



HPE ProLiant DL560 Gen11 User Guide

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HPE ProLiant DL560 Gen11 User Guide

Abstract

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

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Component identification

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

Subtopics

Front panel components

Front panel LEDs and buttons

Rear panel components

Rear panel LEDs

System board components

Liquid cooling options

Processor mezzanine board components

Riser board components

OCP slot population rules

Riser slot numbering

HPE Basic Drive LED definitions

EDSFF SSD LED definitions

Drive bay numbering

Drive backplane naming

Fan numbering

Fan mode behavior

Trusted Platform Module 2.0

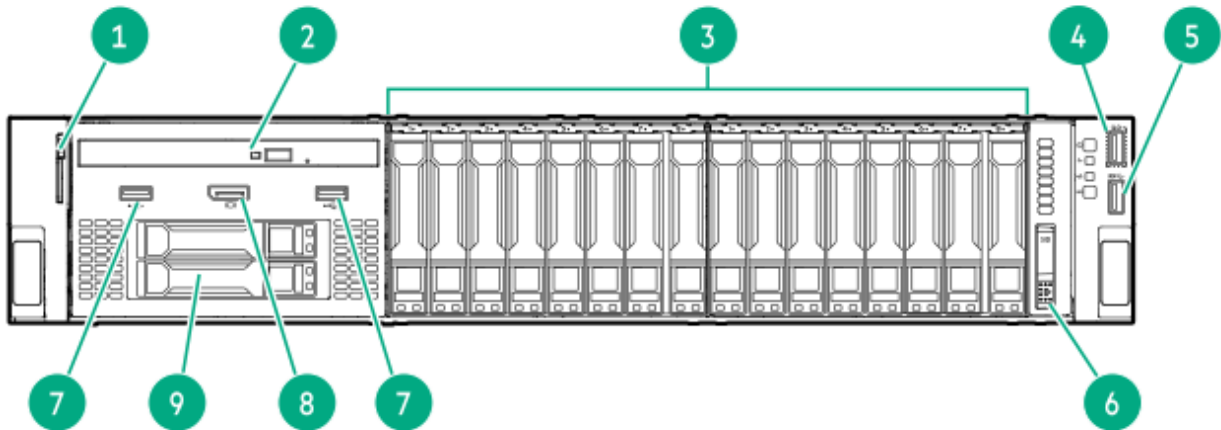
HPE NS204i-u Boot Device components

HPE NS204i-u Boot Device LED definitions

HPE NS204i-u Boot Device locations

Front panel components

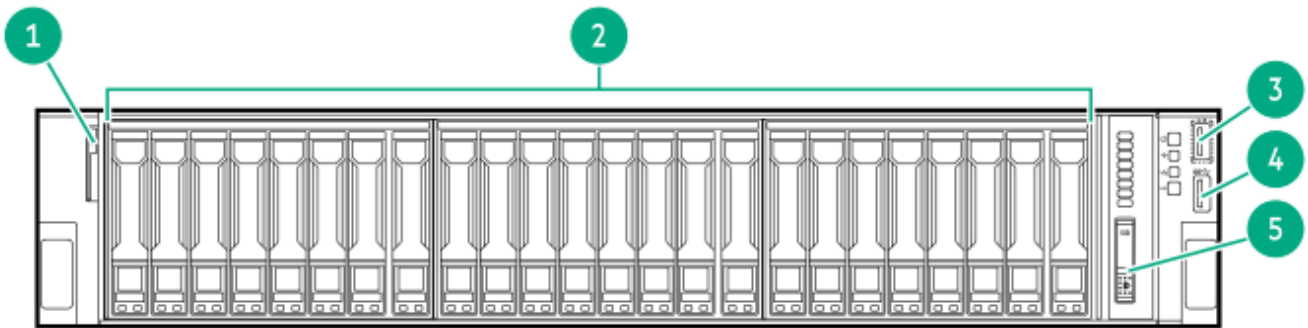
16 SFF drive configuration



Item	Description
1	Serial number/iLO information pull tab ¹
2	Optical drive (optional)
3	SFF drives ²
4	iLO service port
5	USB 3.2 Gen 1 port
6	System Insight Display (optional)
7	USB 2.0 ports
8	DisplayPort 1.1a (optional)
9	2 SFF stacked drives (optional) ³

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

24 SFF drive configuration

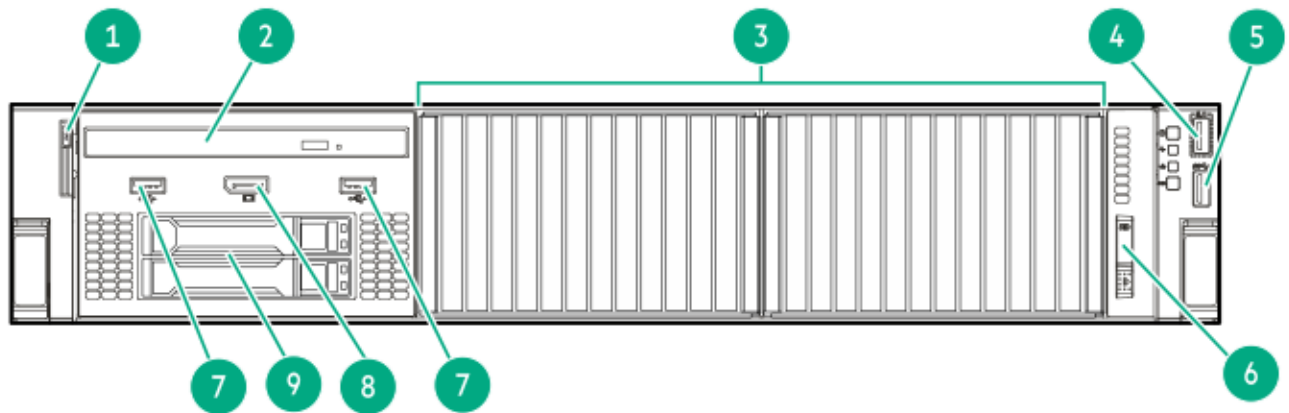


Item	Description
1	Serial number/iLO information pull tab ¹
2	SFF drives ²
3	iLO service port
4	USB 3.2 Gen 1 ports
5	System Insight Display (optional)

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 Depending on the [type of drive backplane installed](#), the server supports SFF SAS, SATA, or U.3 NVMe drives.

24 E3.S drive configuration



Item	Description
1	Serial number/iLO information pull tab ¹
2	Optical drive (optional)

Item	Description
3	E3.S drives
4	<u>iLO service port</u>
5	USB 3.2 Gen 1 port
6	<u>System Insight Display</u> (optional)
7	USB 2.0 ports
8	<u>DisplayPort 1.1a</u> (optional)
9	2 SFF stacked drives (optional) ²

- ¹ The serial number/iLO information pull tab is double-sided. One side shows the server serial number and the customer asset tag label. The other side shows the default iLO account information.
- ² The 2 SFF stacked drive cage option supports SAS, SATA, or U.3 NVMe drives.

Subtopics

iLO Service Port

iLO Service Port

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

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

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

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

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

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

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

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

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

When you use the iLO Service Port:

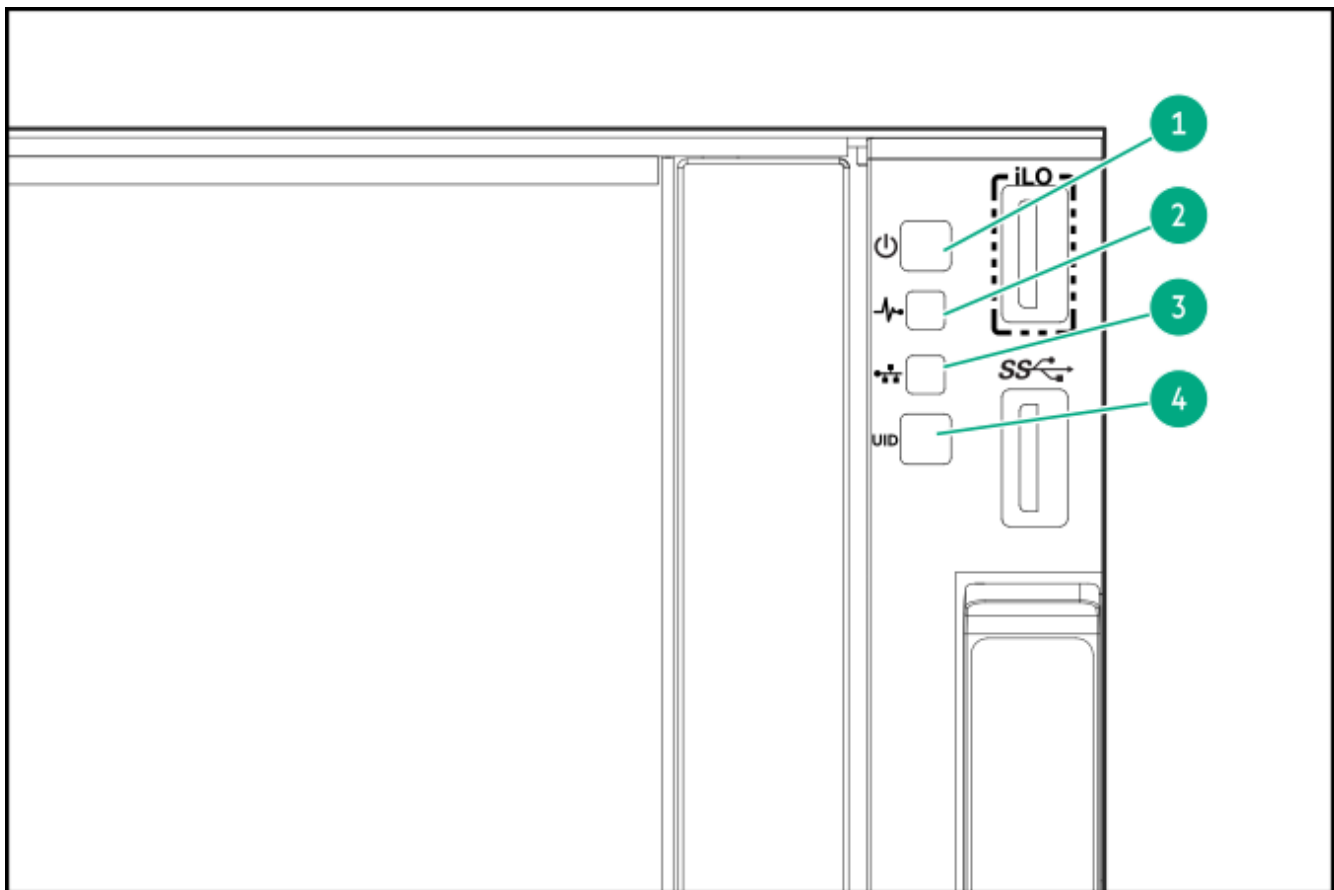
- Actions are logged in the iLO event log.
- The server UID flashes to indicate the Service Port status.

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

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

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

Front panel LEDs and buttons



Item	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	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.

Subtopics

Server UID LED

Viewing the Server Health Summary

Front panel LED power fault codes

Systems Insight Display LEDs

Systems Insight Display combined LED descriptions

Server UID LED

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

Viewing the Server Health Summary

Prerequisites

- An external monitor is connected.
- In the iLO web interface, the **Show Server Health on External Monitor** feature is enabled on the **Access Settings** page.

About this task

If the server does not power on, use the UID button to display the iLO **Server Health Summary** screen on an external monitor. This function works when the server is powered on or off.

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

Procedure

1. Press and release the UID button.



CAUTION

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

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

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

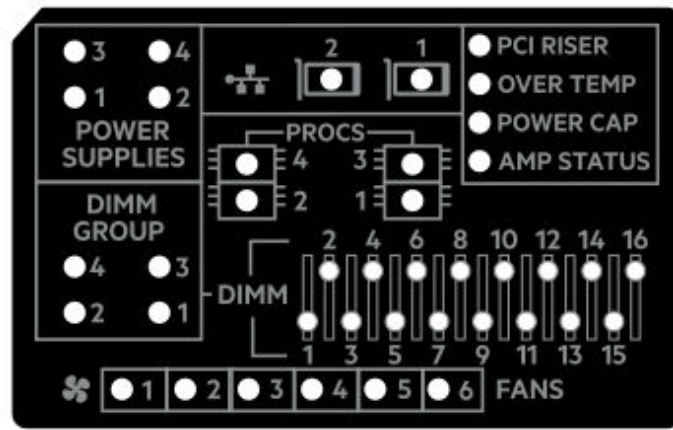
Front panel LED power fault codes

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

Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Storage controller	6 flashes
System board PCIe slots	7 flashes
Power backplane	8 flashes
Storage backplane	9 flashes
Power supply	10 flashes
PCIe expansion cards installed in riser board	11 flashes
Chassis	12 flashes
GPU card	13 flashes

Systems Insight Display LEDs

The Systems Insight Display LEDs represent the system board layout. The display enables diagnosis with the access panel installed.



Description	Status
Processor LEDs	Off = Normal Amber = Failed processor
DIMM LEDs	Off = Normal Amber = Failed DIMM or configuration issue
DIMM group LEDs	Off = Normal Amber = Failed DIMM group or configuration issue
Fan LEDs	Off = Normal Amber = Failed fan or missing fan
NIC LEDs <u>1</u>	Off = No link to network Solid green = Network link Flashing green = Network link with activity If power is off, the front panel LED is not active. For status, see Rear panel LEDs .
Power supply LEDs	Off = Normal Solid amber = Power subsystem degraded, power supply failure, or input power lost.
PCI riser LED	Off = Normal Amber = Incorrectly installed PCI riser cage
Over temp LED	Off = Normal Amber = High system temperature detected

Description	Status
Power cap LED	Off = System is in standby, or no cap is set. Solid green = Power cap applied
AMP ² Status LED	Off = AMP modes disabled Solid green = AMP mode enabled Solid amber = Failover Flashing amber = Invalid configuration

- ¹ Embedded NIC ports are not equipped on the server. NIC LEDs on the Systems Insight Display will flash based on the network adapter port activity. In the case of a dual-port adapters, only NIC LED 1 and 2 will illuminate to correspond with the activity of the respective network ports.
- ² To configure Advanced Memory Protection, see the UEFI System Utilities User Guide for HPE ProLiant Gen11 Servers and HPE Synergy:
<https://www.hpe.com/support/UEFIGen11-UG-en>

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 [Systems Insight Display combined LED descriptions](#).

Systems Insight Display combined LED descriptions

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

- Systems Insight Display LEDs
- System power LED
- Health LED

Systems Insight Display LED and color	Health LED	System power LED	Status
Processor (amber)	Red	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.

Systems Insight Display LED and Health LED System power LED Status

			ROM detects a failed processor during POST.
Processor (amber)	Amber	Green	Processor in socket X is in a pre-failure condition.
DIMM (amber)	Red	Green	One or more DIMMs have failed.
DIMM (amber)	Amber	Green	DIMM in slot X is in a pre-failure condition.
Over temp (amber)	Amber	Green	The Health Driver has detected a cautionary temperature level.
Over temp (amber)	Red	Amber	The server has detected a hardware critical temperature level.
PCI riser (amber)	Red	Green	The PCI riser cage is not seated properly.
Fan (amber)	Amber	Green	One fan has failed or has been removed.
Fan (amber)	Red	Green	Two or more fans have failed or been removed.
Power supply (amber)	Red	Amber	One or more of the following conditions might exist: - Only one power supply is installed and that power supply is in standby. - Power supply fault. - System board fault.
Power supply (amber)	Amber	Green	One or more of the following conditions might 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.
Power cap (off)	—	Amber	Standby.
Power cap (green)	—	Flashing green	Waiting for power.
Power cap (green)	—	Green	Power is available.

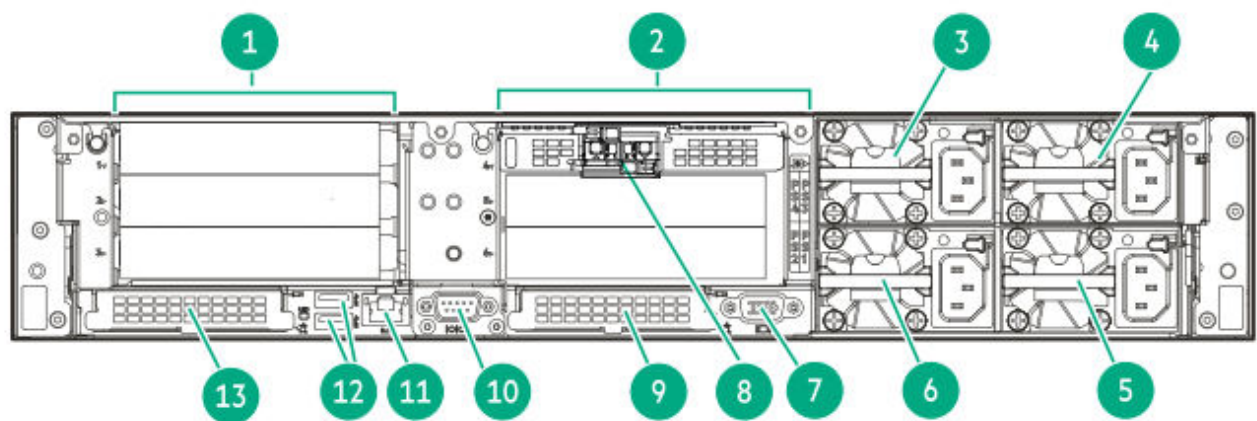
Systems Insight Display LED color	Health LED	System power LED	Status
Power cap (flashing amber)	—	Amber	Power is not available.



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.

Rear panel components



Item	Description
1	Primary riser slots 1–3 top to bottom ¹
2	Secondary riser slots 4–6 top to bottom
3	Power supply 4 (PS4)
4	Power supply 3 (PS3)
5	Power supply 1 (PS1)
6	Power supply 2 (PS2)
7	<u>VGA port</u>
8	NS204i-u boot device (optional)
9	Slot 15 OCP
10	Serial port (optional)
11	iLO management port

Item	Description
12	USB 3.2 Gen 1 ports
13	Slot 14 OCP

¹ When installing a single riser board, install it on the primary riser cage.

Subtopics

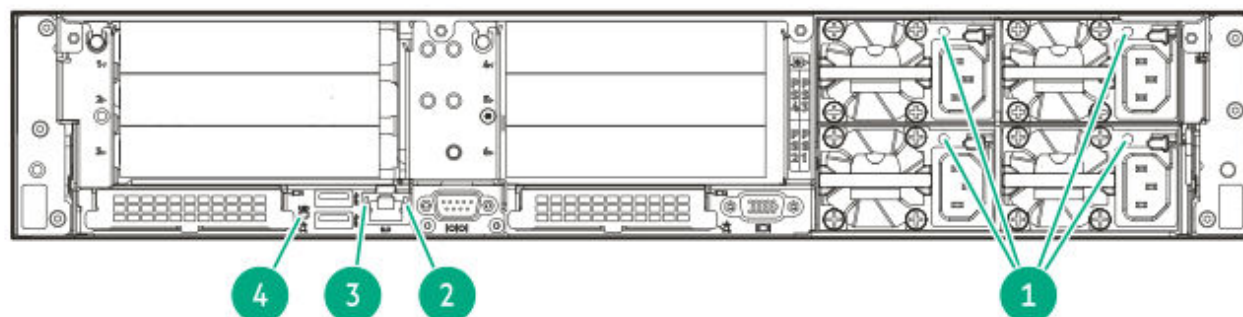
Monitor setup

Monitor setup

Before connecting a monitor, observe the following:

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

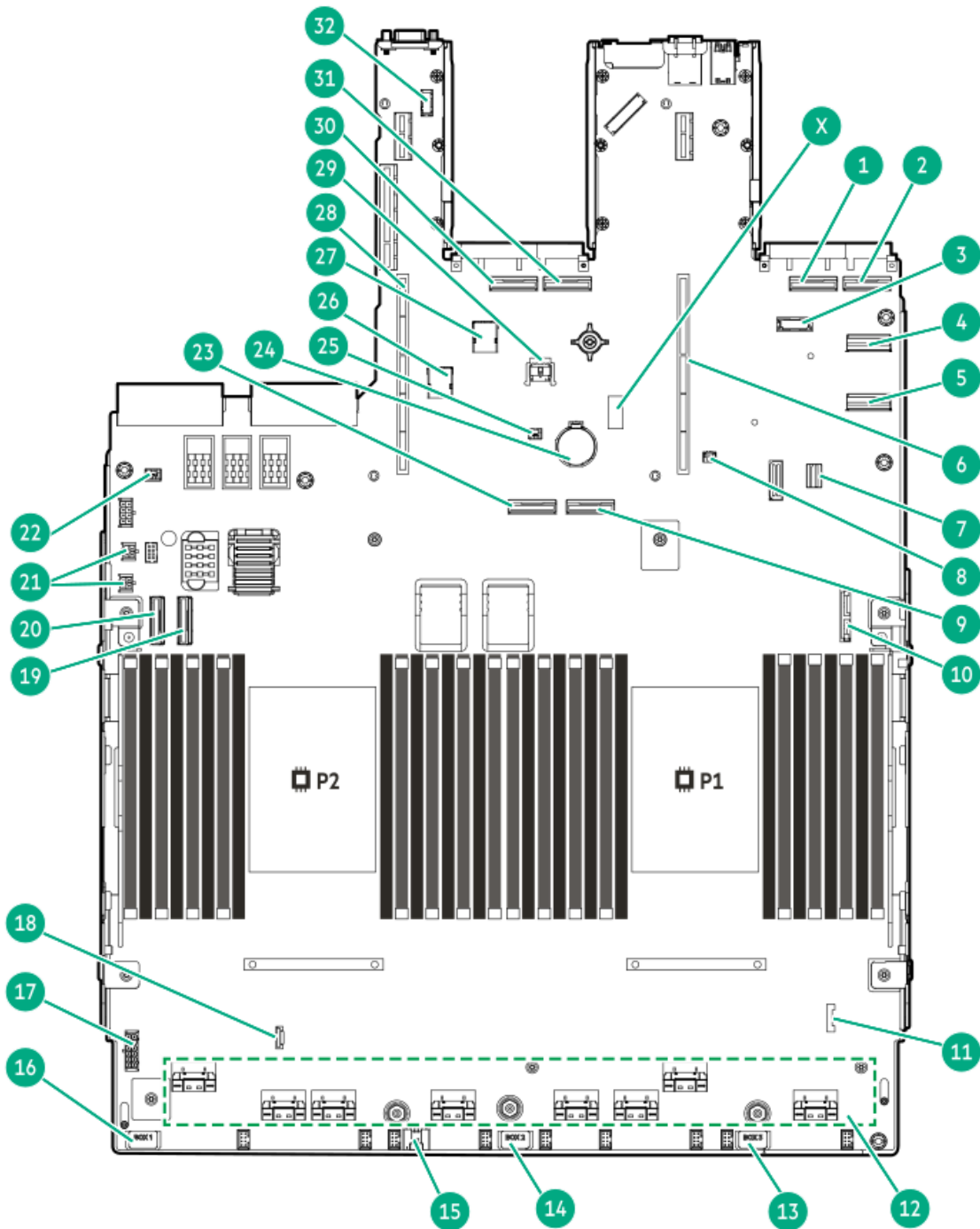
Rear panel LEDs



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

System board components

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



Item	Description
1	Slot 14 OCP port 1
2	Slot 14 OCP port 2
3	Front DisplayPort/USB 2.0 connector
4	PCH LP SlimSAS connector 2

Item	Description
5	PCH LP SlimSAS connector 1
6	Primary riser connector
7	Front I/O connector and USB 3.2 Gen1 port connector
8	Slot 14 OCP storage backup power connector
9	Socket 1 MCIO connector 1
10	SATA optical port
11	SID connector
12	x8 SlimSAS ports 1–8 (from right to left)
13	Drive box 3 power connector
14	Drive box 2 power connector
15	Energy pack connector
16	Drive box 1 power connector
17	Drive box 2 power connector 2
18	Cooling module connector
19	Socket 2 MCIO connector 1
20	Socket 2 MCIO connector 2
21	SmartNIC power connectors
22	Chassis intrusion detection connector
23	Socket 1 MCIO connector 2
24	System battery
25	Slot 15 OCP storage backup power connector
26	USB 3.2 Gen 1 port
27	USB 2.0 port
28	Secondary riser connector
29	NS204i-u power connector
30	OCP slot 15 port 1
31	OCP slot 15 port 2
32	Serial port connector
X	<u>System maintenance switch</u>

Subtopics

System maintenance switch

DIMM label identification

System maintenance switch

The system maintenance switch is a DIP switch block on the system board used during service and troubleshooting to temporarily override security or configuration settings. Each switch has an OFF (default) and ON position that enables a specific maintenance function.

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

Position	Default	Function
S1 ¹ _—	Off	- Off—iLO 6 security is enabled. - On—iLO 6 security is disabled.
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 ¹ _—	Off	- Off—Power-on password is enabled. - On—Power-on password is disabled.
S6 ^{1, 2, 3} _{— — —}	Off	- Off—No function - On—Restore default manufacturing settings
S7	Off	Reserved
S8	Off	Reserved
S9	Off	Reserved
S10	Off	Reserved
S11	Off	Reserved
S12	Off	Reserved

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

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

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

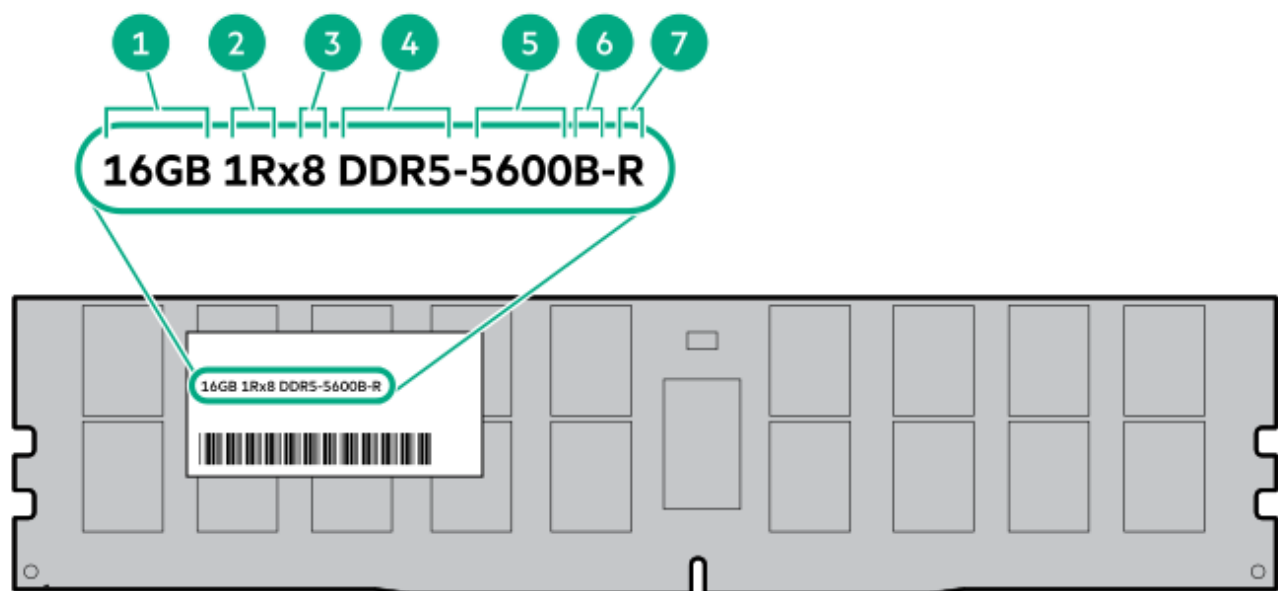
DIMM label identification

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

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

See the website:

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



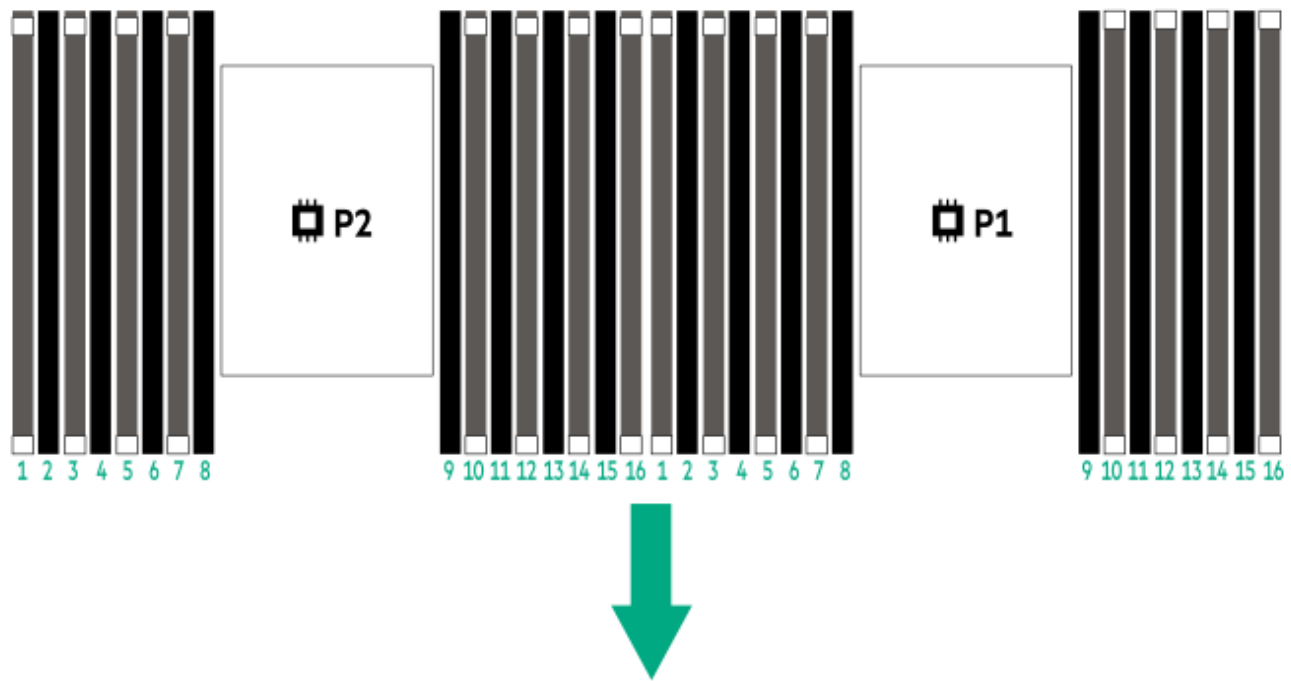
Item	Description	Example
1	Capacity $\frac{1}{_}$	16 GB
		32 GB
		64 GB
		96 GB
		128 GB
		256 GB
2	Rank	1R—Single rank
		2R—Dual rank

Item	Description	Example
		4R—Quad rank 8R—Octal rank
3	Data width on DRAM	x4—4-bit x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed ¹ _—	4800 MT/s 5600 MT/s 6400 MT/s
6	CAS latency	B—42-42-42 B—50-42-42 (for 128 GB and 256 GB capacities)
7	DIMM type	E—UDIMM (unbuffered with ECC) R—RDIMM (registered)

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

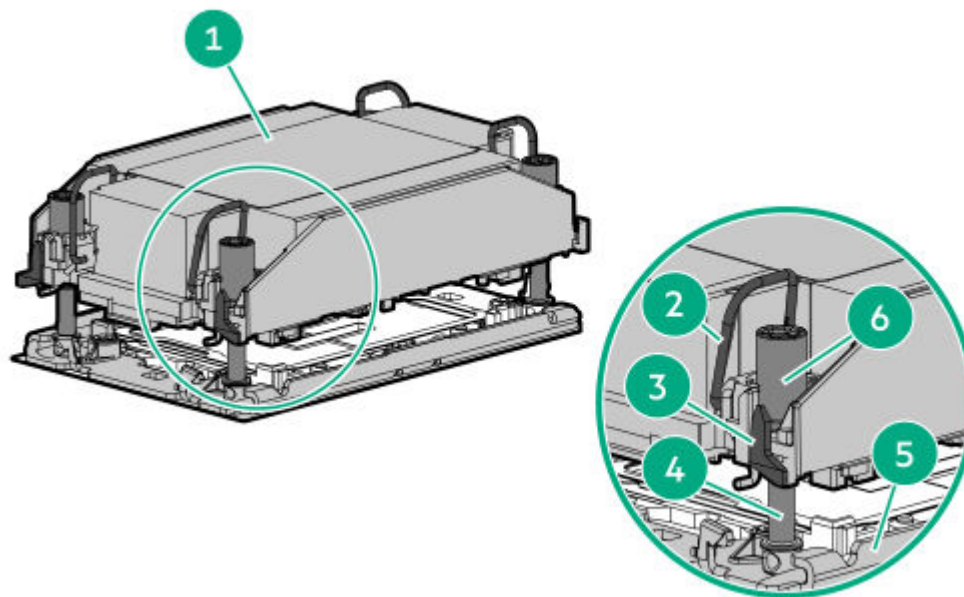
DIMM slot numbering

The arrow points to the front of the server.



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.

Liquid cooling options

When four 4th Gen Intel Xeon Scalable Processors with a TDP of 270 W–350 W are installed, the closed-loop liquid cooling heatsinks and liquid cooling fans options are required.

- The pump-cold plate of the liquid cooling heatsink picks up heat from the processor.
- Heat is transferred to the radiator through the coolant tubes.
- The coolant tubes and liquid cooling fans work together to cool down the system. The coolant is a mixture of purified water and ethylene glycol with additional additives for corrosion resistance.

Subtopics

Liquid cooling components

Liquid cooling components



CAUTION

- The hoses of the liquid cooling module are prefilled with coolant. Do not attempt to replace the coolant. In the unlikely event of a spill or leak of this server coolant, follow the recommended procedure in Appendix I: Server coolant spill response of the server maintenance guide:

<https://www.hpe.com/info/dl560gen11-msg>

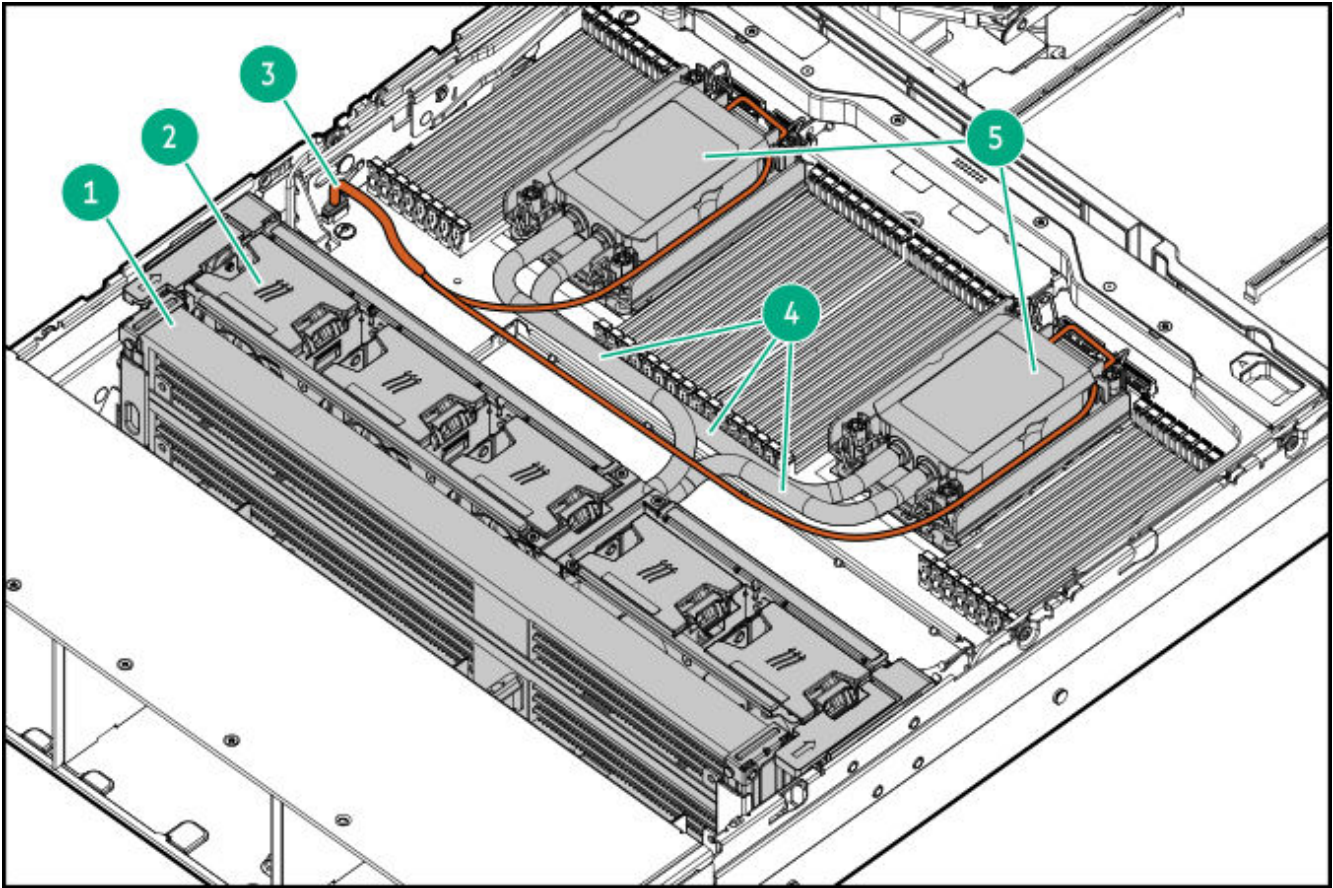
- For service inquiries, contact your local service provider.



IMPORTANT

Maximum Usage Limitation Reminders:

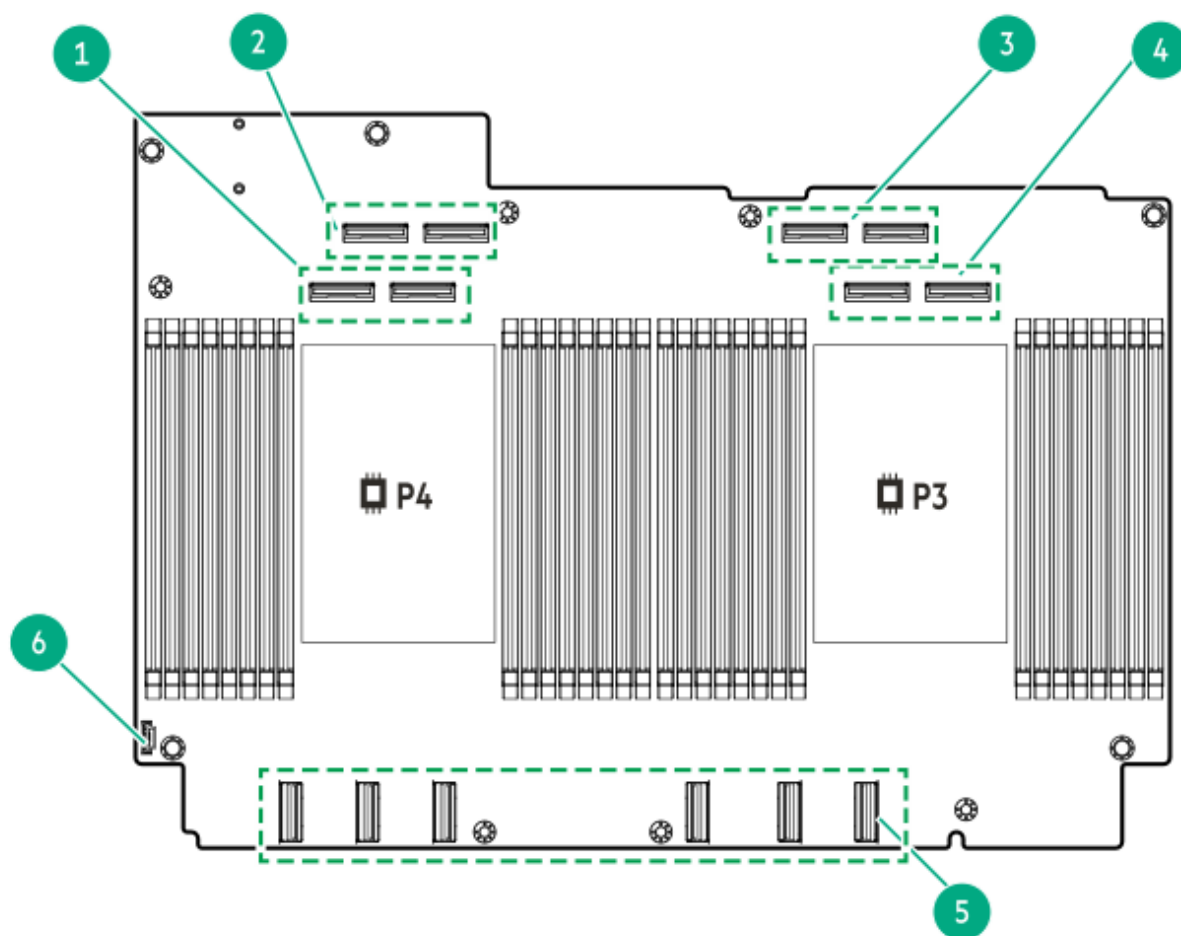
- The closed-loop liquid cooling module used in this server is subject to a Maximum Usage Limitation not to exceed five (5) years of operation. After reaching this five (5) year limit, it is required that the liquid cooling module be replaced. Parts and components that Hewlett Packard Enterprise determines have reached or exceeded their Maximum Usage Limitation will not be provided, repaired, or replaced under a warranty or service contract. Contact your local HPE sales representative for additional information.
- To remind users of the operational life of the liquid cooling module, iLO will send notification message at 4 years and 6 months, at 4 years and 9 months, and at 5 years of operation. This iLO notification feature is available starting in iLO 6 v1.59.



Item	Description
1	Radiator
2	Liquid cooling fans (5, single-rotor)
3	Pump signal cable
4	Coolant tubes
5	Pump-cold plate ¹ _—

¹_— The liquid cooling heatsink has two pumps for redundancy.

Processor mezzanine board components

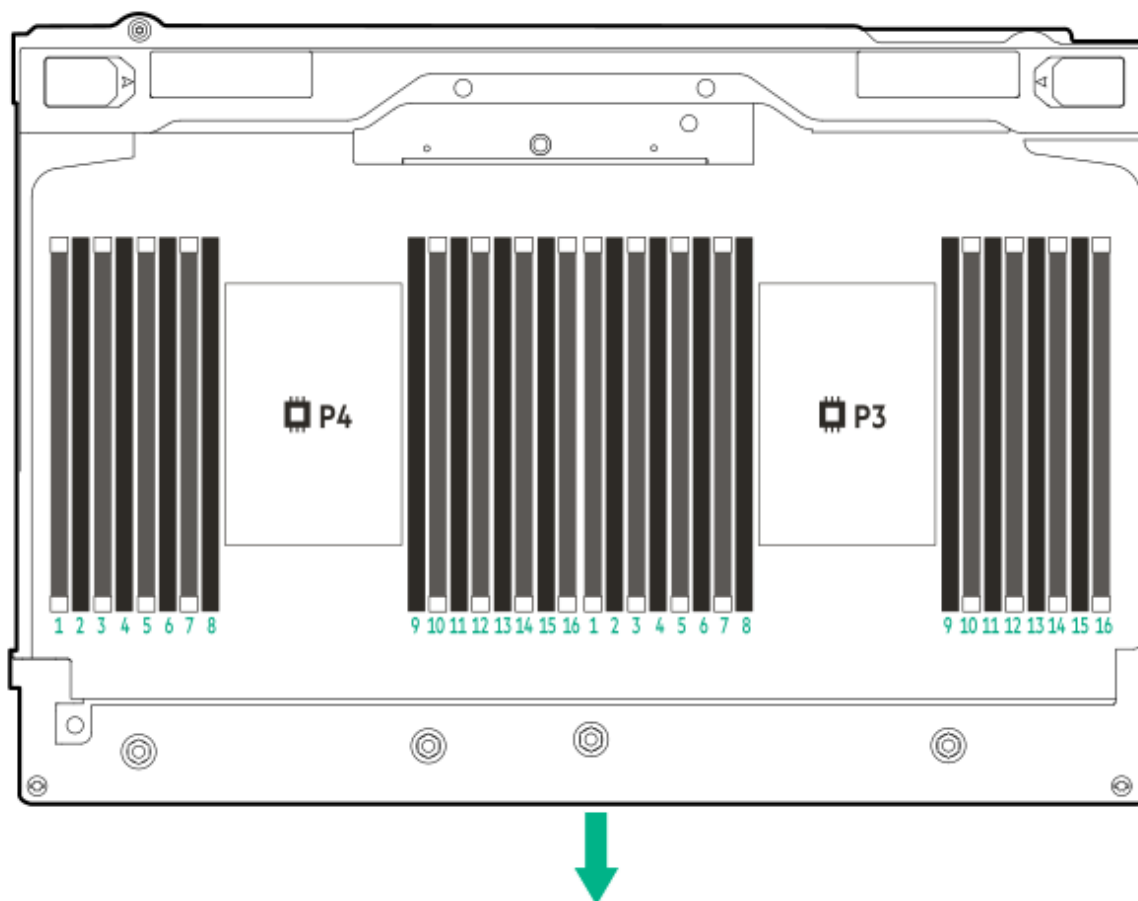


Item	Description
1	Socket 4 MCIO connectors 7–8 (from left to right)
2	Socket 4 MCIO connectors 9–10 (from left to right)
3	Socket 3 MCIO connectors 11–12 (from left to right)
4	Socket 3 MCIO connectors 13–14 (from left to right)
5	x8 SlimSAS ports 1–6 (from right to left)
6	Liquid cooling power connector

Subtopics

Processor mezzanine board DIMM slot numbering

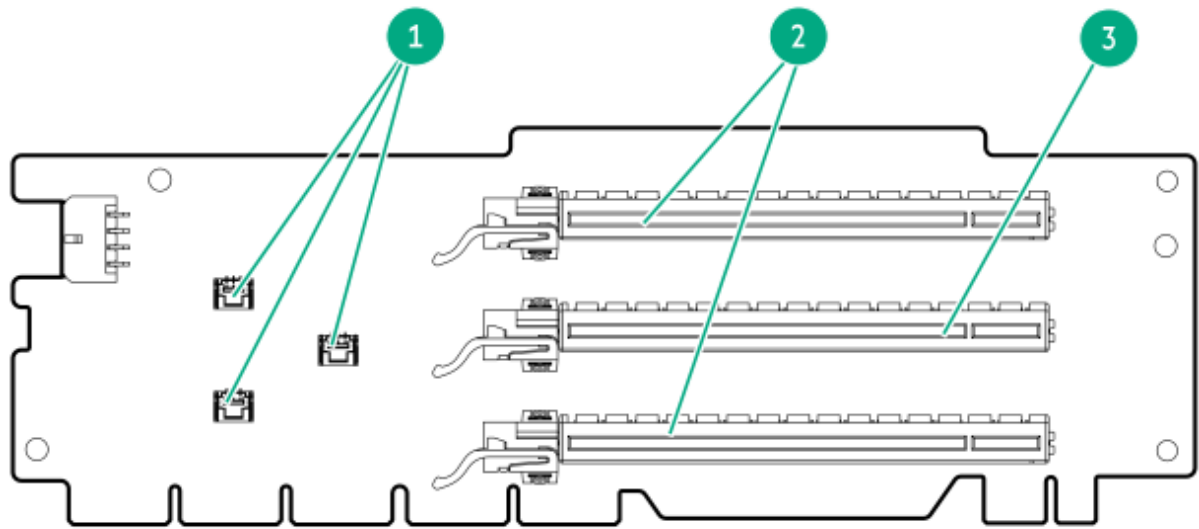
Processor mezzanine board DIMM slot numbering



The arrow points to the front of the server.

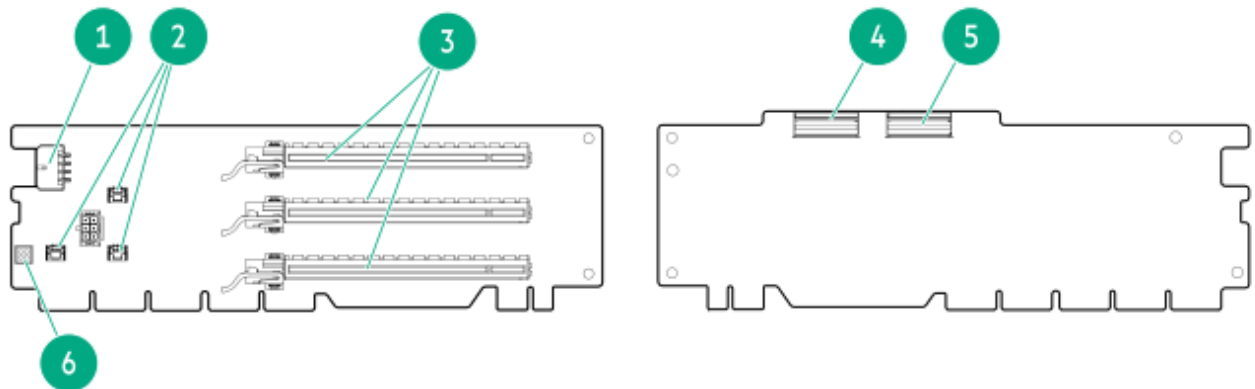
Riser board components

PCIe5 x8/x16/x8 riser components



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

PCIe5 3 x16 riser components



Item	Description
1	GPU auxiliary power connector

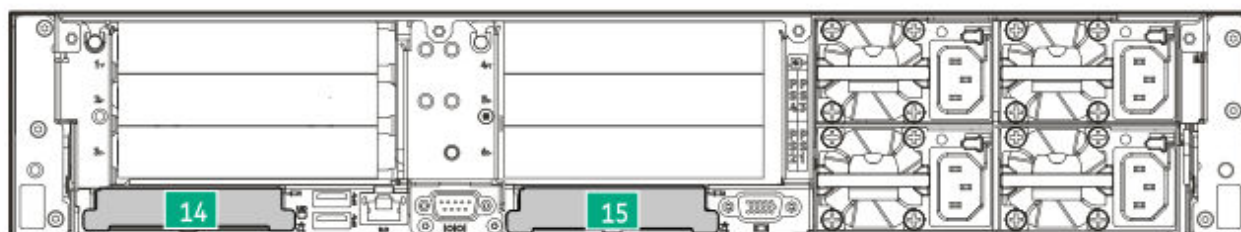
Item	Description
2	Storage controller backup power connectors
3	PCIe5 x16 (16, 8, 4, 1) slots
4	LP SlimSAS connector 1
5	LP SlimSAS connector 2
6	GPU signal connector

OCP slot population rules

Both Slot 14 and 15 OCP PCIe5 x8 support type-o storage controllers and OCP NIC adapters.

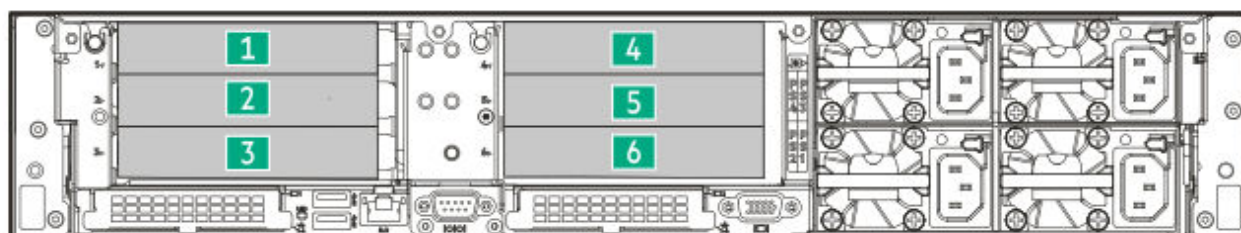
For some specific InfiniBand adapters that require to be installed in Slot 15 OCP, see the product QuickSpecs:

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



Riser slot numbering

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



Slot number	Location	Supported form factors
1	Primary riser cage	• Full-height, $\frac{3}{4}$ -length ¹ _—
2		• Half-height, half-length (low-profile) ² _—
3		• Full-height, half-length
4	Secondary riser cage	• Half-height, half-length (low-profile) ² _—
5		• Full-height, $\frac{3}{4}$ -length ¹ _—
6		• Half-height, half-length (low-profile) ² _—

¹ — These slots also support the 10.5-inch length of double-width accelerators.

² — The low-profile bracket is required when installing the low-profile expansion card.

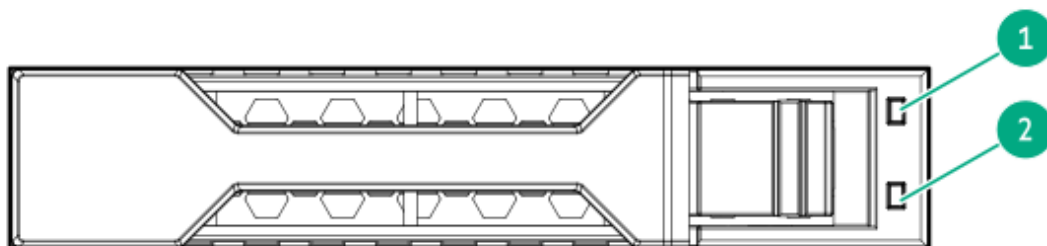
HPE Basic Drive LED definitions

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, and U.3 PCIe4 NVMe drives.



Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (1 flash per second)	The drive is doing one of the following: • Rebuilding or performing a RAID • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	The drive is not configured by a RAID controller or is a spare drive.

EDSFF SSD LED definitions

The EDSFF drive carrier has two LEDs:

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



Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive. The drive has also been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
		Off	The drive is operating normally and not being identified by a management application.
2	Online/Activity	Solid green	The drive is online and has no activity.
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Off	No power present.

Drive bay numbering



CAUTION

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

Subtopics

SFF drive bay numbering

E3.S drive bay numbering

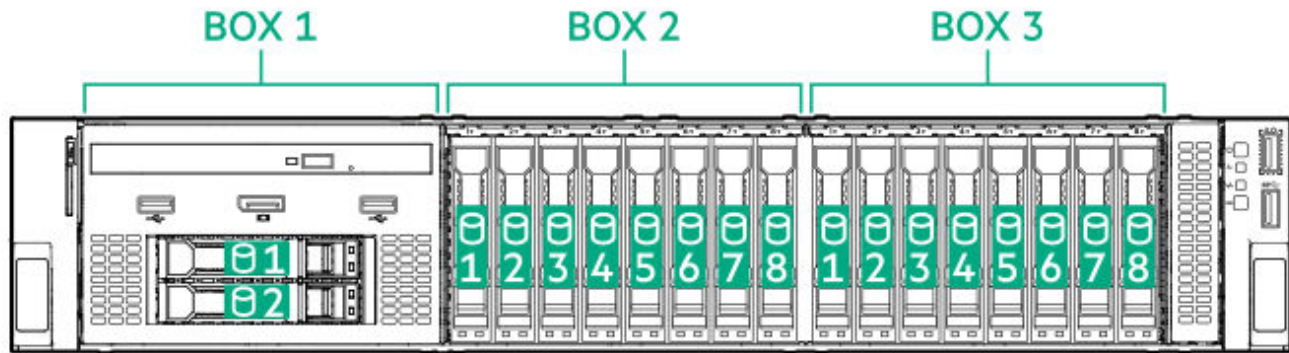
SFF drive bay numbering

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

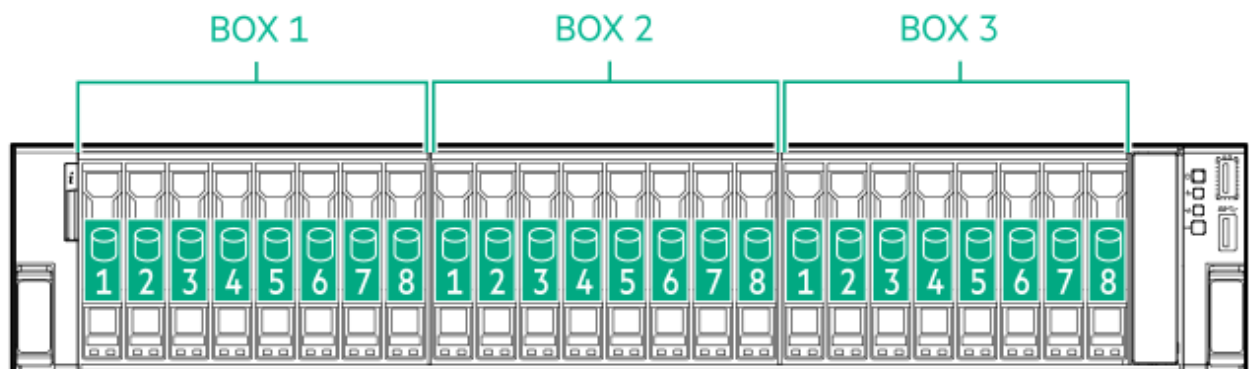
- 2 SFF stacked drive backplanes:
 - 24G x4 U.3 NVMe / SAS UBM3 BC
 - 24G x4 U.3 NVMe / SAS UBM6 BC
- 8 SFF drive backplanes:
 - 8 SFF 24G x1 U.3 NVMe / SAS UBM3 BC
 - 8 SFF 24G x1 U.3 NVMe / SAS UBM6 BC
 - 8 SFF 24G x4 U.3 NVMe / SAS UBM3 BC
 - 8 SFF 24G x4 U.3 NVMe / SAS UBM6 BC

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

16 SFF + 2 SFF drive bay numbering



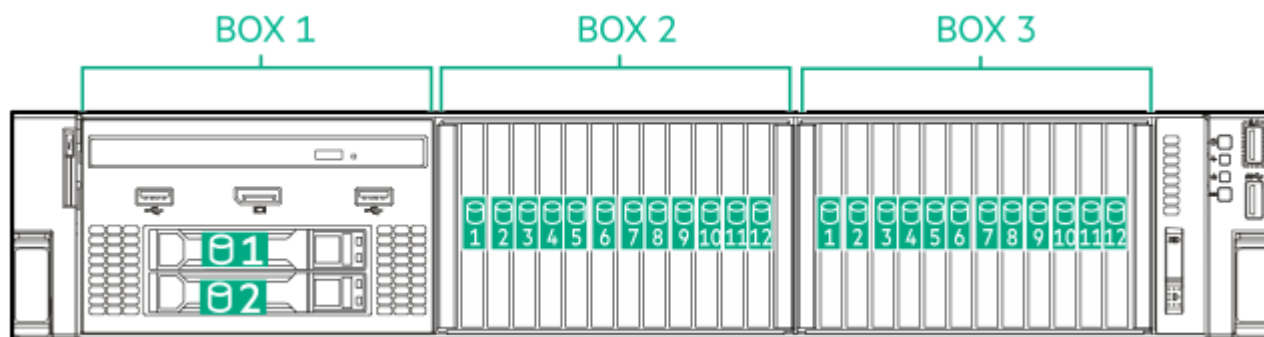
24 SFF drive bay numbering



E3.S drive bay numbering

E3.S drive box uses the 12 E3.S 32G x4 NVMe UMB5 EC drive backplane.

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



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

Item	Description	Values
		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.

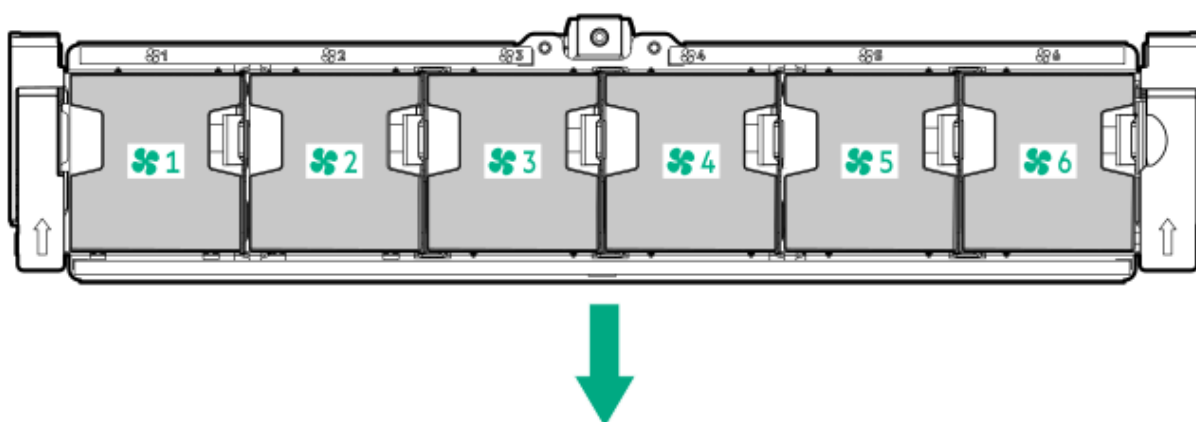
² CPU direct attach or tri-mode controller support for x4 U.3 NVMe, x2 (via a splitter cable) U.3 NVMe, or x1 SAS and SATA drives.

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

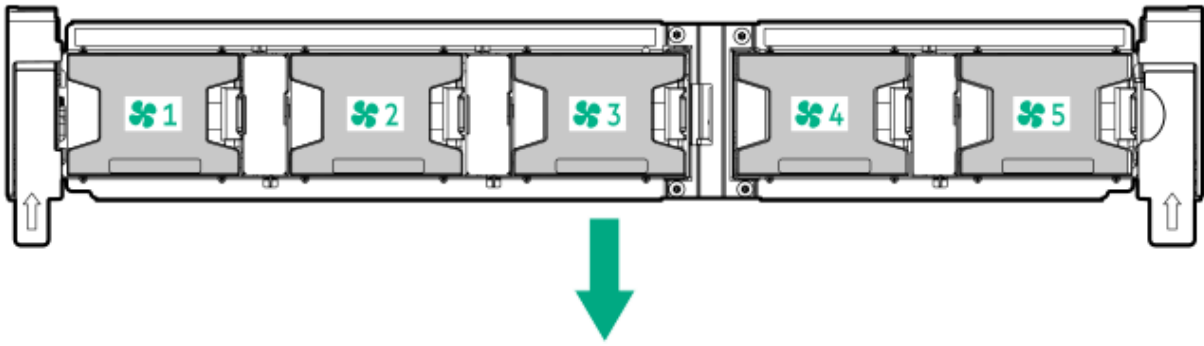
Fan numbering

This server supports two cooling configurations:

- The server in the air cooling configuration is by default populated by six dual-rotor fans.



- The server in the liquid cooling configuration is by default populated by five single-rotor fans



The arrow points to the front of the server.

Fan mode behavior

To provide sufficient airflow to the system, the server is by default populated by either six dual-rotor fans in the air cooling configuration, or five single-rotor fans in the liquid cooling configuration. Both air cooling and liquid cooling configurations with full-load fans provide redundant fan support:

- In the air cooling, 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.

- In the liquid cooling, redundant fan mode, if a fan fails or is missing:
 - The system switches to nonredundant fan mode. The system continues to operate in this mode.
 - The system health LED flashes amber.

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

Trusted Platform Module 2.0

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

The TPM 2.0 is embedded on the server system board.

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

Subtopics

Trusted Platform Module 2.0 guidelines

BitLocker recovery key/password retention guidelines

Trusted Platform Module 2.0 guidelines



CAUTION

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

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

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

- When using the Microsoft Windows BitLocker Drive Encryption feature, always retain the recovery key or password. The recovery key or password is required to enter Recovery Mode after BitLocker detects a possible compromise of system integrity.
- HPE is not liable for blocked data access caused by improper TPM use. For operating instructions, see the documentation for the encryption technology feature provided by the operating system.

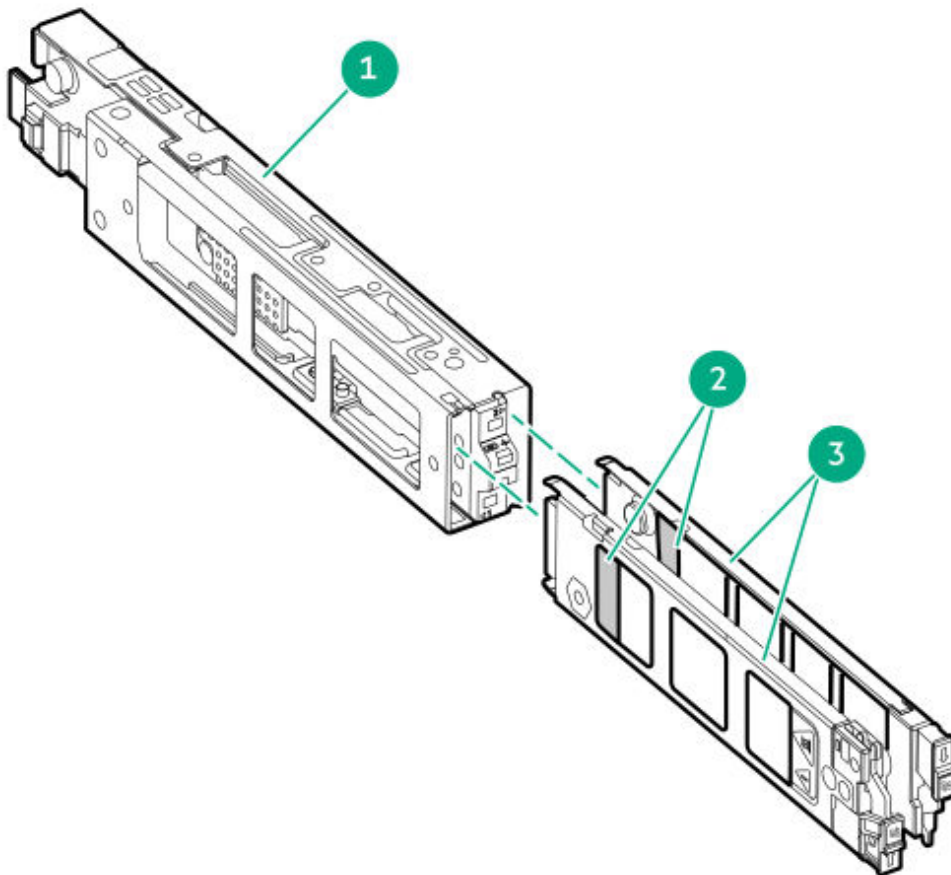
BitLocker recovery key/password retention guidelines

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

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

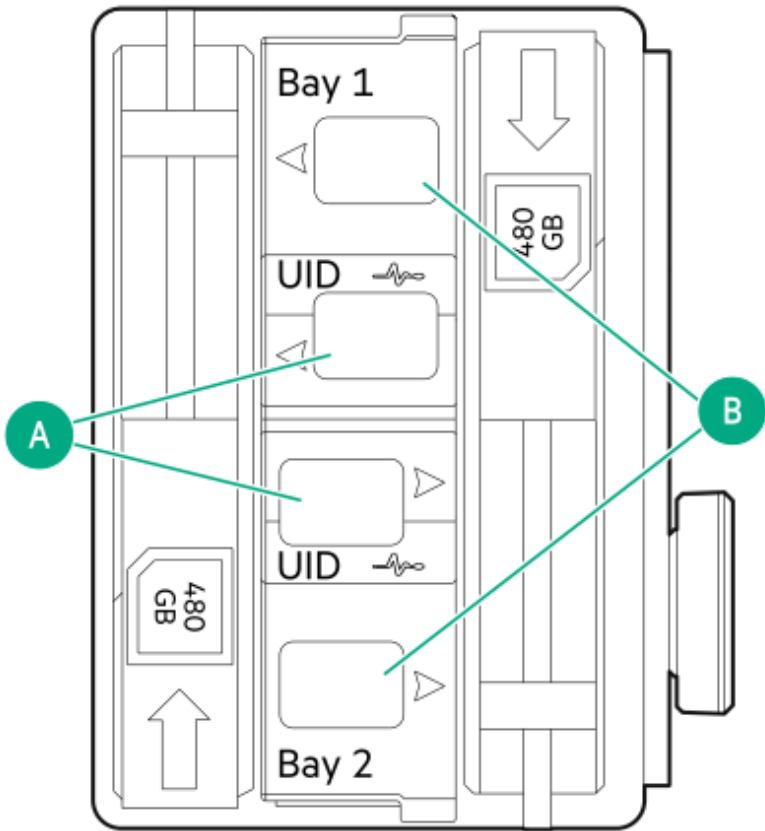
- Always store the recovery key/password in multiple locations.
- Always store copies of the recovery key/password away from the server.
- Do not save the recovery key/password on an encrypted drive.

HPE NS204i-u Boot Device components



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

HPE NS204i-u Boot Device LED definitions



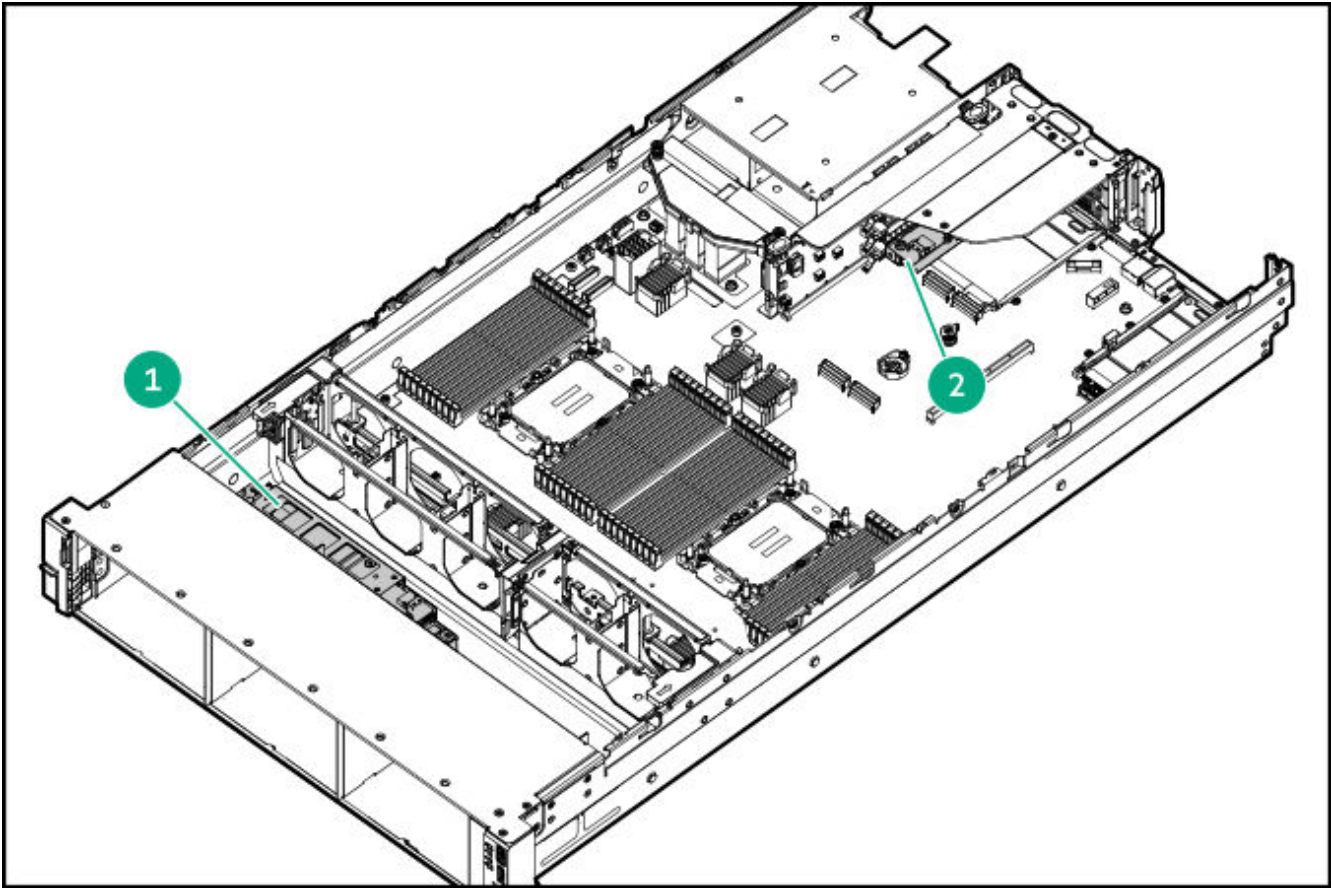
NOTE

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

Item	LED	Status	Definition
A	Fault or Locate	Solid amber	Drive has failed, unsupported, or invalid.

Item	LED	Status	Definition
		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.

HPE NS204i-u Boot Device locations



Item	Description
1	Front boot device
2	Rear boot device ¹ _—

¹_— This is located on the secondary riser cage Slot 4.

Setup

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

Subtopics

Initial system installation

Operational requirements

Rack warnings and cautions

Server warnings and cautions

Electrostatic discharge

Initial system installation

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

- [Ordering the HPE Installation Service](#)
- [Setting up the server](#)

Subtopics

HPE Installation Service

Intel VROC support

Setting up the server

Adjusting the server power supply redundancy setting

HPE Installation Service

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

The HPE Installation Service provides the following benefits:

- Installation by an HPE authorized technical specialist.
- Verification prior to installation that all service prerequisites are met.
- Delivery of the service at a mutually scheduled time convenient to your organization.
- Allows your IT resources to stay focused on their core tasks and priorities.
- Full coverage during the warranty period for products that require installation by an HPE authorized technical specialist.

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

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

Intel VROC support

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

- Intel VROC provides RAID support for direct attached SATA and NVMe SSDs.
- The Intel VROC driver is required. For the OS-specific driver download, see the following page:
<https://www.hpe.com/support/VROC-installation>
- Intel VROC requires the server boot mode to be set to **UEFI Mode**.
- Intel VROC RAID support is disabled by default. In the pre-OS environment, use UEFI System Utilities to enable Intel VROC and create a VROC RAID volume. These tasks are not supported in Intelligent Provisioning.
- The VROC RAID volume must use drives of the same interface and form factor.
- Intel VROC supports RAID management through the following tools:
 - Non-OS specific: UEFI System Utilities
 - Windows: Intel VROC GUI, Intel VROC CLI
 - Linux: `mdadm` CLI

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

Setting up the server

Prerequisites

- As a best practice, Hewlett Packard Enterprise recommends installing the latest firmware, drivers, and system software before using the server for the first time. You have these options:
 - HPE Compute Ops Management is an advanced software-as-a-service platform that securely streamlines operations from edge-to-cloud and automates key life cycle tasks through a unified single browser-based interface. For more information on using HPE Compute Ops Management, see **<https://www.hpe.com/support/hpe-gl-com-quicklinks>**.
 - Use the **Firmware Update** option in Intelligent Provisioning—Intelligent Provisioning is a server deployment tool embedded in HPE ProLiant servers. To access Intelligent Provisioning, during the

server boot process, press **F10**. For more information, see the Intelligent Provisioning user guide at <https://www.hpe.com/support/hpeintelligentprovisioning-quicklinks>.

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

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

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

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

- Verify that your OS or virtualization software is supported:
<https://www.hpe.com/support/Servers-Certification-Matrices>
- This server supports type-o and type-p storage controller options. For storage configuration, use either SATA AHCI (default) or Intel 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>
- Take note of the iLO hostname and default login credentials on the [serial number / iLO information pull tab](#).

Procedure

1. Unbox the server and verify the contents:

- Server
- Power cord
- Rack-mounting hardware (optional)
- Printed setup documentation

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

2. (Optional) [Install the hardware options](#).
3. [Install the server into the rack](#).
4. Decide how to manage the server:

- Locally: Use a KVM switch or 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. Set the server power supply requirements.

9. Deploy an OS or virtualization software.

.0. After the OS is installed, update the drivers.

.1. Register the server.

Adjusting the server power supply redundancy setting

Prerequisites

- To verify that the server is cabled properly for power redundancy, see [Power supply redundancy](#).

- To determine the power draw of the system and verify that the server will continue to operate redundantly in the default configuration, use the HPE Power Advisor:

<https://www.hpe.com/info/poweradvisor/online>

Procedure

1. To access the UEFI System Utilities, press **F9** during POST.
2. From the **System Utilities** screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options**.
3. Select the appropriate redundancy configuration from the **Power Supply Requirements** menu, and then press **Enter**.
4. Press **F10** to Save or **F12** to Save and Exit.

Operational requirements

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

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

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

Subtopics

[**Space and airflow requirements**](#)

[**Temperature requirements**](#)

[**Power requirements**](#)

[**Electrical grounding requirements**](#)

Space and airflow requirements

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

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

Observe the following:

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



CAUTION

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



CAUTION

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

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

Temperature requirements

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

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



CAUTION

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

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

Power requirements

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



WARNING

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



CAUTION

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

Electrical grounding requirements

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

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

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

Rack warnings and cautions



WARNING

When all components are removed, the server weighs 21.08 kg (46.75 lb). When all components are installed, the server can weigh up to 36.93 kg (81.67 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 21.08 kg (46.75 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).

Server warnings and cautions



WARNING

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



WARNING

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



WARNING

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

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

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



CAUTION

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



CAUTION

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



CAUTION

To avoid data loss, Hewlett Packard Enterprise recommends that you back up

Electrostatic discharge

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

To prevent electrostatic damage:

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

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

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

Operations

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

- [Rack warnings and cautions](#)

- [Server warnings and cautions](#)

Subtopics

[Remove the front bezel](#)

[Power down the server](#)

[Open the cable management arm](#)

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

[Remove the server from the rack](#)

[Remove the access panel](#)

[Remove the air baffle](#)

[Remove the processor mezzanine tray](#)

[Remove the fan cage](#)

[Remove the riser cage](#)

[Installing the riser cage](#)

[Install the fan cage](#)

[Install the processor mezzanine tray](#)

[Install the air baffle](#)

[Install the access panel](#)

[Install the server into the rack](#)

[Power up the server](#)

Remove the front bezel

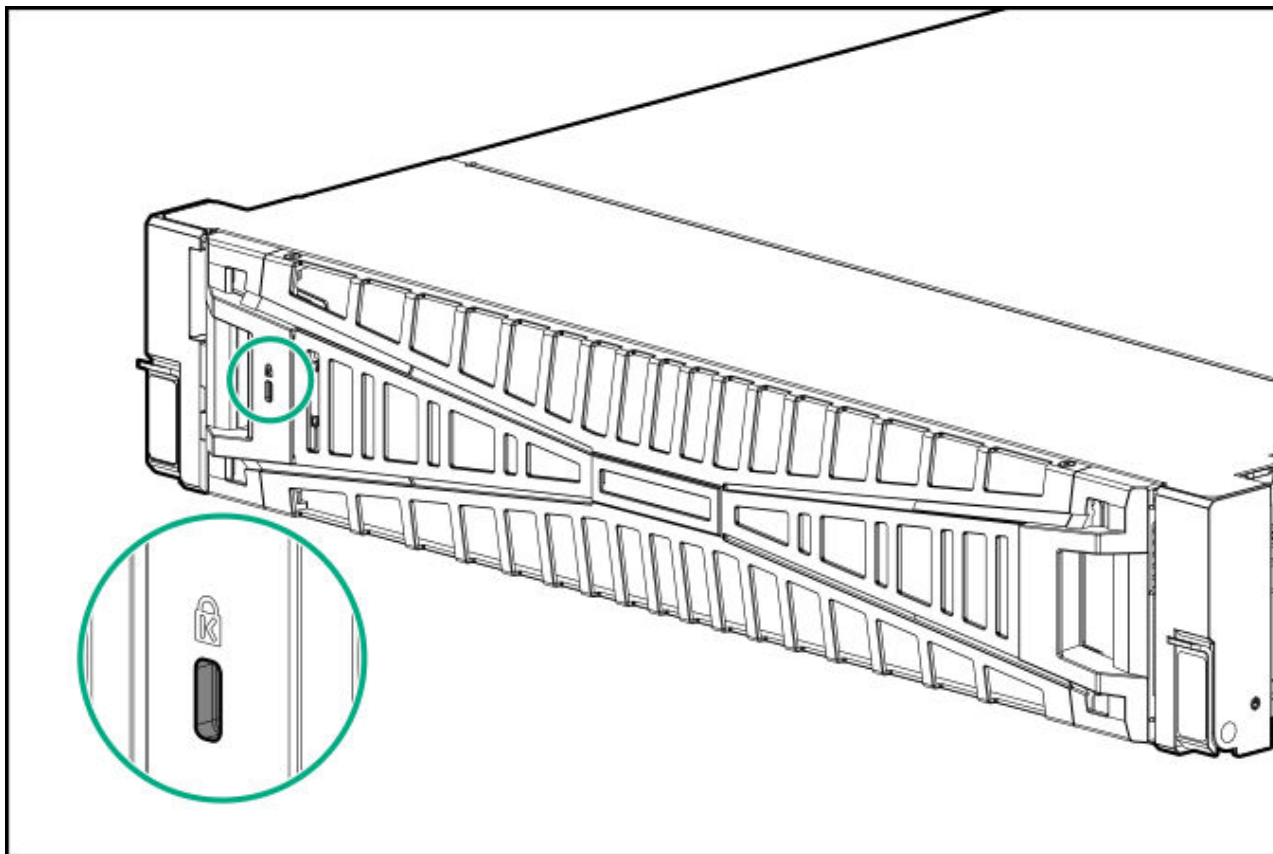
About this task

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

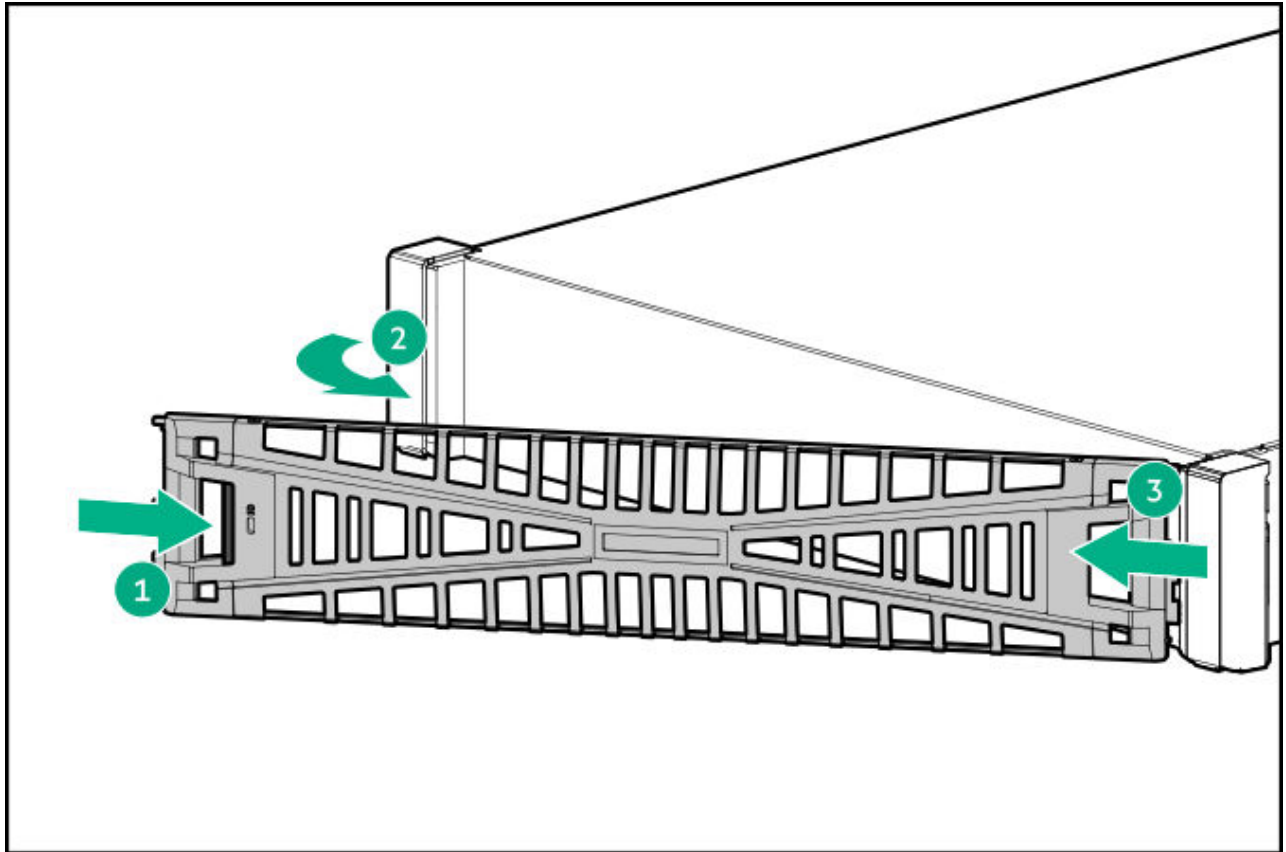
Procedure

1. If installed, remove the Kensington security lock.

For more information, see the lock documentation.



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



Power down the server

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



IMPORTANT

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

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

- Press and release the Power On/Standby button.
This method activates a controlled shutdown of applications and the OS before the server enters standby mode. It can also activate a shutdown behavior governed by an OS configuration or policy.
- Press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode.

This method forces the server to enter standby mode without properly exiting applications and the OS. If an application stops responding, you can use this method to force a shutdown.

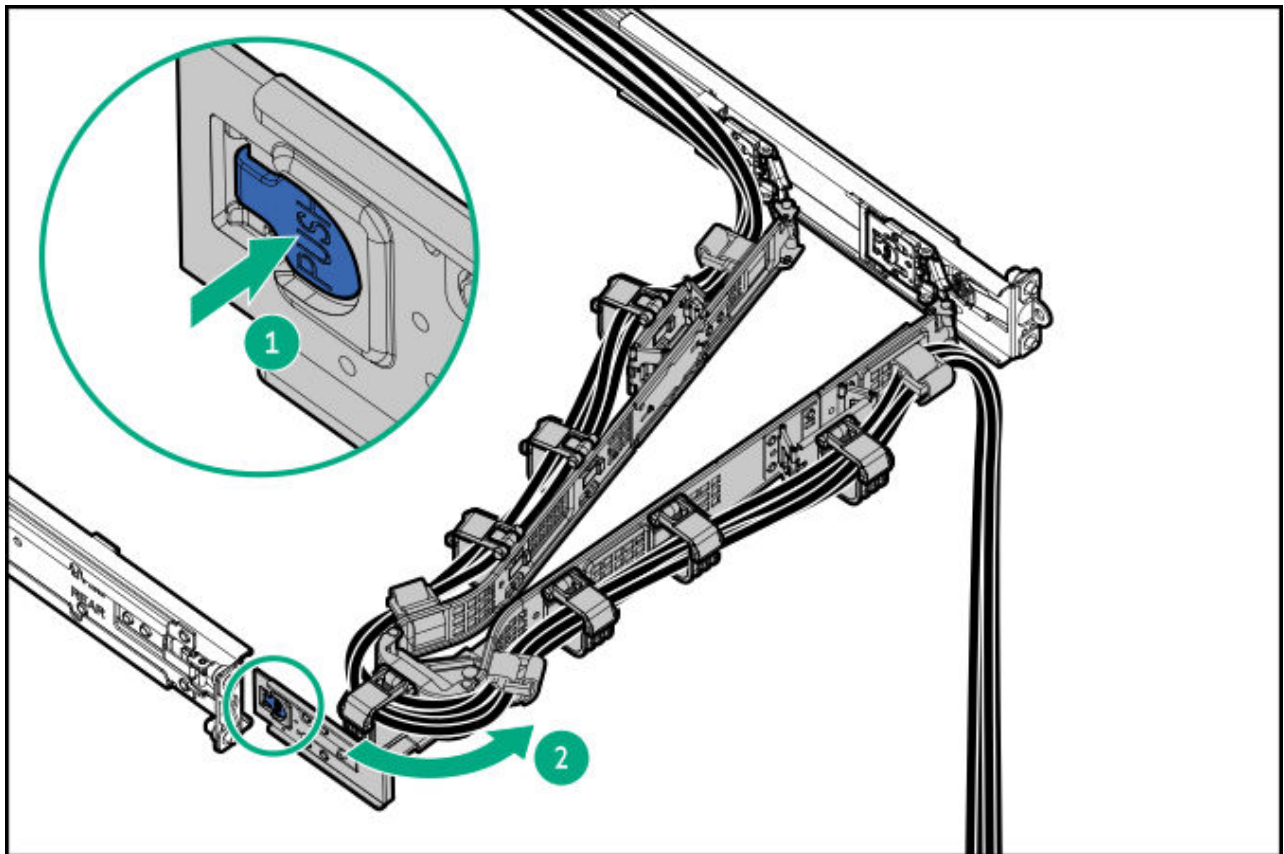
- Use a virtual power button selection through iLO 6.
This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

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

Open the cable management arm

Procedure

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



Extend the server out of the rack

Prerequisites

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

About this task

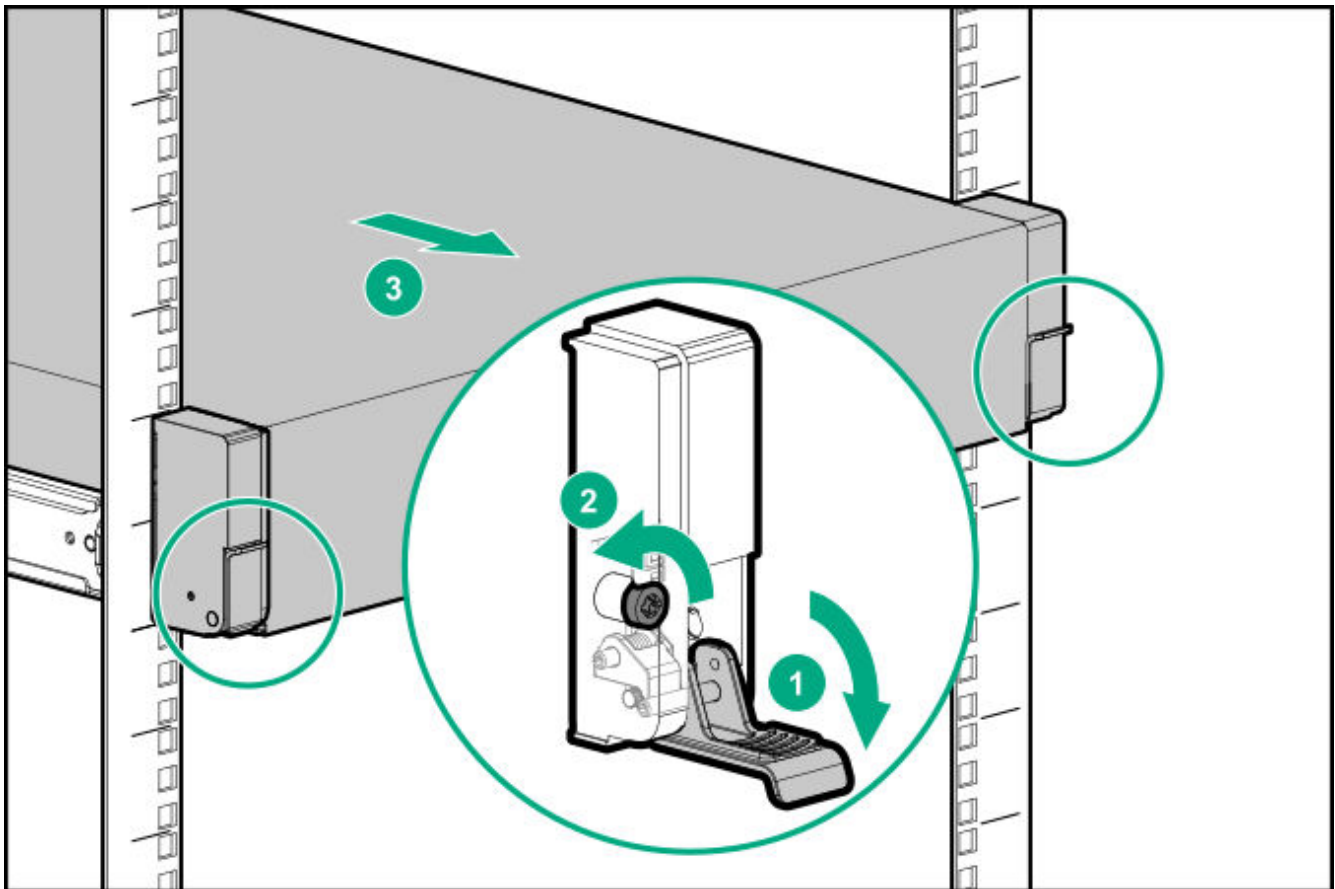


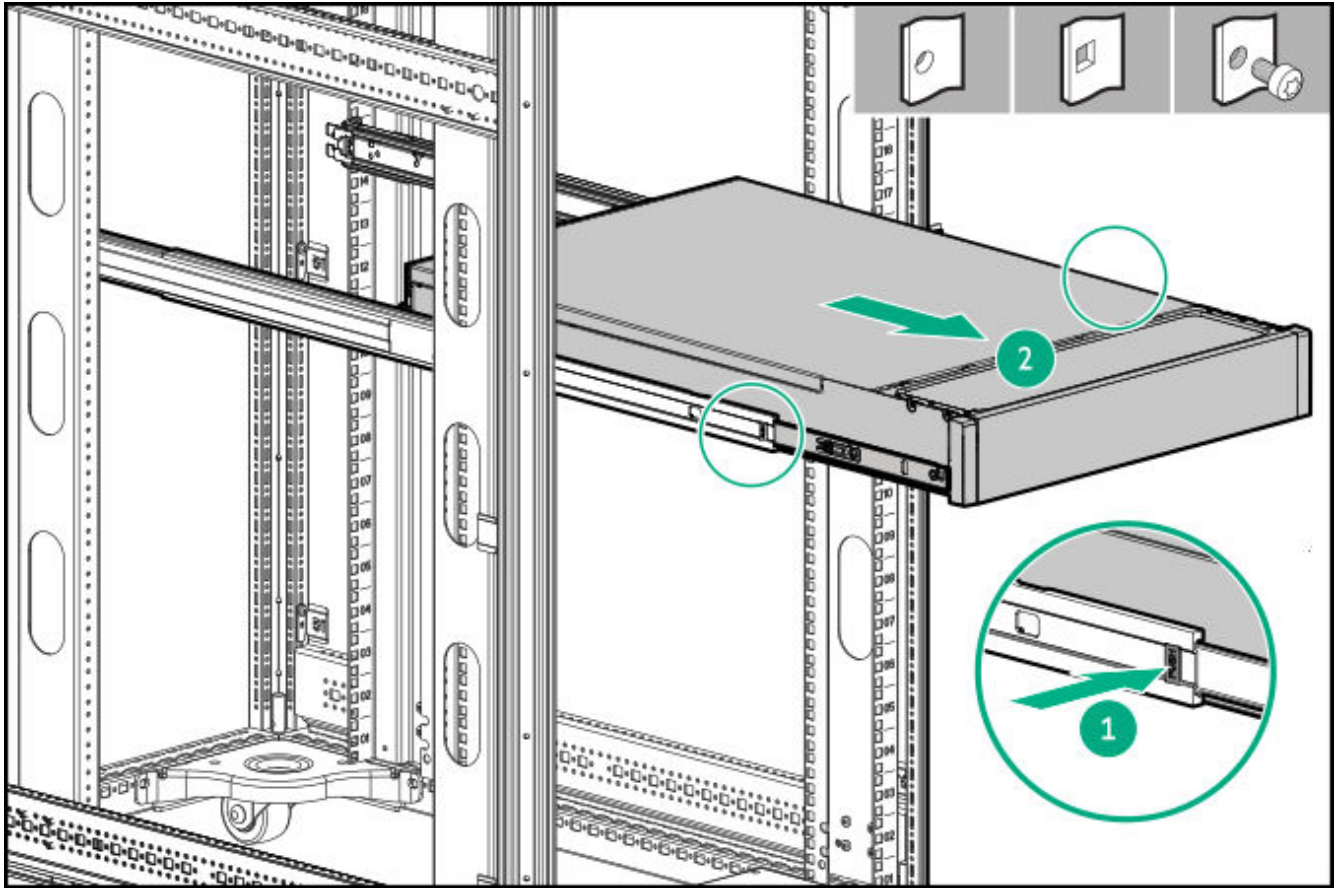
WARNING

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

Procedure

Fully extend the server from the rack.





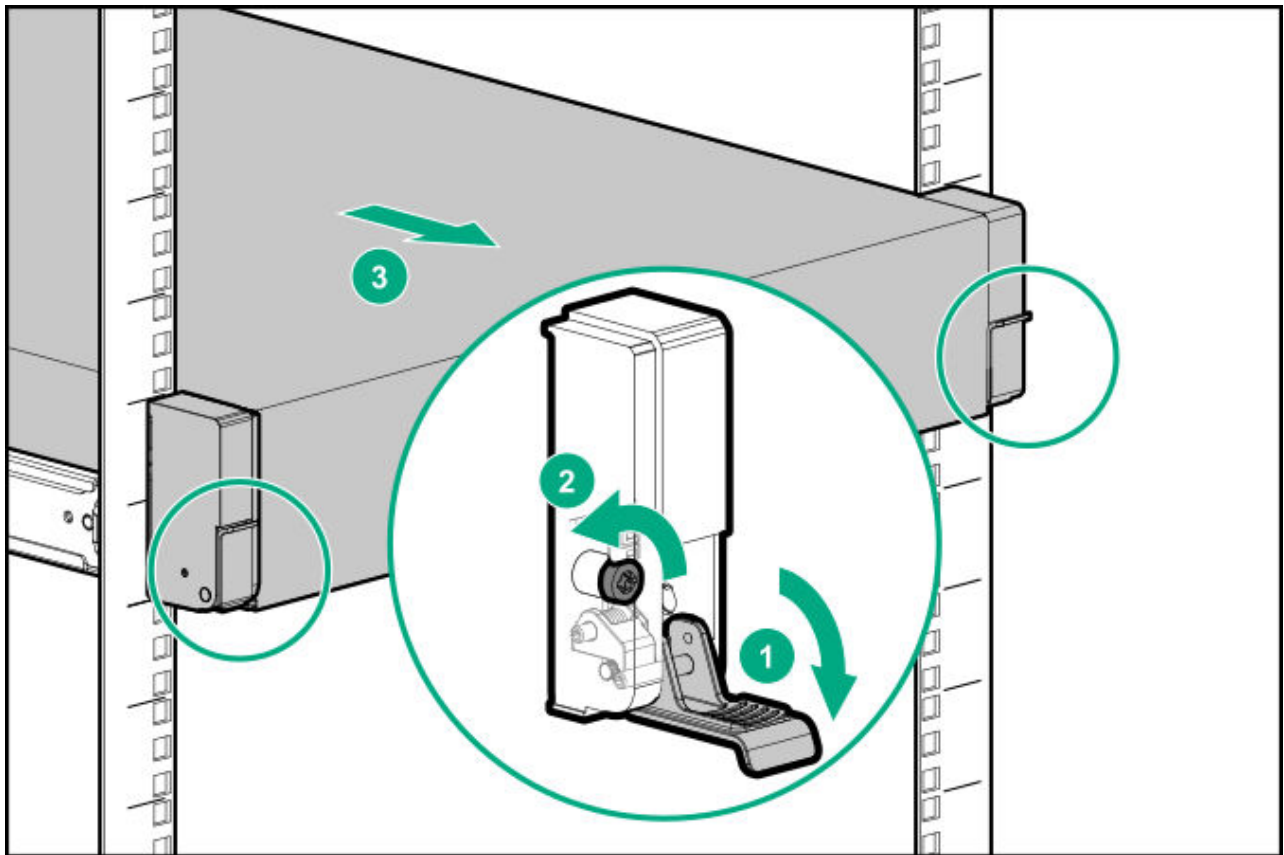
Remove the server from the rack

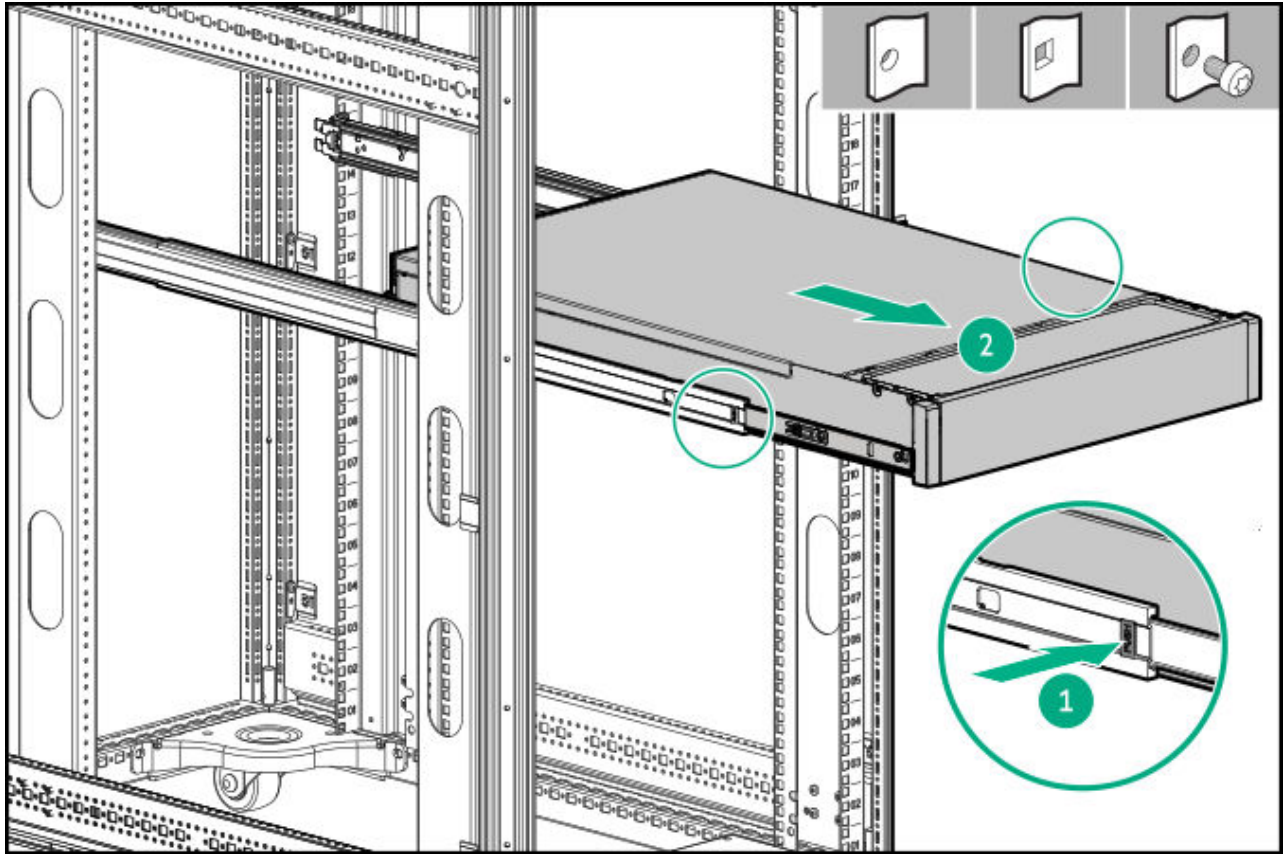
Prerequisites

- 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.

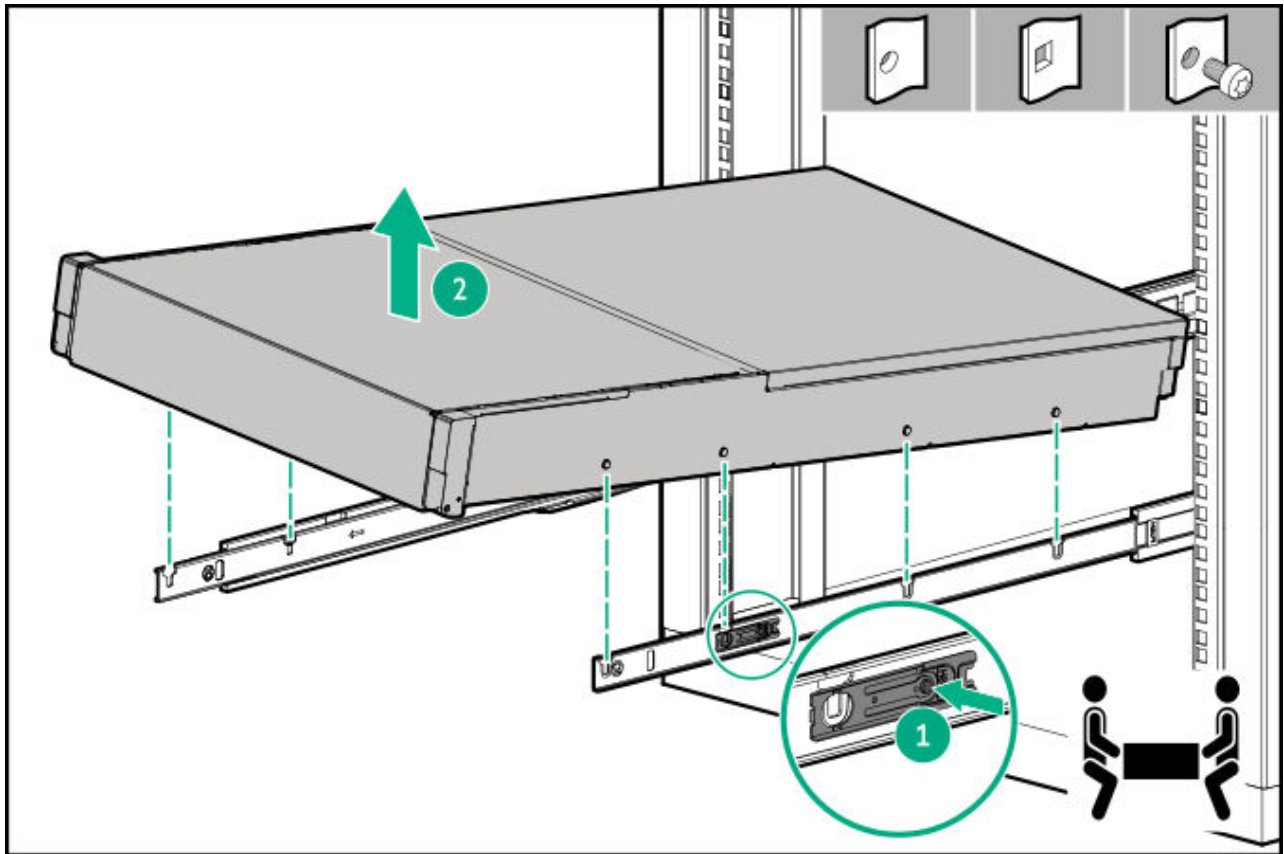
Procedure

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. Fully extend the server from the rack.





5. Unlock the spools from the locking tab and then remove the server.



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

Remove the access panel

Prerequisites

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

About this task



WARNING

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



CAUTION

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



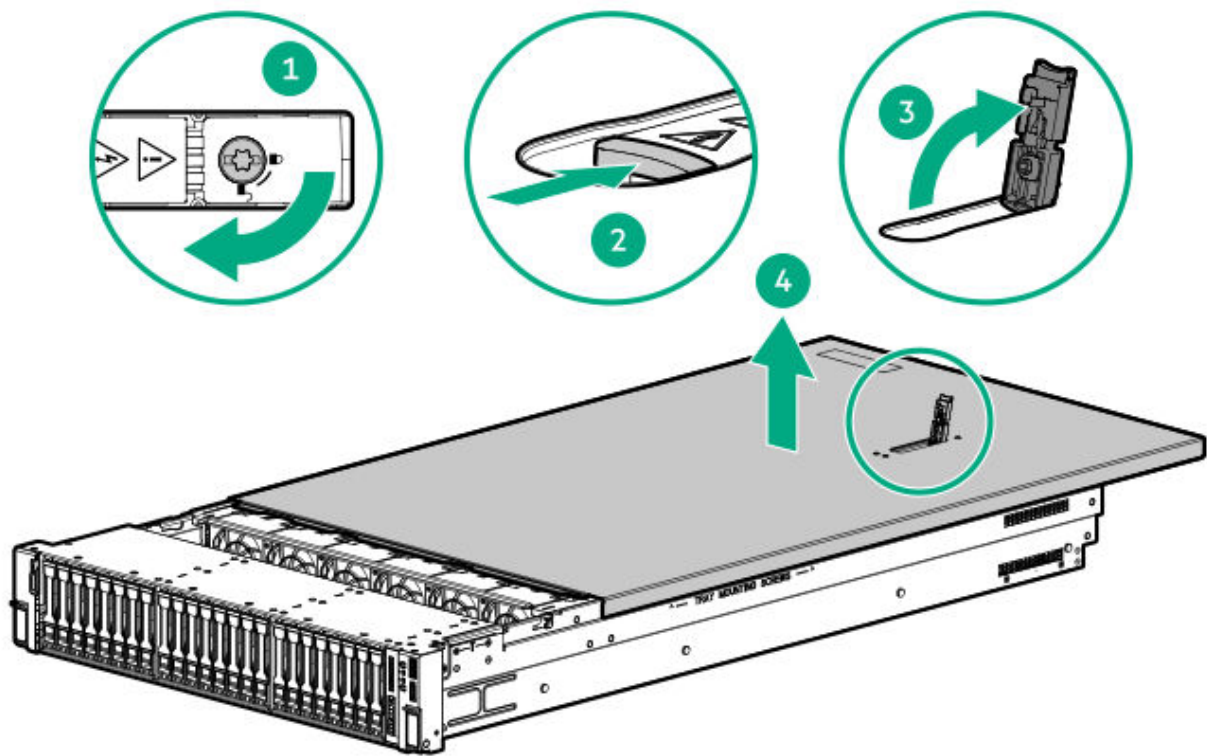
CAUTION

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

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

Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:
 - Extend the server from the rack.
 - Remove the server from the rack.
5. Remove the access panel:
 - a. If necessary, unlock the access panel latch.
 - b. To disengage the access panel from the chassis, press the release button and pull up the latch.
 - c. Lift the access panel.



Remove the air baffle

About this task

The air baffle must be installed in the dual-processor configuration.



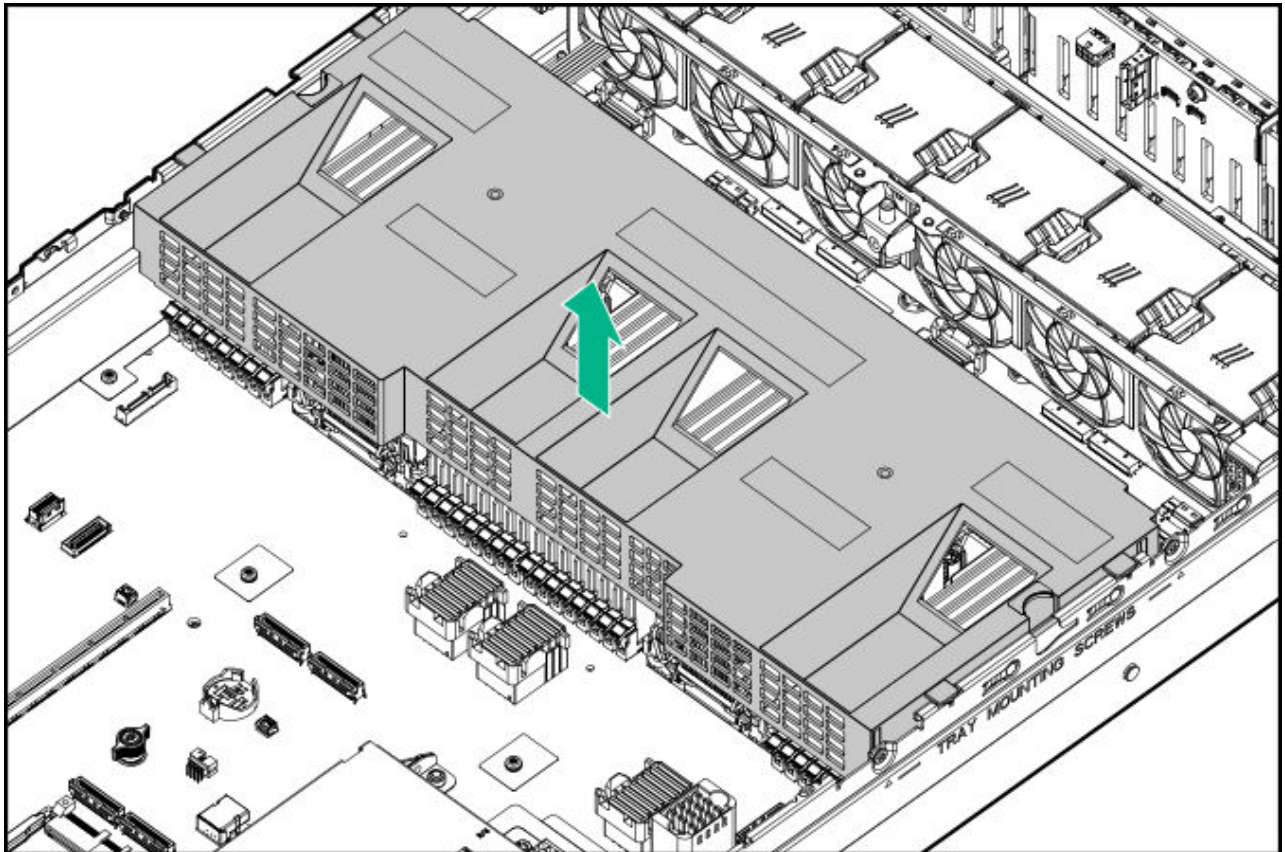
CAUTION

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

Procedure

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

3. Disconnect all peripheral cables from the server.
4. Do one of the following:
 - Extend the server from the rack.
 - Remove the server from the rack.
5. Remove the access panel.
6. Remove the air baffle.



Remove the processor mezzanine tray

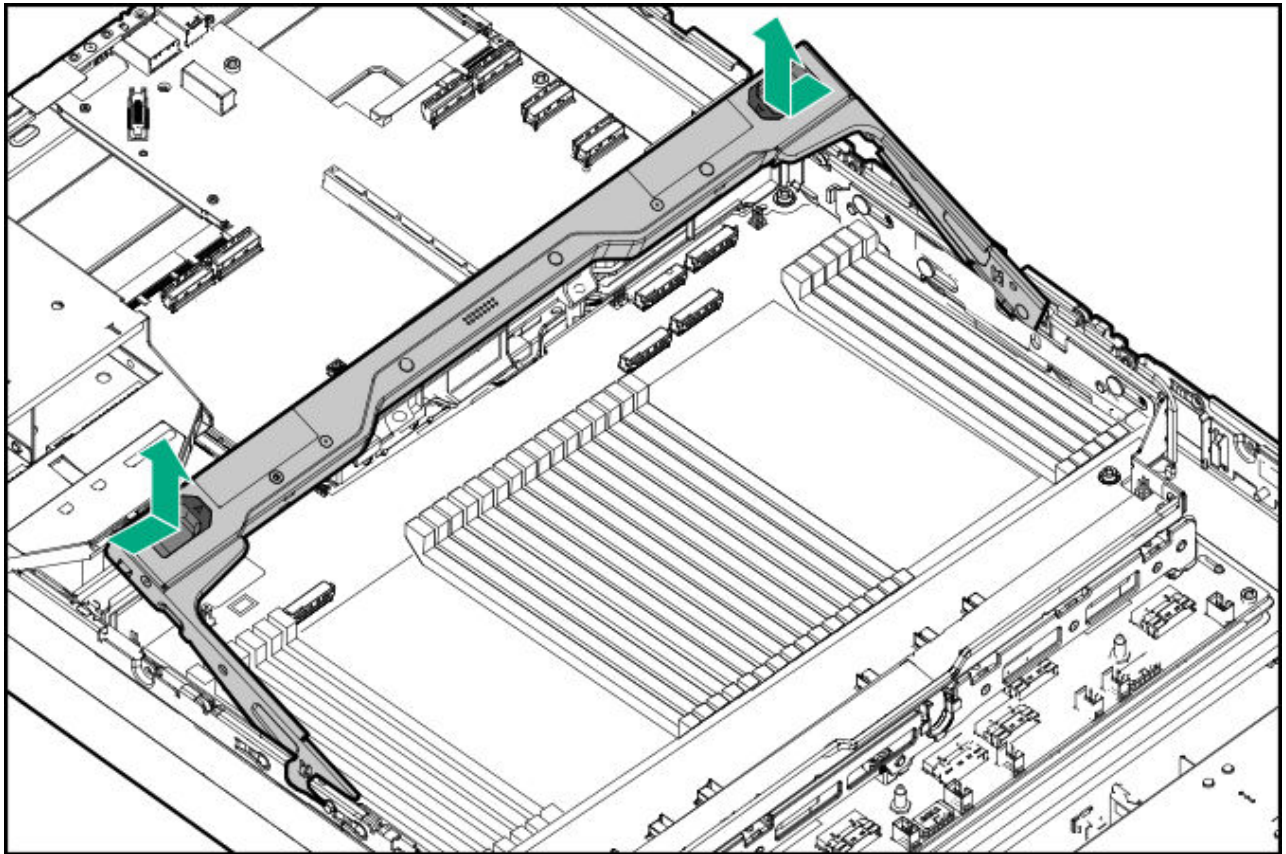
Prerequisites

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

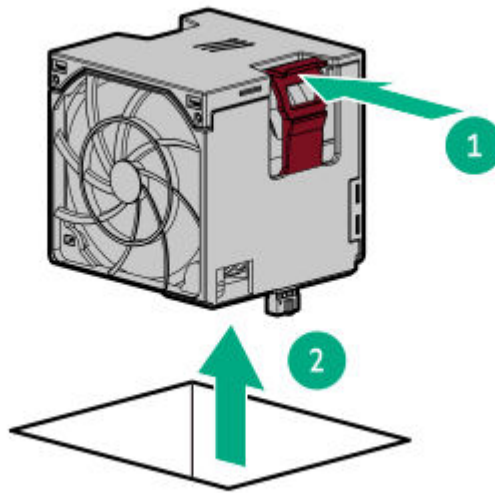
Procedure

1. Power down the server.

2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Press the buttons to rotate the processor mezzanine tray handle to the fully open position.

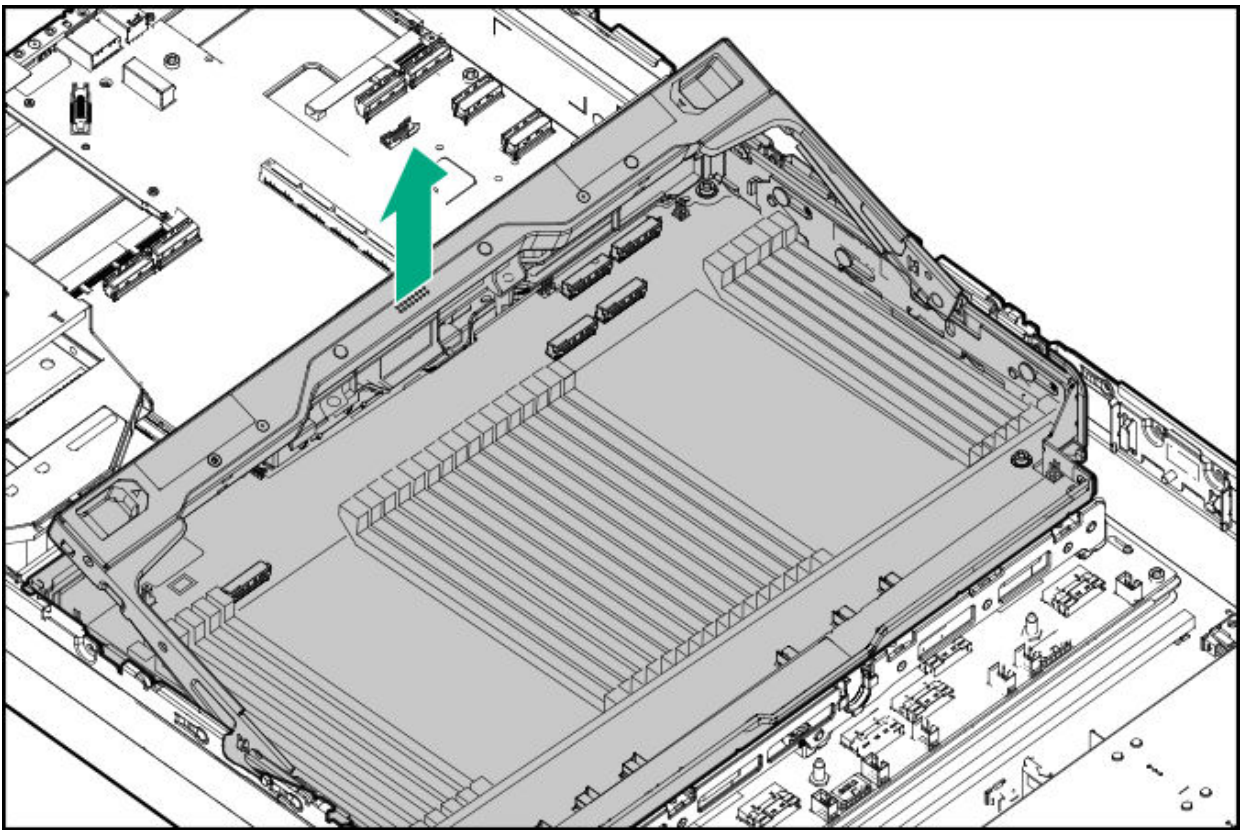


8. Disconnect all cables from the processor mezzanine board.
9. Remove all fans.



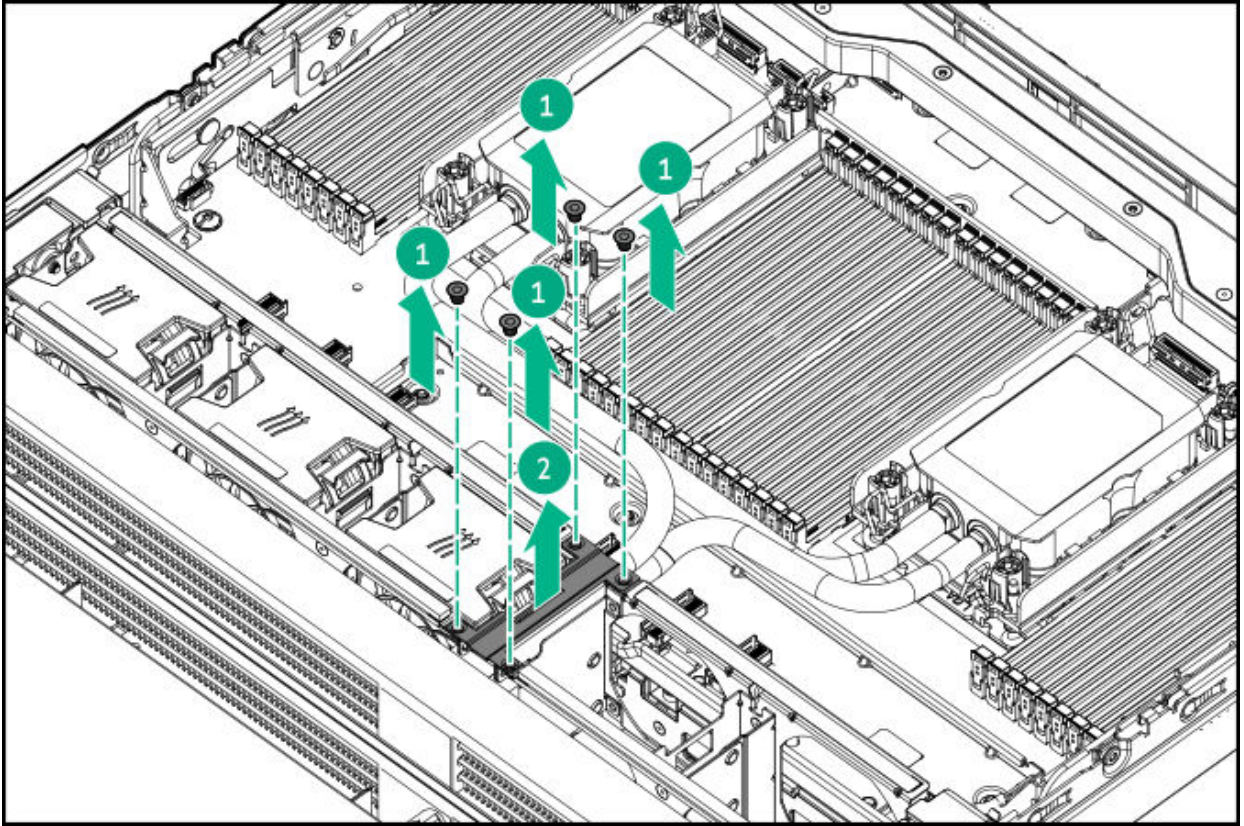
.0. If removing the air cooling processor mezzanine tray:

- a. Remove the fan cage.
- b. Remove the processor mezzanine tray from the server.

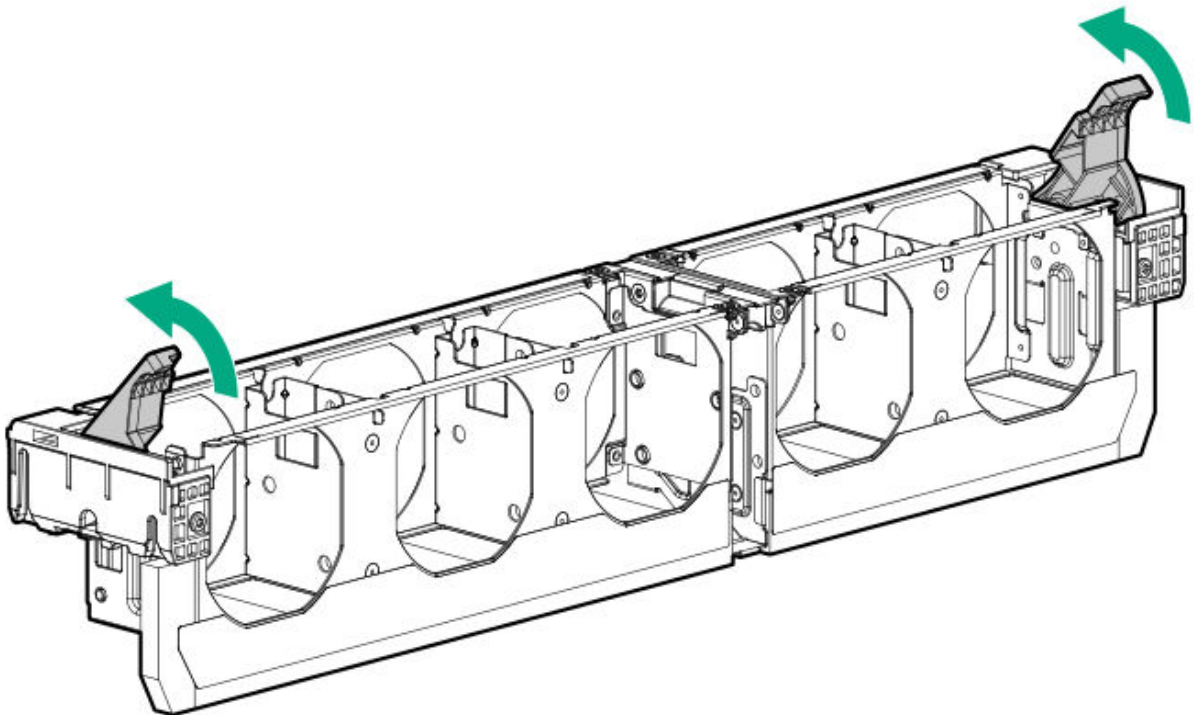


.1. If removing the liquid cooling processor mezzanine tray:

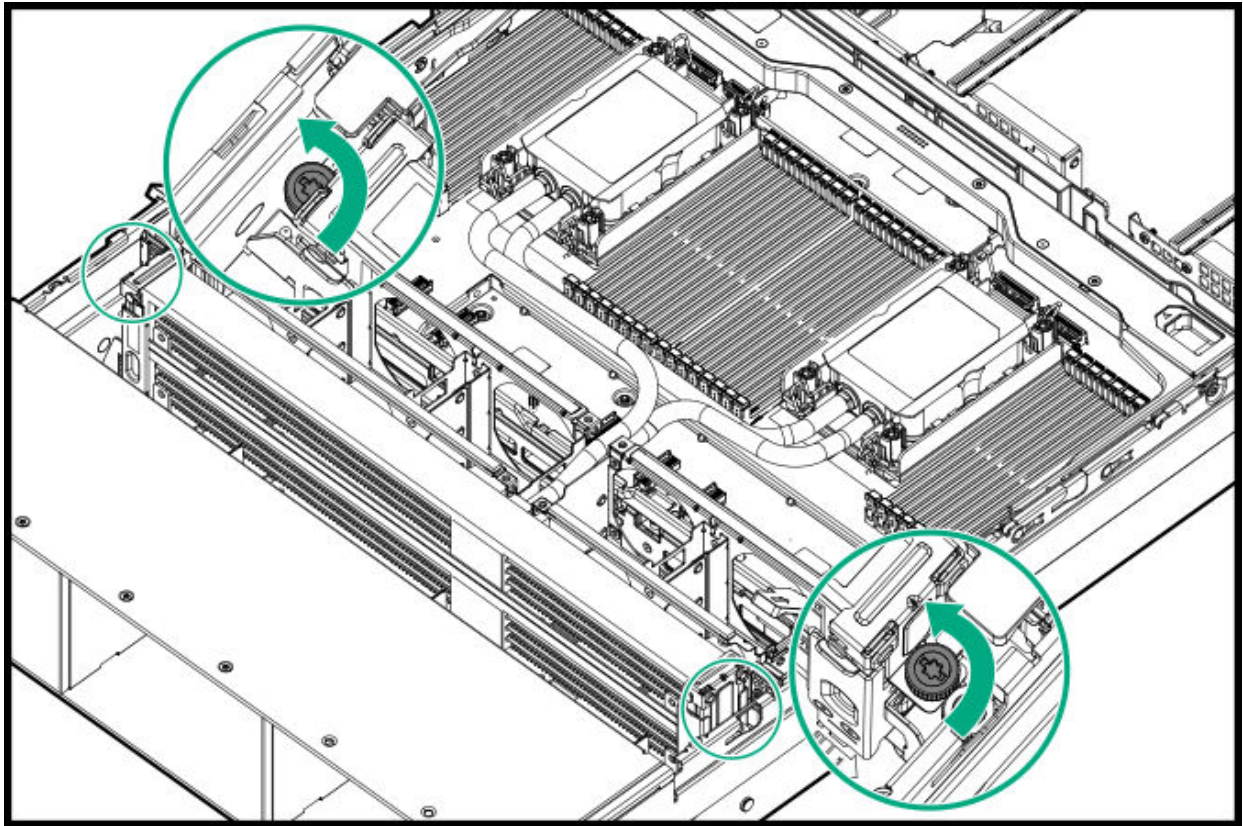
- a. Remove the fan cage groove cover.



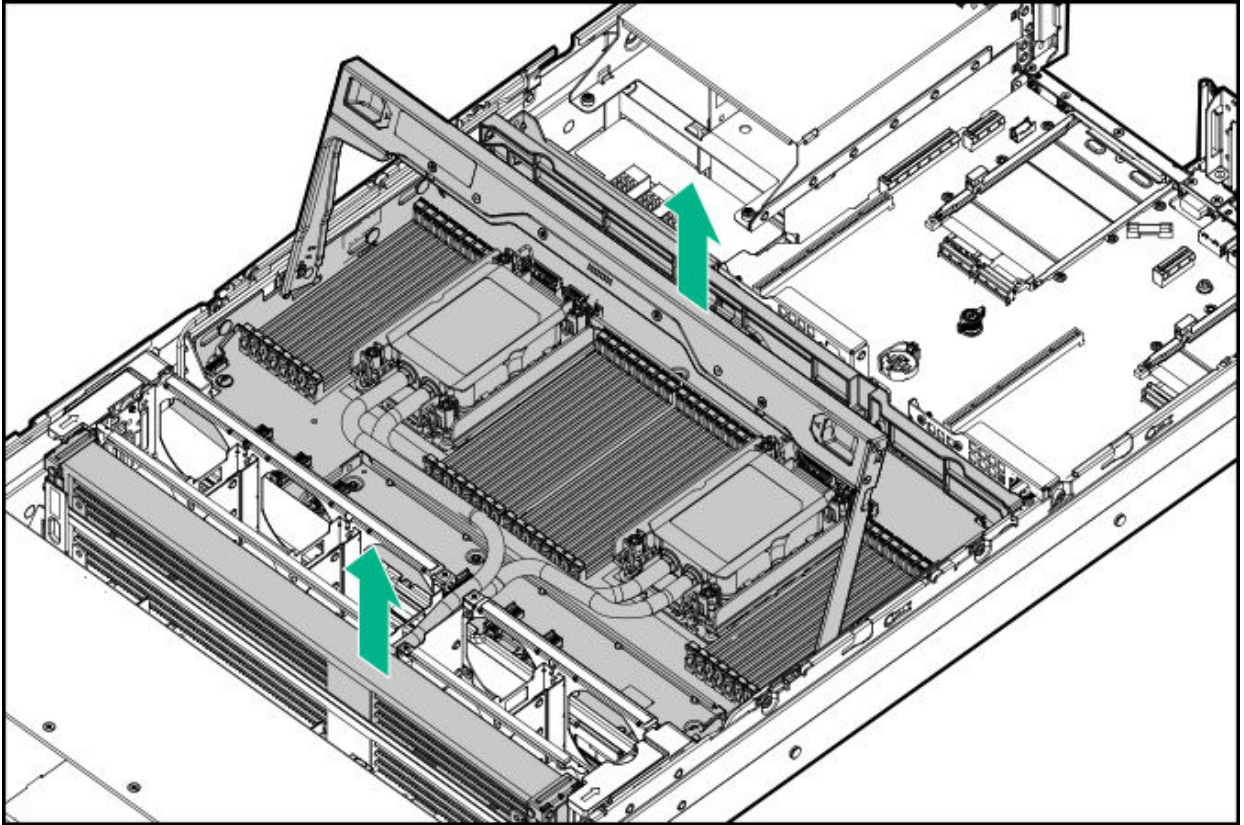
- b. Lift the fan cage latches to provide more room to access the radiator bracket thumbscrews.



- c. Loosen the radiator bracket screws.



- d. Hold the tray handle and the top radiator with the brackets simultaneously to remove the top processor mezzanine tray from the server.



Remove the fan cage

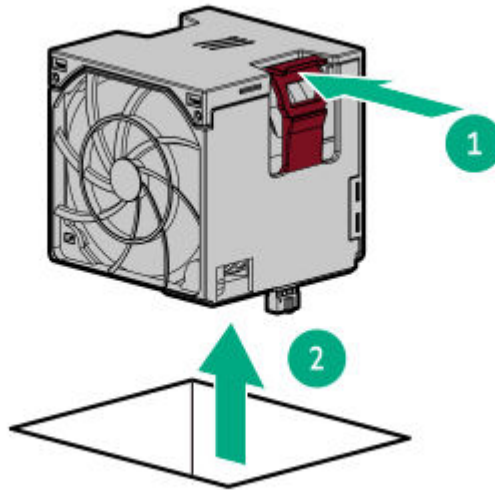
Prerequisites

When the server is in the liquid cooling configuration, Hewlett Packard Enterprise recommends having at least two people to operate this procedure: One person to remove and hold the top radiator with its brackets to keep the coolant tubes out of the fan cage groove, and the other one to remove the fan cage from the server.

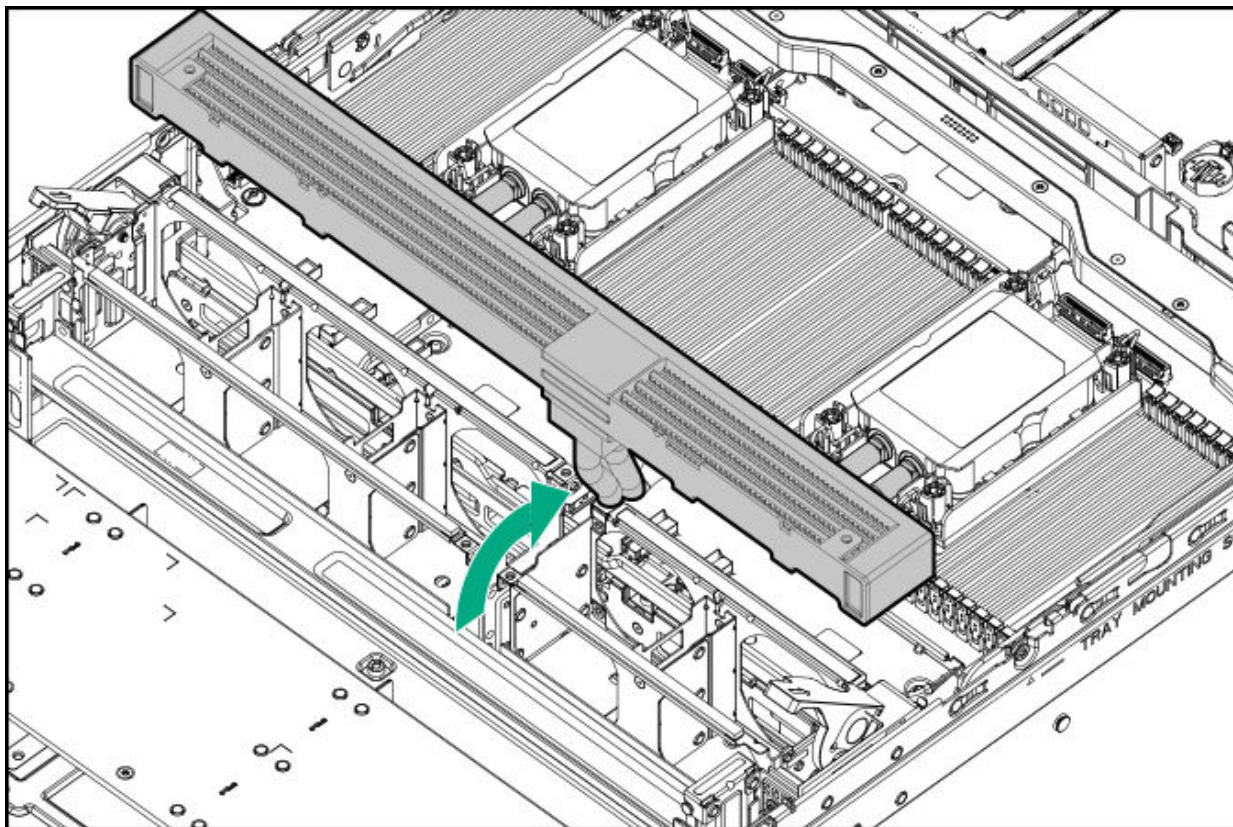
Procedure

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

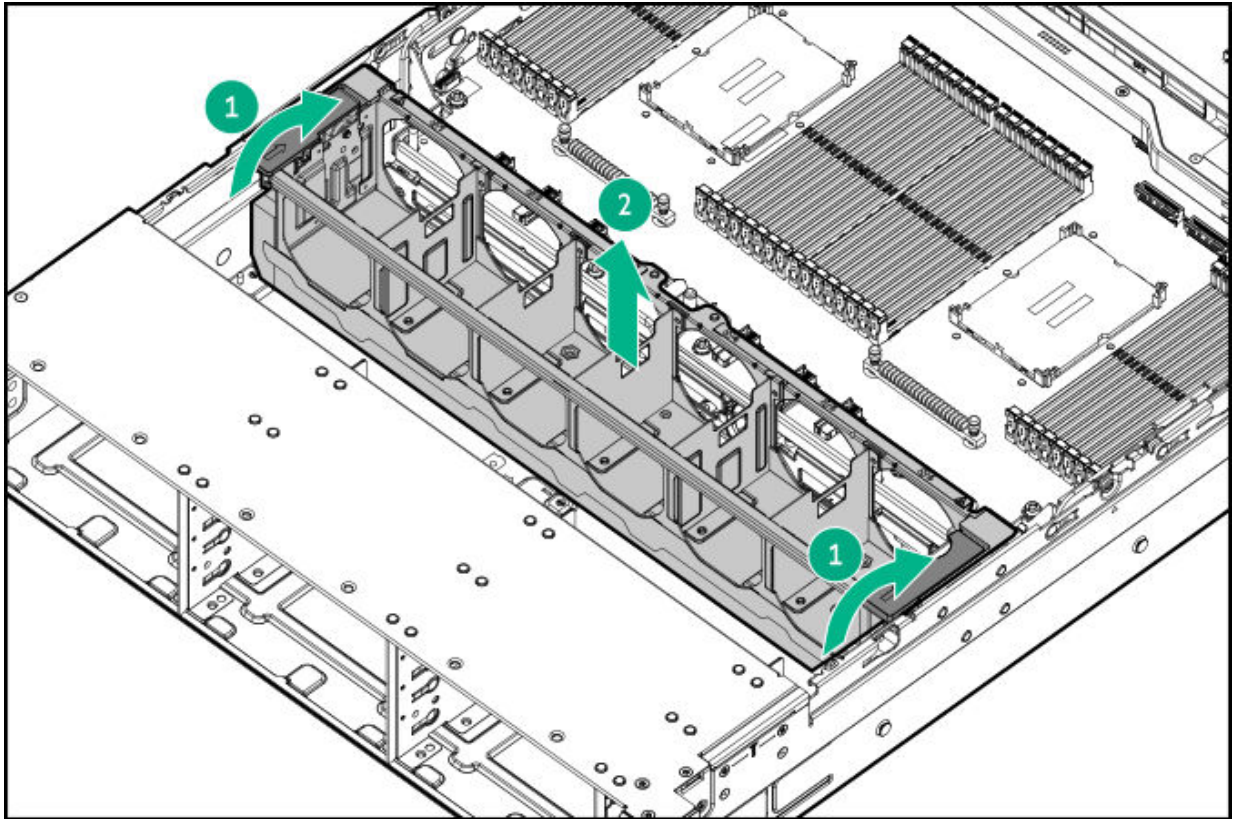
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove all fans.



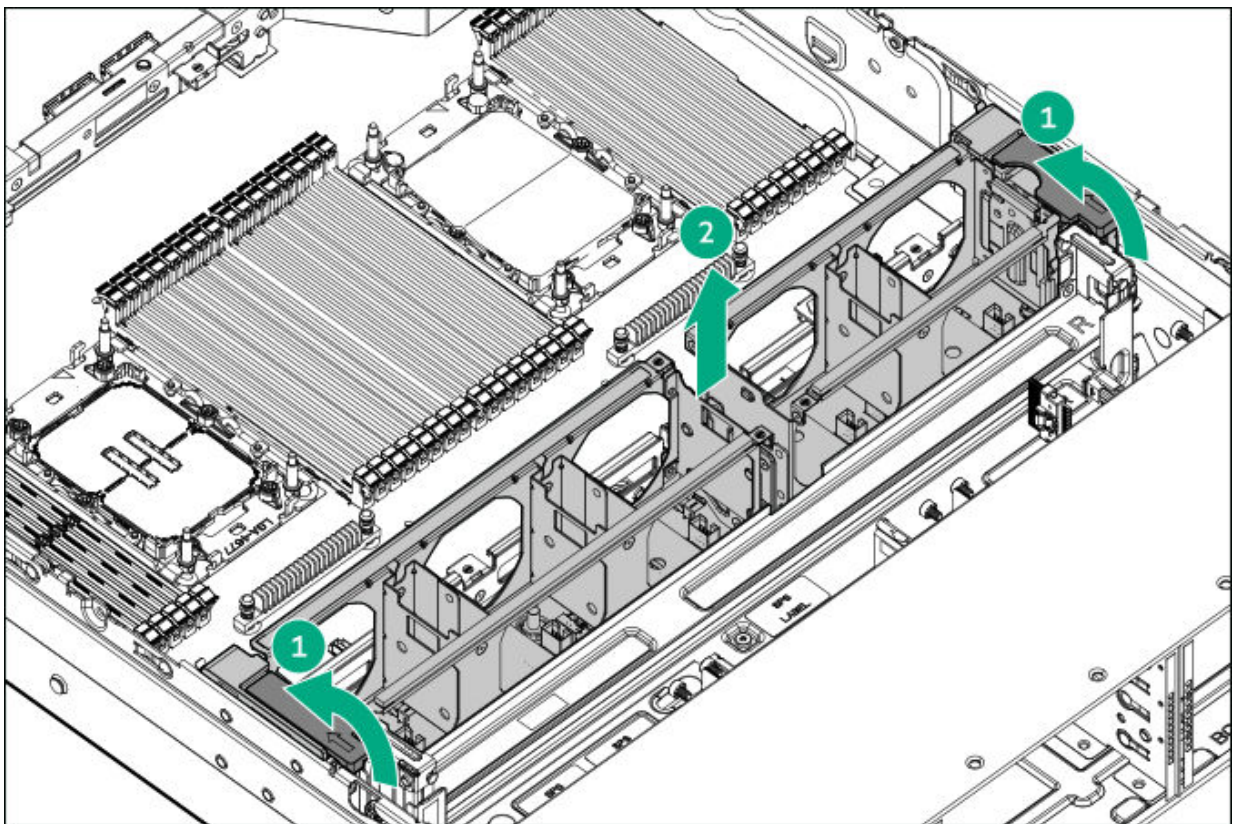
8. If the server is in the liquid cooling configuration, do the following:
 - a. Remove the processor mezzanine tray.
 - b. Gently remove and hold the bottom radiator to keep the coolant tubes out of the fan cage groove.



9. Remove the fan cage:
 - a. Open the fan cage latches.
 - b. Remove the fan cage from the server.
 - Air cooling fan cage



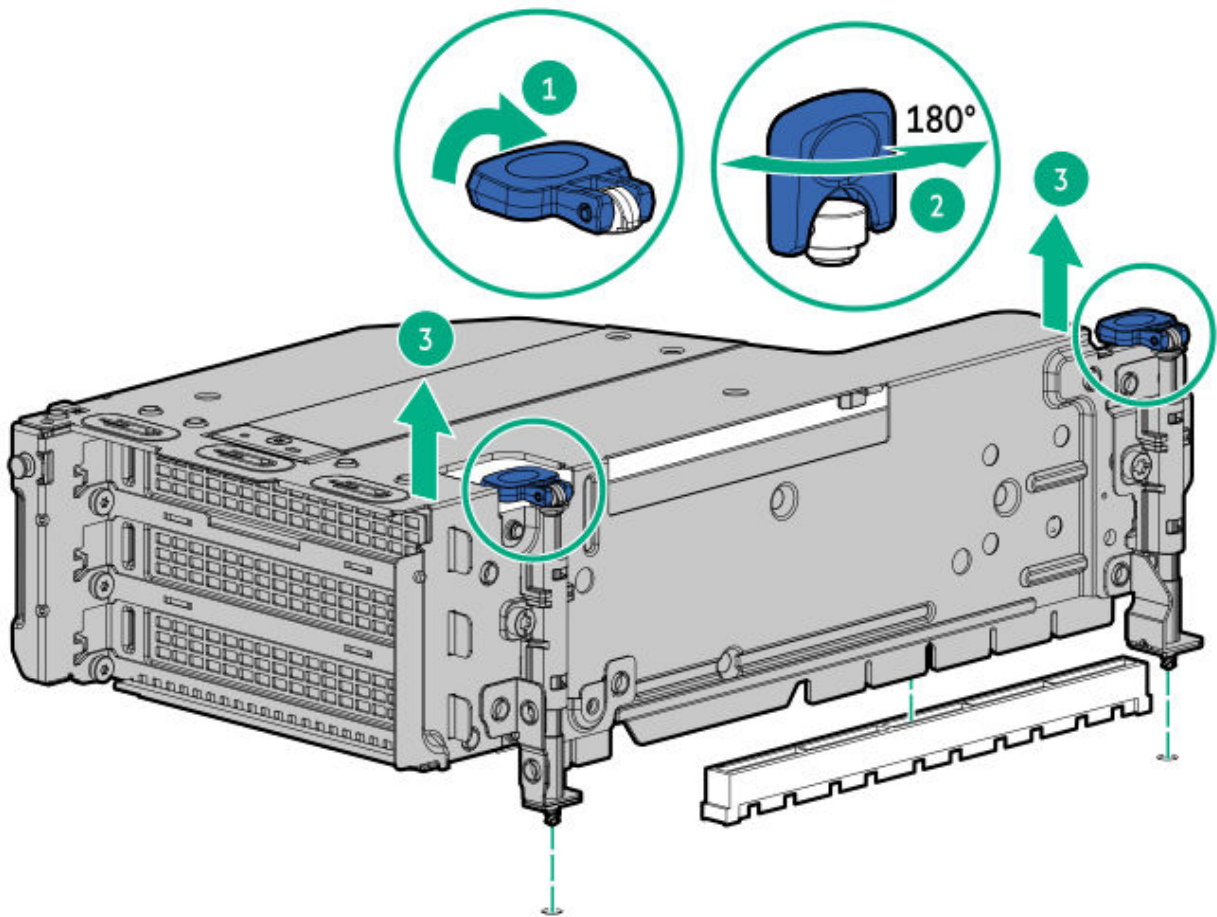
- Liquid cooling fan cage



Remove the riser 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. If an expansion card with internal cables is installed on the riser, disconnect all cables from the expansion card.
7. Remove the riser cage.
 - a. Release the half-turn spring latch.
 - b. Lift the riser cage off the system board.



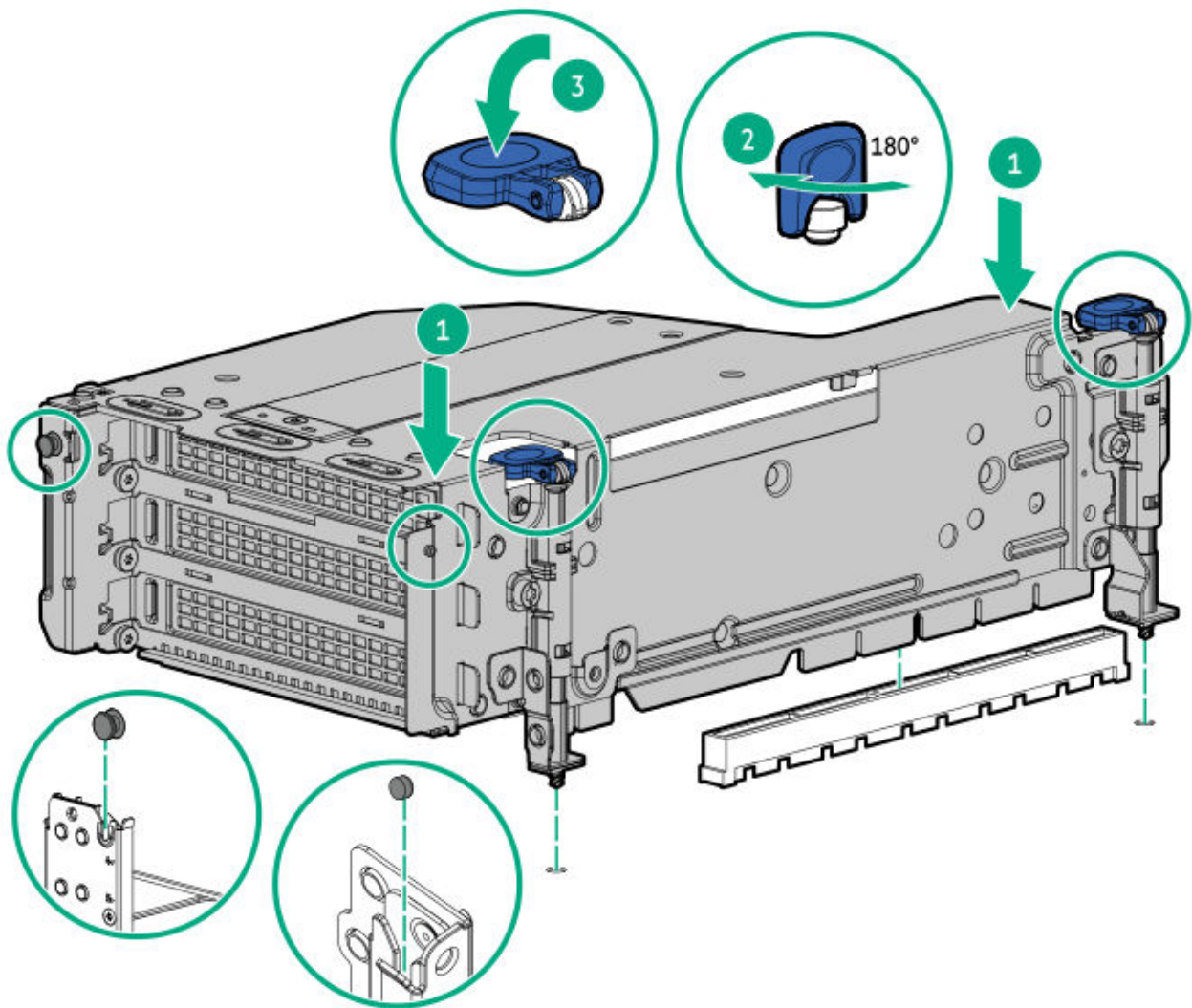
Installing the riser cage

Procedure

1. Install the riser cage.
 - a. Carefully press the riser down on its system board connector.

Make sure that:

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



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

Install the fan cage

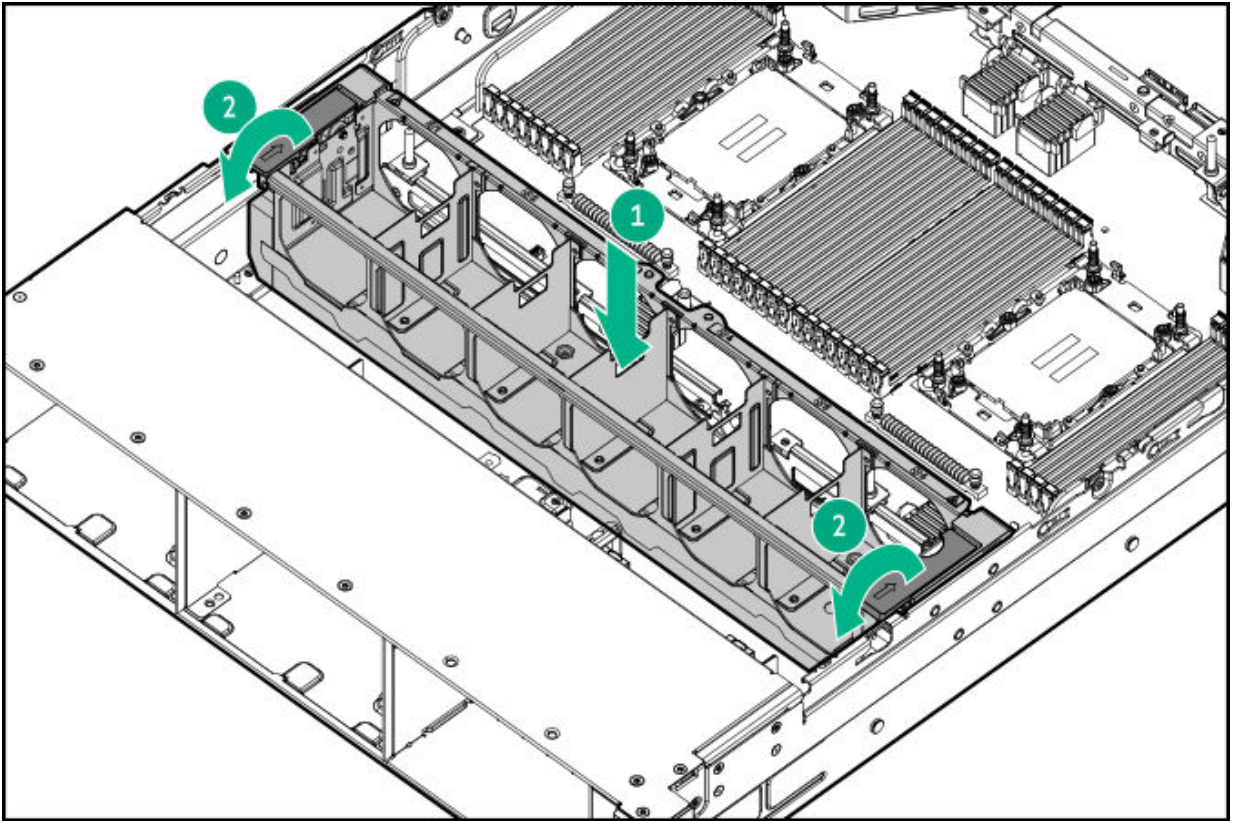
Prerequisites

When the server is in the liquid cooling configuration, Hewlett Packard Enterprise recommends having at least two people to operate this procedure: One person to install the fan cage in the server, and the other one to hold and install the top radiator with its brackets to place the coolant tubes into the fan cage groove.

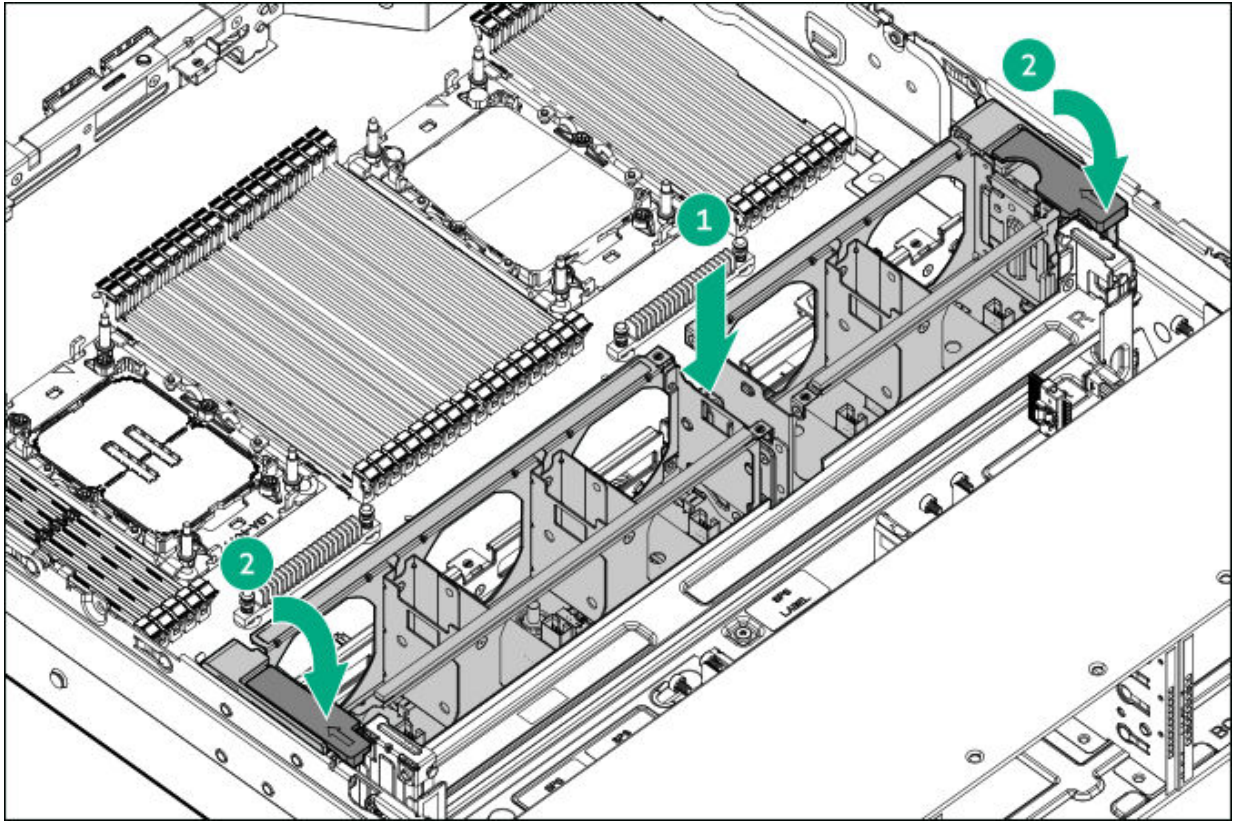
Procedure

1. Install the fan cage.

- Air cooling fan cage

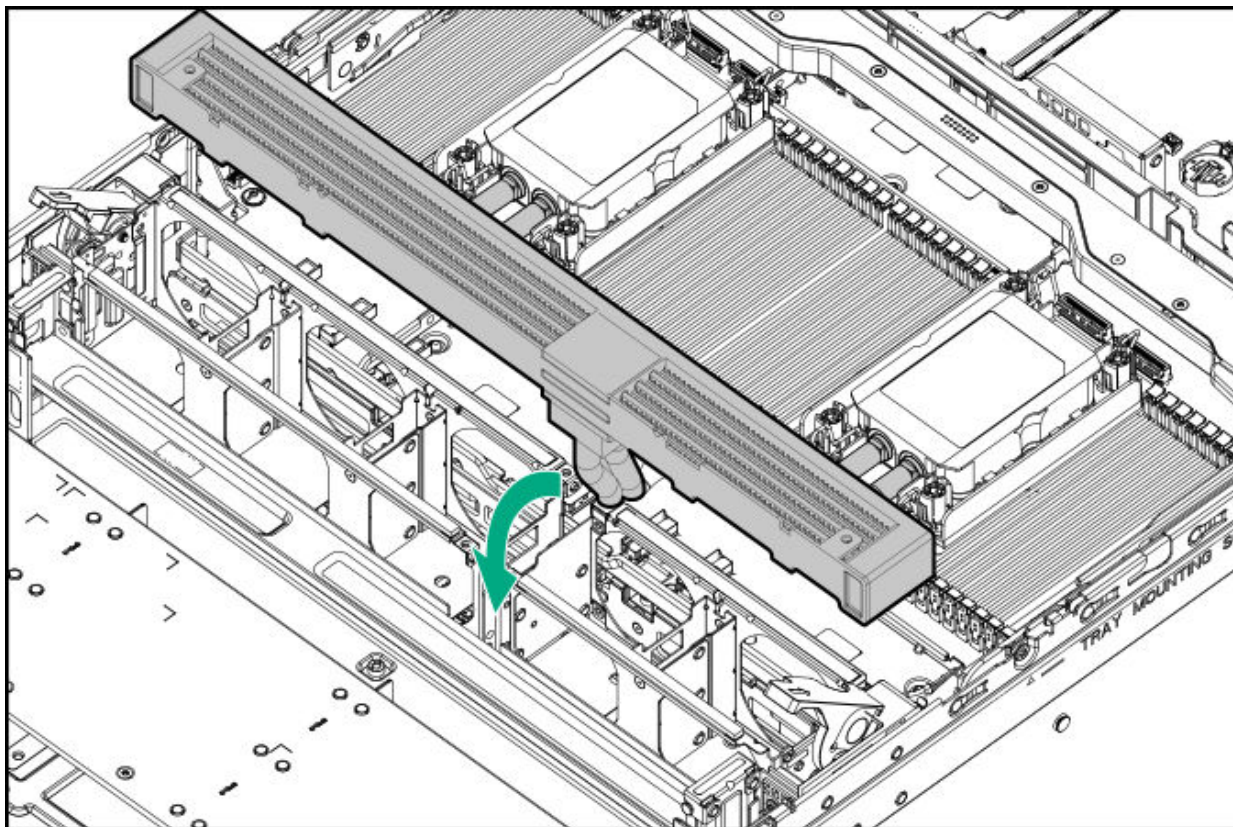


- Liquid cooling fan cage



2. If removed, do the following:

- a. Gently hold and install the bottom radiator to position the coolant tubes into the fan cage groove.



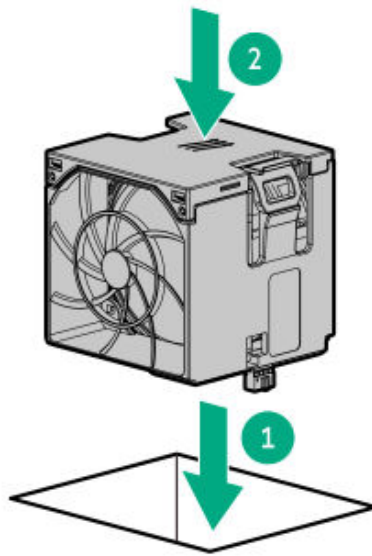
b. Install the processor mezzanine tray.

3. Install all fans:

The installation procedures for air cooling and liquid cooling fans are the same. This procedure shows the installation step for the air cooling fan.

a. Lower the fan into the bay.

b. Press down on the fan to make sure that it is seated firmly in the bay. A click sound indicates that the fan is properly engaged.



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

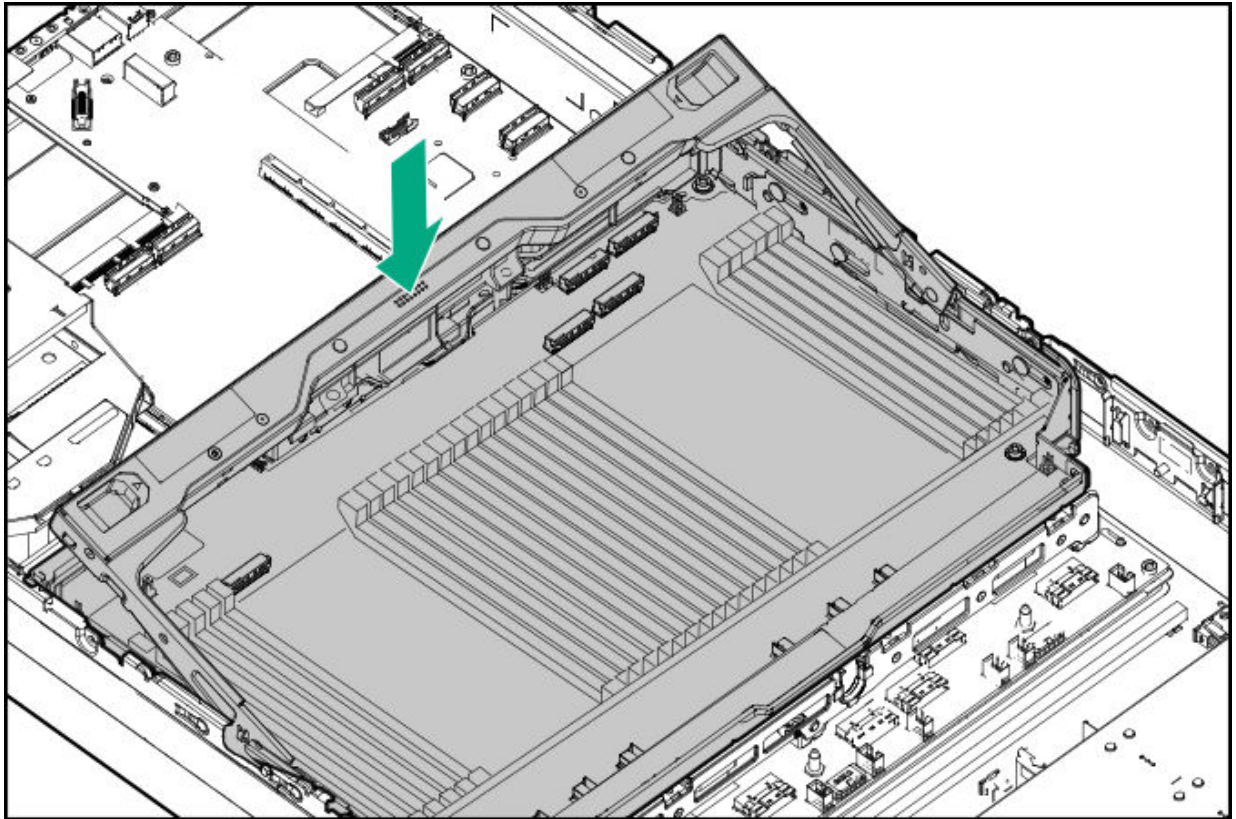
Install the processor mezzanine tray

Prerequisites

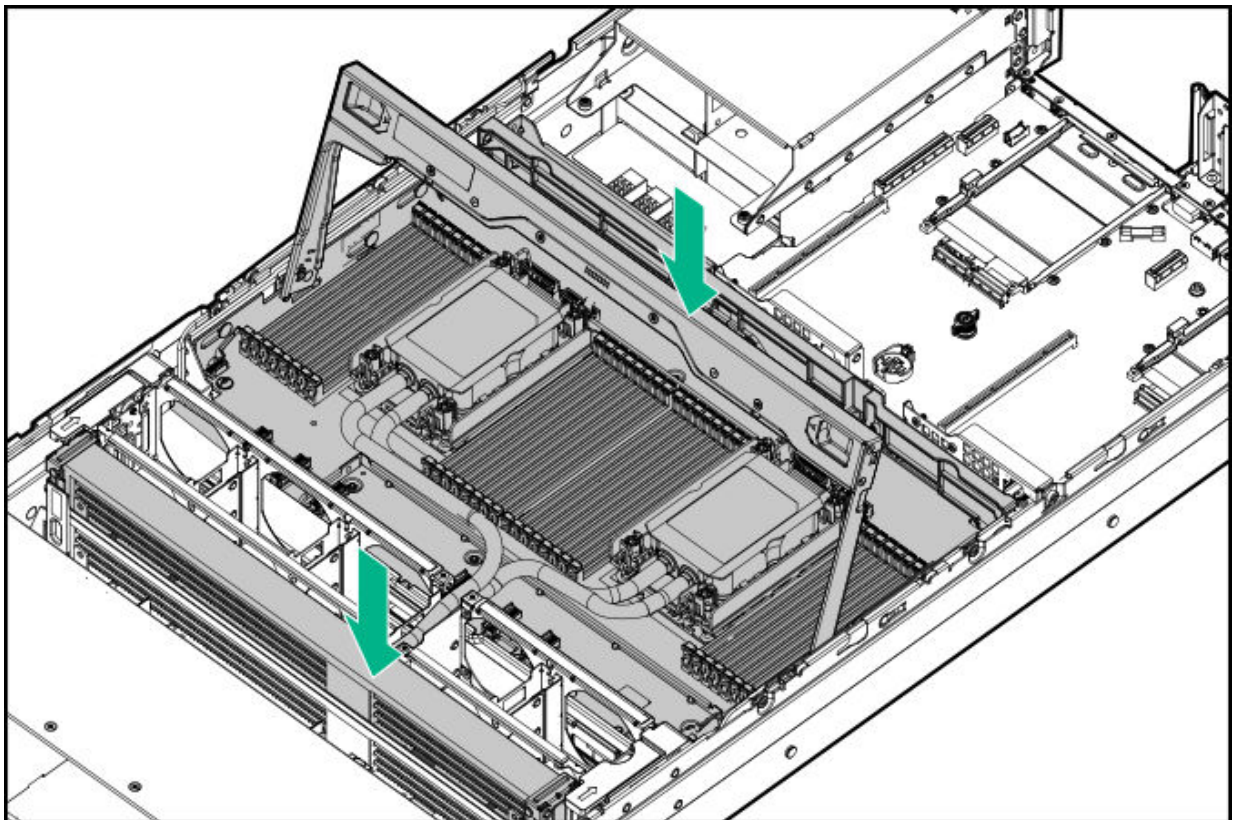
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

1. Do one of the following:
 - If installing the air cooling processor mezzanine tray, place the tray in the server.

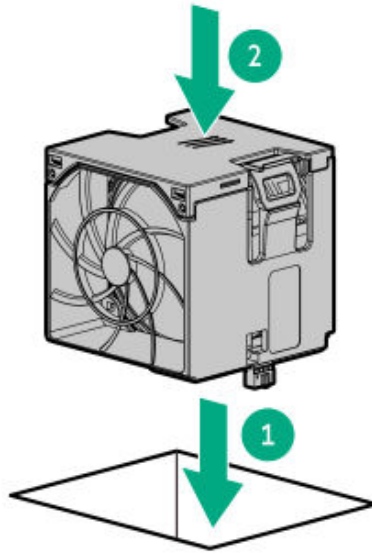


- If installing the liquid cooling processor mezzanine tray, hold the tray handle and the top radiator simultaneously to install the tray in the server.

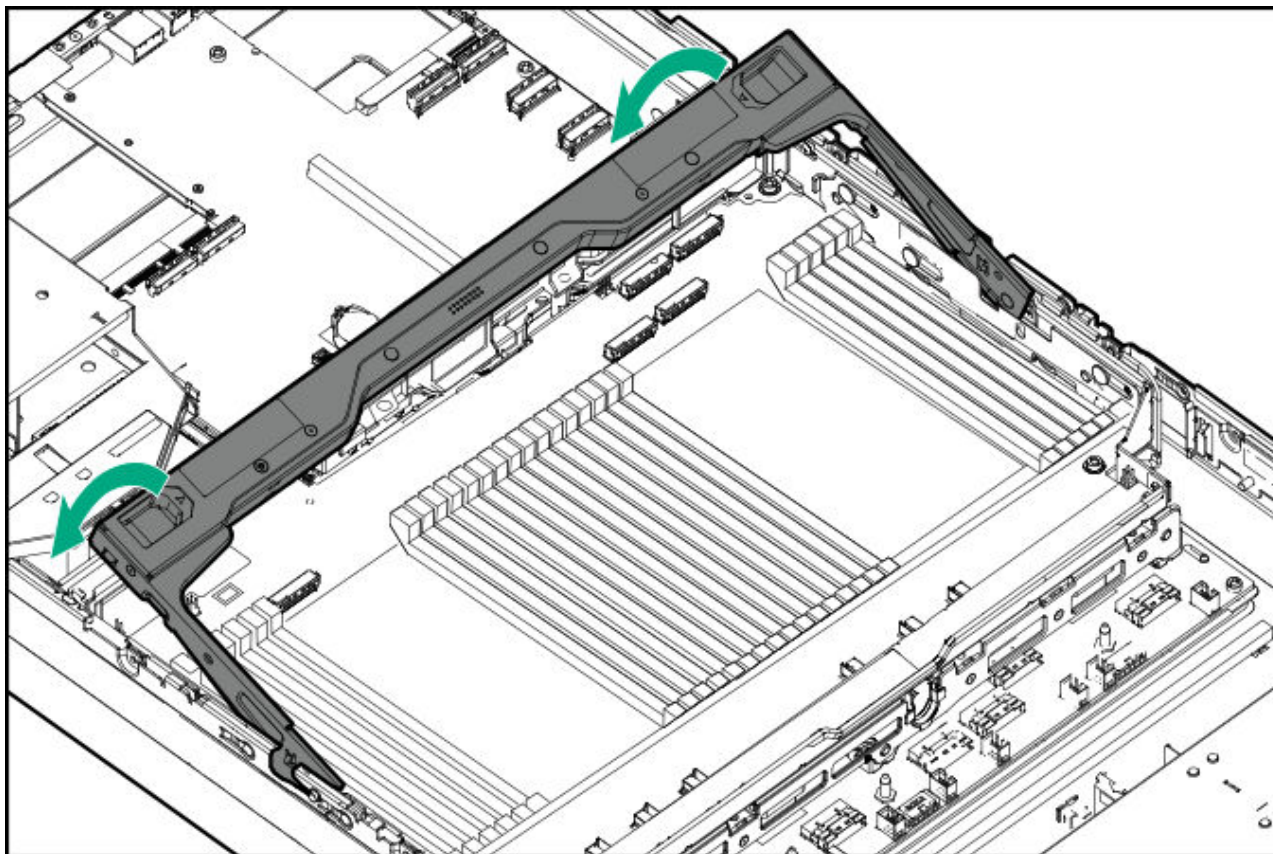


2. If installing the air cooling processor mezzanine tray, do the following:

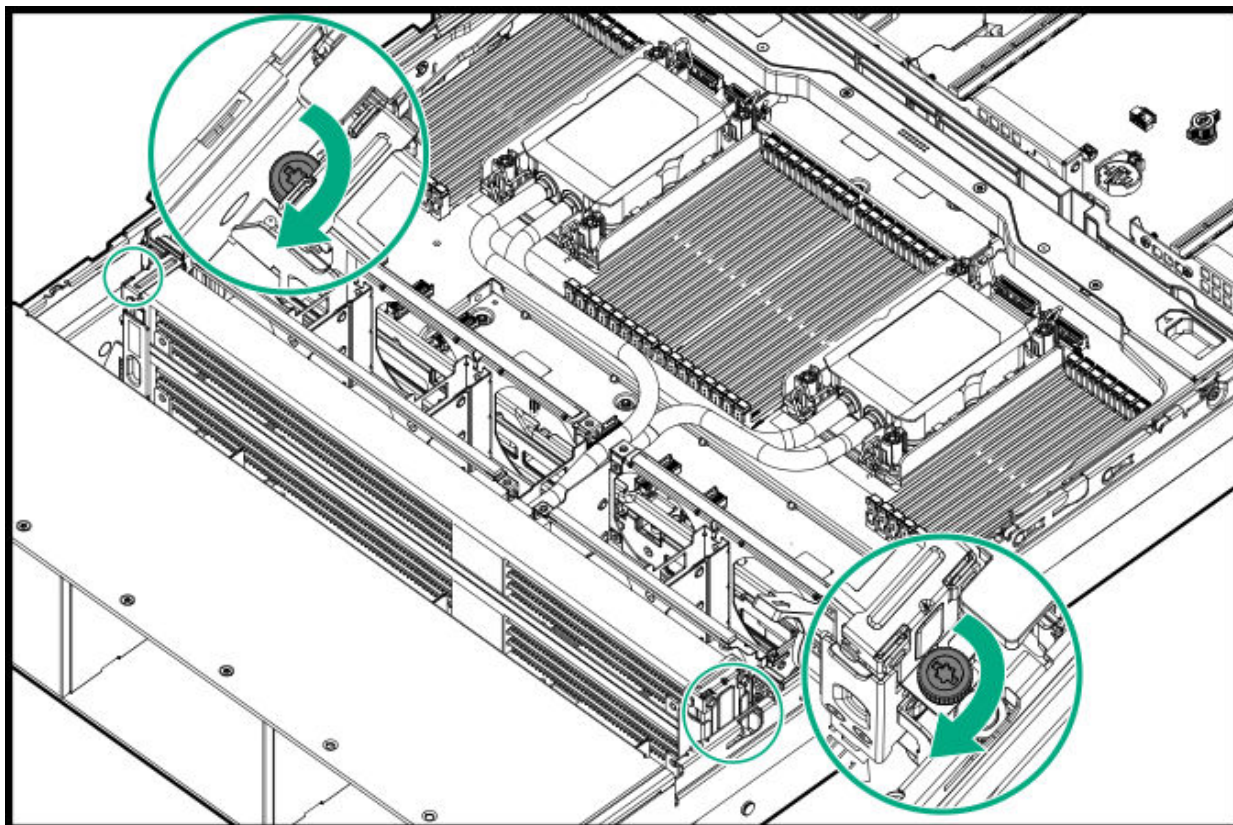
- a. Install the fan cage.
- b. Install all fans.



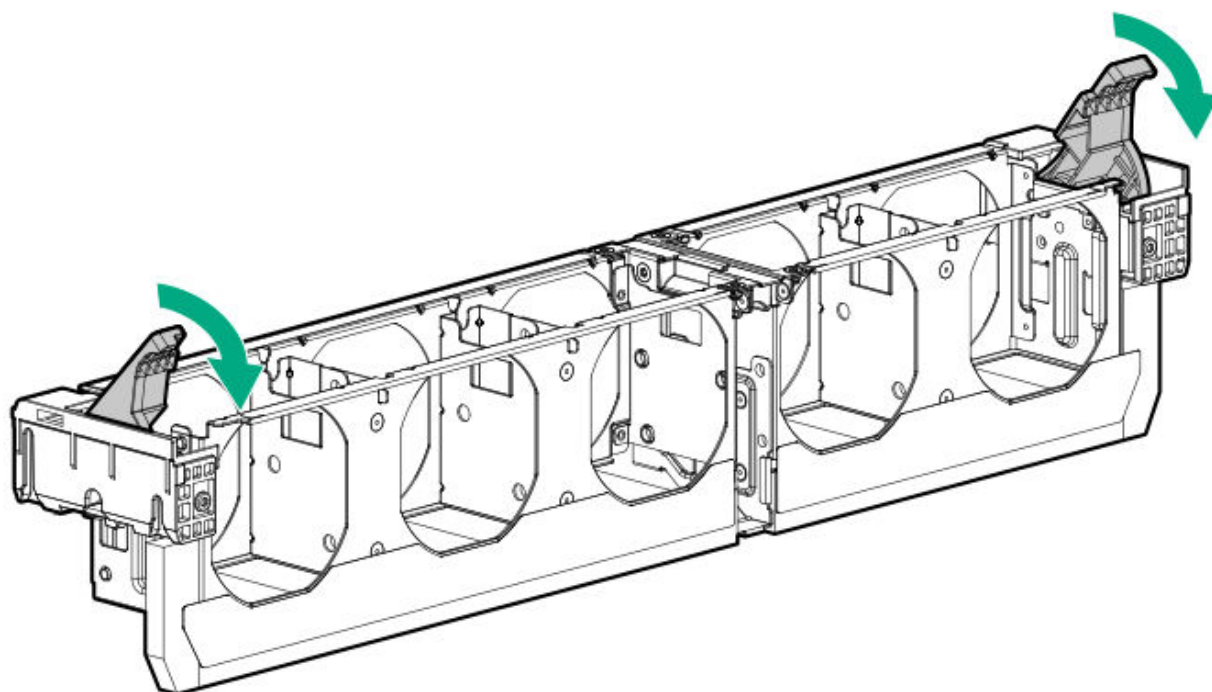
3. Connect all cables to the processor mezzanine board.
4. Press down on the processor mezzanine tray handle until it locks into place.



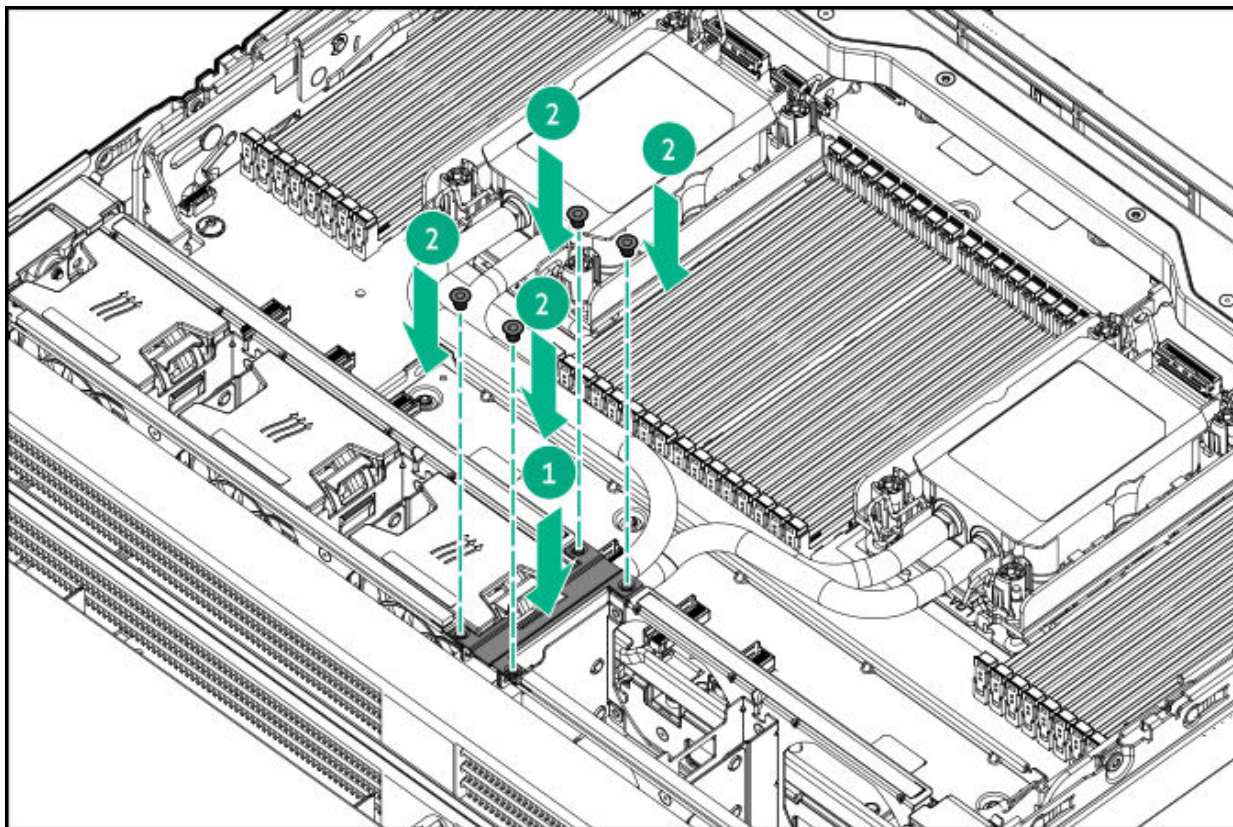
5. If installing the liquid cooling processor mezzanine tray:
 - a. Install the radiator bracket screws.



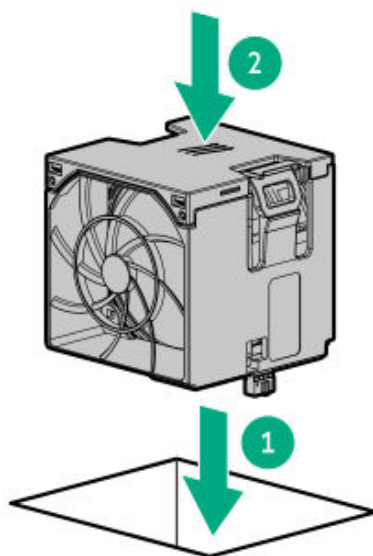
b. Close the fan cage latches.



c. Install the fan cage groove cover.



d. Install all fans.



6. Install the access panel.

7. Perform the post-installation or maintenance steps required by the procedure that necessitates the removal of the processor mezzanine tray.

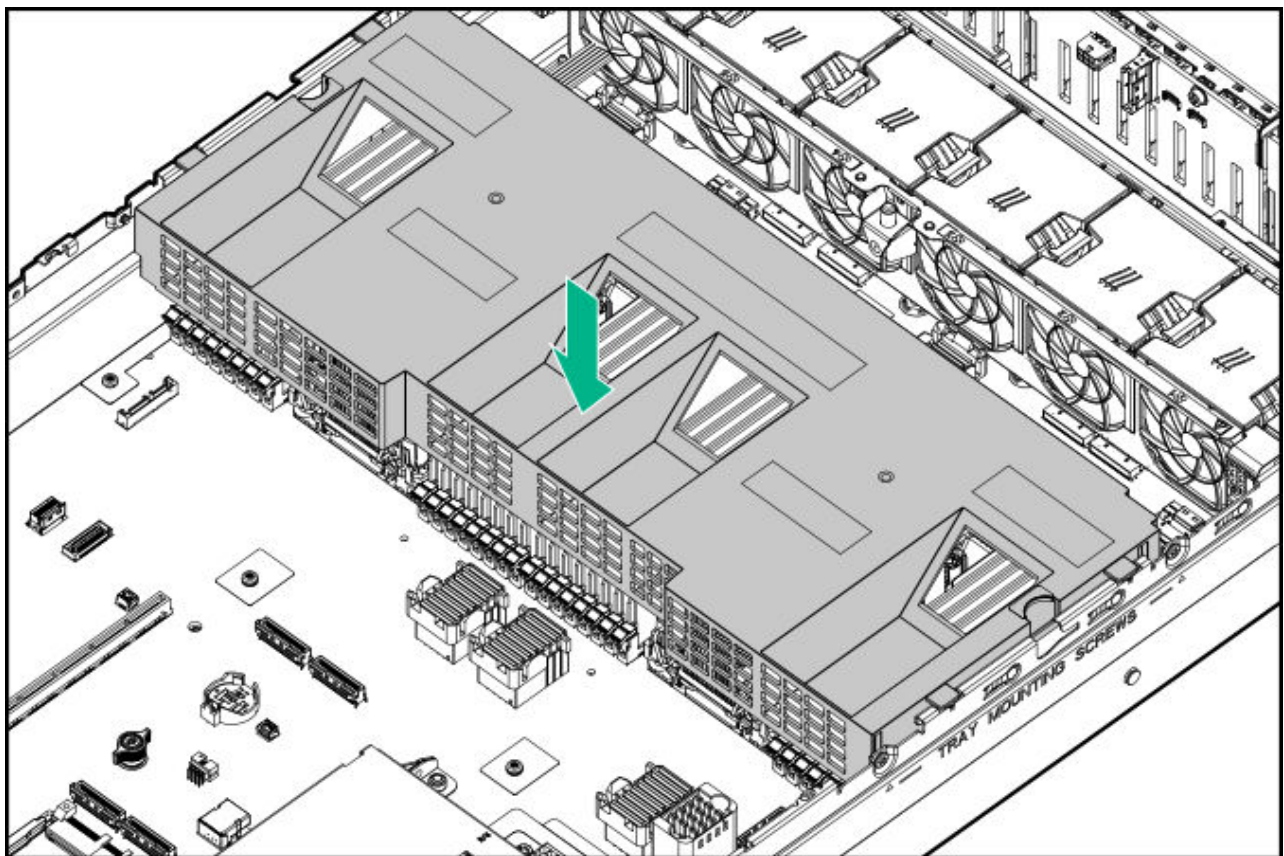
Install the air baffle

About this task

The air baffle must be installed in the dual-processor configuration.

Procedure

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



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

Install the access panel

Prerequisites

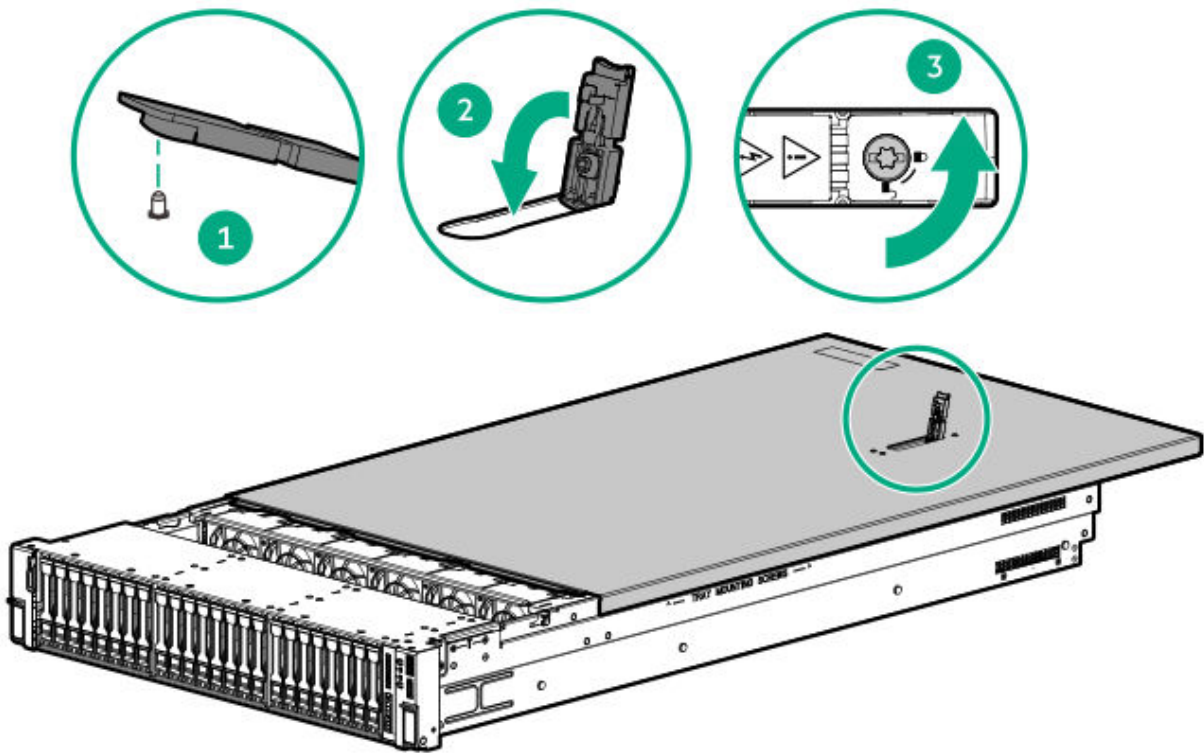
Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

Procedure

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

The access panel slides to the closed position.

3. Lock the access panel latch.



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

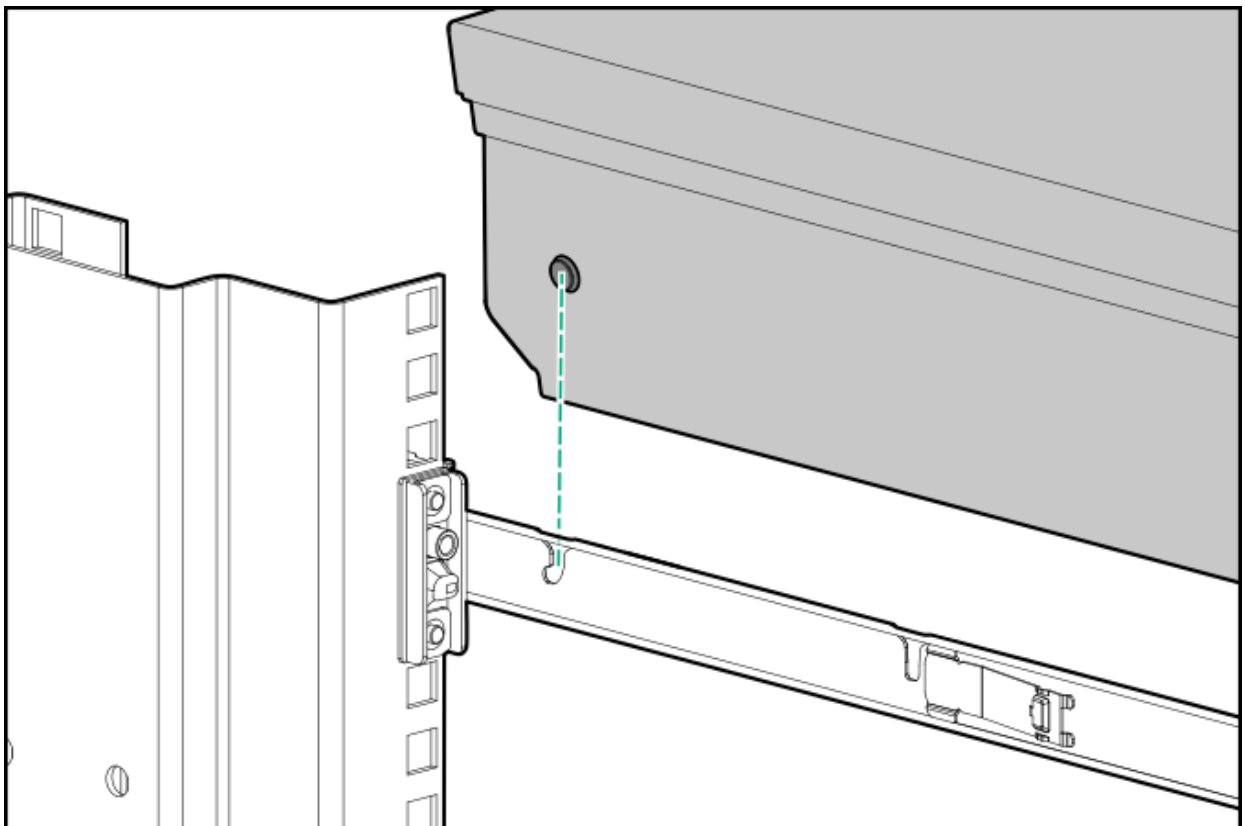
Install the server into the rack

Prerequisites

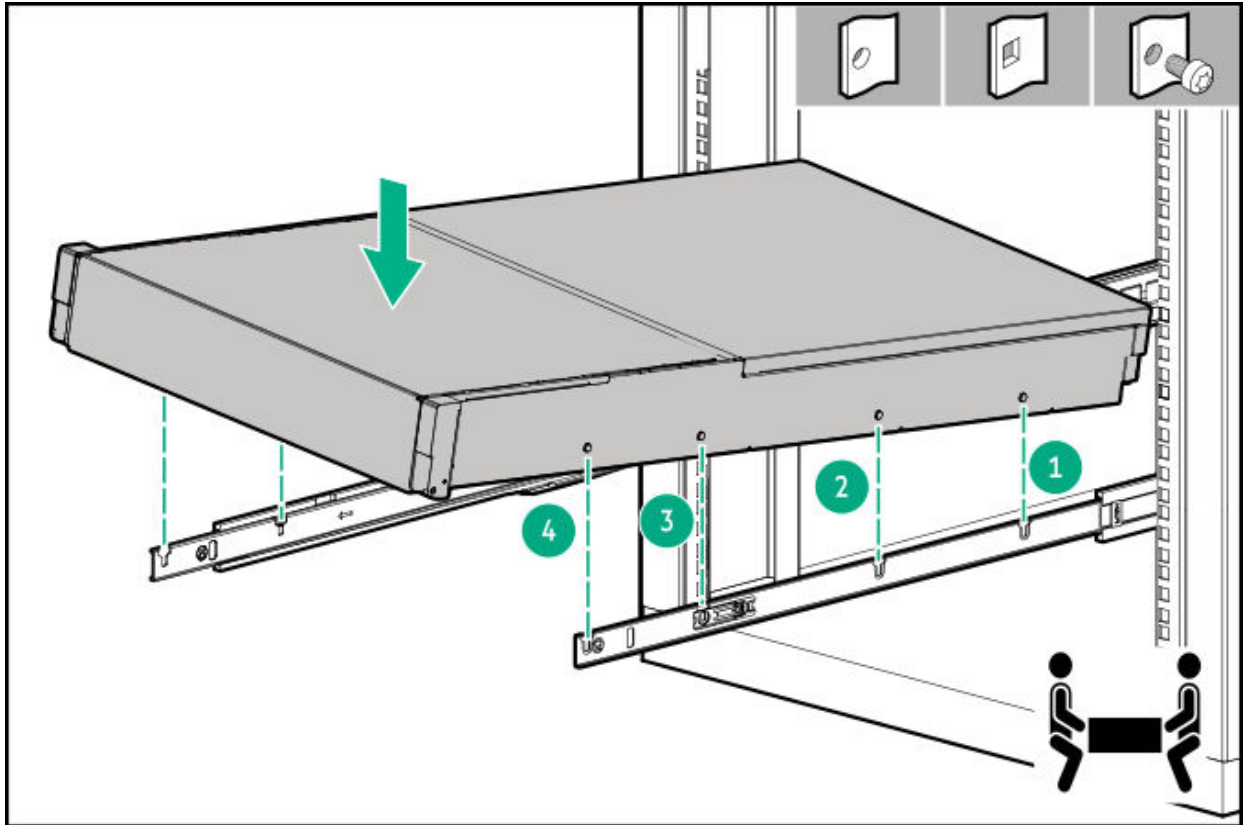
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

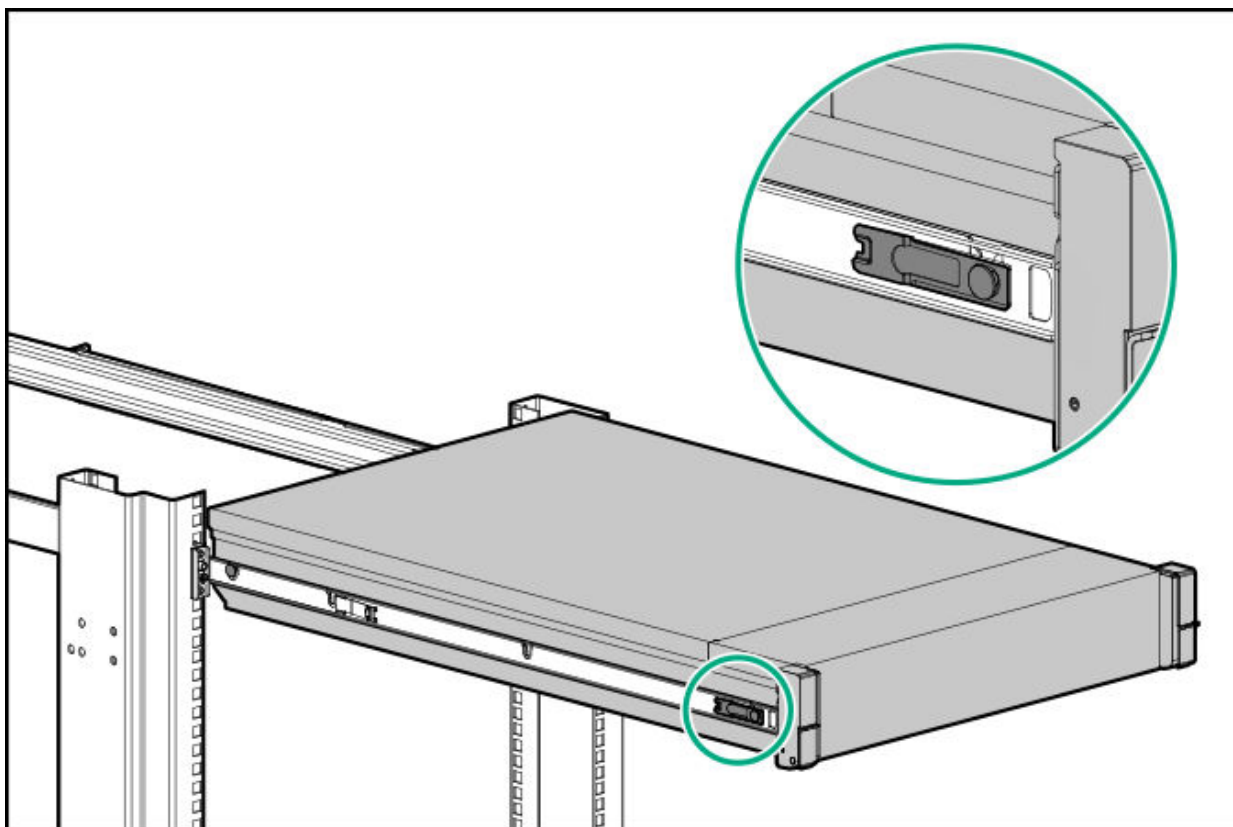


b. Install each spool to the rail.



c. Install the front of the server.

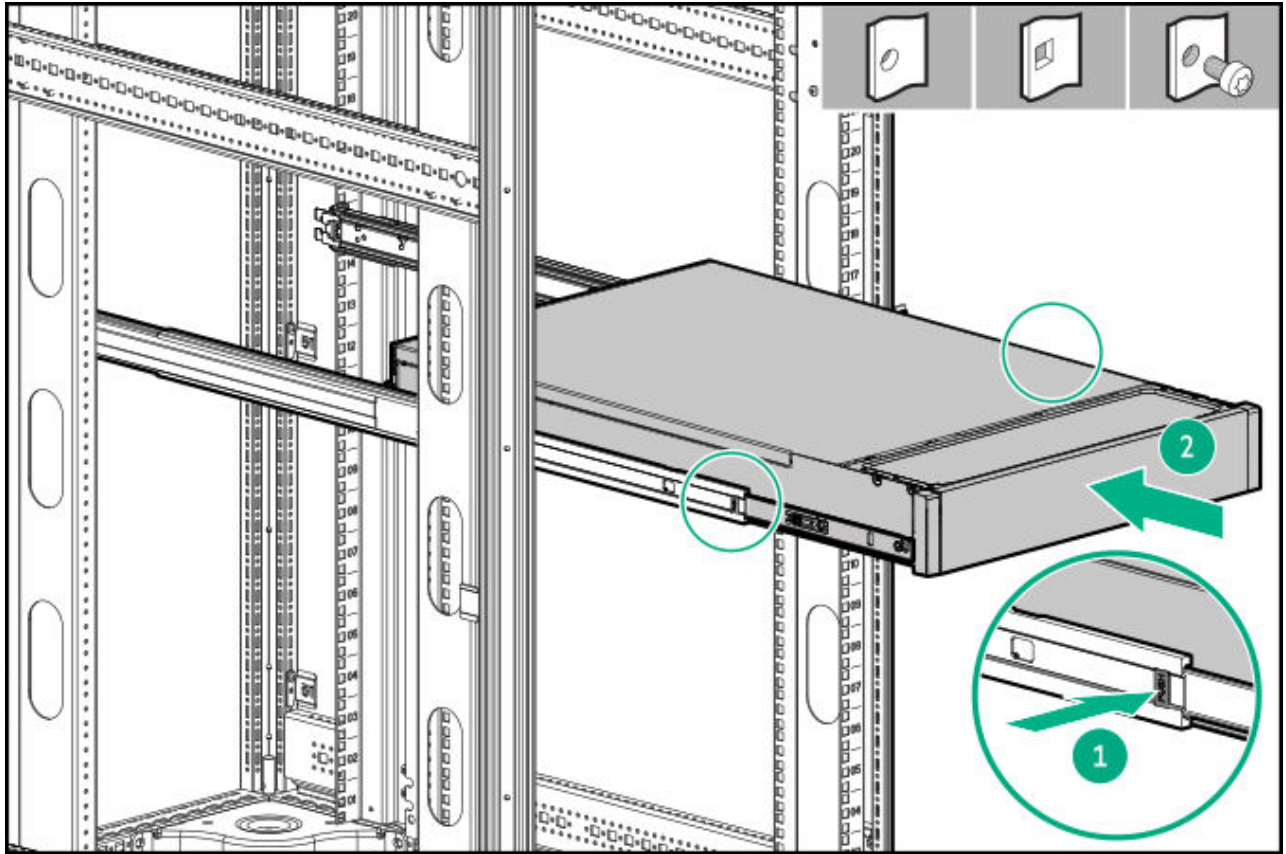
Be sure the front spool engages the locking tab.



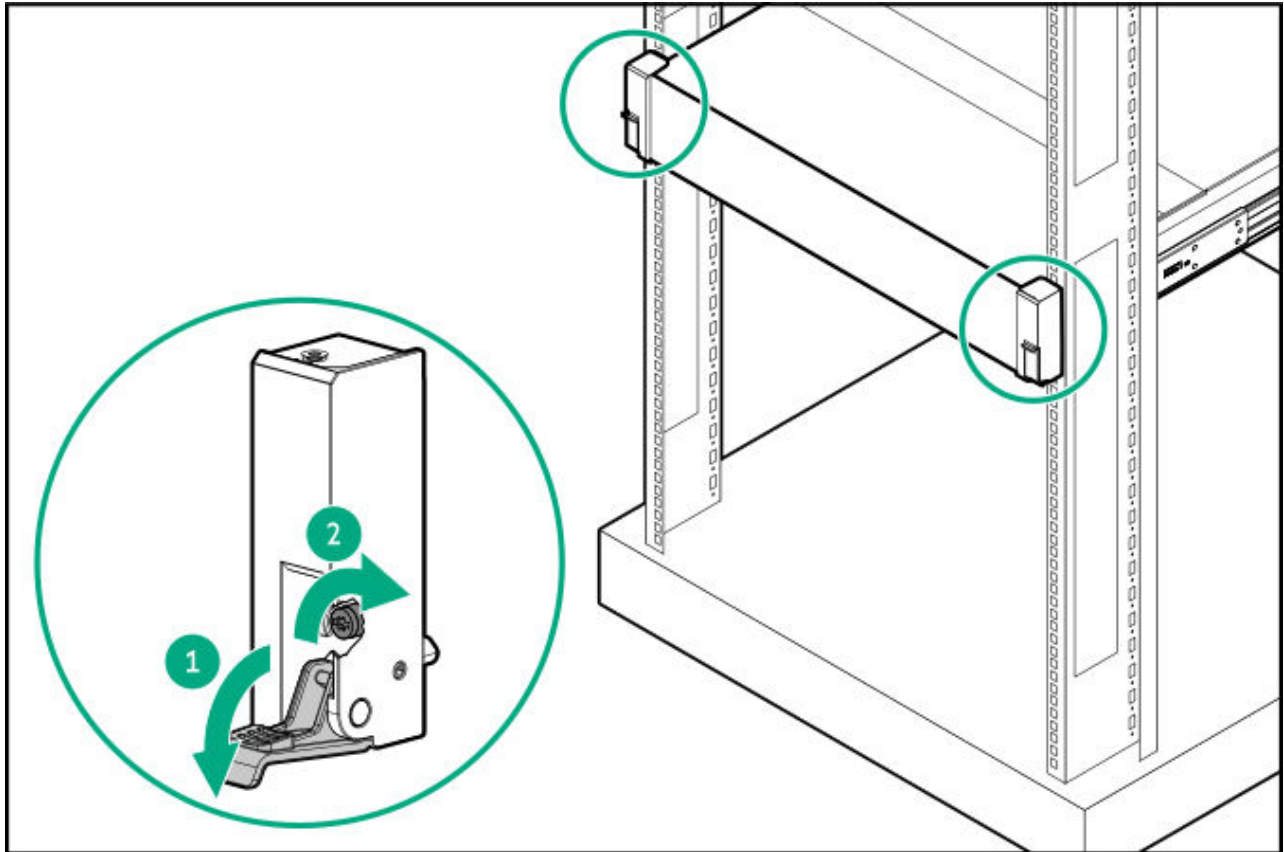
CAUTION

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

2. Install the server into the rack.



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



4. Connect all peripheral cables to the server.
5. Connect the power cords:
 - a. Connect each power cord to the server.
 - b. Connect each power cord to the power source.

Power up the server

Procedure

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

Hardware options installation

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

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

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

Subtopics

[Server data backup](#)

[Hardware option installation guidelines](#)

[Hewlett Packard Enterprise product QuickSpecs](#)

[Rack mounting options](#)

[Installing the front bezel option](#)

[Drive options](#)

[Power supply options](#)

[Transceiver option](#)

[Installing the System Insight Display module](#)

[Universal media bay option](#)

[Optical drive option](#)

[Drive cage options](#)

[Memory option](#)

[Riser board options](#)

[Storage controller options](#)

[Energy pack options](#)

[Expansion card options](#)

[Processor mezzanine tray option](#)

[Processor heatsink assembly option](#)

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

[OCP NIC 3.0 option](#)

[Power distribution board](#)

[Chassis intrusion detection switch option](#)

[Serial port option](#)

[Internal USB device options](#)

Server data backup

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

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

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

Hardware option installation guidelines



WARNING

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



CAUTION

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



CAUTION

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

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

Hewlett Packard Enterprise product QuickSpecs

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

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

Rack mounting options

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

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

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

Subtopics

[**Rail identification markers**](#)

[**Rack mounting interfaces**](#)

[**CMA components**](#)

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

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

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

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

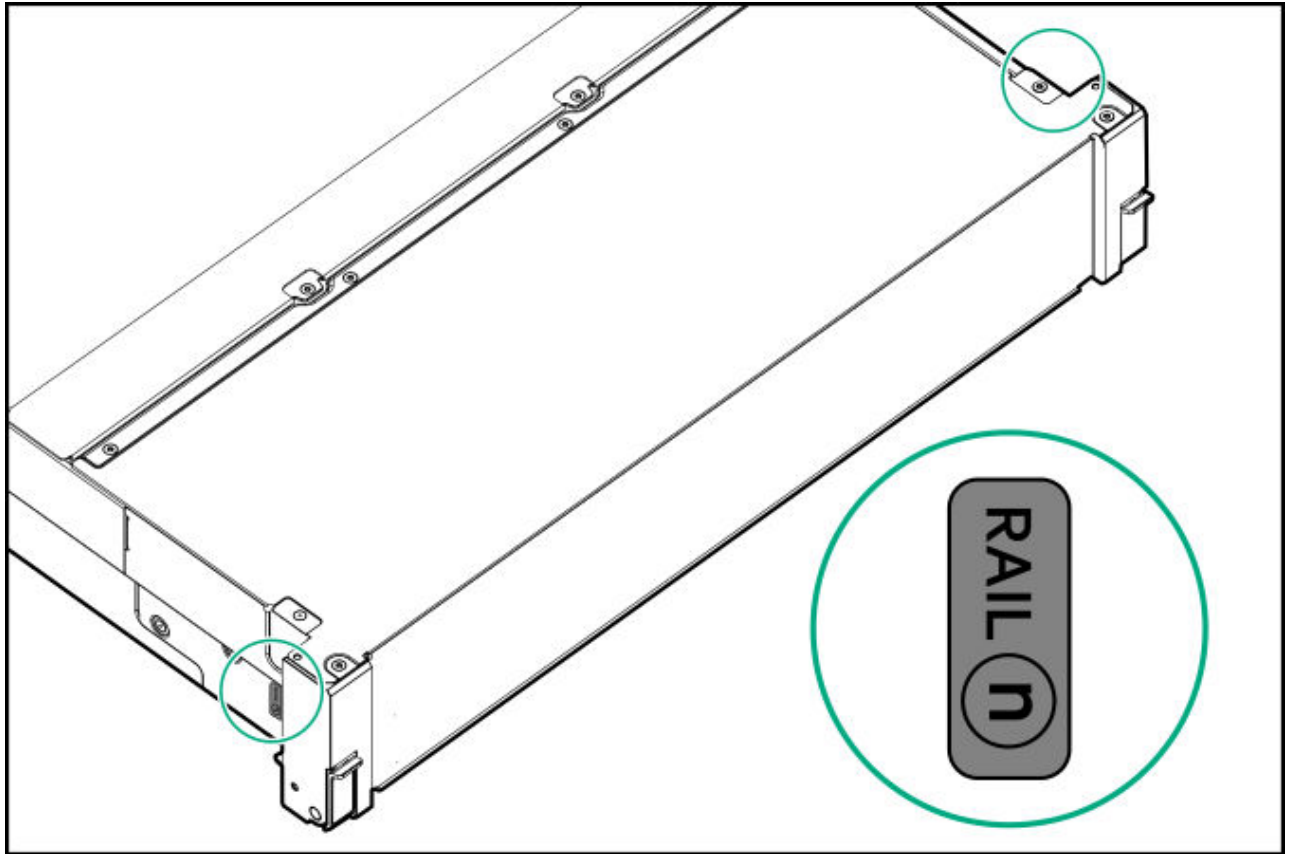
Rail identification markers

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

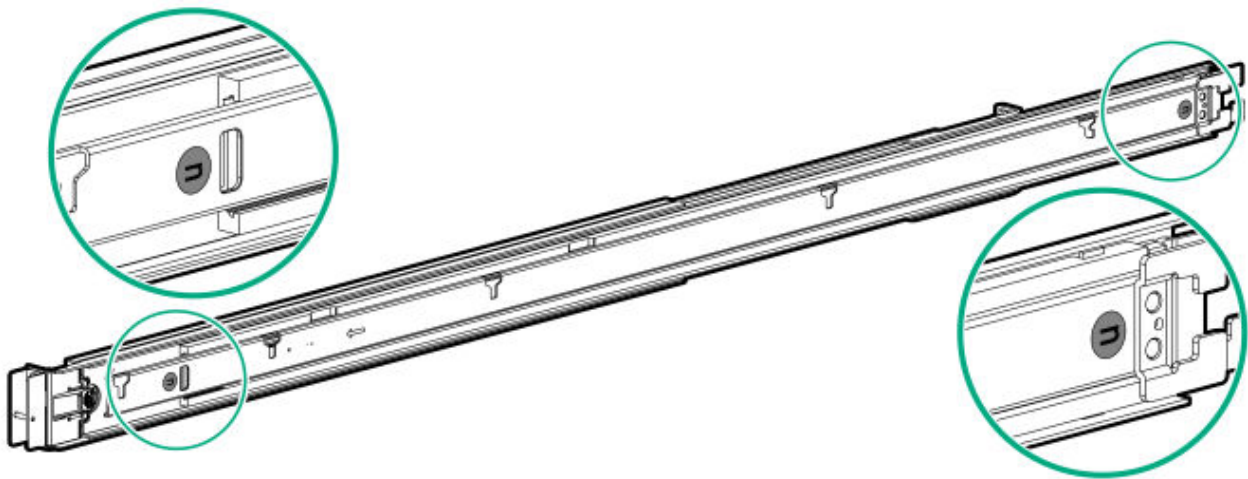
- The height and weight of the chassis as determined by the front- and rear-end server configurations.
- The depth of the chassis as measured from the edge of the front panel (without the front bezel) to the edge of the rear panel.

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

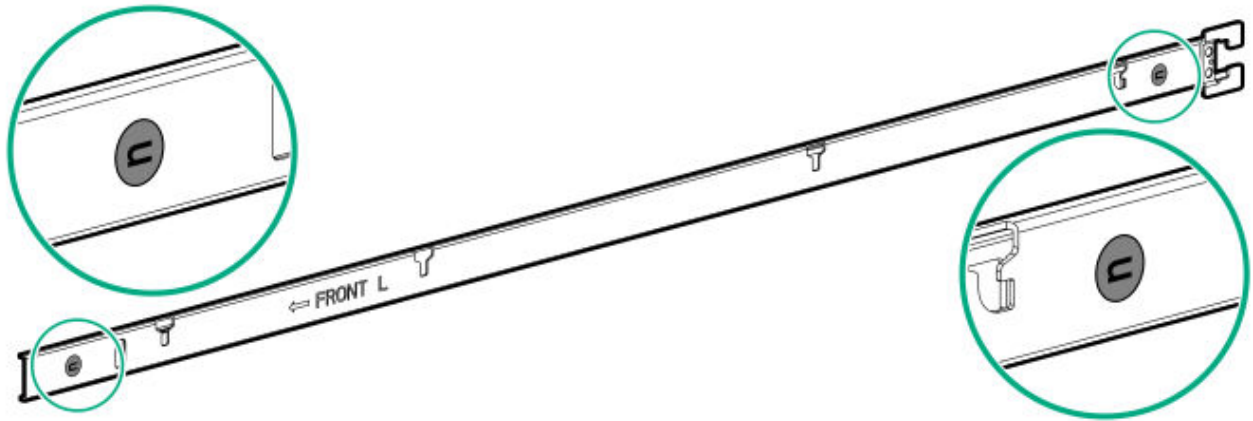
- Rail number labels on the chassis



- Rail identifier stamps on the short ball-bearing rail

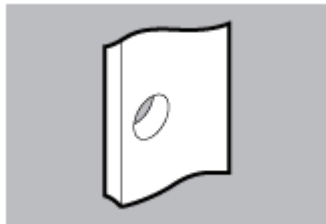


- Rail identifier stamps on the long ball-bearing rail

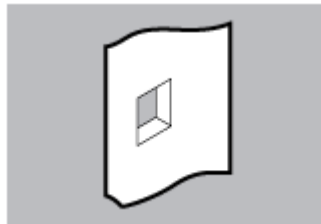


Rack mounting interfaces

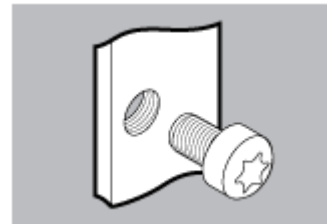
The rack rails can be installed in a rack that has the following mounting interfaces:



Round-hole



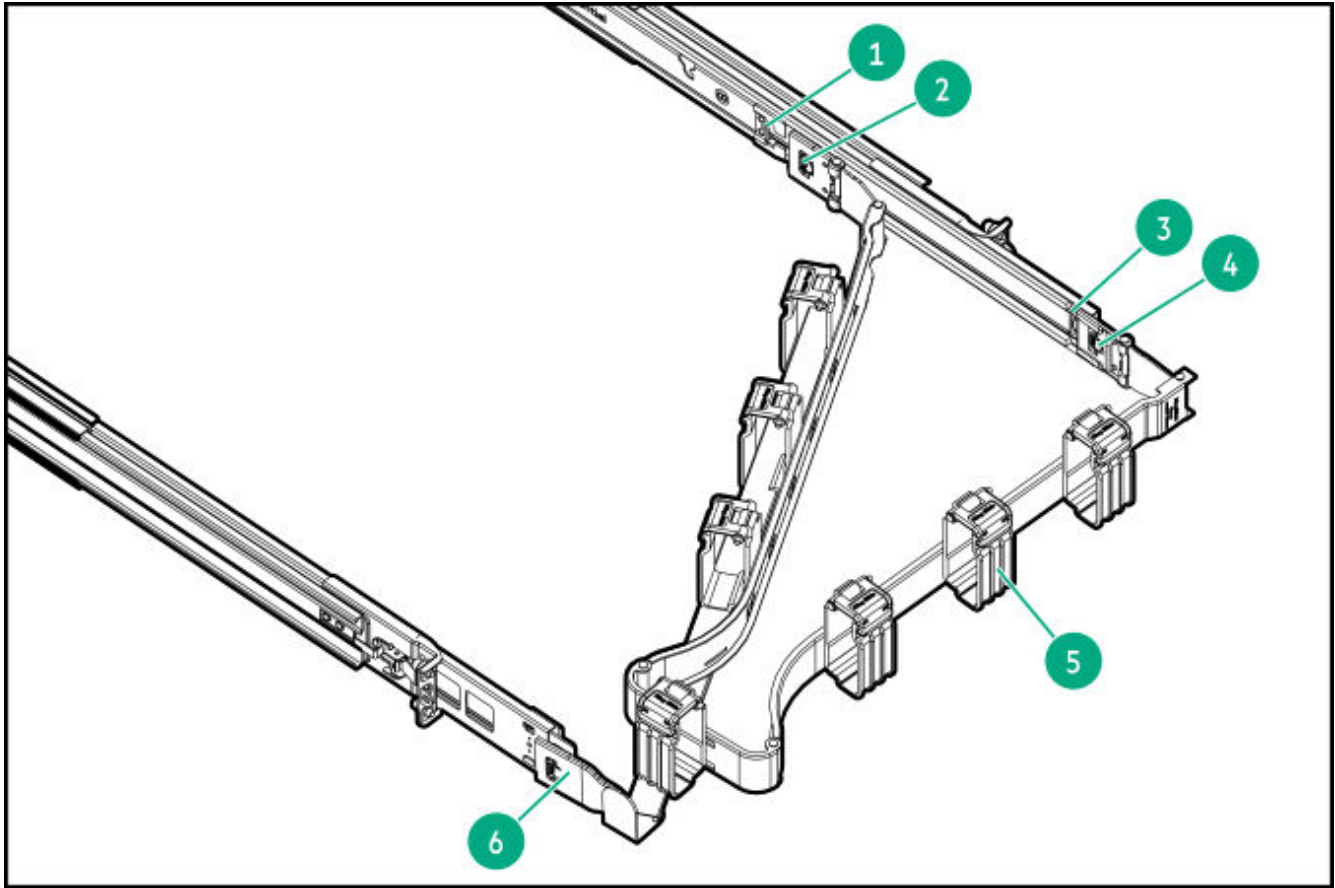
Square-hole



Threaded round-hole

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

CMA components



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

Rack rail option

This server supports the HPE Easy Install rack rail option kit #8 (P61501-B21). This rail kit supports the following specifications:

- Type: Ball-bearing rack rail (drop-in)

- Minimum rail length: 843.91 mm (33.22 in)
- Rail adjustability range: 609.60–918.10 mm (24.00–36.15 in)

Subtopics

Installing the ball-bearing rack rails

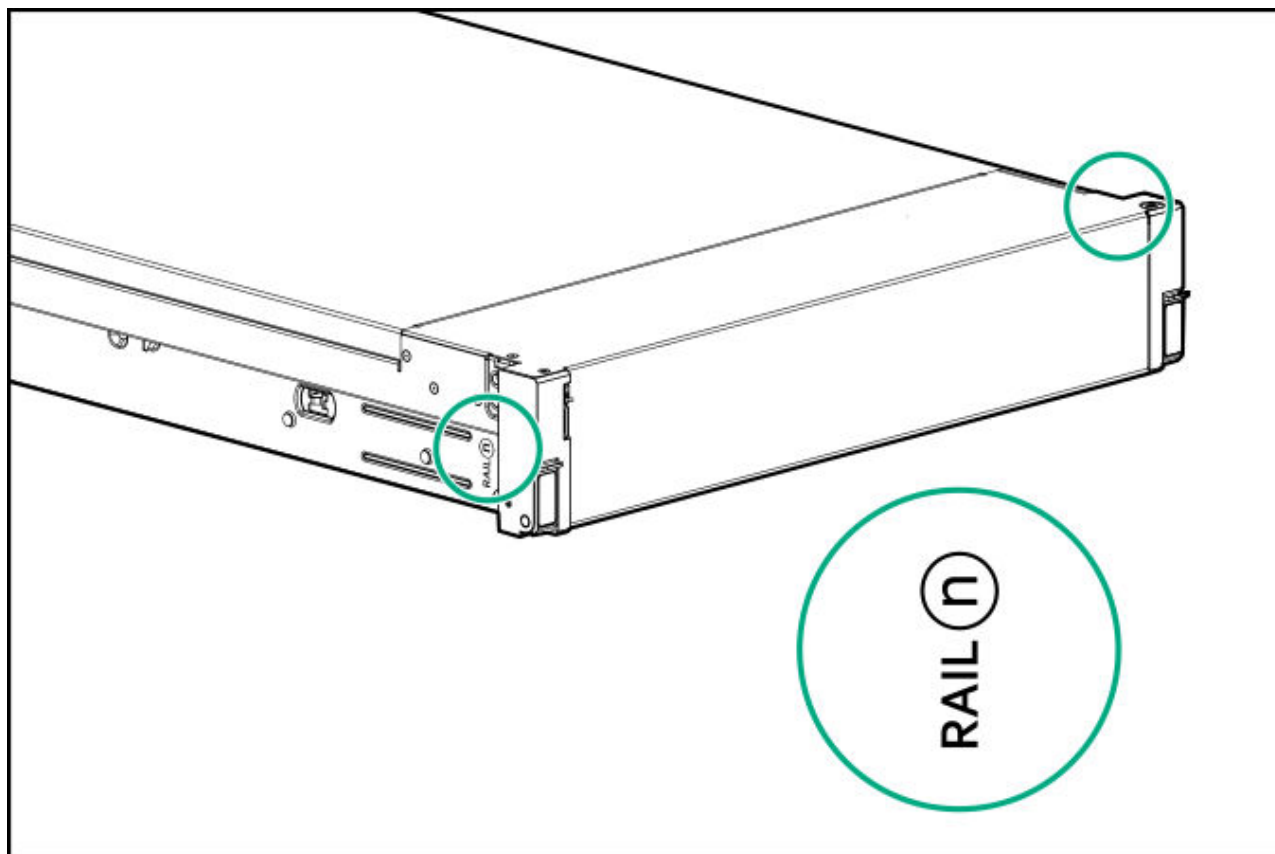
Installing the ball-bearing rack rails

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.
- Before you perform this procedure, make sure that you have a small slotted screwdriver—This tool is required if you intend to install the server in a threaded round-hole rack.

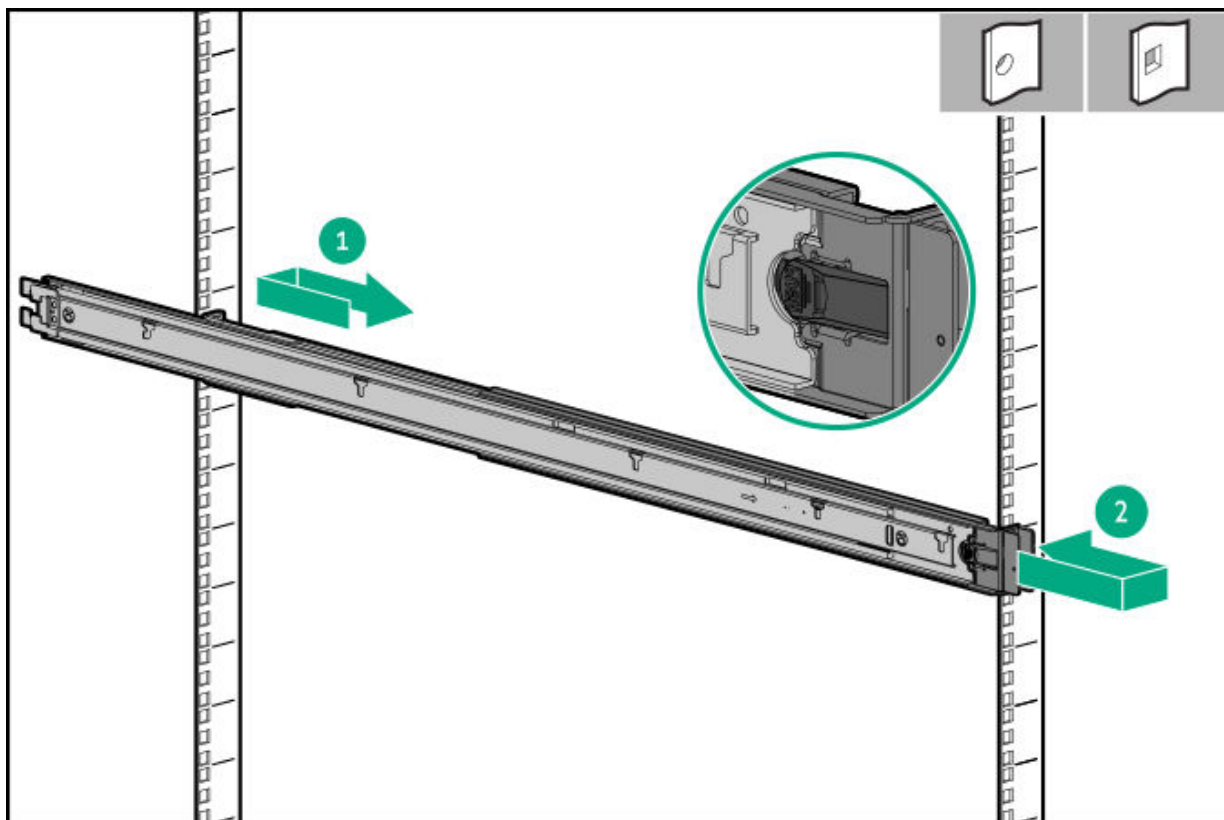
Procedure

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

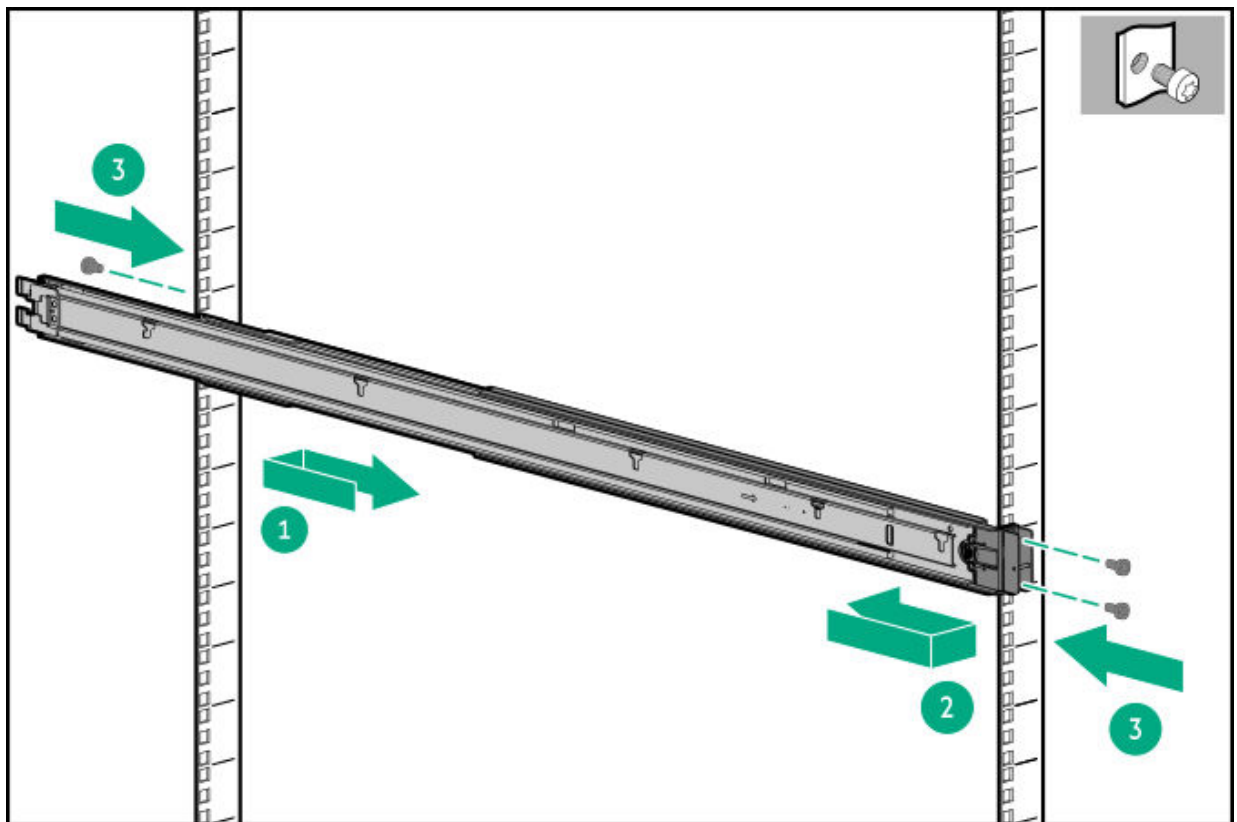
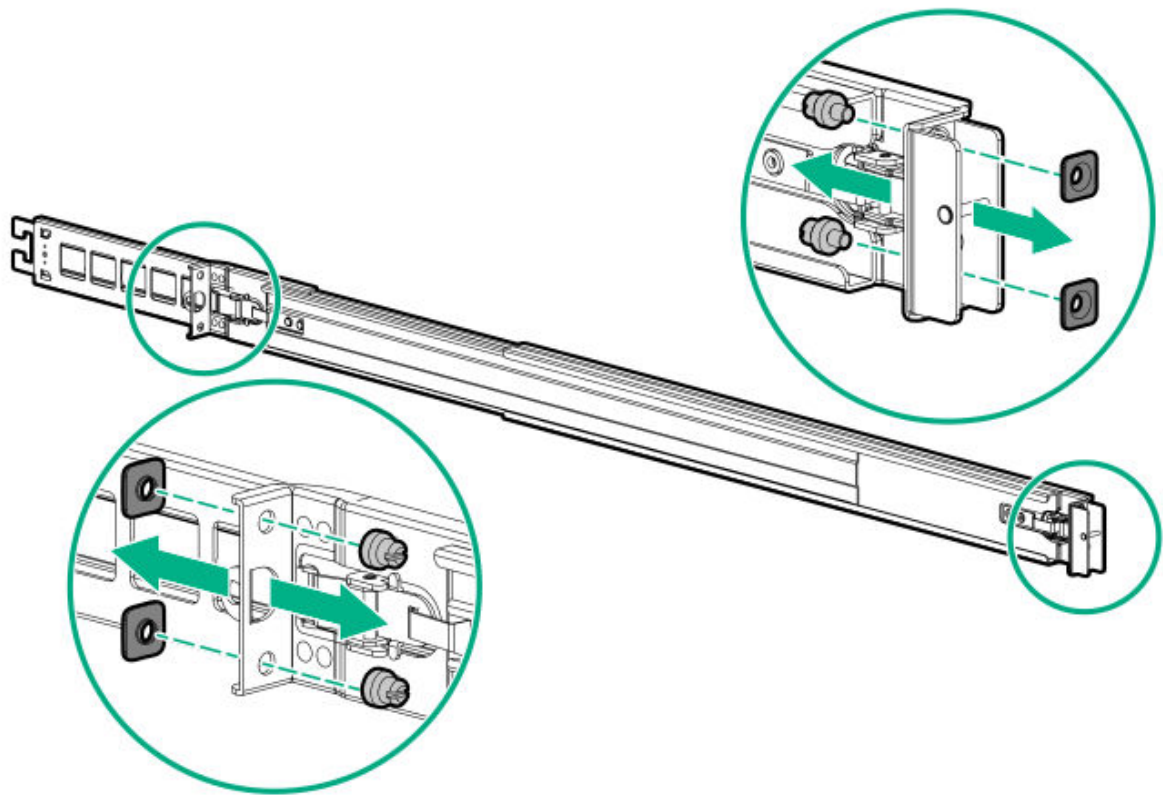


2. Install the rack rails.

- For round and square-hole racks



- For threaded-hole racks



3. Install the server into the rack.

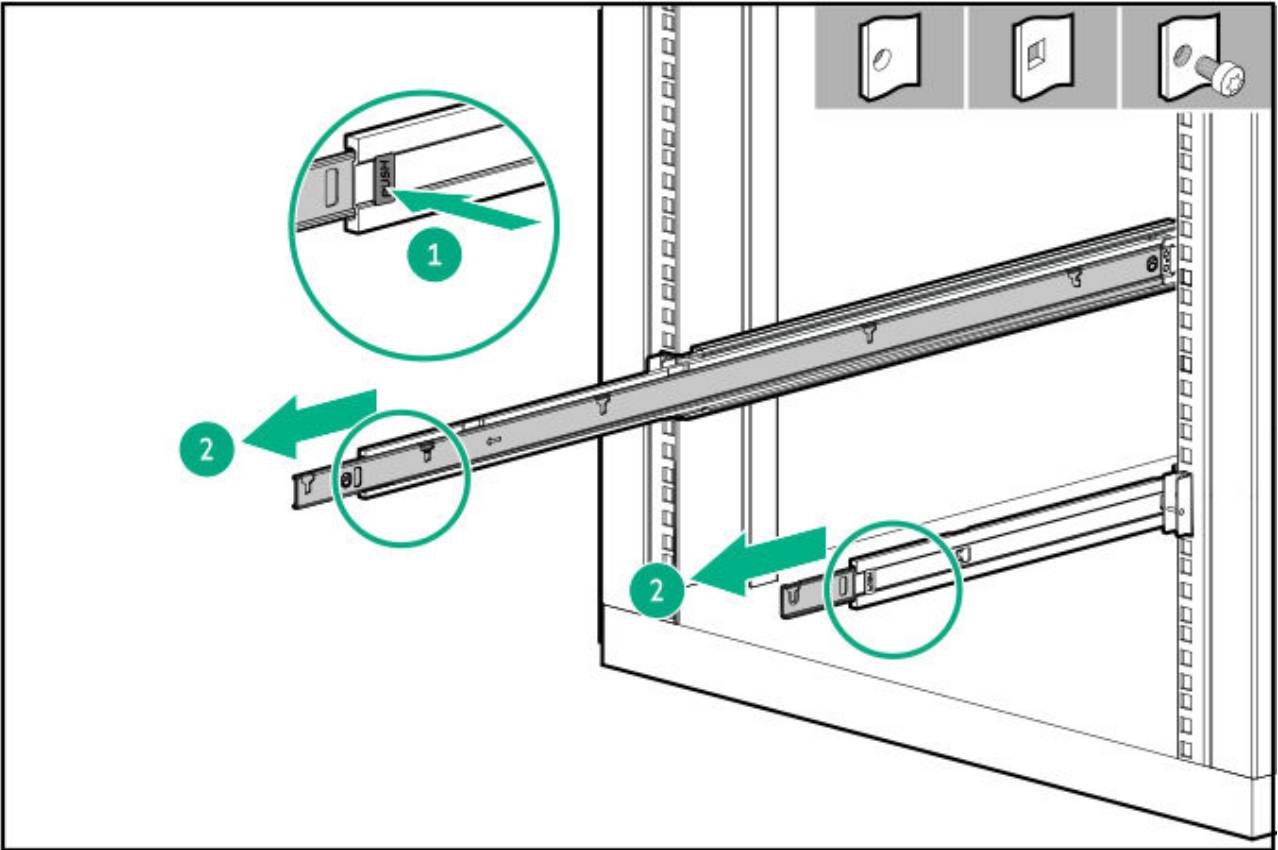
Installing the server into the rack: Ball-bearing rack rail

Prerequisites

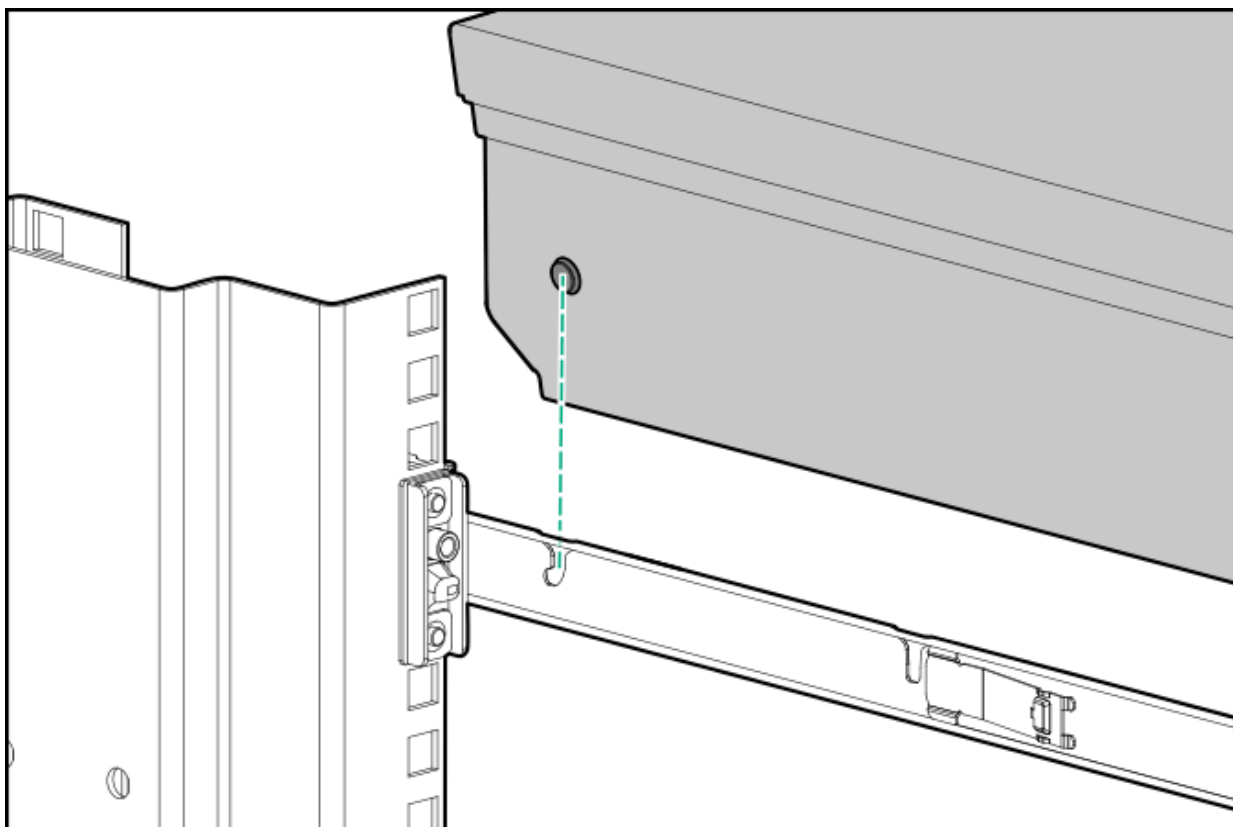
- Get help to lift and stabilize the server during rack installation. **If the server is installed higher than chest level, additional two people might be required to help install the server:** One person to support the server weight, and the other two to slide the server into the rack.
- Before you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

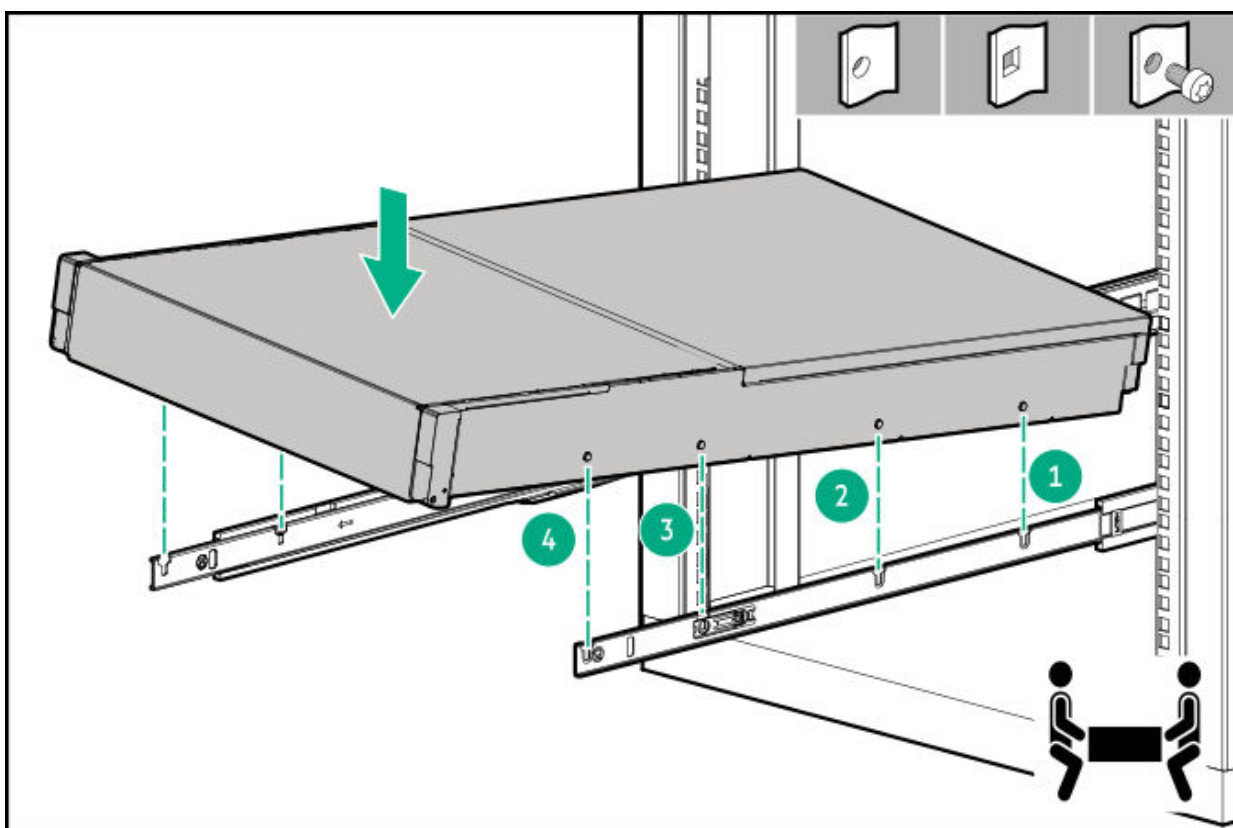
1. Fully extend the rails to the locked position.



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

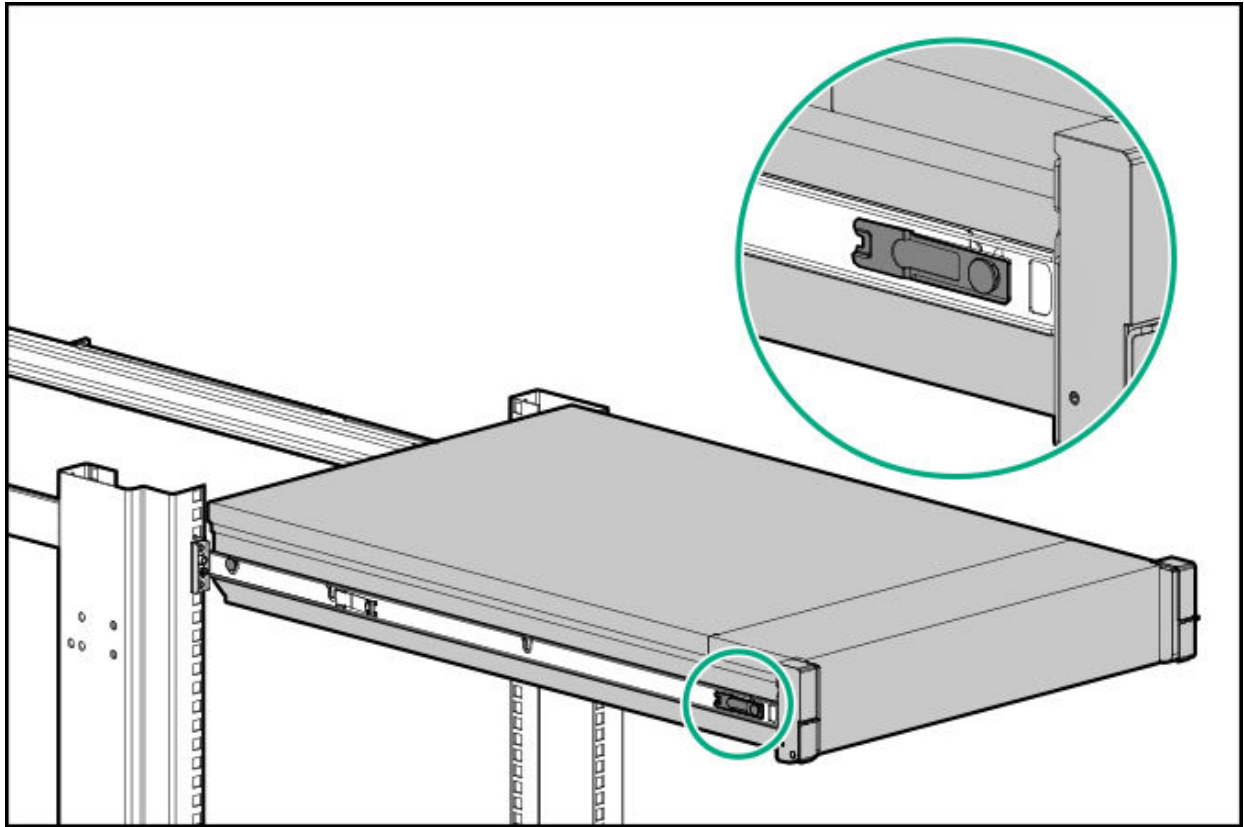


b. Install each spool to the rail.



- c. Install the front of the server.

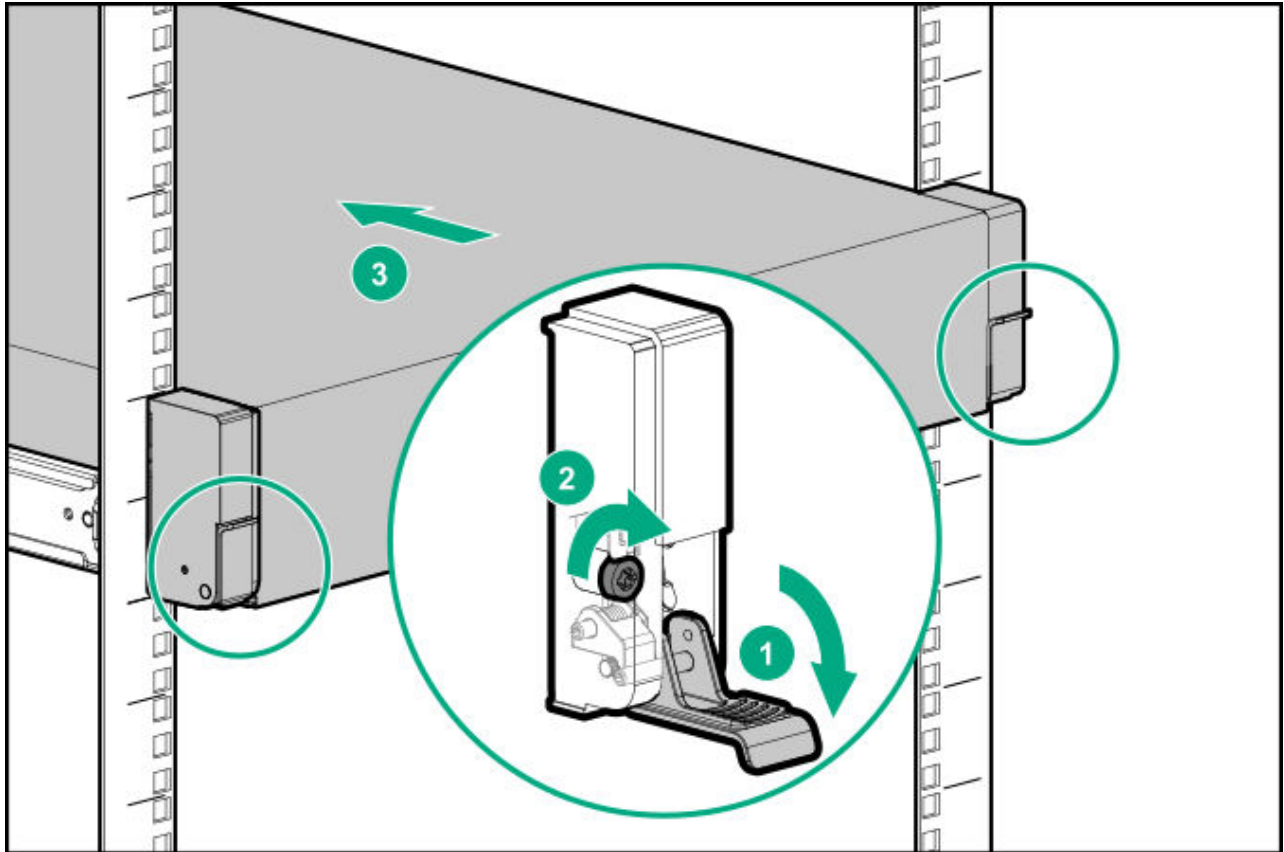
Be sure the front spool engages the locking tab.



CAUTION

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

3. Install the server into the rack, and then tighten the shipping screws.



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

Results

The installation procedure is complete.

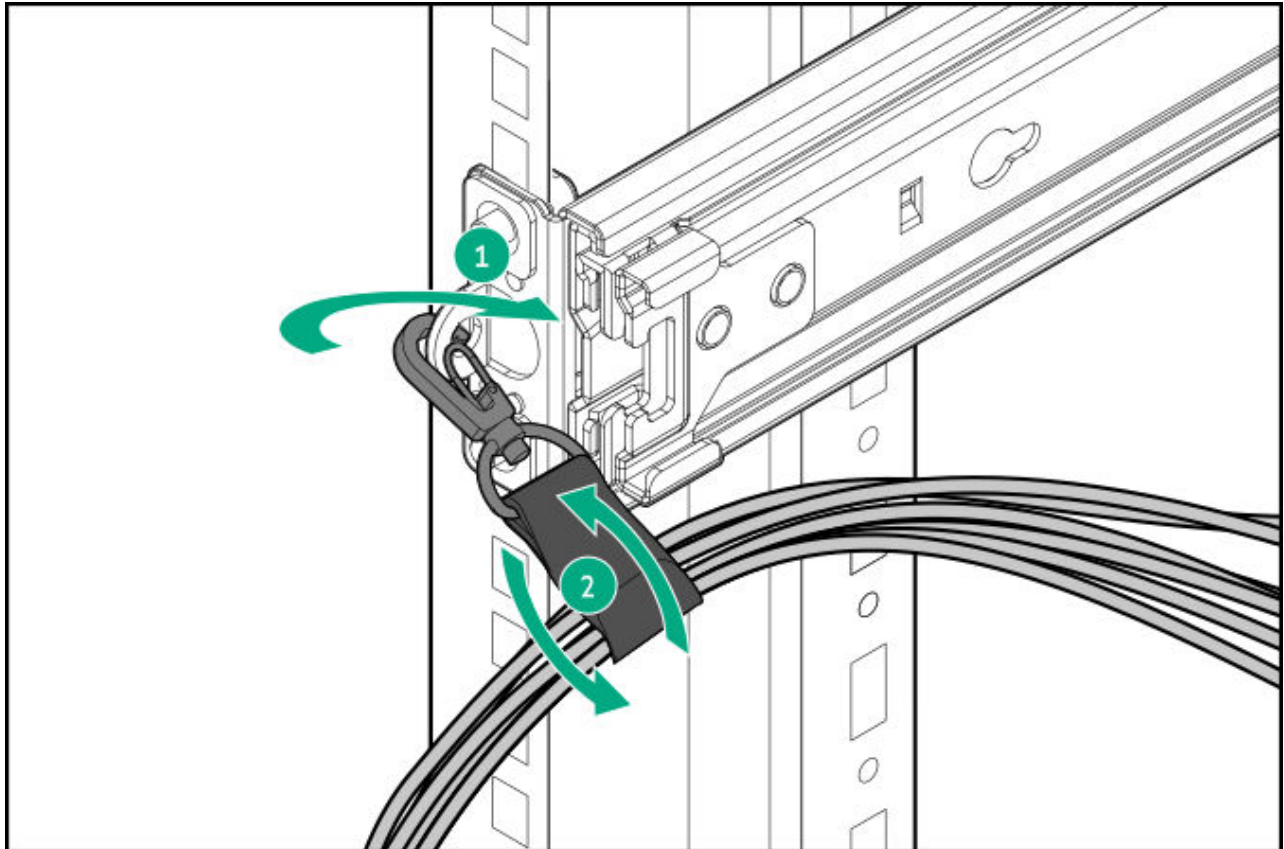
Installing the rack rail hook-and-loop strap

About this task

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

Procedure

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



Results

The installation procedure is complete.

Installing the cable management arm

Prerequisites

Before installing the management arm:

- Identify the part number.

**IMPORTANT**

Some management arms are designed to hold extra weight:

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

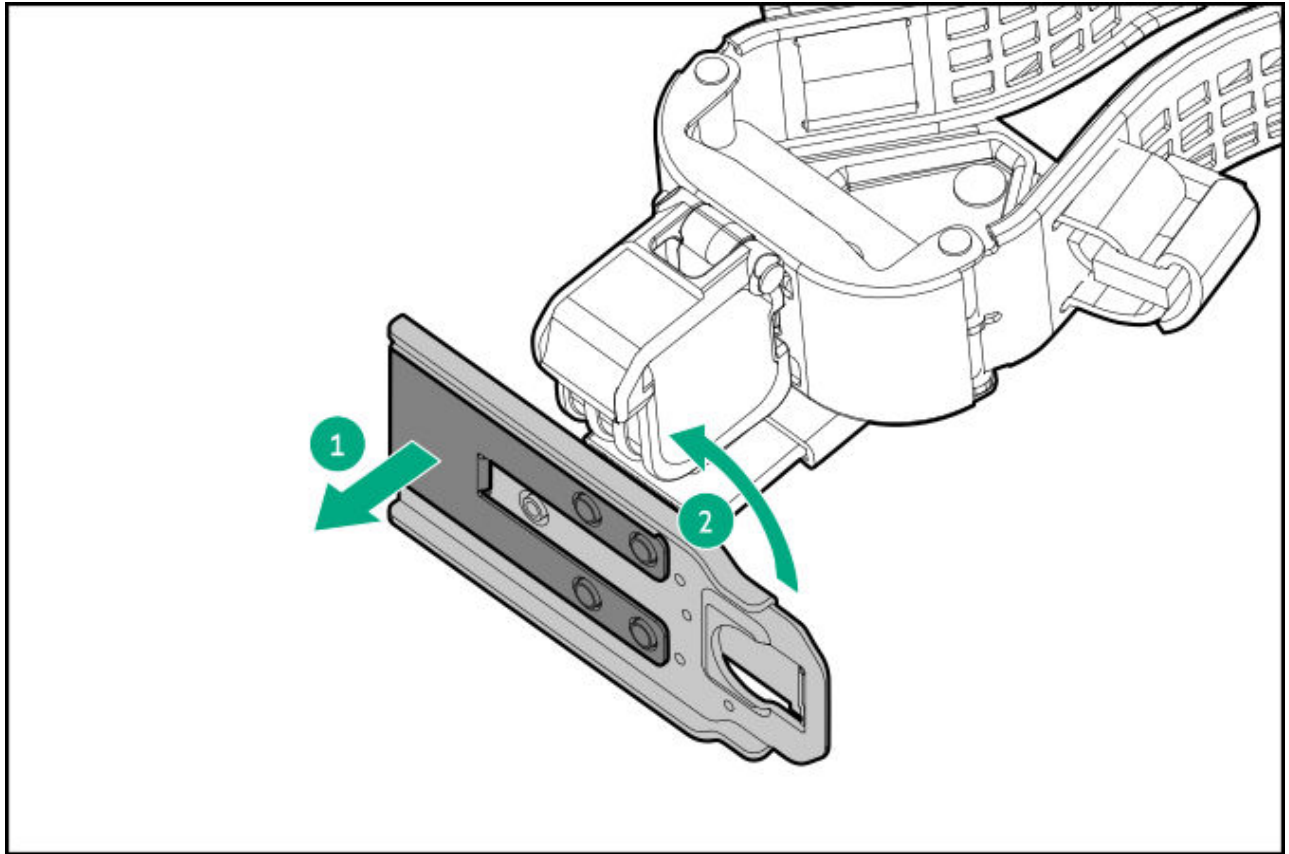
For these management arms, the angle of the brackets requires the outer bracket to be removed before installing the elbow bracket.

- Prepare the management arm.

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

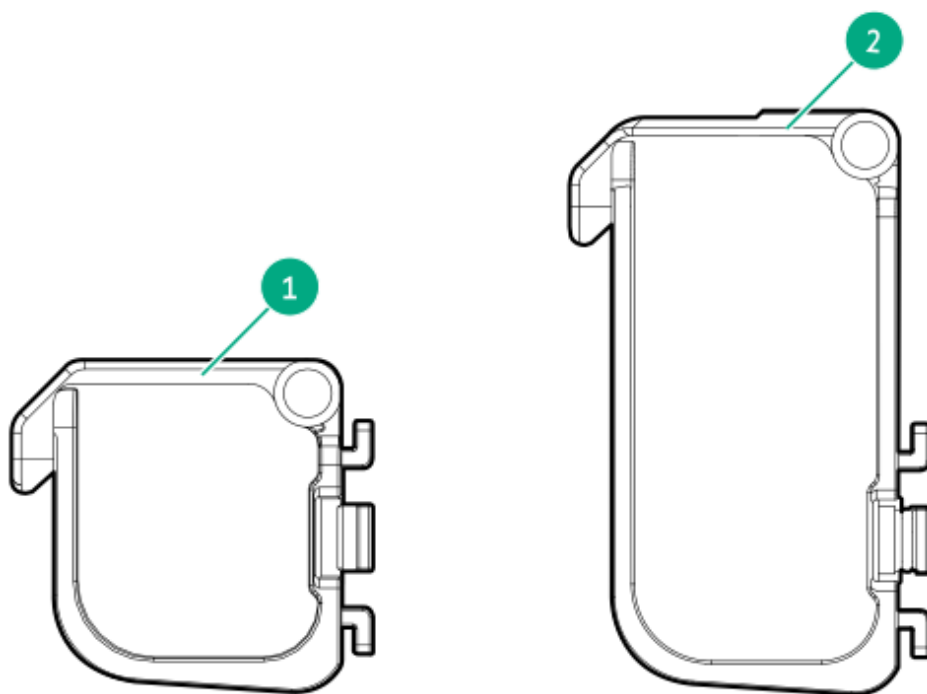
**NOTE**

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



About this task

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



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

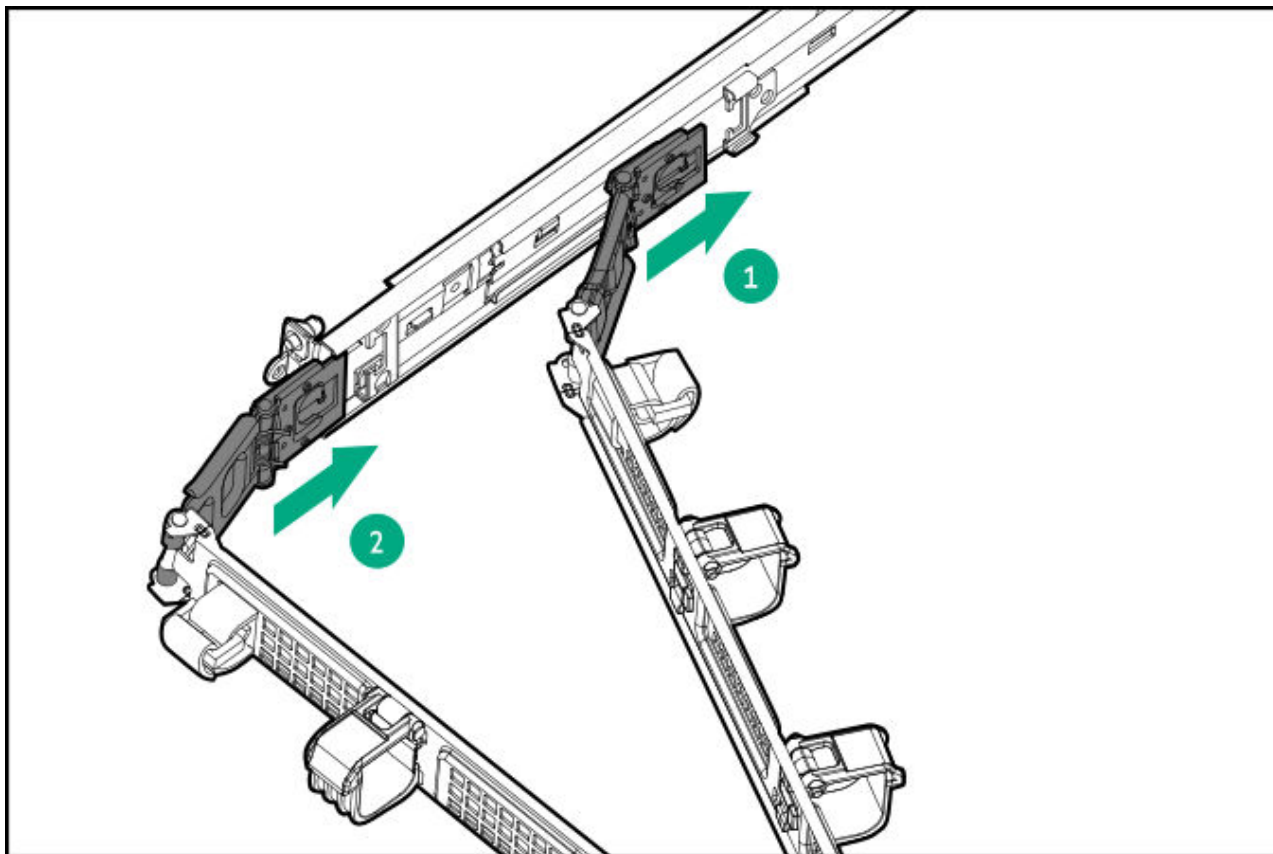


CAUTION

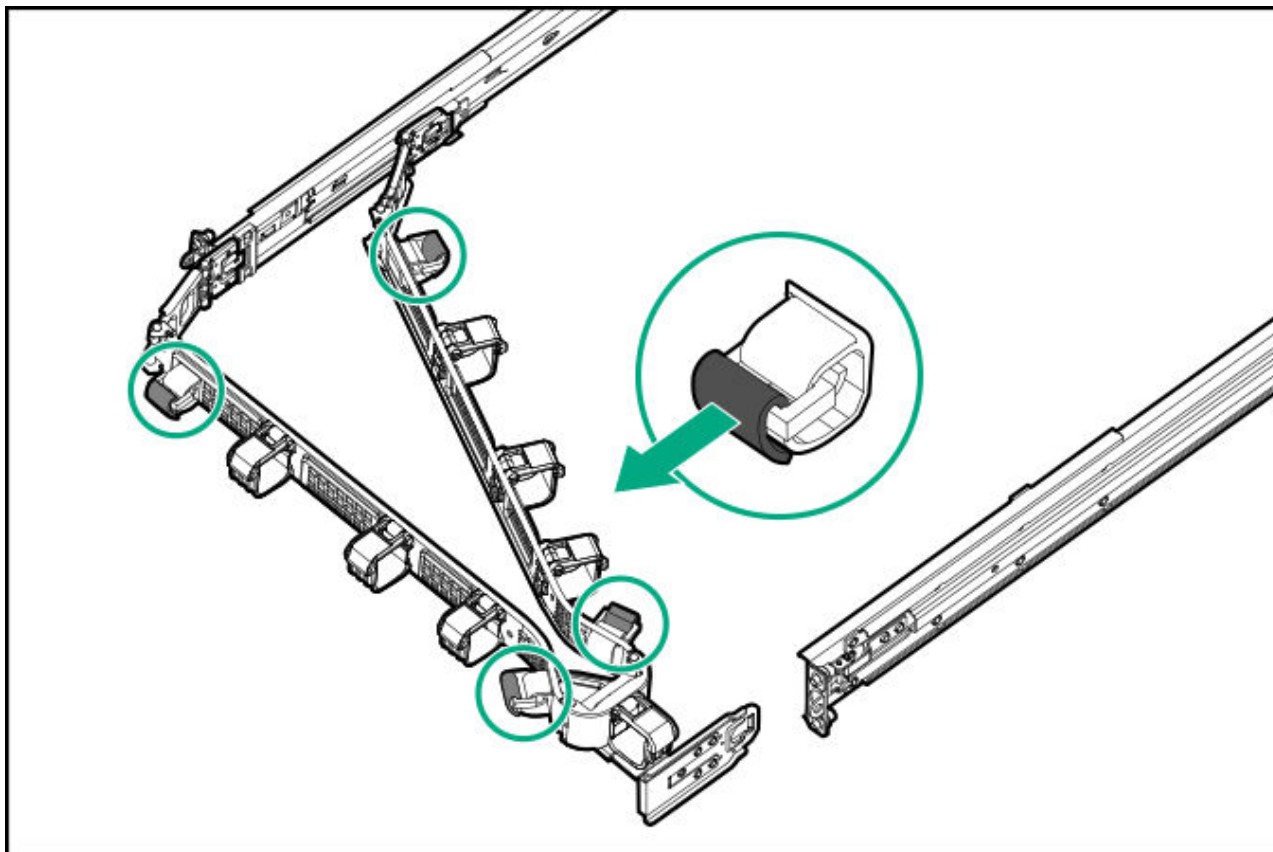
To reduce the risk of personal injury, be careful when pressing the cable management or rail-release latches. The rails or latches could pinch your fingers.

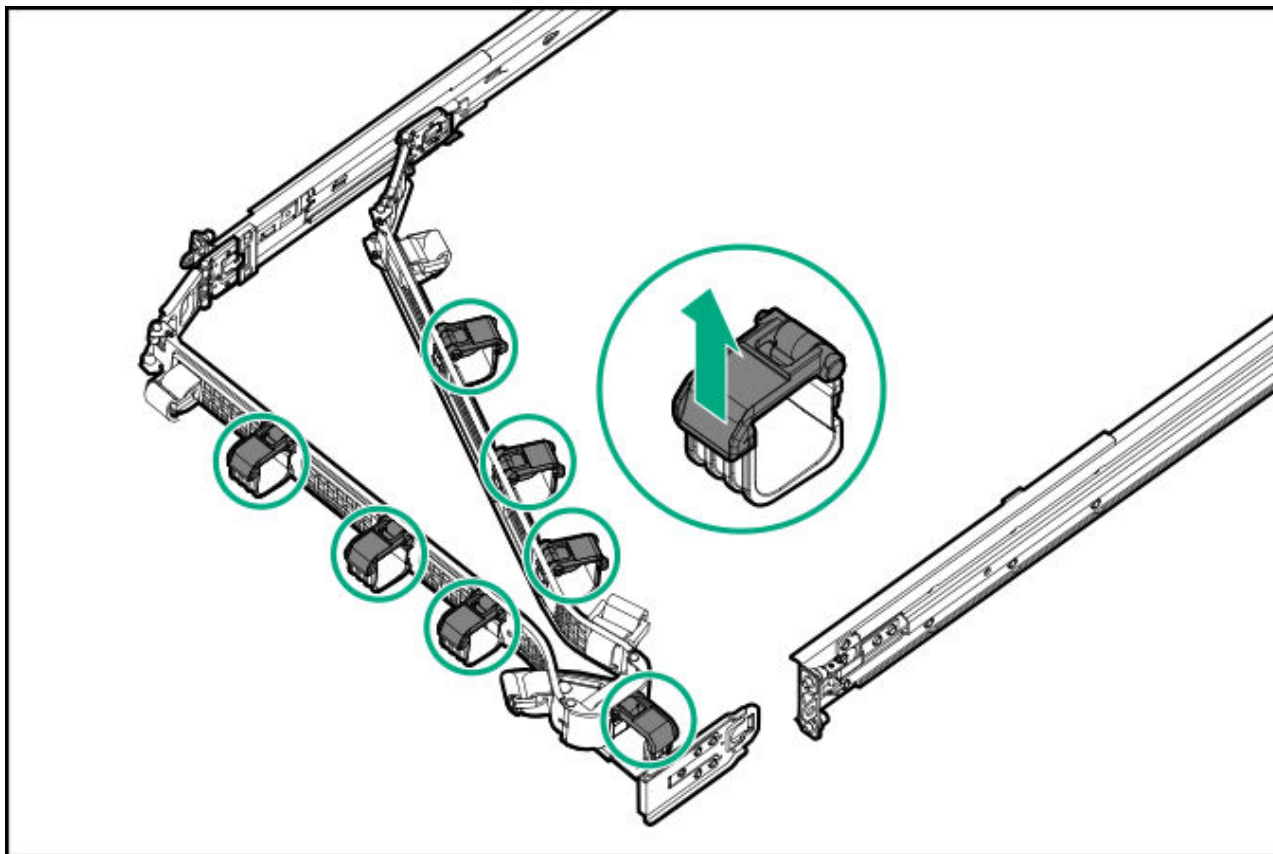
Procedure

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

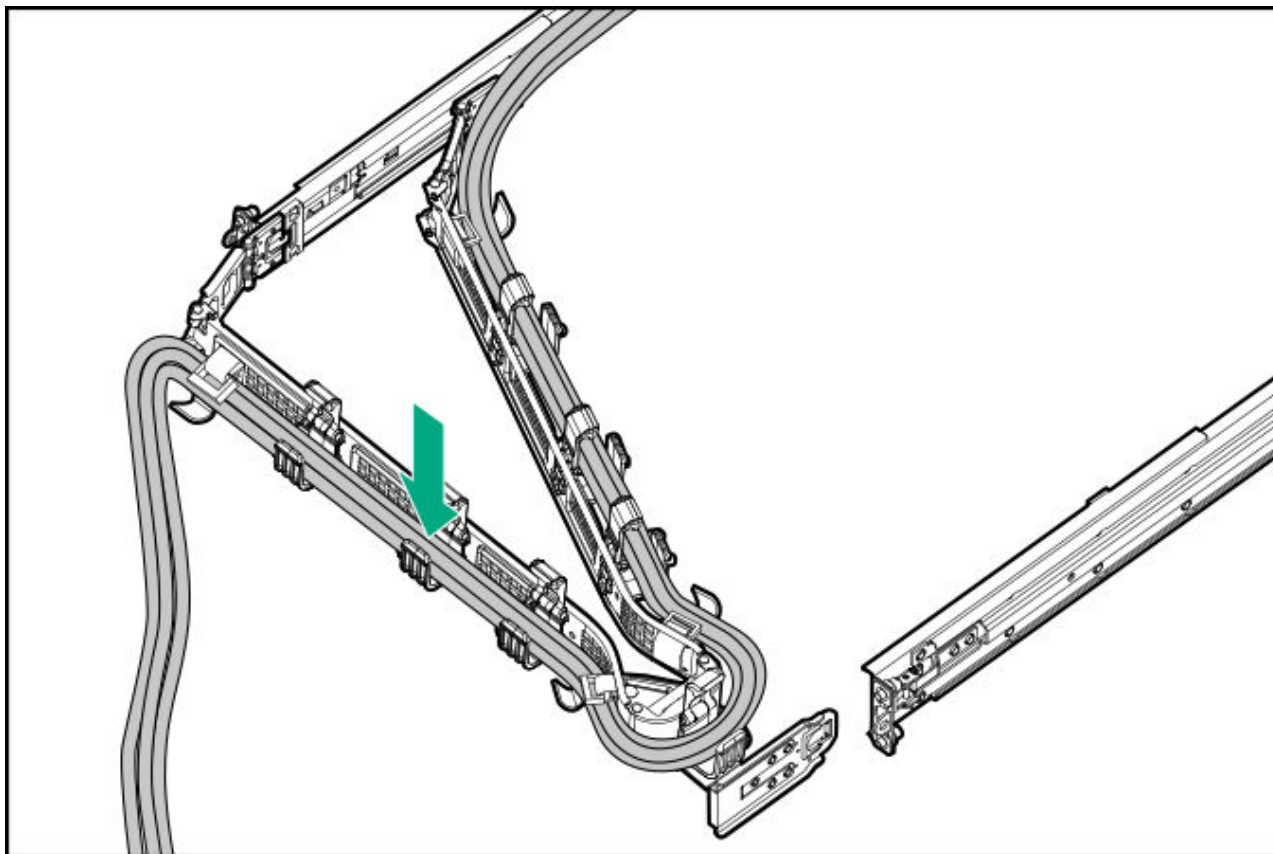


3. Open the straps and cable baskets.

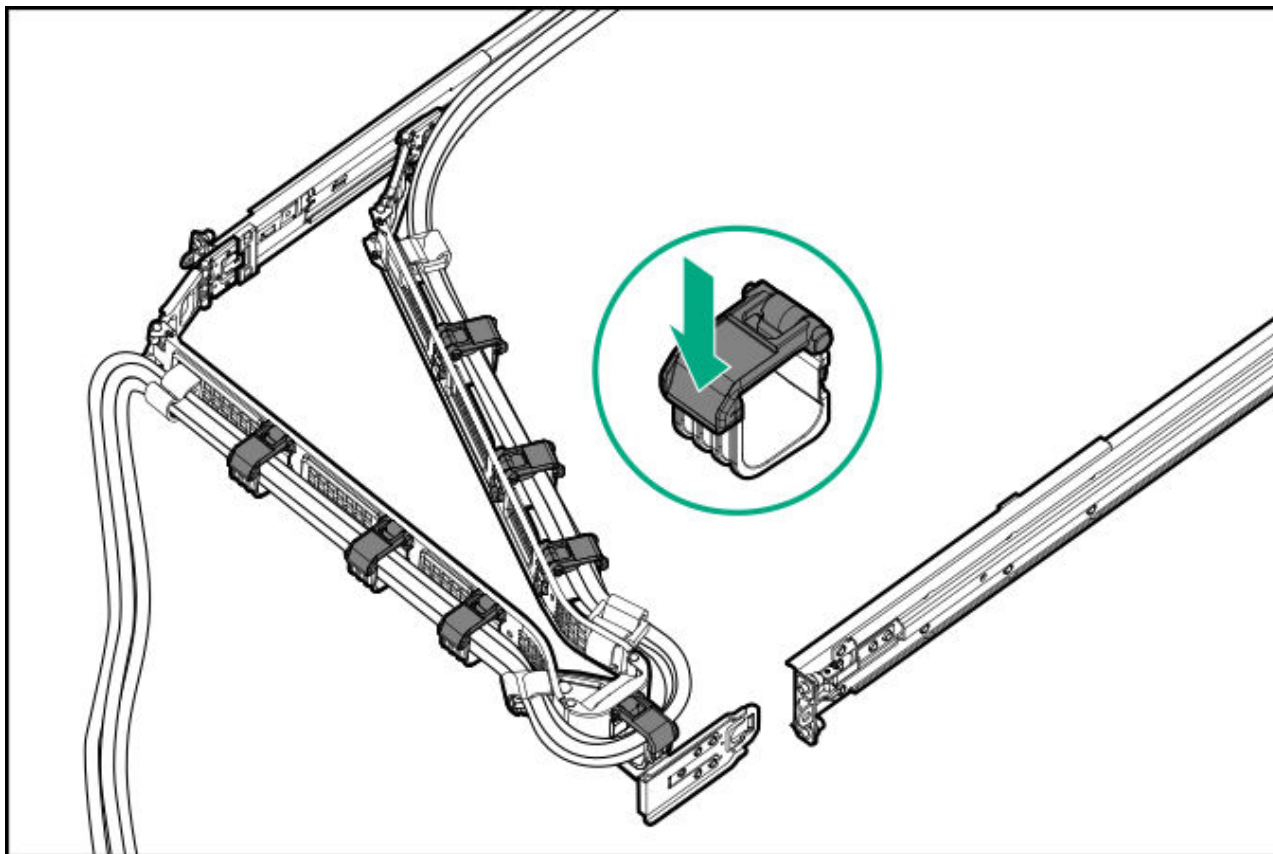




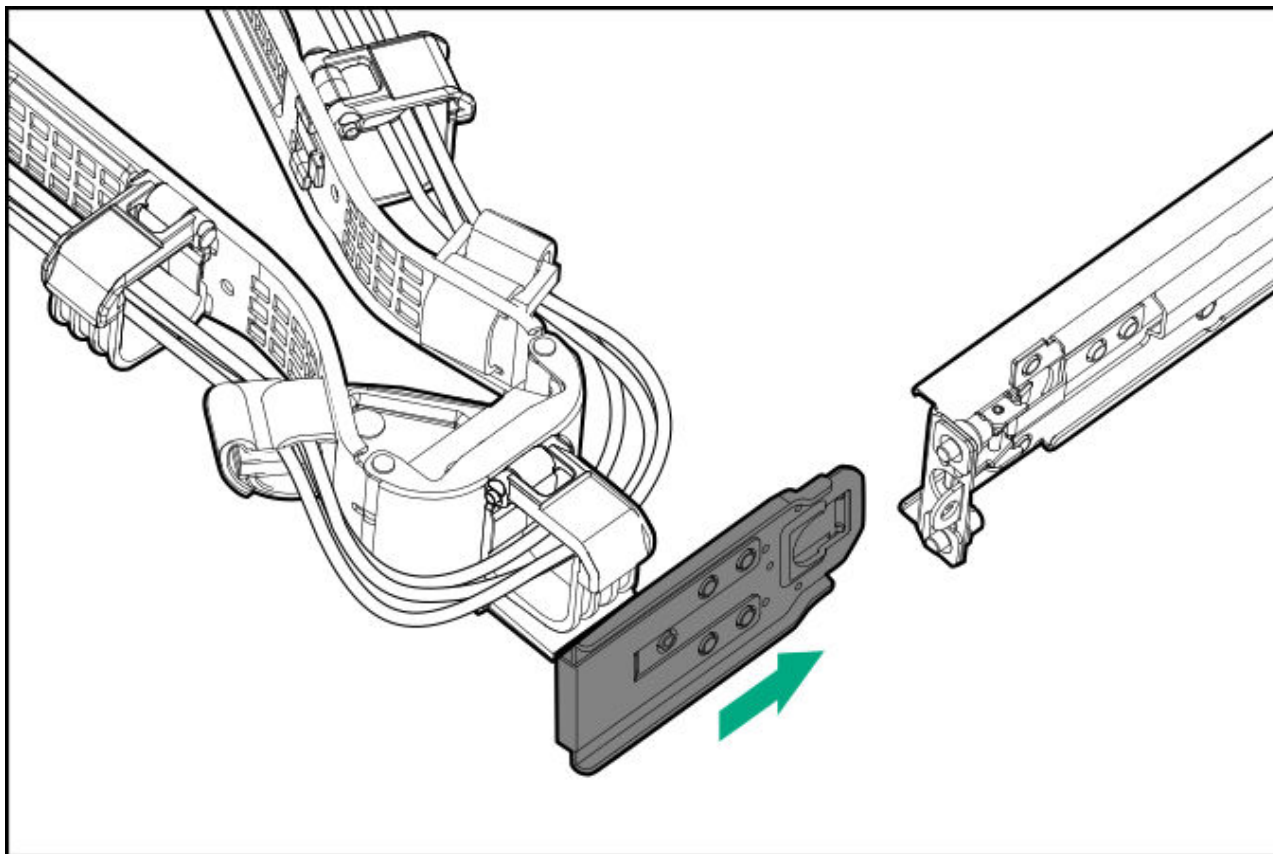
4. Install the cables.



5. Close the baskets and secure the straps.



6. Install the elbow bracket to the outer rail.



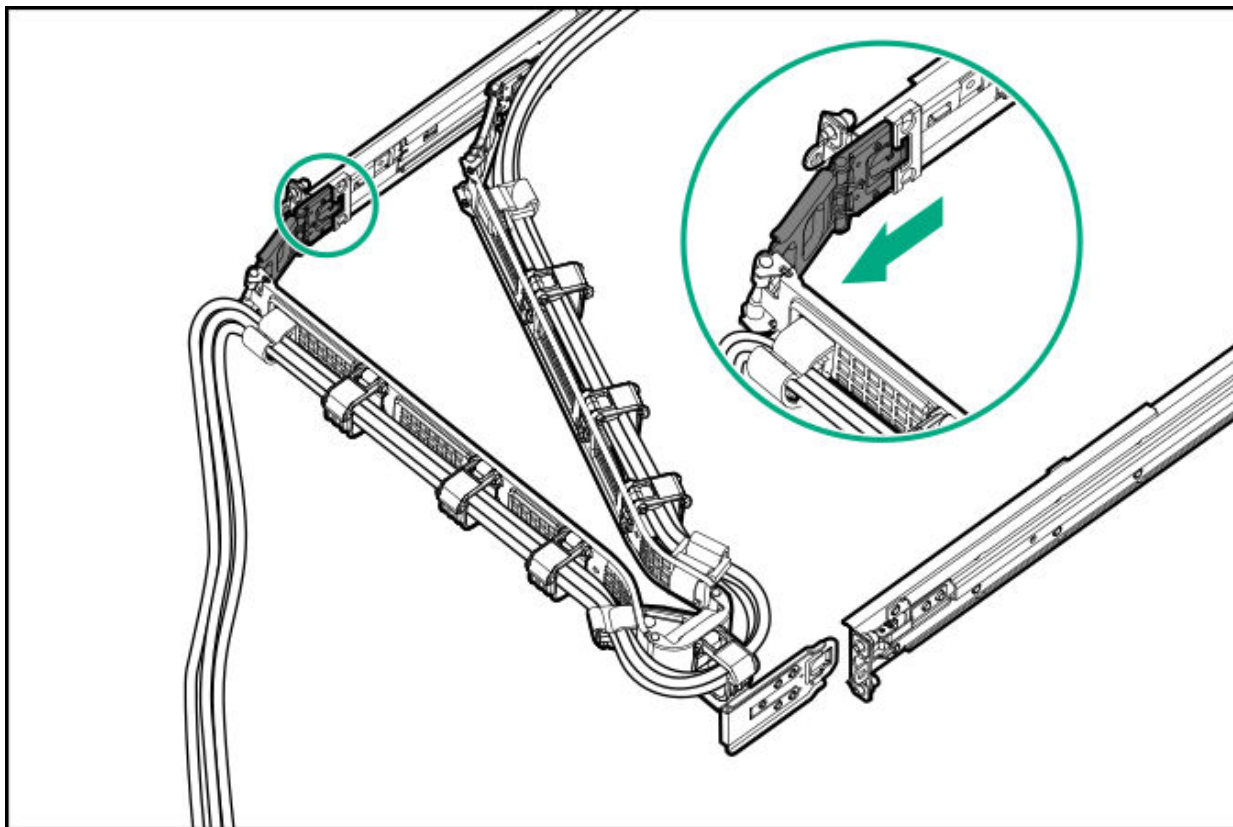
IMPORTANT

Some management arms are designed to hold extra weight:

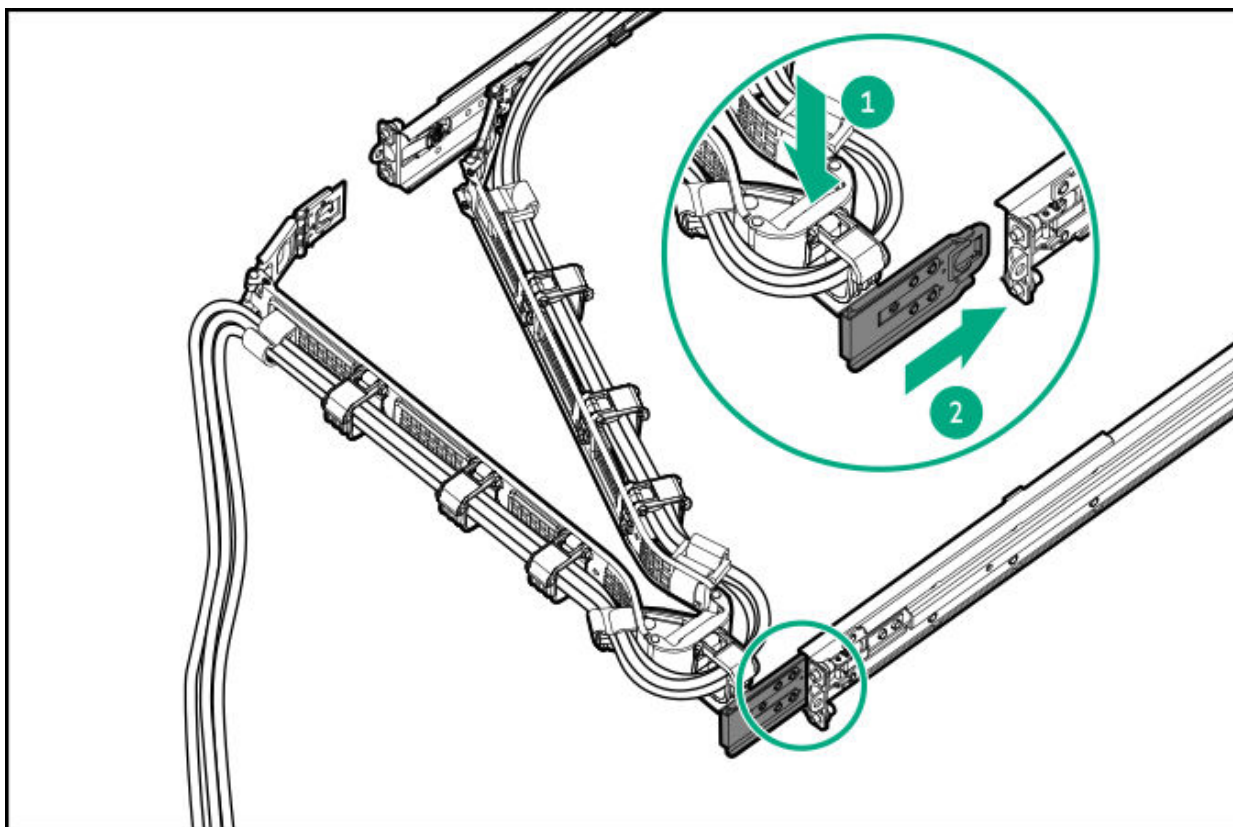
- P26489-B21
- P22020-B21
- P18546-B21

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

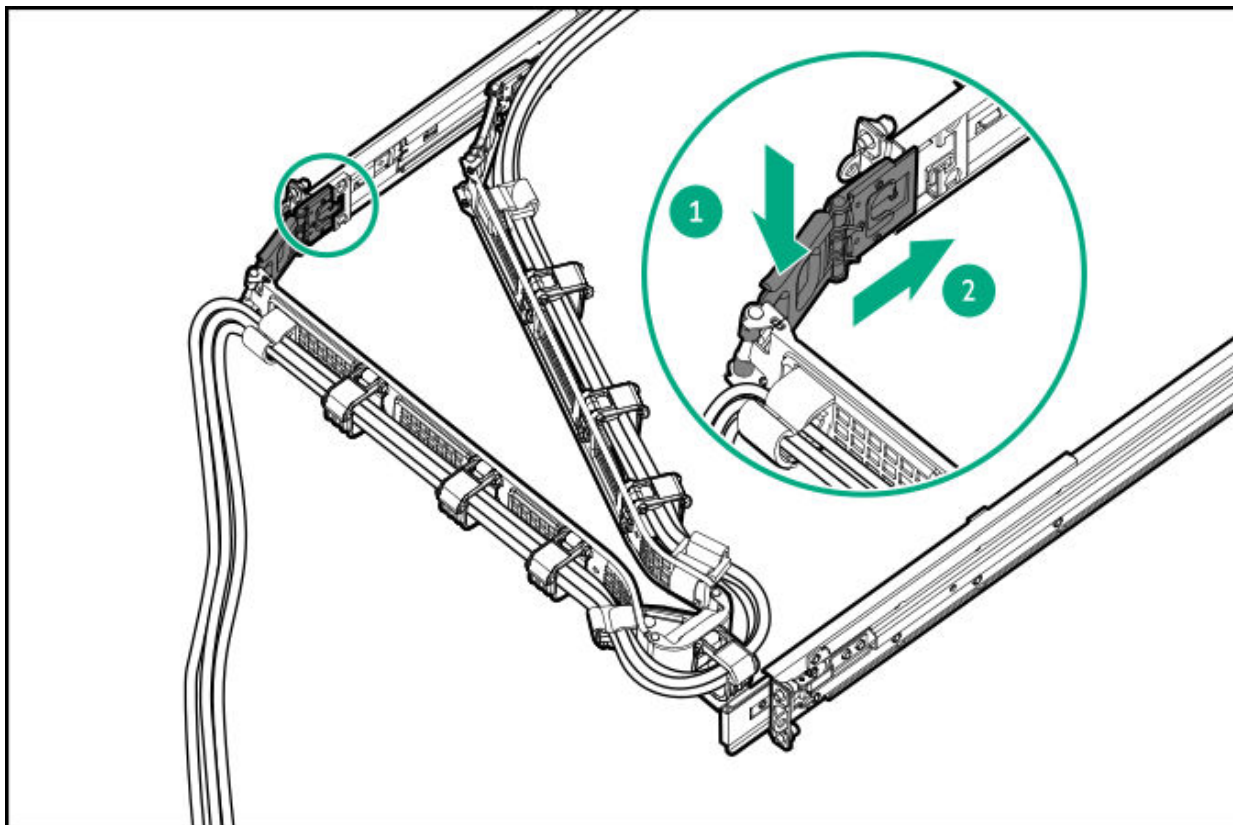
- a. Remove the outer bracket.



b. Align and install the elbow bracket.



c. Install the outer bracket.



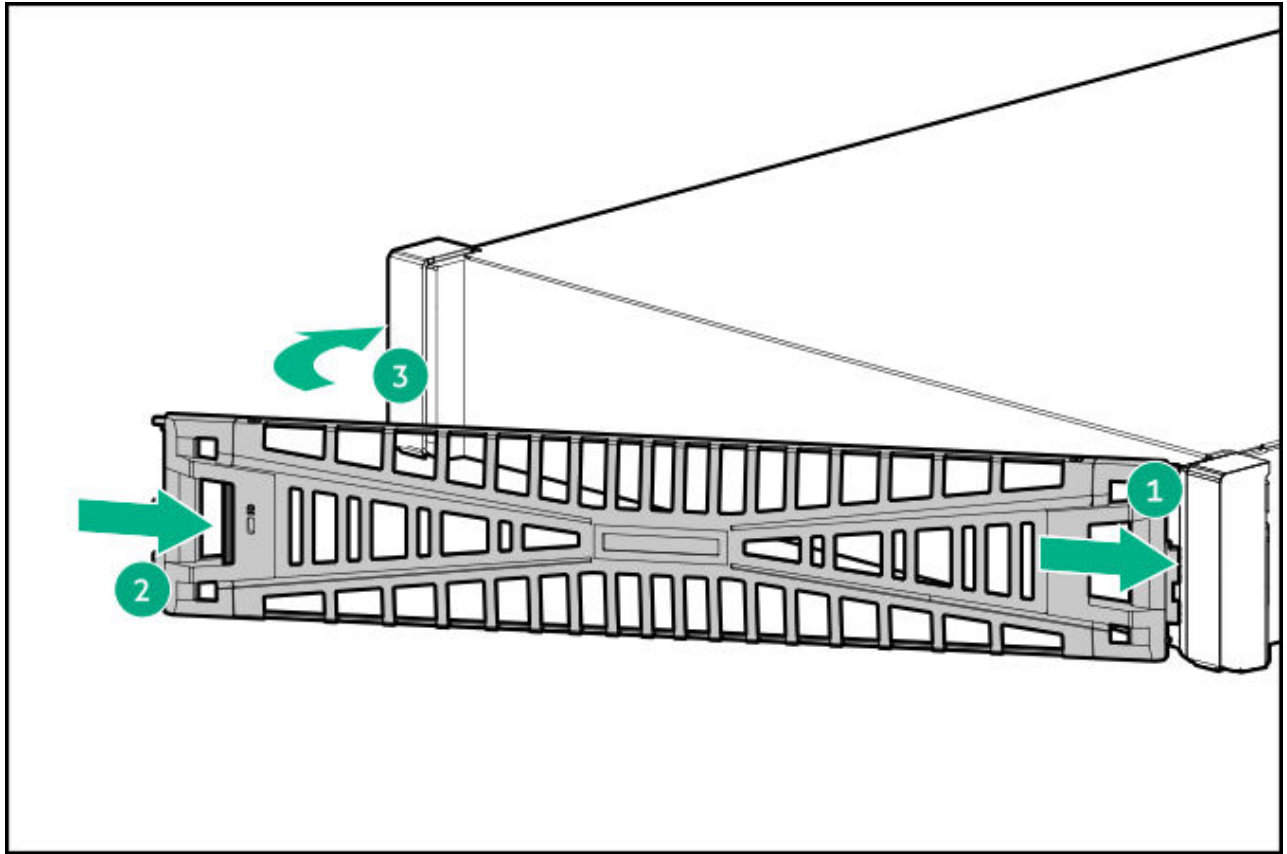
Results

The installation is complete.

Installing the front bezel option

Procedure

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



4. (Optional) Install the Kensington security lock.

For more information, see the lock documentation.

Results

The installation procedure is complete.

Drive options

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

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

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

To support hardware RAID, install a storage controller option.

Subtopics

Drive installation guidelines

Installing a hot-plug SFF SAS, SATA or NVMe drive

Installing an E3.S drive

Drive installation guidelines

Observe the following general guidelines:

- The system automatically sets all drive numbers.



CAUTION

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

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

Installing 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.



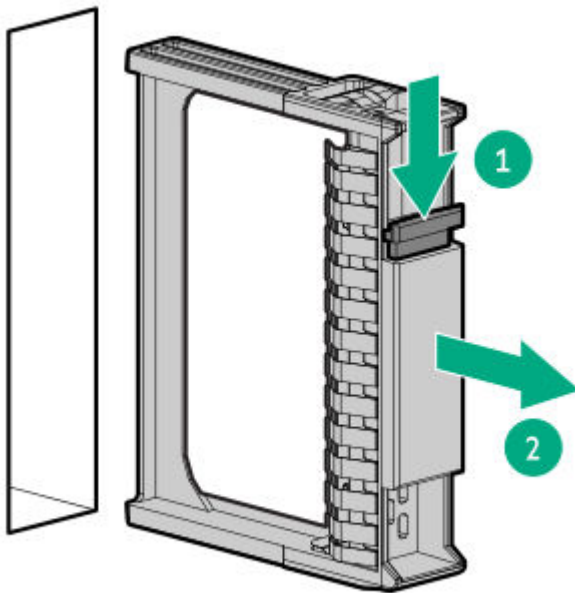
CAUTION

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

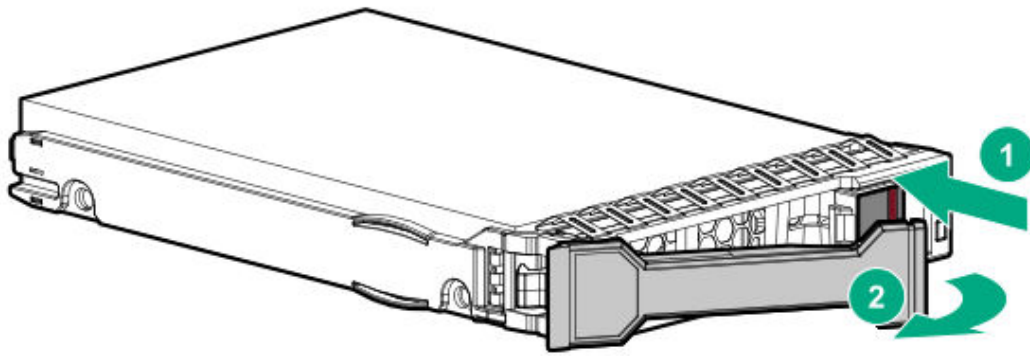
Procedure

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

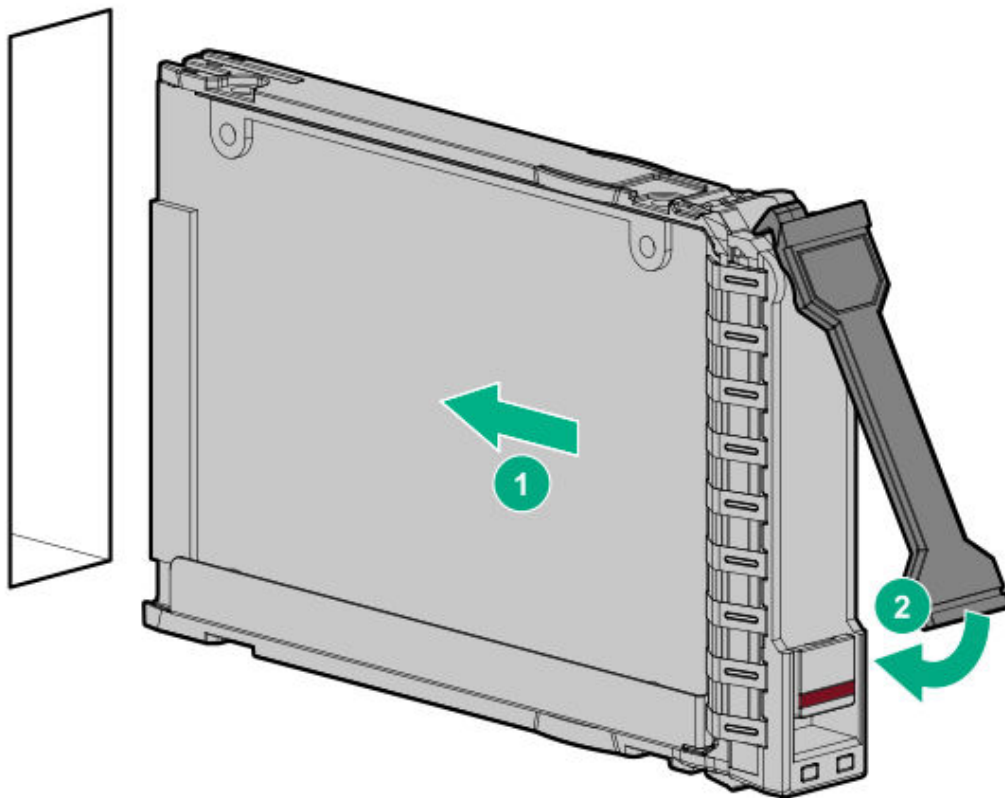
Retain the blank for future use.



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.



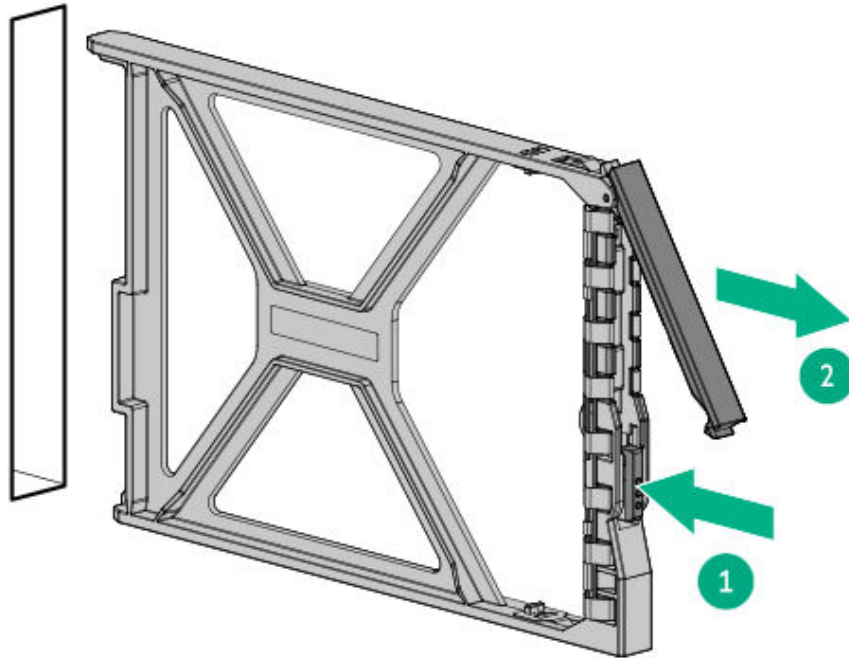
CAUTION

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

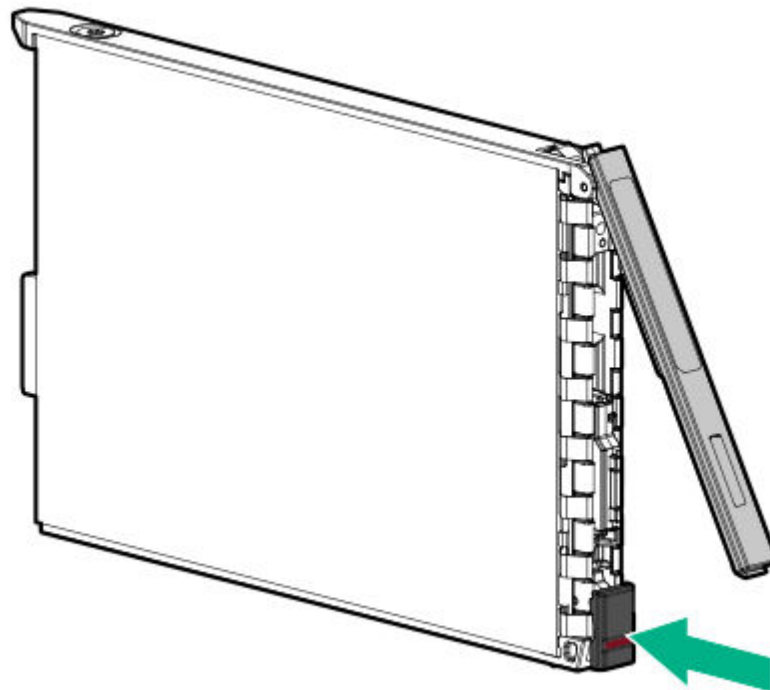
Procedure

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.

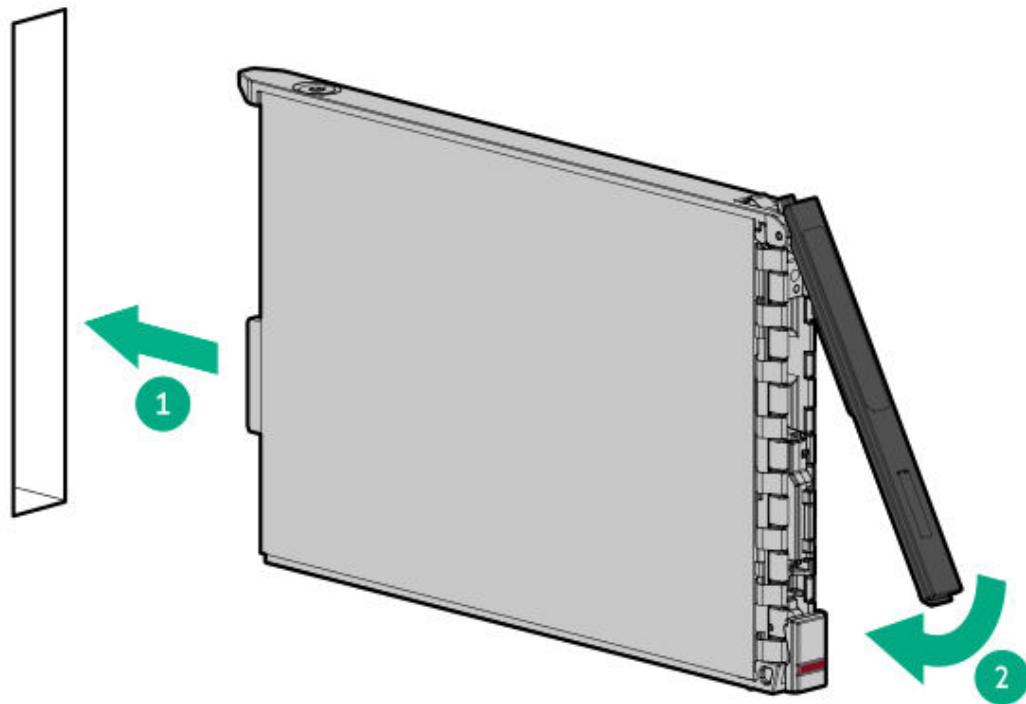
Retain the blank for future use.



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.

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 redundancy

DC power supply warnings and cautions

DC power supply wire colors

Installing an AC power supply

Installing a DC power supply

Connecting a DC power cable to a DC power source

Hot-plug power supply calculations

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

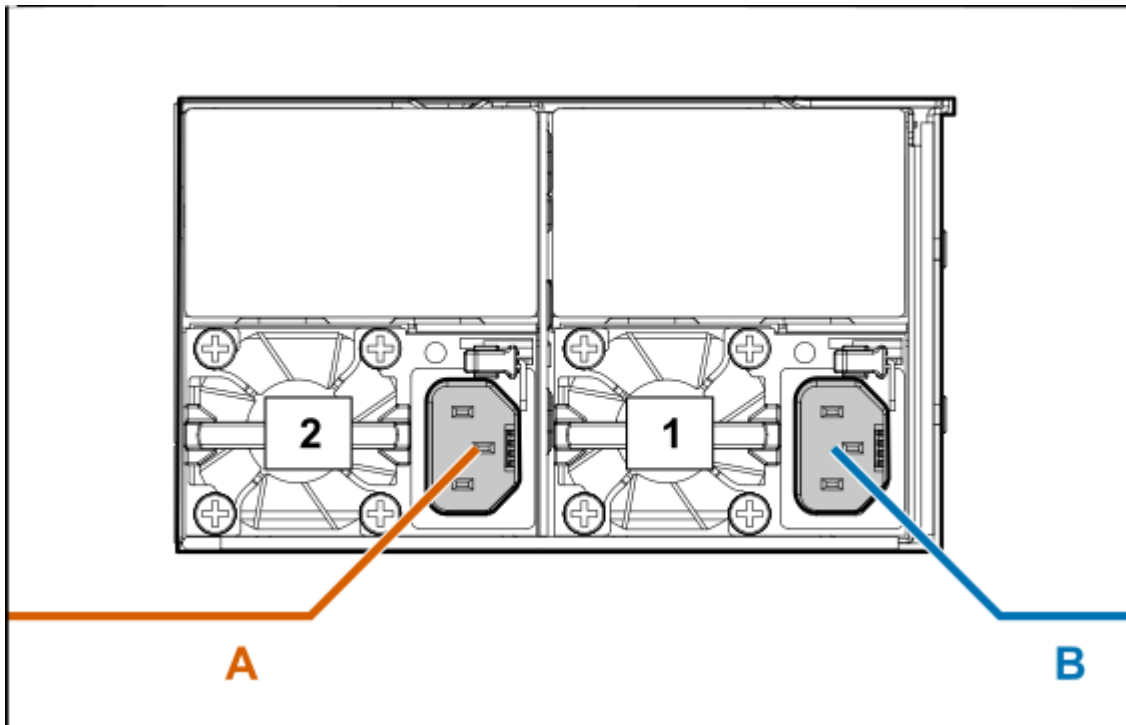
Power supply redundancy

The server supports two or four power supplies.

Two-power supply configuration

In a two-power supply configuration, the server supports 1 + 1 redundancy. The server will continue to operate if one power supply fails.

Power supply 1 (blue) and power supply 2 (orange) are supported horizontally for redundancy.

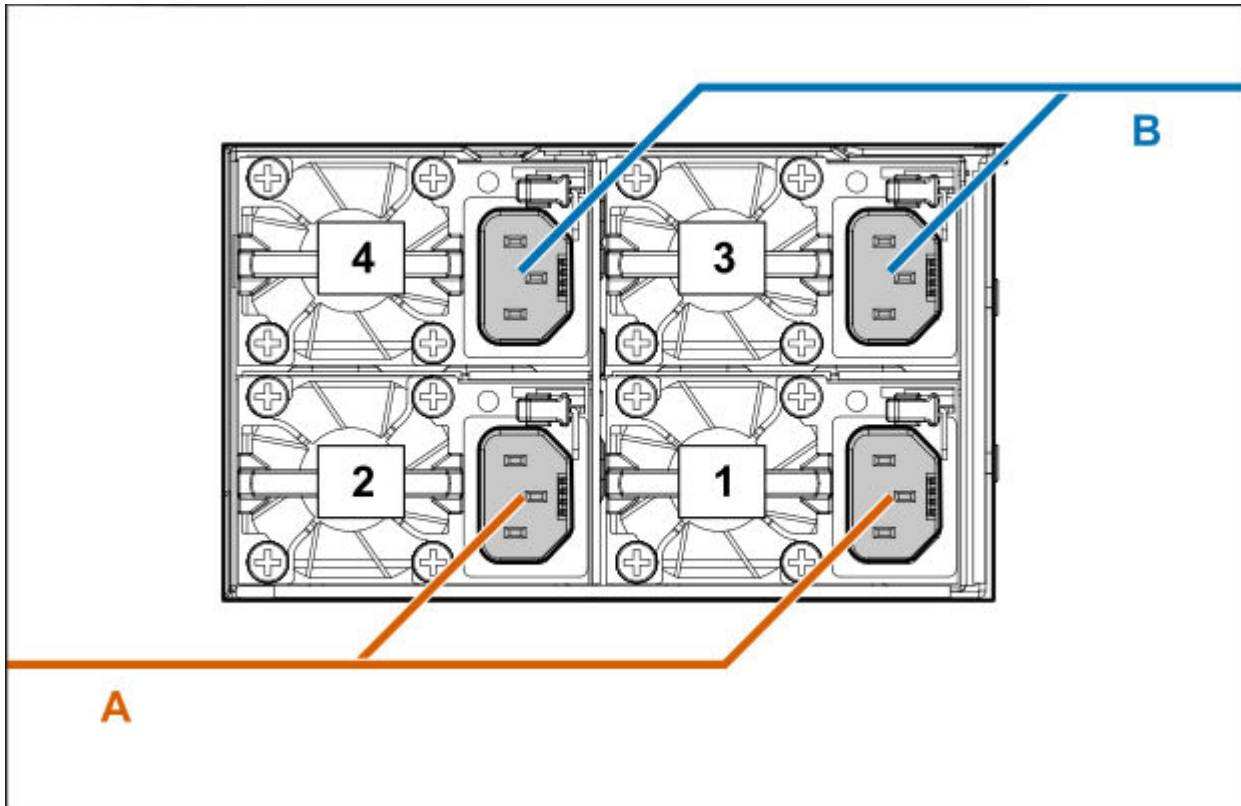


Four-power supply configuration

In the four-power supply configuration, the server supports the following redundancy modes:

- 2 + 2 Redundancy—The server will continue to operate if two power supplies fail or if one power supply feed loses power.
- 3 + 1 Redundancy—The server will continue to operate if a single power supply fails. The server will initiate an operating system shutdown if two power supplies fail. No power redundancy is possible.
- 4 + 0 Redundancy—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 fail.

In a four-power supply configuration, the server is by default configured for 2 + 2 redundancy. Power supplies 1 and 2 (orange), and power supplies 3 and 4 (blue) are supported horizontally for redundancy.



To review or update the power redundancy setting in UEFI System Utilities, see [Adjusting the server power supply redundancy setting](#).

DC power supply warnings and cautions



WARNING

To reduce the risk of electric shock or energy hazards:

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



WARNING

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

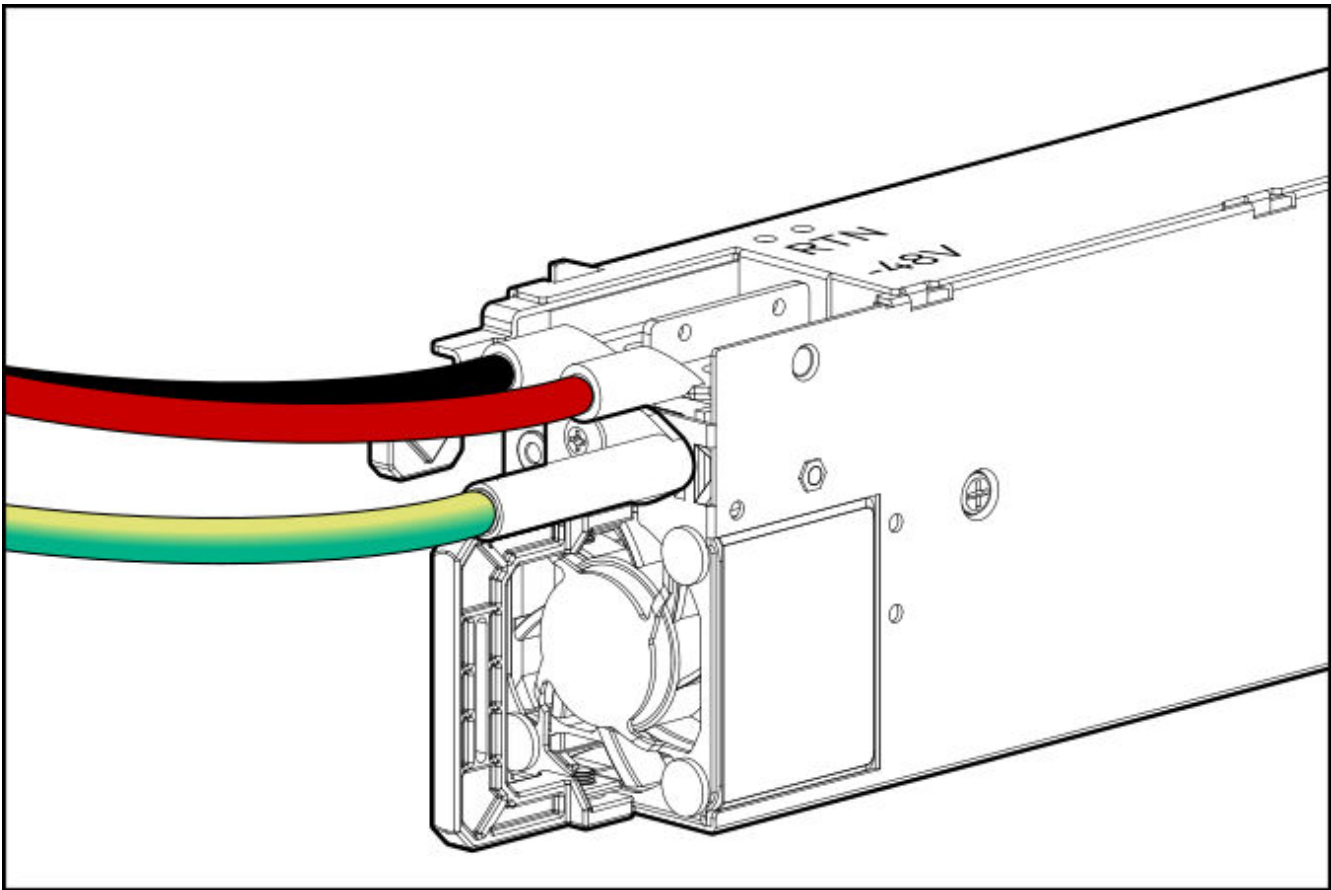


CAUTION

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

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

DC power supply wire colors



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

Installing an AC power supply

Prerequisites

Before installing a power supply option, review the following:

- [Power supply warnings and cautions](#)

- Power supply redundancy

About this task



WARNING

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



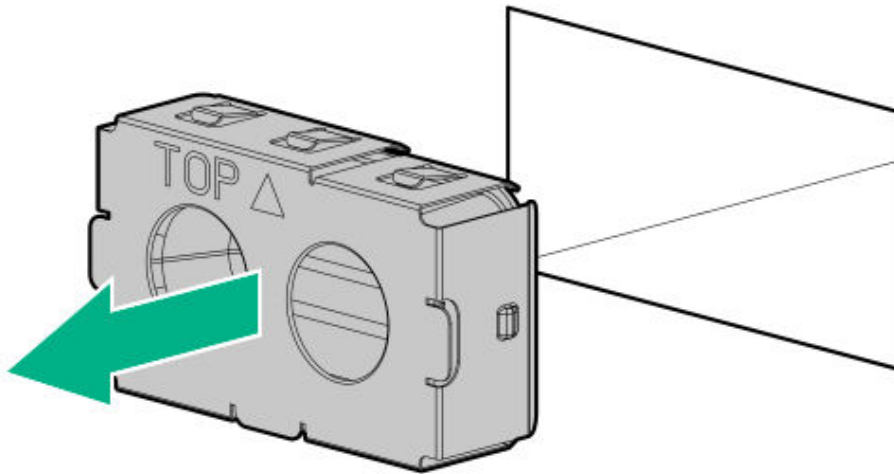
CAUTION

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

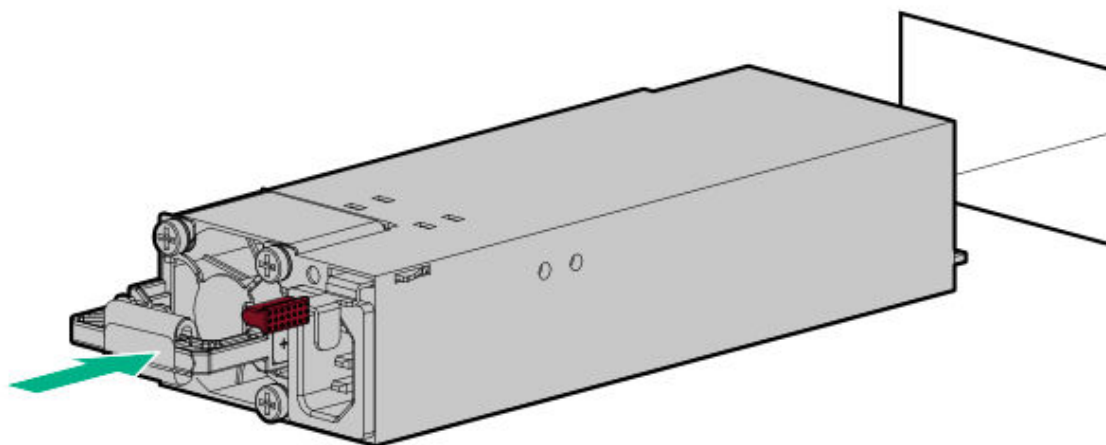
Procedure

1. Remove the power supply blank.

Retain the blank for future use.



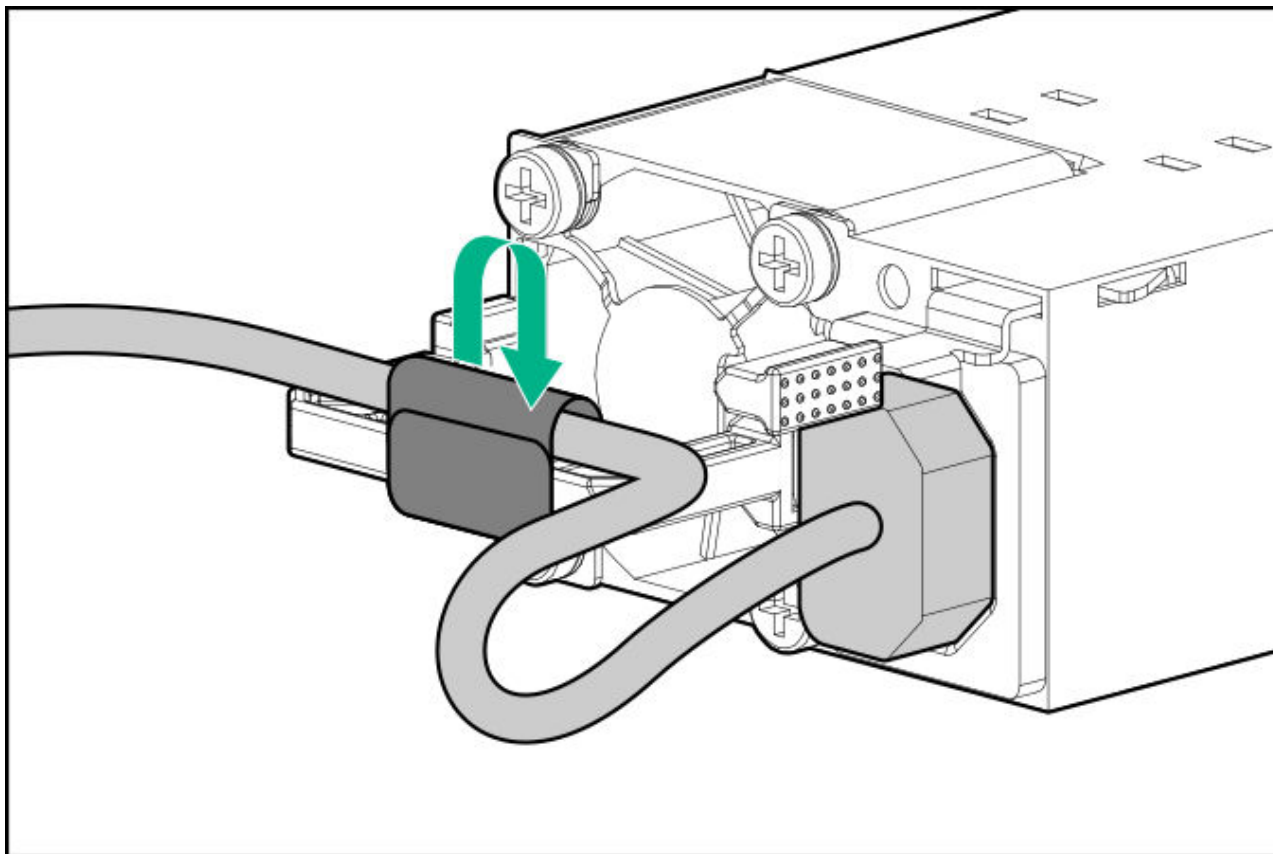
2. Install the power supply.



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

**CAUTION**

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



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

Results

The installation procedure is complete.

Installing a DC power supply

Prerequisites

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

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

About this task

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



WARNING

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

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

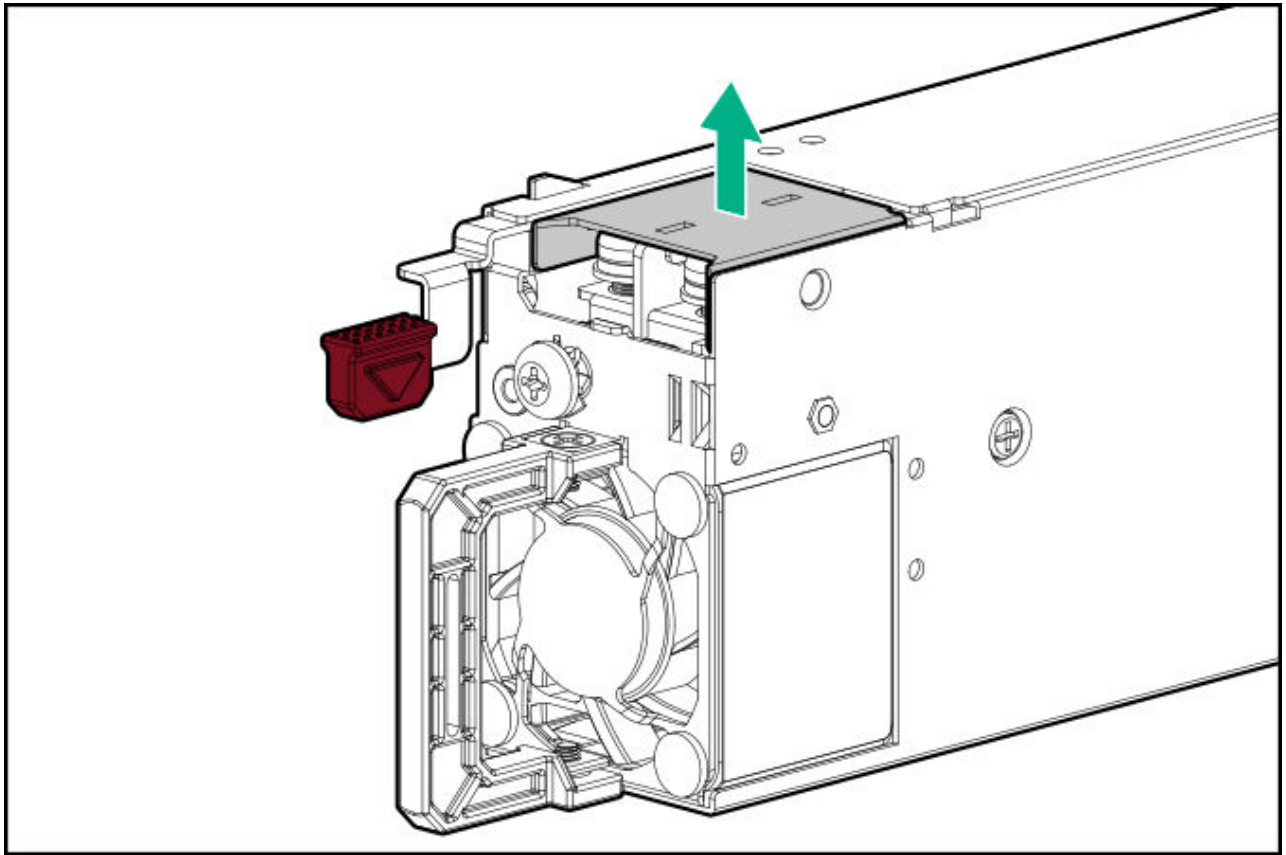


WARNING

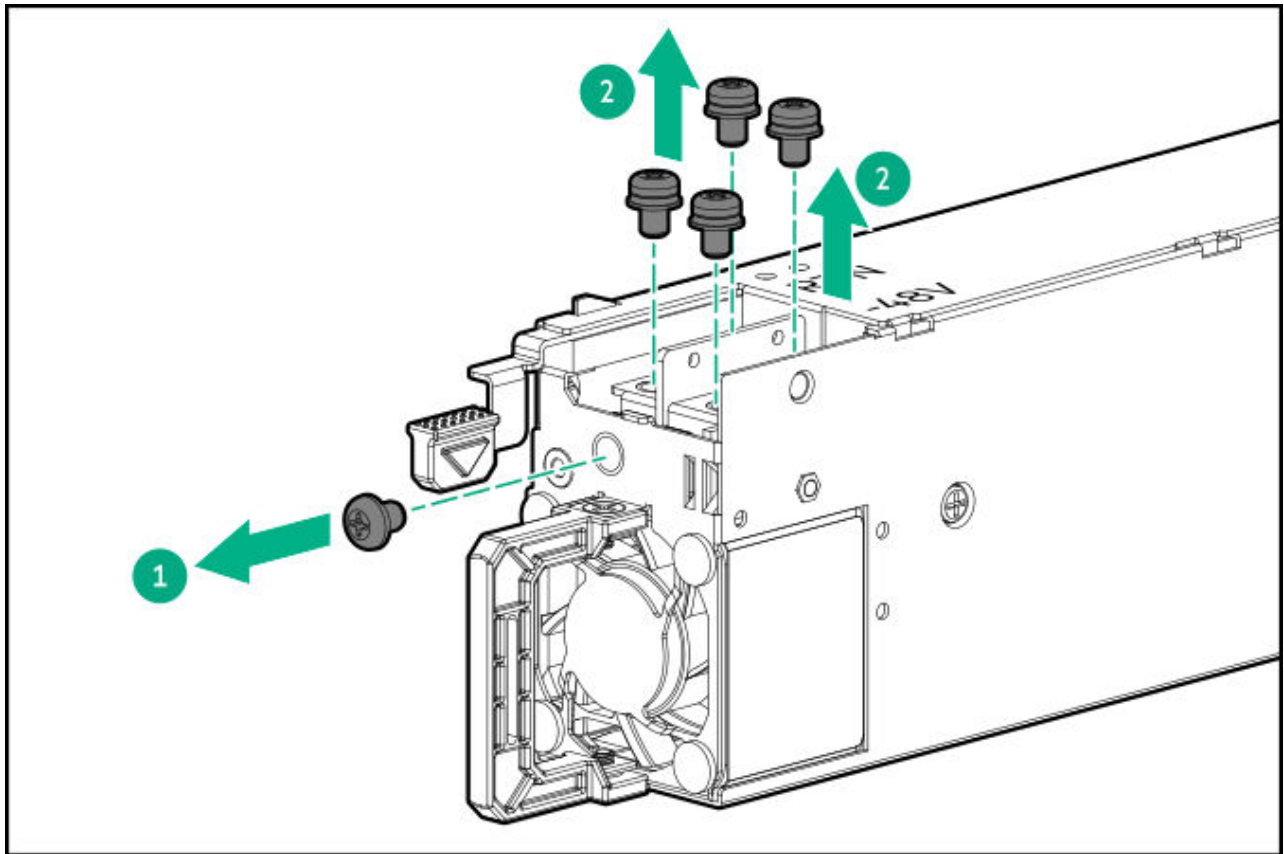
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

Procedure

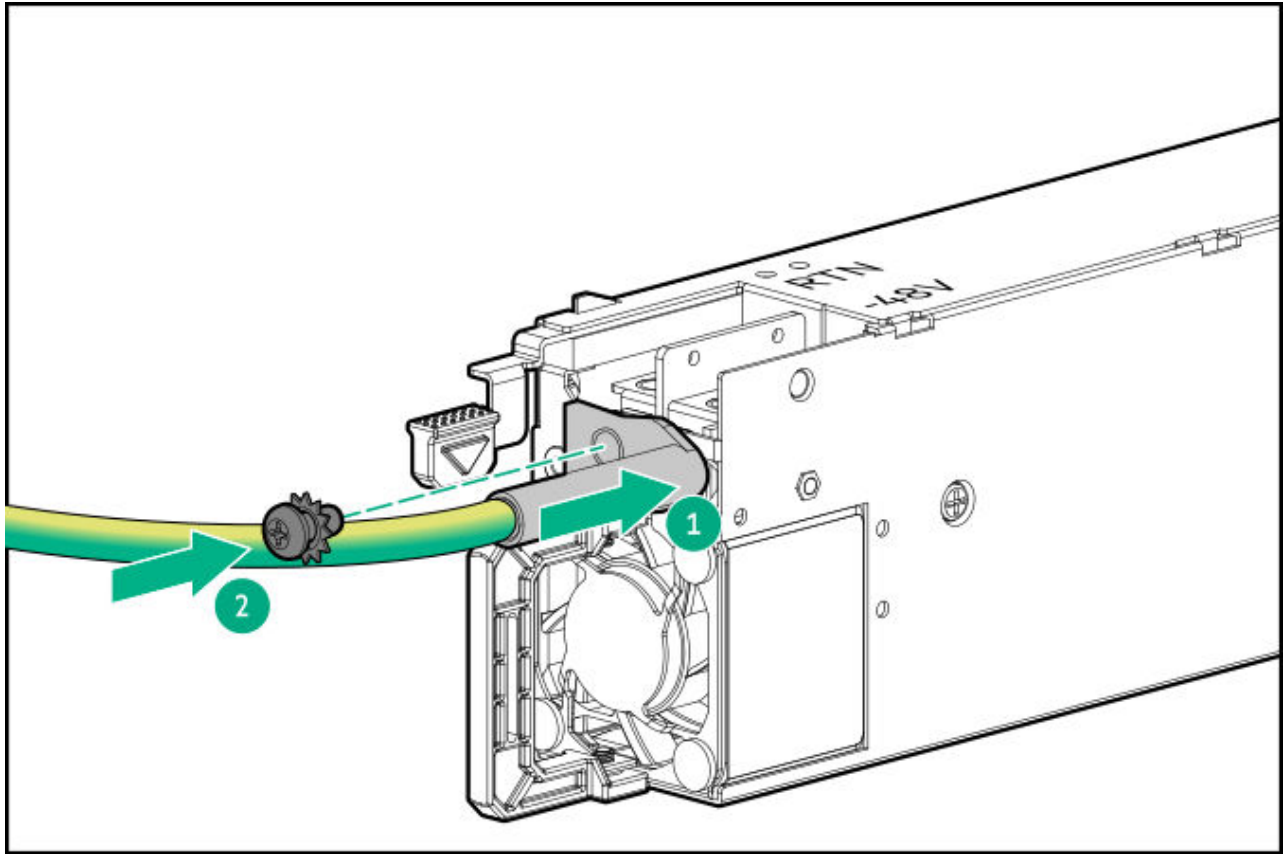
1. Remove the protective cover from the power supply.



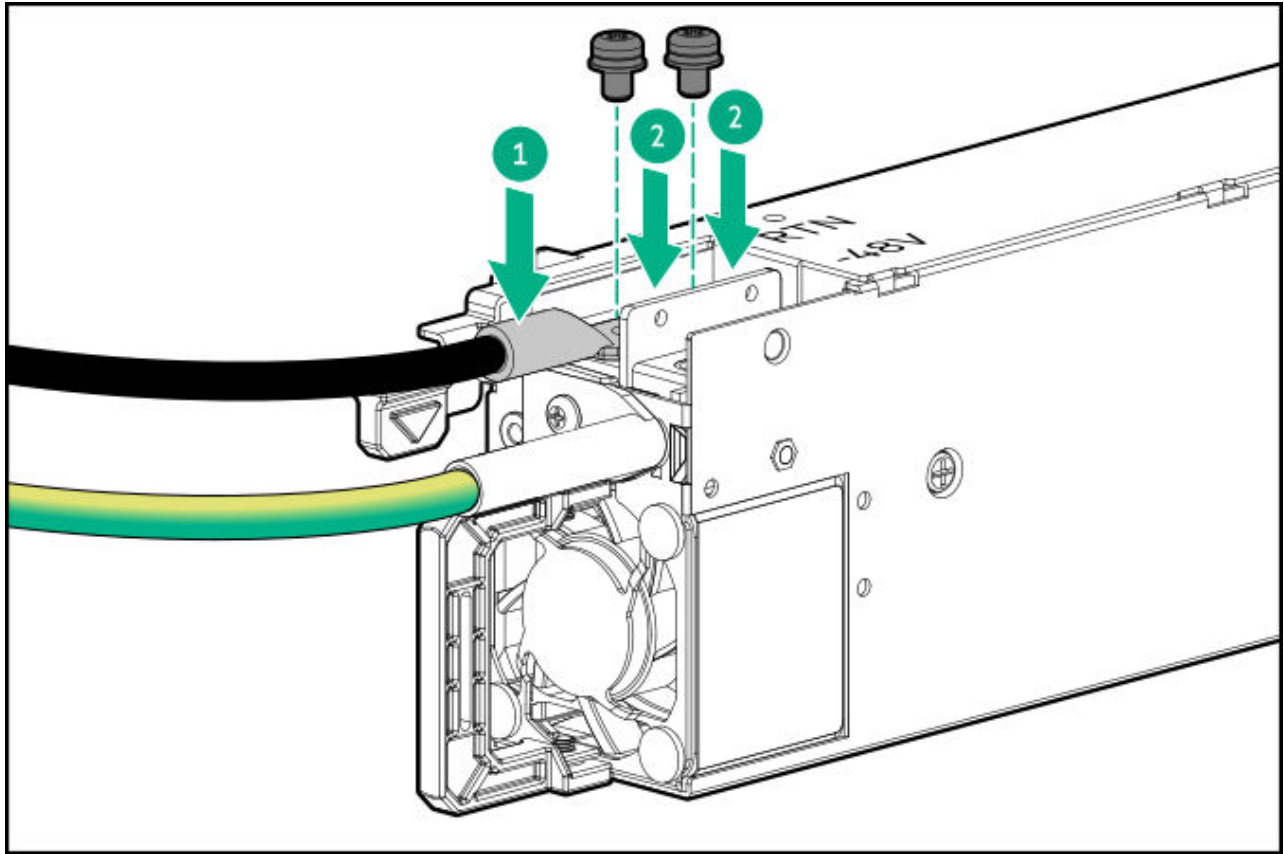
2. Remove the ground wire screw, and then remove the return wire and line wire screws.



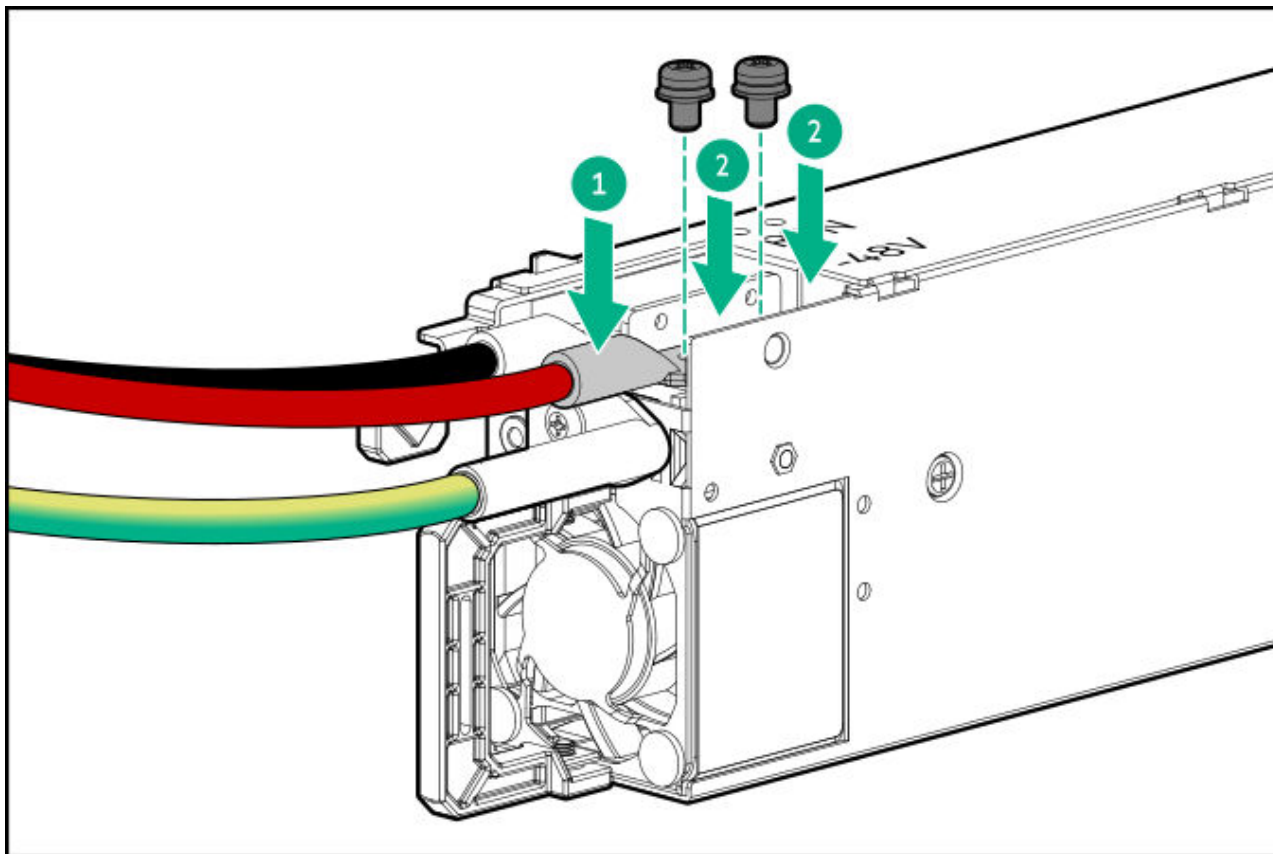
3. Attach the ground wire (green and yellow) to the DC power supply and tighten the screw and washer with 1.47 N-m (13 lbf-in).



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

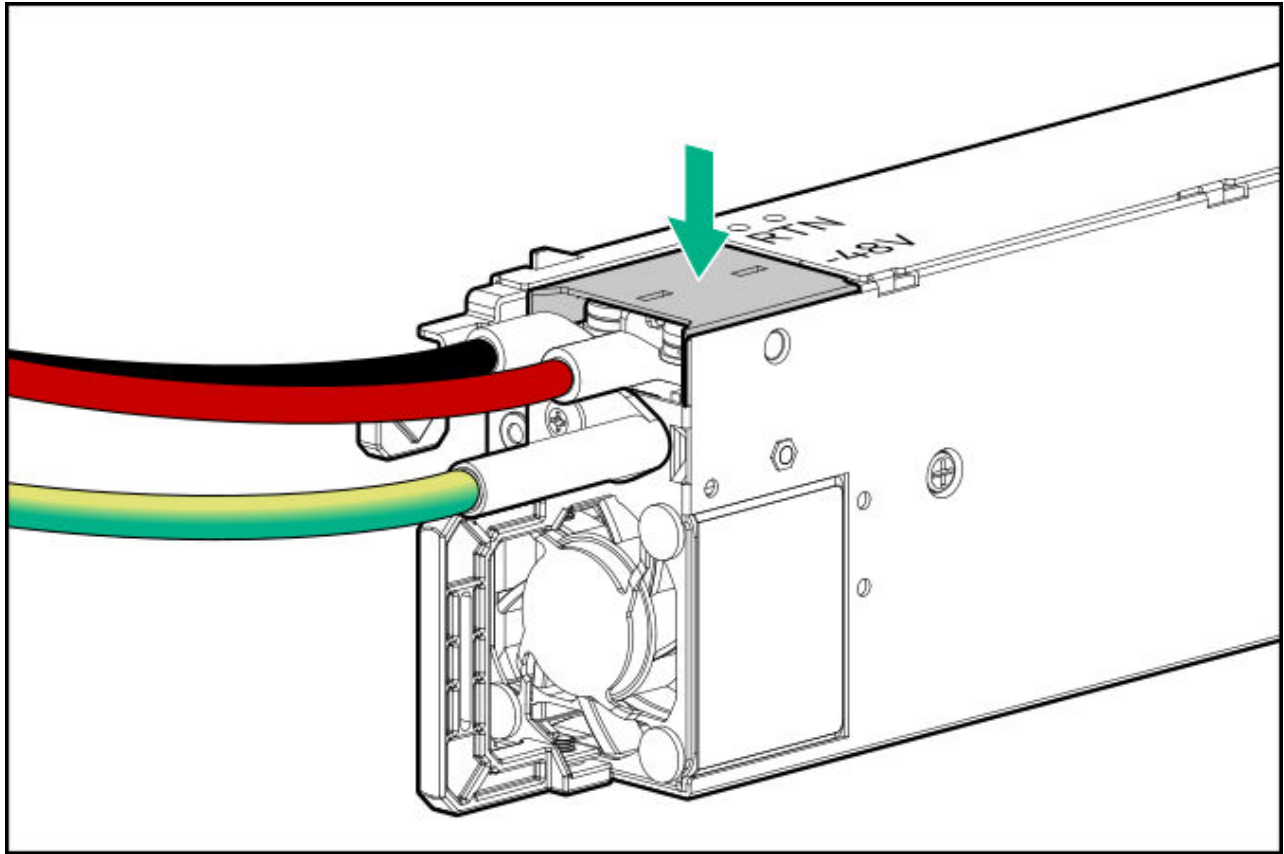


5. Install the line wire (red):
 - a. Insert the line wire into the -48V slot on the DC power supply.
 - b. Tighten the screw to 0.98 N-m (8.68 lbf-in).



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

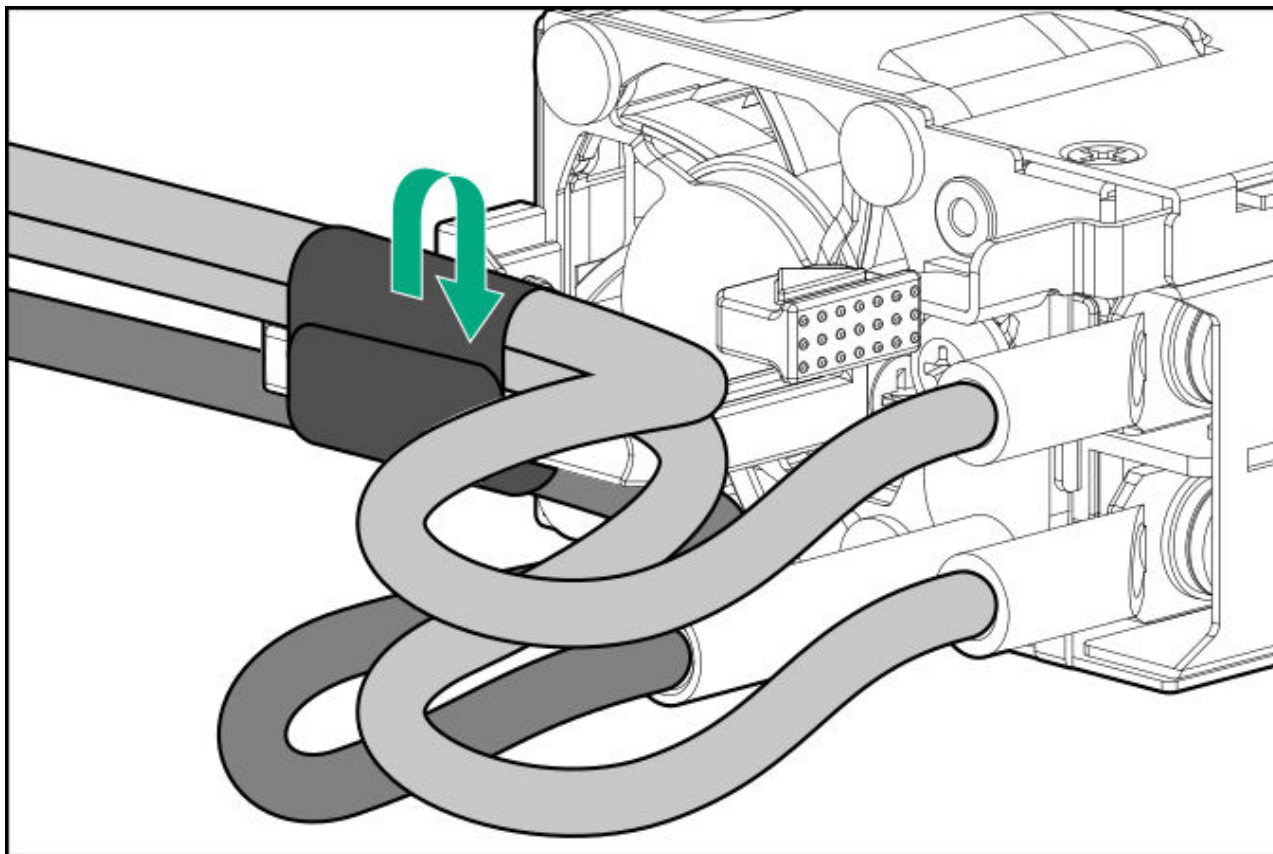
Make sure that the protective cover is locked.



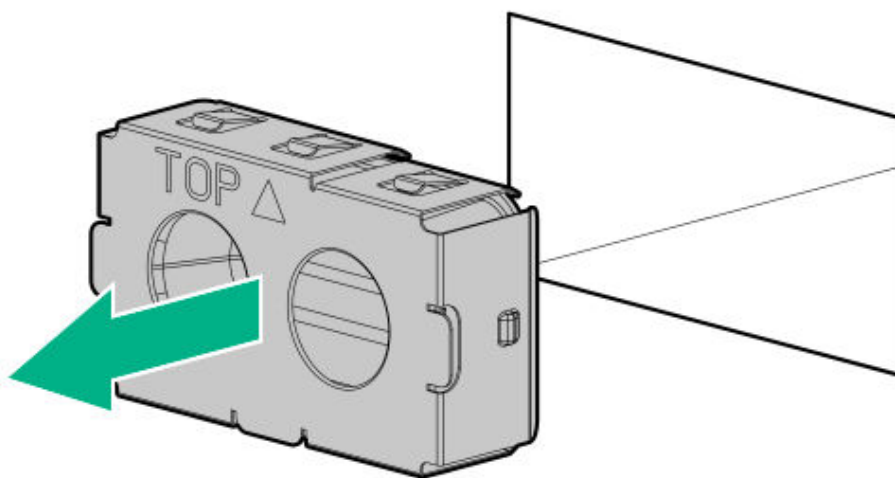
7. Secure the ground, positive return, and negative input wires in the strain relief strap.

**CAUTION**

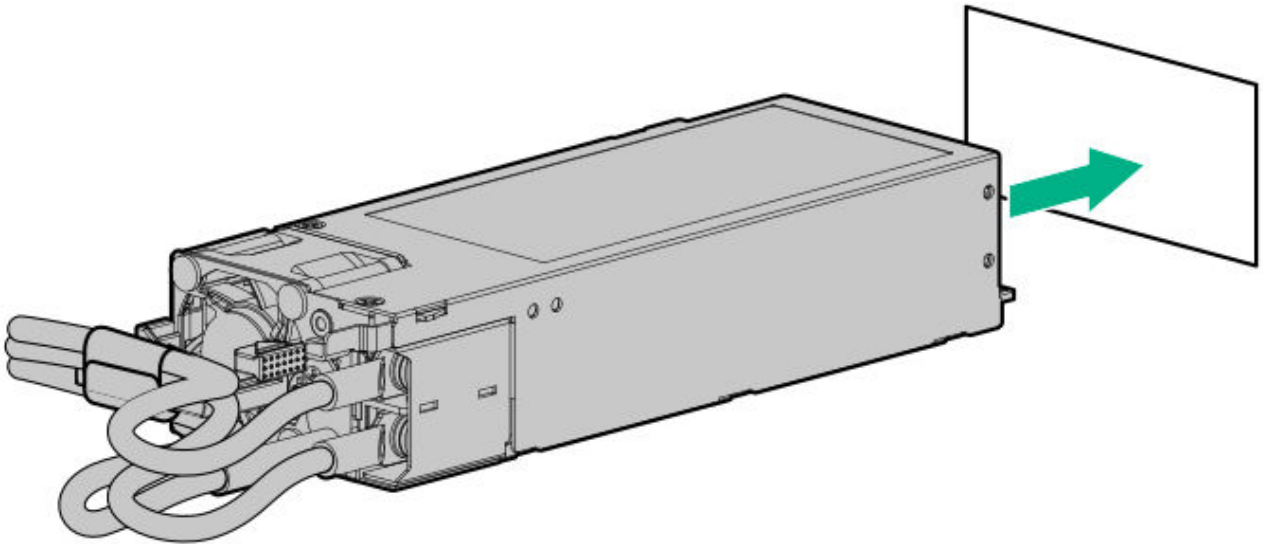
Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.



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



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



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

Results

The installation procedure is complete.

Connecting a DC power cable to a DC power source

Prerequisites

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

- Electrical wire cutter
- Hand crimp tool

About this task



WARNING

To reduce the risk of electric shock or energy hazards:

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



WARNING

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



WARNING

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



CAUTION

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



CAUTION

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

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

Procedure

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



IMPORTANT

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



IMPORTANT

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

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

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

Transceiver option

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

Subtopics

Transceiver warnings and cautions

Installing a transceiver

Transceiver warnings and cautions



WARNING

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



CAUTION

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



CAUTION

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



CAUTION

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



IMPORTANT

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

Installing a transceiver

Prerequisites

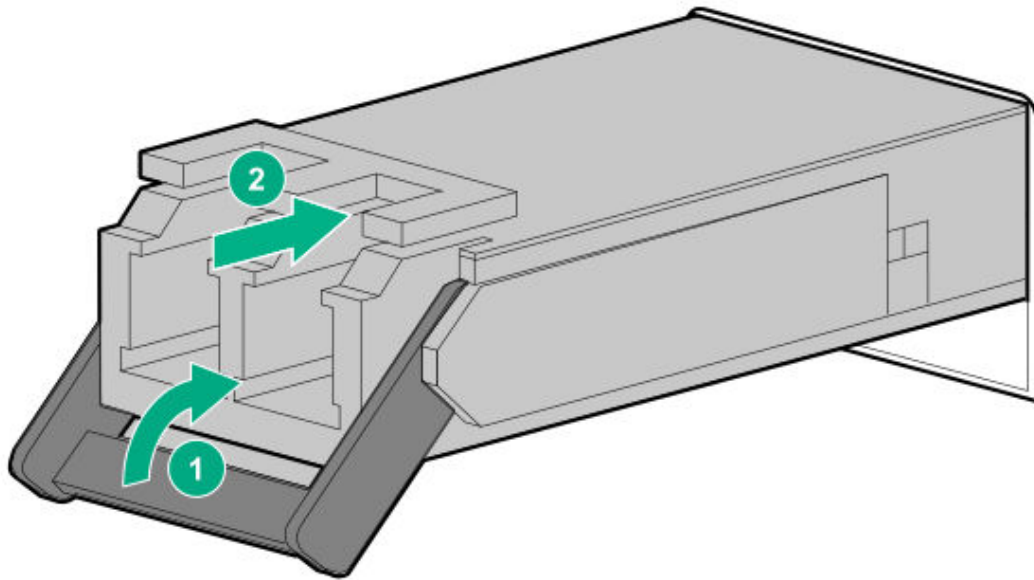
Before installing a transceiver option, review the following:

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

Procedure

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

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



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

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

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

Results

The installation procedure is complete.

Installing the System Insight Display module

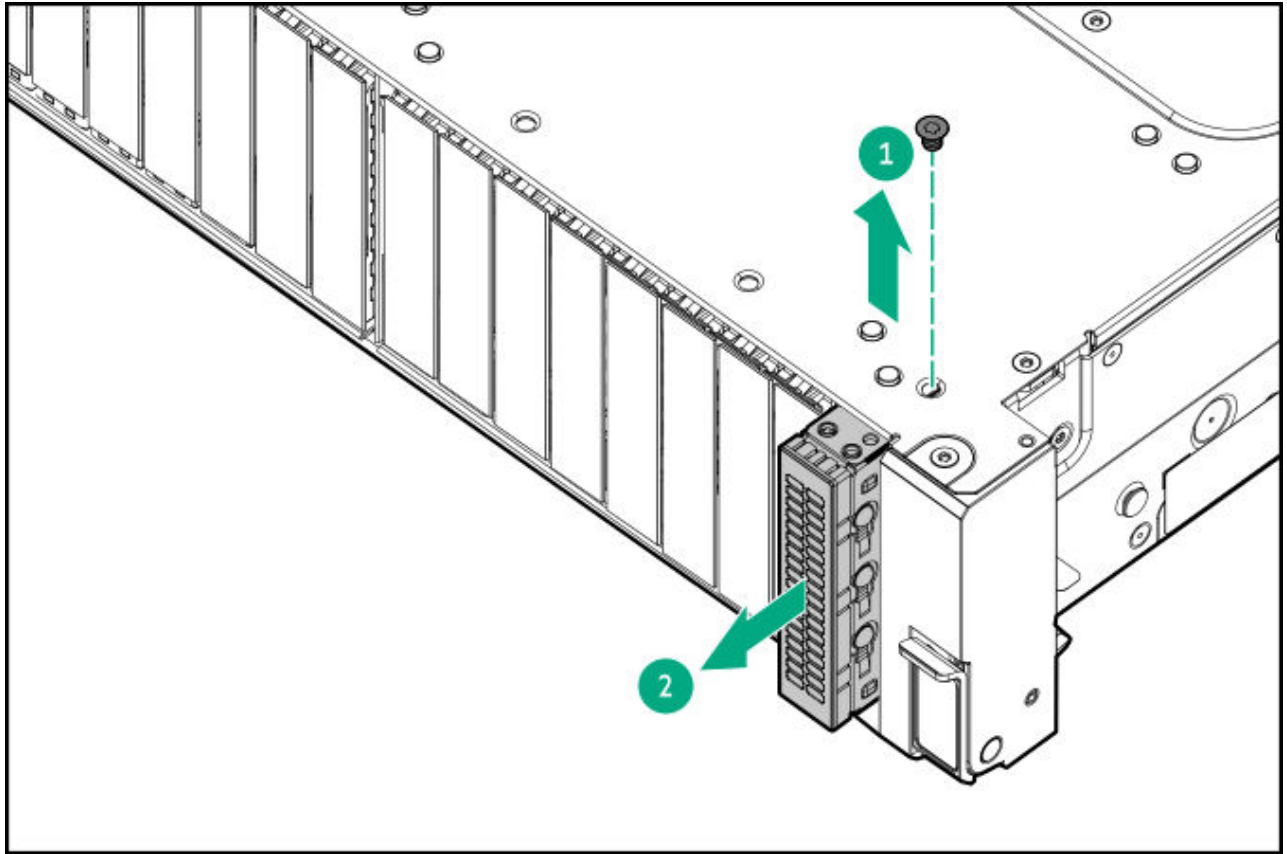
Prerequisites

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

Procedure

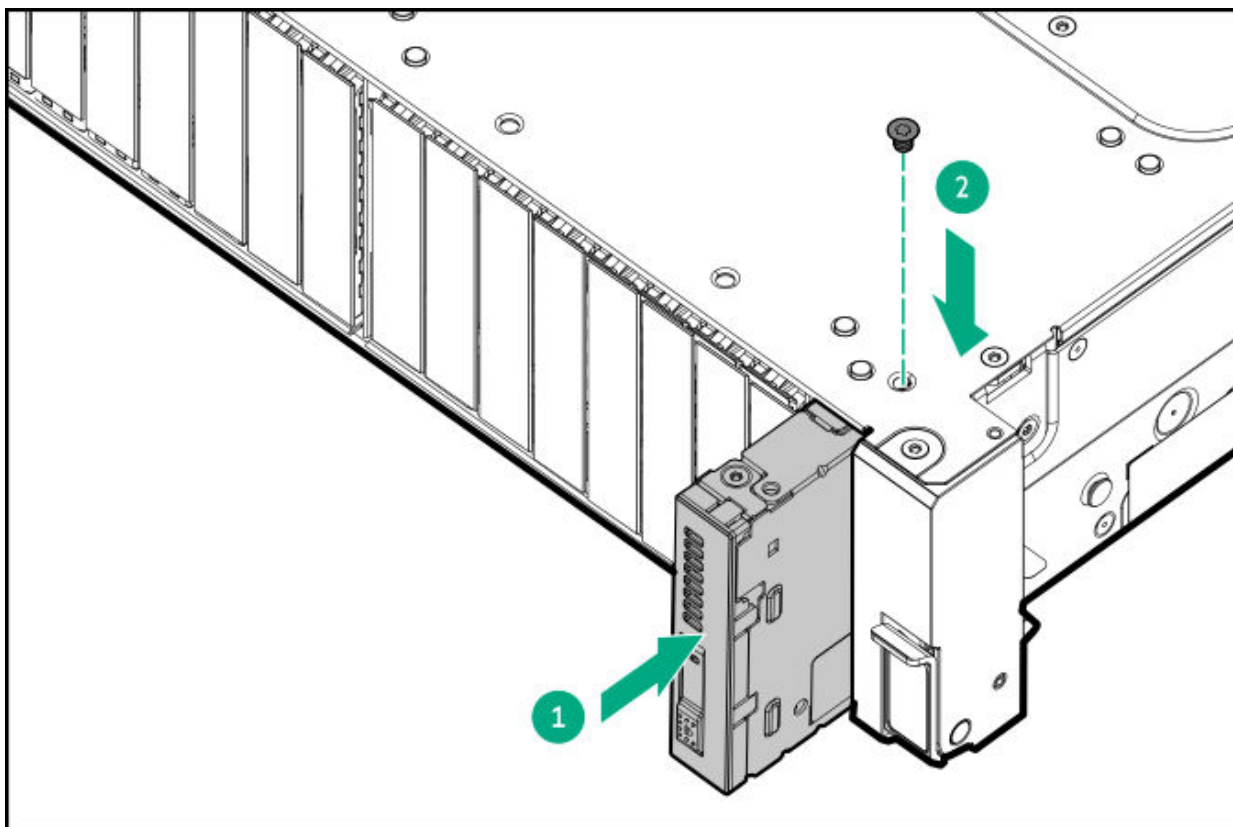
1. If installed, remove the front bezel.
 2. Power down the server.
 3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
 4. Disconnect all peripheral cables from the server.
 5. Remove the server from the rack.
 6. Place the server on a flat, level work surface.
 7. Remove the access panel.
 8. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
 9. Remove the fan cage.
 10. Disconnect the blank from the power switch/SID module connector.

The SID module cable will be connected to this same connector.
 11. Remove the SID blank.
- Retain the T-10 screw for later use.



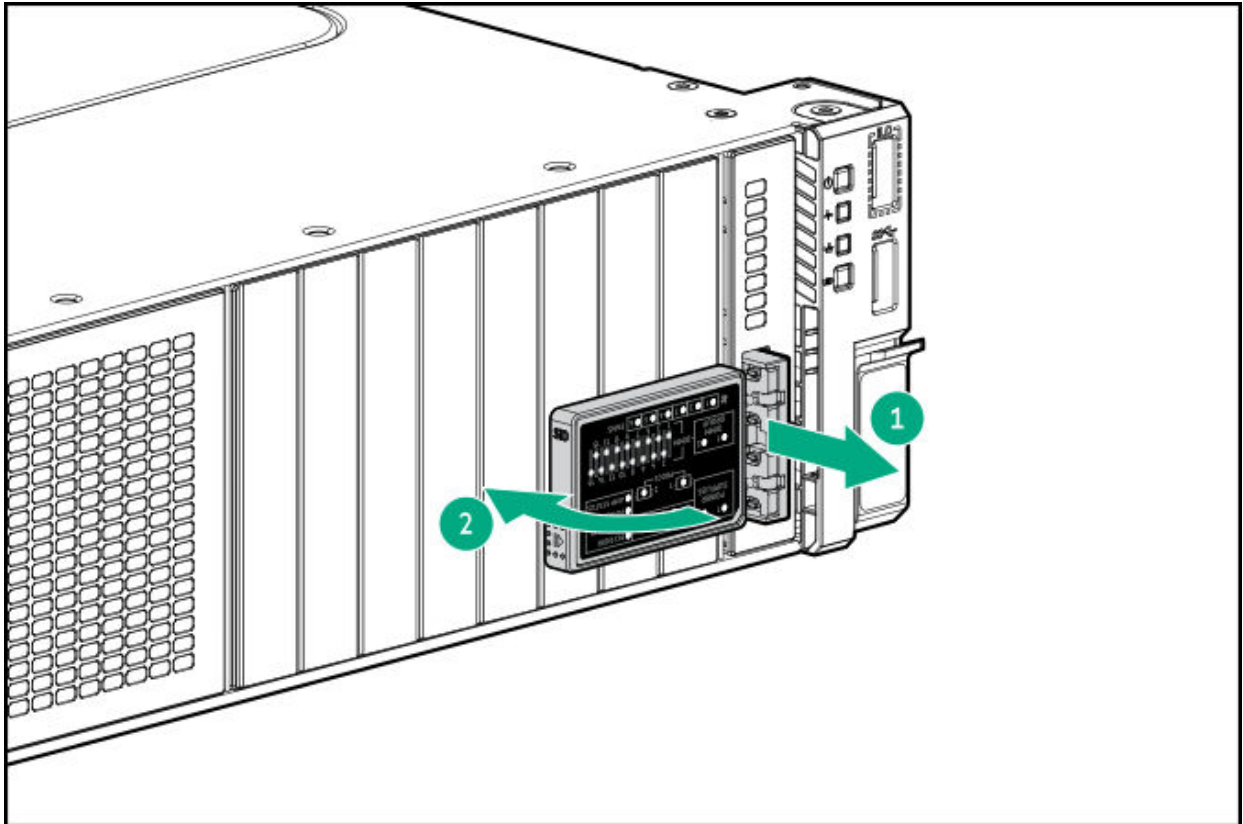
.2. Install the SID module:

- a. Route the SID cable through the opening in the front of the server, and then install the SID module.
- b. Install the removed T-10 screw.



- .3. Cable the SID module.
- .4. Install the fan cage.
- .5. Do one of the following:
 - Install the air baffle.
 - Install the processor mezzanine tray.
- .6. Install the access panel.
- .7. Install the server into the rack.
- .8. Connect all peripheral cables to the server.
- .9. Connect each power cord to the power source.
- !0. Connect each power cord to the server.
- !1. Power up the server.
- !2. If removed, install the front bezel.
- !3. To access the SID, do the following:
 - a. Press and release the panel.

- b. After the display fully ejects, rotate the display to view the LEDs.



Results

The installation procedure is complete.

Universal media bay option

The universal media bay is populated in Box 1.

Subtopics

Installing the universal media bay

Installing the universal media bay

Prerequisites

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

About this task

This server supports the universal media bay option with an optical drive bay, two USB 2.0 ports, DisplayPort 1.1a, and 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.

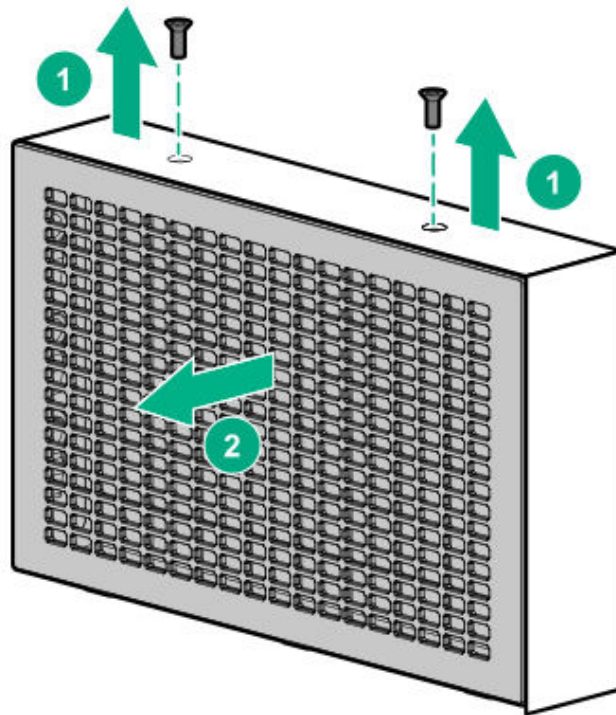


CAUTION

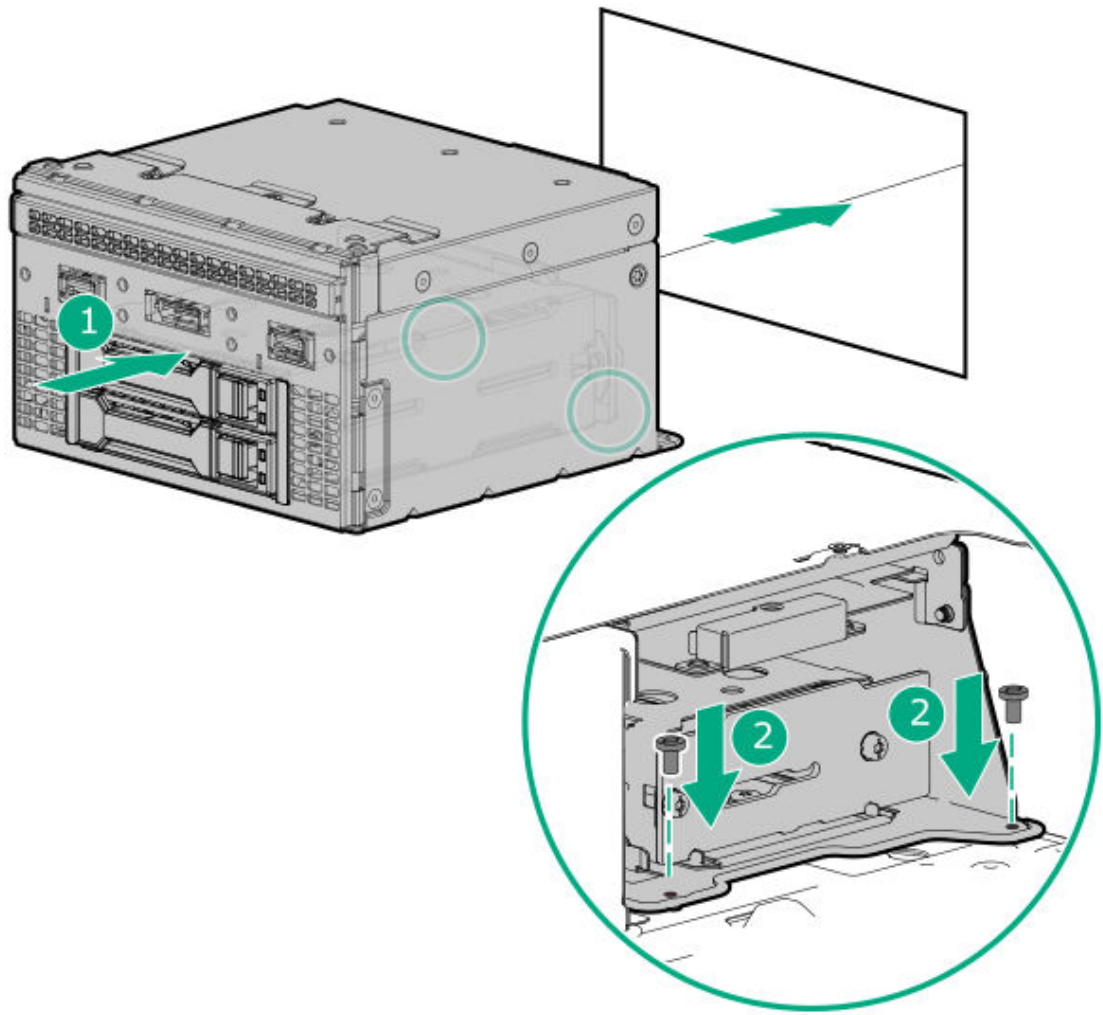
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

1. Back up all server data on the drive.
2. If installed, remove the front bezel.
3. Power down the server.
4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
5. Disconnect all peripheral cables from the server.
6. Remove the server from the rack.
7. Place the server on a flat, level work surface.
8. Remove the access panel.
9. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
10. Remove the fan cage.
11. Remove the drive box blank:
 - a. Remove the drive box blank screws.
 - b. Remove the drive box blank.



- .2. (Optional) Install the 2 SFF stacked drive cage in the universal media bay.
- .3. Install the universal media bay:
 - a. Install the universal media bay in the server.
 - b. Install the universal media bay screws.



.4. Connect the following cables:

- USB 2.0 / DisplayPort Y-cable
- USB 2.0 port cable

.5. (Optional) Install the optical drive into the universal media bay.

.6. Install the fan cage.

.7. Do one of the following:

- Install the air baffle.
- Install the processor mezzanine tray.

.8. Install the access panel.

.9. Install the server into the rack.

- !0. Connect all peripheral cables to the server.
- !1. Connect each power cord to the power source.
- !2. Connect each power cord to the server.
- !3. Power up the server.
- !4. If removed, install the front bezel.

Results

The installation procedure is complete.

Optical drive option

The server supports a slim-type SATA optical drive.

Subtopics

Installing the optical drive in the universal media bay

Installing the optical drive in the universal media bay

Prerequisites

- The optical drive installation requires the optical drive power cable (P55376-001) in the universal media bay option kit (P60500-B21).
- Before you perform this procedure, make sure that you have the following items available:
 - T-10 Torx screwdriver
 - Phillips No. 1 screwdriver

About this task



CAUTION

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

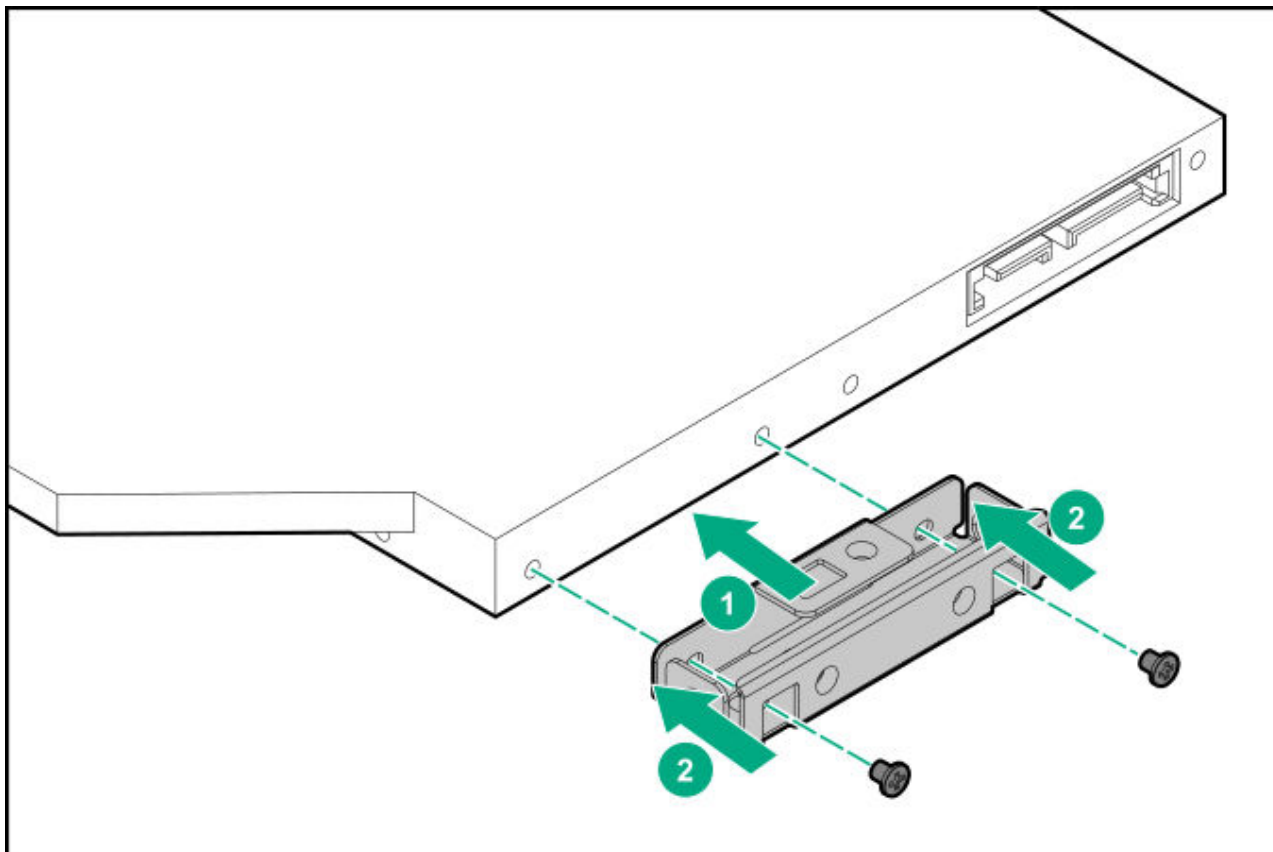


CAUTION

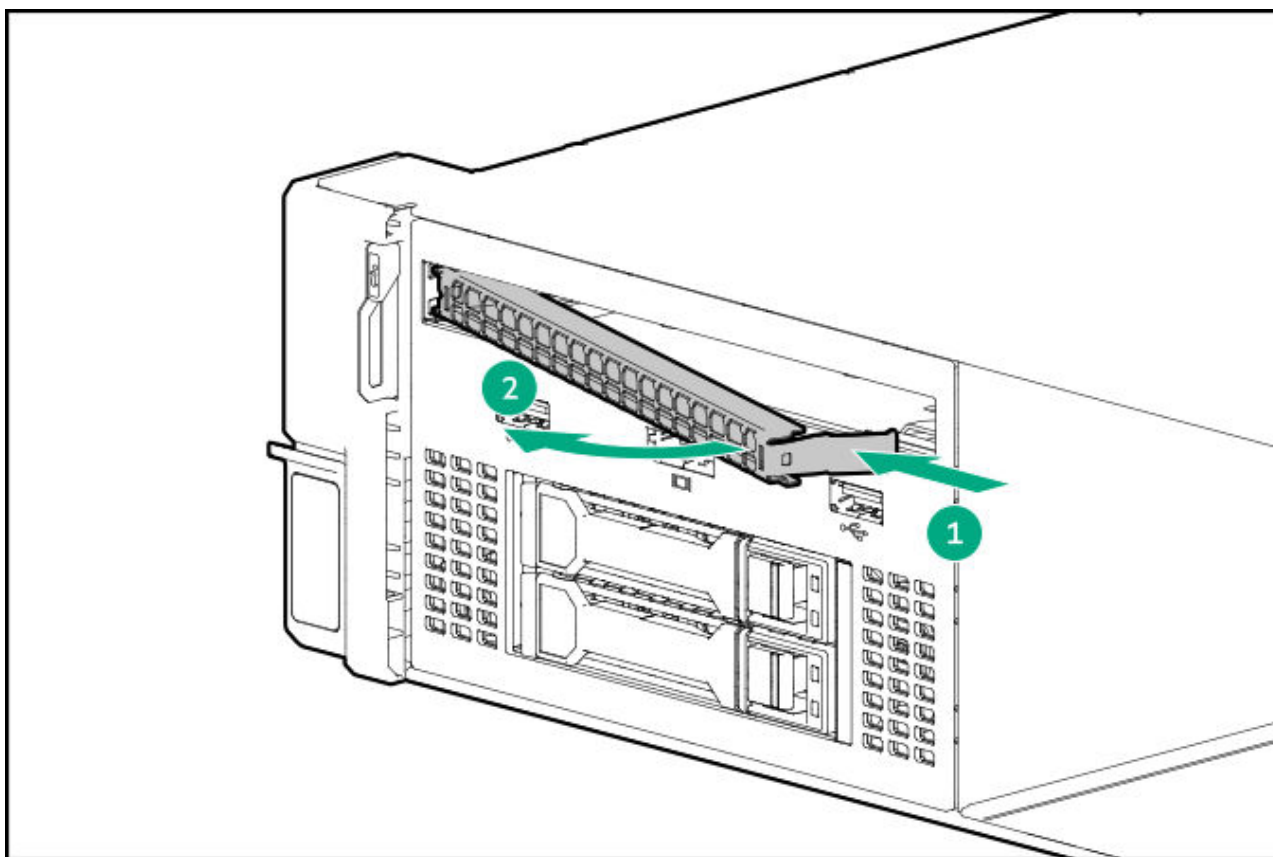
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

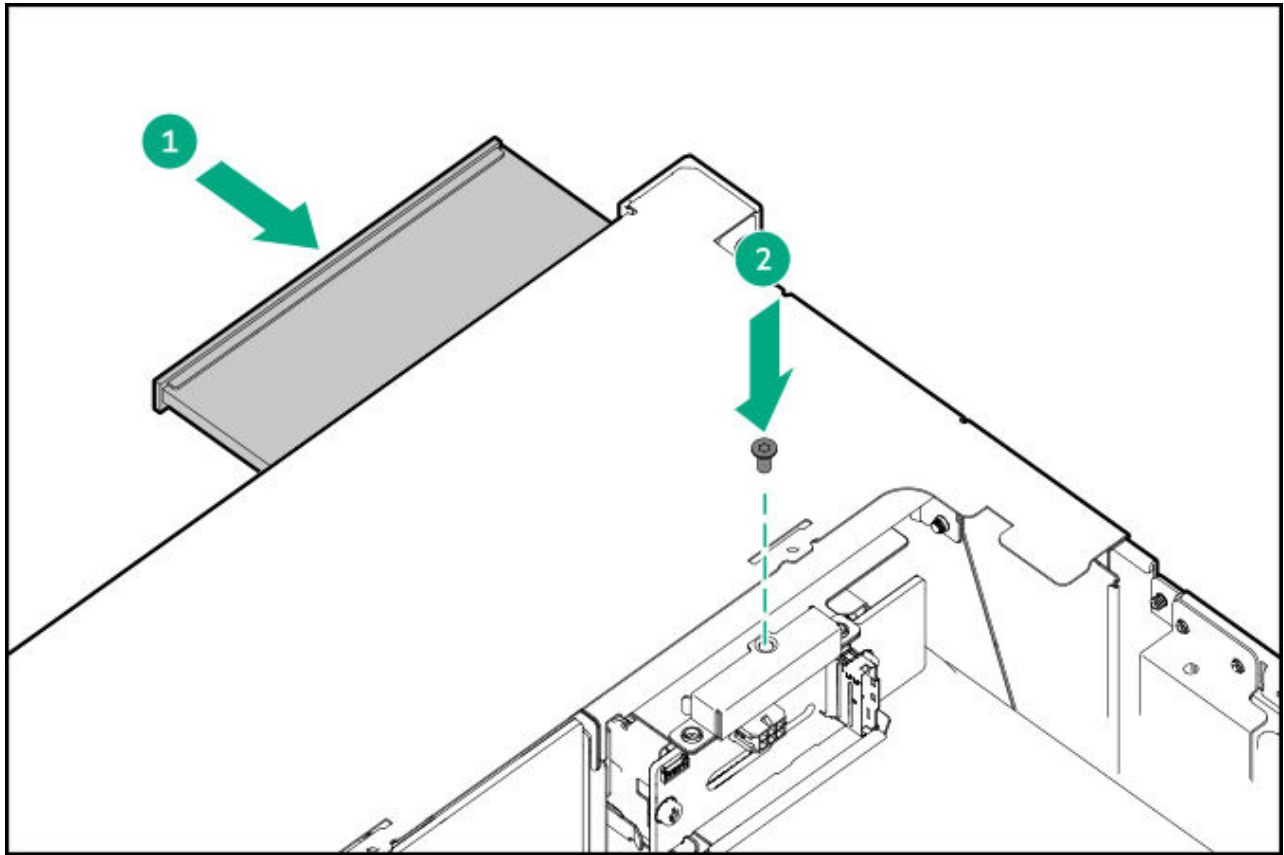
1. If installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server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



- .2. Remove the optical drive blank from the universal media bay.



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



- .4. Connect the optical drive power cable to the optical drive and the system board.
- .5. Install the fan cage.
- .6. Do one of the following:
- Install the air baffle.
 - Install the processor mezzanine tray.
- .7. Install the access panel.
- .8. Install the server into the rack.
- .9. Connect all peripheral cables to the server.
- !0. Connect each power cord to the power source.
- !1. Connect each power cord to the server.
- !2. Power up the server.

!3. If removed, install the front bezel.

Results

The installation procedure is complete.

Drive cage options

The server supports the following drive cage options:

- 8 SFF drive cage
- E3.S drive cage
- 2 stacked drive cage

To maintain proper system cooling, install the correct fan and heatsink types required for specific drive configurations. For more information, see the product QuickSpecs on the Hewlett Packard Enterprise website:

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

Subtopics

Installing a 8 SFF drive cage option

Installing the E3.S drive cage

Installing the 2 SFF stacked drive cage

Installing a 8 SFF drive cage option

Prerequisites

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

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

About this task

This server supports several 8 SFF drive cage options with different backplanes. This drive cage supports SAS, SATA, and U.3 PCIe4 NVMe drives.



CAUTION

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

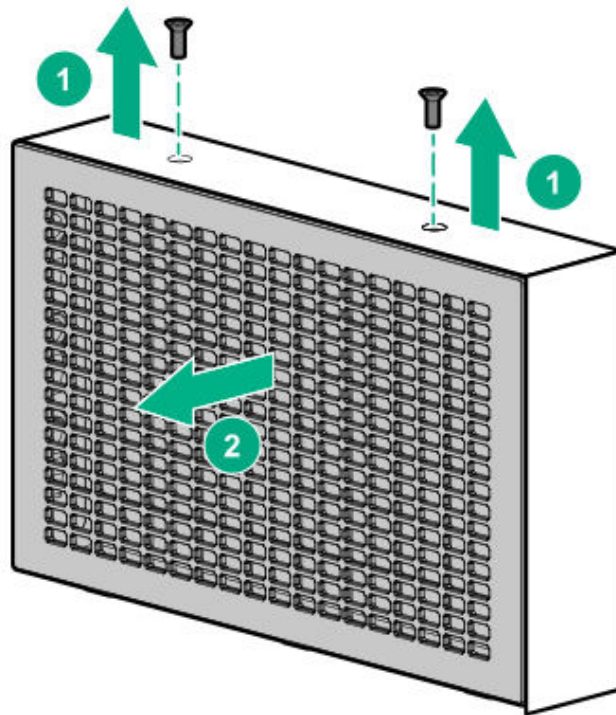


CAUTION

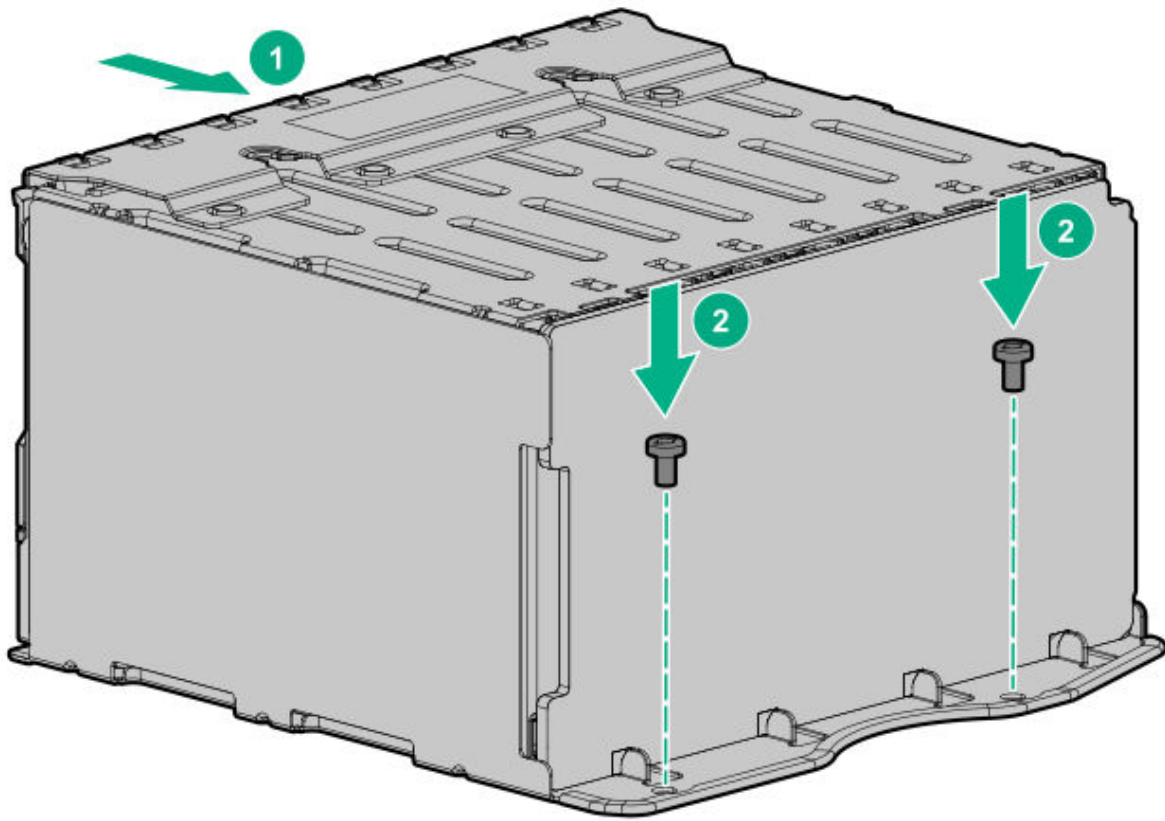
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

1. If installed, remove the front bezel.
2. Power down the server.
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. Remove the server from the rack.
6. Place the server on a flat, level work surface.
7. Remove the access panel.
8. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
9. Remove the fan cage.
10. Remove the drive box blank:
 - a. Remove the drive box blank screws.
 - b. Remove the drive box blank.



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



- .2. Cable the 8 SFF drive cage:
 - Drive power cable
 - Storage controller cable
- .3. Install the fan cage.
- .4. Do one of the following:
 - Install the air baffle.
 - Install the processor mezzanine tray.
- .5. Install the access panel.
- .6. Install the server into the rack.
- .7. Connect all peripheral cables to the server.
- .8. Connect each power cord to the power source.
- .9. Connect each power cord to the server.
- .10. Power up the server.

1. If removed, install the front bezel.

Results

The installation procedure is complete.

Installing the 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

About this task

This E3.S drive cage option can be installed in Boxes 2–3.



CAUTION

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



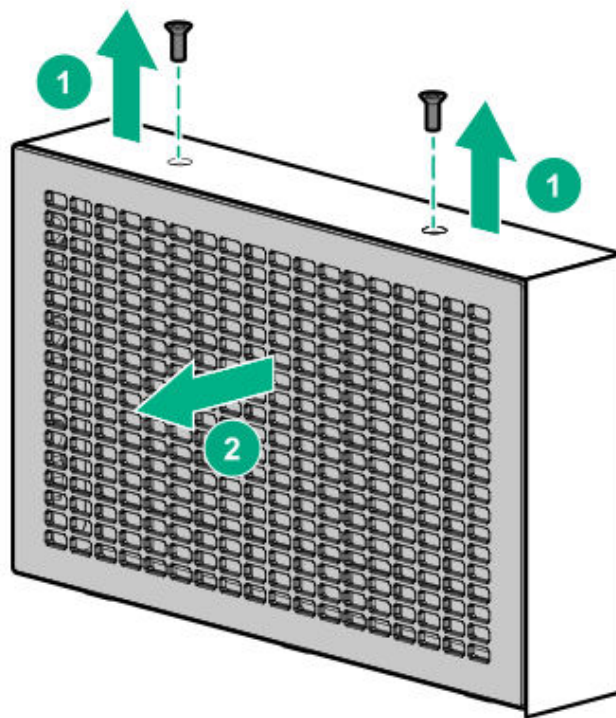
CAUTION

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

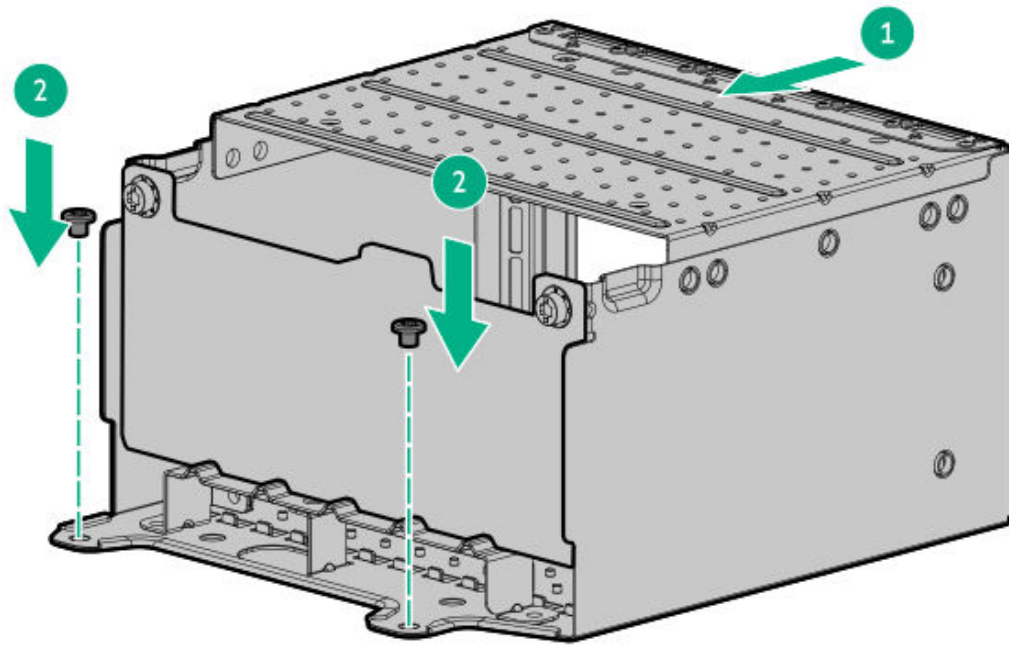
Procedure

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

7. Remove the access panel.
8. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
9. Remove the fan cage.
10. Remove the drive box blank:
 - a. Remove the drive box blank screws.
 - b. Remove the drive box blank.



11. Install the E3.S drive cage:
 - a. Install the E3.S drive cage in the server.
 - b. Install the drive cage screws.



- .2. Cable the E3.S drive cage:
 - Drive power cable
 - Storage controller cable
- .3. Install the fan cage.
- .4. Do one of the following:
 - Install the air baffle.
 - Install the processor mezzanine tray.
- .5. Install the access panel.
- .6. Install the server into the rack.
- .7. Connect all peripheral cables to the server.
- .8. Connect each power cord to the power source.
- .9. Connect each power cord to the server.
- !0. Power up the server.
- !1. If removed, install the front bezel.

Results

The installation procedure is complete.

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

The 2 SFF stacked drive cage in the universal media bay supports SAS, SATA, and U.3 PCIe4 NVMe drives.



CAUTION

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



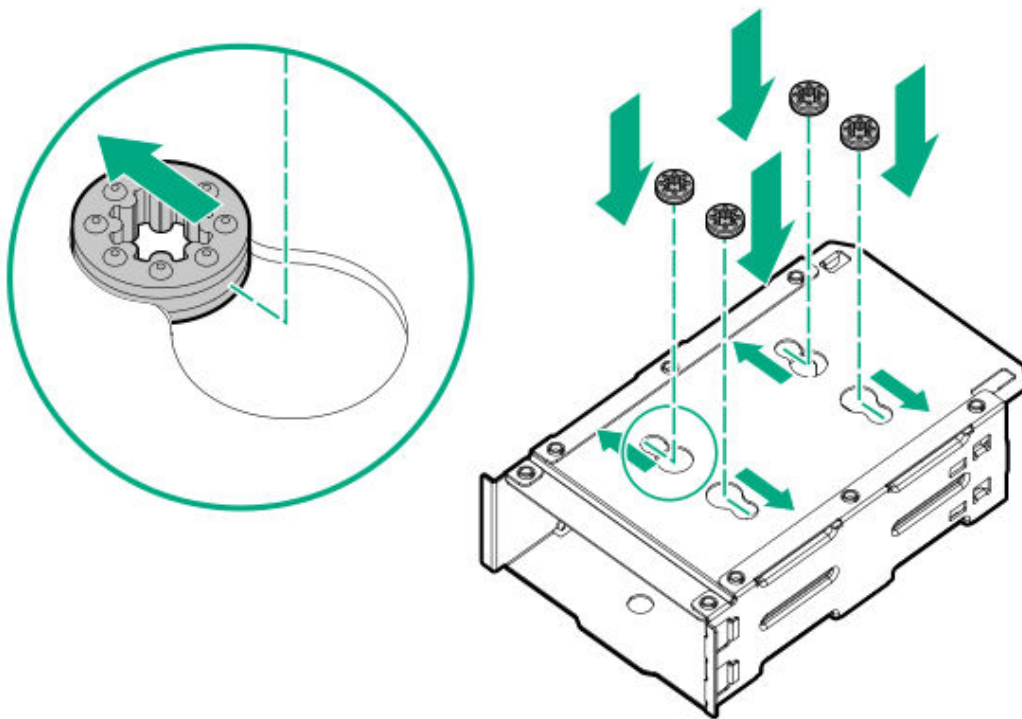
CAUTION

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

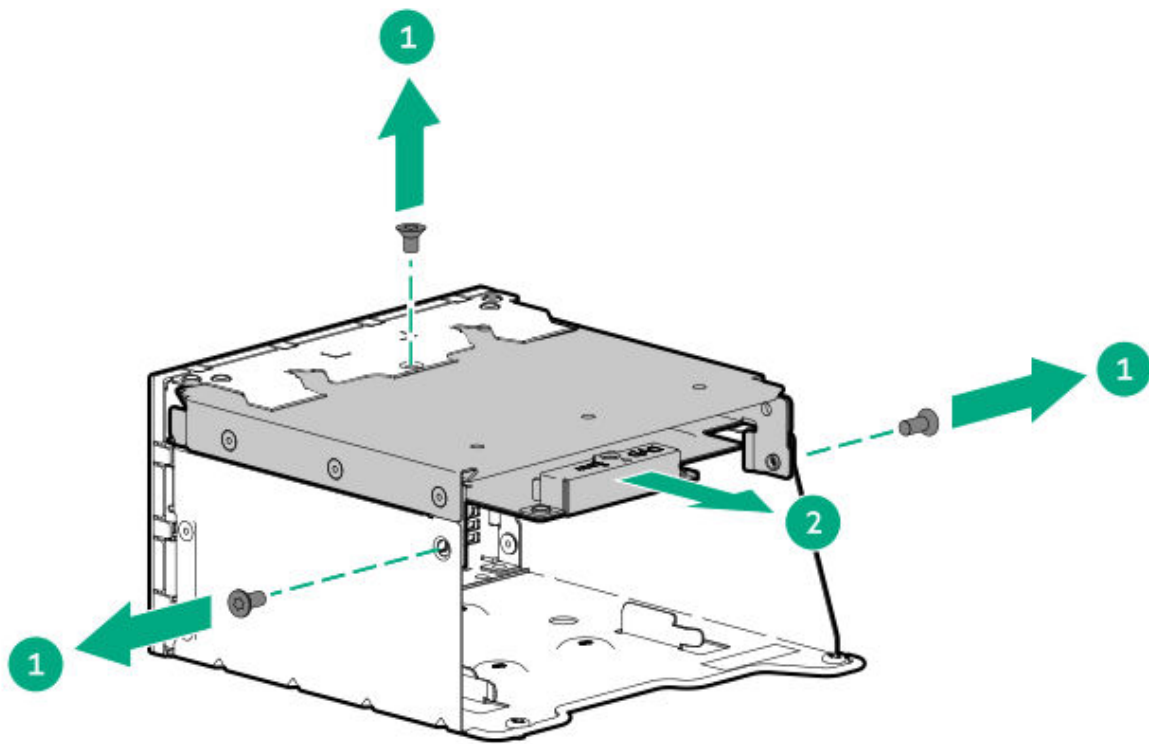
Procedure

Installing the 2 SFF stacked drive cage in the universal media bay

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

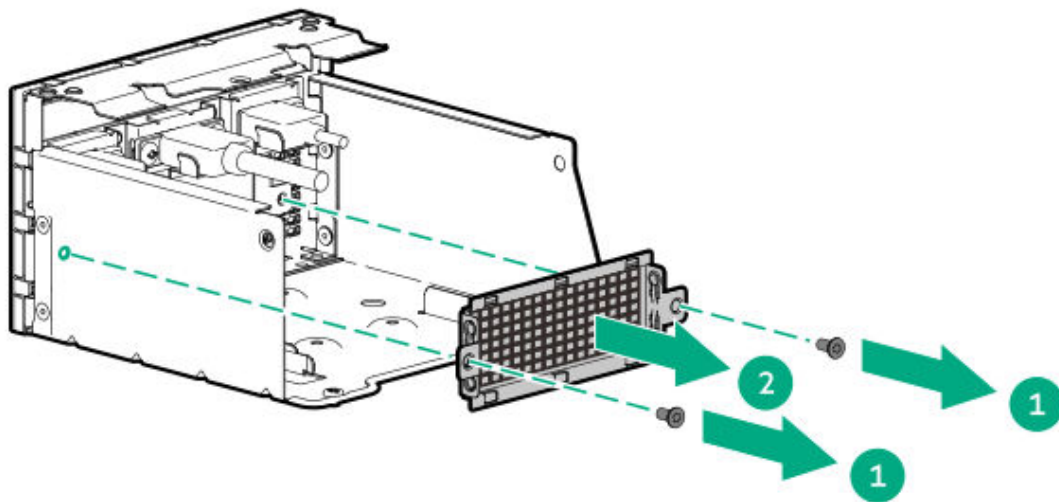


2. Remove the optical drive tray:
 - a. Remove the optical drive tray screws.
 - b. Remove the optical drive tray from universal media bay.



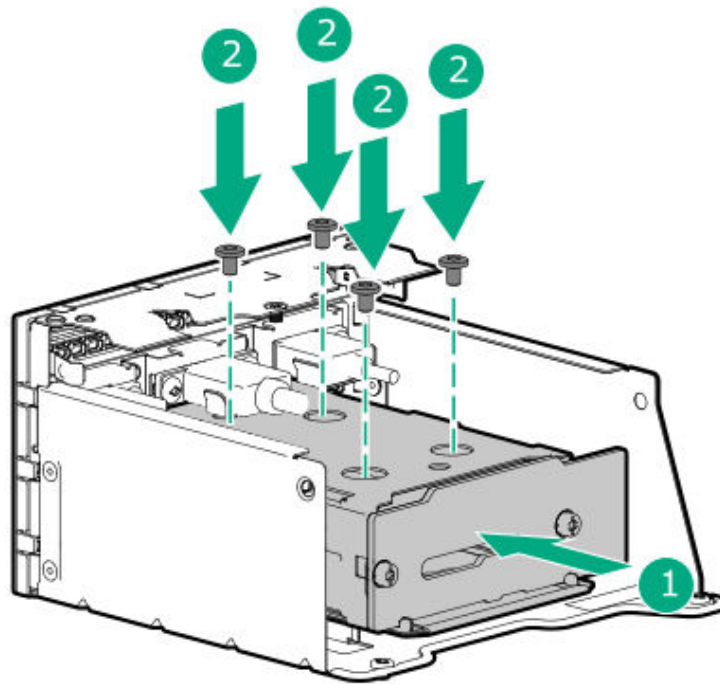
3. Remove the 2 SFF drive blank:

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

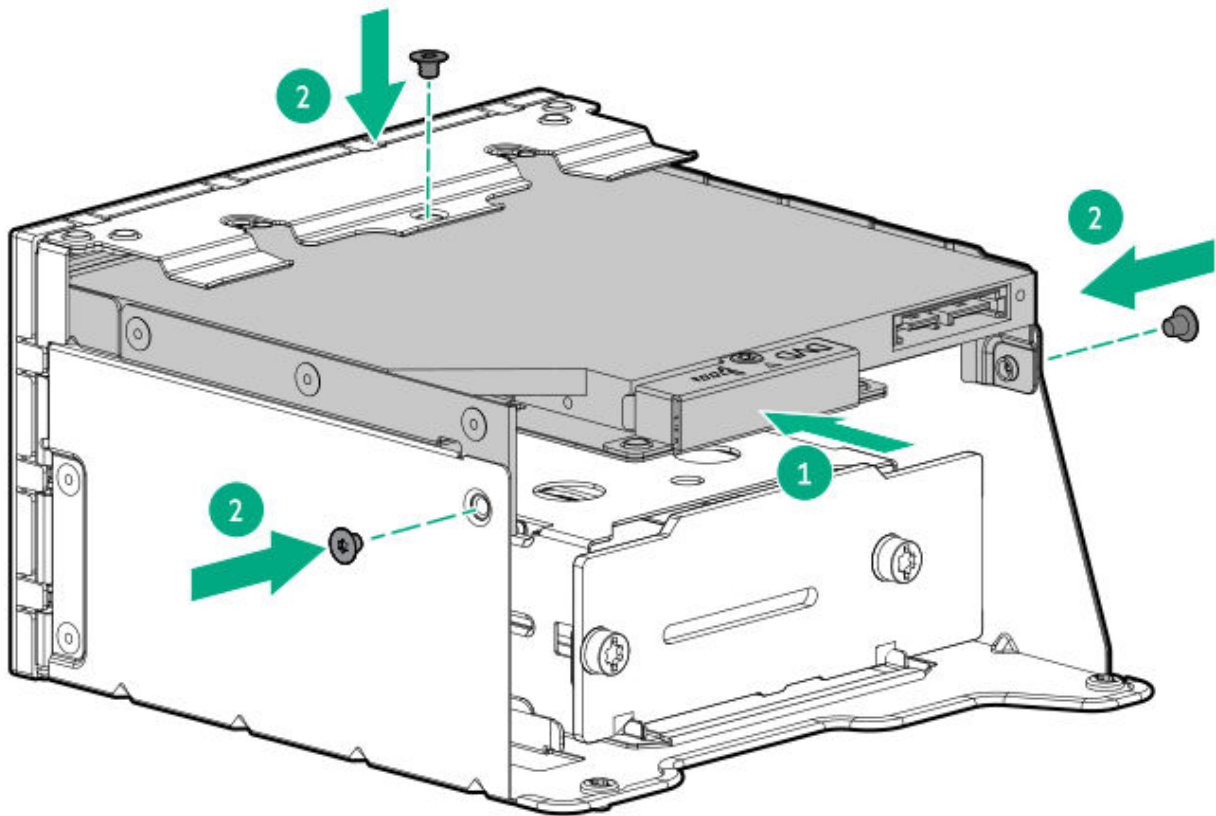


4. Install the front 2 SFF stacked drive cage:

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



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



Installing the universal media bay in the server

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

- .5. Install the universal media bay in the server.
- .6. Cable the 2 SFF stacked drive cage:
 - Drive power cable
 - Storage controller cable
- .7. Connect the universal media bay cables to the system board.
- .8. Install the fan cage.
- .9. Do one of the following:
 - Install the air baffle.
 - Install the processor mezzanine tray.
- !0. Install the access panel.
- !1. Install the server into the rack.
- !2. Connect all peripheral cables to the server.
- !3. Connect each power cord to the power source.
- !4. Connect each power cord to the server.
- !5. Power up the server.
- !6. If removed, install the front bezel.

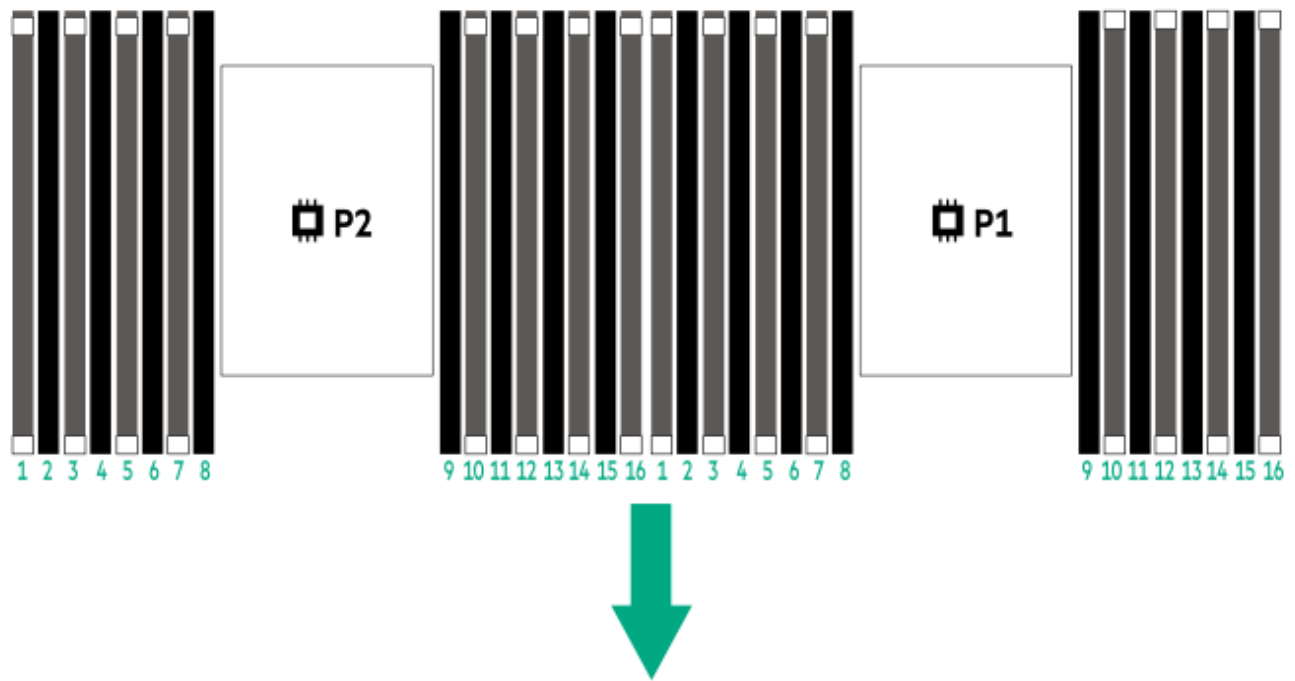
Results

The installation procedure is complete.

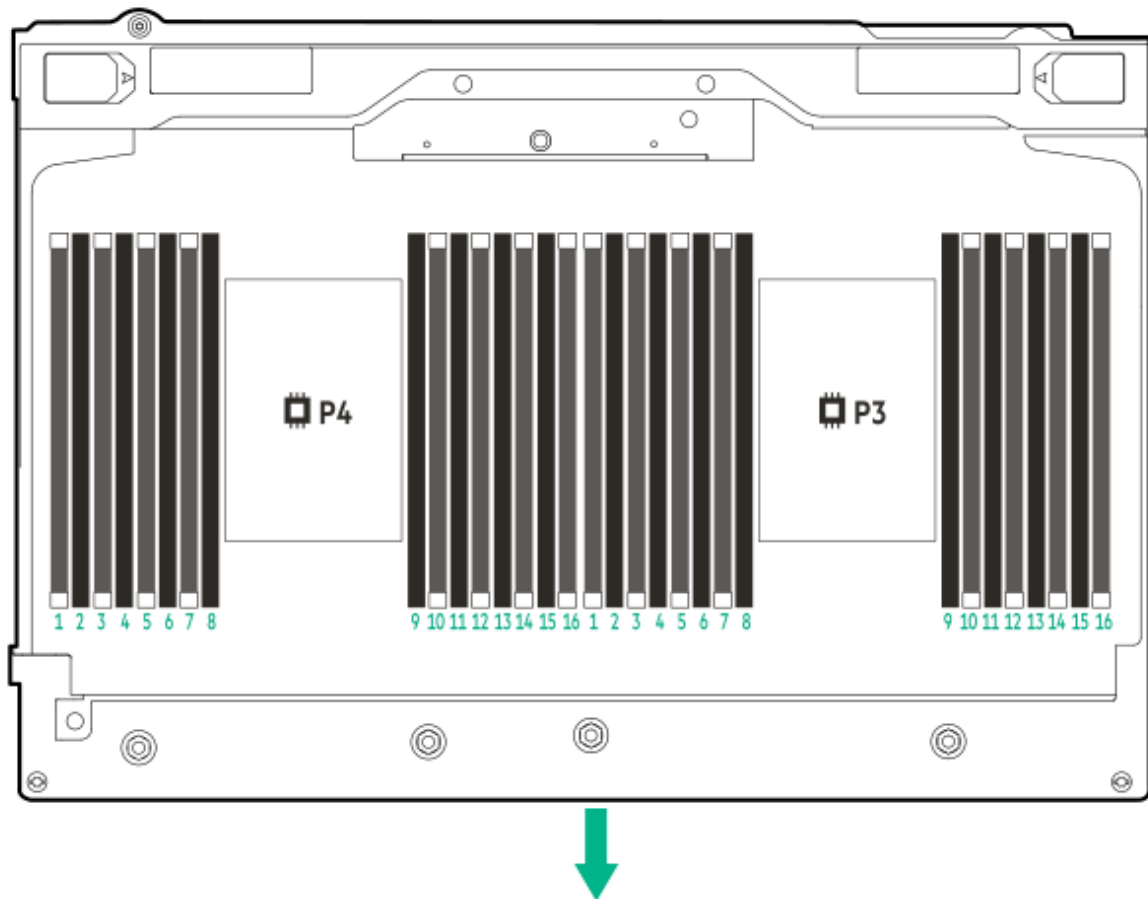
Memory option

The server has either 32 DIMM slots in the dual-processor configuration, or 64 DIMM slots in the quad-processor configuration with the processor mezzanine board installed. All DIMM slots support HPE DDR5 SmartMemory (RDIMM with ECC, LRDIMM).

DIMM slots on the system board



DIMM slots on the processor mezzanine board



The arrow points to the front of the server.

Subtopics

HPE SmartMemory speed and population information

DIMM installation guidelines

Installing a DIMM

HPE SmartMemory speed and population information

For information about memory speed and server-specific DIMM population rules for HPE servers using 4th Gen Intel Xeon Scalable Processor, see the relevant memory technical paper in:

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

DIMM installation guidelines

When handling a DIMM, observe the following:

- Observe antistatic precautions.
- Handle the DIMM only along the edges.
- Do not touch the components on the sides of the DIMM.
- Do not touch the connectors on the bottom of the DIMM.
- Never wrap your fingers around a DIMM.
- Never bend or flex the DIMM.

When installing a DIMM, observe the following:

- To align and seat the DIMM, use two fingers to hold the DIMM along the side edges.
- To seat the DIMM, use two fingers to apply gentle pressure along the top of the DIMM.

For more information, see the Hewlett Packard Enterprise website (**<https://www.hpe.com/support/DIMM-20070214-CN>**).

Installing a DIMM

Prerequisites

- To meet the system thermal requirements, some DIMMs require specific processors and drive configuration. Review the product QuickSpecs for these requirements on the Hewlett Packard Enterprise website:

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

- 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.



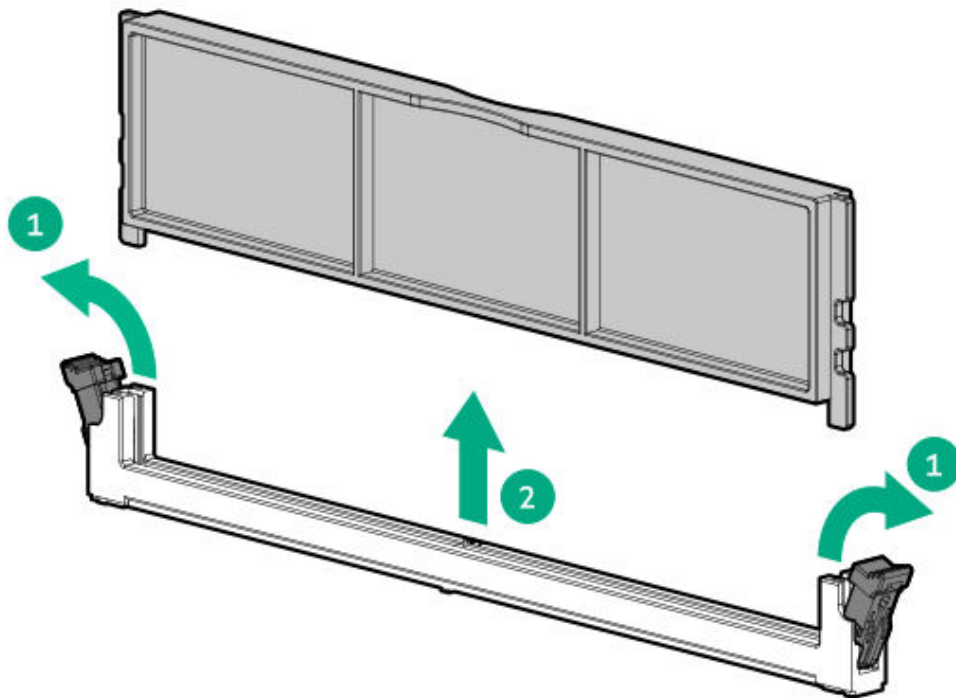
CAUTION

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

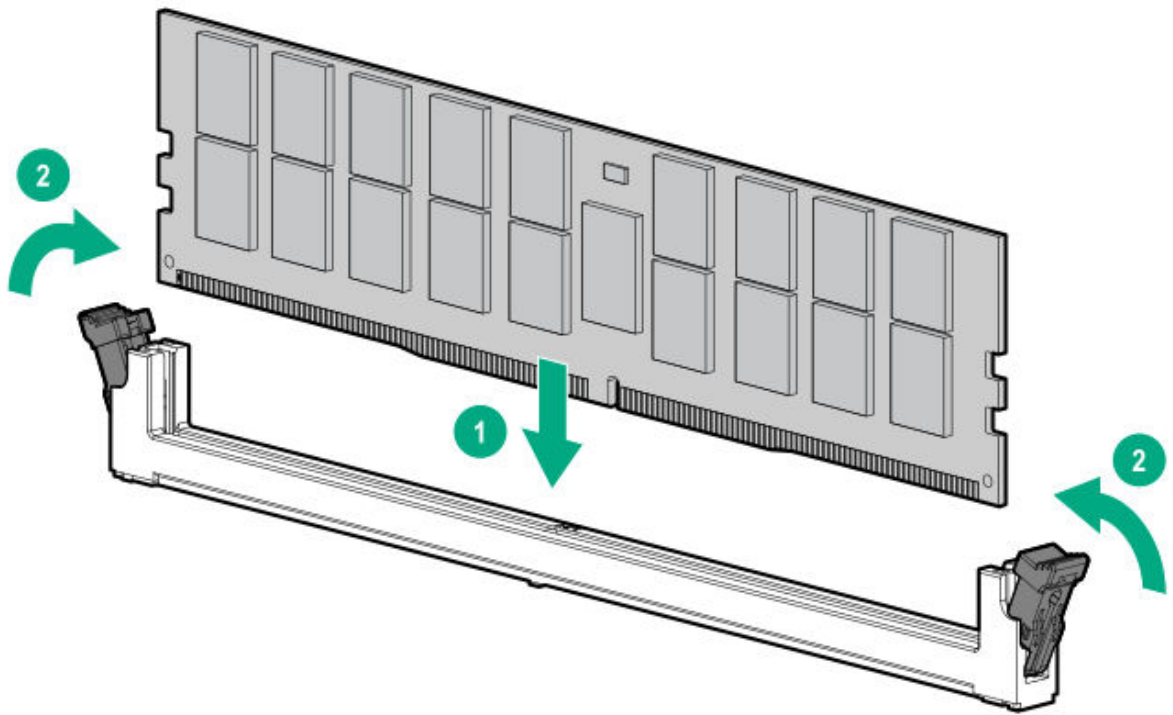
1. [Power down the server](#).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Do one of the following:

- Extend the server from the rack.
 - Remove the server from the rack.
5. Remove the access panel.
 6. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
 7. Remove the DIMM blank.



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

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



9. Do one of the following:

- Install the air baffle.
- Install the processor mezzanine tray.

.0. Install the access panel.

.1. Install the server into the rack.

.2. Connect all peripheral cables to the server.

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

.4. Connect each power cord to the server.

.5. Power up the server.

.6. To configure the memory settings:

- a. From the boot screen, press **F9** to access the UEFI System Utilities.
- b. From the **System Utilities** screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Memory Options**.

Results

The installation procedure is complete.

Riser board options

The server supports two preinstalled PCIe riser cages that can be configured with different riser boards. Both primary and secondary riser cages support installation of the following riser boards:

- 3-slot riser board with 2 x8 and 1 x16 connections
- 3-slot riser board with 3 x16 connections

Subtopics

Installing the riser board

Installing the riser board

Prerequisites

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

About this task



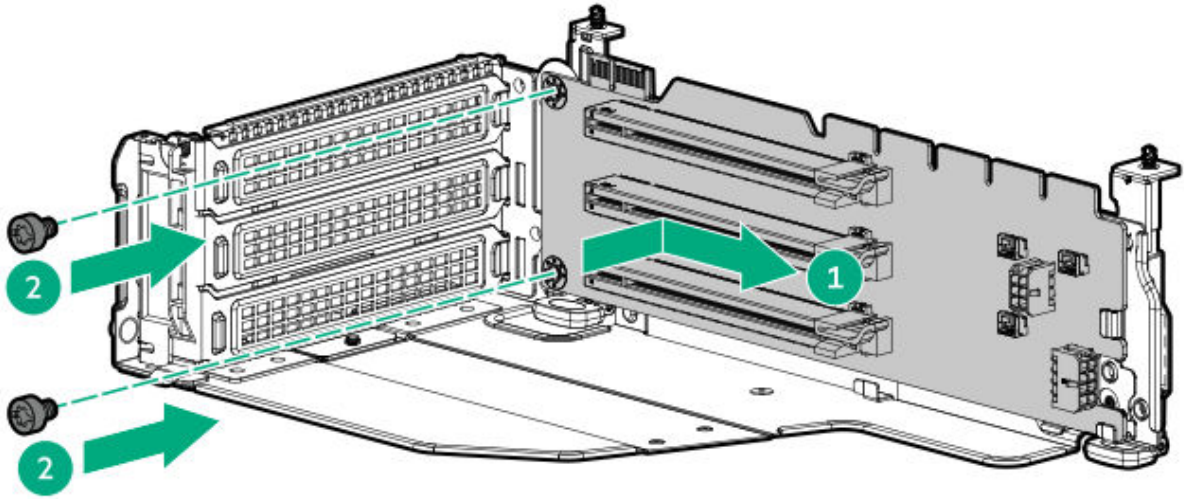
CAUTION

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

Procedure

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

7. Remove the riser cage.
8. Install the riser board on the cage.



9. (Optional) Install the expansion card.
10. Install the riser cage.
11. If a PCIe5 3 x16 riser is installed, connect the riser enablement cables.
12. Install the access panel.
13. Install the server into the rack.
14. Connect all peripheral cables to the server.
15. Connect each power cord to the power source.
16. Connect each power cord to the server.
17. Power up the server.

Results

The installation procedure is complete.

Storage controller options

The server supports the following storage controllers:

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

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

Subtopics

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

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

[Installing a type-p storage controller](#)

Preparing the server for storage controller installation

Prerequisites

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

Procedure

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



CAUTION

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

2. If the server firmware is not the latest revision, [update the firmware](#).
3. If the new controller is the new boot device, [install the controller drivers](#).

Installing a type-o storage controller

Prerequisites

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

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

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

About this task

Both OCP Slots 14 and 15 support the type-o storage controller installation.



CAUTION

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



CAUTION

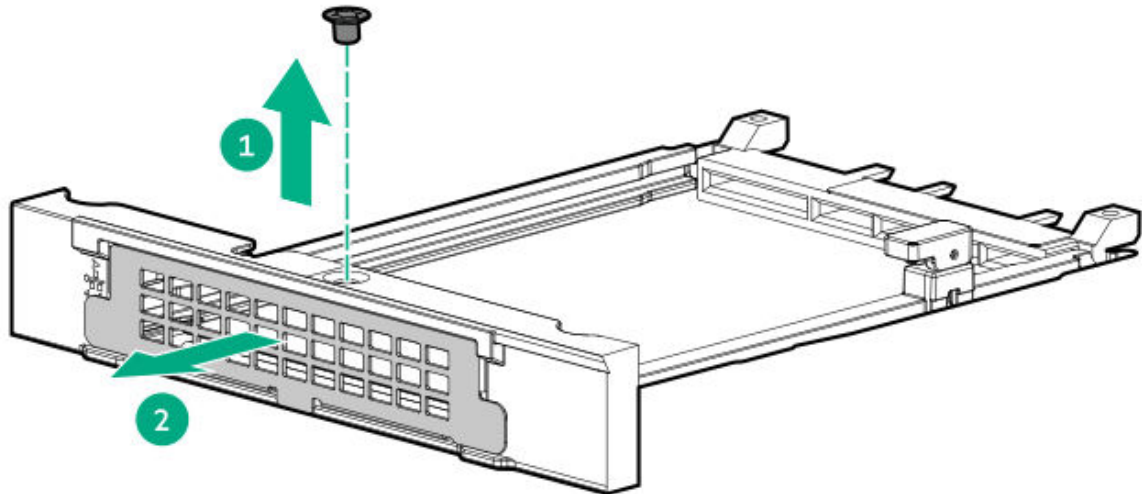
The port blank provides EMI shielding and helps maintain proper thermal status inside the server. Do not operate the server when a port blank is removed without the corresponding I/O port option installed.

Procedure

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

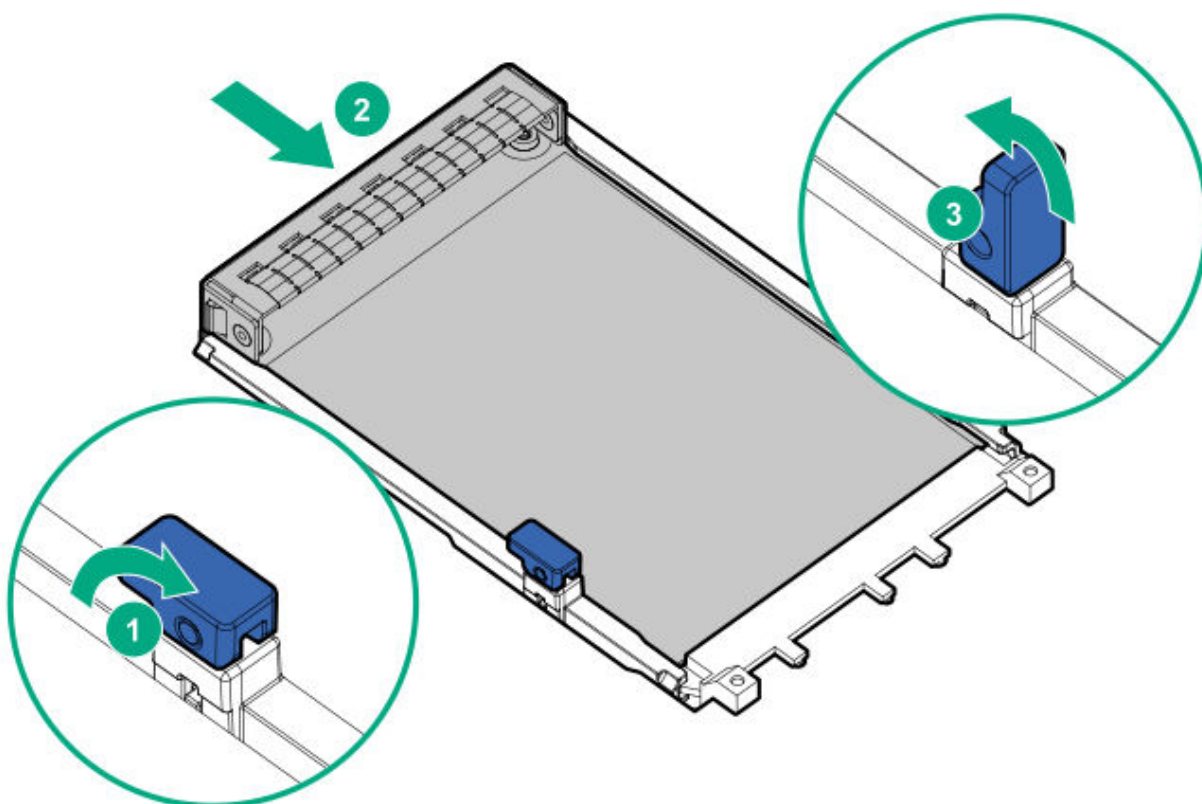
7. Remove the riser cage.
8. Remove the OCP slot blank:
 - a. Remove the blank screw.
 - b. Remove the blank.

Retain the screw and blank for future use.



9. Install the type-o storage controller:
 - a. Rotate the locking pin to the open (vertical) position.
 - b. Slide the controller into the bay until it clicks into place.

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



- .0. Cable the type-o storage controller.
- .1. Install the riser cage.
- .2. Install the access panel.
- .3. Install the server into the rack.
- .4. Connect all peripheral cables to the server.
- .5. Connect each power cord to the server.
- .6. Connect each power cord to the power source.
- .7. Power up the server.
- .8. Before using the controller for the first time, update the server and controller firmware if they are not the latest revision.
- .9. To configure the controller, see the relevant controller guide.

Results

The installation procedure is complete.

Installing a type-p storage controller

Prerequisites

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

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

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

About this task

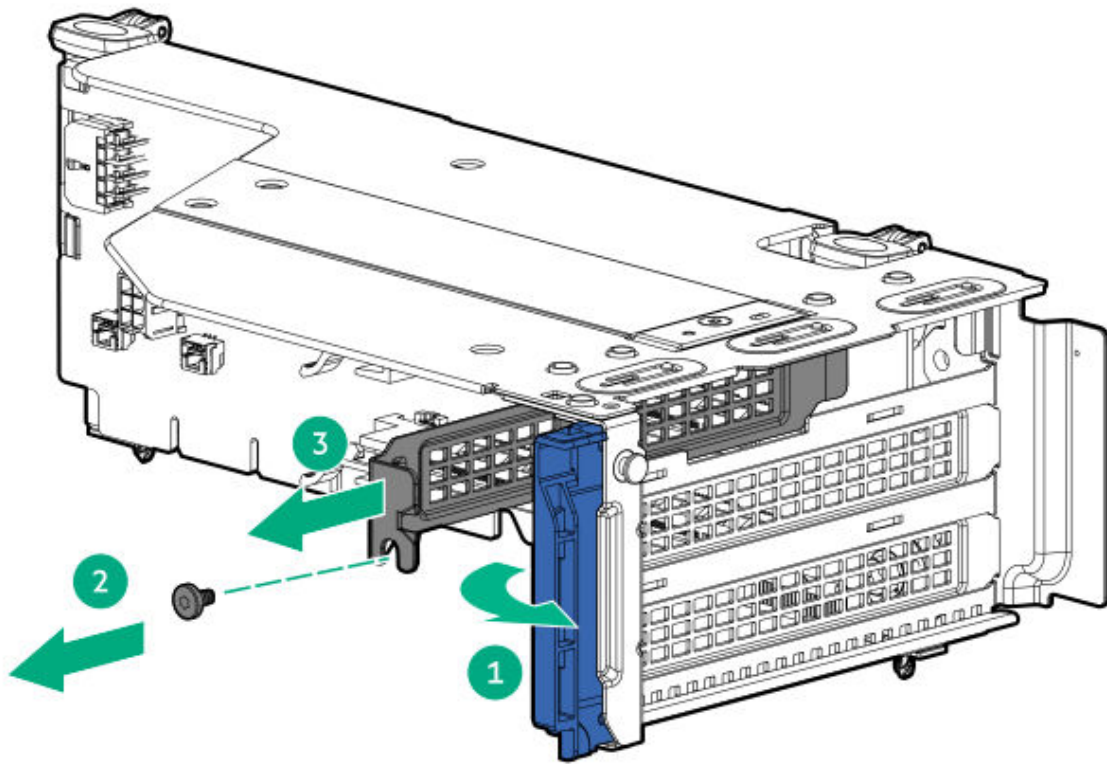


CAUTION

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

Procedure

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

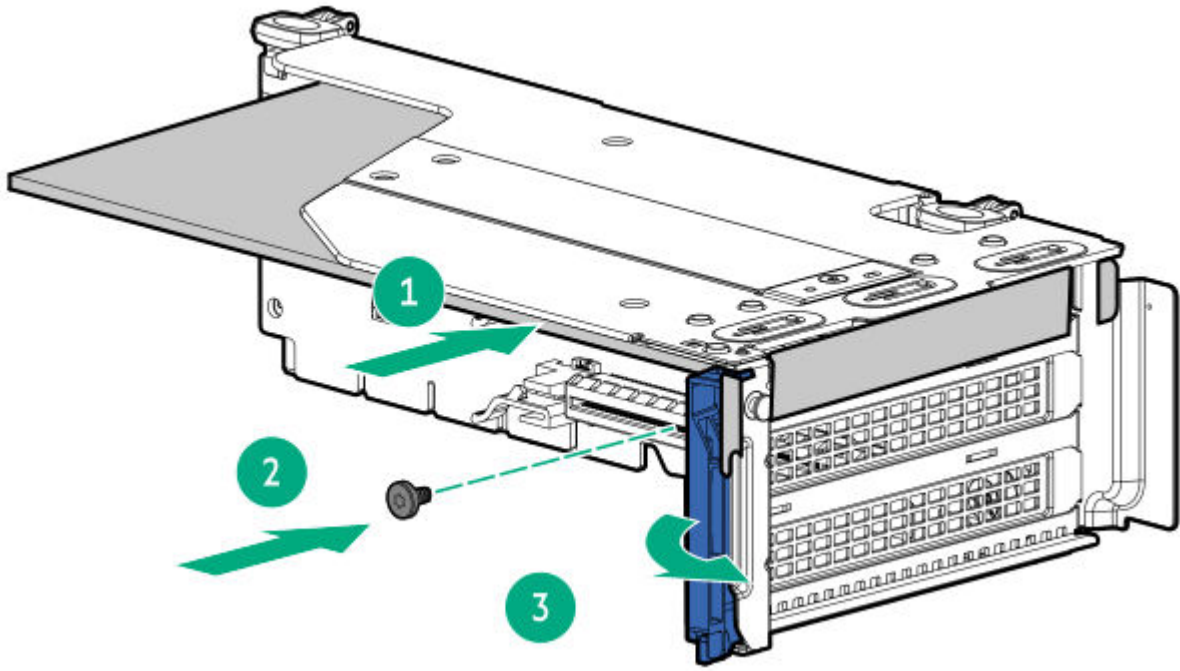


.0. Install the type-p storage controller.

a. Install the type-p storage controller, and install the screw.

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

b. Close the riser cage latch.



1. Install the riser cage.
2. Cable the type-p storage controller.
3. To enable the FBWC feature of the storage controller, install an energy pack.
4. Install the access panel.
5. Install the server into the rack.
6. Connect all peripheral cables to the server.
7. Connect each power cord to the power source.
8. Connect each power cord to the server.
9. Power up the server.
10. Before using the controller for the first time, update the server and controller firmware if they are not the latest revision.
11. To configure the controller, see the relevant controller guide.

Results

The installation procedure is complete.

Energy pack options

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

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

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

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

Subtopics

[**HPE Smart Storage Battery**](#)

[**HPE Smart Storage Hybrid Capacitor**](#)

[**Installing an energy pack**](#)

HPE Smart Storage Battery

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

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

This server supports the 96 W HPE Smart Storage Battery with the 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 12 W or 16 W HPE Smart Storage Hybrid Capacitor with the 260 mm cable.

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



IMPORTANT

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

The capacitor pack is fully charged after the system boots.

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

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

Subtopics

Minimum firmware versions

Minimum firmware versions

Product	Minimum firmware version
Server system ROM	1.20
HPE MR type-o and type-p Gen11 controllers	52.24.3-4948
HPE SR900 series type-p Gen11 controllers	03.01.14.062

Installing an energy pack

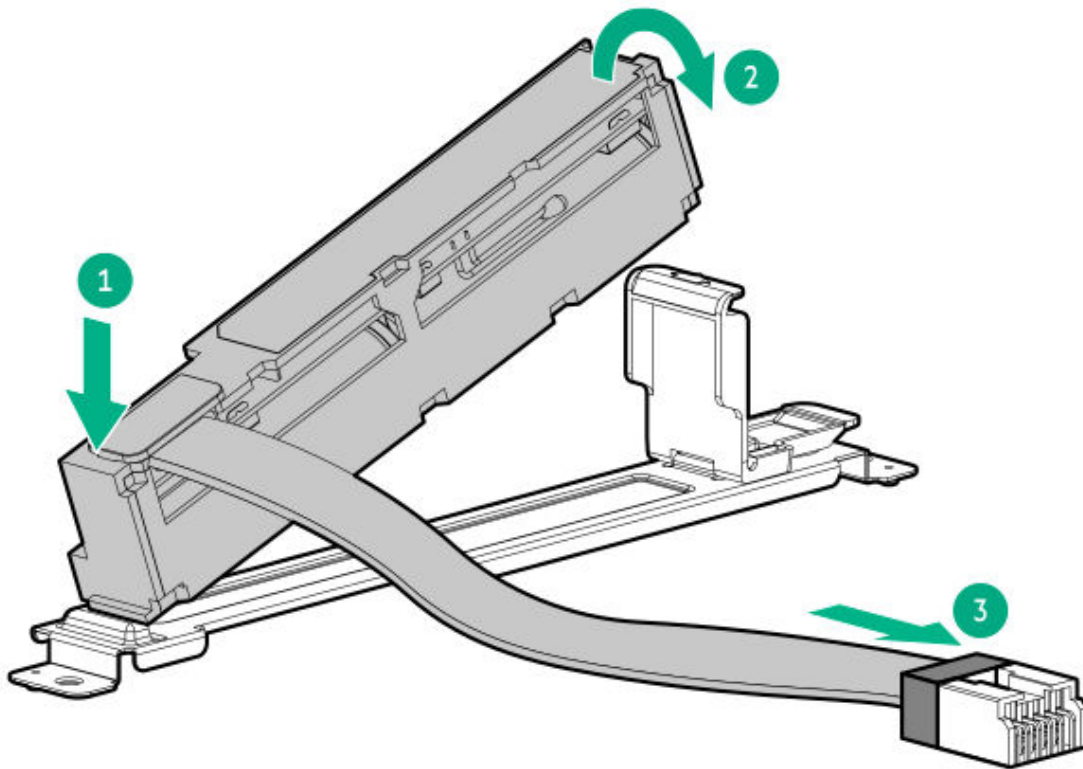
Prerequisites

- Make sure that a compatible type-p storage controller is installed.
- Make sure that you have the storage controller backup power cable that ships with the storage controller.
- If you are installing the HPE Smart Storage Hybrid Capacitor, verify that the system meets the minimum firmware requirements.

Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
8. Remove the fan cage.
9. Install the energy pack:
 - a. Insert the energy pack at an angle.
 - b. Pivot the energy pack downward.

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



- .0. Connect the storage backup power cable.
- .1. Install the fan cage.
- .2. Do one of the following:
 - Install the air baffle.
 - Install the processor mezzanine tray.
- .3. Install the access panel.
- .4. Install the server into the rack.
- .5. Connect all peripheral cables to the server.
- .6. Connect each power cord to the power source.
- .7. Connect each power cord to the server.
- .8. Power up the server.

Results

The installation procedure is complete.

Expansion card options

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

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

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

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

Subtopics

GPU options

Installing an expansion card

GPU options

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

Subtopics

Accelerator installation guidelines

Accelerator installation guidelines

- To support high power accelerators (TDP > 75 W), the following options are required:
 - PCIe5 3 x16 riser option (P54780-B21) in the primary or secondary locations.

Up to one accelerator is supported in each riser cage.

- GPU enablement option (P54816-B21):
 - GPU support bracket
 - GPU auxiliary power cable
- This server does not support the installation of different accelerator models in the same system.
- High performance double-width accelerators are not supported in the liquid cooling configuration.
- The limited operating inlet ambient temperatures required for accelerators vary based on the model and the server drive configuration. For more information, see the server QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/quickspecs>).



IMPORTANT

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

Installing an expansion card

Prerequisites

- Depending on the drive configurations in the different cooling configurations, some Ethernet adapters and InfiniBand cards require specific system ambient temperature. Review the product QuickSpecs for these requirements on the Hewlett Packard Enterprise website:

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

- When installing an accelerator, review the [Accelerator installation guidelines](#).
- Before you perform this procedure, make sure that you have the following items available:
 - T-10 Torx screwdriver
 - T-15 Torx screwdriver
 - Phillips No. 1 screwdriver

About this task



CAUTION

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

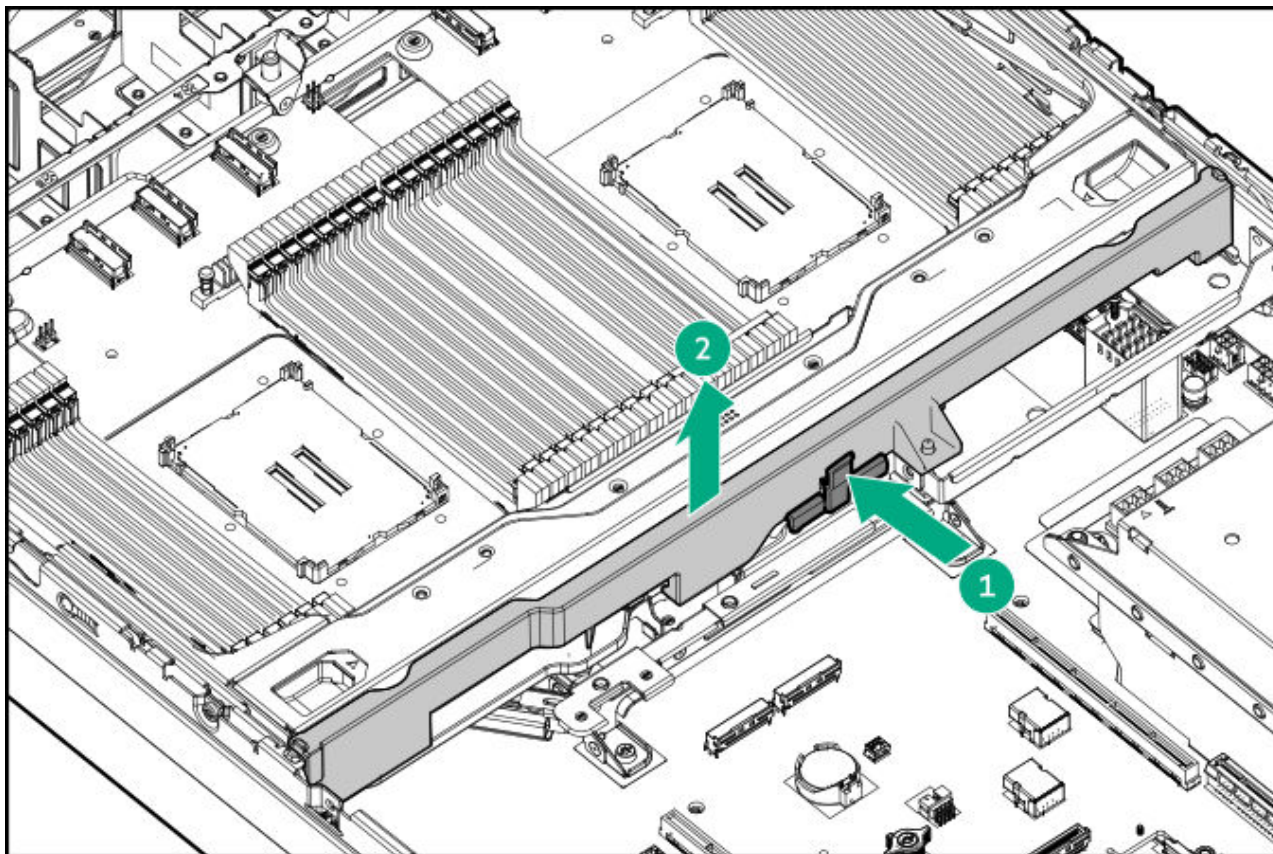


CAUTION

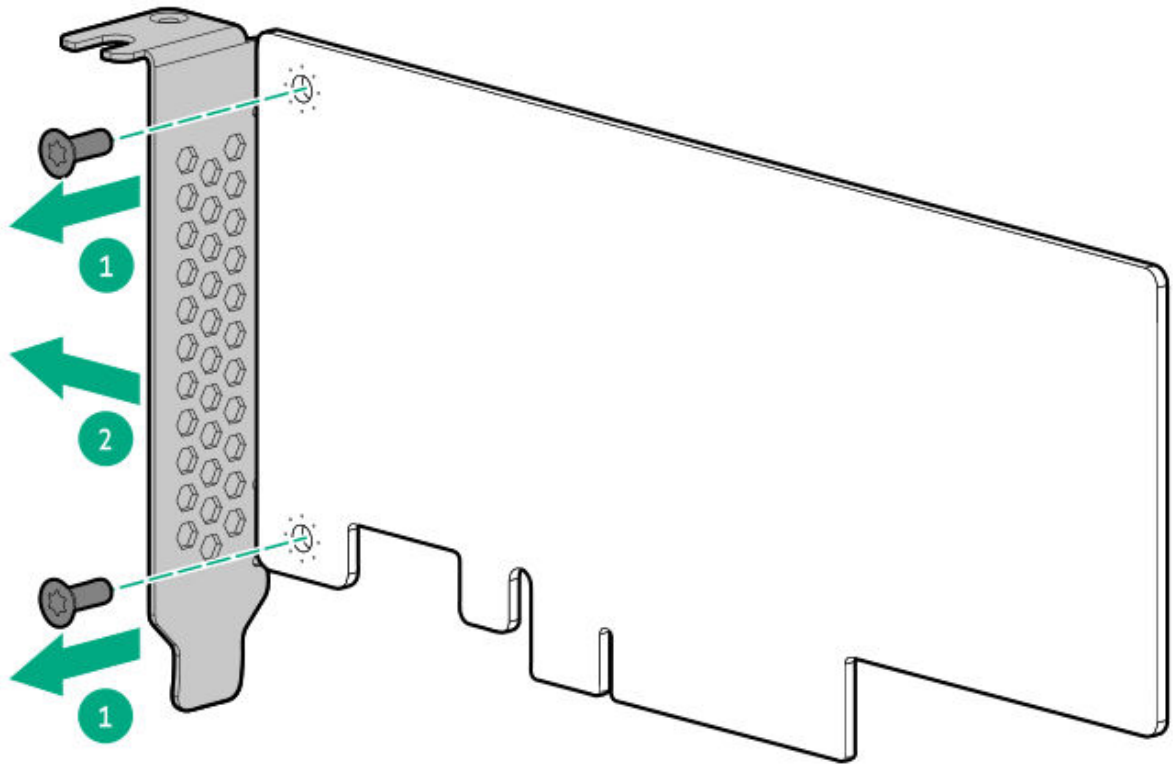
To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either a riser slot blank or an expansion card installed.

Procedure

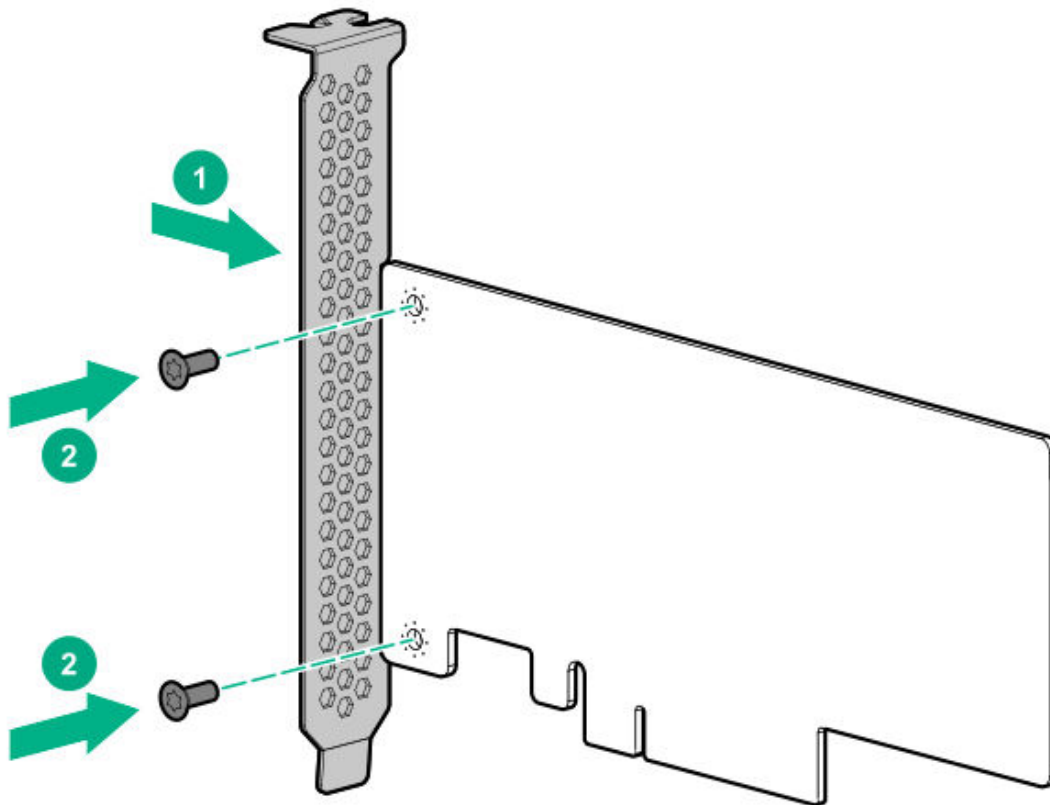
1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Remove the riser cages.
8. If installing a double-width accelerator, remove the processor mezzanine tray baffle.
Retain the baffle for future use.



9. (Optional) Install the riser board.
10. If you are installing a low-profile expansion card:
 - a. Remove the half-height bracket from the expansion card.

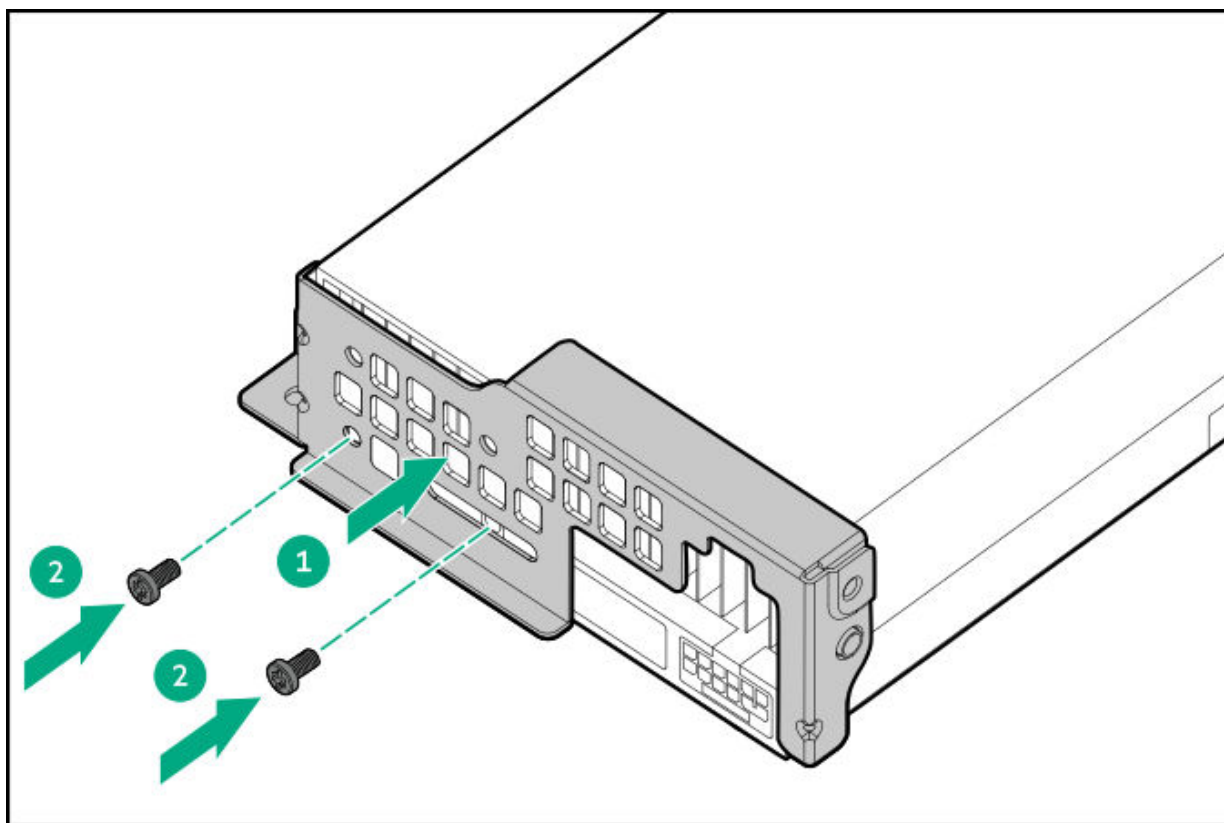


b. Install the full-height bracket on the expansion card.

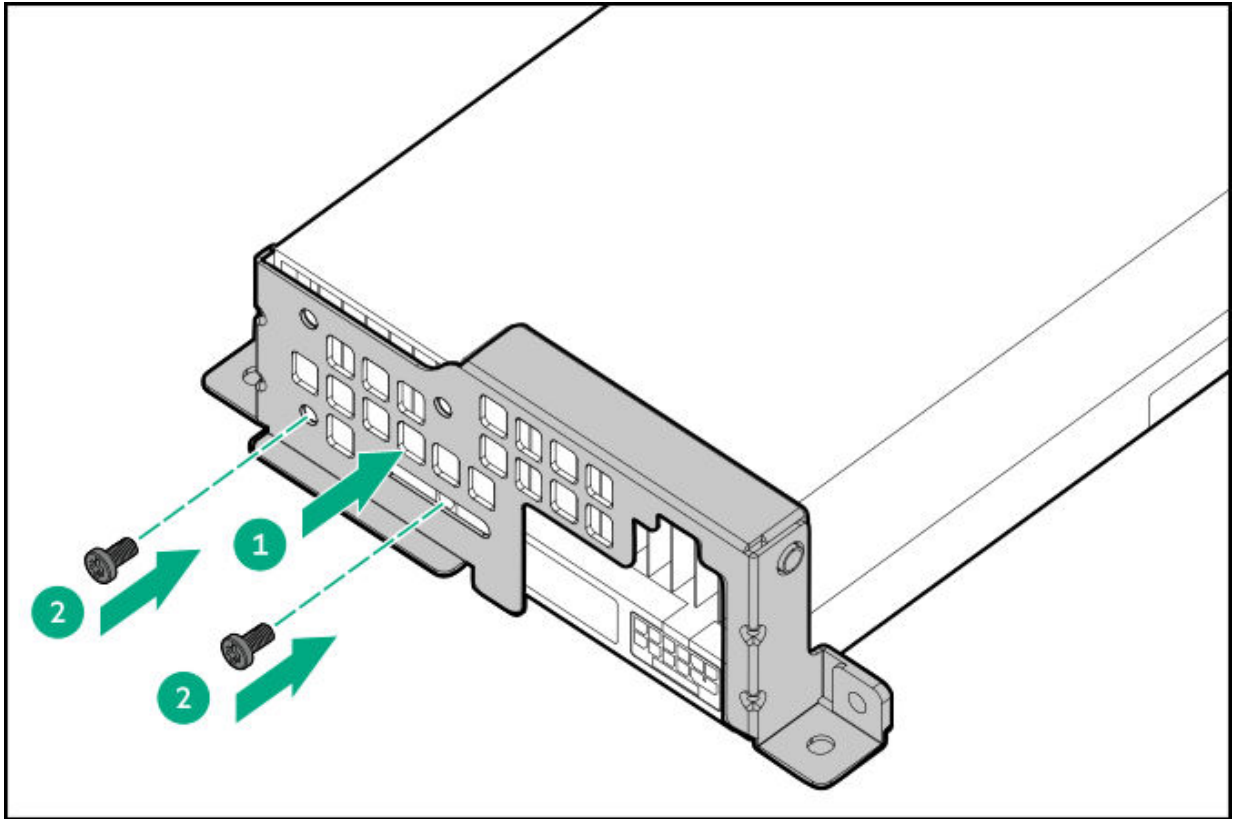


.1. If installing a double-width accelerator, install the GPU support bracket on the accelerator.

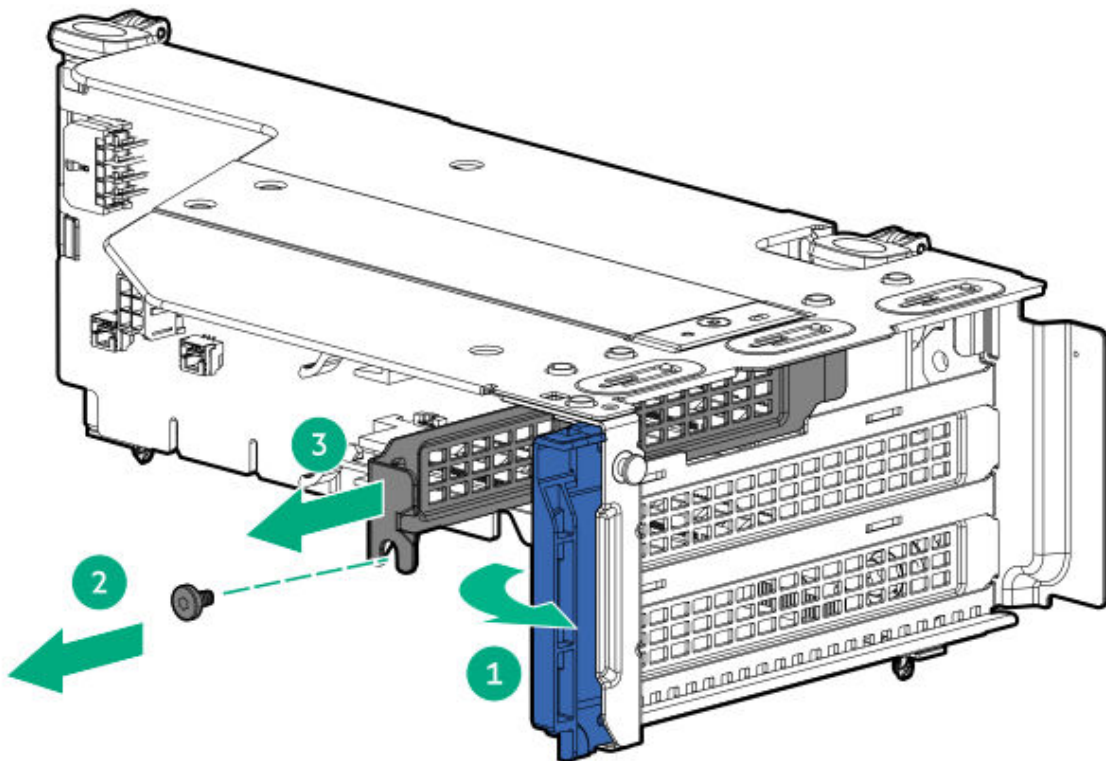
- Accelerator on the primary riser cage



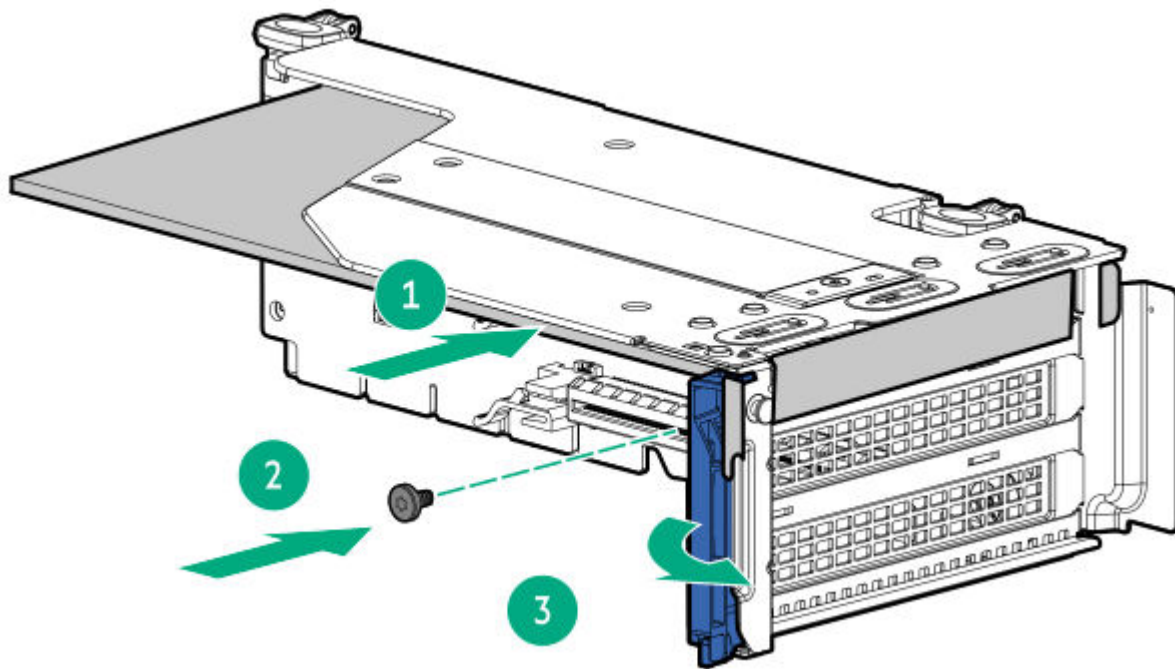
- Accelerator on the secondary riser cage



.2. Remove the riser slot blank.



.3. Install the expansion card.



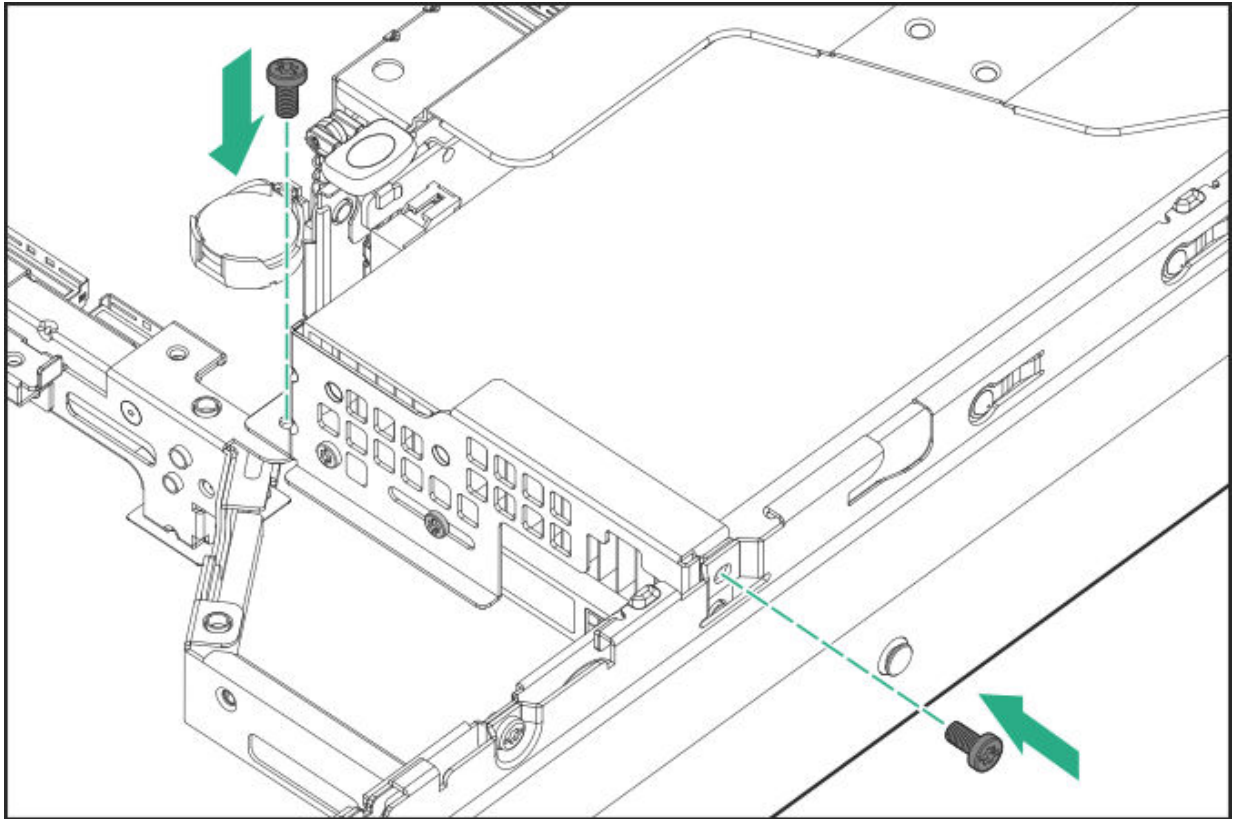
.4. Connect all necessary internal cabling to the expansion card.

If installing a high power accelerator, connect the GPU auxiliary power cable.

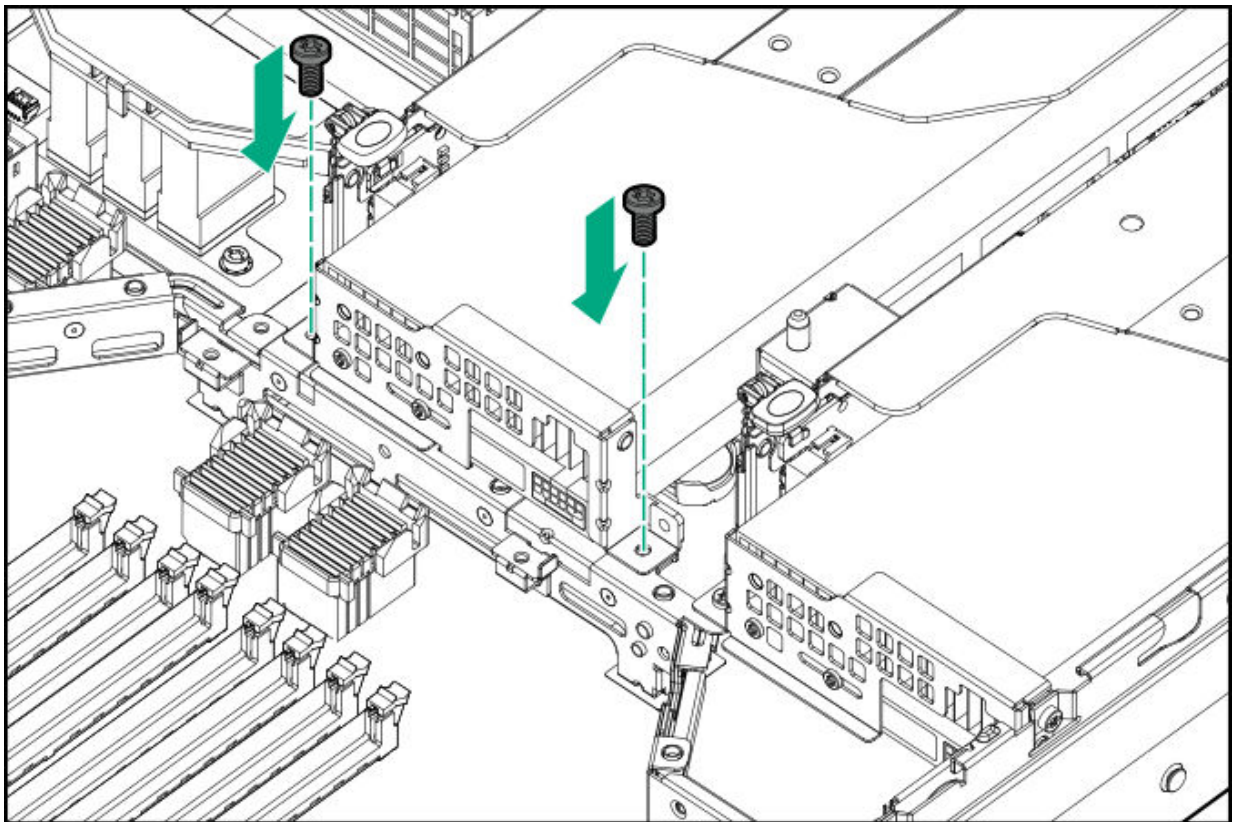
.5. Install the riser cage.

.6. If installing a double-width accelerator, install the GPU support bracket screws to secure the accelerator.

- Primary accelerator



- Secondary accelerator



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

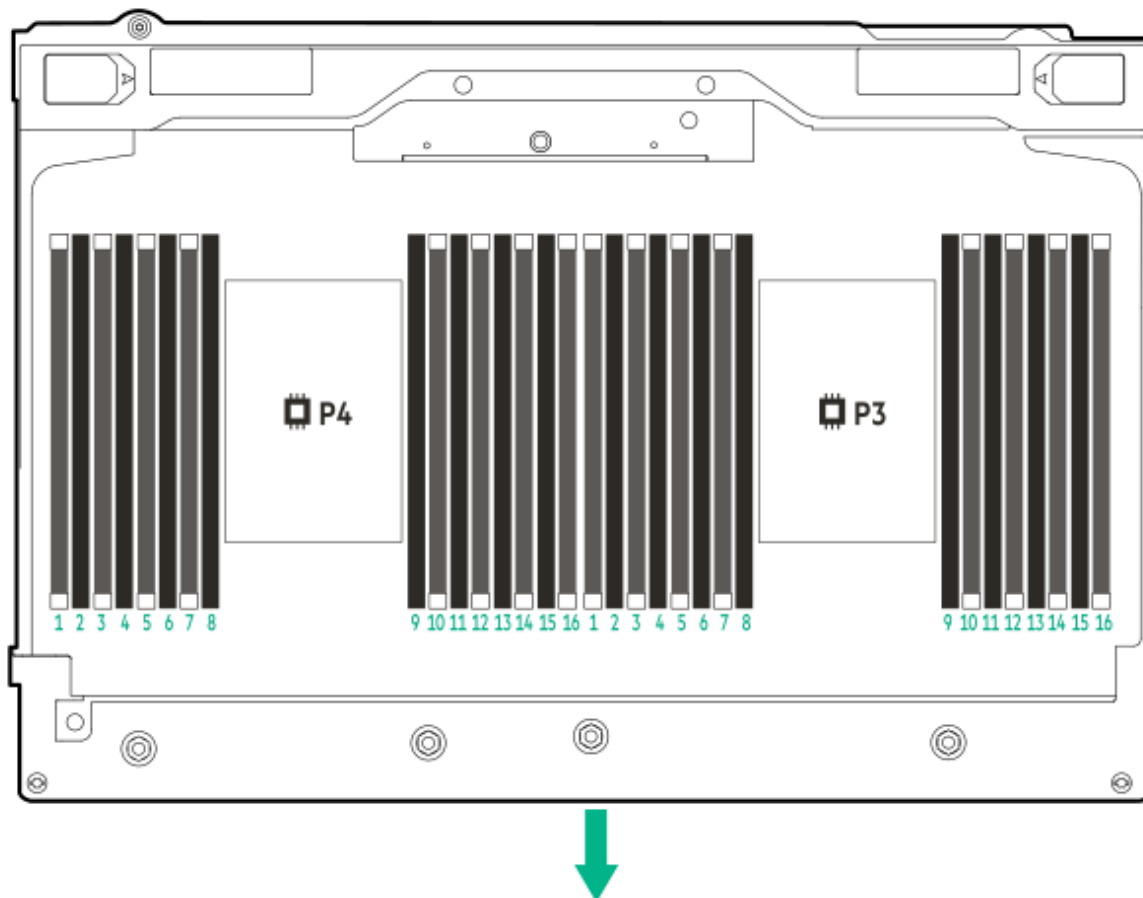
Results

The installation procedure is complete.

Processor mezzanine tray option

Only the air cooling configuration supports the installation of processor mezzanine tray to upgrade the server from dual- to quad-processor configuration. In the liquid cooling configuration, the processor mezzanine tray with the [liquid cooling options](#) is by default in the server.

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 dual- to quad-processor configuration

Upgrading from the dual- to quad-processor configuration

Prerequisites

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

- T-30 Torx screwdriver
- T-10 Torx screwdriver
- Processor option
- Standard heatsink option (P48905-B21)
- Processor mezzanine tray option (P54803-B21)

About this task

Only the server in the air cooling configuration can be upgraded from the dual- to quad-processor configuration. For the processors that support the liquid cooling, quad-processor configuration, see the product QuickSpecs on the Hewlett Packard Enterprise website:

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

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.

Removing all high performance heatsinks

9. Allow all internal system components to cool before continuing.

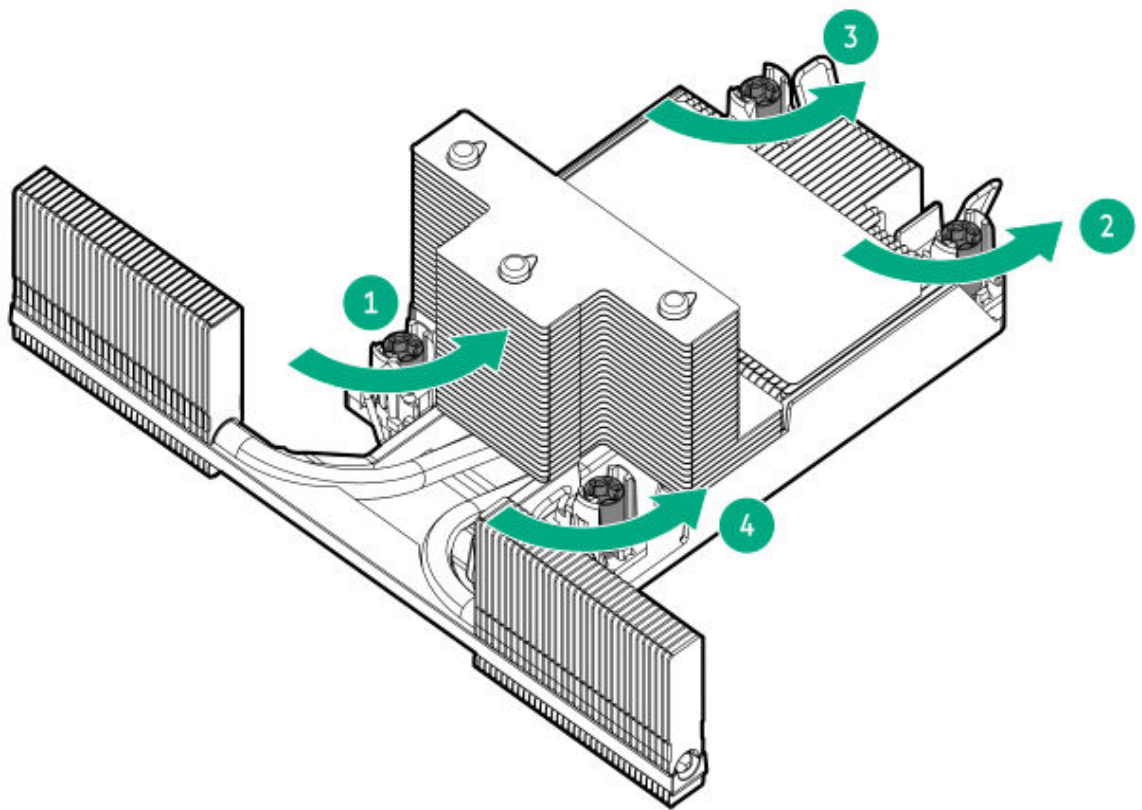
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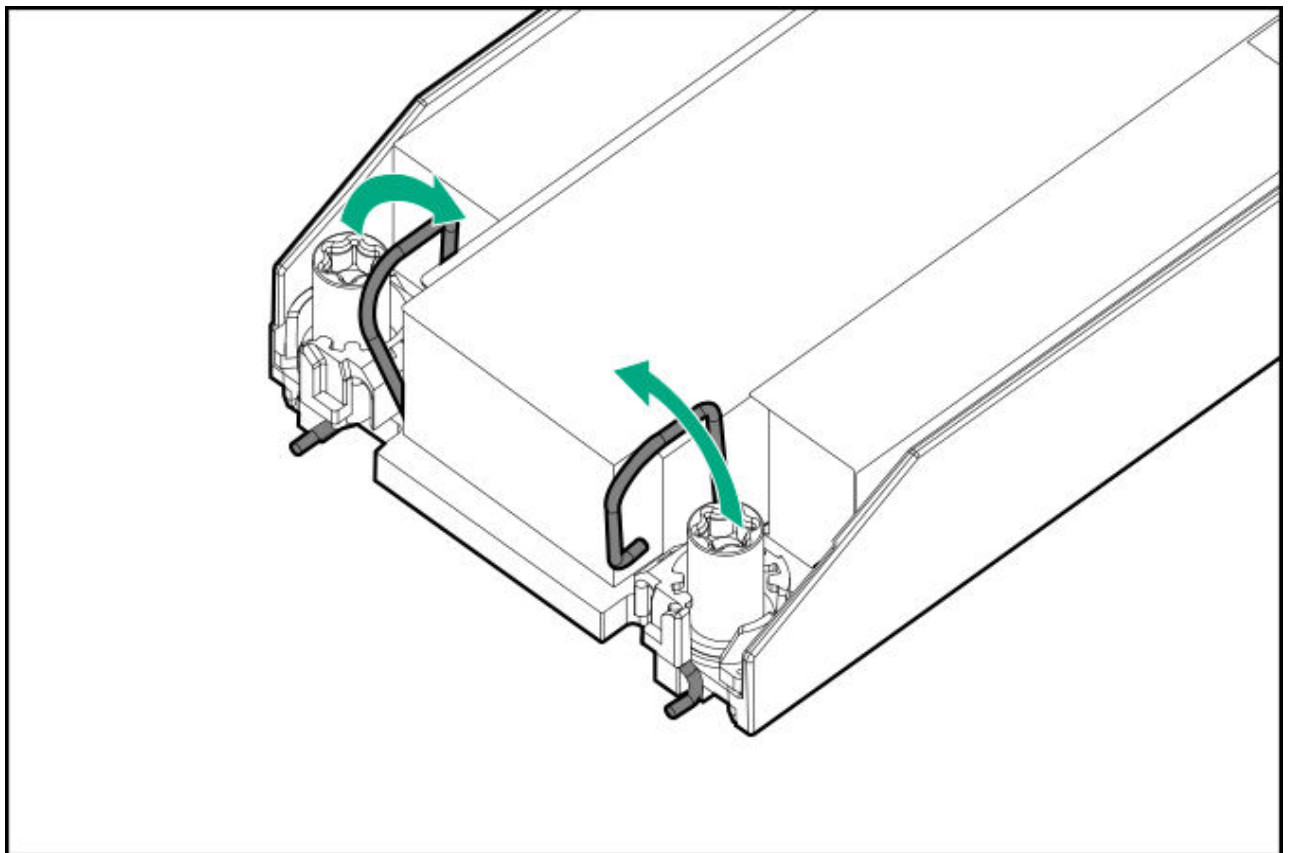
CAUTION

Heatsink screws must be tightened and loosened in alternating sequence. Do not overtighten the screws as this might damage the system board or the processor socket.

Loosen one pair of diagonally opposite heatsink screws, and then loosen the other pair of heatsink screws.



1. Set the anti-tilt wires to the unlocked position.



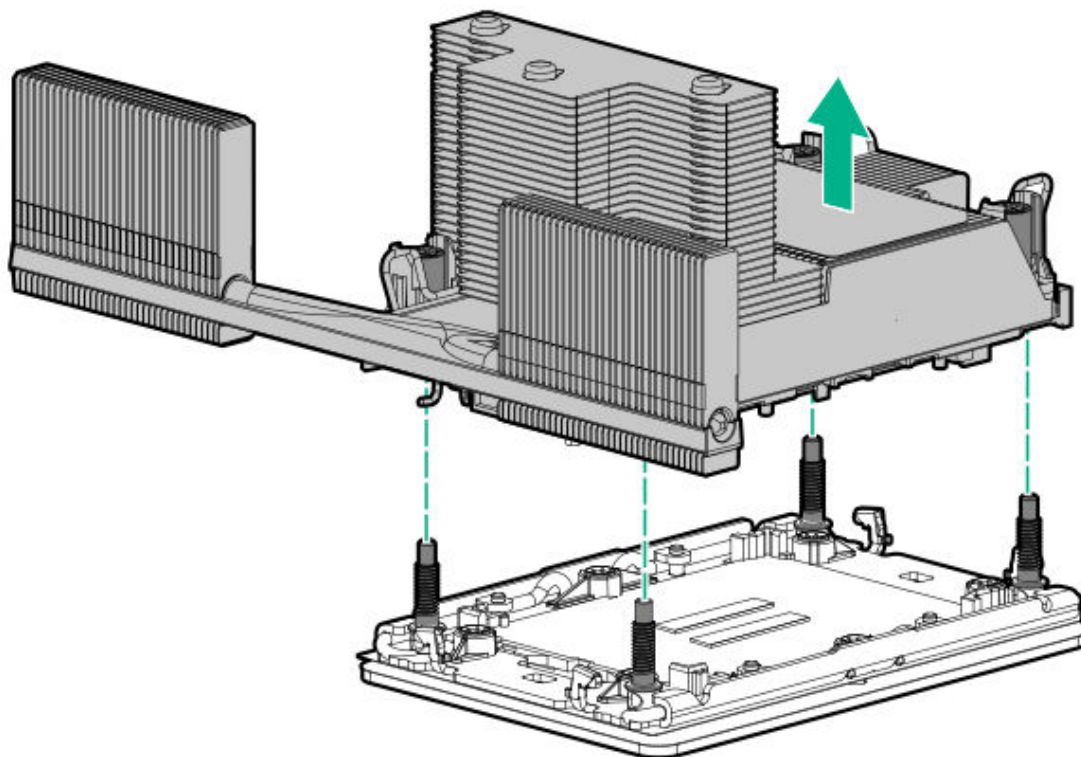
.2.



CAUTION

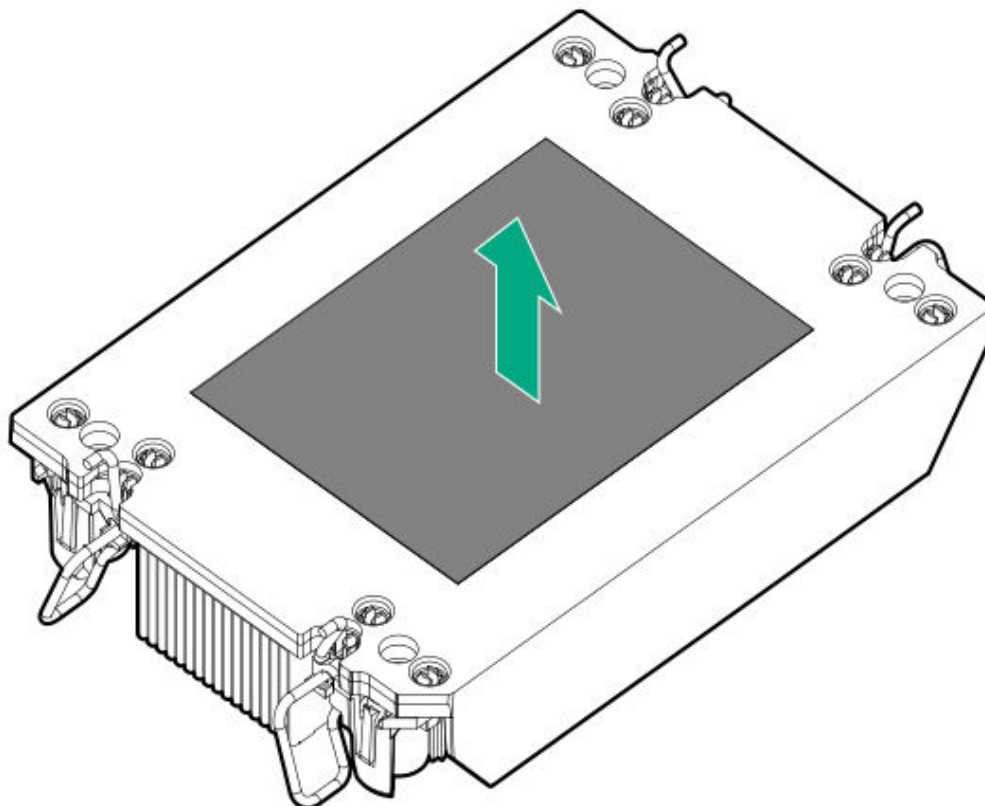
To prevent mechanical damage or depositing oil on your hands or other contaminants to the heatsink contact surface, hold the heatsink only by the edge of its base plate. Do not touch the heatsink fins.

Lift the high performance processor-heatsink module straight up from the system board.

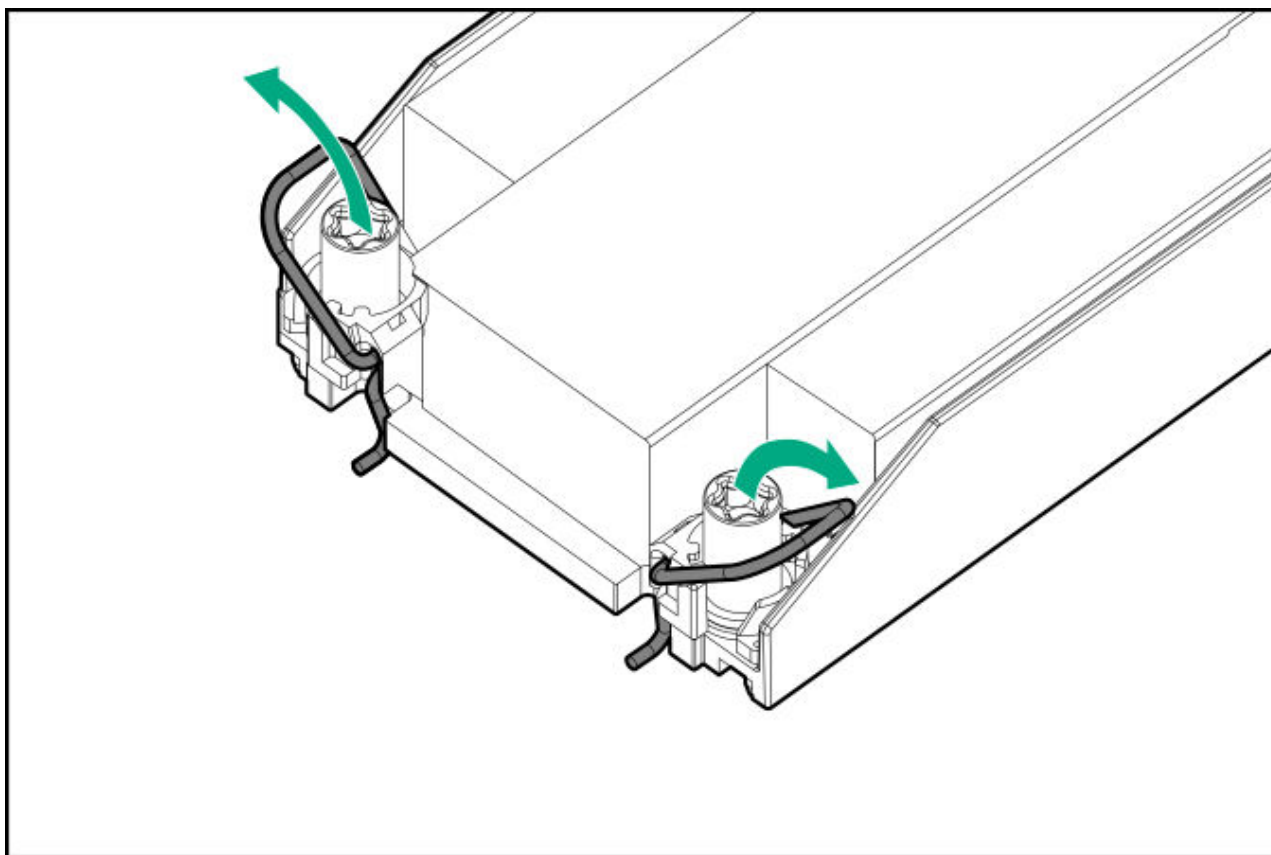


Installing the standard heatsinks on the system board and the mezzanine tray

.3. Remove the protective film from the thermal interface material.

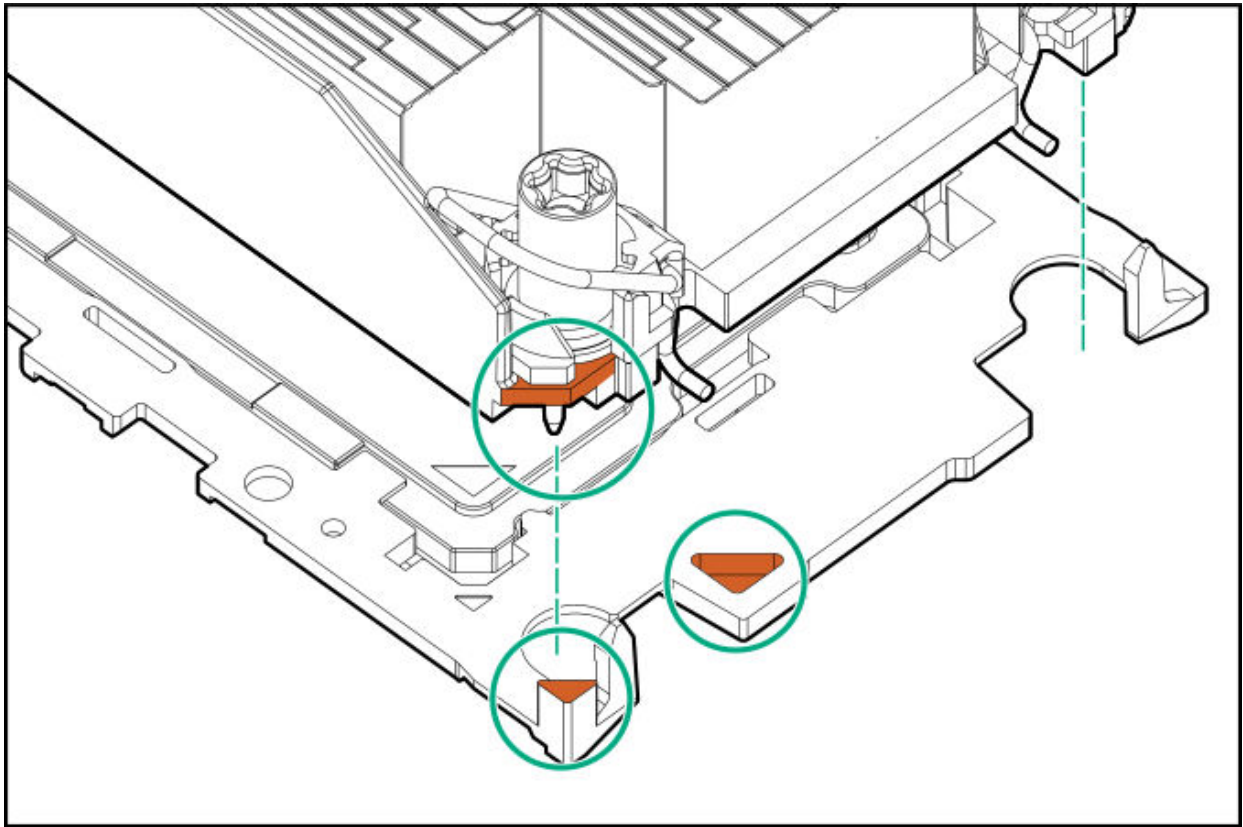


4. Set the anti-tilt wires to the locked position.



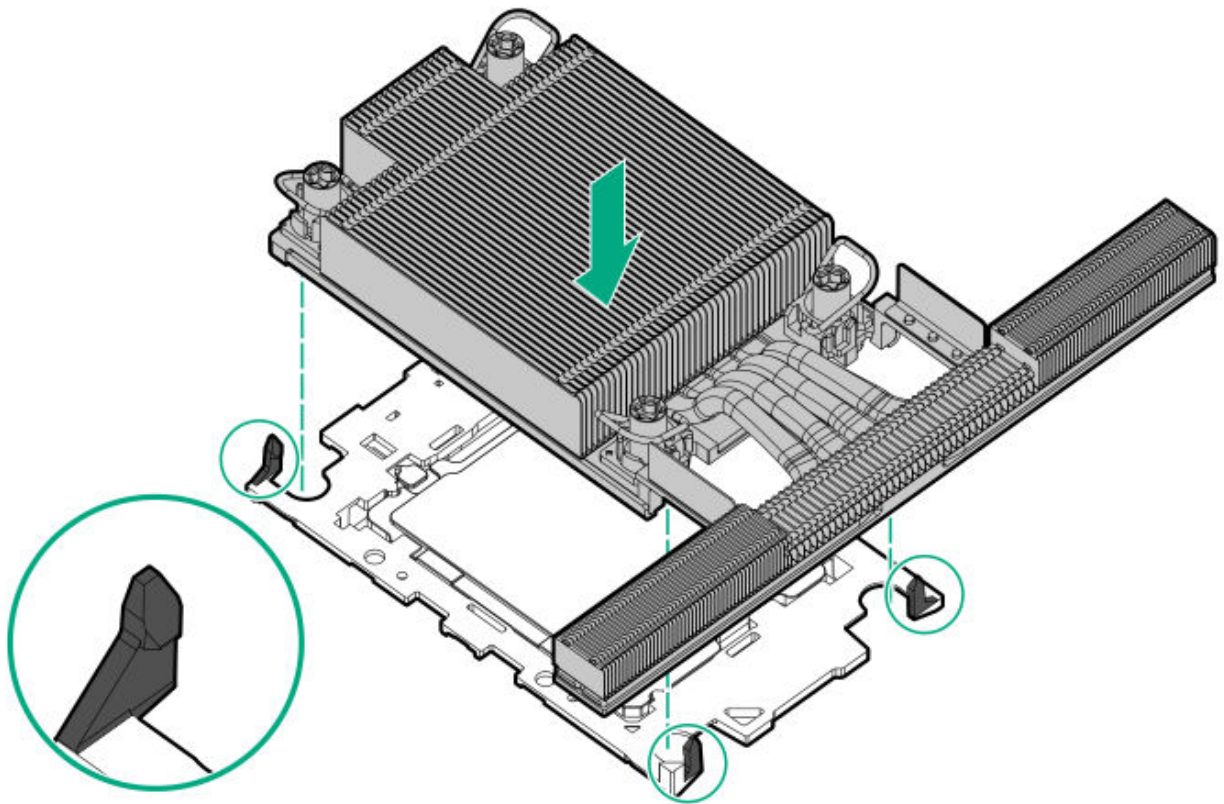
.5. Attach the heatsink to the processor carrier:

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



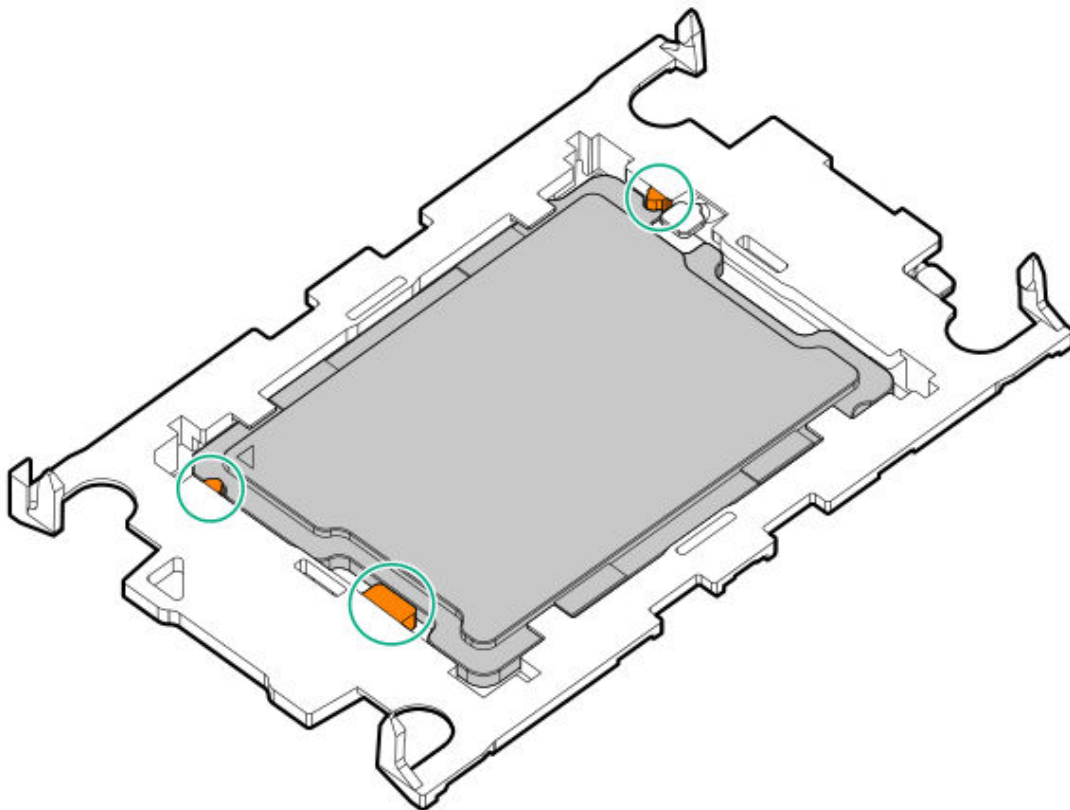
- b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

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



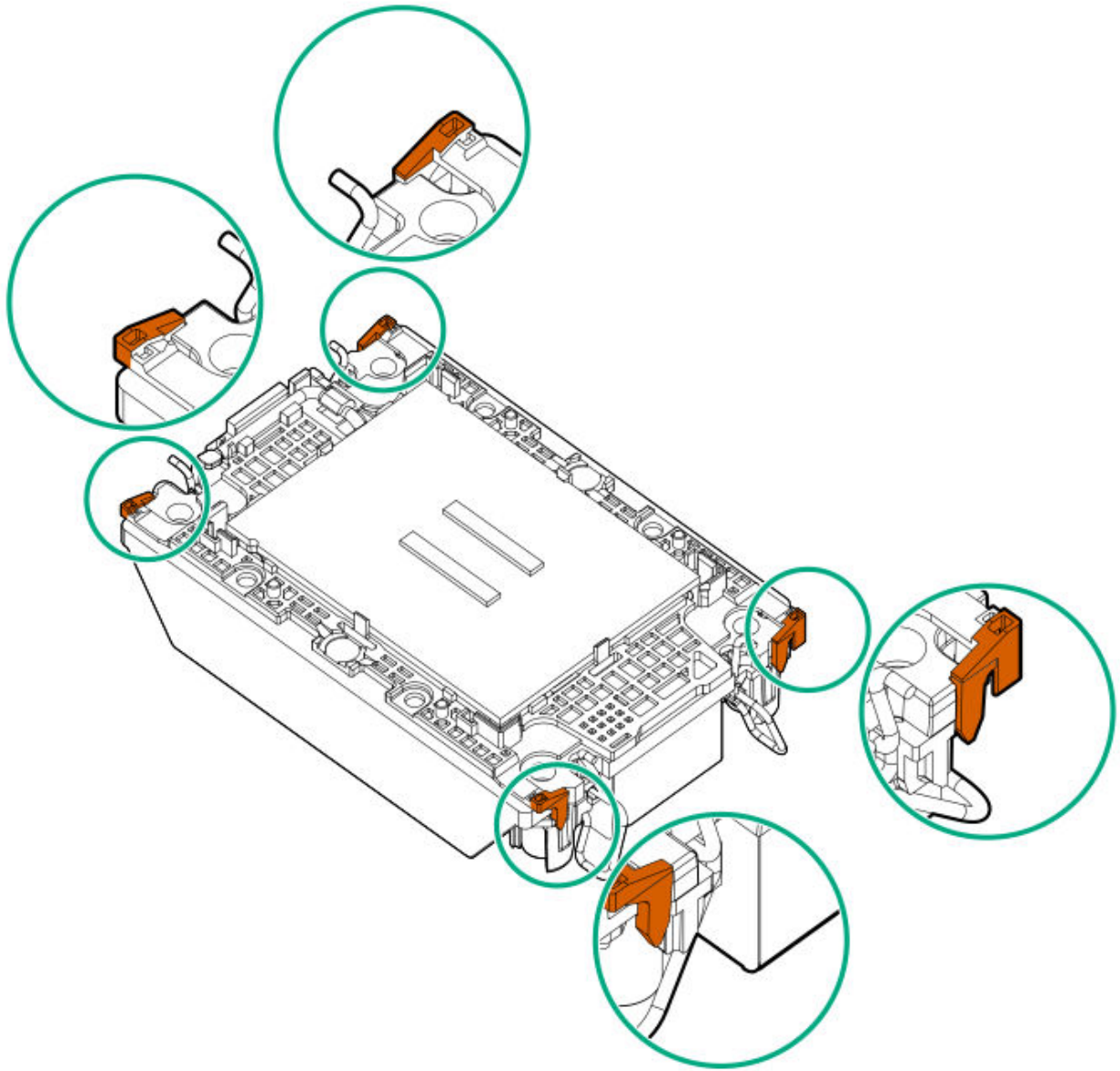
- .6. Verify that the processor is securely latched to the processor carrier.

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

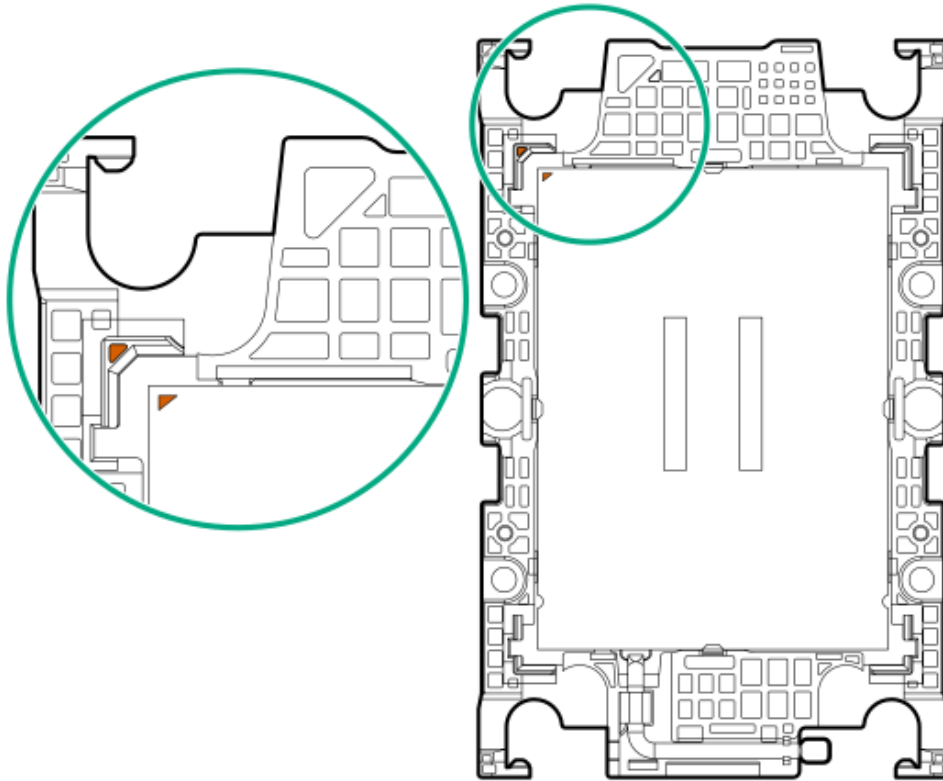


.7. Perform the following verification steps:

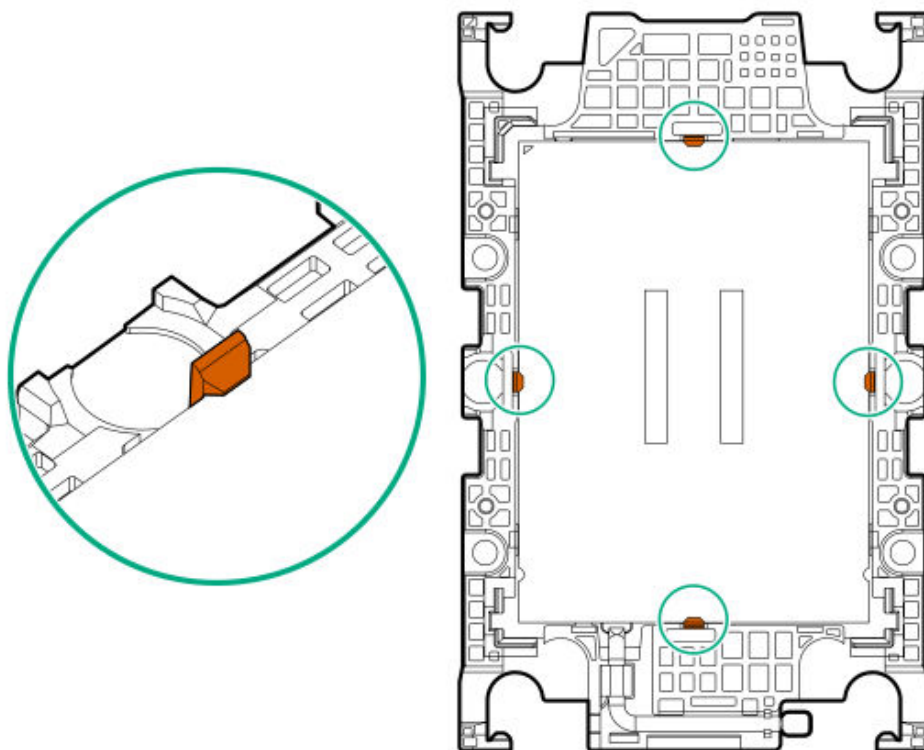
- a. Verify that the tabs on the processor carrier are securely latched on the heatsink.



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

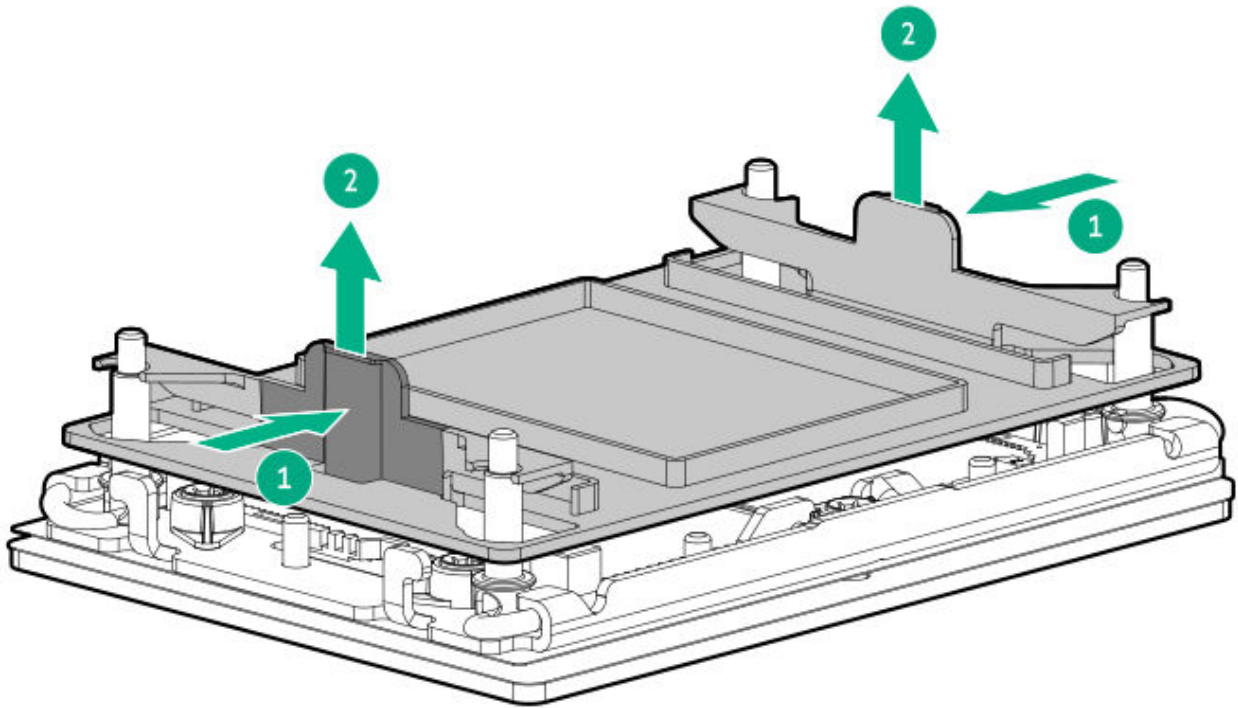


c. Verify that the processor is properly secured by the carrier snaps.



- .8. 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.



.9.



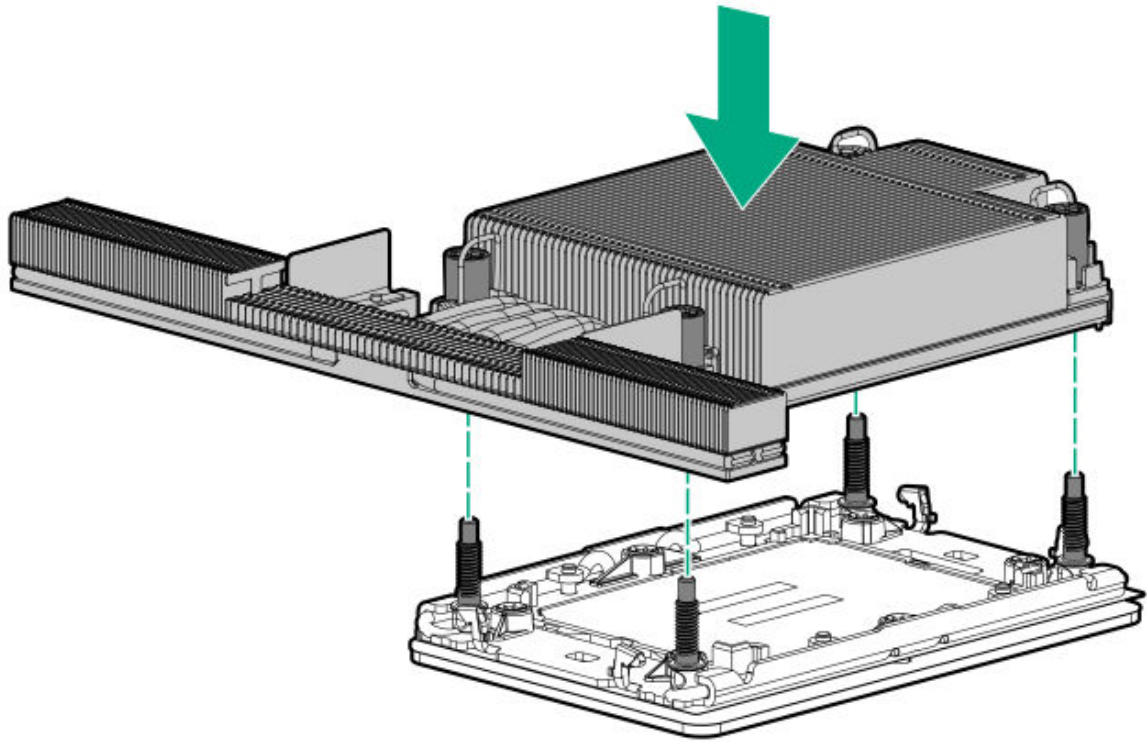
CAUTION

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.

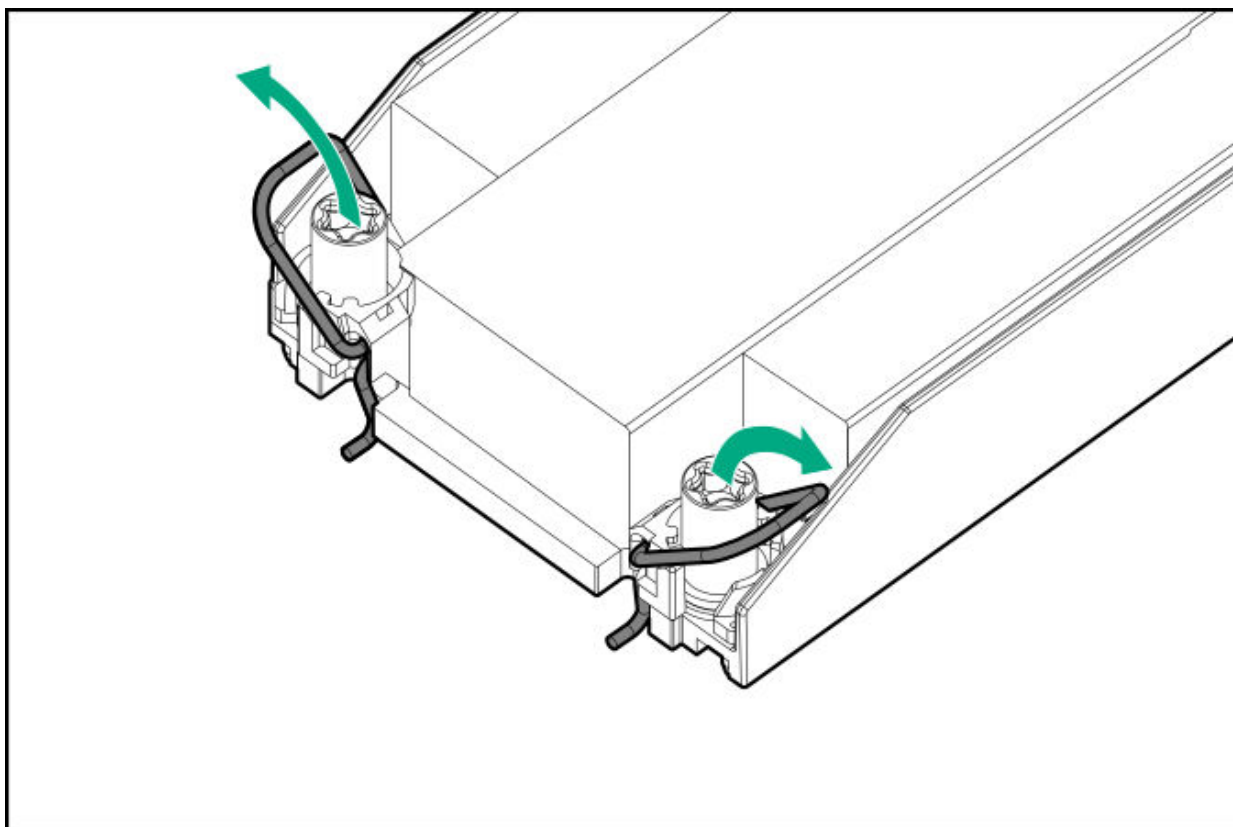
Install the processor-heatsink module:

- a. When using a torque wrench to tighten the heatsink screws, set it to 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.

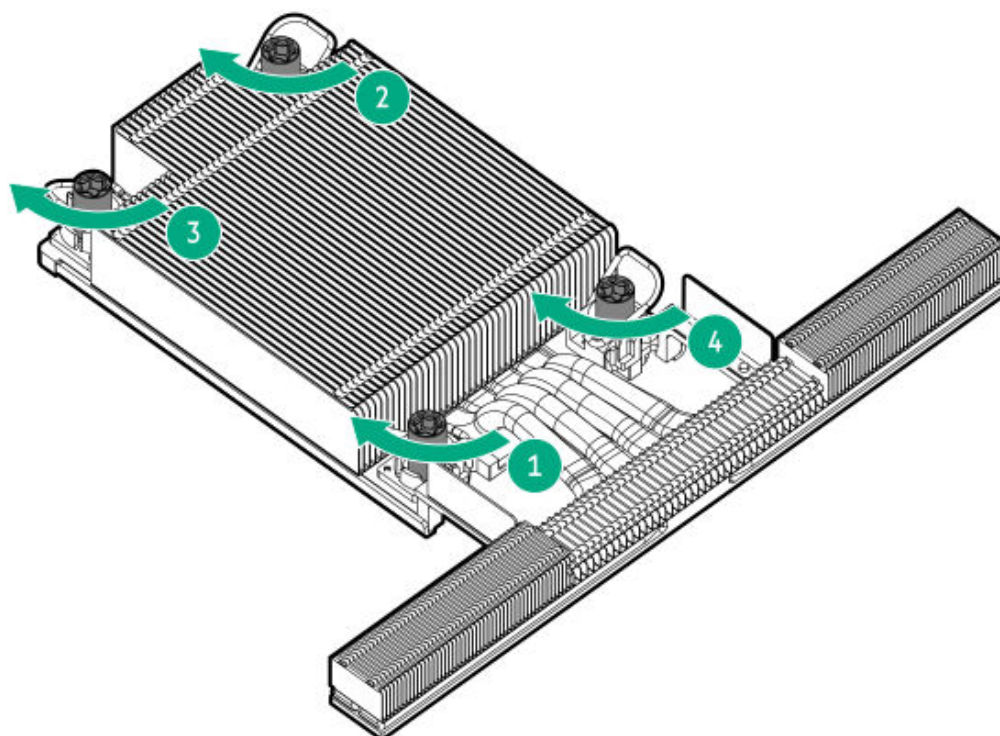
The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



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

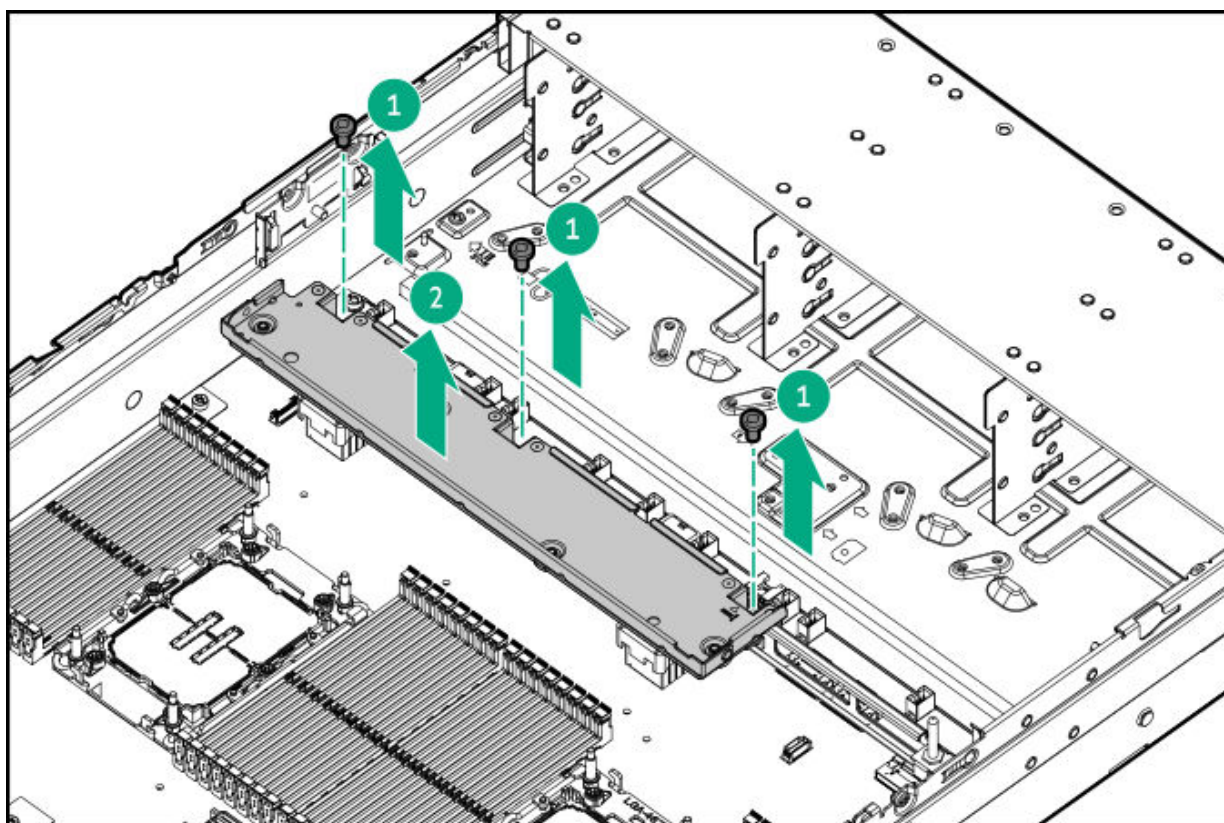


- e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.

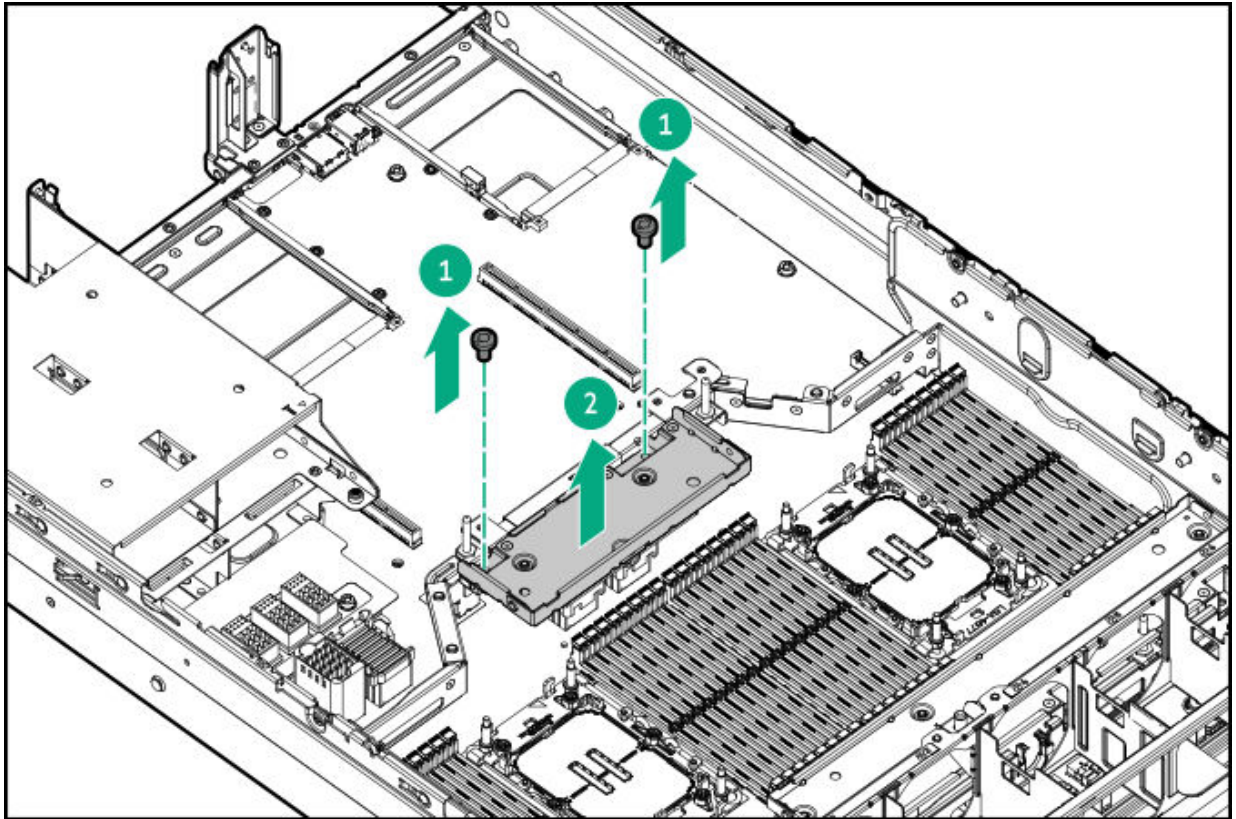


!0. Remove the pass through modules.

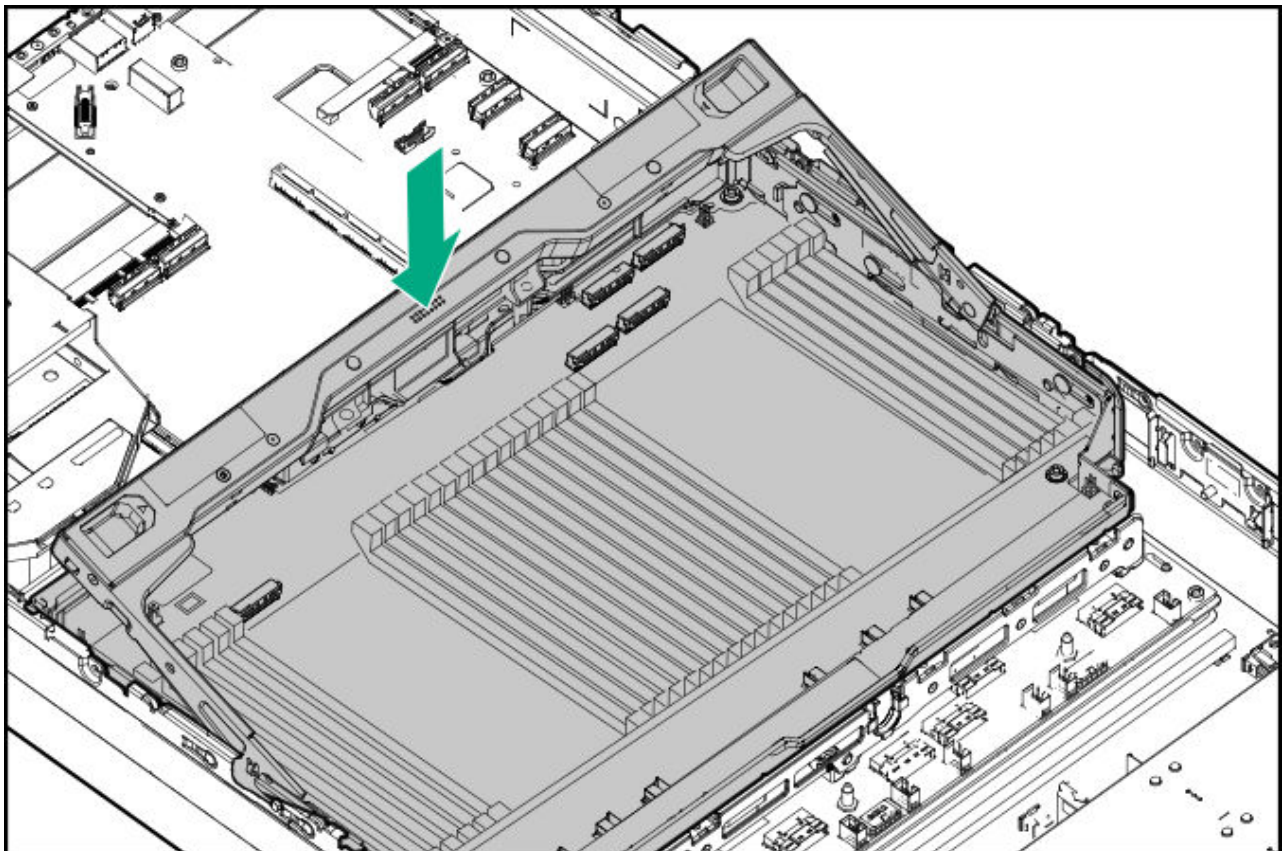
- Front pass through module



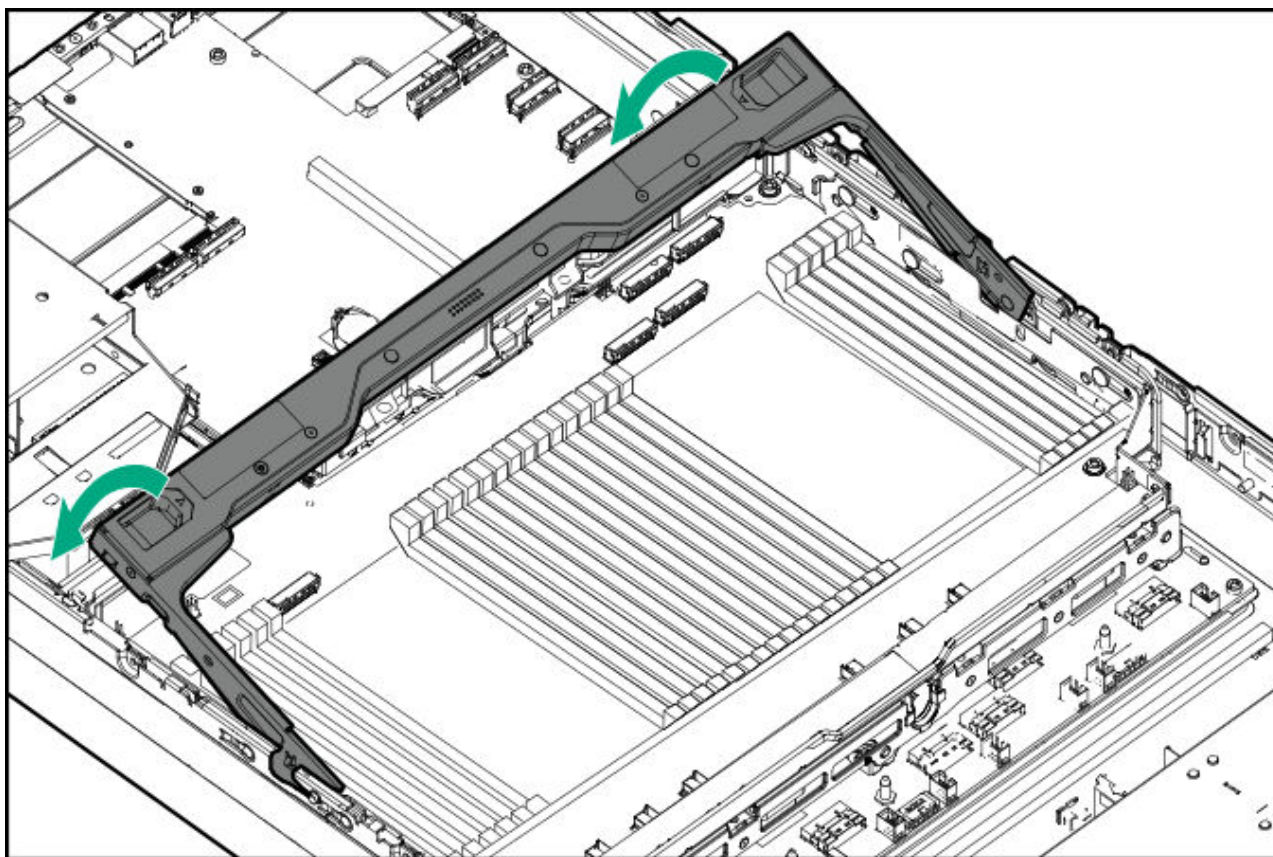
- Rear pass through module



1. Install the processor mezzanine tray in the server.



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

Results

The installation procedure is complete.

Processor heatsink assembly option

Subtopics

Processor cautions

Installing the processor heatsink assembly

Processor cautions



CAUTION

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



CAUTION

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



CAUTION

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



IMPORTANT

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



IMPORTANT

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

Installing the processor heatsink assembly

Prerequisites

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

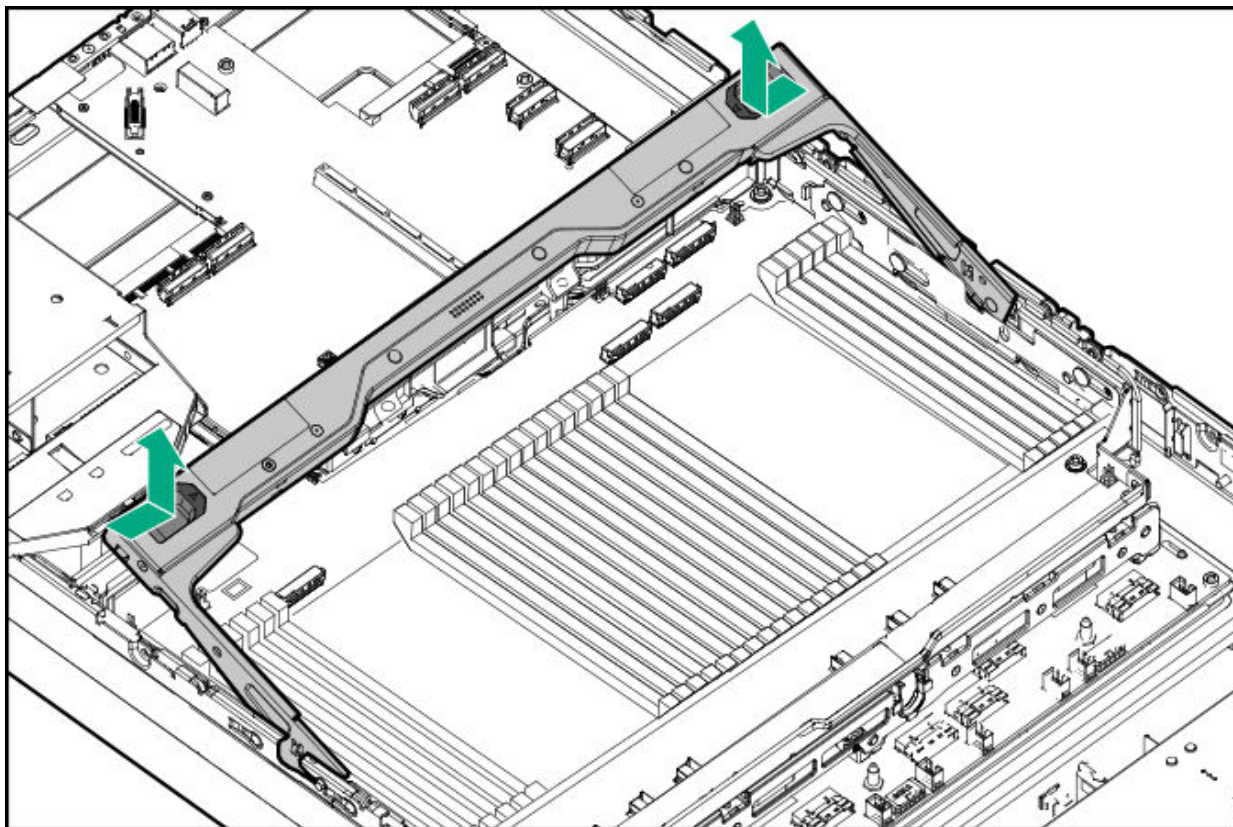
- T-30 Torx screwdriver
- Processor option

About this task

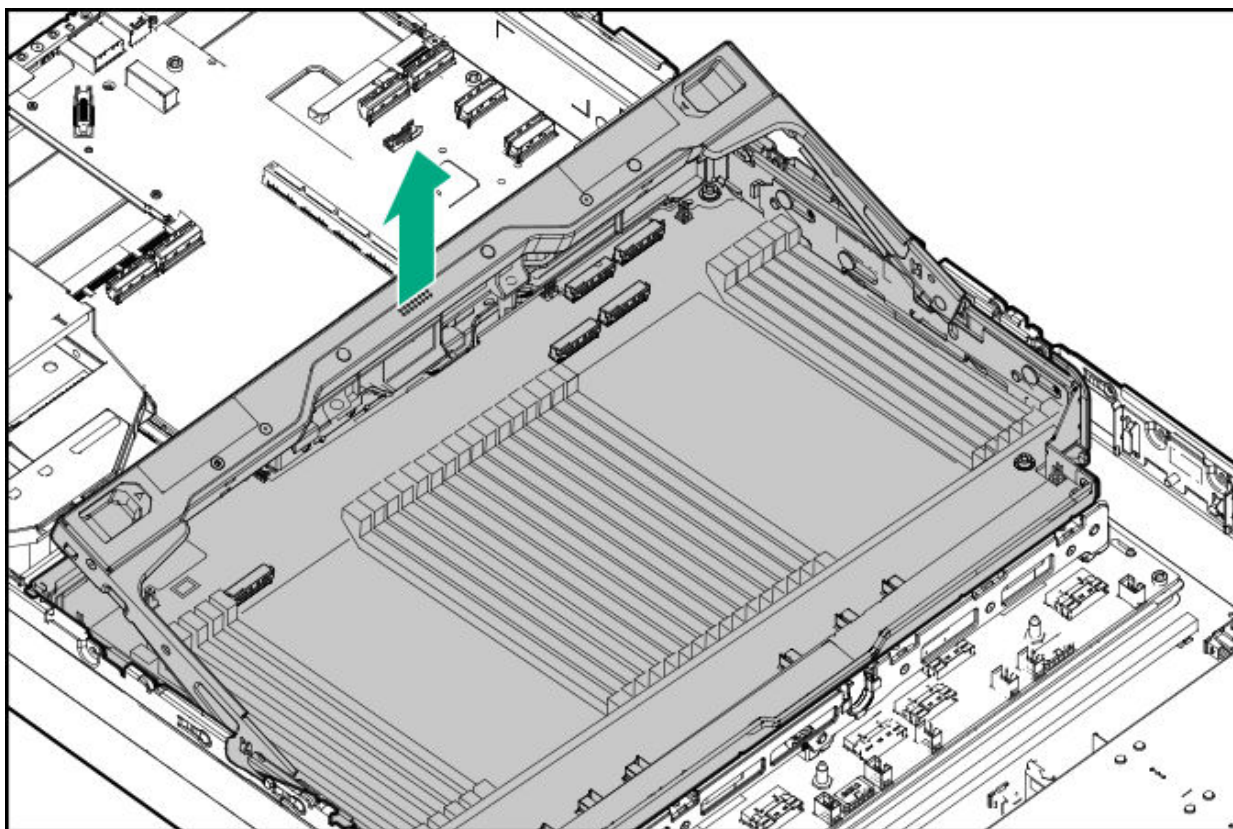
This procedure only shows the installation steps for the standard and high performance heatsink options. In the liquid cooling configuration, the liquid cooling options with the heatsinks are by default in the server.

Procedure

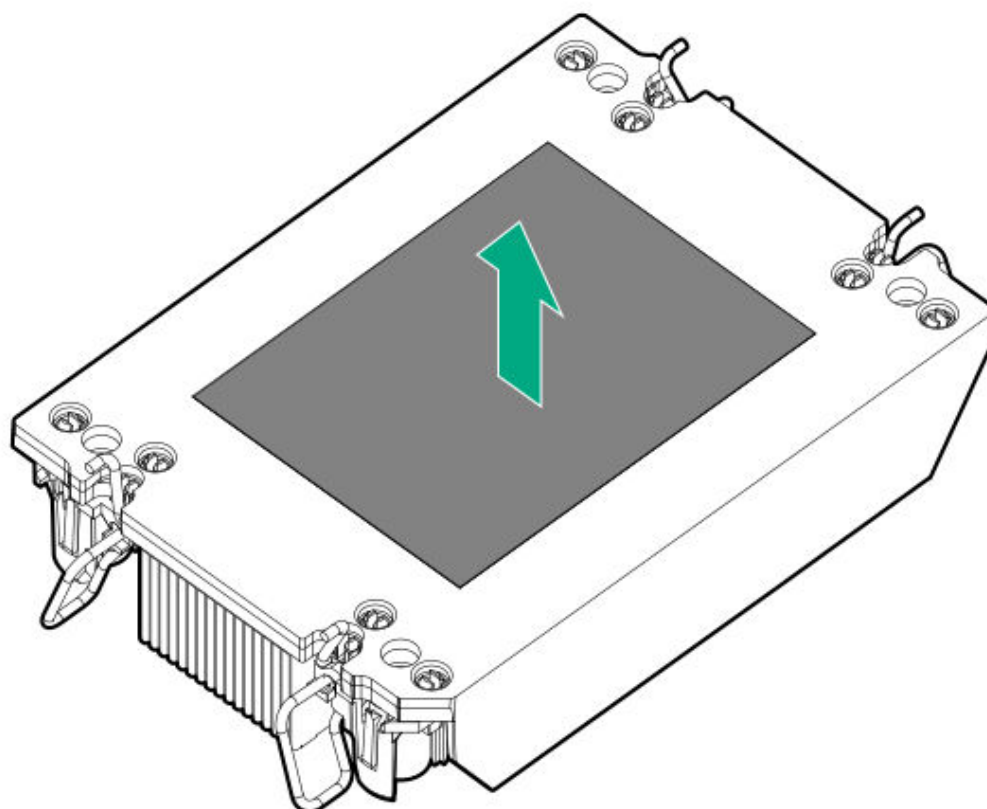
1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If the server is in a dual-processor configuration, remove the air baffle.
8. If the server is in a quad-processor configuration:
 - a. Press the buttons to rotate the processor mezzanine tray handle to the fully open position.



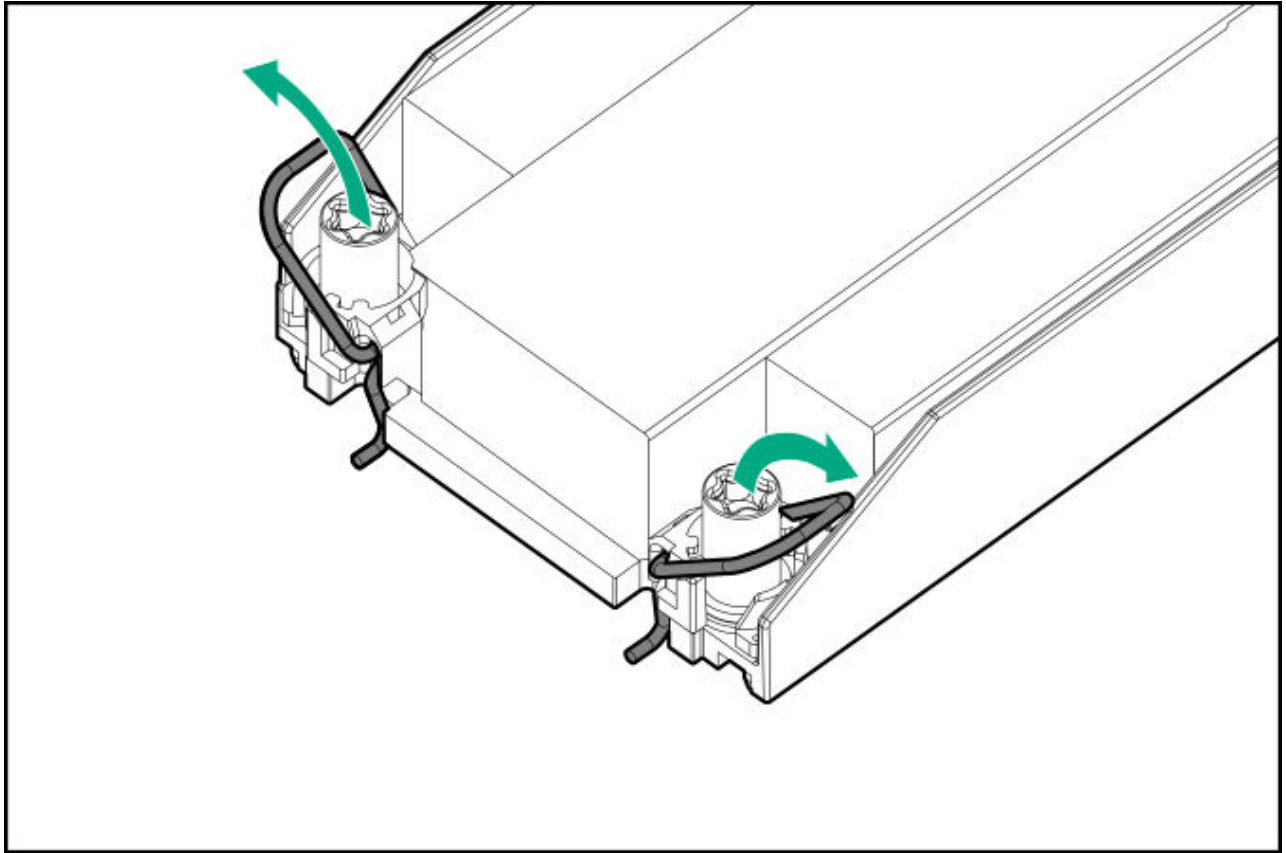
- b. Disconnect all cables from the processor mezzanine board.
- c. Remove the processor mezzanine tray.



9. Remove the protective film from the thermal interface material.

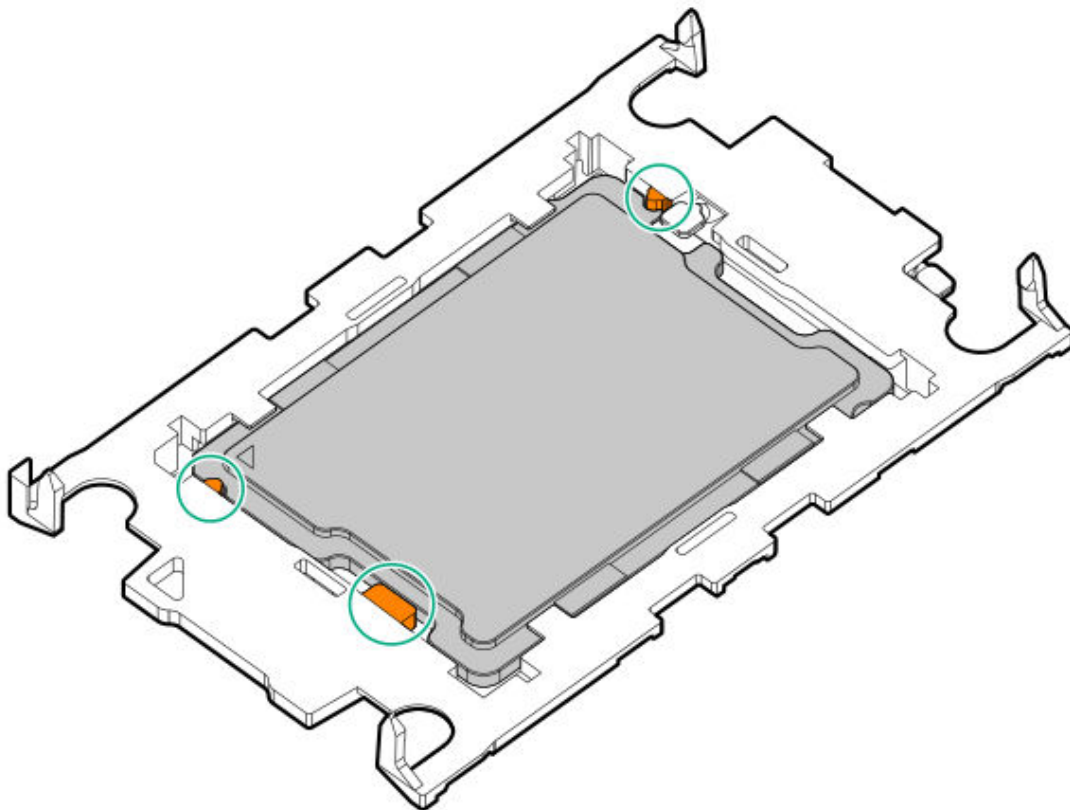


- .0. Set the anti-tilt wires to the locked position.



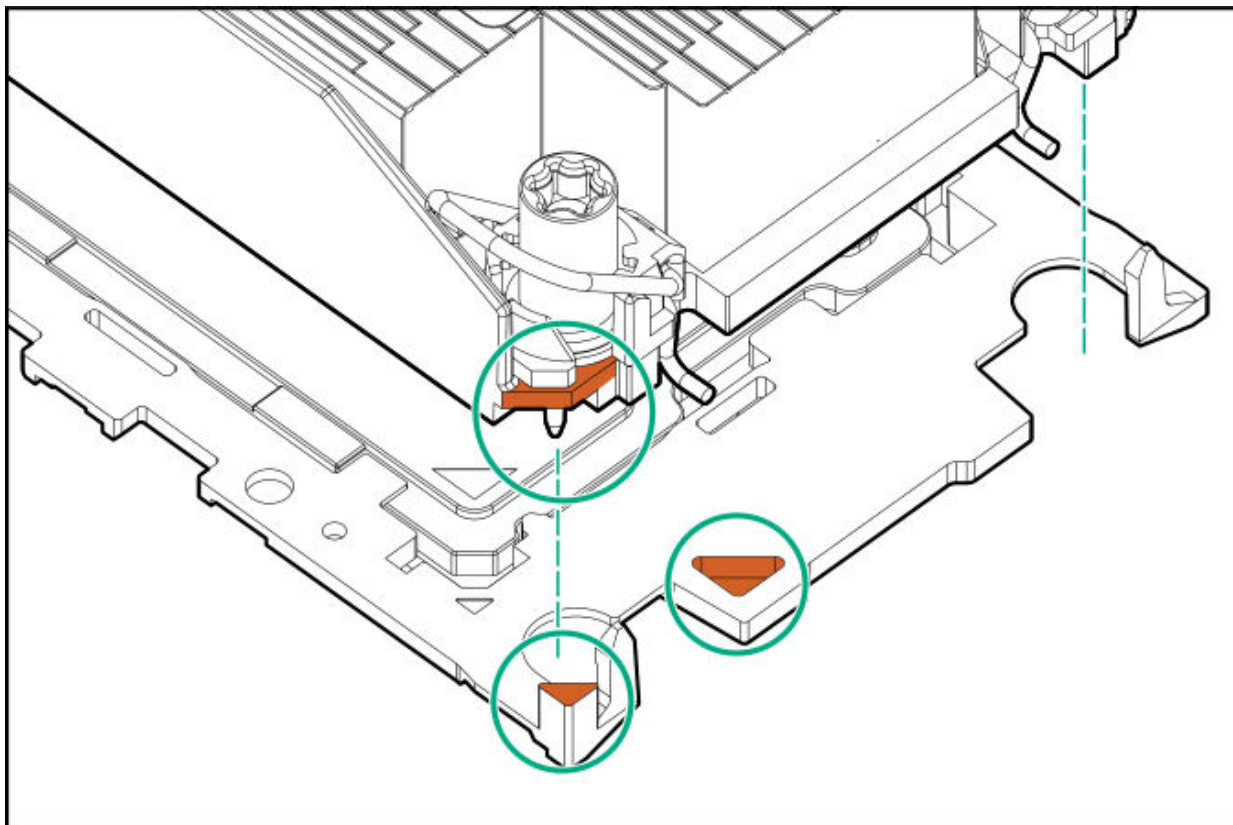
- .1. Verify that the processor is securely latched to the processor carrier.

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



.2. Attach the heatsink to the processor carrier:

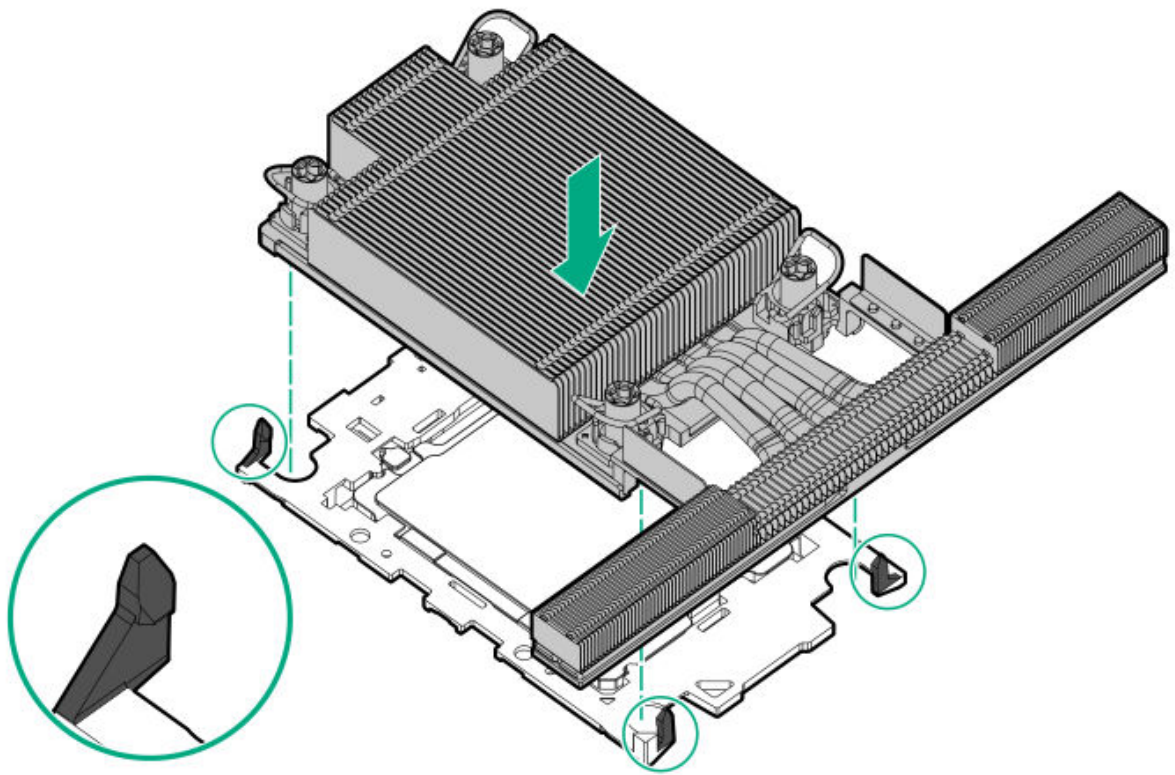
- a. Align the pin 1 indicator on the processor carrier with that on the heatsink.



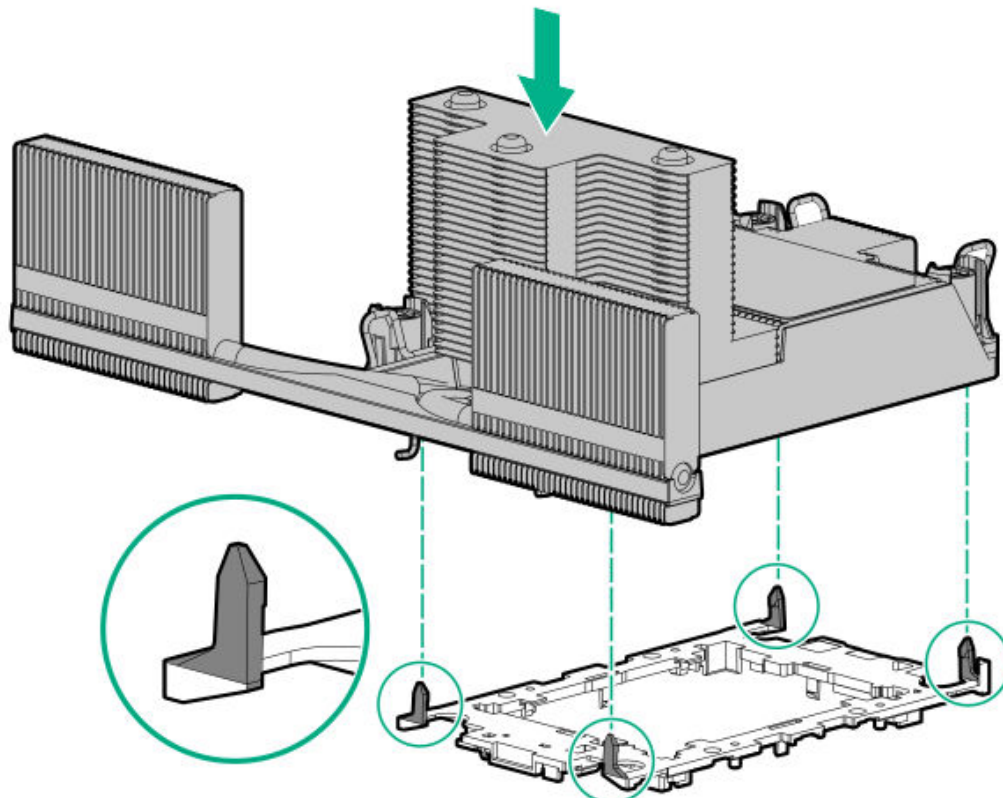
- b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

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

- Standard heatsink

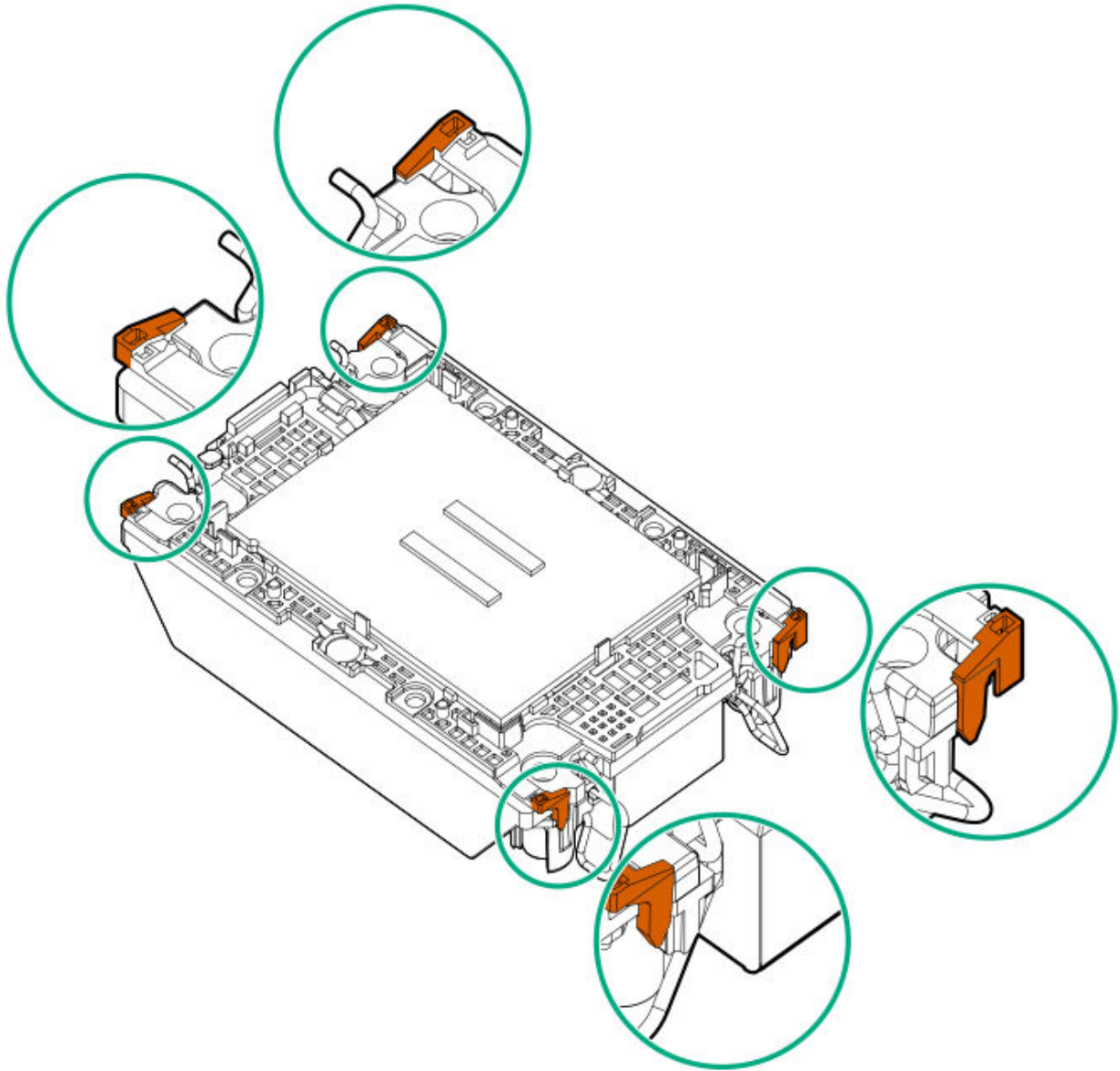


- High performance heatsink

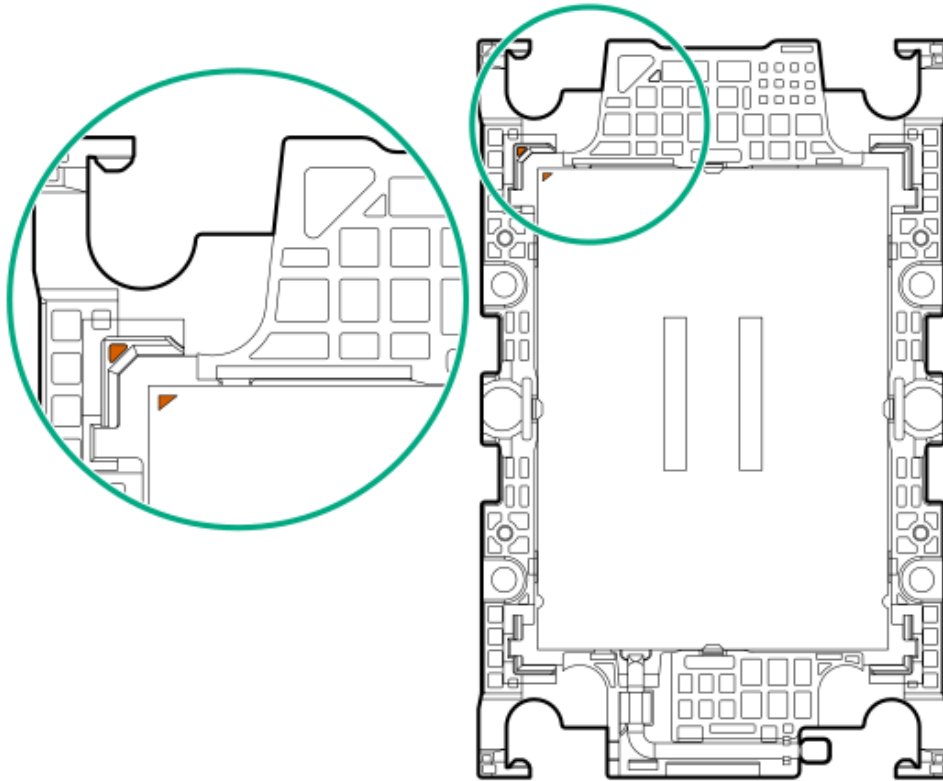


3. Perform the following verification steps:

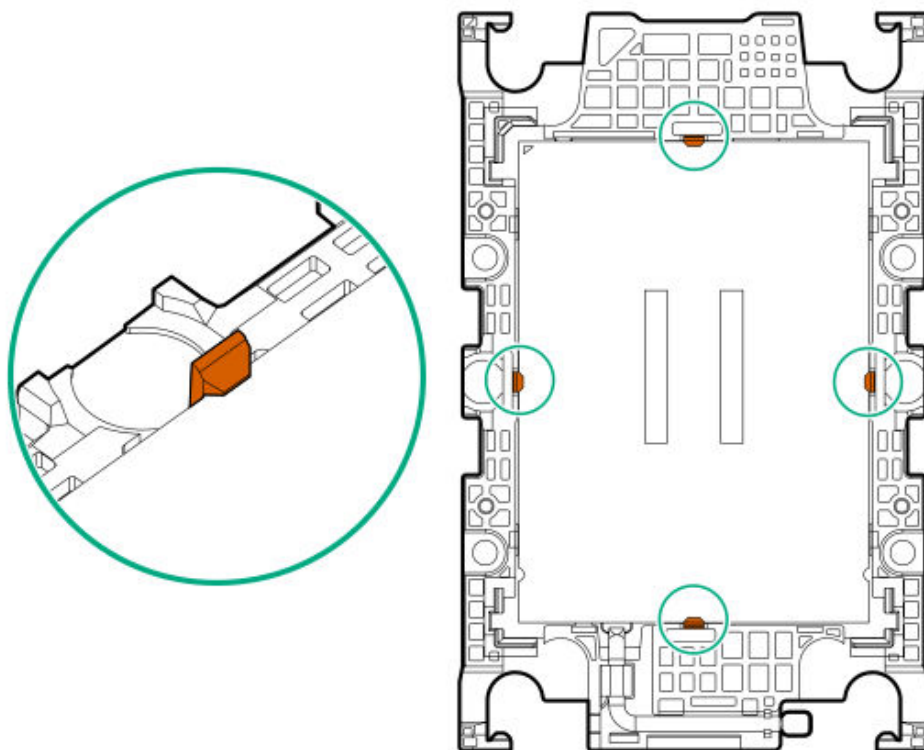
a. Verify that the tabs on the processor carrier are securely latched on the heatsink.



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

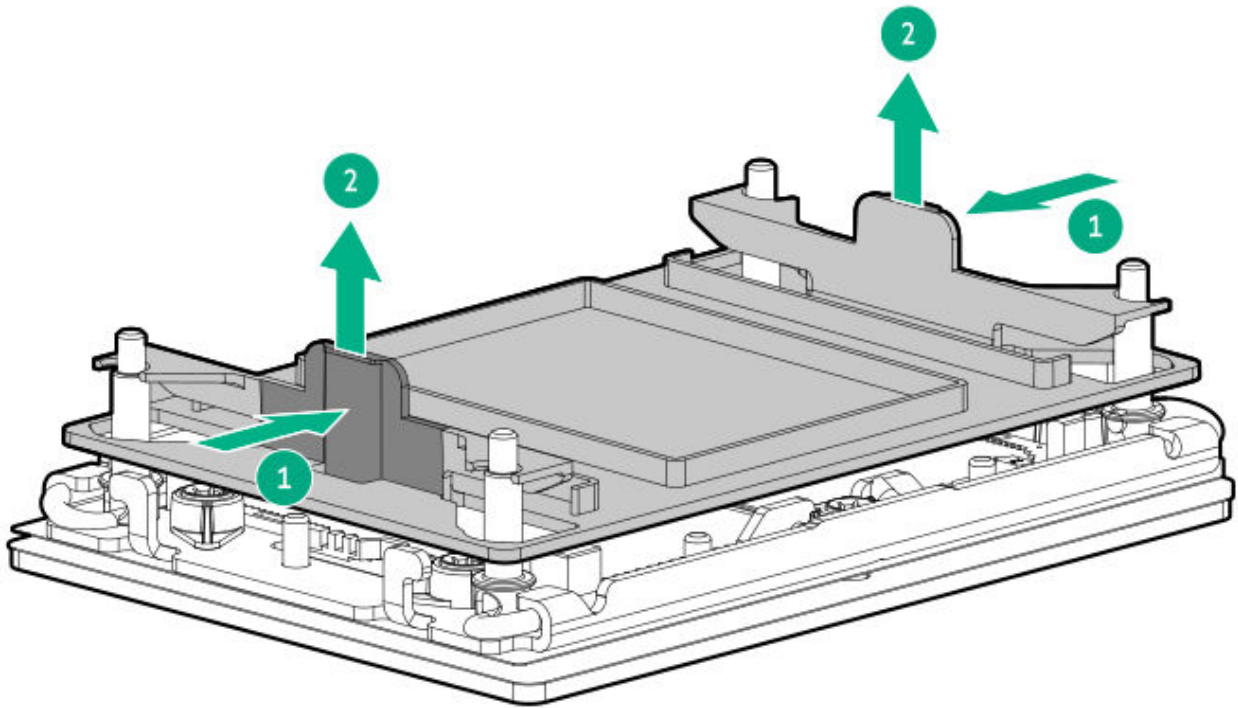


c. Verify that the processor is properly secured by the carrier snaps.



- .4. 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.



.5.



CAUTION

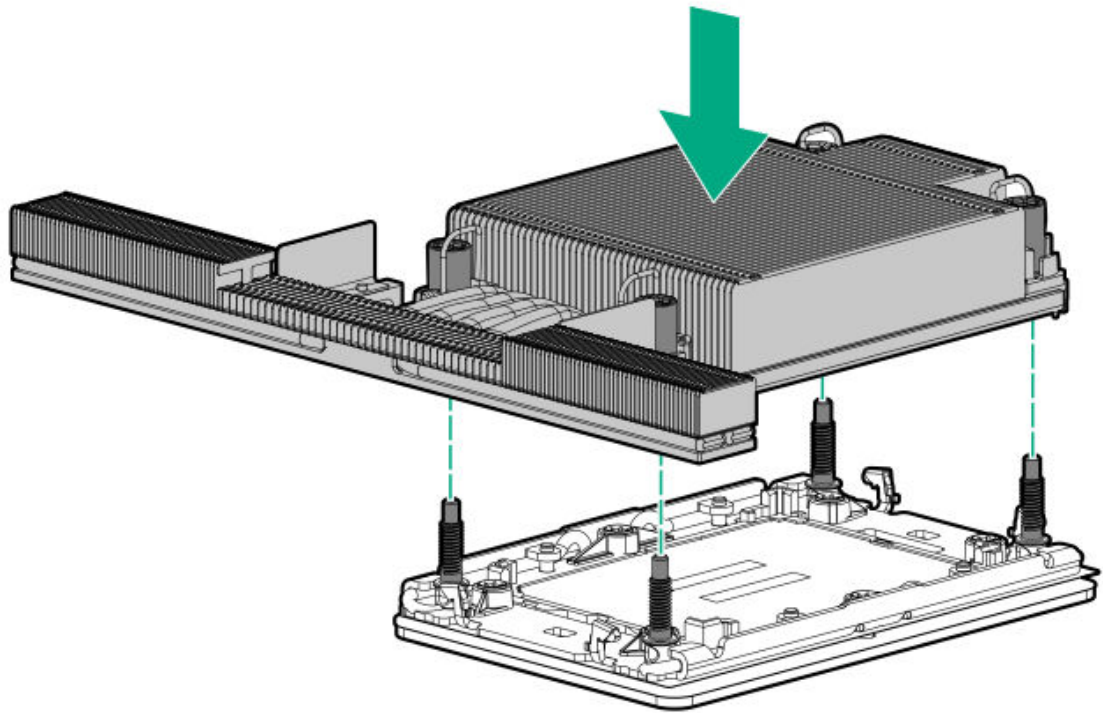
To prevent thermal failure or component damage, do not move the heatsink once the bottom of its base plate touches the top of the processor. Excessive heatsink movement can cause the thermal grease to smear and become uneven. Voids in the compound can adversely impact the transfer of heat away from the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

Install the processor-heatsink module:

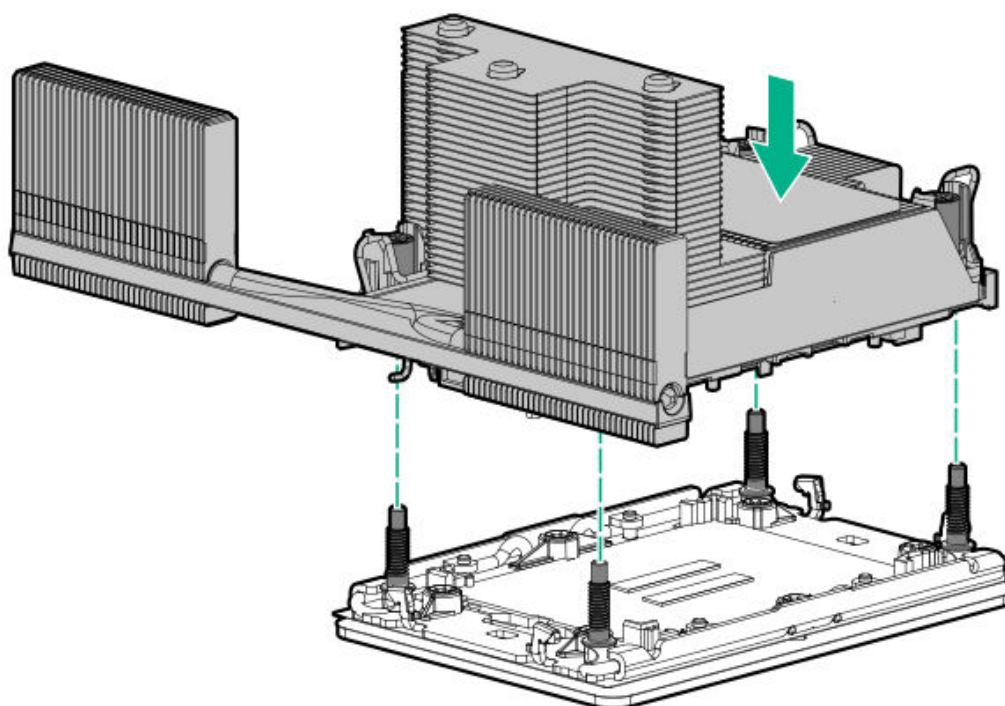
- a. When using a torque wrench to tighten the heatsink screws, set 0.9 N-m (8 in-lb) of torque.
- b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.
- c. Carefully lower the processor-heatsink module onto the bolster plate 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.

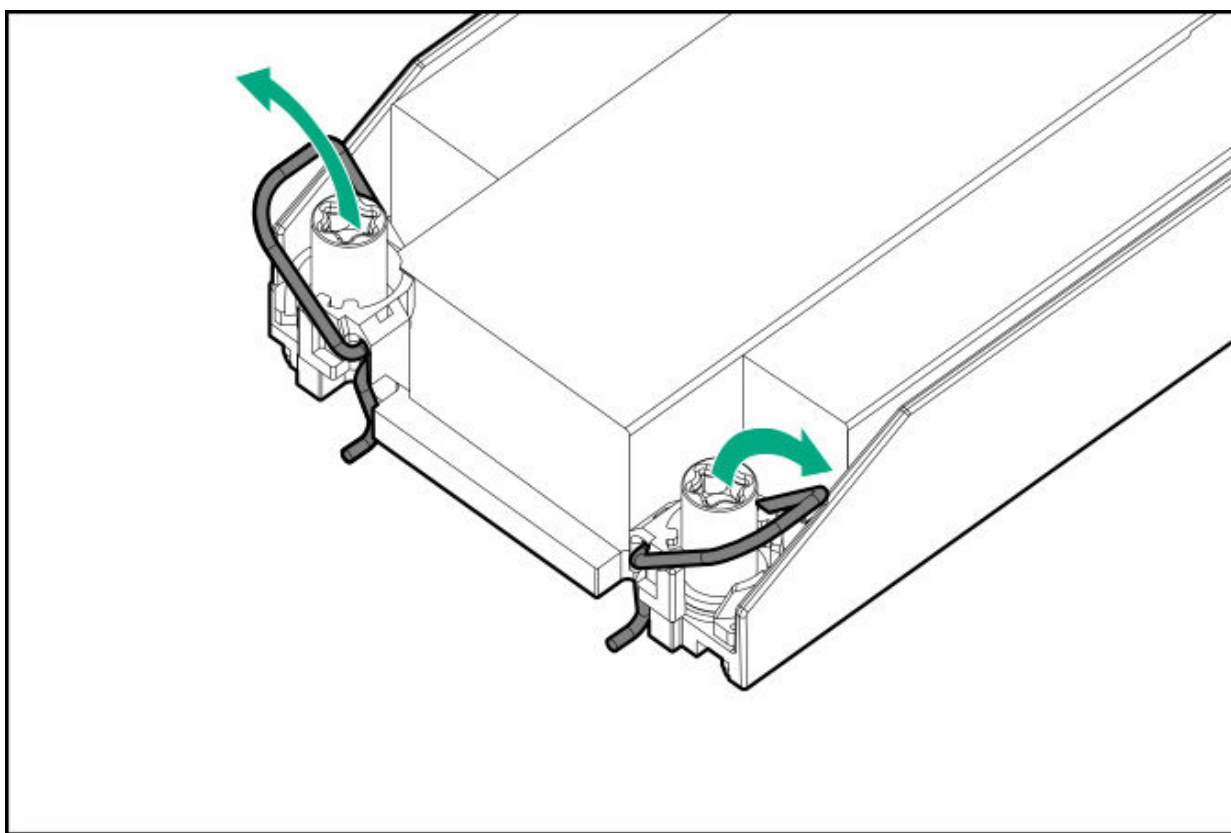
- Standard heatsink



- High performance heatsink

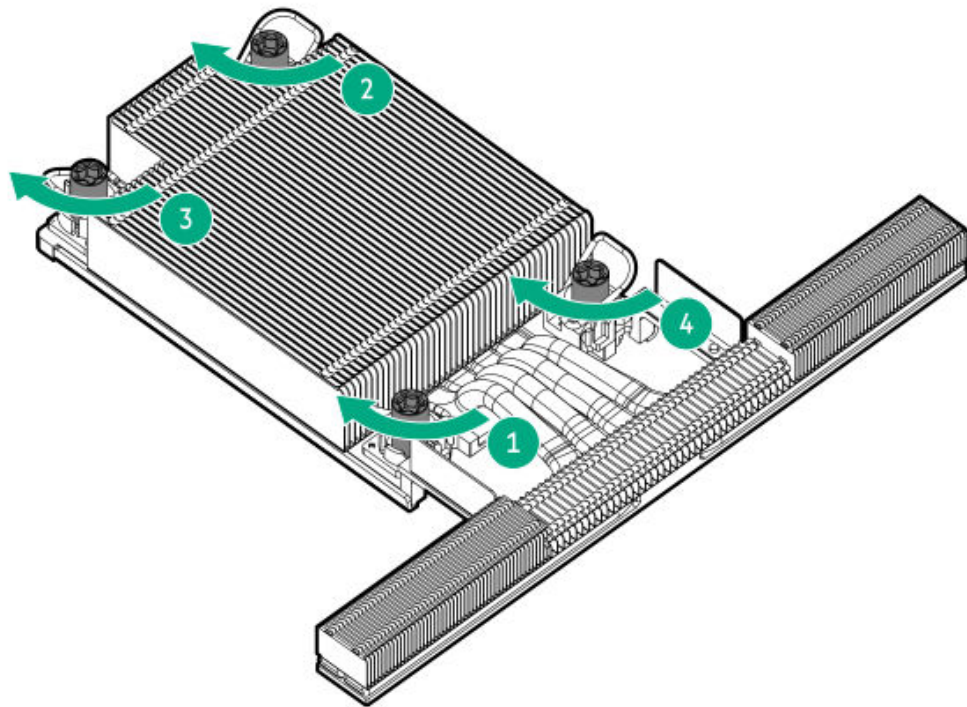


d. Set the anti-tilt wires to the locked position.

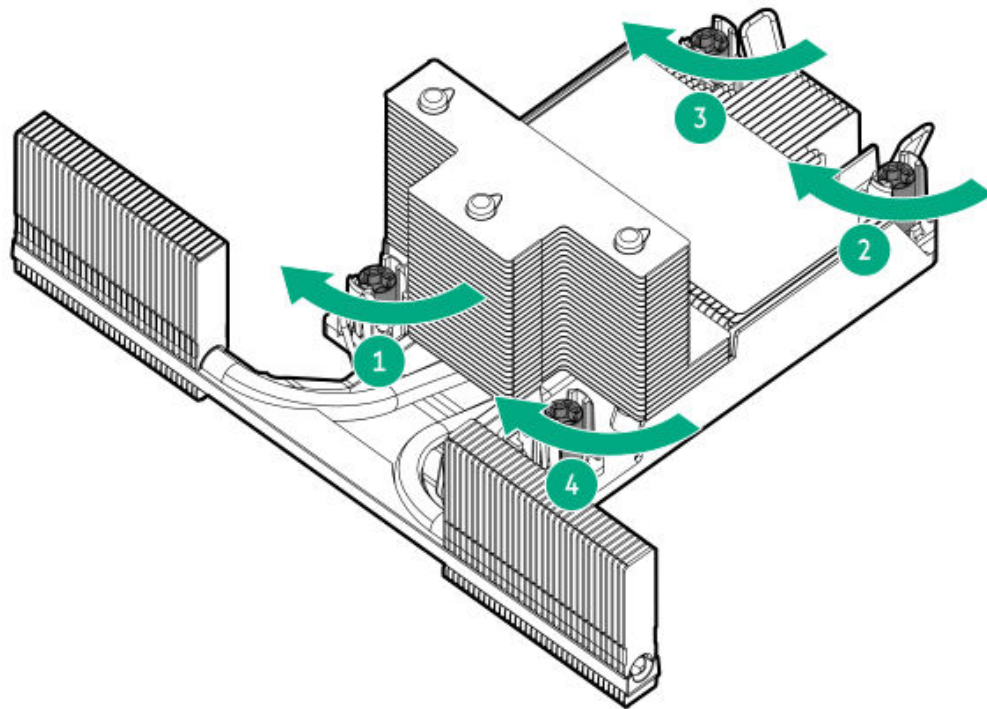


e. Tighten one pair of diagonally opposite heatsink screws, and then tighten the other pair of heatsink screws.

- Standard heatsink

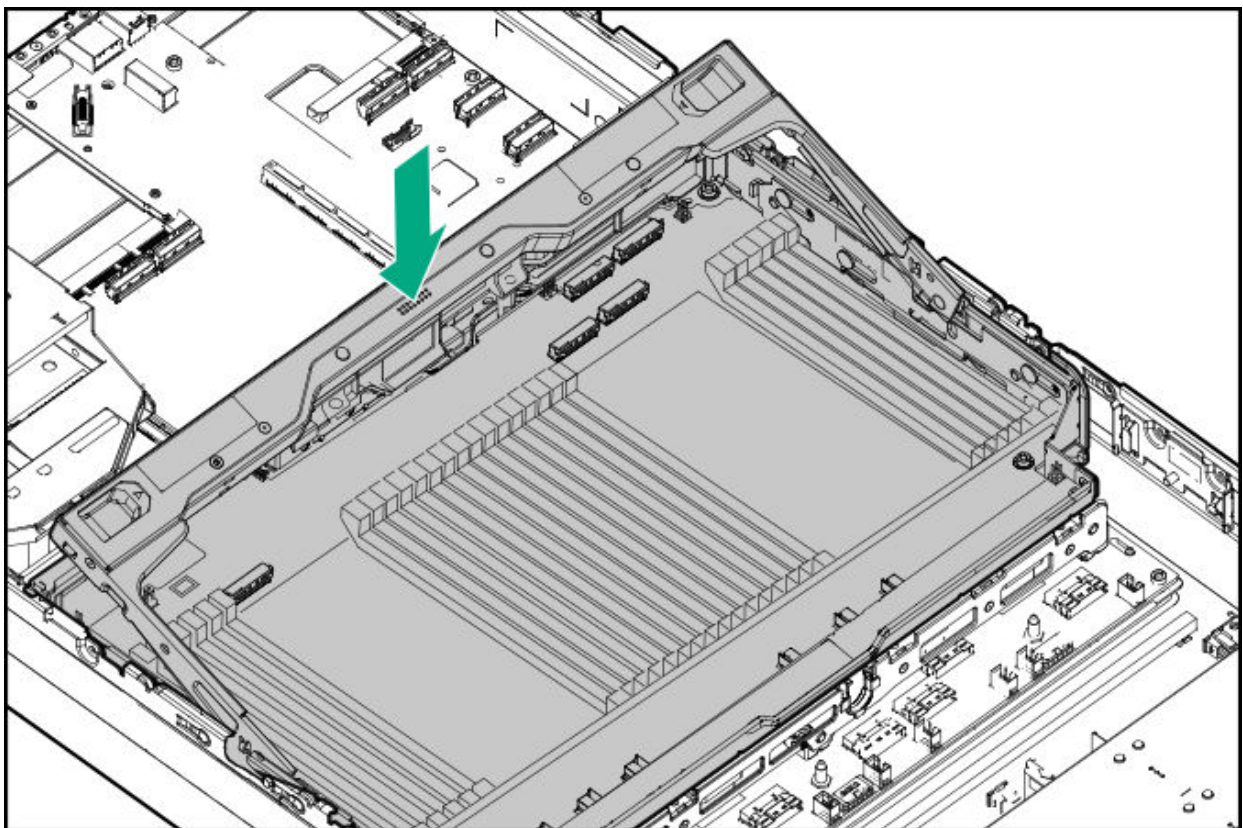


- High performance heatsink

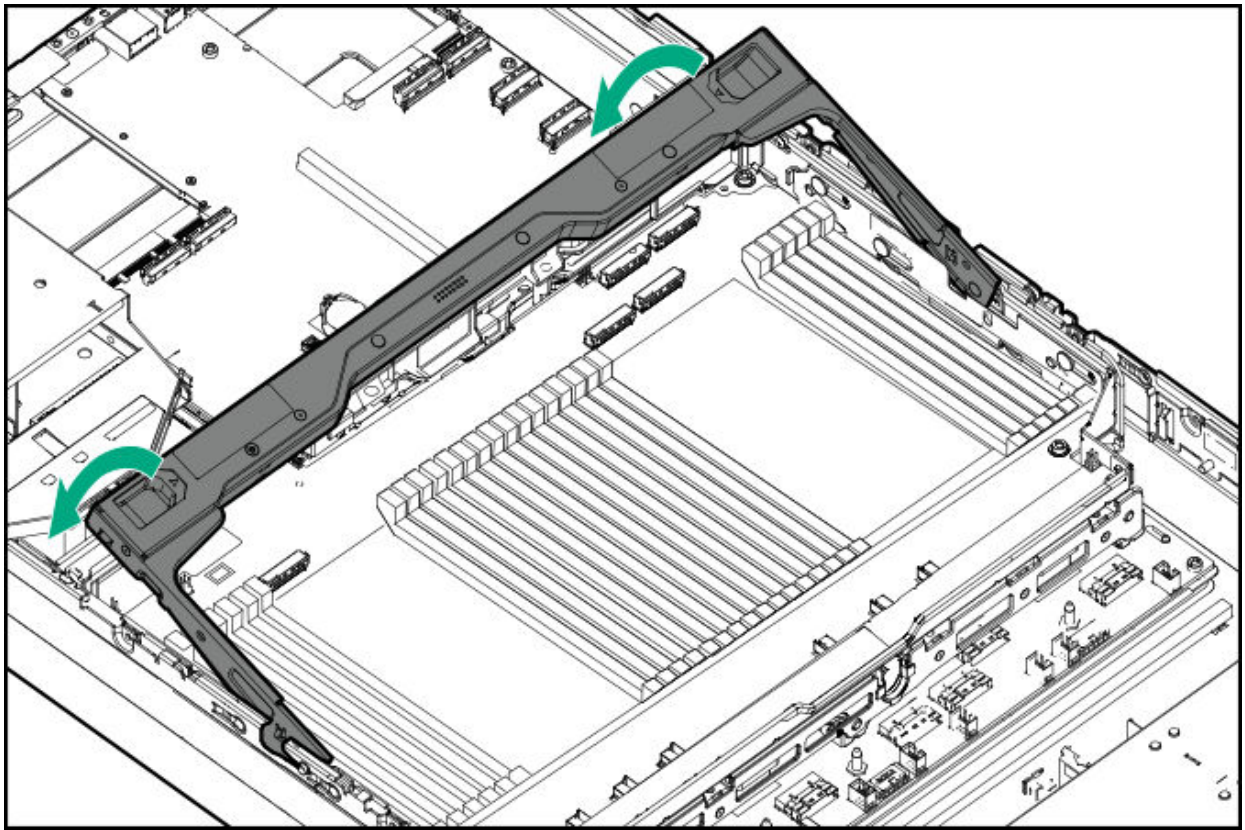


.6. If removed, do the following:

- a. Install the processor mezzanine tray.



- b. Connect all cables to the processor mezzanine board.
- c. Press down on the processor mezzanine tray handle until it locks into place.



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

Results

The installation procedure is complete.

HPE NS204i-u Boot Device option

The NS204i-u boot device can be installed in different locations:

- To prevent hot-plug access to the SSDs on the boot device, install the front boot device in the server.
- To allow hot-plug access to the SSDs on the boot device, install the rear boot device on the secondary riser cage.

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

- The HPE NS204i-u NVMe Hot Plug Boot Optimized Storage Device is a PCIe custom form factor module that includes two hot-pluggable 2280 M.2 NVMe SSDs.
- This boot device enables the deployed OS to be mirrored through a dedicated hardware RAID 1.
- The boot device auto-creates a RAID1 volume during boot. This means the boot device does not require further RAID configuration.
- This boot device is compatible with the following native OS:
 - Windows
 - Linux
 - VMware
- This boot device uses native inbox OS NVMe drivers.

Subtopics

[Installing the front HPE NS204i-u Boot Device](#)

[Installing the rear HPE NS204i-u Boot Device](#)

Installing the front HPE NS204i-u Boot Device

Prerequisites

- If the server is in the quad-processor configuration, review the product QuickSpecs for specific system operating temperature requirements on the Hewlett Packard Enterprise website:

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

- Verify that your OS or virtualization software is supported:

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

- Verify that you are running the latest iLO firmware and server BIOS version.
- Identify the HPE NS204i-u Boot Device components.
- Before you perform this procedure, make sure that you have the following items available:
 - 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 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:

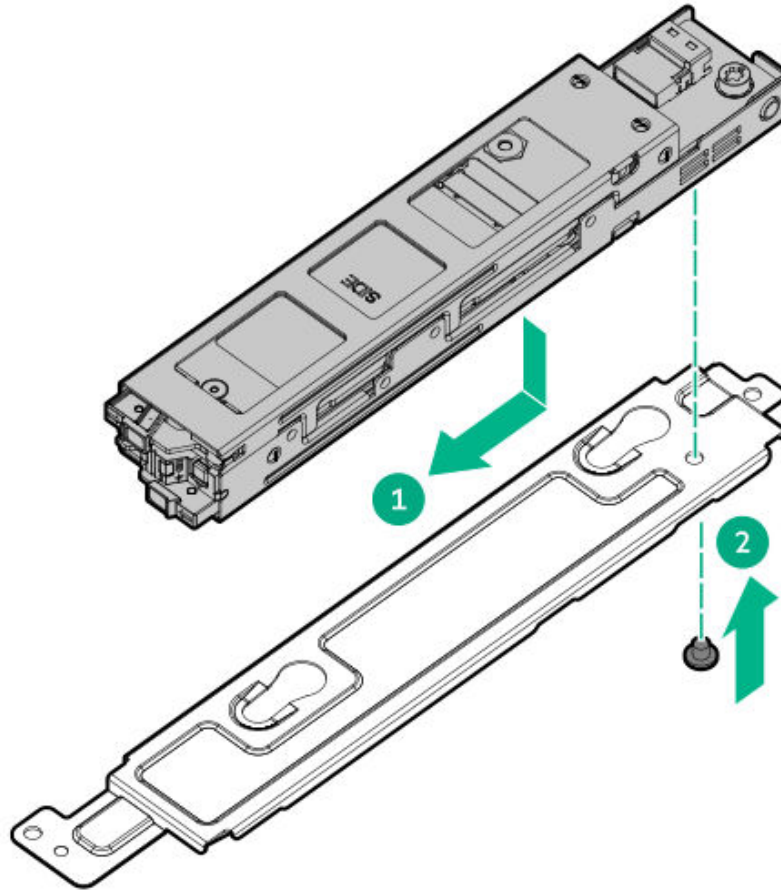
- In the iLO web interface, see the **Storage** page.
- In UEFI System Utilities, see **System Configuration > HPE NS204i Boot Controller > Physical Device Information**.

Configurations with SSDs from different manufacturers are not supported.

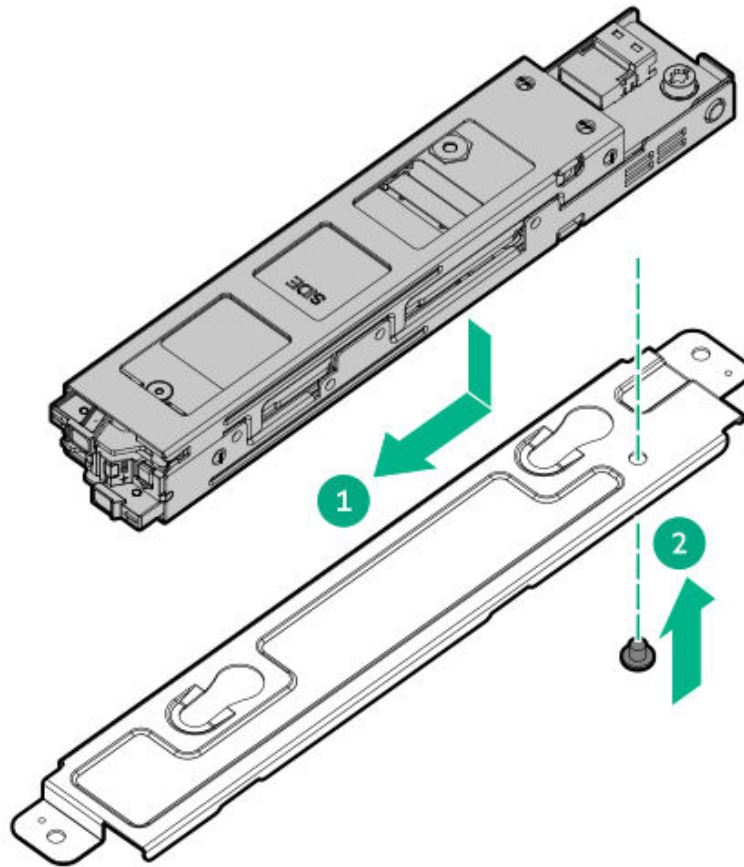
Procedure

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.

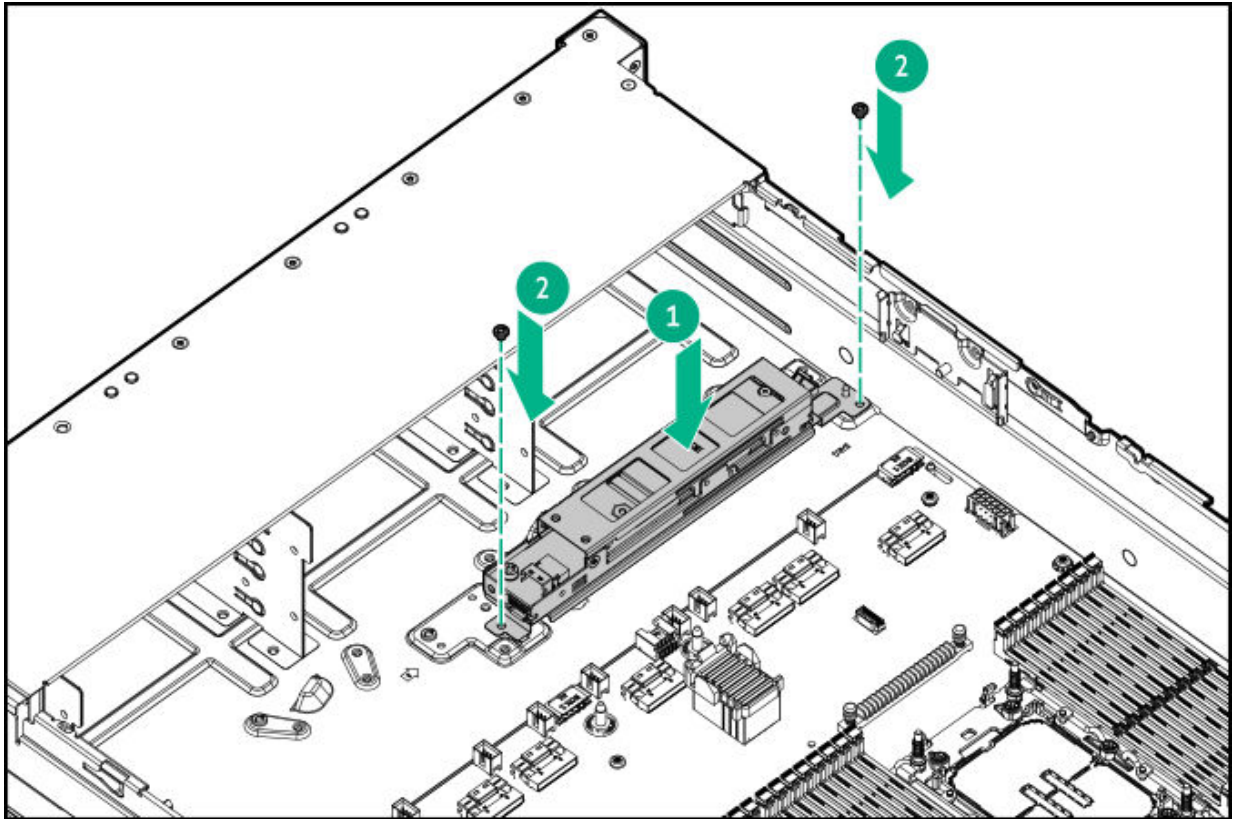
7. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
8. Remove the fan cage.
9. Install the boot device on the bracket.
 - Air cooling configuration



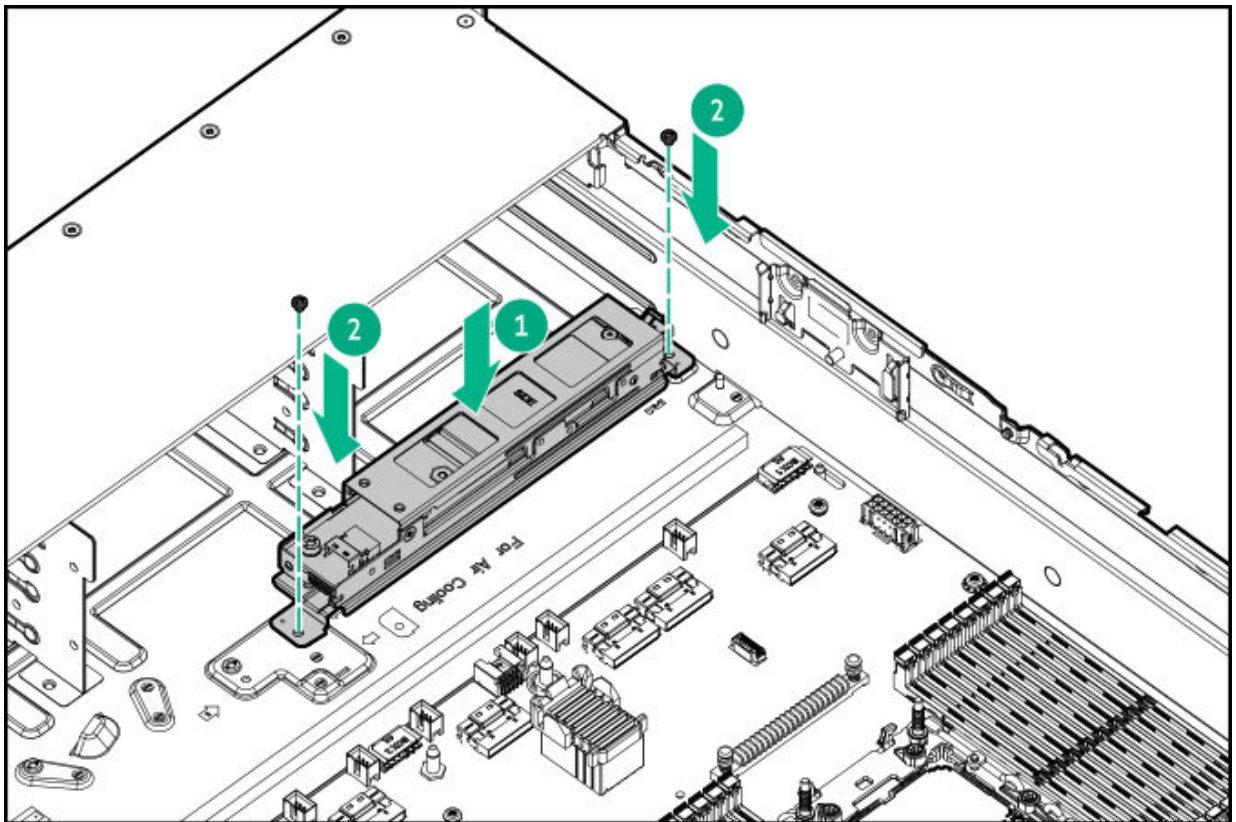
- Liquid cooling configuration



- .0. Connect the signal and power cables to the boot device.
- .1. Install the boot device in the server.
 - Air cooling configuration



- Liquid cooling configuration



- .2. Connect the boot device SlimSAS and power cables to the system board.
- .3. Install the fan cage.
- .4. Do one of the following:
 - Install the air baffle.
 - Install the processor mezzanine tray.
- .5. Install the access panel.
- .6. Install the server into the rack.
- .7. Connect all peripheral cables to the server.
- .8. Connect each power cord to the power source.
- .9. Connect each power cord to the server.
- !0. Power up the server.
- !1. Verify that the Online/Activity LEDs on the boot device are solid green.
- !2. Deploy a supported operating system to the boot device.
- !3. After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

Proceed with normal system setup and operation.

Results

The installation procedure is complete.

Installing the rear HPE NS204i-u Boot Device

Prerequisites

- If the server is in the quad-processor configuration, review the product QuickSpecs for special specific system operating temperature requirements on the Hewlett Packard Enterprise website:

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

- Verify that your OS or virtualization software is supported:

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

- Verify that you are running the latest iLO firmware and server BIOS version.
- Identify the HPE NS204i-u Boot Device components.
- Before you perform this procedure, make sure that you have the following items available:
 - 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 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:

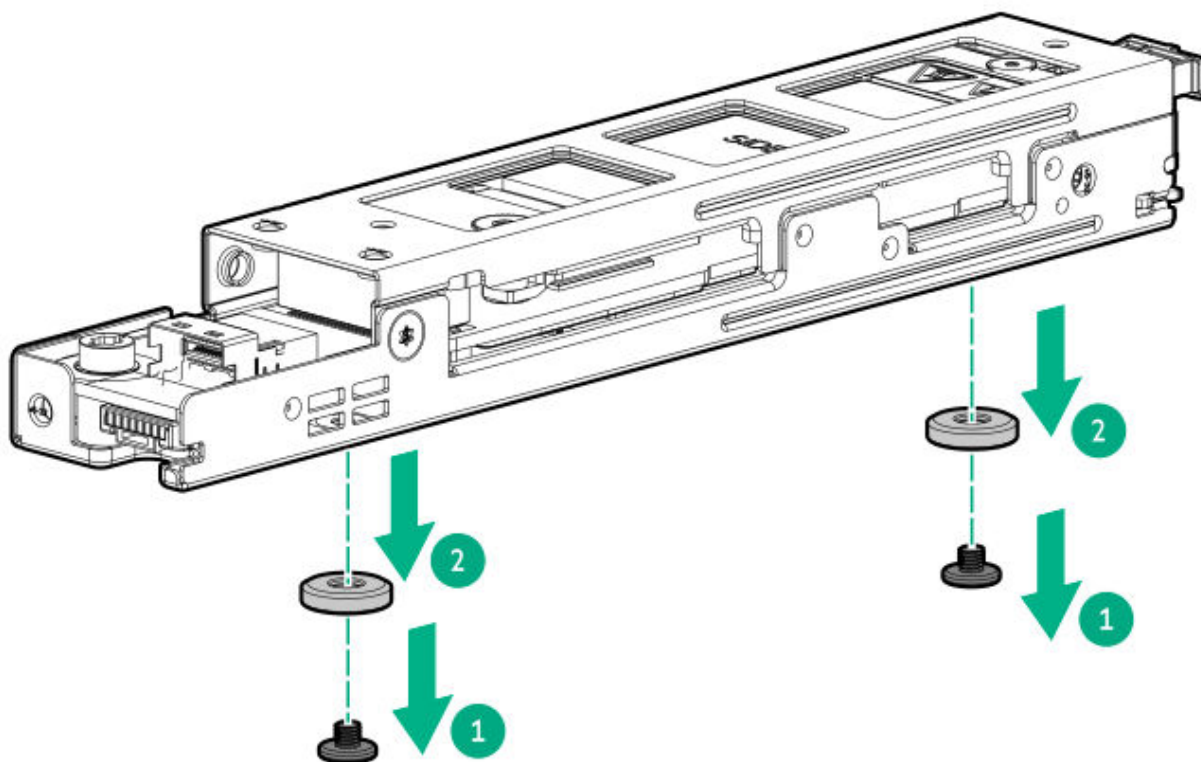
- In the iLO web interface, see the **Storage** page.
- In UEFI System Utilities, see **System Configuration > HPE NS204i Boot Controller > Physical Device Information**.

Configurations with SSDs from different manufacturers are not supported.

Procedure

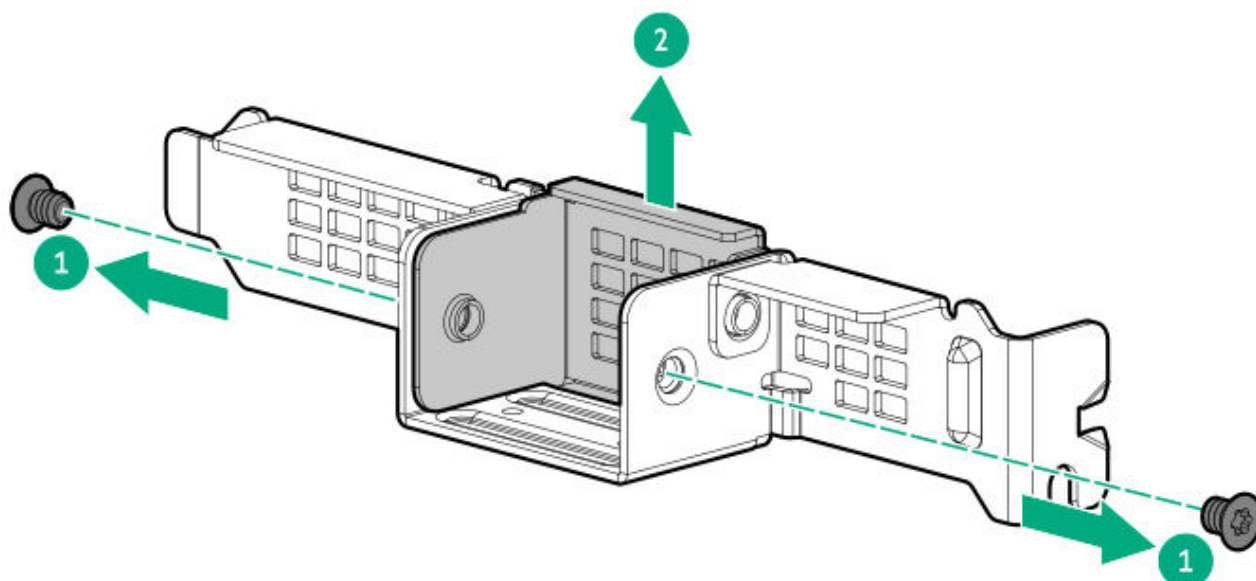
1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove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

7. Remove the secondary riser cage.
8. Remove the boot device screws and spools.

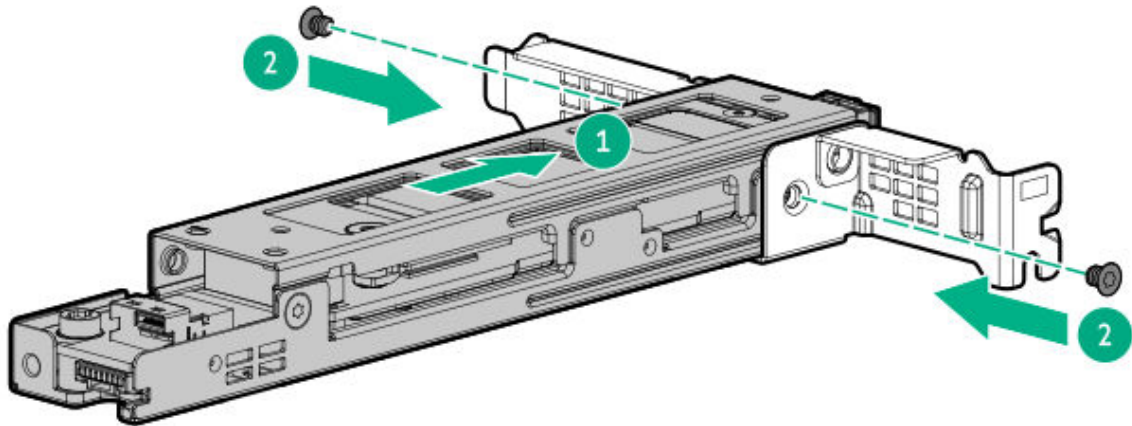


9. Remove the security cover from the boot device bracket.

Retain the screws for the boot device installation.

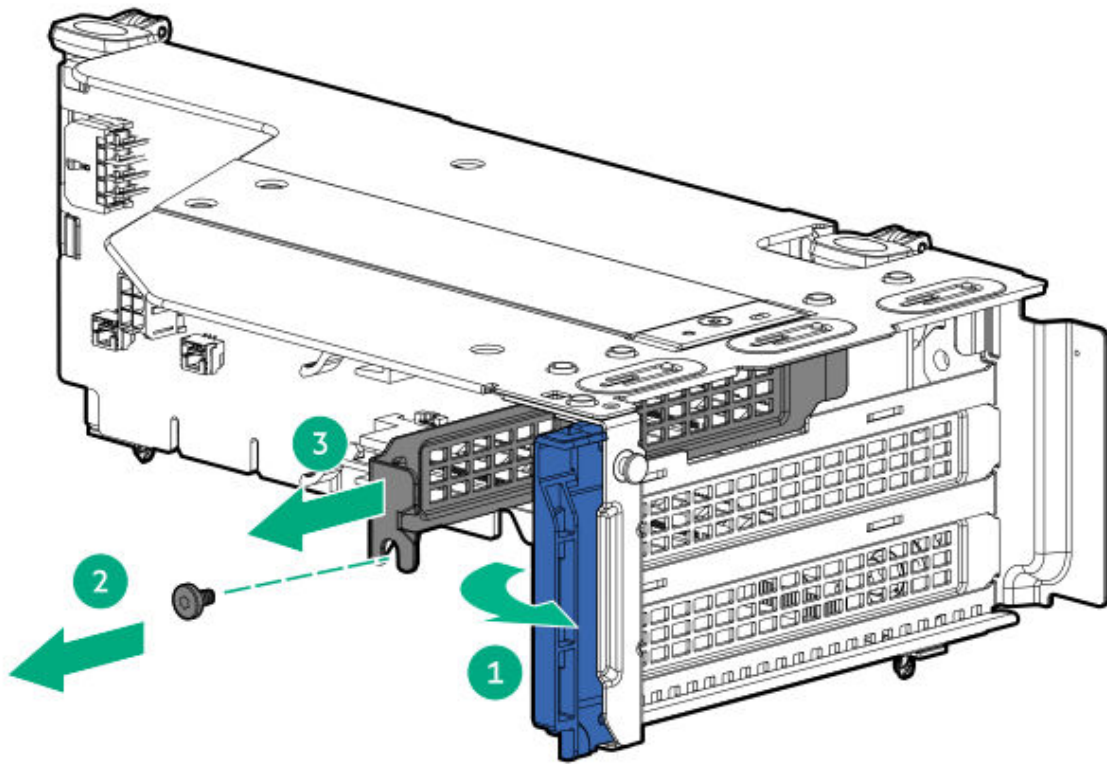


- .0. Install the boot device onto the bracket:
 - a. Slide the boot device onto the bracket.
 - b. Install the screws on the side.

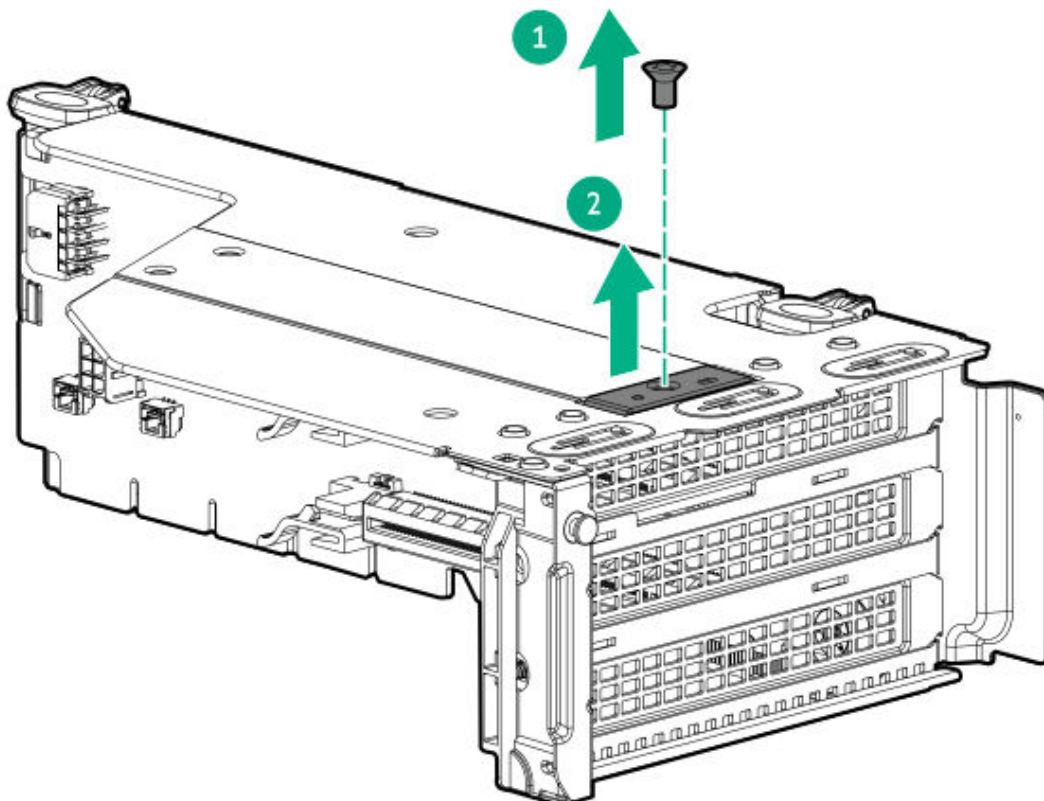


- .1. Connect the signal and power cables to the boot device.
- .2. Remove the first secondary riser slot blank:
 - a. Open the riser cage latch.
 - b. Remove the screw and the riser slot blank.

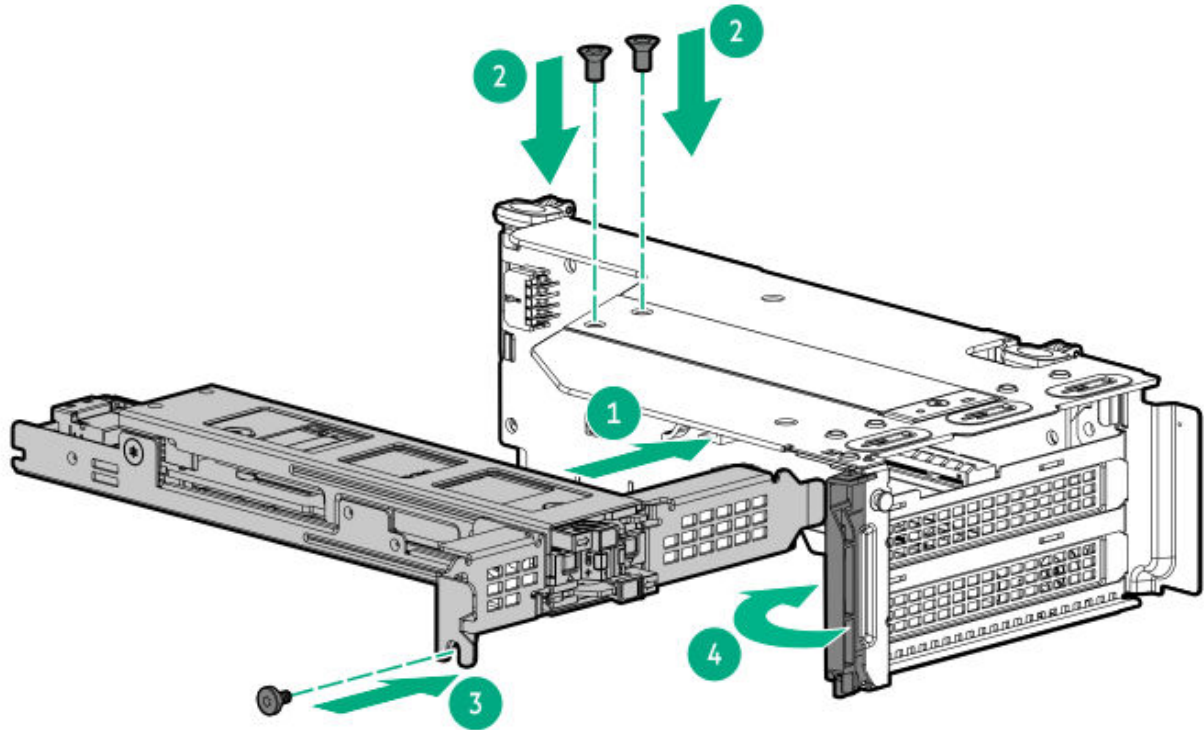
Retain the screw. This screw will be used to secure the boot device.



3. Remove the boot device cover on the top of the riser cage.



- .4. Install the boot device on the secondary riser cage:
 - a. Install the boot device on the first slot.
 - b. Install the screw on the top of the secondary riser cage.
 - c. Install the boot device bracket screw, and then close the riser cage latch.



- .5. Install the secondary riser cage.
- .6. Connect the boot device SlimSAS and power cables to the system board.
- .7. Install the access panel.
- .8. Install the server into the rack.
- .9. Connect all peripheral cables to the server.
- !0. Connect each power cord to the power source.
- !1. Connect each power cord to the server.
- !2. Power up the server.
- !3. Verify that the Online/Activity LEDs on the boot device are solid green.

- !4. Deploy a supported operating system to the boot device.
- !5. After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

Proceed with normal system setup and operation.

Results

The installation procedure is complete.

OCP NIC 3.0 option

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

Subtopics

Installing the OCP NIC 3.0 adapter

Installing the OCP NIC 3.0 adapter

Prerequisites

- Review the [OCP slot population rules](#).
- Depending on the drive configurations in the different cooling configurations, some OCP 3.0 adapters require specific system ambient temperature. Review the product QuickSpecs for these requirements on the 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:
 - T-10 Torx screwdriver
 - OCP bandwidth upgrade cable kit—Depending on which processor the OCP NIC 3.0 adapter is connecting to, the server has two OCP bandwidth upgrade cable kits:
 - P55322-B21—To the processor 1 or 2
 - P55324-B21—To the processor 3 or 4

About this task



CAUTION

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



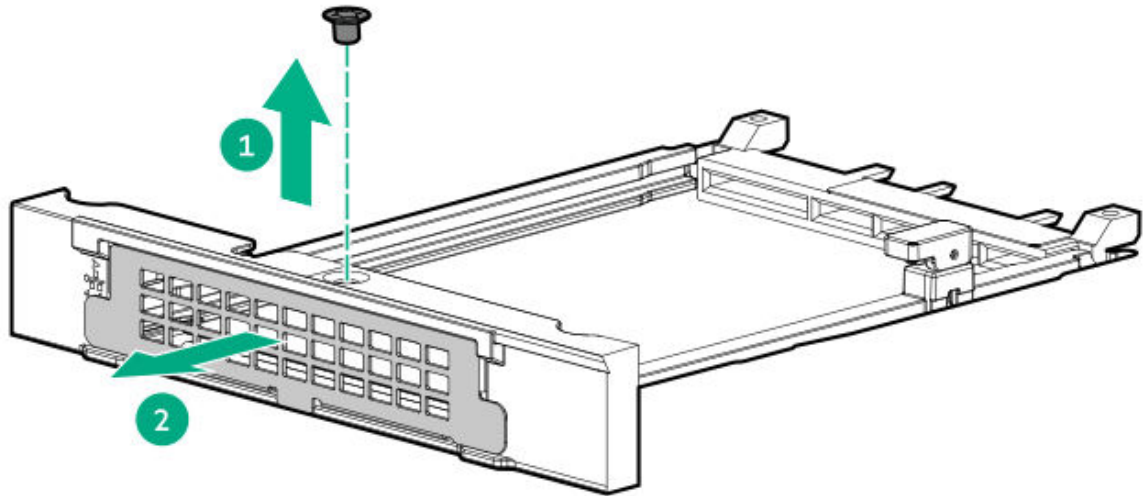
CAUTION

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

Procedure

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

Retain the screw and blank for future use.

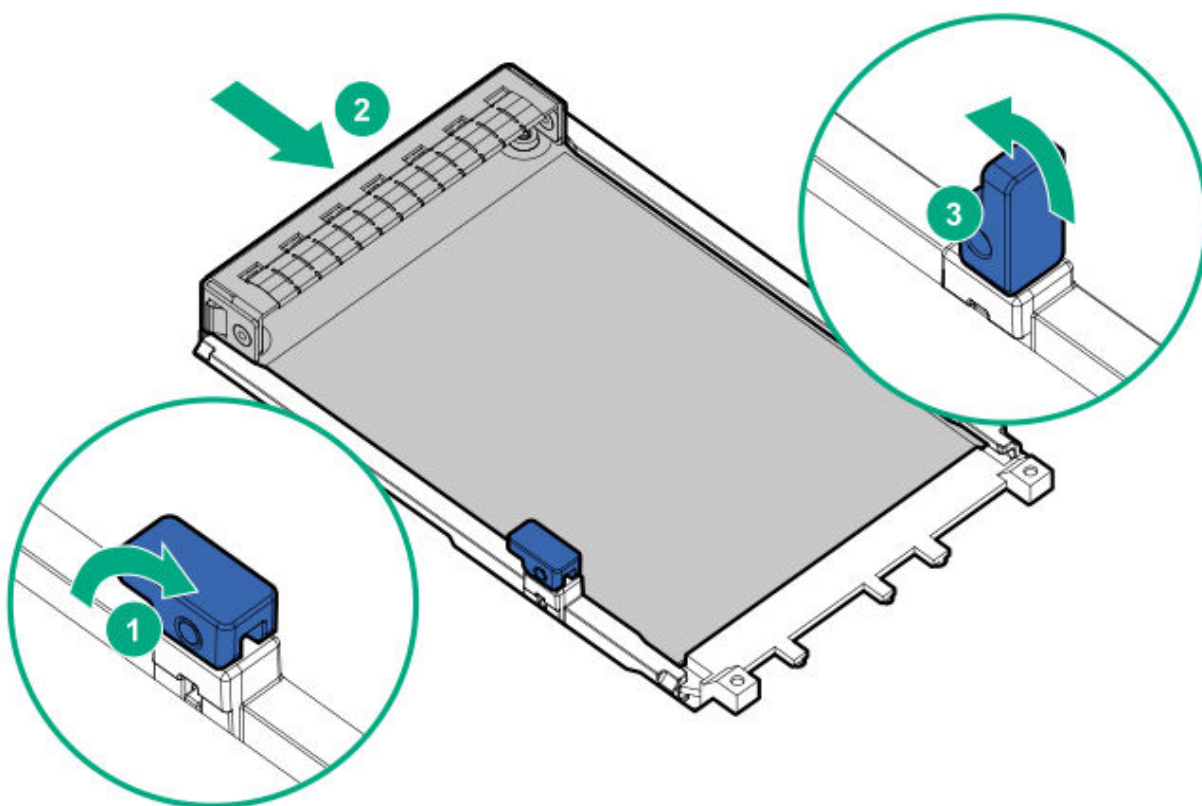


9. Install the OCP NIC:

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

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

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



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

Results

The installation procedure is complete.

Power distribution board

The power distribution board (PDB) supports the installation of power supplies 3 and 4.

Subtopics

Installing the PDB

Installing the PDB

Prerequisites

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

About this task

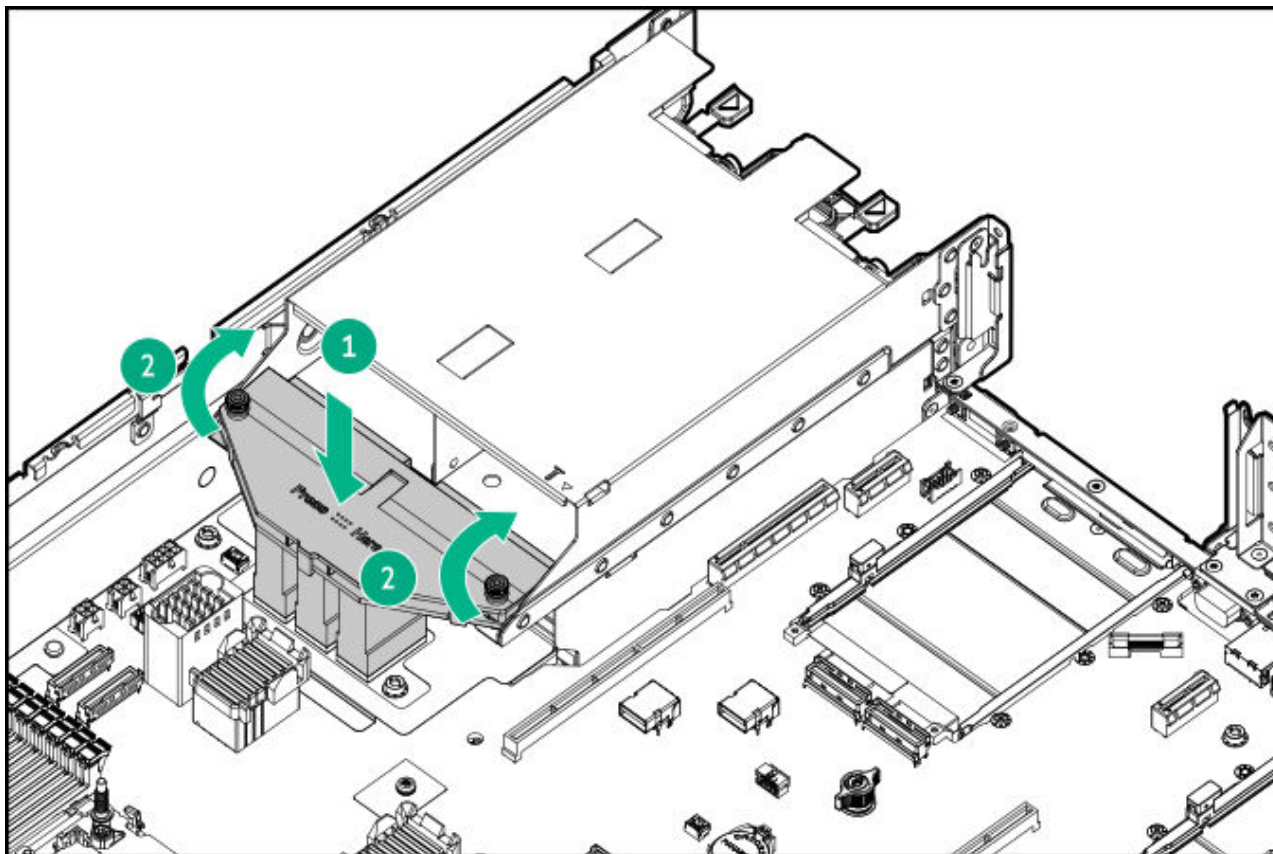


CAUTION

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.

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. Install the PDB.



8. Install the power supplies 3 and 4.
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.

Results

The installation procedure is complete.

Chassis intrusion detection switch option

The chassis intrusion detection switch enables iLO to record an event in the Integrated Management Log (IML) whenever the access panel is physically opened or removed. An alert is also sent to the BIOS whenever

a chassis intrusion is detected. The chassis intrusion detection occurs as long as the server is plugged in, regardless of whether the server is powered on or off.

Subtopics

Installing the chassis intrusion detection switch

Installing the chassis intrusion detection switch

About this task

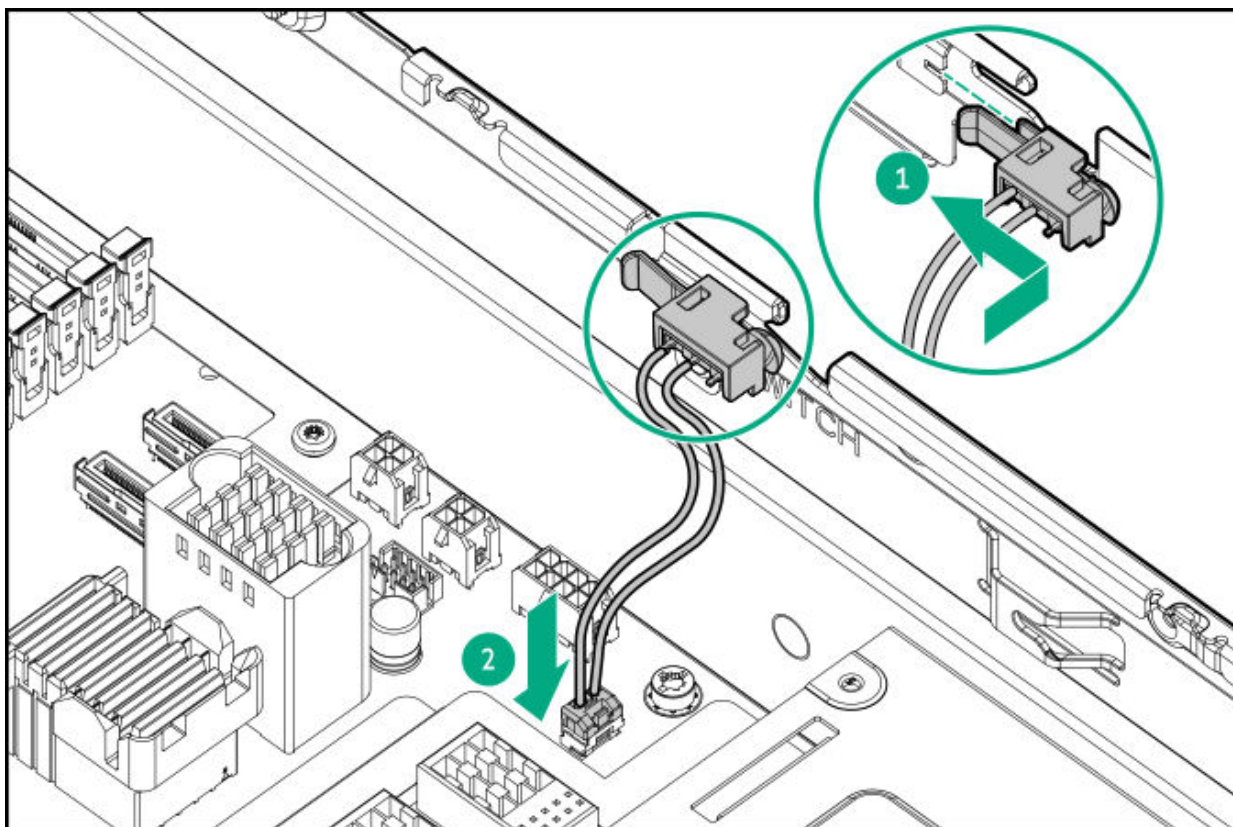


CAUTION

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

Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Do one of the following:
 - Remove the air baffle.
 - Remove the processor mezzanine tray.
8. Install the chassis intrusion detection switch:
 - a. Insert the switch tab into the chassis slot until the switch clicks into place.
 - b. Connect the switch cable.



9. Do one of the following:
- Install the air baffle.
 - Install the processor mezzanine tray.
- .0. Install the access panel.
- .1. Install the server into the rack.
- .2. Connect all peripheral cables to the server.
- .3. Connect each power cord to the server.
- .4. Connect each power cord to the power source.
- .5. Power up the server.

Results

The installation procedure is complete.

Serial port option

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

Subtopics

Installing the serial port

Installing the serial port

Prerequisites

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

About this task



CAUTION

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



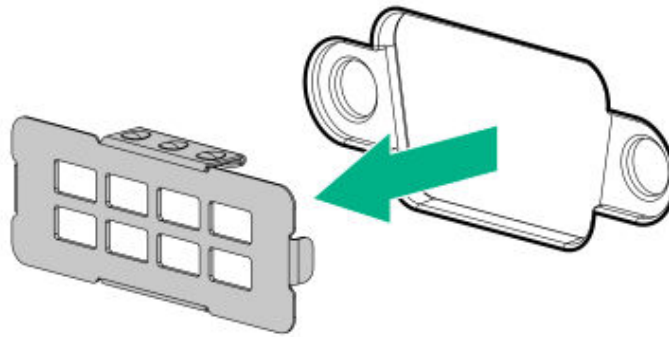
CAUTION

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

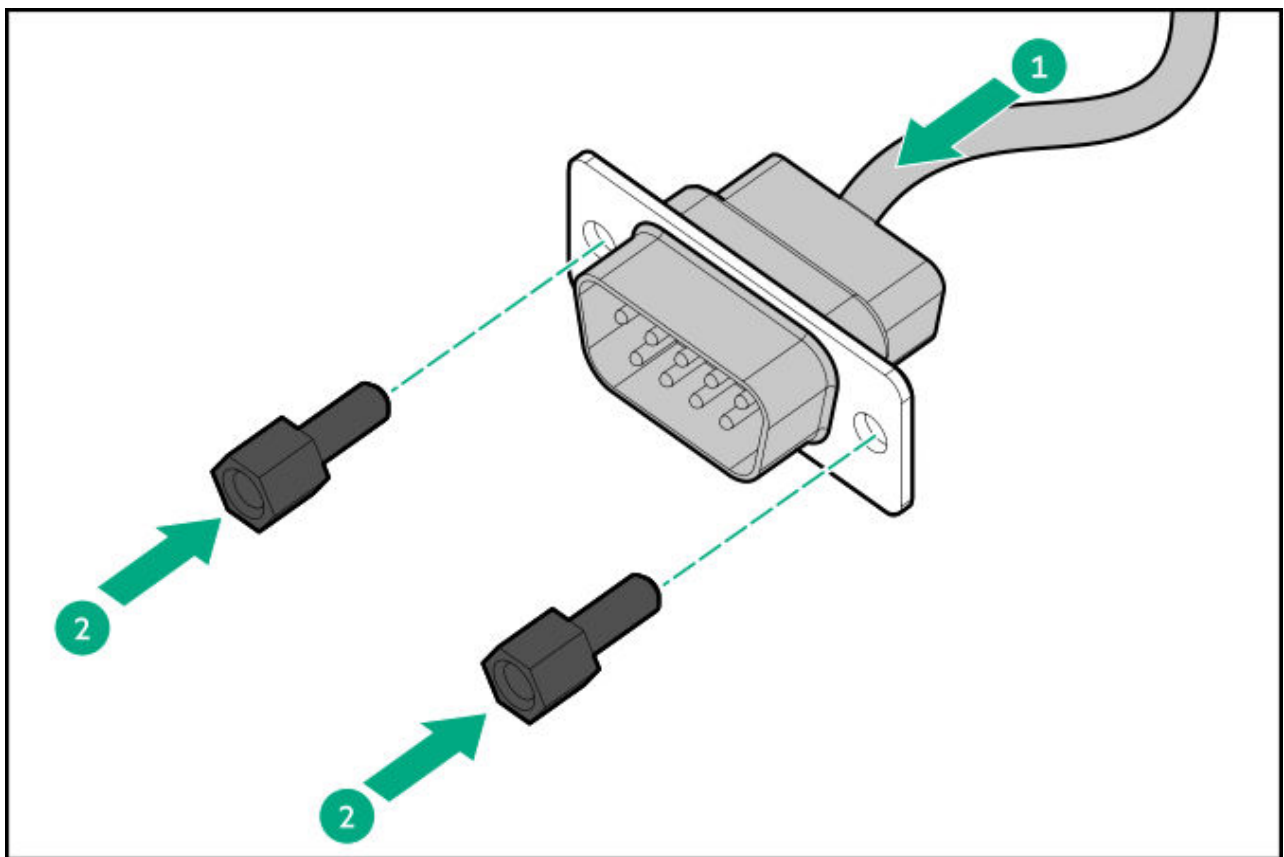
Procedure

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

7. Remove the secondary riser cage.
8. Remove the serial port blank.



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



10. Connect the serial port cable to the system board.

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

Configuring the serial port

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

Results

The installation procedure is complete.

Internal USB device options

The server has one internal USB 2.0 port and one USB 3.2 Gen 1 port that you can use to install an internal USB flash media device for:

- booting up from flash solution
- data backup/redundancy

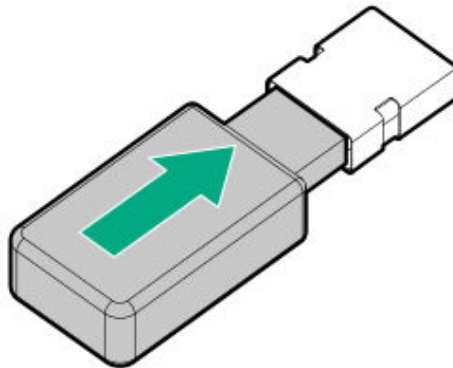
Subtopics

Installing an internal USB device

Installing an internal USB device

Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. If the expansion card is installed on the secondary riser cage, remove the secondary riser cage.
8. Plug in the USB device into the USB port.



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

Results

The installation procedure is complete.

Cabling

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

Subtopics

Cabling guidelines

Cabling diagrams

Internal cabling management

Storage cabling

Optical drive cabling

Universal media bay cabling

HPE NS204i-u Boot Device cabling

OCP bandwidth upgrade cabling

GPU auxiliary power cabling

Riser enablement cabling

Serial port cabling

Chassis intrusion detection switch cabling

Power switch module / SID module cabling

Front I/O cabling

Cabling guidelines

Observe the following:



NOTE

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



CAUTION

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

- For cable option kits, see the product QuickSpecs.
- For cable spare part numbers, see the Illustrated parts catalog in the maintenance and service guide.

- Some diagrams show alphabetical callouts such as A, B, C, etc. These callouts correspond to labels near the connectors on the cable.
- Some cables have more than one connector, such as a Y-cable, but not all connectors are used.
- Observe all guidelines when working with server cables.

Before connecting cables

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

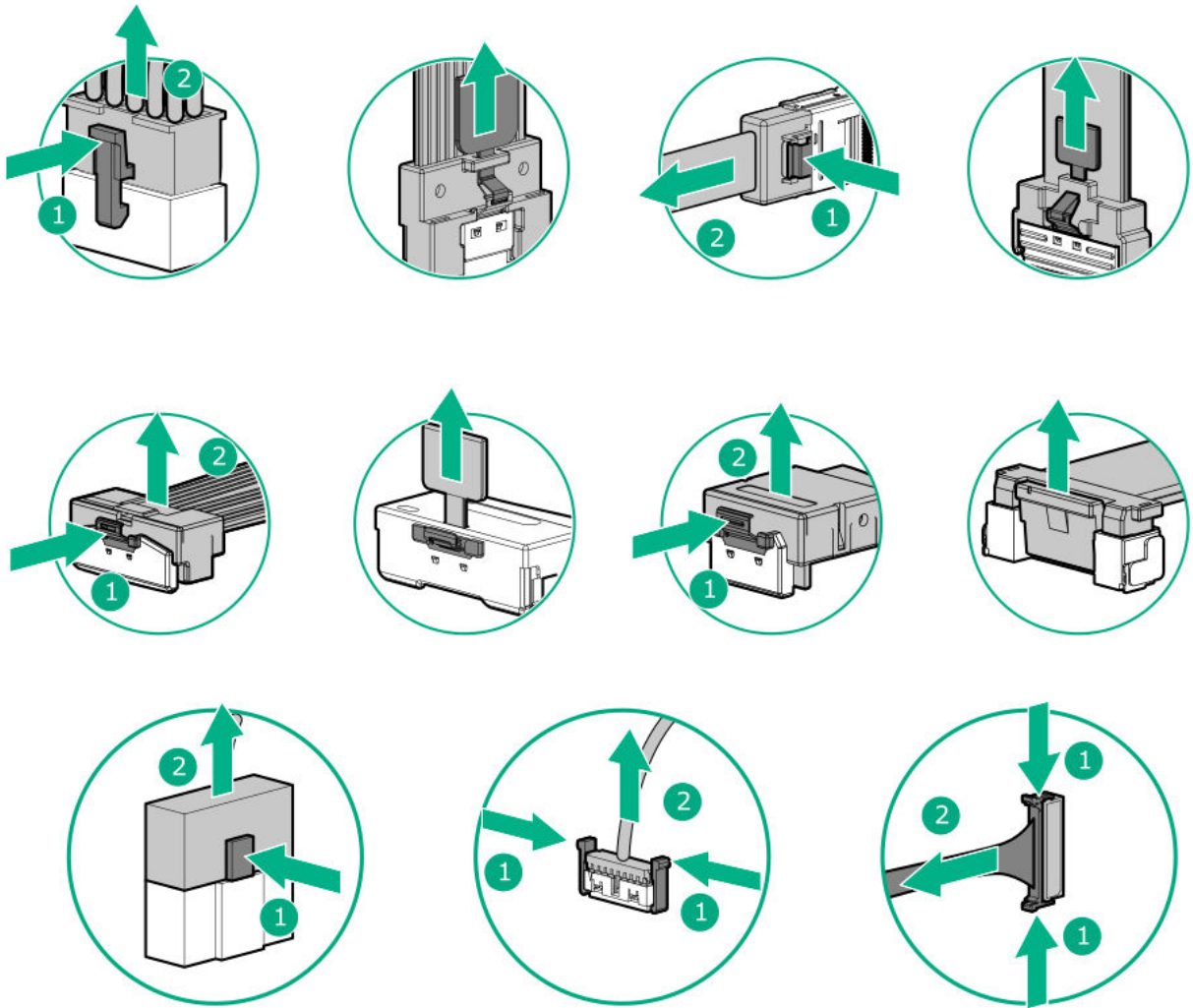
When connecting cables

- Before connecting a cable to a port, lay the cable in place to verify the length of the cable.
- Use the internal cable management features to properly route and secure the cables.
- Route cables so that they do not contact or rest on cooling components, including heatsinks. Ensure that cable routing does not obstruct airflow to or from heatsinks or ventilation openings
- When routing cables, be sure that the cables are not in a position where they can be pinched or crimped.
- Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.
- Make sure that the excess length of cables is properly secured to avoid excess bends, interference issues, and airflow restriction.
- Before installing a new component or closing up the server, make sure that all cables are in their appropriate routing position. This cable check prevents component damage and potential signal interference.

When disconnecting cables

- Grip the body of the cable connector. Do not pull on the cable itself because this action can damage the internal wires of the cable or the pins on the port.

- If a cable does not disconnect easily, check for any release latch that must be pressed to disconnect the cable.



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

Cabling diagrams

Observe the following:

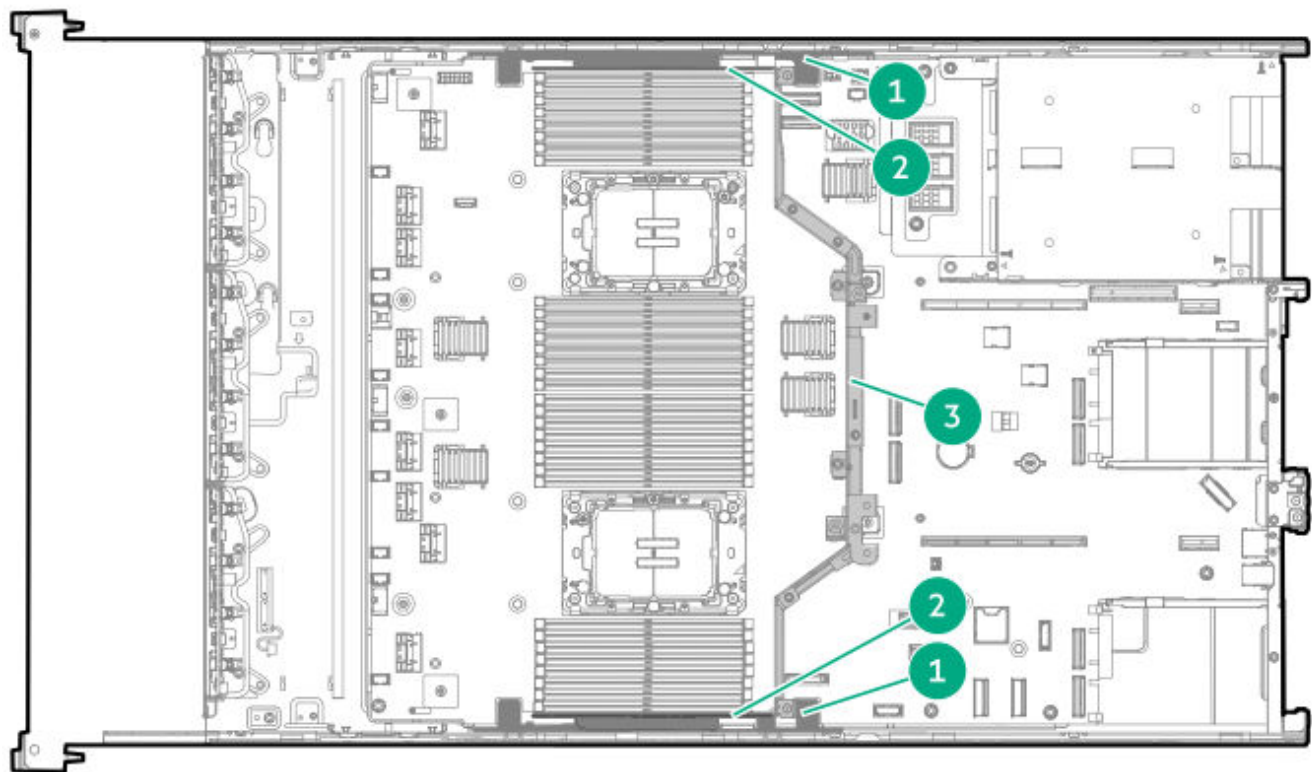
- Before cabling components, see the [Cabling guidelines](#).
- Use the cable part number or search feature to find your diagram.

Component cabling	Cable part number
Drive box 1 cabling	—
8 SFF x4 NVMe direct attach cabling for the processors 2 and 4	P55344-001 P55341-001 (For air cooling configuration) P61769-001 (For liquid cooling configuration)
2 SFF stacked drive: Onboard NVMe cable	P55343-001
8 SFF x1 SAS storage controller cable: Type-o controller in Slot 15	P55357-001
8 SFF x2 NVMe drive controller cable: Type-o controller in Slot 15	P48963-001
8 SFF x1 SAS drive controller cable: Type-p controller in the primary riser	P55362-001
8 SFF x4 NVMe drive controller cable: Type-p controller in the secondary riser	P55362-001
2 stacked drive controller cable: Type-o controller in Slot 15	P55357-001
2 stacked drive controller cable: Type-p controller in the secondary riser	P55362-001
Drive box 2 cabling	—
8 SFF x4 NVMe direct attach cable (for dual-processor, air cooling configuration only)	P55345-001
8 SFF x4 NVMe direct attach cables for the processors 2 and 4	When box 1 is the universal media bay: P55347-001 P55346-001 (For air cooling configuration) P61772-001 (For liquid cooling configuration) When box 1 is 8 SFF drive cage: P55348-001 P55342-001 (For air cooling configuration only)
8 E3.S NVMe direct attach cable (for dual-processor, air cooling configuration only)	P55368-001

Component cabling	Cable part number
12 E3.S NVMe direct attach cables	P55371-001 P59130-001 (For air cooling configuration) P55355-001 (For liquid cooling configuration)
8 SFF x1 SAS drive controller cable: Type-o controller in Slot 14	P55357-001
8 SFF x2 NVMe drive controller cabling: Type-o controller in Slot 15	P48963-001
8 SFF x1 SAS drive controller cabling: Type-p controller in the primary riser	P55362-001
8 SFF x1 SAS drive controller cabling: Type-p controller in the secondary riser	P55362-001
8 SFF x4 NVMe drive controller cabling: Type-p controller in the secondary riser	P55362-001
8 SFF x4 NVMe drive controller cabling: Type-o controller in Slot 15 and type-p controller in the secondary riser	P55362-001 P55358-001
Drive box 3 cabling	—
8 SFF x1 SAS drive: Onboard SATA cable	P14337-001
8 SFF x4 NVMe direct attach cable	P55350-001
8 SFF x4 NVMe direct attach cables for the processors 1 and 3	P55352-001 P55353-001
8 E3.S NVMe direct attach cable (for dual-processor, air cooling configuration only)	P55369-001
12 E3.S NVMe direct attach cables	P59132-001 P55370-001
8 SFF x1 SAS drive controller cabling: Type-o controller in Slot 14	P55356-001
8 SFF x2 NVMe drive controller cabling: Type-o controller in Slot 14	P48964-001
8 SFF x1 SAS drive controller cabling: Type-p controller in the primary riser	P55364-001

Component cabling	Cable part number
8 SFF x4 NVMe drive controller cable: Type-p controller in the primary riser	P55364-001
8 SFF x4 NVMe drive controller cable: Type-o controller in Slot 14 and type-p controller in the primary riser	P55364-001
24 SFF drive power cable	869825-001
24 E3.S drive power cable	P55372-001
	P59131-001
Energy pack cabling	876851-001
	P02378-001
Optical drive cabling	P55376-001
Universal media bay cabling	—
Universal media bay USB 2.0 port cable	P55373-001
Universal media bay USB 2.0 / DisplayPort Y-cable	P14314-001
HPE NS204i-u Boot Device cabling	—
Front HPE NS204i-u Boot Device power cable	P48956-001
Rear HPE NS204i-u Boot Device power cable	P54088-001
HPE NS204i-u Boot Device signal cable	P54092-001
OCP bandwidth upgrade cabling	P55366-001
	P55367-001
Miscellaneous component cabling	—
Serial port cable	P45623-001
Chassis intrusion detection switch cable	P47751-001
Power switch module / SID module cable	P55374-001
Front I/O cable	P43727-001

Internal cabling management



Item	Description
1	Cable guards
2	DIMM guards
3	Processor mezzanine tray support bracket

Storage cabling

Subtopics

- [Storage controller cabling](#)
- [Drive power cabling](#)
- [Energy pack cabling](#)
- [Storage controller backup power cabling](#)

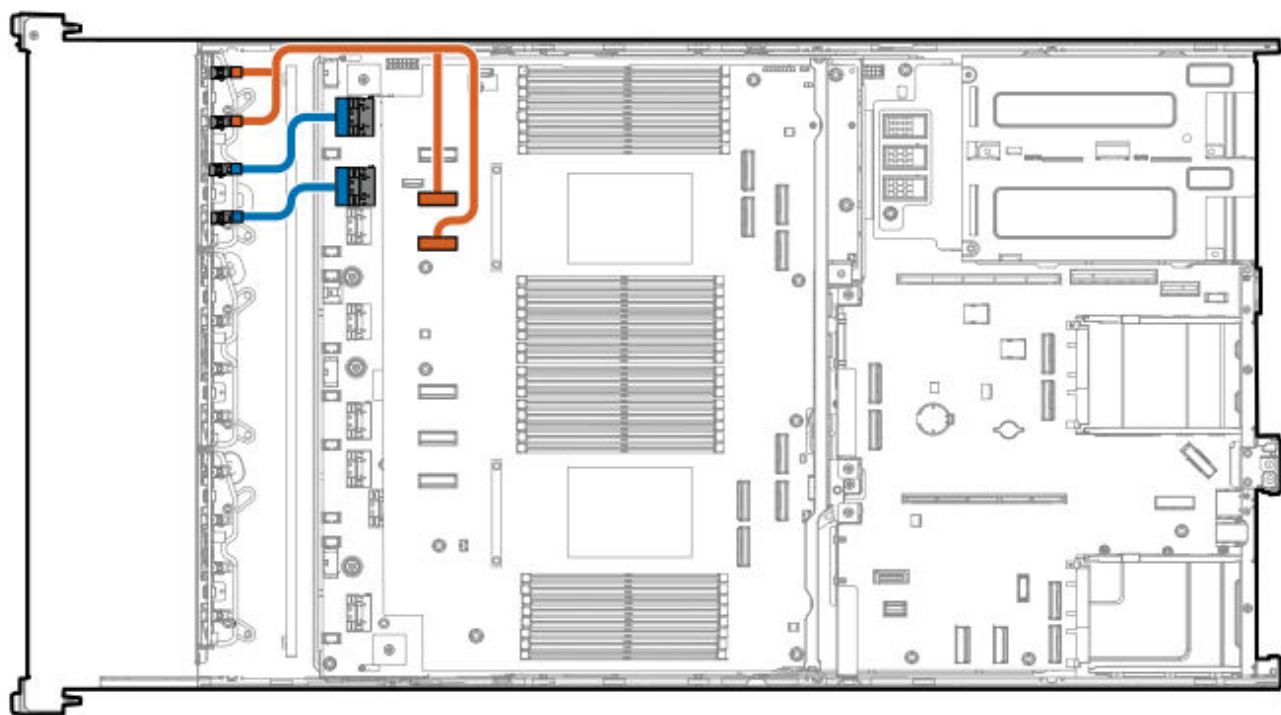
Storage controller cabling

Subtopics

- [Drive box 1 cabling](#)
- [Drive box 2 cabling](#)
- [Drive box 3 cabling](#)

Drive box 1 cabling

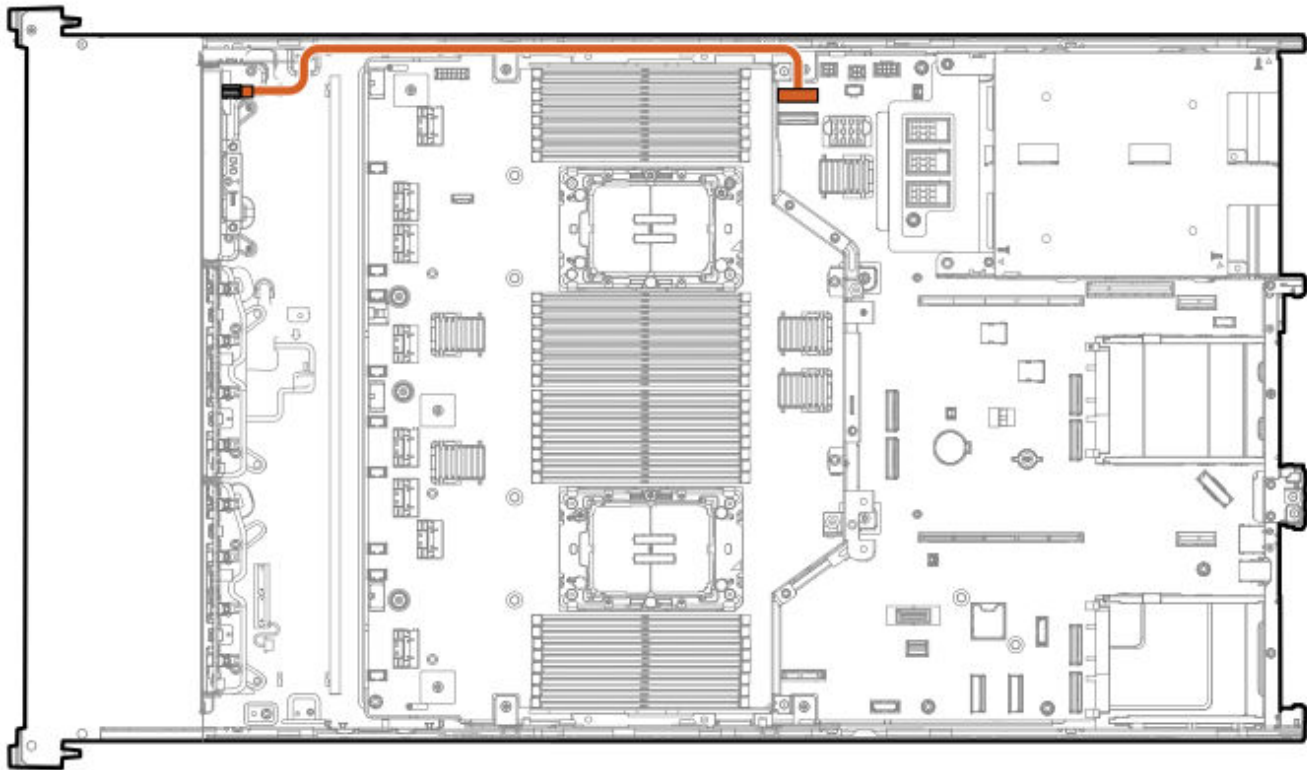
8 SFF x4 NVMe direct attach cabling for the processors 2 and 4



Cable part number	Color	From	To
P55344-001	Orange	Box 1 ports 1-2	x8 SlimSAS ports 4-5 (from bottom to top) on the processor mezzanine board

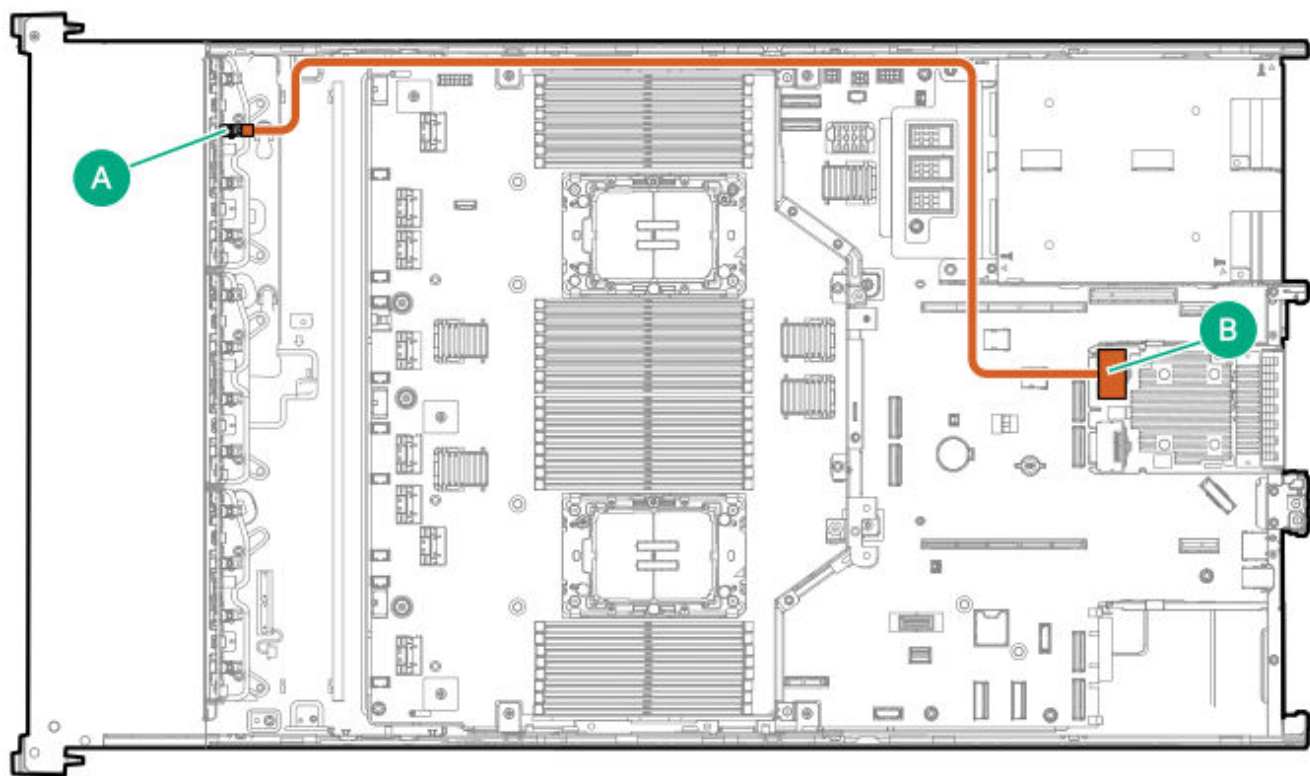
Cable part number	Color	From	To
Air cooling configuration: P55341-001	Blue	Box 1 ports 3–4	x8 SlimSAS ports 7–8 (from bottom to top) on the system board
Liquid cooling configuration: P61769-001			

2 SFF stacked drive: Onboard NVMe cabling



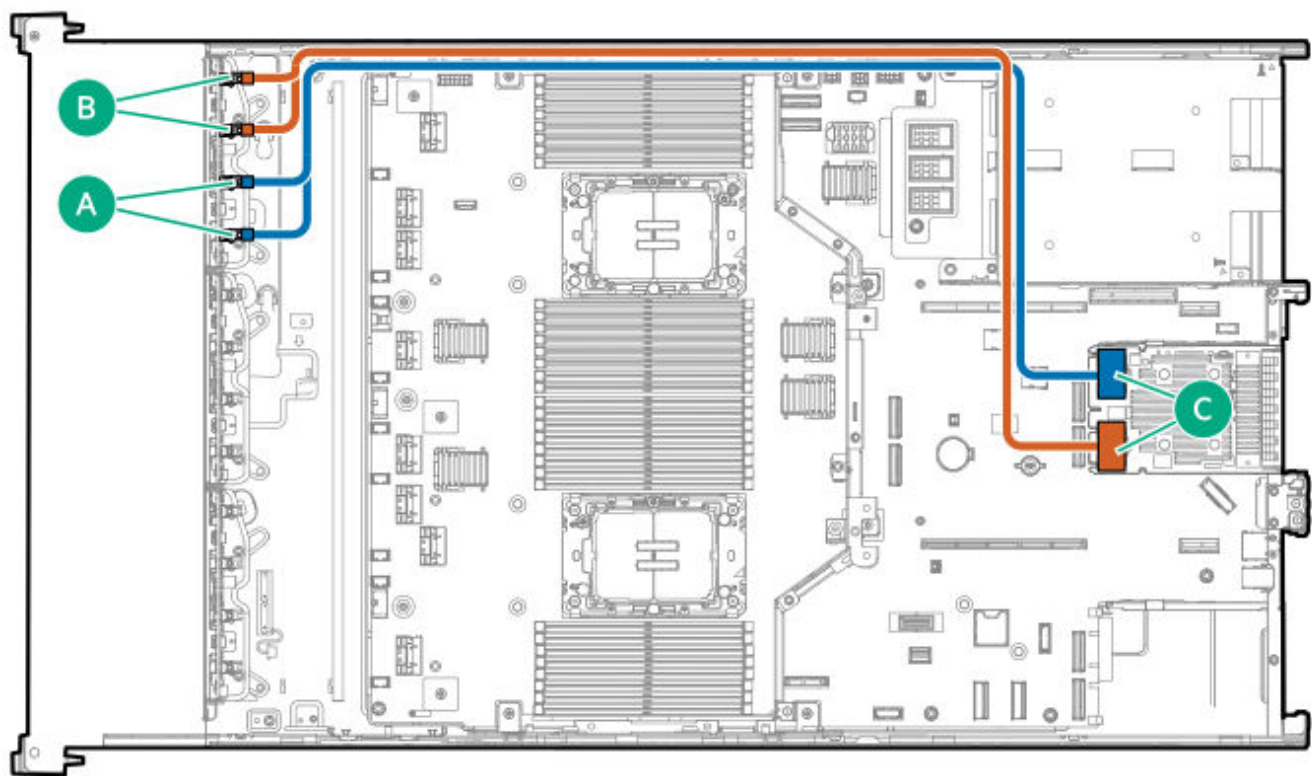
Cable part number	Color	From	To
P55343-001	Orange	Box 1 port 1	Socket 2 MCIO connector 2

8 SFF x1 SAS storage controller cabling: Type-o controller in Slot 15



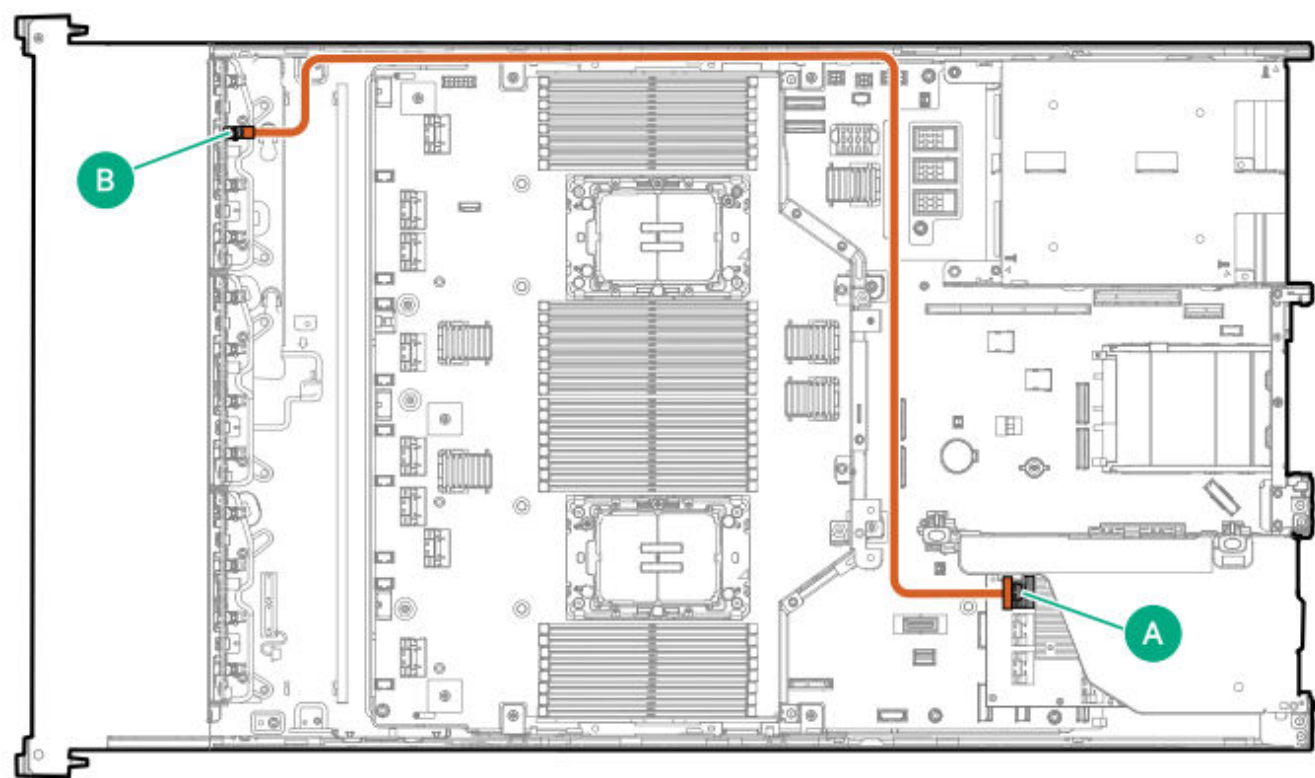
Cable part number	Color	From	To
P55357-001	Orange	Box 1 port 1	Type-o storage controller port 2 in Slot 15

8 SFF x2 NVMe drive controller cabling: Type-o controller in Slot 15



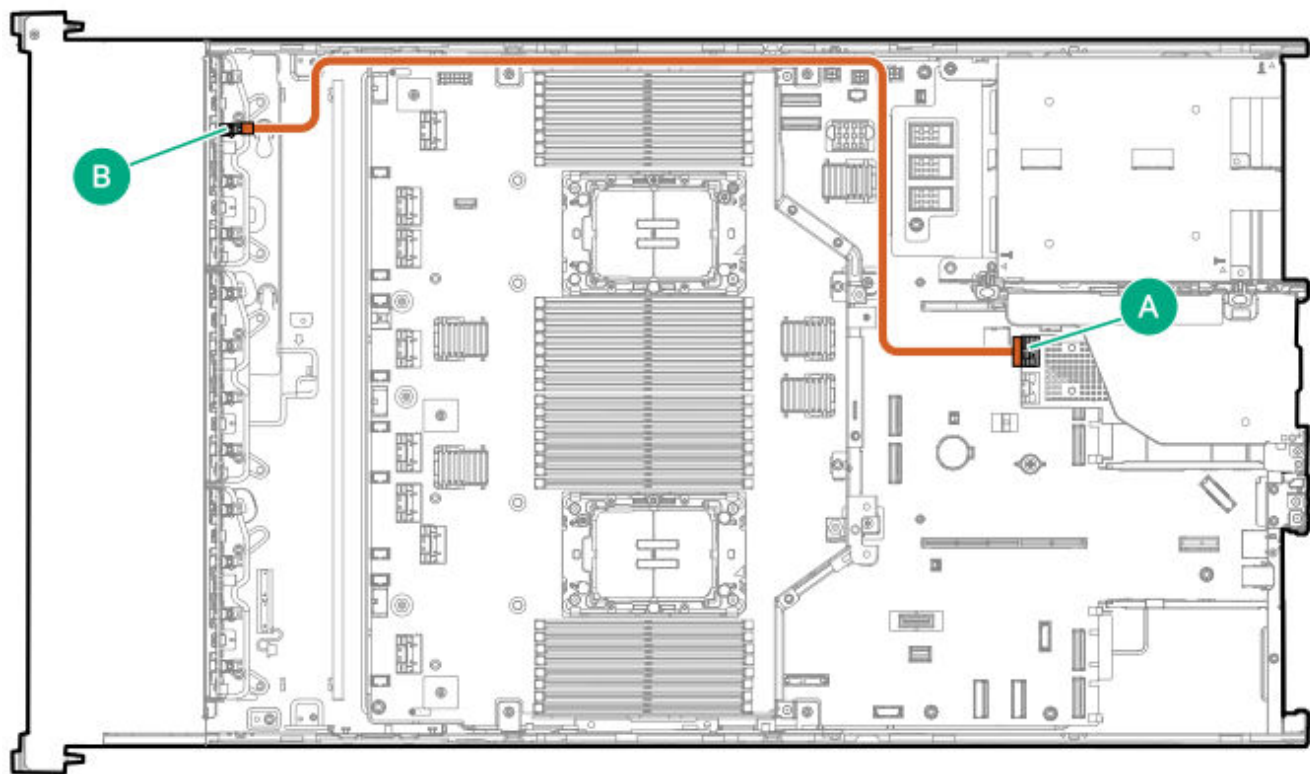
Cable part number	Color	From	To
P48963-001	Orange	Box 1 ports 1-2	Type-o storage controller port 1 in Slot 15
	Blue	Box 1 ports 3-4	Type-o storage controller port 2 in Slot 15

8 SFF x1 SAS drive controller cabling: Type-p controller in the primary riser



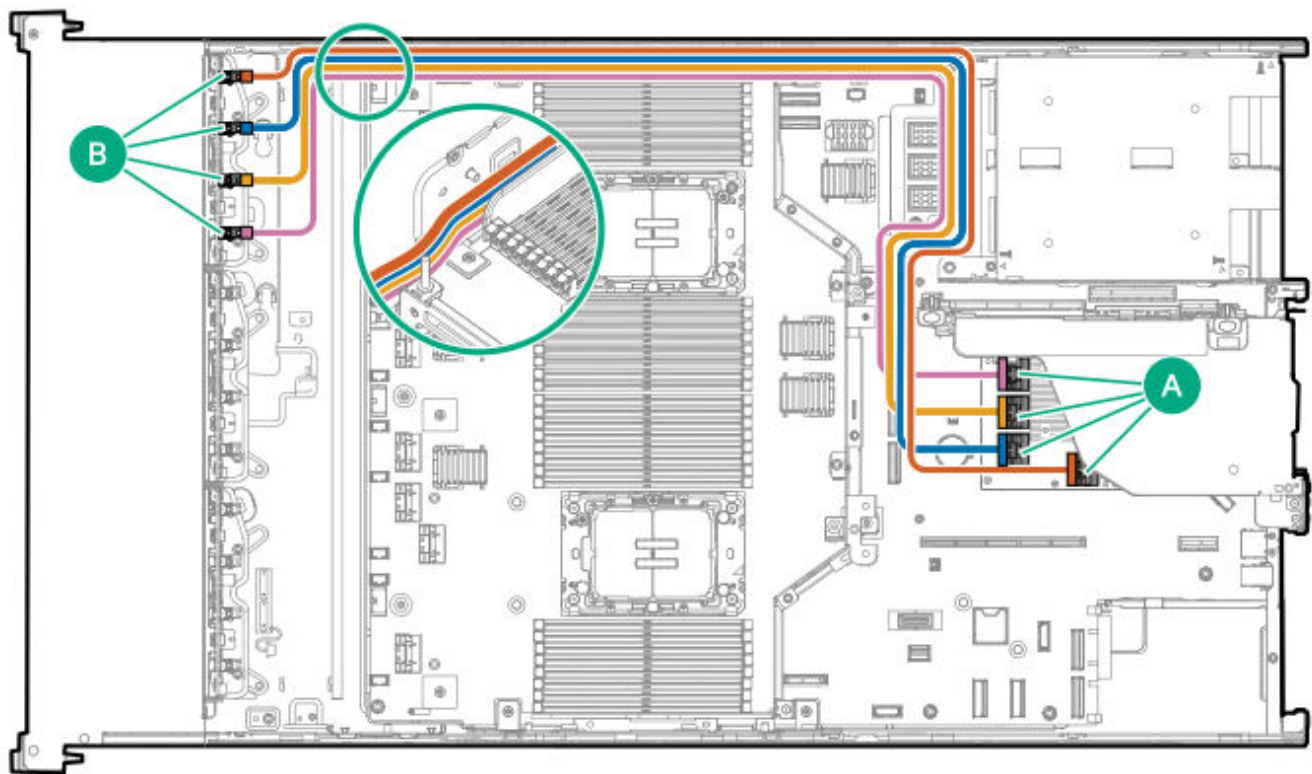
Cable part number	Color	From	To
P55362-001	Orange	Box 1 port 1	Primary type-p storage c ontroller port 4

8 SFF x1 SAS drive controller cabling: Type-p controller in the secondary riser



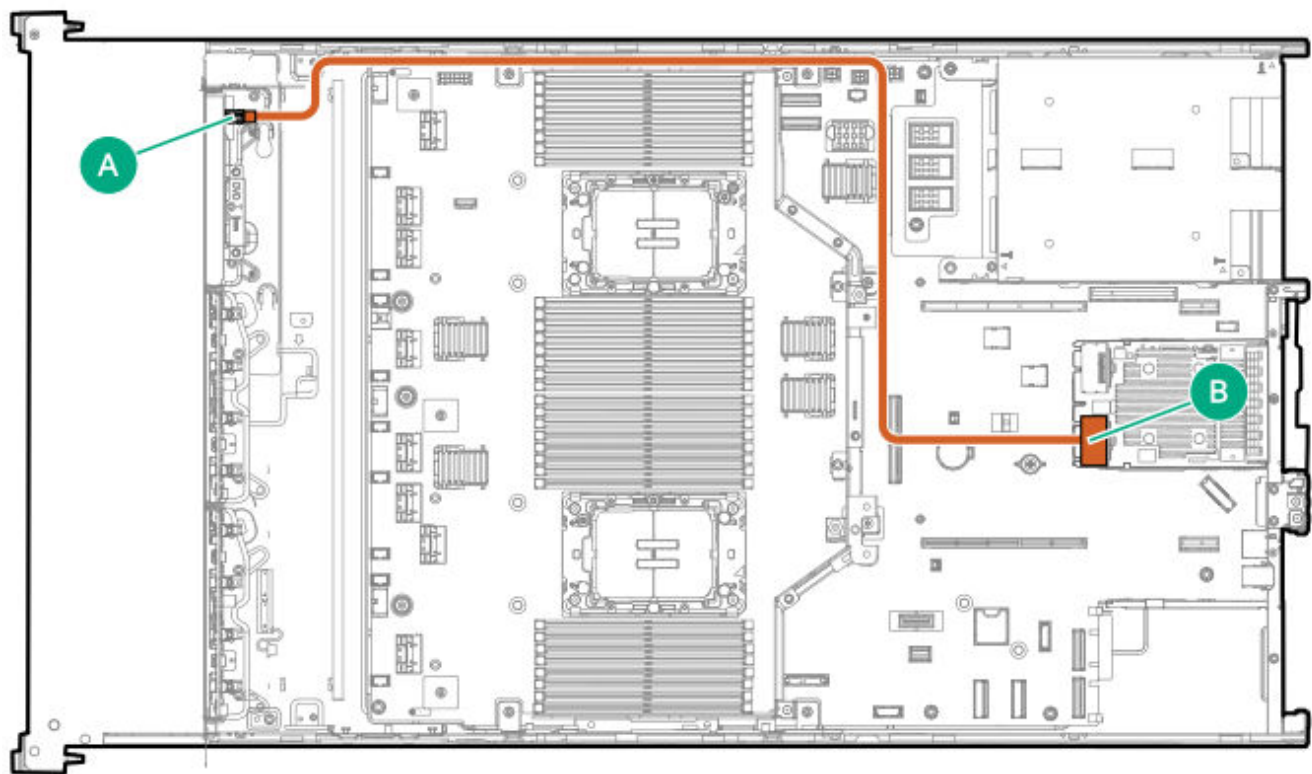
Cable part number	Color	From	To
P55362-001	Orange	Box 1 port 1	Secondary type-p storage controller port 2

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



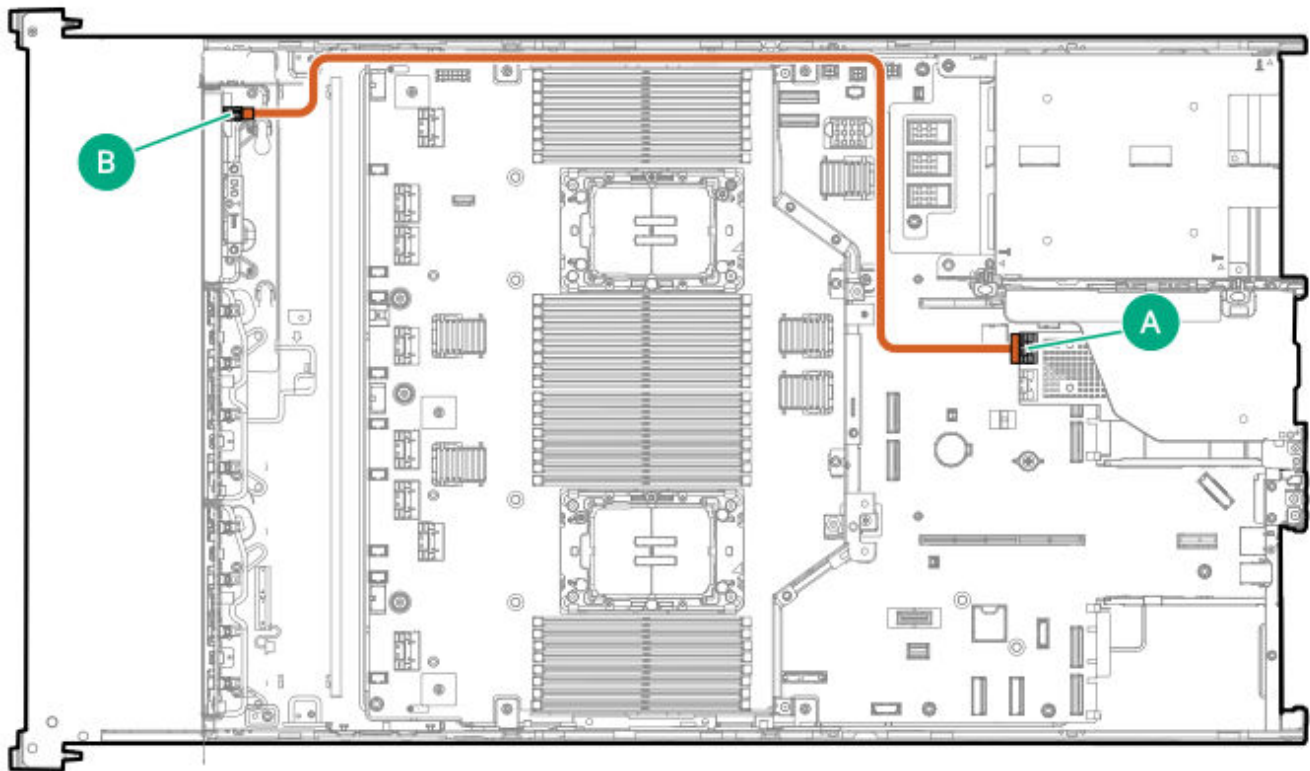
Cable part number	Color	From	To
P55362-001	Orange	Box 1 port 1	Secondary type-p storage controller port 1
	Blue	Box 1 port 2	Secondary type-p storage controller port 2
	Gold	Box 1 port 3	Secondary type-p storage controller port 3
	Pink	Box 1 port 4	Secondary type-p storage controller port 4

2 stacked drive controller cabling: Type-o controller in Slot 15



Cable part number	Color	From	To
P55357-001	Orange	Box 1 port 1	Type-o storage controller port 1 in Slot 15

2 stacked drive controller cabling: Type-p controller in the secondary riser

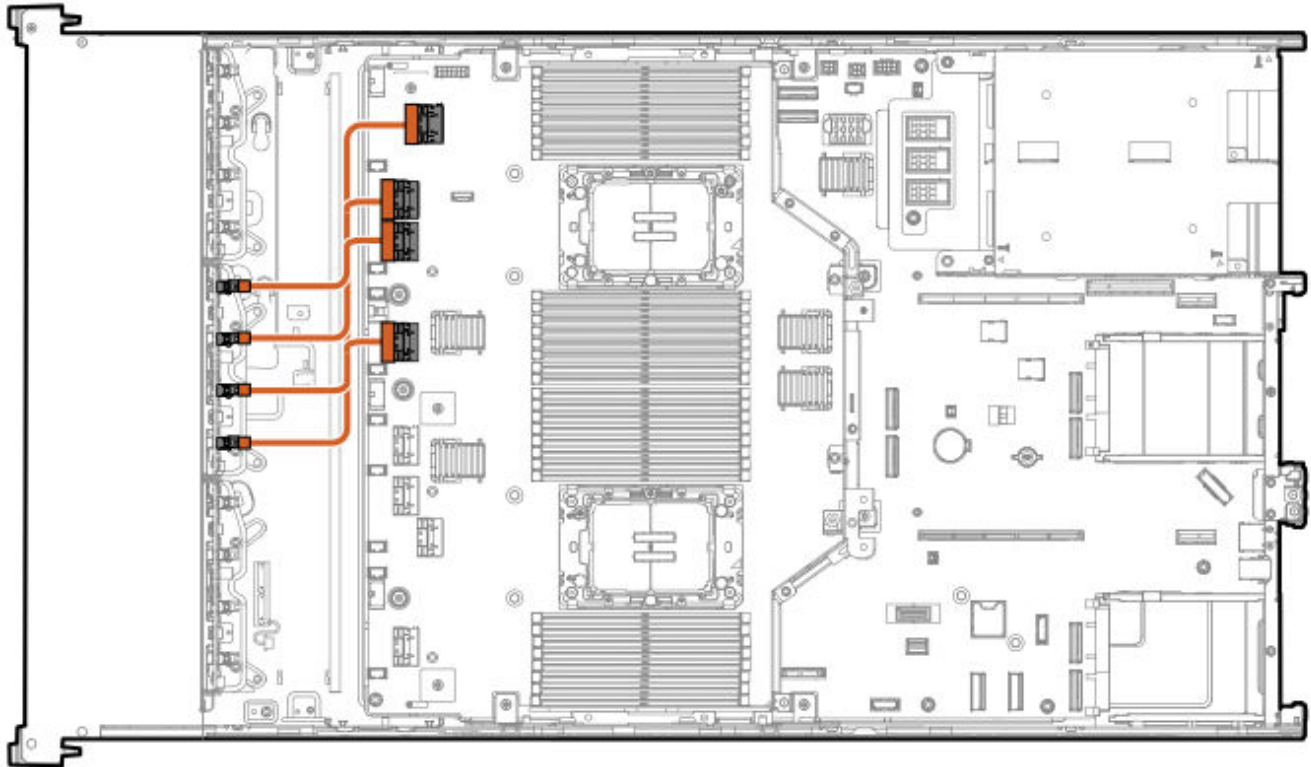


Cable part number	Color	From	To
P55362-001	Orange	Box 1 port 1	Type-p storage controller port 2 in Slot 15

Drive box 2 cabling

8 SFF x4 NVMe direct attach cabling

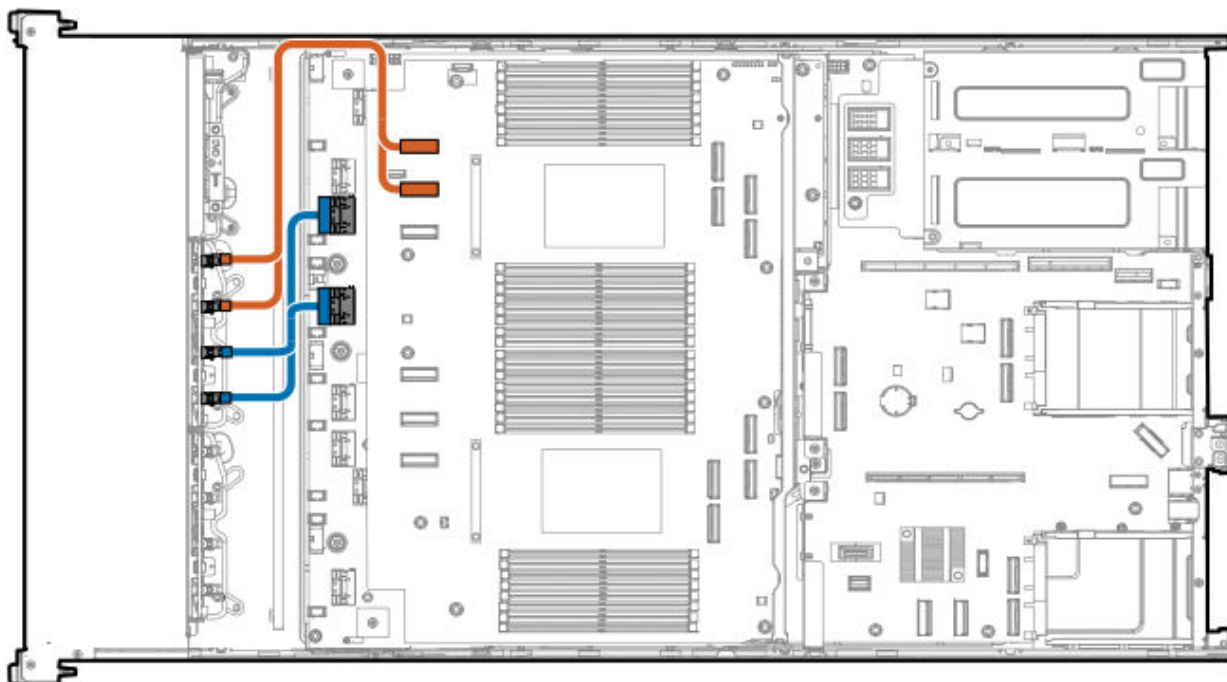
This is for dual-processor, air cooling configuration only.



Cable part number	Color	From	To
P55345-001	Orange	Box 2 ports 1–4	x8 SlimSAS ports 5–8 (from bottom to top)

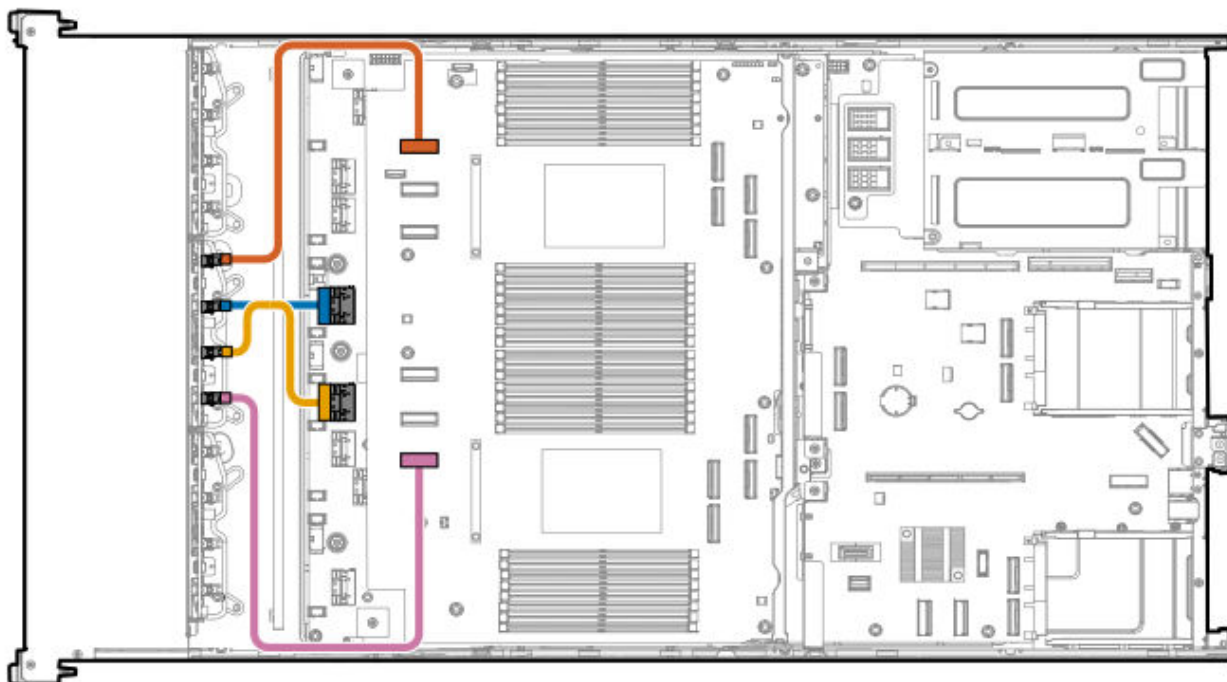
8 SFF x4 NVMe direct attach cabling for the processors 2 and 4

- When box 1 is the universal media bay



Cable part number	Color	From	To
P55347-001	Orange	Box 2 ports 1–2	x8 SlimSAS ports 5–6 (from bottom to top) on the processor mezzanine board
Air cooling configuration : P55346-001	Blue	Box 2 ports 3–4	x8 SlimSAS ports 5–6 (from bottom to top) on the system board
Liquid cooling configuration: P61772-001			

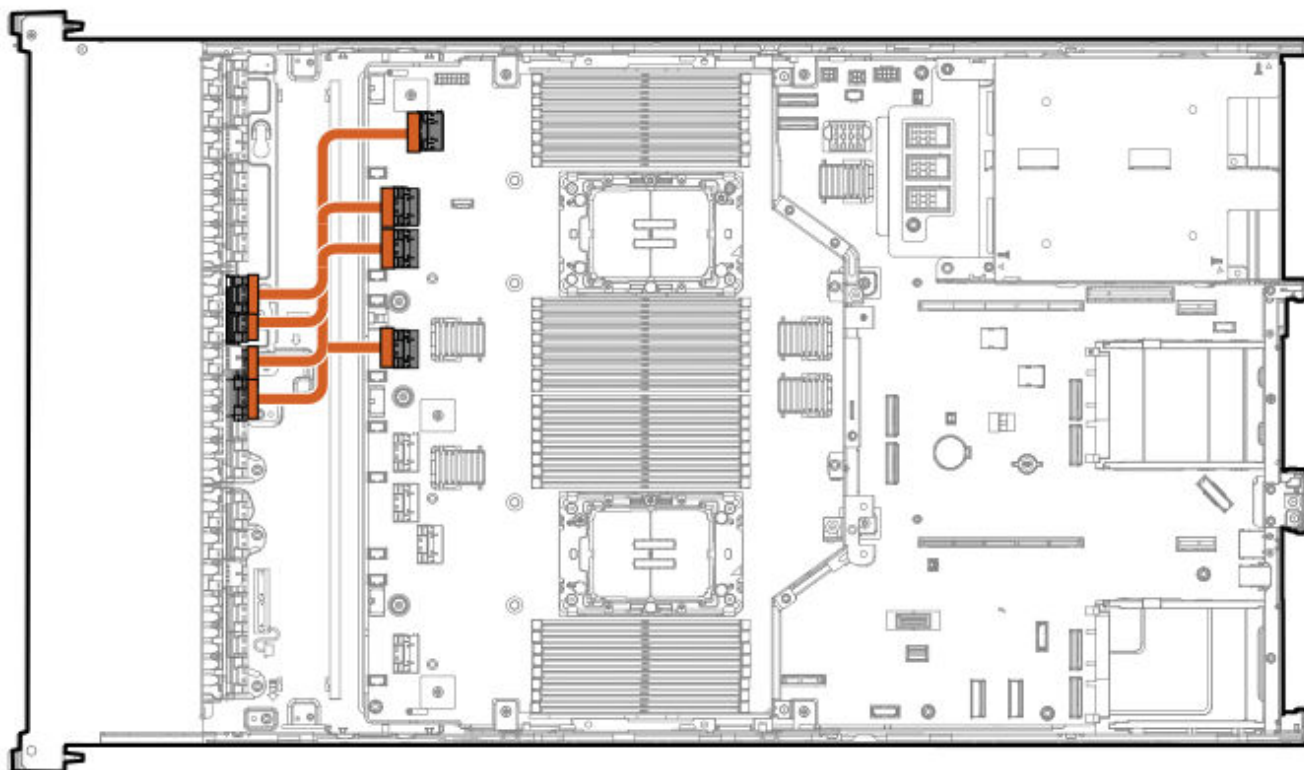
- When box 1 is the 8 SFF drive cage



Cable part number	Color	From	To
P55348-001	Orange	Box 2 port 1	x8 SlimSAS port 6 on the processor mezzanine board
Air cooling configuration : P55342-001	Blue	Box 2 port 2	x8 SlimSAS port 5 on the system board
	Gold	Box 2 port 3	x8 SlimSAS port 4 on the system board
P55349-001	Pink	Box 2 port 4	x8 SlimSAS port 1 on the processor mezzanine board

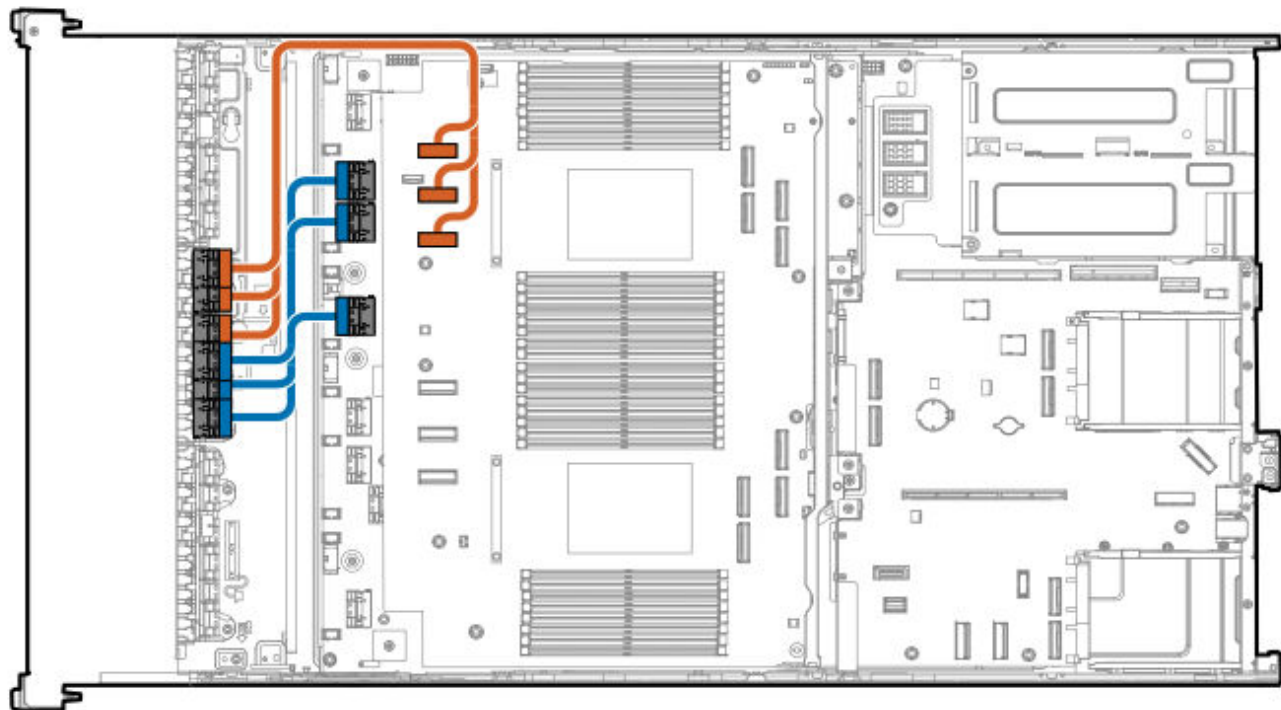
8 E3.S NVMe direct attach cabling

This is for dual-processor, air cooling configuration only



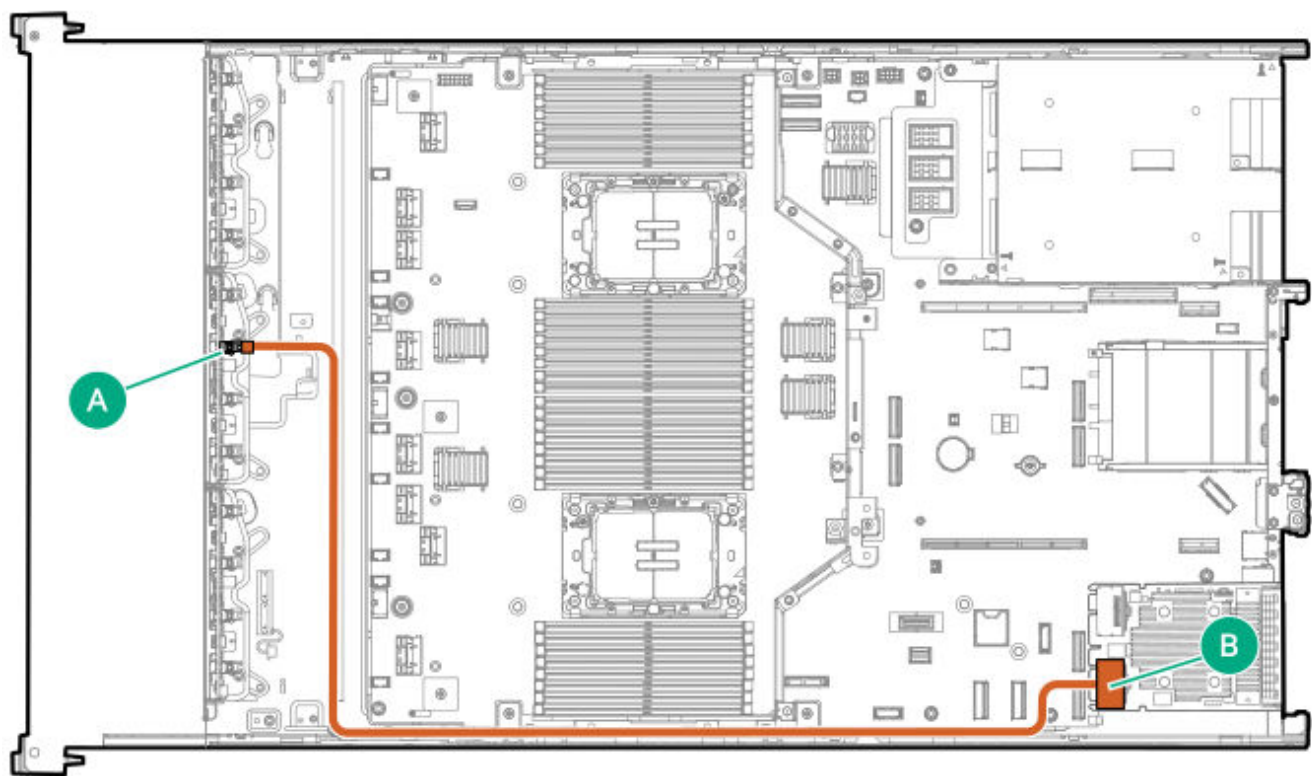
Cable part number	Color	From	To
P55368-001	Orange	Box 2 ports 1-4	x8 SlimSAS ports 5-8 (from bottom to top)

12 E3.S NVMe direct attach cabling



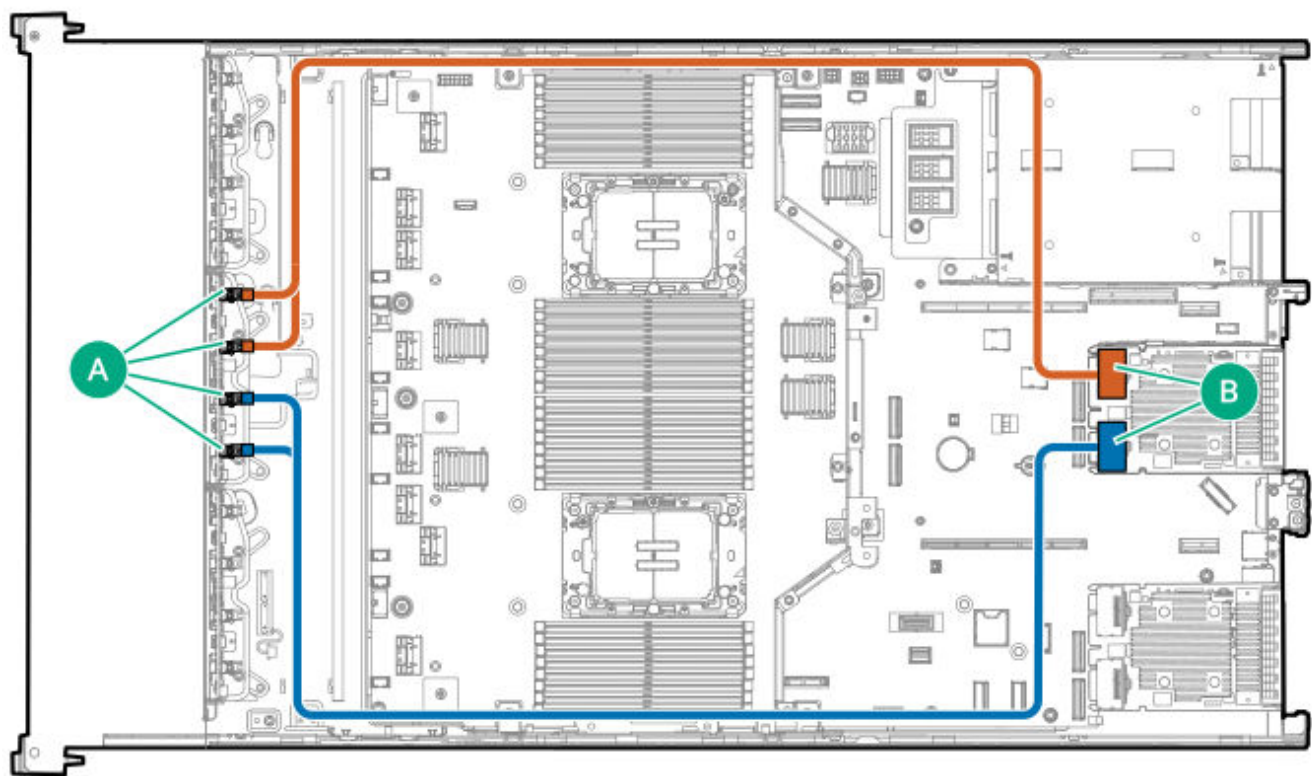
Cable part number	Color	From	To
P55371-001	Orange	Box 2 ports 1–3	x8 SlimSAS ports 4–6 (from bottom to top) on the processor mezzanine board
Air cooling configuration: P59130-001	Blue	Box 2 ports 5–6	x8 SlimSAS ports 5–7 (from bottom to top) on the system board
Liquid cooling configuration: P55355-001			

8 SFF x1 SAS drive controller cabling: Type-o controller in Slot 14



Cable part number	Color	From	To
P55357-001	Orange	Box 2 port 1	Type-o storage controller port 1 in Slot 14

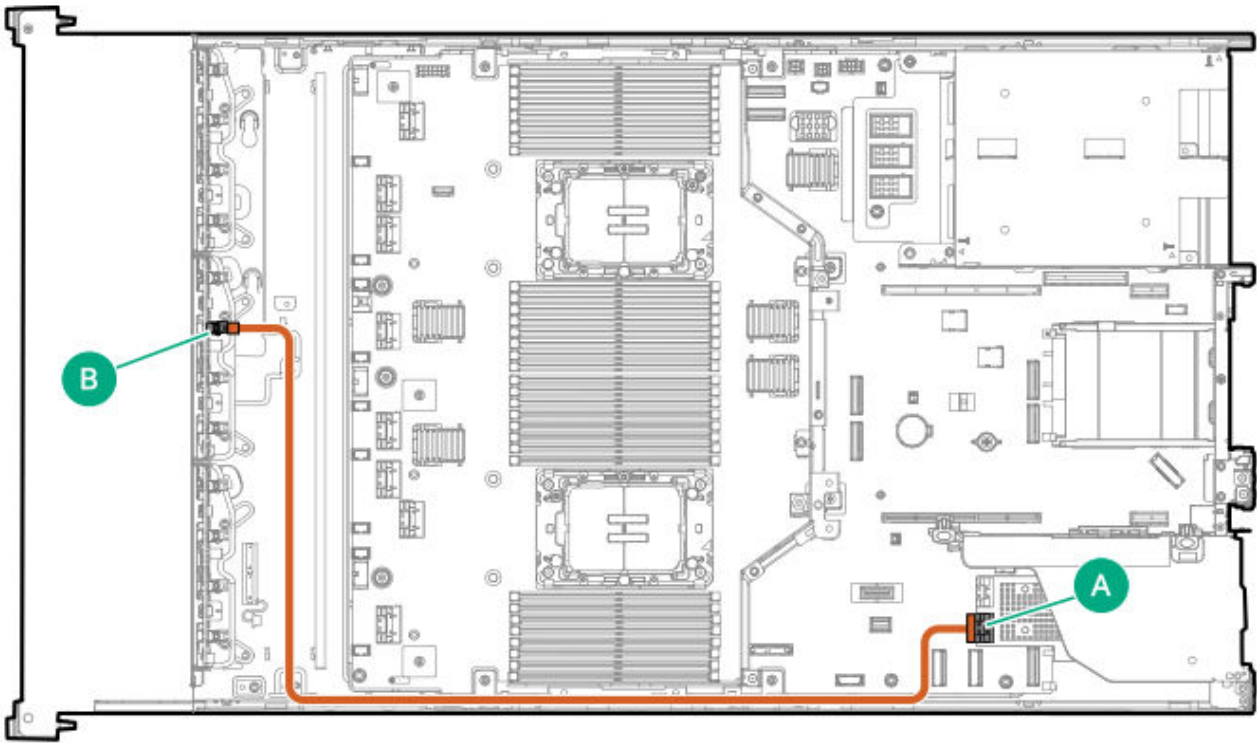
8 SFF x2 NVMe drive controller cabling: Type-o controller in Slot 15



Cable part number	Color	From	To
P48963-001	Orange	Box 2 ports 1-2	Type-o storage controller port 2 in Slot 15
	Blue	Box 2 ports 3-4	Type-o storage controller port 1 in Slot 15

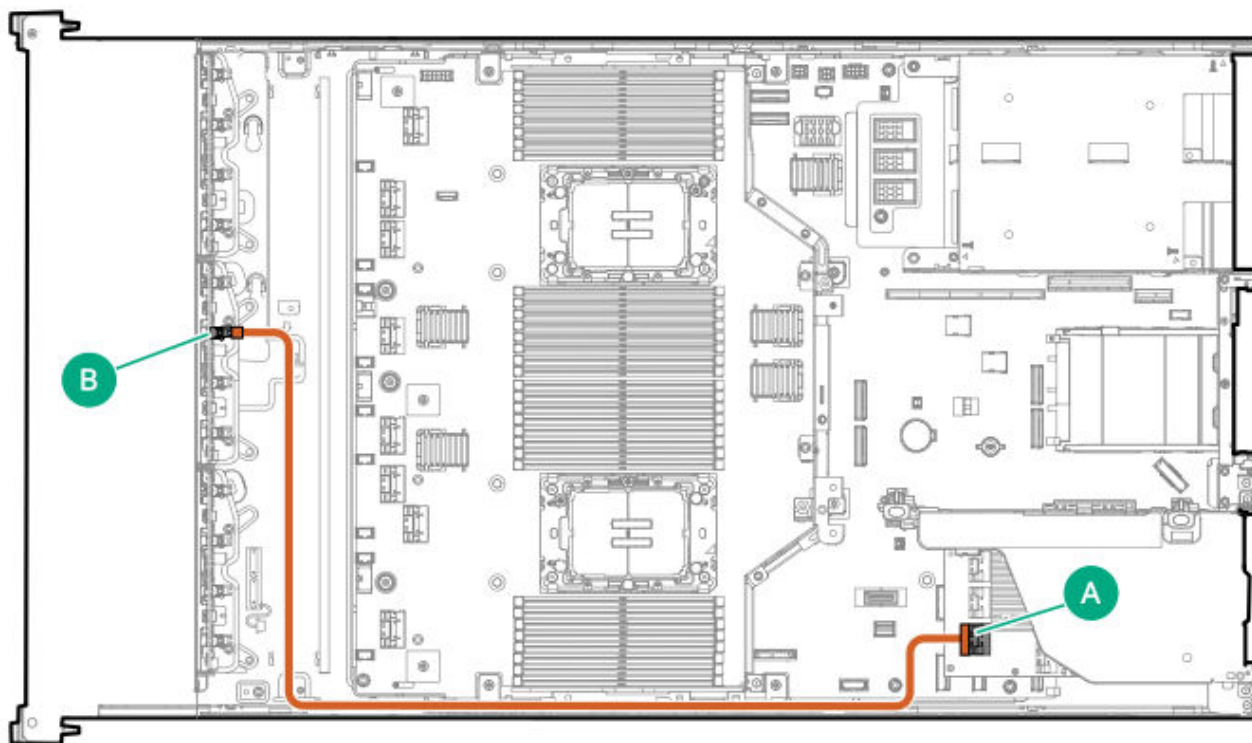
8 SFF x1 SAS drive controller cabling: Type-p controller in the primary riser

- MR416i-p



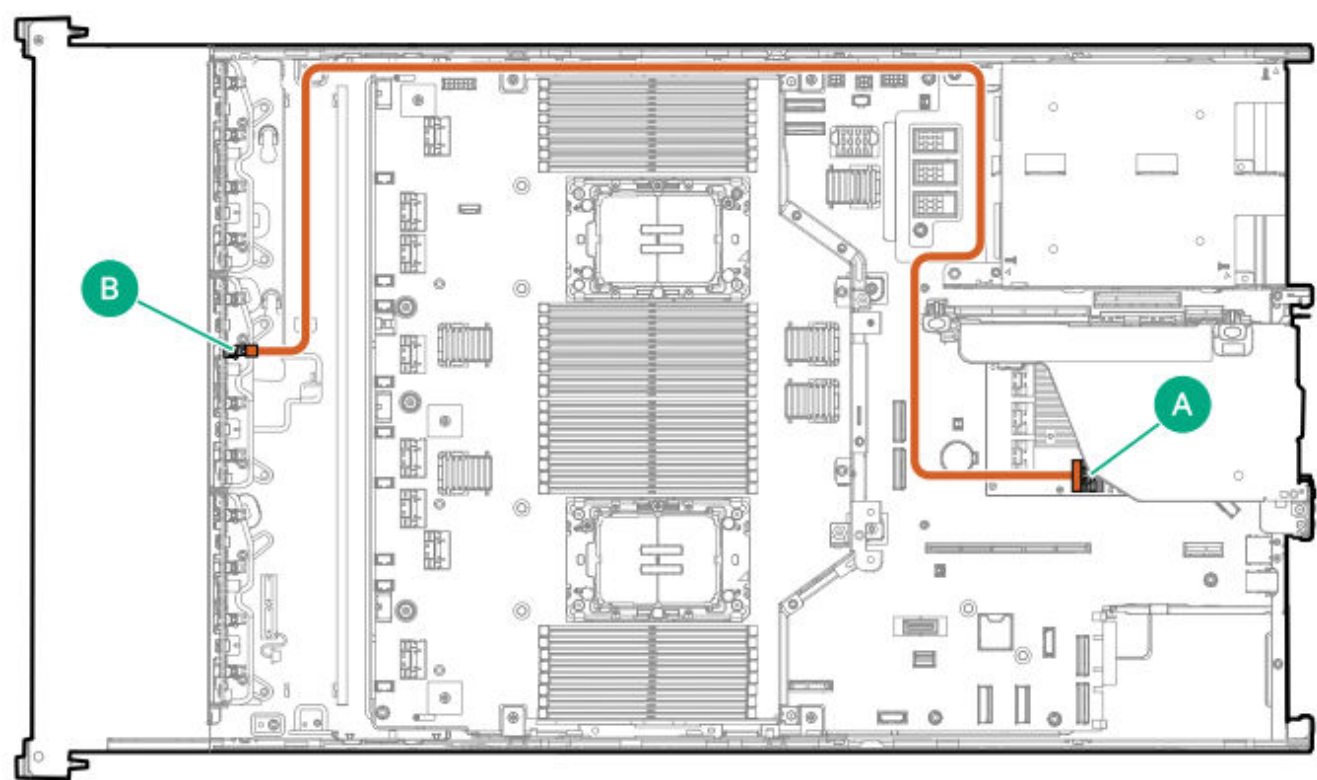
Cable part number	Color	From	To
P55362-001	Orange	Box 2 port 1	Primary type-p storage controller port 1

- SR932i-p



Cable part number	Color	From	To
P55362-001	Orange	Box 2 port 1	Primary type-p storage controller port 2

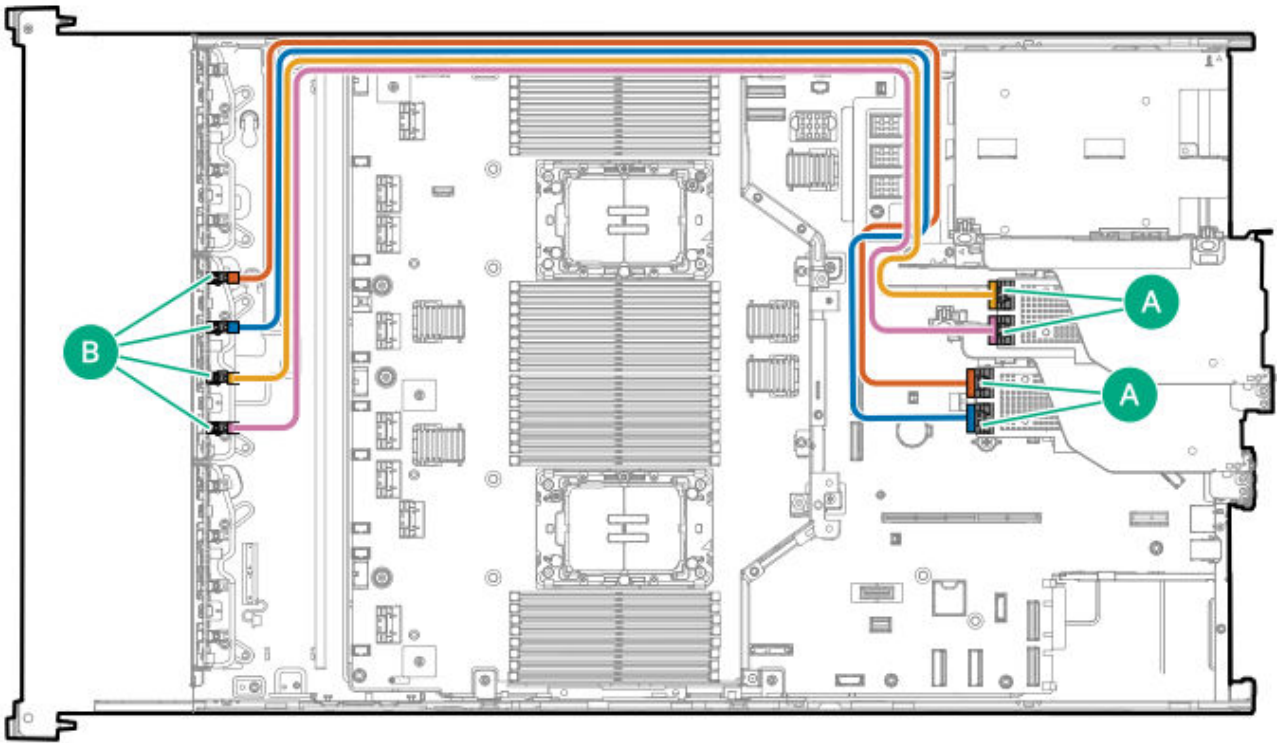
8 SFF x1 SAS drive controller cabling: Type-p controller in the secondary riser



Cable part number	Color	From	To
P55362-001	Orange	Box 2 port 1	Primary type-p storage c ontroller port 1

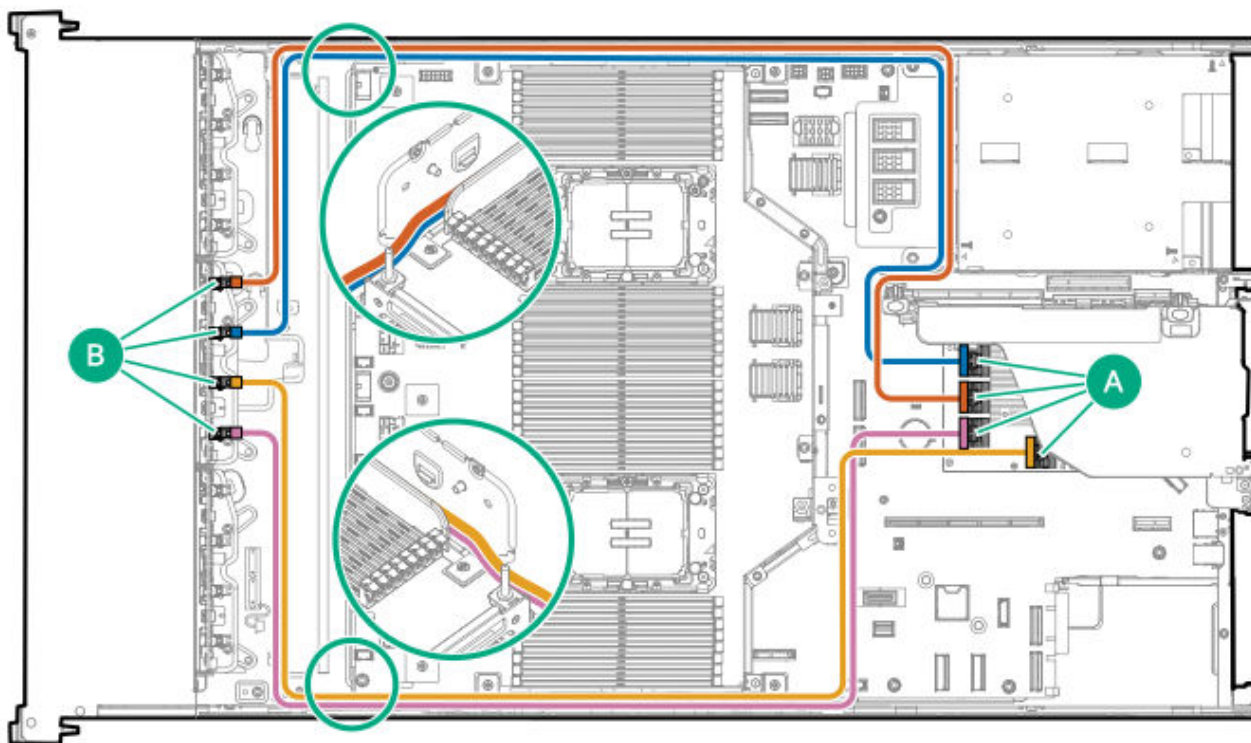
8 SFF x4 NVMe drive controller cabling: Type-p controller in the secondary riser

- Two MR416i-p controllers in the secondary riser when the box 1 is the universal media bay



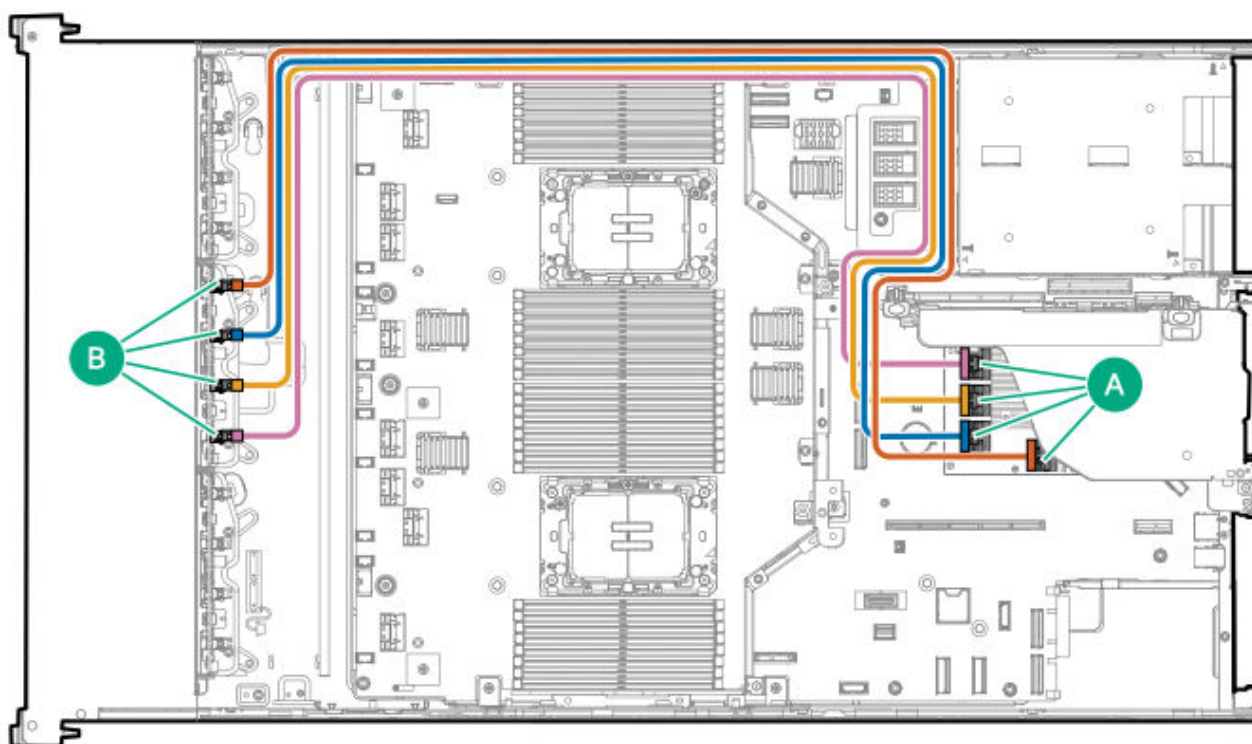
Cable part number	Color	From	To
P55362-001	Orange	Box 2 port 1	Secondary type-p storage controller port 1
	Blue	Box 2 port 2	Secondary type-p storage controller port 2
	Gold	Box 2 port 3	Secondary type-p storage controller port 1
	Pink	Box 2 port 4	Secondary type-p storage controller port 2

- SR932i-p controller in the secondary riser when the box 1 is the 8 SFF drive cage



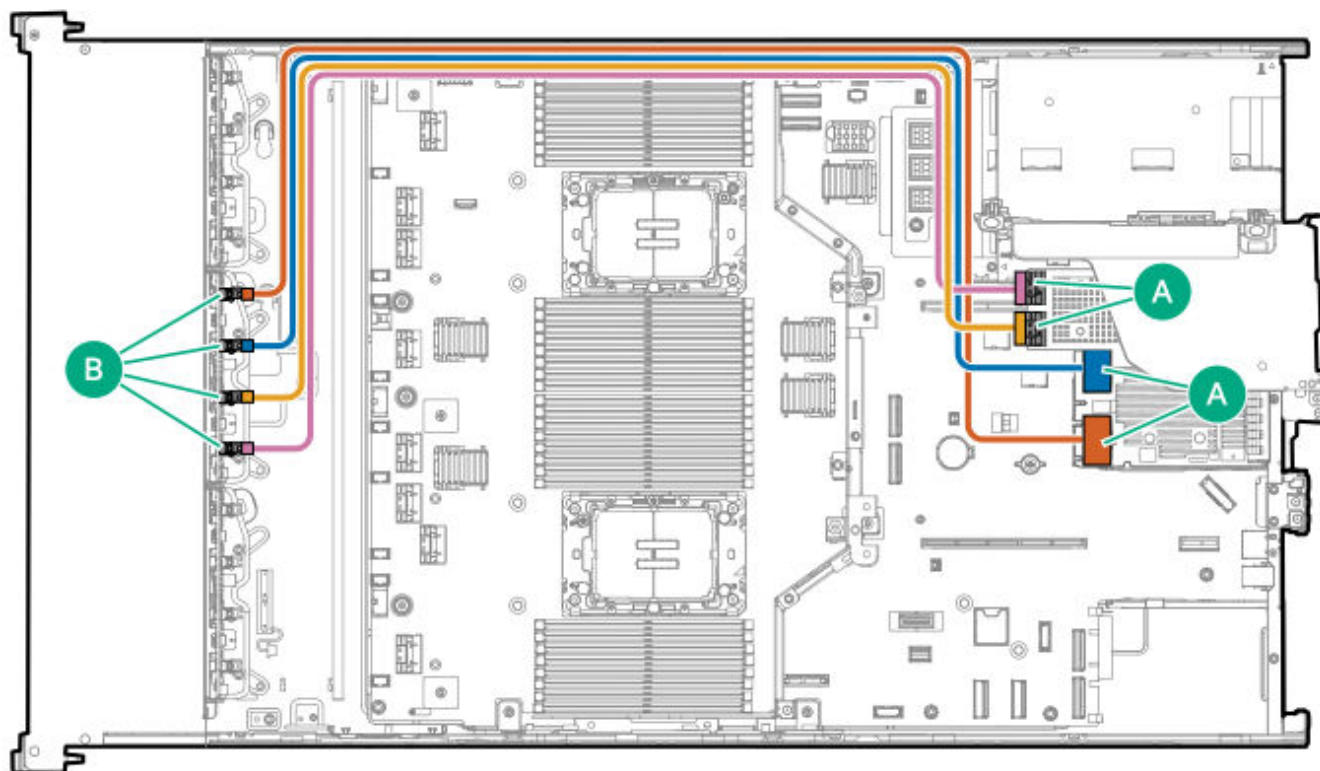
Cable part number	Color	From	To
P55362-001	Orange	Box 2 port 1	Secondary type-p storage controller port 3
	Blue	Box 2 port 2	Secondary type-p storage controller port 4
	Gold	Box 2 port 3	Secondary type-p storage controller port 1
	Pink	Box 2 port 4	Secondary type-p storage controller port 2

- SR932i-p controller in the secondary riser when the box 1 is the universal media bay



Cable part number	Color	From	To
P55362-001	Orange	Box 2 port 1	Secondary type-p storage controller port 1
	Blue	Box 2 port 2	Secondary type-p storage controller port 2
	Gold	Box 2 port 3	Secondary type-p storage controller port 3
	Pink	Box 2 port 4	Secondary type-p storage controller port 4

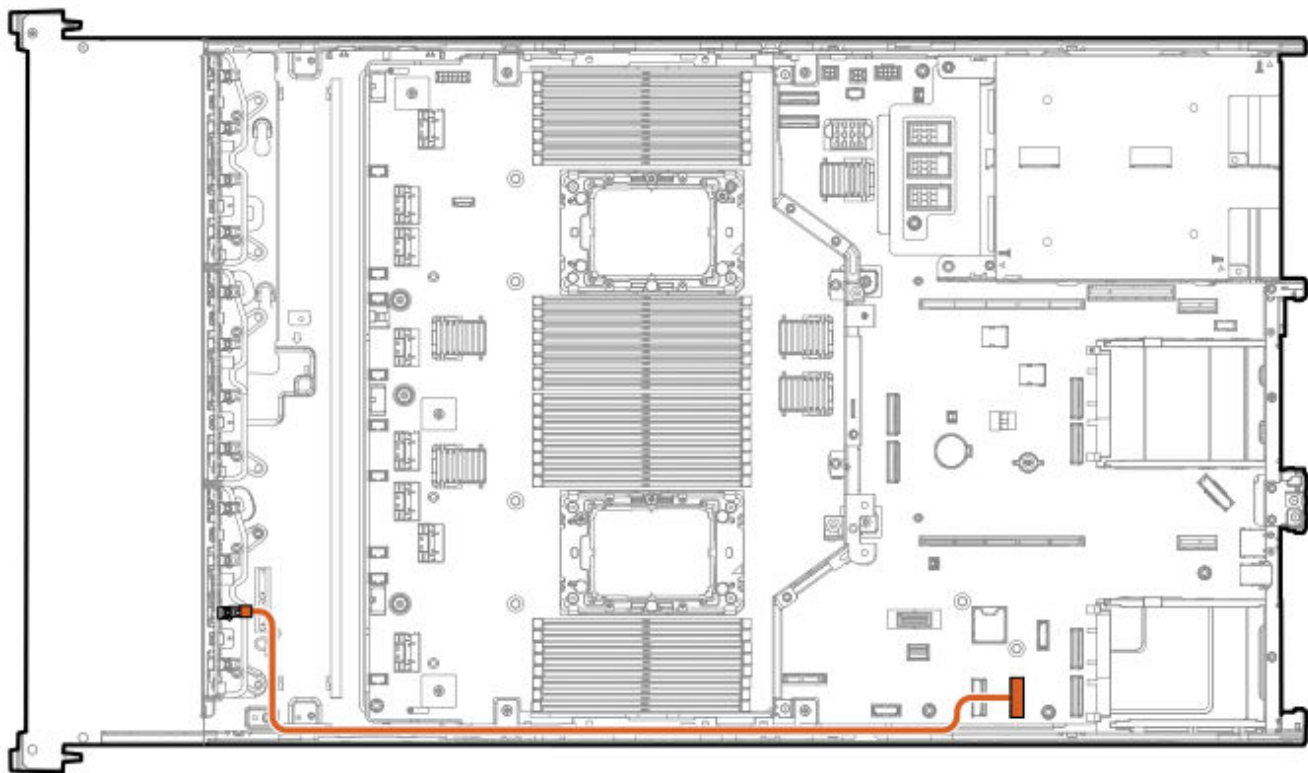
8 SFF x4 NVMe drive controller cabling: Type-o controller in Slot 15 and type-p controller in the secondary riser



Cable part number	Color	From	To
P55358-001	Orange	Box 2 port 1	Type-o storage controller port 1 in Slot 15
	Blue	Box 2 port 2	Type-o storage controller port 2 in Slot 15
P55362-001	Gold	Box 2 port 3	Secondary type-p storage controller port 1
	Pink	Box 2 port 4	Secondary type-p storage controller port 2

Drive box 3 cabling

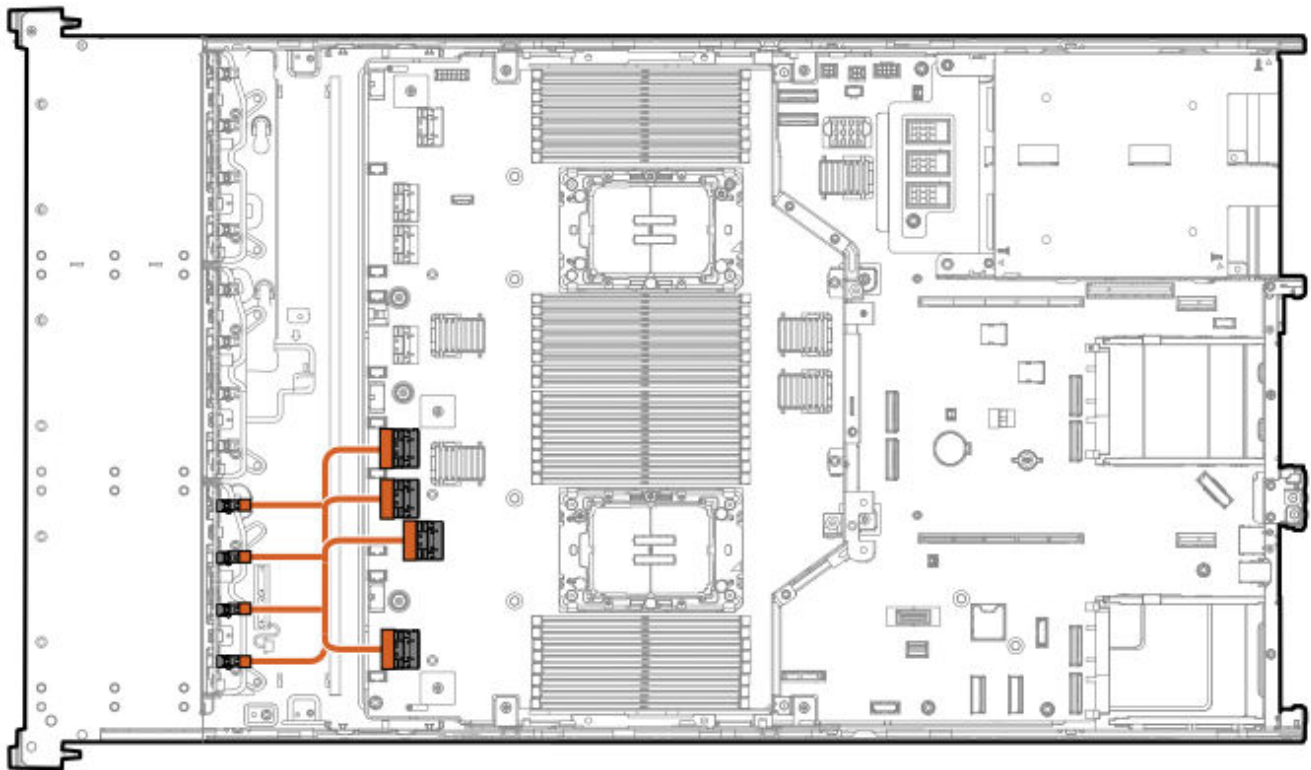
8 SFF x1 SAS drive: Onboard SATA cabling



Cable part number	Color	From	To
P14337-001	Orange	Box 3 port 1	PCH LP SlimSAS connector 2

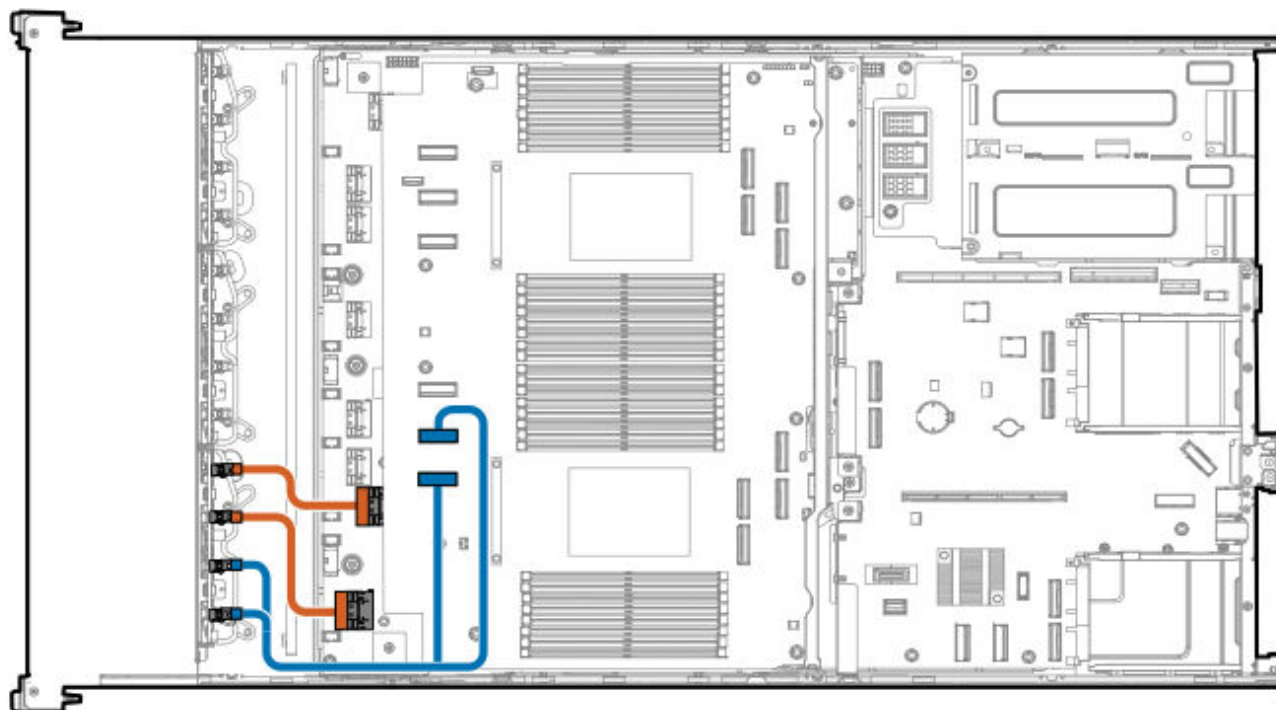
8 SFF x4 NVMe direct attach cabling cabling

This is for the dual-processor configuration, air cooling configuration only.



Cable part number	Color	From	To
P55350-001	Orange	Box 3 ports 1-4	x8 SlimSAS ports 1-4 (from bottom to top)

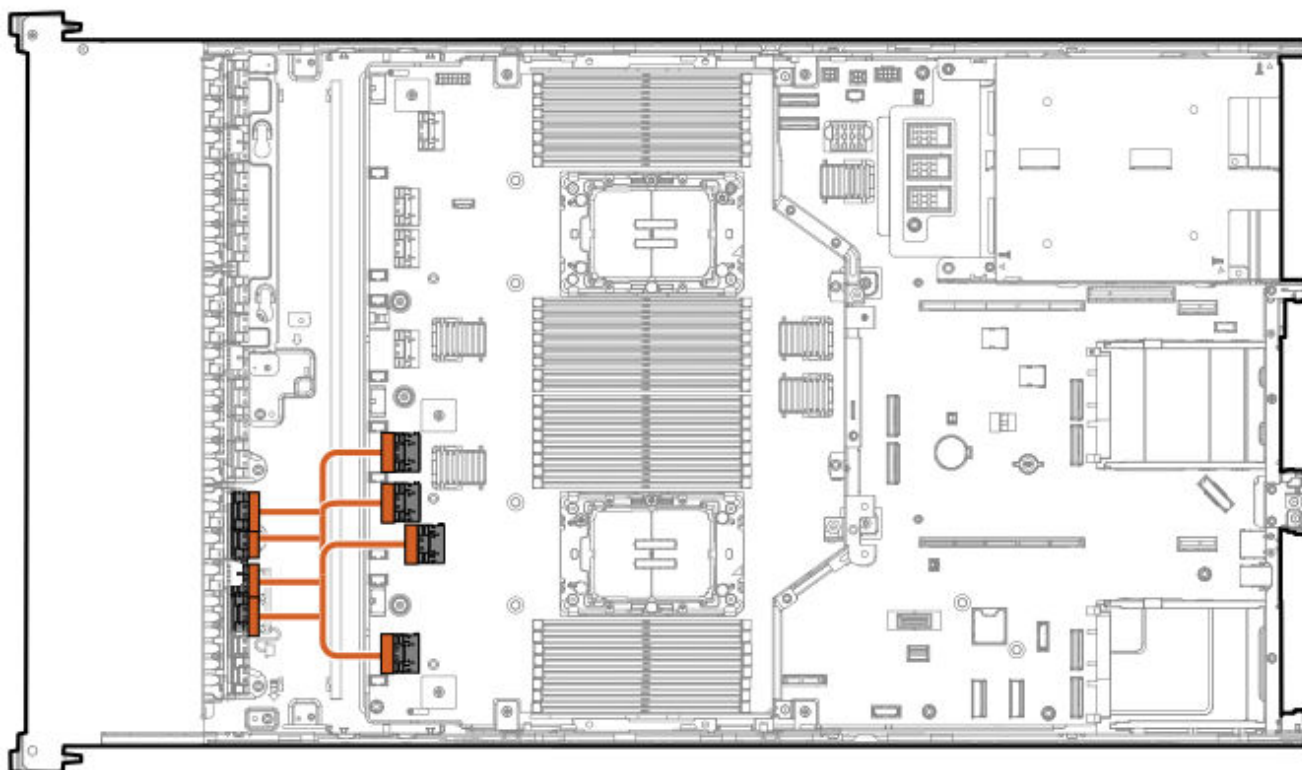
8 SFF x4 NVMe direct attach cabling for the processors 1 and 3



Cable part number	Color	From	To
P55352-001	Orange	Box 3 ports 1–2	x8 SlimSAS ports 1–2 (from bottom to top) on the system board
P55353-001	Blue	Box 3 ports 3–4	x8 SlimSAS ports 1–2 (from bottom to top) on the processor mezzanine board

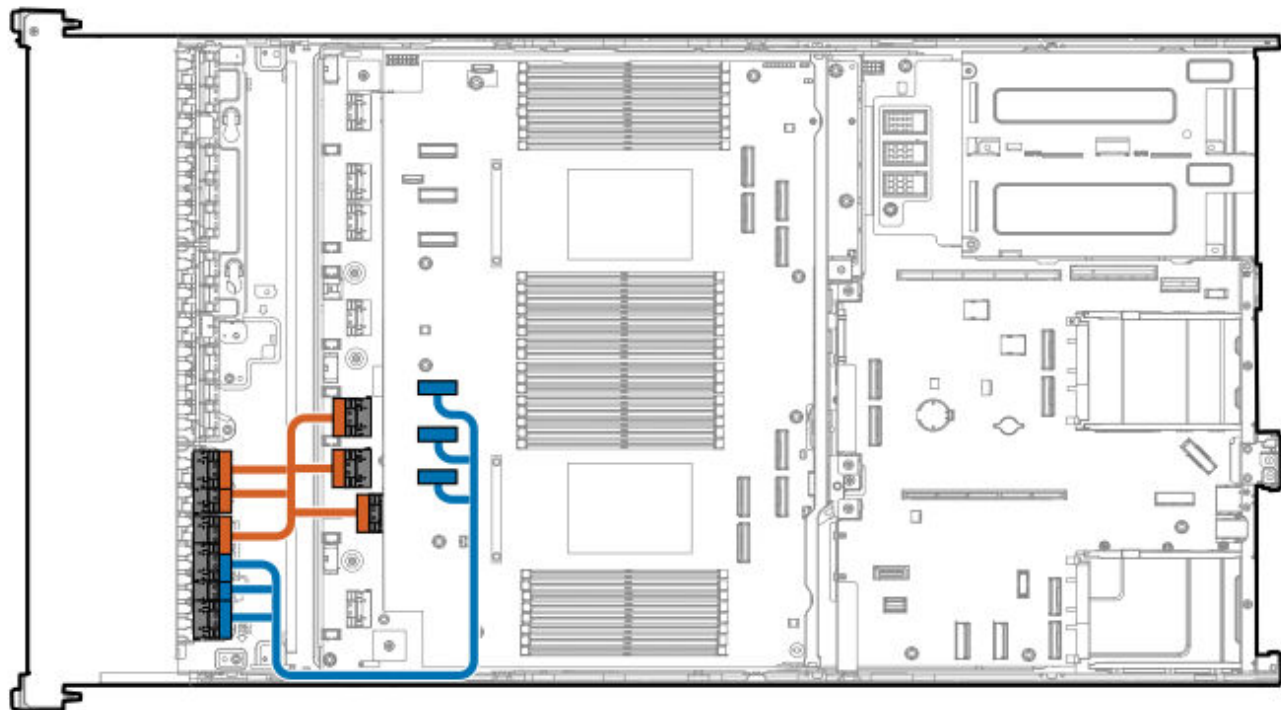
8 E3.S NVMe direct attach cabling

This is for the dual-processor configuration, air cooling configuration only.



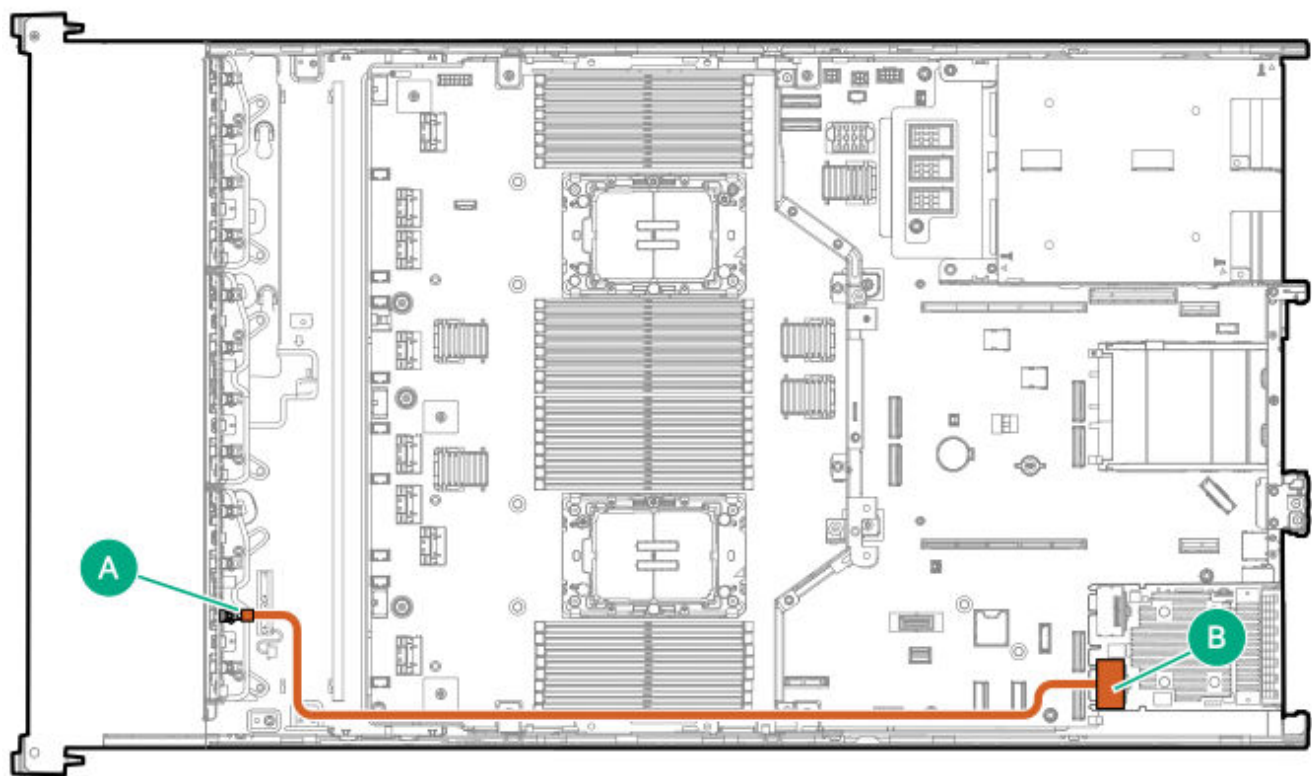
Cable part number	Color	From	To
P55369-001	Orange	Box 3 ports 1-4	x8 SlimSAS ports 1-4 (from bottom to top)

12 E3.S NVMe direct attach cabling



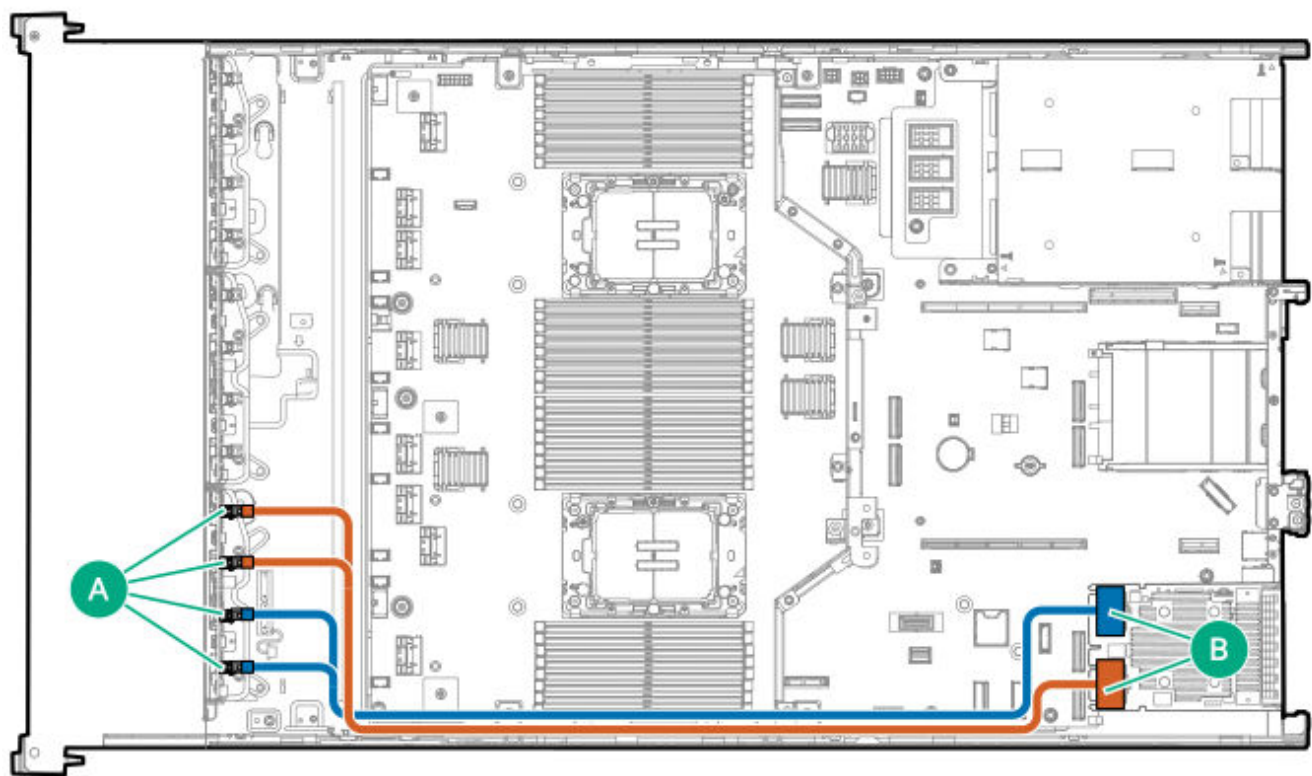
Cable part number	Color	From	To
P59132-001	Orange	Box 3 ports 1–3	x8 SlimSAS ports 1–3 (from bottom to top) on the system board
P55370-001	Blue	Box 3 ports 4–6	x8 SlimSAS ports 1–3 (from bottom to top) on the processor mezzanine board

8 SFF x1 SAS drive controller cabling: Type-o controller in Slot 14



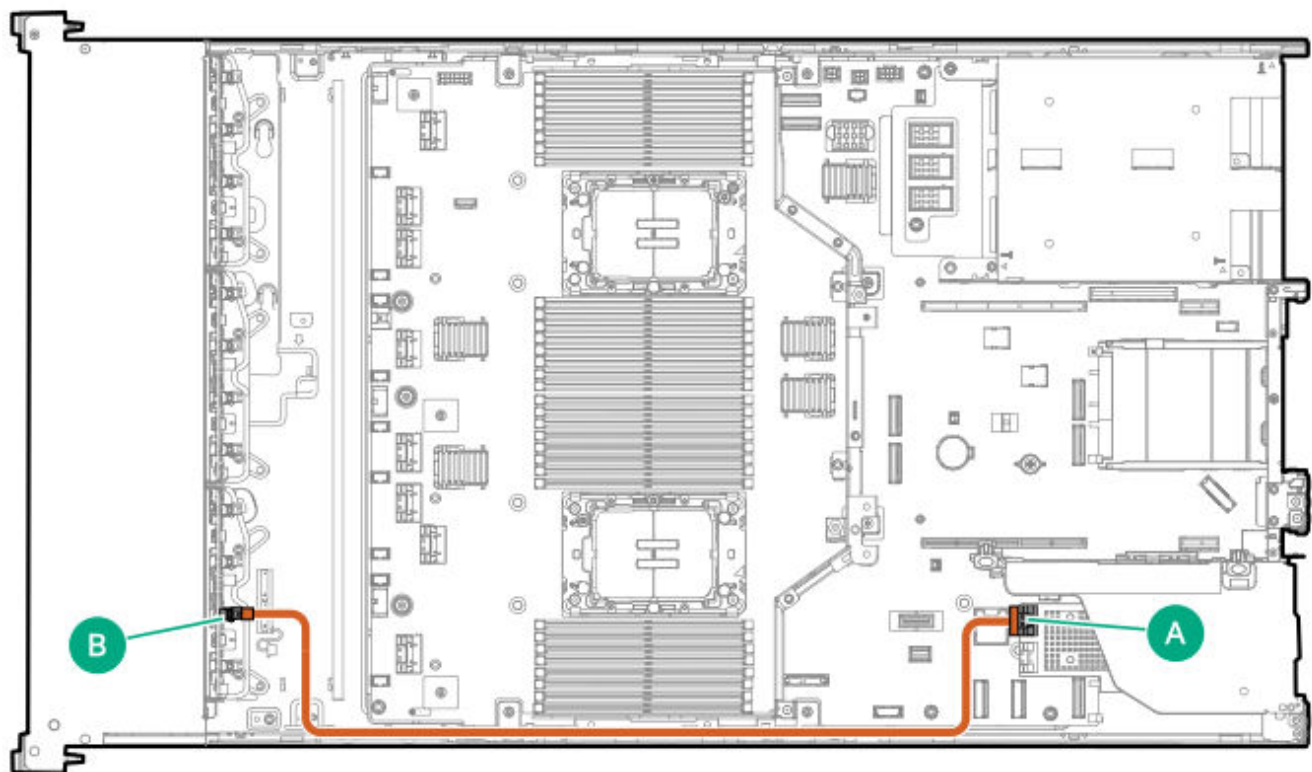
Cable part number	Color	From	To
P55356-001	Orange	Box 3 port 1	Type-o storage controller port 1 in Slot 14

8 SFF x2 NVMe drive controller cabling: Type-o controller in Slot 14



Cable part number	Color	From	To
P48964-001	Orange	Box 3 ports 1-2	Type-o storage controller port 1 in Slot 14
	Blue	Box 3 ports 3-4	Type-o storage controller port 2 in Slot 14

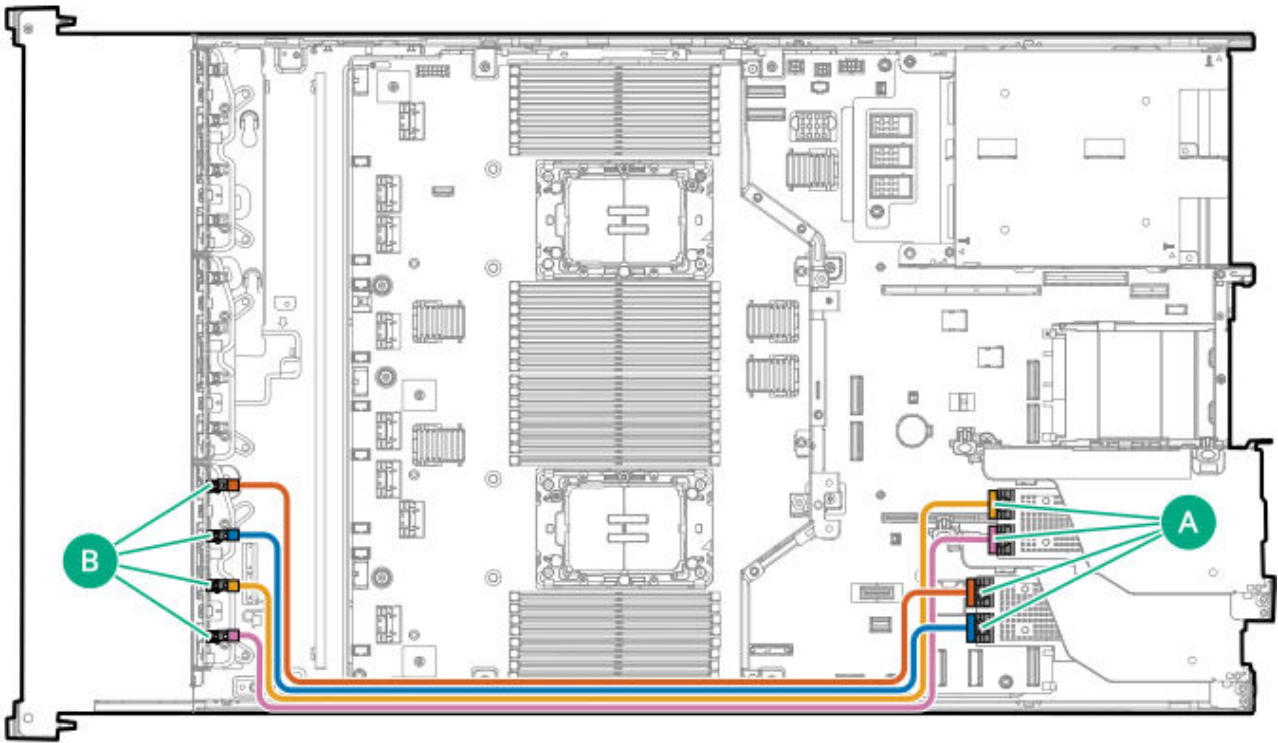
8 SFF x1 SAS drive controller cabling: Type-p controller in the primary riser



Cable part number	Color	From	To
P55364-001	Orange	Box 3 port 1	Primary type-p storage c ontroller port 2

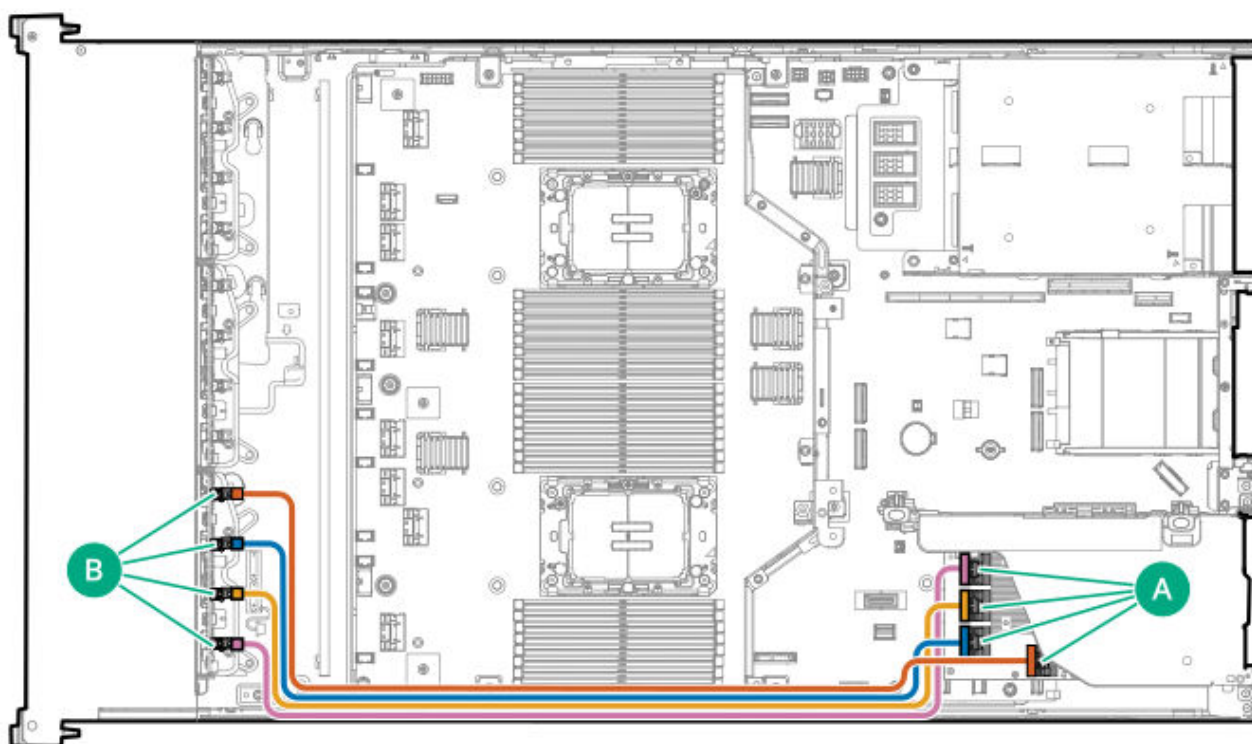
8 SFF x4 NVMe drive controller cabling: Type-p controller in the primary riser

- Two MR416i-p controllers in the primary riser



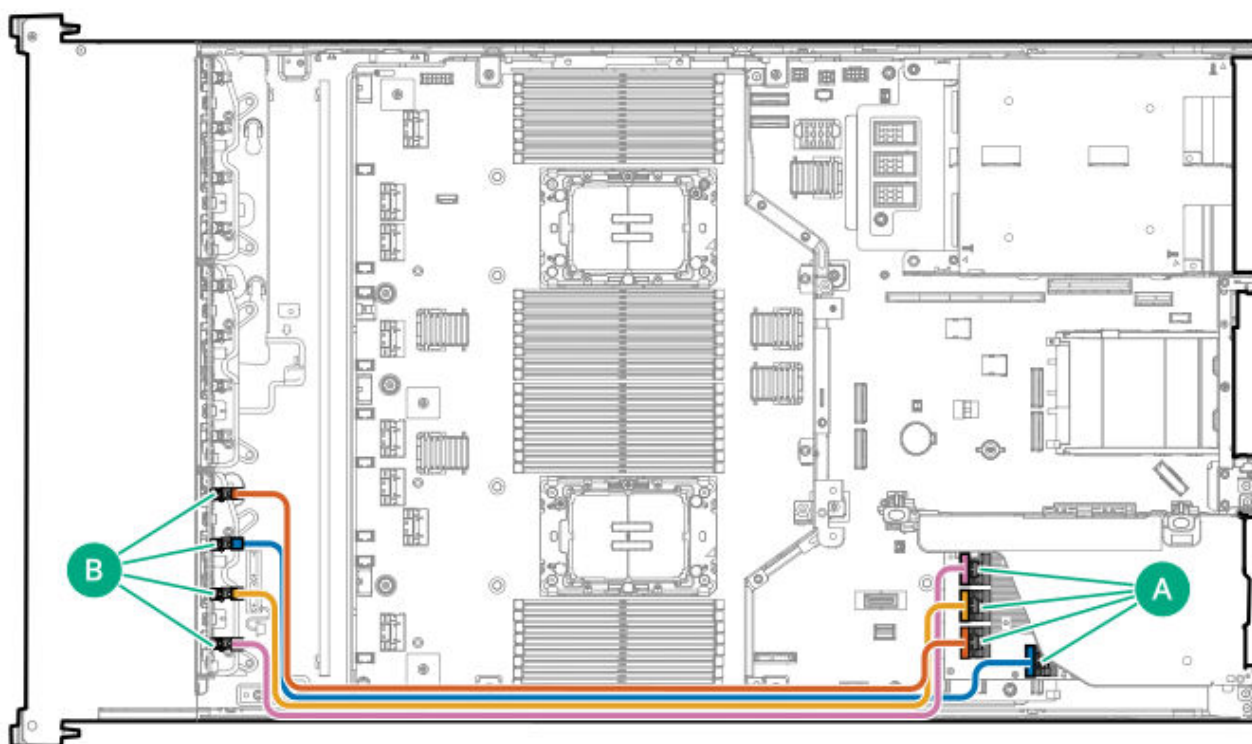
Cable part number	Color	From	To
P55364-001	Orange	Box 3 port 1	Primary type-p storage controller port 1
	Blue	Box 3 port 2	Primary type-p storage controller port 2
	Gold	Box 3 port 3	Primary type-p storage controller port 1
	Pink	Box 3 port 4	Primary type-p storage controller port 2

- SR932i-p controller in the primary riser (air cooling configuration)



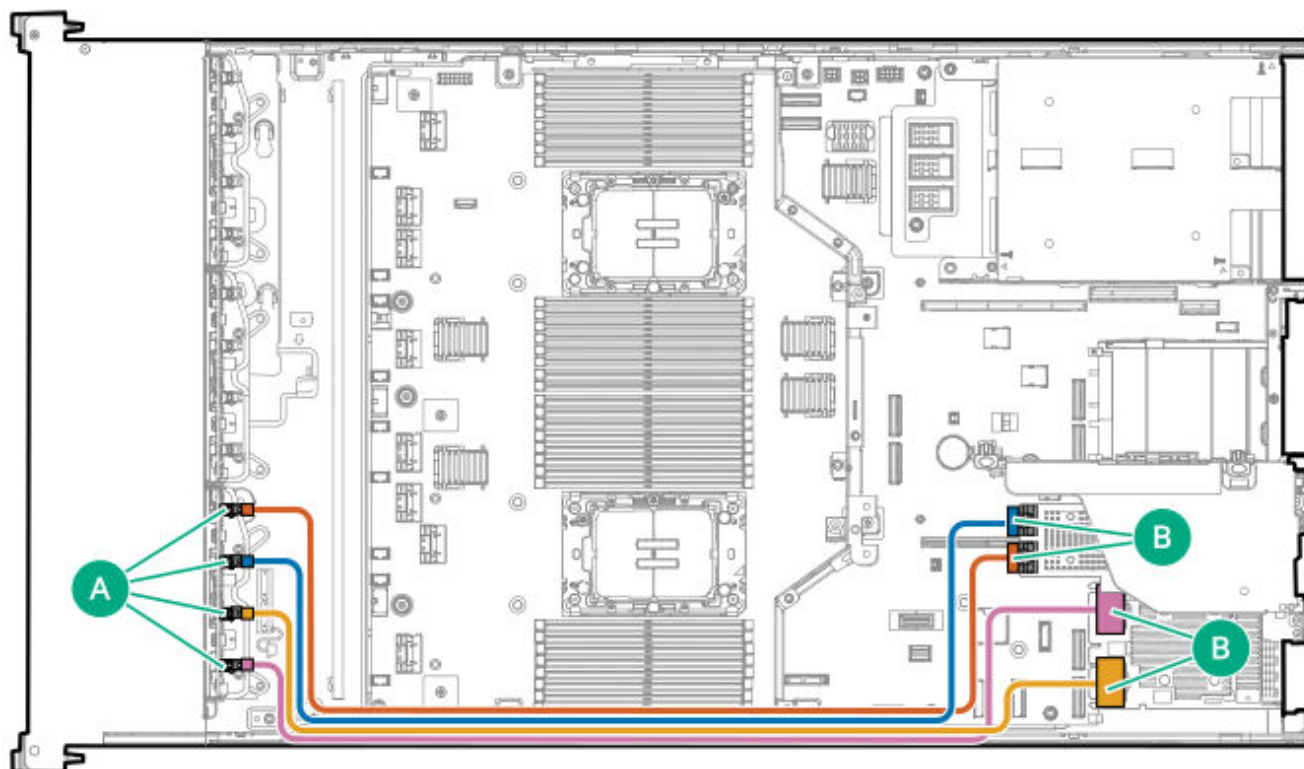
Cable part number	Color	From	To
P55364-001	Orange	Box 3 port 1	Primary type-p storage controller port 1
	Blue	Box 3 port 2	Primary type-p storage controller port 2
	Gold	Box 3 port 3	Primary type-p storage controller port 3
	Pink	Box 3 port 4	Primary type-p storage controller port 4

- SR932i-p controller in the primary riser (liquid cooling configuration)



Cable part number	Color	From	To
P55364-001	Orange	Box 3 port 1	Primary type-p storage controller port 2
	Blue	Box 3 port 2	Primary type-p storage controller port 1
	Gold	Box 3 port 3	Primary type-p storage controller port 3
	Pink	Box 3 port 4	Primary type-p storage controller port 4

8 SFF x4 NVMe drive controller cabling: Type-o controller in Slot 14 and type-p controller in the primary riser

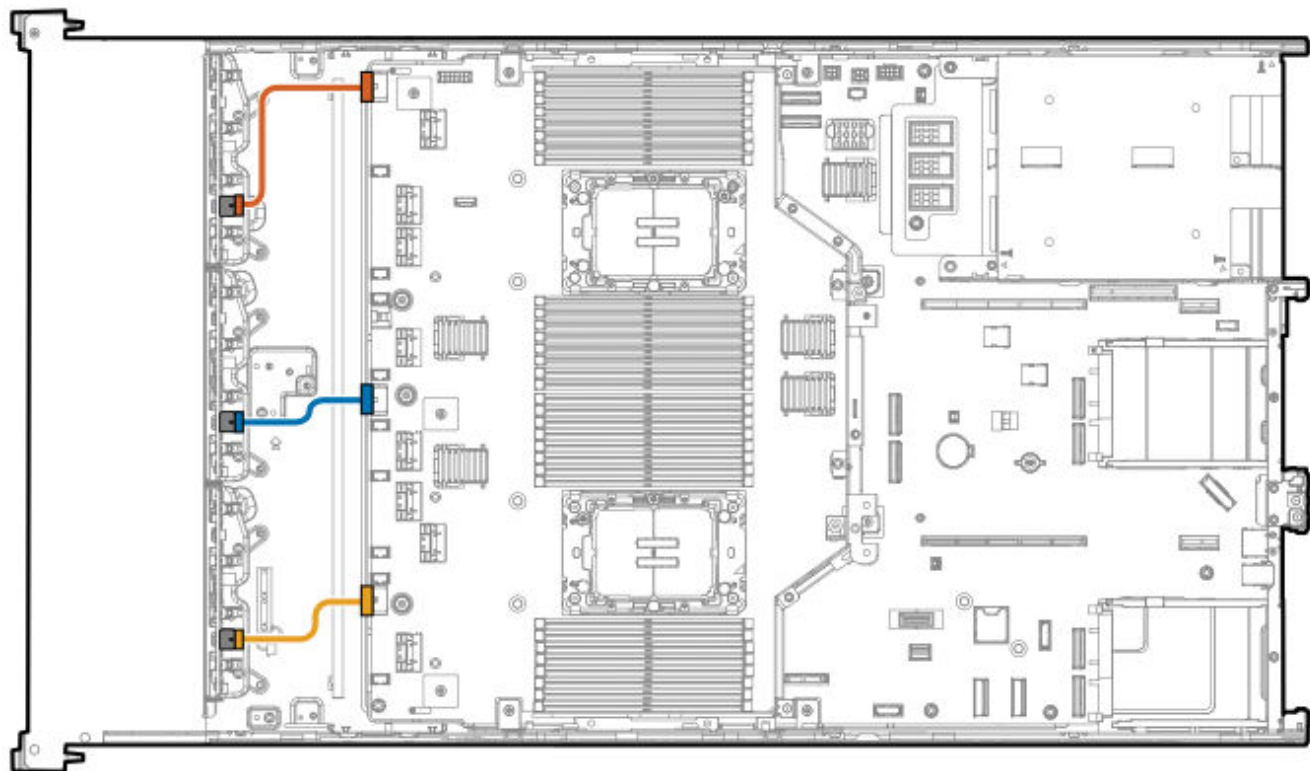


Cable part number	Color	From	To
P55364-001	Orange	Box 3 port 1	Primary type-p storage controller port 1
	Blue	Box 3 port 2	Primary type-p storage controller port 2
	Gold	Box 3 port 3	Type-o storage controller port 1 in Slot 14
	Pink	Box 3 port 4	Type-o storage controller port 2 in Slot 14

Drive power cabling

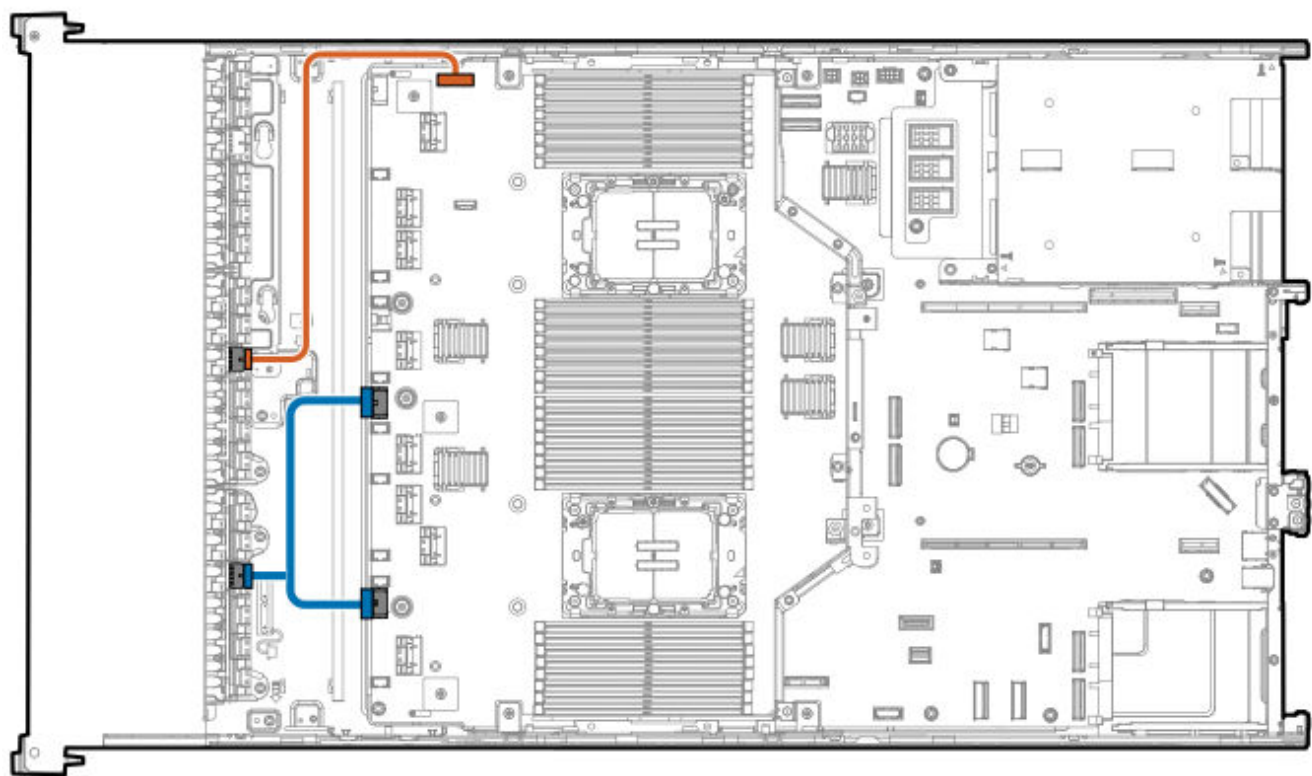
24 SFF drive power cabling

Drive power cables are either preinstalled in the server or structured under the relevant drive cage option kit.



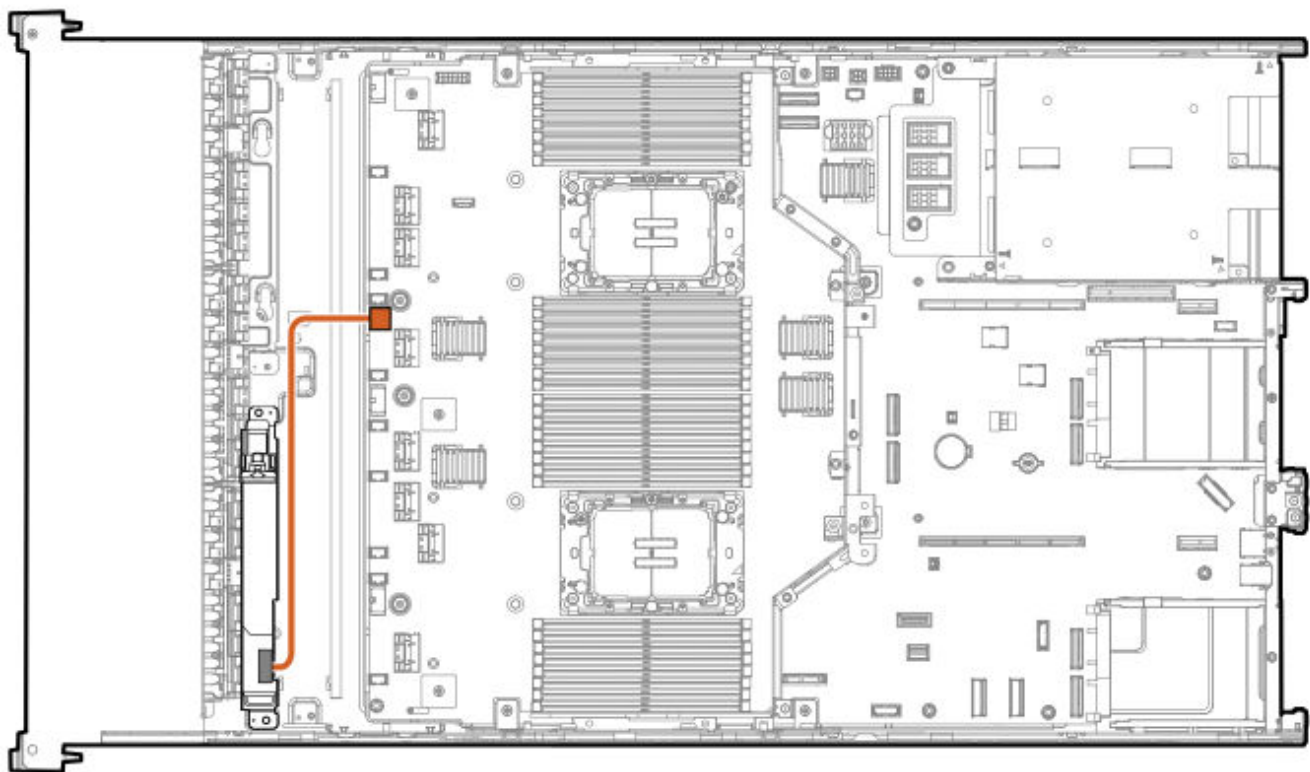
Cable part number	Color	From	To
869825-001	Orange	Box 1 power connector	Drive box 1 power connector
	Blue	Box 2 power connector	Drive box 2 power connector
	Gold	Box 3 power connector	Drive box 3 power connector

24 E3.S drive power cabling



Cable part number	Color	From	To
P59131-001	Orange	Box 2 power connector	Drive box 2 power connector 2
P55372-001	Blue	Box 3 power connector	Drive box 1 power connector and Drive box 2 power connector

Energy pack cabling



Cable part number	Color	From	To
876851-001	Orange	Energy pack	Energy pack connector
P02378-001			

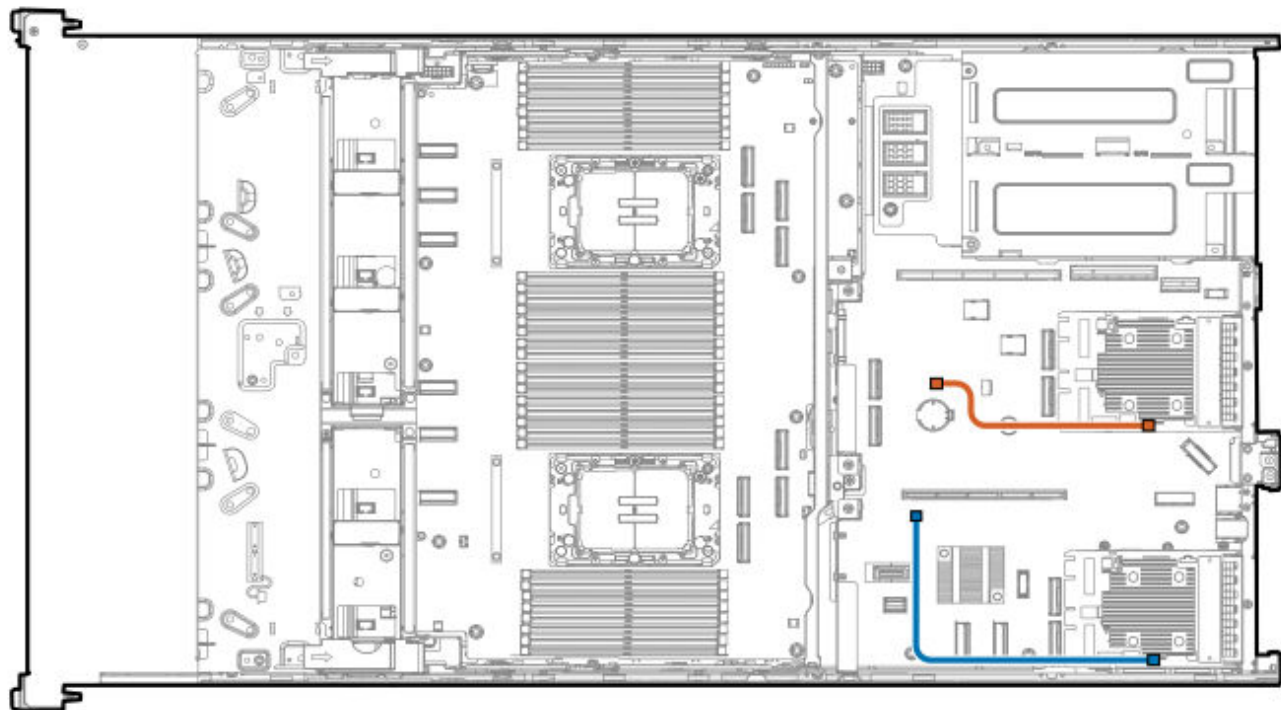
Storage controller backup power cabling

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

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

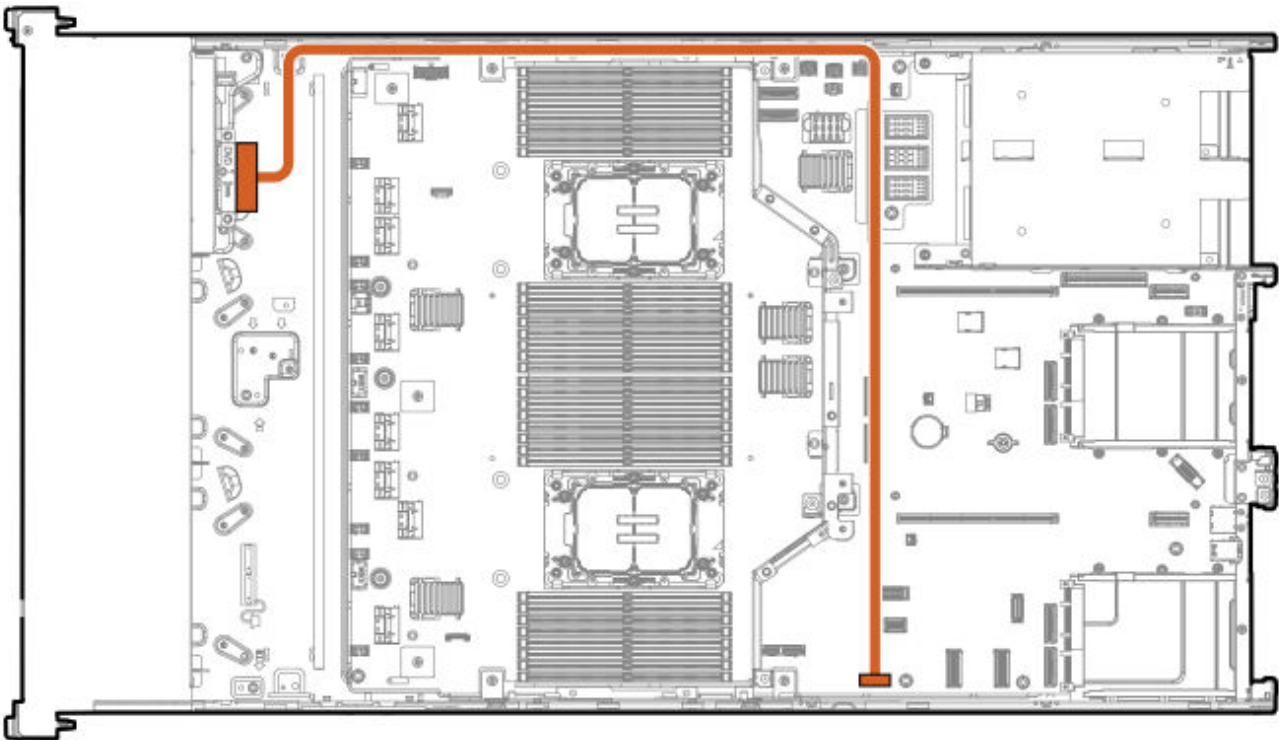
Use the following diagrams for reference only.

Storage controller backup power cabling from type-o storage controllers



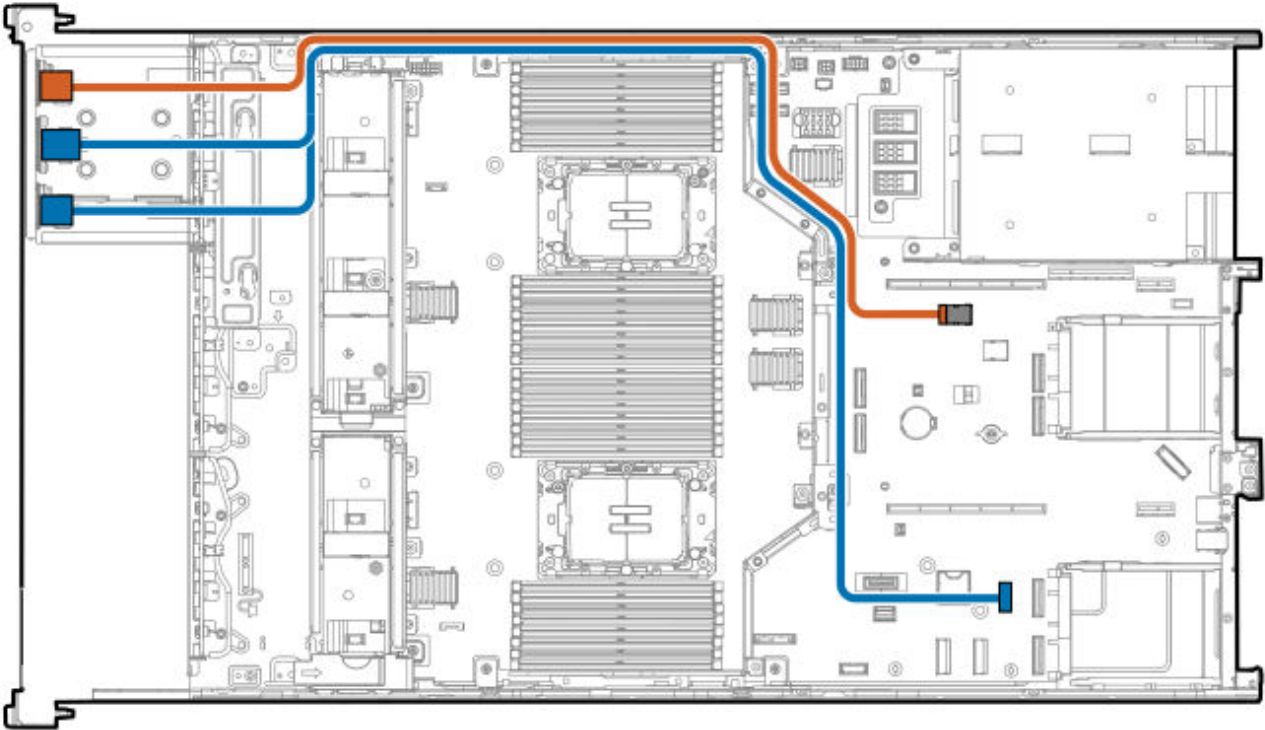
Color	From	To
Orange	Type-o controller in Slot 15	OCP slot 15 backup power connector
Blue	Type-o controller in Slot 14	OCP slot 14 backup power connector

Optical drive cabling



Cable part number	Color	From	To
P55376-001	Orange	Universal media bay	SATA optical port

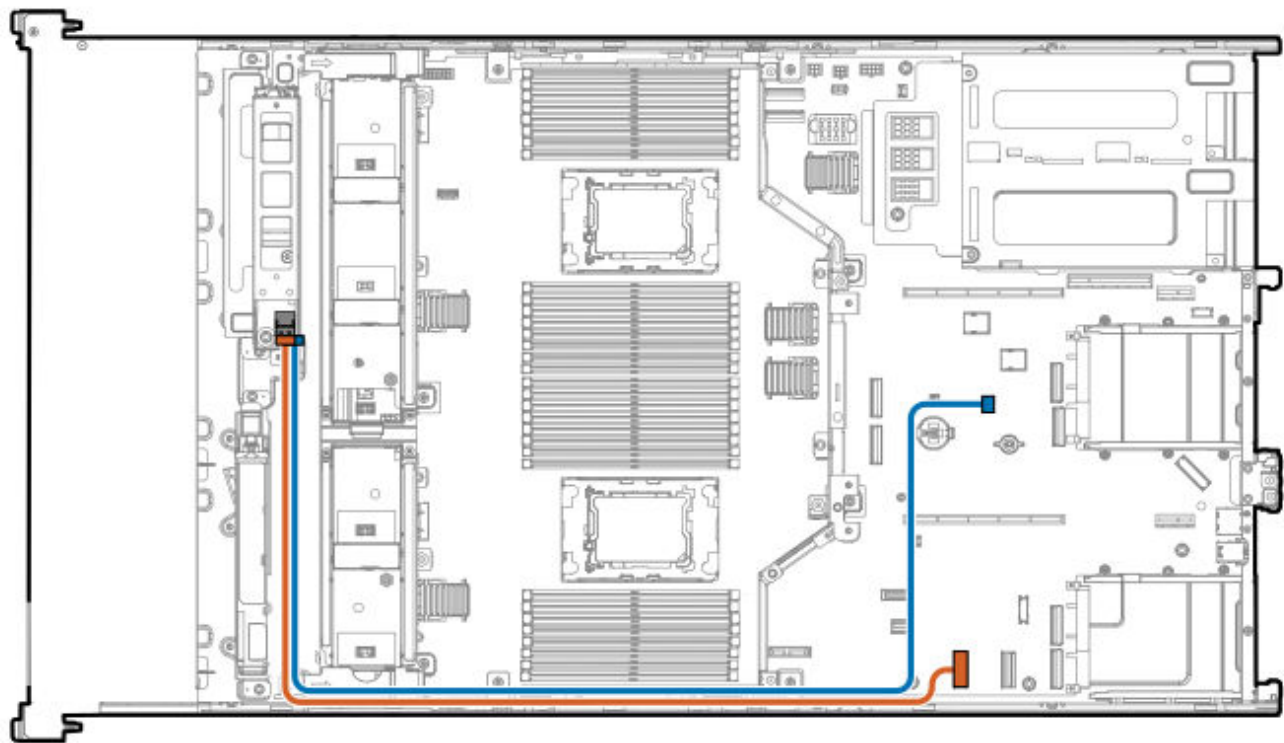
Universal media bay cabling



Cable part number	Color	From	To
P55373-001	Orange	Universal media bay	Single port USBs
P14314-001	Blue		Front DisplayPort/USB 2.0 connector

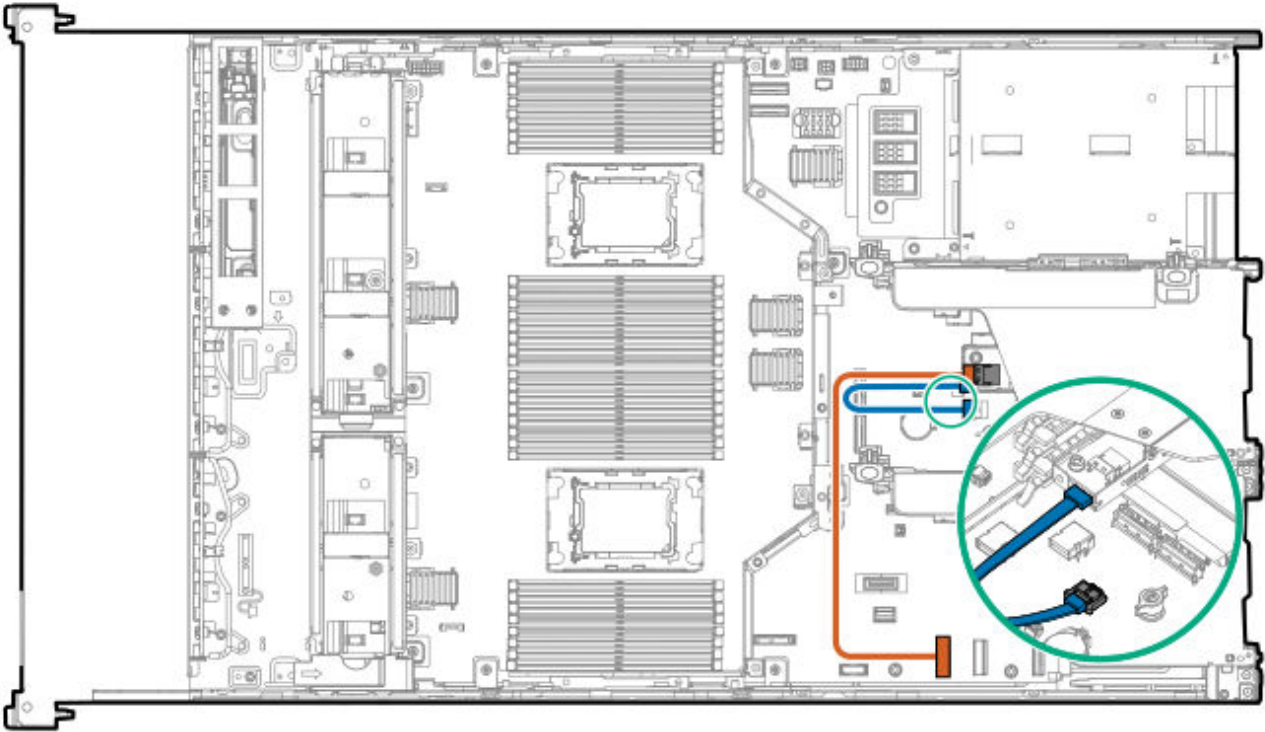
HPE NS204i-u Boot Device cabling

Front HPE NS204i-u Boot Device



Cable part number	Color	From	To
P54092-001	Orange	Boot device signal connector	PCH LP SlimSAS connector 1
P48956-001	Blue	Boot device power connector	NS204i-u power connector

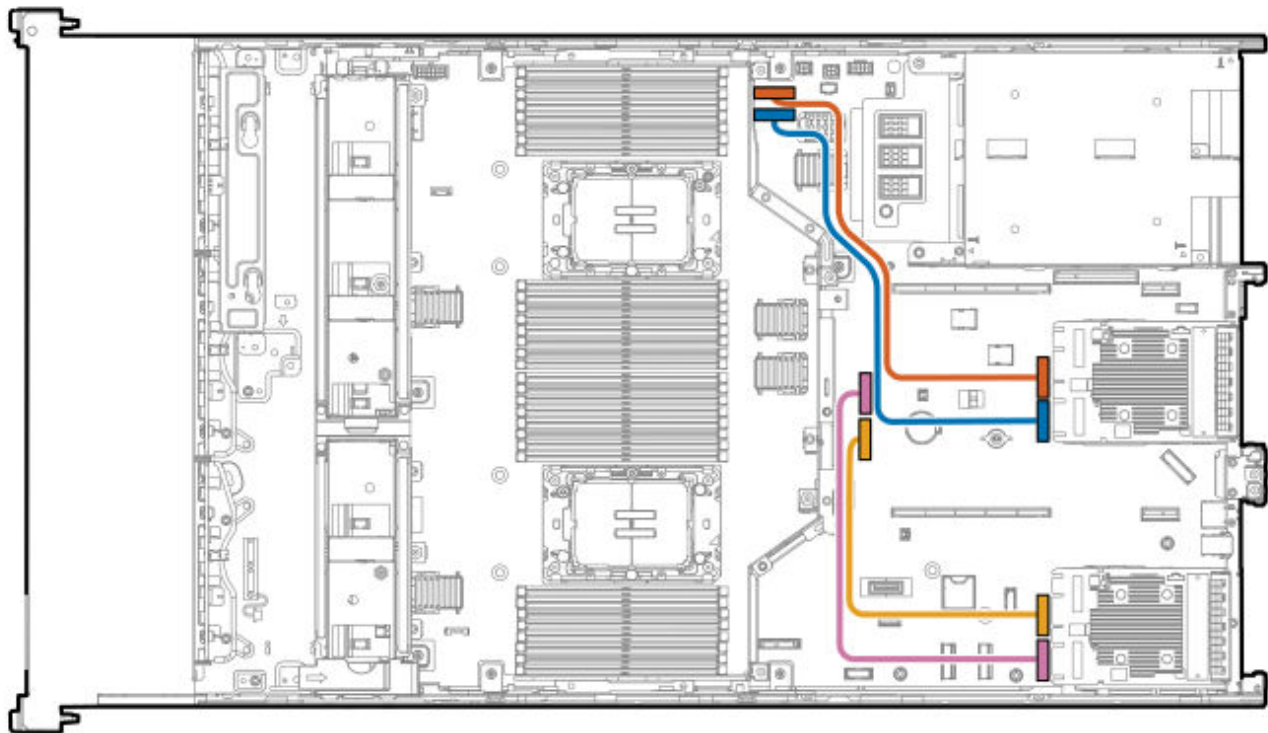
Rear HPE NS204i-u Boot Device



Cable part number	Color	From	To
P54092-001	Orange	Boot device signal connector	PCH LP SlimSAS connector 1
P54088-001	Blue	Boot device power connector	NS204i-u power connector

OCP bandwidth upgrade cabling

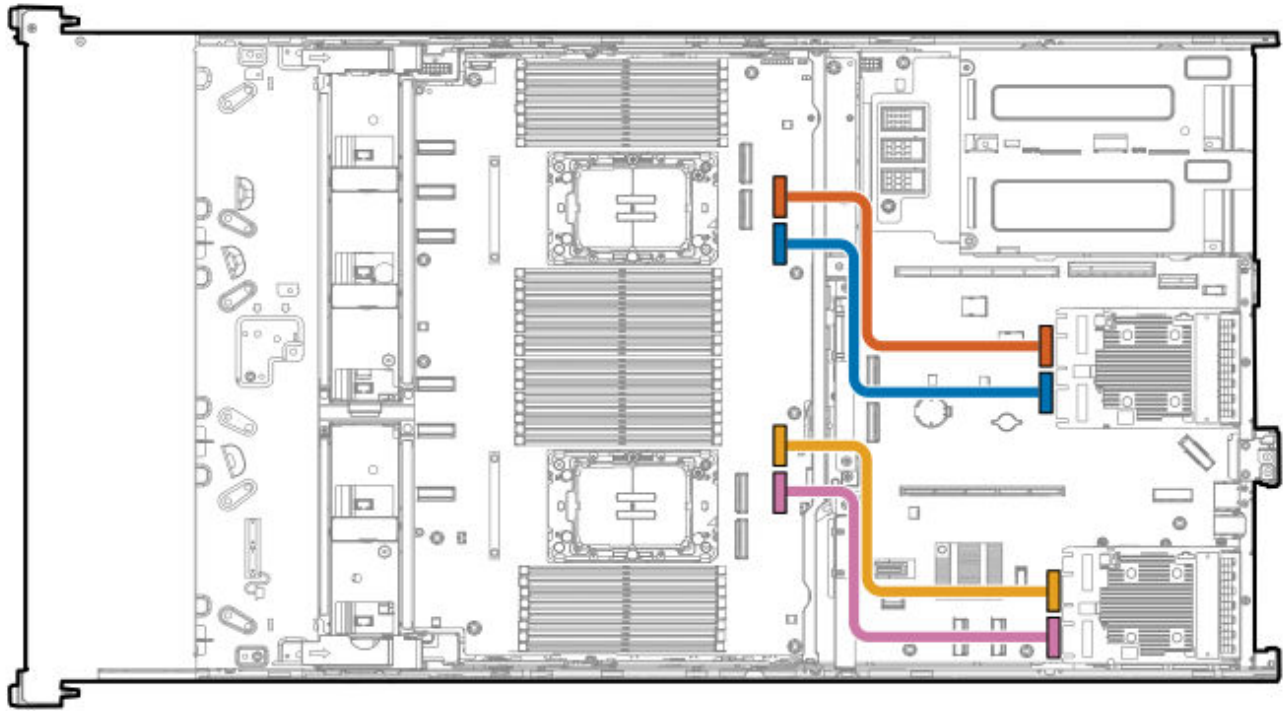
From the OCP NIC 3.0 adapter to the processor 1 or 2



Cable part number	Color	From	To
P55366-001	Orange	Slot 15 OCP port 1	Socket 2 MCIO connector 2
	Blue	Slot 15 OCP port 2	Socket 2 MCIO connector 1
	Pink	Slot 14 OCP port 1	Socket 1 MCIO connector 2
	Gold	Slot 14 OCP port 2	Socket 1 MCIO connector 1

From the OCP NIC 3.0 adapter to the processor 3 or 4

The processor 3 and 4 are located on the processor mezzanine board.



Cable part number	Color	From	To
P55367-001	Orange	Slot 15 OCP port 1	Socket 4 MCIO connector 9
	Blue	Slot 15 OCP port 2	Socket 4 MCIO connector 10
	Gold	Slot 14 OCP port 1	Socket 3 MCIO connector 11
	Pink	Slot 14 OCP port 2	Socket 3 MCIO connector 12

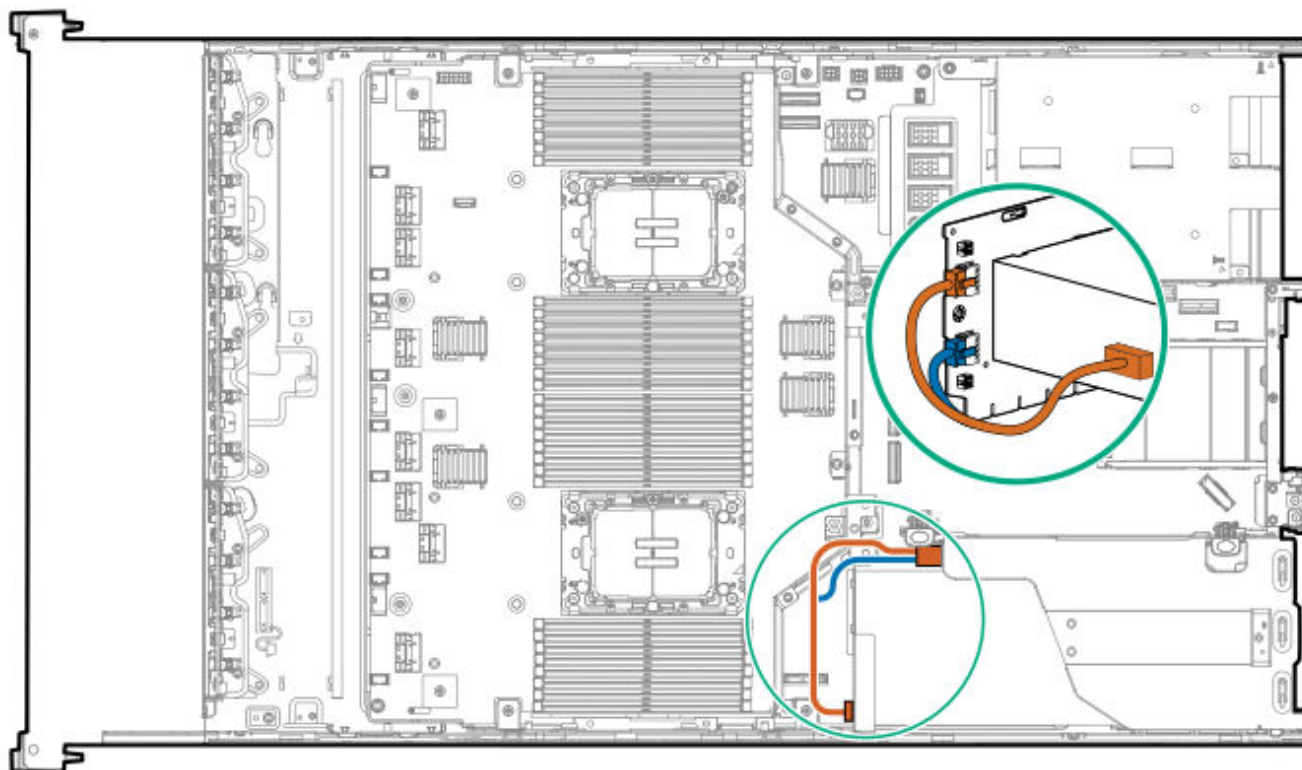
GPU auxiliary power cabling

The exact route of the GPU auxiliary power cabling will depend on the:

- The riser cage where the accelerator is installed.

- The location of the power connector on the accelerator.

Use the following diagrams for reference only.

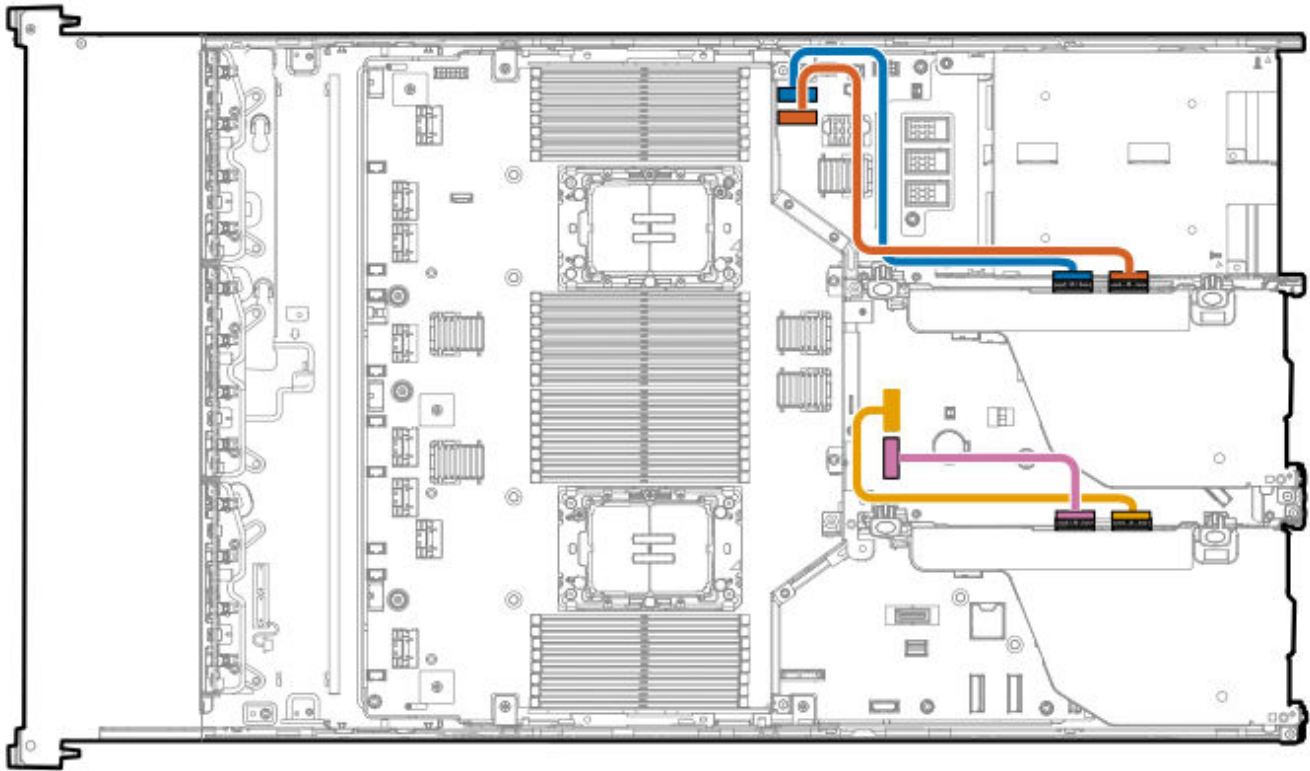


Cable part number	Color	From	To
P58422-001	Orange	Accelerator power connector	<u>GPU auxiliary power connector</u>
	Blue		<u>GPU signal connector</u>

Riser enablement cabling

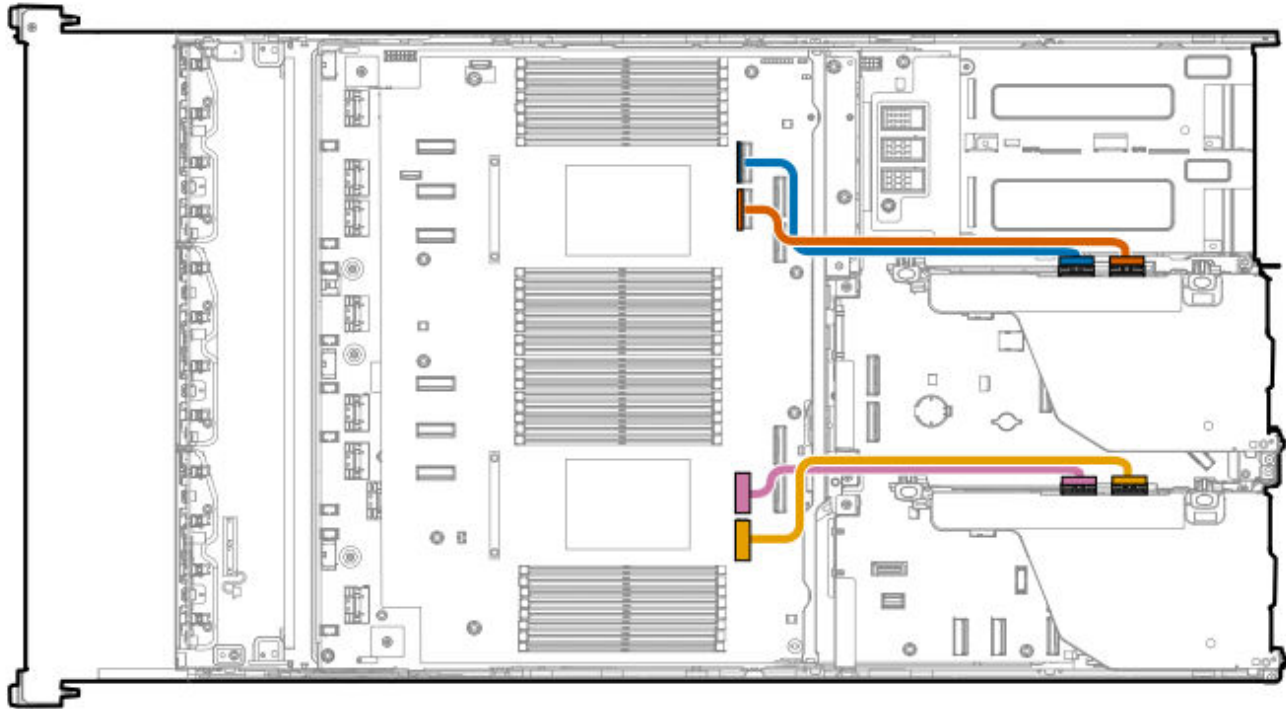
When the PCIe5 3 ×16 riser is installed, connecting the riser enablement cables is required to enable all the risers.

For the processors 1 and 2



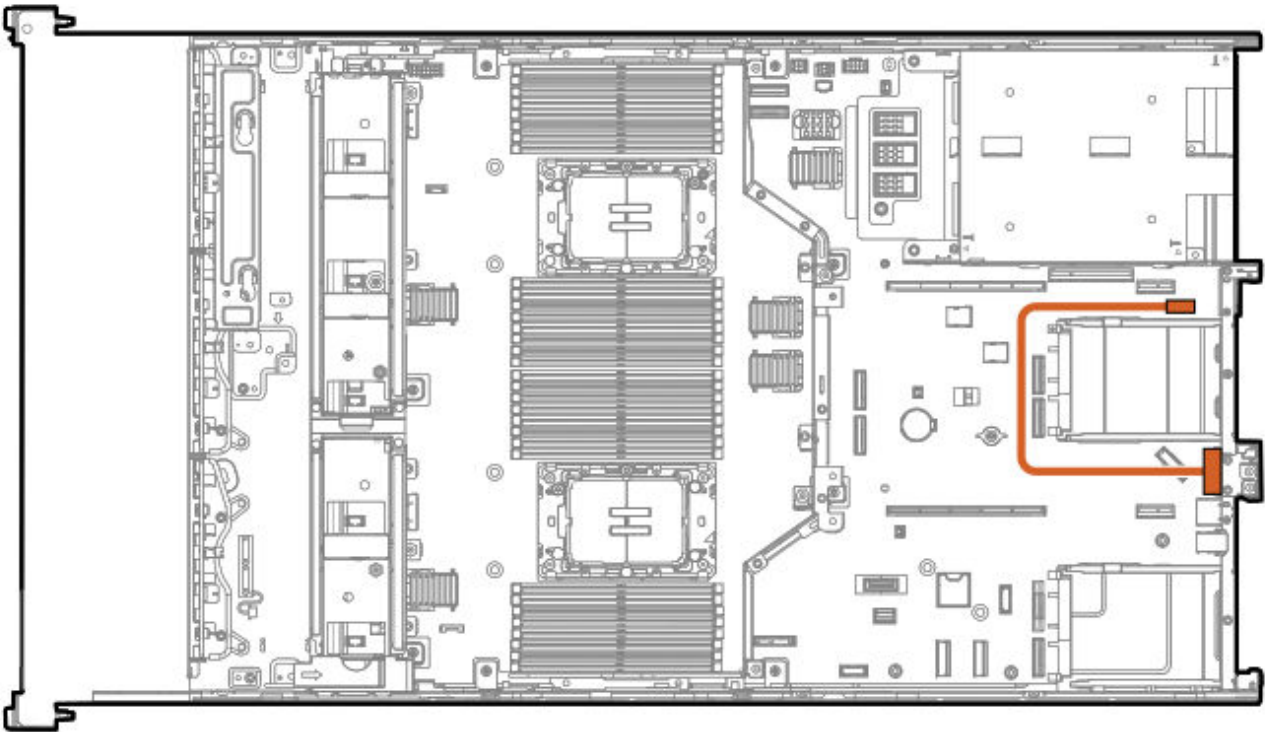
Cable part number	Color	From	To
P46034-001	Orange	LP SlimSAS connector 1 on the secondary riser	Socket 2 MCIO connector 1
	Blue	LP SlimSAS connector 2 on the secondary riser	Socket 2 MCIO connector 2
	Gold	LP SlimSAS connector 1 on the primary riser	Socket 1 MCIO connector 2
	Pink	LP SlimSAS connector 2 on the primary riser	Socket 1 MCIO connector 1

For the processors 3 and 4



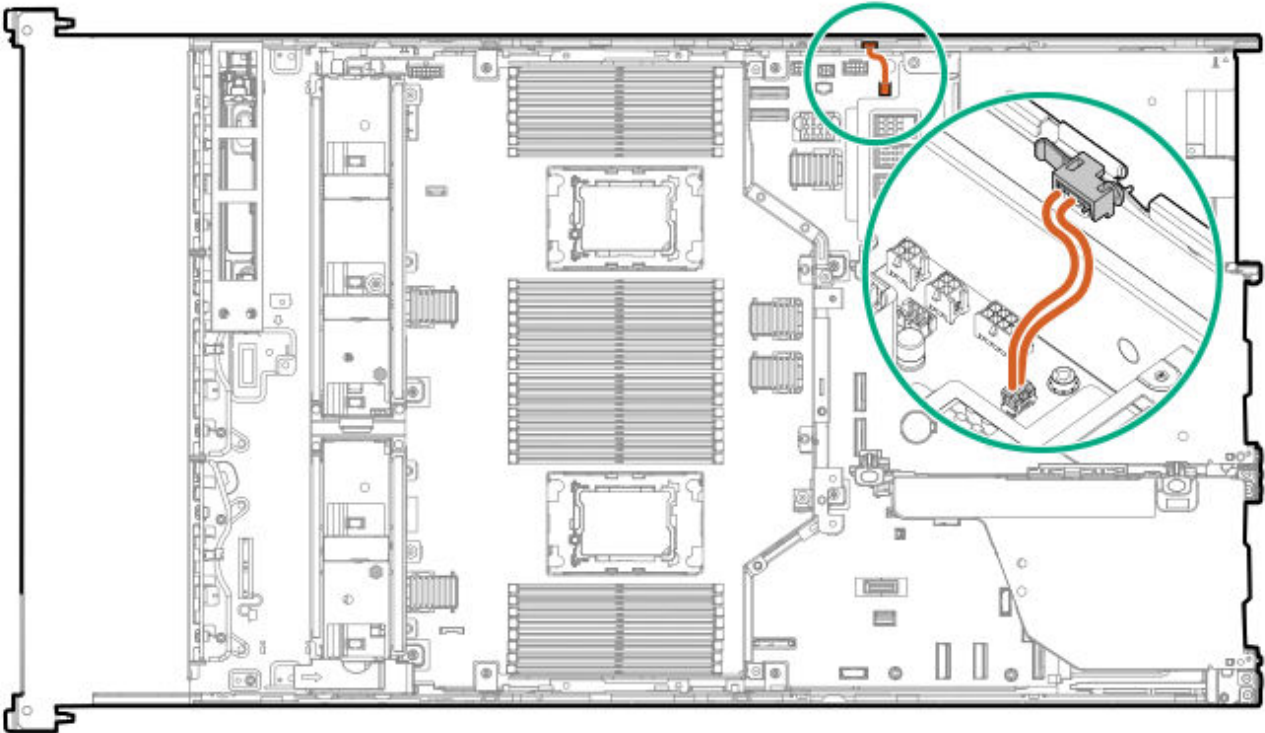
Cable part number	Color	From	To
P55340-001	Orange	LP SlimSAS connector 1 on the secondary riser	Socket 4 MCIO connector 8
	Blue	LP SlimSAS connector 2 on the secondary riser	Socket 4 MCIO connector 7
	Gold	LP SlimSAS connector 1 on the primary riser	Socket 3 MCIO connector 14
	Pink	LP SlimSAS connector 2 on the primary riser	Socket 3 MCIO connector 13

Serial port cabling



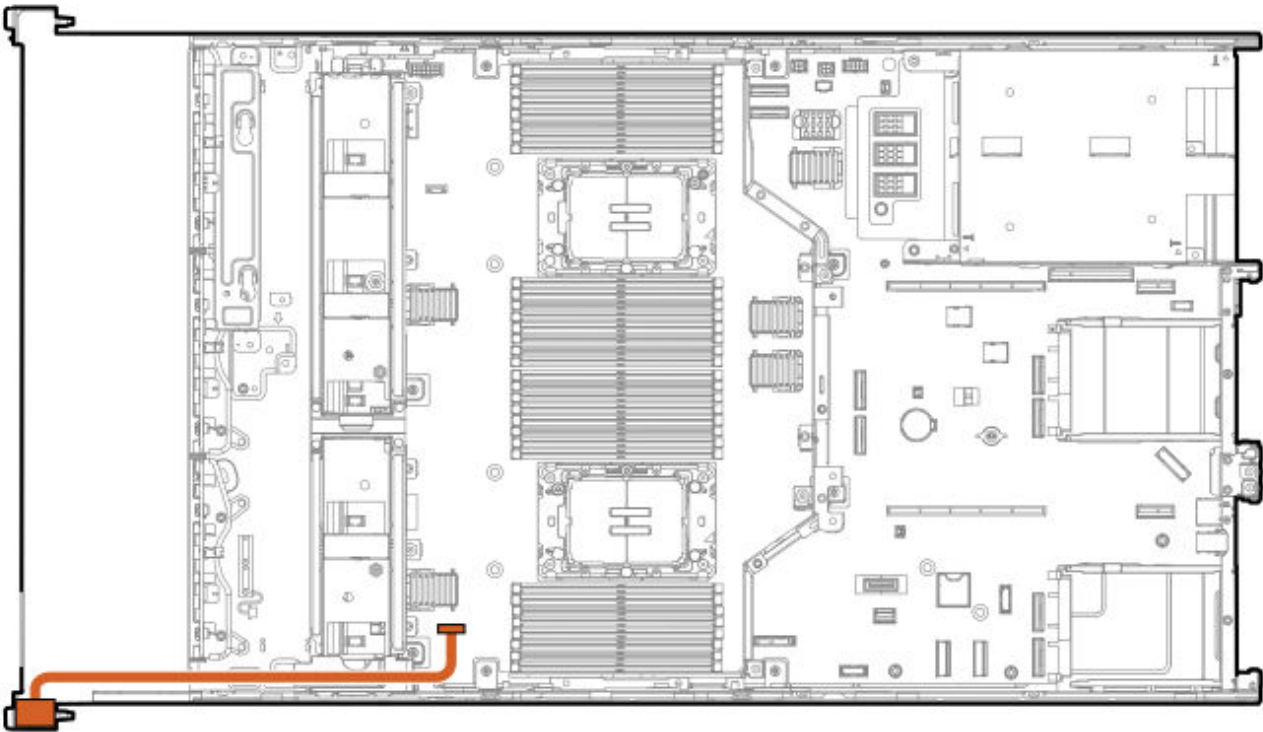
Cable part number	Color	From	To
P45623-001	Orange	Serial port	Serial port connector

Chassis intrusion detection switch cabling



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

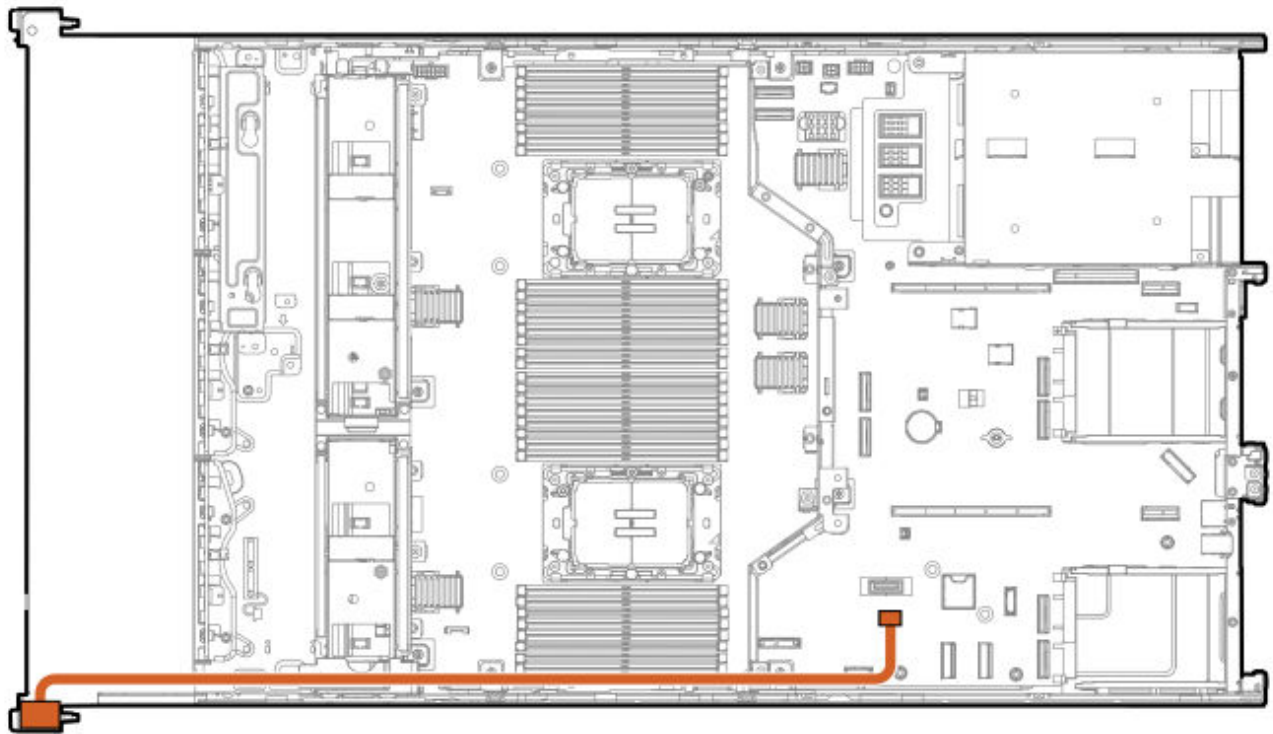
Power switch module / SID module cabling



Cable part number	Color	From	To
P55374-001	Orange	Right chassis ear	SID connector

Front I/O cabling

Front I/O cable is preinstalled in the server.



Cable part number	Color	From	To
P43727-001	Orange	Right chassis ear	Front I/O connector and USB 3.2 Gen1 port connector

Configuration resources

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

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

Subtopics

[Updating firmware or system ROM](#)

[Configuring the server](#)

[Configuring storage controllers](#)

[Deploying an OS](#)

[Configuring security](#)

[Server management](#)

[Managing Linux-based high performance compute clusters](#)

Updating firmware or system ROM

To	Use
Download service packs	• Service Pack for ProLiant (SPP) <u>https://www.hpe.com/servers/spp/download</u> • Get an overview of SPP and its ecosystem <u>https://www.hpe.com/support/SPP-overview-views-en</u>
Deploy service packs to a single server	Smart Update Manager (SUM) <u>https://www.hpe.com/support/hpesmartupdatemanager-quicklinks</u>
Deploy service packs to multiple servers	HPE OneView <u>https://www.hpe.com/support/hpeoneview-quicklinks</u>
Updating iLO or system firmware in a single server or multiple servers	HPE iLO <u>https://www.hpe.com/support/hpeilodocs-quicklinks</u>
• Enable policy-based management of server or server group firmware for distributed server infrastructure	HPE Compute Ops Management <u>https://www.hpe.com/support/hpe-gl-com-quicklinks</u>

To	Use
	• Monitor server compliance with a configured firmware baseline • Receive automatic iLO firmware updates • Receive baseline update alerts

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

To configure

Use

- 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 SR Gen11 controllers	- HPE SR Gen11 Controller User Guide https://hpe.com/support/SR-Gen11-UG - SR Gen11 controller RAID creation: https://www.hpe.com/support/SR-RAID-creation Configuration guides: - HPE Smart Storage Administrator GUI User Guide https://www.hpe.com/support/SSA-UG - HPE Smart Storage Administrator CLI User Guide https://www.hpe.com/support/SSACLI-UG
HPE MR controller user guides	- 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
HPE MR controller configuration guides	- HPE MR Storage Administrator User Guide https://www.hpe.com/support/MRSA - HPE StorCLI User Guide https://www.hpe.com/support/StorCLI - HPE StorCLI2 User Guide

<https://www.hpe.com/support/StorCLI2>

Intel VROC for HPE Gen11

- Intel Virtual RAID on CPU for HPE User Guide

<https://hpe.com/support/VROC-Gen11-UG>

- Intel VROC SATA RAID quick installation:

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

OS-specific configuration guides:

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

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

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

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

- Intel Volume Management Device Driver for VMware ESXi User Guide

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

Storage controller documents library<https://www.hpe.com/support/hpestoragecontrollerdocs-quicklinks>

Deploying an OS

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

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

To	See
Deploy an OS using HPE Compute Ops Management	HPE Compute Ops Management User Guide https://www.hpe.com/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 ProLiant Gen11 Servers and HPE Synergy https://www.hpe.com/support/UEFIGen11-UG-en
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide https://www.hpe.com/info/boot-from-san-configuration-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 6 Security Technology Brief https://www.hpe.com/support/ilo6-security-en
Configure and use the Server Configuration Lock feature on HPE Trusted Supply Chain servers and other	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy

To	See
r servers that have the Server Configuration Lock feature enabled.	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>

Troubleshooting

Subtopics

[NMI functionality](#)

[Troubleshooting resources](#)

NMI functionality

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

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

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

Troubleshooting resources

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

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

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

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

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

System battery replacement

If the server no longer automatically displays the correct date and time, then replace the battery that provides power to the real-time clock. Under normal use, battery life is 5–10 years.

Subtopics

[System battery information](#)

[Removing and replacing the system battery](#)

System battery information

The server contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery that provides power to the real-time clock.



WARNING

If this battery is not properly handled, a risk of fire or burning exists. To reduce the risk of personal injury:

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

Removing and replacing the system battery

Prerequisites

Before you perform this procedure, make sure that you have a small flat-bladed, nonconductive tool available.

About this task

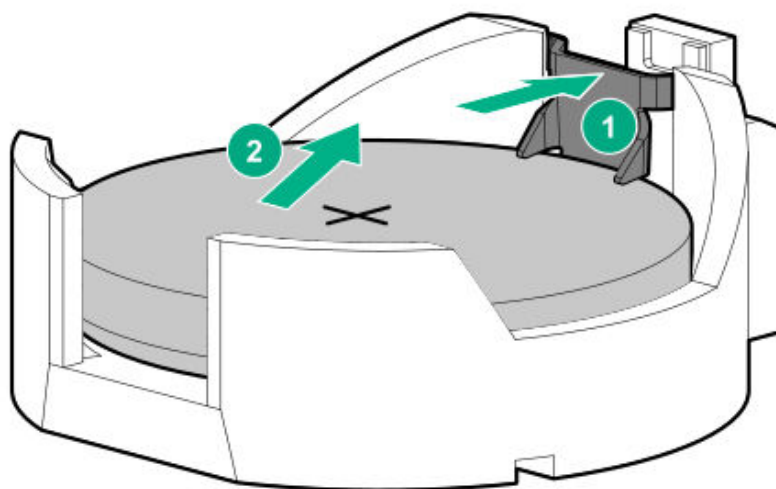


IMPORTANT

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

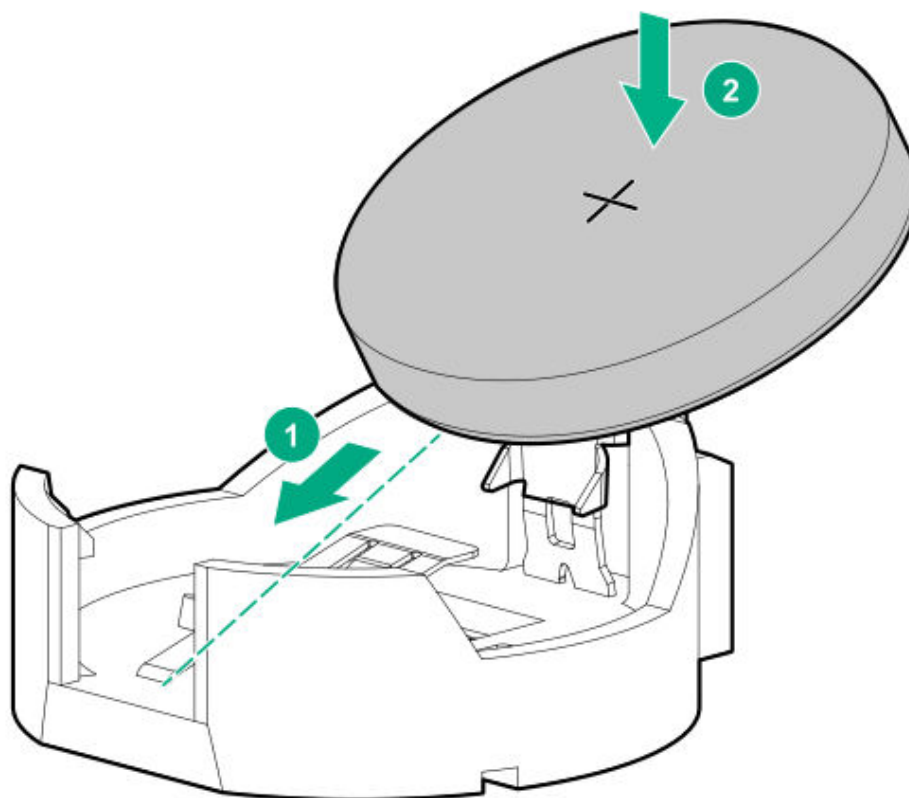
Procedure

1. Power down the server.
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the rack.
5. Place the server on a flat, level work surface.
6. Remove the access panel.
7. Locate the battery on the system board.
8. If the expansion card is installed, remove the secondary riser cage.
9. Remove the system battery:
 - a. Use a small flat-bladed, nonconductive tool to press the battery latch.
 - b. Remove the system battery from the socket.



.0. Install the system battery:

- a. With the side of the battery showing the "+" sign facing up, insert the battery into the socket.
- b. Press the system battery down until it clicks into place.



.1. If removed, install the secondary riser cage.

- .2. Install the access panel.
- .3. Install the server into the rack.
- .4. Connect all peripheral cables to the server.
- .5. Connect each power cord to the server.
- .6. Connect each power cord to the power source.
- .7. Wait for 10 minutes for the server to reset and reinitialize the iLO configuration settings stored in SRAM.



IMPORTANT

If iLO security is disabled, the configuration will not be restored. To restore the configuration manually, see <https://www.hpe.com/support/hpeilodocs-quicklinks>.

- .8. Power up the server.
- .9. Properly dispose of the old battery.

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

Results

The installation procedure is complete.

Safety, warranty, and regulatory information

Subtopics

[Regulatory information](#)

[Warranty information](#)

Regulatory information

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

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

Additional regulatory information

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

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

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

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

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

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

Subtopics

[Notices for Eurasian Economic Union](#)

[Turkey RoHS material content declaration](#)

[Ukraine RoHS material content declaration](#)

Notices for Eurasian Economic Union



Manufacturer and Local Representative Information

Manufacturer information:

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

Local representative information Russian:

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

Local representative information Kazakh:

- **Russia**

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

- **Kazakhstan**

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

Manufacturing date:

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (product serial number format)

WW = Week of manufacture (calendar week)
Y = Year of manufacture (decade, year)

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

Turkey RoHS material content declaration

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

Ukraine RoHS material content declaration

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

Warranty information

To view the warranty information for your product, see the [warranty check tool](#).

Specifications

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

Subtopics

[Environmental specifications](#)

[Mechanical specifications](#)

[Power supply specifications](#)

Environmental specifications

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

Specifications	Value
	Maximum allowable altitude change rate is 457 m/min (1,500 ft/min).

Standard operating support

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

System performance during standard operating support might be reduced if operating above 30°C (86°F).

Extended ambient operating support

For approved hardware configurations, the supported system inlet range is extended to be:

- 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2,953 ft) to a maximum of 3,050 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 (2,953 ft) to a maximum of 3,050 m (10,000 ft).

The approved hardware configurations for this system are listed in the Extended Ambient Temperature Guidelines for Gen11 HPE ProLiant servers:

<https://www.hpe.com/support/ASHRAEGen11>

Mechanical specifications

Specification	Value
Dimensions	—
Height	8.75 cm (3.44 in)
Depth	80.66 cm (31.76 in)
Width	43.31 cm (17.05 in)
Weight, approximate values	—
Minimum, air cooling configuration	21.08 kg (46.47 lb)
Maximum, air cooling configuration	38.02 kg (83.82 lb)
Minimum, liquid cooling configuration	26.83 kg (59.15 lb)
Maximum, liquid cooling configuration	36.93 kg (81.42 lb)

Power supply specifications

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

Subtopics

[**HPE 800 W Flex Slot Platinum Hot-plug Low Halogen Power Supply**](#)

[**HPE 1000 W Flex Slot Titanium Hot-plug Power Supply**](#)

[**HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply**](#)

[**HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply**](#)

[**HPE 1800-2200 W Flex Slot Titanium Power Supply**](#)

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

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	9.4 A at 100 VAC 4.5 A at 200 VAC 3.8 A at 240 VDC for China only
Maximum rated input power	940 W at 100 VAC 900 W at 200 VAC 897 W at 240 VDC for China only
BTUs per hour	3067 at 100 VAC 2958 at 200 VAC

Specification	Value
	2949 at 240 VAC for China only
Power supply output	—
Rated steady-state power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only

HPE 1000 W Flex Slot Titanium Hot-plug Power Supply

Specification	Value
Input requirements	—
Rated input voltage	100 VAC to 127 VAC 200 VAC to 240 VAC 240 VDC for China
Rated input frequency	50 Hz to 60 Hz
Rated input current	11.3 A at 100 VAC 6.1 A at 200 VAC
Maximum rated input power	1130 W at 100 VAC 1090 W at 200 VAC
BTUs per hour	3764 at 100 VAC 3629 at 200 VAC
Power supply output	—
Rated steady-state power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC input
Maximum peak power	1000 W at 100 VAC to 127 VAC

Specification	Value
	1000 W at 200 VAC to 240 VAC

HPE 1600 W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.7 A at 200 VAC 7.5 A at 230 VAC 7.2 A at 240 VDC
Maximum rated input power	1734 W at 200 VAC 1720 W at 240 VAC
BTUs per hour	5918 at 200 VAC 5891 at 230 VAC
Power supply output	—
Rated steady-state power	1600 W at 200 VAC to 240 VAC input 1600 W at 240 VDC input
Maximum peak power	1600 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

HPE 1600 W Flex Slot -48 VDC Hot-plug Power Supply

Specification	Value
Input requirements	—
Rated input voltage	-40 VDC to -72 VDC
Rated input frequency	DC
Nominal input current	45 A DC at -40 VDC input 36.6 A DC at -48 VDC input 24.4 A DC at -72 VDC input
Maximum Rated Input Wattage Rating	1798 W at -40 VDC input 1758 W at -48 VDC input 1755 W at -72 VDC input
BTUs per hour	6026 at -40 VDC input 6000 at -48 VDC input 5989 at -72 VDC input
Power supply output	—
Rated steady-state power	1600 W at -40 VDC to -72 VDC
Maximum peak power	1600 W at -40 VDC to -72 VDC

HPE 1800-2200 W Flex Slot Titanium Power Supply

Specification	Value
Input requirements	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	10 A at 200 VAC 10 A at 240 VAC

Specification	Value
	10 A at 240 VDC for China only
Maximum rated input power	1946 W at 200 VAC 2375 W at 240 VAC 2375 W at 240 VDC for China only
BTUs per hour	6497 at 200 VAC 7962 at 240 VAC
Power supply output	—
Rated steady-state power	1800 W at 200 VAC 2200 W at 240 VAC
Maximum peak power	2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

Websites

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

General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

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

Product white papers and analyst reports

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

For additional websites, see [Support and other resources](#).

Product websites

HPE ProLiant DL560 Gen11 user documents

<https://www.hpe.com/info/DL560Gen11-docs>

Support and other resources

Subtopics

Accessing Hewlett Packard Enterprise Support

HPE product registration

Accessing updates

Customer self repair

Remote support

Documentation feedback

Accessing Hewlett Packard Enterprise Support

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

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

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

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

Information to collect

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

HPE product registration

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

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

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

Accessing updates

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

Hewlett Packard Enterprise Support Center

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

My HPE Software Center

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

- To subscribe to eNewsletters and alerts:

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

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

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



IMPORTANT

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

Customer self repair

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

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

Remote support

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

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

HPE Get Connected

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

HPE Tech Care Service

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

HPE Complete Care Service

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

Documentation feedback

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