Hewlett Packard
Enterprise

HPE ProLiant DL380 Gen11 Server User Guide

Part Number: 30-ABE7B3E0-011
Published: June 2024
Edition: 11

HPE ProLiant DL380 Gen11 Server 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.

Part Number: 30-ABE7B3E0-011
Published: June 2024
Edition: 11

© Copyright –2024 Hewlett Packard Enterprise Development LP

Notices

The information contained herein is subject to change without notice. The only warranties for Hewlett Packard Enterprise products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. Hewlett Packard Enterprise shall not be liable for technical or editorial errors or omissions contained herein.

Confidential computer software. Valid license from Hewlett Packard Enterprise required for possession, use, or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Links to third-party websites take you outside the Hewlett Packard Enterprise website. Hewlett Packard Enterprise has no control over and is not responsible for information outside the Hewlett Packard Enterprise website.

Acknowledgments

Intel®, Itanium®, Optane™, Pentium®, Xeon®, Intel Inside®, and the Intel Inside logo are trademarks of Intel Corporation or its subsidiaries.

Microsoft® and Windows® are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

VMware ESXi™ and VMware vSphere® are registered trademarks or trademarks of VMware, Inc. in the United States and/or other jurisdictions.

Red Hat® Enterprise Linux is a registered trademark of Red Hat, Inc. in the United States and other countries.

microSD® is a trademark or a registered trademark of SD-3D in the United States, other countries of both.

Kensington® is a registered trademark of ACCO Brands.

All third-party marks are property of their respective owners.

Table of contents

- Component identification
  - Front panel components
  - Front panel LEDs and buttons
    - UID button functionality
    - Front panel LED power fault codes
    - Systems Insight Display LEDs
    - Systems Insight Display combined LED descriptions
  - Rear panel components
  - Rear panel LEDs
  - System board components
    - System maintenance switch descriptions
    - DIMM label identification
    - DIMM slot locations
    - Heatsink and processor socket components
  - HPE Basic Drive LED definitions
  - EDSFF SSD LED definitions
  - Drive boxes and numbering
  - HPE NS204i-u Boot Device components
  - HPE NS204i-u Boot Device LED definitions
- Setup
  - Optional services
  - Setting up the server
    - Operational requirements
      - Space and airflow requirements
      - Temperature requirements
      - Power requirements
      - Electrical grounding requirements
    - Rack warnings and cautions
    - Server warnings and cautions
    - Electrostatic discharge
  - HPE product registration
- Operations
  - Power up the server
  - Power down the server
  - Extend the server from the rack
  - Remove the server from the rack
  - Remove the bezel
  - Remove the access panel
  - Installing the access panel

    - Remove the fan cage
    - Install the fan cage
    - Remove the air baffle or midplane drive cage
    - Install the air baffle
    - Remove the riser cage
    - Releasing the cable management arm
    - Accessing the Systems Insight Display
- Hardware options installation
    - Introduction
    - Hewlett Packard Enterprise product QuickSpecs
    - Server data backup
    - Controllers
        - Installing a type-o storage controller
        - Installing a type-p storage controller
    - Cooling
        - Fan mode behavior
        - Installing high-performance fans
    - Drive cage options
        - Installing a front 8SFF drive cage
        - Installing a front 2SFF side-by-side drive cage
        - Installing a front 2SFF stacked drive cage
        - Installing a midplane drive cage
        - Installing a rear 2SFF stacked drive cage
    - Drives
        - Drive guidelines
        - Installing a hot-plug LFF/SFF SAS, SATA or NVMe drive
        - Installing an E3.S drive
    - Energy pack options
        - Minimum firmware versions
        - HPE Smart Storage Battery
        - HPE Smart Storage Hybrid Capacitor
        - Installing a smart storage battery/capacitor
    - Management
        - Installing the Systems Insight Display
        - Installing a rear serial port interface
    - Memory
        - Memory population information
        - DIMM-processor compatibility
        - Installing a DIMM
    - Networking
        - Installing an OCP network adapter

        - Installing a PCIe network adapter
    - Optical drives and media bays
        - Installing a universal media bay in the SFF chassis
        - Installing a universal media bay in the LFF chassis
        - Installing the optical disc drive in the SFF universal media bay
        - Installing the optical disc drive in the LFF universal media bay
    - OS boot device
        - Installing boot device drives
        - Installing the HPE NS204i Boot Device
    - Power supply options
        - Power supply warnings and cautions
        - Hot-plug power supply calculations
        - Installing an AC power supply
        - DC power supply warnings and cautions
        - Connecting a DC power cable to a DC power source
        - DC power supply wire colors
        - Installing a DC power supply
    - Processor and heatsink options
        - Processor cautions
        - Installing the processor
        - Connecting the direct liquid cooling kit
    - Rack mounting options
        - Rack mounting interfaces
        - Rack rail options
        - Rail identification markers
        - Installing the rack rails
        - Installing the server into the rack
        - Installing the rack rail hook-and-loop strap
        - Installing the cable management arm
    - Riser and riser cage options
        - PCIe5 slot description
        - Supported PCIe form factors
        - Installing expansion boards
        - Installing a secondary riser cage
        - Installing a tertiary riser cage
        - Installing an accelerator or GPU
        - Installing a rear 2 SFF riser cage
        - Installing a rear 2LFF riser cage
        - Installing primary and secondary risers
        - Installing tertiary risers
    - Security

        - Installing the bezel
        - Installing the chassis intrusion detection switch
        - Trusted Platform Module 2.0 guidelines
            - BitLocker recovery key/password retention guidelines
- Cabling
    - Cabling guidelines
    - Cabling diagrams
        - EDSFF cabling
        - 8 SFF box 1 cabling
        - 8 SFF box 2 cabling
        - 8 SFF box 3 cabling
        - Mid 8 SFF cabling
        - Front 2 SFF cabling
        - Rear 2 SFF cabling
        - LFF cabling
        - Riser enablement cabling
        - Power cabling
        - GPU cabling
        - NS204i-u boot device cabling
        - OCP bandwidth enablement
        - Systems Insight Display cabling
        - I/O cabling
        - Front power switch cabling
        - Serial port cabling
- Configuration resources
    - Updating firmware or system ROM
    - Configuring the server
    - Configuring storage controllers
    - Managing the HPE NS204i Boot Device
    - Deploying an OS
    - Configuring security
    - Optimizing the server
    - Server management
    - Managing Linux-based high performance compute clusters
- Troubleshooting
    - NMI functionality
    - Troubleshooting resources
- Specifications
    - Environmental specifications
    - Mechanical specifications
    - Power supply specifications

        - 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
    - Hot-plug power supply calculations
- Websites
- Support and other resources
    - Accessing Hewlett Packard Enterprise Support
    - Accessing updates
    - Remote support
    - Warranty information
    - Regulatory information
    - Documentation feedback

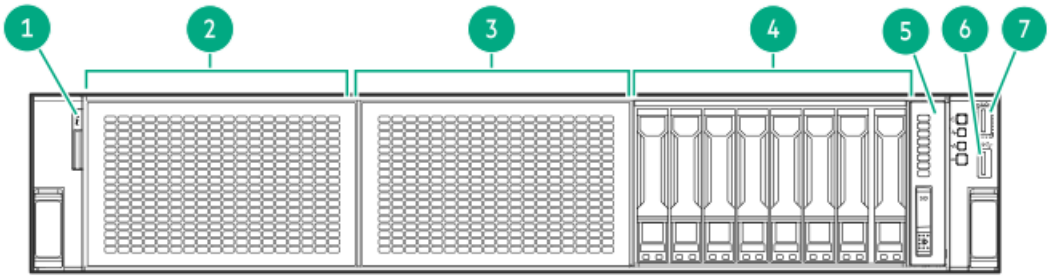
Component identification

Subtopics

- Front panel components
- Front panel LEDs and buttons
- Rear panel components
- Rear panel LEDs
- System board components
- HPE Basic Drive LED definitions
- EDSFF SSD LED definitions
- Drive boxes and numbering
- HPE NS204i-u Boot Device components
- HPE NS204i-u Boot Device LED definitions

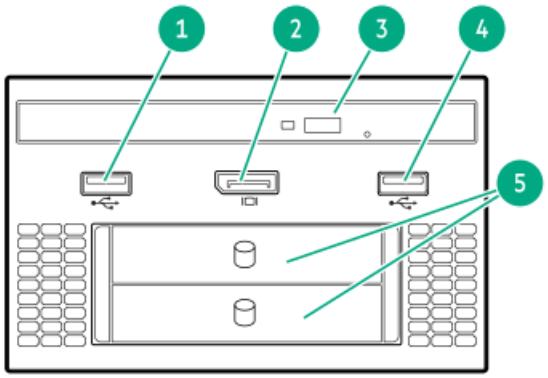
Front panel components

SFF front panel components



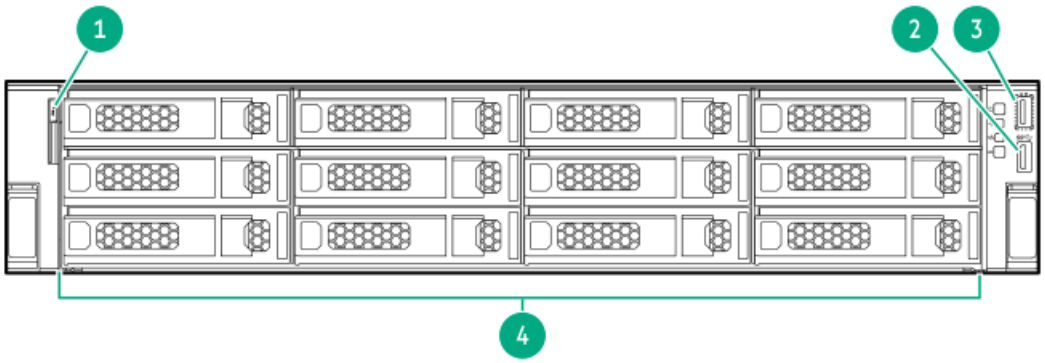
Item	Description
1	Serial number/iLO information pull tab
2	8 SFF drives or universal media bay (optional)
3	8 SFF drives (optional)
4	8 SFF drives
5	Systems Insight Display (optional)
6	USB 3.2 Gen 1 port
7	iLO Service Port

SFF media bay components



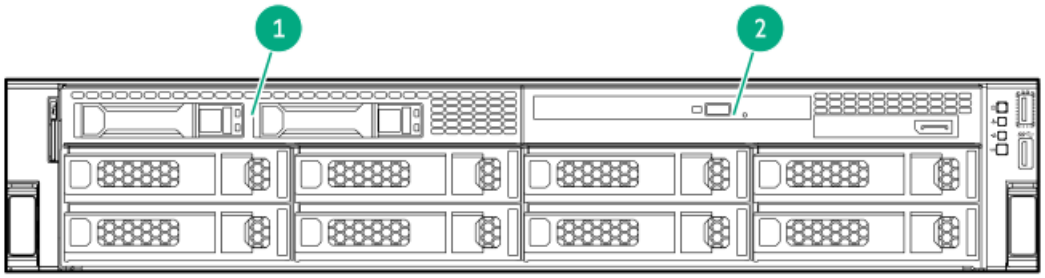
Item	Description
1	USB 2.0 port
2	DisplayPort 1.1a
3	Optical disc drive (optional)
4	USB 2.0 port
5	Front 2 SFF stacked drives (optional)

12 LFF front panel components



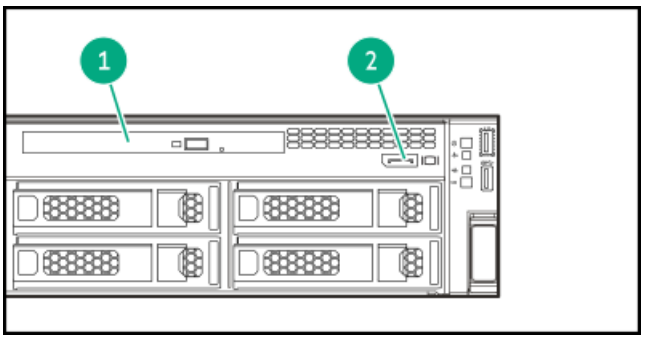
Item	Description
1	Serial number/iLO information pull tab
2	USB 3.2 Gen 1 port
3	iLO Service Port
4	LFF drives

8 LFF front panel components



Item	Description
1	2 SFF side by side drives (optional)
2	LFF media bay

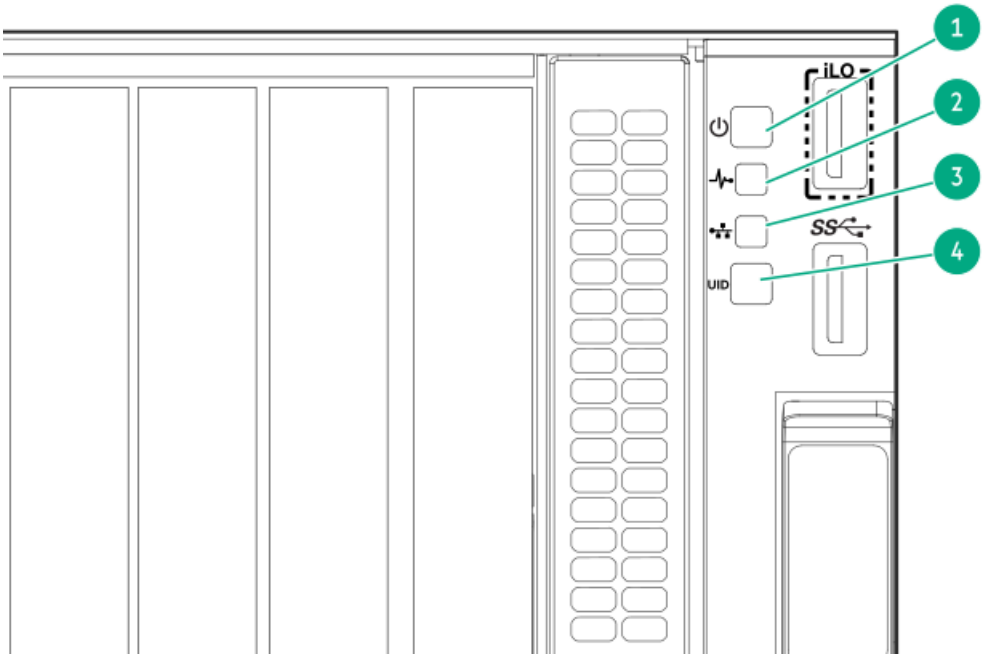
LFF media bay components



Item	Description
1	Optical disk drive
2	DisplayPort 1.1a

Front panel LEDs and buttons

SFF

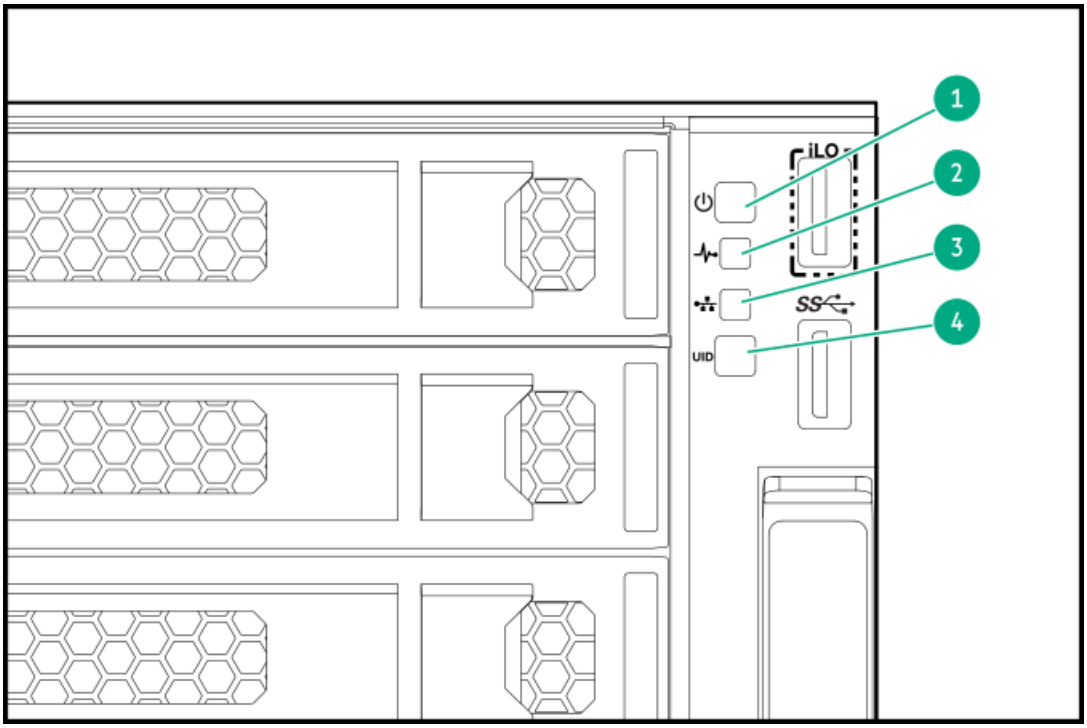


Item	Description	Status
1	Power On/Standby button and system power LED [1]	• Solid green = System on • Flashing green (1 Hz/cycle per sec) = Performing power on sequence • Solid amber = System in standby • Off = No power present [2]
2	Health LED [1]	• Solid green = Normal • Flashing green (1 Hz/cycle per sec) = iLO is rebooting • Flashing amber = System degraded • Flashing red (1 Hz/cycle per sec) = System critical [3]
3	NIC status LED [1]	• Solid green = Link to network • Flashing green (1 Hz/cycle per sec) = Network active • Off = No network activity

4	UID button/LED [1]	• Solid blue = Activated
		• Flashing blue:
		  ○ 1 Hz/cycle per sec = Remote management or firmware upgrade in progress
		  ○ 4 Hz/cycle per sec = iLO manual reboot sequence initiated
		  ○ 8 Hz/cycle per sec = iLO manual reboot sequence in progress
		  ○ Off = Deactivated

1 When all four LEDs described in this table flash simultaneously, a power fault has occurred.
2 Facility power is not present, the power cord is not attached, no power supplies are installed, power supply failure has occurred, or the power button cable is disconnected.
3 If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

LFF


iLO
1
2
3
4
UID

Item	Description	Status
1	Power On/Standby button and system power LED [1]	• Solid green = System on • Flashing green (1 Hz/cycle per sec) = Performing power on sequence • Solid amber = System in standby • Off = No power present [2]
2	Health LED [1]	• Solid green = Normal • Flashing green (1 Hz/cycle per sec) = iLO is rebooting • Flashing amber = System degraded • Flashing red (1 Hz/cycle per sec) = System critical [3]
3	NIC status LED [1]	• Solid green = Link to network • Flashing green (1 Hz/cycle per sec) = Network active • Off = No network activity

4	UID button/LED [1]	• Solid blue = Activated
		• Flashing blue:
		  ○ 1 Hz/cycle per sec = Remote management or firmware upgrade in progress
		  ○ 4 Hz/cycle per sec = iLO manual reboot sequence initiated
		  ○ 8 Hz/cycle per sec = iLO manual reboot sequence in progress
		  ○ Off = Deactivated

1 When all four LEDs described in this table flash simultaneously, a power fault has occurred.
2 Facility power is not present, the power cord is not attached, no power supplies are installed, power supply failure has occurred, or the power button cable is disconnected.
3 If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

Subtopics

UID button functionality
Front panel LED power fault codes
Systems Insight Display LEDs
Systems Insight Display combined LED descriptions

UID button functionality

The UID button can be used to identify a specific server in a rack or display the Server Health Summary when the server will not power on. For more information, see the latest HPE iLO User Guide on the **Hewlett Packard Enterprise website**.

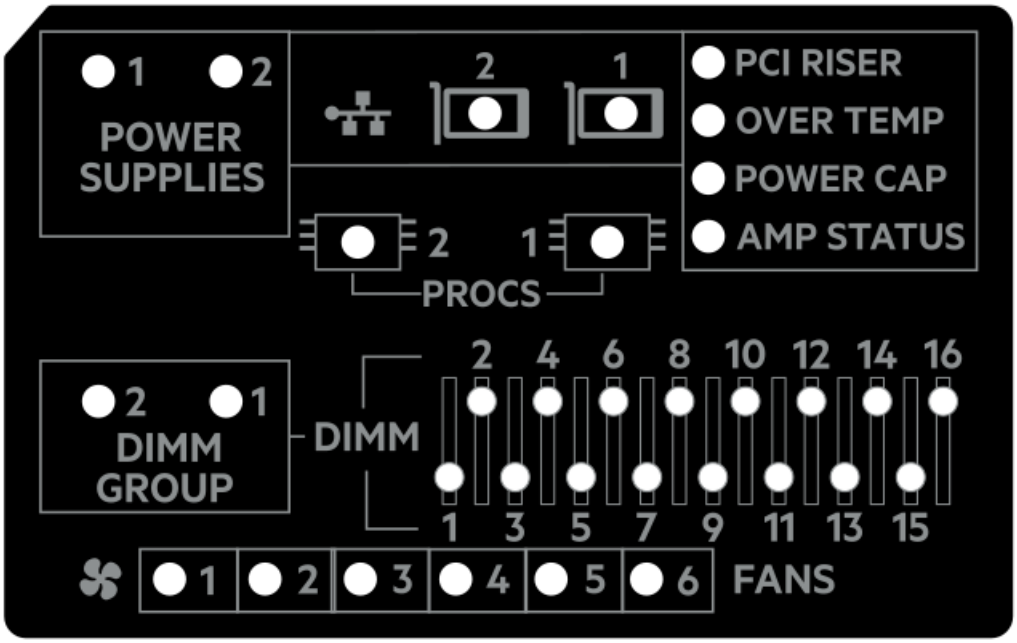
Front panel LED power fault codes

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

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

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 [1]	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
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 latest **UEFI System Utilities user guide**.

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:

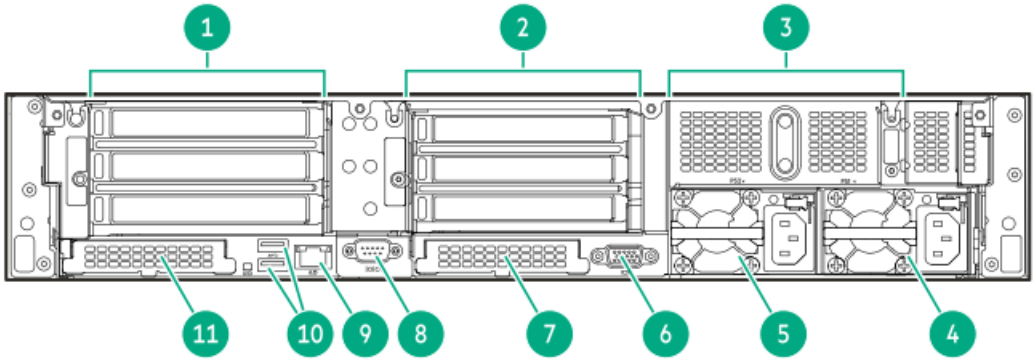
- Systems Insight Display LEDs
- System power LED
- Health LED

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. • 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.
Power cap (flashing amber)	—	Amber	Power is not available.

IMPORTANT

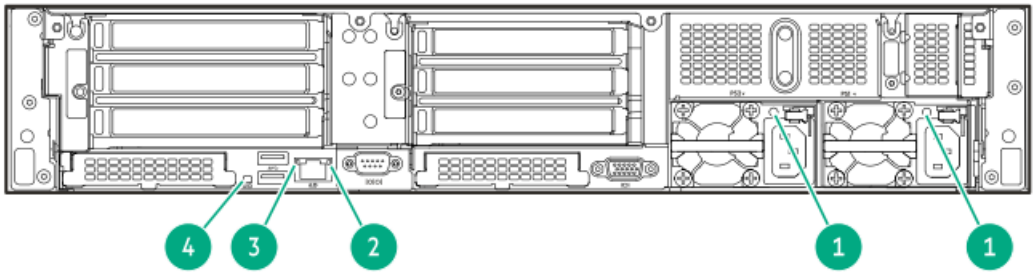
If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

Rear panel components



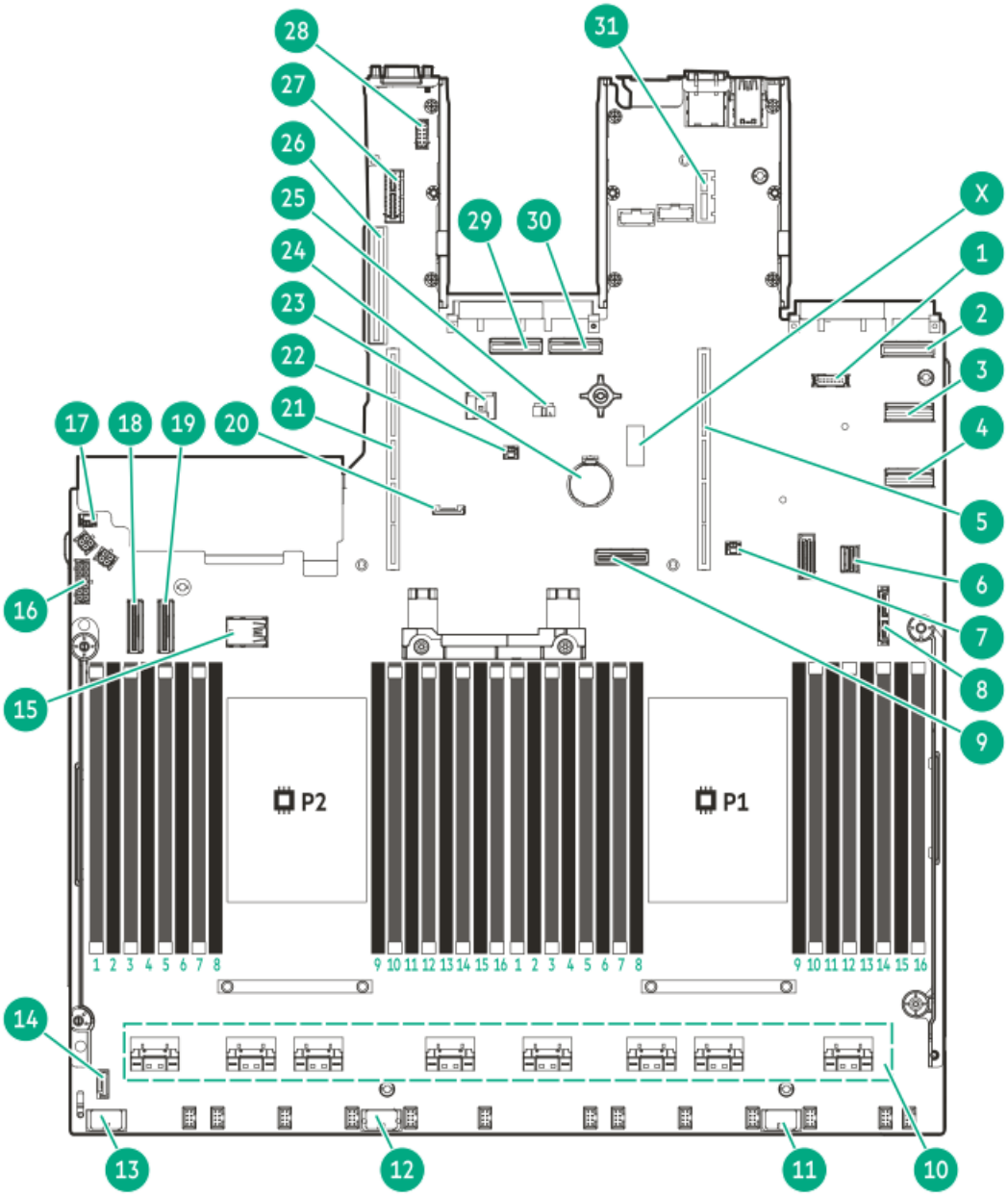
Item	Description
1	Primary riser slots 1–3 (optional drive cage)
2	Secondary riser slots 4–6 (optional drive cage)
3	Tertiary riser slots 7–8 (optional drive cage)
4	Power supply 1 (PS1)
5	Power supply 2 (PS2)
6	Video port (VGA)
7	OCP slot 15
8	Serial port (optional)
9	iLO Management Port
10	USB 3.2 Gen 1 ports
11	OCP slot 14

Rear panel LEDs



Item	Description	Status
1	Power supply LED	• Off = System is off or power supply has failed • Solid green = Normal
2	Status LED	• Off = No network activity • Solid green = Link to network • Flashing green = Network activity
3	Link LED	• Off = No network link • Green = Network link
4	UID LED	• Off = Deactivated • Solid blue = Activated • Flashing blue = System is being managed remotely

System board components


28
27
26
25
24
23
22
21
31
29
30
X
1
2
3
4
5
6
7
8
9
17
18
19
20
16
15
14
13
12
11
10
P2
P1
1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16 1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16

Item	Description
X	System maintenance switch
1	Front DisplayPort/USB 2.0 connector
2	OCP slot 14 port 2
3	LP SlimSAS port 2
4	LP SlimSAS port 1
5	Primary riser connector
6	Front I/O & USB 3.2 Gen 1 port connector
7	OCP slot 14 backup power connector
8	SATA optical port
9	Socket 1 MCIO port 1
10	x8 SlimSAS ports [1]
11	Drive box 3 power connector
12	Drive box 2 power connector
13	Drive box 1 power connector
14	Signal connector
15	Internal USB ports [2]
16	Backplane power connector
17	Chassis Intrusion Detection switch connector
18	Socket 2 MCIO port 2
19	Socket 2 MCIO port 1
20	SID connector
21	Secondary riser connector
22	OCP slot 15 backup power connector
23	System battery
24	Energy pack connector
25	NS204i-u power connector
26	Tertiary riser connector
27	Auxiliary power connector for secondary riser
28	Serial port connector (optional)
29	OCP slot 15 port 1
30	OCP slot 15 port 2
31	Auxiliary power connector for primary riser

1 The SlimSAS ports are numbered 1B-4B, 1A-4A from left to right. B is for processor 2 and A is for processor 1.
2 Top = USB 3.2 Gen 1 port, Bottom = USB 2.0 port

Subtopics

System maintenance switch descriptions
DIMM label identification
DIMM slot locations
Heatsink and processor socket components

System maintenance switch descriptions

System maintenance switch descriptions

Position	Default	Function
S1 [1]	Off	• Off—iLO security is enabled. • On—iLO 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.

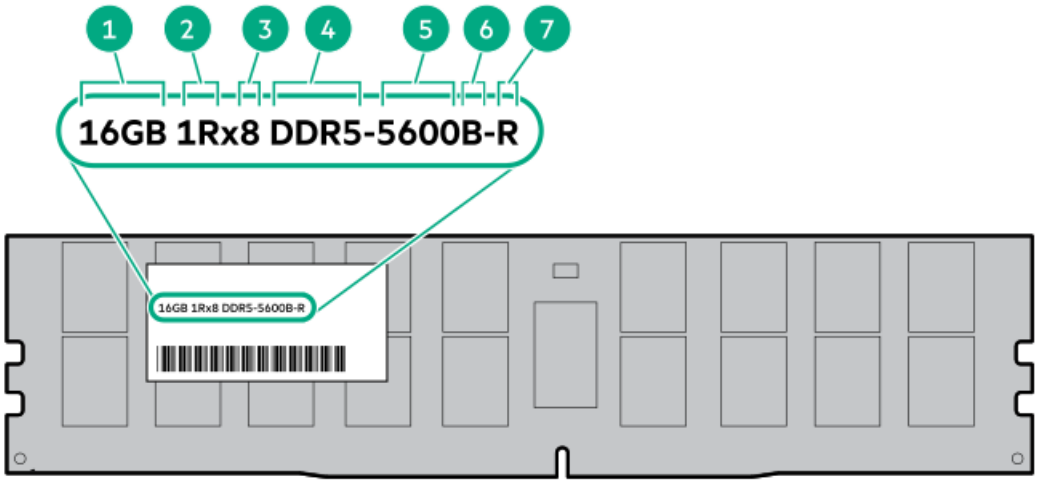
[3] When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see Configuring the server.

DIMM label identification

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

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

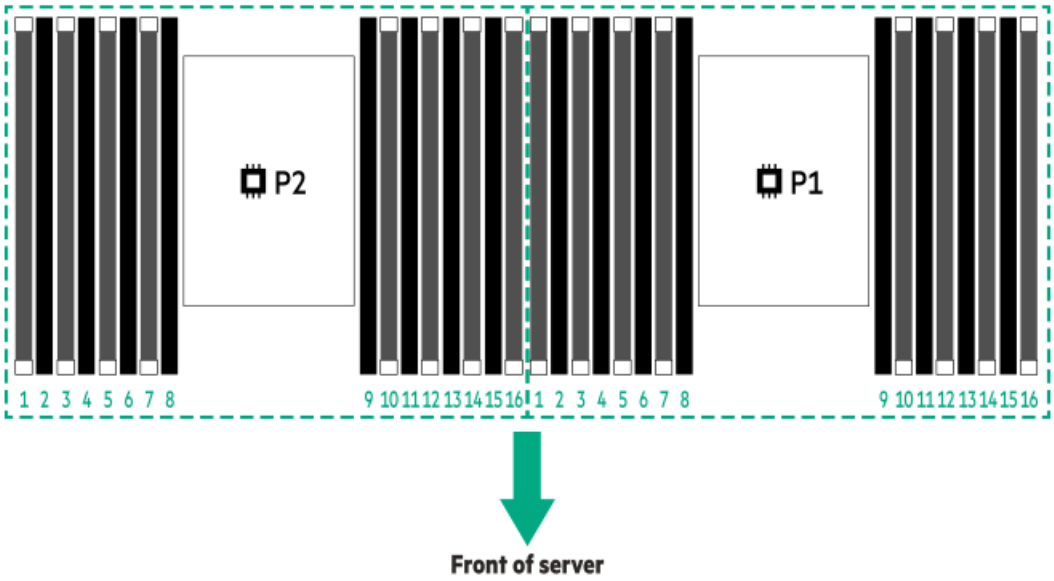
https://www.hpe.com/docs/server-memory



Item	Description	Example
1	Capacity	16 GB 32 GB 64 GB 128 GB 256 GB
2	Rank	1R—Single rank 2R—Dual rank 4R—Quad rank 8R—Octal rank
3	Data width on DRAM	x4—4-bit x8—8-bit
4	Memory generation	PC5—DDR5
5	Maximum memory speed	4800 MT/s
6	CAS latency	B—42-42-42 B—50-42-42 (for 128 GB and 256 GB capacities)
7	DIMM type	R—RDIMM (registered)

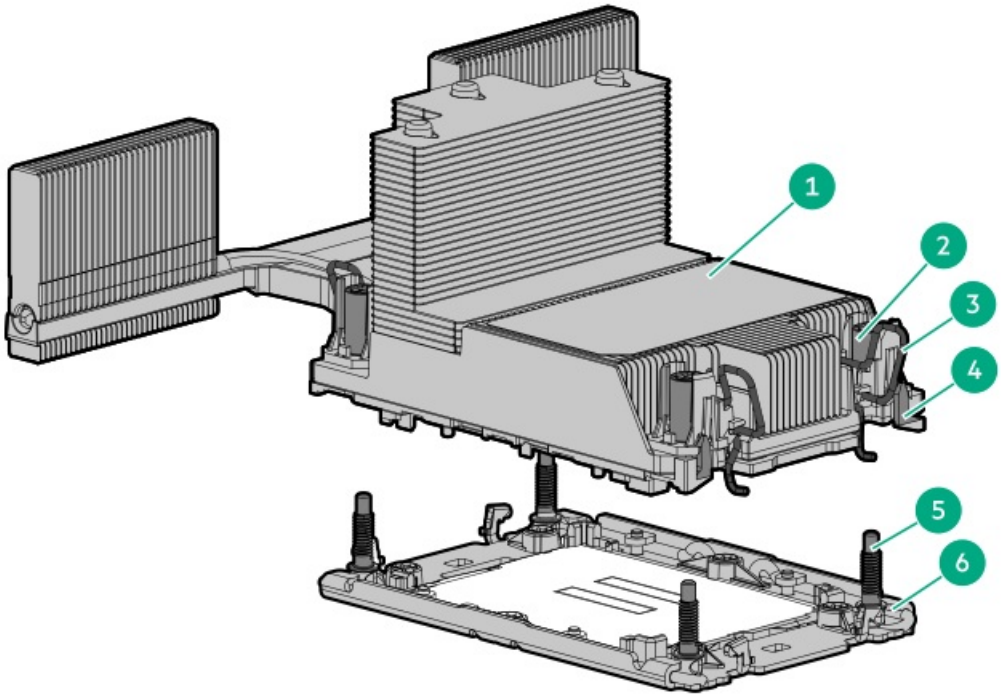
DIMM slot locations

DIMM slots are numbered sequentially (1 through 16) for each processor.



Heatsink and processor socket components

A high-performance heatsink is shown. Your heatsink might look different.



Item	Description
1	Processor-heatsink module [1]
2	Heatsink nuts
3	Heatsink latches
4	Processor carrier latches
5	Alignment screws
6	Bolster plate

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

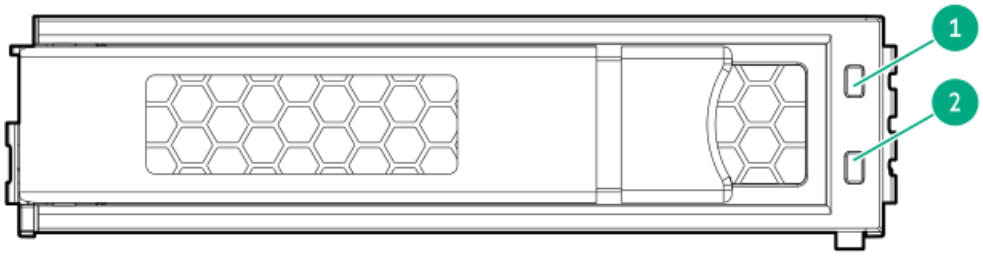
HPE Basic Drive LED definitions

The HPE Basic drive carrier has the following LEDs:

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

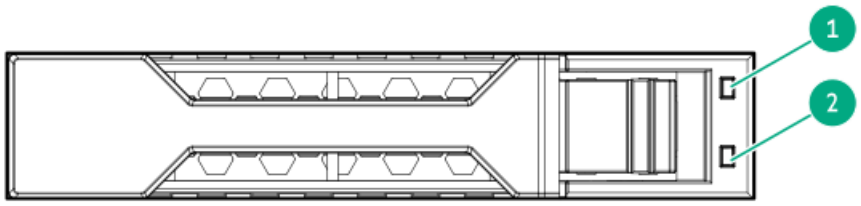
LFF low-profile drive carrier

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



SFF basic drive carrier

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



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

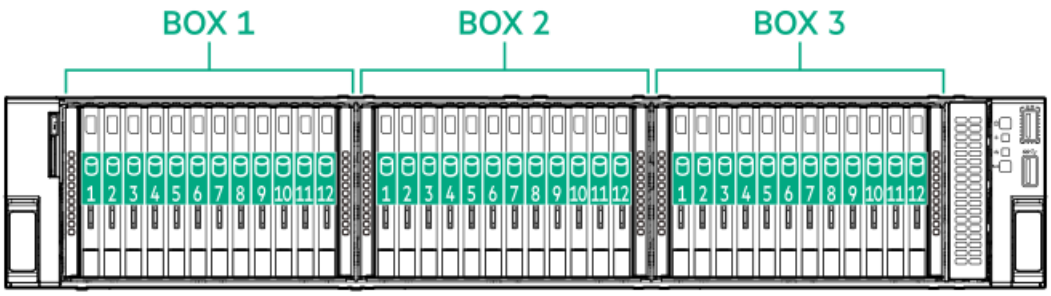
This server supports hot-plug Enterprise and Data Center Standard Form Factor (EDSFF) drives. Specifically, E3.S form factor PCIe5 NVMe SSDs. The EDSFF drive carrier has two LEDs:

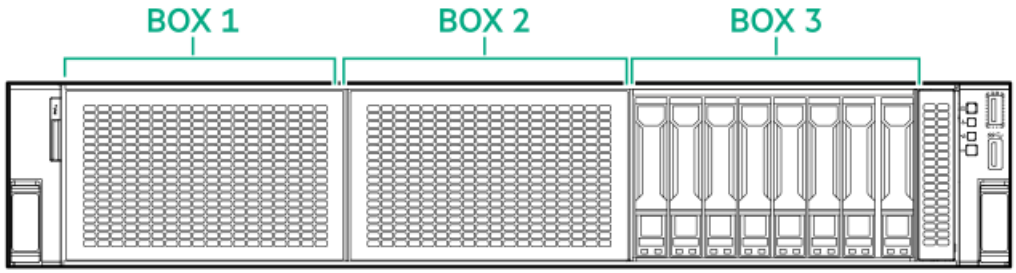
- Amber/blue LED—Managed by the drive backplane in conjunction with the storage controller and is used to indicate drive status.
- Green LED—Managed by the drive itself and indicates the drive activity.

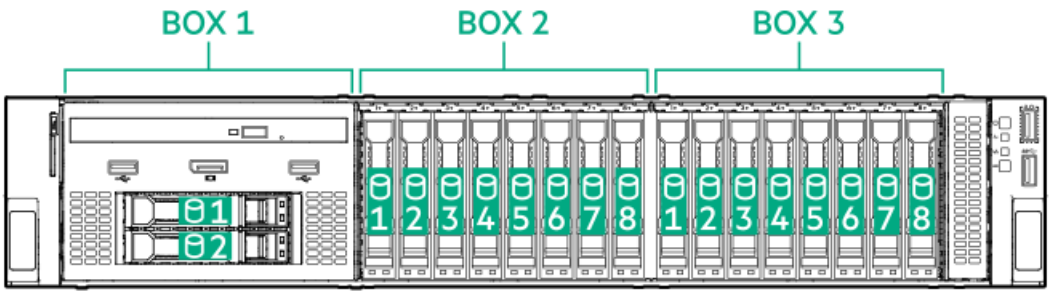
Item	LED	State	Definition
1	Fault/Locate	Solid amber	This drive has failed, is unsupported, or is invalid.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has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

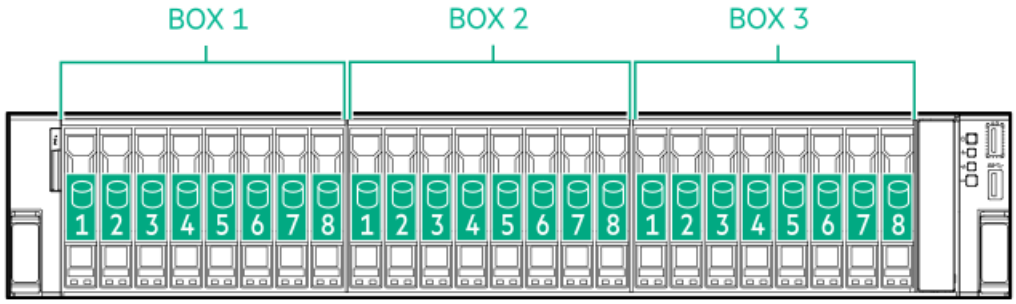
Drive boxes and numbering

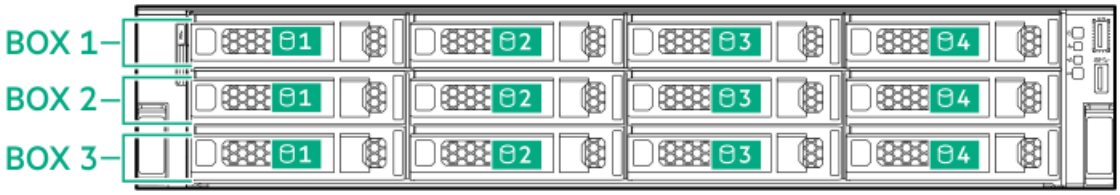
Front boxes





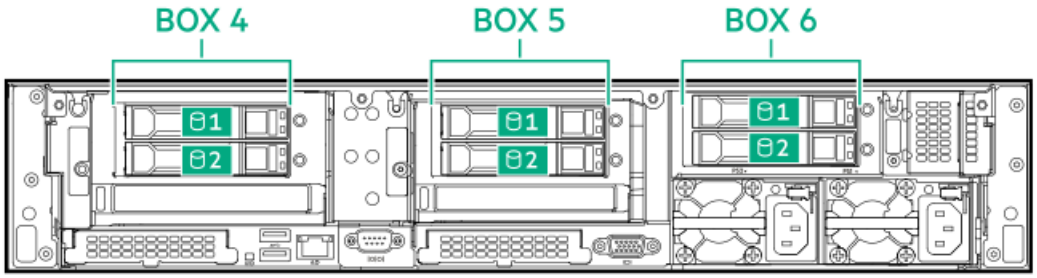

BOX 1
BOX 2
BOX 3

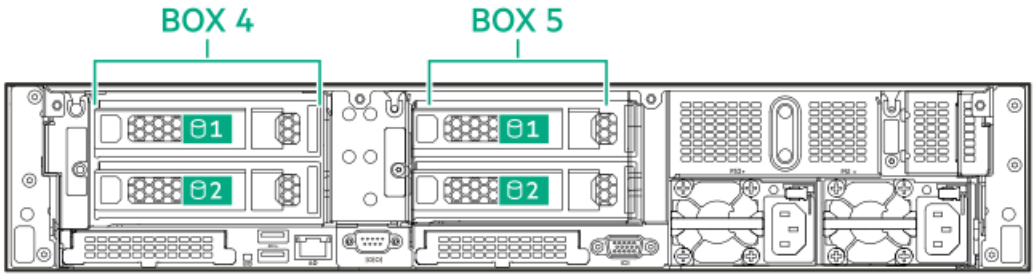

BOX 1
BOX 2
BOX 3


BOX 1
BOX 2
BOX 3

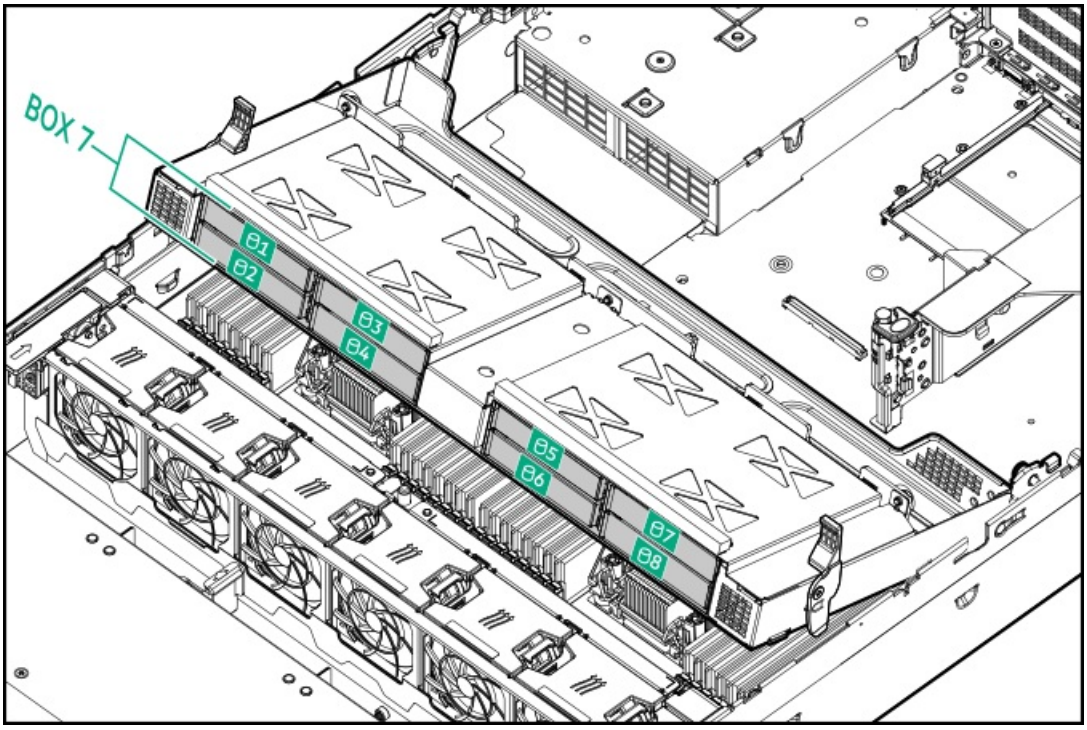
BOX 1
BOX 2
BOX 3

Rear boxes

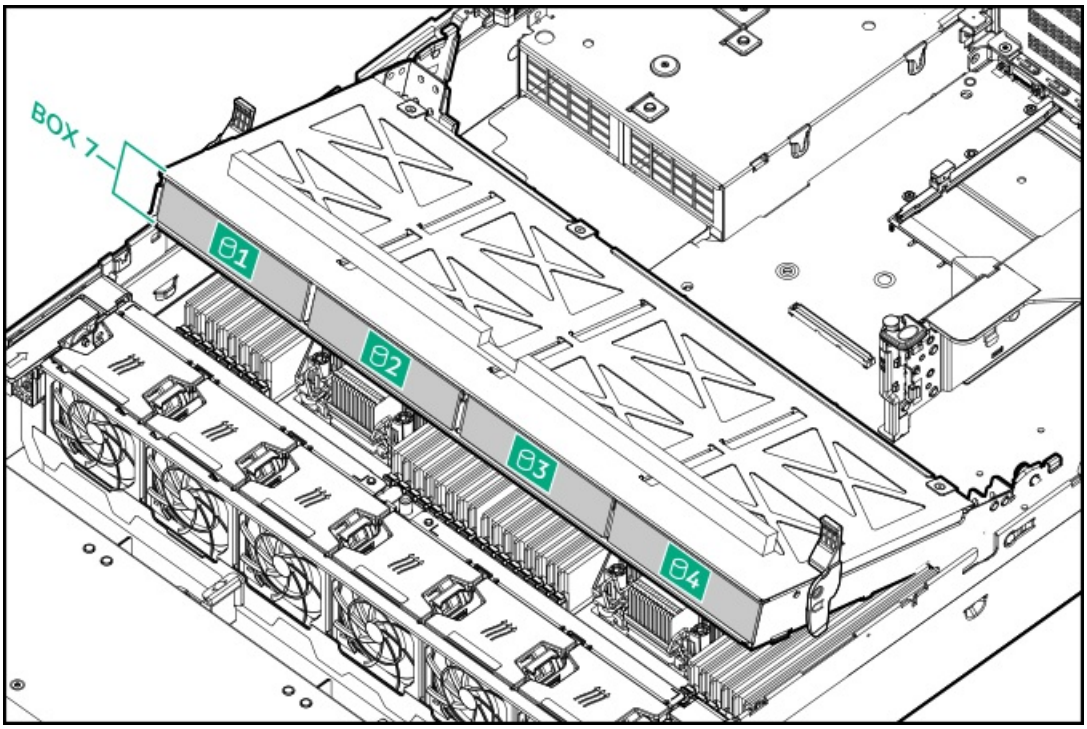

BOX 4
BOX 5
BOX 6



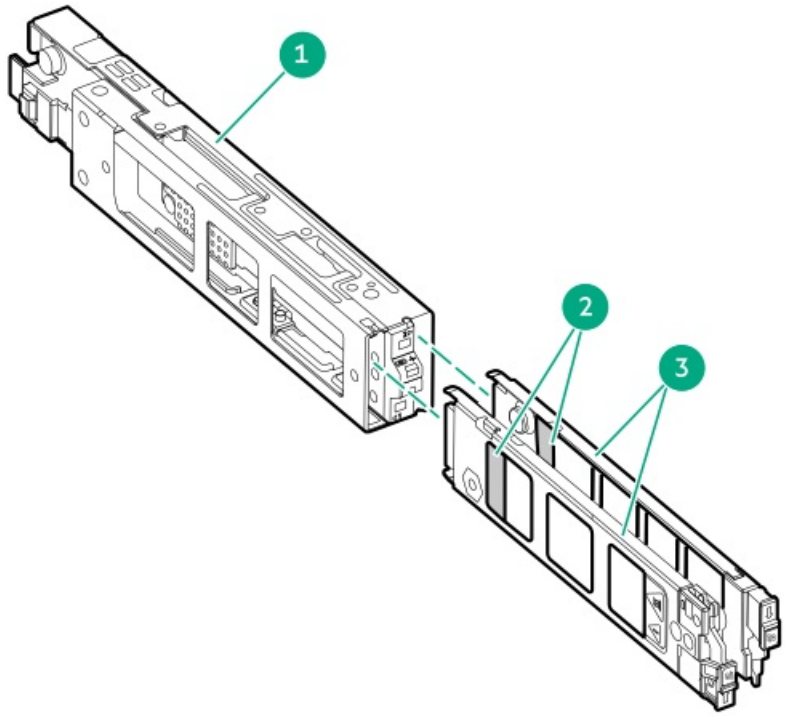
Midplane box (SFF)



Midplane box (LFF)

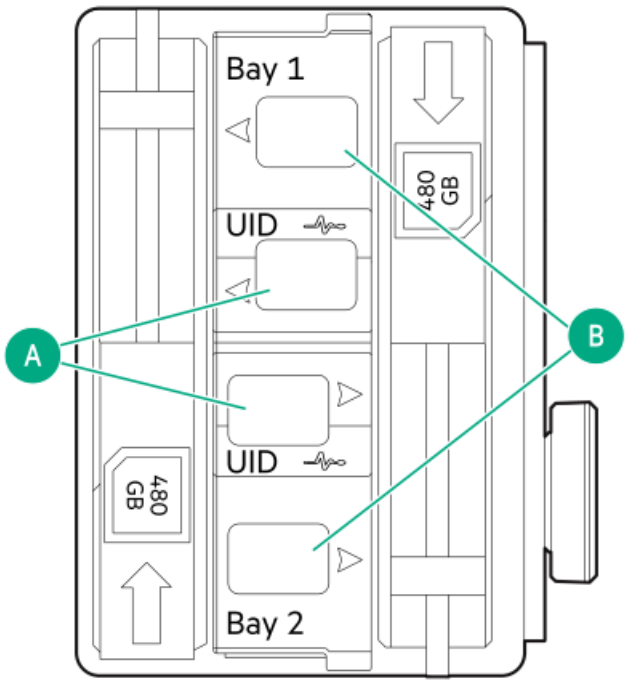


HPE NS204i-u Boot Device components



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

HPE NS204i-u Boot Device LED definitions



Item	LED	Status	Definition
1	Fault/Locate	Solid amber	Drive has failed, unsupported, or invalid.
		Solid blue	Drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	Drive has failed, or a predictive failure alert is received for the drive. The drive has also been identified by a management application.
		Flashing amber (1 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 a management application.
2	Online/Activity	Solid green	Drive is online and has no activity.
		Flashing green (1 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 or is a spare drive.

Setup

Subtopics

Optional services

Setting up the server
HPE product registration

Optional services

Delivered by experienced, certified engineers, HPE support services help you keep your servers up and running with support packages tailored specifically for HPE ProLiant systems. HPE support services let you integrate both hardware and software support into a single package. A number of service level options are available to meet your business and IT needs.

HPE support services offer upgraded service levels to expand the standard product warranty with easy-to-buy, easy-to-use support packages that will help you make the most of your server investments. Some of the HPE support services for hardware, software, or both are:

- HPE Pointnext Tech Care – Keep systems running.

  The time commitment for this service might vary depending on the site's geographical region. For more service information available at your site, contact your local **HPE support center**.

- Deployment service for both hardware and software.
- HPE Education Services – Help train your IT staff.

For more information on HPE support services, see the HPE Pointnext website:

https://www.hpe.com/services

Setting up the server

Prerequisites

Before setting up the server:

- Read the operational requirements for the server:
  Operational requirements
- Read the safety and compliance information on the HPE website:
  http://www.hpe.com/support/safety-compliance-enterpriseproducts

Procedure

1. Unbox the server and verify the contents:
   - A server
   - A power cord
   - Rack-mounting hardware
   - Documentation
2. (Optional) Install hardware options.
3. Install the server in a 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 using remote console.
     a. Verify that 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:

- The hostname is on the serial pull tab.
- 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.
- The default login credentials are on the serial label pull tab.

c. In the side navigation, 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. For the latest support and resources, register the server.

Subtopics

Operational requirements
Rack warnings and cautions
Server warnings and cautions
Electrostatic discharge

Operational requirements

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 deciding where to install a rack:

- Leave a minimum clearance of 63.5 cm (25 in) in front of the rack.
- Leave a minimum clearance of 76.2 cm (30 in) behind the rack.
- Leave a minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks.

Hewlett Packard Enterprise servers draw in cool air through the front door and expel warm air through the rear door. Therefore, the front and rear rack doors must be adequately ventilated to allow ambient room air to enter the cabinet, and 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.

When vertical space in the rack is not filled by a server or rack component, the gaps between the components cause changes in airflow through the rack and across the servers. Cover all gaps with blanking panels to maintain proper airflow.

CAUTION

Always use blanking panels to fill empty vertical spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

The 9000 and 10000 Series Racks provide proper server cooling from flow-through perforations in the front and rear doors that provide 64 percent open area for ventilation.

CAUTION

When using a Compaq branded 7000 series rack, install the high airflow rack door insert (PN 327281-B21 for 42U rack, PN 157847-B21 for 22U rack) to provide proper front-to-back airflow and cooling.

CAUTION

If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to 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 cm (2.75 in).

Temperature requirements

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

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

CAUTION

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

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

Power requirements

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

WARNING

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

CAUTION

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

Electrical grounding requirements

The server must be grounded properly for proper operation and safety. In the United States, you must install the equipment in accordance with NFPA 70, National Electric Code Article 250, as well as any local and regional building codes. In Canada, you must install the equipment in accordance with Canadian Standards Association, CSA C22.1, Canadian Electrical Code. In all other countries, you must install the equipment in accordance with any regional or national electrical wiring codes, such as the International Electrotechnical Commission (IEC) Code 364, parts 1 through 7. Furthermore, you must be sure that all power distribution devices used in the installation, such as branch wiring and receptacles, are listed or certified grounding-type devices.

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

Rack warnings and cautions

WARNING

When all components are removed, the server weighs 16.00 kg (35.27 lbs). When all components are installed, the server can weigh up to 37.00 kg (81.57 lbs).

Before configuring your rack solution, be sure to check the rack manufacturer weight limits and specifications. Failure to do so can result in physical injury or damage to the equipment and the facility.

WARNING

The server is heavy. To reduce the risk of personal injury or damage to the equipment, do the following:

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The server weighs more than 16.00 kg (35.27 lbs), so at least two people must lift the server into the server 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 server.
- Adequately stabilized the server before extending a component outside the server. Extend only one component at a time. A server may become unstable if more than one component is extended.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.

WARNING

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

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

WARNING

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

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

CAUTION

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

CAUTION

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

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

Server warnings and cautions

WARNING

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

WARNING

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

WARNING

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

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

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

CAUTION

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

CAUTION

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

CAUTION

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

CAUTION

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

Electrostatic discharge

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

To prevent electrostatic damage:

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

floors or dissipating floor mats.

- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

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

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

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**.

Operations

Subtopics

Power up the server
Power down the server
Extend the server from the rack
Remove the server from the rack
Remove the bezel
Remove the access panel
Installing the access panel
Remove the fan cage
Install the fan cage
Remove the air baffle or midplane drive cage
Install the air baffle
Remove the riser cage
Releasing the cable management arm
Accessing the Systems Insight Display

Power up the server

About this task

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

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

Power down the server

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

IMPORTANT

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

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

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

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

Extend the server from the rack

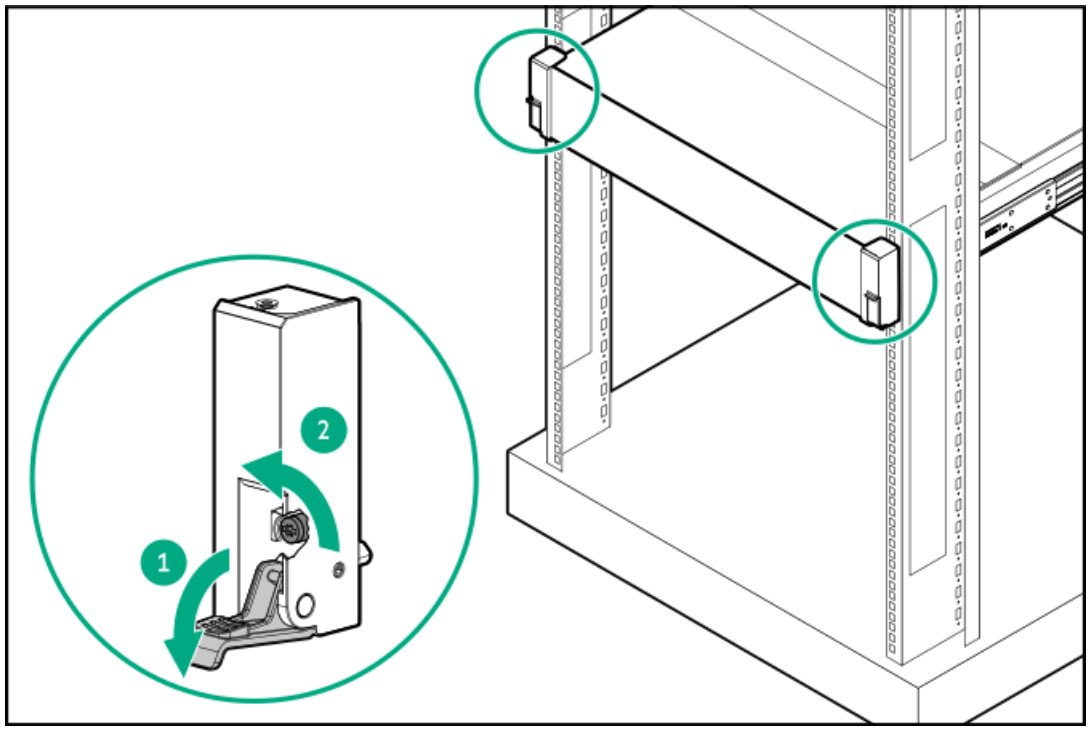
About this task

WARNING

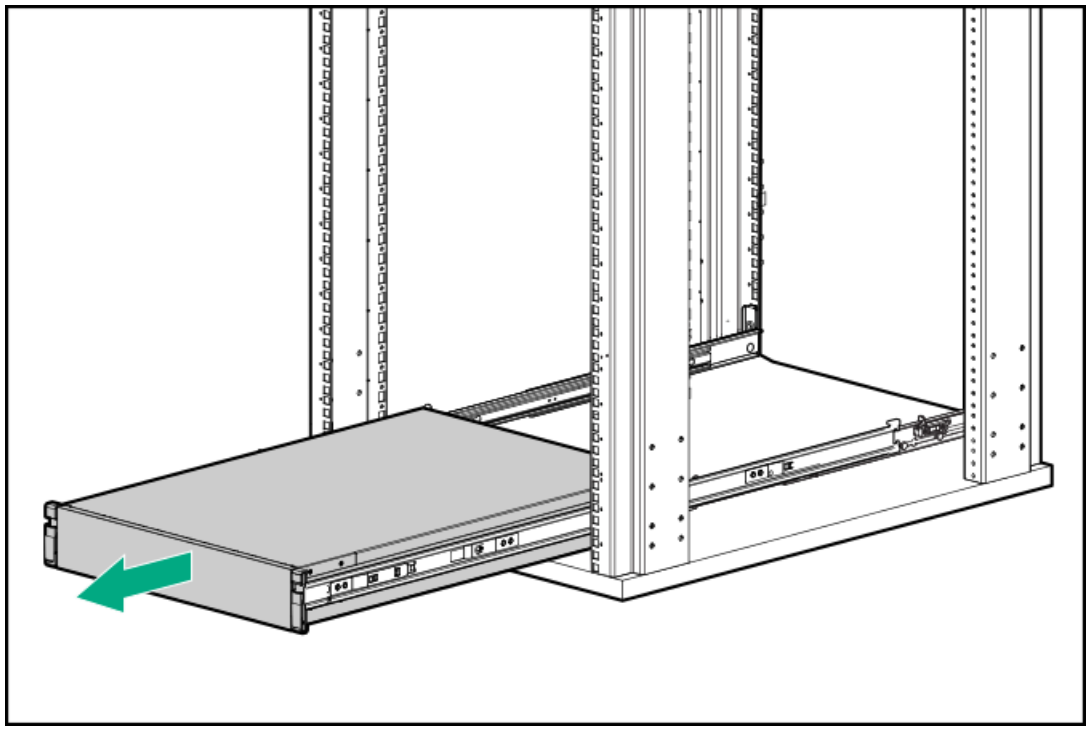
To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending anything from the rack.

Procedure

1. Pull down the quick release levers on each side of the server.
2. If necessary, use a T-25 Torx screwdriver to loosen the shipping screws.



3. Extend the server from the rack.



Remove the server from the rack

Prerequisites

- Before you perform this procedure, review the:
  - Rack warnings and cautions

- Server warnings and cautions

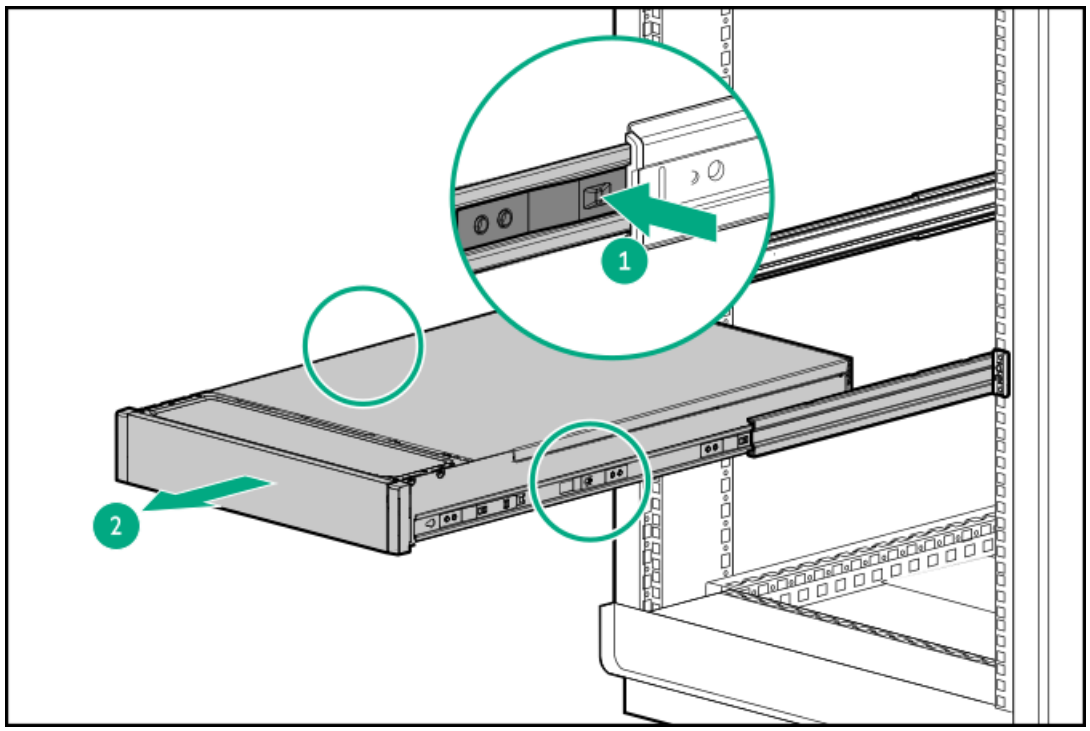
- T-25 Torx screwdriver

About this task

To remove the server from a Hewlett Packard Enterprise, Compaq-branded, Telco, or third-party rack:

Procedure

1. Power down the server.
2. Disconnect the rear cabling.
3. Extend the server from the rack.
4. Release the rail latches and remove the server from the rack.

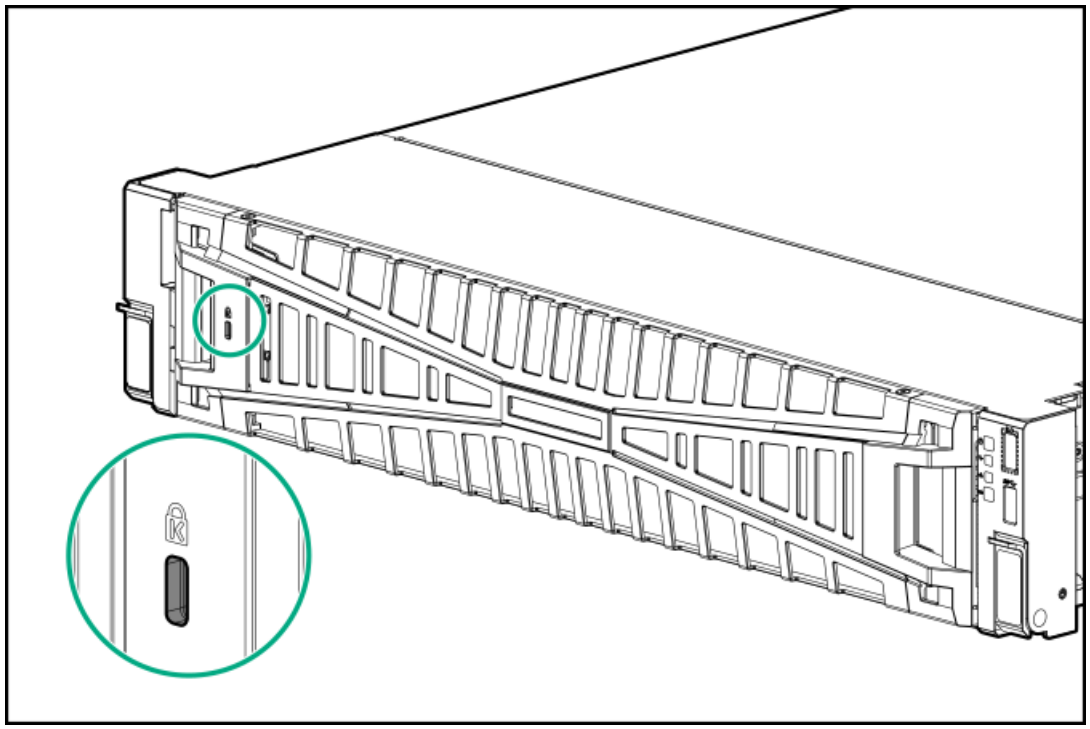


5. Place the server on a sturdy, level surface.

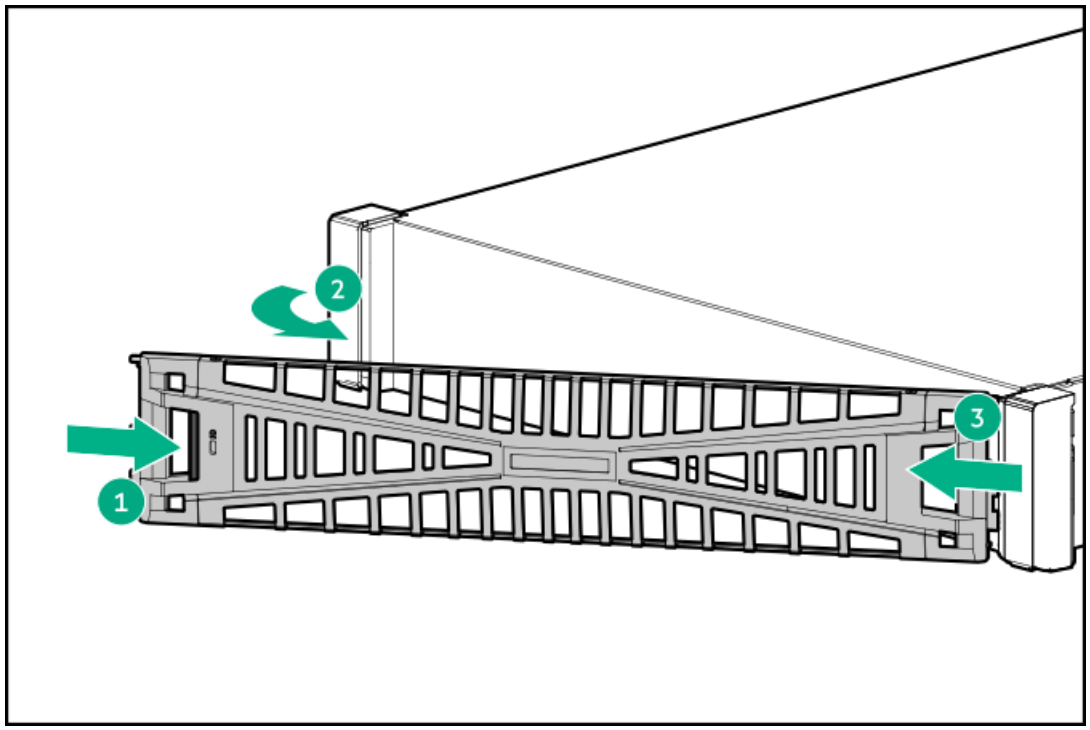
Remove the bezel

Procedure

1. If installed, remove the Kensington security lock.



2. Remove the bezel.



Remove the access panel

About this task

WARNING

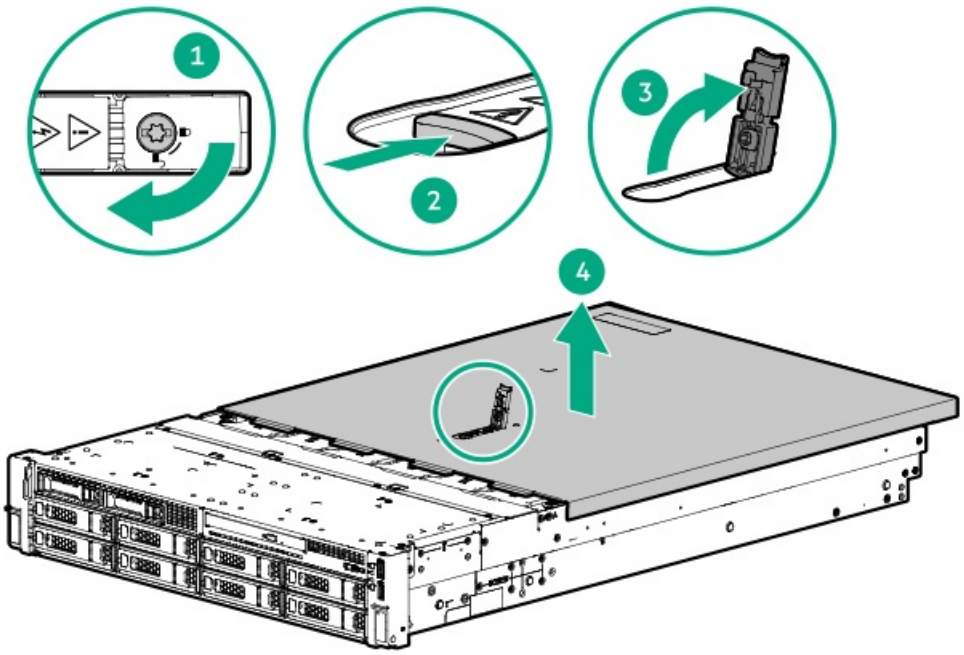
To reduce the risk of personal injury from hot surfaces, allow the drives, power supplies, and internal system components to cool before touching them.

CAUTION

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

Procedure

1. Power down the server.
2. If installed, release the cable management arm.
3. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
4. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Open or unlock the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.



Installing the access panel

Procedure

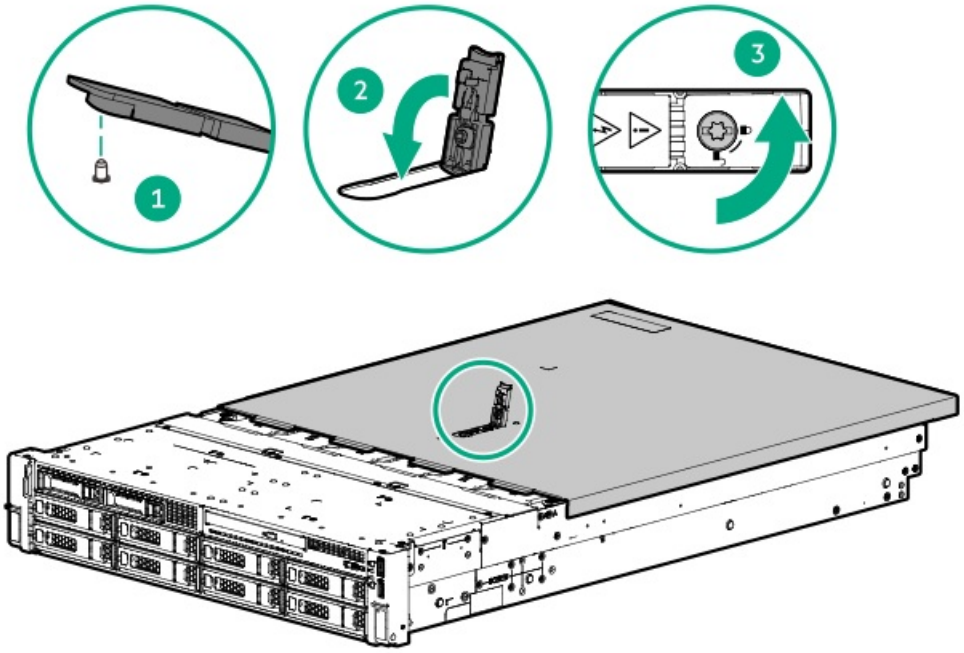
1. Place the access panel on top of the server with the latch open.

Allow the panel to extend past the rear of the server approximately 1.25 cm (0.5 in).

2. Push down on the latch.

   The access panel slides to a closed position.

3. Tighten the security screw on the latch, if needed.



Remove the fan cage

About this task

CAUTION

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

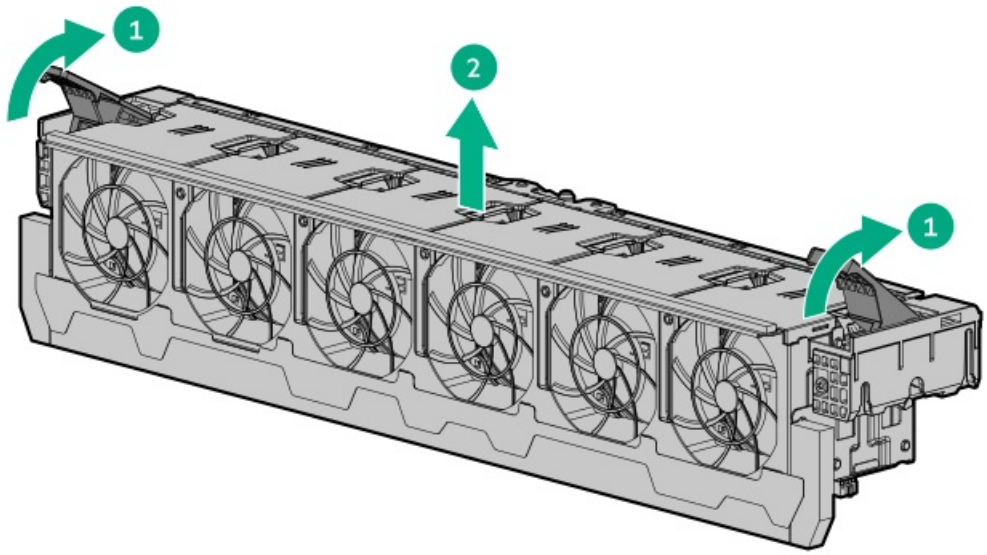
IMPORTANT

For optimum cooling, install fans in all primary fan locations.

Procedure

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

4. Remove the access panel.
5. Remove the fan cage.



Install the fan cage

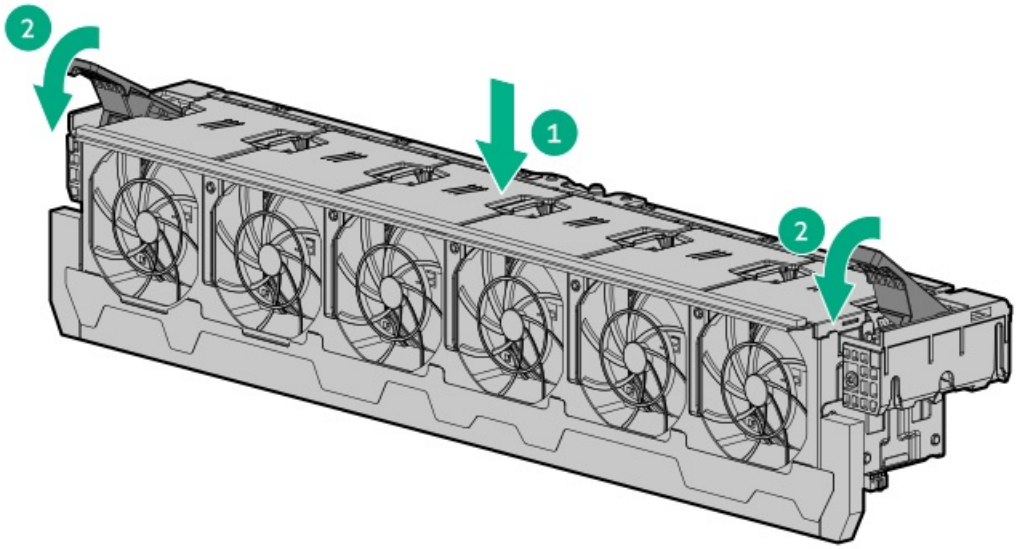
About this task

CAUTION

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

IMPORTANT

For optimum cooling, install fans in all primary fan locations.



Remove the air baffle or midplane drive cage

About this task

CAUTION

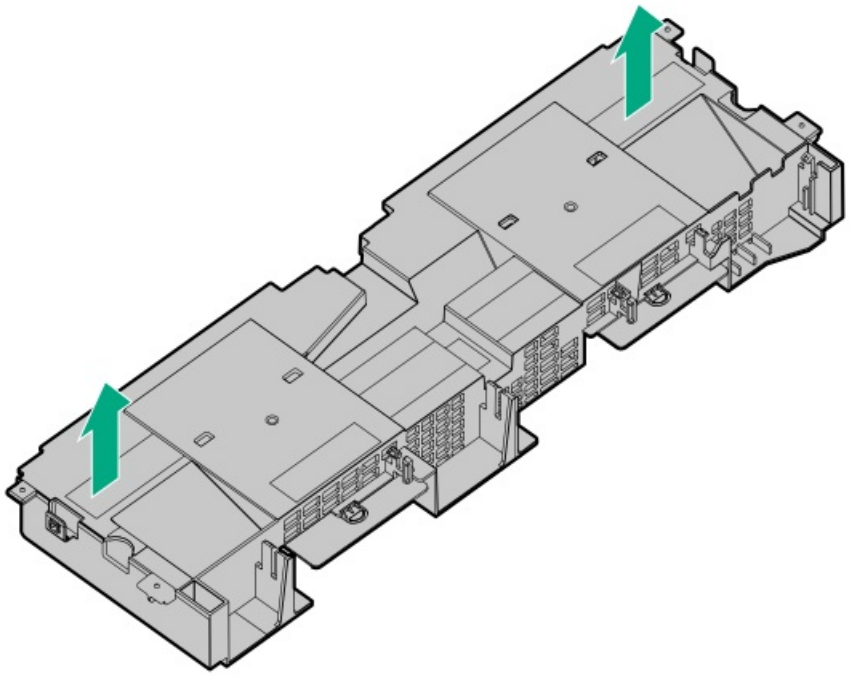
Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

CAUTION

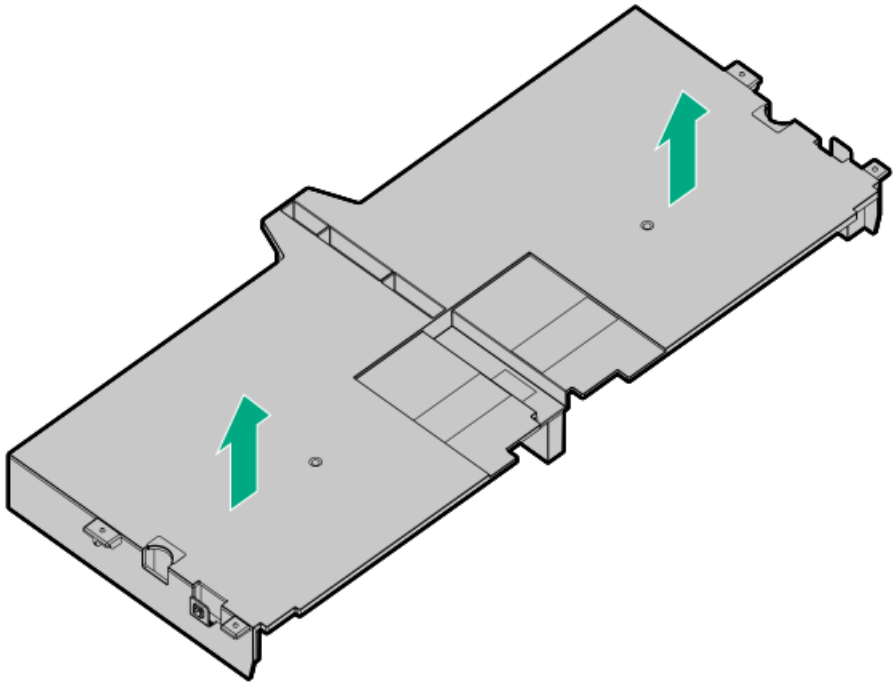
For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

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

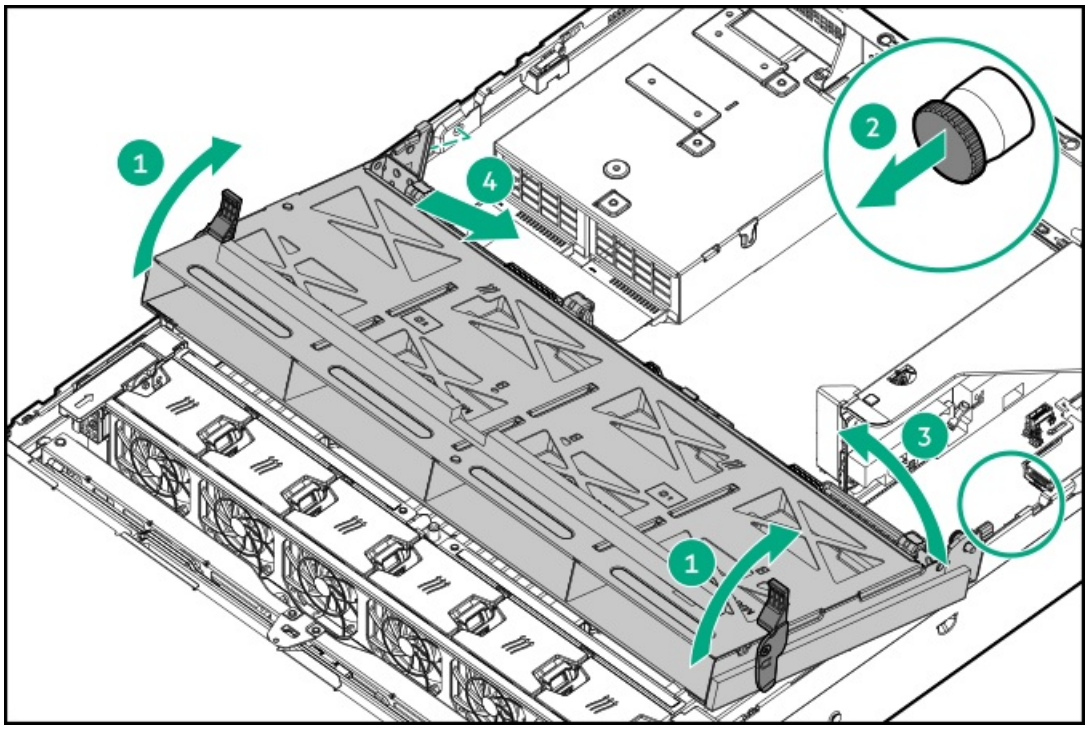


For systems with max-performance heatsinks:



- Remove the midplane drive cage:
  a. Disconnect all cables.
  b. Remove all drives.
     Be sure to note the location of each drive.
  c. Remove the drive cage.
     A 4LFF version is shown.

> **CAUTION**
>
> Do not drop the drive cage on the system board. Dropping the drive cage on the system board might damage the system or components. Remove all drives and use two hands when installing or removing the drive cage.



Install the air baffle

Procedure

1. Observe the following alerts.

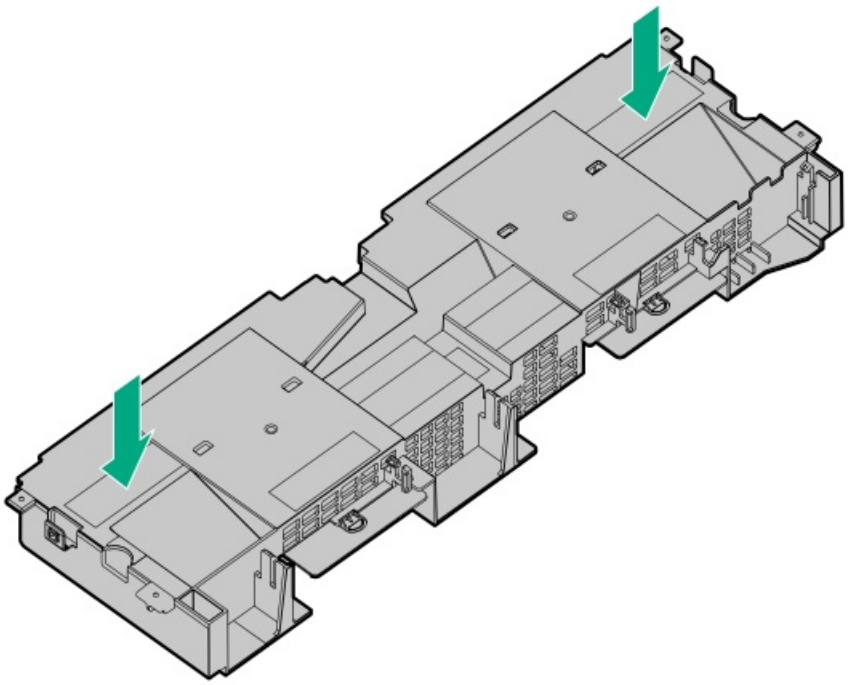
   CAUTION

   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.

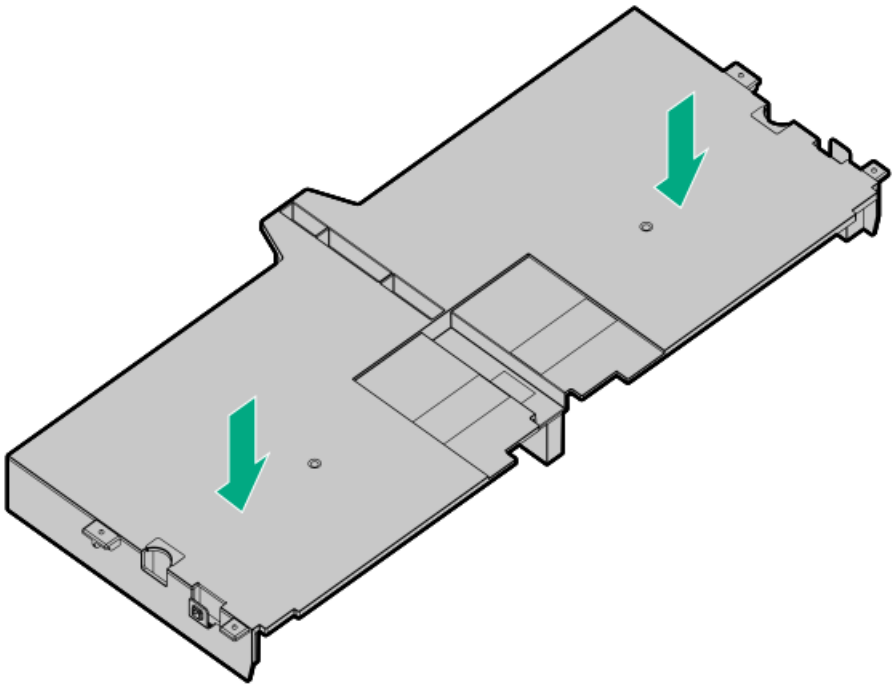
   CAUTION

   Do not detach the cable that connects the battery pack to the cache module. Detaching the cable causes any unsaved data in the cache module to be lost.

2. Install the air baffle.



For systems with max-performance heatsinks:



Remove the riser cage

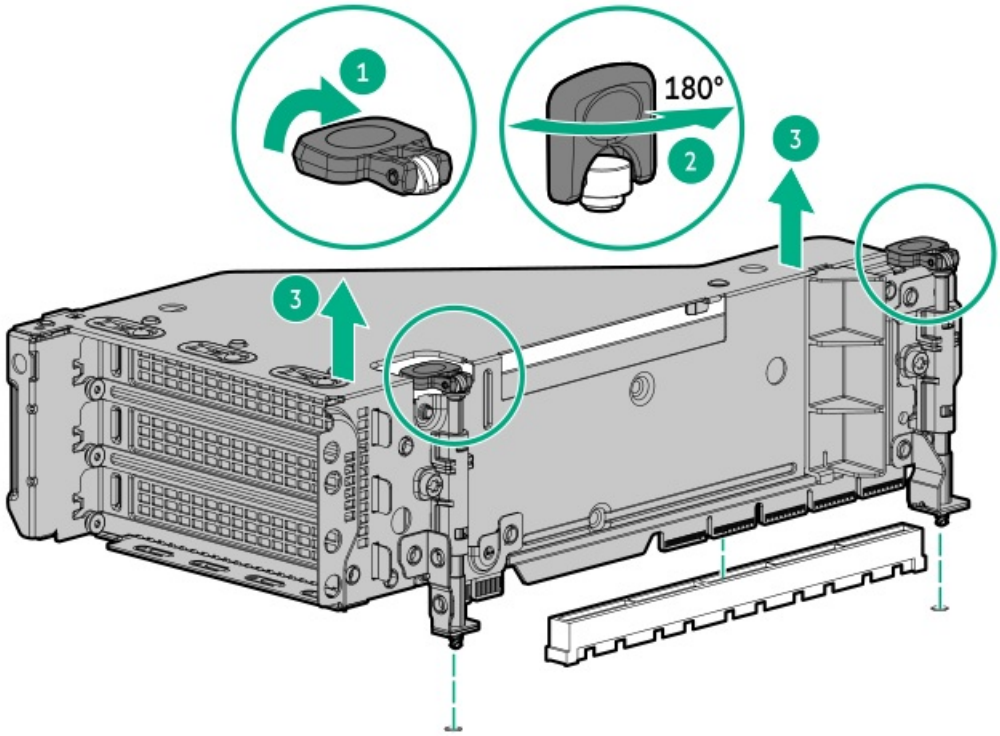
About this task

CAUTION

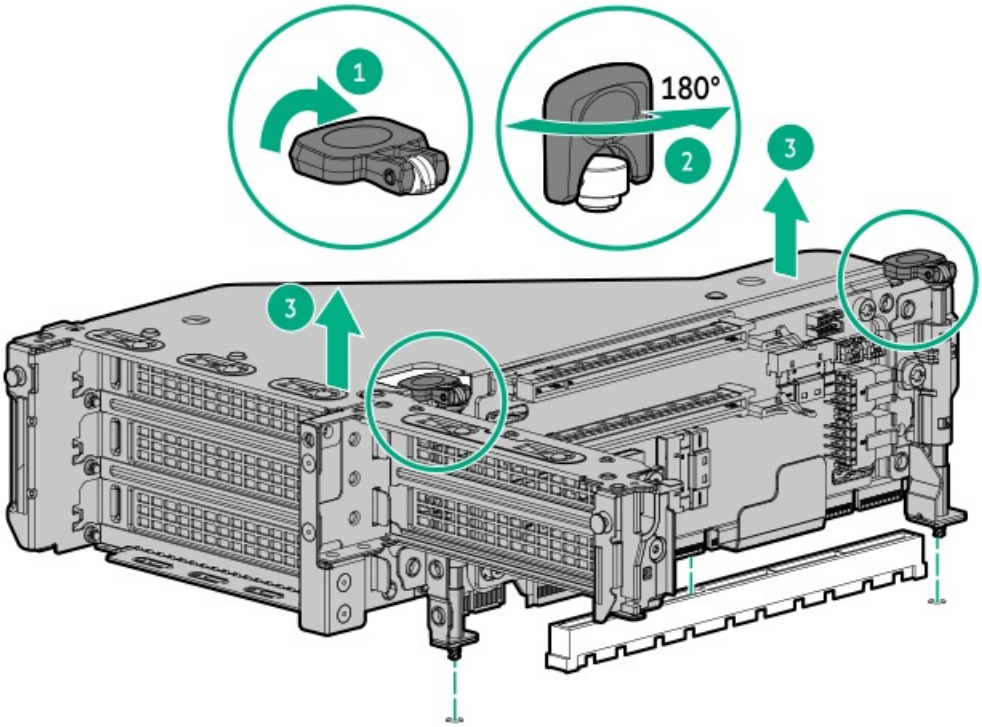
To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the riser cage:
   - Primary and secondary riser cages



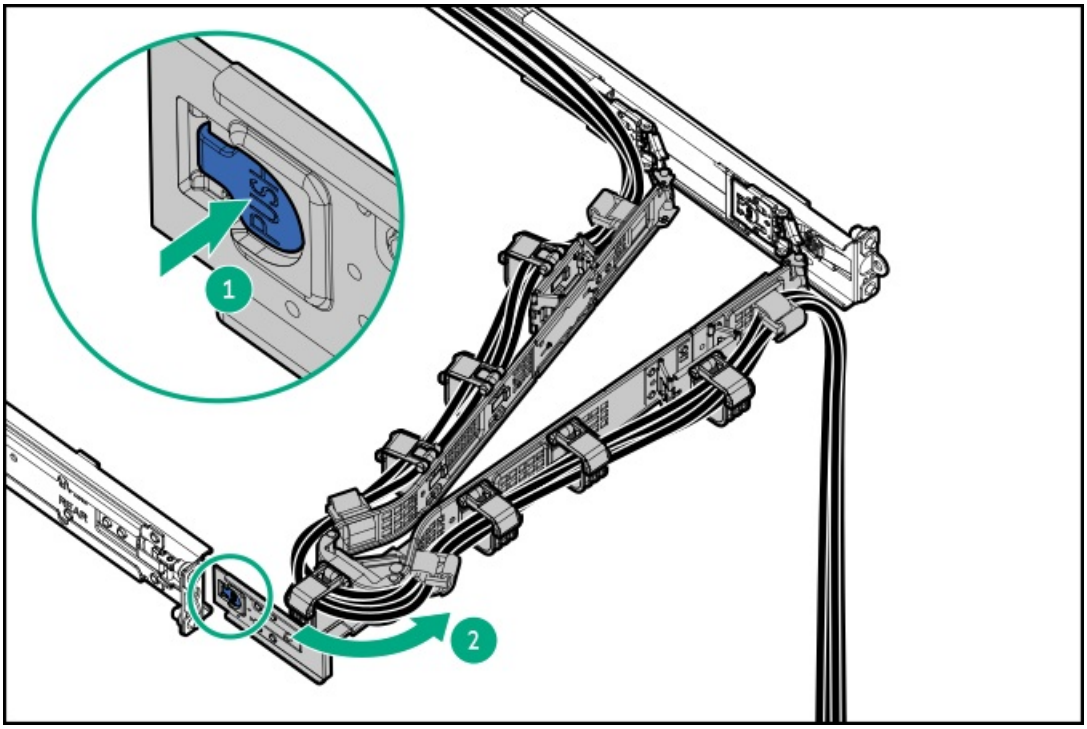
   - Tertiary riser cage



Releasing the cable management arm

Results

Release the cable management arm and then swing the arm away from the rack.



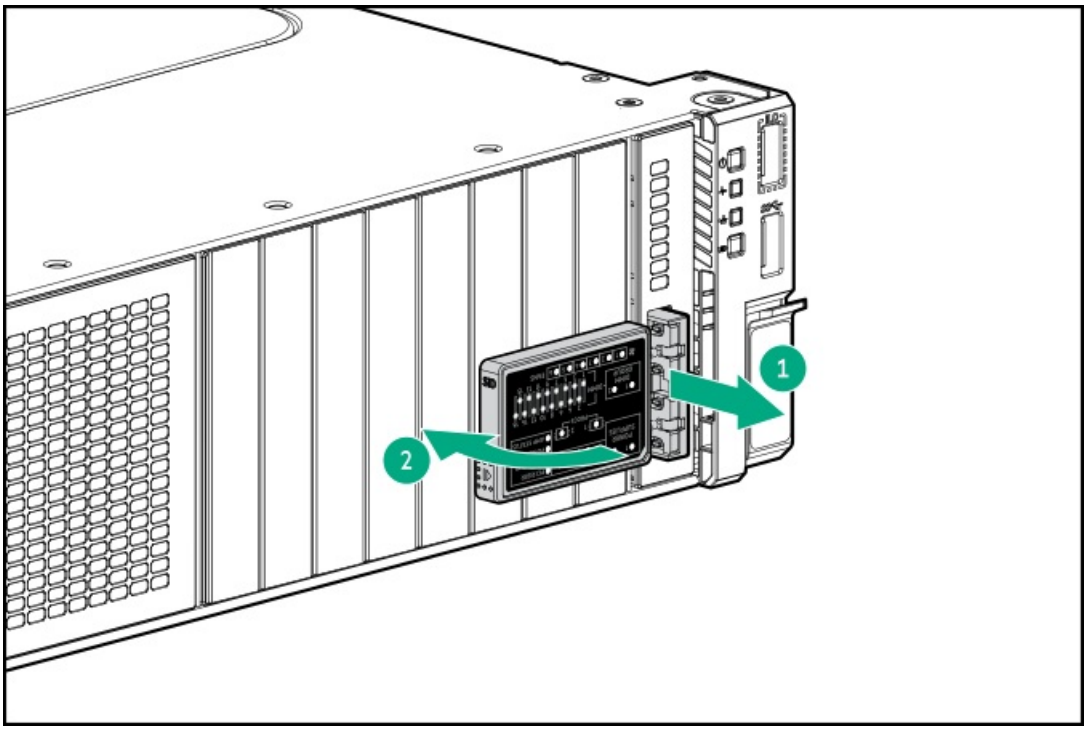
Accessing the Systems Insight Display

About this task

The Systems Insight Display is only supported on SFF models.

Procedure

1. Press and release the panel.
2. After the display fully ejects, rotate the display to view the LEDs.



Hardware options installation

Subtopics

Introduction
Hewlett Packard Enterprise product QuickSpecs
Server data backup
Controllers
Cooling
Drive cage options
Drives
Energy pack options
Management
Memory
Networking
Optical drives and media bays
OS boot device
Power supply options
Processor and heatsink options

Rack mounting options
Riser and riser cage options
Security

Introduction

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.

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 procedure. Improper grounding can cause electrostatic discharge.

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

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/info/UEFI-manuals**).

- 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/ilo6**).
  - iLO license
  - Customer iLO user name, password, and DNS name
  - iLO configuration settings
- For servers managed by HPE GreenLake for Compute Ops Management , make sure that you have your HPE GreenLake account ID. For more information, see **HPE GreenLake for Compute Ops Management Getting Started Guide** .

Controllers

Subtopics

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

Installing a type-o storage controller

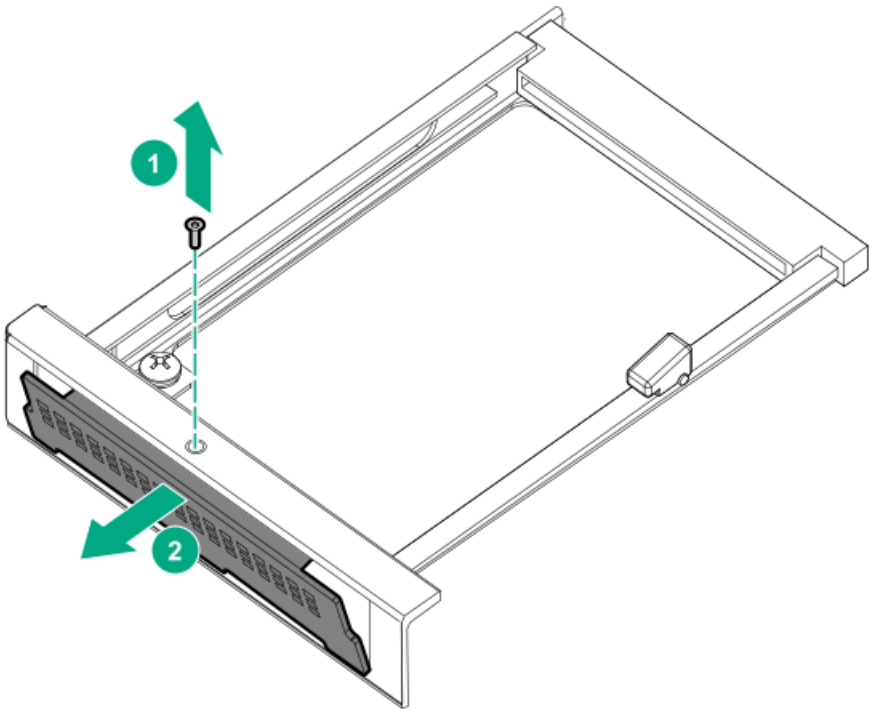
Prerequisites

Before installing this option, be sure you that have the following:

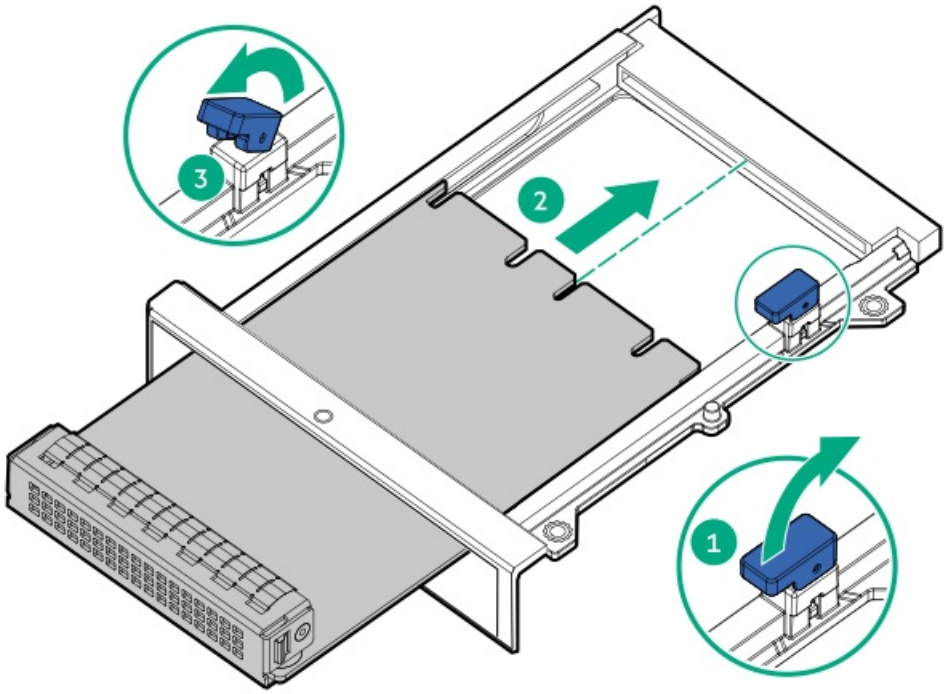
- The components included with the hardware option kit
- T-10 Torx screwdriver

Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the rear wall blank or riser cage.
6. Remove the OCP adapter blank.



7. Install the storage controller.



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

Installing a type-p storage controller

Prerequisites

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

The components included with the hardware option kit

About this task

WARNING

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

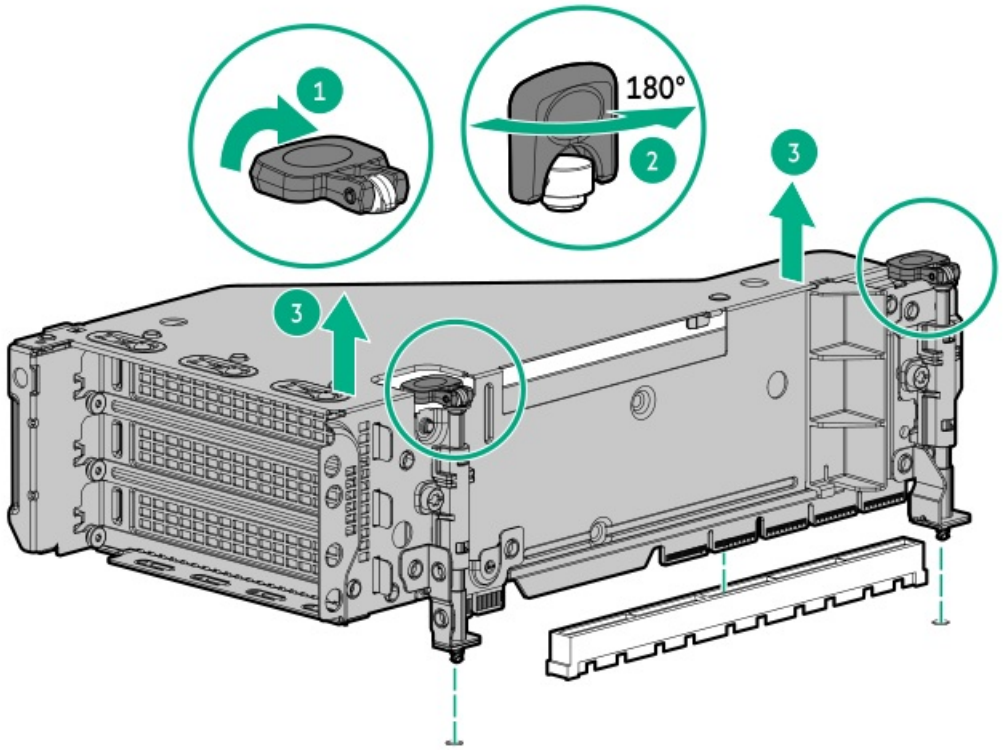
CAUTION

To prevent improper cooling or thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

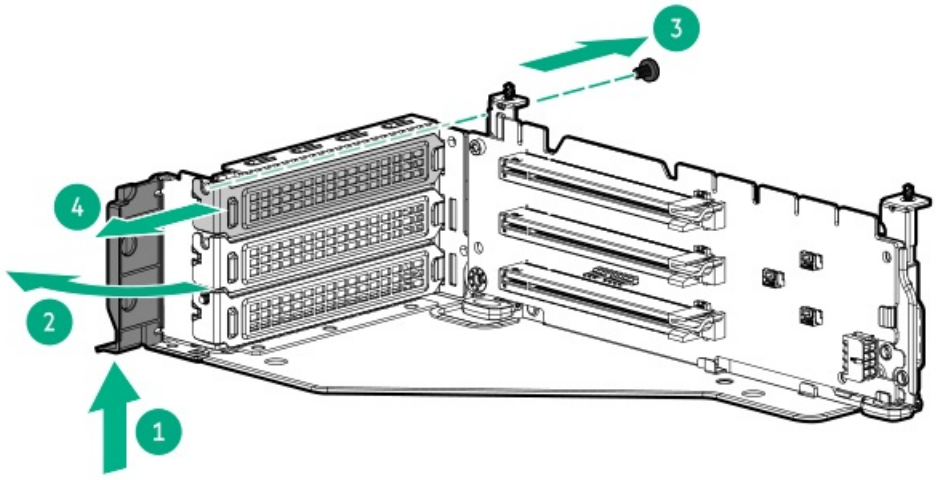
To install the component:

Procedure

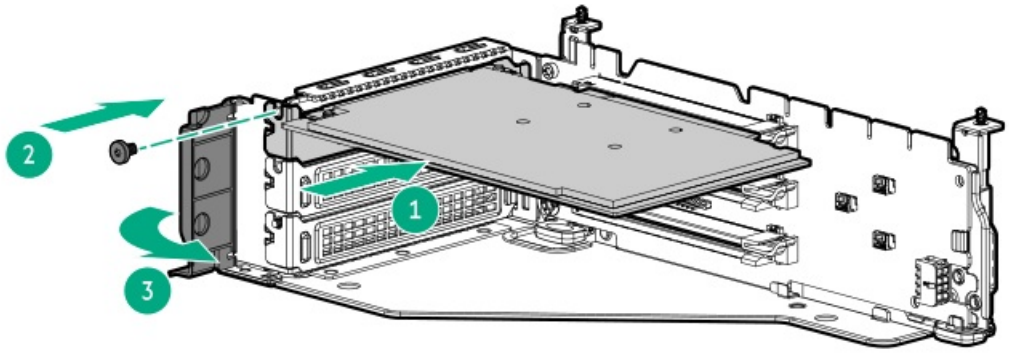
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the riser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



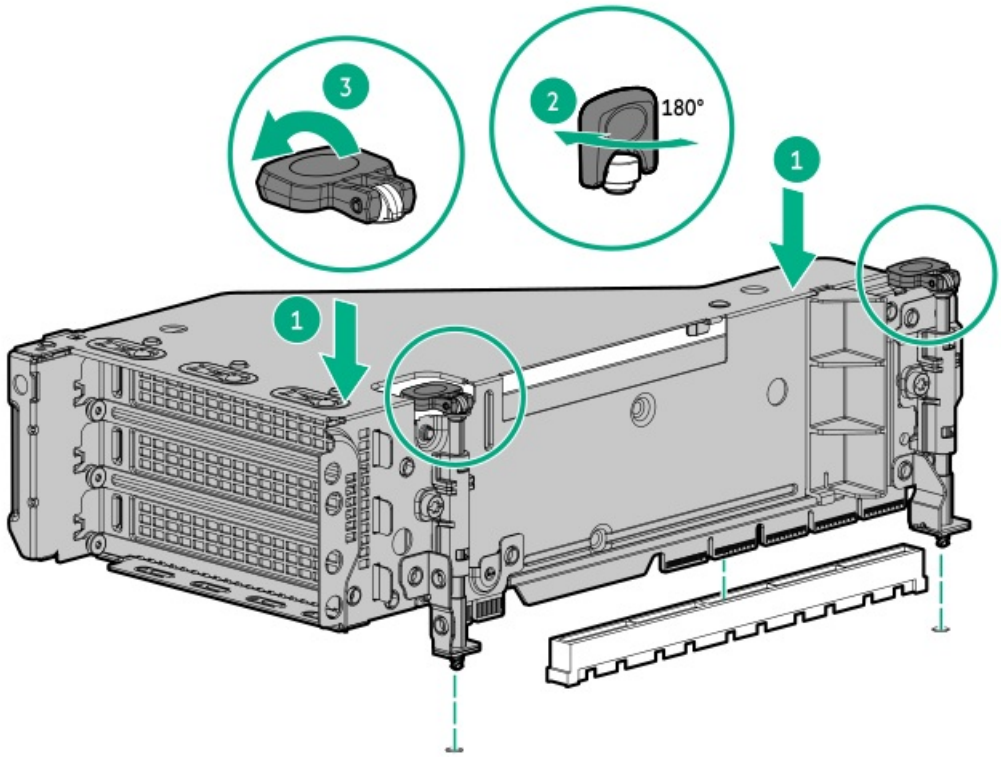
6. Identify and then remove the PCIe blank from the riser cage.



7. Install the expansion board.



8. If internal cables are required for the expansion board, connect the cables.
9. Install the riser cage.



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

Results

The installation is complete.

Cooling

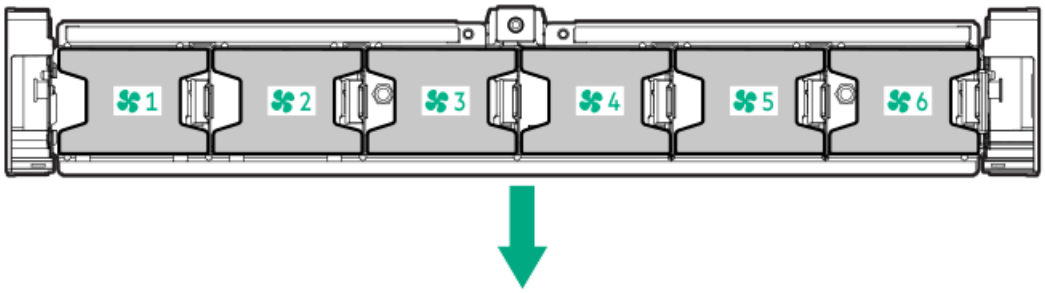
Subtopics

Fan mode behavior
Installing high-performance fans

Fan mode behavior

CAUTION
To avoid damage to server components, fan blanks must be installed in fan bays 1 and 2 in a single-processor configuration.

CAUTION
To avoid damage to the equipment, do not operate the server for extended periods of time if the server does not have the optimal number of fans installed. Although the server might boot, Hewlett Packard Enterprise does not recommend operating the server without the required fans installed and operating.



Valid fan configurations are listed in the following table.

Configuration	Fan bay 1	Fan bay 2	Fan bay 3	Fan bay 4	Fan bay 5	Fan bay 6
1 processor	Fan blank	Fan blank	Fan	Fan	Fan	Fan
1 processor 24-SFF or 12-LFF configuration with high-performance fans	Fan	Fan	Fan	Fan	Fan	Fan
2 processors	Fan	Fan	Fan	Fan	Fan	Fan

For a single-processor configuration, excluding 24-SFF and 12-LFF configurations, four fans and two blanks are required in specific fan bays for redundancy. A fan failure or missing fan causes a loss of redundancy. A second fan failure or missing fan causes an orderly shutdown of the server.

For a dual-processor configuration or single-processor 24-SFF or 12-LFF configurations, six fans are required for redundancy. A fan failure or missing fan causes a loss of redundancy. A second fan failure or missing fan causes an orderly shutdown of the server.

High-performance fans might be necessary in 24-SFF and 12-LFF configurations for the following installations:

- Optional GPU riser installations
- ASHRAE compliant configurations
  For more information, see the **Hewlett Packard Enterprise website**.

The server supports variable fan speeds. The fans operate at minimum speed until a temperature change requires a fan speed increase to cool the server. The server shuts down during the following temperature-related scenarios:

- At POST and in the OS, iLO performs an orderly shutdown if a cautionary temperature level is detected. If the server hardware detects a critical temperature level before an orderly shutdown occurs, the server performs an immediate shutdown.
- When the Thermal Shutdown feature is disabled in the BIOS/Platform Configuration (RBSU), iLO does not perform an orderly shutdown when a cautionary temperature level is detected. Disabling this feature does not disable the server hardware from performing an immediate shutdown when a critical temperature level is detected.

CAUTION

A thermal event can damage server components when the Thermal Shutdown feature is disabled in the BIOS/Platform Configuration (RBSU).

Installing high-performance fans

About this task

CAUTION

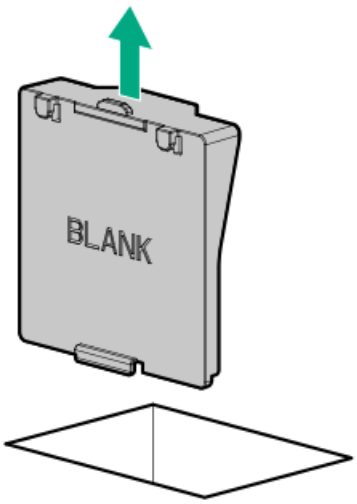
Caution: To prevent damage server, ensure that all DIMM latches are closed and locked before installing the fans.

CAUTION

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

Procedure

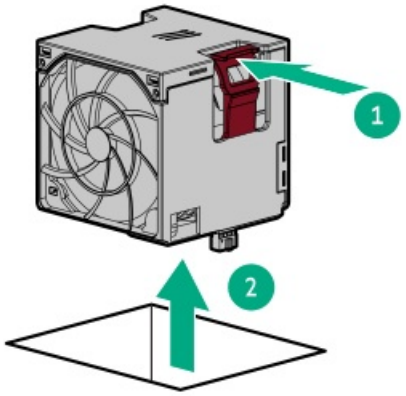
1. Extend the server from the rack.
2. Remove the access panel.
3. If installed, remove all fan blanks.



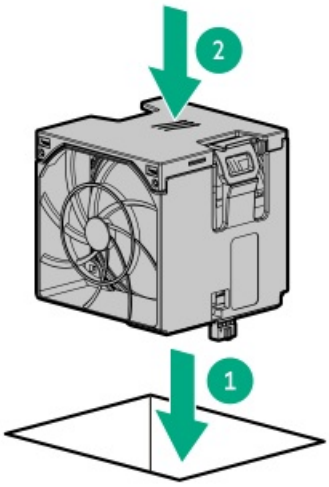
4. Remove all standard fans.

IMPORTANT

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



5. Install high-performance fans in all fan bays.



6. Install the access panel.

Results

The installation is complete.

Drive cage options

Subtopics

Installing a front 8SFF drive cage
Installing a front 2SFF side-by-side drive cage
Installing a front 2SFF stacked drive cage
Installing a midplane drive cage
Installing a rear 2SFF stacked drive cage

Installing a front 8SFF drive cage

About this task

The drive cage can be installed in any box.

WARNING

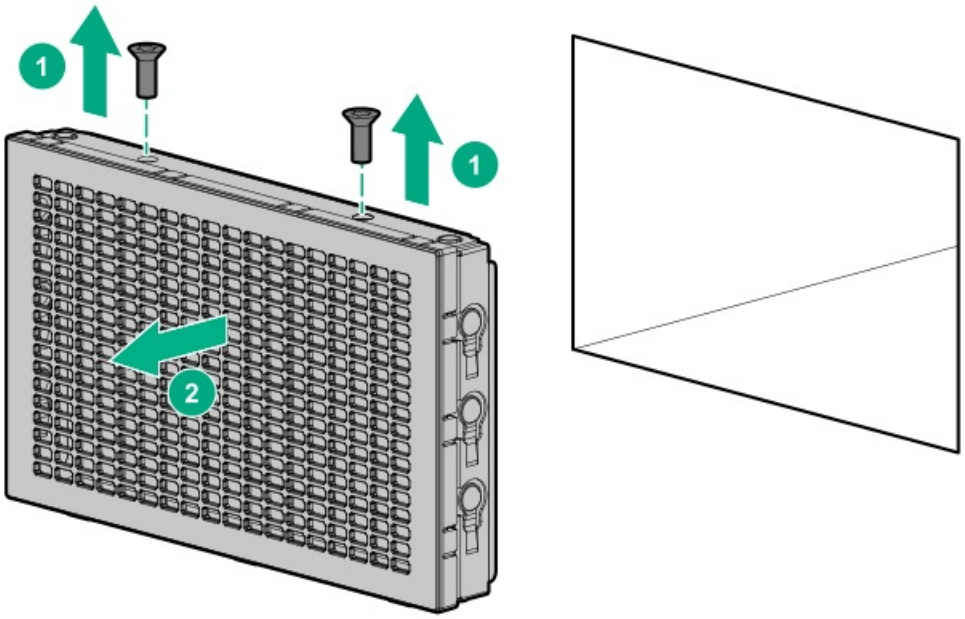
To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

CAUTION

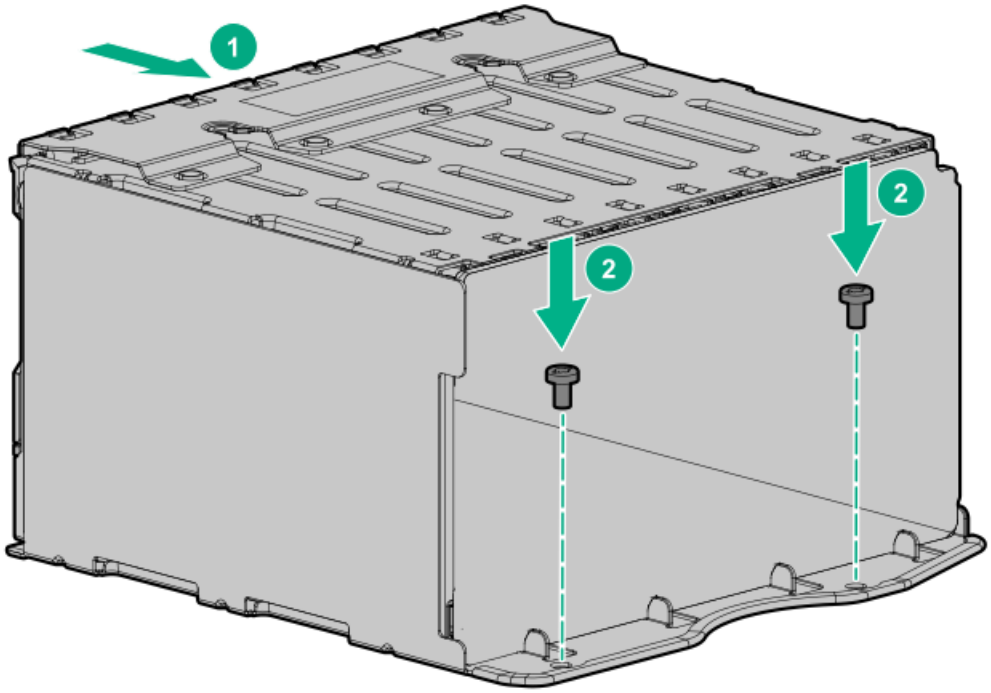
To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause ESD.

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the air baffle.
6. Remove the fan cage.
7. Remove the drive cage blank.



8. Install the drive cage:



9. Connect the power cable to the drive backplane power connector .
10. Connect the data cables from the drive backplane to the NVMe riser .
11. Install drives or drive blanks.

Results

The installation is complete.

Installing a front 2SFF side-by-side drive cage

About this task

WARNING

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

CAUTION

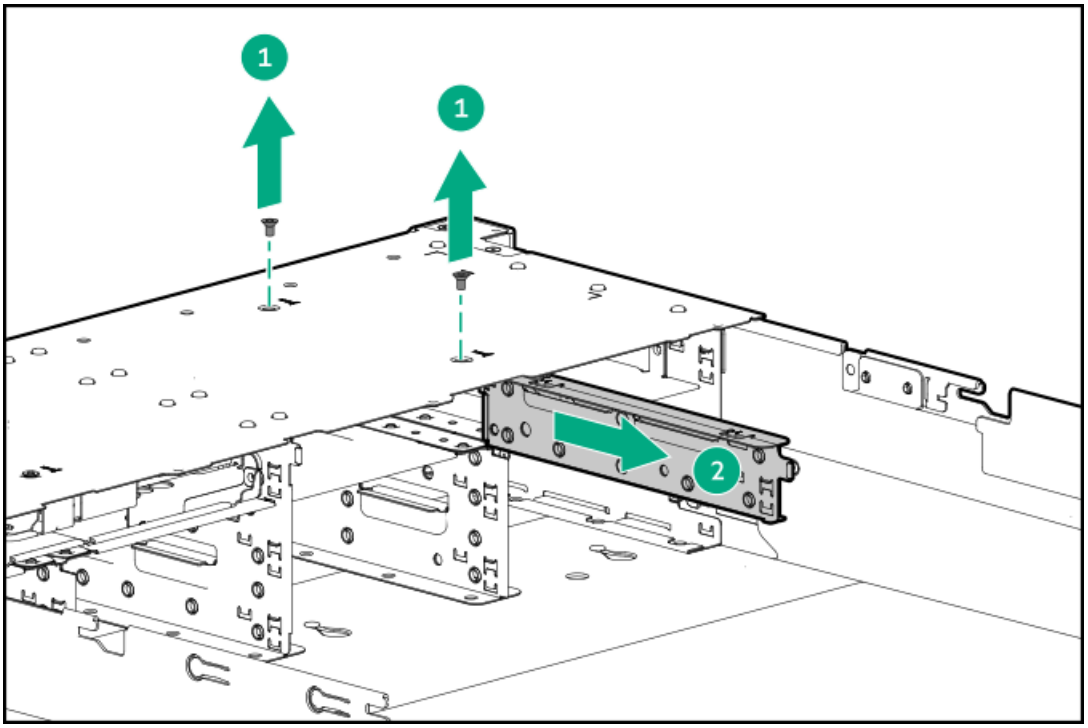
To prevent damage to electrical components, properly ground the server before beginning any installation procedure. Improper grounding can cause ESD.

Procedure

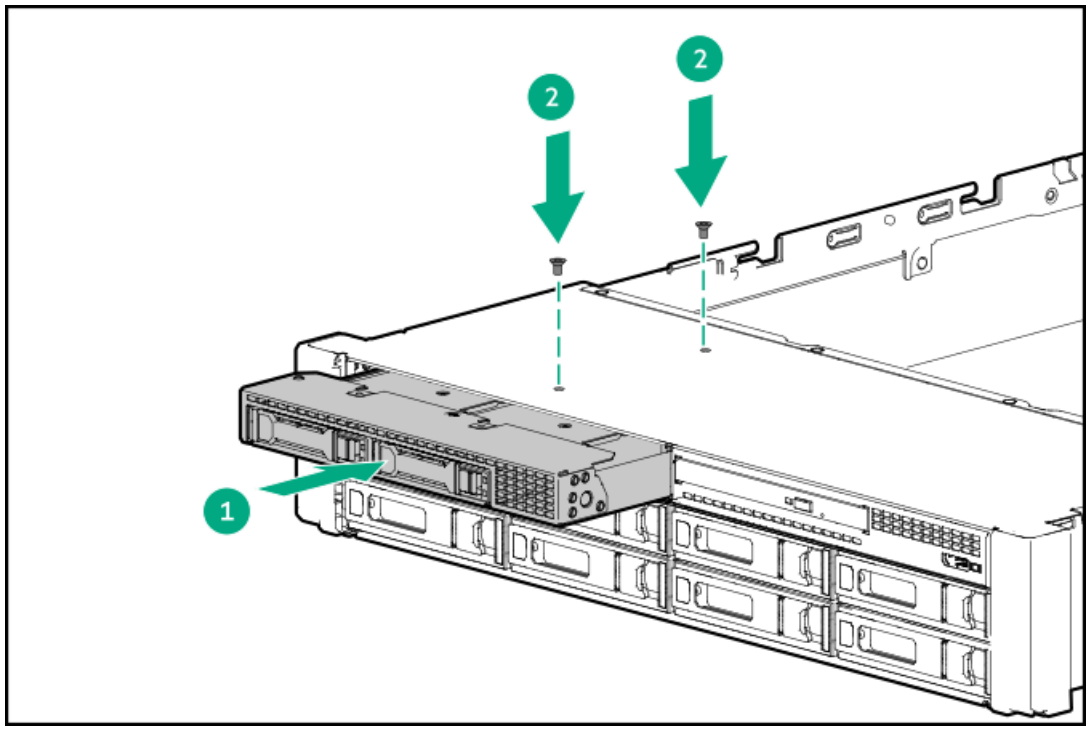
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.

- Remove the server from the rack.

4. Remove the access panel.
5. Remove the air baffle.
6. Remove the fan cage.
7. Remove the drive cage blank.
8. Remove the support bracket.



9. Install the drive cage:



10. Connect the power cable to the drive backplane power connector .

11. Connect the data cables from the drive backplane to the NVMe riser .
12. Install drives or drive blanks.
13. Install the access panel.
14. Slide the server into the rack.
15. Connect each power cord to the server.
16. Connect each power cord to the power source.
17. Power up the server.

Results

The installation is complete.

Installing a front 2SFF stacked drive cage

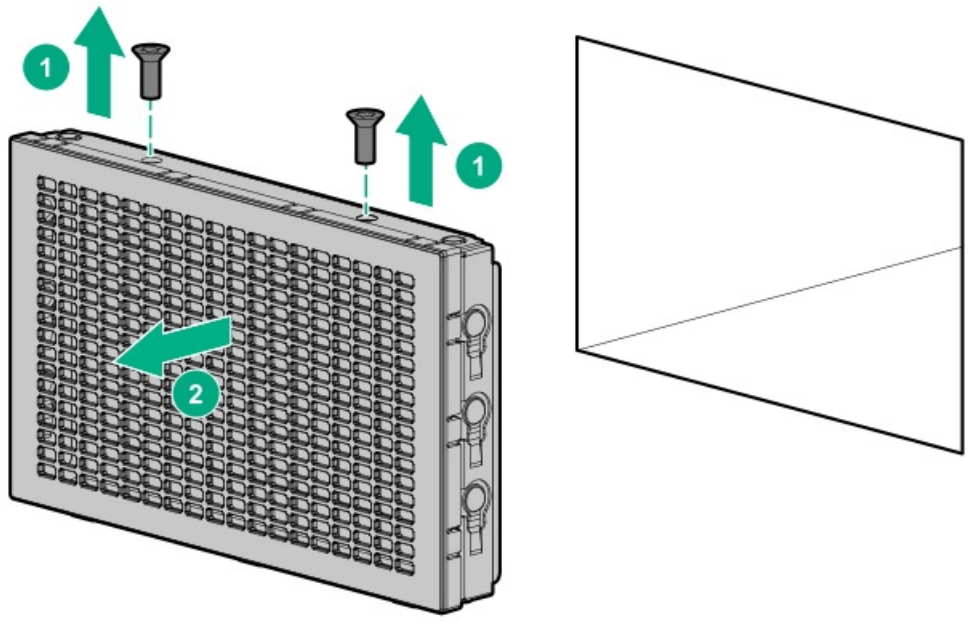
Prerequisites

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

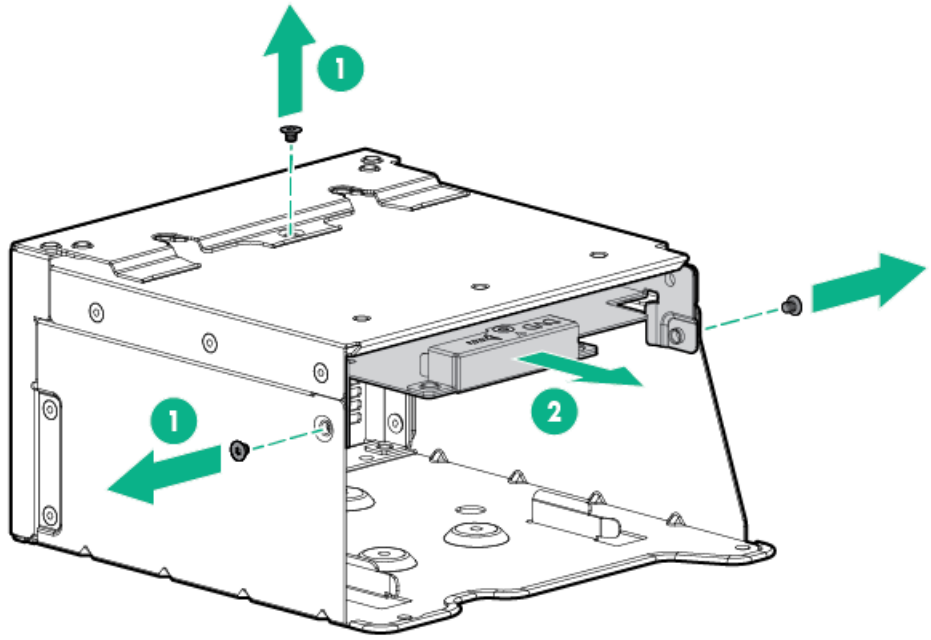
- T-10 Torx screwdriver
- The components included with the hardware option kit
- This installation requires a universal media bay.

Procedure

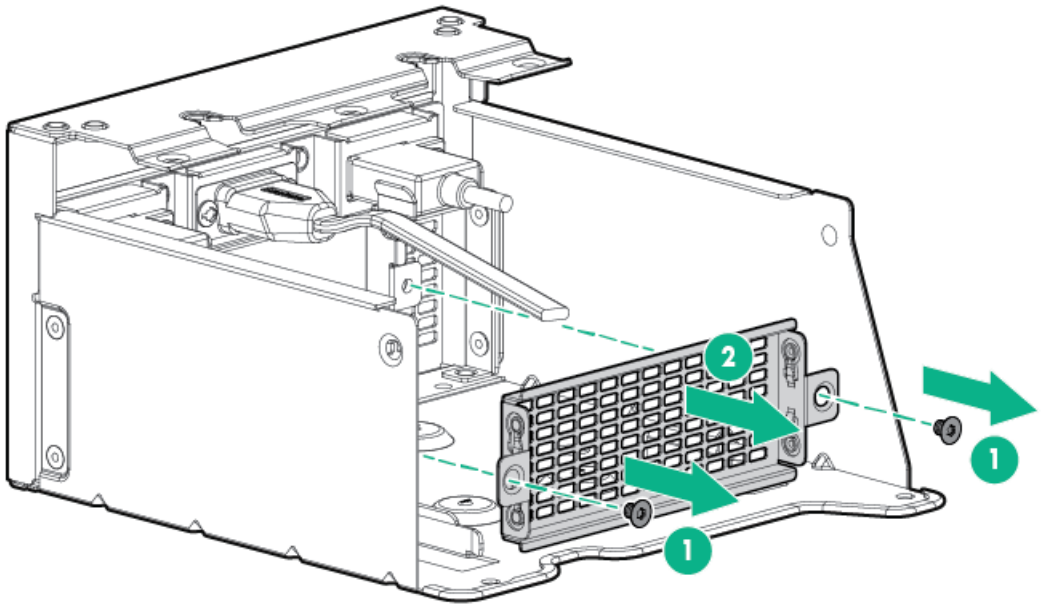
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the drive cage blank.



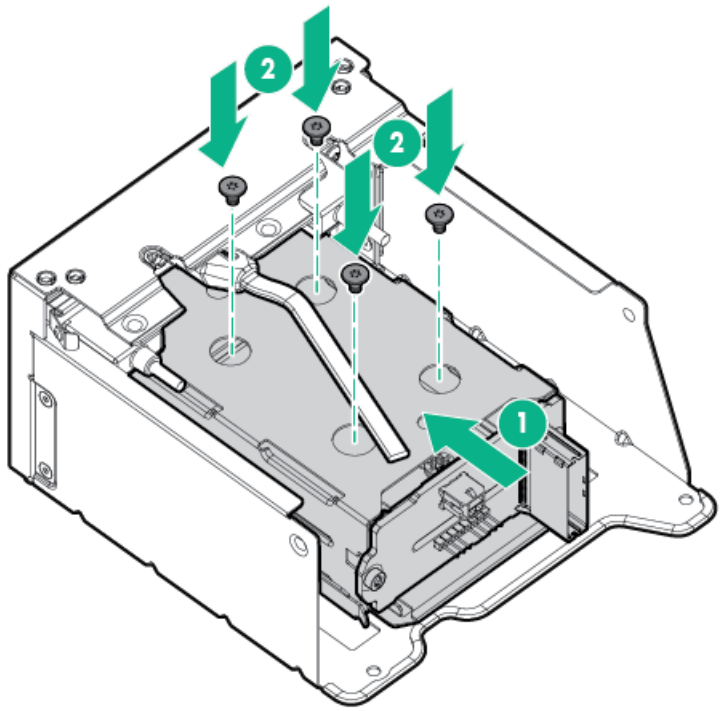
6. Remove the optical disc drive tray from the universal media bay.



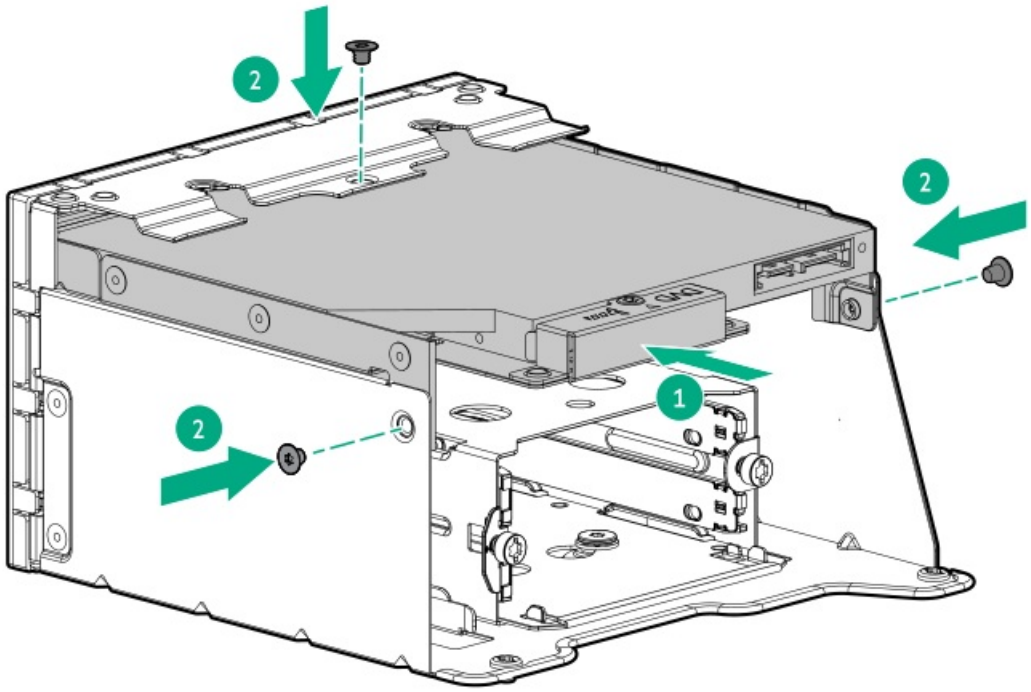
7. Remove the SFF drive blank from the universal media bay.



8. Install the drive cage into the universal media bay.



9. Install the optical disc drive tray.



10. Install the universal media bay.
11. Connect the power and data cables.
12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Installing a midplane drive cage

Prerequisites

Before you perform this procedure, make sure that the components included with the hardware option kit are available.

About this task

- A 1U performance heatsink is required for each processor when installing this option.

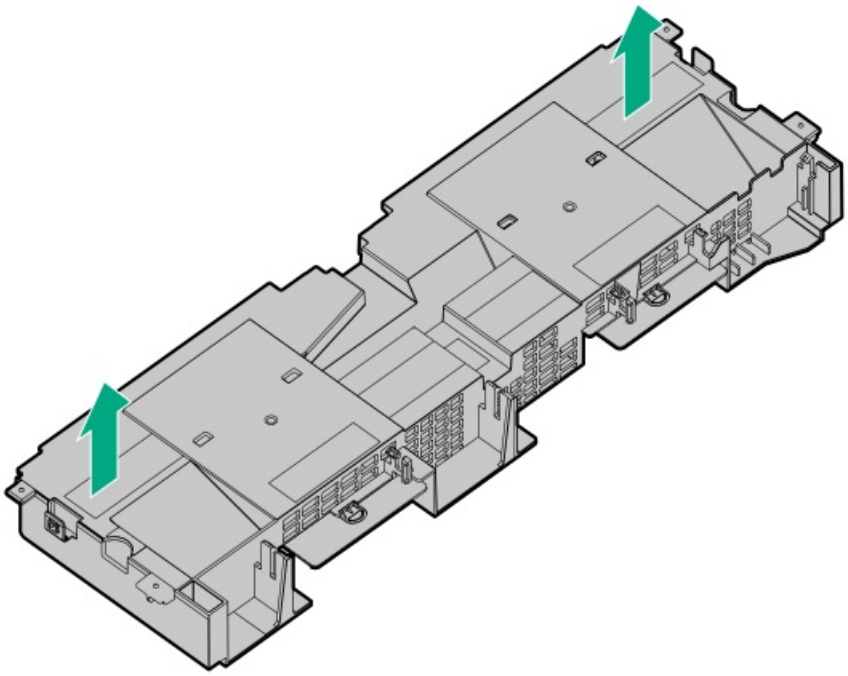
Procedure

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. Do one of the following:
   - Extend the server from the rack.

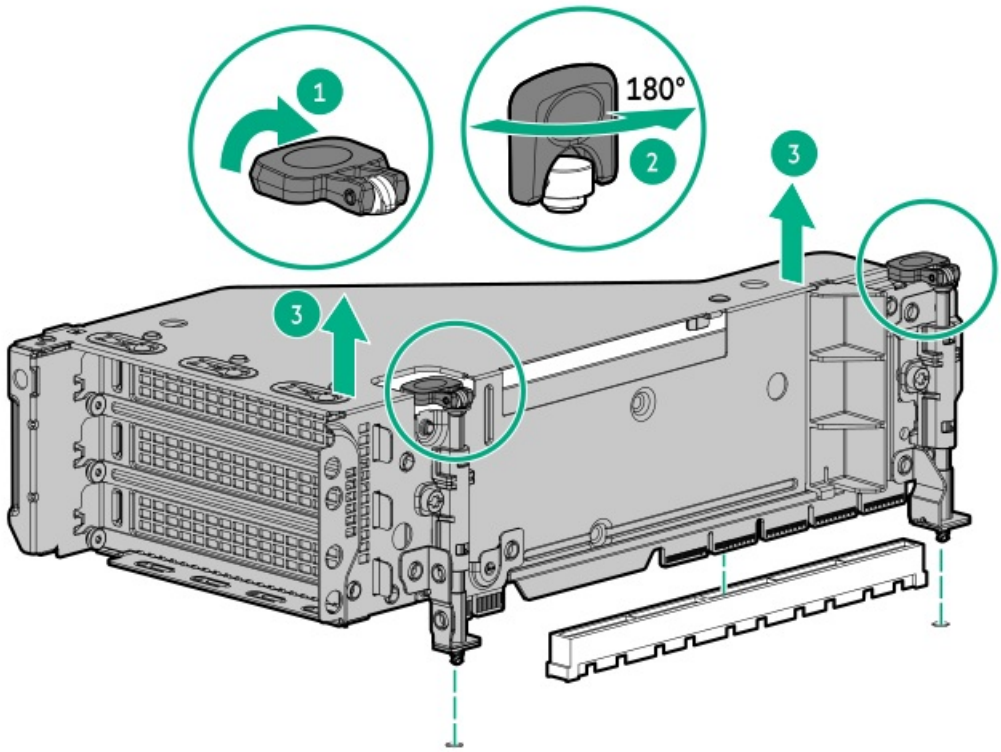
- Remove the server from the rack.

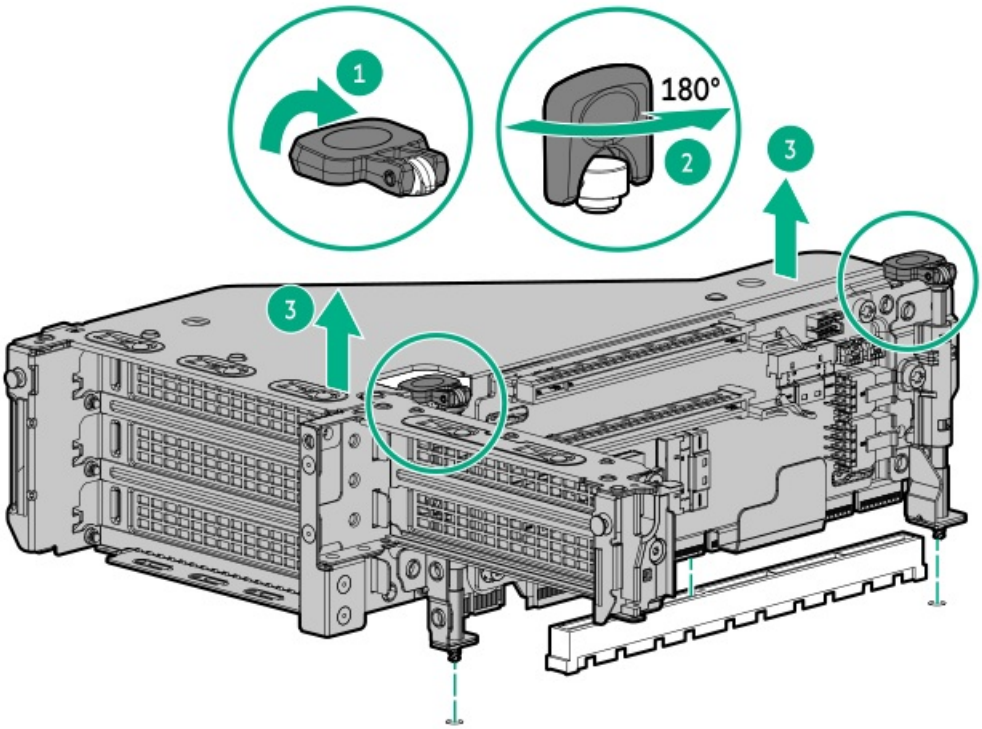
4. Remove the access panel.
5. Remove the air baffle.

   The air baffle is no longer needed. The drive cage acts as an air baffle for the server.



6. Remove all riser cages.

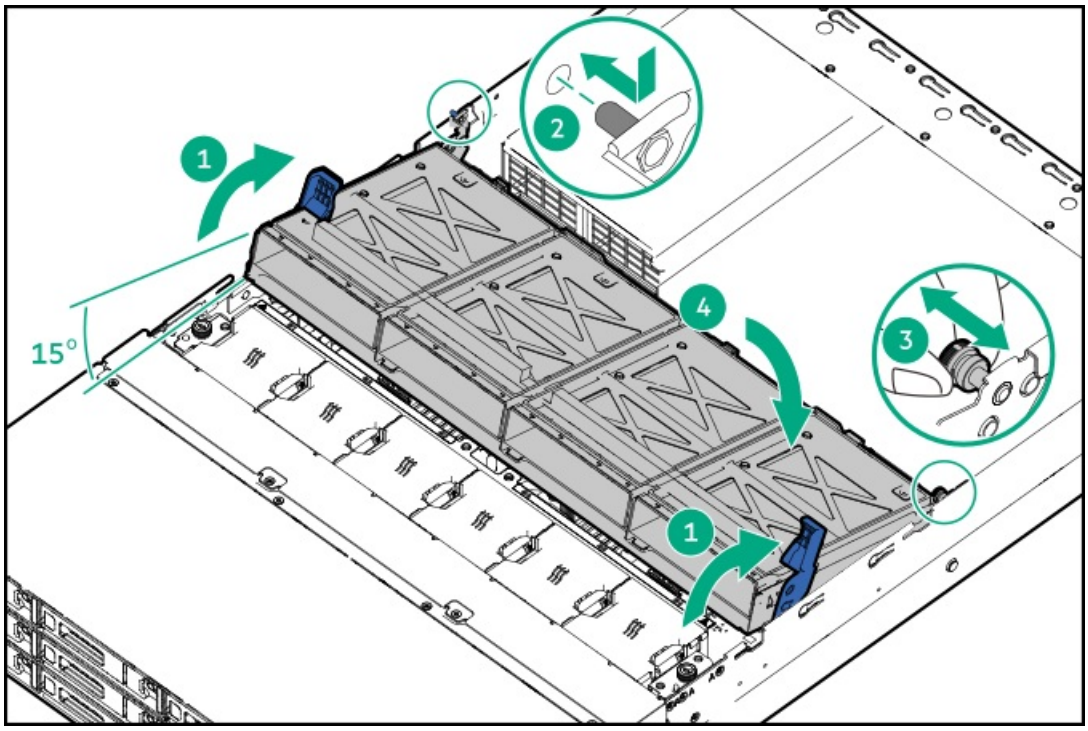




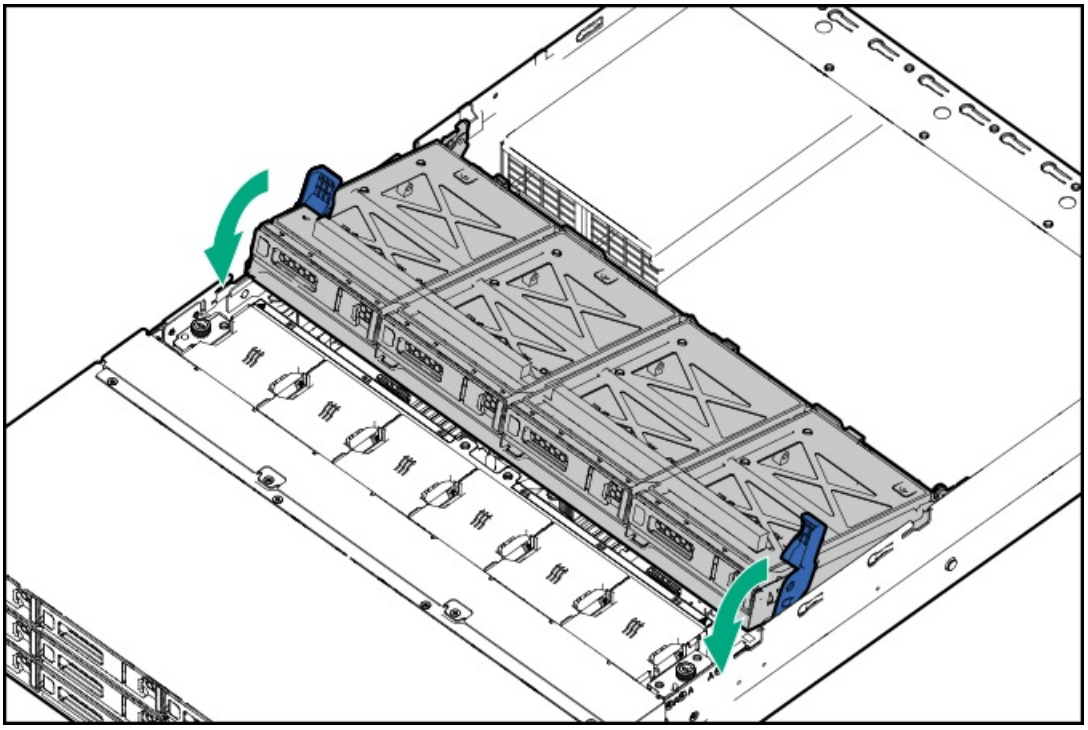
7. Prepare the drive cage for installation by lifting the latches on the drive cage.
8. Install the drive cage:

> **CAUTION**
>
> Do not drop the drive cage on the system board. Dropping the drive cage on the system board might damage the system or components. Remove all drives and use two hands when installing or removing the drive cage.

   a. Locate the alignment pins on the rear of the drive cage.
   b. Align the pin on the rear left of the drive cage to the server and then insert the pin.
   c. Gently lower the opposite side of the drive cage.
   d. Pull the plunger pin on the rear right of the drive cage and then lower the drive cage until the plunger pin engages.



9. Install drives or drive blanks.
10. Push down on the latches to lower the drive cage into place.



11. Connect the power and data cables to the drive backplane .
12. Install the riser cages .
13. Install the access panel .
14. Slide the server into the rack.
15. Connect each power cord to the server.
16. Connect each power cord to the power source.

17. Power up the server.

Results

The installation is complete.

Installing a rear 2SFF stacked drive cage

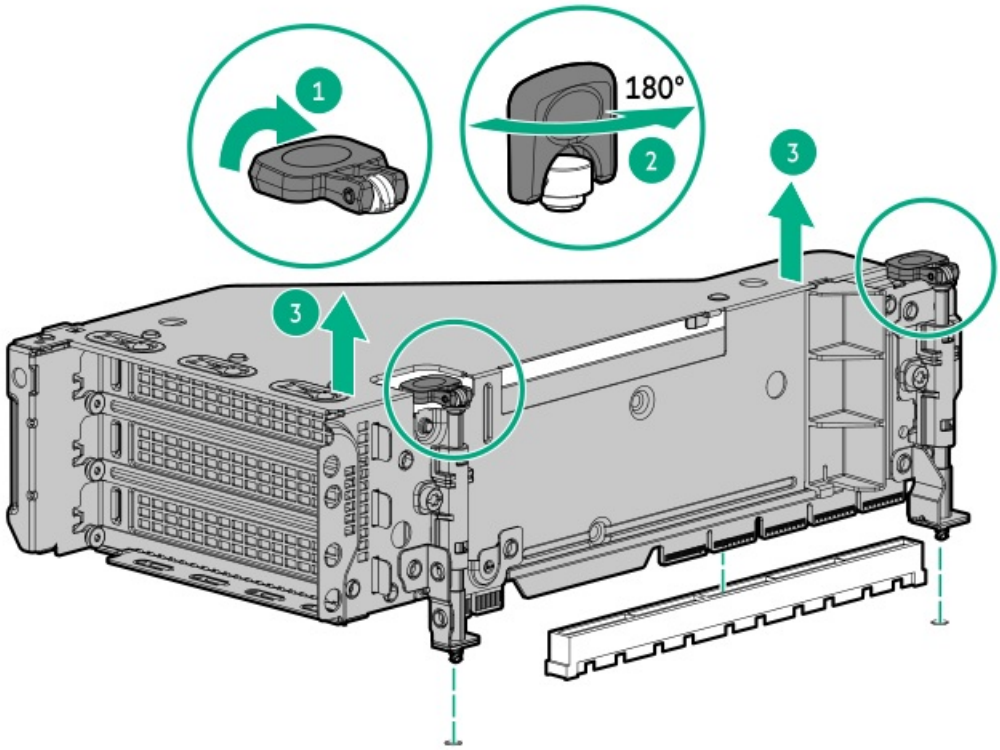
Prerequisites

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

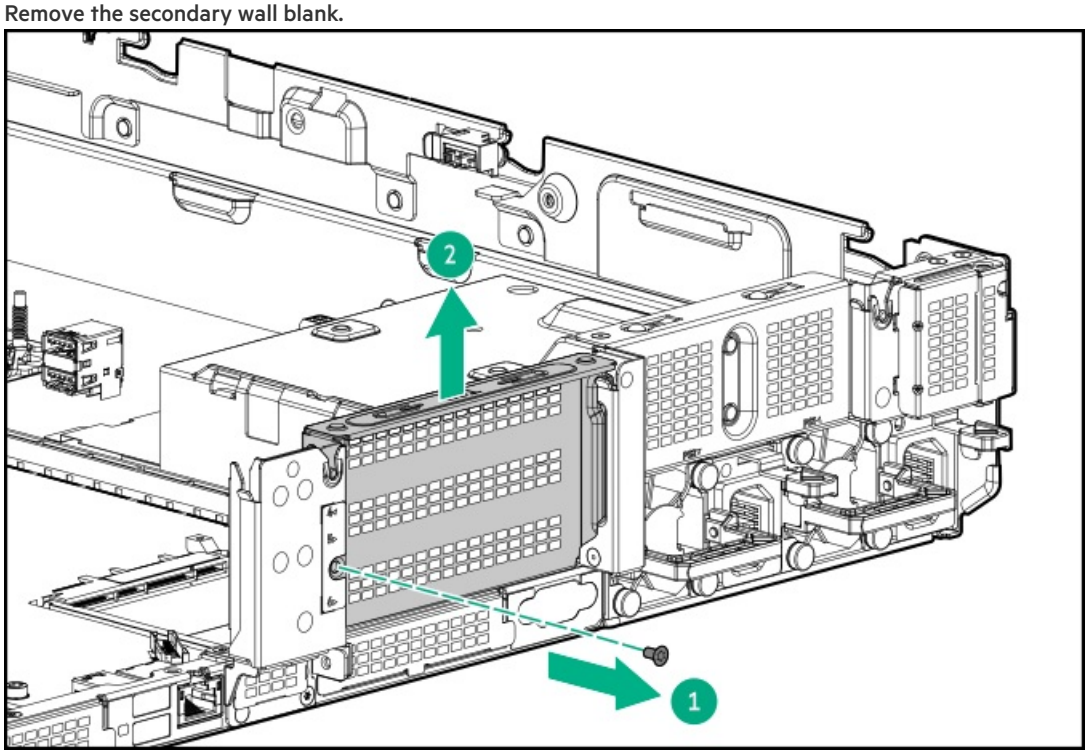
- T-10 Torx screwdriver
- The components included with the hardware option kit
- The front bays are fully populated with 12 LFF or 24 SFF drives
- High-performance fans are installed in all fan bays

Procedure

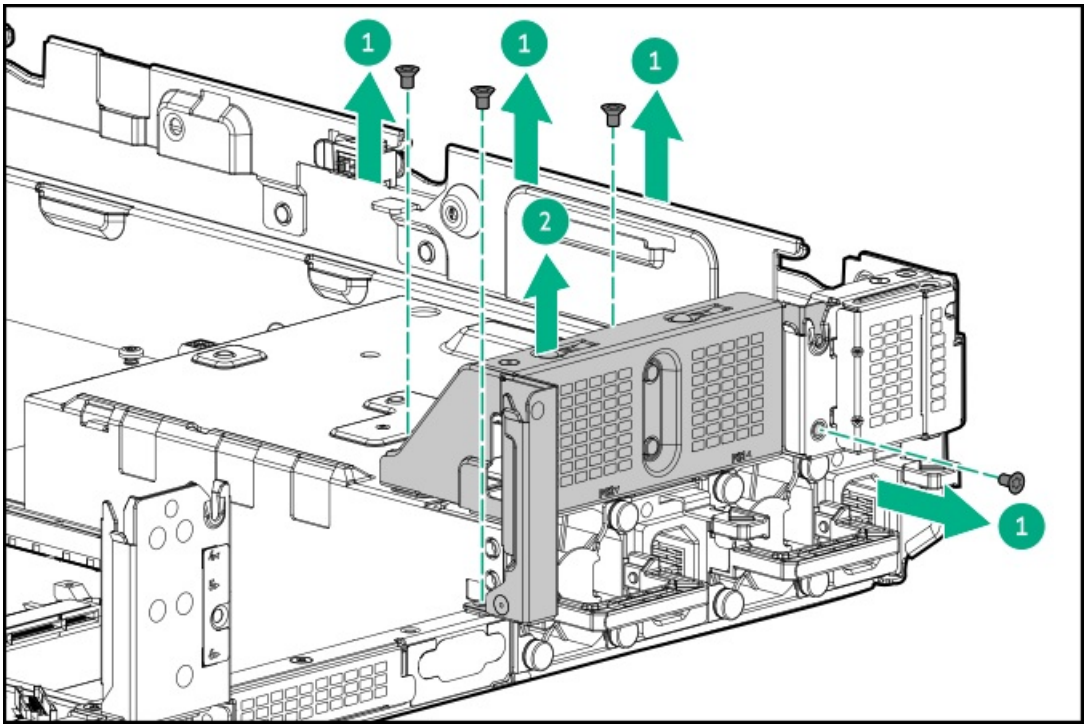
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Do one of the following:
   - If installed, remove the secondary riser cage.



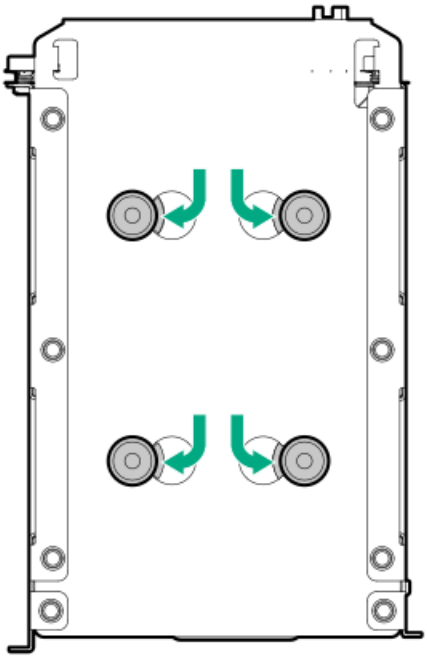
- Remove the secondary wall blank.



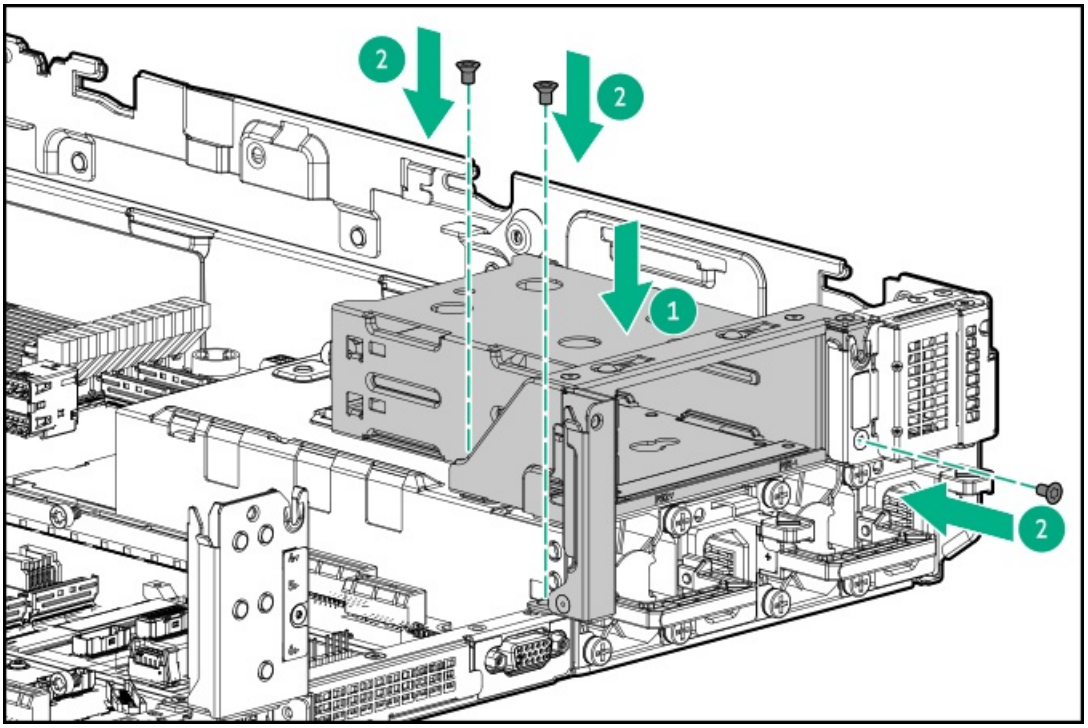
6. Remove the tertiary wall blank.

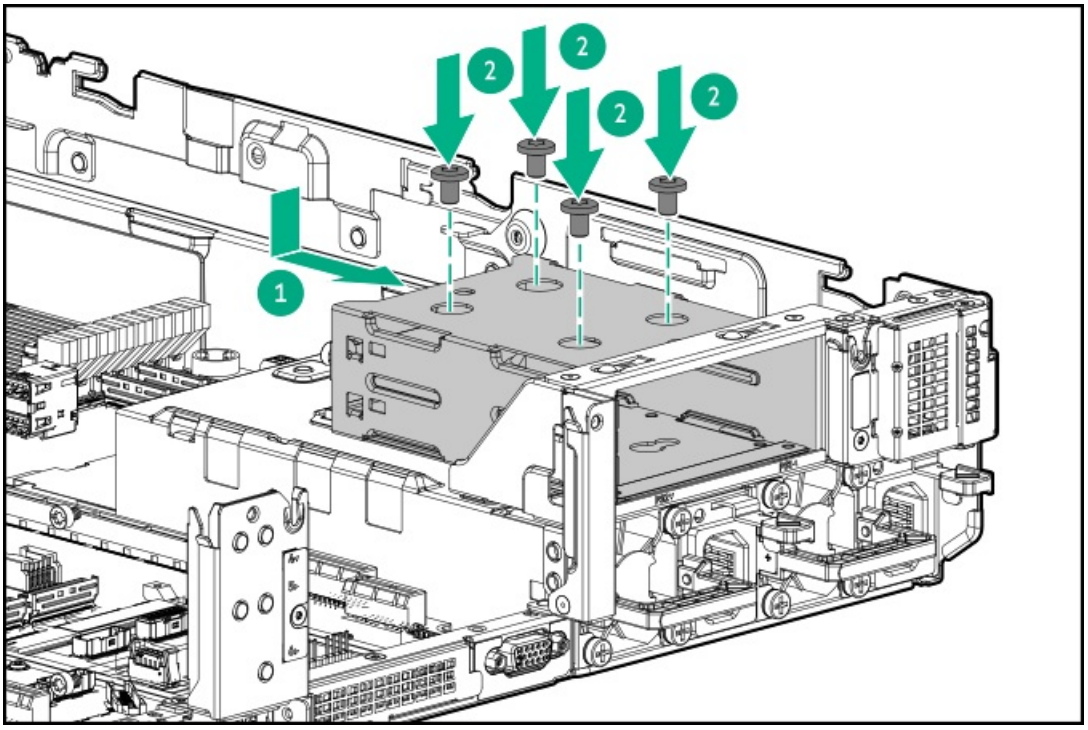


7. Install grommets onto drive cage.



8. Install the drive cage.





9. Install drives or drive blanks.
10. Install the secondary rear wall or a secondary riser cage.
11. Cable the drive backplane.
12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Drives

Subtopics

Drive guidelines
Installing a hot-plug LFF/SFF SAS, SATA or NVMe drive
Installing an E3.S drive

Drive guidelines

Observe the following general guidelines:

- The system automatically sets all drive numbers.
- If only one hard drive is used, install it in the bay with the lowest drive number.
  For drive numbering, see Drive bay numbering.
- The NVMe SSD is a PCIe bus device. Devices attached to a PCIe bus cannot be removed without allowing the device and bus to complete and cease the signal/traffic flow.
  Do not remove an NVMe SSD from the drive bay while the Do Not Remove button LED is flashing. The Do Not Remove button LED flashes to indicate that the device is still in use. Removal of the NVMe SSD before the device has completed and ceased signal/traffic flow can cause loss of data.
- Drives with the same capacity provide the greatest storage space efficiency when grouped into the same drive array.

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

About this task

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

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

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

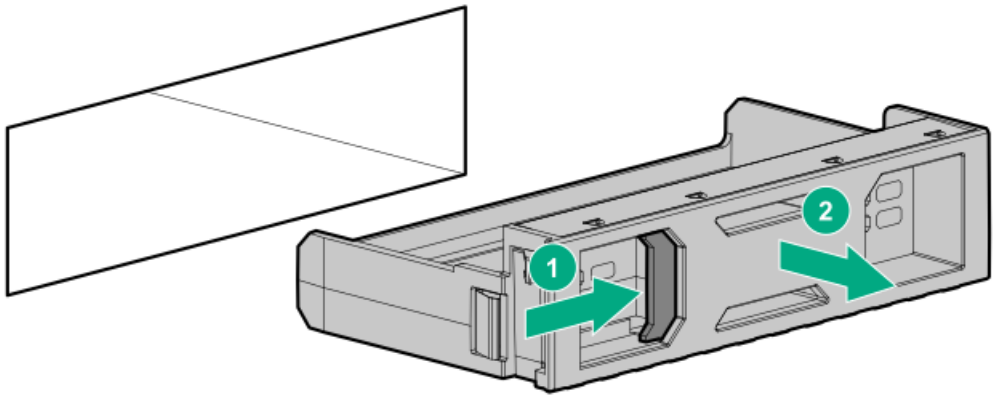
CAUTION
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

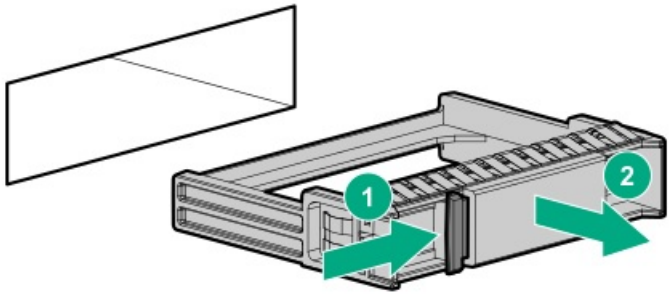
1. Remove the drive blank.

Retain the blank for future use.

- LFF drive blank

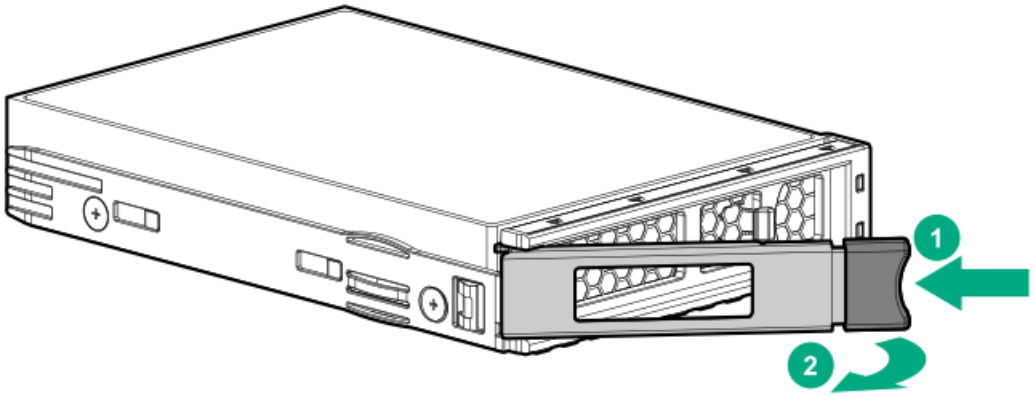


- SFF drive blank

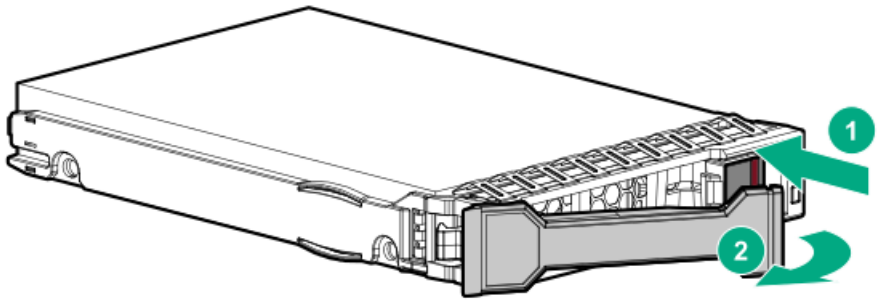


2. Prepare the drive.

- LFF drive

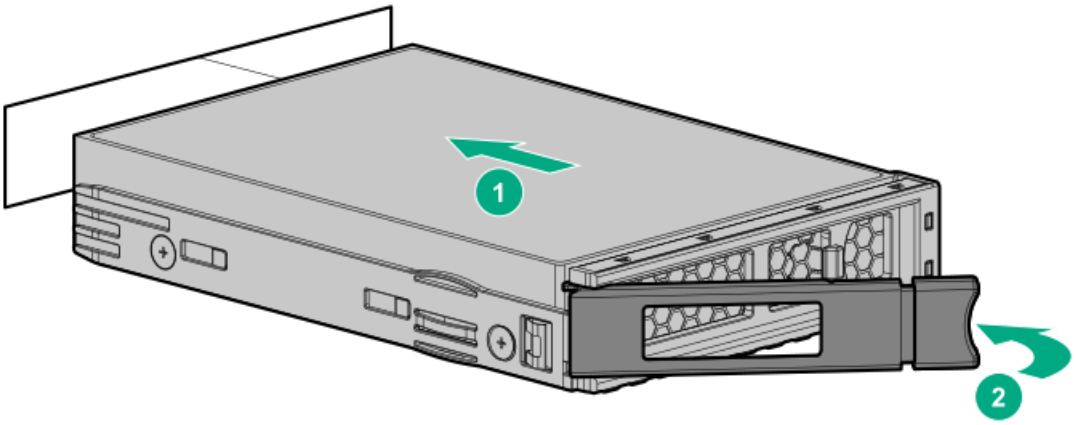


- SFF drive

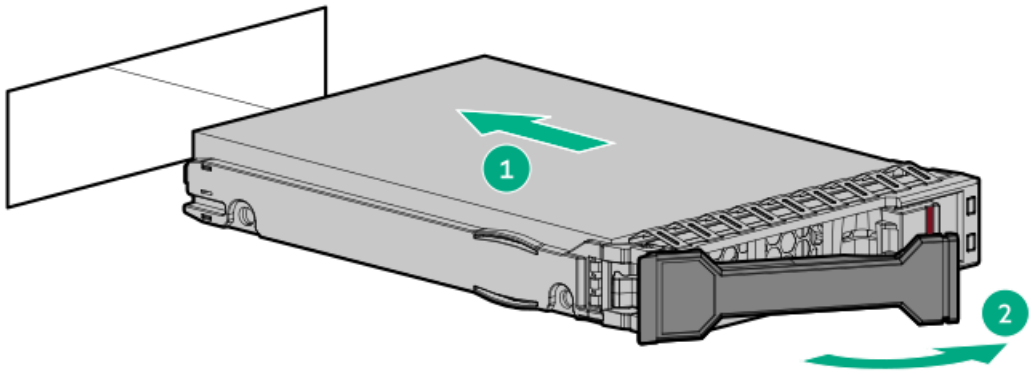


3. Install the drive.

- LFF drive



- SFF drive



4. Determine the status of the drive from the drive LED definitions .
5. If removed, install the front bezel.
6. Configure the controller.

Results

The installation 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

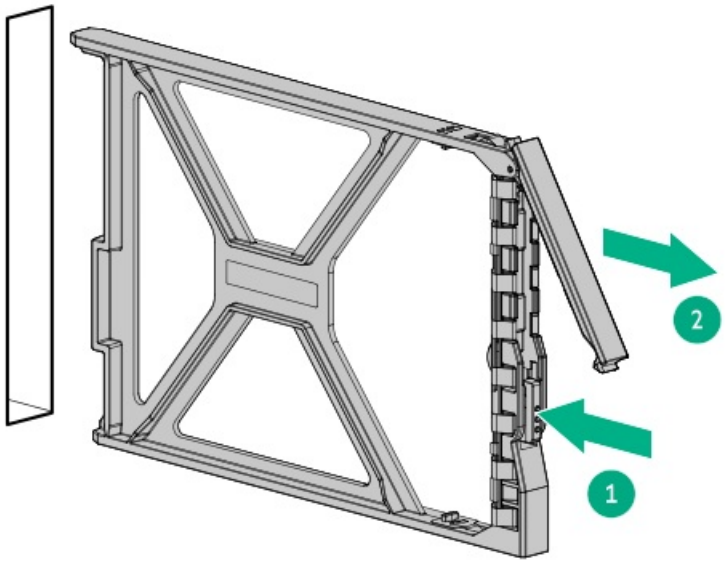
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

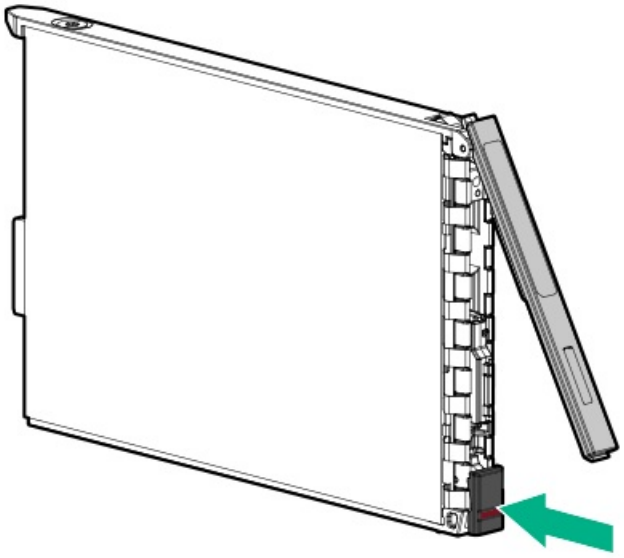
1. Back up all server data on the drive.

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

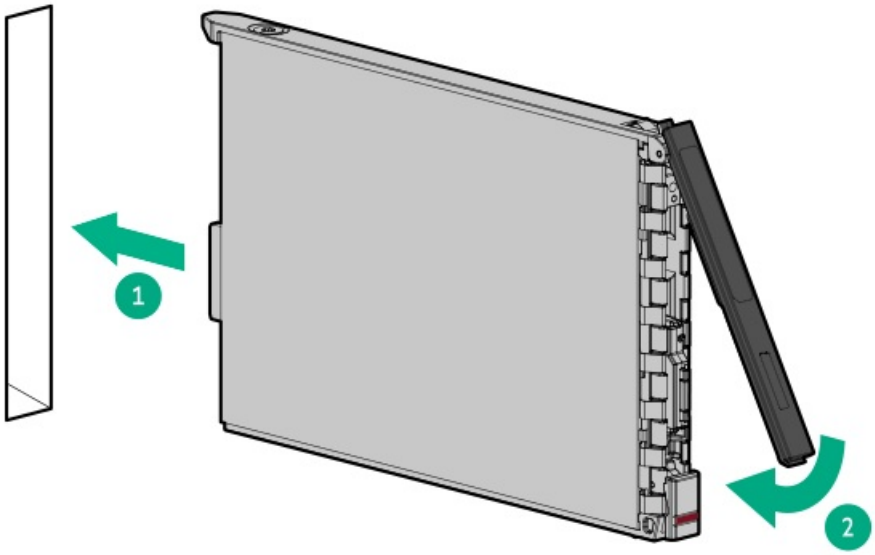
   Retain the blank for future use.



5. Prepare the drive.



6. Install the drive.



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

Results

The installation 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/ilo6

Subtopics

Minimum firmware versions
HPE Smart Storage Battery
HPE Smart Storage Hybrid Capacitor
Installing a smart storage battery/capacitor

Minimum firmware versions

Product	Minimum firmware version
Server system ROM	1.20
HPE MR type-o and type-p Gen11 controllers	52.22.3-4650
HPE SR900 series type-p Gen11 controllers	03.01.14.062

HPE Smart Storage Battery

The HPE Smart Storage Battery supports both HPE SR and MR storage controllers.

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

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

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

HPE Smart Storage Hybrid Capacitor

The HPE Smart Storage Hybrid Capacitor supports both HPE SR and MR storage controllers.

The capacitor pack can support up to two devices.

This server supports the HPE Smart Storage Hybrid Capacitor with the 145 mm cable.

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

IMPORTANT

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

The capacitor pack is fully charged after the system boots.

Installing a smart storage battery/capacitor

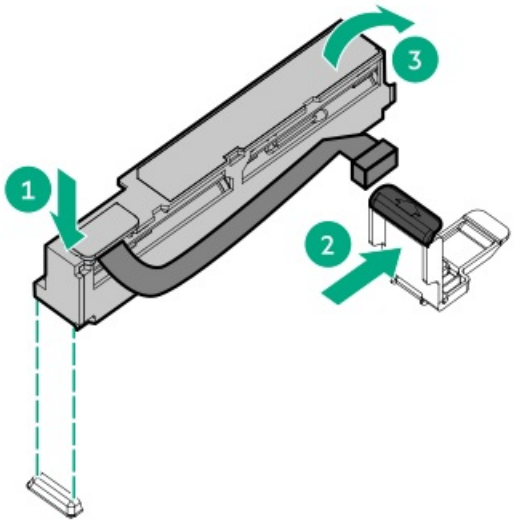
Prerequisites

Be sure you have the components included with the hardware option kit.

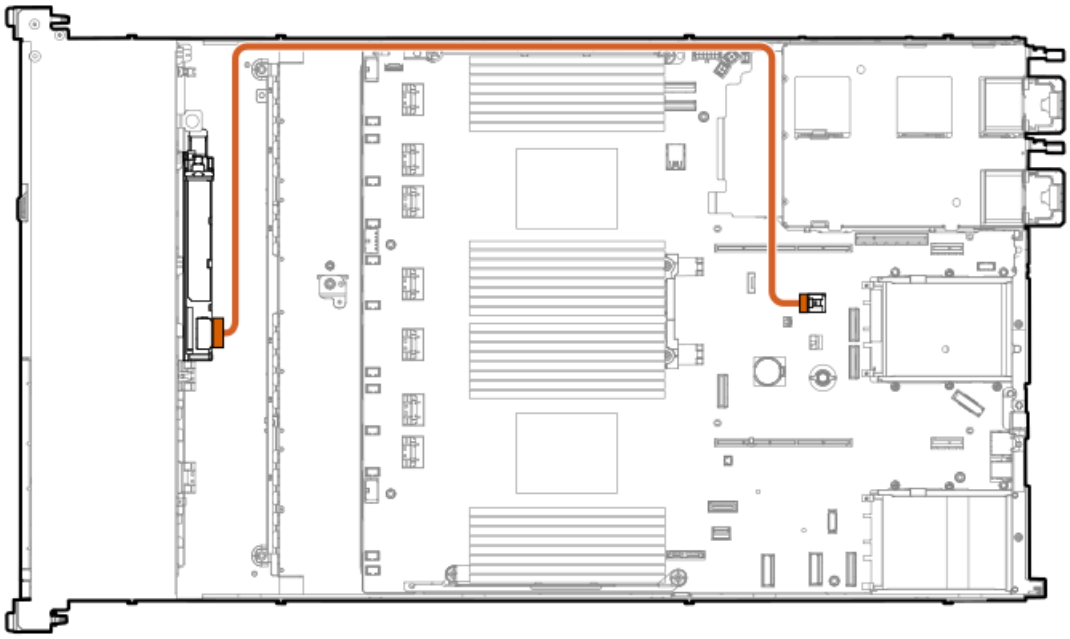
Procedure

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. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.

4. Remove the access panel.
5. Install the energy pack.



6. If needed, connect the extension cable.
7. Connect the cable to the system board.



8. Install the access panel.
9. Install the server in the rack.
10. Connect each power cord to the server.
11. Connect each power cord to the power source.
12. Power up the server.

Results

The installation is complete.

Management

Subtopics

Installing the Systems Insight Display
Installing a rear serial port interface

Installing the Systems Insight Display

Prerequisites

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

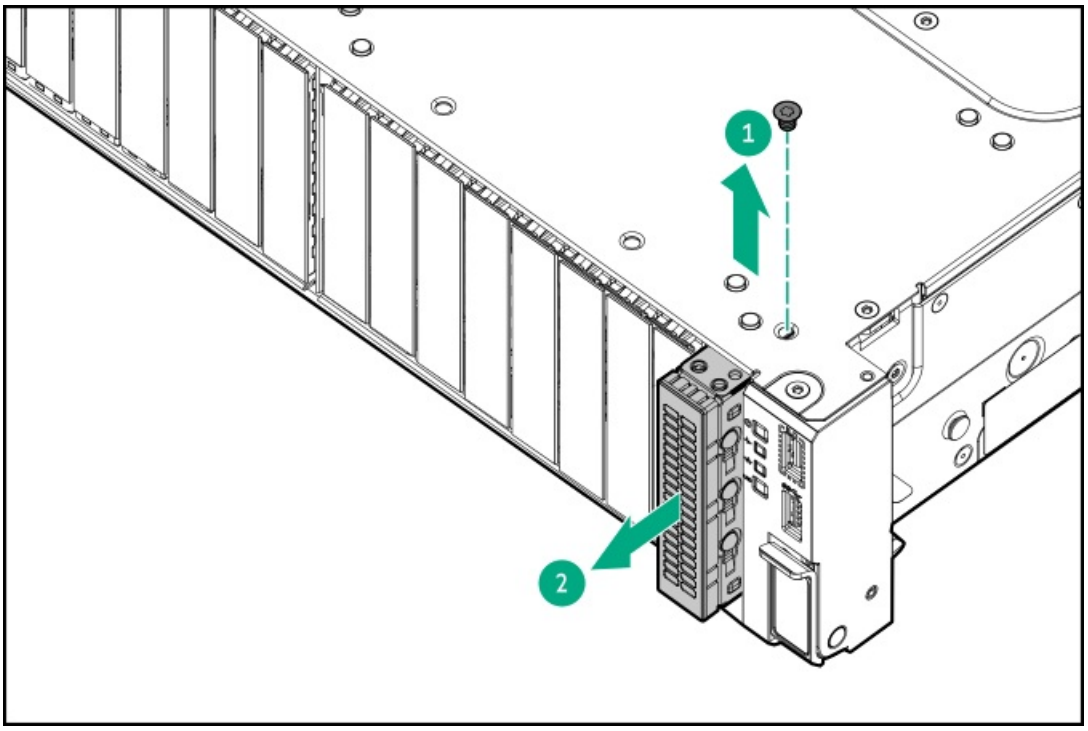
- The components included with the hardware option kit
- T-10 Torx screwdriver

About this task

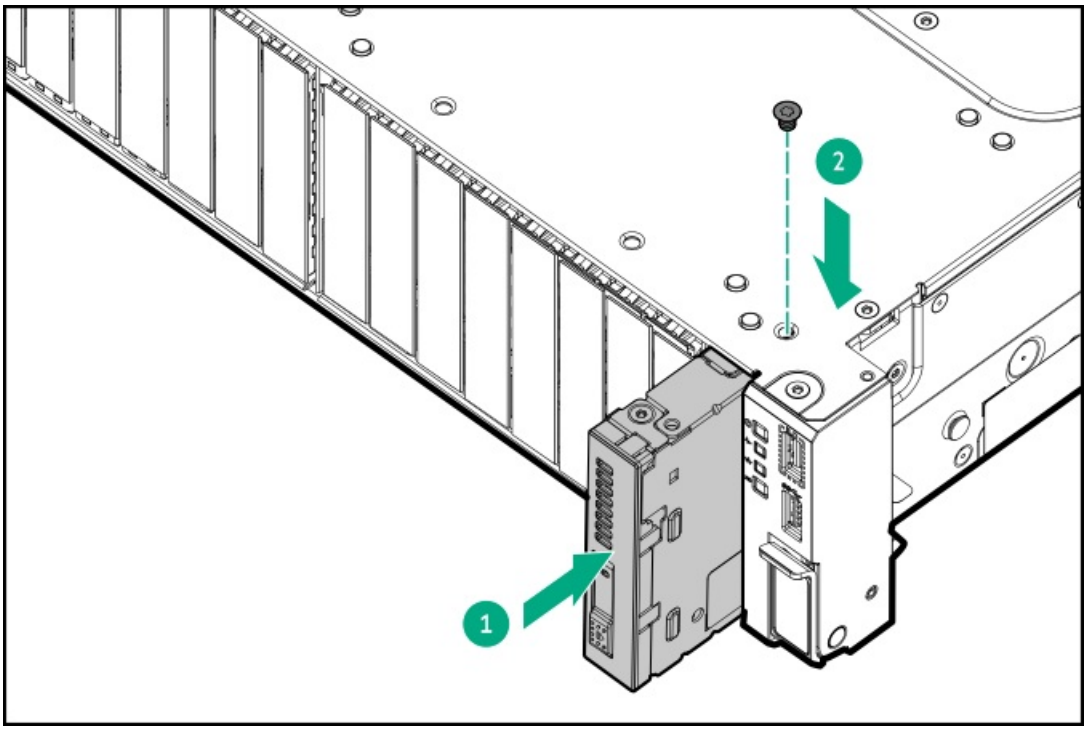
The Systems Insight Display is only supported on SFF models.

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Do one of the following:
   - Remove the air baffle.
   - If installed, remove the midplane drive cage.
6. Remove the fan cage.
7. Using a T-10 driver, remove the power switch module blank. Retain the T-10 screw.



8. Route the SID cable through the opening in the front of the server, and then install the SID module. Secure the module using the T-10 screw.



9. Connect the SID module cable to the SID module connector .

> **CAUTION**
>
> When routing cables, make sure that the cables are not in a position where they can be pinched or crimped.

10. Install the fan cage.
11. Do one of the following:

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

12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Results

The installation is complete.

Installing a rear serial port interface

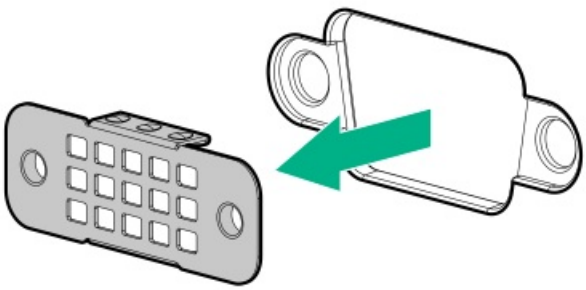
Prerequisites

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

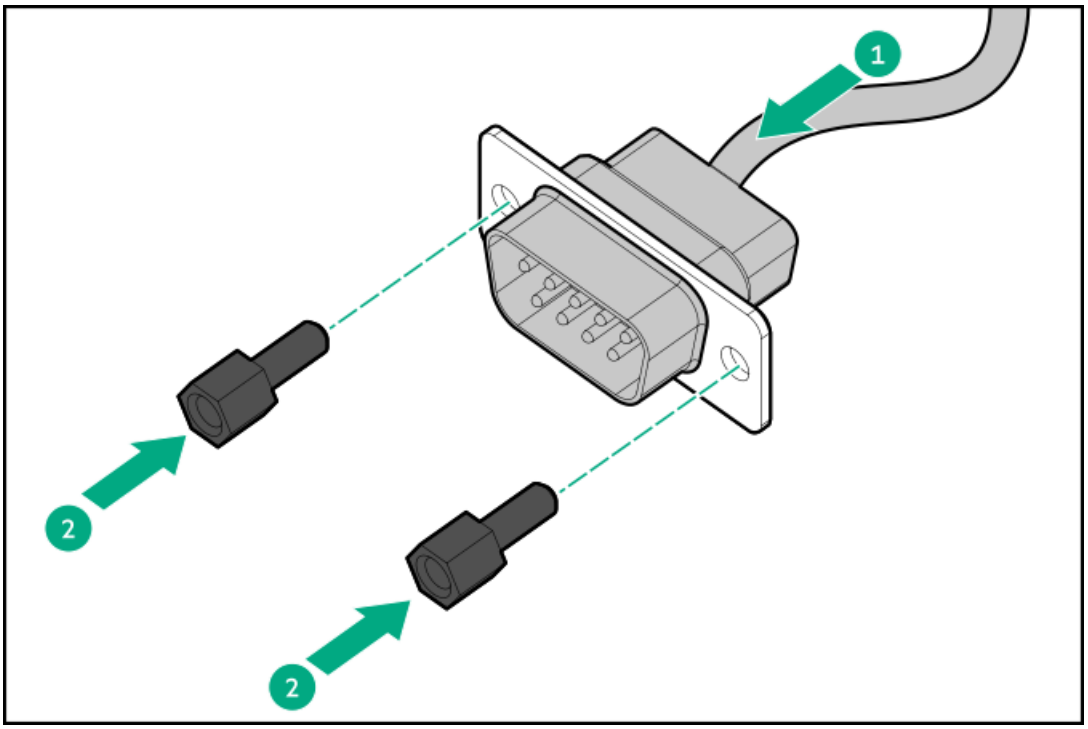
The components included with the hardware option kit

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the serial port blank.



6. Install the serial port interface.



7. Connect the cable to the system board.
8. Install the access panel.
9. Install the server in the rack.
10. Connect each power cord to the server.
11. Connect each power cord to the power source.
12. Power up the server.

Results

The installation is complete.

Memory

Subtopics

Memory population information
DIMM-processor compatibility
Installing a DIMM

Memory population information

For specific memory population information, see the memory population guidelines on the Hewlett Packard Enterprise website (https://www.hpe.com/docs/server-memory).

DIMM-processor compatibility

Fourth-generation Intel Xeon Scalable processors support DDR5-4800 DIMMs.

Do not mix DIMMs. Install only the supported DDR5-4800 DIMMs in the server.

Installing a DIMM

Prerequisites

Before installing this option, be sure you have the following:

The components included with the hardware option kit

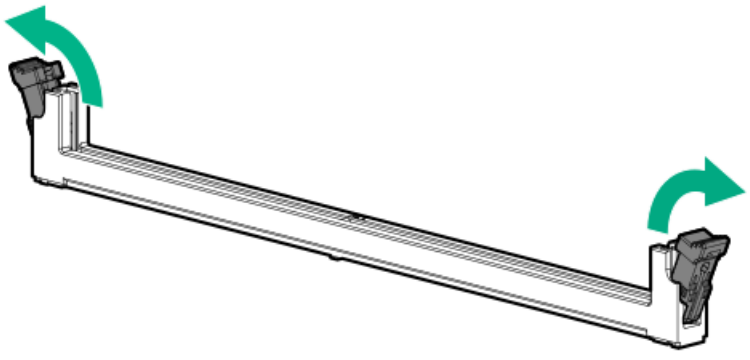
For more information on specific options, see the server QuickSpecs on the **Hewlett Packard Enterprise website**.

About this task

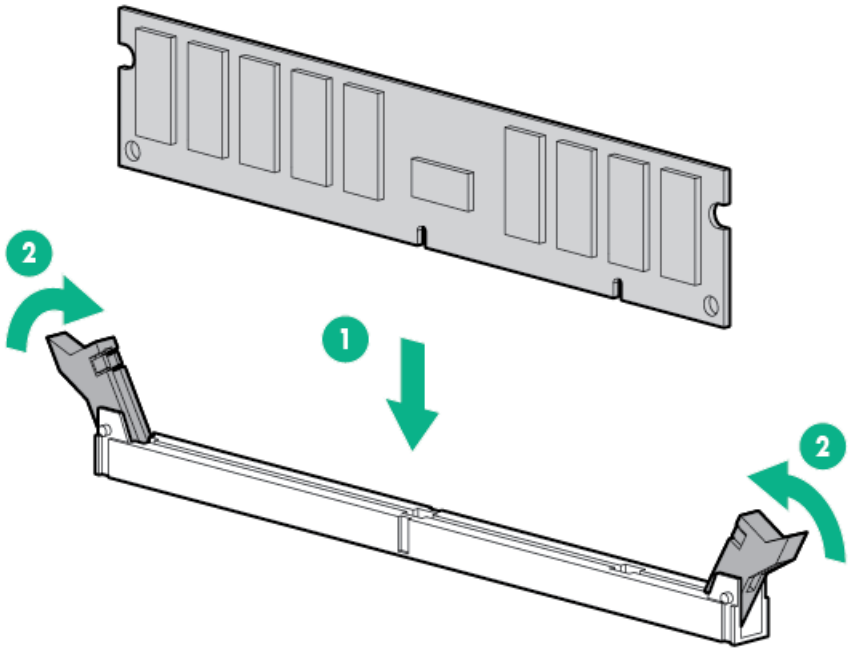
The server supports up to 32 DIMMs.

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. Do one of the following:
   a. Extend the server from the rack.
   b. Remove the server from the rack.
4. Remove the access panel.
5. Remove the air baffle.
6. Open the DIMM slot latches.

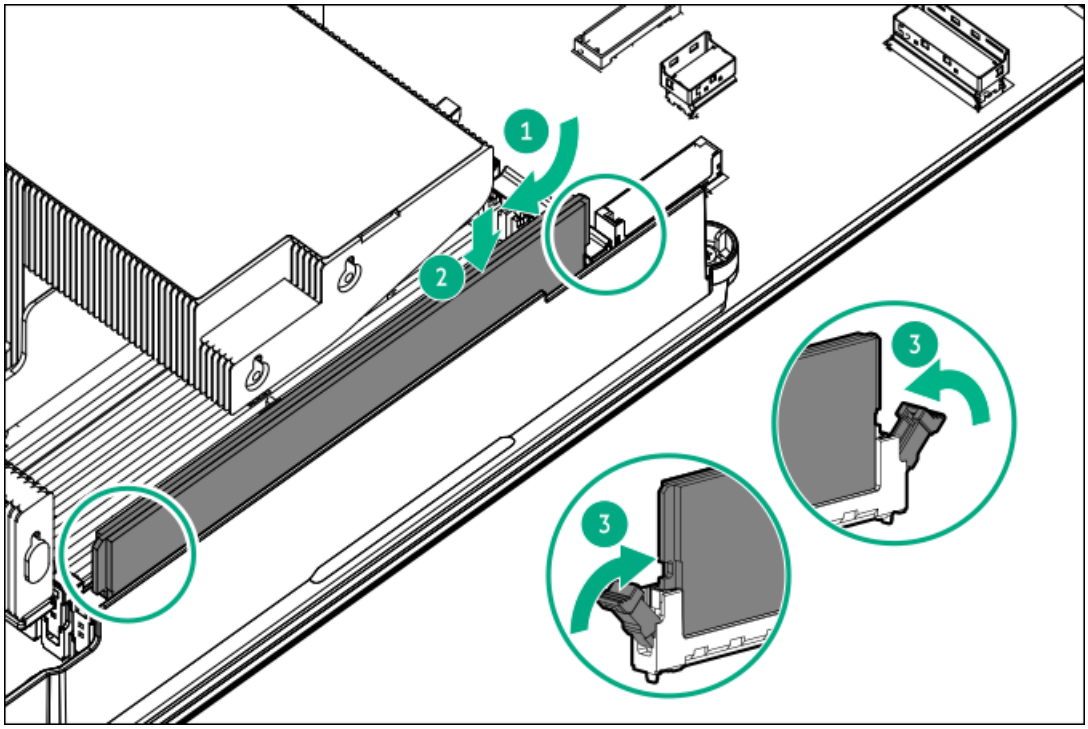


7. Do one of the following:
   - For systems without max-performance heatsinks, install the DIMM.



- For systems with max-performance heatsinks, position the DIMM under the heatsink wing and then install the DIMM.

> **CAUTION**
>
> To reduce the risk of personal injury from hot surfaces, allow the heatsink to cool for at least 5 minutes before touching it.



8. Install the air baffle.
9. Install the access panel.
10. Install the server in the rack.
11. Connect each power cord to the server.

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

Results

To configure the memory mode, use the BIOS/Platform Configuration (RBSU) in the UEFI System Utilities.

For more information about LEDs and troubleshooting failed DIMMs, see " Systems Insight Display combined LED descriptions."

Networking

Subtopics

Installing an OCP network adapter
Installing a PCIe network adapter

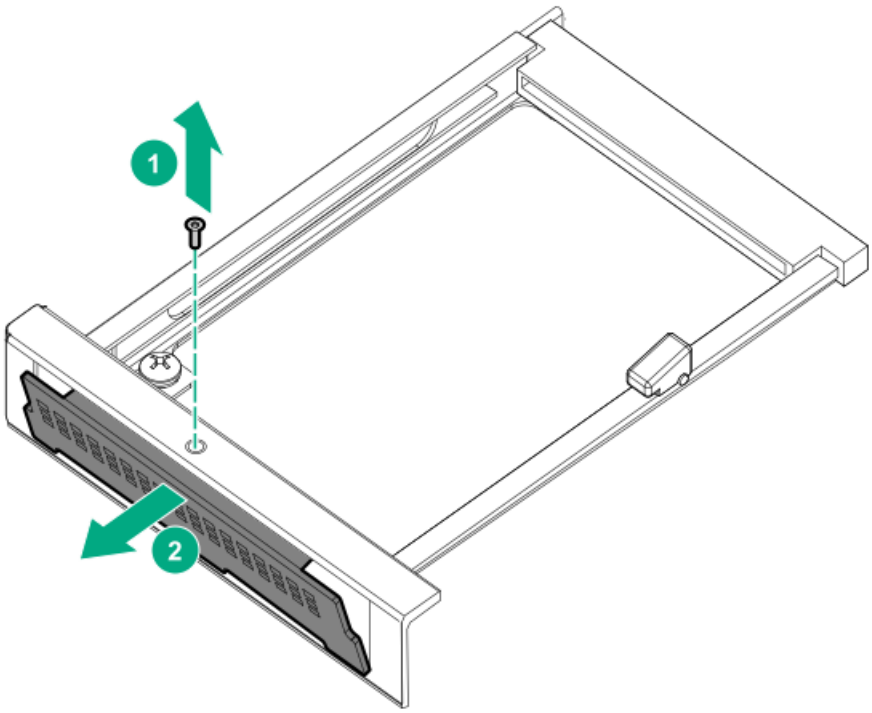
Installing an OCP network adapter

Prerequisites

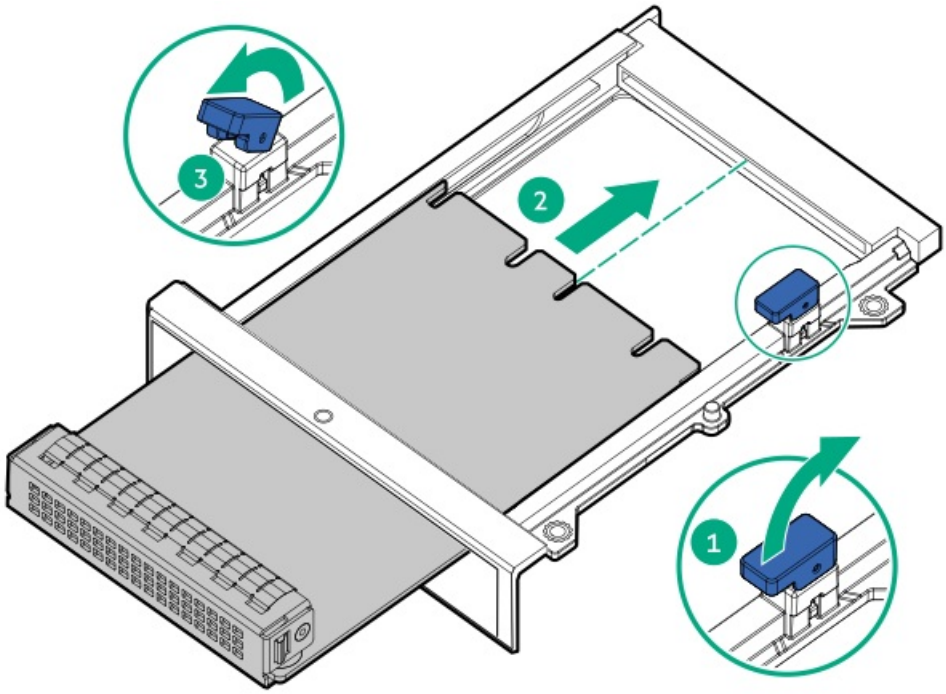
Before you begin this procedure, make sure that the components included with the hardware option kit are available.

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the rear wall blank or riser cage.
6. Remove the OCP adapter blank.



7. Install the network adapter.



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

Installing a PCIe network adapter

Prerequisites

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

The components included with the hardware option kit

About this task

WARNING

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

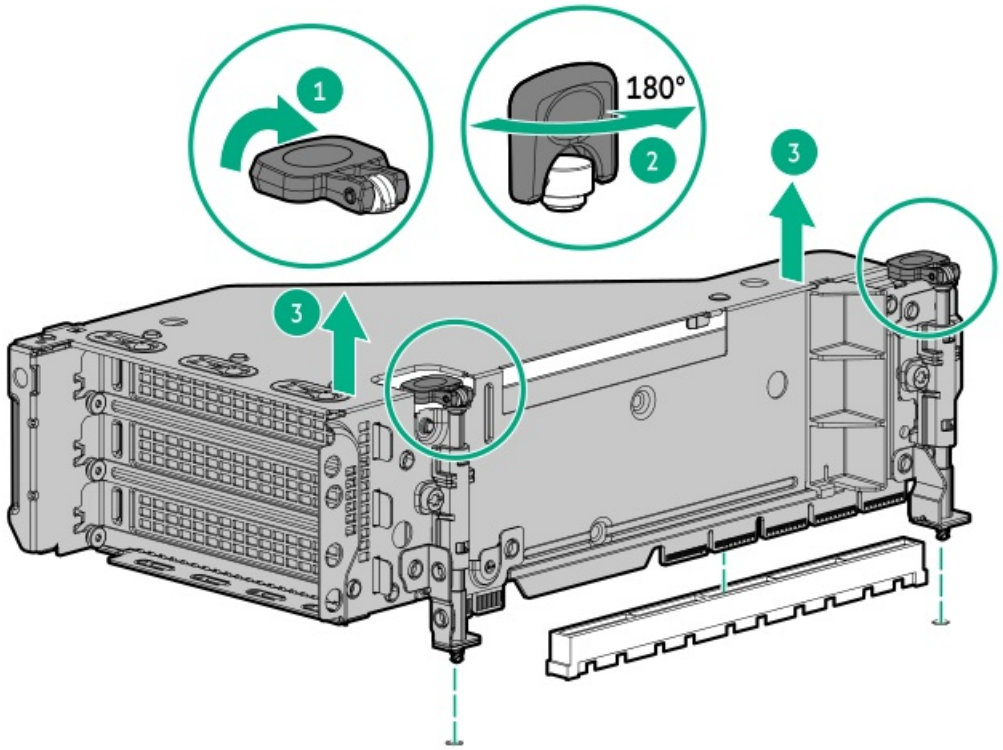
CAUTION

To prevent improper cooling or thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

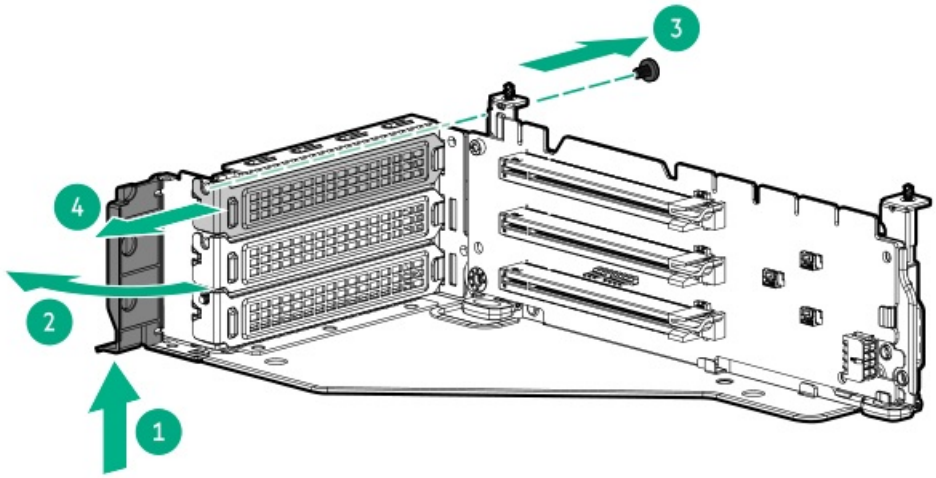
To install the component:

Procedure

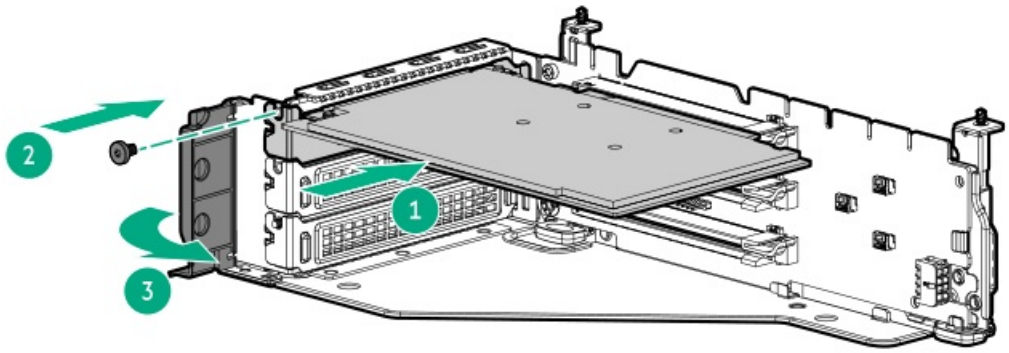
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the riser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



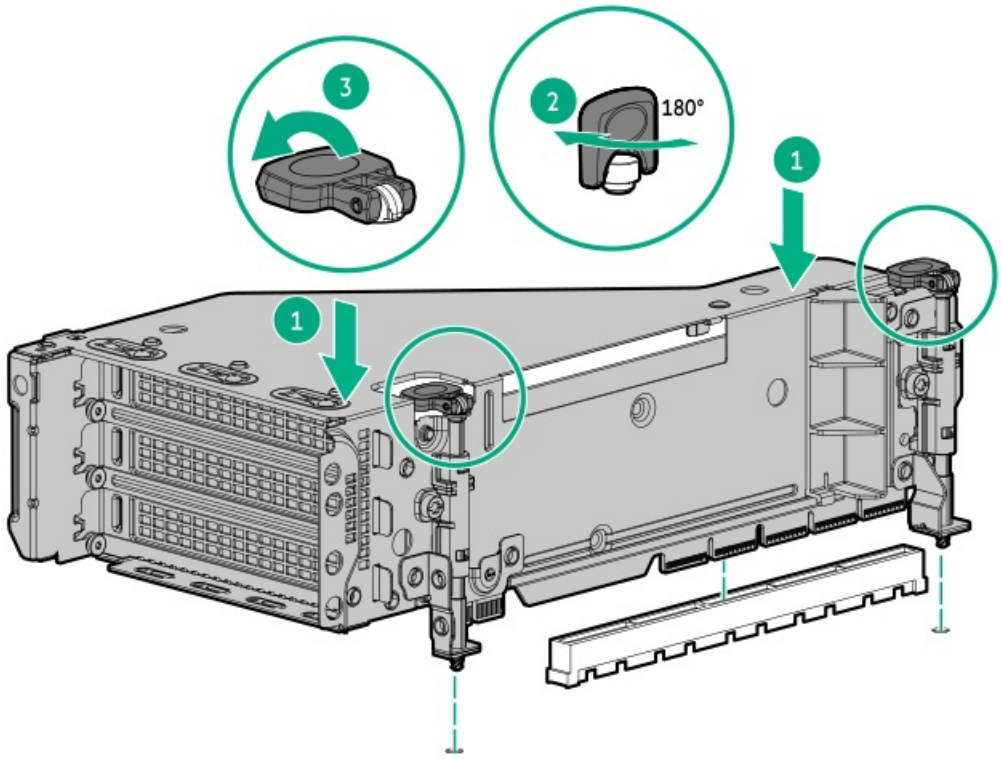
6. Identify and then remove the PCIe blank from the riser cage.



7. Install the expansion board.



8. Install the riser cage.



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

Results

The installation is complete.

Optical drives and media bays

Subtopics

Installing a universal media bay in the SFF chassis
Installing a universal media bay in the LFF chassis
Installing the optical disc drive in the SFF universal media bay
Installing the optical disc drive in the LFF universal media bay

Installing a universal media bay in the SFF chassis

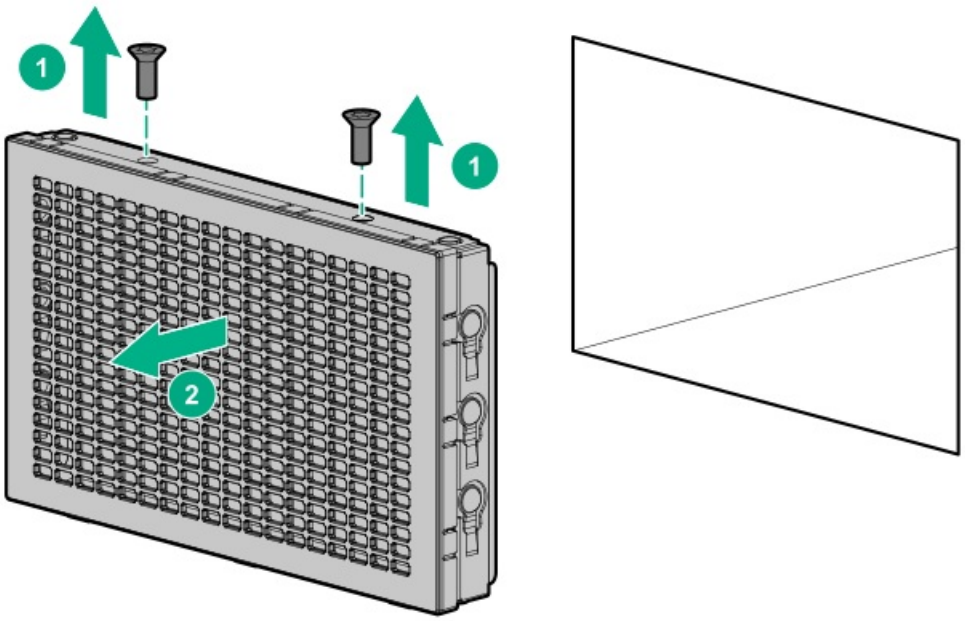
Prerequisites

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

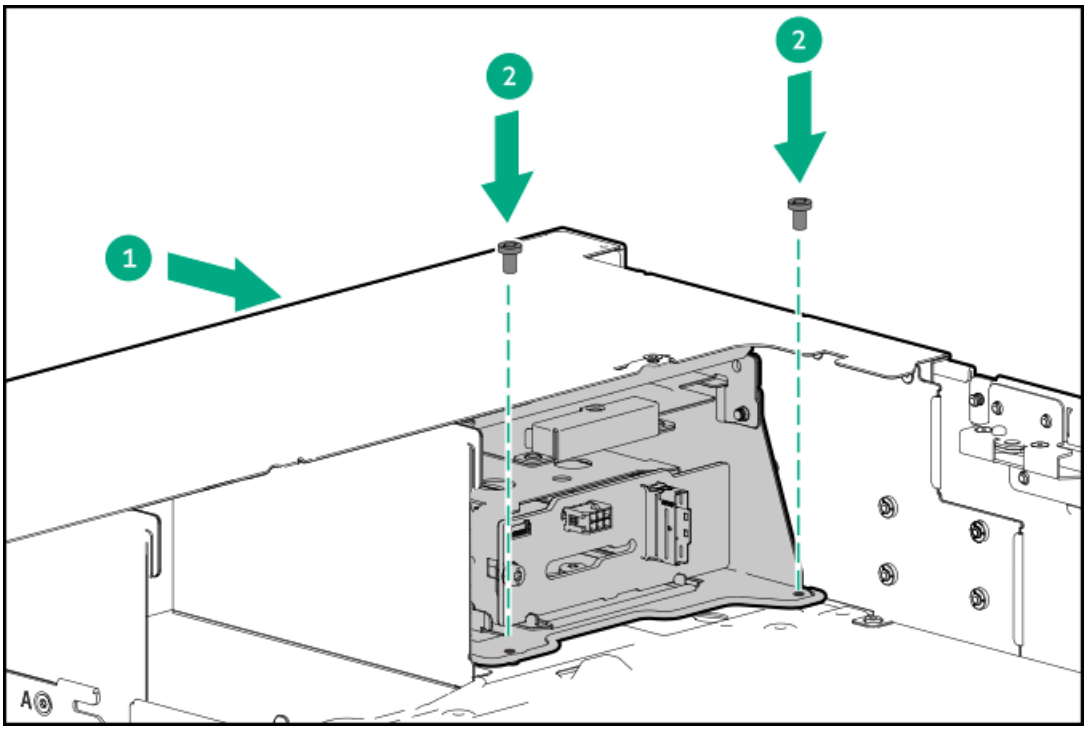
- The components included with the hardware option kit
- T-10 Torx screwdriver

Procedure

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



8. Route the USB and video cables through the opening.
9. If installing the front 2SFF stacked drive cage, install the drive cage.
10. Install the universal media bay.



11. Connect the cables.
12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Results

The installation is complete.

Installing a universal media bay in the LFF chassis

Prerequisites

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

- The components included with the hardware option kit
- T-10 Torx screwdriver

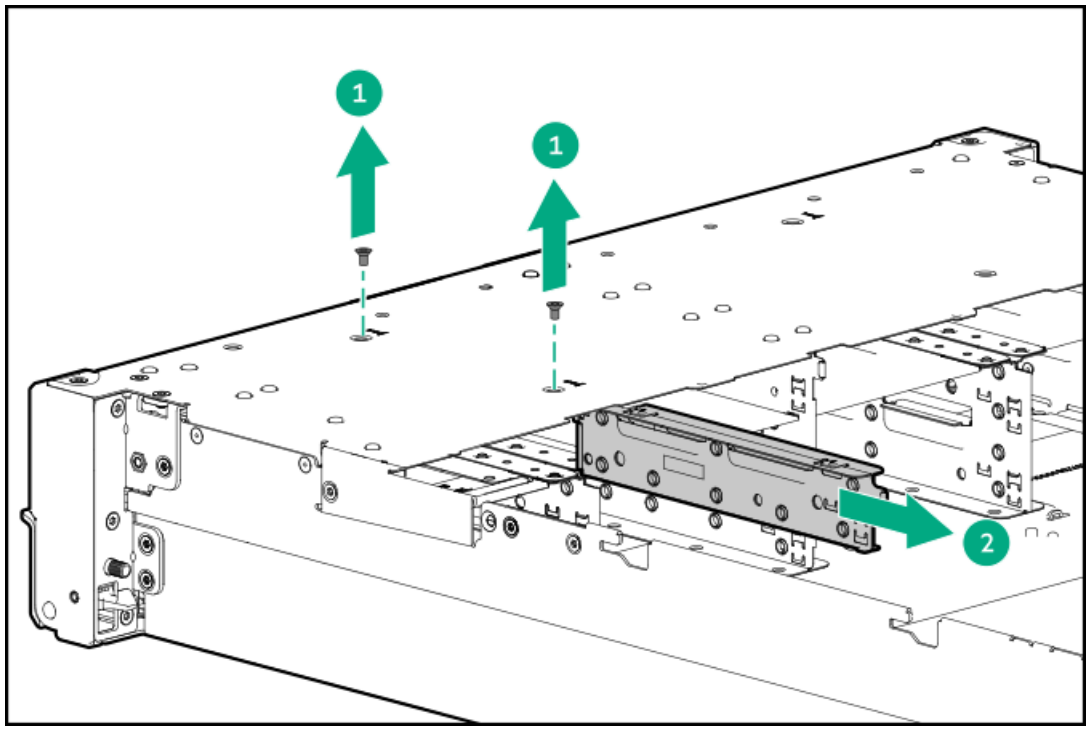
Procedure

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

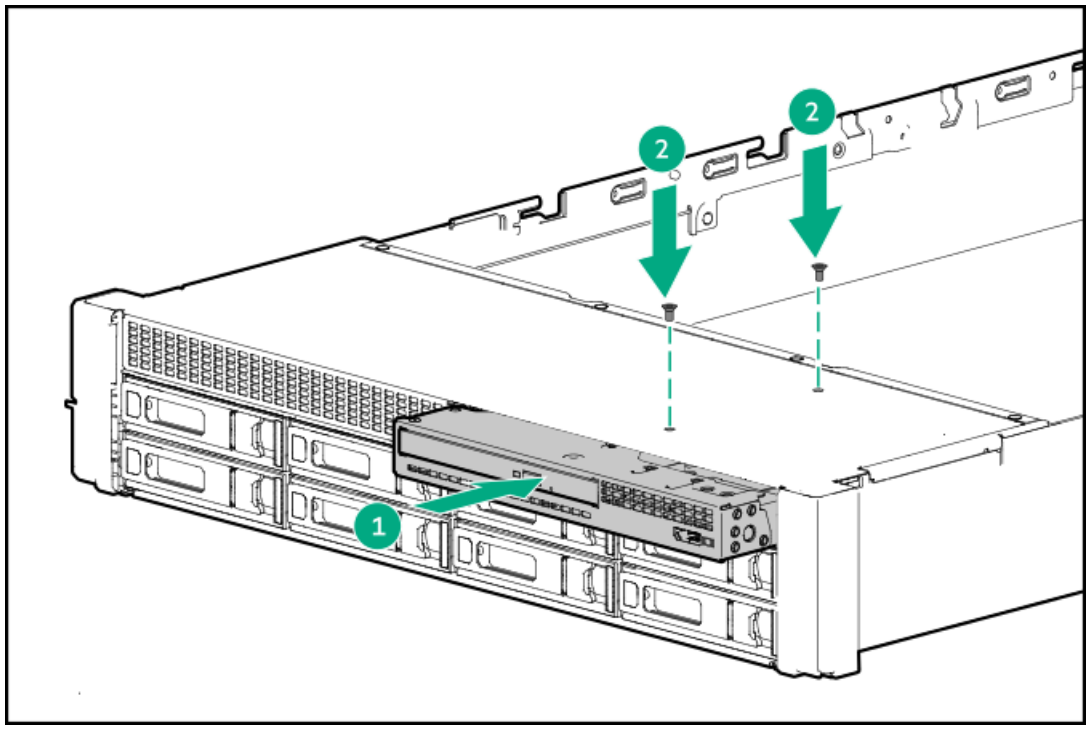
a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the air baffle or midplane drive cage.
6. Remove the fan cage.
7. Remove the bay blank.
8. Remove the support bracket.



9. Route the cables through the opening.
10. Install the universal media bay.



11. Connect the cables.
12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Results

The installation is complete.

Installing the optical disc drive in the SFF universal media bay

Prerequisites

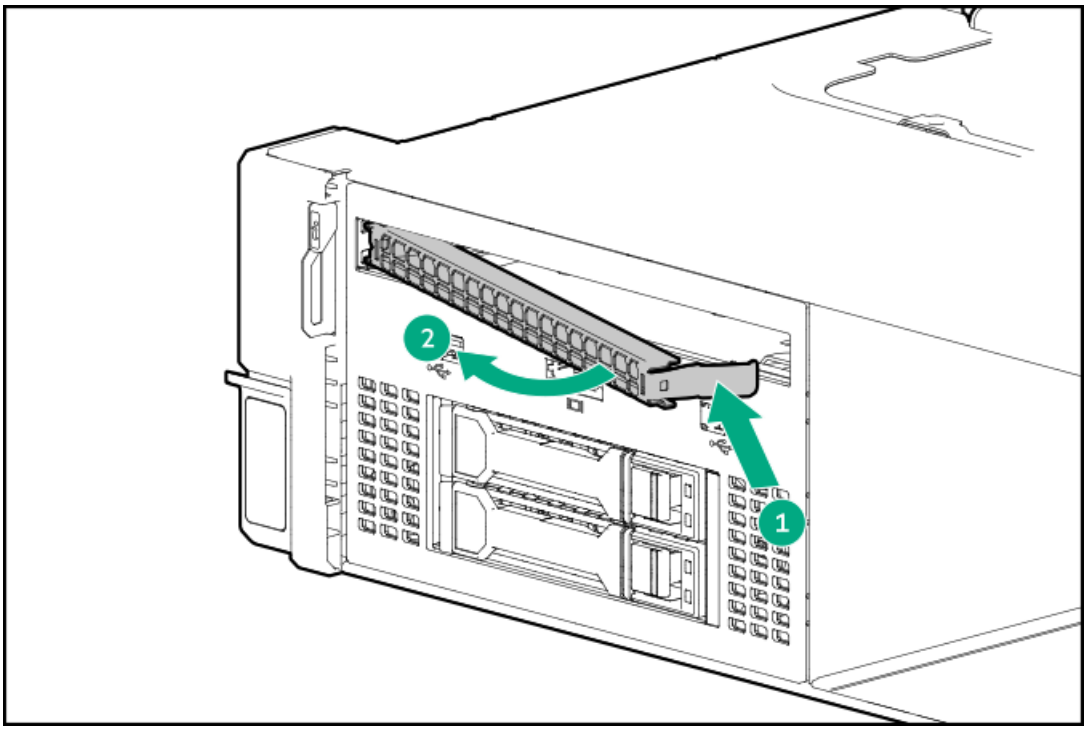
Before you perform this procedure, make sure that you have the following items available:

- The components included with the hardware option kit
- T-10 Torx screwdriver
- Phillips No. 1 screwdriver

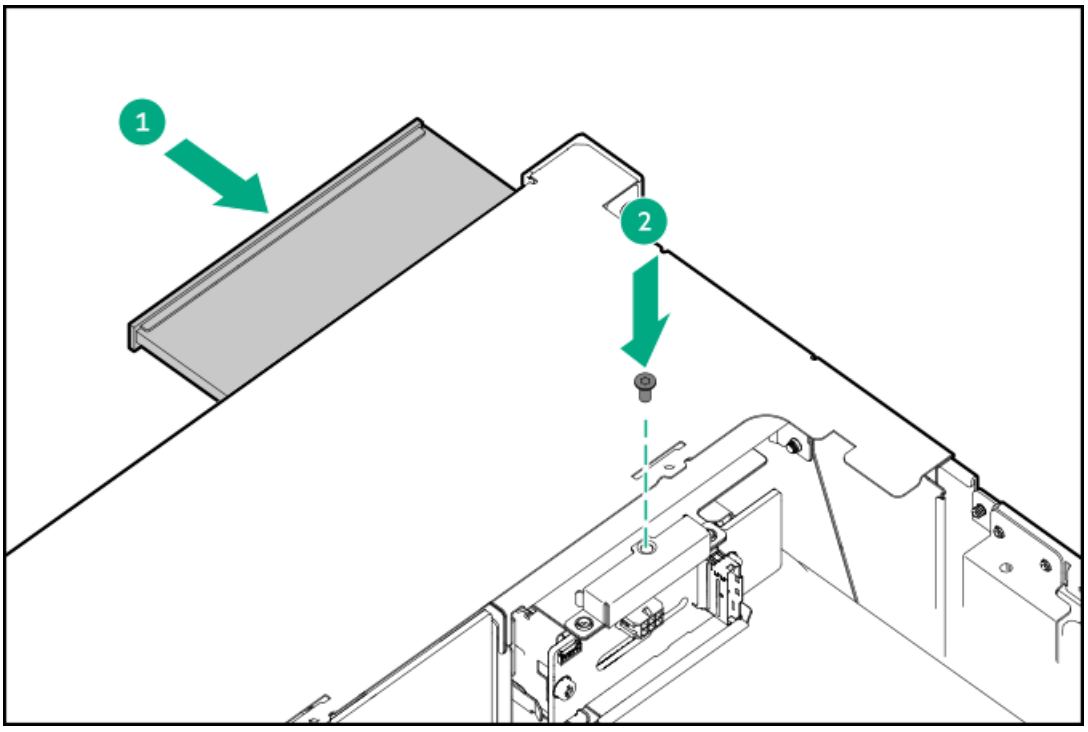
Procedure

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

3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the air baffle or midplane drive cage.
6. Remove the fan cage.
7. Remove the optical drive blank from the universal media bay.



8. Install the optical drive in the universal media bay (callout 1), and then install the screw (callout 2).



9. Cable the optical disc drive.

10. Install the fan cage.
11. Install the air baffle or midplane drive cage.
12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Results

The installation is complete.

Installing the optical disc drive in the LFF universal media bay

Prerequisites

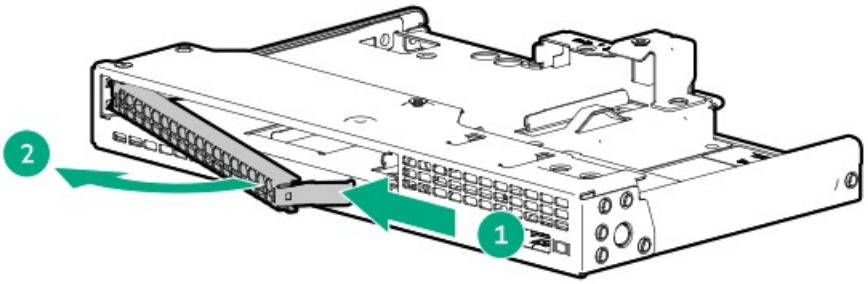
Before you perform this procedure, make sure that you have the following items available:

- The components included with the hardware option kit
- T-10 Torx screwdriver
- Phillips No. 1 screwdriver

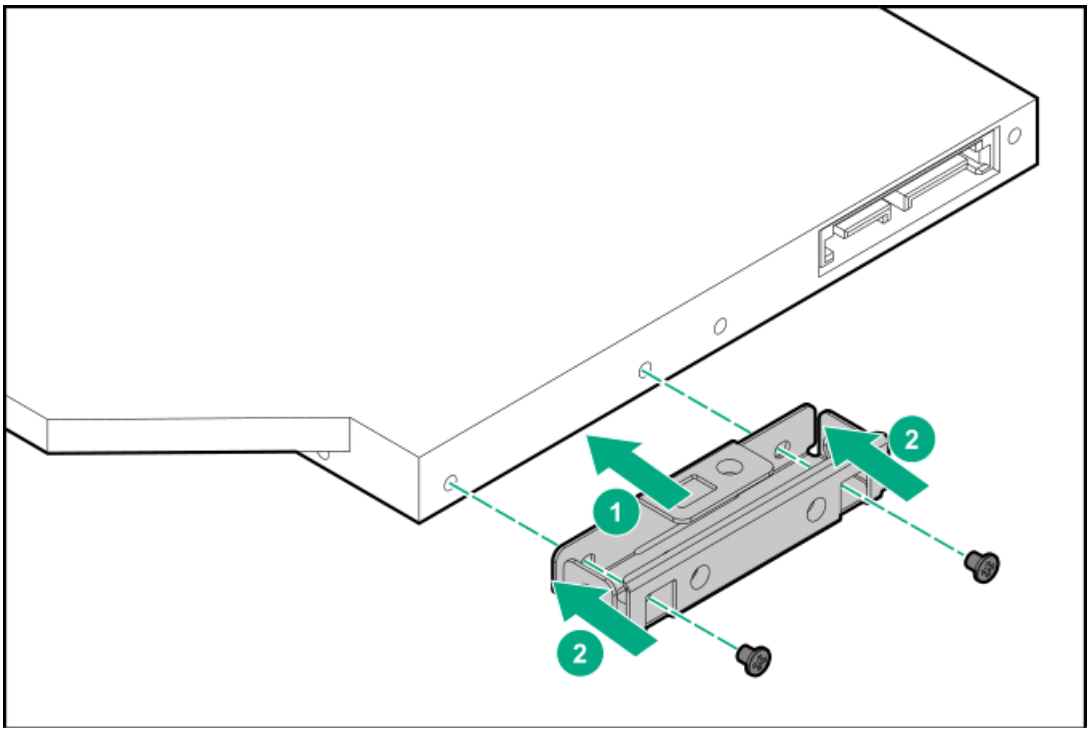
Procedure

1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the air baffle or midplane drive cage.
6. Remove the fan cage.
7. Remove the optical drive blank from the universal media bay.

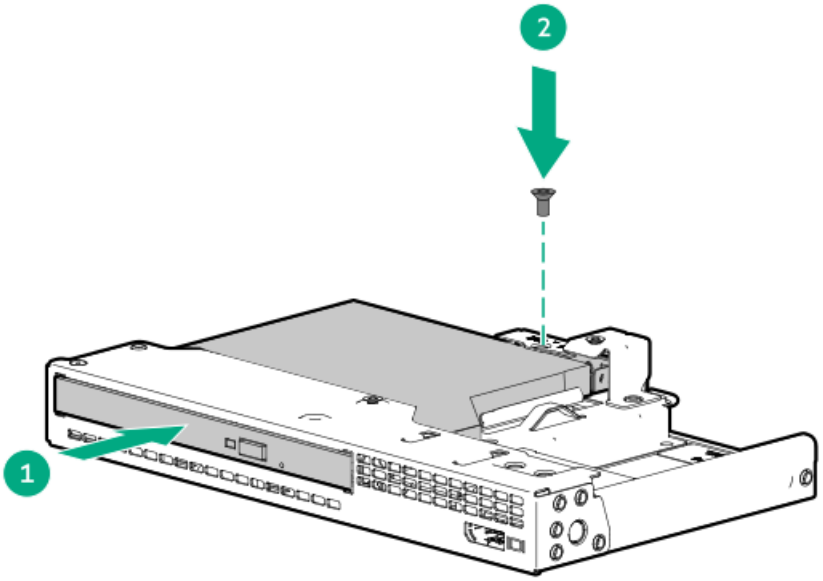
   Retain the blank for future use.



8. Install the optical drive bracket.



9. Install the optical disc drive.



10. Install the fan cage.
11. Install the air baffle or midplane drive cage.
12. Install the access panel.
13. Slide the server into the rack.
14. Connect each power cord to the server.
15. Connect each power cord to the power source.
16. Power up the server.

Results

The installation is complete.

OS boot device

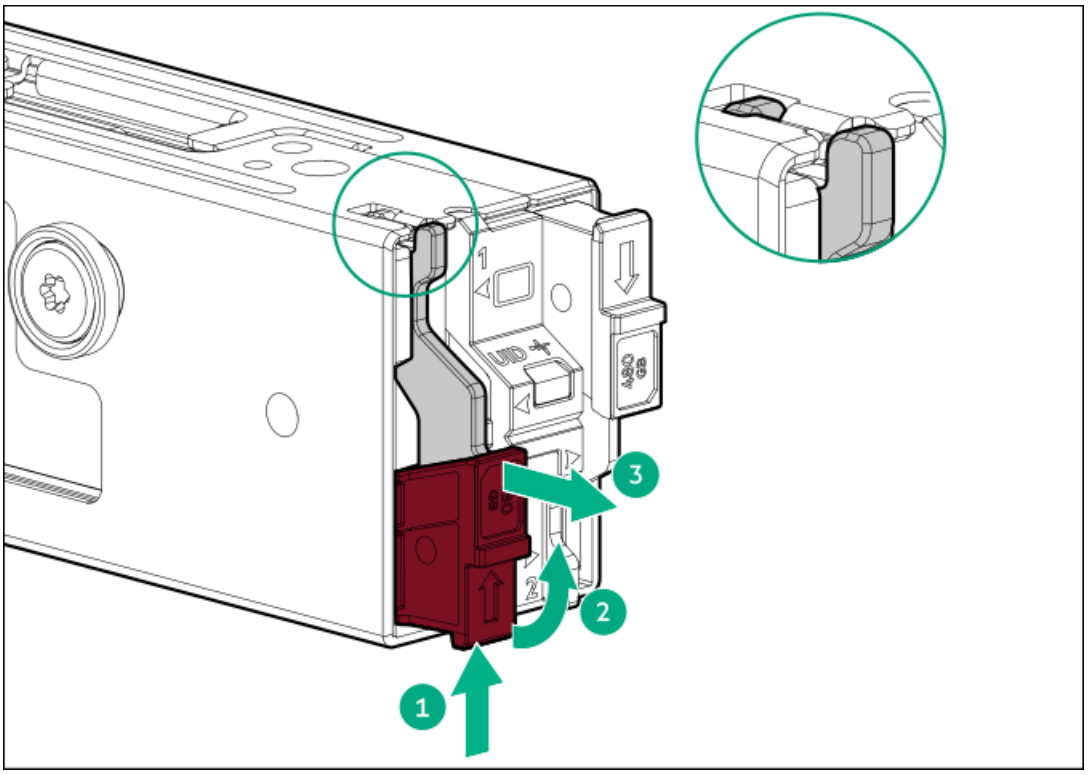
Subtopics

Installing boot device drives
Installing the HPE NS204i Boot Device

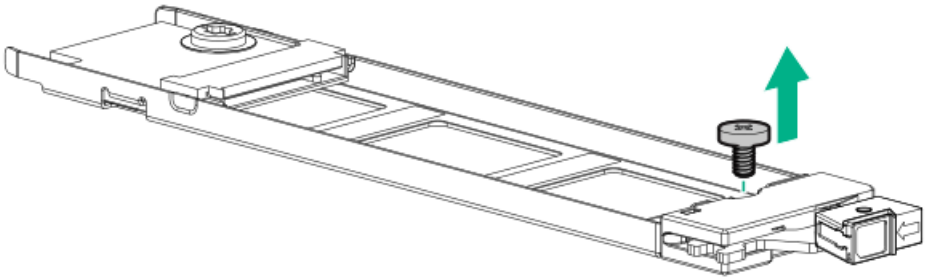
Installing boot device drives

Procedure

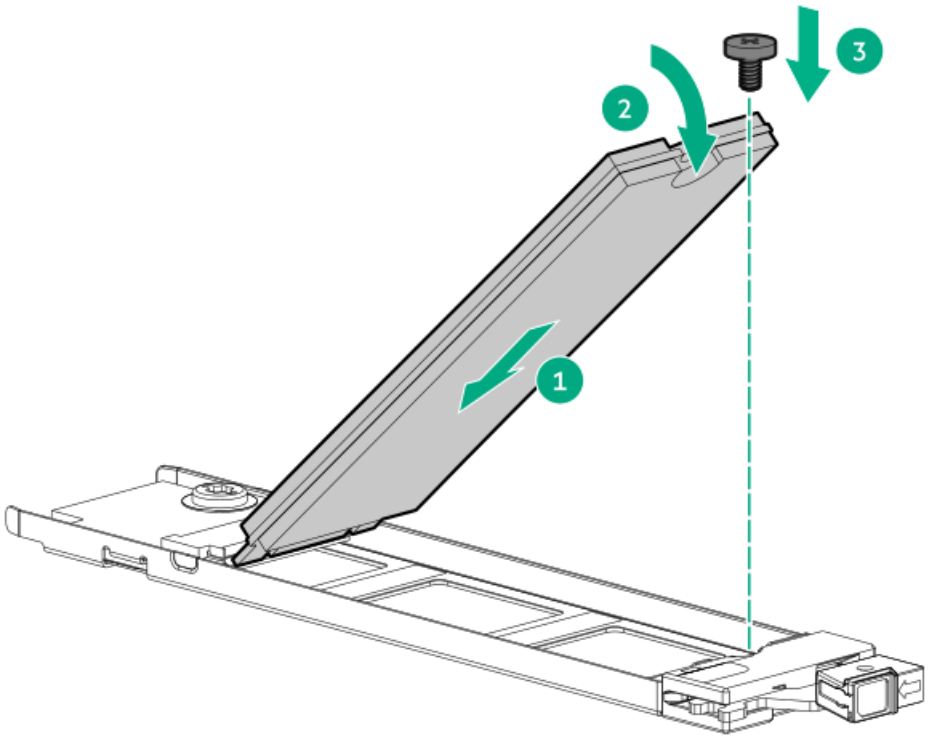
1. Push the button to pull out the carrier.



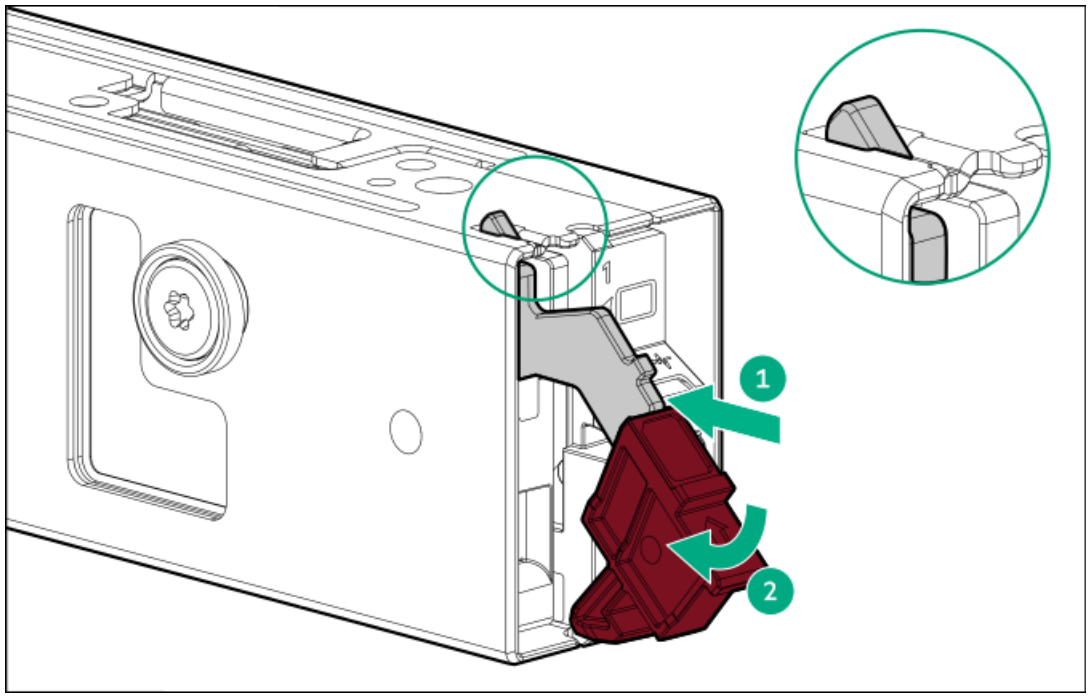
2. Remove the SSD mounting screw.



3. Insert the SSD into the M.2 slot at a 45° angle (callout 1).
4. Carefully press the SSD down to the horizontal position (callout 2).
5. Install the SSD mounting screw (callout 3).



6. If the second M.2 SSD is installed on the carrier assembly, repeat steps 1 and 2.
7. Slide the carrier inside the boot device cage and push the button. There will be an audible click when the latch locks into place. Ensure that the latch is fully engaged.



NOTE

For removal of the drive, follow the same procedure.

Installing the HPE NS204i Boot Device

Prerequisites

- Before beginning installation, make sure that the server is updated with the latest operating system firmware and drivers.
- Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

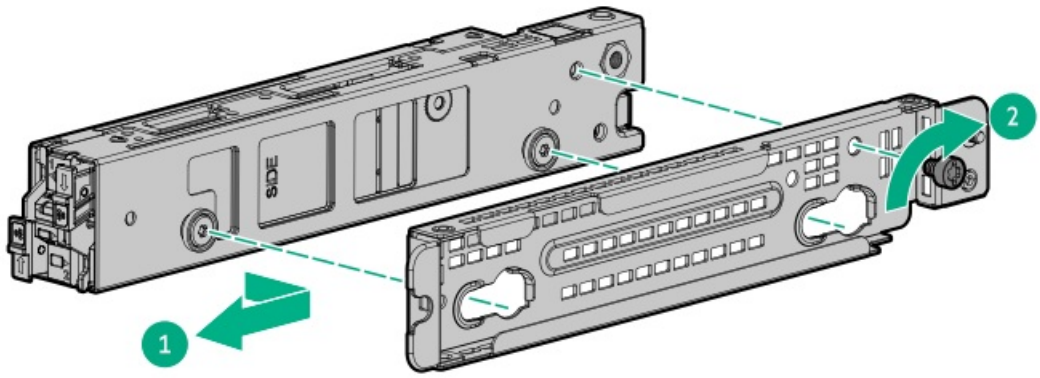
About this task

Note the following:

- The HPE NS204i-u Gen11 NVMe Hot Plug Boot Optimized Storage Device is a PCIe3 x4 custom form-factor module that includes two hot pluggable 2280 M.2 NVMe SSDs.
- HPE NS204i-u Boot Device auto-creates a RAID1 volume during boot, therefore does not require configuration.
- Identify the HPE NS204i Boot Device components.

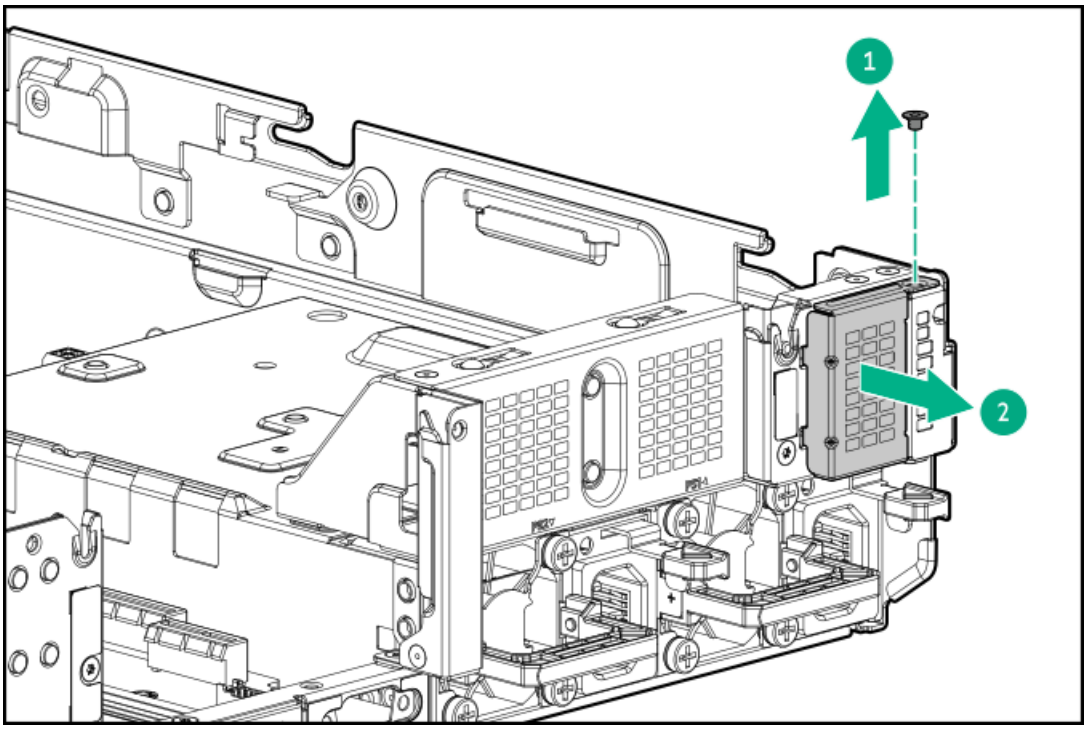
Procedure

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Install the drives to the boot device.
6. Install the boot device to the mounting bracket.

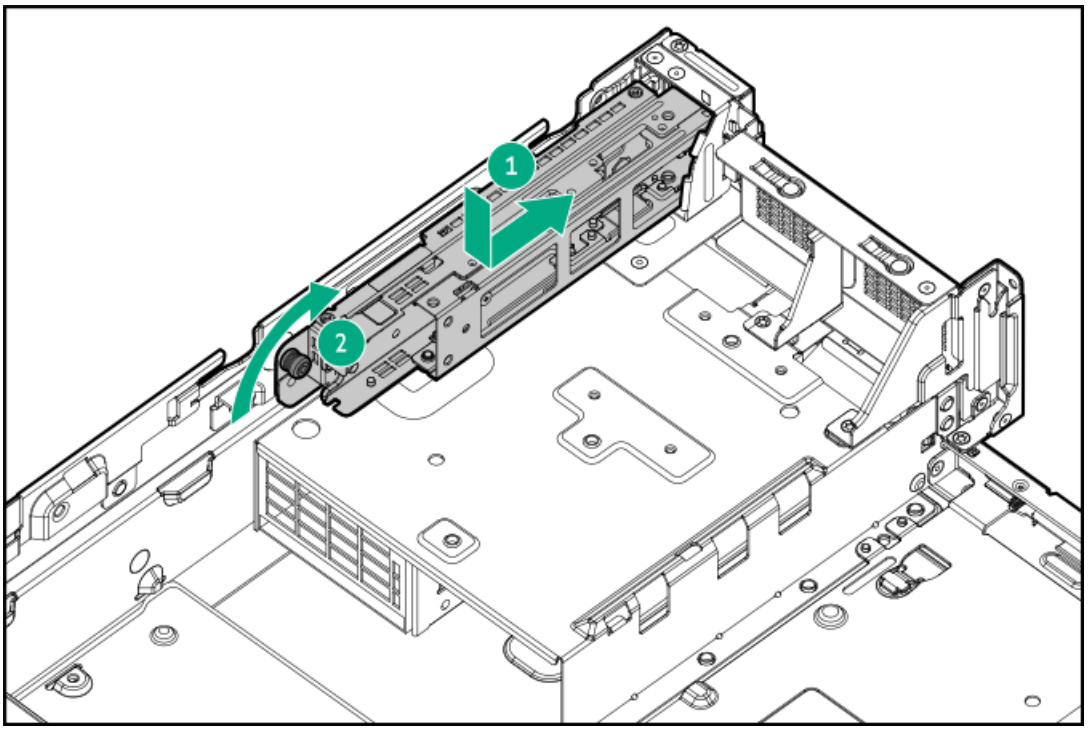


7. To allow drive access, remove the security cover.

   If you want to secure drive access, keep the security cover installed.



8. Install the mounting bracket.



9. Connect the power and signal cables to the HPE NS204i Boot Device.
10. Install the access panel.
11. Install the server in the rack.
12. Connect each power cord to the server.
13. Connect each power cord to the power source.
14. Power up the server.
15. Verify the Online/Activity LEDs on the HPE NS204i Boot Device are solid green.

Results

The installation is complete.

Power supply options

Subtopics

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

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.

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**).

Installing an AC power supply

Prerequisites

Before installing a power supply option, review the Power supply warnings and cautions.

About this task

WARNING

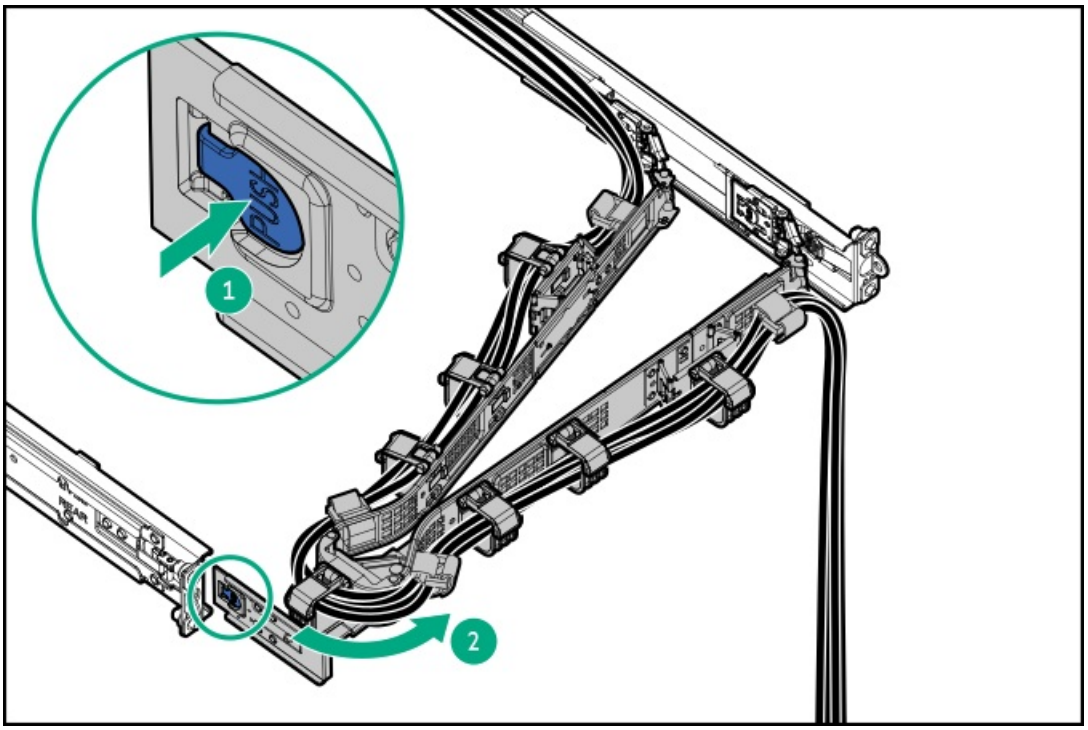
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

CAUTION

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

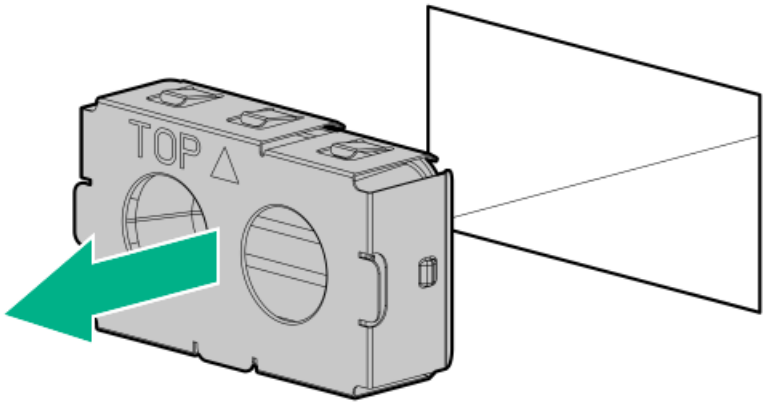
Procedure

1. If installed, open the cable management arm.

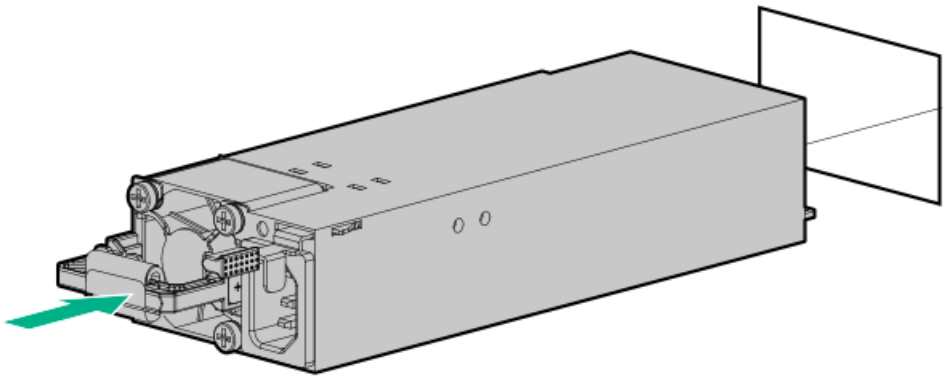


2. If you are installing a power supply in the power supply bay 2, remove the power supply blank.

   Retain the blank for future use.



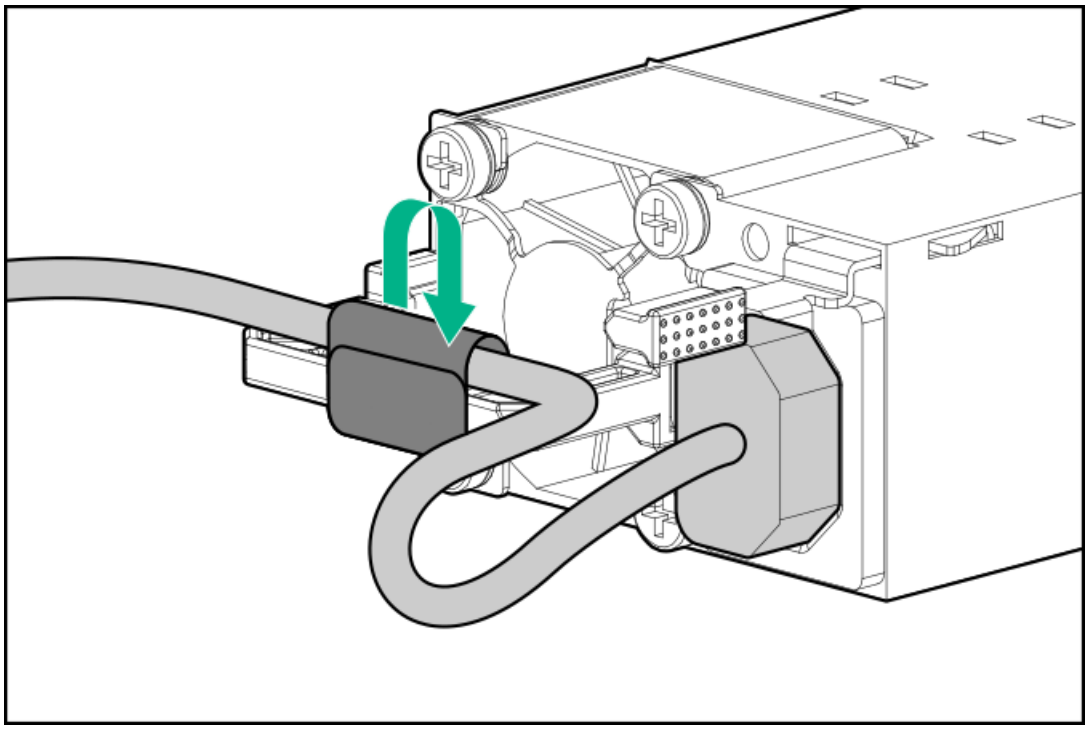
3. Immediately slide the power supply into the bay until it clicks into place.



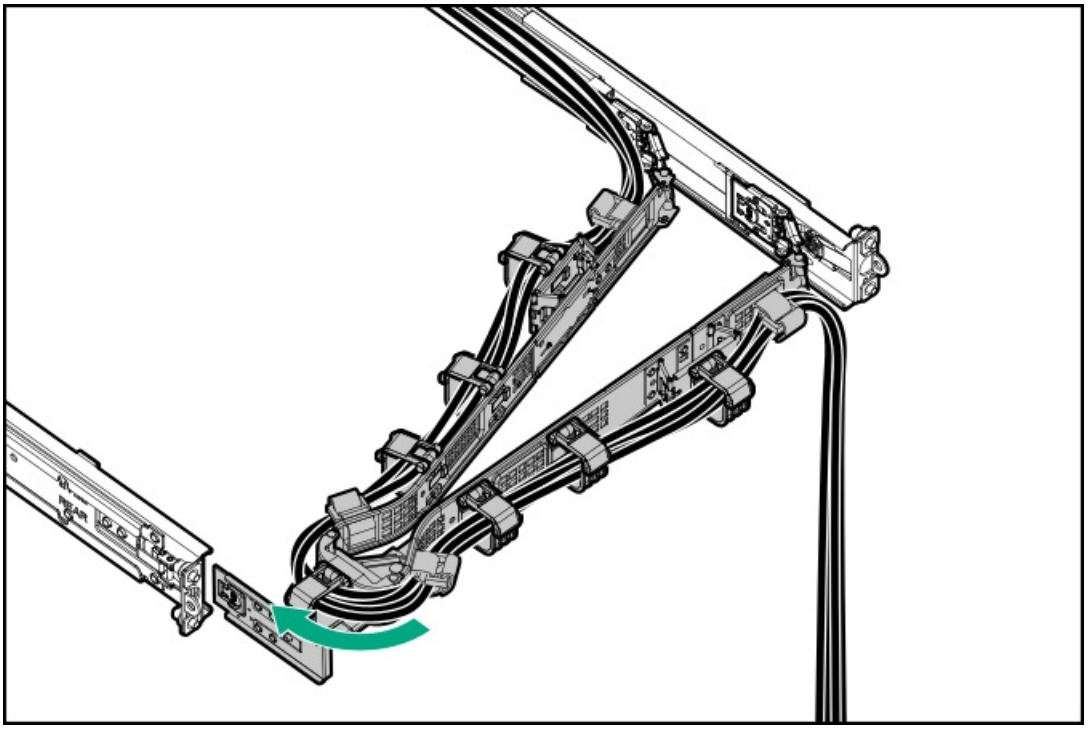
4. Connect the power cord to the power supply.
5. Secure the power cord in the strain relief strap attached to the power supply handle:
   a. Unwrap the strain relief strap from the power supply handle.

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

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



6. Connect the power cords:
   a. Connect each power cord to the server.
   b. Connect each power cord to the power source.
7. Make sure that the power supply LED is green.
8. If installed, close the cable management arm.



Results

The installation is complete.

DC power supply warnings and cautions

WARNING

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

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.

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 elsewhere.
- The DC supply source is to be located within the same premises as the equipment.
- Switching or disconnecting devices should not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.

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.

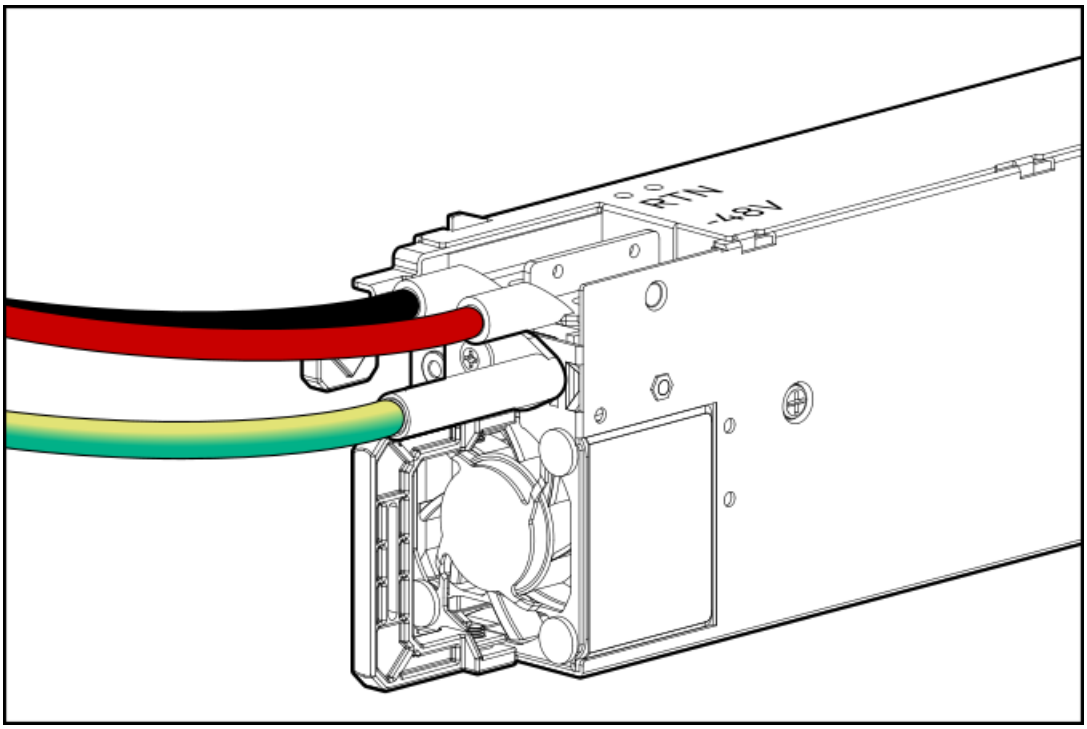
   IMPORTANT

   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.

DC power supply wire colors



Wire color	Description	Wire slot
Red	Positive return wire	-48V
Black	Negative input wire	Return
Green + Yellow	Ground wire	Safety ground

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 Hewlett Packard Enterprise 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

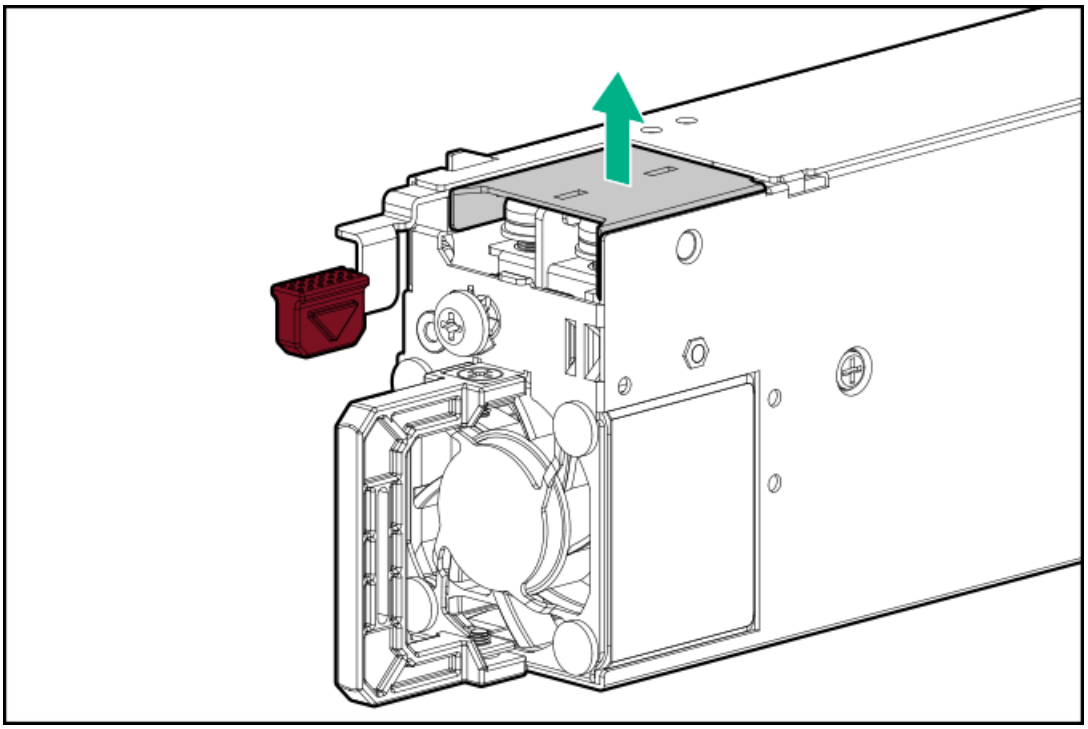
To reduce the risk of personal injury from hot surfaces, allow the power supply, power supply blank, or dual slot power supply adapter to cool before touching it.

CAUTION

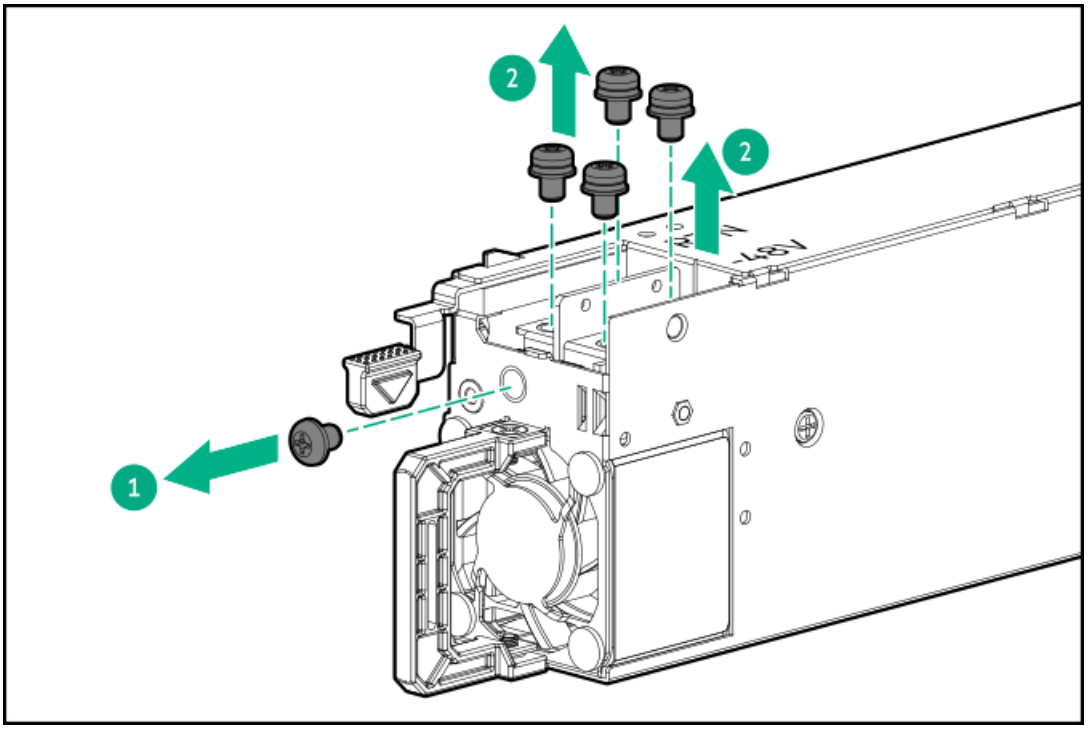
To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

Procedure

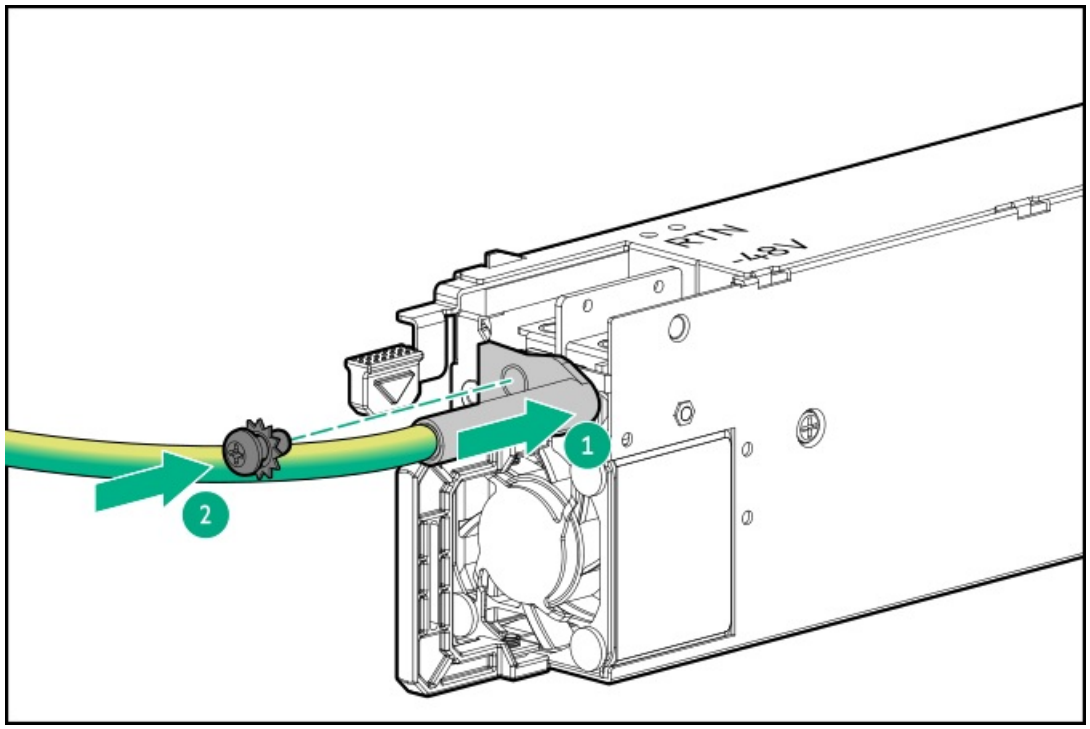
1. Remove the protective cover from the power supply.



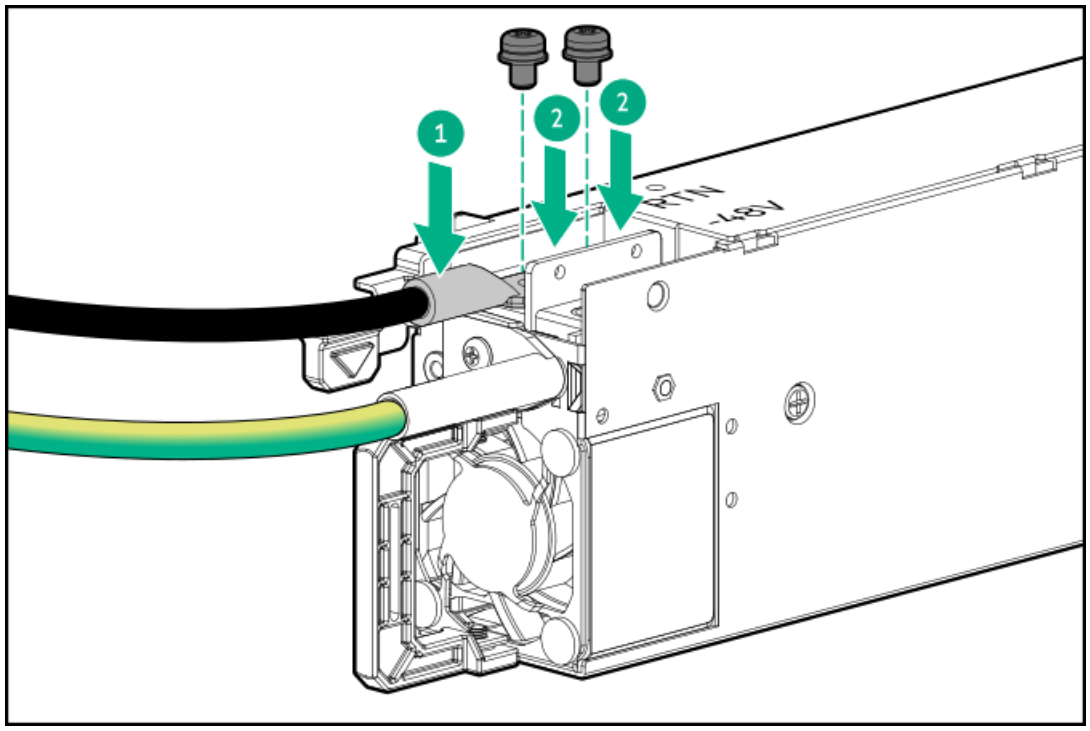
2. Remove the ground wire screw (callout 1), and then remove the positive return wire and negative input wire screws (callout 2).



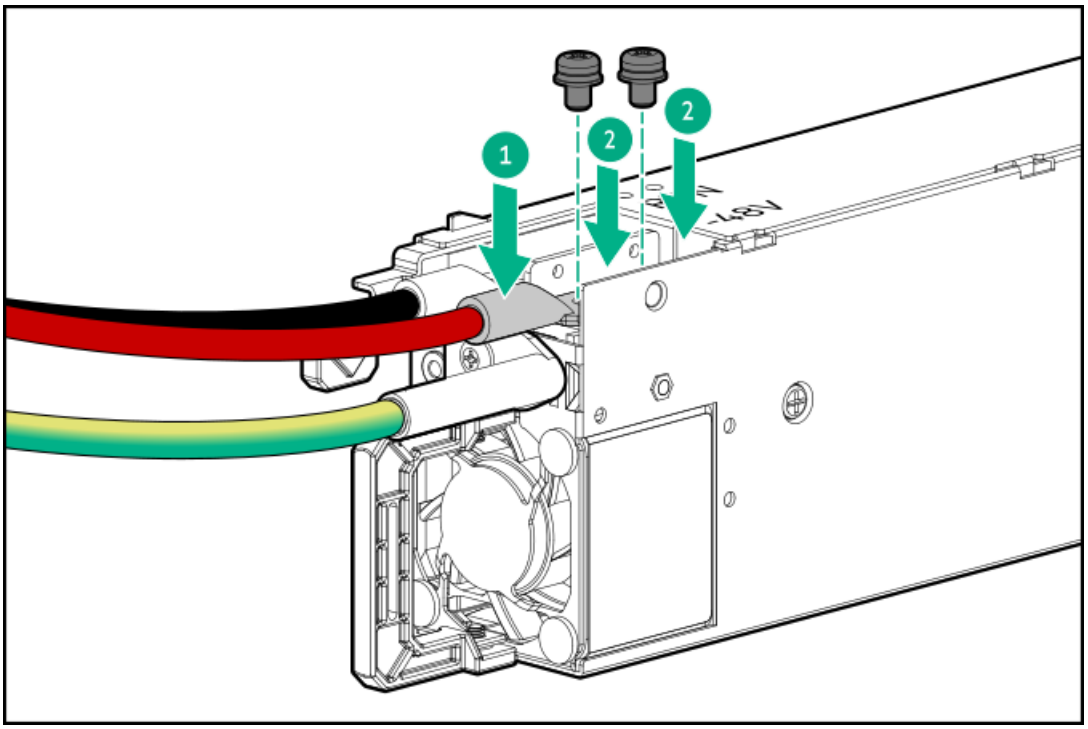
3. Attach the ground wire (green and yellow) to the DC power supply (callout 1) and tighten the screw and washer with 1.47 N-m (13 lbf-in) (callout 2).



4. Install the positive return wire (red):
   a. Insert the positive return wire (red) into the RTN slot on the DC power supply (callout 1).
   b. Tighten the screw with 0.98 N-m (8.68 lbf-in) (callout 2).

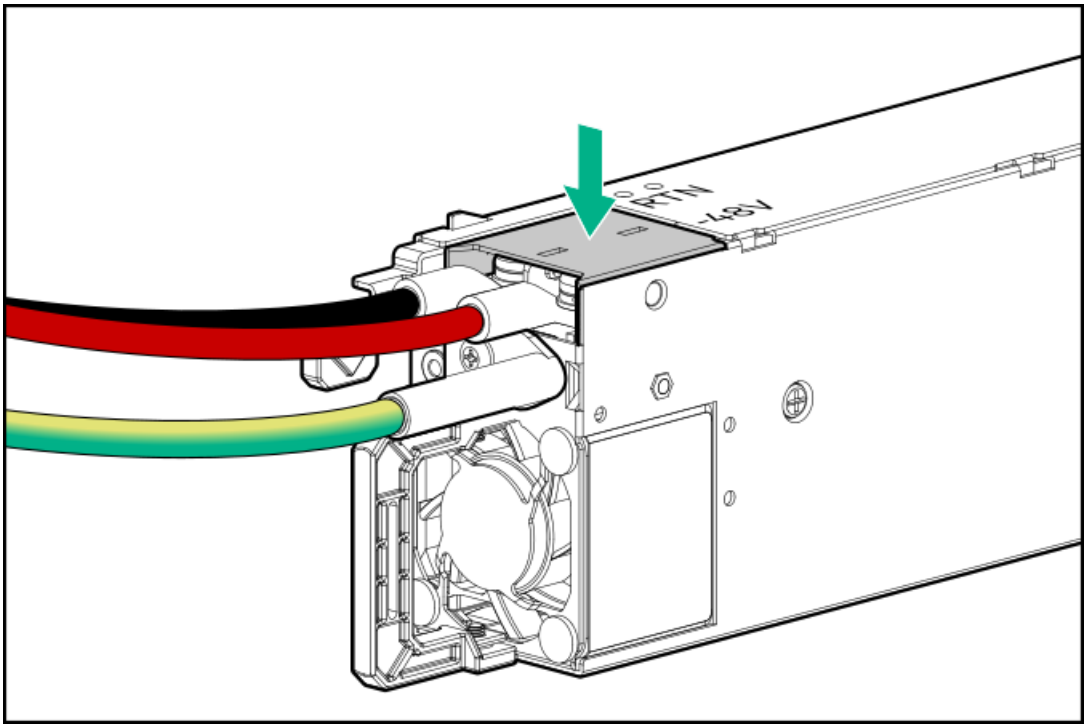


5. Install the negative input wire (black):
   a. Insert the negative input wire into the -48V slot on the DC power supply (callout 1).
   b. Tighten the screw to 0.98 N-m (8.68 lbf-in) (callout 2).



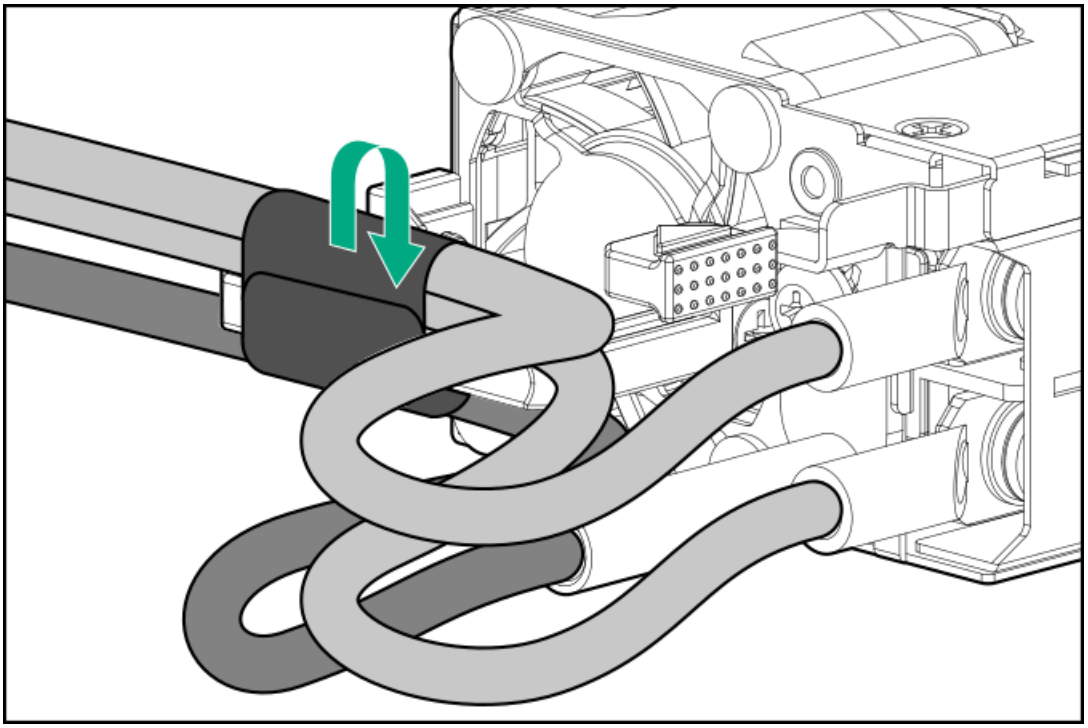
6. Install the protective cover on the DC power supply.

   Make sure that the protective cover is locked.



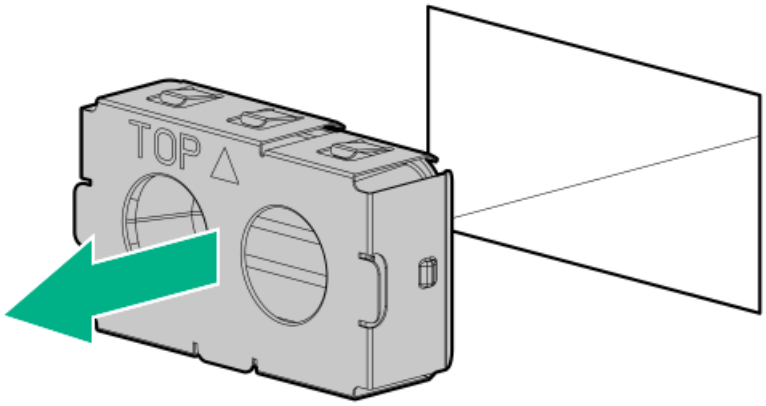
7. Secure the ground, positive return, and negative input wires in the strain relief strap.

> **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.

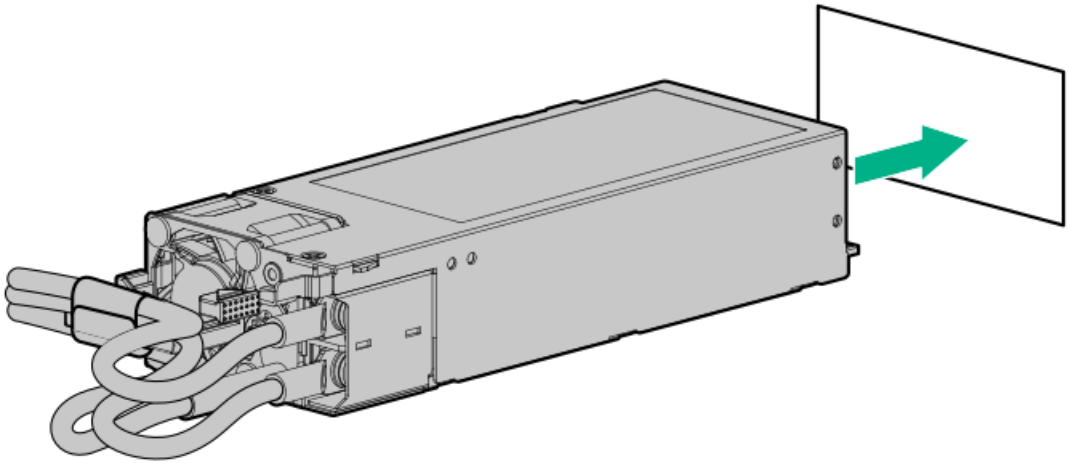


8. If you are installing a power supply in the power supply bay 2, remove the power supply blank.

   Retain the blank for future use.



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



10. 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.
11. Turn on the -48 V power source or switch the PDU breaker to the on position to supply -48 V to the power supply.
12. Connect a DC power cable to a DC power source .
13. Make sure that the power supply LED is green.

Results

The installation is complete.

Processor and heatsink options

Subtopics

Processor cautions
Installing the processor
Connecting the direct liquid cooling kit

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, go to the Hewlett Packard Enterprise Support Center website (**https://www.hpe.com/support/hpesc**).

Installing the processor

Prerequisites

- T-30 Torx screwdriver
- Thermal grease

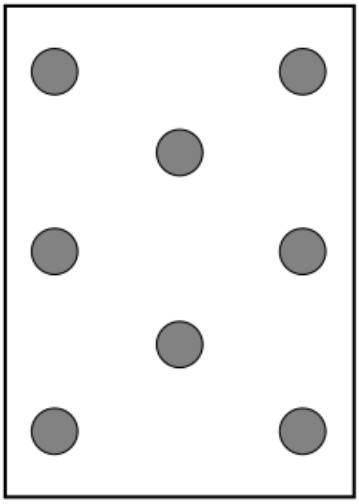
About this task

CAUTION

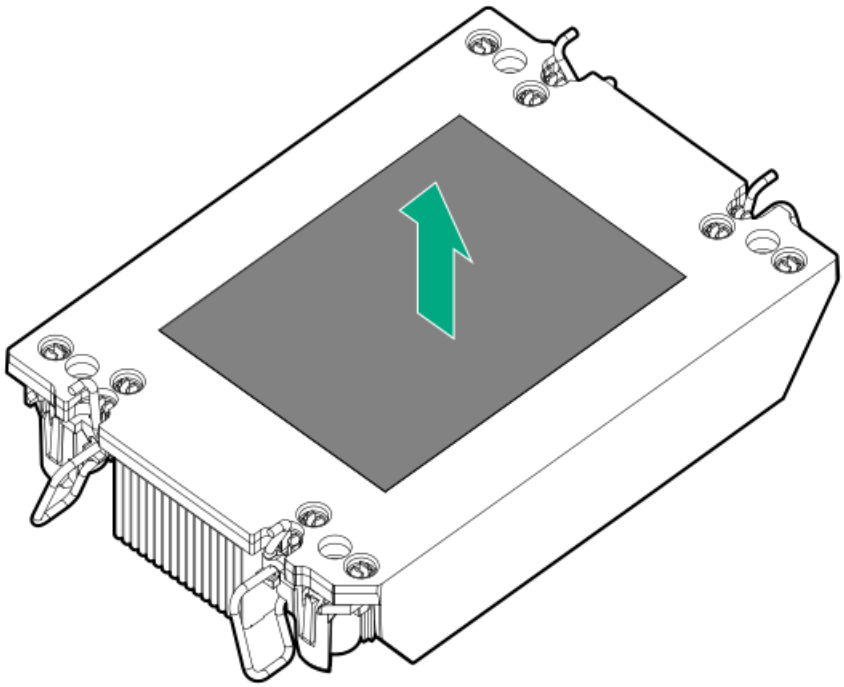
To prevent possible server overheating, always populate each processor socket with a processor socket cover and a processor blank, or a processor and a heatsink.

Procedure

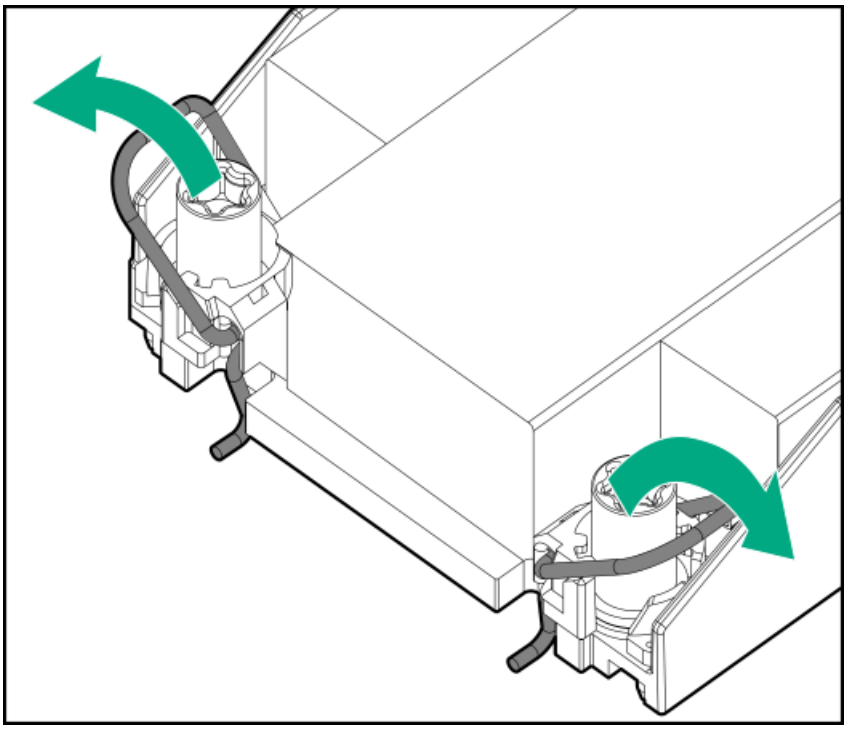
1. If you are using the same heatsink, apply the full content of the thermal grease syringes on top of the processor. Follow the pattern shown in the following image.



2. If you are using a new heatsink, remove the protective film from the thermal interface material.

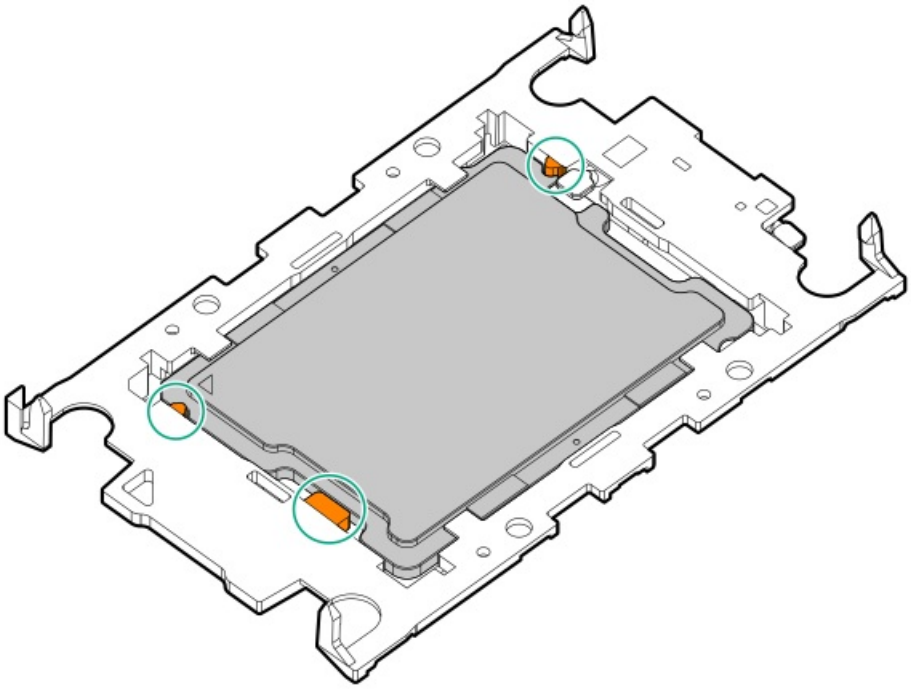


3. Set the anti-tilt wires to the locked position.



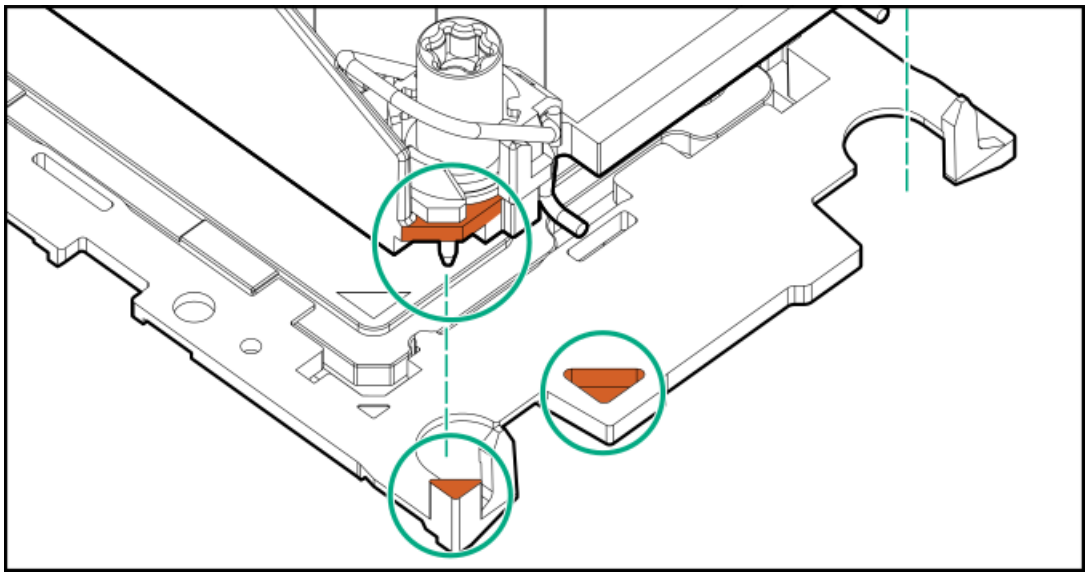
4. Verify that the processor is securely latched to the processor carrier.

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



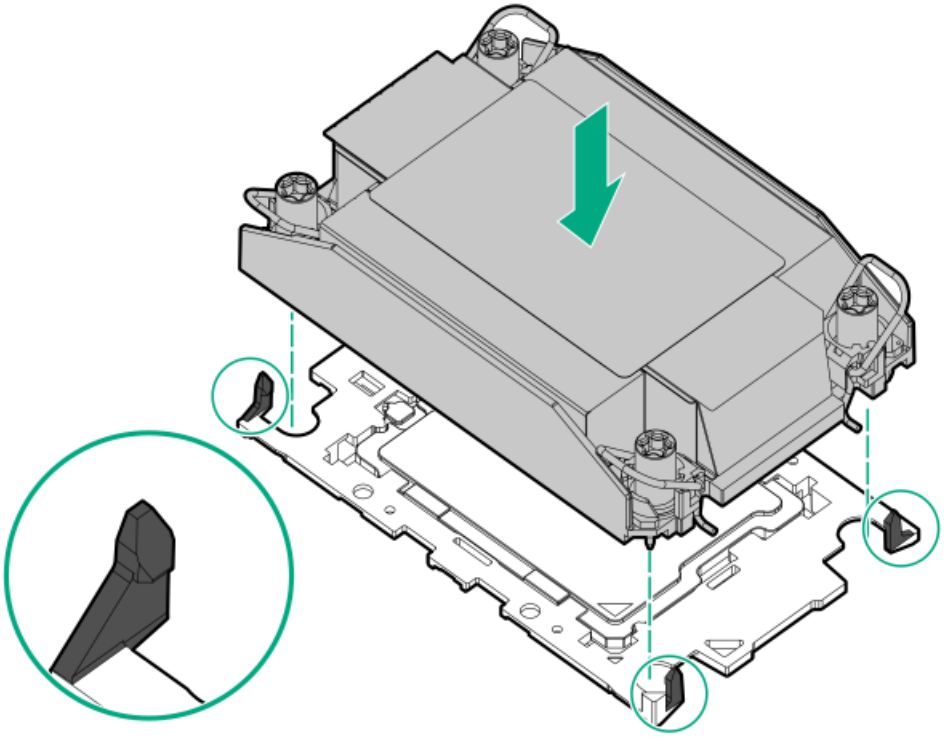
5. Attach the heatsink to the processor carrier:

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



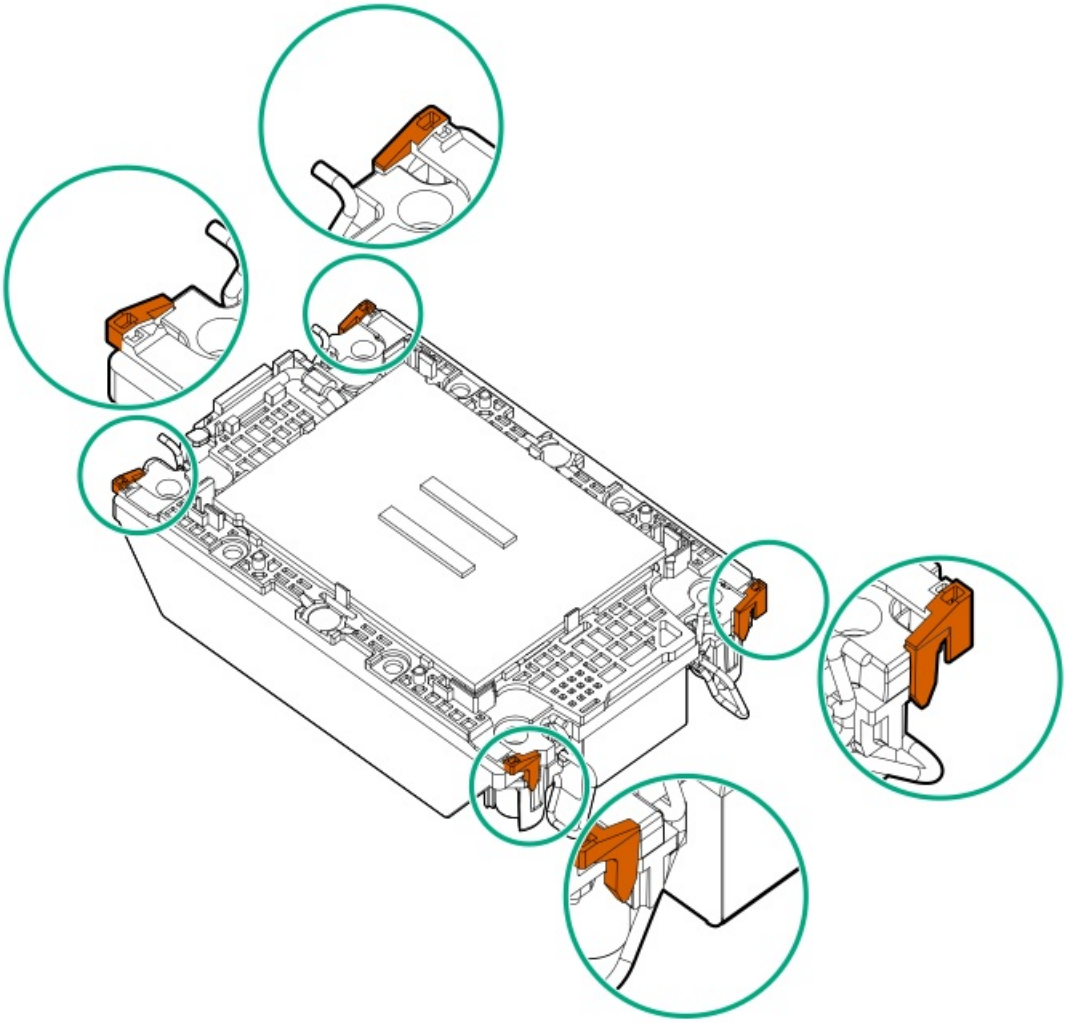
b. Lower the heatsink on the processor carrier until the carrier tabs snap into place.

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

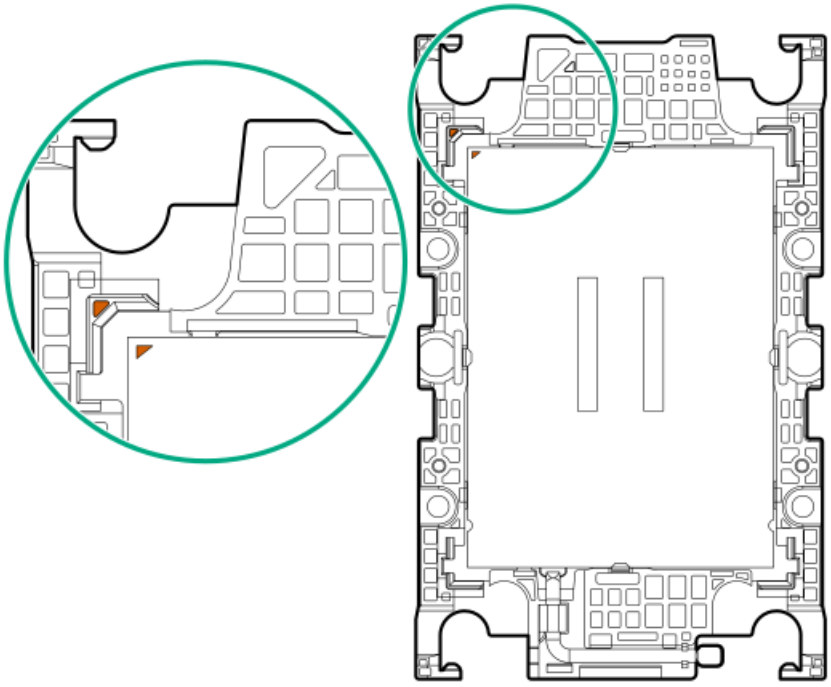


6. Perform the following verification steps:

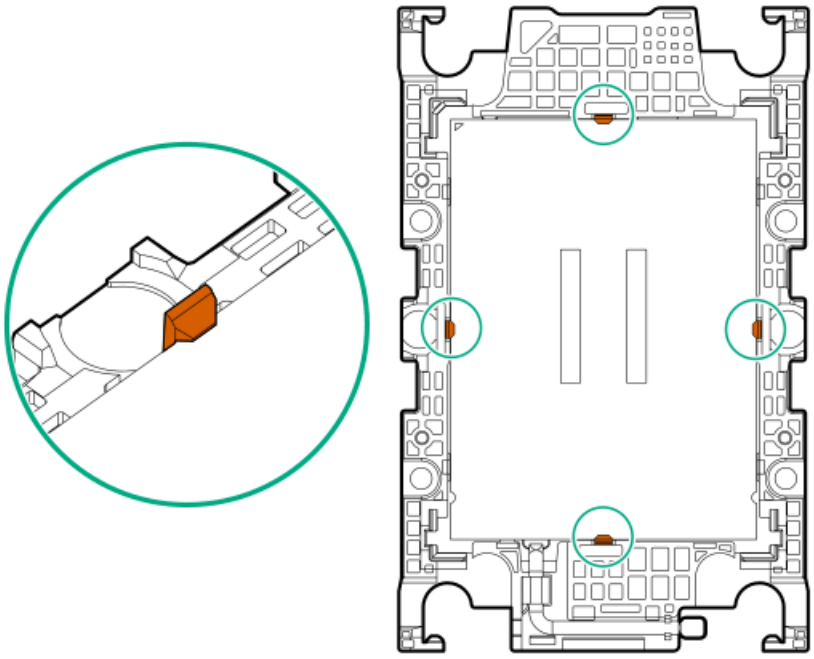
   a. Verify that the tabs on the processor carrier are securely latched on the heatsink.



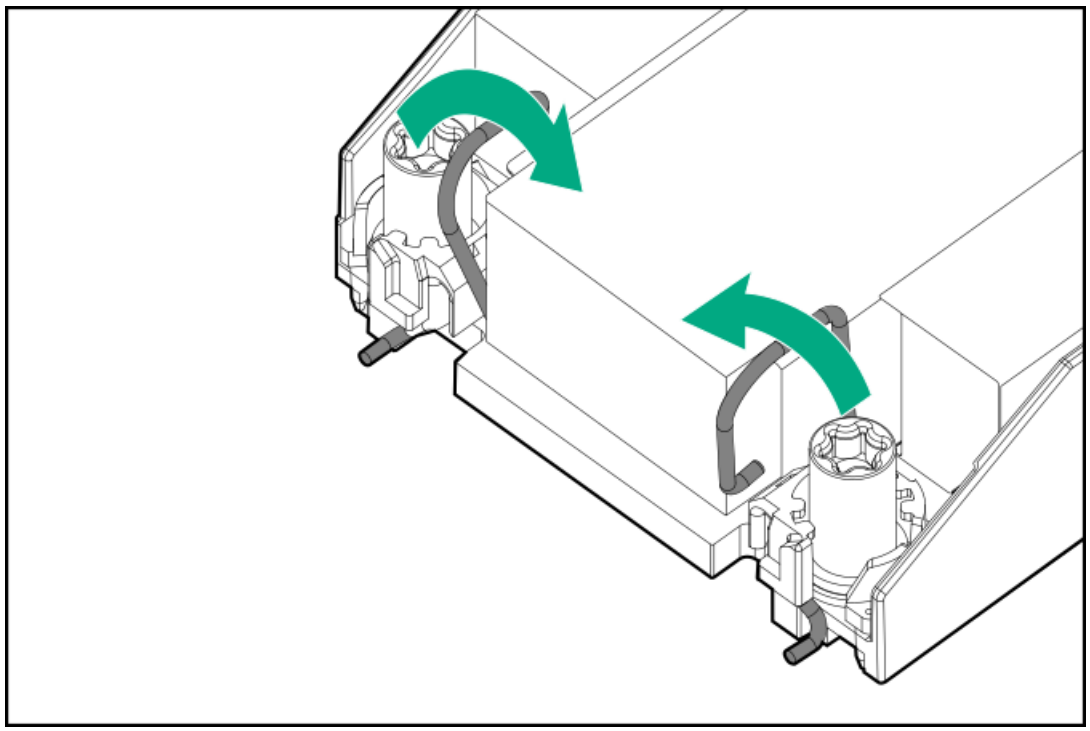
b. Verify that the pin 1 indicators on the processor and processor carrier are aligned.



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



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



8. **CAUTION**

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

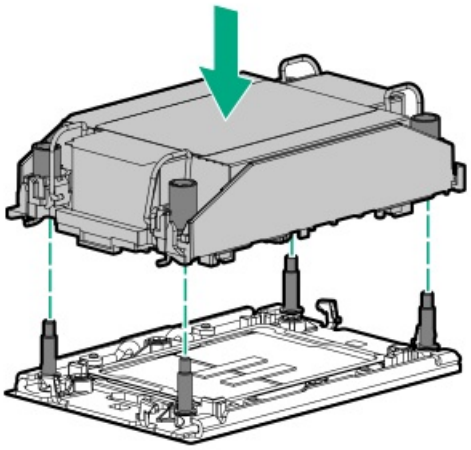
Install the processor-heatsink module:

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

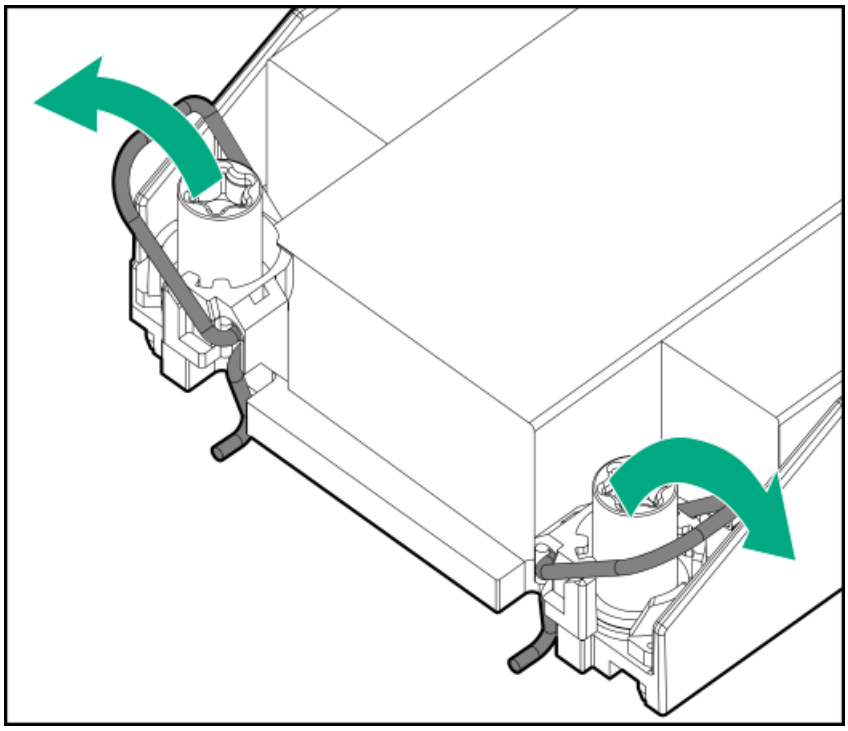
b. Note the **Front of server** text on the heatsink label to correctly orient the processor-heatsink module over the bolster plate.

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

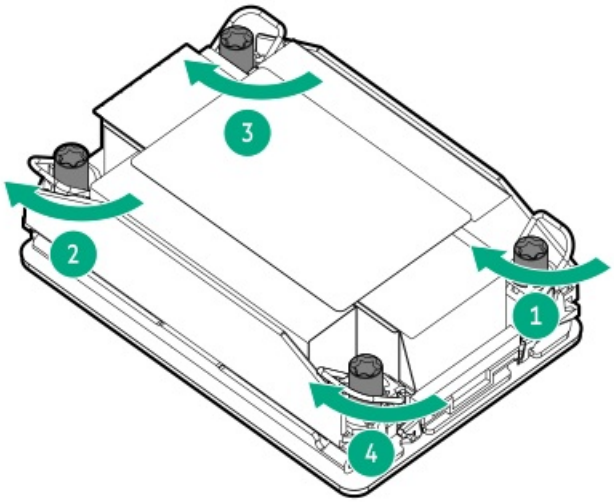
The posts are keyed so that the module can only be installed one way. Make sure that the module is properly seated on the bolster plate before securing the screws.



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



e. Use a T-30 Torx screwdriver to tighten one pair of diagonally opposite heatsink screws (callouts 1 to 2), and then tighten the other pair of heatsink screws (callouts 3 to 4).



9. Install the air baffle and other removed hardware components.
10. Install the access panel.
11. If the server was removed from an enclosure or a rack, reinstall it now.
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

Results

The installation is complete.

Connecting the direct liquid cooling kit

Prerequisites

Be sure you have the DLC hose kit. The hose kit connects the DLC manifold to the processor cold plates.

About this task

For more information about the DLC system, see the **HPE Cray XD Direct Liquid Cooling System Site Preparation, User, and Maintenance Guide**:
http://www.hpe.com/info/xdDLCguide

Procedure

1. From the rear of the server, locate the hoses coming from the riser cage or NS204i-u bracket.
2. Remove the quick connector caps from the hoses.
3. Connect the DLC hose kit.
4. Connect the DLC hose kit to the DLC manifold on the rack.

Rack mounting options

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

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

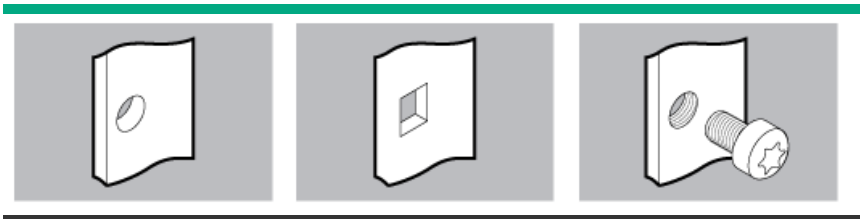
- Rack rail hoop-and-loop strap
- Cable management arm

Subtopics

Rack mounting interfaces
Rack rail options
Rail identification markers
Installing the rack rails
Installing the server into the rack
Installing the rack rail hook-and-loop strap
Installing the cable management arm

Rack mounting interfaces

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



Round-hole Square-hole Threaded round-hole

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

Rack rail options

This server supports rack rail #3 for SFF and LFF drive configurations.

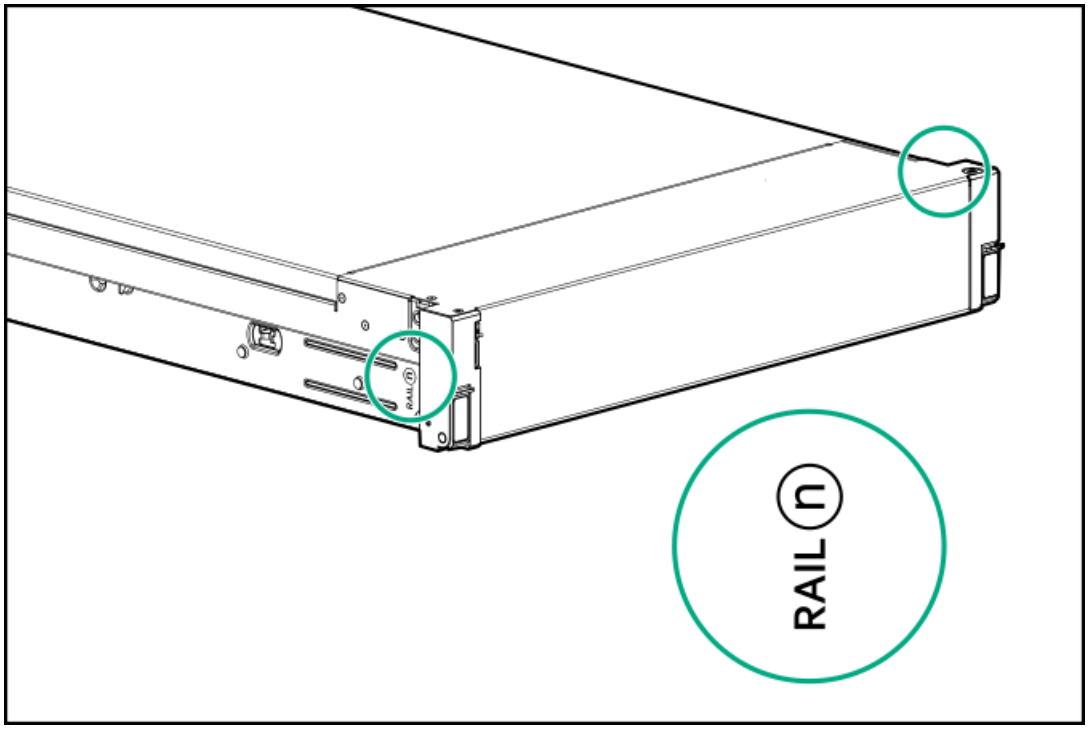
Rail identification markers

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

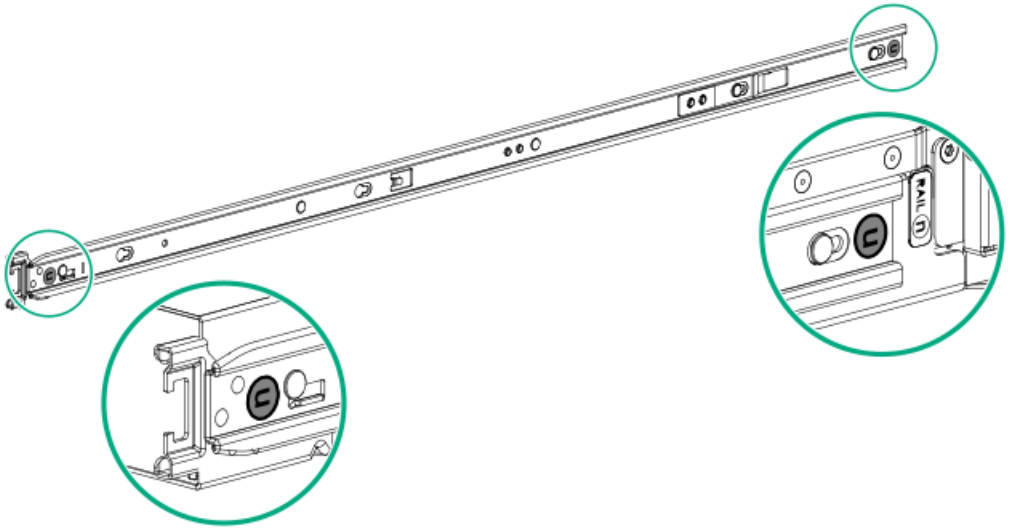
- The height and weight of the chassis as determined by the front- and rear-end server configurations.
- The depth of the chassis as measured from the edge of the front panel (without the front bezel) to the edge of the rear panel.

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

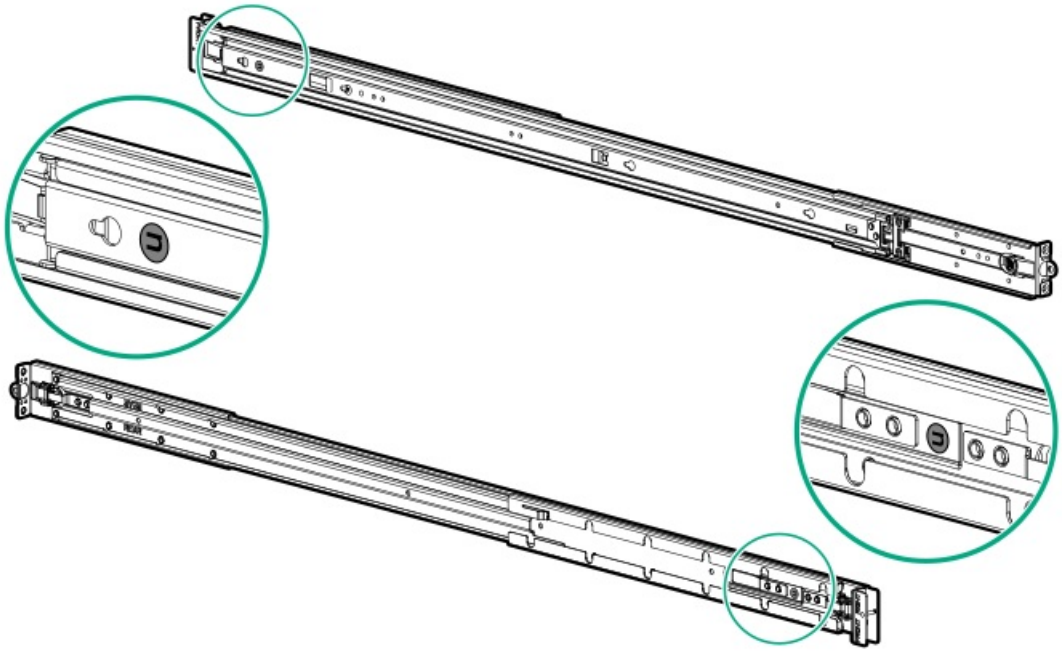
- Rail number labels on the chassis



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



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



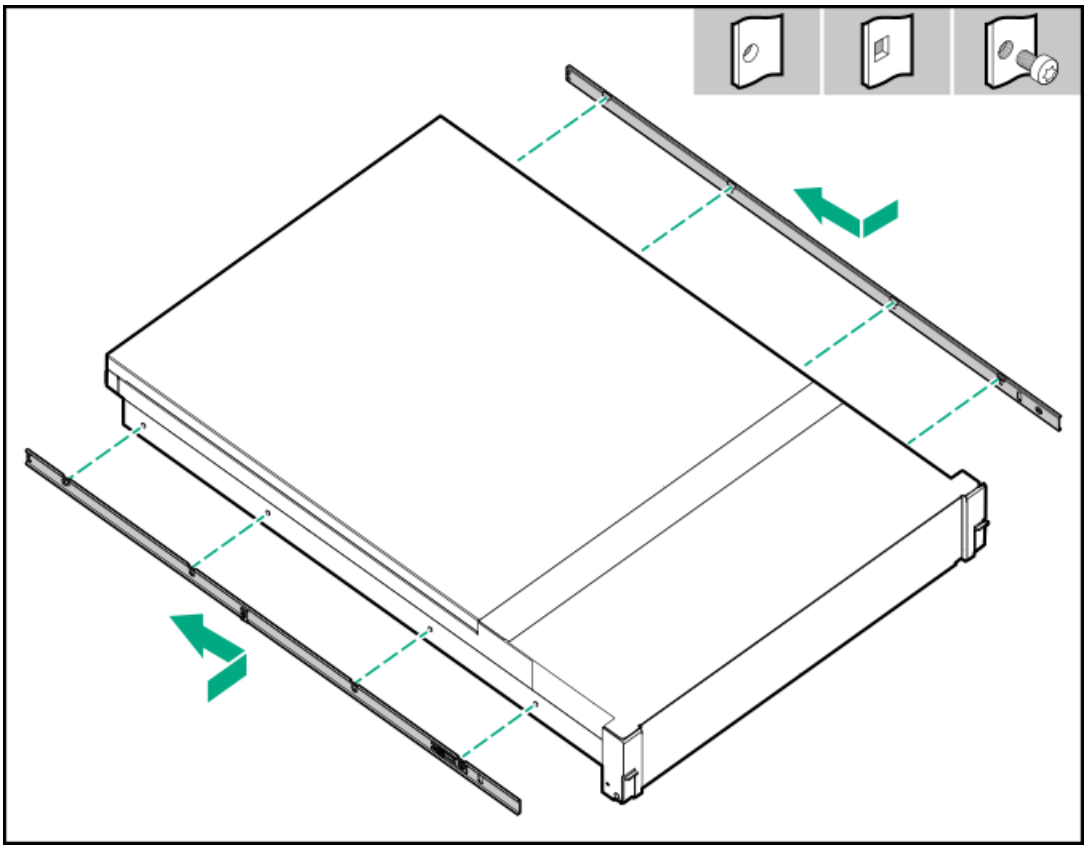
Installing the rack rails

Prerequisites

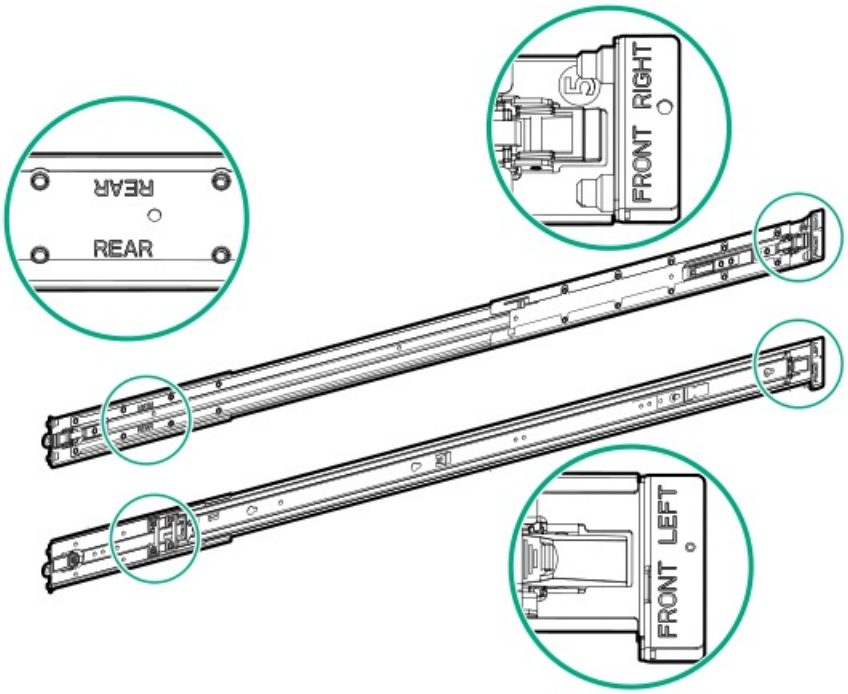
- Make sure that the rail option is compatible with the server configuration .
- If you are installing the server in a threaded round-hole rack, be sure to have a small slotted screwdriver.

Procedure

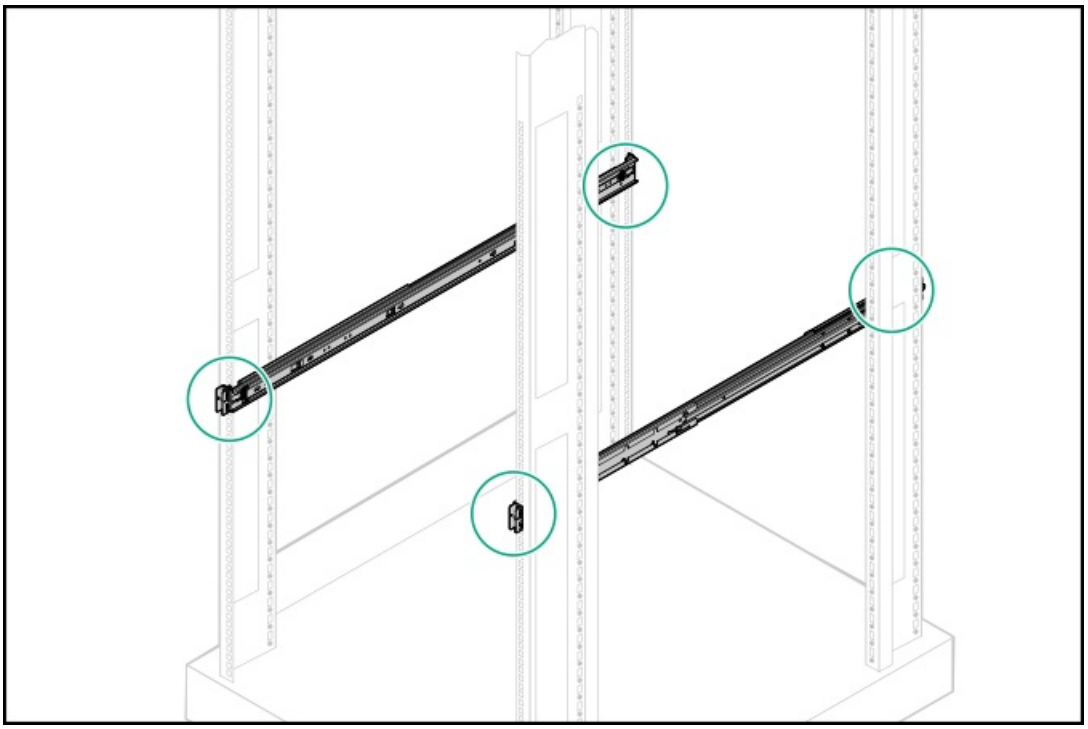
1. Install the server rails.



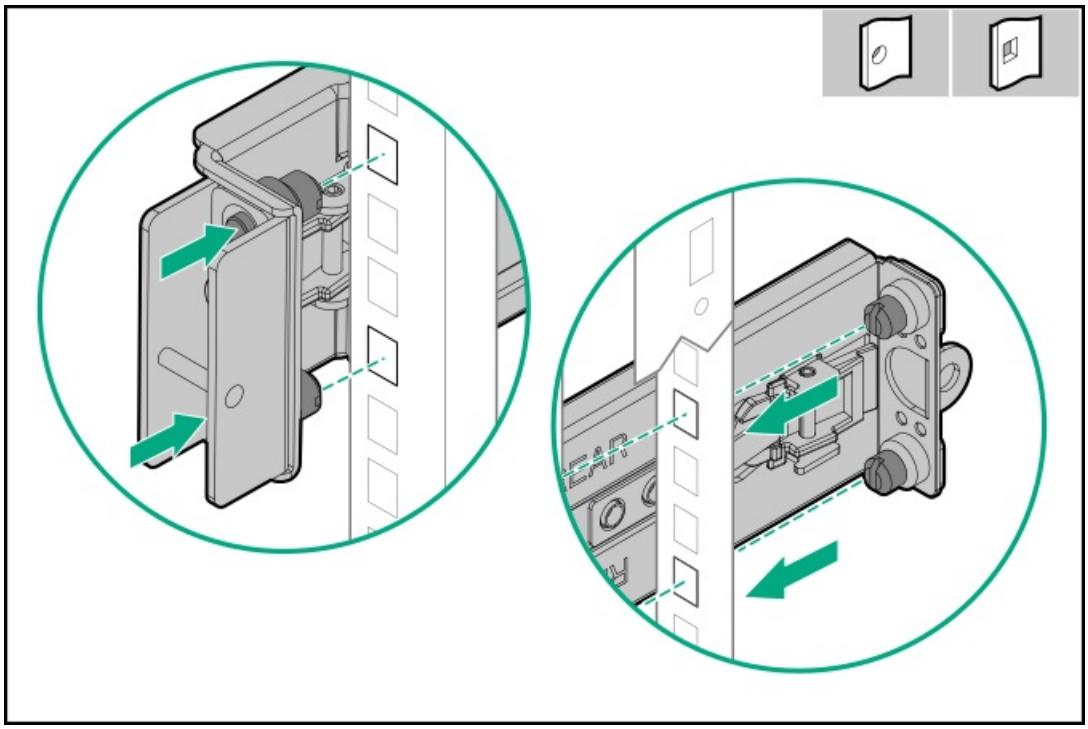
2. Identify the rack rails.
   - The front end of the rails is marked as **FRONT LEFT** or **FRONT RIGHT**.
   - The other end of the rails is marked as **REAR**.



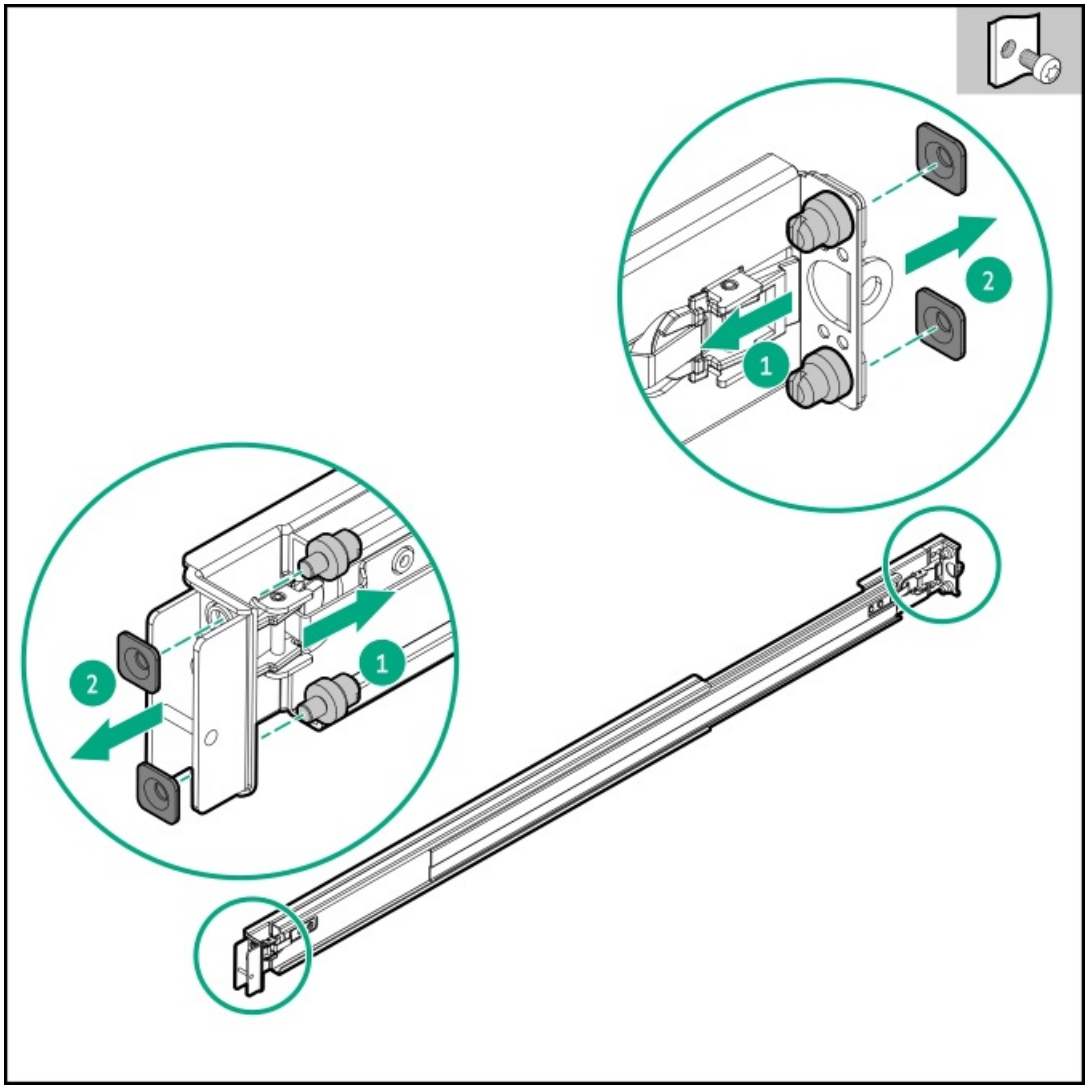
3. Extend the rack rails to align with the depth of the rack.

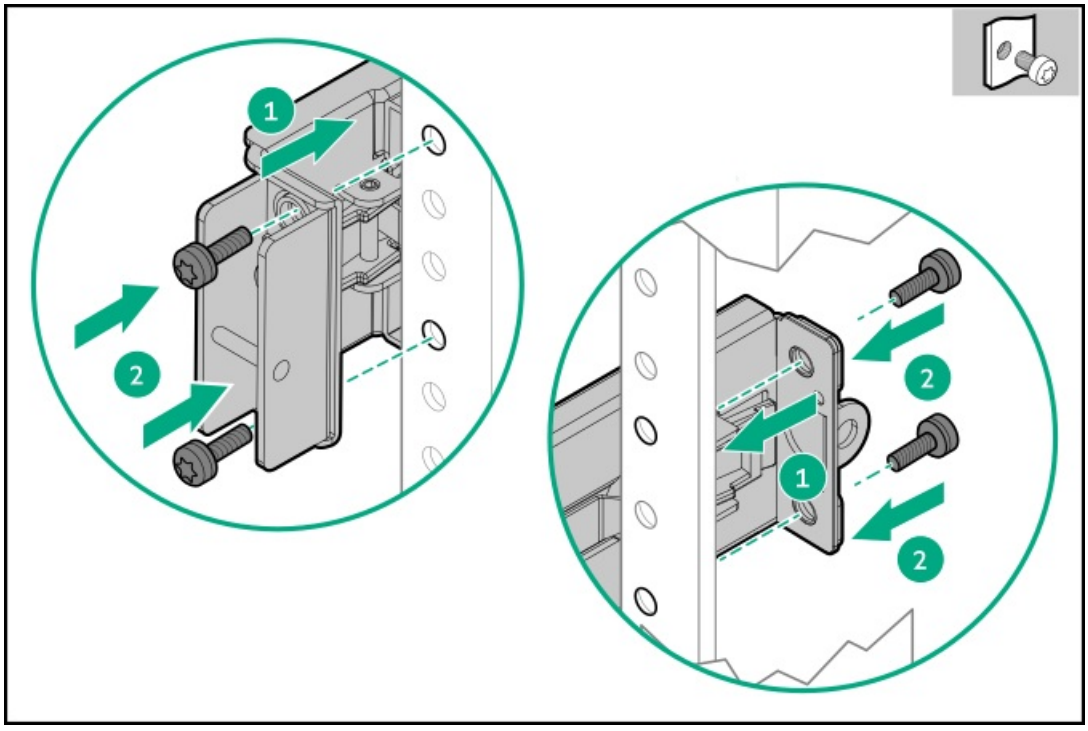


4. Install the rack rails.
   - For round-hole or square-hole racks:



   - For threaded round-hole racks:





5. Install the server into the rack .

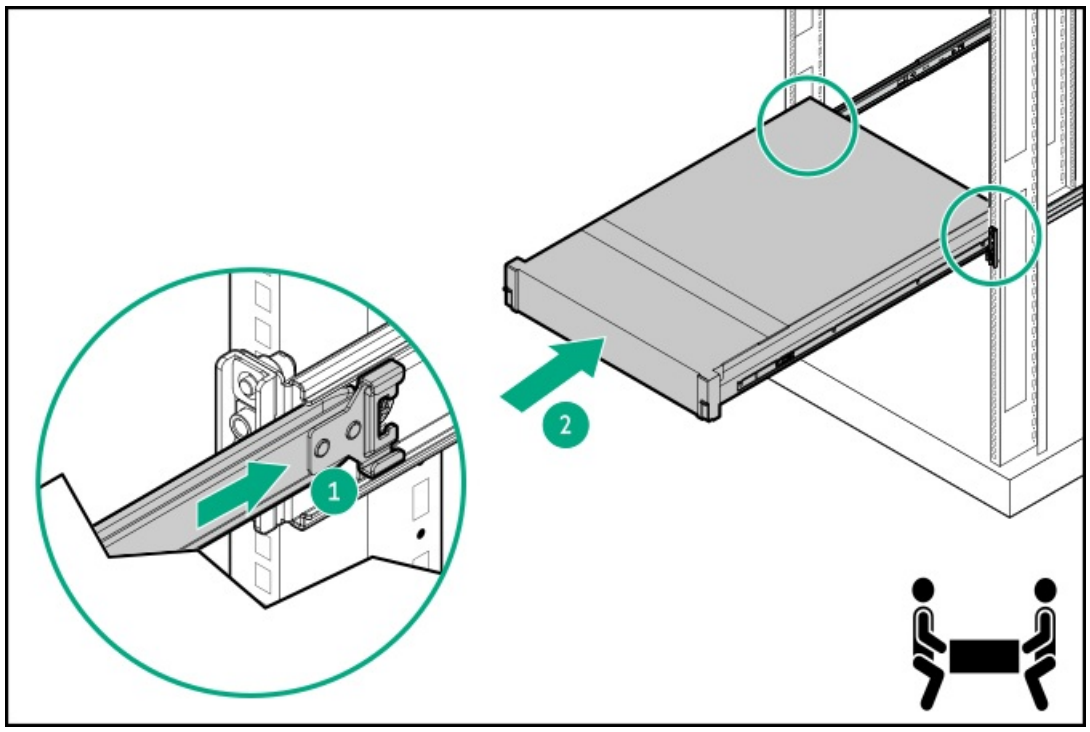
Installing the server into the rack

Prerequisites

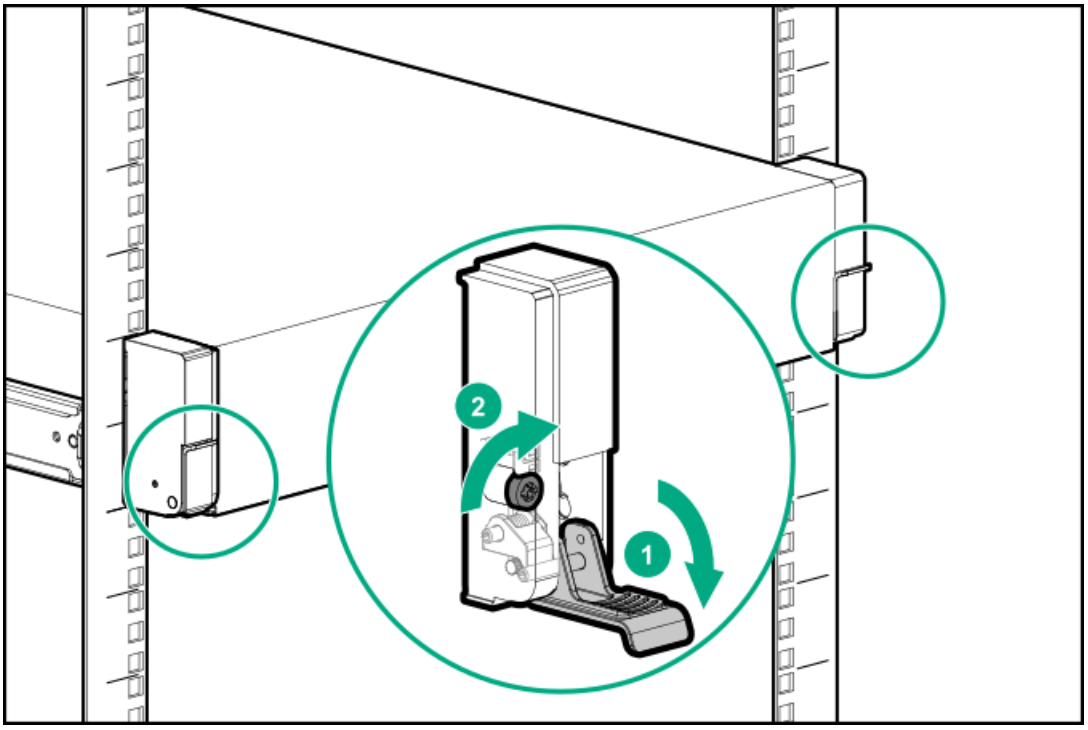
- Before you perform this procedure, review the:
  - Space and airflow requirements
  - Rack warnings and cautions
  - Server warnings and cautions
- A fully populated server is heavy. Hewlett Packard Enterprise recommends removing the external chassis components before installing the server into a rack.
- Before you perform this procedure, make sure that you have a T-25 Torx screwdriver available.

Procedure

1. Install the server into the rack.



2. Tighten the shipping screws.



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

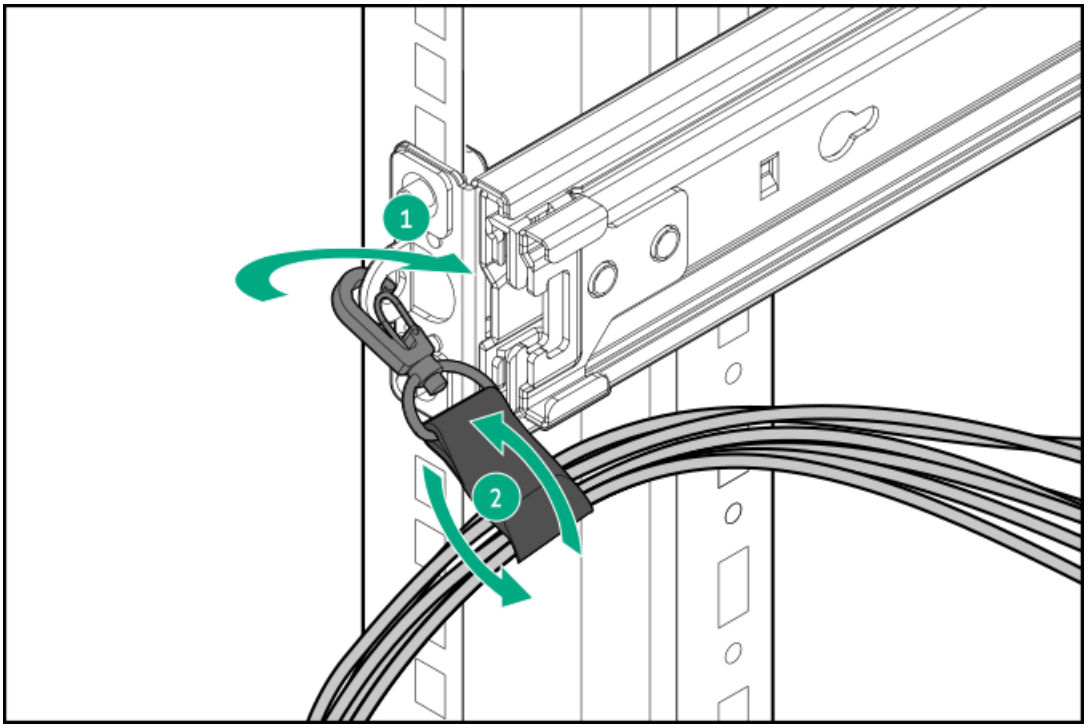
Installing the rack rail hook-and-loop strap

About this task

If you do not require in-rack serviceability for your rack-mounted server, use the rack rail hook-and-loop strap, instead of a CMA, to manage the rear panel cables. The hook-and-loop strap can be installed on either the left or right rack mounting rail.

Procedure

1. Attach the strap carabiner to the rack mounting rail.
2. Bundle the rear panel power cords and peripheral cables, and then wrap the strap around the cables.



Installing the cable management arm

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 need to be loosened or tightened.

About this task

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

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

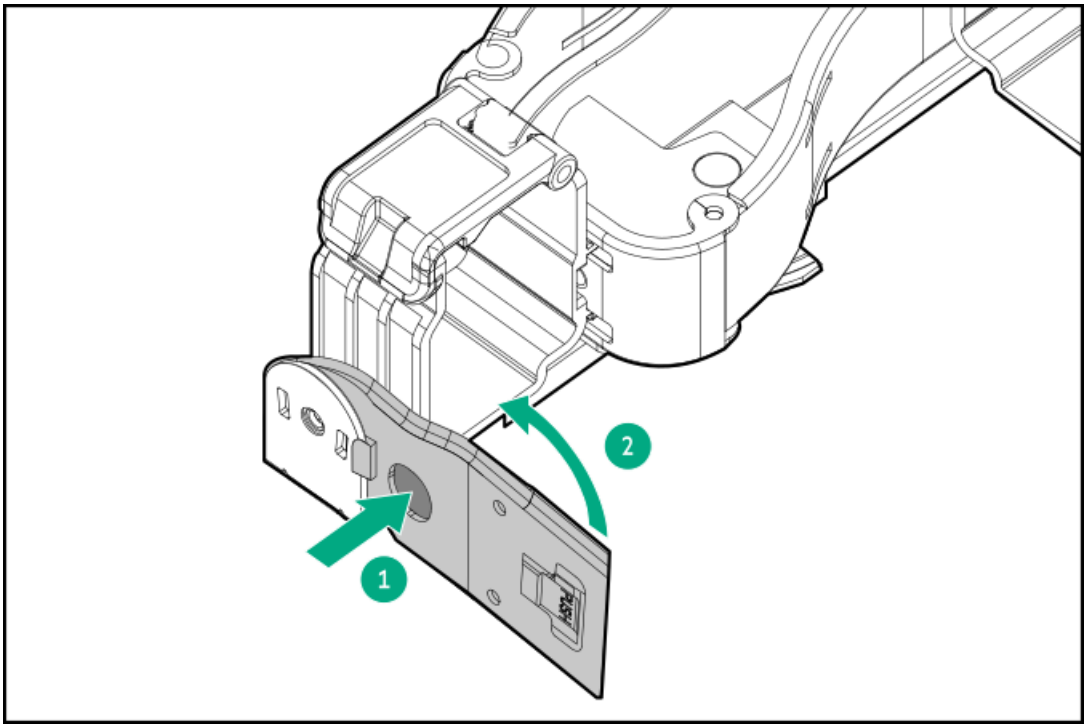
CAUTION

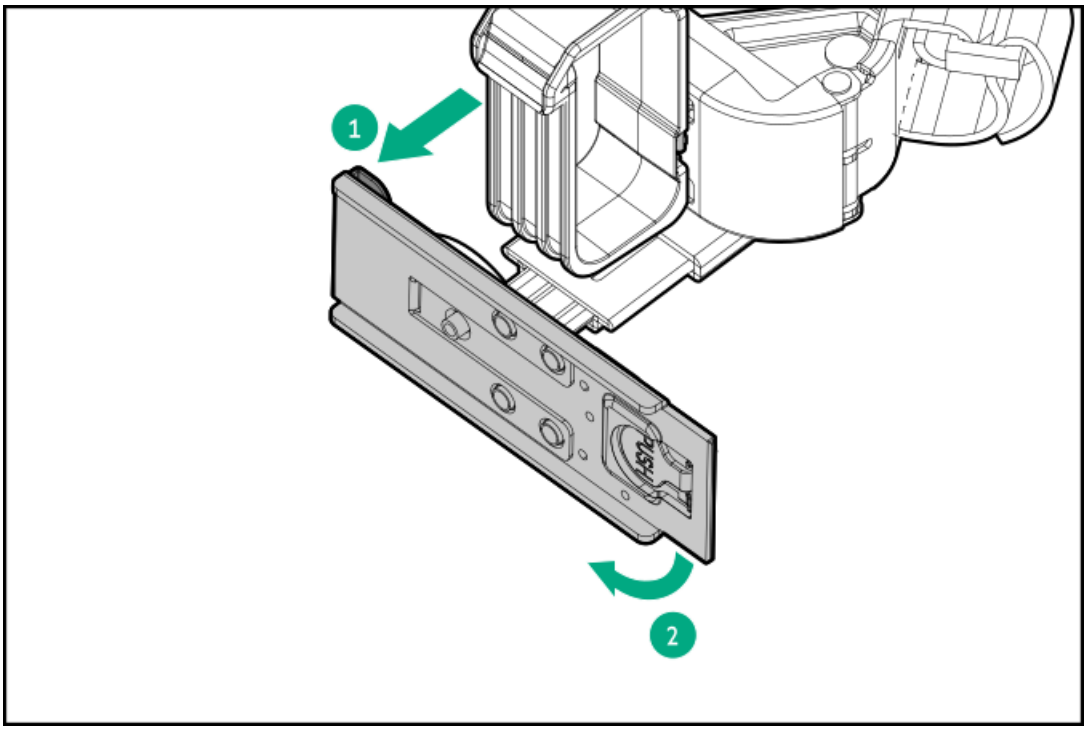
Support the CMA during the removal and replacement procedures. Do not allow the CMA to hang by its own weight during the procedure.

Procedure

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

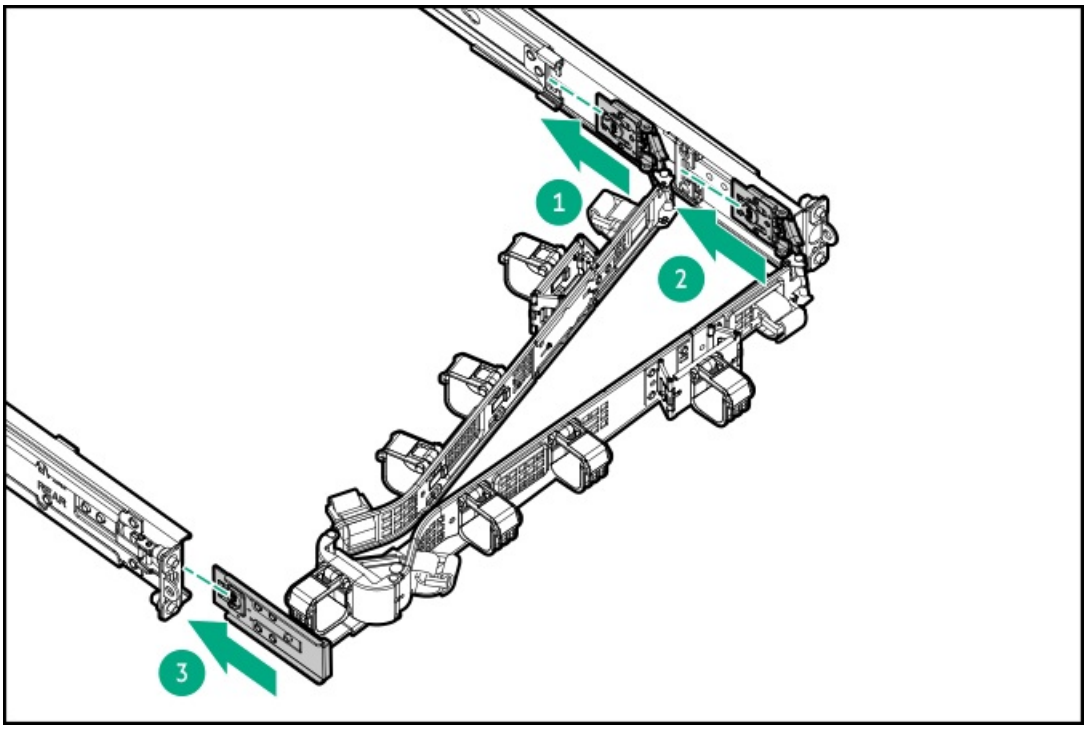
   There will be an audible click to indicate that the bracket is locked in its adjusted position.



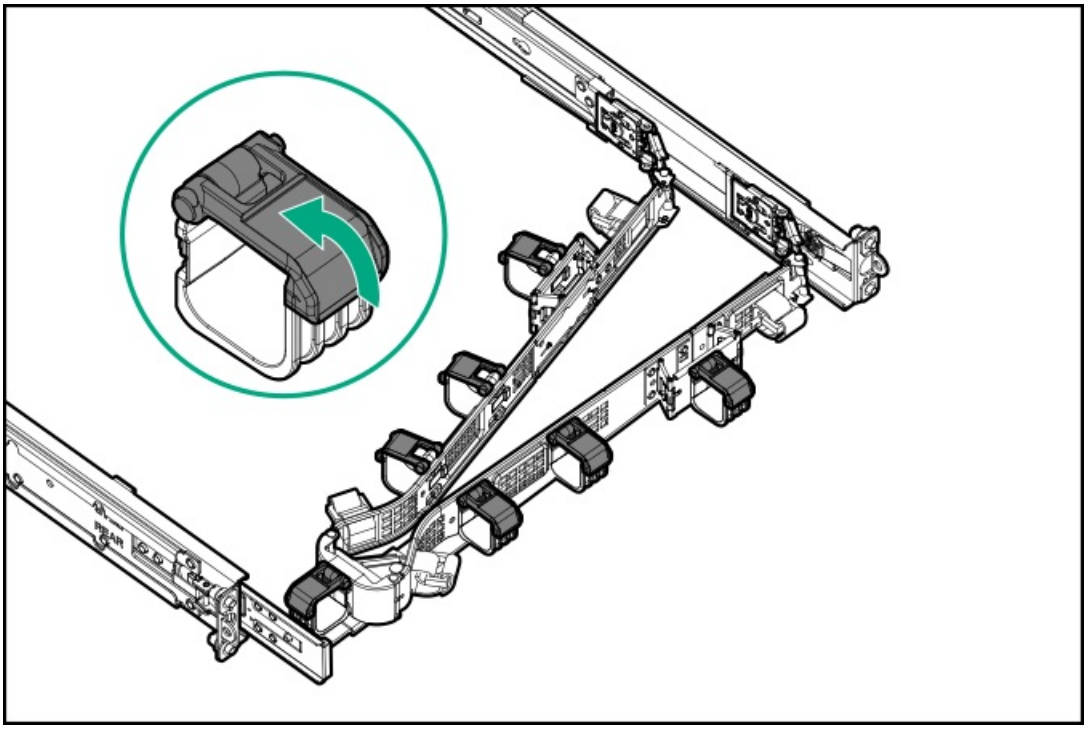


3. Connect the CMA hinged tabs and retention bracket to the server rails:
   a. Insert the inner tab into the slide rail (callout 1).
   b. Insert the outer tab into the mounting rail (callout 2).
   c. Insert the retention bracket into the opposite mounting rail (callout 3).

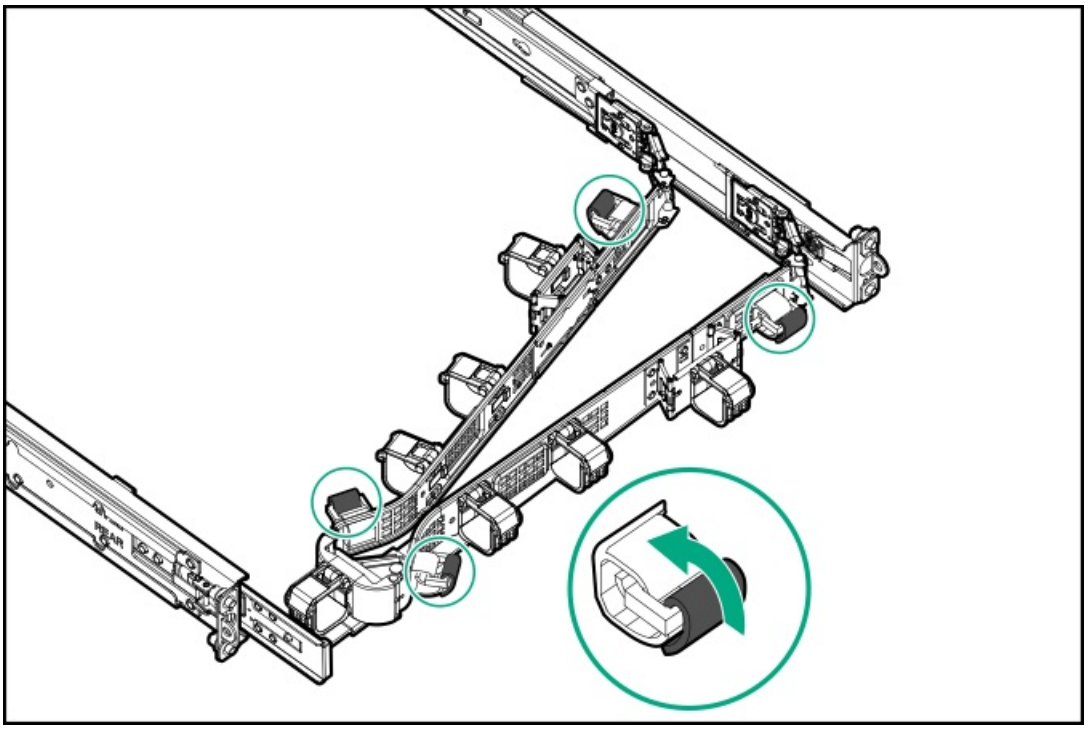
      There will be an audible click to indicate that the tabs and bracket are locked into place.



4. Open the cable clamps.



5. (Optional) If your CMA has cable straps for additional cable strain relief, unwrap the straps.

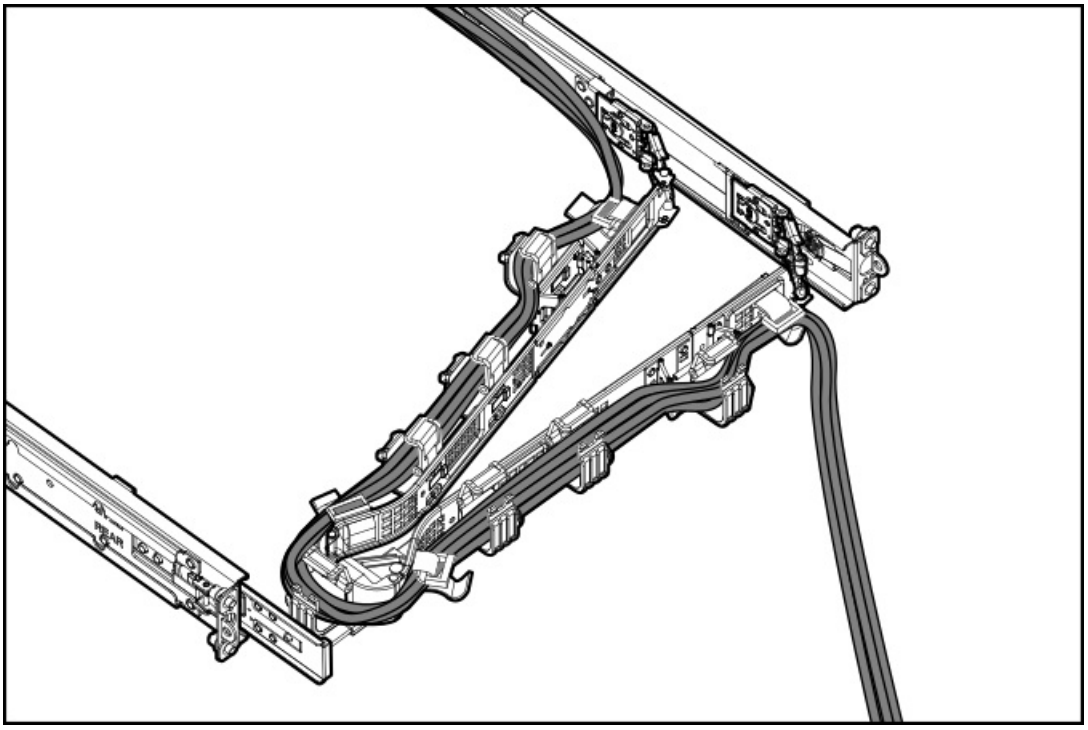


6. **CAUTION**

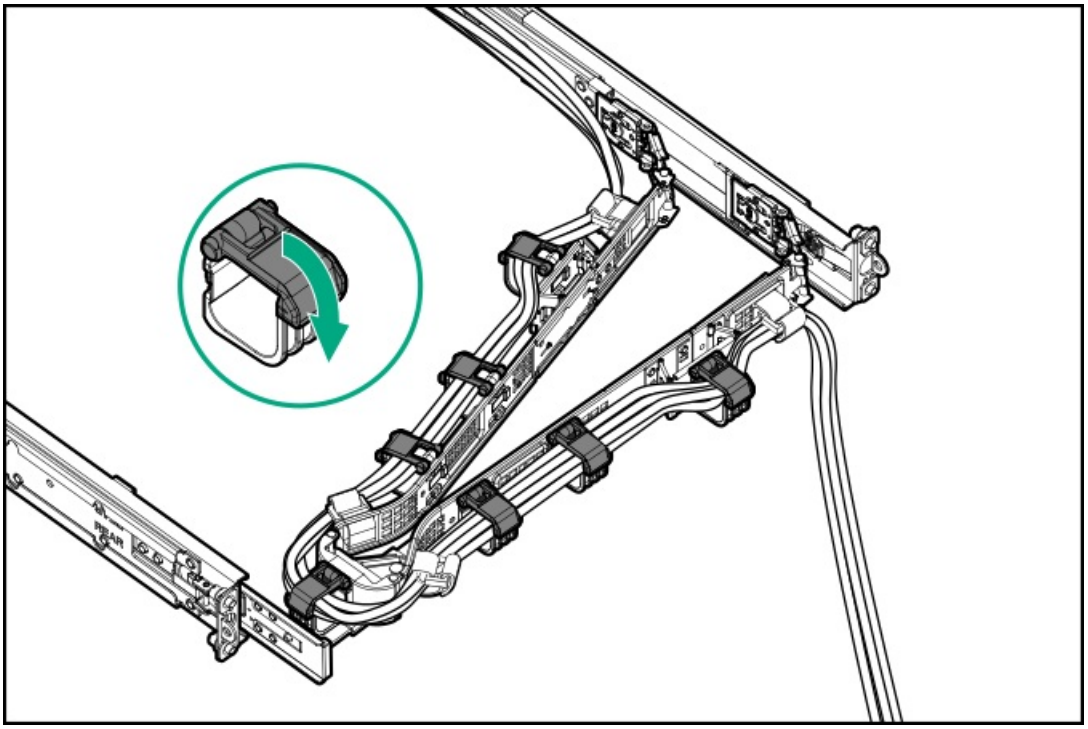
   Employ industry best practices in managing peripheral cables and power cords secured in the CMA. These are some of the more important points:

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

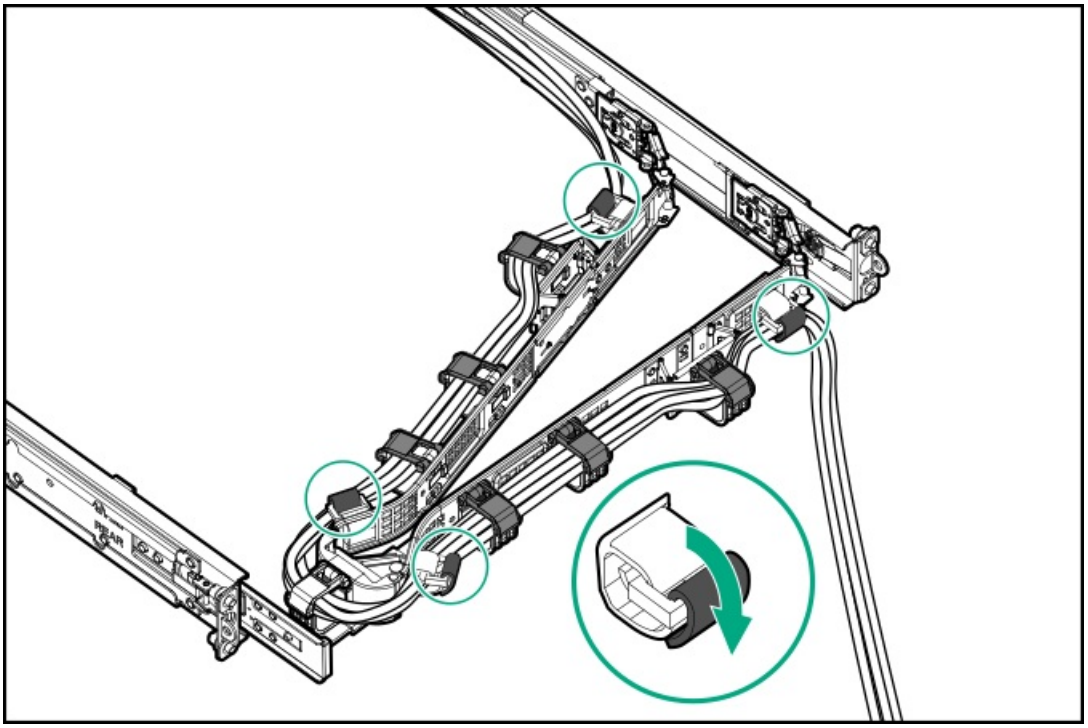
Route the peripheral cables and power cords through the cable clamps and/or straps.



7. Close the cable clamps.



8. (Optional) If your CMA has cable straps, fasten the straps.



9. Verify the operation of the server rails:

   Two people might be needed for this procedure: one to slide the chassis in and out of the server, and the other to observe the rear panel cables and power cords.

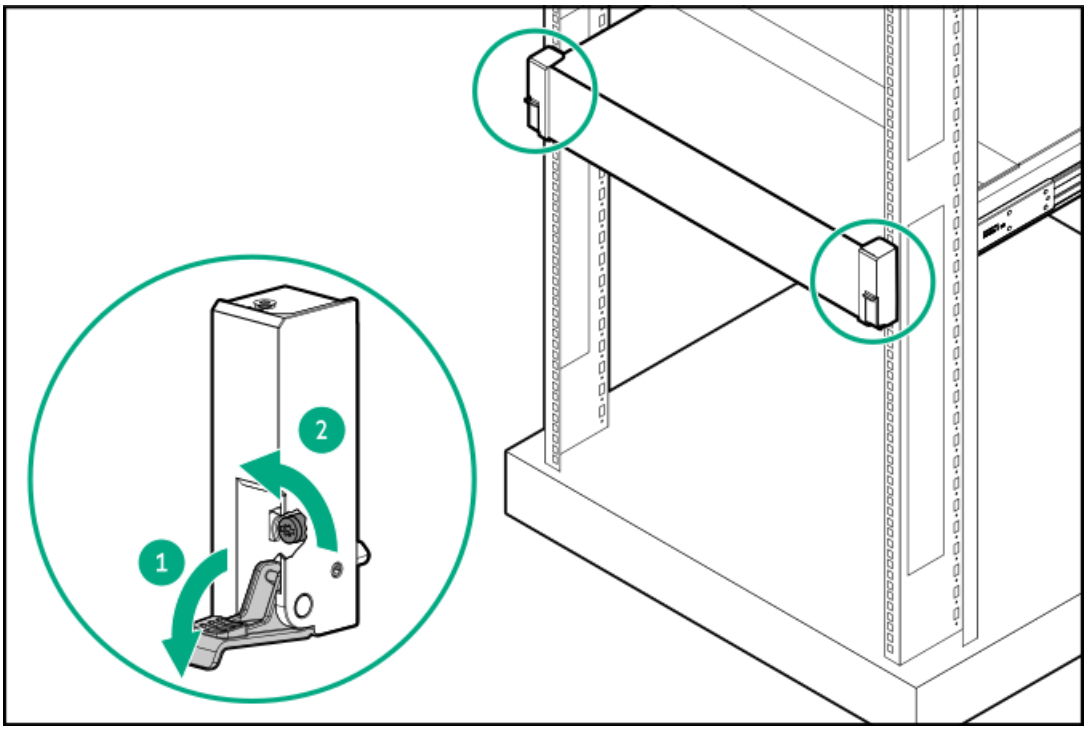
   a. Fully extend the chassis out of the server.

   b. Check that there is enough slack in the cables and cords for full extension of the chassis. Make sure that there is no cable binding or crimping.

   c. To ensure that the cables and cords are secured properly, slide the chassis in and out of the server. Make sure that there is no risk of accidental disconnection of the peripheral cables and power cords.

10. Slide the server into the rack until the chassis ears are flushed against the server posts.

11. (Optional) Open the chassis ear latches (callout 1), and then tighten the shipping screws (callout 2).



Results

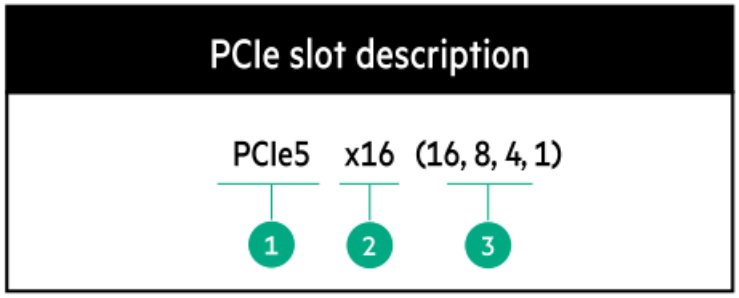
The installation is complete.

Riser and riser cage options

Subtopics

- PCIe5 slot description
- Supported PCIe form factors
- Installing expansion boards
- Installing a secondary riser cage
- Installing a tertiary riser cage
- Installing an accelerator or GPU
- Installing a rear 2 SFF riser cage
- Installing a rear 2LFF riser cage
- Installing primary and secondary risers
- Installing tertiary risers

PCIe5 slot description



Item	Description	Definition
1	PCI Express version	Each PCIe version corresponds to a specific data transfer rate between the processor and peripheral devices. Generally, a version update corresponds to an increase in transfer rate. • PCIe 1.x • PCIe 2.x • PCIe 3.x • PCIe 4.x • PCIe 5.x The PCIe technology is under constant development. For the latest information, see the **PCI-SIG website**.
2	Physical connector link width	PCIe devices communicate through a logical connection called an interconnect or link. At the physical level, a link is composed of one or more lanes. The number of lanes is written with an x prefix with x16 being the largest size in common use. • x1 • x2 • x4 • x8 • x16
3	Negotiable link width	These numbers correspond to the maximum link bandwidth supported by the slot.

Supported PCIe form factors

All slots support full-height expansion cards. Use the following information to find supported lengths for each slot.

Primary riser connector

PCIe slot and card length	3-slot riser*	3-slot riser (Optional)
Slot 1 - Full-length/Full-height (FL/FH)	PCIe5 x8 (8, 4, 2, 1)	PCIe5 x16 (16, 8, 4, 2, 1)
Slot 2 - Full-length/Full-height (FL/FH)	PCIe5 x16 (16, 8, 4, 2, 1)	PCIe5 x16 (16, 8, 4, 2, 1)
Slot 3 - Half-length/Full-height (HL/FH)	PCIe5 x8 (8, 4, 2, 1)	PCIe5 x16 (16, 8, 4, 2, 1)

*When a 3 x16 riser kit is installed, all slots support PCIe5 x16 Full Length and Full Height.

Secondary riser connector

PCIe slot and card length	3-slot riser*	3-slot riser (Optional)
Slot 1 - Full-length/Full-height (FL/FH)	PCIe5 x8 (8, 4, 2, 1)	PCIe5 x16 (16, 8, 4, 2, 1)
Slot 2 - Full-length/Full-height (FL/FH)	PCIe5 x16 (16, 8, 4, 2, 1)	PCIe5 x16 (16, 8, 4, 2, 1)
Slot 3 - Half-length/Full-height (HL/FH)	PCIe5 x8 (8, 4, 2, 1)	PCIe5 x16 (16, 8, 4, 2, 1)

*When a 3 x16 riser kit is installed, all slots support PCIe5 x16 Full Length and Full Height.

Tertiary riser connector

PCIe slot and card length	2-slot riser (Optional)
Slot 7 - Full-length/Full-height (FL/FH)	PCIe5 x16 (16, 8, 4, 2, 1)
Slot 8 - Full-length/Full-height (FL/FH)	PCIe5 x8 (8, 4, 2, 1) or PCIe4 x16 (16, 8, 4, 2, 1)

Installing expansion boards

Prerequisites

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

The components included with the hardware option kit

About this task

WARNING

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

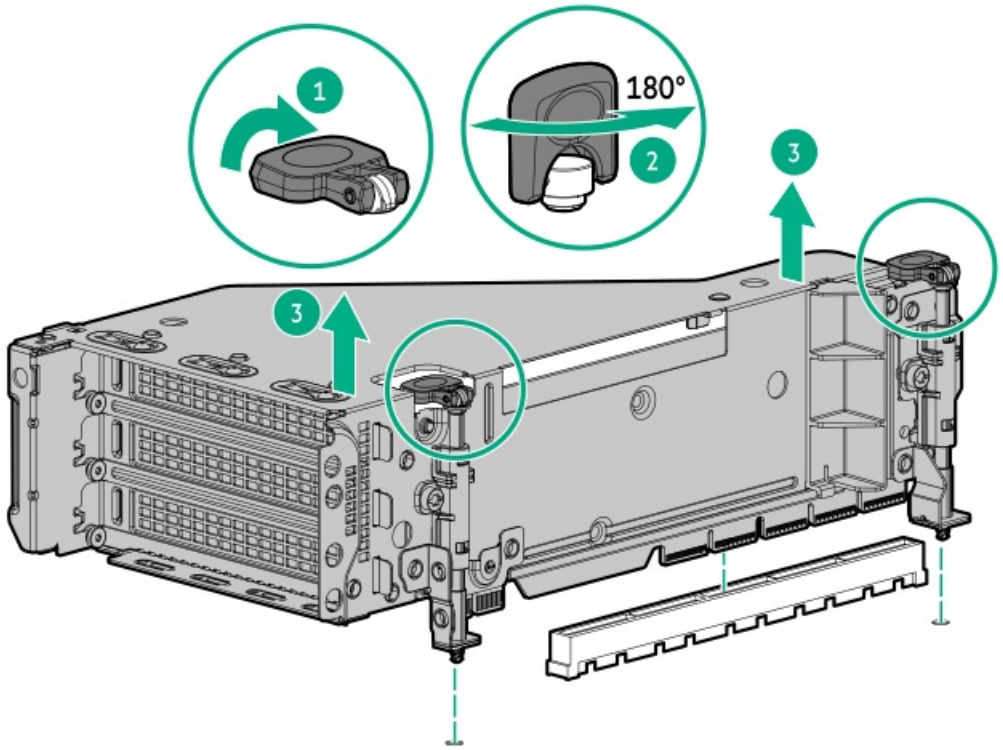
CAUTION

To prevent improper cooling or thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

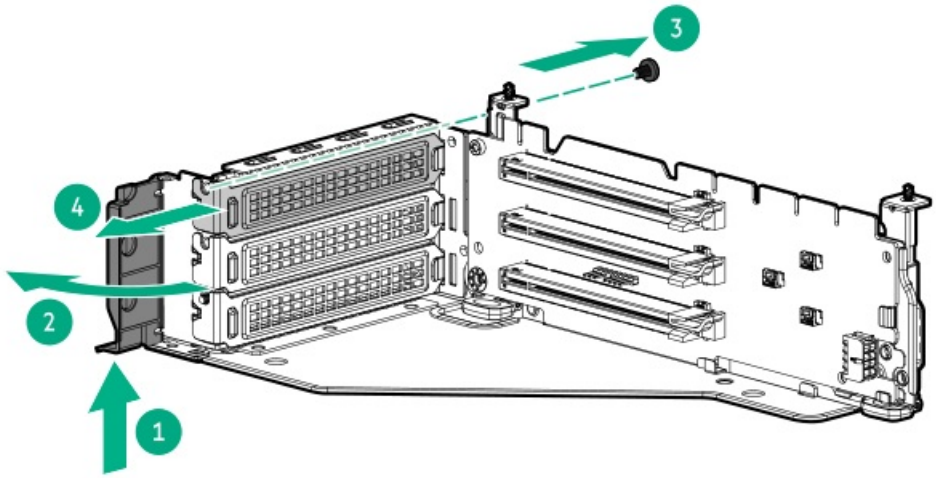
To install the component:

Procedure

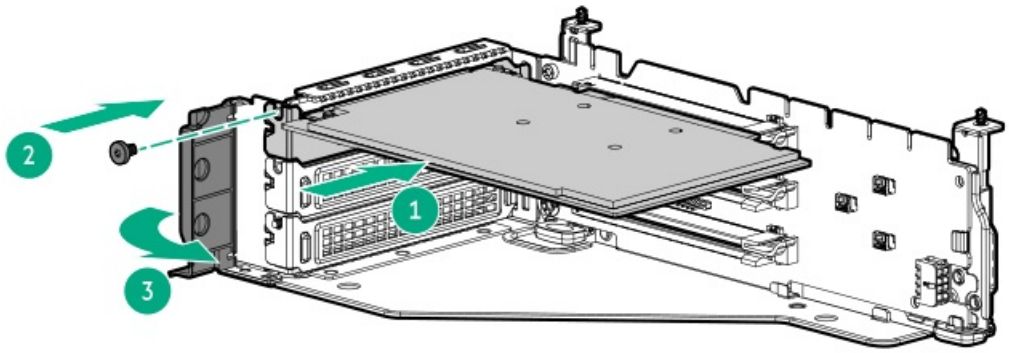
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the riser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



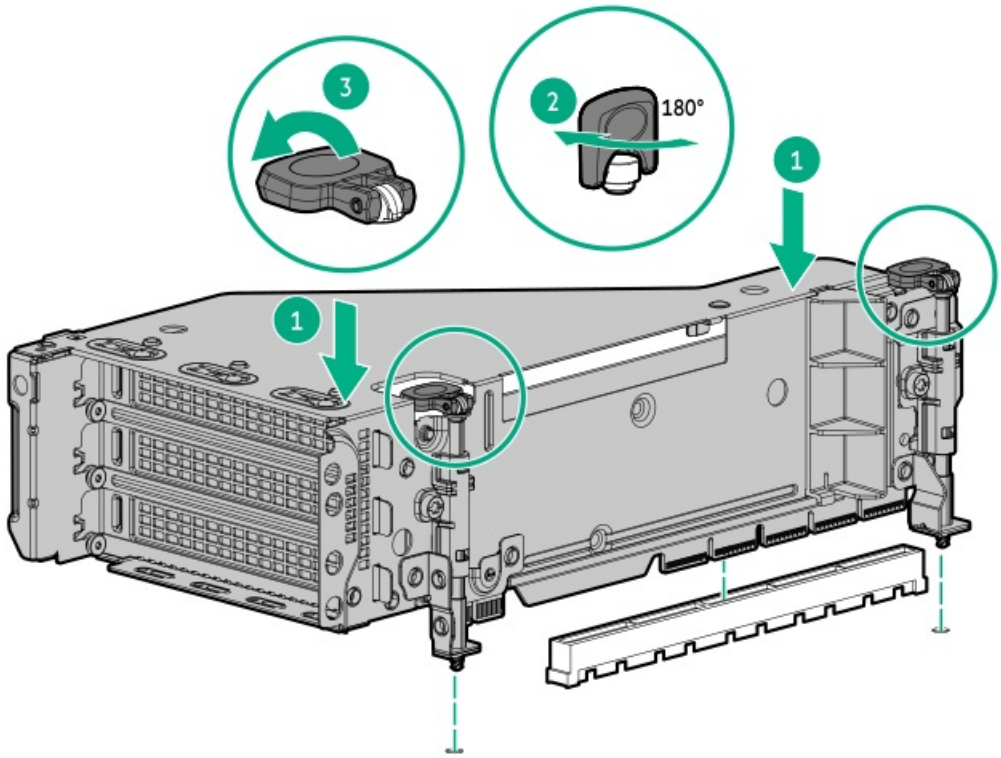
6. Identify and then remove the PCIe blank from the riser cage.



7. Install the expansion board.



8. Install the riser cage.



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

Results

The installation is complete.

Installing a secondary riser cage

Prerequisites

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

- The components included with the hardware option kit
- T-10 Torx screwdriver

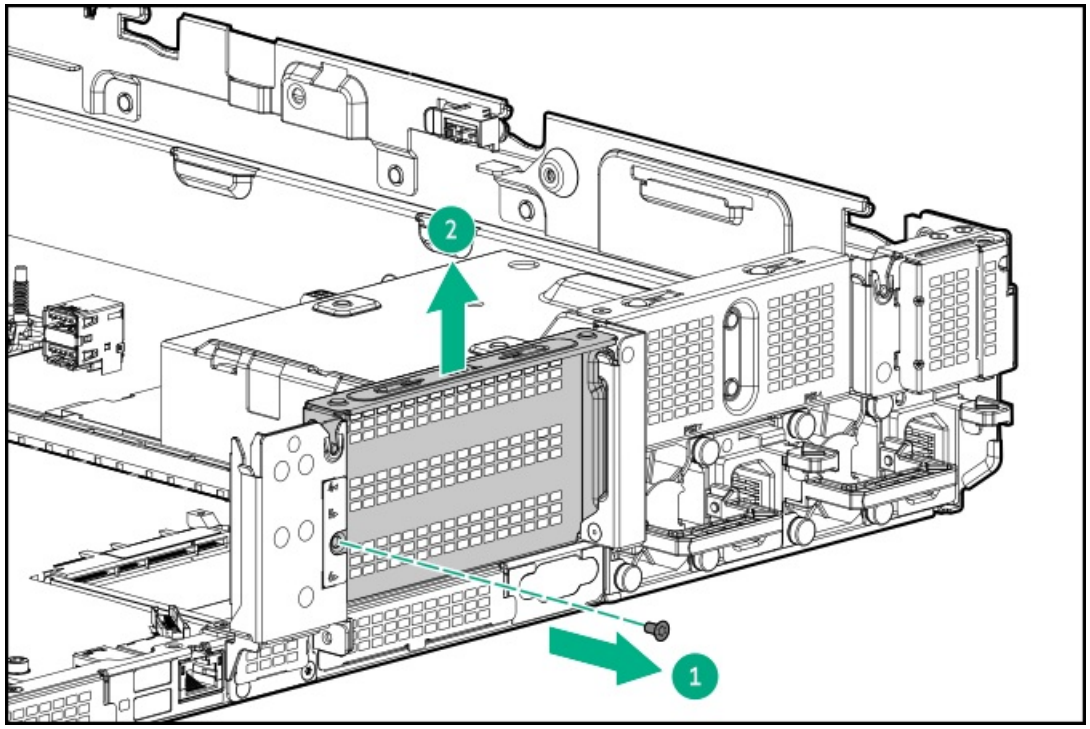
Procedure

1. Observe the following alert:

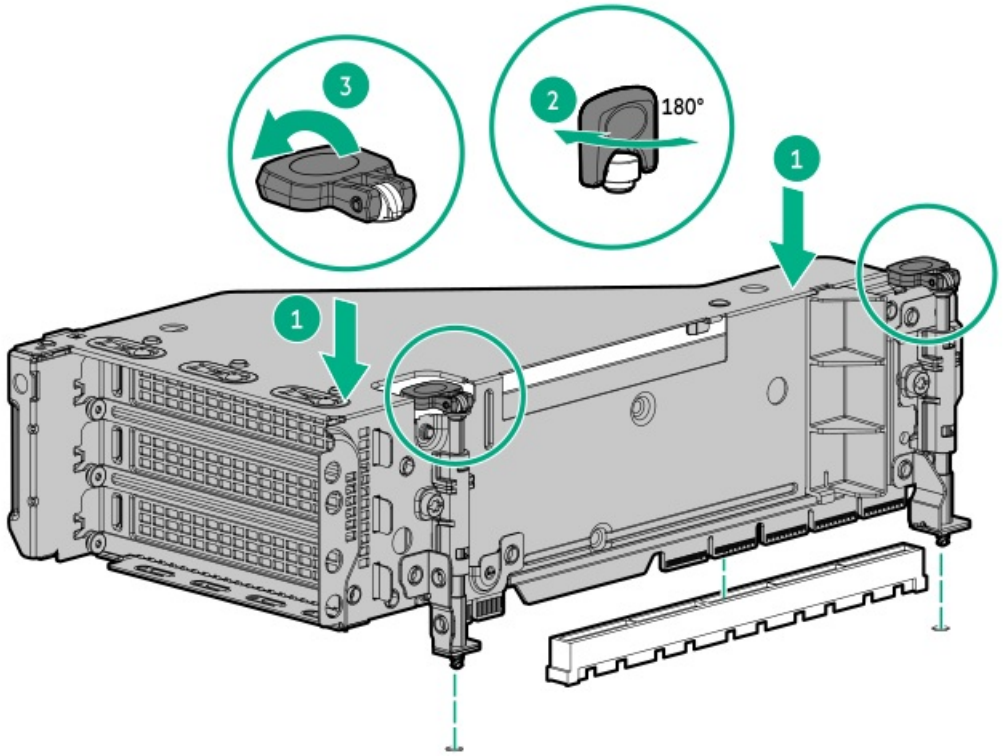
   CAUTION

   To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

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. 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 rear wall blank.



7. Install any expansion boards, if needed.
8. Install the riser cage.



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

Results

The installation is complete.

Installing a tertiary riser cage

Prerequisites

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

- The components included with the hardware option kit
- T-10 Torx screwdriver

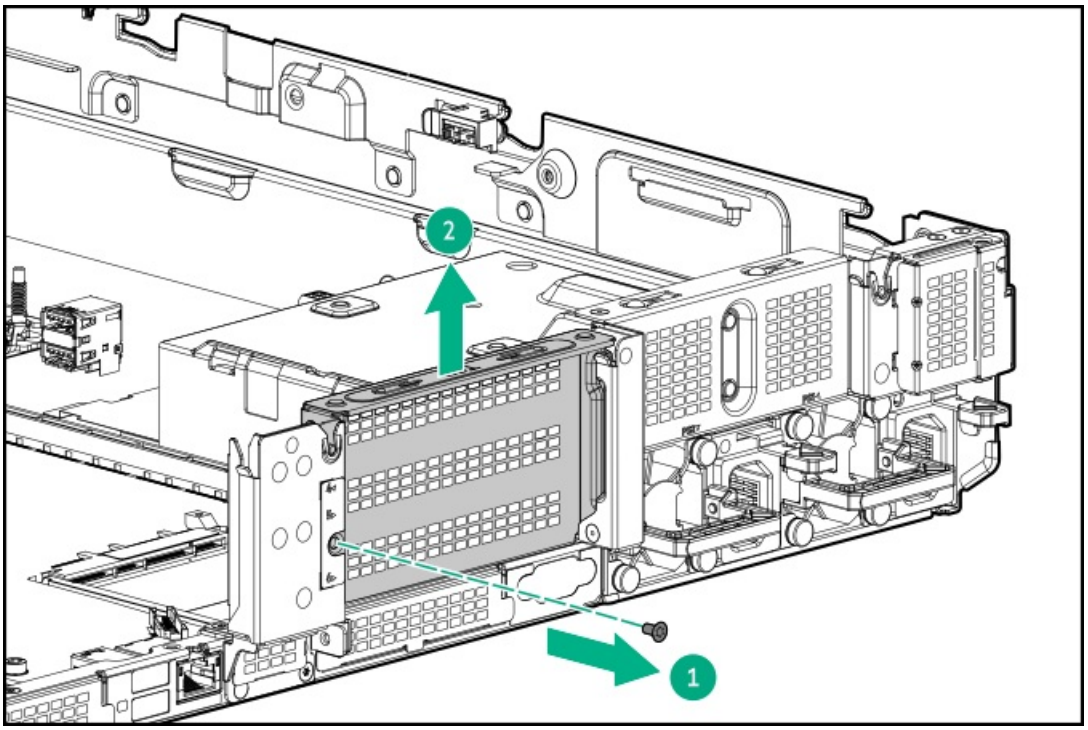
Procedure

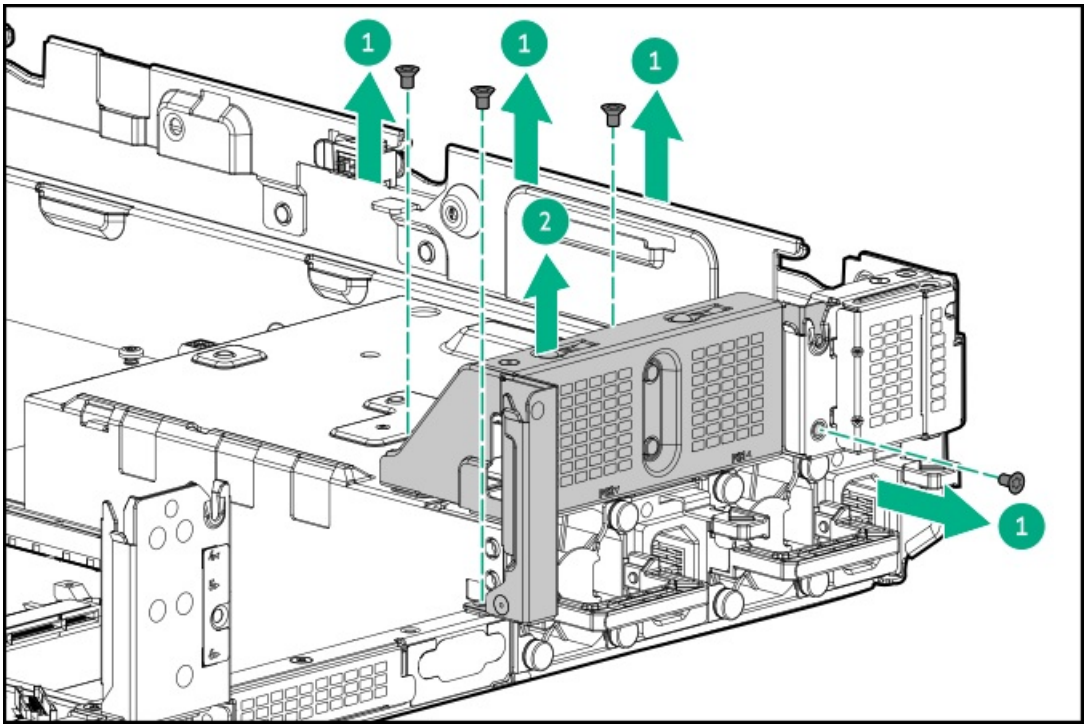
1. Observe the following alert.

> **CAUTION**
>
> To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI riser cage.

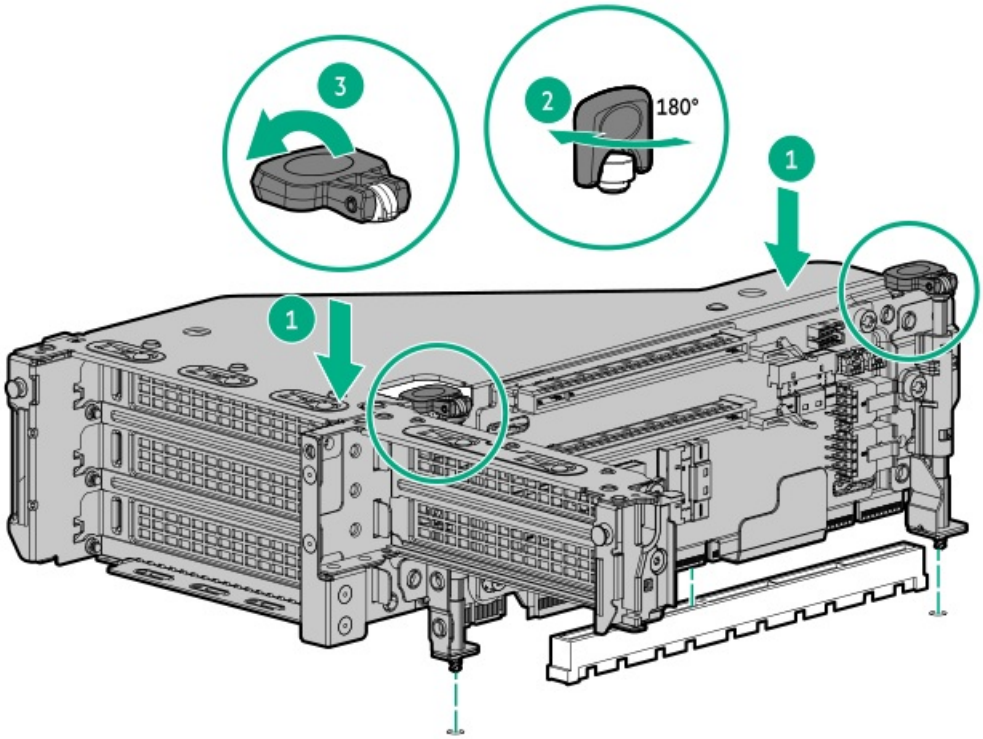
2. Power down the server.

3. Do one of the following:
   - Disconnect each power cord from the power source.
   - Disconnect each power cord 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 rear wall blanks.





7. Install any expansion boards, if needed
8. Install the tertiary riser cage:



Results

The installation is complete.

Installing an accelerator or GPU

Prerequisites

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

- The components included with the hardware option kit
- T-30 Torx screwdriver
- T-10 Torx screwdriver
- High-performance heatsinks must be installed with this option.

About this task

An accelerator or GPU can be installed into the primary, secondary, or tertiary position. This procedure shows an installation in the secondary position.

Procedure

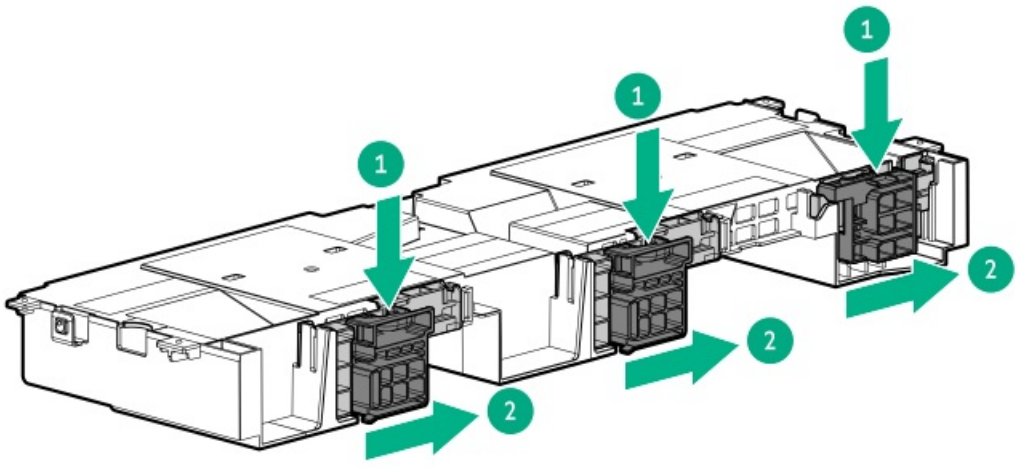
1. Observe the following alert.

   CAUTION

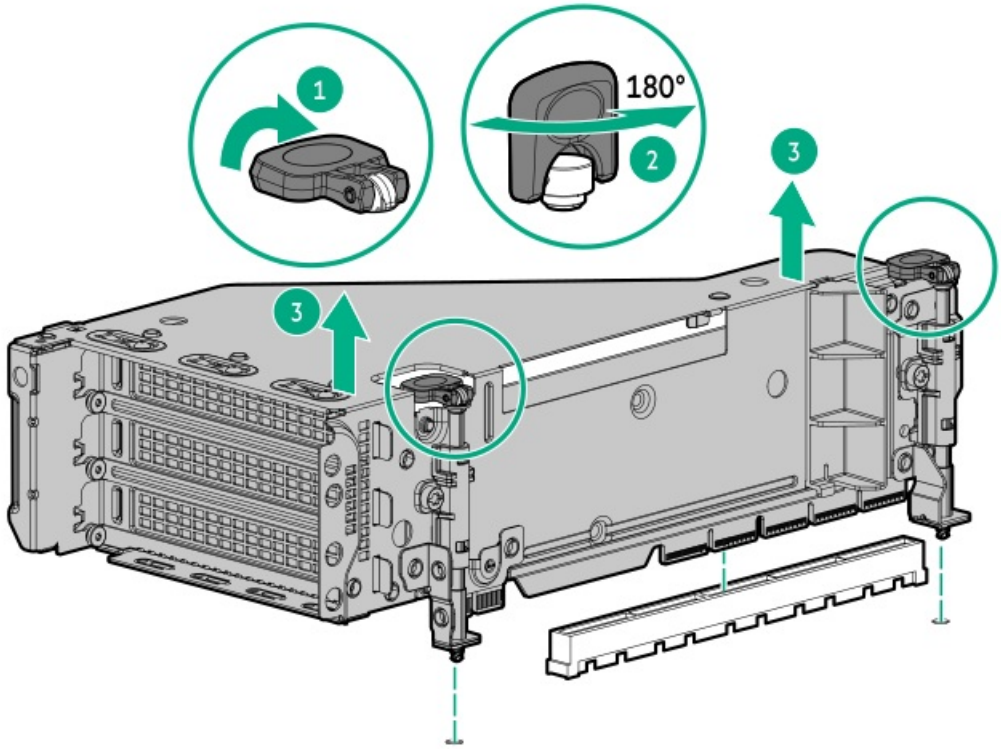
   To prevent improper cooling and thermal damage, do not operate the server unless all PCIe slots have either an expansion slot cover or an expansion board installed.

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
5. Remove the access panel.
6. Remove the air baffle.
7. Install the appropriate support bracket onto the air baffle.

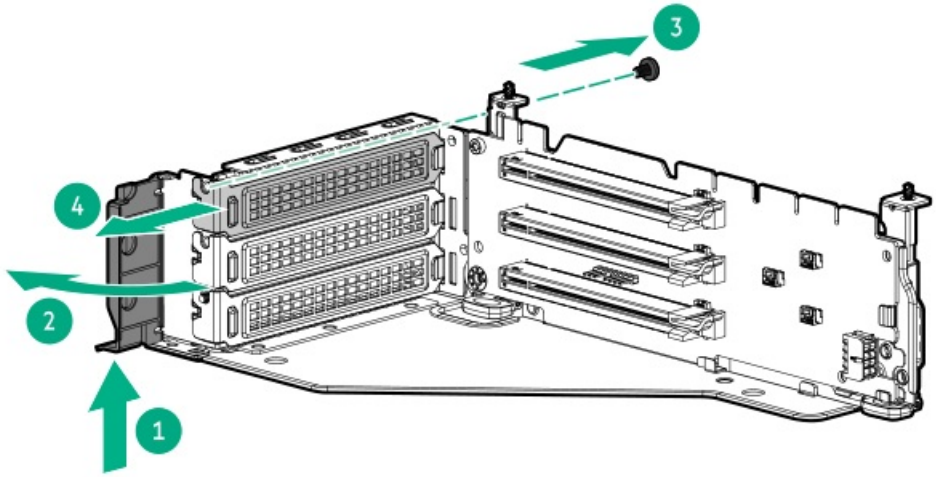
   Install the bracket that supports your configuration. Primary, secondary, and tertiary positions are shown.



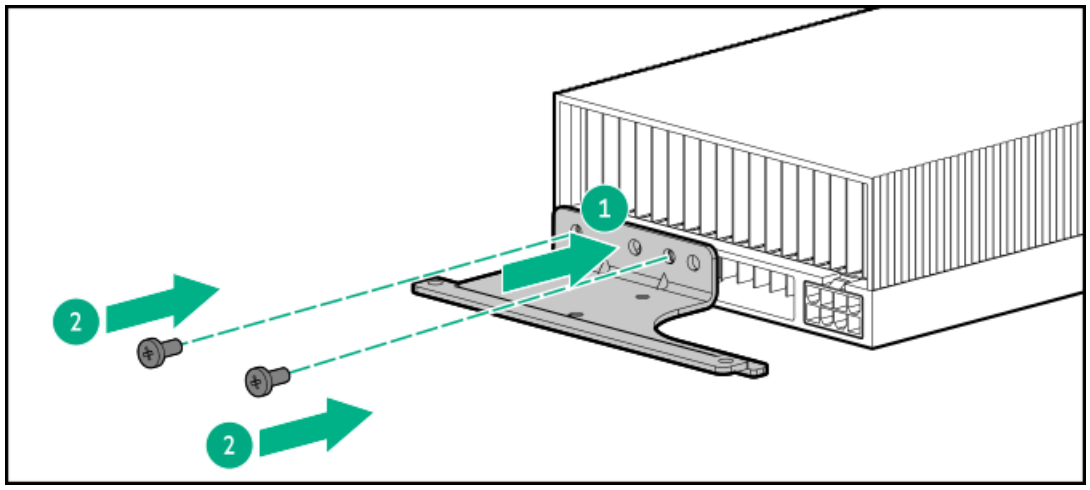
8. Remove the riser cage.



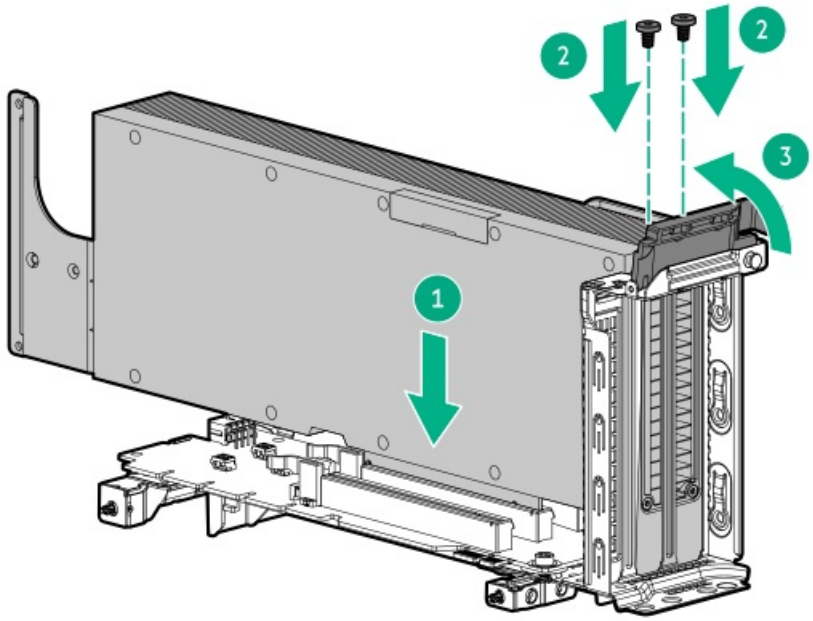
9. Remove the appropriate PCIe blanks from the riser cage.



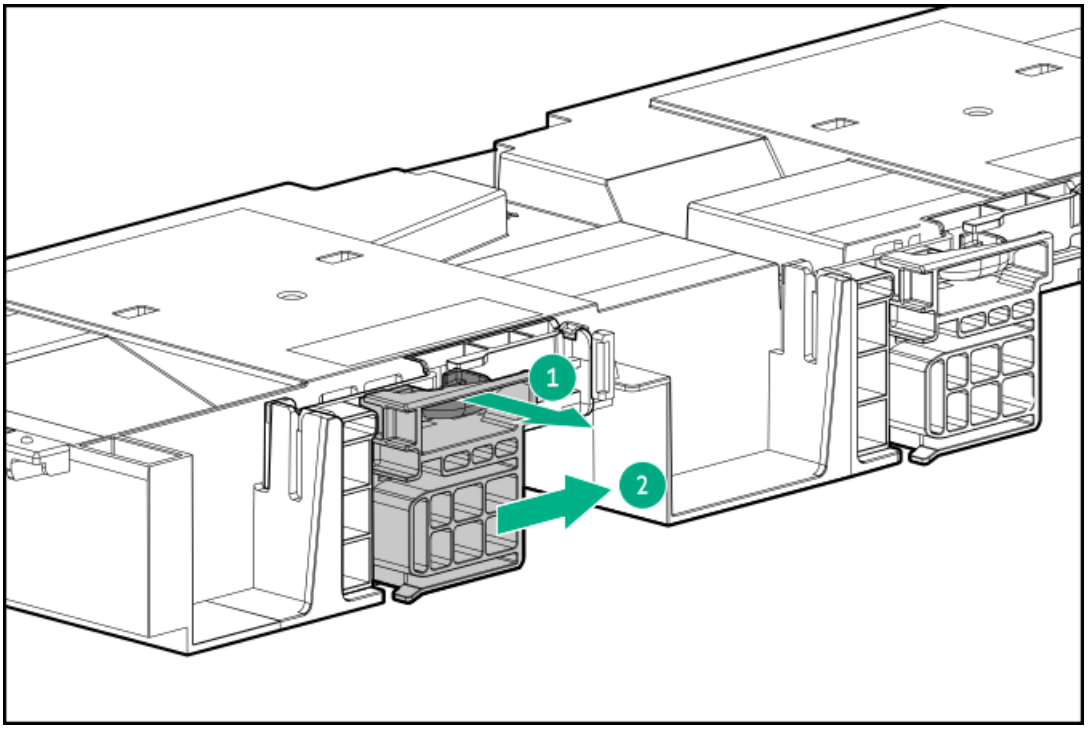
10. Install the GPU extender bracket provided by the manufacturer.



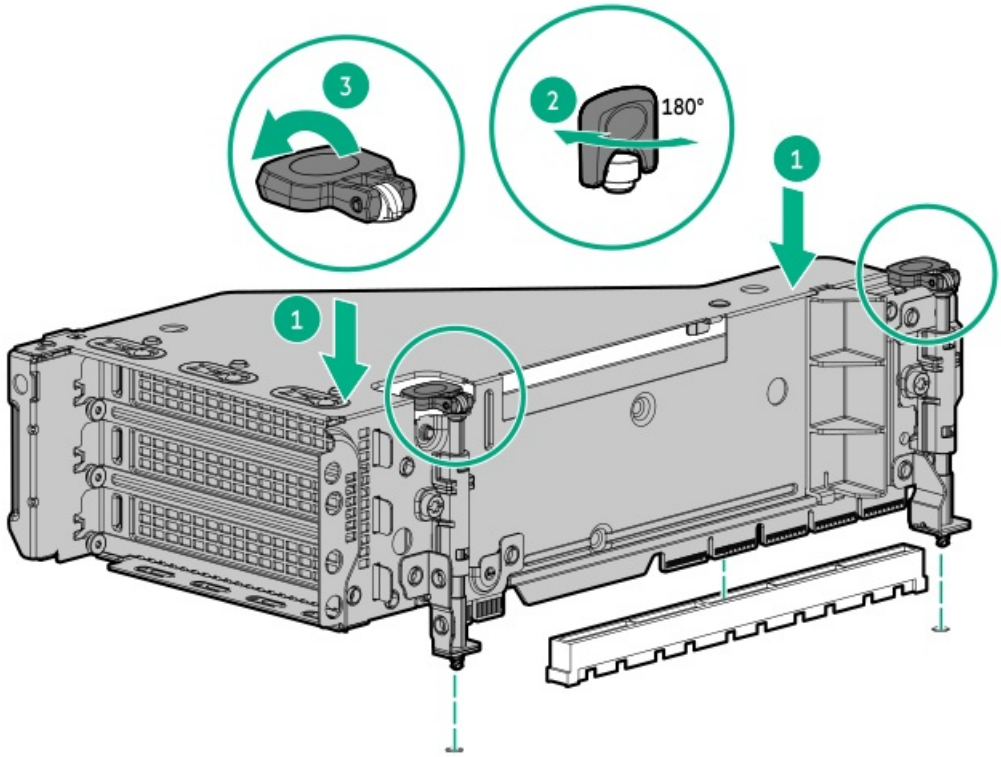
11. Install the GPU into the riser.



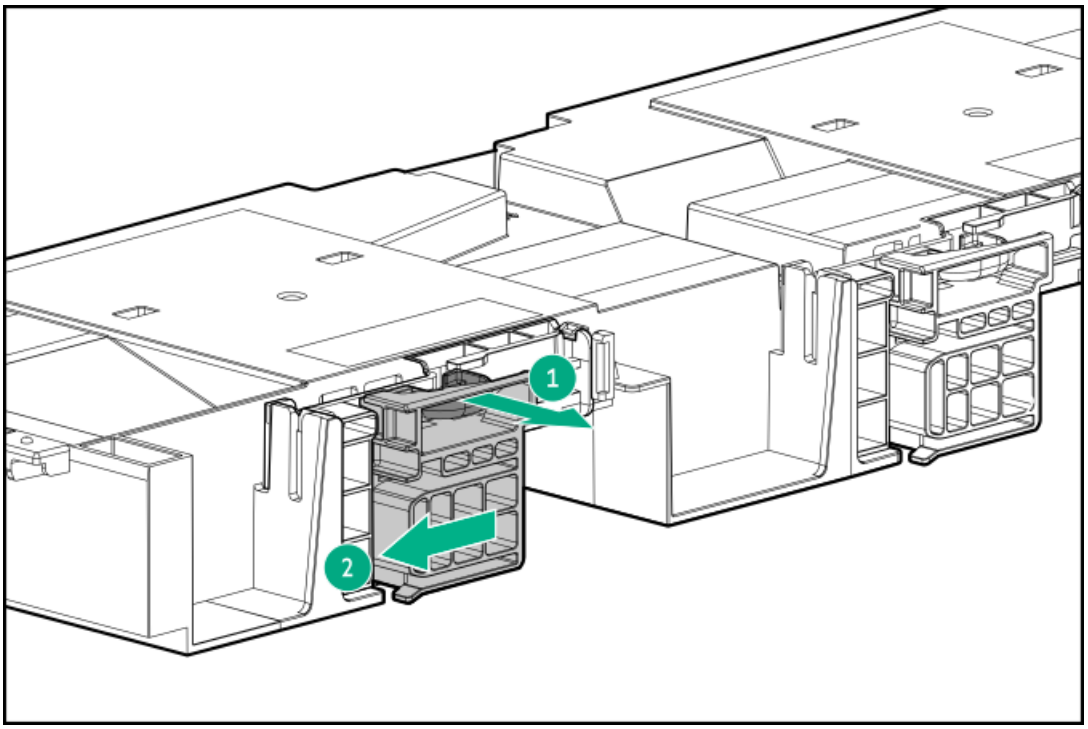
12. Connect the GPU power cables.
13. If needed, open the support brackets.



14. Install the riser cage.



15. Close the retention clips to the locked position.



16. Install the access panel.
17. Slide the server into the rack.
18. Connect each power cord to the server.
19. Connect each power cord to the power source.
20. Power up the server.

Results

The installation is complete.

Installing a rear 2 SFF riser cage

Prerequisites

-

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

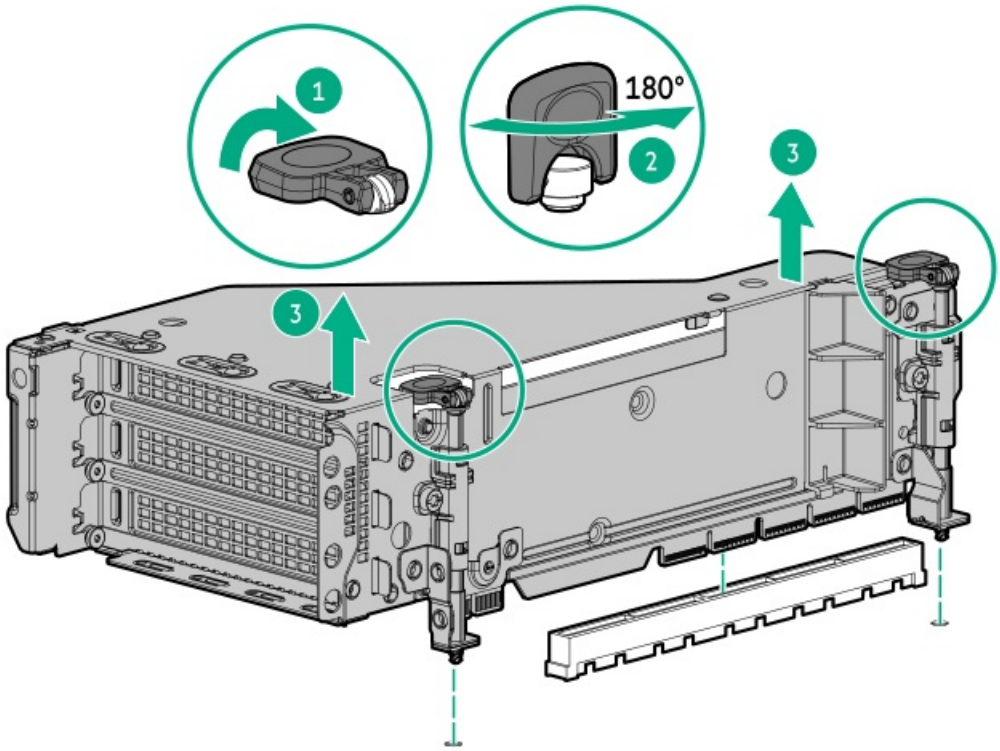
- T-10 Torx screwdriver
- The components included with the hardware option kit
- The front drive bays are fully populated with 12 LFF or 24 SFF drives.
- High-performance fans are installed in all fan bays.

Procedure

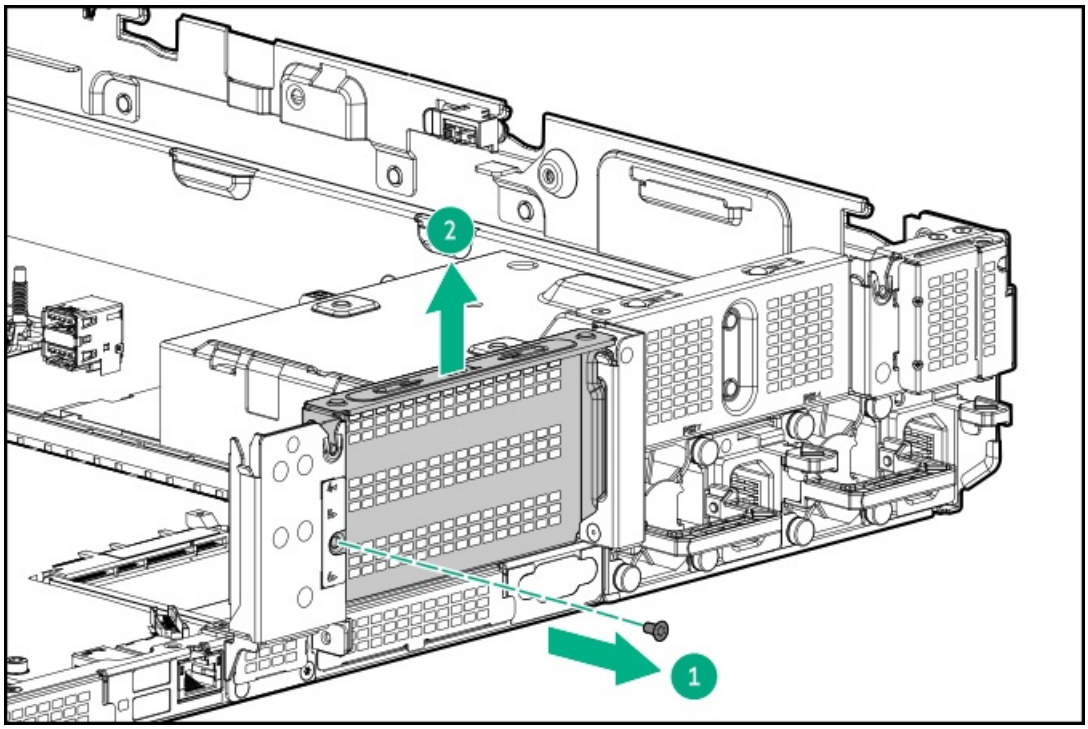
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

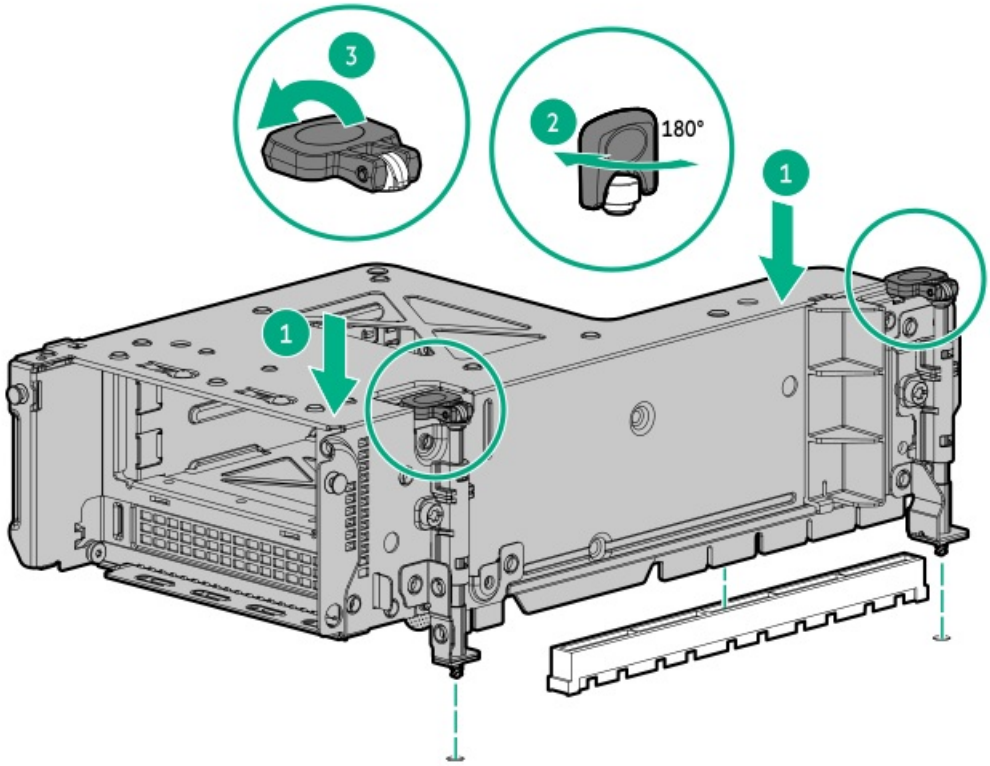
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Do one of the following:
   - For primary bays, remove the riser cage.



   - For secondary bays, remove the rear wall blank.



6. Install the drive cage.



7. Install the drives.
8. Connect the drive backplane cables to the controller .
9. Install the access panel.
10. Slide the server into the rack.
11. Connect each power cord to the server.

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

Installing a rear 2LFF riser cage

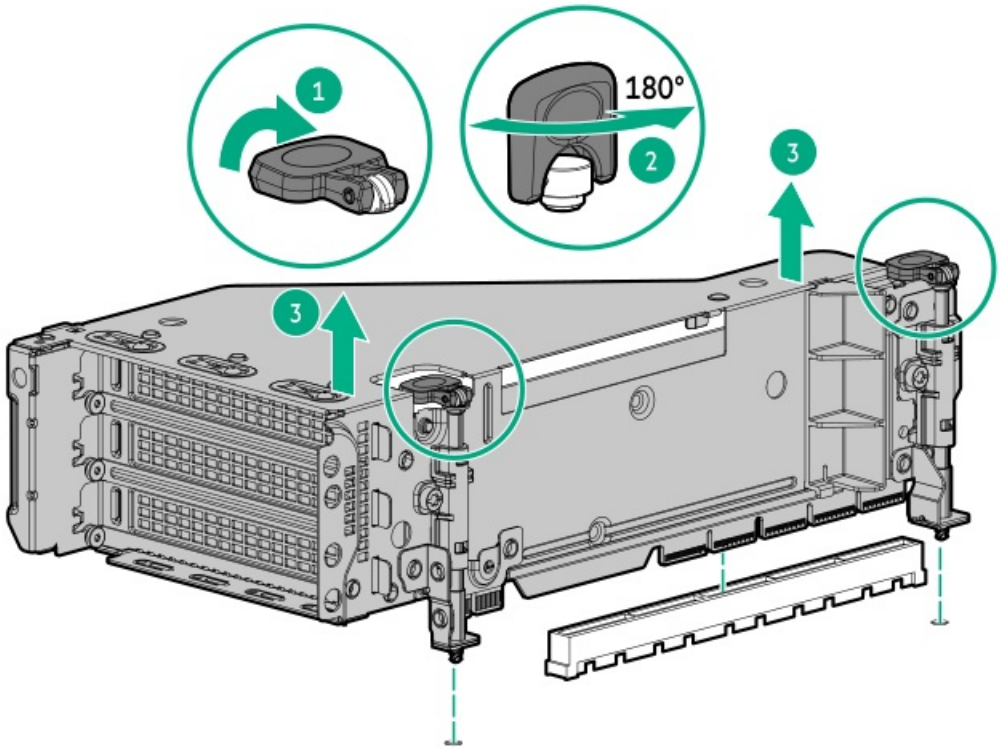
Prerequisites

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

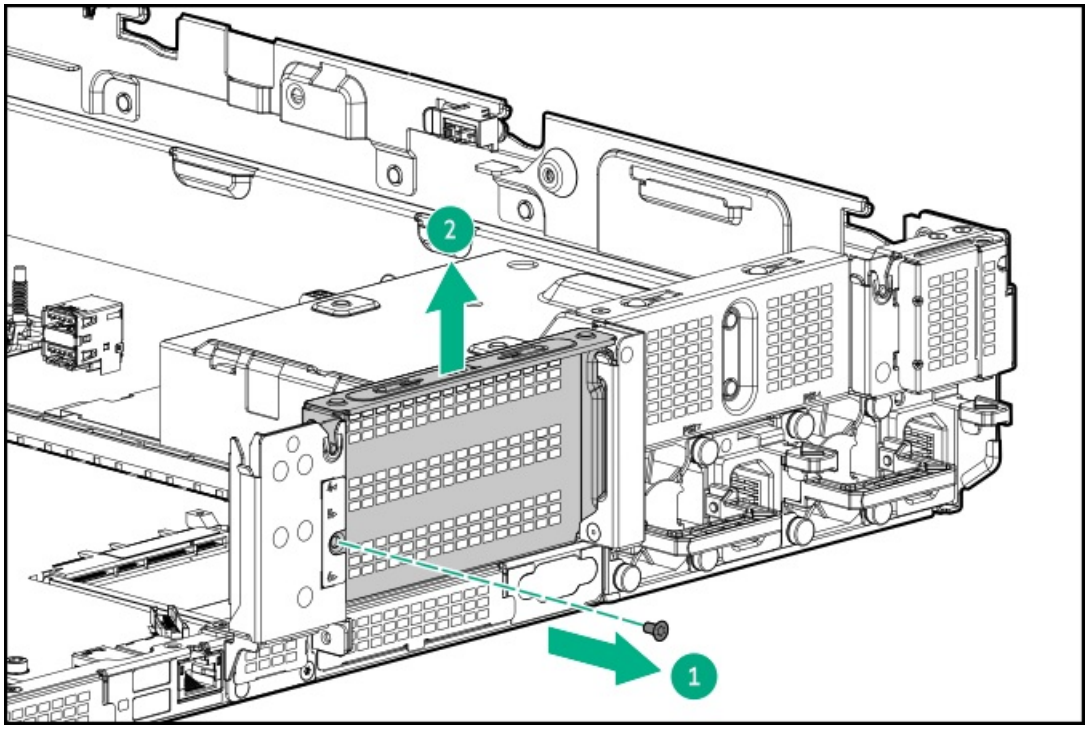
- T-10 Torx screwdriver
- The components included with the hardware option kit
- The front drive bays are fully populated with 12 LFF or 24 SFF drives.
- High performance fans are installed in all fan bays.

Procedure

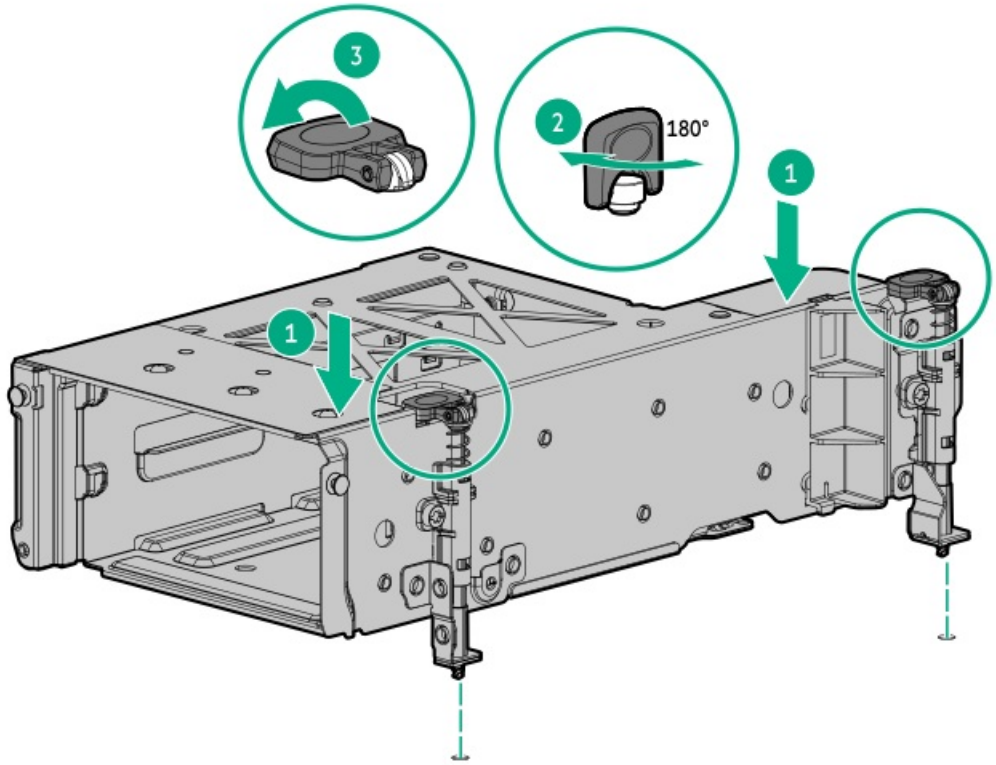
1. Power down the server.
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Do one of the following:
   - For primary bays, remove the riser cage.



- For secondary riser cages, remove the rear wall blank.



6. Install the drive cage.



7. Connect the backplane cables.
8. Install the drives.
9. Install the access panel.
10. Return the server to the rack.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. Power up the server.

Results

The installation is complete.

Installing primary and secondary risers

Prerequisites

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

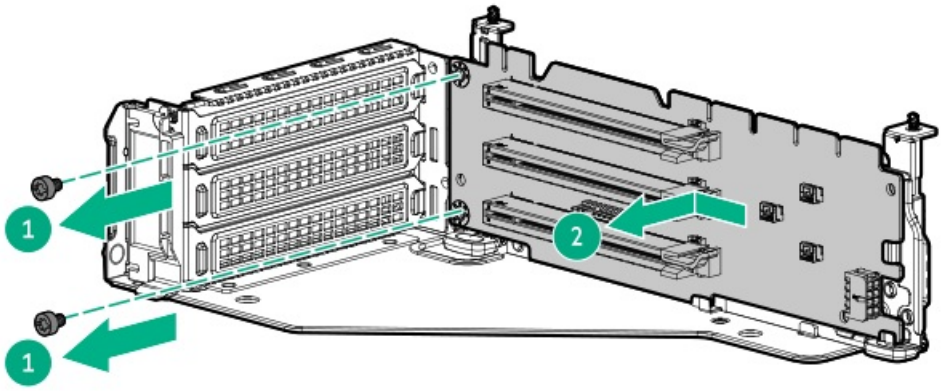
- The components included with the hardware option kit
- T-10 Torx screwdriver

Procedure

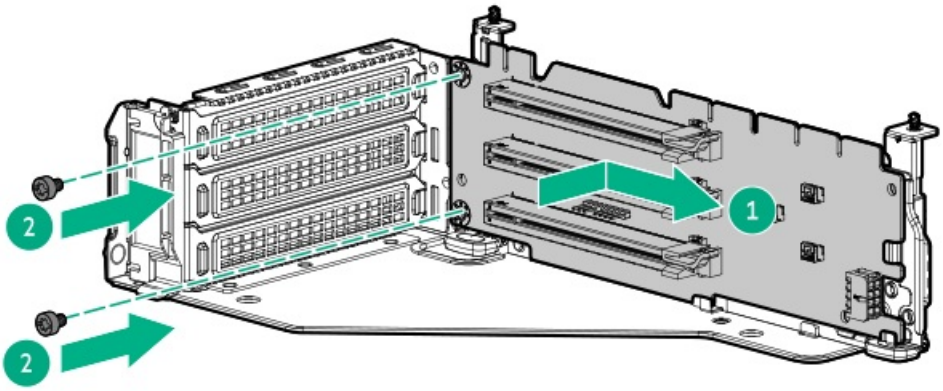
1. Power down the server.
2. Do one of the following:
   - Disconnect each power cord from the power source.

- Disconnect each power cord from the server.

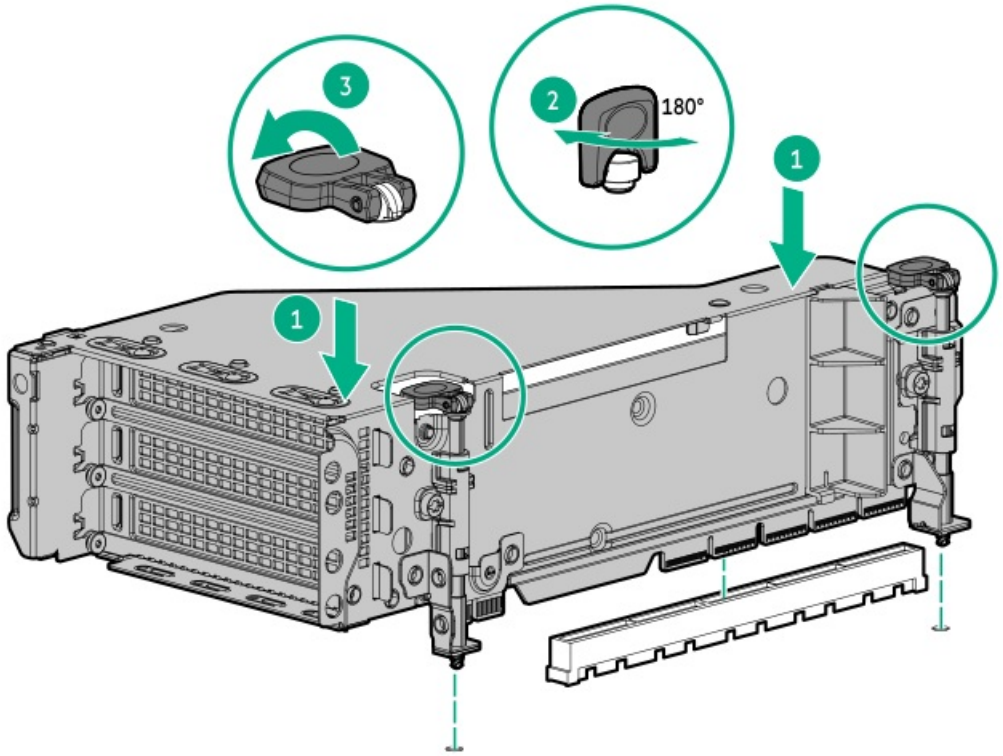
3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the riser cage.
6. Remove the riser board.



7. Install the riser.



8. If needed, install an expansion board.
9. If needed, connect data cables to the riser or expansion board.
10. Install the riser cage.



11. Install the access panel.
12. Slide the server into the rack.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. Power up the server.

Results

The installation is complete.

Installing tertiary risers

Prerequisites

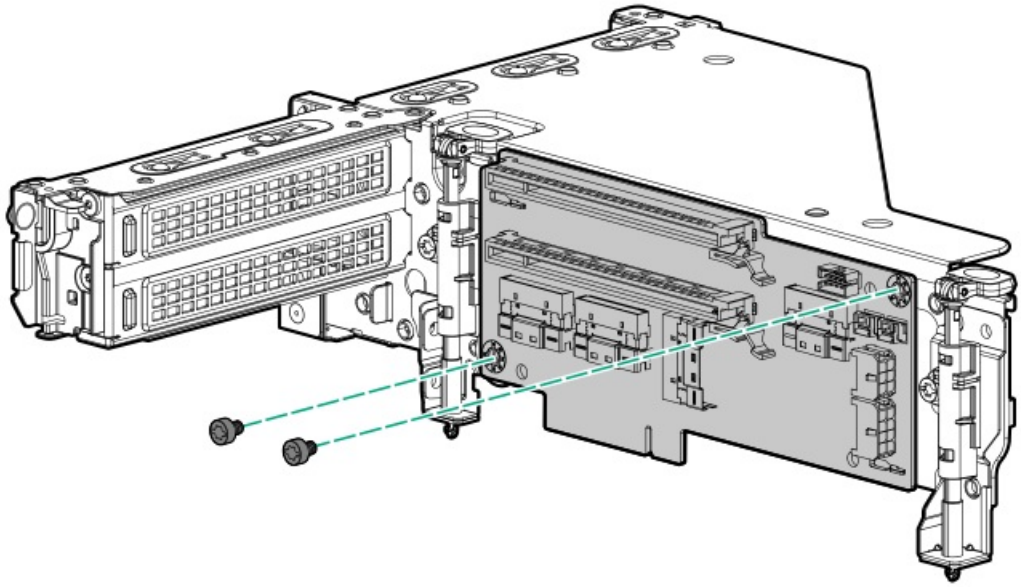
Before you perform this procedure, make sure that you have the following items available:

- The components included with the hardware option kit
- T-10 Torx screwdriver
- A tertiary riser cage is required to install this option.

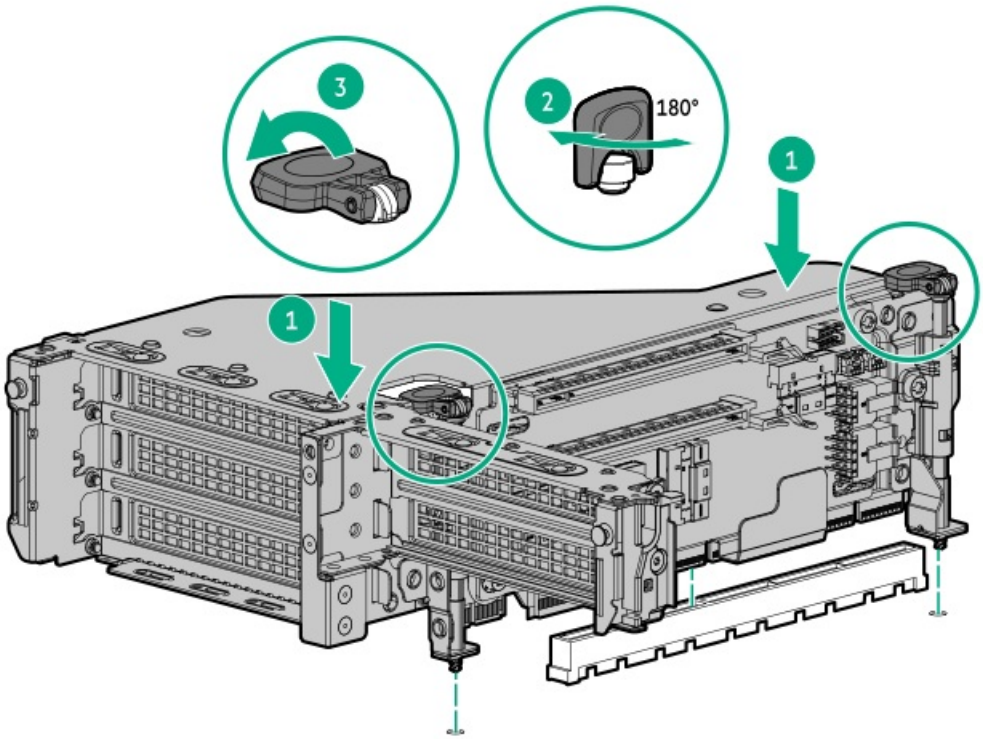
Procedure

1. Power down the server.
2. Do one of the following:
   - Disconnect each power cord from the power source.
   - Disconnect each power cord from the server.

3. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Remove the riser cage.
6. Install the riser.



7. If needed, install an expansion board.
8. If needed, connect data cables to the riser or expansion board.
9. Install the tertiary riser cage:



Results

The installation is complete.

Security

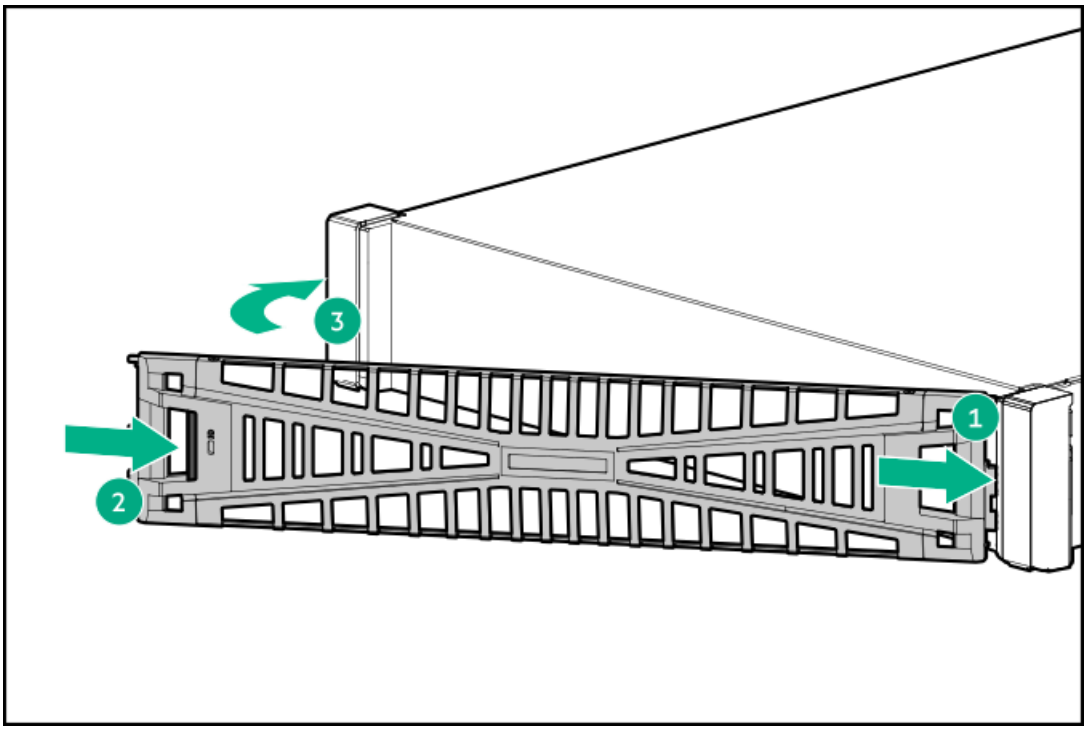
Subtopics

Installing the bezel
Installing the chassis intrusion detection switch
Trusted Platform Module 2.0 guidelines

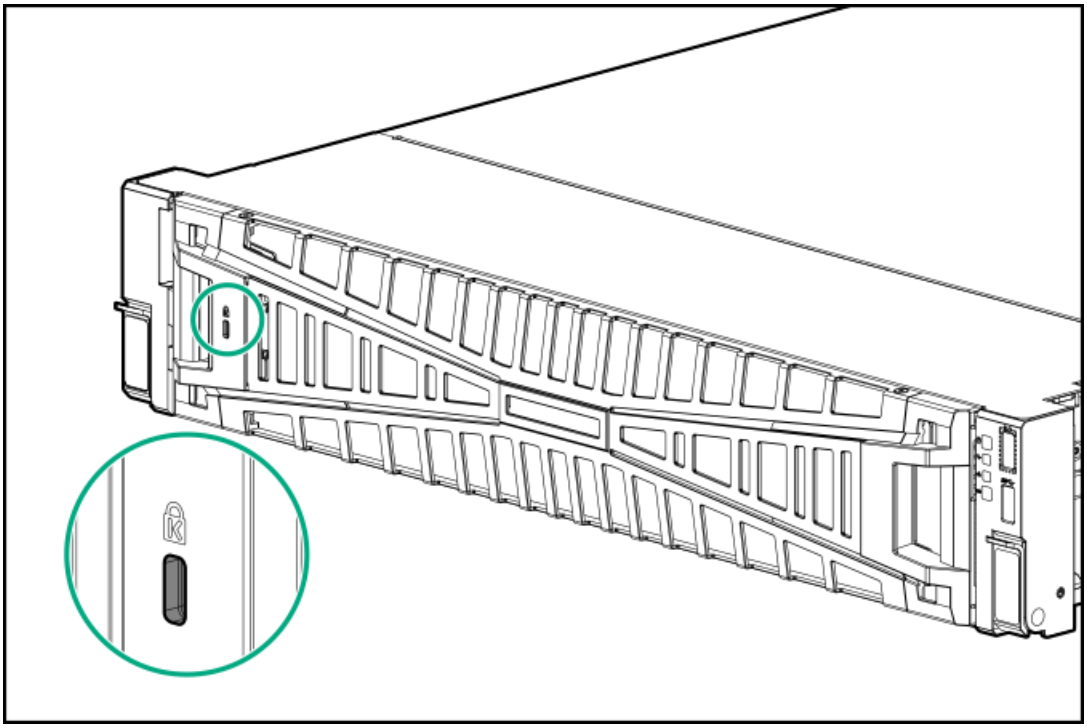
Installing the bezel

Results

Install the front bezel.



(Optional) Install the bezel lock.



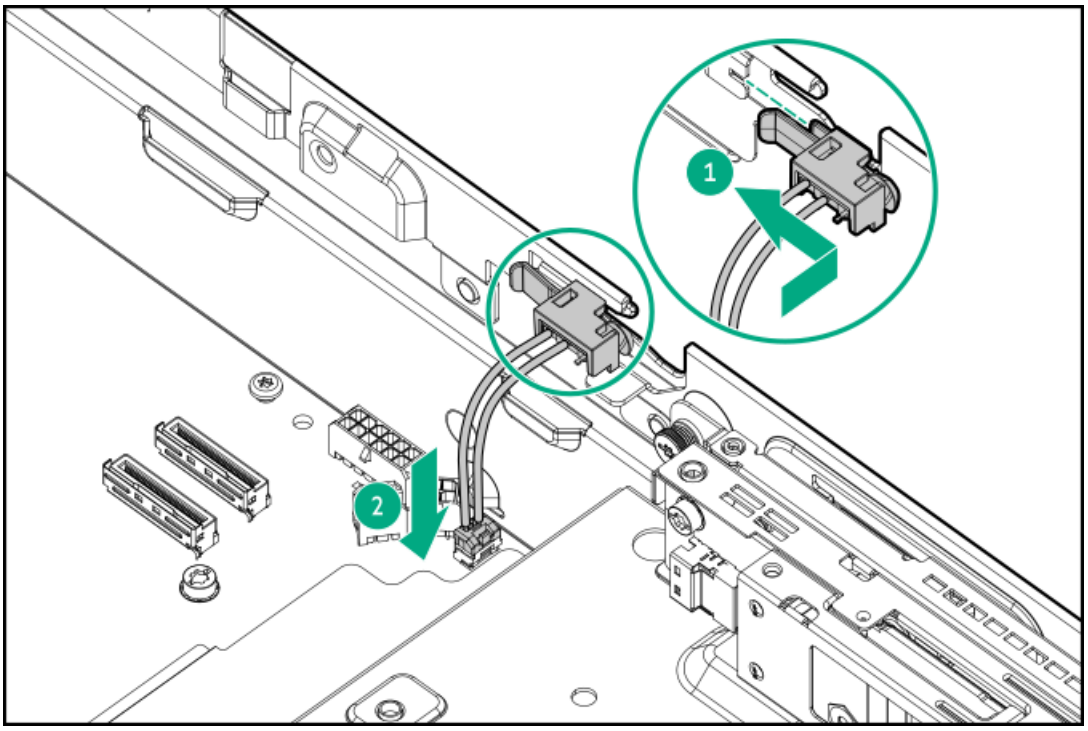
Installing the chassis intrusion detection switch

Prerequisites

Before you perform this procedure, make sure that you have the components included with the hardware option kit.

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. Do one of the following:
   - Extend the server from the rack.
   - Remove the server from the rack.
4. Remove the access panel.
5. Install the chassis intrusion detection switch.



6. Install the access panel.
7. Slide the server into the rack.
8. Connect each power cord to the server.
9. Connect each power cord to the power source.
10. Power up the server.

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.

Hewlett Packard Enterprise SPECIAL REMINDER: Before enabling TPM functionality on this system, you must ensure that your intended use of TPM complies with relevant local laws, regulations and policies, and approvals or licenses must be obtained if applicable.

慧与特别提醒：在您启用系统中的TPM功能前，请务必确认您对TPM的使用遵守当地相关法律、法规及政策，并已事先获得所需的一切批准及许可（如适用），因您未获得相应的操作/使用许可而导致的违规问题，皆由您自行承担全部责任，与慧与无涉。

- When the embedded TPM is enabled, the Trusted Platform Module operates in TPM 2.0 mode.
- 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/UEFIGen11-UG-en

- 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.

Subtopics

BitLocker recovery key/password retention guidelines

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.

Cabling

Subtopics

Cabling guidelines
Cabling diagrams

Cabling guidelines

Observe the following:

- 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.
- The cable colors in the cabling diagrams used in this chapter are for illustration purposes only.
- Observe all guidelines when working with server cables.

Before connecting cables

- Note the port labels on the PCA components. Not all these components are used by all servers:
  - System board ports
  - Drive and power supply backplane ports

- Expansion board ports (controllers, retimers, adapters, expanders, risers, and similar boards)

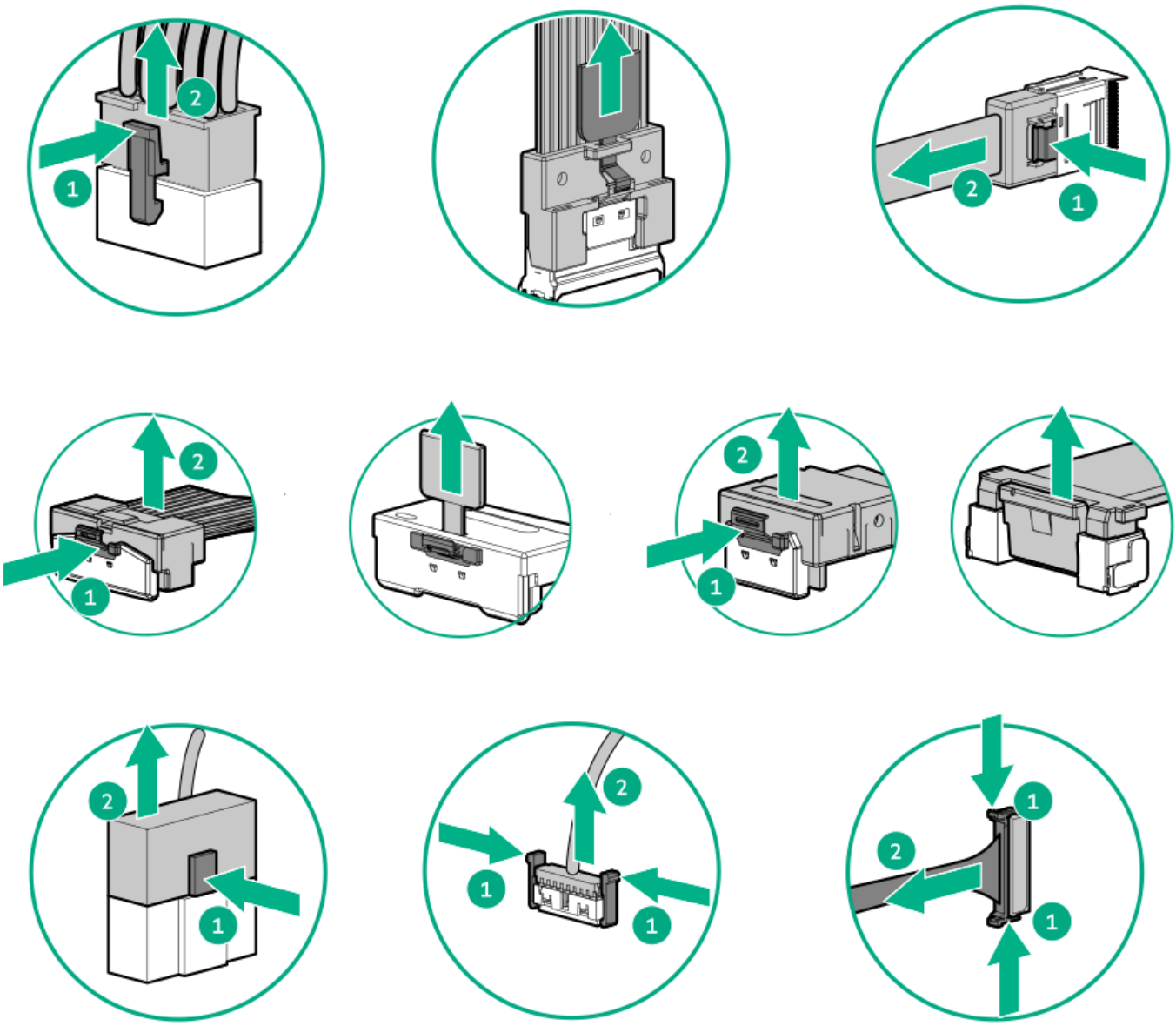
- Note the label near each cable connector. This label indicates the destination port for the cable connector.
- Some data cables are prebent. Do not unbend or manipulate the cables.
- To prevent mechanical damage or depositing oil that is present on your hands, and other contamination, do not touch the ends of the connectors.

When connecting cables

- Before connecting a cable to a port, lay the cable in place to verify the length of the cable.
- Use the internal cable management features to properly route and secure the cables.
- When routing cables, be sure that the cables are not in a position where they can be pinched or crimped.
- Avoid tight bend radii to prevent damaging the internal wires of a power cord or a server cable. Never bend power cords and server cables tight enough to cause a crease in the sheathing.
- Make sure that the excess length of cables is properly secured to avoid excess bends, interference issues, and airflow restriction.
- To prevent component damage and potential signal interference, make sure that all cables are in their appropriate routing position before installing a new component and before closing up the server after hardware installation/maintenance.

When disconnecting cables

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



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

Cabling diagrams

Observe the following:

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

Drive backplanes

Component cabling	Cable part number
EDSFF cabling	P51556-001

Component cabling	Cable part number
	P51555-001
	P51542-001
	P51542-001
	P53288-001
	P51564-001
	P51544-001
8 SFF box 1 cabling	P51545-001
	P51546-001
	P51549-001
	P51550-001
	P51551-001
	P51552-001
	P51553-001
	P51548-001
	P51543-001
	P53287-001
	P53285-001
	P51556-001
	P22904-001
	P22905-001
8 SFF box 2 cabling	P51545-001
	P51547-001
	P51546-001
	P22905-001
	P51551-001
	P51552-001
	P22904-001
	P53286-001
8 SFF box 3 cabling	P51545-001
	P51546-001
	P22904-001
	P14330-001
	P51553-001
	P53287-001
	P51543-001
8 SFF box 7 cabling	P51554-001
	P22903-001
	P14329-001
Front 2 SFF cabling	P51555-001
	P51556-001
	P22905-001
	P51545-001
Rear 2 SFF cabling	P22903-001

Component cabling	Cable part number
	P14329-001
	P51554-001
	P51557-001
LFF cabling	P51559-001
	P51560-001
	P51561-001
	P58791-001
	P46047-001
	P51563-001
	P51558-001
Riser enablement cabling	P46031-001
	P46034-001
	P51571-001
	P46032-001
	P46028-001
	P46026-001
	P46029-001
	P46030-001

Power

Component cabling	Cable part number
Front EDSFF boxes 1-3	P51577-001
Rear 2 SFF riser cage	P51574-001
Front 8 SFF boxes 1-3	869825-001
Front 4 LFF box 1	P14341-001
Front 4 LFF box 2/3	P14342-001
Front 2 SFF side-by-side	P14343-001
8 SFF midplane + 2 LFF riser cage + 2 SFF rear stacked	P51575-001
Smart battery	P45618-001
GPU power	869820-001
GPU power + sideband	P58422-001

NS204i-u cabling

Component cabling	Cable part number
NS204i-u data cabling (SFF)	P51579-001
NS204i-u power cabling	P54089-001
NS204i-u data cabling (LFF)	P51578-001

OCP bandwidth

Component cabling	Cable part number
OCP bandwidth upgrade	P43736-001
	P43735-001
	P43734-001

Systems Insight Display

Component cabling	Cable part number
Systems Insight Display	P48971-001

I/O cabling

Component cabling	Cable part number
SFF media bay USB	P50731-001
SFF media bay DP/USB	P14314-001
LFF Display Port	869808-001
SFF/LFF ODD	756914-001

Front power switch

Component cabling	Cable part number
SFF/LFF front power switch	P43727-001

Serial port cabling

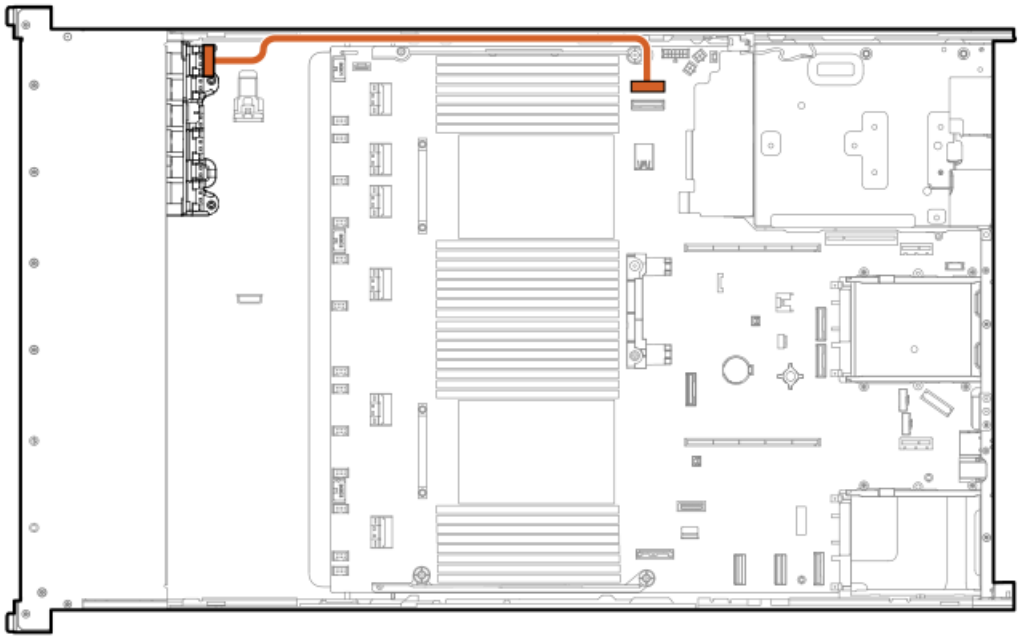
Component cabling	Cable part number
Serial port cable	P45623-001

Subtopics

- EDSFF cabling
- 8 SFF box 1 cabling
- 8 SFF box 2 cabling
- 8 SFF box 3 cabling
- Mid 8 SFF cabling
- Front 2 SFF cabling
- Rear 2 SFF cabling
- LFF cabling
- Riser enablement cabling
- Power cabling
- GPU cabling
- NS204i-u boot device cabling
- OCP bandwidth enablement
- Systems Insight Display cabling
- I/O cabling
- Front power switch cabling
- Serial port cabling

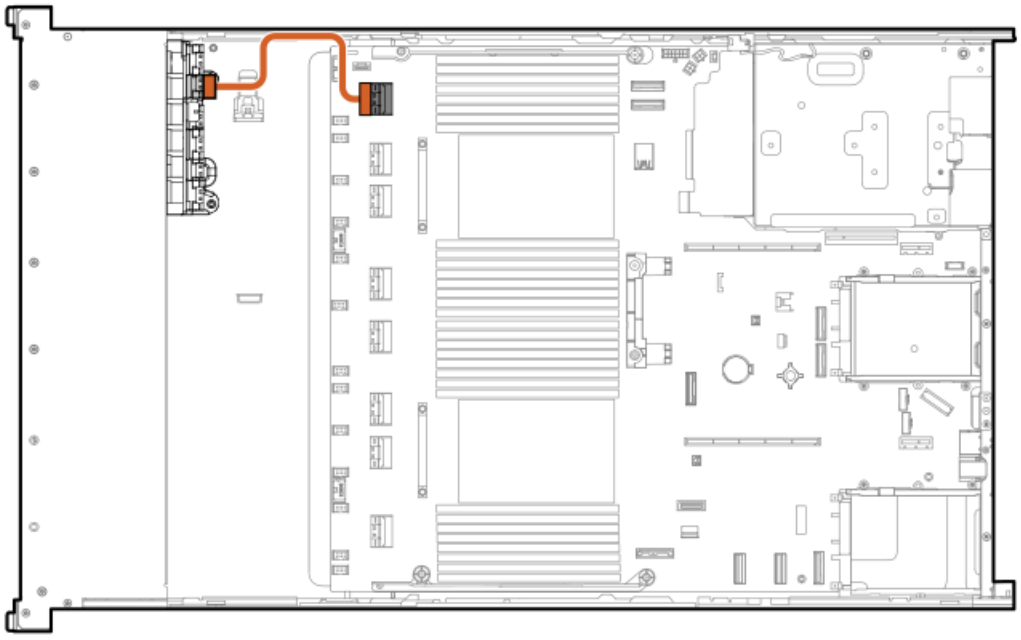
EDSFF cabling

EDSFF box 1 port 1



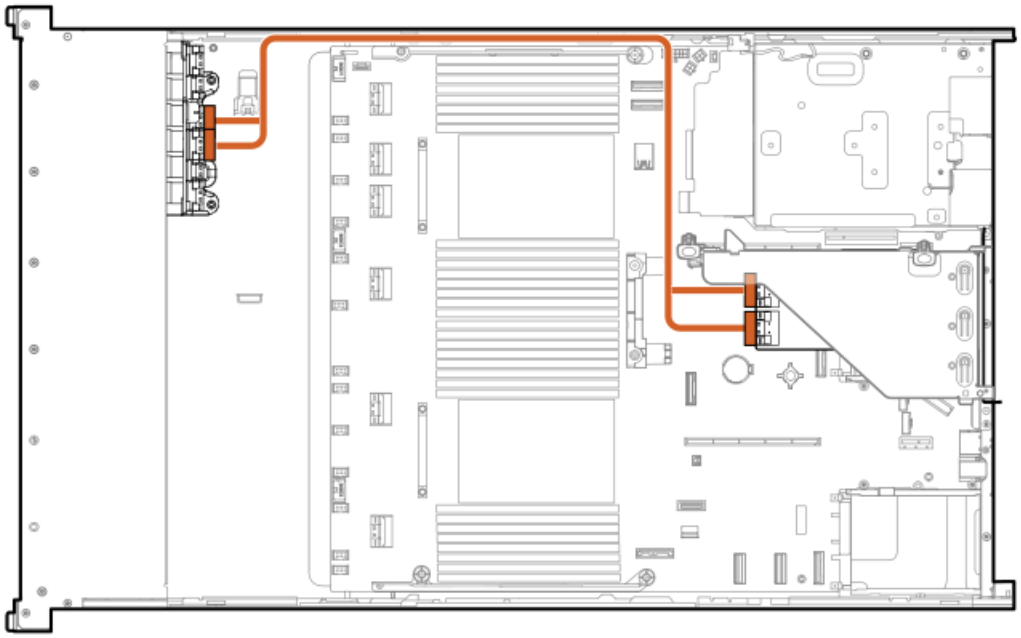
Cable part number	Color	From	To
P51556-001	Orange	Drive backplane	System board

Front EDSFF box 1 port 2



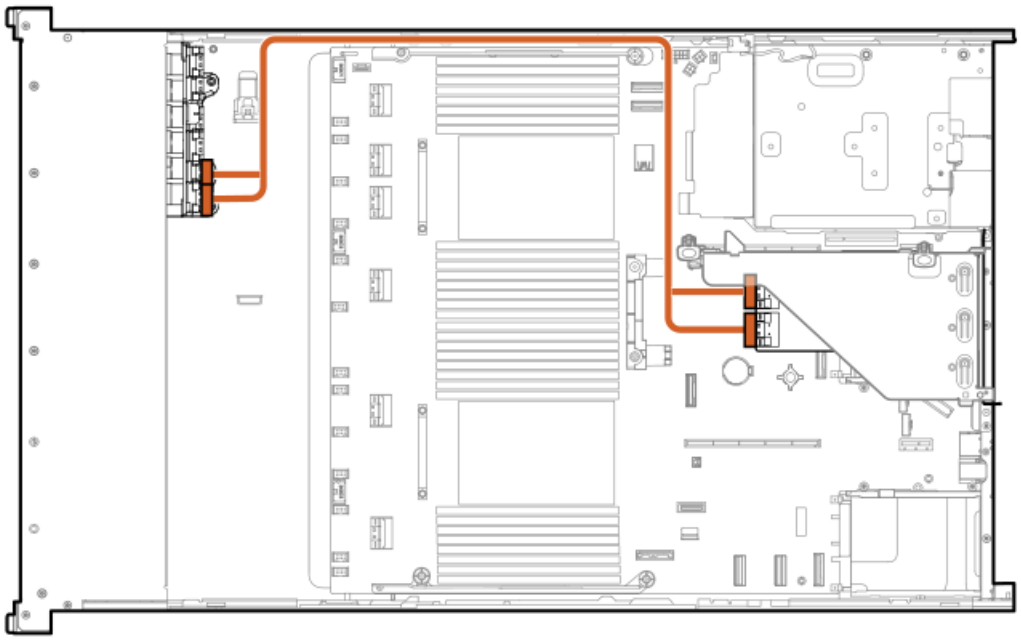
Cable part number	Color	From	To
P51555-001	Orange	Drive backplane	System board

EDSFF box 1 ports 3 and 4



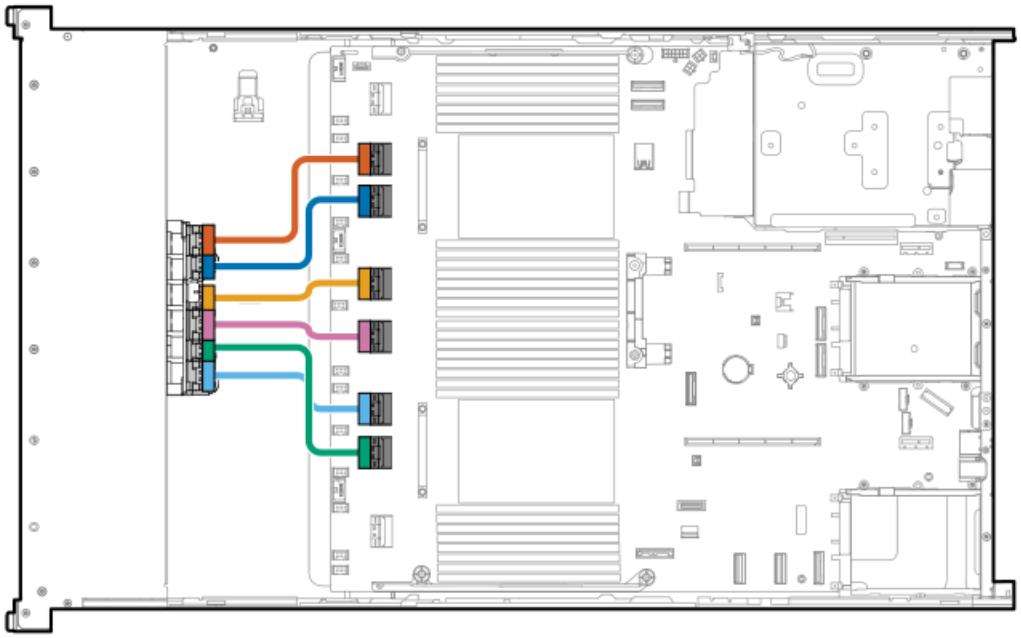
Cable part number	Color	From	To
P51542-001	Orange	Drive backplane	Secondary riser controller

EDSFF box 1 ports 5 and 6



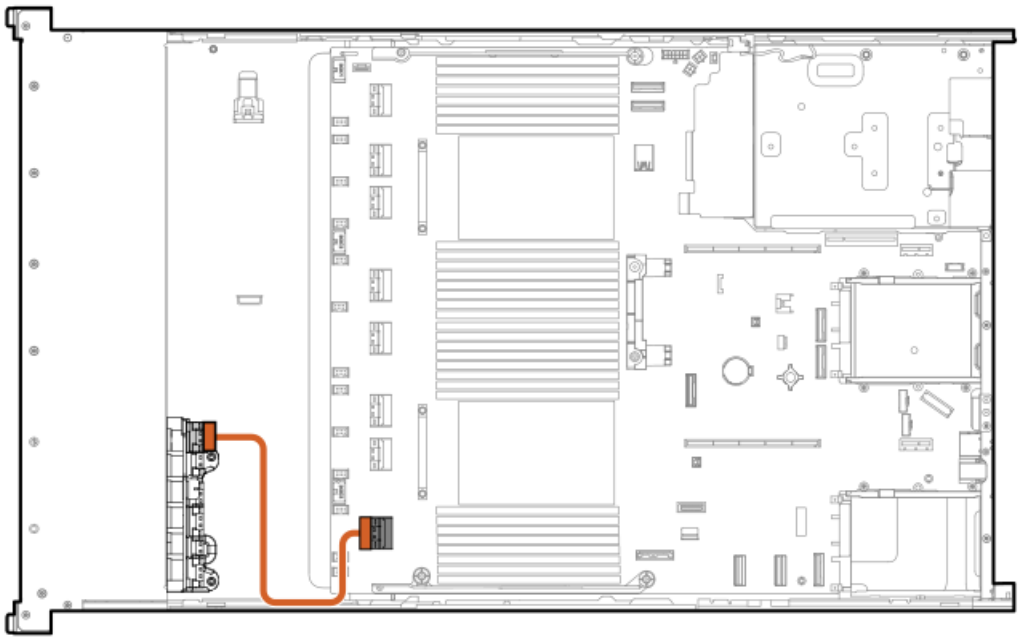
Cable part number	Color	From	To
P51542-001	Orange	EDSFF box 1 port 5/6	Secondary riser controller

EDSFF box 2 ports 1-6



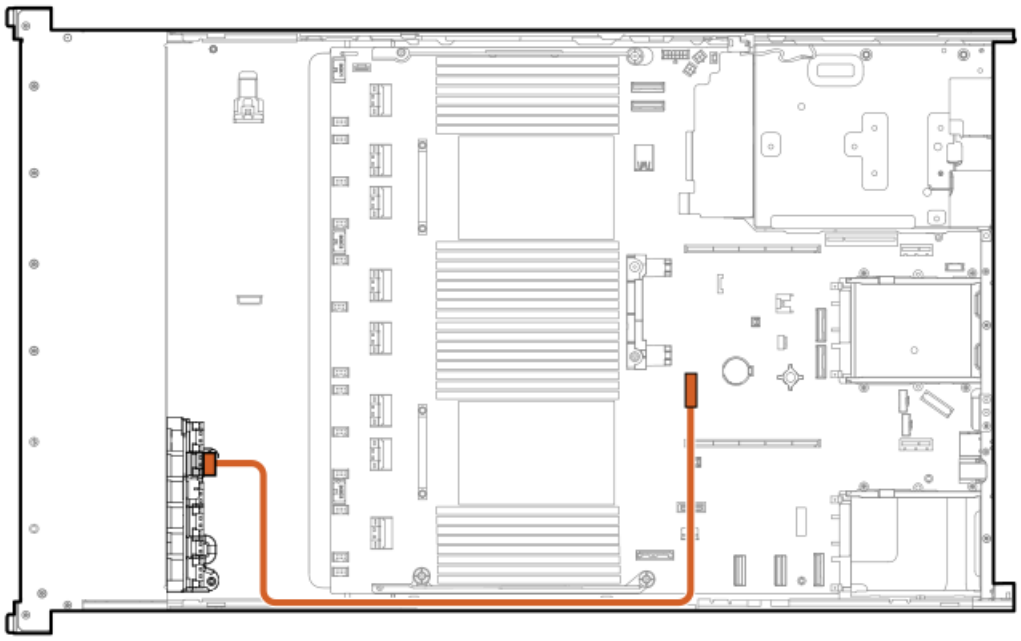
Cable part number	Color	From	To
P53288-001	Orange	Drive backplane	System board
	Blue	Drive backplane	System board
	Yellow	Drive backplane	System board
	Pink	Drive backplane	System board
	Green	Drive backplane	System board
	Light blue	Drive backplane	System board

EDSFF box 3 port 1



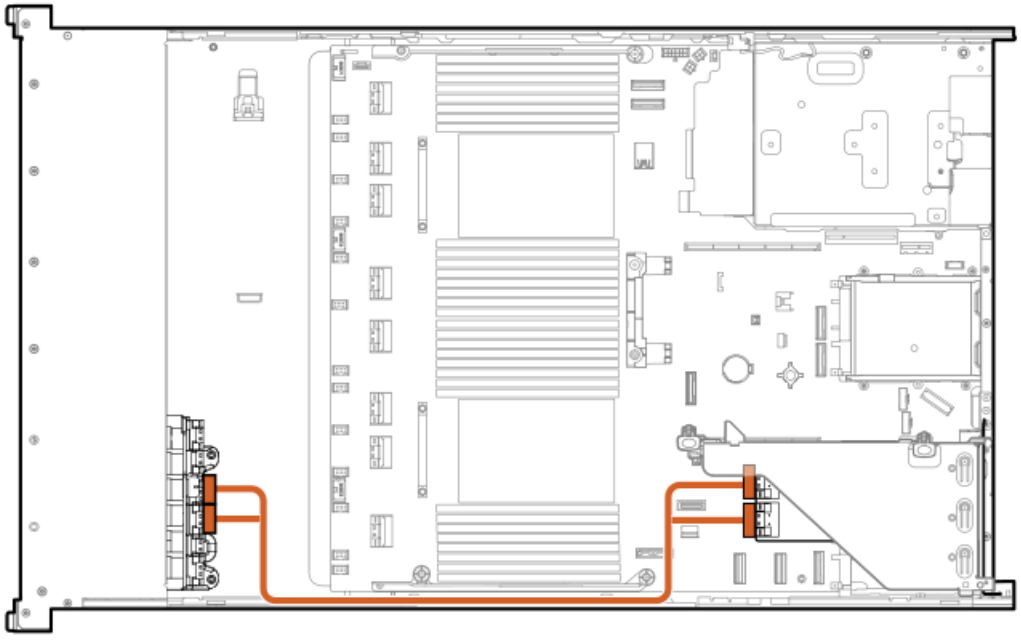
Cable part number	Color	From	To
P51555-001	Orange	Drive backplane	System board

EDSFF box 3 port 2



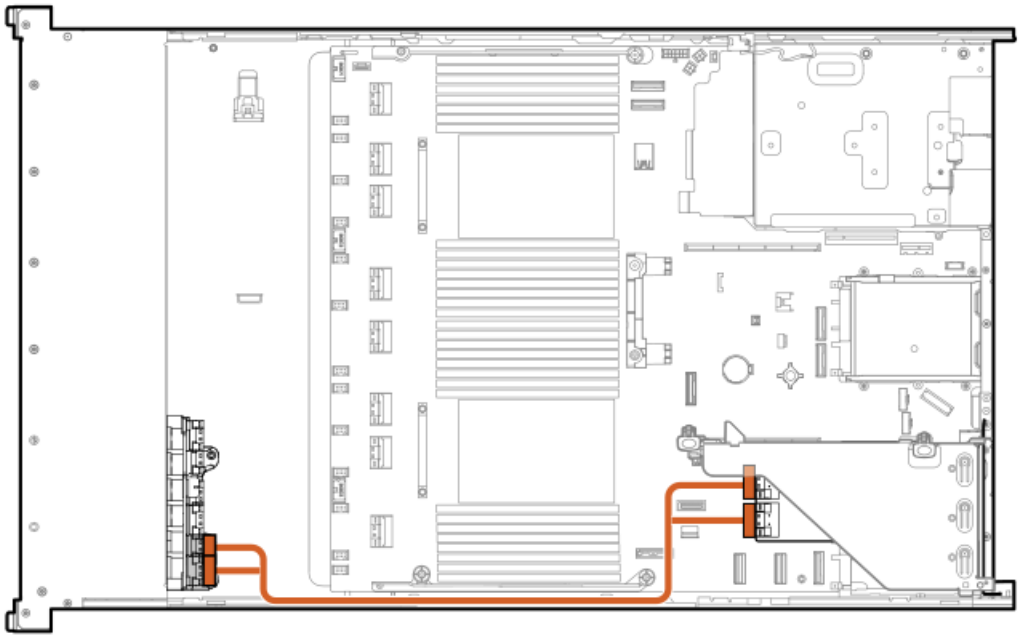
Cable part number	Color	From	To
P51564-001	Orange	Drive backplane	System board

EDSFF box 3 ports 3 and 4



Cable part number	Color	From	To
P51544-001	Orange	Drive backplane	Primary riser controller

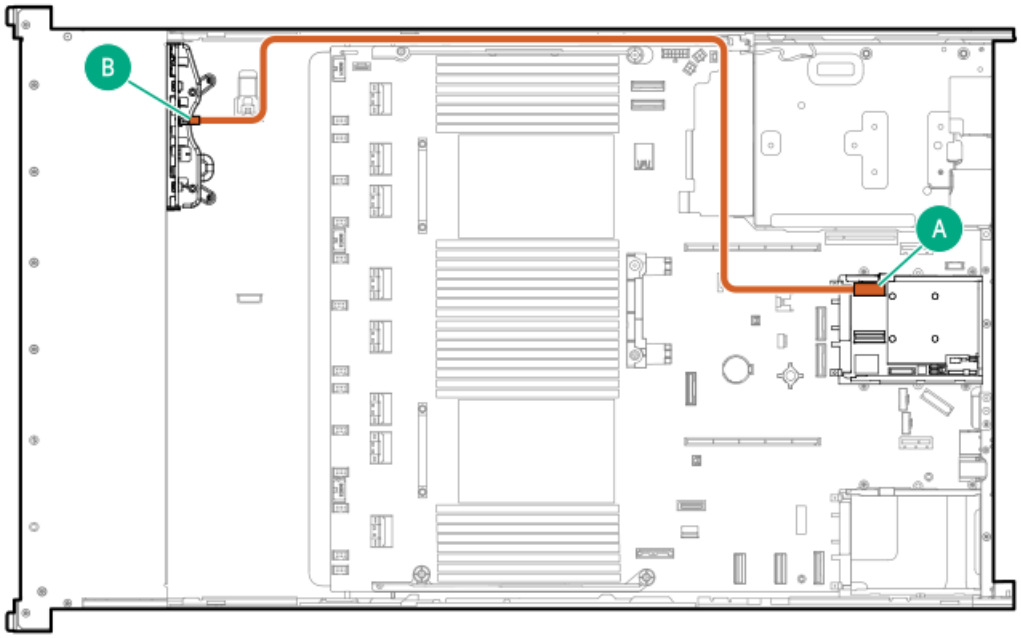
EDSFF box 3 ports 5 and 6



Cable part number	Color	From	To
P51544-001	Orange	Drive backplane	Primary riser controller

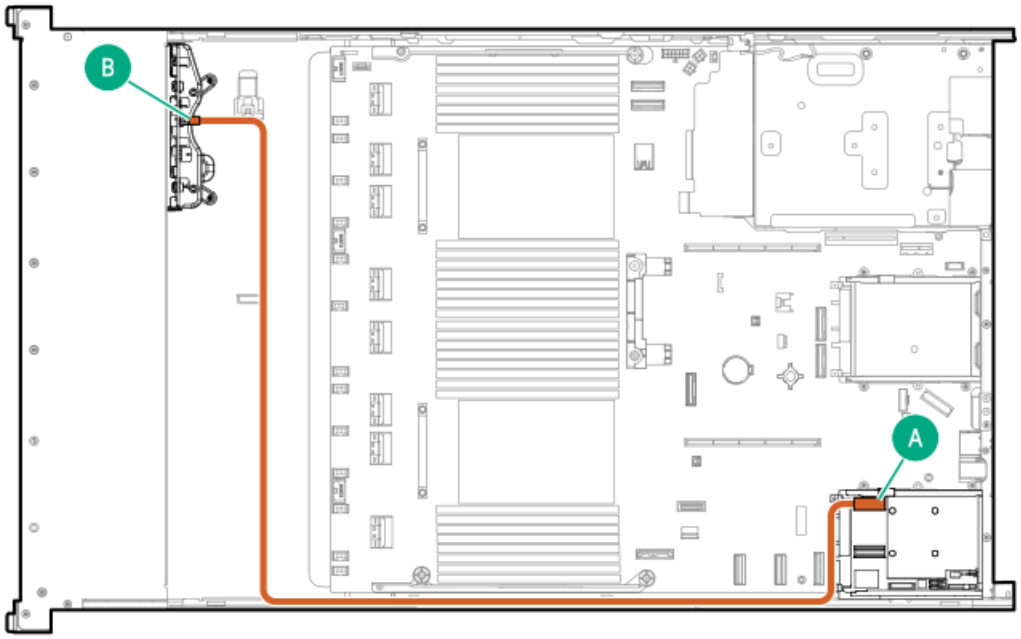
8 SFF box 1 cabling

8 SFF box 1: Secondary type-o controller



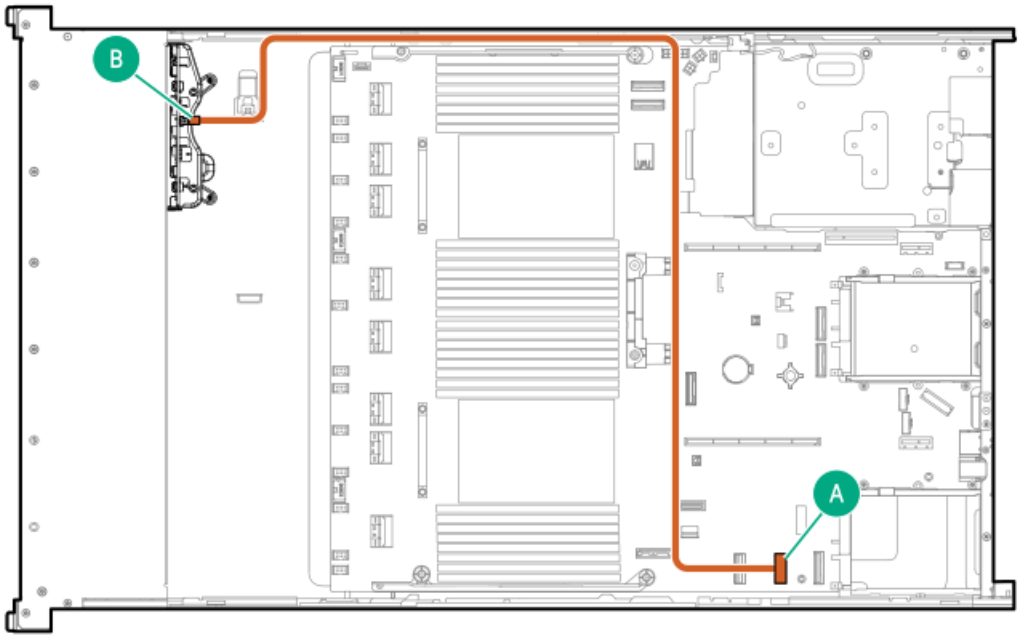
Cable part number	Color	From	To
P51545-001	Orange	Drive backplane	Secondary type-o controller

8 SFF box 1: Primary type-o controller



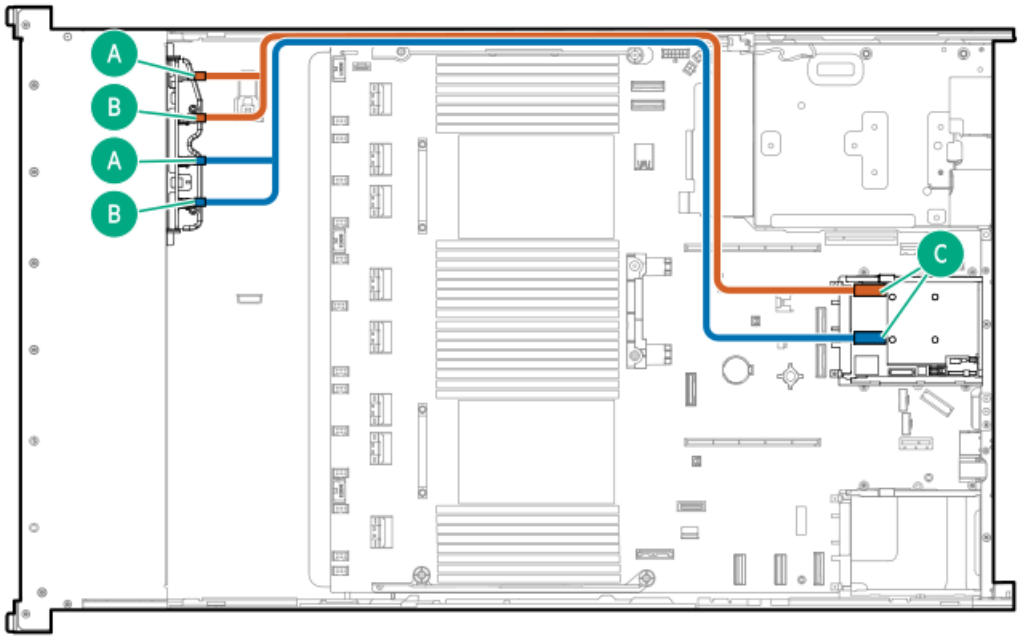
Cable part number	Color	From	To
P51545-001	Orange	Drive backplane	Primary type-o controller

8 SFF box 1: Onboard controller



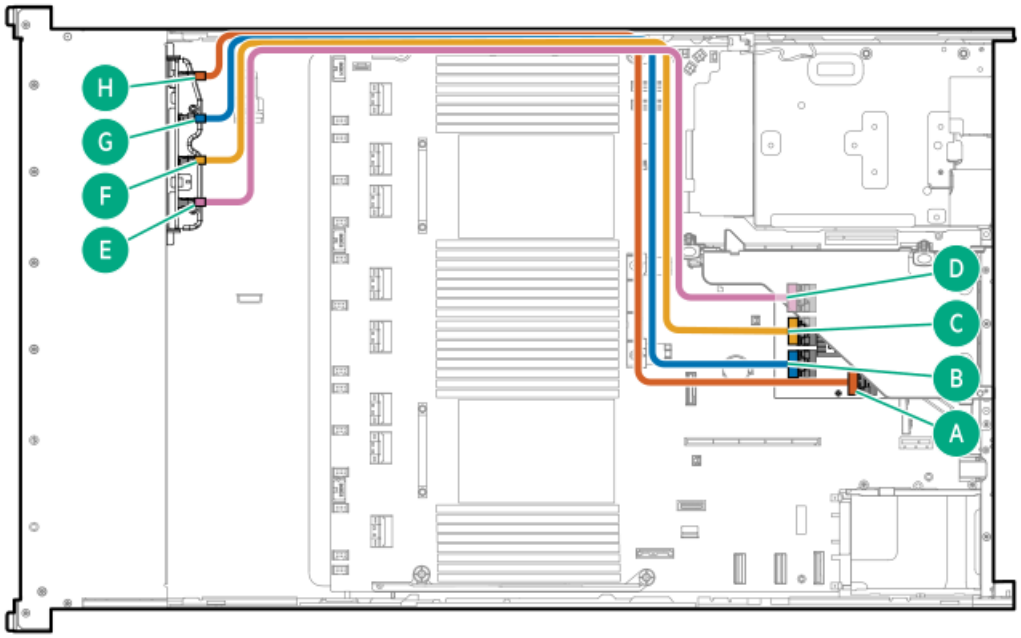
Cable part number	Color	From	To
P51545-001	Orange	Drive backplane	System board

8 SFF box 1: to OCP 2



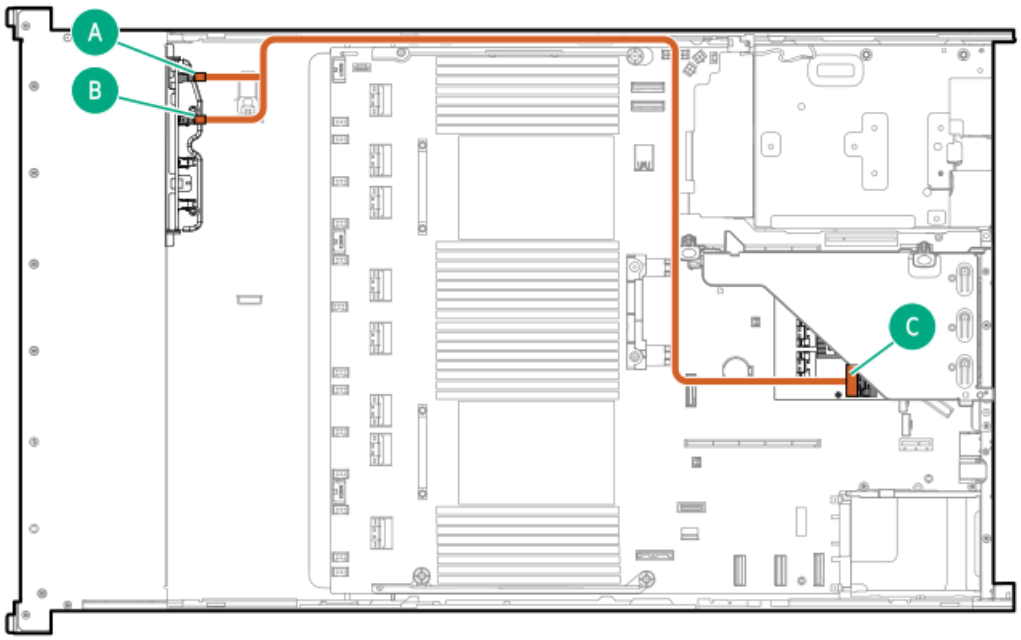
Cable part number	Color	From	To
P51546-001	Orange	Drive backplane	Secondary type-o controller

8 SFF box 1: Secondary type-p controller



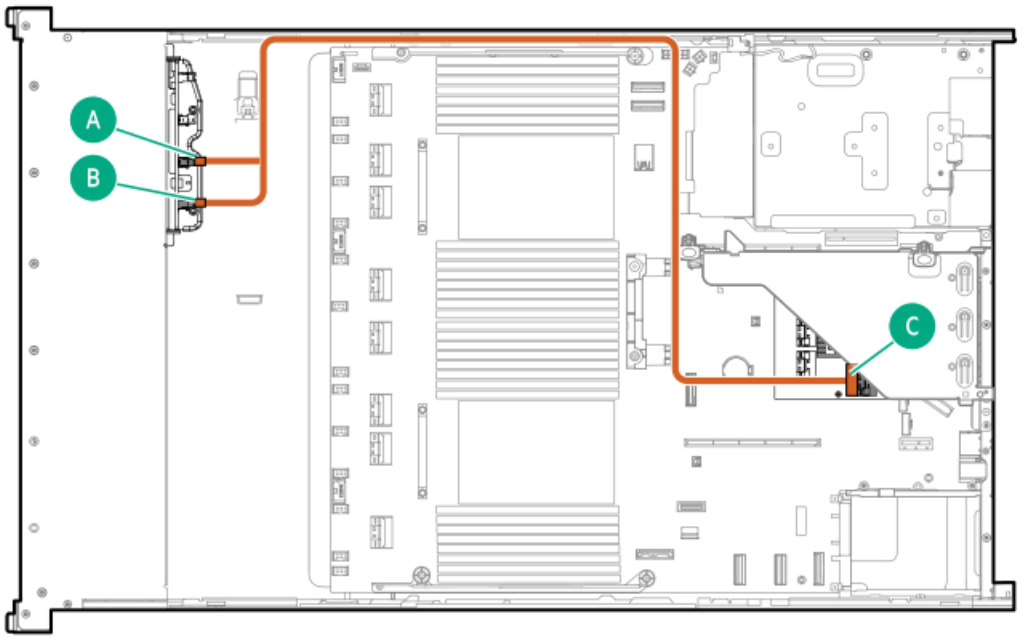
Cable part number	Color	From	To
P51549-001	Orange	Drive backplane	Secondary type-p controller
	Blue	Drive backplane	Secondary type-p controller
	Yellow	Drive backplane	Secondary type-p controller
	Pink	Drive backplane	Secondary type-p controller

8 SFF box 1:



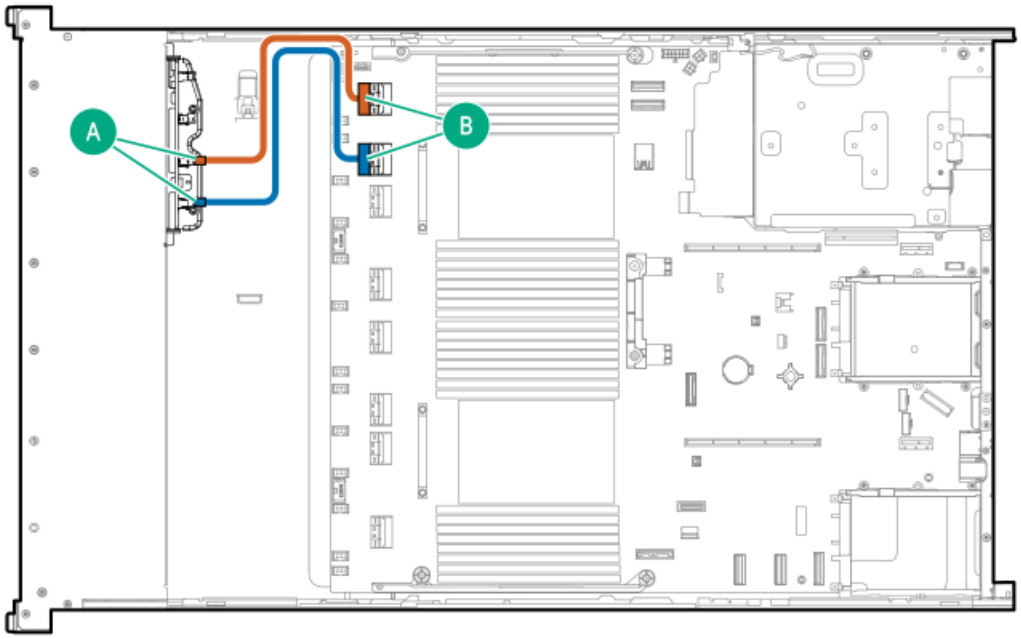
Cable part number	Color	From	To
P51548-001	Orange	Drive backplane	Secondary type-p controller

8 SFF box 1: Secondary type-p controller



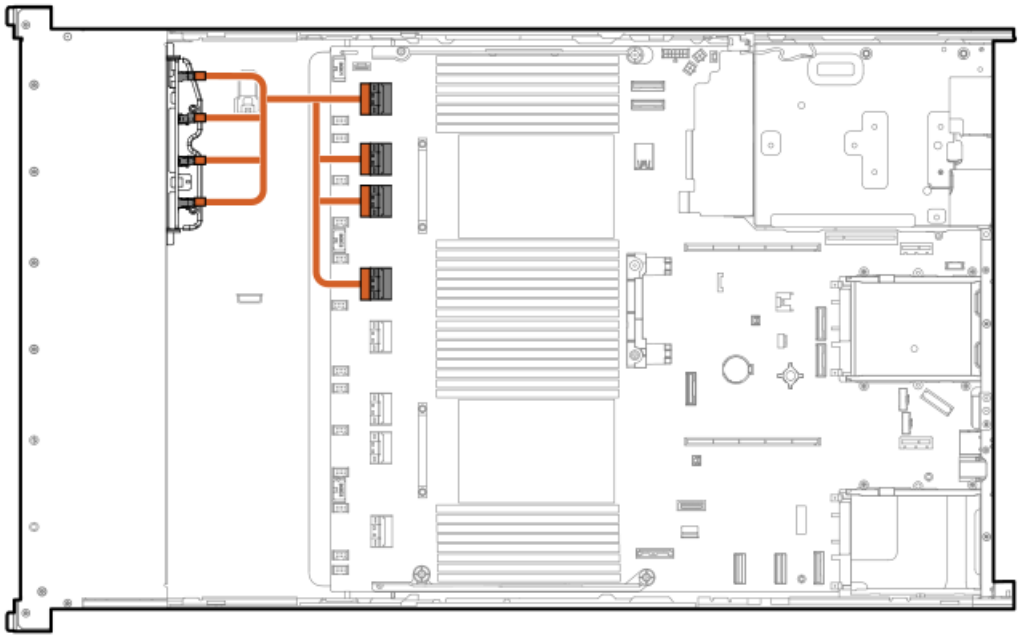
Cable part number	Color	From	To
P51548-001	Orange	Drive backplane	Secondary type-p controller

8 SFF box 1: System board



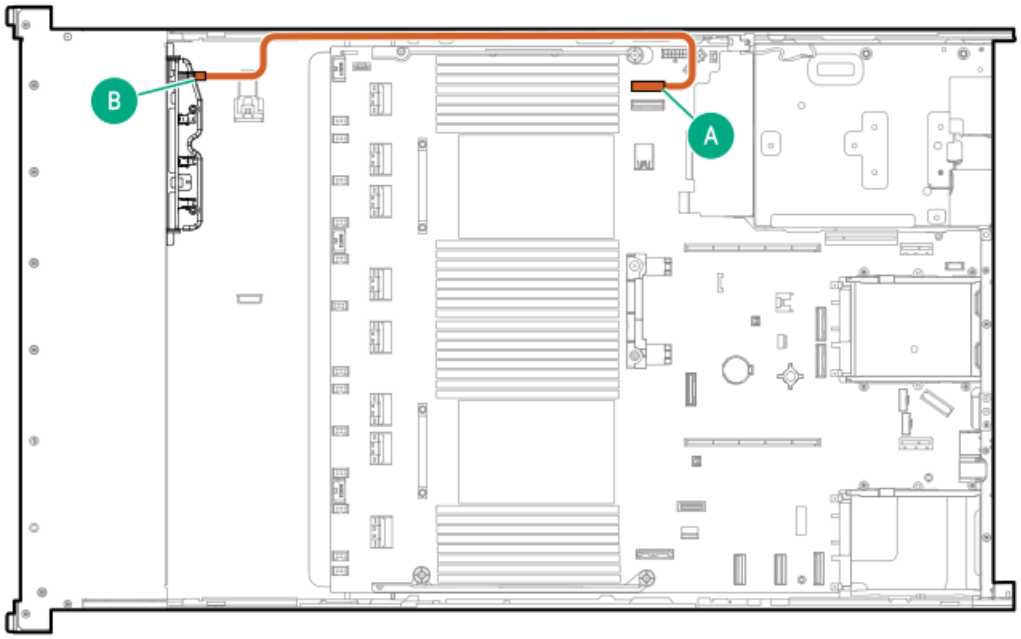
Cable part number	Color	From	To
P51543-001	Orange	Drive backplane port 3/4	System board port 7/8

8 SFF box 1: System board



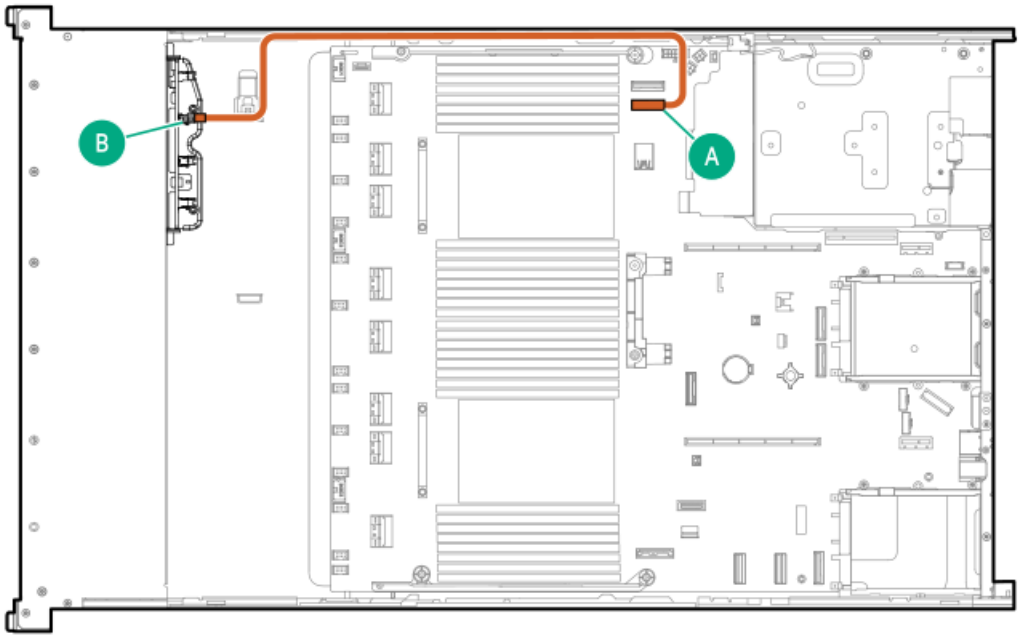
Cable part number	Color	From	To
P53285-001	Orange	Box 1 ports 1-4	System board ports 5-8

8 SFF box 1: System board



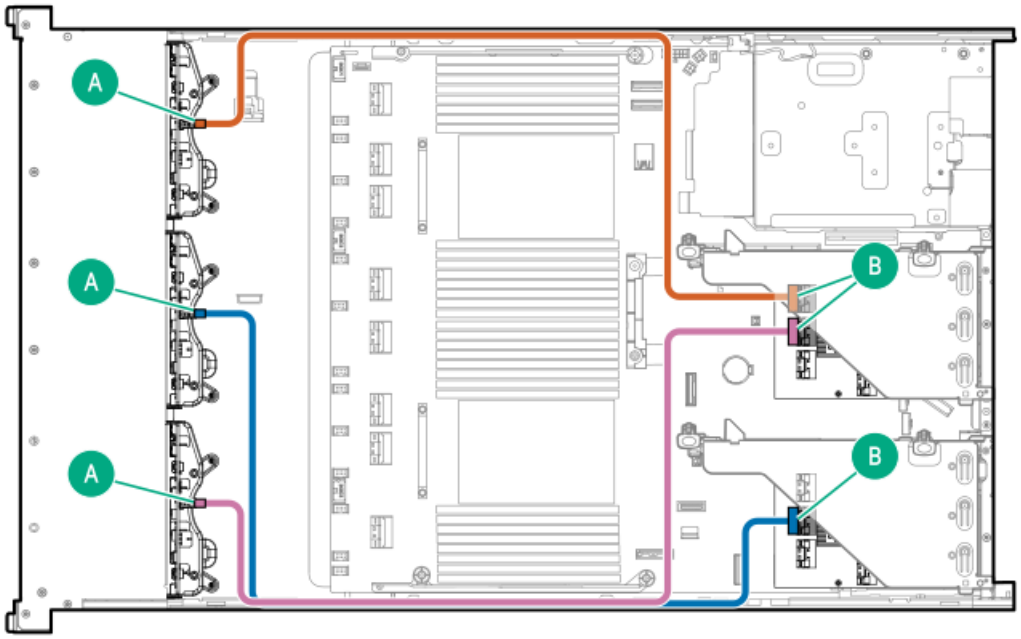
Cable part number	Color	From	To
P51556-001	Orange	8 SFF box 1	System board

8 SFF box 1: System board



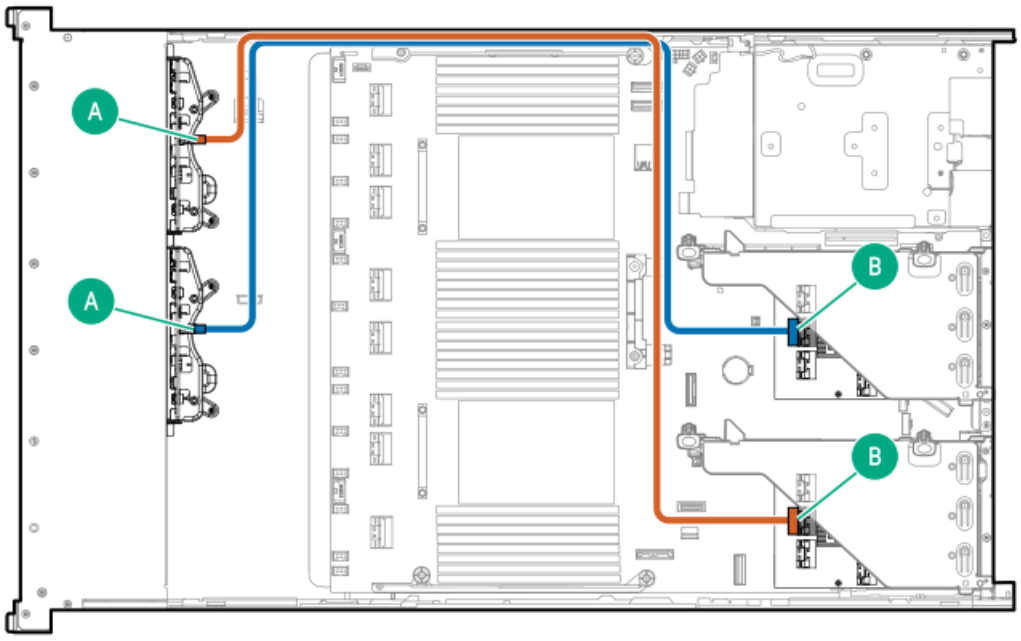
Cable part number	Color	From	To
P51556-001	Orange	8 SFF box 1	System board

8 SFF box 1-3: Primary and secondary type-p controllers



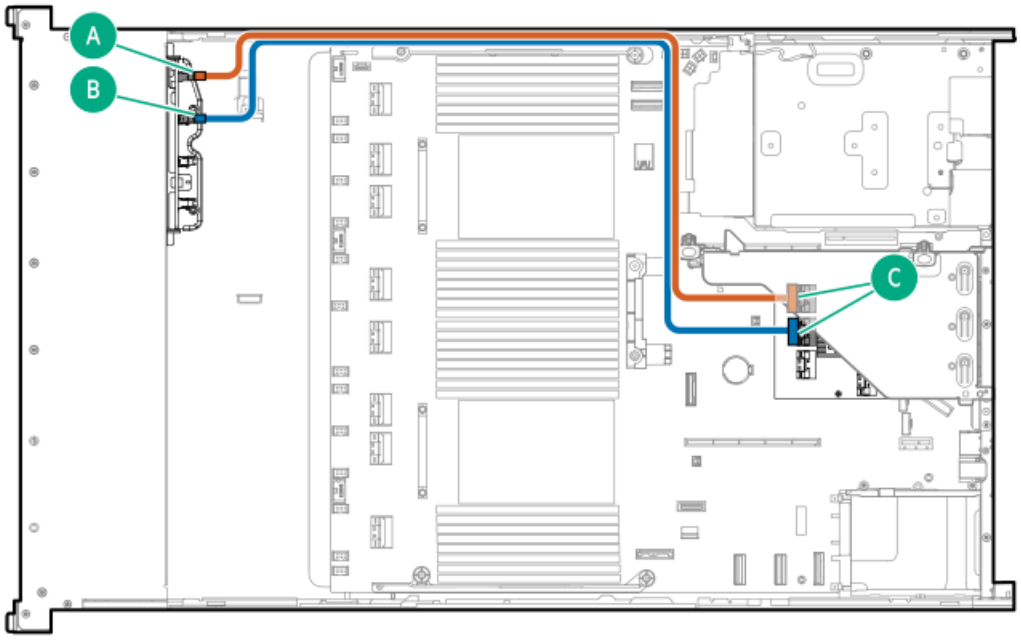
Cable part number	Color	From	To
P22904-001	Orange	Drive backplane	Secondary type-p controller
	Blue	Drive backplane	Secondary type-p controller
	Pink	Drive backplane	Primary type-p controller

8 SFF boxes 1 and 2: Primary and secondary type-p controllers



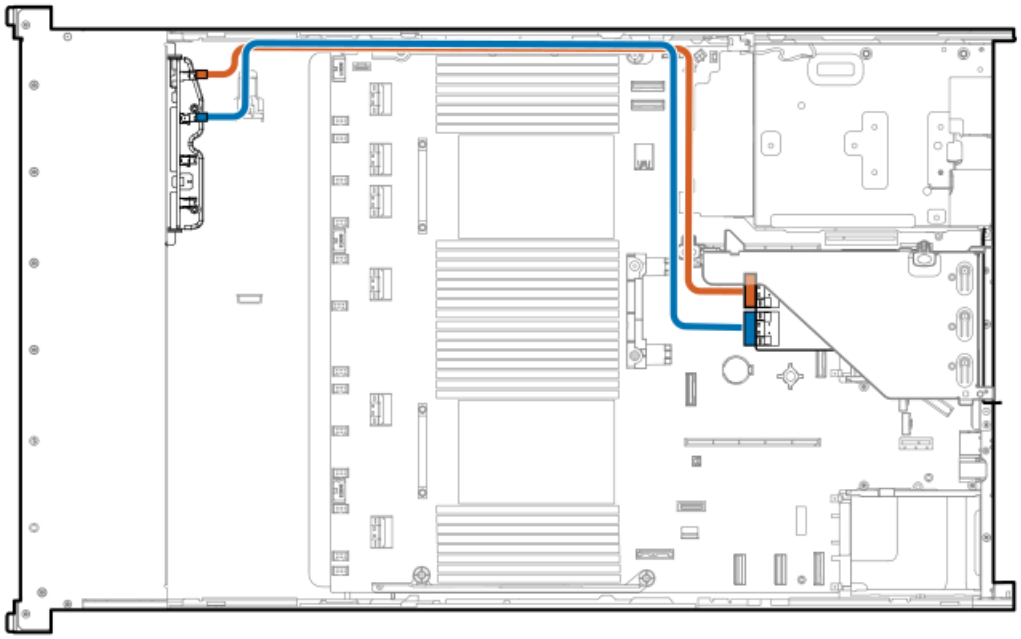
Cable part number	Color	From	To
P22905-001	Orange	Box 1 drive backplane	Primary type-p controller
	Blue	Box 2 drive backplane	Secondary type-p controller

8 SFF box 1: Secondary type-p controller



Cable part number	Color	From	To
P22905-001	Orange	Drive backplane	Secondary type-p controller
	Blue	Drive backplane	Secondary type-p controller

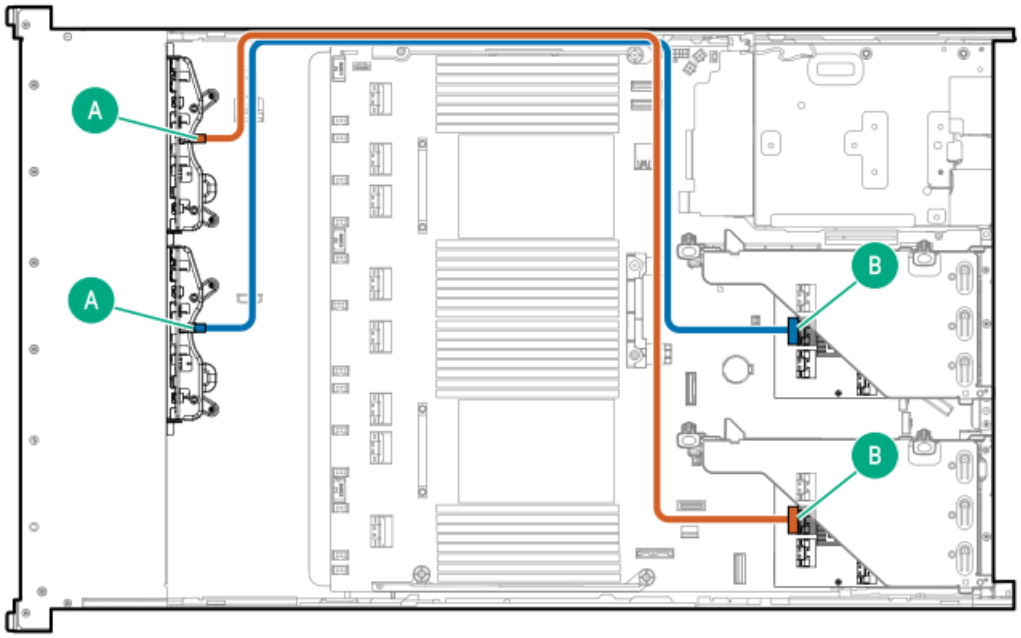
8 SFF box 1: Secondary retimer



Cable part number	Color	From	To
P22905-001	Orange	Drive backplane	Secondary retimer
	Blue	Drive backplane	Secondary retimer

8 SFF box 2 cabling

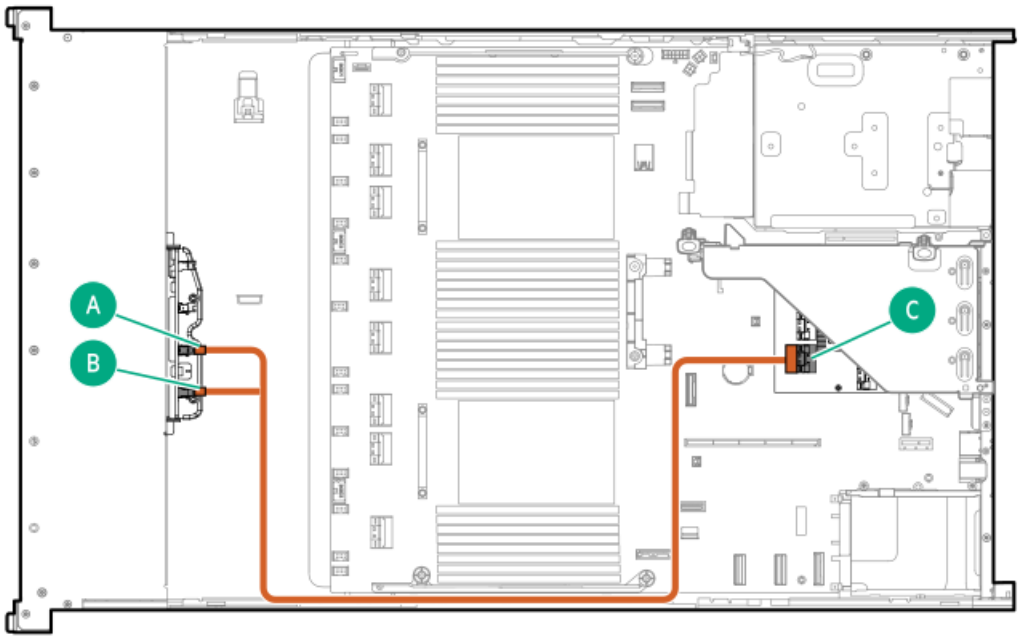
8 SFF boxes 1 and 2: Primary and secondary type-p controllers



Cable part number	Color	From	To
P22905-001 [1]	Orange	Box 1 drive backplane	Primary type-p controller
	Blue	Box 2 drive backplane	Secondary type-p controller

[1] Option kit: P54874-B21

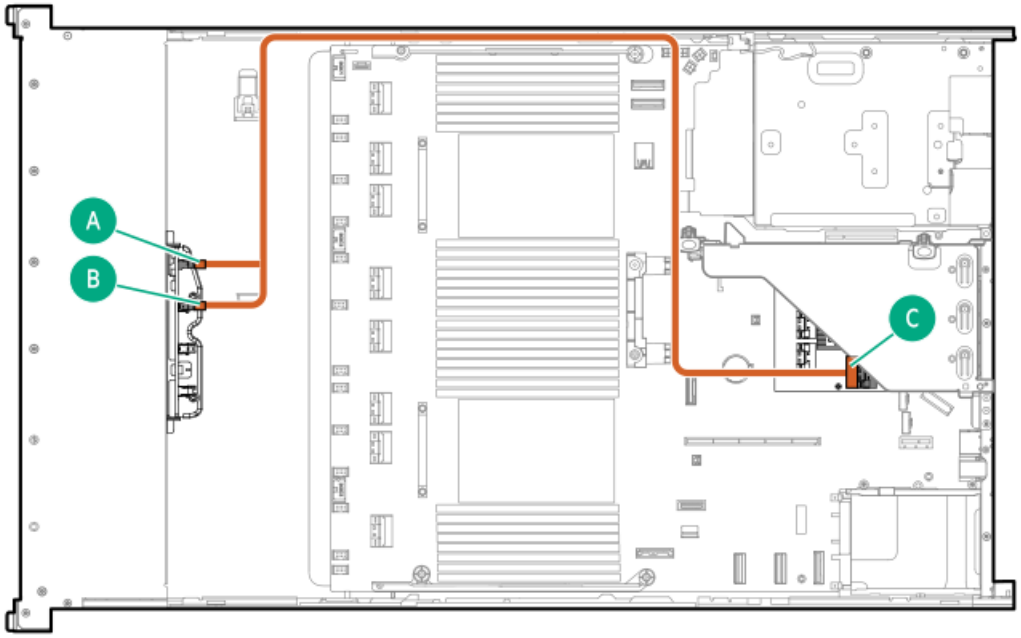
8 SFF box 2: Secondary type-p controller



Cable part number	Color	From	To
P51547-001 [1]	Orange	Drive backplane	Secondary type-p controller

1 Option kit: P48832-B21

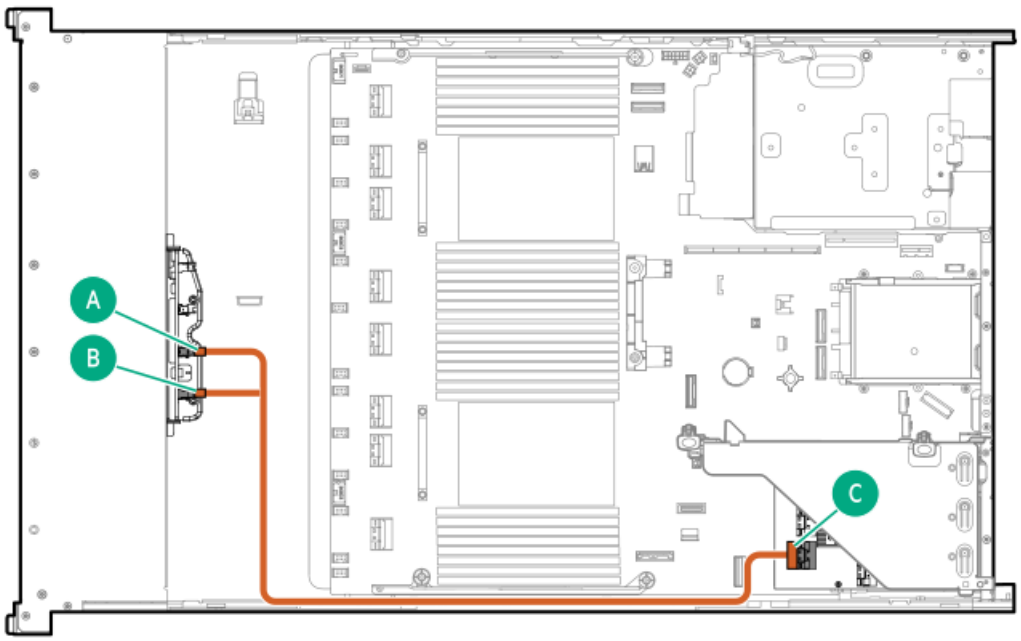
8 SFF box 2: Secondary type-p controller



Cable part number	Color	From	To
P51547-001 [1]	Orange	Drive backplane	Secondary type-p controller

1 Option kit: P48832-B21

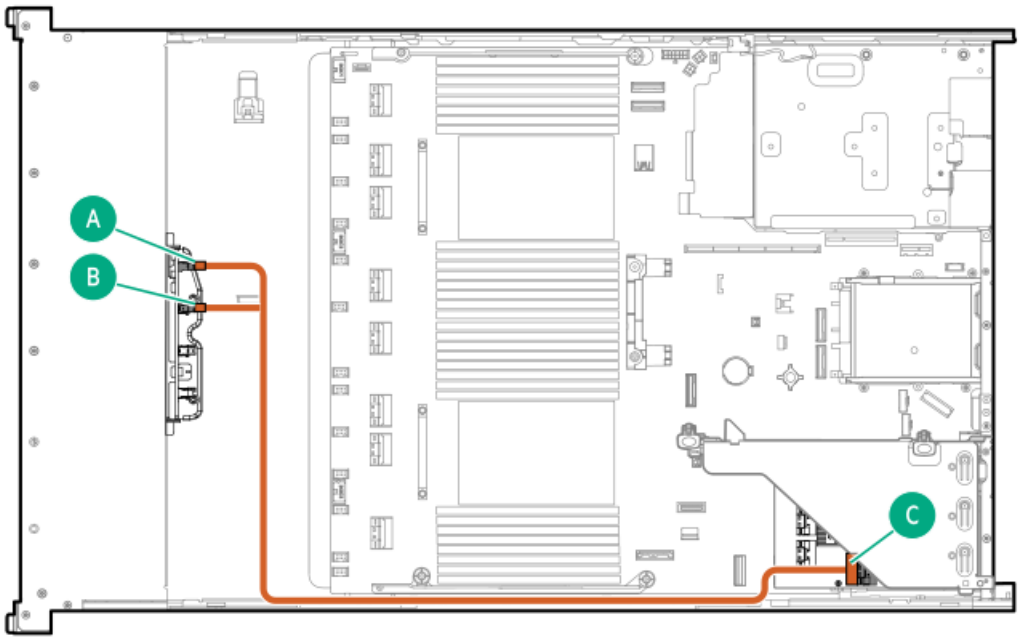
8 SFF box 2: Primary type-p controller



Cable part number	Color	From	To
P51547-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48832-B21

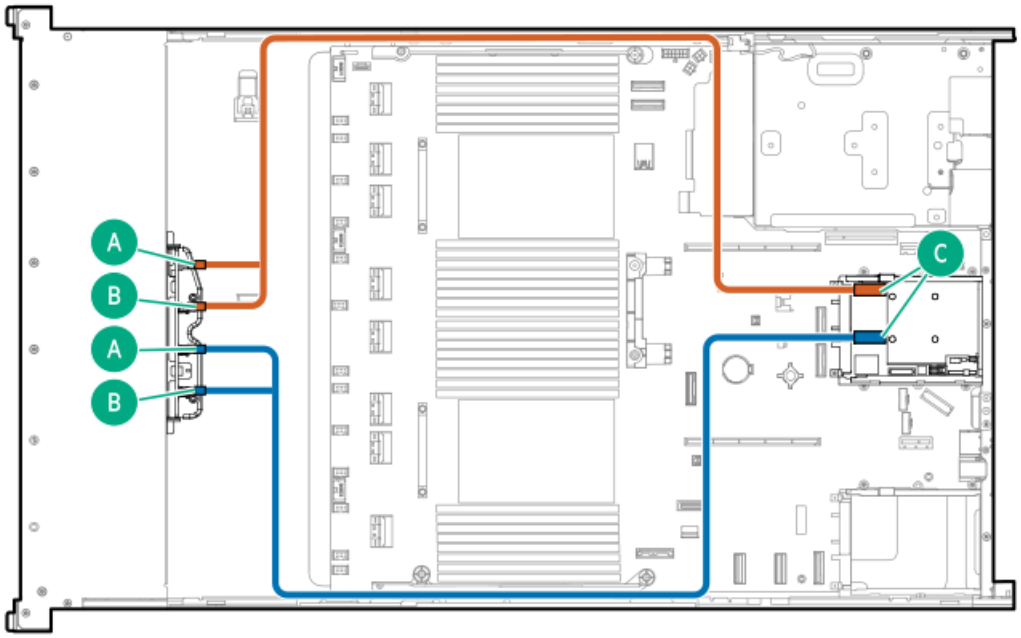
8 SFF box 2: Primary type-p controller



Cable part number	Color	From	To
P51547-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48832-B21

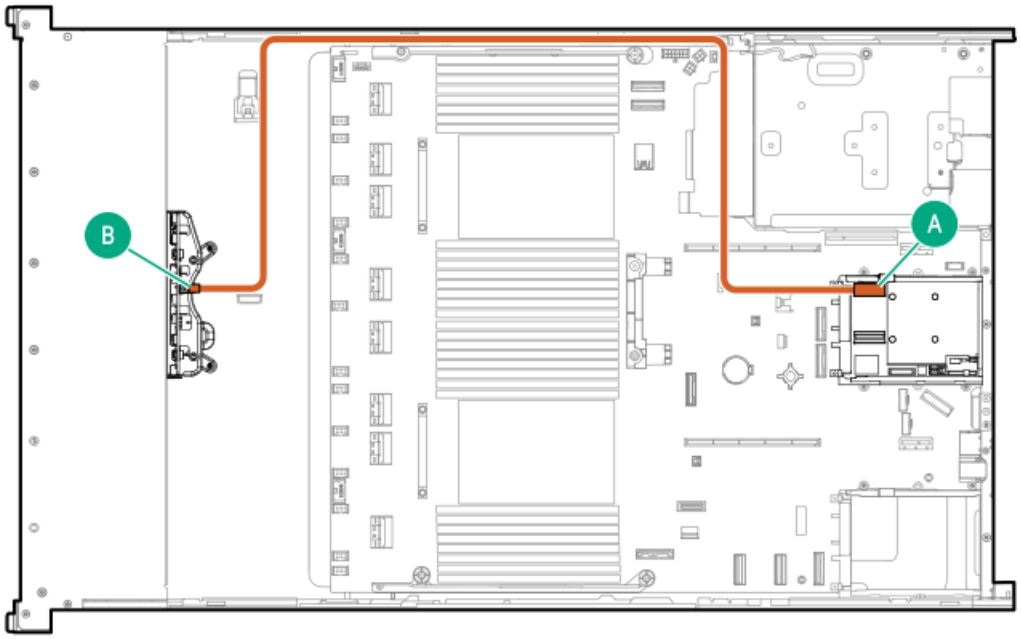
8 SFF box 2: Secondary type-o controller



Cable part number	Color	From	To
P51546-001 [1]	Orange	Drive backplane	Secondary type-o controller

[1] Option kit: P48829-B21

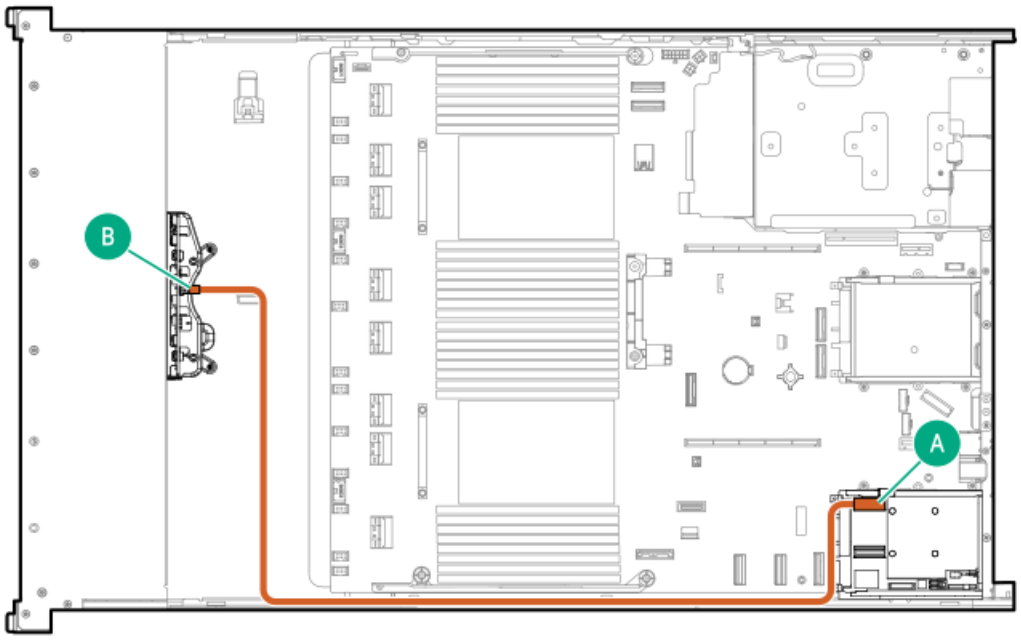
8 SFF box 2: Secondary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Secondary type-o controller

[1] Option kit: P48813-B21

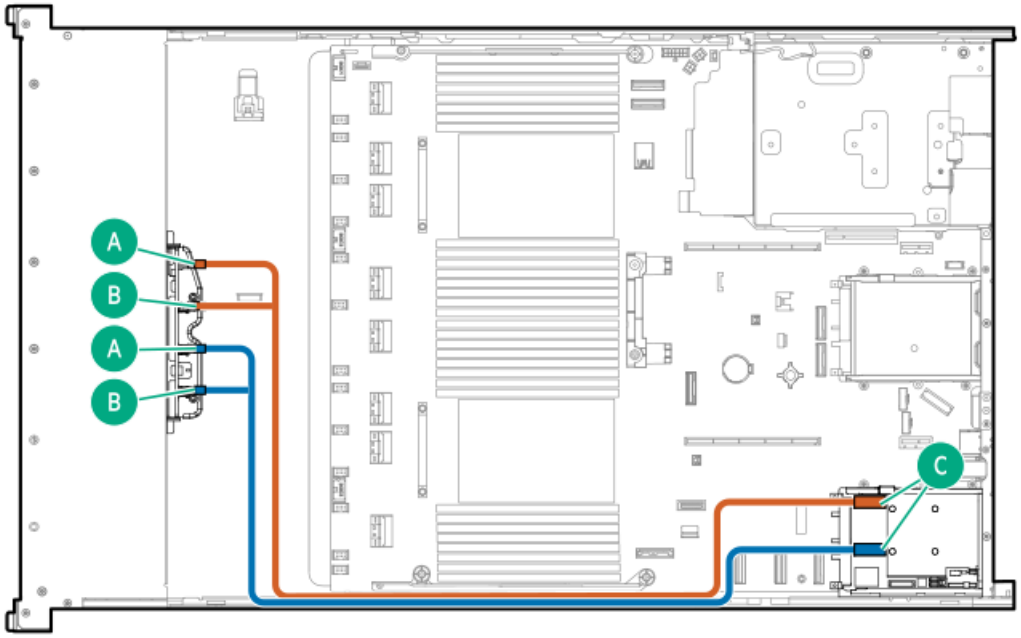
8 SFF box 2: Primary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Primary type-o controller

[1] Option kit: P48813-B21

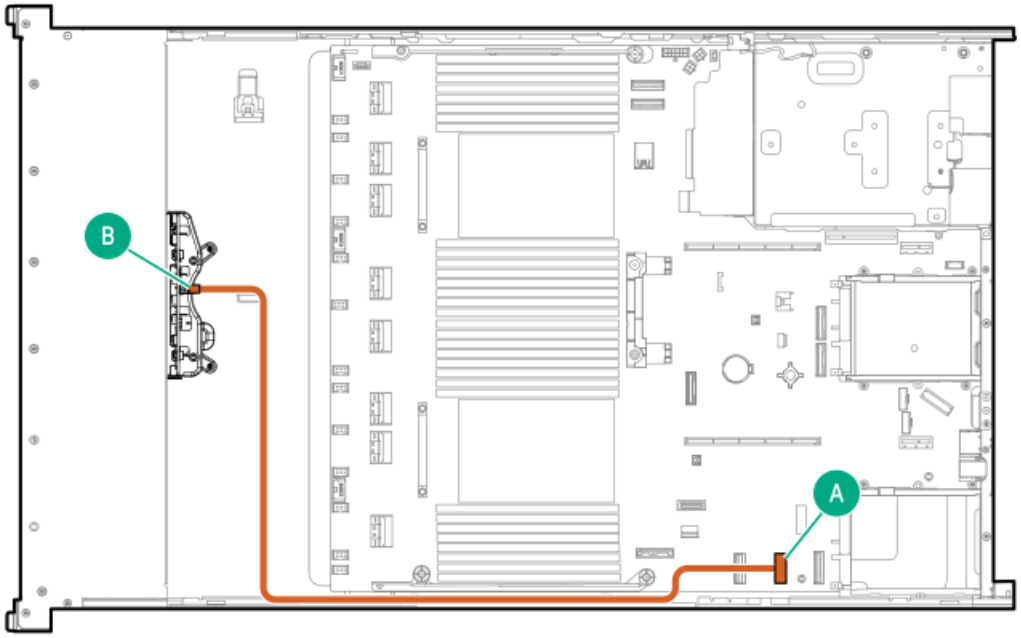
8 SFF box 2 to OCP 1



Cable part number	Color	From	To
P51546-001 [1]	Orange	Drive backplane	Primary type-o controller

1 Option kit: P48829-B21

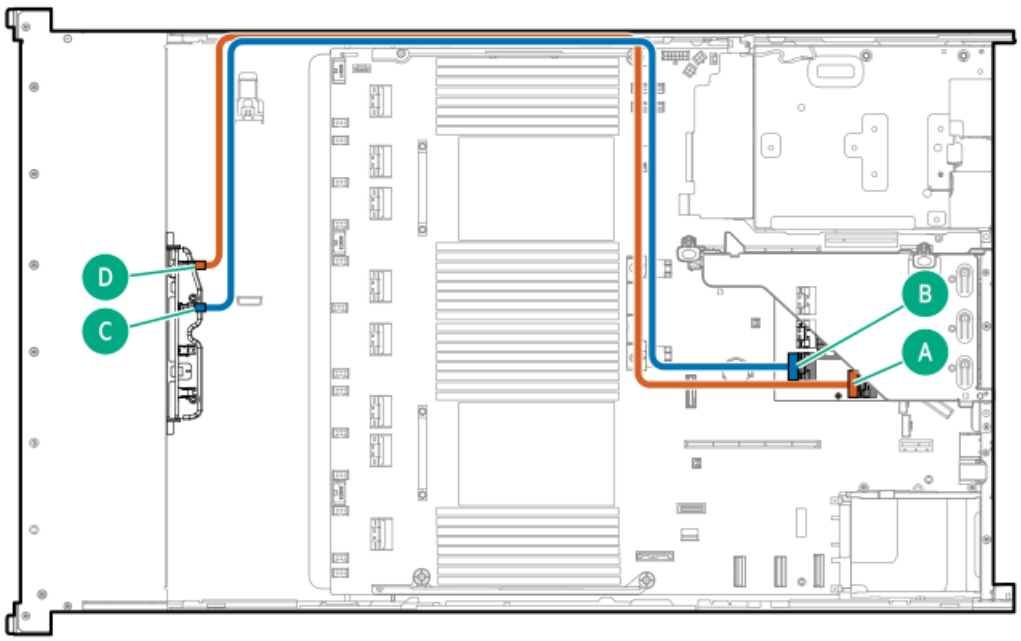
8 SFF box 2: System board



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	System board

1 Option kit: P48813-B21

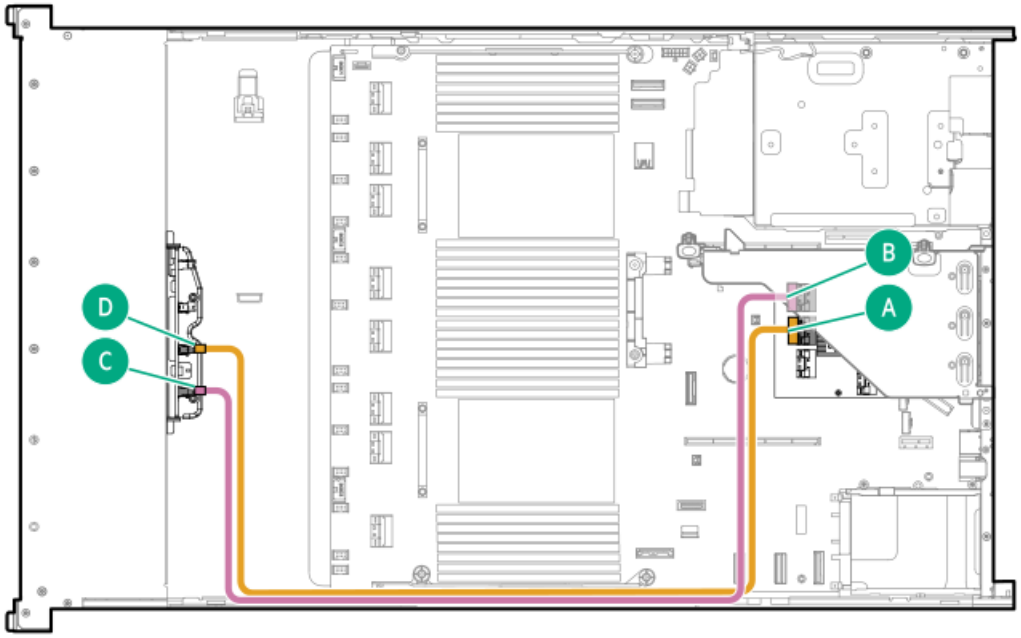
8 SFF box 2: Secondary type-p controller



Cable part number	Color	From	To
P51550-001 [1]	Yellow	Drive backplane	Secondary type-p controller
	Pink	Drive backplane	Secondary type-p controller

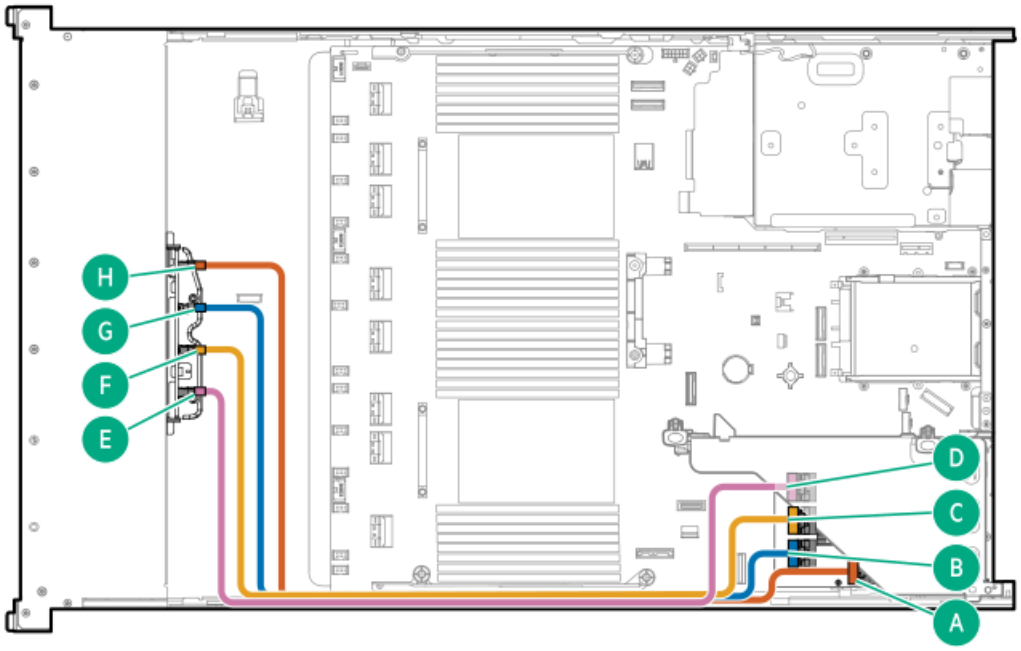
[1] Option kit: P48831-B21

8 SFF box 2: Secondary type-p controller



Cable part number	Color	From	To
P51551-001 [1]	Yellow	Drive backplane	Secondary type-p controller
	Pink	Drive backplane	Secondary type-p controller

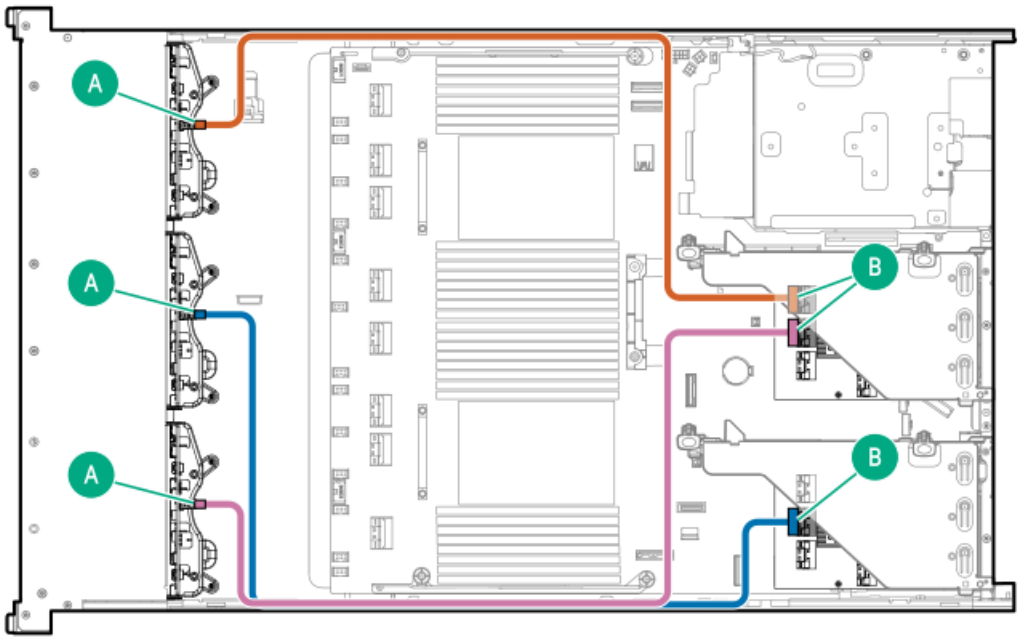
[1] Option kit: P48831-B21



Cable part number	Color	From	To
P51552-001 [1]	Orange	Drive backplane	Primary type-p controller
	Blue	Drive backplane	Primary type-p controller
	Yellow	Drive backplane	Primary type-p controller
	Pink	Drive backplane	Primary type-p controller

1 Option kit: P48831-B21

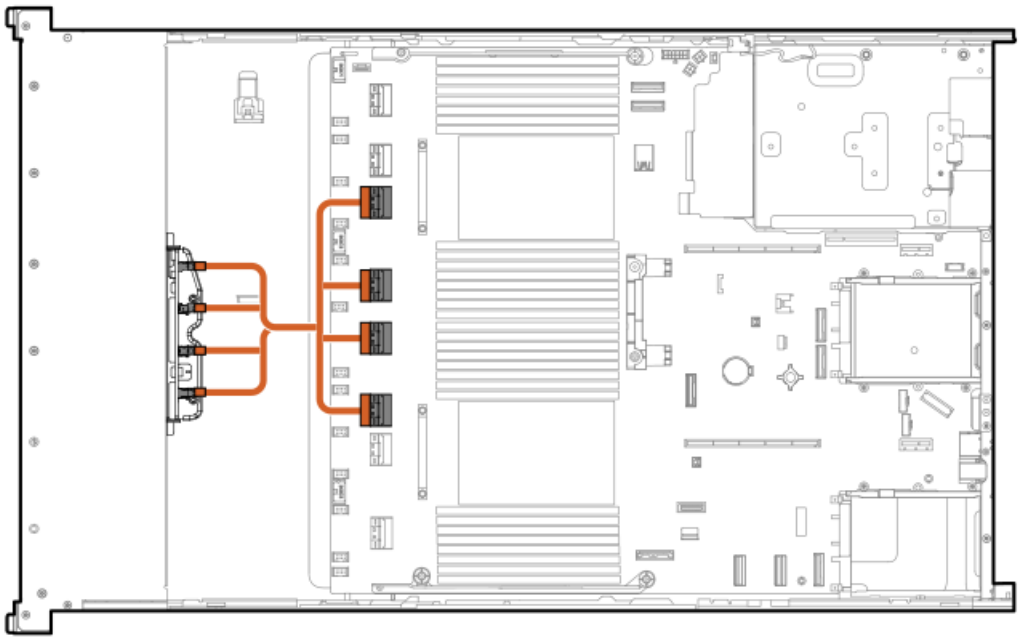
8 SFF box 1-3: Primary and secondary type-p controllers



Cable part number	Color	From	To
P22904-001 [1]	Orange	Drive backplane	Secondary type-p controller
	Blue	Drive backplane	Secondary type-p controller
	Pink	Drive backplane	Primary type-p controller

[1] Option kit: P54874-B21

8 SFF NVMe box 2 to system board cabling

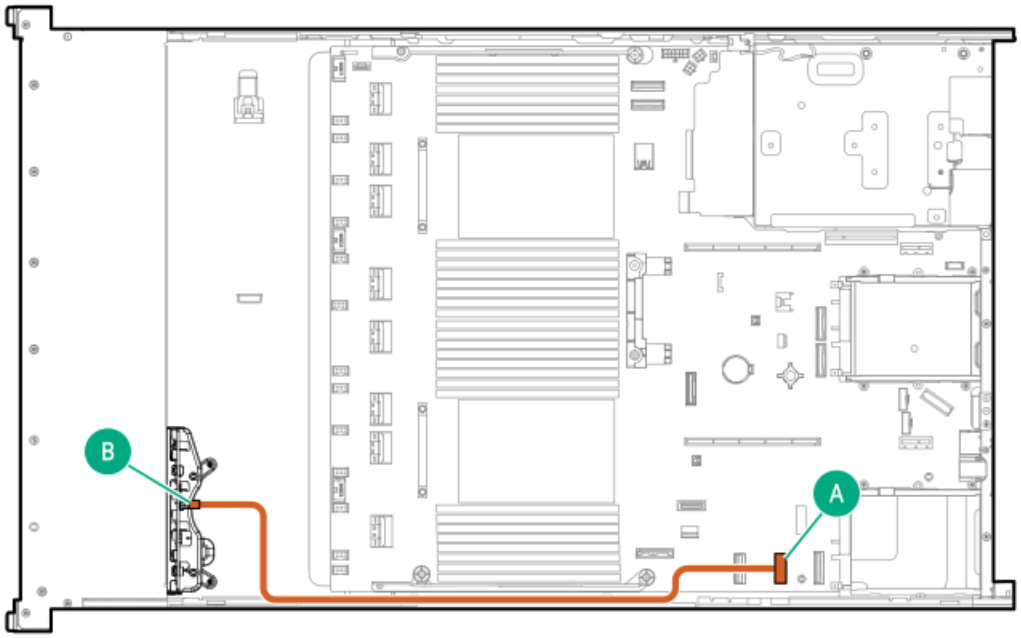


Cable part number	Color	From	To
P53286-001 [1]	Orange	Box 2 ports 1-4	System board ports 3-6

[1] Option kit: P48825-B21

8 SFF box 3 cabling

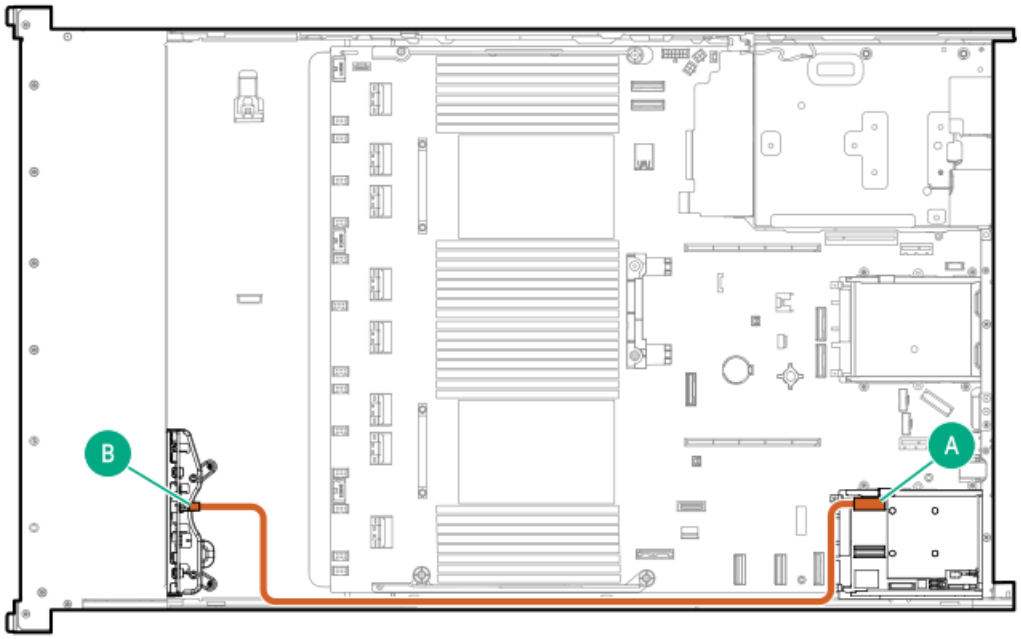
8 SFF box 3: System board



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P48813-B21

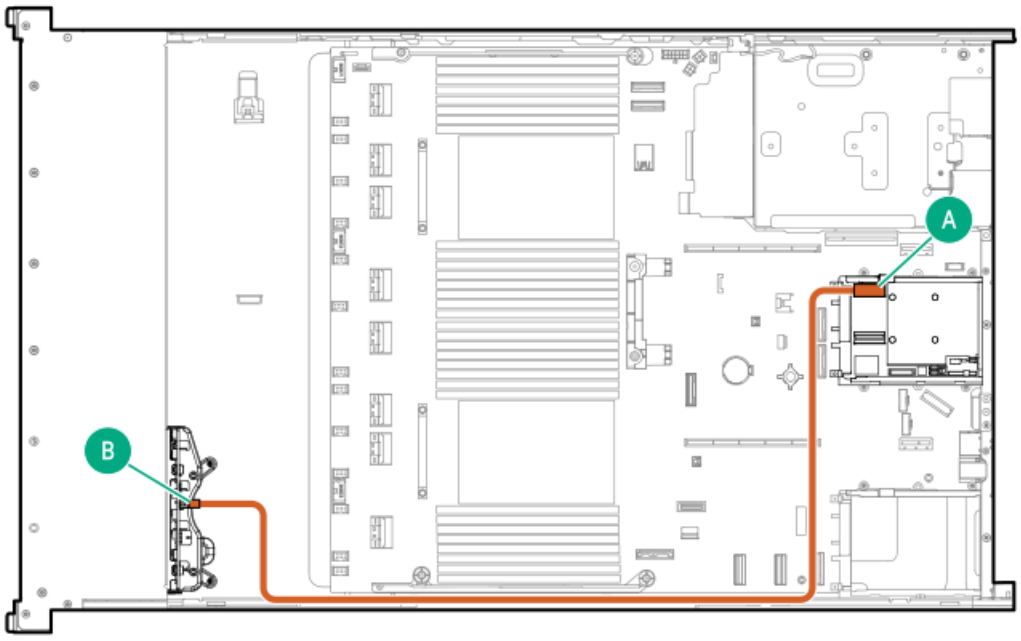
8 SFF box 3: Primary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Primary type-o controller

[1] Option kit: P48813-B21

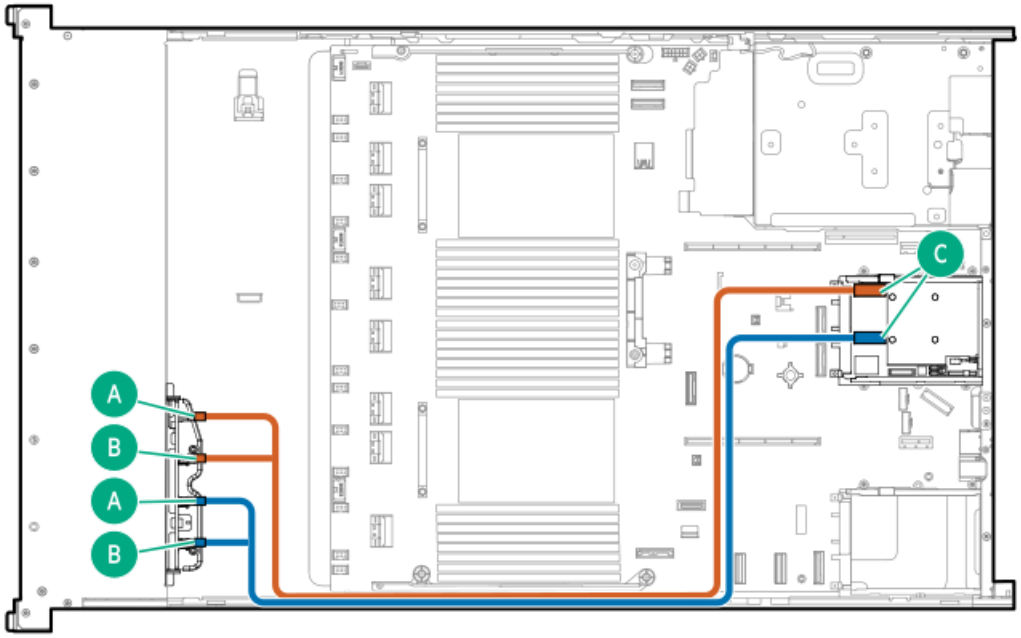
8 SFF box 3: Secondary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Secondary type-o controller

[1] Option kit: P48813-B21

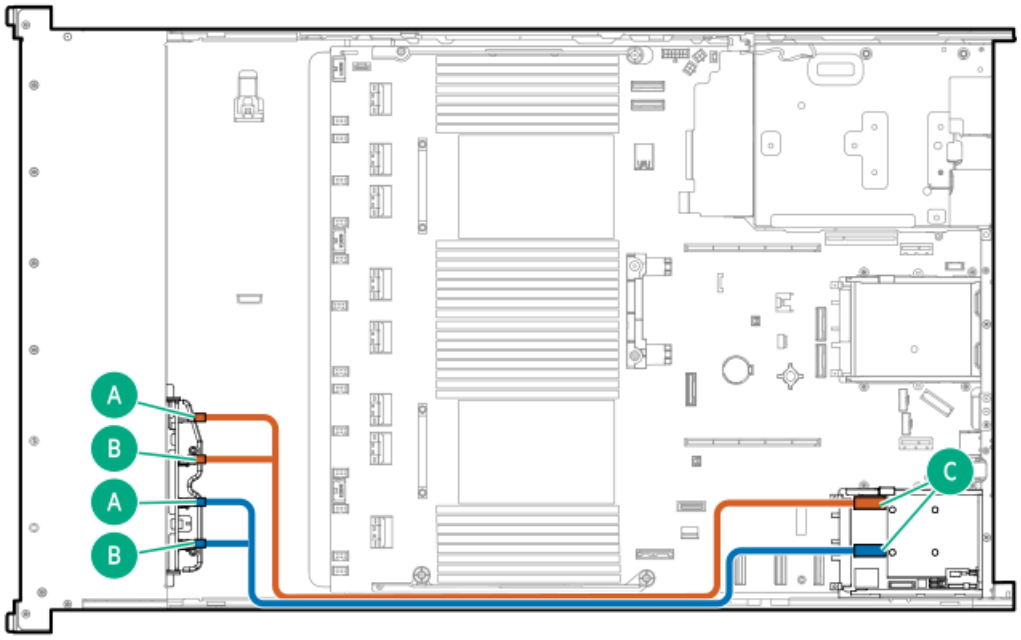
8 SFF box 3: Secondary type-o controller



Cable part number	Color	From	To
P51546-001 [1]	Orange	Drive backplane	Secondary type-o controller

1 Option kit: P48829-B21

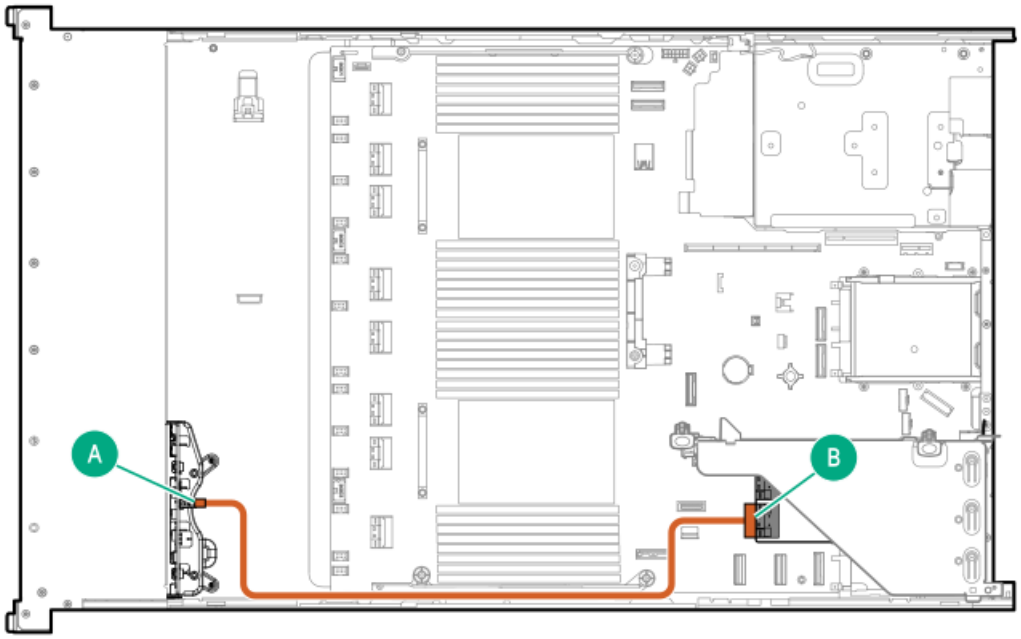
8 SFF box 3: Primary type-o controller



Cable part number	Color	From	To
P51546-001 [1]	Orange	Drive backplane	Primary type-o controller

1 Option kit: P48829-B21

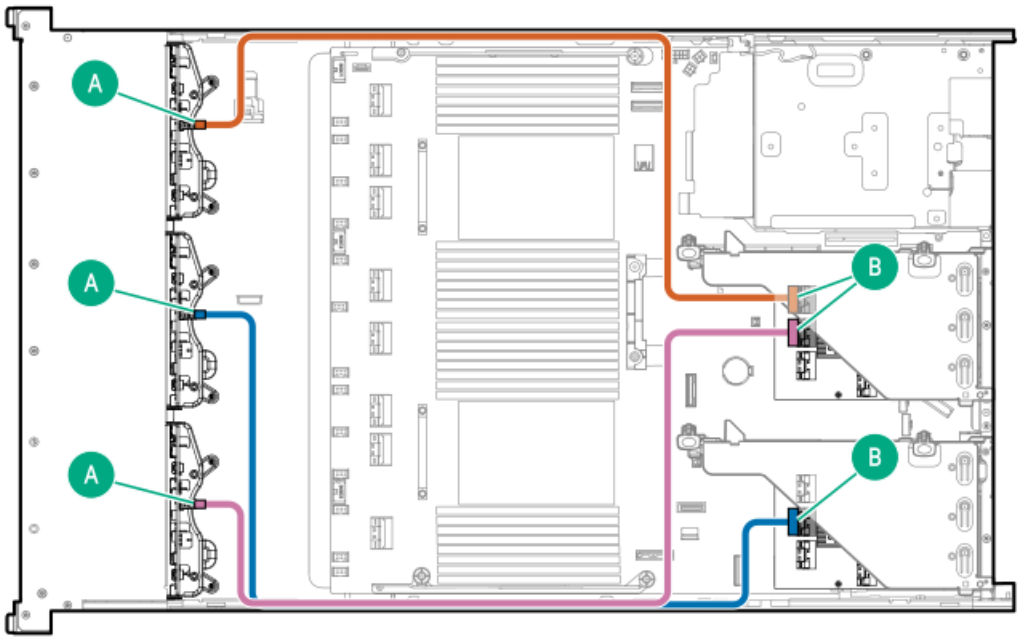
8 SFF box 3: Primary retimer



Cable part number	Color	From	To
P22904-001 [1]	Orange	Drive backplane	Primary retimer

[1] Option kit: P54874-B21

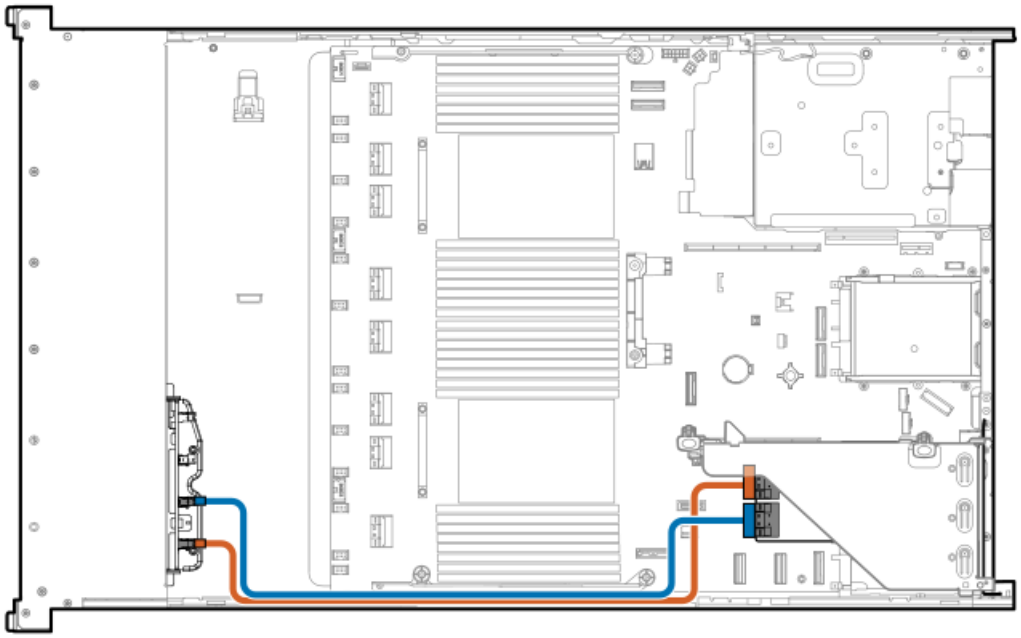
8 SFF box 1-3: Primary and secondary type-p controllers



Cable part number	Color	From	To
P22904-001 [1]	Orange	Drive backplane	Secondary type-p controller
	Blue	Drive backplane	Secondary type-p controller
	Pink	Drive backplane	Primary type-p controller

[1] Option kit: P54874-B21

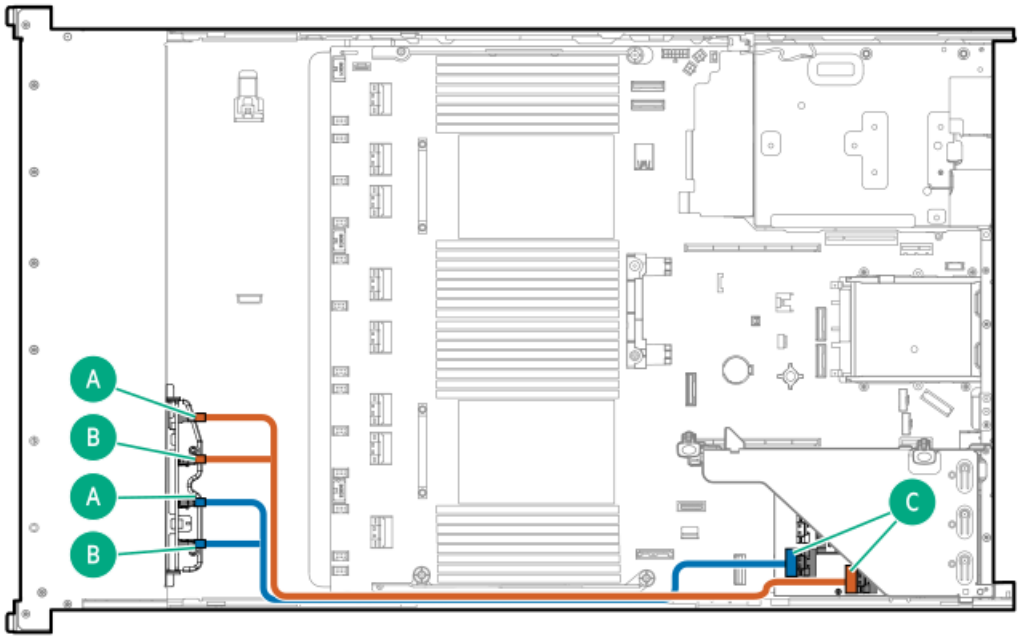
8 SFF box 3: Primary retimer



Cable part number	Color	From	To
P22904-001 [1]	Orange and blue	Drive backplane	Primary retimer

[1] Option kit: P54874-B21

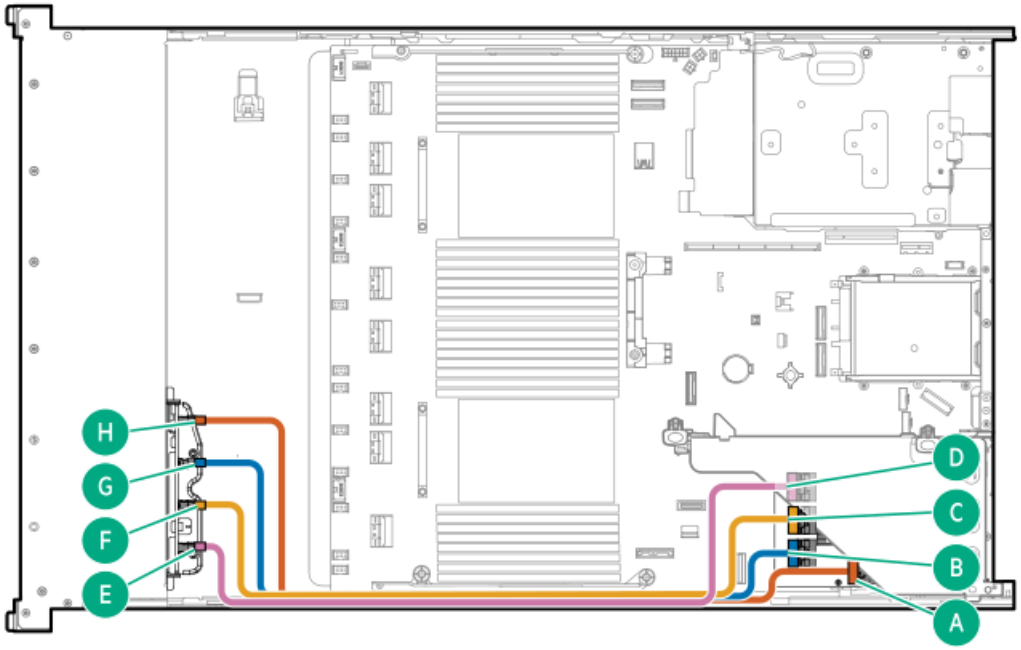
8 SFF box 3: Primary type-p controller



Cable part number	Color	From	To
P14330-001 [1]	Orange	Drive backplane	Primary type-p controller
	Blue	Drive backplane	Primary type-p controller

[1] Option kit: P48832-B21

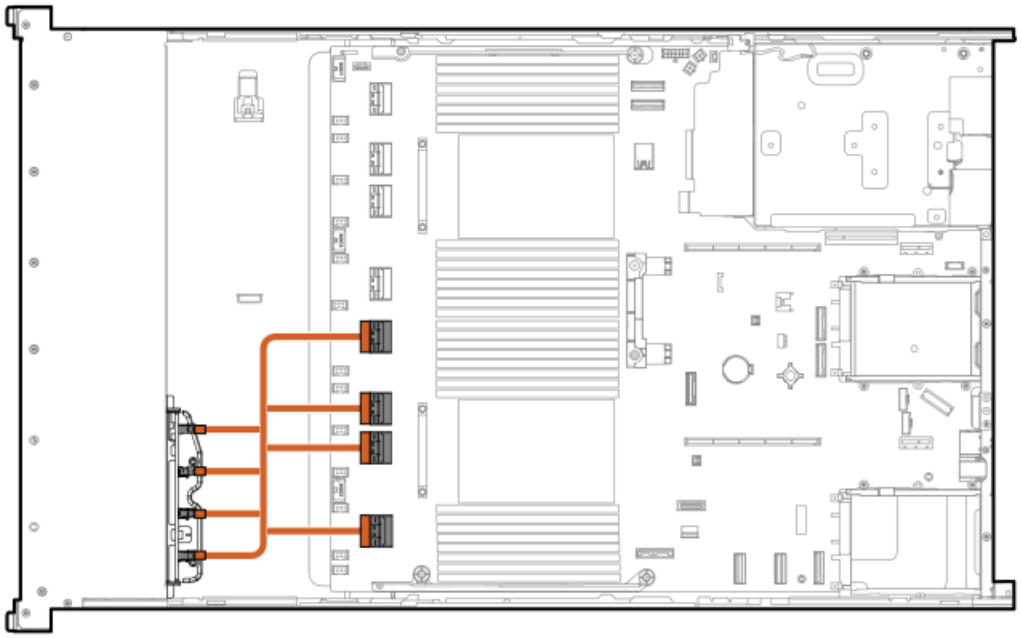
8 SFF box 3: Primary type-p controller



Cable part number	Color	From	To
P51553-001 [1]	Orange	Drive backplane	Primary type-p controller
	Blue	Drive backplane	Primary type-p controller
	Yellow	Drive backplane	Primary type-p controller
	Pink	Drive backplane	Primary type-p controller

[1] Option kit: P48831-B21

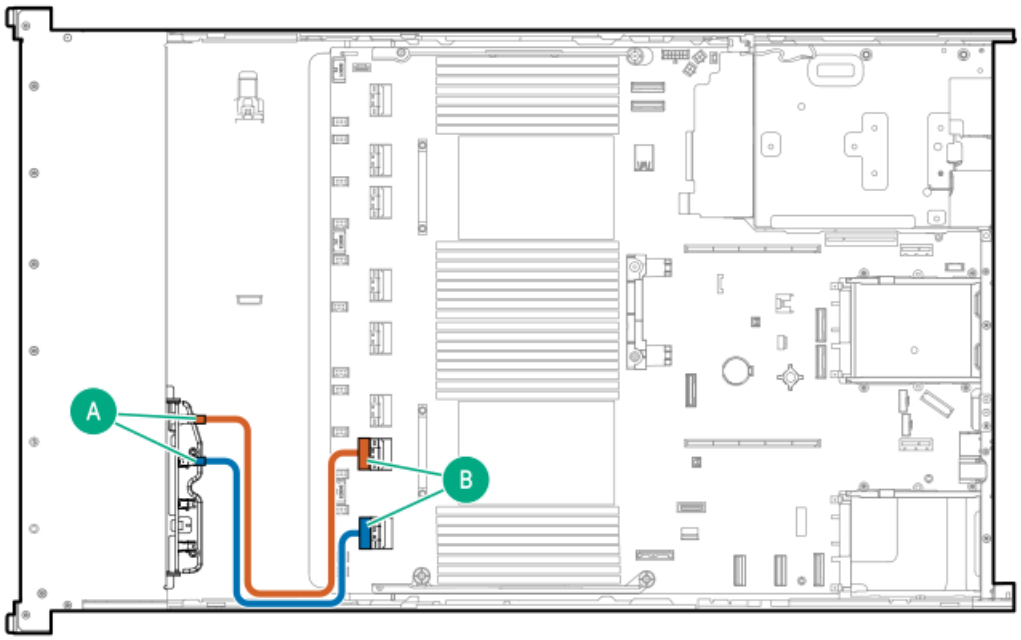
8 SFF box 3: System board



Cable part number	Color	From	To
P53287-001 [1]	Orange	Box 3 ports 1-4	System board ports 1-4

[1] Option kit: P48825-B21

8 SFF box 3: System board

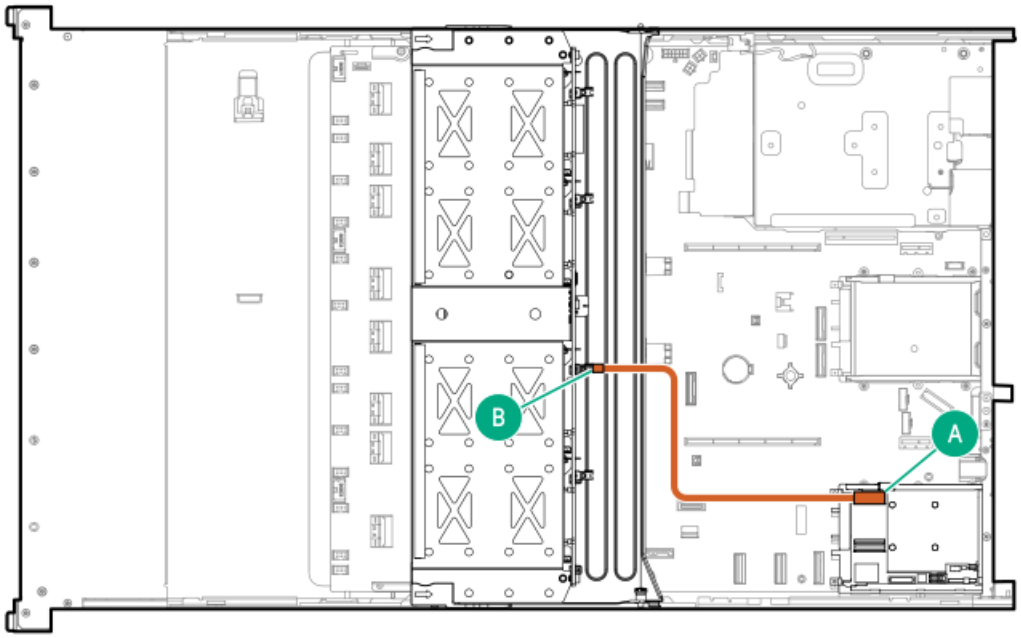


Cable part number	Color	From	To
P51543-001 [1]	Orange	Drive backplane port 1 and 2	System board port 1 and 2

[1] Option kit: P48825-B21

Mid 8 SFF cabling

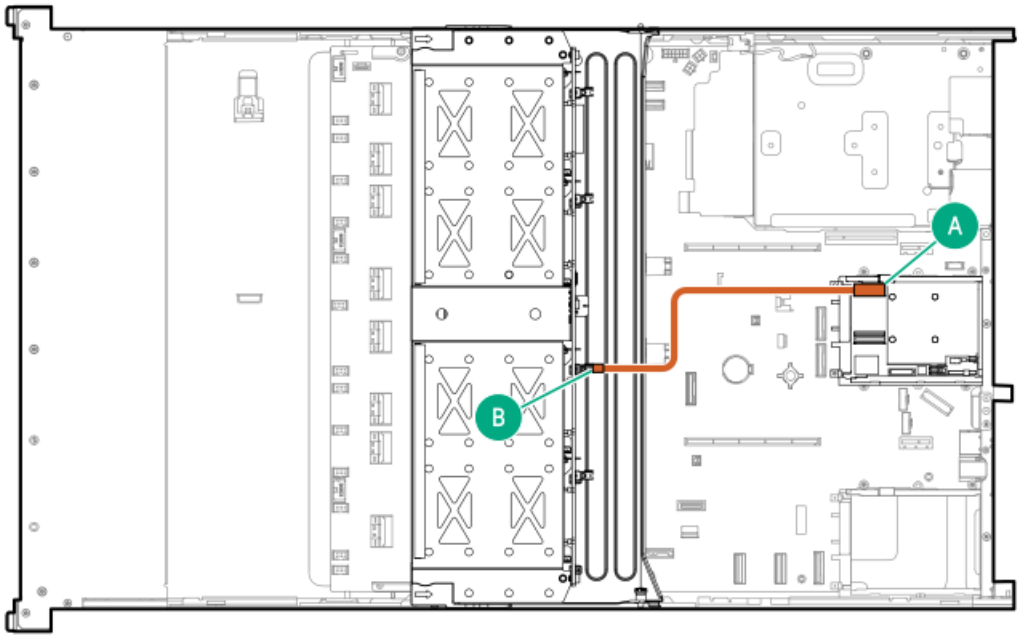
8 SFF box 7: Primary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Primary type-o controller

[1] Option kit: P48815-B21

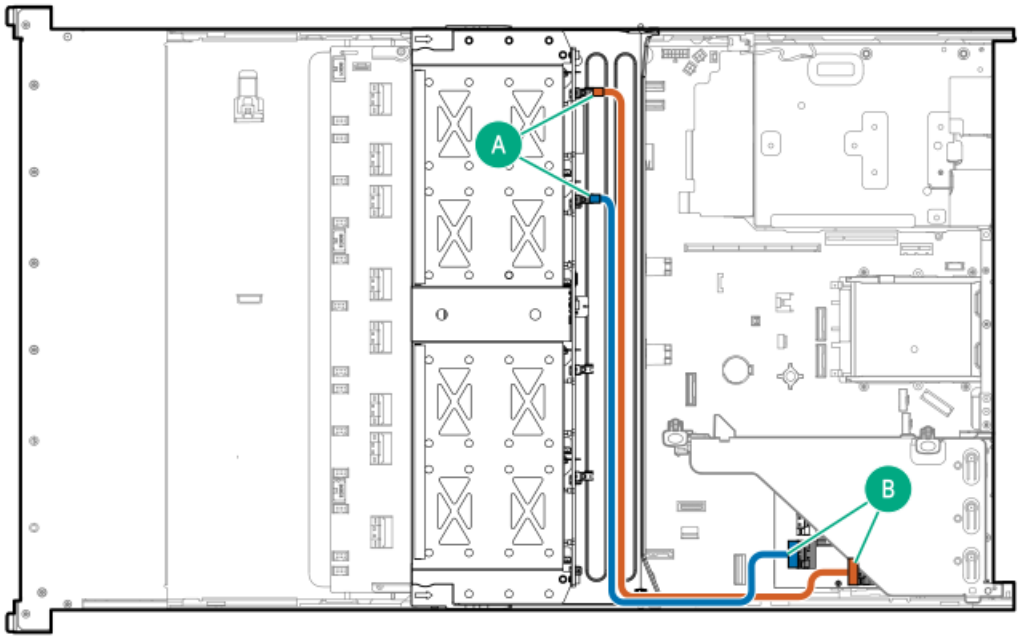
8 SFF box 7: Secondary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Secondary type-o controller

[1] Option kit: P48815-B21

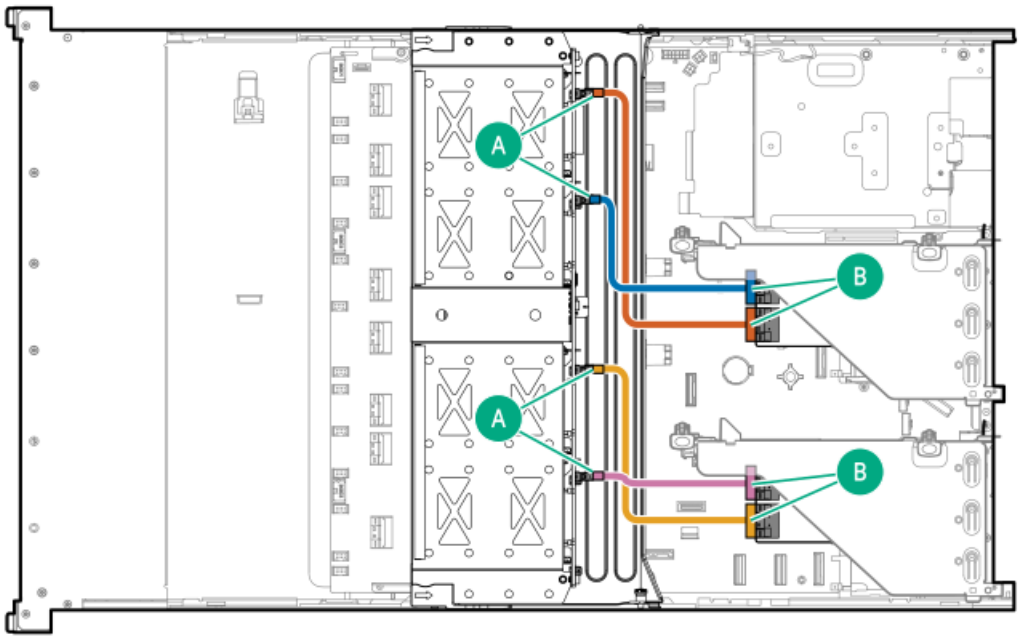
8 SFF box 7: Primary type-p controller



Cable part number	Color	From	To
P22903-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48816-B21

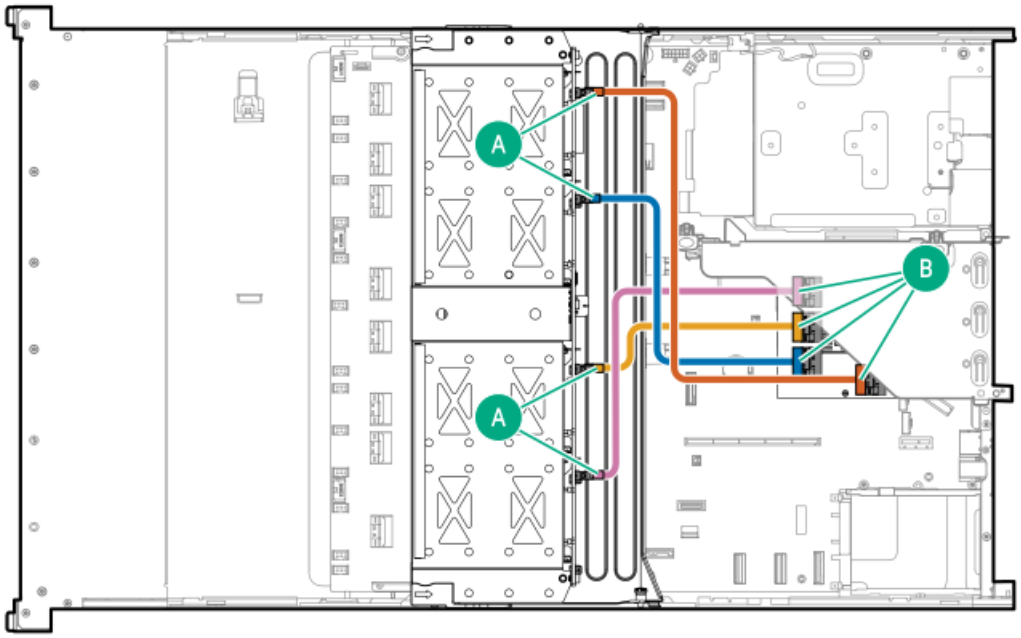
8 SFF midplane drive cabling: Type-p controllers



Cable part number	Color	From	To
P14329-001 [1]	Orange	Drive backplane	Primary and Secondary type-p controllers

[1] Option kit: P48816-B21

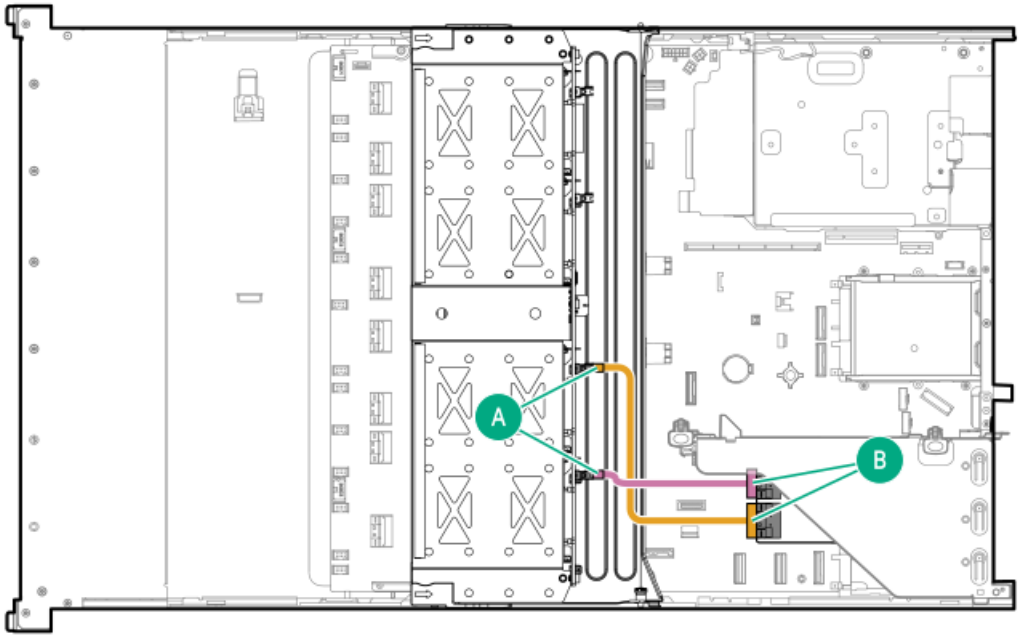
8 SFF midplane drive cabling: Secondary type-p controller



Cable part number	Color	From	To
P14329-001 [1]	Orange	Drive backplane	Secondary type-p controller

[1] Option kit: P48810-B21

8 SFF midplane drive cabling: Primary type-p controller

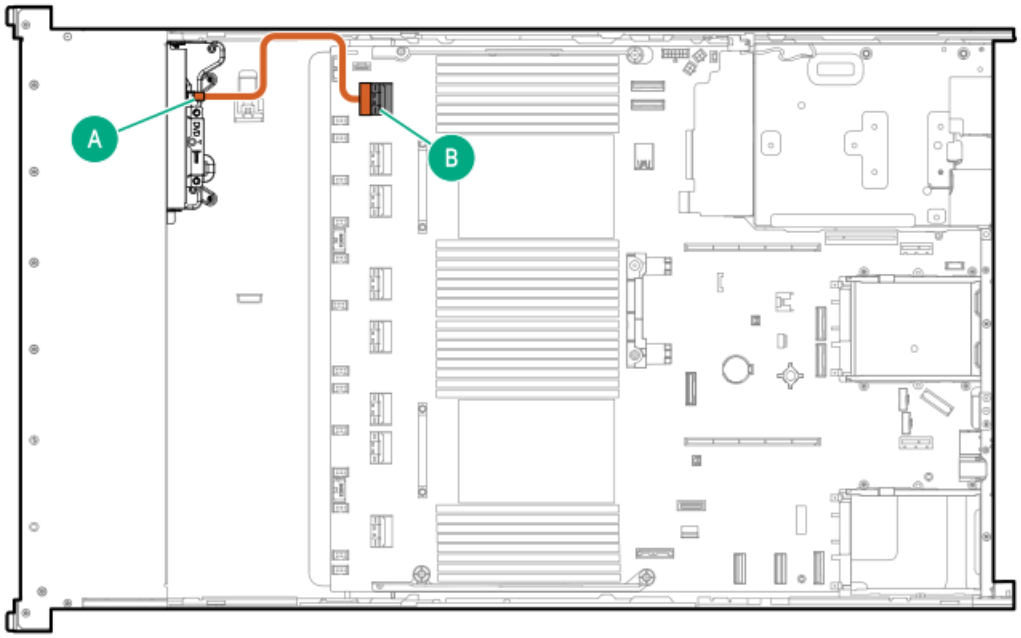


Cable part number	Color	From	To
P14329-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48810-B21

Front 2 SFF cabling

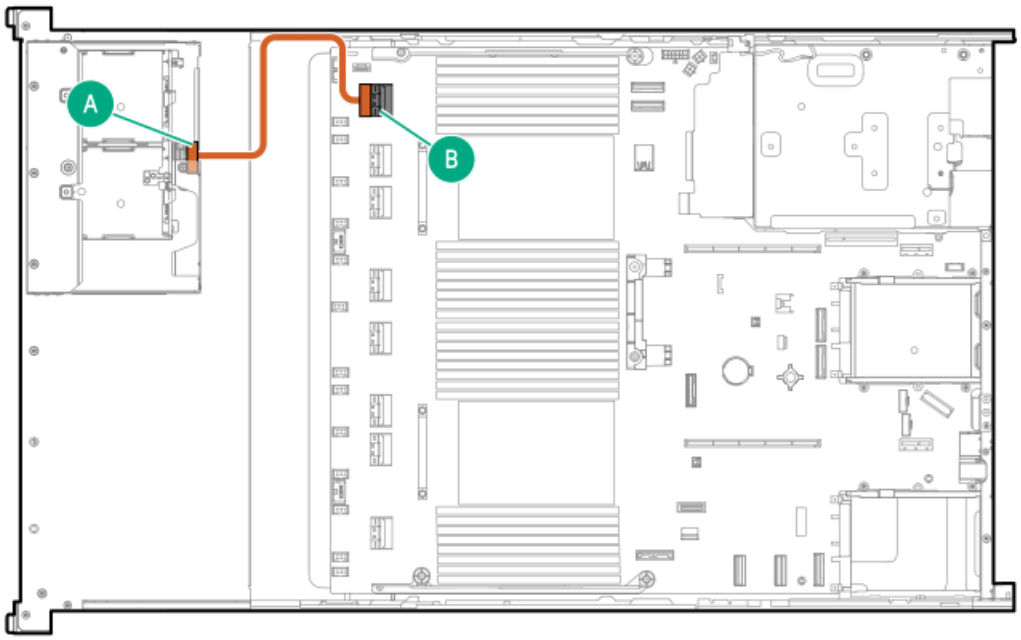
2 SFF box 1: System board



Cable part number	Color	From	To
P51555-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P52153-B21

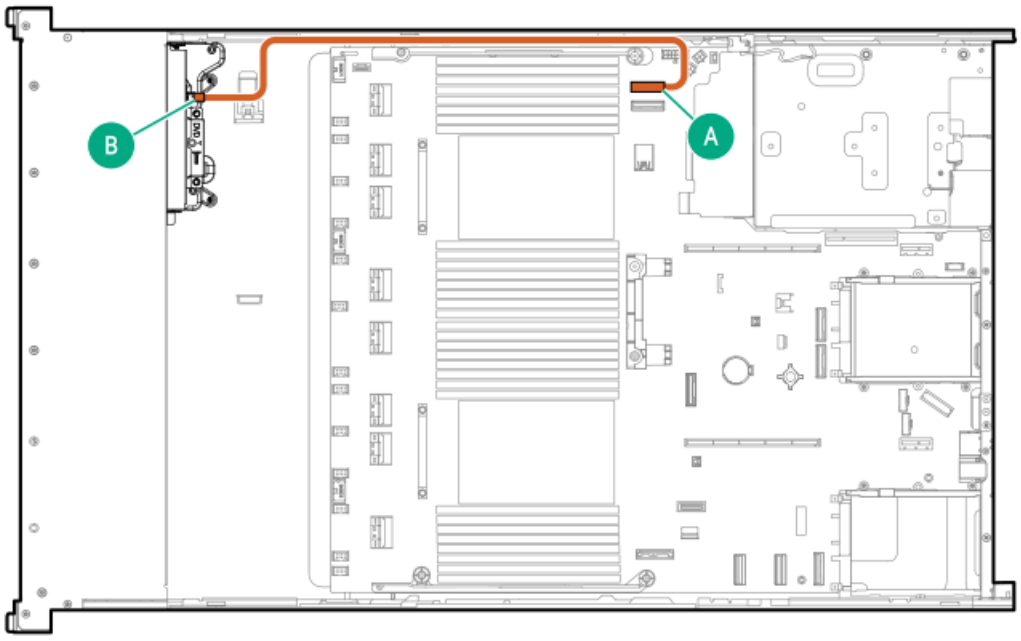
2 SFF box 1: to system board cabling



Cable part number	Color	From	To
P51555-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P52153-B21

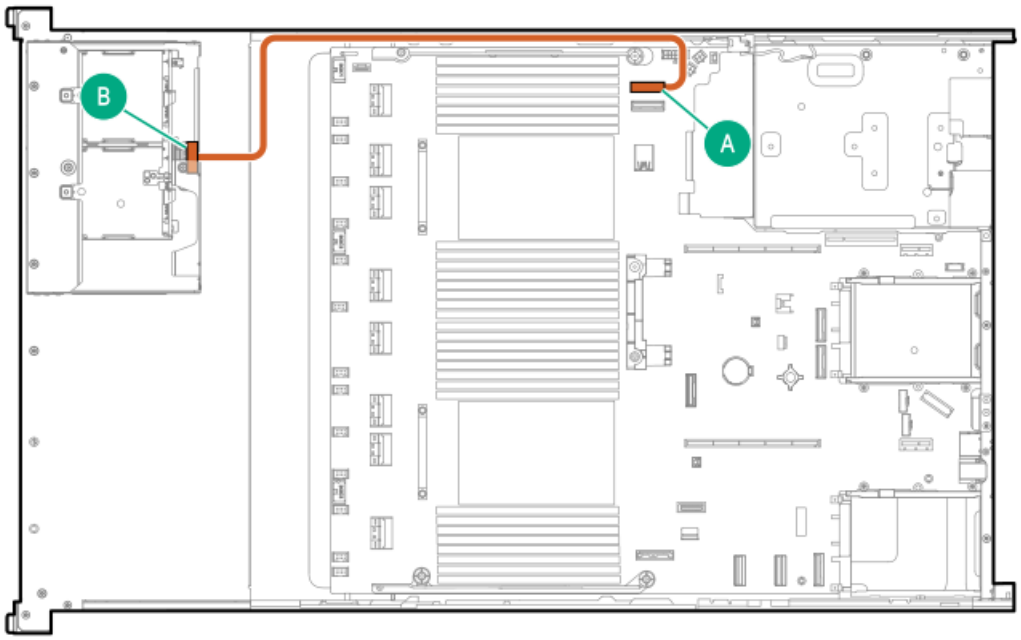
2 SFF box 1: System board



Cable part number	Color	From	To
P51556-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P52153-B21

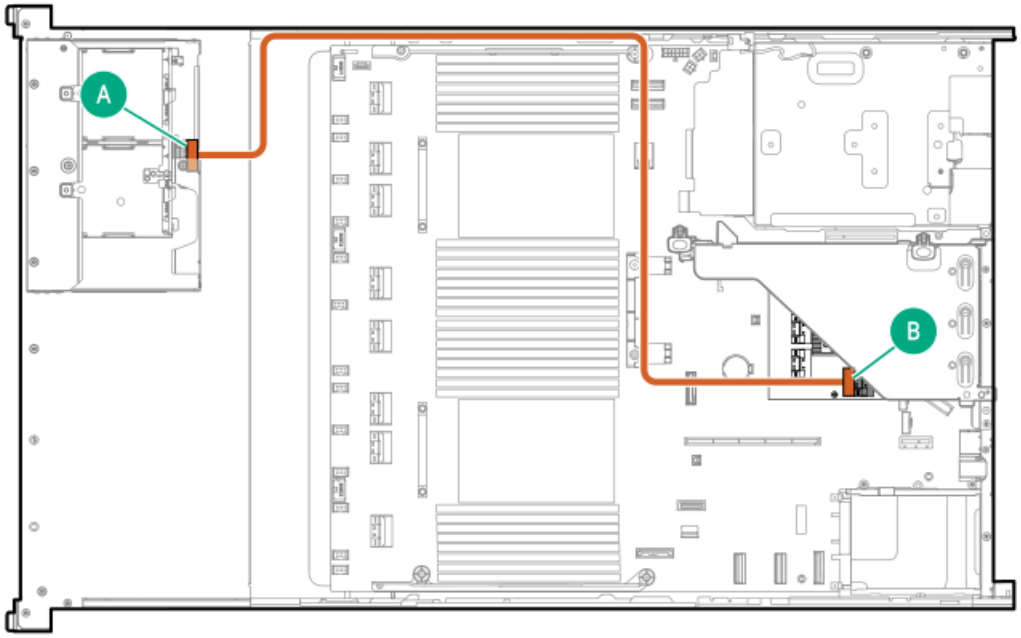
2 SFF box 1: System board



Cable part number	Color	From	To
P51556-001 [1]	Orange	Drive backplane	System board

1 Option kit: P52153-B21

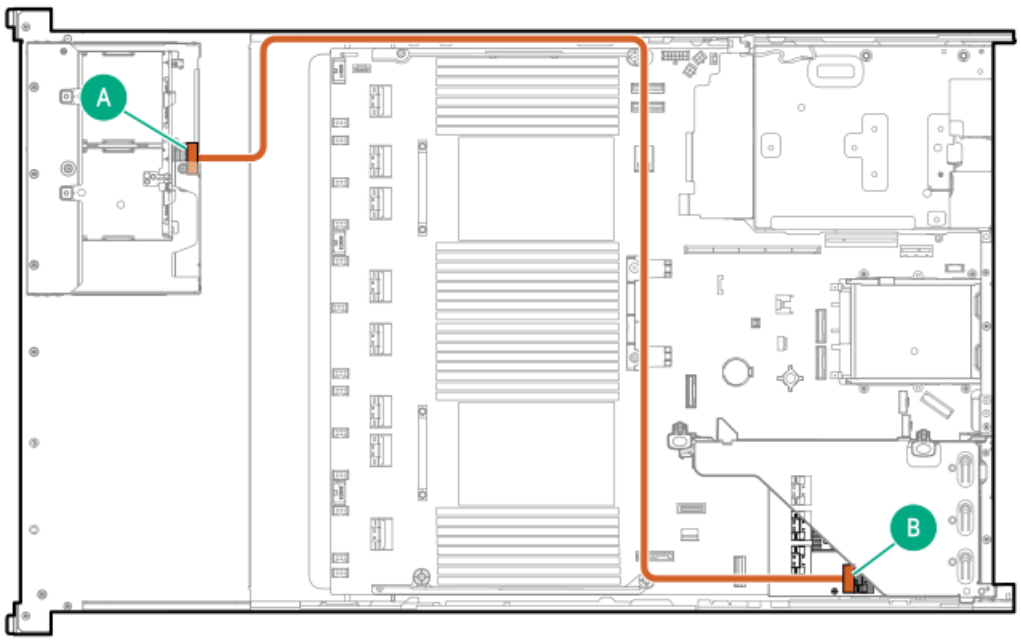
2 SFF box 1: Secondary type-p controller



Cable part number	Color	From	To
P22905-001 [1]	Orange	Drive backplane	Secondary type-p controller

1 Option kit: P54874-B21

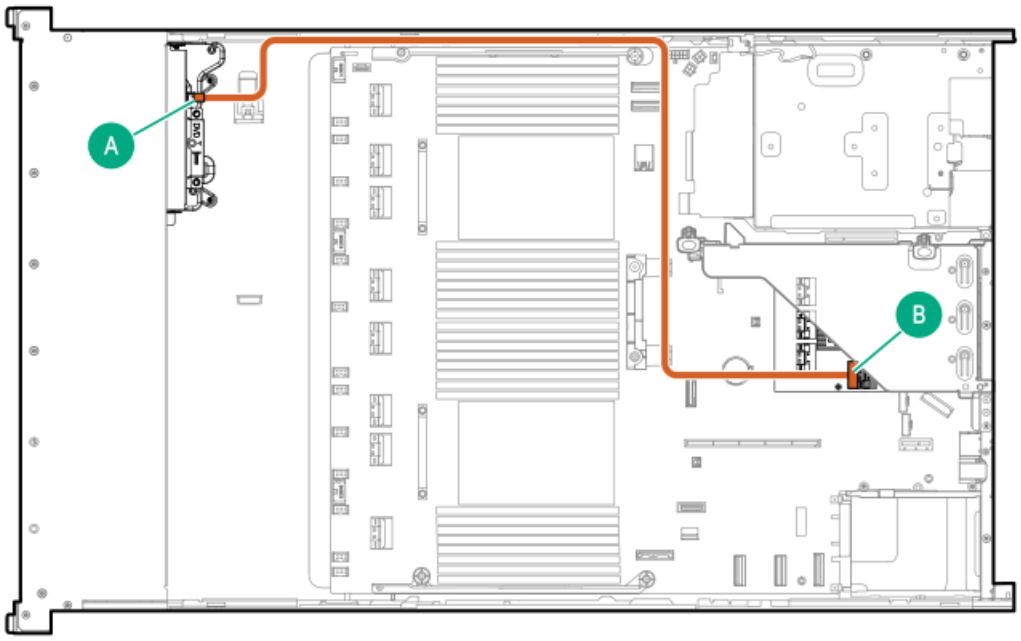
2 SFF box 1: Primary type-p controller



Cable part number	Color	From	To
P22905-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P54874-B21

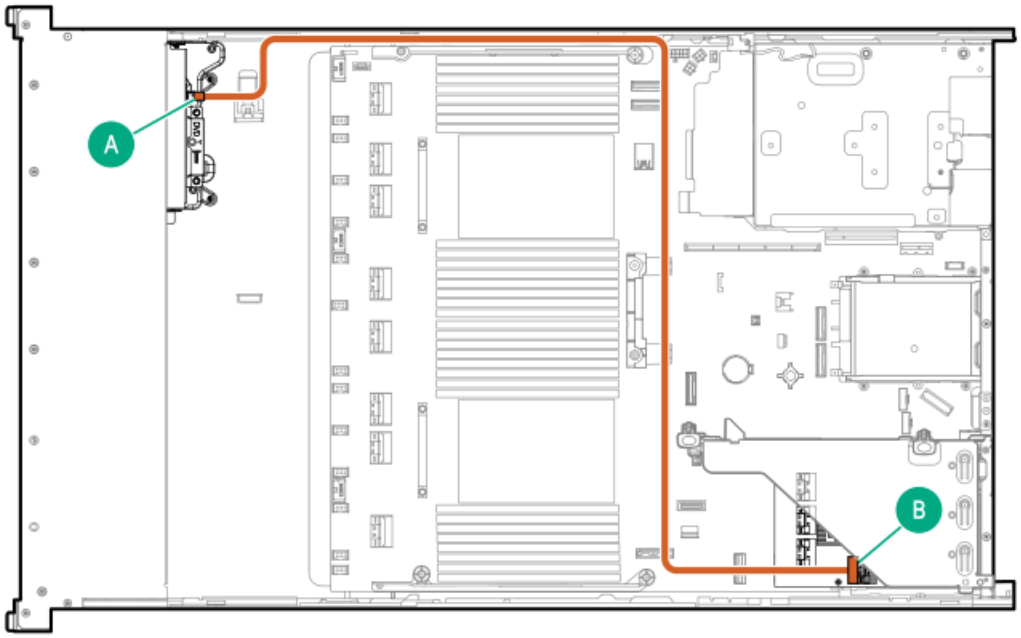
2 SFF box 1: Secondary type-p controller



Cable part number	Color	From	To
P22905-001 [1]	Orange	Drive backplane	Secondary type-p controller

[1] Option kit: P54874-B21

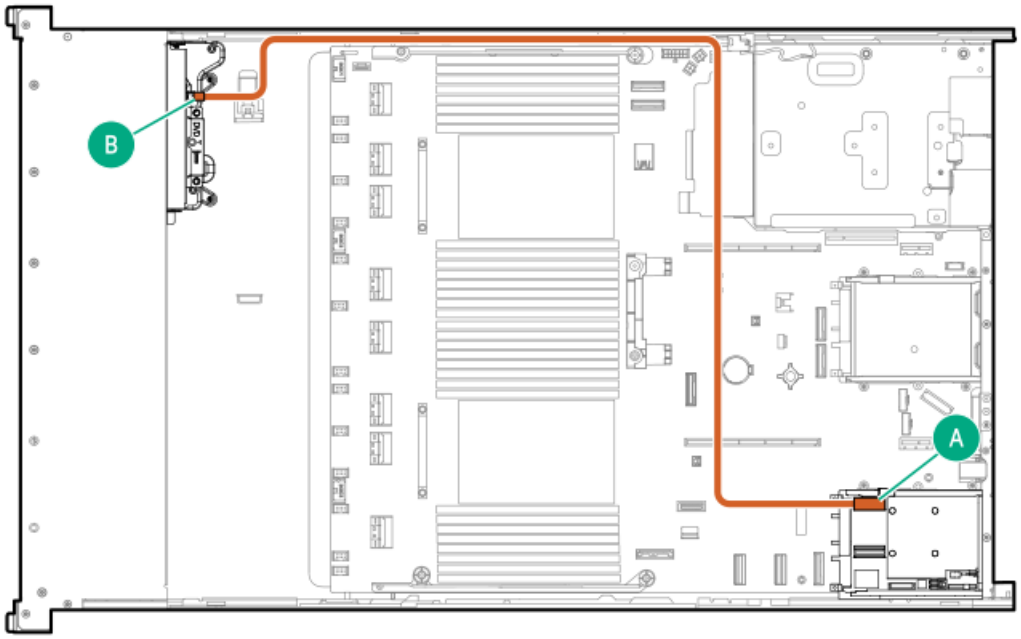
2 SFF box 1: Primary type-p controller



Cable part number	Color	From	To
P22905-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P54874-B21

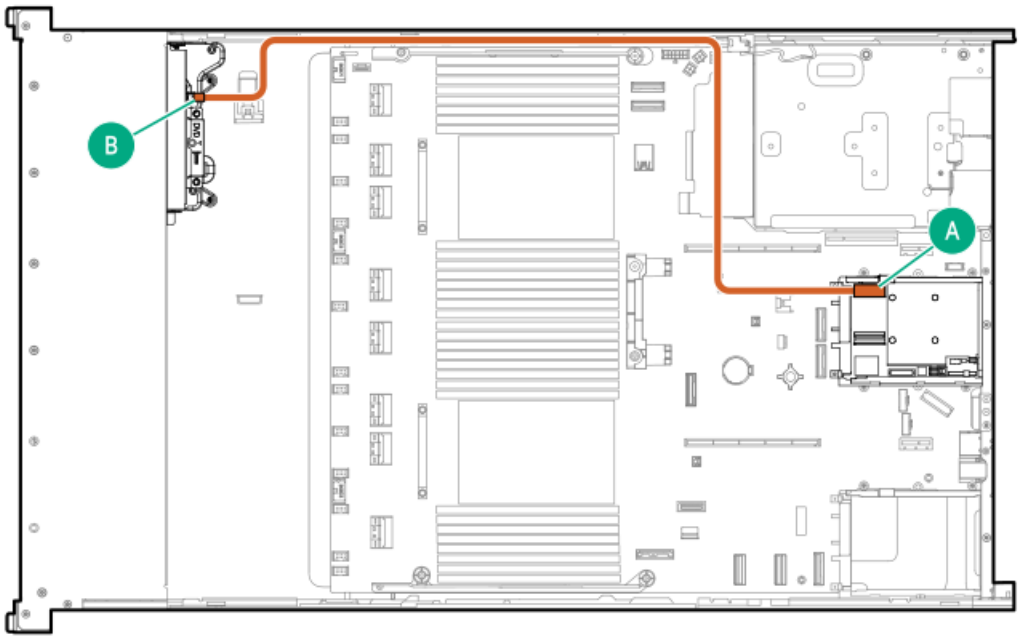
2 SFF box 1: Primary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Primary type-o controller

[1] Option kit: P48813-B21

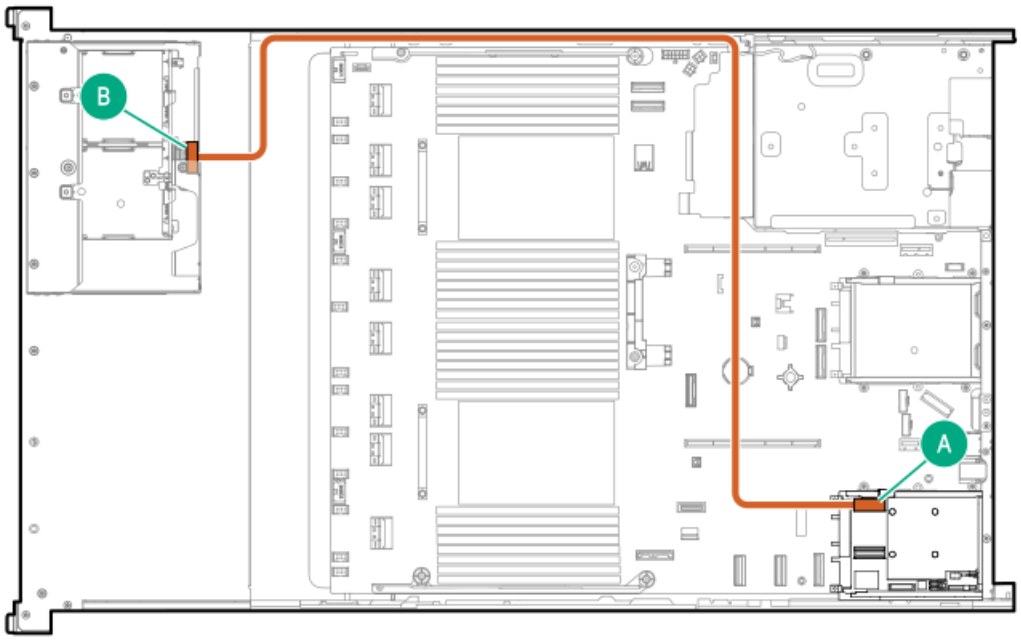
2 SFF box 1: Secondary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Secondary type-o controller

[1] Option kit: P48813-B21

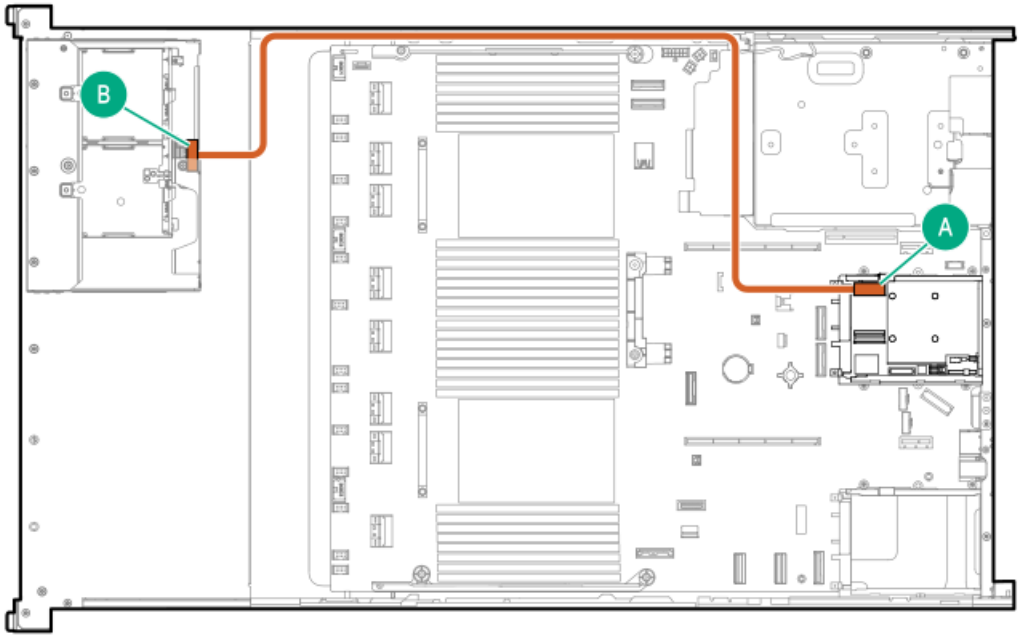
2 SFF box 1: Primary type-o controller



Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Primary type-o controller

1 Option kit: P48813-B21

2 SFF box 1: Secondary type-o controller

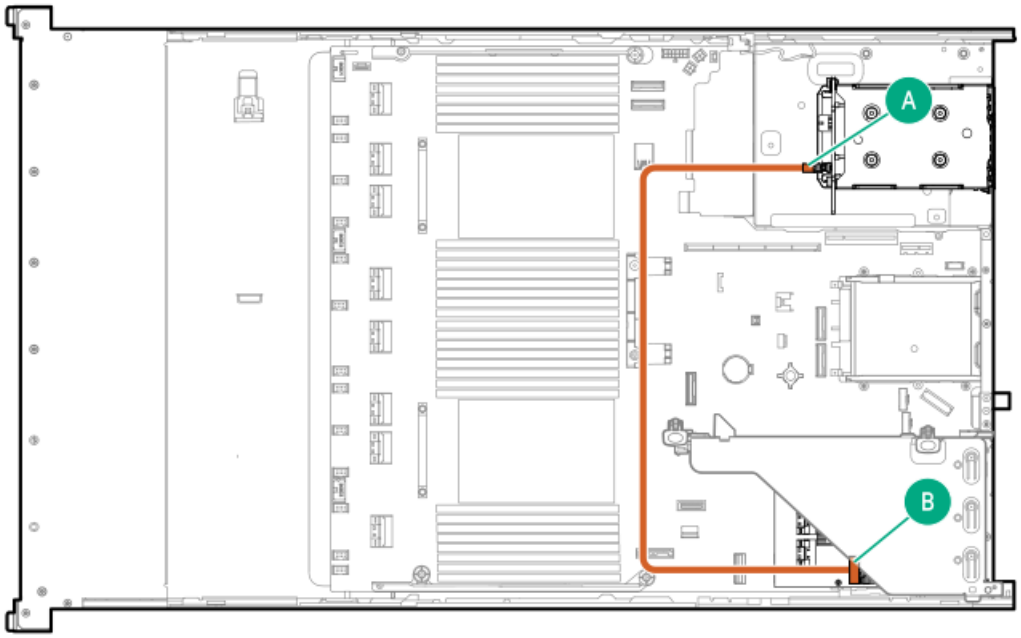


Cable part number	Color	From	To
P51545-001 [1]	Orange	Drive backplane	Secondary type-o controller

1 Option kit: P48813-B21

Rear 2 SFF cabling

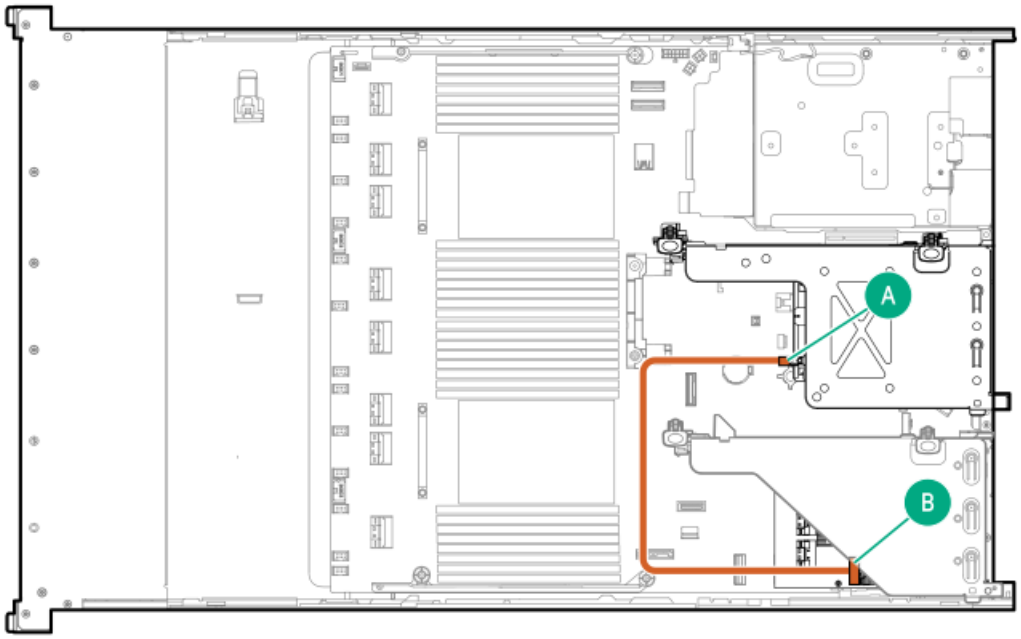
2 SFF box 6: Primary type-p controller



Cable part number	Color	From	To
P22903-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48816-B21

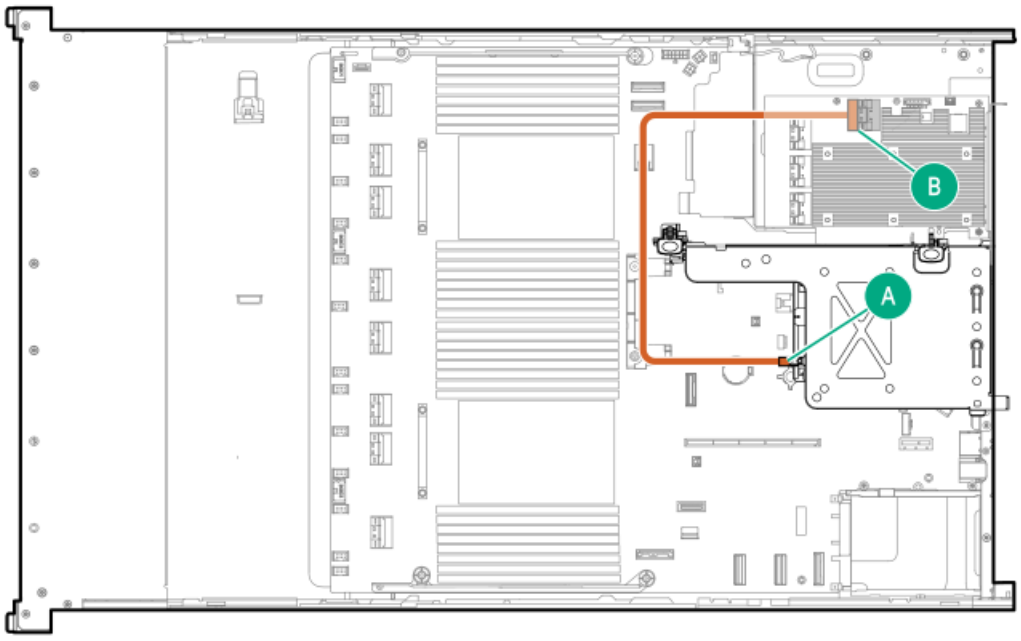
2 SFF box 5: Primary type-p controller



Cable part number	Color	From	To
P22903-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48816-B21

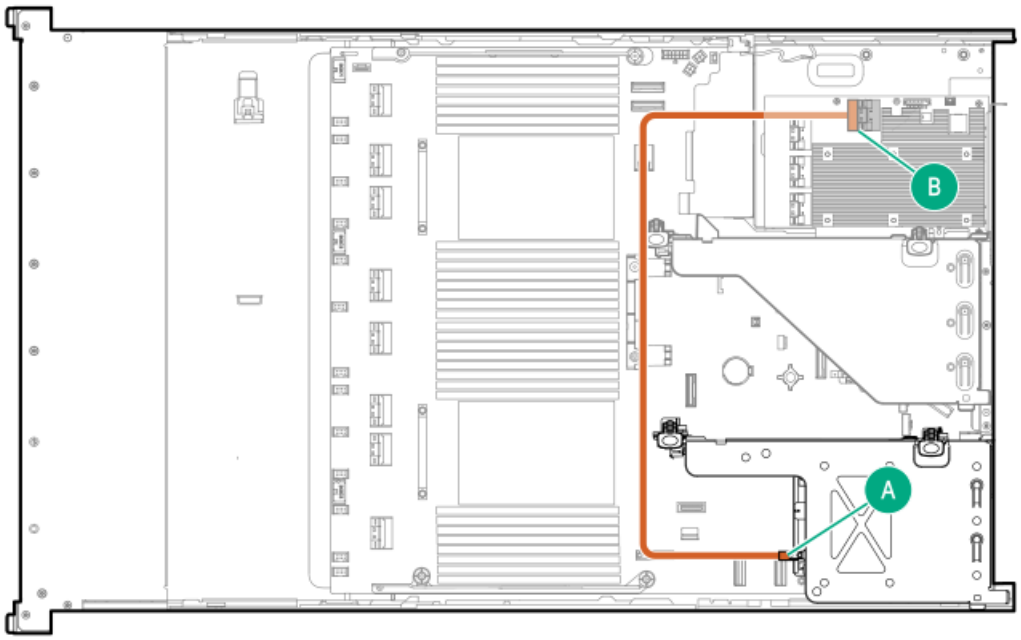
2 SFF box 5: Tertiary type-p controller



Cable part number	Color	From	To
P22903-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48816-B21

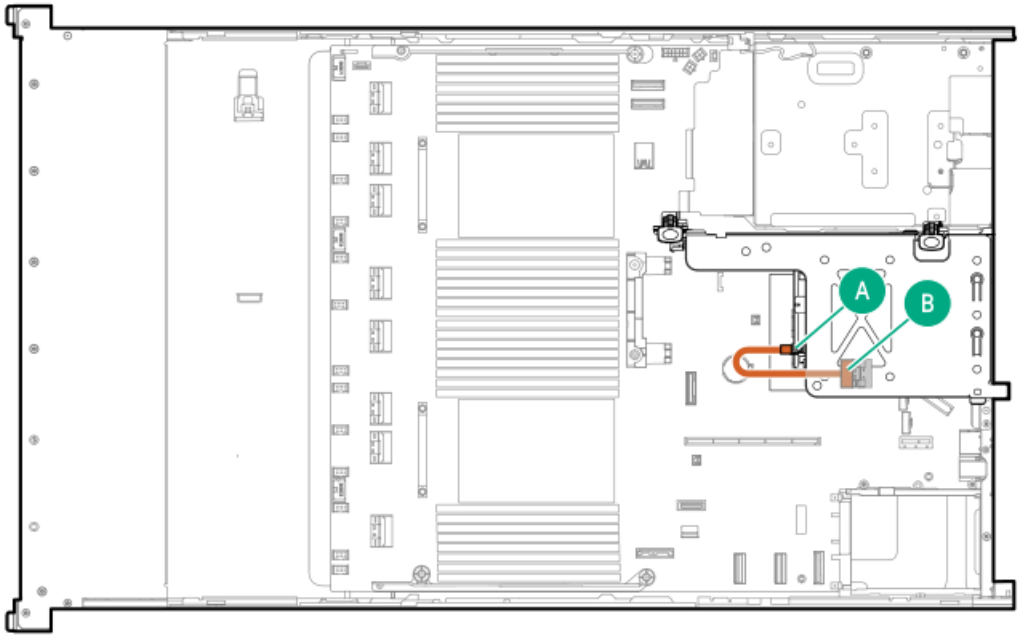
2 SFF box 4: Tertiary type-p controller



Cable part number	Color	From	To
P22903-001 [1]	Orange	Drive backplane	Primary type-p controller

1 Option kit: P48816-B21

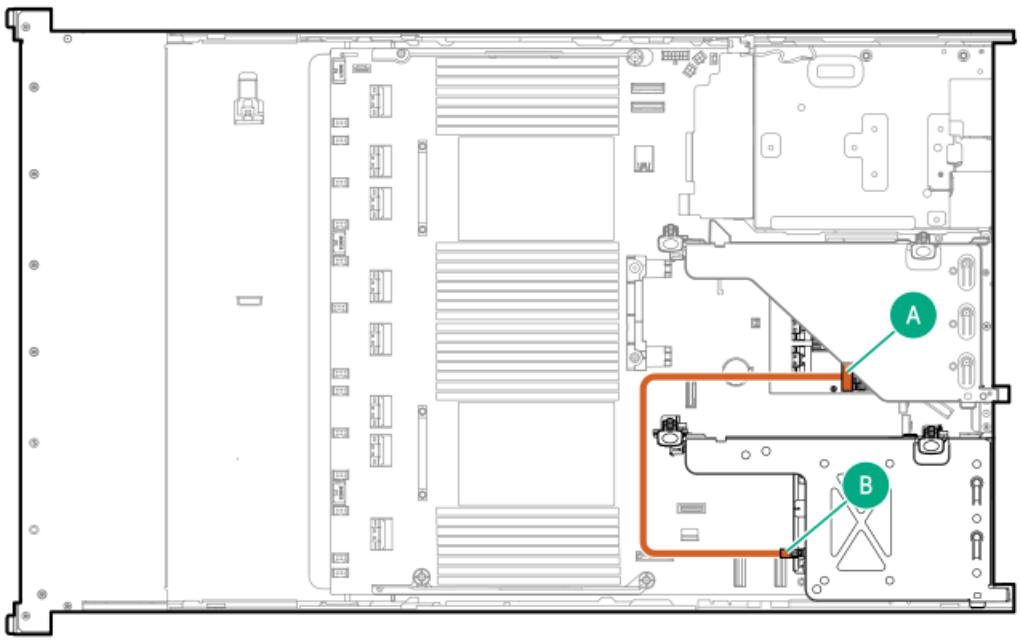
Secondary 2 SFF riser cage: Secondary Type-p controller



Cable part number	Color	From	To
P14329-001 [1]	Orange	Drive backplane	Secondary type-p controller

1 Option kit: P48816-B21

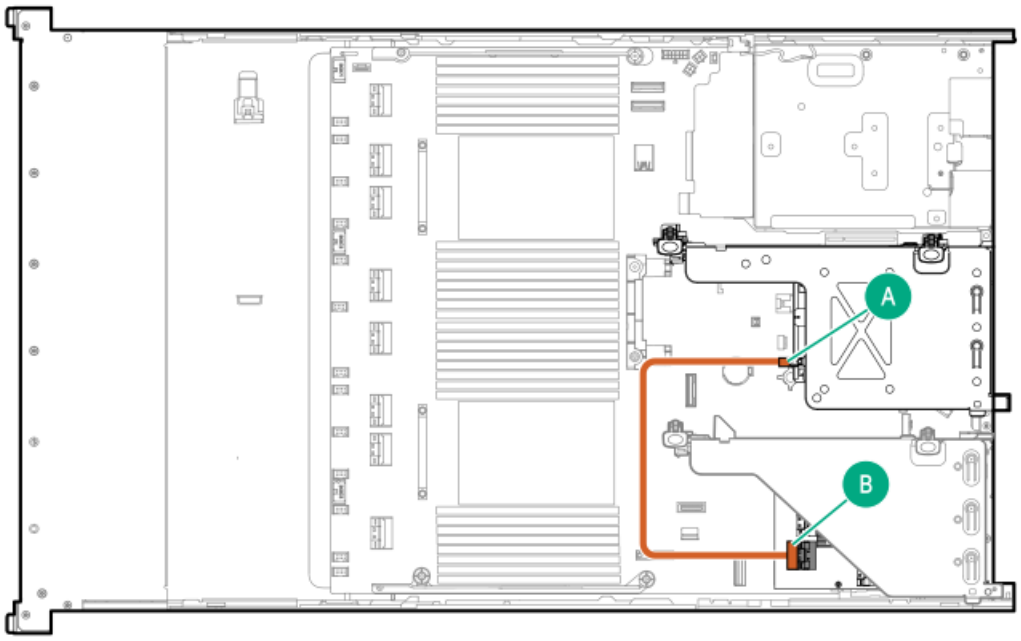
Primary 2 SFF riser cage: Secondary type-p controller



Cable part number	Color	From	To
P14329-001 [1]	Orange	Drive backplane	Secondary type-p controller

[1] Option kit: P48816-B21

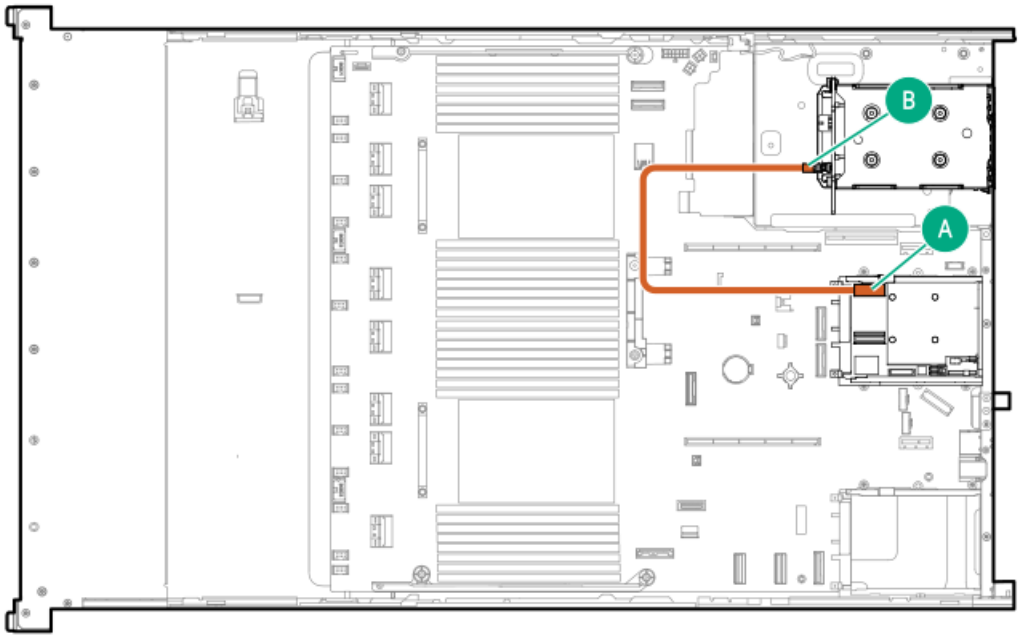
Secondary 2 SFF riser cage: Primary type-p controller



Cable part number	Color	From	To
P14329-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48816-B21

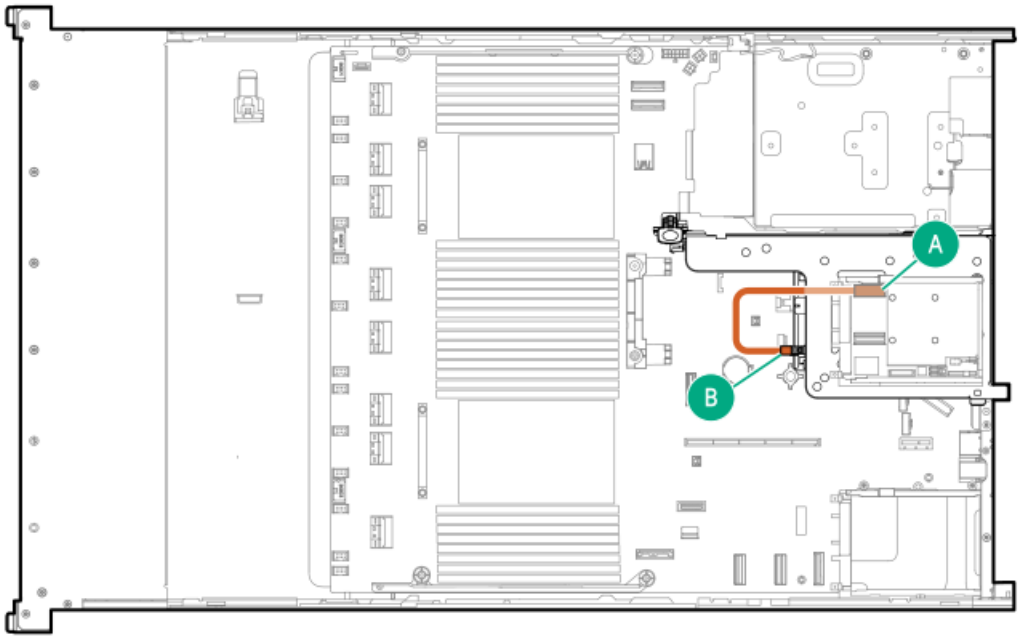
2 SFF box 6: Secondary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Type-o controller

[1] Option kit: P48811-B21

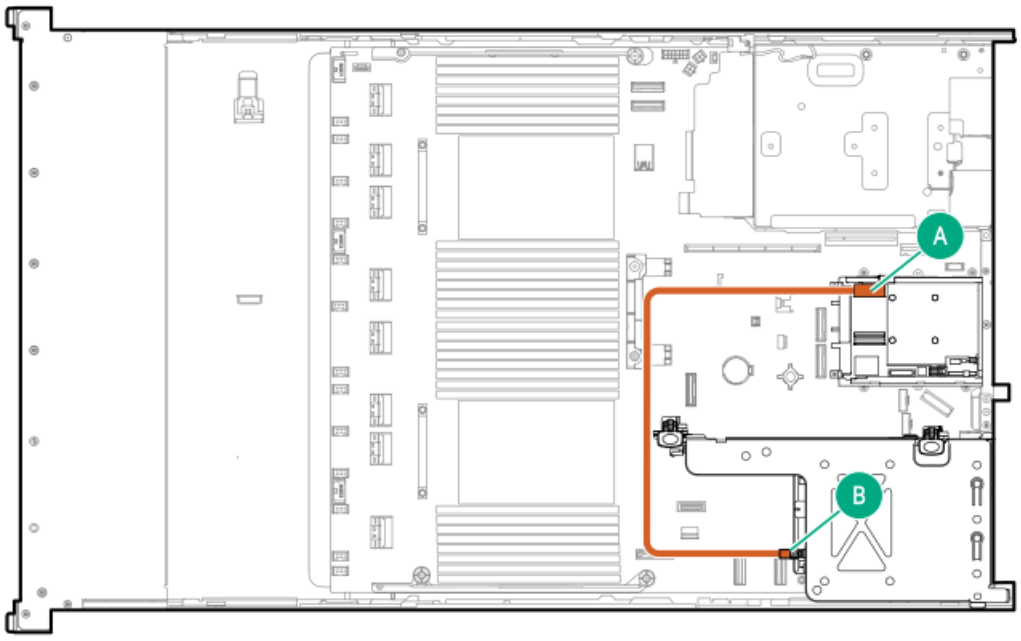
2 SFF box 5: Secondary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Type-o controller

[1] Option kit: P48811-B21

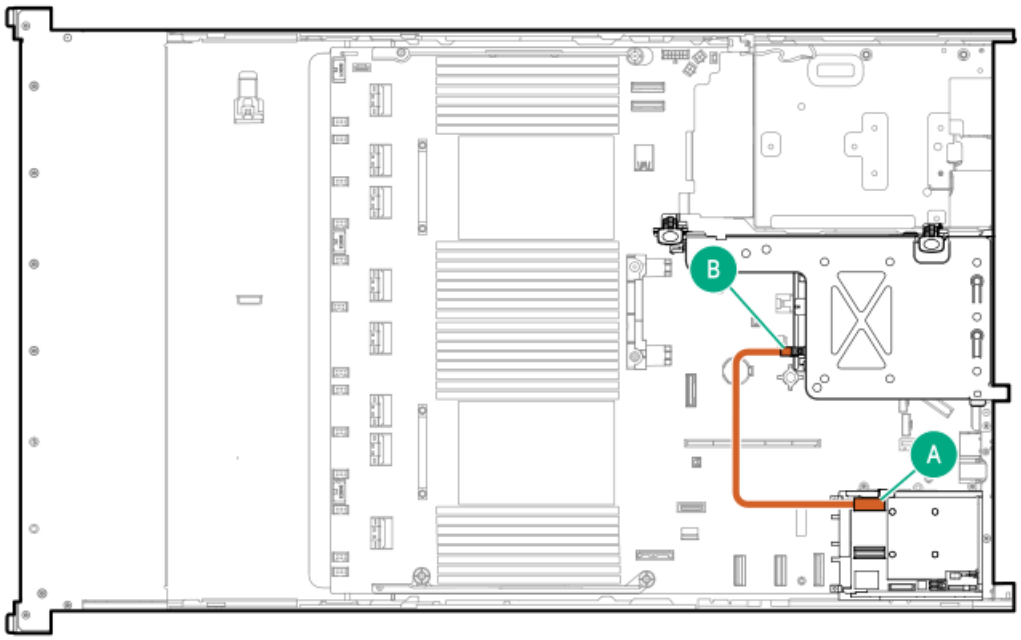
2 SFF box 4: Secondary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Type-o controller

[1] Option kit: P48811-B21

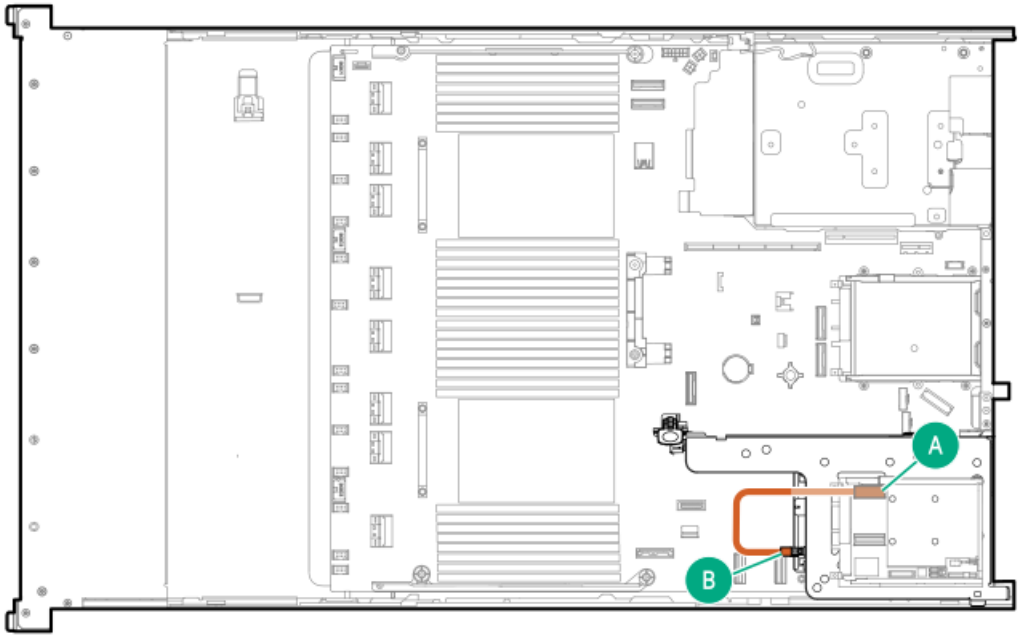
2 SFF box 5: Primary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Type-o controller

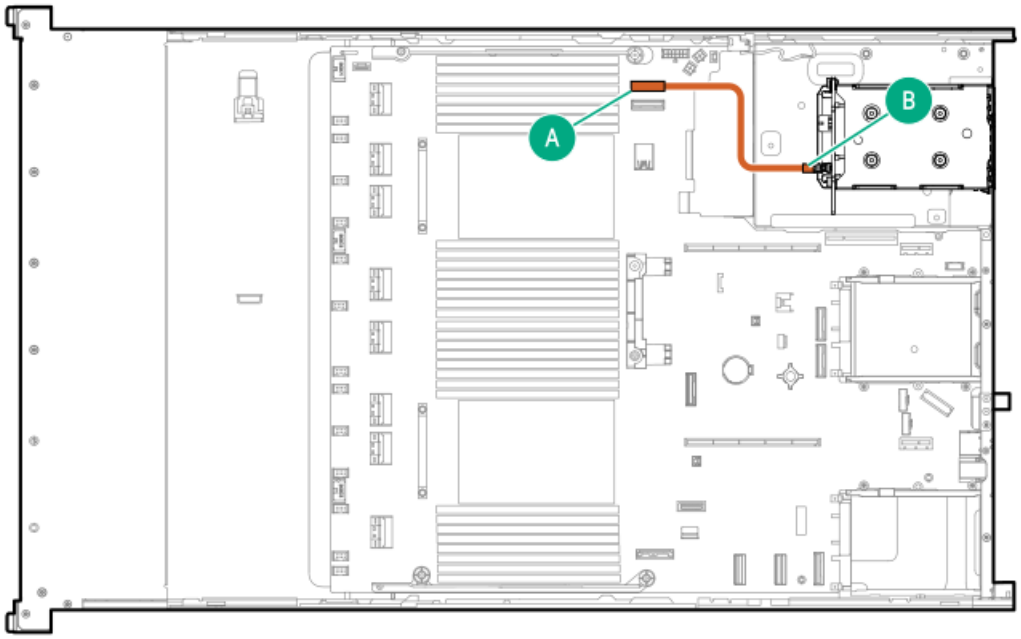
1 Option kit: P48811-B21

2 SFF box 4: Primary type-o controller



Cable part number	Color	From	To
P51554-001 [1]	Orange	Drive backplane	Primary type-o controller

1 Option kit: P48811-B21

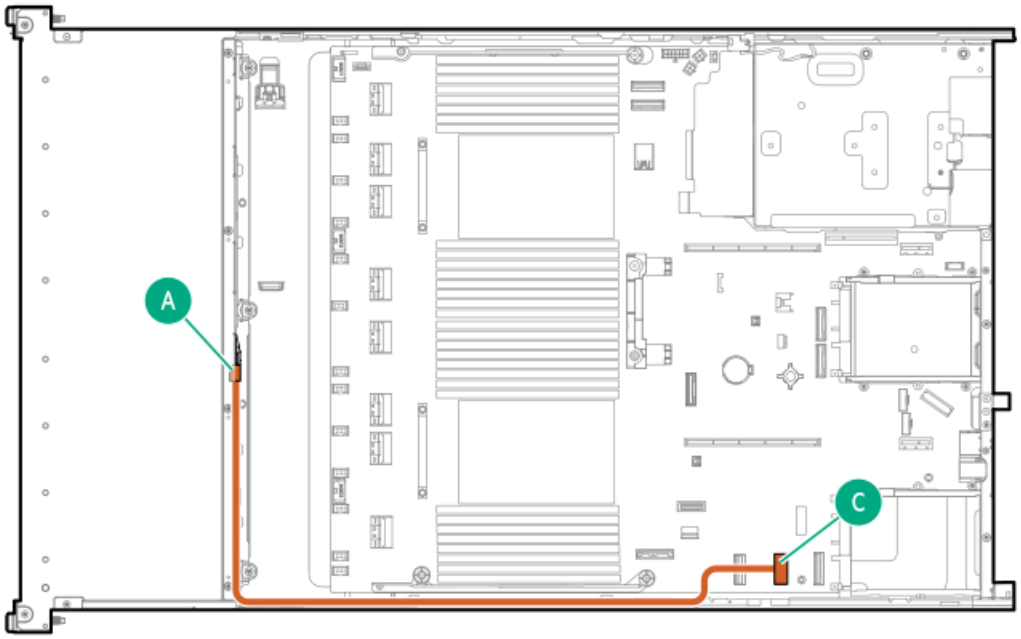


Cable part number	Color	From	To
P51557-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P48811-B21

LFF cabling

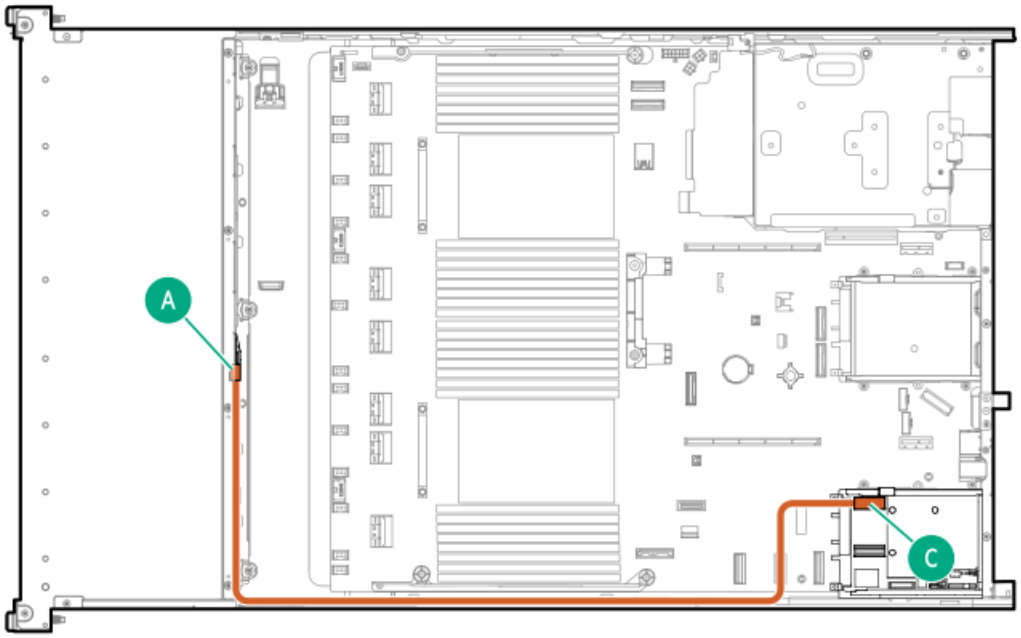
LFF box 2 or 3: System board



Cable part number	Color	From	To
P51559-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P56995-B21

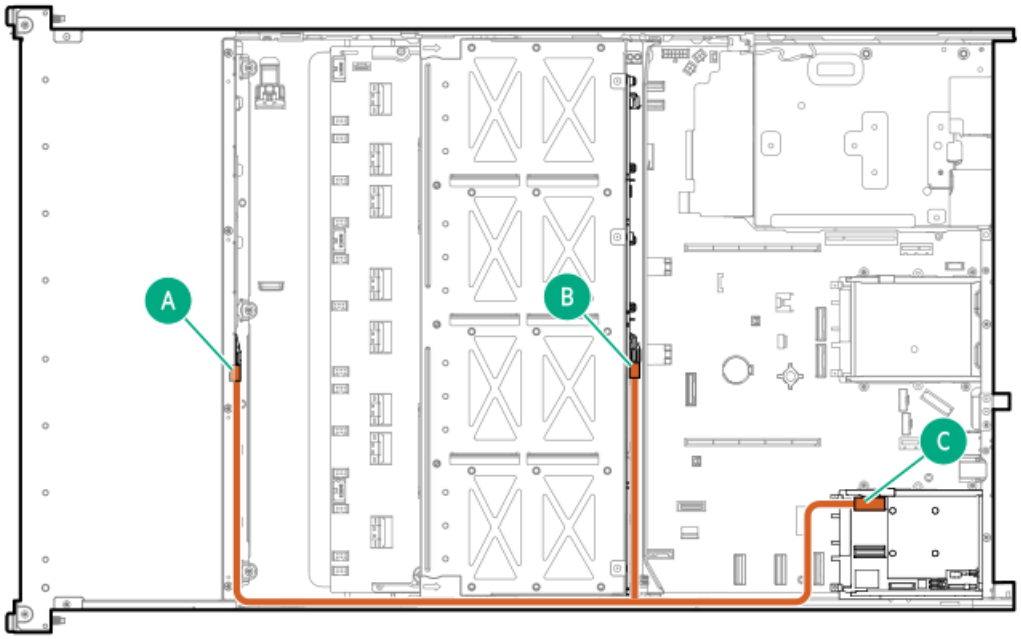
LFF box 2 or 3: Primary type-o controller



Cable part number	Color	From	To
P51559-001 [1]	Orange	LFF box 2 or 3	Primary type-o controller

[1] Option kit: P56995-B21

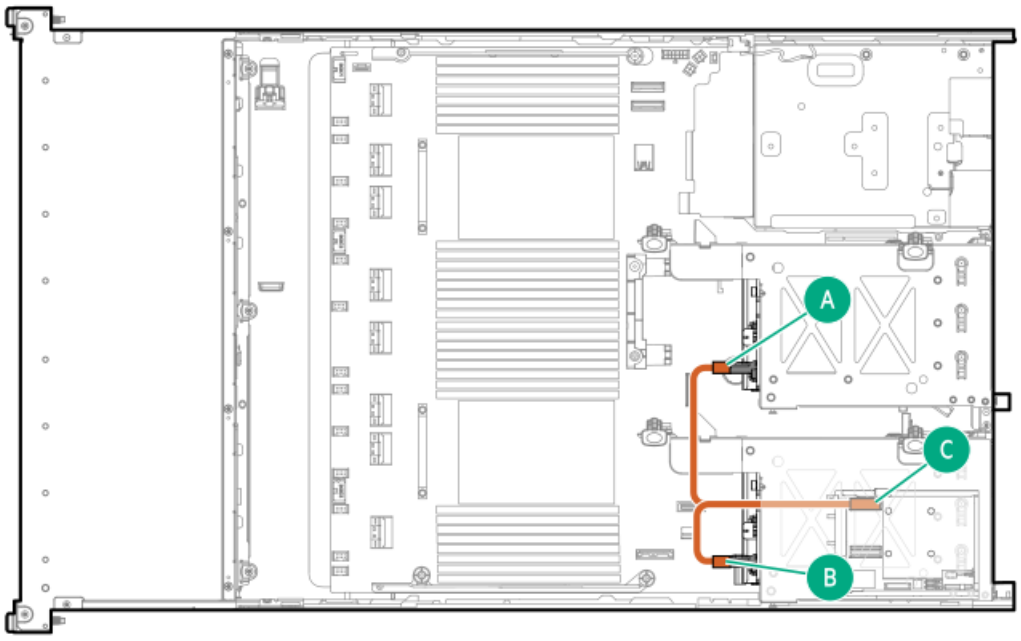
LFF box 1 and 7: Primary type-o controller



Cable part number	Color	From	To
P51560-001 [1]	Orange	LFF box 1 and 7	Primary type-o controller

[1] Option kit: P56995-B21

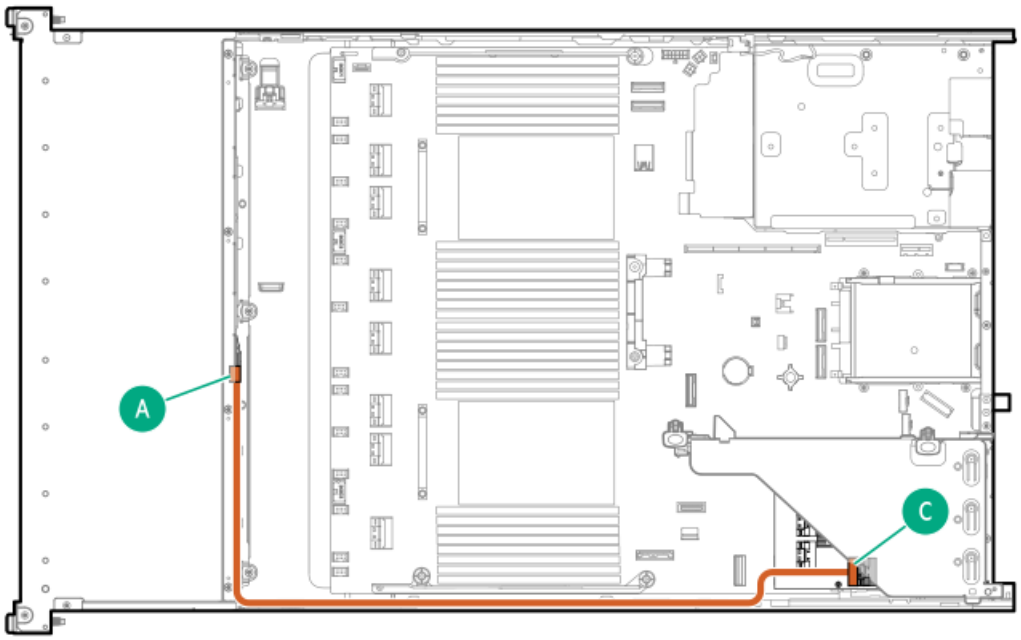
LFF box 4 and 5: Primary type-o controller



Cable part number	Color	From	To
P51561-001 [1]	Orange	LFF box 4 and 5	Primary type-o controller

[1] Option kit: P48823-B21

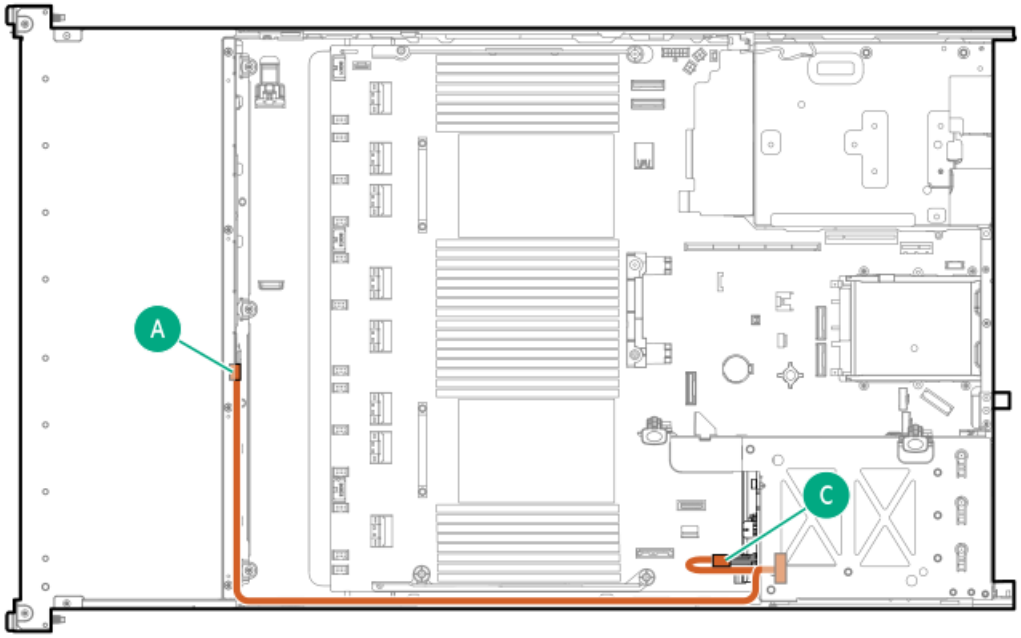
LFF box 2 and 3: Primary type-p controller



Cable part number	Color	From	To
P58791-001 [1]	Orange	LFF box 2 and 3	Primary type-p controller

[1] Option kit: P56995-B21

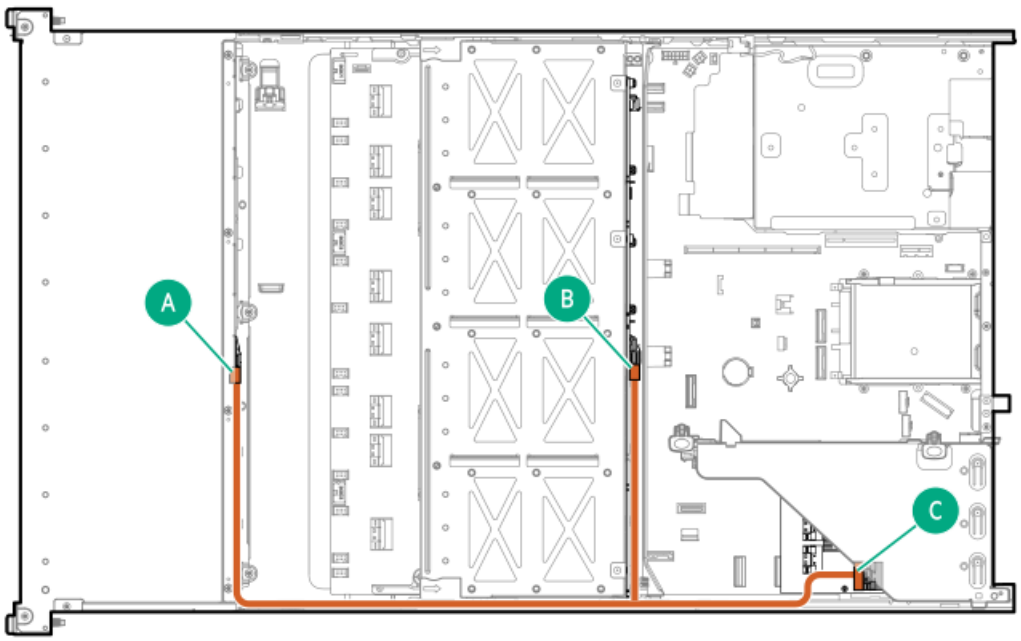
LFF box 1 and 4: Primary type-p controller



Cable part number	Color	From	To
P46047-001 [1]	Orange	LFF box 1 and 4	Primary type-p controller

[1] Option kit: P48823-B21

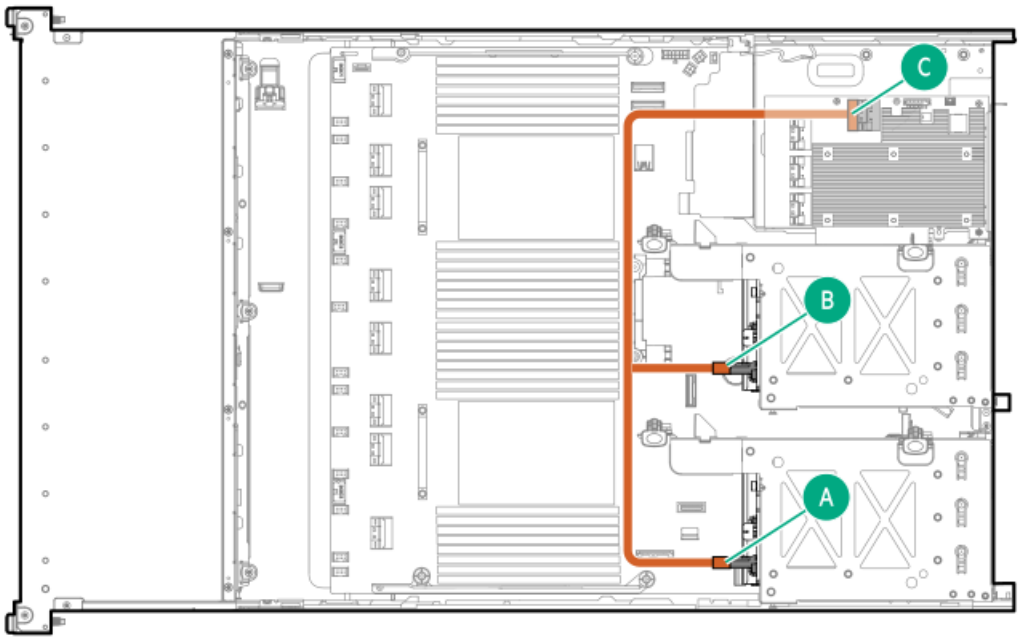
LFF box 1 and box 7: Primary type-p controller



Cable part number	Color	From	To
P51563-001 [1]	Orange	LFF box 1 and box 7	Primary type-p controller

[1] Option kit: P56995-B21

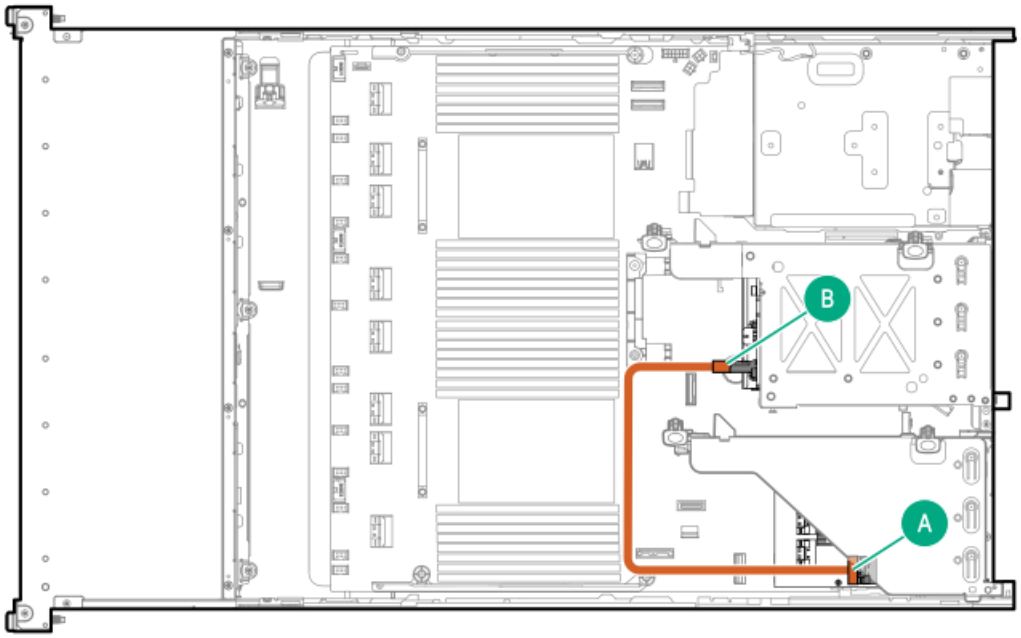
2 LFF box 4 and 5: Tertiary type-p controller



Cable part number	Color	From	To
P51558-001 [1]	Orange	Drive backplane	Tertiary type-p controller

[1] Option kit: P48823-B21

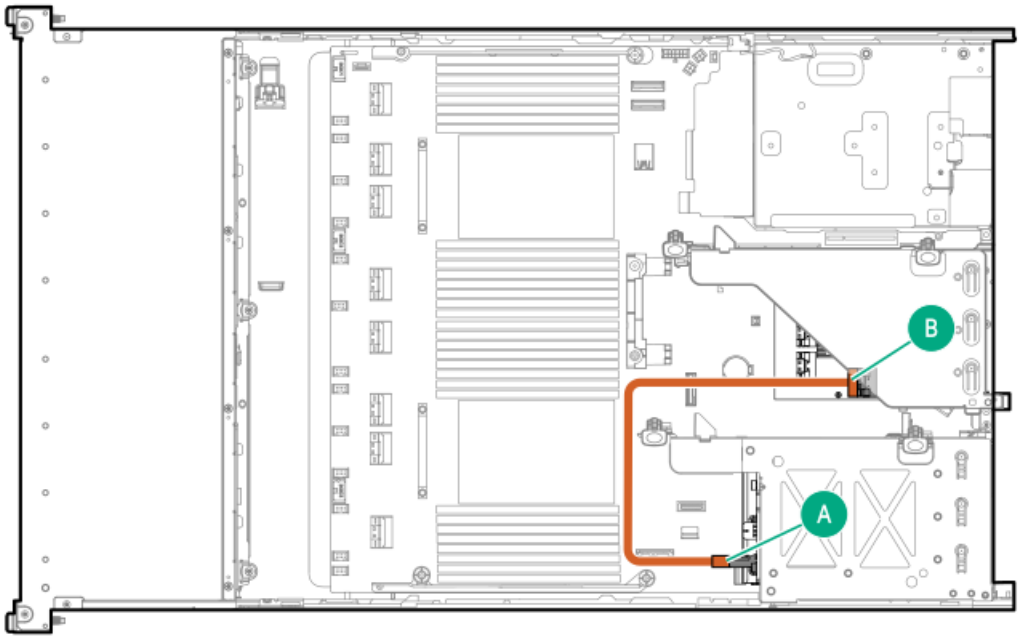
2 LFF box 5: Primary type-p controller



Cable part number	Color	From	To
P51558-001 [1]	Orange	Drive backplane	Primary type-p controller

[1] Option kit: P48823-B21

2 LFF box 4: Secondary type-p controller

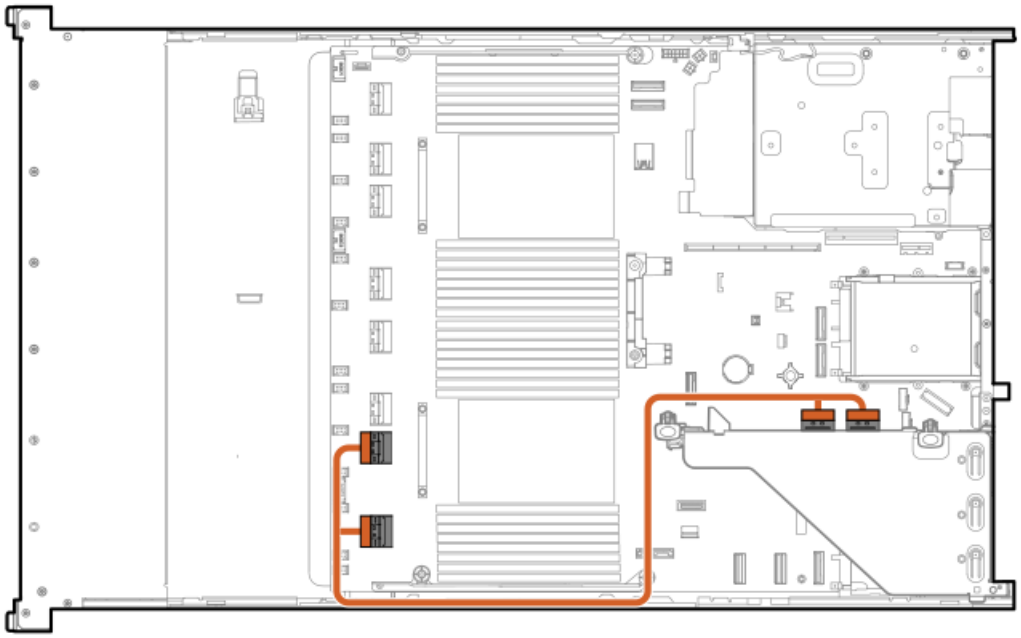


Cable part number	Color	From	To
P51558-001 [1]	Orange	Drive backplane	Secondary type-p controller

[1] Option kit: P48823-B21

Riser enablement cabling

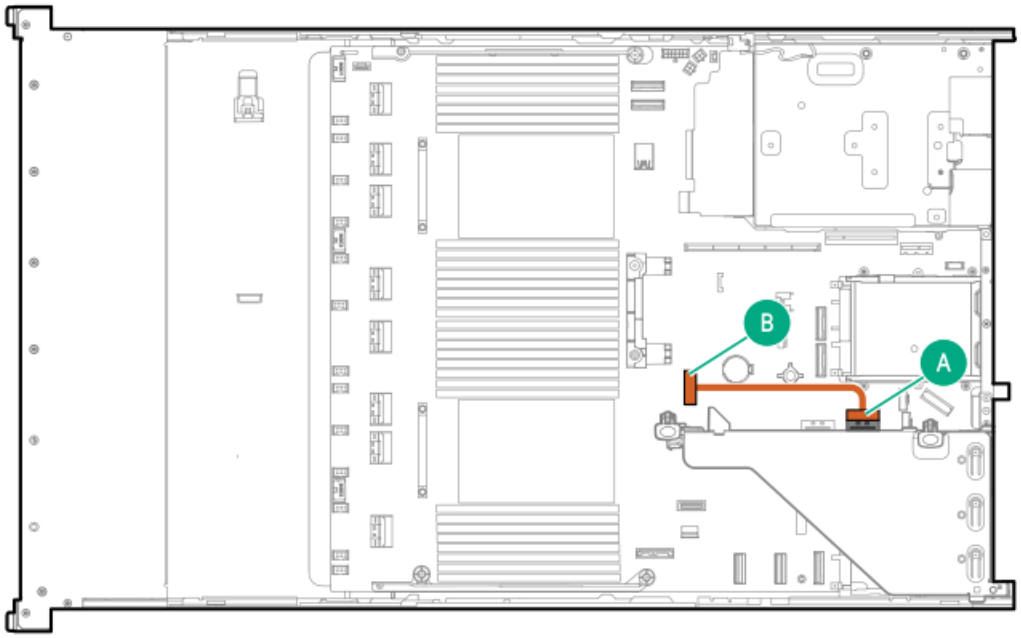
Primary riser



Cable part number	Color	From	To
P46031-001 [1]	Orange	Primary riser	System board

[1] Option kit: P56073-B21

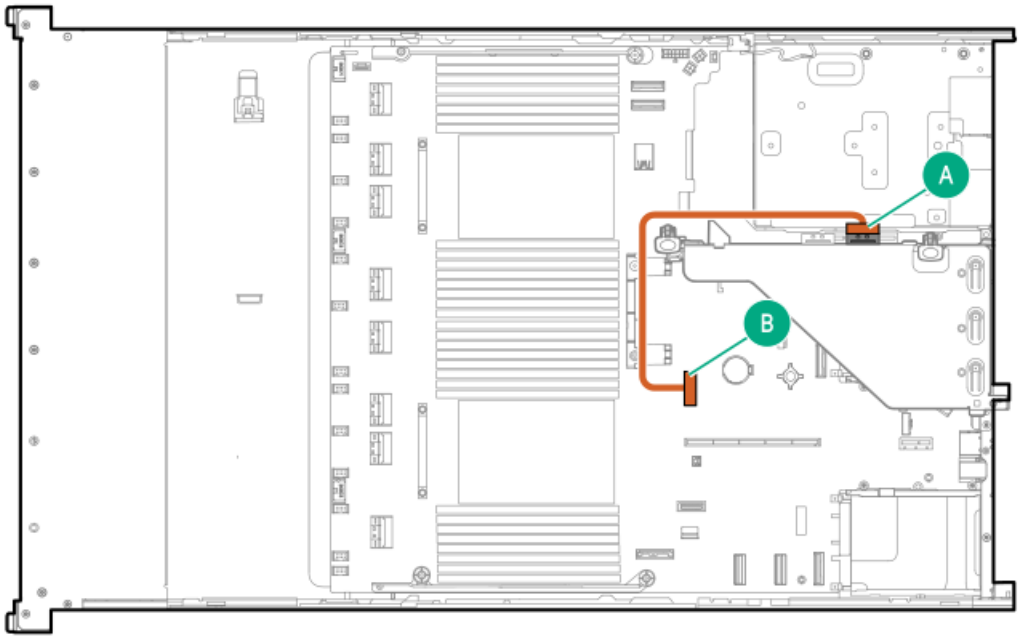
Primary riser



Cable part number	Color	From	To
P46034-001 [1]	Orange	Riser board	System board

[1] Option kit: P56073-B21

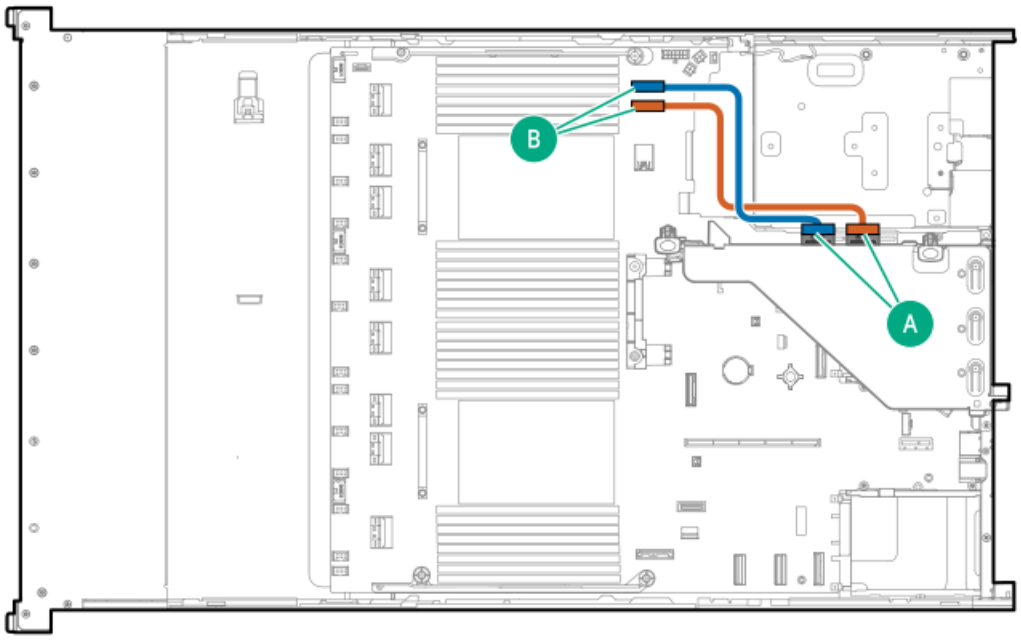
Secondary riser



Cable part number	Color	From	To
P46034-001 [1]	Orange	Riser board	System board

[1] Option kit: P56074-B21

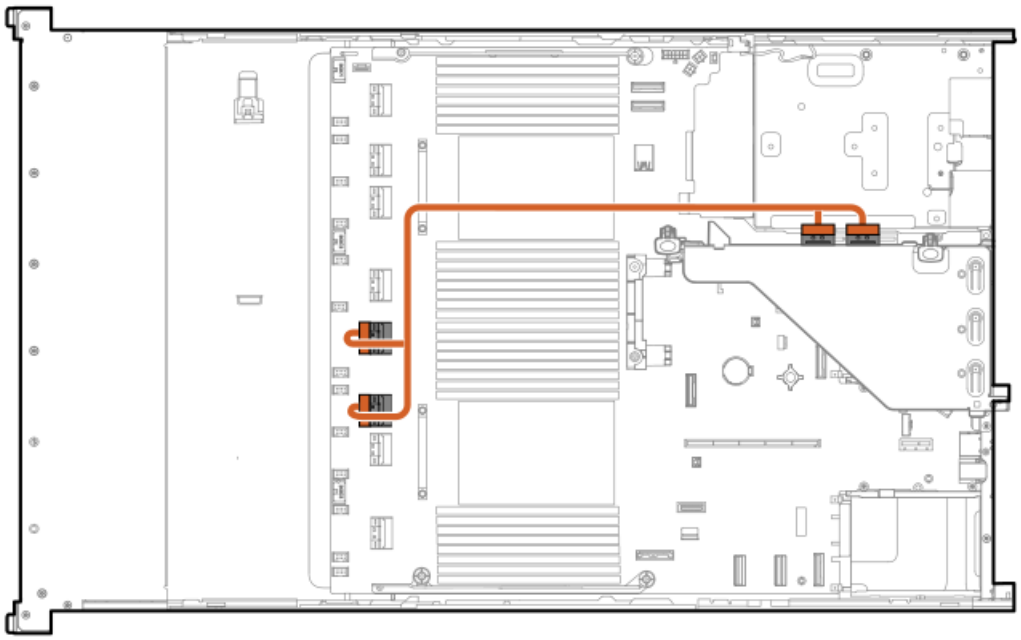
Secondary riser



Cable part number	Color	From	To
P46034-001 [1]	Orange	Riser board	System board

[1] Option kit: P56074-B21

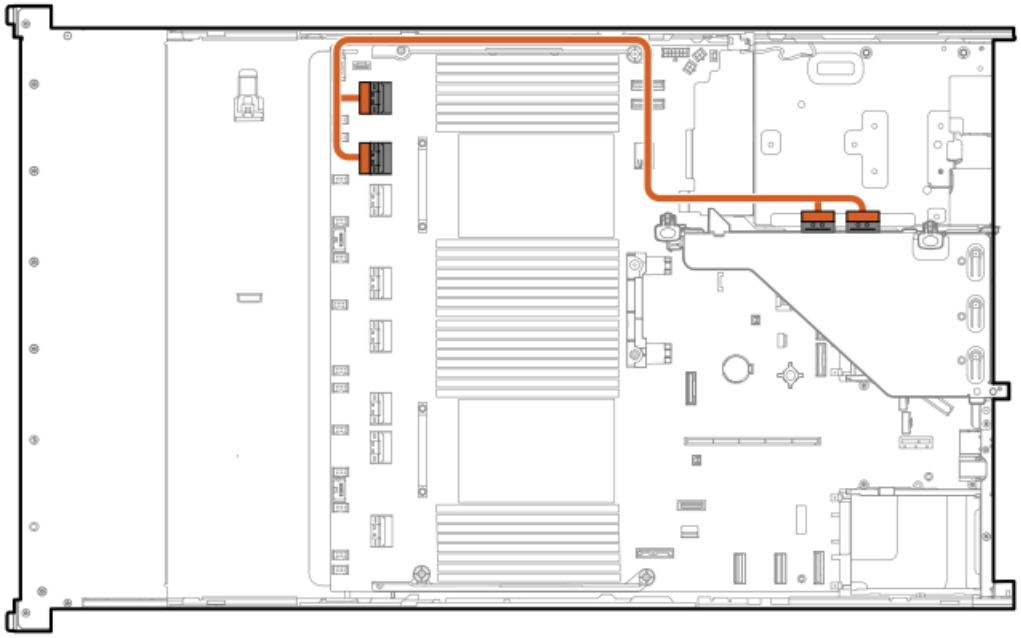
Tertiary riser



Cable part number	Color	From	To
P51571-001 [1]	Orange	Riser board	System board

[1] Option kit: P56074-B21

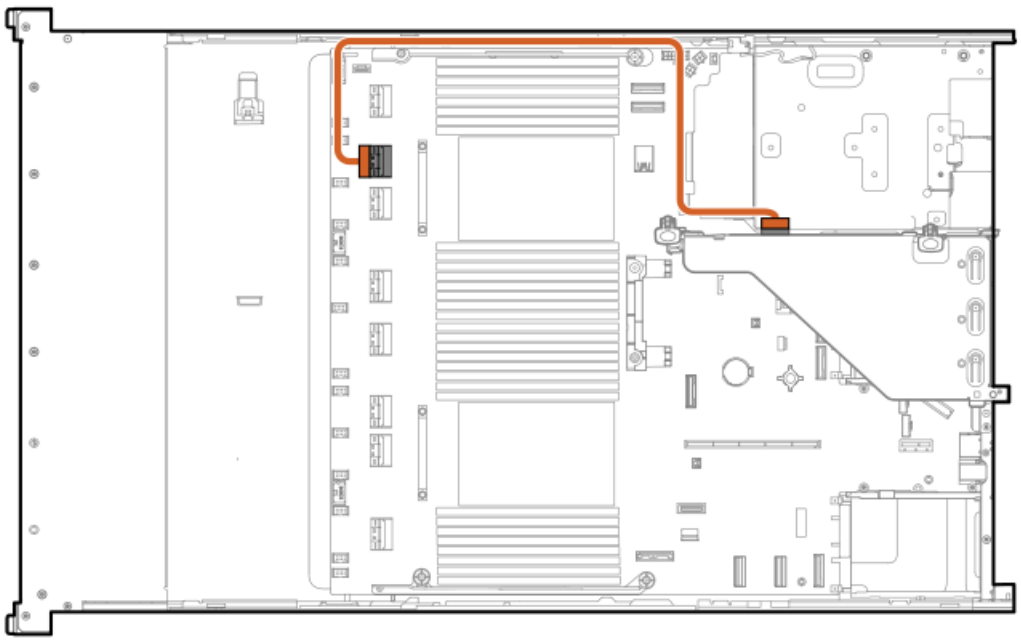
Secondary riser



Cable part number	Color	From	To
P46032-001 [1]	Orange	Secondary riser	System board

[1] Option kit: P56074-B21

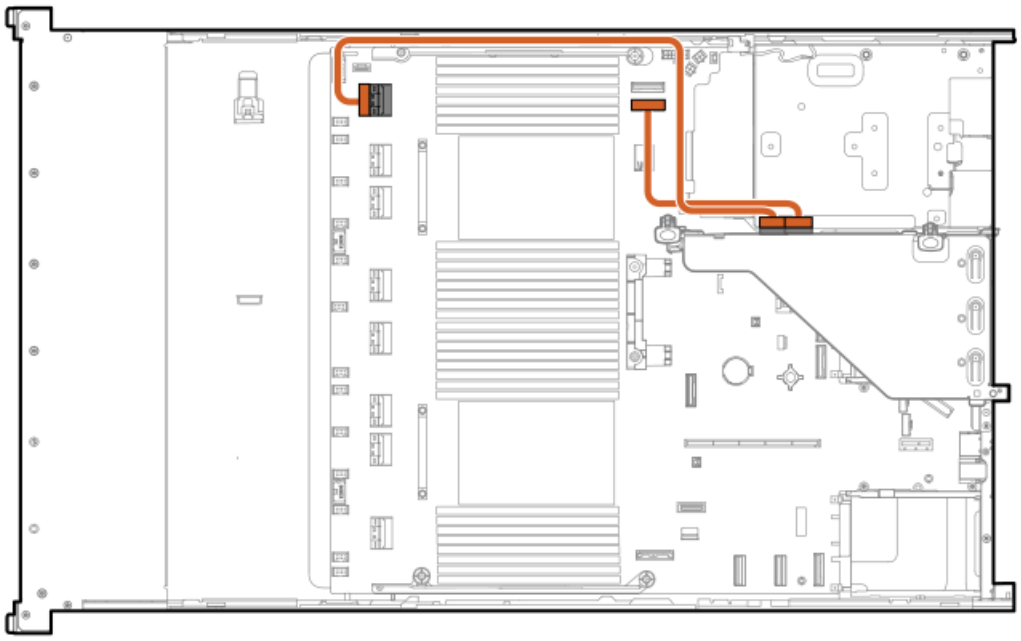
Tertiary riser



Cable part number	Color	From	To
P46028-001 [1]	Orange	Secondary riser	System board

[1] Option kit: P48804-B21

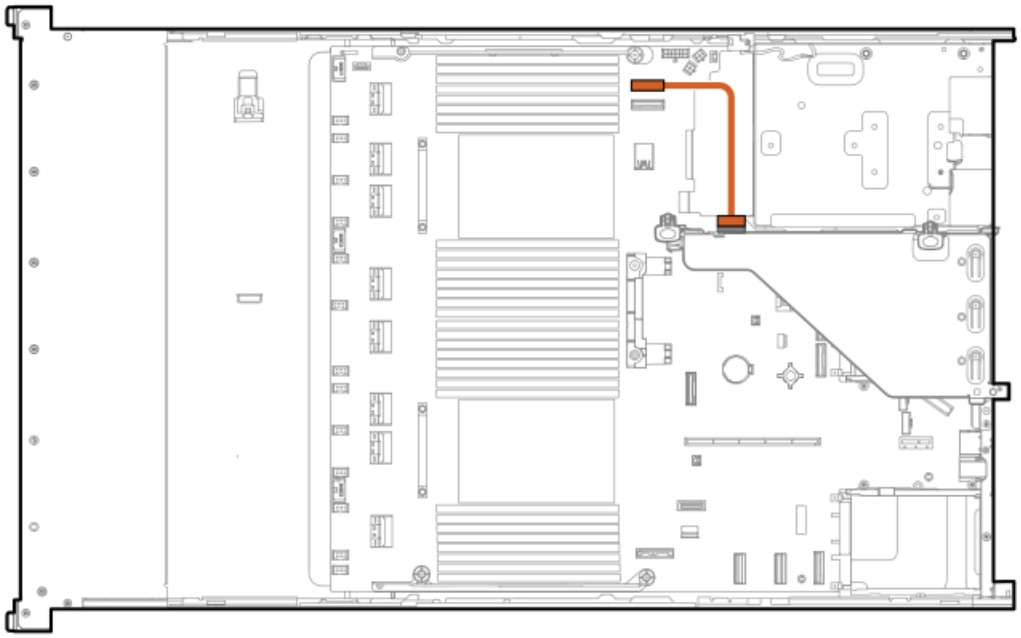
Tertiary riser



Cable part number	Color	From	To
P46026-001 [1]	Orange	Tertiary riser	System board

[1] Option kit: P48804-B21

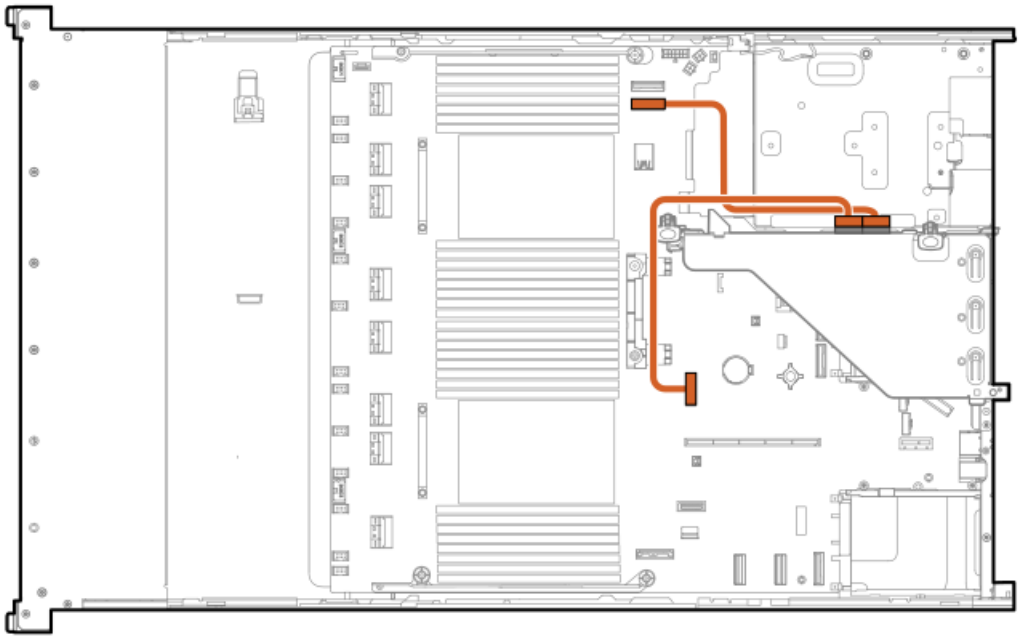
Tertiary riser



Cable part number	Color	From	To
P46029-001 [1]	Orange	Tertiary riser	System board

[1] Option kit: P48804-B21

Tertiary riser

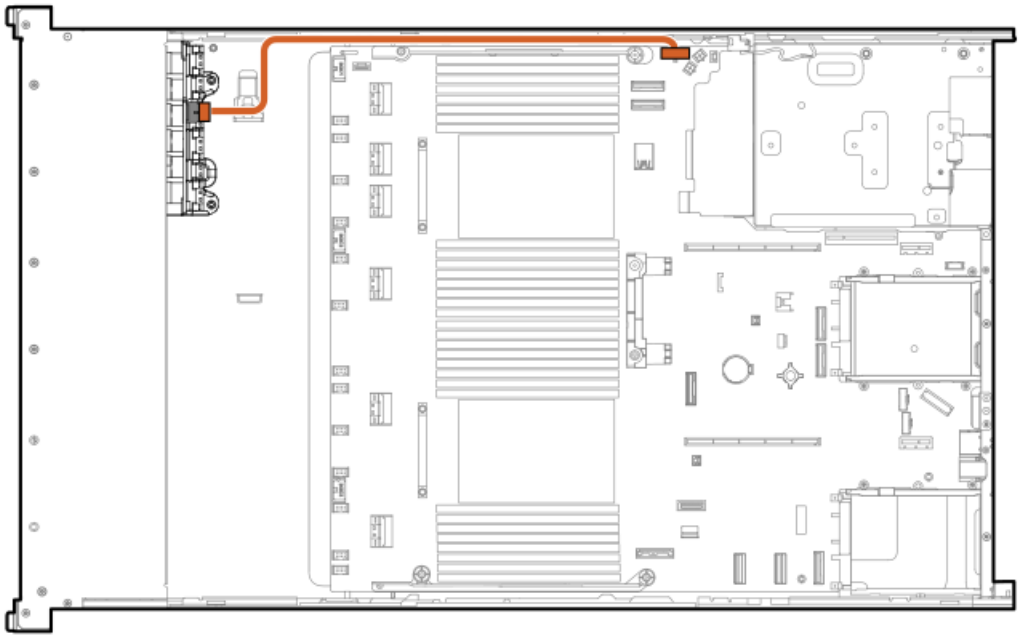


Cable part number	Color	From	To
P46030-001 [1]	Orange	Tertiary riser	System board

[1] Option kit: P48804-B21

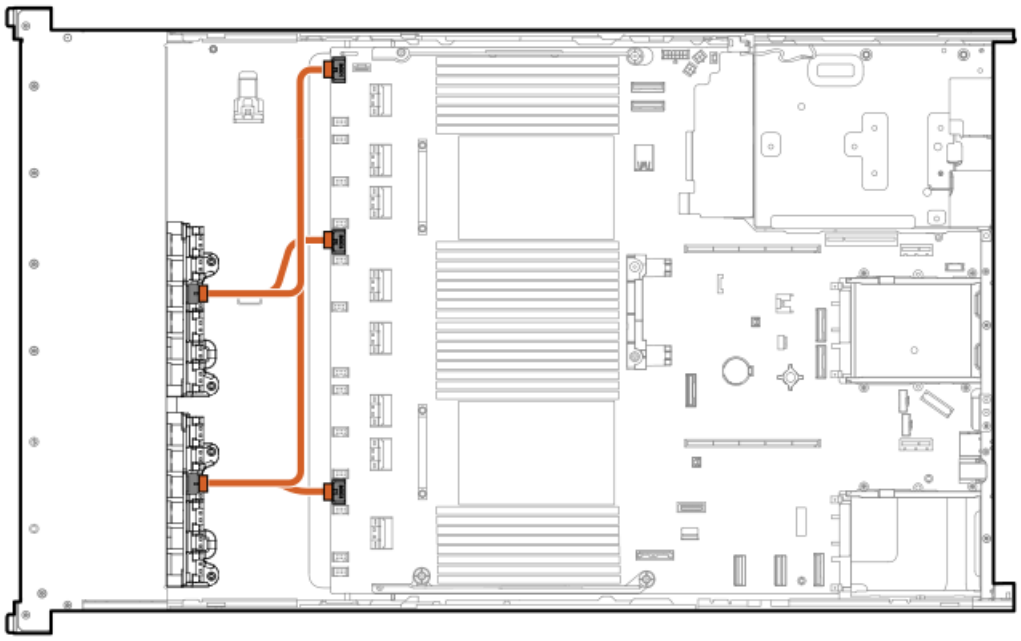
Power cabling

EDSFF box 1



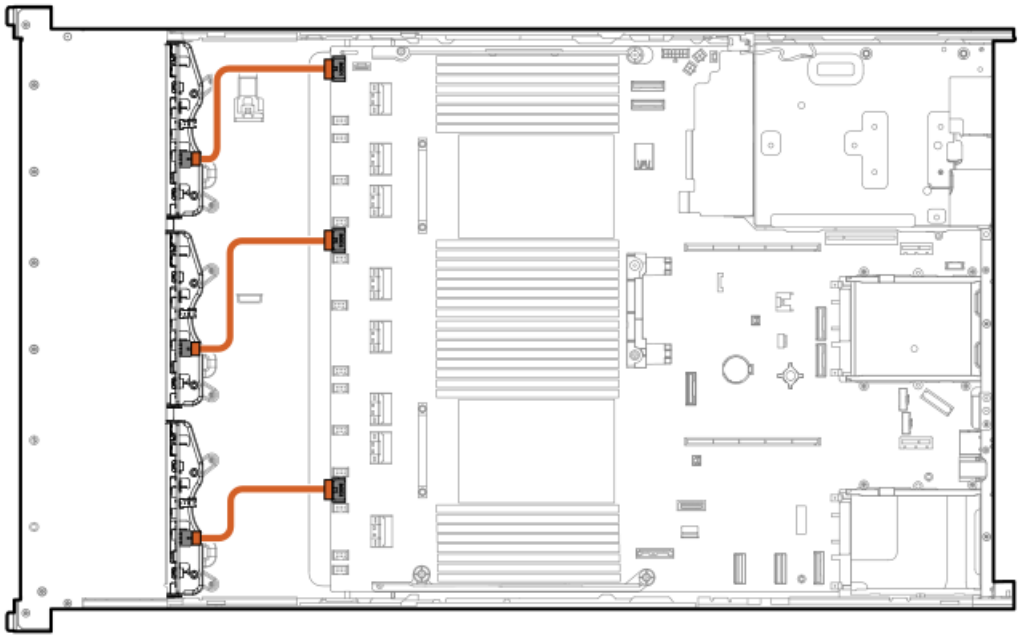
Cable part number	Color	From	To
P51577-001	Orange	Drive backplane	System board

EDSFF boxes 2 and 3



Cable part number	Color	From	To
P46048-001	Orange	Drive backplane	System board

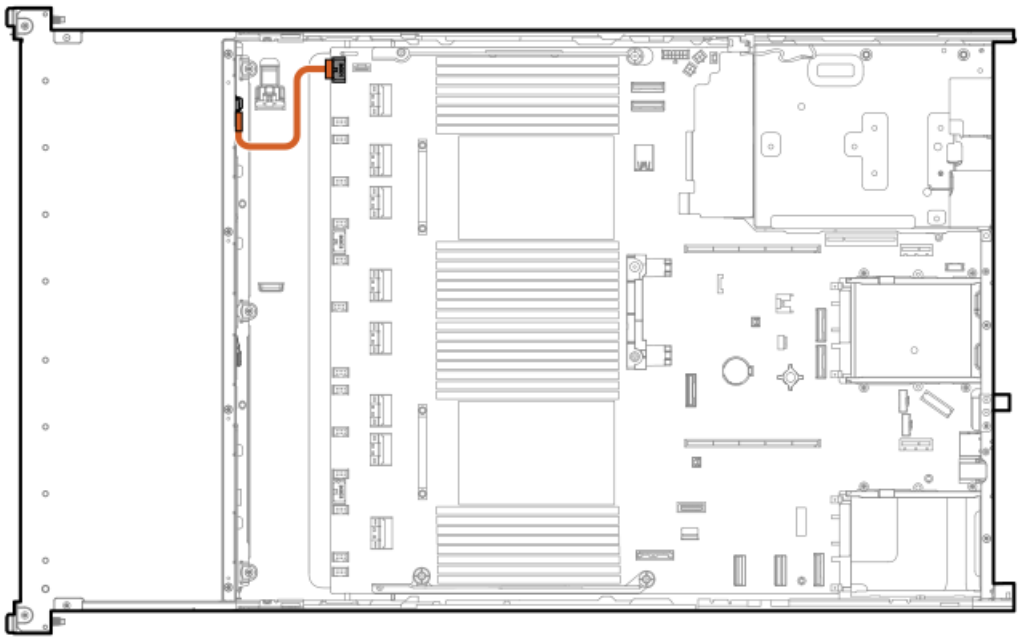
8 SFF boxes 1-3



Cable part number	Color	From	To
869825-001 [1]	Orange	8 SFF backplane	System board

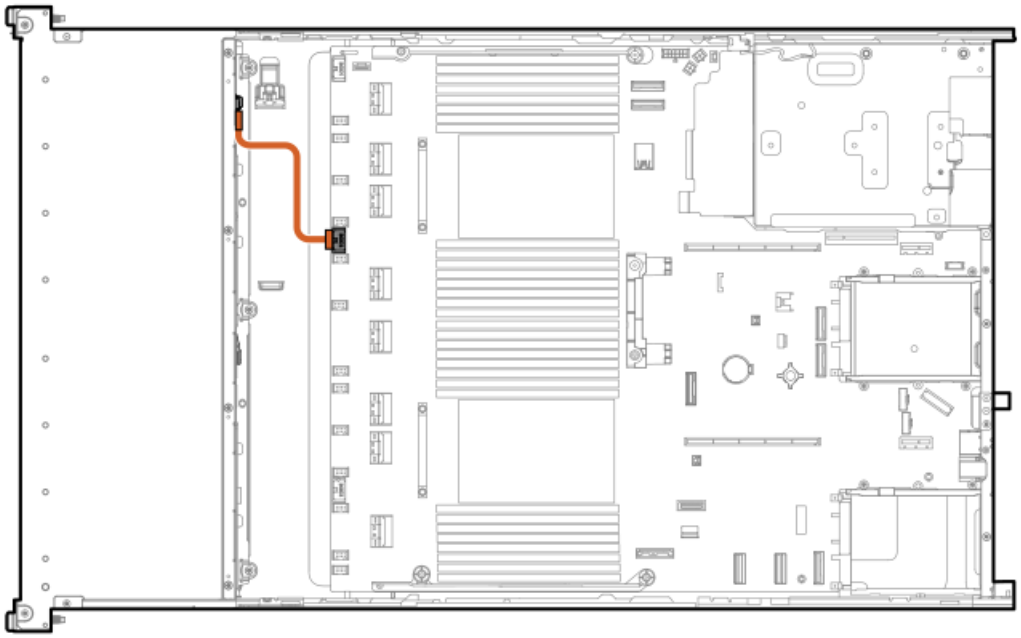
[1] Option kit: P50727-B21

4 LFF box 1



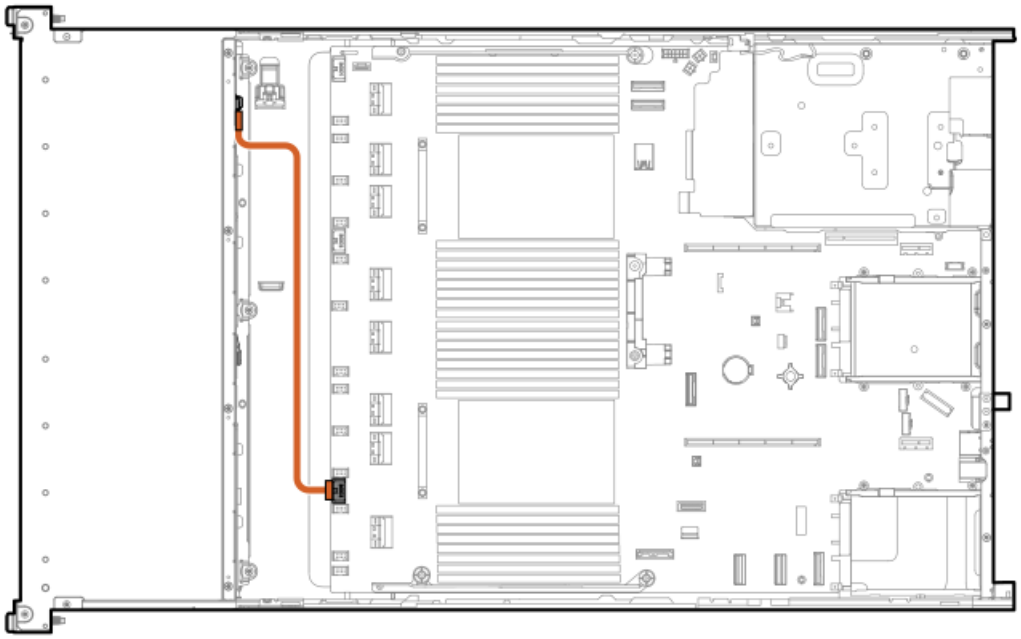
Cable part number	Color	From	To
P14341-001	Orange	4 LFF backplane box 1	System board

4 LFF box 2



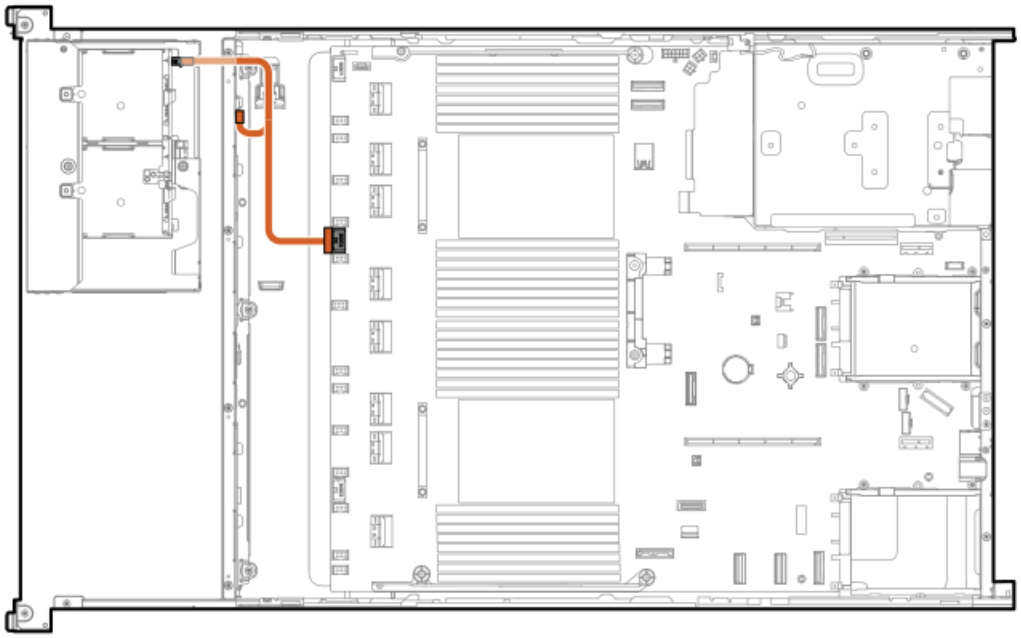
Cable part number	Color	From	To
P14342-001	Orange	4 LFF backplane box 2	System board

4 LFF box 3



Cable part number	Color	From	To
P14342-001	Orange	4 LFF backplane box 3	System board

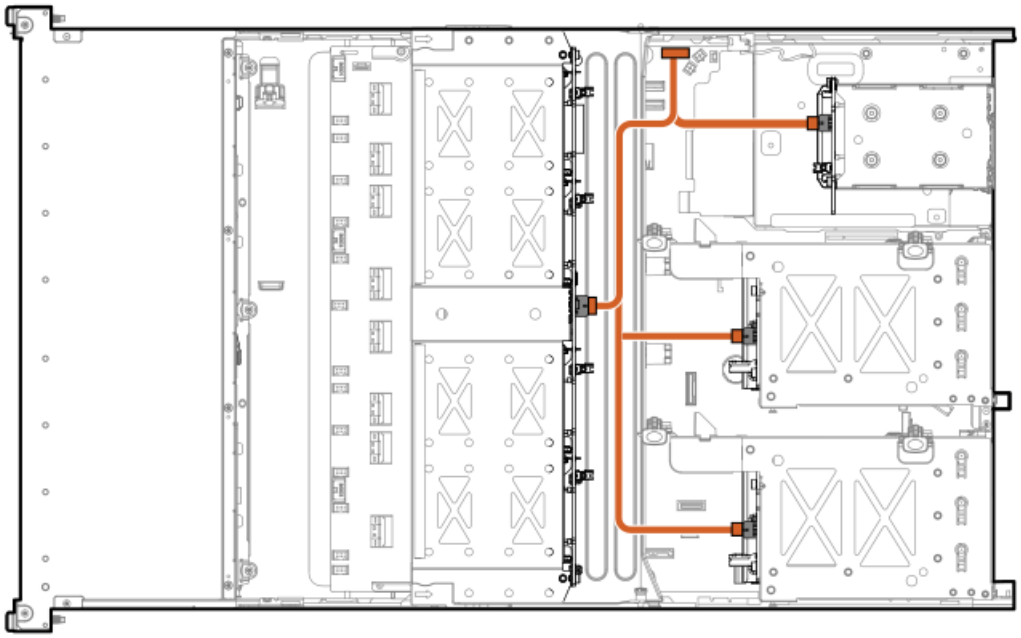
2 SFF side-by-side



Cable part number	Color	From	To
P14343-001 [1]	Orange	Drive backplane	System board

[1] Option kit: P48812-B21

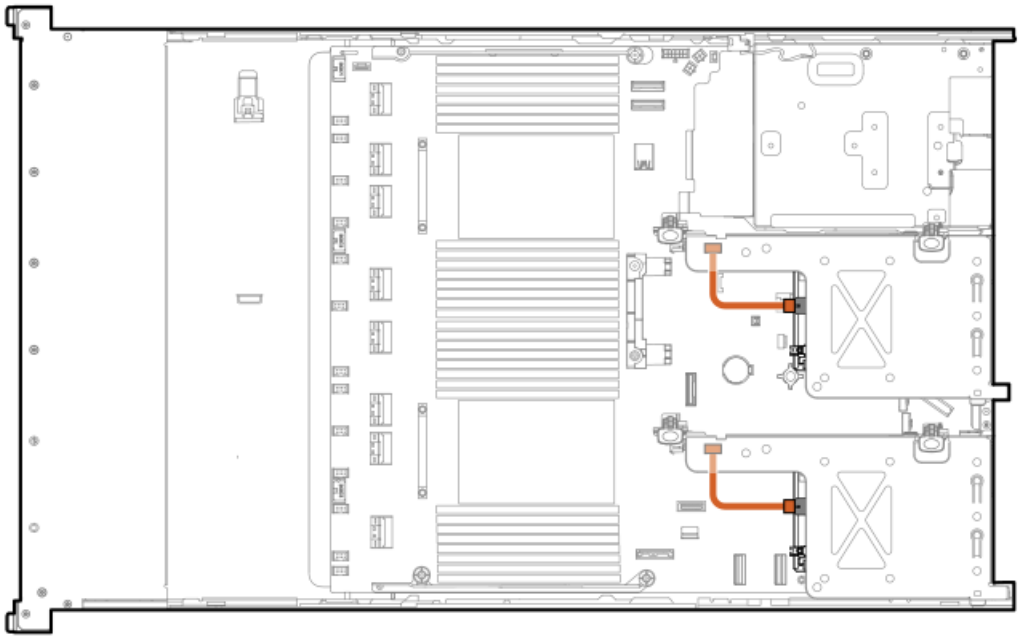
8 SFF midplane + 2 LFF riser cage + 2 SFF rear stacked power



Cable part number	Color	From	To
P51575-001 [1]	Orange	Drive backplanes	System board

[1] Option kit: P48823-B21

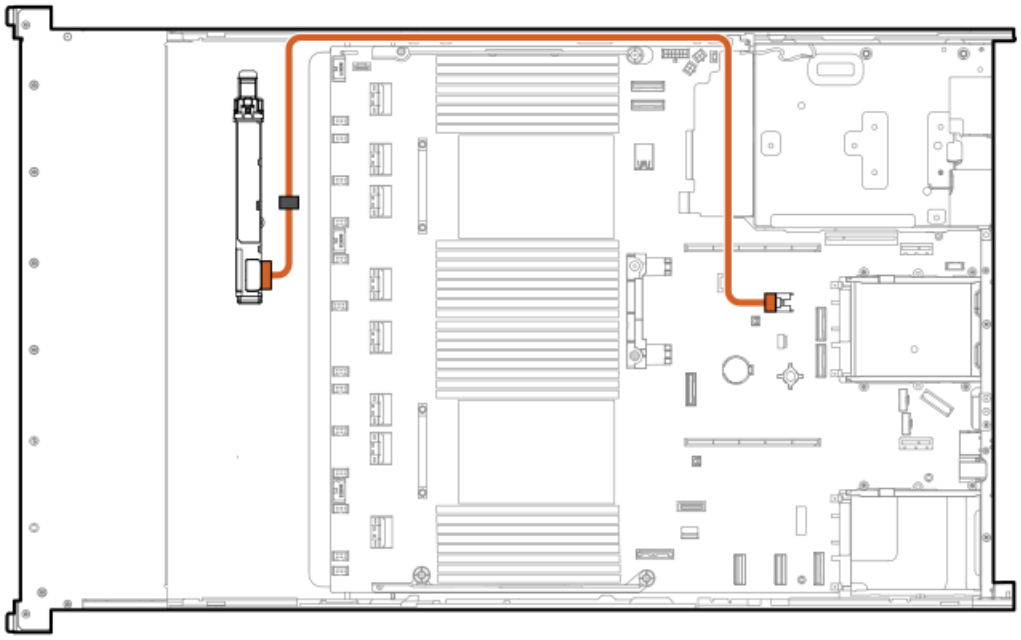
2 SFF box 4 and 5



Cable part number	Color	From	To
P51574-001 [1]	Orange	2 SFF backplane	Riser power connector

1 Option kit: P48810-B21

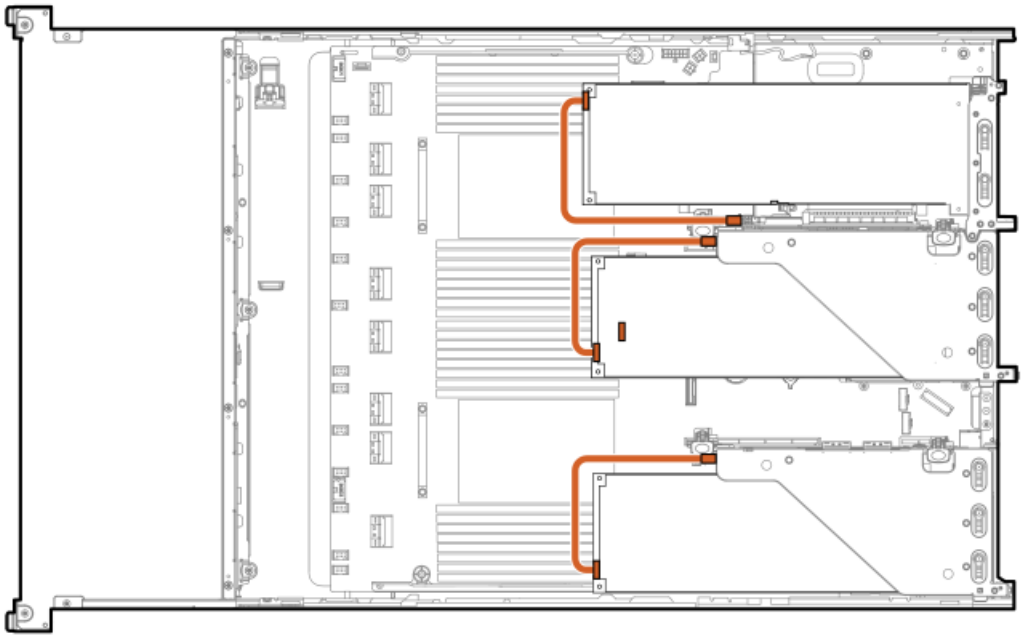
Smart battery cabling



Cable part number	Color	From	To
P45618-001	Orange	Smart battery	System board

GPU cabling

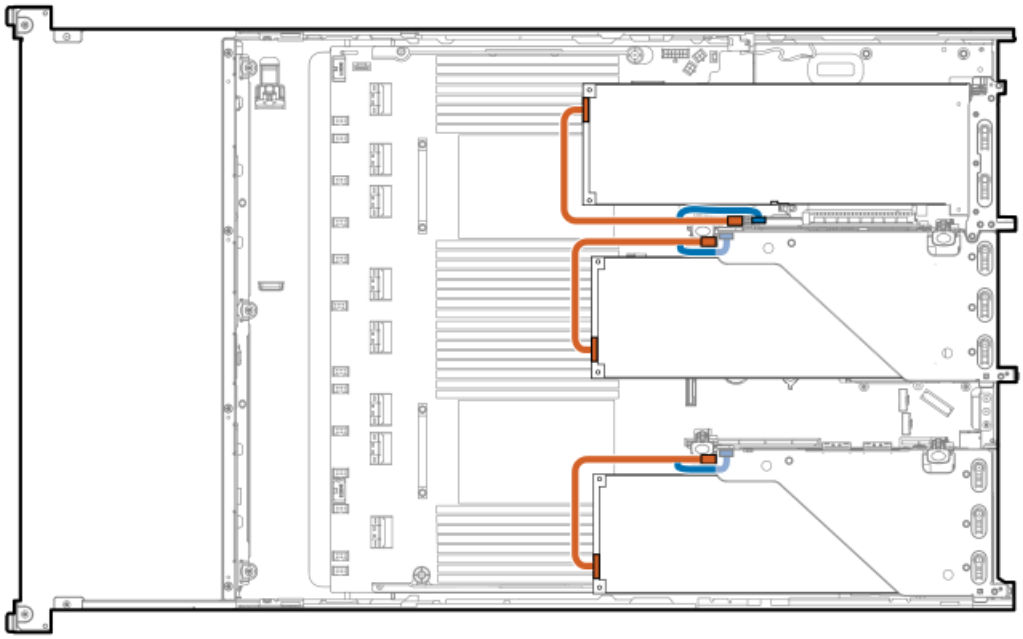
GPU power cabling



Cable part number	Color	From	To
869820-001 [1]	Orange	GPU	Riser

[1] Option kit: P39102-B21

GPU power + sideband cabling

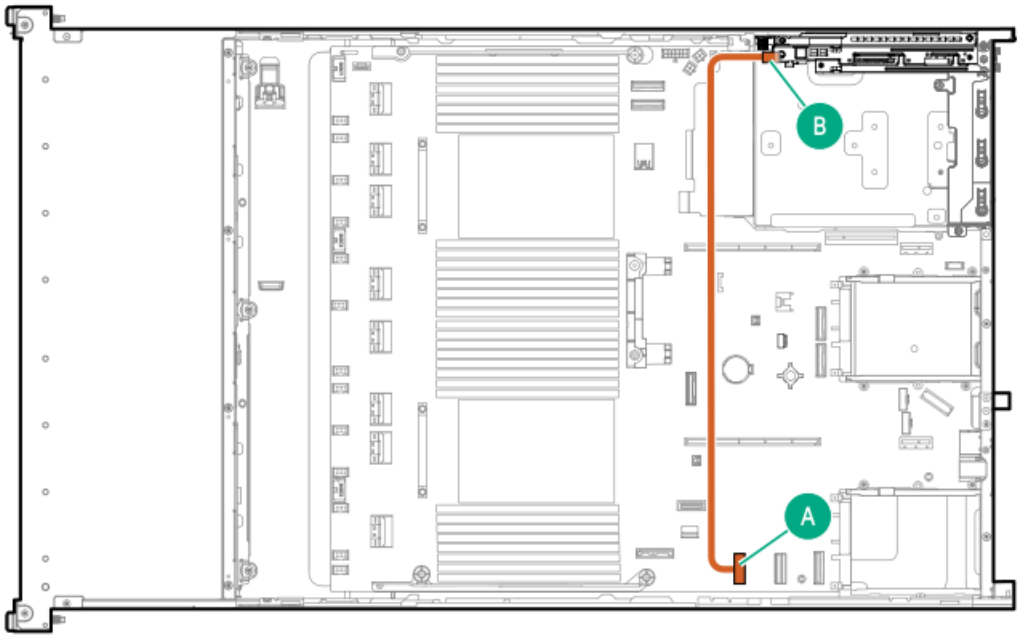


Cable part number	Color	From	To
P58422-001 [1]	Orange	GPU	Riser

[1] Option kit: P56072-B21

NS204i-u boot device cabling

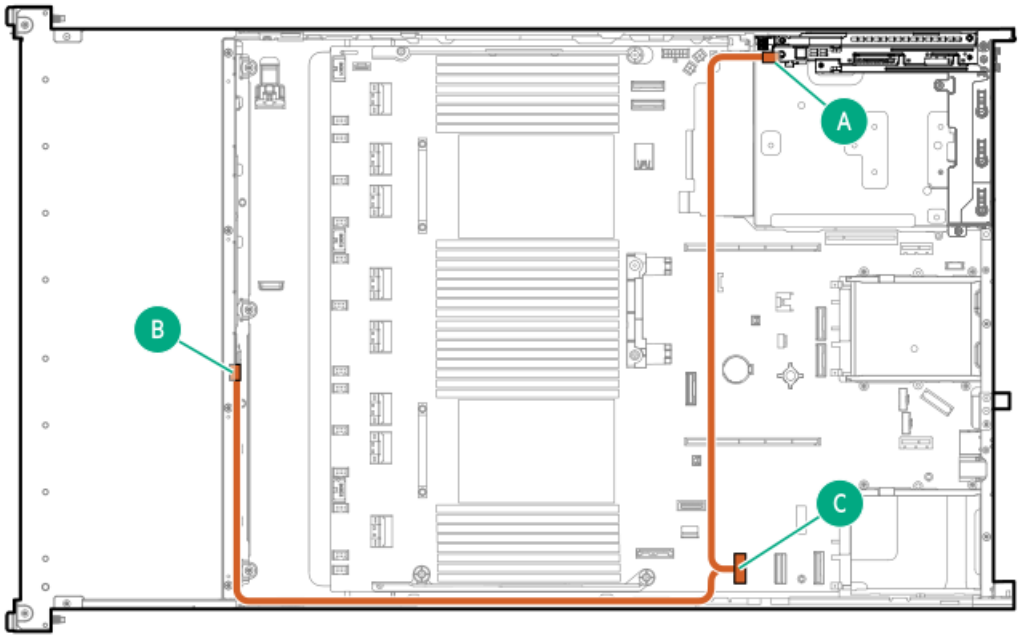
Data for SFF chassis



Cable part number	Color	From	To
P51579-001 [1]	Orange	NS204i-u boot device	System board

1 Option kit: P52152-B21

Data for LFF chassis



Cable part number	Color	From	To
P51578-001 [1]	Orange	NS204i-u boot device and box 1*	System board

[1] Option kit: P52152-B21

*This is a Y-cable. For 12LFF configurations that connect to an OCP controller, boxes 2 and 3 use cable P51559-001. Box 1 connects to the controller using cable P51560-001. One end will remain loose.

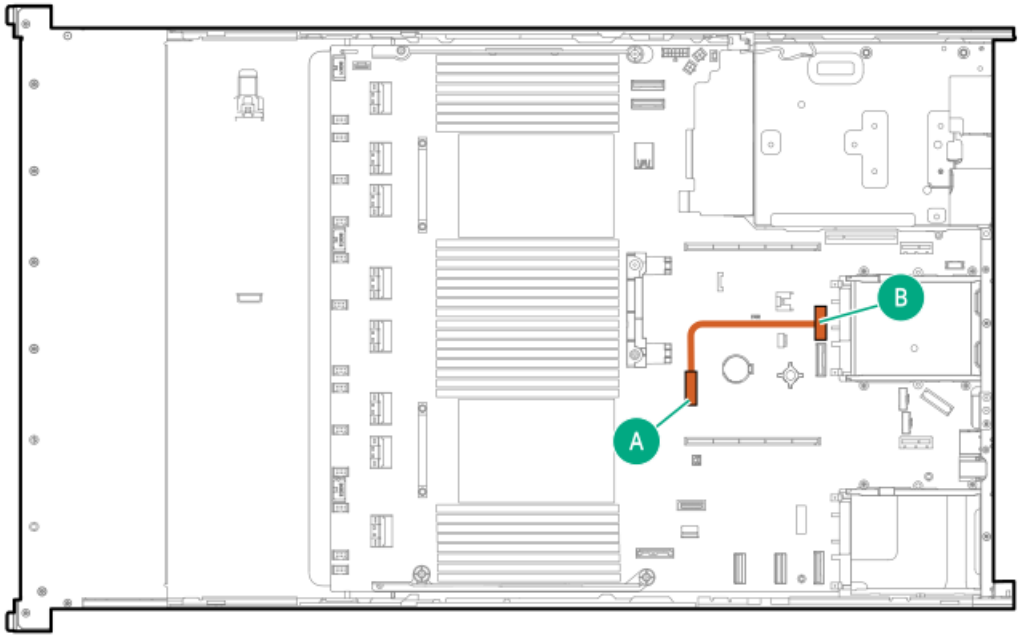
Power for SFF/LFF

Cable part number	Color	From	To
P54089-001 [1]	Orange	NS204i-u boot device	System board

[1] Option kit: P52152-B21

OCP bandwidth enablement

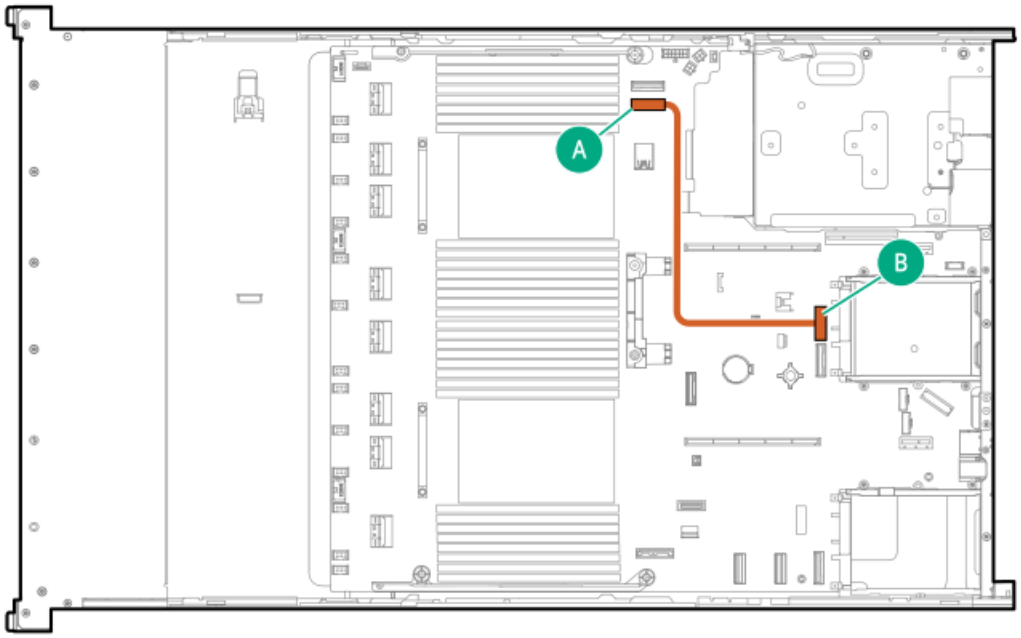
CPU1 to OCP2 x8 enablement



Cable part number	Color	From	To
P43735-001 [1]	Orange	OCP slot 15 port 1	Socket 1 MCIO port 1

[1] Option kit: P51911-B21

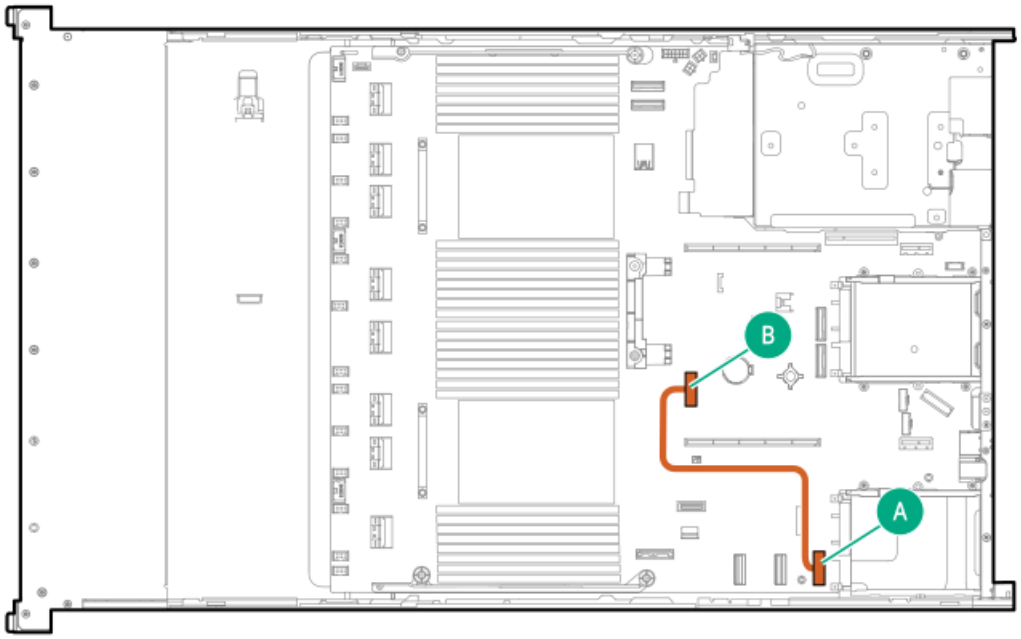
CPU2 to OCP2 x8 enablement



Cable part number	Color	From	To
P43734-001 [1]	Orange	OCP slot 15 port 1	Socket 2 MCIO port 1

[1] Option kit: P48830-B21

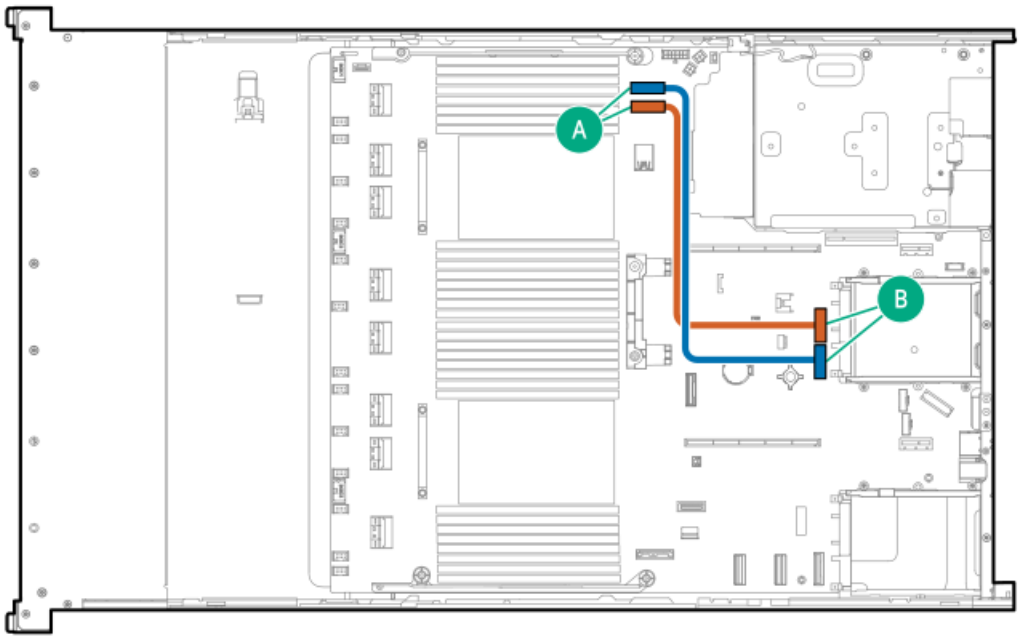
OCP1 x16 enablement



Cable part number	Color	From	To
P43736-001 [1]	Orange	OCP slot 14 port 2	Socket 1 MCIO port 1

[1] Option kit: P48827-B21

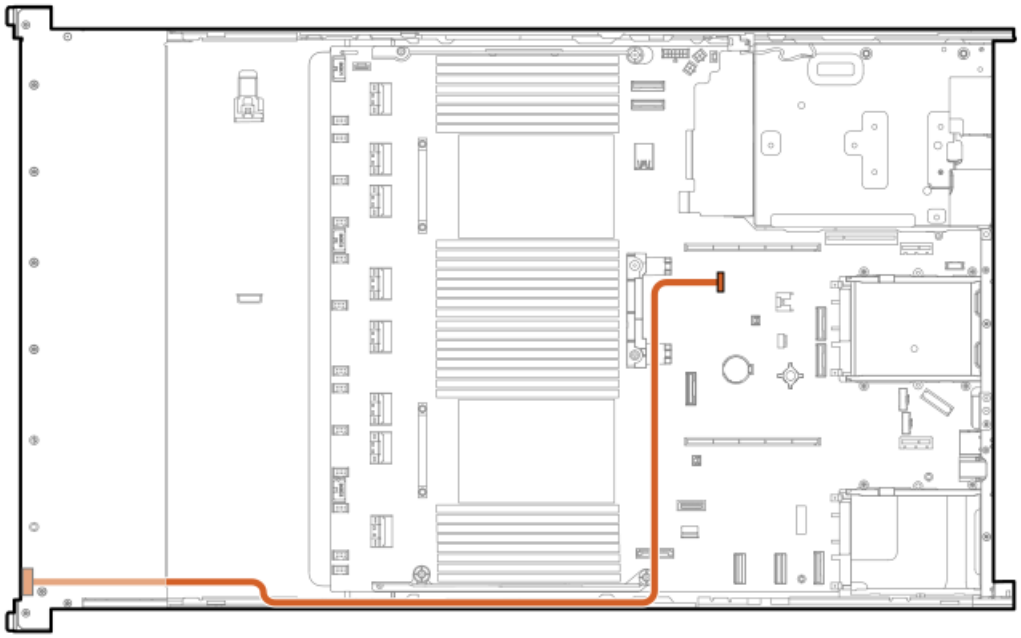
OCP2 x16 enablement



Cable part number	Color	From	To
P43734-001	Orange	OCP slot 15 port 1	Socket 2 MCIO port 1
P43734-001 [1]	Blue	OCP slot 15 port 2	Socket 2 MCIO port 2

1 Option kit: P48830-B21

Systems Insight Display cabling

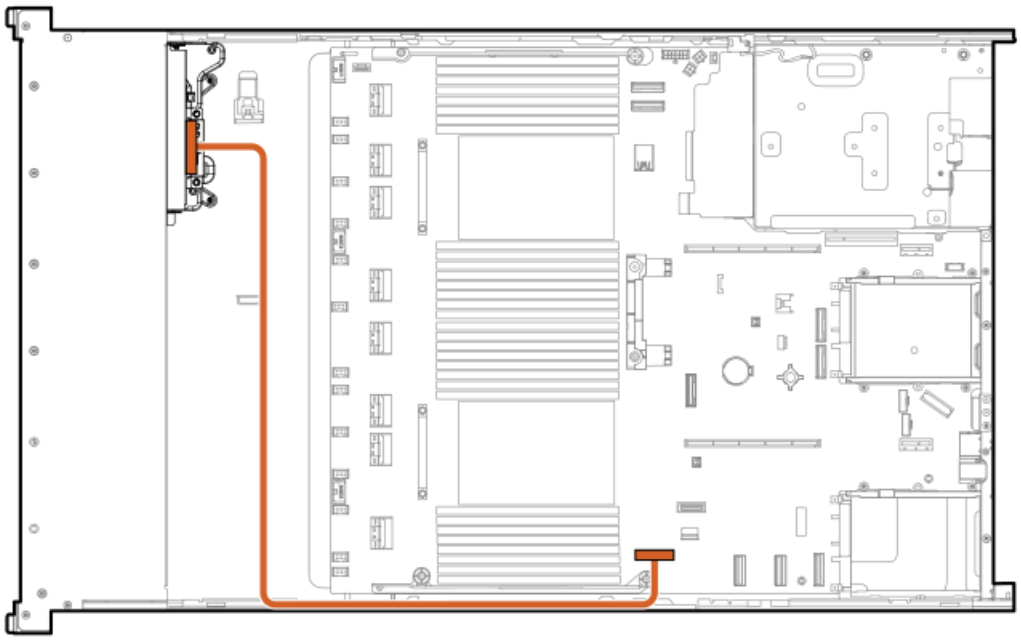


Cable part number	Color	From	To
P48971-001 [1]	Orange	Systems Insight Display	System board

[1] Option kit: P48819-B21

I/O cabling

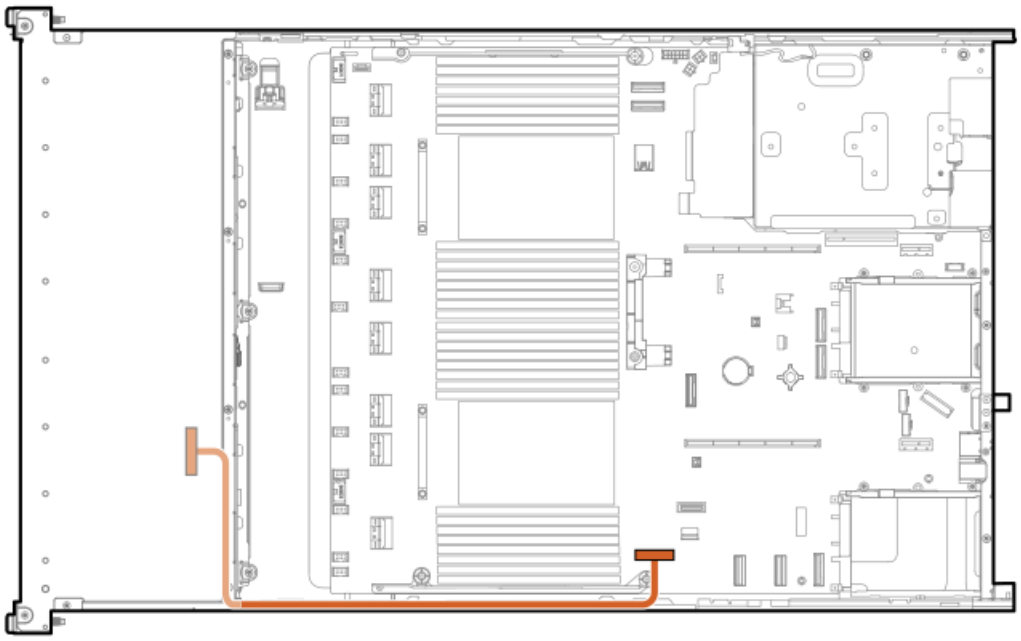
SFF optical disk drive



Cable part number	Color	From	To
756914-001 [1]	Orange	SFF ODD	System board

[1] Option kit: 726536-B21

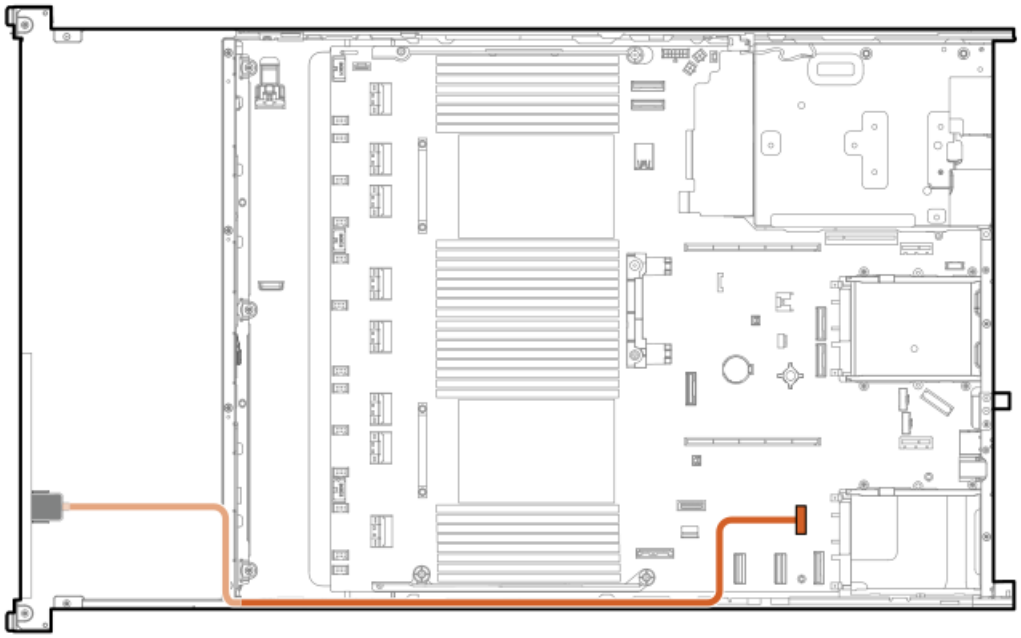
LFF optical disk drive



Cable part number	Color	From	To
756914-001 [1]	Orange	LFF ODD	System board

[1] Option kit: 726537-B21

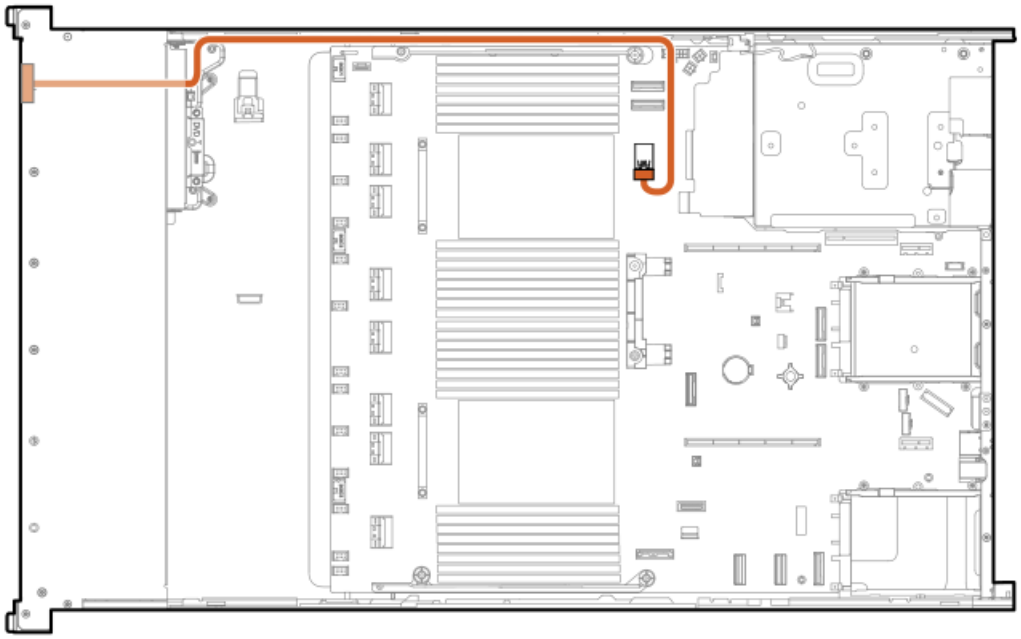
LFF DisplayPort



Cable part number	Color	From	To
869808-001 [1]	Orange	Front DisplayPort	System board

[1] Option kit: P52150-B21

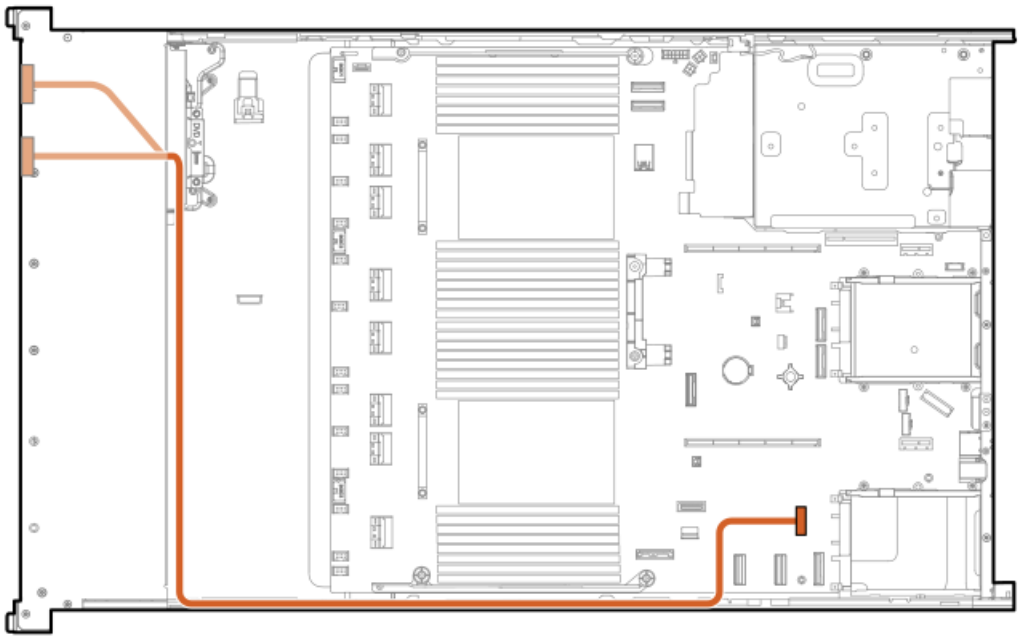
SFF UMB USB cabling



Cable part number	Color	From	To
P50731-001 [1]	Orange	Front USB port	System board

[1] Option kit: P50728-B21

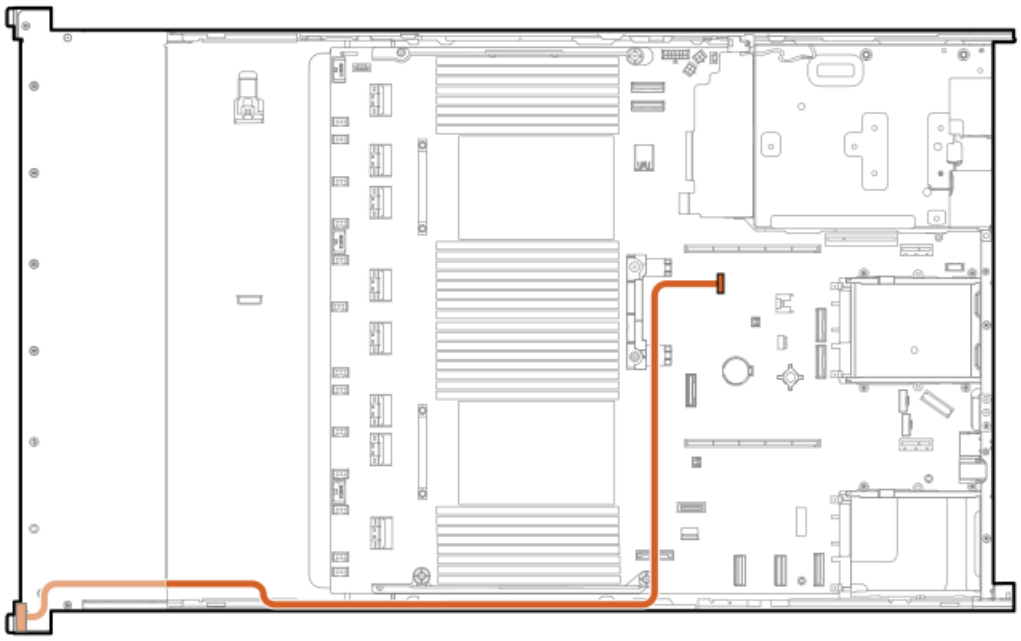
SFF UMB DisplayPort/USB cabling



Cable part number	Color	From	To
P14314-001 [1]	Orange	Universal media bay	System board

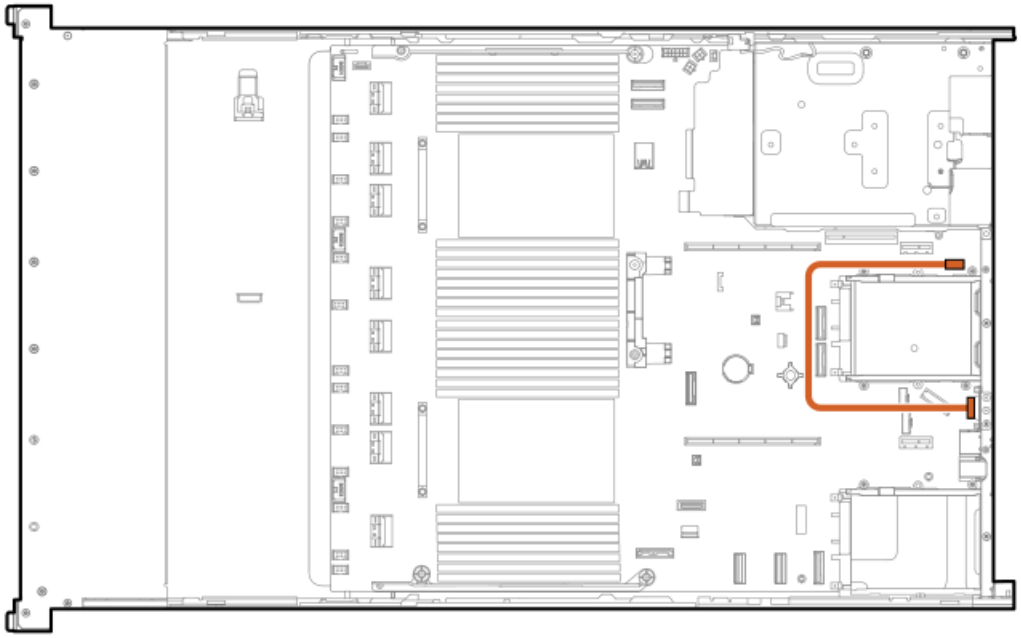
[1] Option kit: P50728-B21

Front power switch cabling



Cable part number	Color	From	To
P43727-001	Orange	Front power switch	System board

Serial port cabling



Cable part number	Color	From	To
P45623-001 [1]	Orange	Serial port	System board

[1] Option kit: P48824-B21

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/dl380gen11-docs**).
- 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 the most recent changes, feature enhancements, and bug fixes, see the latest product release notes.

Subtopics

Updating firmware or system ROM
Configuring the server
Configuring storage controllers
Managing the HPE NS204i Boot Device
Deploying an OS

Configuring security
Optimizing the server
Server management
Managing Linux-based high performance compute clusters

Updating firmware or system ROM

To	Use
Download service packs	• Service Pack for ProLiant (SPP) https://www.hpe.com/servers/spp/download • HPE Synergy software releases and HPE Synergy Service Packs (SSPs) https://www.hpe.com/info/synergy-sw-release-information
Deploy service packs to a single server	Smart Update Manager (SUM) https://www.hpe.com/info/sum-docs
Deploy service packs to multiple servers	HPE OneView https://www.hpe.com/support/oneview-docs
• Enable policy-based management of server or server group firmware for distributed server infrastructure • Monitor server compliance with a configured firmware baseline • Receive automatic iLO firmware updates • Receive baseline update alerts	HPE GreenLake for Compute Ops Management https://www.hpe.com/info/com-docs

Configuring the server

To configure	Use
Single server (GUI)	• Intelligent Provisioning https://www.hpe.com/info/intelligentprovisioning/docs • iLO remote console or web interface https://www.hpe.com/support/ilo6 • UEFI System Utilities https://www.hpe.com/info/UEFI-manuals • HPE GreenLake for Compute Ops Management https://www.hpe.com/info/com-docs
Single server (scripting)	• RESTful Interface Tool https://www.hpe.com/support/restfulinterface/docs • Python iLO Redfish Library (python-ilorest-library) https://github.com/HewlettPackard/python-ilorest-library • Scripting Tools for Windows Powershell https://www.hpe.com/info/powershell/docs • iLO RESTful API https://hewlettpackard.github.io/ilo-rest-api-docs/ • HPE GreenLake for Compute Ops Management API https://developer.greenlake.hpe.com/

Multiple servers (either UI or scripting)	• HPE OneView [1]
	https://www.hpe.com/support/oneview-docs
	• HPE GreenLake for Compute Ops Management
	https://www.hpe.com/info/com-docs
	  ○ **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/ilo6.

Configuring storage controllers

Controller type	Documentation
SR controllers	—
Gen11	HPE SR Gen11 Controller User Guide **https://hpe.com/support/SR-Gen11-UG**
Gen10	HPE Smart Array SR Controller Gen10 User Guide **https://www.hpe.com/support/SR-Gen10-UG**
MR controllers	—
Gen11	HPE MR Gen11 Controller User Guide **https://hpe.com/support/MR-Gen11-UG**
Cross-generation MR guides	• HPE MR Storage Administrator User Guide **https://www.hpe.com/support/MRSA** • HPE MR StorCLI User Guide **https://www.hpe.com/support/StorCLI**
Software RAID	Intel VROC for HPE Gen11 User Guide **https://hpe.com/support/VROC-Gen11-UG**

Managing the HPE NS204i Boot Device

For more information on supported features and maintenance information for the HPE NS204i Boot Device, see the HPE NS204 Boot Device User Guide:

https://www.hpe.com/support/NS204-UG

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
Configure the server to boot from a SAN	HPE Boot from SAN Configuration Guide https://www.hpe.com/info/boot-from-san-config-guide
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
Deploy an OS using iLO virtual media	iLO user guide https://www.hpe.com/support/ilo6
Deploy an OS using Intelligent Provisioning	Intelligent Provisioning user guide https://www.hpe.com/info/intelligentprovisioning/docs

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 servers that have the Server Configuration Lock feature enabled.	Server Configuration Lock User Guide for HPE ProLiant servers and HPE Synergy https://www.hpe.com/info/server-config-lock-UG-en

Optimizing the server

To	See
Optimize server performance through management and tuning features.	HPE Server Performance Management and Tuning Guide https://www.hpe.com/info/server-performance-management-tuning-en
Obtain recommendations for resolving incorrect settings.	HPE InfoSight for Servers User Guide https://www.hpe.com/support/InfoSight-for-Servers-UG-en

Server management

To monitor	See
Single server	HPE iLO https://www.hpe.com/support/ilo-docs
Multiple servers	HPE OneView https://www.hpe.com/support/oneview-docs
Single or multiple servers	HPE GreenLake for Compute Ops Management https://www.hpe.com/info/com-docs

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

To access troubleshooting resources for your product, see the **Hewlett Packard Enterprise website**.

Specifications

Subtopics

Environmental specifications
Mechanical specifications
Power supply specifications
Hot-plug power supply calculations

Environmental specifications

Specification	Value
Temperature range [1]	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (non-condensing)	—
Operating	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity Maximum to be 24°C (75.2°F) dew point or 90% relative humidity
Non-operating	5% to 95% 38.7°C (101.7°F), maximum wet bulb temperature

1 All temperature ratings shown are for sea level. An altitude derating of 1.0°C per 304.8 m (1.8°F per 1000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Maximum rate of change is 20°C per hour (36°F per hour). The upper limit and rate of change might be limited by the type and number of options installed.

For certain approved hardware configurations, the supported system inlet temperature range is extended:

- 5°C to 10°C (41°F to 50°F) and 35°C to 40°C (95°F 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 (2953 ft) to a maximum of 3048 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).

The approved hardware configurations for this system are listed on the **Hewlett Packard Enterprise website**.

Mechanical specifications

Specification	Value
Height	8.75 cm (3.44 in)
Depth, SFF	72.70 cm (28.62 in)
Depth, LFF	73.25 cm (28.84 in)
Width	44.80 cm (17.64 in)
Weight, SFF minimum	16.00 kg (35.27 lbs)
Weight, SFF maximum	33.00 kg (72.75 lbs)
Weight, LFF minimum	18.00 kg (39.68 lbs)
Weight, LFF maximum	37.00 kg (81.57 lbs)

Power supply specifications

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

- 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

For detailed power supply specifications, see the QuickSpecs on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/proliant/powersupply**).

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 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	9.1 A at 100 VAC 4.4 A at 200 VAC 3.6 A at 240 VDC for China only
Maximum rated input power	899 W at 100 VAC 867 W at 200 VAC 864 W at 240 VDC for China only
BTUs per hour	3067 at 100 VAC 2958 at 200 VAC 2949 at 240 VAC for China only
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 only
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	1103 W at 100 VAC 1064 W at 200 VAC
BTUs per hour	3764 at 100 VAC 3629 at 200 VAC
Power supply output	—
Rated steady-state power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC input
Maximum peak power	1000 W at 100 VAC to 127 VAC 1000 W at 200 VAC to 240 VAC

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
Maximum rated input power	1734 W at 200 VAC 1727 W at 230 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	2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input

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**).

Websites

General websites

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

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

Storage white papers and analyst reports

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

For additional websites, see Support and other resources.

Storage websites

Support and other resources

Subtopics

Accessing Hewlett Packard Enterprise Support
Accessing updates
Remote support
Warranty information
Regulatory information
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

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.

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

https://www.hpe.com/services/completecare

Warranty information

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

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

Documentation feedback

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