Hewlett Packard Enterprise

HPE ProLiant XL170r Gen10 Server Maintenance and Service Guide

Abstract

This guide describes identification and maintenance procedures, diagnostic tools, specifications, and requirements for hardware components and software. This guide is for an experienced service technician. Hewlett Packard Enterprise assumes you are qualified in the servicing of computer equipment, trained in recognizing hazards in products, and are familiar with weight and stability precautions.

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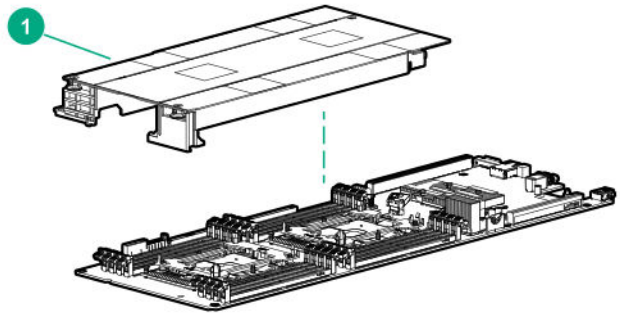
Contents

Illustrated parts catalog

Mechanical components

Hewlett Packard Enterprise continually improves and changes product parts. For complete and current supported parts information, see the **Hewlett Packard Enterprise PartSurfer website**.



Item	Description
1	**Air baffle spare part**

Air baffle spare part

Customer self repair: **Mandatory**

Description	Spare part number
Air baffle	879858-001

System components

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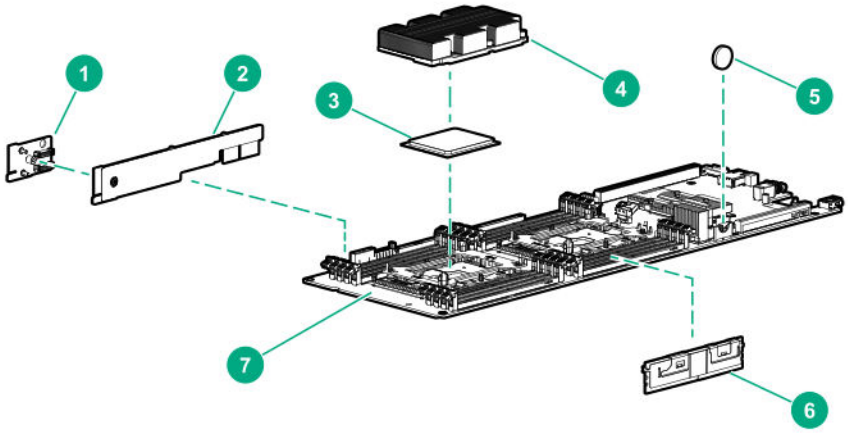


Item	Description
1	**Small bayonet board spare part**
2	**Large bayonet board spare part**
3	**First-generation Intel Xeon Scalable Processor spare parts** **Second-generation Intel Xeon Scalable Processor spare parts**
4	**Heatsink spare parts**
5	**System battery spare part**
6	**DIMM spare parts**
7	**System board assembly spare parts**
8	**System cable spare parts***

*Not shown

Bayonet board spare parts

Customer self repair: **Optional**

Description	Spare part number
Large bayonet board	879855-001
Small bayonet board	879845-001

Processor spare parts

First-generation Intel Xeon Scalable Processor spare parts

Customer self repair: **No**

Description	Spare part number
Intel Xeon Bronze series processors	—
1.70 GHz Intel Xeon Bronze 3104, 6C, 85 W	875709-001
1.70 GHz Intel Xeon Bronze 3106, 8C, 85 W	875710-001
Intel Xeon Silver series processors	—
1.80 GHz Intel Xeon Silver 4108, 8C, 85 W	875712-001
2.00 GHz Intel Xeon Silver 4109T, 8C, 70 W	880185-001
2.10 GHz Intel Xeon Silver 4110, 8C, 85 W	875711-001
2.10 GHz Intel Xeon Silver 4116, 12C, 85 W	875716-001
2.20 GHz Intel Xeon Silver 4114, 10C, 85 W	875713-001
2.60 GHz Intel Xeon Silver 4112, 4C, 85 W	875714-001
Intel Xeon Gold series processors	—

Table Continued

Description	Spare part number
1.90 GHz Intel Xeon Gold 5119T, 14C, 85 W	882170-001
2.00 GHz Intel Xeon Gold 6138, 20C, 125 W	874735-001
2.00 GHz Intel Xeon Gold 6138F, 20C, 135 W[1]	878095-001
2.10 GHz Intel Xeon Gold 6130, 16C, 125 W	874736-001
2.10 GHz Intel Xeon Gold 6130F, 16C, 135 W[1]	878096-001
2.10 GHz Intel Xeon Gold 6152, 22C, 140 W	874730-001
2.20 GHz Intel Xeon Gold 5120, 14C, 105 W	875718-001
2.30 GHz Intel Xeon Gold 6140, 18C, 140 W	874734-001
2.30 GHz Intel Xeon Gold 5118, 12C, 105 W	875717-001
2.40 GHz Intel Xeon Gold 5115, 10C, 85 W	875715-001
2.40 GHz Intel Xeon Gold 6148, 20C, 150 W	874732-001
2.60 GHz Intel Xeon Gold 6126, 12C, 125 W	875720-001
2.60 GHz Intel Xeon Gold 6126F, 12C, 135 W[1]	878097-001
2.60 GHz Intel Xeon Gold 6132, 14C, 140 W	875722-001
2.60 GHz Intel Xeon Gold 6142, 16C, 150 W	874733-001
3.00 GHz Intel Xeon Gold 6136, 12C, 150 W	875724-001
3.20 GHz Intel Xeon Gold 6134, 8C, 130 W	875723-001
3.40 GHz Intel Xeon Gold 6128, 6C, 115 W	875721-001
3.50 GHz Intel Xeon Gold 6144, 8C, 150 W	875725-001
3.60 GHz Intel Xeon Gold 5122, 4C, 105 W	875719-001
Intel Xeon Platinum series processors	—
2.00 GHz Intel Xeon Platinum 8153, 16C, 125 W	875728-001
2.00 GHz Intel Xeon Platinum 8164, 26C, 150 W	875729-001
2.10 GHz Intel Xeon Platinum 8160, 24C, 150 W	874729-001
3.00 GHz Intel Xeon Platinum 8158, 12C, 150 W	875733-001
3.60 GHz Intel Xeon Platinum 8156, 4C, 105 W	875732-001

[1] This processor model can be installed in processor 1 socket only.

Second-generation Intel Xeon Scalable Processor spare parts

Customer self repair: **No**

Description	Spare part number
Intel Xeon Bronze series processor	—
1.90 GHz Intel Xeon Bronze 3204, 6C, 85 W	P11604-001

Table Continued

Description	Spare part number
Intel Xeon Silver series processors	—
2.10 GHz Intel Xeon Silver 4208, 8C, 85 W	P11605-001
2.10 GHz Intel Xeon Silver 4216, 16C, 100 W	P11609-001
2.20 GHz Intel Xeon Silver 4210, 10C, 85 W	P11606-001
2.20 GHz Intel Xeon Silver 4214, 12C, 85 W	P11607-001
2.50 GHz Intel Xeon Silver 4215, 8C, 85 W	P11608-001
Intel Xeon Gold series processors	—
2.10 GHz Intel Xeon Gold 6230, 20C, 125 W	P11614-001
2.10 GHz Intel Xeon Gold 6238, 22C, 140 W	P12010-001
2.10 GHz Intel Xeon Gold 6252, 24C, 150 W	P11619-001
2.20 GHz Intel Xeon Gold 5220, 18C, 125 W	P11613-001
2.30 GHz Intel Xeon Gold 5218, 16C, 125 W	P11612-001
2.50 GHz Intel Xeon Gold 5215, 10C, 85 W	P11610-001
2.50 GHz Intel Xeon Gold 6248, 20C, 150 W	P11618-001
2.60 GHz Intel Xeon Gold 6240, 18C, 150 W	P11615-001
2.70 GHz Intel Xeon Gold 6226, 12C, 125 W	P12008-001
2.80 GHz Intel Xeon Gold 6242, 16C, 150 W	P11616-001
3.00 GHz Intel Xeon Gold 5217, 8C, 125 W	P11611-001
3.30 GHz Intel Xeon Gold 6234, 8C, 130 W	P12009-001
3.60 GHz Intel Xeon Gold 6244, 8C, 150 W	P11617-001
3.80 GHz Intel Xeon Gold 5222, 4C, 105 W	P11632-001
Intel Xeon Platinum series processors	—
2.20 GHz Intel Xeon Platinum 8253, 16C, 125 W	P12011-001

Heatsink spare parts

Customer self repair: **No**

Description	Spare part number
Heatsink for processor 1	879851-001
Heatsink for processor 2	879852-001

System battery spare part

Customer self repair: **Mandatory**

Description	Spare part number
System battery	P20916-001

DIMM spare parts

Customer self repair: **Mandatory**

Description	Spare part number
PC4-2666V DIMM spares	—
8 GB, single-rank x8 PC4-2666V-R	850879-001
16 GB, single-rank x4 PC4-2666V-R	868846-001
16 GB, dual-rank x8 PC4-2666V-R	850880-001
32 GB, dual-rank x4 PC4-2666V-R	850881-001
8 GB, dual-rank x8 PC4-2666V-R	878490-001
64 GB, dual-rank x4 PC4-2666V-L	850882-001
128 GB, dual-rank x4 PC4-2666V-L	850883-001
PC4-2933Y DIMM spares	—
8 GB, single-rank x8 PC4-2933Y-R	P06186-001
16 GB, single-rank x4 PC4-2933Y-R	P06187-001
16 GB, dual-rank x8 PC4-2933Y-R	P06188-001
32 GB, dual-rank x4 PC4-2933Y-R	P06189-001
64 GB, dual-rank x4 PC4-2933Y-R	P06192-001
64 GB, quad-rank x4 PC4-2933Y-L	P06190-001
128 GB, dual-rank x4 PC4-2933Y-L	P06191-001

HPE Persistent Memory module spare parts

Customer self repair: **Mandatory**

Description	Spare part number
HPE Persistent Memory module, 128 GB	844071-001
HPE Persistent Memory module, 256 GB	844072-001
HPE Persistent Memory module, 512 GB	844073-001

System board assembly spare parts

Customer self repair: **Optional**

Description	Spare part number
System board assembly for the first-generation Intel Xeon Scalable processors	879847-001
System board assembly for the second-generation Intel Xeon Scalable processors	P11391-001

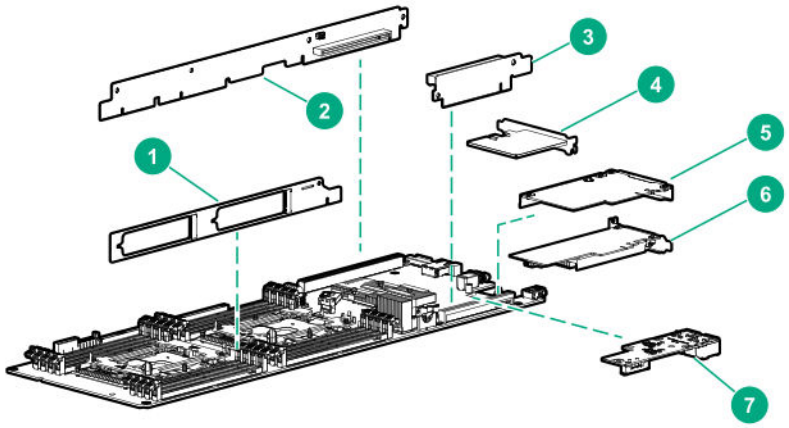
System cable spare parts

Customer self repair: **Optional**

Description	Spare part number
Apollo r2600 Gen10 Chassis/Apollo r2800 Gen10 Chassis Gen10 for server PCIe riser Slimline cable kit includes: • 1U Slimline cable for processor 1 • 1U Short Slimline cable for processor 2 • 2U Short Slimline x-cable for FlexibleLOM riser board	879838-001
Apollo r2600 Gen10 Chassis/Apollo r2800 Gen10 Chassis power cable and server NVMe cable kit includes: • Power cable for servers 1 and 2 in the Apollo r2600 Gen10 Chassis/Apollo r2800 Gen10 Chassis • 1U server NVMe cable • 2U server NVMe cable	879840-001

Server options

Hewlett Packard Enterprise continually improves and changes product parts. For complete and current supported parts information, see the **Hewlett Packard Enterprise PartSurfer website**.



Item	Description
1	**M.2 SSD riser board spare part**
2	**Secondary riser board spare parts**
3	**Primary riser board spare part**
4	**Omni-Path adapter spare part**
5	**Ethernet adapter spare part** **InfiniBand adapter spare parts**

Table Continued

Item	Description
6	**Smart Array controller spare parts**
7	**Media Module adapter spare parts**
8	**HPE Trusted Platform Module 2.0 spare part***
9	**SUV cable spare part***
10	**OPA adapter cable spare kit***
11	**Smart Array controller cable spare part***

*Not shown

M.2 SSD riser board spare part

Customer self repair: **Optional**

Description	Spare part number
M.2 SSD riser board	879849-001

Secondary riser board spare parts

Customer self repair: **Optional**

Description	Spare part number
FlexibleLOM riser board	879854-001
Secondary riser board for processor 1	879856-001
Secondary riser board for processor 2	879857-001

Primary riser board spare part

Customer self repair: **Optional**

Description	Spare part number
Primary riser board	879846-001

Omni-Path adapter spare part

Customer self repair: **Optional**

Description	Spare part number
HPE 100Gb Intel Omni-Path Adapter	879850-001
HPE 100Gb 1P OP101 QSFP28 x16 OPA Adapter	841703-001
HPE 100Gb 1P OP101 QSFP28 x8 OPA Adapter	841702-001

InfiniBand adapter spare parts

Customer self repair: **Optional**

Description	Spare part number
HPE IB FDR/EN 40Gb 2P 544+QSFP Adapter	764736-001
HPE IB FDR/EN 40Gb 2P 544+FLR-QSFP Adapter	779132-001
HPE IB EDR 100Gb 1P 841QSFP28 Adapter	878578-001
HPE IB EDR/EN 100Gb 2P 841QSFP28 Adapter	878579-001
HPE IB FDR/EN 40/50Gb 547FLR 2QSFP Adapter	879667-001
HPE IB EDR/EN 100Gb 1P 840QSFP28 Adapter	828107-001
HPE IB EDR/EN 100Gb 2P 840QSFP28 Adapter	828108-001
HPE IB HDR100/EN 100Gb 1P 940QSFP56 Adapter	P08356-001
HPE IB HDR100/EN 100Gb 2P 940QSFP56 Adapter	P08355-001
HPE IB HDR/EN 200Gb 1P 940QSFP56 Adapter	P08354-001
HPE IB HDR PCIe G3 Auxiliary card with 150 mm cable kit	P10330-001

Ethernet adapter spare part

Customer self repair: **Optional**

Description	Spare part number
HPE Ethernet 100Gb 1P 842QSFP28 Adapter	877697-001

Smart Array controller spare parts

Customer self repair: **Optional**

Description	Spare part number
HPE Smart Array E208i-p Controller	836266-001
HPE Smart Array E208e-p Controller	836267-001
HPE Smart Array P408i-p Controller	836269-001
HPE Smart Array P408e-p Controller	836270-001

Media Module adapter spare parts

Customer self repair: **Optional**

Description	Spare part number
Media Module Ethernet 10Gb 2P 568FLR-MMT Adapter	879848-001
Media Module Ethernet 1Gb 2P 368FLR-MMT Adapter	872161-001
Media Module Ethernet 10Gb 2P 568FLR-MMSFP+ Adapter	872162-001

HPE Trusted Platform Module 2.0 spare part

Customer self repair: **No**

Description	Spare part number
HPE Trusted Platform Module Gen 10, TAA	872159-001

SUV cable spare part

Customer self repair: **Mandatory**

Description	Spare part number
36-pin SUV cable	416003-001

For more information on the removal and replacement procedures, see **Disconnecting and replacing the SUV cable**.

OPA adapter cable spare kit

Customer self repair: **Optional**

Description	Spare part number
• OPA adapter sideband cable • OPA adapter IFP cable	P01290-001

Smart Array controller cable spare part

Customer self repair: **Optional**

Description	Spare part number
• Onboard S100i SR Gen10 controller SATA cable • Type-p controller Mini-SAS cable for the primary riser slot 1 • Type-p controller Mini-SAS cable for the secondary riser slot 2	879853-001

Customer self repair

Hewlett Packard Enterprise products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period Hewlett Packard Enterprise (or Hewlett Packard Enterprise service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, Hewlett Packard Enterprise will ship that part directly to you for replacement. There are two categories of CSR parts:

- **Mandatory**—Parts for which customer self repair is mandatory. If you request Hewlett Packard Enterprise to replace these parts, you will be charged for the travel and labor costs of this service.
- **Optional**—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that Hewlett Packard Enterprise replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

NOTE: Some Hewlett Packard Enterprise parts are not designed for customer self repair. In order to satisfy the customer warranty, Hewlett Packard Enterprise requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the Hewlett Packard Enterprise Support Center and a technician will help you over the telephone. Hewlett Packard Enterprise specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to Hewlett Packard Enterprise. In cases where it is required to return the defective part to Hewlett Packard Enterprise, you must ship the defective part back to Hewlett Packard Enterprise within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in Hewlett Packard Enterprise billing you for the replacement. With a customer self repair, Hewlett Packard Enterprise will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about the Hewlett Packard Enterprise CSR program, contact your local service provider. For the North American program, go to the **Hewlett Packard Enterprise CSR website**.

Parts only warranty service

Your Hewlett Packard Enterprise Limited Warranty may include a parts only warranty service. Under the terms of parts only warranty service, Hewlett Packard Enterprise will provide replacement parts free of charge.

For parts only warranty service, CSR part replacement is mandatory. If you request Hewlett Packard Enterprise to replace these parts, you will be charged for the travel and labor costs of this service.

Réparation par le client (CSR)

Les produits Hewlett Packard Enterprise comportent de nombreuses pièces CSR (Customer Self Repair = réparation par le client) afin de minimiser les délais de réparation et faciliter le remplacement des pièces défectueuses. Si pendant la période de diagnostic, Hewlett Packard Enterprise (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, Hewlett Packard Enterprise vous l'envoie directement. Il existe deux catégories de pièces CSR :

- **Obligatoire—**Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à Hewlett Packard Enterprise de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.
- **Facultatif—**Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à Hewlett Packard Enterprise de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces Hewlett Packard Enterprise ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, Hewlett Packard Enterprise exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention "Non" dans le Catalogue illustré.

Les pièces CSR sont livrées le jour ouvré suivant, dans la limite des stocks disponibles et selon votre situation géographique. Si votre situation géographique le permet et que vous demandez une livraison le jour même ou dans les 4 heures, celle-ci vous sera facturée. Pour toute assistance, appelez le Centre d'assistance Hewlett Packard Enterprise pour qu'un technicien vous aide au téléphone Dans les documents envoyés avec la pièce de rechange CSR, Hewlett Packard Enterprise précise s'il est nécessaire de lui retourner la pièce défectueuse. Si c'est le cas, vous devez le faire dans le délai indiqué, généralement cinq (5) jours ouvrés. La pièce et sa documentation doivent être retournées dans l'emballage fourni. Si vous ne retournez pas la pièce défectueuse, Hewlett Packard Enterprise se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, Hewlett Packard Enterprise supporte l'ensemble des frais d'expédition et de retour, et détermine la société de courses ou le transporteur à utiliser.

Pour plus d'informations sur le programme CSR de Hewlett Packard Enterprise, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site **Web Hewlett Packard Enterprise**.

Service de garantie "pièces seules"

Votre garantie limitée Hewlett Packard Enterprise peut inclure un service de garantie "pièces seules". Dans ce cas, les pièces de rechange fournies par Hewlett Packard Enterprise ne sont pas facturées.

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à Hewlett Packard Enterprise de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

Riparazione da parte del cliente

Per abbreviare i tempi di riparazione e garantire una maggiore flessibilità nella sostituzione di parti difettose, i prodotti Hewlett Packard Enterprise sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica Hewlett Packard Enterprise (o un centro di servizi o di assistenza Hewlett Packard Enterprise) identifica il guasto come riparabile mediante un ricambio CSR, Hewlett Packard Enterprise lo spedirà direttamente al cliente per la sostituzione. Vi sono due categorie di parti CSR:

- **Obbligatorie—**Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad Hewlett Packard Enterprise, deve sostenere le spese di spedizione e di manodopera per il servizio.
- **Opzionali—**Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad Hewlett Packard Enterprise, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti Hewlett Packard Enterprise non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, Hewlett Packard Enterprise richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

In base alla disponibilità e alla località geografica, le parti CSR vengono spedite con consegna entro il giorno lavorativo seguente. La consegna nel giorno stesso o entro quattro ore è offerta con un supplemento di costo solo in alcune zone. In caso di necessità si può richiedere l'assistenza telefonica di un addetto del centro di supporto tecnico Hewlett Packard Enterprise. Nel materiale fornito con una parte di ricambio CSR, Hewlett Packard Enterprise specifica se il cliente deve restituire dei component. Qualora sia richiesta la resa ad Hewlett Packard Enterprise del componente difettoso, lo si deve spedire ad Hewlett Packard Enterprise entro un determinato periodo di tempo, generalmente cinque (5) giorni lavorativi. Il componente difettoso deve essere restituito con la documentazione associata nell'imballo di spedizione fornito. La mancata restituzione del componente può comportare la fatturazione del ricambio da parte di Hewlett Packard Enterprise. Nel caso di riparazione da parte del cliente, Hewlett Packard Enterprise sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di Hewlett Packard Enterprise, contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento **al sito Web**.

Servizio di garanzia per i soli componenti

La garanzia limitata Hewlett Packard Enterprise può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, Hewlett Packard Enterprise fornirà gratuitamente le parti di ricambio.

Per il servizio di garanzia per i soli componenti è obbligatoria la formula CSR che prevede la riparazione da parte del cliente. Se il cliente invece richiede la sostituzione ad Hewlett Packard Enterprise dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

Hewlett Packard Enterprise Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn Hewlett Packard Enterprise (oder ein Hewlett Packard Enterprise Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen Hewlett Packard Enterprise dieses Bauteil zum Austausch direkt zu. CSR-Teile werden in zwei Kategorien unterteilt:

- **Zwingend**—Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.
- **Optional**—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

HINWEIS: Einige Hewlett Packard Enterprise Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem Hewlett Packard Enterprise Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das Hewlett Packard Enterprise Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien von Hewlett Packard Enterprise, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an Hewlett Packard Enterprise zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an Hewlett Packard Enterprise zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann Hewlett Packard Enterprise Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt Hewlett Packard Enterprise für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das Hewlett Packard Enterprise Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der **Hewlett Packard Enterprise Website unter**.

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

Ihre Hewlett Packard Enterprise Garantie umfasst möglicherweise einen Parts-only Warranty Service (Garantieservice ausschließlich für Teile). Gemäß den Bestimmungen des Parts-only Warranty Service stellt Hewlett Packard Enterprise Ersatzteile kostenlos zur Verfügung.

Für den Parts-only Warranty Service ist das CSR-Verfahren zwingend vorgegeben. Wenn Sie den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

Reparaciones del propio cliente

Los productos de Hewlett Packard Enterprise incluyen muchos componentes que el propio usuario puede reemplazar (Customer Self Repair, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar

sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, Hewlett Packard Enterprise (o los proveedores o socios de servicio de Hewlett Packard Enterprise) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, Hewlett Packard Enterprise le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio**—Componentes cuya reparación por parte del usuario es obligatoria. Si solicita a Hewlett Packard Enterprise que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
- **Opcional**—Componentes cuya reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que Hewlett Packard Enterprise realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes de Hewlett Packard Enterprise no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, Hewlett Packard Enterprise pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de Hewlett Packard Enterprise y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, Hewlett Packard Enterprise especificará si los componentes defectuosos deberán devolverse a Hewlett Packard Enterprise. En aquellos casos en los que sea necesario devolver algún componente a Hewlett Packard Enterprise, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, Hewlett Packard Enterprise podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, Hewlett Packard Enterprise se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de Hewlett Packard Enterprise, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite **la página web de Hewlett Packard Enterprise CSR**.

Servicio de garantía exclusivo de componentes

La garantía limitada de Hewlett Packard Enterprise puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, Hewlett Packard Enterprise le facilitará los componentes de repuesto sin cargo adicional alguno.

Para este servicio de garantía exclusivo de componentes, es obligatoria la sustitución de componentes por parte del usuario (CSR). Si solicita a Hewlett Packard Enterprise que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

Customer Self Repair

Veel onderdelen in Hewlett Packard Enterprise producten zijn door de klant zelf te repareren, waardoor de reparatieduur tot een minimum beperkt kan blijven en de flexibiliteit in het vervangen van defecte onderdelen groter is. Deze onderdelen worden CSR-onderdelen (Customer Self Repair) genoemd. Als Hewlett Packard Enterprise (of een Hewlett Packard Enterprise Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt Hewlett Packard Enterprise dat onderdeel rechtstreeks naar u, zodat u het defecte onderdeel daarmee kunt vervangen. Er zijn twee categorieën CSR-onderdelen:

- **Verplicht**—Onderdelen waarvoor reparatie door de klant verplicht is. Als u Hewlett Packard Enterprise verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.
- **Optioneel**—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter Hewlett Packard Enterprise verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

OPMERKING: Sommige Hewlett Packard Enterprise onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

Afhankelijk van de leverbaarheid en de locatie worden CSR-onderdelen verzonden voor levering op de eerstvolgende werkdag. Levering op dezelfde dag of binnen vier uur kan tegen meerkosten worden aangeboden, indien dit mogelijk is gezien de locatie. Indien assistentie is gewenst, belt u het Hewlett Packard Enterprise Support Center om via de telefoon ondersteuning van een technicus te ontvangen. Hewlett Packard Enterprise vermeldt in de documentatie bij het vervangende CSR-onderdeel of het defecte onderdeel aan Hewlett Packard Enterprise moet worden geretourneerd. Als het defecte onderdeel aan Hewlett Packard Enterprise moet worden teruggezonden, moet u het defecte onderdeel binnen een bepaalde periode, gewoonlijk vijf (5) werkdagen, retourneren aan Hewlett Packard Enterprise. Het defecte onderdeel moet met de bijbehorende documentatie worden geretourneerd in het meegeleverde verpakkingsmateriaal. Als u het defecte onderdeel niet terugzendt, kan Hewlett Packard Enterprise u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt Hewlett Packard Enterprise alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest Hewlett Packard Enterprise zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van Hewlett Packard Enterprise. Informatie over Service Partners vindt u op de **Hewlett Packard Enterprise website**.

Garantieservice "Parts Only"

Het is mogelijk dat de Hewlett Packard Enterprise garantie alleen de garantieservice "Parts Only" omvat. Volgens de bepalingen van de Parts Only garantieservice zal Hewlett Packard Enterprise kosteloos vervangende onderdelen ter beschikking stellen.

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u Hewlett Packard Enterprise verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht

Reparo feito pelo cliente

Os produtos da Hewlett Packard Enterprise são projetados com muitas peças para reparo feito pelo cliente (CSR) de modo a minimizar o tempo de reparo e permitir maior flexibilidade na substituição de peças com defeito. Se, durante o período de diagnóstico, a Hewlett Packard Enterprise (ou fornecedores/parceiros da Hewlett Packard Enterprise) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a Hewlett Packard Enterprise enviará a peça diretamente ao cliente. Há duas categorias de peças CSR:

- **Obrigatória**—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a Hewlett Packard Enterprise substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
- **Opcional**—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a Hewlett Packard Enterprise as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

OBSERVAÇÃO: Algumas peças da Hewlett Packard Enterprise não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a Hewlett Packard Enterprise exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da Hewlett Packard Enterprise para

que um técnico o ajude por telefone. A Hewlett Packard Enterprise especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à Hewlett Packard Enterprise. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à Hewlett Packard Enterprise, você deverá enviar a peça com defeito de volta para a Hewlett Packard Enterprise dentro do período de tempo definido, normalmente em 5 (cinco) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a Hewlett Packard Enterprise poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a Hewlett Packard Enterprise paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da Hewlett Packard Enterprise, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, **visite o site da Hewlett Packard Enterprise**.

Serviço de garantia apenas para peças

A garantia limitada da Hewlett Packard Enterprise pode incluir um serviço de garantia apenas para peças. Segundo os termos do serviço de garantia apenas para peças, a Hewlett Packard Enterprise fornece as peças de reposição sem cobrar nenhuma taxa.

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a Hewlett Packard Enterprise substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

カスタマーセルフリペア

修理時間を短縮し、故障部品の交換における高い柔軟性を確保するために、Hewlett Packard Enterprise製品には多数のカスタマーセルフリペア（CSR）部品があります。診断の際に、CSR部品を使用すれば修理ができるとHewlett Packard Enterprise（Hewlett Packard EnterpriseまたはHewlett Packard Enterprise正規保守代理店）が判断した場合、Hewlett Packard Enterpriseはその部品を直接、お客様に発送し、お客様に交換していただきます。CSR部品には以下の2種類があります。

- **必須** - カスタマーセルフリペアが必須の部品。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。
- **任意** - カスタマーセルフリペアが任意である部品。この部品もカスタマーセルフリペア用です。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

注：Hewlett Packard Enterprise製品の一部の部品は、カスタマーセルフリペアの対象外です。製品の保証を継続するためには、Hewlett Packard EnterpriseまたはHewlett Packard Enterprise正規保守代理店による交換作業が必須となります。部品カタログには、当該部品がカスタマーセルフリペア除外品である旨が記載されています。

部品供給が可能な場合、地域によっては、CSR部品を翌営業日に届くように発送します。また、地域によっては、追加費用を負担いただくことにより同日または4時間以内に届くように発送することも可能な場合があります。サポートが必要なときは、Hewlett Packard Enterpriseサポートセンターに電話していただければ、技術者が電話でアドバイスします。交換用のCSR部品または同梱物には、故障部品をHewlett Packard Enterpriseに返送する必要があるかどうかが表示されています。故障部品をHewlett Packard Enterpriseに返送する必要がある場合は、指定期限内（通常は5営業日以内）に故障部品をHewlett Packard Enterpriseに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、Hewlett Packard Enterpriseから部品費用が請求されます。カスタマーセルフリペアの際には、Hewlett Packard Enterpriseは送料および部品返送費を全額負担し、使用する宅配便会社や運送会社を指定します。

部品のみ保証サービス

Hewlett Packard Enterprise保証サービスには、部品のみ保証サービスが適用される場合があります。このサービスでは、交換部品は無償で提供されます。

部品のみ保証サービスにおいては、CSR部品をお客様により交換作業していただくことが必須になります。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様のご負担となります。

客户自行维修

Hewlett Packard Enterprise 产品提供许多客户自行维修 (CSR) 部件，以尽可能缩短维修时间和在更换缺陷部件方面提供更大的灵活性。如果在诊断期间 Hewlett Packard Enterprise（或Hewlett Packard Enterprise 服务提供商或服务合作伙伴）确定可以通过使用 CSR 部件完成维修，Hewlett Packard Enterprise 将直接把该部件发送给您进行更换。有两类 CSR 部件：

- **强制性的** — 要求客户必须自行维修的部件。如果您请求 Hewlett Packard Enterprise 更换这些部件，则必须为该服务支付差旅费和人工费用。
- **可选的** — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 Hewlett Packard Enterprise 为您更换这些部件，则根据为您的产品指定的保修服务类型，Hewlett Packard Enterprise 可能收取或不再收取任何附加费用。

注：某些 Hewlett Packard Enterprise 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，Hewlett Packard Enterprise 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

CSR 部件将在下一个工作日发运（取决于备货情况和允许的地理范围）。在允许的地理范围内，可在当天或四小时内发运，但要收取额外费用。如果需要帮助，您可以致电 Hewlett Packard Enterprise 技术支持中心，将会有技术人员通过电话为您提供帮助。Hewlett Packard Enterprise 会在随更换的 CSR 部件发运的材料中指明是否必须将有缺陷的部件返还给 Hewlett Packard Enterprise。如果要求您将有缺陷的部件返还给 Hewlett Packard Enterprise，那么您必须在规定的期限内（通常是五 (5) 个工作日）将缺陷部件发给 Hewlett Packard Enterprise。有缺陷的部件必须随所提供的发运材料中的相关文件一起返还。如果未能送还有缺陷的部件，Hewlett Packard Enterprise 可能会要求您支付更换费用。客户自行维修时，Hewlett Packard Enterprise 将承担所有相关运输和部件返回费用，并指定快递商/承运商。

有关 Hewlett Packard Enterprise 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 Hewlett Packard Enterprise 网站 (http://www.hpe.com/support/selfrepair)。

仅部件保修服务

您的 Hewlett Packard Enterprise 有限保修服务可能涉及仅部件保修服务。根据仅部件保修服务条款的规定，Hewlett Packard Enterprise 将免费提供更换的部件。

仅部件保修服务要求进行 CSR 部件更换。如果您请求 Hewlett Packard Enterprise 更换这些部件，则必须为该服务支付差旅费和人工费用。

客戶自行維修

Hewlett Packard Enterprise 產品設計了許多「客戶自行維修」(CSR) 的零件以減少維修時間，並且使得更換瑕疵零件時能有更大的彈性。如果在診斷期間，Hewlett Packard Enterprise (或 Hewlett Packard Enterprise 服務供應商或維修夥伴) 辨認出此項維修工作可以藉由使用 CSR 零件來完成，則 Hewlett Packard Enterprise 將直接寄送該零件給您作更換。CSR 零件分為兩種類別：

- **強制的** — 客戶自行維修所使用的零件是強制性的。如果您要求 Hewlett Packard Enterprise 更換這些零件，Hewlett Packard Enterprise 將會向您收取此服務所需的外出費用與勞動成本。
- **選購的** — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 Hewlett Packard Enterprise 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

備註：某些 Hewlett Packard Enterprise 零件沒有消費者可自行維修的設計。為符合客戶保固，Hewlett Packard Enterprise 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

基於材料取得及環境允許的情況下，CSR 零件將於下一個工作日以快遞寄送。在環境的允許下當天或四小時內送達，則可能需要額外的費用。若您需要協助，可致電 Hewlett Packard Enterprise 支援中心，會有一位技術人員透過電話來協助您。不論損壞的零件是否必須退回，Hewlett Packard Enterprise 皆會在與 CSR 替換零件一起運送的材料中註明。若要將損壞的零件退回 Hewlett Packard Enterprise，您必須在指定的一段時間內 (通常為五 (5) 個工作天)，將損壞的零件寄回 Hewlett Packard Enterprise。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，Hewlett Packard Enterprise 可能要向您收取替換費用。針對客戶自行維修情形，Hewlett Packard Enterprise 將負責所有運費及零件退還費用，並指定使用何家快遞/貨運公司。

如需 Hewlett Packard Enterprise 的 CSR 方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 Hewlett Packard Enterprise 的 CSR 網站frepair (http://www.hpe.com/support/selfrepair)。

僅限零件的保固服務

您的「Hewlett Packard Enterprise 有限保固」可能包含僅限零件的保固服務。在僅限零件的保固服務情況下，Hewlett Packard Enterprise 將免費提供替換零件。

針對僅限零件的保固服務，CSR 零件替換是強制性的。如果您要求 Hewlett Packard Enterprise 更換這些零件，Hewlett Packard Enterprise 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

Hewlett Packard Enterprise 제품은 수리 시간을 최소화하고 결함이 있는 부품 교체 시 더욱 융통성을 발휘할 수 있도록 하기 위해 고객 셀프 수리(CSR) 부품을 다량 사용하여 설계되었습니다. 진단 기간 동안 Hewlett Packard Enterprise(또는 Hewlett Packard Enterprise 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 Hewlett Packard Enterprise는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **필수 -** 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 Hewlett Packard Enterprise에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
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부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 Hewlett Packard Enterprise에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

Removal and replacement procedures

Required tools

The following tools might be required to perform some procedures:

- T-10 Torx screwdriver
- T-15 Torx screwdriver
- T-30 Torx screwdriver
- Phillips No. 1 screwdriver

Safety considerations

Before performing service procedures, review all the safety information.

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.

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. If the server is installed higher than chest level, a third person may be required to help align the server.
- Use caution when installing the server in or removing the server from the rack; 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. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC/DC power is removed.

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

- Do not disassemble, crush, or puncture the energy pack.
- Do not short external contacts.
- Do not dispose of the energy pack in fire or water.

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

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

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

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

CAUTION: Protect the server from power fluctuations and temporary interruptions with a regulating 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.

Rack warnings

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

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

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

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

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

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

Preparation procedures

To access some components and perform certain service procedures, you must perform one or more of the following procedures:

- **Power down the server**
- **Remove the server from the chassis**
- **Remove the air baffle**
- **Remove the bayonet board**
- **Remove the secondary riser blank**
- **Remove the secondary riser cage**
- **Remove the primary riser blank**
- **Remove the primary riser cage**
- **Power up the server**

Power down the server

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

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

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

- Press and release the Power On/Standby button.

  This method 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 5.

  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.

Remove the server from the chassis

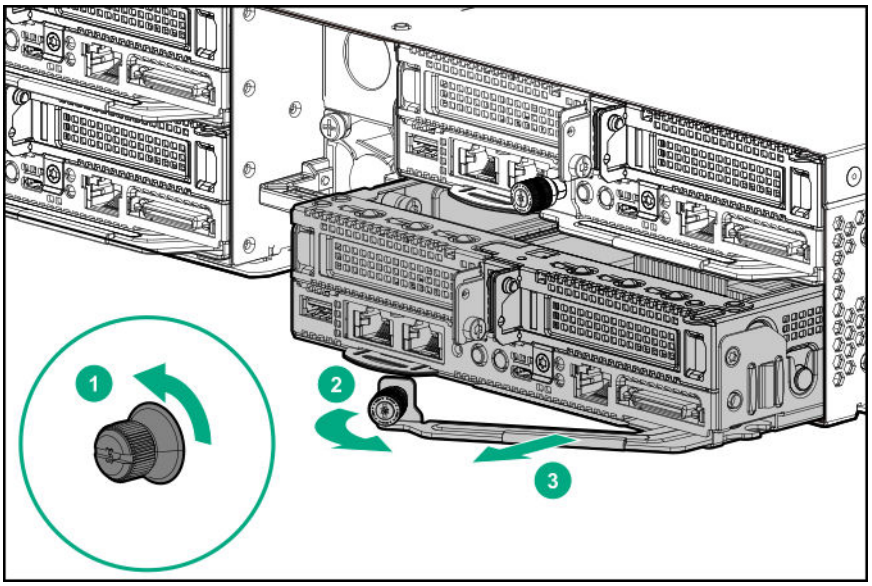
CAUTION: To prevent improper cooling and thermal damage, do not operate the chassis unless all bays are populated with a component or a blank.

CAUTION: To avoid damage to the server or server blank:

- Always support the bottom of the server or server blank when removing it from the chassis.
- Do not use the release lever to carry the server or server blank.

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. Remove the server from the chassis:
   a. Loosen the release lever thumbscrew.
   b. Open the release lever.
   c. Use the release lever to pull the server out of the chassis.



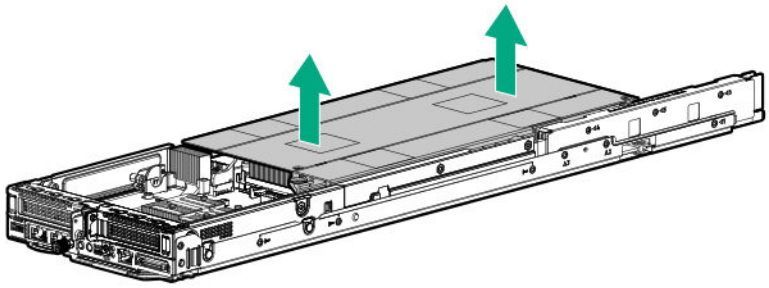
Remove the air baffle

CAUTION: For proper cooling, do not operate the server without the baffles, expansion slot covers, or blanks installed.

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.

3. **Remove the server from the chassis**.
4. Remove the air baffle.



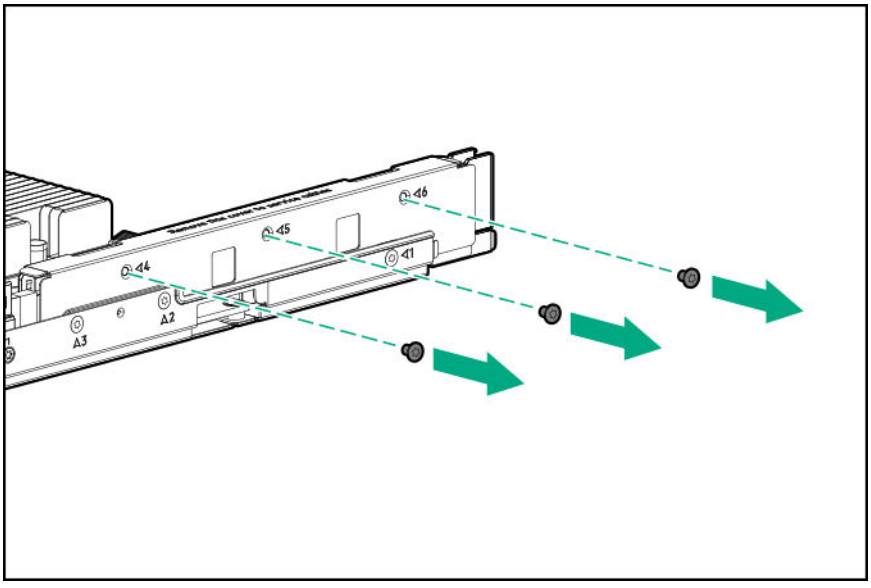
Remove the bayonet board

Prerequisites

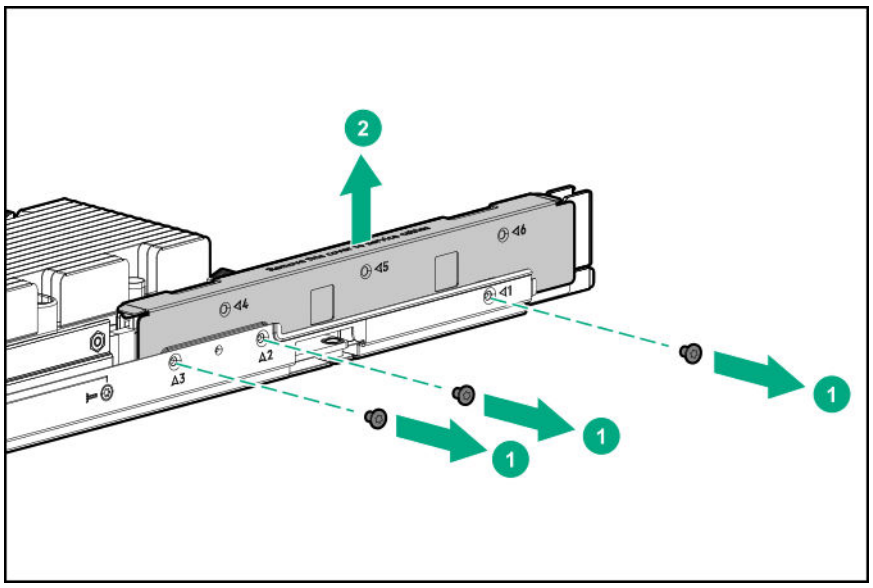
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

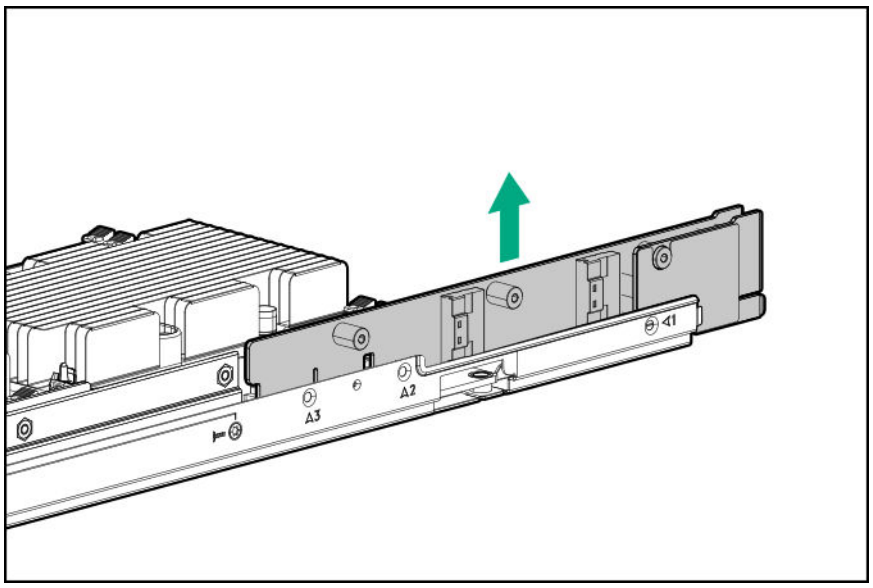
1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. Remove the bayonet board:
   a. Remove the screws securing the cover to the bayonet board.



   b. Remove the screws securing the cover to the server tray, and then remove the cover.



c. Disconnect the bayonet board cables, and then remove the bayonet board.



Remove the secondary riser blank

CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blank or riser cage is installed.

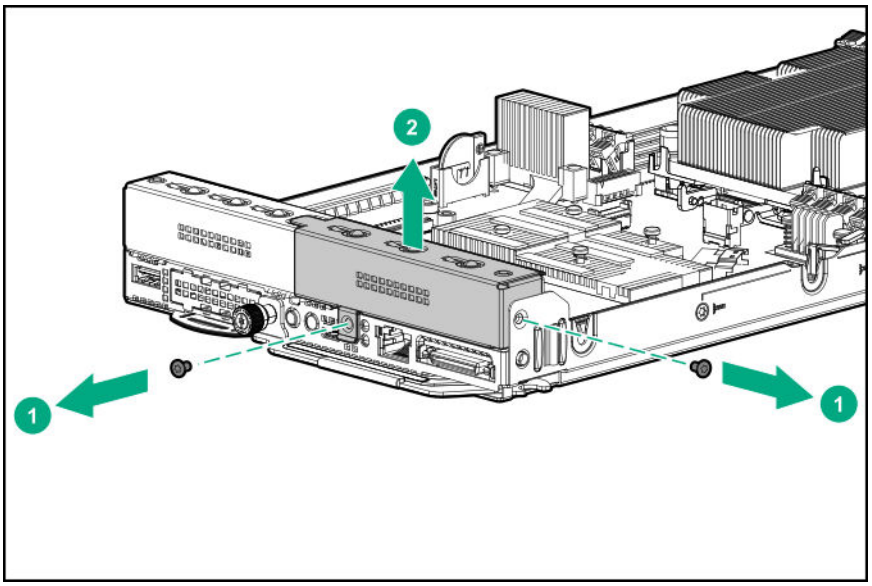
Prerequisites

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

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.

3. **Remove the server from the chassis**.
4. Remove the secondary riser blank.



Remove the secondary riser cage

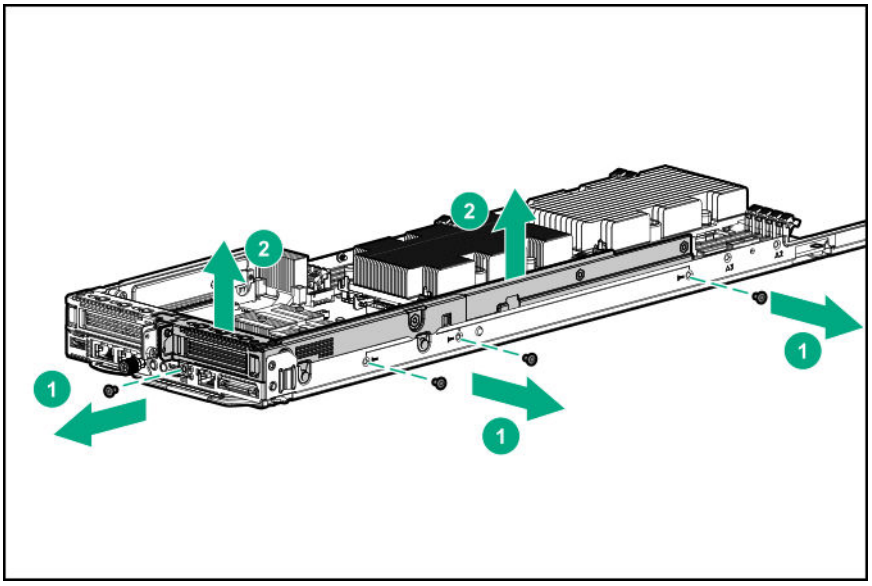
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blank or riser cage is installed.

Prerequisites

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

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. **Remove the bayonet board**.
6. If an expansion board with internal cabling is installed on the riser cage, disconnect these internal cables from the expansion board.
7. Disconnect all cables from the riser board.
8. Remove the secondary riser cage.



Remove the primary riser blank

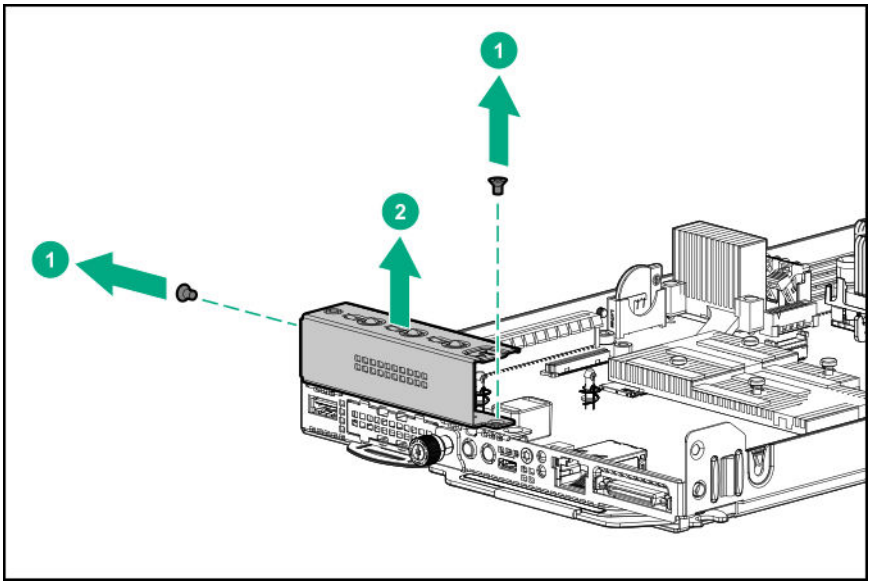
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blank or riser cage is installed.

Prerequisites

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

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. If a secondary riser cage is installed, **remove the bayonet board**.
5. Do one of the following:
   - **Remove the secondary riser blank**.
   - **Remove the secondary riser cage**.
6. Remove the primary riser blank.



Remove the primary riser cage

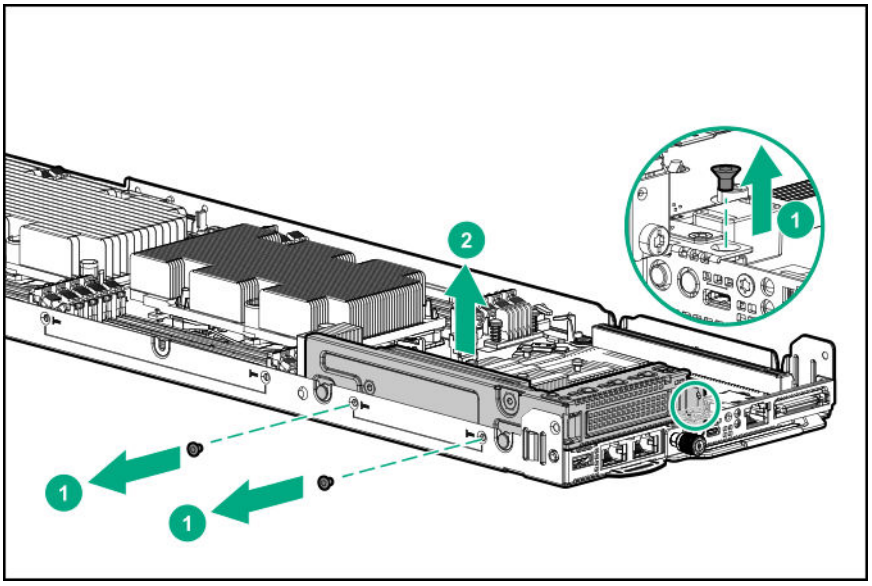
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless either riser blank or riser cage is installed.

Prerequisites

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

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. If a secondary riser option is installed, **remove the bayonet board**.
6. Do one of the following:
   - **Remove the secondary riser blank**.
   - **Remove the secondary riser cage**.
7. If an expansion board with internal cabling is installed on the riser cage, disconnect these internal cables from the expansion board.
8. Disconnect all cables from the riser board.
9. Remove the primary riser cage.



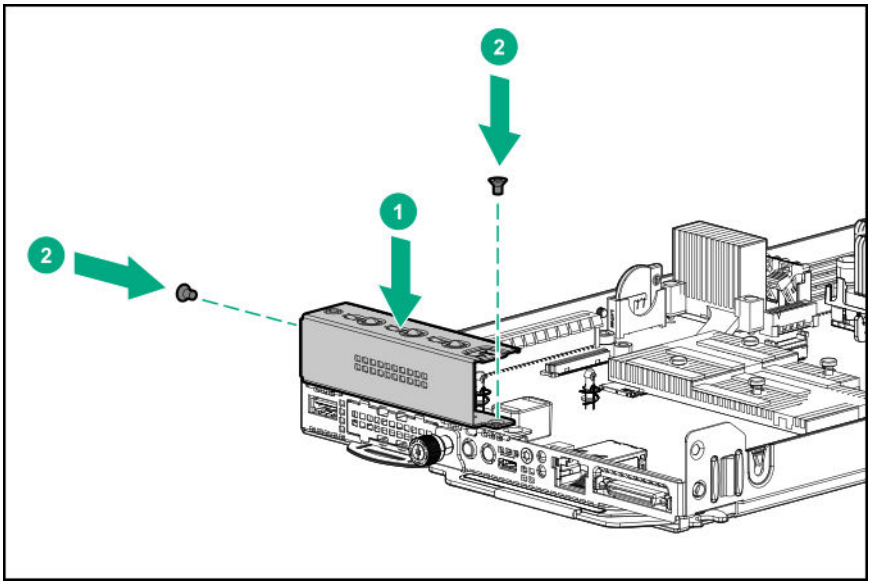
Install the primary riser blank

Prerequisites

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

Procedure

1. Install the primary riser blank.



2. Do one of the following:
   - **Install the secondary riser blank**.
   - **Install the secondary riser cage**.
3. If removed, **install the bayonet board**.

4. **Install the server into the chassis**.
5. Connect all peripheral cables to the server.
6. **Power up the server**.

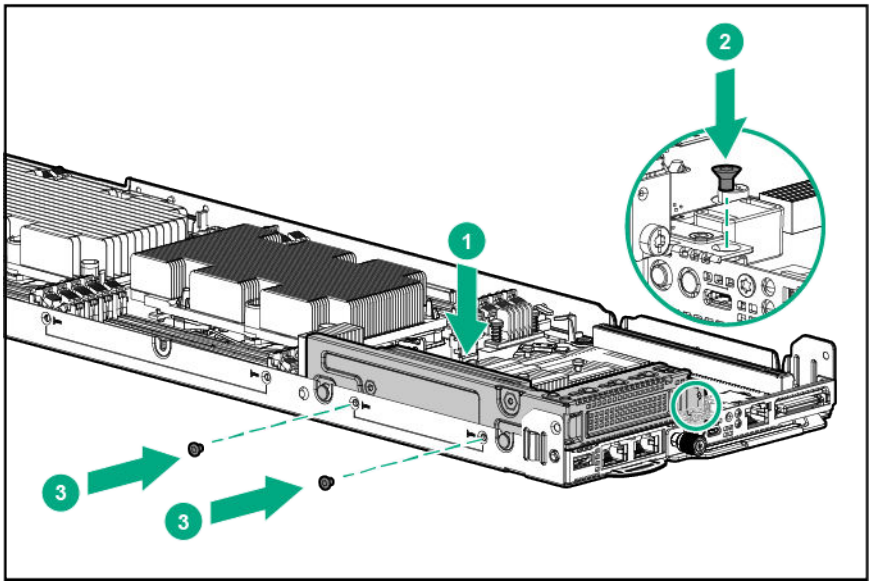
Install the primary riser cage

Prerequisites

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

Procedure

1. Install the primary riser cage. Make sure that the riser board is firmly seated in its system board the connector.



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

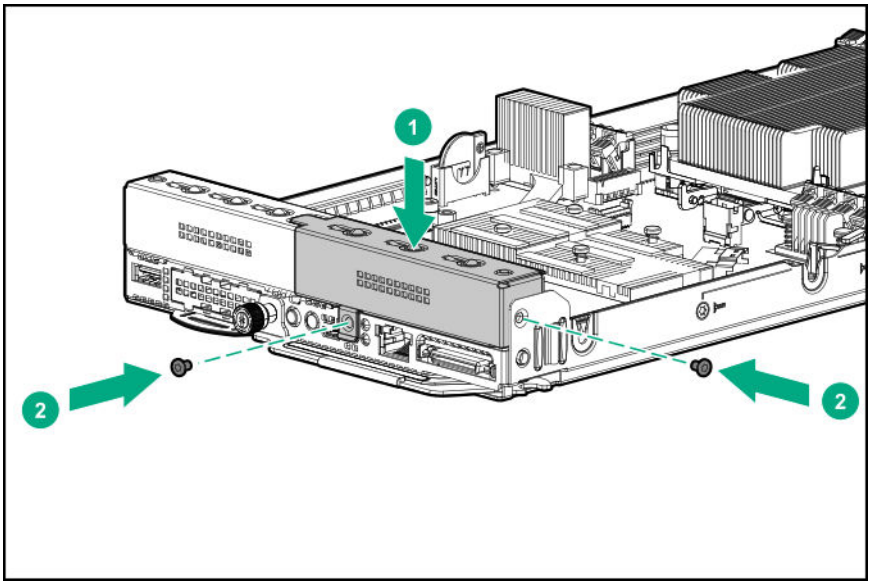
Install the secondary riser blank

Prerequisites

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

Procedure

1. Install the secondary riser blank.



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

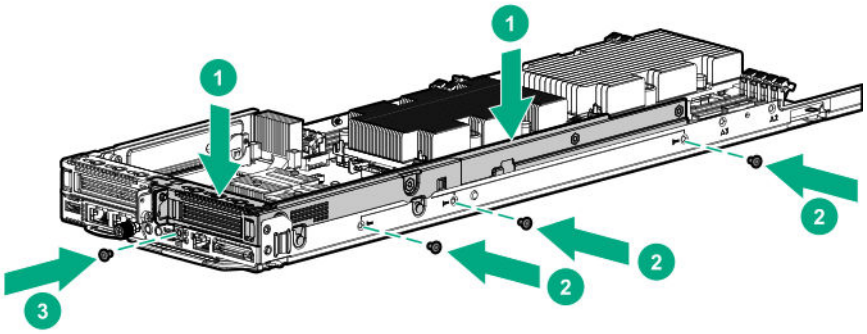
Install the secondary riser cage

Prerequisites

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

Procedure

1. Install the secondary riser cage. Make sure that the riser board is firmly seated in its system board connectors.



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**.

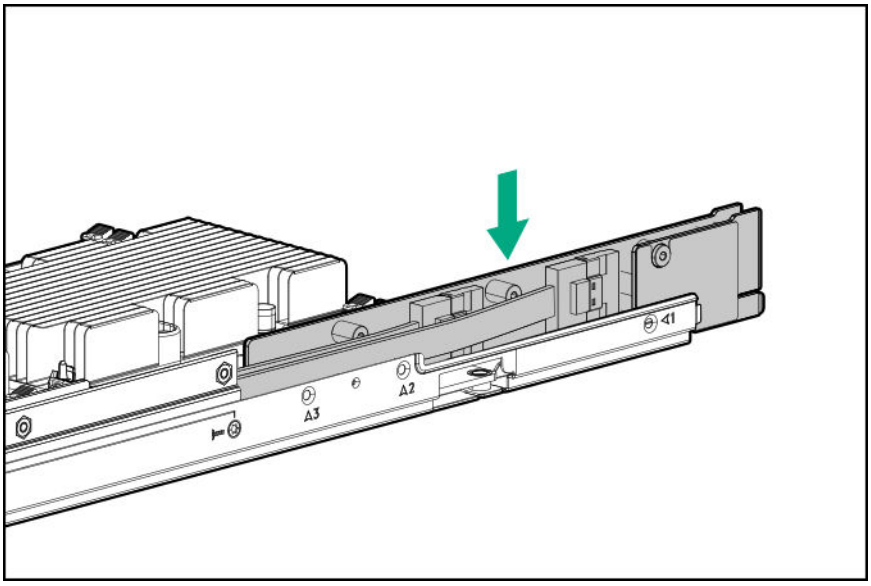
Install the bayonet board

Prerequisites

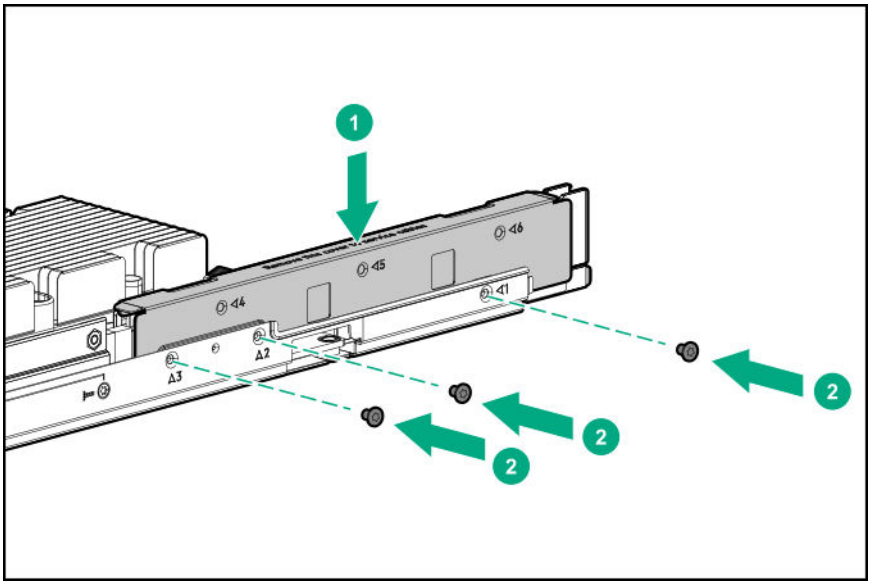
Before you perform this procedure, make sure that you have a T-10 Torx screwdriver available.

Procedure

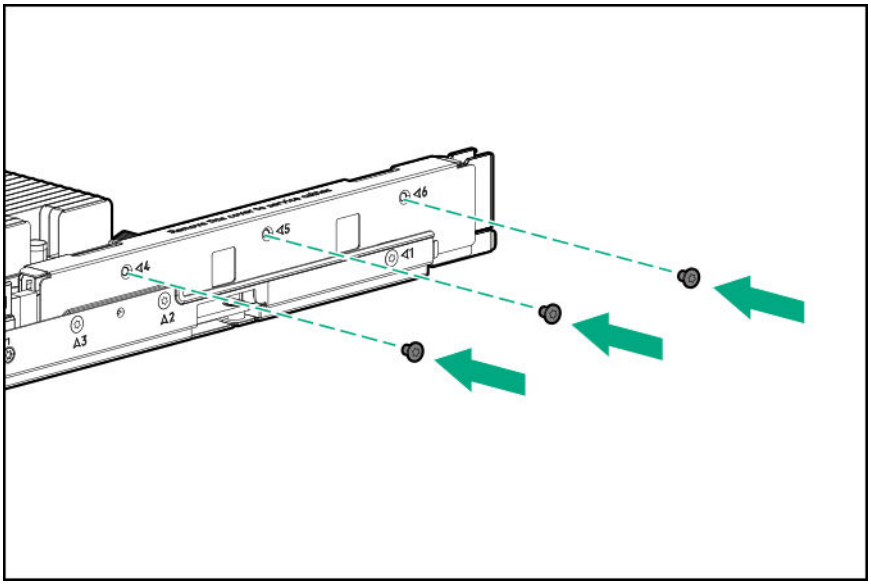
1. Install the bayonet board:
   a. Connect all the bayonet board cables.
   b. Install the bayonet board. Make sure that the board is firmly seated in the connector.



c. Install the bayonet board cover, and then install the screws to secure it to the server tray.



d. Install the screws to secure the cover to the bayonet board.

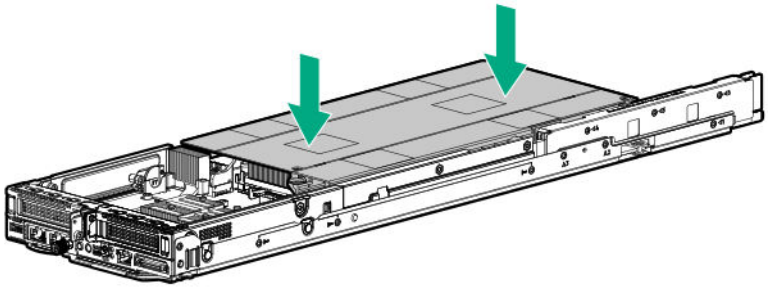


2. **Install the air baffle**.
3. **Install the server into the chassis**.
4. Connect all peripheral cables to the server.
5. **Power up the server**.

Install 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**.

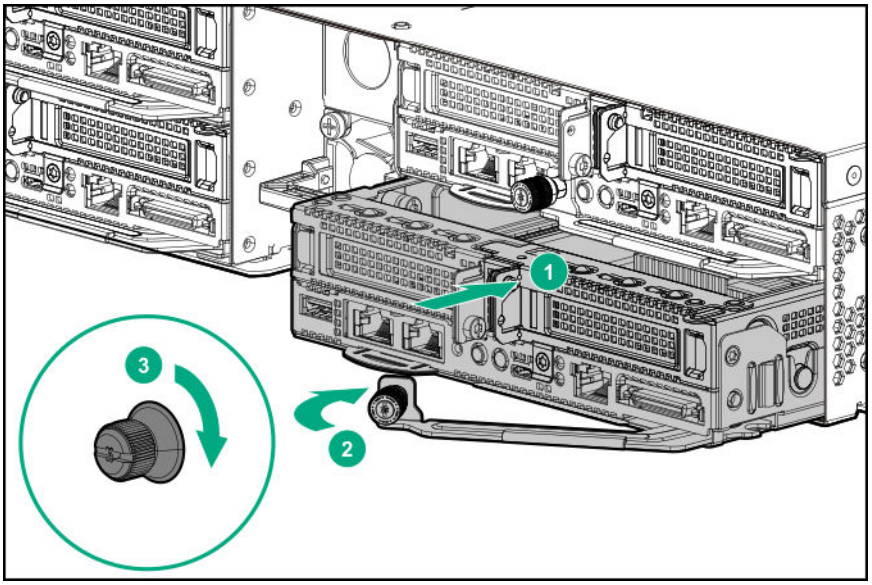
Install the server into the chassis

CAUTION: To avoid damage to the server or server blank:

- Always support the bottom of the server or server blank when removing it from the chassis.
- Do not use the release lever to carry the server or server blank.

Procedure

1. Slide the server into the chassis.
2. Close the release lever.
3. Tighten the release lever thumbscrew.



4. Connect all peripheral cables to the server.
5. **Power up the server**.

Power 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 5.
- Press and release the Power On/Standby button.

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

Selecting an advanced fan cooling method

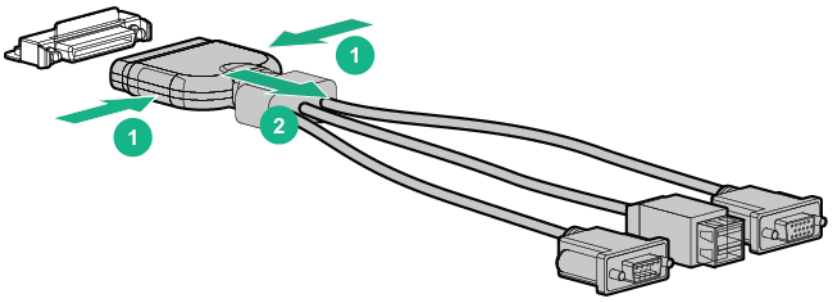
Procedure

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)** > **Advanced Options** > **Fan and Thermal Options** > **Thermal Configuration**.
3. Select one of the advanced fan cooling method:
   - **Enhanced CPU Cooling**
   - **Maximum Cooling**
4. Press **F10** to save the configuration.

Disconnecting and replacing the SUV cable

Procedure

1. Disconnect the peripheral devices connected to the SUV cable.
2. Disconnect the SUV cable:
   a. Press and hold both sides of the SUV connector.
   b. Disconnect the cable from the SUV port.



To replace the component, reverse the removal procedure.

Removing and replacing the bayonet boards

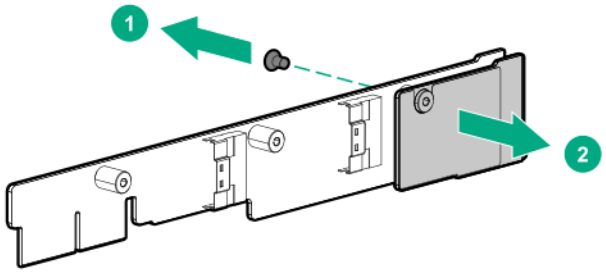
CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

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

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. **Remove the bayonet board**.
6. Separate the small bayonet boards from the large bayonet board.



To replace the component, reverse the removal procedure.

Removing and replacing an expansion board

CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

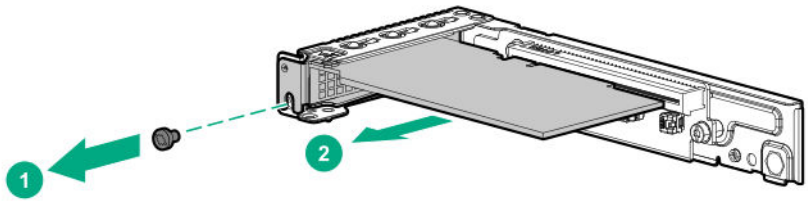
Before you perform this procedure, make sure that you have a T-10 and T-15 Torx screwdrivers available.

Procedure

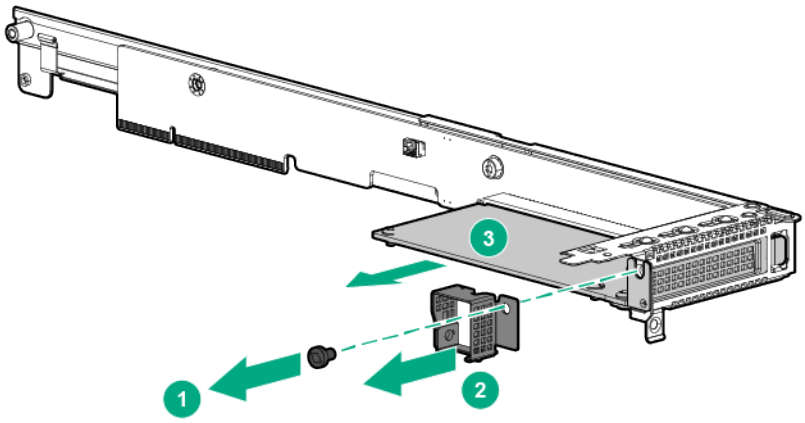
1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. If a secondary PCIe riser cage is installed, **remove the bayonet board**.
5. If replacing the expansion board installed in slot 1, do one of the following:

- **Remove the secondary riser cage**
- **Remove the primary riser cage**

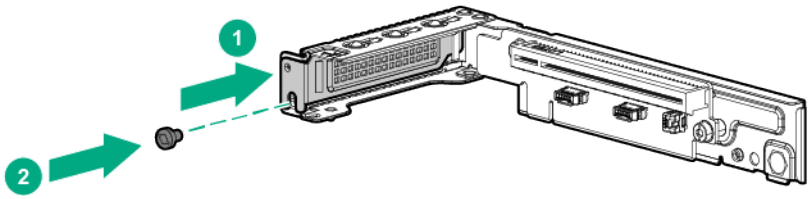
6. If the expansion board has internal cabling, disconnect these internal cables from the expansion board.
7. Remove an expansion board.
   - Primary riser cage



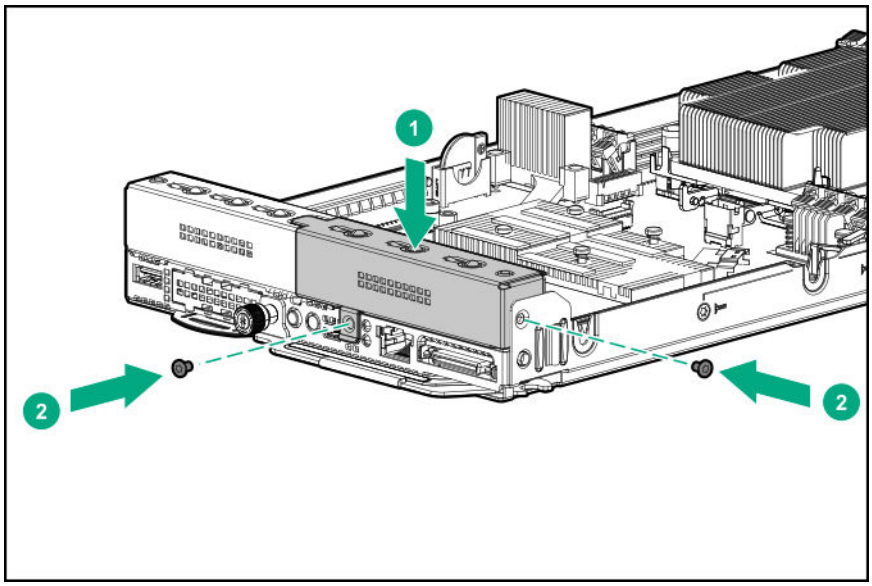
   - Secondary riser cage



8. If you do not intend to replace the expansion board, install the riser slot blank.
   - Primary riser cage



- Secondary riser cage



To replace the component, reverse the removal procedure.

Removing and replacing an HPE InfiniBand HDR/Ethernet 200 GB 1-port 940QSFP56 x16 adapter and auxiliary card

An HPE InfiniBand HDR/Ethernet 200 GB 1-port 940QSFP56 x16 adapter is installed in slot 1 and auxiliary card is installed in slot 2.

Prerequisites

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

- T-15 Torx screwdriver
- Phillips No. 2 screwdriver

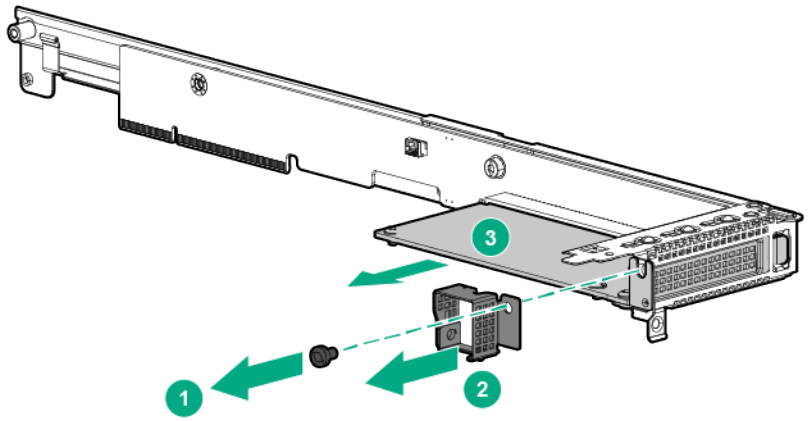
Procedure

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

a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

3. 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 riser cage**.
8. Remove the auxiliary card from slot 2.



Retain the secondary riser retention cover and screw for future use.

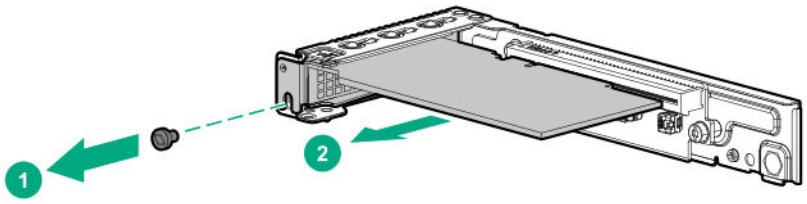
9. Disconnect the cables from the auxiliary card:

a. Open the retention clip and slide it away from the connectors.

b. Gently pull the top corner of the cable latch door upwards.

c. Disconnect the black and white cables from the auxiliary card.

10. **Remove the primary riser cage**.
11. Remove the adapter from slot 1.

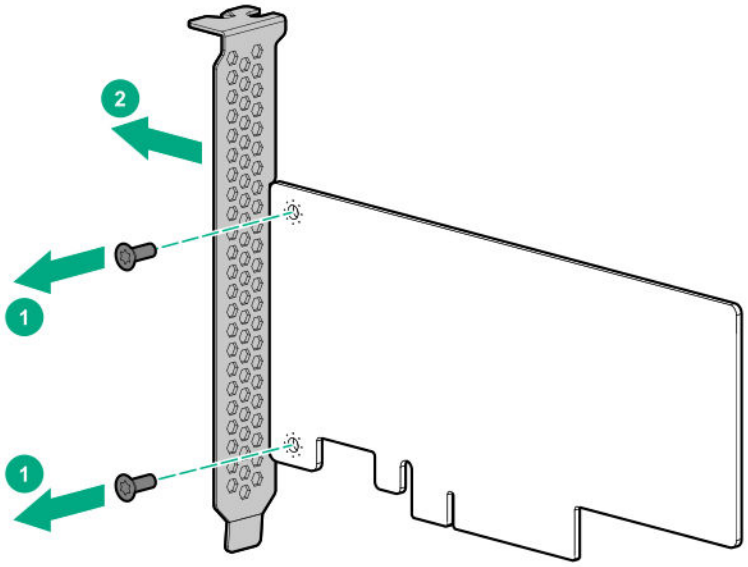


Retain the screw for future use.

12. To disconnect the cables from the adapter, **repeat step 9**.

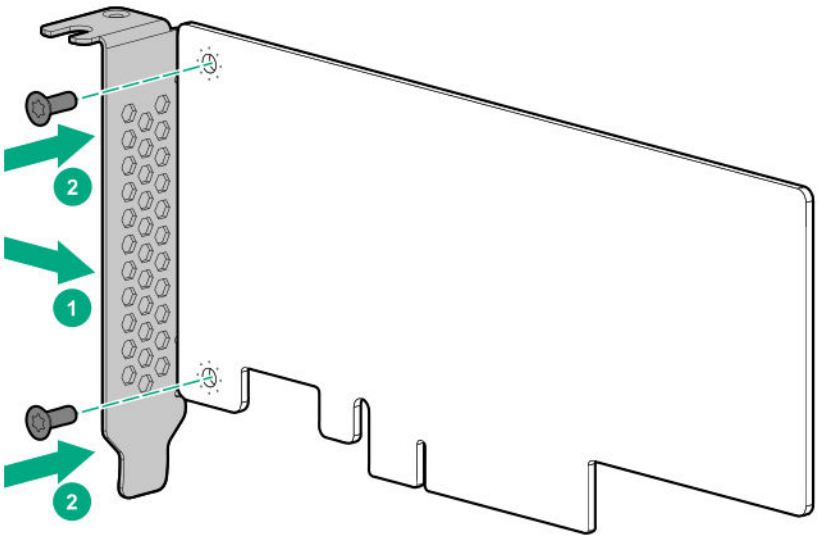
To replace the component:

1. If installed, remove the full-height bracket from the adapter.

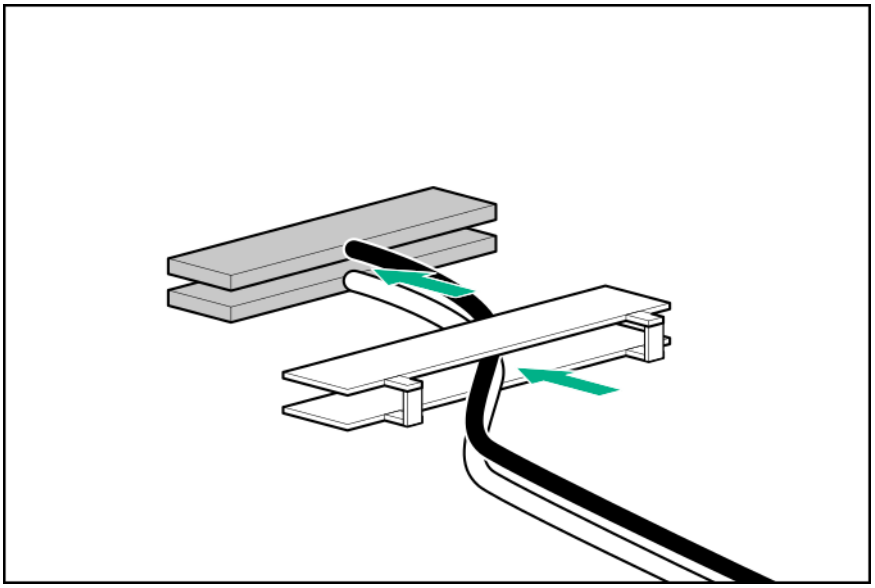


Retain the full-height bracket and screws for future use.

2. Install the low-profile bracket provided in the kit on the adapter and the auxiliary card.



3. Thread the two cables provided in the kit together using the cable retention clip on either ends of the cables. Ensure that the clip posts are pointing towards the cable ends.

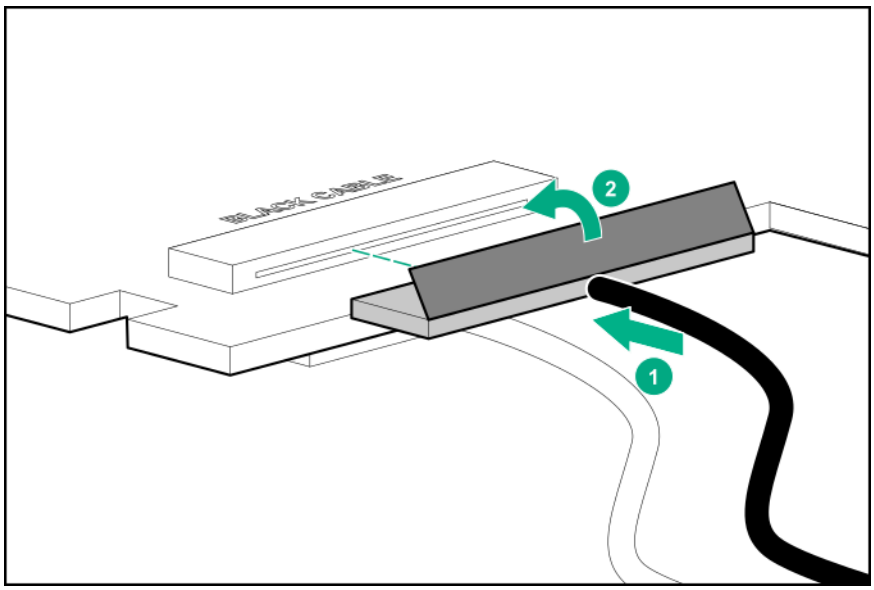


CAUTION: The white and black cables from the auxiliary card connect to the adapter board ports labeled WHITE CABLE and BLACK CABLE, respectively. The cable latch door must be open when connecting the cables. Close the cable latch door after connecting the cable.

4. Install the cables on the adapter:

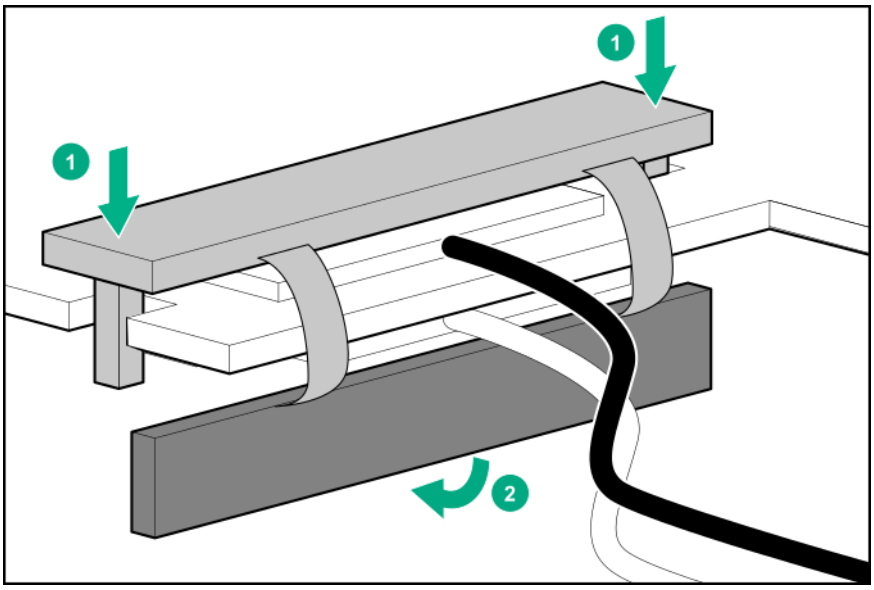
   a. Connect the cable.

   b. Close the cable latch door until it clicks into place.

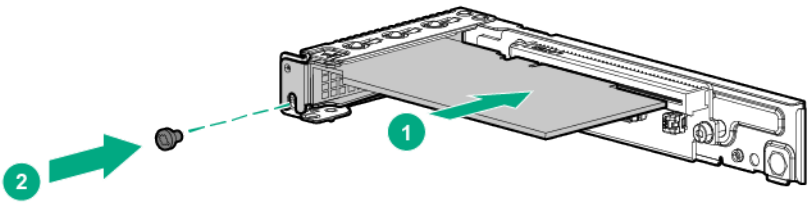


CAUTION: The connector pins are fragile and easily damaged. To avoid damaging the connector pins, do not use excessive force when connecting the cables.

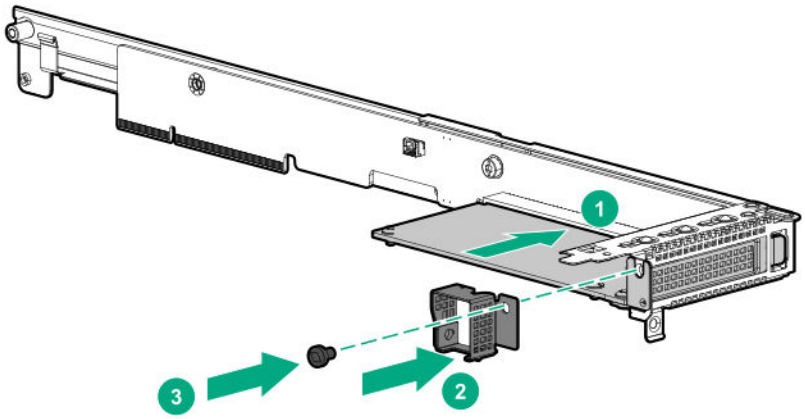
5. Push the clip down and slide the cable retention clip on the adapter.



6. Install the adapter in slot 1.



7. Install the primary riser cage.
8. Thread the cables through the second retention clip.
9. **Connect the cables to the auxiliary card**.
10. Install the auxiliary card in slot 2.



11. Install the secondary 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. Connect all power:
    a. Connect each power cord to the server.
    b. Connect each power cord to the power source.
17. Power up the server.

Removing and replacing a Smart Array controller

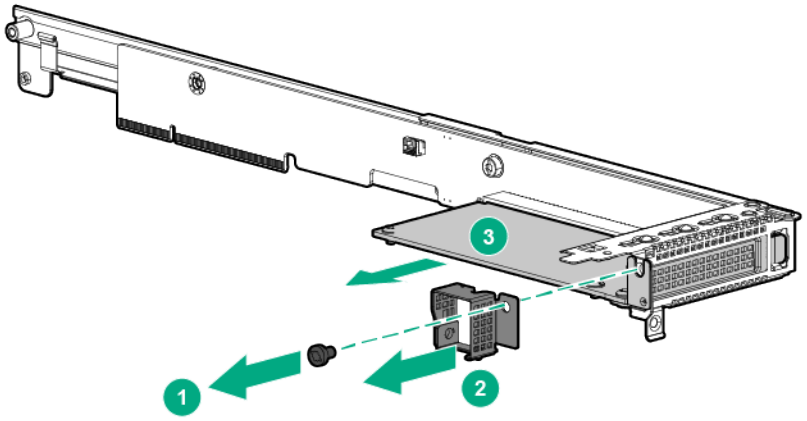
CAUTION: Before replacing the component due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

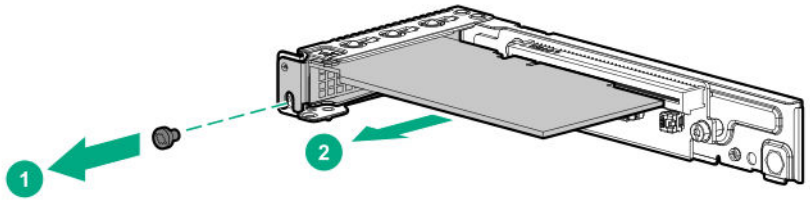
- Before you perform this procedure, ensure that you have T-15 Torx screwdriver is available.
- Determine if there are temperature requirements for the component. For more information, see **Temperature requirements**.
- Depending on the chassis configuration and the component being installed in the 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**.

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. If a secondary PCIe riser cage is installed, **remove the bayonet board**.
6. Do one of the following:
   - **Remove the secondary riser blank**.
   - **Remove the secondary riser cage**.
7. If replacing the expansion board installed in slot 1, **remove the primary PCIe riser cage**.
8. Disconnect the Mini-SAS cable and controller backup power cable from the controller.
9. Remove the Smart Array controller from the PCIe riser cage.
   - Secondary PCIe riser cage



- Primary PCIe riser cage



To replace the component, reverse the removal procedure.

Removing and replacing the primary riser board

CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

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

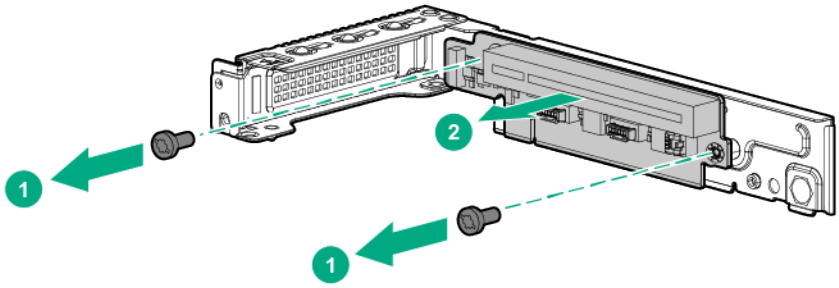
Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the bayonet board**.

5. Do one of the following:

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

6. **Remove the primary riser cage**.
7. If installed, **remove the expansion board from the riser board**.
8. If present, **disconnect the storage controller backup power cable from the riser board**.
9. Remove the primary riser board.



To replace the component, reverse the removal procedure.

Removing and replacing the secondary riser board

CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

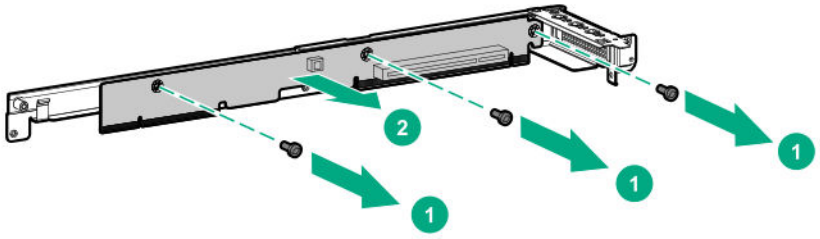
Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

Procedure

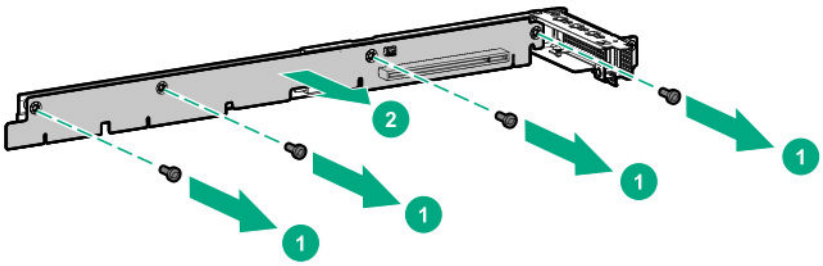
1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the bayonet board**.
5. **Remove the secondary riser cage**.

6. If installed, **remove all expansion boards from the riser board**.
7. If present, **disconnect the storage controller backup power cables from the riser board**.
8. Remove the riser board.

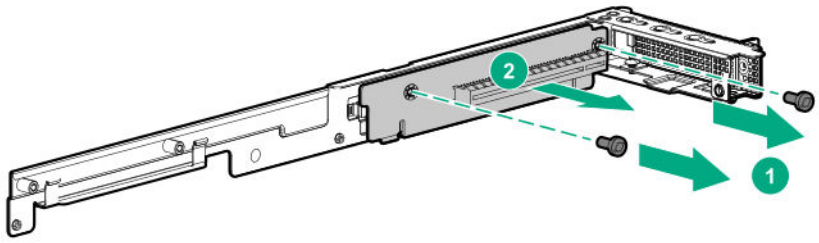
- Secondary riser board for processor 1



- Secondary riser board for processor 2



- FlexibleLOM riser board



To replace the component, reverse the removal procedure.

Removing and replacing the M.2 SSD riser board

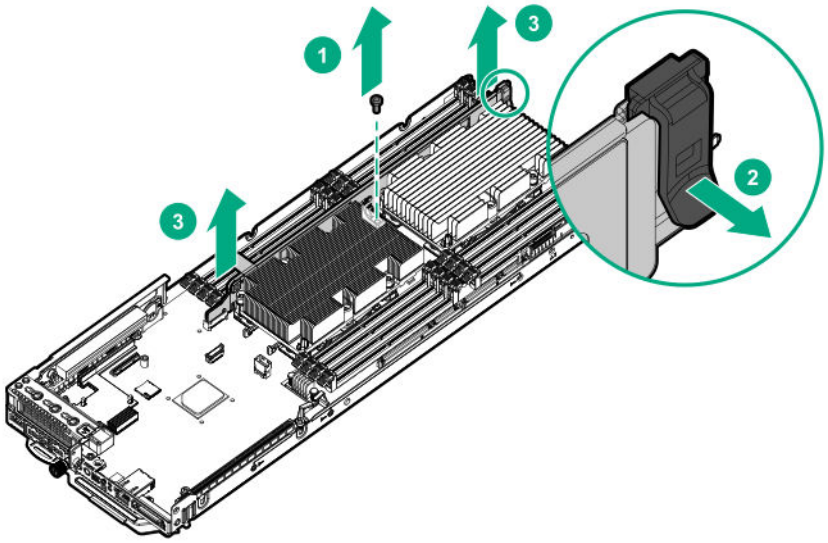
CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

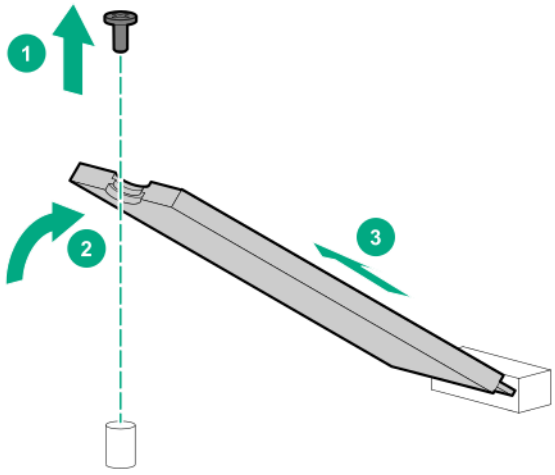
Before you perform this procedure, make sure that you have a T-15 Torx and Phillips No.1 screwdrivers available.

Procedure

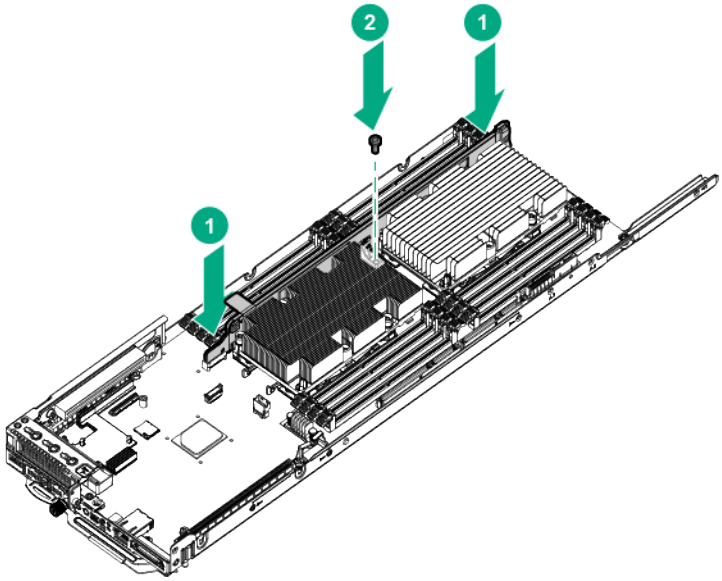
1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. Remove the M.2 SSD riser board:
   a. Remove the riser board screw.
   b. Carefully disengage the latch from the riser board post.
   c. Remove the M.2 SSD riser board.



6. Remove all installed M.2 SSDs from the riser board.



7. If you do not intend to replace the M.2 SSD riser board, install the DIMM guard.



To replace the component, reverse the removal procedure.

Removing and replacing a Media Module adapter

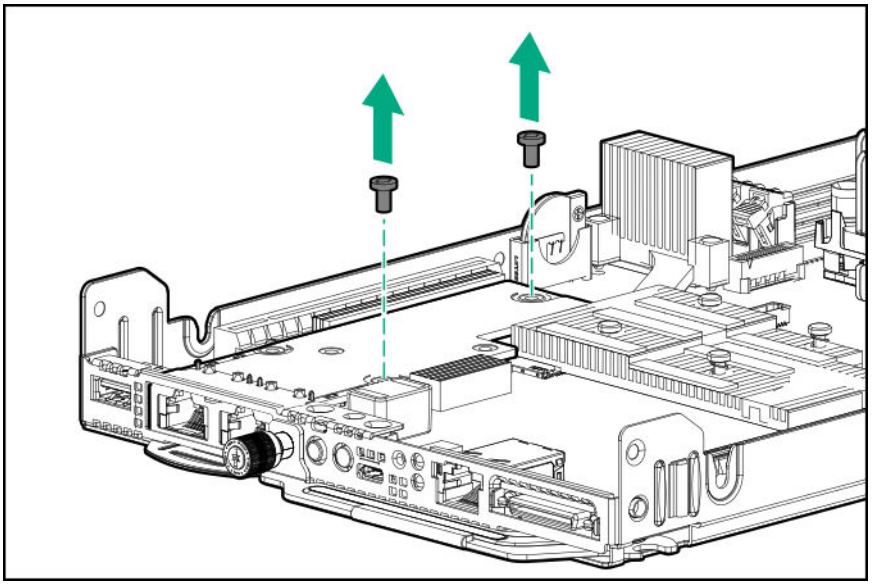
CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Prerequisites

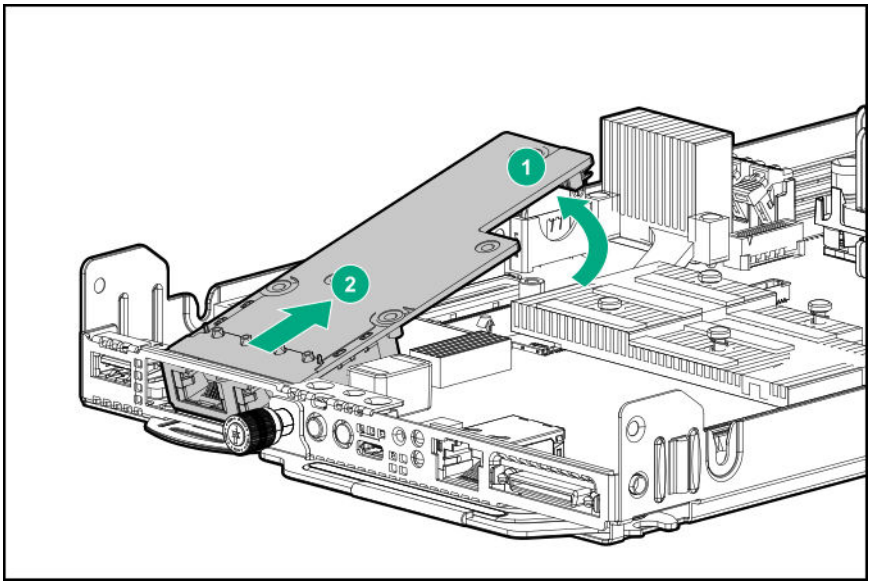
Before you perform this procedure, make sure that you have a T-15 Torx screwdriver available.

Procedure

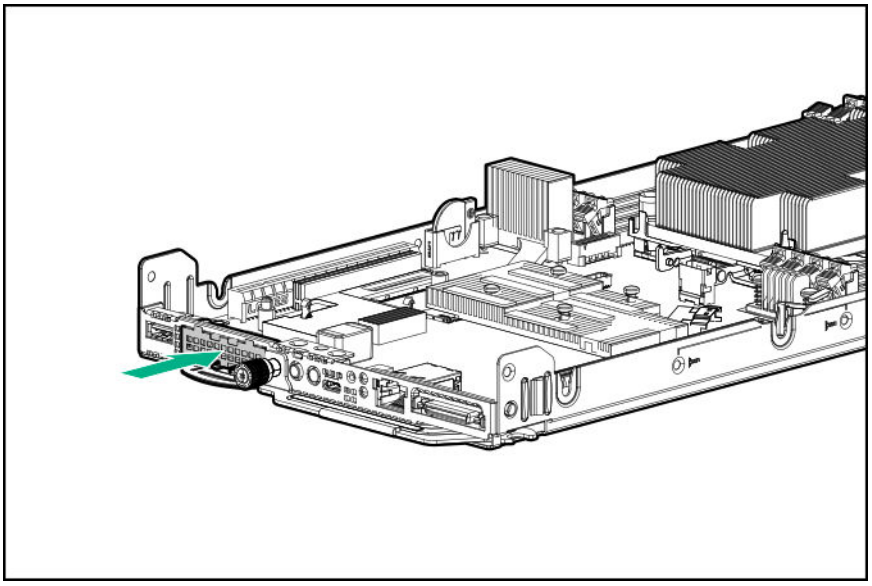
1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. If a secondary PCIe riser cage is installed, **remove the bayonet board**.
5. Do one of the following:
   - **Remove the secondary riser blank**.
   - **Remove the secondary riser cage**.
6. Do one the following:
   - **Remove the primary riser blank**.
   - **Remove the primary riser cage**.
7. Remove the Media Module screws.



8. Remove the Media Module adapter.



9. If you do not intend to replace the adapter, install the Media Module blank.



To replace the component, reverse the removal procedure.

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.

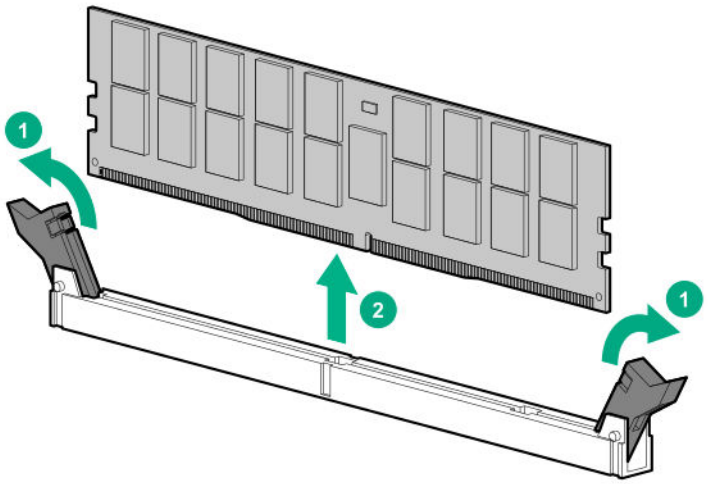
Mixing DIMM types is not supported. Install either all DDR4-2666 DIMMs or all DDR4-2933 DIMMs in the server.

Removing and replacing a DIMM

CAUTION: Before replacing a DIMM, expansion board, or other similar PCA components due to a perceived hardware error, make sure first that the component is firmly seated in the slot. Do not bend or flex circuit boards when reseating components.

Procedure

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



To replace the component, reverse the removal procedure.

For DIMM configuration information, see the Hewlett Packard Enterprise website (**https://www.hpe.com/docs/arm-population-rules**).

Removing and replacing an HPE Persistent Memory module

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

To identify the HPE Persistent Memory modules installed in the server, see **HPE Persistent Memory module label identification**.

Procedure

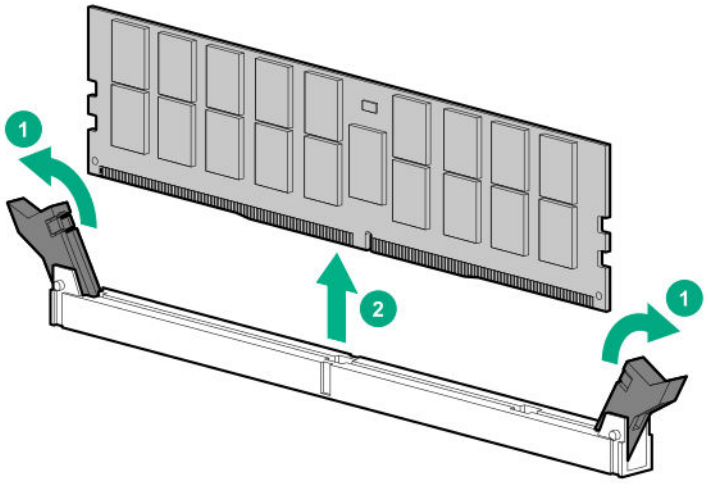
1. Observe the following alerts:

   CAUTION: Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning this procedure.

   CAUTION: Failure to properly handle HPE Persistent Memory modules can damage the component and the system board connector.

2. **Power down the server**.
   a. Shut down the OS as directed by the OS documentation.
   b. To place the server in standby mode, press the Power On/Standby button. When the server enters standby power mode, the system power LED changes to amber.
   c. Disconnect the power cords (rack and tower servers).
3. Disconnect all peripheral cables from the server.
4. **Remove the server from the chassis**.
5. **Remove the air baffle**.
6. Remove all components necessary to access the DIMM slots.

7. Remove the HPE Persistent Memory module.



8. Install the new HPE Persistent Memory module, and review the persistent memory configuration of the server.

   For more information, see **Configuring the server for HPE Persistent Memory**.

9. If you are relocating the HPE Persistent Memory module to or from another server, see the **HPE Persistent Memory module relocation guidelines**.

HPE Persistent Memory module-processor compatibility

HPE Persistent Memory modules are supported only in servers with second-generation Intel Xeon Scalable processors installed.

Configuring the server for HPE Persistent Memory

After installing HPE Persistent Memory modules, configure the server for HPE Persistent Memory.

IMPORTANT: Always follow recommendations from your software application provider for high-availability best practices to ensure maximum uptime and data protection.

A number of configuration tools are available, including:

- UEFI System Utilities—Access System Utilities through the Remote Console to configure the server by pressing the **F9** key during POST.
- iLO RESTful API—Use the iLO RESTful API through tools such as the RESTful Interface Tool (ilorest) or other third-party tools.
- HPE Persistent Memory Management Utility—The HPE Persistent Memory Management Utility is a desktop application used to configure the server for HPE Persistent Memory, as well as evaluate and monitor the server memory configuration layout.

For more information, see the *HPE Persistent Memory User Guide* on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/persistentmemory-docs**).

HPE Persistent Memory module relocation guidelines

Observe the relocation guidelines when doing the following:

- When relocating HPE Persistent Memory modules to another DIMM slot on the server.
- When relocating HPE Persistent Memory modules to another server.
- When reinstalling HPE Persistent Memory modules after replacing the server system board.

IMPORTANT: When data must be preserved, Hewlett Packard Enterprise strongly recommends that you perform a manual backup of all user data on the HPE Persistent Memory modules before changing the goal configuration or performing relocation procedures.

Requirements for relocating HPE Persistent Memory modules or a set of HPE Persistent Memory modules when the data must be preserved

- The destination server hardware must match the original server hardware configuration.
- All System Utilities settings in the destination server must match the original System Utilities settings in the original server.
- If HPE Persistent Memory modules are used with **Persistent Memory Interleaving** set to Enabled in the original server, do the following:
  - Install the HPE Persistent Memory modules in the same DIMM slots in the destination server.
  - Install the entire interleaved set (all the DIMMs and HPE Persistent Memory modules on the processor) on the destination server.

  If any of the requirements cannot be met during relocation, do the following:
  - Manually back up the persistent memory data before relocating HPE Persistent Memory modules to another server.
  - Relocate the HPE Persistent Memory modules to another server.
  - Sanitize all HPE Persistent Memory modules on the new server before using them.

Requirements for relocating encrypted HPE Persistent Memory modules or a set of HPE Persistent Memory modules when the data must be preserved

- If HPE Persistent Memory modules are encrypted with local key management, either manually retrieve the HPE Persistent Memory module passwords from the server (user-generated passwords only) or export a password file to a USB key.

  Hewlett Packard Enterprise recommends exporting the password file to a USB key.
- Follow the requirements for relocating HPE Persistent Memory modules or a set of HPE Persistent Memory modules when the data must be preserved.
- Do one of the following:
  - If HPE Persistent Memory modules are encrypted with local key management, either manually enter the HPE Persistent Memory module passwords in the System Utilities or import the password file from the USB key.
  - If HPE Persistent Memory modules are encrypted with remote key management, enroll the HPE iLO in the key management server to provide access to the data on the HPE Persistent Memory modules.

  For more information, see the *HPE Persistent Memory User Guide* on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/persistentmemory-docs**).

Requirements for relocating HPE Persistent Memory modules or a set of HPE Persistent Memory modules when the data does not have to be preserved

- Move the HPE Persistent Memory modules to the new location and sanitize all HPE Persistent Memory modules after installing them to the new location.
- Observe the DIMM and HPE Persistent Memory module population guidelines.
- Observe the process for removing an HPE Persistent Memory module.
- Observe the process for installing an HPE Persistent Memory module.
- Review and configure the system settings for HPE Persistent Memory.

For more information, see the *HPE Persistent Memory User Guide* on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/persistentmemory-docs**).

HPE Persistent Memory module sanitization

Media sanitization is defined by NIST SP800-88 *Guidelines for Media Sanitization* (Rev 1, Dec 2014) as "a general term referring to the actions taken to render data written on media unrecoverable by both ordinary and extraordinary means."

The specification defines the following levels:

- Clear: Overwrite user-addressable storage space using standard write commands; might not sanitize data in areas not currently user-addressable (such as bad blocks and over-provisioned areas).
- Purge: Overwrite or erase all storage space that might have been used to store data using dedicated device sanitize commands, such that data retrieval is "infeasible using state-of-the-art laboratory techniques."
- Destroy: Ensure that data retrieval is "infeasible using state-of-the-art laboratory techniques" and render the media unable to store data (such as disintegrate, pulverize, melt, incinerate, or shred).

HPE Persistent Memory supports the purge level using a cryptographic erase technique and an overwrite technique.

HPE ProLiant and HPE Synergy Gen10 server products support sanitizing HPE Persistent Memory modules during POST. Use the HPE RESTful Interface Tool or UEFI System Utilities to schedule sanitization on the next boot.

For more information, see the following sections in the *HPE Persistent Memory User Guide* on the Hewlett Packard Enterprise website (**https://www.hpe.com/info/persistentmemory-docs**):

- Sanitization policies
- Sanitization guidelines

NIST SP800-88 *Guidelines for Media Sanitization* (Rev 1, Dec 2014) is available for download from the NIST website (**https://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-88r1.pdf**).

Removing and replacing the system board

Removing the system board

Prerequisites

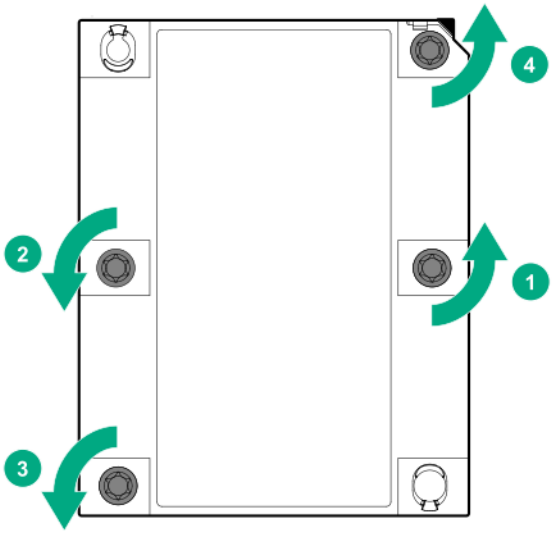
- Take note of the following:

- The slot locations in which each memory module is installed. These components must be installed in the same locations on the new system board.
- The port numbers and cable connections between the system board and the secondary riser board.

- Before you perform this procedure, make sure that you have a T-15 and T-30 Torx screwdrivers available.

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the bayonet board**.
5. Do one of the following:
   - **Remove the secondary riser blank**.
   - **Remove the secondary riser cage**.
6. Do one the following:
   - **Remove the primary riser blank**.
   - **Remove the primary riser cage**.
7. If installed, **remove the Media Module adapter**.
8. If installed, **remove the M.2 SSD riser board**.
9. If present, **disconnect the S100i SR Gen10 controller SATA X-cable**.
10. **Remove the DIMMs from the system board**.
11. Remove the processor heatsink assembly:
    a. Allow the heatsink to cool.
    b. Loosen the heatsink nuts in the order specified by the label on the heatsink.

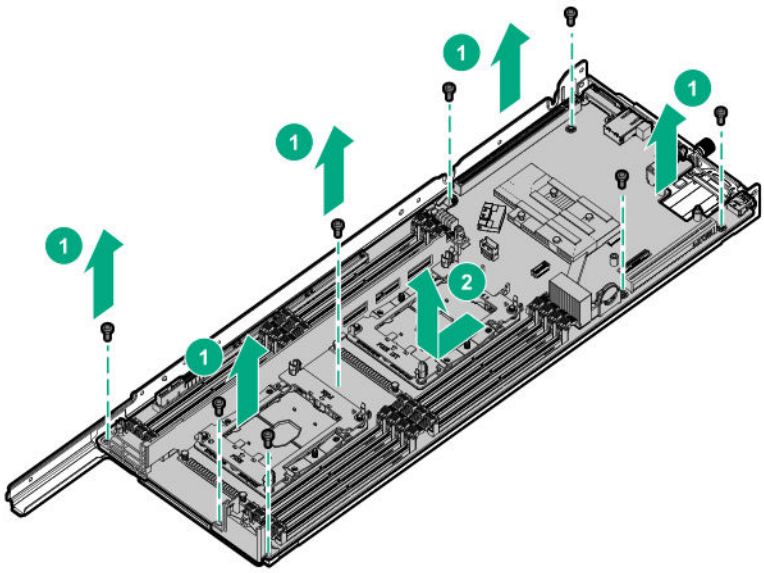


c. Lift the processor heatsink assembly and move it away from the system board.

d. Turn the assembly over and place it on a work surface with the processor facing up.

e. Install the dust cover.

12. Remove the system board.



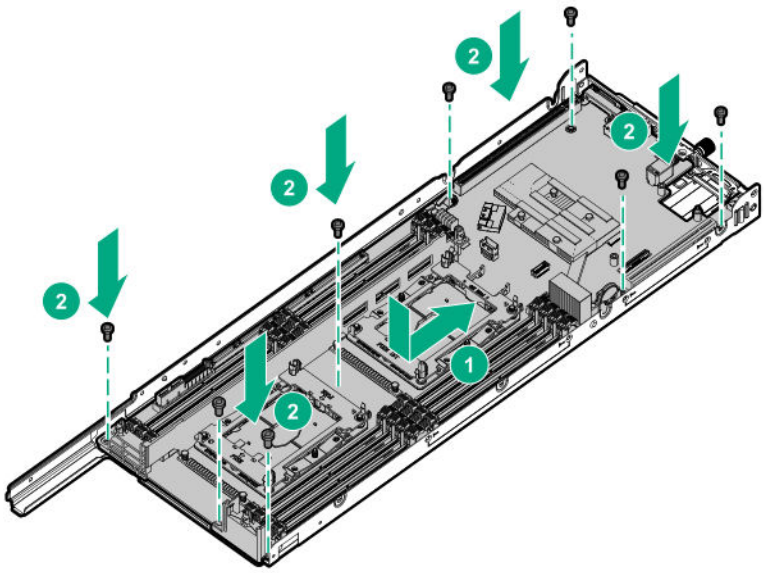
Replacing the system board

Prerequisites

Before you perform this procedure, make sure that you have a T-15 and T-30 Torx screwdrivers available.

Procedure

1. Install the system board.



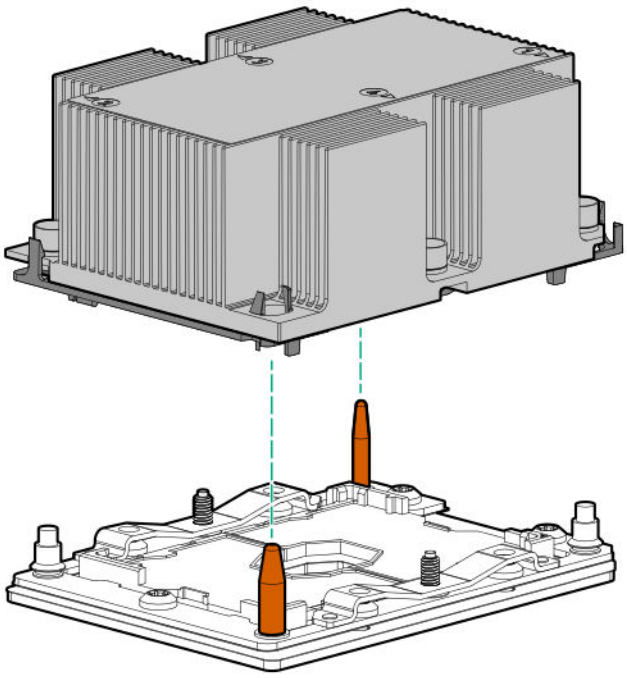
2. Install the processor heatsink assembly:

   a. Locate and align the Pin 1 indicator on the processor frame and the socket.

   b. Align the processor heatsink assembly with the heatsink alignment posts and gently lower it down until it sits evenly on the socket.

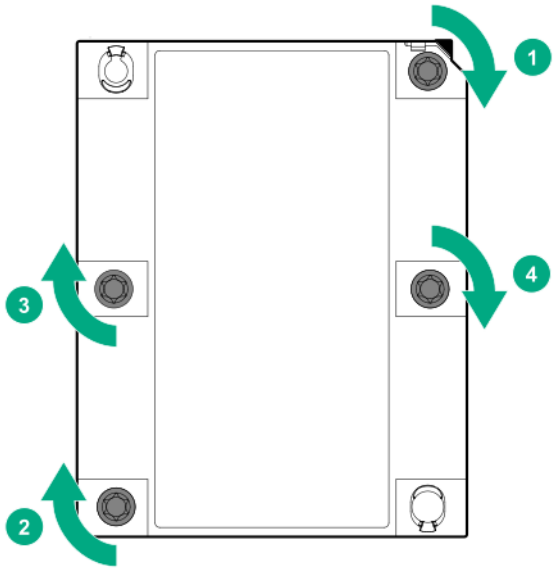
      The heatsink alignment posts are keyed. The processor will only install one way.

      A standard heatsink is shown, your heatsink might look different.



> **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, tighten the nuts until they stop.



3. Install all components removed from the failed system board.

   Be sure to install the DIMMs in the same DIMM slots as the failed system board.

4. Do the following:

   - Install the primary PCIe riser cage.
   - Install the primary PCIe riser blank.

5. Do the following:

   - Install the secondary PCIe riser cage.
   - Install the secondary PCIe riser blank.

6. Install the bayonet board.
7. Install the server from the chassis.
8. Connect all peripheral cables to the server.
9. **Power up the server**.
10. Access System Utilities and:

    - **Re-enter the server serial number and product ID**.
    - If the server is using Intel Xeon Gold 6244 processors, **select an advanced fan cooling method**.

11. Ensure all firmware, including option cards and embedded devices, is updated to the same versions to ensure that the latest drivers are being used.

Re-entering the server serial number and product ID and selecting an advanced fan cooling method

After you replace the system board, the server serial number and the product ID must be configured:

Procedure

1. Access System Utilities. During POST, press **F9**.
2. On the System Utilities home screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Advanced Service Options**.
3. Select the Serial Number field and press **Enter**.

   The following alert appears:

   ```
   The serial number is modified by qualified service personnel and must
   match the serial number located on the chassis.
   ```
4. Click **OK**.
5. Type the serial number and press **Enter**.
6. Select the Product ID field and press **Enter**.

   The following alert appears:

   ```
   Product ID is modified only by qualified personnel. This value must match
   the product ID located on the chassis.
   ```
7. Type the product ID and press **Enter**.
8. Press **F10** to save the configuration.
9. If the server is using Intel Xeon Gold 6244 processors, do the following:

   a. Select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Fan and Thermal Options** > **Thermal Configuration**.

   b. Select one of the following advanced fan cooling method:

   - **Enhanced CPU Cooling**
   - **Maximum Cooling**

10. Save your setting.

The procedure is complete.

System battery replacement

System battery information

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

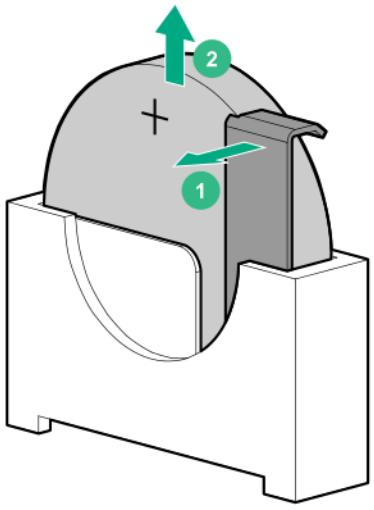
- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not expose the battery to extremely low air pressure as it might lead to explosion or leakage of flammable liquid or gas.

- Do not disassemble, crush, puncture, short external contacts, or dispose the battery in fire or water.
- If the server no longer automatically displays the correct date and time, then replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

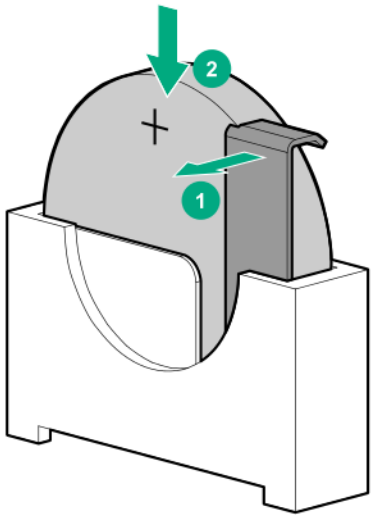
Removing and replacing the system battery

Procedure

1. **Power down the server**.
2. Disconnect all peripheral cables from the server.
3. **Remove the server from the chassis**.
4. **Remove the air baffle**.
5. If a secondary riser option is installed, **remove the bayonet board**.
6. Do one of the following:
   - **Remove the secondary riser blank**.
   - **Remove the secondary riser cage**.
7. **Remove the primary riser cage**.
8. **Locate the battery on the system board**.
9. Slightly push the metal tab, and then remove the system battery from the socket.



10. Slightly push the metal tab, and then install the new system battery in the socket.



11. **Install the server into the chassis**.
12. Connect all peripheral cables to the server.
13. **Power up the server**.
14. Properly dispose of the old battery. For more information about proper battery disposal, contact an authorized reseller or an authorized service provider.

HPE Trusted Platform Module 2.0 Gen10 Option

The HPE Trusted Platform Module 2.0 Gen10 Option is not a customer-removable part.

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.

If you suspect a TPM board failure, leave the TPM installed and remove the system board. Contact a authorized service provider for a replacement system board and TPM board.

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 (**https://www.hpe.com/info/gen10-troubleshooting**).

Diagnostic tools

Product QuickSpecs

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

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 **https://www.hpe.com/servers/ossupport**.

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

You can configure Secure Boot:

- Using the **System Utilities** options described in the following sections.
- Using the iLO RESTful API to clear and restore certificates. For more information, see the Hewlett Packard Enterprise website (**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.

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 Rapid Setup Software. When you launch F10 mode from the POST screen, you are prompted to select whether you want to enter the Intelligent Provisioning or HPE Rapid Setup Software mode.

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

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

To access Intelligent Provisioning:

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

HPE Insight Remote Support

Hewlett Packard Enterprise strongly recommends that you register your device for remote support to enable enhanced delivery of your Hewlett Packard Enterprise warranty, HPE support services, or Hewlett Packard Enterprise contractual support agreement. Insight Remote Support supplements your monitoring continuously to ensure maximum system availability by providing 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. Notifications can be sent to your authorized Hewlett Packard Enterprise Channel Partner for onsite service, if configured and available in your country.

For more information, see *Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures* on the **Hewlett Packard Enterprise website**. Insight Remote Support is available as part of Hewlett Packard Enterprise Warranty, HPE support services, or Hewlett Packard Enterprise contractual support agreement.

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.

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

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

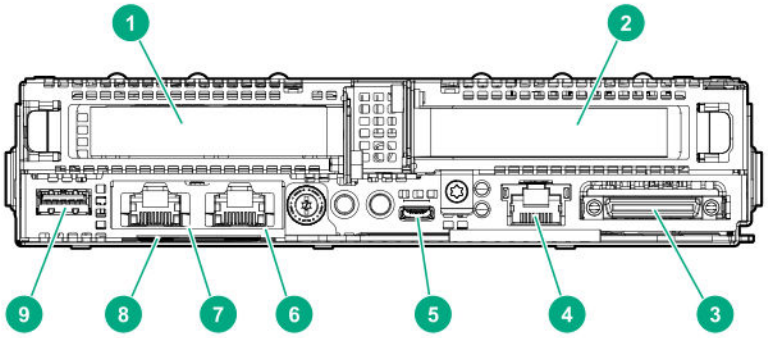
HPE InfoSight for servers:

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

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

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 port
4	iLO Management Port[1]
5	iLO Service Port
6	Media Module NIC port 2[2]
7	Media Module NIC port 1[2]
8	**Serial number/iLO information pull tab**
9	USB 3.0 port

[1] If the RCM module is installed on the chassis, the iLO Management Port is automatically disabled.

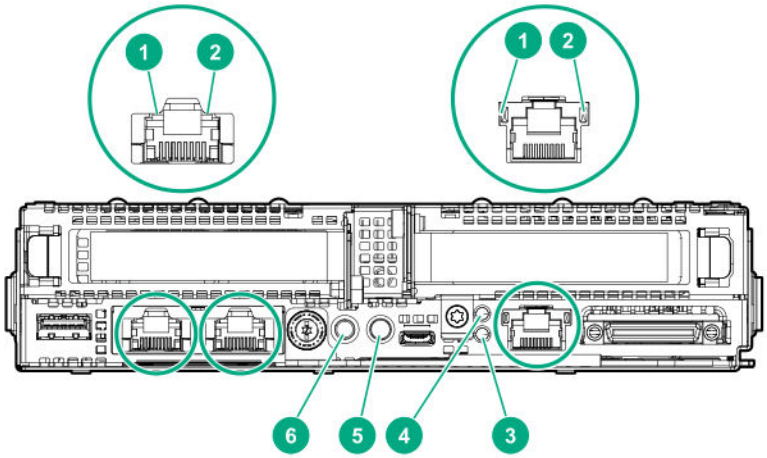
[2] The Media Module adapter is a hardware option.

Serial number/iLO information pull tab

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

Use a mobile device to scan the QR code label to display the server mobile product page (**https://www.hpe.com/qref/xl170rgen10**). This page contains links to server setup information, spare part numbers, QuickSpecs, troubleshooting resources, and other useful product links.

Rear panel LEDs and buttons



Item	Description	Status	Definition
1	NIC link LED[2]	Green	Linked to network
		Off	No network link
2	NIC status LED[1]	Flashing green	Network active
		Off	No network activity
3	Health LED[1]	Solid green	Normal
		Flashing green	iLO is rebooting.
		Flashing amber	System degraded
		Flashing red	System critical
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
		Flashing blue	• 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

Table Continued

Item	Description	Status	Definition
		Off	Deactivated
6	Power On/Standby button and system power LED[1]	Solid green	System on and normal operation
		Flashing green	Performing power-on sequence
		Solid amber	System in standby
		Off	No power present[3]

1 When the LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see **Front panel LED power fault codes**.

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

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.

Server UID LED

The UID LED is used to locate a particular server when it is deployed in a dense chassis with other equipment. Activating the UID LED helps an onsite technician to quickly identify a server for maintenance tasks.

UID button functionality

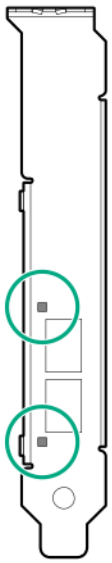
The UID button can be used to display the Server Health Summary when the server will not power on. For more information, see the latest *HPE iLO 5 User Guide* on the **Hewlett Packard Enterprise website**.

Front panel LED power fault codes

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

Subsystem	LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Removable HPE Smart Array SR Gen10 controller	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

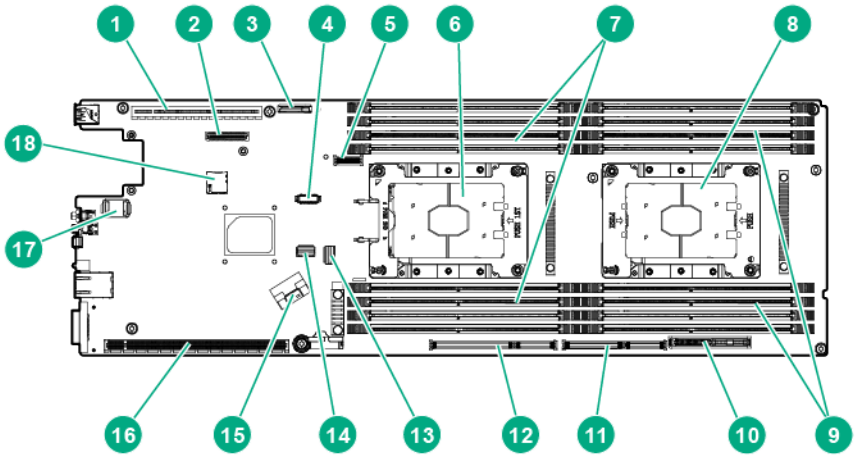
HPE InfiniBand HDR/Ethernet 940QSFP 56x16 adapter LEDs



Link LED status[1]	Description
Off	A link has not been established.
Solid amber	Active physical link exists
Blinking amber	4 Hz blinking amber indicates a problem with the physical link.
Solid green	A valid logical (data activity) link exists with no active traffic.
Blinking green	A valid logical link exists with active traffic.

1 2-port adapter LEDs are shown. The 1-port adapters have only a single LED.

System board components



Item	Description
1	Primary PCIe x16 riser connector 1
2	Media Module connector
3	System battery
4	OPA adapter sideband cable connector
5	M.2 SSD riser connector
6	Processor 1
7	DIMM slots for processor 1
8	Processor 2
9	DIMM slots for processor 2
10	Bayonet board connector
11	Secondary PCIe x24 riser connector 4
12	Secondary PCIe x24 riser connector 3
13	x4 SATA port
14	**System maintenance switch**
15	x8 SATA port
16	Secondary PCIe x24 riser connector 2
17	TPM connector
18	microSD slot

System maintenance switch descriptions

Position	Default	Function
S1[1]	Off	Off = iLO 5 security is enabled. On = iLO 5 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

Table Continued

Position	Default	Function
S9	—	Reserved
S10	—	Reserved
S11	—	Reserved
S12	—	Reserved

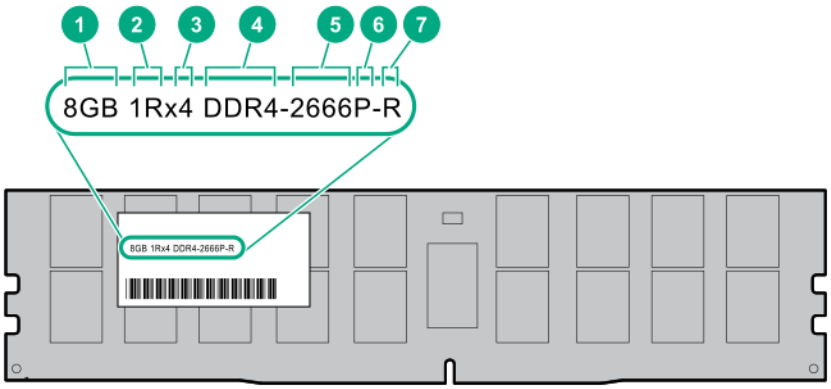
1 To access the redundant ROM, set S1, S5, and S6 to On.

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**.

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.



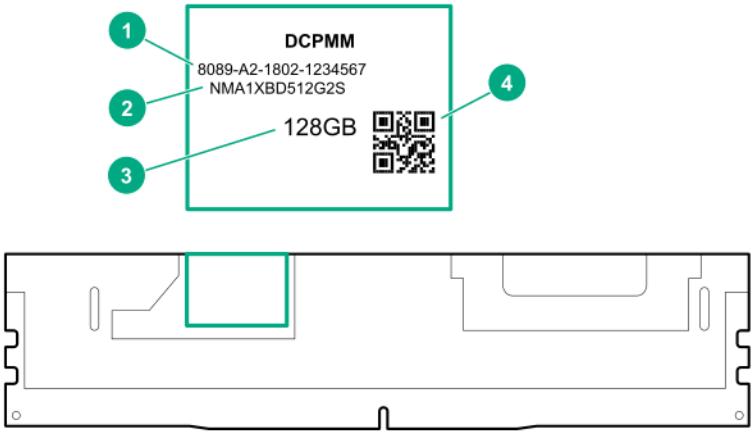
Item	Description	Example
1	Capacity	8 GB 16 GB 32 GB 64 GB 128 GB
2	Rank	1R = Single rank 2R = Dual rank 4R = Quad rank 8R = Octal rank

Table Continued

Item	Description	Example
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
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 (**https://www.hpe.com/support/DDR4SmartMemoryQS**).

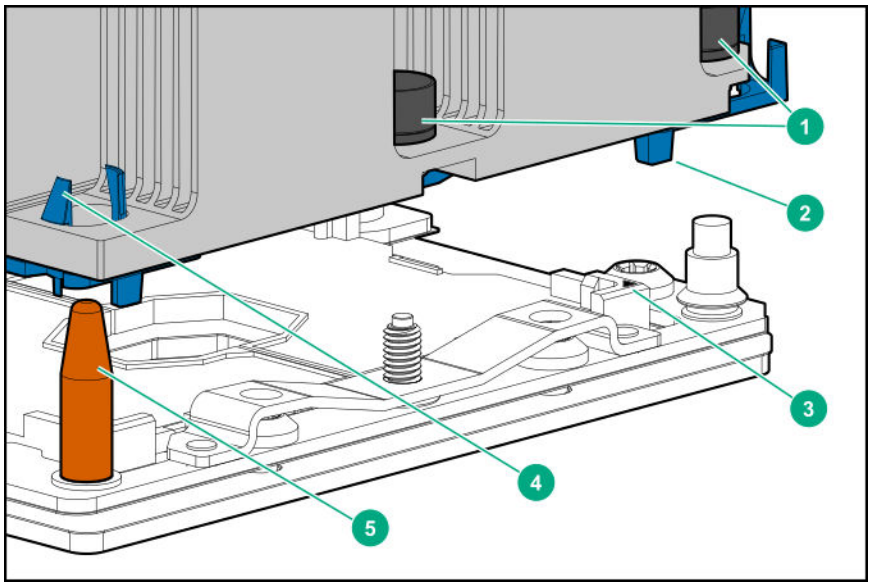
HPE Persistent Memory module label identification



Item	Description	Example
1	Unique ID number	8089-A2-1802-1234567
2	Model number	NMA1XBD512G2S
3	Capacity	128 GB 256 GB 512 GB
4	QR code	Includes part number and serial number

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

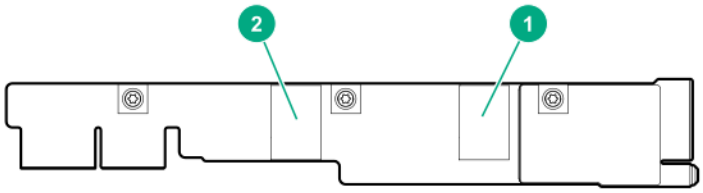
Processor, heatsink, and socket components



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.

Bayonet port numbering



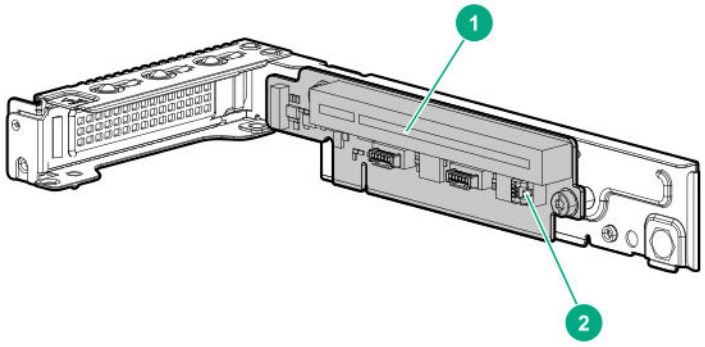
PCIe riser board components

This section identifies the riser slots compatible with specific types of expansion options supported by the server. The following riser options are supported:

- **Primary riser**
- **Secondary risers**
- **M.2 SSD riser**

Primary riser board components

The primary riser function is linked to processor 1. This riser only supports low-profile expansion boards.



Item	Slot number	Description	Supported option
1	1	PCIe3 x16 (16, 8, 4, 1)	• **Smart Array type-p controller** • Network adapter • **OPA adapter**[1] • **InfiniBand adapter**
2	—	Storage controller backup power connector	—

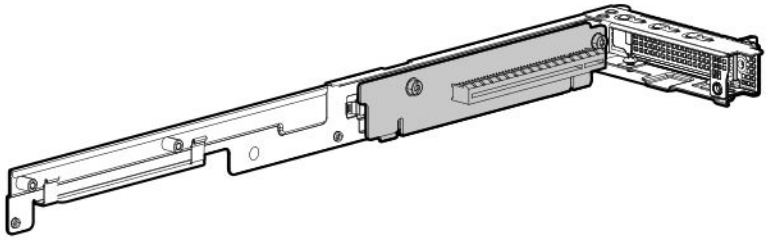
1 Intel Omni-Path Architecture

Secondary riser board components

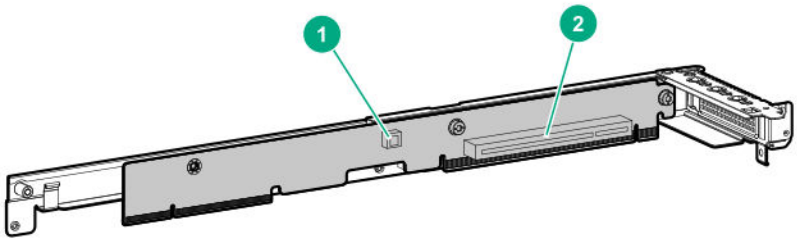
The server supports multiple riser options in the secondary position.

FlexibleLOM riser board slot

The FlexibleLOM riser function is linked to processor 1.



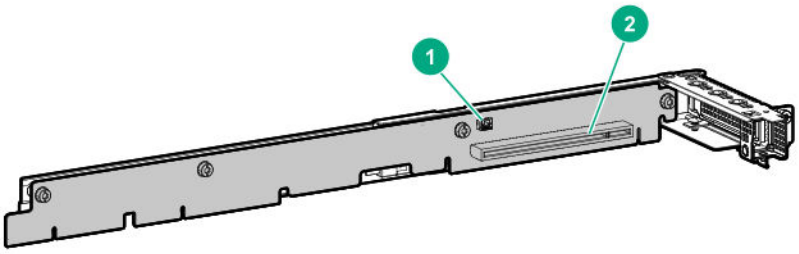
P1 secondary riser board components



Item	Slot number	Description	Supported options
1	—	Storage controller backup power connector	—
2	2	PCIe3 x16 (16, 8, 4, 1)	• **Smart Array type-p controller** • Low-profile expansion boards • **Auxiliary adapter**

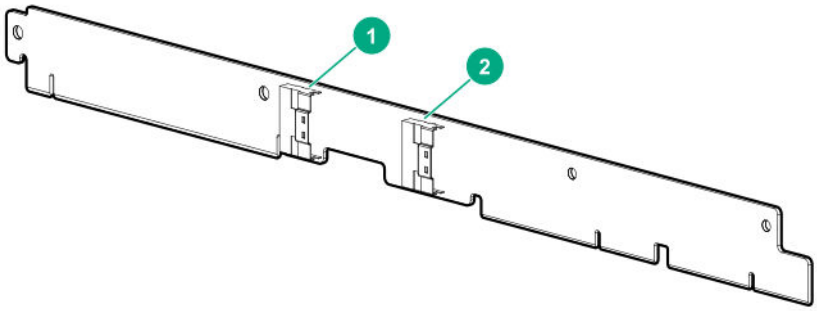
P2 secondary riser board components

Processor 2 is required to support the P2 secondary riser option.

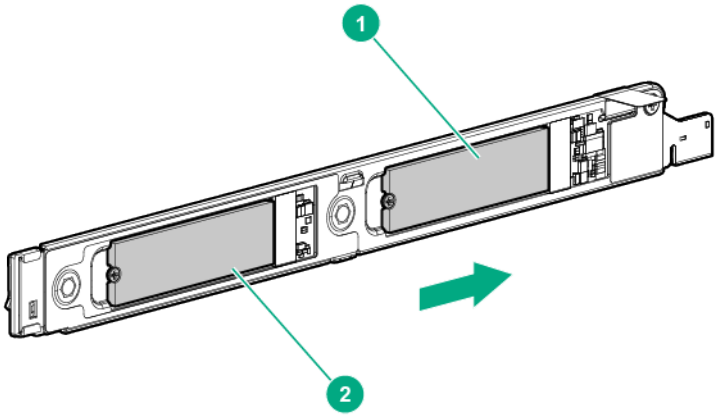


Item	Slot number	Description	Supported options
1	—	Storage controller backup power connector	—
2	2	PCIe3 x16 (16, 8, 4, 1)	• **Smart Array type-p controller** • Low-profile expansion boards • **Auxiliary adapter**

P1/P2 secondary riser port numbering



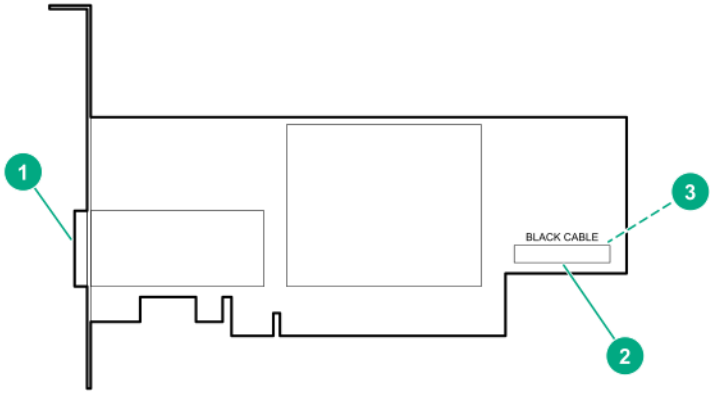
M.2 SSD riser bay numbering



The arrow points toward the server release lever.

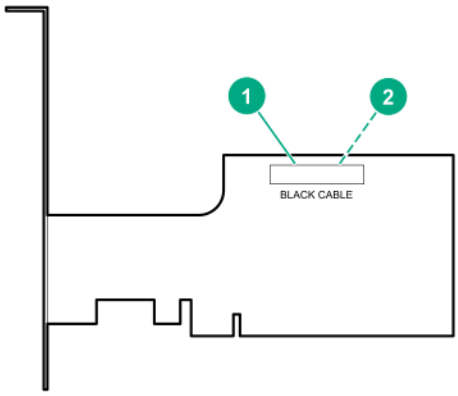
Item	Description
1	Bay 7
2	Bay 8

HPE InfiniBand HDR100/Ethernet 200 GB 1-port 940QSFP56 x16 adapter component



Item	Description
1	QSFP56 port
2	Black cable connector
3	White cable connector

HPE InfiniBand HDR PCIe G3 Auxiliary card



Item	Description
1	Black cable connector
2	White cable connector

Cabling

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

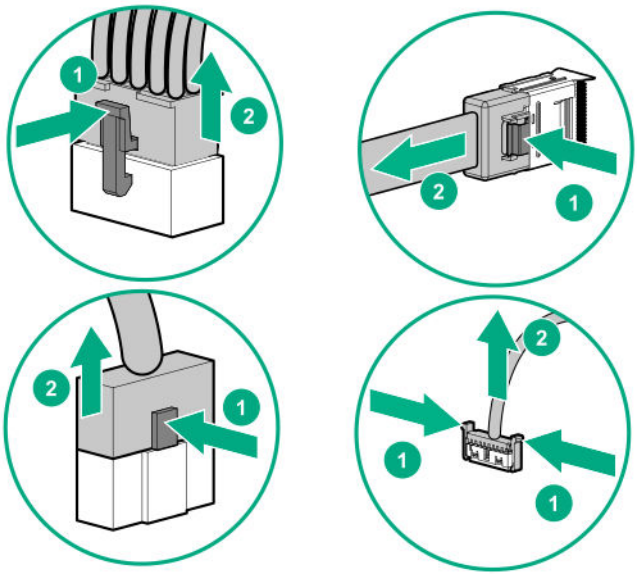
- Note the port labels on the PCA components. Not all of these components are used by all servers:
  - System board ports
  - Drive and power supply backplane ports
  - Expansion board ports (controllers, adapters, expanders, risers, and similar boards)
- Note the label near each cable connector. This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

Smart Array cabling

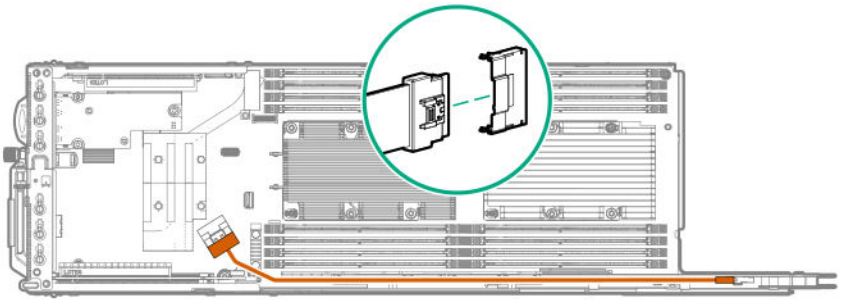
Smart Array controller cables

Controller type	Cable kit part number	Cable part number	From #	To port #
Embedded controller	874305-B21	870527-001	System board	Bayonet port
Type-p standup plug-in controller	874785-B21[1]	870539-001	Controller port 1 or 2	Bayonet port
	874855-B21[2]	870540-001		

1 The 870539-001 cable included in the 874785-B21 cable kit is for primary riser.

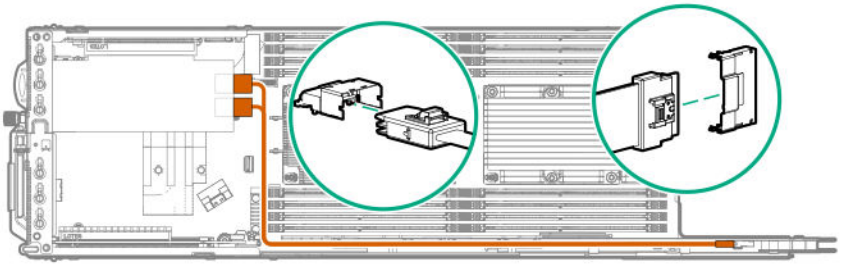
2 The 870540-001 cable included in the 874855-B21 cable kit is for secondary riser.

Onboard S100i SR Gen10 controller cabling (SATA only)



Smart Array type-p controller cabling (SAS/SATA)

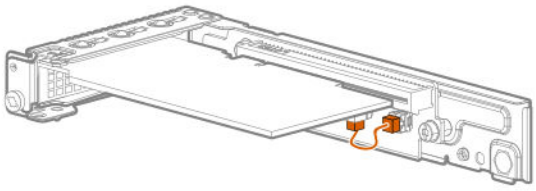
Smart Array type-p controller cabling in the primary riser slot



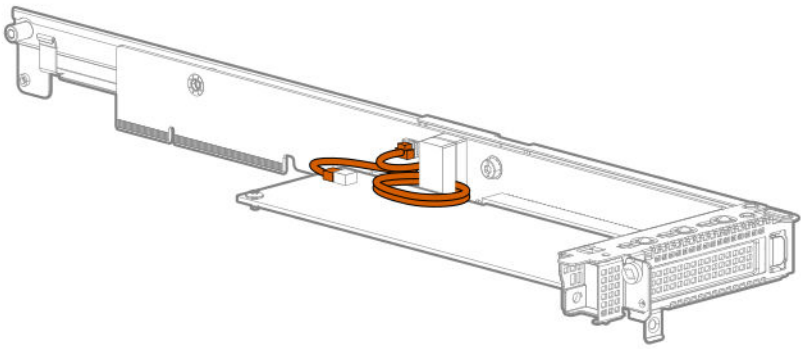
Smart Array type-p controller cabling in the secondary riser slot

Storage controller backup power cabling

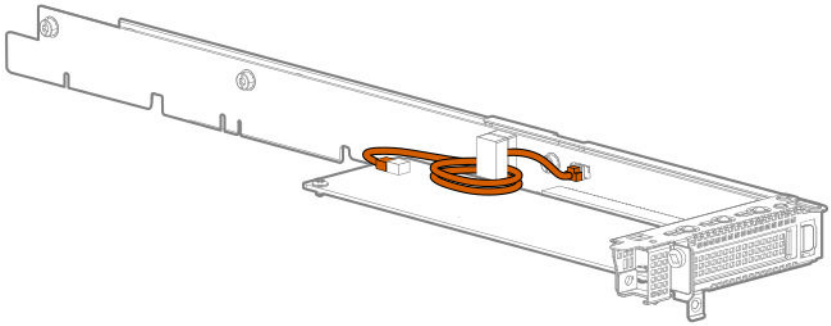
Storage controller backup power cabling in the primary riser slot



Storage controller backup power cabling in the P1 secondary riser



Storage controller backup power cabling in the P2 secondary riser



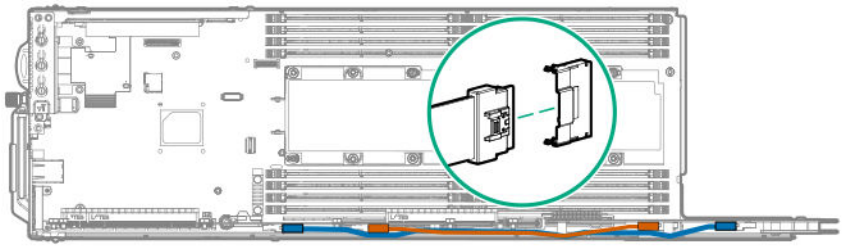
Secondary riser cabling

Cabling matrix

Cable kit part number	Cable part number	From #	To port #
874304-B21	870531-001[1]	Riser port 1 or 2	Bayonet port 1 or 2
	870532-001[2]		

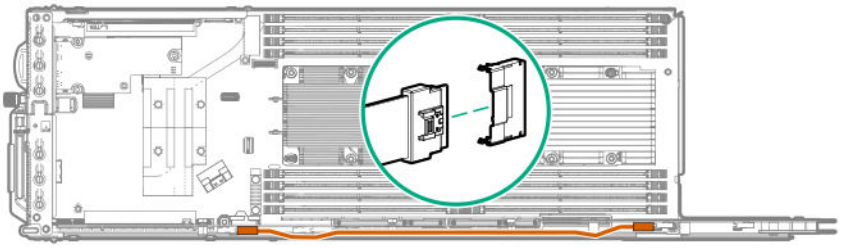
1 The 870531-001 cable included in the 874304-B21 cable kit is a 16NVMe long cable.

2 The 870532-001 cable included in the 874304-B21 cable kit is a 16NVMe short cable.



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

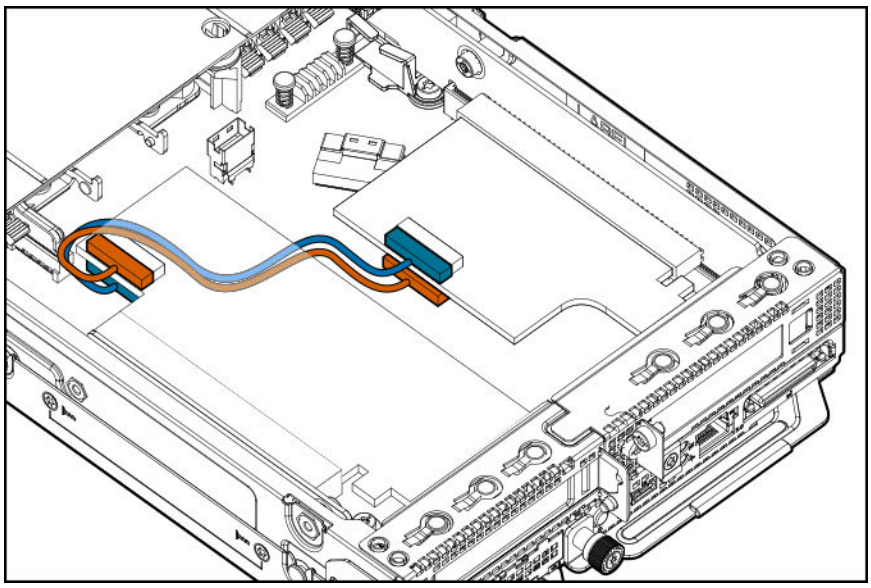
FlexibleLOM riser cabling



OPA adapter cabling

Cable color	Description
Blue	OPA adapter sideband cable
Orange	OPA adapter IFP cable

InfiniBand and auxiliary adapter cabling



Cable color	Description
Orange	White cable
Blue	Black cable

Specifications

Environmental specifications

Specification	Value
Temperature range[1]	—
Operating	10°C to 35°C (50°F to 95°F)
Non-operating	-30°C to 60°C (-22°F to 140°F)
Relative humidity (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)

Temperature requirements

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 TMRA of manufacturer.

- The maximum inlet ambient temperature for most components installed in the server is 35°C (95°F). Some components, however, have thermal limitations depending on the chassis model and the fan configuration. If two or more components with temperature limitations are installed in the server, observe the lowest maximum inlet ambient temperature.
- In most cases, the removable drive blanks are installed in empty drive bays. However, when components that have thermal limitations are installed, it might be necessary to limit the number of drives installed in the chassis. In which case, a combination of drive blanks and/or thermal bezel blanks is installed in the empty drive bays.
- For list of components with thermal limitations, see to the following topics:
  - **Thermal limitations for components in systems with the Enhanced Processor Performance feature enabled**
  - **Thermal limitations for components in systems with the Enhanced Processor Performance feature disabled**
- The following drive options have drive capacities greater than or equal to 10 TB, but their thermal requirements are the same as drives with capacities of less than 10 TB.
  - 857646-B21
  - 857650-B21
  - 878562-B21
  - 878566-B21
  - 881781-B21
  - 881787-B21

List of components with temperature requirements

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 for components in systems with the Enhanced Processor Performance feature enabled

The Enhanced Processor Performance feature adjusts the processor settings to a more aggressive setup that can result in increased performance, but might result in higher power consumption.

To configure this feature, from the **System Utilities** screen, select **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Power and Performance Options** > **Advanced Performance Tuning Options**.

Processors

The following limitations are for the Intel Xeon Gold 6244 (G6244) processor:

- The processor does not support enhanced processor performance.
- 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 supported by the server	Maximum inlet ambient temperature
Processor with a TDP of 135 W or more, except G6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	28°C (82.4°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	30°C (86°F)
Intel Xeon Gold 6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
Processor with a TDP between 115 W and 130 W	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	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.

DIMMs

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

NOTE: HPE Persistent Memory module does not support enhanced processor performance.

Description	Chassis	Fan configuration	Number of drives supported by 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]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe 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 supported by 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]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe 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 nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
HPE Persistent Memory module	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	Not supported
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
			0 to 2 drives[5]	Not supported
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)		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.

4 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, bezel 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, bezel blanks must be installed in drive bays 3-2 and 4-2.

5 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 1-3, 1-4, 1-5, 1-6, 2-3, 2-4, 2-5 and 2-6. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 3-3, 3-4, 3-5, 3-6, 4-3, 4-4, 4-5 and 4-6.

HPE Smart Array controllers

CAUTION: To prevent improper cooling and thermal damage, do not keep an energy pack inside the chassis when the Smart Array P-class controller is not installed.

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
P408i-p Controller[1]	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[2]	Not supported
			3 drives[3]	Not supported
			0 to 2 drives[4]	28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	22°C (71.6°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	22°C (71.6°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
P408e-p Controller[1]	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[2]	Not supported
			3 drives[3]	Not supported
			0 to 2 drives[4]	28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	25°C (77°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	25°C (77°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	25°C (77°F)
E208i-p Controller	Apollo r2200 Gen10 Chassis	Redundant and nonredundant	3 drives[2]	30°C (86°F)
			3 drives[3]	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	(12 LFF backplane)		0 to 2 drives[4]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
E208e-p Controller	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[2]	28°C (82.4°F)
			3 drives[3]	Not supported
			0 to 2 drives[4]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	30°C (86°F)

1 An energy pack is supported only with P408i-p and P408e-p controllers. Due to thermal concerns, HPE recommends removing the energy pack if these controller type 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.

Fibre Channel and Converged Network adapters

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
FC HBA	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	22°C (71°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
CNA	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Optical cable: Not supported Copper cable: 28°C (82.4°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	Optical cable: 22°C (71°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Optical cable: Not supported Copper cable: 30°C (86°F)

Table Continued

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

Ethernet and InfiniBand adapters

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
Ethernet adapters with SFP+, SFP28 or QSFP transceivers/ InfiniBand adapters with QDR or FDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Optical cable: Not supported Copper cable: 28°C (82.4°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	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 nonredundant	0 to 24 drives	Optical cable: Not supported Copper cable: 30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Optical cable: Not supported Using a copper cable: 30°C (86°F)
Ethernet adapters with QSFP28 transceiver/ InfiniBand adapters with EDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Optical cable: Not supported Copper cable: 25°C (77°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	Optical cable: Not supported Copper cable: 28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	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 nonredundant	0 to 24 drives	Optical cable: Not supported Copper cable: 28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Optical cable: Not supported Copper cable: 28°C (82.4°F)
IB HDR100/EN 100 GB 1P 940QSFP56	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	Optical cable: 25°C (77°F) Copper cable: 30°C (86°F)
	Apollo r2600 Gen10 Chassis	Redundant and nonredundant	0 to 6 drives	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	(24 SFF or 16 SFF + 8 NVMe backplane)		0 to 2 drives[5]	Optical cable: 22°C (71.6°F) Copper cable: 28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
			0 to 2 drives [6]	Optical cable: Not supported Copper cable: 22°C (71.6°F)
IB HDR100/EN 100 GB 2P 940QSFP56	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
			0 to 2 drives[5]	Optical cable: Not supported Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
			0 to 2 drives[6]	Optical cable: Not supported Copper cable: 25°C (77°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
IB HDR/EN 200 GB 1P 940QSFP56	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	Optical cable: 22°C (71.6°F) Copper cable: 28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
			0 to 2 drives[5]	Optical cable: Not supported Copper cable: 22°C (71.6°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
		Nonredundant	0 to 2 drives[6]	Not supported
		Redundant		Optical cable: Not supported Copper cable: 22°C (71.6°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.

4 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, bezel 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, bezel blanks must be installed in drive bays 3-2 and 4-2.

5 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 1-3, 1-4, 1-5, 1-6, 2-3, 2-4, 2-5 and 2-6. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 3-3, 3-4, 3-5, 3-6, 4-3, 4-4, 4-5 and 4-6.

6 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2800 Gen10 Chassis, bezel blanks must be installed in drive bays 1-3, 1-4, 2-3 and 2-4. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2800 Gen10 Chassis, bezel blanks must be installed in drive bays 3-3, 3-4, 4-3 and 4-4.

FlexibleLOM adapters with SFP+, SFP28 or QSFP transceivers

Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Optical cable: Not supported Copper cable: 28°C (82.4°F)
		3 drives[2]	Not supported
		0 to 2 drives[3]	Optical cable: Not supported Copper cable: 30°C (86°F)
Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	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 nonredundant	0 to 24 drives	Optical cable: Not supported Copper cable: 30°C (86°F)
Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	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.

Media Module adapters

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
Media Module 10 GB 2P 568FLR-MMSFP+	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	30°C (86°F)
Media Module 10 GB 2P 568FLR-MMT	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	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.

Thermal limitations for components in systems with the Enhanced Processor Performance feature disabled

Processors

The following limitations are for the Intel Xeon Gold 6244 (G6244) processor:

- The processor does not support enhanced processor performance.
- 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 supported by the server	Maximum inlet ambient temperature
Processor with a TDP of 125 W or more, except G6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	25°C (77°F)
			0 to 2 drives[3]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	35°C (95°F)
Intel Xeon Gold 6244	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	25°C (77°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	28°C (82.4°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	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.

DIMMs

In nonredundant fan mode, the 32 GB RDIMM, 64 GB LRDIMM, and 128 GB LRDIMM can support the maximum inlet ambient temperature of 35°C (95°F).

Description	Chassis	Fan configuration	Number of drives supported by 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]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe 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)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
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]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe 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]	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe 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)
HPE Persistent Memory module	Apollo r2200 Gen10 Chassis	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	(12 LFF backplane)		0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	25°C (77°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
			0 to 2 drives[5]	22°C (71.6°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	22°C (71.6°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.

4 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, bezel 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, bezel blanks must be installed in drive bays 3-2 and 4-2.

5 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 1-3, 1-4, 1-5, 1-6, 2-3, 2-4, 2-5 and 2-6. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 3-3, 3-4, 3-5, 3-6, 4-3, 4-4, 4-5 and 4-6.

HPE Smart Array controllers

CAUTION: To prevent improper cooling and thermal damage, do not keep an energy pack inside the chassis when the Smart Array P-class controller is not installed.

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
P408i-p controller	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	22°C (71.6°F)
			3 drives[2]	Not supported
			0 to 2 drives[3]	30°C (86°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	28°C (82.4°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
P408e-p controller	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	22°C (71.6°F)
			3 drives[2]	22°C (71.6°F)
			0 to 2 drives[3]	30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	30°C (86°F)
E208i-p controller	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	35°C (95°F)
			3 drives[2]	28°C (82.4°F)
			0 to 2 drives[3]	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	35°C (95°F)
E208e-p controller	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	28°C (82.4°F)
			0 to 2 drives[3]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	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.

Fibre Channel and Converged Network adapters

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
FC HBA	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	28°C (82.4°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	25°C (77°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	25°C (77°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	25°C (77°F)
CNA	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	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]	Optical cable: 28°C (82.4°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	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 nonredundant	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.

Ethernet and InfiniBand adapters

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
Ethernet adapters with SFP+, SFP28 or QSFP transceiver/ InfiniBand adapters with QDR or FDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	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]	Optical cable: 28°C (82.4°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	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 nonredundant	0 to 24 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
Ethernet adapters with QSFP28 transceiver/ InfiniBand adapters with EDR speed	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	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]	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	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 nonredundant	0 to 4 drives	Optical cable: 22°C (71.6°F) Copper cable: 35°C (95°F)
IB HDR100/EN 100 GB 1P 940QSFP56	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	Optical cable: 30°C (86°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis	Redundant and nonredundant	0 to 6 drives	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	(24 SFF or 16 SFF + 8 NVMe backplane)		0 to 2 drives[5]	Optical cable: 25°C (77°F) Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
			0 to 2 drives[6]	Optical cable: 22°C (71.6°F) Copper cable: 25°C (77°F)
IB HDR100/EN 100 GB 2P 940QSFP56	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported
			0 to 2 drives[4]	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
			0 to 2 drives[5]	Optical cable: 22°C (71.6°F) Copper cable: 30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
			0 to 2 drives[6]	Optical cable: 22°C (71.6°F) Copper cable: 28°C (82.4°F)
IB HDR/EN 200 GB 1P 940QSFP56	Apollo r2200 Gen10 Chassis	Redundant and nonredundant	3 drives[1]	Not supported
			3 drives[2]	Not supported
			0 to 2 drives[3]	Not supported

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	(12 LFF backplane)		0 to 2 drives[4]	Optical cable: 25°C (77°F) Copper cable: 30°C (86°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	Not supported
			0 to 2 drives[5]	Optical cable: 22°C (71.6°F) (CPU TDP <= 130W) Copper cable: 25°C (77°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	Not supported
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	Not supported
		Nonredundant	0 to 2 drives[6]	Not supported
		Redundant		Optical cable: 22°C (71.6°F) (CPU TDP <= 125W) Copper cable: 25°C (77°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.

4 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2200 Gen10 Chassis, bezel 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, bezel blanks must be installed in drive bays 3-2 and 4-2.

5 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 1-3, 1-4, 1-5, 1-6, 2-3, 2-4, 2-5 and 2-6. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2600 Gen10 Chassis, bezel blanks must be installed in drive bays 3-3, 3-4, 3-5, 3-6, 4-3, 4-4, 4-5 and 4-6.

6 If the component is installed in server 1 or server 2, and the server is installed in the Apollo r2800 Gen10 Chassis, bezel blanks must be installed in drive bays 1-3, 1-4, 2-3 and 2-4. Similarly, if the component is installed in server 3 or server 4, and the server is installed in the Apollo r2800 Gen10 Chassis, bezel blanks must be installed in drive bays 3-3, 3-4, 4-3 and 4-4.

FlexibleLOM adapters with SFP+, SFP28 or QSFP transceivers

Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	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]	Optical cable: 25°C (77°F) Copper cable: 35°C (95°F)
Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	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 nonredundant	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 nonredundant	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.

Media Module adapters

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
Media Module 10 GB 2P 568FLR-MMSFP+	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	30°C (86°F)
			0 to 2 drives[3]	35°C (95°F)

Table Continued

Description	Chassis	Fan configuration	Number of drives supported by the server	Maximum inlet ambient temperature
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	35°C (95°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	0 to 4 drives	35°C (95°F)
Media Module 10 GB 2P 568FLR-MMT	Apollo r2200 Gen10 Chassis (12 LFF backplane)	Redundant and nonredundant	3 drives[1]	30°C (86°F)
			3 drives[2]	30°C (86°F)
			0 to 2 drives[3]	35°C (95°F)
	Apollo r2600 Gen10 Chassis (24 SFF or 16 SFF + 8 NVMe backplane)	Redundant and nonredundant	0 to 6 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (24 SFF backplane with SAS expander)	Redundant and nonredundant	0 to 24 drives	30°C (86°F)
	Apollo r2800 Gen10 Chassis (16 NVMe backplane)	Redundant and nonredundant	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.

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 support page

https://www.hpe.com/info/Apollo2000-Gen10-docs

HPE ProLiant XL170r Gen10 user documents

https://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:

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

- To access documentation and support services, go to the Hewlett Packard Enterprise Support Center website:

  https://www.hpe.com/support/hpesc

Information to collect

- Technical support registration number (if applicable)
- Product name, model or version, and serial number
- Operating system name and version
- Firmware version
- Error messages
- Product-specific reports and logs
- Add-on products or components
- Third-party products or components

Accessing updates

- Some software products provide a mechanism for accessing software updates through the product interface. Review your product documentation to identify the recommended software update method.
- To download product updates:

  Hewlett Packard Enterprise Support Center

  https://www.hpe.com/support/hpesc

  Hewlett Packard Enterprise Support Center: Software downloads

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

  Software Depot

  https://www.hpe.com/support/softwaredepot

- To subscribe to eNewsletters and alerts:

  https://www.hpe.com/support/e-updates

- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:

  https://www.hpe.com/support/AccessToSupportMaterials

IMPORTANT: Access to some updates might require product entitlement when accessed through the Hewlett Packard Enterprise Support Center. You must have an HPE 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

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

HPE Proactive Care services

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

HPE Datacenter Care services

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

HPE Proactive Care service: Supported products list

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

HPE Proactive Care advanced service: Supported products list

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

Proactive Care customer information

Proactive Care central

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

Proactive Care service activation

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

Warranty information

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

HPE ProLiant and IA-32 Servers and Options

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

HPE Enterprise and Cloudline Servers

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

HPE Storage Products

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

HPE Networking Products

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

Regulatory information

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

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

Additional regulatory information

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

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

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

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

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

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

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Acronyms and abbreviations

AHCI

Advanced Host Controller Interface

CSR

Customer Self Repair

CNA

Converged Network Adapter

FHHL

Full Height Half Length

FC HBA

Fibre Channel Host Bus Adapter

HPE APM

HPE Apollo Platform Management

HPE SSA

HPE Smart Storage Administrator

iLO

Integrated Lights-Out

IML

Integrated Management Log

ISO

International Organization for Standardization

IFP

Internal faceplate-to-processor

LFF

large form factor

LOM

LAN on Motherboard

NIC

network interface controller

NMI

nonmaskable interrupt

PCIe

Peripheral Component Interconnect Express

PDB

Power Distribution Board

PDU

power distribution unit

POST

Power-On Self-Test

RBSU

ROM-Based Setup Utility

RCM

Rack Consolidation Management

RoHS

Restriction of Hazardous Substances

SAS

serial attached SCSI

SATA

serial ATA

SFF

small form factor

SPP

Service Pack for ProLiant

UEFI

Unified Extensible Firmware Interface

UID

unit identification

USB

universal serial bus