



**Hewlett Packard
Enterprise**

HPE ProLiant XL170r Gen10 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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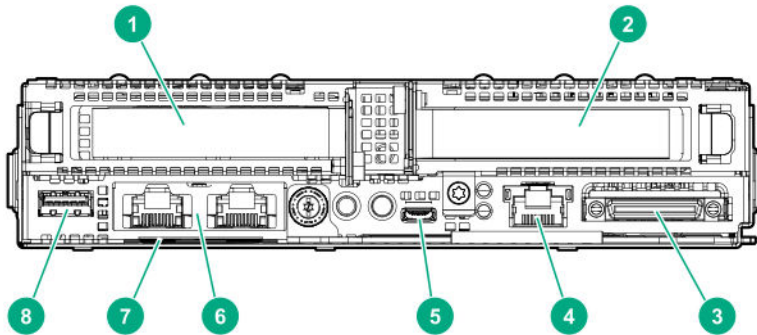
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Component identification

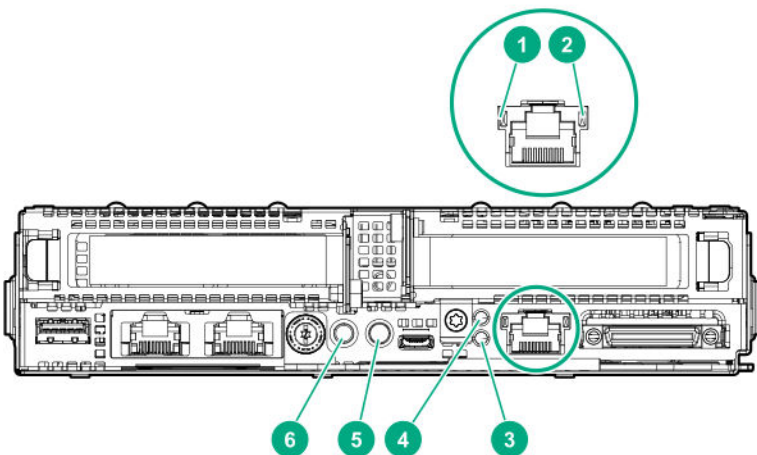
Rear panel components



Item	Description
1	Slot 1 PCIe3 x16 (16, 8, 4, 1)
2	Slot 2 PCIe3 x16 (16, 8, 4, 1) or FlexibleLOM
3	SUV connector
4	iLO Management Port ¹
5	iLO Service Port with micro USB connector
6	Media Module (optional - NIC ports)
7	Server serial number and iLO label pull tab
8	USB 3.0 port

¹ If the RCM module is installed on the chassis, the iLO Management Port is automatically disabled. For more information, see the HPE Apollo 2000 Gen10 Chassis User Guide on the [Hewlett Packard Enterprise website](#).

Rear panel LEDs and buttons



Item	Description	Status
1	NIC link LED ¹	Green = Linked to network Off = No network connection
2	NIC activity LED ¹	Green or flashing green = Network activity Off = No network activity
3	Health LED ¹	Solid green = Normal Flashing green = iLO rebooting Flashing amber = System degraded Flashing red = System critical ¹
4	Do not remove LED	Flashing white = Do not remove the server. Removing the server may terminate the current operation and cause data loss. Off = The server can be removed.
5	UID button/LED ¹	Solid blue = Activated <ul style="list-style-type: none"> 1 flash per second = Remote management or firmware upgrade in progress 4 flashes per second = iLO manual soft reboot sequence initiated 8 flashes per second = iLO manual hard reboot sequence in progress Off = Deactivated
6	Power button/LED ²	Solid green = System on Flashing green = Performing power on sequence Solid amber = System in standby Off = No power present ³

¹ If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status.

² When the LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "**Power fault LEDs**" on page 8."

³ Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the front I/O cable is disconnected.

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 latest *HPE iLO 5 User Guide* on the [Hewlett Packard Enterprise website](#).

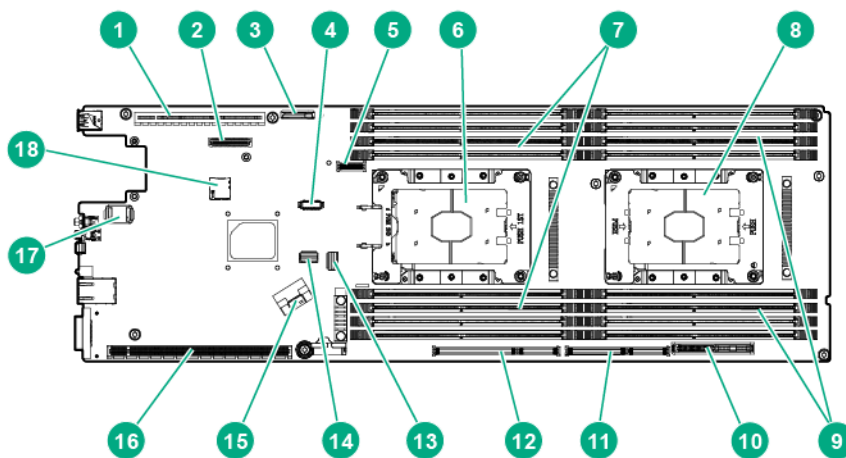
Power fault LEDs

The following table provides a list of power fault LEDs, 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
Removable HPE Flexible Smart Array controller	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

System board components

NOTE: HPE ProLiant XL170r and XL190r Gen10 Servers share the same system board.

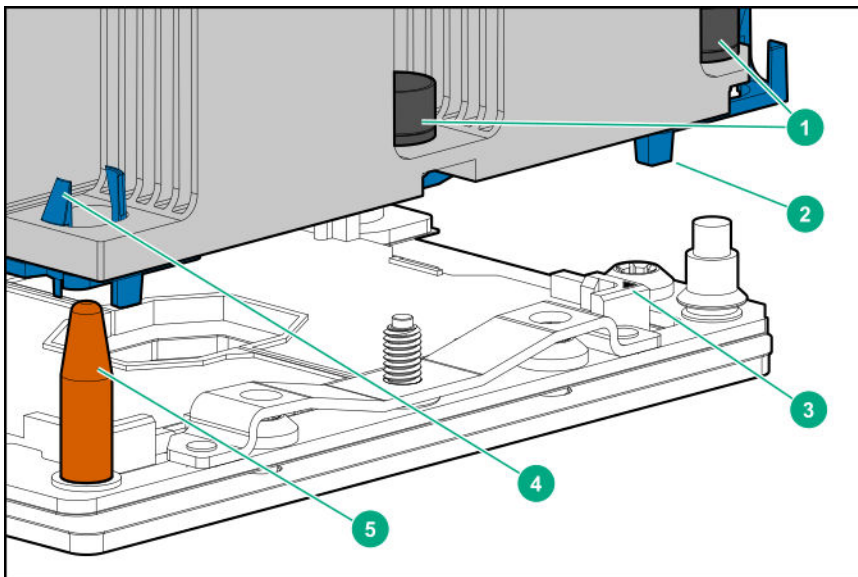


Item	Description
1	Primary riser slot 1
2	Media Module connector
3	System battery
4	Fabric carrier sideband signal connector
5	M.2 SSD riser connector
6	Processor 1
7	DIMMs for processor 1

Table Continued

Item	Description
8	Processor 2
9	DIMMs for processor 2
10	Bayonet board slot
11	Secondary riser slot 4
12	Secondary riser slot 3
13	Slimline SATA x4 connector
14	System maintenance switch
15	Slimline SATA x8 connector
16	Secondary riser slot 2
17	TPM connector
18	microSD slot

Processor, heatsink, and socket components



Item	Description
1	Heatsink nuts
2	Processor carrier
3	Pin 1 indicator ¹
4	Heatsink latch
5	Alignment post

¹ Symbol also on the processor and frame.

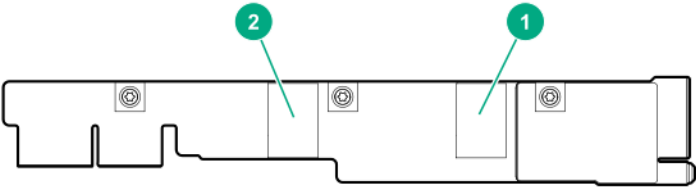
System maintenance switch descriptions

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

- ¹ To access the redundant ROM, set S1, S5, and S6 to On.
- ² When the system maintenance switch position 6 is set to the On position, the system is prepared to restore all configuration settings to their manufacturing defaults.
- ³ When the system maintenance switch position 6 is set to the On position and Secure Boot is enabled, some configurations cannot be restored. For more information, see [Secure Boot](#) on page 79.

Bayonet board components

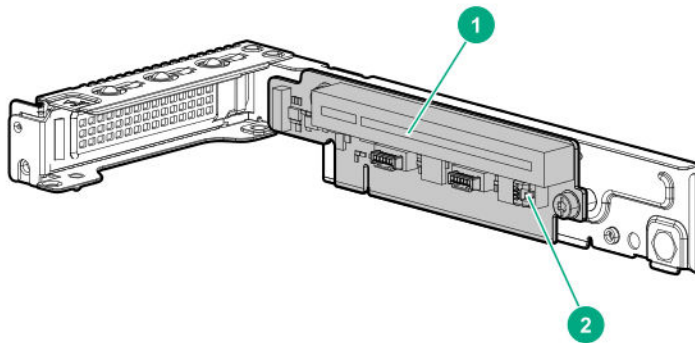
1U bayonet board



Item	Description
1	Port 1
2	Port 2

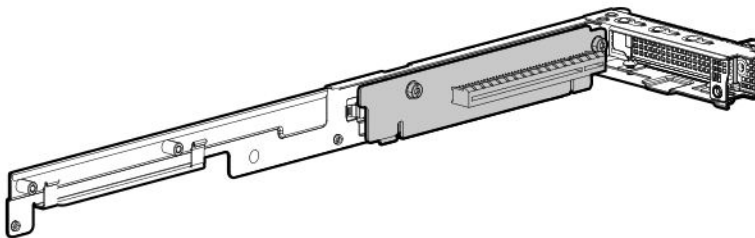
PCIe riser board slot definitions

Primary riser components



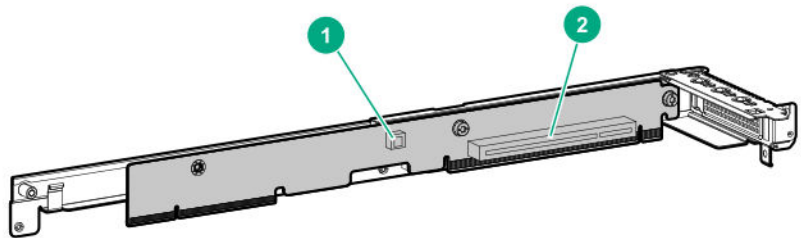
Item	Form Factor	Slot number	Description
1	Storage controller or low-profile PCIe expansion board	1	PCIe3 x16 (16, 8, 4, 1) for Processor 1
2	—	—	Storage backup power connector

FlexibleLOM 1U riser



Item	Form Factor	Slot number	Description
1	FlexibleLOM	FlexibleLOM slot	PCIe3 x16 for Processor 1

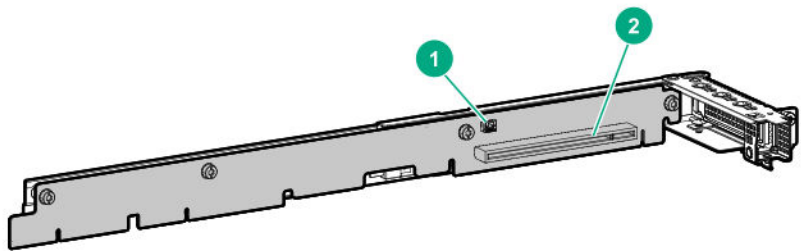
1U secondary riser for processor 1



Item	Form Factor	Slot number	Description
1	—	—	Storage backup power connector
2	Storage controller or low-profile PCIe expansion board	2	PCIe3 x16 (16, 8, 4, 1) for Processor 1

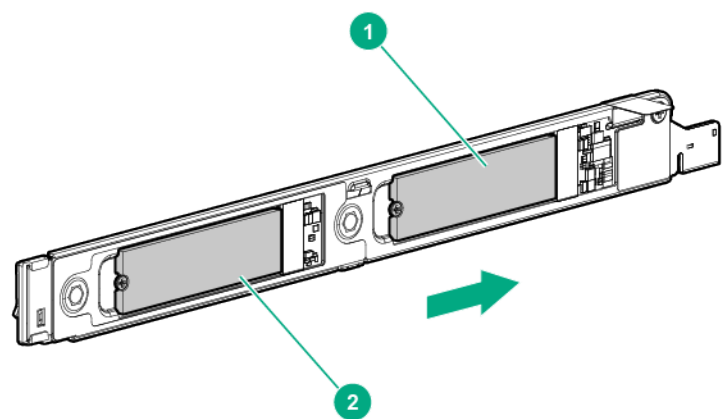
1U secondary riser for processor 2

NOTE: The HPE XL170r 16NVMe Gen10 P2 LP Riser Kit (PN 874304-B21) is only for use in servers that are installed in the HPE Apollo r2800 Gen10 Chassis with 16 NVMe. For more information, see [Cabling](#) on page 65.



Item	Form Factor	Slot number	Description
1	—	—	Storage backup power connector
2	Storage controller or low-profile PCIe expansion board	2	PCIe3 x16 (16, 8, 4, 1) for Processor 2

M.2 SSD riser bay numbering



The arrow points toward the server tray handle.

Item	Description
1	Bay 7
2	Bay 8

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-Repair¹
 - 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-Repair¹
 - 4-Hour 24x7
 - Next Business Day
- Deployment service for both hardware and software
- Hewlett Packard Enterprise Education Services – Help train your IT staff.

¹The time commitment for this repair service might vary depending on the site's geographical region. 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 server installation

Depending on the user technical expertise and the complexity of the product, for the initial server installation, the user can choose to order the **HPE Installation Service** on page 15.

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:


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


Server warnings and cautions


 **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.

 **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. Pressing the Power On/Standby button does not shut off system power completely. Portions of the power supply and some internal circuitry remain active until AC power is removed.

 **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.

 **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.

Server shipping carton contents

Unpack the server shipping carton and locate the materials and documentation necessary for installing the server. All the rack mounting hardware necessary for installing the server into the rack is included with the rack or the server.

The contents of the server shipping carton include:

- Server
- Printed setup documentation
- Accessory kit

Installation overview

Installation of a server requires the following steps:

1. Install the chassis into the rack.
2. Install any server options.
3. Install the server into the chassis.
4. Install the operating system.
5. Register the product.

Installing the chassis into the rack

To install the chassis into the rack, see the *HPE Apollo 2000 Gen10 Chassis User Guide* on the **Hewlett Packard Enterprise website**.

Installing hardware options

Before installing and initializing the server, install any hardware options. For options installation information, see the documentation that ships with the option. For server-specific information, see "**Hardware options installation**."

Installing the operating system

To operate properly, the server must have a supported operating system installed. For the latest information on operating system support, see the Hewlett Packard Enterprise website (**<http://www.hpe.com/info/supportos>**).

! **IMPORTANT:** HPE ProLiant 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 *HPE Intelligent Provisioning User Guide* and online help.

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

- Insert the operating system CD into the USB-attached DVD-ROM drive (user provided) and reboot the server. Download the Service Pack for ProLiant from the SPP download site (**<http://www.hpe.com/servers/spp/download>**) and create SPP media to install the drivers.
- Remote deployment installation — Use PXE boot into a server and deploy an operating system with a host server.

For additional system software and firmware updates, download the Service Pack for ProLiant from the Hewlett Packard Enterprise website (**<http://www.hpe.com/servers/spp/download>**). Software and firmware must be updated before using the node for the first time, unless any installed software or components require an older version.

For more information on using these installation methods, see the Hewlett Packard Enterprise website (**<http://www.hpe.com/info/ilo>**).

Selecting boot options

This server supports both Legacy BIOS Boot Mode and UEFI Boot Mode. On servers operating in UEFI Boot Mode, the boot controller and boot order are set automatically.

Procedure

1. Press the Power On/Standby button.
2. Do one of the following:
 - a. To enter the UEFI System Utilities screen and modify the server configuration ROM default settings, press the **F9** key on the ProLiant POST screen. Choose one of the following boot modes:
 - Legacy BIOS
 - UEFI (default)
 - b. If you do not need to modify the server configuration and are ready to install the system software, press the **F10** key to access Intelligent Provisioning.

For more information on automatic configuration, see the UEFI documentation on the [Hewlett Packard Enterprise website](#).

Registering the server

To experience quicker service and more efficient support, register the product at the [Hewlett Packard Enterprise Product Registration website](#).

Operations

This chapter describes the hardware operations carried out prior to and after installing or removing a hardware option, or performing a server maintenance or troubleshooting procedure.

Before performing these hardware operations, review and observe the server warnings and cautions.

Powering up the server

The SL/XL Chassis Firmware initiates an automatic power-up sequence when the servers are installed. If the default setting is changed, use one of the following methods to power up each server:


- Use a virtual power button selection through iLO.
- Press and release the Power On/Standby button.

When the server mode changes from the standby mode to the full power mode, the server power LED changes from amber to green.

For more information about iLO, see the [Hewlett Packard Enterprise website](#).

Powering down the server

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


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

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

- Press and release the Power On/Standby button.
This method 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.

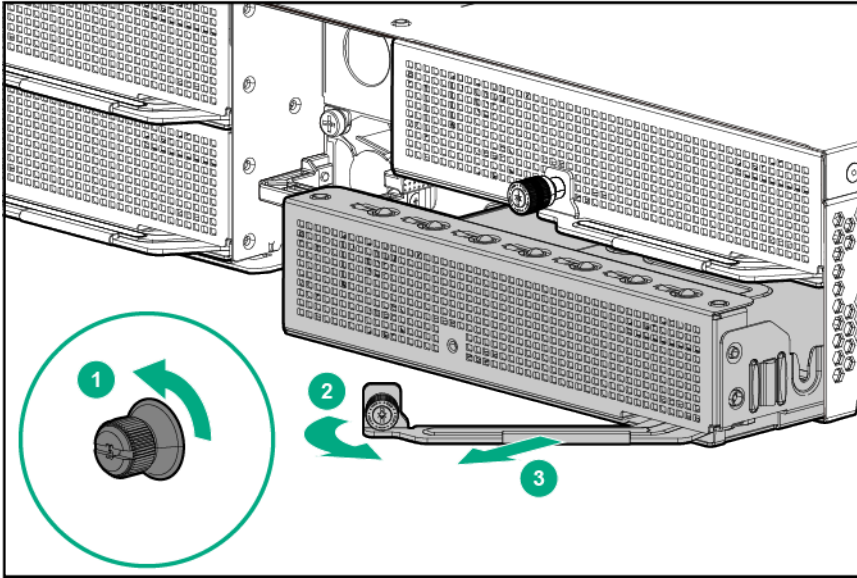
Before proceeding, verify that the server is in standby mode by observing that the system power LED is amber.

Removing the server tray blank

 **CAUTION:** To ensure proper thermal cooling, all server tray slots must be populated with servers or server tray blanks.

Procedure

Remove the server tray blank.

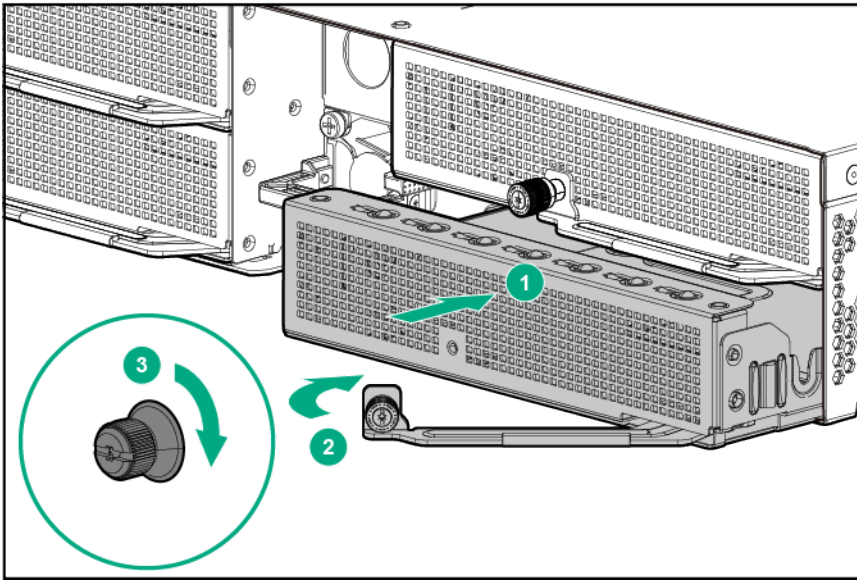


Installing the server tray blank

⚠ CAUTION: To ensure proper thermal cooling, all server tray slots must be populated with servers or server tray blanks.

Procedure

Install the server tray blank.

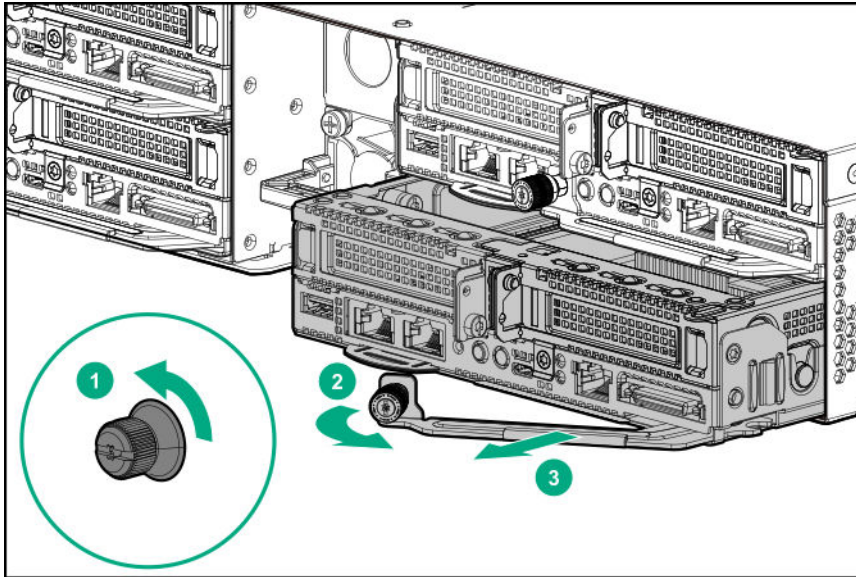


Removing the server from the chassis

- ⚠ **CAUTION:** Before powering down the server, perform a backup of critical server data and programs. Removing the server while the Do not remove LED is on may result in data loss or corruption.
- ⚠ **CAUTION:** To avoid damage to the server, always support the bottom of the server when removing it from the chassis.
- ⚠ **CAUTION:** To ensure proper thermal cooling, all server tray slots must be populated with servers or server tray blanks.

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. Remove the server from the chassis:
 - a. Loosen the thumbscrew.
 - b. Open the locking lever.
 - c. Slide out the server.



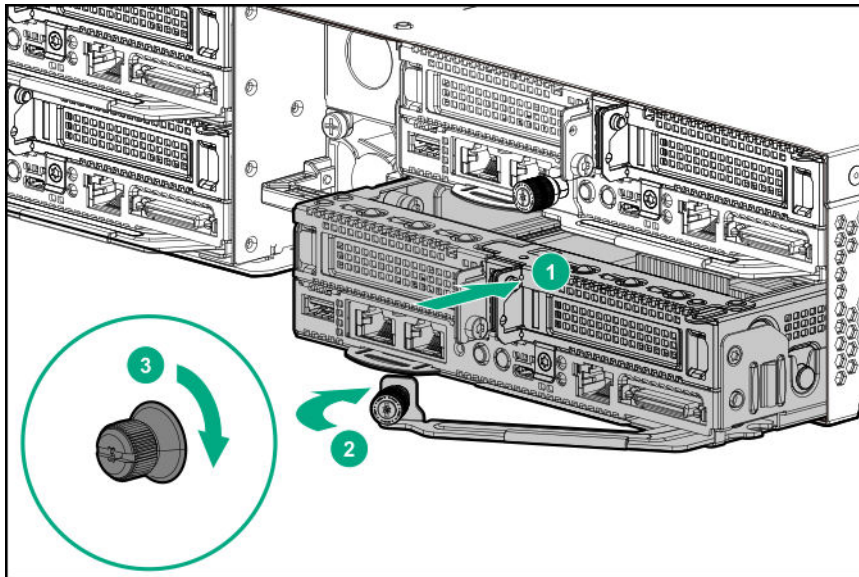
⚠ CAUTION: To avoid damage to the device, do not use the removal handle to carry the server.

Installing the server into the chassis

⚠ CAUTION: To avoid damage to the device, do not use the removal handle to carry it.

Procedure

1. Install the server into the chassis:
 - a. Slide the server into the chassis.
 - b. Close the locking lever.
 - c. Tighten the thumbscrew.

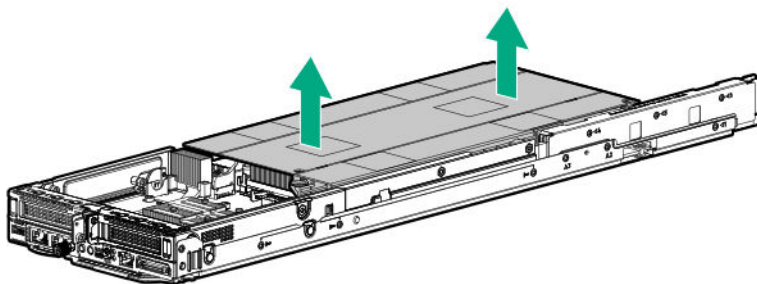


2. Connect all peripheral cables to the server.
3. **Power up the server.**

Removing the air baffle

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. Remove the air baffle.

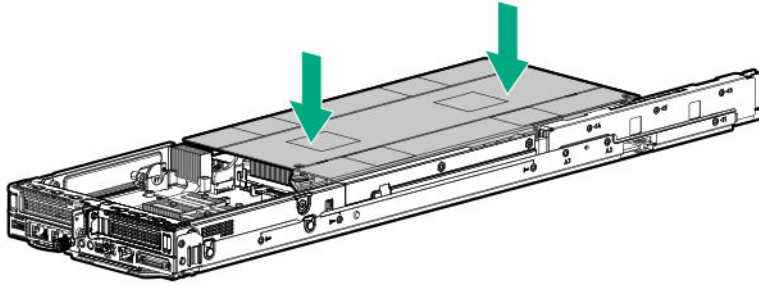


Installing the air baffle

⚠ CAUTION: To prevent damage to the server, ensure that all DIMM latches are in closed and locked position before installing the air baffle.

Procedure

1. Install the air baffle.



2. Install the server into the chassis.
3. Connect all peripheral cables to the server.
4. Power up the server.

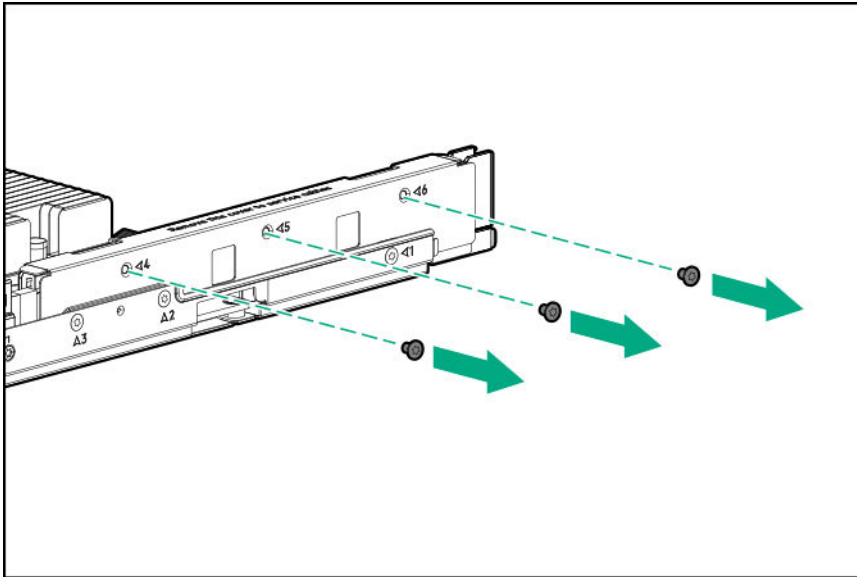
Removing the bayonet board

Prerequisites

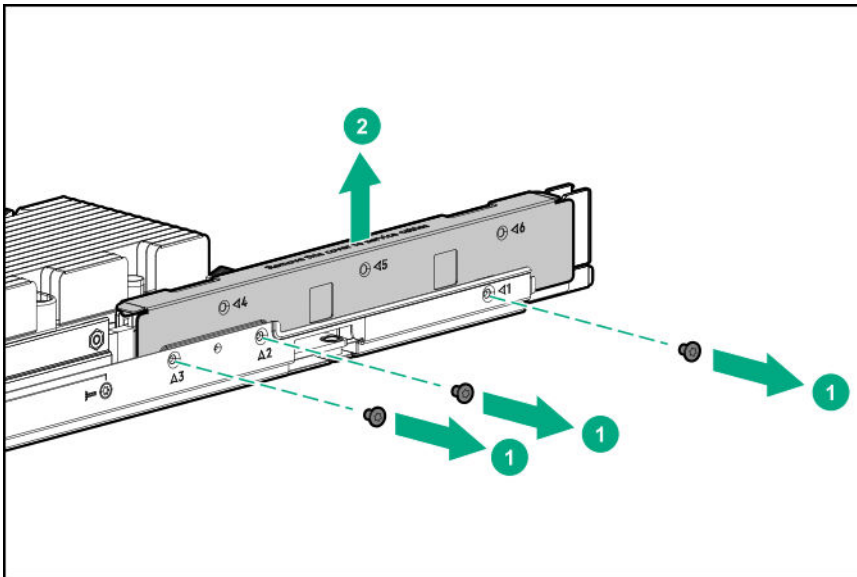
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

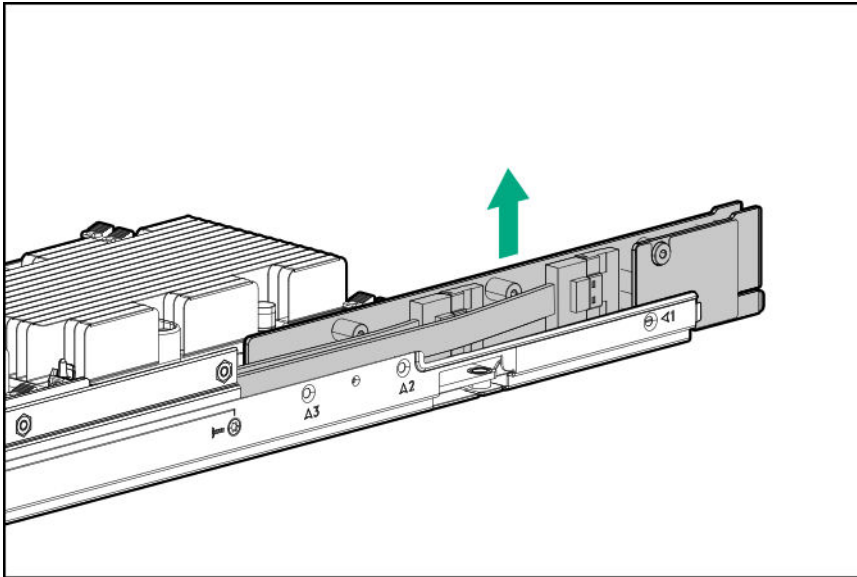
1. Back up all server data.
2. Power down the server.
3. Disconnect all peripheral cables from the server.
4. Remove the server from the chassis.
5. Remove the air baffle.
6. Remove the bayonet board:
 - a. Remove the top screws from the cover.



b. Remove the bottom screws from the cover and lift the cover up.



c. Gently lift up the bayonet board and disconnect the cables.



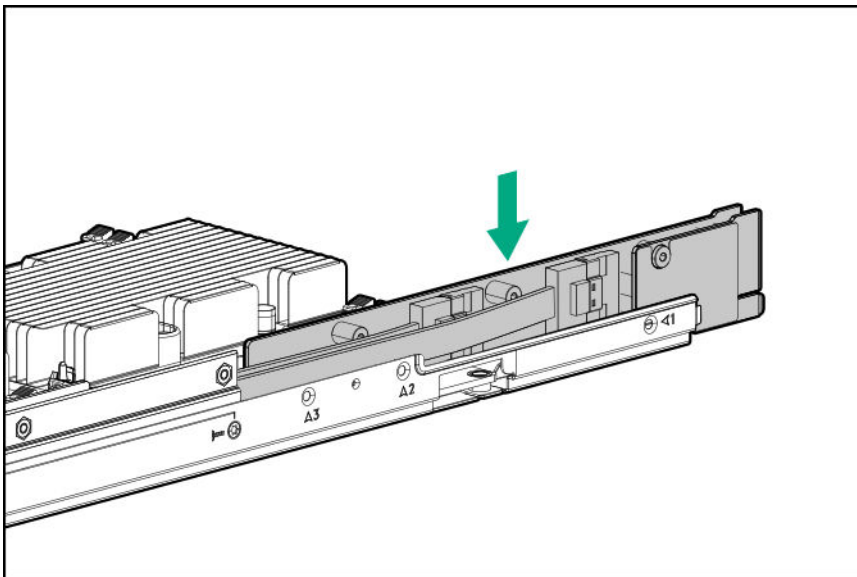
Installing the bayonet board

Prerequisites

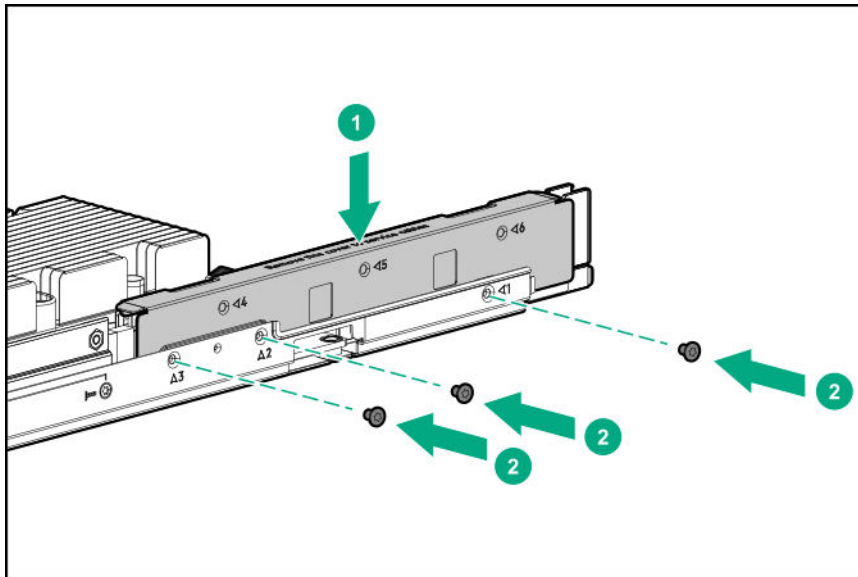
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

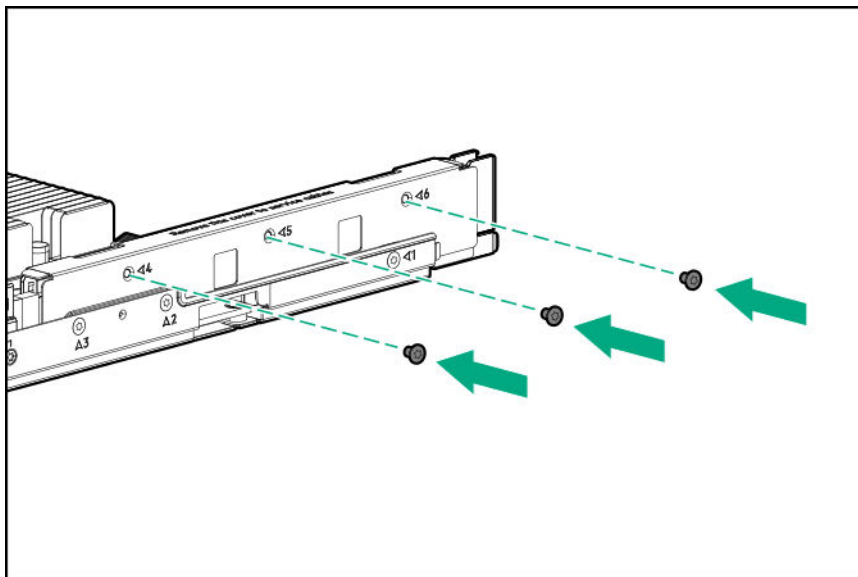
1. Install the bayonet board:
 - a. Connect all cables and firmly seat the bayonet board.



- b. Install the cover and the bottom screws.



c. Install the top screws.



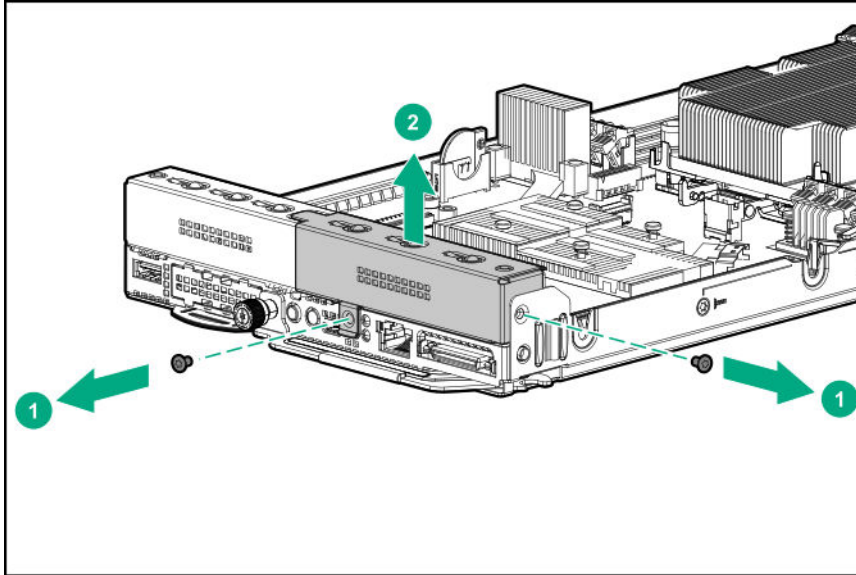
2. Install the air baffle.
3. Install the server into the chassis.
4. Connect all peripheral cables to the server.
5. Power up the server.

Removing the secondary PCI riser blank

⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blanks or riser cages are installed.

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. Remove the secondary PCI riser blank.

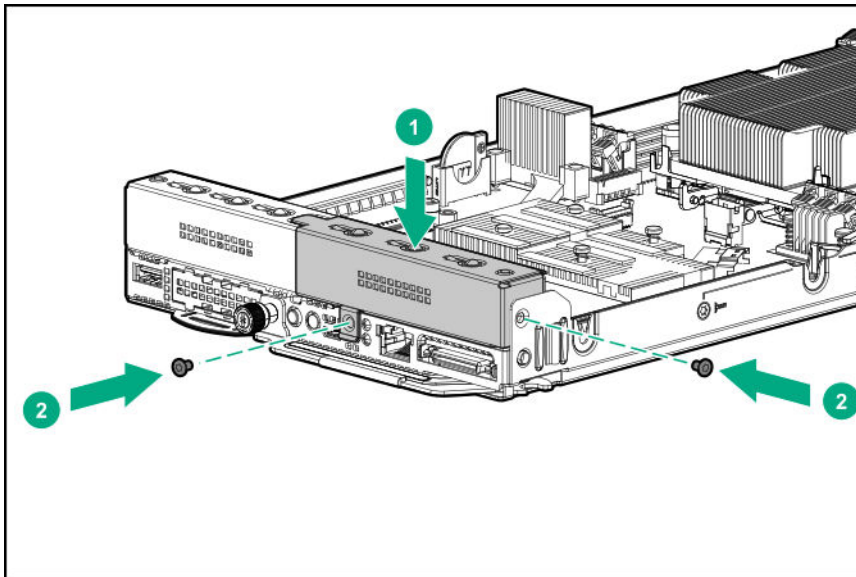


Installing the secondary PCI riser blank

⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blanks or riser cages are installed.

Procedure

1. Install the secondary PCI riser blank.



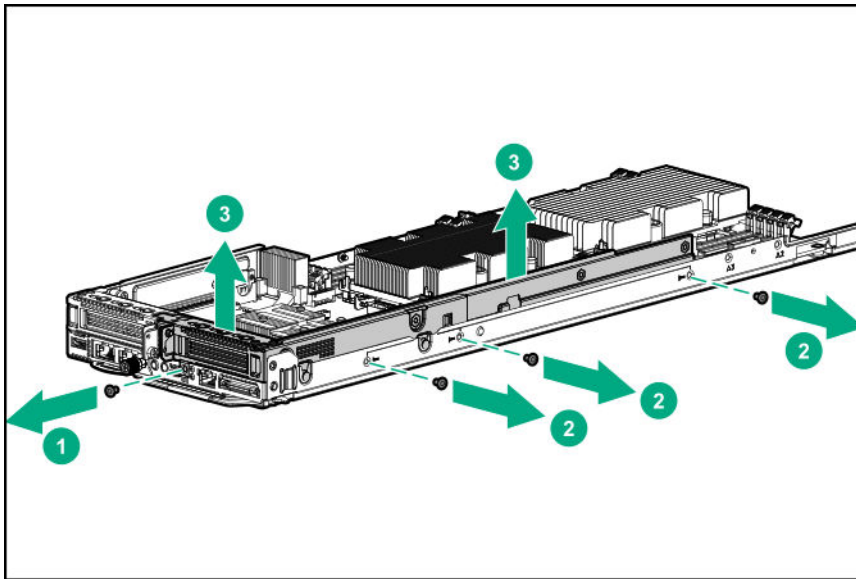
2. **Install the air baffle.**
3. **Install the server into the chassis.**
4. Connect all peripheral cables to the server.
5. **Power up the server.**

Removing the secondary PCI riser cage

⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blanks or riser cages are installed.

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. **Remove the bayonet board.**
7. Remove the secondary PCI riser cage.

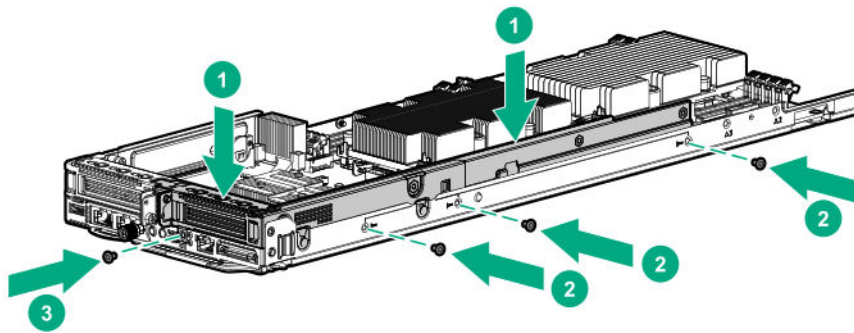


Installing the secondary PCI riser cage

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

Procedure

1. Install the secondary PCI riser cage. Ensure that the riser board is firmly seated in the connectors on the system board.



2. Install the bayonet board.
3. Install the air baffle.
4. Install the server into the chassis.

5. Connect all peripheral cables to the server.

6. Power up the server.

Removing the primary PCI riser cage

⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blanks or riser cages are installed.

Procedure

1. Back up all server data.

2. Power down the server.

3. Disconnect all peripheral cables from the server.

4. Remove the server from the chassis.

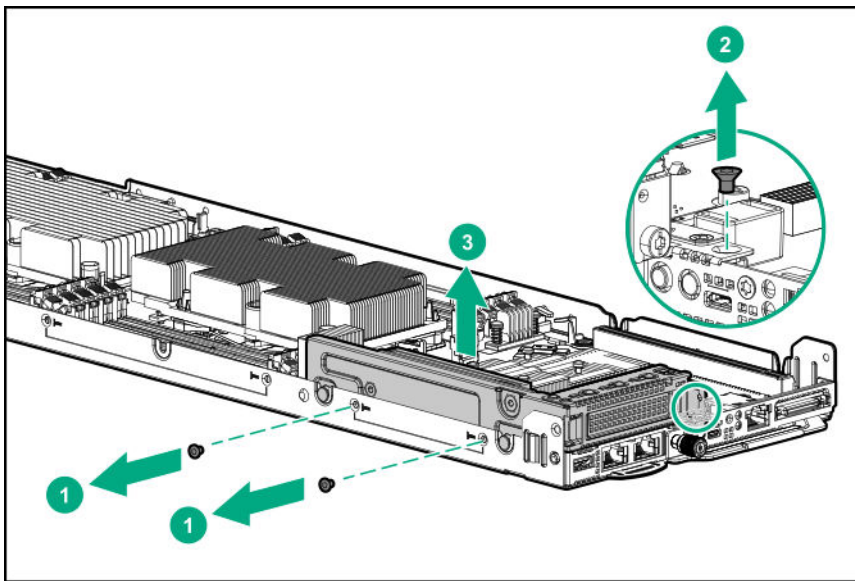
5. Remove the air baffle.

6. If a secondary PCI riser cage is installed, remove the bayonet board.

7. Do one of the following:

- Remove the secondary PCI riser blank.
- Remove the secondary PCI riser cage.

8. Remove the primary PCI riser cage.

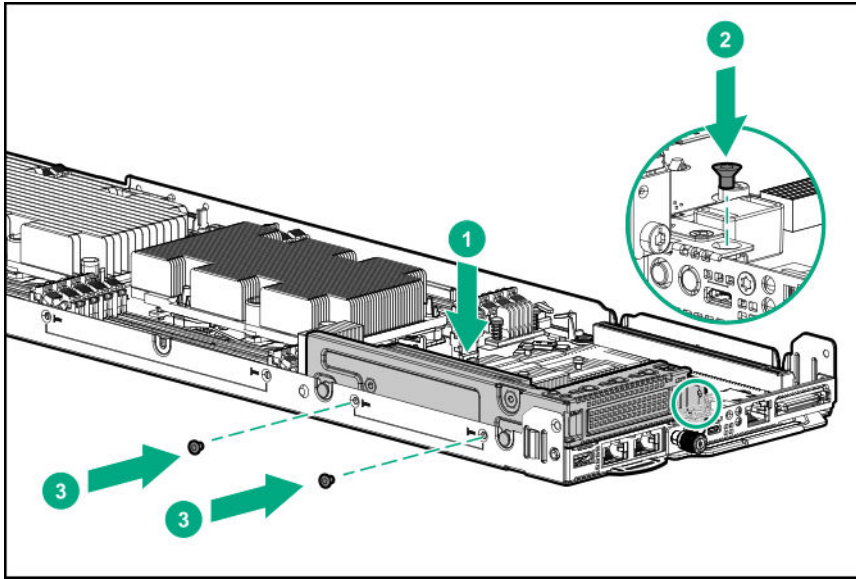


Installing the primary PCI riser cage

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

Procedure

1. Install the primary PCI riser cage. Ensure that the riser board is firmly seated in the connector on the system board.



2. Do one of the following:
 - **Install the secondary PCI riser blank.**
 - **Install the secondary PCI riser cage.**
3. If removed, **install the bayonet board.**
4. **Install the air baffle.**
5. **Install the server into the chassis.**
6. Connect all peripheral cables to the server.
7. **Power up the server.**

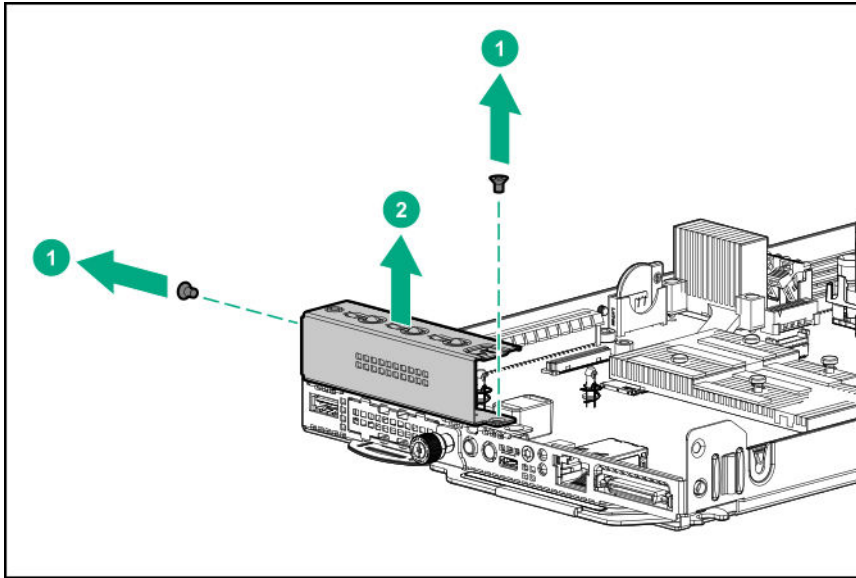
Removing the primary PCI riser blank

⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blanks or riser cages are installed.

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect the peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. If a secondary PCI riser cage is installed, **remove the bayonet board.**
7. Do one of the following:

- **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
8. Remove the primary PCI riser blank.

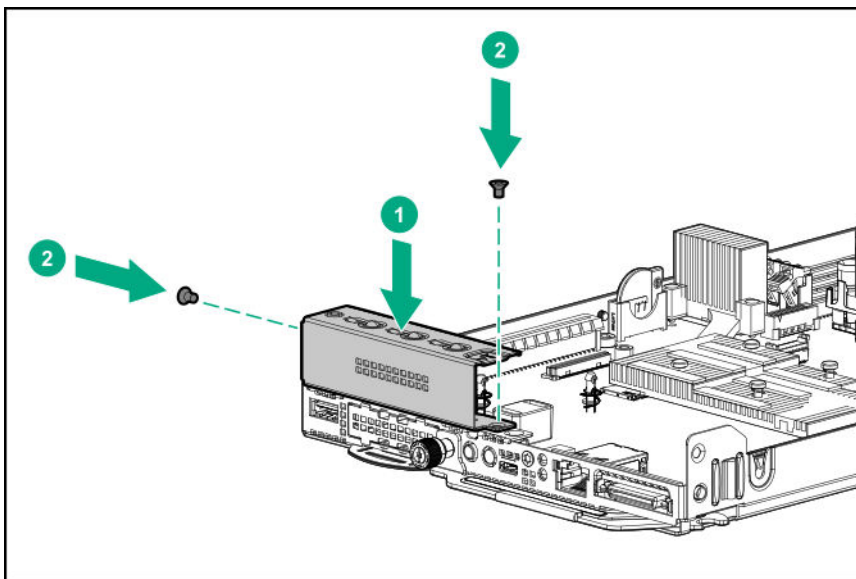


Installing the primary PCI riser blank

⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blanks or riser cages are installed.

Procedure

1. Install the primary PCI riser blank.



2. Do one of the following:

- **Install the secondary PCI riser blank.**
 - **Install the secondary PCI riser cage.**
3. If removed, **install the bayonet board.**
 4. **Install the air baffle.**
 5. **Install the server into the chassis.**
 6. Connect all peripheral cables to the server.
 7. **Power up the server.**

Hardware options installation


Hewlett Packard Enterprise product QuickSpecs


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

Introduction

Install any hardware options before initializing the server. For options installation information, see the option documentation. For server-specific information, use the procedures in this section.

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.

Processor and heatsink options

Installing a second processor heatsink assembly

Determine if there are temperature requirements for the component. For more information, see **Temperature requirements**.

 **IMPORTANT:** Existing HPE ProLiant and HPE Synergy Gen10 server products containing First Generation Intel Xeon Scalable Processors may not be upgraded to Second Generation Intel Xeon Scalable Processors at this time. For more information, see the product QuickSpecs on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).

Hewlett Packard Enterprise recommends identifying the processor heatsink module components before performing this procedure. See "**Processor, heatsink, and socket components**" on page 10."


Prerequisites

Before installing this option, make sure that you have the following items available:

- The components included with the processor heatsink assembly option kit
- T-30 Torx screwdriver

Procedure

1. Observe the following alerts:

 **CAUTION:** When handling the heatsink, always hold it along the top and bottom of the fins. Holding it from the sides can damage the fins.

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

⚠ CAUTION: Heatsink processor assemblies specified for processor 1 and 2 are not interchangeable. Be sure to note the appropriate orientation on the heatsink label.

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

⚠ CAUTION: If installing a processor with a faster speed, update the system ROM before installing the processor.

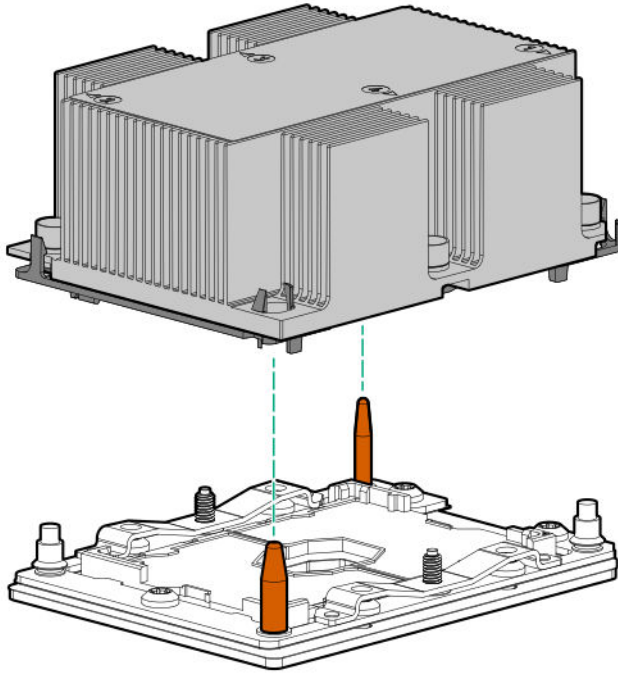
To download firmware and view installation instructions, see the **Hewlett Packard Enterprise Support Center website**.

⚠ CAUTION: THE CONTACTS ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the socket or processor, do not touch the contacts.

2. Back up all server data.
3. **Power down the server.**
4. Disconnect the peripheral cables from the server.
5. **Remove the server from the chassis.**
6. **Remove the air baffle.**
7. Remove the dust cover from the processor socket you intend to upgrade.
8. Install the processor heatsink assembly:
 - a. Locate and align the Pin 1 indicator on the processor frame and the socket.
 - b. Align the processor-heatsink module with the heatsink alignment pins and gently lower it down until it sits evenly on the socket.

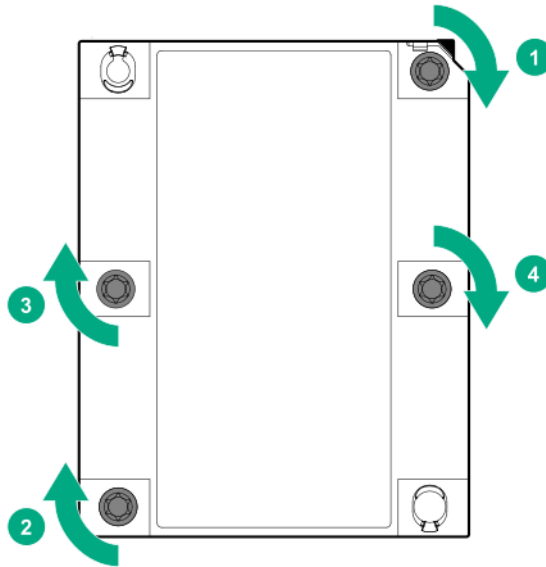
The heatsink alignment pins are keyed. The processor will only install one way.

Your heatsink may look different than the one shown.



⚠ CAUTION: Be sure to tighten each heatsink nut fully in the order indicated. Otherwise, boot failure or intermittent shutdowns might occur.

- c. Using a T-30 Torx screwdriver, fully tighten each heatsink screw in the order indicated on the heatsink label (1 -2 -3 -4) until it no longer turns.



9. **Install the air baffle.**
10. **Install the server into the chassis.**
11. Connect all peripheral cables to the server.
12. **Power up the server.**

The installation is complete.

Installing the fabric processor heatsink assembly and enablement board

Determine if there are temperature requirements for the component. For more information, see **Temperature requirements**.

Hewlett Packard Enterprise recommends identifying the processor heatsink module components before performing this procedure. See "**Processor, heatsink, and socket components**" on page 10."

Prerequisites

Before installing this option, make sure that you have the following items available:

- The components included with the processor heatsink assembly option kit
- T-30 Torx screwdriver

Procedure

1. Observe the following alerts:

⚠ CAUTION: When handling the heatsink, always hold it along the top and bottom of the fins. Holding it from the sides can damage the fins.

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

⚠ CAUTION: Heatsink processor assemblies specified for processor 1 and 2 are not interchangeable. Be sure to note the appropriate orientation on the heatsink label.

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

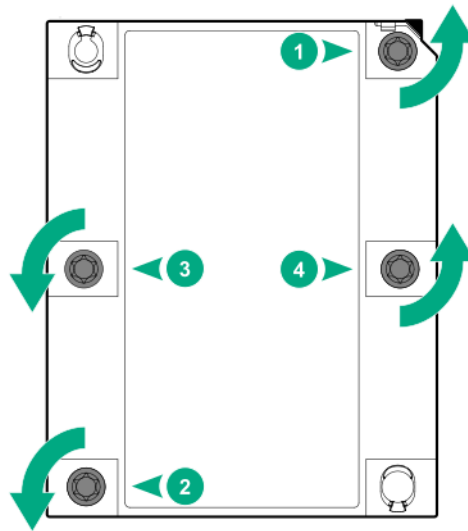
⚠ CAUTION: If installing a processor with a faster speed, update the system ROM before installing the processor.

To download firmware and view installation instructions, see the **Hewlett Packard Enterprise Support Center website**.

⚠ CAUTION: THE CONTACTS ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the socket or processor, do not touch the contacts.

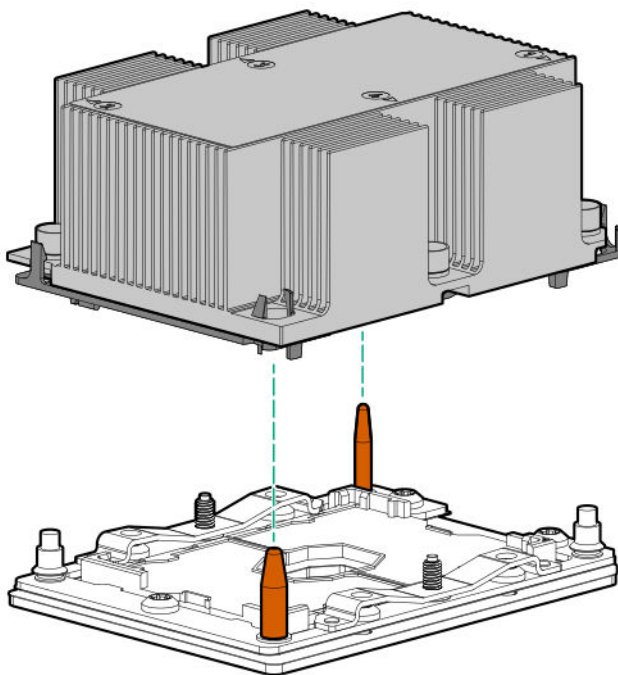
2. Back up all server data.
3. **Power down the server.**
4. Disconnect the peripheral cables from the server.
5. **Remove the server from the chassis.**
6. **Remove the air baffle.**
7. If a secondary PCI riser cage is installed, **remove the bayonet board.**
8. Do one of the following:

- **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
9. Do one of the following:
- **Remove the primary PCI riser blank.**
 - **Remove the primary PCI riser cage.**
10. Remove the existing processor 1 heatsink assembly:
- a. Allow the heatsink to cool.
 - b. Loosen the heatsink nuts in the order specified by the label on the heatsink (4 - 3 - 2 - 1).



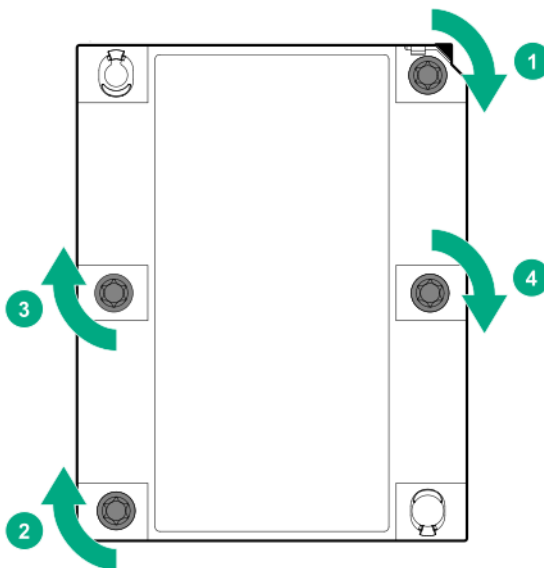
- c. Lift the processor-heatsink module up and away from the system board.
 - d. Turn the module over and place it on a work surface with the processor facing up.
Retain the component for future use.
11. Install the fabric processor heatsink assembly:
- a. Locate and align the Pin 1 indicator on the processor frame and the socket.
 - b. Align the processor-heatsink module with the heatsink alignment pins and gently lower it down until it sits evenly on the socket.
The heatsink alignment pins are keyed. The processor will only install one way.

Your heatsink may look different than the one shown.

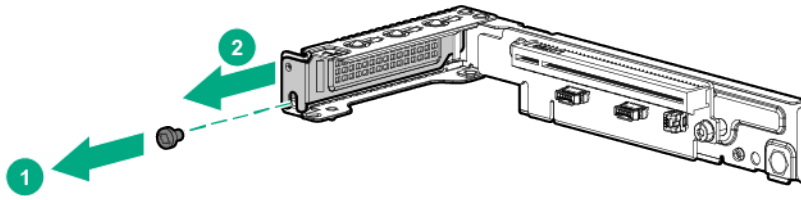


⚠ CAUTION: Be sure to tighten each heatsink nut fully in the order indicated. Otherwise, boot failure or intermittent shutdowns might occur.

- c. Using a T-30 Torx screwdriver, fully tighten each heatsink screw in the order indicated on the heatsink label (1 -2 -3 -4) until it no longer turns.

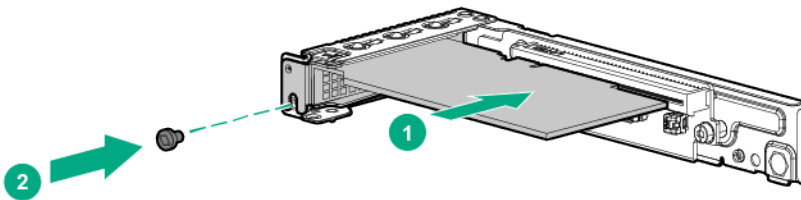


12. Remove the expansion slot blank.



13. Connect the cables to the fabric processor enablement board.

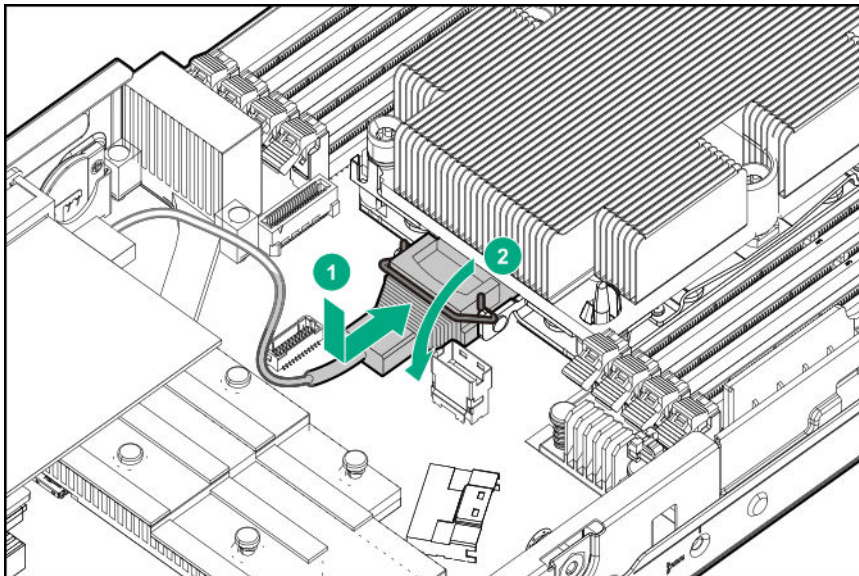
14. Install the fabric processor enablement board into slot 1. Ensure that the component is firmly seated in the connector.



15. Install the primary PCI riser cage.

16. Connect the cables to the fabric processor and system board:

- a. Lift the retaining latch.
- b. Install the cable and close the retaining latch.




c. Connect the sideband signal cable.

17. Do one of the following:
 - **Install the secondary PCI riser blank.**
 - **Install the secondary PCI riser cage.**
18. If removed, **install the bayonet board.**
19. **Install the air baffle.**
20. **Install the server into the chassis.**
21. Connect all peripheral cables to the server.
22. **Power up the server.**

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 (<http://www.hpe.com/docs/memory-population-rules>).

DIMM-processor compatibility

The installed processor determines the type of DIMM that is supported in the server:

- First Generation Intel Xeon Scalable Processors support DDR4-2666 DIMMs.
- Second Generation Intel Xeon Scalable Processors support DDR4-2666 DIMMs or DDR4-2933 DIMMs.

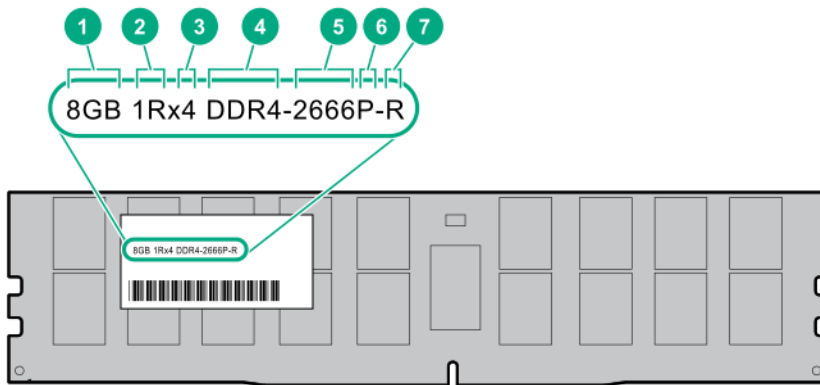
Mixing DIMM types is not supported. Install either all DDR4-2666 DIMMs or all DDR4-2933 DIMMs in the server.

HPE SmartMemory speed information

For more information about memory speed information, see the Hewlett Packard Enterprise website (<https://www.hpe.com/docs/memory-speed-table>).

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
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 x16 = 16-bit
4	Memory generation	PC4 = DDR4
5	Maximum memory speed	2133 MT/s 2400 MT/s 2666 MT/s 2933 MT/s

Table Continued

Item	Description	Example
6	CAS latency	P = CAS 15-15-15 T = CAS 17-17-17 U = CAS 20-18-18 V = CAS 19-19-19 (for RDIMM, LRDIMM) V = CAS 22-19-19 (for 3DS TSV LRDIMM) Y = CAS 21-21-21 (for RDIMM, LRDIMM) Y = CAS 24-21-21 (for 3DS TSV LRDIMM)
7	DIMM type	R = RDIMM (registered) L = LRDIMM (load reduced) E = Unbuffered ECC (UDIMM)

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

Installing a DIMM

Determine if there are temperature requirements for the component. For more information, see **Temperature requirements**.

Depending on the chassis configuration and the component being installed in the server, it might be necessary to limit the number of drives installed in the chassis. For more information, see **List of components with temperature requirements in the HPE ProLiant XL170r Gen10 Server** on page 92.

The server supports up to 16 DIMMs.

Prerequisites

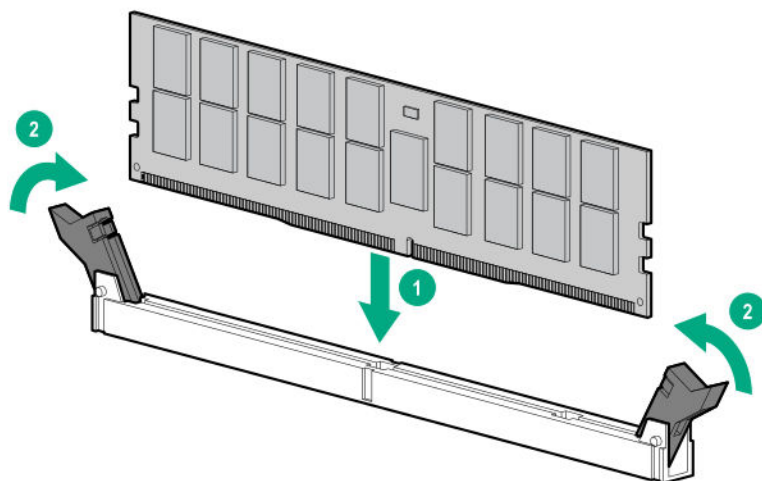
Before installing this option, make sure that you have the components included with the hardware option kit available.

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

Procedure

1. **Power down the server.**
2. Disconnect the peripheral cables from the server.
3. **Remove the server from the chassis.**
4. **Remove the air baffle.**
5. Open the DIMM slot latches.
6. 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.



❗ **IMPORTANT:** Ensure that the DIMM latches are fully closed.

7. **Install the air baffle.**
8. **Install the server into the chassis.**
9. Connect the peripheral cables to the server.
10. **Power up the server.**

The installation is complete.

To configure the memory mode, use UEFI System Utilities (see **UEFI System Utilities** on page 78).

Primary PCI riser options

Installing primary PCI riser options

Determine if there are temperature requirements for the component. For more information, see **Temperature requirements**.

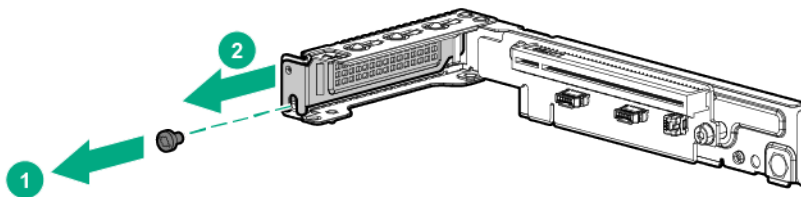
Depending on the chassis configuration and the component being installed in the server, it might be necessary to limit the number of drives installed in the chassis. For more information, see **List of components with temperature requirements in the HPE ProLiant XL170r Gen10 Server** on page 92.

❗ **IMPORTANT:** The HPE Apollo r2800 Gen10 Chassis with 16 NVMe does not support servers using the embedded SATA HPE Dynamic Smart Array S100i Controller or any type-p plug-in Smart Array Controller with internal ports and cables.

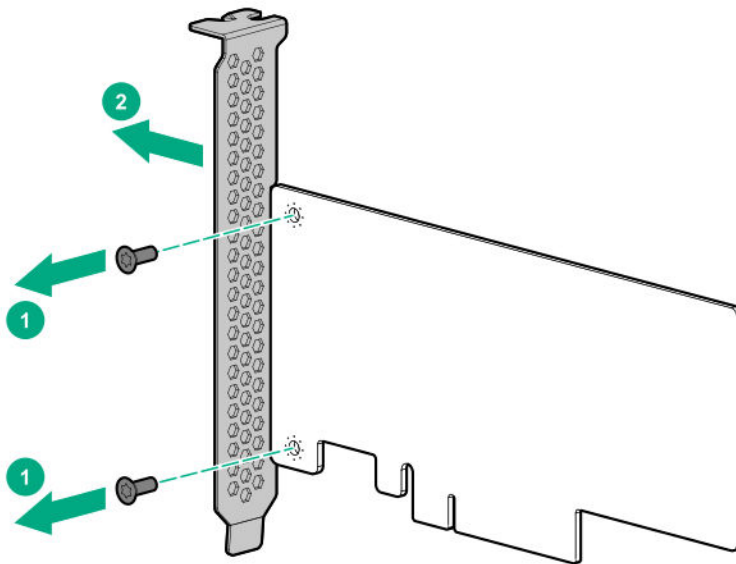
Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**

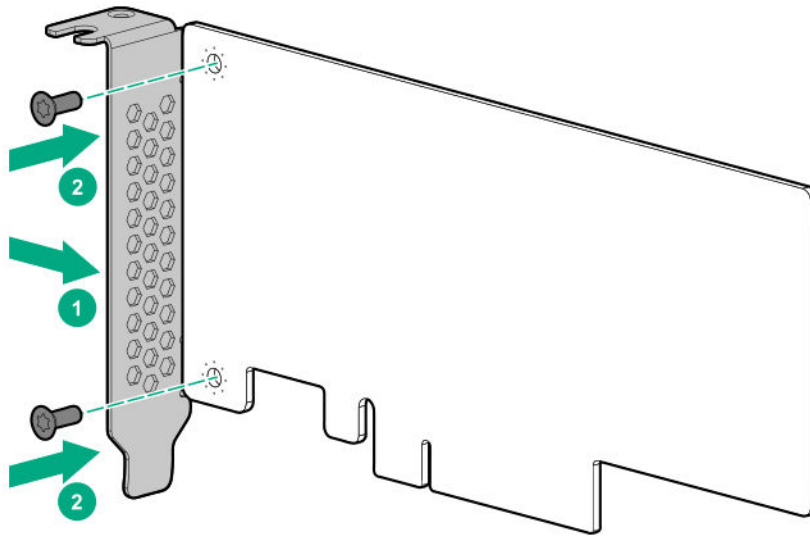
6. **Remove the bayonet board.**
7. Do one of the following:
 - **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
8. Do one of the following:
 - **Remove the primary PCI riser blank.**
 - **Remove the primary PCI riser cage.**
9. Remove the expansion slot blank.



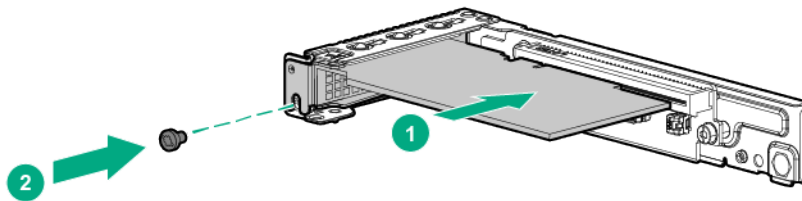
10. If installed, remove the full-height bracket from the expansion board.



11. Install the low-profile bracket onto the expansion board.



12. Connect all cables to the expansion board.
13. Install the expansion board. Ensure that the component is firmly seated in the connector.



14. If using a cache module, connect the cable to the riser board.
15. Install the primary PCI riser cage.
16. Route and connect all necessary cables.
17. Do one of the following:
 - Install the secondary PCI riser blank.
 - Install the secondary PCI riser cage.
18. Install the bayonet board.
19. Install the air baffle.
20. Install the server into the chassis.
21. Connect all peripheral cables to the server.
22. Power up the server.

The installation is complete.

Secondary PCI riser options

Installing a low-profile PCIe expansion board

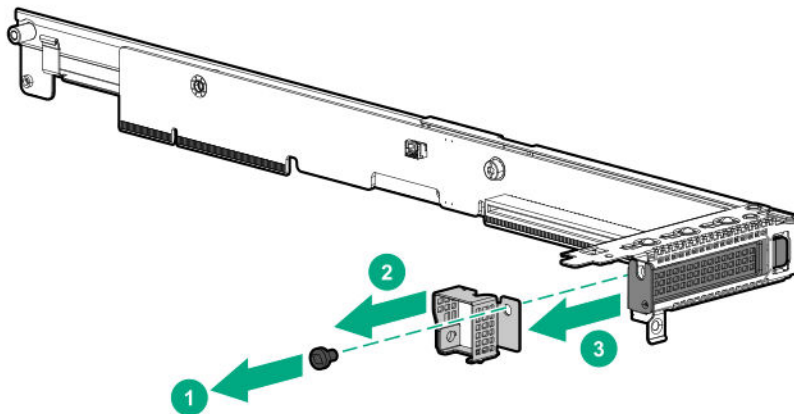
Determine if there are temperature requirements for the component. For more information, see [Temperature requirements](#).

Depending on the chassis configuration and the component being installed in the server, it might be necessary to limit the number of drives installed in the chassis. For more information, see [List of components with temperature requirements in the HPE ProLiant XL170r Gen10 Server](#) on page 92.

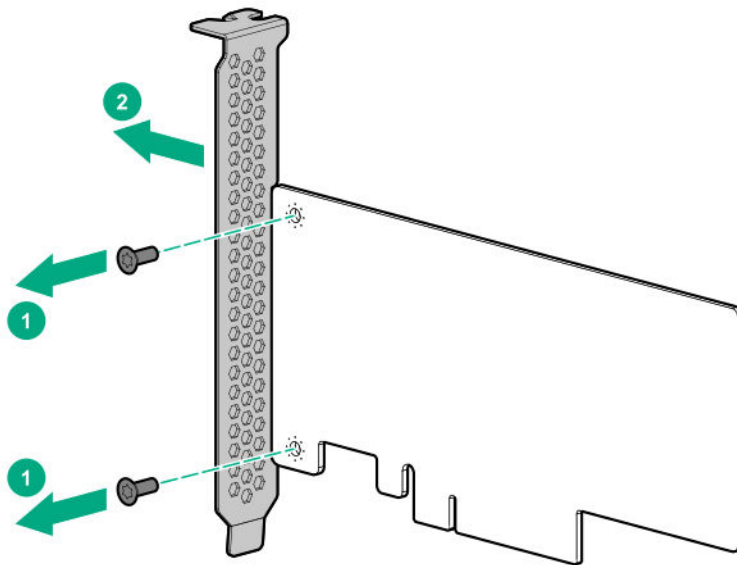
-
- ❗ **IMPORTANT:** The HPE Apollo r2800 Gen10 Chassis with 16 NVMe does not support servers using the embedded SATA HPE Dynamic Smart Array S100i Controller or any type-p plug-in Smart Array Controller with internal ports and cables.
-

Procedure

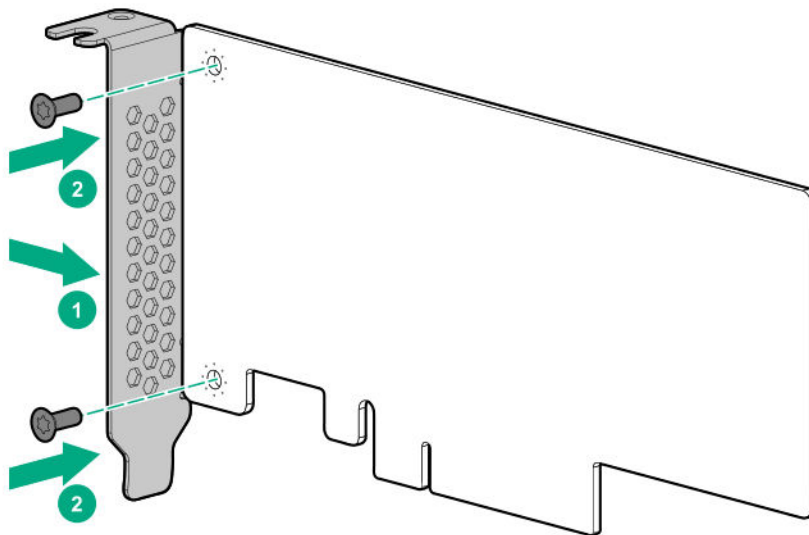
1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. If a secondary PCI riser cage is installed, **remove the bayonet board.**
7. Do one of the following:
 - **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
8. Remove the expansion slot blank.



9. If installed, remove the full-height bracket from the expansion board.

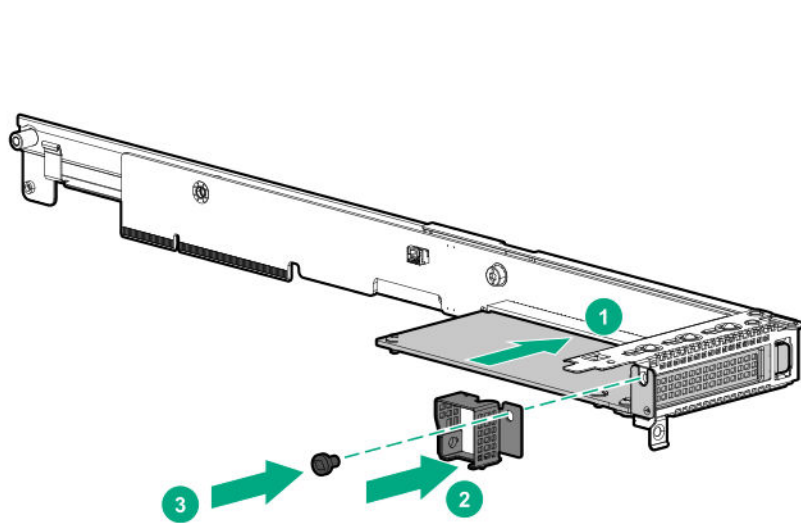


10. Install the low-profile bracket onto the expansion board.



11. Connect all cables to the expansion board.

12. Install the expansion board. Ensure that the component is firmly seated in the connector.



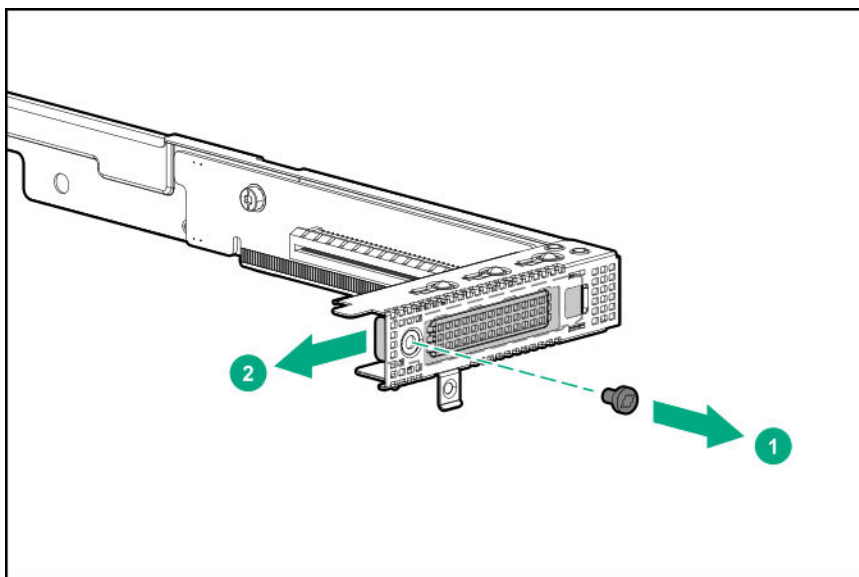
13. If using a cache module, **connect the cable to the riser board.**
14. **Install the secondary PCI riser cage.**
15. **Route and connect all necessary cables.**
16. **Install the bayonet board.**
17. **Install the air baffle.**
18. **Install the server into the chassis.**
19. Connect all peripheral cables to the server.
20. **Power up the server.**

The installation is complete.

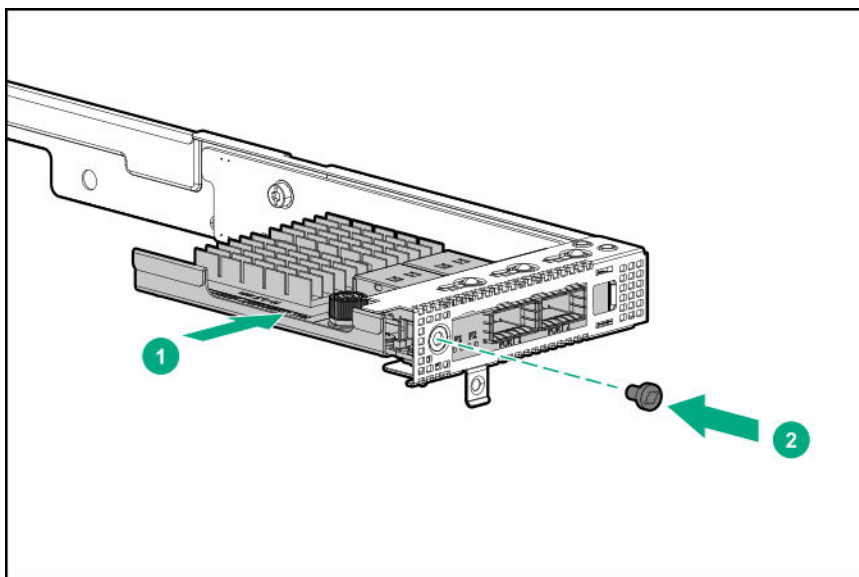
Installing the FlexibleLOM

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. **Remove the bayonet board.**
7. Do one of the following:
 - **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
8. Remove the blank.



9. Install the FlexibleLOM. Ensure that the component is firmly seated in the connector.



10. Install the secondary PCI riser cage.
11. Install the bayonet board.
12. Install the air baffle.
13. Install the server into the chassis.
14. Connect all peripheral cables to the server.
15. Power up the server.

The installation is complete.

Storage controller options

The server supports the following storage controllers:

- For SATA drives only – Embedded HPE Smart Array S100i SR Gen10 Controller
- For SAS and SATA drives – Type-p standup plug-in Smart Array Controller

For the location and description of the PCIe3 expansion slots, see **System board components** on page 9.

For more information on PCIe slot descriptions, see **PCIe riser board slot definitions** on page 12.

To configure an array, see the HPE Smart Array SR Gen10 Configuration Guide on the Hewlett Packard Enterprise website (<http://h17007.www1.hpe.com/us/en/enterprise/servers/solutions/info-library>).

Installing a Smart Array standup controller

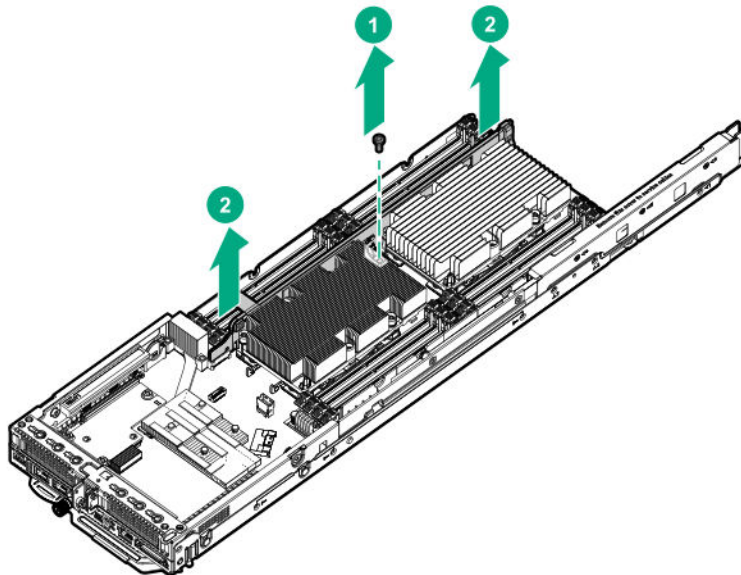
If you are installing a Smart Array P-class SR Gen10 controller, see "**Installing primary PCI riser options**".

The installation is complete.

Installing the M.2 SSD riser

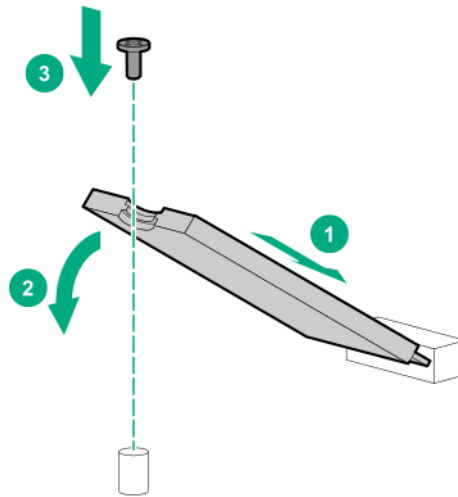
Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. Remove the DIMM guard.

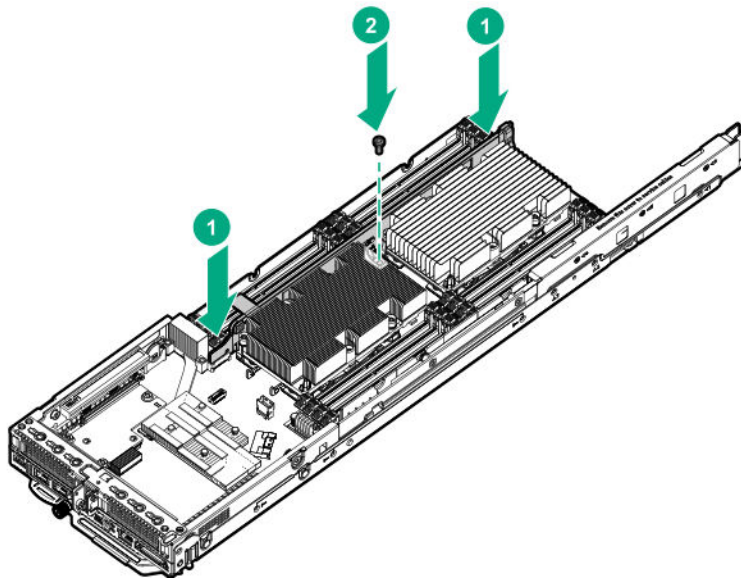


7. Install the SSD module on the M.2 SSD riser:

- 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 riser with a screw.
- c. Repeat the process if you are installing a second SSD module.



8. Install the M.2 SSD riser. Ensure that the component is firmly seated in the connector.



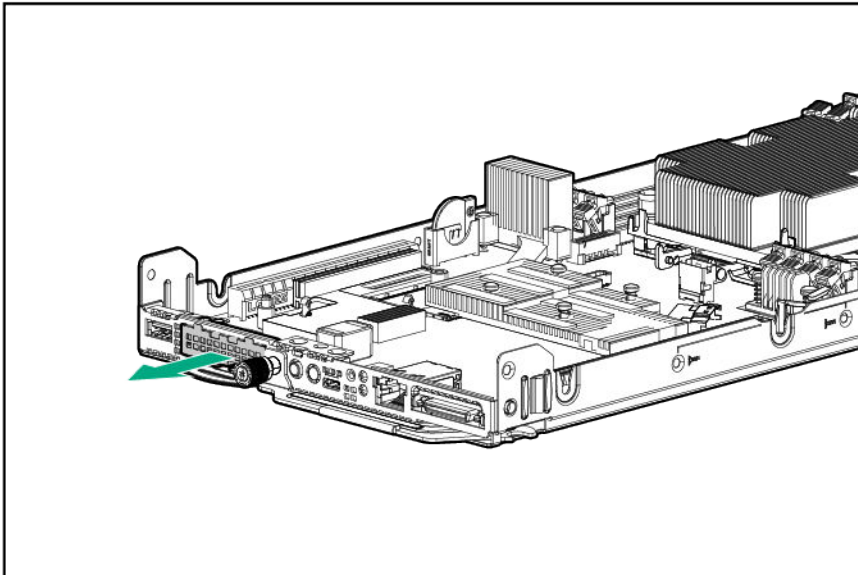
9. **Install the air baffle.**
10. **Install the server into the chassis.**
11. Connect all peripheral cables to the server.
12. **Power up the server.**

The installation is complete.

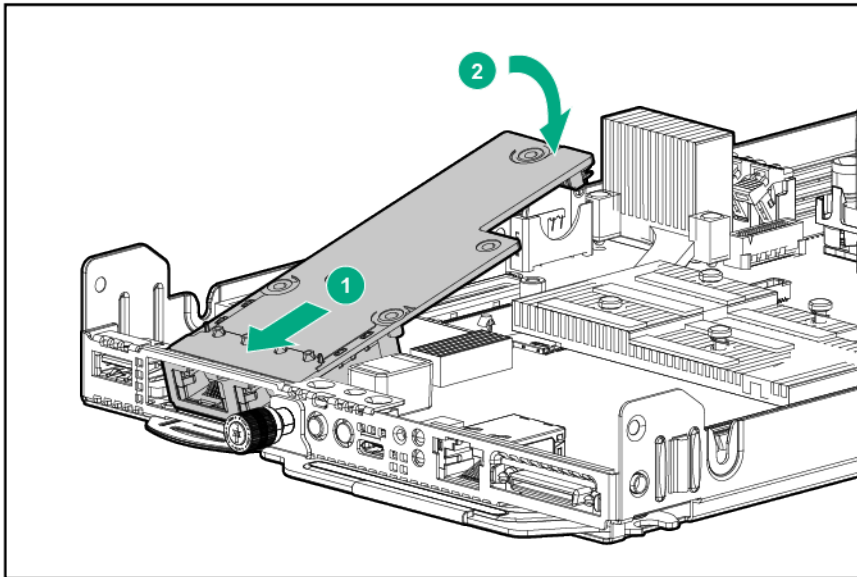
Installing the Media Module

Procedure

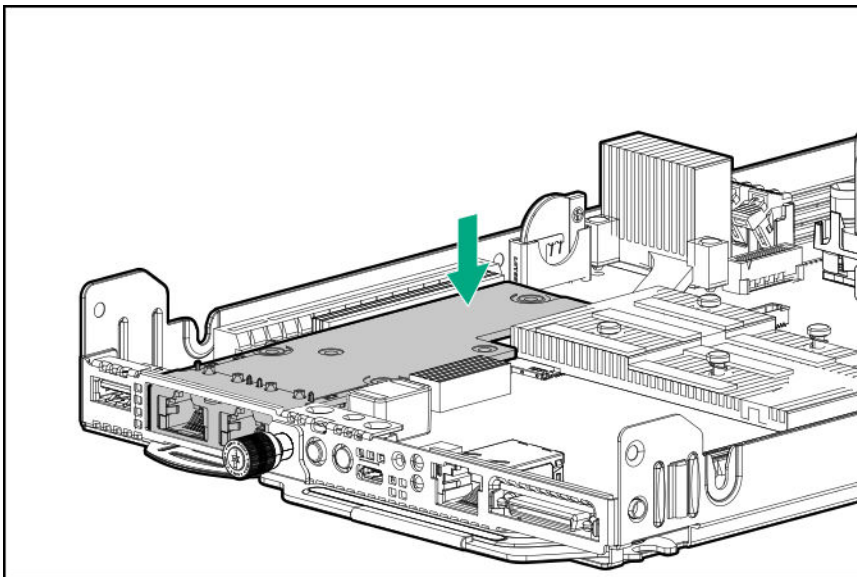
1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. If a secondary PCI riser cage is installed, **remove the bayonet board.**
7. Do one of the following:
 - **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
8. Do one of the following:
 - **Remove the primary PCI riser blank.**
 - **Remove the primary PCI riser cage.**
9. Remove the media module blank.



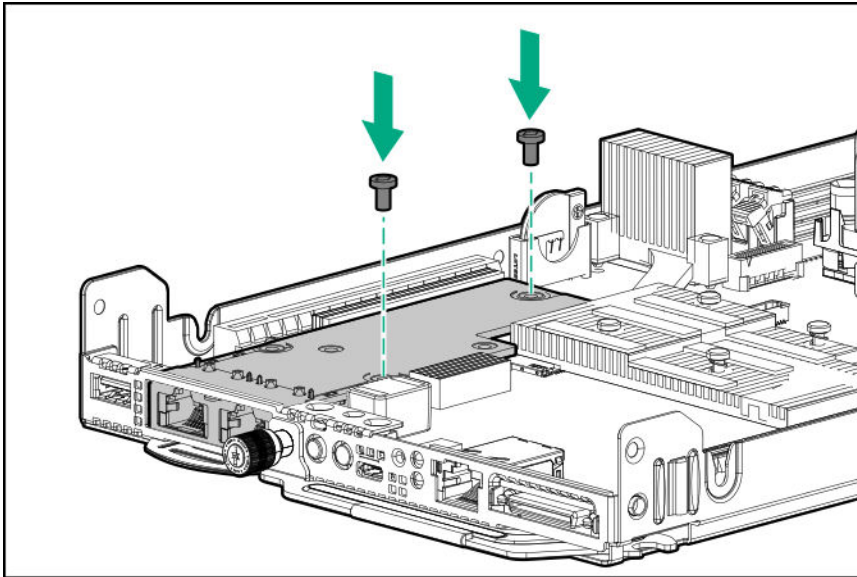
10. Install the Media Module.



11. Firmly seat the Media Module in the connector.



12. Secure the Media Module with T-15 screws.



13. Do one of the following:
 - **Install the primary PCI riser blank.**
 - **Install the primary PCI riser cage.**
14. Do one of the following:
 - **Install the secondary PCI riser blank.**
 - **Install the secondary PCI riser cage.**
15. If removed, **install the bayonet board.**
16. **Install the air baffle.**
17. **Install the server into the chassis.**
18. Connect all peripheral cables to the server.
19. **Power up the server.**

The installation is complete.

Installing the S100i SATA cable assembly

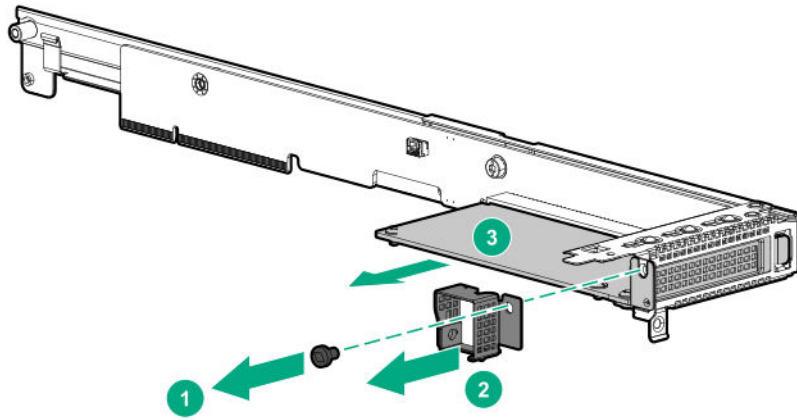
Before installing the S100i SATA cable assembly, remove any type-p plug-in Smart Array Controller with internal ports and cables from the server.

-
- ❗ **IMPORTANT:** The HPE Apollo r2800 Gen10 Chassis with 16 NVMe does not support servers using the embedded SATA HPE Dynamic Smart Array S100i Controller or any type-p plug-in Smart Array Controller with internal ports and cables.
-

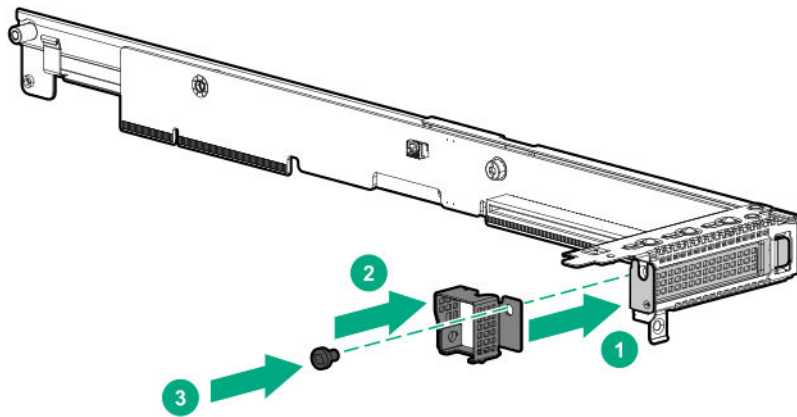
Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.

4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. **Remove the bayonet board.**
7. If a storage controller with internal ports and cables is installed in slot 2, do the following:
 - a. **Remove the secondary PCI riser cage.**
 - b. Remove the storage controller.

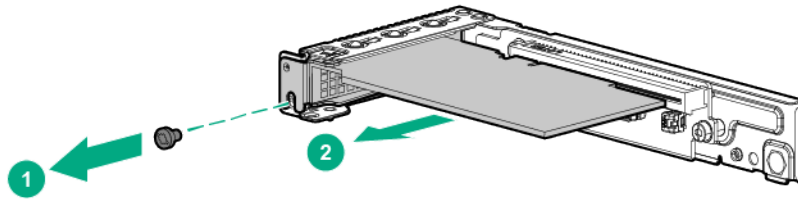


- c. If you intend to leave slot 2 empty, install an expansion slot cover to prevent improper cooling and thermal damage.

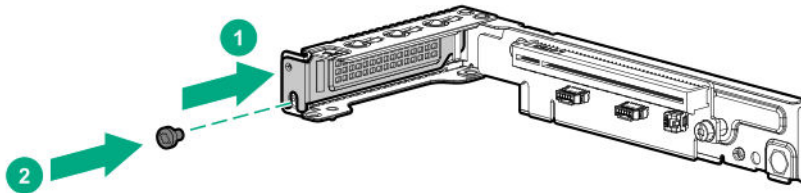


8. If a storage controller with internal ports and cables is installed in slot 1, do the following:
 - a. Do one of the following:

- **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
- b. **Remove the primary PCI riser cage.**
- c. Remove the storage controller.



- d. If you intend to leave slot 1 empty, install an expansion slot cover to prevent improper cooling and thermal damage.



9. **Connect and route the S100i SATA cable assembly.**
10. If removed, **install the primary PCI riser cage.**
11. Do one of the following:
- **Install the secondary PCI riser blank.**
 - **Install the secondary PCI riser cage.**
12. **Install the bayonet board.**
13. **Install the air baffle.**
14. **Install the server into the chassis.**
15. Connect all peripheral cables to the server.
16. **Power up the server.**

The installation is complete.

HPE Trusted Platform Module 2.0 Gen10 option

Overview

Use these instructions to install and enable an HPE TPM 2.0 Gen10 Kit in a supported server. This option is not supported on Gen9 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 (<http://www.hpe.com/info/qs>). For more information about Microsoft® Windows® BitLocker Drive Encryption feature, see the Microsoft website (<http://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 TPM 2.0 Gen10 Kit 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

⚠ 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, 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 Kit

Installing the Trusted Platform Module board

Preparing the server for installation

Procedure

1. Observe the following warnings:



WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove power from the server by removing the power cord. 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.



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**. Follow the instructions on the website to update the system ROM.
3. Power down the server.
4. Disconnect all peripheral cables from the server.
5. **Remove the server from the chassis.**
6. **Remove the air baffle.**
7. **Remove the bayonet board.**
8. Do one of the following:
 - **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
9. Do one of the following:

- **Remove the primary PCI riser blank.**
- **Remove the primary PCI riser cage.**

10. Proceed to **Installing the TPM board and cover** on page 61.

Installing the TPM board and cover

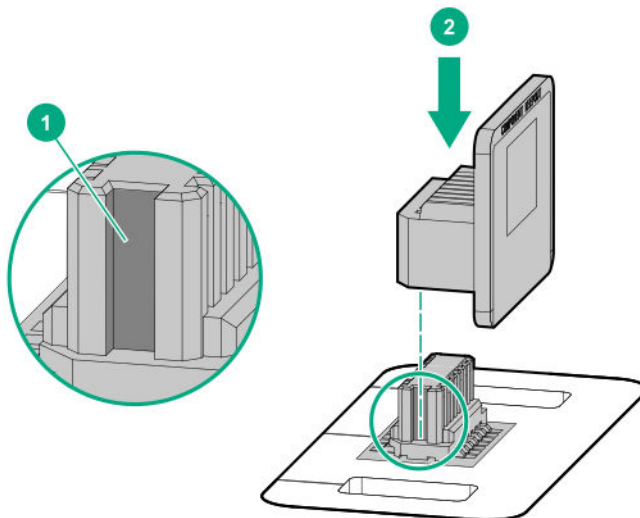
Procedure

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.

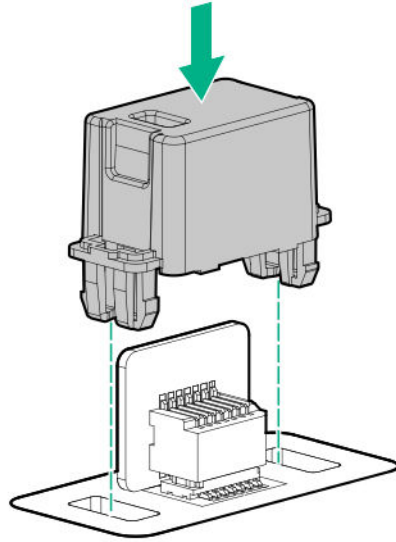
⚠ CAUTION: The TPM is keyed to install only in the orientation shown. Any attempt to install the TPM in a different orientation might result in damage to the TPM or system board.

2. 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. To locate the TPM connector on the system board, see the server label on the access panel.



3. Install the TPM cover:

- Line up the tabs on the cover with the openings on either side of the TPM connector.
- To snap the cover into place, firmly press straight down on the middle of the cover.



4. Proceed to **Preparing the server for operation** on page 62.

Preparing the server for operation

Procedure

1. Install all cables and components previously removed to access the TPM connector.
2. Do one of the following:
 - Install the server in the rack, if necessary.
 - Install the server in the enclosure.
3. 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 or TPM 1.2.
- In Legacy Boot Mode, the Trusted Platform Module configuration can be changed between TPM 1.2 and TPM 2.0, 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 "TPM Visibility" is **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 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 overview

This section provides guidelines that help you make informed decisions about cabling the server and hardware options to optimize performance.

⚠ CAUTION: When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

When installing cables, observe the following:

- All ports are labeled:
 - System board ports
 - Bayonet board ports
 - Riser board ports
 - Controller ports
- Most data cables have labels near each connector with destination port information.
- Some data cables are pre-bent. Do not unbend or manipulate the cables.
- Before connecting a cable to a port, lay the cable in place to verify the length of the cable.
- Before disconnecting a cable, check whether there is a release latch. Do not forcibly disconnect cables from the ports.

Cabling guidelines

The cable colors in the cabling diagrams used in this chapter are for illustration purposes only. Most of the server cables are black.

Observe the following guidelines when working with server cables.

Before connecting cables

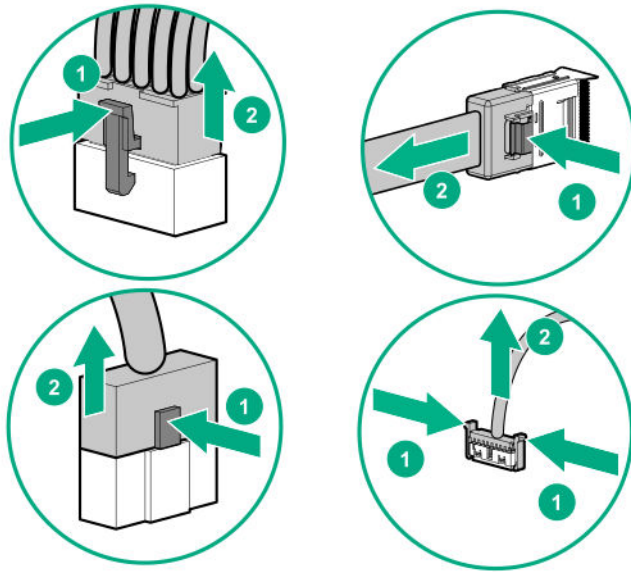
- Note the port labels on the PCA components. Not all of these components are used by all servers:
 - System board ports
 - Drive and power supply backplane ports
 - Expansion board ports (controllers, adapters, expanders, risers, and similar boards)
- Note the label near each cable connector. This label indicates the destination port for the cable connector.
- Some data cables are pre-bent. 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 are 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

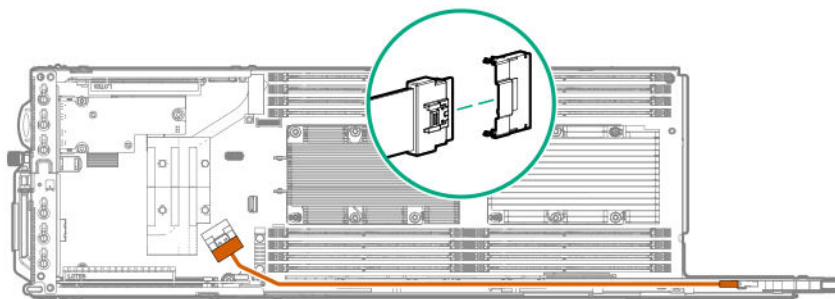
- Grip the body of the cable connector. Do not pull on the cable itself because this action can damage the internal wires of the cable or the pins on the port.
- If a cable does not disconnect easily, check for any release latch that must be pressed to disconnect the cable.



- 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.

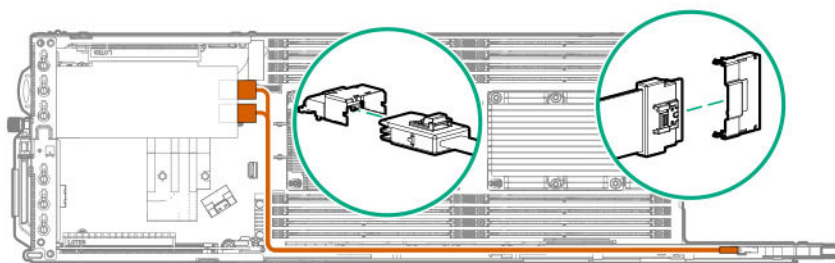
Storage cabling

S100i SATA controller

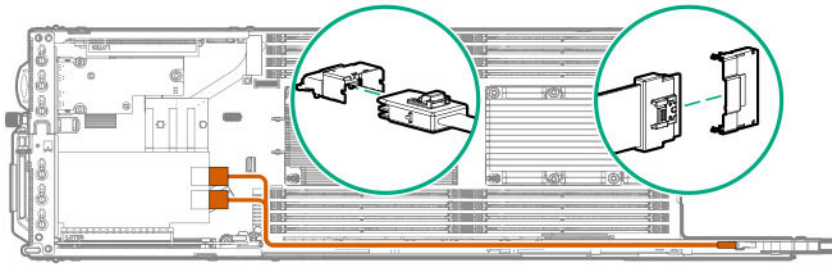


Type-p plug-in controller

Slot 1

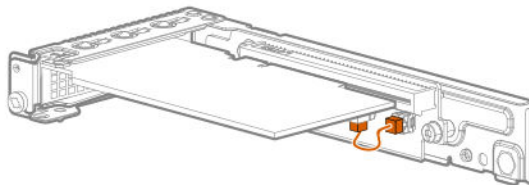


Slot 2

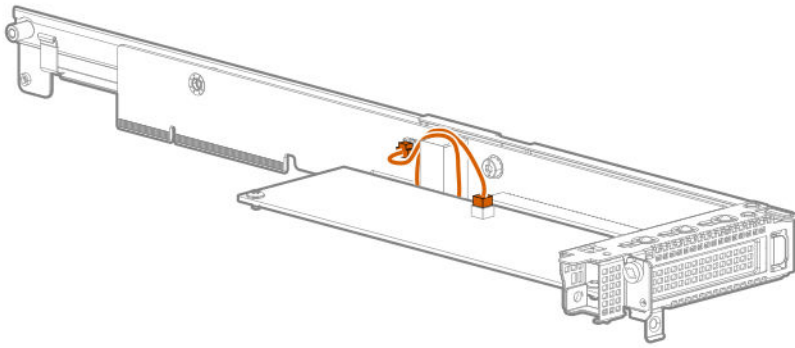


Controller backup power cable

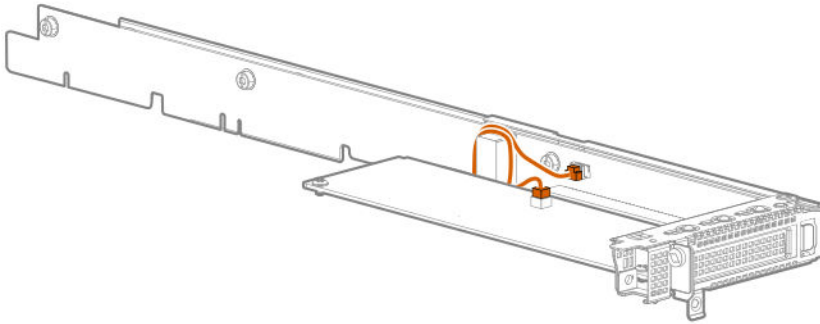
Slot 1 of the primary PCI riser cage



Slot 2 of the 1U secondary riser for processor 1



Slot 2 of the 1U secondary riser for processor 2



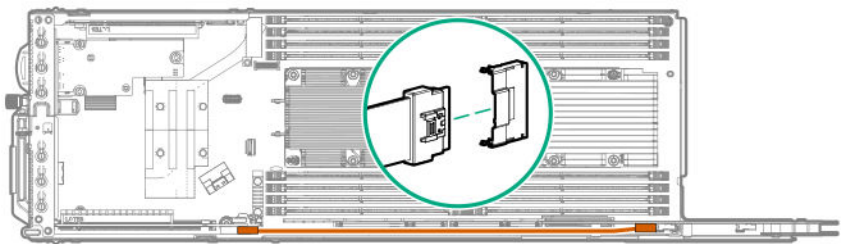
Fabric processor enablement board cabling



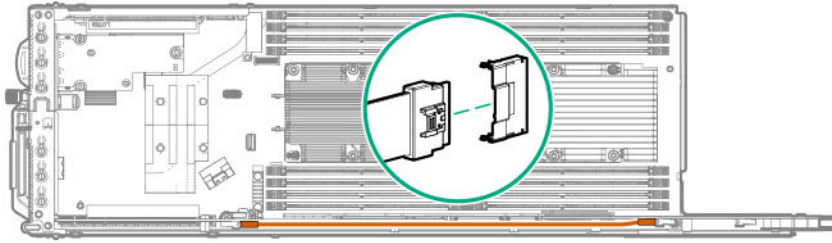
Cable color	Description
Blue	Fabric processor enablement board to system board
Orange	Fabric processor to fabric processor enablement board

Secondary PCI riser board NVMe cabling

1U FlexibleLOM riser

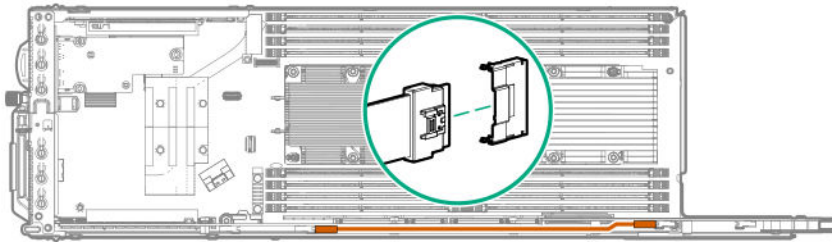


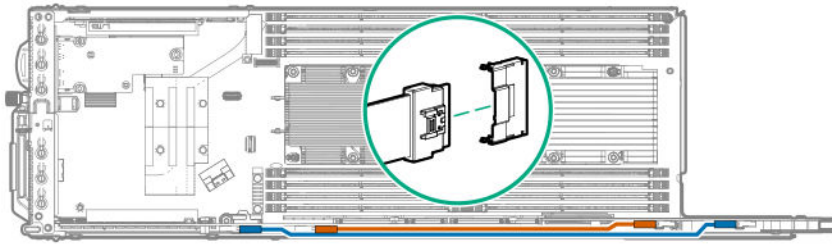
1U secondary riser for processor 1



1U secondary riser for processor 2

Installed in HPE Apollo r2200 Gen10 Chassis or HPE Apollo r2600 Gen10 Chassis



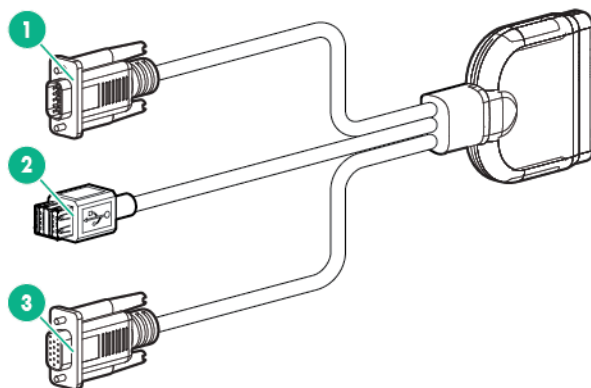


Cable color	Description
Blue	Secondary riser port 1 to bayonet port 1
Orange	Secondary riser port 2 to bayonet port 2

SUV cable connectors

CAUTION: Before disconnecting the SUV cable from the connector, always squeeze the release buttons on the sides of the connector. Failure to do so can result in damage to the equipment.

NOTE: If all server tray slots in the chassis are populated with servers, connect a SUV cable for maintenance purposes only.



Item	Connector	Description
1	Serial	For trained personnel to connect a null modem serial cable and perform advanced diagnostic procedures
2	USB ¹	For connecting up to two USB 2.0 devices
3	Video	For connecting a video monitor

¹ The USB connectors on the SUV cable do not support devices that require greater than a 500mA power source.

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.

Software or configuration utility	Server mode
Active Health System on page 74	Online and Offline
HPE iLO 5 on page 75	Online and Offline
HPE Smart Storage Administrator on page 81	Online and Offline
iLO RESTful API on page 77	Online and Offline
Intelligent Provisioning on page 77	Online and Offline
Scripting Toolkit for Windows and Linux on page 78	Online
Service Pack for ProLiant on page 82	Online and Offline
Smart Update Manager on page 83	Online and Offline
UEFI System Utilities on page 78	Offline

Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (<http://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: <http://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.

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 <http://www.hpe.com/info/privacy>.

You can also upload the log to the Active Health System Viewer. For more information, see the Active Health System Viewer documentation at the following website: <http://www.hpe.com/support/ahsv-docs>.

HPE iLO 5

iLO 5 is a remote server management processor embedded on the system boards of HPE ProLiant servers and Synergy 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. iLO (Standard) comes preconfigured on Hewlett Packard Enterprise servers without an additional cost or license.

Features that enhance server administrator productivity and additional new security features are licensed. For more information, see the iLO licensing guide at the following website: <http://www.hpe.com/support/ilo-docs>.

For more information about iLO, see the iLO user guide at the following website: <http://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 an iLO Federation group.

When an iLO Federation page loads, 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 the servers in an iLO Federation group.
- Group power control—Manage the power status of the servers in an iLO Federation group.
- Group power capping—Set dynamic power caps for the servers in an iLO Federation group.
- Group firmware update—Update the firmware of the servers in an iLO Federation group.
- Group license installation—Enter a license key to activate iLO licensed features on the servers in an iLO Federation group.
- 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: <http://www.hpe.com/support/ilo-docs>.

iLO Service Port

The Service Port is a USB port with the label **iLO** on supported ProLiant Gen10 servers and Synergy Gen10 compute modules.

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

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 iLO web interface, remote console, CLI, iLO RESTful API, or scripts.

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

Some servers, such as the XL170r, require an adapter to connect a USB to Ethernet adapter to the iLO Service Port.

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: <http://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 (<http://www.hpe.com/info/restfulinterface/docs>).

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

iLO Amplifier Pack

The iLO Amplifier Pack is an advanced server inventory and firmware and driver update solution that enables rapid discovery, detailed inventory reporting, and firmware and driver updates by leveraging iLO advanced functionality. The 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: <http://www.hpe.com/support/ilo-ap-ug-en>.

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.

Intelligent Provisioning 3.30 and later includes HPE SMB Setup. When you launch F10 mode from the POST screen, you are prompted to select whether you want to enter the Intelligent Provisioning or HPE SMB Setup mode.

NOTE: After you have selected a mode, you must reprovision the server to change the mode that launches when you boot to F10.

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.

❗ **IMPORTANT:** HPE ProLiant 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.

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 SMB Setup.
- From the iLO web interface using **Always On**. **Always On** allows you to access Intelligent Provisioning without rebooting your server.

Management Security

HPE ProLiant Gen10 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 and iLO Advanced Premium Security Edition licenses provides security features that help ensure protection, detection, and recovery from advanced cyber-attacks. For more information, see the *HPE Gen10 Server Security Reference Guide* on the Hewlett Packard Enterprise Information Library at <http://www.hpe.com/support/gen10-security-ref-en>.

For information about the iLO Advanced Premium Security Edition license, see <http://www.hpe.com/servers/ilopremium>.

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

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.

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 <http://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 (<http://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.

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 overview

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/support/infosight-servers-docs**](https://www.hpe.com/support/infosight-servers-docs).

USB support

Hewlett Packard Enterprise Gen10 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.

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

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 iSUT, 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 www.hpe.com/servers/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 the firmware, drivers, and system software of HPE ProLiant, HPE Synergy, HPE BladeSystem and HPE Moonshot infrastructures and associated options up to date and secure.

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 mode.
- Ability to create custom baselines and ISOs.
- Support for iLO Repository (Gen10 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.

NOTE: SUM does not support third-party controllers, including flashing hard drives behind the controllers.

NOTE: If you configure iLO in one of the High Security modes in HPE OneView, you need to create a custom SPP. To create an SPP custom download, filter the SPP. Add SPP Supplements or reduce the download size by selecting pre-defined filter sets or choosing individual filter options. You can download a custom SPP from <https://www.hpe.com/servers/spp/custom>

Integrated Smart Update Tools

Smart Update Tools is a software utility used with iLO 4, iLO 5, HPE OneView, iLO Amplifier Pack, Service Pack for ProLiant (SPP), and Smart Update Manager (SUM) to stage, install, and activate firmware and driver updates.

NOTE: HPE OneView or iLO Amplifier Pack manage the iLO while iSUT runs on each server and deploys the updates. The same administrator might not manage both applications. Create a process that notifies the administrators when updates are available.

- **Smart Update Tools:** Polls iLO to check for requests from HPE OneView or iLO Amplifier Pack for updates through the management network and orchestrates staging, deploying, and activating updates. You can adjust the polling interval by issuing the appropriate command-line option provided by iSUT. Performs inventory on target servers, stages deployment, deploys updates, and then reboots the servers.
- **iLO 5 with integrated Smart Update** (Gen10 servers only): Loads Install Sets to the iLO Repository on iLO 5 nodes. iSUT deploys OS-based updates from the iLO Repository.

- **iLO Amplifier Pack:** Displays available updates for servers. Communicates with iSUT (or SUT 1.x) to initiate updates using the iLO Redfish interface. iSUT reports the status of updates to iLO Amplifier Pack via iLO Restful Interface.
- **HPE OneView:** Displays available updates for servers. Communicates with iSUT (or SUT 1.x) to initiate updates, reports the status on the **Firmware** section of the **Server Profile** page of HPE OneView. HPE OneView provides automated compliance reporting in the dashboard.
- **SPP:** A comprehensive systems software and firmware update solution, which is delivered as a single ISO image.
- **SUM:** A tool for firmware and driver maintenance for HPE ProLiant servers and associated options.

NOTE: Do not manage same nodes with iLO Amplifier Pack and HPE OneView at the same time.

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 (<http://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

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

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 (<http://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 (<http://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:

<http://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 invoke the NMI handler and generate a crash dump log, the administrator can use the iLO Virtual NMI feature.

Troubleshooting resources

Troubleshooting resources are available for HPE Gen10 server products in the following documents:

- *Troubleshooting Guide for HPE ProLiant Gen10 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.
- *Integrated Management Log Messages and Troubleshooting Guide for HPE ProLiant Gen10 and HPE Synergy* provides IML messages and associated troubleshooting information to resolve critical and cautionary IML events.

To access the troubleshooting resources, see the Hewlett Packard Enterprise Information Library (<http://www.hpe.com/info/gen10-troubleshooting>).

Removing and replacing the system battery

The system battery provides power to the real-time clock. If the server no longer automatically displays the correct date and time, you might need to replace the system battery.

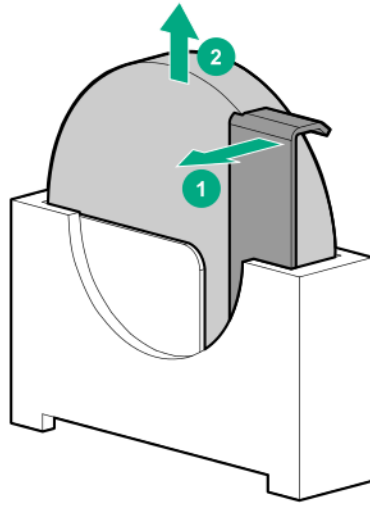


WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

Procedure

1. Back up all server data.
2. **Power down the server.**
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis.**
5. **Remove the air baffle.**
6. If a secondary PCI riser cage is installed, **remove the bayonet board.**
7. Do one of the following:
 - **Remove the secondary PCI riser blank.**
 - **Remove the secondary PCI riser cage.**
8. If installed, **remove the primary PCI riser cage.**
9. **Locate the battery.**
10. Remove the battery.



11. To replace the component, reverse the removal procedure.
12. Properly dispose of the old battery.
For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

Electrostatic discharge

Preventing electrostatic discharge

To prevent damaging the system, be aware of the precautions you must follow when setting up the system or handling parts. 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 device.

Procedure

- 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.

Grounding methods to prevent electrostatic discharge

Several methods are used for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded workstation or computer chassis. Wrist straps are flexible straps with a minimum of 1 megohm ± 10 percent resistance in the ground cords. To provide proper ground, wear the strap snug against the skin.
- Use heel straps, toe straps, or boot straps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

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

For more information on static electricity or assistance with product installation, contact the **Hewlett Packard Enterprise Support Center**.

Specifications

Environmental specifications

Specification	Value
Temperature range¹	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (noncondensing)	—
Operating	8% to 90% 28°C (82.4°F), maximum wet bulb temperature
Non-operating	5% to 95% 38.7°C (101.7°F), maximum wet bulb temperature

¹ All temperature ratings shown are for sea level. An altitude derating of 1.0°C per 305 m (1.8°F per 1000 ft) to 3050 m (10,000 ft) is applicable. No direct sunlight allowed. Maximum rate of change is 20°C per hour (36°F per hour). The upper limit and rate of change might be limited by the type and number of options installed.

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

- 5°C to 10°C (41°F to 50°F) and 35°C to 40°C (95°F to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3050 m (10,000 ft).

Mechanical specifications

Specification	Value
Height	4.13 cm (1.63 in)
Depth	65.80 cm (25.91 in)
Width	18.45 cm (7.27 in)
Weight (approximate values)	
Weight (maximum)	4.61 kg (10.17 lb)
Weight (minimum)	3.30 kg (7.27 lb)

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 (<http://www.hpe.com/info/poweradvisor/online>).

Temperature requirements for the HPE ProLiant XL170r Gen10 Server

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

The operating temperature inside the rack is always higher than the room temperature and is dependent on the configuration of equipment in the rack. Check the TMRA for each piece of equipment before installation.

⚠ 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.

NOTE: The removable drive blanks are recommended to be installed in the empty drive bays, unless otherwise specified.

The hard drive kits (PN 857646-B21, 857650-B21, 878562-B21, and 878566-B21) have drive capacities greater than or equal to 10 TB, but their thermal conditions are the same as drives with drive capacities less than 10 TB.

Thermal limitations for different options installed in the servers may differ depending on the chassis configuration. For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).

Determine if there are temperature requirements for the component. For more information, see **List of components with temperature requirements in the HPE ProLiant XL170r Gen10 Server** on page 92.

If necessary, populate drive bays in the chassis with drive blanks. For more information, see **Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server** on page 116.

List of components with temperature requirements in the HPE ProLiant XL170r Gen10 Server

The maximum inlet ambient temperature for most components installed in the server is 35°C (95°F). Some components, however, are subject to thermal limitations depending on the chassis model and the fan configuration. If two or more components with temperature requirements are installed in the server, observe the lowest maximum inlet ambient temperature.

Thermal limitations without Processor Power Adjustment (PPA) Processors

NOTE: Make sure to note the following requirements for the Intel Xeon Gold 6244 (G6244) processor:

- The processor does not support PPA.
 - The enhanced cooling or max cooling mode must be chosen at RBSU.
 - LFF drives with drive capacities greater than or equal to 10 TB are not supported for the Apollo r2200 Gen10 Chassis series with three drives per node.
-

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
Processor with a TDP (thermal design power) of 125 W or more, except G6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	30°C (86°F)
			3 drives ²	25°C (77°F)
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	35°C (95°F)
G6244	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	35°C (95°F)
			0 to 4 drives	35°C (95°F)
			0 to 4 drives	35°C (95°F)
	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	25°C (77°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	28°C (82.4°F)
			0 to 6 drives	28°C (82.4°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	30°C (86°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

DIMMs

NOTE: In non-redundant fan configuration, 32 GB RDIMM, 64 GB LRDIMM, and 128GB LRDIMM can support up to 35°C (95°F) temperature.

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
32 GB RDIMM	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant	3 drives ¹	30°C (86°F)
			3 drives ²	30°C (86°F)
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant	0 to 6 drives	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant	0 to 4 drives	35°C (95°F)
64 GB LRDIMM	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant	3 drives ¹	Not supported
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant	0 to 4 drives	35°C (95°F)
128 GB LRDIMM	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant	3 drives ¹	Not supported
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant	0 to 4 drives	35°C (95°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

Storage controllers

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
HPE Smart Array P408i-p Controller ¹	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	22°C (71.6°F)
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	28°C (82.4°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Not supported
HPE Smart Array P408e-p Controller ¹	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	22°C (71.6°F)
			3 drives ³	22°C (71.6°F)
			0 to 2 drives ^{4, 5}	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	30°C (86°F)
HPE Smart Array E208i-p Controller ⁶	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	35°C (95°F)
			3 drives ³	28°C (82.4°F)
			0 to 2 drives ^{4, 5}	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	35°C (95°F)
HPE Smart Array E208e-p Controller ⁶	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	30°C (86°F)
			3 drives ³	28°C (82.4°F)
			0 to 2 drives ^{4, 5}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
Fibre channel host bus adapter	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	Not supported
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	25°C (77°F)
			0 to 24 drives	25°C (77°F)
Converged network adapter	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	0 to 4 drives	25°C (77°F)
			3 drives ²	Optical cable: Not supported Copper cable: 30°C (86°F)
			3 drives ³	Optical cable: Not supported Copper cable: 25°C (77°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 2 drives ^{4, 5}	Optical cable: 28°C (82.4°F) Copper cable: 35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)

¹ The Smart Storage Battery is supported with P408i-p and P408e-p controllers only. Due to thermal concerns on some configurations, you are recommended to remove the Smart Storage Battery if these cards are not installed in the chassis.

² The drive capacity must be less than 10 TB.

³ The drive capacity must be greater than or equal to 10 TB.

⁴ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁵ The first removable drive blank is populated at bay 2.

⁶ A Smart Storage Battery is not needed for the HPE Smart Array E208i-p and E208e-p controllers.

PCIe NIC cards/Infiniband Adapters

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
NIC cards with SFP+, SFP28 or QSFP transceiver / InfiniBand adapters with QDR or FDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Optical cable: Not supported Copper cable: 30°C (86°F)
			3 drives ²	Optical cable: Not supported Copper cable: 25°C (77°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
NIC cards with QSFP28 transceiver / InfiniBand adapters with EDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	0 to 2 drives ^{3, 4}	Optical cable: 28°C (82.4°F) Copper cable: 35°C (95°F)
			0 to 6 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
			0 to 24 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
			0 to 4 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
NIC cards with QSFP28 transceiver / InfiniBand adapters with EDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Optical cable: Not supported Copper cable: 25°C (77°F)
			3 drives ²	Optical cable: Not supported Copper cable: 22°C (71.6°F)
			0 to 2 drives ^{3, 4}	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
			0 to 6 drives	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

FlexibleLOM adapters

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
FlexibleLOM adapters with SFP+, SFP28 or QSFP transceivers	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Optical cable: Not supported Copper cable: 30°C (86°F)
			3 drives ²	Optical cable: Not supported Copper cable: 25°C (77°F)
			0 to 2 drives ^{3, 4}	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see **Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server** on page 116.

⁴ The first removable drive blank is populated at bay 2.

Media Modules

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
Media Module 10Gb 2p 568FLR-MMSFP+	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	30°C (86°F)
			3 drives ²	30°C (86°F)
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	35°C (95°F)
Media Module 10Gb 2p 568FLR-MMT	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	30°C (86°F)
			3 drives ²	30°C (86°F)
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	30°C (86°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see **Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server** on page 116.

⁴ The first removable drive blank is populated at bay 2.

Thermal limitations with Processor Power Adjustment (PPA)

Processors

NOTE: Make sure to note the following requirements for the Intel Xeon Gold 6244 (G6244) processor:

- The processor does not support PPA.
- The enhanced cooling or max cooling mode must be chosen at RBSU.
- LFF drives with drive capacities greater than or equal to 10 TB are not supported for the Apollo r2200 Gen10 Chassis series with three drives per node.

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
Processor with a TDP (thermal design power) of 135 W or more, except G6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	28°C (82.4°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
G6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	0 to 4 drives	30°C (86°F)
			3 drives ¹	Not supported
			3 drives ²	Not supported
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 2 drives ^{3, 4}	Not supported
			0 to 6 drives	Not supported
			0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Not supported
Processor with a TDP (thermal design power) between 115 W and 130 W	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	0 to 4 drives	Not supported
			3 drives ¹	30°C (86°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	35°C (95°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

DIMMs

NOTE: In non-redundant fan configuration, 32 GB RDIMM and 64 GB LRDIMM can support up to 35°C (95°F) temperature.

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
32 GB RDIMM	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant	3 drives ¹	30°C (86°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant	0 to 24 drives	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant	0 to 4 drives	35°C (95°F)
64 GB LRDIMM	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant	3 drives ¹	Not supported
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant	0 to 4 drives	35°C (95°F)
128 GB LRDIMM	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Not supported
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	Not supported
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Not supported

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

Storage controllers

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
HPE Smart Array P408i-p Controller ¹	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	Not supported
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	22°C (71.6°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	22°C (71.6°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Not supported
HPE Smart Array P408e-p Controller ¹	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	Not supported
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	25°C (77°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	25°C (77°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	25°C (77°F)
HPE Smart Array E208i-p Controller ⁶	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	30°C (86°F)
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Not supported
HPE Smart Array E208e-p Controller ⁶	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	28°C (82.4°F)
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	30°C (86°F)
Fibre channel host bus adapter	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	Not supported
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	22°C (71°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Not supported
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Not supported
Converged network adapter	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ²	Optical cable: Not supported Copper cable: 28°C (82.4°F)
			3 drives ³	Not supported
			0 to 2 drives ^{4, 5}	Optical cable: 22°C (71°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: Not supported Copper cable: 30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: Not supported Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: Not supported Copper cable: 30°C (86°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

⁵ A Smart Storage Battery is not needed for the HPE Smart Array E208i-p and E208e-p controllers.

PCIe NIC cards/Infiniband Adapters

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
NIC cards with SFP+, SFP28 or QSFP transceivers/ InfiniBand adapters with QDR or FDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Optical cable: Not supported Copper cable: 28°C (82.4°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: Not supported Copper cable: 30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: Not supported Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: Not supported Using a copper cable: 30°C (86°F)
NIC cards with QSFP28 transceiver / InfiniBand adapters with EDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Optical cable: Not supported Copper cable: 25°C (77°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	Optical cable: Not supported Copper cable: 28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: Not supported Copper cable: 28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: Not supported Copper cable: 28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: Not supported Copper cable: 28°C (82.4°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

- ³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.
- ⁴ The first removable drive blank is populated at bay 2.

FlexibleLOM adapters

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
FlexibleLOM adapters with SFP+, SFP28 or QSFP transceivers	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	Optical cable: Not supported Copper cable: 28°C (82.4°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	Optical cable: Not supported Copper cable: 30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	Optical cable: Not supported Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	Optical cable: Not supported Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	Optical cable: Not supported Copper cable: 30°C (86°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

³ If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.

⁴ The first removable drive blank is populated at bay 2.

Media Modules

Description	Chassis	Fan configuration	Number of drives that correspond to the server	Maximum inlet ambient temperature
Media Module 10Gb 2p 568FLR-MMSFP +	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	30°C (86°F)
			3 drives, ²	Not supported
			0 to 2 drives ^{3, 4}	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
Media Module 10Gb 2p 568FLR-MMT	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and non-redundant	3 drives ¹	30°C (86°F)
			3 drives ²	Not supported
			0 to 2 drives ^{3, 4}	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF combo backplane)	Redundant and non-redundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and non-redundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and non-redundant	0 to 4 drives	30°C (86°F)

¹ The drive capacity must be less than 10 TB.

² The drive capacity must be greater than or equal to 10 TB.

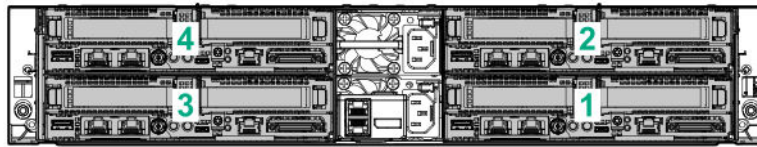
- 3 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 1-2 and 2-2. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2200 Gen10 Chassis, drive blanks must be installed in drive bays 3-2 and 4-2. For more information, see [Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server](#) on page 116.
- 4 The first removable drive blank is populated at bay 2.

Drive blank installation guidelines for the HPE ProLiant XL170r Gen10 Server

Depending on the chassis configuration and the component being installed in the server, it might be necessary to limit the number of drives installed in the chassis. For more information, see [List of components with temperature requirements in the HPE ProLiant XL170r Gen10 Server](#) on page 92.

Procedure

1. Note the server number.

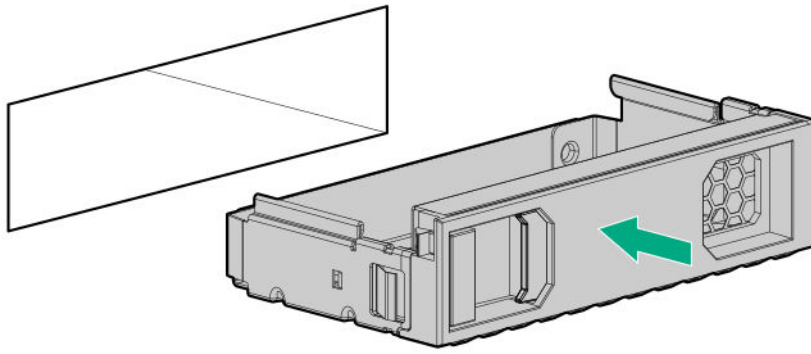


2. Note the drive bays that correspond to the server.

HPE Apollo r2200 Gen10 Chassis



3. Do the following:
 - a. If the component is installed in server 1 or server 2, remove the drives from drive bays 1-2 and 2-2.
 - b. If the component is installed in server 3 or server 4, remove the drives from drive bays 3-2 and 4-2.
4. Install the drive blanks.



Websites

General websites

Hewlett Packard Enterprise Information Library

www.hpe.com/info/EIL

Subscription Service/Support Alerts

www.hpe.com/support/e-updates

Single Point of Connectivity Knowledge (SPOCK) Storage compatibility matrix

www.hpe.com/storage/spock

Storage white papers and analyst reports

www.hpe.com/storage/whitepapers

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

Product websites

HPE ProLiant XL170r Gen10 product page

<http://www.hpe.com/servers/xl170r-gen10>

HPE ProLiant XL170r Gen10 support page

<http://www.hpe.com/info/Apollo2000-Gen10-docs>

HPE ProLiant XL170r Gen10 user documents

<http://www.hpe.com/info/XL170r-Gen10-UG-en>

Support and other resources

Accessing Hewlett Packard Enterprise Support

- For live assistance, go to the Contact Hewlett Packard Enterprise Worldwide website:
<http://www.hpe.com/info/assistance>
- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:
<http://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

www.hpe.com/support/hpesc

Hewlett Packard Enterprise Support Center: Software downloads

www.hpe.com/support/downloads

Software Depot

www.hpe.com/support/softwaredepot

- To subscribe to eNewsletters and alerts:
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:
www.hpe.com/support/AccessToSupportMaterials

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

Customer self repair

Hewlett Packard Enterprise customer self repair (CSR) programs allow you to repair your product. If a CSR part needs to be replaced, it will be shipped directly to you so that you can install it at your convenience. Some parts do not qualify for CSR. Your Hewlett Packard Enterprise authorized service provider will determine whether a repair can be accomplished by CSR.

For more information about CSR, contact your local service provider or go to the CSR website:

<http://www.hpe.com/support/selfrepair>

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

www.hpe.com/services/getconnected

HPE Proactive Care services

www.hpe.com/services/proactivecare

HPE Proactive Care service: Supported products list

www.hpe.com/services/proactivecaresupportedproducts

HPE Proactive Care advanced service: Supported products list

www.hpe.com/services/proactivecareadvancedsupportedproducts

Proactive Care customer information

Proactive Care central

www.hpe.com/services/proactivecarecentral

Proactive Care service activation

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

www.hpe.com/support/ProLiantServers-Warranties

HPE Enterprise and Cloudline Servers

www.hpe.com/support/EnterpriseServers-Warranties

HPE Storage Products

www.hpe.com/support/Storage-Warranties

HPE Networking Products

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:

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:

www.hpe.com/info/reach

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

www.hpe.com/info/ecodata

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

www.hpe.com/info/environment

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Acronyms and abbreviations

AHCI

Advanced Host Controller Interface

CSR

Customer Self Repair

DDR

double data rate

GPU

graphics processing unit

HP SUM

HP Smart Update Manager

HPE APM

HPE Advanced Power Manager

HPE SSA

HPE Smart Storage Administrator

IEC

International Electrotechnical Commission

iLO

Integrated Lights-Out

IML

Integrated Management Log

ISO

International Organization for Standardization

LFF

large form factor

LOM

LAN on Motherboard

LRDIMM

load reduced dual in-line memory module

NIC

network interface controller

NMI

nonmaskable interrupt

NVRAM

nonvolatile memory

PCIe

Peripheral Component Interconnect Express

PDU

power distribution unit

POST

Power-On Self-Test

RBSU

ROM-Based Setup Utility

RCM

Rack Consolidation Management

RDIMM

registered dual in-line memory module

RDP

Remote Desktop Protocol

RoHS

Restriction of Hazardous Substances

SAS

serial attached SCSI

SATA

serial ATA

SFF

small form factor

SPP

Service Pack for ProLiant

SUV

serial, USB, video

TMRA

recommended ambient operating temperature

TPM

Trusted Platform Module

UEFI

Unified Extensible Firmware Interface

UID

unit identification

USB

universal serial bus