Hewlett Packard Enterprise

HPE ProLiant Compute DL580 Gen12 User Guide

Part Number: 30-49B70A45-001a
Published: September 2025
Edition: 1a

HPE ProLiant Compute DL580 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.

Part Number: 30-49B70A45-001a
Published: September 2025
Edition: 1a

Notices

Acknowledgments

Table of contents

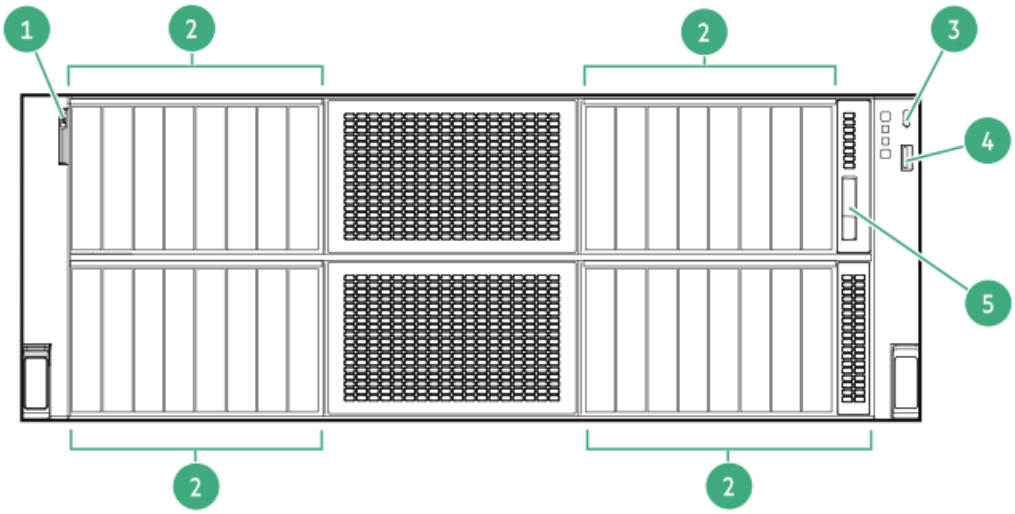
Component identification

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

Subtopics

Front panel components

SFF drive configuration

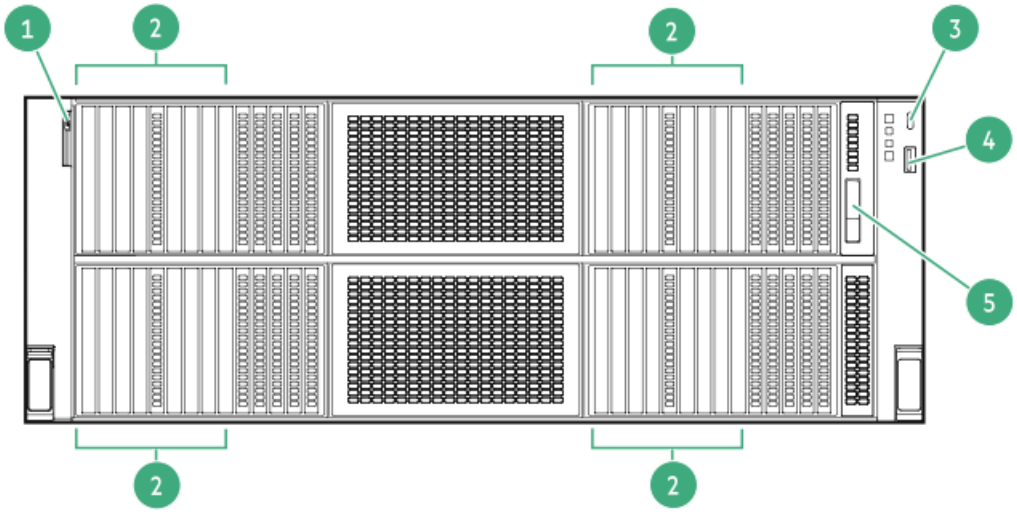


Item	Description
1	Serial number/ iLO information pull tab [1]
2	SFF drives [2]
3	iLO service port
4	USB 3.2 Gen 1 port
5	System Insight Display (optional)

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 SAS, SATA, or U.3 NVMe drives .

E3.S drive configuration

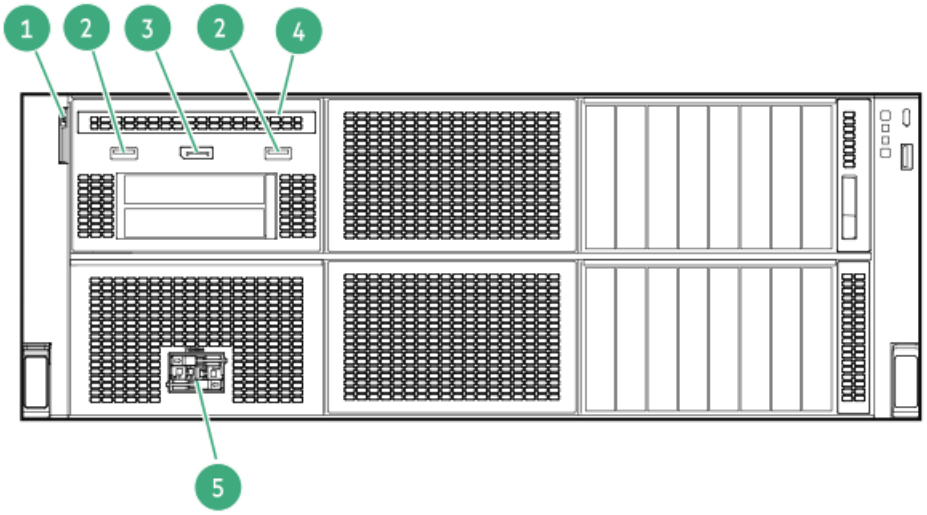


Item	Description
1	Serial number/ iLO information pull tab [1]
2	E3.S drives
3	iLO service port
4	USB 3.2 Gen 1 port
5	System Insight Display (optional)

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 SFF + NS204i-u drive configuration

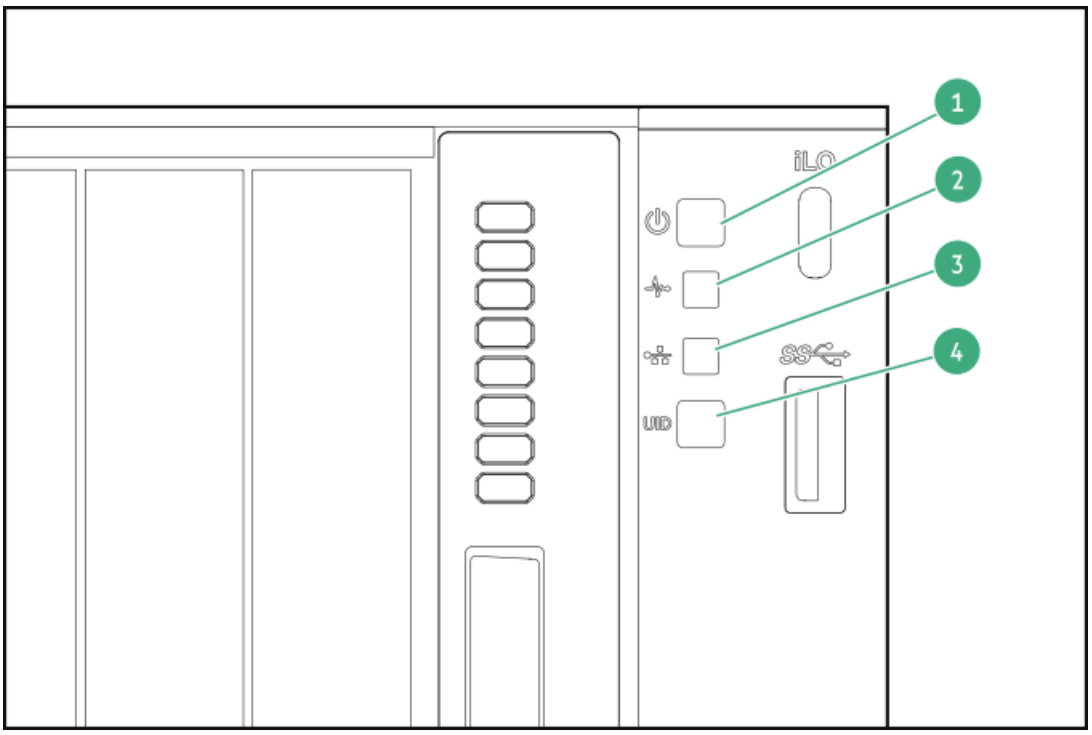
The universal media bay and the NS204i-u boot device are located in the same positions in both SFF and E3.S drive configurations.



Item	Description
1	Serial number/ iLO information pull tab [1]
2	USB 2.0 ports
3	DisplayPort 1.1a
4	Optical drive bay
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.

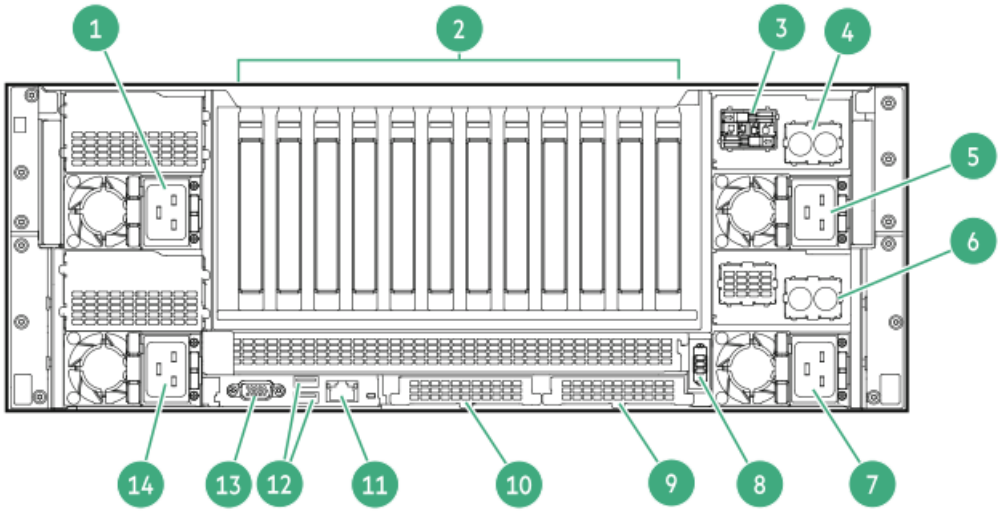
Front panel LEDs and button



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.

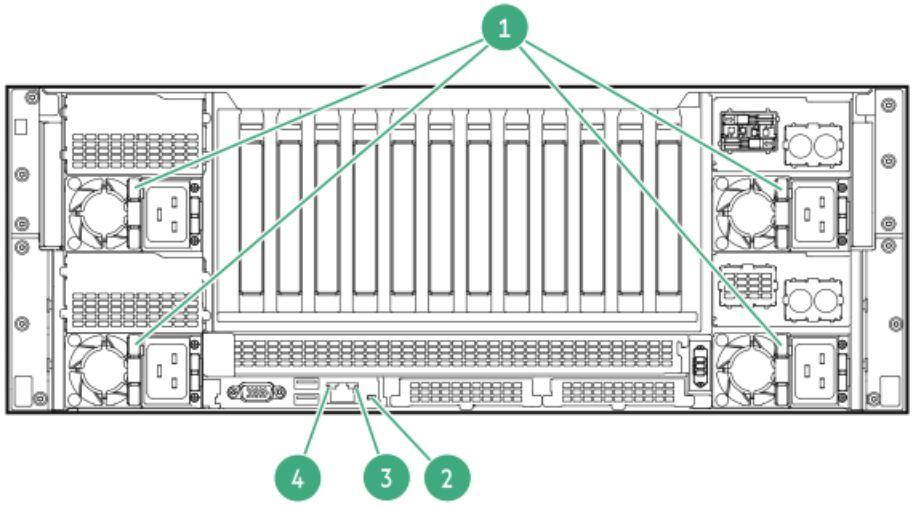
Rear panel components



Item	Description
1	M-CRPS [1] 4 (dedicated to mezzanine board - optional)
2	Slots 1-12 PCIe5 (from left to right)
3	NS204i-u device (optional)
4	Direct liquid cooling water hoses 2 (dedicated to mezzanine board - optional)
5	M-CRPS 3 (dedicated to mezzanine board - optional)
6	Direct liquid cooling water hoses 1 (dedicated to system board - optional)
7	M-CRPS 1
8	ix port [2] (optional)
9	Slot 15 OCP B PCIe5 ×8/×16 [3]
10	Slot 14 OCP A PCIe5 ×8/×16 (optional)
11	iLO dedicated network port [4]
12	USB 3.2 Gen 1 ports [4]
13	VGA port [4]
14	M-CRPS 2

1 Modular hardware system common redundant power supply
2 The ix port connects to an external serial port dongle.
3 Slot 15 supports ×8 bandwidth by default. To enable ×16 configuration, install the OCP bandwidth upgrade cable option .
4 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.

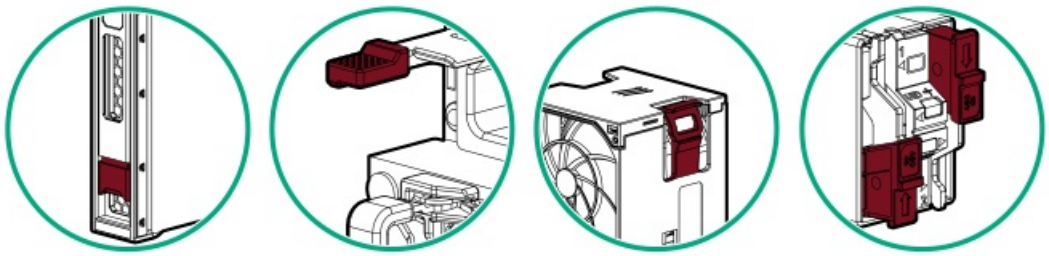
Component touchpoints

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

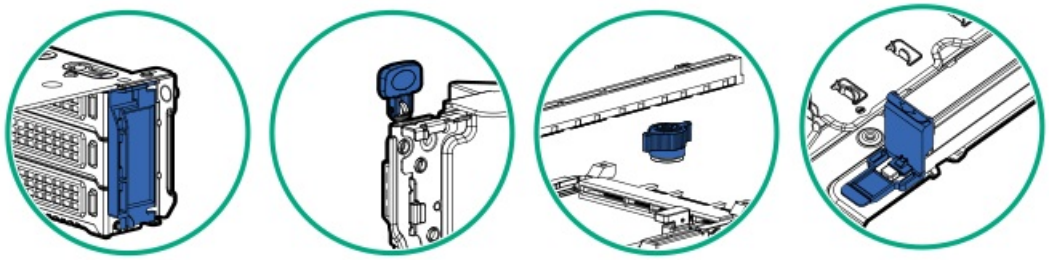


Hot-plug red indicates hot-pluggable components. These components can be removed and installed while the system is running, and doing so will not result in a system shutdown.

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

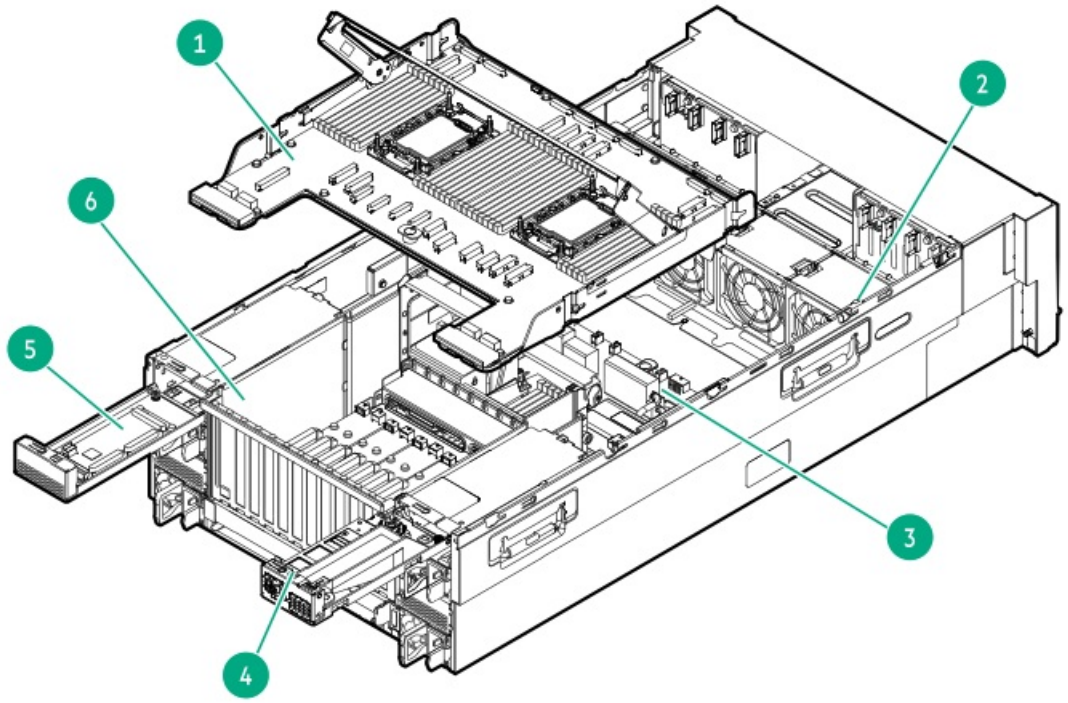


Touchpoint blue indicates cold-pluggable components. These components require a system shutdown. Failure to do so might result in system failure or data loss. Cold-pluggable components might also indicate touchpoints on non-electrical components.

Component examples:

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

Internal components

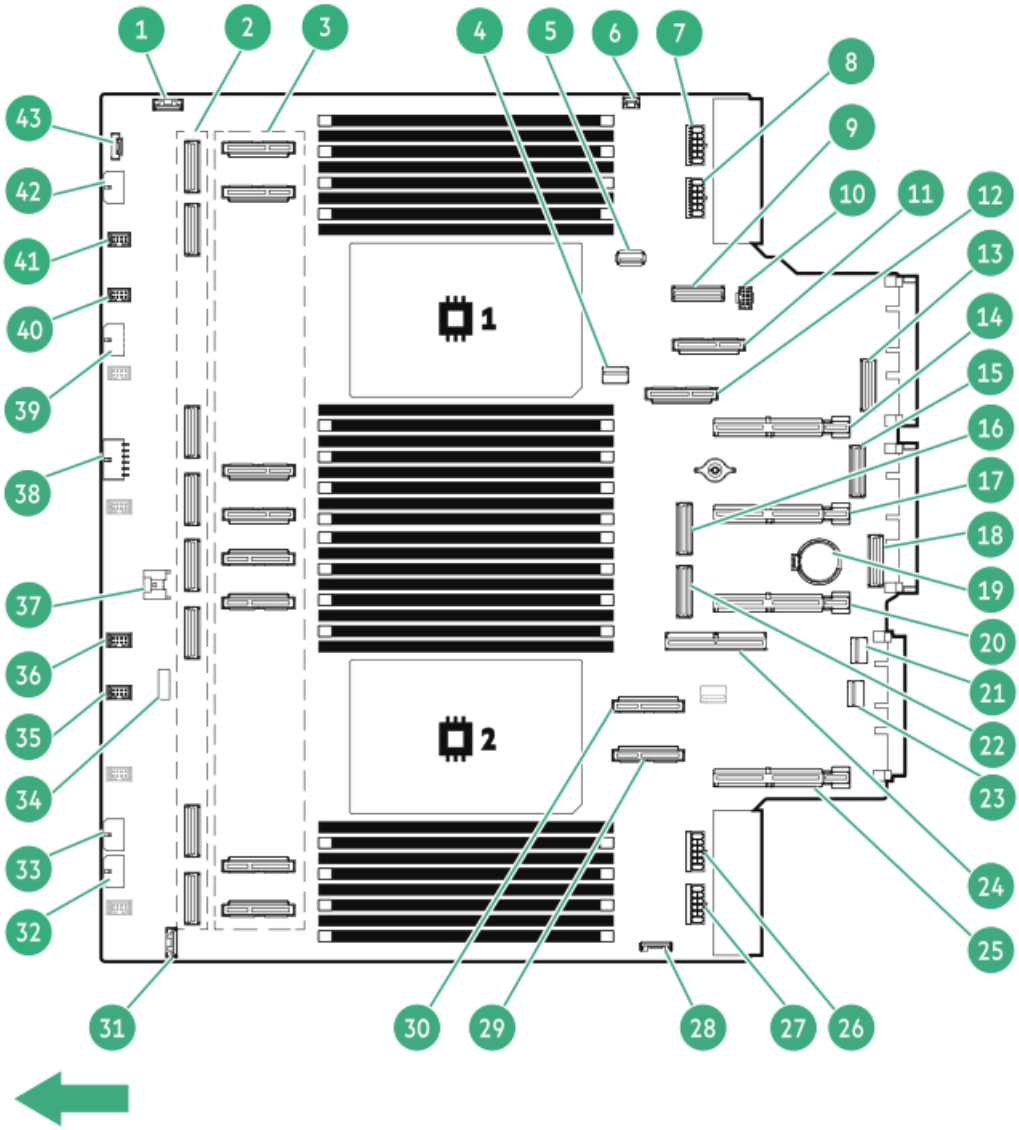


Item	Description
1	Processor mezzanine tray
2	Fan cage
3	System board
4	HPE NS204i-u Boot Device V2 (optional)
5	Sideband board
6	GPU cage

System board components

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

The arrow points to the front of the server.



Item	Description
1	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

Item	Description
18	M-XIO OCP port A-2
19	System battery
20	PCIe5 x16 riser connector 4
21	USB 2.0 / DisplayPort cable connector
22	M-XIO port 13
23	Front I/O connector
24	Sideband signal connector 1
25	PCIe5 x16 riser connector 6
26	M-PIC power connector 3
27	M-PIC power connector 4
28	SID connector
29	UPI connector 8
30	UPI connector 7
31	Storage backup power connector 2
32	Box 6: Drive backplane power connector
33	Box 3: Drive backplane power connector
34	System maintenance switch
35	Fan connector 6
36	Fan connector 5
37	Energy pack connector
38	M-PIC power connector 5
39	Box 4: Drive backplane power connector
40	Fan connector 2
41	Fan connector 1
42	Box 1: Drive backplane power connector
43	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

Position	Default	Function
S1	Off	• Off—iLO 7 security is enabled. • On—iLO 7 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.

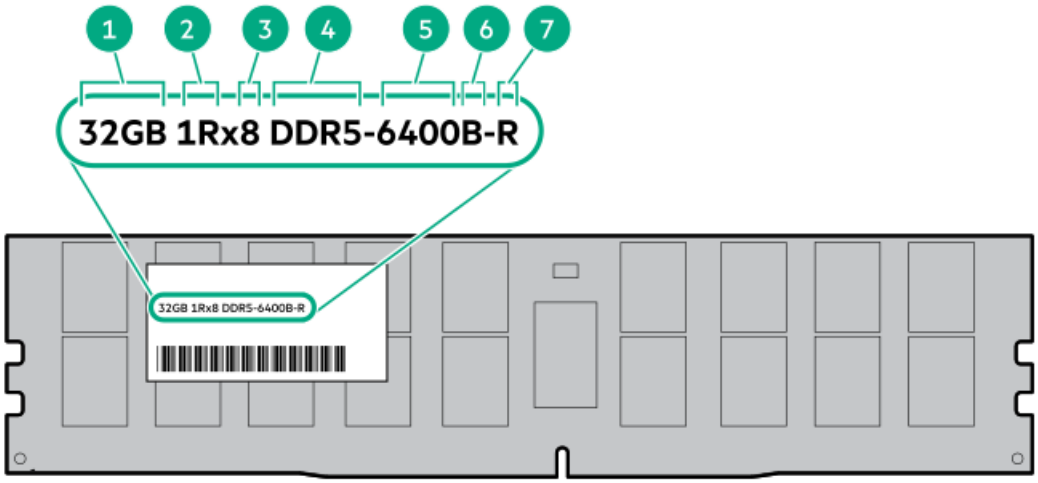
[2] When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see Configuring the server.

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

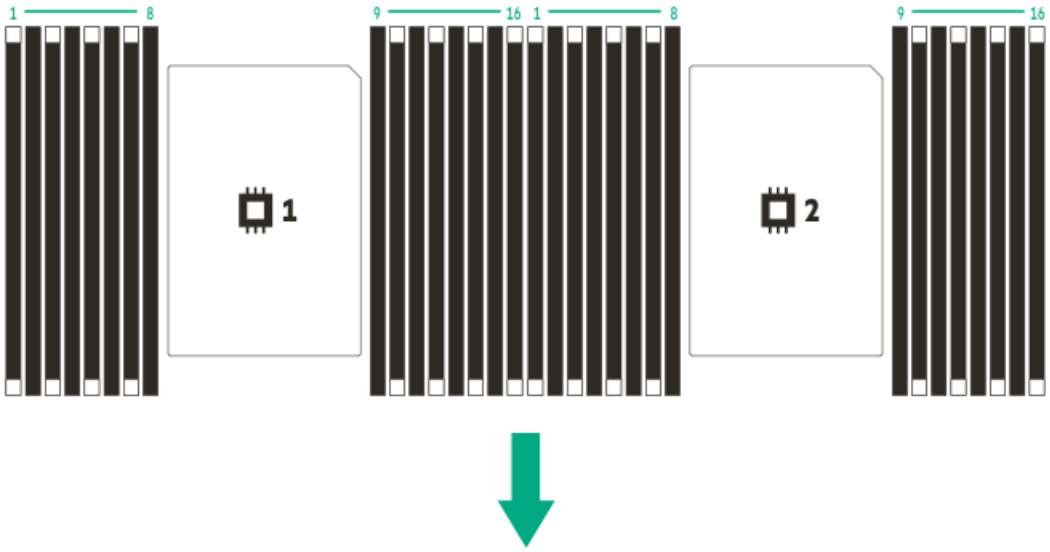


Item	Description	Example
1	Capacity*	16 GB
		32 GB
		64 GB
		96 GB
		128 GB
		256 GB
2	Rank	1R—Single rank
		2R—Dual rank
		4R—Quad rank
3	Data width on DRAM	x4—4-bit
		x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed*	6400 MT/s
6	CAS latency	B—42-42-42
7	DIMM type	R—RDIMM (registered)

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

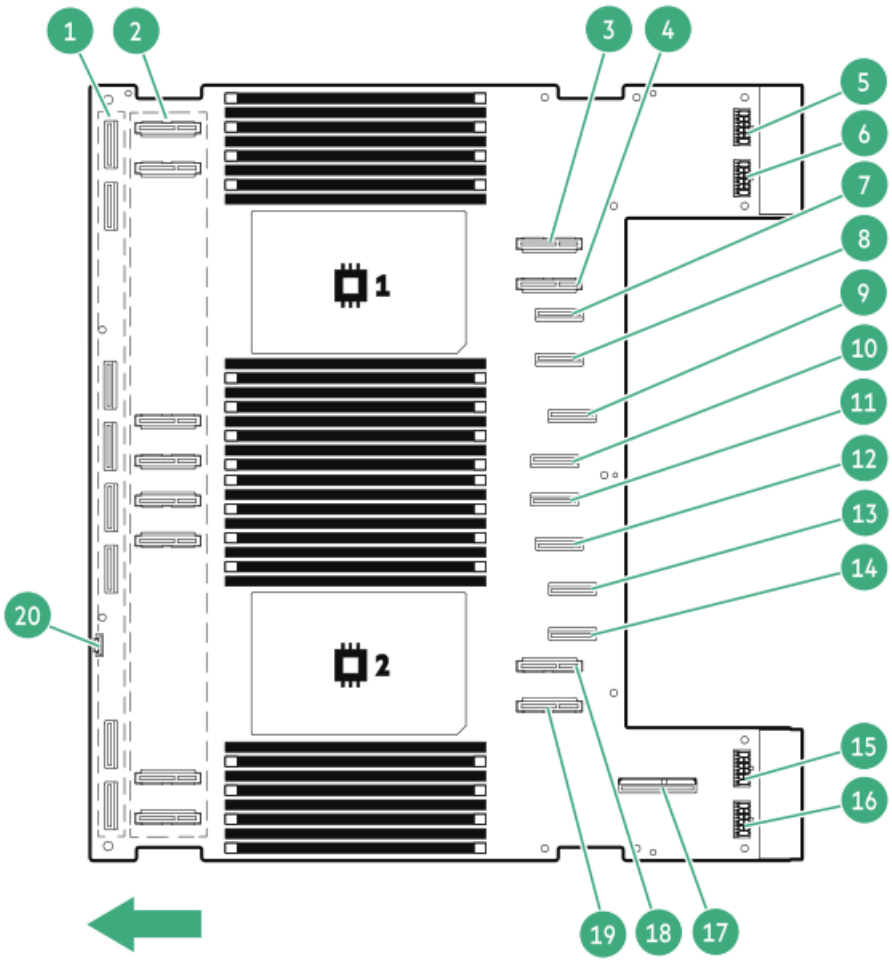
DIMM slot numbering

The arrow points to the front of the server.



Processor mezzanine board components

The arrow points to the front of the server.



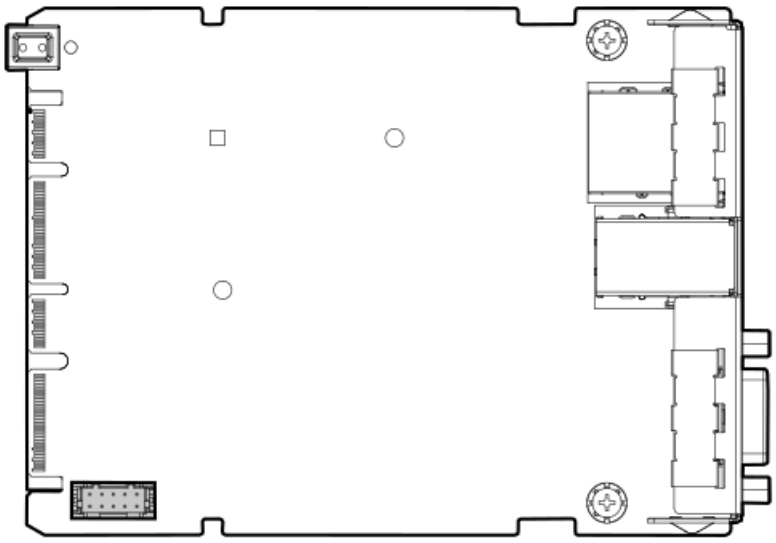
Item	Description
1	M-XIO ports [1]
2	UPI connectors [2]
3	UPI connector 1
4	UPI connector 2
5	M-PIC power connector 1
6	M-PIC power connector 2
7	MCIO port 10
8	MCIO port 8
9	MCIO port 12
10	MCIO port 14
11	MCIO port 15
12	MCIO port 13
13	MCIO port 11
14	MCIO port 9
15	M-PIC power connector 3
16	M-PIC power connector 4
17	Sideband signal connector
18	UPI connector 7
19	UPI connector 8
20	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.

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.

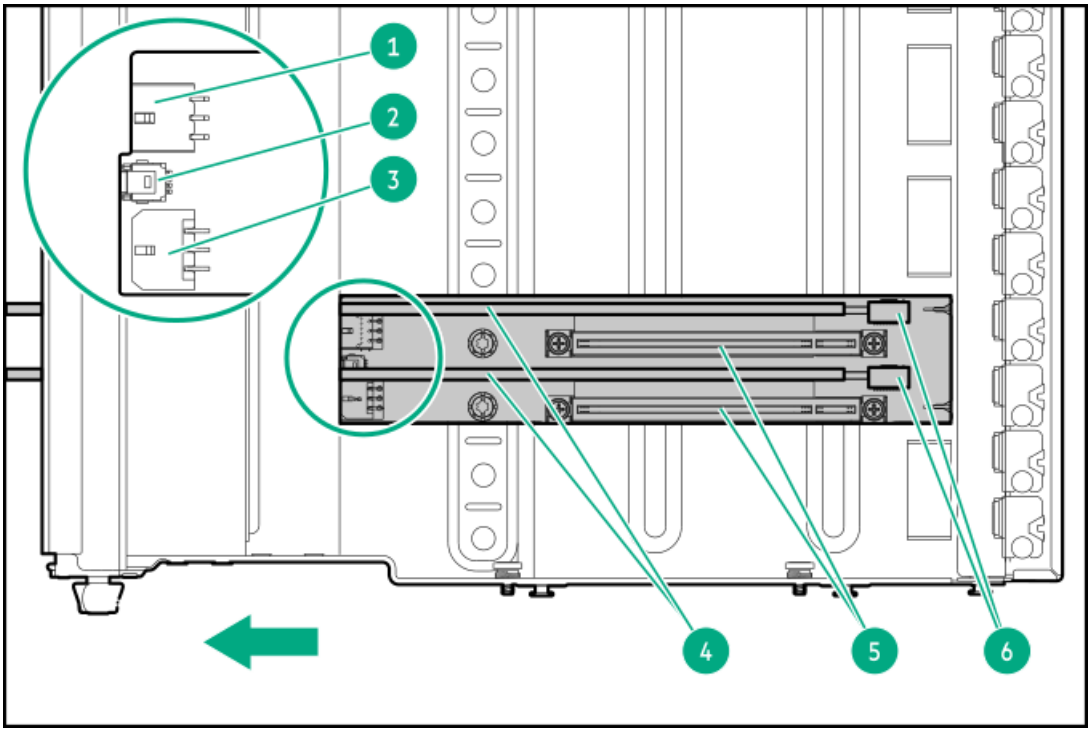


Riser board components

Two-slot PCIe x16 captive riser has its signal cable option that attached a PCIe slot. Each riser supports up to two slots.

Depending on the processor configuration, the server supports three captive risers in the two-processor configuration, or six captive risers in the four-processor configuration.

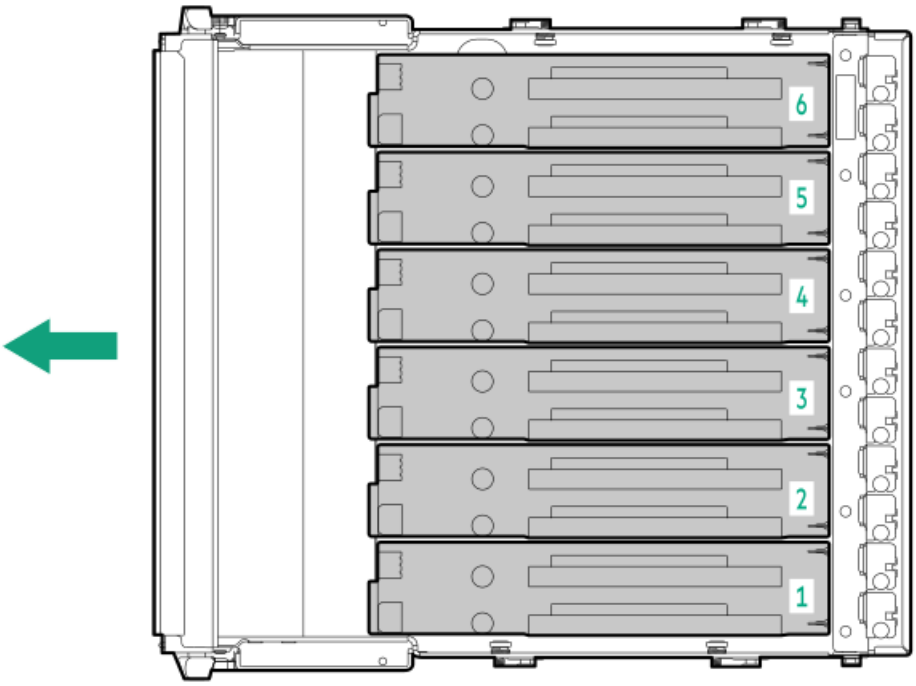
The arrow points to the front of the server.



Item	Description	Supported form factors
1	Captive riser power connector	—
2	GPU sideband connector	—
3	Captive auxiliary power connector	—
4	Captive riser cable	—
5	PCIe5 x16 (16, 8, 4, 2)	• Double-width, full-height, full-length • Single-width, half-height, half-length (low-profile)
6	PCIe slots sideband signal connectors	—

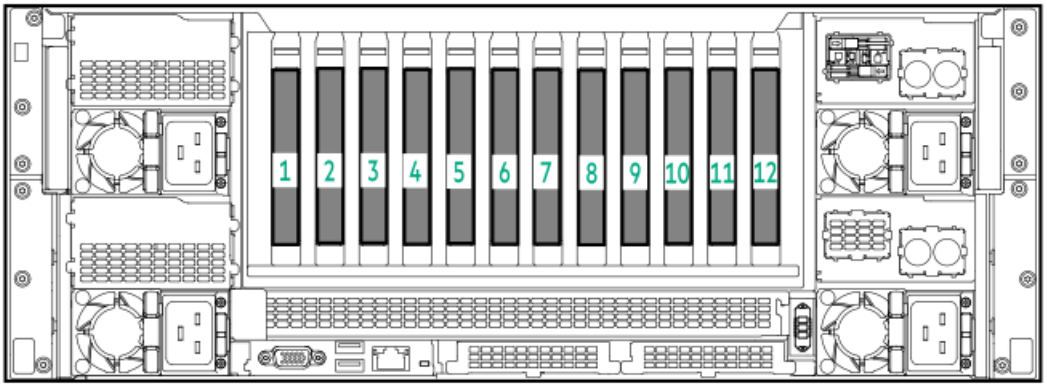
PCIe riser numbering

The arrow points to the front of the server.



PCIe riser slot numbering

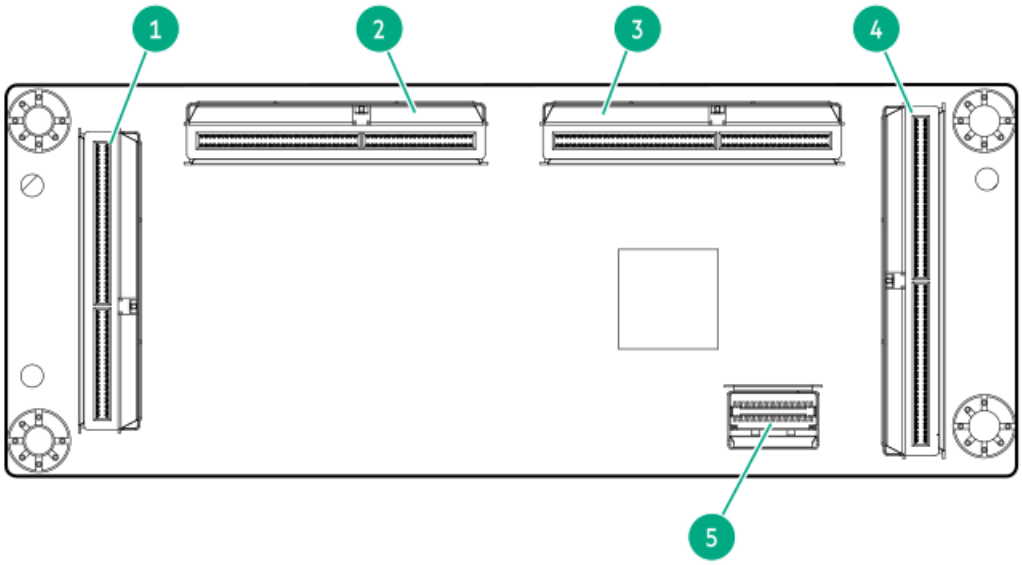
All captive riser slots are PCIe5 x16 (16, 8, 4, 2) and are rated for a maximum power draw of 75 W each.



Slot number	Supported hardware components	Supported form factors
1, 2, 11, 12	• Type-p storage controller • OCP NIC adapter	• Full-height, half-length • Half-height, half-length (low-profile)
3-10	• Type-p storage controller • OCP NIC adapter	• Full-height, full-length • Full-height, half-length Half-height, half-length (low-profile)

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

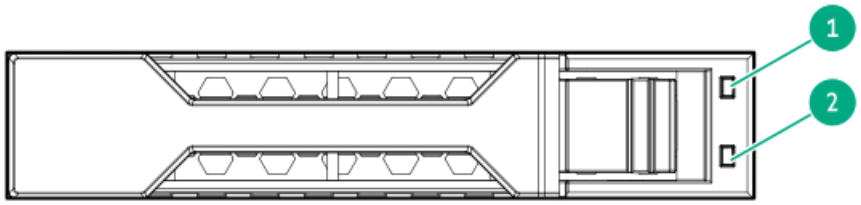
HPE Basic Drive LED definitions

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 SAS, SATA, or U.3 NVMe drives .

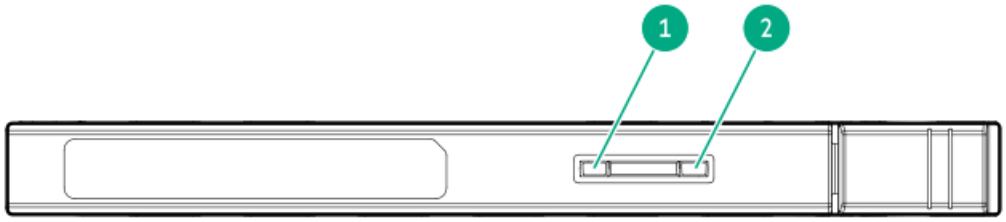


Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has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

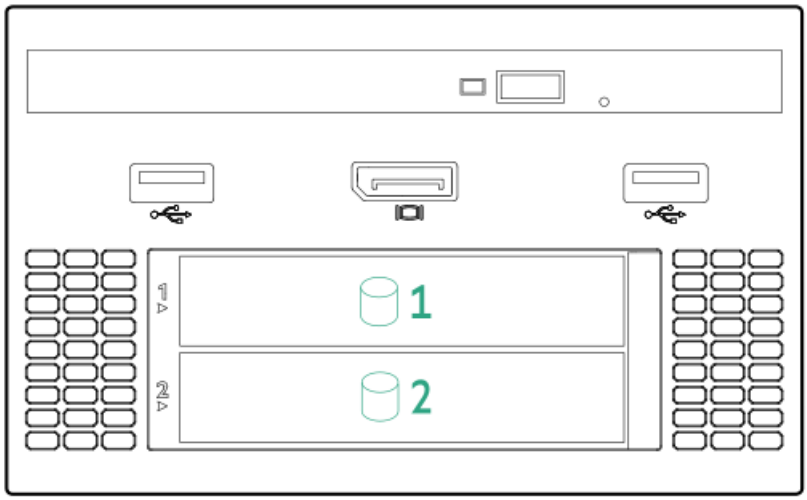
SFF drive bay numbering

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

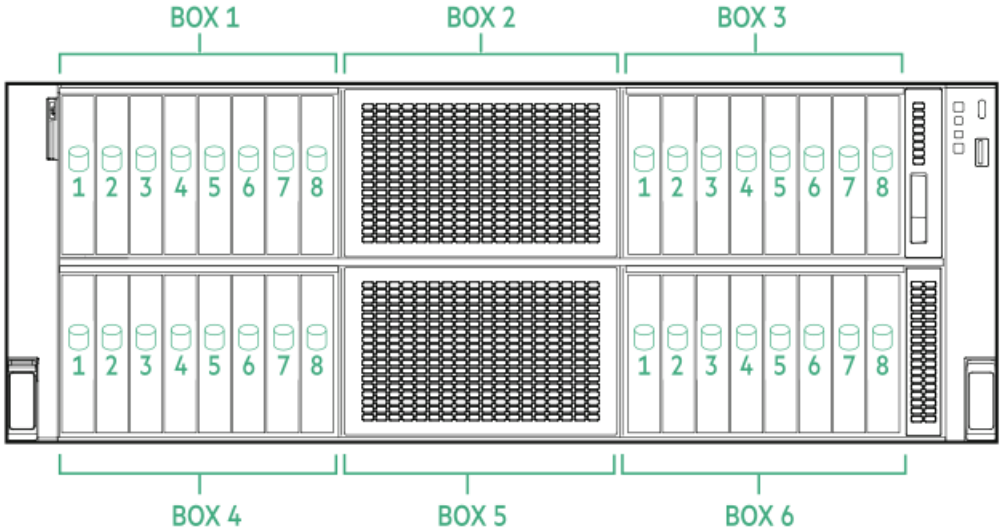
- 2 SFF, stacked:
  - 24G x4 U.3 NVMe / SAS UBM3 BC
  - 24G x4 U.3 NVMe / SAS UBM6 BC
- 8 SFF:
  - 8 SFF 24G x1 U.3 NVMe / SAS UBM3 BC
  - 8 SFF 24G x1 U.3 NVMe / SAS UBM6 BC
  - 8 SFF 24G x4 U.3 NVMe / SAS UBM3 BC
  - 8 SFF 24G x4 U.3 NVMe / SAS UBM6 BC

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

2 SFF stacked drive bay numbering



8/16/24/32 SFF drive bay numbering

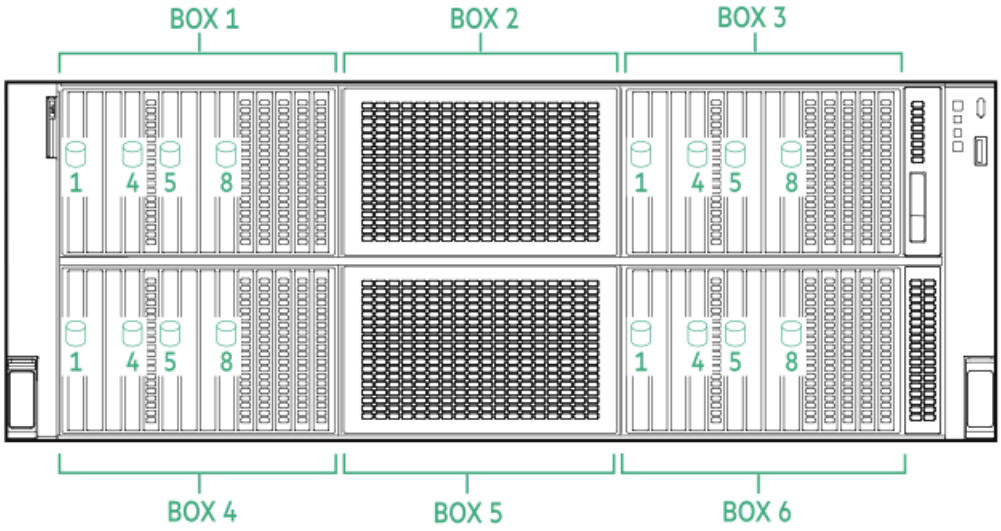


E3.S drive bay numbering

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.

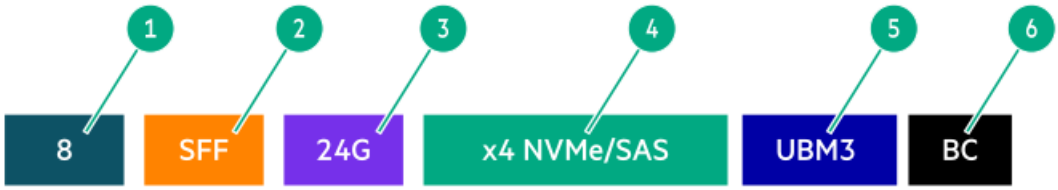
8/16/24/32 E3.S drive bay numbering



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.



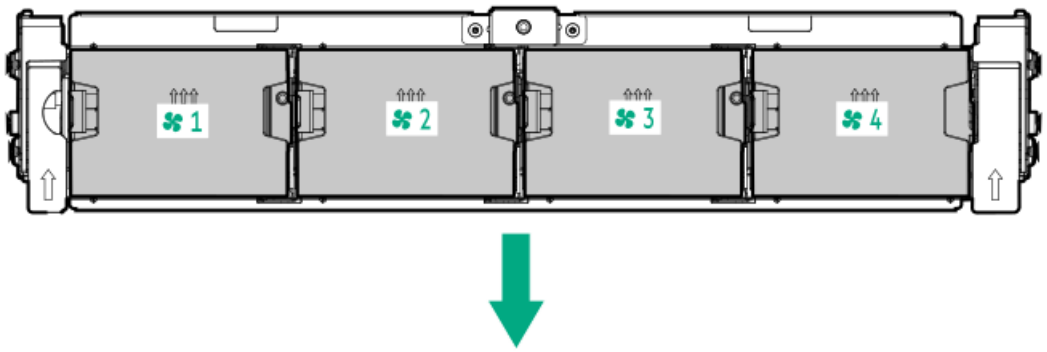
Item	Description	Values
1	Drive bay count	Number of drive bays supported by the backplane.
2	Drive form factor	LFF—Large Form Factor
		SFF—Small Form Factor
		E3S—Enterprise and Datacenter Standard Form Factor (EDSFF E3.S)
3	Maximum link rate per lane (GT/s)	12G
		16G
		24G
		32G
4	Port link width and 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.

Fan numbering

To provide sufficient airflow to the system, the server is default populated by four dual-rotor fans.

The arrow points to the front of the server.



Subtopics

Fan mode behavior

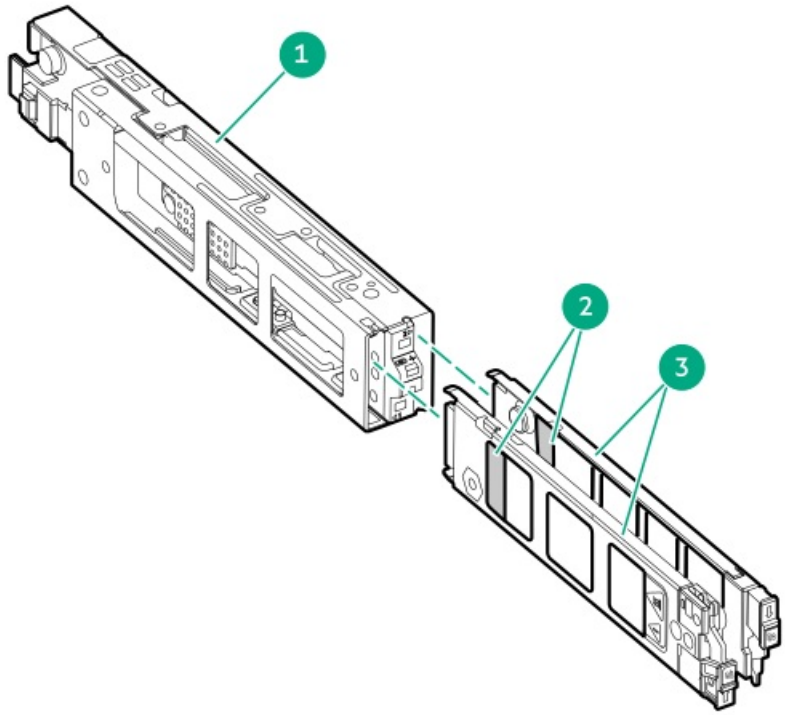
Fan mode behavior

The default four fans that contain eight rotors 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.

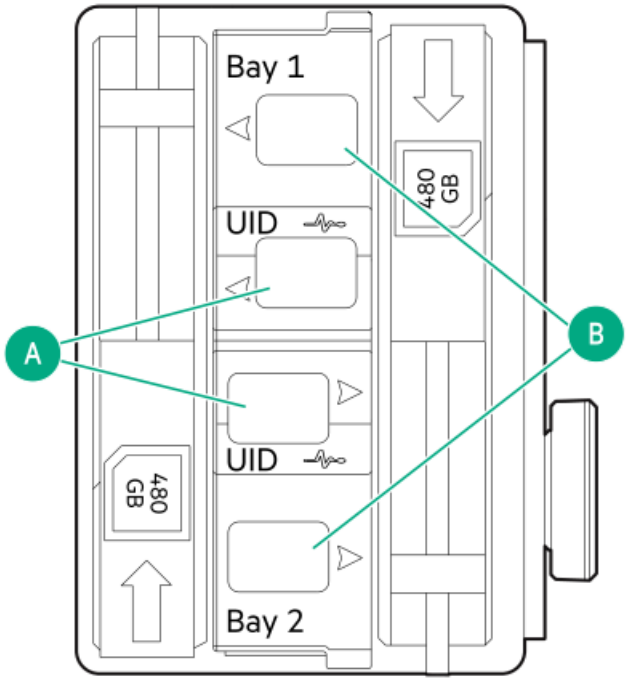
If a second fan rotor failure or a missing fan occurs, the operating system gracefully shuts down.

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.

System Insight Display LEDs

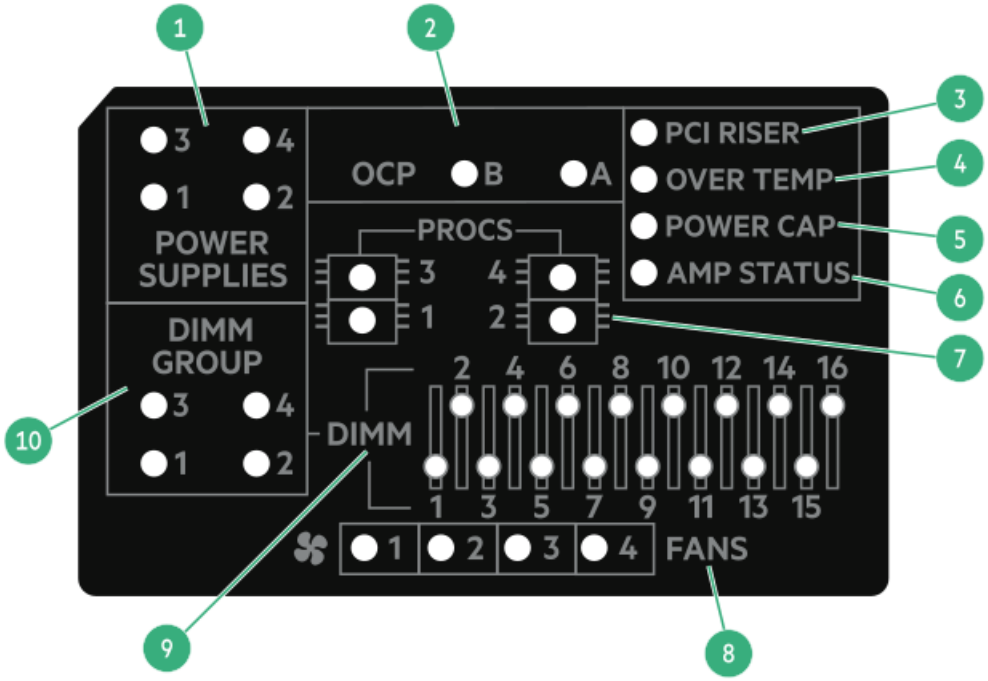
The System Insight Display (SID) LEDs represent components on the system board. The display enables component issue diagnosis even with the access panel installed.

IMPORTANT

If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

For information about memory population rules, see the relevant memory technical paper in:

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



Item	LED	Status	Description
1	Power supply LEDs	Off	Normal
		Solid amber	One or more of the following conditions exit: • Power subsystem degraded • Power supply failure • Input power lost
2	OCP LEDs	Solid green	Network link
		Flashing green	Network active
		Off	No network link
3	PCI riser LED	Off	Normal
		Solid amber	Incorrectly installed PCI riser cage
4	Over temp LED	Off	Normal
		Solid amber	High system temperature detected
5	Power cap LED	Solid green	Power cap applied
		Off	One or more of the following conditions exit: • System is in standby • No cap is set
6	AMP [1]	Solid green	AMP mode enabled
		Solid amber	Failover
		Flashing amber	Invalid configuration
		Off	AMP modes disabled
7	Processor LED	Off	Normal
		Solid amber	Failed processor
8	Fan LEDs	Off	Normal
		Solid amber	Failed fan or missing fan
9	DIMM LEDs	Off	Normal
		Solid amber	Failed DIMM or configuration issue
10	DIMM group LEDs	Off	Normal
		Solid amber	Failed DIMM group or configuration issue

[1] To enable Advanced Memory Protection (AMP), see the UEFI user guide (**https://www.hpe.com/support/hpeuefisystemutilities-quicklinks**).

When the health LED on the front panel illuminates either amber or red, the server is experiencing a health event. For more information on the combination of these LEDs, see System Insight Display combined LED descriptions.

System Insight Display combined LED descriptions

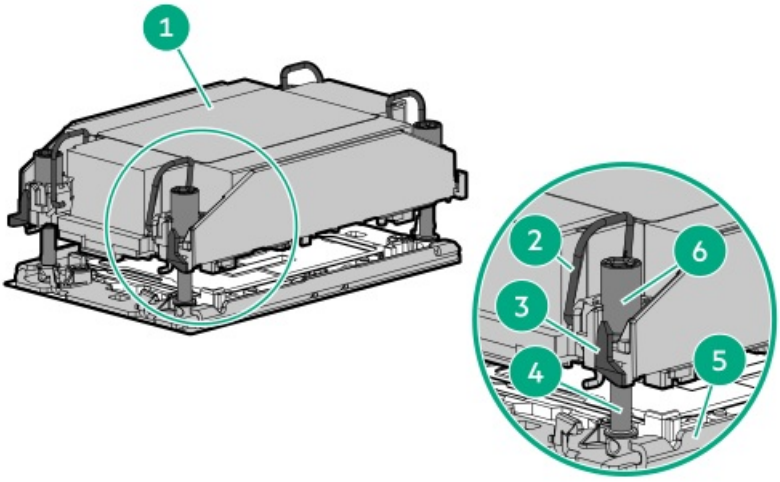
The combined illumination of the following LEDs indicates a system condition:

- SID LEDs
- System power LED
- Health LED

SID LED status	Health LED status	System power LED status	Definition
Power supply (solid amber)	Flashing red	Solid amber	One or more of the following conditions exist: • Only one power supply is installed and that power supply is in standby. • Power supply fault. • System board fault.
	Flashing amber	Solid green	One or more of the following conditions exist: • Redundant power supply is installed and only one power supply is functional. • AC power cord is not plugged into redundant power supply. • Redundant power supply fault. • Power supply mismatch at POST or power supply mismatch through hot-plug addition.
PCI riser (solid amber)	Flashing red	Solid green	The PCI riser cage is not seated properly.
Over temp (solid amber)	Flashing amber	Solid green	The Health Driver has detected a cautionary temperature level.
	Flashing red	Solid amber	The server has detected a hardware critical temperature level.
Power cap (solid green)	—	Solid green	Power is available.
Power cap (solid green)	—	Flashing green	Waiting for power
Power cap (flashing amber)	—	Solid amber	Power is not available.
Power cap (off)	—	Solid amber	Standby
Processor (solid amber)	Flashing red	Solid amber	One or more of the following conditions might exist: • Processor in socket X has failed. • Processor X is not installed in the socket. • Processor X is unsupported. • ROM detects a failed processor during POST.
	Flashing amber	Solid green	Processor in socket X is in a pre-failure condition.
Fan (solid amber)	Flashing amber	Solid green	One fan has failed or has been removed.
	Flashing red	Solid green	Two or more fans have failed or been removed.
DIMM (solid amber)	Flashing red	Solid green	One or more DIMMs have failed.
	Flashing amber	Solid green	DIMM in slot X is in a pre-failure condition.

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

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

   For remote management, use the iLO virtual power button.
6. Configure the initial server setup.
7. Set up the storage.
8. Deploy an OS or virtualization software.
9. After the OS is installed, update the drivers.
10. Register the server.

Operational requirements

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

- Space and airflow requirements
- Temperature requirements
- Power requirements
- Electrical grounding requirements

For environmental requirements, see Environmental specifications.

Subtopics

Space and airflow requirements

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 38.77 kg (85.47 lb). When all components are installed, the server can weigh up to 48.75 kg (107.49 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 38.77 kg (85.47 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

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 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

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.

Fan mode behavior

The default four fans that contain eight rotors provide redundant fan support. In redundant fan mode, if a fan rotor fails:

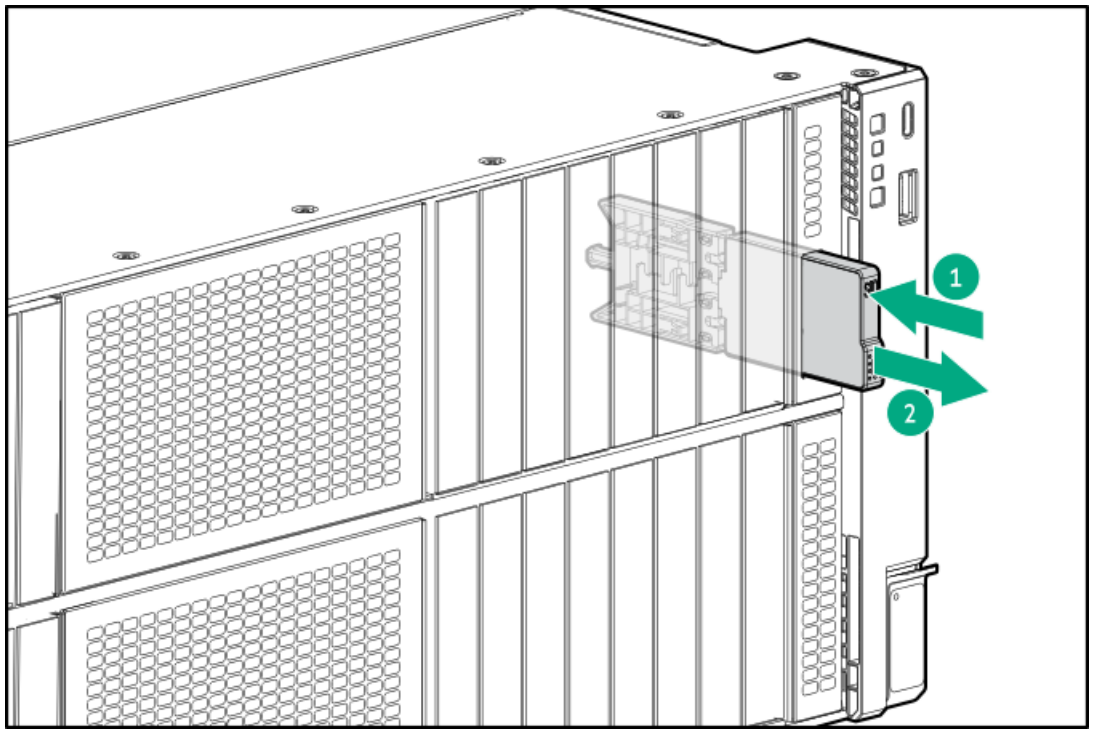
- The system switches to nonredundant fan mode. The system continues to operate in this mode.
- The system health LED flashes amber.

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

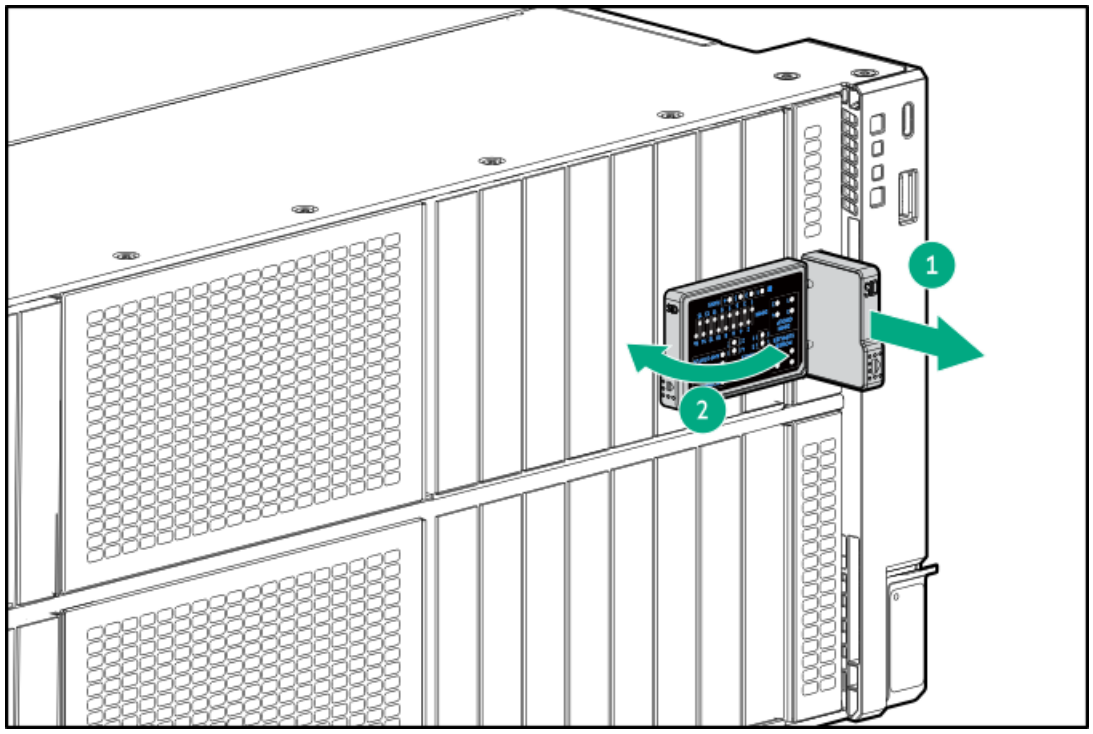
Access the Systems Insight Display

Procedure

1. Press and release the SID panel.



2. After the display fully ejects, rotate the display to view the LEDs.



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

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

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 7.
  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.

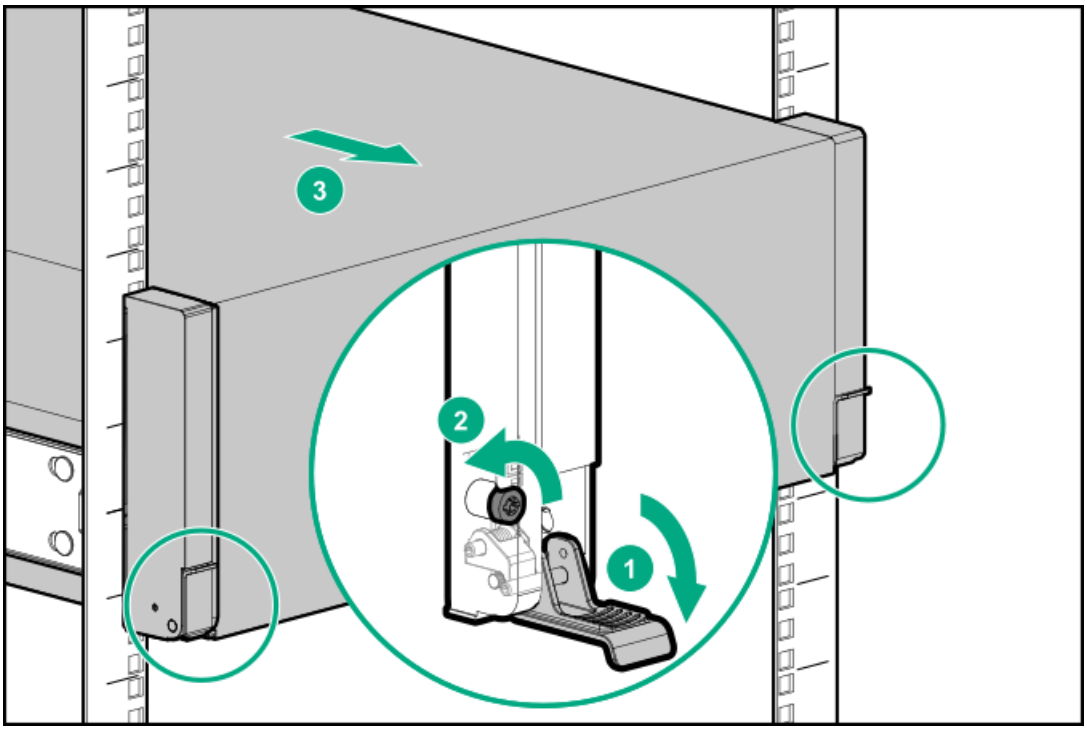
About this task

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

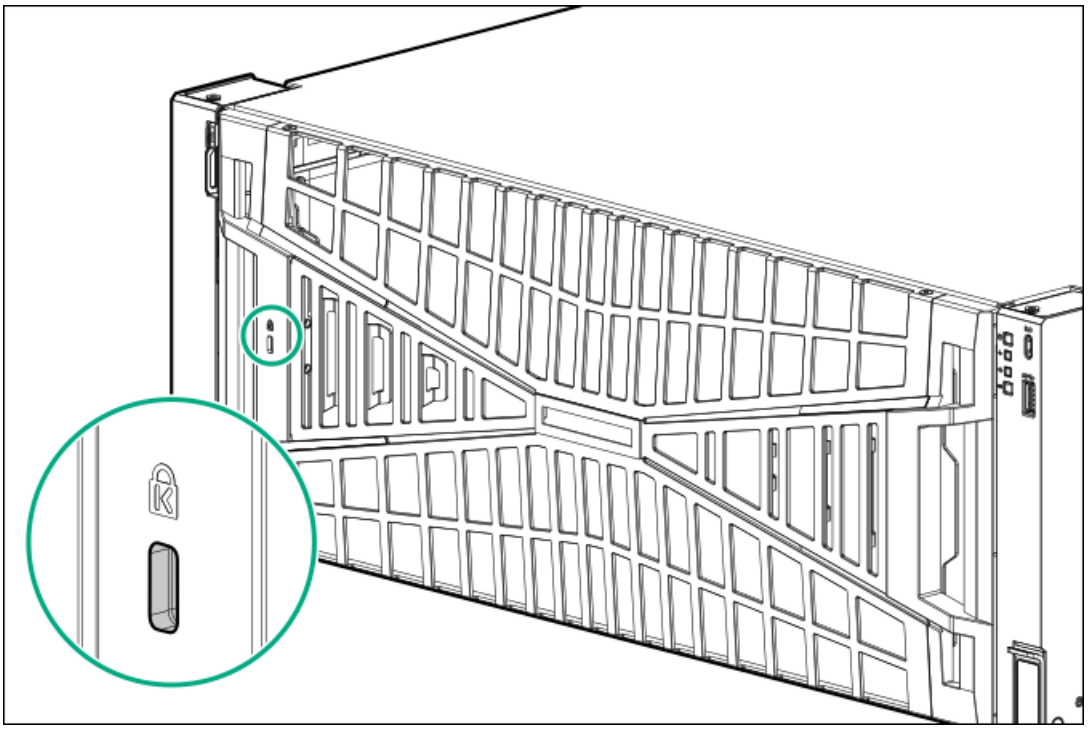
About this task

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.

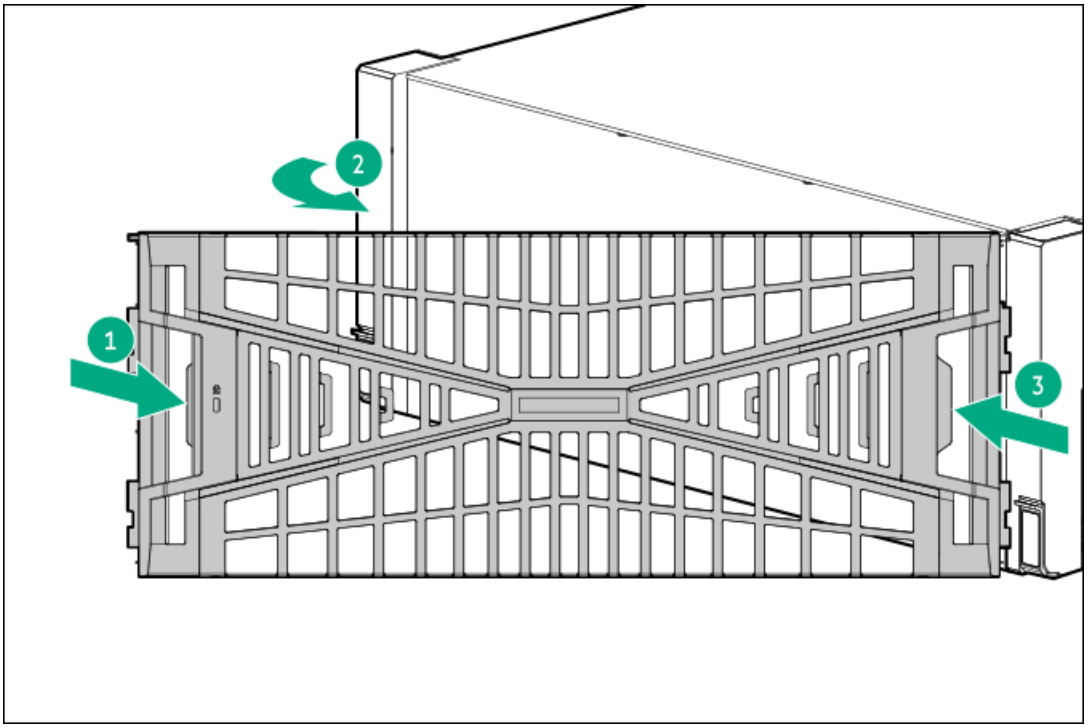
Procedure

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

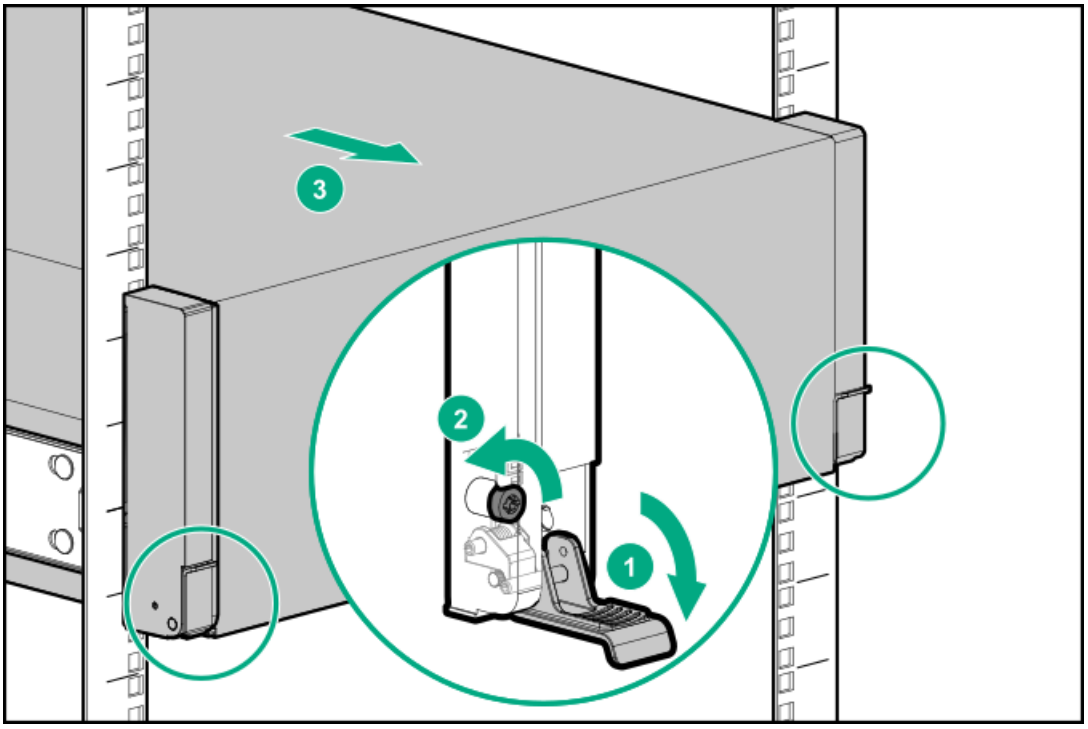
Prerequisites

- 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

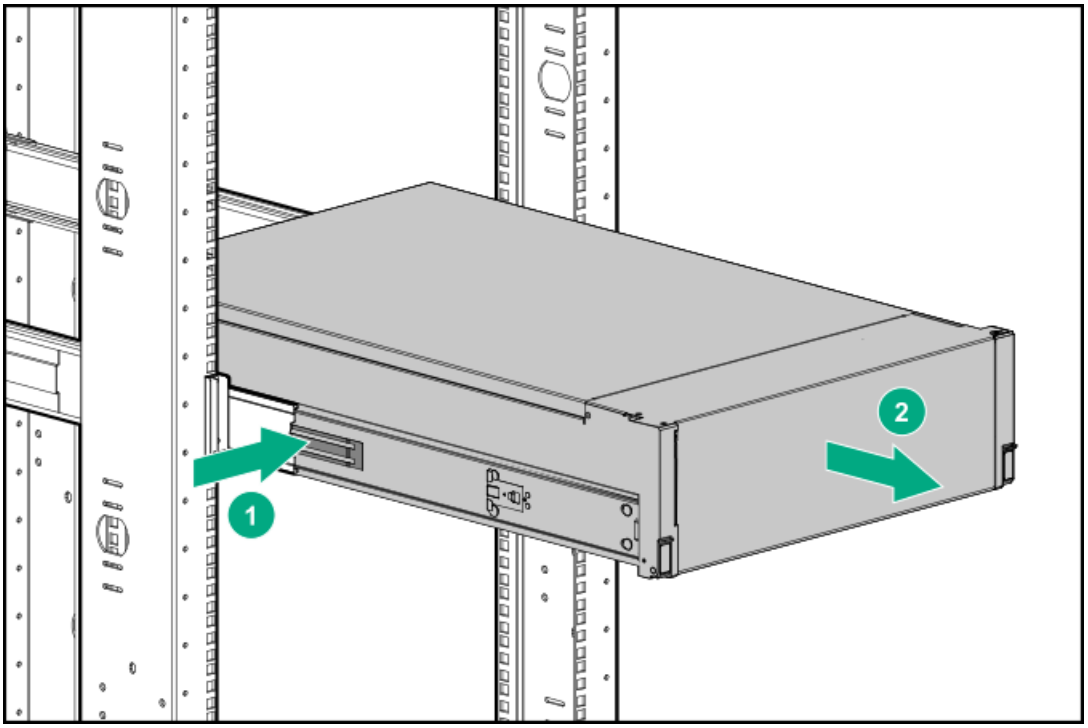
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. If needed, loosen the shipping screws, and then use the chassis ear latches to slide the server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

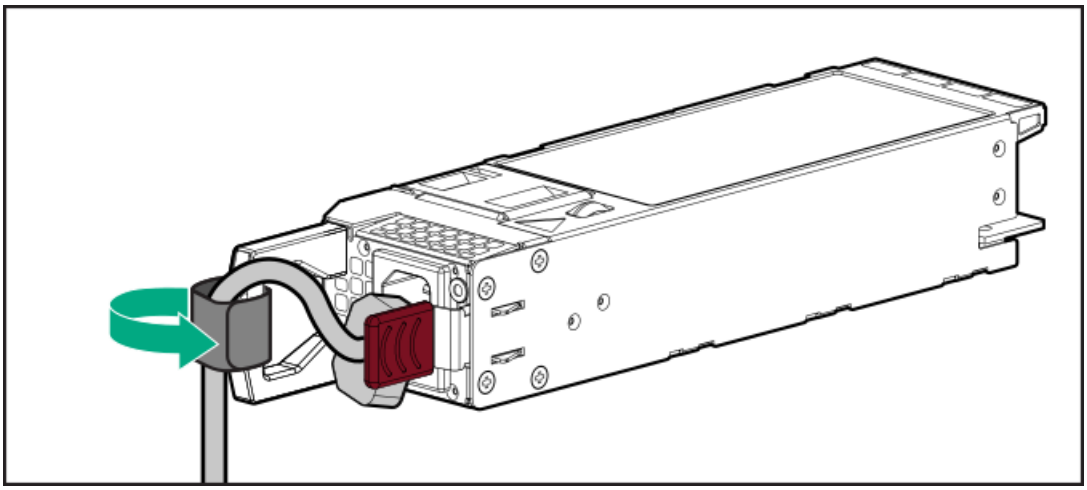
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

CAUTION

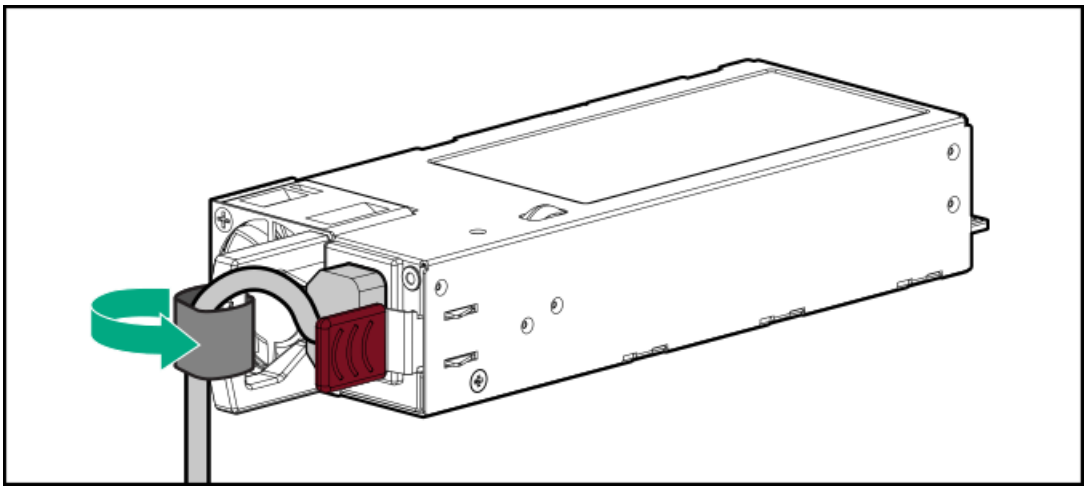
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

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

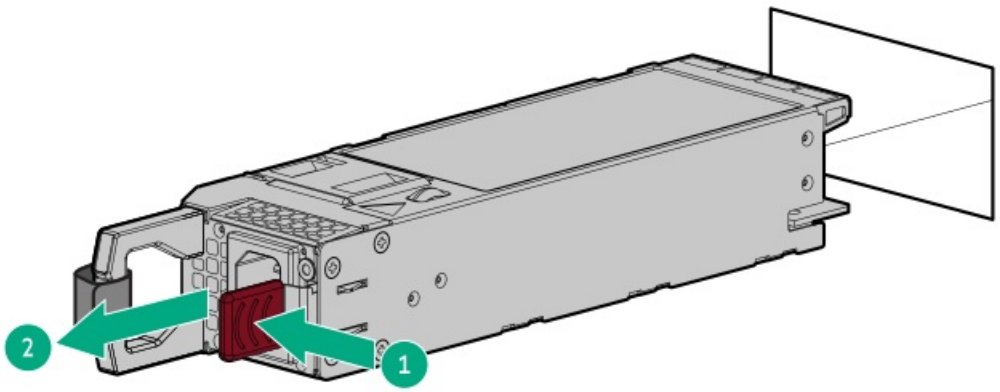


- 73.5-mm M-CRPS

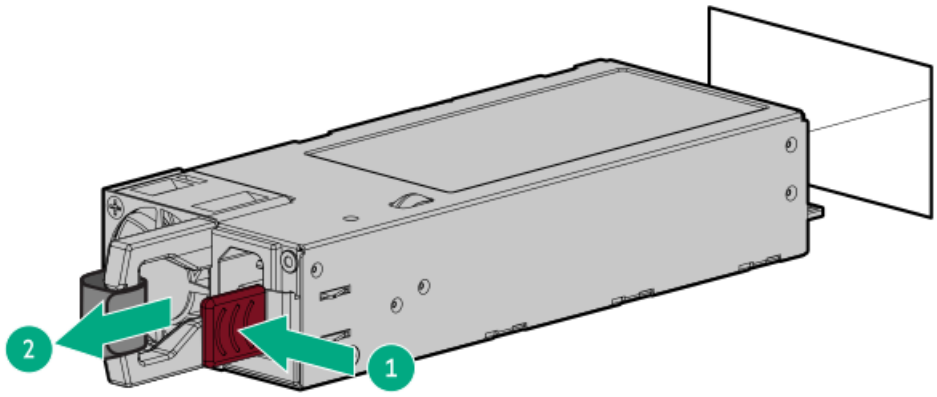


b. Press and hold the release latch, and then remove the power supply.

- 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:

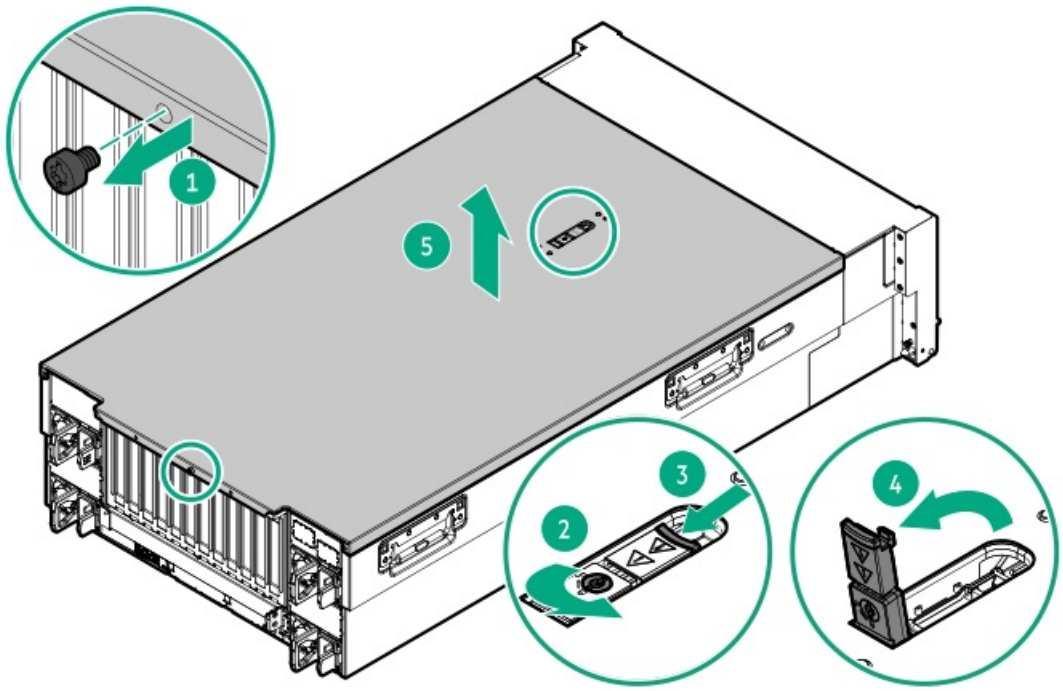
- The health LED flashes amber.
- The operating system gracefully shuts down.

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 air baffle

About this task

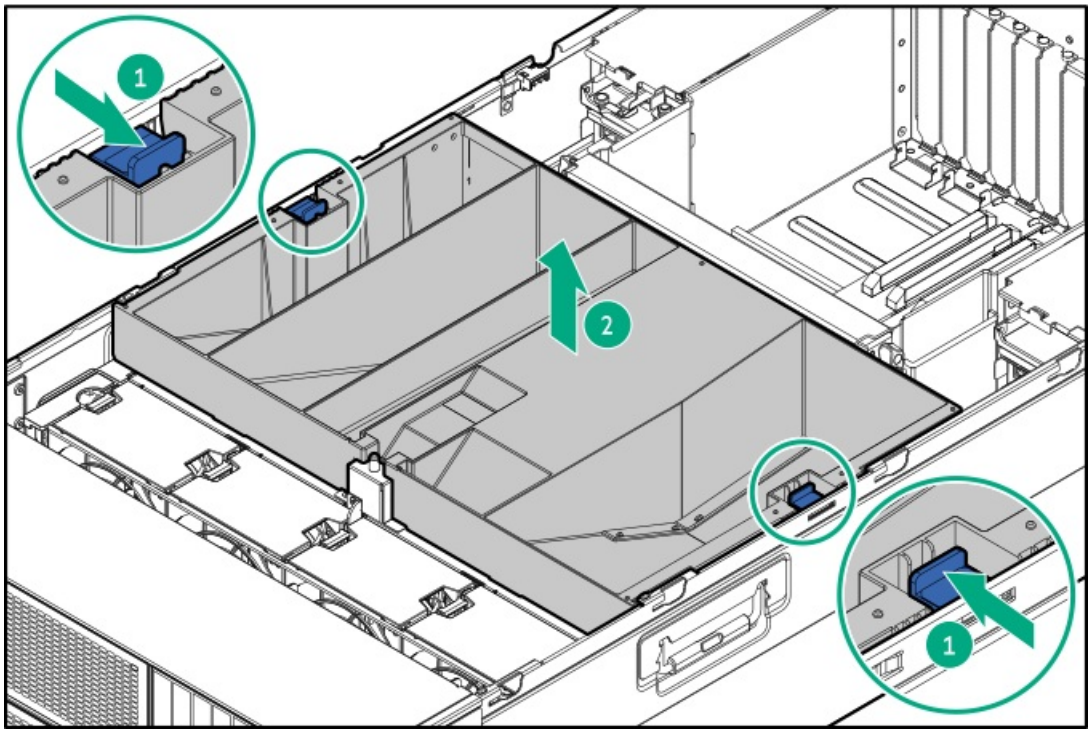
CAUTION
For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

Procedure

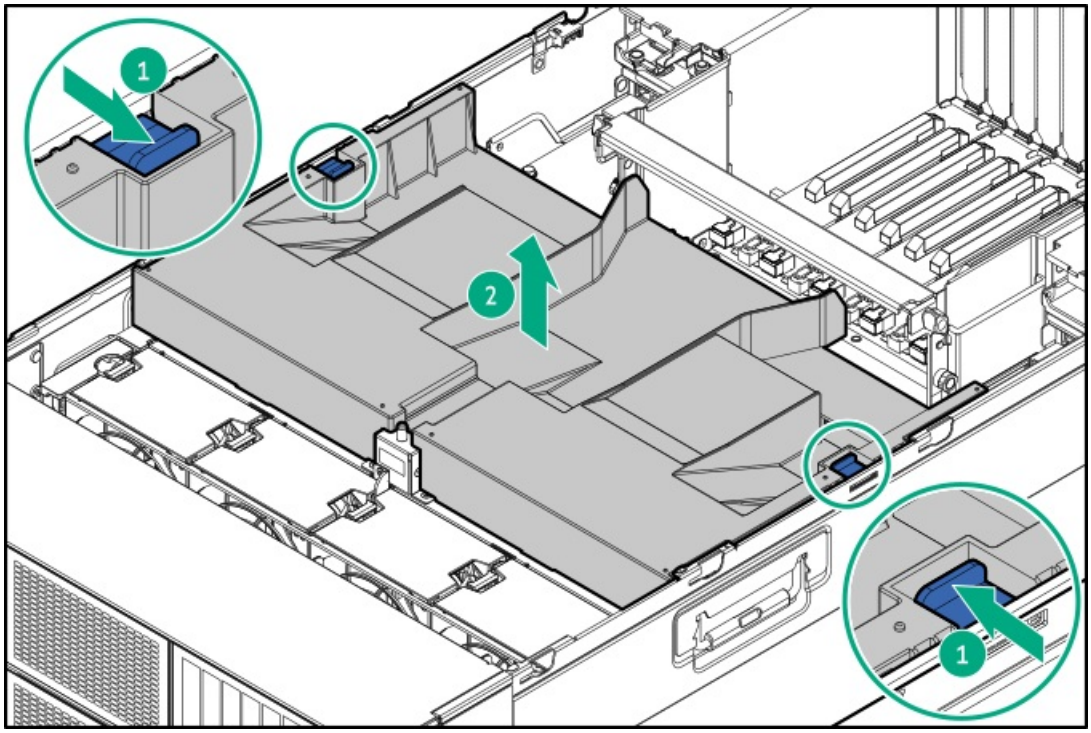
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   - Extend the server from the rack.

- Remove the server from the rack.

5. Remove the access panel.
6. Press the release latches, and then remove the air baffle.
   - Two-processor configuration



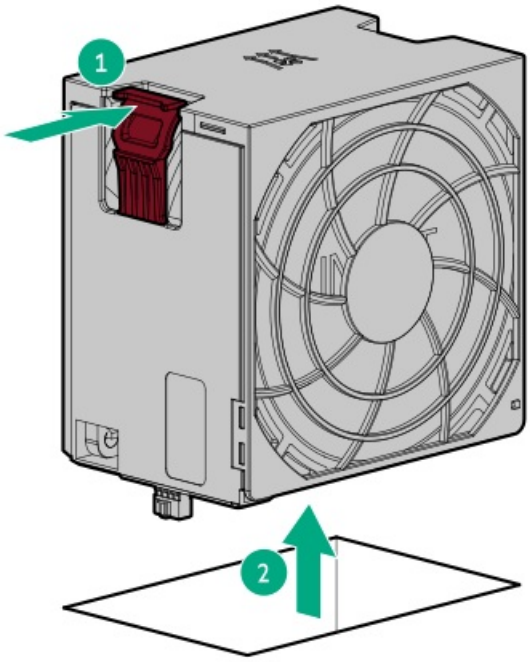
   - Four-processor configuration



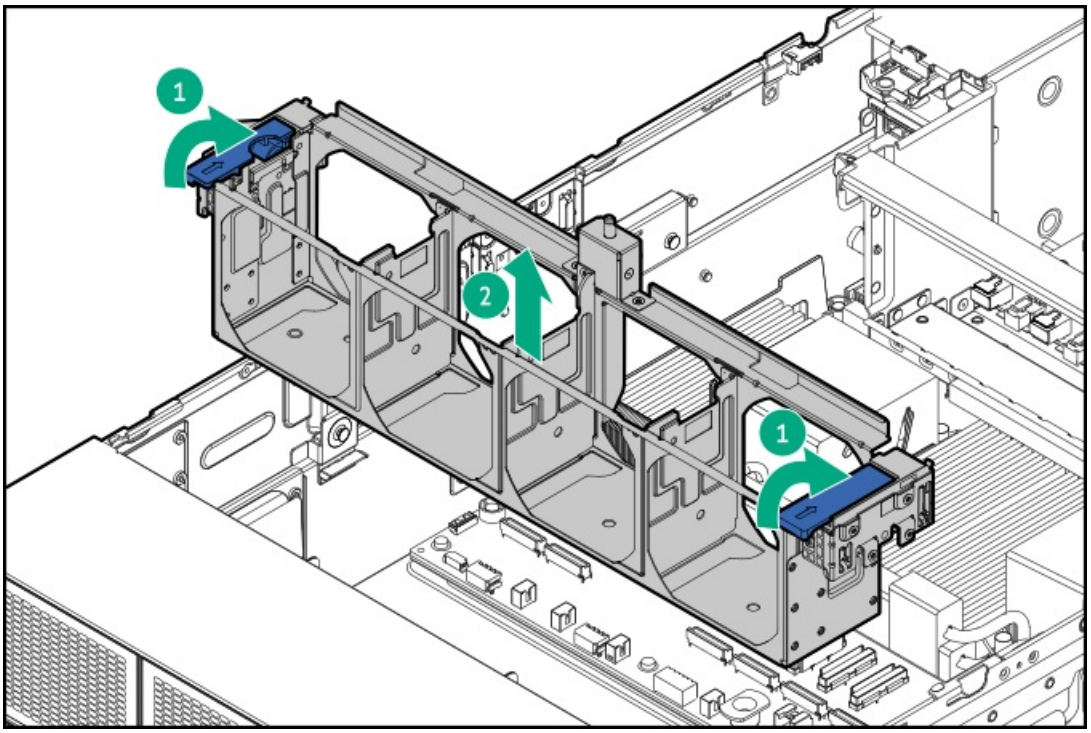
Remove the fan cage

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 fans.



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



Remove the system board baffle

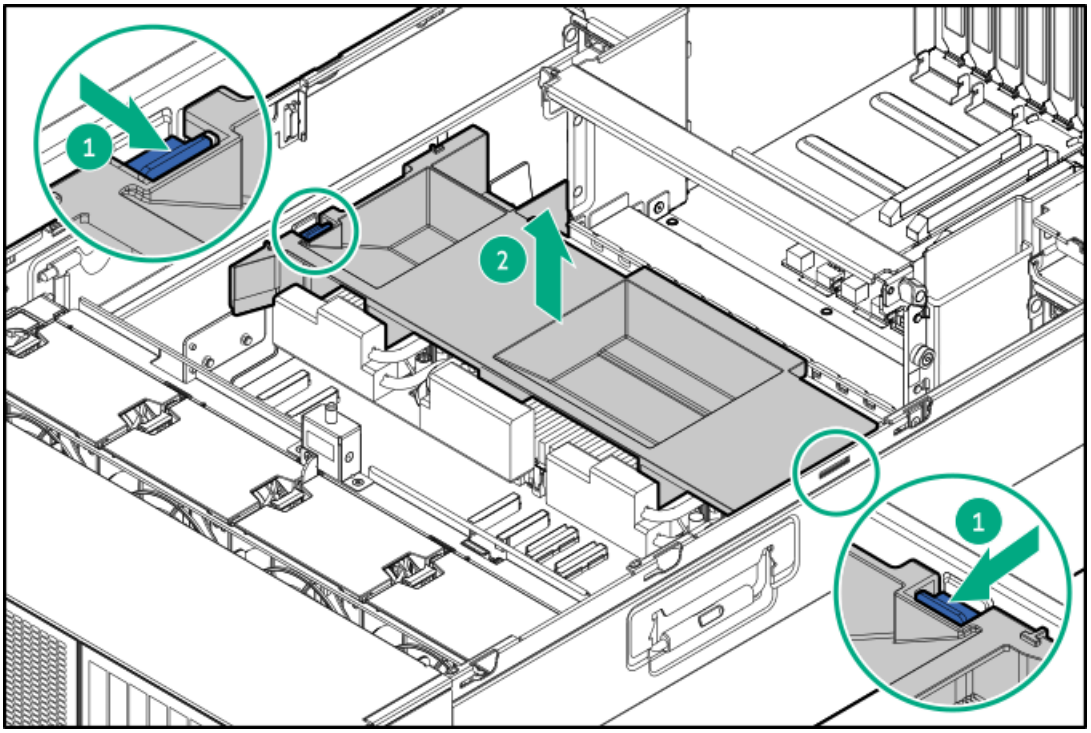
About this task

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

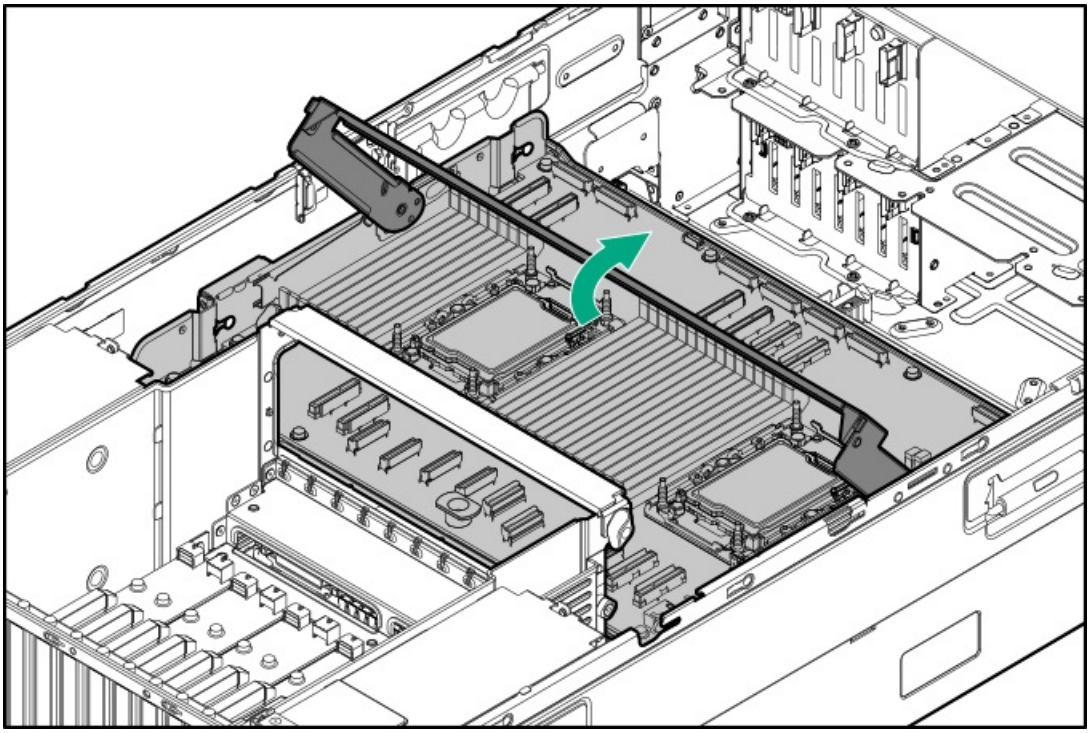
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the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



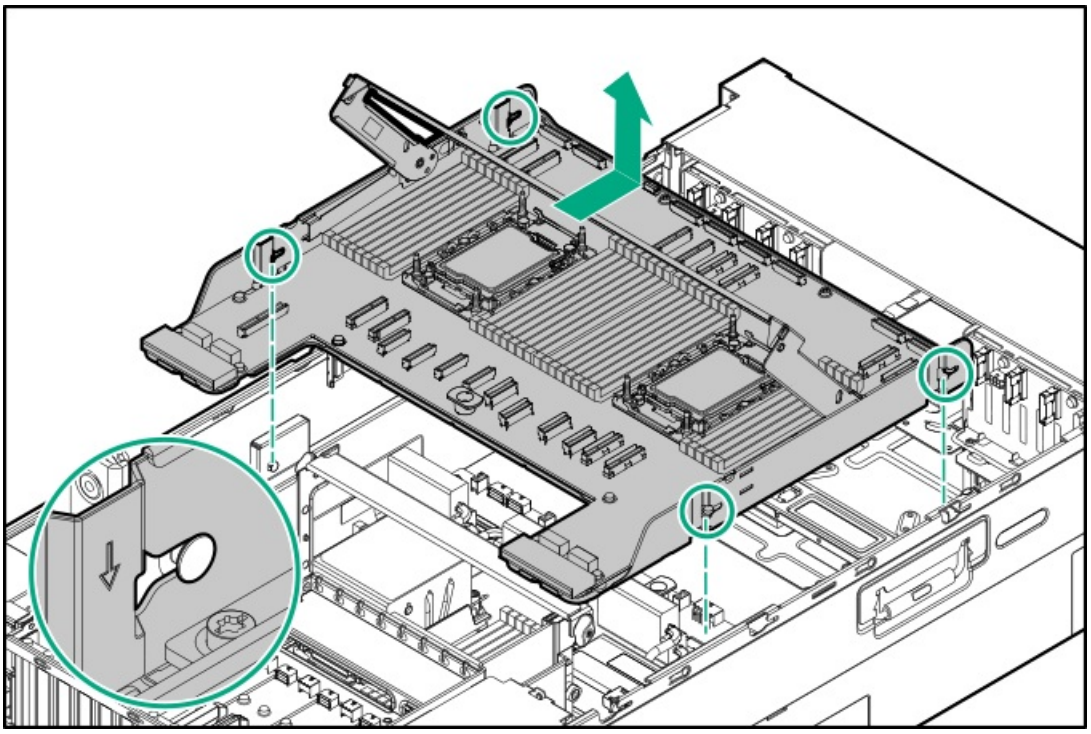
Remove the processor mezzanine tray

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 fan cage.
9. Rotate the processor mezzanine tray handle to the fully open position.



10. Disconnect all cables from the processor mezzanine board.
11. Hold the tray handle to remove the processor mezzanine tray from the server.



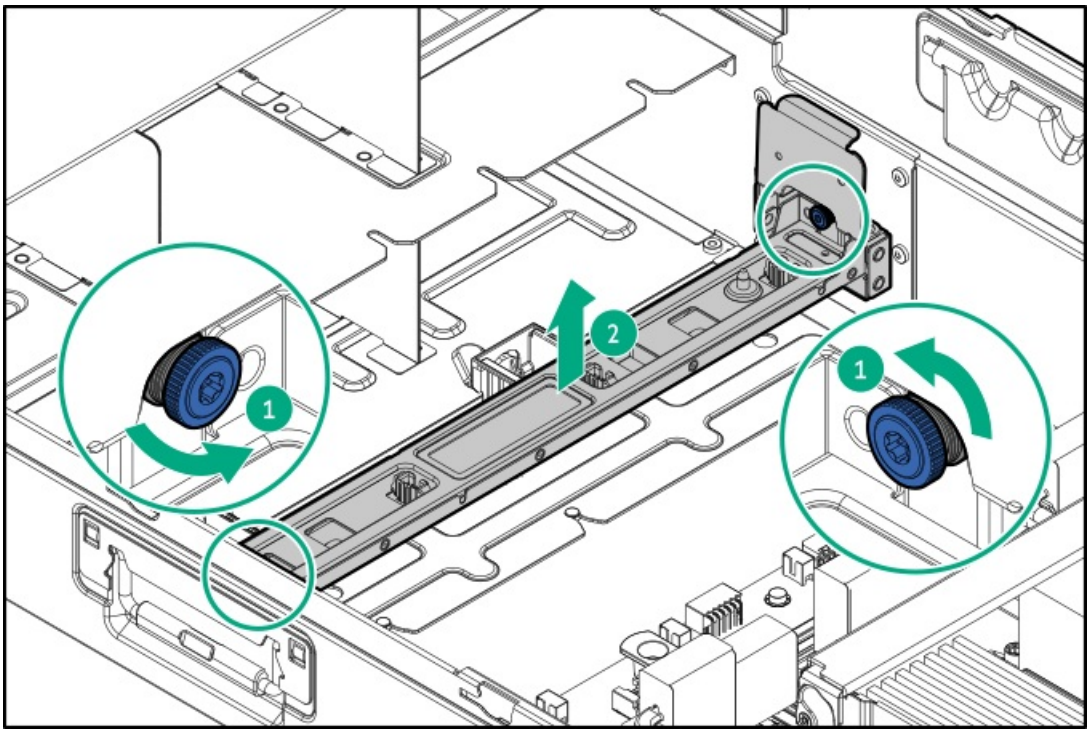
Remove the fan cable assembly

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 fan cage.
9. If installed, remove the processor mezzanine tray.
10. Disconnect all fan cables from the system board.
11. Remove the fan cable assembly.



Remove 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.

About this task

WARNING

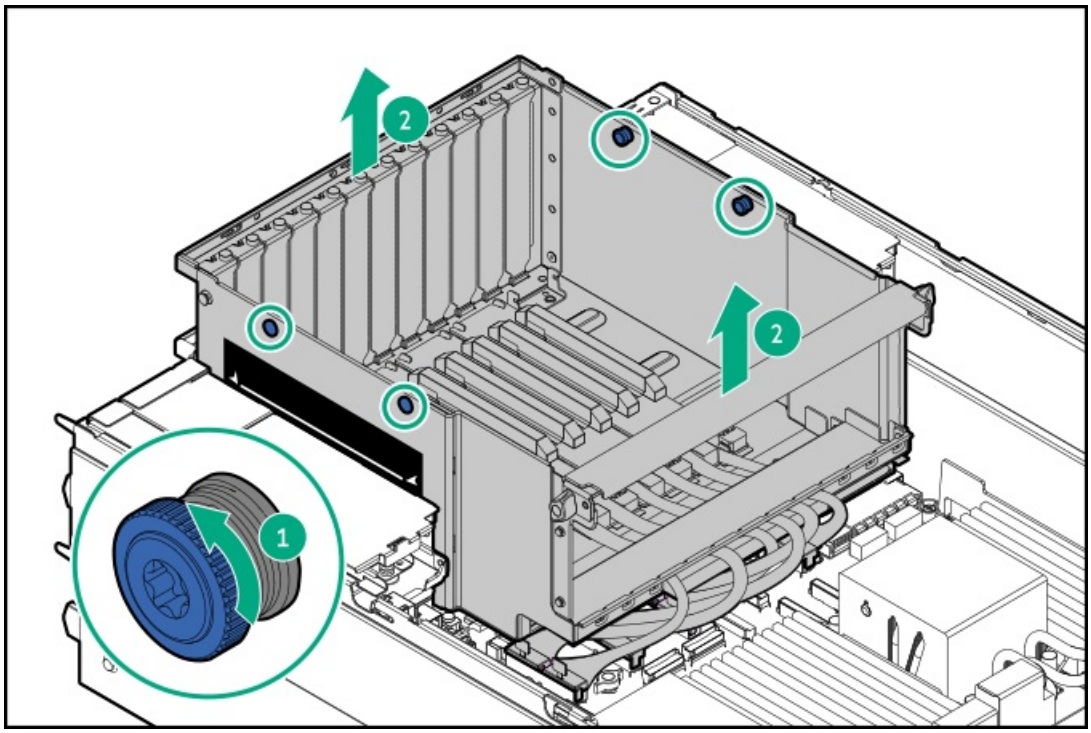
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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.

Procedure

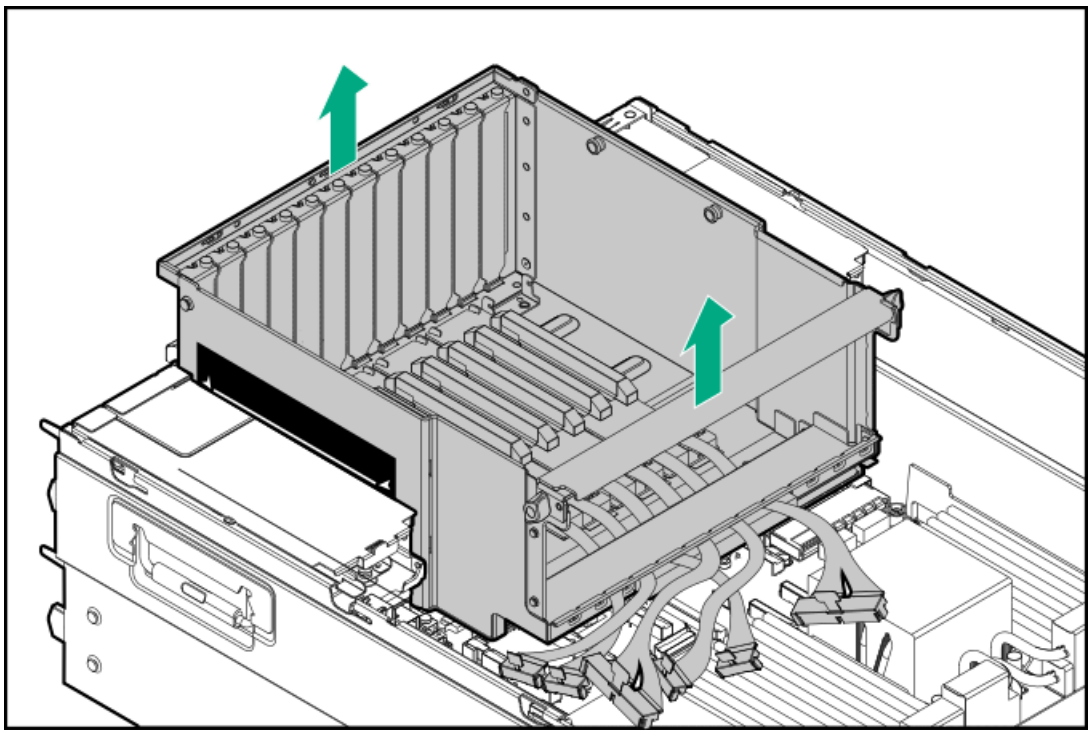
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the air baffle.
8. If the processor mezzanine tray is installed:
   a. Remove the fan cage
   b. Remove the processor mezzanine tray.
9. Remove the system board baffle.
10. Remove the GPU cage:
    a. Loosen the captive screws.
    b. Lift and hold the GPU cage until the alignment lines on the labels on the sides are level with the top of the power supply cages.



c. Disconnect all captive riser power cables from the risers.

d. Disconnect all captive riser signal cables from the system board.

e. Remove the GPU cage from the server.



11. Place the GPU cage on the flat work surface.

Remove the captive riser

Prerequisites

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

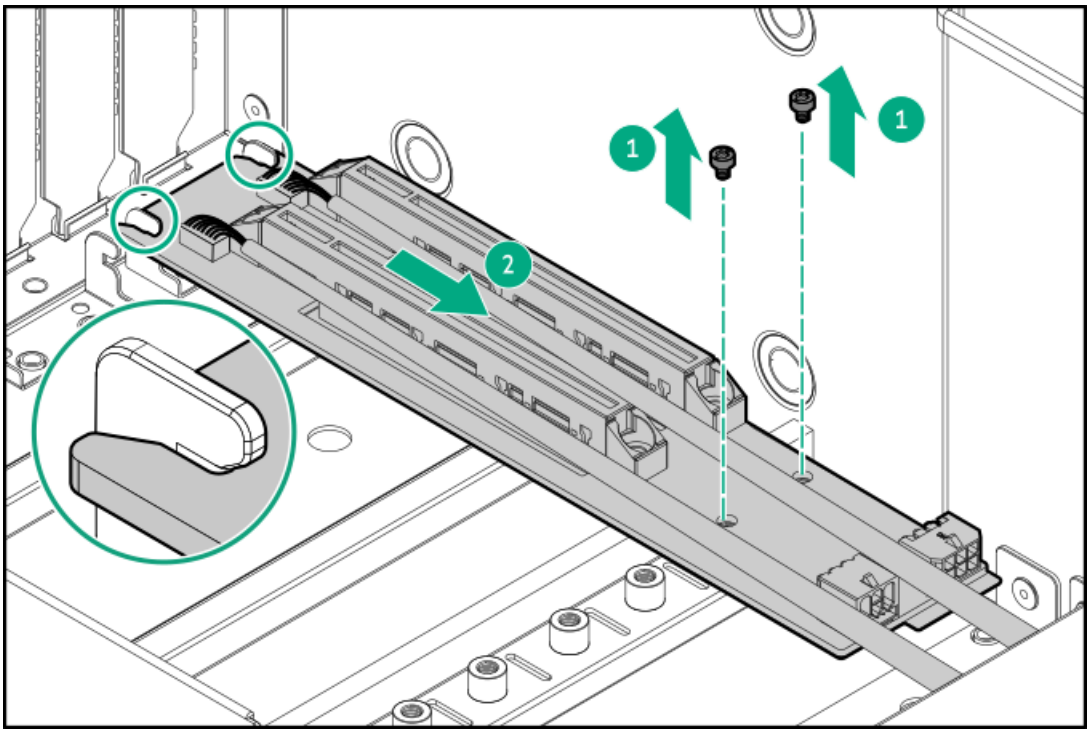
About this task

CAUTION

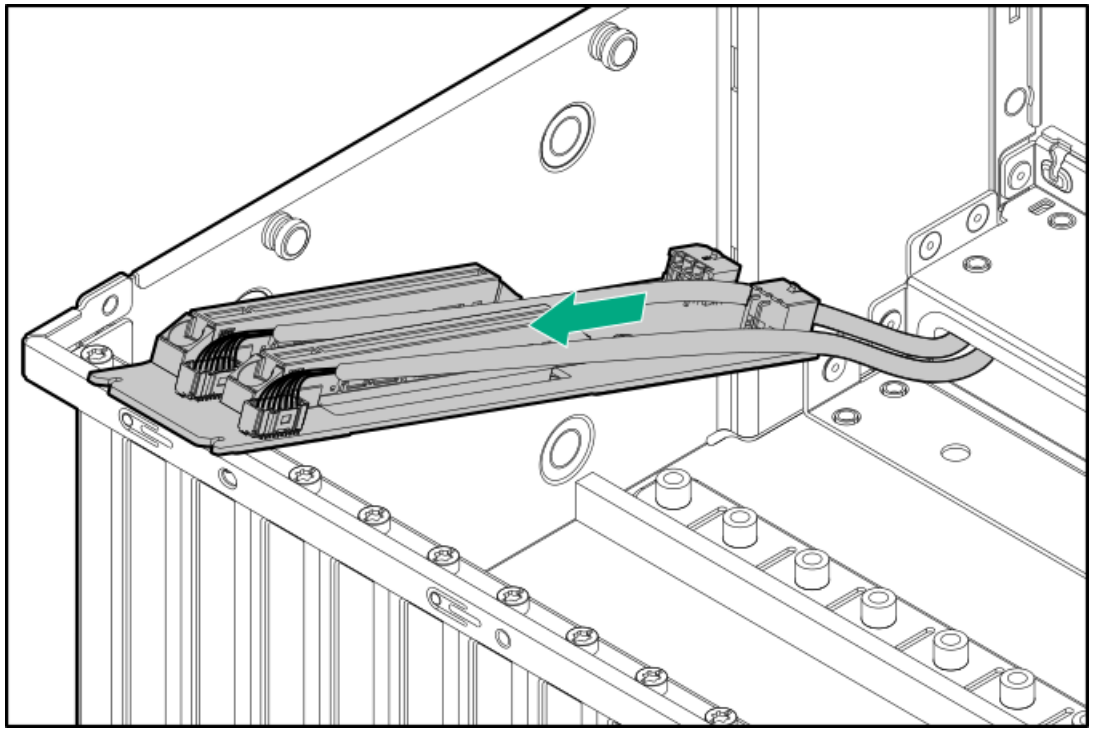
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the air baffle.
8. If the processor mezzanine tray is installed:
   a. Remove the fan cage
   b. Remove the processor mezzanine tray.
9. Remove the system board baffle.
10. Remove the GPU cage.
11. Place the GPU cage on the flat work surface.
12. Remove the PCIe x16 captive riser.



13. Remove the riser along with its riser cables from the GPU cage.



Remove the captive riser cable

Prerequisites

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

About this task

CAUTION

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

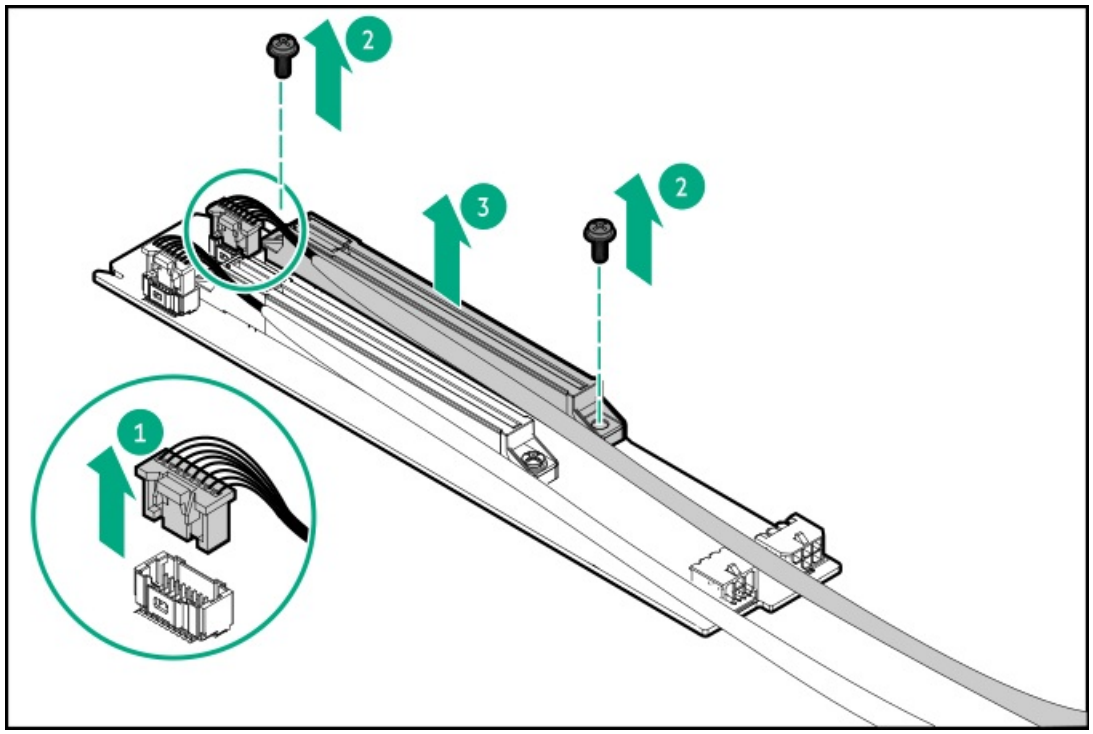
Procedure

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

a. Remove the fan cage

b. Remove the processor mezzanine tray.

9. Remove the system board baffle.
10. Remove the GPU cage.
11. Place the GPU cage on the flat work surface.
12. Remove the captive riser.
13. Remove the captive riser cable.



Post-installation procedures

Subtopics

Install the GPU cage
Install the fan cable assembly
Install the processor mezzanine tray
Install the fan cage
Install the system board baffle
Install the air baffle
Install the access panel
Install the server into the rack
Power up the server

Install the GPU cage

Prerequisites

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.

About this task

WARNING

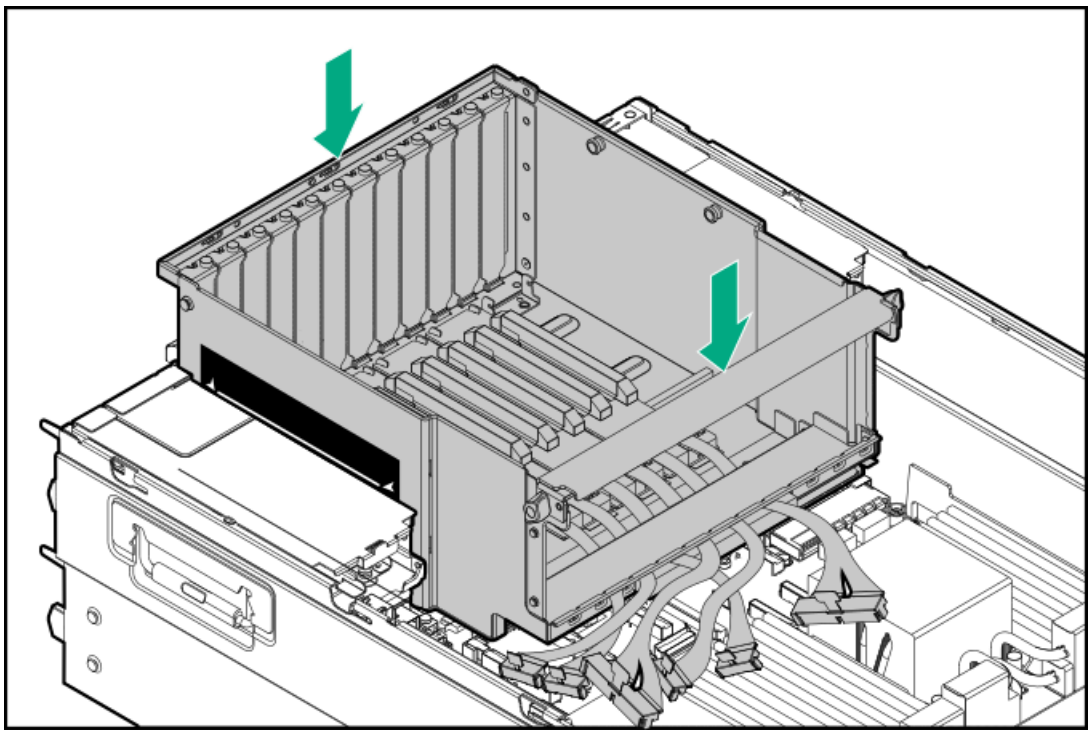
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION

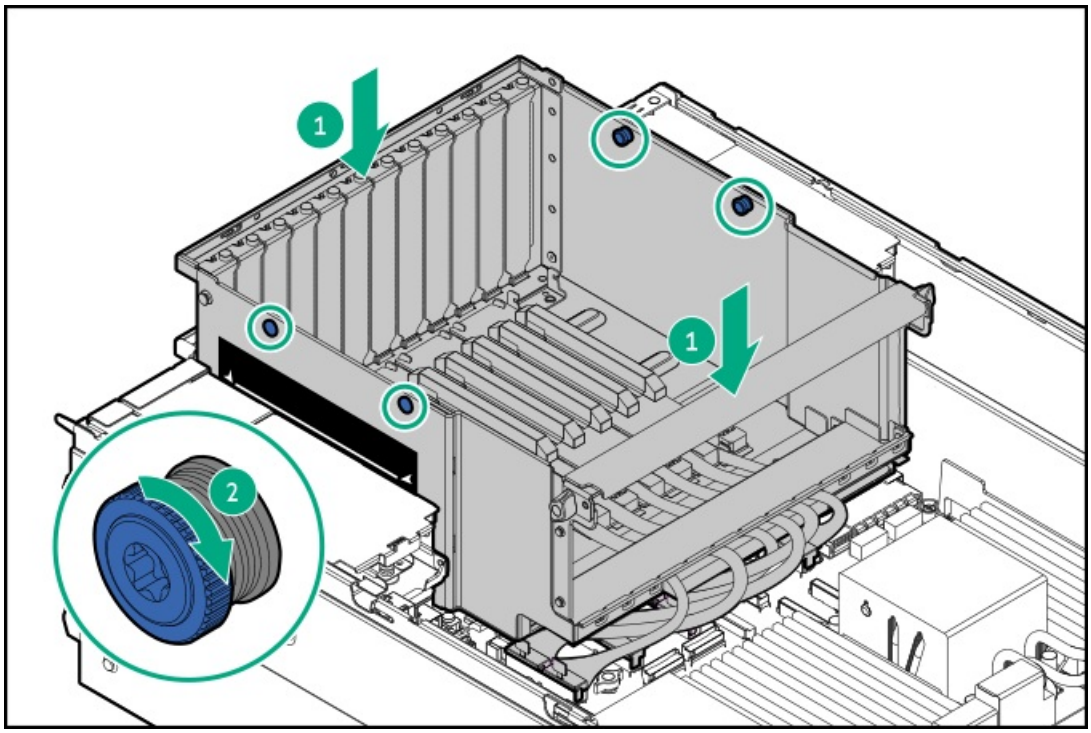
To prevent damage to electrical components, properly ground the server before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Procedure

1. Install the GPU cage:
   a. Hold and place the GPU cage until the alignment lines on the labels on the sides are level with the top of the power supply cages.



   b. Connect all captive riser signal cables from the system board.
   c. Connect all captive riser power cables from the risers.
   d. Install the GPU cage in the server, and then fasten the captive screws.



2. Install the system board baffle .
3. If removed:
   a. Install the processor mezzanine tray .
   b. Install the fan cage.
4. Install the air baffle.
5. Perform the post-installation or maintenance steps required by the procedure that requires the removal of the GPU cage.

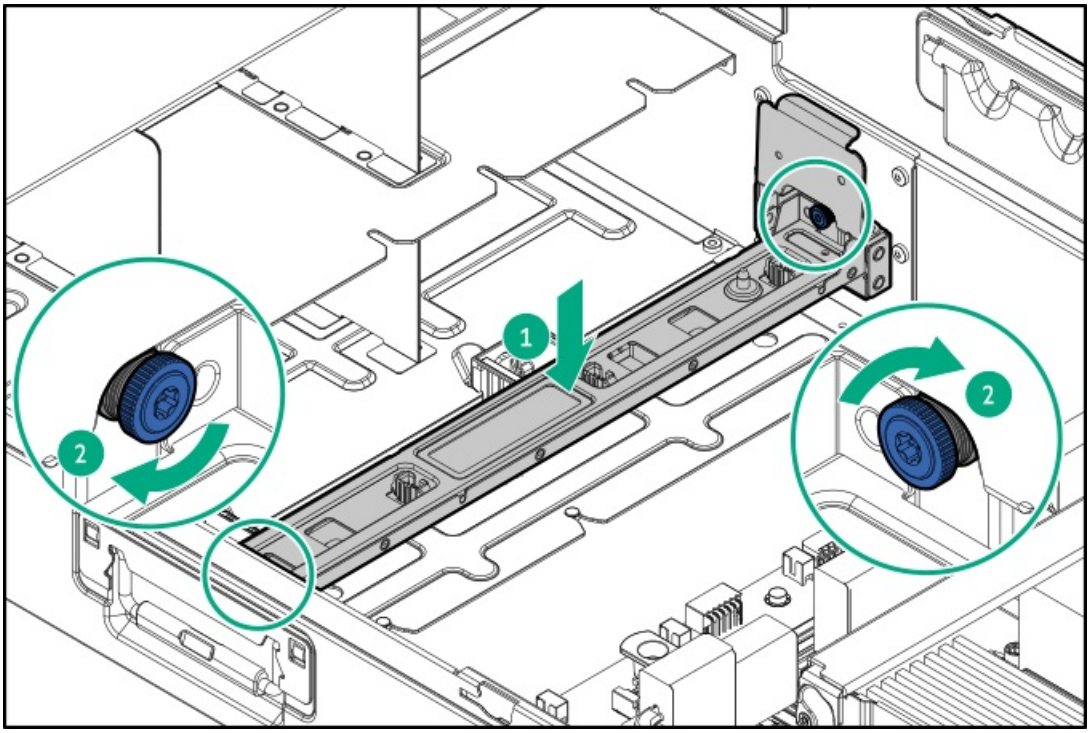
Install the fan cable assembly

Prerequisites

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

Procedure

1. Install the fan cable assembly.

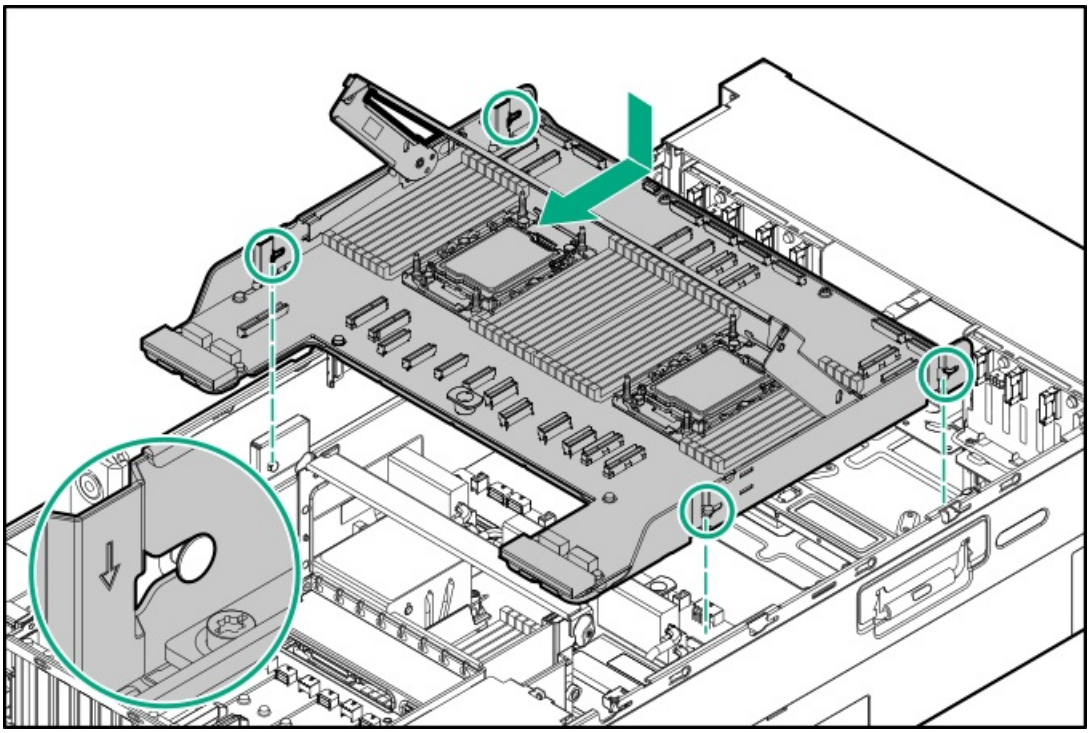


2. Connect all fan cables to the system board .
3. Install the fan cage.
4. Perform the post-installation or maintenance steps required by the procedure that requires the removal of the fan cable assembly.

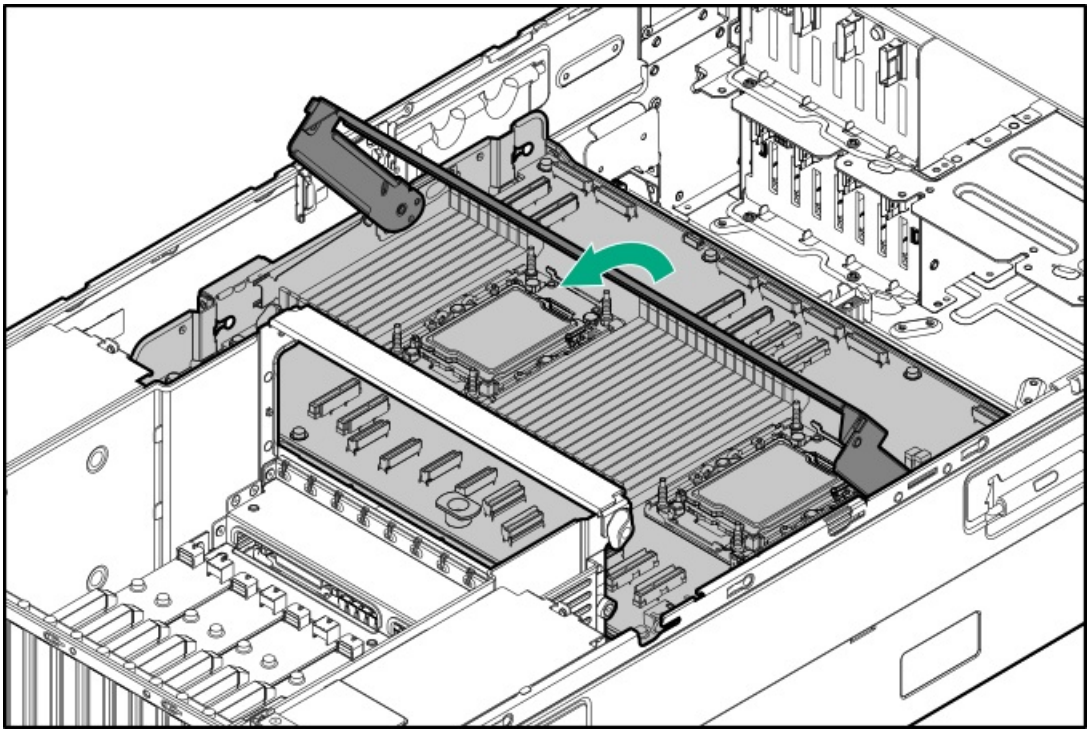
Install the processor mezzanine tray

Procedure

1. Install the processor mezzanine tray.



2. Connect all disconnected cables to the processor mezzanine board.
3. Press down on the processor mezzanine tray handle until it locks into place.

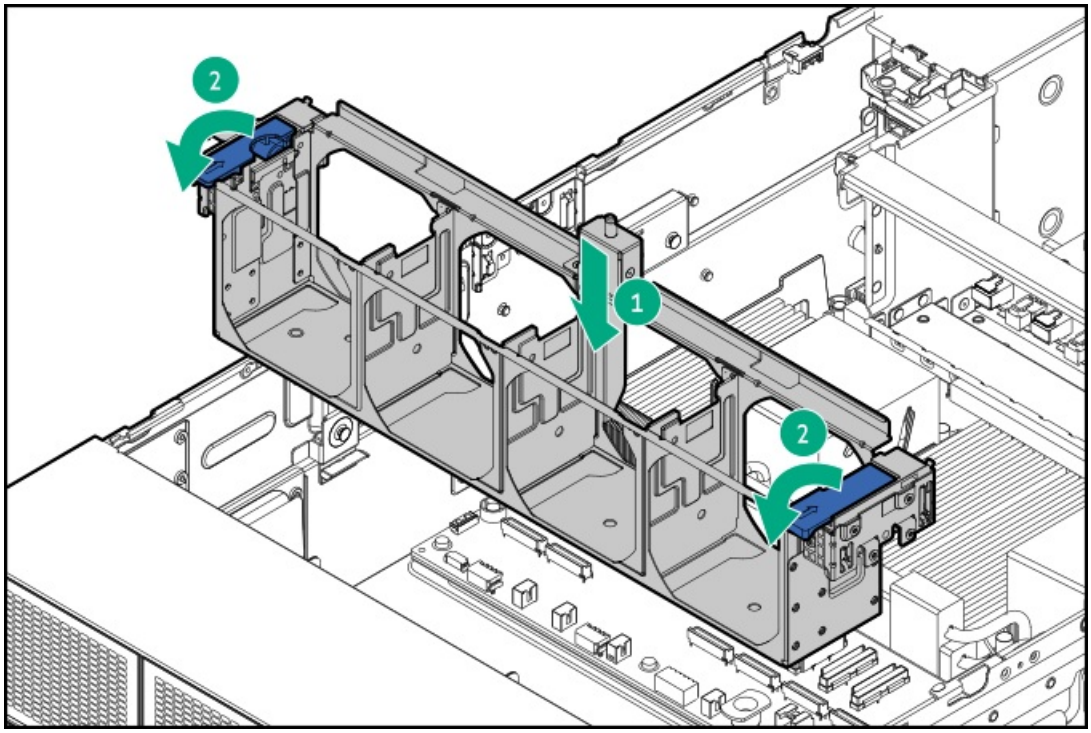


4. Install the fan cage.
5. Install the air baffle.
6. Install the access panel.
7. Perform the post-installation or maintenance steps required by the procedure that requires the removal of the processor mezzanine tray.

Install the fan cage

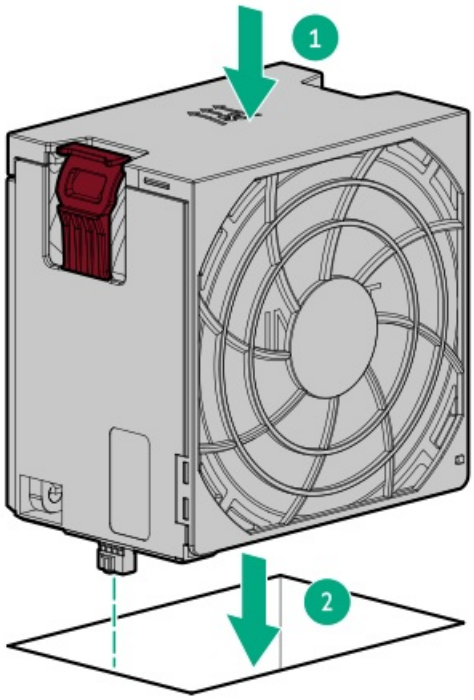
Procedure

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



2. Install all fans.
   a. Lower the fan 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 requires the removal of the fan cage.

Install the system board baffle

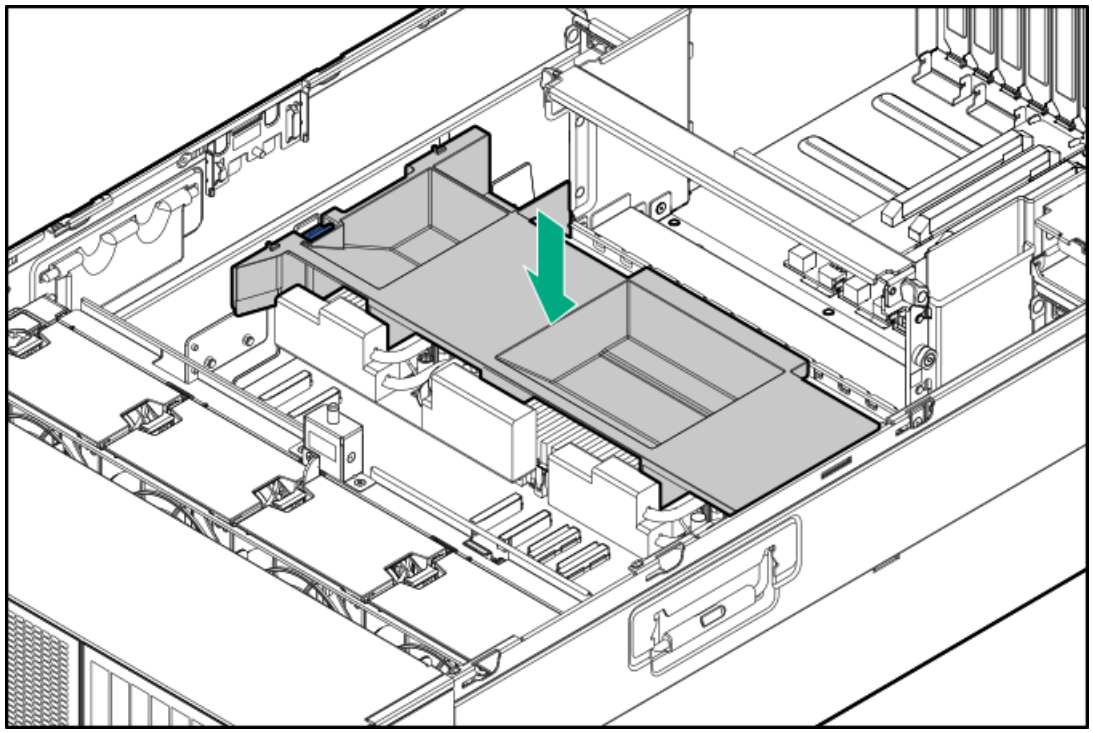
About this task

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. Press down the system board baffle to make sure that it fits properly into place. A click sound indicates that the release latches are properly engaged.

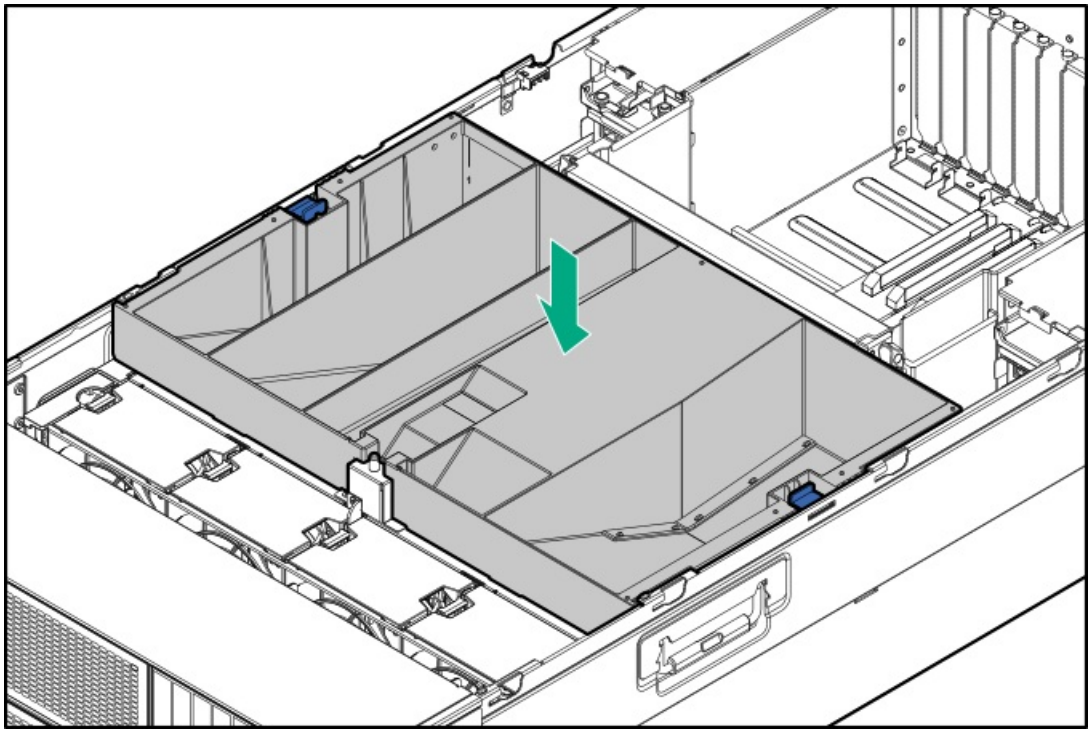


2. Perform the post-installation or maintenance steps required by the procedure that requires the removal of the system board baffle.

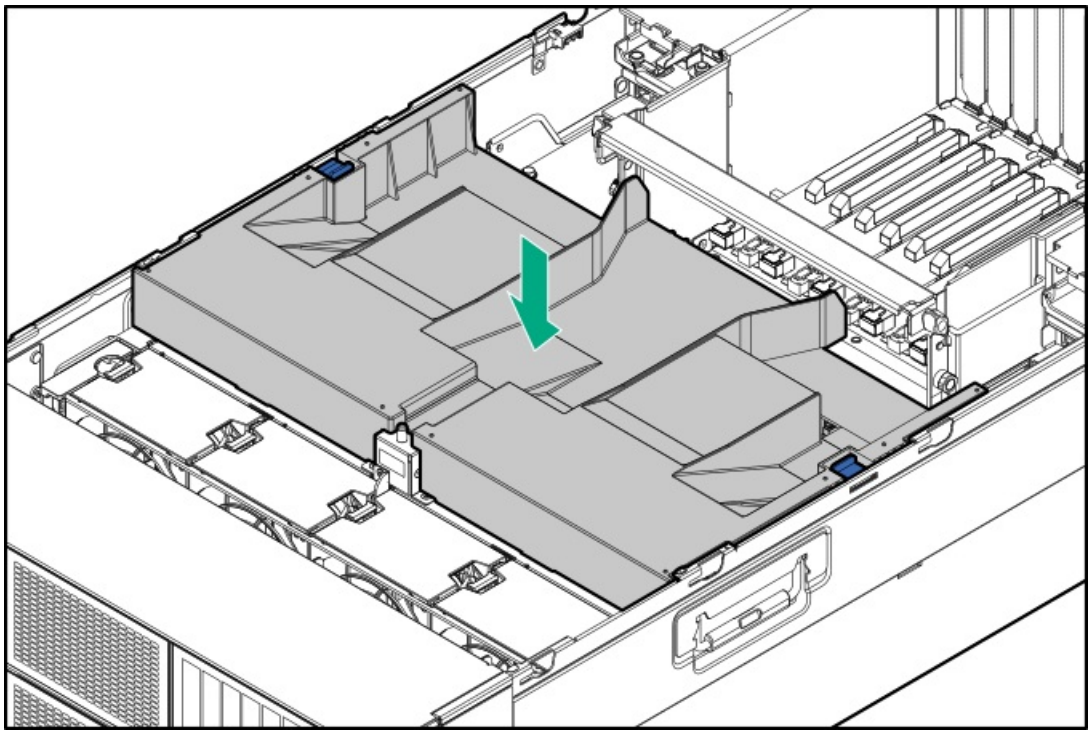
Install the air baffle

Procedure

1. Make sure that all internal cables have been properly routed and will not interfere with the air baffle installation.
2. Press down the air baffle to make sure that it fits properly into place. A click sound indicates that the release latches are properly engaged.
   - Two-processor configuration



- Four-processor configuration



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

Install the access panel

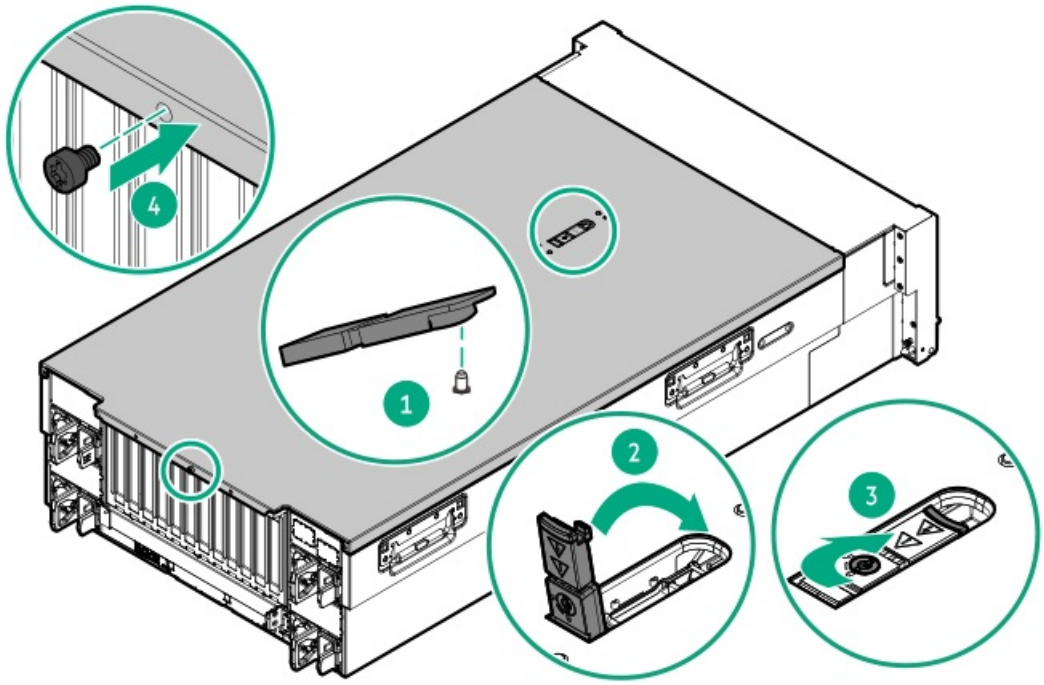
Prerequisites

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

Procedure

1. With the access panel latch open, insert the guide pin on the chassis through the hole on the bottom side of the latch.
2. Close the access panel latch.

   The access panel slides to the closed position.
3. Lock the access panel latch.
4. Install the access panel screw.



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

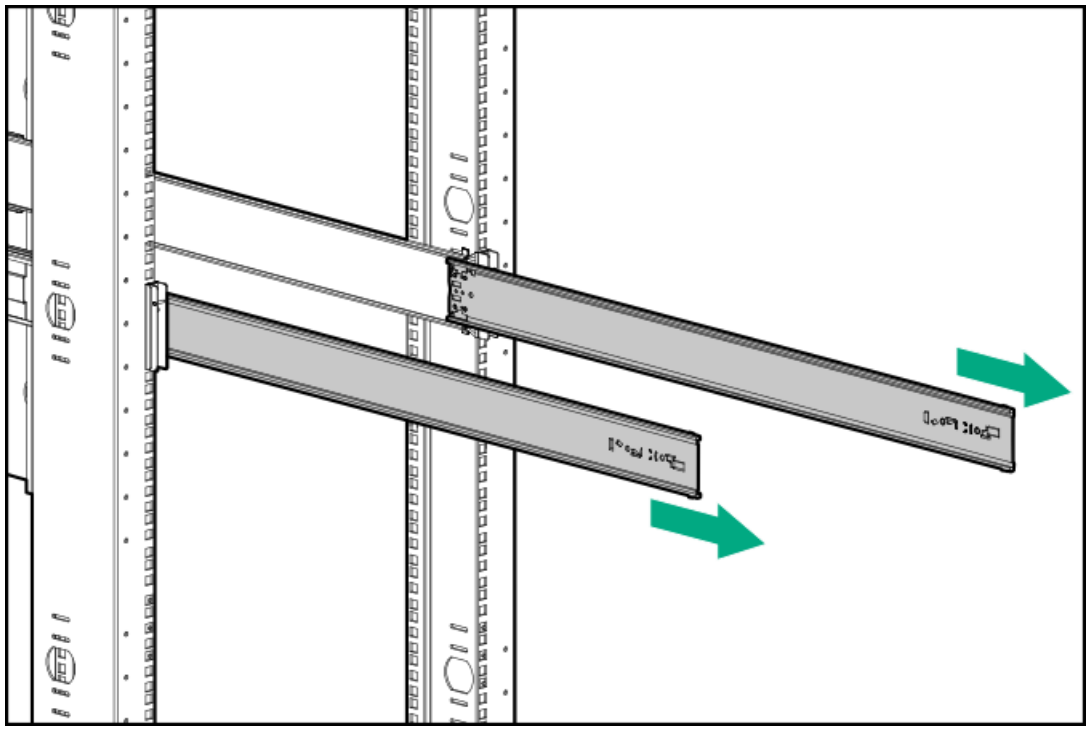
Install the server into the rack

Prerequisites

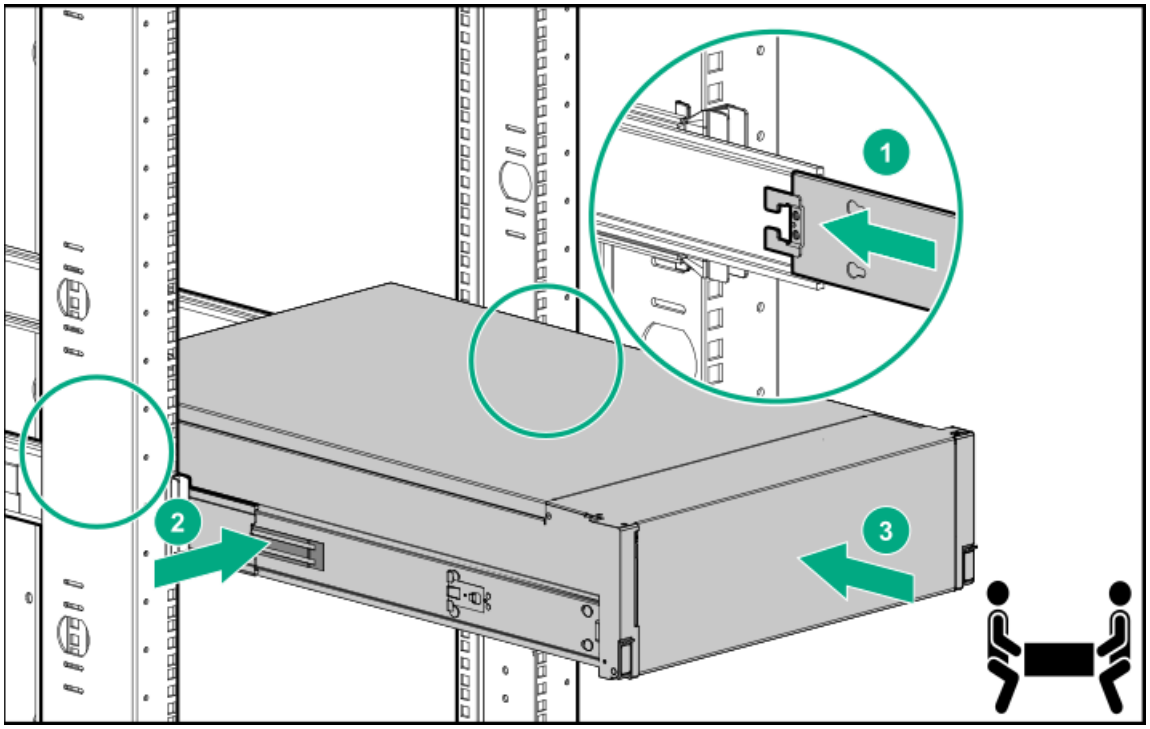
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

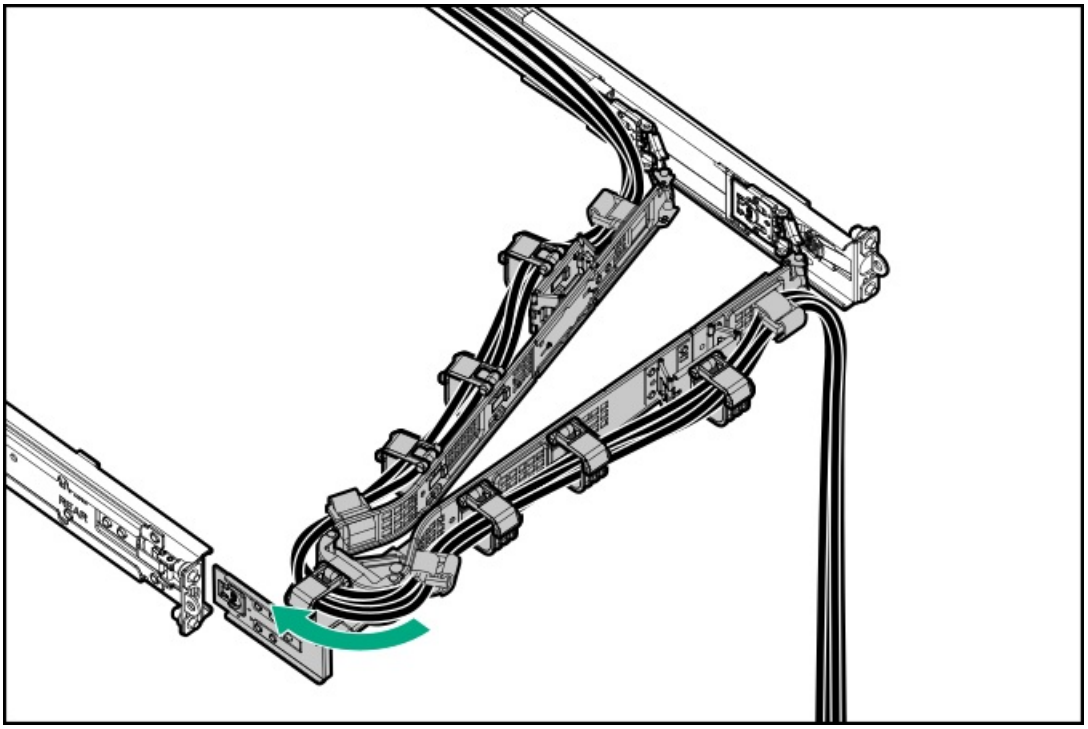


2. Install the server into the rack:
   a. Insert the inner rails into the slide rails.
   b. Press and hold the rear-end rail-release latches, and slide the server into the rack until the chassis ears are flush against the rack posts.



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 7.

Drives

Subtopics

Drive installation guidelines

Observe the following general guidelines:

- The system automatically sets all drive numbers.

CAUTION

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

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

Installing a hot-plug SFF SAS, SATA or 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.

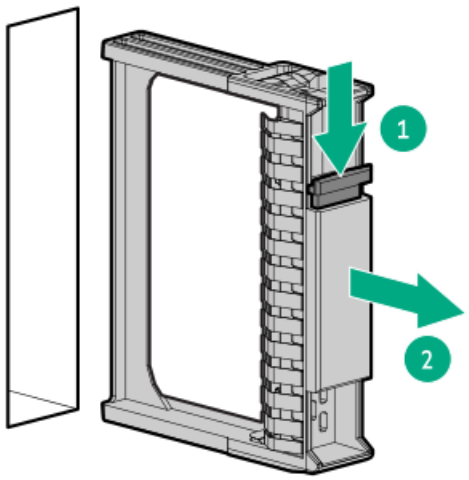
CAUTION

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

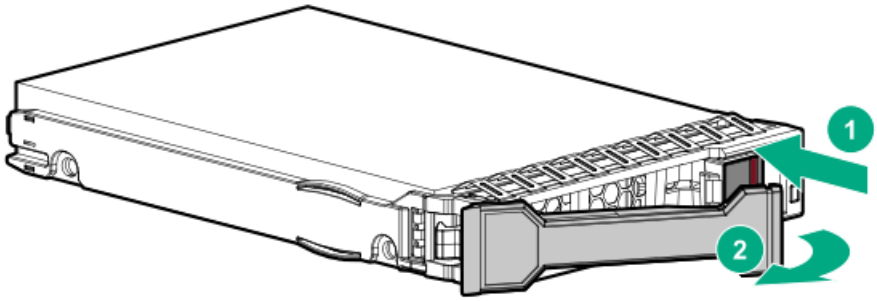
Procedure

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

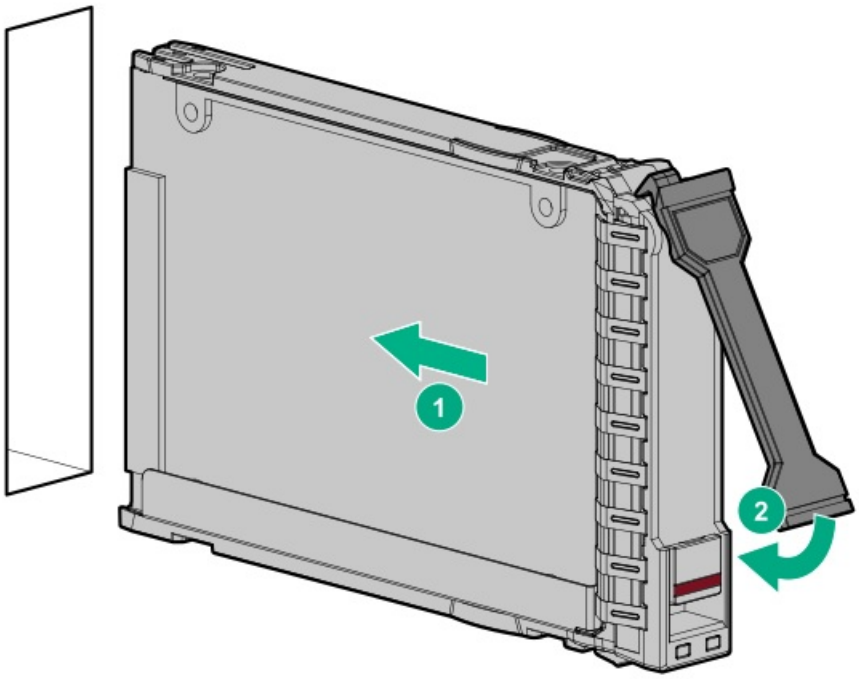
   Retain the blank for future use.



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.

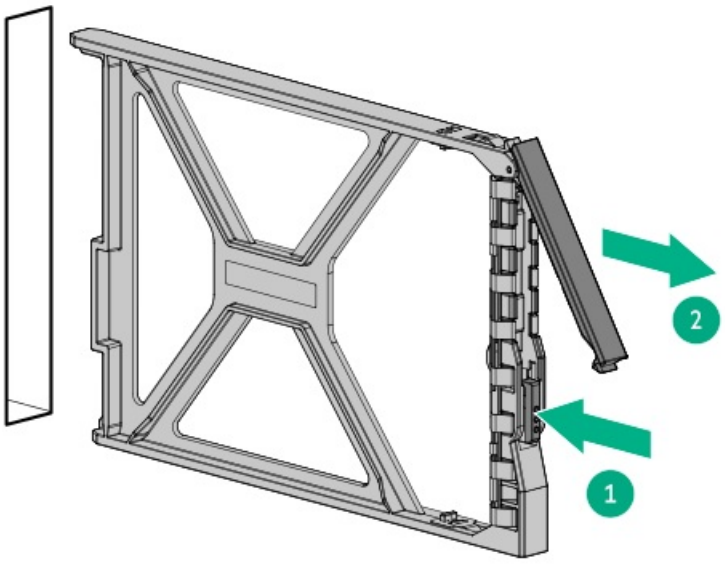
CAUTION

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

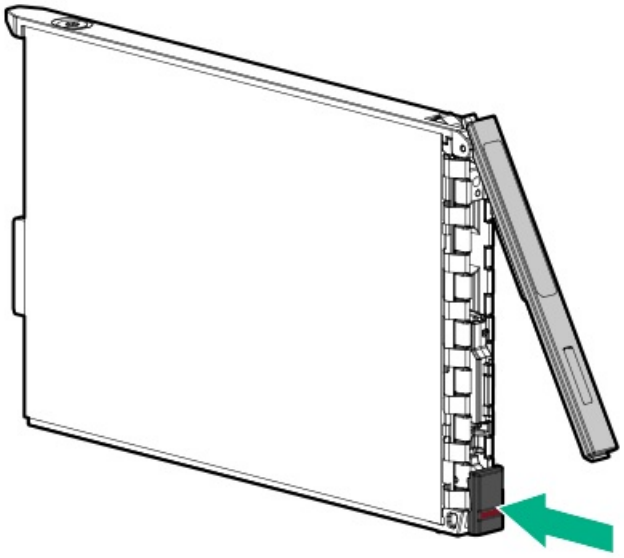
Procedure

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

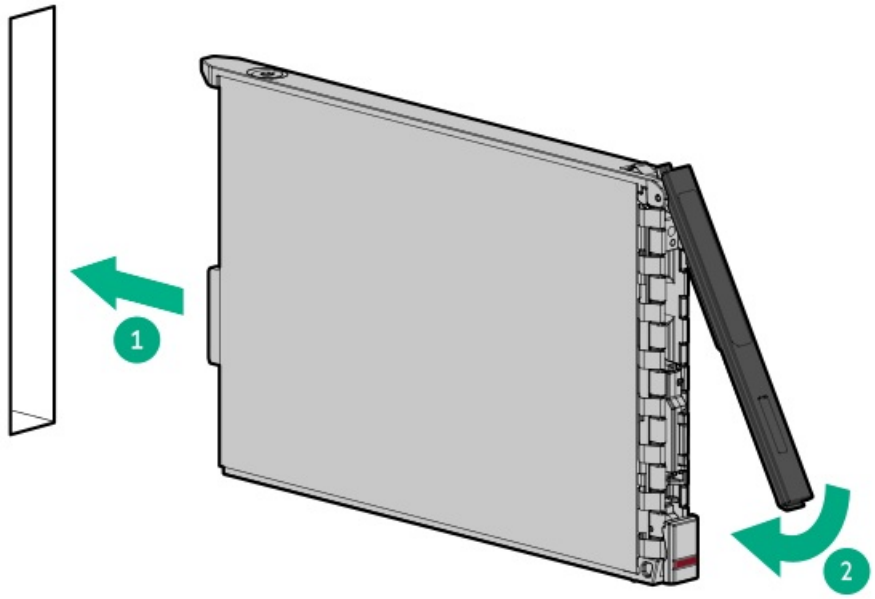
   Retain the blank for future use.



4. Prepare the drive.



5. Install the drive.



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

Results

The installation procedure is complete.

Drive cages

Subtopics

Installing the 2 SFF stacked drive cage
Installing an 8 SFF drive cage
Installing an 8 E3.S drive cage

Installing the 2 SFF stacked drive cage

Prerequisites

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

About this task

CAUTION

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

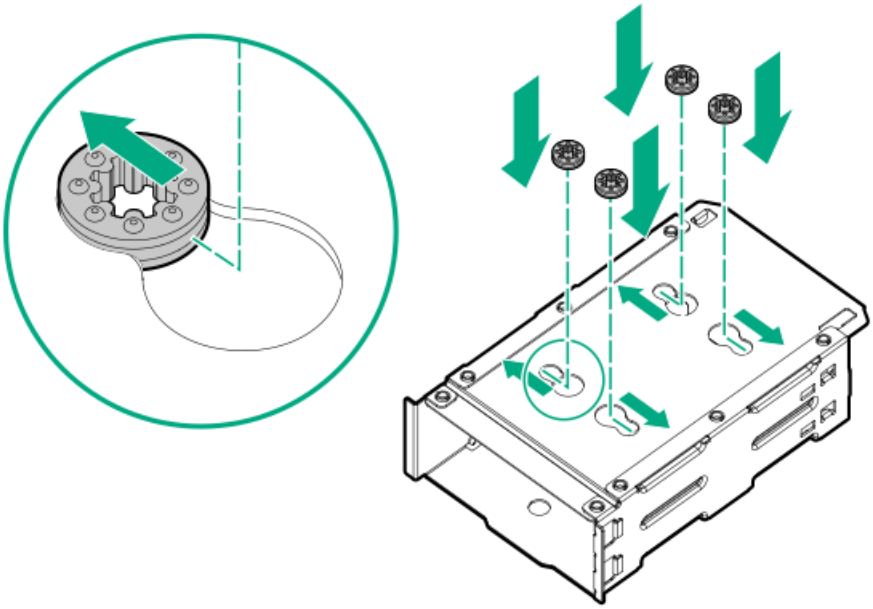
CAUTION

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

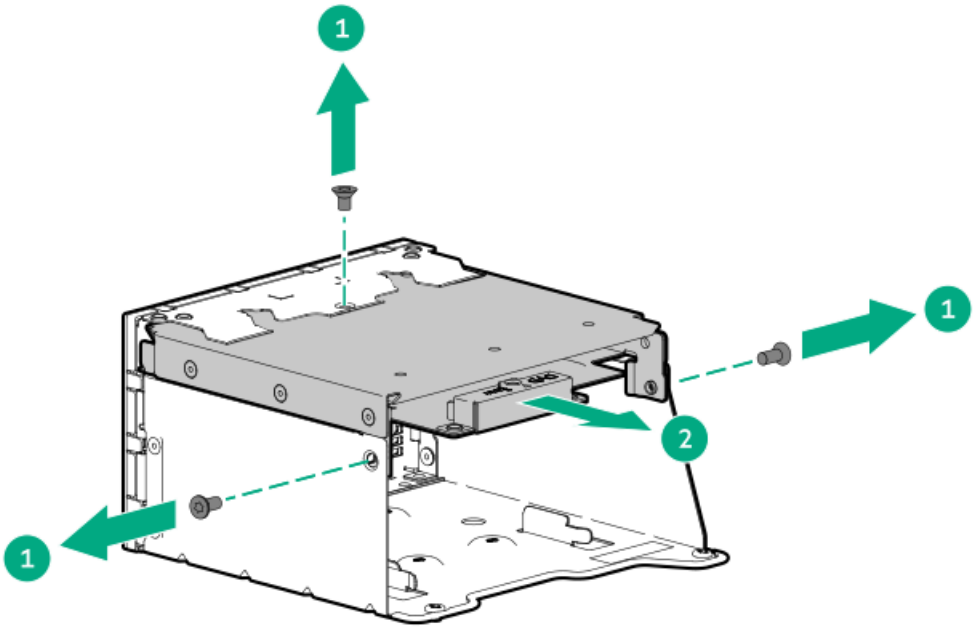
Procedure

Installing the 2 SFF stacked drives in the universal media bay

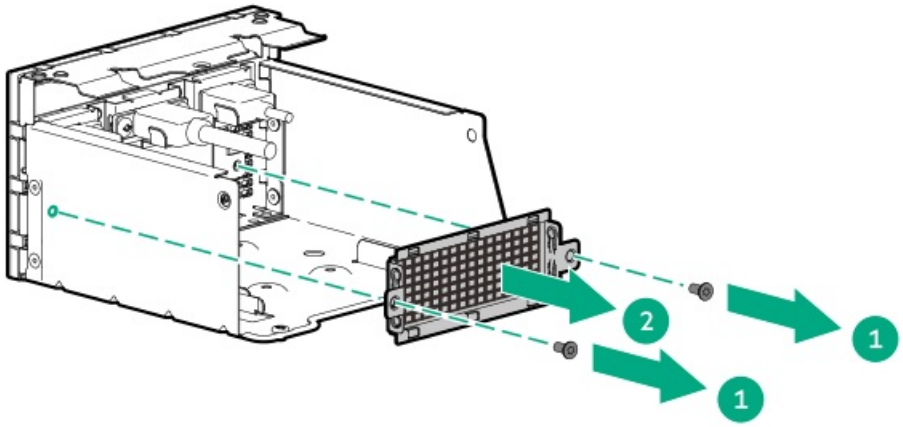
1. Install the grommets onto the underside of the stacked drive cage.



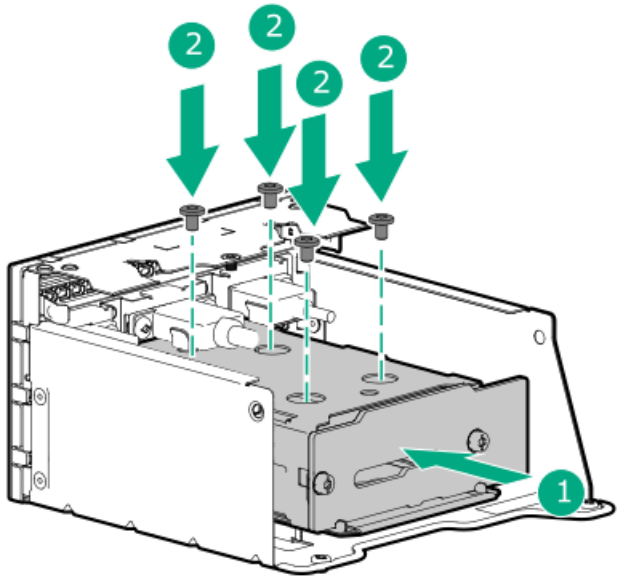
2. Remove the optical drive tray:
   a. Remove the optical drive tray screws.
   b. Remove the optical drive tray from universal media bay.



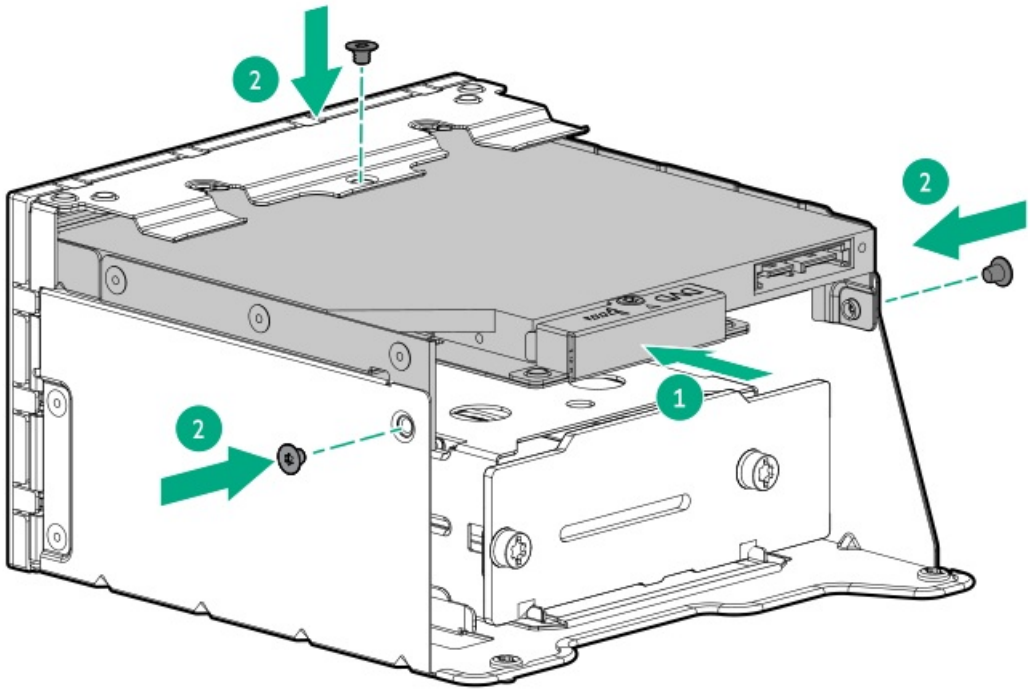
3. Remove the 2 SFF drive blank:
   a. Remove the blank screws.
   b. Remove the drive blank from universal media bay.



4. Install the front 2 SFF stacked drive cage:
   a. Install the 2 SFF stacked drive cage in the universal media bay.
   b. Install the stacked drive cage screws.



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



Installing the universal media bay in the server

6. Back up all server data.
7. Power down the server.
8. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
9. Disconnect all peripheral cables from the server.
10. Remove the server from the rack.
11. Place the server on a flat, level work surface.
12. If installed, remove the front bezel.
13. Remove the access panel.
14. Remove the air baffle.
15. Remove the fan cage.
16. If install, remove the processor mezzanine tray.
17. Remove the system board baffle.
18. Remove the fan cable assembly.
19. Install the universal media bay in the server.
20. Connect the following cables:
    - Storage controller cables
    - Drive power cables
21. Connect the universal media bay cable to the system board.
22. Install the fan cable assembly.
23. Install the system board baffle.

24. If removed, install the processor mezzanine tray.
25. Install the fan cage.
26. Install the air baffle.
27. Install the access panel.
28. If removed, install the front bezel.
29. Install the server into the rack.
30. Connect all peripheral cables to the server.
31. Connect each power cord to the server.
32. Connect each power cord to the power source.
33. Power up the server.

Results

The installation procedure is complete.

Installing an 8 SFF drive cage

Prerequisites

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

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

About this task

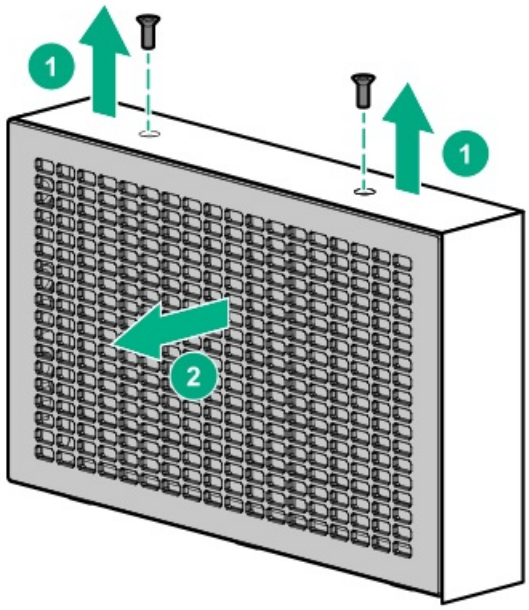
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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

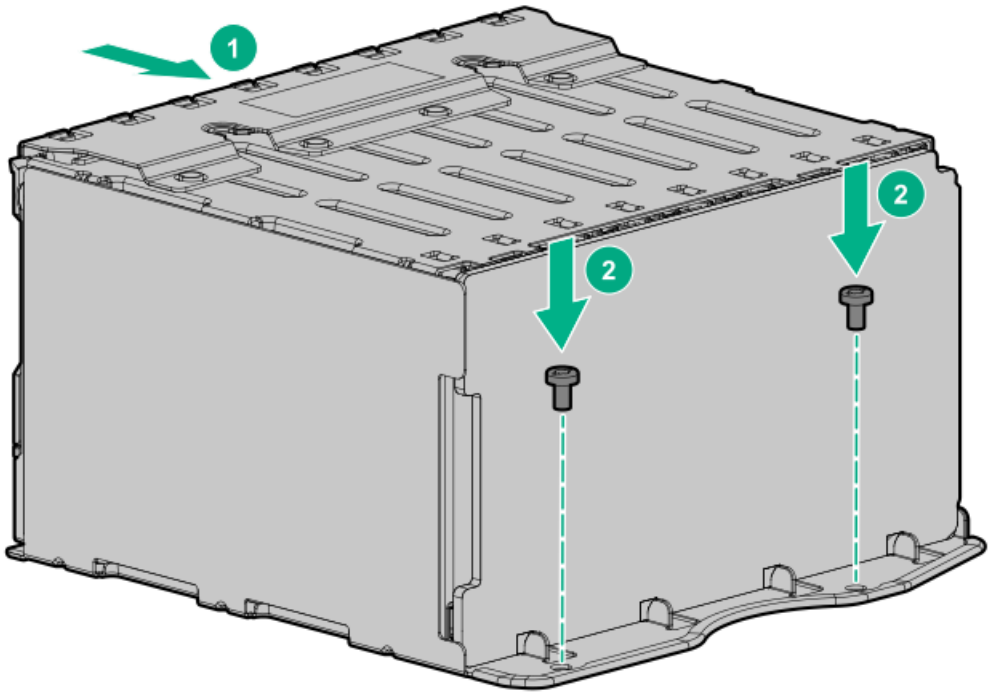
Procedure

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

7. If installed, remove the front bezel.
8. Remove the access panel.
9. Remove the air baffle.
10. Remove the fan cage.
11. If install, remove the processor mezzanine tray.
12. Remove the system board baffle.
13. Remove the fan cable assembly.
14. Remove the drive box blank.



15. Slide the cage in the drive box, and then install the drive cage screws.



16. Connect the following cables:

- Storage controller cables
- Drive power cables

17. Install the fan cable assembly.
18. Install the system board baffle.
19. If removed, install the processor mezzanine tray.
20. Install the fan cage.
21. Install the air baffle.
22. Install the access panel.
23. If removed, install the front bezel.
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. Install the SFF drive.

Results

The installation procedure is complete.

Installing an 8 E3.S drive cage

Prerequisites

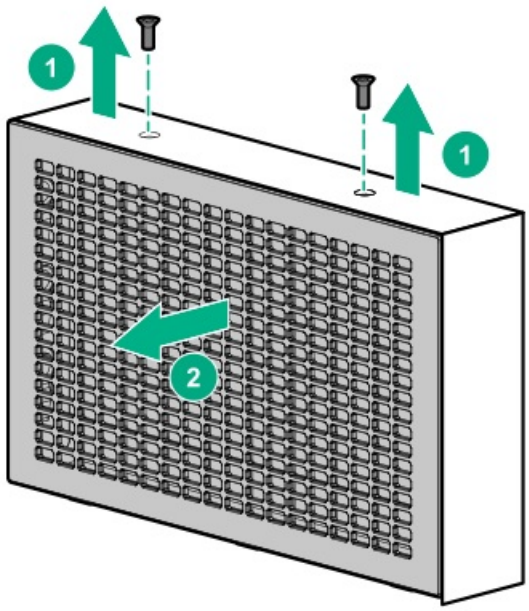
Before you perform this procedure, make sure that you have the following items available:

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

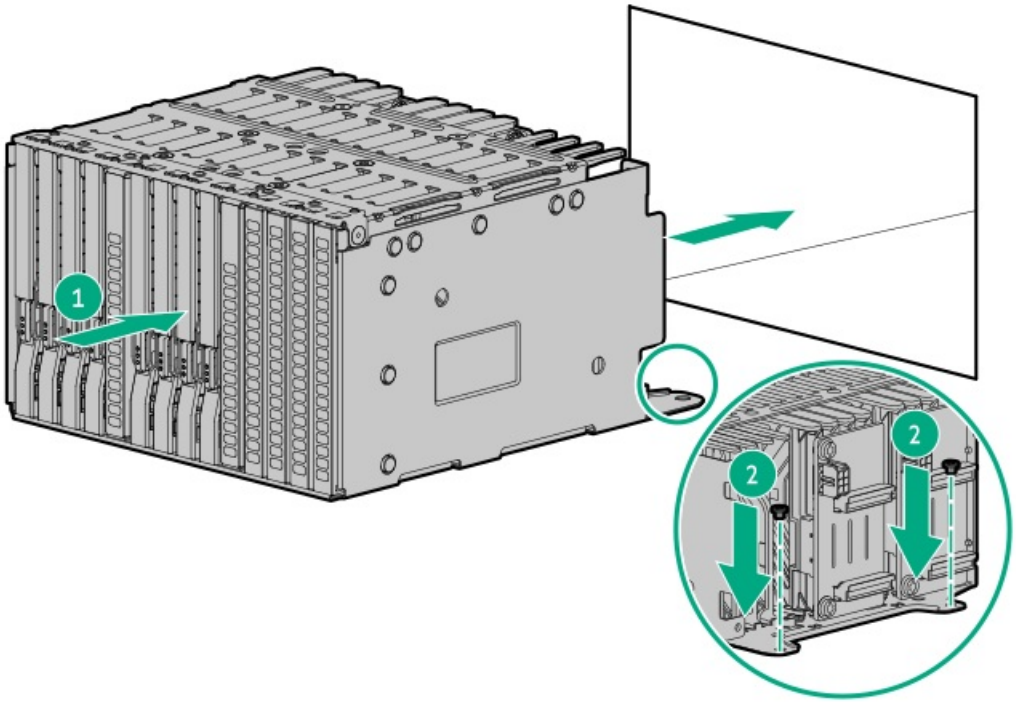
Procedure

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. Place the server on a flat, level work surface.
7. If installed, remove the front bezel.
8. Remove the access panel.

9. Remove the air baffle.
10. Remove the fan cage.
11. If install, remove the processor mezzanine tray .
12. Remove the system board baffle .
13. Remove the fan cable assembly.
14. Remove the drive box blank.



15. Install the 8 E3.S drive cage.



16. Connect the following cables:
    - Storage controller cables

- Drive power cables

17. Install the fan cable assembly.
18. Install the system board baffle.
19. If removed, install the processor mezzanine tray.
20. Install the fan cage.
21. Install the air baffle.
22. Install the access panel.
23. If removed, install the front bezel.
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. Install the E3.S drive.

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

Product	Minimum firmware version
Server system ROM	1.42
HPE MR type-o and type-p Gen11 controllers	52.24.3-4948

Installing the energy pack

About this task

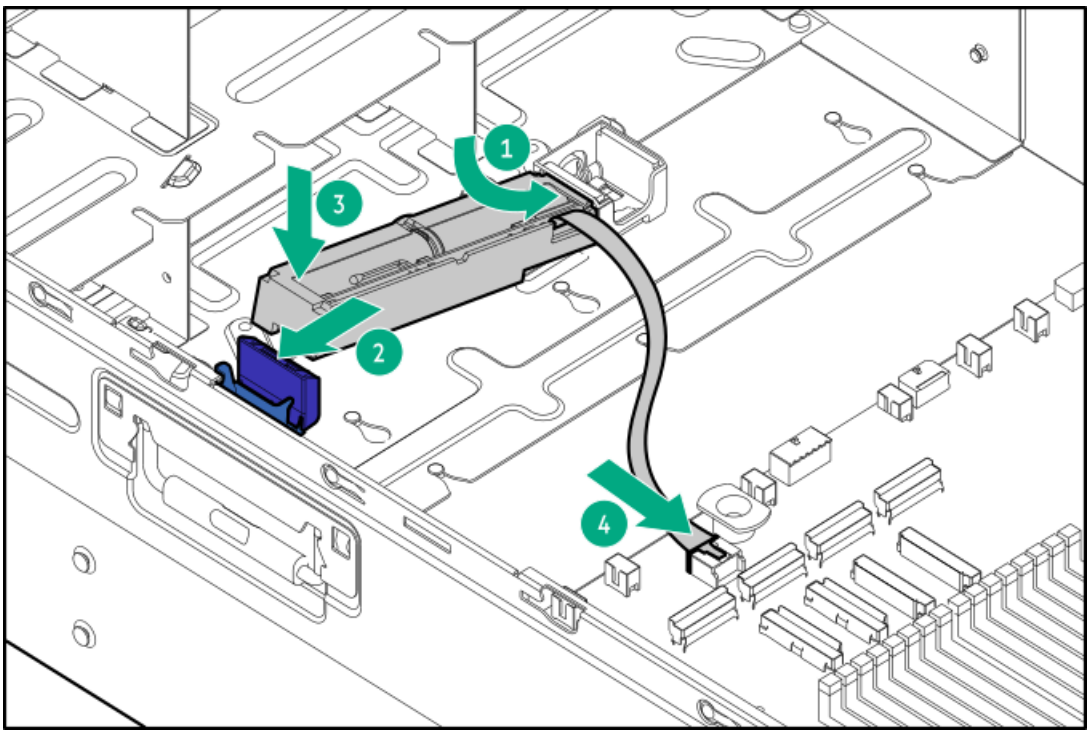
CAUTION

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. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the fan cage.
10. If install, remove the processor mezzanine tray.

11. Remove the system board baffle.
12. Remove the fan cable assembly.
13. Install the energy pack.



14. Install the fan cable assembly.
15. Install the system board baffle.
16. If removed, install the processor mezzanine tray.
17. Install the 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.

Management

Subtopics

Installing the System Insight Display

Installing the System Insight Display

Prerequisites

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

About this task

CAUTION

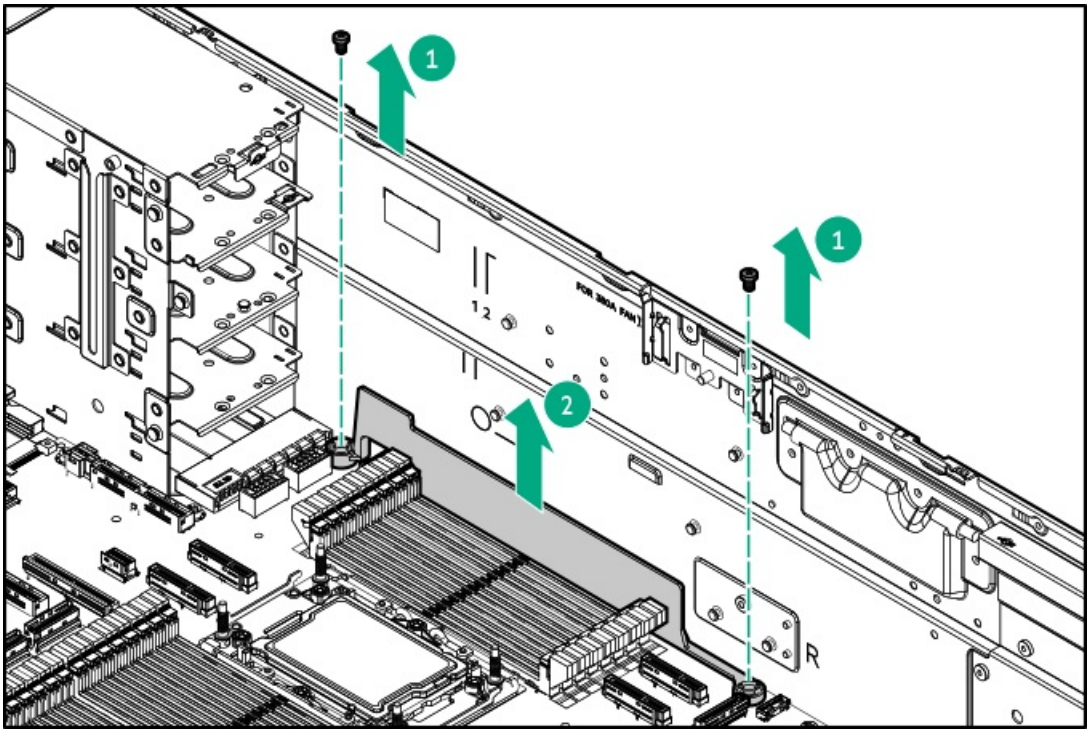
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

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

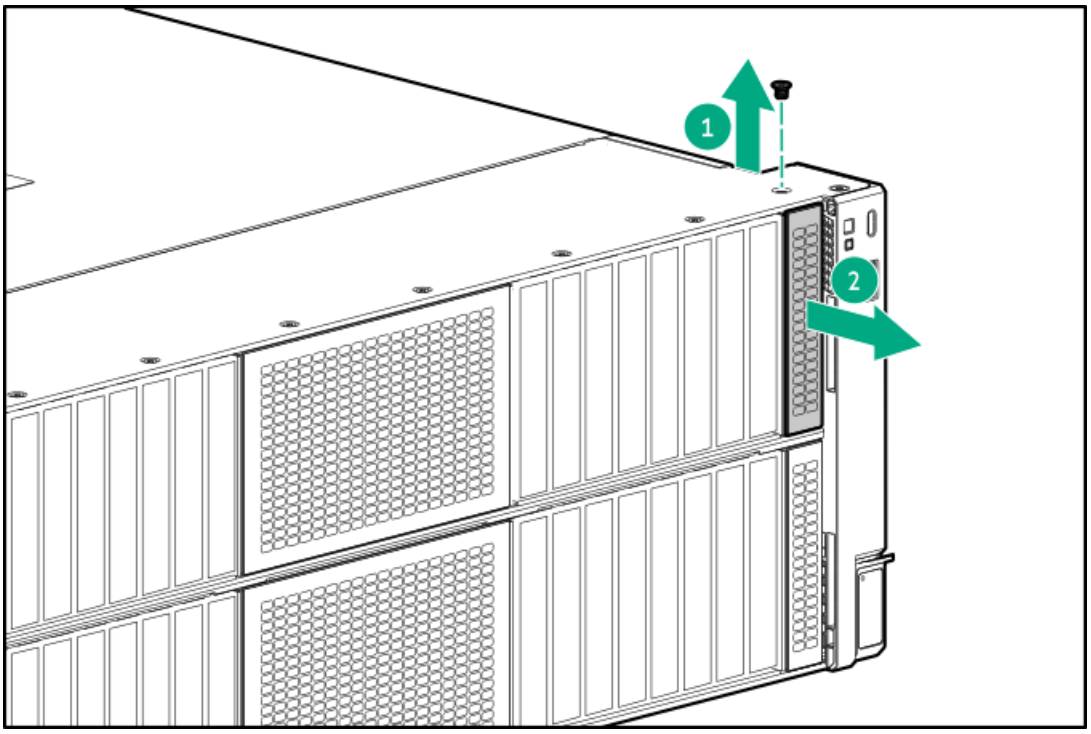
Procedure

1. 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 fan cage.
10. If install, remove the processor mezzanine tray.
11. Remove the system board baffle.
12. Remove the fan cable assembly.
13. Remove the right DIMM guard.



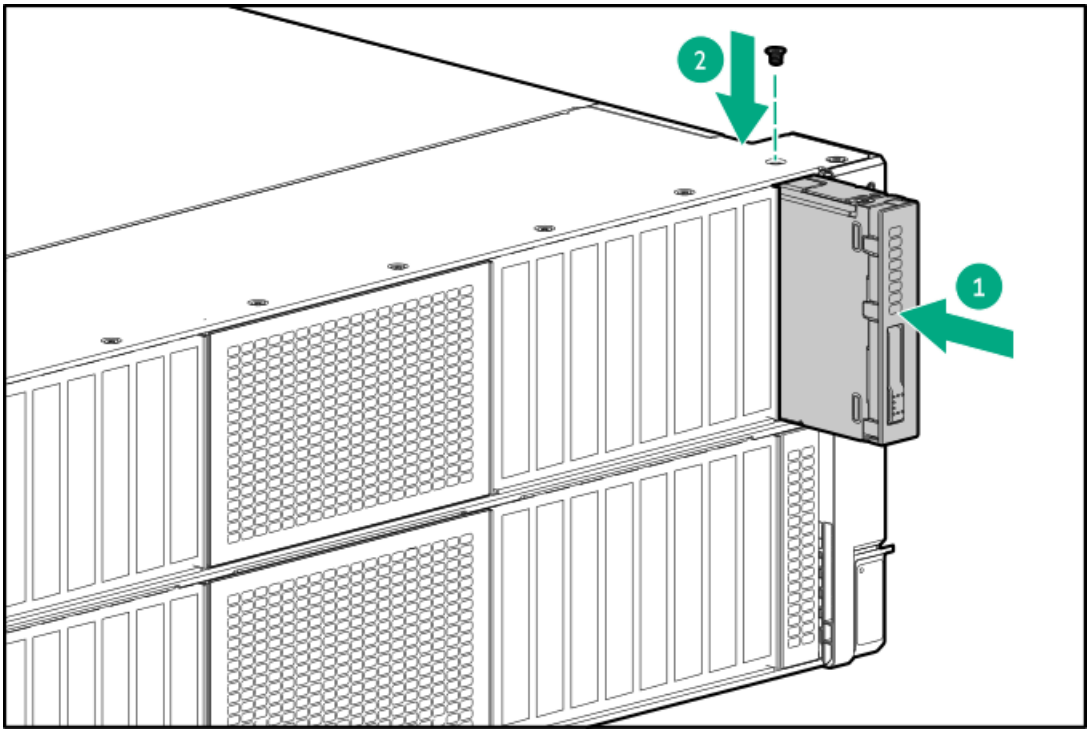
14. Remove the SID blank.

    Retain the screw. This screw with be used to secure the SID.

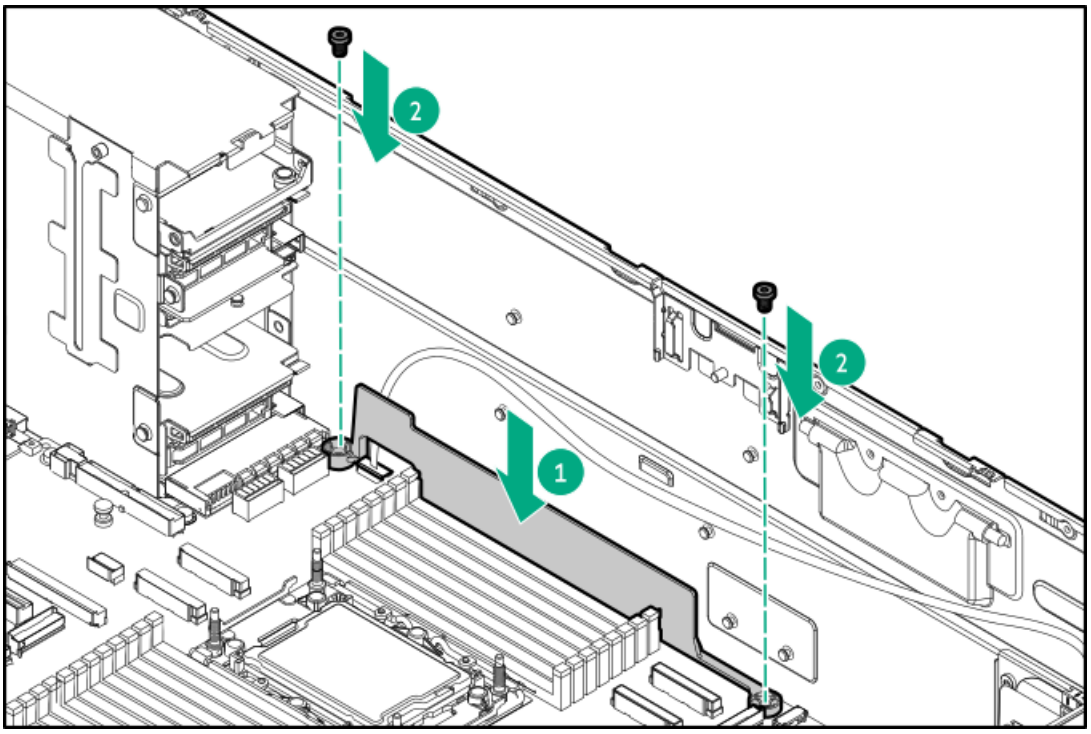


15. Route the SID cable through the opening in the front of the server, and then install the SID.

    Make sure that the SID cable is not in a position where it can be pinched or crimped.



16. Connect the SID cable to the system board .
17. Install the right DIMM guard.



18. Install the fan cable assembly.
19. Install the system board baffle .
20. If removed, install the processor mezzanine tray .
21. Install the fan cage.
22. Install the air baffle.
23. Install the access panel.
24. If removed, install the front bezel .

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

Results

The installation procedure is complete.

Media devices

Subtopics

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

Installing the universal media bay

Prerequisites

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

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

About this task

The server supports the universal media bay in the Box 1 with the following:

- Optical drive bay
- USB 2.0 ports
- DisplayPort 1.1a
- 2 SFF stacked drive cage

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

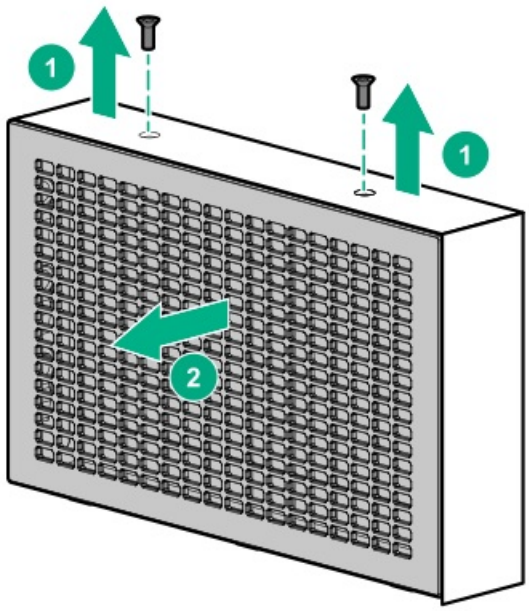
CAUTION
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

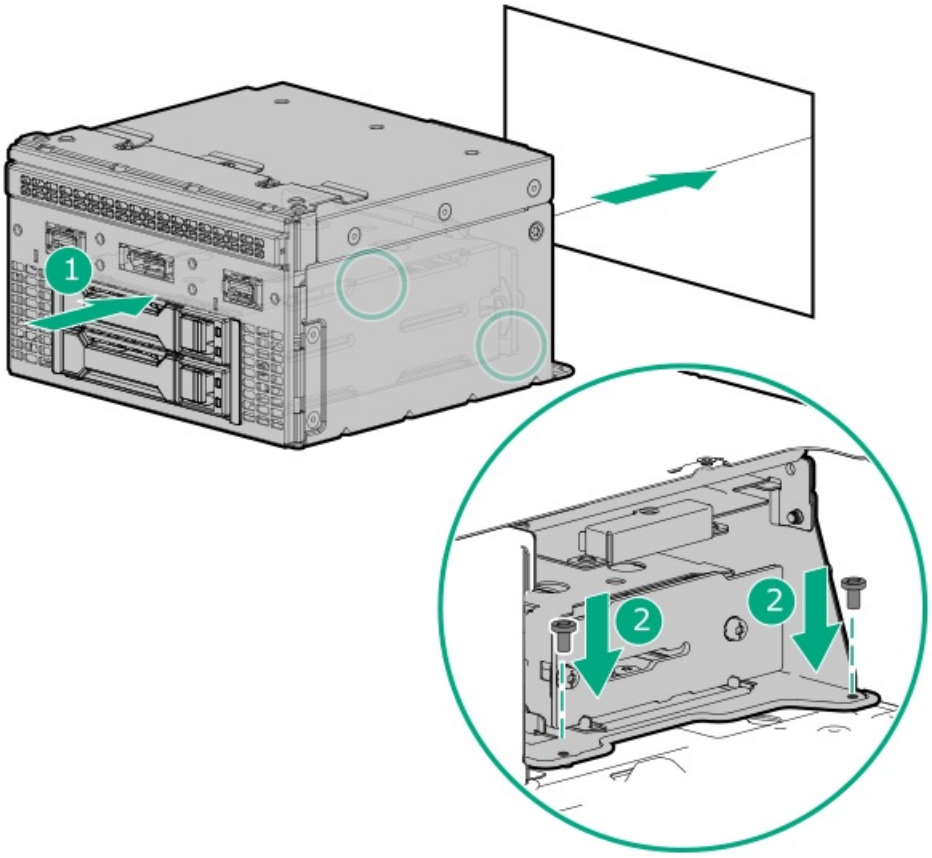
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.

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. If installed, remove the front bezel.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the fan cage.
10. If install, remove the processor mezzanine tray.
11. Remove the system board baffle.
12. Remove the fan cable assembly.
13. (Optional) Install the front 2 SFF stacked drive cage in the universal media bay .
14. Remove the drive box blank.



15. Thread all cables on the universal media bay into the drive box 1, and then slide the universal media bay in and secure it with the two screws.



16. Connect the universal media bay cable to the system board .
17. (Optional) Install the optical drive.
18. Install the fan cable assembly.
19. Install the system board baffle .
20. If removed, install the processor mezzanine tray .
21. Install the fan cage.
22. Install the air baffle.
23. Install the access panel.
24. If removed, install the front bezel.
25. Install the server into the rack .
26. Connect all peripheral cables to the server.
27. Connect each power cord to the server.
28. Connect each power cord to the power source.
29. Power up the server.

Results

The installation procedure is complete.

Installing the optical drive in the universal media bay

Prerequisites

- The optical drive installation requires the optical drive cable option (P73776-001).
- Before you perform this procedure, make sure that you have the following items available:
  - T-10 Torx screwdriver
  - Phillips No. 1 screwdriver

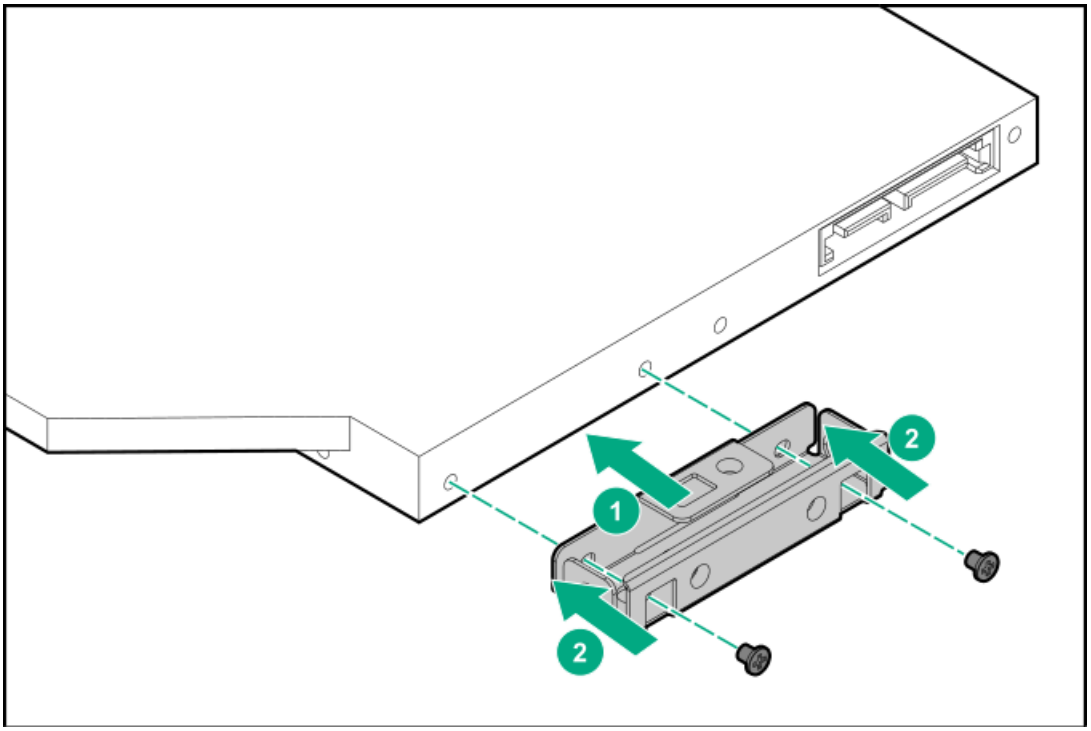
About this task

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

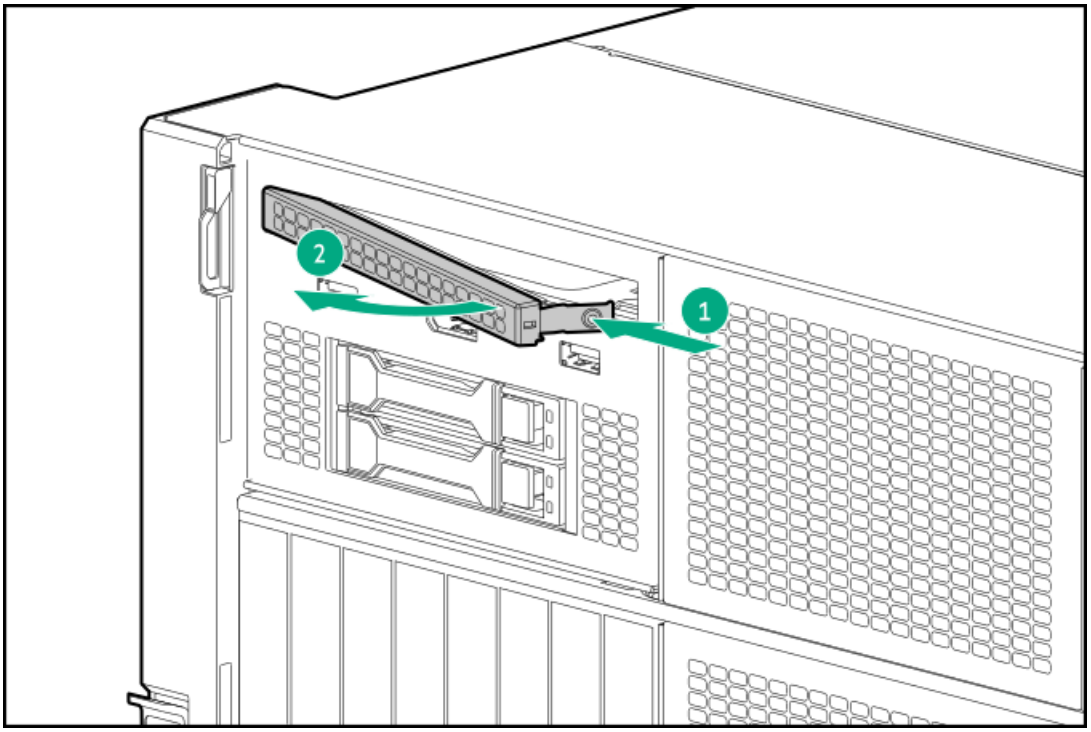
CAUTION
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

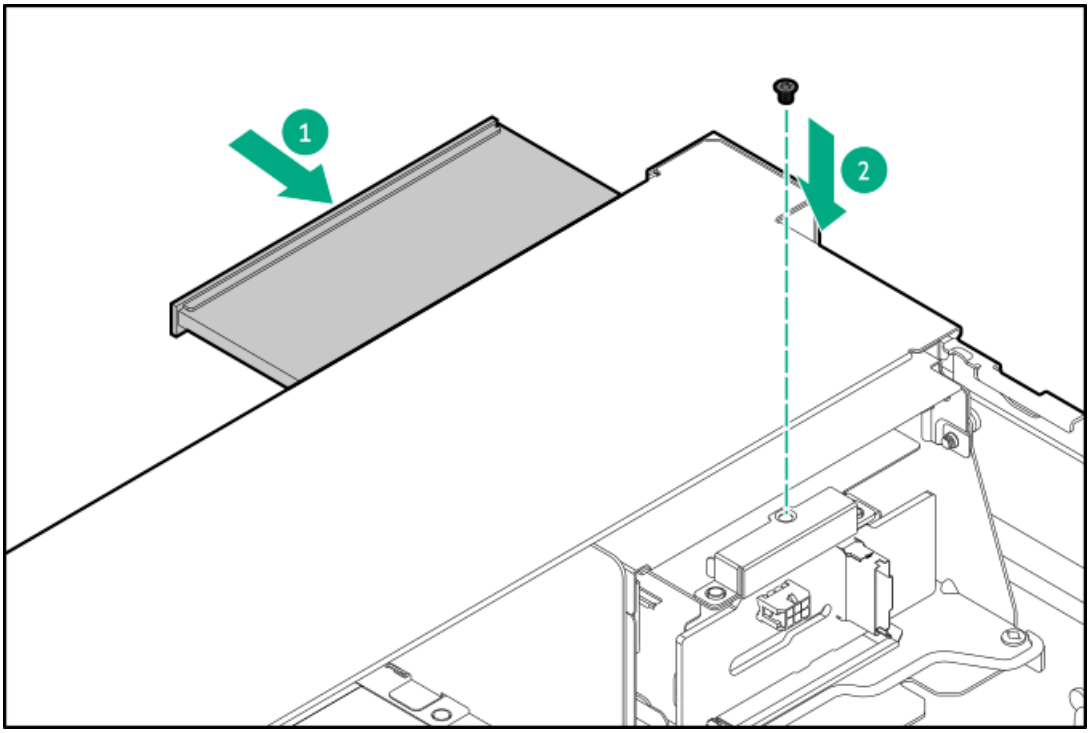
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. If installed, remove the front bezel.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the fan cage.
10. If install, remove the processor mezzanine tray.
11. Remove the system board baffle.
12. Remove the fan cable assembly.
13. Install the universal media bay.
14. Install the optical drive bracket.



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



16. Install the optical drive in the universal bay.



17. Connect the optical drive cable to the system board .
18. Install the fan cable assembly.
19. Install the system board baffle .
20. If removed, install the processor mezzanine tray .
21. Install the fan cage.
22. Install the air baffle.
23. Install the access panel.
24. If removed, install the front bezel.
25. Install the server into the rack .
26. Connect all peripheral cables to the server.
27. Connect each power cord to the server.
28. Connect each power cord to the power source.
29. Power up the server.

Results

The installation procedure is complete.

Memory

Subtopics

HPE SmartMemory speed and population information
DIMM installation guidelines
Installing a DIMM on the processor mezzanine board
Installing a DIMM on the system board

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 on the processor mezzanine board

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.

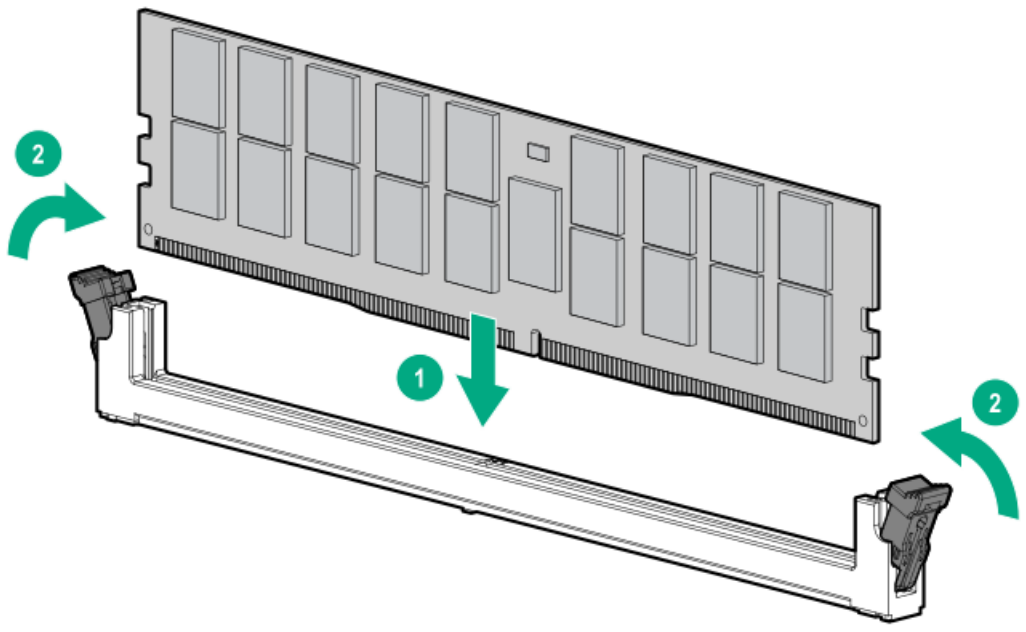
CAUTION

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. 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.



8. Install the air baffle.
9. Install the access panel.
10. Install the server into the rack.
11. Connect all peripheral cables to the server.

12. Connect each power cord to the power source.
13. Connect each power cord to the server.
14. Power up the server.
15. 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.

Installing a DIMM on the system board

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.

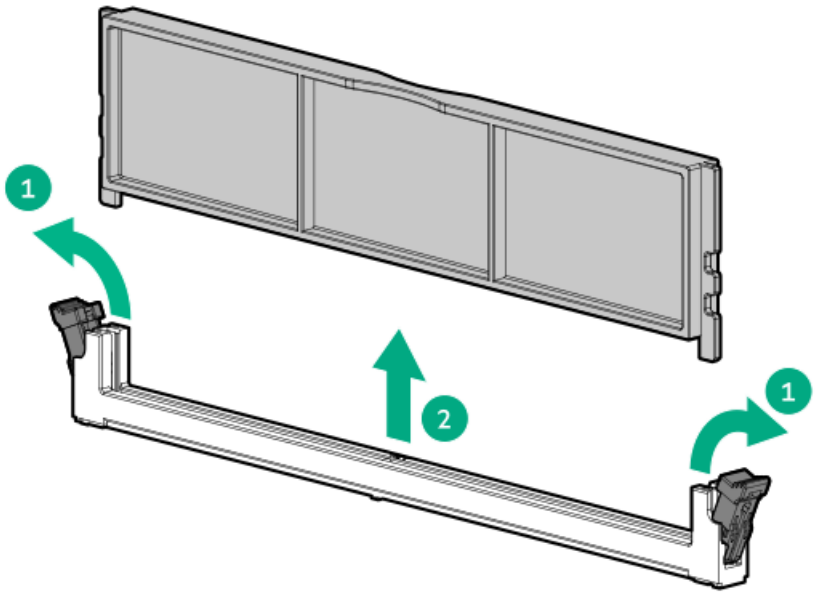
CAUTION
To prevent improper cooling and thermal damage, do not operate the server unless all DIMM slots have either a DIMM or a DIMM blank installed.

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

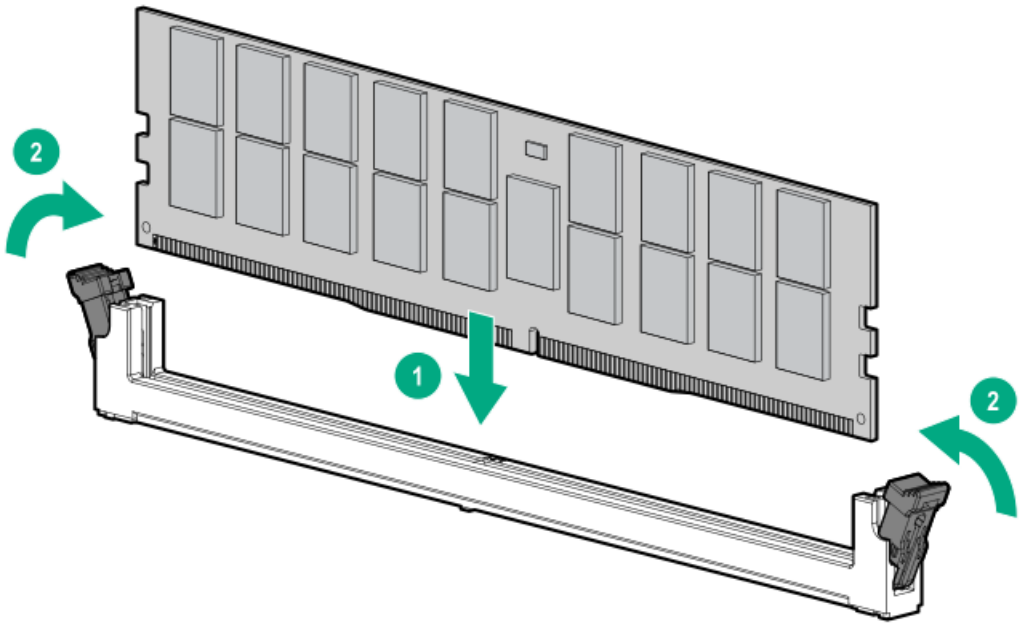
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove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

8. If the processor mezzanine tray is install:
   a. Remove the fan cage.
   b. Remove the processor mezzanine tray .
9. Remove the system board baffle .
10. Remove the DIMM blank.



11. 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.



12. Install the system board baffle .

13. If removed,
    a. Install the processor mezzanine tray.
    b. Install the 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 power source.
19. Connect each power cord to the server.
20. Power up the server.
21. 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

Installing an OCP NIC
Installing a PCIe NIC adapter in the GPU cage

Installing an OCP NIC

Prerequisites

- 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 14 OCP A PCIe5 ×8 or ×16 configurations—P80427-B21
    - For Slot 15 OCP B PCIe5 from ×8 to ×16 configuration—P80428-B21

About this task

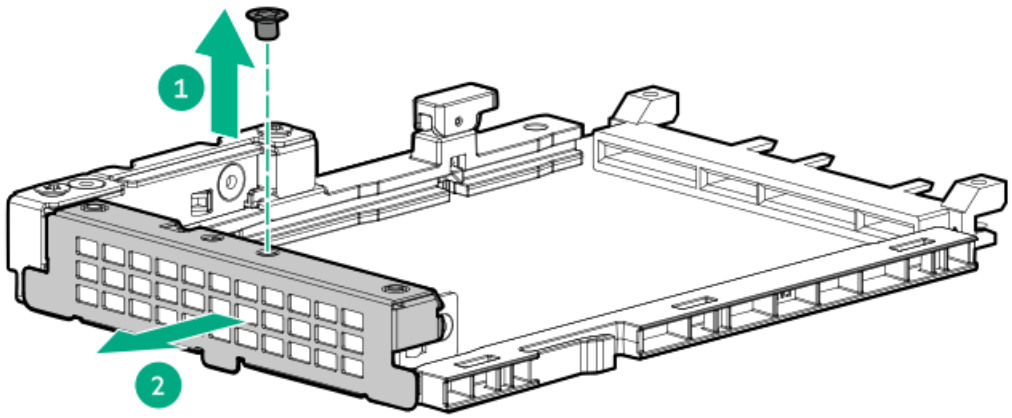
CAUTION
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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.

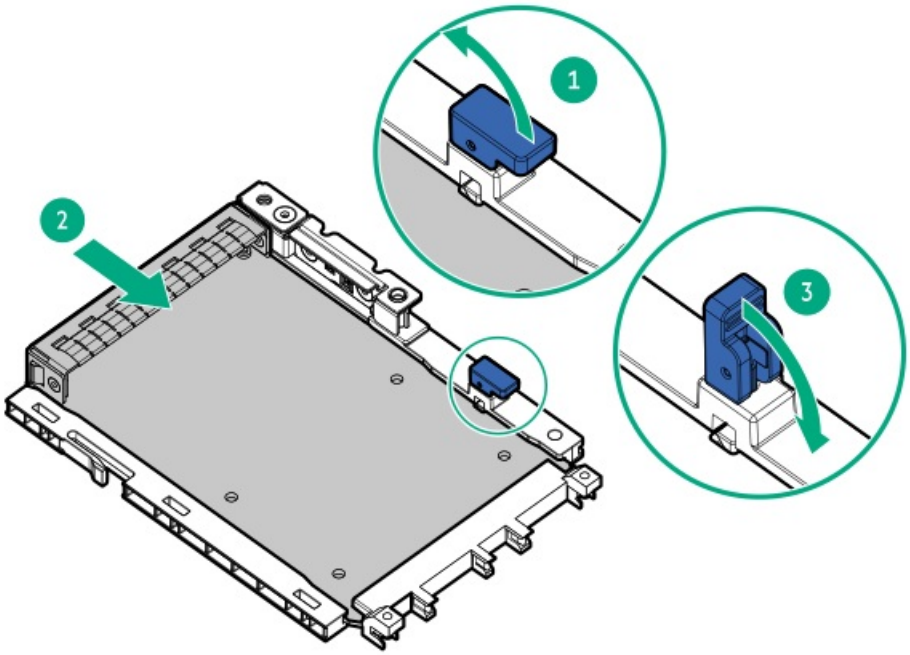
Procedure

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 air baffle.
8. If the processor mezzanine tray is installed:
   a. Remove the fan cage.
   b. Remove the processor mezzanine tray.
9. Remove the system board baffle.
10. Remove the GPU cage.
11. Remove the OCP slot blank.



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

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



13. Connect the OCP bandwidth upgrade cables.
14. Install the GPU cage.
15. Install the system board baffle.
16. If removed:
    a. Install the processor mezzanine tray.
    b. Install the fan cage.
17. Install the air baffle.
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. Power up the server.

Results

The installation procedure is complete.

Installing a PCIe NIC adapter in the GPU cage

Prerequisites

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

About this task

CAUTION

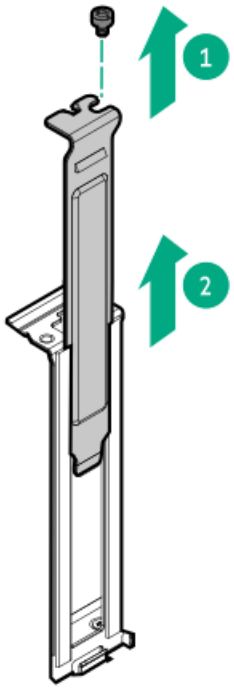
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

CAUTION

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

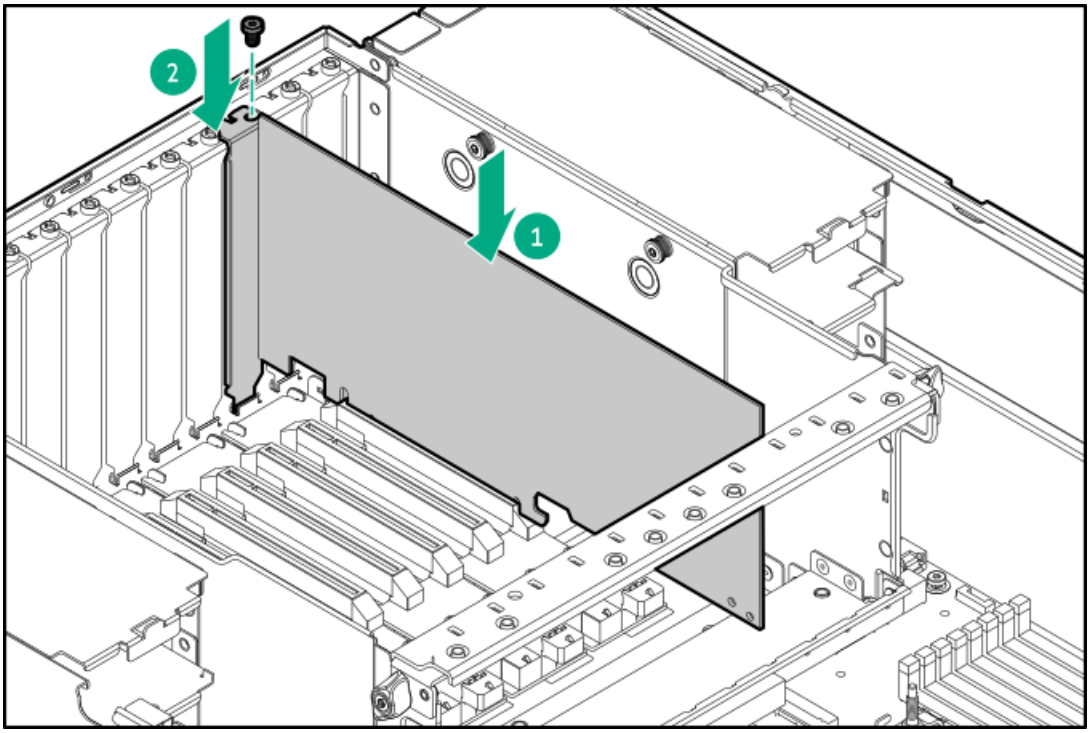
Procedure

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the PCIe slot blank.



8. Install the PCIe NIC adapter in the GPU cage.

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



9. Connect all necessary internal cabling to the PCIe NIC adapter.
10. Install the access panel.
11. Install the server into the rack.
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

Results

The installation procedure is complete.

OS boot device

Subtopics

HPE NS204i-u Boot Device V2 option

HPE NS204i-u Boot Device V2 option

The HPE NS204i-u Boot Device V2 can be installed in two locations.

- If no SFF or E3.S drive cage is installed in drive box 4, install the boot device in drive box 4 on the front panel.
- If an SFF or E3.S drive cage is installed in drive box 4, install the boot device in the power supply bay on the rear panel.

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 on the front panel

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:
  - Front NS204i-u enablement option (P79031-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

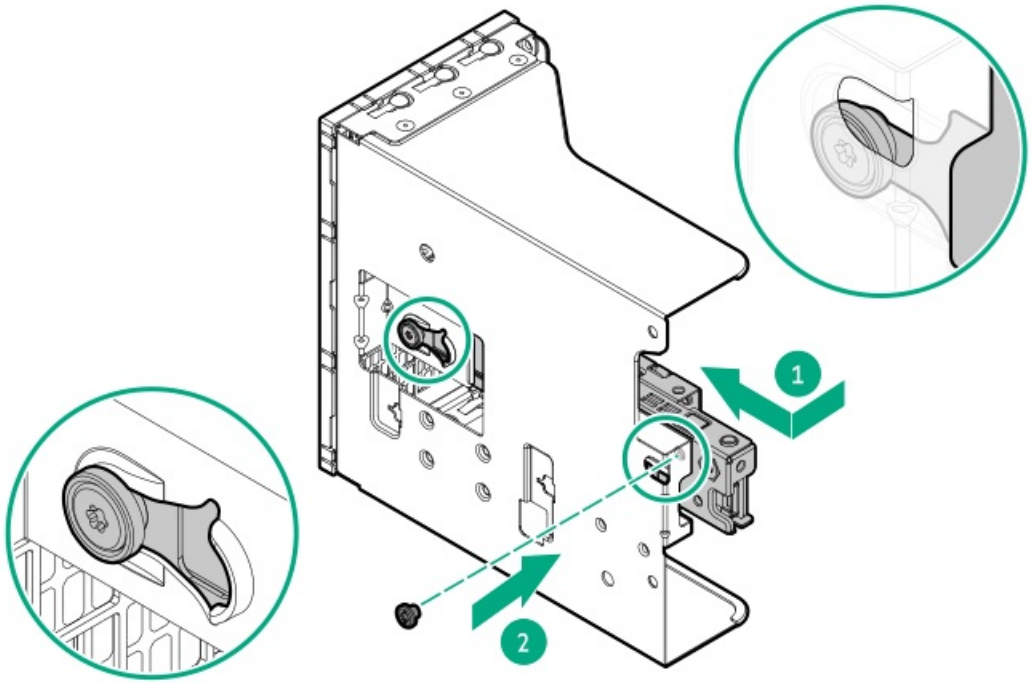
For successful RAID 1 configuration, verify that the boot device SSDs have the same model number and firmware version:

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

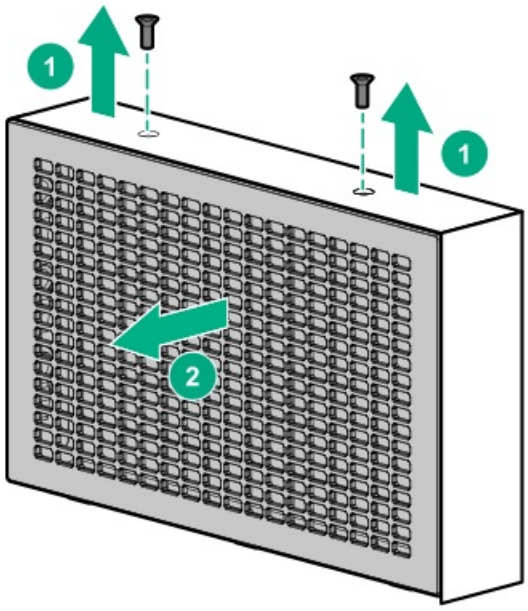
Configurations with SSDs from different manufacturers are not supported.

Procedure

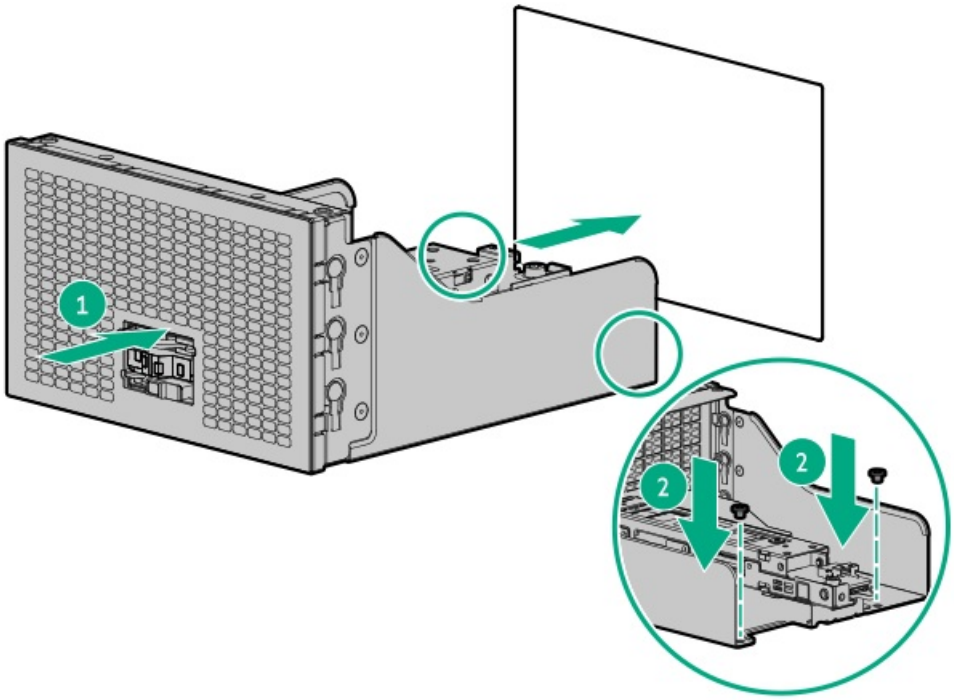
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. If installed, remove the front bezel.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the fan cage.
10. If install, remove the processor mezzanine tray.
11. Remove the system board baffle.
12. Remove the fan cable assembly.
13. Install the boot device on the cage.



14. Connect the signal and power cables to the boot device.
15. Remove the drive box blank.



16. Install the boot device cage in the server.



17. Connect the boot device signal and power cables to the system board .
18. Install the fan cable assembly.
19. Install the system board baffle .
20. If removed, install the processor mezzanine tray .
21. Install the fan cage.
22. Install the air baffle.
23. Install the access panel.

24. If removed, install the front bezel.
25. Install the server into the rack.
26. Connect all peripheral cables to the server.
27. Connect each power cord to the server.
28. Connect each power cord to the power source.
29. Power up the server.
30. Verify that the Online/Activity LEDs on the boot device are solid green.
31. Deploy a supported operating system to the boot device.
32. After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

    Proceed with normal system setup and operation.

Results

The installation procedure is complete.

Installing the HPE NS204i-u Boot Device V2 on the rear panel

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:
  - Rear NS204i-u enablement option (P80440-B21)
  - T-10 Torx screwdriver
  - T-15 Torx screwdriver

About this task

CAUTION

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

CAUTION

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

IMPORTANT

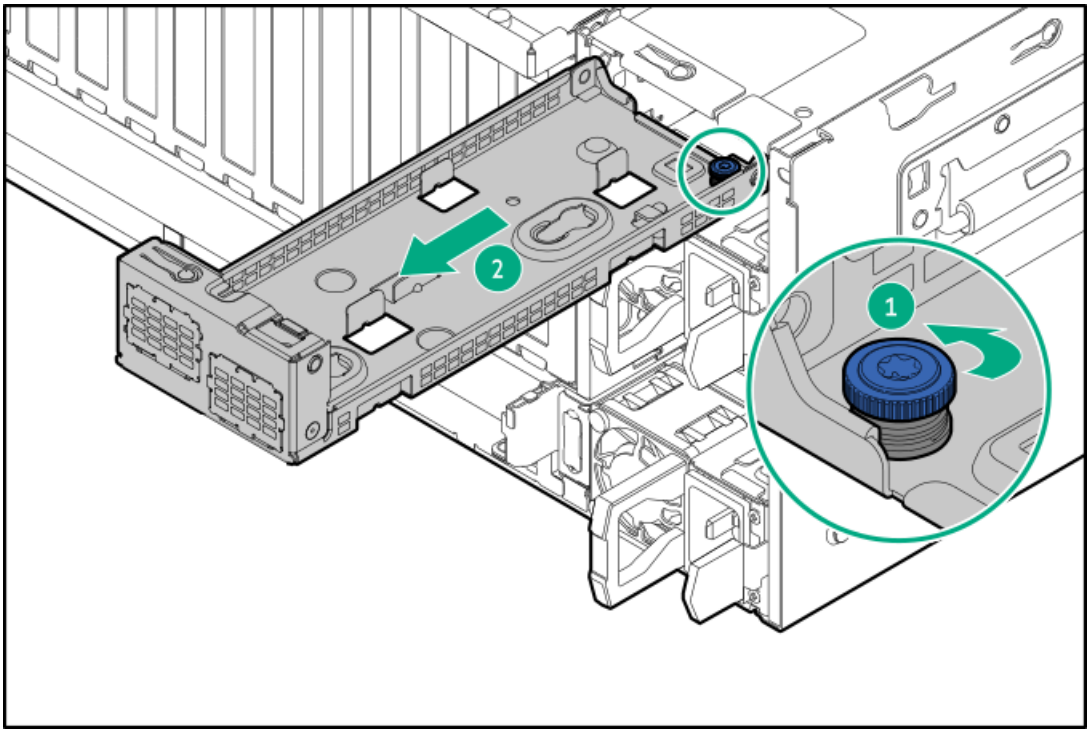
For successful RAID 1 configuration, verify that the boot device SSDs have the same model number and firmware version:

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

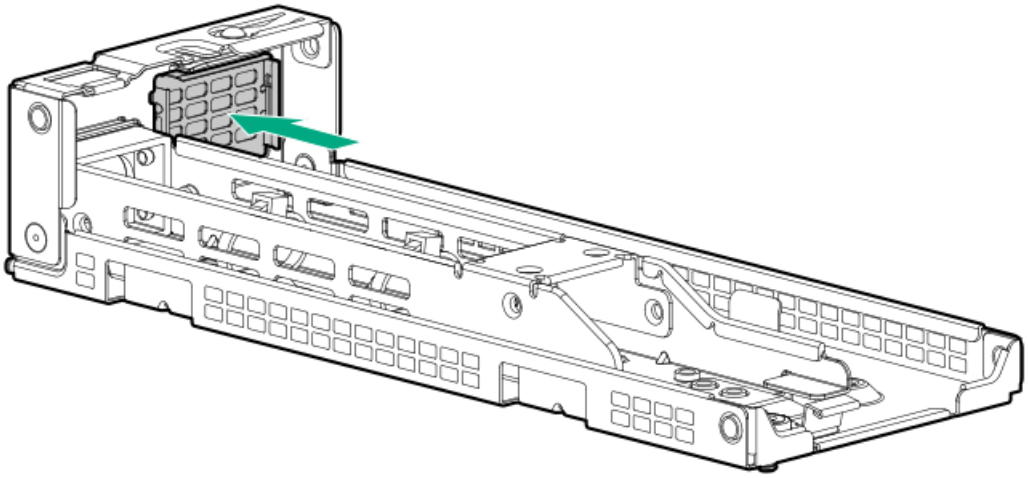
Configurations with SSDs from different manufacturers are not supported.

Procedure

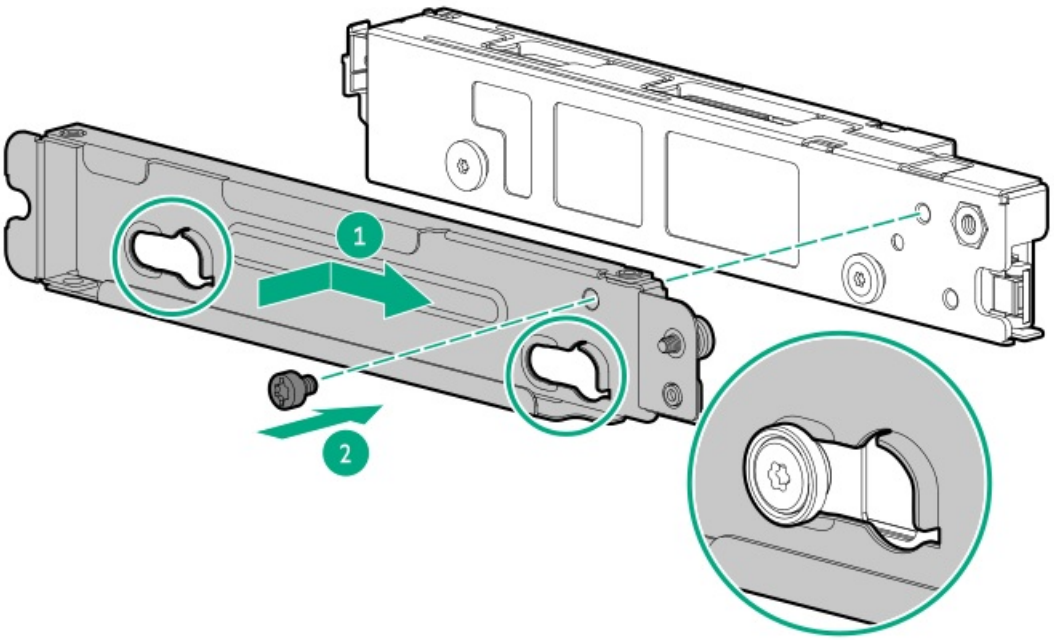
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the air baffle.
8. If the processor mezzanine tray is installed:
   a. Remove the fan cage
   b. Remove the processor mezzanine tray.
9. Remove the system board baffle.
10. Remove the GPU cage.
11. Remove the boot device tray from the server.



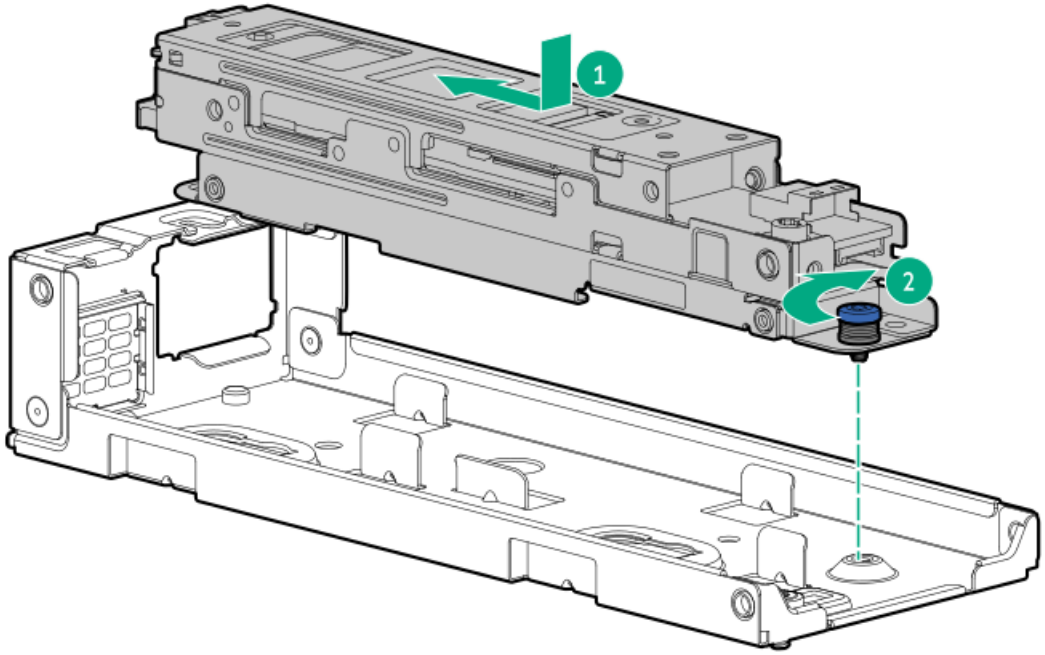
12. Remove the boot device blank from the tray.



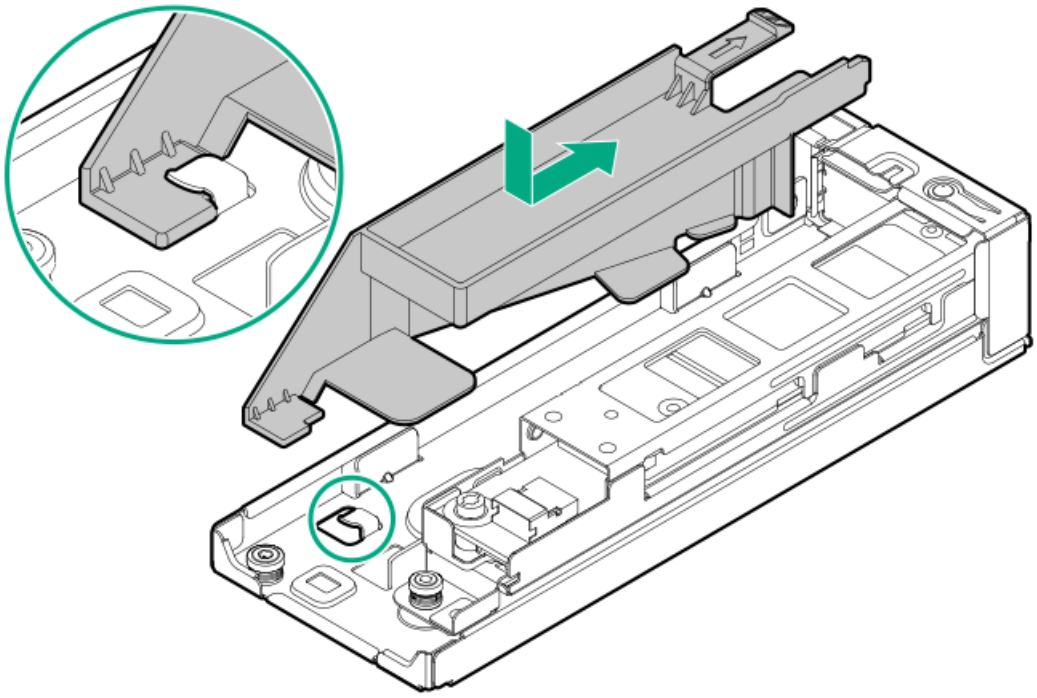
13. Install the bracket on the boot device.



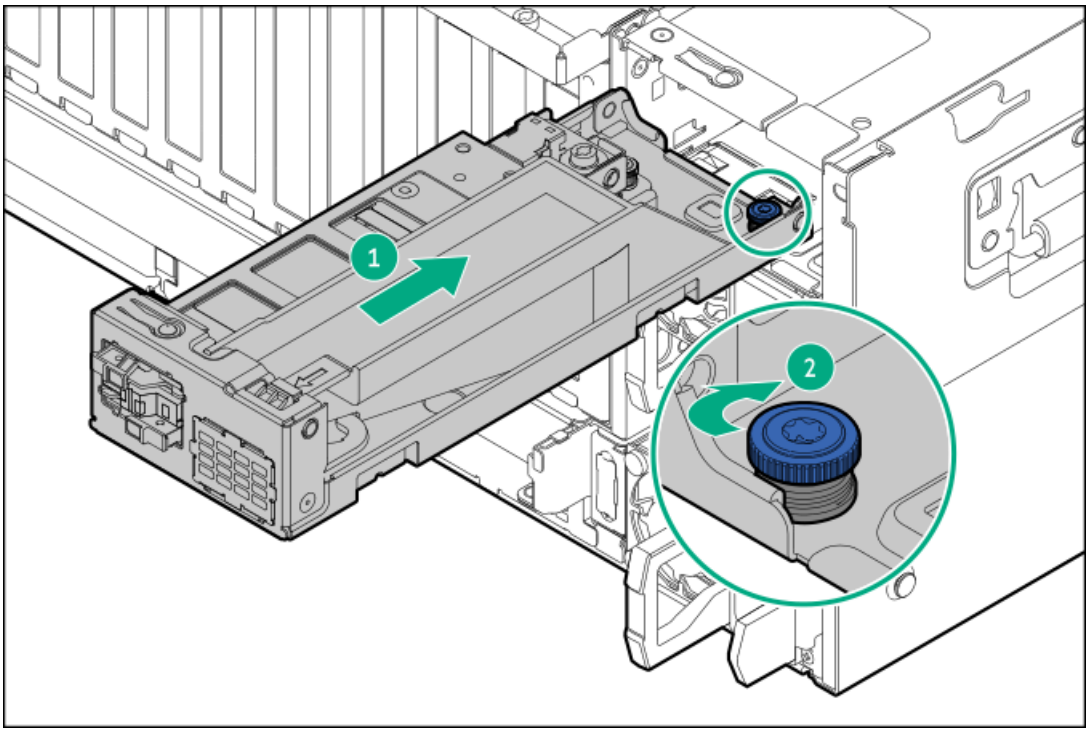
14. Install the boot device on the tray.



15. Install the boot device baffle on the tray.



16. Connect the signal and power cables to the boot device.
17. Install the boot device tray into the server.



18. Connect the boot device signal and power cables to the system board .
19. Install the GPU cage.
20. Install the system board baffle .
21. If removed:
    a. Install the processor mezzanine tray .
    b. Install the 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 supply options

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:

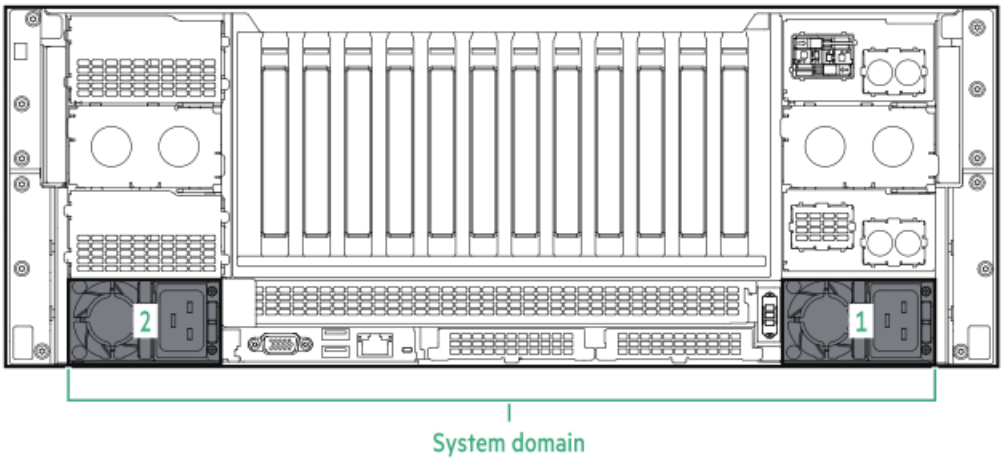
- Limit or disable some power supply features including support for power redundancy.
- Cause the system to become unstable and might shut down.

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.

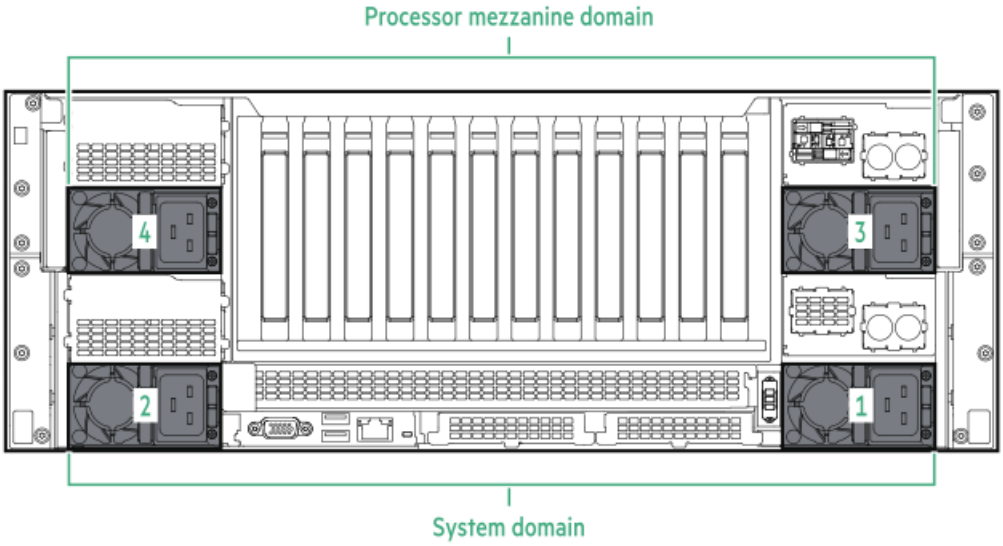
Power supply guidelines

Depending on the processor configurations, the server supports installation of one, two or four power supplies.

Two-power supply configuration



Four-processor configuration



System and processor mezzanine domains have two power supplies that support 1 + 1 redundancy, and 1 + 0 / 2 + 0 nonredundancy.

- In 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.
- In 1 + 0 or 2 + 0 nonredundancy, there is no power supply redundancy. The server consumes more power than what redundancy can supply, and will initiate an operating system shutdown if one or more power supplies fails.

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

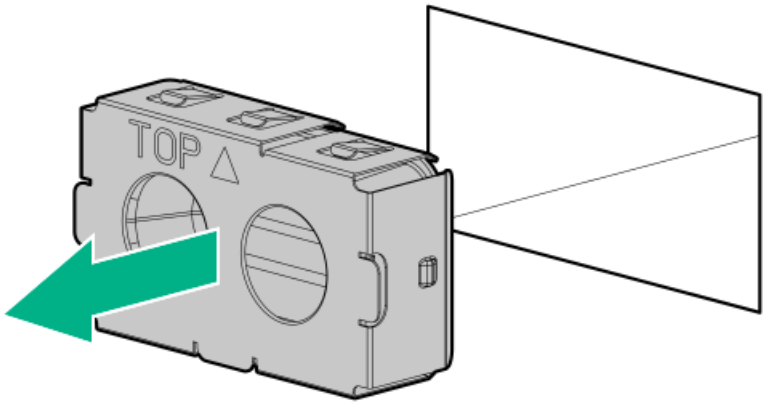
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

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.

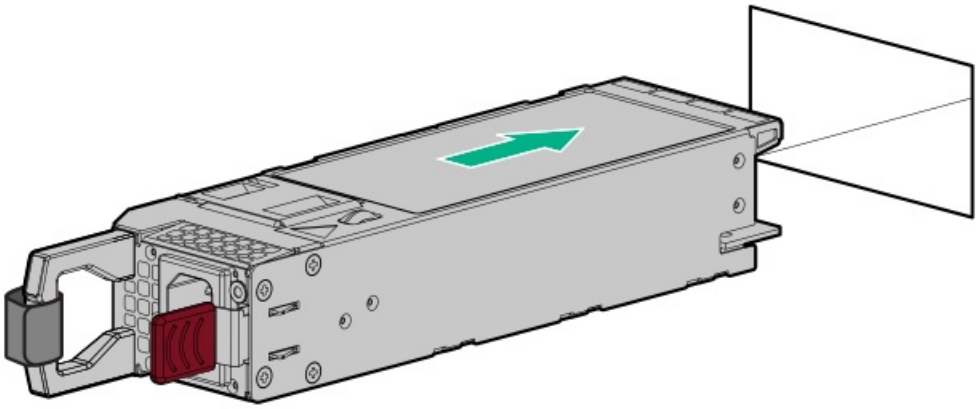
Procedure

1. Remove the power supply bay blank.

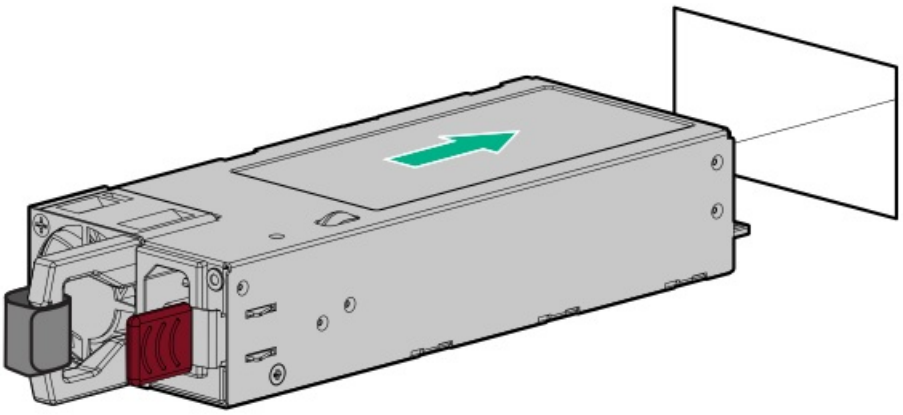


2. Immediately slide the power supply into the bay until it clicks into place.

   - 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.

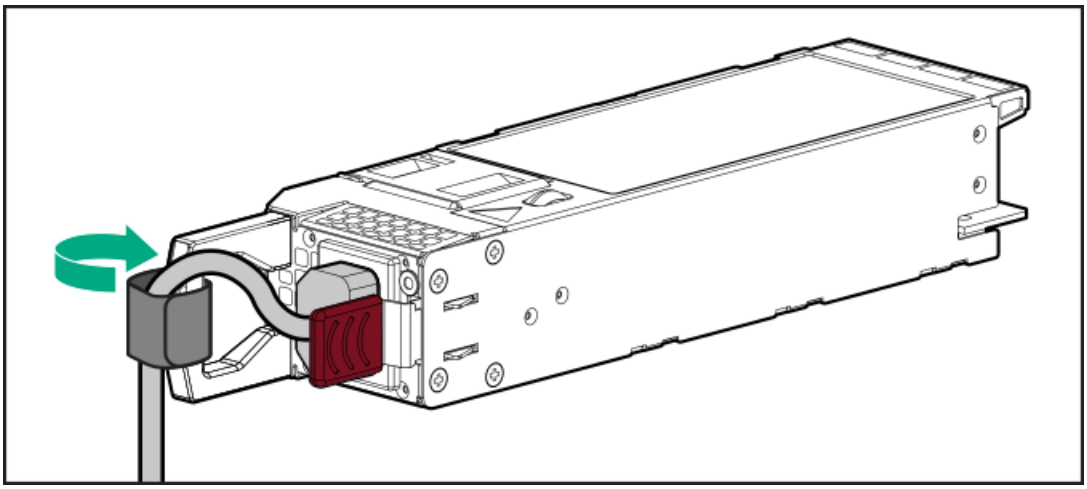
4. Secure the power cord in the strain relief strap attached to the power supply handle:
   a. Unwrap the strain relief strap from the power supply handle.

CAUTION

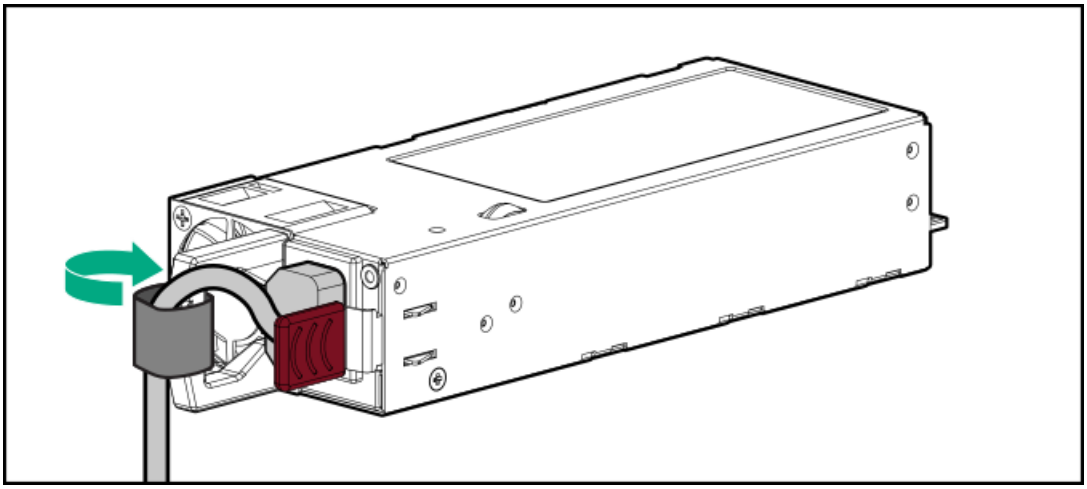
Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.

   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

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

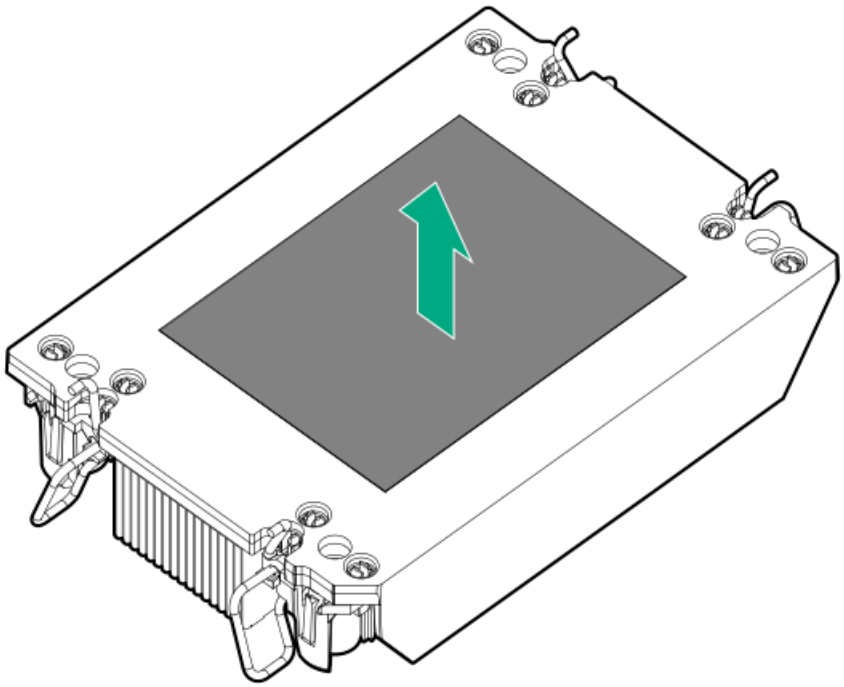
- Identify the heatsink and processor socket components .
- Review the processor cautions .
- Before you perform this procedure, make sure that you have a T-30 Torx screwdriver or a torque screwdriver with T-30 Torx bit available.

Procedure

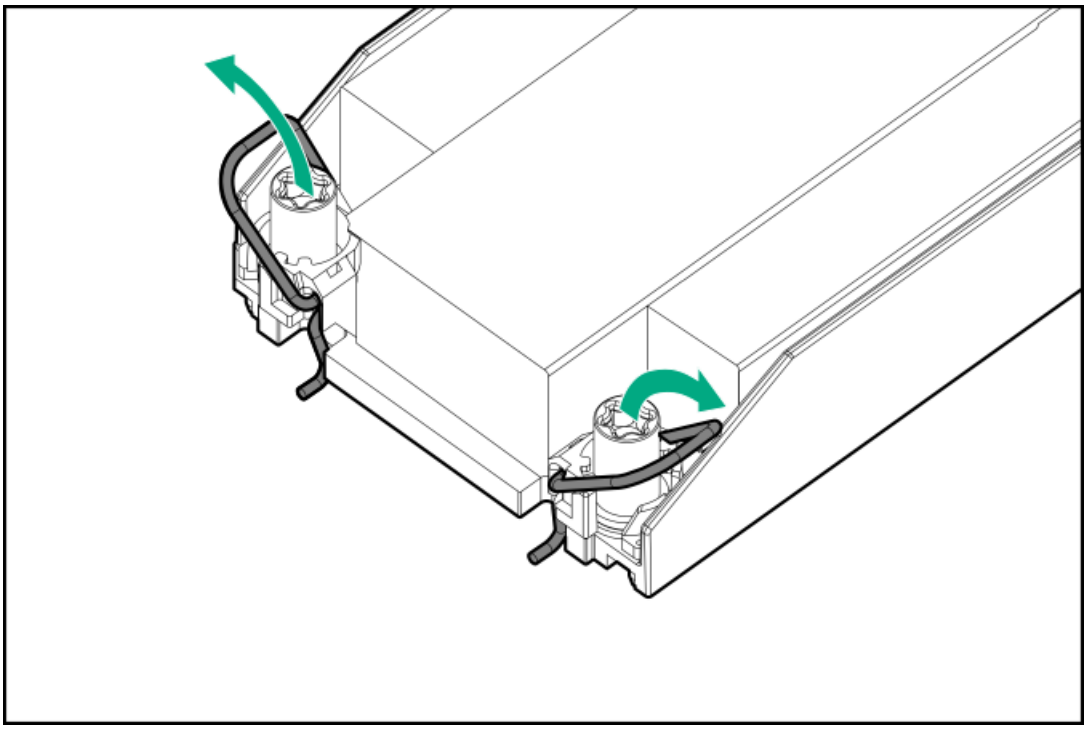
1. Power down the server .
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.

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 system board baffle.
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.

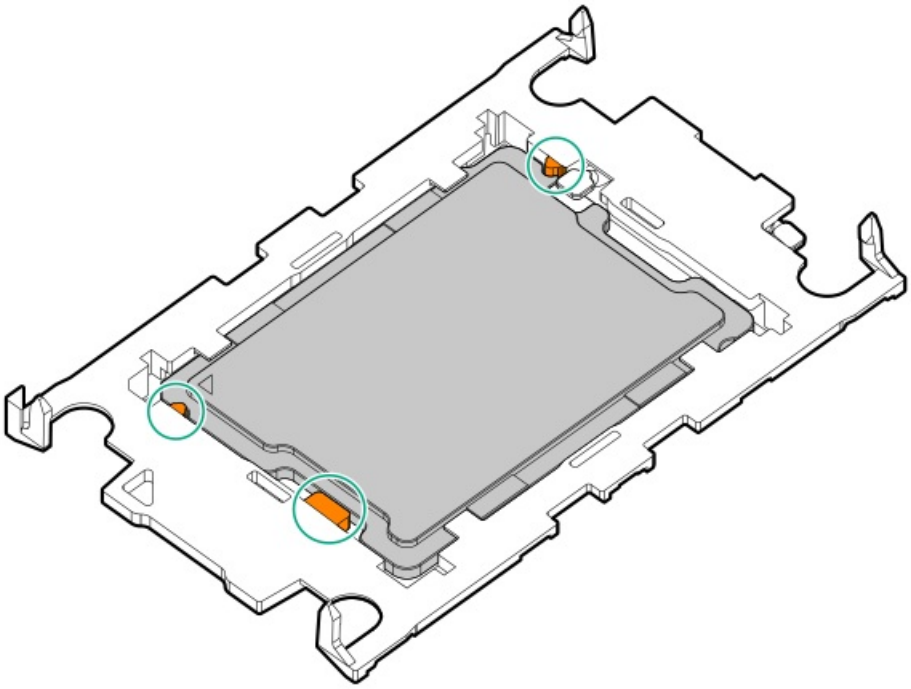


10. Set the anti-tilt wires to the locked position.



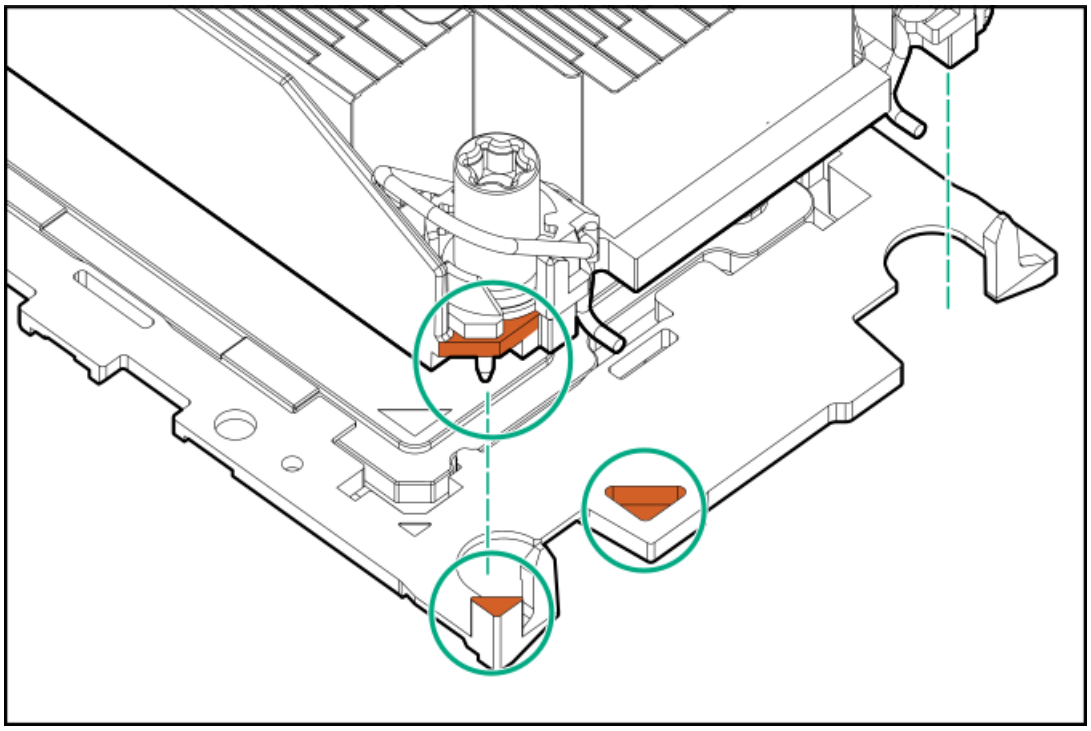
11. Verify that the processor is securely latched to the processor carrier.

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



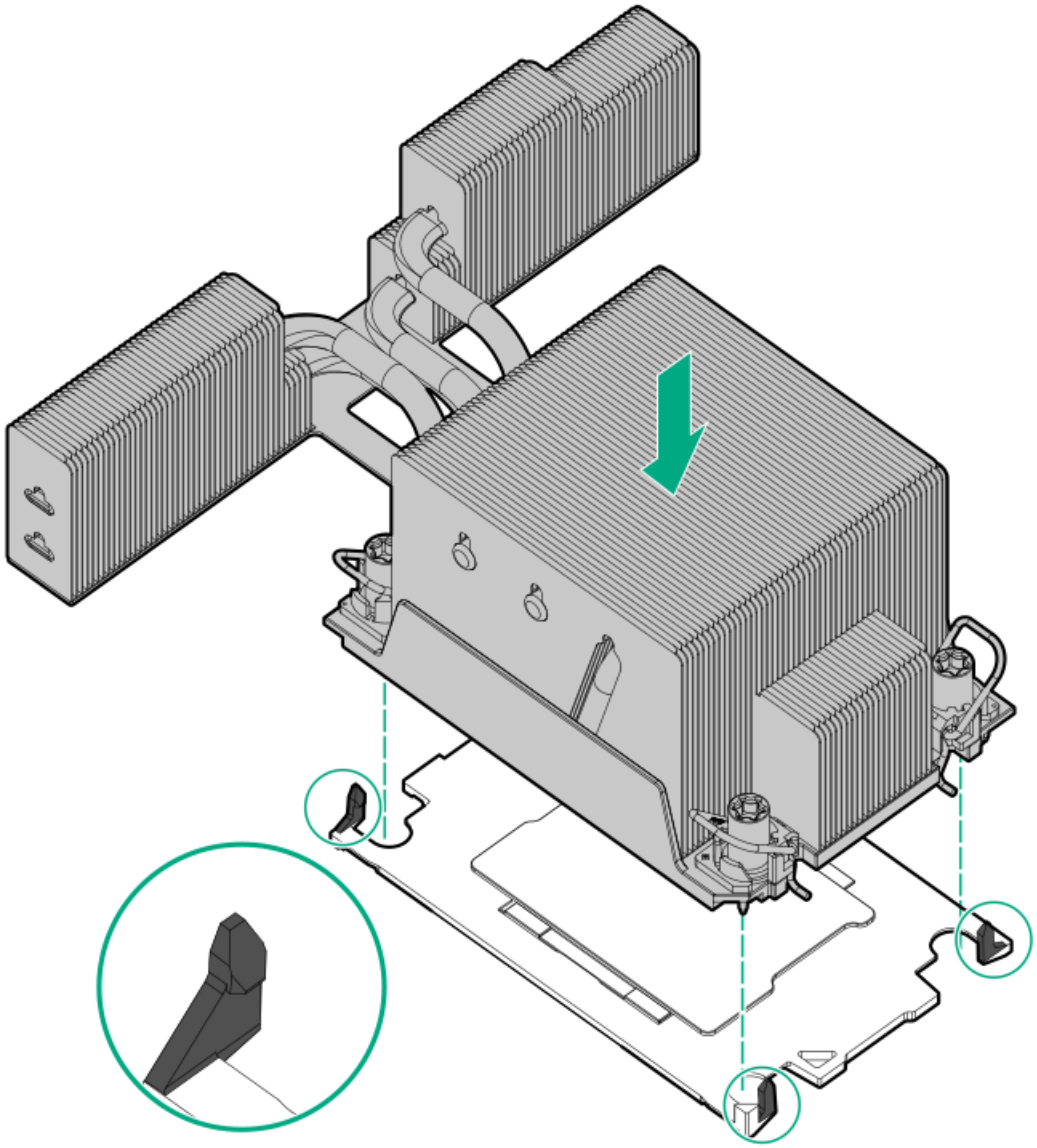
12. Attach the heatsink to the processor carrier:

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

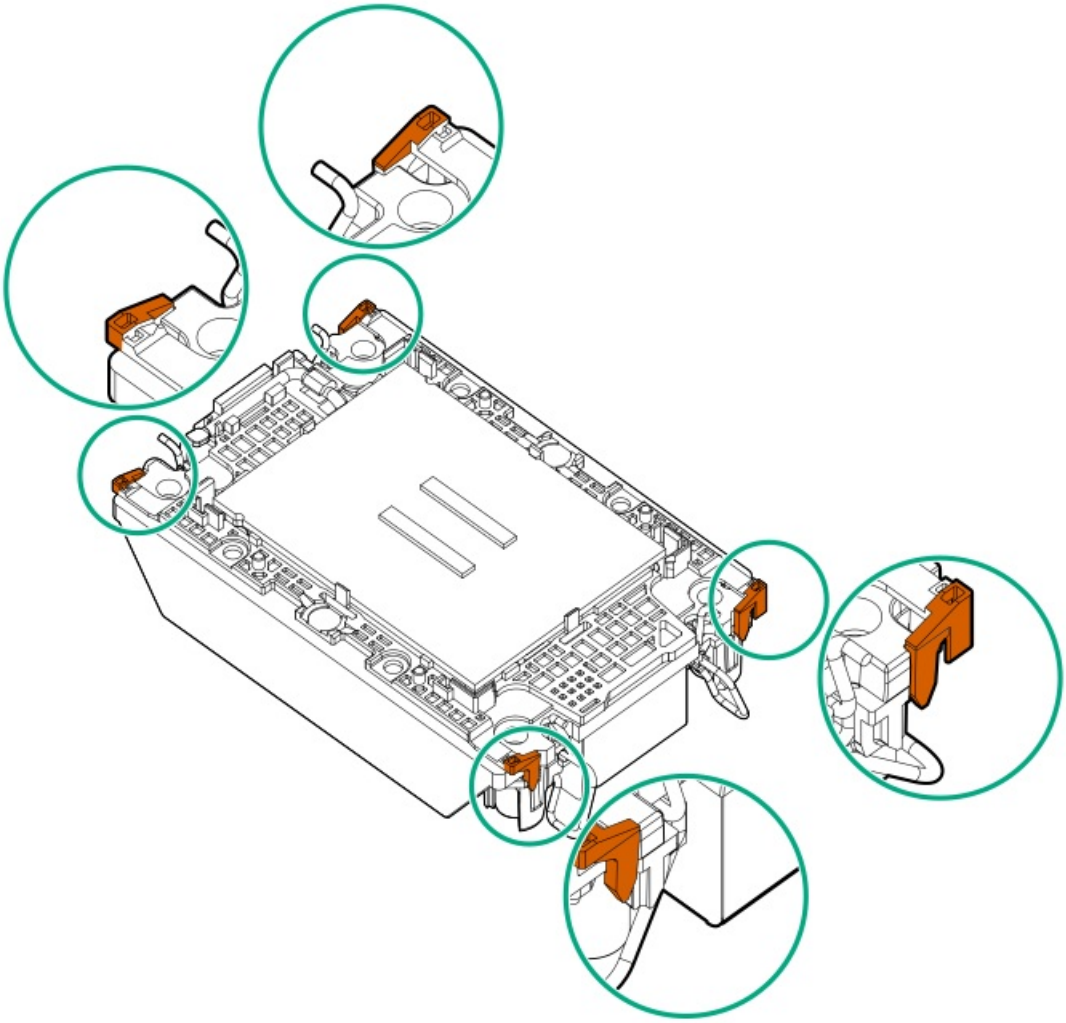


b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

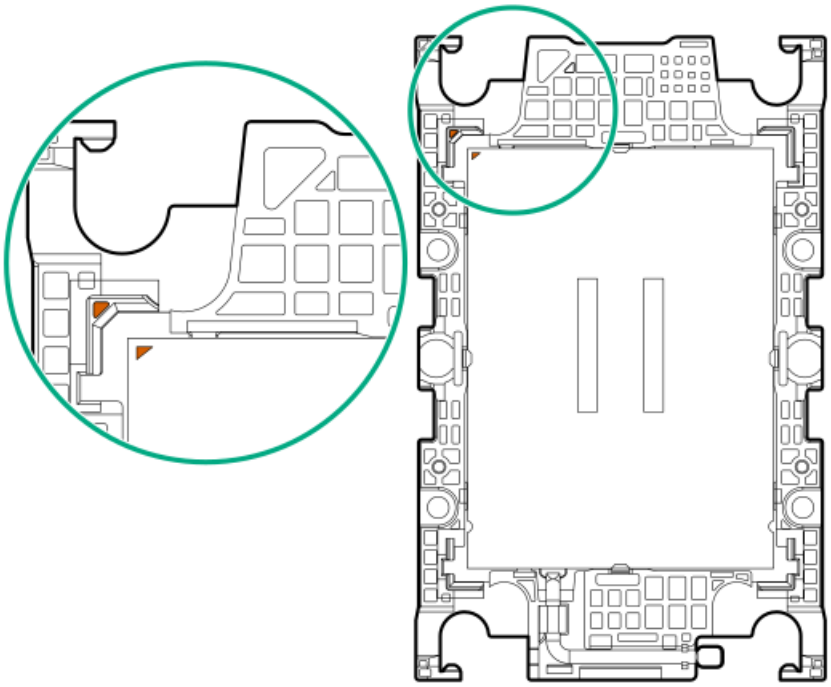
   There will be an audible click to indicate that the heatsink is properly latched on the processor carrier.



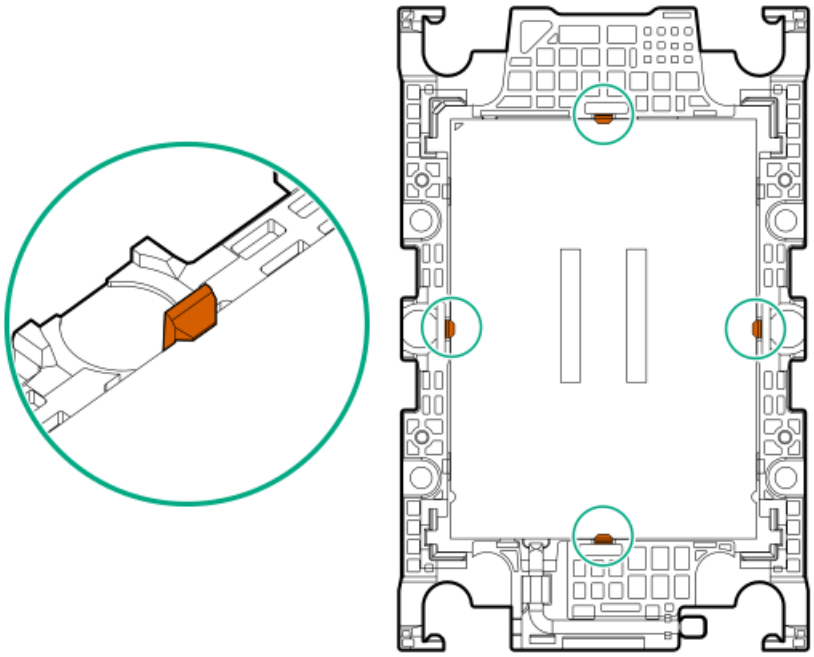
13. Perform the following verification steps:
    a. Verify that the tabs on the processor carrier are securely latched on the heatsink.



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

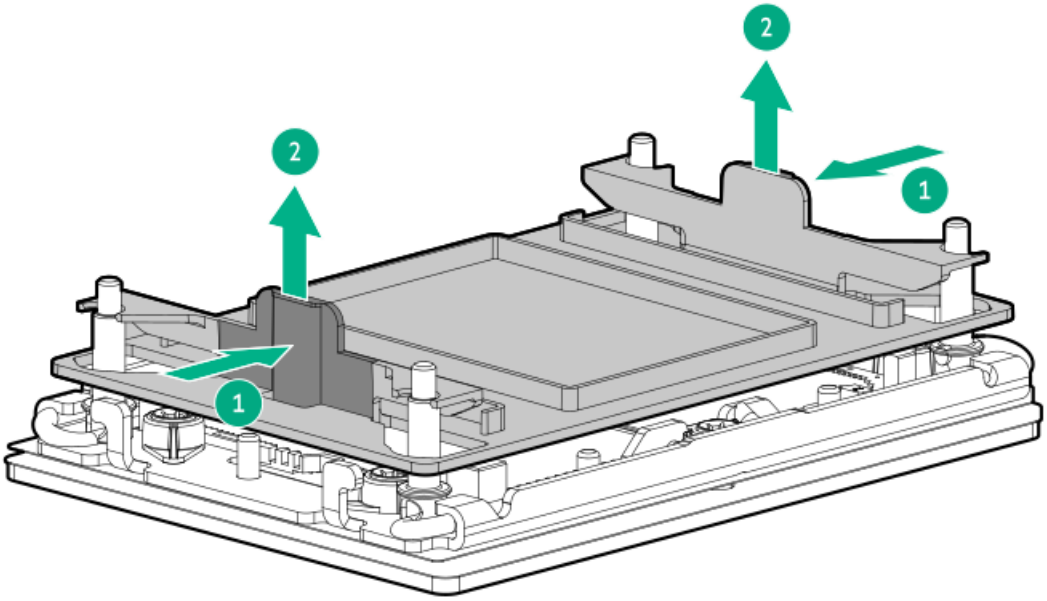


c. Verity that the processor is properly secured by the carrier snaps.



14. 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.



15. Install the processor-heatsink module:

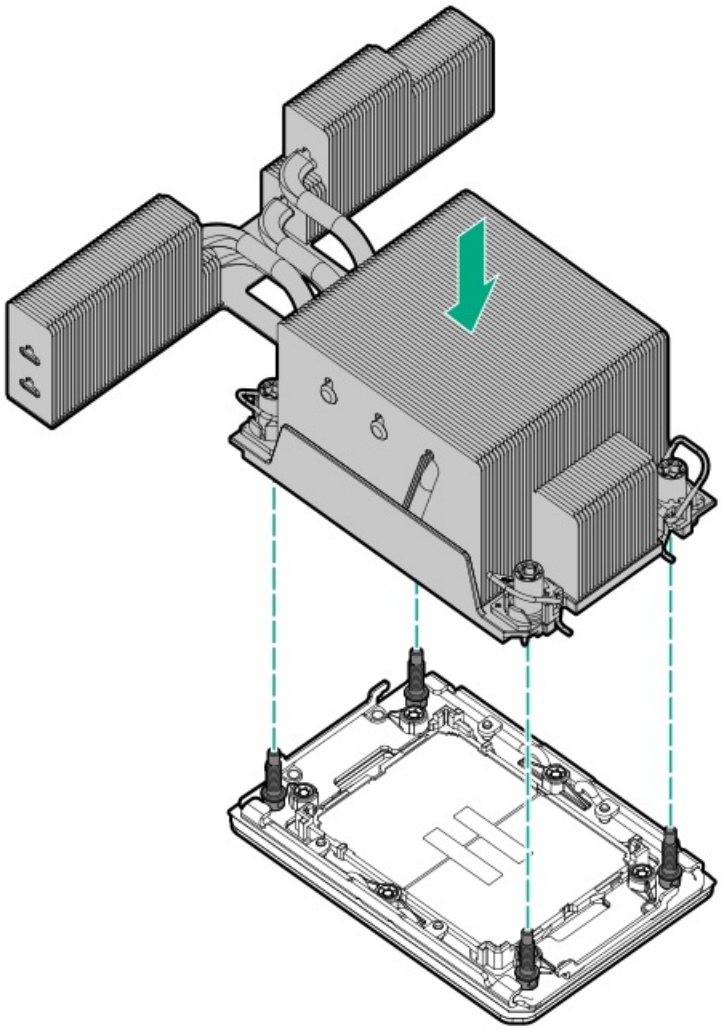
> **CAUTION**
>
> To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of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

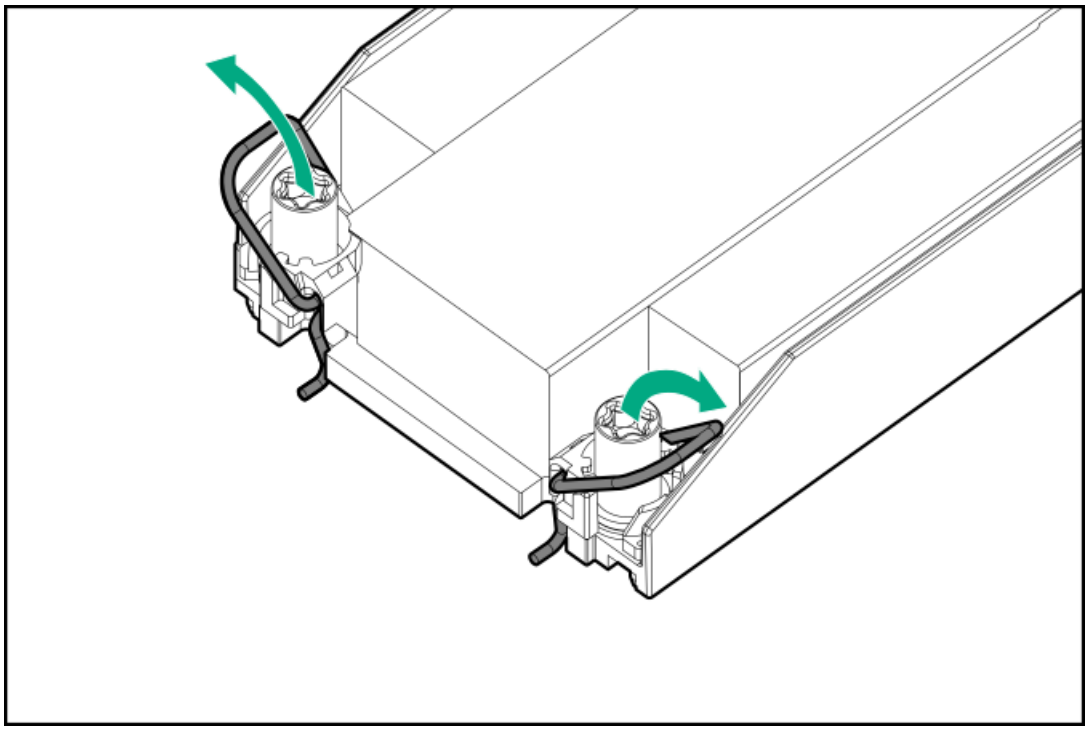
b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

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

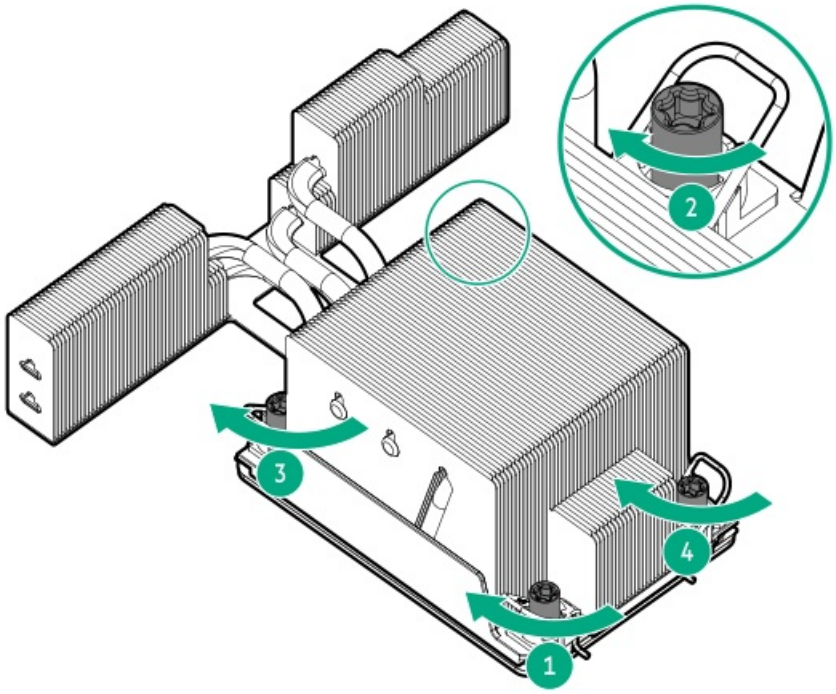
   The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



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.



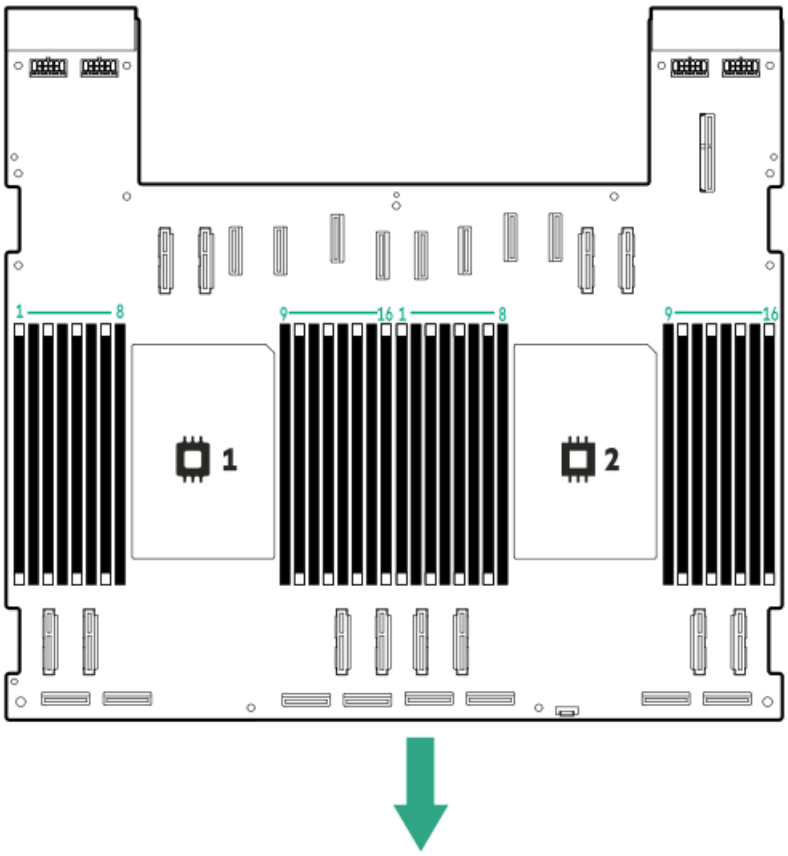
16. Install the air baffle.
17. Install the access panel.
18. Install the server into the rack.
19. Connect all peripheral cables to the server.
20. Connect each power cord to the server.
21. Connect each power cord to the power source.
22. Power up the server.

Results

The installation procedure is complete.

Processor mezzanine tray option

The processor mezzanine board on the tray has 32 DIMM slots supporting HPE DDR5 SmartMemory (RDIMM with ECC, LRDIMM) .



The arrow points to the front of the server.

Subtopics

Upgrading from the two- to four-processor configuration

Upgrading from the two- to four-processor configuration

Prerequisites

- Review the PCIe riser numbering.
- Before you perform this procedure, make sure that you have the following items available:
  - T-30 Torx screwdriver
  - T-15 Torx screwdriver
  - T-10 Torx screwdriver

- Processor option
- Heatsink option (P80382-B21)
- Processor mezzanine tray option (P80445-B21)
- Captive riser option (P80379-B21)
- Captive riser cable options (P80380-B21/P81004-B21)

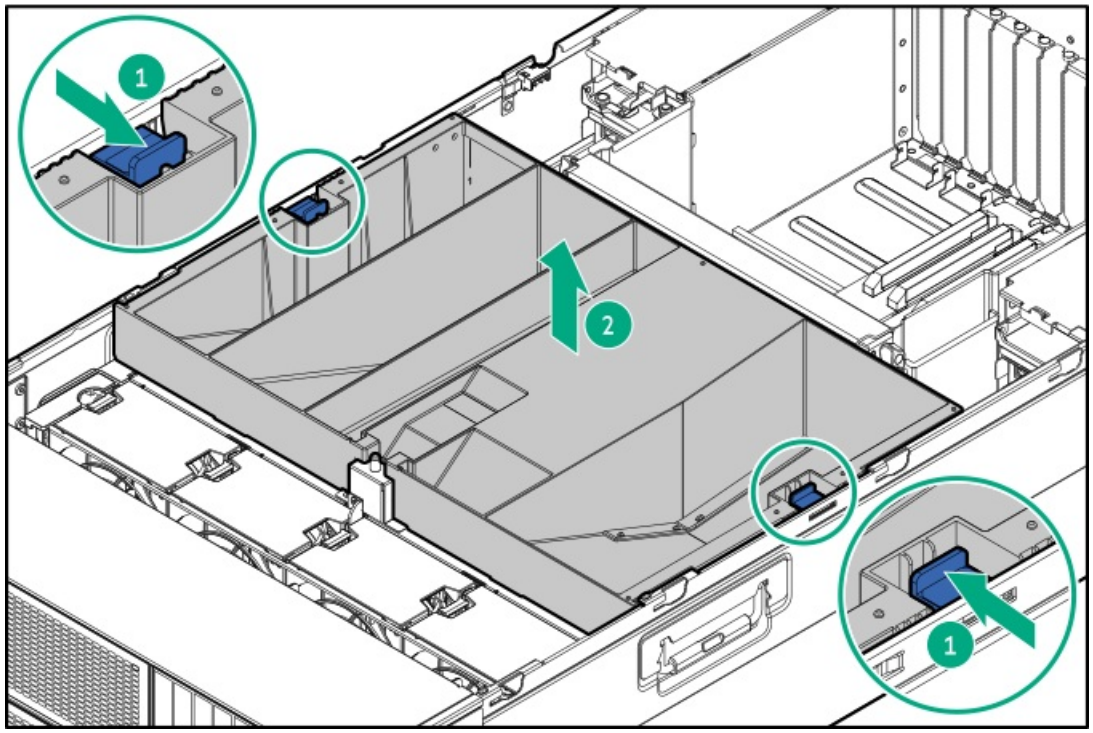
About this task

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.

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 for two-processor configuration.

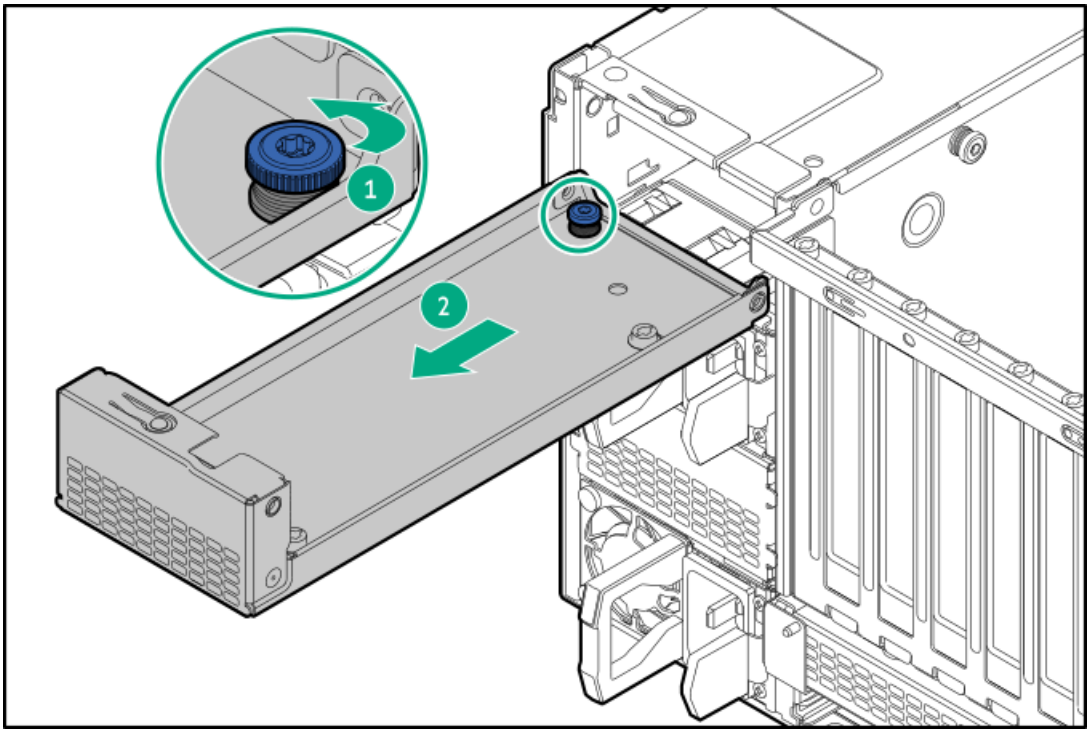


8. Remove the system board baffle.
9. Remove the fan cage.
10. Remove the GPU cage.

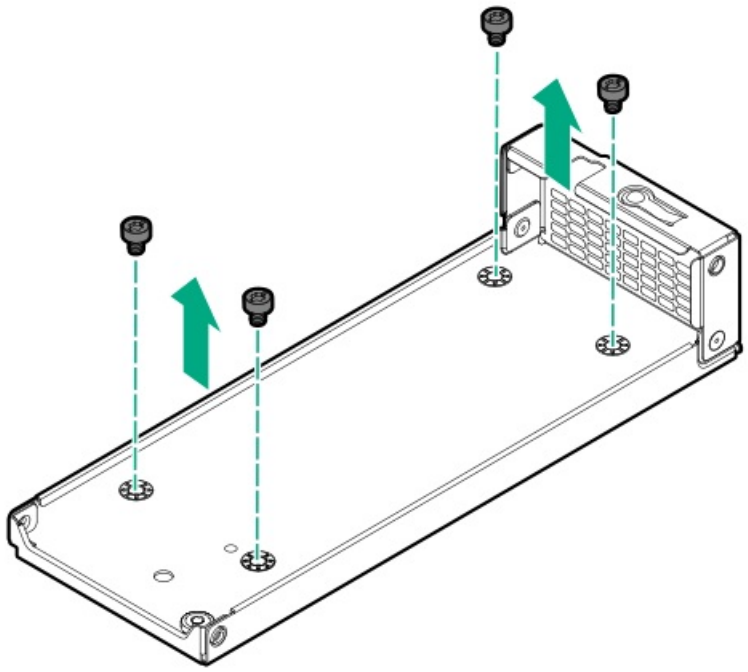
11. Disconnect all UPI cables from the system board .
12. Connect new UPI cables to system board .

Installing the sideband board

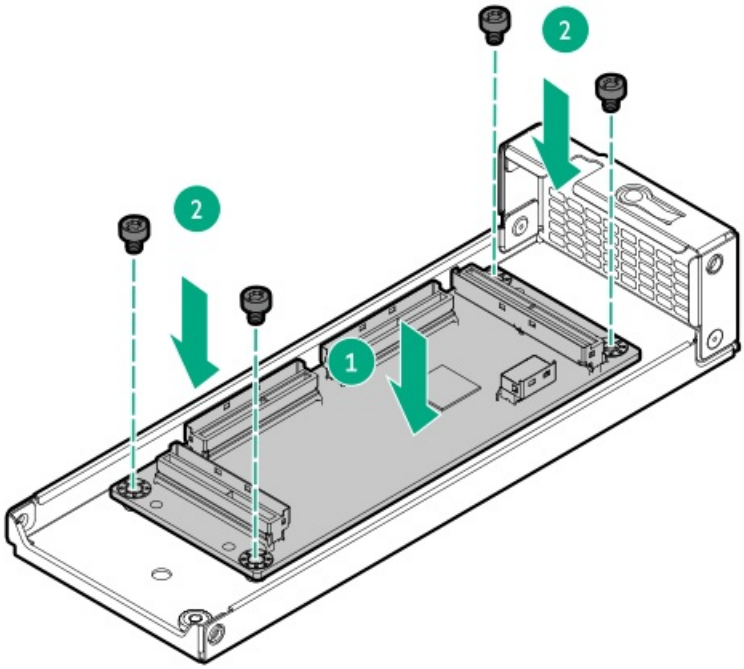
13. Remove the sideband board tray.



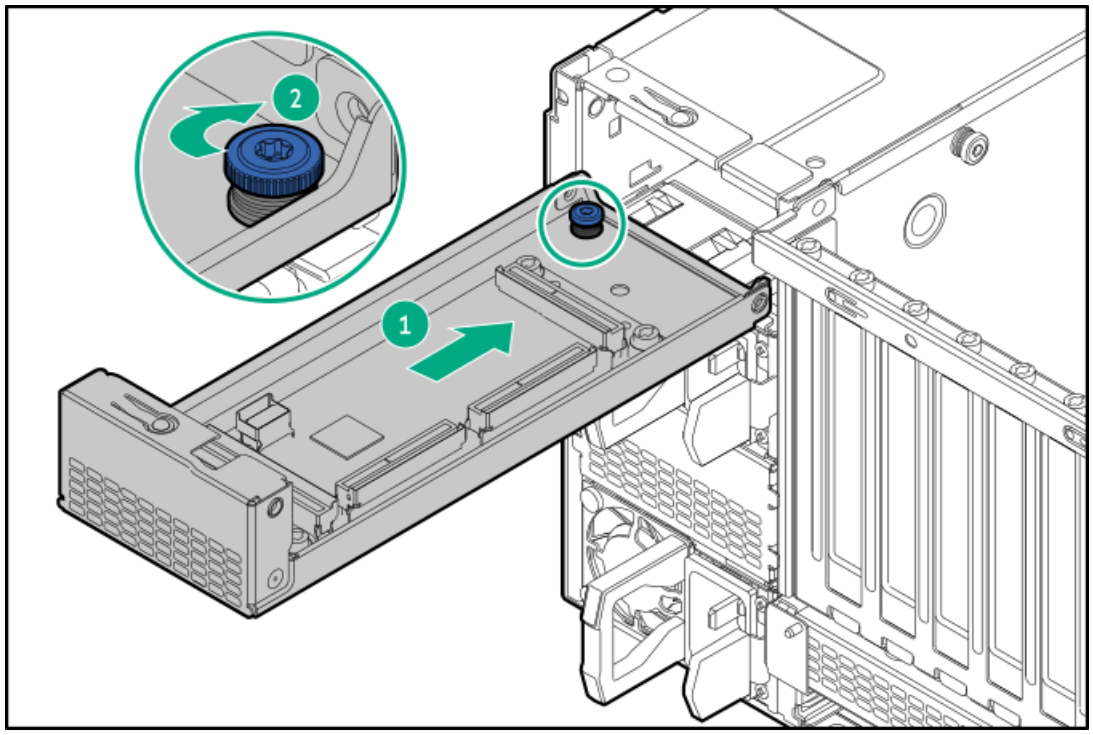
14. Remove the screws from the sideband board tray.



15. Install the sideband board on the tray



16. Connect the sideband cables to the sideband .
17. Install the sideband board tray.

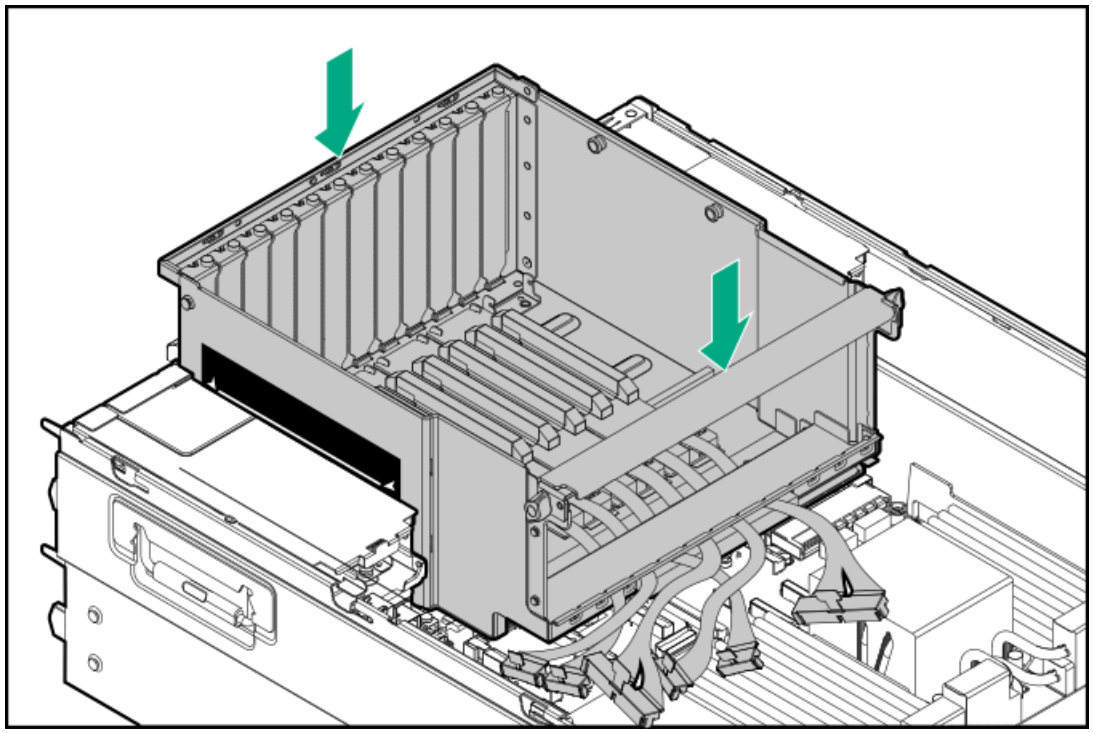


18. Connect the sideband cable (P74904-001) to the system board .

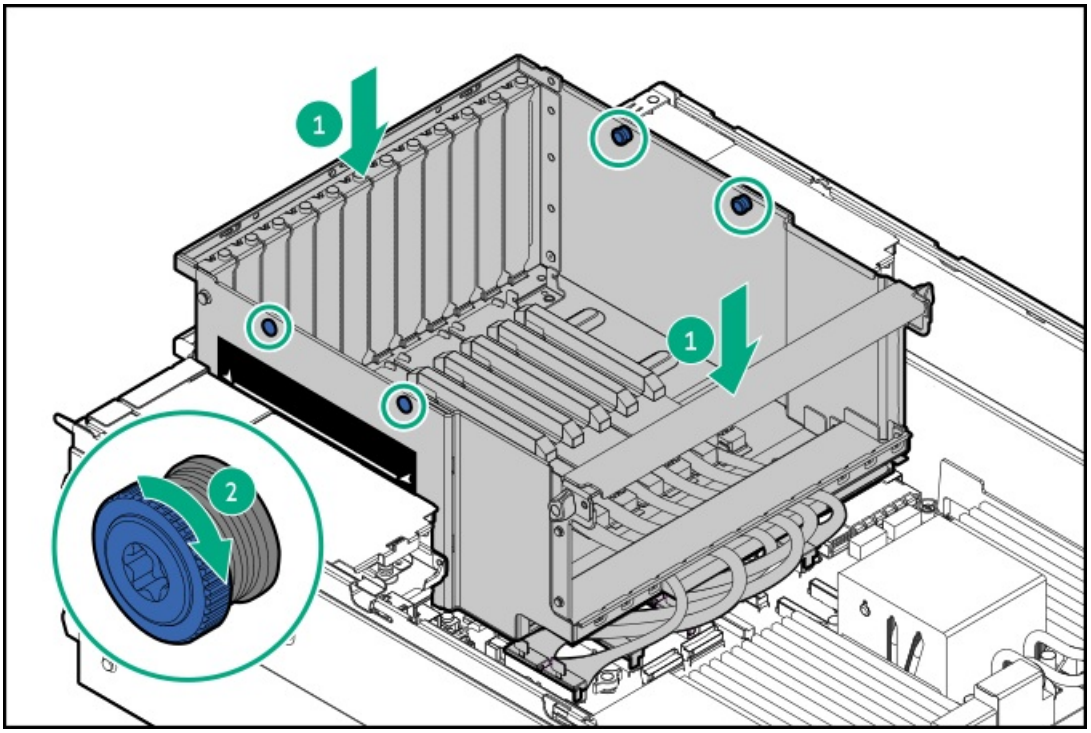
Installing the captive riser

19. Replace the captive riser cable on slot 3:
    a. Remove riser 2 from the GPU cage .
    b. Remove the captive riser cable (P71883-001) from slot 3 .
    c. Install the new captive riser cable (P71884-001) on slot 3 .
    d. Install the riser 2 in the GPU cage .

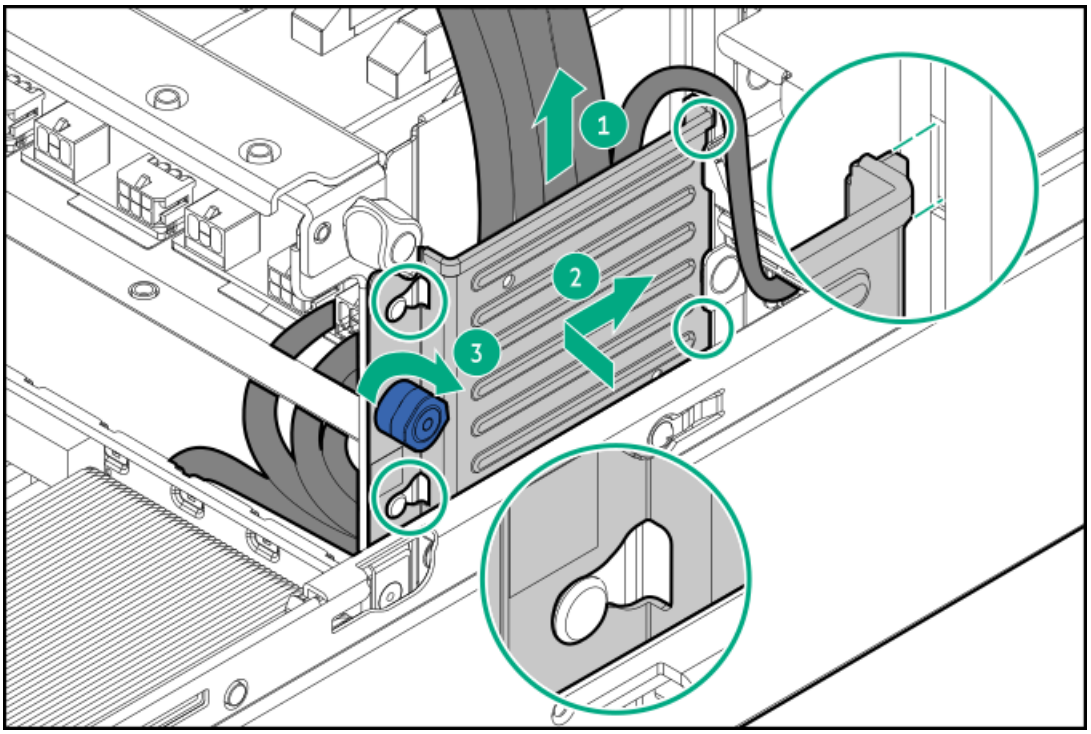
20. Replace the captive riser cable on slot 5:
    a. If installed, remove riser 4 from the GPU cage.
    b. Remove the captive riser cable (P71890-001) from slot 5.
    c. Install the captive riser cable (P71883-001) removed from slot 3.
    d. Install riser 4 in the GPU cage.
21. Install risers 5, 6, and 7.
22. Disconnect the captive riser power cables for risers 2, 3, and 4 from the system board, and remove them from the server.
23. Hold and place the GPU cage until the alignment lines on the labels on the sides are level with the top of the power supply cages.



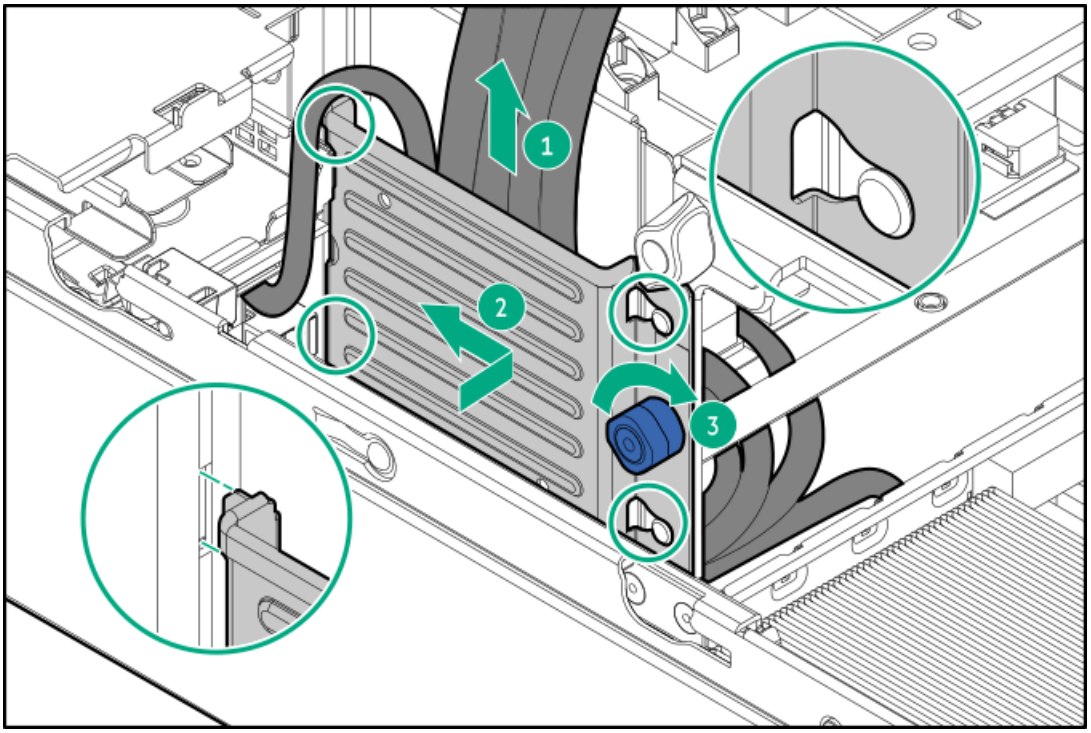
24. Connect the captive riser cables to the system board.
25. Install the GPU cage in the server, and then fasten the captive screws.



26. Route the cables through the right GPU cable channel bracket, and then install the bracket on the GPU cage.



27. Route the cables through the left GPU cable channel bracket, and then install the bracket on the GPU cage.

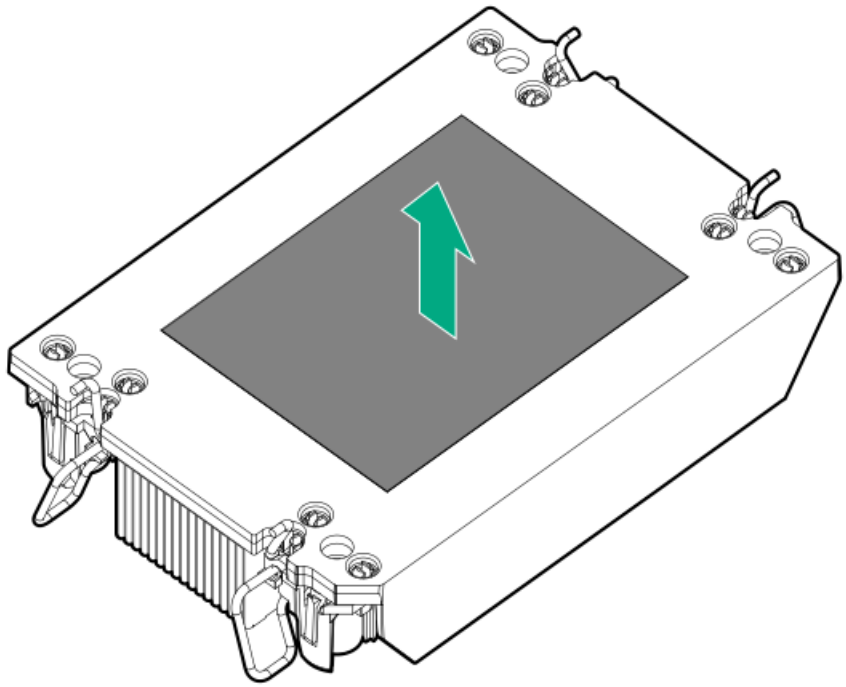


28. Install the system board baffle .

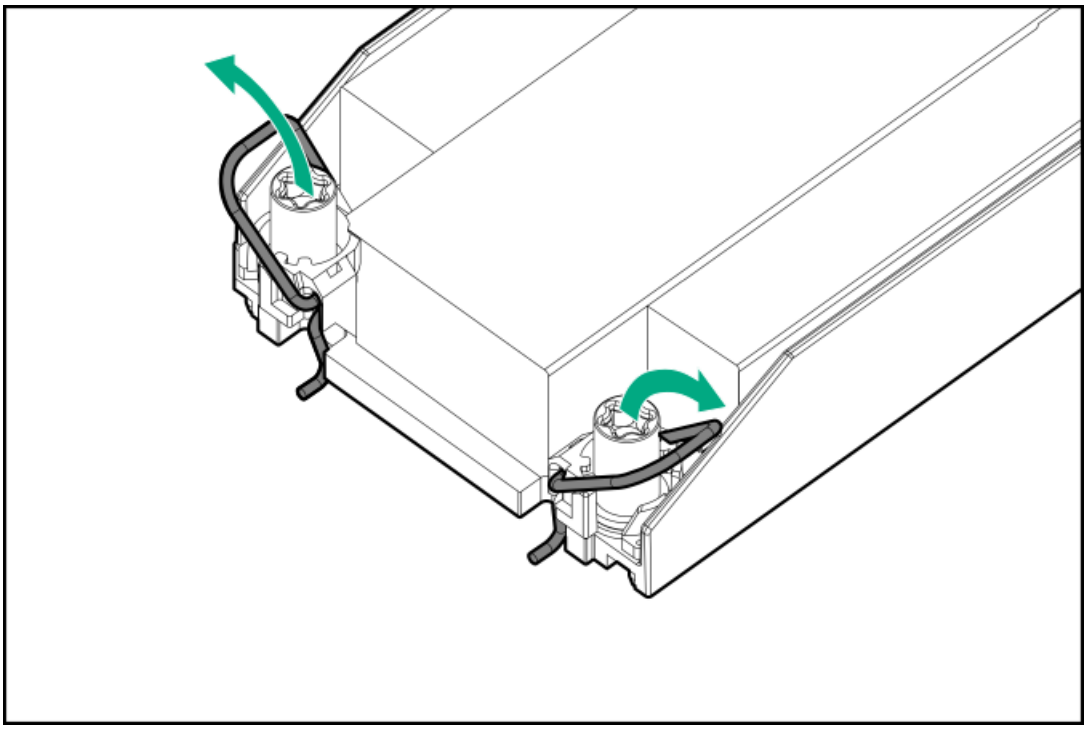
Installing the processors and heatsinks on the processor mezzanine board

29. 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.

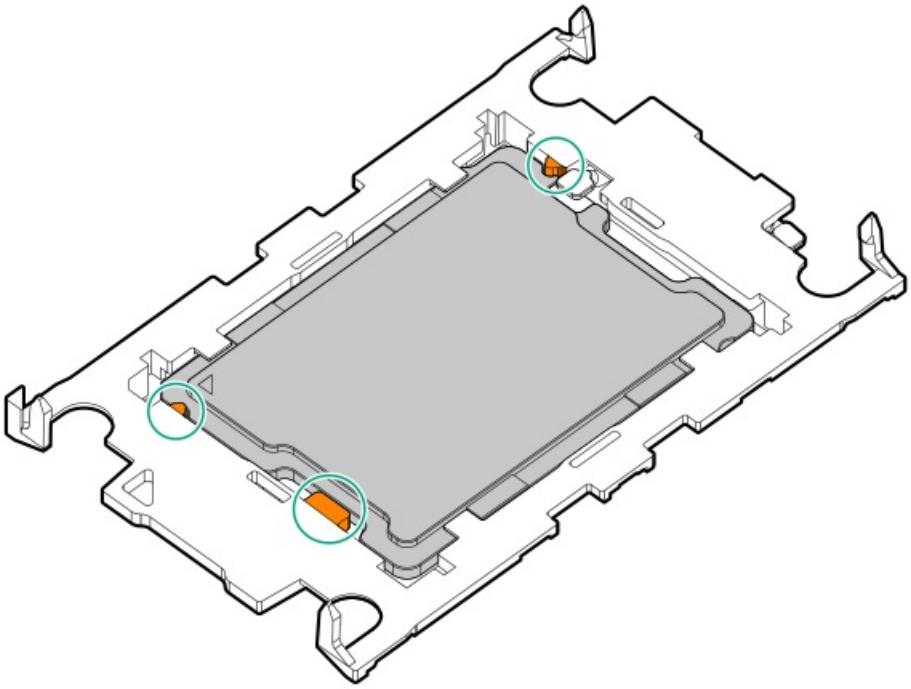


30. Set the anti-tilt wires to the locked position.



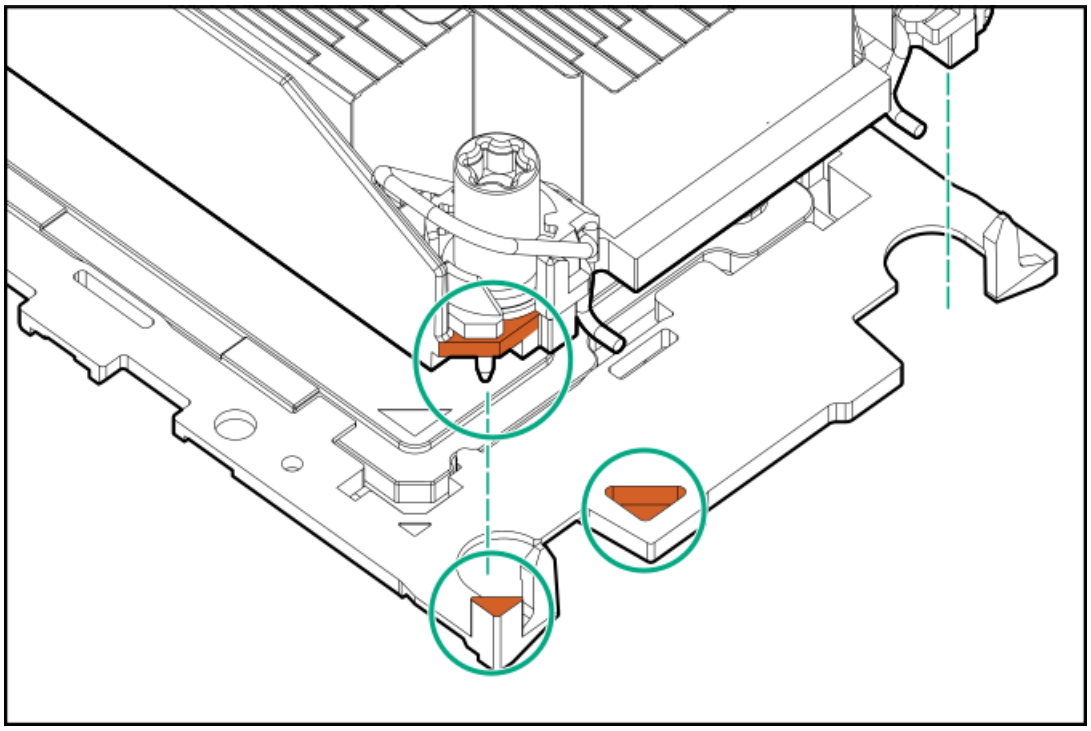
31. Verify that the processor is securely latched to the processor carrier.

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



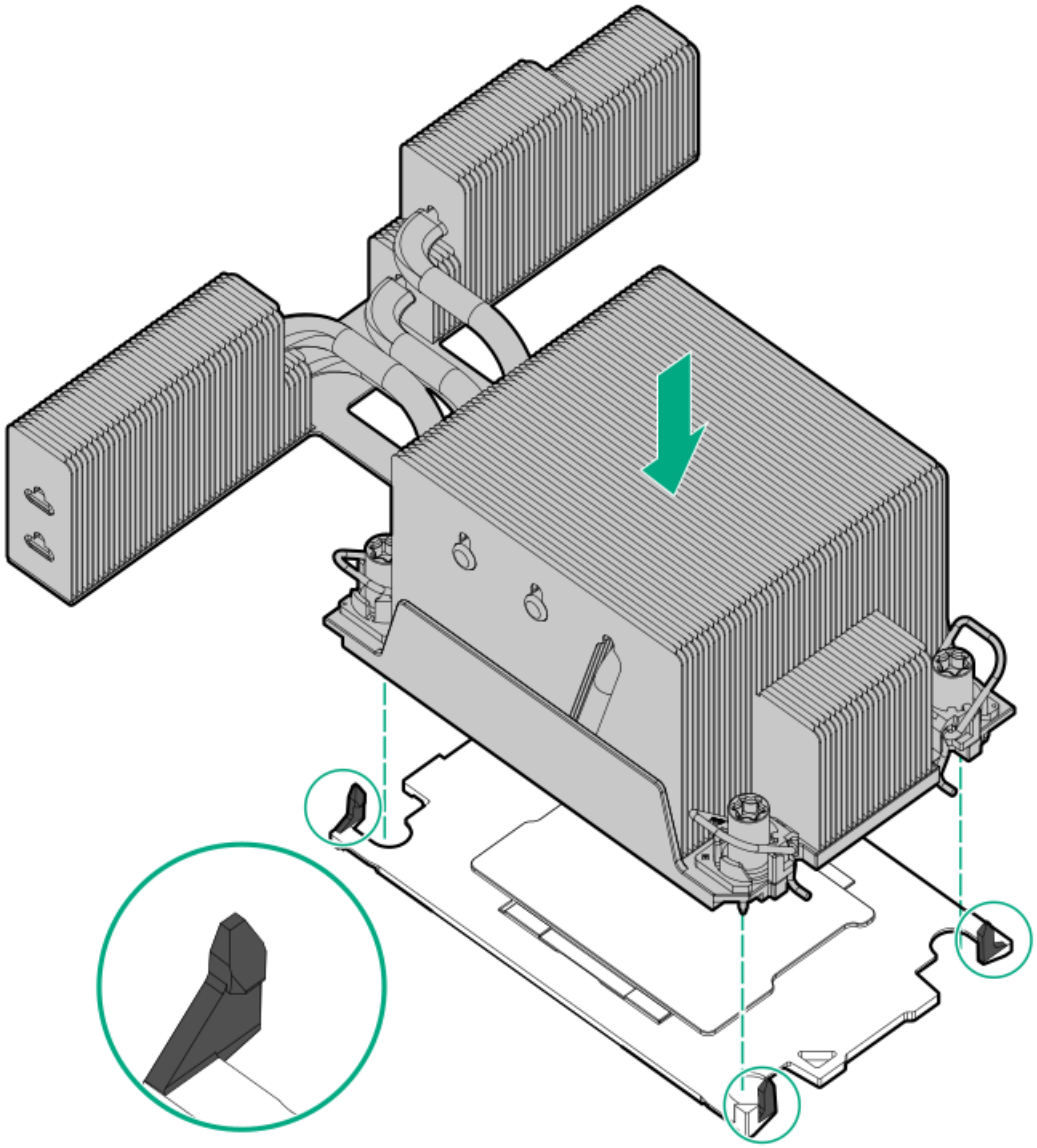
32. Attach the heatsink to the processor carrier:

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



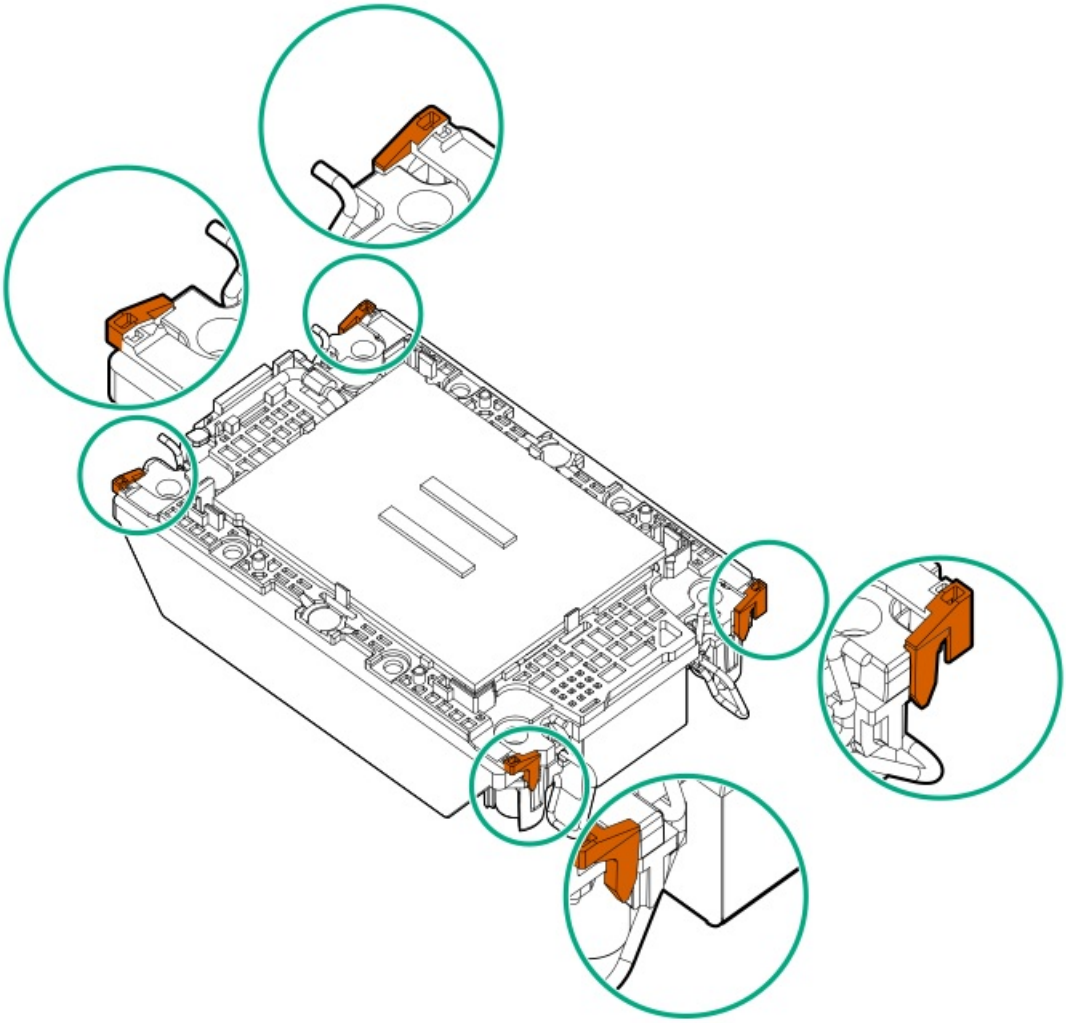
b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

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

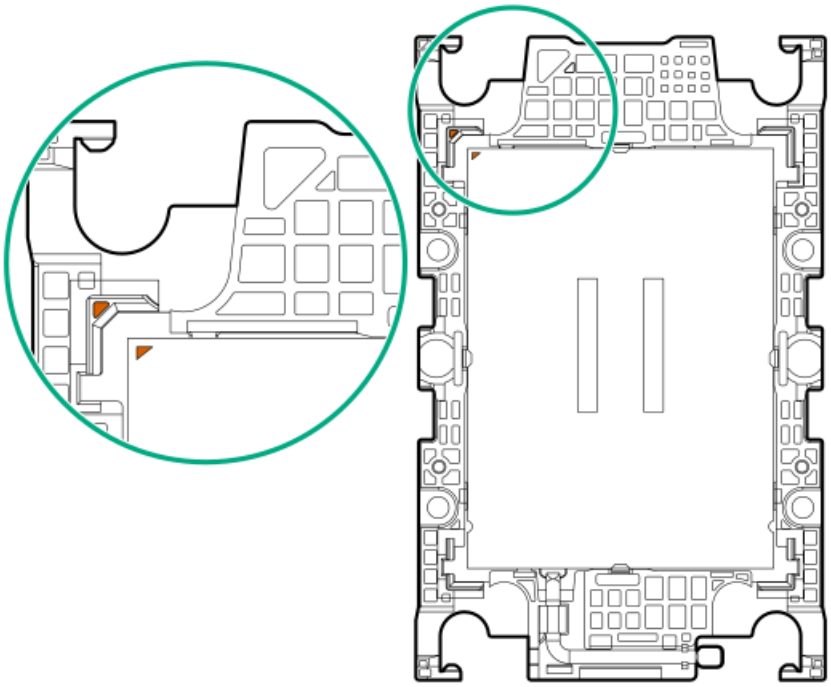


33. Perform the following verification steps:

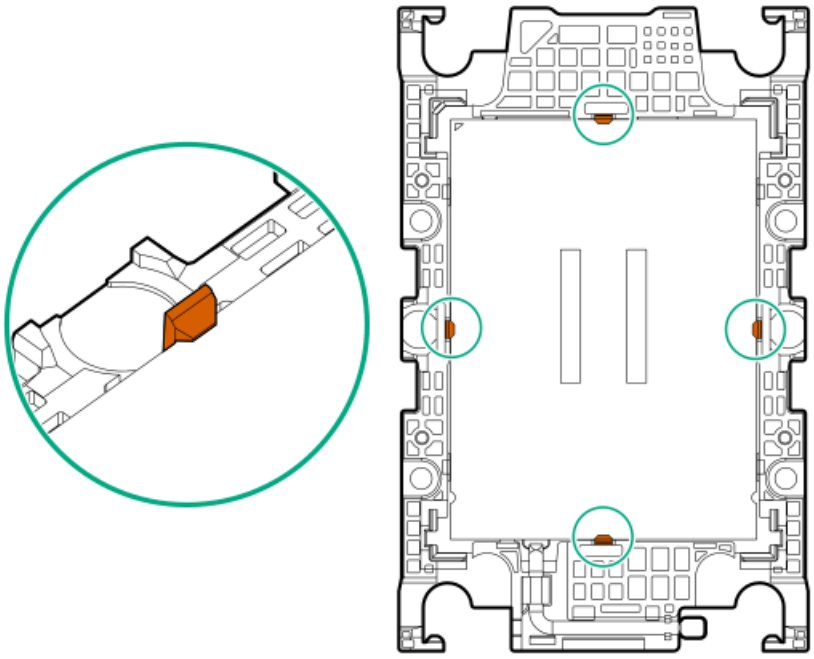
    a. Verify that the tabs on the processor carrier are securely latched on the heatsink.



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

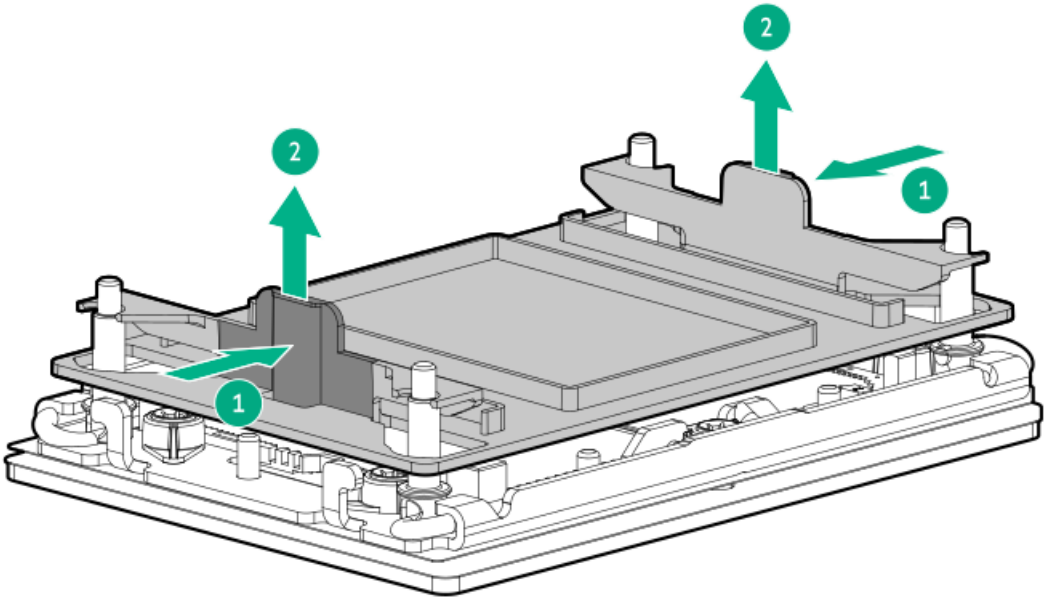


c. Verity that the processor is properly secured by the carrier snaps.



34. 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.



35. Install the processor-heatsink module:

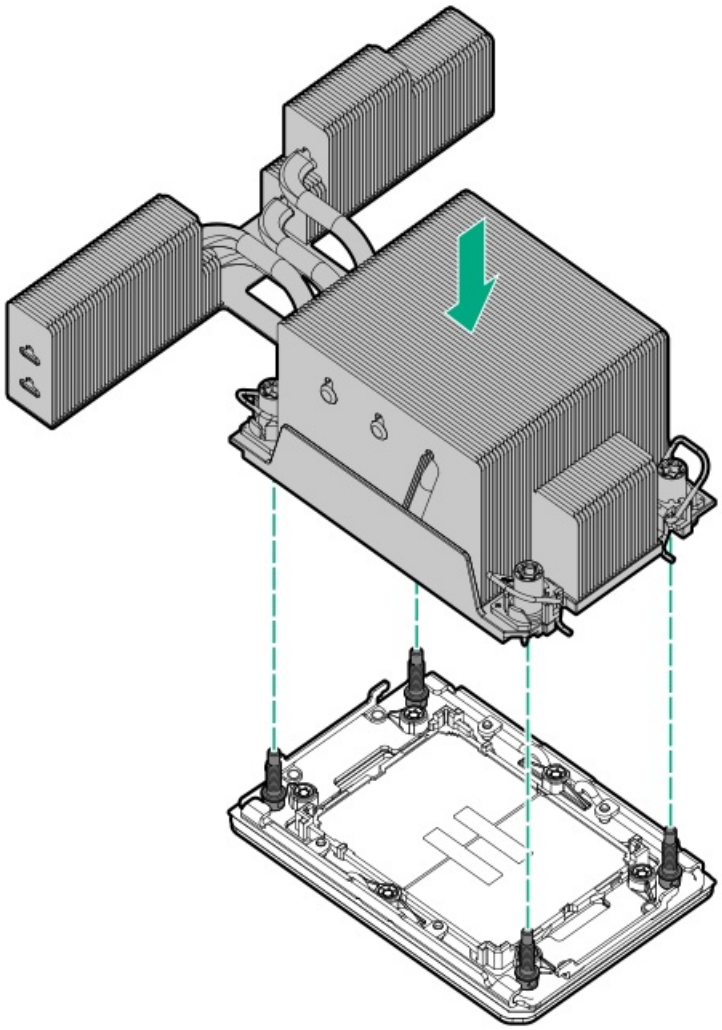
> **CAUTION**
>
> To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of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

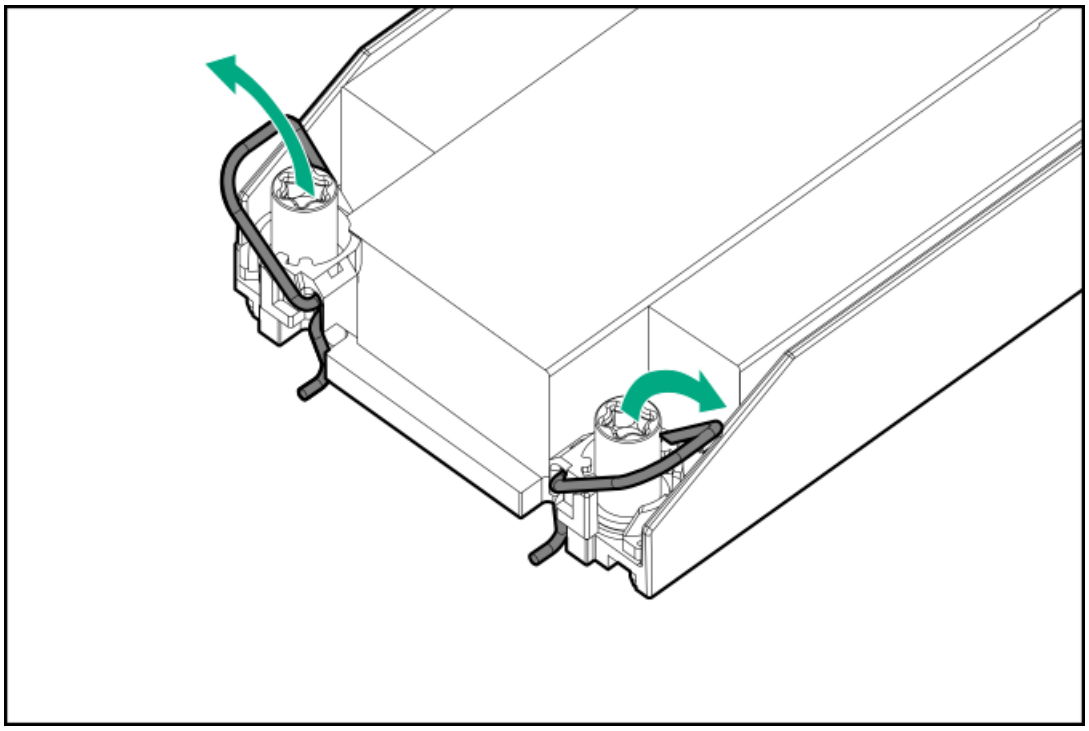
b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

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

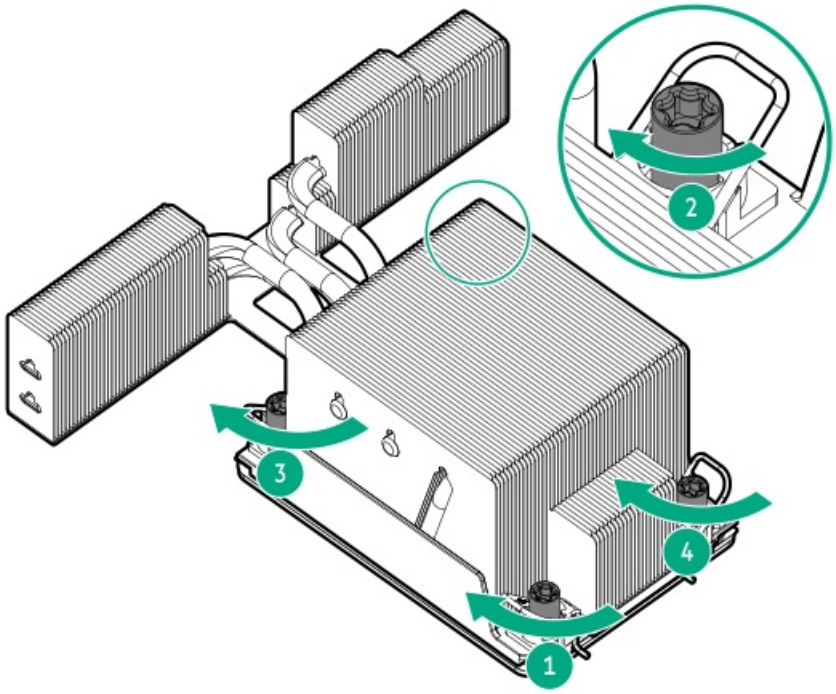
   The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



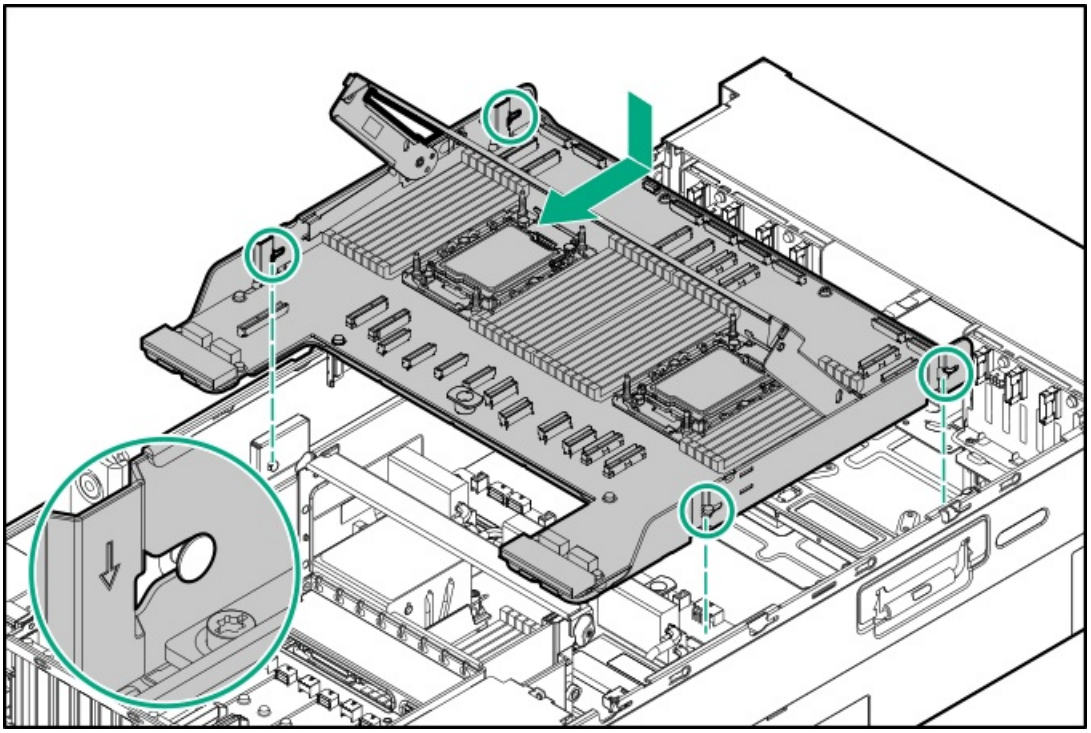
d. Set the anti-tilt wires to the locked position.



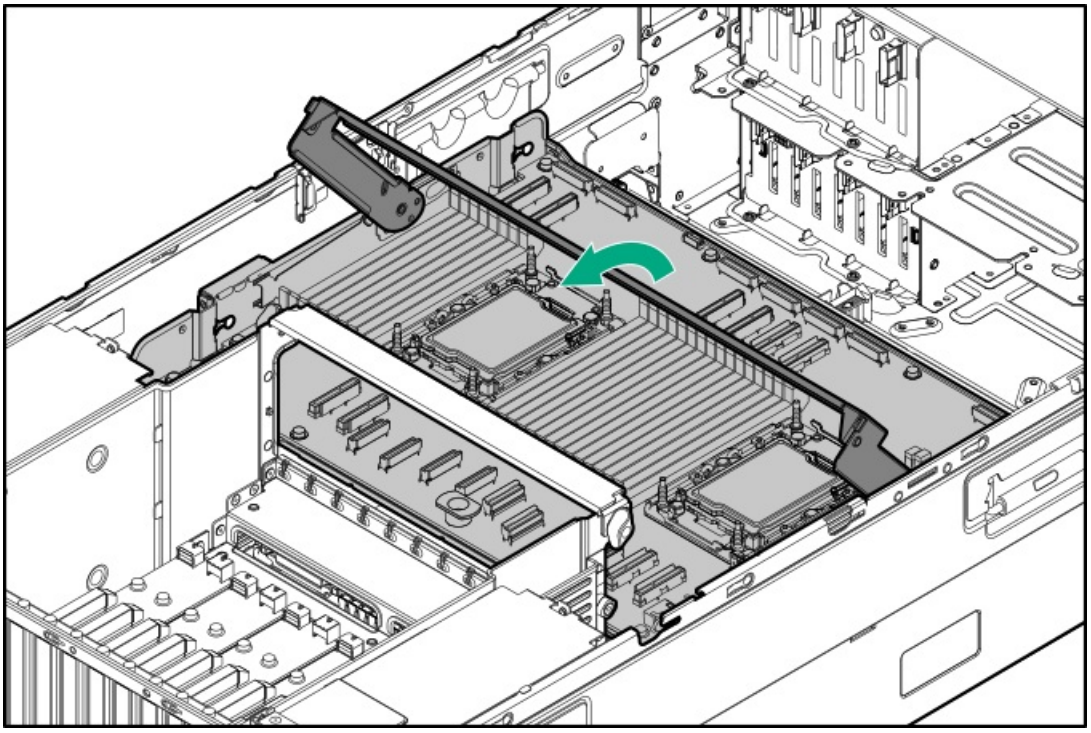
e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.



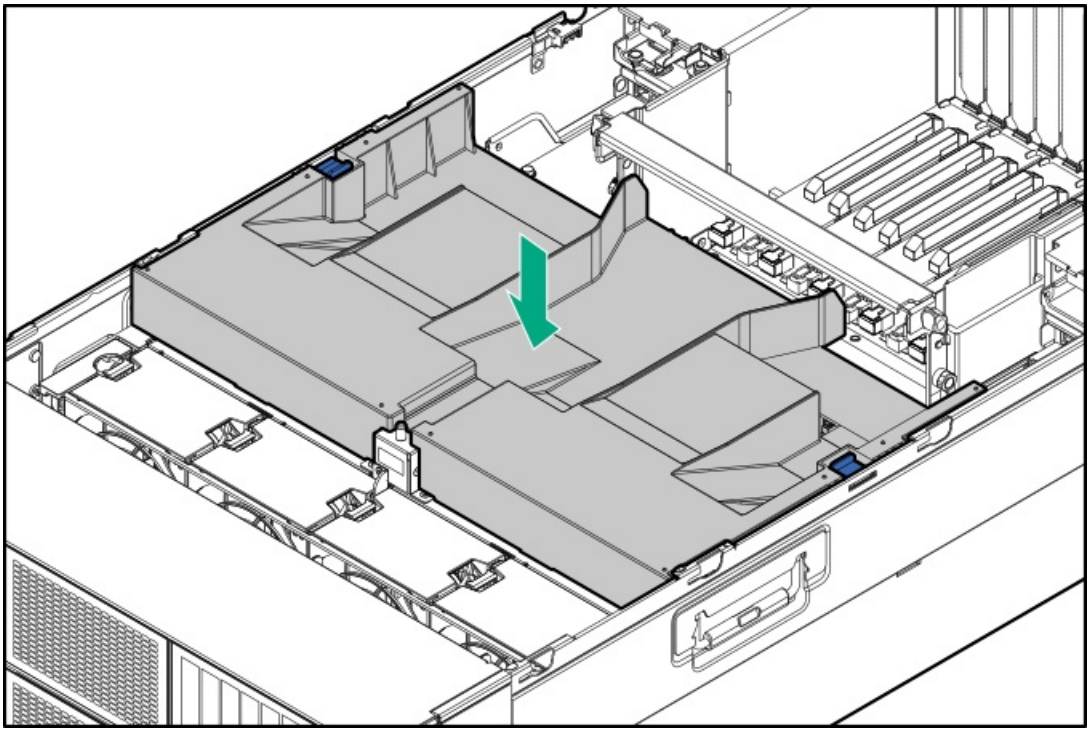
36. Install the processor mezzanine tray.



37. Connect the following cables to the processor mezzanine board:
    - Sideband board cable
    - UPI cables
    - Captive riser cables
38. Connect the captive riser power cables to the risers and processor mezzanine board .
39. Press down on the processor mezzanine tray handle until it locks into place.



40. Install the air baffle for four-processor configuration.



41. Install the fan cage.
42. Install the M-CRPS 3 and 4.
43. Install the access panel.
44. Install the server into the rack .
45. Connect all peripheral cables to the server.
46. Connect each power cord to the server.
47. Connect each power cord to the power source.
48. 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

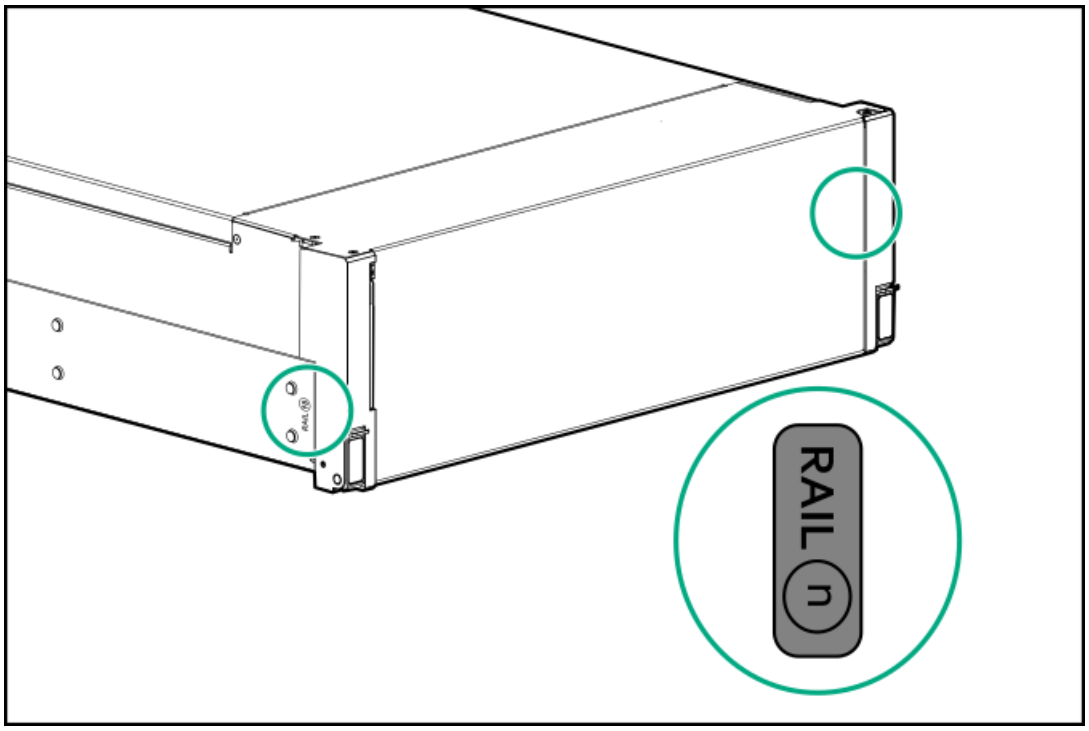
Rail identification markers

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

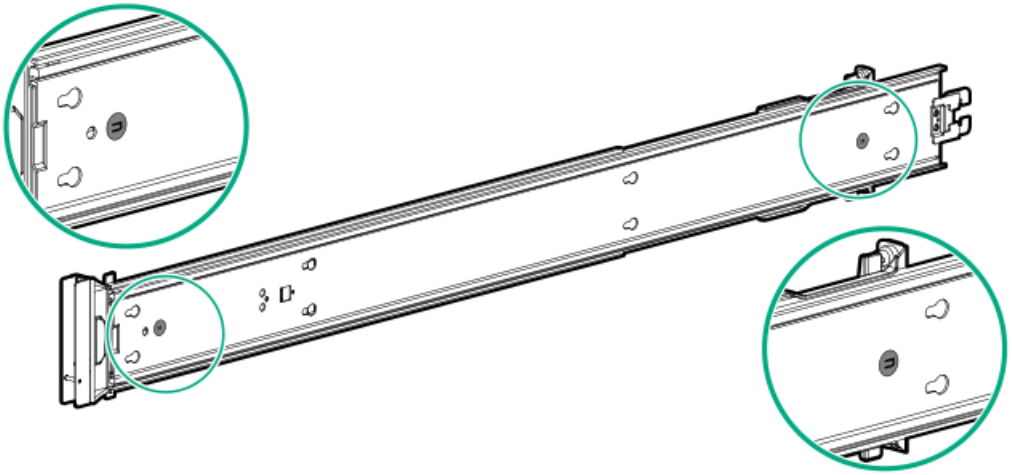
- The height and weight of the chassis as determined by the front- and rear-end server configurations.
- The depth of the chassis as measured from the edge of the front panel (without the front bezel) to the edge of the rear panel.

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.

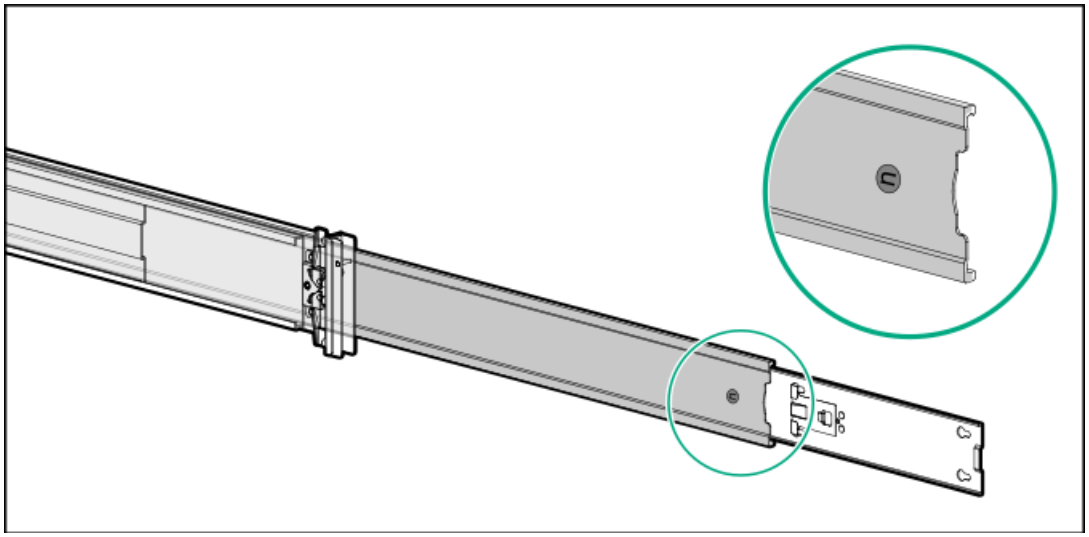
- Rail number labels on the chassis



- Rail identifier stamps on the inner rail

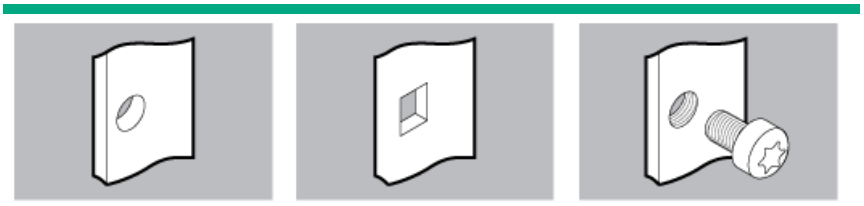


- Rail identifier stamps on the mounting rail



Rack mounting interfaces

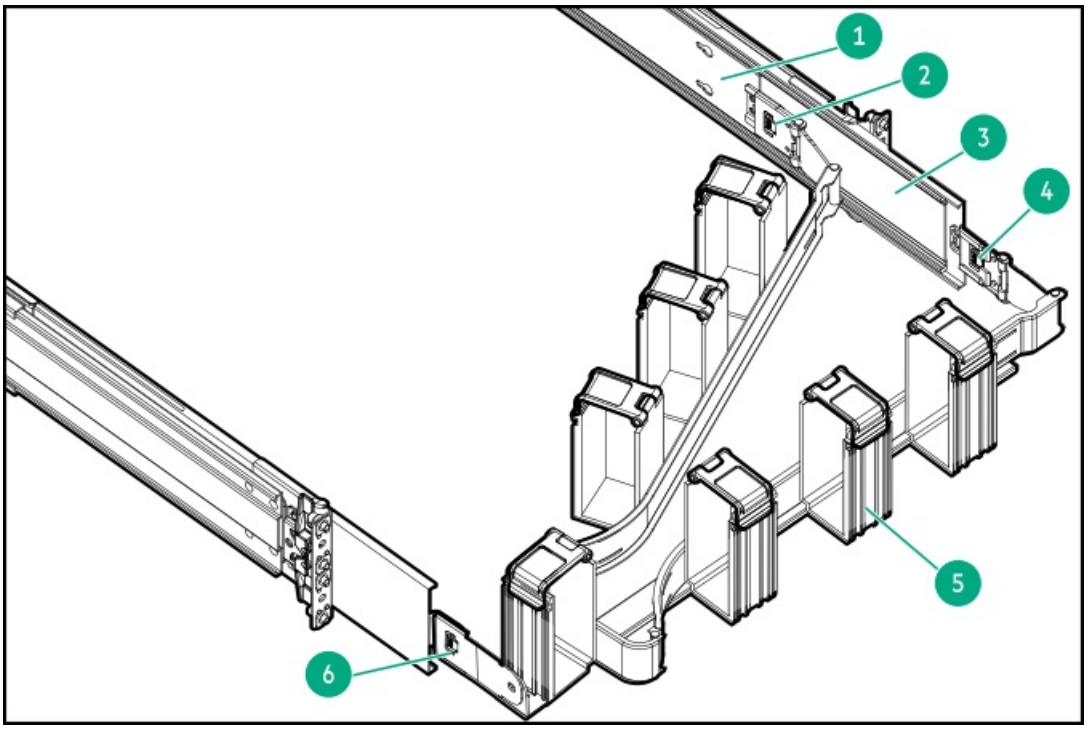
The rack rails can be installed in a rack that has the following mounting interfaces:



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

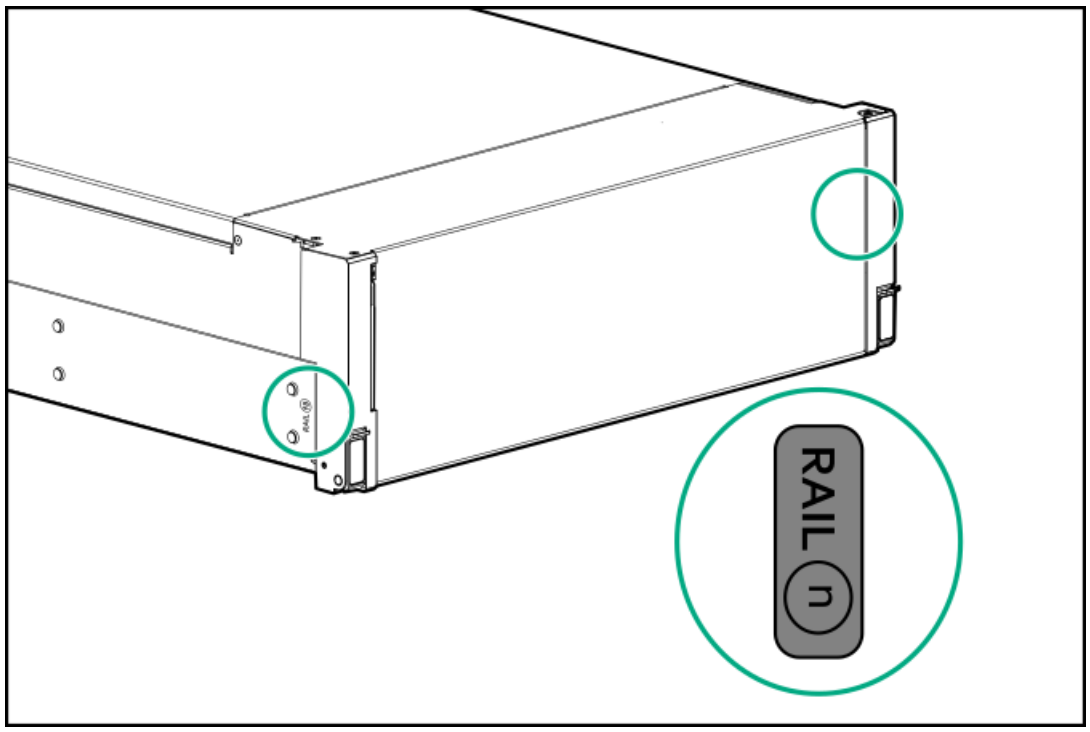
- Before you perform this procedure, review the:
  - Space and airflow requirements

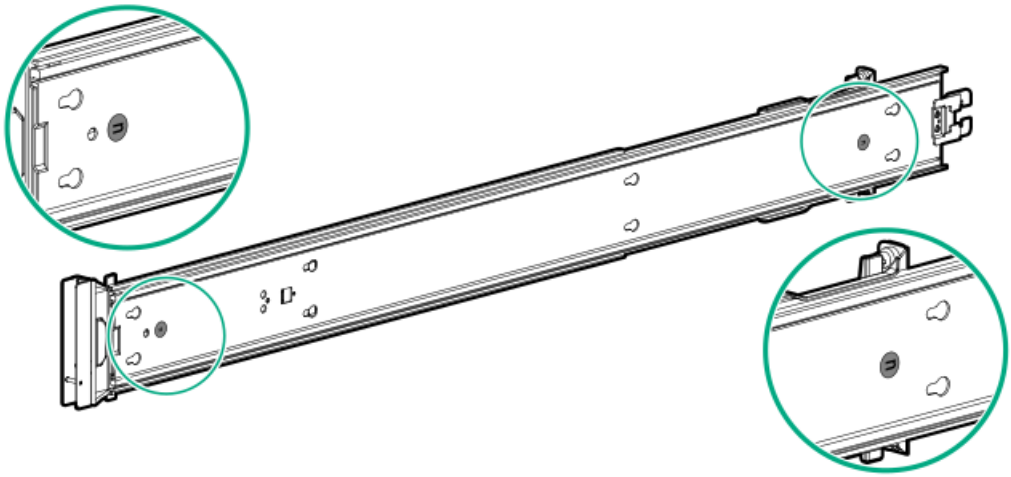
- Rack warnings and cautions
- Server warnings and cautions

- 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

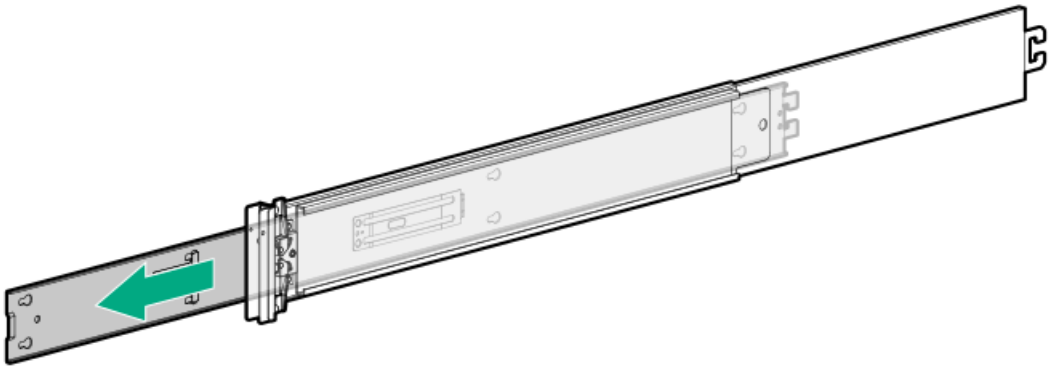
Procedure

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

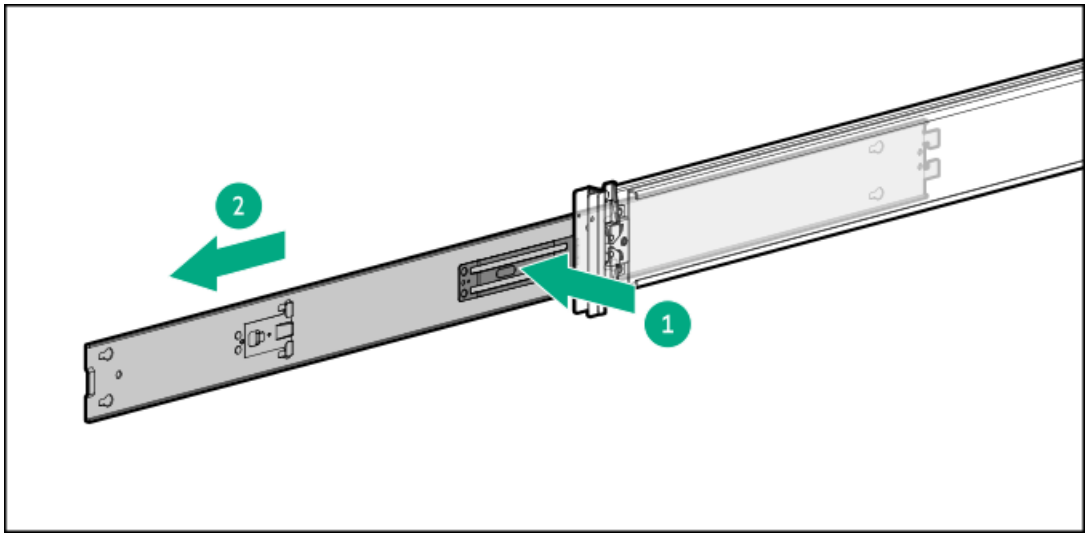




2. Remove the inner rails from the mounting rails:
   a. Extend the inner rail out of the mounting rail until it is fully extended.



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

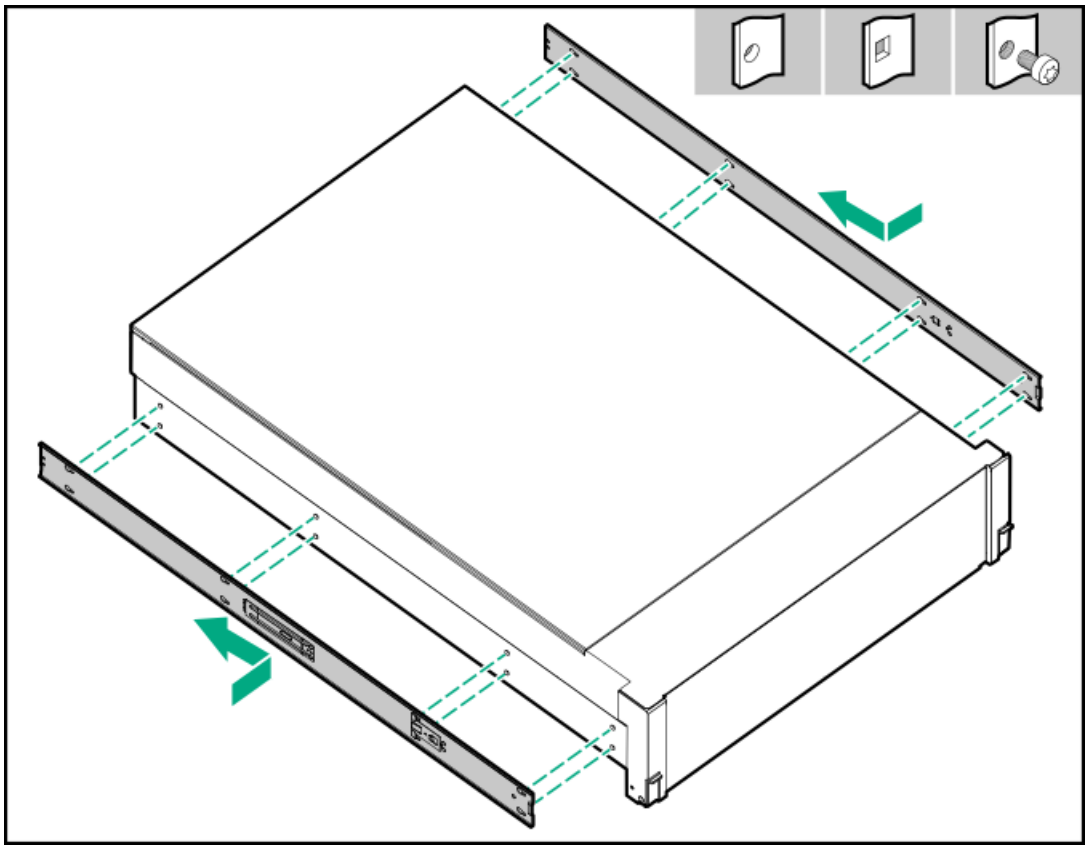


c. Repeat steps 1–2 on the other inner rail.

3. Attach the inner rails to the server:

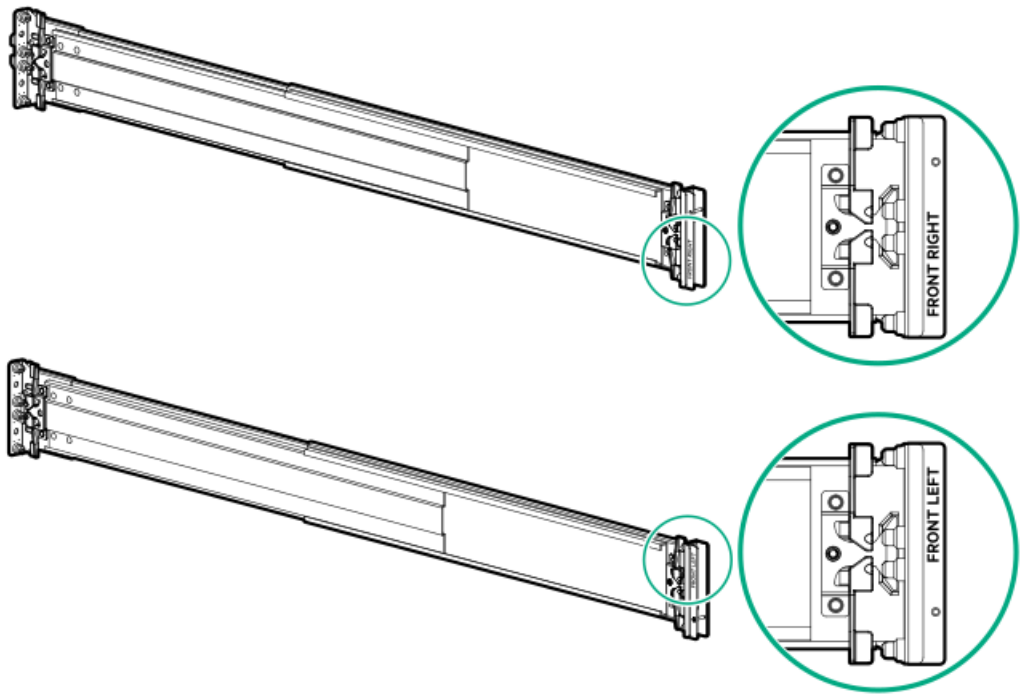
a. Insert the spools on the sides of the server through the keyed slots on the rails.

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

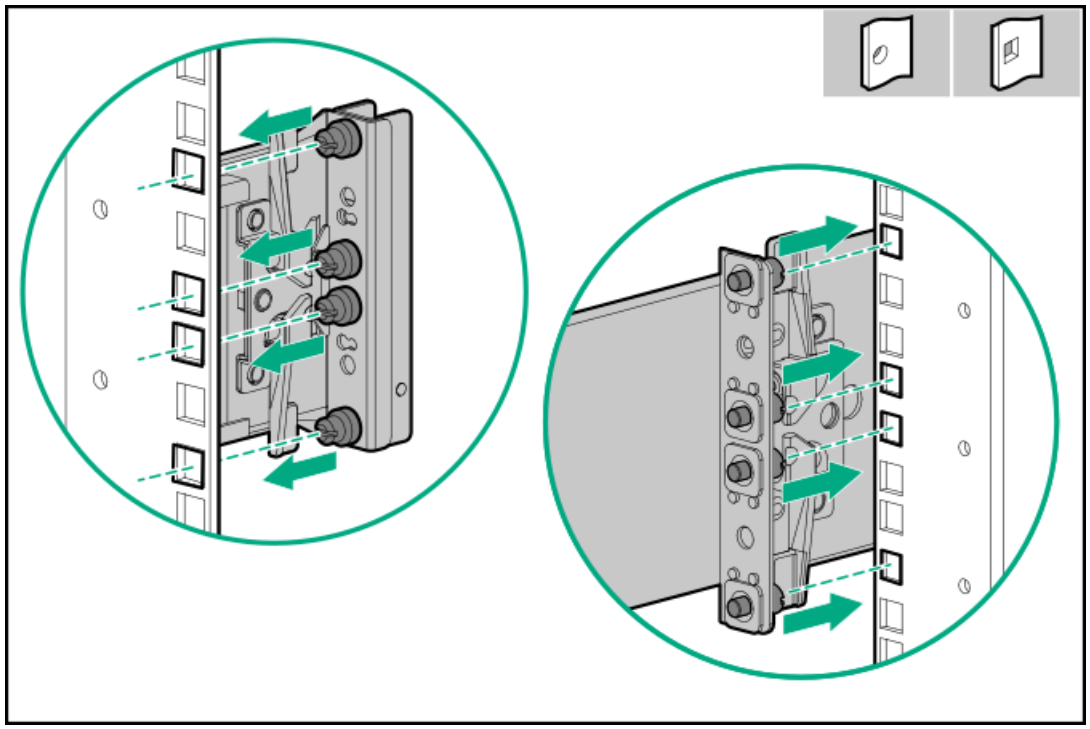


4. Locate the orientation markers on the mounting rails.

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

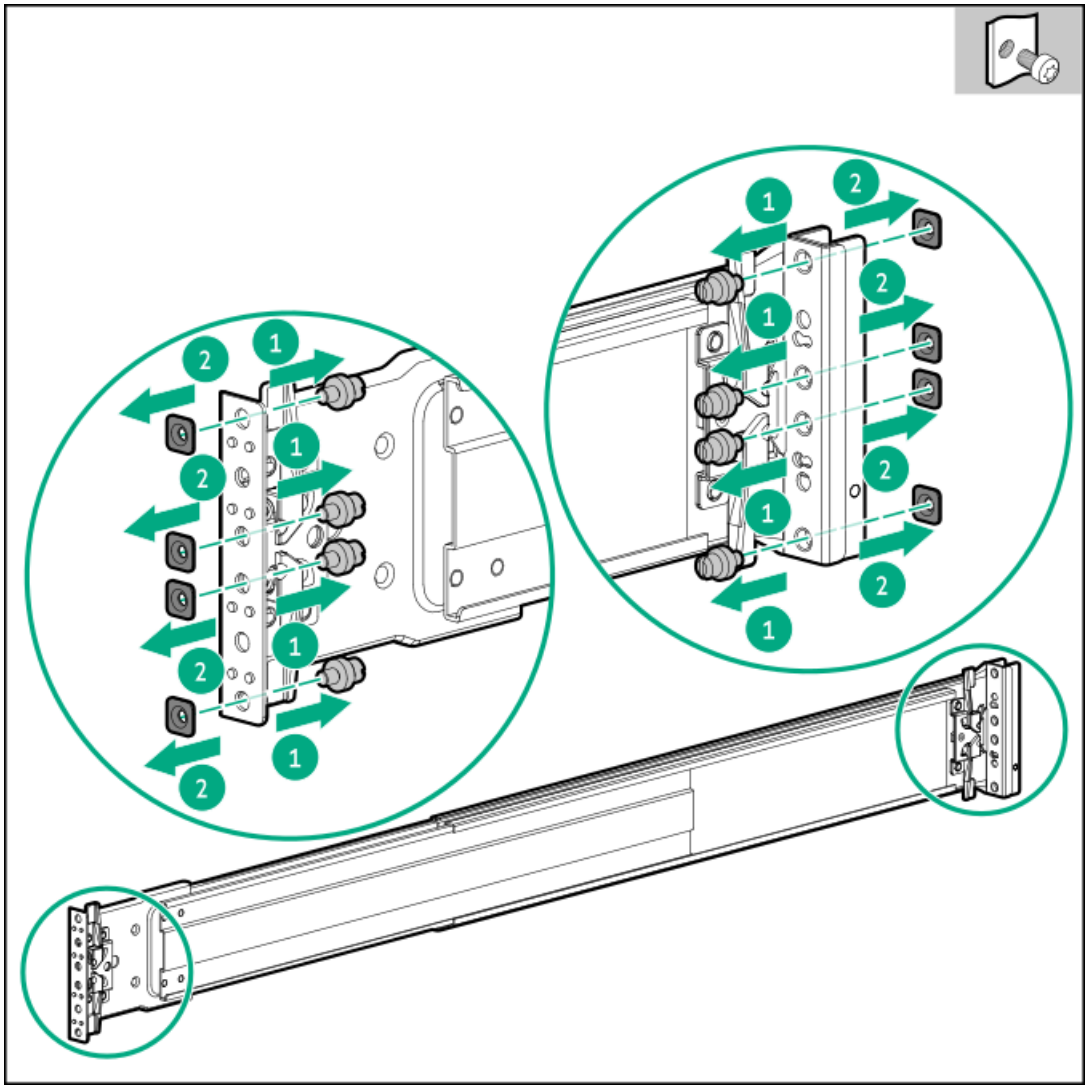


5. Extend the mounting rails to align with the depth of the rack.
6. To install the mounting rails in a round-hole or square-hole rack, insert the pins on the mounting flanges into the rack post holes.



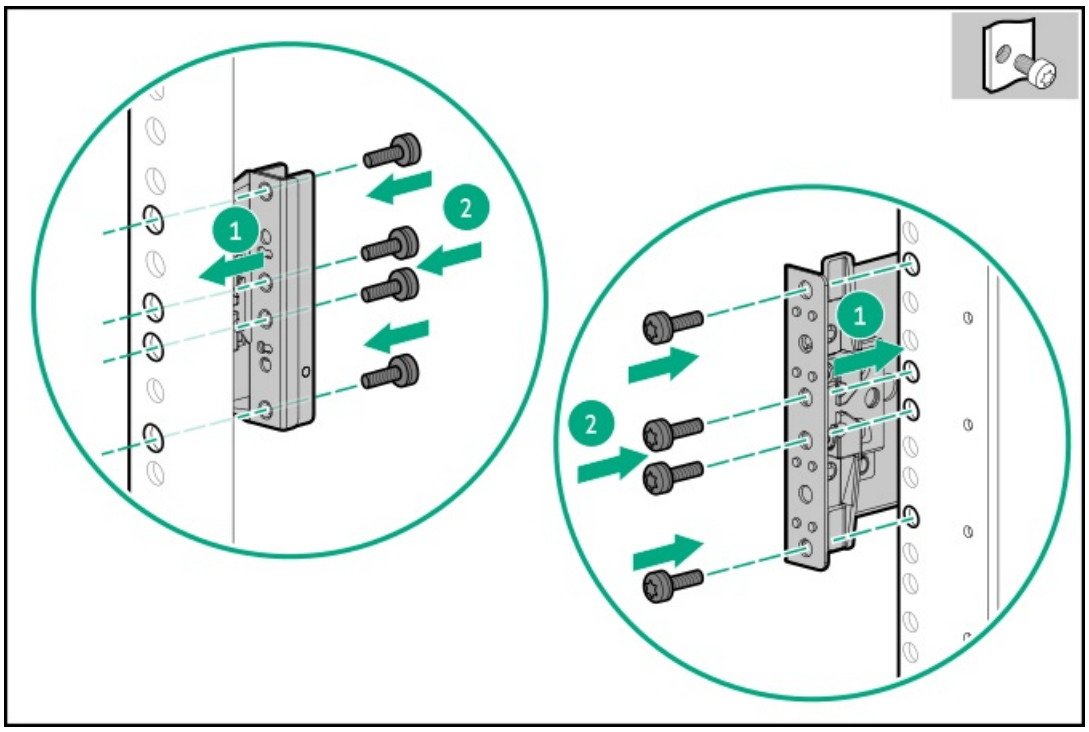
7. To install the mounting rails in a threaded round-hole rack, do the following:

   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 .

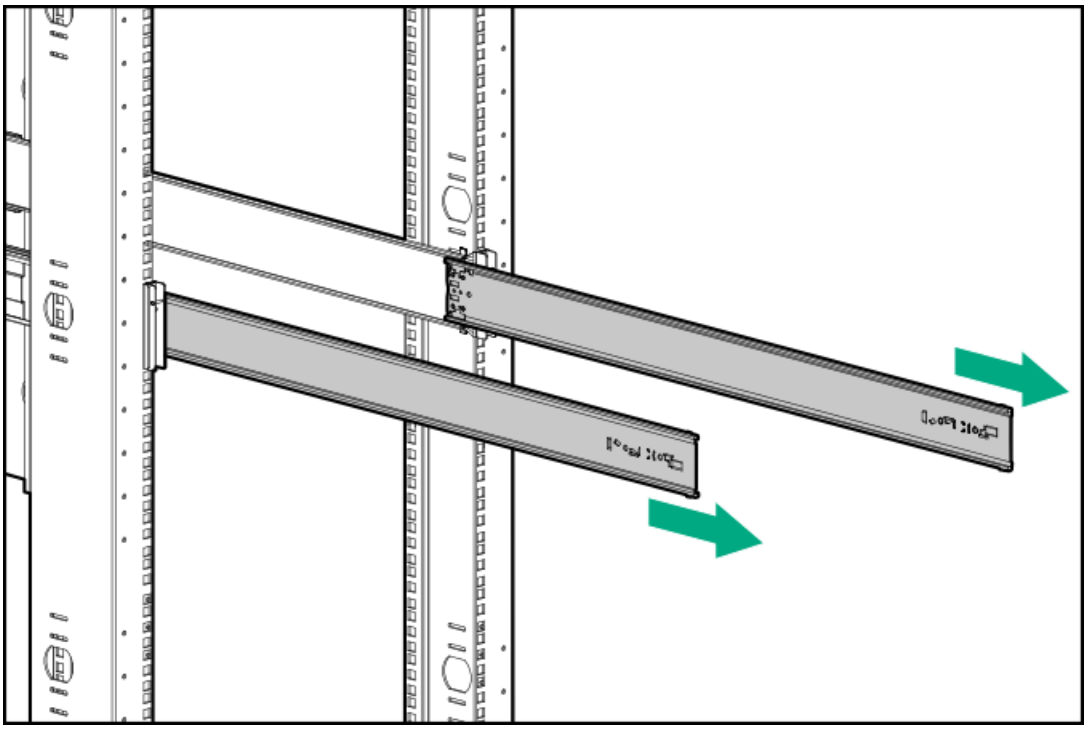
Installing the server into the rack: Ball-bearing rack rail

Prerequisites

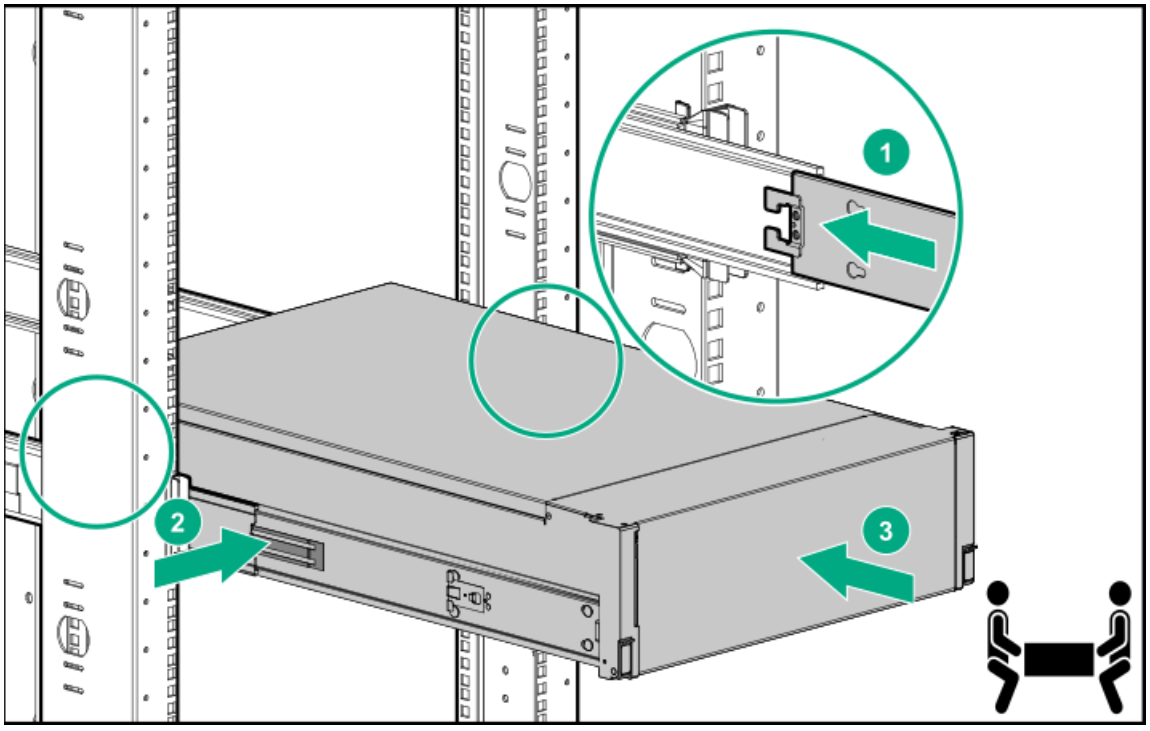
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

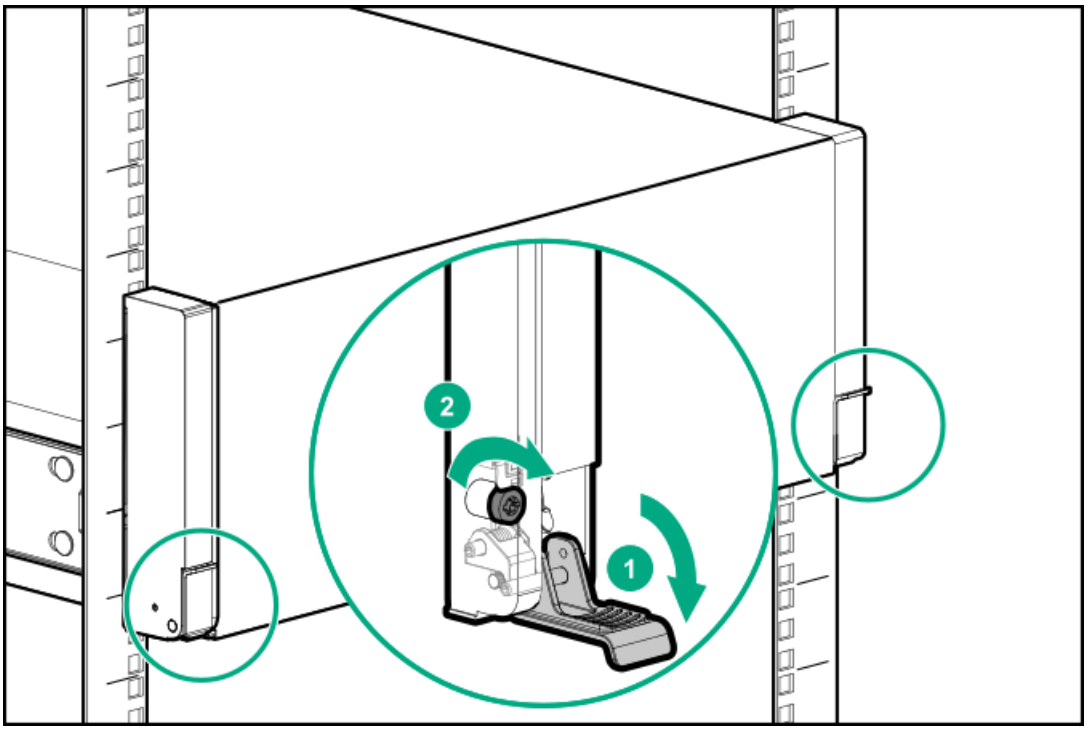
1. Fully extend the rails to the locked position.



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.

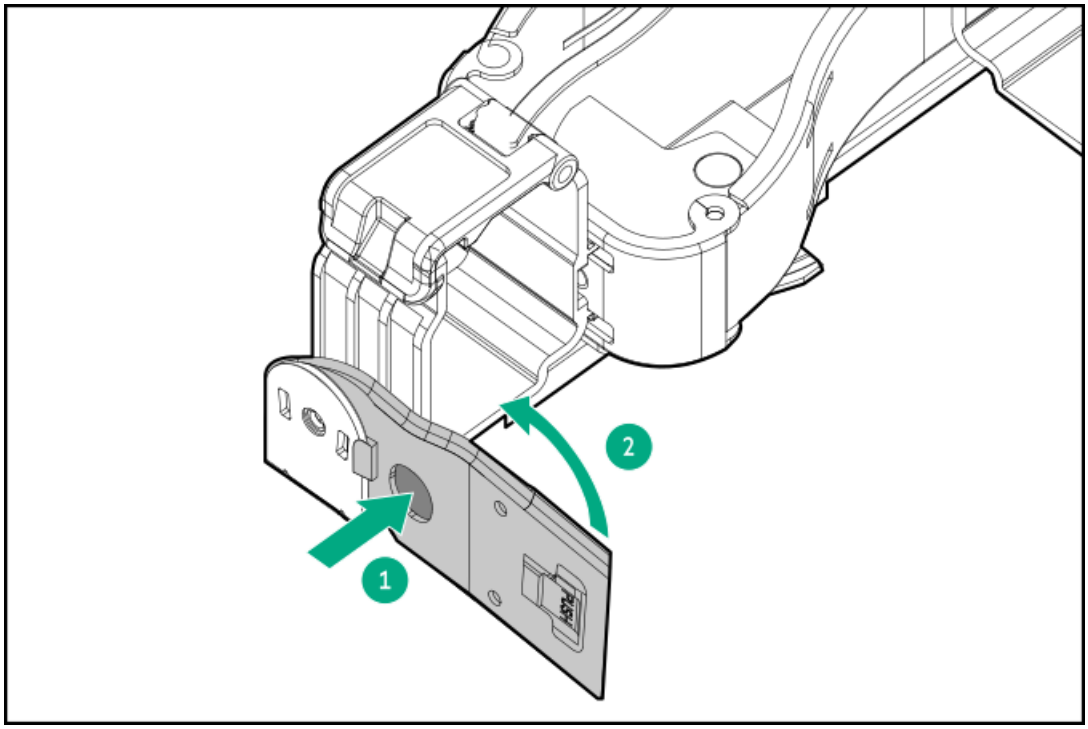
Procedure

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°.

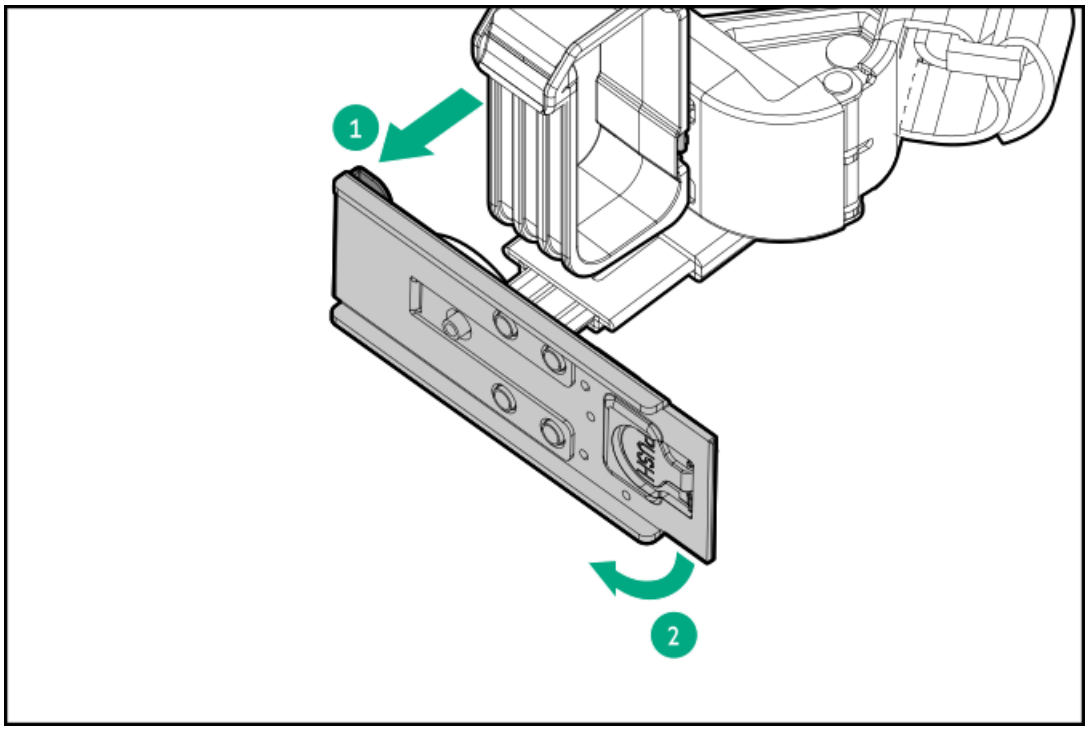
   There will be an audible click to indicate that the bracket is locked in its adjusted position.

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

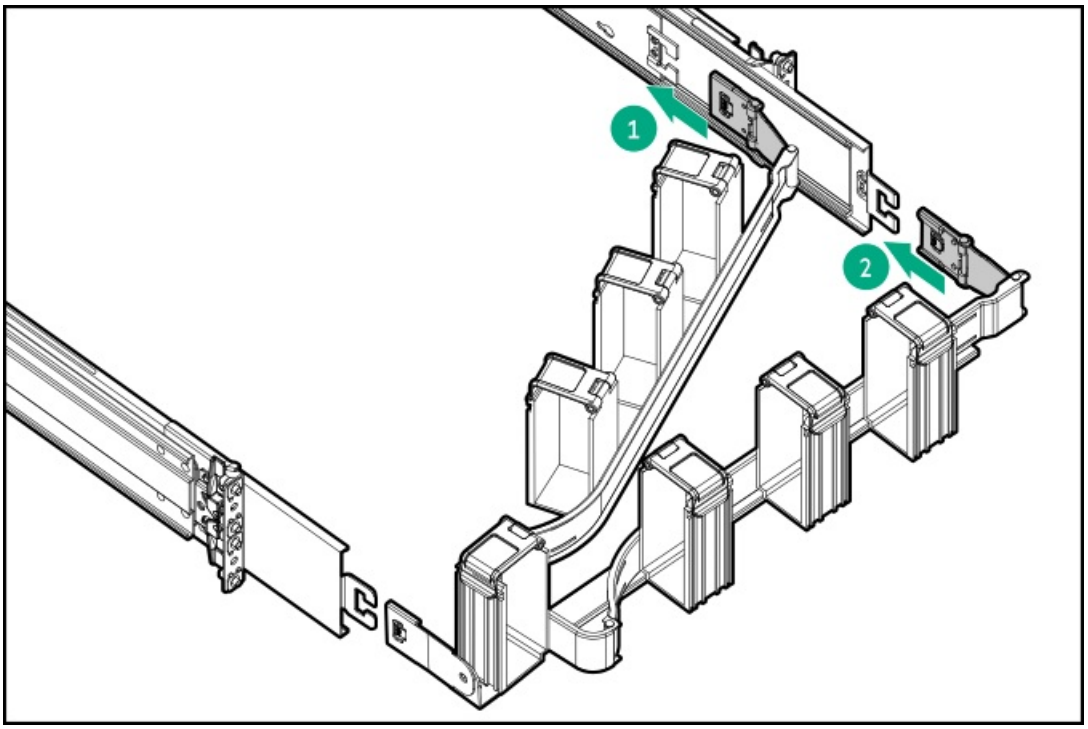
   - CMA with a rotate button

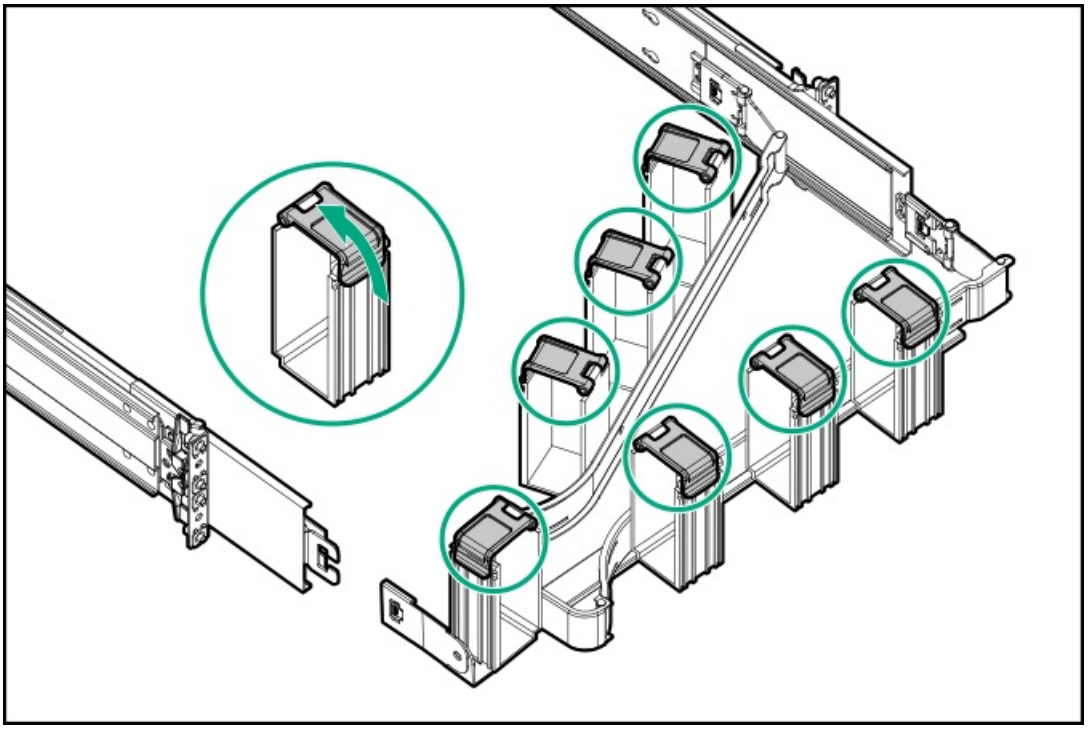
   - CMA with a rotate latch

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



4. Open the cable baskets.

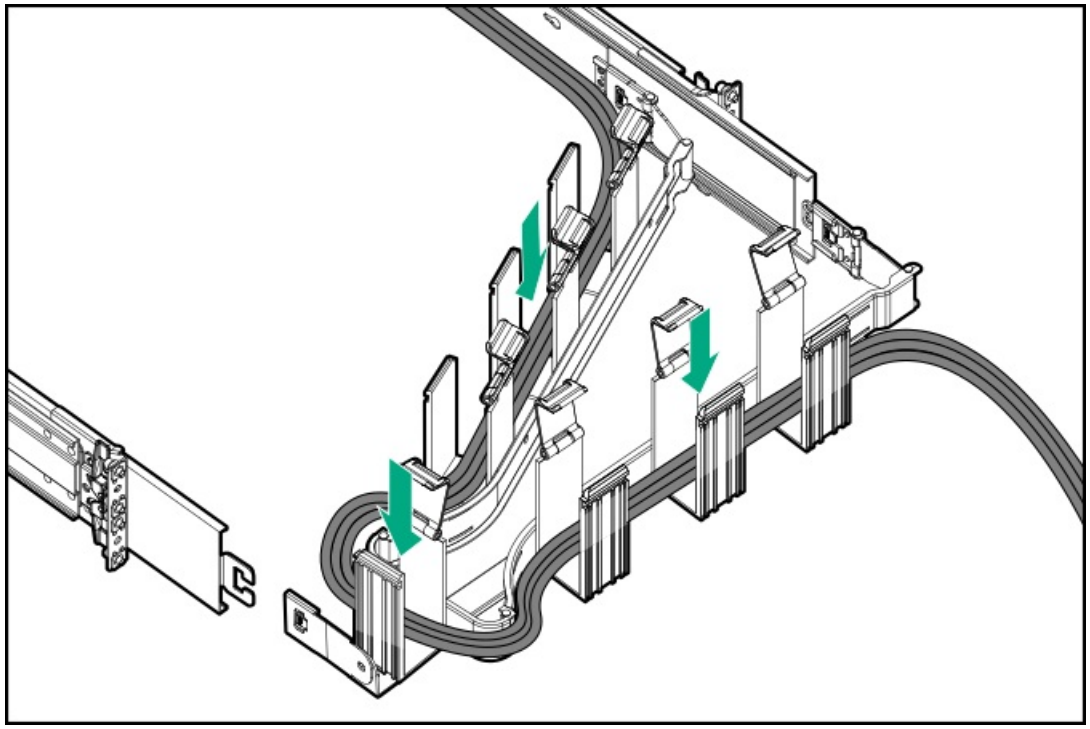


5. Install the cables.

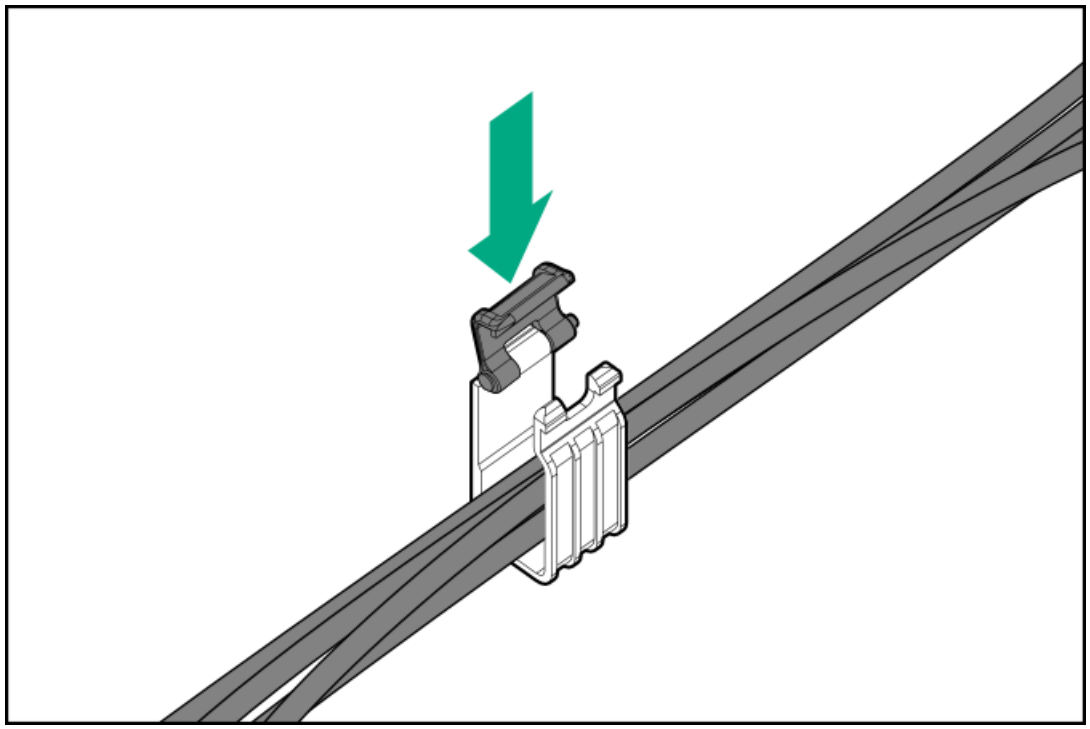
CAUTION

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

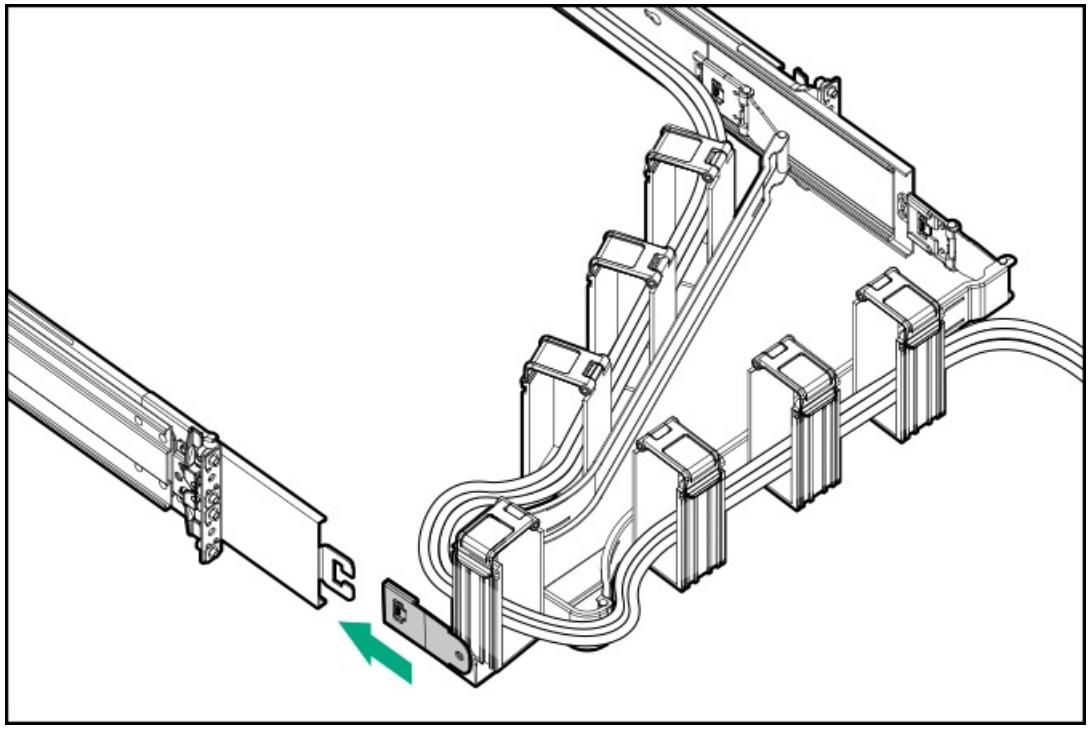
- Leave enough cable slack between the rear panel and the CMA to allow the full extension of the CMA when the server is extended out of the rack.
- However, there should be no excess cable slack inside the CMA; this might cause cable binding and could lead to cable damage.
- Make sure that the cables 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.



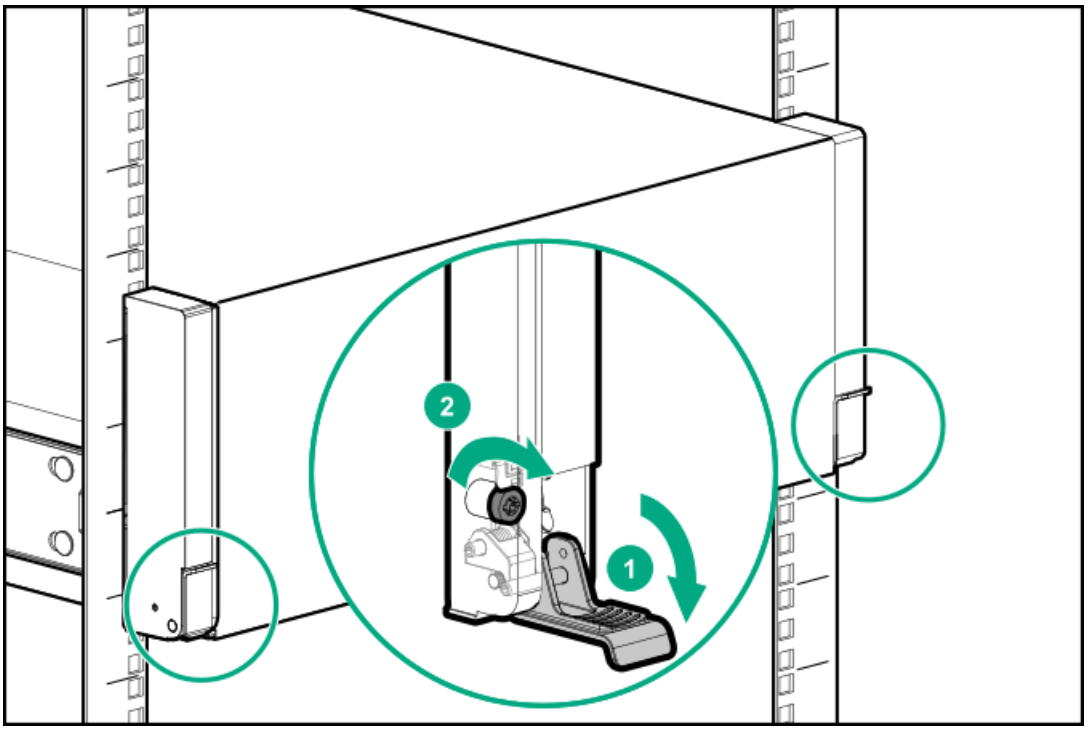
6. Close all baskets.



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

Prerequisites

- Review the PCIe riser numbering.
- Before you perform this procedure, make sure that you have the following items available:
  - Captive riser option (P80379-B21)
  - Compatible riser cable option
  - T-10 Torx screwdriver
  - T-15 Torx screwdriver
  - Phillips No. 1 screwdriver

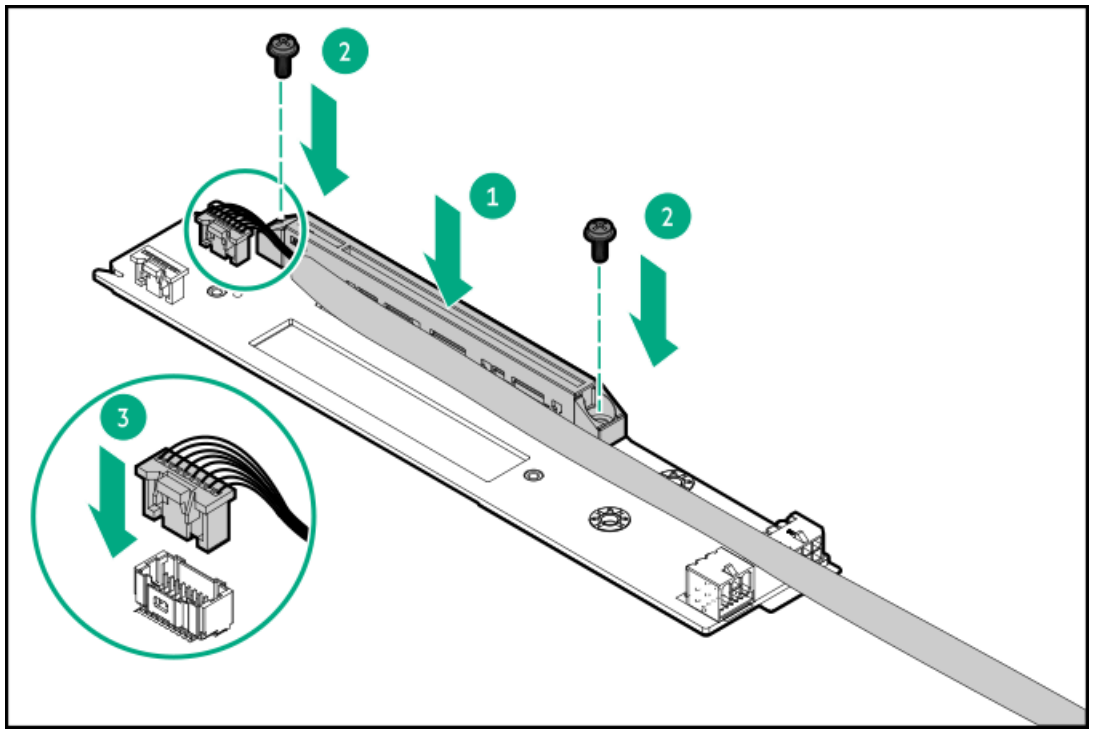
About this task

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.

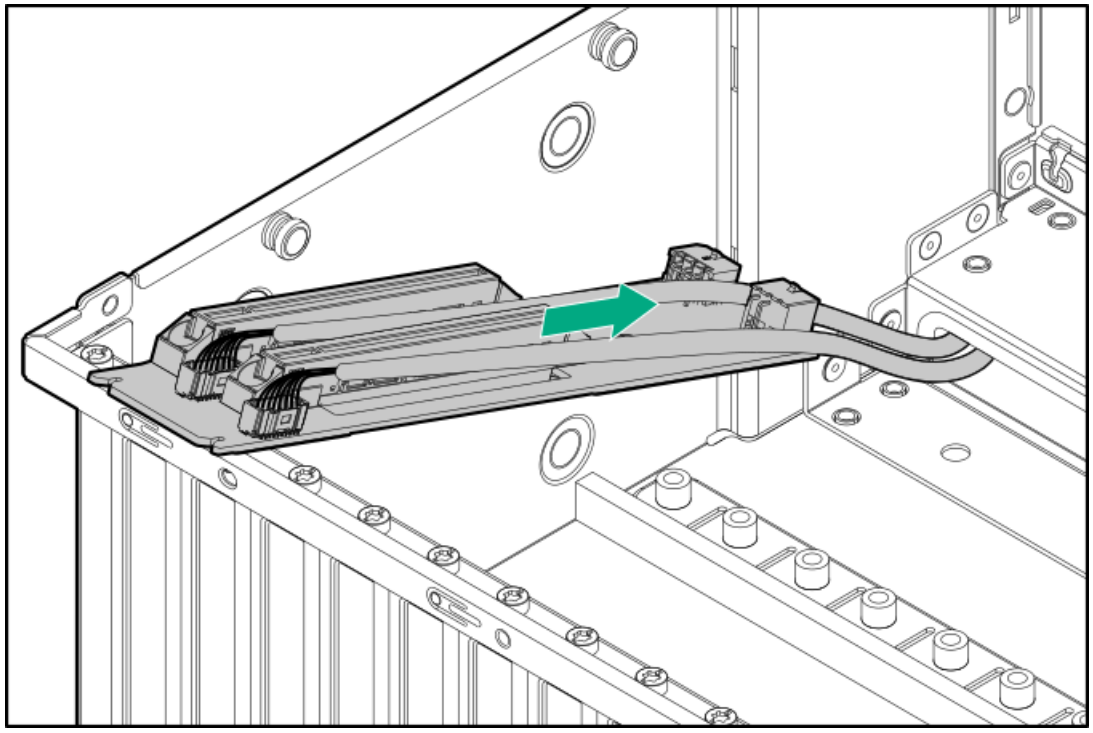
Procedure

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 air baffle.
8. If the processor mezzanine tray is installed:
   a. Remove the fan cage
   b. Remove the processor mezzanine tray.
9. Remove the system board baffle.
10. Remove the GPU cage.
11. Place the GPU cage on the flat work surface.
12. Install the captive riser cable.

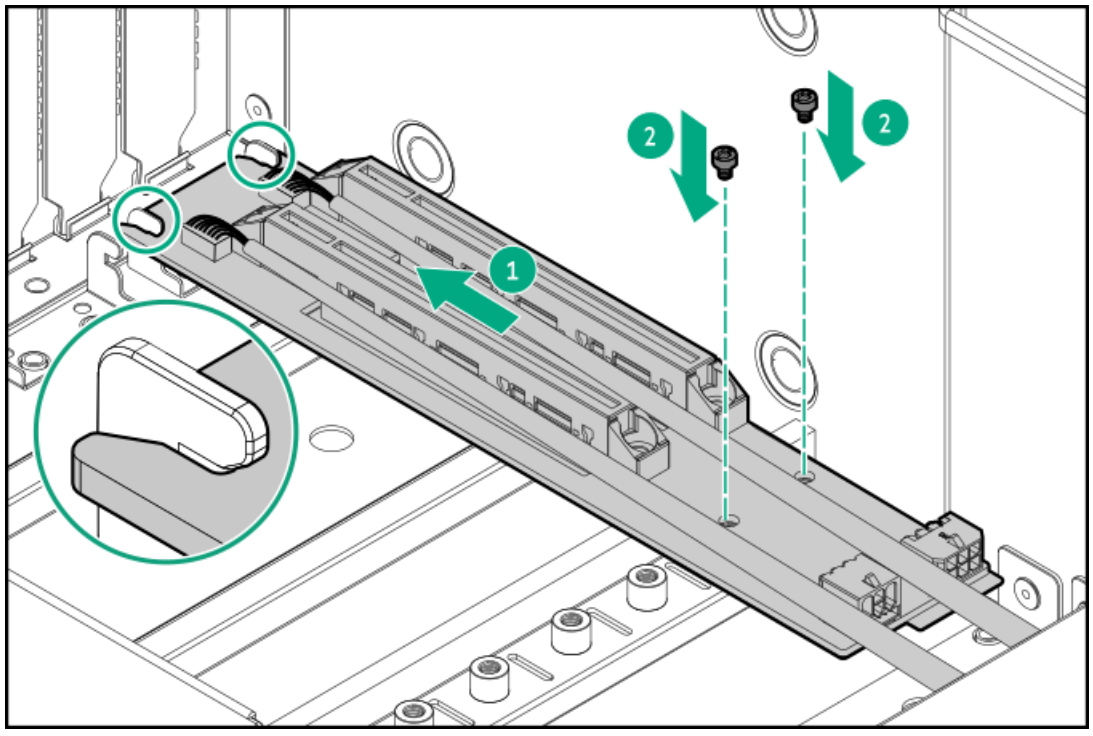


13. Repeat step 12 to install the riser cable on the other slot.
14. Connect the riser power cable to the captive riser.

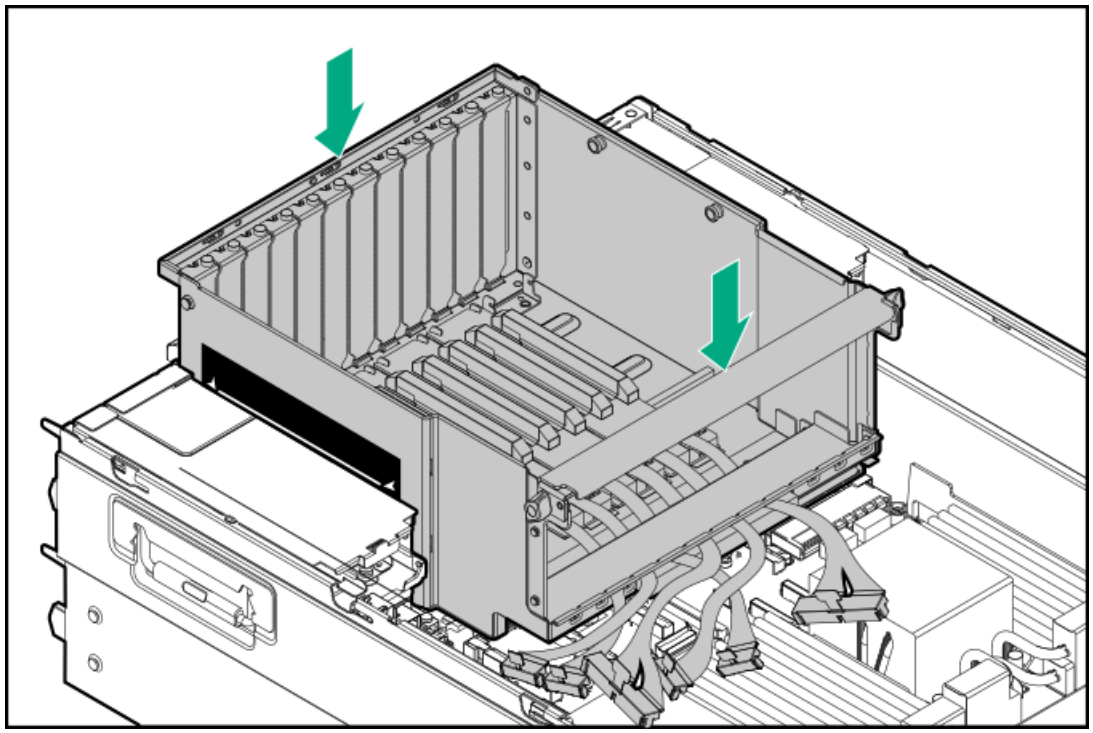
15. Route the riser cables through the GPU cage cable channel.



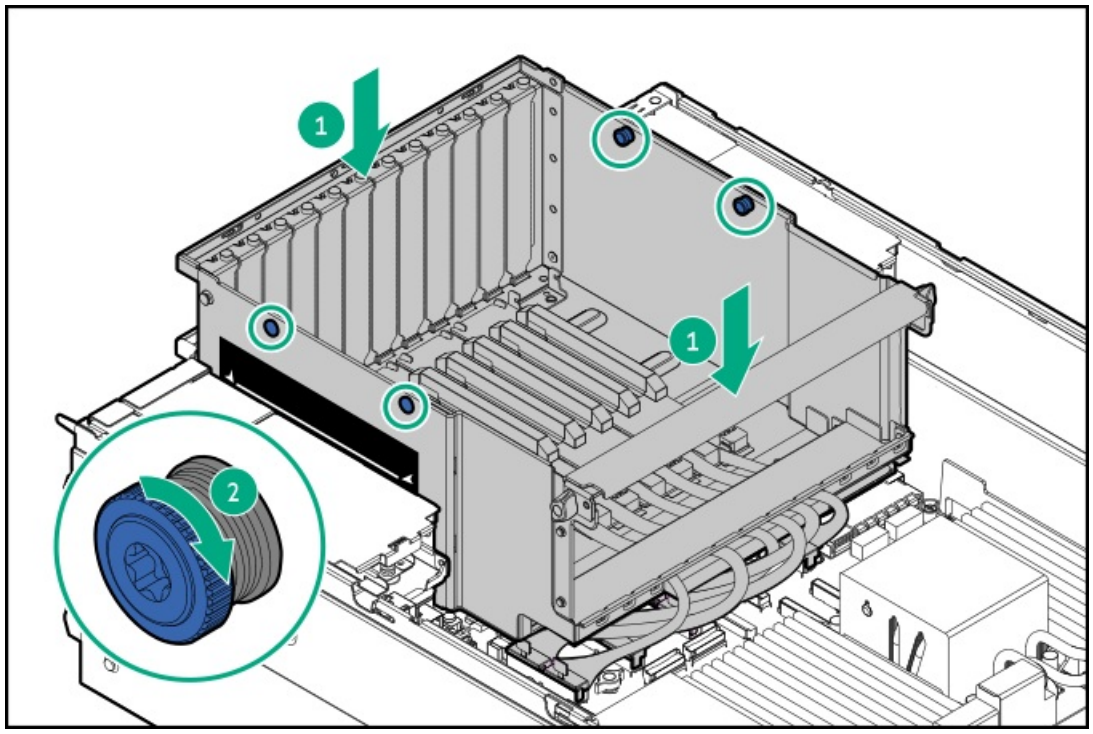
16. Install the captive riser in the GPU cage.



17. Hold and place the GPU cage until the alignment lines on the labels on the sides are level with the top of the power supply cages.



18. Connect the captive riser signal and power cables to the system board .
19. Install the GPU cage in the server, and then fasten the captive screws.



20. Install the system board baffle .
21. If removed:
    a. Install the processor mezzanine tray .
    b. Install the fan cage.
22. Install the air baffle.
23. Install the server into the rack .
24. Connect all peripheral cables to the server.

25. Connect each power cord to the server.
26. Connect each power cord to the power source.
27. 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

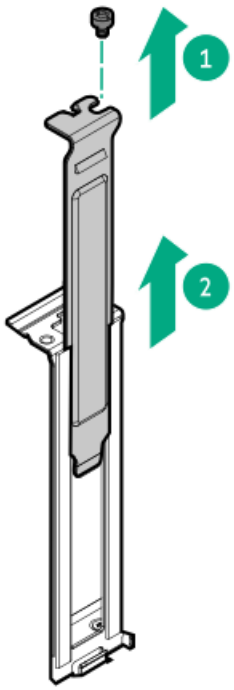
A discharge of static electricity from a finger or other conductor might damage system boards or other static-sensitive devices. To prevent damage, observe antistatic precautions.

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

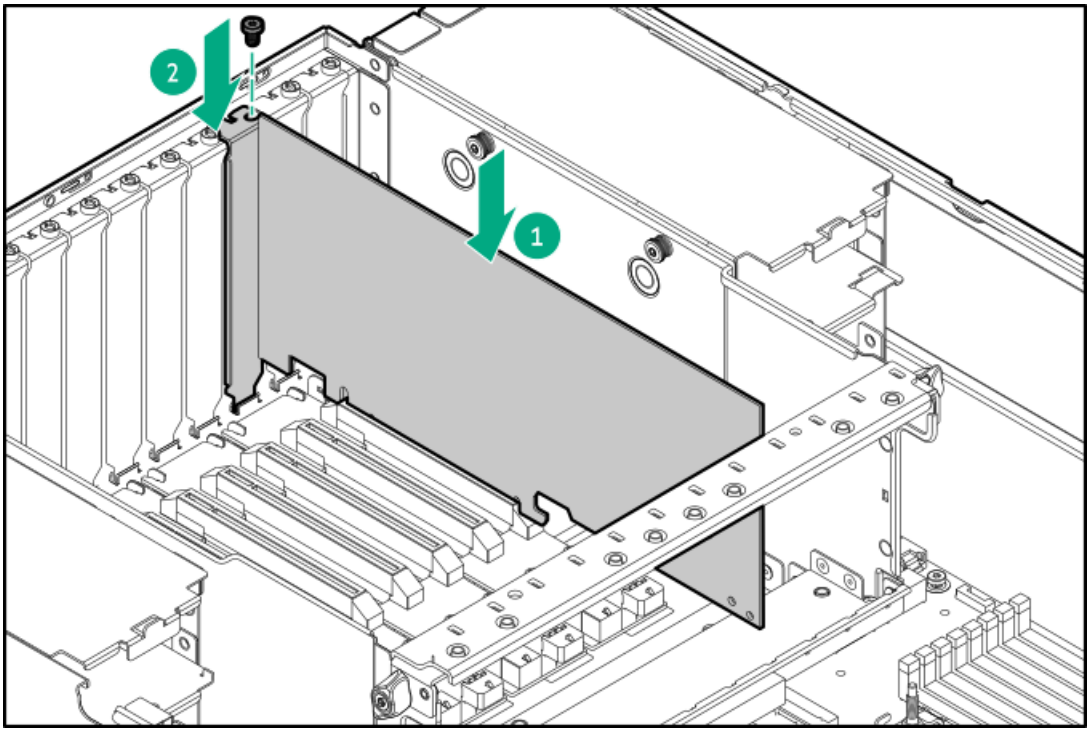
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove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



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

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

9. Install the expansion card in the GPU cage.



10. Connect all necessary internal cabling to the expansion card.
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 server.

16. Connect each power cord to the power source.
17. Power up the server.

Results

The installation procedure is complete.

Security

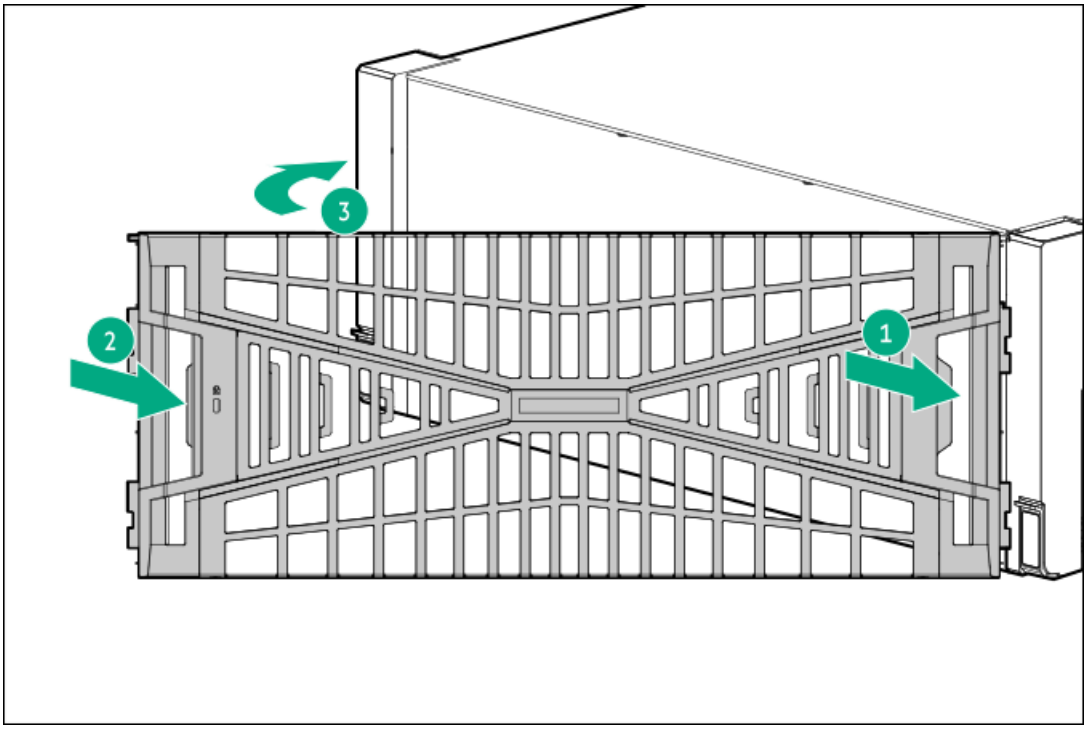
Subtopics

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 controllers

Subtopics

Installing a type-o storage controller

Prerequisites

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

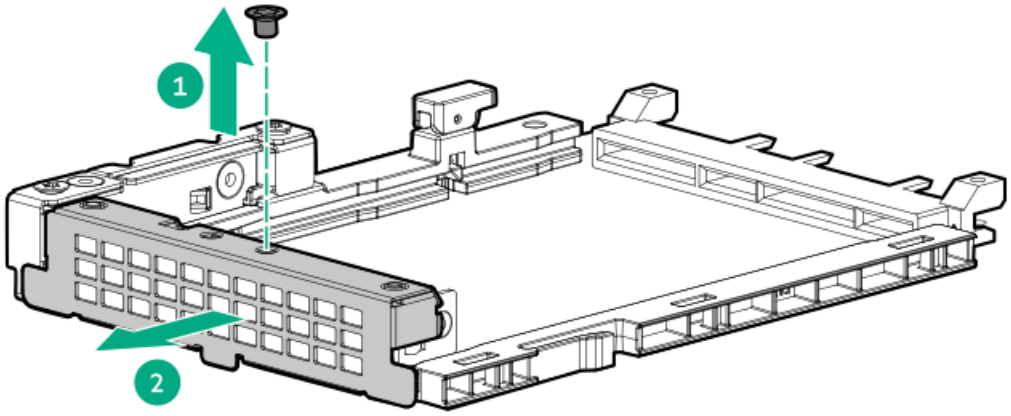
About this task

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.

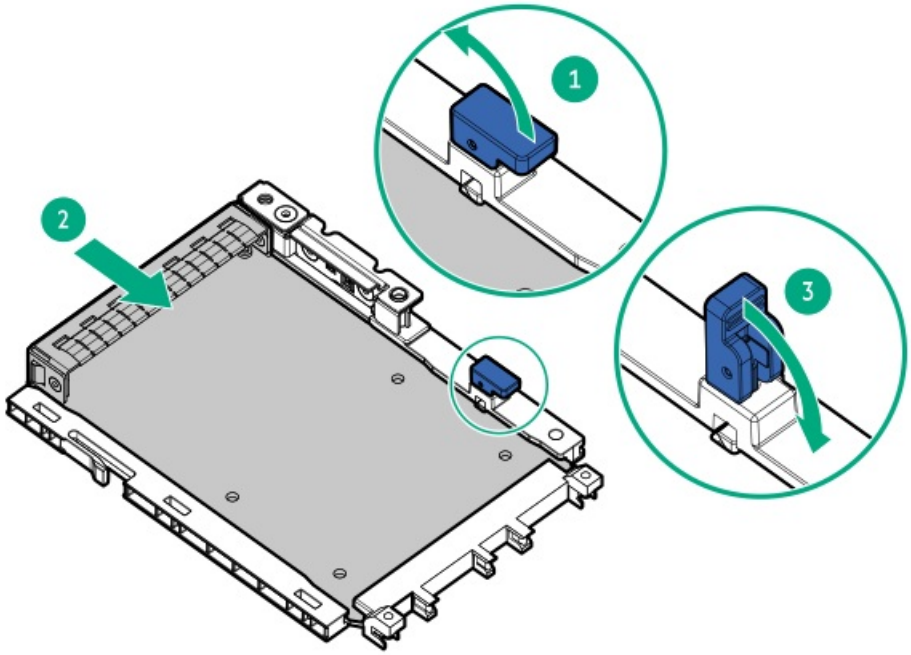
Procedure

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 air baffle.
8. Remove the fan cage.
9. If install, remove the processor mezzanine tray.
10. Remove the system board baffle.
11. Remove the fan cable assembly.
12. Remove the GPU cage.
13. Remove the OCP slot blank.



14. 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.



15. Connect the type-o controller.
16. Install the GPU cage.
17. Install the fan cable assembly.
18. Install the system board baffle .
19. If removed, install the processor mezzanine tray .
20. Install the fan cage.

21. Install the air baffle.
22. Install the access panel.
23. Install the server into the rack .
24. Connect all peripheral cables to the server.
25. Connect each power cord to the server.
26. Connect each power cord to the power source.
27. Power up the server.
28. Update the server firmware if they are not the latest revision .
29. Configure the controller.

Results

The installation procedure is complete.

Installing a type-p storage controller in the GPU cage

Prerequisites

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

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

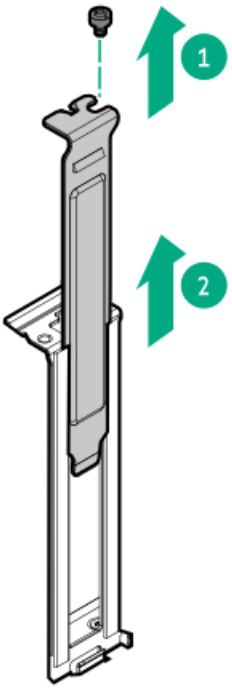
CAUTION

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

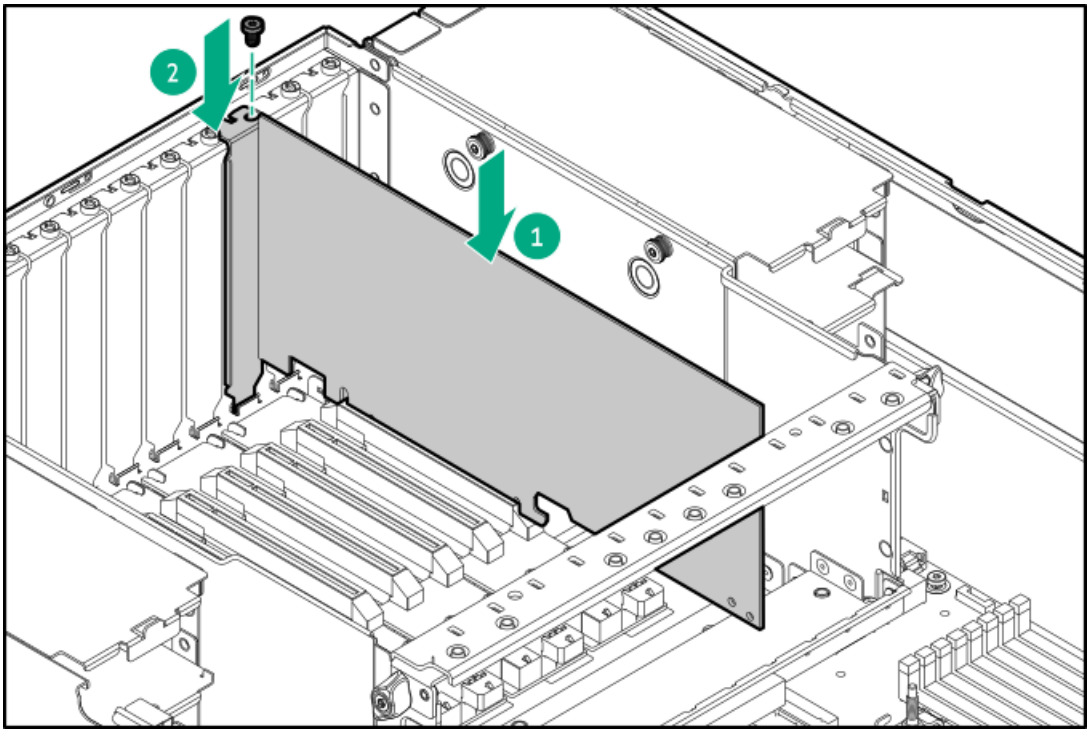
1. Back up all server data.
2. Power down the server.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.

5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Remove the air baffle.
9. Remove the fan cage.
10. If install, remove the processor mezzanine tray.
11. Remove the system board baffle.
12. Remove the fan cable assembly.
13. Remove the PCIe slot blank.



14. Install the type-p storage controller in the GPU cage.

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



15. Cable the type-p storage controller .
16. To enable the FBWC feature of the storage controller, install an energy pack.
17. Install the fan cable assembly.
18. Install the system board baffle .
19. If removed, install the processor mezzanine tray .
20. Install the fan cage.
21. Install the air baffle.
22. Install the access panel.
23. Install the server into the rack .
24. Connect all peripheral cables to the server.
25. Connect each power cord to the server.
26. Connect each power cord to the power source.
27. Power up the server.
28. Update the server firmware if they are not the latest revision .
29. Configure the controller.

Results

The installation procedure is complete.

Cabling

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

Subtopics

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.

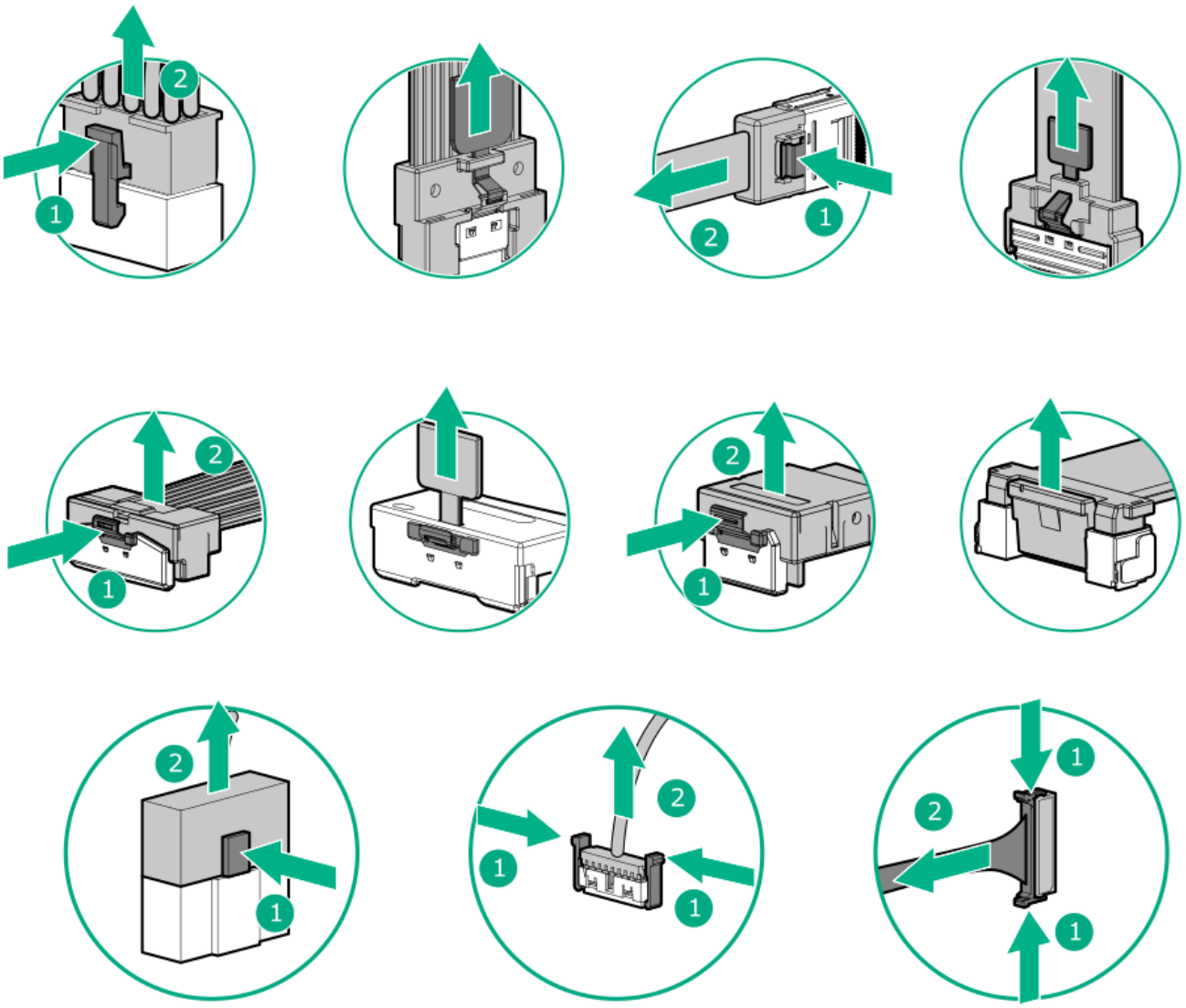
When connecting cables

- 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

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
Storage controller cabling	—
Drive box 1	—
8 SFF ×4 NVMe direct cable	• P74813-001 • P74816-001
8 E3.S ×4 NVMe direct cable	• P78323-001 • P78324-001
2 SFF ×4 stacked NVMe drive direct attach cable	• Two-processor configuration: P78316-001 • Four-processor configuration: P78316-001
8 SFF NVMe ×1 drive cable: Type-o controller	P78320-001
8 SFF NVMe ×1 drive cable: Type-p 2-port Tri-mode controller	P78322-001
8 SFF NVMe ×4 drive cable: Type-p 2-port Tri-mode controller	P78629-001
2 SFF ×4 stacked NVMe drive cable: Type-o controller	P78320-001
2 SFF ×4 stacked NVMe drive cable: Type-p controller	P78322-001
Drive box 3	—
8 SFF ×4 NVMe direct cable for 8 SFF drive configuration	• P74813-001 • P74809-001
8 SFF ×4 NVMe direct cable for 16/24/32 drive configurations, or when 2 stacked drives are installed in box 1	P74813-001
8 E3.S ×4 NVMe direct cable	P78323-001
8 SFF ×1 NVMe drive cable: Type-o controller in Slot 15 OCP B	P78317-001
8 SFF ×1 NVMe drive cable: Type-o controller in Slot 14 OCP A	P78317-001
8 SFF ×4 NVMe drive cable: Type-o controller in Slot 14 OCP A and Slot 15 OCP B	P78317-001
8 SFF ×1 NVMe drive cable: Type-o controller in Slot 14 OCP A	P78319-001
8 SFF NVMe ×1 drive cable: Type-p 2-port Tri-mode controller	P78322-001

Component cabling	Cable part number
8 SFF NVMe ×4 drive cable: Type-p 2-port Tri-mode controller	• Slot 2: P78629-001 • Slots 3 and 4: P78322-001 • Slots 4 and 6: P78322-001 • Slots 6 and 8: P78321-001 • Slots 5 and 6: P78321-001
Drive box 4	—
8 SFF ×4 NVMe direct attach cable in two-processor configuration	P74812-001
8 SFF ×4 NVMe direct attach cable in four-processor configuration	• To system board: P74813-001 • To processor mezzanine board: P78316-001
8 E3.S ×4 NVMe direct attach cabling in two-processor configuration	P78325-001
8 E3.S ×4 NVMe direct attach cabling in four-processor configuration	• To system board: P78324-001 • To processor mezzanine board: P78324-001
8 SFF ×1 NVMe drive cable: Type-o controller	• Port 1 on the controller: P78332-001 • Port 2 on the controller: P78320-001
8 SFF ×4 NVMe drive storage controller cable: Type-o controller	P78318-001
8 SFF ×1 NVMe drive storage controller cable: Type-p 2-port Tri-mode controller	• Slot 7: P78322-001 • Slot 8: P78322-001
8 SFF ×4 NVMe drive storage controller cable: Type-p 2-port Tri-mode controller	• Slots 5 and 6: P78322-001 • Slots 7 and 8: P78632-001 • Slot 8: P78630-001
Drive box 6	—
8 SFF ×4 NVMe direct attach cable	P74817-001
8 E3.S ×4 NVMe direct attach cable	P78326-001
8 SFF ×1 NVMe drive storage controller cable: Type-o controller	P78317-001
8 SFF ×1 NVMe drive storage controller cable: Type-p 2-port Tri-mode controller	P78322-001
8 SFF ×4 NVMe drive storage controller cable: Type-p 2-port Tri-mode controller	P78630-001
Drive power cabling	—
SFF drive power cable	• P78327-001 • P78328-001
E3.S drive power cable	• P78329-001 • P78330-001
2 SFF stacked drive power cable	P78327-001

Component cabling	Cable part number
Energy pack cabling	• P01367-B21 • P02381-B21
Storage backup cabling	• Type-o controller: P78333-001 • Type-p controller: P78333-001
Captive riser cabling	—

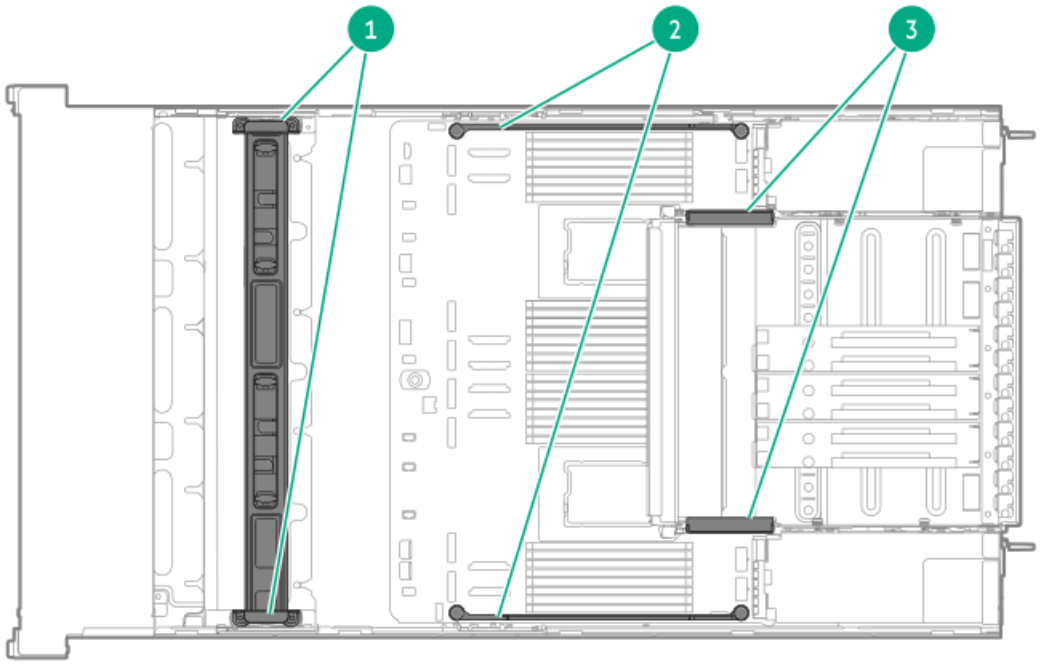
Captive riser cable for two-processor configuration	• Riser signal cable:
	  ◦ P71883-001
	  ◦ P71890-001
	• Riser power cable
	  ◦ P78312-001
	  ◦ P78313-001

Captive riser cable for four-processor configuration	Riser signal cable
	• Captive riser slots 1, 2, 11, and 12: P73416-001
	• Captive riser slots 3, 4, 9, and 10
	  ◦ P71884-001
	  ◦ P71890-001
	• Captive riser slots 5-8
	  ◦ P71883-001
	  ◦ P71890-001
	Riser power cable
	• P78312-001
	• P78313-001

Optical drive cabling	P73776-001
Universal media bay cabling	P75280-001
HPE NS204i-u Boot Device V2 cabling	—
Boot device on the front panel	• P48956-001 • P74839-001
Boot device on the rear panel	• P54088-001 • P71913-001
Sideband board cabling	• P74904-001 • P74901-001
Fan cabling	P78331-001

Component cabling	Cable part number
Intel UPI cabling	Two-processor configuration: • P72257-001 • P72259-001 • P74340-001 Four-processor configuration: • P74902-001 • P74903-001
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
System Insight Display cabling	P48971-001
Front I/O cabling	P71909-001

Internal cabling management



Item	Description
1	Fan cable assembly
2	DIMM guards
3	GPU cable channel bracket

Storage cabling

Subtopics

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

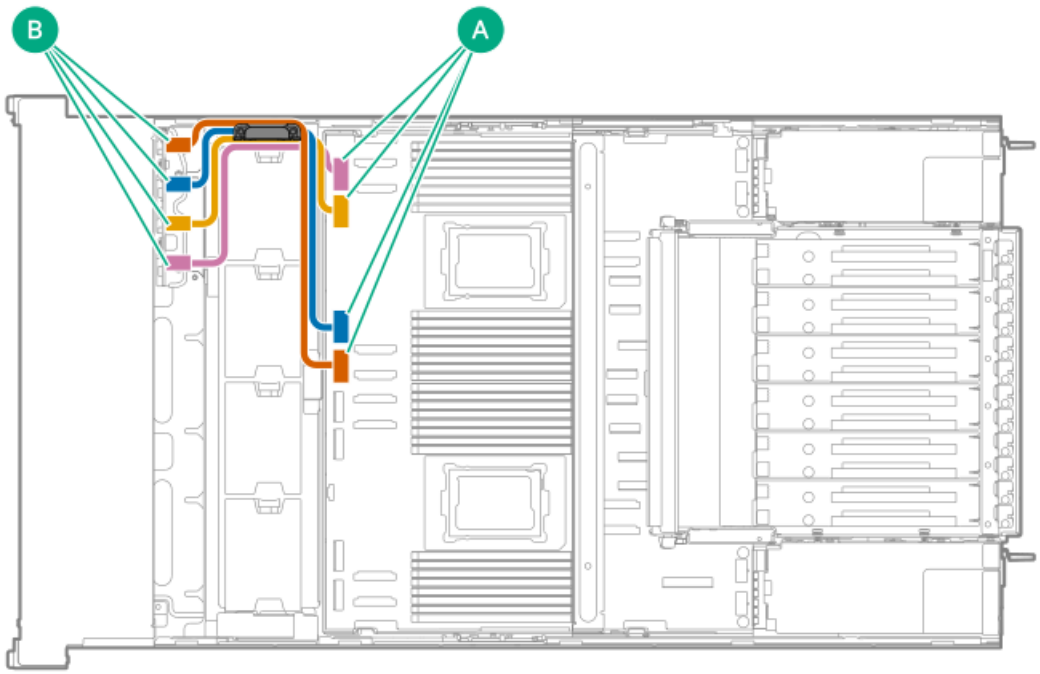
Storage controller cabling

Subtopics

- Drive box 1 cabling
- Drive box 3 cabling
- Drive box 4 cabling
- Drive box 6 cabling

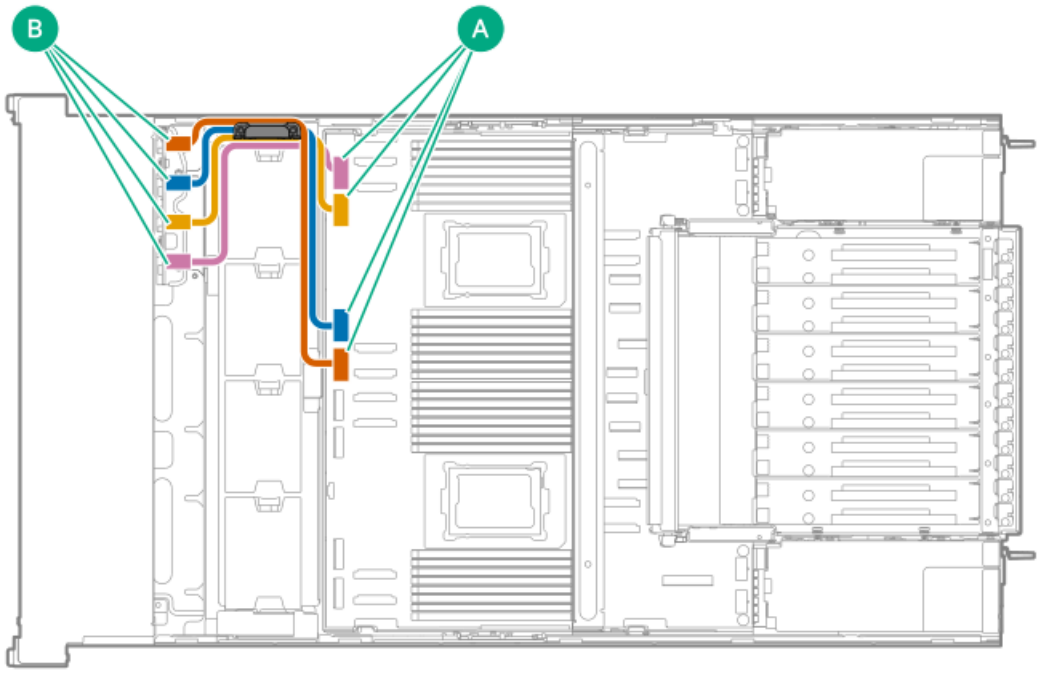
Drive box 1 cabling

8 SFF ×4 NVMe direct attach cabling



Cable part number	Color	From	To (Processor mezzanine board)
P74813-001	Orange	Box 1 port 1	M-XIO port 0
	Blue	Box 1 port 2	M-XIO port 2
P78316-001	Gold	Box 1 port 3	M-XIO port 6
	Pink	Box 1 port 4	M-XIO port 4

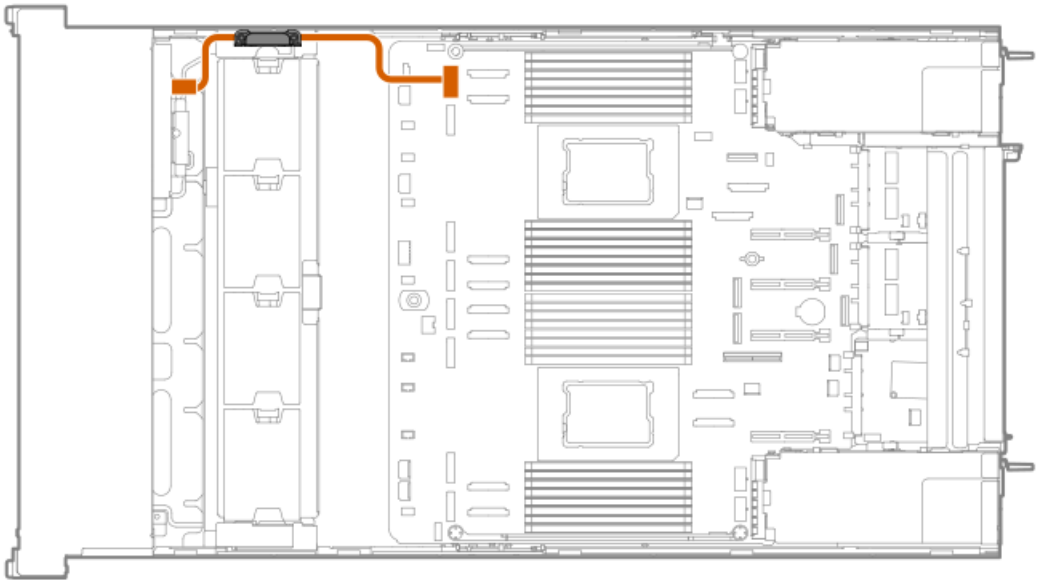
8 E3.S ×4 NVMe direct attach cabling



Cable part number	Color	From	To (Processor mezzanine board)
P78323-001	Orange	Box 1 port 1 for drives 1 and 2	M-XIO port 0
P78324-001	Blue	Box 1 port 2 for drives 3 and 4	M-XIO port 2
	Gold	Box 1 port 1 for drives 5 and 6	M-XIO port 6
	Pink	Box 1 port 2 for drives 7 and 8	M-XIO port 4

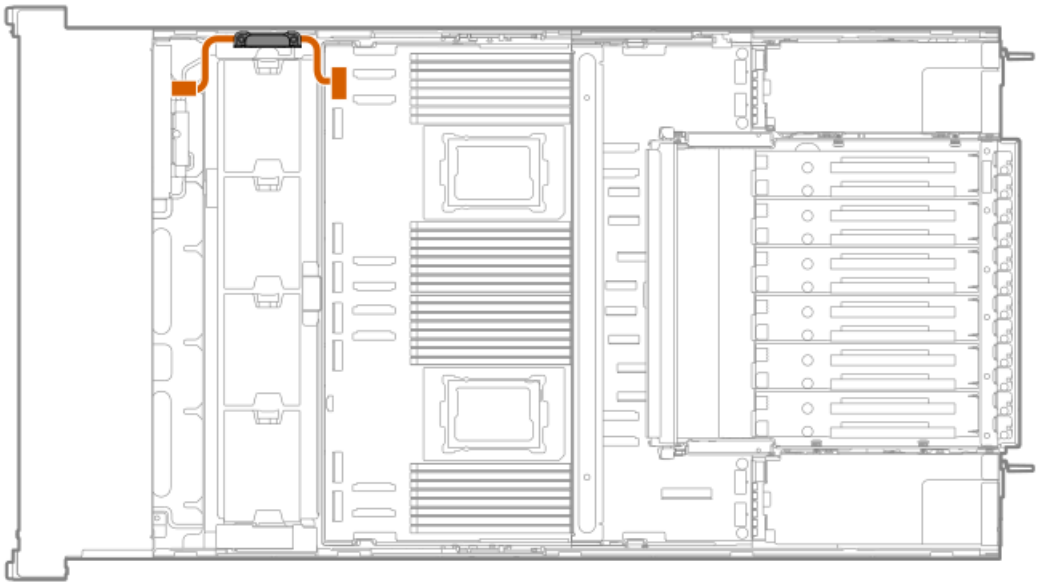
2 SFF ×4 stacked NVMe drive direct attach cabling

- **Two-processor configuration**



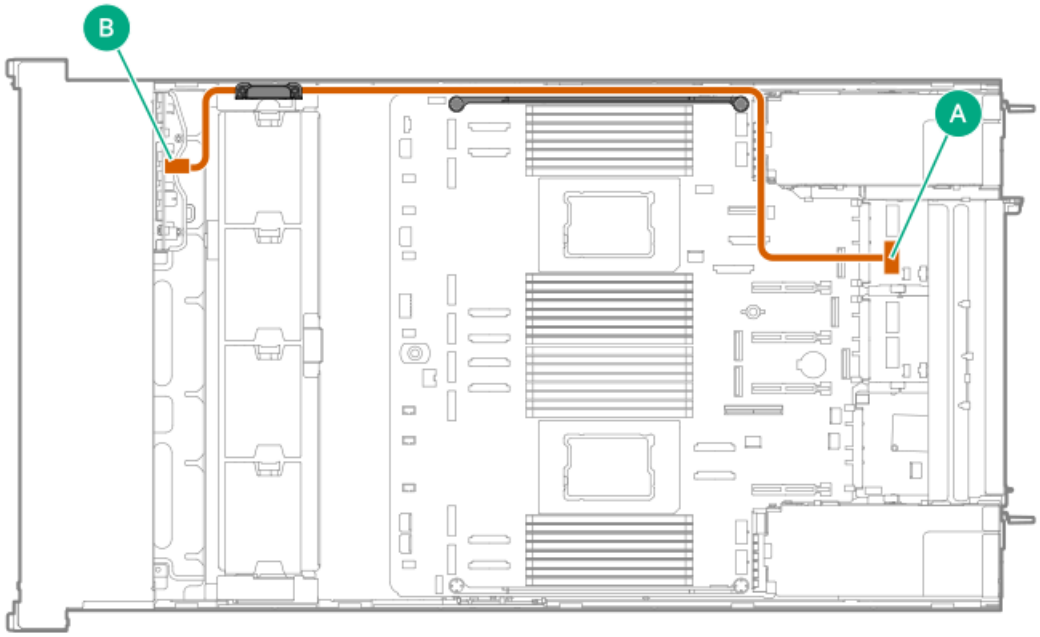
Cable part number	Color	From	To (System board)
P78316-001	Orange	Box 1 port 1	M-XIO port 4

- **Four-processor configuration**



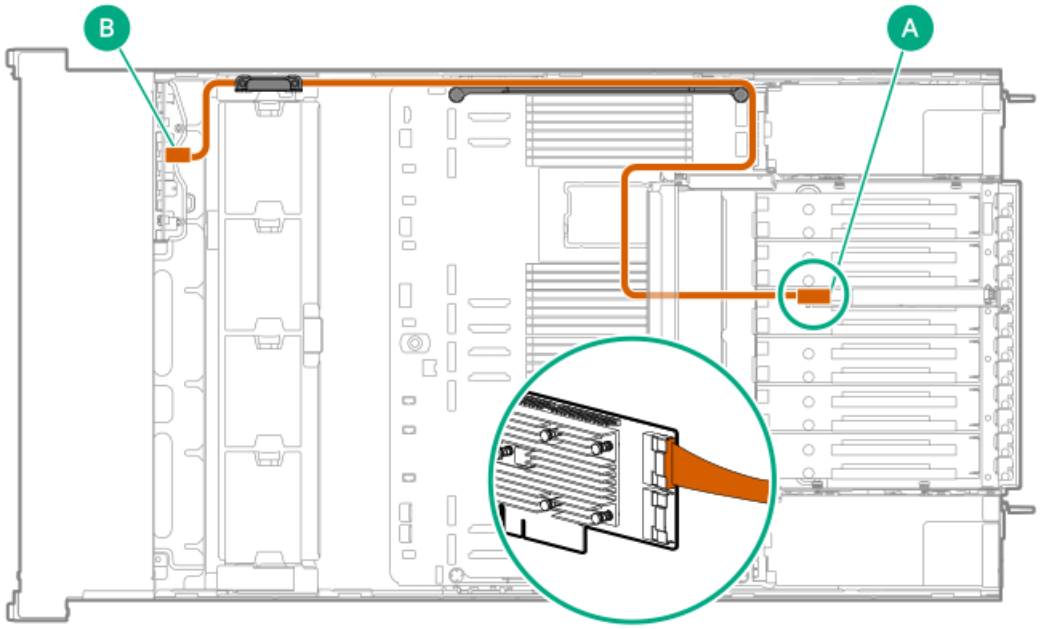
Cable part number	Color	From	To (Processor mezzanine board)
P78316-001	Orange	Box 1 port 1	M-XIO port 4

8 SFF ×1 NVMe drive storage controller cabling: Type-o controller



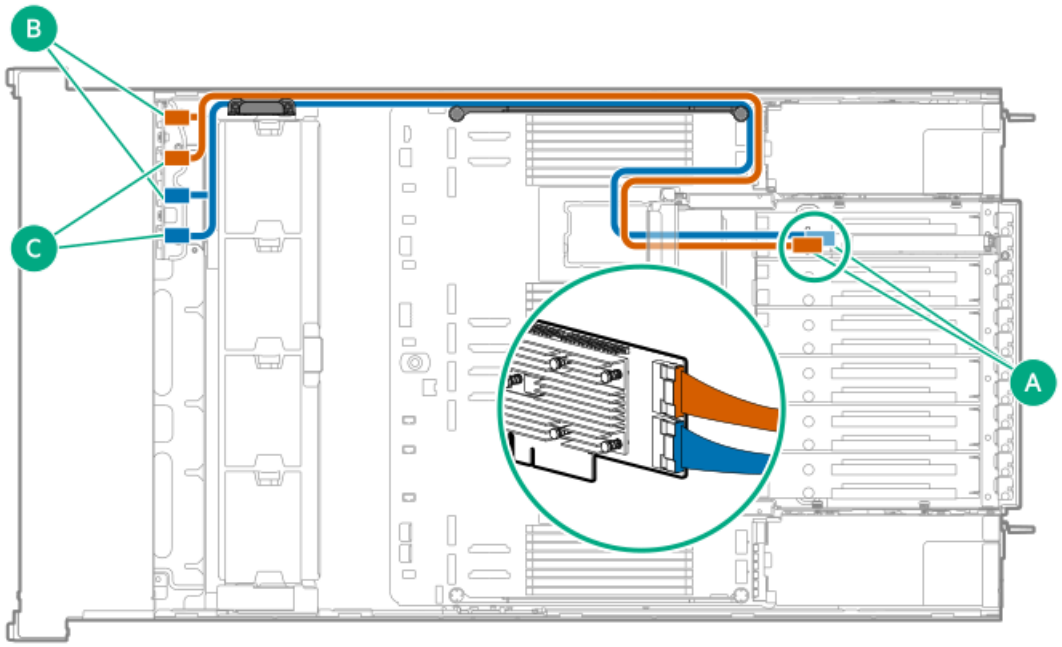
Cable part number	Color	From	To
P78320-001	Orange	Box 1 port 1	Type-o storage controller port 1 in Slot 15 OCP B

8 SFF ×1 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller



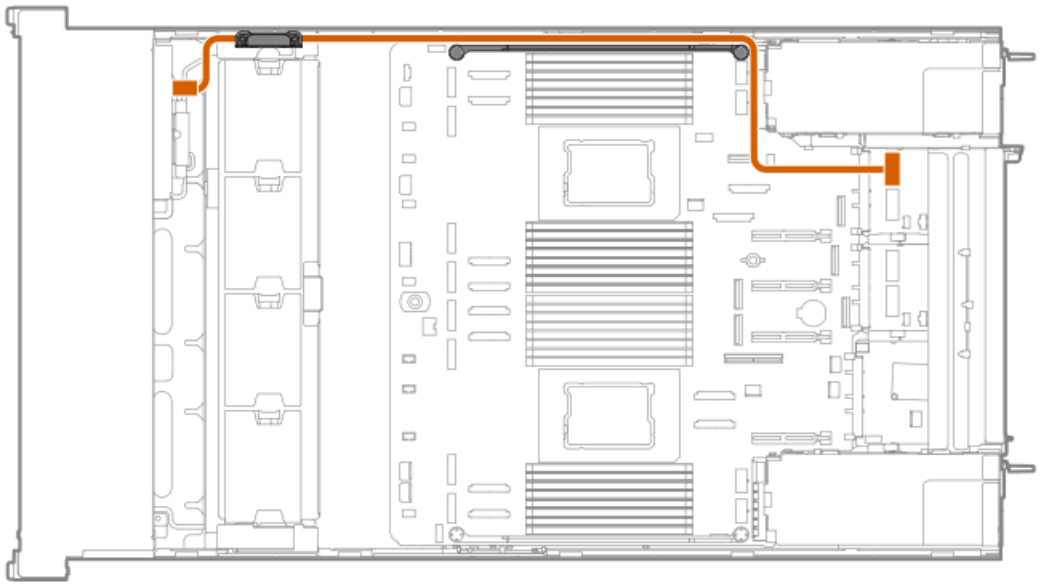
Cable part number	Color	From	To
P78322-001	Orange	Box 1 port 1	Type-p storage controller port 1 in Slot 8

8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller



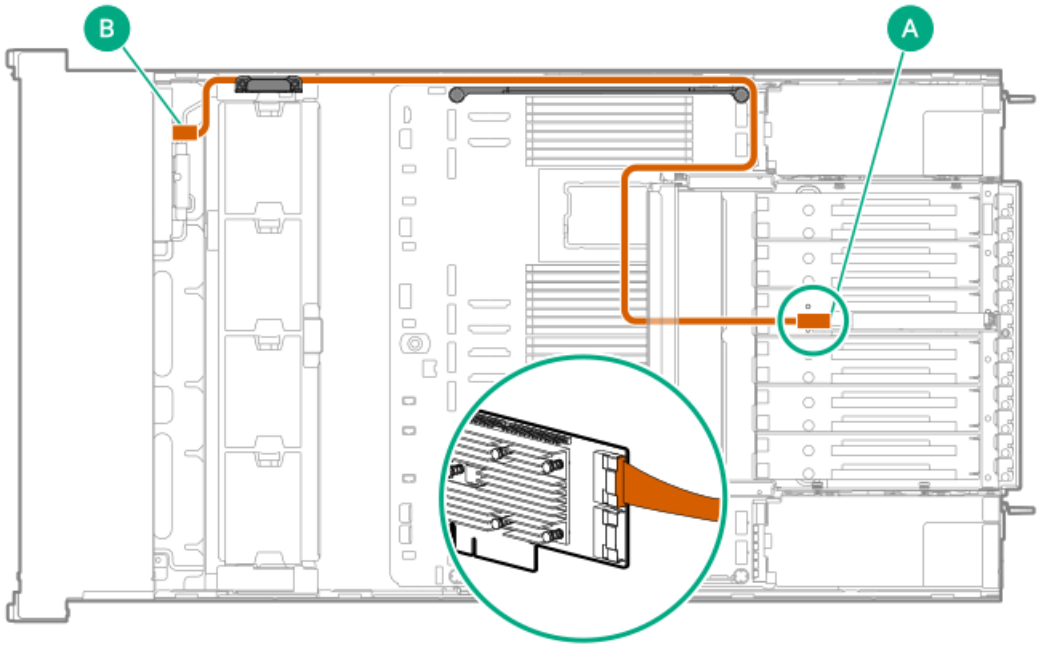
Cable part number	Color	From	To
P78629-001	Orange	Box 1 ports 1 and 2	Type-p storage controller port 1 in Slot 11
	Blue	Box 1 ports 3 and 4	Type-p storage controller port 2 in Slot 11

2 SFF ×4 stacked NVMe drive storage controller cabling: Type-o controller



Cable part number	Color	From	To
P78320-001	Orange	Box 1 port 1	Type-o storage controller port 2 in Slot 15 OCP B

2 SFF ×4 stacked NVMe drive storage controller cabling: Type-p controller

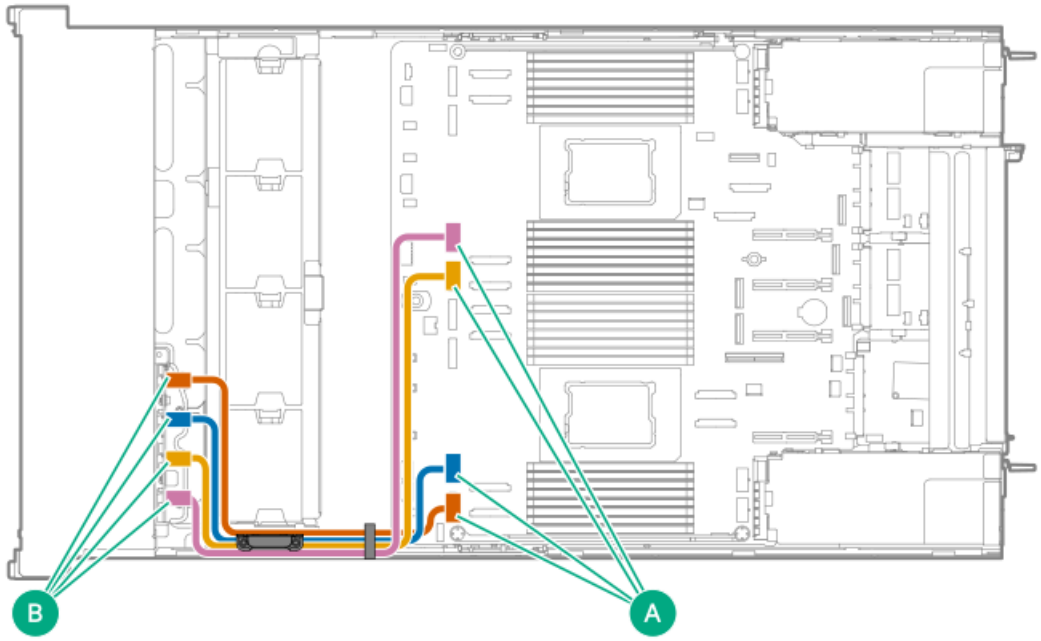


Cable part number	Color	From	To
P78322-001	Orange	Box 1 port 1	Type-p storage controller port 1 in Slot 7

Drive box 3 cabling

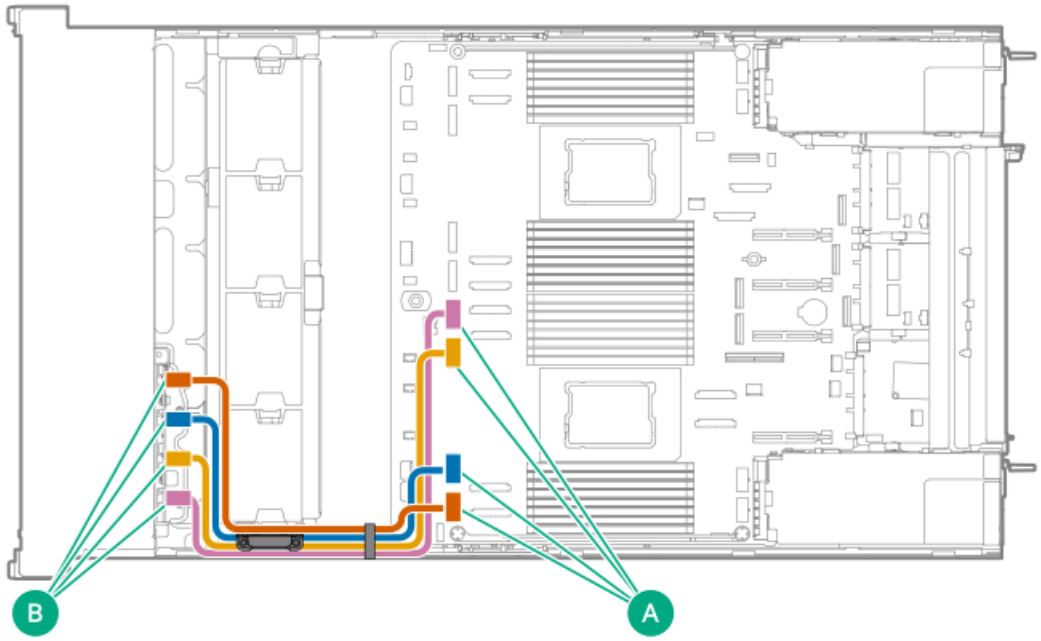
8 SFF ×4 NVMe direct attach cabling

- **For 8 SFF drive configuration**



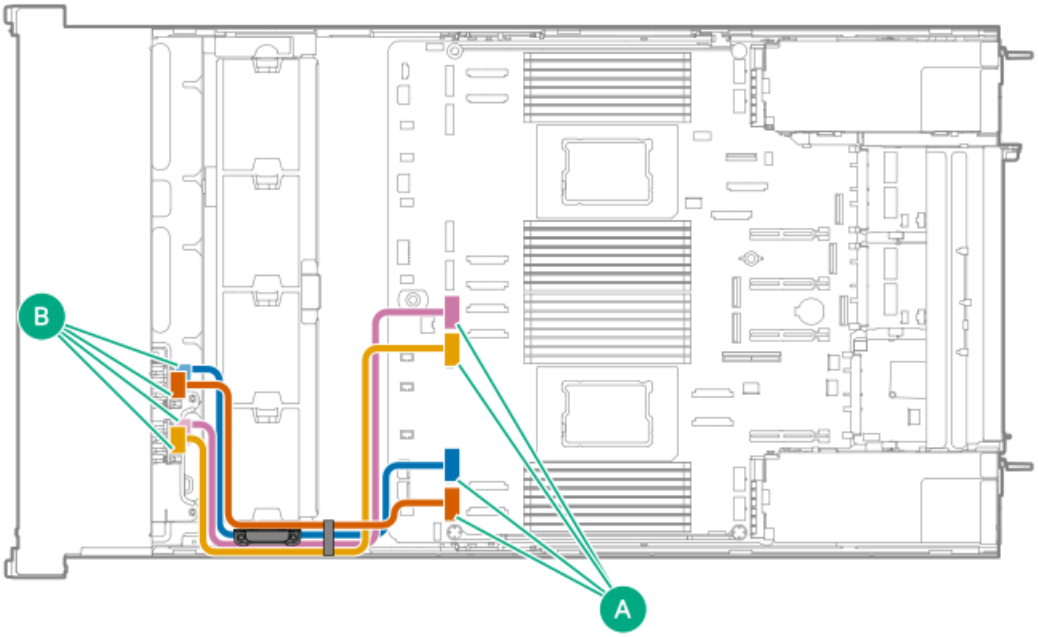
Cable part number	Color	From	To
P74813-001	Orange	Box 3 port 1	M-XIO port 1
	Blue	Box 3 port 2	M-XIO port 3
P74809-001	Gold	Box 3 port 3	M-XIO port 0
	Pink	Box 3 port 4	M-XIO port 2

- **For 16/24/32 drive configurations, or when 2 stacked drives are installed in box 1**



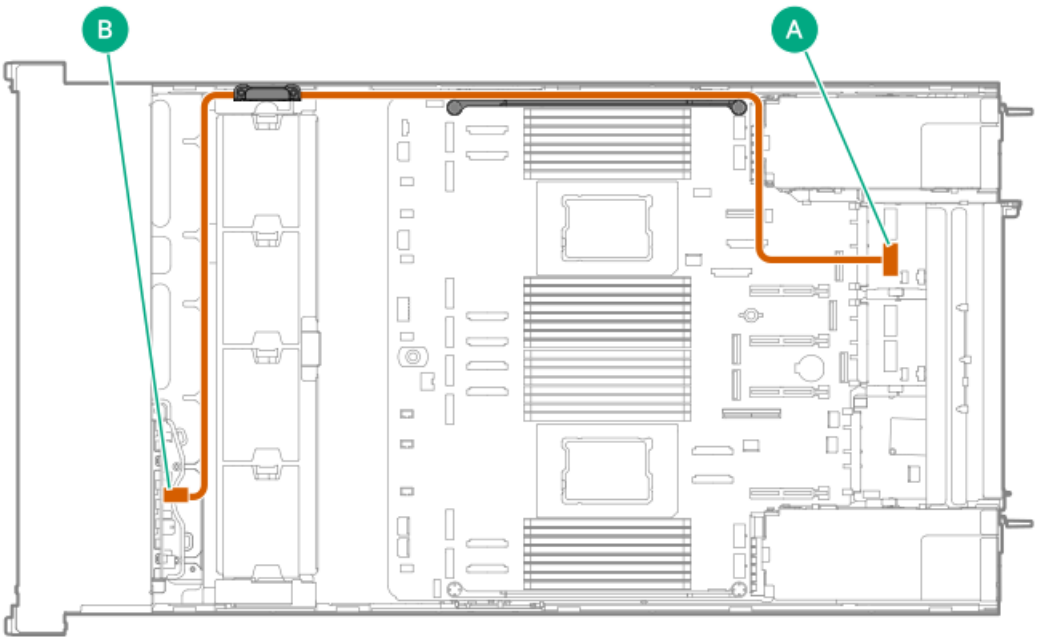
Cable part number	Color	From	To
P74813-001	Orange	Box 3 port 1	M-XIO port 1
	Blue	Box 3 port 2	M-XIO port 3
	Gold	Box 3 port 3	M-XIO port 7
	Pink	Box 3 port 4	M-XIO port 5

8 E3.S ×4 NVMe direct attach cabling



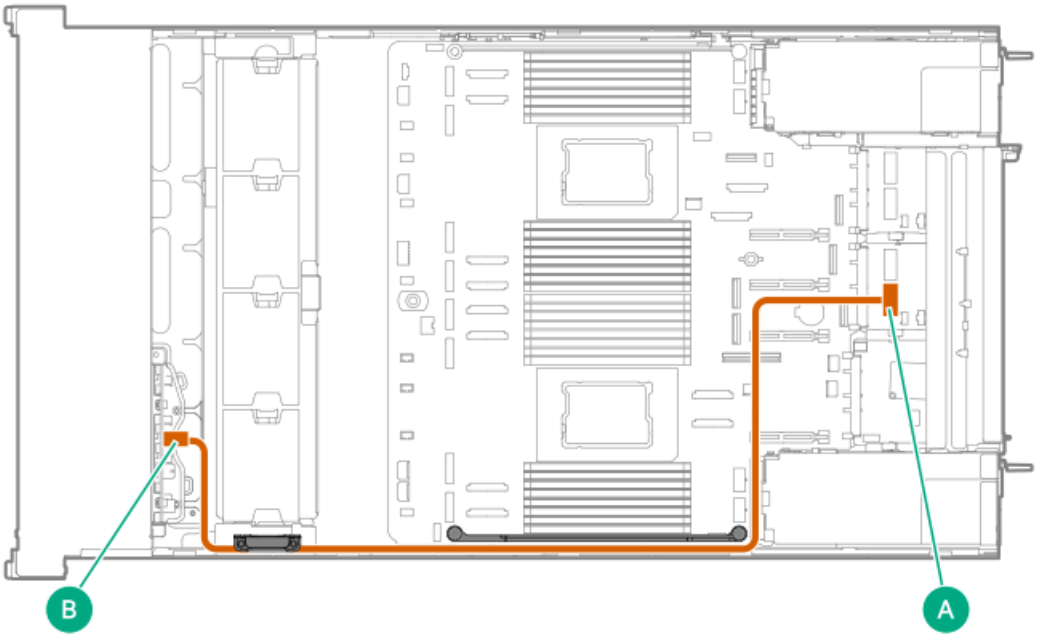
Cable part number	Color	From	To
P78323-001	Orange	Box 3 port 1 for drives 1 and 2	M-XIO port 1
	Blue	Box 3 port 2 for drives 3 and 4	M-XIO port 2
	Gold	Box 3 port 1 for drives 5 and 6	M-XIO port 6
	Pink	Box 3 port 2 for drives 7 and 8	M-XIO port 4

8 SFF ×1 NVMe drive storage controller cabling: Type-o controller in Slot 15 OCP B



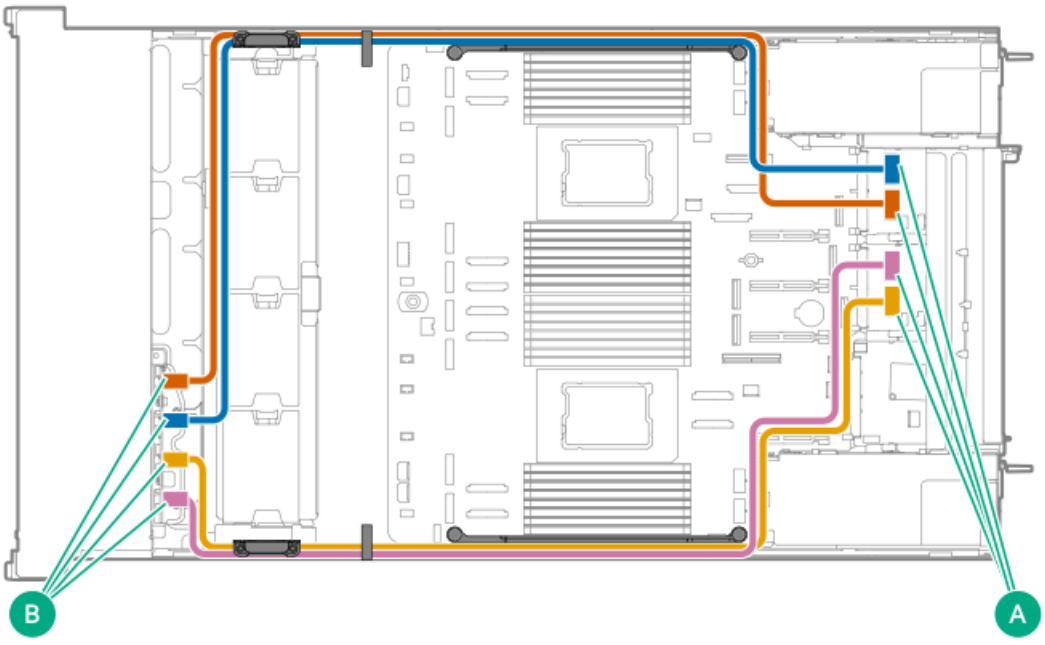
Cable part number	Color	From	To
P78317-001	Orange	Box 3 port 1	Type-o storage controller port 1 in Slot 15 OCP B

8 SFF ×1 NVMe drive storage controller cabling: Type-o controller in Slot 14 OCP A



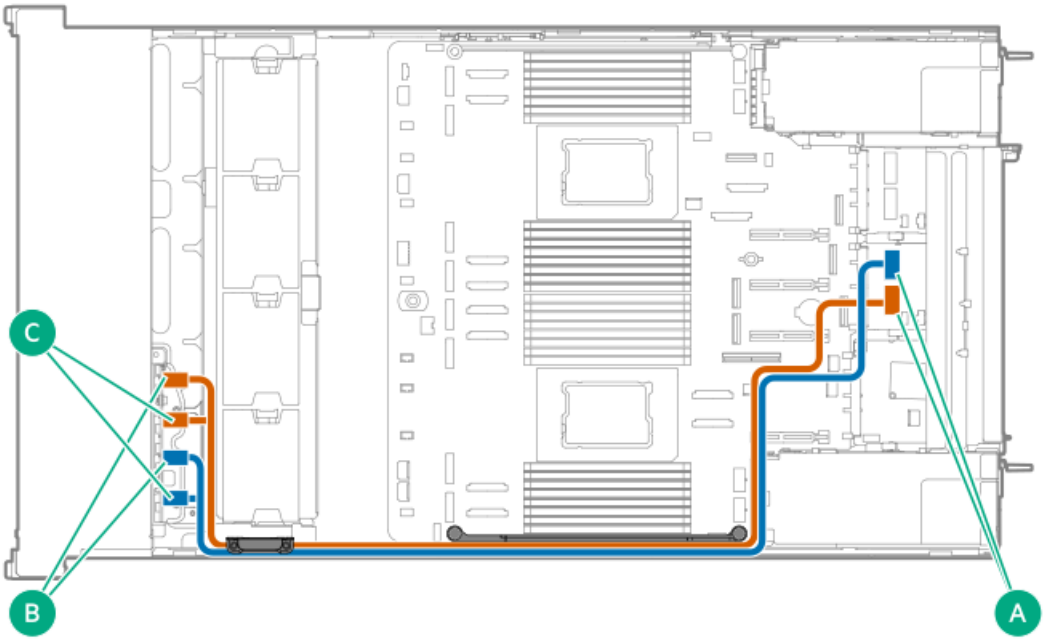
Cable part number	Color	From	To
P78317-001	Orange	Box 3 port 1	Type-o storage controller port 1 in Slot 14 OCP A

8 SFF ×4 NVMe drive storage controller cabling: Type-o controller in Slot 14 OCP A and Slot 15 OCP B



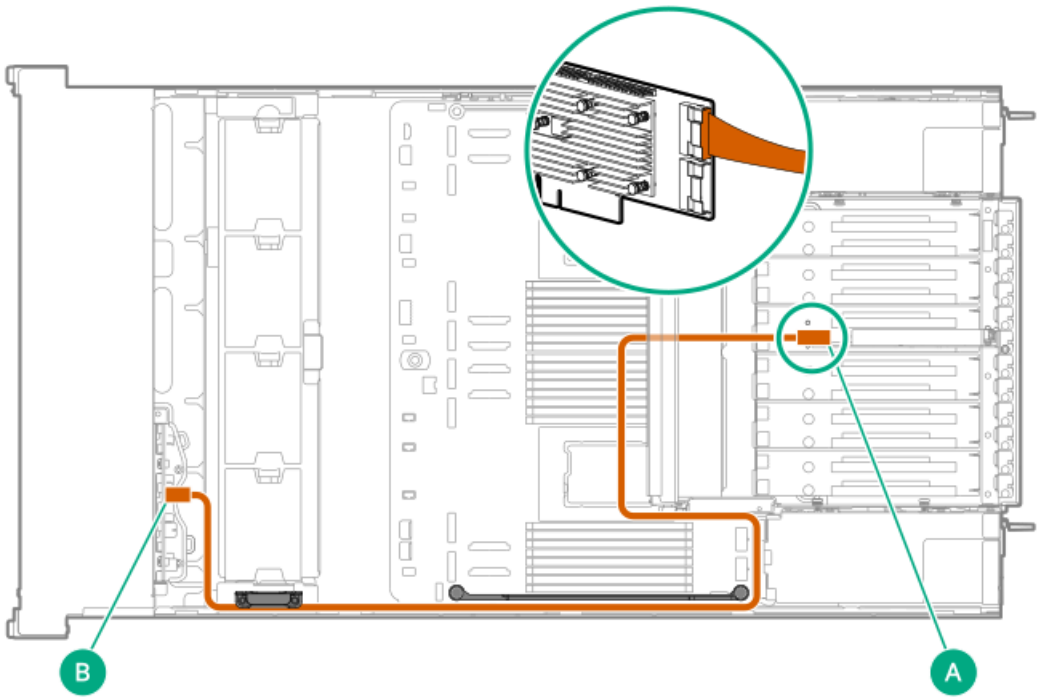
Cable part number	Color	From	To
P78317-001	Orange	Box 3 port 1	Type-o storage controller port 1 in Slot 15 OCP B
	Blue	Box 3 port 2	Type-o storage controller port 2 in Slot 15 OCP B
	Gold	Box 3 port 3	Type-o storage controller port 1 in Slot 14 OCP A
	Pink	Box 3 port 4	Type-o storage controller port 2 in Slot 14 OCP A

8 SFF ×4 NVMe drive storage controller cabling: Type-o controller in Slot 14 OCP A



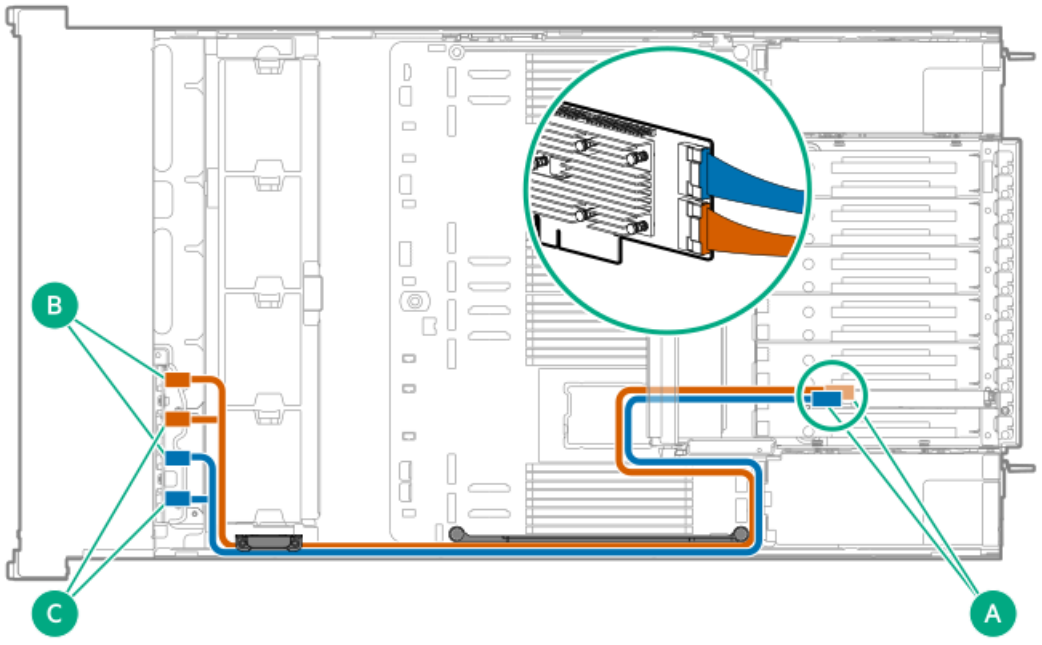
Cable part number	Color	From	To
P78319-001	Orange	Box 3 ports 1 and 2	Type-o storage controller port 1 in Slot 14 OCP A
	Blue	Box 3 ports 3 and 4	Type-o storage controller port 2 in Slot 14 OCP A

8 SFF ×1 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller



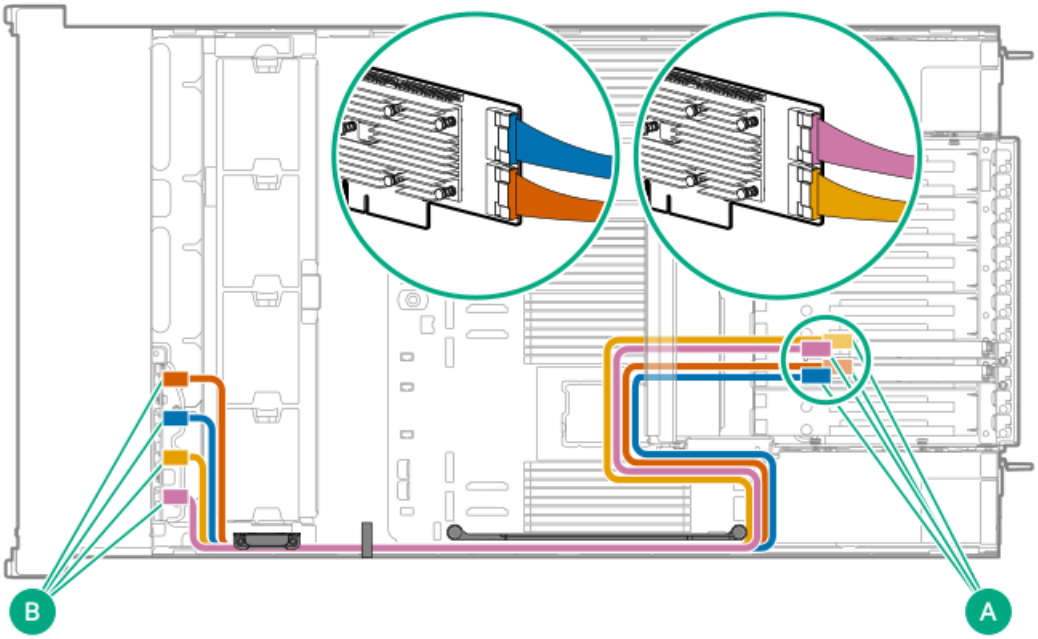
Cable part number	Color	From	To
P78322-001	Orange	Box 3 port 1	Type-p storage controller in Slot 7

8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller in Slot 2



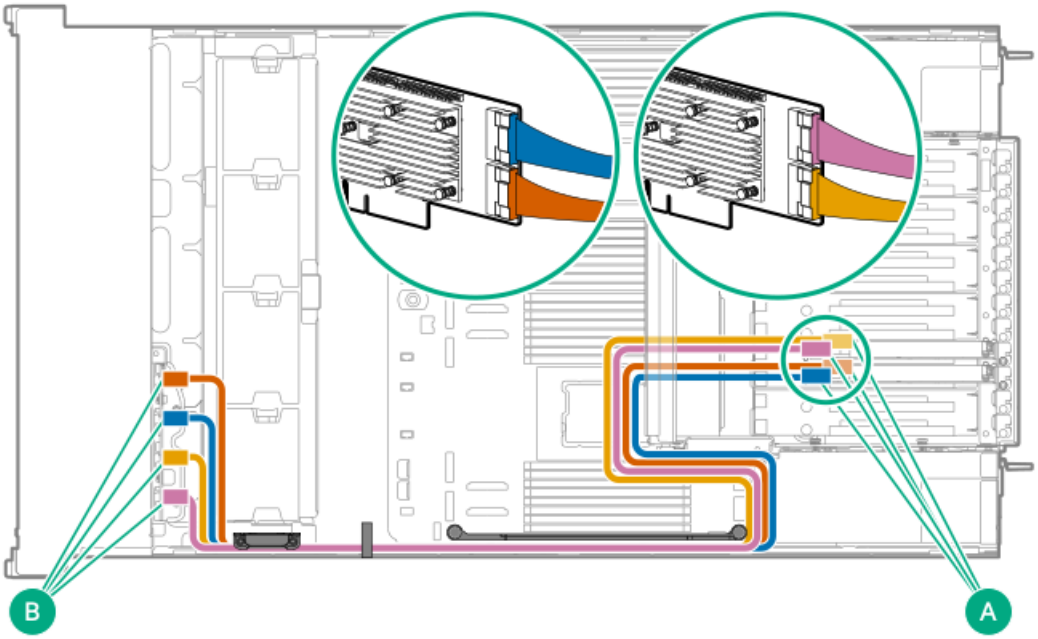
Cable part number	Color	From	To
P78629-001	Orange	Box 3 ports 1 and 2	Type-p storage controller port 2 in Slot 2
	Blue	Box 3 ports 3 and 4	Type-p storage controller port 1 in Slot 2

8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller in Slots 3 and 4



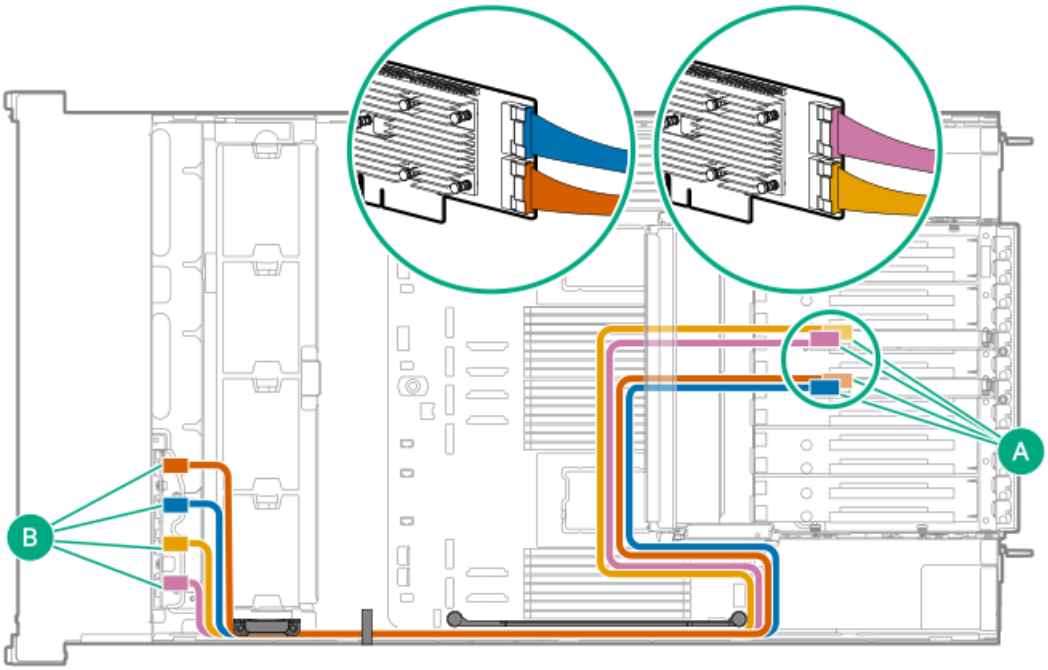
Cable part number	Color	From	To
P78322-001	Orange	Box 3 port 1	Type-p storage controller port 2 in Slot 3
	Blue	Box 3 port 2	Type-p storage controller port 1 in Slot 3
	Gold	Box 3 port 3	Type-p storage controller port 2 in Slot 4
	Pink	Box 3 port 4	Type-p storage controller port 1 in Slot 4

8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller in Slots 4 and 6



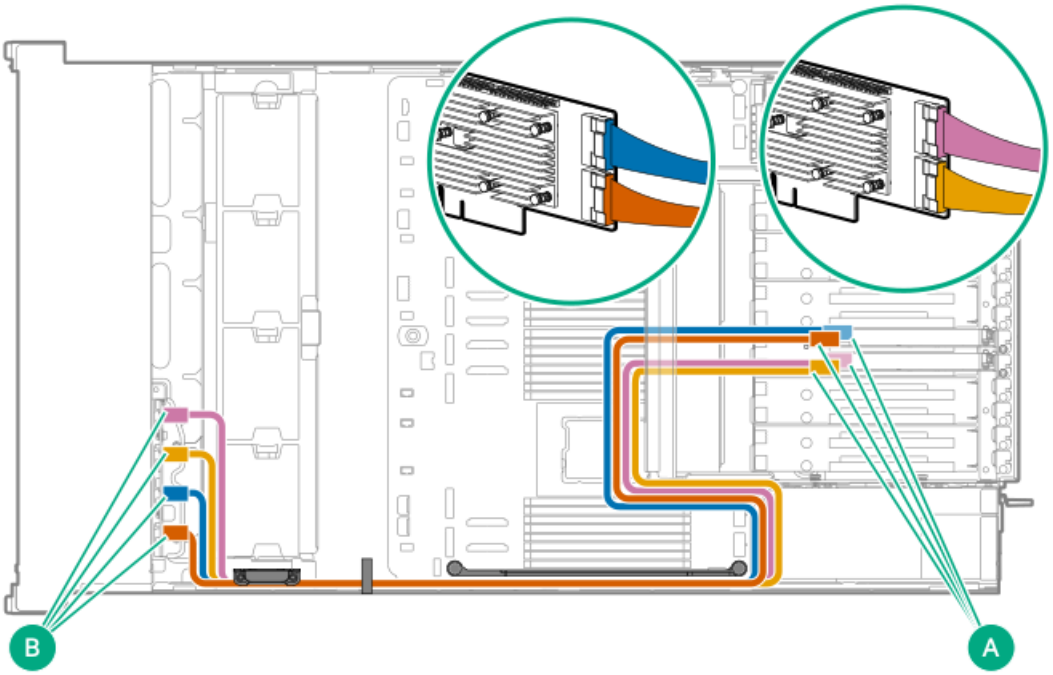
Cable part number	Color	From	To
P78322-001	Orange	Box 3 port 1	Type-p storage controller port 2 in Slot 4
	Blue	Box 3 port 2	Type-p storage controller port 1 in Slot 4
	Gold	Box 3 port 3	Type-p storage controller port 2 in Slot 6
	Pink	Box 3 port 4	Type-p storage controller port 1 in Slot 6

8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller in Slots 6 and 8



Cable part number	Color	From	To
P78321-001	Orange	Box 3 port 1	Type-p storage controller port 2 in Slot 6
	Blue	Box 3 port 2	Type-p storage controller port 1 in Slot 6
	Gold	Box 3 port 3	Type-p storage controller port 2 in Slot 8
	Pink	Box 3 port 4	Type-p storage controller port 1 in Slot 8

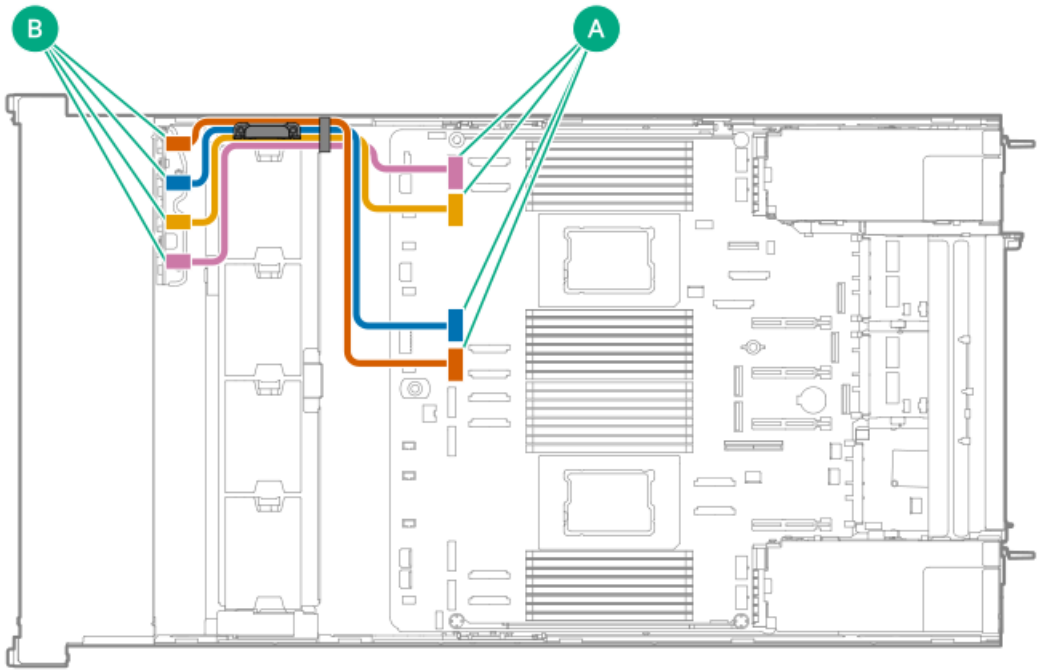
8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller in Slots 5 and 6



Cable part number	Color	From	To
P78321-001	Orange	Box 3 port 1	Type-p storage controller port 2 in Slot 5
	Blue	Box 3 port 2	Type-p storage controller port 1 in Slot 5
	Gold	Box 3 port 3	Type-p storage controller port 2 in Slot 6
	Pink	Box 3 port 4	Type-p storage controller port 1 in Slot 6

Drive box 4 cabling

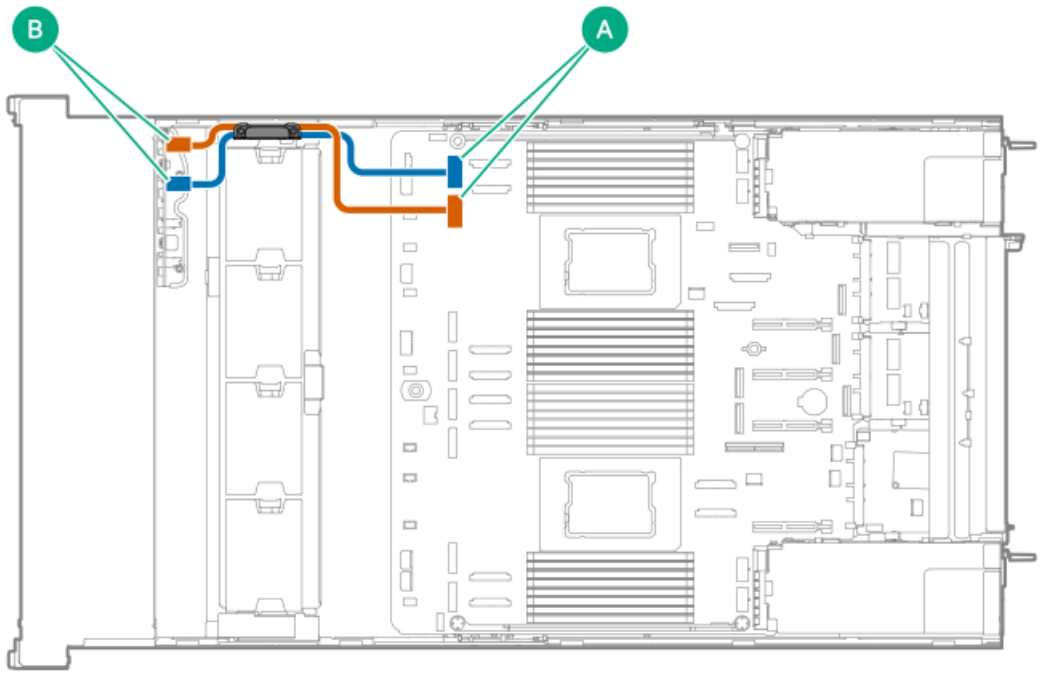
8 SFF ×4 NVMe direct attach cabling in two-processor configuration



Cable part number	Color	From	To (System board)
P74812-001	Orange	Box 4 port 1	M-XIO port 0
	Blue	Box 4 port 2	M-XIO port 2
	Gold	Box 4 port 3	M-XIO port 6
	Pink	Box 4 port 4	M-XIO port 4

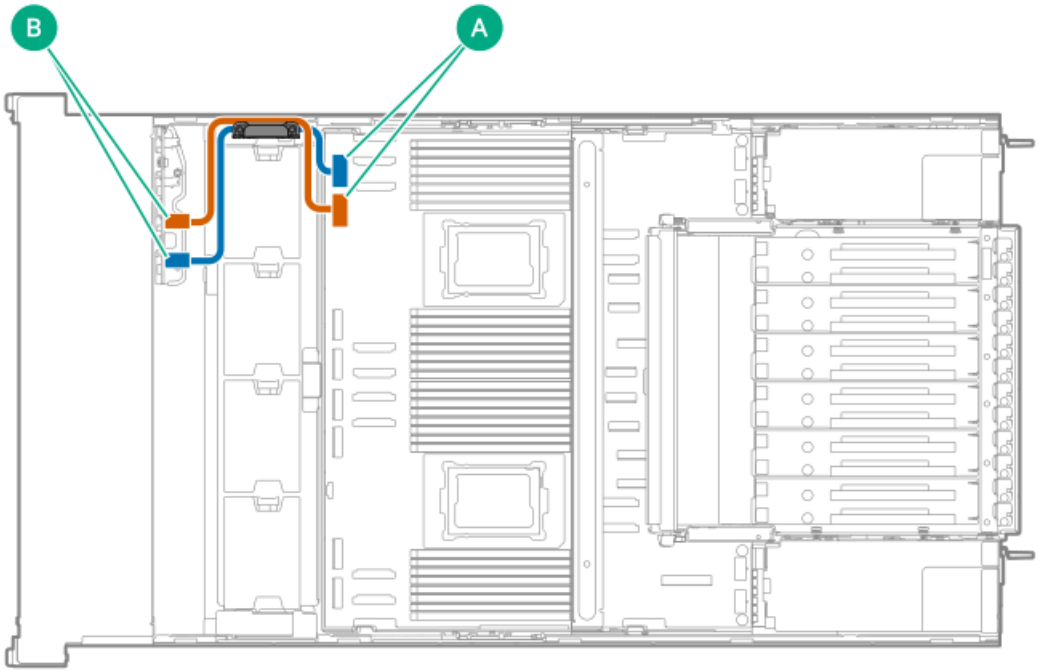
8 SFF ×4 NVMe direct attach cabling in four-processor configuration

- System board



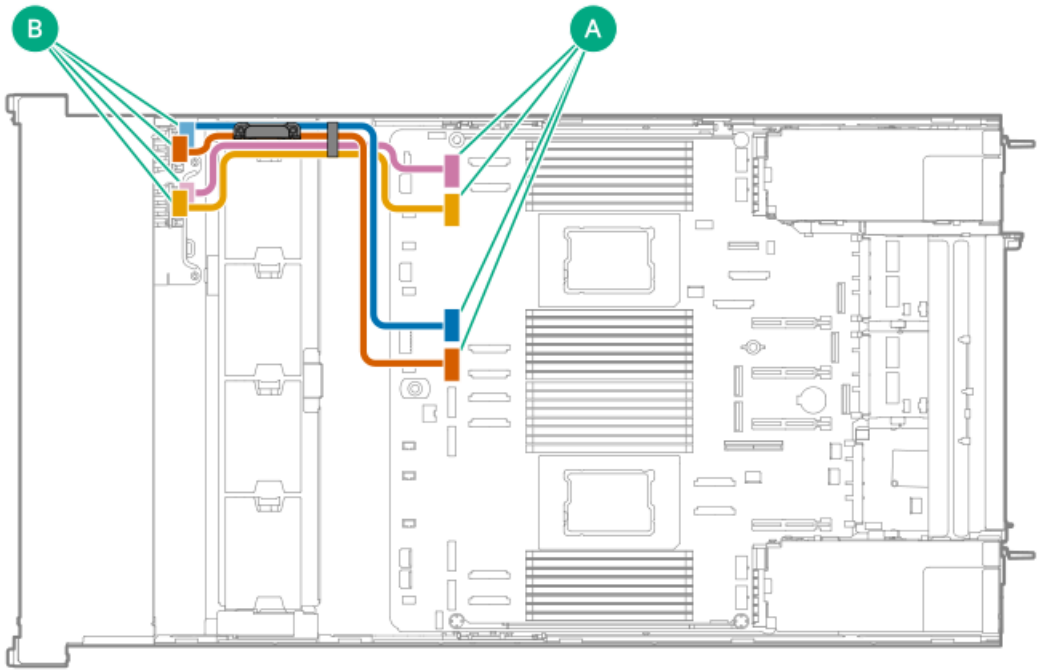
Cable part number	Color	From	To (System board)
P74813-001	Orange	Box 4 port 1	M-XIO port 6
	Blue	Box 4 port 2	M-XIO port 4

- **Processor mezzanine board**



Cable part number	Color	From	To (Processor mezzanine board)
P78316-001	Orange	Box 4 port 3	M-XIO port 6
	Blue	Box 4 port 4	M-XIO port 4

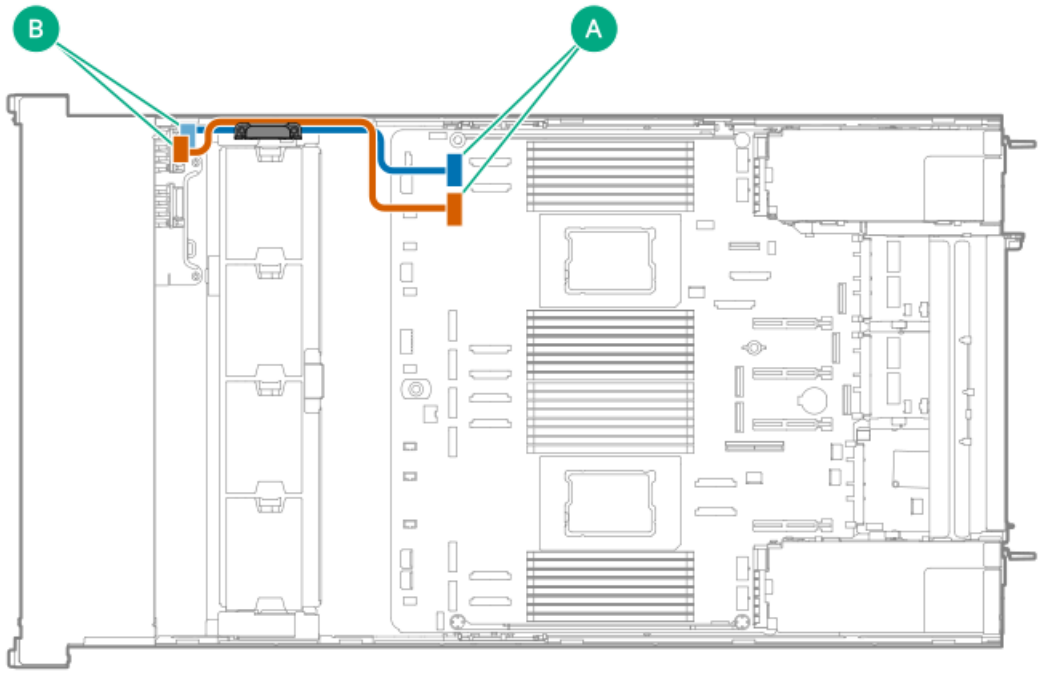
8 E3.S ×4 NVMe direct attach cabling in two-processor configuration



Cable part number	Color	From	To (System board)
P78325-001	Orange	Box 4 port 1 for drives 1 and 2	M-XIO port 0
	Blue	Box 4 port 2 for drives 3 and 4	M-XIO port 2
	Gold	Box 4 port 1 for drives 5 and 6	M-XIO port 6
	Pink	Box 4 port 2 for drives 7 and 8	M-XIO port 4

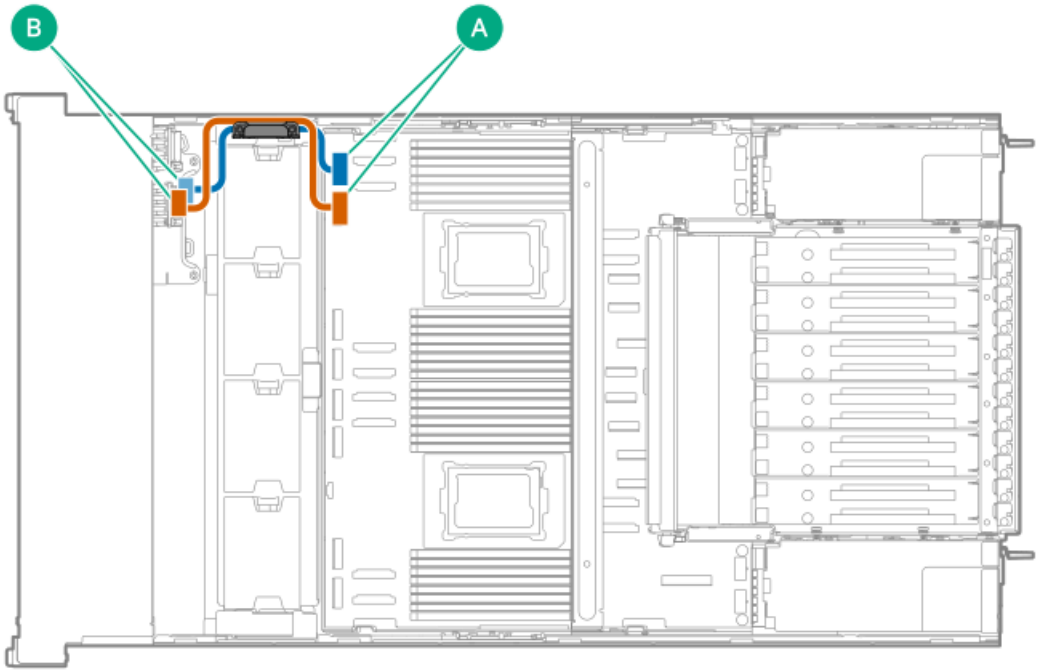
8 E3.S ×4 NVMe direct attach cabling in four-processor configuration

- **System board**



Cable part number	Color	From	To (System board)
P78324-001	Orange	Box 4 port 1 for drives 1 and 2	M-XIO port 6
	Blue	Box 4 port 2 for drives 3 and 4	M-XIO port 4

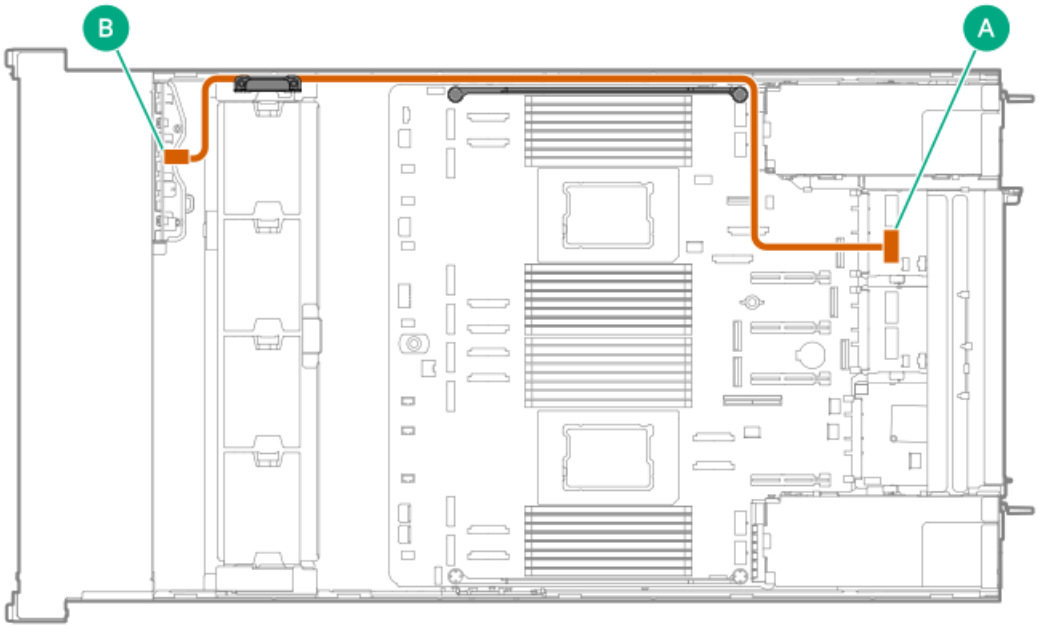
- **Processor mezzanine board**



Cable part number	Color	From	To (Processor mezzanine board)
P78324-001	Orange	Box 4 port 1 for drives 5 and 6	M-XIO port 6
	Blue	Box 4 port 2 for drives 7 and 8	M-XIO port 4

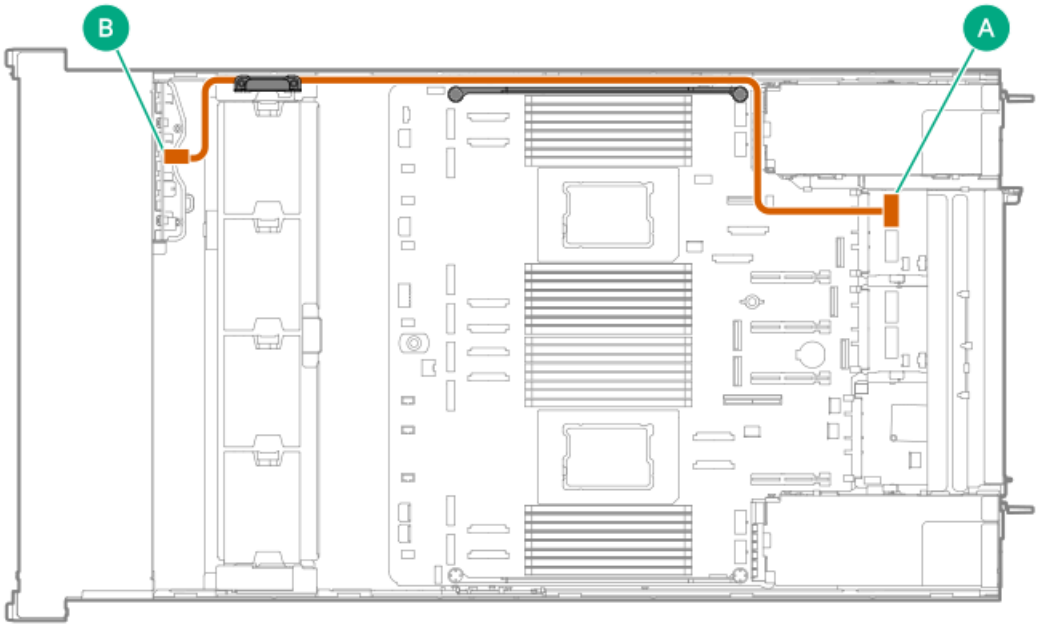
8 SFF ×1 NVMe drive storage controller cabling: Type-o controller

- **Port 1 on the controller**



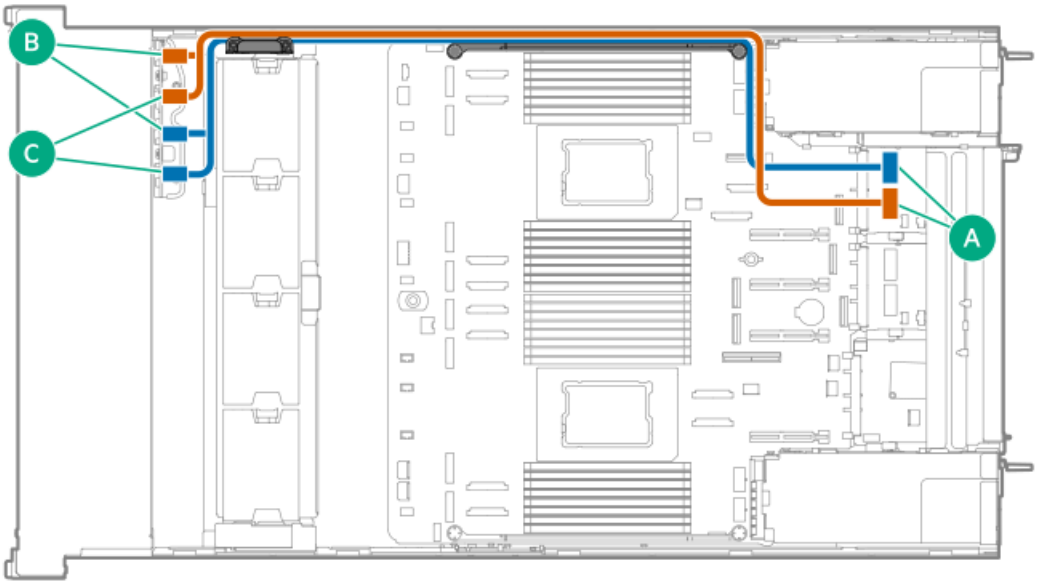
Cable part number	Color	From	To
P78332-001	Orange	Box 4 port 1	Type-o storage controller port 1 in Slot 15 OCP B

- **Port 2 on the controller**



Cable part number	Color	From	To
P78320-001	Orange	Box 4 port 1	Type-o storage controller port 2 in Slot 15 OCP B

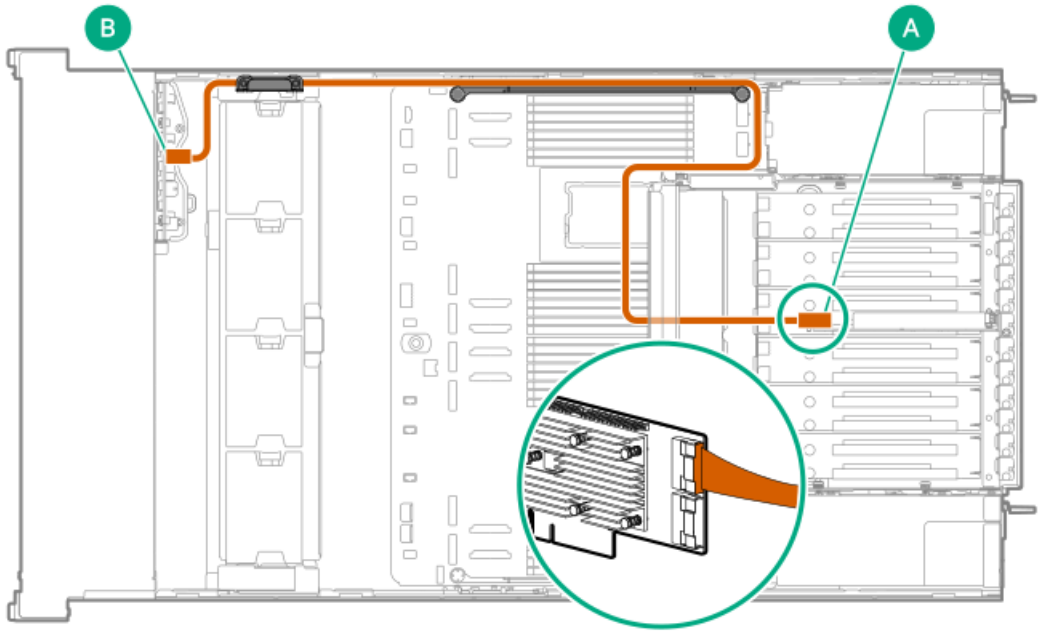
8 SFF ×4 NVMe drive storage controller cabling: Type-o controller



Cable part number	Color	From	To
P78318-001	Orange	Box 4 ports 1 and 2	Type-o storage controller port 1 in Slot 15 OCP B
	Blue	Box 4 ports 3 and 4	Type-o storage controller port 2 in Slot 15 OCP B

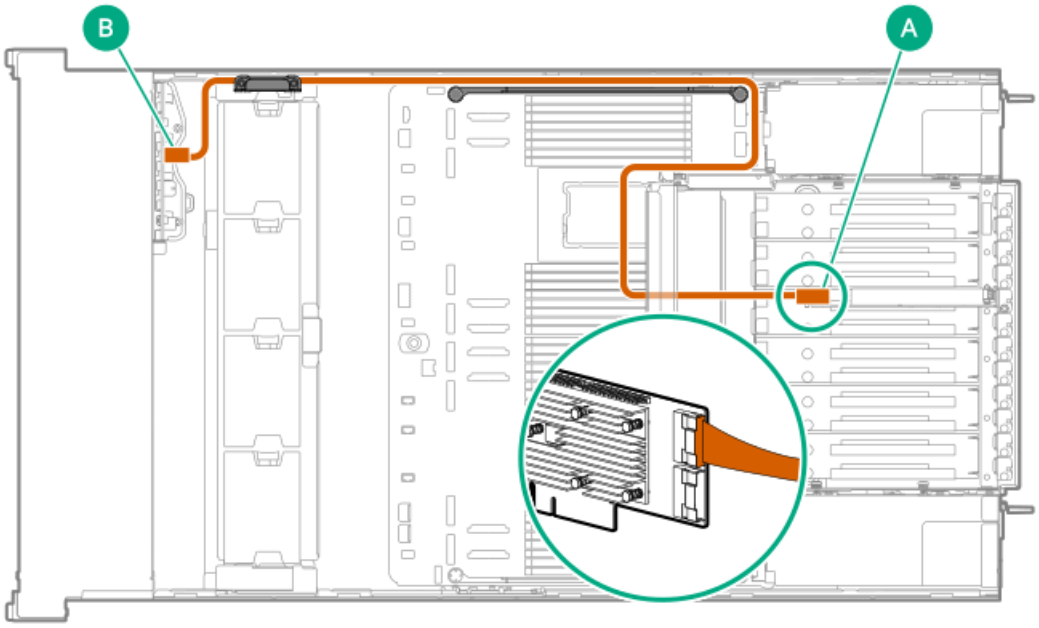
8 SFF ×1 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller

- **Slot 7**



Cable part number	Color	From	To
P78322-001	Orange	Box 4 port 1	Type-p storage controller in Slot 7

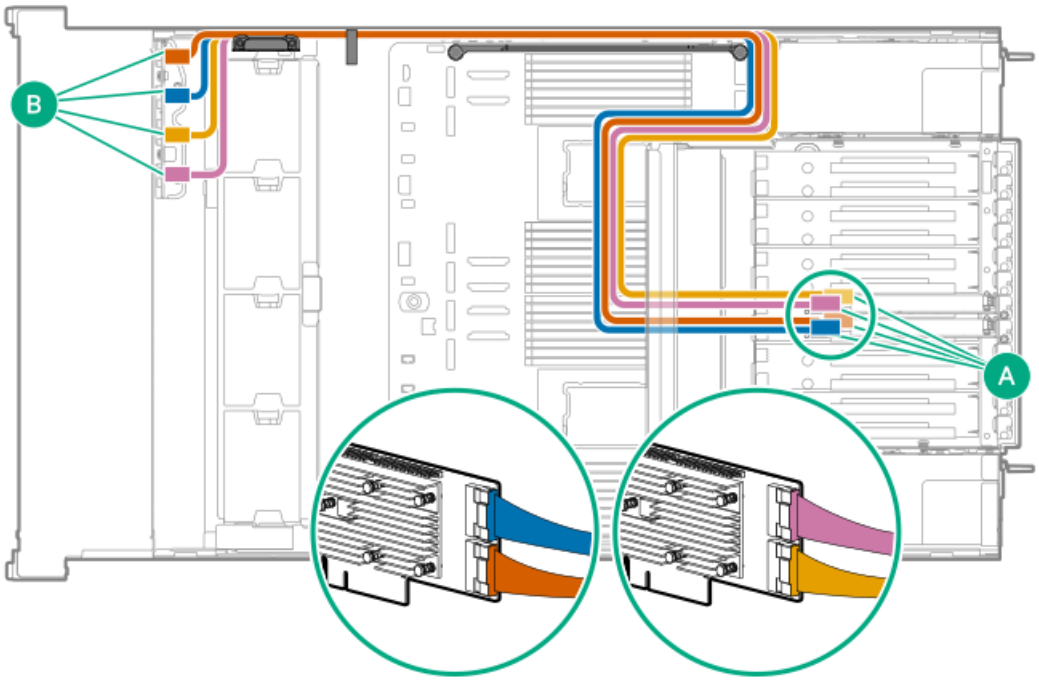
- Slot 8



Cable part number	Color	From	To
P78322-001	Orange	Box 4 port 1	Type-p storage controller in Slot 8

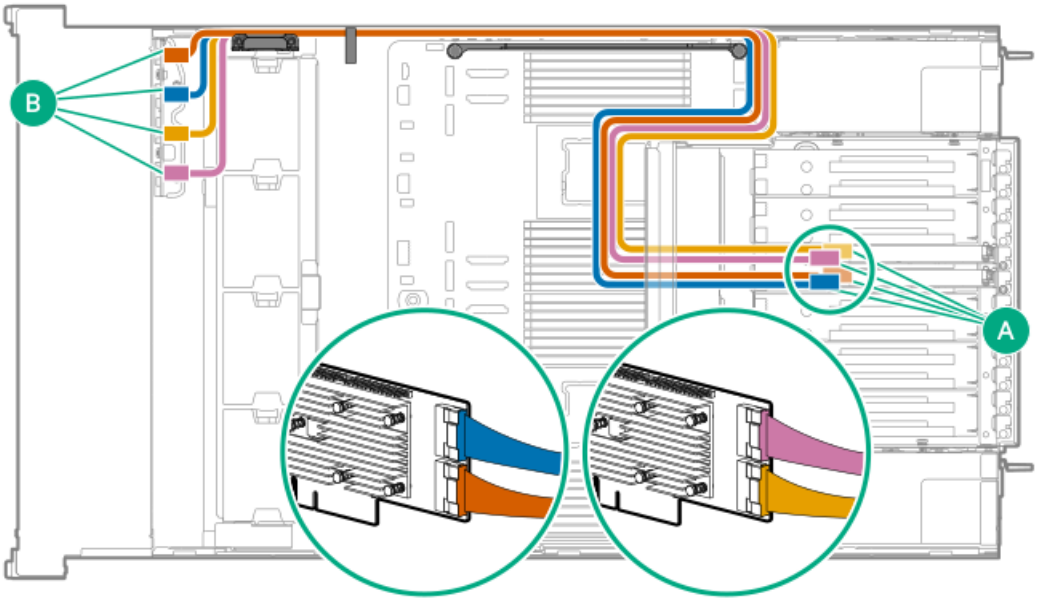
8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller

- Slots 5 and 6



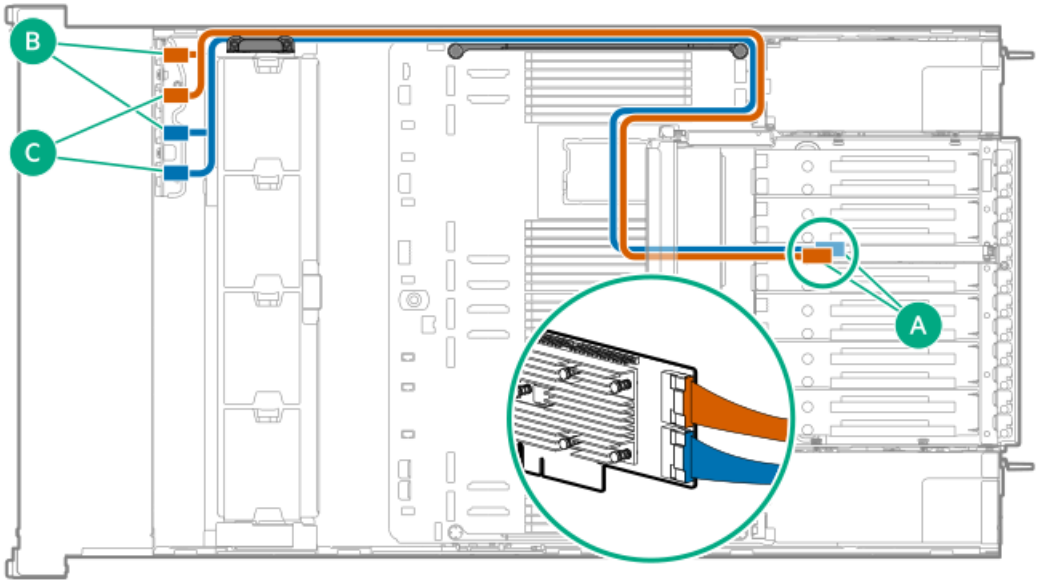
Cable part number	Color	From	To
P78322-001	Orange	Box 4 port 1	Type-p storage controller port 2 in Slot 5
	Blue	Box 4 port 2	Type-p storage controller port 1 in Slot 5
	Gold	Box 4 port 3	Type-p storage controller port 2 in Slot 6
	Pink	Box 4 port 4	Type-p storage controller port 1 in Slot 6

- **Slots 7 and 8**



Cable part number	Color	From	To
P78632-001	Orange	Box 4 port 1	Type-p storage controller port 2 in Slot 7
	Blue	Box 4 port 2	Type-p storage controller port 1 in Slot 7
	Gold	Box 4 port 3	Type-p storage controller port 2 in Slot 8
	Pink	Box 4 port 4	Type-p storage controller port 1 in Slot 8

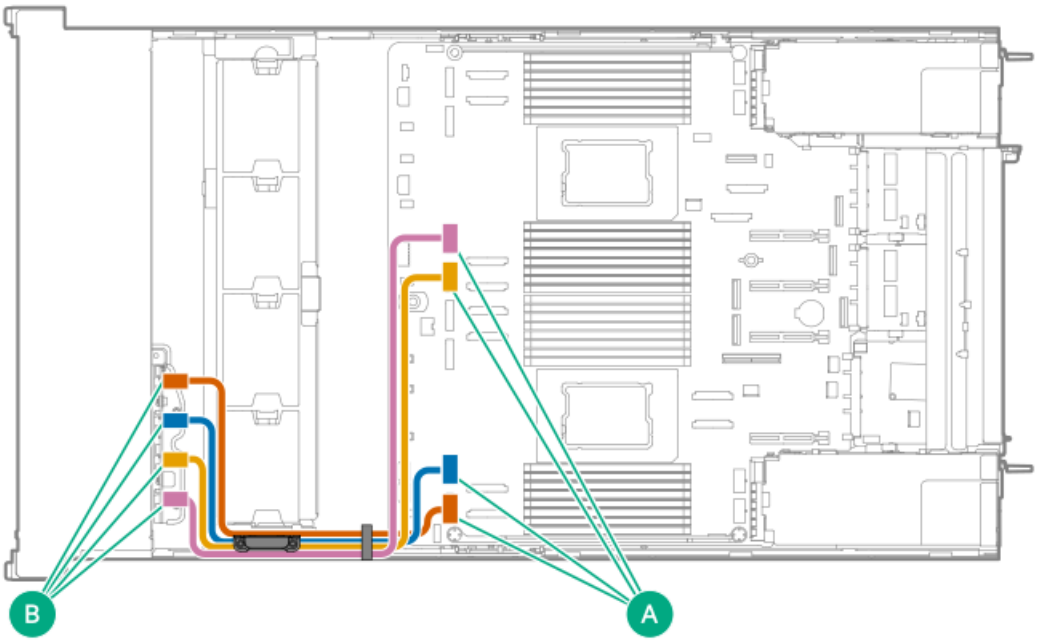
- **Slot 8**



Cable part number	Color	From	To
P78630-001	Orange	Box 4 ports 1 and 2	Type-p storage controller port 1 in Slot 8
	Blue	Box 4 ports 3 and 4	Type-p storage controller port 2 in Slot 8

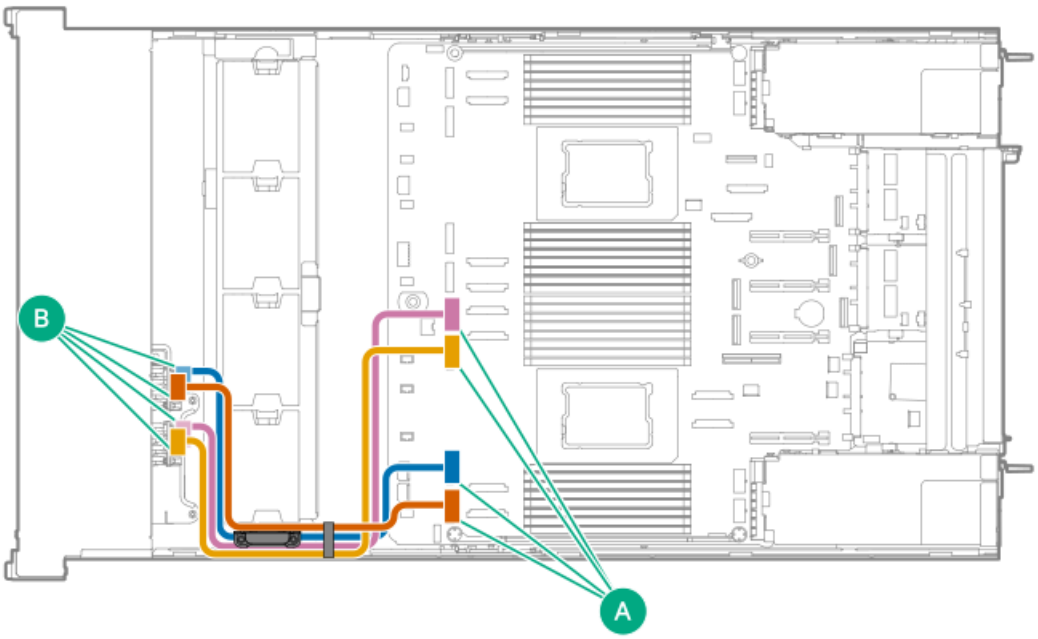
Drive box 6 cabling

8 SFF ×4 NVMe direct attach cabling



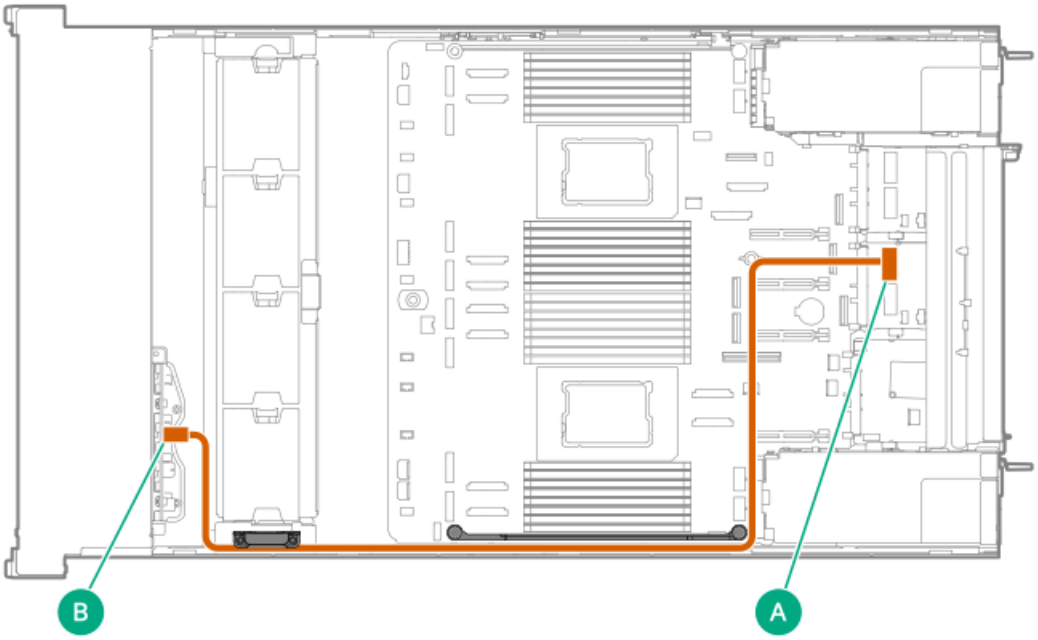
Cable part number	Color	From	To (System board)
P74817-001	Orange	Box 6 port 1	M-XIO port 1
	Blue	Box 6 port 2	M-XIO port 3
	Gold	Box 6 port 3	M-XIO port 7
	Pink	Box 6 port 4	M-XIO port 5

8 E3.S ×4 NVMe direct attach cabling



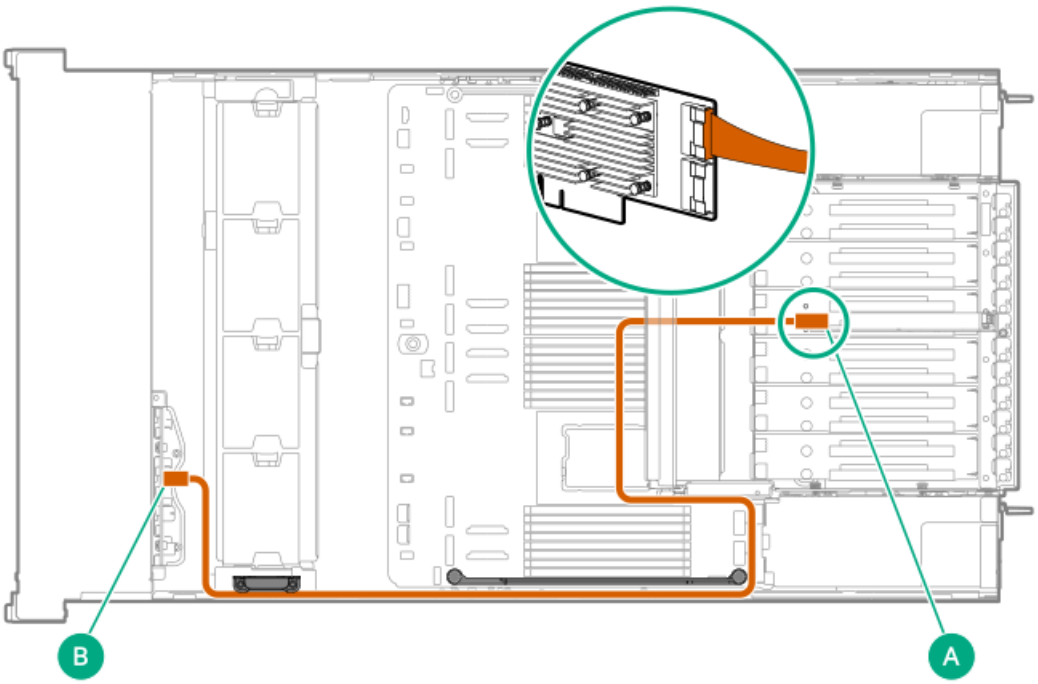
Cable part number	Color	From	To (System board)
P78326-001	Orange	Box 6 port 1 for drives 1 and 2	M-XIO port 1
	Blue	Box 6 port 1 for drives 3 and 4	M-XIO port 3
	Gold	Box 6 port 1 for drives 5 and 6	M-XIO port 7
	Pink	Box 6 port 1 for drives 7 and 8	M-XIO port 5

8 SFF ×1 NVMe drive storage controller cabling: Type-o controller



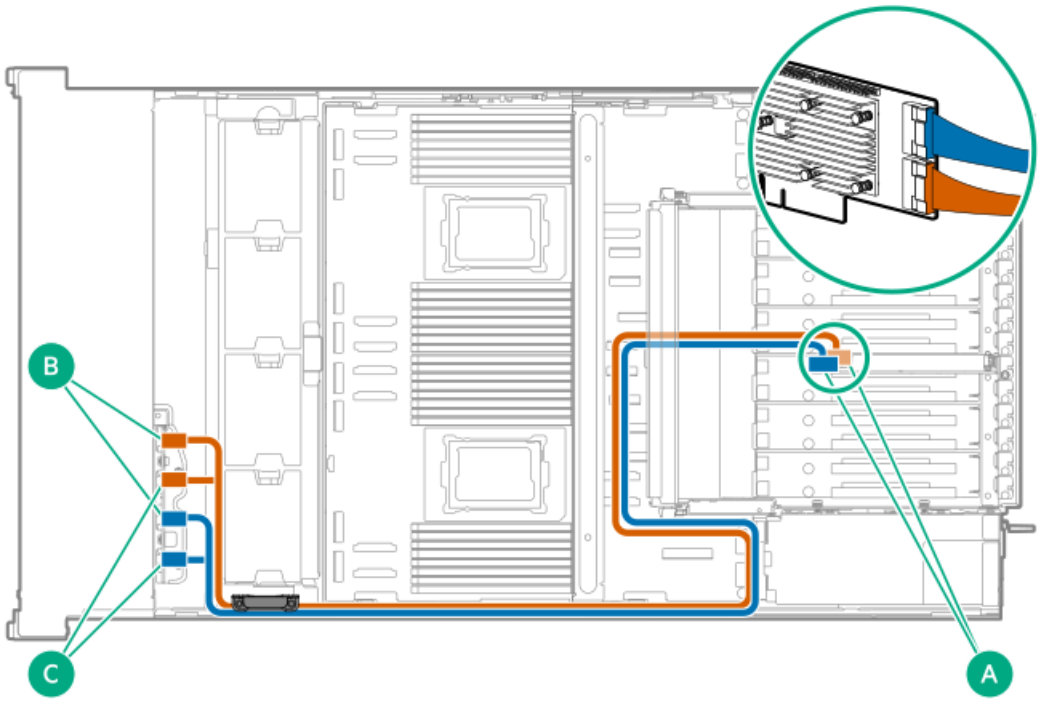
Cable part number	Color	From	To
P78317-001	Orange	Box 6 port 1	Type-o storage controller port 2 in Slot 14 OCP A

8 SFF ×1 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller



Cable part number	Color	From	To
P78322-001	Orange	Box 6 port 1	Type-p storage controller in Slot 7

8 SFF ×4 NVMe drive storage controller cabling: Type-p 2-port Tri-mode controller

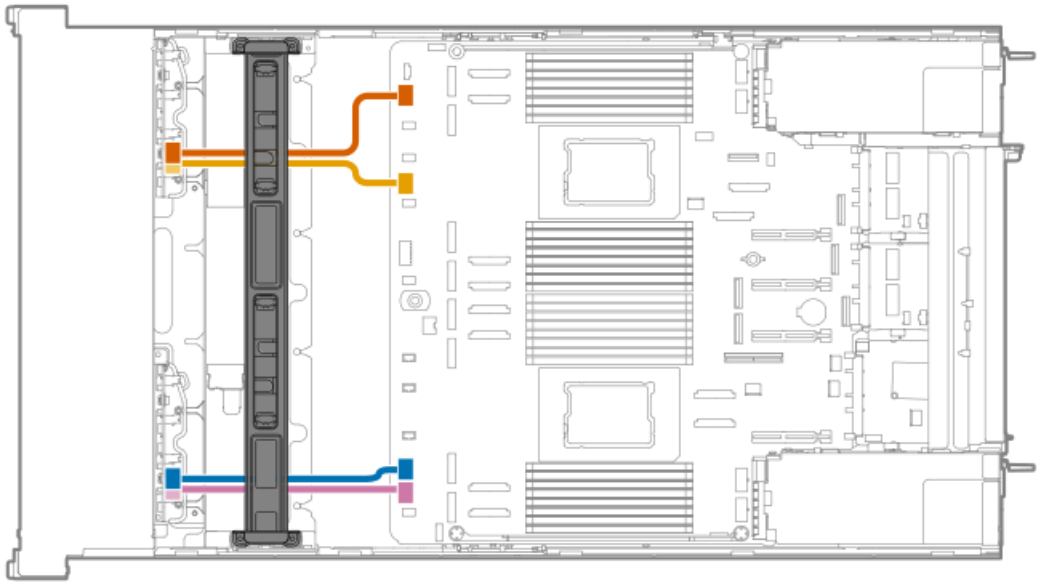


Cable part number	Color	From	To
P78630-001	Orange	Box 4 ports 1 and 2	Type-p storage controller port 2 in Slot 6
	Blue	Box 4 ports 3 and 4	Type-p storage controller port 1 in Slot 6

Drive power cabling

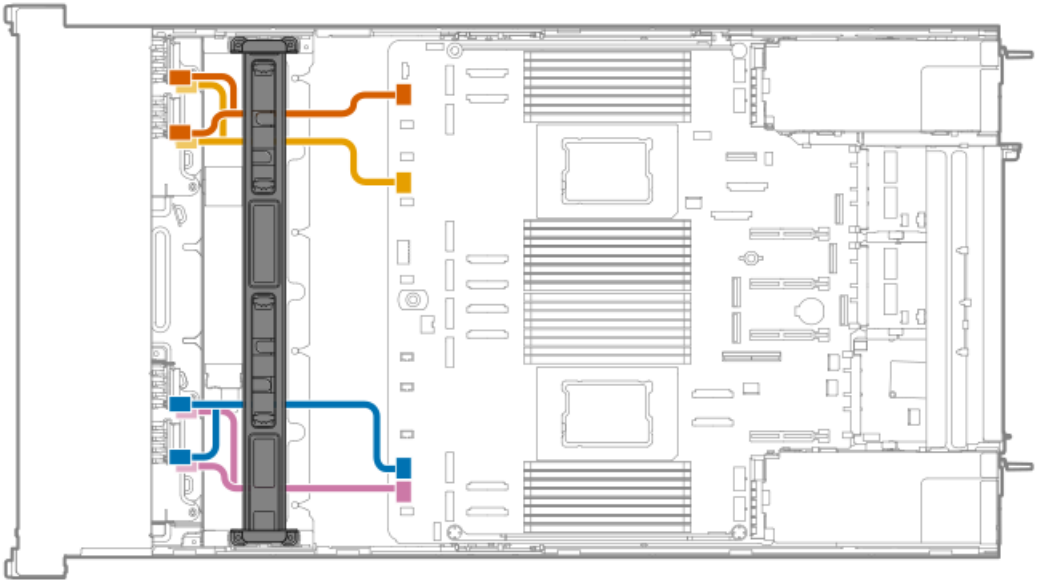
Drive power cables are either preinstalled in the server or structured under the relevant storage controller cable option kit.

SFF drive power cabling



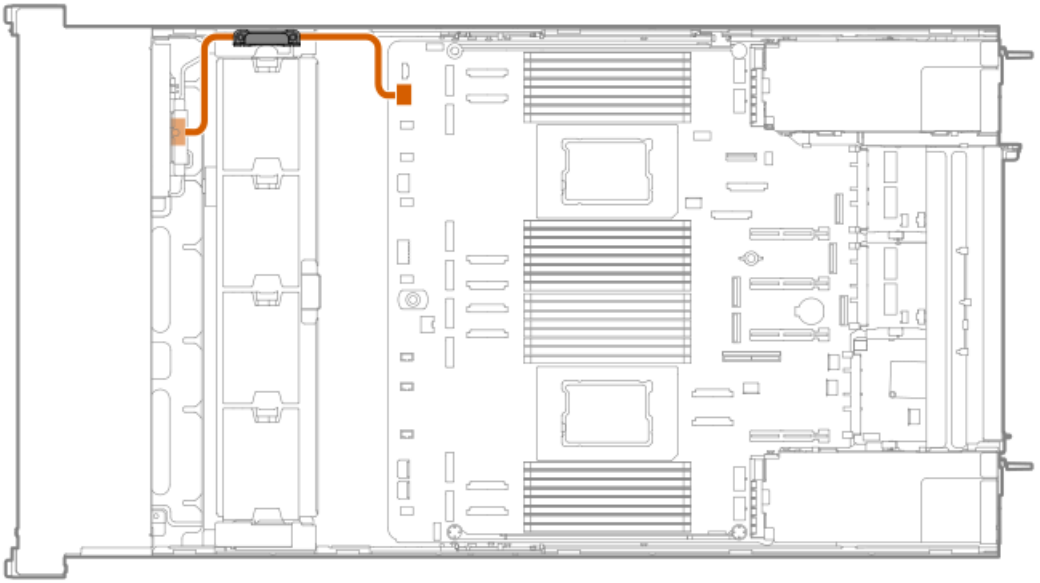
Cable part number	Color	From	To
P78327-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector
	Blue	Box 3 power connector	Box 3: Drive backplane power connector
P78328-001	Gold	Box 4 power connector	Box 4: Drive backplane power connector
	Pink	Box 6 power connector	Box 6: Drive backplane power connector

E3.S drive power cabling



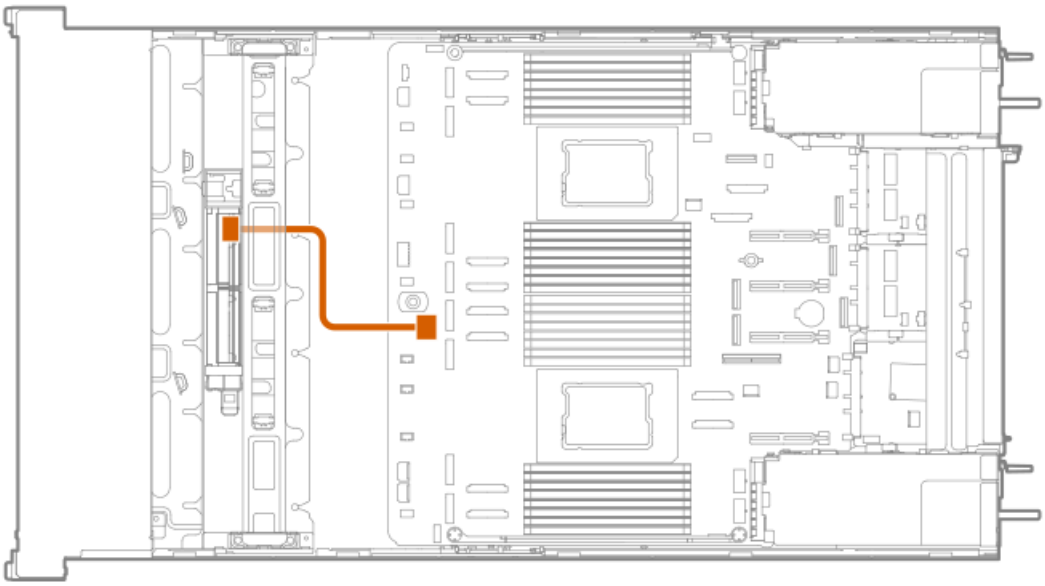
Cable part number	Color	From	To
P78329-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector
	Blue	Box 3 power connector	Box 3: Drive backplane power connector
P78330-001	Gold	Box 4 power connector	Box 4: Drive backplane power connector
	Pink	Box 6 power connector	Box 6: Drive backplane power connector

2 SFF stacked drive power cabling



Cable part number	Color	From	To
P78327-001	Orange	Box 1 power connector	Box 1: Drive backplane power connector

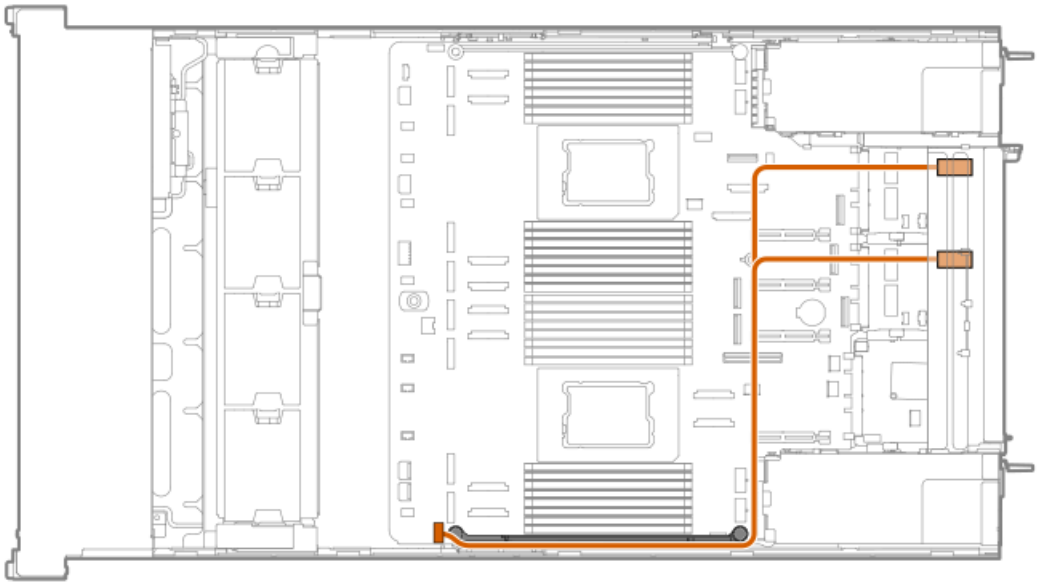
Energy pack cabling



Cable color	From	To
Orange	Energy pack	Energy pack connector

Storage backup power cabling

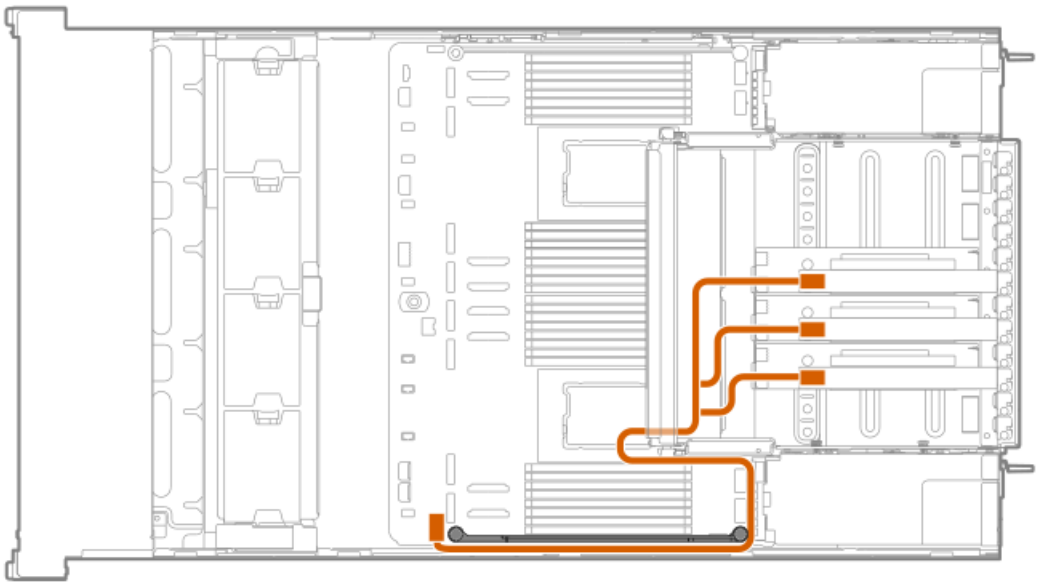
Type-o storage controller



Cable part number	Cable color	From	To
P78333-001	Orange	Type-o controller	Storage controller backup power connector 2

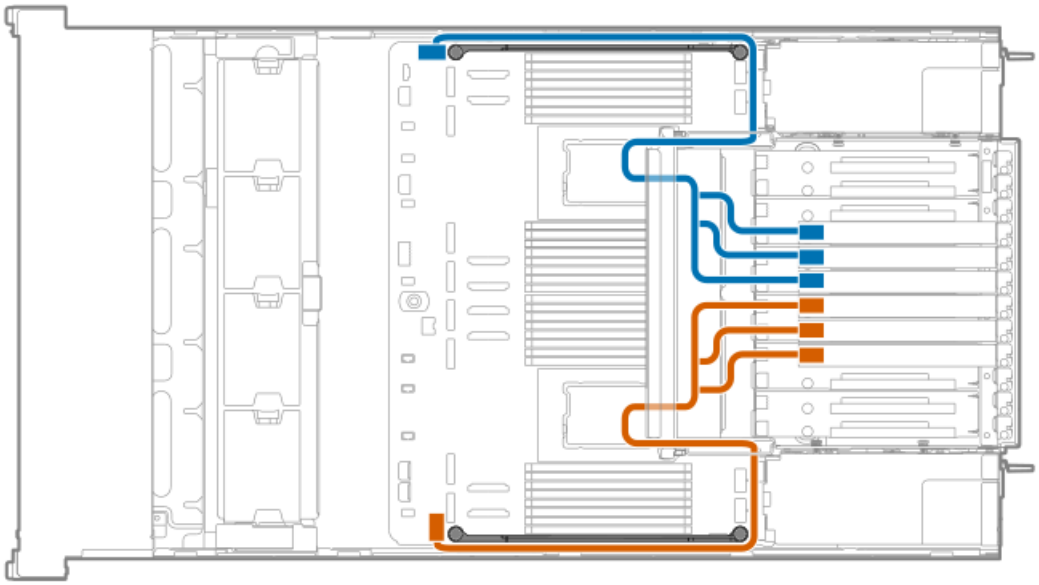
Type-p storage controller

- **Two-processor configuration**



Cable part number	Cable color	From	To
P78333-001	Orange	Controllers on risers 2-4	Storage controller backup power connector 2

- **Four-processor configuration**



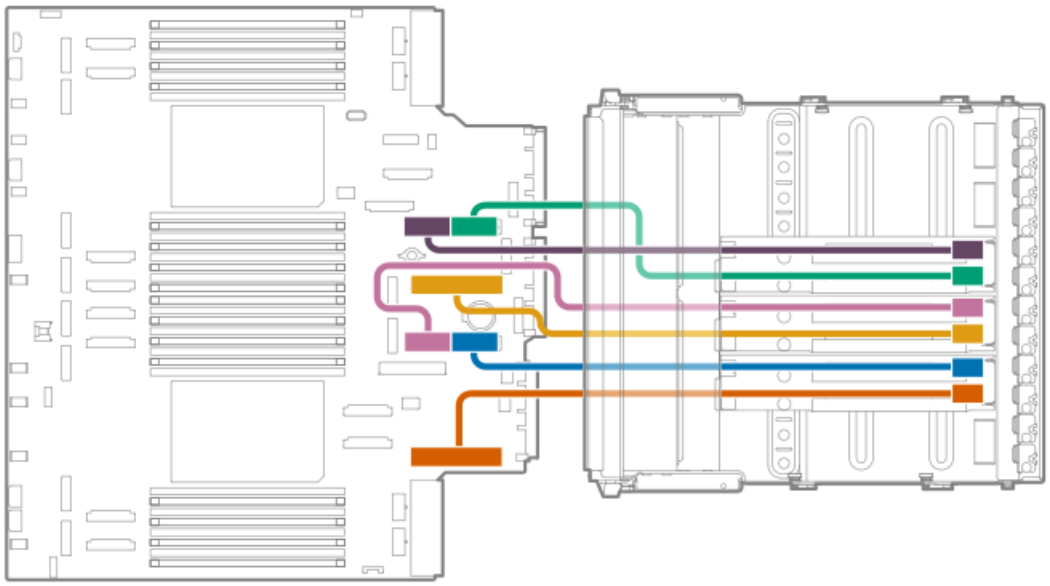
Cable part number	Cable color	From	To
P78333-001	Orange	Controllers on risers 2 and 3	Storage controller backup power connector 2
	Blue	Controllers on risers 4 and 5	Storage controller backup power connector 1

Captive riser cabling

Subtopics

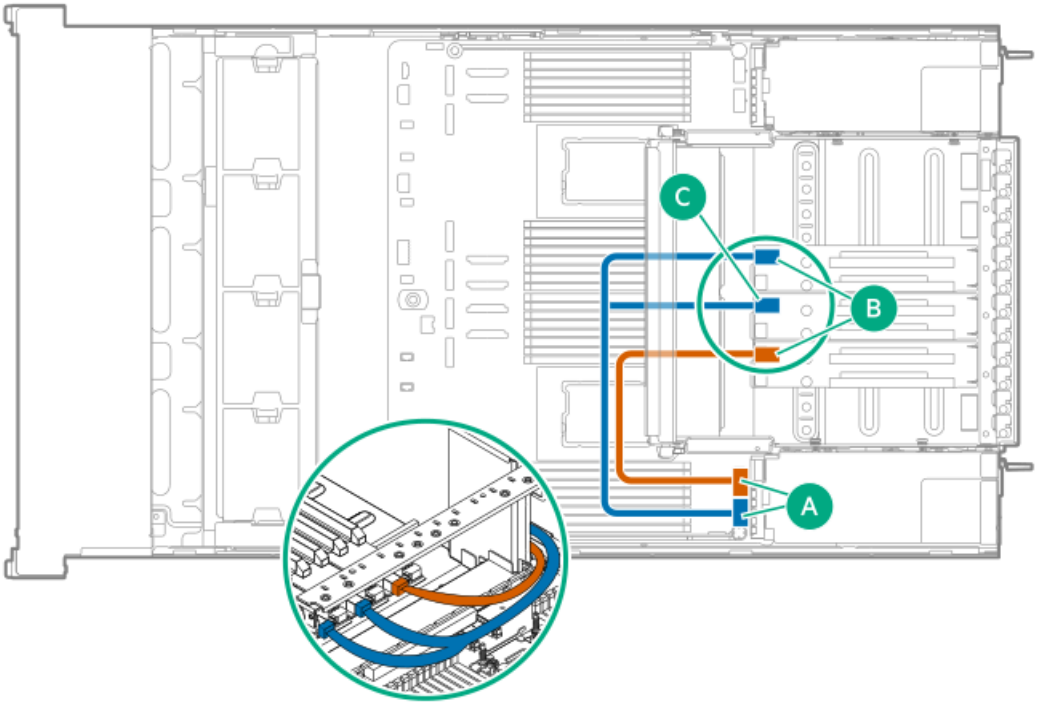
Captive riser cabling for two-processor configuration

Riser signal cabling



Component part number	Color	From	To
P71883-001	Orange	Slot 3 PCIe captive riser	PCIe5 x16 riser connector 6
P71890-001	Blue	Slot 4 PCIe captive riser	PCIe5 x16 riser connector 4
P71883-001	Gold	Slot 5 PCIe captive riser	PCIe5 x16 riser connector 3
P71890-001	Pink	Slot 6 PCIe captive riser	PCIe5 x16 riser connector 4
	Green	Slot 7 PCIe captive riser	PCIe5 x16 riser connector 2
	Purple	Slot 8 PCIe captive riser	PCIe5 x16 riser connector 2

Riser power cabling



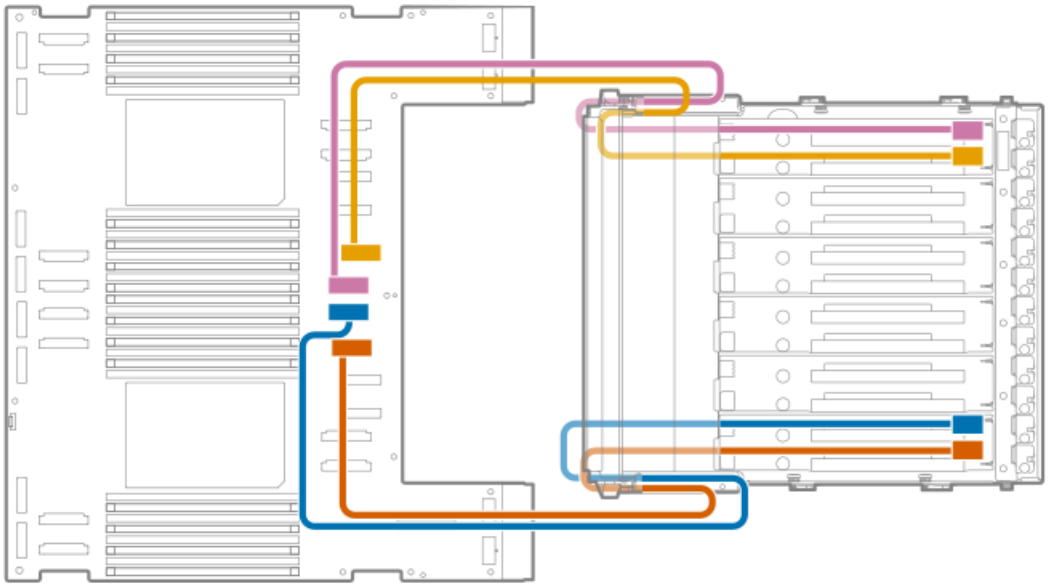
Component part number	Color	From	To
P78312-001	Orange	Captive riser 2 power connector	M-PIC power connector 3
P78313-001	Blue	Captive risers 3 and 4 power connectors	M-PIC power connector 4

Captive riser cabling for four-processor configuration

For clarity, the chassis is not shown in the following signal cabling images.

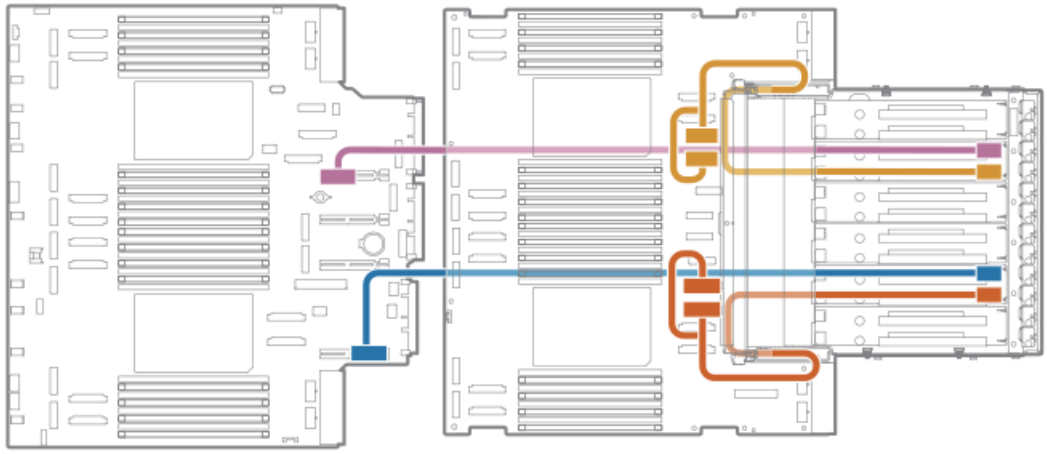
Riser signal cabling

- **Captive riser slots 1, 2, 11, and 12**



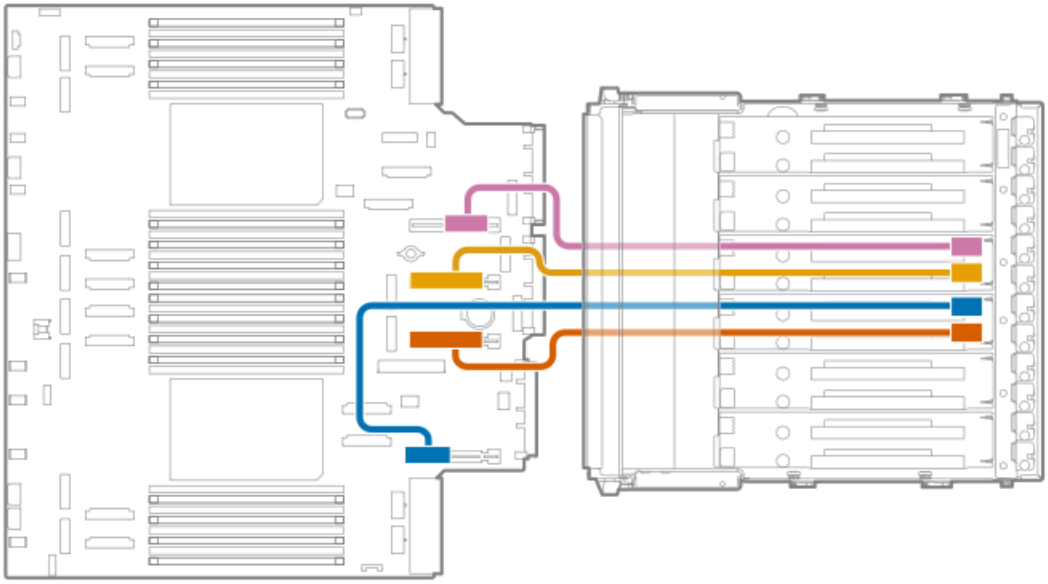
Component part number	Color	From	To (Processor mezzanine board)
P73416-001	Orange	Slot 1 PCIe captive riser	MCIO port 11
	Blue	Slot 2 PCIe captive riser	MCIO port 13
	Gold	Slot 11 PCIe captive riser	MCIO port 15
	Pink	Slot 12 PCIe captive riser	MCIO port 14

- **Captive riser slots 3, 4, 9, and 10**



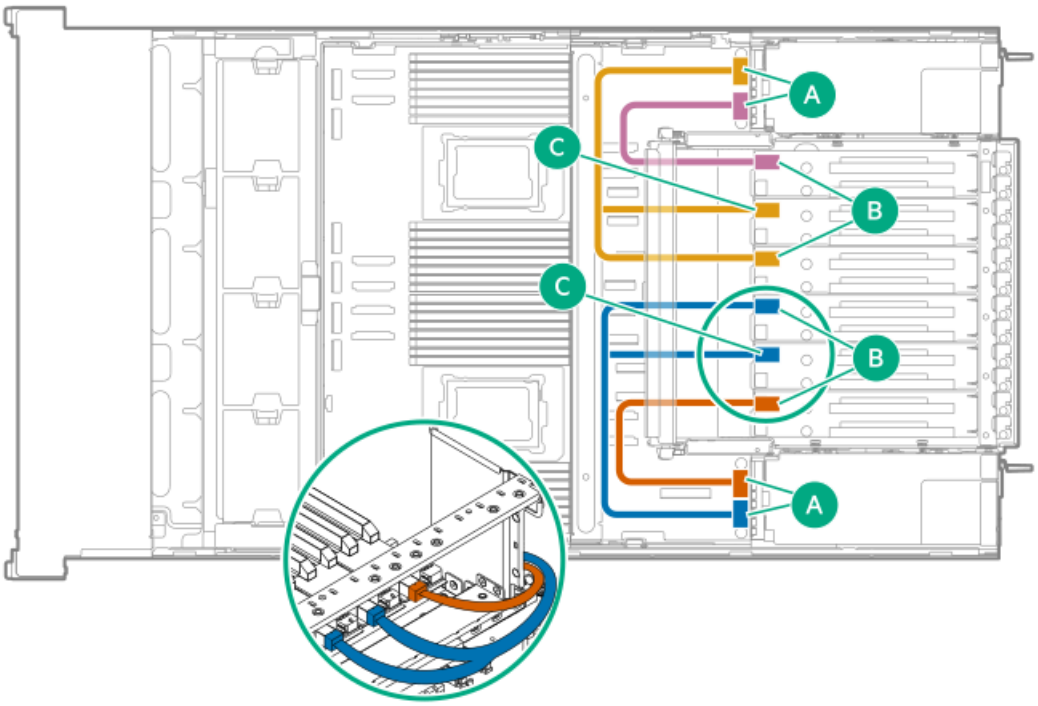
Component part number	Color	From	To
P71884-001	Orange	Slot 3 PCIe captive riser	Processor mezzanine board: ○ MCIO port 11 ○ MCIO port 9
P71890-001	Blue	Slot 4 PCIe captive riser	System board: PCIe5 x16 riser connector 6
P71884-001	Gold	Slot 9 PCIe captive riser	Processor mezzanine board: ○ MCIO port 10 ○ MCIO port 8
P71890-001	Pink	Slot 10 PCIe captive riser	System board: PCIe5 x16 riser connector 2

- **Captive riser slots 5-8**



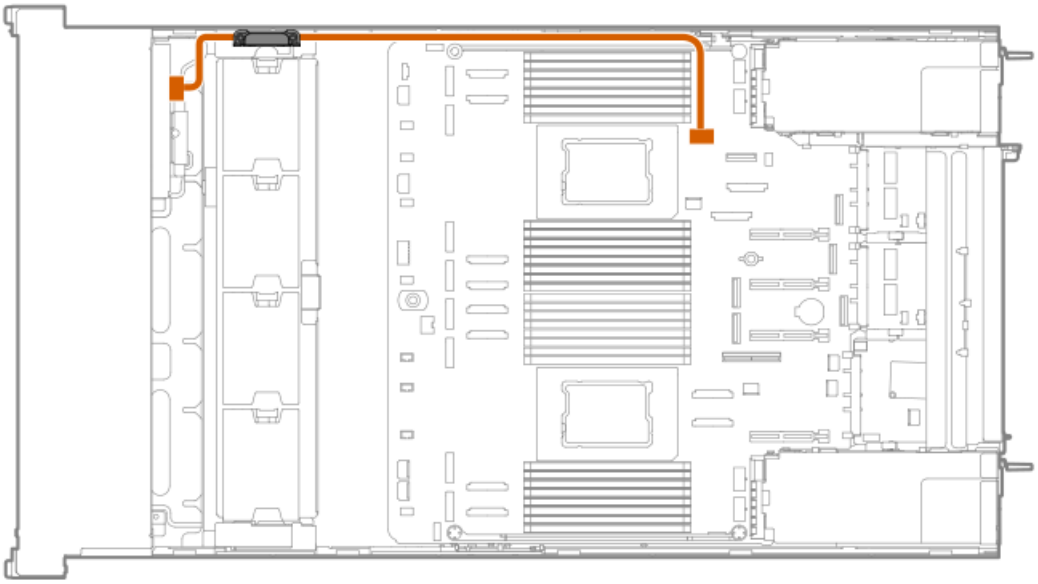
Component part number	Color	From	To
P71883-001	Orange	Slot 5 PCIe captive riser	PCIe5 x16 riser connector 4
P71890-001	Blue	Slot 6 PCIe captive riser	PCIe5 x16 riser connector 6
P71883-001	Gold	Slot 7 PCIe captive riser	PCIe5 x16 riser connector 3
P71890-001	Pink	Slot 8 PCIe captive riser	PCIe5 x16 riser connector 2

Riser power cabling



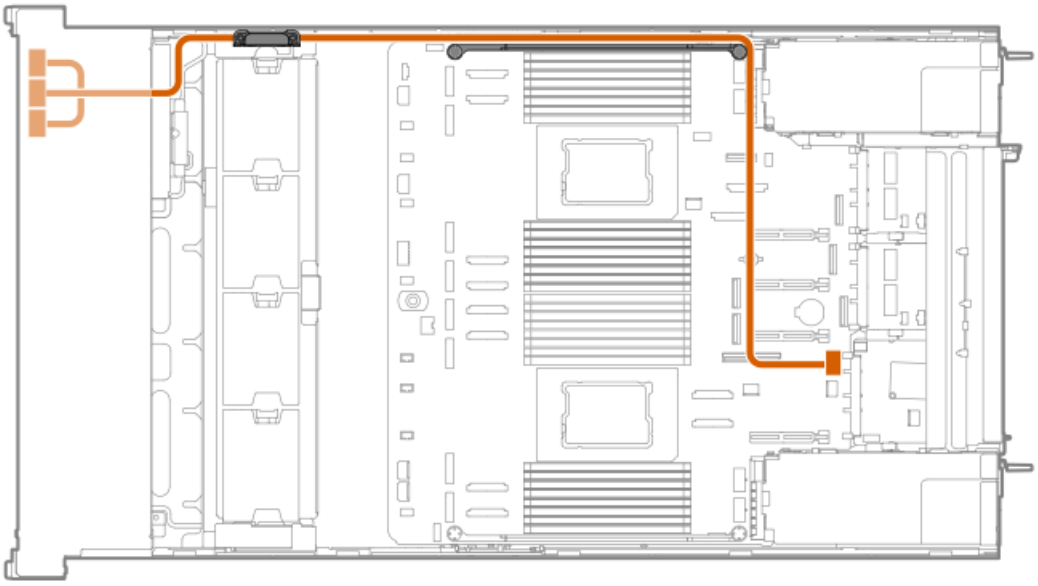
Component part number	Color	From	To
P78312-001	Orange	Captive riser 1 power connector	M-PIC power connector 3
P78313-001	Blue	Captive risers 2 and 3 power connectors	M-PIC power connector 4
	Gold	Captive risers 4 and 5 power connectors	M-PIC power connector 1
P78312-001	Pink	Captive riser 6 power connector	M-PIC power connector 2

Optical drive cabling



Cable part number	Color	From	To
P73776-001	Orange	Optical drive	USB 3.2 Gen 1 port

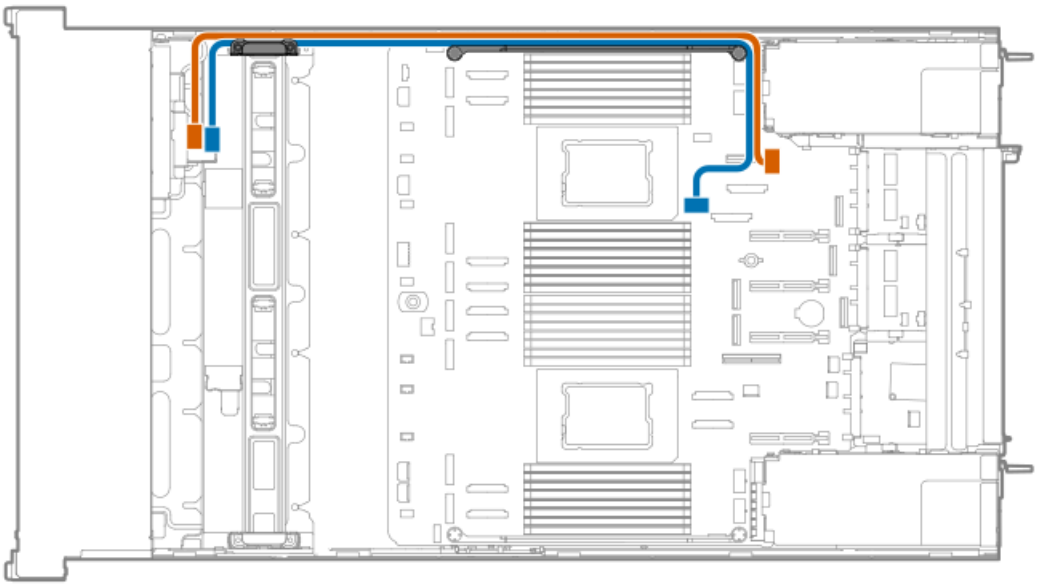
Universal media bay cabling



Cable part number	Color	From	To
P75280-001	Orange	• DisplayPort • USB 2.0 ports	USB 2.0 / DisplayPort cable connector

HPE NS204i-u Boot Device V2 cabling

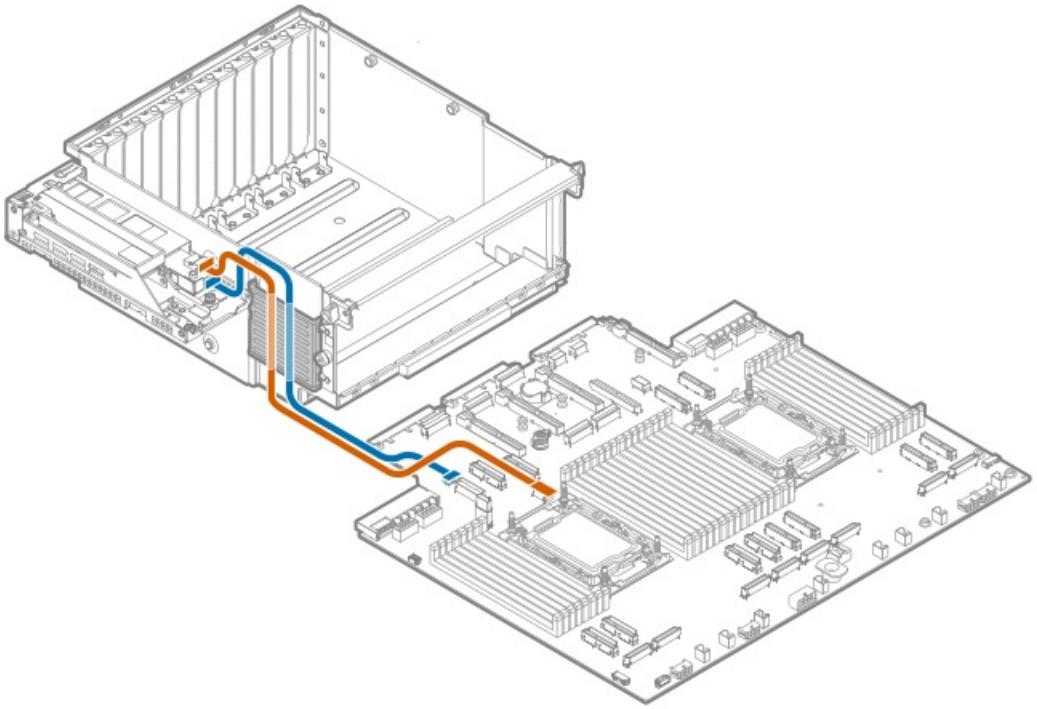
Boot device on the front panel



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

Boot device on the rear panel

For clarity, the chassis is not shown in the following image.

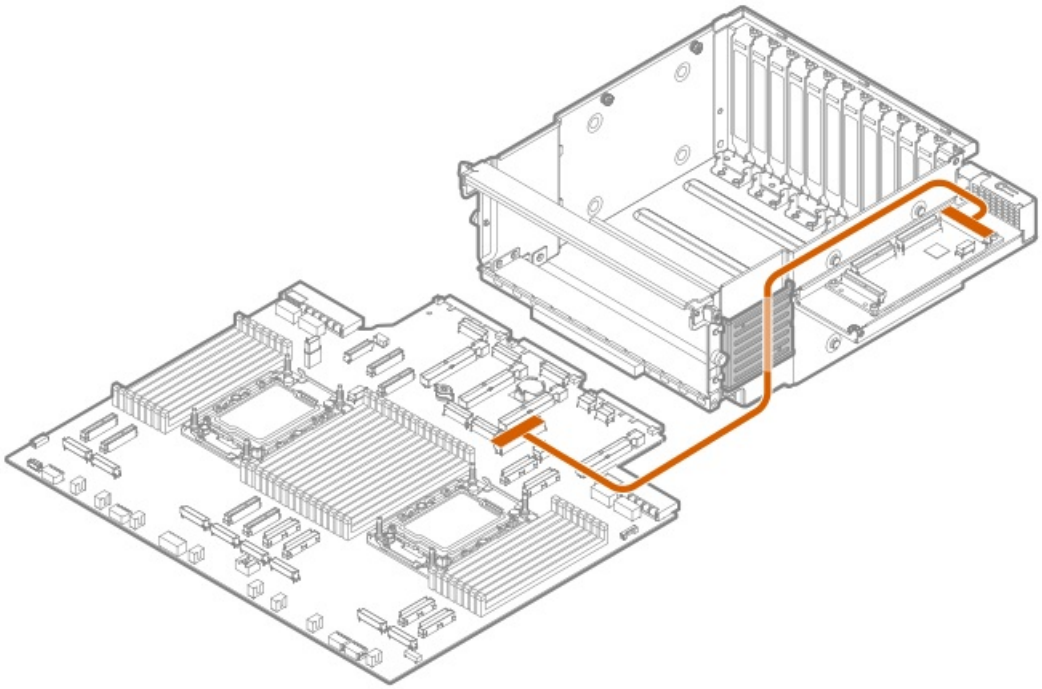


Cable part number	Color	From	To
P71913-001	Orange	Boot device signal connector	NS204i-u signal connector
P54088-001	Blue	Boot device power connector	NS204i-u power connector

Sideband board cabling

Sideband board cabling to the system board

For clarity, the chassis is not shown in the following cabling image.

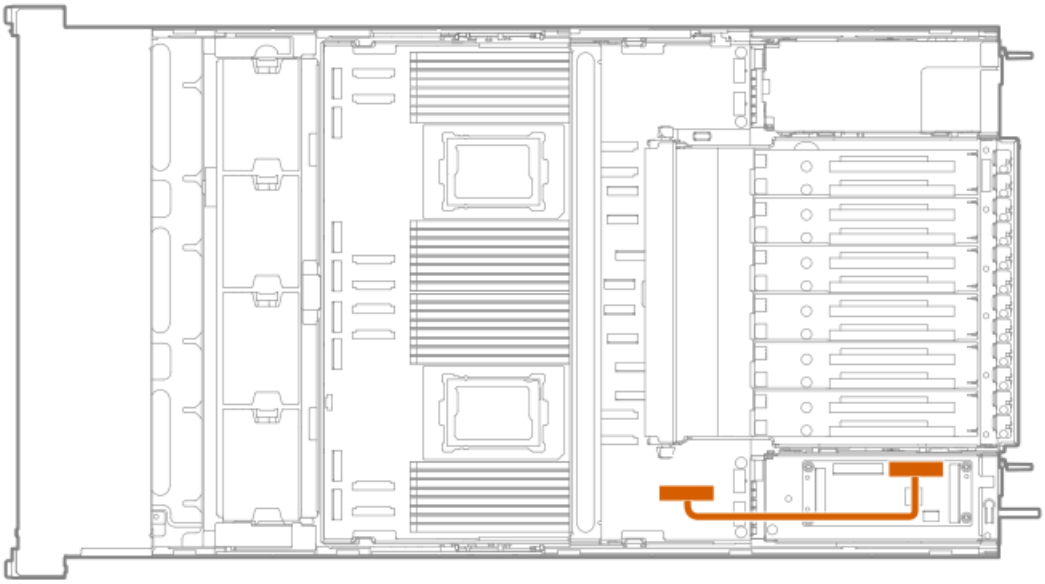


Component part number	Color	From	To
P74904-001	Orange	HPM SB1	Sideband signal connector 1

1

Silkscreen marker on the sideband board

Sideband board cabling to the processor mezzanine board

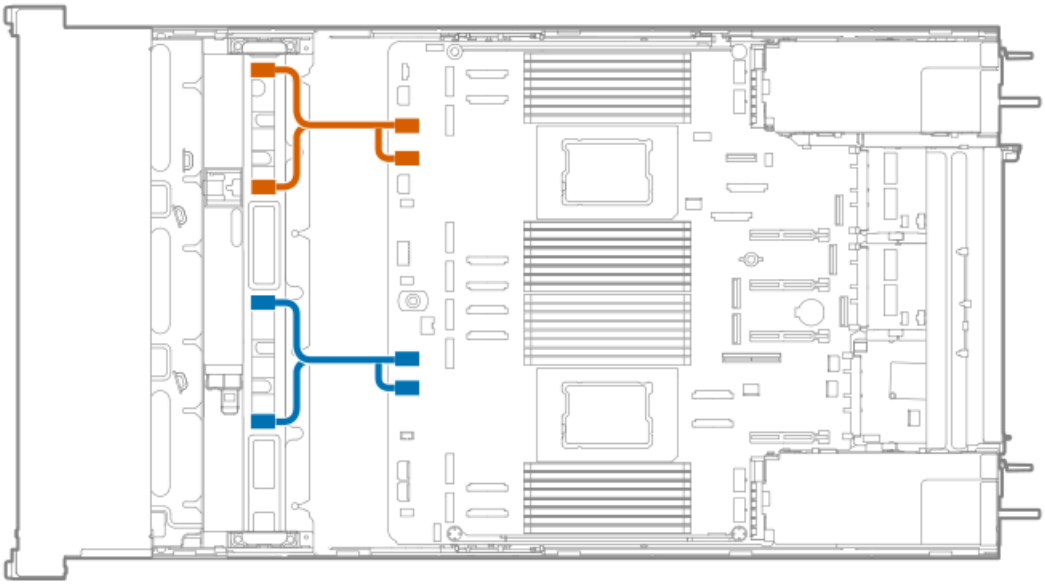


Component part number	Color	From	To
P74901-001	Orange	CB1 SB [1]	Sideband signal connector

1 Silkscreen marker on the sideband board

Fan cabling

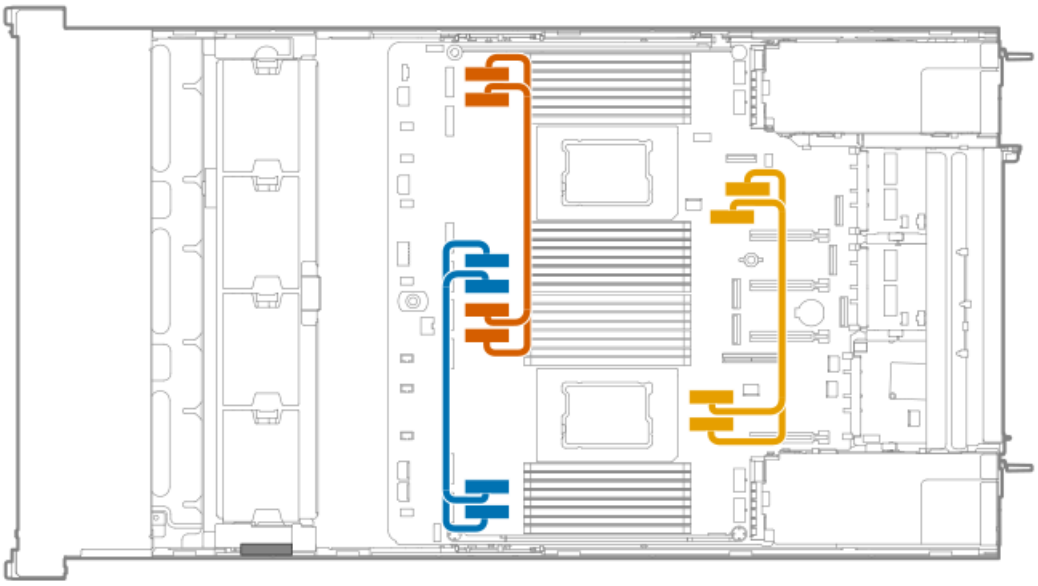
The fan cables assembled with the fan cable bracket are preinstalled in the server.



Cable part number	Color	From	To
P78331-001	Orange	Fans 1 and 2	Fan connectors 1 and 2
	Blue	Fans 3 and 4	Fan connectors 5 and 6

Intel UPI cabling

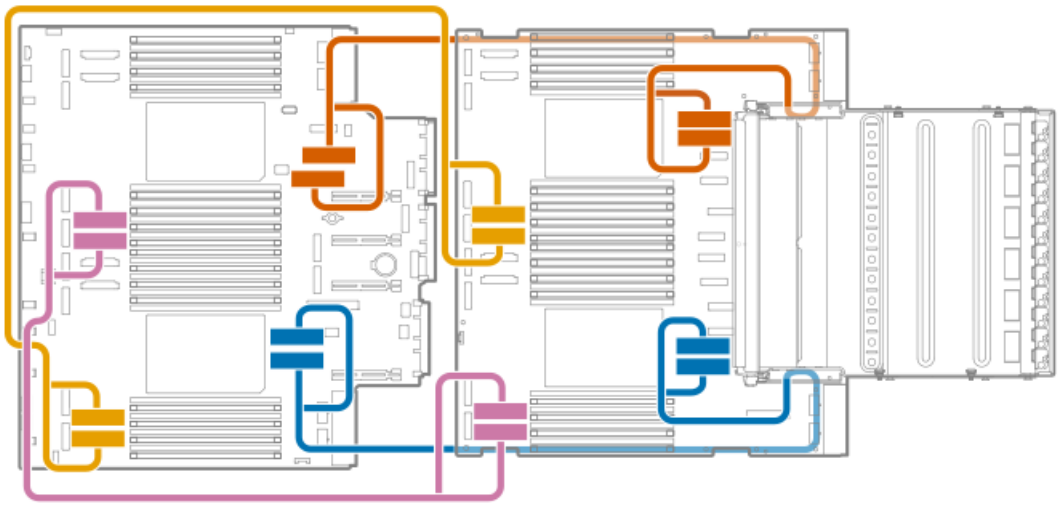
Two-processor configuration



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

Four-processor configuration

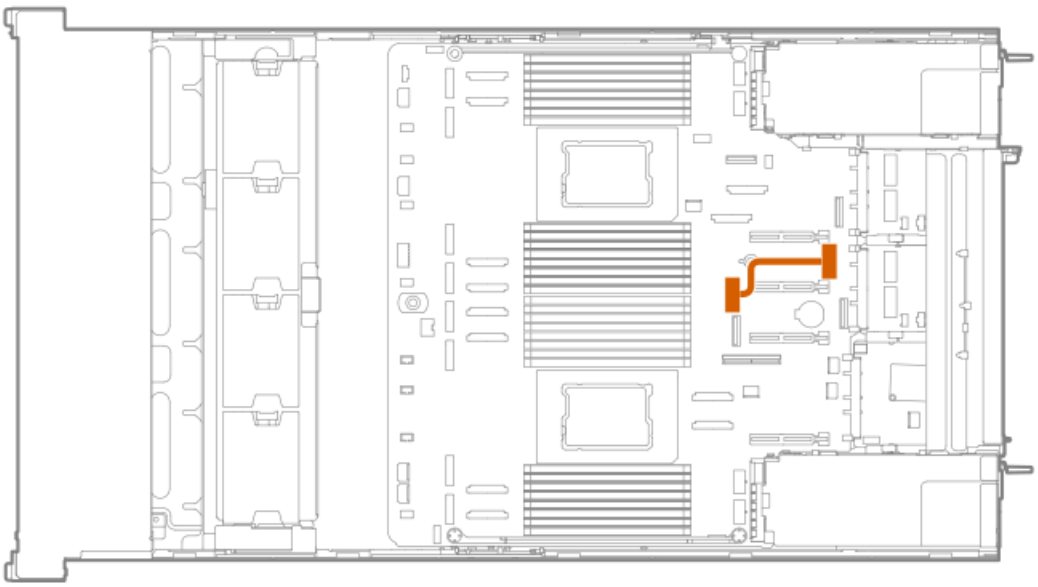
For clarity, the chassis is not shown in the following cabling image.



Cable part number	Color	From processor mezzanine board	To system board
P74902-001	Orange	UPI connectors 1 and 2	UPI connectors 1 and 2
	Blue	UPI connectors 7 and 8	UPI connectors 7 and 8
P74903-001	Gold	UPI connectors 9 and 10	UPI connectors 3 and 4
	Pink	UPI connectors 3 and 4	UPI connectors 9 and 10

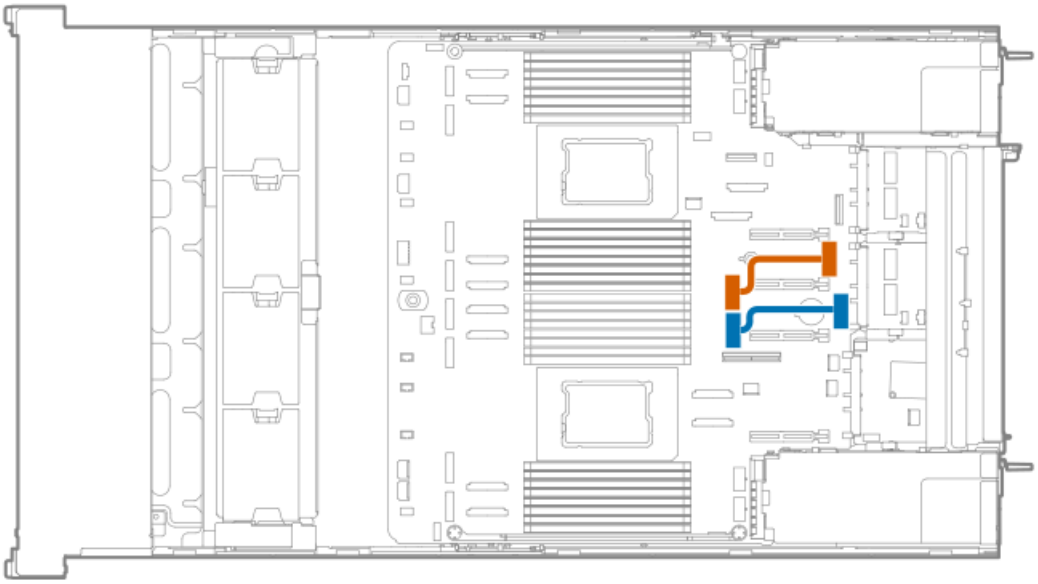
OCP bandwidth enablement cabling

Slot 14 OCP A PCIe x8 configuration



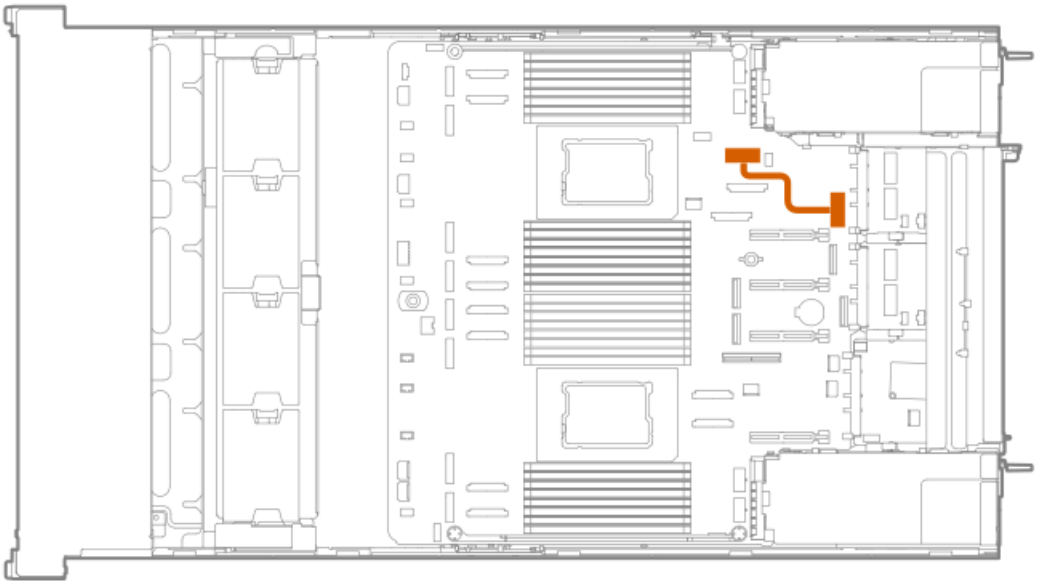
Cable part number	Color	From	To
P72256-001	Orange	M-XIO port 17	M-XIO OCP port A-1

Slot 14 OCP A PCIe x16 configuration



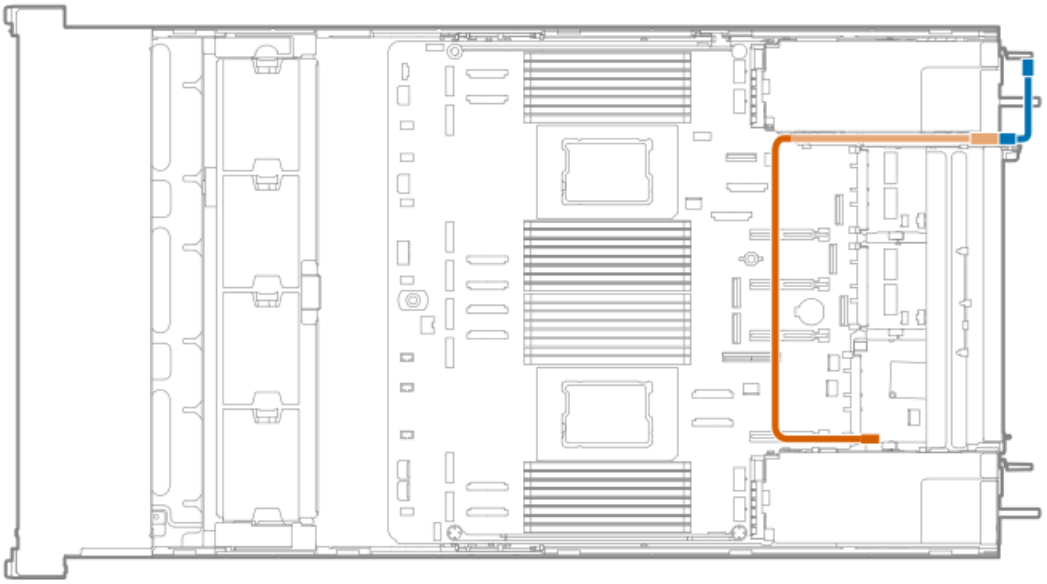
Cable part number	Color	From	To
P72256-001	Orange	M-XIO port 17	M-XIO OCP port A-1
	Blue	M-XIO port 13	M-XIO OCP port A-2

Slot 15 OCP B PCIe5 x16 configuration



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

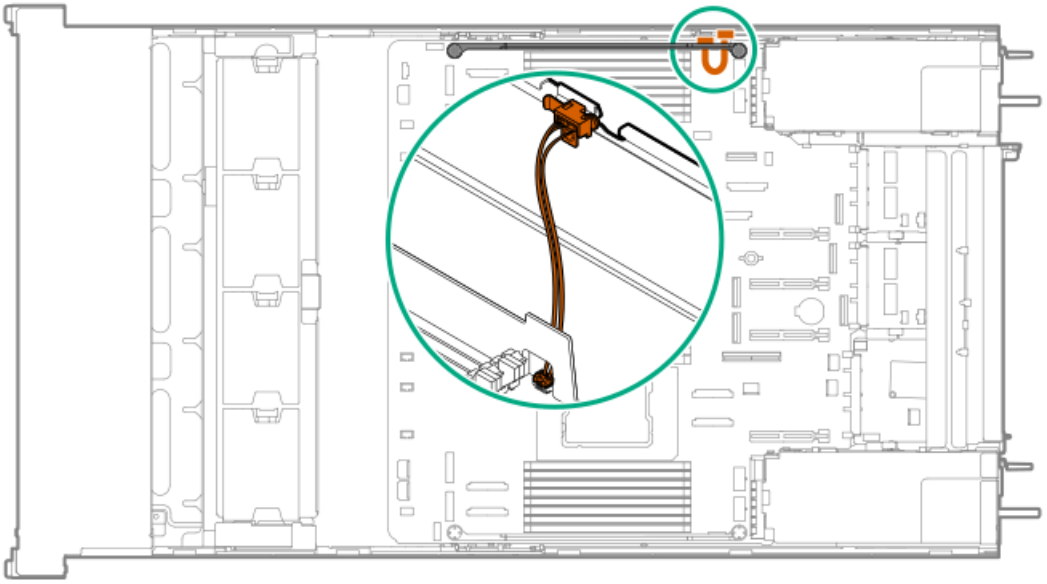
Serial port cabling



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

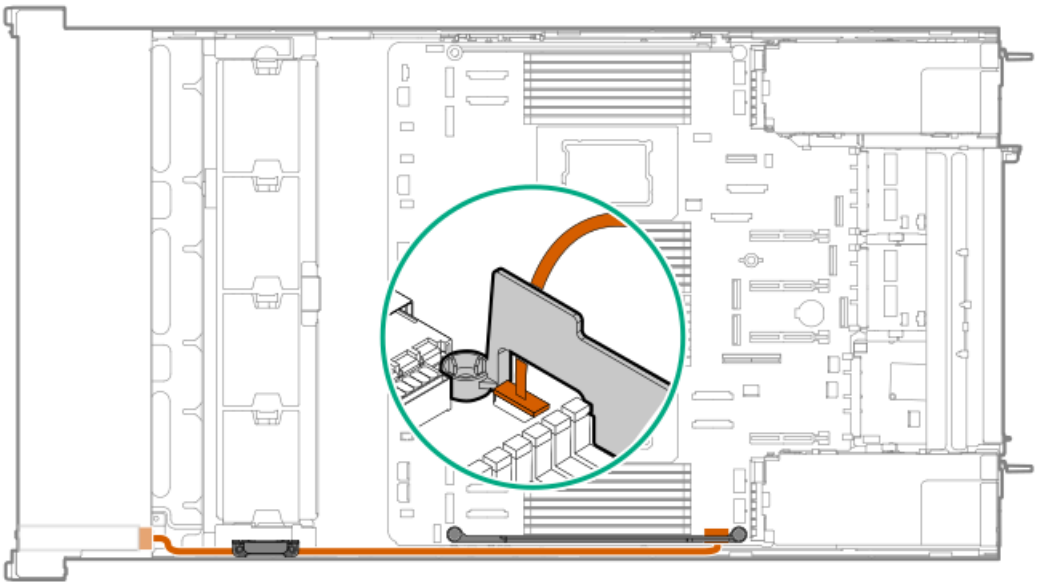
[1] This port is located on the DC-SCM.

Chassis intrusion detection switch cabling



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

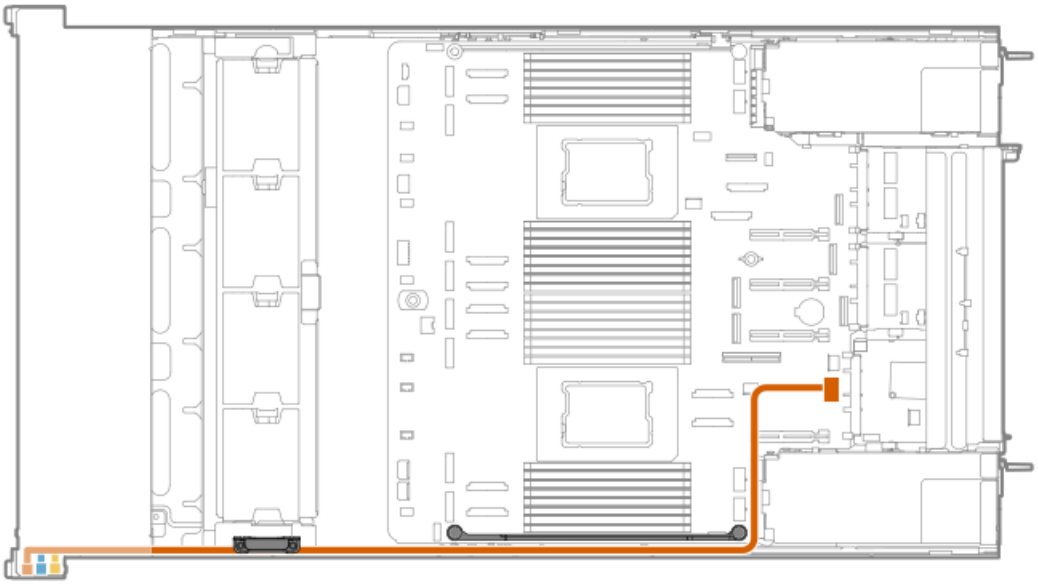
System Insight Display cabling



Cable part number	Color	From	To
P48971-001	Orange	System Insight Display	SID 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	

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.

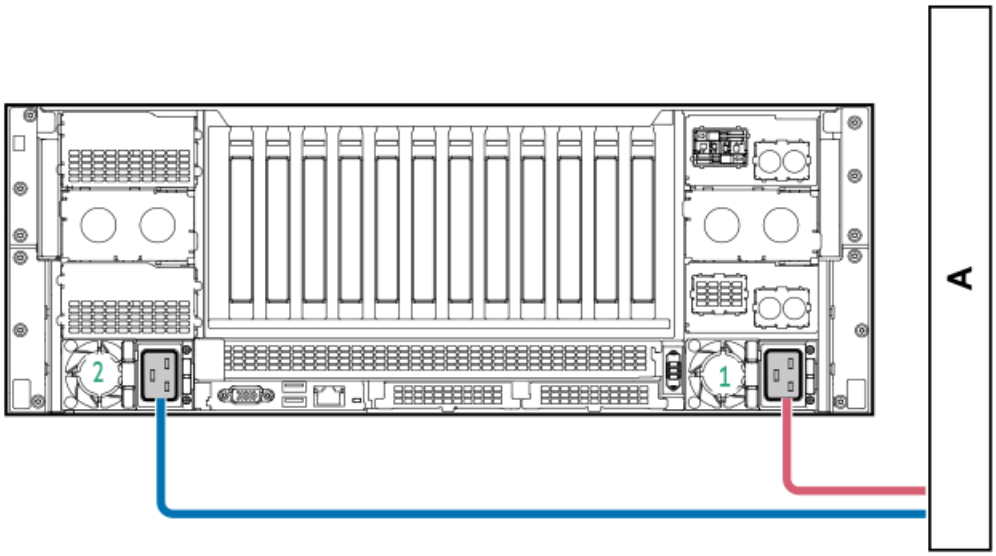
For information about PDU compatibility with the server power supply, see the PDU QuickSpecs.

Subtopics

PDU cabling: Two-power supply configuration

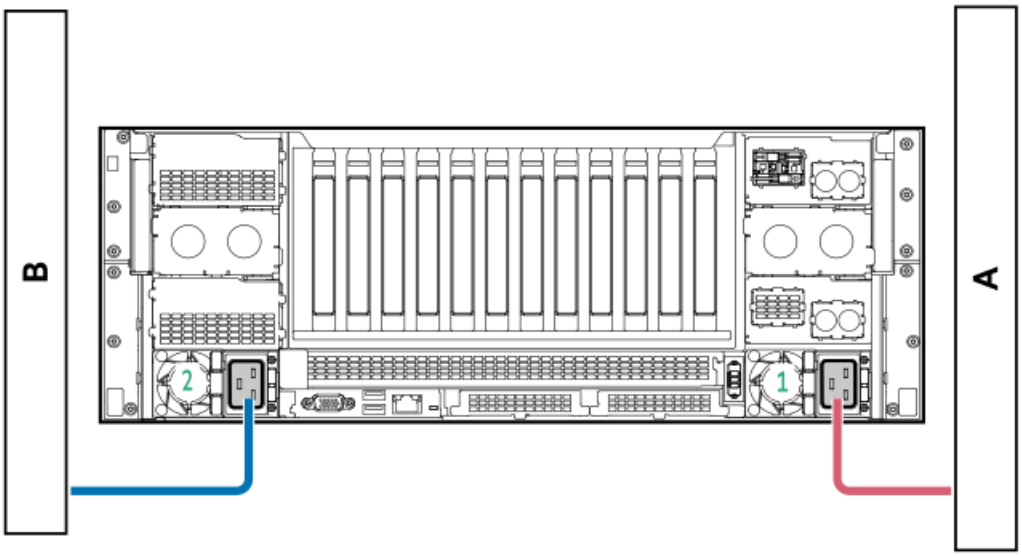
A two-power supply configuration supports the system domain. Depending on the number of racks, couplets and storage, and the input voltage, connect this configuration to one or two PDUs.

One PDU



Two PDUs

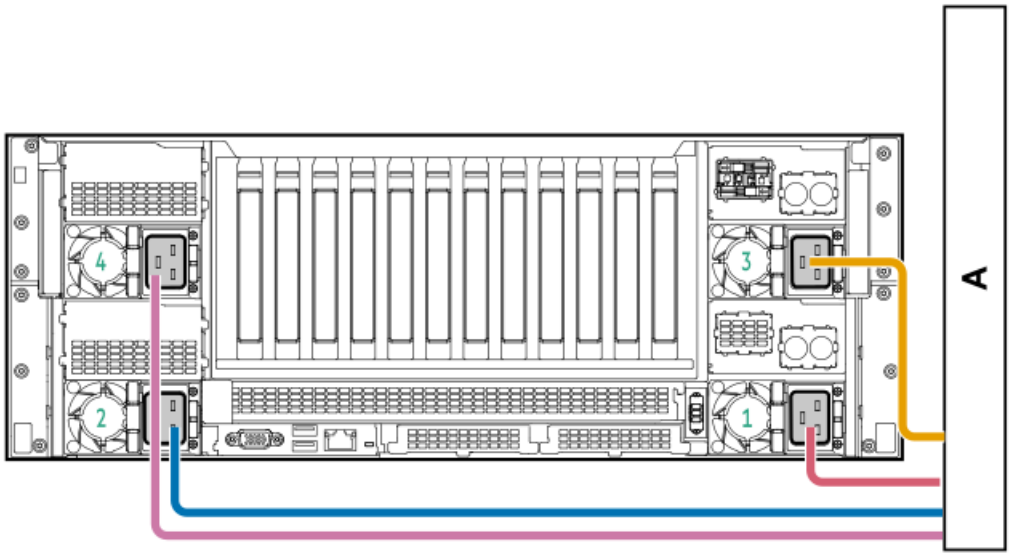
If one of the PDUs fails, the server continues to operate as long as the capacity of the remaining PDU feed is able to compensate for the entire domain load.



PDU cabling: Four-power supply configuration

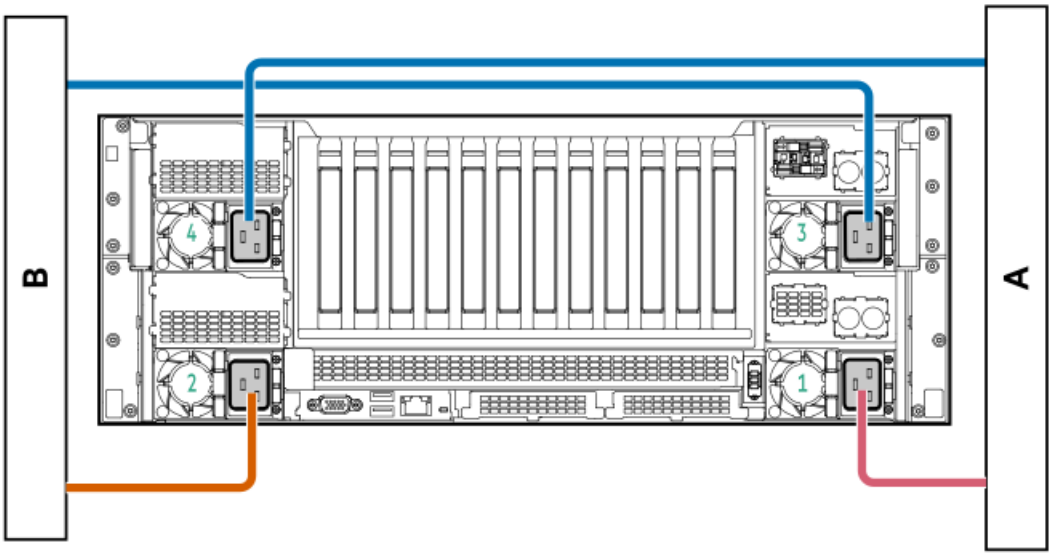
An four-power supply configuration supports the system domain and processor mezzanine domain.

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.



Troubleshooting

Subtopics

NMI functionality

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

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

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

Front panel LED power fault codes

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

Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
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/dl580gen12-ts

Configuration resources

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

- Some utilities might not apply to your server. For information about server compatibility with the products listed in this chapter, see the product QuickSpecs (https://www.hpe.com/info/quickspecs).
- Products ordered from HPE Factory Express might have already been configured with some or all the configurations in this chapter. To determine if any additional setup is required, see your HPE Factory Express order.
- For one-stop access to version-specific software and firmware documentation, including the latest product release notes, see this quick links page:
  https://www.hpe.com/support/hpeproductdocs-quicklinks

Subtopics

Updating firmware or system ROM

To	Use
Download service packs	• Service Pack for HPE 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
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy https://www.hpe.com/info/server-config-lock-UG-en

Server management

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

Safety, warranty, and regulatory information

Subtopics

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

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:

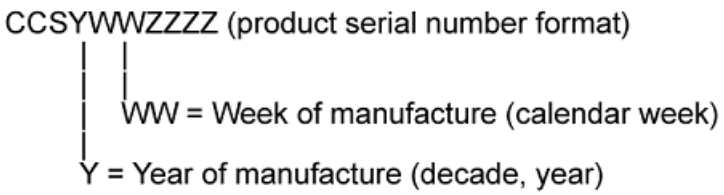
- **Russia**
  ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677
- **Kazakhstan**
  ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7,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

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

Standard operating support

10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1,000 ft) above sea level to a maximum of 3,050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change 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	80.26 cm (31.60 in)
Width	44.78 cm (17.63 in)
Weight, approximate values	—
Two-processor configuration	—
Weight, minimum	28.79 kg (63.48 lbs)
Weight, maximum	37.24 kg (82.12 lbs)
Four-processor configuration	—
Weight, minimum	38.77 kg (85.47 lbs)
Weight, maximum	48.75 kg (107.49 lbs)

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

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 DL580 Gen12 user documents

https://www.hpe.com/info/dl580gen12-docs

Support and other resources

Subtopics

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.