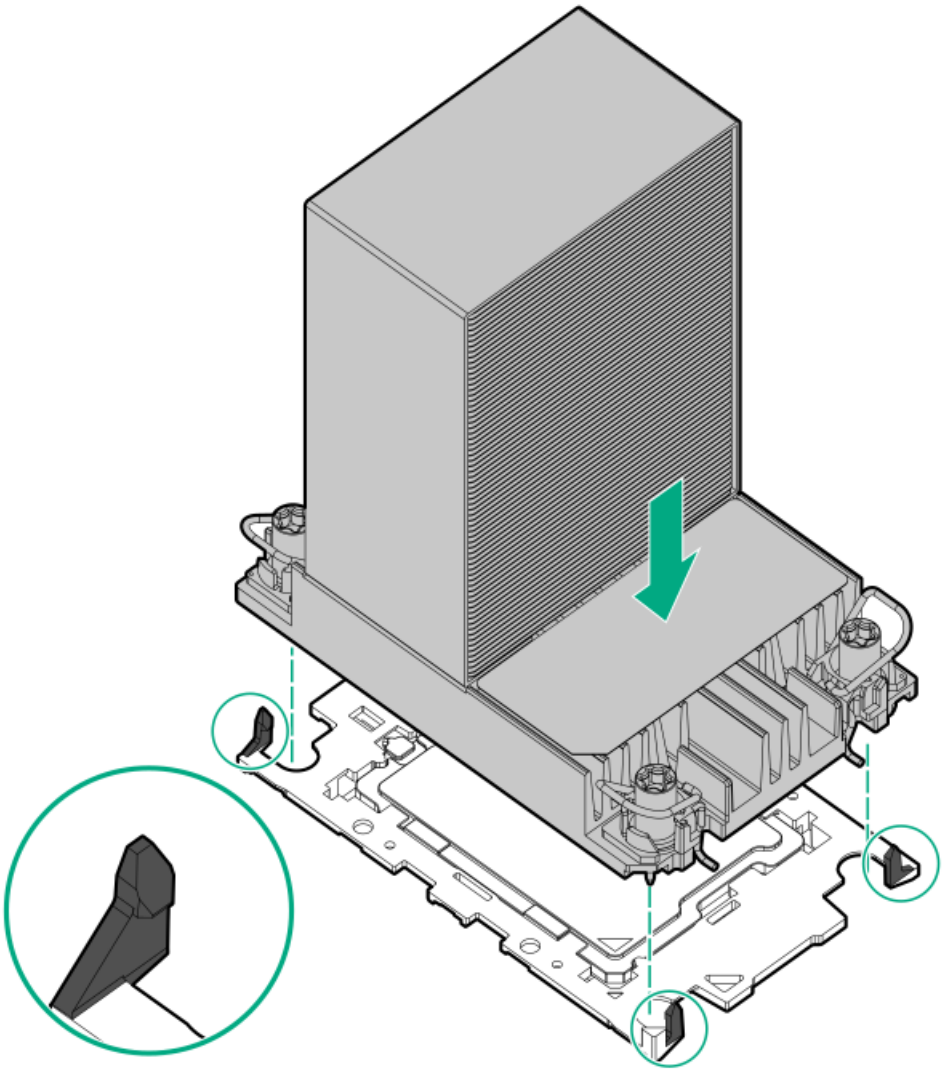
13. Attach the heatsink to the processor carrier:

    a. Align the pin 1 indicator on the processor carrier with that on the heatsink.

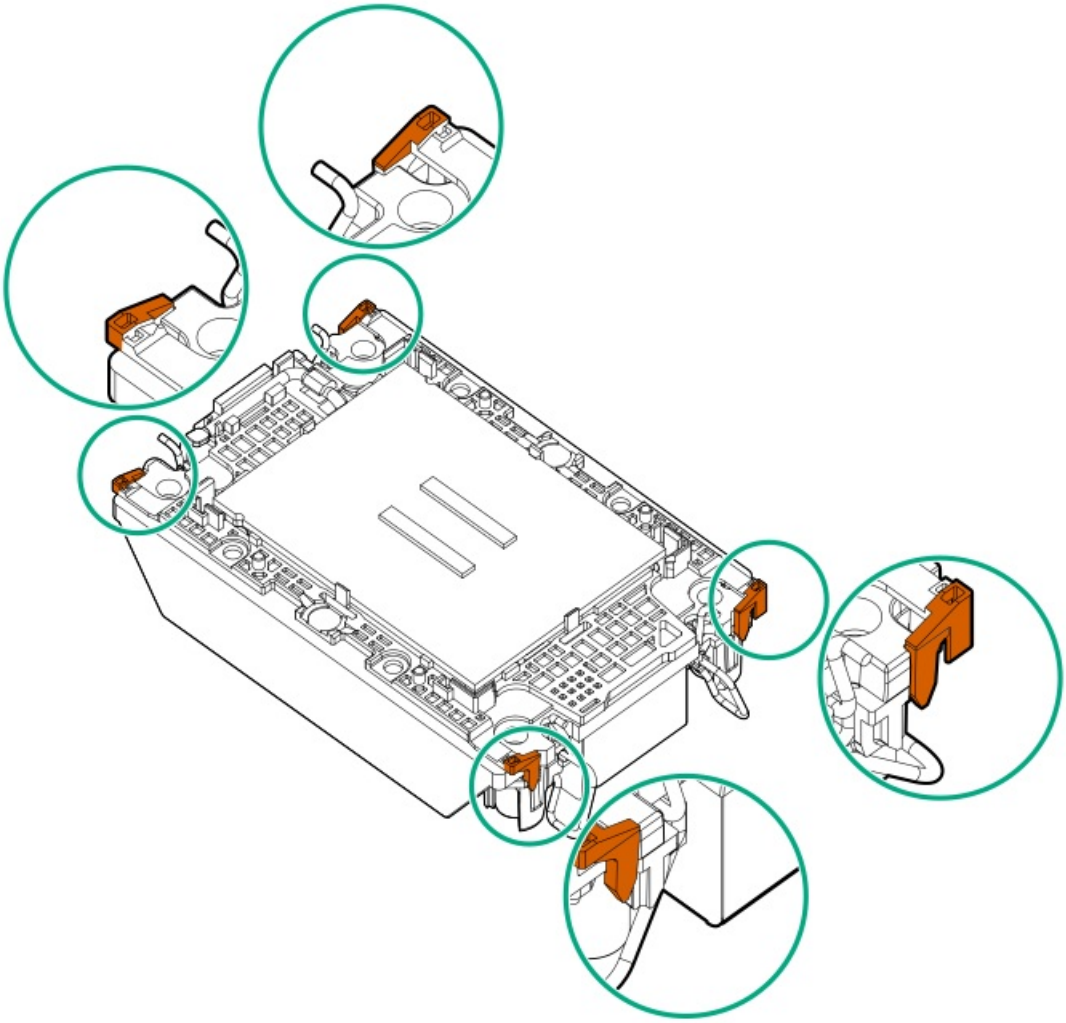


    b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

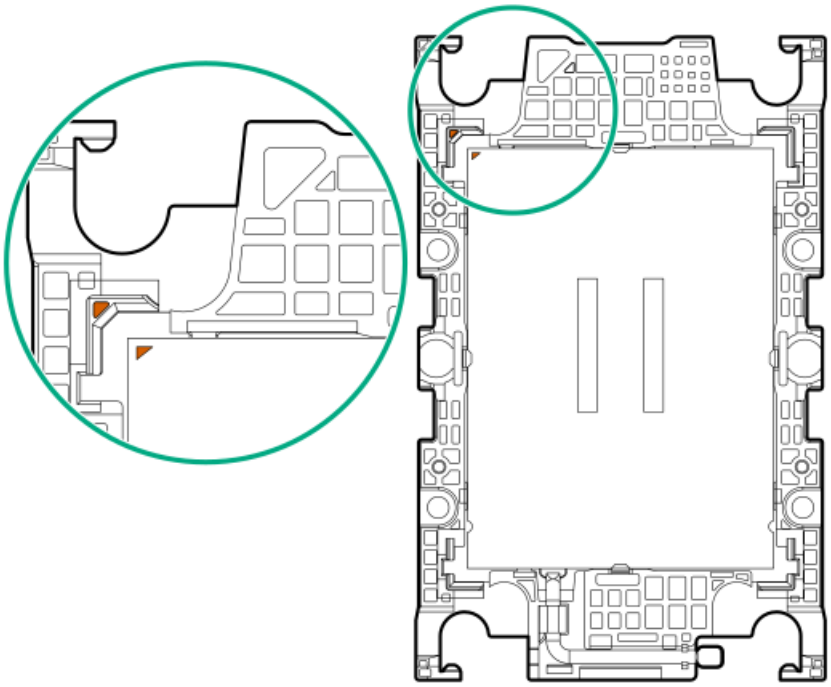
       There will be an audible click to indicate that the heatsink is properly latched on the processor carrier.



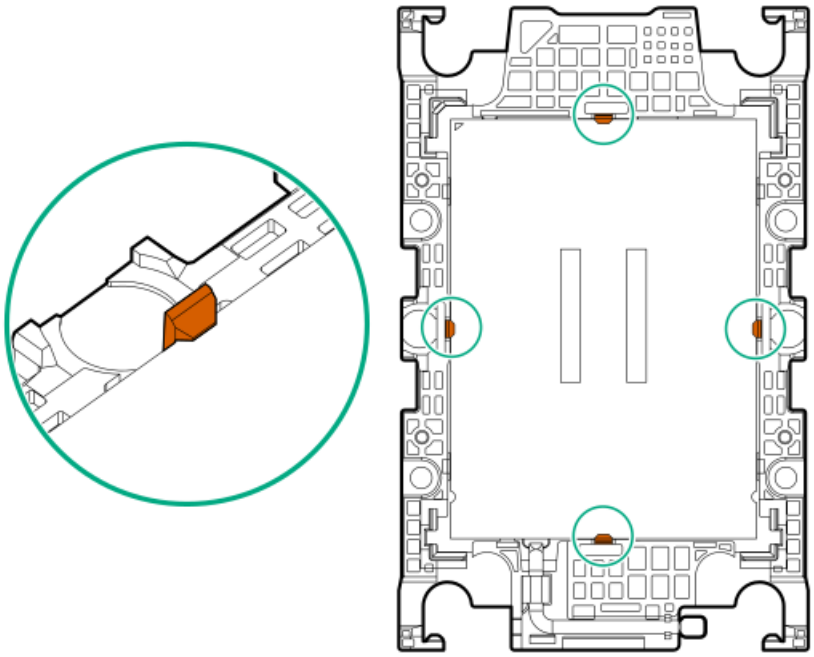
14. Perform the following verification steps:
    a. Verify that the tabs on the processor carrier are securely latched on the heatsink.



b. Verify that the pin 1 indicators on the processor and processor carrier are aligned.

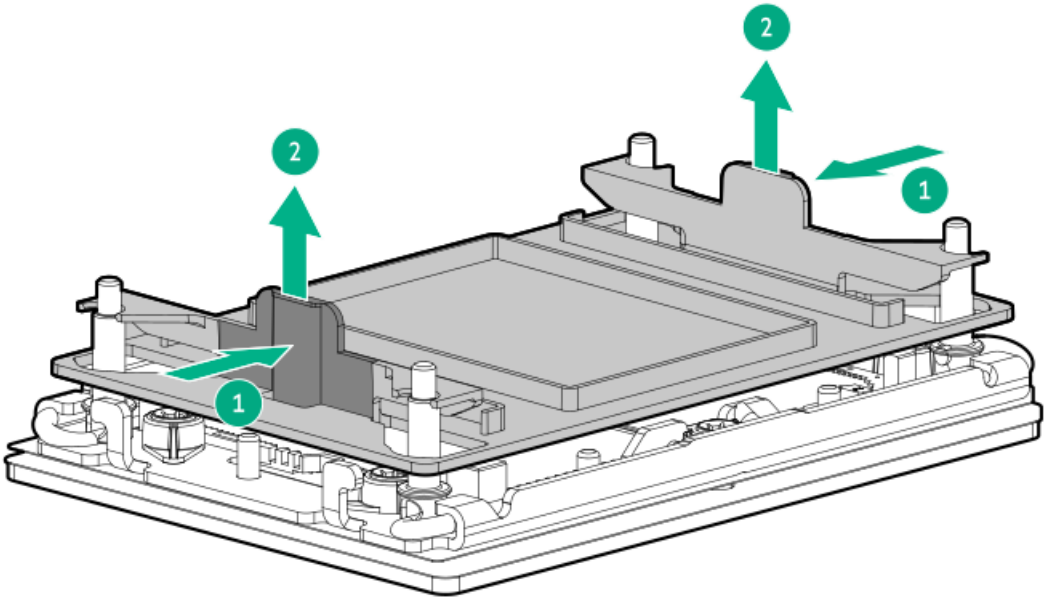


c. Verity that the processor is properly secured by the carrier snaps.



15. Remove the dust cover from the processor socket:
    a. Press and hold the grip tabs on the dust cover.
    b. Lift the dust cover away from the bolster plate.

       Retain the cover for future use.



16. Install the processor-heatsink module:

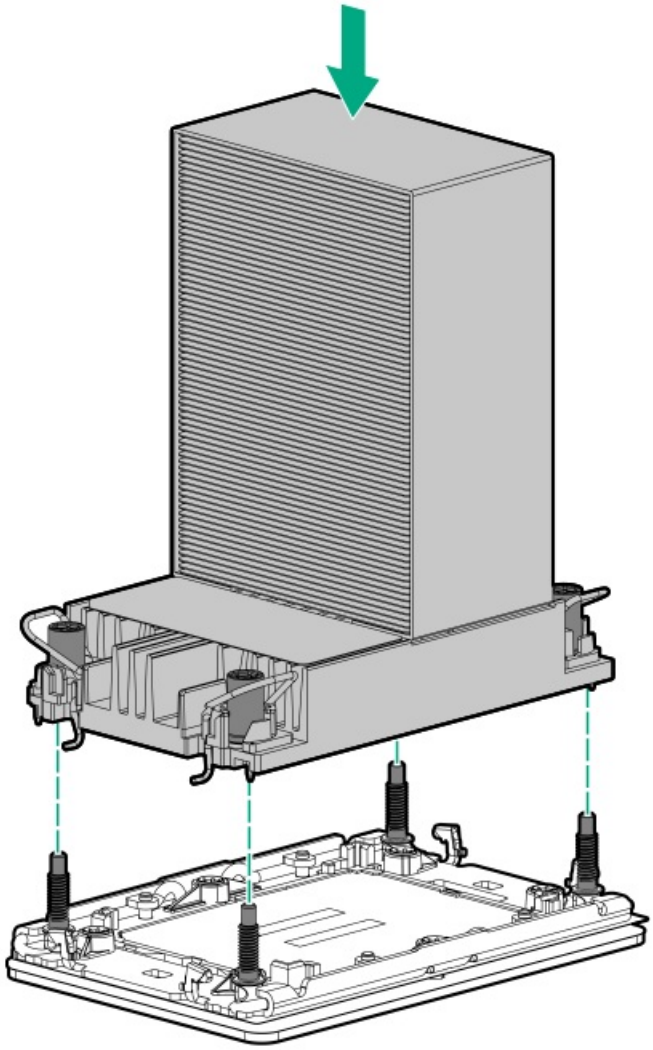
> **CAUTION**
>
> To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of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

a. When using a torque screwdriver to tighten the heatsink screws, set 0.9 N-m (8 in-lb) of torque .

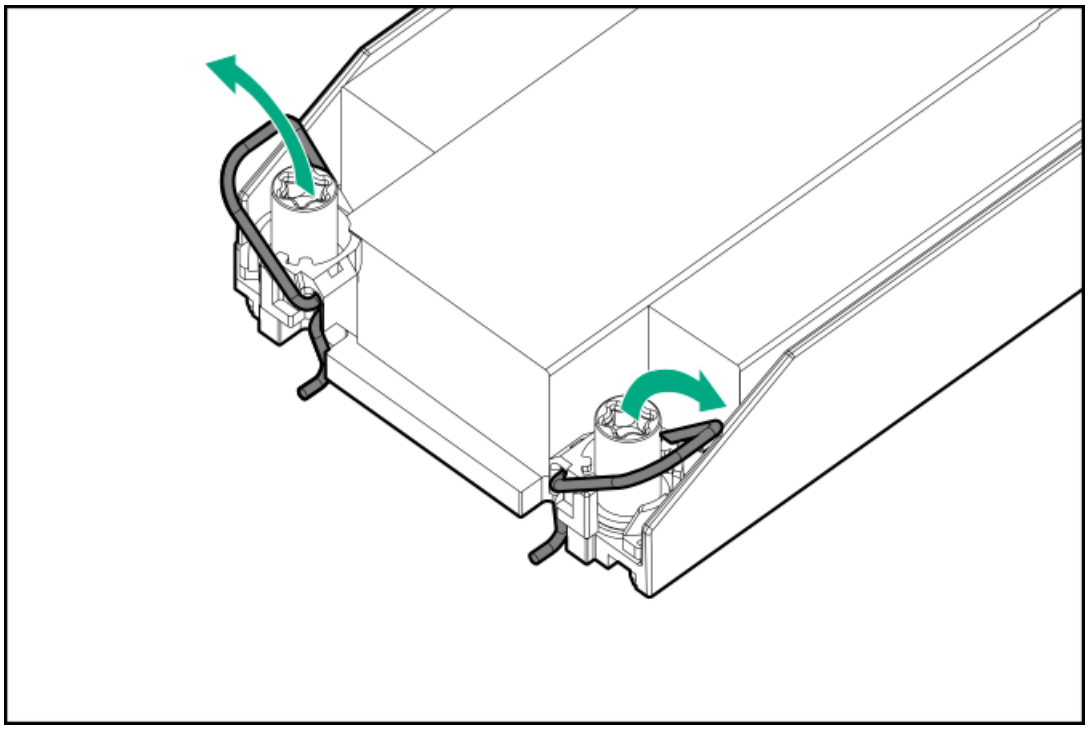
b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

c. Carefully lower the processor-heatsink module onto the bolster plate guide posts.

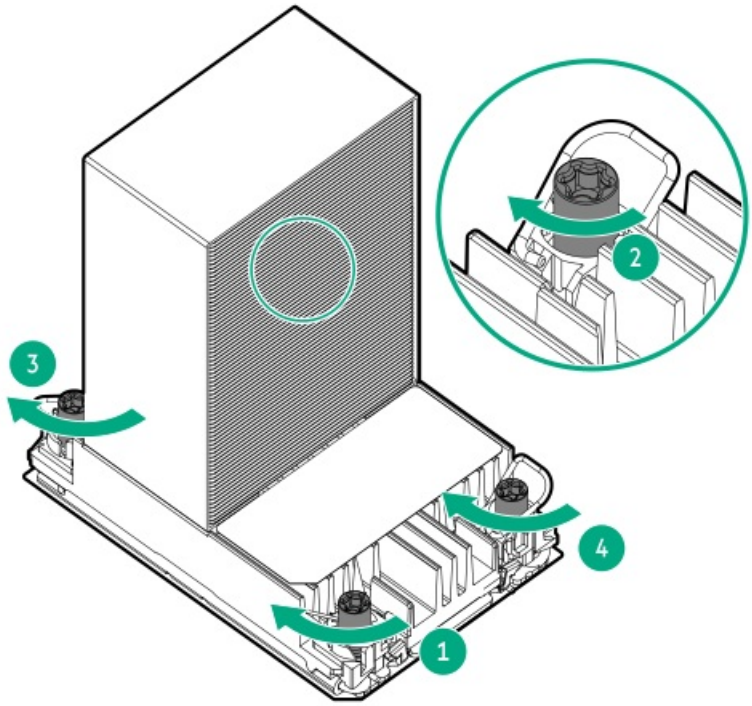
   The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



d. Set the anti-tilt wires to the locked position.



e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.



17. Install the internal fan cage.
18. Install the air baffle.
19. Install the access panel.
20. Install the server into the rack.
21. Connect all peripheral cables to the server.
22. Connect each power cord to the server.
23. Connect each power cord to the power source.
24. Power up the server.

Results

The installation procedure is complete.

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 includes Cable management arm option.

Subtopics

Rail identification markers
Rack mounting interfaces
CMA components
Rack rail option
Installing the server into the rack: Ball-bearing rack rail
Installing the cable management arm

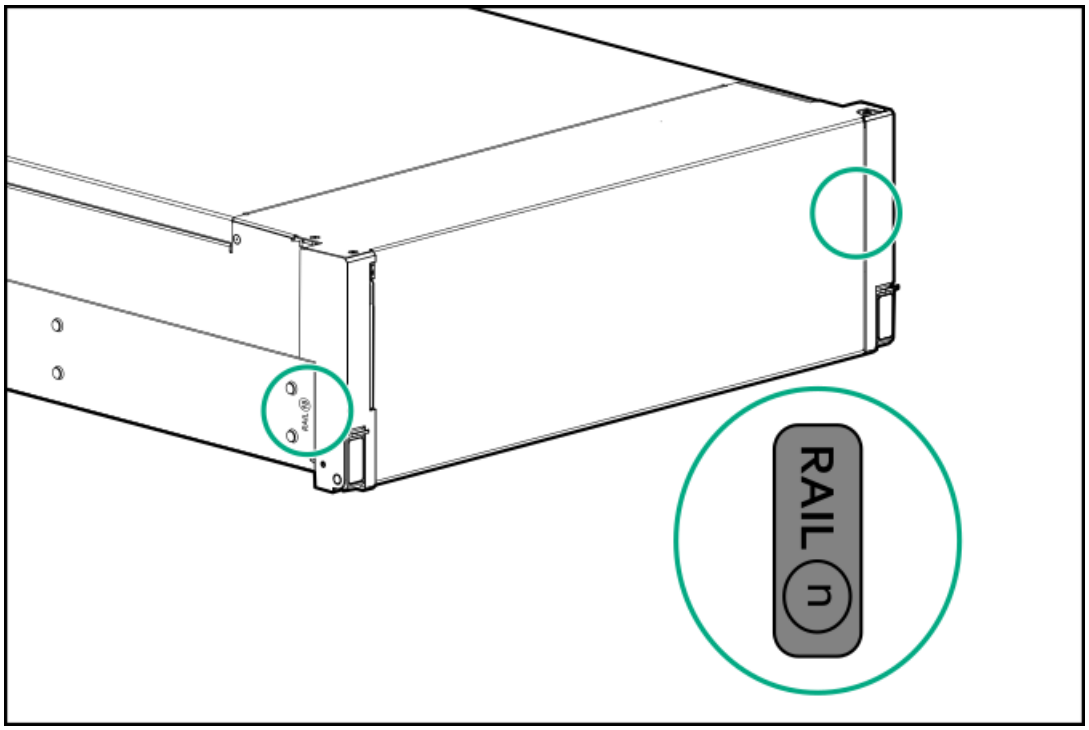
Rail identification markers

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

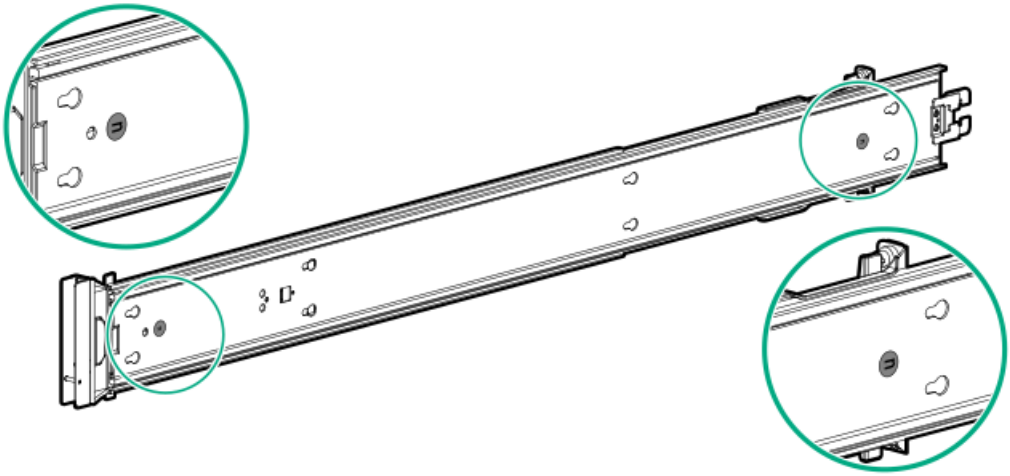
- The height and weight of the chassis as determined by the front- and rear-end server configurations.
- The depth of the chassis as measured from the edge of the front panel (without the front bezel) to the edge of the rear panel.

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.

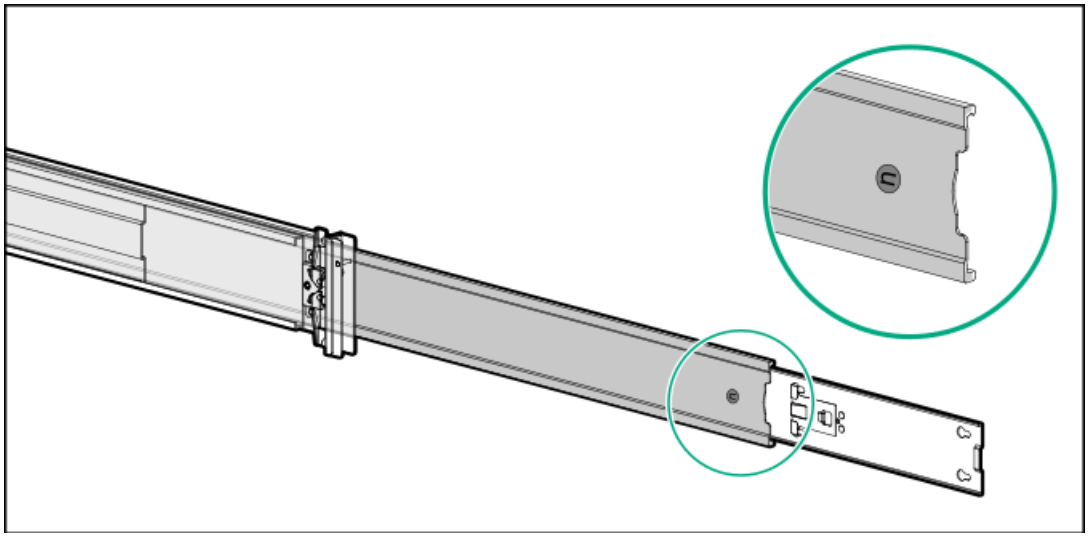
- Rail number labels on the chassis



- Rail identifier stamps on the inner rail

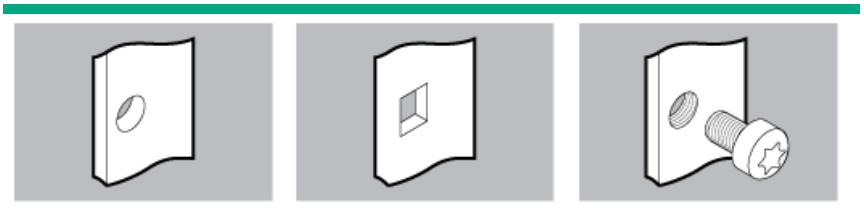


- Rail identifier stamps on the mounting rail



Rack mounting interfaces

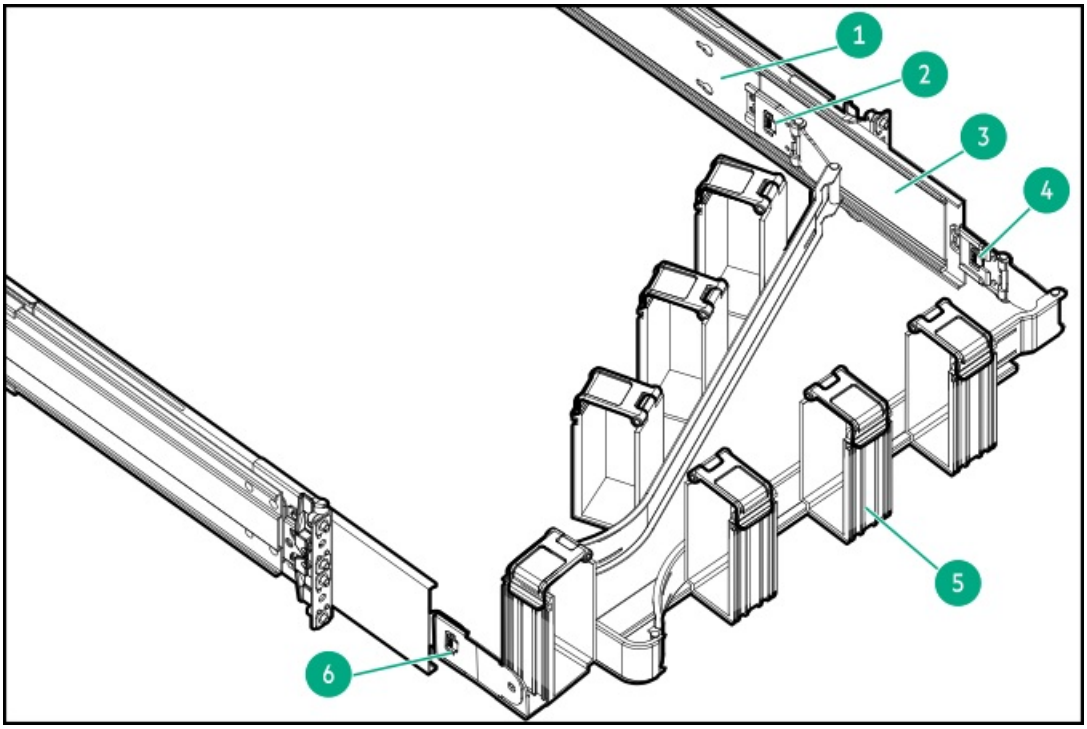
The rack rails can be installed in a rack that has the following mounting interfaces:



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 option

This server supports the HPE Ball Bearing rack rail option kit #13 (P69770-B21) . This rail kit supports the following specifications:

- Type: Ball-bearing rack rail (stab-in)
- Minimum rail length: 845.67 mm (33.29 in)
- Rail adjustability range: 609.60–918.10 mm (24.00–36.15 in)

Subtopics

Installing the ball-bearing rack rails

Installing the ball-bearing rack rails

Prerequisites

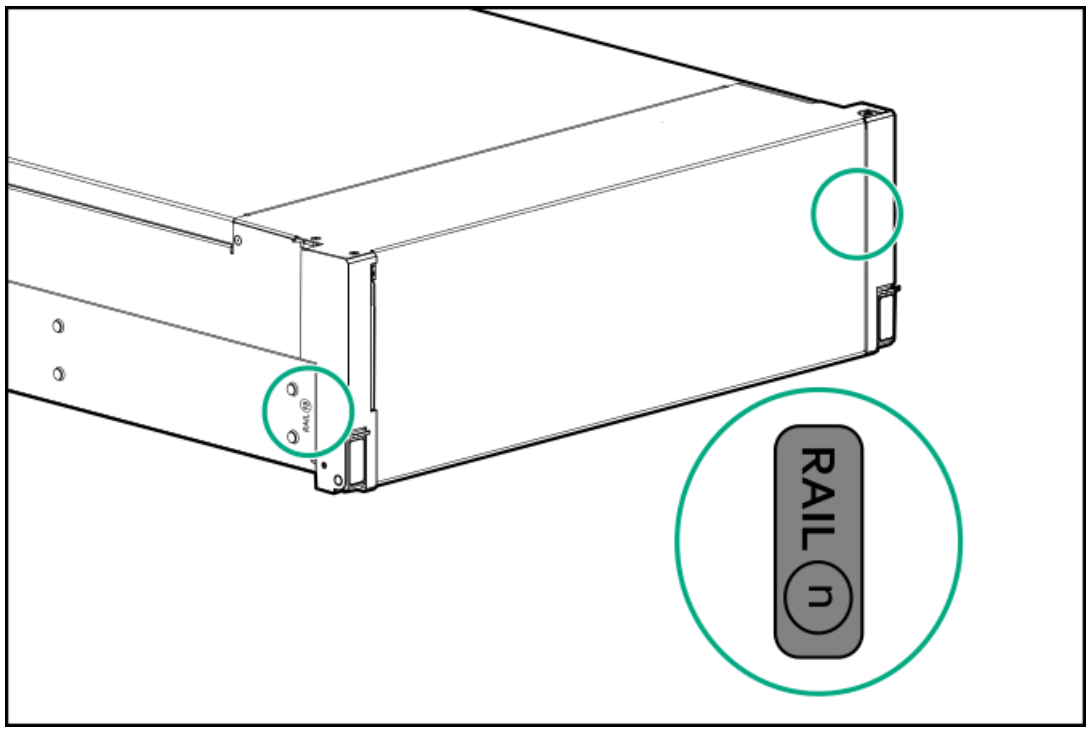
- Before you perform this procedure, review the:
  - Space and airflow requirements

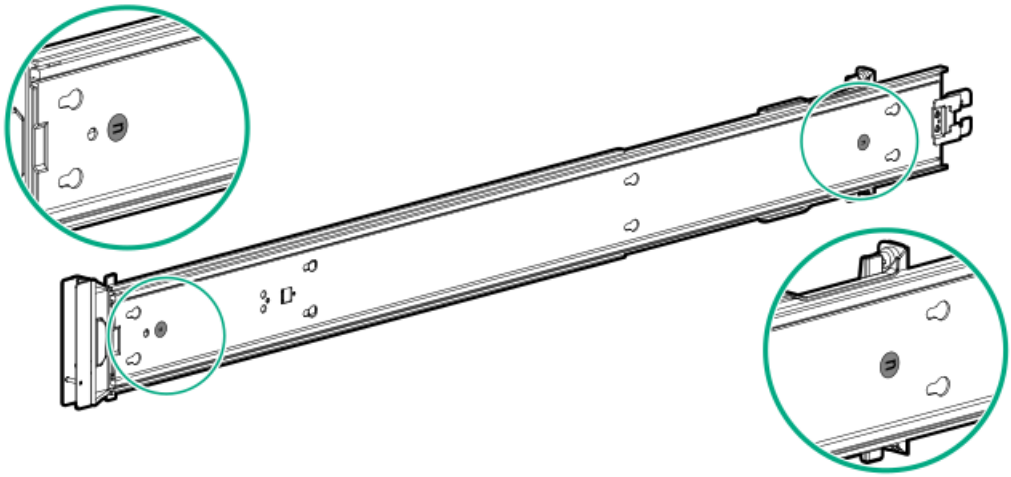
- Rack warnings and cautions
- Server warnings and cautions

- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- If you are installing the rack mounting rails in a threaded-hole rack, make sure that you have one of the following items available:
  - T-25 Torx screwdriver
  - Small slotted screwdriver

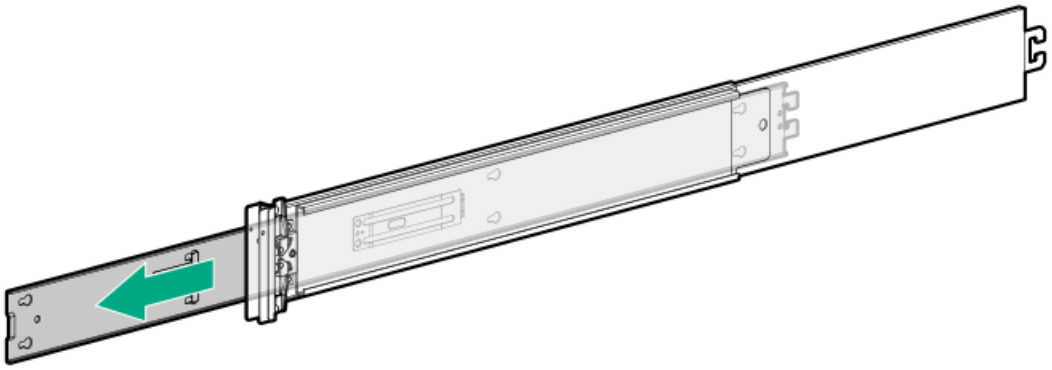
Procedure

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

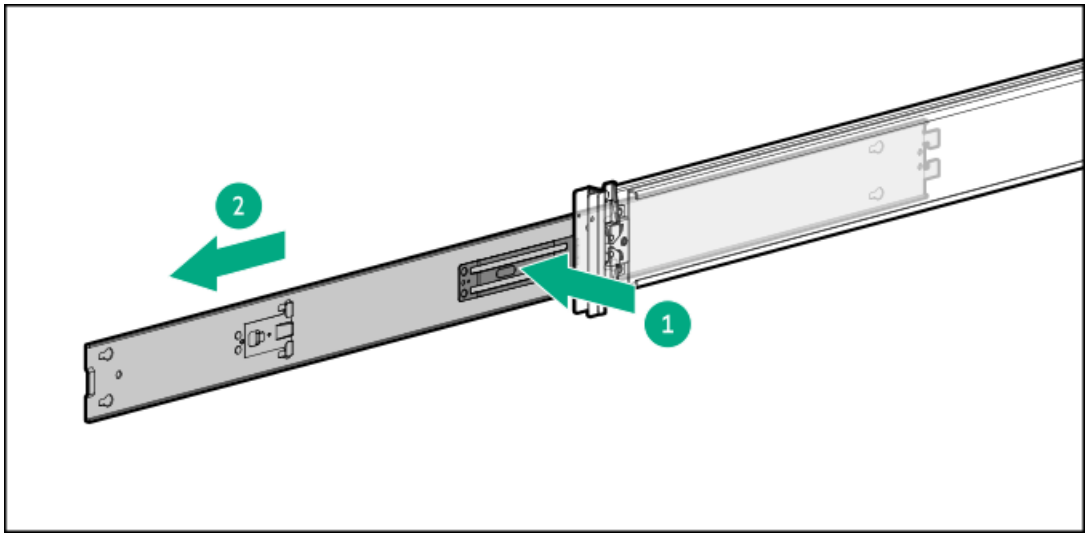




2. Remove the inner rails from the mounting rails:
   a. Extend the inner rail out of the mounting rail until it is fully extended.



b. Press and hold the latch, and then slide the inner rail completely out of the mounting rail.

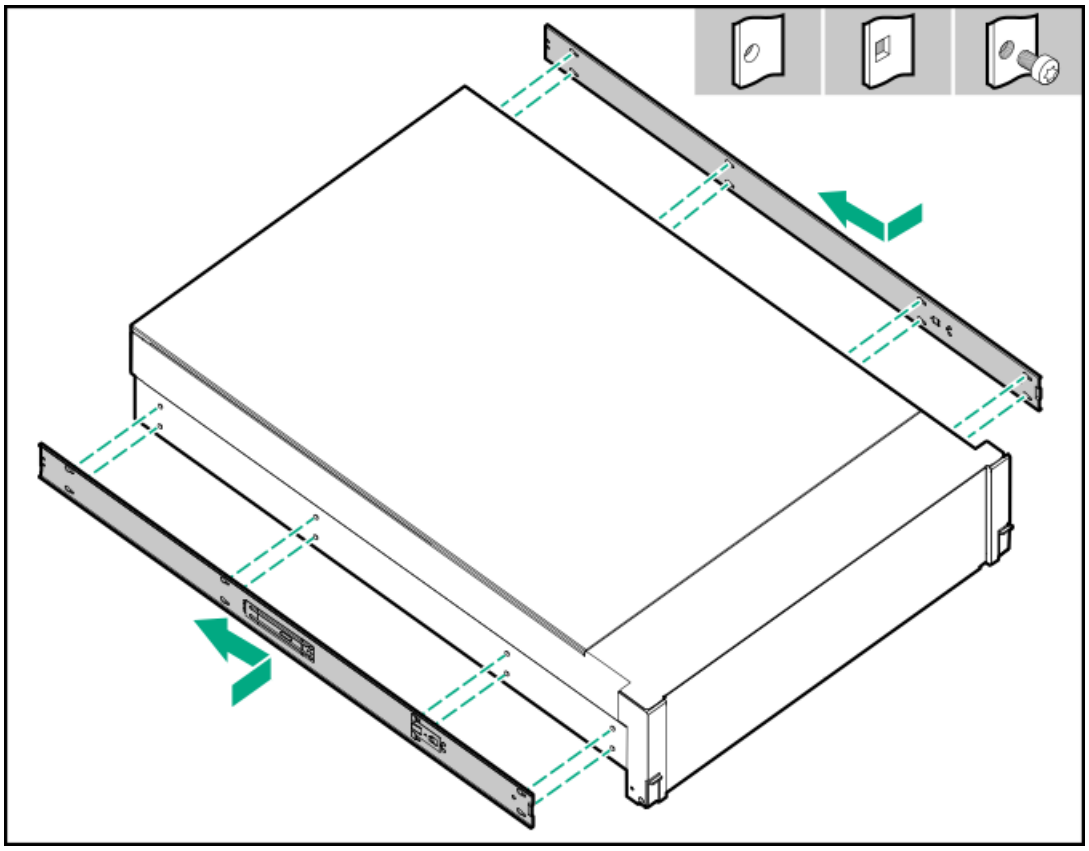


c. Repeat steps 1–2 on the other inner rail.

3. Attach the inner rails to the server:

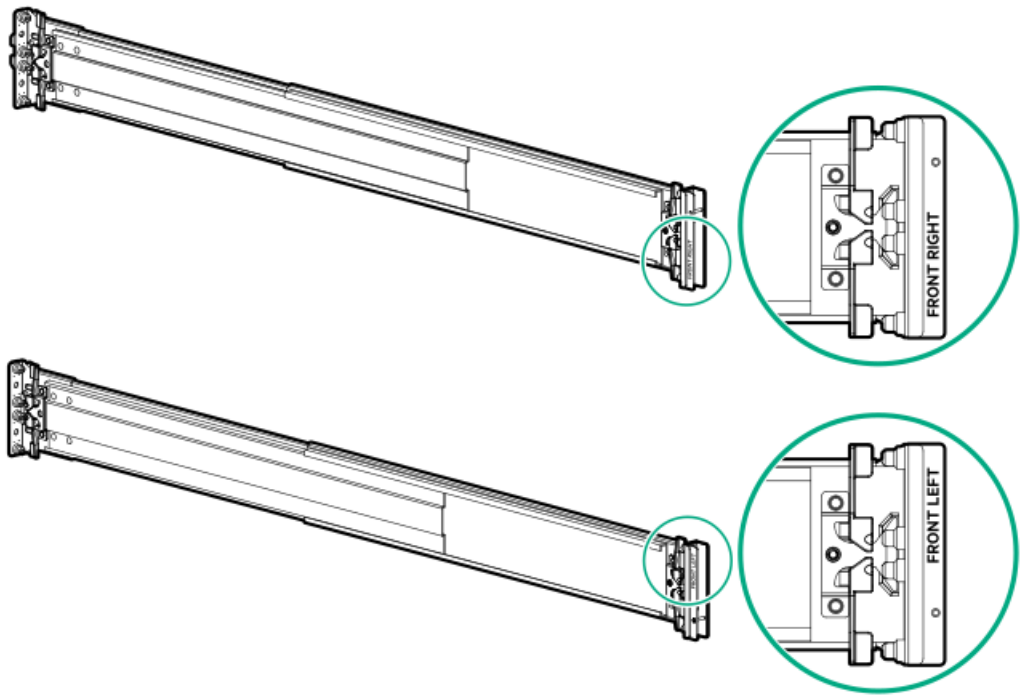
a. Insert the spools on the sides of the server through the keyed slots on the rails.

b. Slide the rail towards the rear panel to lock it into place.

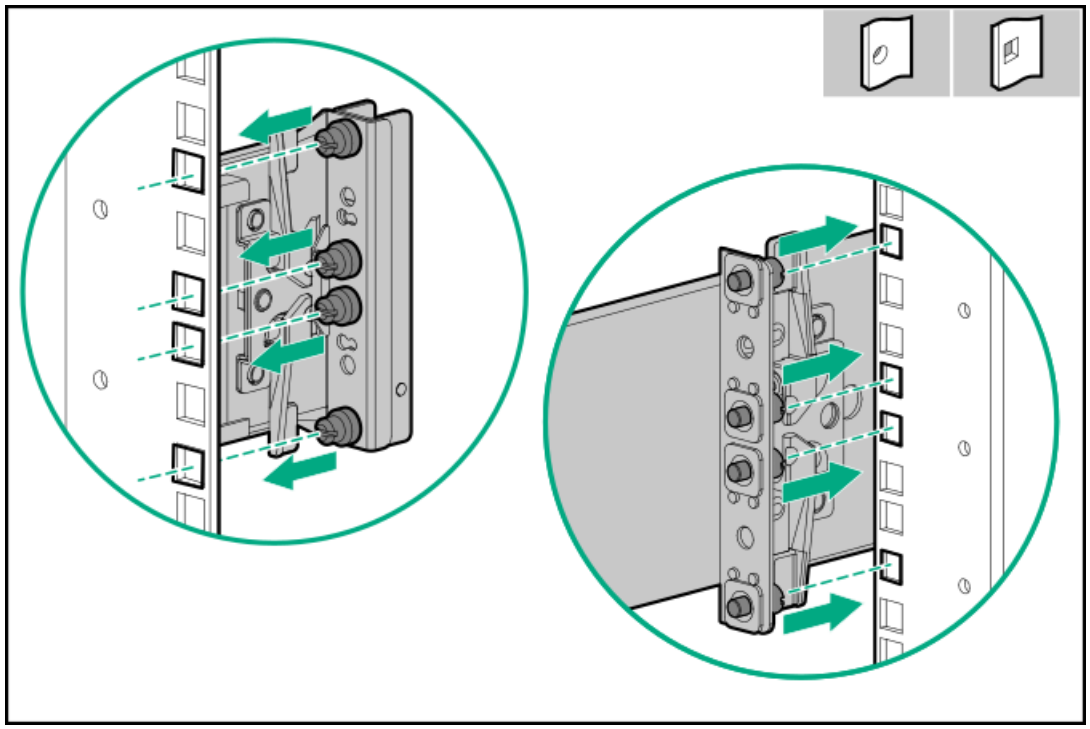


4. Locate the orientation markers on the mounting rails.

   The front end of the rails is marked as **FRONT LEFT** or **FRONT RIGHT**.

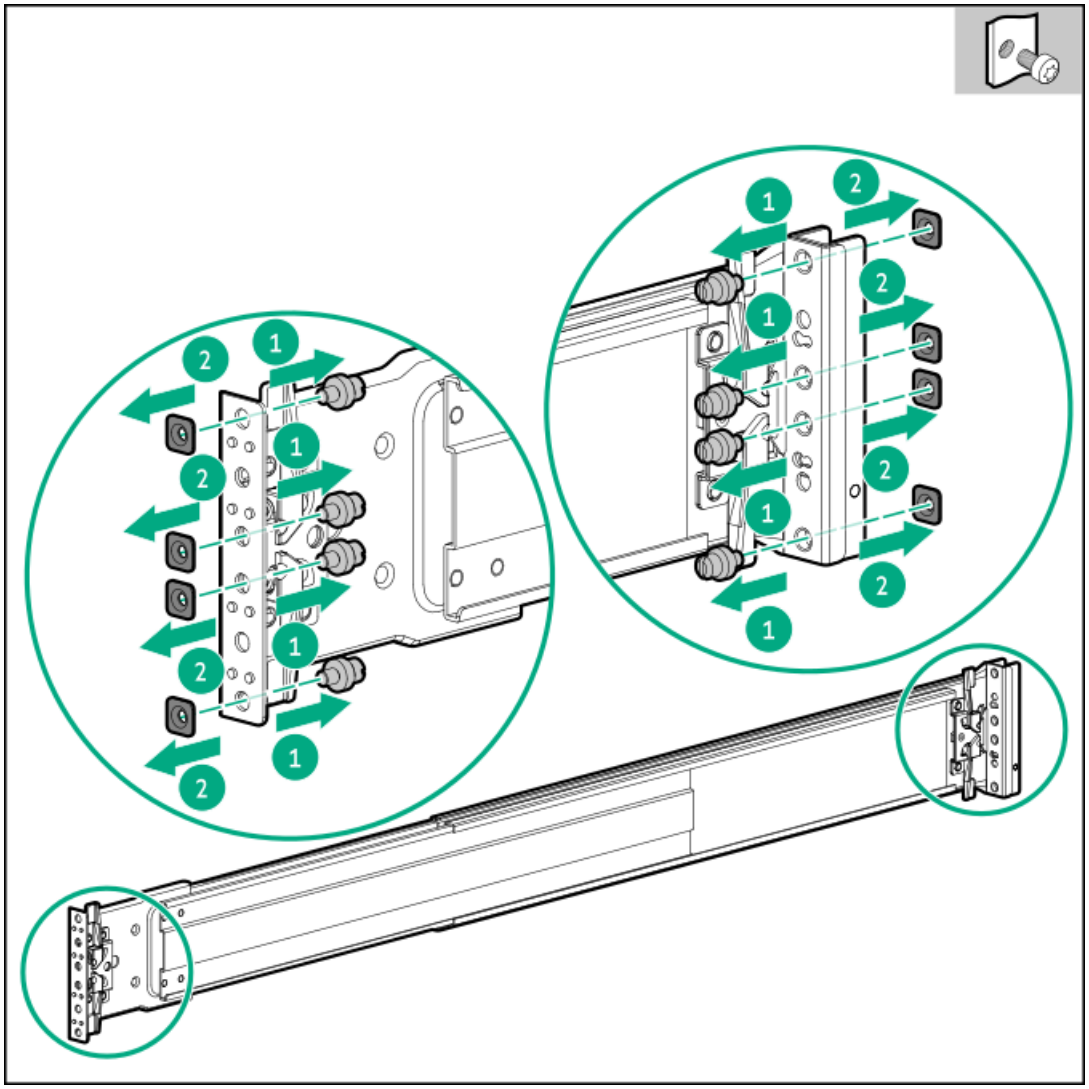


5. Extend the mounting rails to align with the depth of the rack.
6. To install the mounting rails in a round-hole or square-hole rack, insert the pins on the mounting flanges into the rack post holes.



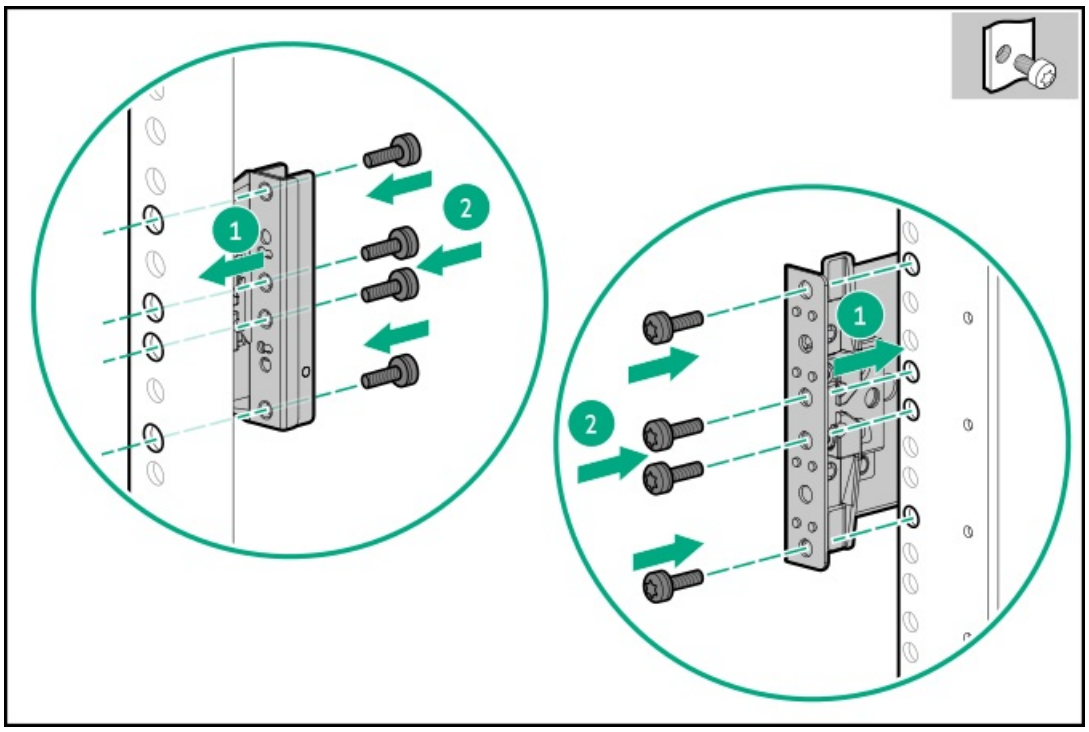
7. To install the mounting rails in a threaded round-hole rack, do the following:

   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.



8. Install the server into the rack .

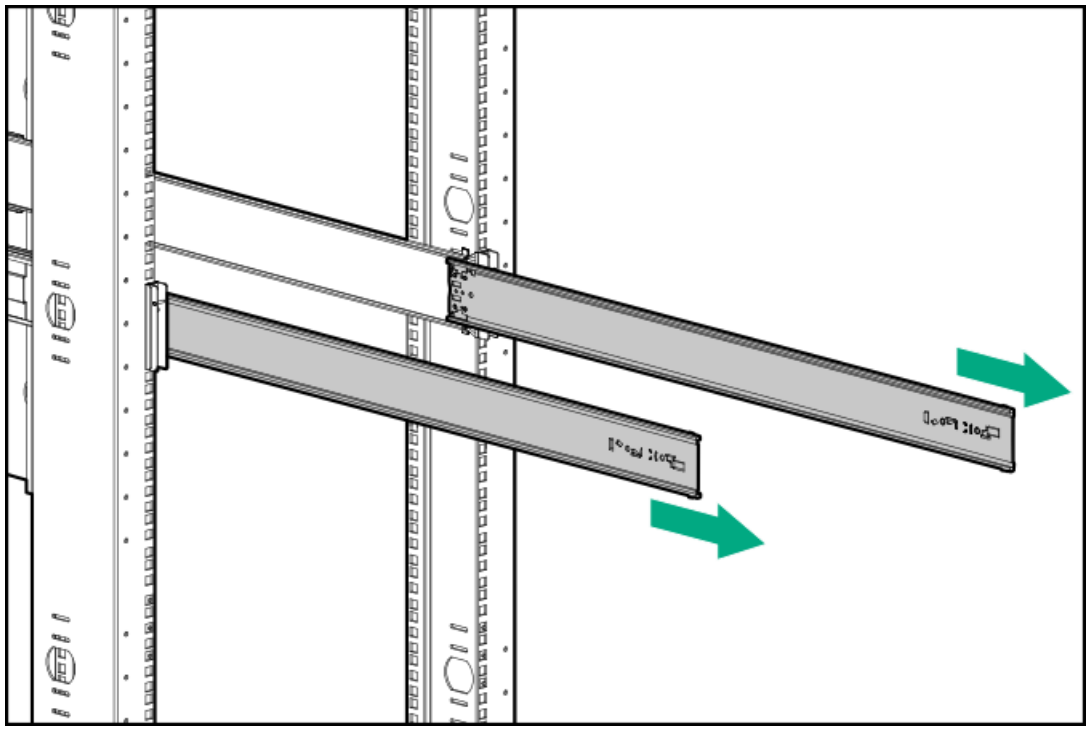
Installing the server into the rack: Ball-bearing rack rail

Prerequisites

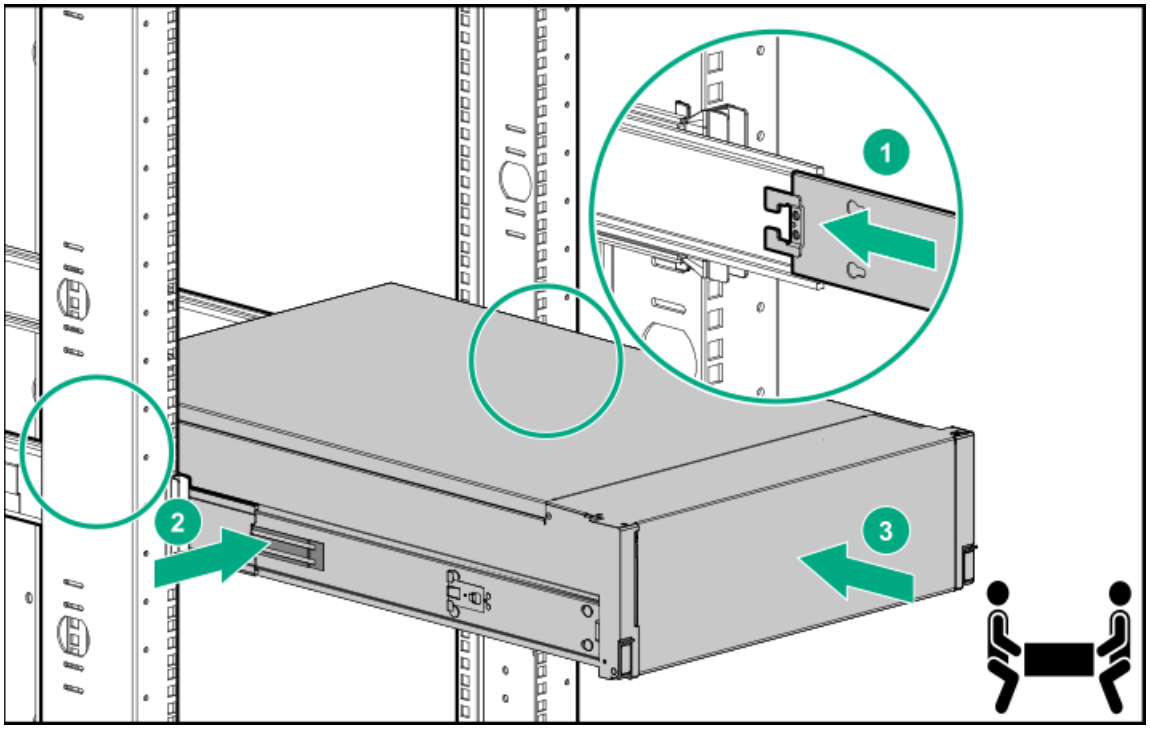
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

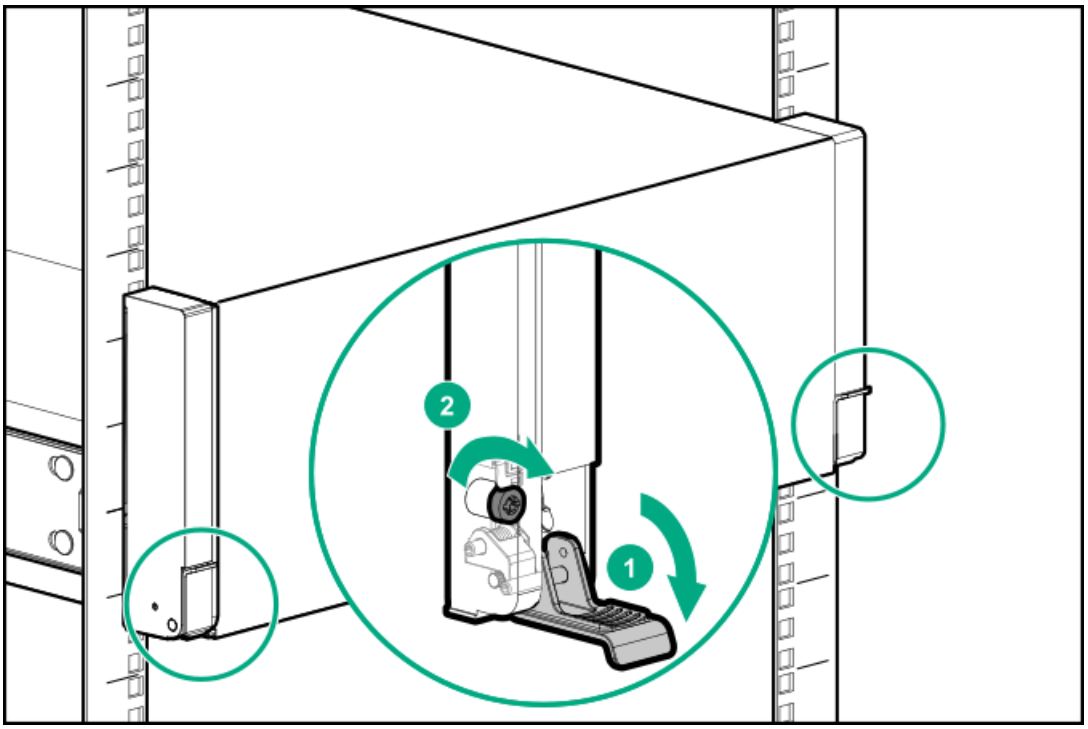
1. Fully extend the rails to the locked position.



2. Install the server into the rack:
   a. Insert the inner rails into the slide rails.
   b. Press and hold the rear-end rail-release latches, and 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. Connect each power cord to the power source.

Installing the cable management arm

Prerequisites

- Before you perform this procedure, review the following: .
  - Rack warnings and cautions
  - CMA components
- T-25 Torx screwdriver—This tool is required if the shipping screws located inside the chassis ears need to be loosened or tightened.

About this task

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

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

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

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.

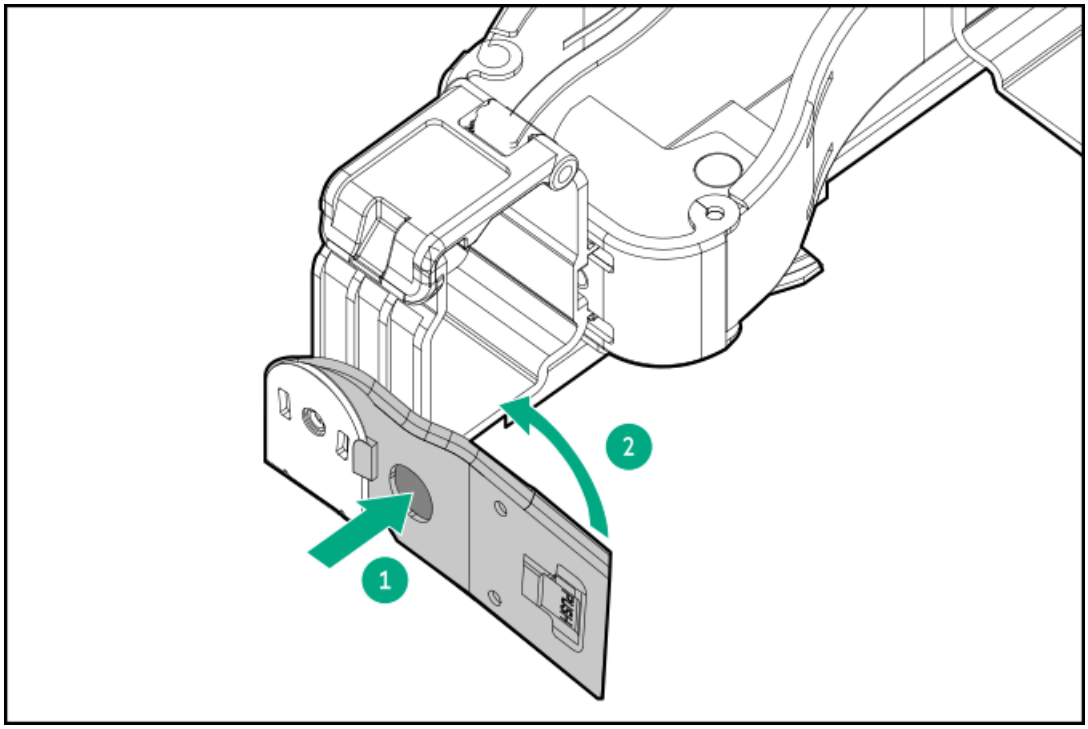
Procedure

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

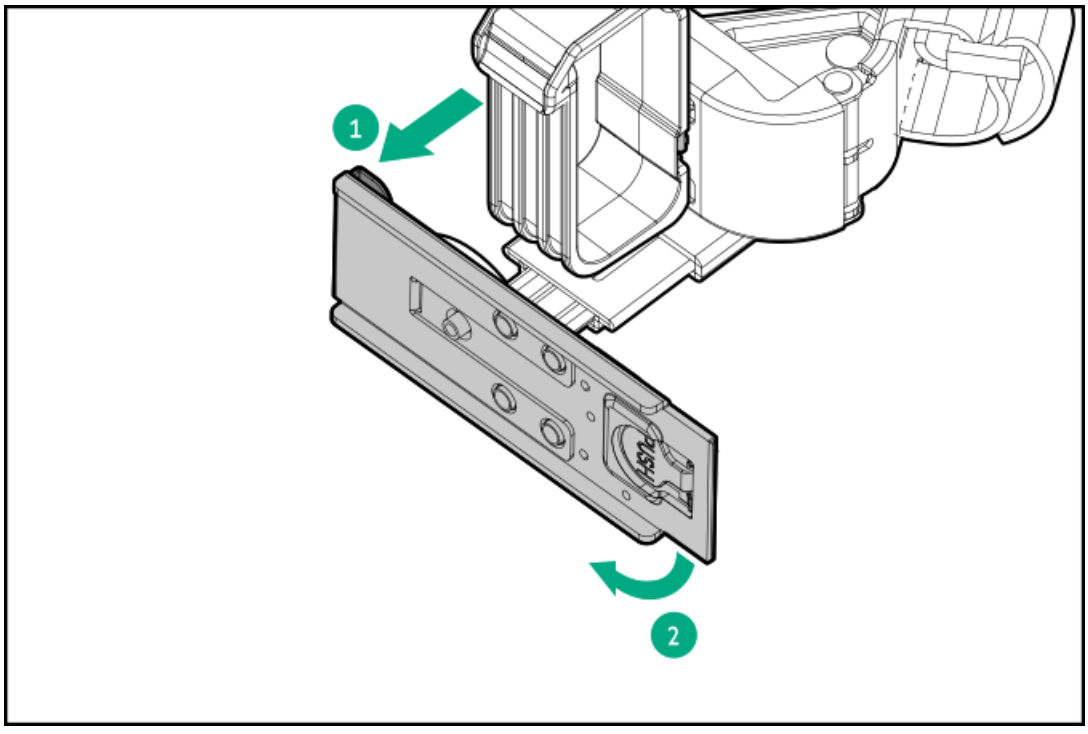
   There will be an audible click to indicate that the bracket is locked in its adjusted position.

   The direction of the bracket rotation will differ depending on the CMA module that you are using:

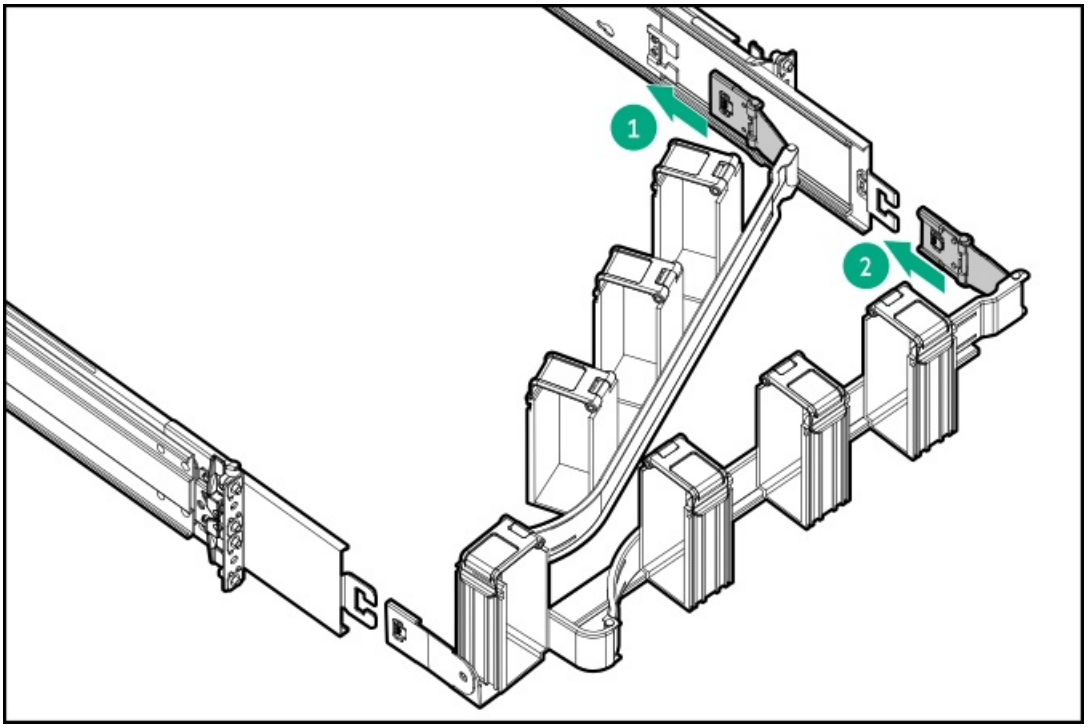
   - CMA with a rotate button

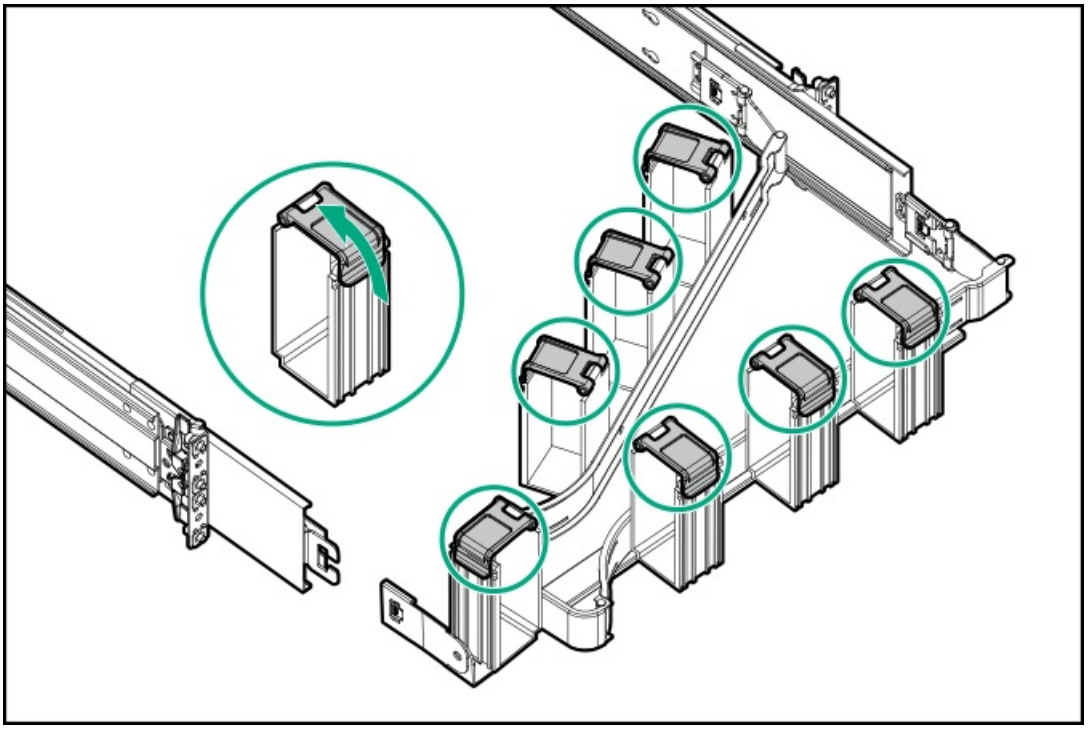
   - CMA with a rotate latch

3. Install the CMA brackets to the inner and outer rails.



4. Open the cable baskets.

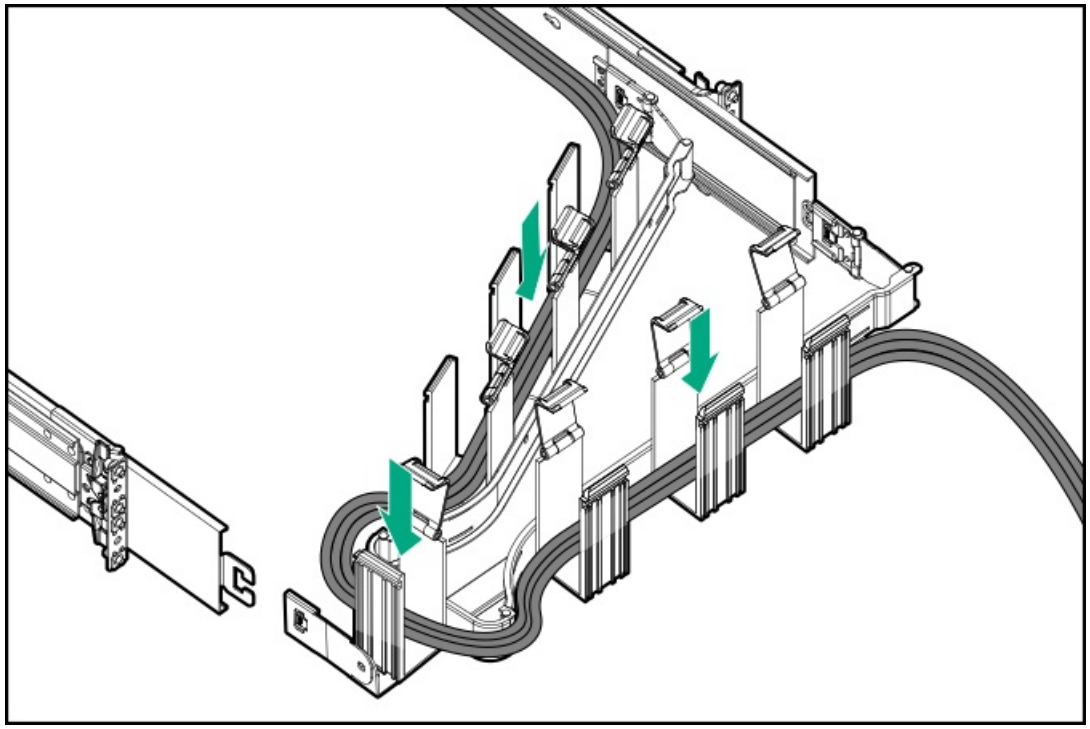


5. Install the cables.

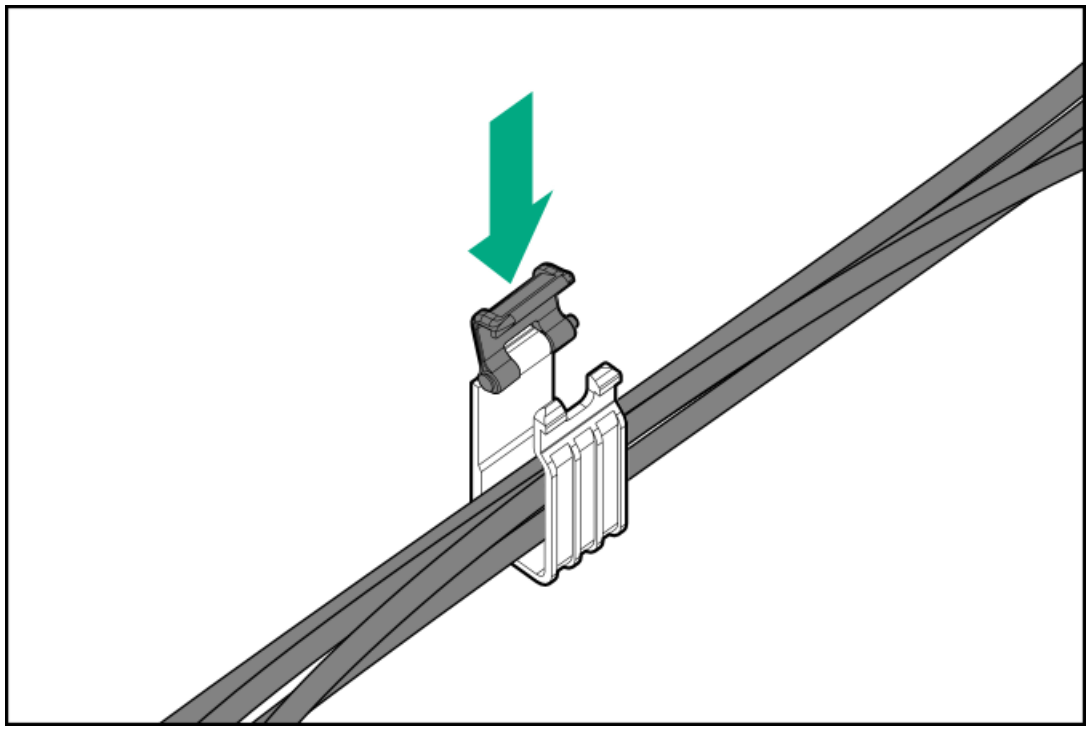
CAUTION

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

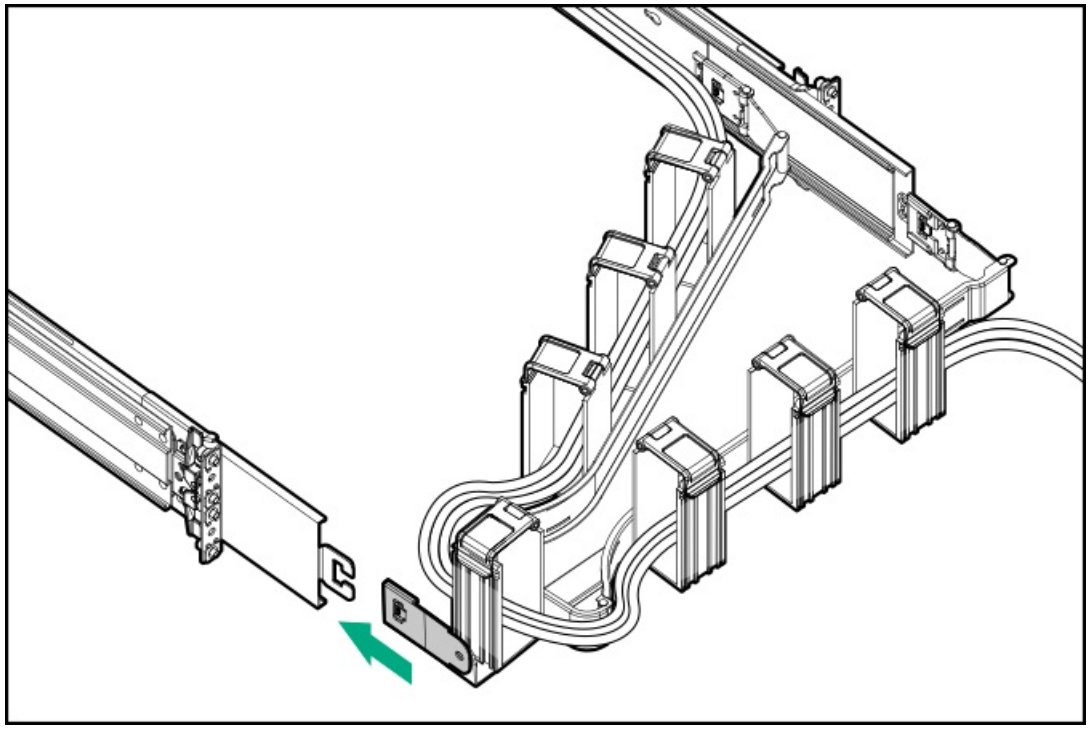
- Leave enough cable slack between the rear panel and the CMA to allow the full extension of the CMA when the server is extended out of the rack.
- However, there should be no excess cable slack inside the CMA; this might cause cable binding and could lead to cable damage.
- Make sure that the cables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



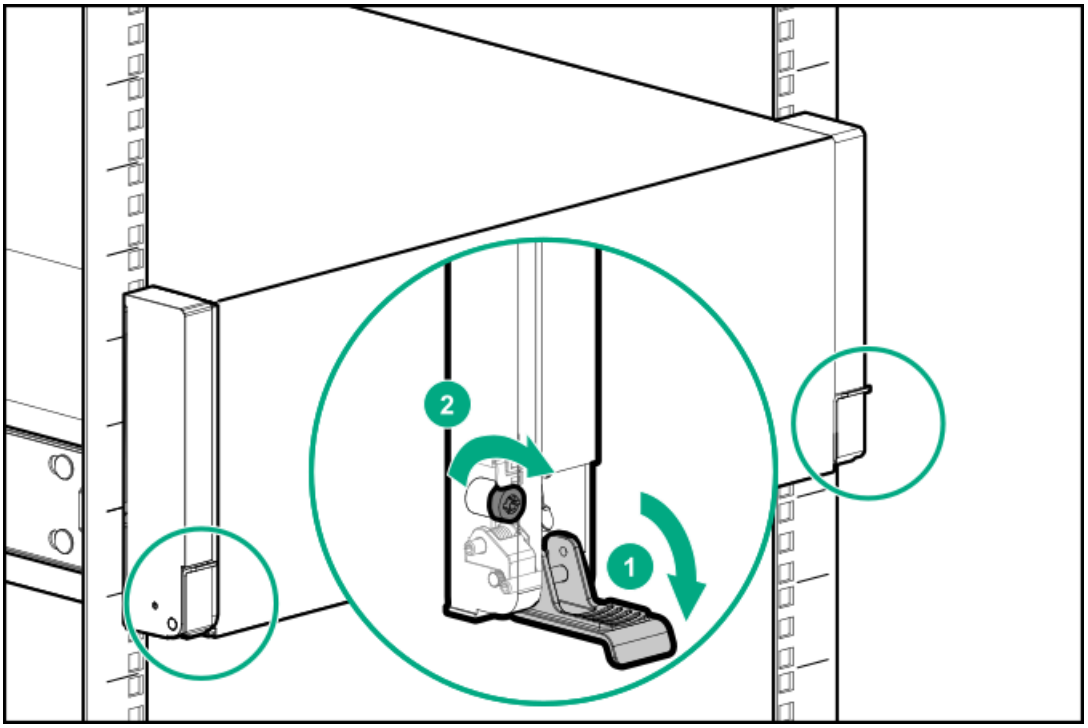
6. Close all baskets.



7. Install the elbow bracket to the outer rail.



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



Results

The installation procedure is complete.

Riser

Subtopics

Installing the captive riser cable
Installing an expansion card
Installing the rear PCIe 5-slot cable kit

Installing the captive riser cable

Prerequisites

- T-10 Torx screwdriver
- T-15 Torx screwdriver
- Phillips No. 1 screwdriver

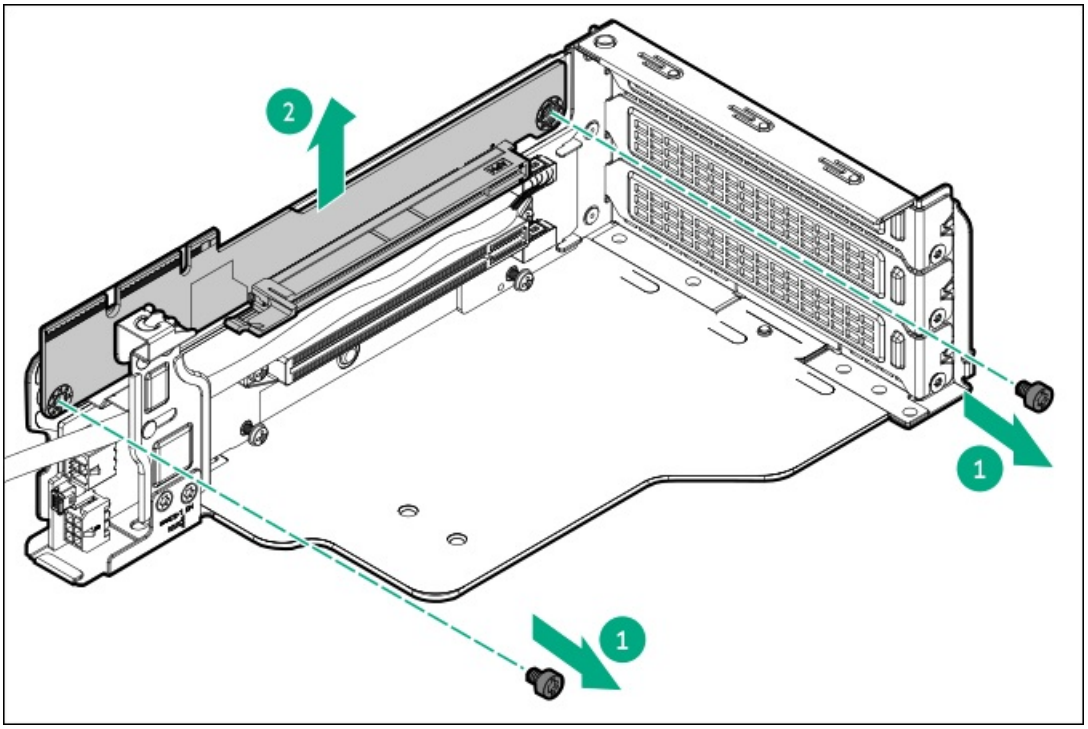
About this task

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

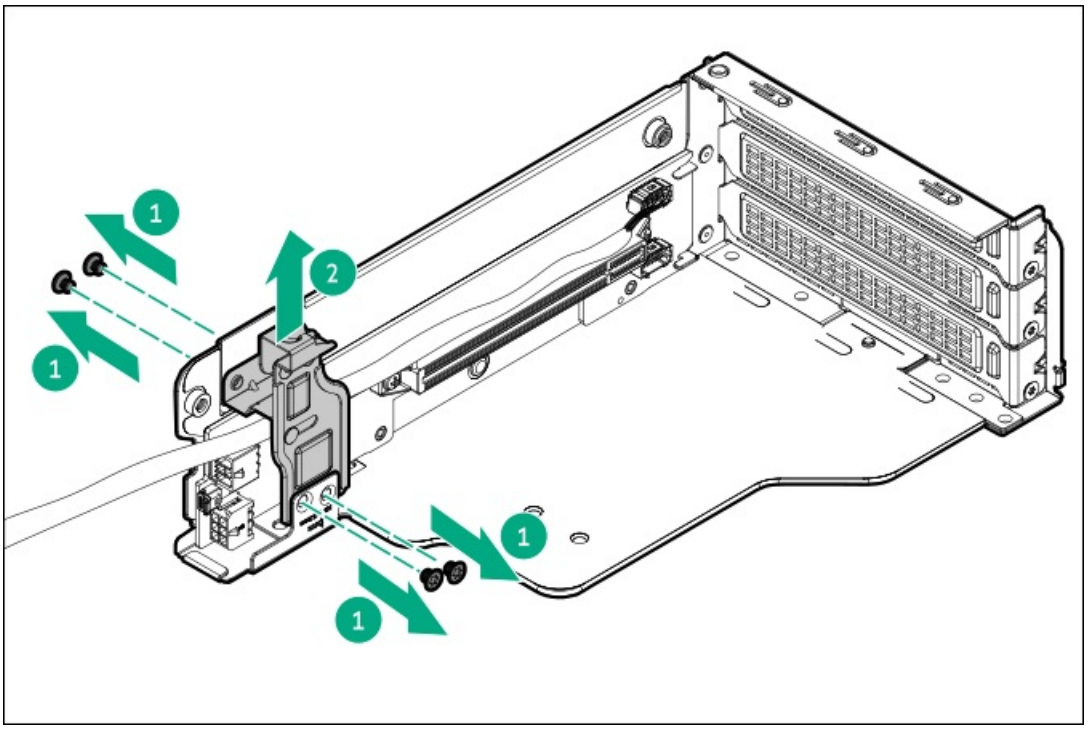
Procedure

1. Power down the server.

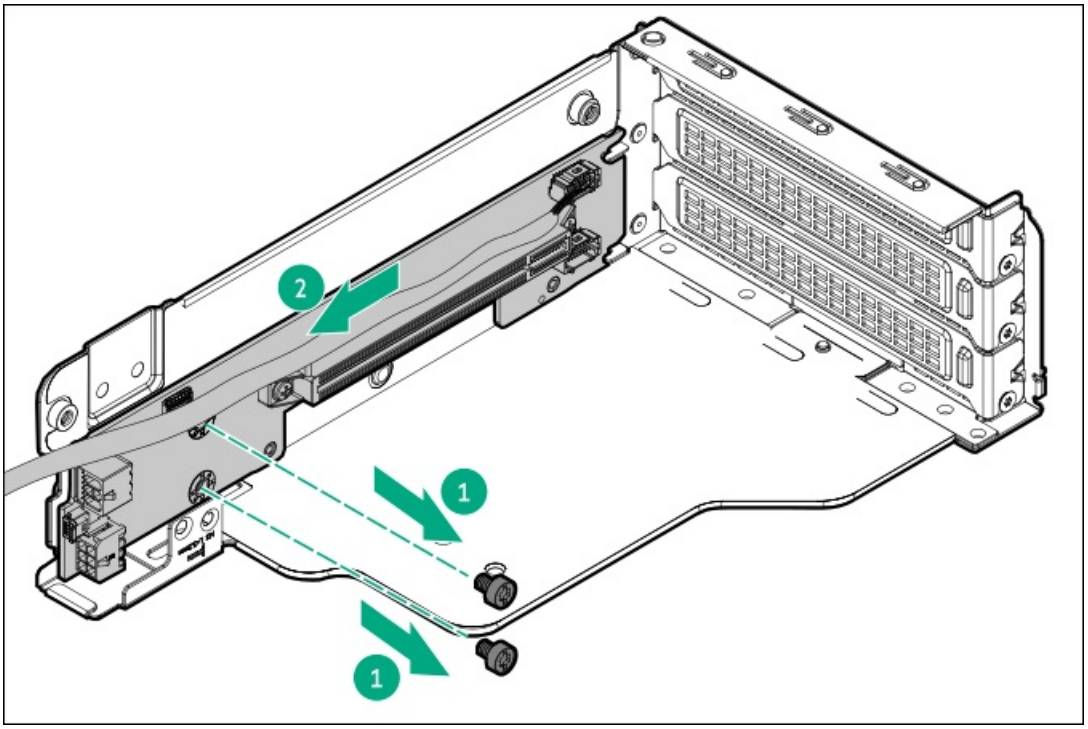
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Remove the primary riser cage.
9. Remove the PCIe ×16 base riser.



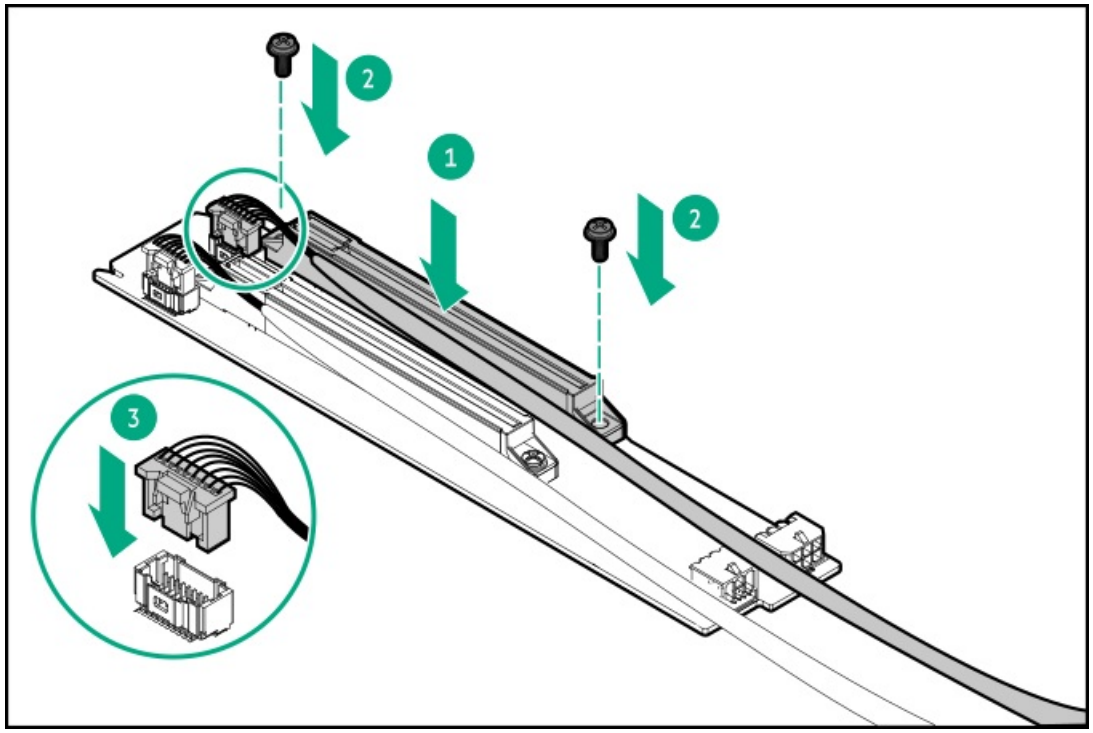
10. Remove the riser screw bracket.



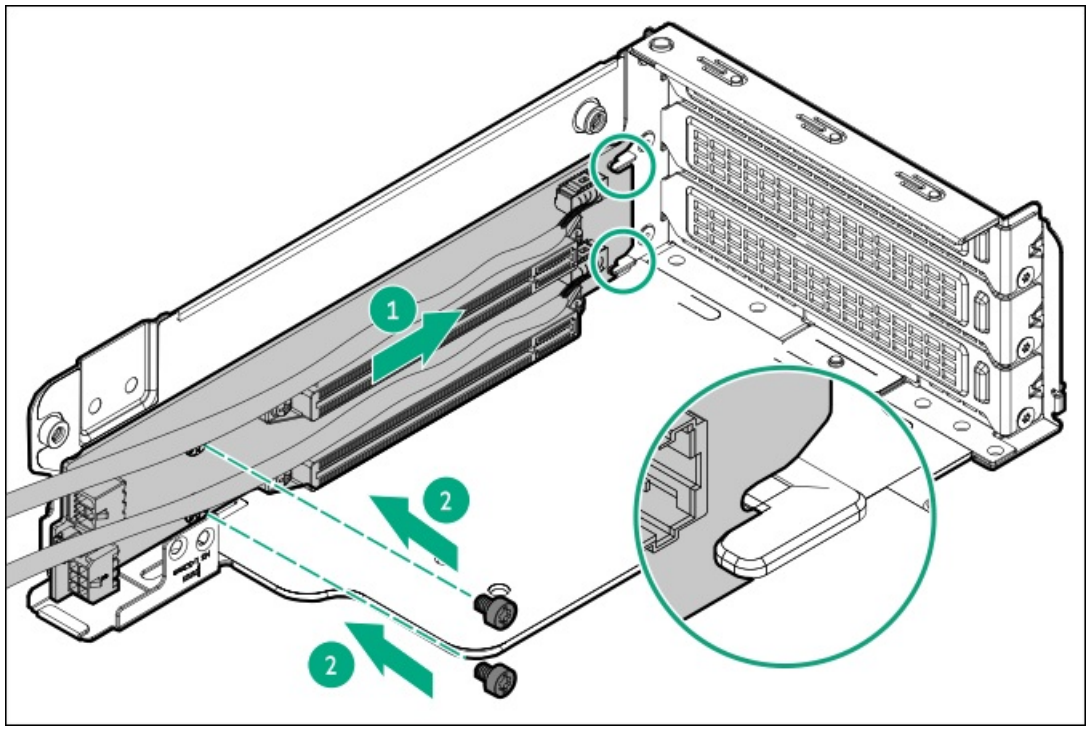
11. Remove the PCIe ×16 captive riser.



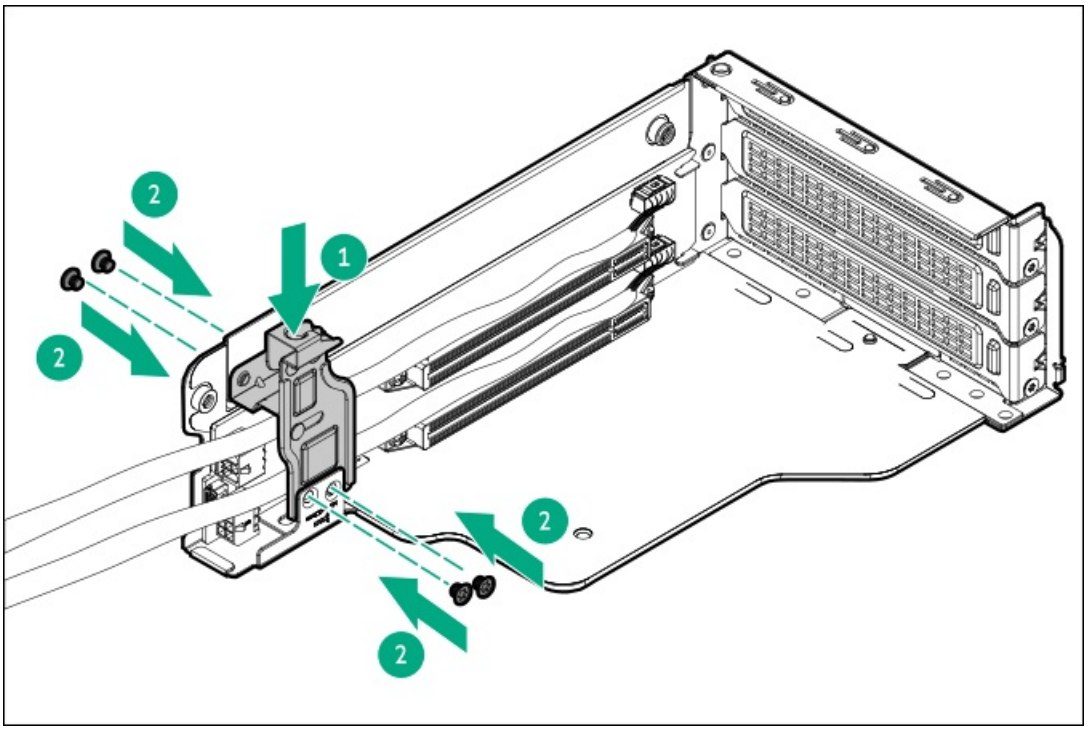
12. Install the captive riser cable.



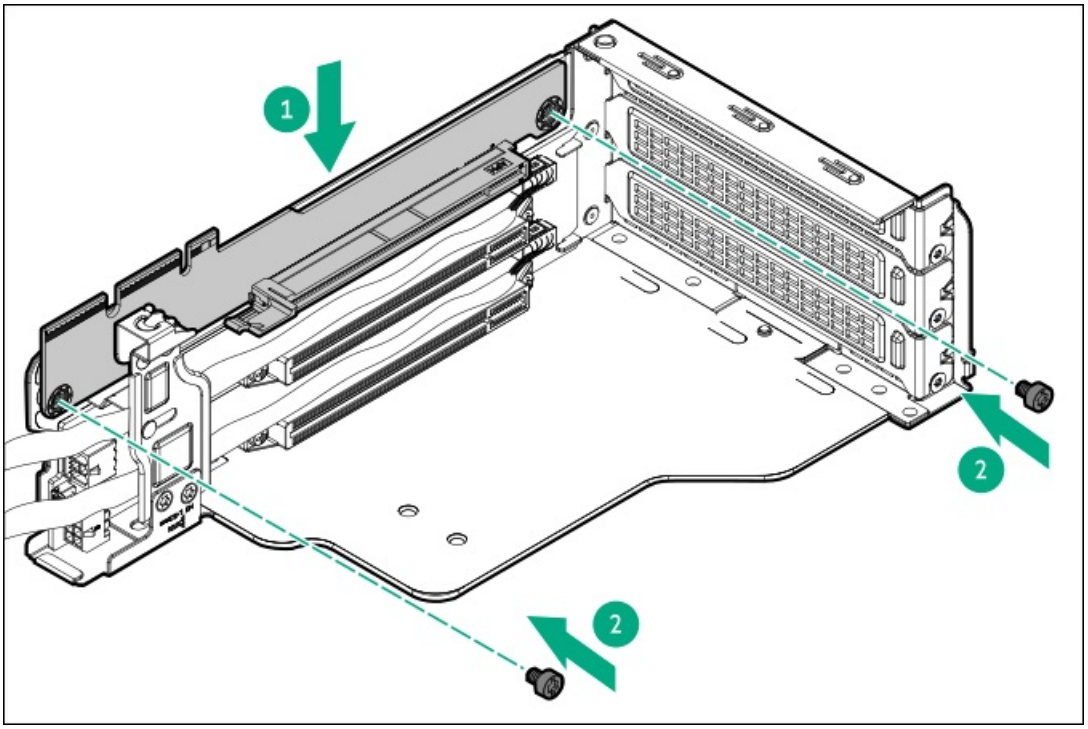
13. Install the PCIe ×16 captive riser on the riser cage.



14. Install the riser screw bracket.



15. Install the PCIe ×16 base riser.



16. Install the primary riser cage.
17. Install the rear vented panel.
18. Install the air baffle.
19. Install the server into the rack.
20. Connect all peripheral cables to the server.
21. Connect each power cord to the server.
22. Connect each power cord to the power source.
23. Power up the server.

Results

The installation procedure is complete.

Installing an expansion card

Prerequisites

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

About this task

CAUTION

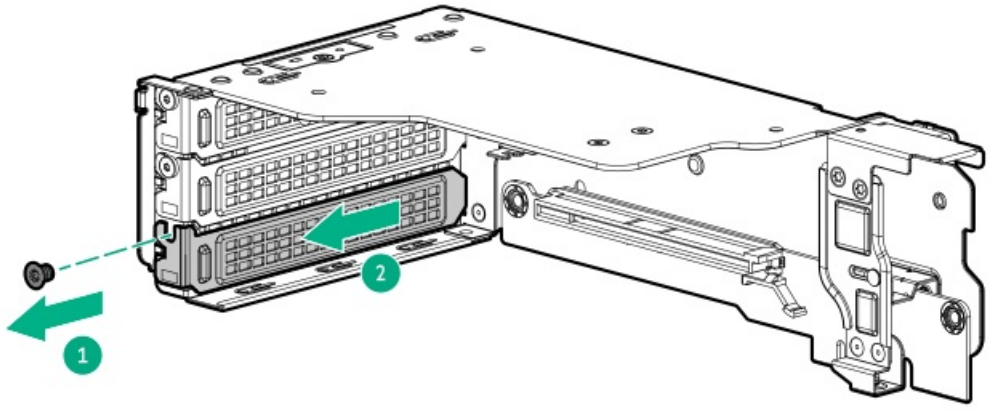
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

To prevent improper cooling and thermal damage, do not operate the server unless all 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. Remove the rear vented panel.
8. Do the following:
   a. Disconnect the PCIe x16 captive riser signal cable from the system board.
   b. Disconnect the PCIe x16 captive riser power cable from the captive riser.
9. Remove the riser cage.
10. Remove the riser slot blank.

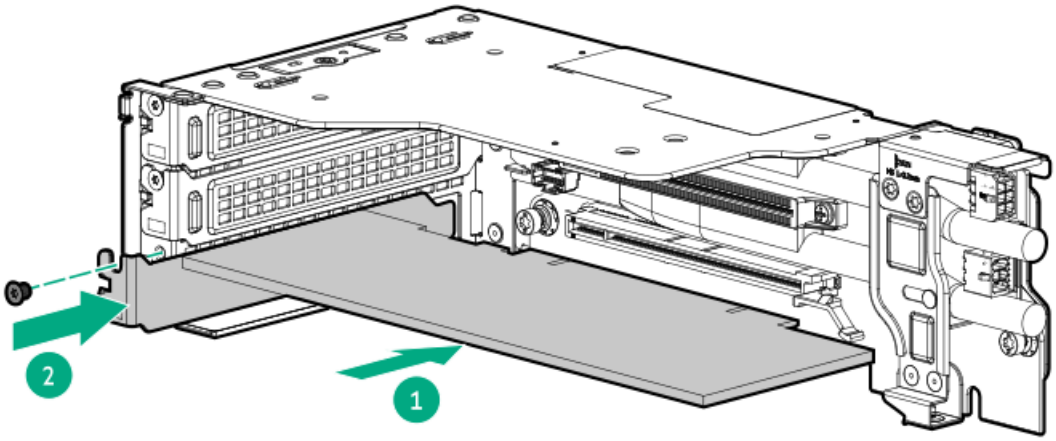


11. Make sure that any switches or jumpers on the expansion card are set properly.

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

12. Install the expansion card, and then secure the screw.

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



13. Connect all necessary internal cabling to the expansion card.
14. Install the riser cage.
15. Do the following:
    a. Connect the PCIe x16 captive riser power cable to the captiver riser .
    b. Connect the PCIe x16 captive riser signal cable to the system board .
16. Install the rear vented panel .
17. Install the air baffle.
18. Install the server into the rack .
19. Connect all peripheral cables to the server.
20. Connect each power cord to the server.

21. Connect each power cord to the power source.
22. Power up the server.

Results

The installation procedure is complete.

Installing the rear PCIe 5-slot cable kit

Prerequisites

- T-15 Torx screwdriver
- Phillips No. 1 screwdriver

About this task

CAUTION

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

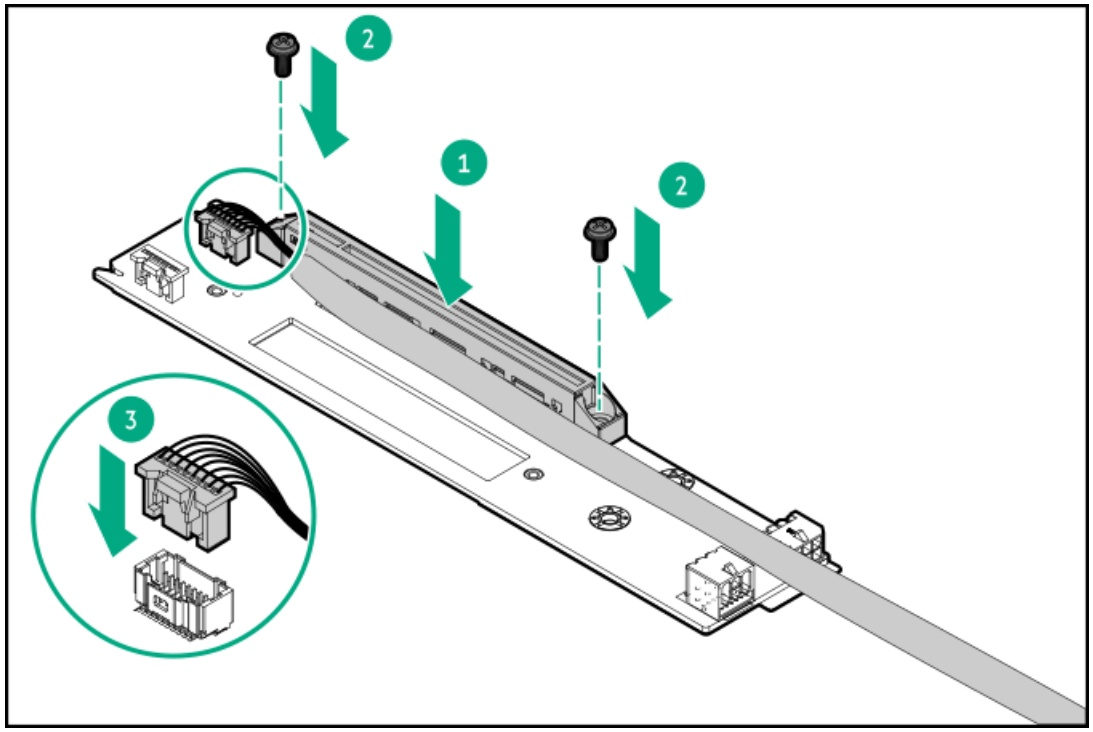
CAUTION

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

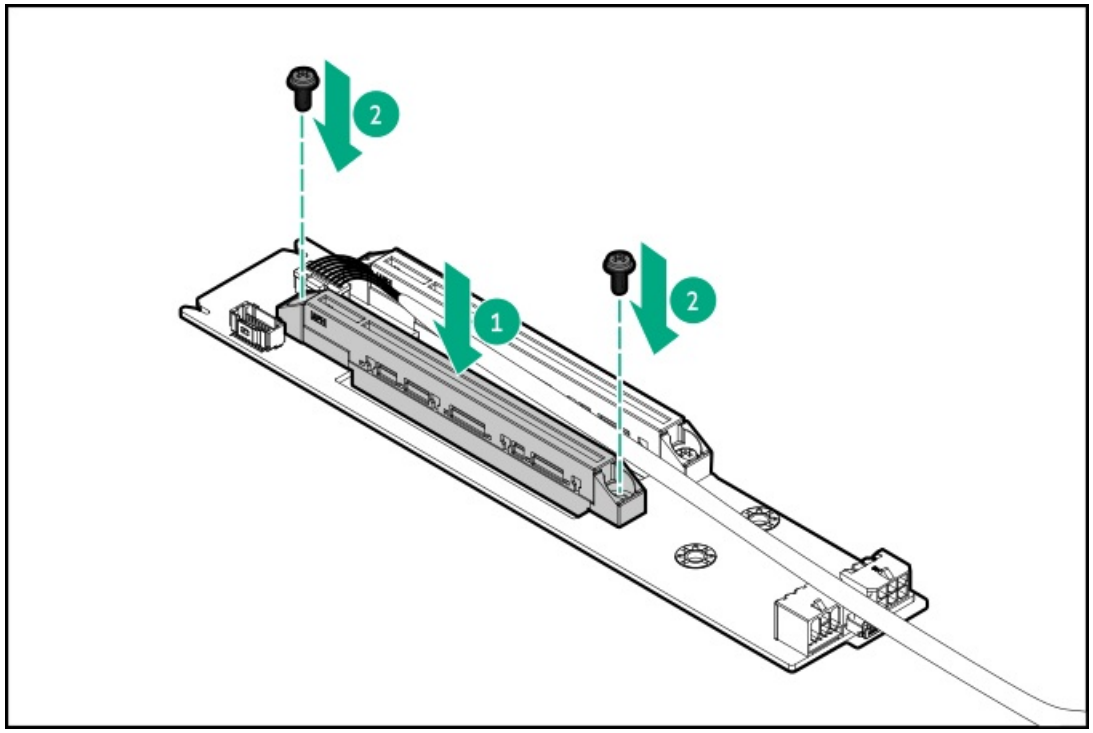
Procedure

Assembling the captive riser

1. Install the captive riser cable on the riser.



2. Install the PCIe dummy slot.

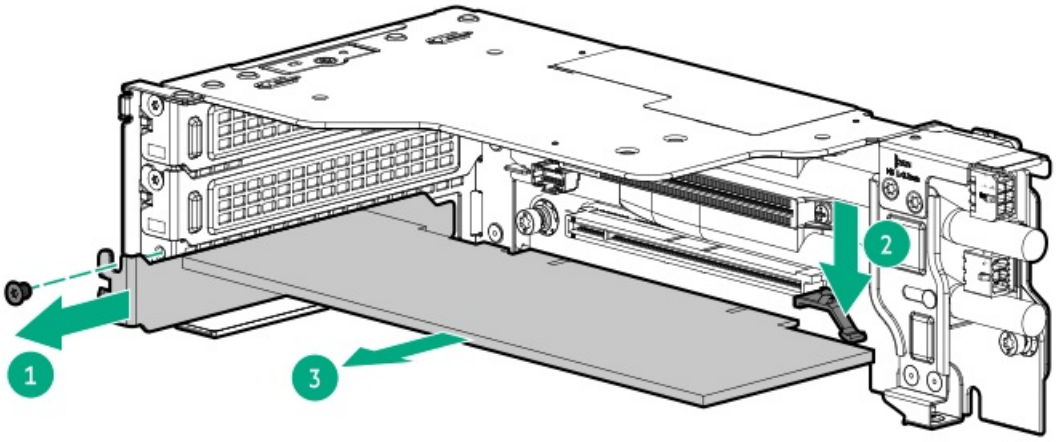


Prepare the server for option installation

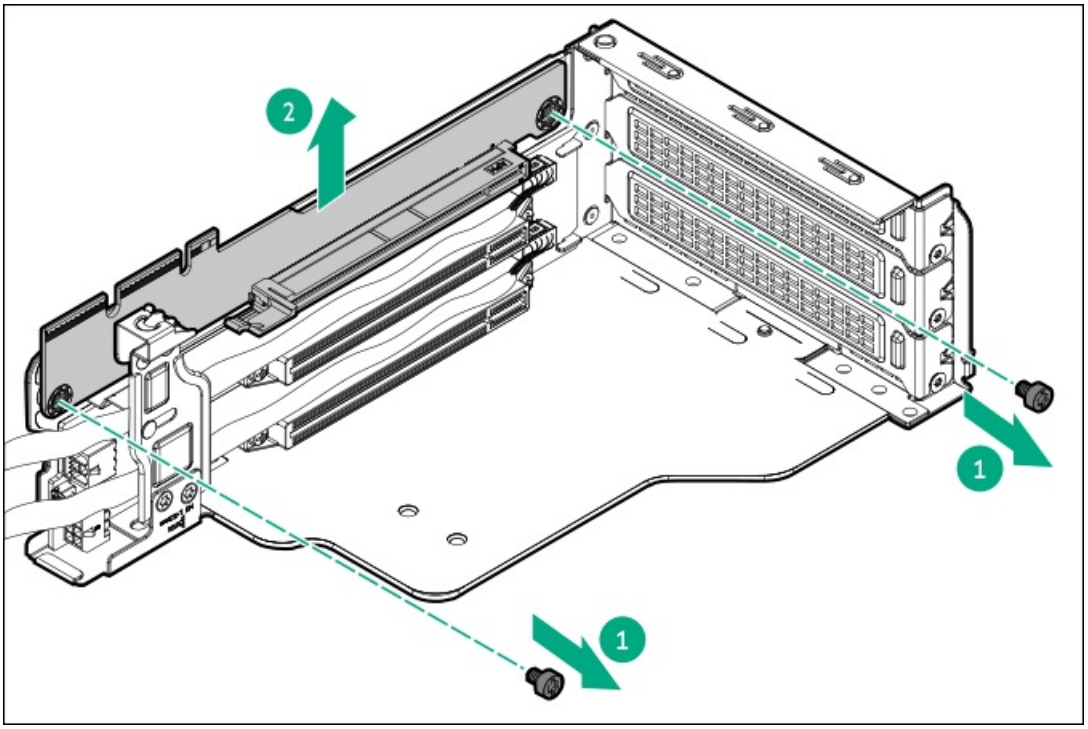
3. Power down the server.
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Remove the server from the rack.
7. Place the server on a flat, level work surface.
8. Remove the access panel.
9. Remove the rear vented panel.
10. Disconnect the captive riser cables from the system.
11. Remove the riser cage.

Prepare the riser cage for option installation

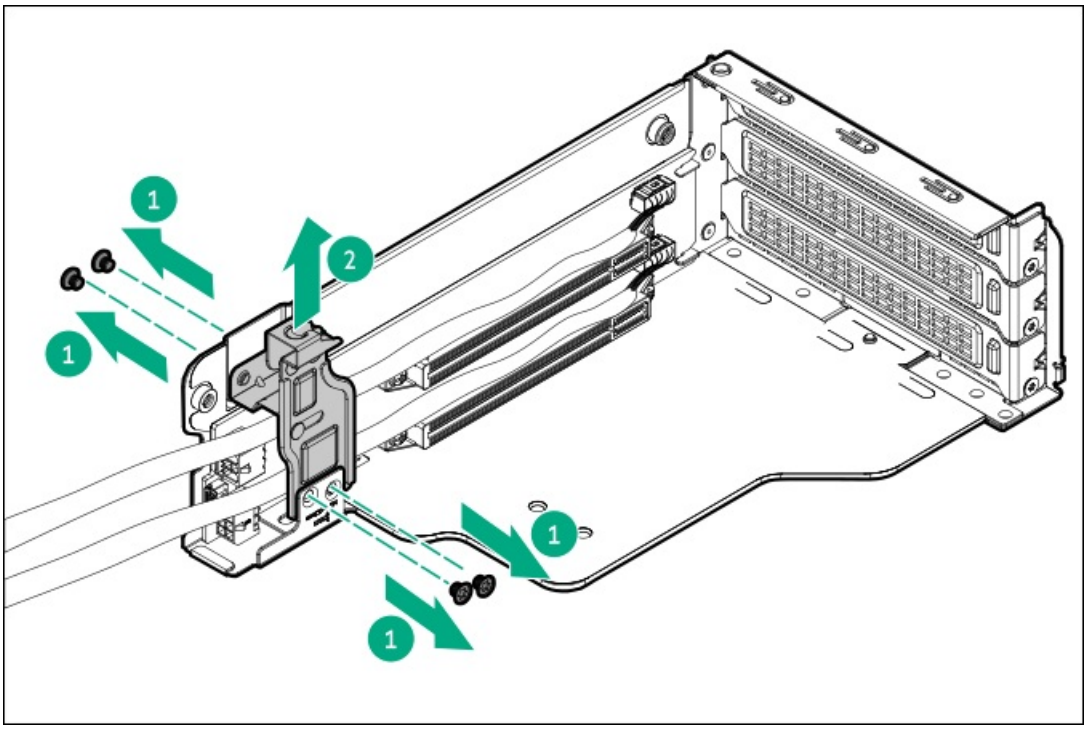
12. If installed, remove the PCIe expansion card.



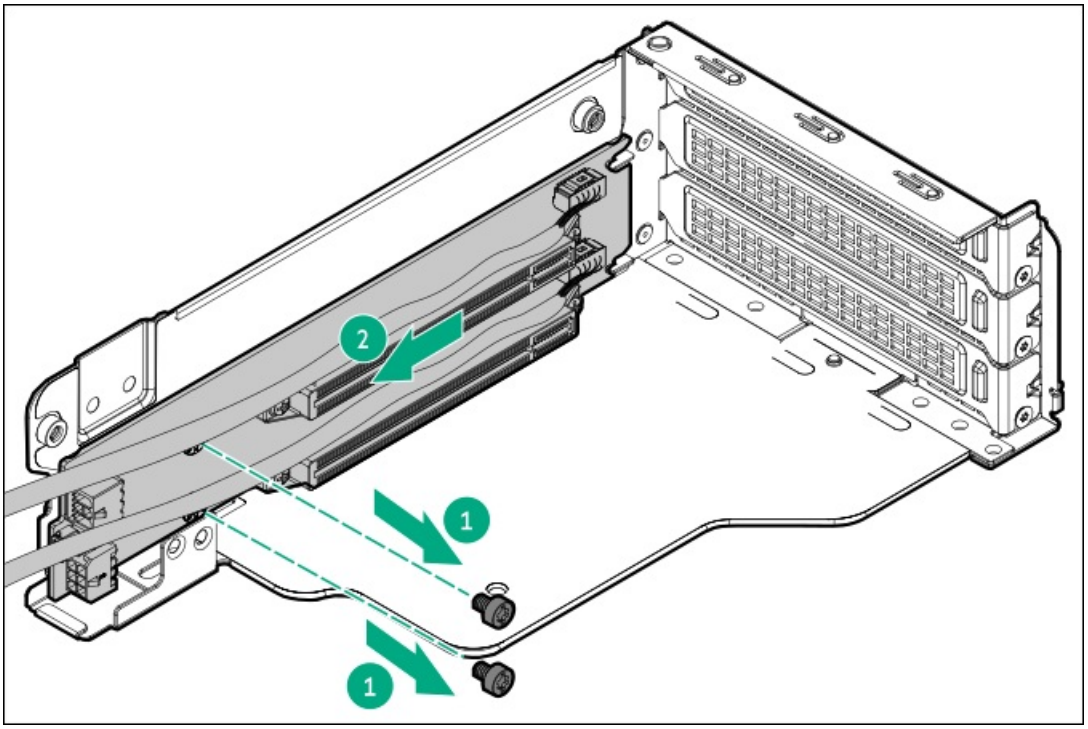
13. Remove the PCIe ×16 base riser.



14. Remove the riser screw bracket.

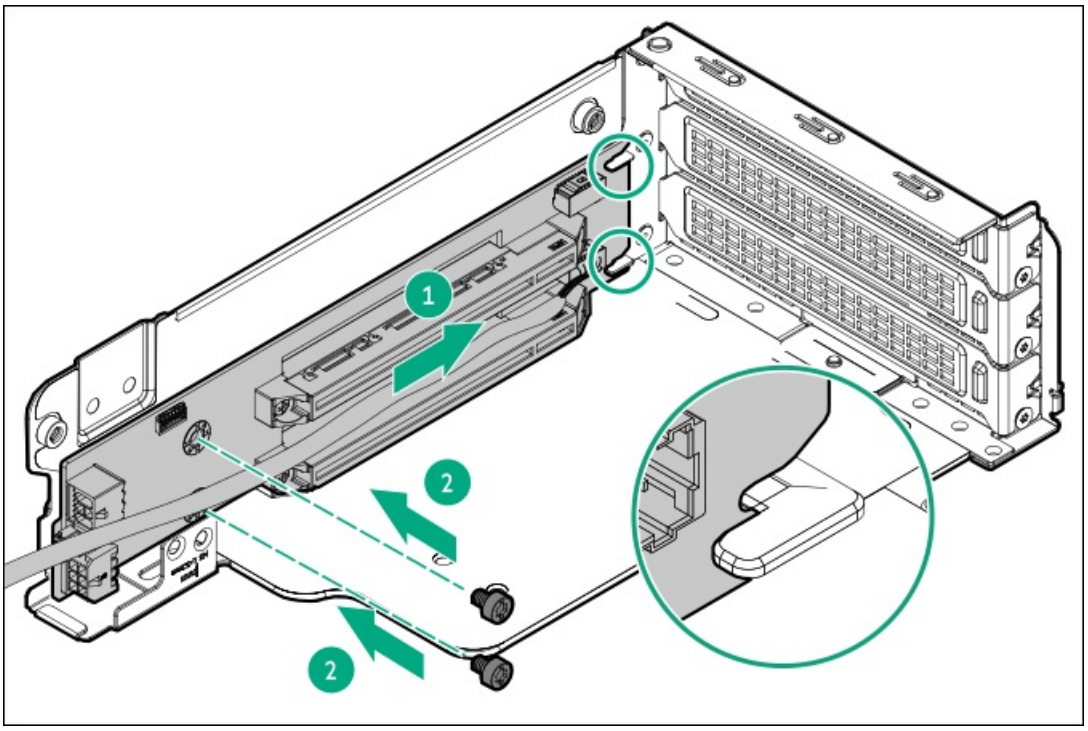


15. Remove the PCIe ×16 captive riser from the riser cage.

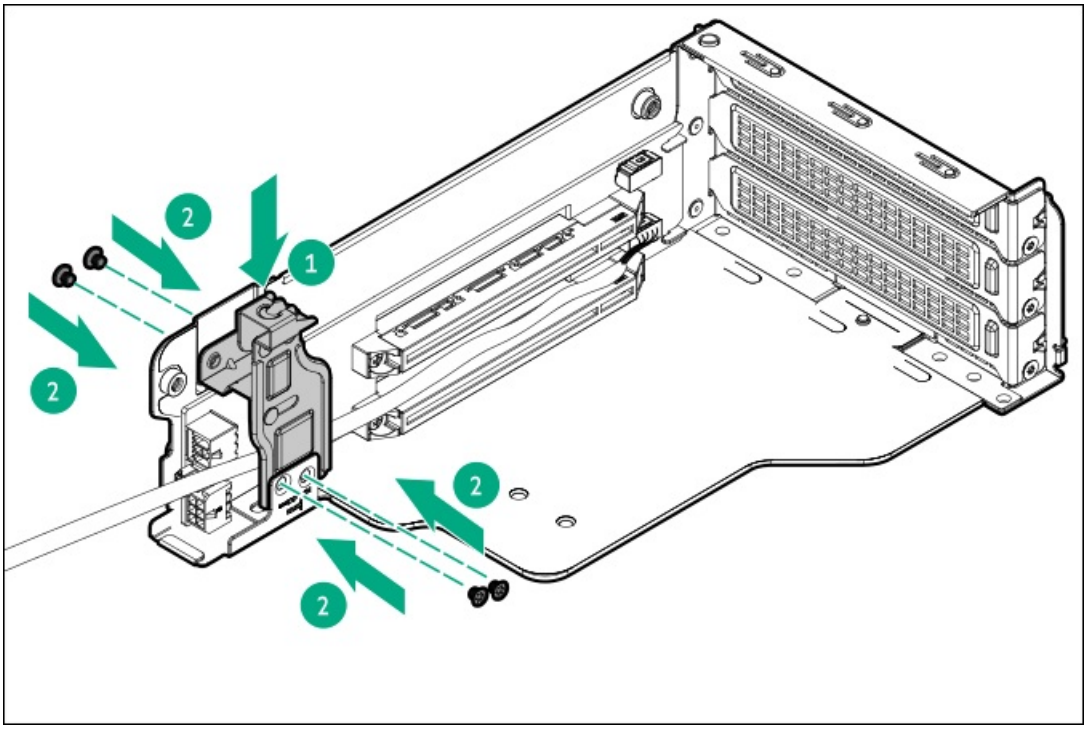


Installing the rear PCIe-5 slot cable kit

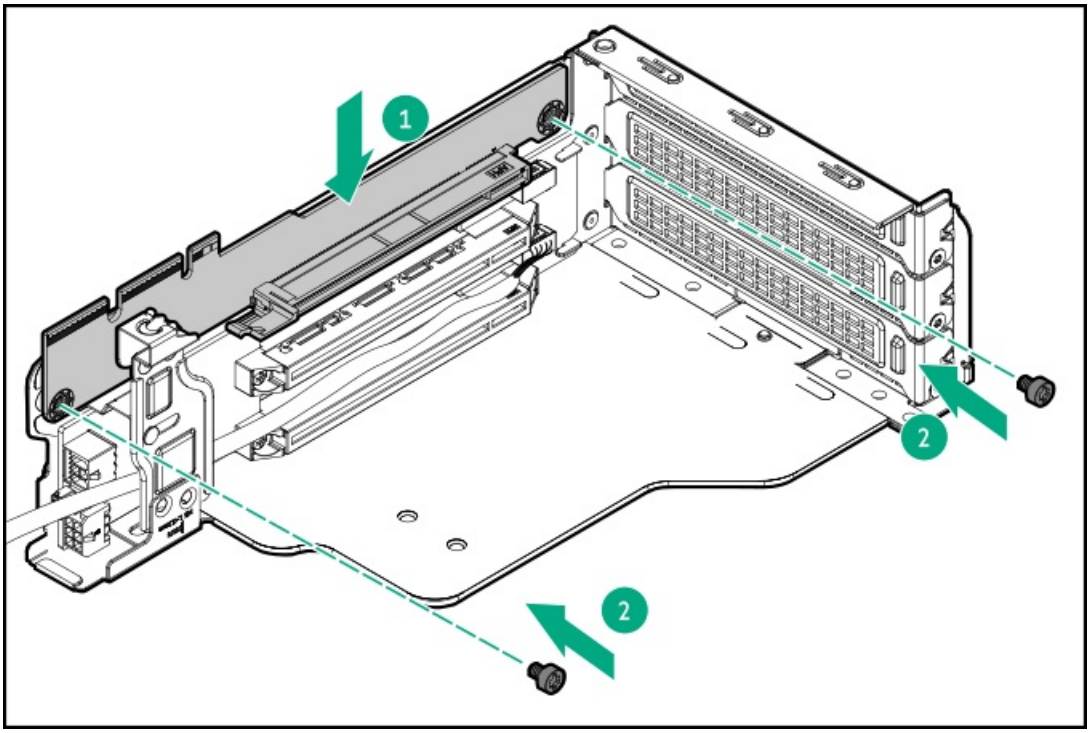
16. Install the new assembled captive riser on the riser cage.



17. Install the riser screw bracket.



18. Install the removed PCIe ×16 base riser.



19. If installing a DPU:
    a. Connect the PCIe fan cable to the captive riser.
        - DPU on slot 1
        - DPU on slot 4
    b. Install the DPU.
    c. Install the PCIe fan.
20. Install the riser cage.
21. Connect the following DPU signal cables:
    - DPU on slot 1
    - DPU on slot 4

Complete the option installation

22. Install the rear vented panel.
23. Install the air baffle.
24. Install the server into the rack.
25. Connect all peripheral cables to the server.
26. Connect each power cord to the server.
27. Connect each power cord to the power source.
28. Power up the server.

Results

The installation procedure is complete.

Security

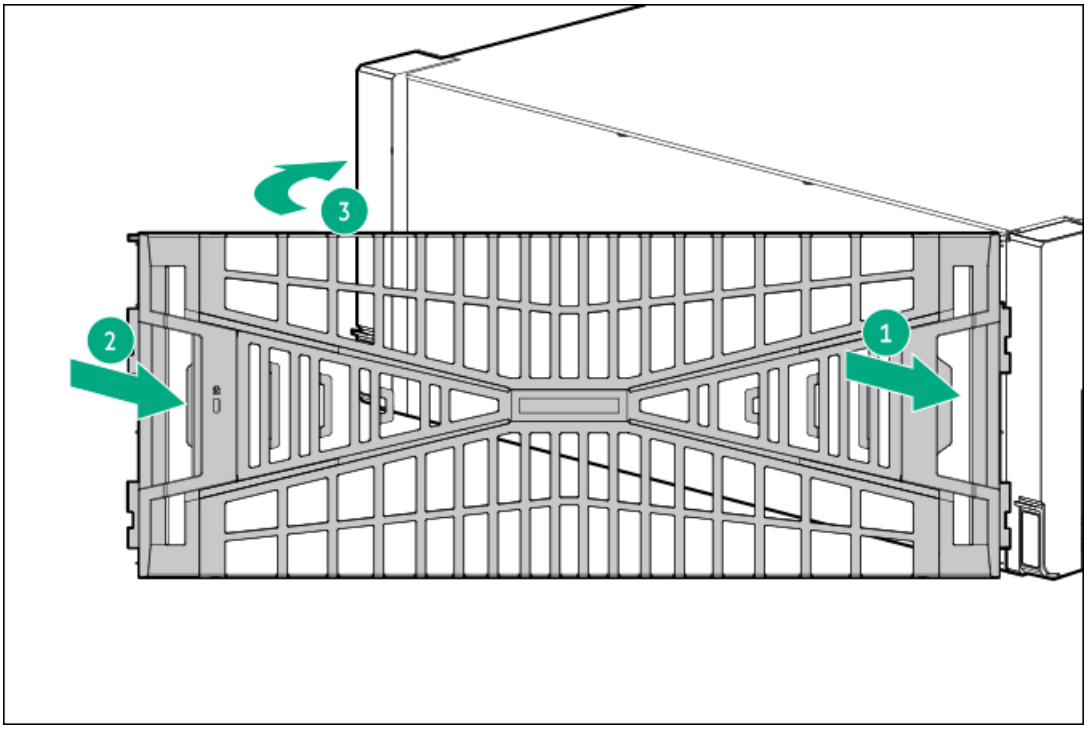
Subtopics

Installing the front bezel option

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.

Storage

Subtopics

Installing the OCP retimer card

Installing the OCP retimer card

Prerequisites

Before you perform this procedure, review the OCP slot population rules.

About this task

CAUTION

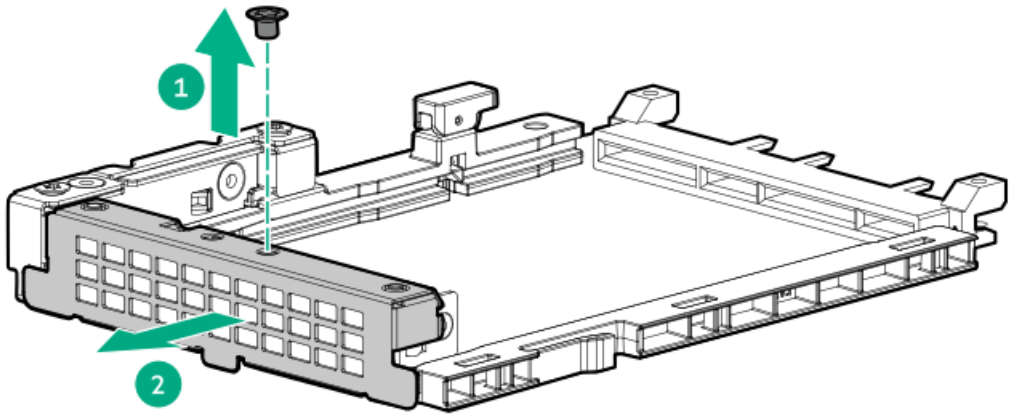
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

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

Procedure

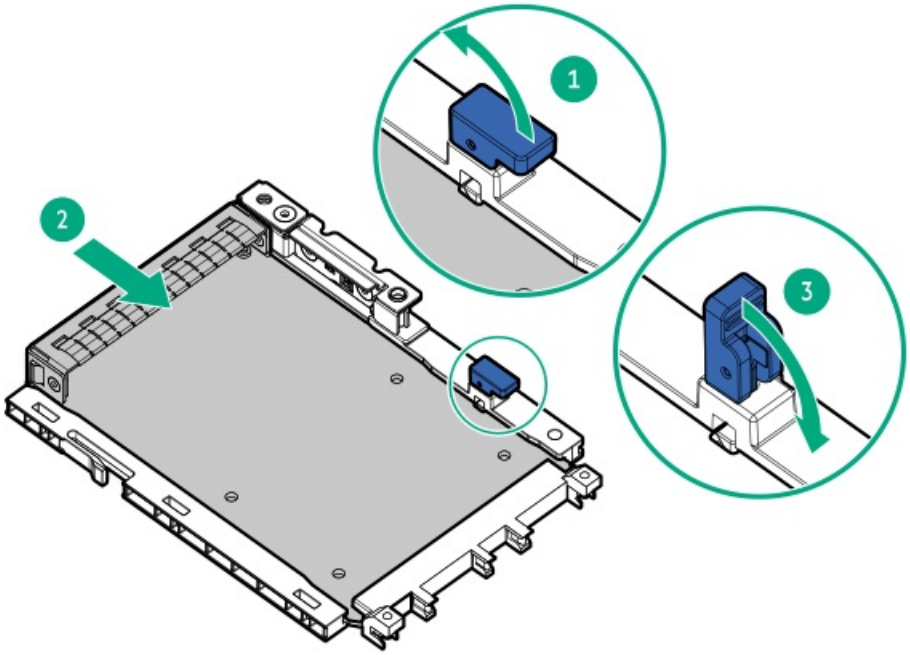
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Remove the secondary riser cage.
9. Remove the screw, and then remove the OCP slot blank.



10. Install the OCP retimer card:
    a. Rotate the locking pin to the open (vertical) position.
    b. Slide the adapter into the slot until it clicks into place.

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

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



11. Connect the SlimSAS cable to the retimer card .
12. Install the secondary riser cage.
13. Install the rear vented panel .
14. Install the server into the rack .
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. Power up the server.

Results

The installation procedure is complete.

Storage controllers

Subtopics

Installing a type-o storage controller
Installing a type-p storage controller

Installing a type-o storage controller

Prerequisites

- Review the OCP slot population rules .

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

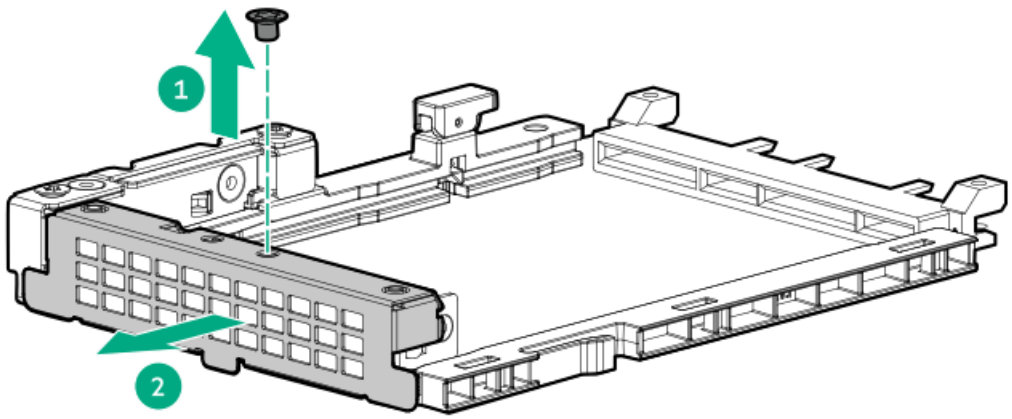
About this task

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.

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

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the rear vented panel.
8. Remove the secondary riser cage.
9. If installing the controller on Slot 27 OCP A, remove the primary riser cage.
10. Remove the screw, and then remove the OCP slot blank.



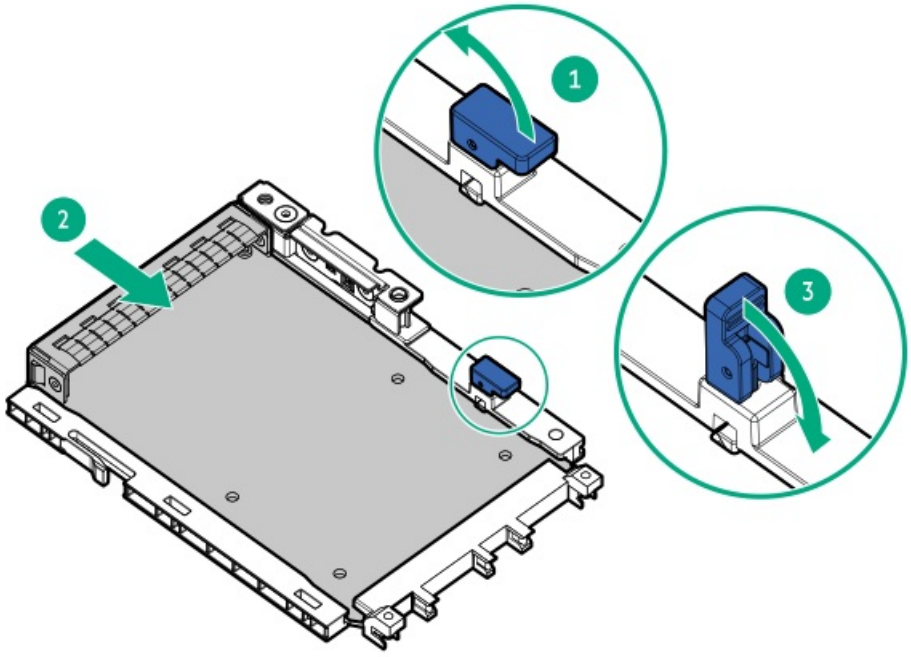
11. Install the type-o storage controller:

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

b. Slide the controller into the slot 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.



12. Connect the type-o controller .
13. If removed, install the primary cage
14. Install the secondary riser cage.
15. Install the rear vented panel .
16. Install the access panel.
17. Install the server into the rack.
18. Connect all peripheral cables to the server.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. Power up the server.
22. Update the server firmware if they are not the latest revision .
23. Configure the controller.

Results

The installation procedure is complete.

Installing a type-p storage controller

Prerequisites

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

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

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

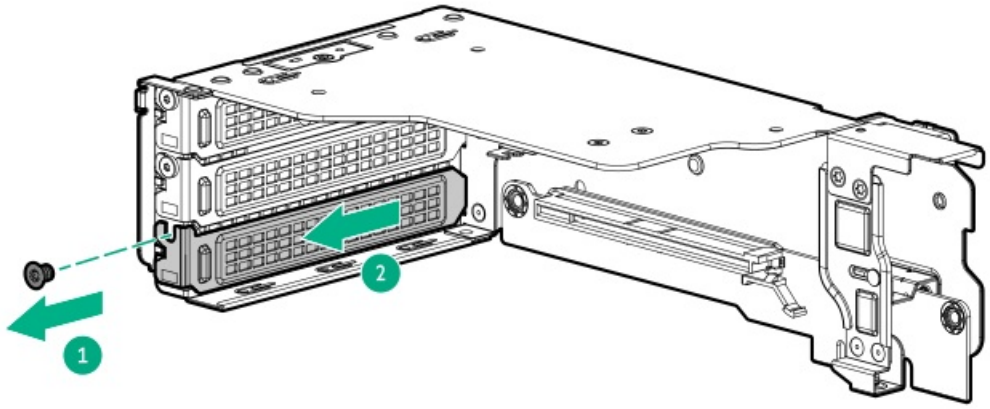
About this task

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.

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.

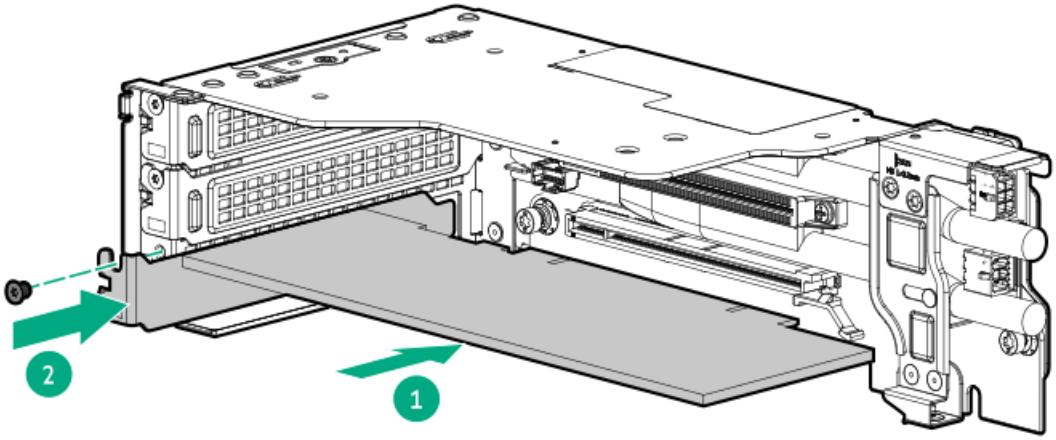
Procedure

1. Back up all server data.
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. 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. Remove the access panel.
10. Remove the rear vented panel.
11. Do the following:
    a. Disconnect the PCIe x16 captive riser signal cable from the system board.
    b. Disconnect the PCIe x16 captive riser power cable from the captive riser.
12. Remove the riser cage.
13. Remove the riser slot blank.



14. Install the type-p controller, and then secure the screw.

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



15. Cable the type-p storage controller.
    - SFF drive configuration
16. To enable the FBWC feature of the storage controller, install an energy pack.
17. Install the riser cage.
18. Do the following:
    a. Connect the PCIe x16 captive riser power cable to the captive riser .
    b. Connect the PCIe x16 captive riser signal cable to the system board .
19. Install the rear vented panel .
20. Install the air baffle.
21. Install the server into the rack .
22. Connect all peripheral cables to the server.
23. Connect each power cord to the server.

24. Connect each power cord to the power source.
25. Power up the server.
26. Update the server firmware if they are not the latest revision .
27. Configure the controller.

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
GPU cage cabling
Front PCIe x16 captive riser cabling
Rear PCIe x16 captive riser cabling
Storage cabling
HPE NS204i-u Boot Device V2 cabling
DPU cabling
Sideband board cabling
Fan cabling
Intel UPI cabling
OCP bandwidth enablement cabling
Serial port cabling
Chassis intrusion detection switch cabling
Front I/O cabling
DLC module cabling
PDU cabling

Cabling guidelines

Observe the following:

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

- 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

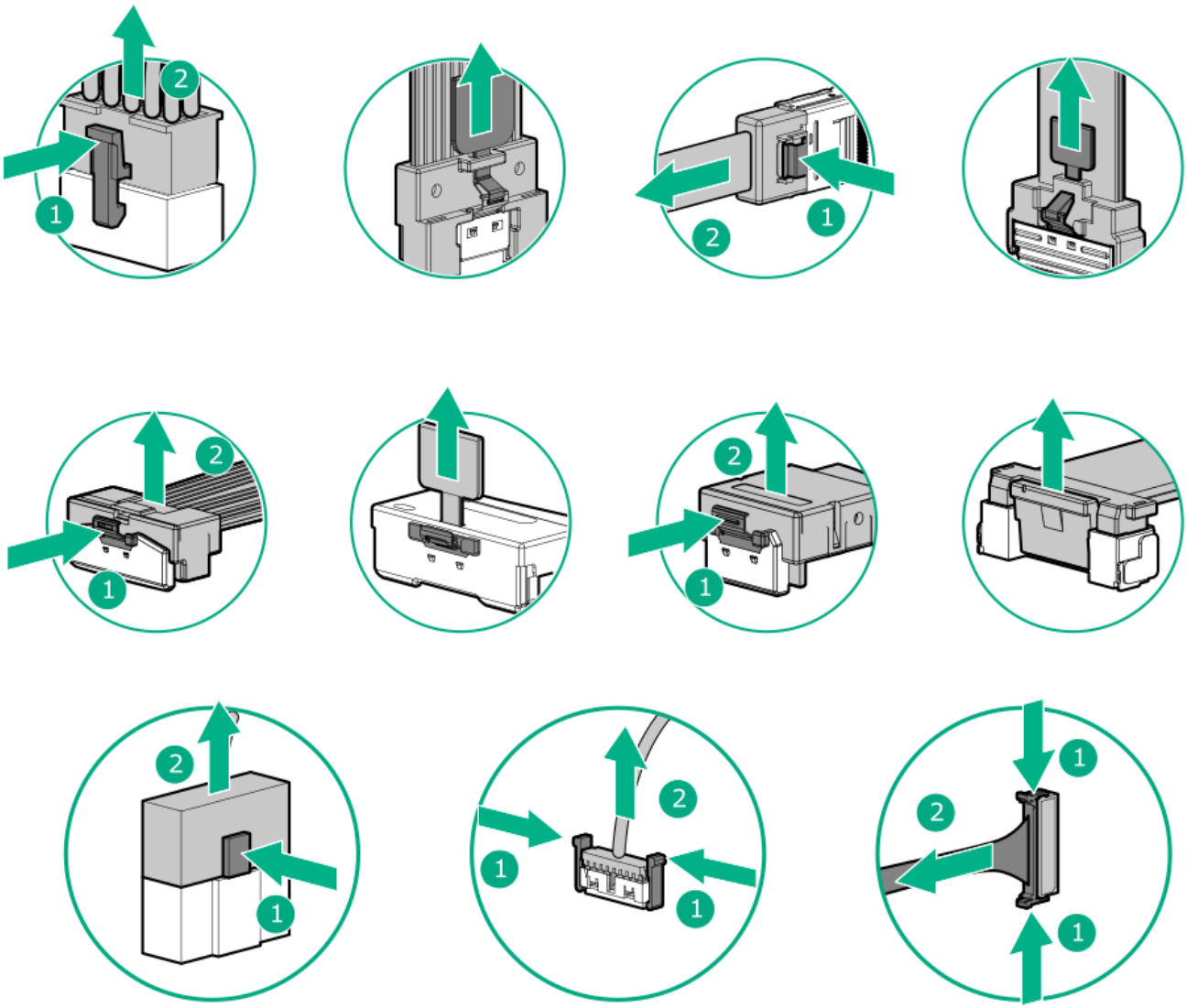
- Note the port labels on the PCA components. Not all these components are used by all servers:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion board ports (controllers, retimers, adapters, expanders, risers, and similar boards)
- Note the label near each cable connector. 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.
- When routing cables, be sure that the cables are not in a position where they can be pinched or crimped.
- Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.
- Make sure that the excess length of cables is properly secured to avoid excess bends, interference issues, and airflow restriction.
- To prevent component damage and potential signal interference, make sure that all cables are in their appropriate routing position before installing a new component and before closing up the server after hardware installation/maintenance.

When disconnecting cables

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



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

Cabling diagrams

Observe the following:

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

Component cabling	Cable part number
GPU cabling	—
Two front captive riser signal cable	P71884-001
Two front captive riser power cable	P72258-001

Component cabling	Cable part number
Four front captive riser signal cable	P71884-001
Four front captive riser power cable	P72258-001
Two switch board signal cabling	P74338-001
Two switch board power cabling	P74337-001
Two switch board sideband cabling	P73979-001
Four switch board signal cable	P74338-001
Four switch board power cable	• P74337-001 • P74898-001
Four switch board sideband cable	P73979-001
Four switch board cascade signal cable	P74339-001
Two front captive riser signal cable	P71887-001
Two front captive riser power cable	P76959-001
Four PCIe x16 switch board power cable	P76957-001
2 double width GPU auxiliary power cable	• 8-pin: P72036-001 • 16-pin: P72037-001
4 double width GPU auxiliary power cable	• 8-pin: P72036-001 • 16-pin: P72037-001

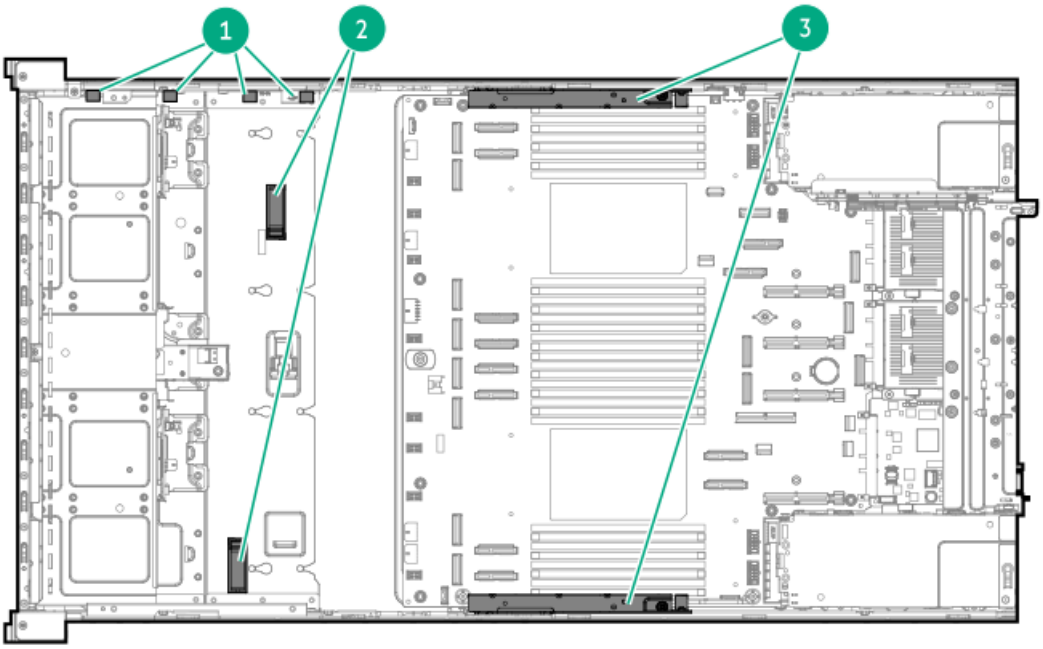
8 double width GPU auxiliary power cable	• 8-pin:
	  ◦ P74944-001
	  ◦ P72036-001
	• 16-pin:
	  ◦ P75018-001
	  ◦ P72037-001

10 double width GPU auxiliary power cable	P76958-001
Front NIC cabling	• P71887-001 • P71886-001 • P76956-001
Rear PCIe x16 captive riser cabling	—
Rear PCIe x16 captive riser signal cable	• P71882-001 • P71886-001 • P71883-001
Rear PCIe x16 captive riser power cable	P72033-001

Component cabling	Cable part number
Storage controller cabling	—
4 SFF NVMe x4 drive direct attach cable	P72034-001
8 SFF NVMe x4 drive direct attach cable two rear PCIe slots	P73978-001
8 SFF NVMe x4 drive direct attach cable: four rear PCIe slots	• P72034-001 • P72035-001
8 SFF NVMe x4 drive direct attach cable for 2 double-width GPU configuration with balance I/O	P74900-001
8 SFF NVMe x4 drive direct attach cable for 2 double-width GPU configuration with non-balance I/O	P74900-001
8 SFF NVMe x4 drive cable: Type-o controller	P72035-001
8 SFF NVMe x4 drive cable: Type-p controller	P74805-001
4 E3.S direct attach cable	• P72034-001 • P72035-001
8 E3.S direct attach cable	P73978-001
16 E3.S direct attach cable	P78766-001
Drive power cabling	—
4 SFF drive power cable	P72029-001
8 SFF drive power cable	• P72029-001 • P72030-001
4 E3.S power cable	P72029-001
8 E3.S power cable	P72029-001
16 E3.S power cable	• P72029-001 • P72030-001
Energy pack cabling	• P01367-B21 • P02381-B21
Storage controller backup power cabling	• Type-o controller: P72038-001 • Type-p controller: P72038-001
HPE NS204i-u Boot Device V2 cabling	—
NS204i-u power cable	P48956-001
NS204i-u signal cable	P74839-001
DPU auxiliary power cabling	—
Front DPU auxiliary power cable	P74341-001
Rear DPU auxiliary power cable	P74341-001
Rear slot 1 DPU cabling	—

Component cabling	Cable part number
Rear captive riser signal cabling	P71882-001
Rear captive riser power cable	P72033-001
PCIe fan cable	P80859-001
Rear slot 4 DPU cabling	—
Rear captive riser signal cabling	P71883-001
Rear captive riser power cable	P72033-001
PCIe fan cable	P80859-001
Sideband board cabling	• P72027-001 • P72028-001
Fan cabling	—
External front fan cable	• P79781-001 • P79782-001
Internal fan cable	P72032-001
Intel UPI cabling	• P72257-001 • P72259-001 • P74340-001
OCP bandwidth upgrade cabling	• P72256-001 • P72031-001
Serial port cabling	—
Serial port dongle	P73744-001
ix port cable cable	P71826-001
Chassis intrusion detection switch cabling	P54901-001
Front I/O cabling	P71909-001
DLC module cabling	P82520-B21

Internal cabling management



Item	Description
1	Front fan power cable clips
2	Cable clips
3	Cable troughs

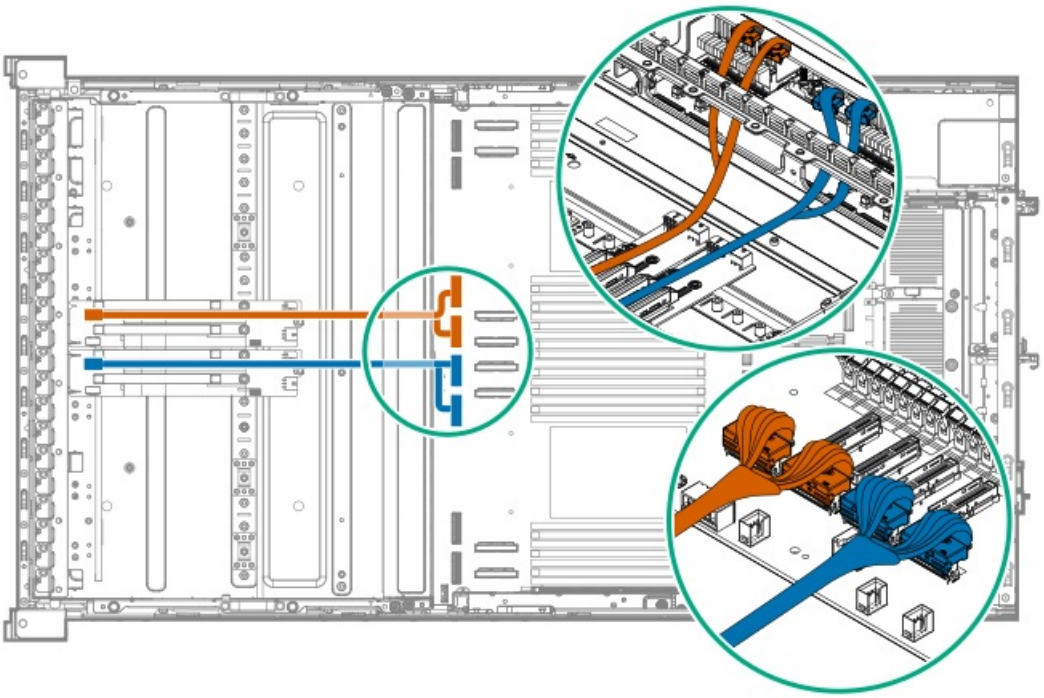
GPU cage cabling

Subtopics

2× captive riser configuration
4× captive riser configuration
2× switch board configuration
4× switch board configuration
4× switch board + 2× captive riser configuration
Double-width GPU auxiliary power cabling

2× captive riser configuration

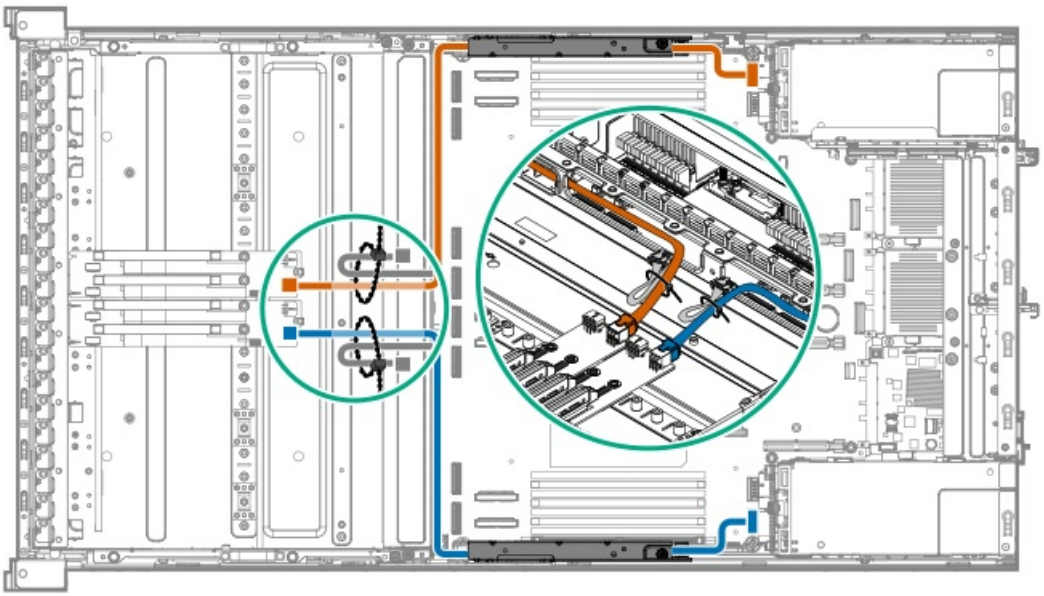
Riser signal cabling



Component part number	Color	From	To
P71884-001	Orange	Slot 15 PCIe captive riser	• M-XIO port 2 (P2) [1] • M-XIO port 0 (P3) [1]
	Blue	Slot 17 PCIe captive riser	• M-XIO port 5 (P2) [1] • M-XIO port 7 (P3) [1]

[1] The enclosed text (P#) refer to the marker on the riser signal cable connector.

Riser power cabling

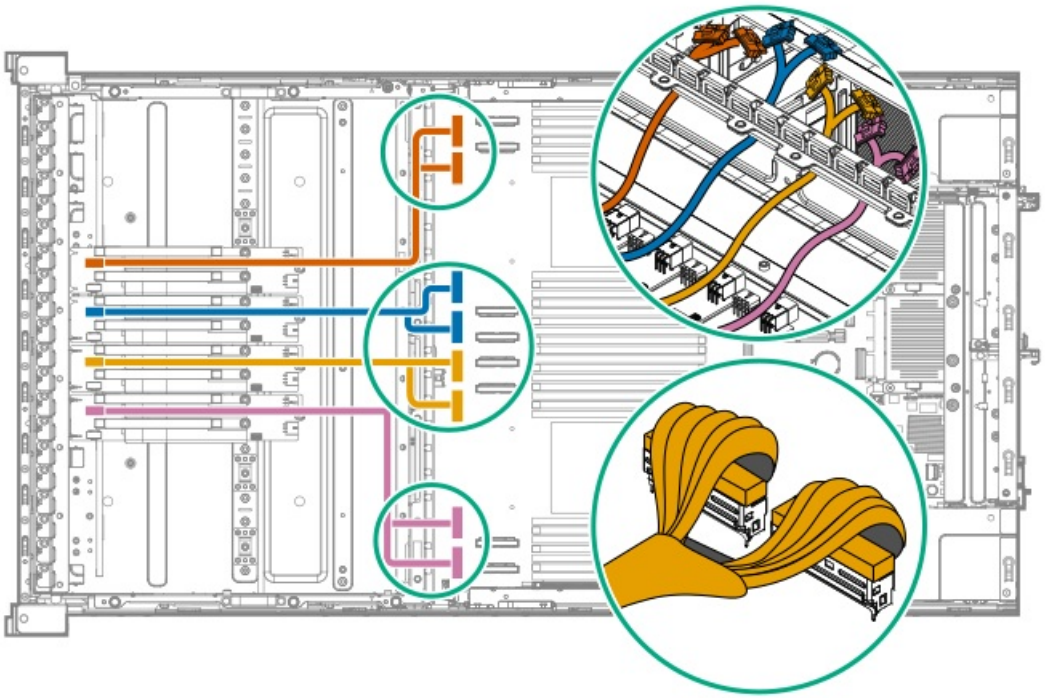


Component part number	Color	From	To
P72258-001	Orange	• Slot 16 PCIe captive riser power connector [1]	M-PIC power connector 1
	Blue	• Slot 18 PCIe captive riser power connector [1]	M-PIC power connector 4

[1] The connector is located on the PCIe captive riser

4× captive riser configuration

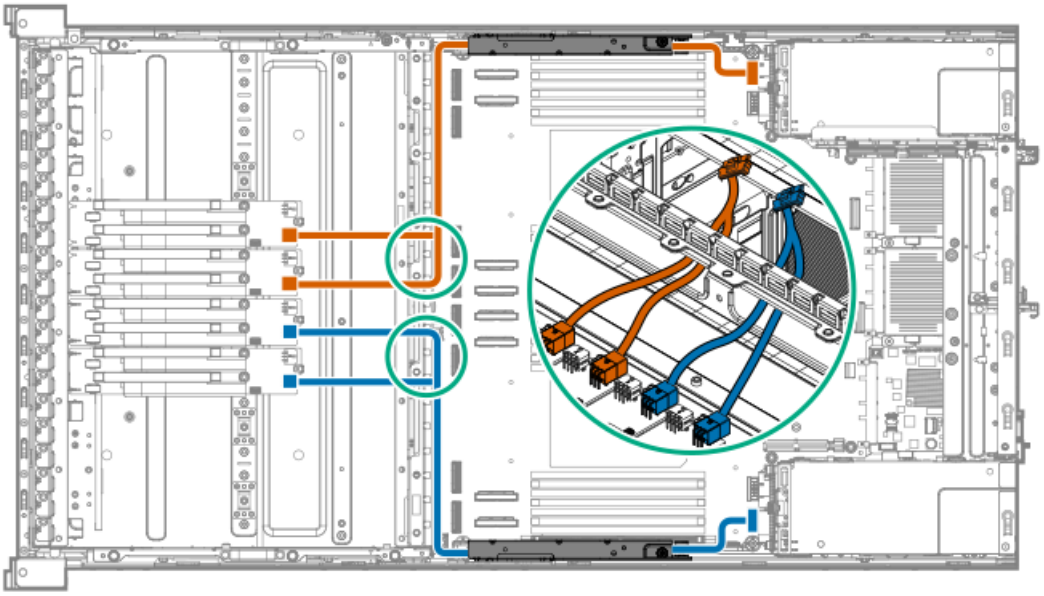
Riser signal cabling



Component part number	Color	From	To
P71884-001	Orange	Slot 13 PCIe captive riser	• M-XIO port 4 (P2) [1] • M-XIO port 6 (P3) [1]
	Blue	Slot 15 PCIe captive riser	• M-XIO port 2 (P2) [1] • M-XIO port 0 (P3) [1]
	Gold	Slot 17 PCIe captive riser	• M-XIO port 5 (P2) [1] • M-XIO port 7 (P3) [1]
	Pink	Slot 19 PCIe captive riser	• M-XIO port 3 (P2) [1] • M-XIO port 1 (P3) [1]

1 The enclosed text (P#) refer to the marker on the riser signal cable connector.

Riser power cabling

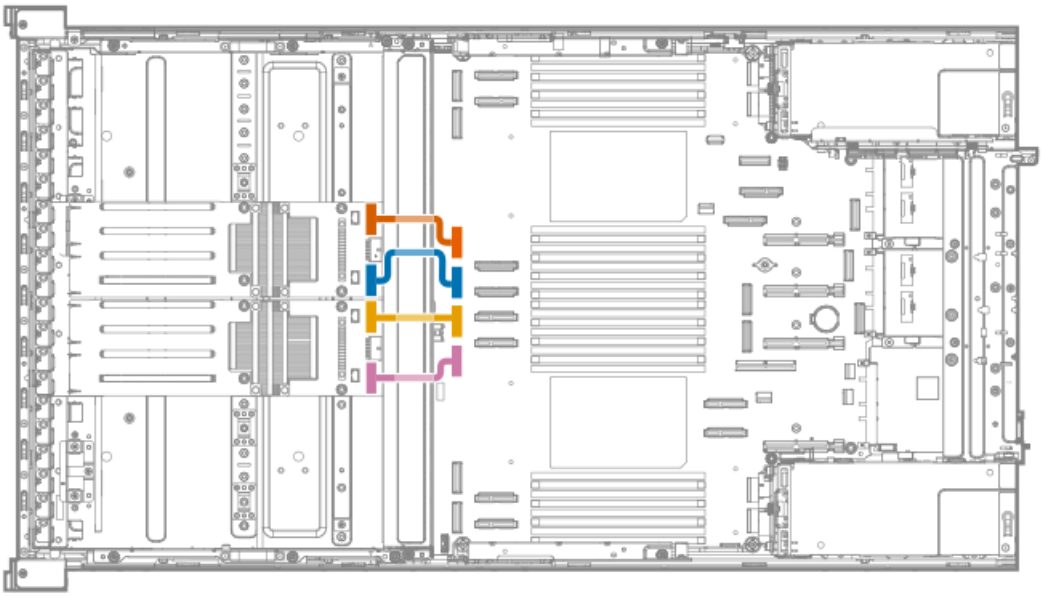


Component part number	Color	From	To
P72258-001	Orange	• Slot 13 PCIe captive riser power connector [1] • Slot 15 PCIe captive riser power connector [1]	M-PIC power connector 1
	Blue	• Slot 17 PCIe captive riser power connector [1] • Slot 19 PCIe captive riser power connector [1]	M-PIC power connector 4

1 The connector is located on the PCIe captive riser

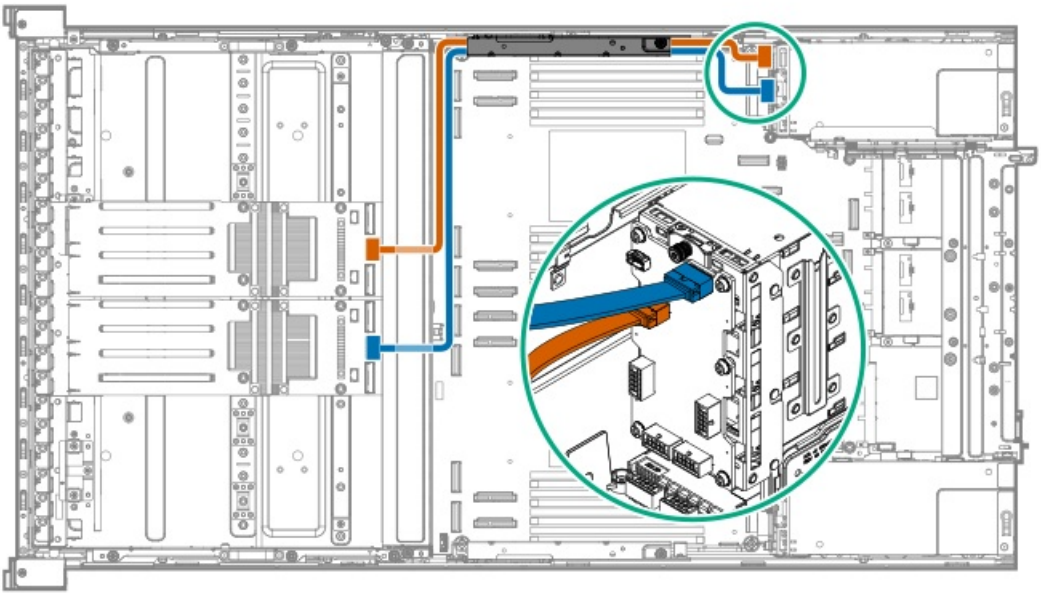
2× switch board configuration

Switch board signal cabling



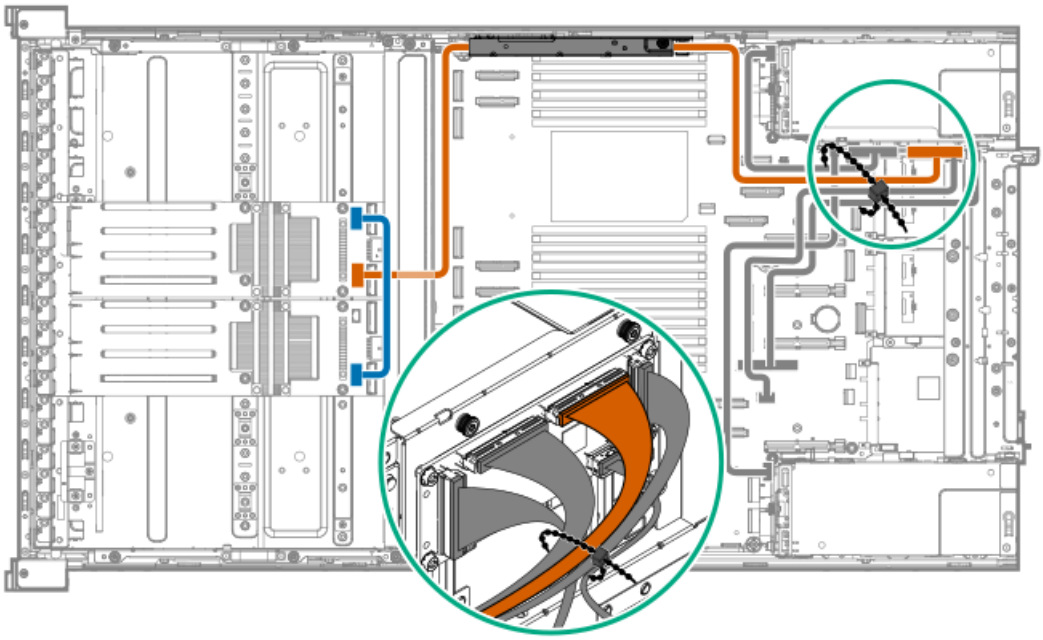
Component part number	Color	From	To
P74338-001	Orange	Slots 13-16 PCIe switch board upstream secondary MCIO	M-XIO port 2
	Blue	Slots 13-16 PCIe switch board upstream primary MCIO	M-XIO port 0
	Gold	Slots 17-20 PCIe switch board upstream secondary MCIO	M-XIO port 5
	Pink	Slots 17-20 PCIe switch board upstream primary MCIO	M-XIO port 7

Switch board power cabling



Component part number	Color	From	To
P74337-001	Orange	Slots 13-16 PCIe switch board power connector	M-PIC power connector for the slots 13-16 PCIe switch board
	Blue	Slots 17-20 PCIe switch board power connector	M-PIC power connector for the slots 17-20 PCIe switch board

Switch board sideband cabling

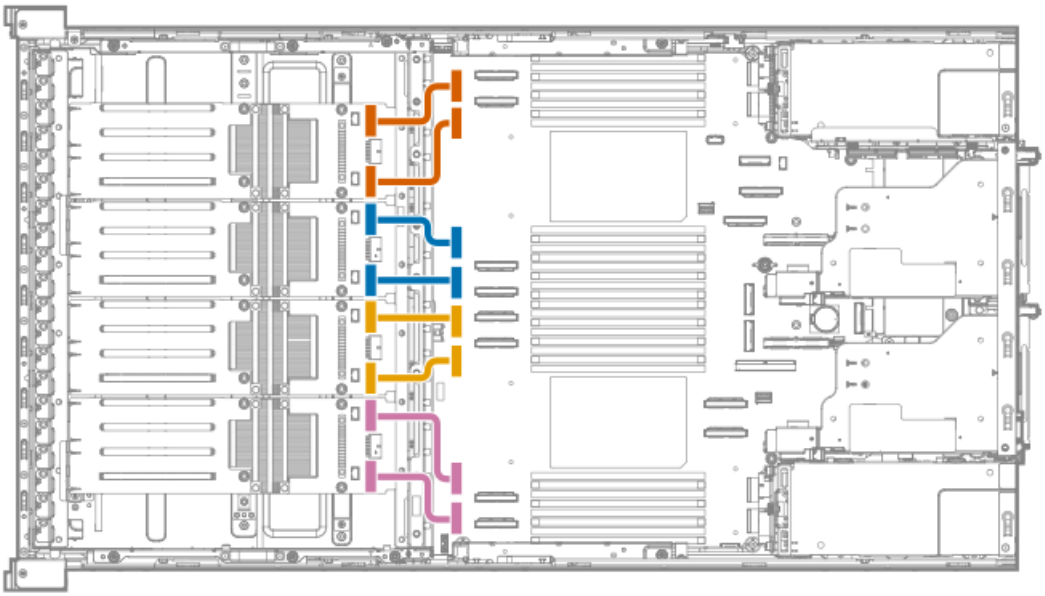


Component part number	Color	From	To
P73979-001	Orange	Slots 13-16 PCIe switch board sideband signal connector	CB1 SB [1]
P74339-001	Blue	Slots 13-16 PCIe switch board cascade signal connector	Slots 17-20 PCIe switch board sideband signal connector

1 Silkscreen marker on the sideband board

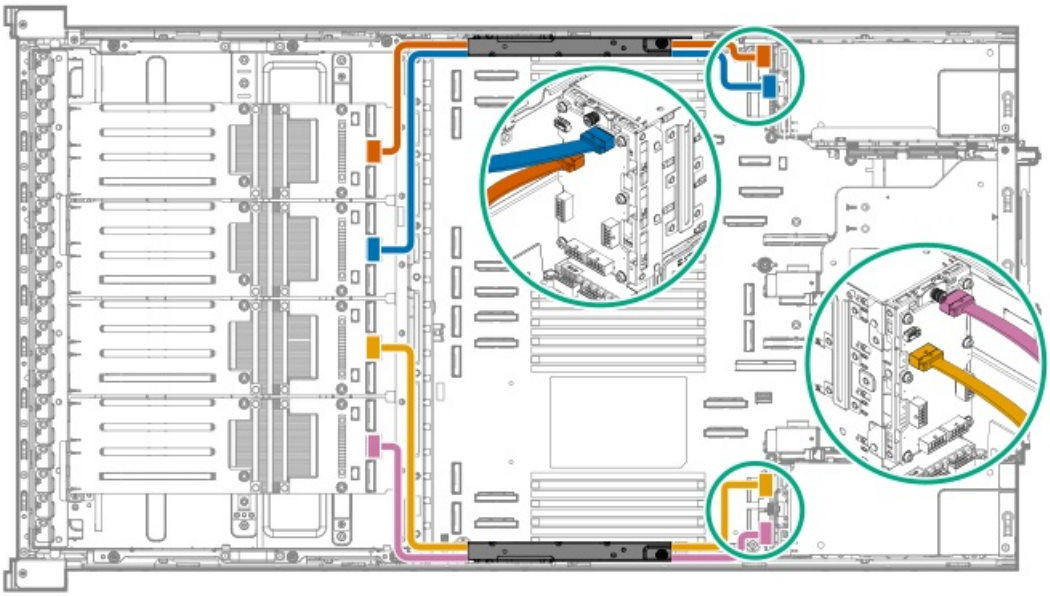
4× switch board configuration

Switch board signal cabling



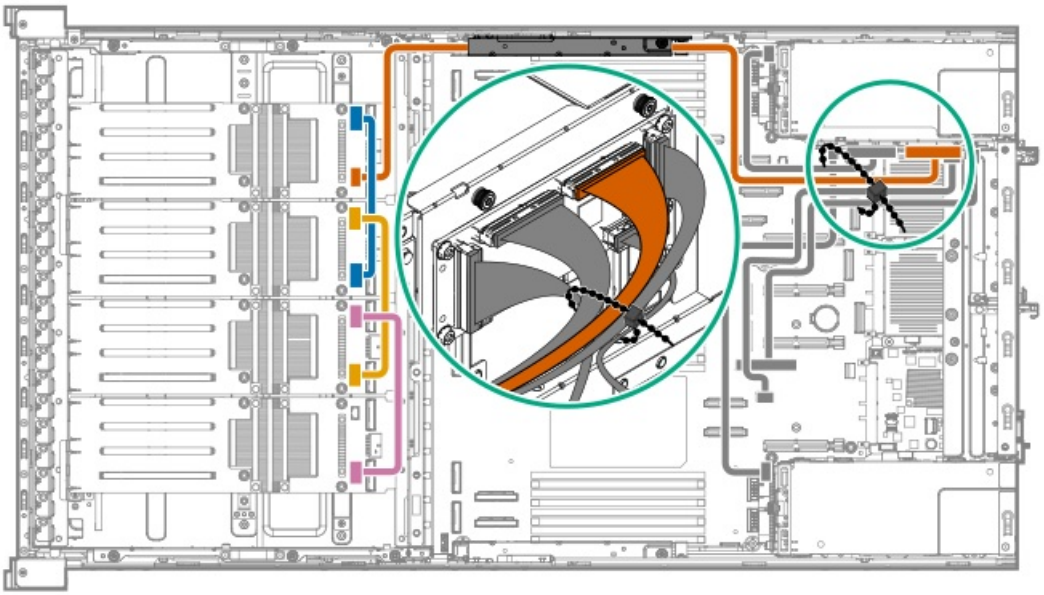
Component part number	Color	From	To
P74338-001	Orange	Slots 9/11 PCIe switch board • Upstream secondary MCIO • Upstream primary MCIO	• M-XIO port 4 • M-XIO port 6
	Blue	Slots 13/15 PCIe switch board • Upstream secondary MCIO • Upstream primary MCIO	• M-XIO port 2 • M-XIO port 0
	Gold	Slots 17/19 PCIe switch board • Upstream secondary MCIO • Upstream primary MCIO	• M-XIO port 5 • M-XIO port 7
	Pink	Slots 21/23 PCIe switch board • Upstream secondary MCIO • Upstream primary MCIO	• M-XIO port 3 • M-XIO port 1

Switch board power cabling



Component part number	Color	From	To
P74337-001	Blue	Slots 13/15 PCIe switch board power connector	M-PIC power connector for the slots 13/15 PCIe switch board
	Gold	Slots 17/19 PCIe switch board power connector	M-PIC power connector for the slots 17/19 PCIe switch board
P74898-001	Orange	Slots 9/11 PCIe switch board power connector	M-PIC power connector for the slots 9/11 PCIe switch board
	Pink	Slots 21/23 PCIe switch board power connector	M-PIC power connector for the slots 21/23 PCIe switch board

Switch board sideband cabling

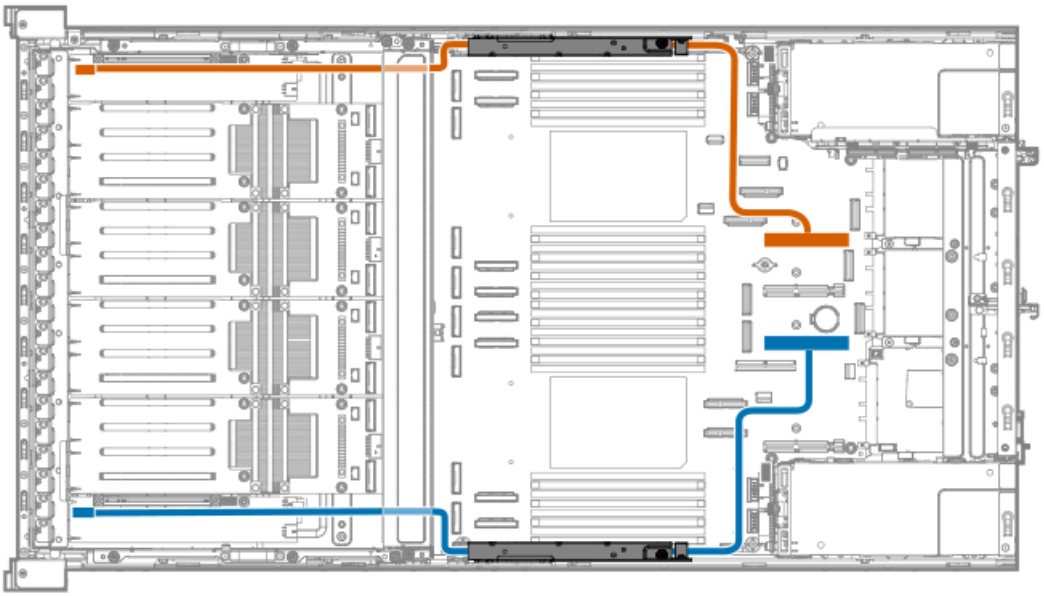


Component part number	Color	From	To
P73979-001	Orange	Slots 9/11 PCIe switch board sideband signal connector	CB1 SB [1]
P74339-001	Blue	Slots 9/11 PCIe switch board cascade signal connector	Slots 13/15 PCIe switch board sideband signal connector
	Gold	Slots 13/15 PCIe switch board cascade signal connector	Slots 17/19 PCIe switch board sideband signal connector
	Pink	Slots 17/19 PCIe switch board cascade signal connector	Slots 21/23 PCIe switch board sideband signal connector

1 Silkscreen marker on the sideband board

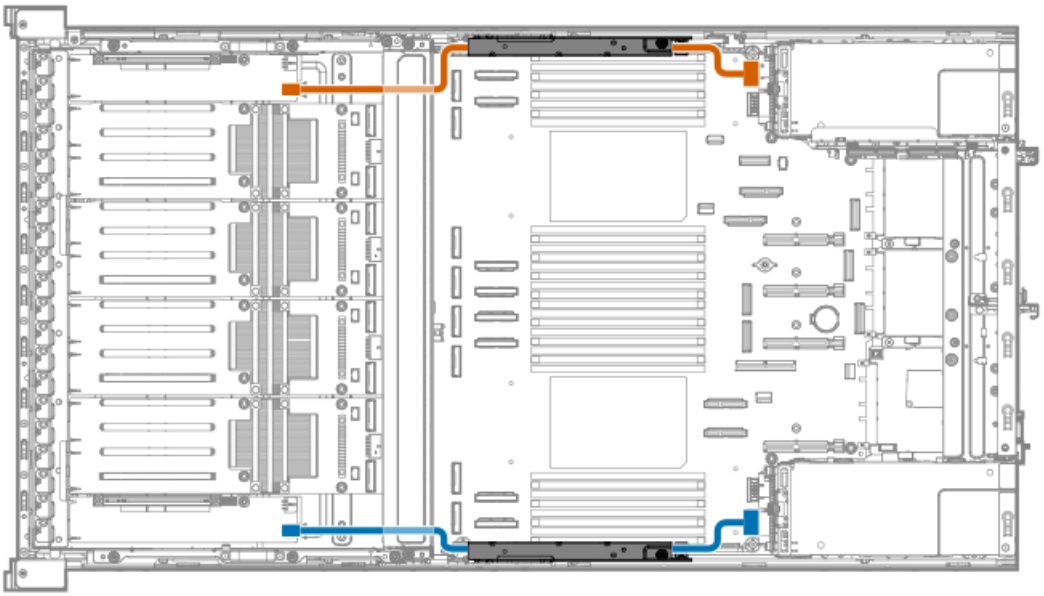
4× switch board + 2× captive riser configuration

Captive riser signal cabling



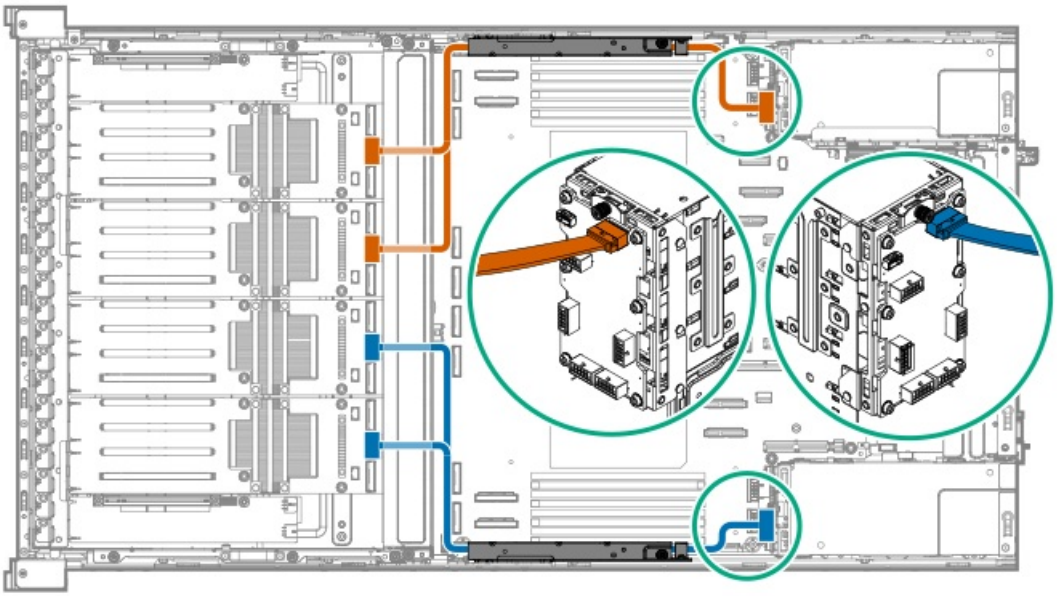
Component part number	Color	From	To
P71887-001	Orange	Slot 7 PCIe captive riser	PCIe5 x16 riser connector 2
	Blue	Slot 25 PCIe captive riser	PCIe5 x16 riser connector 4

Captive riser power cabling



Component part number	Color	From	To
P76959-001	Orange	Slot 7 PCIe captive riser power connector	M-PIC power connector 1
	Blue	Slot 25 PCIe captive riser power connector	M-PIC power connector 4

Switch board power cabling



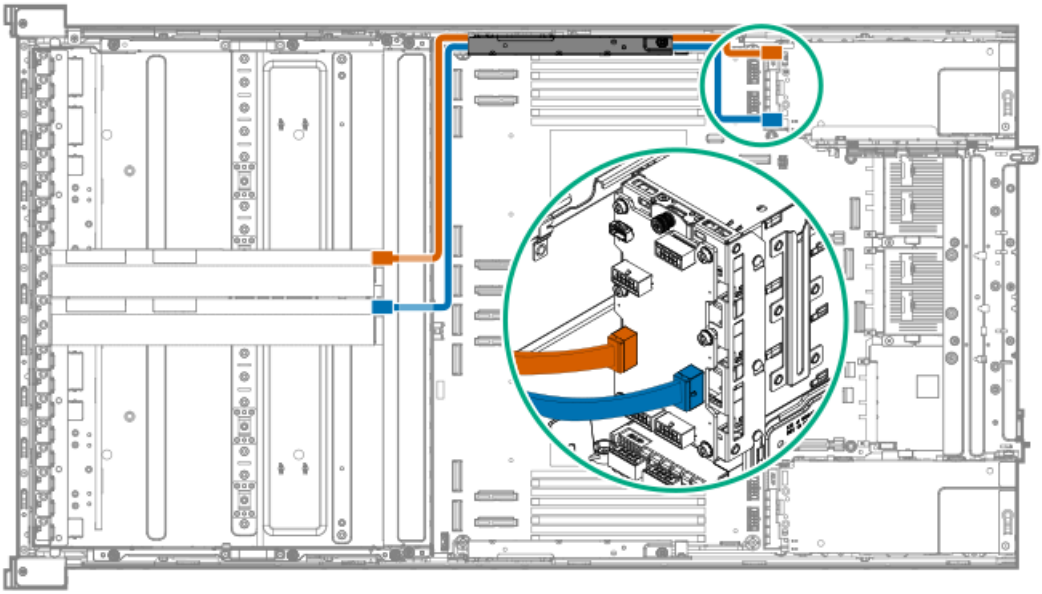
Component part number	Color	From	To
P76957-001	Orange	Slots 9-12 and slots 13-16 PCIe switch board power connectors	M-PIC power connector for the slots 9-12 and slots 13-16 PCIe switch board
	Blue	Slots 17-20 and slots 21-24 PCIe switch board power connector	M-PIC power connector for the slots 17-20 and slots 21-24 PCIe switch board

For the cabling about 4× switch board configuration, see:

- Switch board signal cabling
- Switch board sideband cabling

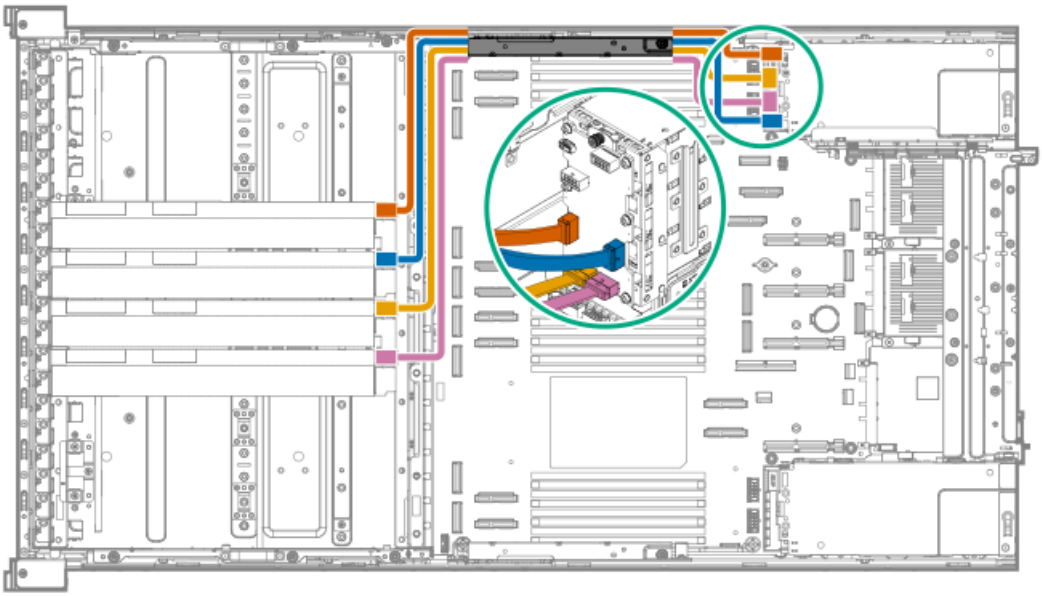
Double-width GPU auxiliary power cabling

2 double-width GPUs



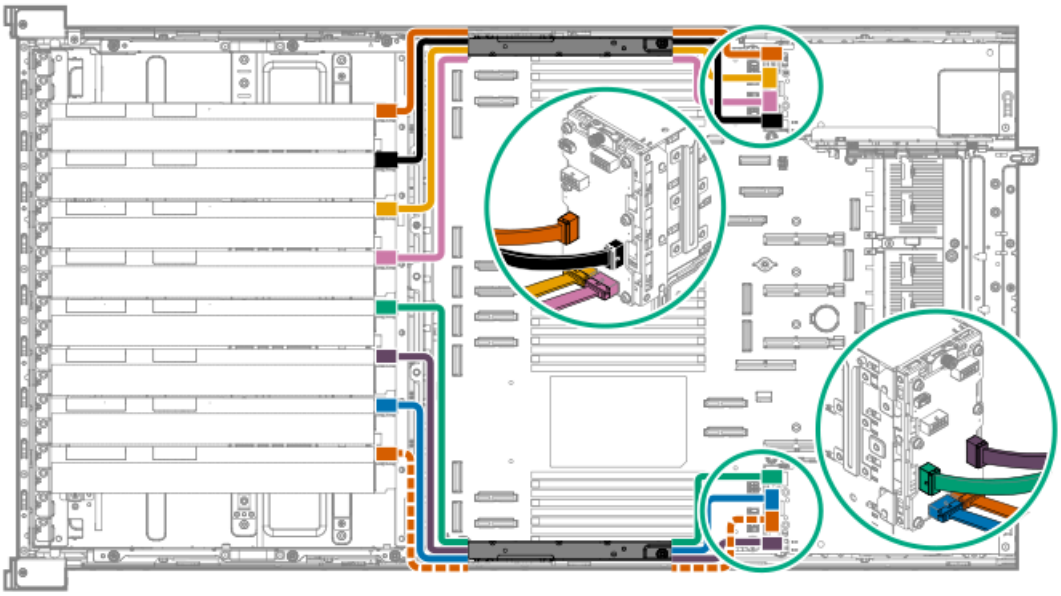
Cable part number	Color	From	To
• 8-pin auxiliary power cable: P72036-001 • 16-pin auxiliary power cable: P72037-001	Orange	GPU on slot 15	M-PIC power connector for GPU on slot 15
	Blue	GPU on slot 17	M-PIC power connector for GPU on slot 17

4 double-width GPUs



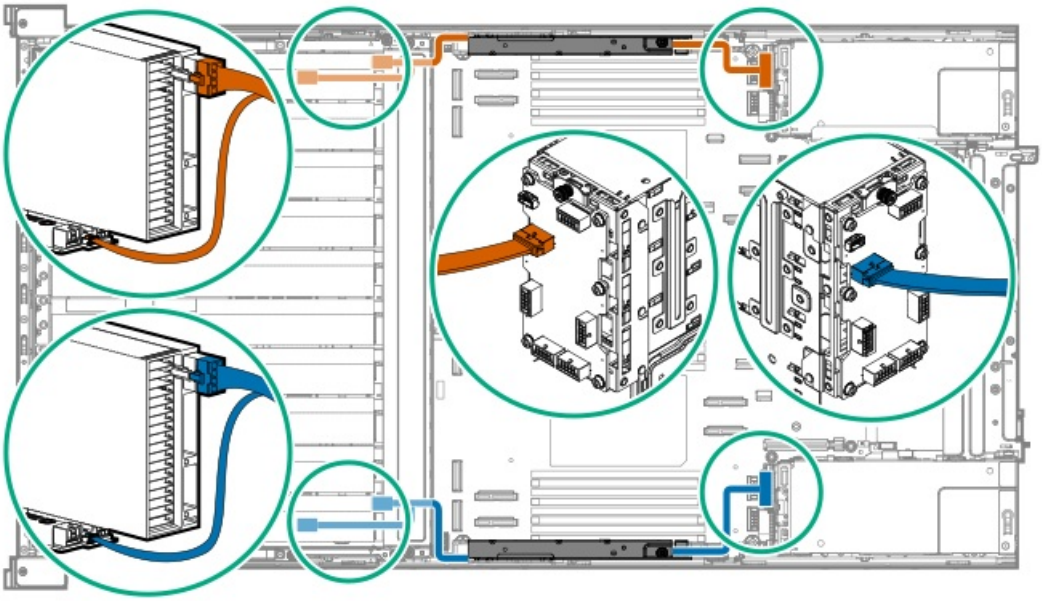
Cable part number	Color	From	To
• 8-pin auxiliary power cable: P72036-001 • 16-pin auxiliary power cable: P72037-001	Orange	GPU on slot 13	M-PIC power connector for GPU on slot 13
	Blue	GPU on slot 15	M-PIC power connector for GPU on slot 15
	Gold	GPU on slot 17	M-PIC power connector for GPU on slot 17
	Pink	GPU on slot 19	M-PIC power connector for GPU on slot 19

8 double-width GPUs



Cable part number	Color	From	To
• 8-pin auxiliary power cable: P74944-001 • 16-pin auxiliary power cable: P75018-001	Orange	GPU on slot 9	M-PIC power connector for GPU on slot 9
	Black	GPU on slot 11	M-PIC power connector for GPU on slot 11
	Blue	GPU on slot 21	M-PIC power connector for GPU on slot 21
	Dash orange	GPU on slot 23	M-PIC power connector for GPU on slot 23
• 8-pin auxiliary power cable: P72036-001 • 16-pin auxiliary power cable: P72037-001	Gold	GPU on slot 13	M-PIC power connector for GPU on slot 13
	Pink	GPU on slot 15	M-PIC power connector for GPU on slot 15
	Green	GPU on slot 17	M-PIC power connector for GPU on slot 17
	Dark purple	GPU on slot 19	M-PIC power connector for GPU on slot 19

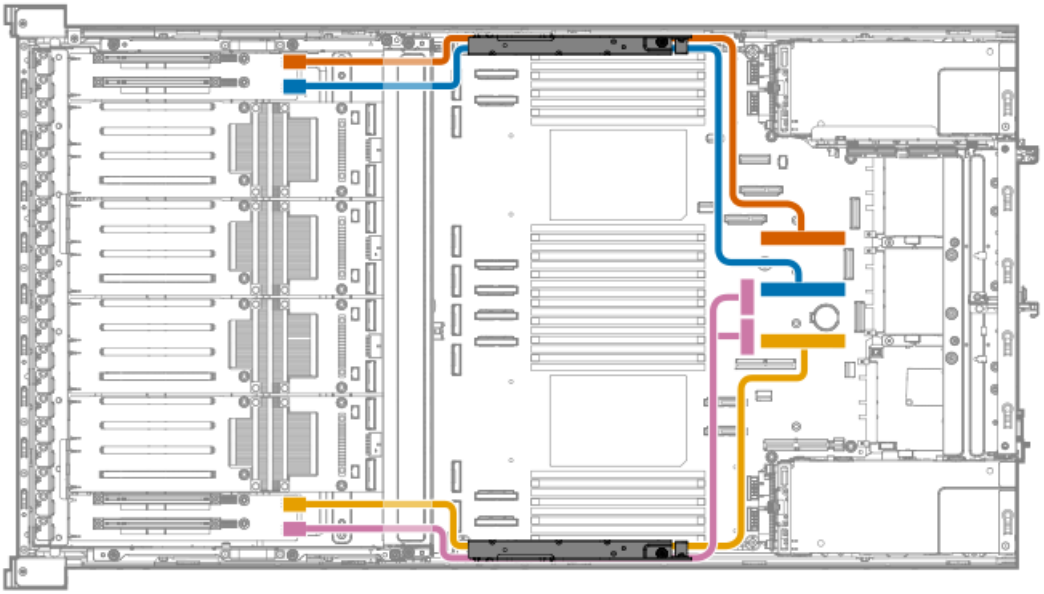
10 double-width GPUs



Cable part number	Color	From	To
P76958-001	Orange	• GPU on slot 7 • GPU sideband connector	M-PIC power connector for GPU on slot 7
	Black	• GPU on slot 25 • GPU sideband connector	M-PIC power connector for GPU on slot 25

Front PCIe x16 captive riser cabling

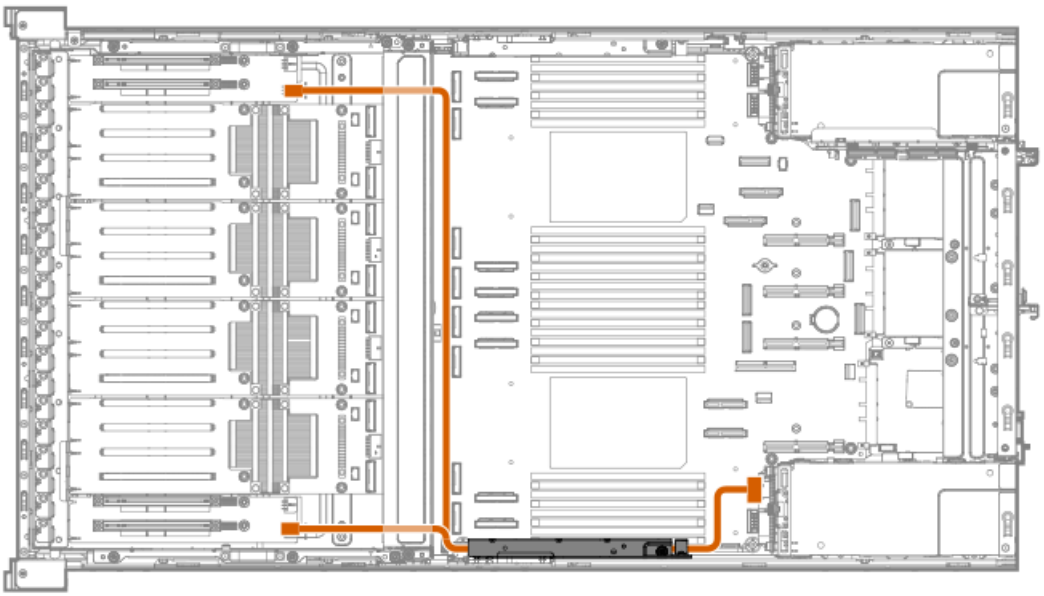
Captive riser signal cabling



Component part number	Color	From	To
P71887-001	Orange	Slot 7 PCIe captive riser	PCIe5 x16 riser connector 2
	Blue	Slot 8 PCIe captive riser	PCIe5 x16 riser connector 3
	Gold	Slot 25 PCIe captive riser	PCIe5 x16 riser connector 4
P71886-001	Pink	Slot 26 PCIe captive riser	• M-XIO port 17 (P3) [1] • M-XIO port 13 (P2) [1]

[1] The enclosed text (P#) refer to the marker on the riser signal cable connector.

Captive riser power cabling



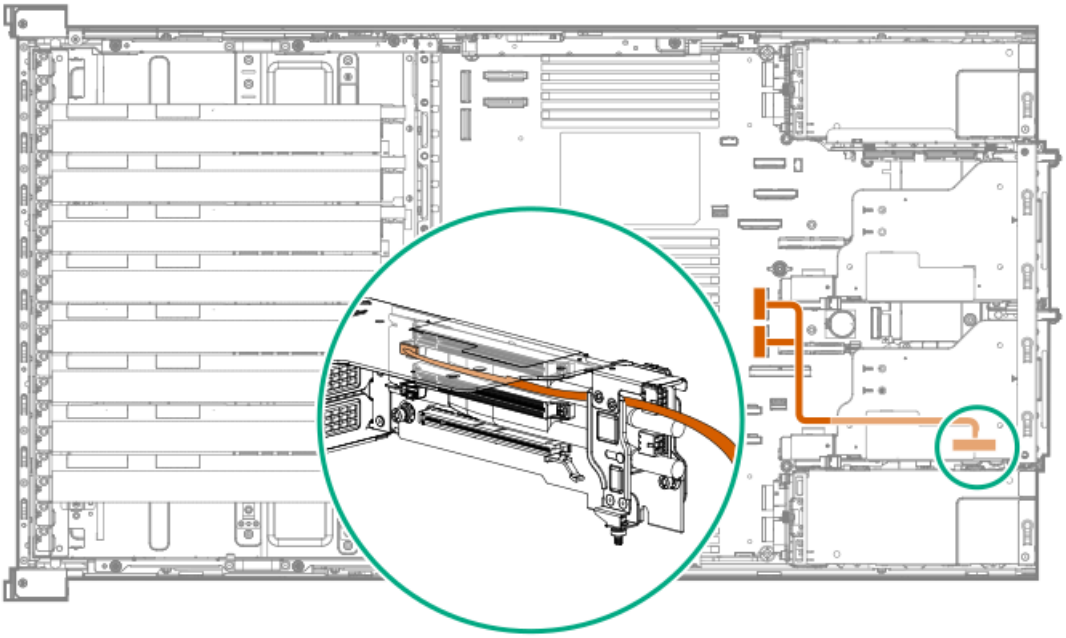
Component part number	Color	From	To
P76956-001	Orange	• Slot 8 PCIe captive riser power connector [1] • Slot 26 PCIe captive riser power connector [1]	M-PIC power connector 3

[1] The connector is located on the PCIe captive riser

Rear PCIe x16 captive riser cabling

Rear captive riser signal cabling

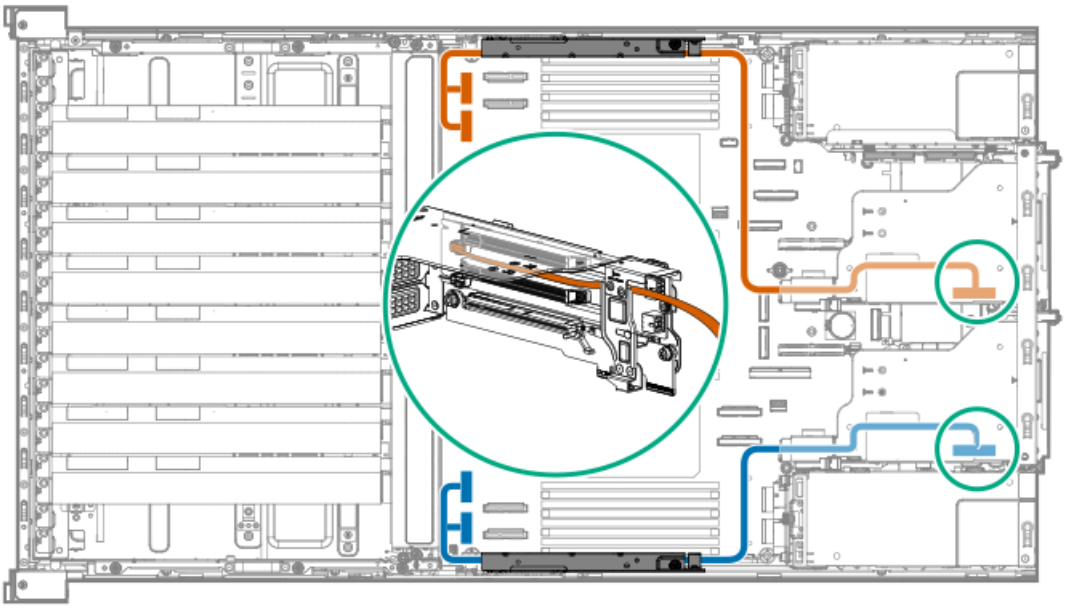
- **Slot 1**



Cable part number	Color	From	To
P71882-001	Orange	Captive riser slot 1 on the primary riser cage	○ M-XIO port 13 (P2) [1] ○ M-XIO port 17 (P3) [1]

[1] The enclosed text (P#) refer to the marker on the captive riser signal cable connector.

- **Slots 1 and 4**

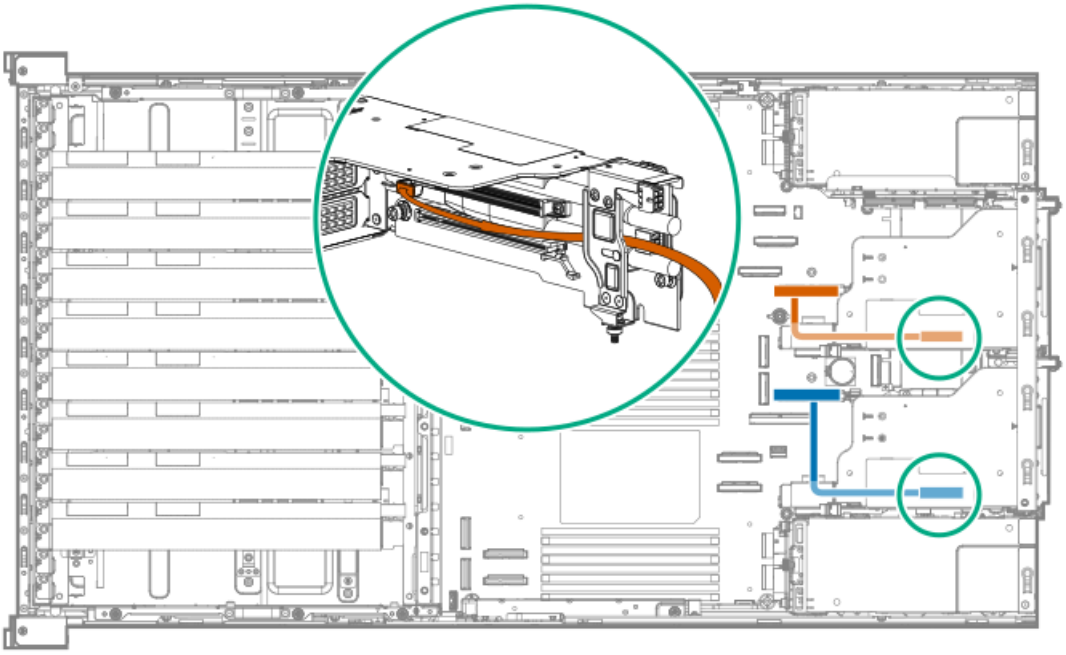


Cable part number	Color	From	To
P71886-001	Orange	Captive riser slot 4 on the secondary riser cage	○ M-XIO port 4 (P2) [1] ○ M-XIO port 6 (P3) [1]
	Blue	Captive riser slot 1 on the primary riser cage	○ M-XIO port 3 (P2) [2] [1] ○ M-XIO port 1 (P3) [1]

[1] The enclosed text (P#) refer to the marker on the captive riser signal cable connector.

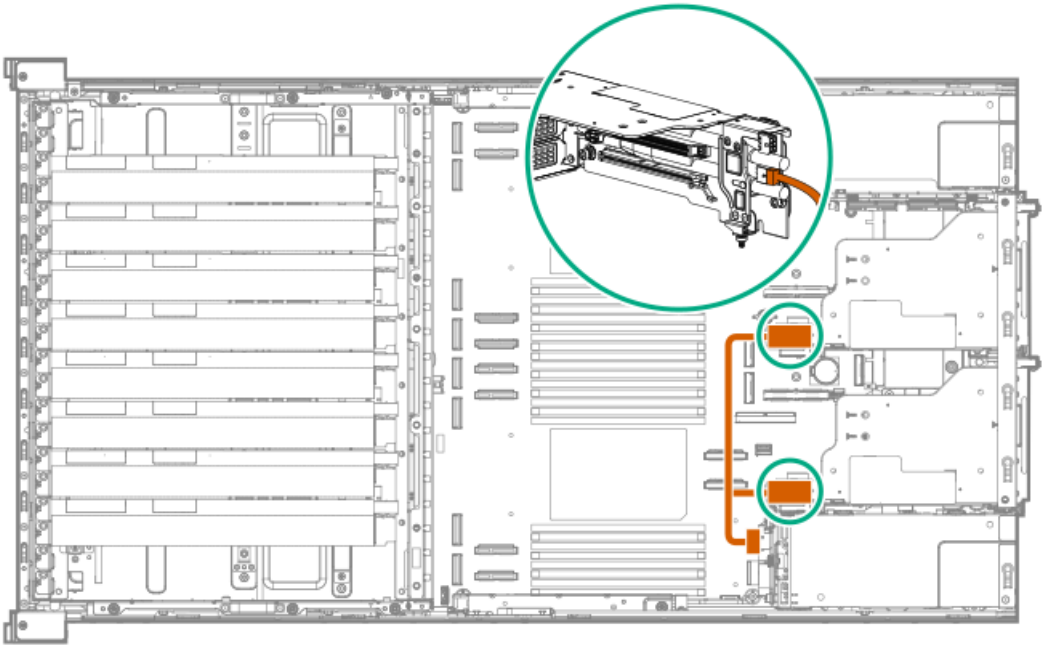
[2] The enclosed text (P#) refer to the marker on the captive riser signal cable connector.

- **Slots 2 and 5**



Cable part number	Color	From	To
P71883-001	Orange	Captive riser slot 5 on the secondary riser cage	PCIe5 x16 riser connector 2
	Blue	Captive riser slot 2 on the primary riser cage	PCIe5 x16 riser connector 4

Rear captive riser power cabling



Cable part number	Color	From	To
P72033-001	Orange	Captive riser power connectors on the riser cages	M-PIC power connector 3

Storage cabling

Subtopics

Storage controller cabling
Drive power cabling
Energy pack cabling
Storage backup power cabling

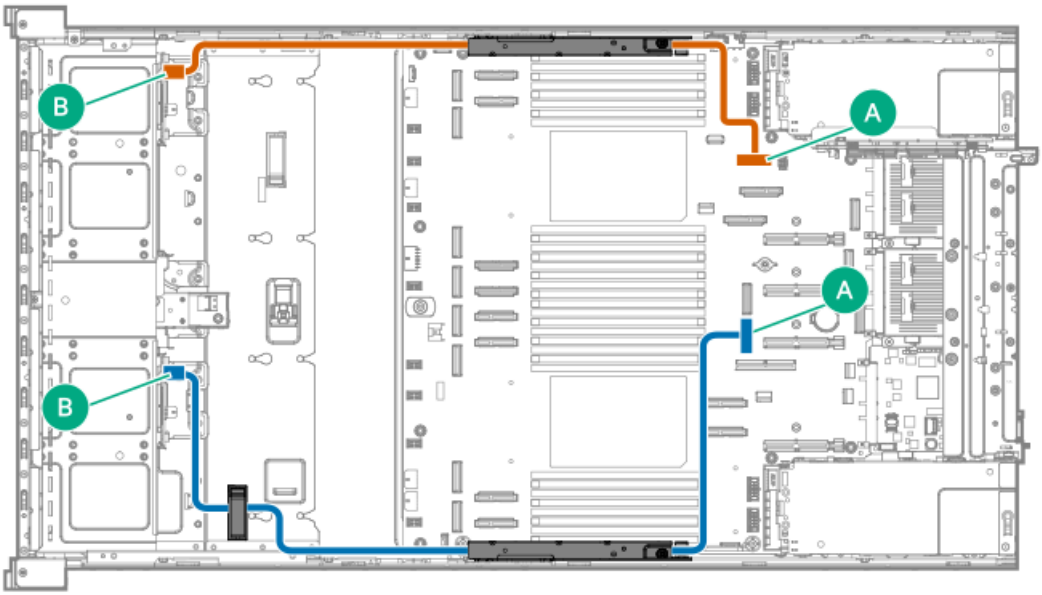
Storage controller cabling

Subtopics

SFF drive storage controller cabling
E3.S drive storage controller cabling

SFF drive storage controller cabling

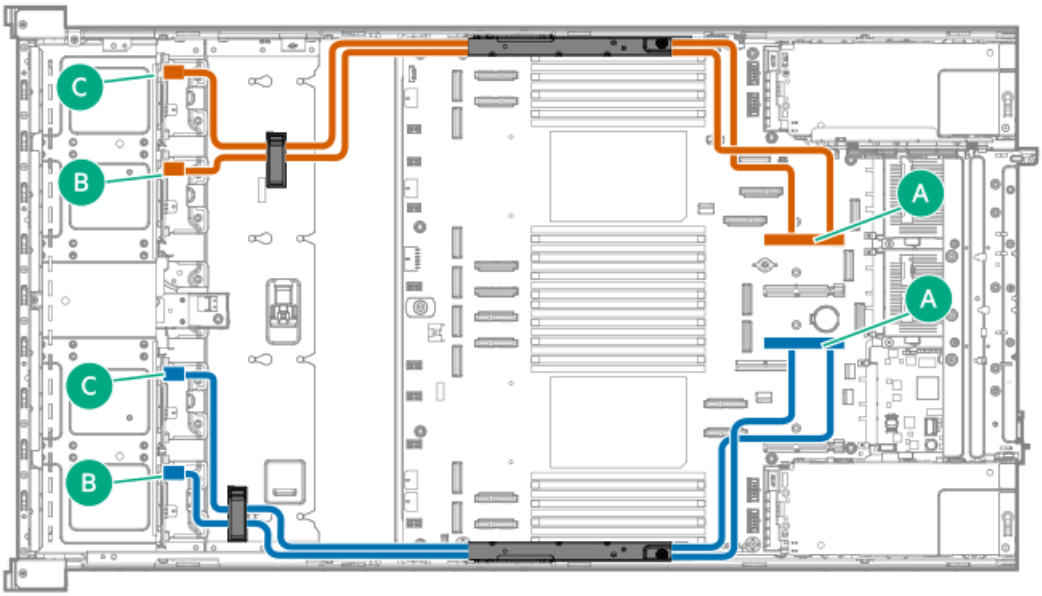
4 SFF NVMe x4 drive direct attach cabling



Cable part number	Color	From	To
P72034-001	Orange	Box 1	M-XIO port 12
	Blue	Box 3	M-XIO port 13

8 SFF NVMe x4 drive direct attach cabling: Two rear PCIe slots

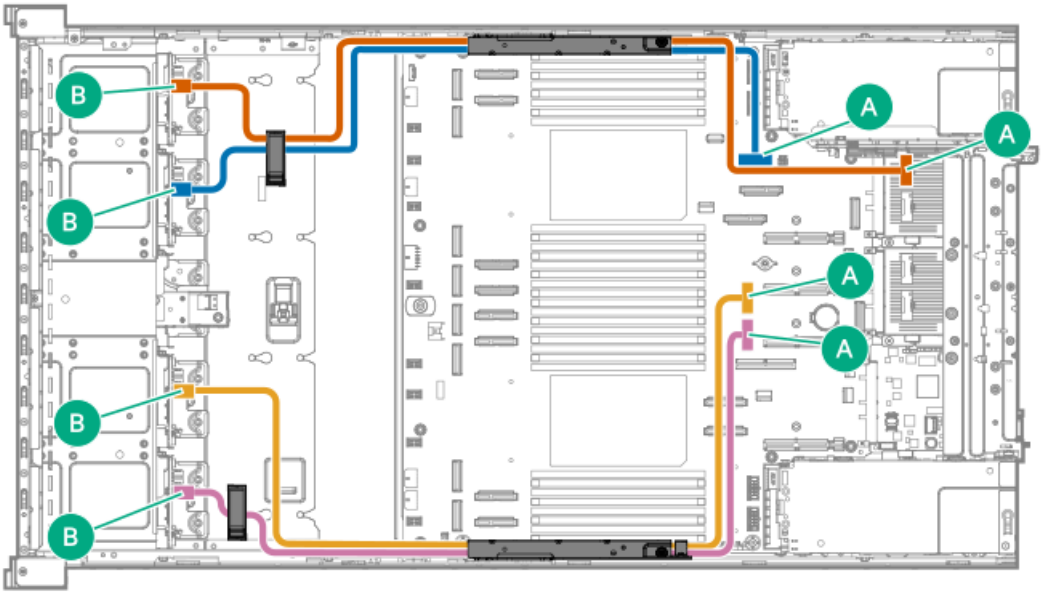
The cabling is for the server that has two rear PCIe slots available.



Cable part number	Color	From	To
P73978-001	Orange	Boxes 1 and 2	PCIe5 x16 riser connector 2
	Blue	Boxes 3 and 4	PCIe5 x16 riser connector 4

8 SFF NVMe x4 drive direct attach cabling: Four rear PCIe slots

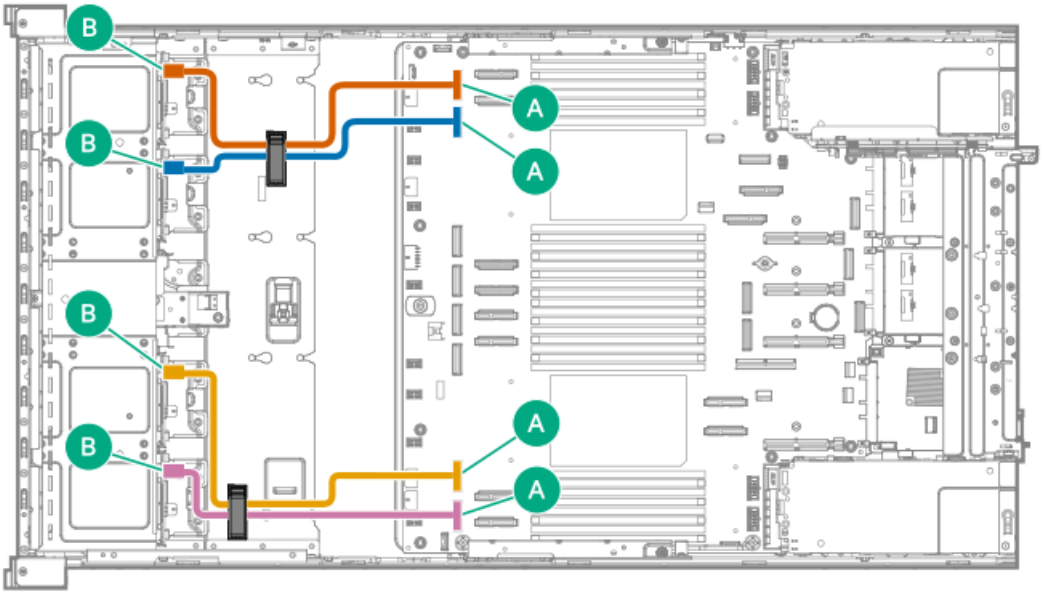
The cabling is for the server that has four rear PCIe slots available.



Cable part number	Color	From	To
P72034-001	Blue	Box 2	M-XIO port 12
	Gold	Box 3	M-XIO port 17
	Pink	Box 4	M-XIO port 13
P72035-001	Orange	Box 1	LP SlimSAS port 1 on the OCP retimer card in Slot B

8 SFF NVMe x4 drive direct attach cabling for 2 double-width GPU configuration with balance I/O

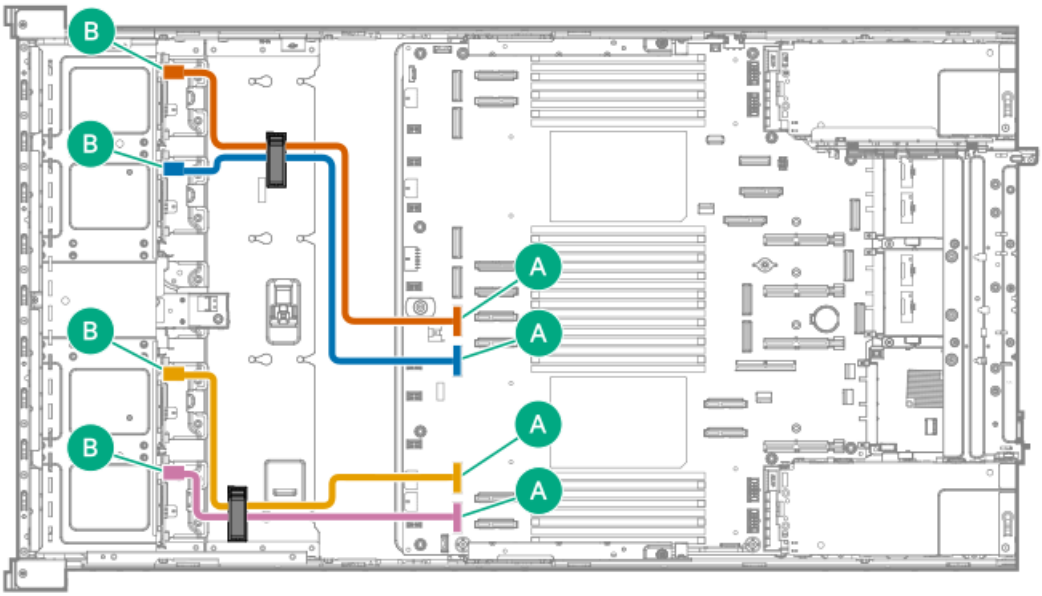
In this configuration, signal to drive boxes 1, 2, and the GPU on slot 15 is from CPU 0. Signal to drive boxes 3, 4, and the GPU on slot 17 is from CPU 1.



Cable part number	Color	From	To
P74900-001	Orange	Box 1	M-XIO port 4
	Blue	Box 2	M-XIO port 6
	Gold	Box 3	M-XIO port 3
	Pink	Box 4	M-XIO port 1

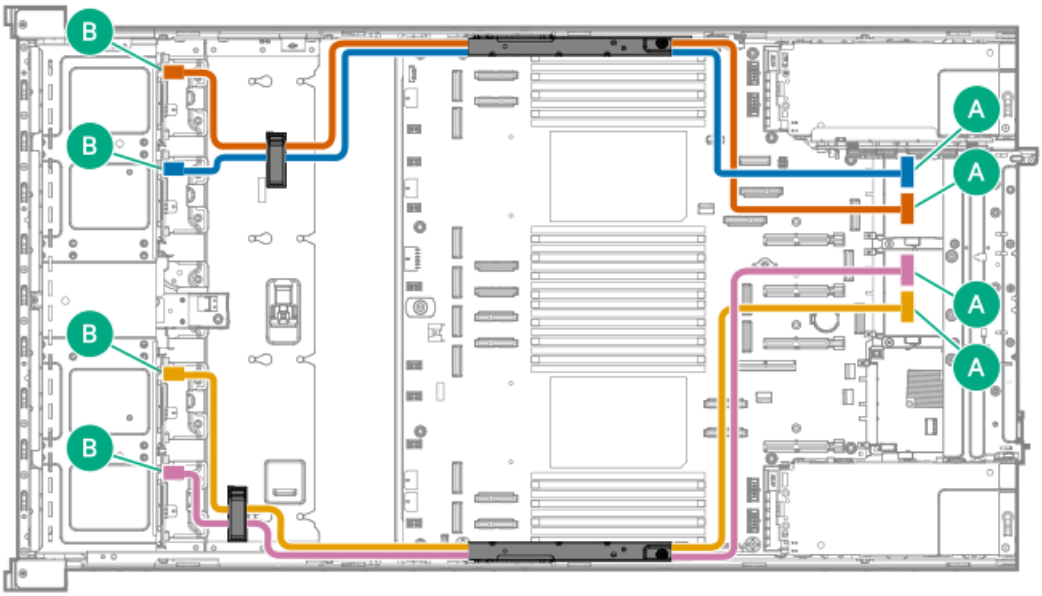
8 SFF NVMe x4 drive direct attach cabling for 2 double-width GPU configuration with non-balance I/O

In this configuration, signal to all two double-width GPUs is from CPU 0. Signal to all drives is from CPU 1.



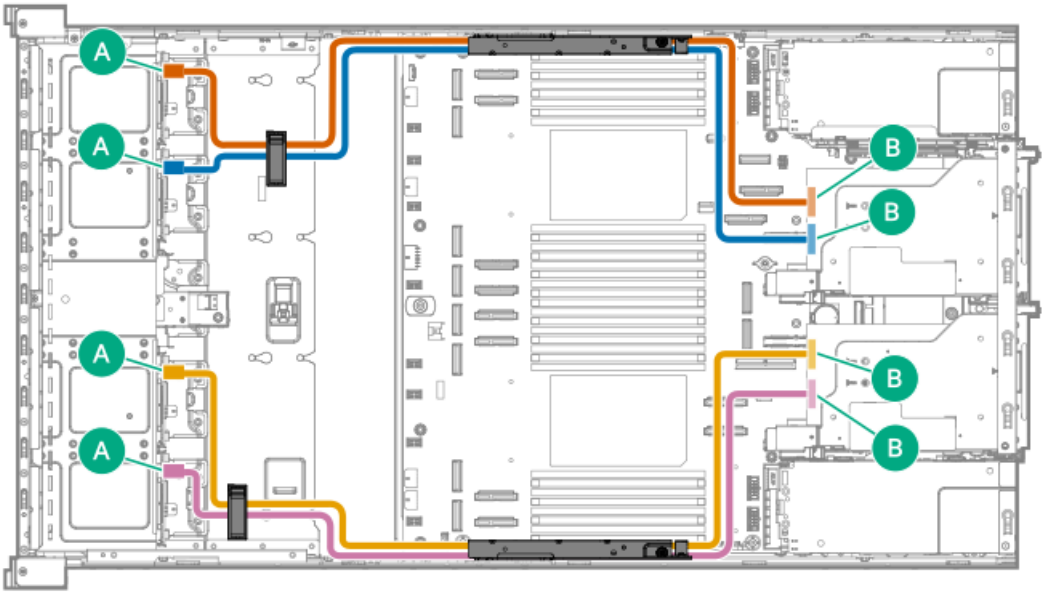
Cable part number	Color	From	To
P74900-001	Orange	Box 1	M-XIO port 5
	Blue	Box 2	M-XIO port 7
	Gold	Box 3	M-XIO port 3
	Pink	Box 4	M-XIO port 1

8 SFF NVMe x4 drive cabling: Type-o controller



Cable part number	Color	From	To
P72035-001	Orange	Box 1	Type-o controller port 1 in Slot 28 OCP B
	Blue	Box 2	Type-o controller port 2 in Slot 28 OCP B
	Gold	Box 3	Type-o controller port 1 in Slot 27 OCP A
	Pink	Box 4	Type-o controller port 2 in Slot 27 OCP A

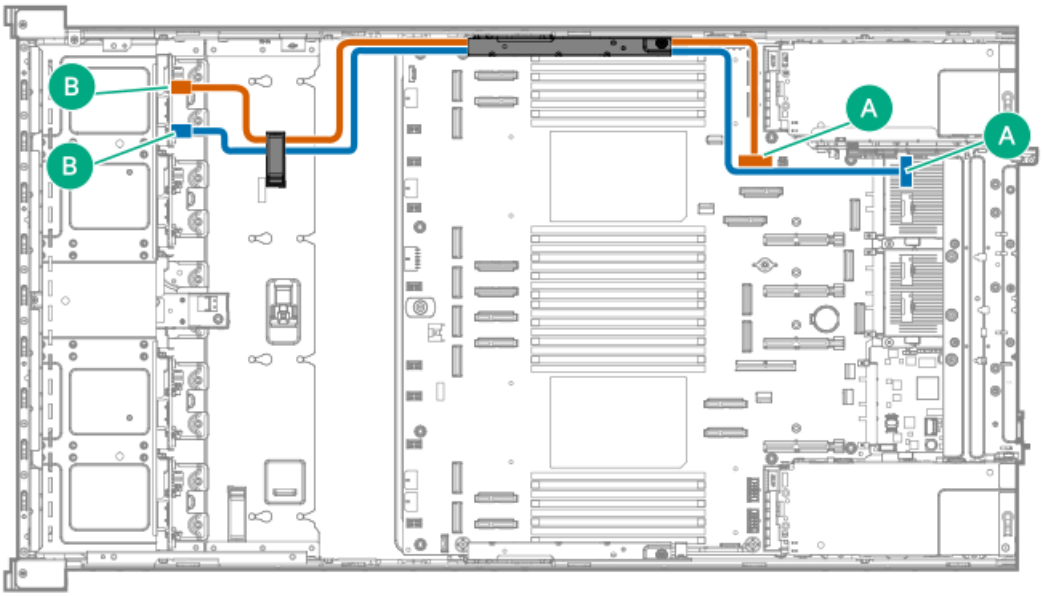
8 SFF NVMe x4 drive cabling: Type-p controller



Cable part number	Color	From	To
P74805-001	Orange	Box 1	Secondary type-p controller port 1
	Blue	Box 2	Secondary type-p controller port 2
	Gold	Box 3	Primary type-p controller port 1
	Pink	Box 4	Primary type-p controller port 2

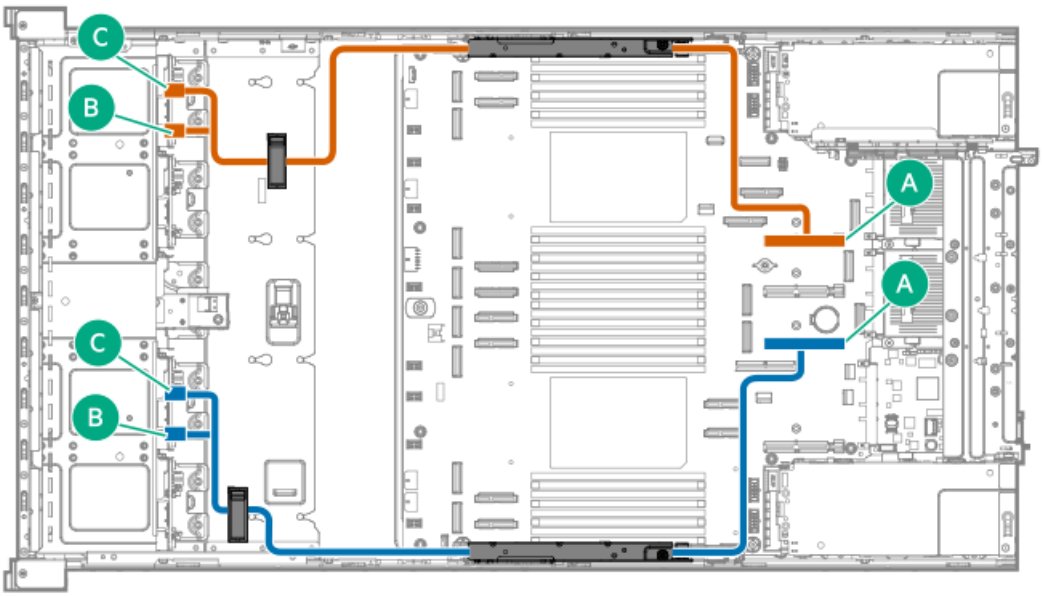
E3.S drive storage controller cabling

4 E3.S drive direct attach cabling



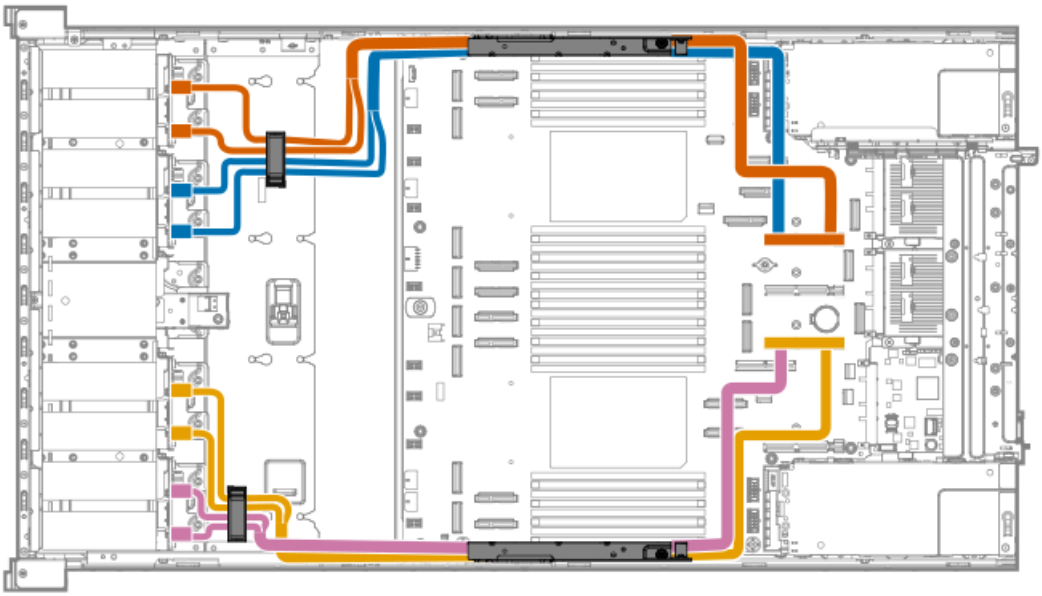
Cable part number	Color	From	To
P72034-001	Orange	Box 1 port 1	M-XIO port 12
P72035-001	Blue	Box 1 port 2	LP SlimSAS port 1 on the OCP retimer card in Slot B

8 E3.S drive direct attach cabling



Cable part number	Color	From	To
P73978-001	Orange	Box 1	PCIe5 x16 riser connector 2
	Blue	Box 3	PCIe5 x16 riser connector 4

16 E3.S drive direct attach cabling

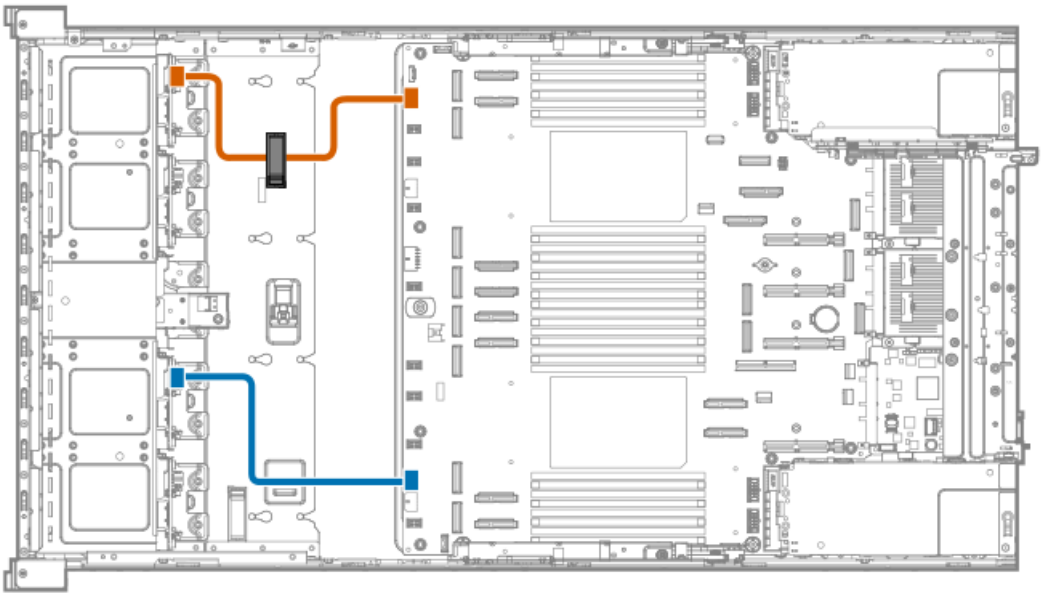


Cable part number	Color	From	To
P78766-001	Orange	Box 1	PCIe5 x16 riser connector 2
	Blue	Box 2	
	Gold	Box 3	PCIe5 x16 riser connector 4
	Pink	Box 4	

Drive power cabling

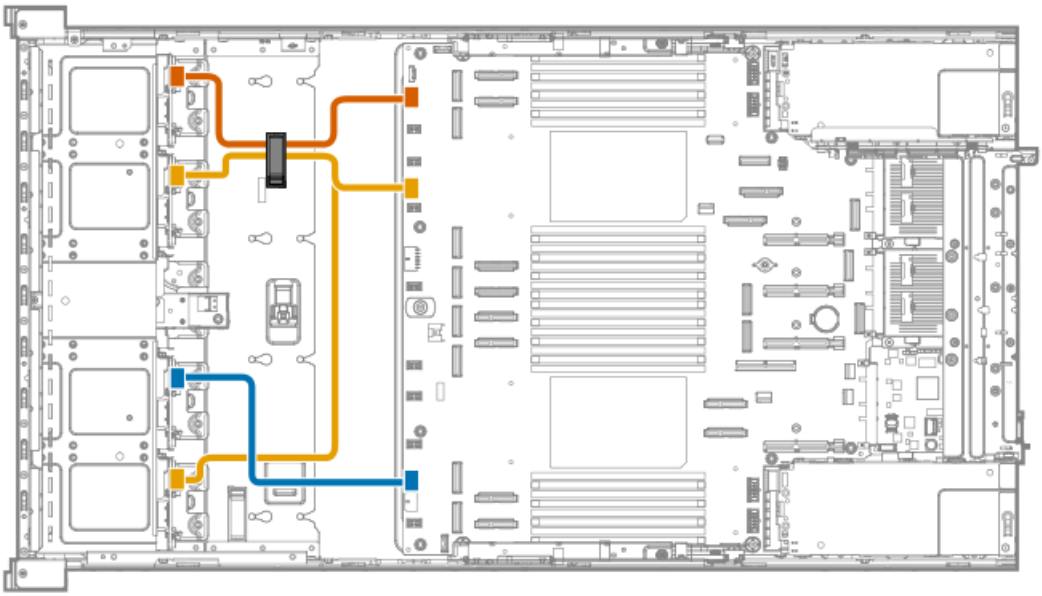
Drive power cables are either preinstalled in the server or structured under the relevant storage controller cable option kit.

4 SFF drive power cabling



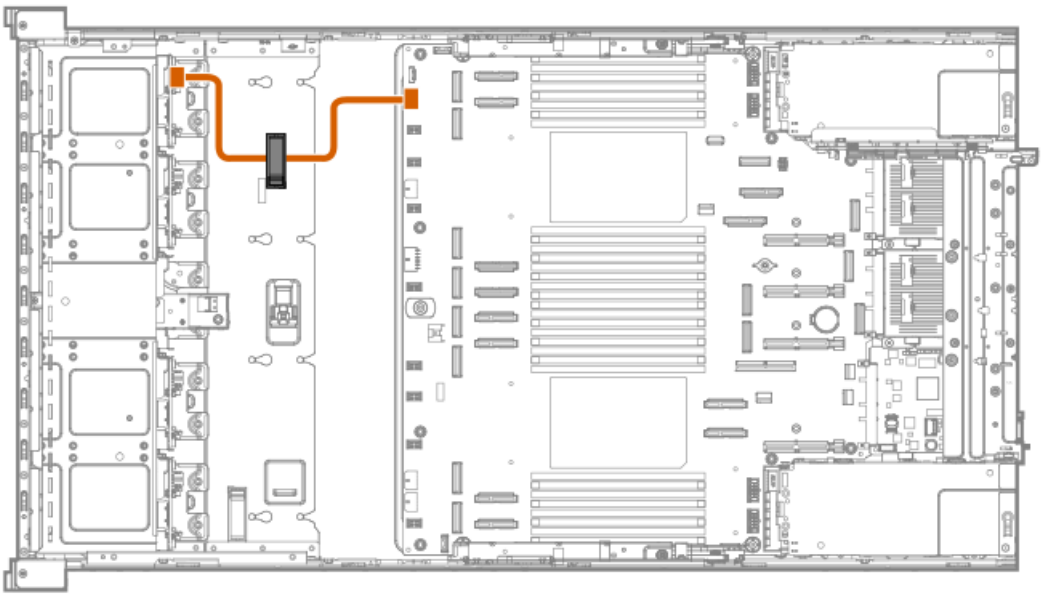
Cable part number	Color	From	To
P72029-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector
	Blue	Box 3 power connector	Box 3: Drive backplane power connector

8 SFF drive power cabling



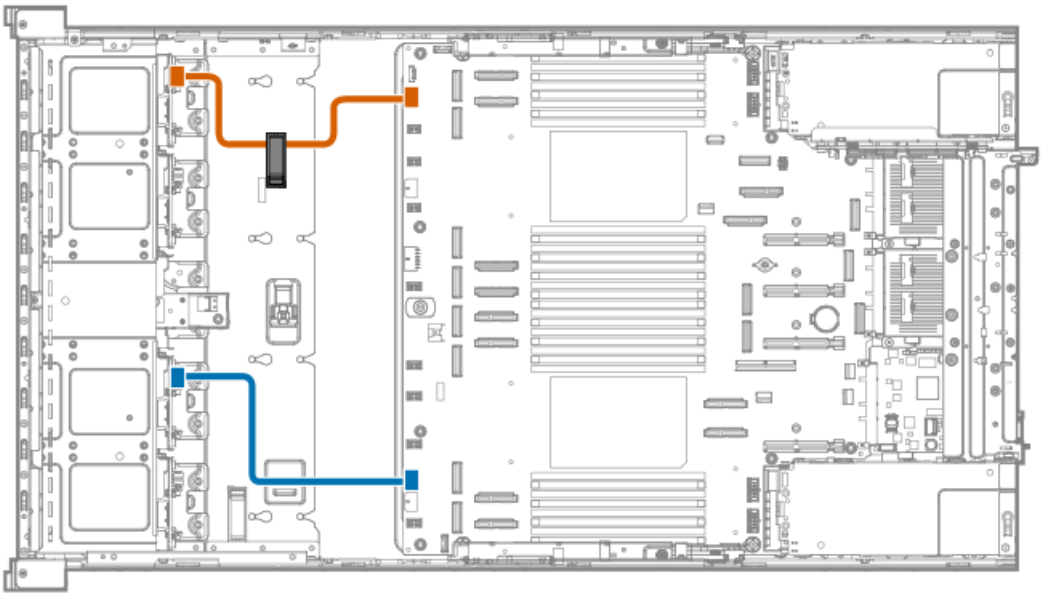
Cable part number	Color	From	To
P72029-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector
	Blue	Box 3 power connector	Box 3: Drive backplane power connector
P72030-001	Gold	Boxes 2 and 4 power connectors	Boxes 2 and 4: Drive backplane power connector

4 E3.S drive power cabling



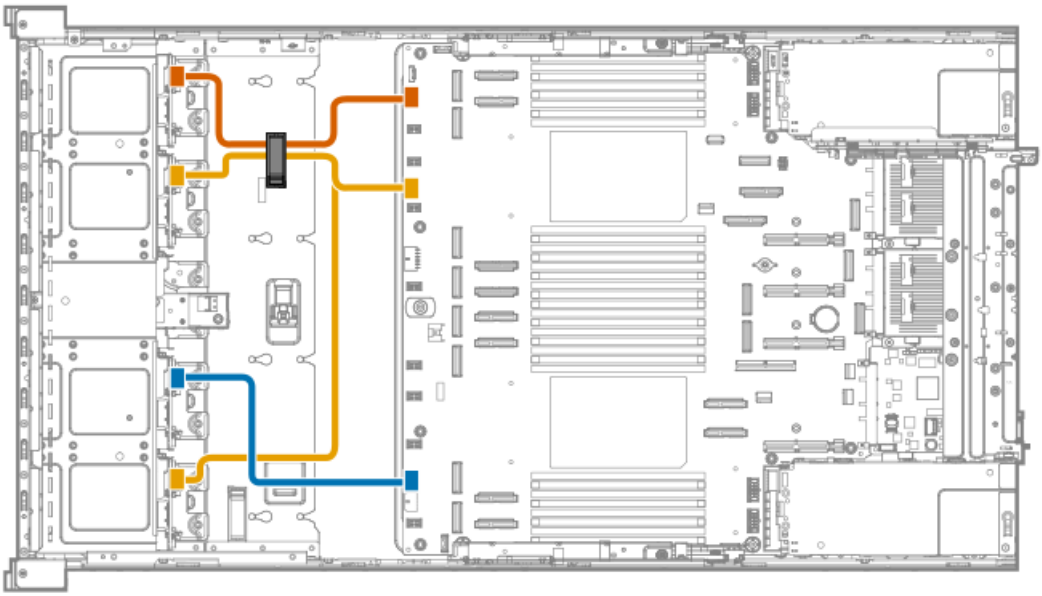
Cable part number	Color	From	To
P72029-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector

8 E3.S drive power cabling



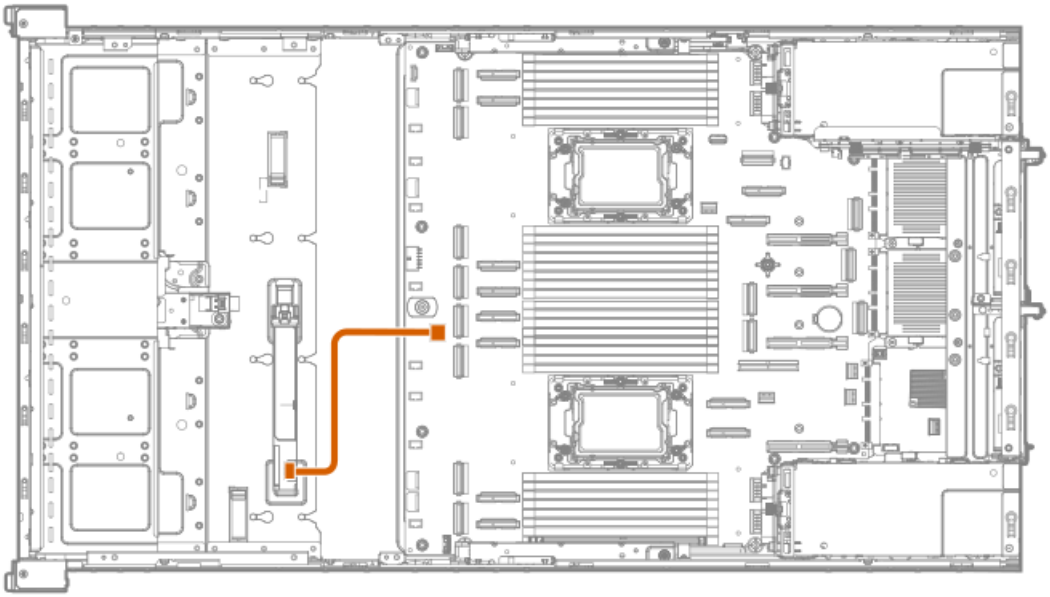
Cable part number	Color	From	To
P72029-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector
	Blue	Box 3 power connector	Box 3: Drive backplane power connector

16 E3.S drive power cabling



Cable part number	Color	From	To
P72029-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector
	Blue	Box 3 power connector	Box 3: Drive backplane power connector
P72030-001	Gold	Boxes 2 and 4 power connectors	Boxes 2 and 4: Drive backplane power connector

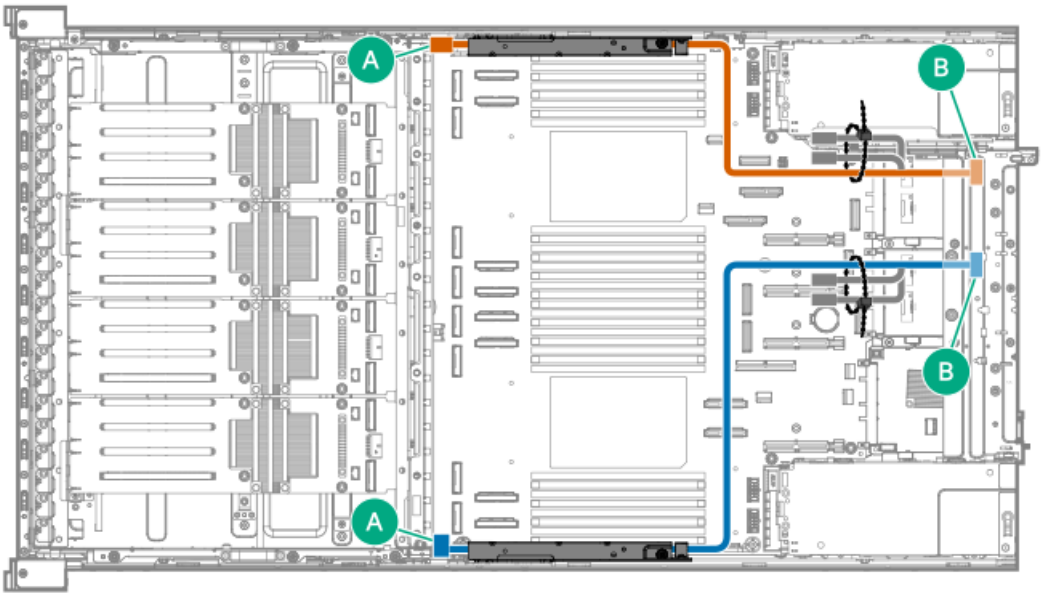
Energy pack cabling



Cable color	From	To
Orange	Energy pack	Energy pack connector

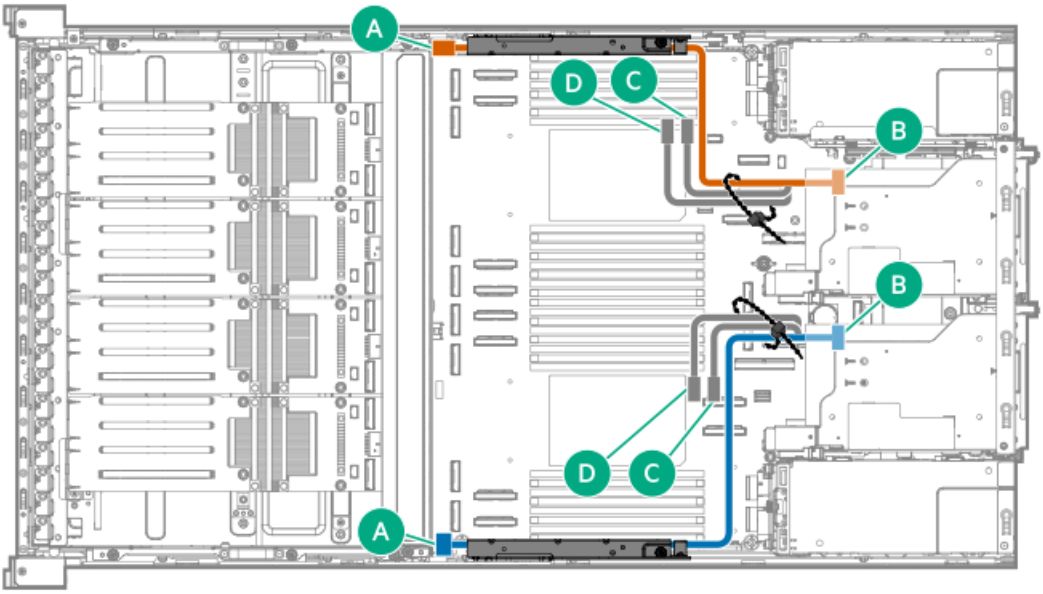
Storage backup power cabling

Type-o controller



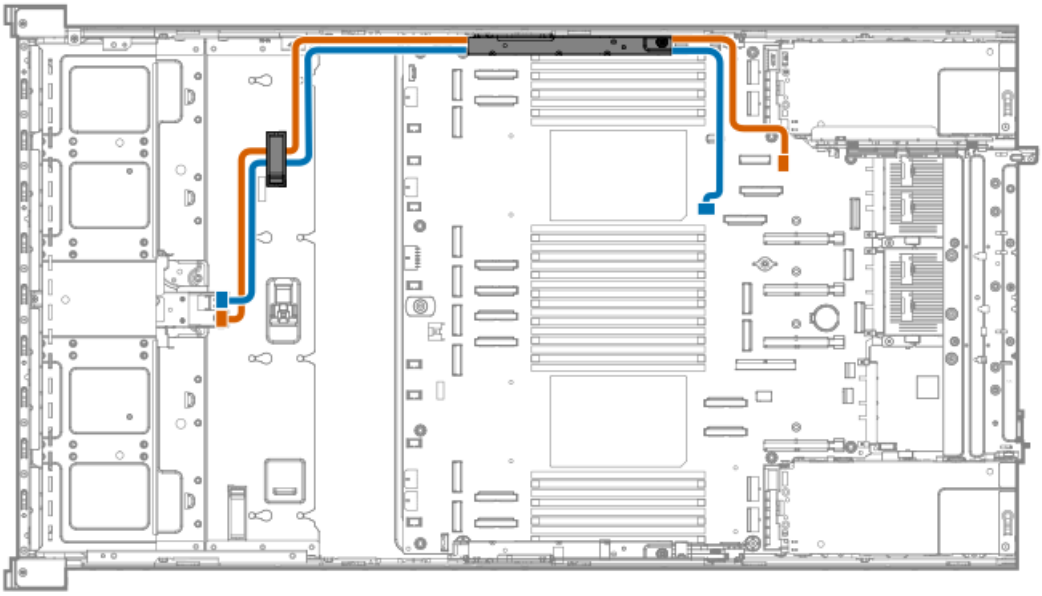
Cable part number	Cable color	From	To
P72038-001	Orange	Slot 28 OCP B	Storage controller backup power connector 1
	Blue	Slot 27 OCP A	Storage controller backup power connector 2

Type-p storage controller



Cable part number	Cable color	From	To
P72038-001	Orange	Slot 6	Storage controller backup power connector 1
	Blue	Slot 3	Storage controller backup power connector 2

HPE NS204i-u Boot Device V2 cabling



Cable part number	Color	From	To
P48956-001	Orange	Boot device power connector	NS204i-u power connector
P74839-001	Blue	Boot device signal connector	NS204i-u signal connector

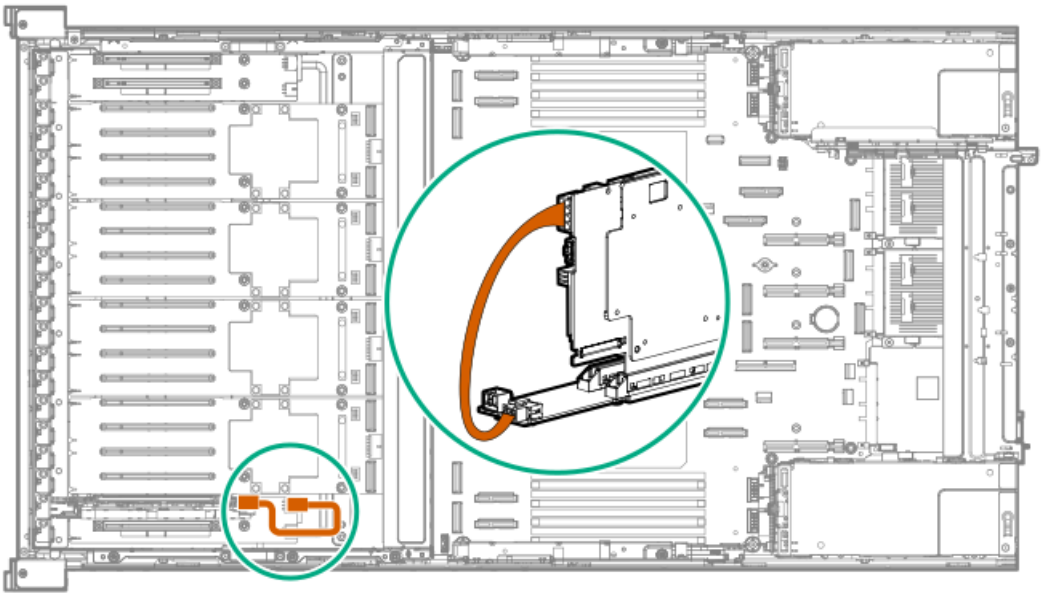
DPU cabling

Subtopics

DPU auxiliary power cabling
Slot 1 DPU cabling
Slot 4 DPU cabling

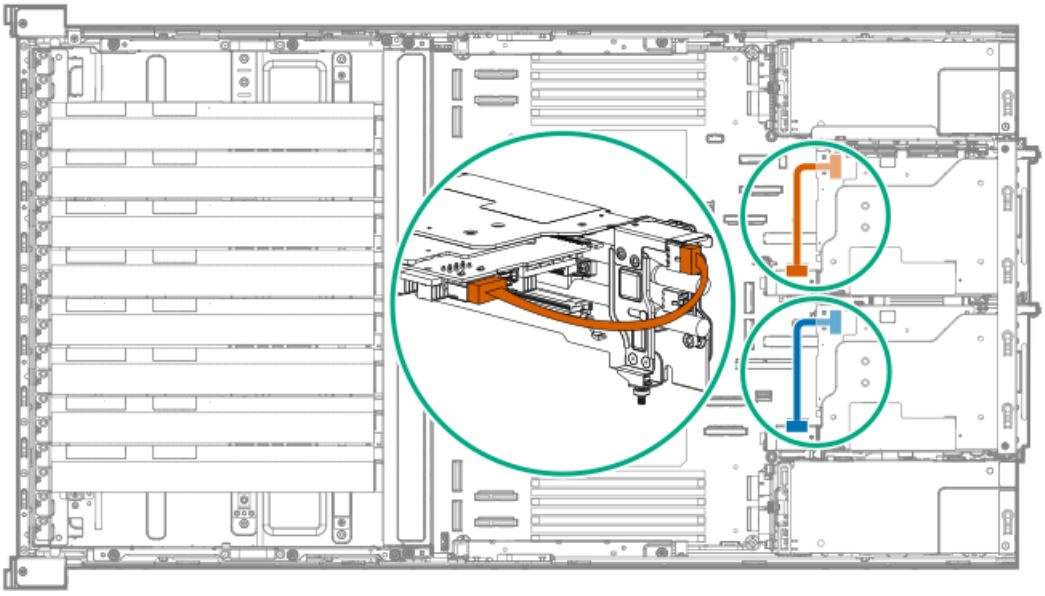
DPU auxiliary power cabling

Front DPU



Cable part number	Color	From	To
P74341-001	Orange	DPU power connector	Slot 25 PCIe captive riser power connector

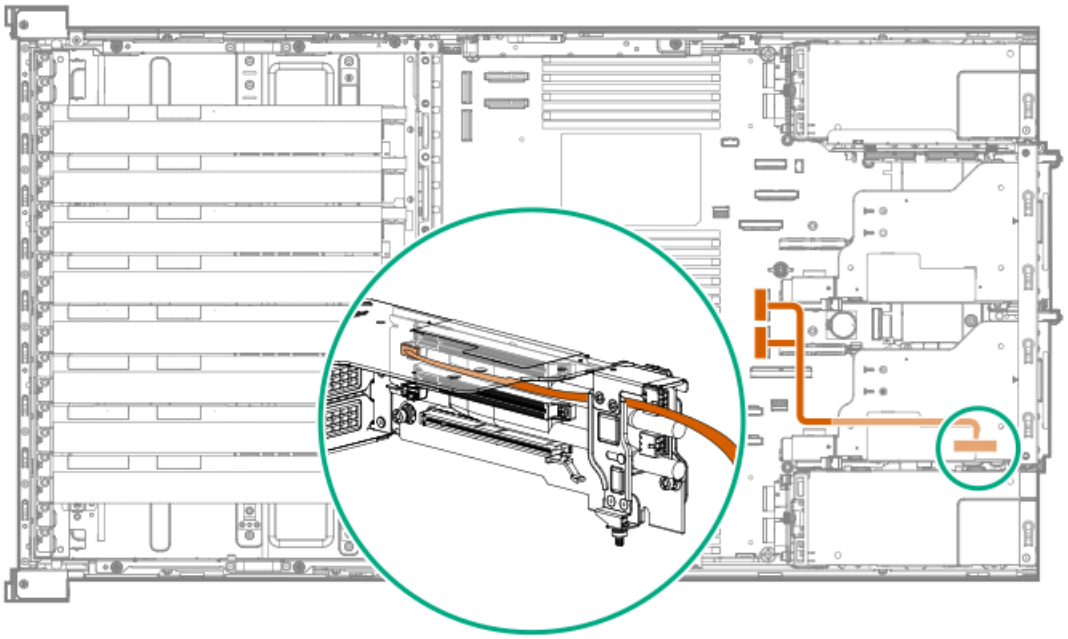
Rear DPU



Cable part number	Color	From	To
P74341-001	Orange	DPU auxiliary power connector	Slot 4 PCIe captive riser power connector
	Blue	DPU auxiliary power connector	Slot 1 PCIe captive riser power connector

Slot 1 DPU cabling

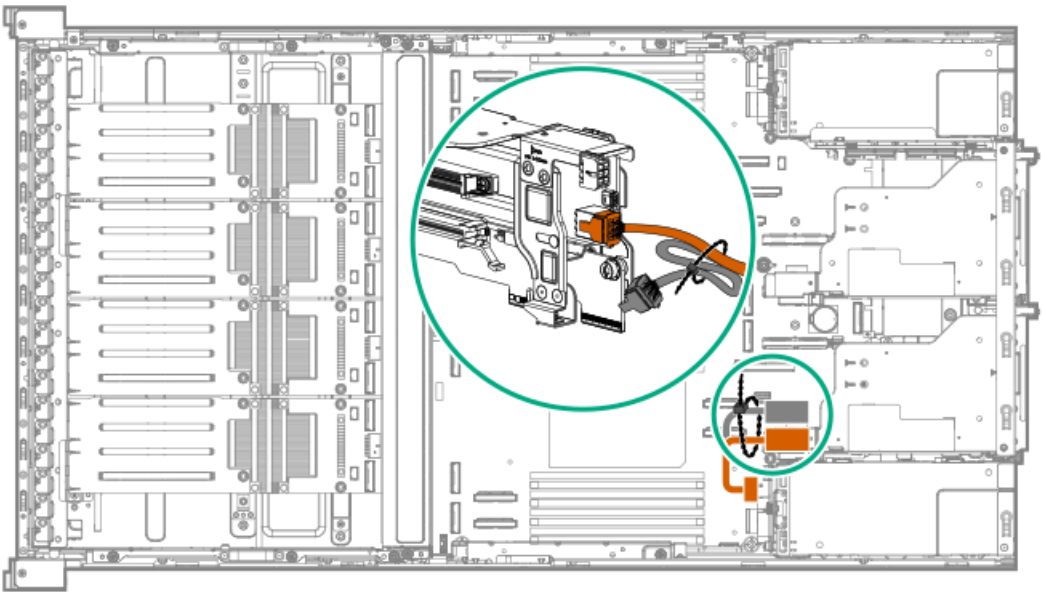
Captive riser signal cabling



Cable part number	Color	From	To
P71882-001	Orange	Captive riser slot 1	• M-XIO port 13 (P2) [1] • M-XIO port 17 (P3) [1]

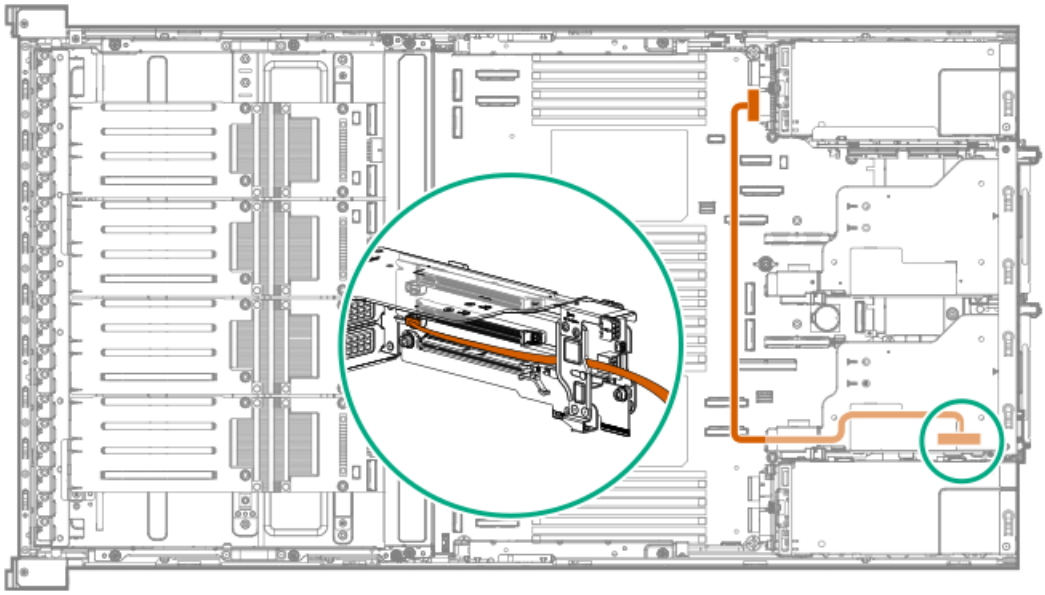
[1] The enclosed text (P#) refer to the marker on the captive riser signal cable connector.

Captive riser power cabling



Cable part number	Color	From	To
P72033-001	Orange	Captive riser power connector on the riser cage	M-PIC power connector 3

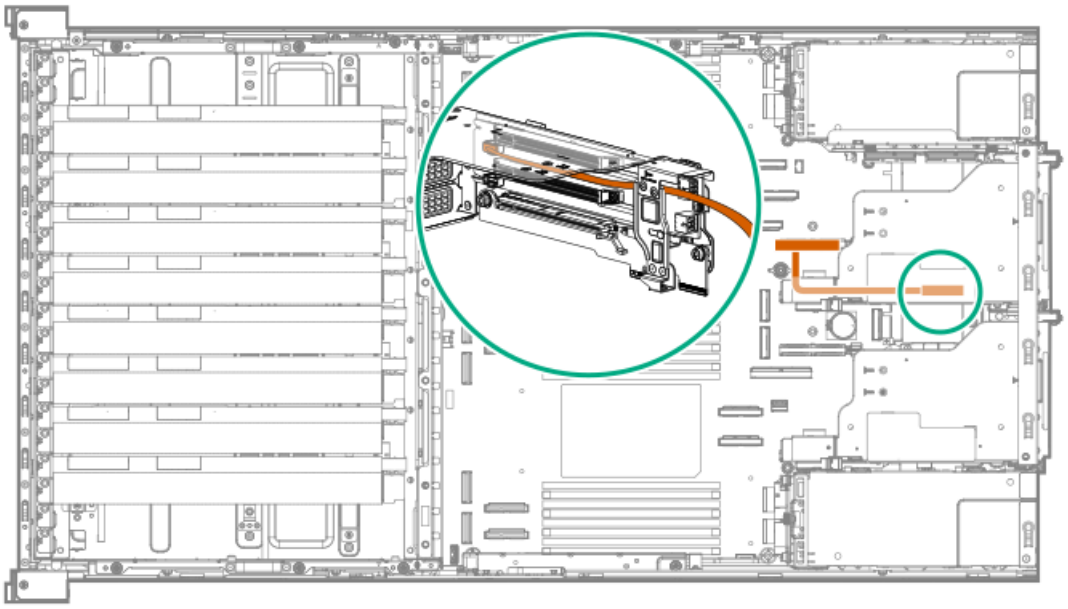
PCIe fan cabling



Cable part number	Color	From	To
P80859-001	Orange	PCIe slot sideband signal connector	M-PIC power connector 2

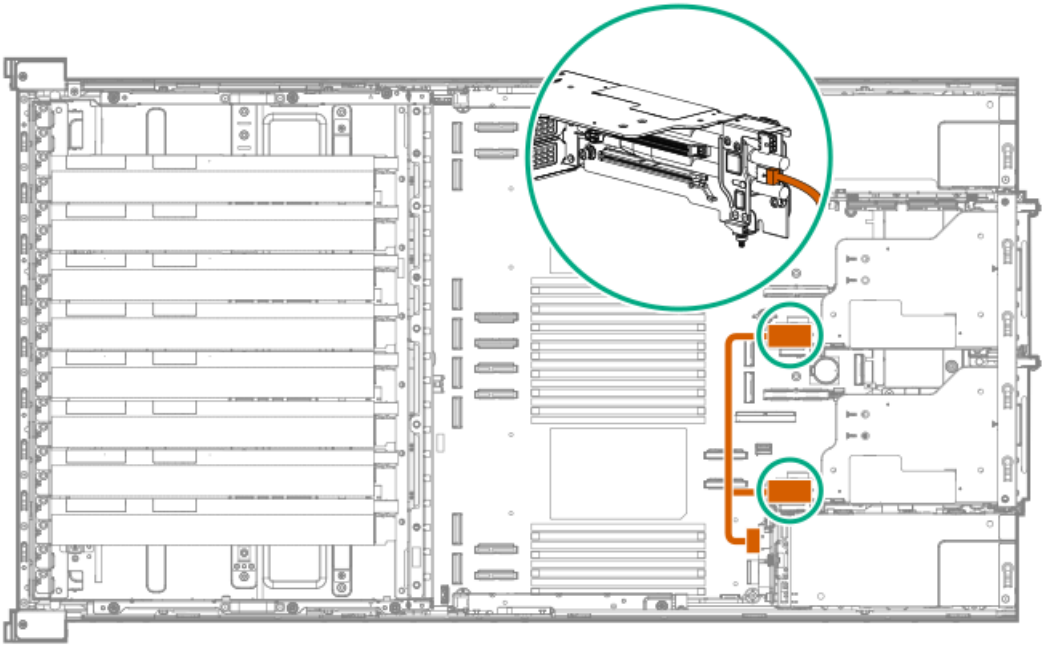
Slot 4 DPU cabling

Captive riser signal cabling



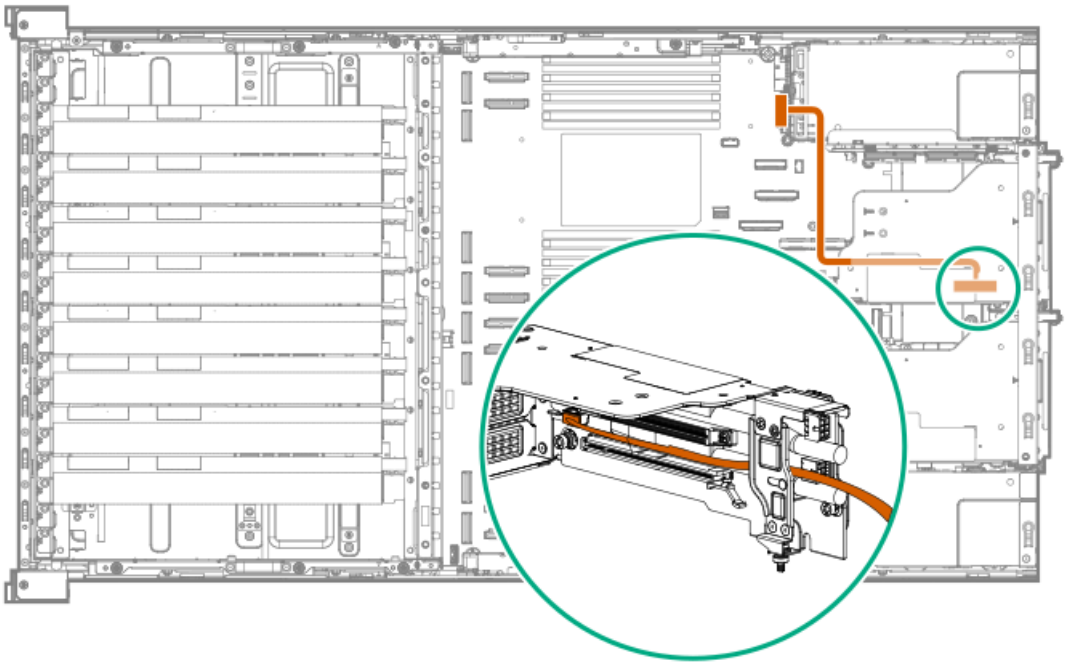
Cable part number	Color	From	To
P71883-001	Orange	Captive riser slot 4	PCIe5 ×16 riser connector 2

Captive riser power cabling



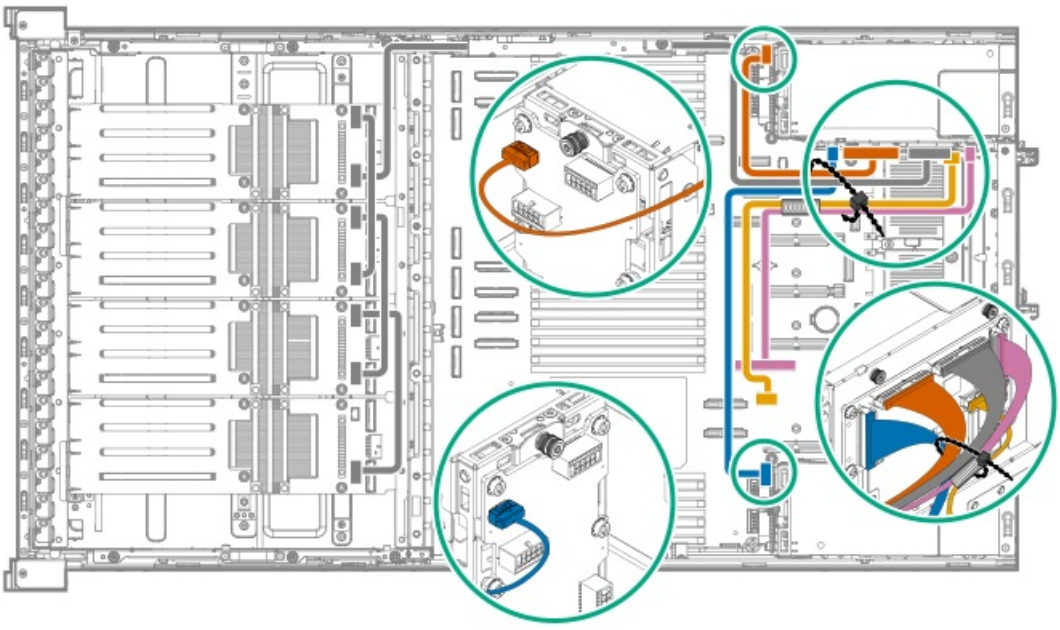
Cable part number	Color	From	To
P72033-001	Orange	Captive riser power connector on the riser cage	M-PIC power connector 3

PCIe fan cabling



Cable part number	Color	From	To
P80859-001	Orange	PCIe slot sideband signal connector	M-PIC power connector 2

Sideband board cabling

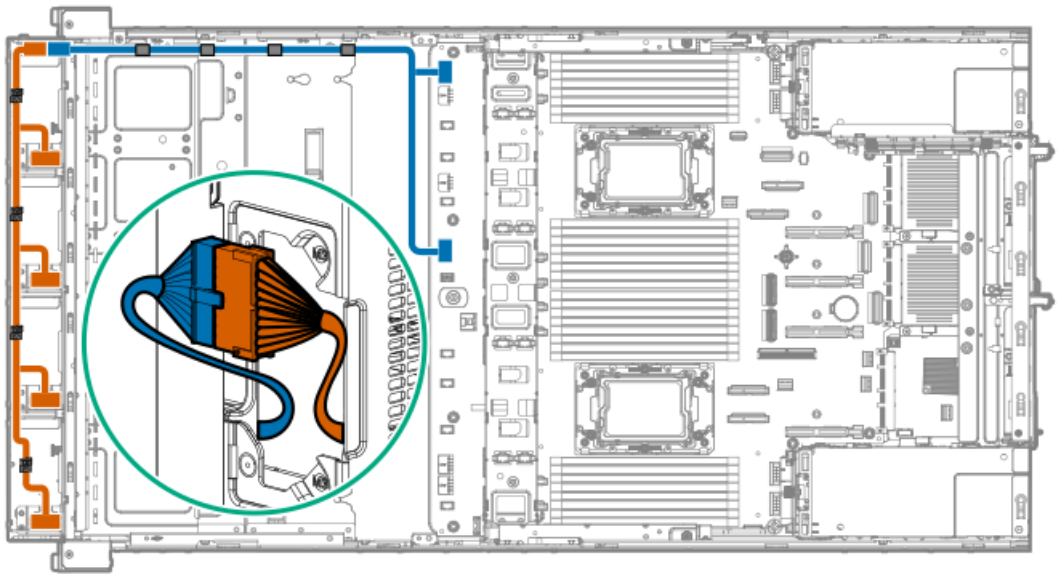


Component part number	Color	From	To
P72028-001	Orange	CB2 SB [1]	Signal connector on PDB 1
	Blue	CB3 SB [1]	Signal connector on PDB 2
P72027-001	Gold	HPM SB2 [1]	Sideband signal connector 2
	Pink	HPM SB1 [1]	Sideband signal connector 1

[1] Silkscreen marker on the sideband board

Fan cabling

External front fan cabling



Cable part number	Color	From	To
P79781-001	Orange	Fans 13-16	P79782-001 fan power cable
P79782-001	Blue	P79781-001 front fan power cable	• Front fan cage / Liquid cooling connector • M-PIC power connector 5

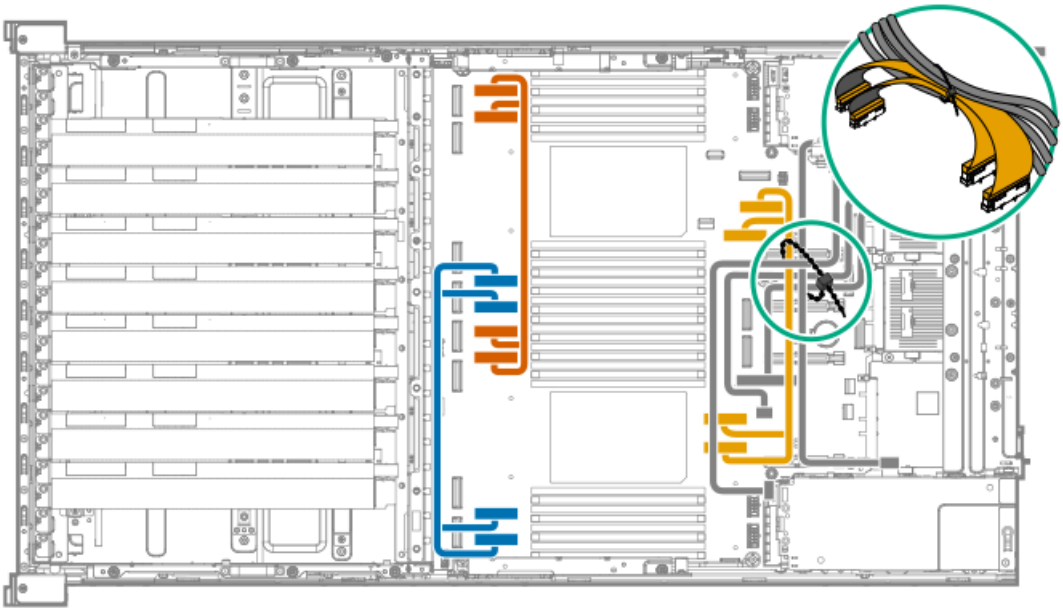
Internal fan cabling

The internal fan cable assembly is secured in the fan cable bracket.

Cable part number	Color	From	To
P72032-001	Orange	Fan 2	Fan connector 1
	Blue	Fans 1 and 3	Fan connector 2
	Gold	Fan 5	Fan connector 3
	Pink	Fans 4 and 6	Fan connector 4
	Green	Fan 8	Fan connector 5
	Dark purple	Fans 7 and 9	Fan connector 6
	Black	Fan 11	Fan connector 7
	Dash orange	Fans 10 and 12	Fan connector 8

Intel UPI cabling

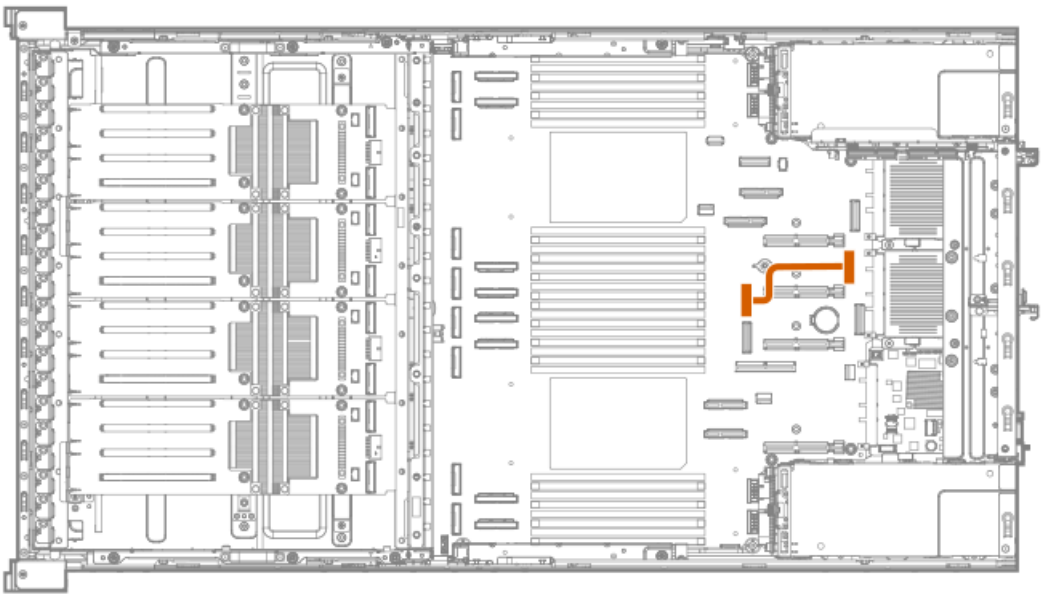
All UPI cables are preinstalled in the server.



Cable part number	Color	From	To
P72257-001	Orange	UPI connectors 5 and 6	UPI connectors 11 and 12
P72259-001	Blue	UPI connectors 3 and 4	UPI connectors 9 and 10
P74340-001	Gold	UPI connectors 1 and 2	UPI connectors 7 and 8

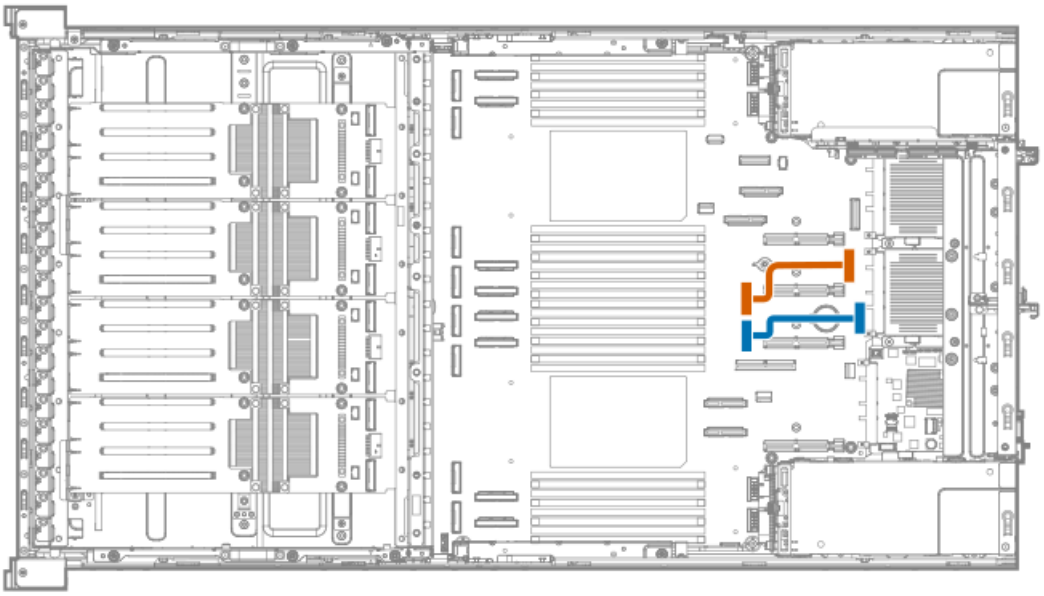
OCP bandwidth enablement cabling

Slot 27 OCP A PCIe x8 configuration



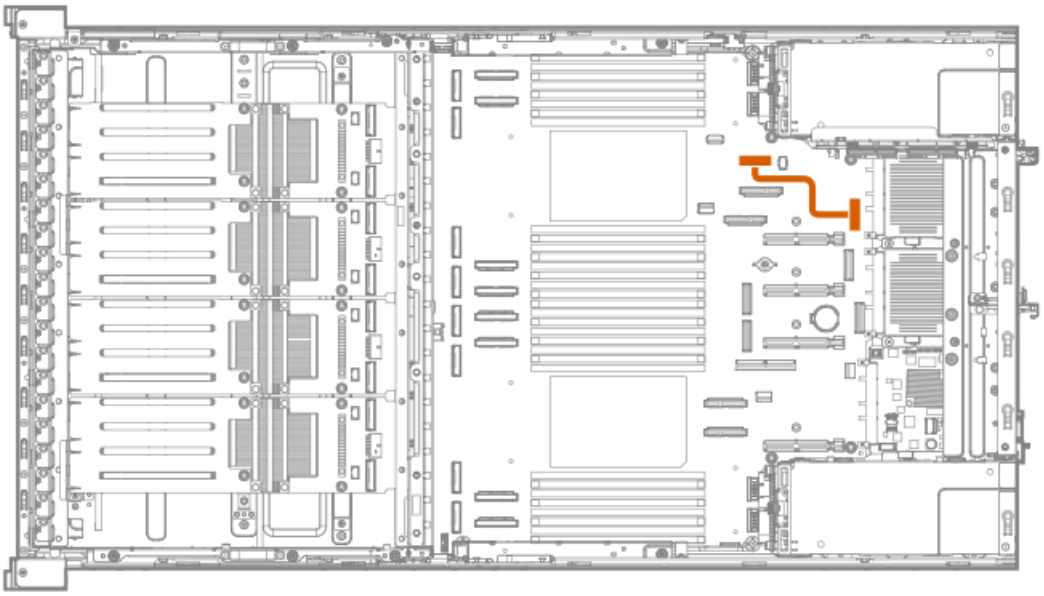
Cable part number	Color	From	To
P72256-001	Orange	M-XIO port 17	M-XIO OCP port A-1

Slot 27 OCP A PCIe x16 configuration



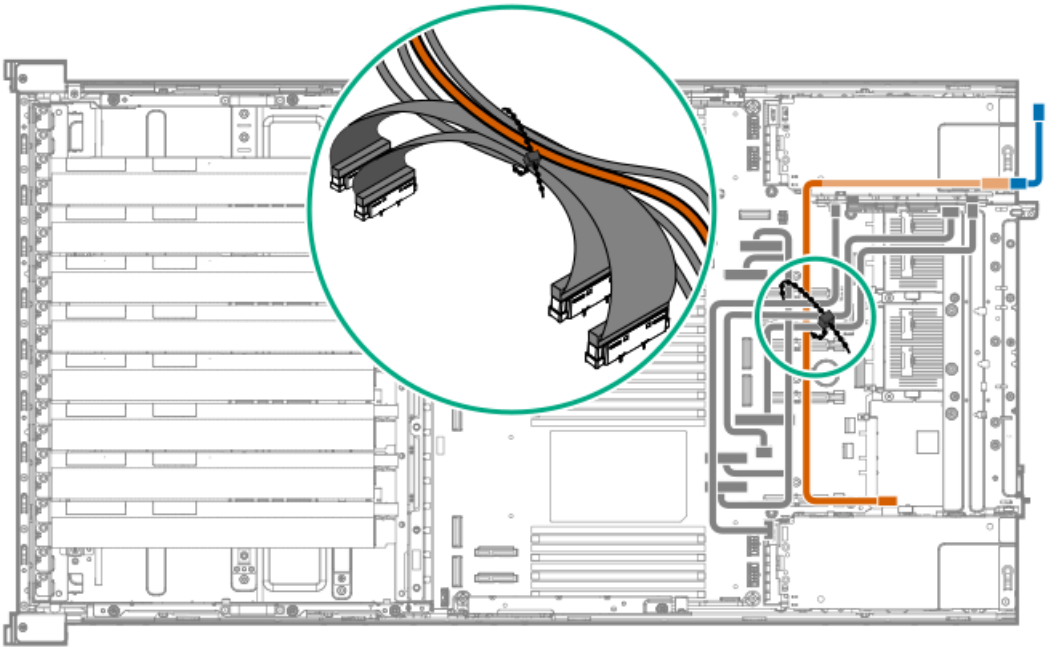
Cable part number	Color	From	To
P72256-001	Orange	M-XIO port 17	M-XIO OCP port A-1
	Blue	M-XIO port 13	M-XIO OCP port A-2

Slot 28 OCP B PCIe5 x16 configuration



Cable part number	Color	From	To
P72031-001	Orange	M-XIO port 12	M-XIO OCP port B

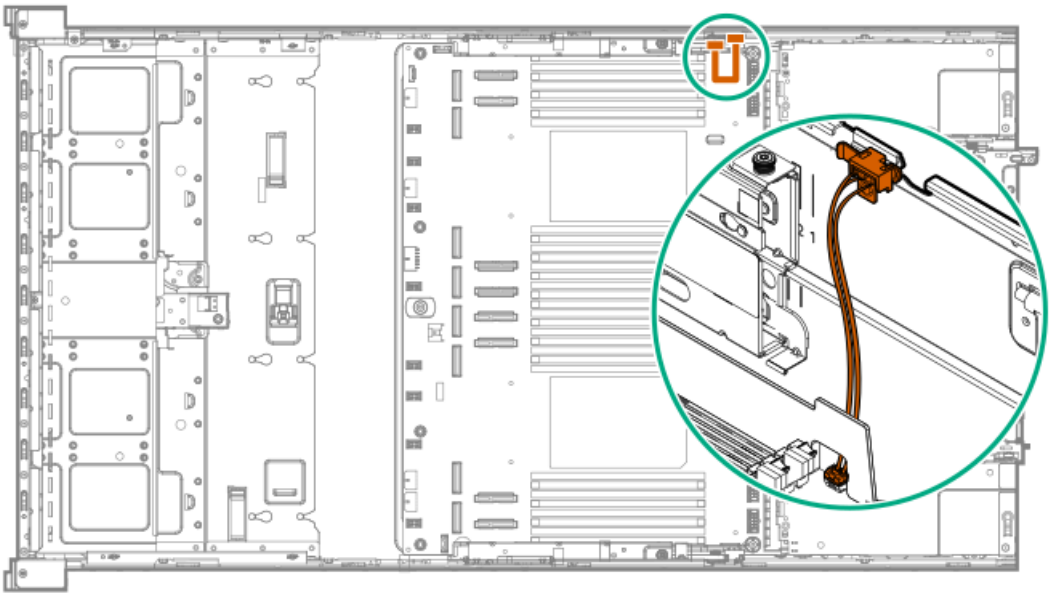
Serial port cabling



Cable part number	Cable color	From	To
P73744-001	Orange	Serial port cable connector	ix port cable
P71826-001	Blue	ix port cable	Serial port dongle

[1] This port is located on the DC-SCM.

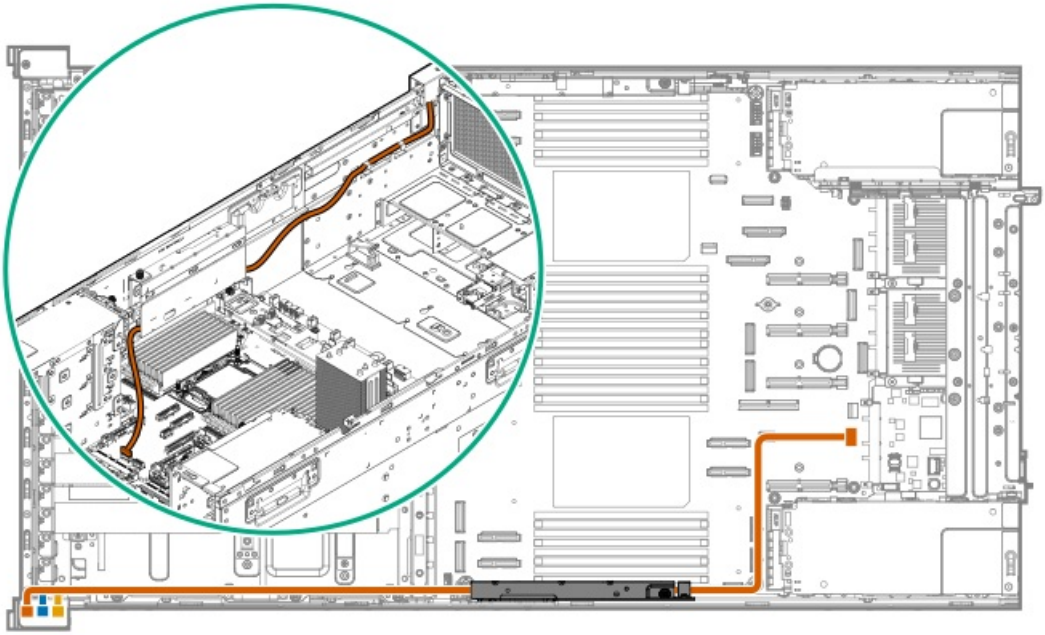
Chassis intrusion detection switch cabling



Cable part number	Color	From	To
P54901-001	Orange	Chassis intrusion detection switch	Chassis intrusion detection switch connector

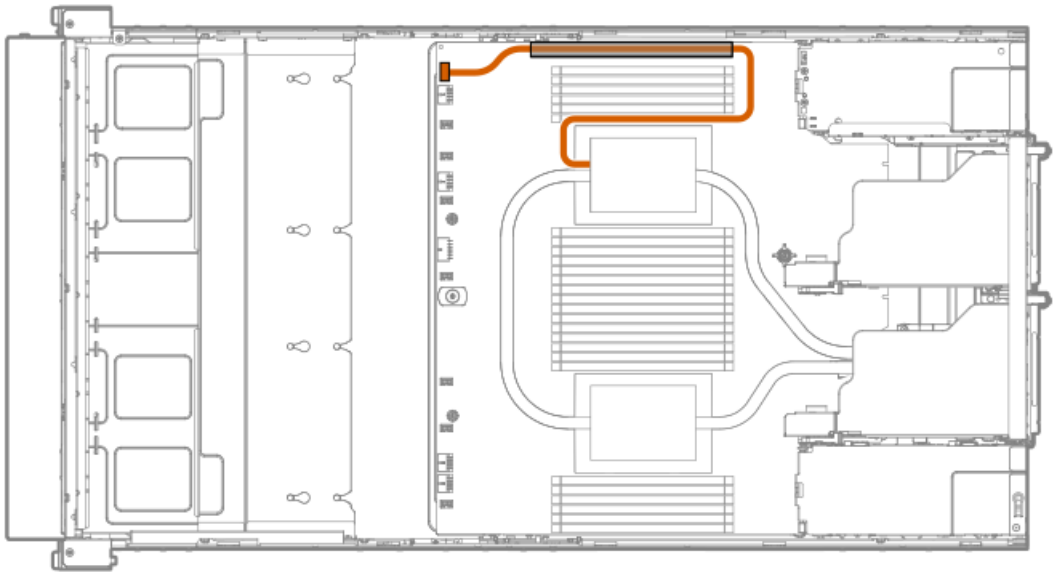
Front I/O cabling

The front I/O cables are preinstalled in the server.



Cable part number	Color	From	To
P71909-001	Orange	Right chassis ear	Front I/O connector
	Blue	USB 3.2 Gen 1 port	
	Pink	iLOservice port	

DLC module cabling



Option PN	Color	From	To
P82520-B21	Orange	Liquid cooling heatsink	Front fan cage / Liquid cooling connector

PDU cabling

CAUTION

Connect the power cords using only the following supported configurations. Using an unsupported power supply or cabling configuration can result in an unexpected loss of system power.

The power supply cabling methods vary based on the selected power distribution unit (PDU). To ensure proper operation and the functionality of the circuit breaker, the input current rating of the power supply must be lower than the current rating of each breaker (node) in the PDU.

The illustrations in this section are for logical mapping reference only. The actual power supply cabling will depend on the specific rack-PDU setup.

For information about PDU compatibility with the server power supply, see the PDU QuickSpecs.

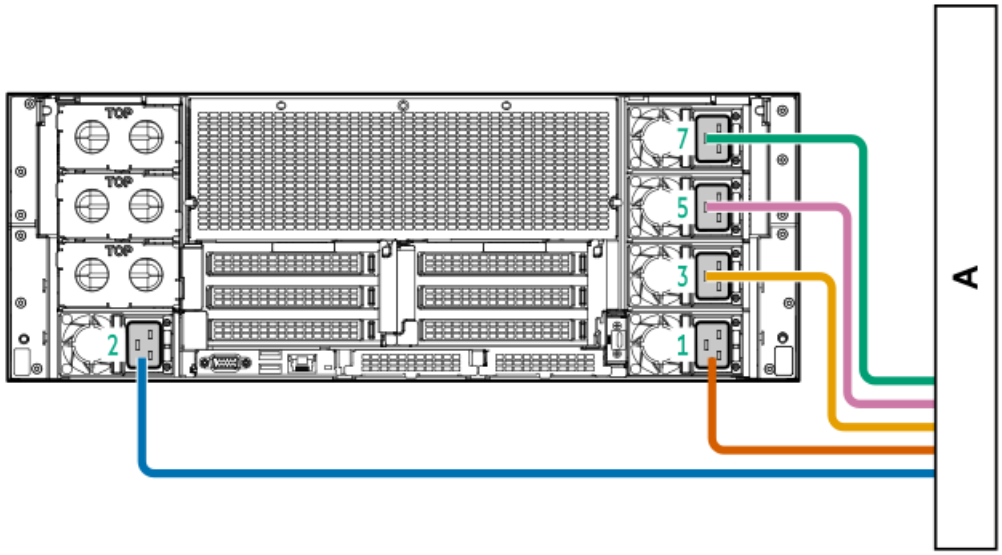
Subtopics

PDU cabling: Five-power supply configuration

PDU cabling: Five-power supply configuration

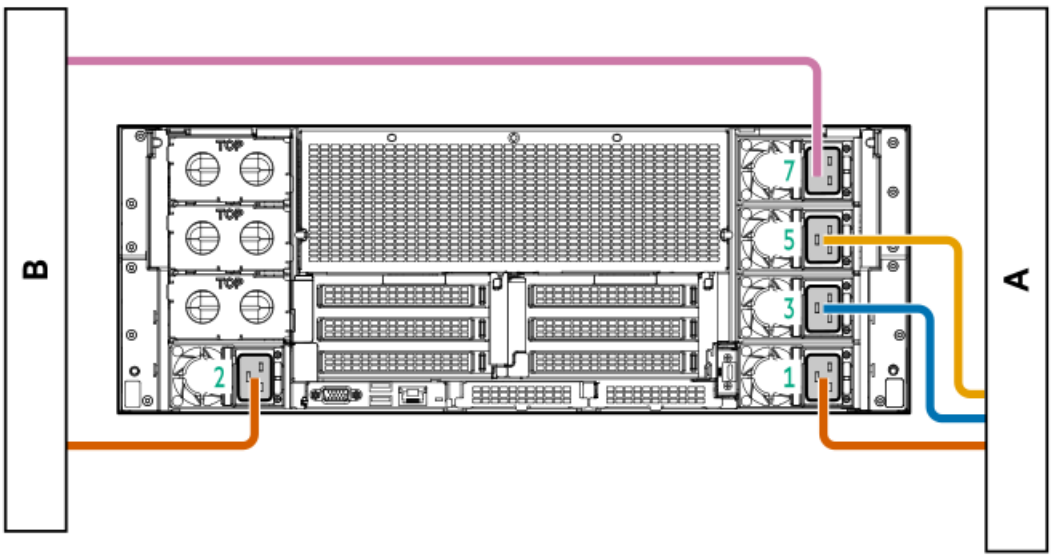
A five-power supply configuration supports the system domain and the GPU domain 1. Depending on the number of racks, couplets and storage, and the input voltage, connect this configuration to one or two PDUs.

One PDU



Two PDUs

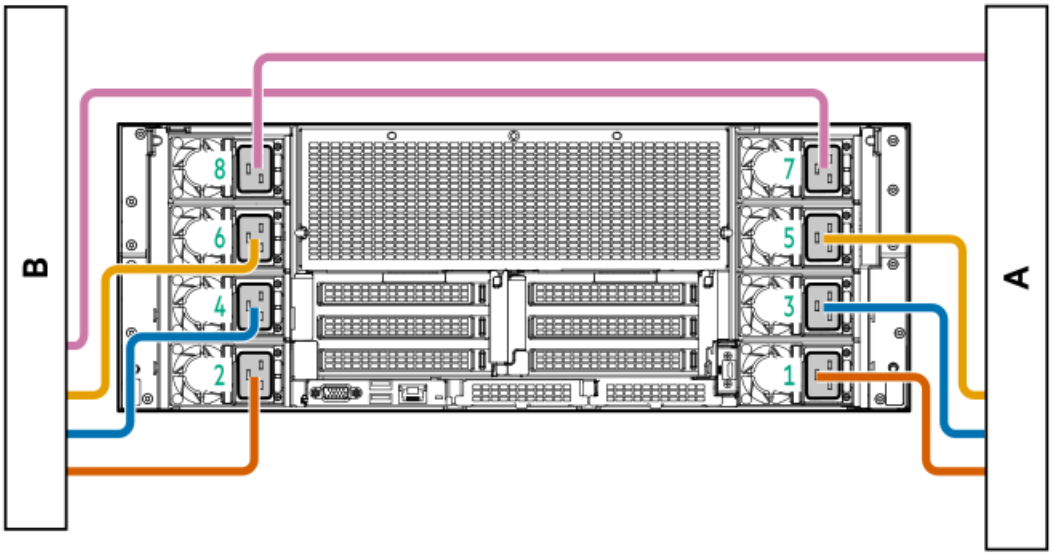
If one of the PDUs fails, the server continues to operate as long as the capacity of the remaining PDU feed is able to compensate for the entire domain load.



PDU cabling: Eight-power supply configuration

An eight-power supply configuration supports the system domain and both GPU domains 1 and 2.

If one of the PDUs fails, the server continues to operate as long as the capacity of the remaining PDU feed is able to compensate for the entire domain load.



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

HPM and DC-SCM versions
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

HPM and DC-SCM versions

Different server SKUs support specific HPM and DC-SCM version.

Server SKU number	System ROM ID on the HPM	iLO ASIC version on the DS-SCM
P74461-B21	U70 (P68908-001)	iLO 6 ASIC (P74726-B21)
P76706-B21	U72 (P79675-001)	iLO 7 ASIC (P68823-B21)

In the UEFI System Utilities, the supported system ROM version is displayed on the System Utilities > System Information > Firmware Information screen.

In the iLO web interface, the supported iLO version is displayed on the upper right corner of the navigation tree.

For information on the HPM and DC-SCM version support, see the server Quickspecs on the Hewlett Packard Enterpriser website (**https://www.hpe.com/info/quickspecs**).

Updating firmware or system ROM

When updating the system firmware, make sure that you download the component package specific for your HPM and DC-SCM version.

1. Go to **https://www.hpe.com/info/dl380agen12-docs**.
2. In the Select Model drop-down menu, choose the HPM version for your server.
3. Click the Drivers and Software tab.

   The Drivers and Software tab lists the firmware downloads compatible with the selected HPM version.

To	Use
Download service packs	• Service Pack for ProLiant **https://www.hpe.com/servers/spp/download** • Get an overview of SPP and its ecosystem **https://www.hpe.com/support/SPP-overview-videos-en**
Deploy service packs to a single server	Smart Update Manager **https://www.hpe.com/support/hpesmartupdatemanager-quicklinks**
Deploy service packs to multiple servers	HPE OneView **https://www.hpe.com/support/hpeoneview-quicklinks**
Updating iLO or system firmware in a single server	iLO user guide **https://www.hpe.com/support/hpeilodocs-quicklinks**
• Enable policy-based management of server or server group firmware for distributed server infrastructure • Monitor server compliance with a configured firmware baseline • Receive automatic iLO firmware updates • Receive baseline update alerts	HPE Compute Ops Management **https://www.hpe.com/support/hpe-gl-com-quicklinks**

Configuring the server

To configure	Use
Single server (GUI)	• Intelligent Provisioning https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks • iLO remote console or web interface https://www.hpe.com/support/hpeilodocs-quicklinks • UEFI System Utilities https://www.hpe.com/support/hpeuefisystemutilities-quicklinks • HPE Compute Ops Management https://www.hpe.com/support/hpe-gl-com-quicklinks
Single server (scripting)	• RESTful Interface Tool https://www.hpe.com/support/restfulinterface/docs • Python iLO Redfish Library (python-ilorest-library) https://github.com/HewlettPackard/python-ilorest-library • Scripting Tools for Windows Powershell https://www.hpe.com/info/powershell/docs • iLO RESTful API https://servermanagementportal.ext.hpe.com/ • HPE Compute Ops Management API https://developer.greenlake.hpe.com/
Multiple servers (either UI or scripting)	• HPE OneView [1] https://www.hpe.com/support/hpeoneview-quicklinks • HPE Compute Ops Management https://www.hpe.com/support/hpe-gl-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.

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

Configuring storage controllers

Controller type	Documentation
HPE MR Gen11 controllers	• HPE MR Gen11 Controller User Guide https://hpe.com/support/MR-Gen11-UG • MR Gen11 controller configuration: https://www.hpe.com/support/MR-Gen11-configuration • MR Gen11 controller RAID creation: https://www.hpe.com/support/MR-Gen11-RAID-creation Configuration guides: • HPE MR Storage Administrator User Guide https://www.hpe.com/support/MRSA • HPE StorCLI User Guide https://www.hpe.com/support/StorCLI
Intel VROC for HPE Gen12	• Intel Virtual RAID on CPU for HPE User Guide https://www.hpe.com/support/VROC-UG • Intel VROC NVMe RAID quick installation: https://www.hpe.com/support/VROC-NVMe-RAID-installation OS-specific configuration guides: • Intel Virtual RAID on CPU (Intel VROC) for Windows User Guide https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/338065_Intel_VROC_UserGuide_Windows.pdf • Intel Virtual RAID on CPU (Intel VROC) for Linux User Guide https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/linux-intel-vroc-userguide-333915.pdf • Intel Volume Management Device Driver for VMware ESXi User Guide https://www.intel.com/content/dam/support/us/en/documents/memory-and-storage/ESXi-Intel-VROC-UserGuide.pdf

Deploying an OS

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

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

To	See
Deploy an OS using HPE Compute Ops Management	HPE Compute Ops Management User Guide https://www.hpe.com/support/hpe-gl-com-quicklinks
Deploy an OS using Intelligent Provisioning	Intelligent Provisioning user guide https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks
Deploy an OS using iLO virtual media	iLO user guide https://www.hpe.com/support/hpeilodocs-quicklinks
Configure the server to boot from a PXE server	UEFI System Utilities User Guide for HPE Compute servers https://www.hpe.com/support/UEFIGen12-UG-en
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide https://www.hpe.com/info/boot-from-san-config-guide

Configuring security

To	See
Implement server security best practices.	• HPE Compute Security Reference Guide https://www.hpe.com/info/server-security-reference-en • HPE iLO 7 Security Technology Brief https://www.hpe.com/support/ilo7-security-en • HPE iLO 6 Security Technology Brief https://www.hpe.com/support/ilo6-security-en
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy https://www.hpe.com/info/server-config-lock-UG-en

Server management

To monitor	See
Single server	Depending on the server SKU, this server supports two DC-SCM options that correspond to different iLO ASIC versions. HPE iLO https://www.hpe.com/support/hpeilodocs-quicklinks
Multiple servers	HPE OneView https://www.hpe.com/support/hpeoneview-quicklinks
Single or multiple servers	HPE Compute Ops Management https://www.hpe.com/support/hpe-gl-com-quicklinks

Managing Linux-based high performance compute clusters

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

Troubleshooting

Subtopics

- NMI functionality
- Front panel LED power fault codes
- 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.

Front panel LED power fault codes

From 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
OCP adapter	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

Troubleshooting resources

If you need help troubleshooting, see the latest articles for your server.

https://www.hpe.com/info/dl380agen12-ts

Safety, warranty, and regulatory information

Subtopics

Regulatory information
Warranty information

Regulatory information

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

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

Additional regulatory information

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

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

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

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

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

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

Subtopics

- Notices for Eurasian Economic Union
- Turkey RoHS material content declaration
- Ukraine RoHS material content declaration

Notices for Eurasian Economic Union

EAC

Manufacturer and Local Representative Information

Manufacturer information:

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

Local representative information Russian:

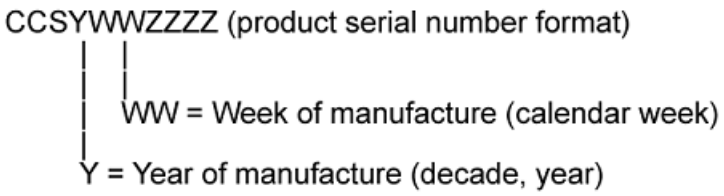
- **Russia**
  ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7,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

Local representative information Kazakh:

- **Russia**
  ЖШС "Хьюлетт Паккард Энтерпрайз", Ресей Федерациясы, 125171, Мәскеу, Ленинград тас жолы, 16А блок 3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы к., Бостандык ауданы, Әл-Фараби даңғ ылы, 77/7, Телефон/факс: +7 727 355 35 50

Manufacturing date:

The manufacturing date is defined by the serial number.



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

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

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

Warranty information

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

Specifications

Subtopics

- Environmental specifications
- Mechanical specifications
- Power supply specifications

Environmental specifications

Specifications	Value
Temperature range	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	Air-cooled systems: -30°C to 60°C (-22°F to 140°F) Liquid-cooled systems (DLC, CLLC): -10 °C to 60°C (14°F to 140°F) **CAUTION:** To prevent freezing the coolant and damaging the liquid cooling module, do not keep the liquid-cooled systems below -10°C (14°F).
Relative humidity (noncondensing)	—
Operating	8% to 90% 28°C (82.4°F) maximum wet bulb temperature, noncondensing
Nonoperating	5% to 95% 38.7°C (101.7°F) maximum wet bulb temperature, noncondensing
Altitude	—
Operating	3050 m (10,000 ft) This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).
Nonoperating	9144 m (30,000 ft) Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).

Standard operating support

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

System performance under standard operating support might be reduced if operating above 30°C (86°F) or with a faulty fan installed.

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 HPE Gen12 Servers: **https://www.hpe.com/support/ASHRAEGen12**

Mechanical specifications

Specification	Value
Dimensions	—
Height	17.47 cm (6.88 in)
Depth—From the back of the chassis ear to the rear I/O	80.26 cm (31.60 in)
Depth—From the external front fan cage to the rear I/O	87.61 cm (34.49 in)
Width	44.78 cm (17.63 in)
Weight, approximate values	—
Weight, minimum	37.51 kg (82.70 lb)
Weight, maximum	60.24 kg (132.81 lb)
Weight, maximum—When the external front fan cage is installed	62.50 kg (137.79 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 1500 W M-CRPS Titanium Hot-plug Power Supply
HPE 2400 W M-CRPS Titanium Hot-plug Power Supply
HPE 3200 W M-CRPS Titanium Hot-plug Power Supply

HPE 1500 W M-CRPS Titanium Hot-plug Power Supply

Specification	Value
Energy efficiency certification	80 Plus Titanium, 96%
Input requirements	—
Rated input voltage	Low-line input voltage: 100 VAC to 110 VAC Low-line input voltage: 110 VAC to 120 VAC High-line input voltage: 200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz
Rated input current	12 A at 100 VAC 12 A at 110 VAC 9 A at 200 VAC
Maximum rated input power	1000 W at 100 VAC 1100 W at 110 VAC 1500 W at 200 VAC
BTUs per hour	3792 at 100 VAC 5560 at 200 VAC
Power supply output	—
Rated steady-state power	Low-line input voltage: 1000 W at 100 VAC to 110 VAC Low-line input voltage: 1100 W at 110 VAC to 120 VAC High-line input voltage: 1500 W at 200 VAC to 240 VAC input
Maximum peak power	1000 W at 100 VAC to 110 VAC 1100 W at 110 VAC to 120 VAC 1500 W at 200 VAC to 240 VAC input
Dimensions	—
Height	40.00 mm (1.57 in)
Depth	185.00 mm (7.28 in)
Width	60.00 mm (2.36 in)

HPE 2400 W M-CRPS Titanium Hot-plug Power Supply

Specification	Value
Energy efficiency certification	80 Plus Titanium, 96%
Input requirements	—
Rated input voltage	Low-line input voltage: 100 VAC to 127 VAC High-line input voltage: 200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz
Rated input current	14.5 A at 100 to 127 VAC 14.5 A at 200 to 240 VAC
Maximum rated input power	1251 W at 100 VAC 1239 W at 120 VAC 1236 W at 127 VAC 2512 W at 200 VAC 2510 W at 208 VAC 2503 W at 230 VAC 2500 W at 240 VAC 2503 W at 240 VDC
BTUs per hour	4268 at 100 VAC 4228 at 120 VAC 4219 at 127 VAC 8572 at 200 VAC 8563 at 208 VAC 8540 at 230 VAC 8532 at 240 VAC 8539 at 240 VDC
Power supply output	—
Rated steady-state power	Low-line input voltage: 1200 W at 100 VAC to 127 VAC High-line input voltage: 2400 W at 200 VAC to 240 VAC input
Maximum peak power	1200 W at 100 VAC to 127 VAC 2400 W at 200 VAC to 240 VAC input
Dimensions	—
Height	40.00 mm (1.57 in)
Depth	185.00 mm (7.28 in)
Width	73.50 mm (2.89 in)

HPE 3200 W M-CRPS Titanium Hot-plug Power Supply

Specification	Value
Energy efficiency certification	80 Plus Titanium, 96%
Input requirements	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz
Rated input current	16 A at 100 VAC to 127 VAC 16 A at 200 VAC to 240 VAC
Maximum rated input power	1504 W at 100 VAC 1727 W at 120 VAC 1723 W at 127 VAC 3100 W at 200 VAC 3207 W at 208 VAC 3433 W at 230 VAC 3429 W at 240 VAC 3436 W at 240 VDC
BTUs per hour	5132 at 100 VAC 5894 at 120 VAC 5878 at 127 VAC 10577 at 200 VAC 10941 at 208 VAC 11713 at 230 VAC 11699 at 240 VAC 11724 at 240 VDC
Power supply output	—
Rated steady-state power	1600 W at 100 VAC to 127 VAC 3200 W at 200 VAC to 240 VAC input
Maximum peak power	1600 W at 100 VAC to 127 VAC 3200 W at 200 VAC to 240 VAC
Dimensions	—
Height	40.00 mm (1.57 in)
Depth	185.00 mm (7.28 in)
Width	73.50 mm (2.89 in)

Websites

General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

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

Product white papers and analyst reports

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

For additional websites, see Support and other resources.

Product websites

HPE ProLiant Compute DL380a Gen12 user documents

https://www.hpe.com/info/dl380agen12-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/completecare

Documentation feedback

Hewlett Packard Enterprise is committed to providing documentation that meets your needs. To help us improve the documentation, use the Feedback button and icons (at the bottom of an opened document) on the Hewlett Packard Enterprise Support Center portal (https://www.hpe.com/support/hpesc) to send any errors, suggestions, or comments. This process captures all document information.