



**Hewlett Packard**  
Enterprise

## **HPE ProLiant DL325 Gen10 Plus 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.

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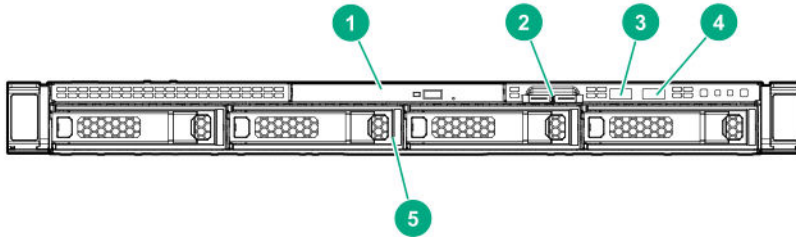
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# Component identification

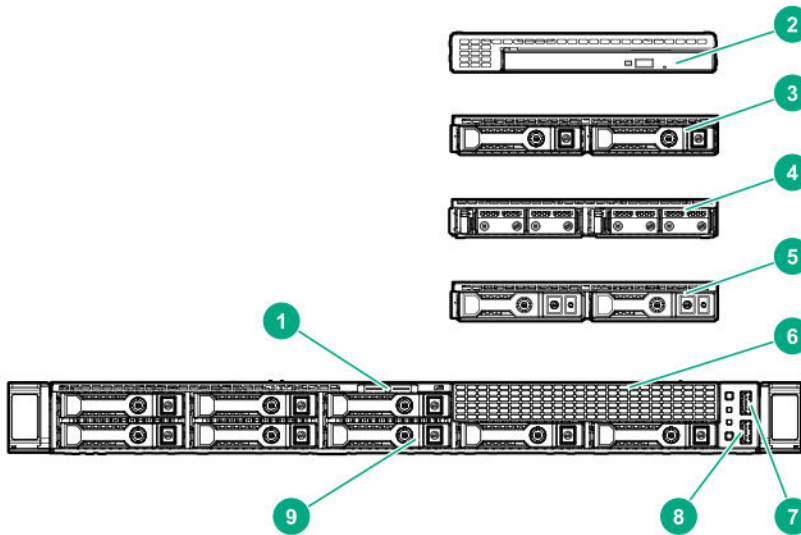
## Front panel components

### LFF drive model



Item	Description
1	Optical drive (optional, for short chassis only)
2	<b>Serial label pull tab</b>
3	iLO service port
4	USB 3.0 port
5	LFF drive bays (up to 12 LFF drives)

### SFF SAS/SATA/U.3 NVMe drive model



Item	Description
1	<b>Serial label pull tab</b>
2	Optical drive cage (optional, for short chassis only)

Table Continued



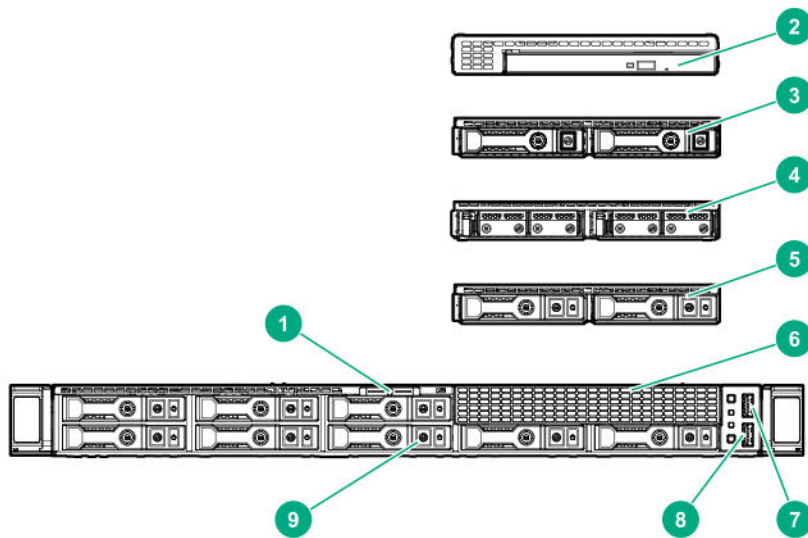


Item	Description
3	2SFF SAS/SATA/U.3 NVMe drive cage (optional, for short chassis only)
4	2SFF dual uFF M.2 drive cage (optional, for short chassis only)
5	2SFF U.2 NVMe drive cage (optional, cage 1 only) <sup>1</sup>
6	Media bay blank
7	USB 3.0 port
8	iLO service port
9	SFF drive bays (up to 24 SAS/SATA/U.3 NVMe drives)

<sup>1</sup> 2SFF U.2 NVMe is supported with 8SFF SAS/SATA, but not supported with 8SFF U.3 NVMe.

### SFF U.2 NVMe drive model

This model is supported with short chassis only.



Item	Description
1	<b>Serial label pull tab</b>
2	Optical drive cage (optional)
3	2SFF SAS/SATA drive cage (optional)
4	2SFF dual uFF M.2 drive cage (optional)
5	2SFF U.2 NVMe drive cage (optional, cage 1 only)
6	Media bay blank
7	USB 3.0 port
8	iLO service port
9	SFF drive bays (up to 16 U.2 NVMe drives)



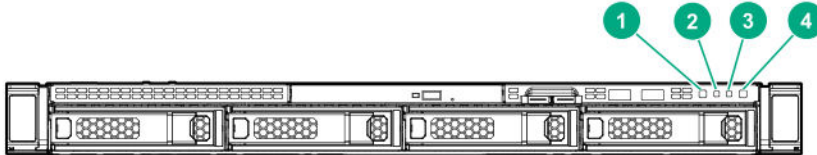
## Serial number/iLO information pull tab

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

Use a mobile device to scan the QR code label to display the server mobile product page (<https://www.hpe.com/qref/dl325gen10plus>). This page contains links to server setup information, spare part numbers, QuickSpecs, troubleshooting resources, and other useful product links.

## Front panel LEDs and buttons

### LFF drive model



Item	Description	Status
1	UID button/LED	<p>Solid blue = Activated</p> <p>Flashing blue:</p> <ul style="list-style-type: none"><li>• 1 flash per second = Remote management or firmware upgrade in progress</li><li>• 4 flashes per second = iLO manual reboot sequence initiated</li><li>• 8 flashes per second = iLO manual reboot sequence in progress</li></ul> <p>Off = Deactivated</p>
2	NIC status LED	<p>Solid green = Link to network</p> <p>Flashing green (1 flash per second) = Network active</p> <p>Off = No network activity</p>

*Table Continued*



Item	Description	Status
3	Health LED	Solid green = Normal Flashing green (1 flash per second) = iLO is rebooting Flashing amber = System degraded <sup>1</sup> Flashing red (1 flash per second) = System critical <sup>1</sup>
4	Power On/Standby button and system power LED	Solid green = System on Flashing green (1 flash per second) = Performing power on sequence Solid amber = System in standby Off = No power present <sup>2</sup>

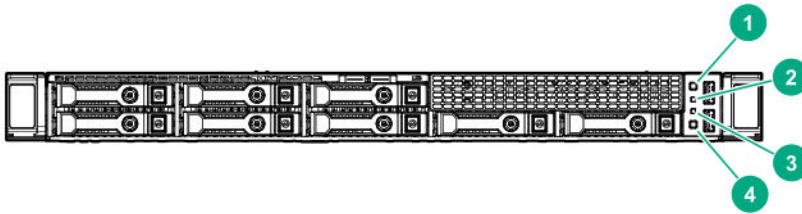
<sup>1</sup> If the health LED indicates a degraded or critical state, review the system Integrated Management Log (IML) or use HPE iLO to review the system health status.

<sup>2</sup> If the system power LED is off, verify the following conditions:

- Facility power is present.
- The power supply is installed and is working correctly.
- The power cord is attached and is connected to a power source.
- The front I/O cable is connected.

If all LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "**Power fault LEDs**".

## SFF drive model



Item	Description	Status
1	Power On/Standby button and system power LED	<p>Solid green = System on</p> <p>Flashing green (1 flash per second) = Performing power on sequence</p> <p>Solid amber = System in standby</p> <p>Off = No power present <sup>1</sup></p>
2	Health LED	<p>Solid green = Normal</p> <p>Flashing green (1 flash per second) = iLO is rebooting</p> <p>Flashing amber = System degraded<sup>2</sup></p> <p>Flashing red (1 flash per second) = System critical<sup>2</sup></p>
3	NIC status LED	<p>Solid green = Link to network</p> <p>Flashing green (1 flash per second) = Network active</p> <p>Off = No network activity</p>
4	UID button/LED	<p>Solid blue = Activated</p> <p>Flashing blue:</p> <ul style="list-style-type: none"> <li>• 1 flash per second = Remote management or firmware upgrade in progress</li> <li>• 4 flashes per second = iLO manual reboot sequence initiated</li> <li>• 8 flashes per second = iLO manual reboot sequence in progress</li> </ul> <p>Off = Deactivated</p>

<sup>1</sup> If the system power LED is off, verify the following conditions:

- Facility power is present.
- The power supply is installed and is working correctly.
- The power cord is attached and is connected to a power source.
- The front I/O cable is connected.

<sup>2</sup> If the health LED indicates a degraded or critical state, review the system Integrated Management Log (IML) or use HPE iLO to review the system health status.

If all LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "**Power fault LEDs**".



## UID button functionality

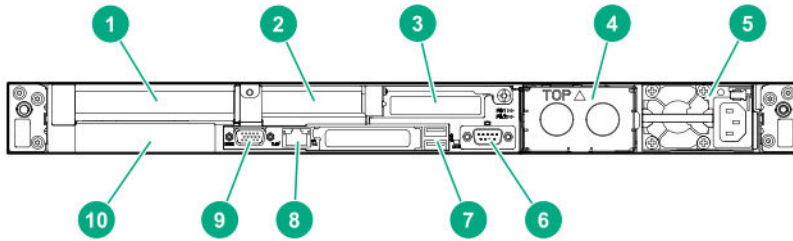
The UID button can be used to display the Server Health Summary when the server will not power on. For more information, see the iLO user guide on the Hewlett Packard Enterprise website (<https://www.hpe.com/support/iLO-docs>).

## Front panel LED power fault codes

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

Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Storage controllers	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

## Rear panel components



Item	Description
1	Slot 1 PCIe4 x16 (16, 8, 4, 1) <sup>1</sup>
2	Slot 2 PCIe4 x16 (16, 8, 4, 1) <sup>1</sup>
3	Slot 3 PCIe4 x16 (16, 8, 4, 1) <sup>1</sup> (optional)
4	Flex Slot power supply 2 (hot-plug, optional)
5	Flex Slot power supply 1 (hot-plug)
6	Serial port (optional)
7	USB 3.0 ports (2)
8	iLO Management port

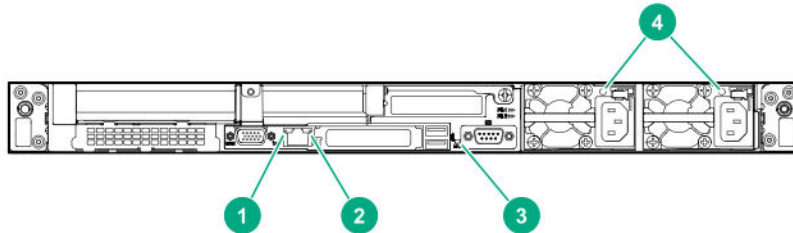
Table Continued



Item	Description
9	Video port
10	Small OCP NIC 3.0 slot (optional)

<sup>1</sup> For more information, see [PCIe expansion slot definitions](#).

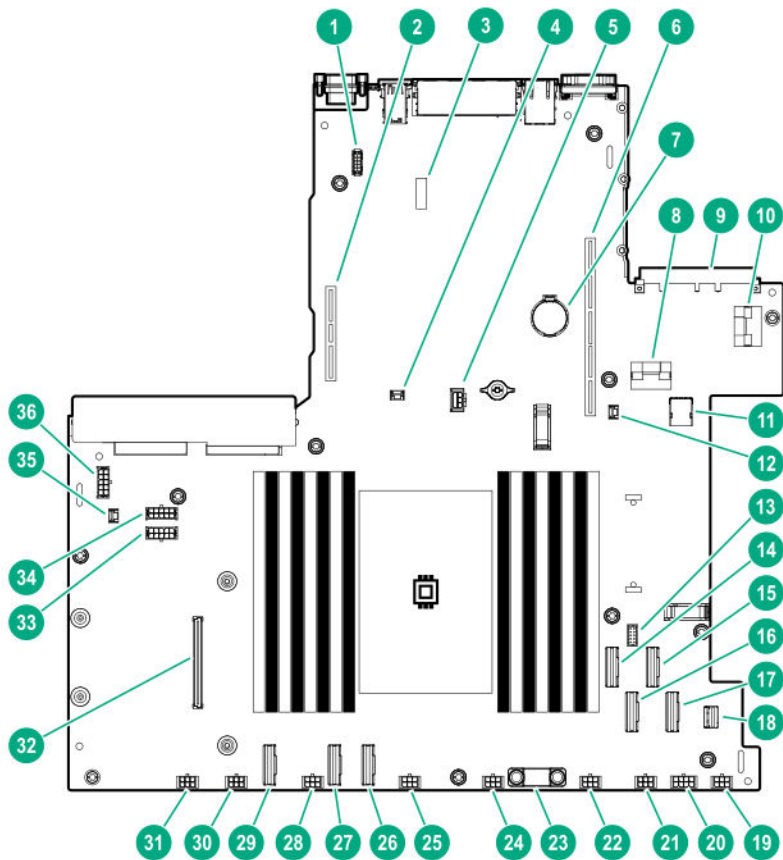
## Rear panel LEDs



Item	LED	Status	Definition
1	NIC link	Green	Network link
		Off	No network link
2	NIC status	Solid Green	Linked to network
		Flashing green	Network active
		Off	No network activity
3	UID	Solid blue	Activated
		Flashing blue	1 flash per sec = Remote management or firmware upgrade in progress
			4 flashes per sec = iLO manual reboot sequence initiated
			8 flashes per sec = iLO manual reboot sequence in progress
4	Power supply	Off	Deactivated
		Solid green	Normal
		Off	System is off or power supply has failed.



# System board components



Item	Description
1	Serial port connector
2	Secondary PCIe riser connector
3	System maintenance switch
4	Storage controller backup power connector 2
5	GPU power connector 2
6	Primary PCIe riser connector
7	System battery
8	NVMe port 6A
9	OCP NIC 3.0 connector
10	OCP X16 upgrade connector
11	Internal USB 3.0 connector
12	Storage controller backup power connector 1
13	Energy pack connector
14	NVMe/SATA port 9A

Table Continued



<b>Item</b>	<b>Description</b>
15	NVMe port 4A
16	NVMe/SATA port 8A
17	NVMe port 5A
18	Front I/O connector
19	Fan connector 8
20	GPU power connector 1
21	Fan connector 7
22	Fan connector 6
23	TPM connector
24	Fan connector 5
25	Fan connector 4
26	NVMe port 3A
27	NVMe port 1A
28	Fan connector 3
29	NVMe port 2A
30	Fan connector 2
31	Fan connector 1
32	Smart Array modular controller connector/NVMe port 7A
33	Drive backplane power connector 3
34	Drive backplane power connector 2
35	Chassis intrusion detection switch connector
36	Drive backplane power connector 1

## System maintenance switch descriptions

<b>Position</b>	<b>Default</b>	<b>Function</b>
S1 <sup>1</sup>	Off	Off = iLO security is enabled. On = iLO security is disabled.
S2	Off	Reserved
S3	Off	Reserved
S4	Off	Reserved
S5 <sup>1</sup>	Off	Off = Power-on password is enabled. On = Power-on password is disabled.

*Table Continued*





Position	Default	Function
S6 <sup>1, 2, 3</sup>	Off	Off = No function On = Restore default manufacturing settings
S7	Off	Reserved
S8	—	Reserved
S9	—	Reserved
S10	—	Reserved
S11	—	Reserved
S12	—	Reserved

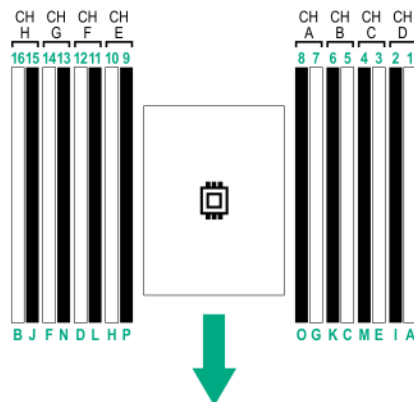
<sup>1</sup> To access the redundant ROM, set S1, S5, and S6 to On.

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

<sup>3</sup> When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see **Secure Boot**.

## DIMM slot locations

DIMM slots are numbered sequentially (1 through 16). The supported Advance Memory Protection (AMP) modes use the letter assignments for population guidelines.

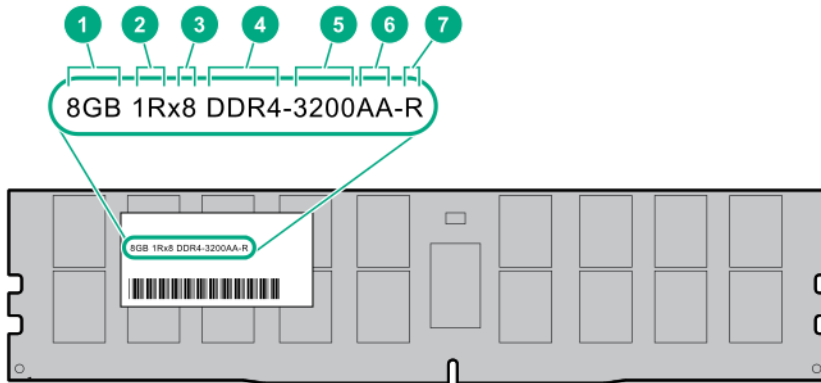


The arrow points to the front of the server.

## 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.



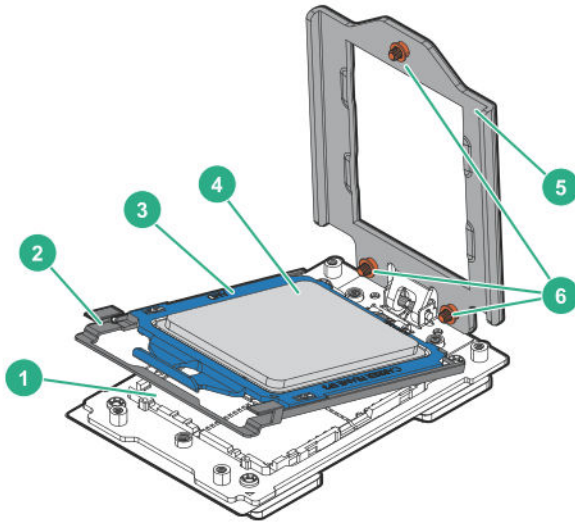


Item	Description	Example
1	Capacity	8 GB 16 GB 32 GB 64 GB 128 GB 256 GB
2	Rank	1R = Single rank 2R = Dual rank 4R = Quad rank 8R = Octal rank
3	Data width on DRAM	x4 = 4-bit x8 = 8-bit
4	Memory generation	PC4 = DDR4
5	Maximum memory speed	3200 MT/s
6	CAS latency	AA = CAS 22-22-22 AA = CAS 26-22-22 (for 3DS LRDIMM)
7	DIMM type	R = RDIMM (registered) L = LRDIMM (load reduced)

For more information about product features, specifications, options, configurations, and compatibility, see the HPE DDR4 SmartMemory QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/support/DDR4SmartMemoryQS>).



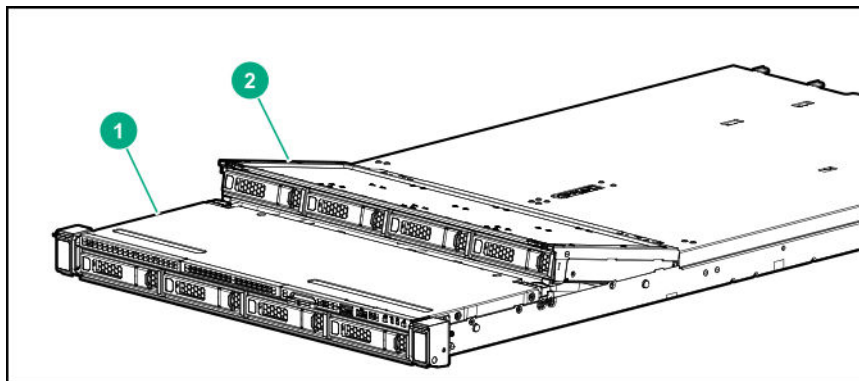
## Processor and socket components



Item	Description
1	Pin field
2	Rail frame
3	Carrier frame
4	Processor
5	Force frame
6	Captive screws (Torx T-20)

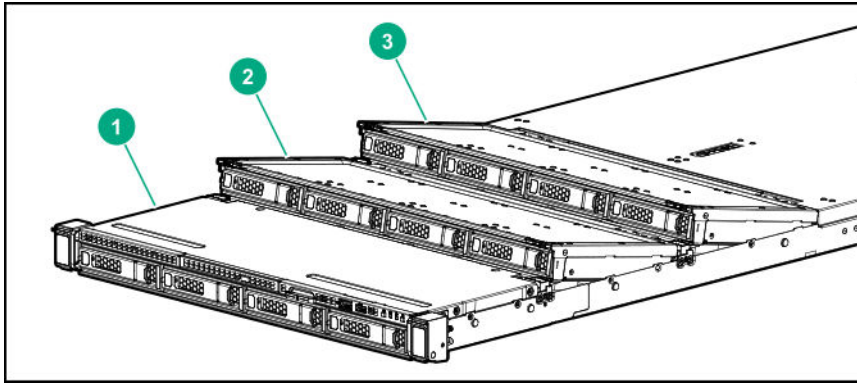
## Drive box identification

- LFF drive model
  - Short chassis



- Long chassis

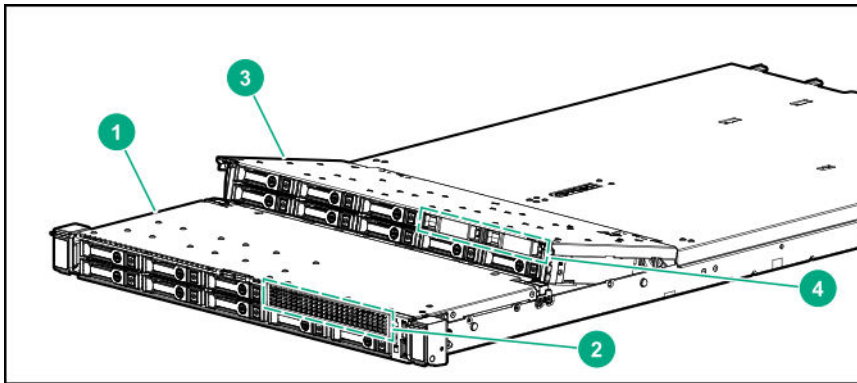




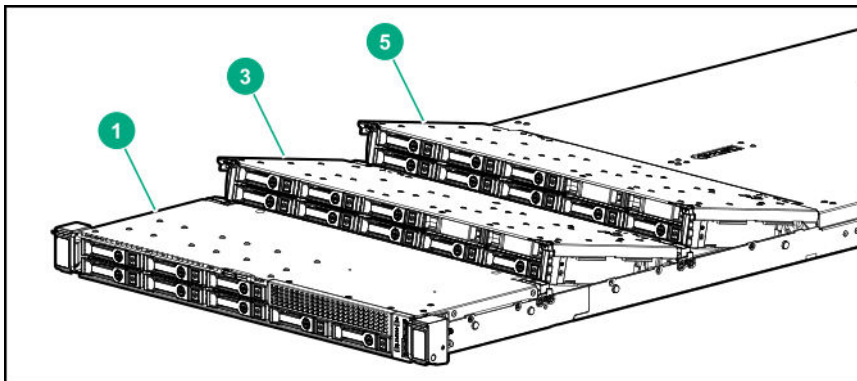
Item	Description
1	Box 1
2	Box 2 <sup>1</sup>
3	Box 3 <sup>1</sup>

<sup>1</sup> Optional

- SFF drive model
  - Short chassis



- Long chassis



**NOTE:** 2SFF drive cage is not supported in long chassis configuration.



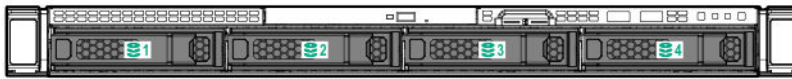
Item	Description
1	Box 1
2	Box 2 <sup>1</sup>
3	Box 3 <sup>1</sup>
4	Box 4 <sup>1</sup>
5	Box 5 <sup>1</sup>

<sup>1</sup> Optional

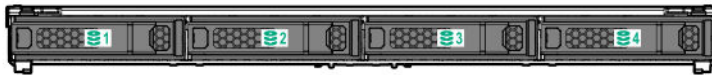
## Drive bay numbering

- LFF drive model

Box 1

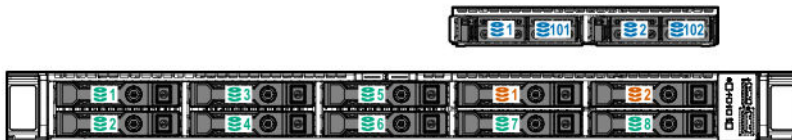


Box 2/Box 3



- SFF drive model

Short Chassis - Box 1/Box 2



Drive numbering color	Description
Green	8SFF SAS/SATA/U.2 or U.3 NVMe drives
Orange	2SFF SAS/SATA/U.2 or U.3 NVMe drives (optional) <sup>1</sup>
Blue	Dual uFF M.2 drives (optional)

<sup>1</sup> 2SFF U.2 NVMe is supported with 8SFF SAS/SATA/U.2 NVMe, but not supported with 8SFF U.3 NVMe.

Short Chassis - Box 3/Box 4





Drive numbering color	Description
Green	8SFF SAS/SATA/U.2 or U.3 NVMe drives
Orange	2SFF SAS/SATA/U.3 NVMe drives (optional) <sup>1</sup>
Blue	Dual uFF M.2 drives (optional)

<sup>1</sup> If 8SFF U.3 NVMe drives are installed in box 3, only 2 SFF U.3 NVMe drives are supported in box 4 using 1-port NVMe adapter due to the cabling limitation.

Long chassis - Box 1

U.2 NVMe drive is not supported in long chassis.



Drive numbering color	Description
Green	8SFF SAS/SATA/U.3 NVMe drives

Long chassis - Box 3/Box 5

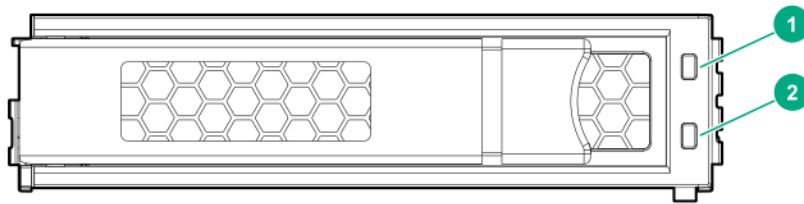


Drive numbering color	Description
Green	8SFF SAS/SATA/U.3 NVMe drives



# Drive LEDs and buttons

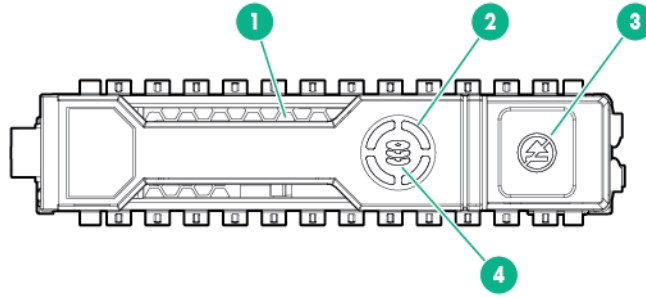
## Low-profile LFF drive LED definitions



Item	LED	Status	Definition
1	Fault \\Locate	Solid amber	The drive has failed.
		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; it also has 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.
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.
		Flashing green (1 flash per second)	The drive is doing one of the following: <ul style="list-style-type: none"> <li>Rebuilding</li> <li>Performing a RAID migration</li> <li>Performing a strip size migration</li> <li>Performing a capacity expansion</li> <li>Performing a logical drive extension</li> <li>Erasing</li> <li>Spare part activation</li> </ul>
		Off	The drive is not configured by a RAID controller or a spare drive.



## Smart Carrier (SC) drive LED definitions



Item	LED	Status	Definition
1	Locate	Solid blue	The drive is being identified by a host application.
		Flashing blue	The drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating green	Drive activity
		Off	No drive activity
3	Do not remove	Solid white	Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.
		Off	Removing the drive does not cause a logical drive to fail.
4	Drive status	Solid green	The drive is a member of one or more logical drives.
		Flashing green	The drive is doing one of the following: <ul style="list-style-type: none"> <li>Rebuilding</li> <li>Performing a RAID migration</li> <li>Performing a strip size migration</li> <li>Performing a capacity expansion</li> <li>Performing a logical drive extension</li> <li>Erasing</li> <li>Spare part activation</li> </ul>
		Flashing amber/green	The drive is a member of one or more logical drives and predicts the drive will fail.
		Flashing amber	The drive is not configured and predicts the drive will fail.
		Solid amber	The drive has failed.
		Off	The drive is not configured by a RAID controller or a spare drive.

## Smart Carrier NVMe (SCN) drive LED definitions

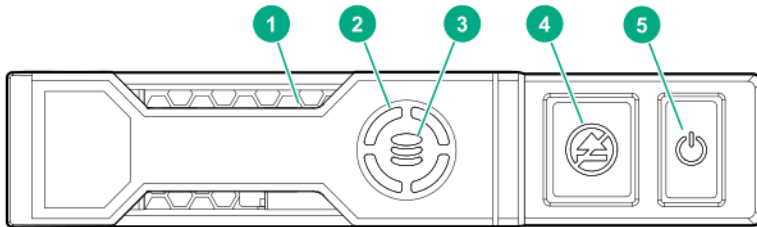
The NVMe drive is a PCIe bus device. A device attached to a PCIe bus cannot be removed without allowing the device and bus to complete and cease the signal/traffic flow.







**CAUTION:** Do not remove an NVMe drive from the drive bay while the Do not remove LED is flashing. The Do not remove LED flashes to indicate that the device is still in use. Removing the NVMe drive before the device has completed and ceased signal/traffic flow can cause loss of data.



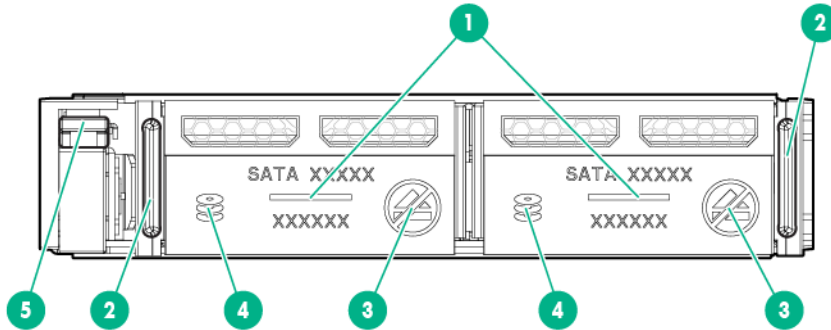
Item	LED	Status	Definition
1	Locate	Solid blue	The drive is being identified by a host application.
		Flashing blue	The drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating green	Drive activity
		Off	No drive activity
3	Drive status	Solid green	The drive is a member of one or more logical drives.
		Flashing green	The drive is doing one of the following: <ul style="list-style-type: none"> <li>Rebuilding</li> <li>Performing a RAID migration</li> <li>Performing a stripe size migration</li> <li>Performing a capacity expansion</li> <li>Performing a logical drive extension</li> <li>Erasing</li> </ul>
		Flashing amber/green	The drive is a member of one or more logical drives and predicts the drive will fail.
		Flashing amber	The drive is not configured and predicts the drive will fail.
		Solid amber	The drive has failed.
4	Do not remove	Off	The drive is not configured by a RAID controller.
		Solid white	Do not remove the drive. The drive must be ejected from the PCIe bus prior to removal.
		Flashing white	The drive ejection request is pending.
5	Power	Off	The drive has been ejected.
		Solid green	Do not remove the drive. The drive must be ejected from the PCIe bus prior to removal.

*Table Continued*



Item	LED	Status	Definition
		Flashing green	The drive ejection request is pending.
		Off	The drive has been ejected.

## uFF drive components and LEDs



Item	Description	Status
1	Locate	<ul style="list-style-type: none"> <li>Off—Normal</li> <li>Solid blue—The drive is being identified by a host application</li> <li>Flashing blue—The drive firmware is being updated or requires an update</li> </ul>
2	uFF drive ejection latch	Removes the uFF drive when released
3	Do not remove LED	<ul style="list-style-type: none"> <li>Off—OK to remove the drive. Removing the drive does not cause a logical drive to fail.</li> <li>Solid white—Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.</li> </ul>

*Table Continued*



Item	Description	Status
4	Drive status LED	<ul style="list-style-type: none"> <li>Off—The drive is not configured by a RAID controller</li> <li>Solid green—The drive is a member of one or more logical drives</li> <li>Flashing green (4 Hz)—The drive is operating normally and has activity</li> <li>Flashing green (1 Hz)—The drive is rebuilding or performing a RAID migration, stripe size migration, capacity expansion, logical drive extension, or is erasing</li> <li>Flashing amber/green (1 Hz)—The drive is a member of one or more logical drives that predicts the drive will fail</li> <li>Solid amber—The drive has failed</li> <li>Flashing amber (1 Hz)—The drive is not configured and predicts the drive will fail</li> </ul>
5	Adapter ejection release latch and handle	Removes the SFF flash adapter when released

## PCIe expansion slot definitions

Slot number	Type	Form factor	Connector link width	Negotiable link width
1 <sup>1</sup>	PCIe 4.0	Full-height/full-length	x16	16, 8, 4, 1
2 <sup>2</sup>	PCIe 4.0	Half-height/half-length	x16	16, 8, 4, 1
3 <sup>3</sup>	PCIe 4.0	Half-height/half-length or Full-height/half-length	x16	16, 8, 4, 1

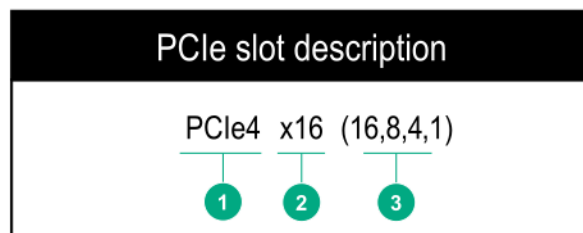
<sup>1</sup> HPE Smart Array plug-in controller is not supported in slot 1 due to the cable limitation.

<sup>2</sup> Slot 2 is not available when a slimline primary riser or full-height secondary riser is installed.

<sup>3</sup> Slot 3 is not available when a slimline secondary riser is installed.

For more information about risers, see [Riser board components](#).

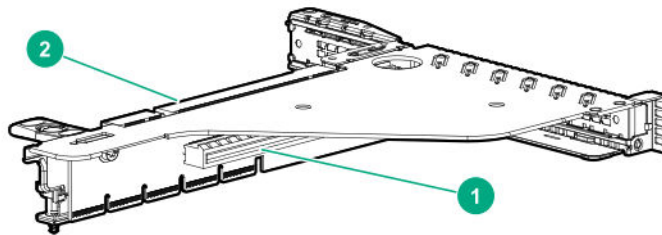
## PCIe4 slot description



Item	Description	Definition
1	PCI Express version	<p>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.</p> <ul style="list-style-type: none"> <li>• PCIe 1.x</li> <li>• PCIe 2.x</li> <li>• PCIe 3.x</li> <li>• PCIe 4.x</li> </ul> <p>The PCIe technology is under constant development. For the latest information, see the <a href="#">PCI-SIG website</a>.</p>
2	Physical connector link width	<p>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.</p> <ul style="list-style-type: none"> <li>• x1</li> <li>• x2</li> <li>• x4</li> <li>• x8</li> <li>• x16</li> </ul>
3	Negotiable link width	<p>These numbers correspond to the maximum link bandwidth supported by the slot.</p>

## Riser board components

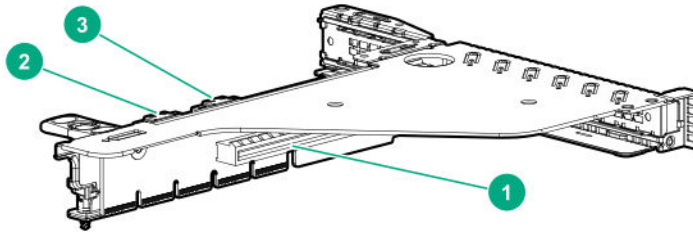
### Standard primary riser



Item	Description
1	PCIe4 x16 (16, 8, 4, 1) slot
2	PCIe4 x16 (16, 8, 4, 1) slot

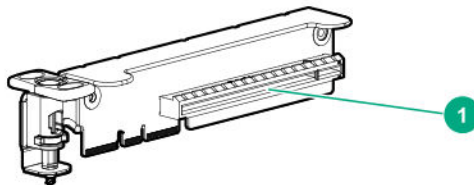


### Slimline primary riser



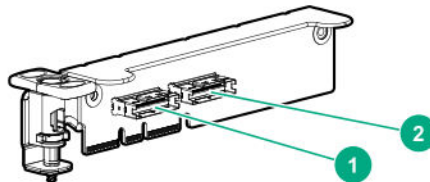
Item	Description
1	PCIe4 x16 (16, 8, 4, 1) slot
2-3	Slimline connectors

### Standard secondary riser



Item	Description
1	PCIe4 x16 (16, 8, 4, 1) slot

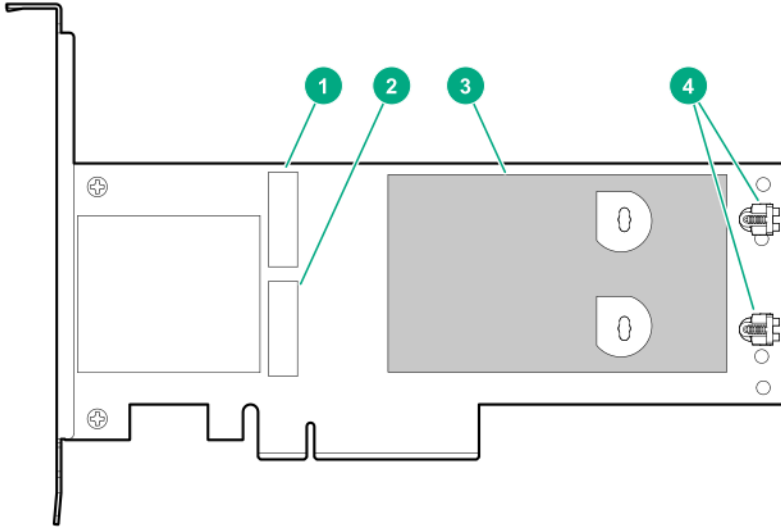
### Slimline secondary riser



Item	Description
1 -2	Slimline connectors

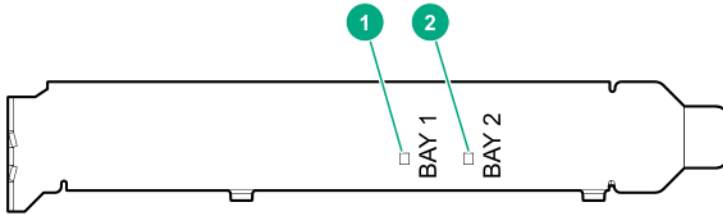


## HPE NS204i-p NVMe OS Boot Device components



Item	Description
1	Drive bay 1
2	Drive bay 2
3	Thermal interface pad with removable liner
4	M.2 drive retaining latches

## HPE NS204i-p NVMe OS Boot Device LED definitions



Item	Description	Fault LED status
1	Bay 1 LED	Off: Normal
2	Bay 2 LED	Flashing 1Hz: Drive predictive failure Amber: Drive failure



# Fan bay numbering



The arrow points to the front of the server.

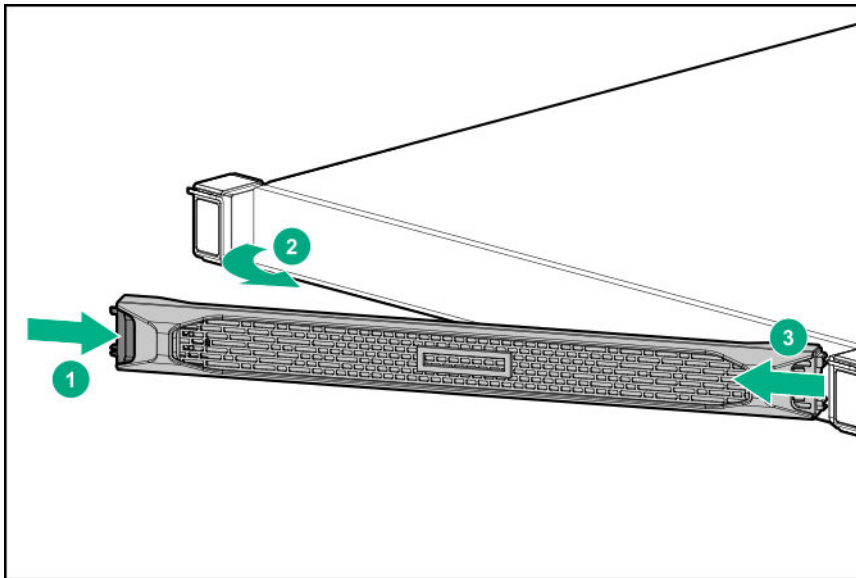


# Operations

## Removing the bezel

### Procedure

1. Remove the Kensington security lock.
2. Remove the bezel.
  - a. Press the latch.
  - b. Open the bezel.
  - c. Detach the bezel from the latch ear.



## Powering up the server

### Procedure


1. **Remove the bezel.**
2. Use one of the following methods to power up the server:
  - Press the Power On/Standby button.
  - Use the virtual power button through iLO.
3. **Install the bezel.**





# Powering down the server

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

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## Prerequisites

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

## Procedure

### 1. Remove the bezel.

### 2. To power down the server, use one of the following methods.

- Press and release the Power On/Standby button.  
This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.
- 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.

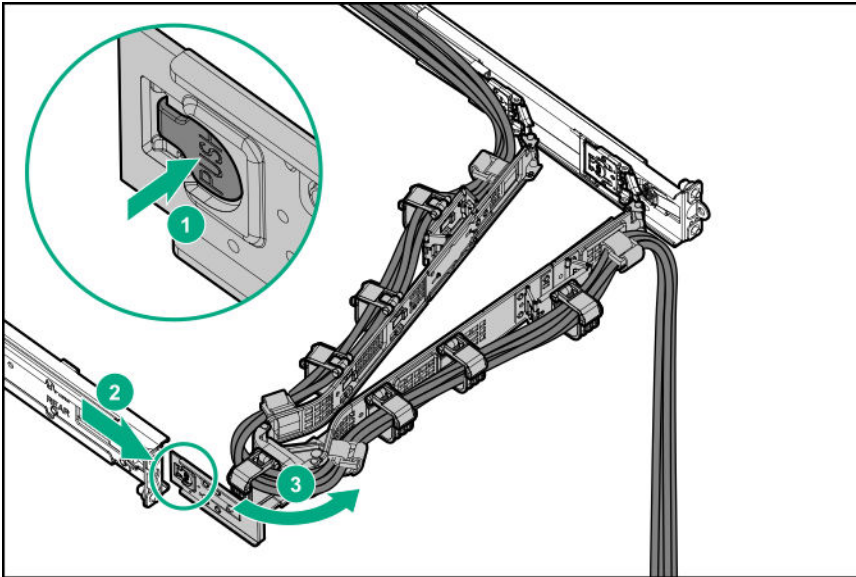
### 3. Verify that the server is in standby mode by observing that the system power LED is amber.

# Accessing the product rear panel

## Procedure

If installed, release the cable management arm and then swing the arm away from the rack.





## Extending the server from the rack

To perform this procedure, you will need a T-25 screwdriver.



**WARNING:** To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

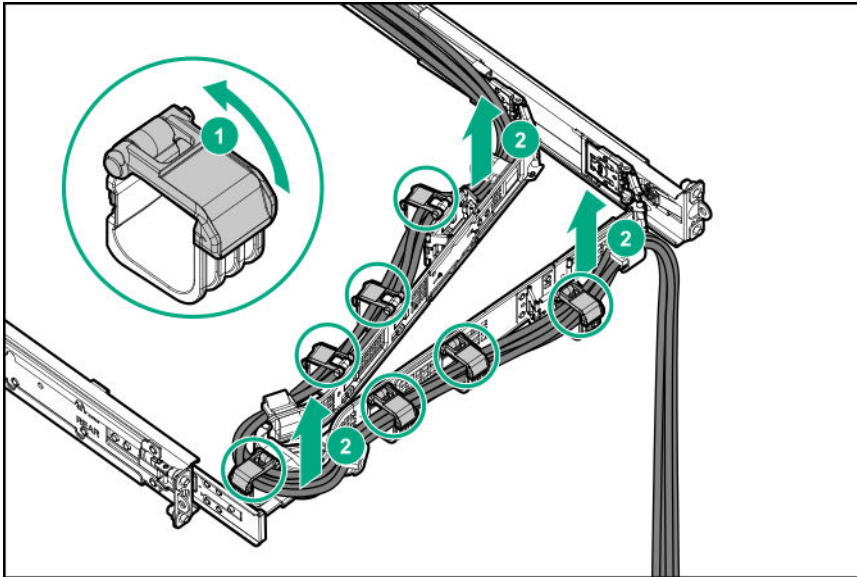
### Procedure

1. To fully extend the long chassis server with the cable management arm, do the following:

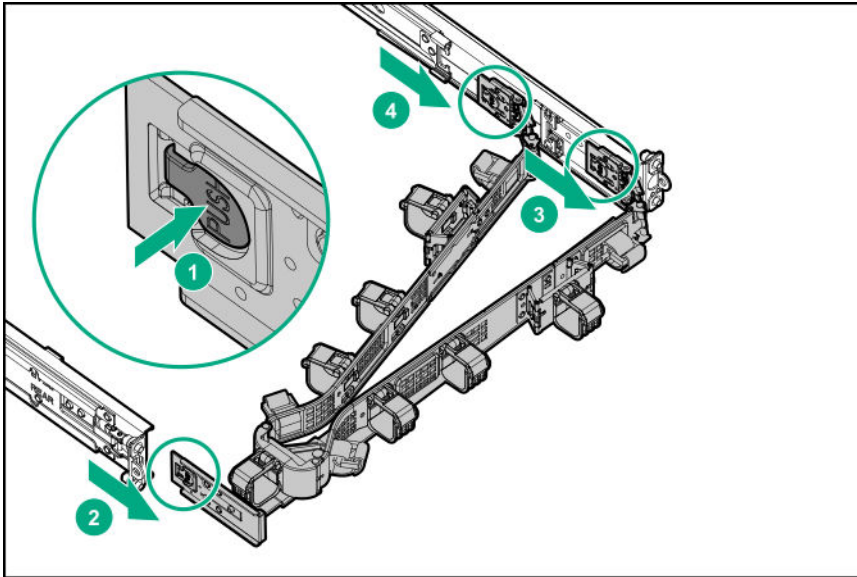
**NOTE:** If the cable management arm option is installed for a short chassis server, you can extend the server without powering down the server or disconnecting peripheral cables and power cords.

- a. If installed, **remove the bezel.**
- b. **Power down the server.**
- c. Disconnect all peripheral cables and power cords.
- d. Remove the cables from the cable management arm.



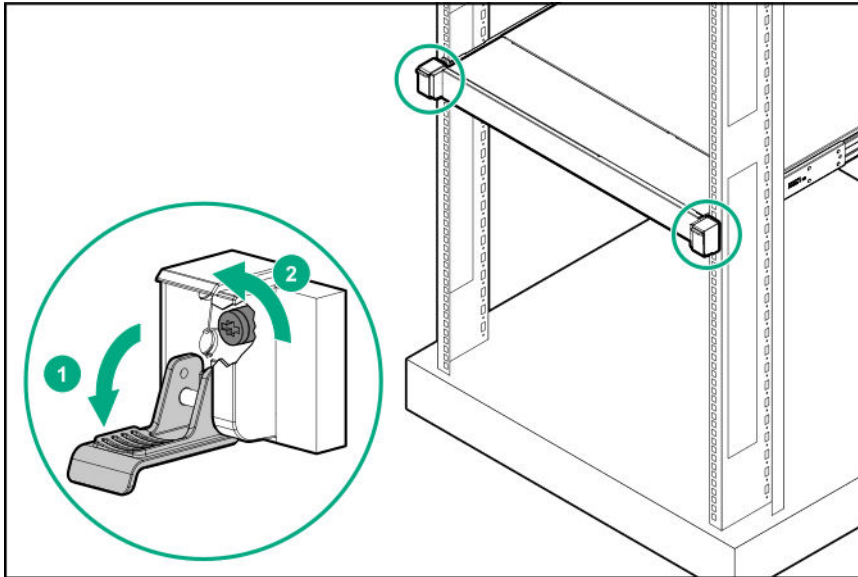


- e. Remove the cable management arm.



- 2. Extend the server from the rack:
  - a. Open the latches on both sides of the server.
  - b. If necessary, use a T-25 Torx screwdriver to loosen the shipping screws.
  - c. Slide the server out of the rack.





3. Extend the server on the rack rails until the server rail-release latches engage.

## Removing the server from the rack



**WARNING:** This server is heavy. To reduce the risk of personal injury or damage to the equipment:

- 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.

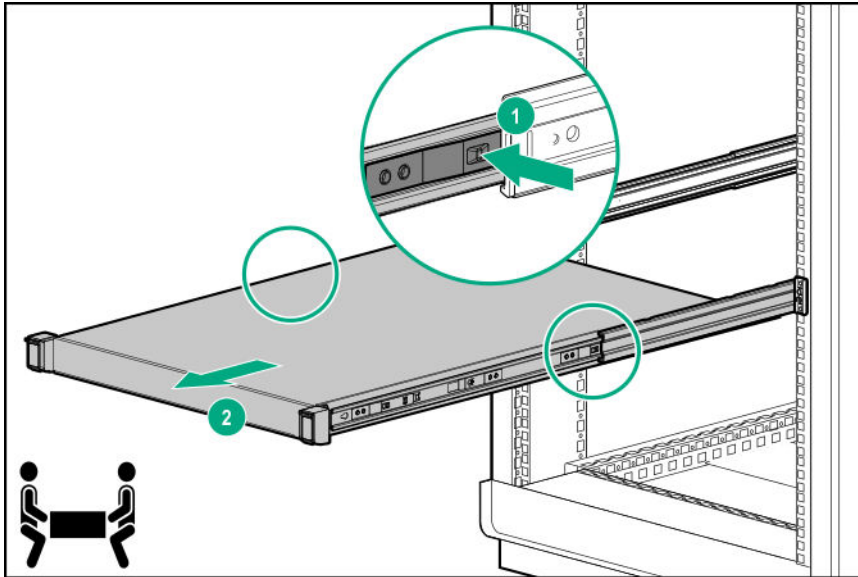
Hewlett Packard Enterprise recommends that a minimum of two people are required for all rack server installations. If the server is installed higher than chest level, a third person may be required to help align the server.

- Use caution when installing the server in or removing the server from the rack. The server is unstable when not fastened to the rails.

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. **Extend the server from the rack.**
4. Remove the server from the rack. Press and hold both server rail-release latches while removing the server.





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

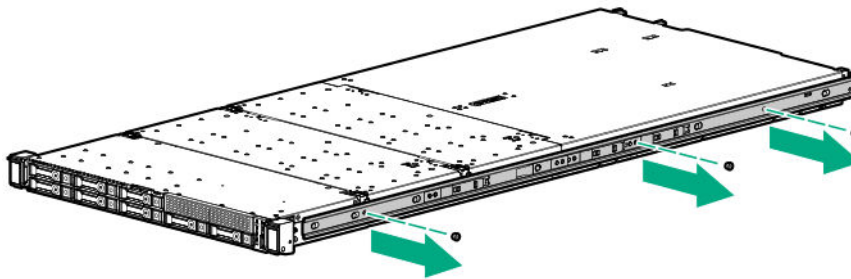
## Removing the inner rack rails

### Prerequisites

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

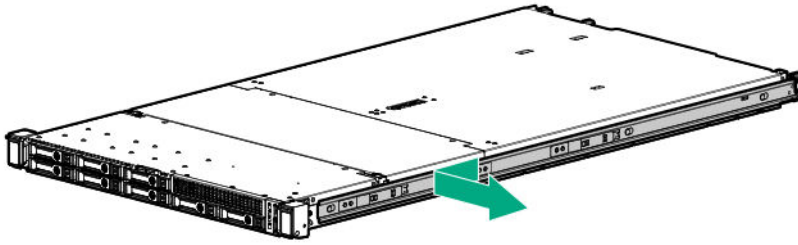
### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. For the long chassis, remove three screws on each side.



7. Slide the inner rails towards the front of the chassis and pull them out.





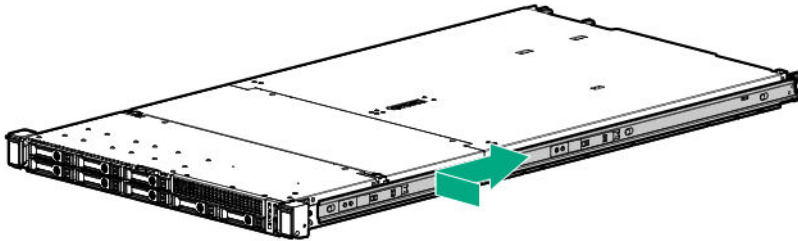
## Installing the inner rack rails

### Prerequisites

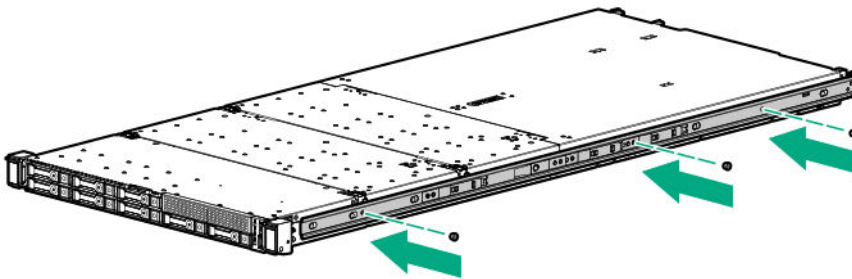
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

1. Align the holes on the rack rail with the chassis alignment pins and slide the rails against the chassis wall.



2. For the long chassis, install three screws on each side.



## Removing the access panel

**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.

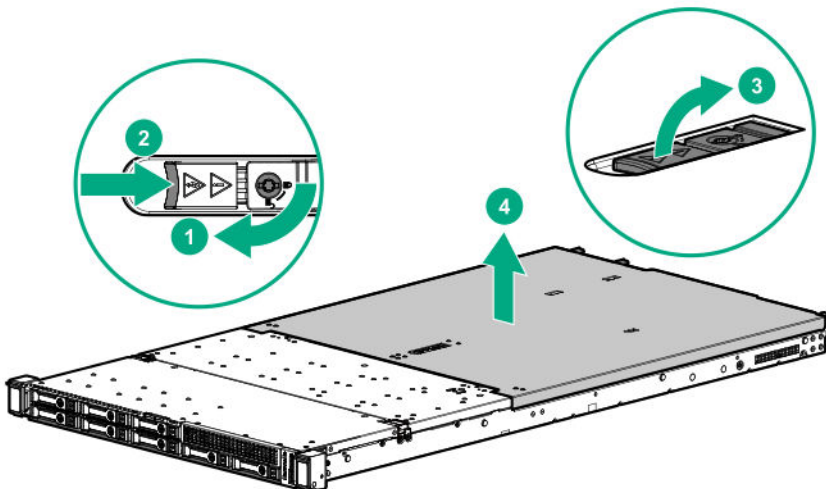
### Prerequisites

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



## Procedure

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



## Installing the access panel

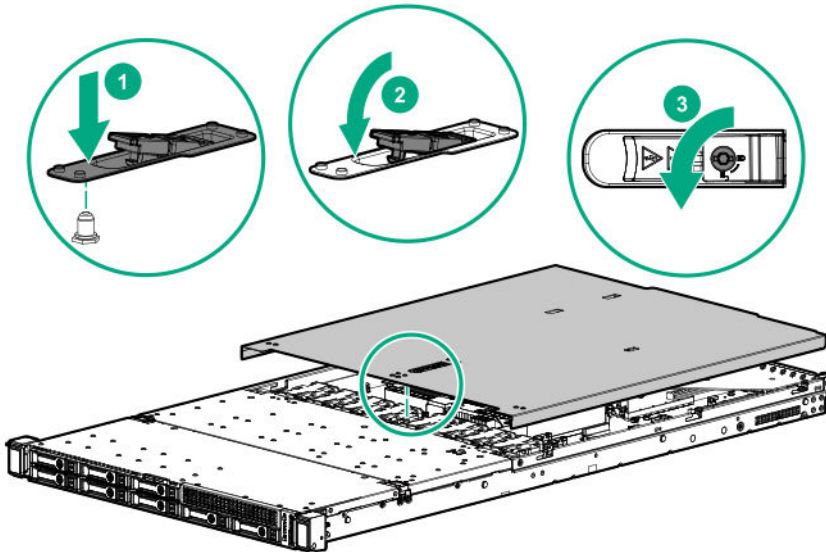
### Prerequisites

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

### 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.





## Removing the outer drive cage

### Prerequisites

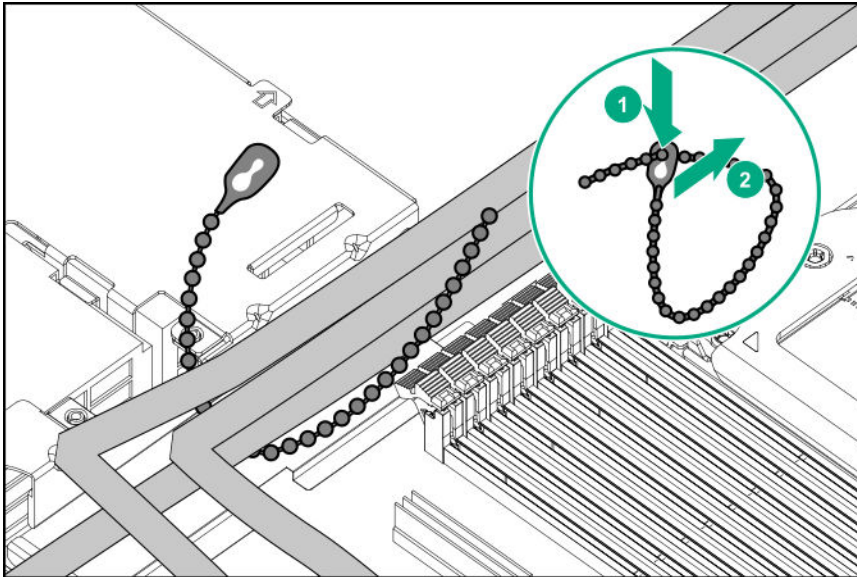
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

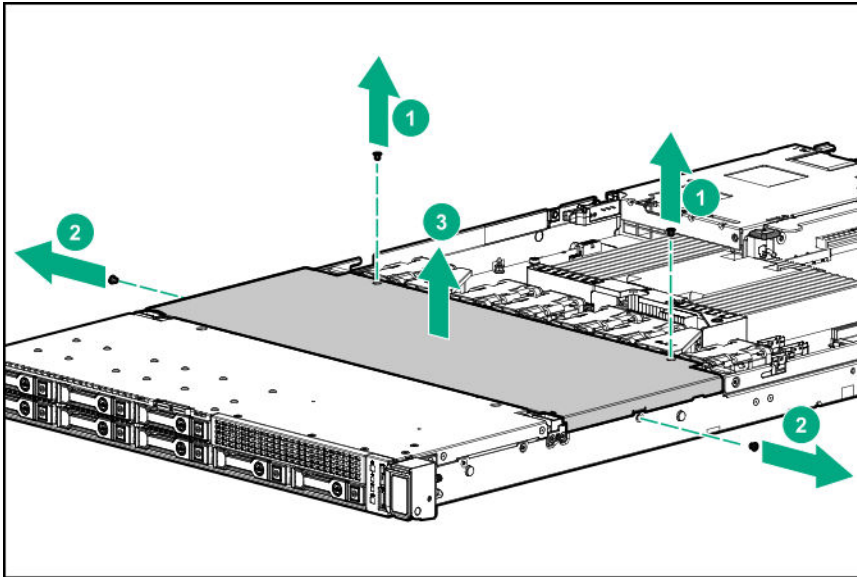
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the inner rack rails.**
7. **Remove the access panel.**
8. Disconnect all drive backplane cables connected to the system board or expansion boards.
9. Release all cables from the cable tie.





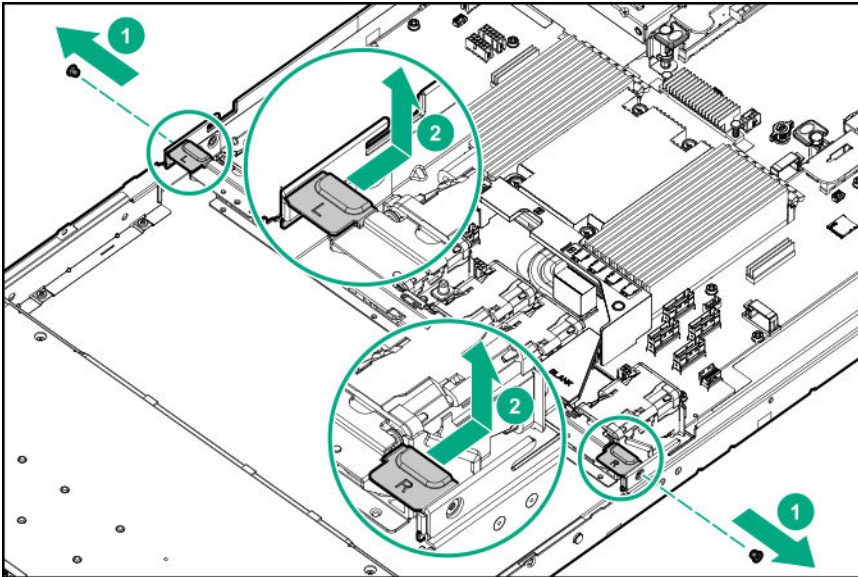


**10.** Remove the inner drive cage blank.

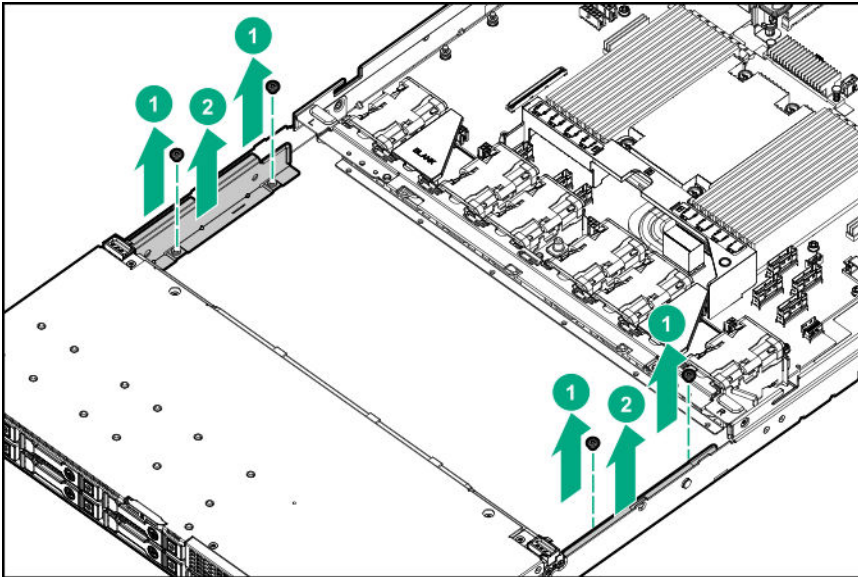


**11.** Remove the fan wall covers.



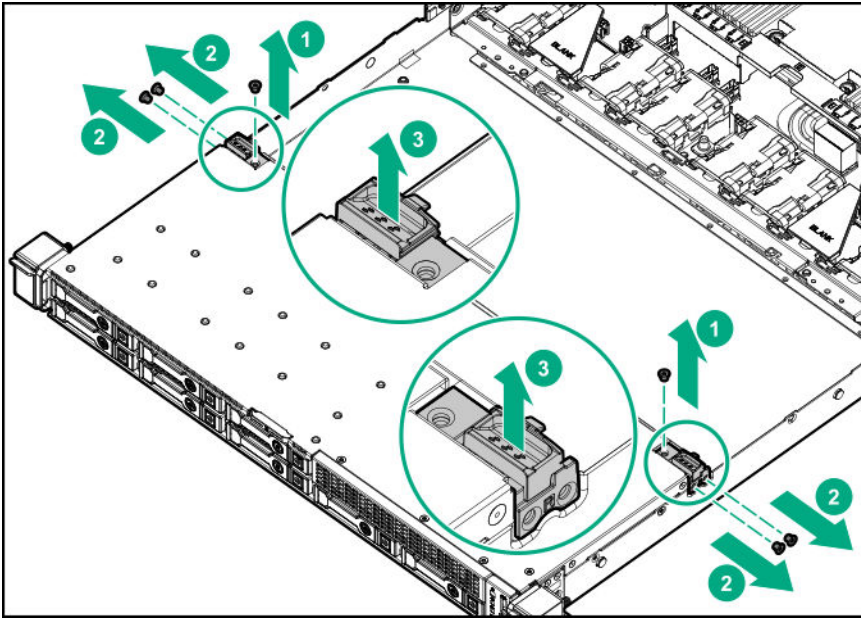


**12.** For SFF drive cage, remove the cable covers.



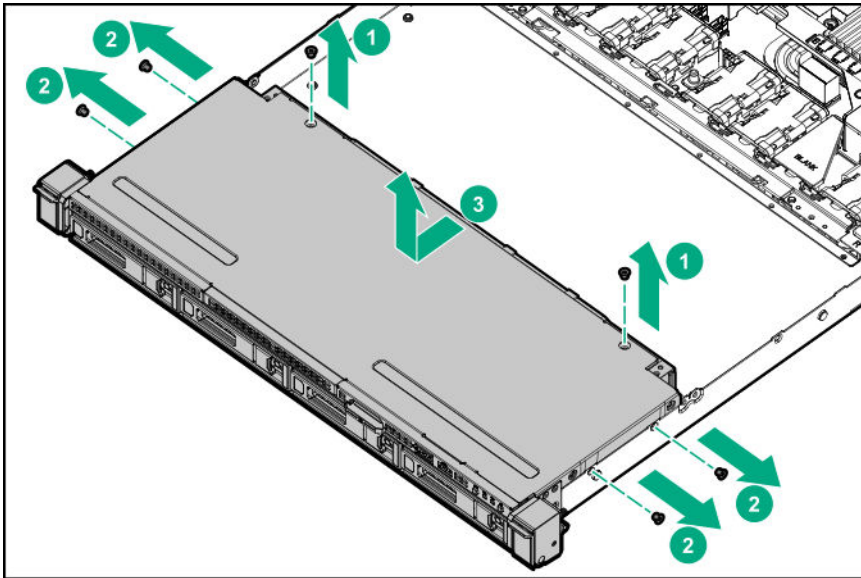
**13.** Remove the drive cage latches.





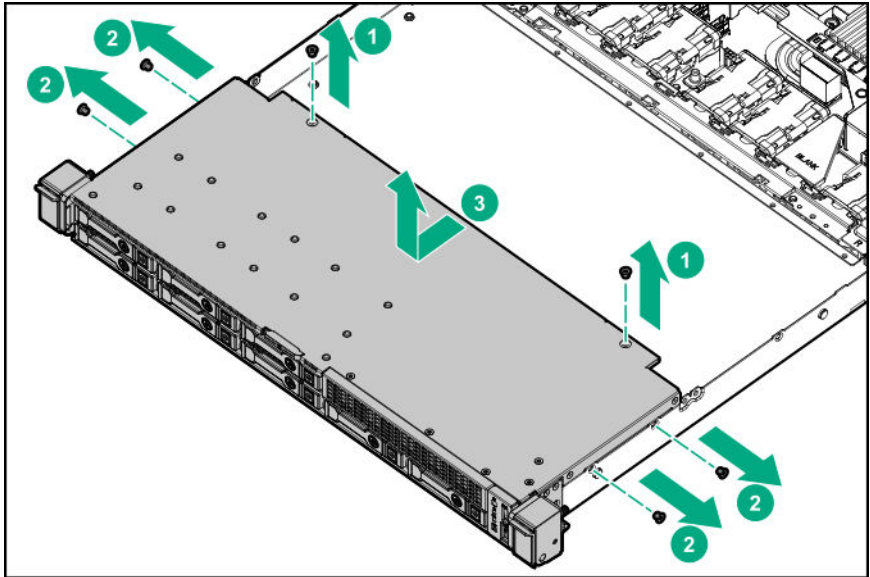
**14.** Remove the outer drive cage.

- LFF



- SFF





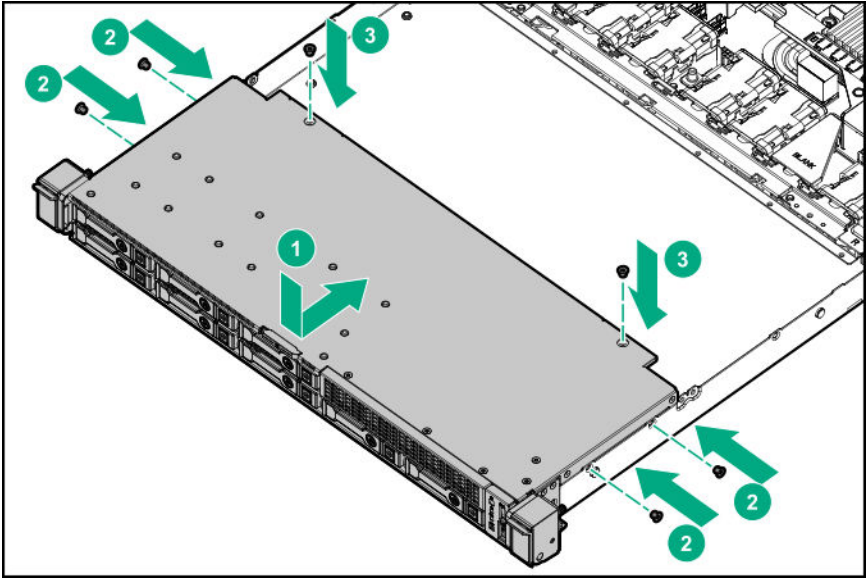
# Installing the outer drive cage

### Prerequisites

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

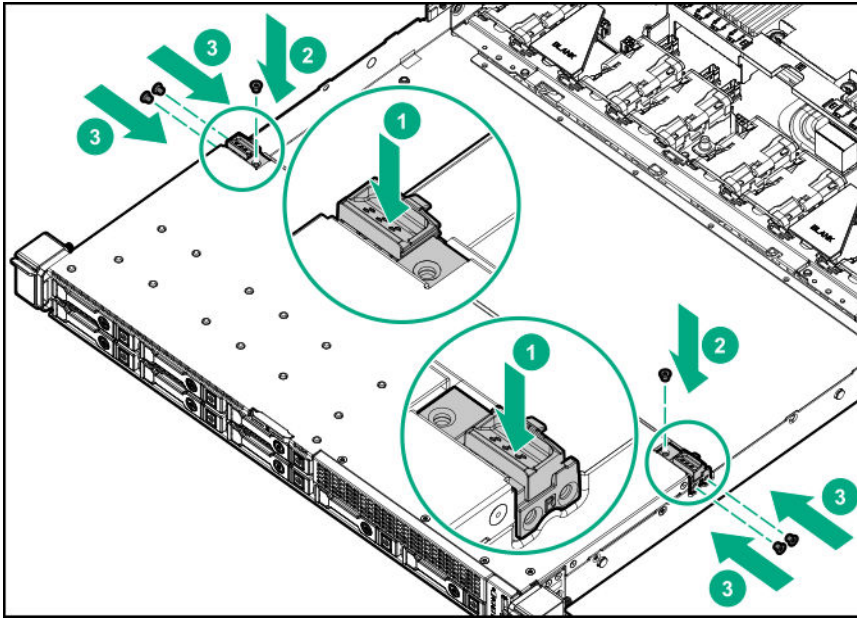
### Procedure

- 1. Install the outer drive cage.
  - a. Slide the outer cage to engage with spools on the base pan of the chassis.
  - b. Secure the cage to the chassis.

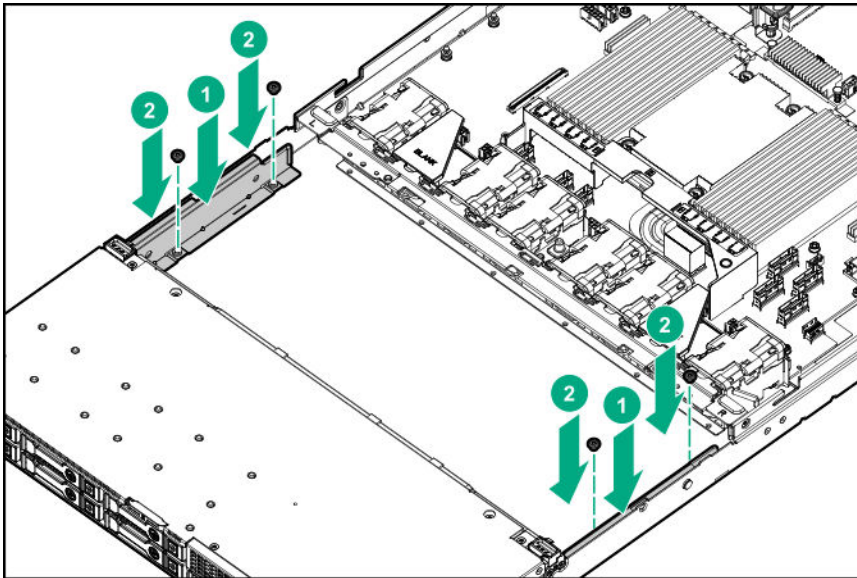


- 2. Install the drive cage latches.



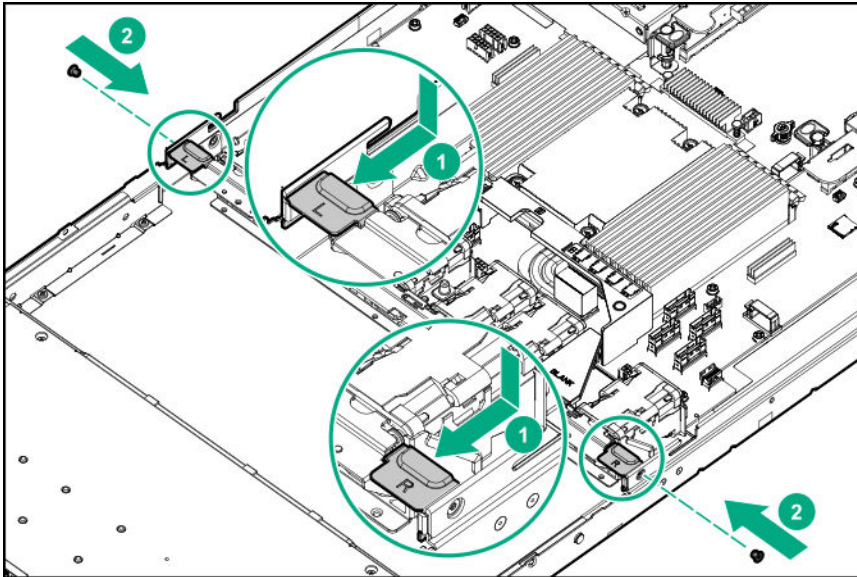


3. Do one of the following:
  - For LFF chassis, route cables through the routing holes on the middle wall.
  - For SFF chassis, route cables along both the side walls.
4. For SFF chassis, install the cable covers on both sides of the chassis.

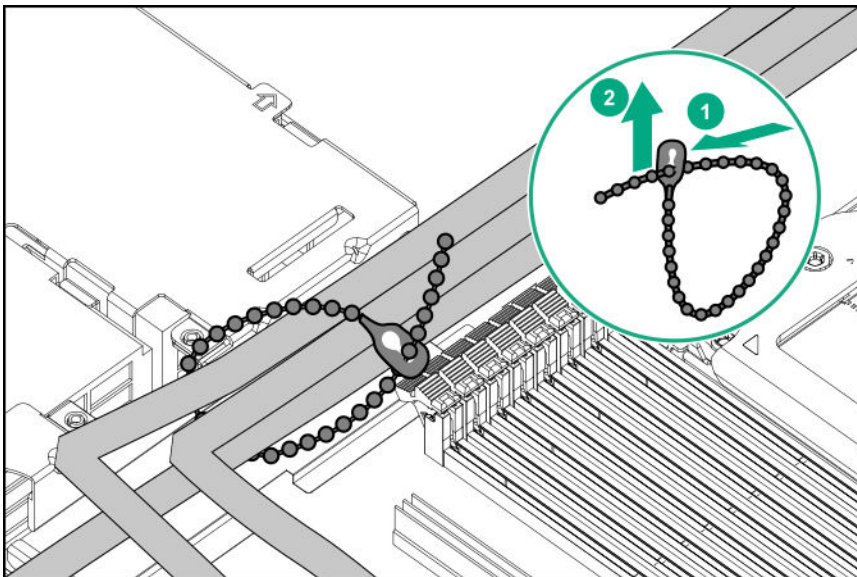


5. Install the fan wall covers.



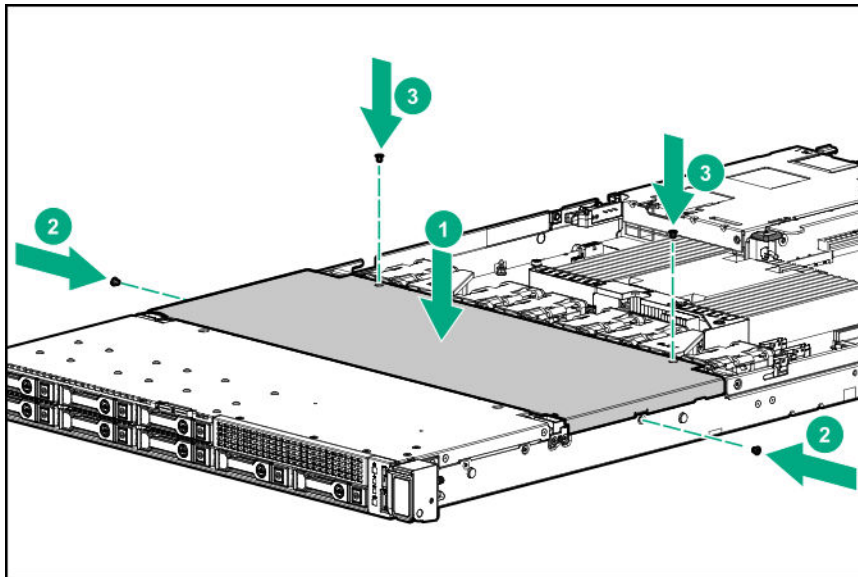


6. **Connect all drive cables.**
7. Secure all drive signal cables with the cable tie.



8. Install the inner drive cage blank.





9. **Install the access panel.**
10. **Install the inner rack rails.**
11. **Install the server into the rack.**
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. **Power up the server.**
16. If removed, **install the bezel.**

## Removing an inner drive cage

### Prerequisites

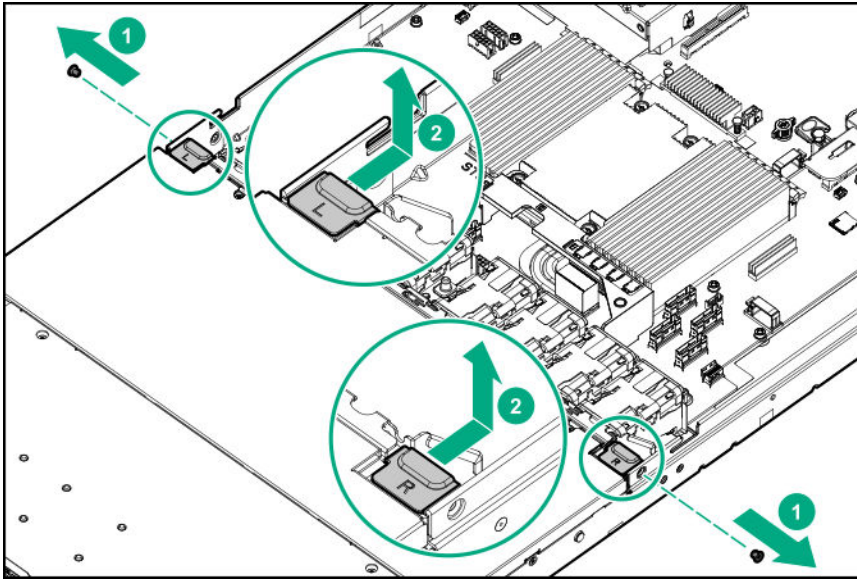
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

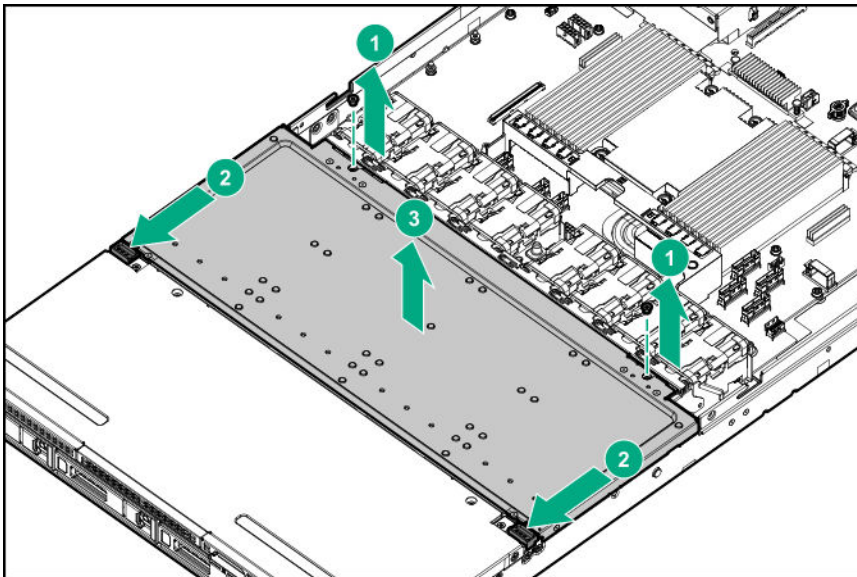
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the inner rack rails.**



7. **Remove the access panel.**
8. Disconnect all drive backplane cables connected to the system board or expansion boards.
9. Remove the fan wall covers.



10. Remove the inner drive cage.



## Installing an inner drive cage

### Prerequisites

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

### Procedure

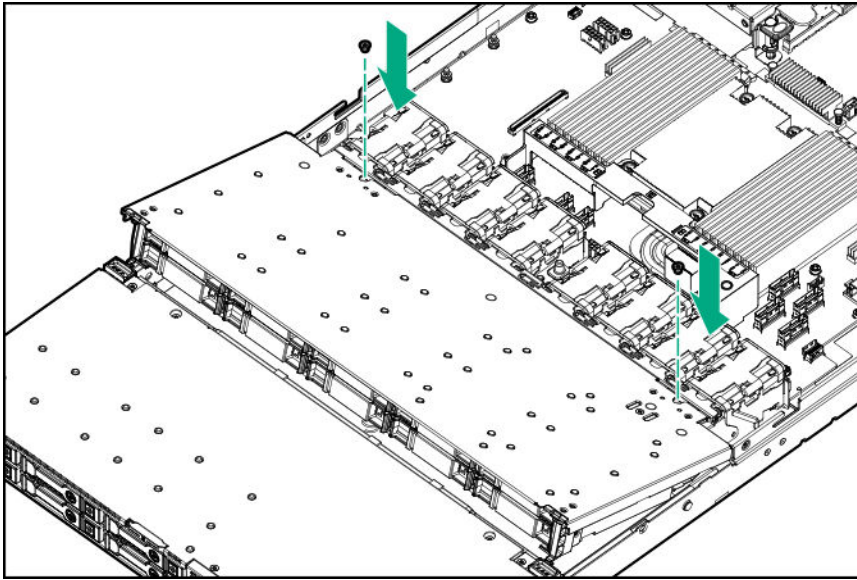
1. Install the inner drive cage:



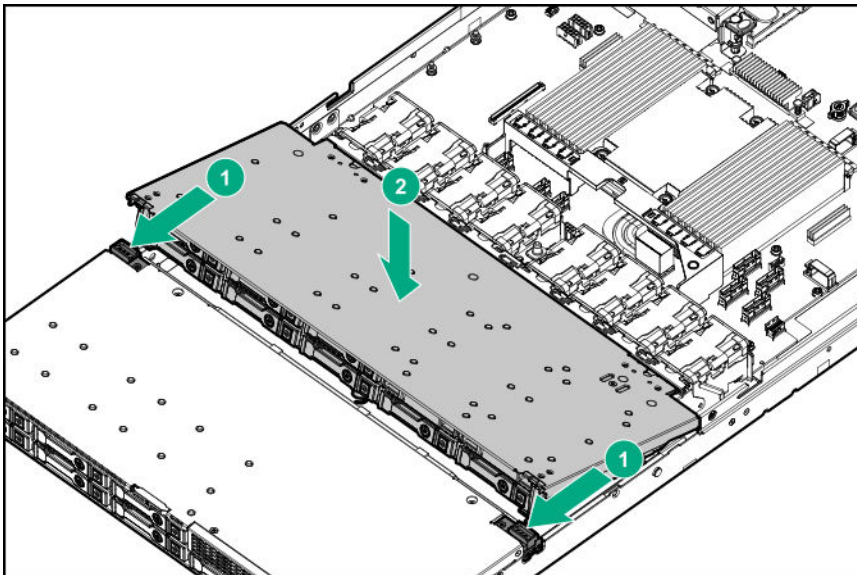


- a. Align the cage with the cage boundary wall.
- b. Install cage cover screws.

**⚠ CAUTION:** The inner drive cage is heavy. Be careful while installing the cage as it might cause finger injury.

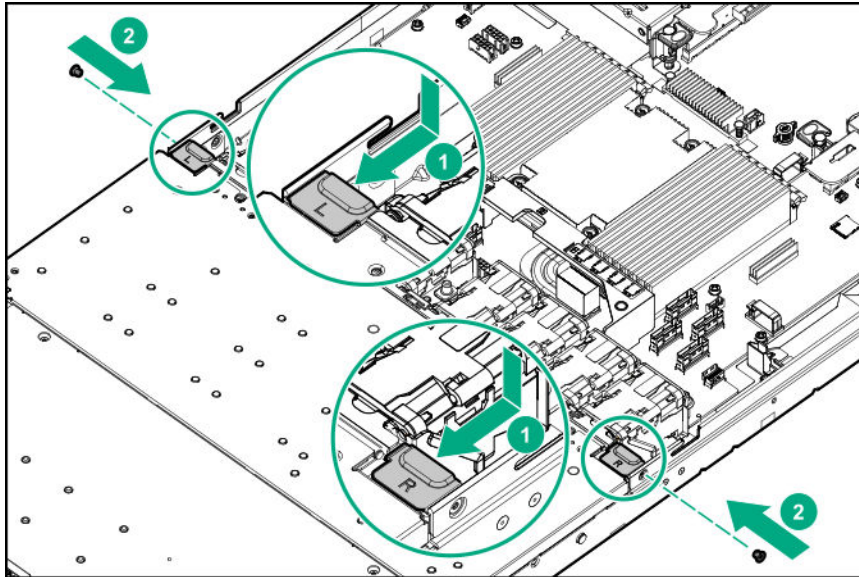


2. If removed, **install the drives in the inner drive cage.**
3. Secure the cage to the chassis:
  - a. Press and hold the cage latches.
  - b. Press the drive cage down.



4. Install the fan wall covers.





5. **Install the access panel.**
6. **Install the inner rack rails.**
7. **Install the server into the rack.**
8. Connect all peripheral cables to the server.
9. Connect each power cord to the server.
10. Connect each power cord to the power source.
11. **Power up the server.**
12. If removed, **install the bezel.**

## Removing the air baffle

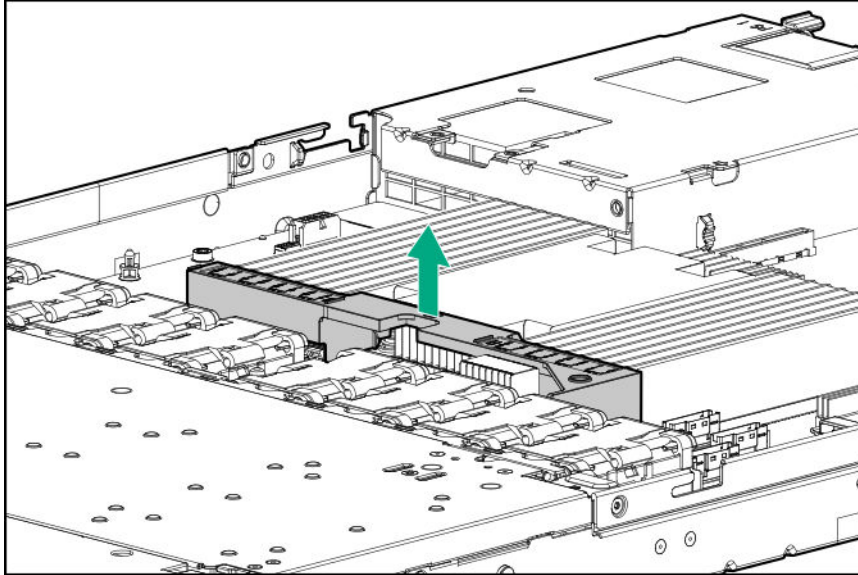
**⚠ CAUTION:** For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**

6. **Remove the access panel.**

7. Remove the air baffle.



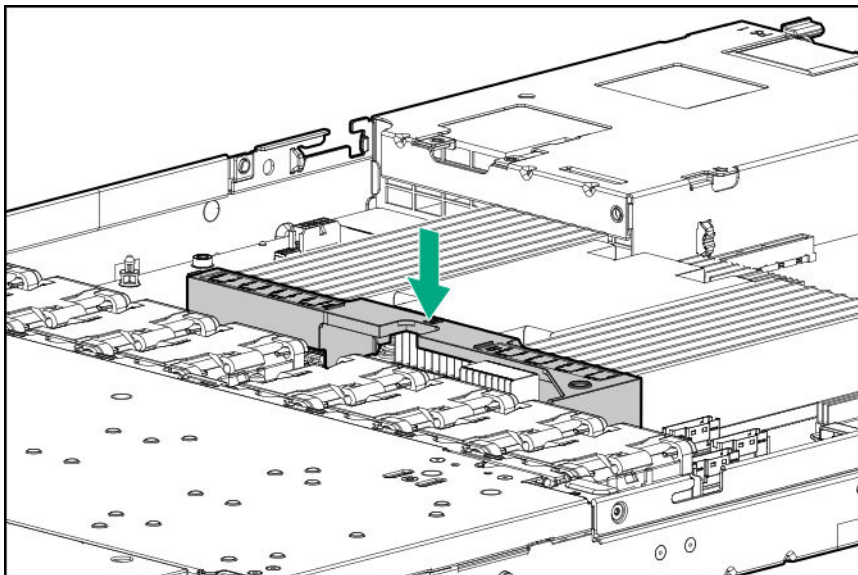
## Installing the air baffle

### Procedure

1. Observe the following alert.

**⚠ 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.

2. Install the air baffle.



3. **Install the access panel.**



4. **Install the server into the rack.**
5. Connect all peripheral cables to the server.
6. Connect each power cord to the server.
7. Connect each power cord to the power source.
8. **Power up the server.**
9. If removed, **install the bezel.**

## Removing a riser cage



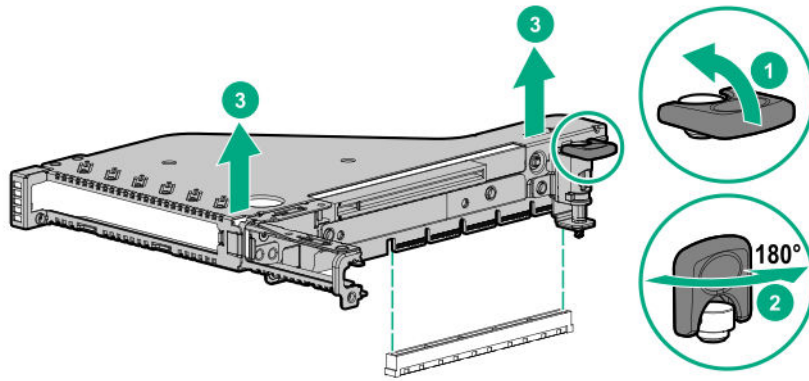
**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.



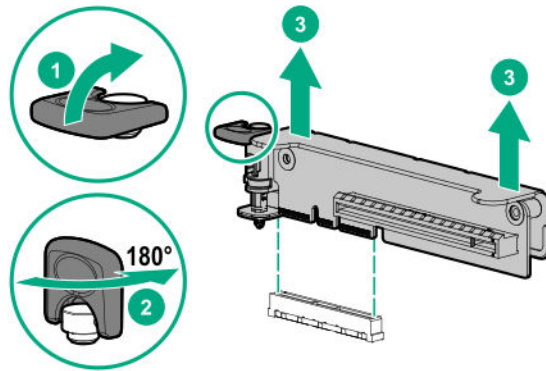
**CAUTION:** To prevent damage to the server or expansion boards, power down the server, and disconnect all power cords before removing or installing the riser board.

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. If installed, disconnect all cables from the expansion boards and remove the expansion boards.
8. Remove the riser cage.
  - Primary riser cage



- Secondary riser cage

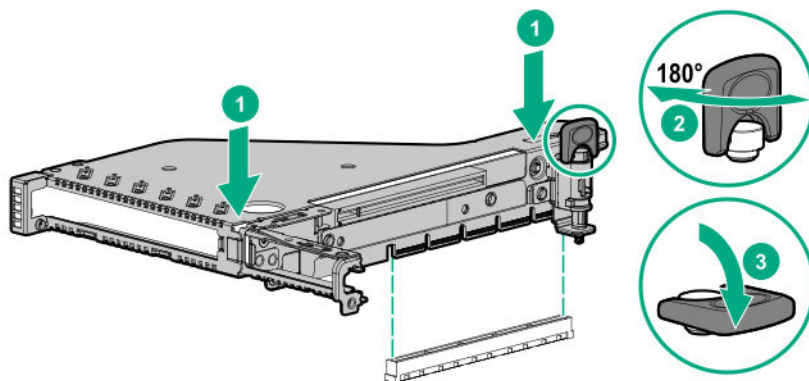


## Installing a riser cage

### Procedure

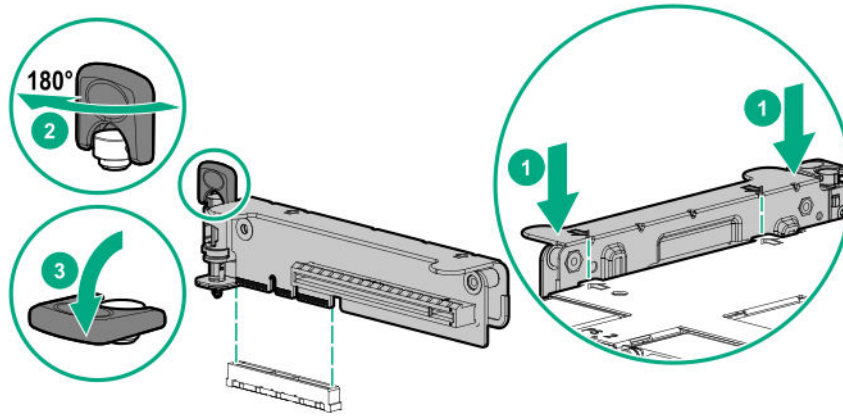
1. Install the riser cage.

- Primary riser cage



- Secondary riser cage





2. **Install the access panel.**
3. **Install the server into the rack.**
4. Connect all peripheral cables to the server.
5. Connect each power cord to the server.
6. Connect each power cord to the power source.
7. **Power up the server.**
8. If removed, **install the bezel.**

## Removing a riser blank

**⚠ CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either a riser blank or an expansion board installed.

### Prerequisites

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

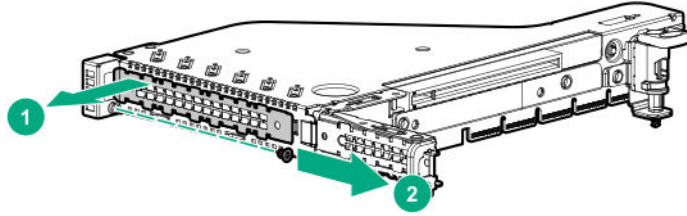
### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**

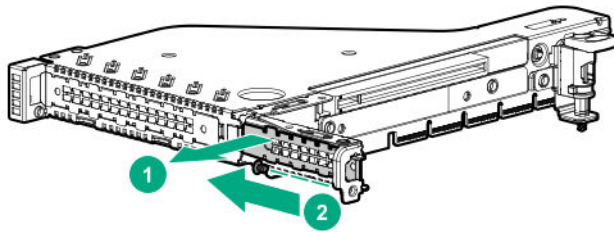
7. If removing the riser blank from primary riser, **remove the primary riser cage.**

8. Remove the riser blank.

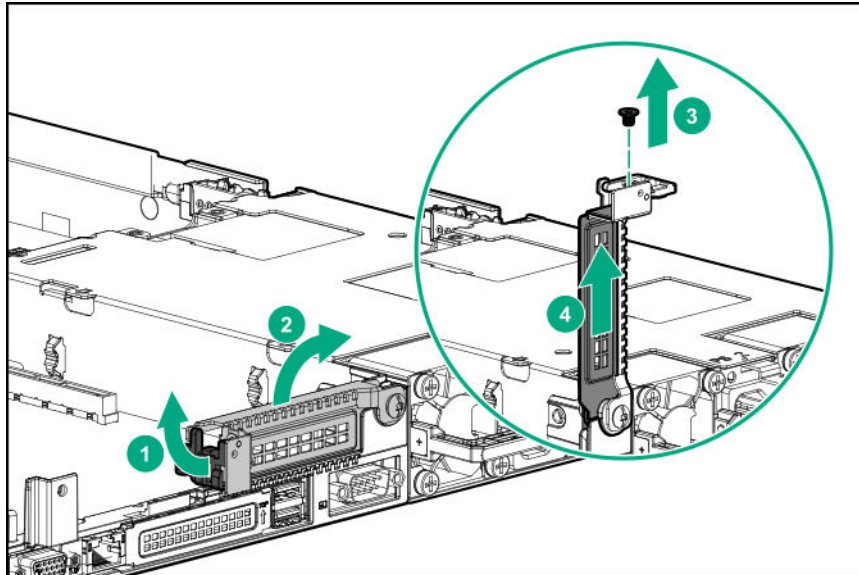
- Primary riser slot 1



- Primary riser slot 2

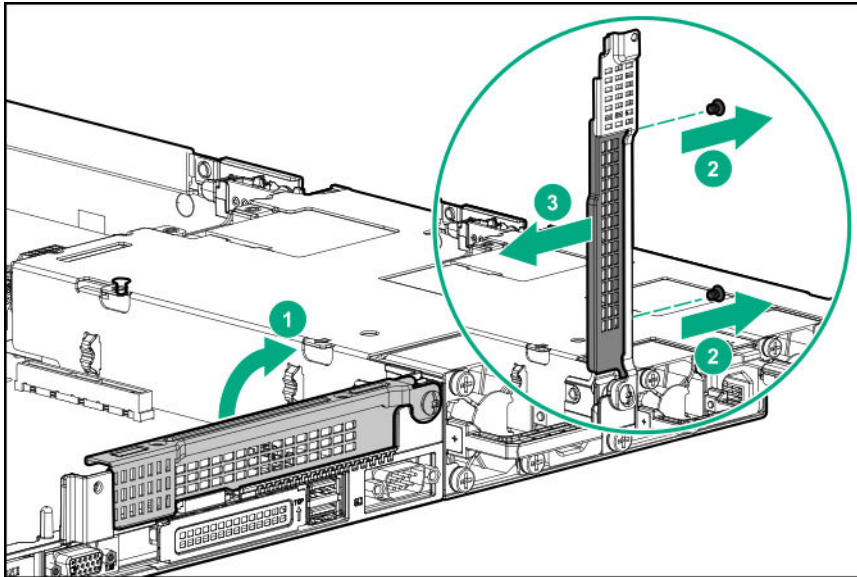


- Secondary riser slot 3: low-profile blank



- Secondary riser slot 3: full-height blank





## Removing the media bay blank

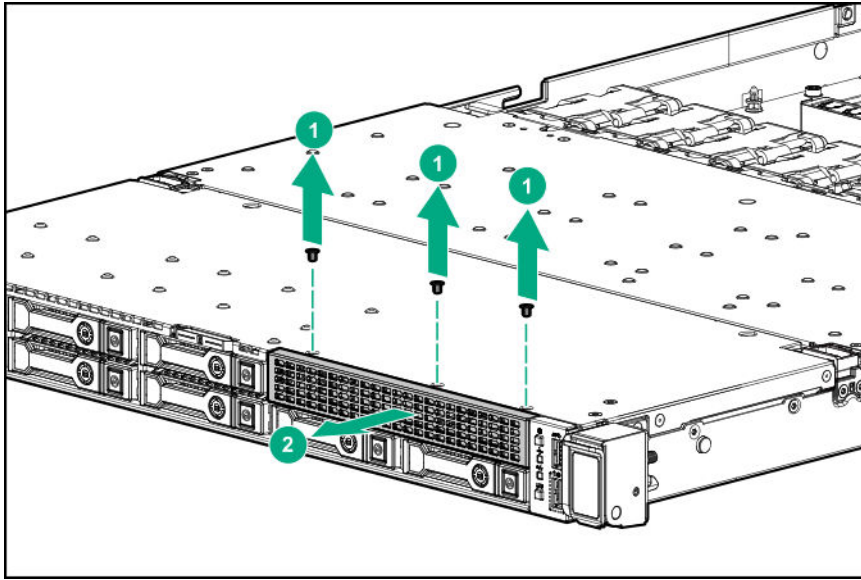
To perform this procedure, you will need a T-10 screwdriver.

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. Remove the media bay blank.  
Retain the blank for future use.







# Setup

## Optional service

Delivered by experienced, certified engineers, Hewlett Packard Enterprise support services help you keep your servers up and running with support packages tailored specifically for HPE ProLiant systems. Hewlett Packard Enterprise 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.

Hewlett Packard Enterprise 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 Hewlett Packard Enterprise support services for hardware, software or both are:

- Foundation Care – Keep systems running.
  - 6-Hour Call-to-Repair<sup>1</sup>
  - 4-Hour 24x7
  - Next Business Day
- Proactive Care – Help prevent service incidents and get you to technical experts when there is one.
  - 6-Hour Call-to-Repair<sup>1</sup>
  - 4-Hour 24x7
  - Next Business Day
- Deployment service for both hardware and software
- Hewlett Packard Enterprise Education Services – Help train your IT staff.

<sup>1</sup>The time commitment for this repair service might vary depending on the geographical region of site. For more service information available in your site, contact your local **Hewlett Packard Enterprise support center**.

For more information on Hewlett Packard Enterprise support services, see the **Hewlett Packard Enterprise website**.

## Initial system installation

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

- **Ordering the HPE Installation Service**
- **Setting up the server**

## HPE Installation Service

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

The HPE Installation Service provides the following benefits:



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

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

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

## Setting up the server

### Prerequisites

Before setting up the server:

- Download the latest SPP:
  - <http://www.hpe.com/servers/spp/download>**
  - Support validation required
- Verify that your OS or virtualization software is supported:
  - <http://www.hpe.com/info/ossupport>**
- Read the HPE UEFI requirements for ProLiant servers on the **Hewlett Packard Enterprise website**. If the UEFI requirements are not met, you might experience boot failures or other errors when installing the operating system.
- Obtain the storage driver if needed:
  - Download it from the HPE Support Center website:
    - <http://www.hpe.com/support/hpesc>**
  - Extract it from the SPP.
- 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

#### Unbox the server

1. Unbox the server and verify the contents:
  - Server
  - Power cord
  - Rack-mounting hardware (optional)
  - Documentation



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

### **Install the hardware options**

2. (Optional) Install hardware options. For installation instructions, see **Hardware options installation**.

### **Rack the server**

#### **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 and run a remote console:

- a. Verify the following:

- iLO is licensed to use the remote console feature.

If iLO is not licensed, visit the HPE website:

**<http://www.hpe.com/info/ilo>**

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

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

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

Note the following:

- The iLO hostname is on the serial number/iLO information 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.

### **Power on the server**

5. Press the Power On/Standby button.

For remote management, use the iLO virtual power button.

### **Update the firmware**

6. Using the SPP, **update the following**:

- System ROM
- Storage controller
- Network adapters
- Intelligent Provisioning

### **Set up storage**

7. Setup the storage. Do one of the following:

- To configure the server to boot from a SAN, see the following guide:



<https://www.hpe.com/info/boot-from-san-config-guide>

- If an HPE Smart Array SR controller is installed, use HPE Smart Storage Administrator to create arrays:
  - a. From the boot screen, press **F10** to run Intelligent Provisioning.
  - b. From Intelligent Provisioning, run **HPE Smart Storage Administrator**.
- If no controller is installed, AHCI is enabled by default. You can deploy an OS or virtualization software.

**Deploy an OS or virtualization software**

**NOTE: HPE ProLiant DL325 Gen10 Plus Server - A legacy OS booting device is only supported on a specific drive location.**

For the server with an embedded SATA configuration, when the embedded SATA port is connected under Legacy BIOS mode, the drive bay number and the port number do not match. The operating system must be installed on the drive with the lowest port number to successfully boot.

The following table provides information about the affected configurations and the required OS boot drive location. 12 LFF and 24 SFF configurations have no impact as the embedded SATA is not supported.

<b>Embedded SATA configuration</b>	<b>OS boot drive location</b>	<b>Port Number</b>
4LFF	Box 1, Bay 1	Port 5
8LFF	Box 2, Bay 1	Port 1
8SFF	Box 1, Bay 5	Port 1
8SFF + 2SFF	Box 1, Bay 5 (if OS is to be installed in 8SFF)	Port 1
	Box 2, Bay 2 (if OS is to be installed in 2SFF)	Port 7
8SFF + Dual uFF	Box 1, Bay 5 (if OS is to be installed in 8SFF)	Port 1
	Box 2, Bay 102 (if OS is to be installed in uFF)	Port 5
20SFF (8 + 2 SATA/8 + 2 SATA)	Box 4, Bay 1 (if OS is to be installed in 2SFF)	Port 1

To identify exact drive bay location, see [Drive box identification](#) and [Drive bay numbering](#).

For more information, see the [customer advisory](#).

**8. Deploy an OS or virtualization software. Do one of the following:**

- Press **F10** at the POST screen.  
For Intelligent Provisioning 3.30 and later, you are prompted to select whether you want to enter the Intelligent Provisioning or HPE SMB Setup mode. After you have selected a mode, you must reprovision the server to change the mode that launches when you boot to **F10**.
- Manually deploy an OS.
  - a. Insert the installation media.

For remote management, click **Virtual Drives** in the iLO remote console to mount images, drivers, or files to a virtual folder. If a storage driver is required to install the OS, use the virtual folder to store the driver.

- b. Press **F11** at boot screen and select the boot device.
- c. After the OS installed, **update the drivers**.

### Register the server

9. To experience quicker service and more efficient support, register the server at the HPE website:  
<https://myenterpriselicense.hpe.com>

## Operational 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.

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

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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.

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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:** 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).

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### 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).

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**⚠ 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.

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**⚠ 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.

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**⚠ 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.

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## 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.



## Server warnings and cautions

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**WARNING:** This server is heavy. To reduce the risk of personal injury or damage to the equipment:

- 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. Hewlett Packard Enterprise recommends that a minimum of two people are required for all rack server installations. A third person may be required to help align the server if the server is installed higher than chest level.
  - Use caution when installing the server in or removing the server from the rack; it is unstable when not fastened to the rails.
- 



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

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**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 completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

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**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.

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

**AVERTISSEMENT:** Pour réduire les risques d'incendie ou de brûlures après le retrait du module batterie :

- N'essayez pas de démonter, d'écraser ou de percer le module batterie.
- Ne court-circuitiez pas ses contacts externes.
- Ne jetez pas le module batterie dans le feu ou dans l'eau.

Après avoir déconnecté l'alimentation, une tension peut subsister dans la batterie durant 1 à 160 secondes.

---



**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:** 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.

---



**CAUTION:** Do not operate the server for long periods with the internal drive cage open. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

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## Rack warnings

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

- The leveling jacks are extended to the floor.
  - The full weight of the rack rests on the leveling jacks.
  - The stabilizing feet are attached to the rack if it is a single-rack installation.
  - The racks are coupled together in multiple-rack installations.
  - Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.
- 



**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.
- 



**WARNING:** To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.

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**WARNING:** When installing a server in a telco rack, be sure that the rack frame is adequately secured at the top and bottom to the building structure.

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## Electrostatic discharge

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

To prevent electrostatic damage:

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

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

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

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

## Installing the server into the rack

**⚠ WARNING:** This server is heavy. To reduce the risk of personal injury or damage to the equipment:

- 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. Hewlett Packard Enterprise recommends that a minimum of two people are required for all rack server installations. A third person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack; it is unstable when not fastened to the rails.

**⚠ 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.

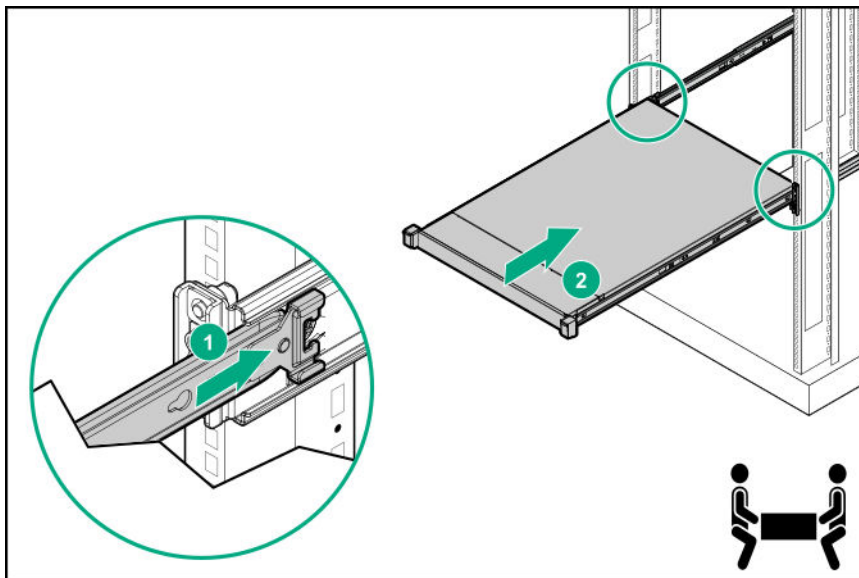
### Procedure

1. Install the rack rail option.

For more information, see Installation Instructions on the [Hewlett Packard Enterprise website](#).

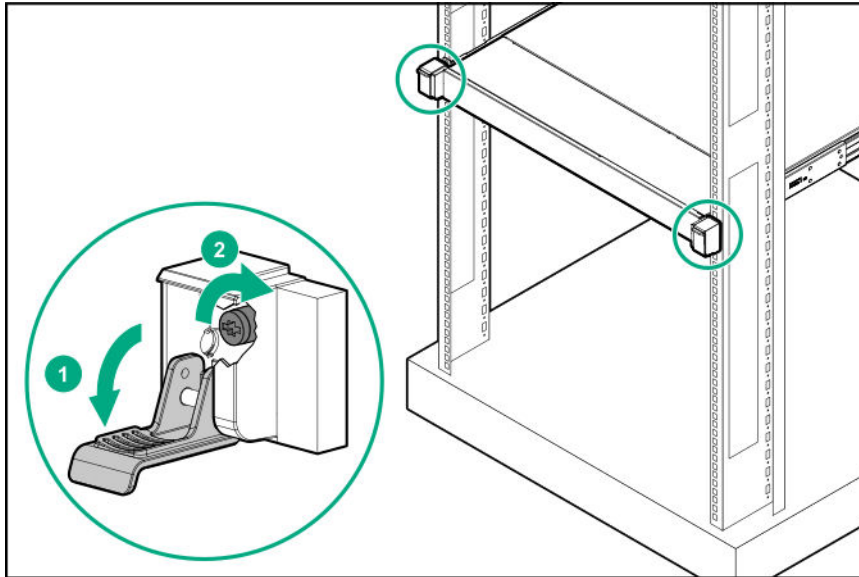
2. Install the server into the rack:

- a. Align the inner rails of the server with the outer rails.
- b. Slide the server into the rack until the quick-release latches engage with the front columns of the rack.



- c. Open the latches and tighten the shipping screws, if necessary.





3. Connect peripheral devices to the server.  
For information on identifying connectors, see **Rear panel components**.
4. Connect the power cord to the rear of the server.
5. Secure the power cord in the cable management arm.
6. Connect the power cord to the power source.

## POST screen options

When the server is powered on, the POST screen is displayed. The following options are displayed:

- **System Utilities (F9)**  
Use this option to configure the system BIOS.
- **Intelligent Provisioning (F10)**  
Use this option to deploy an operating system or configure storage.
- **Boot menu (F11)**  
Use this option to make a one-time boot selection.
- **Network boot (F12)**  
Use this option to boot the server from the network.

## Operating system

This ProLiant server does not ship with provisioning media. Everything required to manage and install the system software and firmware is preloaded on the server.

To operate properly, the server must have a supported operating system. Attempting to run an unsupported operating system can cause serious and unpredictable results. For the latest information on operating system support, see the **Hewlett Packard Enterprise website**.



Failure to observe UEFI requirements for ProLiant Gen10 servers can result in errors installing the operating system, failure to recognize boot media, and other boot failures. For more information on these requirements, see the *HPE UEFI Requirements* on the [Hewlett Packard Enterprise website](#).

To install an operating system on the server, use one of the following methods:

- Intelligent Provisioning—For single-server deployment, updating, and provisioning capabilities. For more information, see [Installing the operating system with Intelligent Provisioning](#).
- Insight Control server provisioning—For multiserver remote OS deployment, use Insight Control server provisioning for an automated solution. For more information, see the Insight Control documentation on the [Hewlett Packard Enterprise website](#).

For additional system software and firmware updates, download the Service Pack for ProLiant from the [Hewlett Packard Enterprise website](#). Software and firmware must be updated before using the server for the first time, unless any installed software or components require an older version.

For more information, see [Keeping the system current](#).

For more information on using these installation methods, see the [Hewlett Packard Enterprise website](#).

## Installing the operating system with Intelligent Provisioning

### Procedure

1. Connect the Ethernet cable between the network connector on the server and a network jack.
2. Press the Power On/Standby button.
3. During server POST, press **F10**.
4. Complete the initial Preferences and Registration portion of [Intelligent Provisioning](#).
5. At the Start screen, click **Configure and Install**.
6. To finish the installation, follow the onscreen prompts. An Internet connection is required to update the firmware and systems software.

## Installing or deploying an operating system

Before installing an operating system, observe the following:

- Be sure to read the HPE UEFI requirements for ProLiant servers on the [Hewlett Packard Enterprise website](#). If UEFI requirements are not met, you might experience boot failures or other errors when installing the operating system.
- Update firmware before using the server for the first time, unless software or components require an older version. For more information, see [Keeping the system current](#).
- For the latest information on supported operating systems, see the [Hewlett Packard Enterprise website](#).
- The server does not ship with OS media. All system software and firmware is preloaded on the server.



# Hardware options installation

This chapter provides detailed instructions on how to install hardware options.

For more information on supported options, see the product QuickSpecs on the HPE ProLiant DL325 Gen10 Plus Server website at:

<https://www.hpe.com/servers/dl325-gen10plus>

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

## 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.

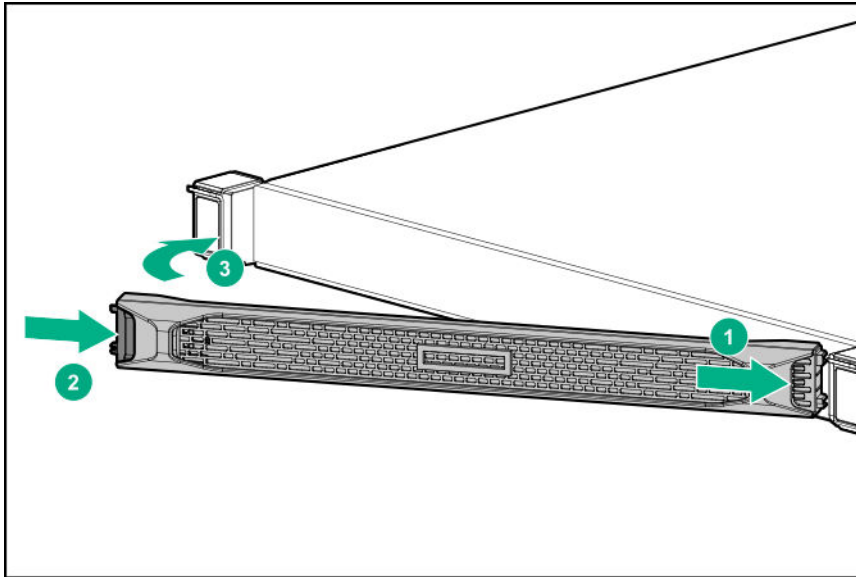
---

## Installing the bezel

### Procedure

1. Install the bezel.
  - a. Attach the bezel to the latch ear.
  - b. Press the latch.
  - c. Close the bezel.





2. Install the Kensington security lock.

## Drive options

### Drive guidelines

Depending on the configuration, the server supports SAS, SATA, NVMe, uFF, and M.2 drives.

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**.

- Drives with the same capacity provide the greatest storage space efficiency when grouped into the same drive array.

### Installing a hot-plug SAS/SATA or NVMe drive

#### Procedure

1. To install a drive in outer drive cage, **remove the bezel** if installed.
2. To install a drive in inner drive cage, do the following:

---

**NOTE:** If the HPE designated cable management arm is not installed on the rack, ensure that the cables at the rear of the server are not damaged while extending the server.

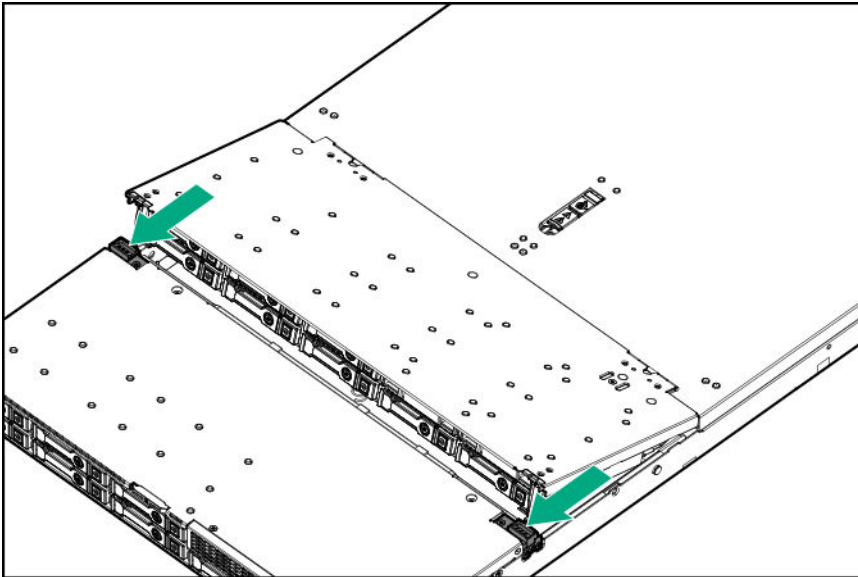
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- a. **Extend the server from the rack.**

- b. To open the inner drive cage, press the cage latches.

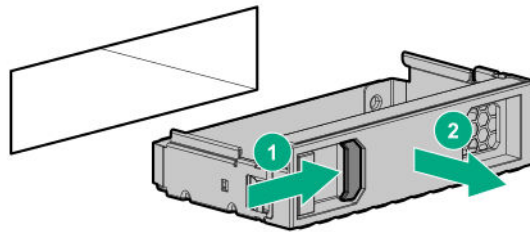
The drive cage pops out of the chassis in the slanting position.



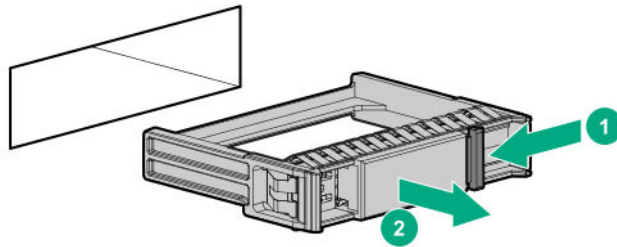


**3. Remove the drive blank.**

- LFF



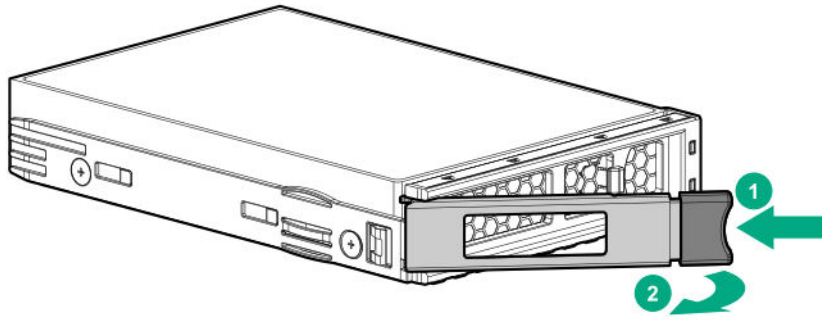
- SFF



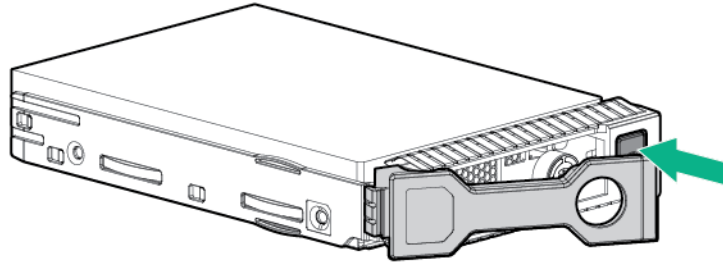
**4. Prepare the drive.**

- LFF

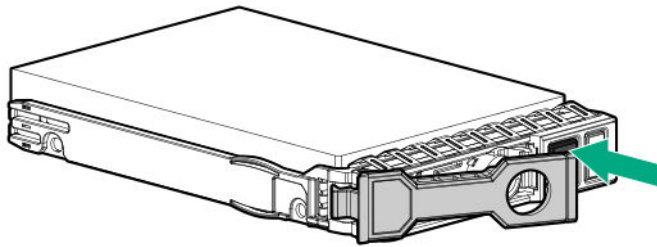




- SFF Smart Carrier (SC) SAS/SATA/NVMe

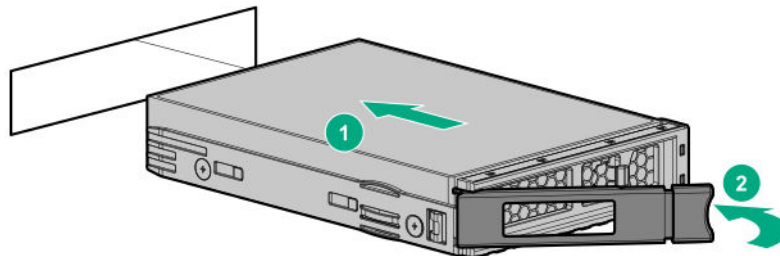


- SFF Smart Carrier NVMe (SCN)



**5. Install the drive.**

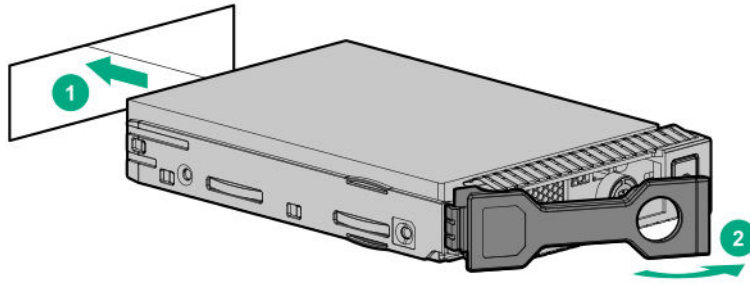
- LFF



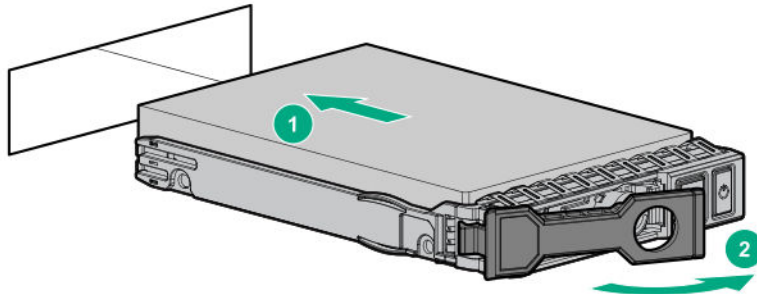
- SFF Smart Carrier (SC) SAS/SATA/NVMe







- SFF Smart Carrier NVMe (SCN)



**6. Observe the LED status of the drive.**

7. If the drive is installed in inner cage, press the inner drive cage down.

8. Slide the server in the rack.

9. If removed, **install the bezel.**

The installation is complete.

To configure arrays, see the *HPE Smart Array SR Gen10 Configuration Guide* at the **Hewlett Packard Enterprise website.**

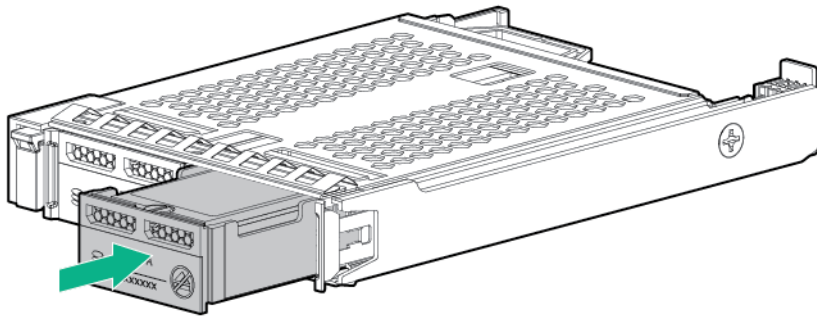
## Installing a uFF drive and SCM drive carrier

For the supported drive bays, see **Drive bay numbering.**

### Procedure

1. If needed, install the uFF drive into the drive carrier.





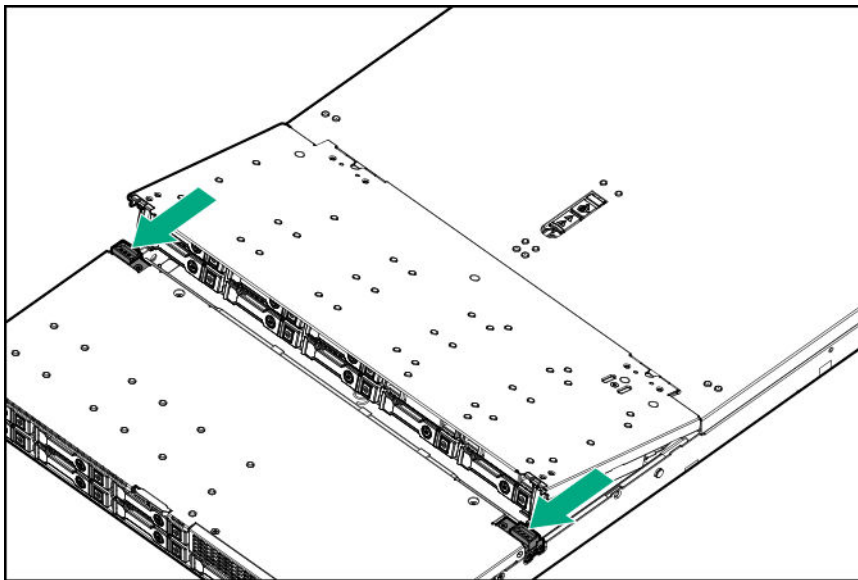
2. To install a drive in outer drive cage, **remove the bezel** if installed.
3. To install a drive in inner drive cage, do the following:

---

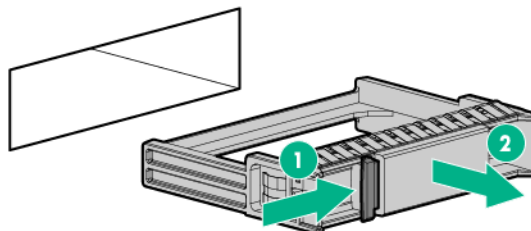
**NOTE:** If the HPE designated cable management arm is not installed on the rack, ensure that the cables at the rear of the server are not damaged while extending the server.

---

- a. **Extend the server from the rack.**
- b. To open the inner drive cage, press the cage latches.  
The drive cage pops out of the chassis in the slanting position.



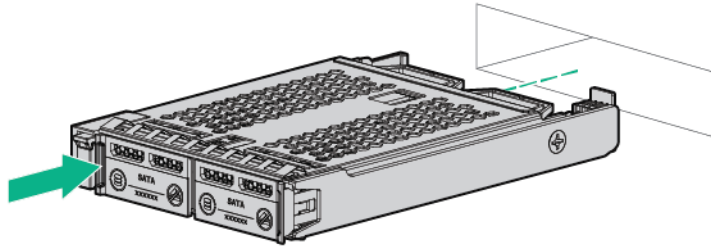
4. Remove the drive blank.



5. Install the drives.



Push firmly near the ejection handle until the latching spring engages with the drive bay.



6. **Observe the LED status of the drive.**
7. If the drive is installed in inner cage, press the inner drive cage down.
8. Slide the server in the rack.
9. If removed, **install the bezel.**  
To configure the drive, use **HPE Smart Storage Administrator**.

## Drive cage options

### Installing a 2SFF SAS/SATA, NVMe, or uFF drive cage

**NOTE:** This drive cage assembly can be installed in outer cage only.

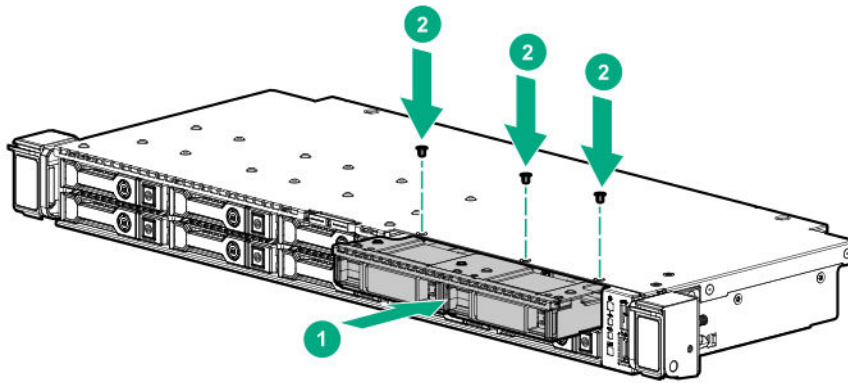
#### Prerequisites

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

#### Procedure

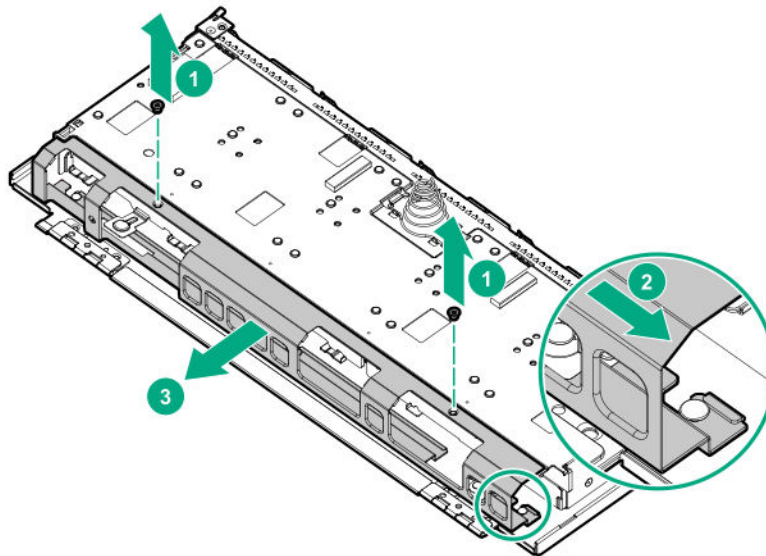
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the inner rack rails.**
7. **Remove the access panel.**
8. **Remove the outer drive cage.**
9. **Remove the media bay blank.**
10. Install the 2SFF drive cage assembly.





**11.** Remove the cable guard:

- a. Remove the screws.
- b. Slide the cable guard horizontally to disengage it from the chassis.
- c. Remove the cable guard.

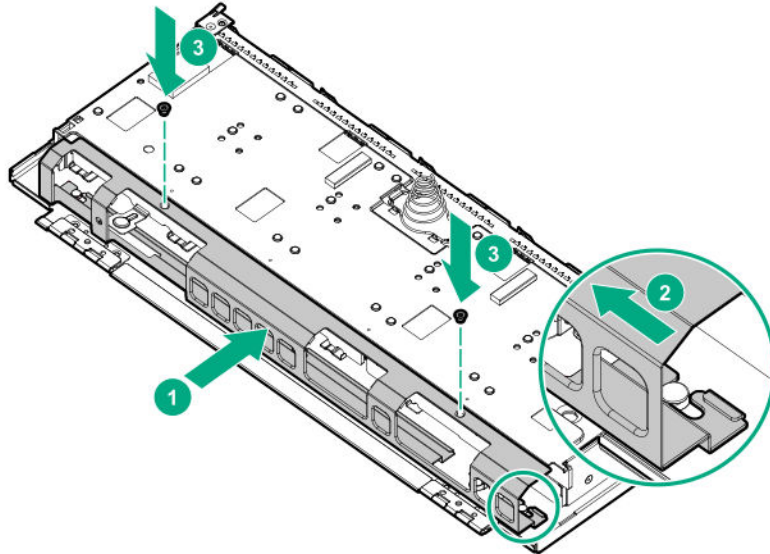


**12.** Connect the signal and power cables for the 2SFF drive backplane:

- **2SFF SAS/SATA or uFF**
- **2SFF NVMe**

**13.** Install the cable guard.





**14. Install the outer drive cage.**

**15.** Install an SFF drive:

- **SAS/SATA or NVMe drive**
- **uFF drive**

**16. Install the access panel.**

**17. Install the inner rack rails.**

**18. Install the server into the rack.**

**19.** Connect all peripheral cables to the server.

**20.** Connect each power cord to the server.

**21.** Connect each power cord to the power source.

**22. Power up the server.**

**23.** If removed, **install the bezel.**

The installation is complete.

## Upgrading 4LFF to 8LFF

### Prerequisites

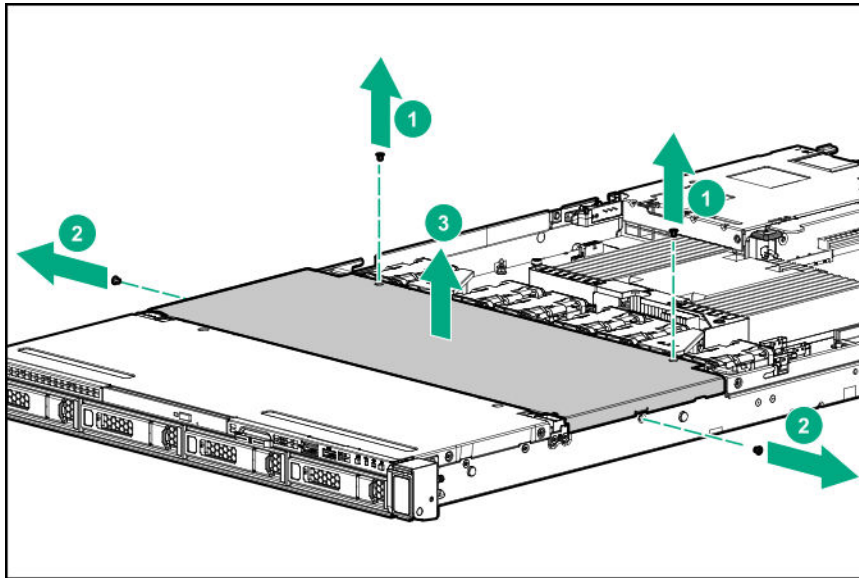
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

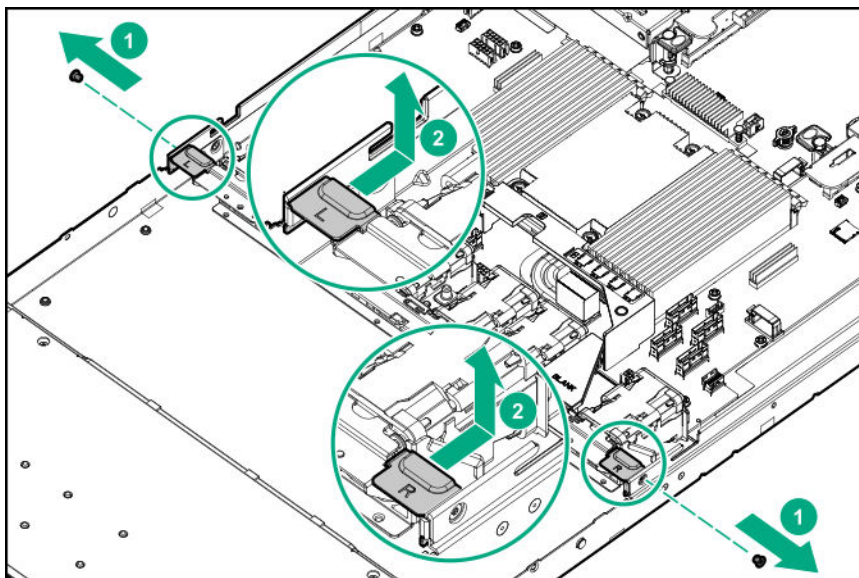
- 1.** If installed, **remove the bezel.**
- 2. Power down the server.**
- 3.** Remove all power:



- a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
  5. **Remove the server from the rack.**
  6. **Remove the inner rack rails.**
  7. **Remove the access panel.**
  8. Remove the inner drive cage blank.



9. Remove the fan wall covers.



10. Remove all the existing single rotor fans and fan blanks.
11. **Connect the signal and power cables for the 8LFF.**
12. **Install eight dual rotor fans included in this 4LFF to 8LFF upgrade option.**



13. **Install the air baffle included in this 4LFF to 8LFF upgrade option.**
14. **Install the inner drive cage.**
15. **Install the access panel.**
16. **Install the inner rack rails.**
17. **Install the server into the rack.**
18. Connect all peripheral cables to the server.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. **Power up the server.**
22. If removed, **install the bezel.**

The installation is complete.

## Upgrading 8SFF to 16SFF

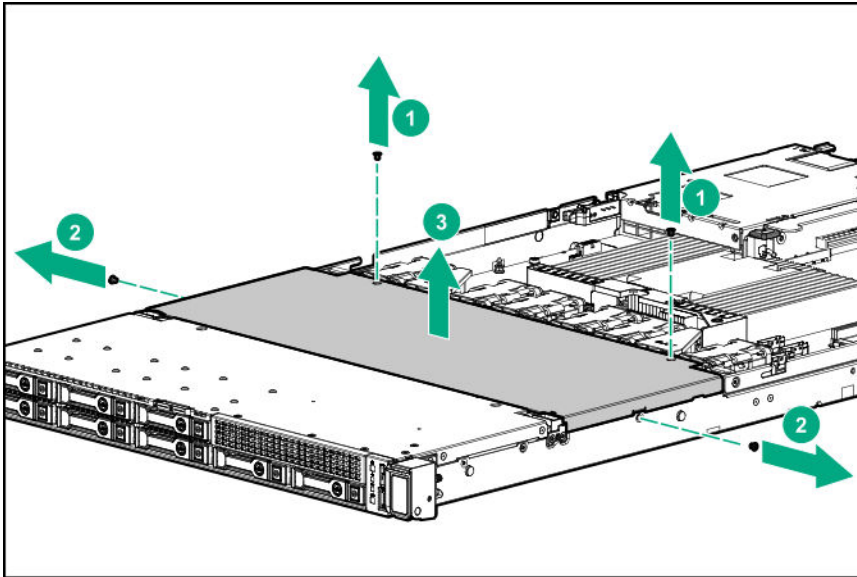
### Prerequisites

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

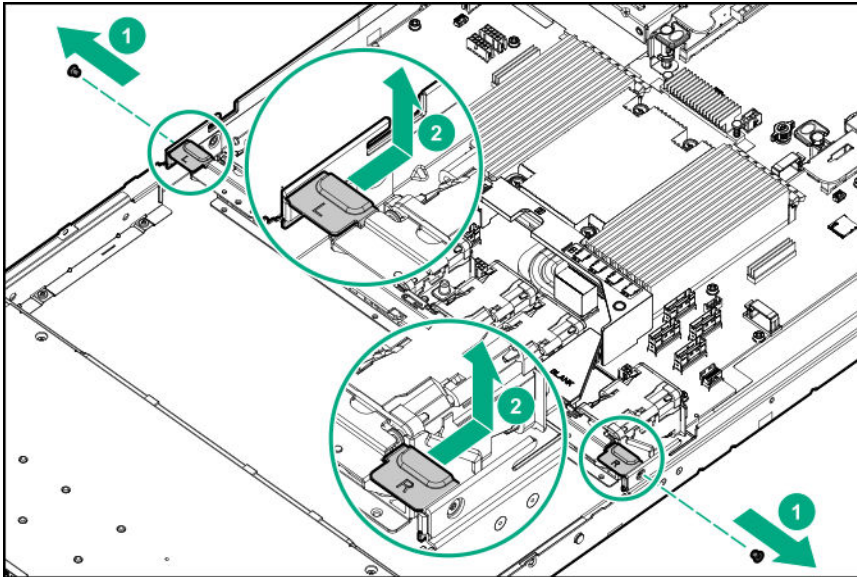
### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the inner rack rails.**
7. **Remove the access panel.**
8. Remove the inner drive cage blank.





9. Remove the fan wall covers.



10. Remove all the existing single rotor fans and fan blanks.
11. Connect the signal and power cables for 16SFF:
  - **16SFF SAS/SATA**
  - **16SFF NVMe**
12. For 16SFF SAS/SATA upgrade only: **Install eight dual rotor fans included in this 8SFF to 16SFF upgrade option.**
13. **Install the air baffle included in this 8SFF to 16SFF upgrade option.**
14. **Install the inner drive cage.**
15. **Install the access panel.**
16. **Install the inner rack rails.**
17. **Install the server into the rack.**





18. Connect all peripheral cables to the server.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. **Power up the server.**
22. If removed, **install the bezel.**

The installation is complete.

## Riser cage options

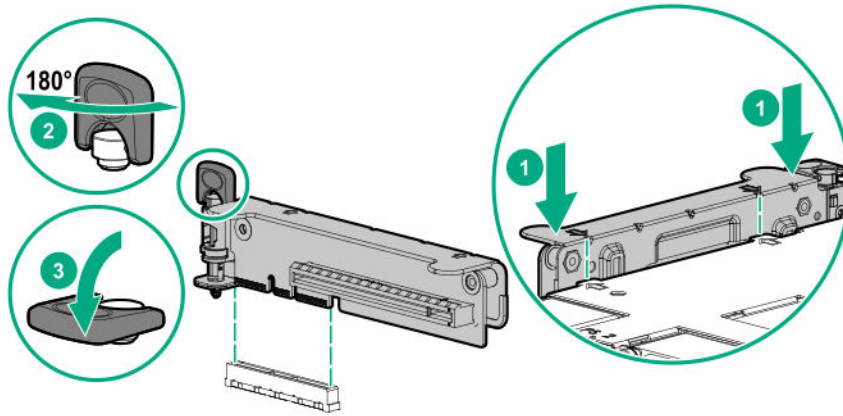
### Installing the secondary low-profile PCIe riser cage

When installed, this riser cage provides an additional low-profile slot and supports half-height/half-length expansion boards.

#### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. Install the secondary riser cage:
  - a. Align the arrows on the riser cage with the arrows on the power supply cage (callout 1).
  - b. Press the riser cage down to sit it firmly in the slot (callout 1).
  - c. Turn the captive screw to 180 ° (callout 2).
  - d. Push the screw handle down in horizontal position (callout 3).





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

The installation is complete.

## Installing the secondary full-height PCIe riser cage

When installed, this riser cage supports full-height, half-length expansion boards. PCIe slot 2 is no longer available.

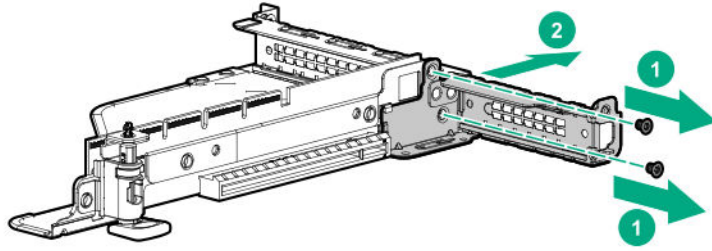
### Prerequisites

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

### Procedure

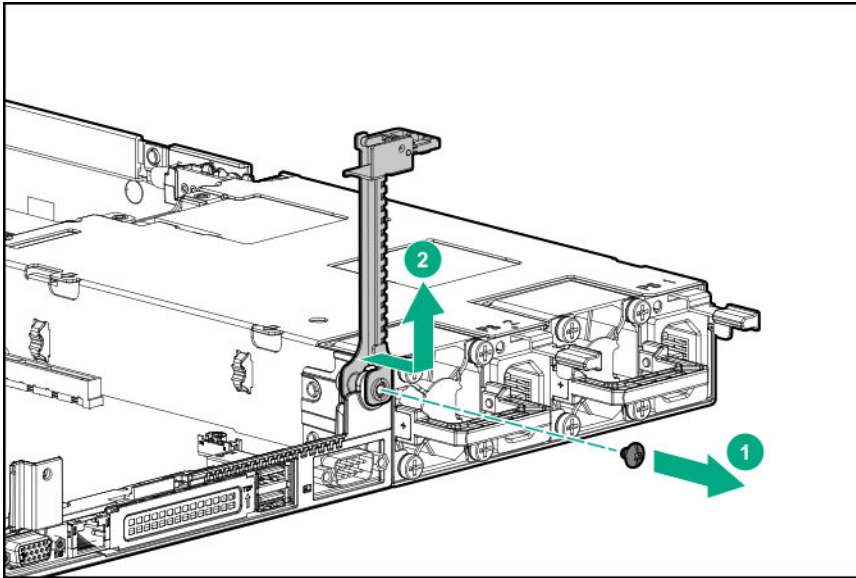
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. If installed, **remove the existing secondary riser cage.**
8. **Remove the primary riser cage.**
9. Remove the slot 2 bracket of the primary riser cage.



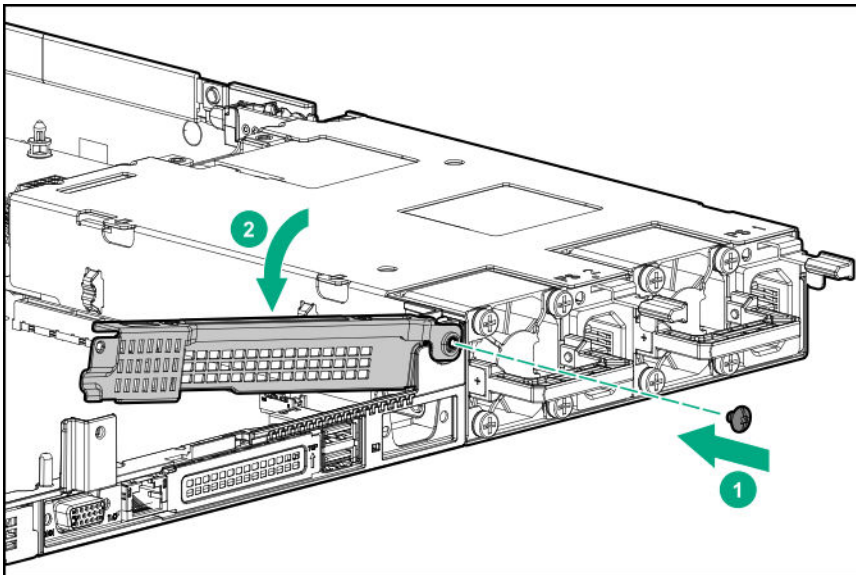


**10. Install the primary riser cage.**

**11.** Remove the secondary low-profile bracket.



**12.** Install the full-height PCIe bracket.

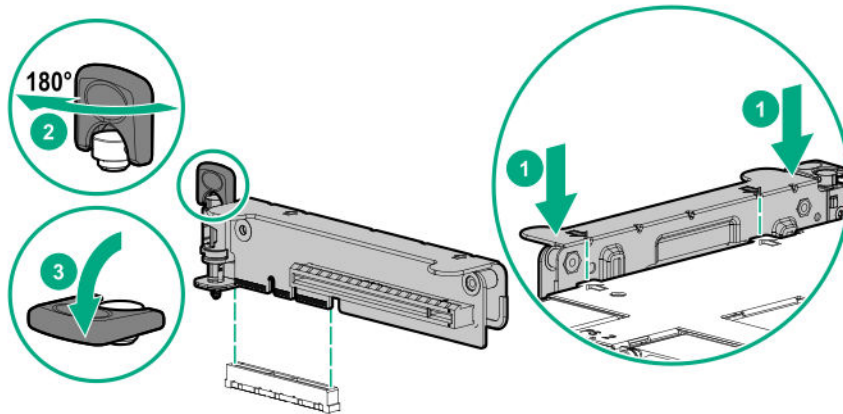


**13.** Install the secondary riser cage:

- a.** Align the arrows on the riser cage with the arrows on the power supply cage. (callout 1)
- b.** Press the riser cage down to sit it firmly in the slot. (callout 1)



- c. Turn the captive screw to 180 °. (callout 2)
- d. Push the screw handle down in horizontal position. (callout 3)



**14. Install the access panel.**

**15. Install the server into the rack.**

16. Connect all peripheral cables to the server.
17. Connect each power cord to the server.
18. Connect each power cord to the power source.
19. **Power up the server.**
20. If removed, **install the bezel.**

The installation is complete.

## Storage controller options

This server supports the following storage controllers:

- For SATA and NVMe drives:
  - Embedded SATA controller in AHCI mode
  - HPE SR100i Gen10 Plus with software RAID support

If no ports from the SATA controller support RAID, then controller will stay AHCI.

- For SAS, SATA, and uFF drives:
  - Smart Array type-a storage controller
  - Smart Array type-p storage controller

## Installing a Smart Array type-a modular controller

### Prerequisites

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



- Smart Array modular controller option
- Compatible controller cable option
- T-15 Torx screwdriver
- If you are installing a Smart Array P-class Gen10 controller, **an energy pack option is required.**

Before you perform this procedure, perform the following steps:

1. Back up data on the system.
2. Close all applications.
3. **Update the server firmware if it is not the latest revision.**
4. Do one of the following:
  - If the new Smart Array is the new boot device, install the device drivers.
  - If the new Smart Array is not the new boot device, go to the next step.
5. Ensure that users are logged off and that all tasks are completed on the server.

---

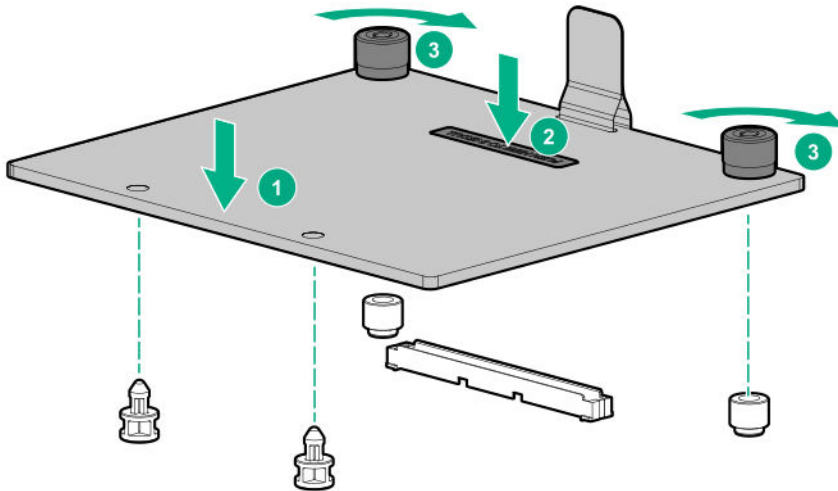
**⚠ CAUTION:** In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

---

#### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. Install a Smart Array type-a modular controller into Smart Array modular controller connector:
  - a. Push the controller board down until the holes on the controller board are inserted through the alignment pins on the system board.
  - b. Press the area of the controller board marked as PRESS TO INSTALL to ensure that the board is firmly seated on the slot.
  - c. Tighten the controller board thumbscrews.





8. **Cable the controller.**
9. **Install the access panel.**
10. **Install the server into the rack.**
11. Connect all peripheral cables to the server.
12. Connect each power cord to the server.
13. Connect each power cord to the power source.
14. **Power up the server.**
15. **Configure the storage controller.**
16. If removed, **install the bezel.**

The installation is complete.

## Installing a Smart Array PCIe plug-in controller

---

**NOTE:** A Smart Array PCIe plug-in controller is supported in slot 2 and slot 3 only due to cabling limitation.

---

**NOTE:** If the slimline primary riser is installed, the controller is not supported in slot 2.

---

**NOTE:** If the slimline secondary riser is installed, the controller is not supported in slot 3.

---

### Prerequisites

- Before you perform this procedure, make sure that you have the following items available:
  - Smart Array PCIe plug-in controller option
  - Compatible controller cable option
  - T-15 Torx screwdriver
  - Phillips No. 1 screwdriver
- If you are installing a Smart Array P-class Gen10 controller, **an energy pack option is required.**



Before you perform this procedure, perform the following steps:

1. Back up data on the system.
2. Close all applications.
3. **Update the server firmware if it is not the latest revision.**
4. Do one of the following:
  - If the new Smart Array is the new boot device, install the device drivers.
  - If the new Smart Array is not the new boot device, go to the next step.
5. Ensure that users are logged off and that all tasks are completed on the server.

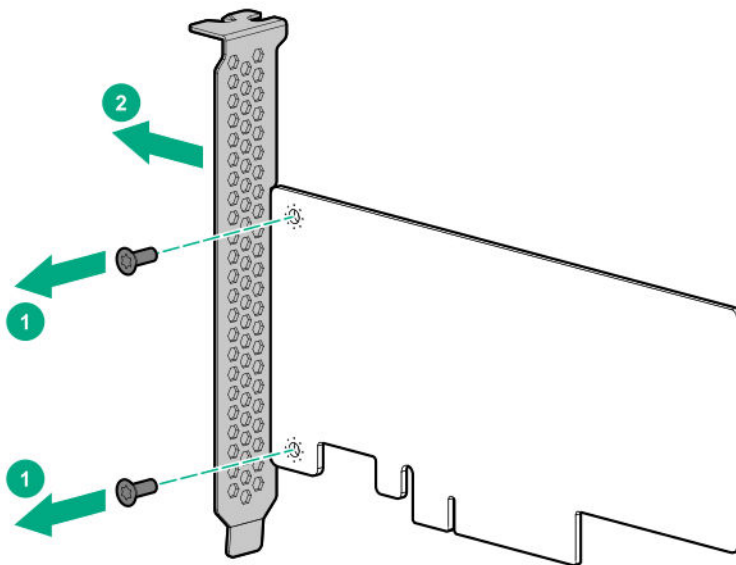
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**CAUTION:** In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when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

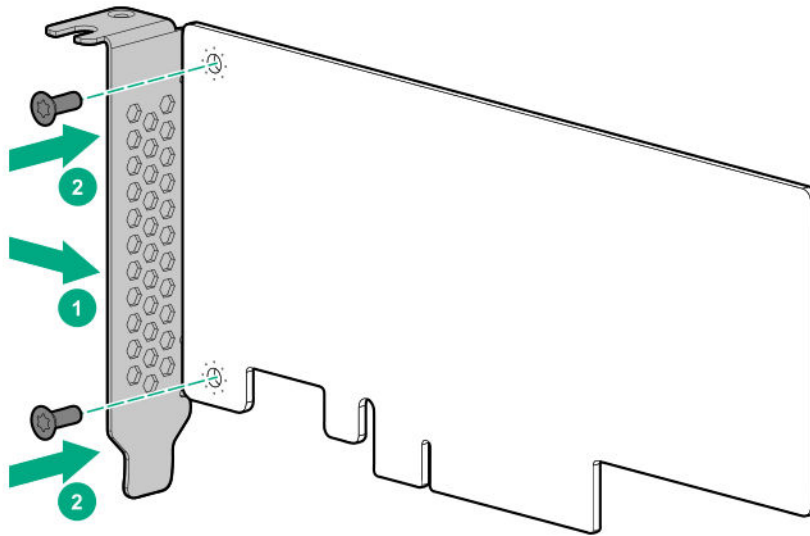
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#### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. Remove the full-height bracket from the controller.



8. Install the low-profile bracket on the controller.



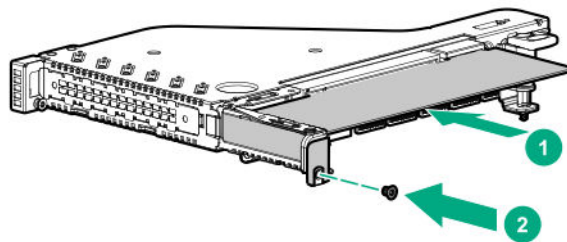
9. If installing a PCIe plug-in controller in the primary riser:

a. **Remove the primary riser cage.**

b. **Remove the primary riser blank.**

c. Install the controller.

Primary riser slot 2



d. **Install the primary riser cage.**

10. If installing a PCIe plug-in controller in the secondary riser:

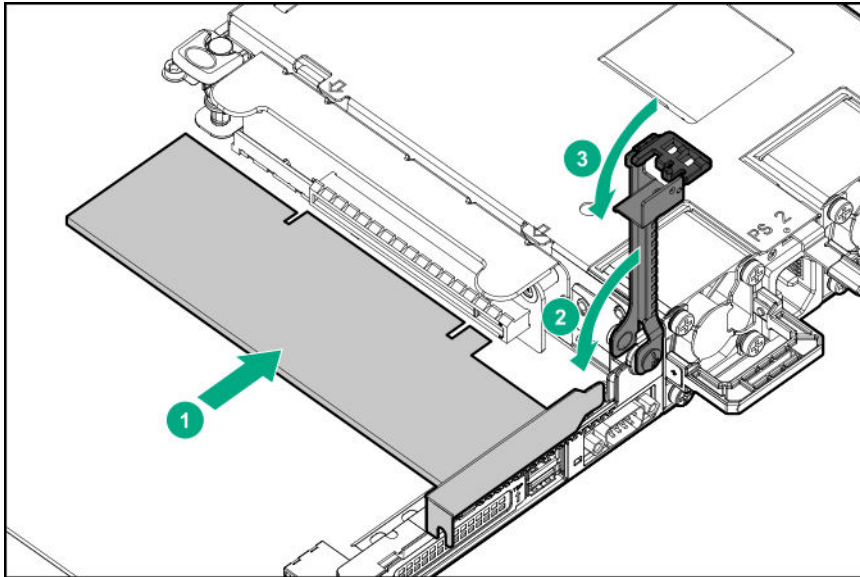
a. **Remove the secondary riser blank.**

b. **Install the secondary riser cage.**

c. Install the controller.







**11. Cable the controller.**

**12.** To enable HPE Smart Array SR SmartCache in a Smart Array P-class Gen10 controller, **install the energy pack.** SmartCache and CacheCade enable solid-state drives to be used as caching devices for hard drive media. These features accelerate access to frequently used data by caching hot data from the hard drives onto the solid-state drives.

**13. Install the access panel.**

**14. Install the server into the rack.**

- 15.** Connect all peripheral cables to the server.
- 16.** Connect each power cord to the server.
- 17.** Connect each power cord to the power source.

**18. Power up the server.**

**19. Configure the storage controller.**

**20.** If removed, **install the bezel.**

The installation is complete.

## Configuring an HPE Smart Array Gen10 controller

### Procedure

**1. Power up the server.**

- 2.** If you are running the server in UEFI Boot Mode, select the boot options.
- 3. Update the drive firmware if it is not the latest revision.**
- 4.** (Optional) If running the server in Legacy Boot Mode, set the controller as the boot controller.
- 5.** (Optional) If running the server in Legacy Boot Mode, change the controller boot order.
- 6.** If the new controller is not the new boot device, install the device drivers.



7. If the controller firmware is not the latest version, use SPP to update it.
8. Use UEFI System Utilities or HPE Smart Storage Administrator (HPE SSA) to create arrays and logical drives.

See the following resources for more information:

- SPP – See the product documentation in the information library:  
<http://www.hpe.com/info/spp/docs>
- UEFI System Utilities or HPE Smart Storage Administrator – See the *HPE Smart Array SR Gen10 Configuration Guide* in the information library:  
<http://www.hpe.com/info/smartstorage-docs>

## Installing the HPE NS204i-p NVMe OS Boot Device option

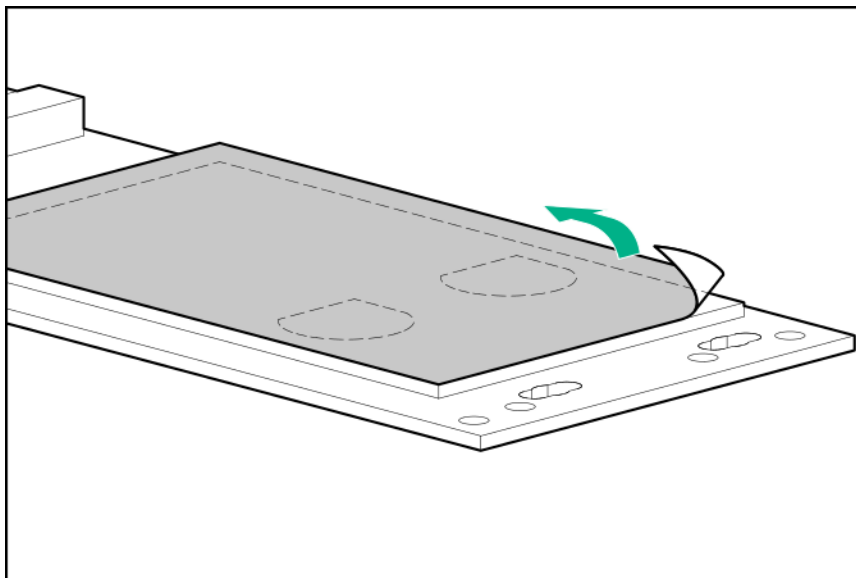
### Prerequisites

- **Make sure that the server is updated with the latest operating system firmware and drivers.**
- T-15 Torx screwdriver

### Procedure

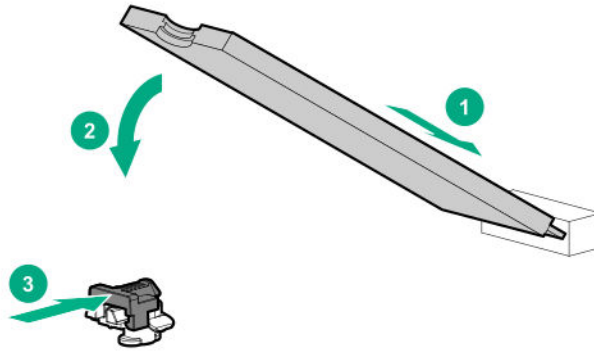
#### Installing drives onto the boot device

1. Remove the liner from the thermal interface pad.



2. Install the drives.

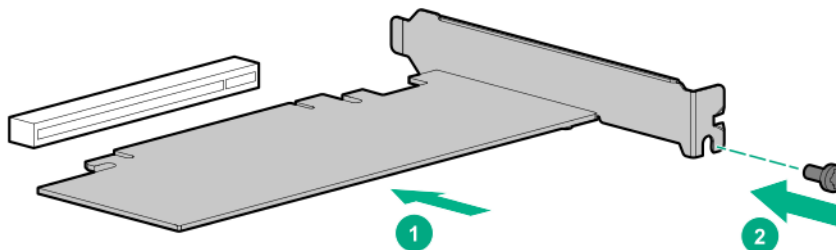




### Installing the boot device

3. If installed, **remove the bezel.**
4. **Power down the server.**
5. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
6. Disconnect all peripheral cables from the server.
7. **Remove the server from the rack.**
8. **Remove the access panel.**
9. Select an available PCIe expansion slot that is x8 physical size and x4 electrical.
10. Remove the expansion slot cover.
 

Save the retaining screw, if one is present.
11. Install the boot device.



12. Install any components that were removed to access the expansion slot.
13. **Install the access panel.**
14. **Install the server into the rack.**
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. **Power up the server.**



19. If removed, **install the bezel.**

### **Deploying an operating system**

20. Deploy a supported operating system to the boot device drive.

For more information, see the product QuickSpecs (<https://www.hpe.com/info/qs>).

After the OS installation completes, the system automatically copies the operating system to the second, mirrored drive on the boot device.

21. Proceed with normal system setup and operation.

The installation is complete.

## **Energy pack options**

Hewlett Packard Enterprise offers the following centralized backup power source option to back up write cache content on P-class Smart Array controllers in case of an unplanned server power outage.

### **HPE Smart Storage Battery**

One energy pack option can support multiple devices. An energy pack option is required for P-class Smart Array controllers. Once installed, the status of the energy pack displays in HPE iLO. For more information, see the HPE iLO user guide on the Hewlett Packard Enterprise website (<https://www.hpe.com/support/ilo-docs>).

### **HPE Smart Storage Battery**

The HPE Smart Storage Battery supports the following devices:

HPE Smart Array SR controllers

A single 12W battery can support up to 3 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.

## **Installing an energy pack**

### **Prerequisites**

Before you perform this procedure:

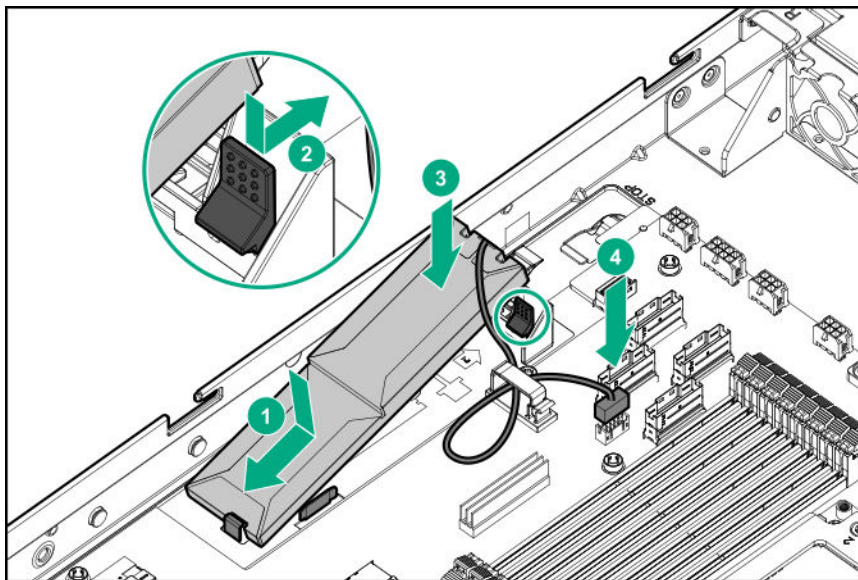
- **Make sure that a Smart Array P-class controller is installed.**
- Make sure that you have the following items available:
  - Storage controller backup power cable (ships with the storage controller)
  - Energy pack option
- HPE Smart Storage Battery fan option is required for 4LFF or 8SFF configurations.

### **Procedure**

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:



- a. Disconnect each power cord from the power source.
- b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. If energy pack is to be installed in 4LFF or 8SFF configurations, **install a fan in fan bay 7.**  
For more information about fan bay locations, see **Fan bay numbering.**
8. Install the energy pack:
  - a. Insert the energy pack at an angle.
  - b. Push the release latch in backward direction.
  - c. Push the energy pack down from other end.
  - d. Connect the energy pack cable and secure the extra length of the cable in the clip.



9. **Connect the controller backup power cable.**
10. **Install the access panel.**
11. **Install the server into the rack.**
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. **Power up the server.**
16. If removed, **install the bezel.**

The installation is complete.



# Expansion board options

The server has three PCIe4 expansion slots that support different form factor expansion boards. For more information on the PCIe4 slot specifications, see [PCIe expansion slot definitions](#).

## Installing an expansion board

---

**NOTE:** If the slimline primary riser is installed, the expansion board is not supported in slot 2.

---

**NOTE:** If the slimline secondary riser is installed, the expansion board is not supported in slot 3.

---

### Prerequisites

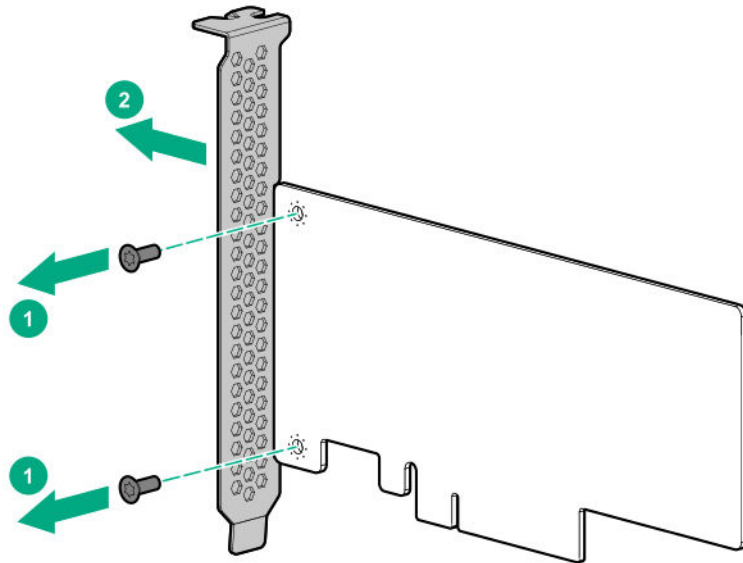
Before you perform this procedure, make sure that you have the following items available:

- Expansion board option kit
- Internal and external cabling required by the expansion board
- T-15 Torx screwdriver

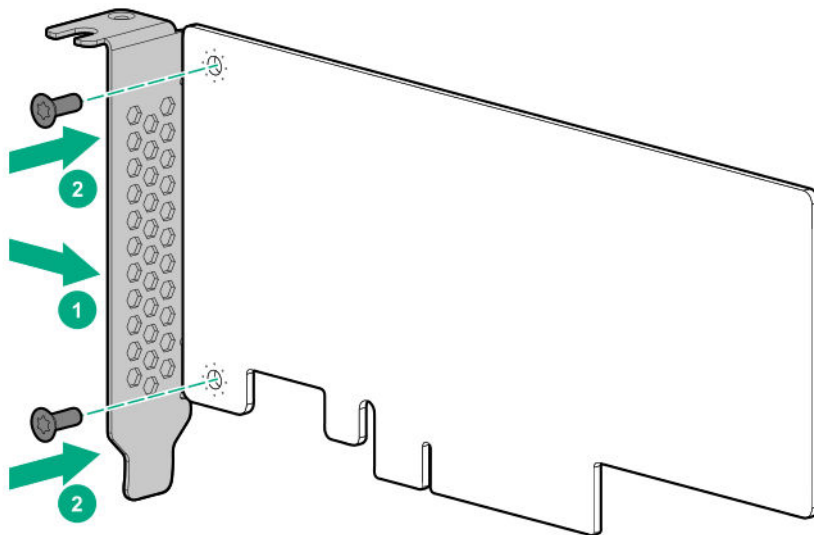
### Procedure

1. If installed, **remove the bezel**.
2. **Power down the server**.
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack**.
6. **Remove the access panel**.
7. **Identify the PCIe slot compatible with the expansion board option**.
8. If installing the expansion board with full-height bracket in slot 2:
  - a. Remove the full-height bracket from the expansion board.





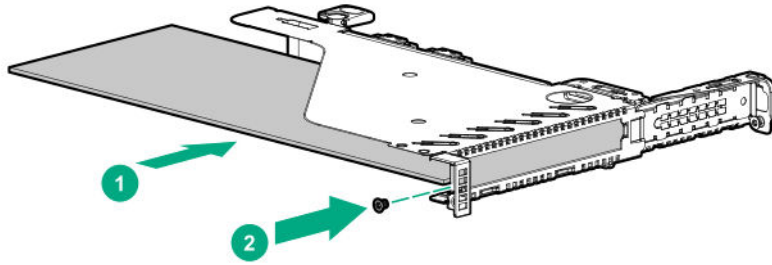
b. Install the low-profile bracket on the expansion board.



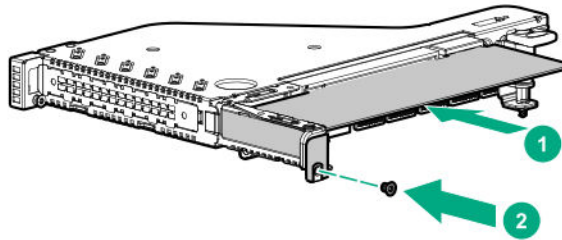
9. If installing an expansion board in the primary riser:

- a. **Remove the primary riser cage.**
- b. **Remove the primary riser blank.**
- c. Install the expansion board.
  - Primary riser slot 1





- Primary riser slot 2



**d. Install the primary riser cage.**

**10.** If installing an expansion board in the secondary riser:

**a.** Install the secondary riser cage.

- **Low profile**
- **Full height**

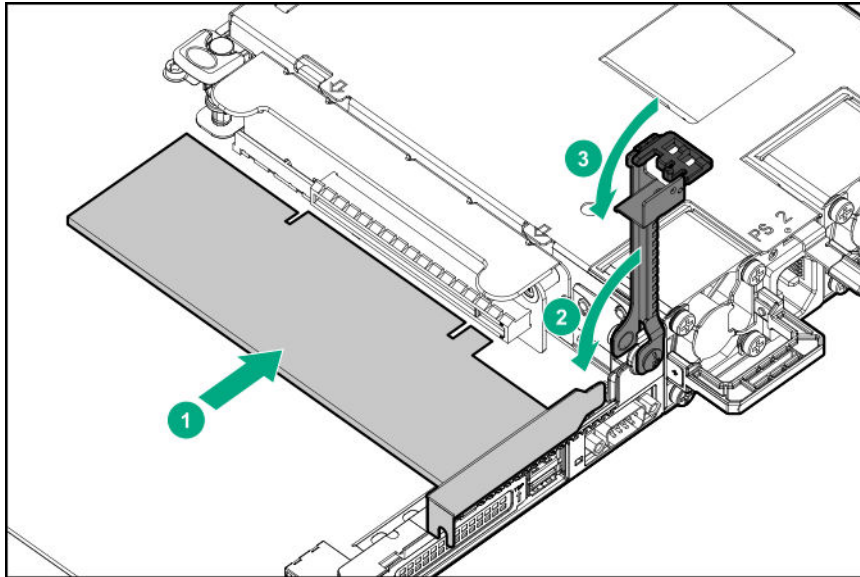
**b. Remove the secondary riser blank.**

**c.** Install the expansion board.

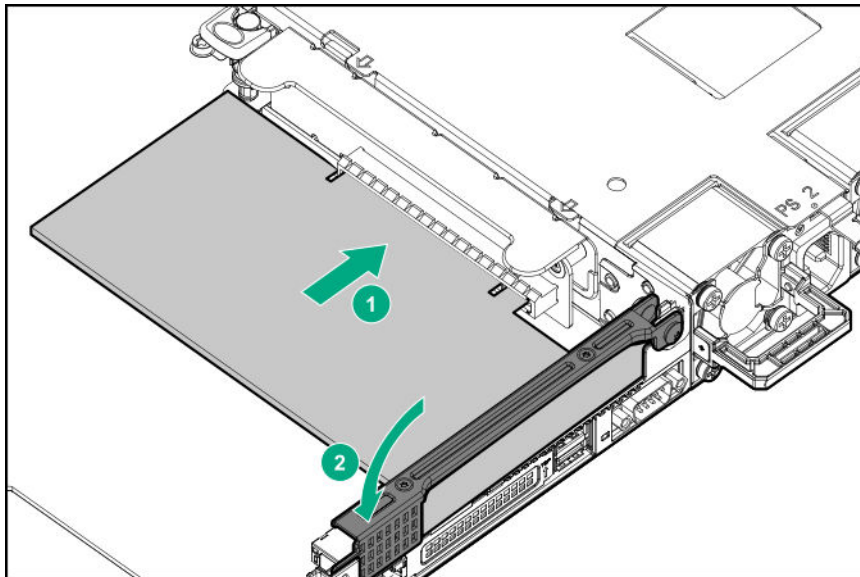
- Low profile







- Full height



- 11.** Connect all necessary internal cabling to the expansion board.  
For more information on these cabling requirements, see the documentation that ships with the option.
- 12. Install the access panel.**
- 13. Install the server into the rack.**
- 14.** Connect all necessary external cabling to the expansion board.  
For more information on these cabling requirements, see the documentation that ships with the option.
- 15.** Connect all peripheral cables to the server.
- 16.** Connect each power cord to the server.
- 17.** Connect each power cord to the power source.



**18. Power up the server.**

**19.** If removed, **install the bezel.**

The installation is complete.

## Installing the HPE 12GB SAS expander card

**NOTE:** The SAS expander card can be installed only in slot 1 of the primary riser.

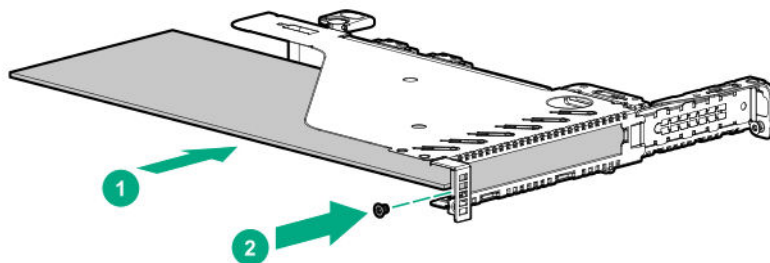
### Prerequisites

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

- SAS expander option
- Internal cabling required by the SAS expander
- **Smart Array type-a modular controller installed**
- T-15 Torx screwdriver

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. **Remove the primary riser cage.**
8. **Remove the primary riser blank from slot 1 of the riser cage.**
9. Connect all cables to the SAS expander card.
10. Install the SAS expander card in slot 1 of the primary riser.



11. **Install the primary riser cage.**



- 12. Connect the mini-SAS cables from the expander to SFF drive backplanes/Smart Array controller.**
- 13. Install the access panel.**
- 14. Install the server into the rack.**
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
- 18. Power up the server.**
19. If removed, **install the bezel.**

The installation is complete.

## Installing the GPU

---

**NOTE:** The GPU option is supported in slot 1 or slot 3 only.

---

**NOTE:** If the slimline secondary riser is installed, the GPU is not supported in slot 3.

---

### Prerequisites

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

- GPU option
- GPU enablement option (required for 4LFF or 8SFF configurations)
- T-15 Torx screwdriver

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. For 4LFF or 8SFF configurations, **install two single rotor fans** included in the GPU enablement option in fan bays 2 and 7.

For more information about installation location, see **Fan population** and **Fan bay numbering.**
8. If installing a GPU in the primary riser slot 1:



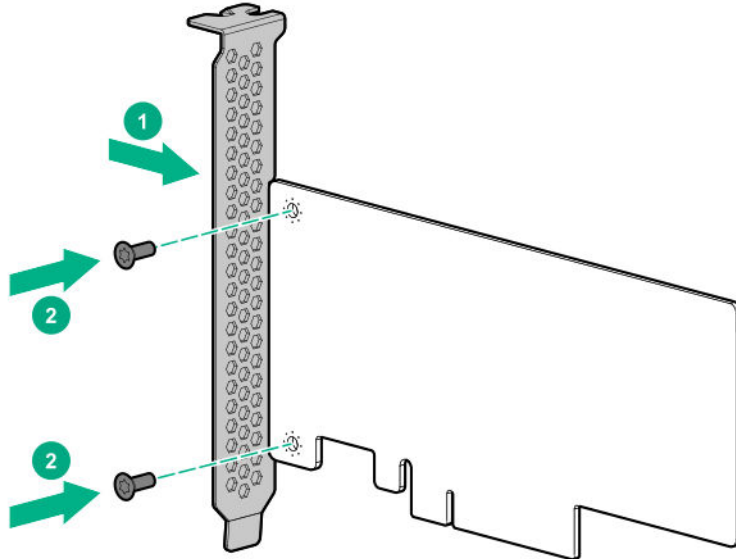
a. **Remove the primary riser cage.**

b. **Remove the primary riser slot 1 blank.**

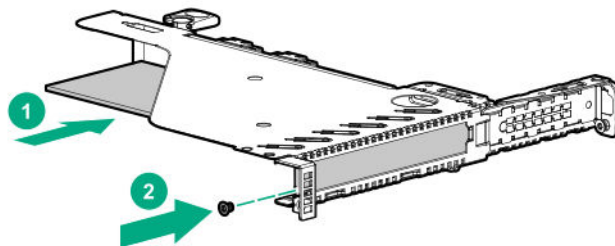
c. If the full-height bracket is not installed, install it on the GPU.

The full-height bracket is provided in the GPU option.

The screw type and location shown in the illustration might be different depending on the GPU option.



d. Install the GPU.



e. **Install the primary riser cage.**

9. If installing a GPU in the secondary riser:

a. Install the secondary riser cage.

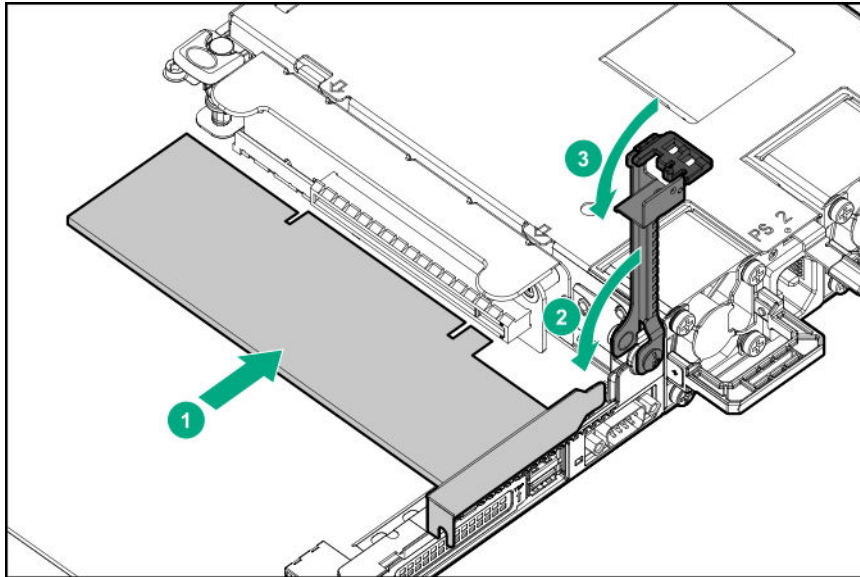
- **Low profile**
- **Full height**

b. **Remove the secondary riser blank.**

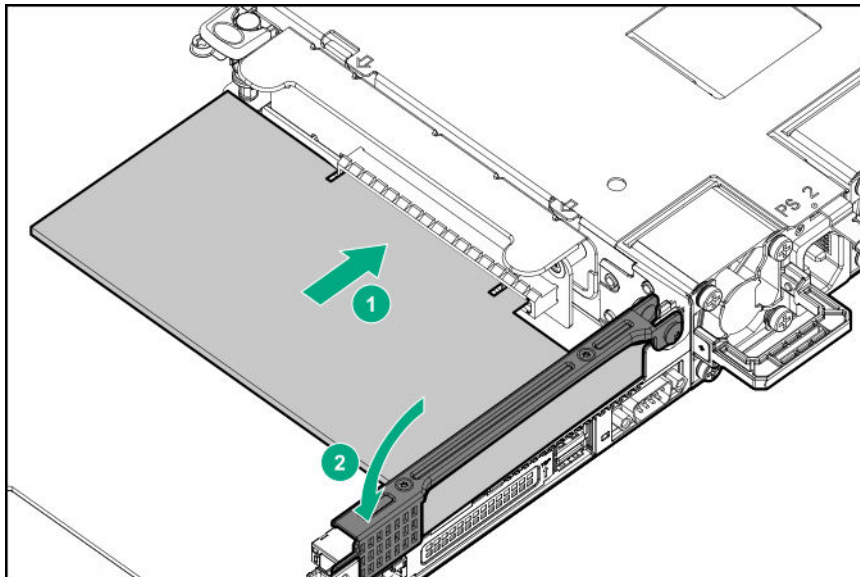
c. Install the GPU.

- Low profile





- Full height



**10. Install the access panel.**

**11. Install the server into the rack.**

**12.** Connect all peripheral cables to the server.

**13.** Connect each power cord to the server.

**14.** Connect each power cord to the power source.

**15. Power up the server.**

**16.** If removed, **install the bezel.**

The installation is complete.



# Installing the M.2 SSD enablement option

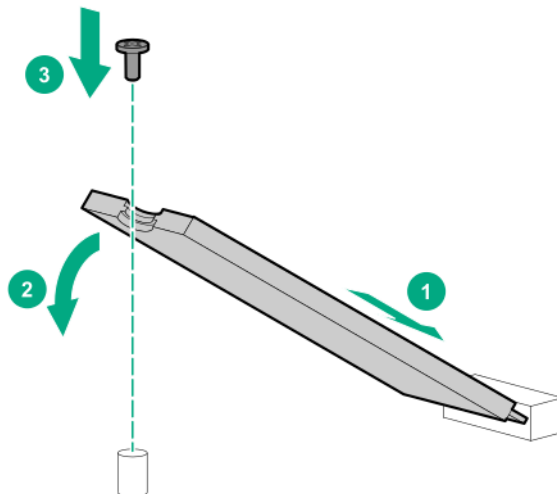
## Prerequisites

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

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

## Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. **Remove the riser cage.**
8. **Remove the riser blank.**
9. Install the SSD module on the M.2 SSD enablement board:
  - a. Insert the SSD module into the SSD slot at a 45 degree angle, and then gently press it down against the M.2 SSD Enablement board.
  - b. Secure the SSD module to the M.2 SSD enablement board with a screw.
  - c. To install a second SSD module, repeat the process.



10. **Install the M.2 SSD enablement board.**
11. **Install the riser cage.**
12. **Connect the SATA cables.**
13. **Install the access panel.**
14. **Install the server into the rack.**
15. Connect all peripheral cables to the server.
16. Connect each power cord to the server.
17. Connect each power cord to the power source.
18. **Power up the server.**
19. If removed, **install the bezel.**

The installation is complete.

## ODD options

### Installing the ODD in LFF

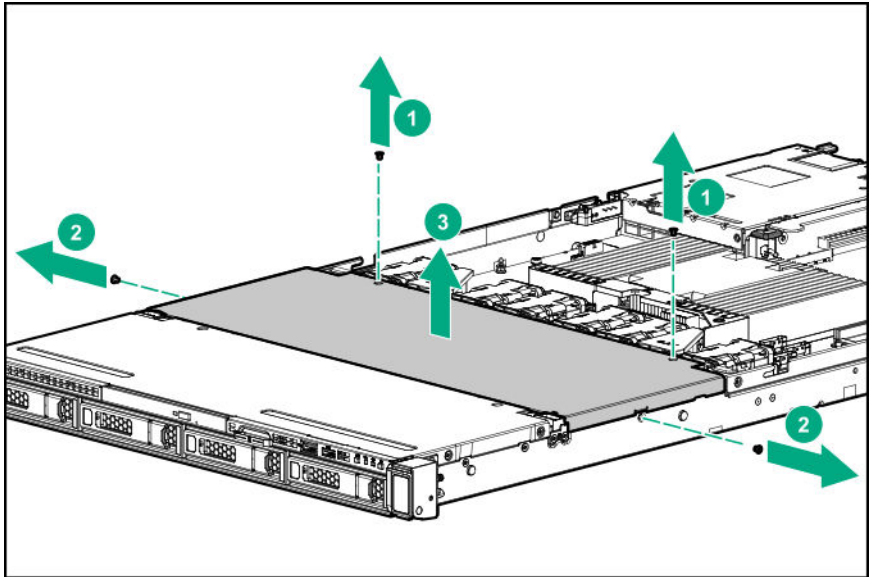
#### Prerequisites

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

#### Procedure

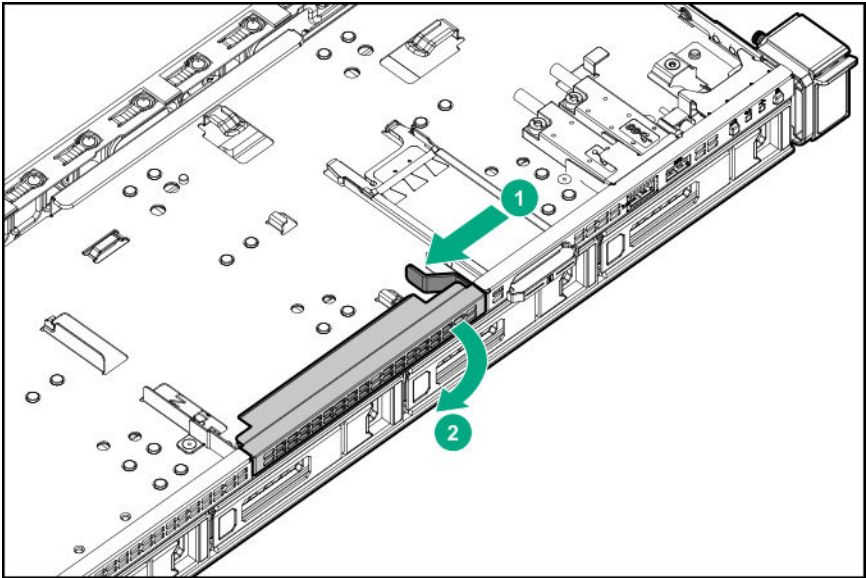
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the inner rack rails.**
7. **Remove the access panel.**
8. Do one of the following:
  - **Remove the inner drive cage.**
  - Remove the inner drive cage blank.





**9.** Remove the outer drive cage cover.

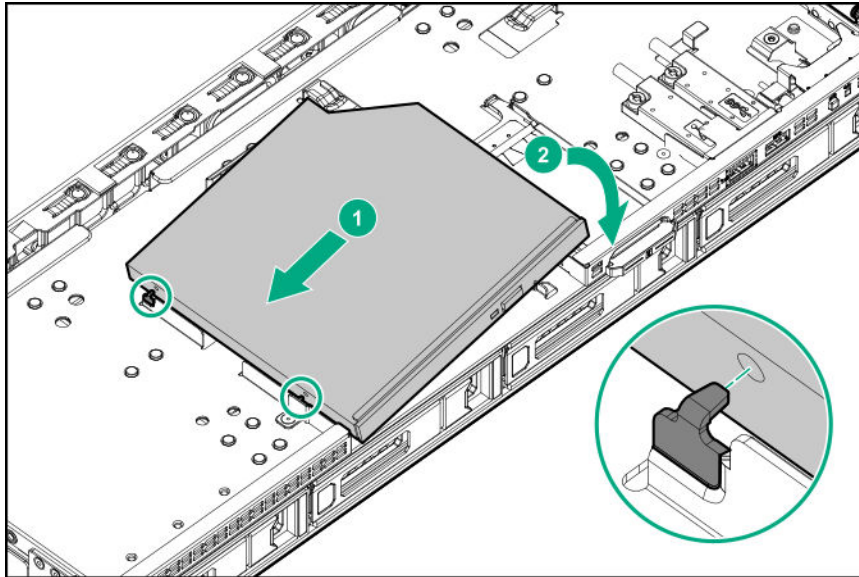
**10.** Remove the ODD bay blank.



**11.** Install the ODD in the cage.







**12. Cable the ODD.**

**13.** Install the outer drive cage cover.

**14.** Do one of the following:

- **Install the inner drive cage.**
- Install the inner drive cage blank.

**15. Install the access panel.**

**16. Install the inner rack rails.**

**17. Install the server into the rack.**

**18.** Connect all peripheral cables to the server.

**19.** Connect each power cord to the server.

**20.** Connect each power cord to the power source.

**21. Power up the server.**

**22.** If removed, **install the bezel.**

The installation is complete.

## Installing the ODD in SFF

### Prerequisites

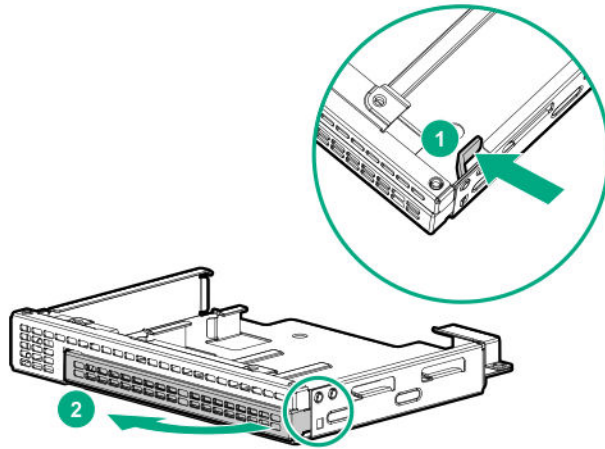
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

### Procedure

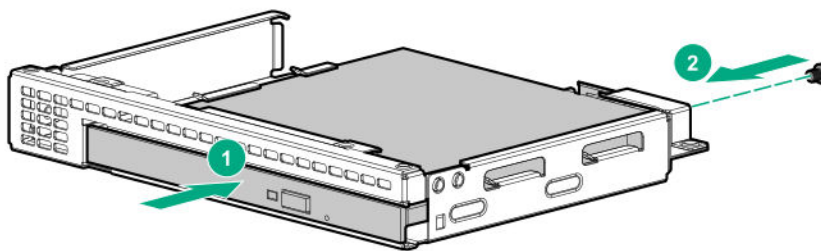
- 1.** If installed, **remove the bezel.**
- 2. Power down the server.**
- 3.** Remove all power:



- a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
  5. **Remove the server from the rack.**
  6. **Remove the inner rack rails.**
  7. **Remove the access panel.**
  8. **Remove the media bay blank.**
  9. Remove the ODD cage blank.

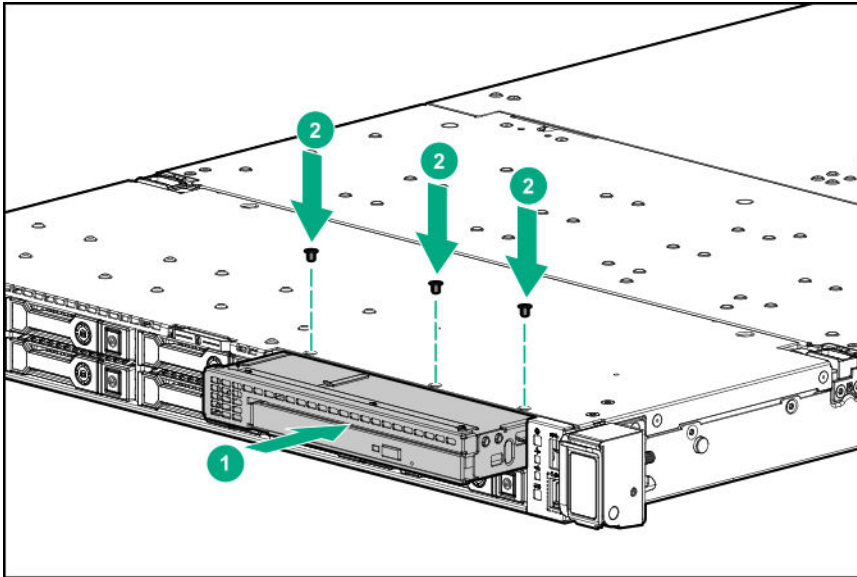


10. Install the ODD into the cage.



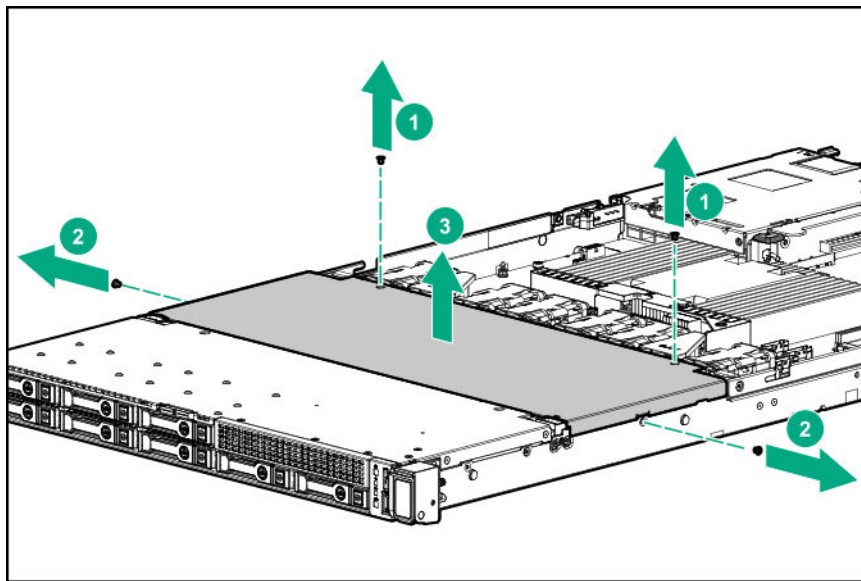
11. Connect the SATA power Y-cable to ODD.
12. Install the ODD cage assembly.





13. Do one of the following:

- **Remove the inner drive cage.**
- Remove the inner drive cage blank.



14. **Connect the ODD cable.**

15. Do one of the following:

- **Install the inner drive cage.**
- Install the inner drive cage blank.

16. **Install the access panel.**

17. **Install the inner rack rails.**

18. **Install the server into the rack.**



19. Connect all peripheral cables to the server.
20. Connect each power cord to the server.
21. Connect each power cord to the power source.
22. **Power up the server.**
23. If removed, **install the bezel.**

The installation is complete.

## Fan option

### Fan population

All configurations support fan redundancy.

The single rotor fan is the standard fan and the dual rotor fan is the high performance fan.

Configuration	Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Bay 6	Bay 7	Bay 8
4LFF	Single rotor fan	Blank	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Blank	Single rotor fan
8SFF SAS/SATA	Single rotor fan	Blank	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Blank	Single rotor fan
4LFF or 8SFF with HPE Smart Storage Battery	Single rotor fan	Blank	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan
4LFF or 8SFF with InfiniBand card installed in slot 1/2	Single rotor fan	Blank	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan
4LFF or 8SFF with InfiniBand card installed in slot 3	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Blank	Single rotor fan
4LFF or 8SFF with more than 1 InfiniBand cards installed	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan
4LFF or 8SFF with HPE Smart Storage Battery and InfiniBand card installed	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan

*Table Continued*



Configuration	Bay 1	Bay 2	Bay 3	Bay 4	Bay 5	Bay 6	Bay 7	Bay 8
4LFF or 8SFF with GPU installed	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan	Single rotor fan
8NVMe	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan
LFF/SFF with inner cage installed	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan
NVMe with inner cage installed	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan	Dual rotor fan

## Fan mode behavior

In redundant fan mode:

- A fan rotor failure will switch the system to nonredundant fan mode.  
This change is indicated by the Health LED flashing amber. The system continues to operate normally in this mode.
- A second fan rotor failure or a missing fan causes the operating system to orderly shutdown.

## Installing a fan

This server supports redundant fans to provide sufficient airflow to the system if a fan rotor fails.



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

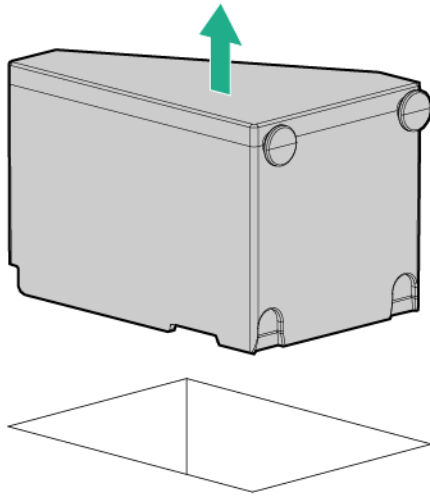


**CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

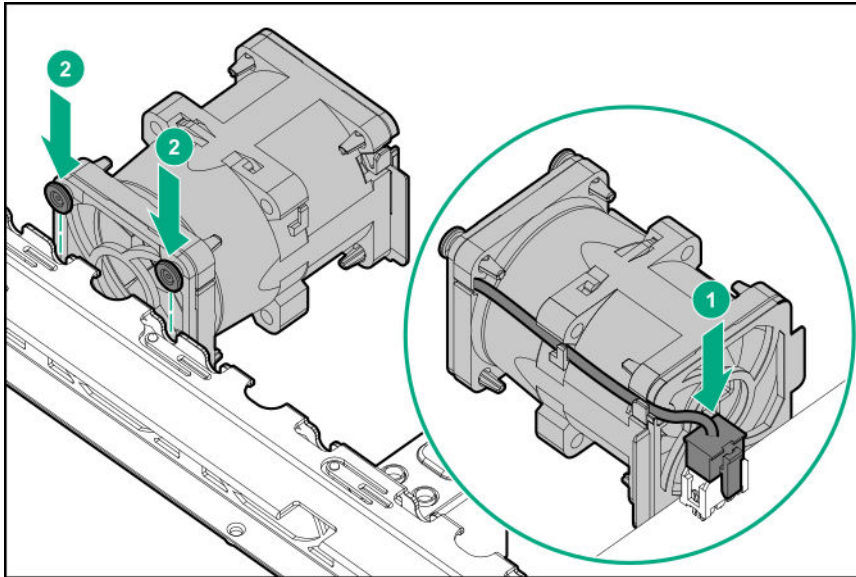
### Procedure

1. **Extend the server from the rack.**
2. **Remove the access panel.**
3. To determine which fan blanks must be removed to install the additional fans, see **Fan bay numbering**.
4. Remove the fan blank.





5. Install the fan.



6. **Install the access panel.**
7. Slide the server in the rack.

The installation is complete.

## Memory options

- ⓘ **IMPORTANT:** This server does not support mixing LRDIMMs and RDIMMs. Attempting to mix any combination of these DIMMs can cause the server to halt during BIOS initialization. All memory installed in the server must be of the same type.



## DIMM population information

For specific DIMM population information, see the DIMM population guidelines on the Hewlett Packard Enterprise website (<https://www.hpe.com/docs/amd-population-rules-Gen10Plus>).

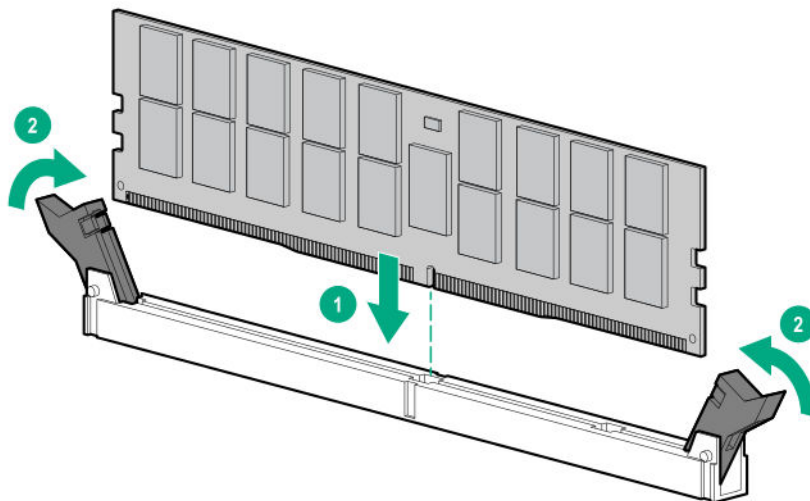
## HPE SmartMemory speed information

For more information about memory speed information in HPE servers using AMD processors, see the Hewlett Packard Enterprise website (<https://www.hpe.com/docs/amd-speed-table-Gen10Plus>).

## Installing a DIMM

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. Install the DIMM:
  - a. Open the DIMM slot latches.
  - b. Align the notch on the bottom edge of the DIMM with the keyed surface of the DIMM slot, and then fully press the DIMM into the slot until the latches snap back into place.



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

8. **Install the access panel.**



9. **Install the server into the rack.**
10. Connect all peripheral cables to the server.
11. Connect each power cord to the server.
12. Connect each power cord to the power source.
13. **Power up the server.**
14. If removed, **install the bezel.**

The installation is complete.

After installing the DIMMs, use the **System Utilities > System Configuration > BIOS/Platform Configuration (RBSU) > Memory Options** to configure the memory settings.

## Installing the OCP NIC 3.0 adapter

### Prerequisites

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

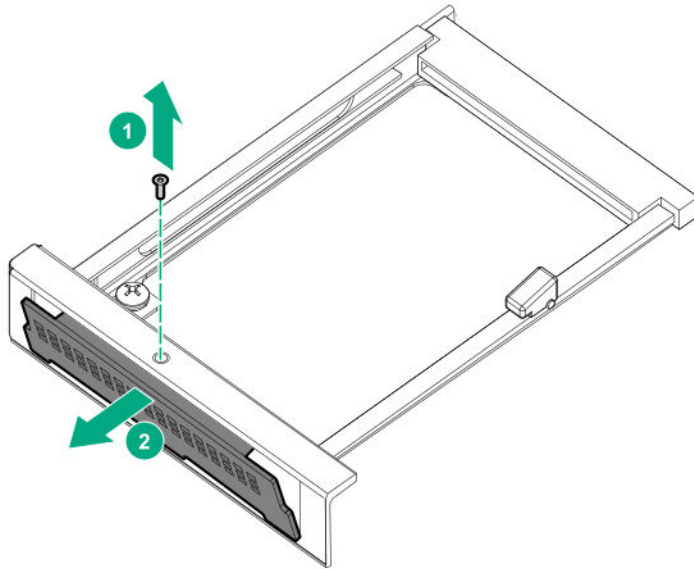
- T-10 Torx screwdriver
- For OCP x16 NIC adapter only: OCP bandwidth upgrade cable kit

### Procedure

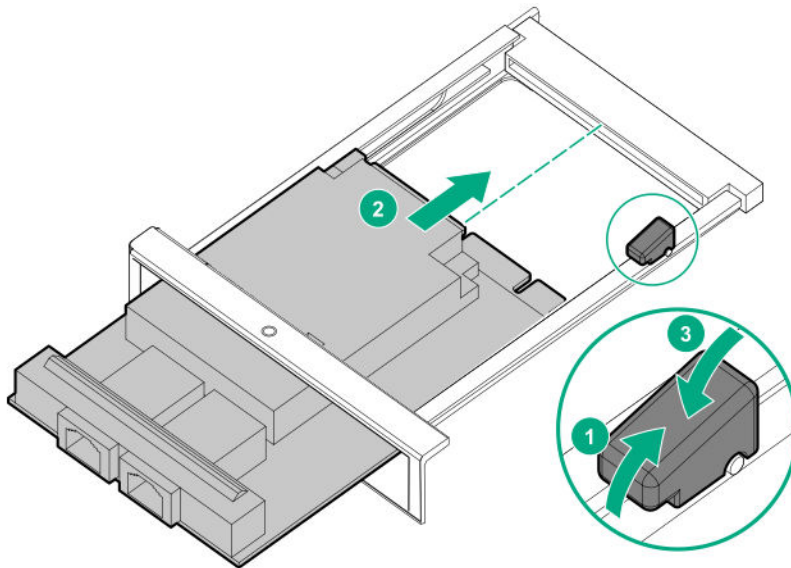
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. **Remove the primary riser cage.**
8. Remove the OCP 3.0 NIC adapter blank.







9. Install the OCP NIC 3.0 adapter:
  - a. Lift the locking pin.
  - b. Slide the OCP 3.0 NIC adapter into rails till it engages with the OCP connector.
  - c. Close the locking pin.



10. If an OCP x16 NIC adapter is installed, **connect the OCP bandwidth upgrade cable to the system board.**
11. If an OCP x16 NIC adapter is installed in 20 NVMe or 24 NVMe configuration, **connect the Y-cable included in the OCP bandwidth upgrade cable kit to ports 1 and 4 of box 3 (20 NVMe) or box 5 (24 NVMe).**

---

**NOTE:** When the Y-cable is connected to NVMe drives, the NVMe drive bandwidth is reduced from x4 to x2.

---

12. **Install the primary riser cage.**
13. **Install the access panel.**
14. **Install the server into the rack.**



15. Connect the OCP NIC 3.0 adapter cables.
16. Connect all peripheral cables to the server.
17. Connect each power cord to the server.
18. Connect each power cord to the power source.
19. **Power up the server.**
20. If removed, **install the bezel.**

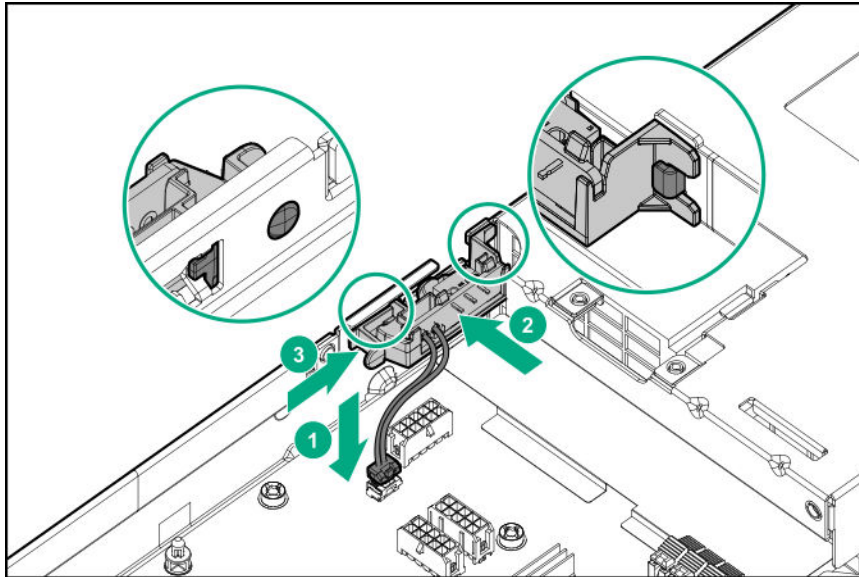
The installation is complete.

## Installing the chassis intrusion detection switch

### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. Install the intrusion detection switch:
  - a. Connect the intrusion detection switch cable.
  - b. Press the switch towards the chassis.
  - c. Slide the switch into the slot on the chassis.





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

The installation is complete.

## Installing the serial port cable

### Prerequisites

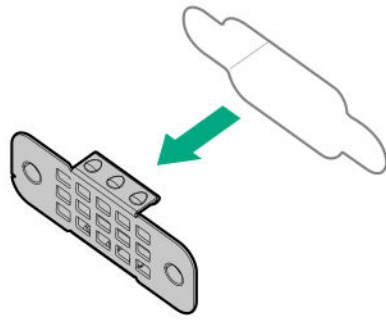
Before you perform this procedure, make sure that hex nut screwdriver is available.

### Procedure

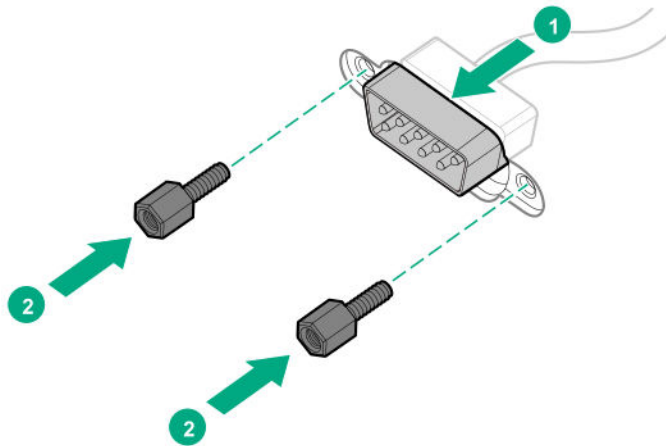
1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**



7. If expansion board is installed in the secondary riser, **remove the riser.**
8. Remove the serial port blank.



9. Install the serial port cable.



10. **Connect the serial port cable.**
11. If removed, **install the secondary riser.**
12. **Install the access panel.**
13. **Install the server into the rack.**
14. Connect all peripheral cables to the server.
15. Connect each power cord to the server.
16. Connect each power cord to the power source.
17. **Power up the server.**
18. If removed, **install the bezel.**

The installation is complete.

## Power supply options



## 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 a redundant hot-plug power supply

**CAUTION:** All power supplies installed in the server must have the same output power capacity. Verify that all power supplies have the same part number and label color. The system becomes unstable and might shut down if it detects different power supplies.

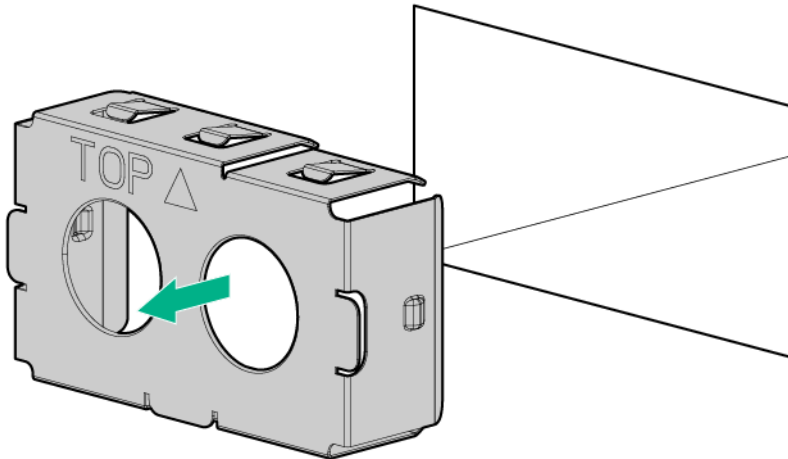
**CAUTION:** To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

### Procedure

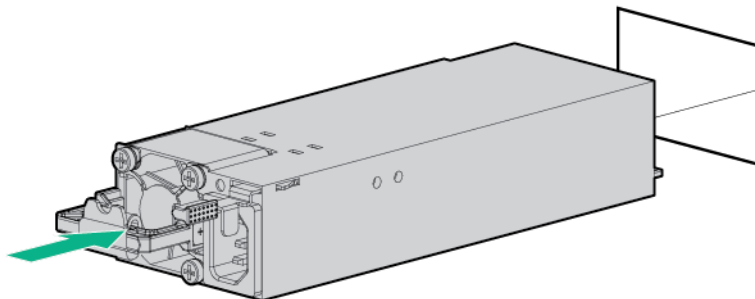
1. **Release the cable management arm to access the rear panel**

2. Remove the blank.

**WARNING:** To reduce the risk of personal injury from hot surfaces, allow the power supply or power supply blank to cool before touching it.



3. Insert the power supply into the power supply bay until it clicks into place.



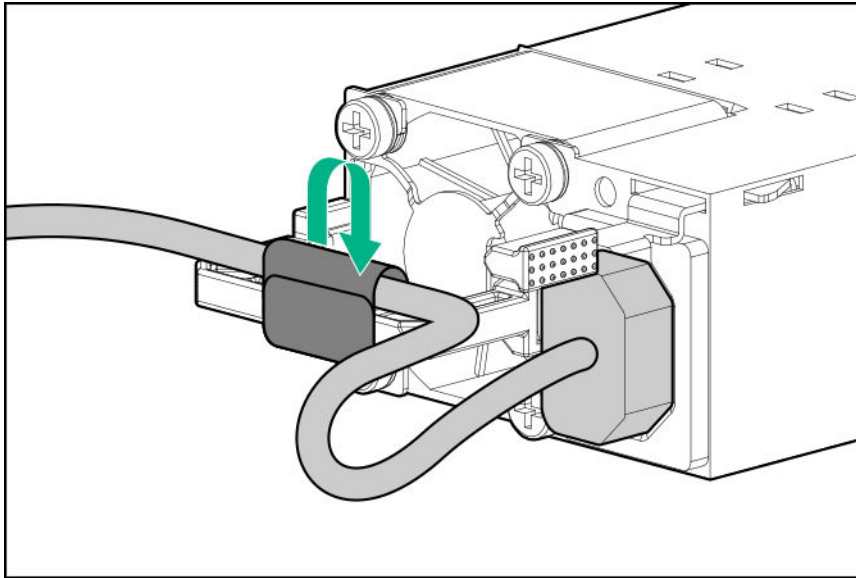
4. Connect the power cord to the power supply.
5. Secure the power cord in the strain relief strap attached to the power supply handle:
  - a. Unwrap the strain relief strap from the power supply handle.

---

**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 cord to the power source.
7. Observe the power supply LED.

## Installing rack rails

For installing rack rails, see the installation instructions on the [Hewlett Packard Enterprise website](#).

## Installing the cable management arm

For installing the cable management arm, see the installation instructions on the [Hewlett Packard Enterprise website](#).

## HPE Trusted Platform Module 2.0 Gen10 Plus option

### Overview

Use these instructions to install and enable an HPE TPM 2.0 Gen10 Plus Kit in a supported server. This option is not supported on Gen10 and earlier servers.

This procedure includes three sections:



1. Installing the Trusted Platform Module board.
2. Enabling the Trusted Platform Module.
3. Retaining the recovery key/password.

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

---

**⚠ CAUTION:** If the TPM is removed from the original server and powered up on a different server, data stored in the TPM including keys will be erased.

---

**❗ IMPORTANT:** In UEFI Boot Mode, the HPE Trusted Platform Module 2.0 Gen10 Plus can be configured to operate as TPM 2.0 (default) or TPM 1.2 on a supported server. In Legacy Boot Mode, the configuration can be changed between TPM 1.2 and TPM 2.0, but only TPM 1.2 operation is supported.

---

## HPE Trusted Platform Module 2.0 guidelines

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**⚠ CAUTION:** Always observe the guidelines in this document. Failure to follow these guidelines can cause hardware damage or halt data access.

---

**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.

For any compliance issues arising from your operation/usage of TPM which violates the above mentioned requirement, you shall bear all the liabilities wholly and solely. Hewlett Packard Enterprise will not be responsible for any related liabilities.

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 installing or replacing a TPM, observe the following guidelines:

- Do not remove an installed TPM. Once installed, the TPM becomes a permanent part of the system board.
- When installing or replacing hardware, Hewlett Packard Enterprise service providers cannot enable the TPM or the encryption technology. For security reasons, only the customer can enable these features.
- When returning a system board for service replacement, do not remove the TPM from the system board. When requested, Hewlett Packard Enterprise Service provides a TPM with the spare system board.
- Any attempt to remove the cover of an installed TPM from the system board can damage the TPM cover, the TPM, and the system board.
- If the TPM is removed from the original server and powered up on a different server, all data stored in the TPM including keys will be erased.

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

## Installing and enabling the HPE TPM 2.0 Gen10 Plus option

### Installing the Trusted Platform Module board

#### Preparing the server for installation

##### Procedure

1. Observe the following warnings:



**WARNING:** 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.

To reduce the risk of personal injury, electric shock, or damage to the equipment, remove power from the server:

- For rack and tower servers, remove the power cord.
  - For server blades and compute modules, remove the server blade or compute module from the enclosure.
- 



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

---

2. Update the system ROM.

Locate and download the latest ROM version from the Hewlett Packard Enterprise Support Center website (<https://www.hpe.com/support/hpesc>). To update the system ROM, follow the instructions on the website.

3. Power down the server.

- a. Shut down the OS as directed by the OS documentation.
- b. To place the server in standby mode, press the Power On/Standby button. When the server enters standby power mode, the system power LED changes to amber.
- c. Disconnect the power cords (rack and tower servers).

4. Do one of the following:

- Depending on your product, extend or remove the server from the rack.
- Remove the server from the enclosure.

5. If removed, place the server on a flat, level work surface.

6. Remove the access panel.

7. Remove any options or cables that might prevent access to the TPM connector.

8. Proceed to "Installing the TPM board and cover."





## Installing the TPM board and cover

### Procedure

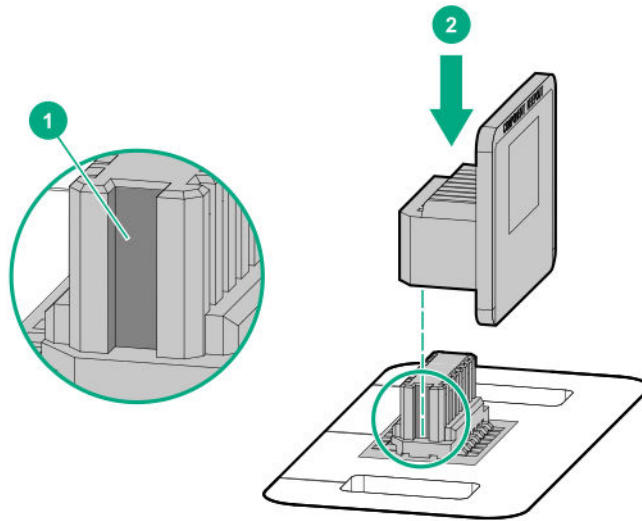
1. Observe the following alerts:

**CAUTION:** If the TPM is removed from the original server and powered up on a different server, data stored in the TPM including keys will be erased.

**CAUTION:** The TPM is keyed to install only in the orientation shown. Any attempt to install the TPM in a different orientation might result in damage to the TPM or system board.

2. Install the TPM board:

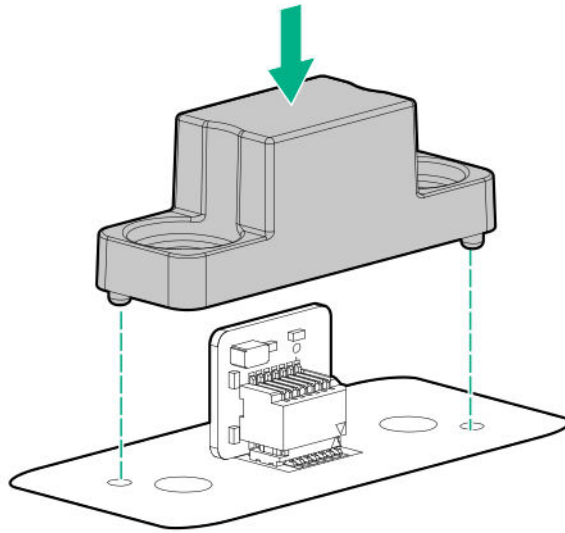
- a. Locate the TPM connector on the system board. See the server hood label for the exact location.
- b. Align the TPM board with the key on the connector, and then install the TPM board. To seat the board, press the TPM board firmly into the connector.



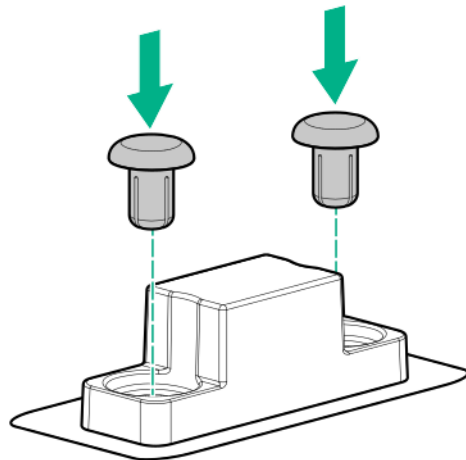
3. Install the TPM cover:

- a. Align the pins on the cover with the openings on the system board.
- b. Press straight down on the middle of the cover until the alignment pins are seated into the holes.





4. Secure the rivets into place by pushing them firmly through the holes in the TPM cover.



5. Proceed to "Preparing the server for operation."

## Preparing the server for operation

### Procedure

1. Install any options or cables previously removed to access the TPM connector.
2. Install the access panel.
3. Do one of the following:
  - Slide or install the server into the rack.
  - Install the server into the enclosure.
4. Power up the server.



- a. Connect the power cords (rack and tower servers).
- b. Press the Power On/Standby button.

## Enabling the Trusted Platform Module

When enabling the Trusted Platform module, observe the following guidelines:

- By default, the Trusted Platform Module is enabled as TPM 2.0 when the server is powered on after installing it.
- In UEFI Boot Mode, the Trusted Platform Module can be configured to operate as TPM 2.0 (default) or TPM 1.2.
- In Legacy Boot Mode, the Trusted Platform Module configuration can be changed between TPM 1.2 and TPM 2.0 (default), but only TPM 1.2 operation is supported.

## Enabling the Trusted Platform Module as TPM 2.0

### Procedure

1. During the server startup sequence, press the **F9** key to access **System Utilities**.
2. From the System Utilities screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options**.
3. Verify the following:
  - "Current TPM Type" is set to **TPM 2.0**.
  - "Current TPM State" is set to **Present and Enabled**.
  - "TPM Visibility" is set to **Visible**.
4. If changes were made in the previous step, press the **F10** key to save your selection.
5. If **F10** was pressed in the previous step, do one of the following:
  - If in graphical mode, click **Yes**.
  - If in text mode, press the **Y** key.
6. Press the **ESC** key to exit System Utilities.
7. If changes were made and saved, the server prompts for reboot request. Press the **Enter** key to confirm reboot.

If the following actions were performed, the server reboots a second time without user input. During this reboot, the TPM setting becomes effective.

- Changing from TPM 1.2 and TPM 2.0
  - Changing TPM bus from FIFO to CRB
  - Enabling or disabling TPM
  - Clearing the TPM
8. Enable TPM functionality in the OS, such as Microsoft Windows BitLocker or measured boot.

For more information, see the [Microsoft website](#).



## Enabling the Trusted Platform Module as TPM 1.2

### Procedure

1. During the server startup sequence, press the **F9** key to access **System Utilities**.
2. From the System Utilities screen select **System Configuration > BIOS/Platform Configuration (RBSU) > Server Security > Trusted Platform Module options**.
3. Change the "TPM Mode Switch Operation" to **TPM 1.2**.
4. Verify that "TPM Visibility" is set to **Visible**.
5. Press the **F10** key to save your selection.
6. When prompted to save the change in System Utilities, do one of the following:
  - If in graphical mode, click **Yes**.
  - If in text mode, press the **Y** key.
7. Press the **ESC** key to exit System Utilities.

The server reboots a second time without user input. During this reboot, the TPM setting becomes effective.
8. Enable TPM functionality in the OS, such as Microsoft Windows BitLocker or measured boot.

For more information, see the [Microsoft website](#).

## Retaining the BitLocker recovery key/password

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 the encrypted hard drive.



# Cabling

## Cabling guidelines

The cable colors in the cabling diagrams used in this chapter are for illustration purposes only.

Observe the following 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, 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.

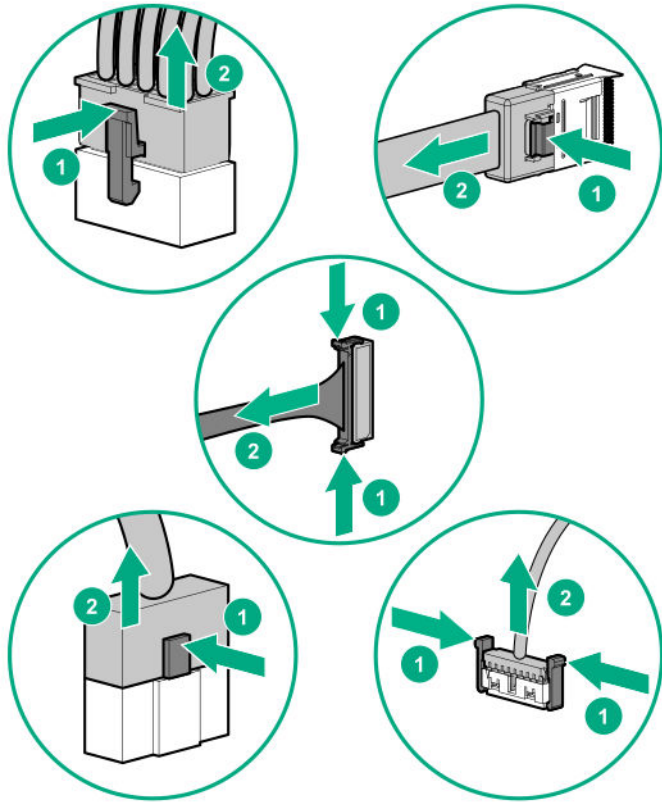
### When connecting cables

- 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.

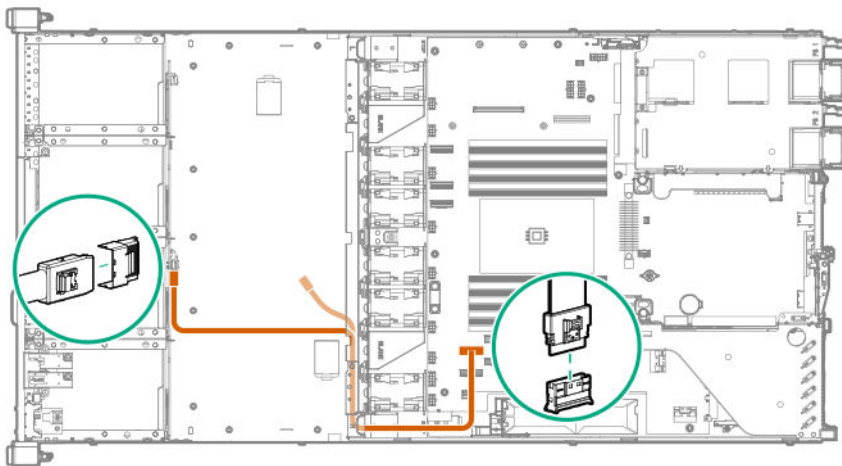




- Remove cables that are no longer being used. Retaining them inside the server can restrict airflow. If you intend to use the removed cables later, label and store them for future use.

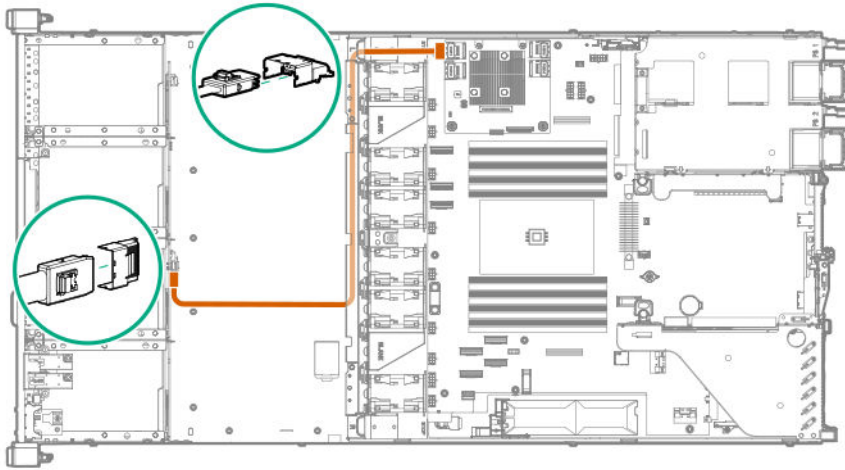
## Cable routing: 4/8LFF drive model

- 4LFF SATA drives (box 1) connected to system board

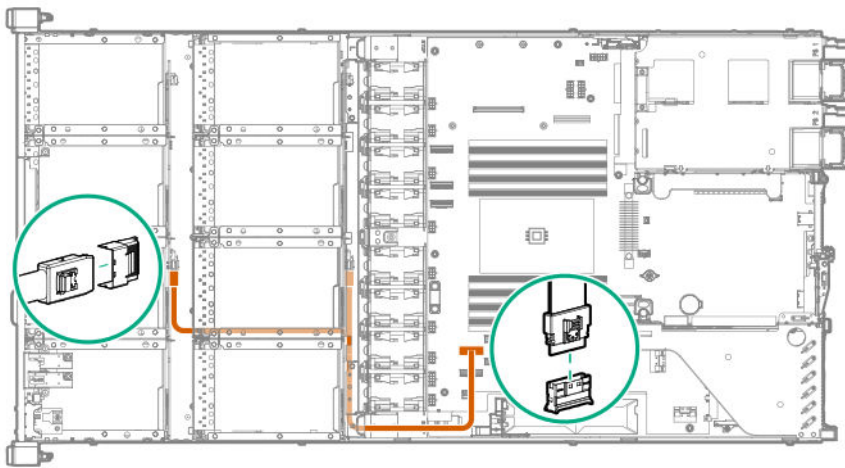


- 4LFF SAS/SATA drives (box 1) connected to HPE Smart Array type-a modular controller

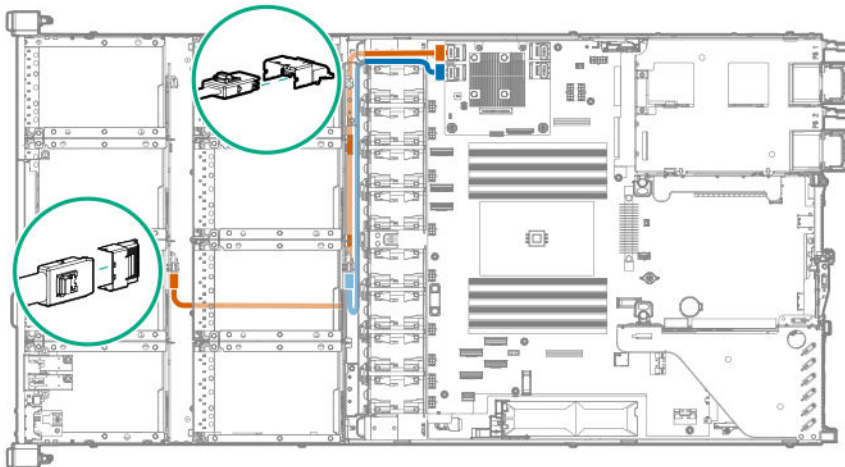




- 8LFF SATA drives (box 1 and 2) connected to system board

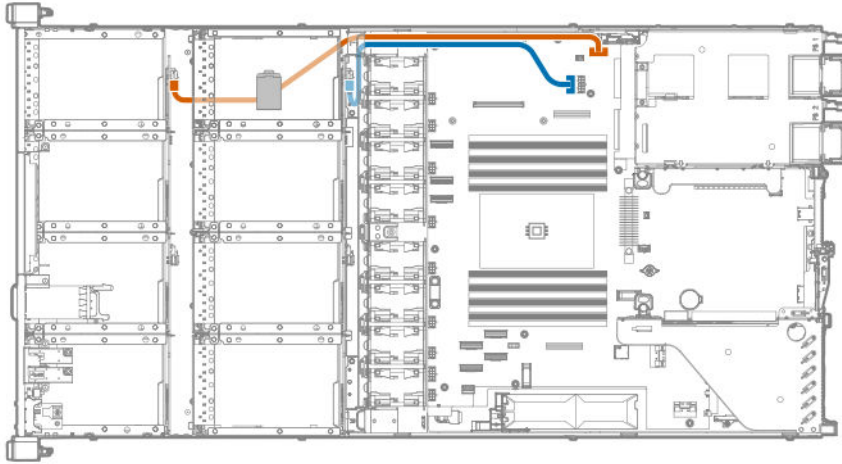


- 8LFF SAS/SATA drives (box 1 and 2) connected to HPE Smart Array type-a modular controller



Cable color	Description
Orange	Mini-SAS cable from box 1 drive backplane port 1 to type-a controller port 1
Blue	Mini-SAS cable from box 2 drive backplane port 1 to type-a controller port 2

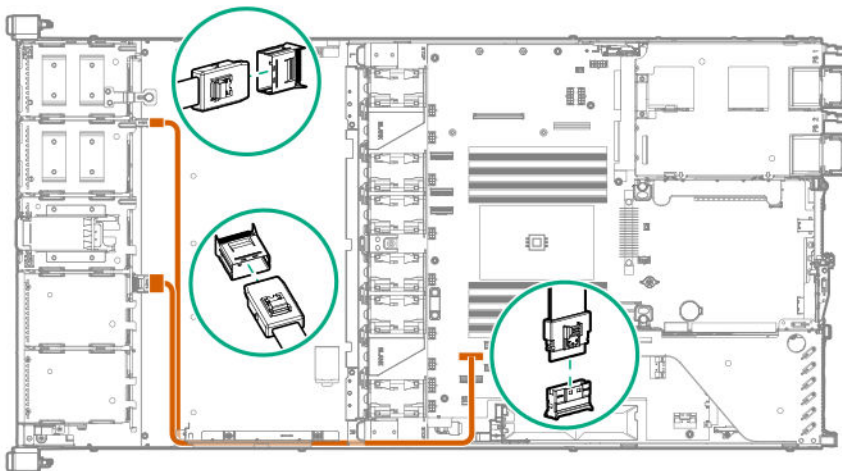
- LFF drive power cabling



Cable color	Description
Orange	Power cable from box 1 drive backplane to system board power connector 1
Blue	Power cable from box 2 drive backplane to system board power connector 3

## Cable routing: 8/16/20SFF SAS/SATA drive model

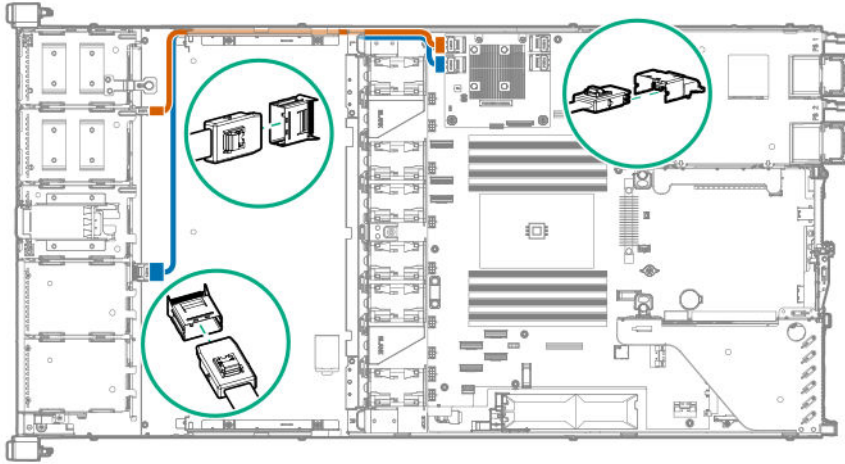
- 8SFF SATA drives (box 1) connected to system board



- 8SFF SAS/SATA drives (box 1) connected to HPE Smart Array type-a modular controller

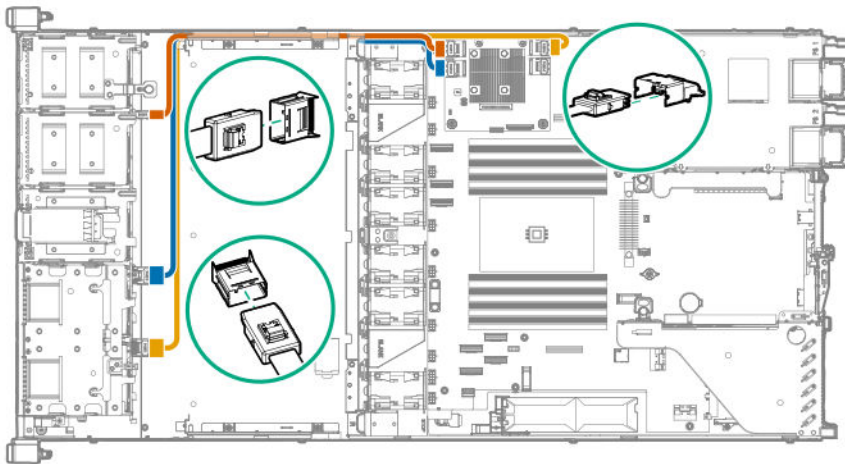






Cable color	Description
Orange	Mini-SAS cable from box 1 drive backplane port 1 to type-a controller port 1
Blue	Mini-SAS cable from box 1 drive backplane port 2 to type-a controller port 2

- 10SFF SAS/SATA drives (box 1 and 2) connected to HPE Smart Array type-a modular controller, P816i-a

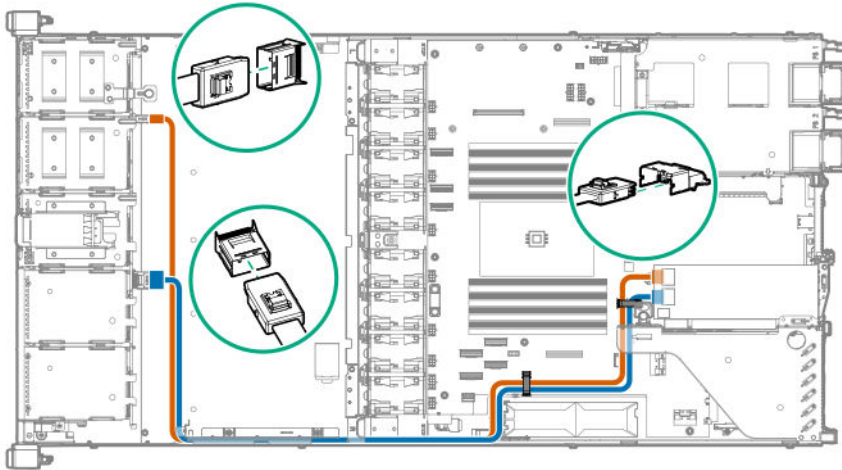


Cable color	Description
Orange	Mini-SAS cable from box 1 drive backplane port 1 to type-a controller port 1
Blue	Mini-SAS cable from box 1 drive backplane port 2 to type-a controller port 2
Gold	Mini-SAS cable from box 2 drive backplane port 1 to type-a controller port 3

- 8SFF SAS/SATA drives (box 1) connected to HPE Smart Array PCIe plug-in controller

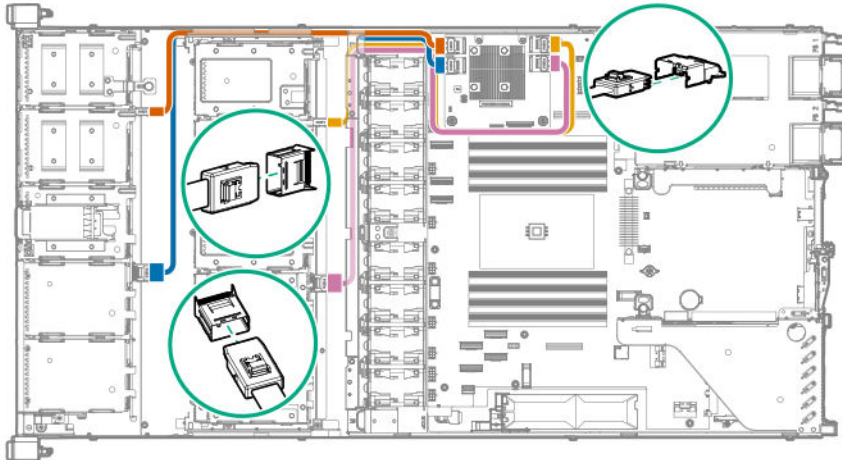
This illustration shows the cabling for PCIe plug-in controller installed in slot 2. The cabling for PCIe plug-in controller installed in slot 3 is similar.





Cable color	Description
Orange	Mini-SAS cable from box 1 drive backplane port 1 to type-p controller port 2
Blue	Mini-SAS cable from box 1 drive backplane port 2 to type-p controller port 1

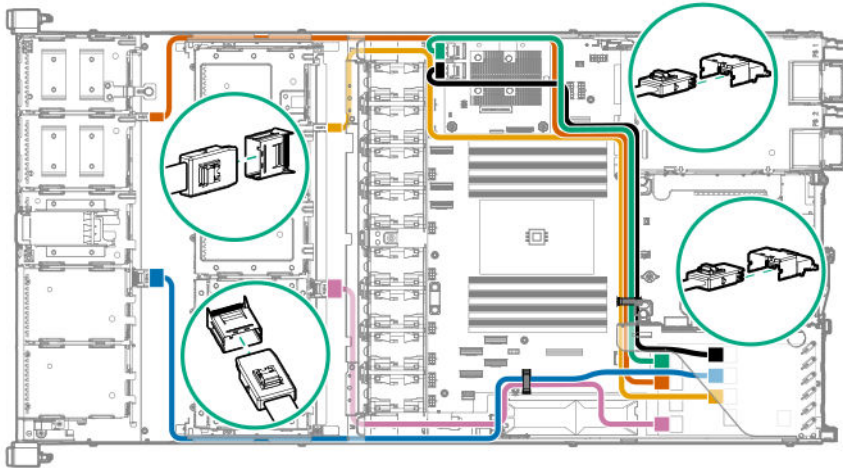
- 16SFF SAS/SATA drives (box 1 and 3) connected to HPE Smart Array type-a modular controller, P816i-a



Cable color	Description
Orange	Mini-SAS cable from box 1 drive backplane port 1 to type-a controller port 1
Blue	Mini-SAS cable from box 1 drive backplane port 2 to type-a controller port 2
Gold	Mini-SAS cable from box 3 drive backplane port 1 to type-a controller port 3
Pink	Mini-SAS cable from box 3 drive backplane port 2 to type-a controller port 4

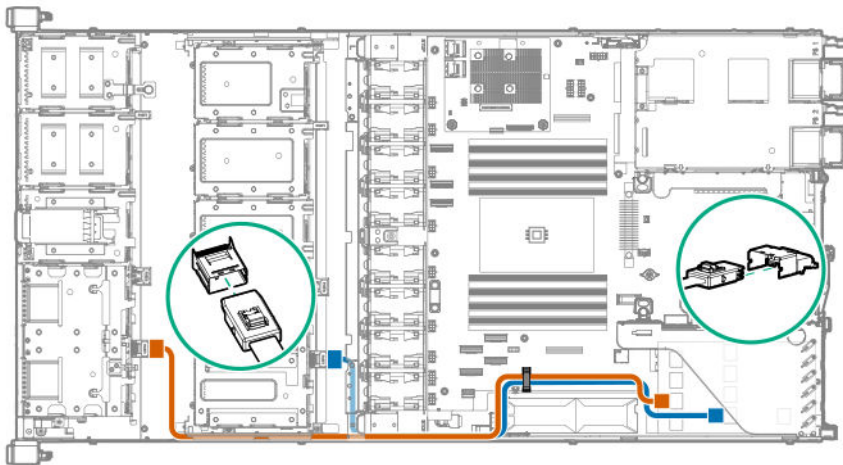
- 20SFF SAS/SATA Configuration
  - 16SFF SAS/SATA drives (box 1 and 3) connected to SAS expander and HPE Smart Array type-a modular controller





Cable color	Description
Orange	Mini-SAS cable from SAS expander port 3 to box 1 drive backplane port 1
Blue	Mini-SAS cable from SAS expander port 4 to box 1 drive backplane port 2
Gold	Mini-SAS cable from SAS expander port 6 to box 3 drive backplane port 1
Pink	Mini-SAS cable from SAS expander port 7 to box 3 drive backplane port 2
Green	Mini-SAS cable from SAS expander port 1 to type-a controller port 1
Black	Mini-SAS cable from SAS expander port 2 to type-a controller port 2

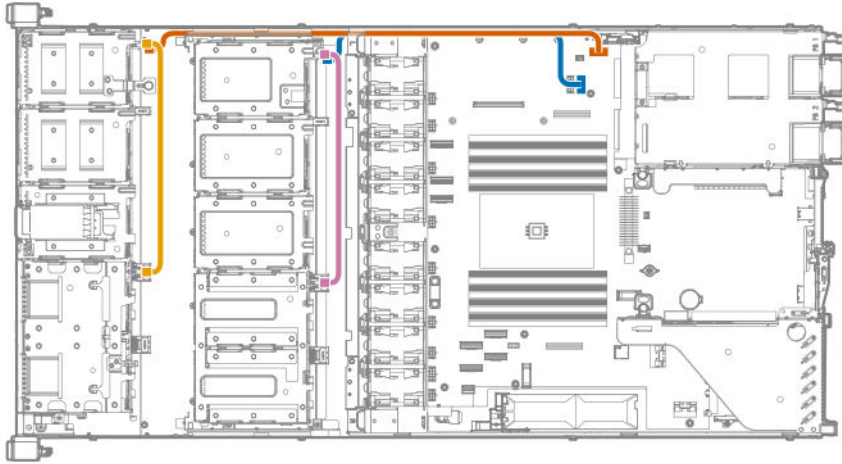
- 4SFF SAS/SATA drives (box 2 and 4) connected to SAS expander



Cable color	Description
Orange	Mini-SAS cable from SAS expander port 5 to box 2 drive backplane port 1
Blue	Mini-SAS cable from SAS expander port 8 to box 4 drive backplane port 1

- SFF drive power cabling

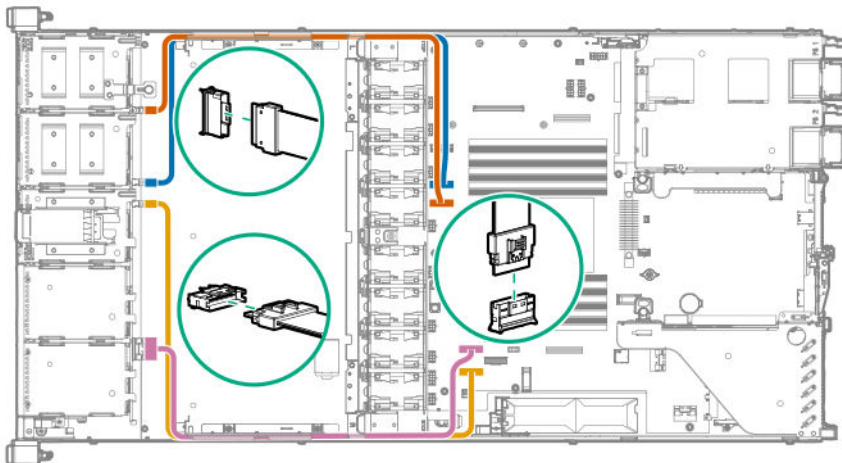




Cable color	Description
Orange	Power cable from box 1 drive backplane to system board power connector 1
Blue	Power cable from box 3 drive backplane to system board power connector 2
Gold	Power cable from box 1 8SFF drive backplane to box 2 2SFF drive backplane
Pink	Power cable from box 3 8SFF drive backplane to box 4 2SFF drive backplane

## Cable routing: 8/16SFF U.2/U.3 NVMe drive model

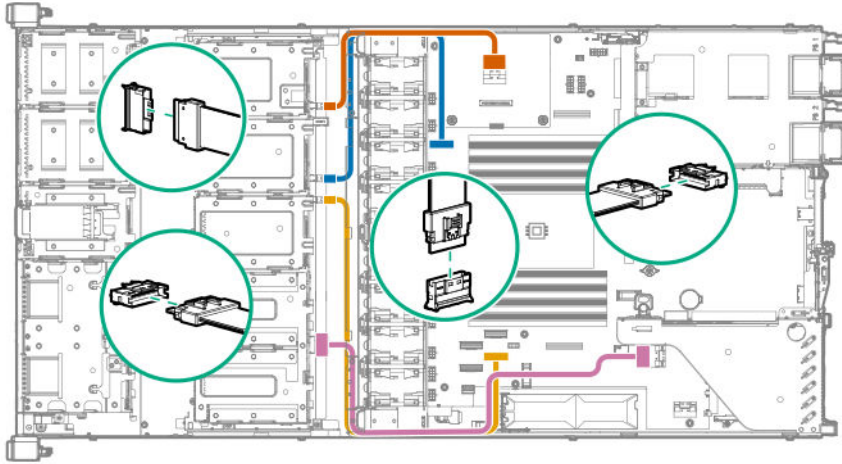
- 8SFF U.2 NVMe drives (box 1) connected to system board



Item	Description
Orange	Slimline cable from box 1 drive backplane port 1 to NVMe port 3A on system board
Blue	Slimline cable from box 1 drive backplane port 2 to NVMe port 1A on system board
Gold	Slimline cable from box 1 drive backplane port 3 to NVMe port 5A on system board
Pink	Slimline cable from box 1 drive backplane port 4 to NVMe port 8A on system board

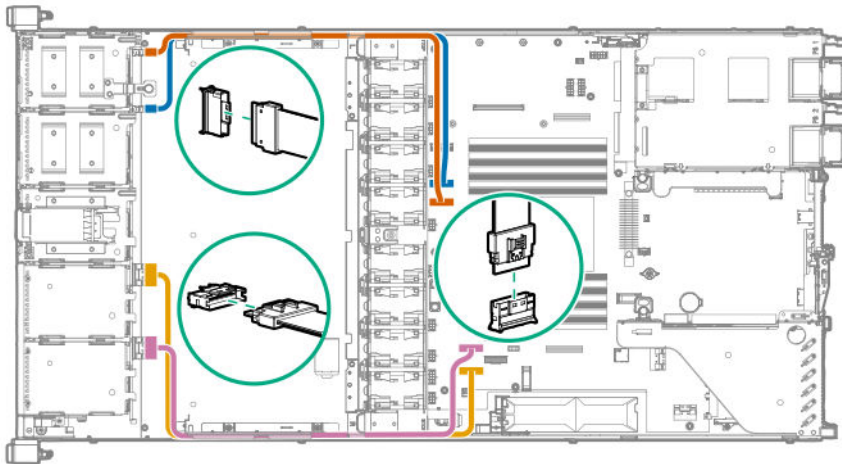
- 8SFF U.2 NVMe drives (box 3) connected to 1-port NVMe adapter and system board





Item	Description
Orange	Slimline cable from box 3 drive backplane port 1 to NVMe port 7A on 1-port NVMe adapter
Blue	Slimline cable from box 3 drive backplane port 2 to NVMe port 2A on system board
Gold	Slimline cable from box 3 drive backplane port 3 to NVMe port 4A on system board
Pink	Slimline cable from box 3 drive backplane port 4 to NVMe port 6A on system board

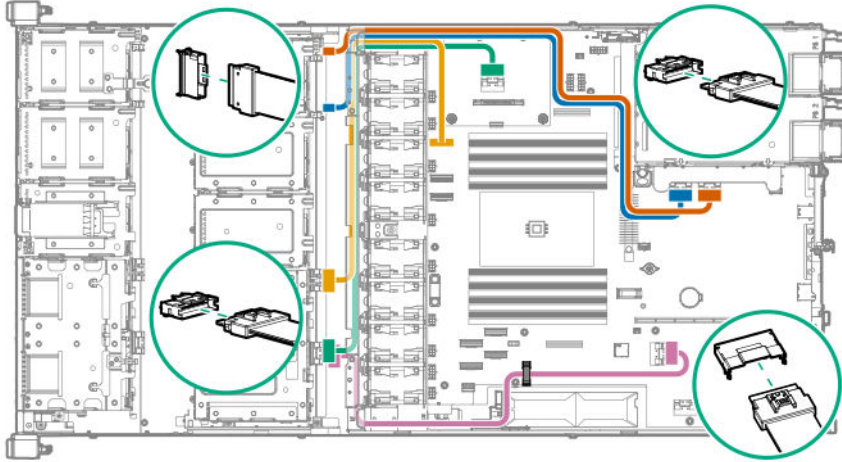
- 8SFF U.3 NVMe drives (box 1) connected to system board



Item	Description
Orange	Slimline cable from box 1 drive backplane port 1 to NVMe port 3A on system board
Blue	Slimline cable from box 1 drive backplane port 2 to NVMe port 1A on system board
Gold	Slimline cable from box 1 drive backplane port 3 to NVMe port 5A on system board
Pink	Slimline cable from box 1 drive backplane port 4 to NVMe port 8A on system board

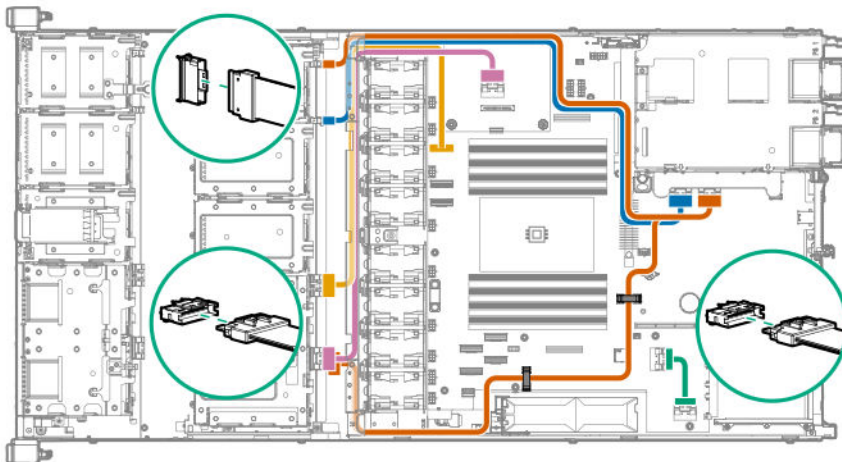
- 8+2 U.3 NVMe drives (box 3 and 4) connected to system board, riser, and 1-port NVMe adapter





Item	Description
Orange	Slimline cable from box 3 drive backplane port 1 to port 2B on secondary riser
Blue	Slimline cable from box 3 drive backplane port 2 to port 1B on secondary riser
Gold	Slimline cable from box 3 drive backplane port 3 to port 2A on system board
Pink	Slimline cable from box 3 drive backplane port 4 to port 6A on system board
Green	Slimline cable from box 4 drive backplane port 1 to port 7A on 1-port NVMe adapter

- 8+2 U.3 NVMe drives (box 3 and 4) connected to system board, riser, and 1-port NVMe adapter and OCP x16 NIC adapter installed



Item	Description
Orange	Slimline cable from box 3 drive backplane port 1 and port 4 to port 2B on secondary riser
Blue	Slimline cable from box 3 drive backplane port 2 to port 1B on secondary riser
Gold	Slimline cable from box 3 drive backplane port 3 to port 2A on system board

Table Continued

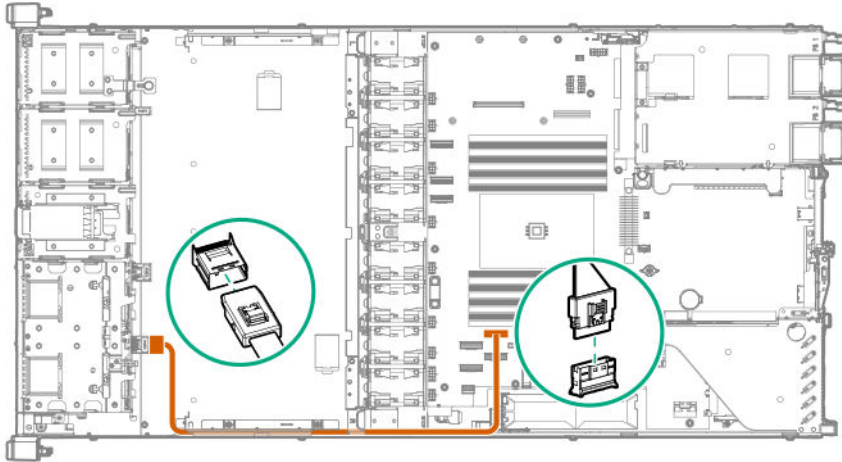


Item	Description
Pink	Slimline cable from box 4 drive backplane port 1 to port 7A on 1-port NVMe adapter
Green	OCP x16 cable from OCP x16 connector to port 6A on system board

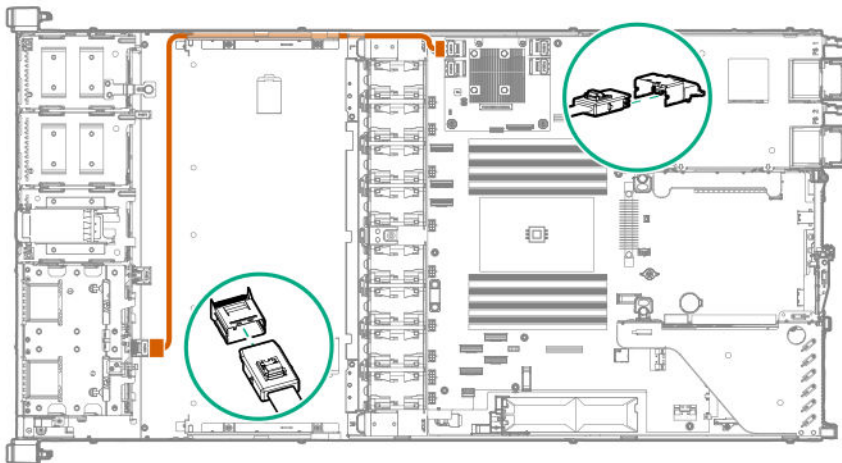
- **Power cabling**

## Cable routing: 2SFF/2+2SFF SAS/SATA/uFF drives

- 2SFF SAS/SATA/uFF drives installed in outer cage (box 2) and connected to system board



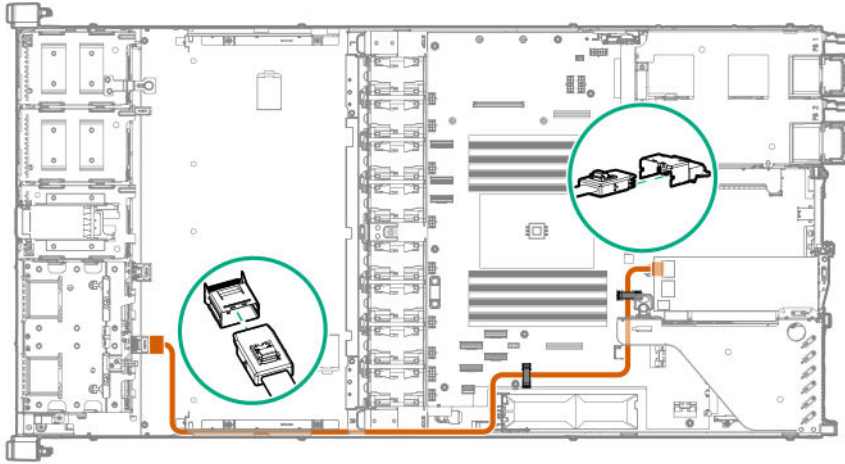
- 2SFF SAS/SATA/uFF drives installed in outer cage (box 2) and connected to type-a storage controller



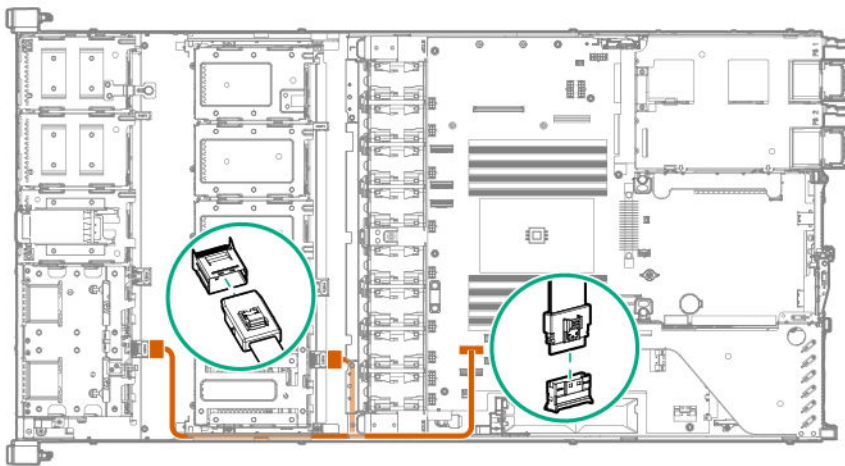
- 2SFF SAS/SATA/uFF drives installed in outer cage (box 2) and connected to type-p storage controller

This illustration shows the cabling for type-p storage controller installed in slot 2. The cabling for type-p storage controller installed in slot 3 is similar.

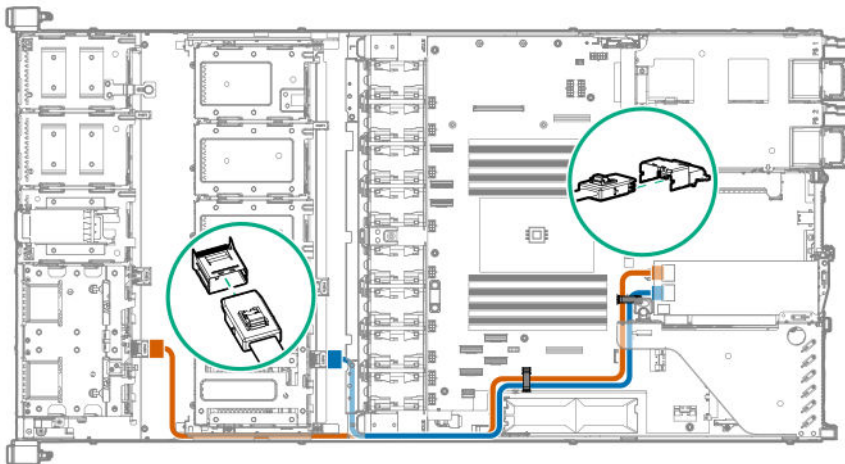




- 2+2SFF SAS/SATA/uFF drives installed in outer and inner cages (box 2 and 4) and connected to system board



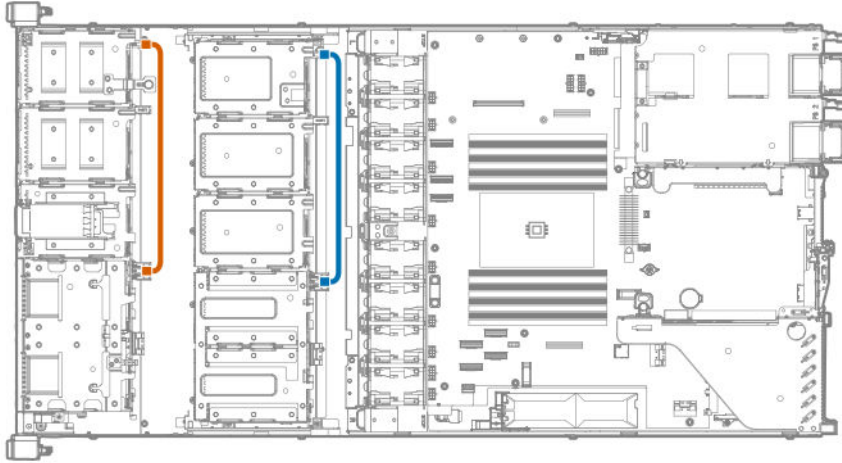
- 2+2SFF SAS/SATA drives installed in outer and inner cages (box 2 and 4) and connected to type-p storage controller
- This illustration shows the cabling for type-p storage controller installed in slot 2. The cabling for type-p storage controller installed in slot 3 is similar.





Cable color	Description
Orange	Mini-SAS cable from box 2 drive backplane port 1 to type-p controller port 1
Blue	Mini-SAS cable from box 4 drive backplane port 1 to type-p controller port 2

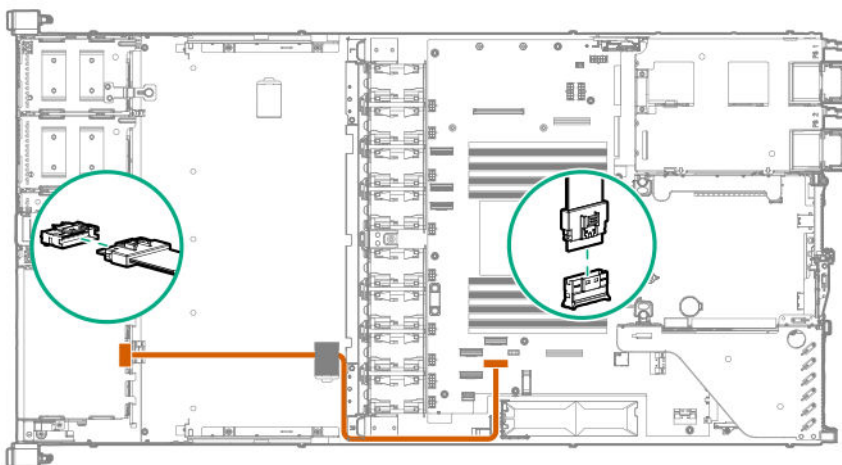
- Power cabling



Cable color	Description
Orange	Power cable from box 1 8SFF drive backplane to box 2 2SFF drive backplane
Blue	Power cable from box 3 8SFF drive backplane to box 4 2SFF drive backplane

## Cable routing: 2SFF NVMe/2+2SFF NVMe drives

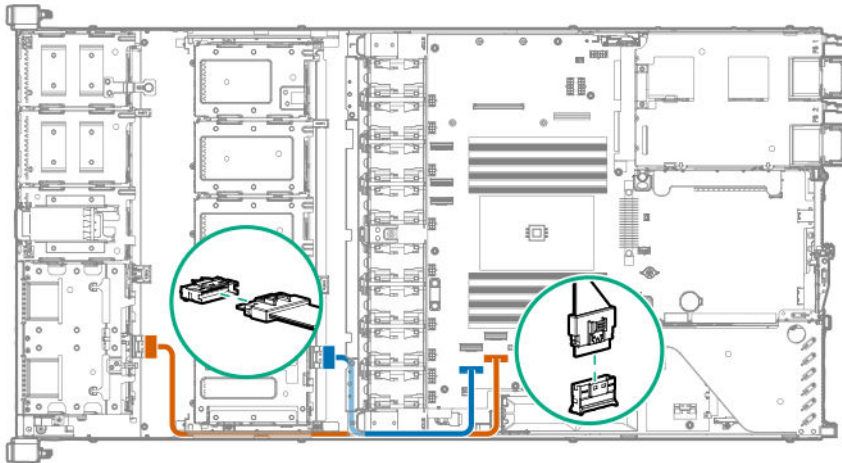
- 2SFF U.2/U.3 NVMe drives installed in outer cage (box 2) and connected to system board (For 8SFF + 2NVMe configuration)



- 2+2SFF U.3 NVMe drives installed in outer and inner cages (box 2 and 4) and connected to system board (For 16SFF SAS/SATA + 4NVMe configuration)



**NOTE:** For 20SFF U.3 NVMe configuration, the 2SFF U.3 NVMe drives installed in inner cage (box 4) are connected to 1-port NVMe adapter.

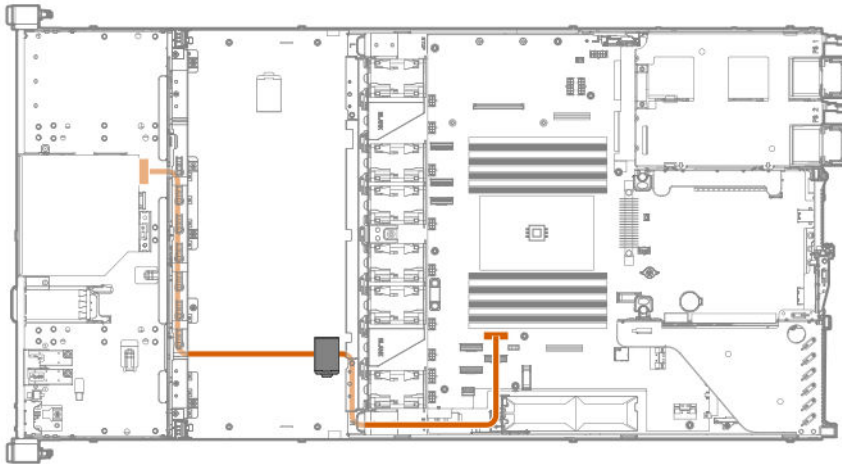


Cable color	Description
Orange	Slimline SAS cable from box 2 drive backplane port 1 to system board port 4A
Blue	Slimline SAS cable from box 4 drive backplane port 1 to system board port 5A

- **Power cabling**

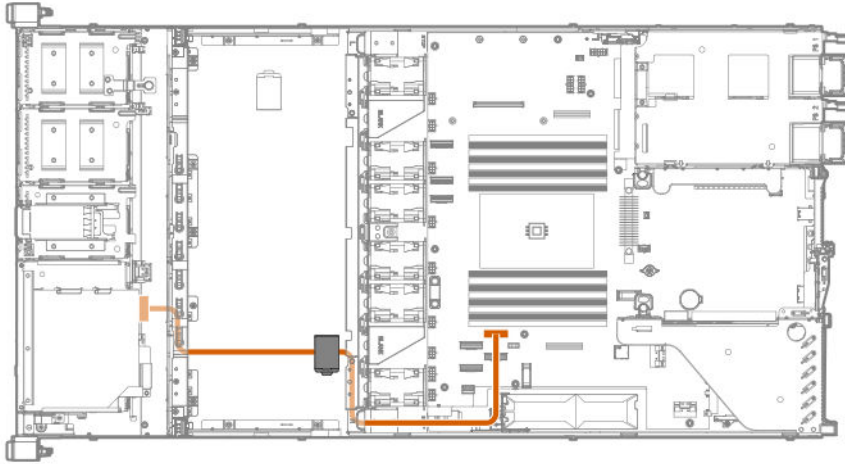
## Cable routing: Optical drive

- LFF



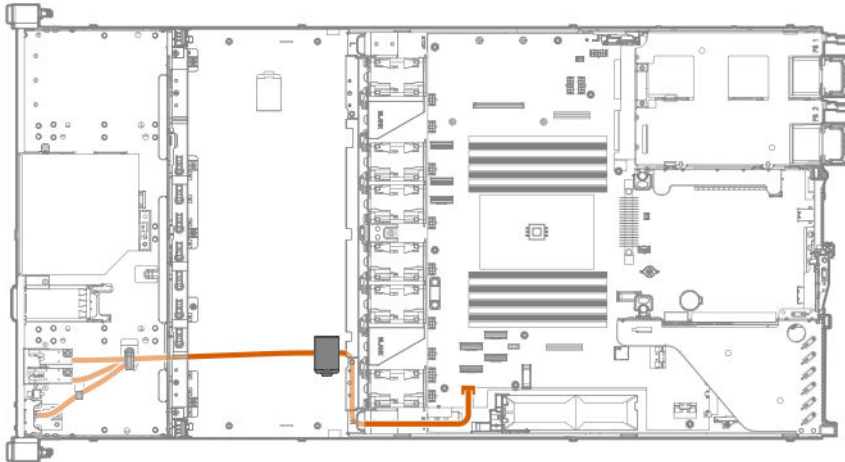
- SFF





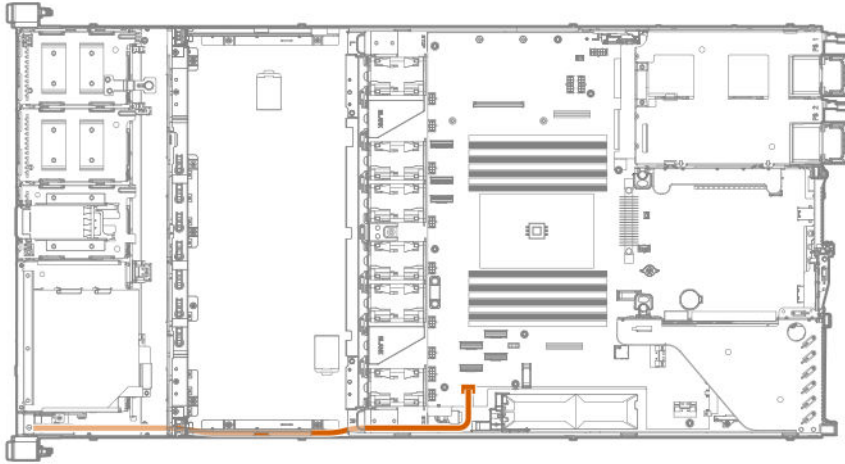
## Cable routing: Front I/O

- LFF

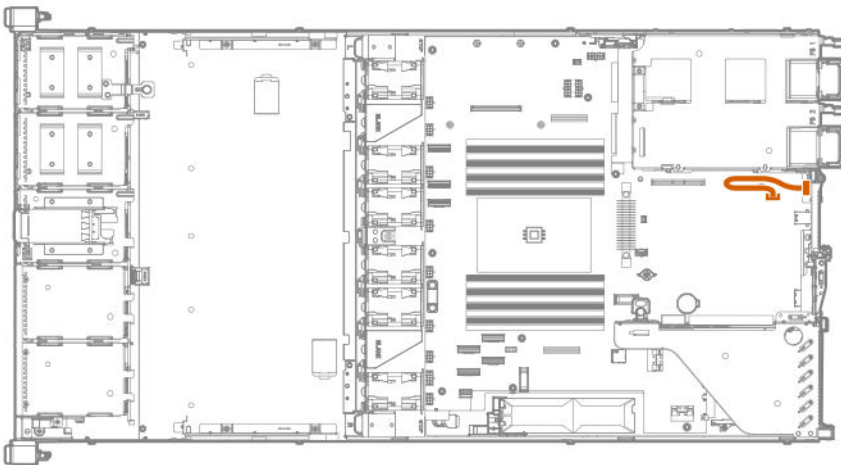


- SFF

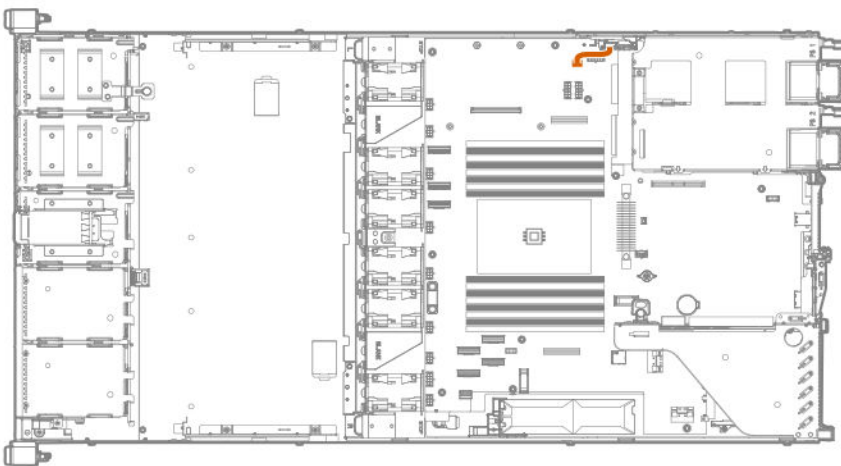




**Cable routing: Serial port**

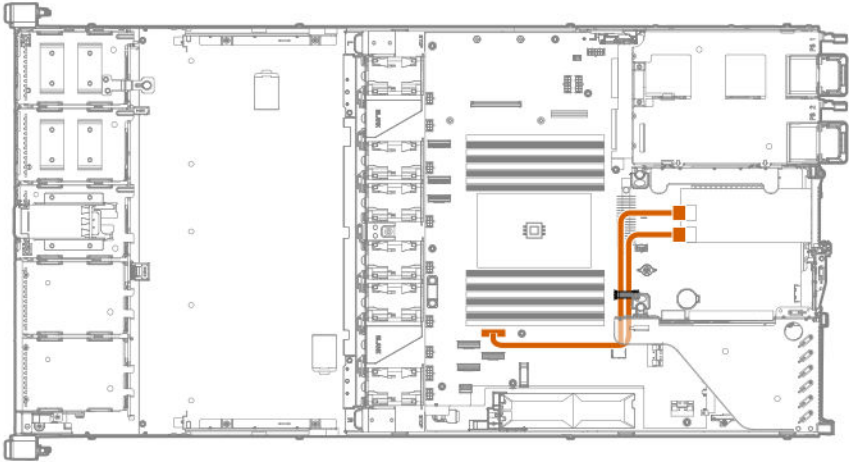


**Cable routing: Chassis intrusion detection switch**



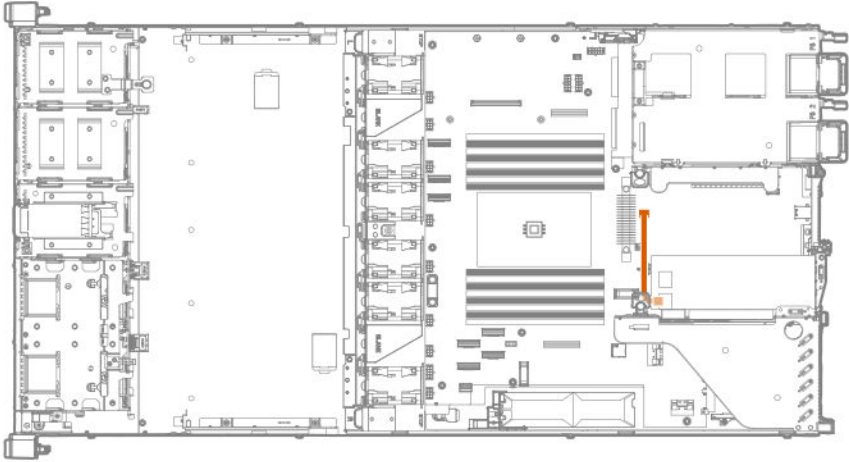
# Cable routing: M.2 enablement board

This illustration shows the cabling for M.2 enablement board installed in slot 3. The cabling for M.2 enablement board installed in slot 1 or 2 is similar.

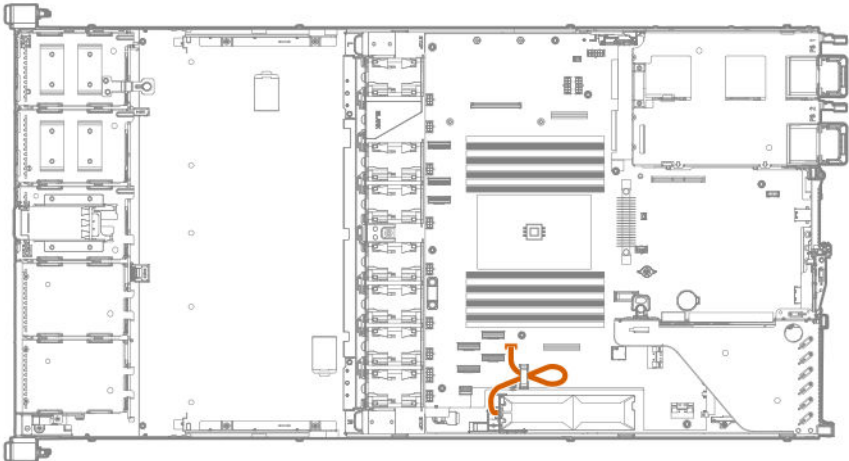


# Cable routing: Controller backup power cable

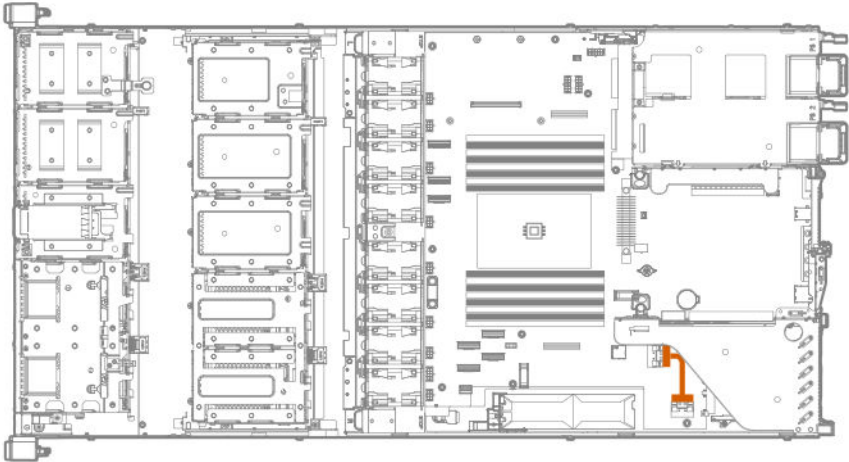
This illustration shows the cabling for type-p controller installed in slot 2. The cabling for type-p controller installed in slot 3 is similar.



### Cable routing: Energy pack



### Cable routing: OCP x16 NIC adapter



# Software and configuration utilities

## Server mode

The software and configuration utilities presented in this section operate in online mode, offline mode, or in both modes.

<b>Software or configuration utility</b>	<b>Server mode</b>
<b><u>Active Health System</u></b>	Online and Offline
<b><u>HPE iLO 5</u></b>	Online and Offline
<b><u>HPE Smart Storage Administrator</u></b>	Online and Offline
<b><u>iLO RESTful API</u></b>	Online and Offline
<b><u>Intelligent Provisioning</u></b>	Online and Offline
<b><u>Scripting Toolkit for Windows and Linux</u></b>	Online
<b><u>Service Pack for ProLiant</u></b>	Online and Offline
<b><u>Smart Update Manager</u></b>	Online and Offline
<b><u>UEFI System Utilities</u></b>	Offline

## Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/qs>).

## Active Health System Viewer

Active Health System Viewer (AHSV) is an online tool used to read, diagnose, and resolve server issues quickly using AHS uploaded data. AHSV provides Hewlett Packard Enterprise recommended repair actions based on experience and best practices. AHSV provides the ability to:

- Read server configuration information
- View Driver/Firmware inventory
- Review Event Logs
- Respond to Fault Detection Analytics alerts
- Open new and update existing support cases

## Active Health System

The Active Health System monitors and records changes in the server hardware and system configuration.



The Active Health System provides:

- Continuous health monitoring of over 1600 system parameters
- Logging of all configuration changes
- Consolidated health and service alerts with precise time stamps
- Agentless monitoring that does not affect application performance

For more information about the Active Health System, see the iLO user guide at the following website: <https://www.hpe.com/support/ilo-docs>.

### Active Health System data collection

The Active Health System does not collect information about your operations, finances, customers, employees, or partners.

Examples of information that is collected:

- Server model and serial number
- Processor model and speed
- Storage capacity and speed
- Memory capacity and speed
- Firmware/BIOS and driver versions and settings

The Active Health System does not parse or change OS data from third-party error event log activities (for example, content created or passed through the OS).

### Active Health System Log

The data collected by the Active Health System is stored in the Active Health System Log. The data is logged securely, isolated from the operating system, and separate from customer data. Host resources are not consumed in the collection and logging of Active Health System data.

When the Active Health System Log is full, new data overwrites the oldest data in the log.

It takes less than 5 minutes to download the Active Health System Log and send it to a support professional to help you resolve an issue.

When you download and send Active Health System data to Hewlett Packard Enterprise, you agree to have the data used for analysis, technical resolution, and quality improvements. The data that is collected is managed according to the privacy statement, available at <https://www.hpe.com/info/privacy>.

## HPE iLO 5

iLO 5 is a remote server management processor embedded on the system boards of supported HPE servers and compute modules. iLO enables the monitoring and controlling of servers from remote locations. iLO management is a powerful tool that provides multiple ways to configure, update, monitor, and repair servers remotely.

For more information about iLO, see the iLO user guide at the following website: <https://www.hpe.com/support/ilo-docs>.

### iLO Federation

iLO Federation enables you to manage multiple servers from one system using the iLO web interface.





When configured for iLO Federation, iLO uses multicast discovery and peer-to-peer communication to enable communication between the systems in iLO Federation groups.

When you navigate to one of the iLO Federation pages, a data request is sent from the iLO system running the web interface to its peers, and from those peers to other peers until all data for the selected iLO Federation group is retrieved.

iLO supports the following features:

- Group health status—View server health and model information.
- Group virtual media—Connect URL-based media for access by a group of servers.
- Group power control—Manage the power status of a group of servers.
- Group power capping—Set dynamic power caps for a group of servers.
- Group firmware update—Update the firmware of a group of servers.
- Group license installation—Enter a license key to activate iLO licensed features on a group of servers.
- Group configuration—Add iLO Federation group memberships for multiple iLO systems.

Any user can view information on iLO Federation pages, but a license is required for using the following features: Group virtual media, Group power control, Group power capping, Group configuration, and Group firmware update.

For more information about iLO Federation, see the iLO user guide at the following website: <https://www.hpe.com/support/ilo-docs>.

## iLO Service Port

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

- Download the Active Health System Log to a supported USB flash drive.  
When you use this feature, the connected USB flash drive is not accessible by the host operating system.
- Connect a client (such as a laptop) with a supported USB to Ethernet adapter to access the following:
  - iLO web interface
  - Remote console
  - iLO RESTful API
  - CLI

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

Hewlett Packard Enterprise recommends the HPE Micro USB to USB Adapter (part number 789904-B21).

When you use the iLO Service Port:

- Actions are logged in the iLO event log.
- The server UID flashes to indicate the Service Port status.  
You can also retrieve the Service Port status by using a REST client and the iLO RESTful API.
- You cannot use the Service Port to boot any device within the server, or the server itself.
- You cannot access the server by connecting to the Service Port.
- You cannot access the connected device from the server.



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

## iLO RESTful API

iLO includes the iLO RESTful API, which is Redfish API conformant. The iLO RESTful API is a management interface that server management tools can use to perform configuration, inventory, and monitoring tasks by sending basic HTTPS operations (GET, PUT, POST, DELETE, and PATCH) to the iLO web server.

To learn more about the iLO RESTful API, see the Hewlett Packard Enterprise website (<https://www.hpe.com/support/restfulinterface/docs>).

For specific information about automating tasks using the iLO RESTful API, see libraries and sample code at <https://www.hpe.com/info/redfish>.

## RESTful Interface Tool

The RESTful Interface Tool (iLOREST) is a scripting tool that allows you to automate HPE server management tasks. It provides a set of simplified commands that take advantage of the iLO RESTful API. You can install the tool on your computer for remote use or install it locally on a server with a Windows or Linux Operating System. The RESTful Interface Tool offers an interactive mode, a scriptable mode, and a file-based mode similar to CONREP to help decrease automation times.

For more information, see the following website: <https://www.hpe.com/info/resttool>.

## iLO Amplifier Pack

iLO Amplifier Pack is an advanced server inventory, firmware and driver update solution that enables rapid discovery, detailed inventory reporting, firmware, and driver updates by leveraging iLO advanced functionality. iLO Amplifier Pack performs rapid server discovery and inventory for thousands of supported servers for the purpose of updating firmware and drivers at scale.

For more information about iLO Amplifier Pack, see the *iLO Amplifier Pack User Guide* at the following website: <https://www.hpe.com/support/ilo-ap-ug-en>.

## Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML timestamps each event with one-minute granularity.

You can view recorded events in the IML in several ways, including the following:

- From within HPE SIM
- From within the UEFI System Utilities
- From within the Embedded UEFI shell
- From within the iLO web interface

## Intelligent Provisioning

Intelligent Provisioning is a single-server deployment tool embedded in ProLiant servers and HPE Synergy compute modules. Intelligent Provisioning simplifies server setup, providing a reliable and consistent way to deploy servers.



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**NOTE:**

- Rapid Setup Software is only available on the ProLiant 300 Series servers or below. When you launch F10 mode from the POST screen, you are prompted to select whether you want to enter the Intelligent Provisioning or HPE Rapid Setup Software mode.
- After you have selected a mode, you must re provision the server to change the mode that launches when you boot to F10.

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Intelligent Provisioning prepares the system for installing original, licensed vendor media and Hewlett Packard Enterprise-branded versions of OS software. Intelligent Provisioning also prepares the system to integrate optimized server support software from the Service Pack for ProLiant (SPP). SPP is a comprehensive systems software and firmware solution for ProLiant servers, server blades, their enclosures, and HPE Synergy compute modules. These components are preloaded with a basic set of firmware and OS components that are installed along with Intelligent Provisioning.

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**!** **IMPORTANT:** HPE ProLiant DX/XL servers do not support operating system installation with Intelligent Provisioning, but they do support the maintenance features. For more information, see "Performing Maintenance" in the Intelligent Provisioning user guide and online help.

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After the server is running, you can update the firmware to install additional components. You can also update any components that have been outdated since the server was manufactured.

To access Intelligent Provisioning:

- Press **F10** from the POST screen and enter either Intelligent Provisioning or HPE Rapid Setup Software.
- From the iLO web interface using **Lifecycle Management**. **Lifecycle Management** allows you to access Intelligent Provisioning without rebooting your server.

## Intelligent Provisioning operation

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**NOTE:** Intelligent Provisioning 3.40 and later requires iLO firmware version 2.10 or later.

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Intelligent Provisioning includes the following components:

- Critical boot drivers
- Active Health System (AHS)
- Erase Utility
- Deployment Settings

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**!** **IMPORTANT:**

- Although your server is preloaded with firmware and drivers, Hewlett Packard Enterprise recommends updating the firmware upon initial setup. Also, downloading and updating the latest version of Intelligent Provisioning ensures the latest supported features are available.
- For ProLiant servers, firmware is updated using the Intelligent Provisioning Firmware Update utility.
- Do not update firmware if the version you are currently running is required for compatibility.

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**NOTE:** Intelligent Provisioning does not function within multihomed configurations. A multihomed host is one that is connected to two or more networks or has two or more IP addresses.

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Intelligent Provisioning provides installation help for the following operating systems:

- Microsoft Windows Server
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware ESXi/vSphere Custom Image
- ClearOS

Not all versions of an OS are supported. For information about specific versions of a supported operating system, see the OS Support Matrix on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/ossupport>).

## Management security

HPE ProLiant Gen10, HPE ProLiant Gen10 Plus, and HPE Apollo servers are built with some of the industry's most advanced security capabilities, out of the box, with a foundation of secure embedded management applications and firmware. The management security provided by HPE embedded management products enables secure support of modern workloads, protecting your components from unauthorized access and unapproved use. The range of embedded management and optional software and firmware available with the iLO Advanced license provides security features that help ensure protection, detection, and recovery from advanced cyber attacks. For more information, see the *HPE Gen10 and Gen10 Plus Security Reference Guide* on the Hewlett Packard Enterprise Information Library at <https://www.hpe.com/support/gen10-security-ref-en>.

## Scripting Toolkit for Windows and Linux

The STK for Windows and Linux is a server deployment product that delivers an unattended automated installation for high-volume server deployments. The STK is designed to support ProLiant servers. The toolkit includes a modular set of utilities and important documentation that describes how to apply these tools to build an automated server deployment process.

The STK provides a flexible way to create standard server configuration scripts. These scripts are used to automate many of the manual steps in the server configuration process. This automated server configuration process cuts time from each deployment, making it possible to scale rapid, high-volume server deployments.

For more information or to download the STK, see the [Hewlett Packard Enterprise website](#).

## UEFI System Utilities

The UEFI System Utilities is embedded in the system ROM. Its features enable you to perform a wide range of configuration activities, including:

- Configuring system devices and installed options.
- Enabling and disabling system features.
- Displaying system information.
- Selecting the primary boot controller or partition.
- Configuring memory options.
- Launching other preboot environments.

HPE servers with UEFI can provide:



- Support for boot partitions larger than 2.2 TB. Such configurations could previously only be used for boot drives when using RAID solutions.
- Secure Boot that enables the system firmware, option card firmware, operating systems, and software collaborate to enhance platform security.
- UEFI Graphical User Interface (GUI)
- An Embedded UEFI Shell that provides a preboot environment for running scripts and tools.
- Boot support for option cards that only support a UEFI option ROM.

## Selecting the boot mode

This server provides two **Boot Mode** configurations: UEFI Mode and Legacy BIOS Mode. Certain boot options require that you select a specific boot mode. By default, the boot mode is set to **UEFI Mode**. The system must boot in **UEFI Mode** to use certain options, including:

- Secure Boot, UEFI Optimized Boot, Generic USB Boot, IPv6 PXE Boot, iSCSI Boot, and Boot from URL
- Fibre Channel/FCoE Scan Policy

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**NOTE:** The boot mode you use must match the operating system installation. If not, changing the boot mode can impact the ability of the server to boot to the installed operating system.

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### Prerequisite

When booting to **UEFI Mode**, leave **UEFI Optimized Boot** enabled.

### Procedure

1. From the **System Utilities** screen, select **System Configuration > BIOS/Platform Configuration (RBSU) > Boot Options > Boot Mode**.
2. Select a setting.
  - **UEFI Mode** (default)—Configures the system to boot to a UEFI compatible operating system.
  - **Legacy BIOS Mode**—Configures the system to boot to a traditional operating system in Legacy BIOS compatibility mode.
3. Save your setting.
4. Reboot the server.

## Secure Boot

Secure Boot is a server security feature that is implemented in the BIOS and does not require special hardware. Secure Boot ensures that each component launched during the boot process is digitally signed and that the signature is validated against a set of trusted certificates embedded in the UEFI BIOS. Secure Boot validates the software identity of the following components in the boot process:

- UEFI drivers loaded from PCIe cards
- UEFI drivers loaded from mass storage devices



- Preboot UEFI Shell applications
- OS UEFI boot loaders

When Secure Boot is enabled:

- Firmware components and operating systems with boot loaders must have an appropriate digital signature to execute during the boot process.
- Operating systems must support Secure Boot and have an EFI boot loader signed with one of the authorized keys to boot. For more information about supported operating systems, see <https://www.hpe.com/servers/ossupport>.

You can customize the certificates embedded in the UEFI BIOS by adding or removing your own certificates, either from a management console directly attached to the server, or by remotely connecting to the server using the iLO Remote Console.

You can configure Secure Boot:

- Using the **System Utilities** options described in the following sections.
- Using the iLO RESTful API to clear and restore certificates. For more information, see the Hewlett Packard Enterprise website (<https://www.hpe.com/info/redfish>).
- Using the `secboot` command in the Embedded UEFI Shell to display Secure Boot databases, keys, and security reports.

## Launching the Embedded UEFI Shell

Use the **Embedded UEFI Shell** option to launch the Embedded UEFI Shell. The Embedded UEFI Shell is a preboot command-line environment for scripting and running UEFI applications, including UEFI boot loaders. The Shell also provides CLI-based commands you can use to obtain system information, and to configure and update the system BIOS.

### Prerequisites

**Embedded UEFI Shell** is set to **Enabled**.

### Procedure

1. From the **System Utilities** screen, select **Embedded Applications > Embedded UEFI Shell**.

The **Embedded UEFI Shell** screen appears.

2. Press any key to acknowledge that you are physically present.

This step ensures that certain features, such as disabling **Secure Boot** or managing the **Secure Boot** certificates using third-party UEFI tools, are not restricted.

3. If an administrator password is set, enter it at the prompt and press **Enter**.

The `Shell>` prompt appears.

4. Enter the commands required to complete your task.
5. Enter the `exit` command to exit the Shell.



# HPE Smart Storage Administrator

HPE SSA is the main tool for configuring arrays on HPE Smart Array SR controllers. It exists in three interface formats: the HPE SSA GUI, the HPE SSA CLI, and HPE SSA Scripting. All formats provide support for configuration tasks. Some of the advanced tasks are available in only one format.

The diagnostic features in HPE SSA are also available in the standalone software HPE Smart Storage Administrator Diagnostics Utility CLI.

During the initial provisioning of the server or compute module, an array is required to be configured before the operating system can be installed. You can configure the array using SSA.

HPE SSA is accessible both offline (either through HPE Intelligent Provisioning or as a standalone bootable ISO image) and online:

- Accessing HPE SSA in the offline environment



**IMPORTANT:** If you are updating an existing server in an offline environment, obtain the latest version of HPE SSA through Service Pack for ProLiant before performing configuration procedures.

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Using one of multiple methods, you can run HPE SSA before launching the host operating system. In offline mode, users can configure or maintain detected and supported devices, such as optional Smart Array controllers and integrated Smart Array controllers. Some HPE SSA features are only available in the offline environment, such as setting the boot controller and boot volume.

- Accessing HPE SSA in the online environment

This method requires an administrator to download the HPE SSA executables and install them. You can run HPE SSA online after launching the host operating system.

For more information, see *HPE Smart Array SR Gen10 Configuration Guide* at the [Hewlett Packard Enterprise website](#).

## HPE InfoSight for servers

The HPE InfoSight portal is a secure web interface hosted by HPE that allows you to monitor supported devices through a graphical interface.

HPE InfoSight for servers:

- Combines the machine learning and predictive analytics of HPE InfoSight with the health and performance monitoring of Active Health System (AHS) and HPE iLO to optimize performance and predict and prevent problems
- Provides automatic collection and analysis of the sensor and telemetry data from AHS to derive insights from the behaviors of the install base to provide recommendations to resolve problems and improve performance

For more information on getting started and using HPE InfoSight for servers, go to: <https://www.hpe.com/info/infosight-servers-docs>.

## USB support

Hewlett Packard Enterprise Gen10 and Gen10 Plus servers support all USB operating speeds depending on the device that is connected to the server.

### External USB functionality

Hewlett Packard Enterprise provides external USB support to enable local connection of USB devices for server administration, configuration, and diagnostic procedures.



For additional security, external USB functionality can be disabled through USB options in UEFI System Utilities.

## Redundant ROM support

The server enables you to upgrade or configure the ROM safely with redundant ROM support. The server has a single ROM that acts as two separate ROM images. In the standard implementation, one side of the ROM contains the current ROM program version, while the other side of the ROM contains a backup version.

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**NOTE:** The server ships with the same version programmed on each side of the ROM.

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## Safety and security benefits

When you flash the system ROM, the flashing mechanism writes over the backup ROM and saves the current ROM as a backup, enabling you to switch easily to the alternate ROM version if the new ROM becomes corrupted for any reason. This feature protects the existing ROM version, even if you experience a power failure while flashing the ROM.

## Keeping the system current

### Updating firmware or system ROM

To update firmware or system ROM, use one of the following methods:

- The **Firmware Update** option in the System Utilities.
- The `fwupdate` command in the **Embedded UEFI Shell**.
- Service Pack for ProLiant (SPP)
- HPE online flash components
- Moonshot Component Pack

### Service Pack for ProLiant

SPP is a systems software and firmware solution delivered as a single ISO file download. This solution uses SUM as the deployment tool and is tested and supports HPE ProLiant, HPE BladeSystem, HPE Synergy, and HPE Apollo servers and infrastructure.

SPP, along with SUM and SUT, provides Smart Update system maintenance tools that systematically update HPE ProLiant, HPE BladeSystem, HPE Synergy, and HPE Apollo servers and infrastructure.

SPP can be used in an online mode on a server running Windows, Linux, or VMware vSphere ESXi, or in an offline mode where the server is booted to an operating system included in the ISO file.

The preferred method for downloading an SPP is using the SPP Custom Download at <https://www.hpe.com/servers/spp/custom>.

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

### Smart Update Manager

SUM is an innovative tool for maintaining and updating the firmware, drivers, and system software of HPE ProLiant, HPE BladeSystem, HPE Synergy, HPE Superdome Flex servers, and HPE Apollo servers, infrastructure, and associated options.

SUM identifies associated nodes you can update at the same time to avoid interdependency issues.

Key features of SUM include:





- Discovery engine that finds installed versions of hardware, firmware, and software on nodes.
- SUM deploys updates in the correct order and ensures that all dependencies are met before deploying an update.
- Interdependency checking.
- Automatic and step-by-step Localhost Guided Update process.
- Web browser-based user interface.
- Ability to create custom baselines and ISOs.
- Support for iLO Repository (Gen10 or later iLO 5 nodes only).
- Simultaneous firmware and software deployment for multiple remote nodes.
- Local offline firmware deployments with SPP deliverables.
- Extensive logging in all modes.

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**NOTE:** Support for HPE Integrity servers has been discontinued from SUM 8.x.

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## Integrated Smart Update Tools

Integrated Smart Update Tools (SUT) is the smart update solution for performing online firmware and driver updates. SUT is used with iLO 4, iLO 5, and with update solutions (management appliances such as iLO Amplifier Pack or HPE OneView and Smart Update Manager (SUM)) to stage, install, and activate firmware and driver updates.

The solution must be installed on the operating system, where it updates results through Rich Infrastructure Services (RIS) communication.

- **SUT:** Polls iLO to check for requests from SUM, iLO Amplifier Pack, or HPE OneView for updates through local iLO using the iLO channel interface driver installed on the OS and orchestrates staging, deploying, and activating updates. You can adjust the polling interval by issuing the appropriate command-line option provided by SUT. Performs inventory on target servers, stages deployment, deploys updates, and then reboots the servers.
- **iLO 5 with integrated Smart Update** (Gen10 or later servers only): Performs iLO Repository-based updates by downloading the components from iLO Repository when iLO Installation Queue has the components which can be updated by SUT.
- **iLO Amplifier Pack and HPE OneView:** Displays available updates for servers. Communicates with SUT (or SUT 1.x) to initiate updates using the iLO Redfish interface. SUT reports the status of updates to iLO Amplifier Pack through iLO Restful Interface.
- **SUM:** A tool for firmware and driver maintenance for HPE ProLiant servers and associated options.

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**NOTE:** SUM and iLO Amplifier Pack should not manage the same nodes.

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## Updating firmware from the System Utilities

Use the **Firmware Updates** option to update firmware components in the system, including the system BIOS, NICs, and storage cards.

### Procedure

1. Access the System ROM Flash Binary component for your server from the Hewlett Packard Enterprise Support Center.
2. Copy the binary file to a USB media or iLO virtual media.
3. Attach the media to the server.



4. Launch the **System Utilities**, and select **Embedded Applications > Firmware Update**.

5. Select a device.

The **Firmware Updates** screen lists details about your selected device, including the current firmware version in use.

6. Select **Select Firmware File**.

7. Select the flash file in the **File Explorer** list.

The firmware file is loaded and the **Firmware Updates** screen lists details of the file in the **Selected firmware file** field.

8. Select **Image Description**, and then select a firmware image.

A device can have multiple firmware images.

9. Select **Start firmware update**.

## Updating the firmware from the UEFI Embedded Shell

### Procedure

1. Access the System ROM Flash Binary component for your server from the Hewlett Packard Enterprise Support Center (<https://www.hpe.com/support/hpesc>).
2. Copy the binary file to a USB media or iLO virtual media.
3. Attach the media to the server.
4. Boot to the UEFI Embedded Shell.
5. To obtain the assigned file system volume for the USB key, enter `map -r`.
6. Change to the file system that contains the System ROM Flash Binary component for your server. Enter one of the `fsx` file systems available, such as `fs0:` or `fs1:`, and press **Enter**.
7. Use the `cd` command to change from the current directory to the directory that contains the binary file.
8. Flash the system ROM by entering `fwupdate -d BIOS -f filename`.
9. Reboot the server. A reboot is required after the firmware update in order for the updates to take effect and for hardware stability to be maintained.

## Online Flash components

This component provides updated system firmware that can be installed directly on supported operating systems. Additionally, when used in conjunction with SUM, this Smart Component allows the user to update firmware on remote servers from a central location. This remote deployment capability eliminates the need for the user to be physically present at the server to perform a firmware update.

## Drivers

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 **IMPORTANT:** Always perform a backup before installing or updating device drivers.

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Update drivers using any of the following **Smart Update Solutions**:

- Download the latest Service Pack for ProLiant (includes Smart Update Manager)
- Create a custom SPP download



- Download Smart Update Manager for Linux
- Download specific drivers

To locate the drivers for a server, go to the **Hewlett Packard Enterprise Support Center website**, and then search for the product name/number.

## Software and firmware

Update software and firmware before using the server for the first time, unless any installed software or components require an older version.

For system software and firmware updates, use one of the following sources:

- Download the SPP from the Hewlett Packard Enterprise website (**<https://www.hpe.com/servers/spp/download>**).
- Download individual drivers, firmware, or other system software components from the server product page in the Hewlett Packard Enterprise Support Center website (**<https://www.hpe.com/support/hpesc>**).

## Operating system version support

For information about specific versions of a supported operating system, refer to the **operating system support matrix**.

## HPE Pointnext Portfolio

HPE Pointnext delivers confidence, reduces risk, and helps customers realize agility and stability. Hewlett Packard Enterprise helps customers succeed through Hybrid IT by simplifying and enriching the on-premise experience, informed by public cloud qualities and attributes.

Operational Support Services enable you to choose the right service level, length of coverage, and response time to fit your business needs. For more information, see the Hewlett Packard Enterprise website:

**<https://www.hpe.com/us/en/services/operational.html>**

Utilize the Advisory and Transformation Services in the following areas:

- Private or hybrid cloud computing
- Big data and mobility requirements
- Improving data center infrastructure
- Better use of server, storage, and networking technology

For more information, see the Hewlett Packard Enterprise website:

**<https://www.hpe.com/services/consulting>**

## Proactive notifications

30 to 60 days in advance, Hewlett Packard Enterprise sends notifications to subscribed customers on upcoming:

- Hardware, firmware, and software changes
- Bulletins
- Patches
- Security alerts

You can subscribe to proactive notifications on the **Hewlett Packard Enterprise website**.



# Troubleshooting

## NMI functionality

An NMI crash dump enables administrators to create crash dump files when a system is hung and 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 Gen10 and Gen10 Plus server products in the following documents:

- *Troubleshooting Guide for HPE ProLiant Gen10 and Gen10 Plus servers* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance.
- *Error Message Guide for HPE ProLiant Gen10 servers and HPE Synergy* provides a list of error messages and information to assist with interpreting and resolving error messages.
- *Error Message Guide for HPE ProLiant Gen10 Plus servers and HPE Synergy* provides a list of error messages and information to assist with interpreting and resolving error messages.
- *Integrated Management Log Messages and Troubleshooting Guide for HPE ProLiant Gen10 and Gen10 Plus 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 Information Library:

- For Gen10 servers, see <https://www.hpe.com/info/gen10-troubleshooting>.
- For Gen10 Plus servers, see <https://www.hpe.com/info/gen10plus-troubleshooting>.



# System battery replacement

## System battery information

The server contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery that provides power to the real-time clock. If this battery is not properly handled, a risk of the fire and burns exists. To reduce the risk of personal injury:

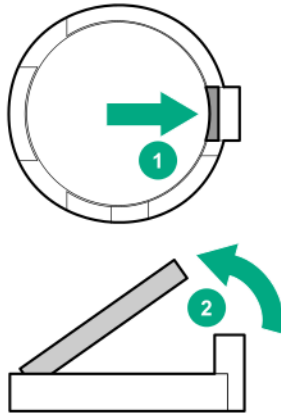
- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not expose the battery to extremely low air pressure as it might lead to explosion or leakage of flammable liquid or gas.
- Do not disassemble, crush, puncture, short external contacts, or dispose the battery in fire or water.
- If the server no longer automatically displays the correct date and time, then replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

## Removing and replacing the system battery

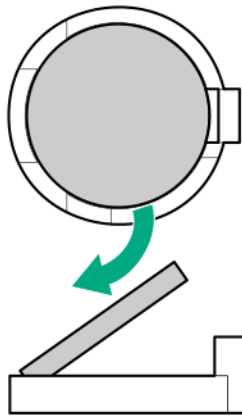
### Procedure

1. If installed, **remove the bezel.**
2. **Power down the server.**
3. Remove all power:
  - a. Disconnect each power cord from the power source.
  - b. Disconnect each power cord from the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the rack.**
6. **Remove the access panel.**
7. **Locate the battery on the system board.**
8. Remove the battery.





9. Insert the battery with the "+" side facing up on the socket, and then press the battery down to secure it in place.



10. **Install the access panel.**
11. **Install the server into the rack.**
12. Connect all peripheral cables to the server.
13. Connect each power cord to the server.
14. Connect each power cord to the power source.
15. **Power up the server.**
16. If removed, **install the bezel.**
17. Properly dispose of the old battery.

For more information about battery replacement or proper disposal, contact an authorized reseller or support specialist.



# Safety, warranty, and regulatory information

## Regulatory information

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

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

### Additional regulatory information

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

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

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

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

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

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

## Notices for Eurasian Economic Union



### Manufacturer and Local Representative Information

#### Manufacturer information:

Hewlett Packard Enterprise, 6280 America Center Drive, San Jose, CA 95002 U.S.

#### Local representative information Russian:

- **Russia**

ООО "Хьюлетт Паккард Энтерпрайз", Российская Федерация, 125171, г. Москва, Ленинградское шоссе, 16А, стр.3, Телефон: +7 499 403 4248 Факс: +7 499 403 4677

- **Kazakhstan**

ТОО «Хьюлетт-Паккард (К)», Республика Казахстан, 050040, г. Алматы, Бостандыкский район, проспект Аль-Фараби, 77/7, Телефон/факс: + 7 727 355 35 50

#### Local representative information Kazakh:

- **Russia**

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

- **Kazakhstan**

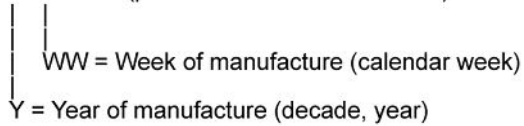


ЖШС «Хьюлетт-Паккард (К)», Қазақстан Республикасы, 050040, Алматы қ., Бостандық ауданы,  
Әл-Фараби даңғылы, 77/7, Телефон/факс: +7 727 355 35 50

#### **Manufacturing date:**

The manufacturing date is defined by the serial number.

CCSYWWZZZZ (product serial number format)



If you need help identifying the manufacturing date, contact [tre@hpe.com](mailto:tre@hpe.com).

## **Turkey RoHS material content declaration**

Türkiye Cumhuriyeti: AEEE Yönetmeliğine Uygundur

## **Ukraine RoHS material content declaration**

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

## **Warranty information**

To view the warranty information for your product, see the links provided below:

#### **HPE ProLiant and IA-32 Servers and Options**

<https://www.hpe.com/support/ProLiantServers-Warranties>

#### **HPE Enterprise and Cloudline Servers**

<https://www.hpe.com/support/EnterpriseServers-Warranties>

#### **HPE Storage Products**

<https://www.hpe.com/support/Storage-Warranties>

#### **HPE Networking Products**

<https://www.hpe.com/support/Networking-Warranties>





# Specifications

## Environmental specifications

Specifications	Value
<b>Temperature range*</b>	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-30°C to 60°C (-22°F to 140°F)
<b>Relative humidity (noncondensing)</b>	—
Operating	8% to 90% - Relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing
Nonoperating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing
<b>Altitude</b>	—
Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).

### Standard operating support

10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 20°C/hr (36°F/hr). The upper limit and rate of change may be limited by the type and number of options installed.

System performance during standard operating support may be reduced if operating with a fan fault or above 30°C (86°F).

### Extended ambient operating support

For approved hardware configurations, the supported system inlet range is extended to be: 5° to 10°C (41° to 50°F) and 35° to 40°C (95° to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft). The approved hardware configurations for this system are listed at the [Hewlett Packard Enterprise website](#).

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 3050 m (10,000 ft). The approved hardware configurations for this system are listed on the [Hewlett Packard Enterprise website](#).

System performance may be reduced if operating in the extended ambient operating range or with a fan fault.



## Mechanical specifications

Specification	Value
Height	4.28 cm (1.69 in)
Depth	
– Short Chassis (two cages)	82.62 cm (32.52 in)
– Long Chassis (three cages)	100.88 cm (39.71 in)
Width	43.46 cm (17.11 in)
Weight (approximate range)	
– Short Chassis (two cages)	17.0 kg to 26.0 kg (37.48 lb to 57.32 lb)
– Long Chassis (three cages)	20.0 kg to 32.0 kg (44.09 lb to 70.55 lb)

## Power supply specifications

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

- [\*\*HPE 500W Flex Slot Platinum Hot-plug Low Halogen Power Supply\*\*](#)
- [\*\*HPE 800W Flex Slot Platinum Hot-plug Low Halogen Power Supply\*\*](#)
- [\*\*HPE 800W Flex Slot Titanium Hot-plug Low Halogen Power Supply\*\*](#)
- [\*\*HPE 800W Flex Slot Universal Hot-plug Low Halogen Power Supply\*\*](#)
- [\*\*HPE 800W Flex Slot -48VDC Hot-plug Low Halogen 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\*\*](#).

### HPE 500W Flex Slot Platinum Hot-plug Low Halogen Power Supply

Specification	Value
<b>Input requirements</b>	—
Rated input voltage	100 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	5.6 A at 100 VAC 2.7 A at 200 VAC 2.3 A at 240 VDC for China only

*Table Continued*



<b>Specification</b>	<b>Value</b>
Maximum rated input power	557 W at 100 VAC
	539 W at 200 VAC
	537 W at 240 VDC for China only
BTUs per hour	1902 at 100 VAC
	1840 at 200 VAC
	1832 at 240 VDC for China only
<b>Power supply output</b>	—
Rated steady-state power	500 W at 100 VAC to 127 VAC input
	500 W at 100 VAC to 240 VAC input
	500 W at 240 VDC input for China only
Maximum peak power	500 W at 100 VAC to 127 VAC input
	500 W at 100 VAC to 240 VAC input
	500 W at 240 VDC input for China only

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

<b>Specification</b>	<b>Value</b>
<b>Input requirements</b>	—
Rated input voltage	100 VAC to 127 VAC
	200 VAC to 240 VAC
	240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
	Not applicable to 240 VDC
Rated input current	9.1 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

*Table Continued*



<b>Specification</b>	<b>Value</b>
BTUs per hour	3067 at 100 VAC 2958 at 200 VAC 2949 at 240 VAC for China only
<b>Power supply output</b>	—
Rated steady-state power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input 800 W at 100 VAC to 240 VAC input 800 W at 240 VDC input for China only

### **HPE 800W Flex Slot Titanium Hot-plug Low Halogen Power Supply**

<b>Specification</b>	<b>Value</b>
<b>Input requirements</b>	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	4.35 A at 200 VAC 3.62 A at 240 VAC 3.62 A at 240 VDC for China only
Maximum rated input power	851 W at 200 VAC 848 W at 240 VAC 848 W at 240 VDC for China only
BTUs per hour	2905 at 200 VAC 2893 at 240 VAC 2893 at 240 VDC for China only
<b>Power supply output</b>	—

*Table Continued*



Specification	Value
Rated steady-state power	800 W at 200 VAC to 240 VAC input
	800 W at 240 VDC input for China only
Maximum peak power	800 W at 200 VAC to 240 VAC input
	800 W at 240 VDC input for China only

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

Specification	Value
<b>Input requirements</b>	—
Rated input voltage	200 VAC to 277 VAC
	380 VDC
Rated input frequency	50 Hz to 60 Hz
Rated input current	4.4 A at 200 VAC
	3.1 A at 277 VAC
	2.3 A at 380 VDC
Maximum rated input power	869 W at 200 VAC
	865 W at 230 VAC
	861 W at 277 VAC
	863 W at 380 VDC
BTUs per hour	2964 at 200 VAC
	2951 at 230 VAC
	2936 at 277 VAC
	2943 at 380 VDC
<b>Power supply output</b>	—
Rated steady-state power	800 W at 200 VAC to 277 VAC input
Maximum peak power	800 W at 200 VAC to 277 VAC input



## HPE 800W Flex Slot -48VDC Hot-plug Low Halogen Power Supply

Specification	Value
<b>Input requirements</b>	—
Rated input voltage	-40 VDC to -72 VDC -48 VDC nominal input
Rated input current	22.1 A at -40 VDC input 18.2 A at -48 VDC input, nominal input 12.0 A at -72 VDC input
Rated input power (W)	874 W at -40 VDC input 865 W at -48 VDC input, nominal input 854 W at -72 VDC input
Rated input power (BTUs per hour)	2983 at -40 VDC input 2951 at -48 VDC input, nominal input 2912 at -72 VDC input
<b>Power supply output</b>	—
Rated steady-state power (W)	800 W at -40 VDC to -72 VDC
Maximum peak power (W)	800 W at -40 VDC to -72 VDC
Maximum peak power	800 W at -40 VDC to -72 VDC input



**WARNING:** To reduce the risk of electric shock or energy hazards:

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



**⚠ 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 of 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.

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

Specification	Value
<b>Input requirements</b>	—
Rated input voltage	200 VAC to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.7 A at 200 VAC 7.2 A at 240 VAC
Maximum rated input power	1734 W at 200 VAC 1725 W at 240 VAC
BTUs per hour	5918 at 200 VAC 5884 at 240 VAC
<b>Power supply output</b>	—
Rated steady-state power	1600 W at 200 VAC to 240 VAC input 1600 W at 240 VDC input
Maximum peak power	2200 W for 1 ms (turbo mode) at 200 VAC to 240 VAC input



# Websites

## General websites

**Hewlett Packard Enterprise Information Library**

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

**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**.

## Product websites

**HPE ProLiant DL325 Gen10 Plus Server product page**

<https://www.hpe.com/servers/dl325-gen10plus>

**HPE ProLiant DL325 Gen10 Plus Server support page**

<https://www.hpe.com/support/dl325gen10plus>

**HPE ProLiant DL325 Gen10 Plus Server user documents**

<https://www.hpe.com/info/dl325gen10plus-docs>





# Support and other resources

## 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>

### Hewlett Packard Enterprise Support Center: Software downloads

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

### 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>





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**IMPORTANT:** Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE Passport set up with relevant entitlements.

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## 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 will initiate a fast and accurate resolution based on your product's service level. 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.

### Remote support and Proactive Care information

#### HPE Get Connected

<https://www.hpe.com/services/getconnected>

#### HPE Proactive Care services

<https://www.hpe.com/services/proactivecare>

#### HPE Datacenter Care services

<https://www.hpe.com/services/datacentercare>

#### HPE Proactive Care service: Supported products list

<https://www.hpe.com/services/proactivecaresupportedproducts>

#### HPE Proactive Care advanced service: Supported products list

<https://www.hpe.com/services/proactivecareadvancedsupportedproducts>

### Proactive Care customer information

#### Proactive Care central

<https://www.hpe.com/services/proactivecarecentral>

#### Proactive Care service activation

<https://www.hpe.com/services/proactivecarecentralgetstarted>

## Warranty information

To view the warranty information for your product, see the links provided below:

### HPE ProLiant and IA-32 Servers and Options

<https://www.hpe.com/support/ProLiantServers-Warranties>

### HPE Enterprise and Cloudline Servers

<https://www.hpe.com/support/EnterpriseServers-Warranties>

### HPE Storage Products

<https://www.hpe.com/support/Storage-Warranties>

### HPE Networking Products

<https://www.hpe.com/support/Networking-Warranties>

## 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, send any errors, suggestions, or comments to Documentation Feedback (**[docsfeedback@hpe.com](mailto:docsfeedback@hpe.com)**). When submitting your feedback, include the document title, part number, edition, and publication date located on the front cover of the document. For online help content, include the product name, product version, help edition, and publication date located on the legal notices page.

