



Hewlett Packard
Enterprise

HPE Apollo 4200 Gen10 System 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 that you are qualified in the servicing of computer equipment, trained in recognizing hazards in products, and are familiar with weight and stability precautions.

Notices

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

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

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

Acknowledgments

Intel® and Xeon® are trademarks of Intel Corporation in the U.S. and other countries.

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

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

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

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

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



Contents

Customer self repair.....	7
Illustrated parts catalog.....	16
Mechanical components.....	16
Air baffle spare part.....	17
Fan cage spare part.....	17
Fan spare part.....	17
Cable management holder spare part.....	17
Miscellaneous mechanical spare parts.....	17
Rear NVMe drive cage air baffle spare part.....	18
Rear PCI cover spare part.....	18
Power cable assembly spare parts.....	18
System components.....	18
Heatsink spare part.....	19
DIMM spare parts.....	19
Persistent memory module spare parts.....	20
Processor spare parts.....	20
Front panel board spare part.....	22
Power supply spare parts.....	22
PCIe riser board spare part.....	22
System board spare part.....	23
System battery spare part.....	23
System options.....	23
HPE Smart Storage Battery spare part.....	24
Front/internal drive cage backplane spare parts.....	24
Drive blank spare parts.....	24
Power supply backplane board spare part.....	25
Expansion board option spare parts.....	25
Rear drive cage backplane spare parts.....	27
Rear drive cage spare parts.....	27
Drive spare parts.....	27
microSD spare parts.....	30
HPE Trusted Platform Module 2.0 spare part.....	30
Cable spare parts.....	31
Removal and replacement procedures.....	32
Required tools.....	32
Safety considerations.....	32
Preventing electrostatic discharge.....	32
Symbols on equipment.....	32
Server warnings and cautions.....	33
Rack warnings and cautions.....	34
Preparation procedures.....	35
Remove the bezel.....	35
Power down the system.....	36
Extend the front drive cages out of the chassis.....	36



Remove the system from the rack.....	38
Remove the access panel.....	39
Remove the rear drive cage blank.....	40
Remove a rear drive cage.....	41
Remove the PCIe riser cage.....	43
Open the cable management holder.....	44
Remove the HPE Smart Storage Battery.....	45
Remove the air baffle.....	46
Removing and replacing a drive blank.....	47
Removing and replacing a drive blank from the front drive cage	47
Removing and replacing a drive blank from the rear drive cage.....	48
Removing and replacing drives.....	49
Removing and replacing a hot-plug drive.....	49
Removing and replacing an M.2 SSD.....	52
Removing and replacing an M.2 enablement board.....	54
Removing and replacing a power supply blank.....	55
Removing and replacing a power supply.....	56
Removing and replacing the air baffle.....	60
Removing and replacing a fan.....	61
Removing and replacing a rear NVMe drive cage air baffle.....	61
Removing and replacing a rear NVMe drive cage fan.....	62
Removing and replacing a DIMM.....	63
Removing and replacing a persistent memory module.....	64
Persistent memory module-processor compatibility.....	65
Configuring the system for Intel Optane persistent memory 100 series for HPE.....	65
Persistent memory module relocation guidelines.....	65
Persistent memory module sanitization.....	67
Removing and replacing a processor heatsink assembly.....	67
Removing and replacing an HPE InfiniBand HDR/Ethernet 200Gb 1-port 940QSFP56 x16 adapter.....	69
Removing and replacing an expansion board or type -p controller.....	71
HPE Smart Storage Battery.....	73
Removing and replacing the HPE Smart Storage Battery.....	73
Removing and replacing a type -a storage controller.....	74
Removing and replacing the two-slot PCIe riser board.....	75
Removing and replacing the power pass-through board.....	76
Removing and replacing the Pensando DSP DSC-25 2p SFP28 card.....	77
Decommissioning the Pensando DSP DSC-25 2p SFP28 card.....	77
Removing the Pensando DSP DSC-25 2p SFP28 card	77
Replacing the Pensando DSP DSC-25 2p SFP28 card.....	79
Removing and replacing the HPE NS204i-p NVMe OS Boot Device option.....	80
Removing and replacing the boot device.....	80
Removing and replacing a boot device drive.....	81
Removing and replacing the system battery.....	84
Removing and replacing drive backplanes.....	85
Removing and replacing the front LFF drive cage backplane.....	85
Removing and replacing the internal LFF drive cage backplane.....	87
Removing and replacing the front SFF drive cage backplane.....	89
Removing and replacing the internal SFF drive cage backplane.....	91
Removing the four-bay LFF rear drive cage backplane.....	94
Removing and replacing the two-bay SFF rear drive cage backplane.....	95
Removing and replacing the six-bay SFF rear drive cage backplane (SAS or SATA).....	96
Removing and replacing the six-bay SFF NVMe rear drive cage backplane.....	98
Removing and replacing the LFF drive cable track assemblies.....	99
Removing and replacing the SFF drive cable track assemblies.....	106
Removing and replacing the front I/O board.....	114



Removing and replacing the cable management holder.....	115
Removing and replacing the air blocker for the onboard PCIe expansion slots 5–7.....	116
Removing and replacing the air blocker for the internal drive cage backplane.....	117
Removing and replacing the chassis retention bracket.....	119
Removing and replacing the system board.....	120
Re-entering the server serial number and product ID.....	122
HPE Trusted Platform Module 2.0 Gen10 Option.....	122

Cabling..... 123

Cabling overview.....	123
Front drive cage cabling.....	123
Front and internal drive cage cabling.....	123
Internal drive cage cabling.....	125
Rear LFF drive cage cabling.....	130
Rear SFF drive cage cabling.....	131
Rear six-bay SFF drive cage cabling (SAS, SATA).....	132
NVMe rear drive cage cabling.....	133
M.2 SSD Enablement option cabling.....	134
HPE Smart Array P824i-p MR Gen10 cabling.....	136
HPE Smart Storage Battery cabling.....	137
iLO ports to network cabling.....	137
Fan assembly cabling.....	138
Front panel cabling.....	139

Diagnostic tools..... 140

Product QuickSpecs.....	140
UEFI System Utilities.....	140
Selecting the boot mode	140
Secure Boot.....	141
Launching the Embedded UEFI Shell	141
Intelligent Provisioning.....	142
Intelligent Provisioning operation.....	143
HPE Insight Remote Support.....	143
USB support.....	144
External USB functionality.....	144
HPE Smart Storage Administrator.....	144
HPE MR Storage Administrator.....	144
HPE InfoSight for servers	145
StorCLI.....	145

Troubleshooting..... 146

Troubleshooting resources.....	146
--------------------------------	-----

Component identification..... 147

Front panel components.....	147
Rear panel components.....	148
Rear panel LEDs.....	151
System board components.....	152
DIMM slot locations.....	153
DIMM label identification.....	154
Intel Optane persistent memory 100 series for HPE label identification.....	156



System maintenance switch descriptions.....	156
NMI functionality.....	157
Front panel LEDs and buttons.....	158
UID button functionality.....	160
Front panel LED power fault codes.....	160
Drive numbering.....	160
Drive LEDs.....	162
Low-profile LFF drive LED definitions.....	162
SFF drive components and LEDs.....	163
NVMe drive components and LEDs.....	164
SFF flash adapter components and LED definitions.....	166
Drive cage identification.....	167
Drive cage backplane identification.....	168
M.2 SSD slot numbering.....	171
HPE Smart Array P824i-p MR Gen10 Controller.....	171
HPE InfiniBand HDR/Ethernet 940QSFP 56x16 adapter LEDs.....	172
DSC-25 2-port SFP28 card ports and LEDs.....	173
HPE NS204i-p NVMe OS Boot Device components.....	174
HPE NS204i-p NVMe OS Boot Device LED definitions.....	175
Fan locations.....	175
Fan numbering.....	175

Specifications..... 177

Environmental specifications.....	177
Mechanical specifications.....	177
Power supply specifications.....	178
Hot-plug power supply calculations.....	179

Support and other resources..... 180

Accessing Hewlett Packard Enterprise Support.....	180
Accessing updates.....	180
Remote support.....	181
Warranty information.....	181
Regulatory information.....	181
Documentation feedback.....	182



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.

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 Agréé local.

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 spedisce 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 aggiuntive 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 componenti. 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.

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 Teilkatalog 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.

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.

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 garantievoorzwaarden 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.

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.



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。

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。

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.
- **선택 사항** - 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 Hewlett Packard Enterprise에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 Hewlett Packard Enterprise 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. Hewlett Packard Enterprise는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

CSR 부품은 재고 상태와 지리적 조건이 허용하는 경우 다음 영업일 납품이 가능하도록 배송이 이루어집니다. 지리적 조건이 허용하는 경우 추가 비용이 청구되는 조건으로 당일 또는 4시간 배송이 가능할 수도 있습니다. 도움이 필요하시면 Hewlett Packard Enterprise Support Center로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. Hewlett Packard Enterprise는 결함이 발생한 부품을 Hewlett Packard Enterprise로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 Hewlett Packard Enterprise로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 Hewlett Packard Enterprise로 반환해야 합니다. 이때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 Hewlett Packard Enterprise가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, Hewlett Packard Enterprise는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

Hewlett Packard Enterprise CSR 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오.

부품 제공 보증 서비스

Hewlett Packard Enterprise 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 Hewlett Packard Enterprise는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

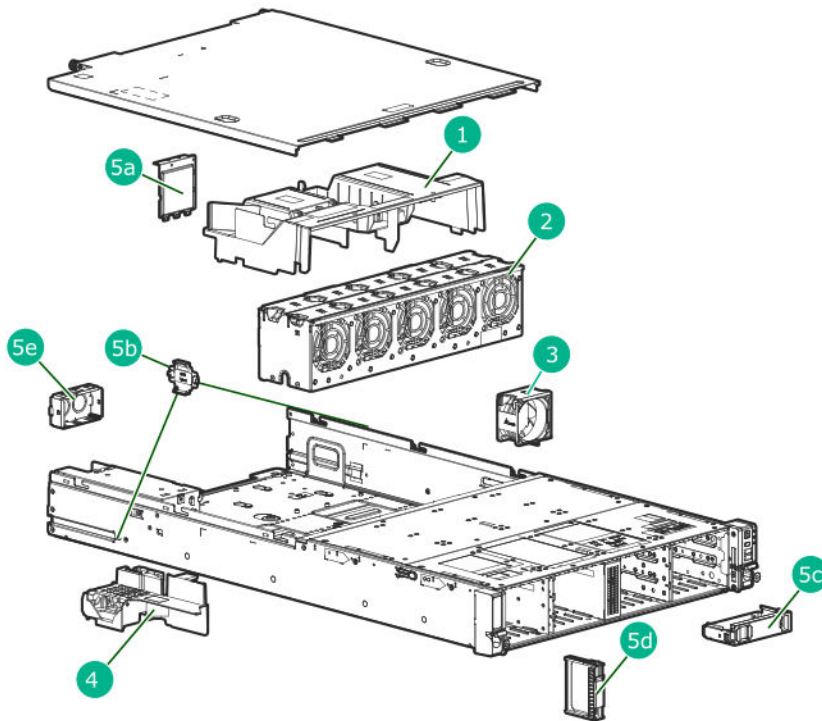
부품 제공 보증 서비스 제공 시 CSR 부품 교체는 의무 사항입니다. 사용자가 Hewlett Packard Enterprise에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.



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



Item	Description
1	<u>Air baffle spare part</u>
2	<u>Fan cage spare part</u>
3	<u>Fan spare part</u>
4	<u>Cable management holder spare part</u>
5	<u>Miscellaneous mechanical spare parts</u>
	5a: Air blocker for the onboard PCIe expansion slots 5-7
	5b: Chassis retention bracket
	5c: SFF drive blank

Table Continued



Item	Description
	5d: LFF drive blank
	5e: Power supply blank
6	Rear NVMe drive cage air baffle spare part¹
7	Rear PCI cover spare part¹
8	Power cable assembly spare parts¹

¹ Not shown.

Air baffle spare part

Customer self repair: mandatory

Description	Spare part number
Air baffle	P10254-001

Fan cage spare part

Customer self repair: mandatory

Description	Spare part number
Fan cage	P10066-001

Fan spare part

Customer self repair: mandatory

Description	Spare part number
Fan	809953-001
6SFF NVMe rear cage fan	P10081-001

Cable management holder spare part

Customer self repair: mandatory

Description	Spare part number
Cable management holder	P10255-001

Miscellaneous mechanical spare parts

Customer self repair: mandatory



Description	Spare part number
Air blocker for the onboard PCIe expansion slots 5-7	809955-001 ¹
LFF drive blank	809955-001 ¹
Chassis retention bracket	809955-001 ¹
SFF drive blank	734348-001
Power supply blank	777301-001

¹ These parts are included in the mechanical spare parts kit p/n 809955-001.

Rear NVMe drive cage air baffle spare part

Customer self repair: mandatory

Description	Spare part number
Rear NVMe drive cage air baffle with 4 screws	P12368-001

Rear PCI cover spare part

Customer self repair: mandatory

Description	Spare part number
Rear PCI cover	P10256-001

Power cable assembly spare parts

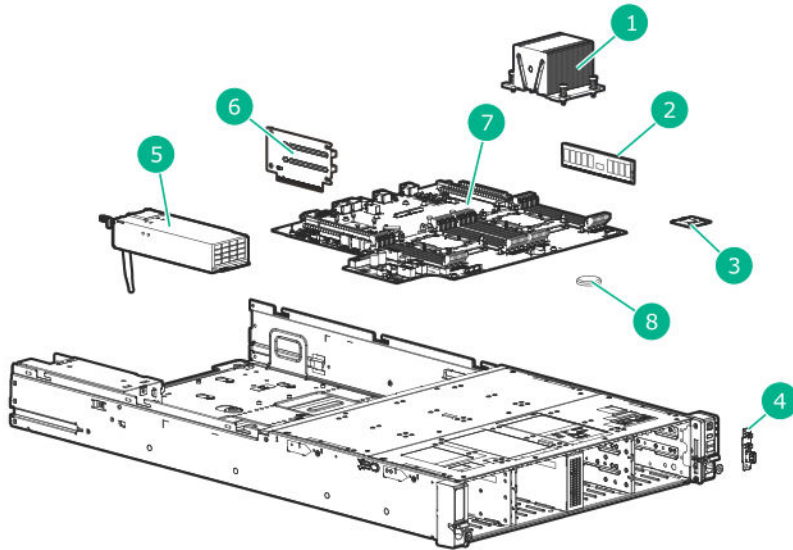
Customer self repair: mandatory

Description	Spare part number
1st LFF drive cable track, signal and power cables	P10061-001
2nd LFF drive cable track, signal and power cables	P10062-001
1st SFF drive cable track, signal and power cables	P10068-001
2nd SFF drive cable track, signal and power cables	P10069-001

System components

Hewlett Packard Enterprise continually improves and changes product parts. For complete and current supported parts information, see the Hewlett Packard Enterprise PartSurfer website (<http://www.hpe.com/info/partssurfer>).





Item	Description
1	<u>Heatsink spare part</u>
2	<ul style="list-style-type: none"> • <u>DIMM spare parts</u> • <u>Persistent memory module spare parts</u>
3	<u>Processor spare parts</u>
4	<u>Front panel board spare part</u>
5	<u>Power supply spare parts</u>
6	<u>PCIe riser board spare part</u>
7	<u>System board spare part</u>
8	<u>System battery spare part</u>

For more information, see **Removal and replacement procedures**.

Heatsink spare part

Customer self repair: optional

Description	Spare part number
Standard heatsink	P09884-001

DIMM spare parts

Customer self repair: mandatory



2666 MT/s DIMMs

Description	Spare part number
DIMM, 32GB PC4-2666V-R, 2Gx4	850881-001
DIMM, 64GB PC4-2666V-L, 2Gx4	850882-001
DIMM, 16GB PC4-2666V-R, 1Gx8	868846-001

2933 MT/s DIMMs

Description	Spare part number
DIMM, 8GB PC4-2933Y-R, 1Gx8	P06186-001
DIMM, 16GB PC4-2933Y-R, 2Gx4	P06187-001
DIMM, 16GB PC4-2933Y-R, 1Gx8	P06188-001
DIMM, 32GB PC4-2933Y-R, 2Gx4	P06189-001
DIMM, 64GB PC4-2933Y-L, 4Gx4	P06192-001
DIMM, 64GB PC4-2933Y-R, 2Gx4	P06190-001
DIMM, 128GB PC4-2933Y-L, 2Gx4	P06191-001
DIMM, 128GB PC4-2933Y-L, 4Rx4	P16001-001

Persistent memory module spare parts

Customer self repair: mandatory

Description	Spare part number
Intel Optane 128GB PMEM 100 for HPE	844071-001
Intel Optane 256GB PMEM 100 for HPE	844072-001
Intel Optane 512GB PMEM 100 for HPE	844073-001

Processor spare parts

Customer self repair: no

First Generation Intel Xeon Scalable Processors

41XX processors

Description	Spare part number
2.1 GHz Intel Xeon-S 4110 processor	875711-001
2.2 GHz Intel Xeon-S 4114 processor	875713-001
2.1 GHz Intel Xeon-S 4116 processor	875716-001

51XX processors

Description	Spare part number
2.3 GHz Intel Xeon-G 5118 processor	875717-001



61XX processors

Description	Spare part number
2.1 GHz Intel Xeon-G 6130 processor	874736-001
2.6-GHz Intel Xeon-G 6132 processor	875722-001
3.2-GHz Intel Xeon-G 6134 processor	875723-001
2.3-GHz Intel Xeon-G 6140 processor	874734-001
2.4 GHz Intel Xeon-G 6148 processor	874732-001

81XX processor

Description	Spare part number
2.1-GHz Intel Xeon-P 8160 processor	874729-001

Second Generation Intel Xeon Scalable Processors

42XX processors

Description	Spare part number
2.1-GHz Intel Xeon-S 4208 processor	P11605-001
2.2-GHz Intel Xeon-S 4208R processor	P19247-001
2.2-GHz Intel Xeon-S 4210 processor	P11606-001
2.4-GHz Intel Xeon-S 4210R processor	P19246-001
2.2-GHz Intel Xeon-S 4214 processor	P11607-001
2.4-GHz Intel Xeon-S 4214R processor	P19245-001
2.5-GHz Intel Xeon-S 4215 processor	P11608-001
3.2-GHz Intel Xeon-S 4215R processor	P25089-001
2.1-GHz Intel Xeon-S 4216 processor	P11609-001
2.3-GHz Intel Xeon-S 4216R processor	P19244-001

52XX processors

Description	Spare part number
2.5-GHz Intel Xeon-G 5215 processor	P11610-001
2.7-GHz Intel Xeon-G 5215R processor	P19243-001
2.3-GHz Intel Xeon-G 5218 processor	P11612-001
2.1-GHz Intel Xeon-G 5218R processor	P25090-001
2.2-GHz Intel Xeon-G 5220 processor	P11613-001
2.2-GHz Intel Xeon-G 5220R processor	P19241-001



62XX processors

Description	Spare part number
2.7-GHz Intel Xeon-G 6226 processor	P12180-001
2.9-GHz Intel Xeon-G 6226R processor	P25094-001
2.1-GHz Intel Xeon-G 6230 processor	P11614-001
2.1-GHz Intel Xeon-G 6230R processor	P25095-001
2.2-GHz Intel Xeon-G 6238R processor	P25096-001
2.4-GHz Intel Xeon-G 6240R processor	P25097-001
2.8-GHz Intel Xeon-G 6242 processor	P11616-001
2.5-GHz Intel Xeon-G 6248 processor	P11618-001
2.1-GHz Intel Xeon-G 6252 processor	P11619-001

82XX processors

Description	Spare part number
2.4-GHz Intel Xeon-P 8260 processor	P11621-001
2.2-GHz Intel Xeon-P 8276 processor	P11624-001

Front panel board spare part

Customer self repair: mandatory

Description	Spare part number
Front panel board	P10063-001

Power supply spare parts

Customer self repair: mandatory

Description	Spare part number
HPE 800 W Flex Slot Platinum Hot-plug power supply	866730-001
HPE 800 W Flex Slot Titanium Hot-plug power supply	866793-001
HPE 800 W Flex Slot -48 V DC Hot-plug power supply	866728-001
HPE 800 W Flex Slot Universal Hot-plug power supply	866727-001
HPE 1600 W Flex Slot Platinum Plus Hot-plug power supply	863373-001

PCIe riser board spare part

Customer self repair: mandatory



Description	Spare part number
FH/HL riser board	P10075-001
NVMe pass-through riser board	P10082-001

System board spare part

Customer self repair: optional

Description	Spare part number
System board ¹	P10065-001
System board	P10065-002
System board ²	P10065-003

¹ Hewlett Packard Enterprise does not support replacing a -002 or -003 system board with a -001 system board.

² The -003 system board can replace a -001 or -002 system board.

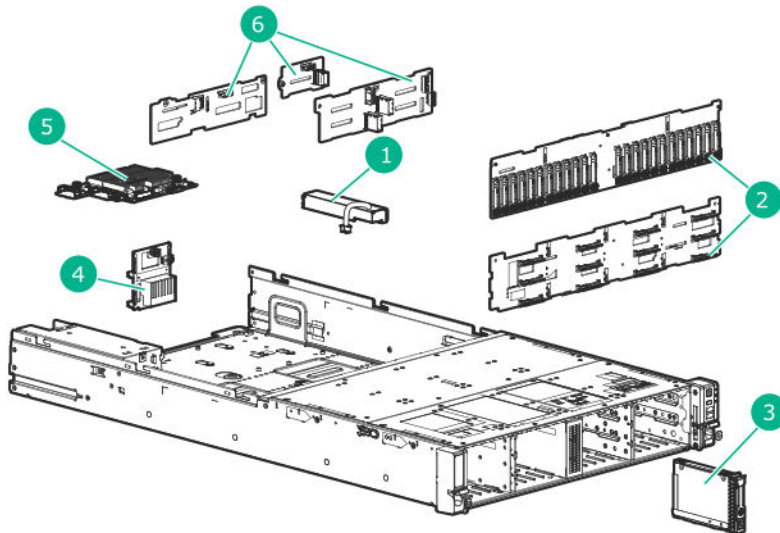
System battery spare part

Customer self repair: mandatory

Description	Spare part number
System battery	319603-001

System options

Hewlett Packard Enterprise continually improves and changes product parts. For complete and current supported parts information, see the Hewlett Packard Enterprise (<http://www.hpe.com/info/partssurfer>).



Item	Description
1	<u>HPE Smart Storage Battery spare part</u>
2	<u>Front/internal drive cage backplane spare parts</u>
3	<u>Drive blank spare parts</u>
4	<u>Power supply backplane board spare part</u>
5	<u>Expansion board option spare parts</u>
6	<u>Rear drive cage backplane spare parts</u>
7	<u>Rear drive cage spare parts¹</u>
8	<u>Drive spare parts¹</u>
9	<u>microSD spare parts¹</u>
10	<u>HPE Trusted Platform Module 2.0 spare part¹</u>
11	<u>Cable spare parts¹</u>

¹Not shown.

HPE Smart Storage Battery spare part

Customer self repair: mandatory

Description	Spare part number
HPE Smart Storage Battery	878643-001

Front/internal drive cage backplane spare parts

Customer self repair: optional

These part numbers apply to both the front and internal drive cage backplanes.

Description	Spare part number
24-bay SFF drive cage backplane	809948-001
12-bay LFF drive cage backplane	809947-001

Drive blank spare parts

Customer self repair: mandatory



Description	Spare part number
LFF drive blank	675039-001
SFF drive blank	670033-001

Power supply backplane board spare part

Customer self repair: mandatory

Description	Spare part number
Power supply backplane board	P10064-001

Expansion board option spare parts

Customer self repair: mandatory

Table 1: Smart Array SAS controllers

Description	Spare part number
HPE Smart Array E208i-a SR Gen10 Controller	836259-001
HPE Smart Array P408i-a SR Gen10 Controller	836260-001
HPE Smart Array P816i-a SR Gen10 Controller	836261-001
HPE Smart Array E208i-p SR Gen10 Controller	836266-001
HPE Smart Array P408i-p SR Gen10 Controller	836269-001
HPE Smart Array P824i-p MR Gen10 Controller Enablement Kit	P11274-B21
<ul style="list-style-type: none"> HPE Smart Array P824i-p MR Gen10 Controller (871043-001) Mini SAS, 36P, STR, HD cable (P10071-001) HPE Smart Array P824i-p MR Gen10 Controller pass thru board (P10070-001) 	

Table 2: InfiniBand adapters

Description	Spare part number
HPE InfiniBand FDR/EN 40Gb 2P 544+QSFP adapter	764736-001
HPE InfiniBand EDR/EN 100Gb 1P 840 QSFP28 adapter	828107-001
HPE InfiniBand EDR/EN 100Gb 2P 840 QSFP28 adapter	828108-001
HPE 100Gb 1p OP101 QSFP28 x16 OPA adapter	841703-001
HPE InfiniBand EDR 100Gb 1p 841 QSFP28 adapter	878578-001

Table Continued



Description	Spare part number
HPE InfiniBand EDR/EN 100Gb 2p 841 QSFP28 adapter	878579-001
HPE InfiniBand HDR/EN 200Gb 1P 940 QSFP56 x16 adapter	P08354-001
HPE InfiniBand HDR PCIe G3 auxiliary card with 350mm cable kit	P10331-001
HPE InfiniBand HDR100/EN 1P 940 QSFP56 x16 adapter	P08356-001
HPE InfiniBand HDR100/EN 100Gb 2P 940 QSFP56 x16 adapter	P08355-001

Table 3: Network controllers

Description	Spare part number
HPE Ethernet 1Gb 4p 331T adapter	649871-001
HPE Ethernet 1Gb 2p 332T adapter	616012-001
HPE Ethernet 1Gb 2p 361T adapter	656241-001
HPE Ethernet 1Gb 4p 366T adapter	816551-001
HPE Ethernet 10Gb 2p 530SFP+ adapter	656244-001
HPE Ethernet 10Gb 2p 530T adapter	657128-001
HPE Ethernet 10Gb 2-port 562SFP+ adapter	790316-001
HPE Ethernet 10Gb 2p 573SFP+ adapter	P02367-001
HPE Ethernet 10/40Gb 2p 574QSFP+ adapter	P02368-001
HPE Ethernet 10Gb 2p 535T adapter	815669-001
HPE Ethernet 10/25Gb 2p 631SFP28 adapter	840130-001
HPE Ethernet 10Gb 2p 562T adapter	840137-001
HPE Ethernet 10/25Gb 2P 640SFP28 adapter	840140-001
HPE Ethernet 10/25Gb 2p 621SFP28 adapter	869570-001
HPE Ethernet 10Gb 2p 521T adapter	869573-001
HPE Ethernet 10Gb 4p 563SFP+ adapter	870511-001
HPE Ethernet 10/25Gb 2p 661SFP28 adapter	879666-001
HPE Ethernet 100Gb 1p 842QSFP28 adapter	877697-001

Table 4: PCIe accelerators

Description	Spare part number
HPE 375GB PCIe x4 WI HH DS Spl Card	882007-001
HPE 750GB PCIe x4 WI HH DS Card	P03580-001
HPE 750GB PCIe x4 WI HH Card Spl SSD	P05455-001



HPE NS204i-p NVMe OS Boot Device spare parts

Customer self repair: mandatory

Description	Spare part number
HPE NS204i-p NVMe OS Boot Device	P14379-001
480 GB NVMe x4 RI M.2 22110 DS SSD	P24886-001

Smart I/O (Pensando Distributed Services Platform) spare part

Customer self repair: mandatory

Description	Spare part number
Pensando Distributed Services Platform DSC-25 10/25G 2-port SFP28 card	P27682-001

Rear drive cage backplane spare parts

Customer self repair: mandatory

Description	Spare part number
Two-bay SFF rear drive cage backplane	P10074-001
Six-bay SFF NVMe rear drive cage backplane	P10080-001
Four-bay LFF rear drive cage backplane	809949-001

Rear drive cage spare parts

Customer self repair: mandatory

Description	Spare part number
4LFF rear drive cage kit	P07943-B21
2SFF rear drive cage kit	P07248-B21
6SFF NVMe rear drive cage kit	P07250-B21
6SFF rear drive cage kit	P17000-001

Drive spare parts

Hot-plug drive spare parts

Customer self repair: mandatory

Description	Spare part number
300GB SAS 15K LFF LPC DS HDD	870793-001
900GB SAS 15K LFF LPC DS HDD	870796-001
1TB SAS 7.2K LFF LP DS HDD	846613-001

Table Continued



Description	Spare part number
1TB SATA 7.2K LFF LP DS HDD	862130-001
2TB SAS 7.2K LFF LP DS HDD	834133-001
2TB SATA 7.2K LFF LP DS HDD	862132-001
4TB SAS 7.2K LFF LP 512e DS HDD	862137-001
4TB SAS 7.2K LFF LP DS HDD	862137-001
4TB SATA 7.2K LFF LP 512e DS HDD	862135-001
4TB SATA 7.2K LFF LP DS HDD	862133-001
6TB SAS 7.2K LFF LP 512e DS HDD	862136-001
6TB SATA 7.2K LFF LP 512e DS HDD	862134-001
8TB SAS 7.2K LFF LP 512e DS HDD	834132-001
8TB SATA 7.2K LFF LP 512e DS HDD	834131-001
10TB SAS 7.2K LFF LP He 512e DS HDD	857966-001
10TB SATA 7.2K LFF LP He 512e DS HDD	857968-001
12TB SAS 7.2K LFF LP He 512e DS HDD	882398-001
12TB SATA 7.2K LFF LP He 512e DS HDD	882401-001
300GB SAS 10K SFF SC DS HDD	872735-001
300GB SAS 15K SFF SC DS HDD	870792-001
600GB SAS 10K SFF SC DS HDD	872736-001
600GB SAS 15K SFF SC DS HDD	870794-001
900GB SAS 15K SFF SC 512e DS HDD	870798-001
900GB SAS 15K SFF SC DS HDD	870795-001
1TB SAS 7.2K SFF SC 512e DS HDD	765872-001
1TB SAS 7.2K SFF SC DS HDD	832984-001
1TB SATA 7.2K SFF SC DS HDD	656108-001
1.2TB SAS 10K SFF SC DS HDD	872737-001
1.8TB SAS 10K SFF SC 512e DS HDD	872738-001
2TB SAS 7.2K SFF SC 512e DS HDD	765873-001
2TB SATA 7.2K SFF SC 512e DS HDD	765869-001
2.4TB SAS 12G 10K SFF SC 512e DS HDD	881507-001

Solid-state drive SATA spare parts

Customer self repair: mandatory



Description	Spare part number
240GB SATA RI SFF SC DS SSD	P05319-001
240GB SATA RI SFF SC MV SSD	P18481-001
480GB SATA MU SFF SC DS SSD	P08620-001
480GB SATA RI SFF SC DS SSD	P05312-001
480GB SATA RI SFF SC DS SSD	P05320-001
480GB SATA RI SFF SC DS SSD	P06571-001
480GB SATA MU SFF SC MV SSD	P18477-001
480GB SATA RI SFF SC MV SSD	P18482-001
960GB SATA MU SFF SC DS SSD	P08692-001
960GB SATA RI SFF SC DS SSD	P05313-001
960GB SATA RI SFF SC DS SSD	P05321-001
960GB SATA RI SFF SC DS SSD	P06572-001
960GB SATA MU SFF SC MV SSD	P18478-001
960GB SATA RI SFF SC MV SSD	P18483-001
1.92TB SATA MU LFF LPC DS SSD	P08696-001
1.92TB SATA MU SFF SC DS SSD	P08694-001
1.92TB SATA RI SFF SC DS SSD	P05314-001
1.92TB SATA RI SFF SC DS SSD	P05322-001
1.92TB SATA RI SFF SC DS SSD	P06573-001
1.92TB SATA MU SFF SC MV SSD	P18479-001
1.92TB SATA RI SFF SC MV SSD	P18484-001
3.84TB SATA MU SFF SC DS SSD	P02562-001
3.84TB SATA RI SFF SC DS SSD	P05315-001
3.84TB SATA RI SFF SC DS SSD	P05323-001
3.84TB SATA RI SFF SC DS SSD	P06574-001
3.84TB SATA MU SFF SC MV SSD	P18480-001
3.82TB SATA RI SFF SC MV SSD	P18485-001
7.68TB SATA RI SFF SC DS SSD	P05316-001
7.68TB SATA RI SFF SC MV SSD	P18486-001

Solid state drive SATA M.2 spare parts

Customer self repair: mandatory



Description	Spare part number
240GB SATA MU M.2 2280 DS SSD	875850-001
480GB SATA MU M.2 2280 DS SSD	875851-001
960GB SATA MU M.2 2280 DS SSD	875852-001
480GB SATA RI M.2 2280 DS SSD	875855-001
960GB SATA RI M.2 2280 DS SSD	875856-001
HPE Universal SATA HHHL M.2 Kit	835802-001

Solid state drive uFF M.2 spare parts

Customer self repair: mandatory

Description	Spare part number
2x240GB SATA MU M.2 SCM DS SSD	P07721-001
2x480GB SATA RI M.2 SCM DS SSD	P07437-001

Solid state NVMe drive spare parts

Customer self repair: mandatory

Description	Spare part number
375GB NVMe x4 WI SFF SCN DS SSD	P02559-001

External drive spare part

Customer self repair: mandatory

Description	Spare part number
HPE Mobile USB DVD-RW optical drive	775676-001

microSD spare parts

Customer self repair: mandatory

Description	Spare part number
HPE 32GB microSD Flash Memory card	704502-001
HPE 8GB microSD Flash Memory card	738576-001
HPE 8GB microSD Flash USB drive	743503-001
HPE 8GB dual microSD Flash USB drive	870891-001

HPE Trusted Platform Module 2.0 spare part

Customer self repair: no



Description	Spare part number
HPE Trusted Platform Module 2.0 Gen 10 kit, TAA	872159-001

Cable spare parts

Customer self repair: mandatory

Description	Spare part numbers
Front panel cable	P10060-001
Mini SAS, 36P, STR, HD cable	P10071-001
4LFF/2SFF power cable assembly	P15889-001
6SFF Mini SAS rear cable	P10077-001
Rear NVMe power cable	P10078-001
Rear 4LFF/2SFF power cable	P15889-001
SFF track power cable (1 of 2)	P10068-001
SFF track power cable (2 of 2)	P10069-001
LFF track single power (1 of 2)	P10061-001
LFF track single power (2 of 2)	P10062-001

Customer self repair: optional

Description	Spare part numbers
Mini SAS, system board cable	P10072-001
Fan signal cable	P10079-001



Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-10 Torx screwdriver
- T-15 Torx screwdriver
- T-25 Torx screwdriver
- Flathead screwdriver (for removing the front I/O board)

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.

Symbols on equipment

The following symbols may be placed on equipment to indicate the presence of potentially hazardous conditions.



This symbol indicates Hewlett Packard Enterprise systems and peripherals that contain assemblies and components that are sensitive to electrostatic discharge. Carefully observe the precautions and recommended procedures in this document to prevent component damage from static electricity.



This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure. Refer all maintenance, upgrades, and servicing to qualified personnel.



This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

WARNING: To reduce the risk of injury from electric shock hazards, do not open this enclosure.



This symbol on an RJ-45 receptacle indicates a network interface connection.

WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into this receptacle.



This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists.

WARNING: To reduce the risk of injury from a hot component, allow the surface to cool before touching.



This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

WARNING: 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.



These symbols, on power supplies or systems, indicate that the equipment is supplied by multiple sources of power.

WARNING: To reduce the risk of injury from electric shock, remove all power cords to disconnect power from the system completely.

Server warnings and cautions

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

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





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

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

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

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

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

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



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



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



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



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

Rack warnings and cautions



WARNING: When all components are removed, the server weighs 22.34 kg (49.25 lb). When all components are installed, the server can weigh up to 40.60 kg (89.51 lb).

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



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

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. The server weighs more than 22.34 kg (49.25 lb), so at least two people must lift the server into the rack together. An additional person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack.
- Adequately 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.
- Do not stack anything on top of rail-mounted component or use it as a work surface when extended from the rack.



WARNING: To reduce the risk of personal injury or damage to the equipment, observe the following precautions:

- 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.



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

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



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



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

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



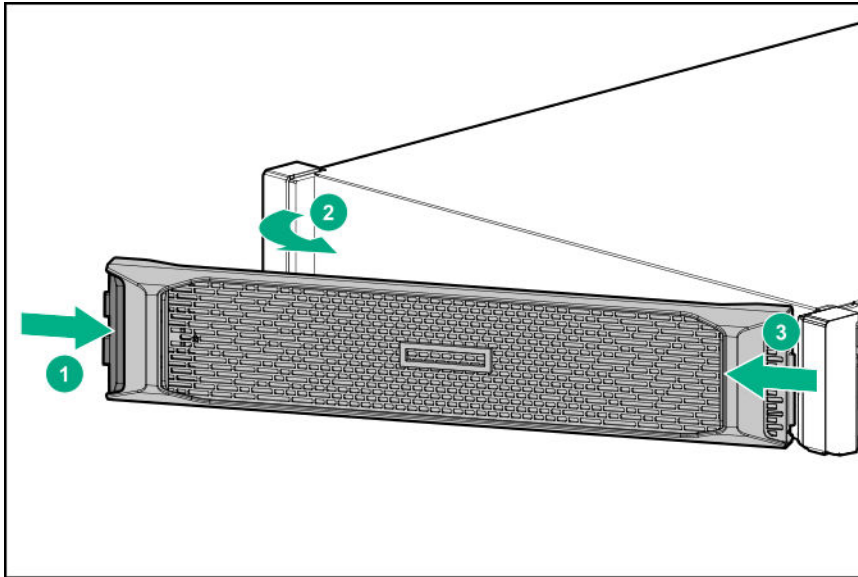
IMPORTANT: The HPE Apollo 4200 Gen10 System cable management arm is not supported on Compaq-branded 7000 series racks.

Preparation procedures

Remove the bezel

To access the front panel components, unlock and then remove the bezel.





Power down the system

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

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

To power down the system, 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 system enters standby mode.
- Press and hold the Power On/Standby button for more than 4 seconds to force the system to enter standby mode.
This method forces the system 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 system enters standby mode.

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

Extend the front drive cages out of the chassis

The front drive cages are secured to the chassis by shipping screws upon product delivery. The location and number of these shipping screws depend on how the system was shipped during product delivery. All installed shipping screws will be indicated by a removable label. Remove these shipping screws before extending the front drive cages for the first time.

Extending front drive cages out of a rack-mounted chassis

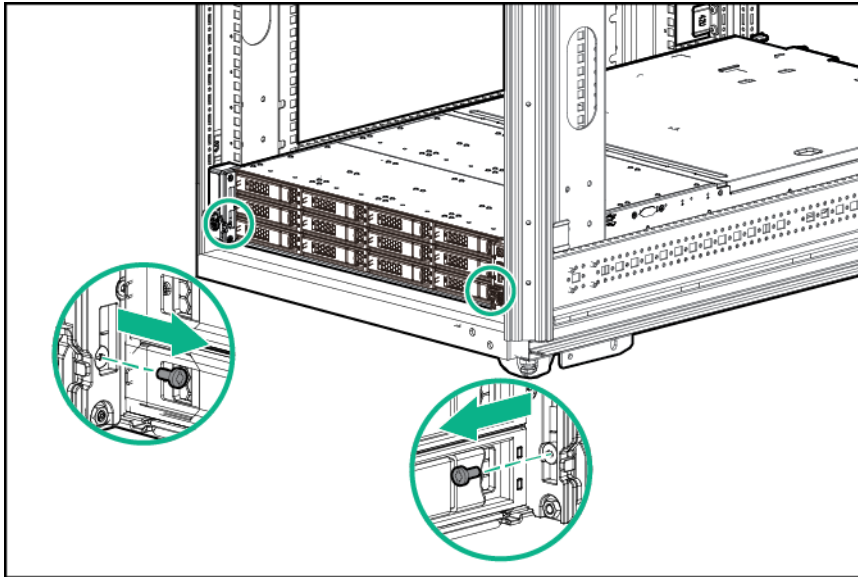
Prerequisites

The chassis is already mounted on a rack

Procedure

1. If installed, remove the security bezel (**Remove the bezel**).
2. Remove the shipping screws on the rack ears.



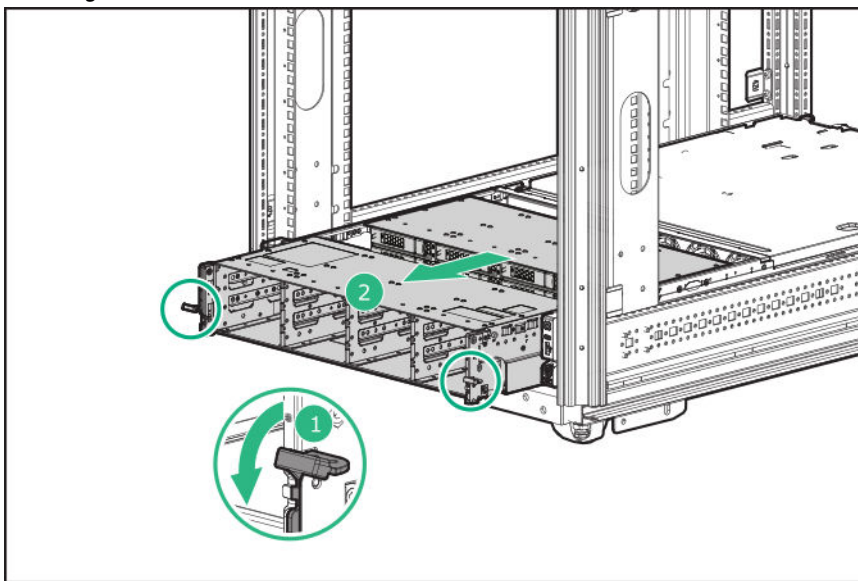


⚠ WARNING: To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.

⚠ CAUTION: Do not operate the system for long periods with the front drive cages extended. When the front drive cages are extended while the system is powered on, monitor the status of the front drive temp sensor (08-HD Max) in iLO. If the iLO temp sensor (08-HD Max) reading is reporting an N/A value, monitor how long the drive cages have been out of the chassis. Before reaching the 110 second mark, slide the drive cages back into the chassis and keep them there for at least 300 seconds before extending them again.

Failure to observe this caution will result in improper airflow and insufficient cooling that can lead to thermal damage.

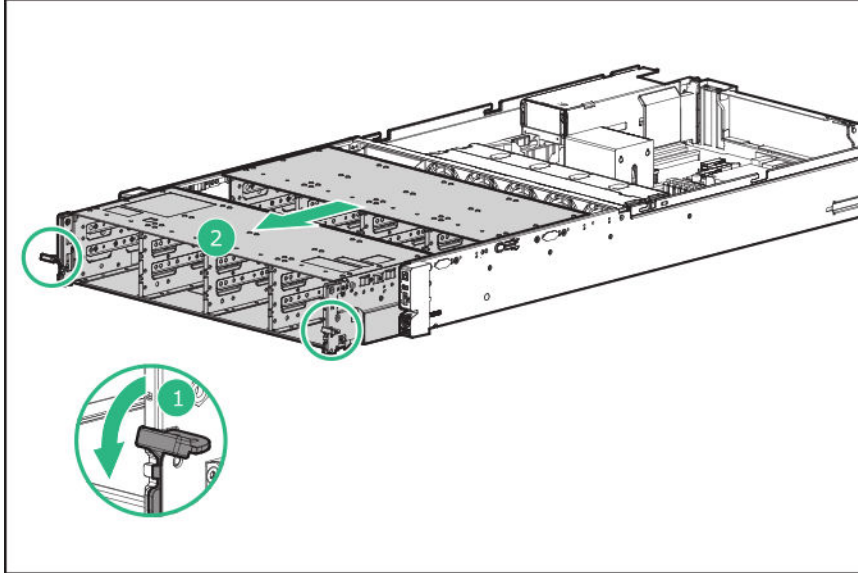
3. Extend the front drive cages by pulling down on the front drive cage release latches and extending the front and internal drive cages out of the chassis.



Extending front drive cages out of a chassis removed from a rack

Procedure

Pull down the front drive cage release latches and use them to extend the front and internal drive cages out of the chassis.



Remove the system from the rack



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



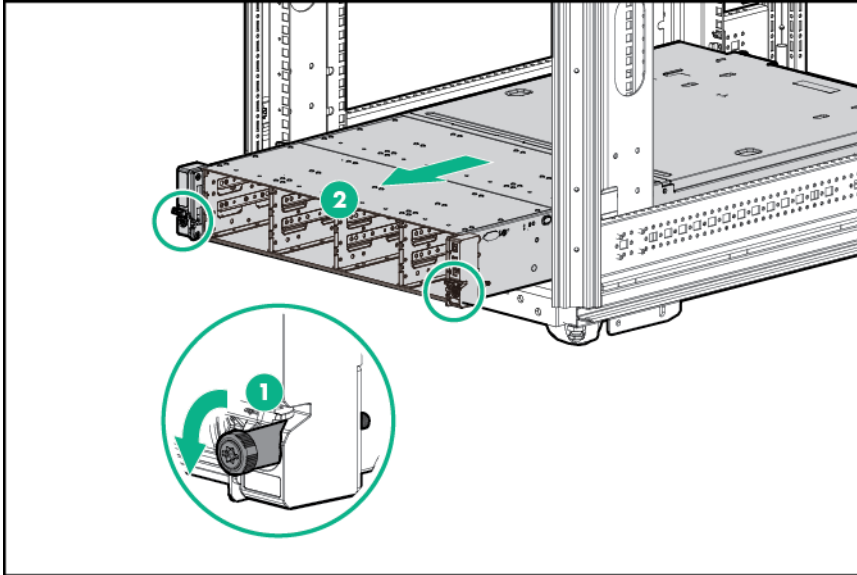
WARNING: To reduce the risk of personal injury or damage to the equipment, be sure that:

- The rack is bolted to the floor using the concrete anchor kit.
- The leveling feet extend to the floor.
- The full weight of the rack rests on the leveling feet.
- The racks are coupled together in multiple rack installations.
- Only one component is extended at a time. If more than one component is extended, a rack might become unstable.

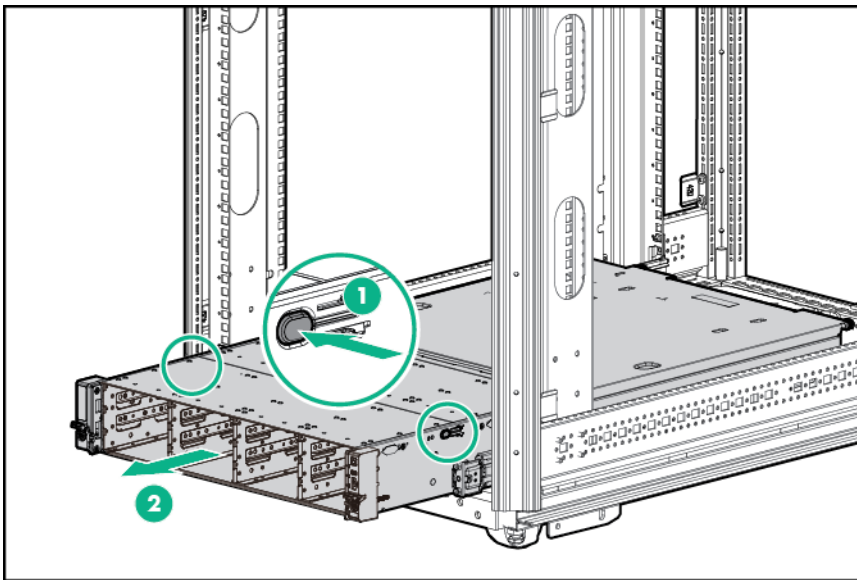
Procedure

1. Back up all system data.
2. Power down the system (**Power down the system**).
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
4. Disconnect all peripheral cables from the system.
5. Remove the system from the rack:

- a. Loosen the rack ear thumbscrews.
- b. Pull the thumbscrews to extend the system out of the rack until the rack rail lock is engaged.



- c. Press the system release latches, and then slide the system out of the rack.



6. Place the system on a flat, level surface.

Remove the access panel



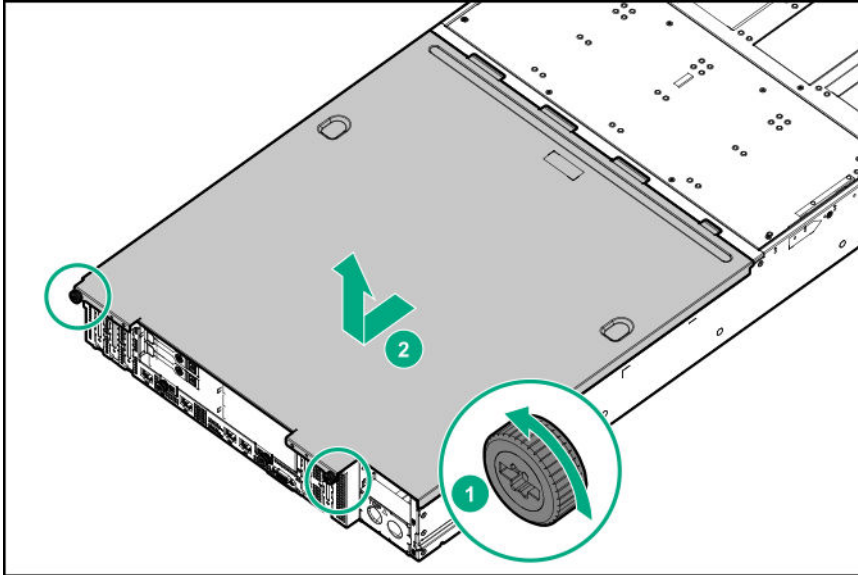
WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives, power supplies, and internal system components to cool before touching them.

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:



- a. Disconnect each power cord from the power source.
- b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level work surface.
5. Remove the access panel.

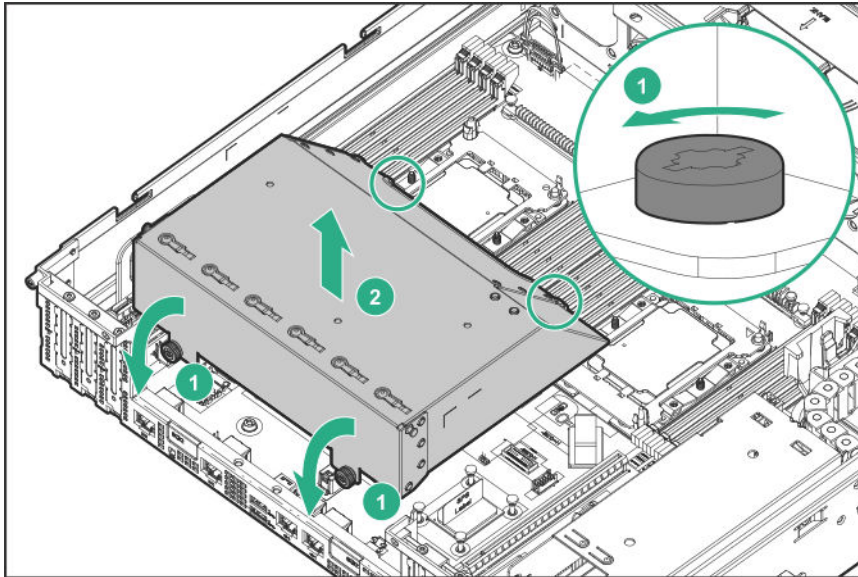


Remove the rear drive cage blank

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level work surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the rear drive cage blank.





Remove a rear drive cage

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

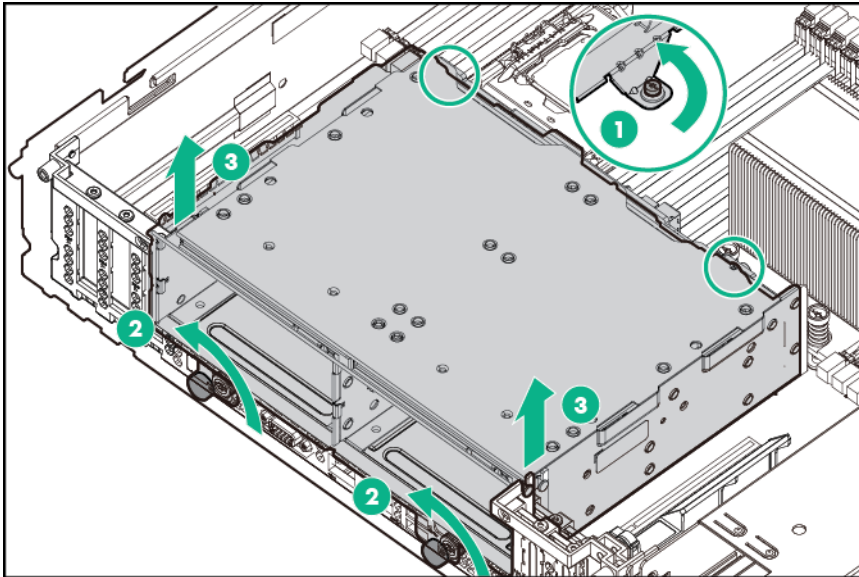
Prerequisites

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

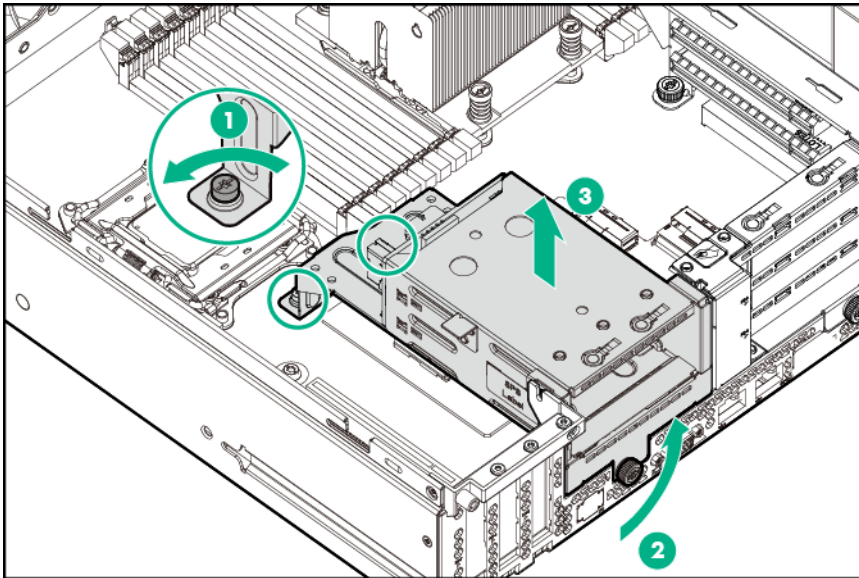
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Disconnect all cables from the drive backplane.
7. Remove the rear drive cage:
 - Four-bay LFF hot-plug rear drive cage removal



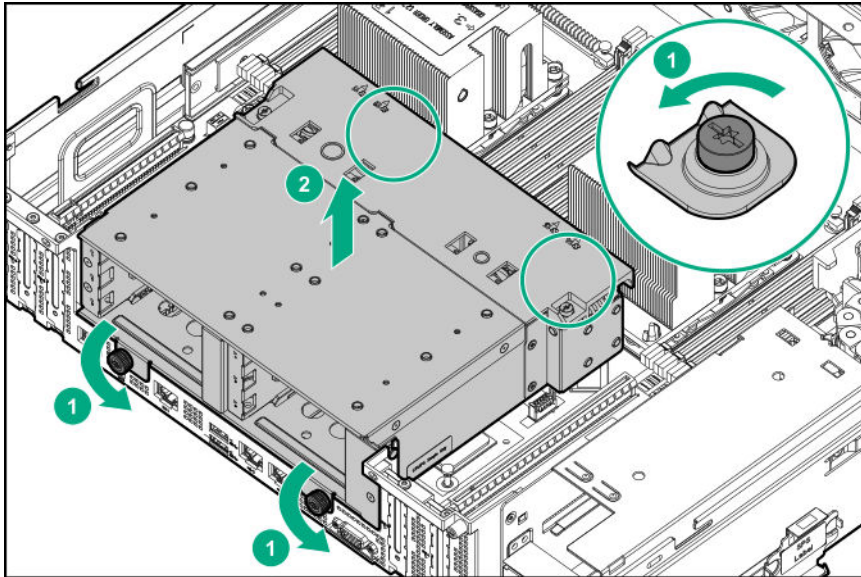


- Two-bay SFF hot-plug rear drive cage removal

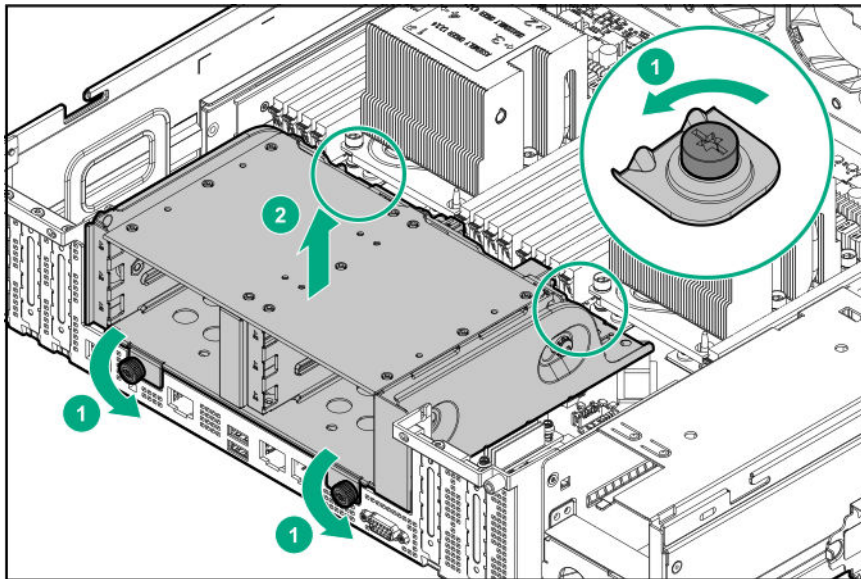


- Six-bay SFF NVMe drive cage removal





- Six-bay SFF rear drive cage (SAS or SATA)



To replace the component, reverse the removal procedure.

Remove the PCIe riser cage

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

⚠ CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

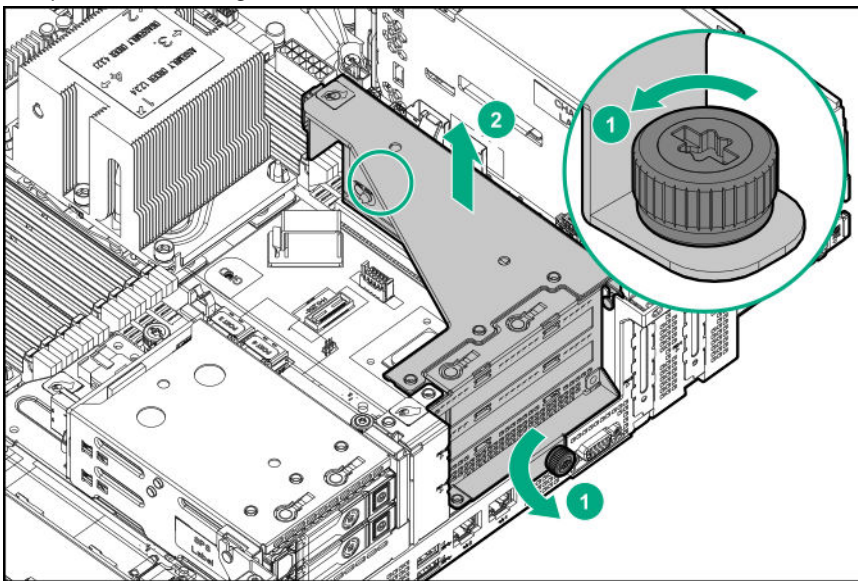
Prerequisites

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



Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. If expansion boards with internal cabling are installed in the PCI riser cage, disconnect all internal cables from the expansion boards to remove the cage from the system.
7. Grasp the PCIe riser cage and lift it out of the chassis.



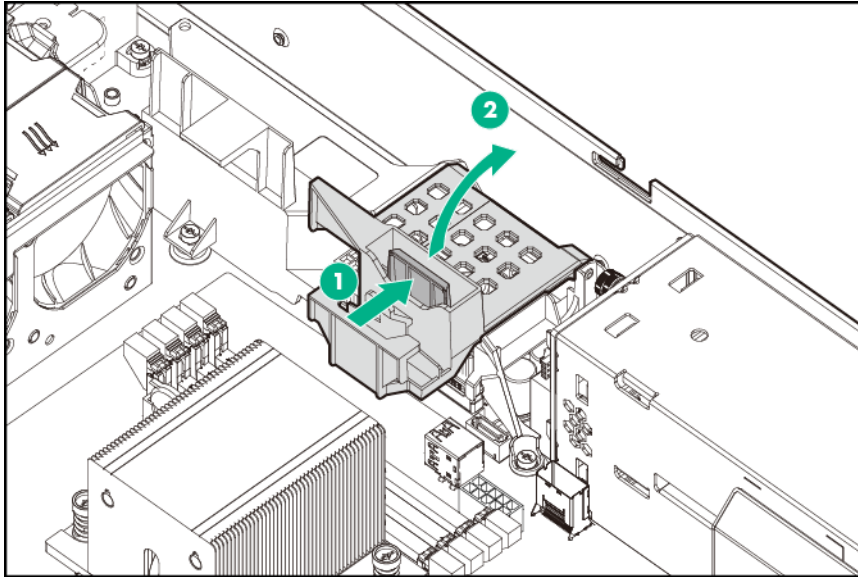
To replace the component, reverse the removal procedure.

Open the cable management holder

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level work surface.
5. Remove the access panel (**Remove the access panel**).

6. Extend the front drive cages out of the chassis (**Extend the front drive cages out of the chassis**).
7. Press and hold the cable management holder release latch, and then open the holder.



8. Remove the cables from the cable management holder.

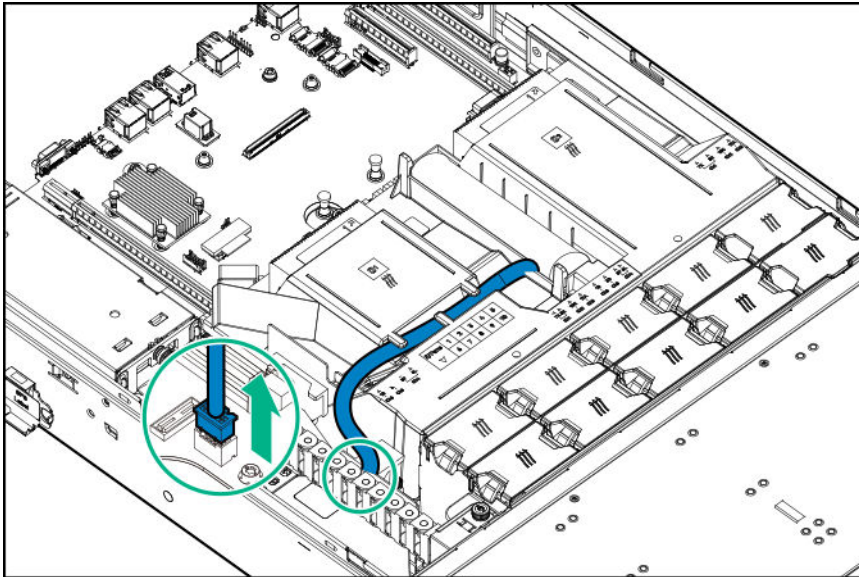
Remove the HPE Smart Storage Battery

NOTE: System ROM and firmware messages might display "energy pack" in place of "Smart Storage Battery." Energy pack refers to both HPE Smart Storage batteries and HPE Smart Storage Hybrid capacitors.

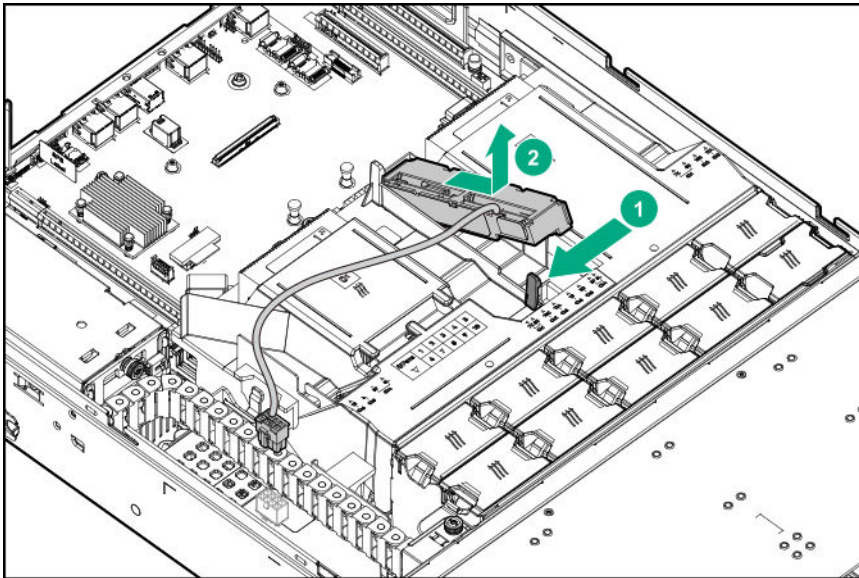
Procedure

1. Power down the system (**Power down the system**).
2. Remove the system from the rack (**Remove the system from the rack**).
3. Place the system on a flat, level work surface.
4. Remove the access panel (**Remove the access panel**).
5. Extend the front drive cages out of the chassis (**Extend the front drive cages out of the chassis**).
6. Open the cable management holder, and then remove the cables from the cable management holder (**Open the cable management holder**).
7. Disconnect the cable from the system board.





8. Remove the cable from the air baffle clips, then remove the HPE Smart Storage Battery from the air baffle.

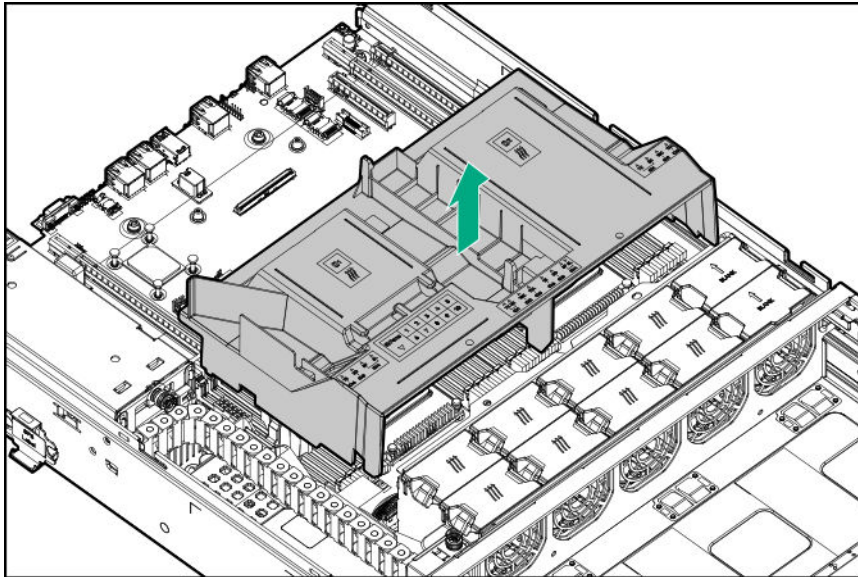


Remove the air baffle

Procedure

1. Power down the system (**Power down the system**).
2. Remove the system from the rack (**Remove the system from the rack**).
3. Place the system on a flat, level work surface.
4. Remove the access panel (**Remove the access panel**).
5. Open the cable management holder, and then remove the cables from the cable management holder (**Open the cable management holder**).
6. Remove the HPE Smart Storage Battery if it is installed on the air baffle (**Remove the HPE Smart Storage Battery**).
7. Remove the air baffle.





Removing and replacing a drive blank

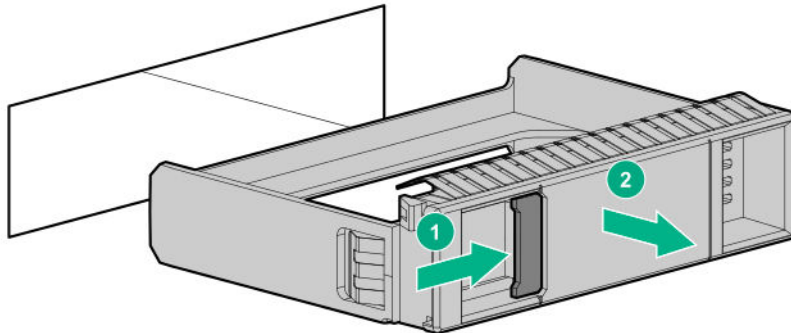
Removing and replacing a drive blank from the front drive cage

CAUTION: Do not operate the system with any of the front or rear drive cage bays empty. To maintain proper airflow and sufficient cooling, all drive bays in the front and rear cage must have a drive or a drive blank.

Procedure

1. Remove the drive blank:

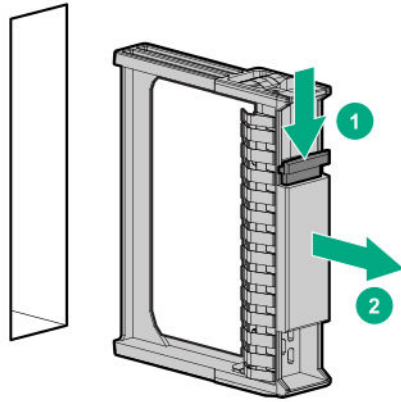
- LFF drive blank



To replace the LFF drive blank, slide the component into the bay until it clicks.

- SFF drive blank





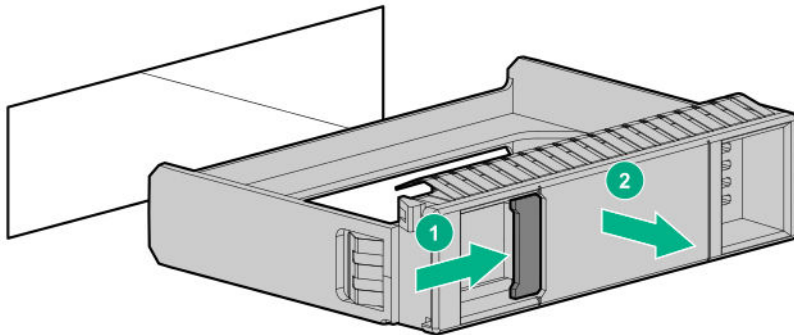
To replace the SFF drive blank, while pressing the release latch, slide the component into the bay until it is fully seated.

Removing and replacing a drive blank from the rear drive cage

- CAUTION:** Do not operate the system with any of the rear drive bays empty. To maintain proper airflow and sufficient cooling in the rear drive cage, all drive bays in this cage must have a drive or a drive blank. Hewlett Packard Enterprise recommends installing at least one drive in the rear drive cage before operating the system.

Procedure

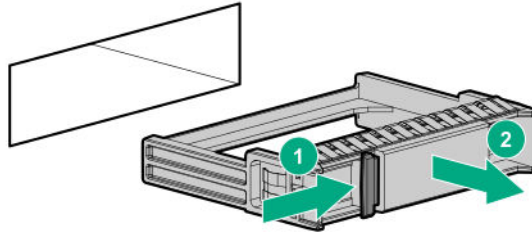
1. Access the product rear panel.
2. Remove the drive blank:
 - LFF drive blank



To replace the LFF drive blank, slide the component into the bay until it clicks.

- SFF drive blank





To replace the SFF drive blank, while pressing the release latch, slide the component into the bay until it is fully seated.

Removing and replacing drives

Depending on the configuration, this system supports SAS, SATA, NVMe, and uFF drives. When removing and replacing drives, observe the following general guidelines.

- The system automatically sets all device numbers.
- If only one drive is used, install the drive in the drive bay with the lowest device number (**Drive numbering**).
- Drives must be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array.



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 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.



CAUTION: Do not operate the system for long periods with the front drive cages extended. When the front drive cages are extended while the system is powered on, monitor the status of the front drive temp sensor (08-HD Max) in iLO. If the iLO temp sensor (08-HD Max) reading is reporting an N/A value, monitor how long the drive cages have been out of the chassis. Before reaching the 110 second mark, slide the drive cages back into the chassis and keep them there for at least 300 seconds before extending them again.

Failure to observe this caution will result in improper airflow and insufficient cooling that can lead to thermal damage.



CAUTION: Do not operate the system with any of the front or rear drive cage bays empty. To maintain proper airflow and sufficient cooling, all drive bays in the front and rear cage must have a drive or a drive blank.



CAUTION: Do not operate the system with any of the rear drive bays empty. To maintain proper airflow and sufficient cooling in the rear drive cage, all drive bays in this cage must have a drive or a drive blank. Hewlett Packard Enterprise recommends installing at least one drive in the rear drive cage before operating the system.

Removing and replacing a hot-plug drive

Procedure

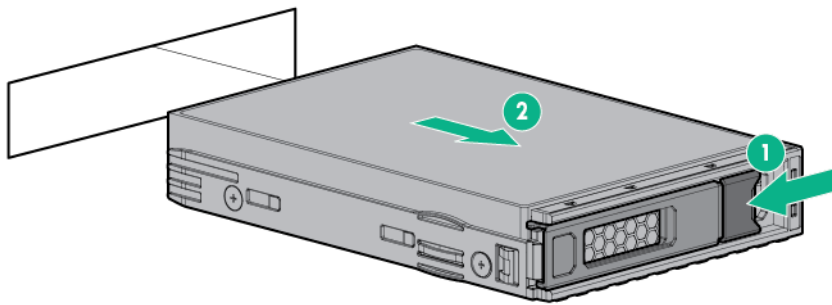
1. Back up all system data.
2. Do one of the following:



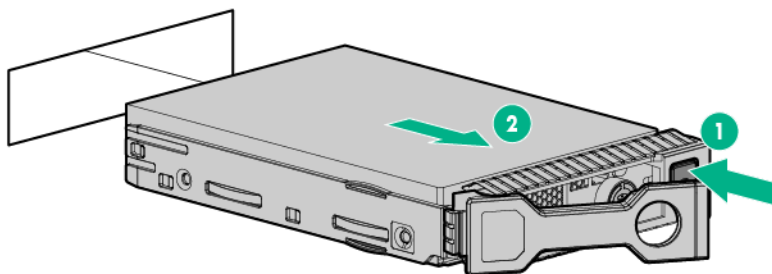
- If removing a drive from the front drive cage and the security bezel is installed, remove the bezel (**Remove the bezel**).
- If removing a drive from the internal drive cage, extend the front and internal drive cages out of the chassis (**Extend the front drive cages out of the chassis**).
- If removing a drive from a rear drive cage, access the product rear panel.

3. Depending on the type of drive in the cage, do one of the following:

- Remove an LFF drive:
 - a. Determine the status of the drive from the low profile LFF drive LEDs (**Low-profile LFF drive LED definitions**).
 - b. Wait until the Online/Activity LED stops flashing.
 - c. To open the release lever, press the latch.
 - d. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



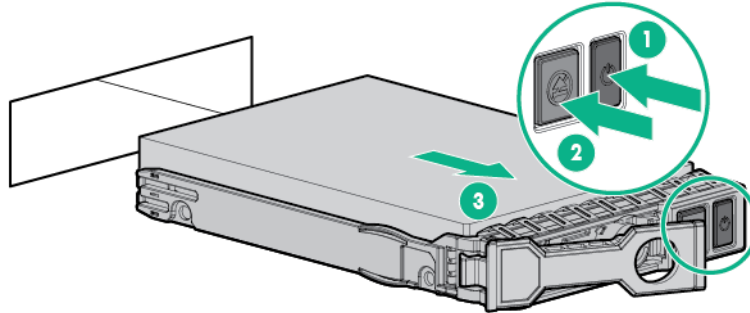
- Remove an SFF drive:
 - a. Determine the status of the drive from the SFF LEDs (**SFF drive components and LEDs**).
 - b. Wait until the icon in the Do Not Remove button stops flashing and is no longer illuminated.
 - c. Press the Do Not Remove button to open the release lever.
 - d. Pull the release lever to disengage the drive from the backplane, and then slide the drive out of the bay.



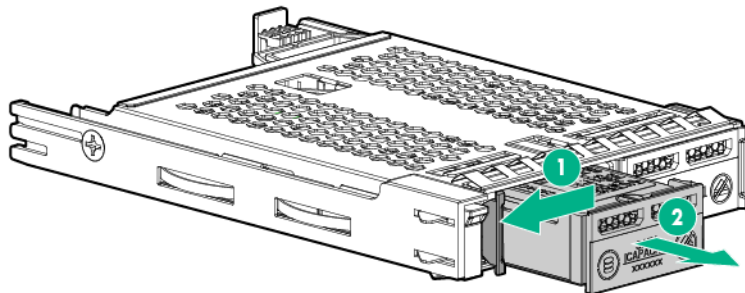
- Remove an NVMe drive (rear drive cage only):



- a. Determine the status of the drive from the NVMe LEDs (**NVMe drive components and LEDs**).
- b. Press the power button.
The Do Not Remove button illuminates and flashes.
- c. When the Do Not Remove button stops flashing and the icon on the button is no longer illuminated, press the Do Not Remove button to release the release lever.
- d. Pull the release lever to disengage the drive from the backplane, and slide the drive out of the drive bay.

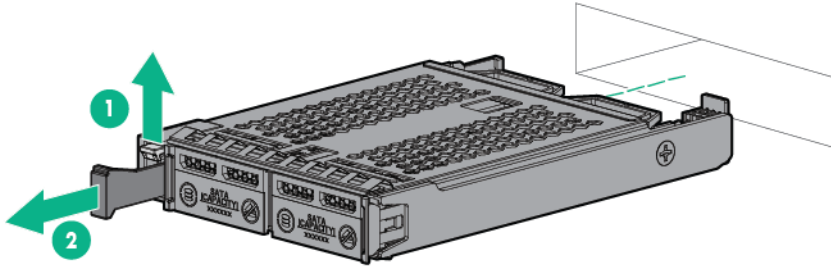


- Remove a uFF drive
 - a. Observe the LED status of the drive and determine if it can be removed (**SFF flash adapter components and LED definitions**).
 - b. Remove the drive.



To remove the drive carrier:



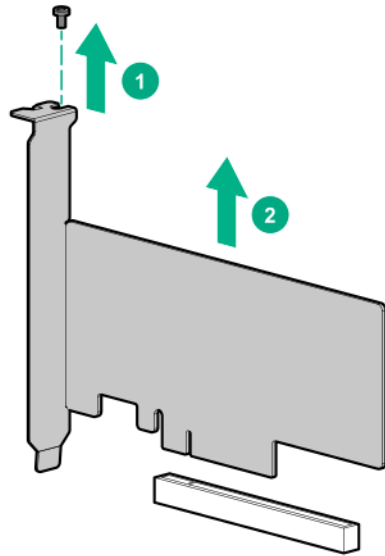


To replace the component, reverse the removal procedure.

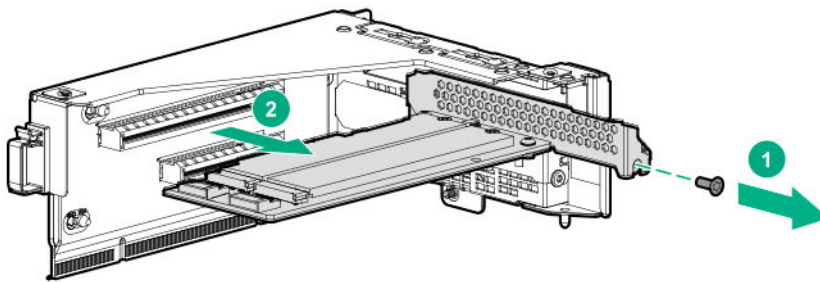
Removing and replacing an M.2 SSD

Procedure

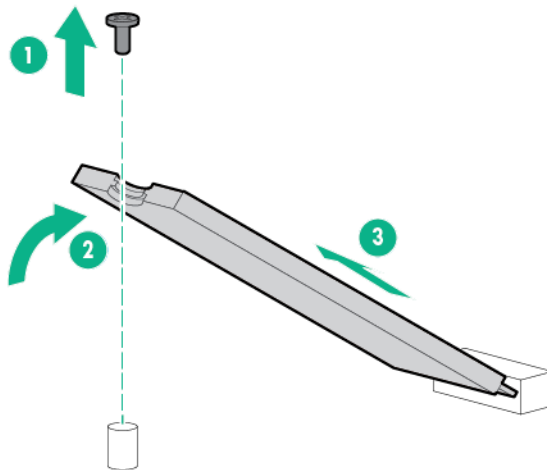
1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. If you are removing an expansion board or controller installed in the PCI riser cage, remove the riser cage.
7. Disconnect any cables that are connected to the expansion board or controller.
8. Remove the M.2 enablement board.
 - Remove the M.2 enablement board from an onboard expansion slot.



- Remove the M.2 enablement board from the PCI riser cage.



9. Remove the M.2 SSD.



To replace the component, reverse the removal procedure.



Removing and replacing an M.2 enablement board

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

⚠ CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

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

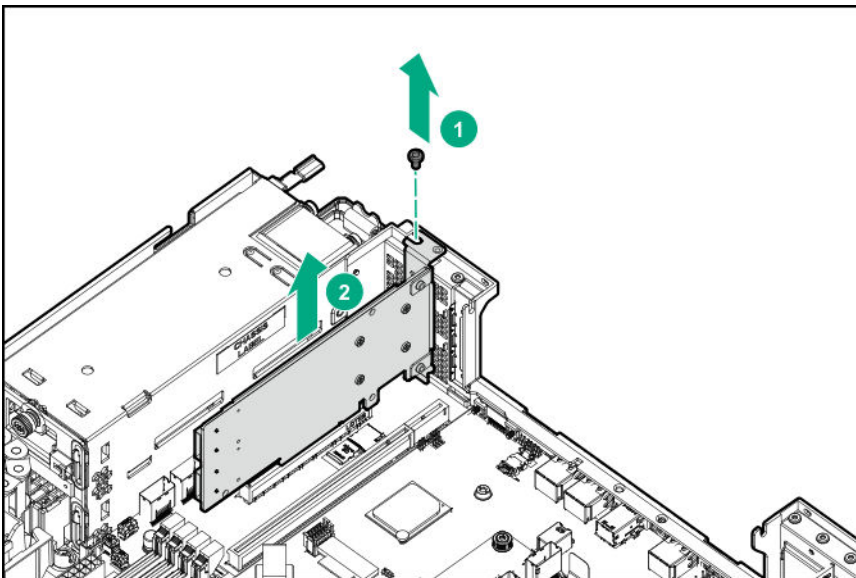
Prerequisites

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

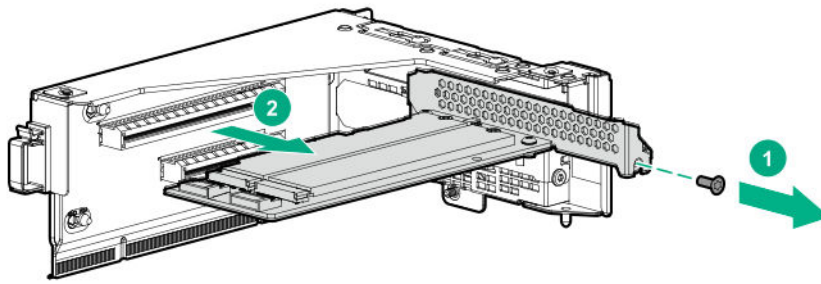
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the M.2 enablement board from the system.

- Enablement board removal from an onboard expansion slot



- Enablement board removal from the PCI riser cage



To replace the component, reverse the procedure.

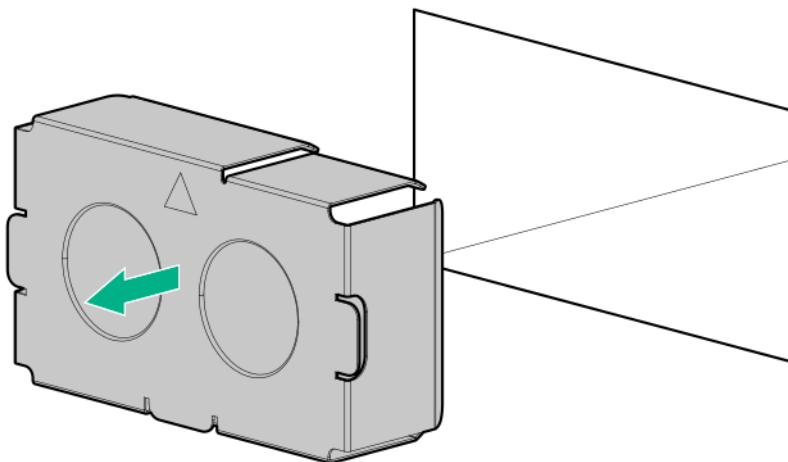
Removing and replacing a power supply blank

Prerequisites

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

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Access the rear of the system.
6. Remove the power supply blank.



To replace the component, reverse the removal procedure.

Removing and replacing a power supply



WARNING: To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
 - Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
 - Unplug the power cord from the power supply to disconnect power to the equipment.
 - Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the system.
-
-



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



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



CAUTION: To prevent damage to electrical components, properly ground the system before beginning any installation procedure. Improper grounding can cause electrostatic discharge.



CAUTION: Always install a power supply blank into each bay to maintain proper airflow and cooling in the power enclosure. Improper airflow can lead to thermal damage.



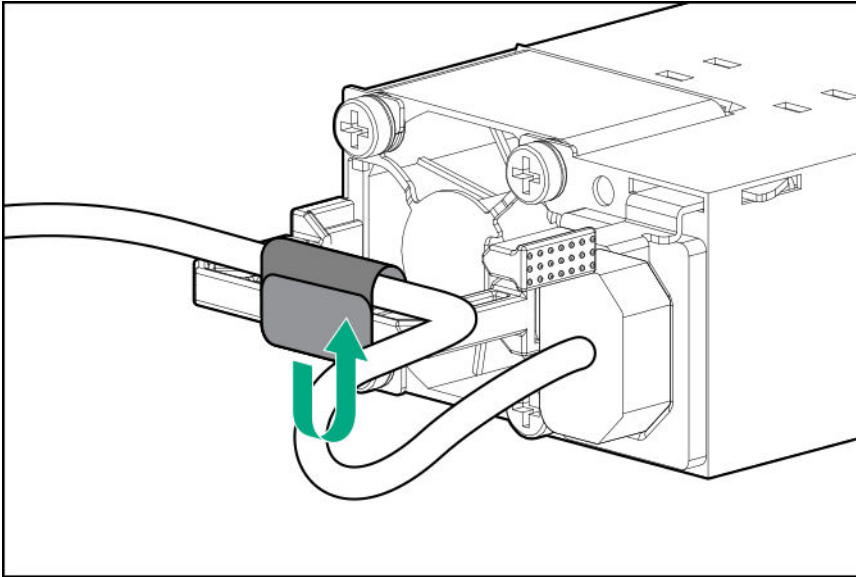
IMPORTANT: Mixing different types of power supplies in the same system might limit or disable some power supply features including support for power redundancy. To ensure access to all available features, all power supplies in the same system should have the same output and efficiency ratings.

Procedure

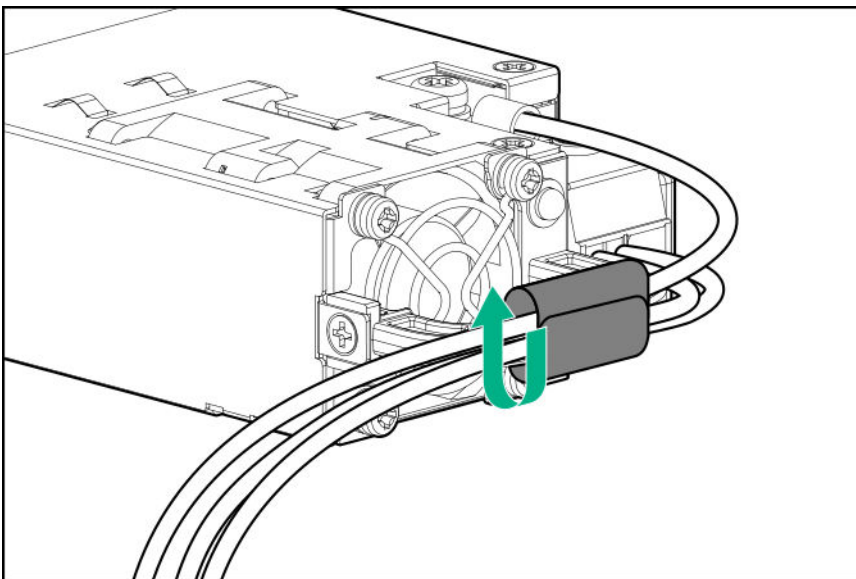
1. If the system is using a single power supply only, remove all power from the system:

- a. Back up all system data.
 - b. Power down the system (**Power down the system**).
 - c. Disconnect all peripheral cables from the system.
2. Release the power cords from the strain relief straps.

AC power supply

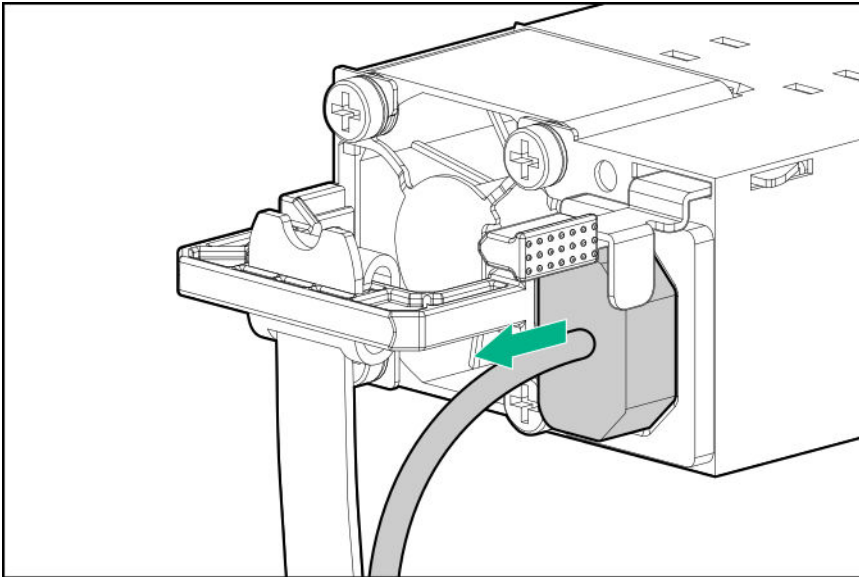


DC power supply

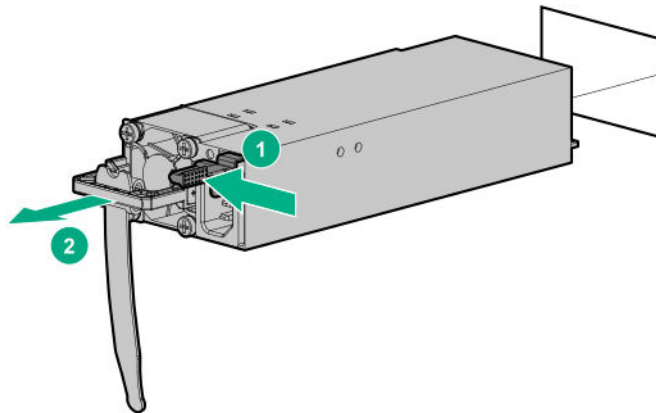


3. For an AC power supply, do the following:
- a. Disconnect the power cord from the power supply.





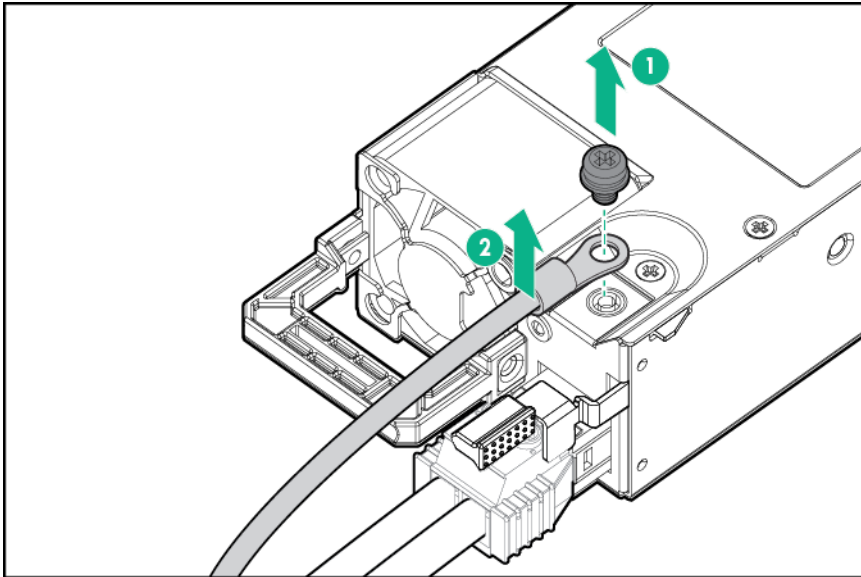
b. Remove the power supply.



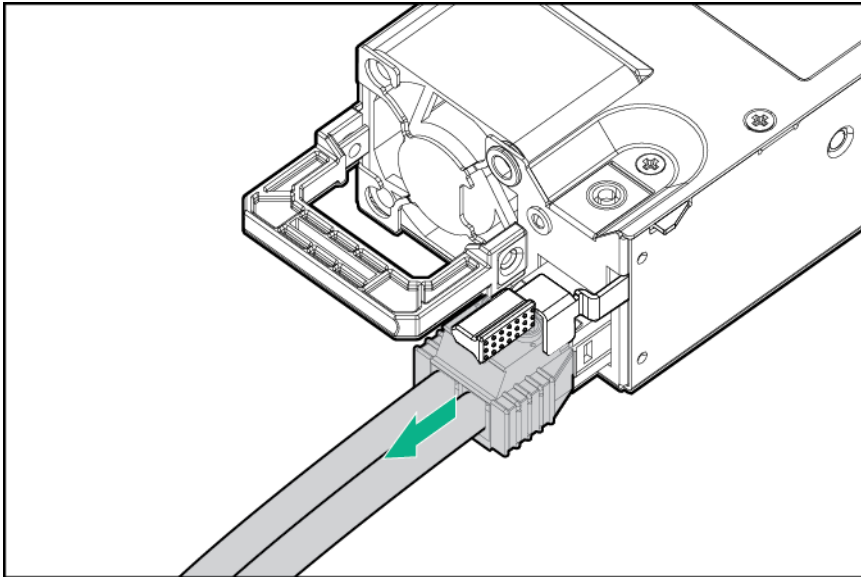
4. For a DC power supply, do the following:

- a.** To access the ground cable screw, slide the power supply out of the bay.
- b.** Detach the ground (earthed) cable from the power supply.



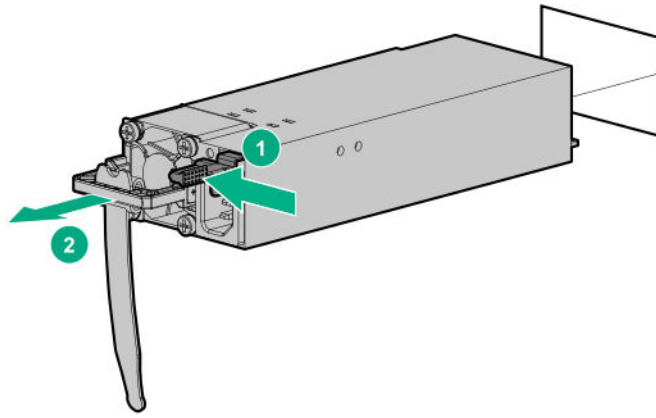


- c. Remove the terminal block connector from the power supply.



- d. Remove the power supply.



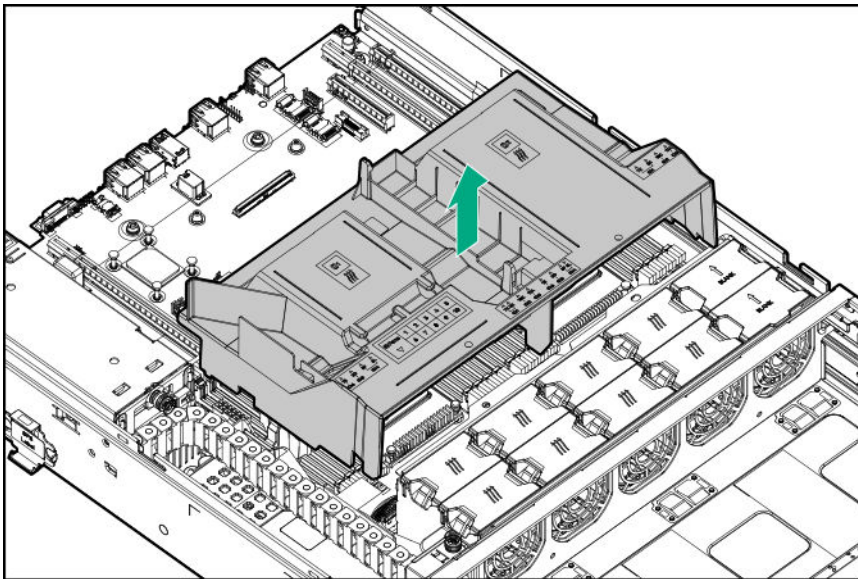


To replace the component, reverse the removal procedure.

Removing and replacing the air baffle

Procedure

1. Power down the system (**Power down the system**).
2. Remove the system from the rack (**Remove the system from the rack**).
3. Place the system on a flat, level work surface.
4. Remove the access panel (**Remove the access panel**).
5. Open the cable management holder, and then remove the cables from the cable management holder (**Open the cable management holder**).
6. Remove the HPE Smart Storage Battery if it is installed on the air baffle (**Remove the HPE Smart Storage Battery**).
7. Remove the air baffle.

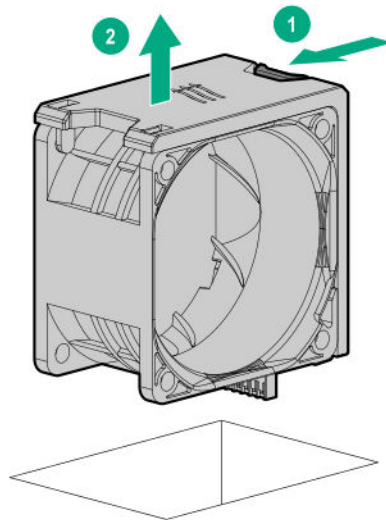


To replace the component, reverse the removal procedure.

Removing and replacing a fan

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the fan.



To replace the component, reverse the removal procedure.

Removing and replacing a rear NVMe drive cage air baffle

Prerequisites

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

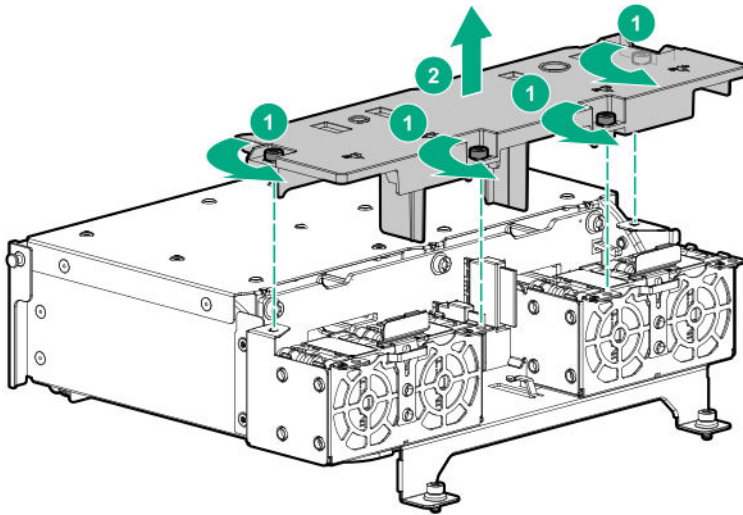
- The components included with the hardware kit
- Torx T-15 screwdriver

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:



- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
 4. Place the system on a flat, level surface.
 5. Remove the access panel (**Remove the access panel**).
 6. Remove the air baffle on the rear of the NVMe drive cage.



To replace the component, reverse the removal procedure.

Removing and replacing a rear NVMe drive cage fan

Prerequisites

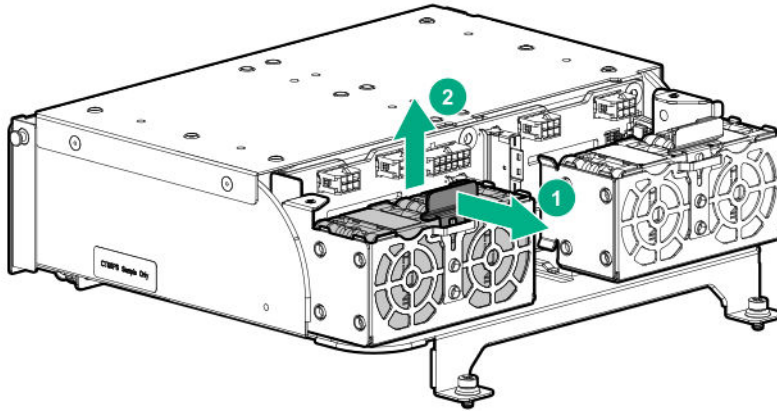
Before you perform this procedure, make sure that you have the following items available:

- The components included with the hardware kit
- Torx T-15 screwdriver

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).

6. Remove the air baffle on the rear of the NVMe drive cage (**Removing and replacing a rear NVMe drive cage air baffle**).
7. Remove the fan.



To replace the component, reverse the removal procedure.

Removing and replacing a DIMM

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

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

- First-generation Intel Xeon Scalable processors support DDR4-2666 DIMMs.
- Second-generation Intel Xeon Scalable processors support DDR4-2933 DIMMs.

Mixing DIMM types is not supported. Install only the supported DDR4-2666 or DDR4-2933 DIMMs in the system.

Prerequisites

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

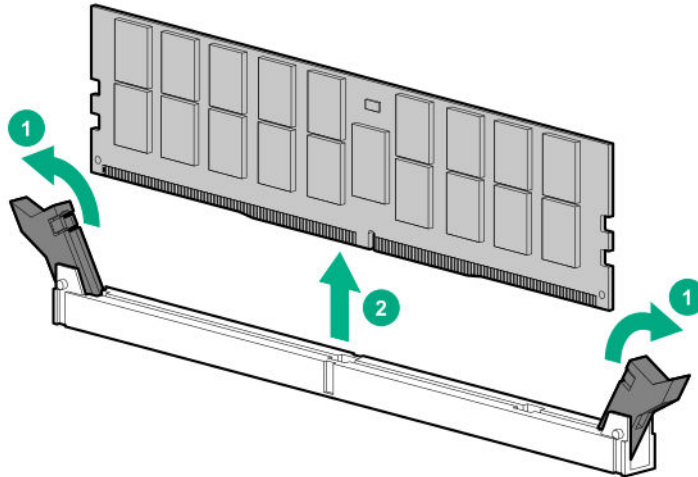
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).



6. Remove the air baffle (**Remove the air baffle**).

7. Remove the DIMM.



To replace the component, reverse the removal procedure.

Removing and replacing a persistent memory module

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

To identify the persistent memory modules installed in the system, see **Intel Optane persistent memory 100 series for HPE 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 persistent memory modules can damage the component and the system board connector.

2. Power down the system (**Power down the system**).

3. Remove all power:

a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the system.

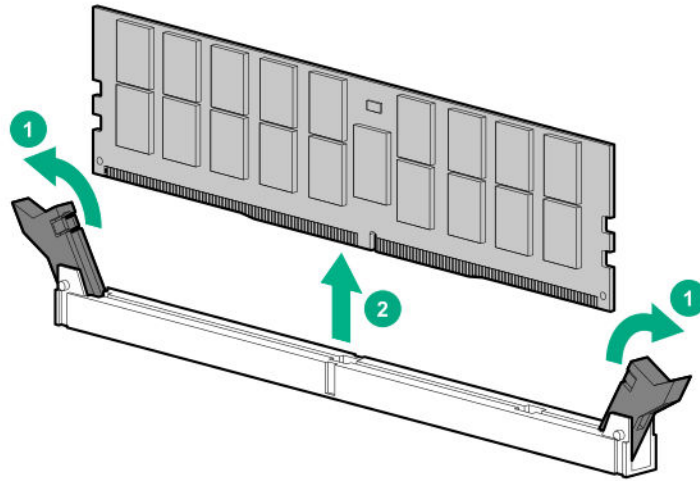
4. Remove the system from the rack (**Remove the system from the rack**).

5. Place the system on a flat, level surface.

6. Remove the access panel (**Remove the access panel**).

7. Remove the air baffle (**Remove the air baffle**).

8. Remove the persistent memory module.



9. Install the new persistent memory module, and review the persistent memory configuration of the system.
For more information, see [Configuring the system for Intel Optane persistent memory 100 series for HPE](#).
10. If you are relocating the persistent memory module to or from another system, see the [Persistent memory module relocation guidelines](#).

Persistent memory module-processor compatibility

Intel Optane persistent memory 100 series for HPE is supported only in servers with second-generation Intel Xeon Scalable processors installed.

Configuring the system for Intel Optane persistent memory 100 series for HPE

After installing persistent memory modules, configure the system for Intel Optane persistent memory for HPE.

- ⚠ **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 system 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 system for Intel Optane persistent memory 100 series for HPE, as well as evaluate and monitor the system memory configuration layout.

For more information, see the *Intel Optane persistent memory 100 series for HPE User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/persistentmemory-docs>).

Persistent memory module relocation guidelines

Observe the relocation guidelines when doing the following:



- When relocating persistent memory modules to another DIMM slot on the system.
- When relocating persistent memory modules to another system.
- When reinstalling persistent memory modules after replacing the system 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 persistent memory modules before changing the goal configuration or performing relocation procedures.

Requirements for relocating persistent memory modules or a set of persistent memory modules when the data must be preserved

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

If any of the requirements cannot be met during relocation, do the following:

- Manually back up the persistent memory data before relocating persistent memory modules to another system.
- Relocate the persistent memory modules to another system.
- Sanitize all persistent memory modules on the new system before using them.

Requirements for relocating encrypted persistent memory modules or a set of persistent memory modules when the data must be preserved

- If persistent memory modules are encrypted with local key management, either manually retrieve the persistent memory module passwords from the system (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 persistent memory modules or a set of persistent memory modules when the data must be preserved.
- Do one of the following:
 - If persistent memory modules are encrypted with local key management, either manually enter the persistent memory module passwords in the System Utilities or import the password file from the USB key.
 - If 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 persistent memory modules.

For more information, see the *Intel Optane persistent memory 100 series for HPE User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/persistentmemory-docs>).

Requirements for relocating persistent memory modules or a set of persistent memory modules when the data does not have to be preserved

- Move the persistent memory modules to the new location and sanitize all persistent memory modules after installing them to the new location.
- Observe the DIMM and persistent memory module population guidelines.
- Observe the process for removing a persistent memory module.
- Observe the process for installing a persistent memory module.
- Review and configure the system settings for Intel Optane persistent memory for HPE.

For more information, see the *Intel Optane persistent memory 100 series for HPE User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/persistentmemory-docs>).

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).

Intel Optane persistent memory for HPE supports the purge level using a cryptographic erase technique and an overwrite technique.

HPE ProLiant and HPE Synergy Gen10 server products support sanitizing 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 sanitization policies and guidelines in the *Intel Optane persistent memory 100 series for HPE User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/persistentmemory-docs>).

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 a processor heatsink assembly

The server supports single-processor and dual processor operations.

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

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

To download firmware and view installation instructions, see the [Hewlett Packard Enterprise Support Center website](#).

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



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

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

⚠ CAUTION: Heatsink screws must be tightened and loosened in sequence. Do not overtighten the screws as this can damage the system board, connectors, or screws.

ⓘ IMPORTANT: Existing HPE ProLiant and HPE Synergy Gen10 server products containing first-generation Intel Xeon Scalable processors may not be upgraded to second-generation Intel Xeon Scalable processors at this time.

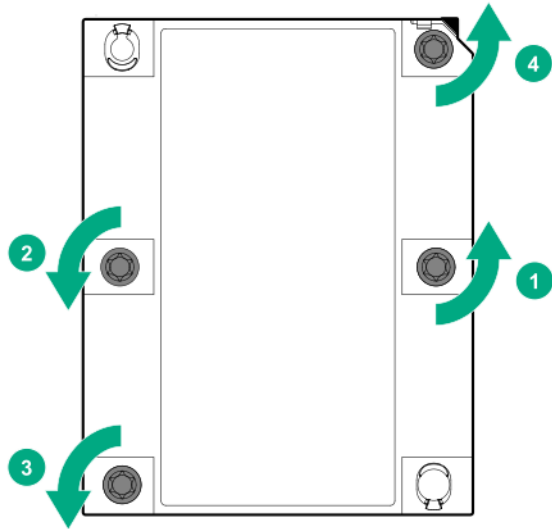
Prerequisites

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

- The components included with the hardware kit
- Torx T-30 screwdriver

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the air baffle (**Remove the air baffle**).
7. 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.

To replace the component, reverse the removal procedure.

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

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

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

Prerequisites

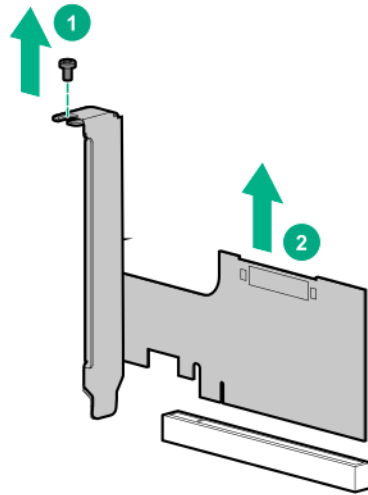
Before you perform this procedure, make sure that you have the components included with the hardware kit.

Procedure

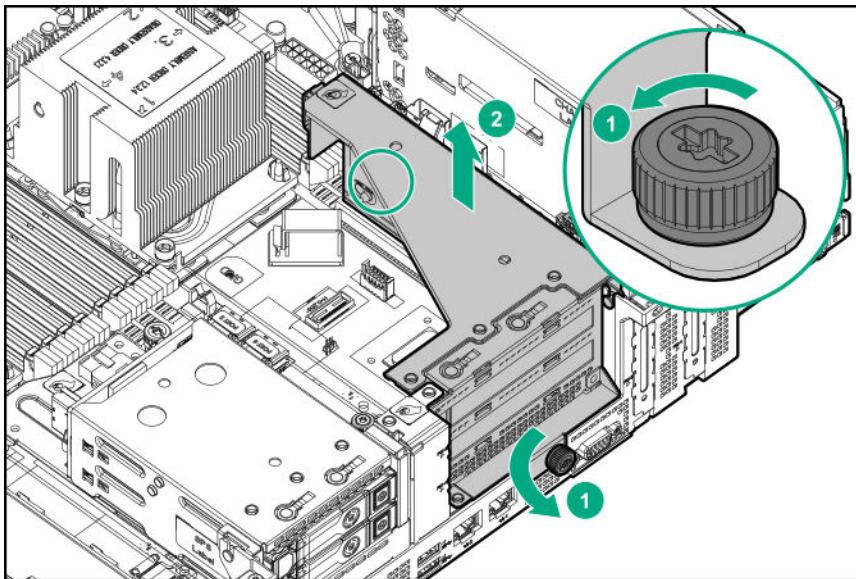
1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).



4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the auxiliary card.



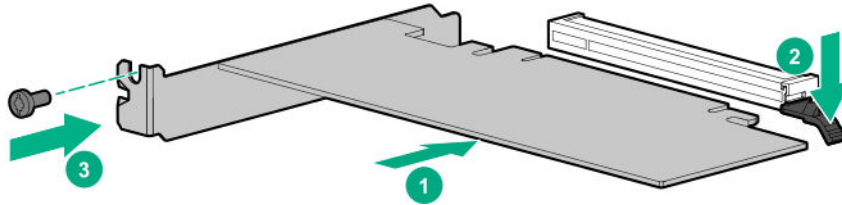
7. Disconnect any cables that are connected to the auxiliary card.
8. If you are removing an adapter installed in the PCI riser cage, remove the riser cage.



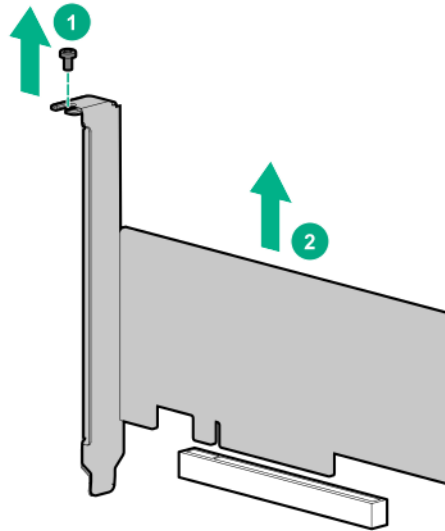
9. Remove the adapter.



- Adapter removal from the PCI riser cage



- Adapter removal from an onboard expansion slot



10. Disconnect the cables from the adapter.

Example

To replace the component, reverse the procedure.

Removing and replacing an expansion board or type -p controller



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



CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.



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

Prerequisites

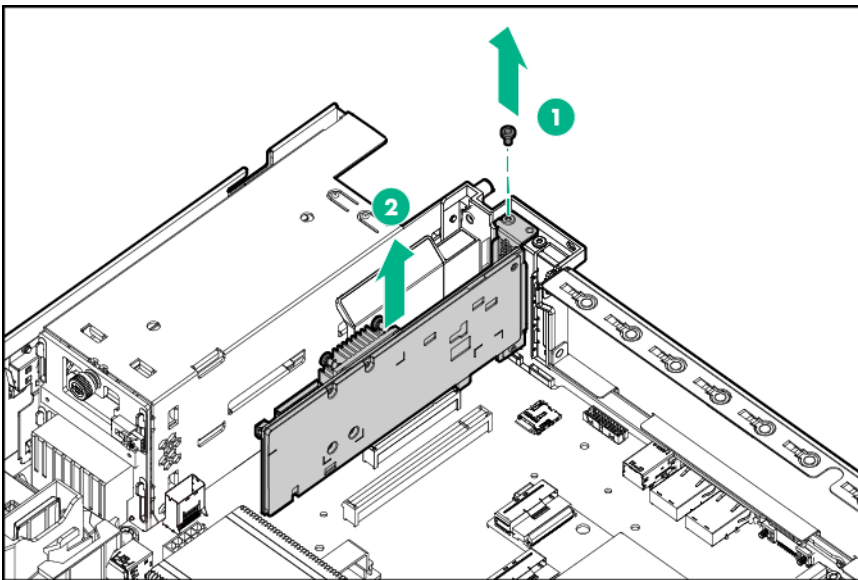
Before you perform this procedure, make sure that you have the components included with the hardware kit.



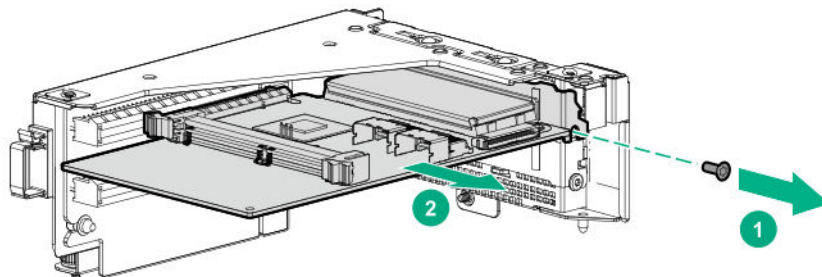
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. If you are removing an expansion board or controller installed in the PCI riser cage, remove the riser cage.
7. Disconnect any cables that are connected to the expansion board or controller.
8. Remove the expansion board or controller.

- Expansion board/controller removal from an onboard expansion slot



- Expansion board/controller removal from the PCI riser cage



To replace the component, reverse the procedure.

HPE Smart Storage Battery

The HPE Smart Storage Battery supports the following devices:

- HPE Smart Array SR controllers
- HPE Smart Array MR controllers

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

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

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

Removing and replacing the HPE Smart Storage Battery



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



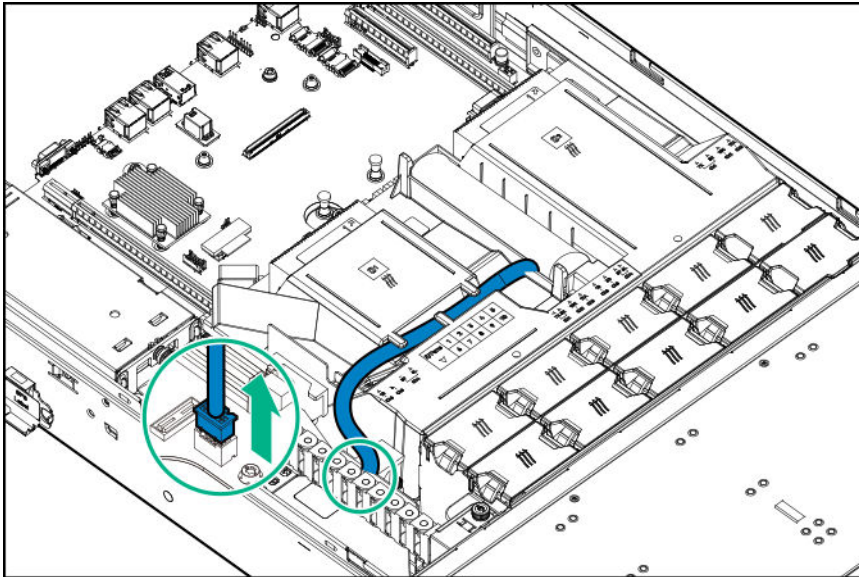
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

NOTE: System ROM and firmware messages might display "energy pack" in place of "Smart Storage Battery." Energy pack refers to both HPE Smart Storage batteries and HPE Smart Storage Hybrid capacitors.

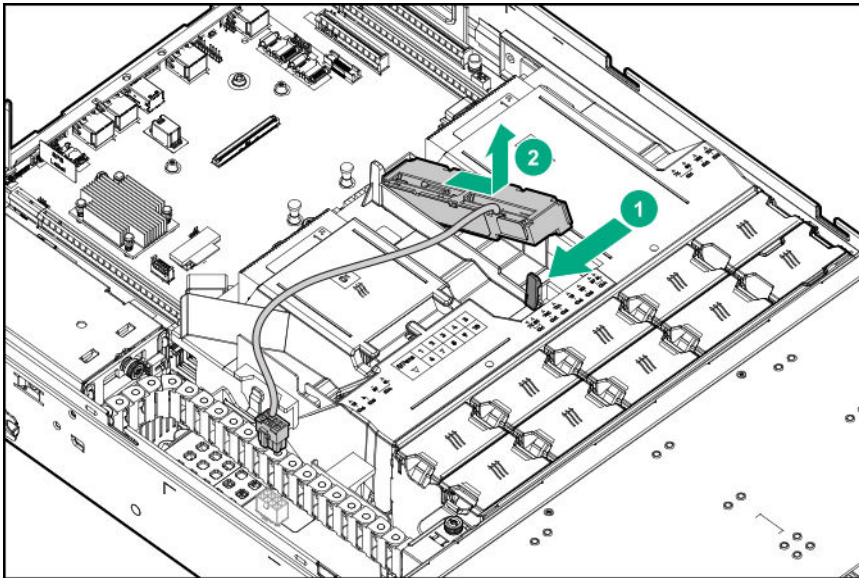
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Extend the front drive cages out of the chassis (**Extend the front drive cages out of the chassis**).
7. Open the cable management holder (**Open the cable management holder**).
8. Disconnect the HPE Smart Storage Battery cable from the system board, and then release the cable from the air baffle clips.





9. Remove the HPE Smart Storage Battery.



To replace the component, reverse the removal procedure.

Removing and replacing a type -a storage controller

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

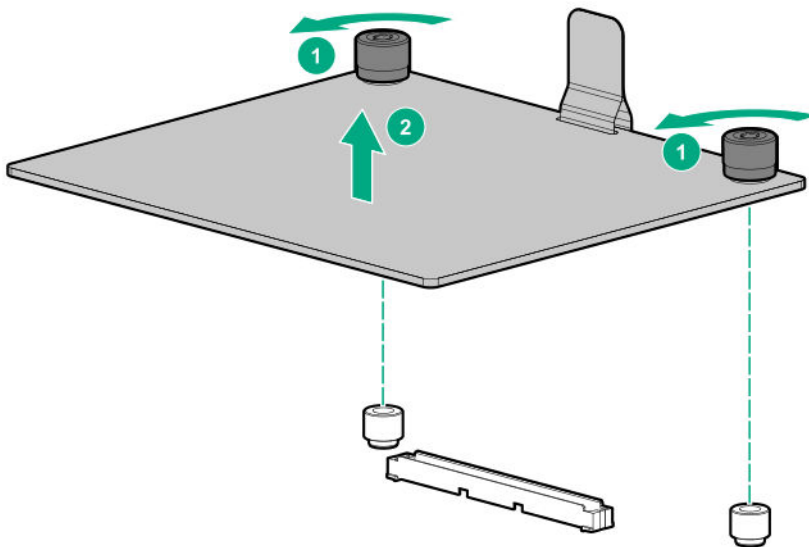
Prerequisites

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



Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Do one of the following:
 - If installed, remove the rear drive cage blank (**Remove the rear drive cage blank**).
 - If installed, remove the rear drive cage (**Remove a rear drive cage**).
7. Disconnect all cables connected to the storage controller.
8. Remove the storage controller.



To replace the component, reverse the removal procedure.

Removing and replacing the two-slot PCIe riser board

-
- WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
- CAUTION:** To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.
-

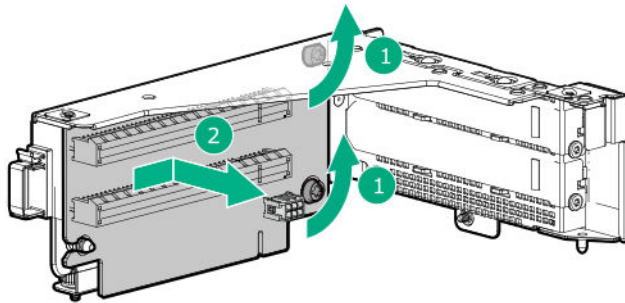


Prerequisites

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

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the PCI riser cage.
7. Remove the PCIe riser board.



To replace the component, reverse the removal procedure.

Removing and replacing the power pass-through board



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



CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

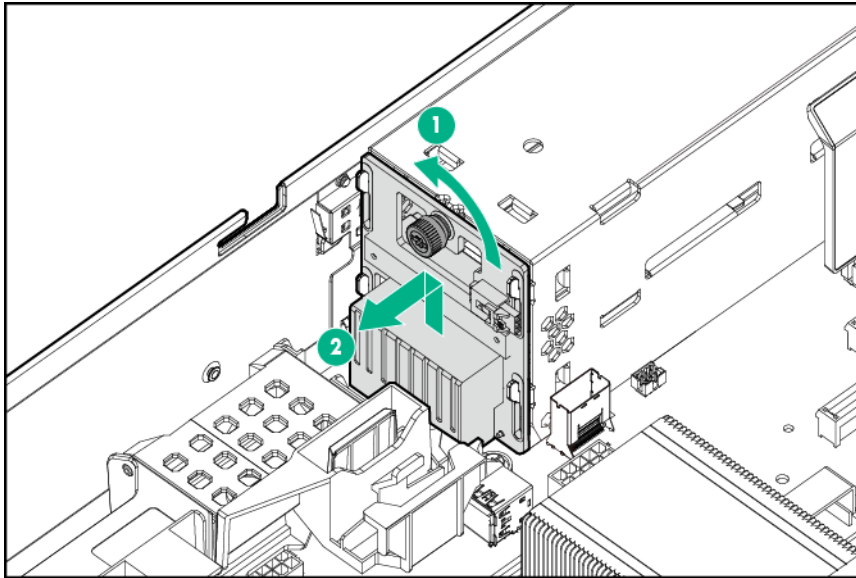
Prerequisites

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

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:

- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
 4. Place the system on a flat, level surface.
 5. Remove the access panel (**Remove the access panel**).
 6. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
 7. Remove the power pass-through board.



To replace the component, reverse the removal procedure.

Removing and replacing the Pensando DSP DSC-25 2p SFP28 card

Decommissioning the Pensando DSP DSC-25 2p SFP28 card

Procedure

Before removing the DSC-25 card from the system, you must first decommission the card using the Pensando Policy and Services Manager (PSM).

For more information, see *Pensando Distributed Services Card for Single-Wire Management (DSC-25-SWM) Removal/Replacement Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/support/dsc25-replacement>).

Removing the Pensando DSP DSC-25 2p SFP28 card

NOTE: Images might differ from the actual product.

Prerequisites

The DSC-25 card has been decommissioned.



Procedure

1. Observe the following alerts:



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



CAUTION: Electrostatic discharge (ESD) can damage electronic components. Be sure that you are properly grounded (earthed) before beginning any installation procedure.



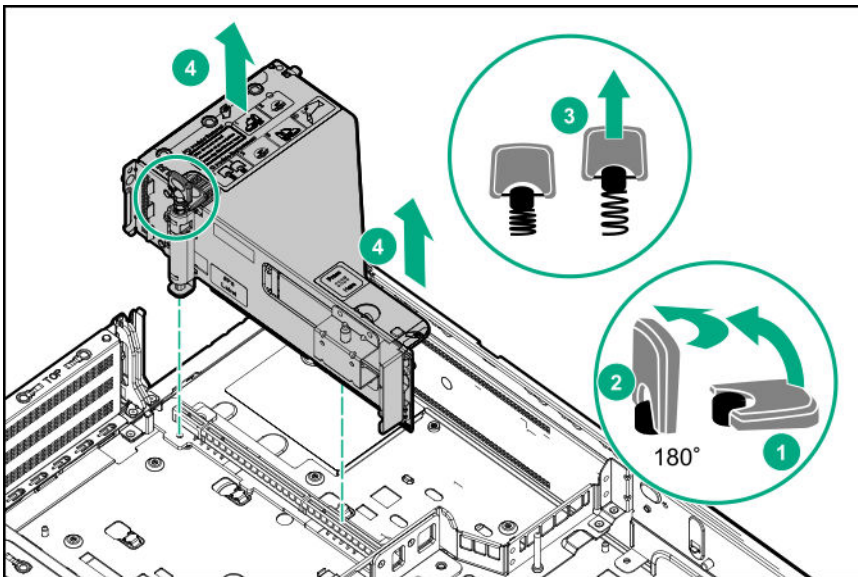
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

2. Power down the system (**Power down the system**).
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
4. Remove the system from the rack (**Remove the system from the rack**).
5. Place the system on a flat, level surface.
6. Remove the access panel (**Remove the access panel**).

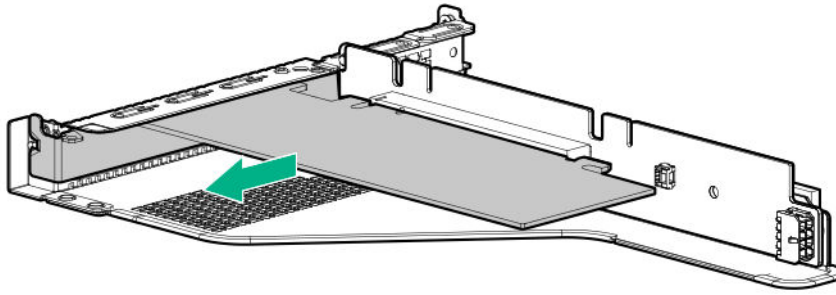


CAUTION: Do not operate the system for long periods with the access panel open or removed. Operating the system in this manner results in improper airflow and improper cooling that can lead to thermal damage.

7. Remove the primary PCIe riser cage.



8. Remove the DSC-25 card from the slot.



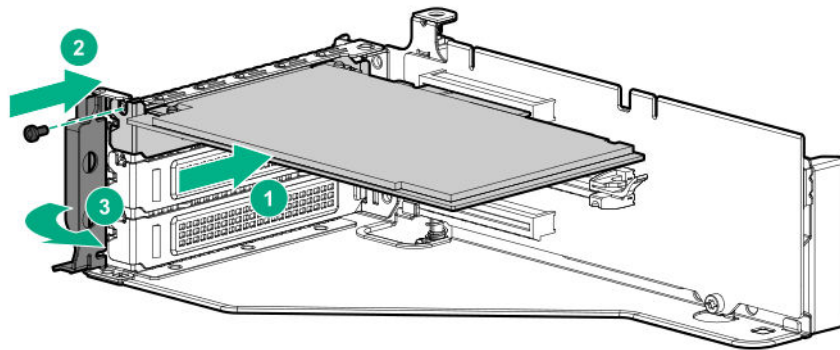
Replacing the Pensando DSP DSC-25 2p SFP28 card

Pensando DSP iLO Sideband ALOM Module requires that the accompanying Smart I/O card (Pensando DSP DSC-25 2p SFP28 card) be installed on slot 1 of the primary PCIe riser cage.

NOTE: Images might differ from the actual product.

Procedure

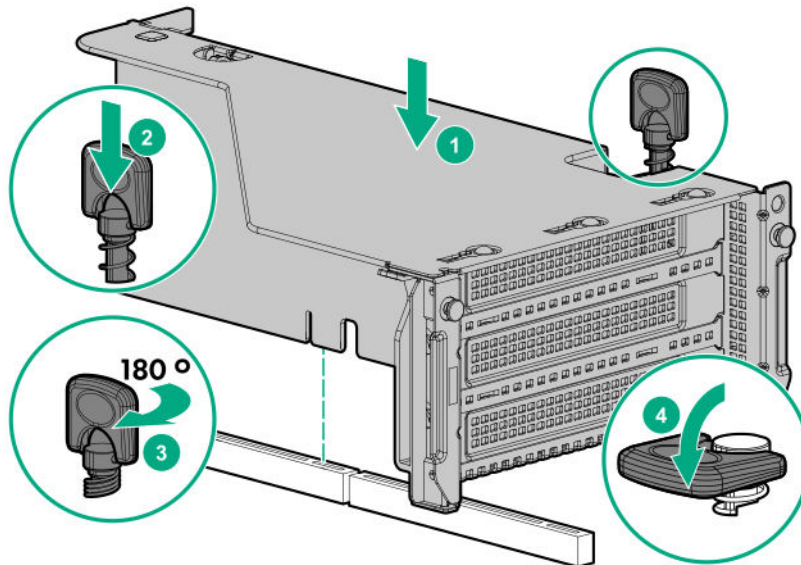
1. Install the DSC-25 card into the PCIe slot:



2. Install the PCIe riser cage into the server.

CAUTION: Do not twist the cable service loop during installation.





3. Install the access panel.
4. Slide the server into the rack.
5. Connect each power cord to the server.
6. Connect each power cord to the power source.
7. Power up the server.
8. Admit the new DSC-25 card to the Pensando Policy and Services Manager (PSM).

For more information, see *Pensando Distributed Services Card for Single-Wire Management (DSC-25-SWM) Removal/Replacement Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/support/dsc25-replacement>).

Removing and replacing the HPE NS204i-p NVMe OS Boot Device option

Removing and replacing the boot device

Prerequisites

Procedure

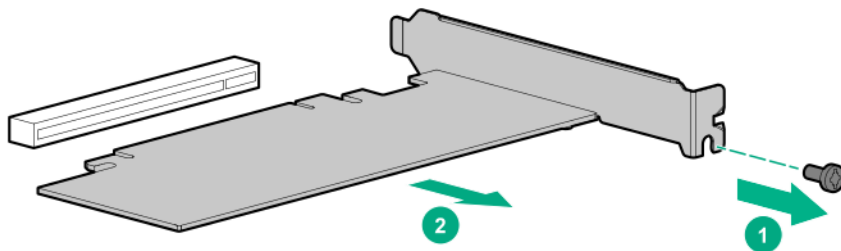
1. Observe the following alerts:

CAUTION: The boot device and the drives installed on the boot device are not hot-pluggable. To remove the boot device, or a drive from the boot device, you must first power down the server.

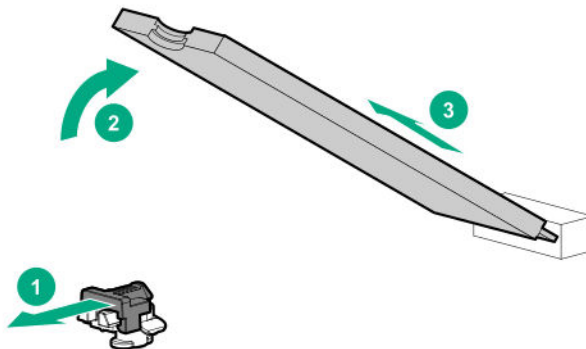
WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

2. Back up all server data.
3. Power down the system.

4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
5. Do one of the following:
 - **Extend the front drive cages out of the chassis.**
 - **Remove the system from the rack.**
 - Remove the compute module from the enclosure.
6. Place the system on a flat, level work surface.
7. **Remove the access panel.**
8. **Remove the PCIe riser cage.**
9. Remove the boot device.



10. Remove the drives from the boot device.



Retain these drives for installation onto the replacement boot device.

To replace the component, reverse the removal procedure.

Removing and replacing a boot device drive

The boot device supports two physical drive sizes:

- 22110 model (110mm)
- 22080 model (80mm)



Two drives of the same physical size, or one of each size (80mm and 110mm), can be installed at the same time. Depending on the replacement drive model, you might be required to **relocate the M.2 drive retaining latches** on the boot device.

Prerequisites

Review the **boot device drive bay LEDs** to determine the failed drive.

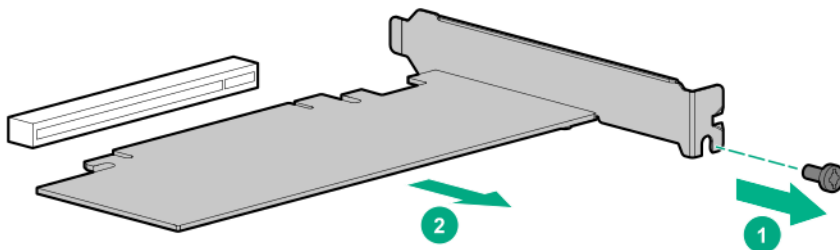
Procedure

1. Observe the following alerts:

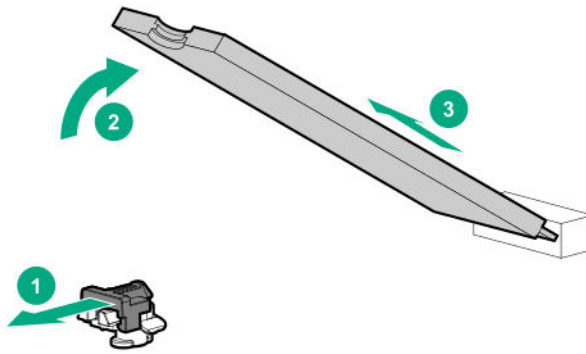
CAUTION: The boot device and the drives installed on the boot device are not hot-pluggable. To remove the boot device, or a drive from the boot device, you must first power down the server.

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

2. Back up all system data.
3. Power down the system.
4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
5. Do one of the following:
 - **Extend the front drive cages out of the chassis.**
 - **Remove the system from the rack.**
 - Remove the compute module from the enclosure.
6. Place the system on a flat, level work surface.
7. **Remove the access panel.**
8. **Remove the PCIe riser cage.**
9. Remove the boot device.



10. Remove the failed drive from the boot device.

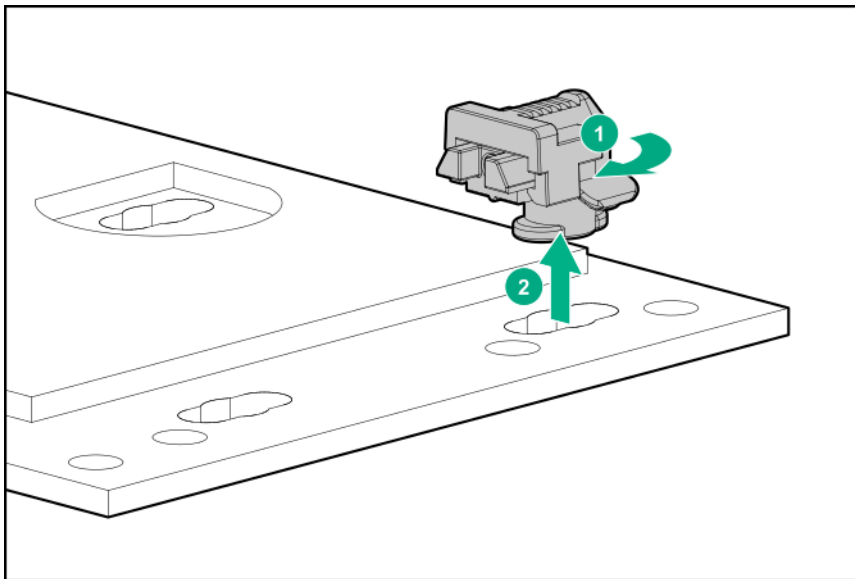


To replace the component, reverse the removal procedure.

Relocating the M.2 drive retaining latches

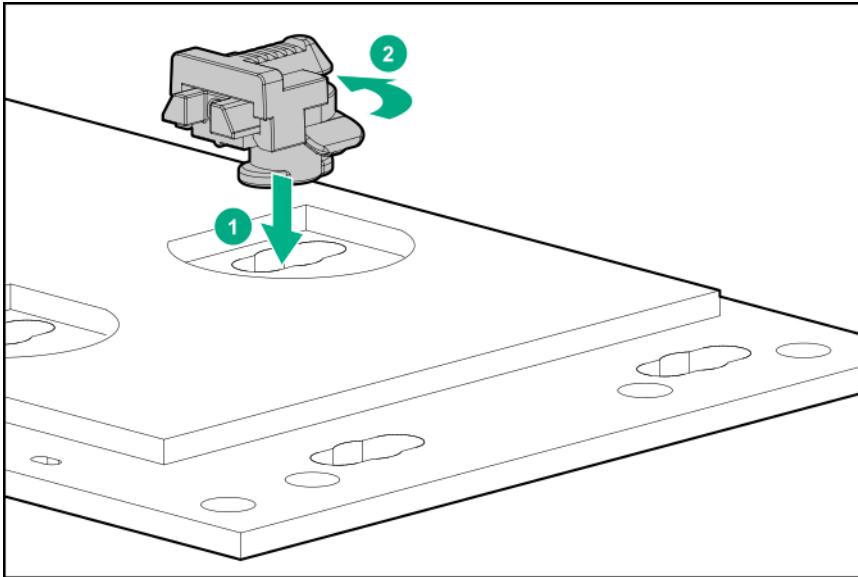
Procedure

1. If your spare kit includes an 80 mm replacement drive, remove the retaining latch from its current location.



2. Install the retaining latch at the 80 mm drive location.





Removing and replacing the system battery

If the system 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.



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

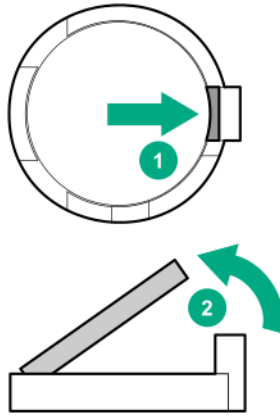
- Do not attempt to recharge the battery.
- Do not expose the battery to temperatures higher than 60°C (140°F).
- Do not disassemble, crush, puncture, short external contacts, or dispose of in fire or water.
- Replace only with the spare designated for this product.

Prerequisites

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

Procedure

- 1. Power down the system.**
- 2. Remove the system from the rack.**
3. Place the system on a flat, level surface.
4. Identify the battery location (**System board components**).
5. To remove the system battery from its socket, slightly push the metal tab, and then pry it gently from the socket.



6. To replace the battery, press the battery into the socket.

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

Removing and replacing drive backplanes

Removing and replacing the front LFF drive cage backplane



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



CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

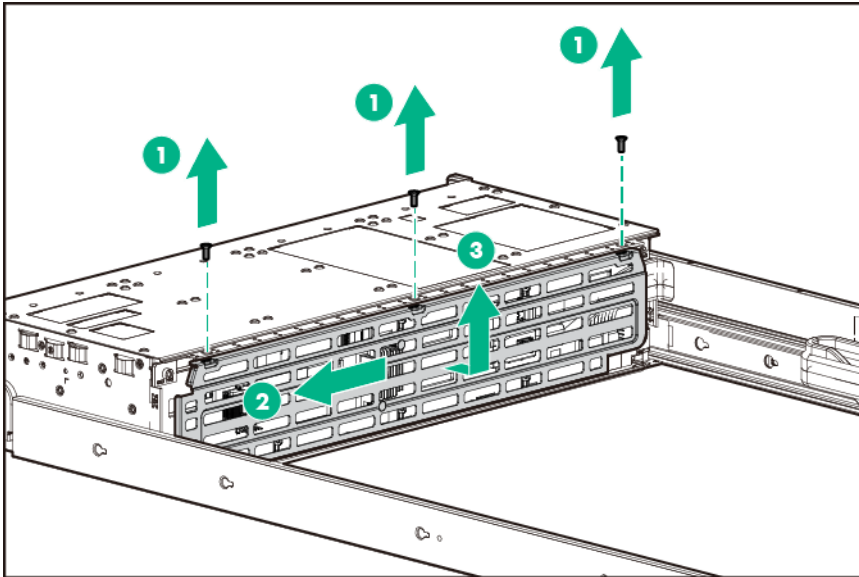
Prerequisites

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

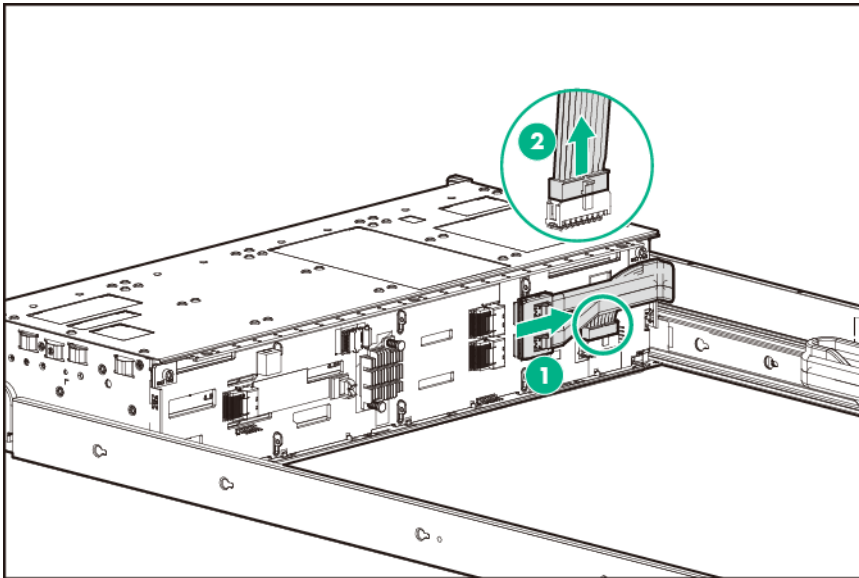
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
6. Remove the backplane cable guard.



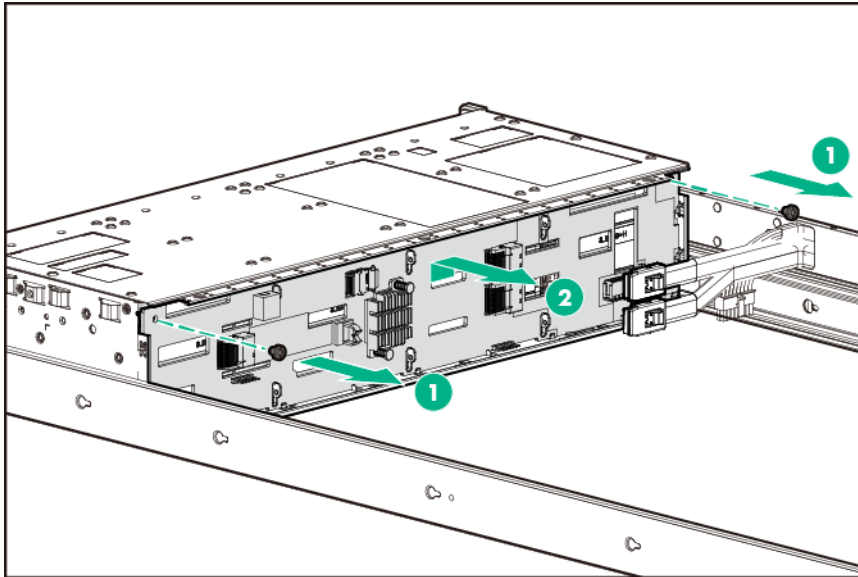


7. Disconnect all cables connected to the drive backplane.



8. Remove the drive backplane.





To replace the component, reverse the removal procedure.

Removing and replacing the internal LFF drive cage backplane



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



CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

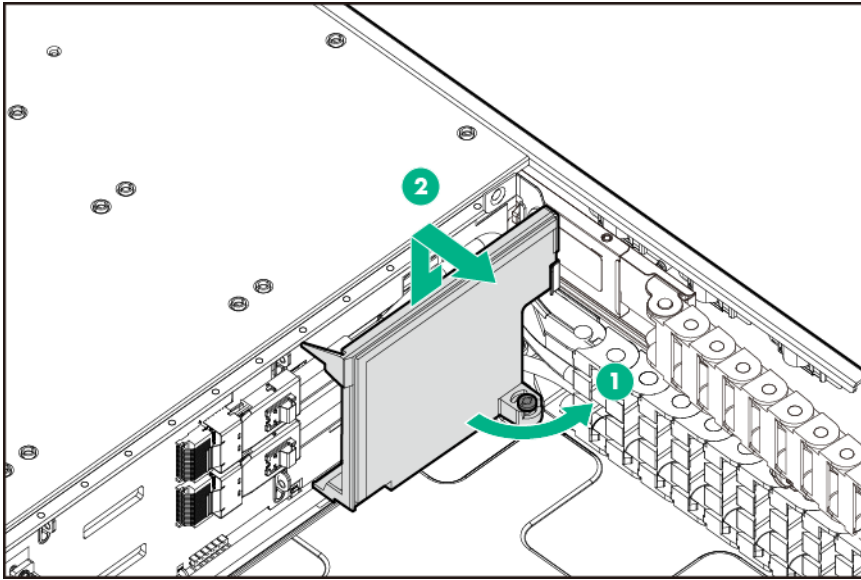
Prerequisites

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

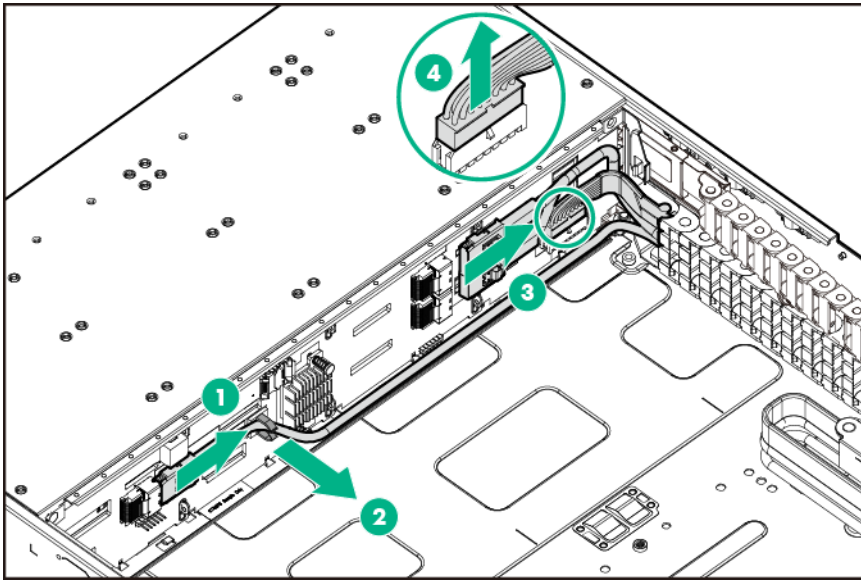
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
6. Remove the air blocker.



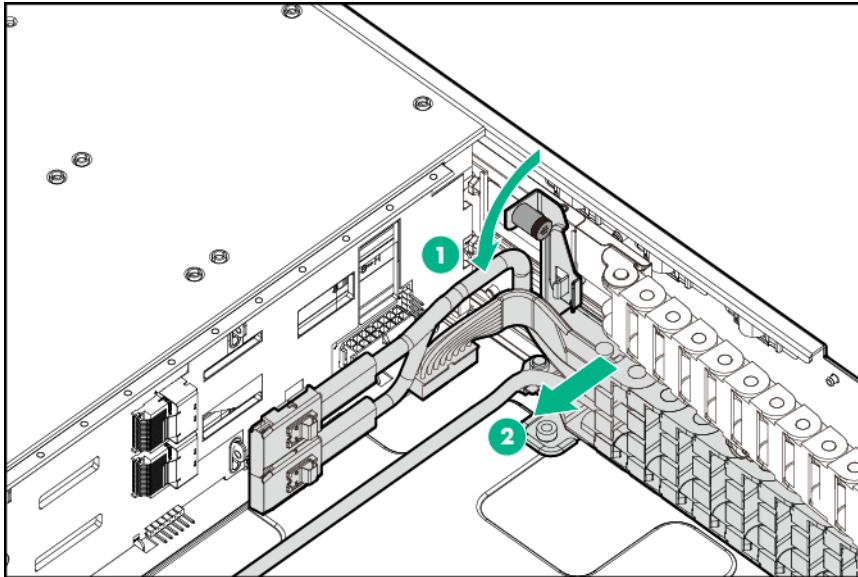


- 7.** Disconnect all cables connected to the drive backplane.

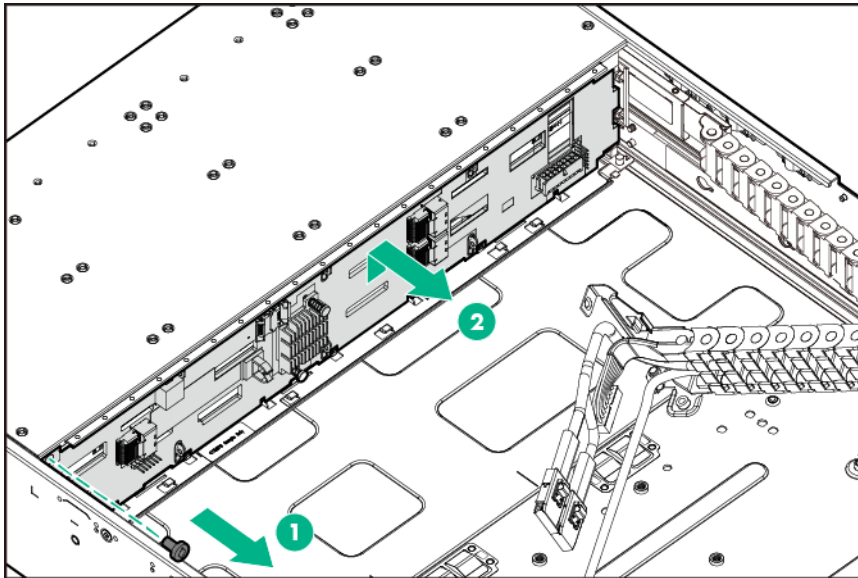


- 8.** Release the front bracket of the internal drive cage cable track from the chassis.





9. Remove the drive backplane.



To replace the component, reverse the removal procedure.

Removing and replacing the front SFF drive cage backplane

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

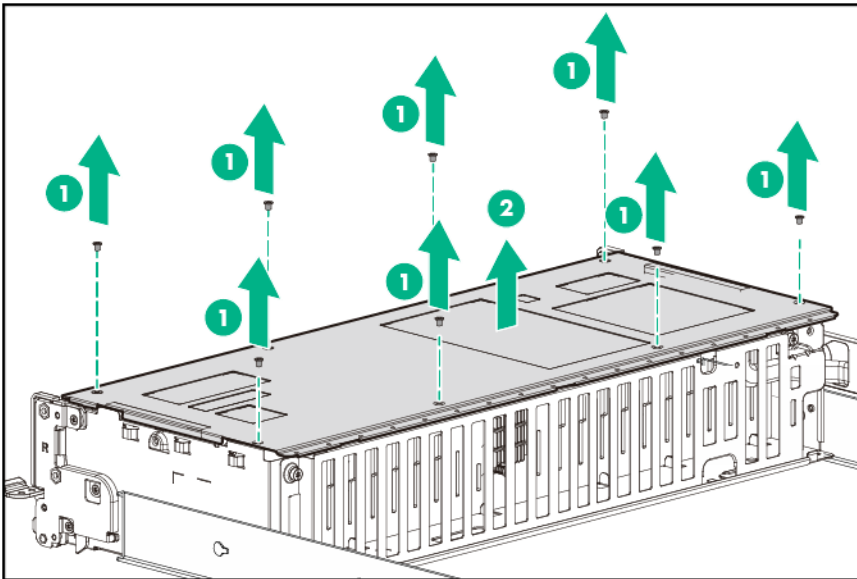
Prerequisites

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

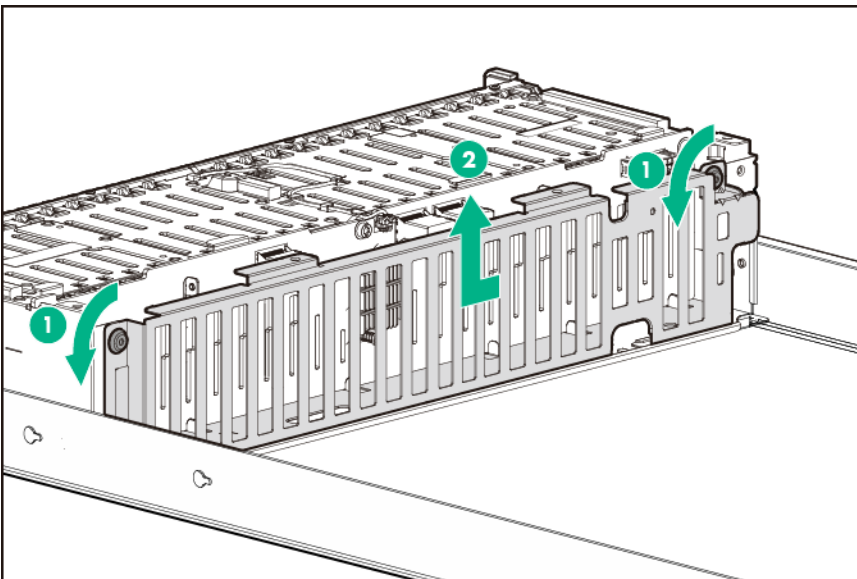


Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
6. Remove the drive cage top cover.

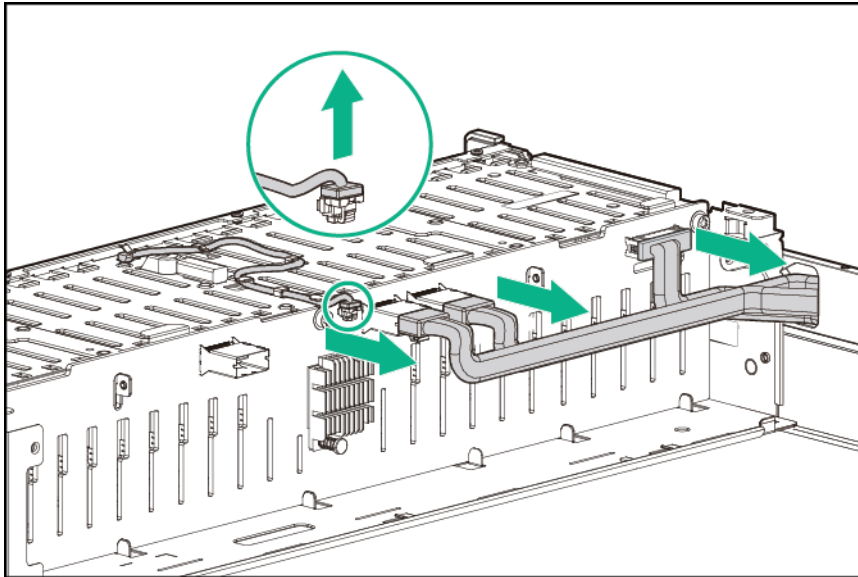


7. Remove the backplane cable guard.

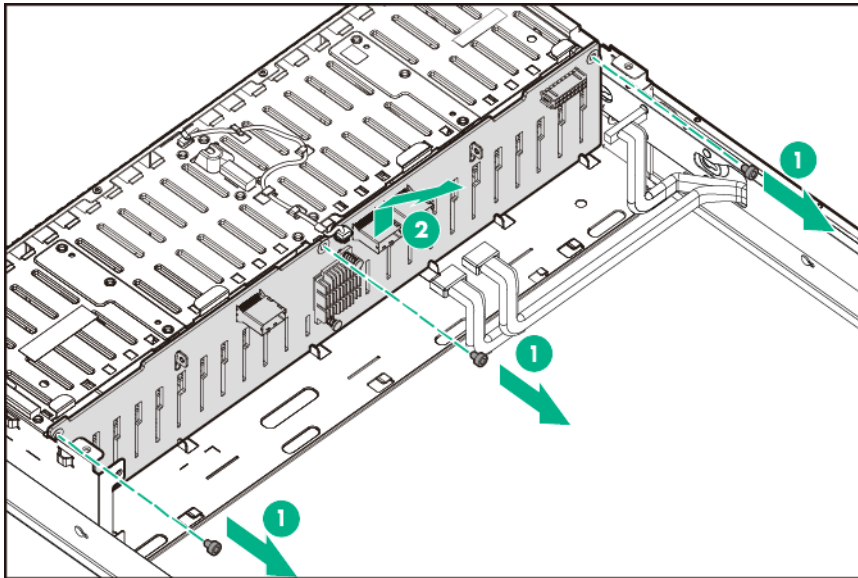


8. Disconnect all cables connected to the drive backplane.





9. Remove the drive backplane.



To replace the component, reverse the removal procedure.

Removing and replacing the internal SFF drive cage backplane

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

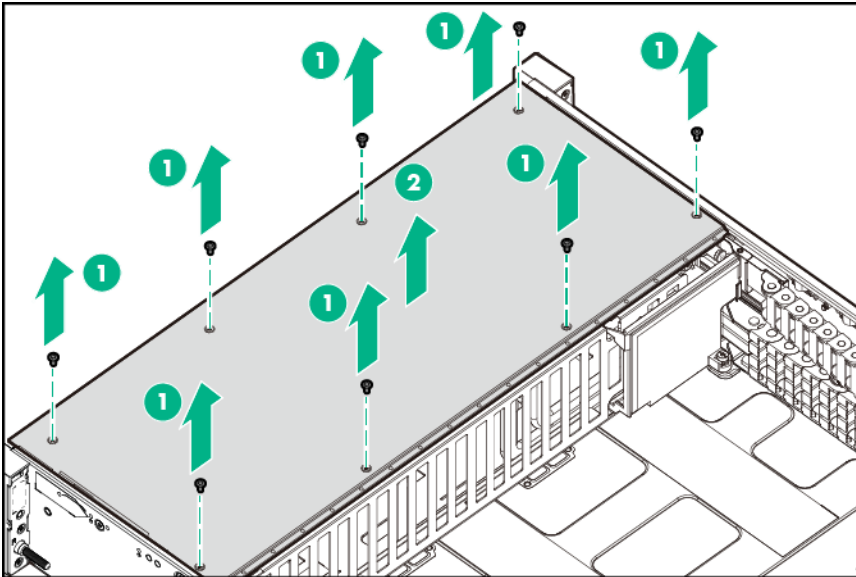
Prerequisites

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

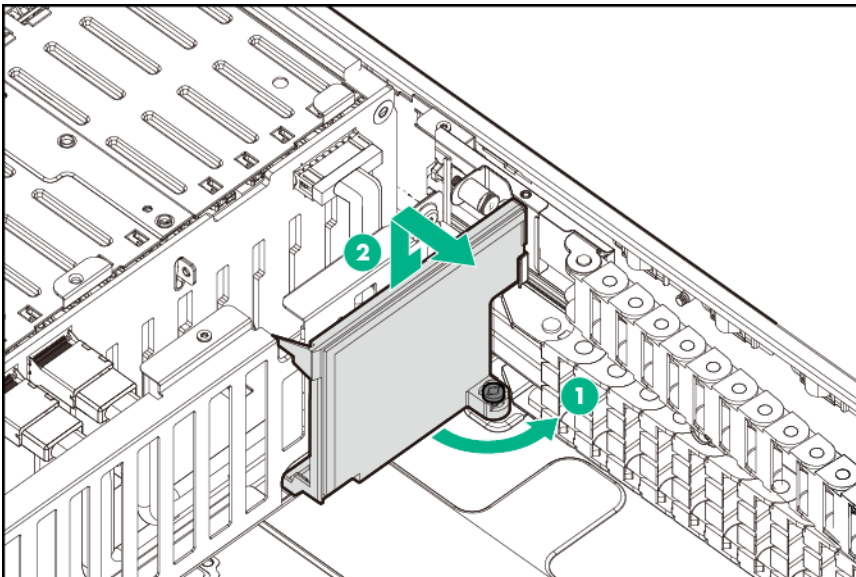


Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
6. Remove the drive cage top cover.

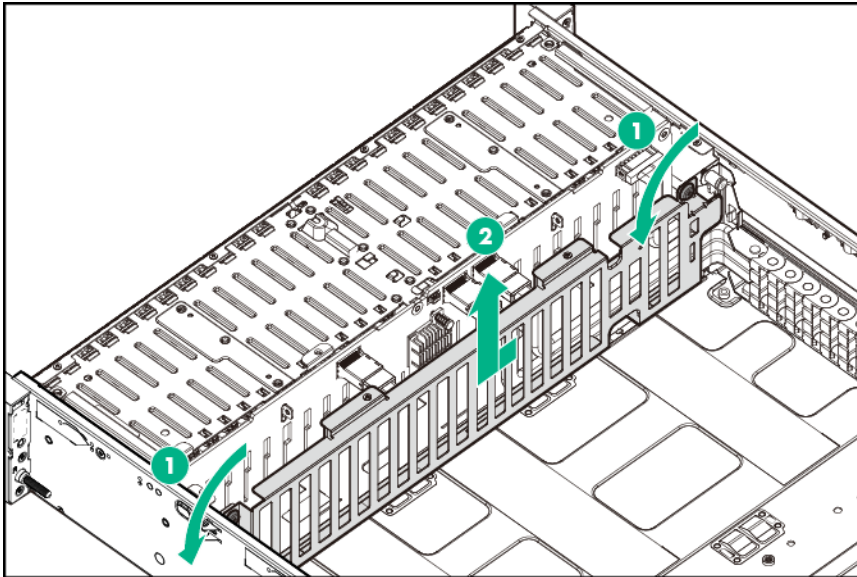


7. Remove the air blocker.

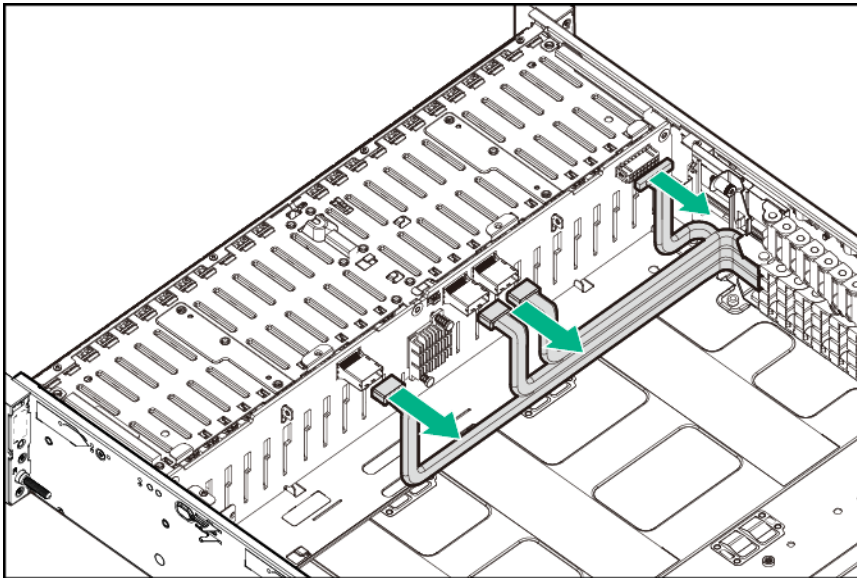


8. Remove the backplane cable guard.



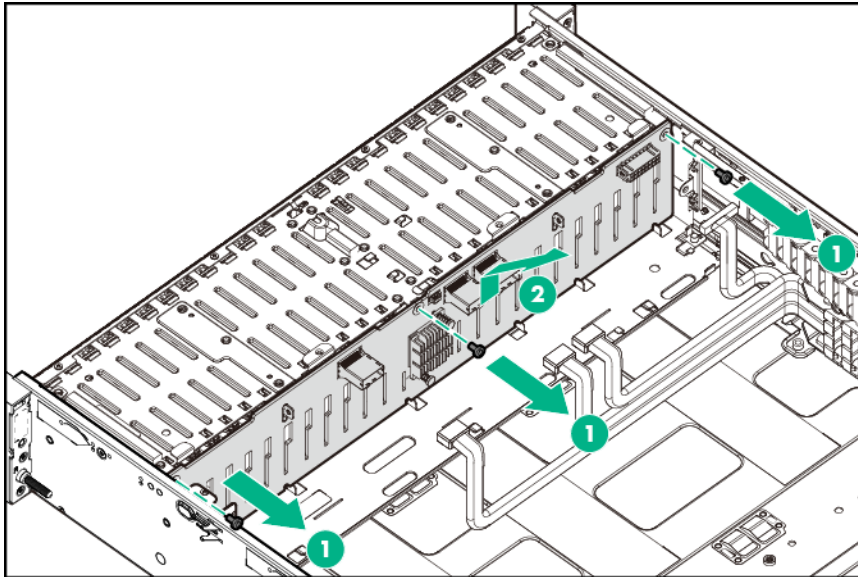


- 9.** Disconnect all cables connected to the drive backplane.



- 10.** Remove the drive backplane.





To replace the component, reverse the removal procedure.

Removing the four-bay LFF rear drive cage backplane

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

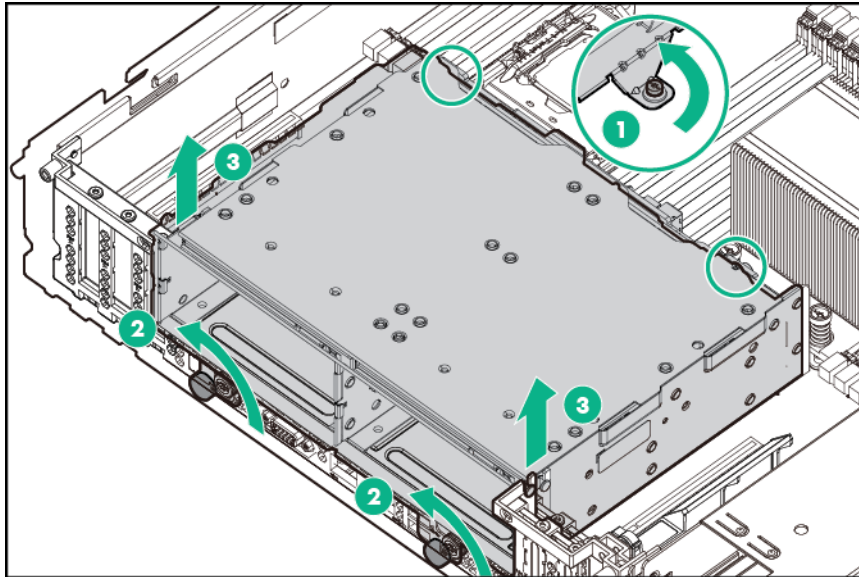
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Prerequisites

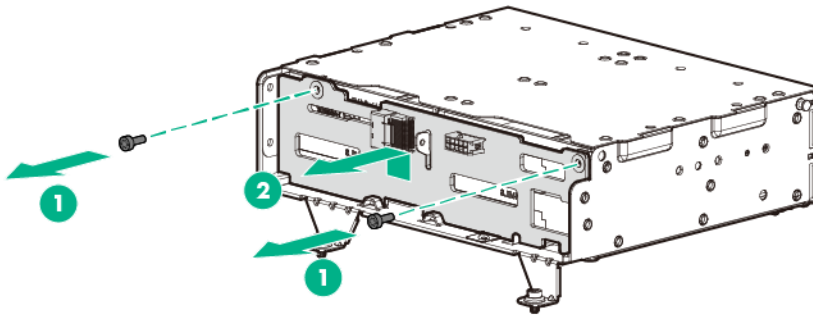
Before you perform this procedure, make sure that you have the components included with the hardware kit.

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Disconnect all cables from the drive backplane.
7. Remove the rear drive cage:
 - a. To detach the rear drive cage from system board, loosen the captive screws.
 - b. To detach the drive cage from the rear panel, loosen the thumbscrews.
 - c. Grasp and lift the rear drive cage out of the chassis.



8. Remove the drive backplane.



To replace the component, reverse the removal procedure.

Removing and replacing the two-bay SFF rear drive cage backplane

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

⚠ CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Prerequisites

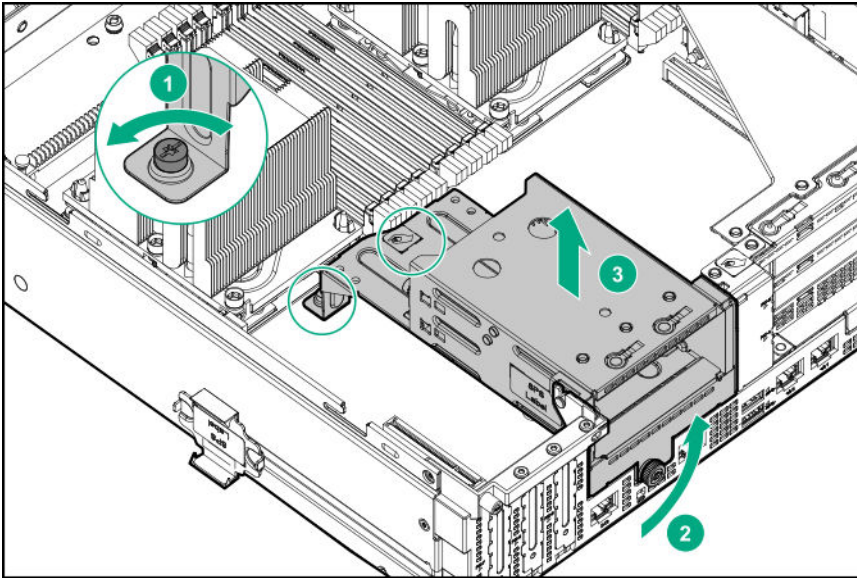
Before you perform this procedure, make sure that you have the components included with the hardware kit.

Procedure

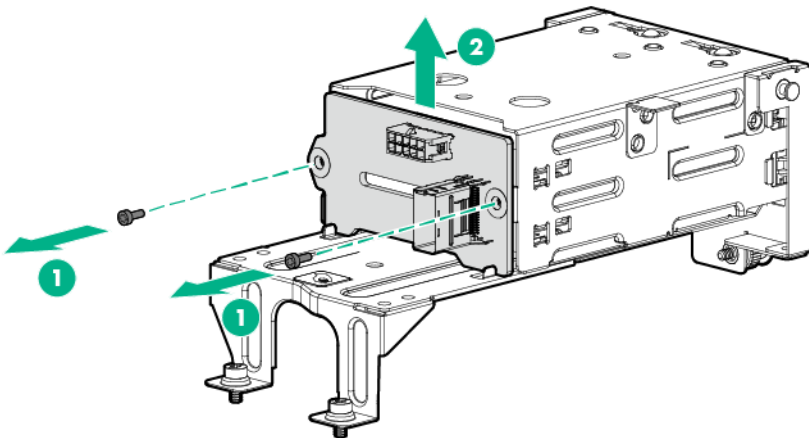
1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.



3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Disconnect all cables from the drive backplane.
7. Remove the rear drive cage:
 - a. To detach the rear drive cage from system board, loosen the captive screws.
 - b. To detach the drive cage from the rear panel, loosen the thumbscrew.
 - c. Grasp and lift the rear drive cage out of the chassis.



8. Remove the drive backplane.



To replace the component, reverse the removal procedure.

Removing and replacing the six-bay SFF rear drive cage backplane (SAS or SATA)

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

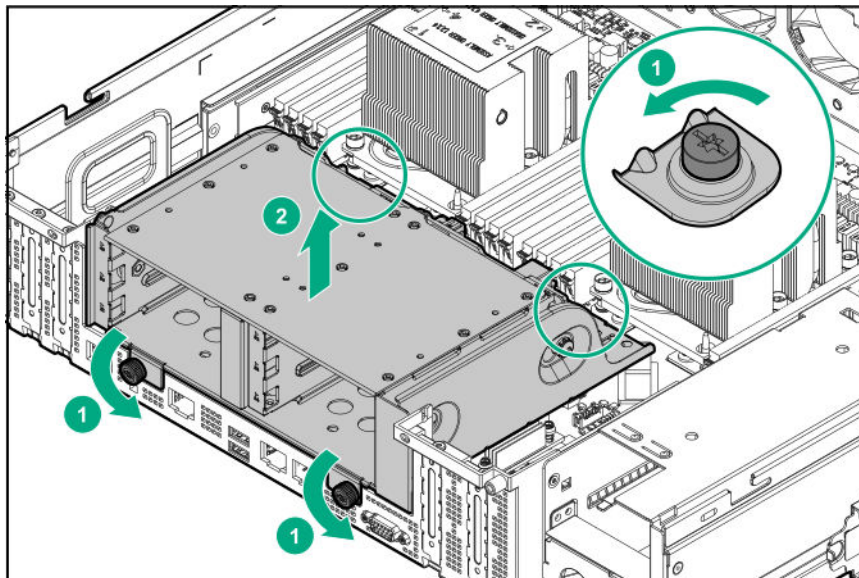


WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives, power supplies, and internal system components to cool before touching them.

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

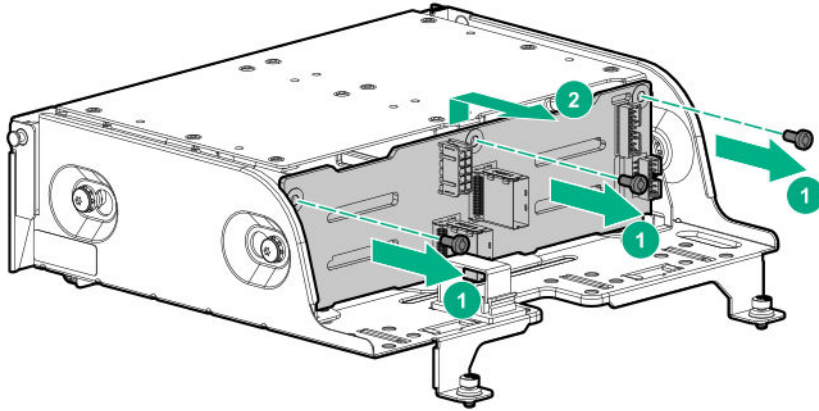
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Disconnect all cables from the drive backplane.
7. Remove the rear drive cage:
 - a. To detach the rear drive cage from system board, loosen the captive screws.
 - b. To detach the drive cage from the rear panel, loosen the thumbscrew.
 - c. Grasp and lift the rear drive cage out of the chassis.



8. Remove the drive backplane.





To replace the component, reverse the removal procedure.

Removing and replacing the six-bay SFF NVMe rear drive cage backplane

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

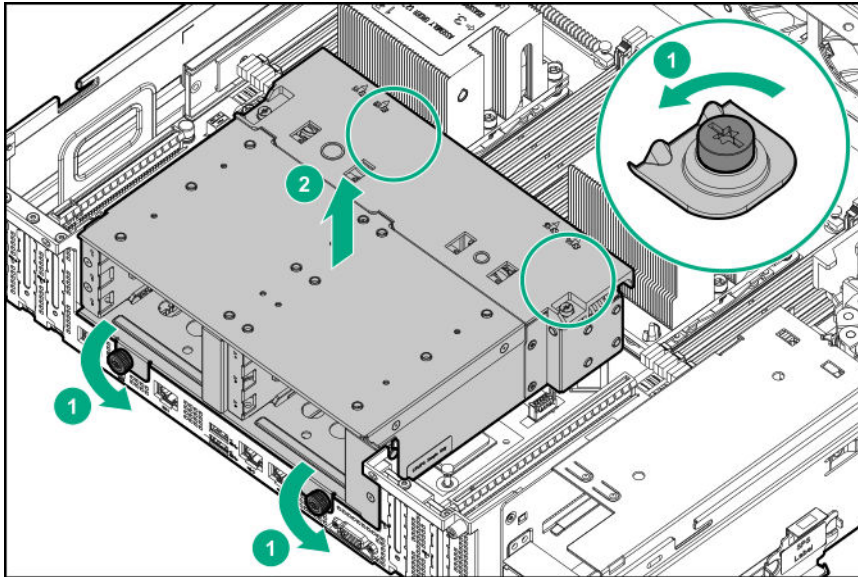
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Prerequisites

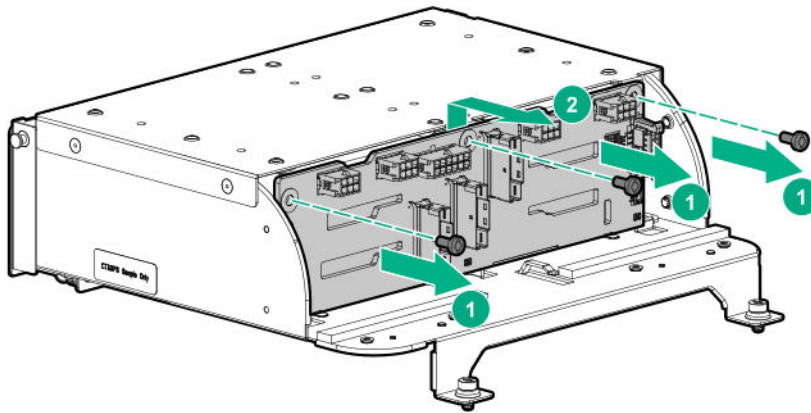
Before you perform this procedure, make sure that you have the components included with the hardware kit.

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Disconnect all cables from the drive backplane.
7. Remove the rear drive cage.



8. Remove the drive backplane.



To replace the component, reverse the removal procedure.

Removing and replacing the LFF drive cable track assemblies

The Mini SAS and power cables used in the 24-bay LFF front drive cages are enclosed in two plastic cable track assemblies. The top cable track connects to the front LFF drive cage backplane; the bottom cable track connects to the internal LFF drive cage backplane.

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

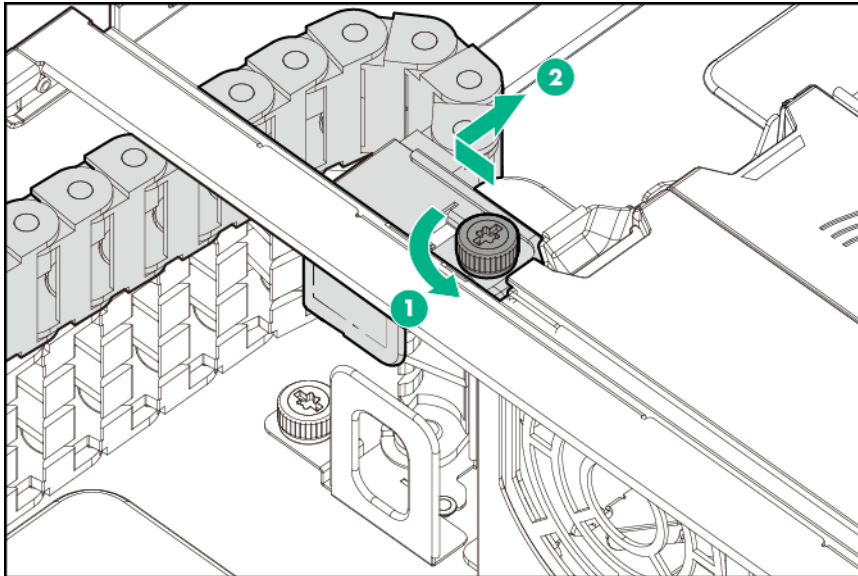
Prerequisites

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



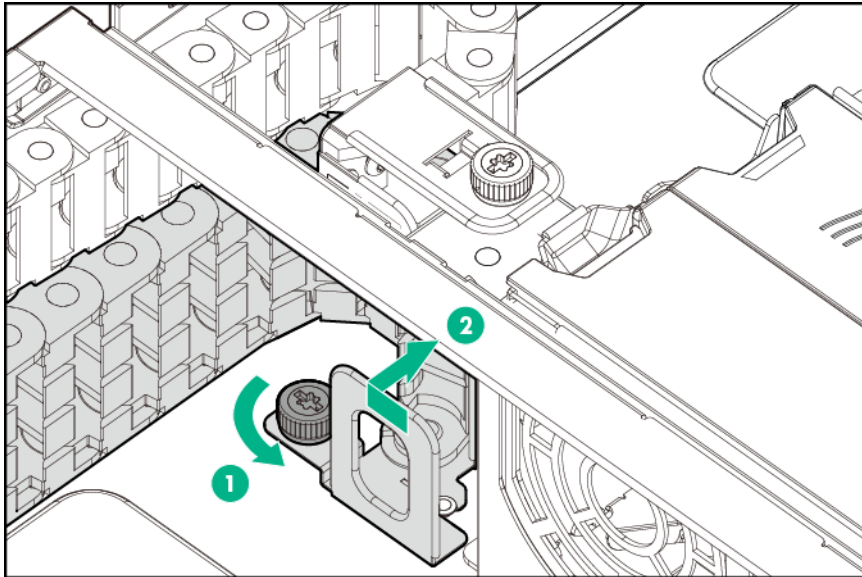
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
7. Do one of the following:
 - Release all cables from the system board cable clips.
 - If a rear drive cage is connected to the internal drive cage backplane, disconnect the cable from the rear drive cage backplane.
8. Remove the cable management holder.
9. Release the cable track brackets:
 - a. Loosen the front LFF drive cage cable track thumbscrew, and then release the bracket from the chassis.



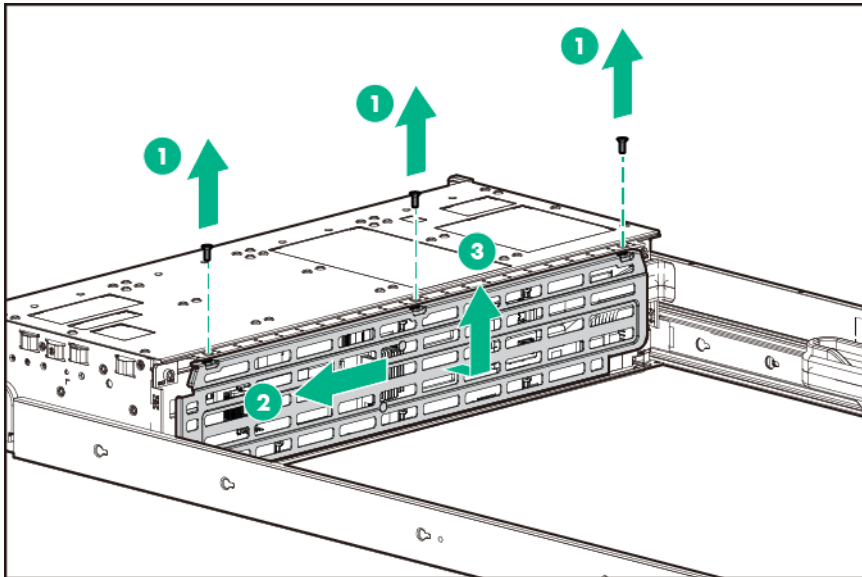
- b. Loosen the internal LFF drive cage cable track thumbscrew, and then release the bracket from the chassis.





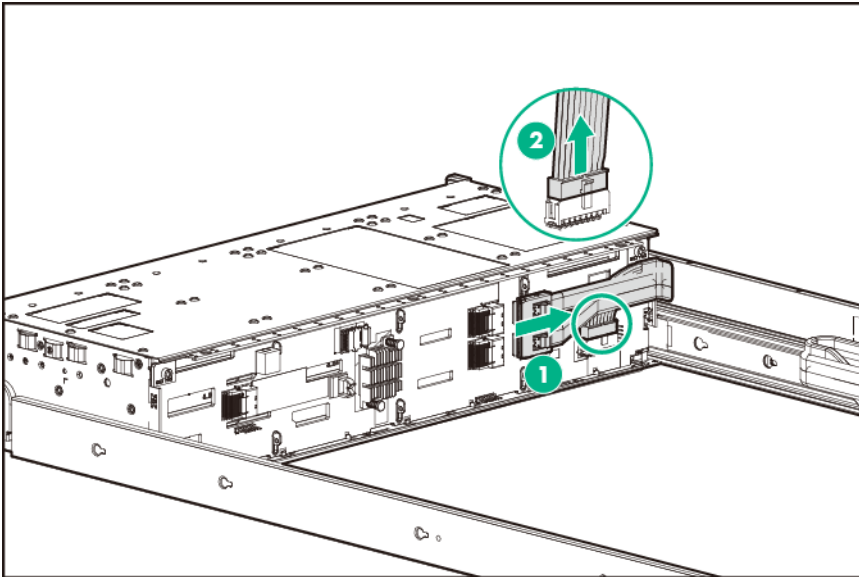
10. Remove the front LFF drive cage cable track assembly:

a. Remove the backplane cable guard.

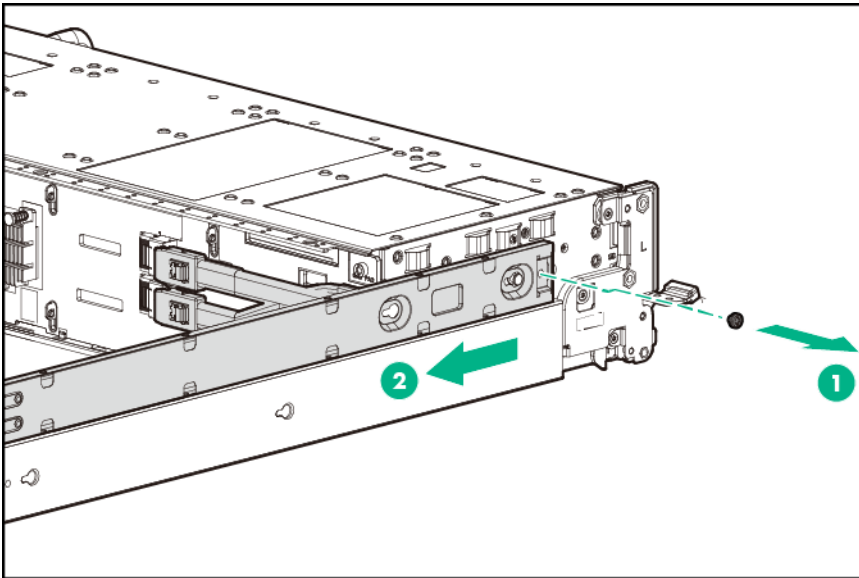


b. Disconnect all cables connected to the drive backplane.



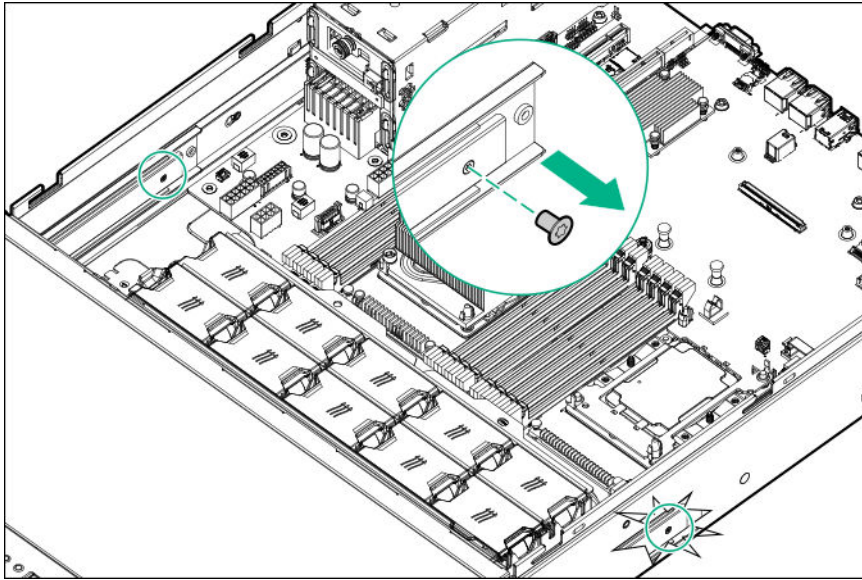


- c. Release the front LFF drive cage cable track rail from the side of the chassis.

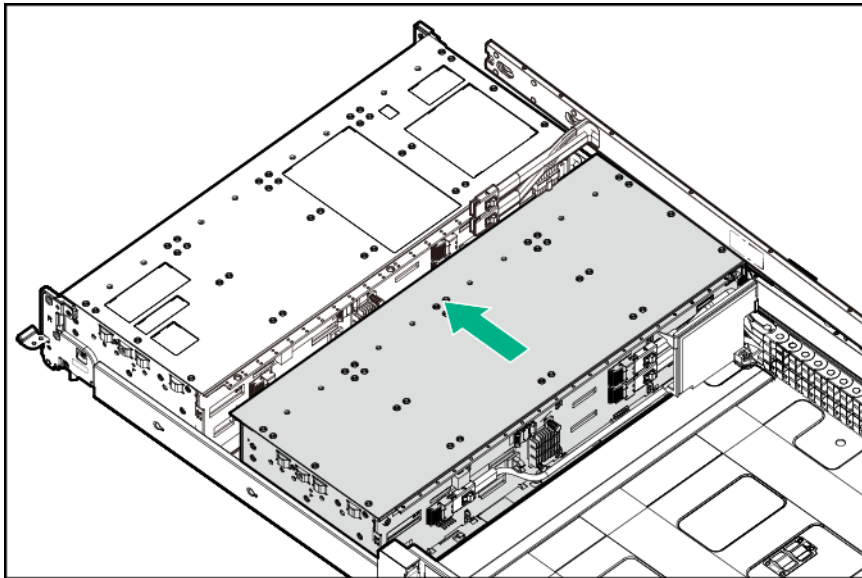


- d. Remove the screws from the front LFF drive cage rails.



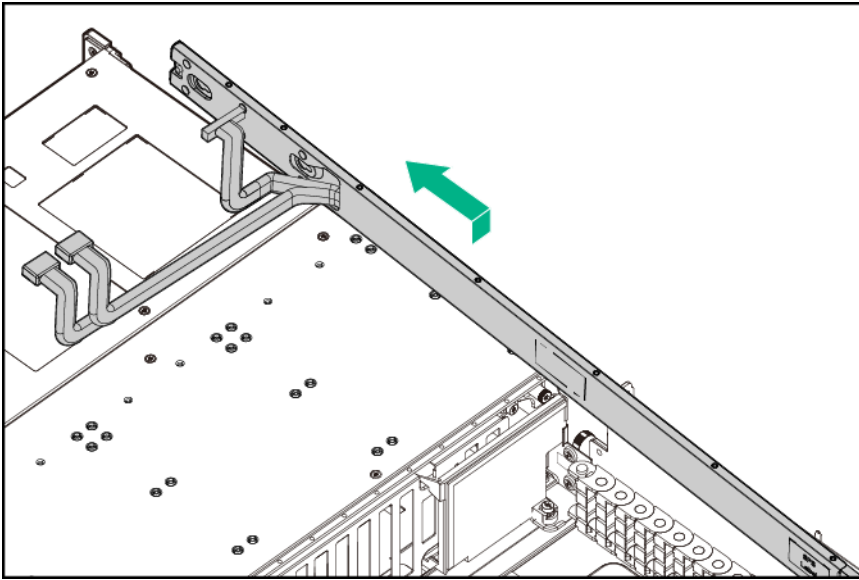


- e. Slide the internal LFF drive cage forward until both drive cages are extended out of the front chassis.



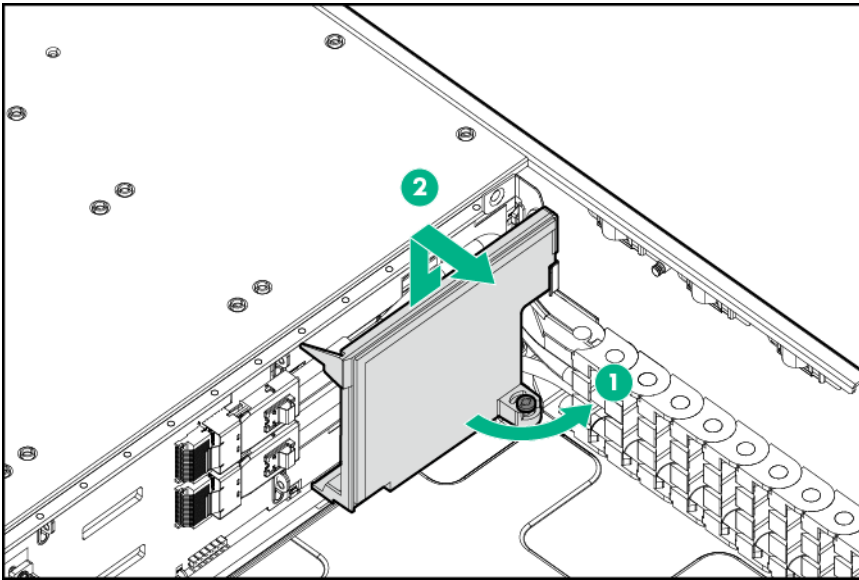
- f. Remove the front LFF drive cage cable track assembly.





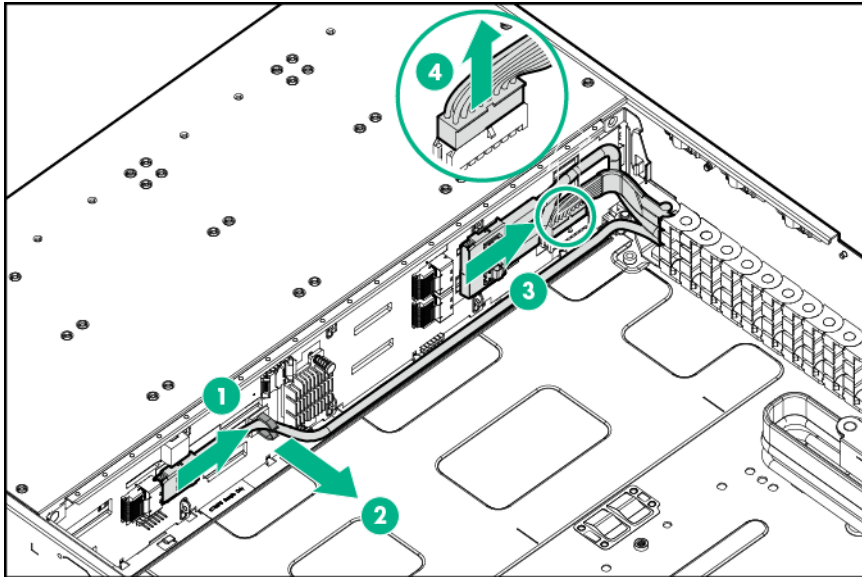
11. Remove the internal LFF drive cage cable track assembly:

- a.** Remove the front LFF drive cage cable track assembly.
- b.** Remove the air blocker.

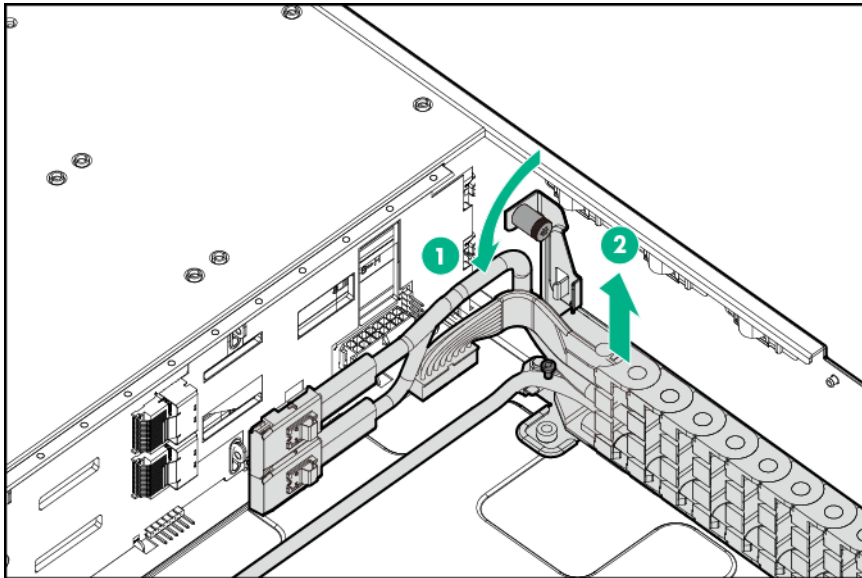


c. Disconnect all cables connected to the drive backplane.



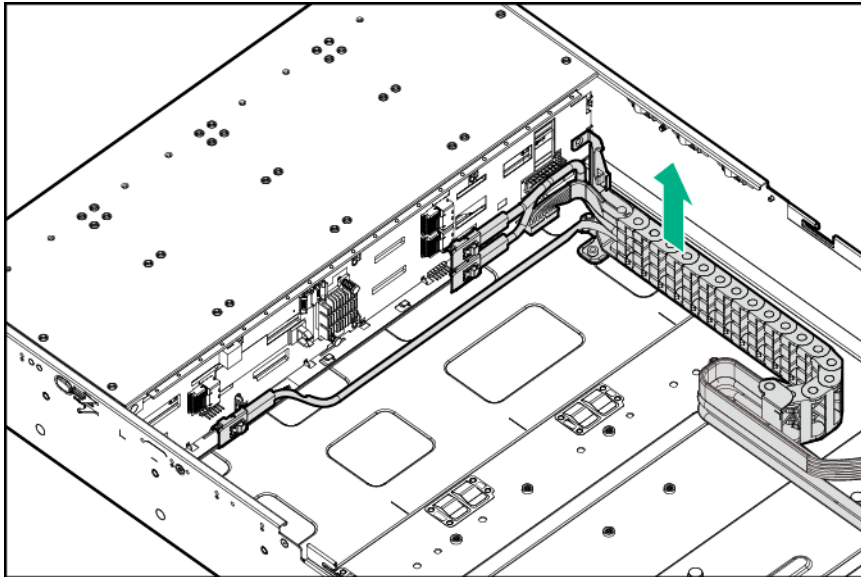


- d. Release the front bracket of the internal LFF drive cage cable track from the chassis.



- e. Remove the internal LFF drive cage cable track assembly.





To replace the component, reverse the removal procedure.

Removing and replacing the SFF drive cable track assemblies

The Mini SAS and power cables used in the 48-bay SFF front drive cages are enclosed in two plastic cable track assemblies. The top cable track connects to the front SFF drive cage backplane; the bottom cable track connects to the internal SFF drive cage backplane.



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



CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Prerequisites

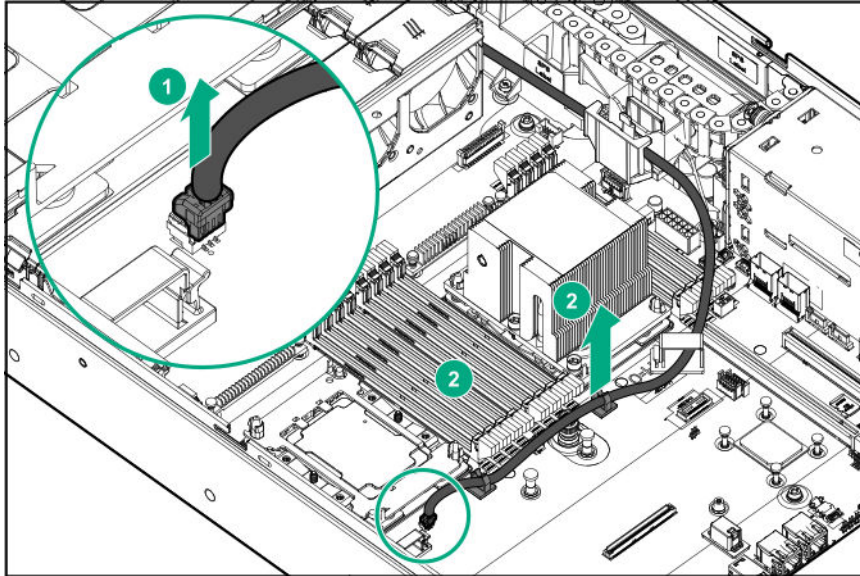
Before you perform this procedure, make sure that you have the components included with the hardware kit.

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).

7. Do one of the following:

- Release the preinstalled Mini SAS x4 cable from the system board cable clips.

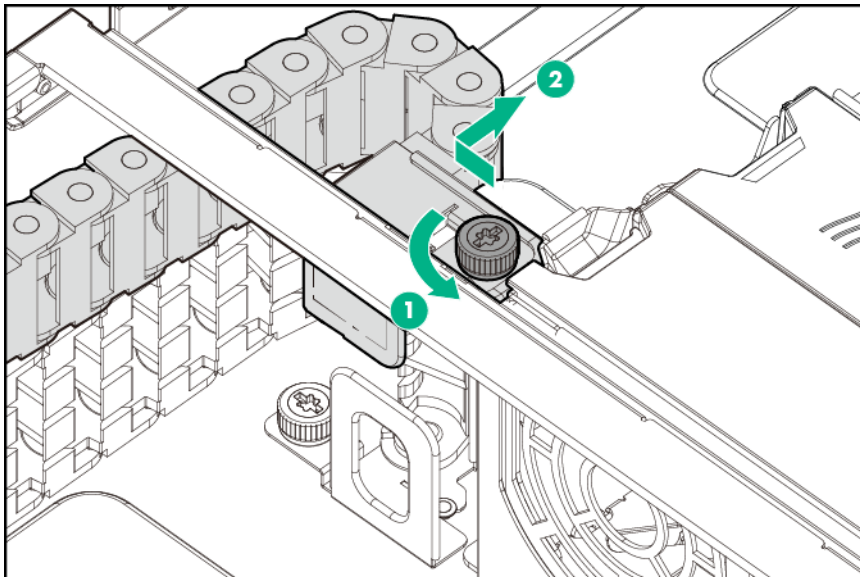


- If a rear drive cage is connected to the internal drive cage backplane, disconnect the preinstalled Mini SAS x4 cable from the rear drive cage backplane.

8. Remove the cable management holder.

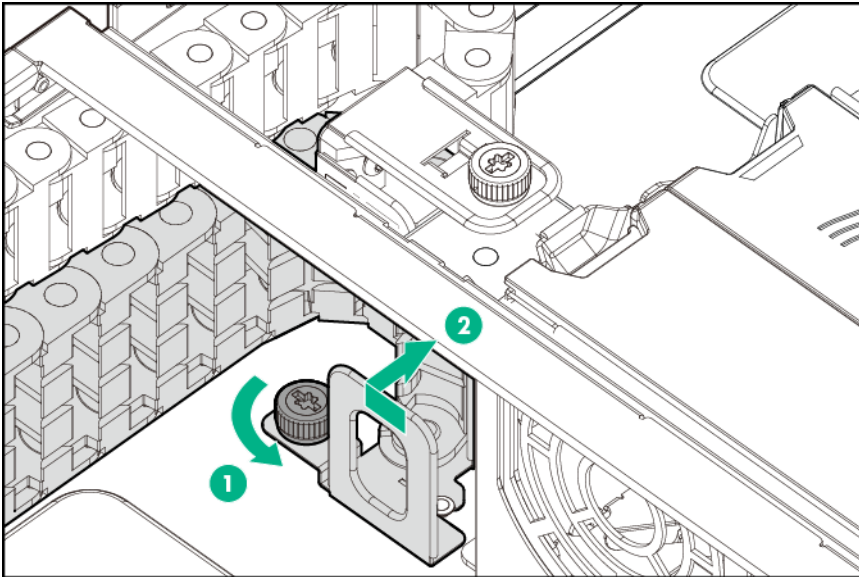
9. Release the cable track brackets:

- a.** Loosen the front SFF drive cage cable track thumbscrew, and then release the bracket from the chassis.



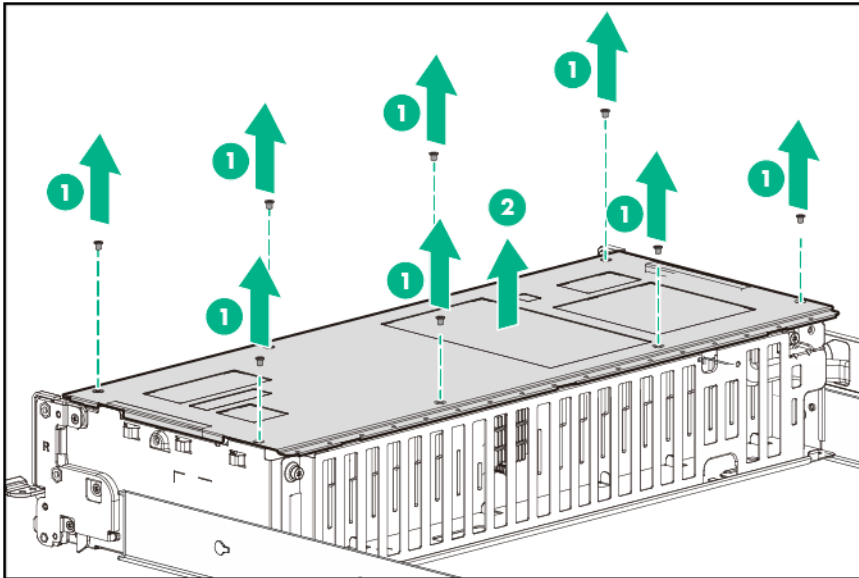
- b.** Loosen the internal SFF drive cage cable track thumbscrew, and then release the bracket from the chassis.





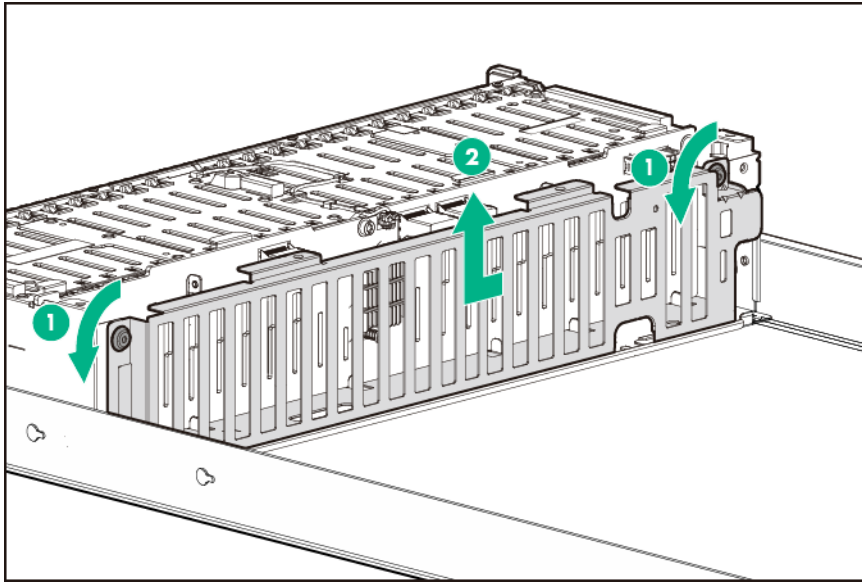
10. Remove the front SFF drive cage cable track assembly:

a. Remove the drive cage top cover.

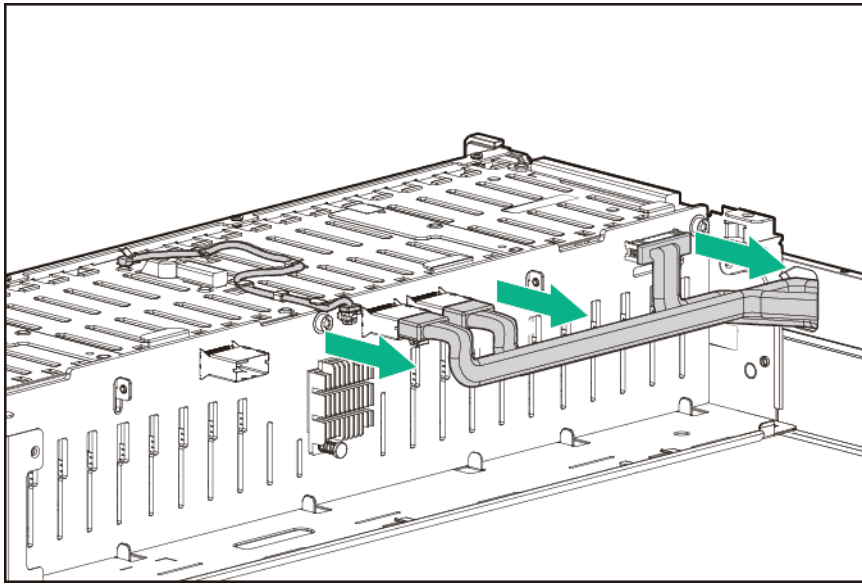


b. Remove the backplane cable guard.



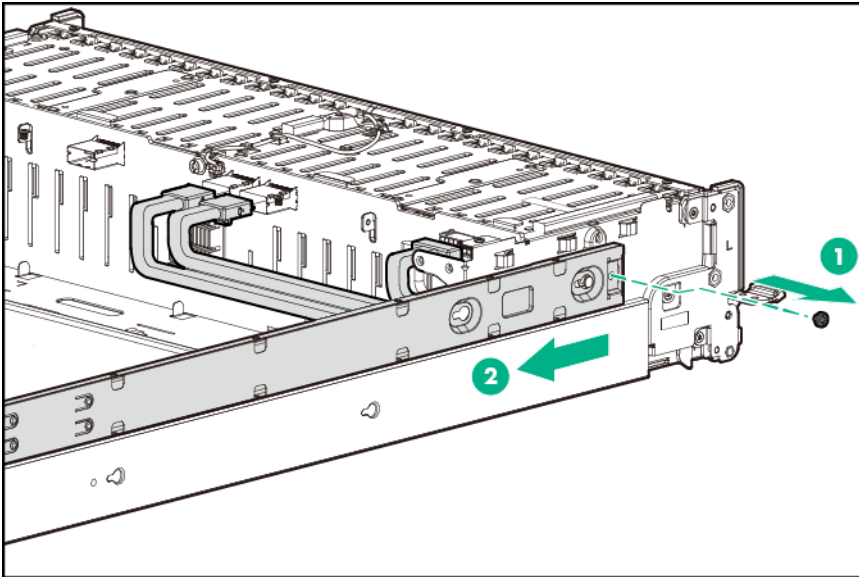


- c. Disconnect the front SFF drive cage Mini SAS and power cables.

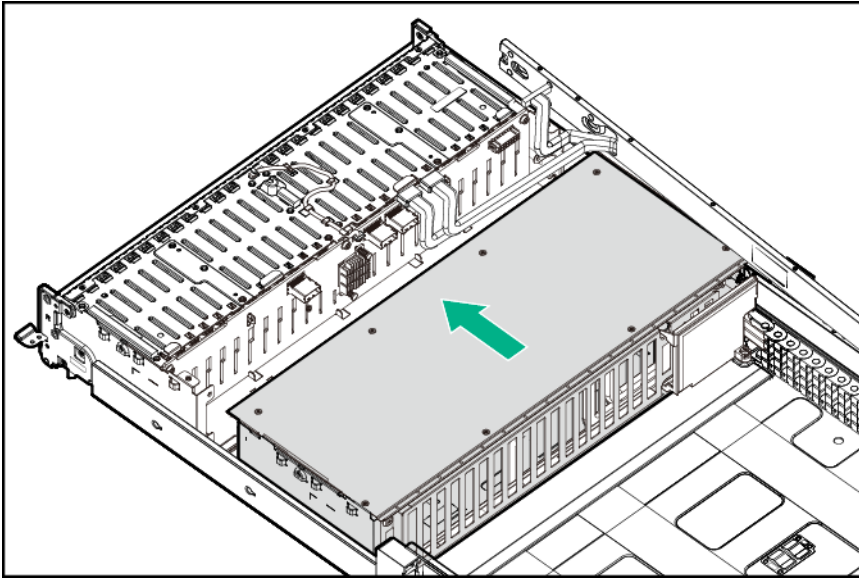


- d. Release the front SFF drive cage cable track rail from the side of the chassis.



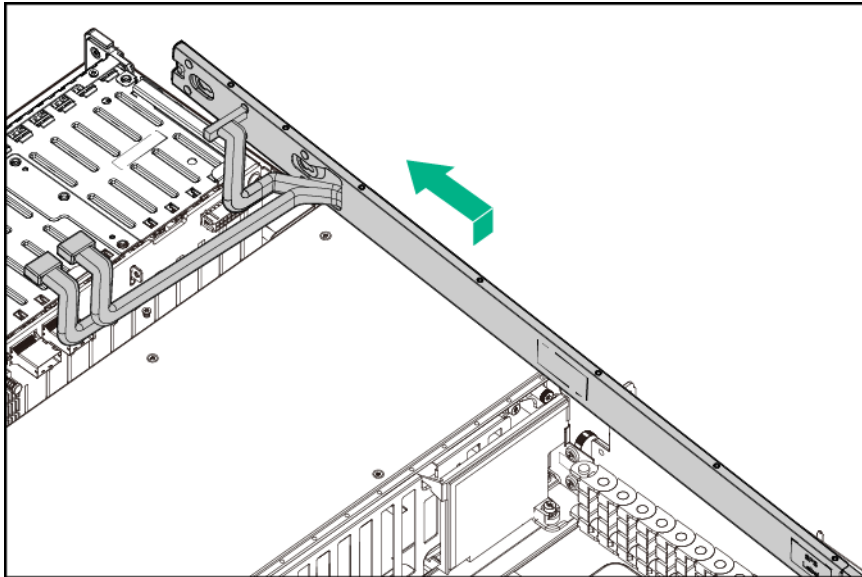


- e. Slide the internal SFF drive cage forward until both front drive cages are extended out of the front chassis.



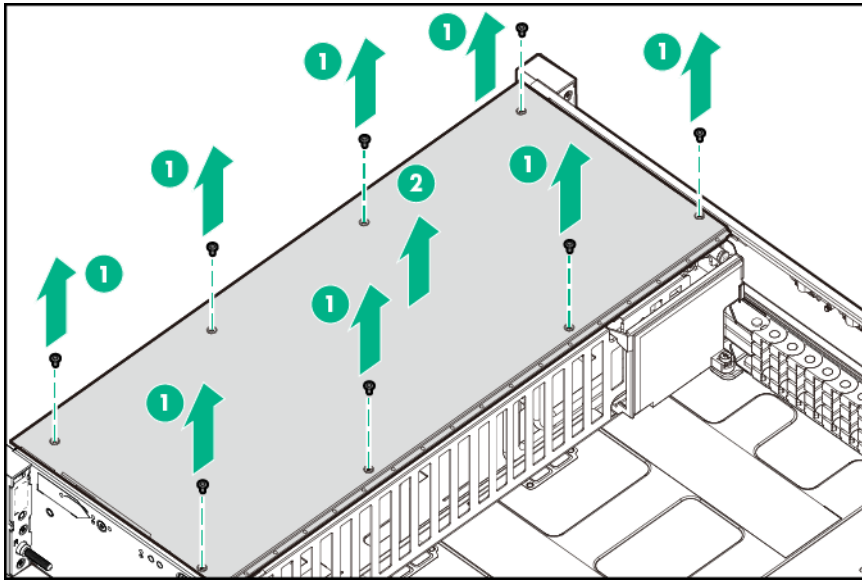
- f. Remove the front SFF drive cage cable track assembly.





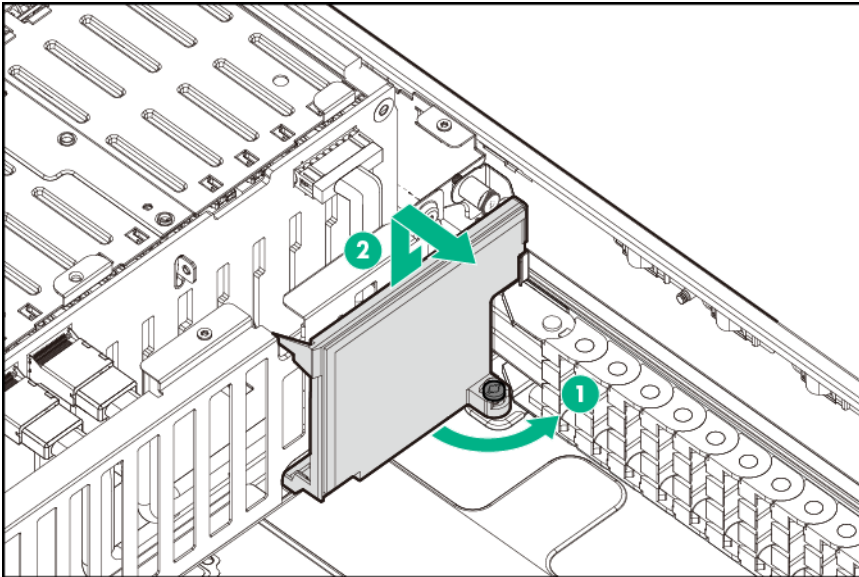
11. Remove the internal SFF drive cage cable track assembly:

- a. Remove the front SFF drive cage cable track assembly.
- b. Remove the drive cage top cover.

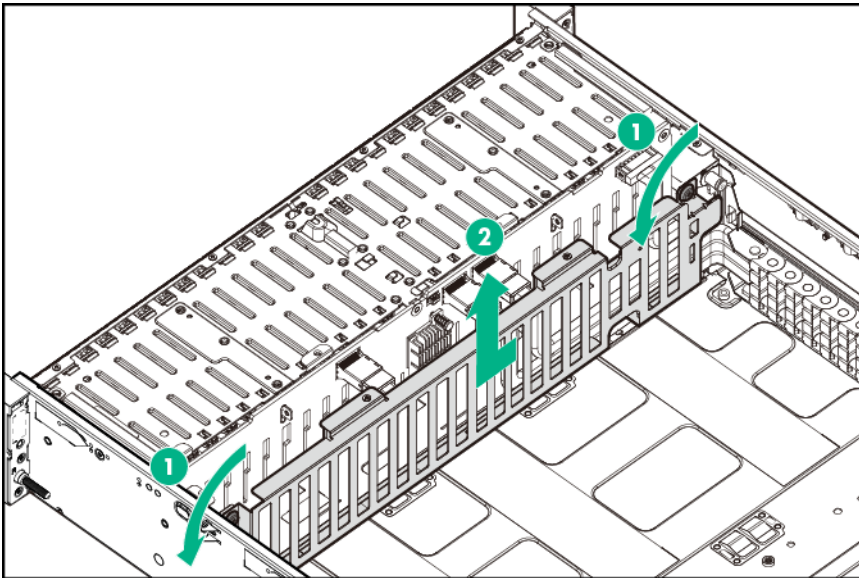


c. Remove the air blocker.



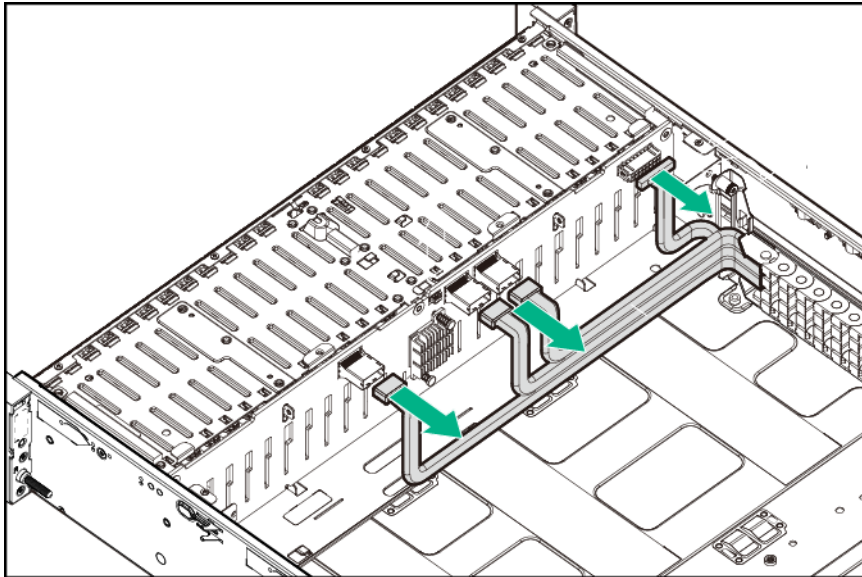


d. Remove the backplane cable guard.

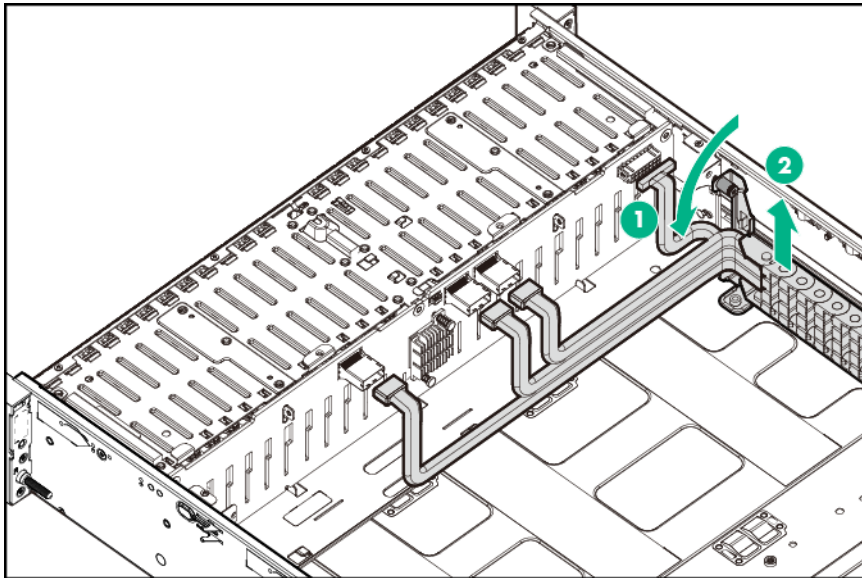


e. Disconnect all cables connected to the drive backplane.



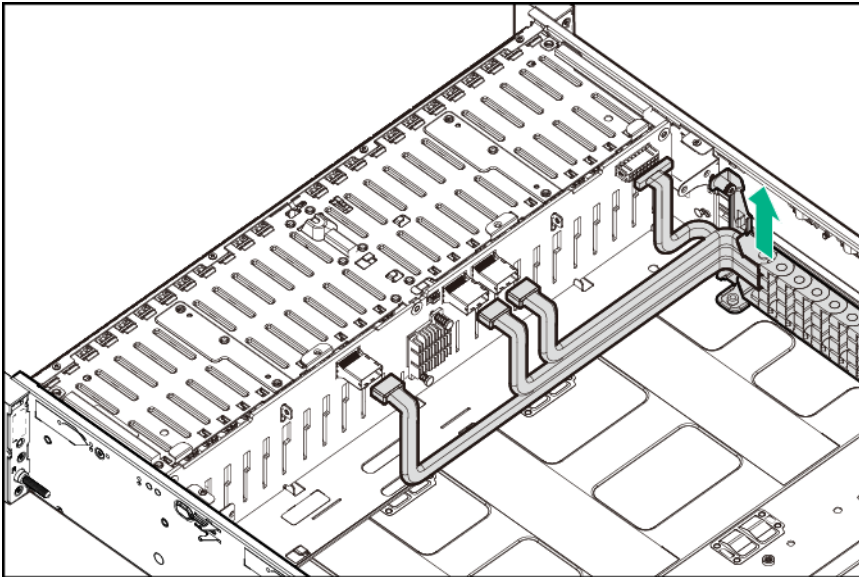


- f. Release the front bracket of the internal SFF drive cage cable track from the chassis.



- g. Remove the internal SFF drive cage cable track assembly.





To replace the component, reverse the removal procedure.

Removing and replacing the front I/O board

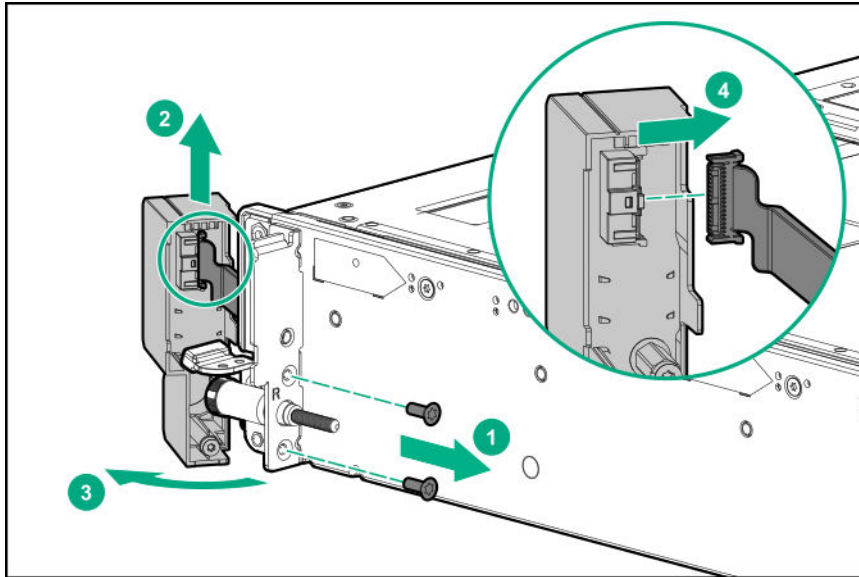
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Prerequisites

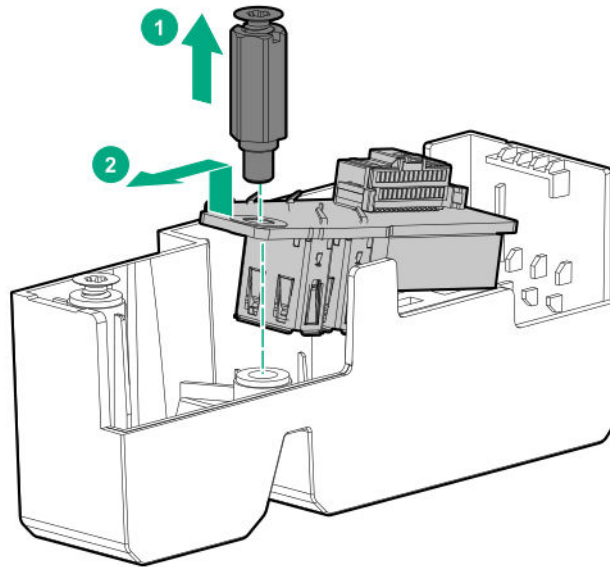
Before you perform this procedure, make sure that you have the components included with the hardware kit.

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
6. Remove the right rack ear assembly:
 - a. Remove the screws behind the right rack ear.
 - b. Carefully open the right rack ear from behind, and then disconnect the front I/O cable.
This action releases the right rack ear assembly from the chassis.



7. Use a flat-headed screwdriver to remove the front I/O board.



To replace the component, reverse the removal procedure.

Removing and replacing the cable management holder



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



CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

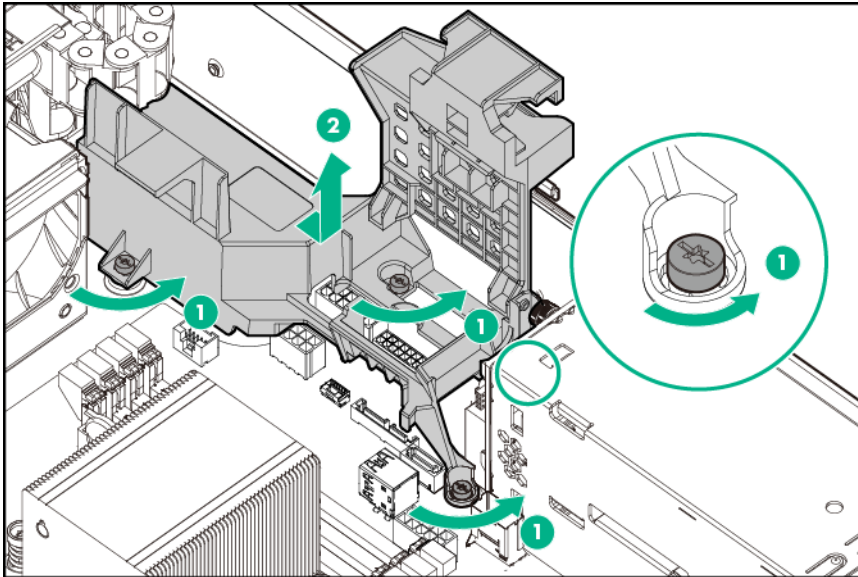
Prerequisites

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



Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the air baffle (**Remove the air baffle**).
7. Open the cable management holder.
8. Disconnect all the cables from the system board connectors located underneath the cable management holder.
9. Remove the cable management holder.



To replace the component, reverse the removal procedure.

Removing and replacing the air blocker for the onboard PCIe expansion slots 5–7

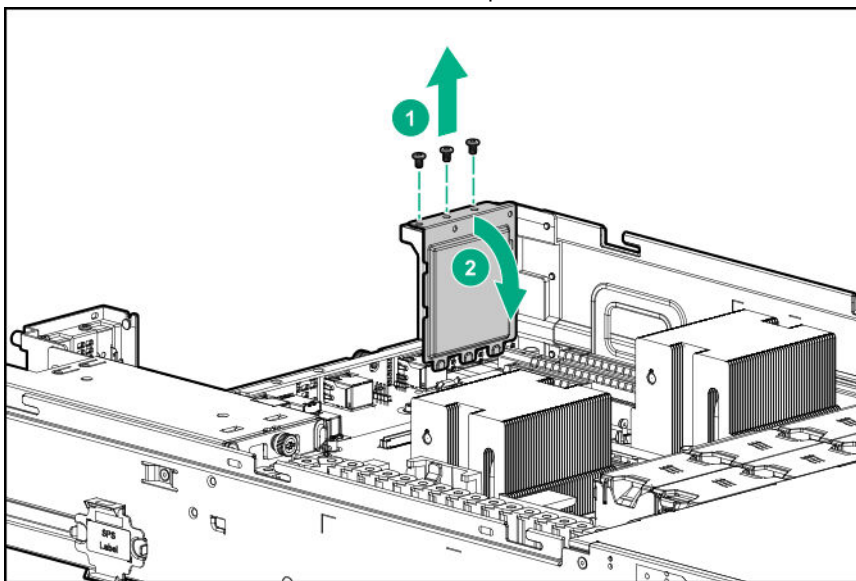
-
- ⚠ CAUTION:** To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.
-
- ⚠ CAUTION:** Ensure that the air blocker for the onboard PCIe expansion slots 5-7 is present if the system is operating as a single-processor system. Failure to observe this caution will result in improper airflow and insufficient cooling that can lead to thermal damage.
-

Prerequisites

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

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the air blocker for the onboard PCIe expansion slots 5–7.



To replace the component, reverse the removal procedure.

Removing and replacing the air blocker for the internal drive cage backplane

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

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

Prerequisites

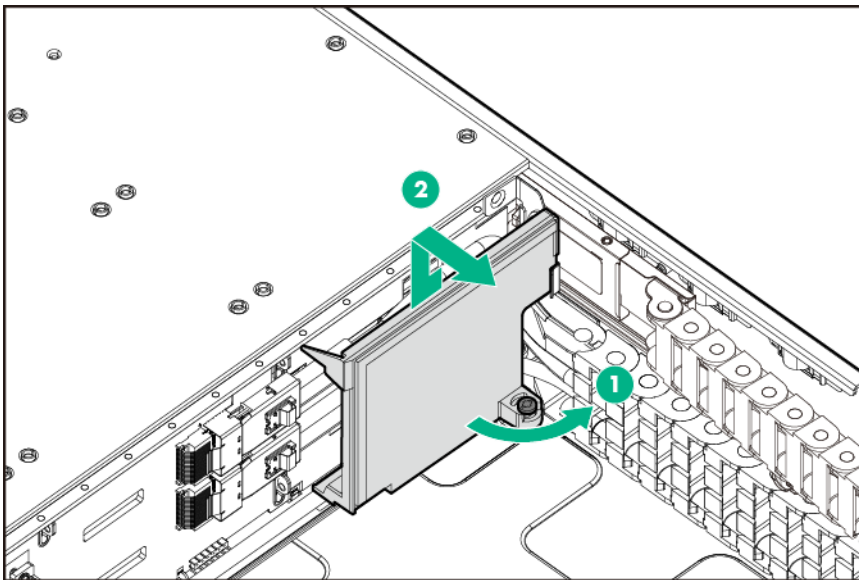
Before you perform this procedure, make sure that you have the components included with the hardware kit.



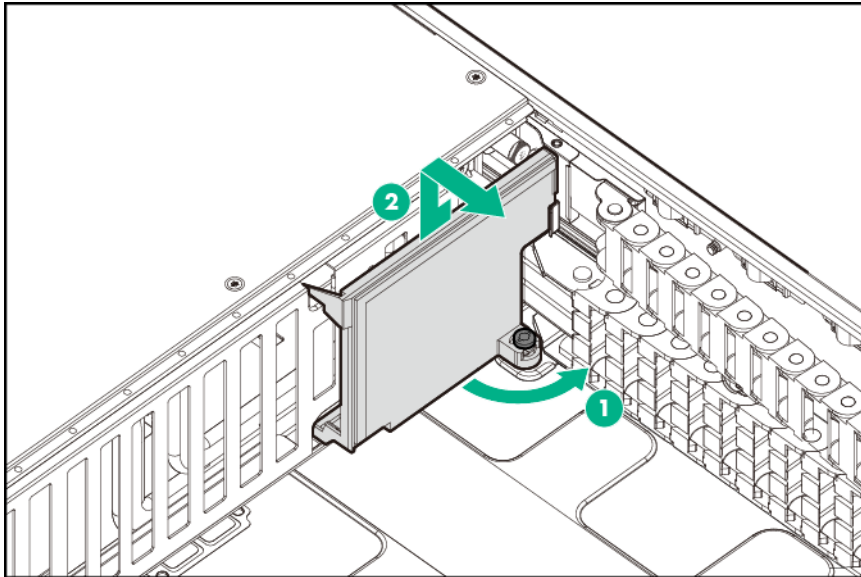
Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
6. Remove the air blocker for the internal drive cage backplane.

- LFF chassis



- SFF chassis



To replace the component, reverse the removal procedure.

Removing and replacing the chassis retention bracket

CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

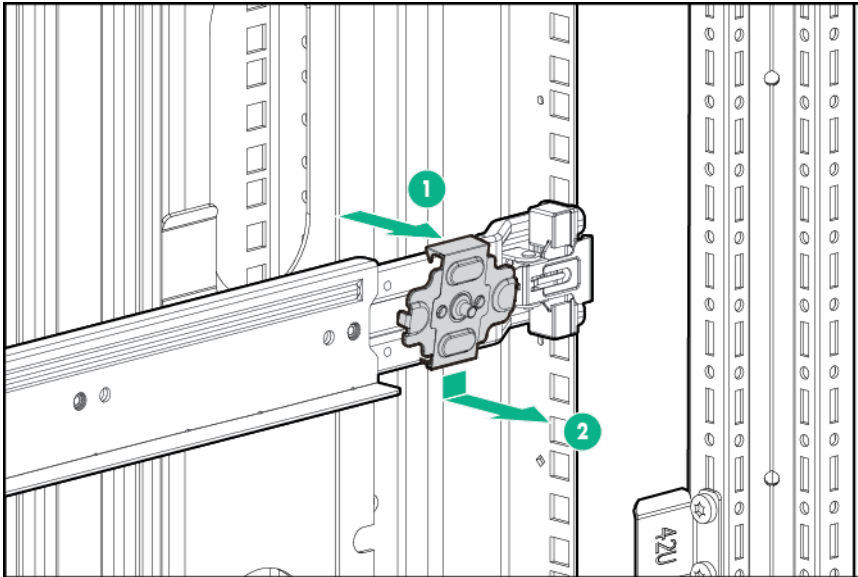
Prerequisites

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

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).
4. Place the system on a flat, level surface.
5. Remove the chassis retention bracket.





To replace the component, reverse the removal procedure.

Removing and replacing the system board

Prerequisites

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

If persistent memory modules are installed in the system and are encrypted with local key management, do one of the following:

- Manually retrieve the persistent memory module passwords from the system (user-generated passwords only)
- Export a password file to a USB key.

Hewlett Packard Enterprise recommends exporting the password file to a USB key.

For more information, see the *Intel Optane persistent memory 100 series for HPE User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/persistentmemory-docs>).

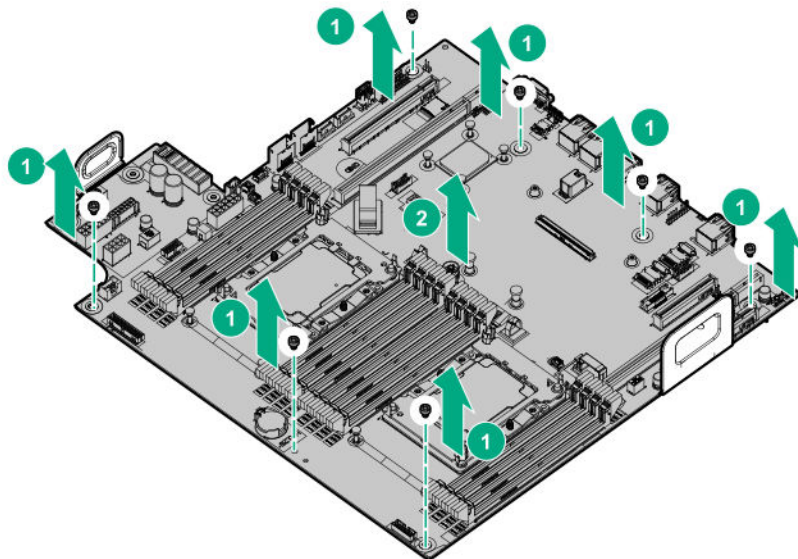
ⓘ IMPORTANT:

- Hewlett Packard Enterprise does not support replacing a -002 or -003 system board with a -001 system board.
- The -003 system board can be used to replace a -001 or -002 system board.

Procedure

1. Power down the system (**Power down the system**).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the system.
3. Remove the system from the rack (**Remove the system from the rack**).

4. Place the system on a flat, level surface.
5. Remove the access panel (**Remove the access panel**).
6. Remove the air baffle (**Remove the air baffle**).
7. Pull down the front drive cage release latches and use them to completely extend the front drive cages from the chassis (**Extend the front drive cages out of the chassis**).
8. If installed, remove the rear drive cage (**Remove a rear drive cage**).
9. If installed, remove the PCI riser cage (**Remove the PCIe riser cage**).
10. Remove all expansion boards or controllers from the onboard PCIe expansion slots.
11. Remove all DIMMs (**Removing and replacing a DIMM**).
Be sure to note the DIMM slot locations in which each DIMM is installed. These components must be installed in the same locations on the new system board.
12. Remove the persistent memory modules installed on the system board (**Removing and replacing a persistent memory module**).
Be sure to note the DIMM slot locations in which each persistent memory module is installed. These components must be installed in the same locations on the new system board.
13. Remove the heatsink (**Removing and replacing a processor heatsink assembly**).
14. Remove the system battery (**Removing and replacing the system battery**).
15. Remove the power pass-through board (**Removing and replacing the power pass-through board**).
16. Disconnect all cables connected to the system board.
17. Remove the cable management holder (**Removing and replacing the cable management holder**).
18. Loosen the thumbscrew in the center of the system board and remove the system board tray.
19. Remove the failed system board from the tray.



To replace the system board, do the following.

20. Insert the new system board into the tray.
21. Tighten the thumbscrew in the center of the system board.



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

Be sure to install the DIMMs and persistent memory modules in the same DIMM slots as the failed system board.

23. Review the persistent memory configuration of the system.

For more information, see **[Configuring the system for Intel Optane persistent memory 100 series for HPE](#)**.

24. Do one of the following:

- If persistent memory modules are encrypted with local key management, either manually enter the persistent memory module passwords in the System Utilities or import the password file from the USB key.
- If persistent memory modules are encrypted with remote key management, enroll the system iLO in the key management server to provide access to the data on the persistent memory modules.

For more information, see the *Intel Optane persistent memory 100 series for HPE User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/persistentmemory-docs>).

Re-entering the server serial number and product ID


After you replace the system board, you must re-enter the server serial number and the product ID.

Procedure

1. During the server startup sequence, press the F9 key to access UEFI System Utilities.
2. Select the System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Advanced System ROM Options > Serial Number, and then press Enter.
3. Enter the serial number and press Enter. The following message appears: `The serial number should only be modified by qualified service personnel. This value should always match the serial number located on the chassis.`
4. Press Enter to clear the warning.
5. Enter the serial number and press Enter.
6. Select Product ID. The following warning appears: `Warning: The Product ID should ONLY be modified by qualified service personnel. This value should always match the Product ID located on the chassis.`
7. Enter the product ID and press Enter.
8. Press the F10 key to confirm exiting System Utilities. The server automatically reboots.

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 system and powered up on a different system, 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.

Cabling

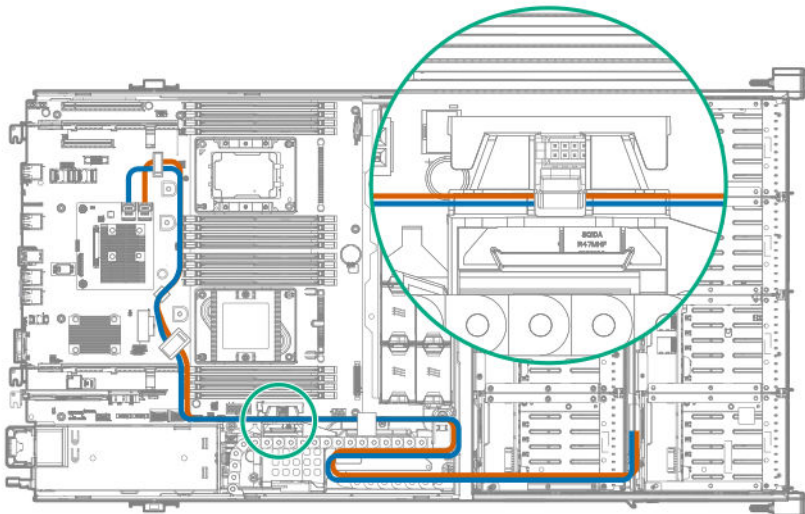
Cabling overview

This section provides cabling diagrams. When you are cabling the system, refer to the appropriate section based on your system configuration. For information on connector location, see [Component identification](#).

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

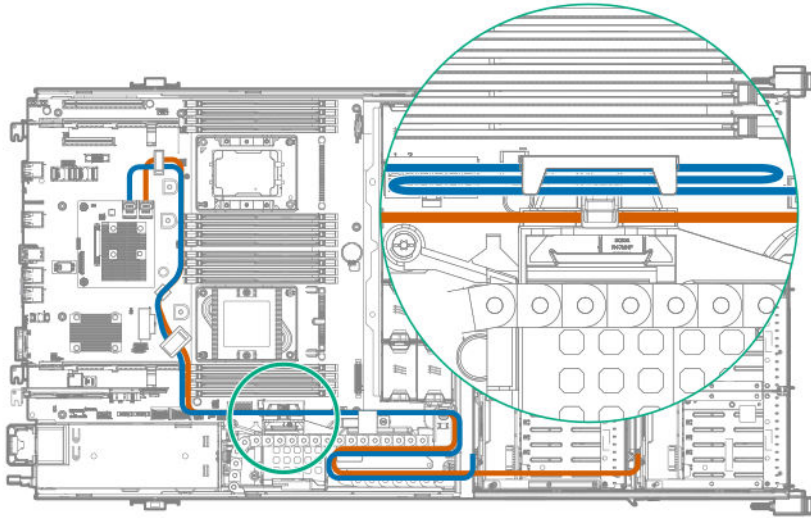
Front drive cage cabling

- Front drive cage P1 and P2 cables connected to P1 and P2 on one of the following options installed on the system board:
 - HPE Smart Array E208i-a SR Gen10 controller
 - HPE Smart Array P408i-a SR Gen10 controller
 - HPE Smart Array P816i-a SR Gen10 controller

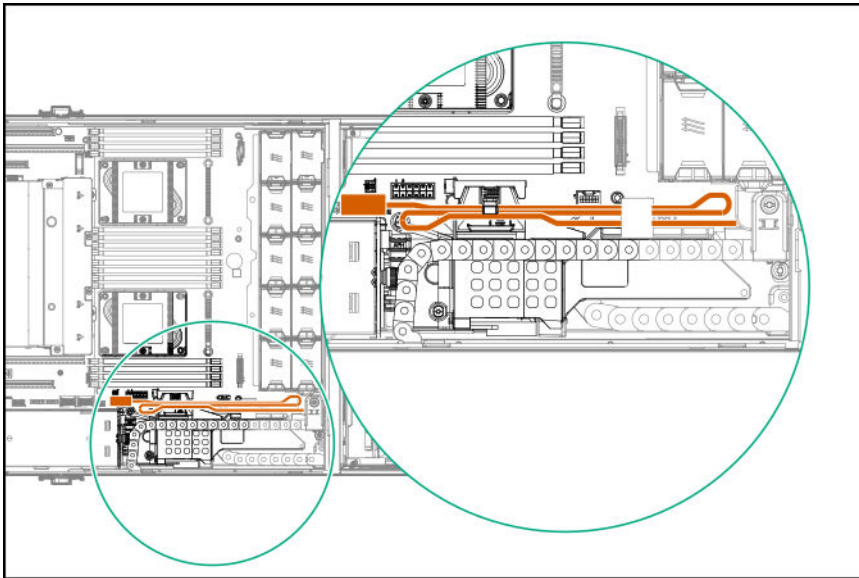


Front and internal drive cage cabling

- Front drive cage P1 and internal drive cage P1 connected to P1 and P2 on an HPE Smart Array E208i-a SR Gen10 controller or an HPE Smart Array P408i-a SR Gen10 controller installed on the system board

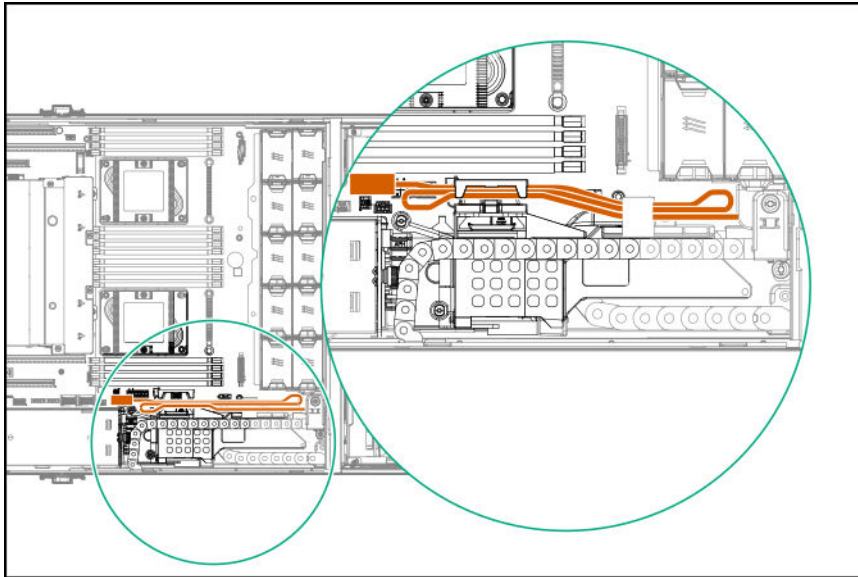


- Unused front drive cage P2 cable folded and stored in the narrow slot of the cable guard

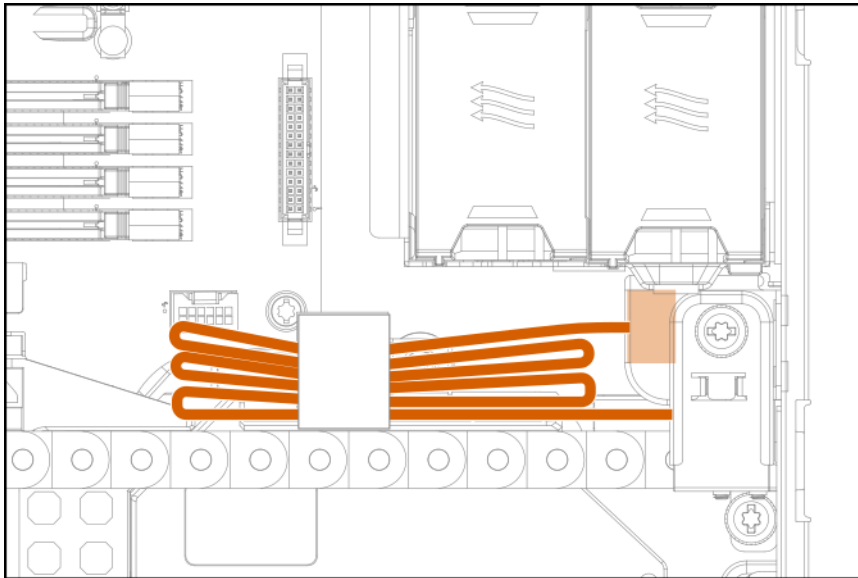


- Unused internal drive cage P2 cable folded and stored in the wider slot of the cable guard





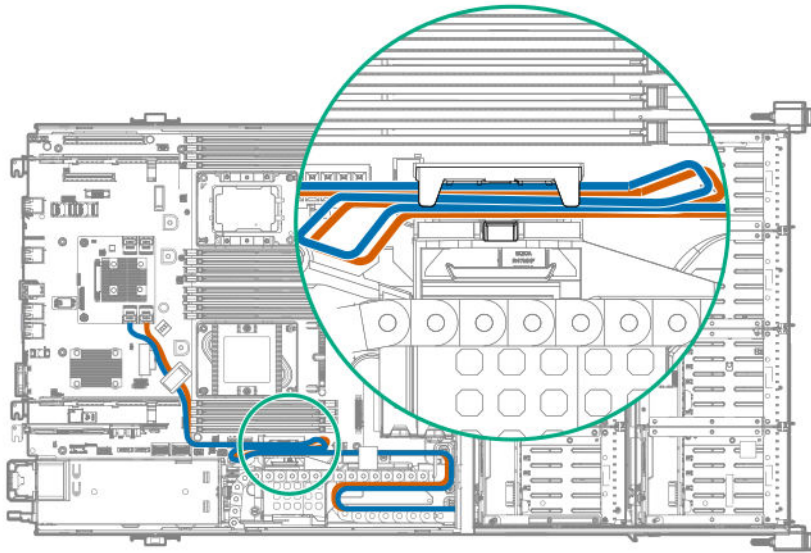
- Unused P3 cable (not routed through either slot on the cable guard)



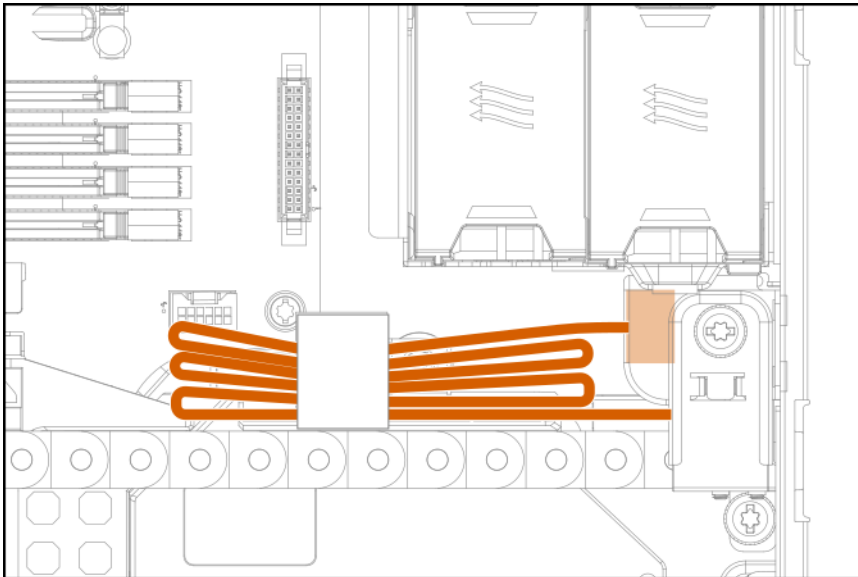
Internal drive cage cabling

- Internal drive cage P1 and P2 connected to P3 and P4 on an HPE Smart Array P816i-a SR Gen10 controller installed on the system board



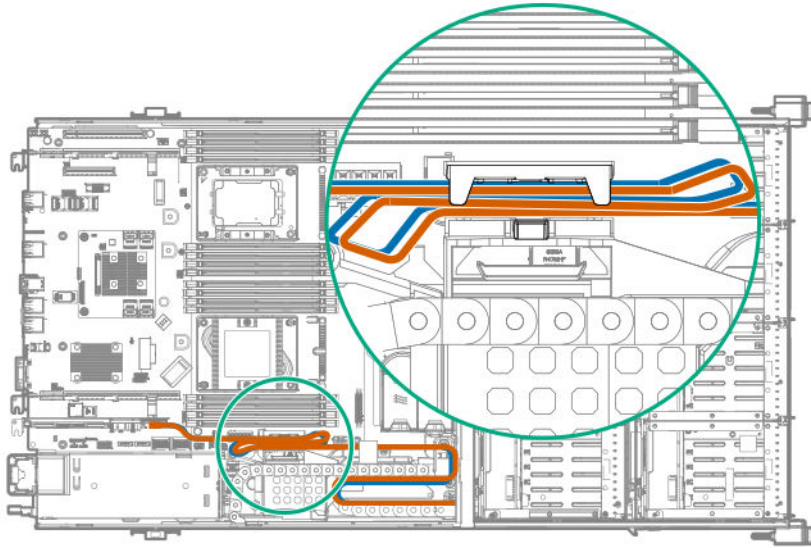


Unused P3 cable (not routed through either slot on the cable guard)

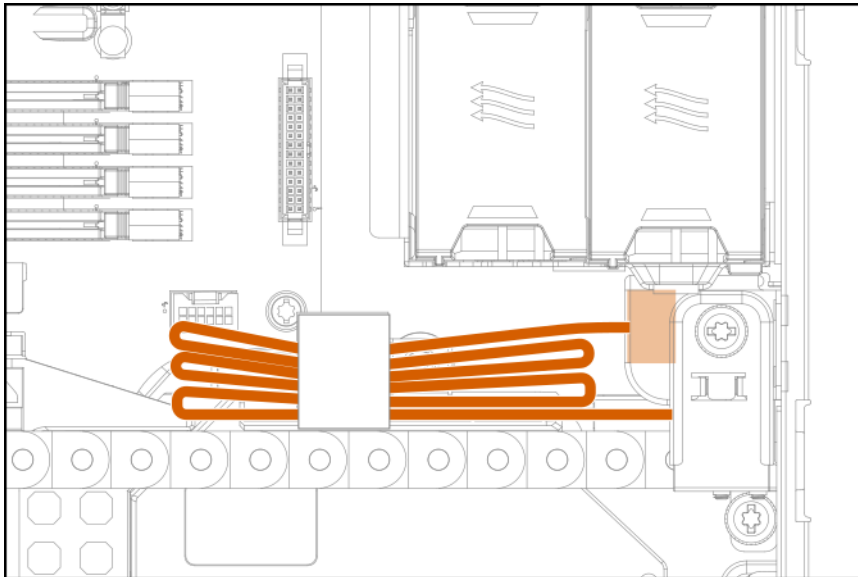


- Internal drive cage P1 and P2 connected to P1 and P2 on a PCIe card in slot 1



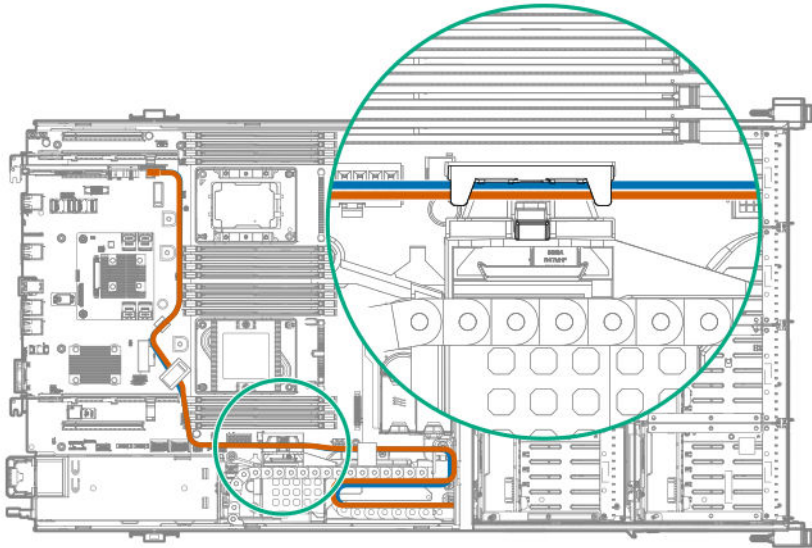


Unused P3 cable (not routed through either slot on the cable guard)

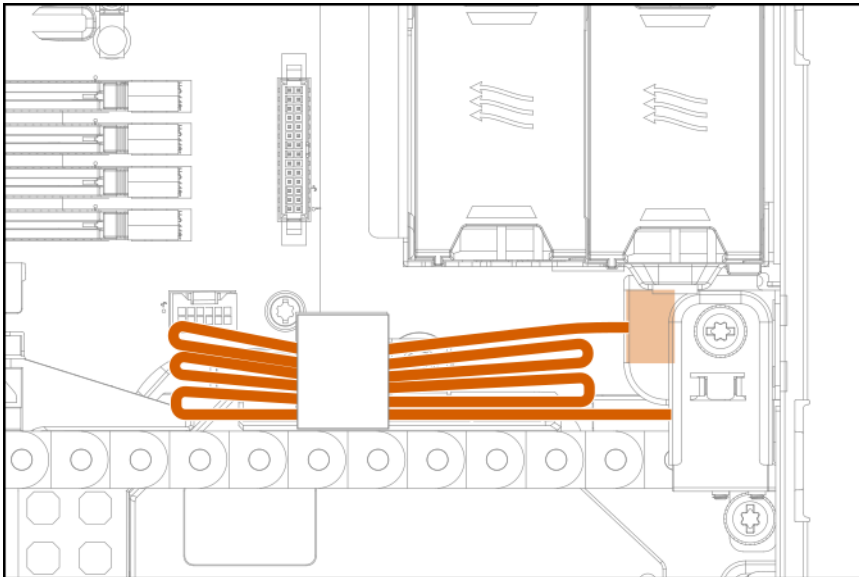


- Internal drive cage P1 and P2 connected to P1 and P2 on a PCIe card in slot 5



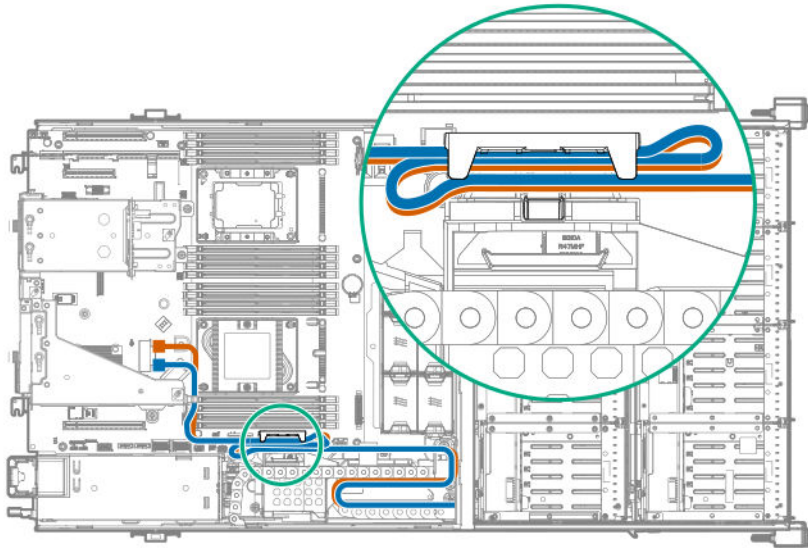


Unused P3 cable (not routed through either slot on the cable guard)

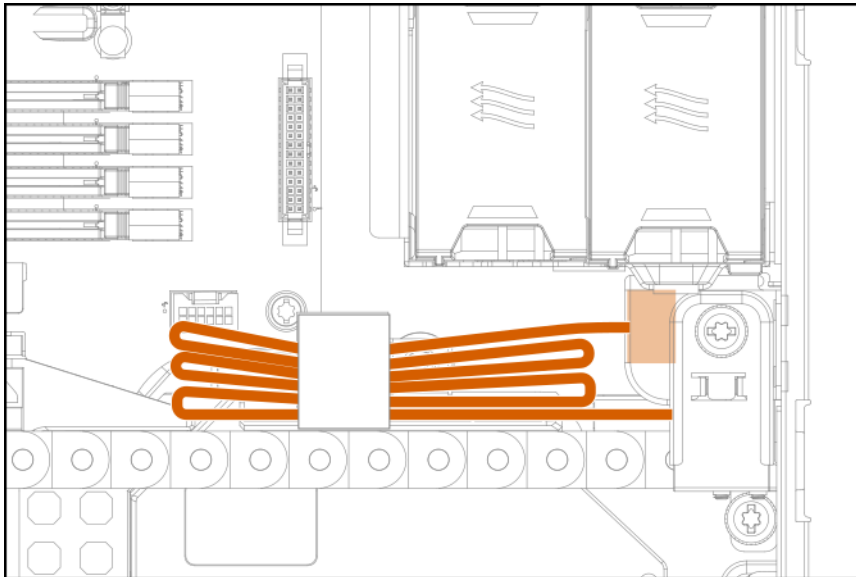


- Internal drive cage P1 and P2 connected to P1 and P2 on a PCIe card located in slot 3 or 4 in riser



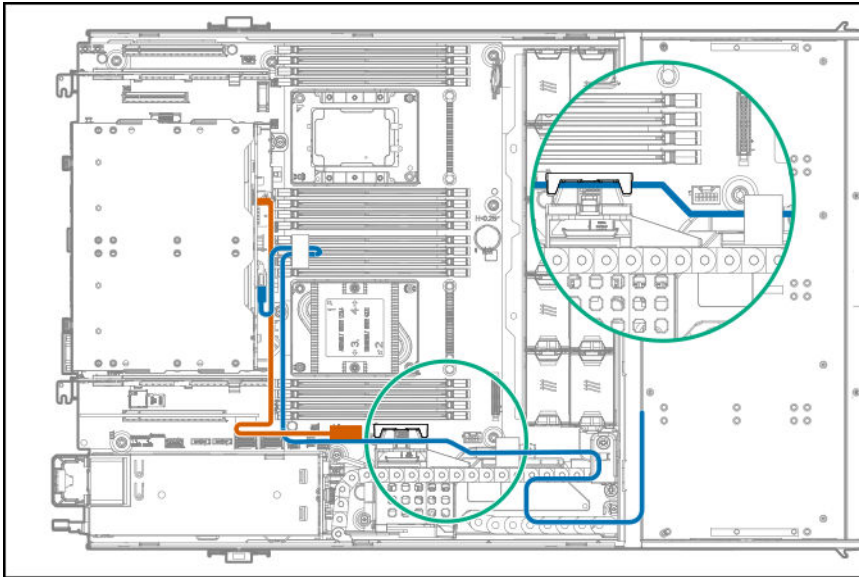


Unused P3 cable (not routed through either slot on the cable guard)

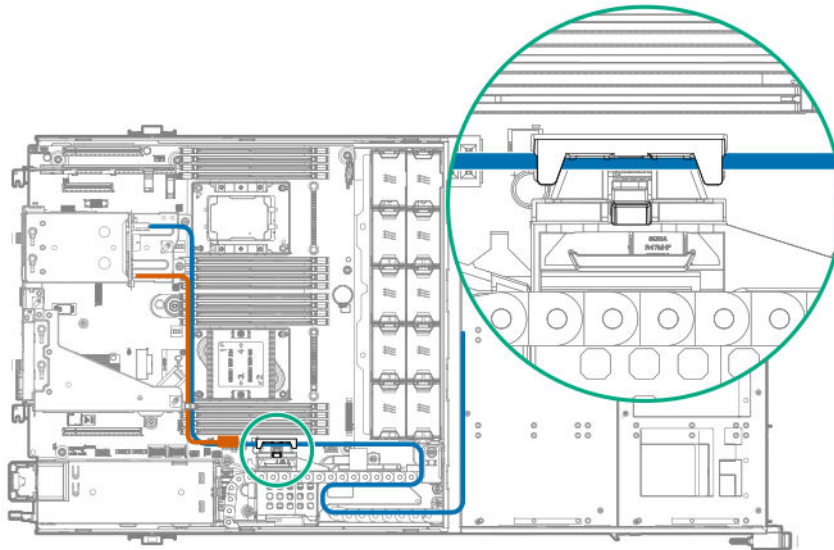


- Internal drive cage P3 connected to rear LFF drive cage





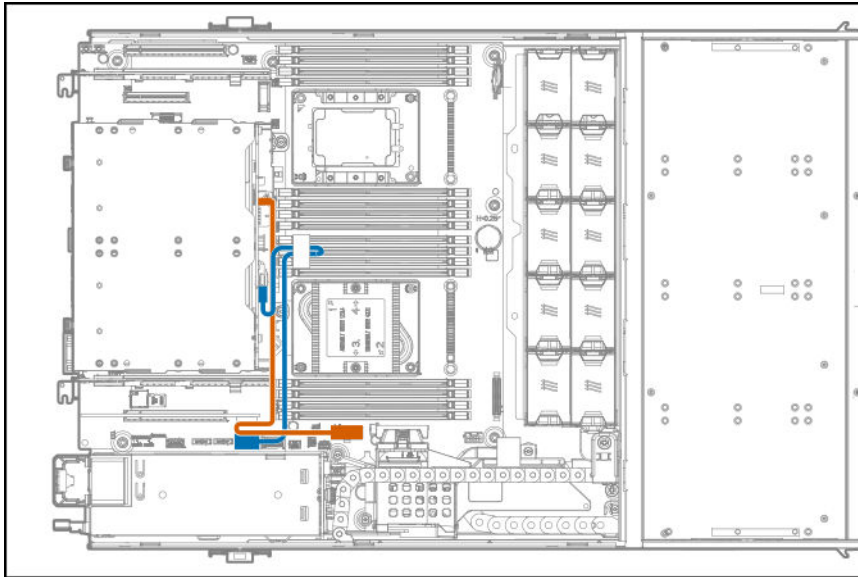
- Internal drive cage P3 connected to the rear SFF drive cage



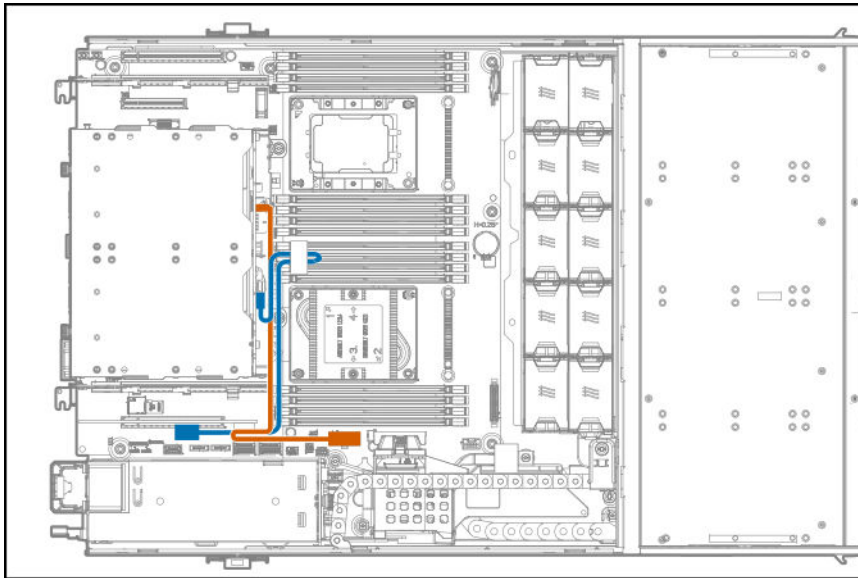
Rear LFF drive cage cabling

- Rear LFF drive cage connected to system board





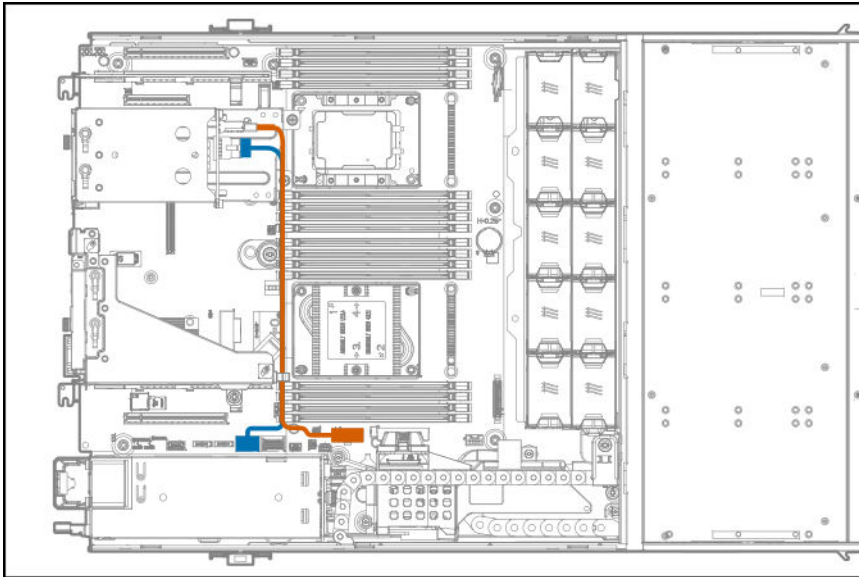
- Rear LFF drive cage connected to PCIe card in slot 1 or 2



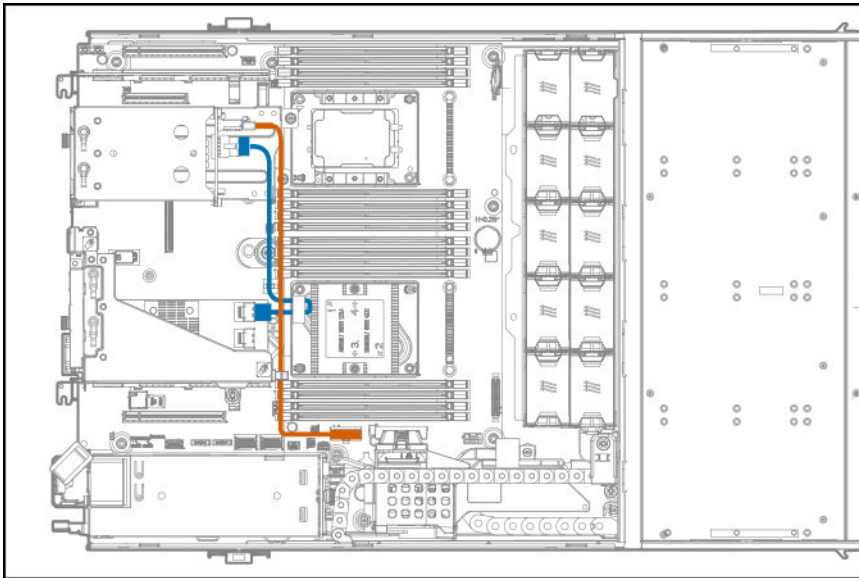
Rear SFF drive cage cabling

- Rear SFF drive cage connected to the system board





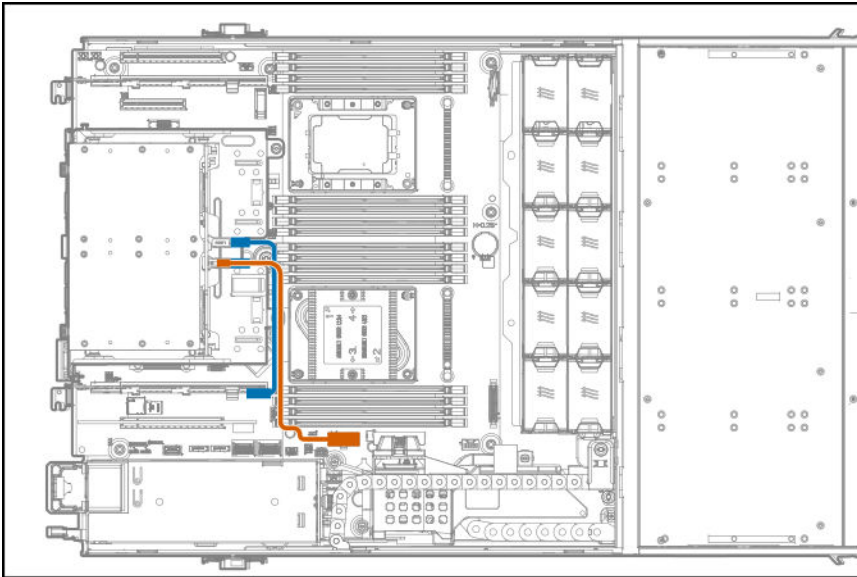
- Rear SFF drive cage connected to PCIe card in riser slot 4



Rear six-bay SFF drive cage cabling (SAS, SATA)

- Rear six-bay SFF drive cage connected to PCIe card in riser slot 2

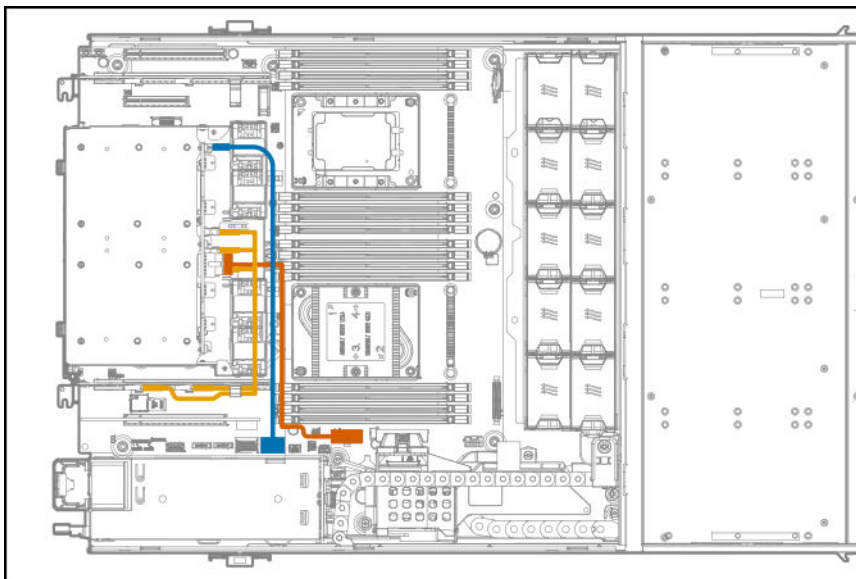




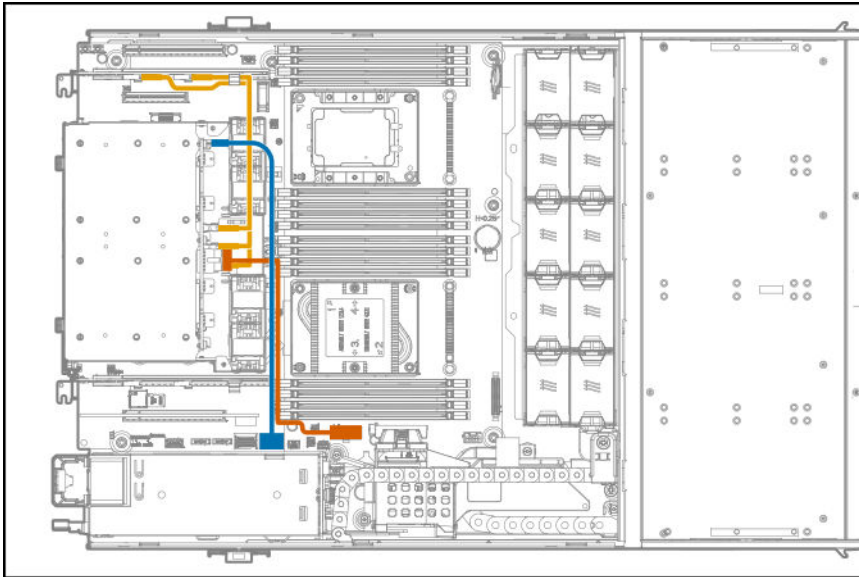
NVMe rear drive cage cabling

The six-bay SFF NVMe rear drive cage comes with preinstalled cabling. Connectors on the cables will connect to corresponding connectors on an NVMe pass-through assembly installed in slot 2, slot 6, or slots 2 and 6.

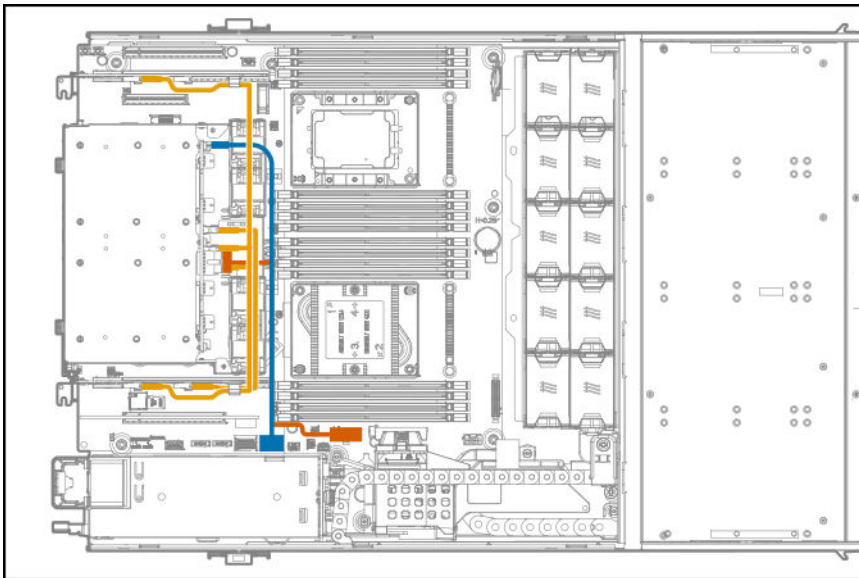
- NVMe rear drive cage cabling to pass-through board in slot 2
 - NVMe P1 to pass-through P1 in slot 2
 - NVMe P2 to pass-through P2 in slot 2
 - NVMe P3 to pass-through P3 in slot 2



- NVMe rear drive cage cabling to pass-through board in slot 6
 - NVMe P1 to pass-through P1 in slot 6
 - NVMe P2 to pass-through P2 in slot 6
 - NVMe P3 to pass-through P3 in slot 6



- NVMe rear drive cage cabling to pass-through boards in slots 2 and 6
 - NVMe P1 to pass-through P1 in slot 6
 - NVMe P2 to pass-through P2 in slot 2
 - NVMe P3 to pass-through P3 in slot 2



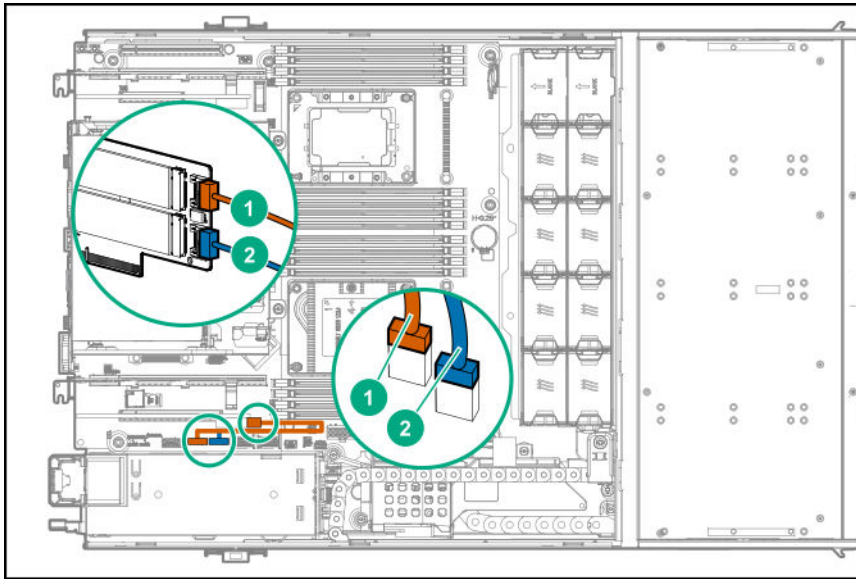
M.2 SSD Enablement option cabling

The M.2 SSD Enablement option is supported in the following slots:

- Expansion slot 1 on the system board
- Expansion slot 2 on the system board
- Expansion slot 3 in the PCI3 riser cage
- Expansion slot 4 in the PCI3 riser cage



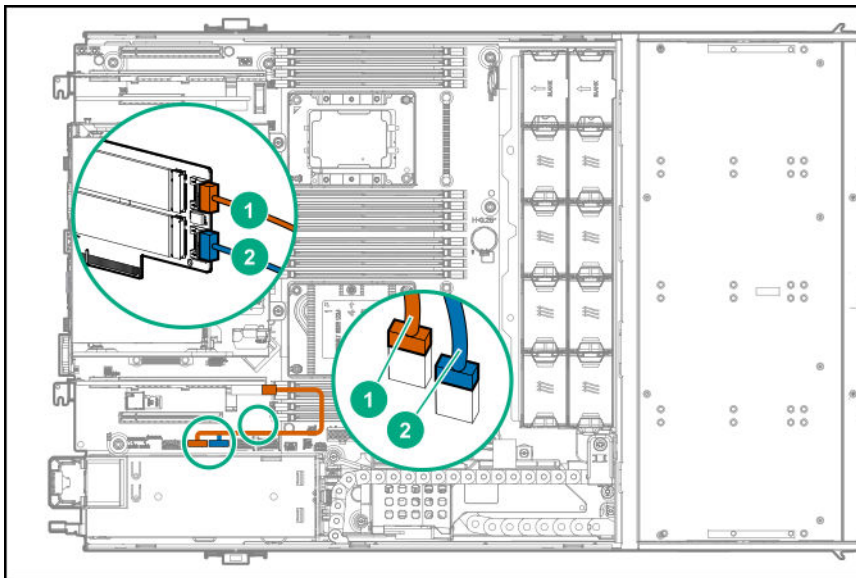
- M.2 SSD cabling from the onboard PCIe x16 expansion slot 1



Item	Description
------	-------------

1	M.2 SSD 1 SATA cable
2	M.2 SSD 2 SATA cable

- M.2 SSD cabling from the onboard PCIe x24 expansion slot 2

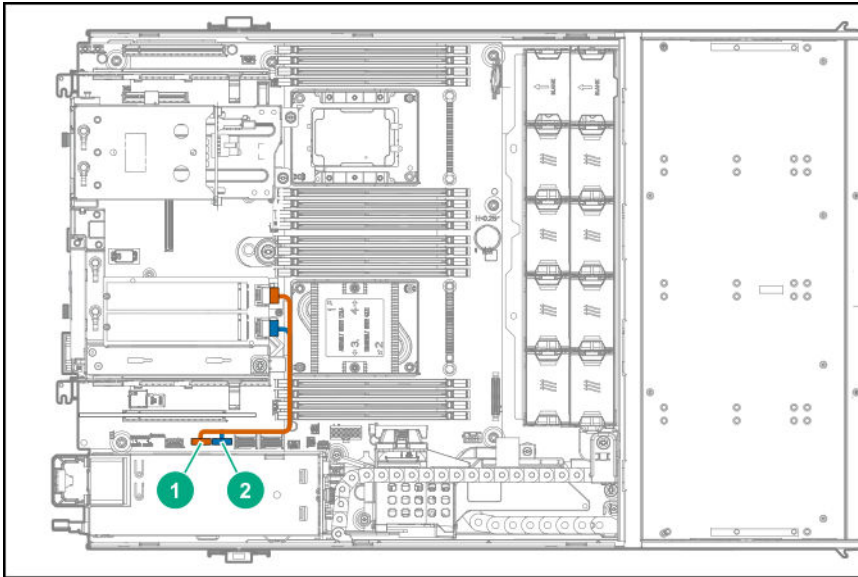


Item	Description
------	-------------

1	M.2 SSD 1 SATA cable
2	M.2 SSD 2 SATA cable

- M.2 SSD cabling from the onboard PCIe x24 expansion slot 3 or 4 in the PCIe riser cage





Item	Description
1	M.2 SSD 1 SATA cable
2	M.2 SSD 2 SATA cable

HPE Smart Array P824i-p MR Gen10 cabling

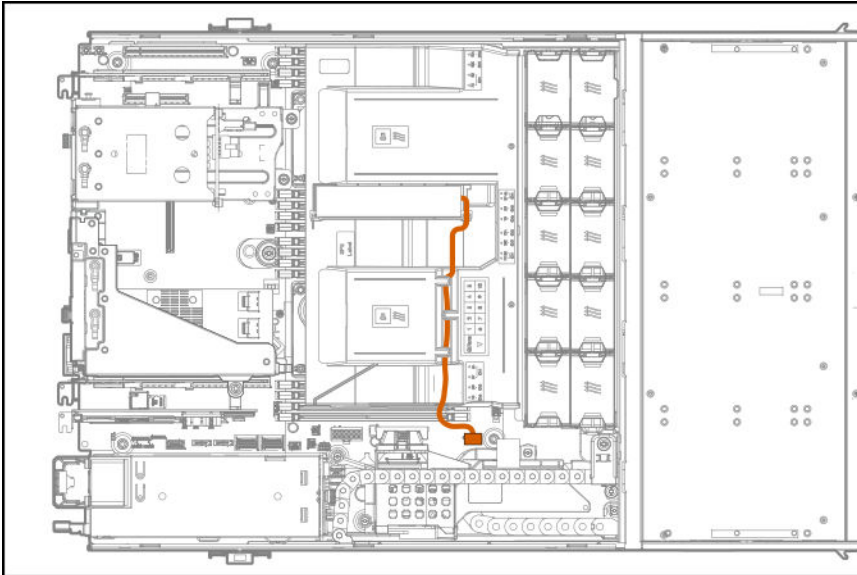
HPE Smart Array P824i-p MR Gen10 controller connected to pass-through board installed on the system board

- ⓘ **IMPORTANT:** Hewlett Packard Enterprise supports only one HPE Smart Array P824i-p MR Gen10 controller to be installed in either slot 3 or 4.





HPE Smart Storage Battery cabling

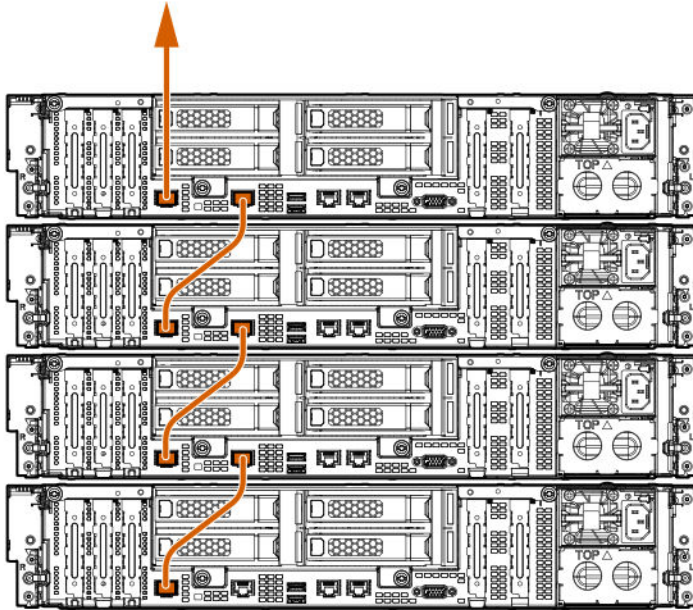


iLO ports to network cabling

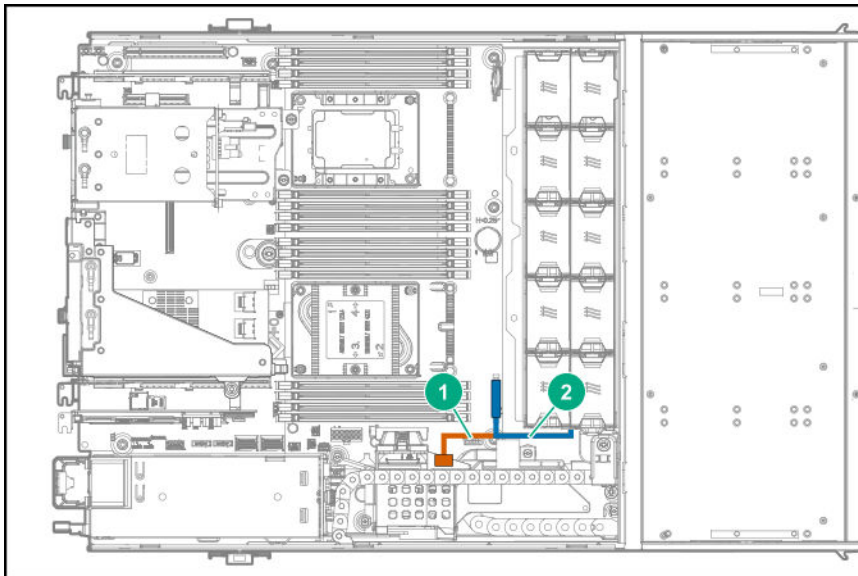
Connecting multiple systems to the network using the iLO management ports

The arrow indicates the connection to the network.





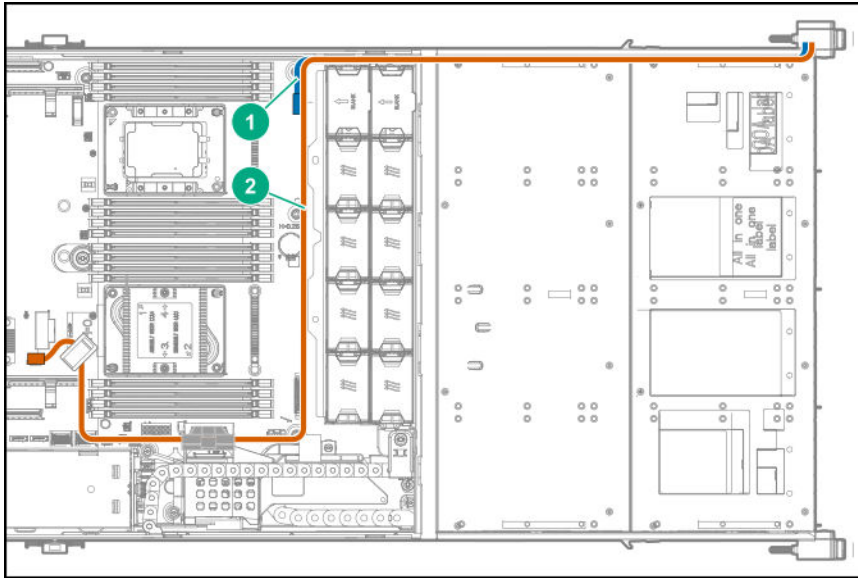
Fan assembly cabling



Item	Description
1	Fan assembly power cable
2	Fan assembly signal cable



Front panel cabling



Item	Description
1	Front I/O cable
2	Front USB 2.0 cable

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 (<https://www.hpe.com/info/redfish>).
- Using the `secboot` command in the Embedded UEFI Shell to display Secure Boot databases, keys, and security reports.

Launching the Embedded UEFI Shell

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



Prerequisites

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

Procedure

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

The **Embedded UEFI Shell** screen appears.

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

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

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

The `Shell>` prompt appears.

4. Enter the commands required to complete your task.

5. Enter the `exit` command to exit the Shell.

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.

NOTE:

- Rapid Setup Software is only available on the ProLiant 300 Series servers or below. When you launch F10 mode from the POST screen, you are prompted to select whether you want to enter the Intelligent Provisioning or HPE Rapid Setup Software mode.
- After you have selected a mode, you must 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 **Lifecycle Management**. **Lifecycle Management** allows you to access Intelligent Provisioning without rebooting your server.



Intelligent Provisioning operation

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

Intelligent Provisioning includes the following components:

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

! **IMPORTANT:**

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

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

Intelligent Provisioning provides installation help for the following operating systems:

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

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

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 and Gen10 Plus systems support all USB operating speeds depending on the device that is connected to the system.

External USB functionality

Hewlett Packard Enterprise provides external USB support to enable local connection of USB devices for system 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 system 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 MR Storage Administrator

HPE MR Storage Administrator is a web-based application that enables you to monitor, configure, maintain, and troubleshoot the HPE Smart Array MR controller. MR Storage Administrator enables you to view, create, and manage storage configurations.



IMPORTANT: The HPE MR Storage Administrator manages **only** the HPE Smart Array MR controllers. It does not manage HPE Smart Array SR controllers.

- **Monitoring and configuring:** MR Storage Administrator enables you to monitor the controllers and configure the drives on the controller. It displays the status of the controller cards, logical drives, and drives on the controller. The device status icons notify you if there are drive failures and other events that require your immediate attention. Email notifications about the status of the server are sent based on your alert settings. The system errors and events are recorded and displayed in an event log file. You can also import or clear foreign configurations.





IMPORTANT: Limited alerting and monitoring is available through iLO when HPE Agentless Management Service is installed. The HPE Smart Array P824i-p MR Gen10 controller supports limited alerts through iLO using the AMS agent.

- **Maintaining:** Using MR Storage Administrator, you can perform system maintenance tasks, such as updating the controller firmware.
- **Troubleshooting:** MR Storage Administrator displays information related to drive failures, device failures, and other issues. It also provides recommendations and displays contextual links, helping you to locate the drives/devices that have issues and troubleshoot them. You can also download a report of the devices and their configurations, properties, and settings and send it to Hewlett Packard Enterprise Support for further troubleshooting.

Obtain MR Storage Administrator installation files through the Service Pack for ProLiant, or SPP, which you can download from the Hewlett Packard Enterprise website (<https://www.hpe.com/servers/spp/download>). Be sure to use the latest SPP version for the server.

For more information about the MR Storage Administrator, see *MR Storage Administrator User Guide* on the Hewlett Packard Enterprise website (<https://www.hpe.com/info/P824i-pdocs>).

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>.

StorCLI

The Storage Command Line Interface (StorCLI) tool is the command line management software designed for the HPE Smart Array MR controller. StorCLI is a command line interface that is designed to be easy to use, consistent, and easy to script.

Obtain StorCLI through the Service Pack for ProLiant, or SPP, which you can download from <https://www.hpe.com/servers/spp/download>. Be sure to use the latest SPP version for the server.

For more information about StorCLI, see *StorCLI User Guide* on the Hewlett Packard Enterprise website <https://www.hpe.com/info/P824i-pdocs>.



Troubleshooting

Troubleshooting resources

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

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

To access troubleshooting resources for your product, see the Hewlett Packard Enterprise Information Library:

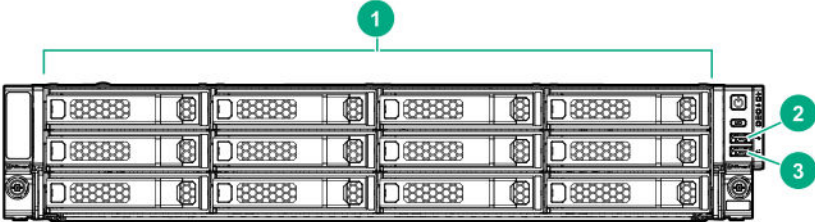
- For Gen10 servers, see <https://www.hpe.com/info/gen10-troubleshooting>.
- For Gen10 Plus servers, see <https://www.hpe.com/info/gen10plus-troubleshooting>.



Component identification

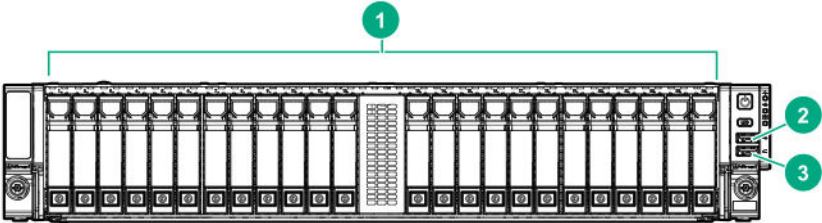
Front panel components

12LFF dual cage configuration



Item	Description
1	LFF hot-plug drives
2	USB 2.0 port
3	iLO Service Port

24SFF dual cage configuration

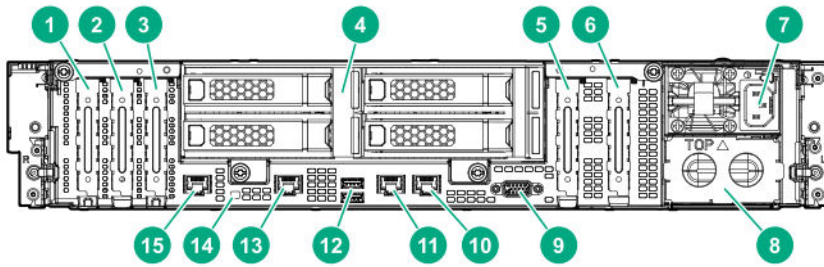


Item	Description
1	SFF hot-plug drives
2	USB 2.0 port
3	iLO Service Port



Rear panel components

Rear panel with the 4LFF hot-plug rear drive cage option

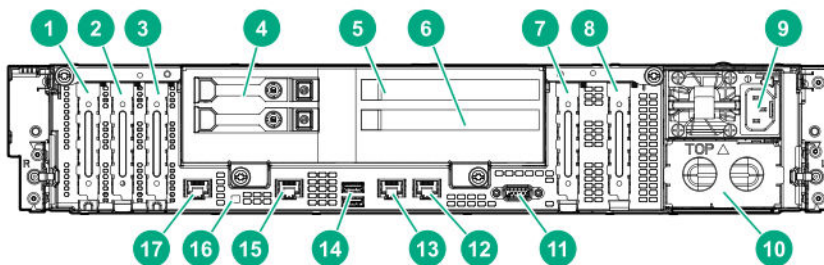


Item	Description
1	PCIe3 x16 slot 7 for low-profile, standup expansion board ¹
2	PCIe3 x24 slot 6 for low-profile, standup expansion board ¹
3	PCIe3 x8 slot 5 for low-profile, standup expansion board ¹
4	Low-profile LFF hot-plug drives
5	PCIe3 x24 slot 2 for low-profile, standup expansion board or riser cage options ²
6	PCIe3 x16 slot 1 for low-profile, standup expansion board ²
7	Hot-plug power supply (bay 1)
8	Power supply blank (bay 2)
9	Video connector
10	NIC 2 port
11	NIC 1 port
12	USB 3.0 ports
13	iLO Management port 2
14	UID LED
15	iLO Management port 1

¹ The PCIe3 expansion slots 5-7 are associated with processor 2.

² The PCIe3 expansion slots 1-4 are associated with processor 1.

Rear panel with the 2SFF/uFF hot-plug rear drive cage and two-slot PCIe riser cage options

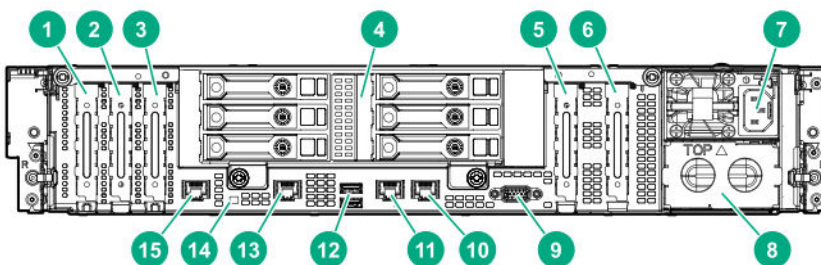


Item	Description
1	PCIe3 x16 slot 7 for low-profile, standup expansion board ¹
2	PCIe3 x24 slot 6 for low-profile, standup expansion board ¹
3	PCIe3 x8 slot 5 for low-profile, standup expansion board ¹
4	SFF/uFF hot-plug drives
5	PCIe3 x16 slot 3 for full-height riser cage ²
6	PCIe3 x8 slot 4 for full-height riser cage ²
7	PCIe3 x24 slot 2 for low-profile, standup expansion board or riser cage options ²
8	PCIe3 x16 slot 1 for low-profile, standup expansion board ²
9	Hot-plug power supply (bay 1)
10	Power supply blank (bay 2)
11	Video connector
12	NIC 2 port
13	NIC 1 port
14	USB 3.0 ports
15	iLO Management port 2
16	UID LED
17	iLO Management port 1

¹ The PCIe3 expansion slots 5-7 are associated with processor 2.

² The PCIe3 expansion slots 1-4 are associated with processor 1.

Rear panel with the 6SFF NVMe hot-plug rear drive cage option with pass-through riser



Item	Description
1	PCIe3 x16 slot 7 for low-profile, standup expansion board ¹
2	PCIe3 x24 slot 6 for low-profile, standup expansion board ¹
3	PCIe3 x8 slot 5 for low-profile, standup expansion board ¹
4	SFF NVMe hot-plug drives
5	PCIe3 x24 slot 2 for low-profile, standup expansion board or NVMe pass-through board ²
6	PCIe3 x16 slot 1 for low-profile, standup expansion board ²

Table Continued

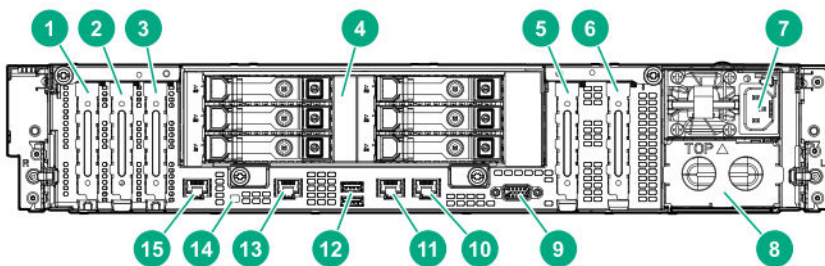


Item	Description
7	Hot-plug power supply (bay 1)
8	Power supply blank (bay 2)
9	Video connector
10	NIC port 2
11	NIC port 1
12	USB 3.0 ports
13	iLO Management port 2
14	UID LED
15	iLO Management port 1

¹ The PCIe3 expansion slots 5-7 are associated with processor 2.

² The PCIe3 expansion slots 1-4 are associated with processor 1.

Rear panel with the 6SFF SAS or SATA hot-plug rear drive cage option with pass-through riser

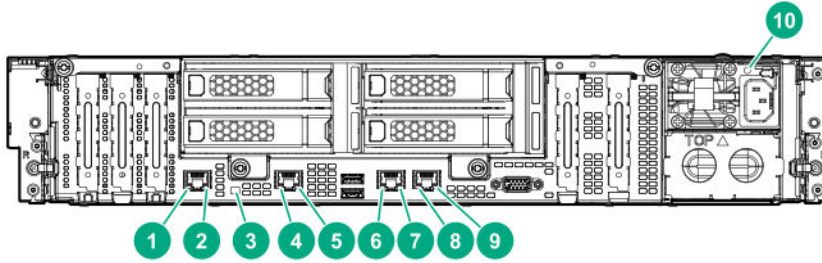


Item	Description
1	PCIe3 x16 slot 7 for low-profile, standup expansion board ¹
2	PCIe3 x24 slot 6 for low-profile, standup expansion board ¹
3	PCIe3 x8 slot 5 for low-profile, standup expansion board ¹
4	SFF SAS or SATA hot-plug drives
5	PCIe3 x24 slot 2 for low-profile, standup expansion board or NVMe pass-through board ²
6	PCIe3 x16 slot 1 for low-profile, standup expansion board ²
7	Hot-plug power supply (bay 1)
8	Power supply blank (bay 2)
9	Video connector
10	NIC port 2
11	NIC port 1
12	USB 3.0 ports
13	iLO Management port 2
14	UID LED
15	iLO Management port 1



- 1 The PCIe3 expansion slots 5-7 are associated with processor 2.
- 2 The PCIe3 expansion slots 1-4 are associated with processor 1.

Rear panel LEDs



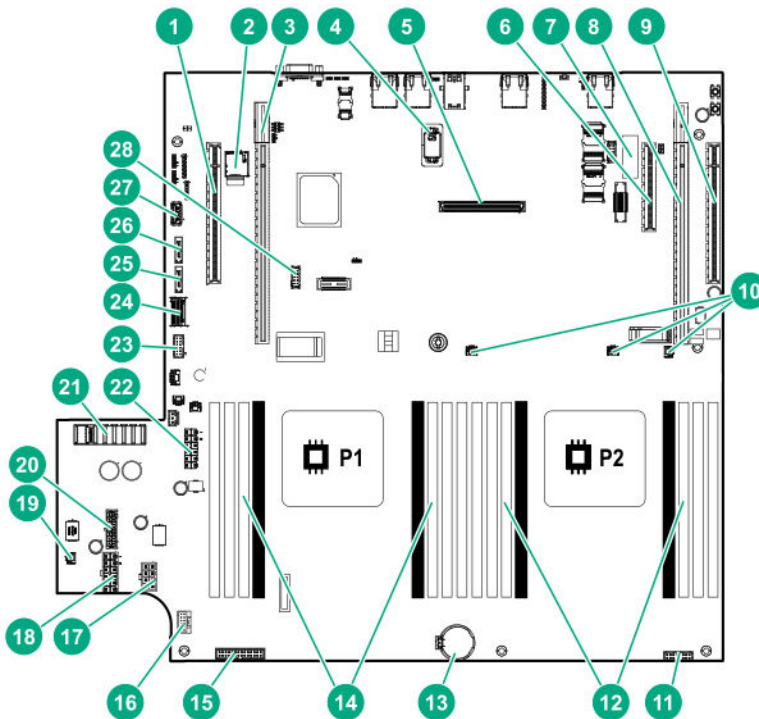
Item	Description	Status
1	iLO port 1 link LED	Green = Network link Off = No network link
2	iLO port 1 activity LED	Solid green = Link to network Flashing green = Network active Off = No network activity
3	UID LED	Solid blue = Activated Flashing blue: <ul style="list-style-type: none"> • 1 flash per second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

Table Continued



Item	Description	Status
7	NIC port 1 activity LED	Solid green = Link to network Flashing green = Network active Off = No network activity
8	NIC port 2 link LED	Green = Network link Off = No network link
9	NIC port 2 activity LED	Solid green = Link to network Flashing green = Network active Off = No network activity
10	Power supply LED	Solid green = Normal Off = One or more of the following conditions exists: <ul style="list-style-type: none"> • Power is unavailable. • Power supply failed • Power supply is in standby mode. • Power supply error

System board components



Item	Description
1	PCIe3 x16 slot 1 for low-profile, standup expansion board or riser cage options ¹
2	microSD card slot
3	PCIe3 x24 slot 2 for low-profile, standup expansion board, riser cage option, or NVMe pass-through board ¹
4	TPM 2.0 connector
5	Flexible Smart Array Controller slot
6	PCIe3 x8 slot 5 for low-profile, standup expansion board ²
7	System maintenance switch
8	PCIe3 x24 slot 6 for low-profile, standup expansion board, riser cage options, or NVMe pass-through board ²
9	PCIe3 x16 slot 7 for low-profile, standup expansion board or riser cage options ²
10	Controller backup power connectors for expansion slots 3-7
11	Front LED connector
12	Processor 2 DIMM slots
13	System battery
14	Processor 1 DIMM slots
15	Fan signal connector
16	Energy pack connector
17	Fan power connector
18	Internal drive cage backplane power connector
19	Controller backup power connectors for expansion slots 1-2
20	Front drive cage backplane power connector
21	Power supply backplane connector
22	Rear drive cage backplane power connector
23	Rear 6SFF NVMe drive cage fan connector
24	Mini SAS connector 1
25	SATA connector 2
26	SATA connector 1
27	Internal USB 3.0 port
28	Front USB 2.0 port

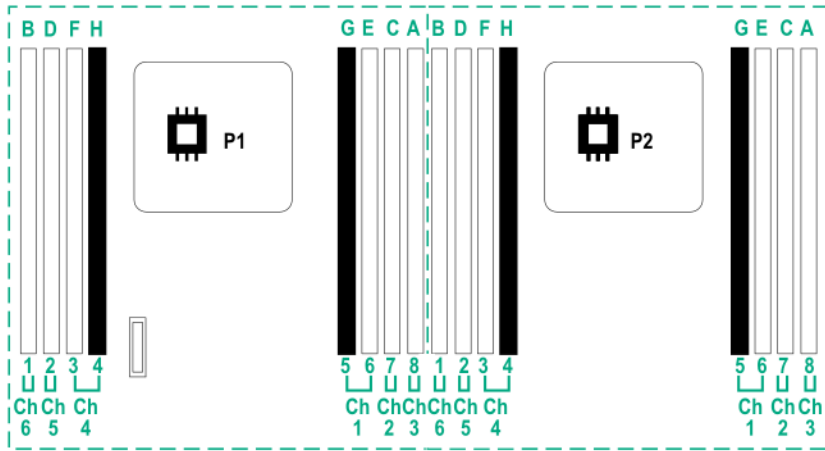
¹ The PCIe3 expansion slots 1-2 are associated with processor 1.

² The PCIe3 expansion slots 5-7 are associated with processor 2.

DIMM slot locations

DIMM slots are numbered sequentially (1 through 8) for each processor. The supported AMP modes use the letter assignments for population guidelines.

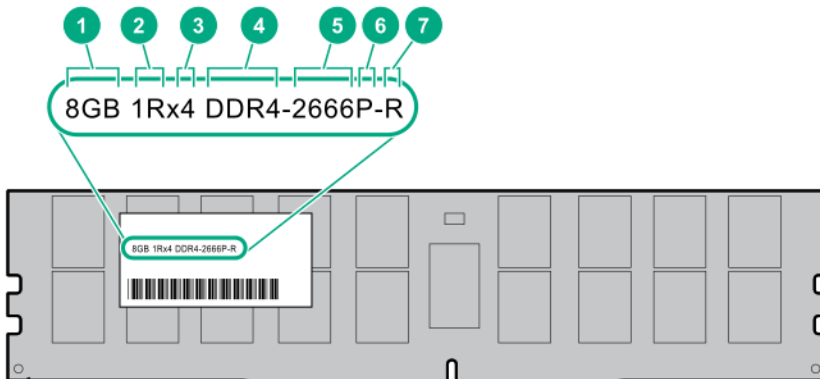




The arrow points to the front of the system.

DIMM label identification

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

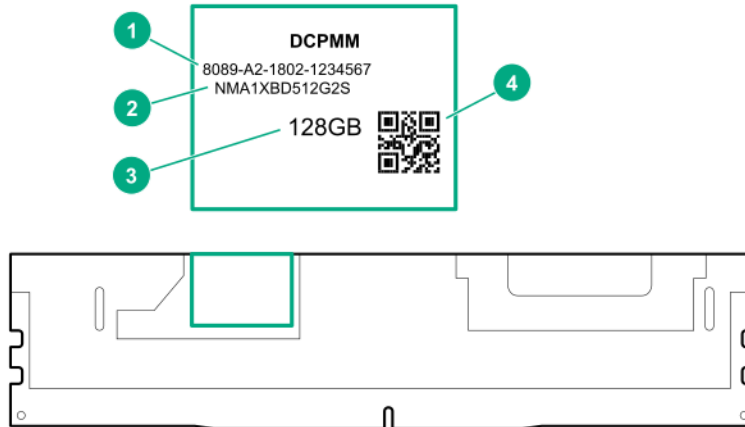


Item	Description	Example
1	Capacity	8 GB 16 GB 32 GB 64 GB 128 GB
2	Rank	1R = Single rank 2R = Dual rank 4R = Quad rank 8R = Octal rank
3	Data width on DRAM	x4 = 4-bit x8 = 8-bit x16 = 16-bit
4	Memory generation	PC4 = DDR4
5	Maximum memory speed	2133 MT/s 2400 MT/s 2666 MT/s
6	CAS latency	P = CAS 15-15-15 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)
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 product QuickSpecs on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).



Intel Optane persistent memory 100 series for HPE 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>).

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

Table Continued



Position	Default	Function
S7	Off	Reserved
S8	—	Reserved
S9	—	Reserved
S10	—	Reserved
S11	—	Reserved
S12	—	Reserved

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

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

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

Disabling the HPE Smart Array S100i Controller

Before changing the boot mode to Legacy BIOS Mode, you must first disable the HPE Smart Array S100i Controller.

NOTE: When you use the software to update, maintain, or monitor the HPE Apollo 4200 Gen10 system, you will see **HPE ProLiant XL420 Gen10 Server** as the product name in the interface.

Procedure

1. Reboot the system.

The system restarts and the POST screen appears.

2. Press **F9**.

The System Utilities screen appears.

3. Select **System Configuration > BIOS/Platform Configuration (RBSU) > System Options > SATA Controller Options > Embedded SATA Configuration**, and then press **Enter**.

4. Select **Enable SATA AHCI Support**, and then press **Enter**.

5. To save the selection, press **F10**.

6. To save the changes, press **Y**.

The `Change saved` confirmation prompt appears.

7. Select **Exit and resume system boot**, and press **Enter**.

The system continues the normal boot process.

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

NMI functionality

An NMI crash dump creates a crash dump log before resetting a system which is not responding.

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

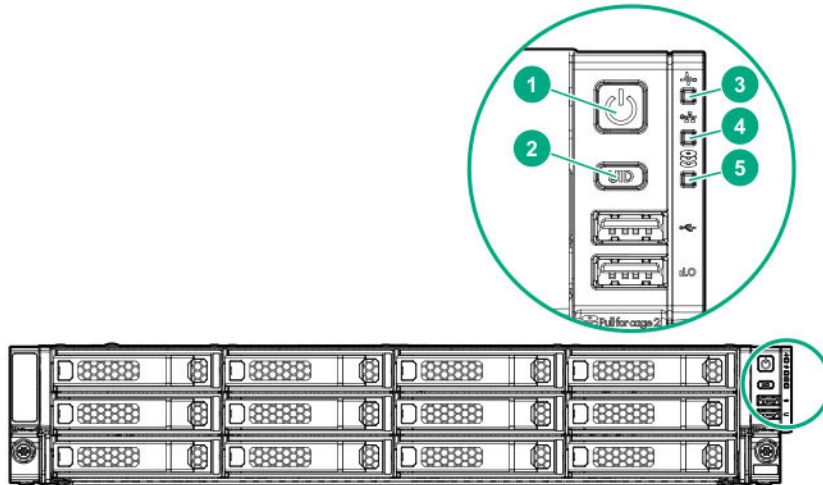


To force the system to initiate the NMI handler and generate a crash dump log, do one of the following:

- Use the iLO Virtual NMI feature.
- Short the NMI header.

For more information, see the Hewlett Packard Enterprise website (<http://www.hpe.com/support/ilo-docs>).

Front panel LEDs and buttons



Item	Description	Status
1	Power On/Standby button and system power LED ¹	<ul style="list-style-type: none"> • Solid green = System on • Flashing green (1 flash per second) = Performing power on sequence • Solid amber = System in standby • Off = No power present²
2	UID button/LED ¹	<ul style="list-style-type: none"> • Solid blue = Activated • Flashing blue: <ul style="list-style-type: none"> ◦ 1 flash per second = Remote management or firmware upgrade in progress ◦ 4 flashes per second = iLO manual reboot sequence initiated ◦ 8 flashes per second = iLO manual reboot sequence in progress ◦ 1 fast flash and then off for 3 seconds = iLO Service Port status is Complete ◦ 4 medium flashes and then off for 1 second = iLO Service Port status is Busy ◦ 8 fast flashes and then off for 1 second = iLO Service Port status is Error • Off = Deactivated
3	Health LED ¹	<ul style="list-style-type: none"> • Solid green = Normal • Flashing green (1 flash per sec) = iLO is rebooting • Flashing amber = System degraded³ • Flashing red (1 flash per sec) = System critical³
4	NIC status LED ¹	<ul style="list-style-type: none"> • Solid green = Link to network • Flashing green (1 flash per second) = Network active • Off = No network activity
5	Front drive health/thermal LED	<ul style="list-style-type: none"> • Solid green = Drives supported by the SAS expander are functional.⁴ • Solid amber = Failure or predictive failure of one or more drives supported by the SAS expander⁴ • Off = No power present²

¹ When these four LEDs flash simultaneously, a power fault has occurred.

² Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the front I/O cable is disconnected.

³ If the health LED indicates a degraded or critical state, review the system IML or use iLO to review the system health status

⁴ This LED behavior applies to all front drives, as well as to the rear drives connected to the internal drive cage backplane.



UID button functionality

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

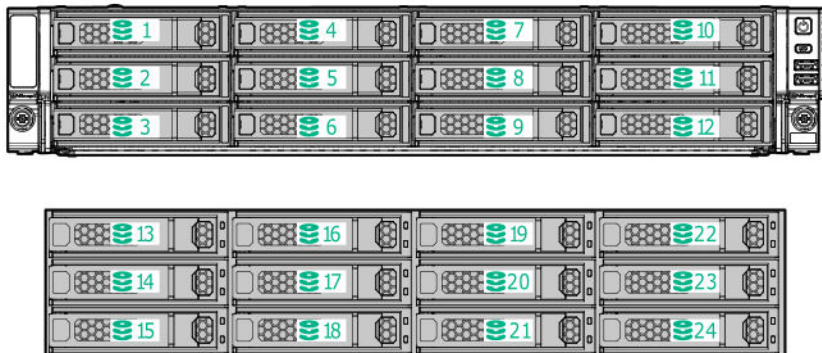
Front panel LED power fault codes

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
Storage controller	6 flashes
System board PCIe slots	7 flashes
Power backplane	8 flashes
Storage backplane	9 flashes
Power supply	10 flashes
PCIe expansion cards installed in riser board	11 flashes
Chassis	12 flashes
GPU card	13 flashes

Drive numbering

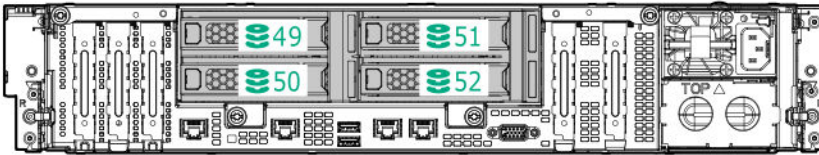
24LFF hot-plug front drive numbering



48SFF hot-plug front drive numbering

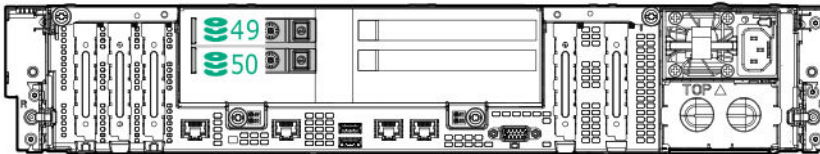


4LFF hot-plug rear drive numbering



2SFF hot-plug rear drive numbering

The drive numbering for the 2SFF rear drive cage varies depending on where it is connected.

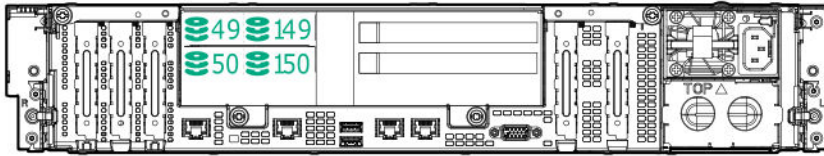


Item	Drive numbering
Internal drive cage	49, 51
HPE Smart Storage S100i SR Gen10 controller (RAID)	49, 50
HPE Smart Storage S100i SR Gen10 controller (HBA mode)	1, 3
Directly attached to controller	49, 50

2uFF hot-plug rear drive numbering

The drive numbering for the 2uFF rear drive cage varies depending on where it is connected.

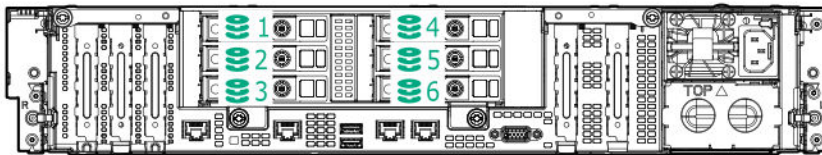




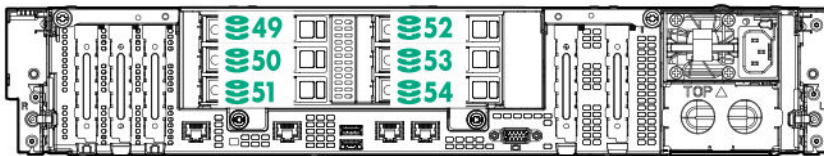
Item Drive numbering

Internal drive cage	49, 50, 51, 52
HPE Smart Storage S100i SR Gen10 controller (RAID)	49, 149, 50, 150
HPE Smart Storage S100i SR Gen10 controller (HBA mode)	1, 2, 3, 4
Directly attached to controller	49, 149, 50, 150

6SFF NVMe rear drive numbering



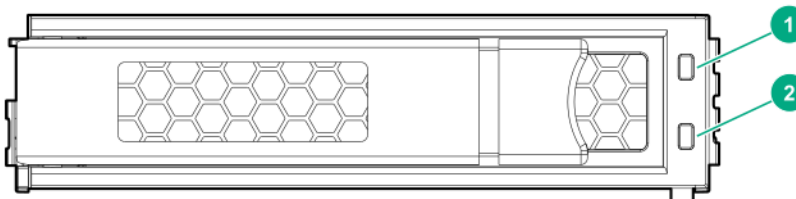
6SFF rear drive numbering (SAS, SATA)



Drive LEDs

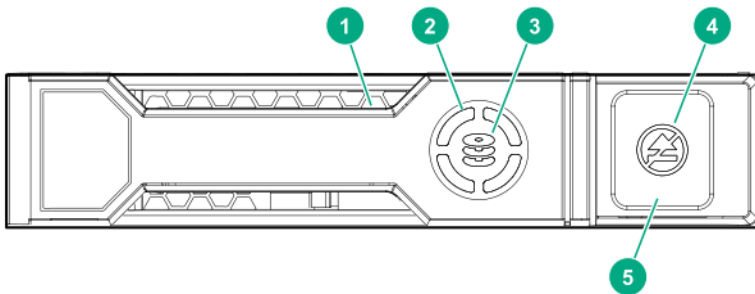
LFF, SFF, NVMe, and uFF drives have different sets of LEDs to reflect the drive status.

Low-profile LFF drive LED definitions



Item	LED	Status	Definition
1	Fault \Locate	Solid amber	The drive has failed.
		Solid blue	The drive is operating normally and being identified by a management application.
		Flashing amber/blue (1 flash per second)	The drive has failed, or a predictive failure alert has been received for this drive; it also has been identified by a management application.
		Flashing amber (1 flash per second)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
2	Online \Activity	Solid green	The drive is online and has no activity.
		Flashing green (4 flashes per second)	The drive is operating normally and has activity.
		Flashing green (1 flash per second)	The drive is doing one of the following: <ul style="list-style-type: none"> • Rebuilding • Performing a RAID migration • Performing a strip size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing • Spare part activation
		Off	The drive is not configured by a RAID controller or a spare drive.

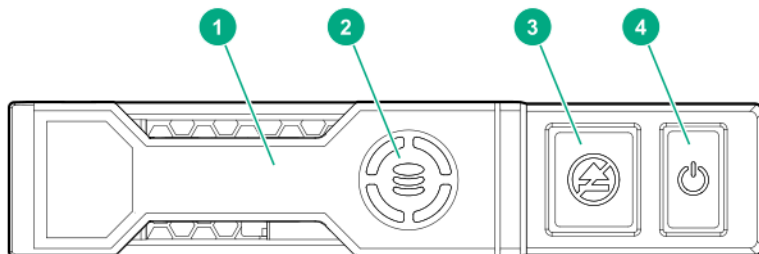
SFF drive components and LEDs



Item	Description	Status
1	Locate LED ¹	<p>Solid blue = The drive is being identified by a host application.</p> <p>Flashing blue = The drive carrier firmware is being updated or requires an update.</p>
2	Activity ring LED	<p>Rotating green = Drive activity</p> <p>Off = No drive activity</p>
3	Drive status LED	<p>Solid green = The drive is a member of one or more logical drives.</p> <p>Flashing green = The drive is rebuilding or performing a RAID migration, stripe size migration, capacity expansion, or logical drive extension, or is erasing.</p> <p>Flashing amber/green = The drive is a member of one or more logical drives and predicts the drive will fail.</p> <p>Flashing amber = The drive is not configured and predicts the drive will fail.</p> <p>Solid amber = The drive has failed.</p> <p>Off = The drive is not configured by a RAID controller.</p>
4	Do not remove LED	<p>Solid white = Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.</p> <p>Off = The drive can be removed. Removing the drive does not cause a logical drive to fail.</p>
5	Do not remove button	Press to open the release lever.

¹ The blue locate LED is behind the release lever and is visible when illuminated.

NVMe drive components and LEDs



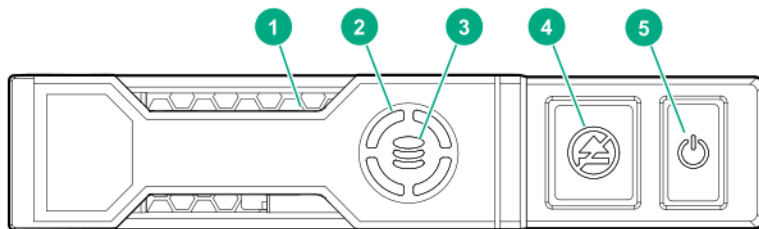
Item	Description
1	Release lever
2	Activity ring
3	Do Not Remove LED ¹
4	Request to Remove NVMe Drive button

¹Do not remove an NVMe SSD from the drive bay while the Do Not Remove button LED is flashing. The Do Not Remove button LED flashes to indicate the device is still in use. Removal of the NVMe SSD before the device has completed and ceased signal/traffic flow can cause loss of data.

Smart Carrier NVMe (SCN) drive LED definitions

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

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



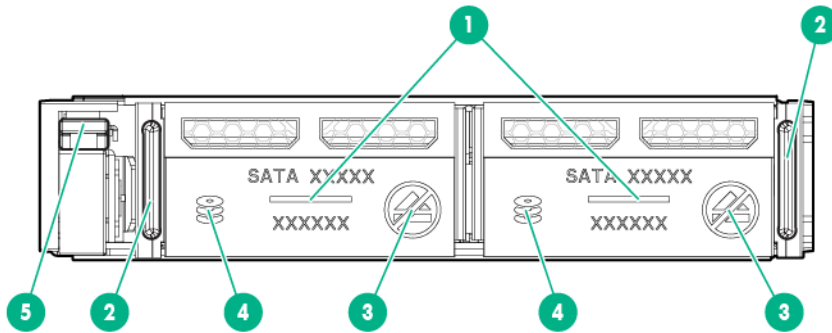
Item	LED	Status	Definition
1	Locate	Solid blue	The drive is being identified by a host application.
		Flashing blue	The drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating green	Drive activity
		Off	No drive activity
3	Drive status	Solid green	The drive is a member of one or more logical drives.

Table Continued



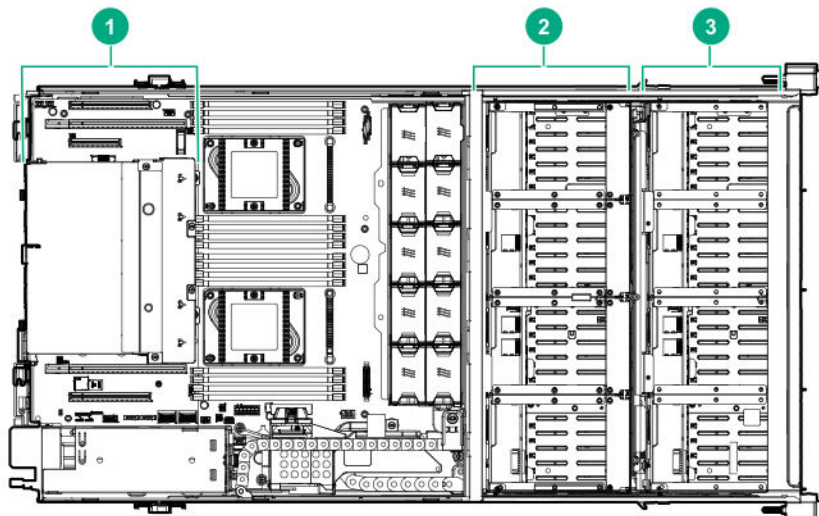
Item	LED	Status	Definition
		Flashing green	The drive is doing one of the following: <ul style="list-style-type: none"> • Rebuilding • Performing a RAID migration • Performing a stripe size migration • Performing a capacity expansion • Performing a logical drive extension • Erasing
		Flashing amber/ green	The drive is a member of one or more logical drives and predicts the drive will fail.
		Flashing amber	The drive is not configured and predicts the drive will fail.
		Solid amber	The drive has failed.
		Off	The drive is not configured by a RAID controller.
4	Do not remove	Solid white	Do not remove the drive. The drive must be ejected from the PCIe bus prior to removal.
		Flashing white	The drive ejection request is pending.
		Off	The drive has been ejected.
5	Power	Solid green	Do not remove the drive. The drive must be ejected from the PCIe bus prior to removal.
		Flashing green	The drive ejection request is pending.
		Off	The drive has been ejected.

SFF flash adapter components and LED definitions



Item	Component	Description
1	Locate	<ul style="list-style-type: none"> Off—Normal Solid blue—The drive is being identified by a host application. Flashing blue—The drive firmware is being updated or requires an update.
2	uFF drive ejection latch	Removes the uFF drive when released.
3	Do not remove LED	<ul style="list-style-type: none"> Off—OK to remove the drive. Removing the drive does not cause a logical drive to fail. Solid white—Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.
4	Drive status LED	<ul style="list-style-type: none"> Off—The drive is not configured by a RAID controller or a spare drive. Solid green—The drive is a member of one or more logical drives. Flashing green (4 Hz)—The drive is operating normally and has activity. Flashing green (1 Hz)—The drive is rebuilding, erasing, or performing a RAID migration, stripe size migration, capacity expansion, logical drive extension, or spare activation. Flashing amber/green (1 Hz)—The drive is a member of one or more logical drives that predicts the drive will fail. Solid amber—The drive has failed. Flashing amber (1 Hz)—The drive is not configured and predicts the drive will fail.
5	Adapter ejection release latch and handle	Removes the SFF flash adapter when released.

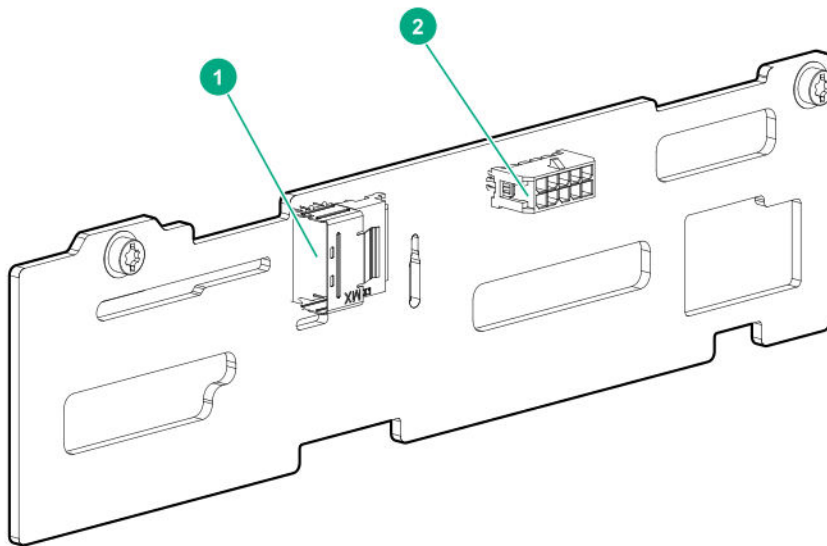
Drive cage identification



Item	Description
1	Rear drive cage (LFF, SFF, NVMe, or uFF)
2	Internal drive cage
3	Front drive cage

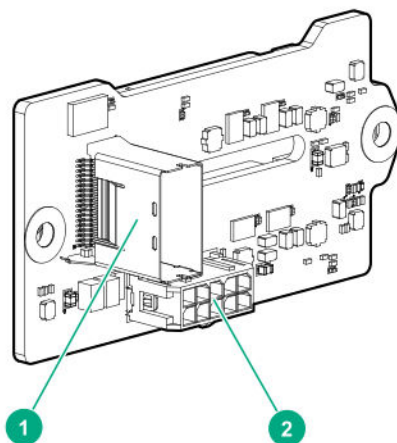
Drive cage backplane identification

4LFF rear drive cage backplane



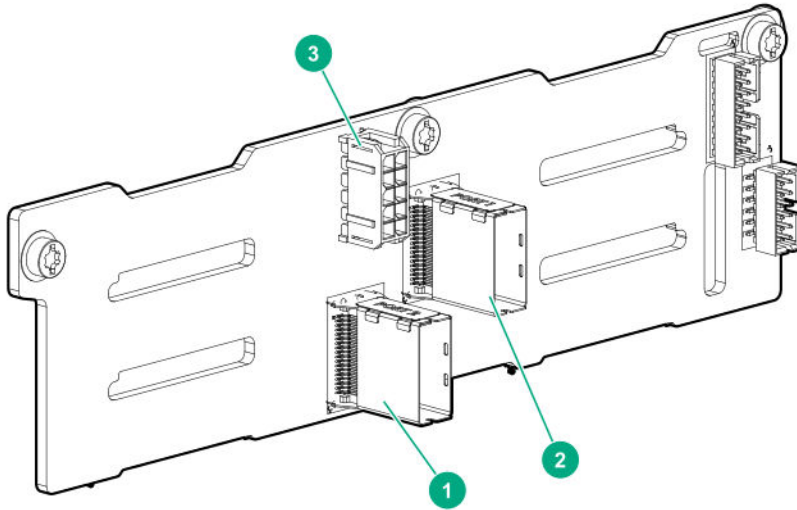
Item	Description
1	x4 Mini SAS connector
2	Power input connector

2SFF rear drive cage backplane



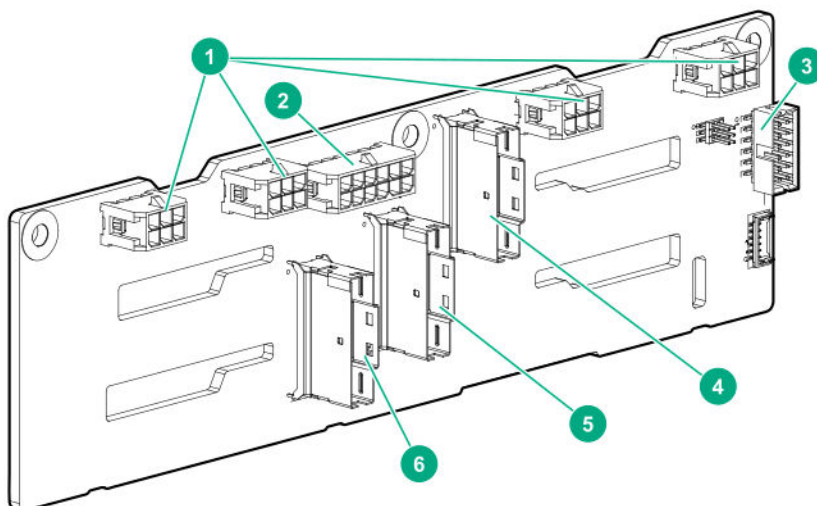
Item	Description
1	x4 Mini SAS connector
2	Power input connector

Six-bay SFF rear drive cage backplane (SAS, SATA)



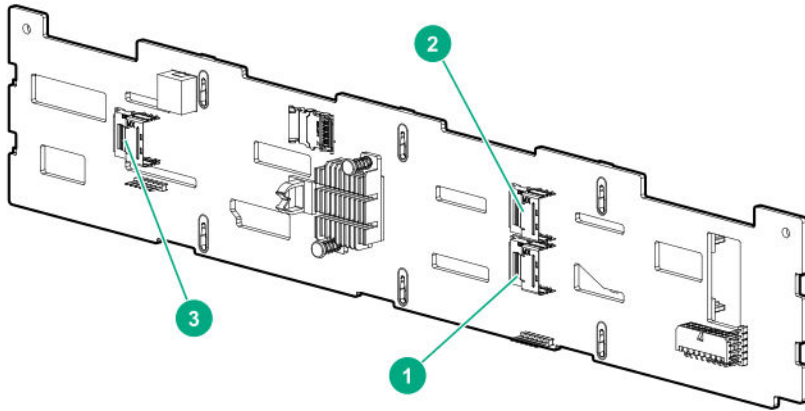
Item	Description
1	P2 connector
2	P1 connector
3	Power input connector

Six-bay SFF NVMe rear drive cage backplane



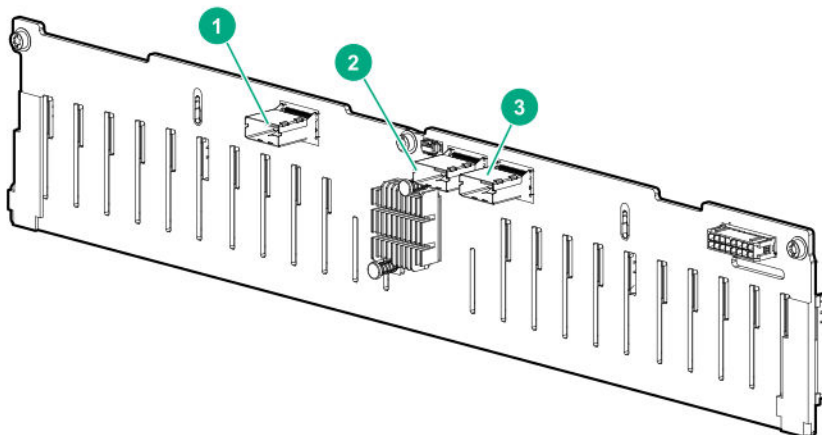
Item	Description
1	Fan connectors
2	Power cable connector
3	Backplane sideband cable connector
4	NVMe port 1 connector
5	NVMe port 2 connector
6	NVMe port 3 connector

Front and internal LFF drive cage backplane



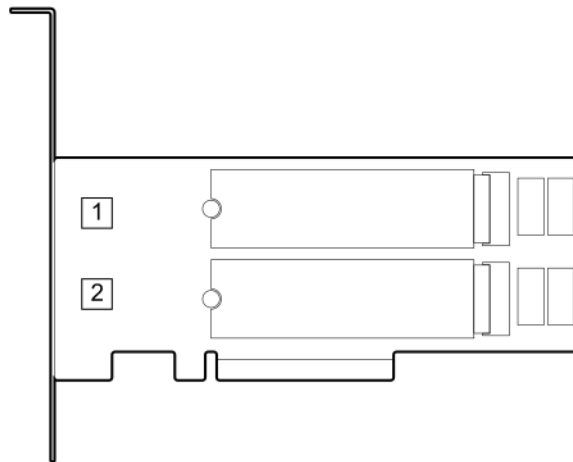
Item	Front drive cage backplane	Internal drive cage backplane
1	P1 connector	P1 connector
2	P2 connector	P2 connector
3	P3 connector (reserved)	P3 connector

Front and internal SFF drive cage backplane



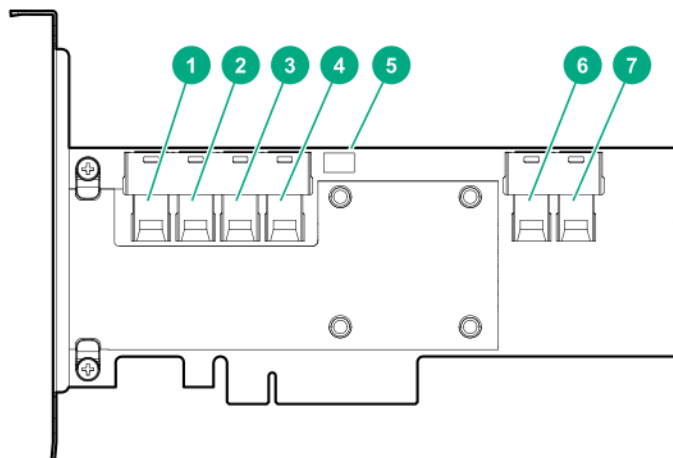
Item	Front drive cage backplane	Internal drive cage backplane
1	P3 connector (reserved)	P3 connector
2	P1 connector	P1 connector
3	P2 connector	P2 connector

M.2 SSD slot numbering



Item	Description
1	M.2 slot 1, port 1i
2	M.2 slot 2, port 2i

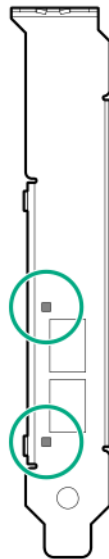
HPE Smart Array P824i-p MR Gen10 Controller



Components

Item	Description
1	Internal SAS port 1i
2	Internal SAS port 2i
3	Internal SAS port 3i
4	Internal SAS port 4i
5	Controller backup power cable connector
6	Internal SAS port 5i
7	Internal SAS port 6i

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.



DSC-25 2-port SFP28 card ports and LEDs

Ports

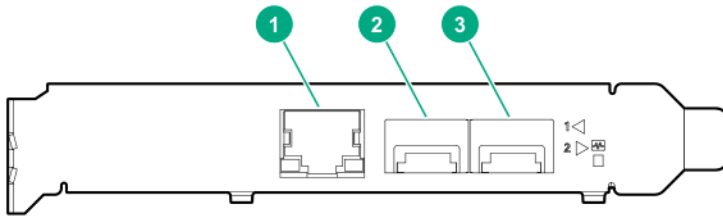


Table 5: Ports

Item	Port	Description
1	Management port	1GbE RJ45
2	Network interface port	10/25G SFP+ based
3	Network interface port	10/25G SFP+ based

LEDs

The HPE for Pensando DSP DSC-25 2p SFP28 card is a dual-port, single-slot, half-height, half-length (HHHL) SFP28 network adapter. It has LEDs for Link (L) and Activity (A) for each port. A half-height bracket is shown in the following illustration with SFP28 ports and LEDs.

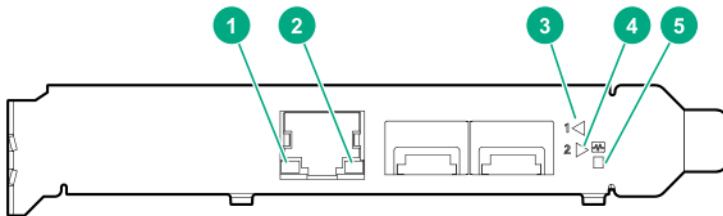


Table 6: LED indicators

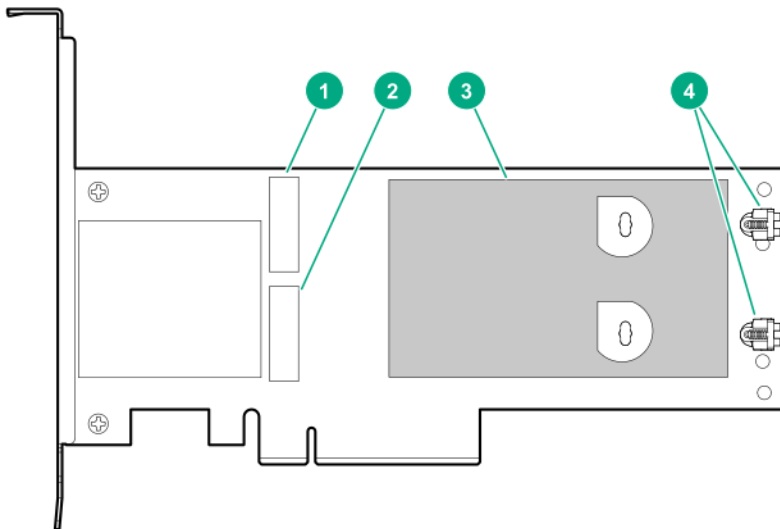
Item	LED	Status	Description
1	Management Port Activity LED	Off	No activity
		Flashing	Passing traffic; flashing frequency indicates traffic intensity
2	Management Port Link LED	Off	A link has not been established
		Solid green	Valid Ethernet link

Table Continued



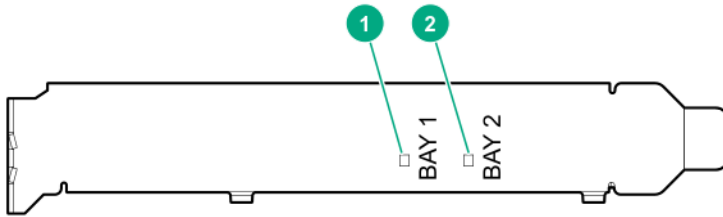
Item	LED	Status	Description
3	SFP Port 1 Link/Activity LED	Off	A link has not been established
		Solid green	Valid Ethernet link
		Flashing green	Passing traffic; flashing frequency indicates traffic intensity
		Solid amber	Link fault
4	SFP Port 2 Link/Activity LED	Off	A link has not been established
		Solid green	Valid Ethernet link
		Flashing green	Passing traffic; flashing frequency indicates traffic intensity
		Solid amber	Link fault
5	System status LED	Off	System is not powered
		Solid amber	Power is up, software has not booted yet
		Solid green	System is up and fully operational

HPE NS204i-p NVMe OS Boot Device components



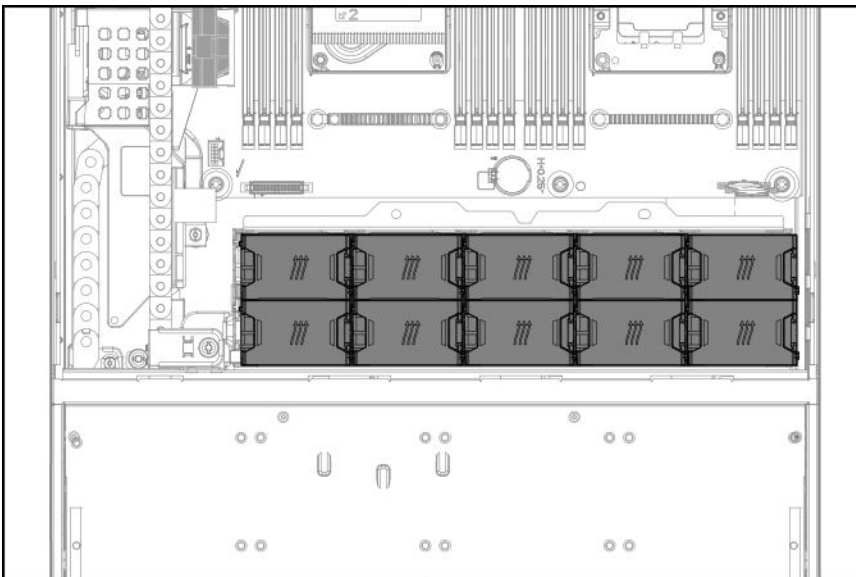
Item	Description
1	Drive bay 1
2	Drive bay 2
3	Thermal interface pad with removable liner
4	M.2 drive retaining latches

HPE NS204i-p NVMe OS Boot Device LED definitions



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

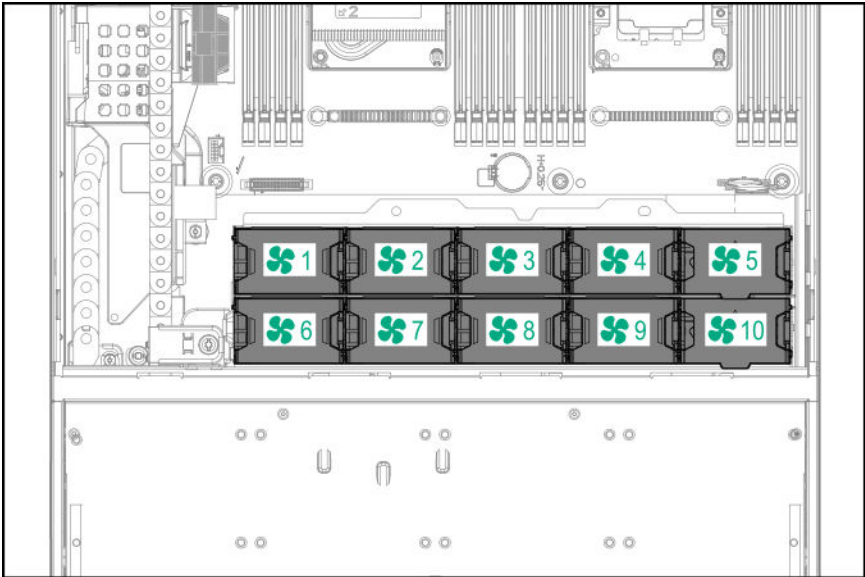
Fan locations



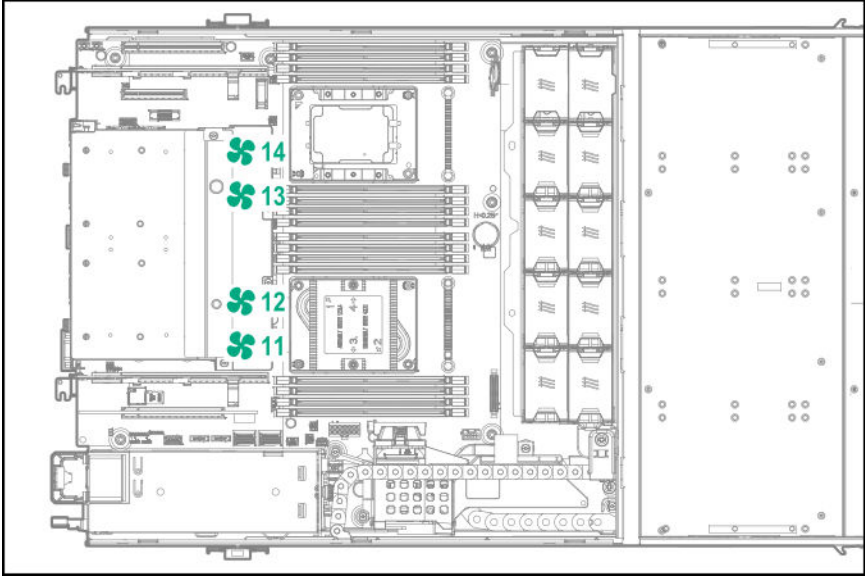
Fan numbering

System fan numbering





NVMe rear drive cage fan numbering



Specifications

Environmental specifications

Specification	Value
Temperature range¹	—
Operating	10°C to 35°C (50°F to 95°F)
Nonoperating	-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
Nonoperating	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 1,000 ft) to 3,050 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 (2,953 ft) to a maximum of 3,050 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2,953 ft) to a maximum of 3,050 m (10,000 ft).

The approved hardware configurations for this system are listed on the Hewlett Packard Enterprise website (<http://www.hpe.com/servers/ASHRAE>).

Mechanical specifications

Specification	Value
Height	87.50 mm (3.44 in)
Depth	825.50 mm (32.50 in)
Width	448.0 mm (17.63 in)
Weight (approximate values)	—
24-bay LFF drive models	—
Without the four-bay rear LFF drive cage option, minimum	22.34 kg (49.25 lb)
Without the four-bay rear LFF drive cage option, maximum	39.74 kg (87.63 lb)

Table Continued



Specification	Value
With the four-bay LFF rear drive cage option, minimum	23.20 kg (51.15 lb)
With the four-bay LFF rear drive cage option, maximum	40.60 kg (89.51 lb)
48-bay SFF drive models	—
Without the two- or six-bay rear SFF drive cage option, minimum	23.40 kg (51.59 lb)
Without the two- or six-bay rear SFF drive cage option, maximum	34.72 kg (76.54 lb)
With the two-bay SFF rear drive cage option, minimum	23.68 kg (52.21 lb)
With the two-bay SFF rear drive cage option, maximum	35.00 kg (77.16 lb)
With the six-bay SFF NVMe rear drive cage option, minimum	24.89 kg (54.87 lb)
With the six-bay SFF NVMe rear drive cage option, maximum	36.87 kg (81.28 lb)
With the six-bay SFF rear drive cage option (SAS or SATA), minimum	24.89 kg (54.87 lb)
With the six-bay SFF rear drive cage option (SAS or SATA), maximum	36.87 kg (81.28 lb)

Power supply specifications

Depending on the installed options and/or the regional location where the system was purchased, the system is configured with one of the following power supplies:

- HPE 800 W Flex Slot Titanium Hot-plug power supply (PN 866793-001)
- HPE 800 W Flex Slot -48 V DC Hot-plug power supply (PN 866728-001)
- HPE 800 W Flex Slot Universal Hot-plug power supply (PN 866727-001)
- HPE 800 W Flex Slot Platinum Hot-plug Power Supply (PN 866730-001)
- HPE 1600 W Flex Slot Platinum Plus Hot-plug Power Supply (PN 863373-001)

These power supplies are Flexible Slot Power Supply products for ProLiant servers. For more information about the power supply features, specifications, and compatibility, see the Hewlett Packard Enterprise website (<http://www.hpe.com/servers/powersupplies>).



CAUTION: Check the system and power supply input ratings before powering up the system.



ⓘ **IMPORTANT:** Mixing different types of power supplies in the same system might limit or disable some power supply features including support for power redundancy. To ensure access to all available features, all power supplies in the same system must have the same output and efficiency ratings.

Hot-plug power supply calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the system, see the Hewlett Packard Enterprise Power Advisor website (<http://www.hpe.com/info/poweradvisor/online>).



Support and other resources

Accessing Hewlett Packard Enterprise Support

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

Information to collect

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

Accessing updates

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

Hewlett Packard Enterprise Support Center

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

Hewlett Packard Enterprise Support Center: Software downloads

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

My HPE Software Center

<https://www.hpe.com/software/hpesoftwarecenter>

- To subscribe to eNewsletters and alerts:
<https://www.hpe.com/support/e-updates>
- To view and update your entitlements, and to link your contracts and warranties with your profile, go to the Hewlett Packard Enterprise Support Center **More Information on Access to Support Materials** page:
<https://www.hpe.com/support/AccessToSupportMaterials>





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.

Remote support

Remote support is available with supported devices as part of your warranty or contractual support agreement. It provides intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution based on your product's service level. Hewlett Packard Enterprise strongly recommends that you register your device for remote support.

If your product includes additional remote support details, use search to locate that information.

Remote support and Proactive Care information

HPE Get Connected

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

HPE Proactive Care services

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

HPE Datacenter Care services

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

HPE Proactive Care service: Supported products list

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

HPE Proactive Care advanced service: Supported products list

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

Proactive Care customer information

Proactive Care central

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

Proactive Care service activation

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

Warranty information

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

HPE ProLiant and IA-32 Servers and Options

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

HPE Enterprise and Cloudline Servers

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

HPE Storage Products

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

HPE Networking Products

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

Regulatory information

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

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



Additional regulatory information

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

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

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

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

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

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

Documentation feedback

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

