

HP ProLiant DL180 Gen9 Server Maintenance and Service Guide

Abstract

This guide describes identification and maintenance procedures, diagnostic tools, specifications and requirements for hardware components and software. This guide is for an experienced service technician. HP 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.



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Contents

Customer self repair	6
Parts only warranty service	6
Illustrated parts catalog	16
Mechanical components.....	16
System components	19
Removal and replacement procedures	24
Required tools.....	24
Safety considerations.....	24
Preventing electrostatic discharge	24
Symbols on equipment	24
Server warnings and cautions	25
Rack warnings	26
Preparation procedures.....	26
Remove the security bezel (optional)	27
Power down the server.....	27
Extend the server from the rack.....	28
Access the product rear panel.....	30
Remove the server from the rack	30
Remove the PCI riser cages.....	31
Remove the air baffle	32
Remove the fan cage	33
Non-hot-plug drive carrier	34
Non-hot-plug drive.....	34
Hot-plug drive blanks	35
Hot-plug drive.....	36
Access panel	37
4-bay and 8-bay LFF non-hot-plug drive cable assemblies	38
4-bay and 8-bay LFF hot-plug drive backplanes	40
8-bay SFF hot-plug drive backplane	42
HP Smart Storage Battery	43
FBWC module	44
M.2 SSD enablement kit.....	46
Optical drive	48
Fan and fan blank	49
Fan population guidelines.....	49
Fan blank	50
Hot-swap fan	51
DIMM.....	52
Heatsink.....	53
Processor	55
Expansion board.....	59
Two-slot and three-slot PCIe riser boards.....	60
FlexibleLOM riser board.....	61
System battery	63
Dedicated iLO management module	66

Enabling the dedicated iLO management module	67
Front I/O assemblies for LFF and SFF chassis using thumbscrew rack ears	68
Quick-release latch rack ear assembly.....	70
Pull tab cage for SFF chassis using quick-release latch rack ears	72
System board	73
HP 550-W Power Supply (non-hot plug)	82
Hot-plug power input module	83
RPS backplane.....	84
HP Trusted Platform Module	86
Troubleshooting	87
Troubleshooting resources	87
Diagnostic tools	88
Product QuickSpecs.....	88
HP iLO.....	88
Active Health System.....	89
HP ProLiant Pre-boot Health Summary.....	89
Integrated Management Log	90
HP UEFI System Utilities	90
Using HP UEFI System Utilities	90
Embedded Diagnostics option	91
Re-entering the server serial number and product ID	91
HP Insight Diagnostics.....	92
HP Insight Diagnostics survey functionality	92
HP Insight Remote Support.....	92
USB support	92
External USB functionality	93
HP Smart Storage Administrator	93
Automatic Server Recovery	94
Component identification	95
Front panel components	95
Serial label pull tab information	96
Front panel LEDs and buttons	97
Front panel LED power fault codes	98
Rear panel components.....	99
Rear panel LEDs.....	100
PCIe riser board slot definitions	100
System board components.....	102
DIMM slot locations	104
System maintenance switch.....	104
NMI functionality.....	105
Drive numbering	105
HP SmartDrive LED definitions	106
Fan locations	107
Cabling	108
Cabling overview.....	108
Storage cabling	108
4-bay LFF non-hot-plug SATA drive cabling	109
8-bay LFF non-hot-plug SATA drive cabling	109
8-bay LFF hot-plug SATA drive cabling	110
8-bay LFF hot-plug SAS/SATA drive cabling	110
8-bay SFF hot-plug SATA drive cabling.....	111

8-bay SFF hot-plug SAS/SATA drive cabling.....	112
16-bay SFF hot-plug SAS/SATA drive cabling.....	113
M.2 SSD cabling.....	114
FBWC module backup power cabling.....	115
HP Smart Storage Battery cabling.....	115
Optical drive cabling.....	116
Fan cabling.....	116
GPU power drive cabling.....	117
FlexibleLOM sideband signal cabling.....	117
Power supply cabling.....	118
HP 550-W Power Supply cabling (non-hot-plug).....	118
HP Redundant Power Supply cabling (hot-plug).....	118
Front panel cabling.....	119
Specifications.....	122
Environmental specifications.....	122
Mechanical specifications.....	122
Power supply specifications.....	123
Hot-plug power supply calculations.....	123
Acronyms and abbreviations.....	124
Documentation feedback.....	127
Index.....	128

Customer self repair

HP 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 HP (or HP service providers or service partners) identifies that the repair can be accomplished by the use of a CSR part, HP 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 HP 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 HP 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 HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP 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 HP Technical Support Center and a technician will help you over the telephone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP 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 HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

For more information about HP's Customer Self Repair program, contact your local service provider. For the North American program, refer to the HP website (<http://www.hp.com/go/selfrepair>).

Parts only warranty service

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

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

Réparation par le client (CSR)

Les produits HP 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, HP (ou ses partenaires ou mainteneurs agréés) détermine que la réparation peut être effectuée à l'aide d'une pièce CSR, HP 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 HP 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 HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

REMARQUE: Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP 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 bénéficier d'une assistance téléphonique, appelez le Centre d'assistance technique HP. Dans les documents envoyés avec la pièce de rechange CSR, HP 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, HP se réserve le droit de vous facturer les coûts de remplacement. Dans le cas d'une pièce CSR, HP 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 HP, contactez votre Mainteneur Agréé local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (<http://www.hp.com/go/selfrepair>).

Service de garantie "pièces seules"

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

Dans le cadre de ce service, la réparation des pièces CSR par le client est obligatoire. Si vous demandez à HP 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 HP sono realizzati con numerosi componenti che possono essere riparati direttamente dal cliente (CSR, Customer Self Repair). Se in fase di diagnostica HP (o un centro di servizi o di assistenza HP) identifica il guasto come riparabile mediante un ricambio CSR, HP 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 HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

Opzionali – Parti la cui riparazione da parte del cliente è facultativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese aggiuntive a seconda del tipo di garanzia previsto per il prodotto.

NOTA: alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP 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 HP. Nel materiale fornito con una parte di ricambio CSR, HP specifica se il cliente deve restituire dei componenti. Qualora sia richiesta la resa ad HP del componente difettoso, lo si deve spedire ad HP 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 HP. Nel caso di riparazione da parte del cliente, HP sostiene tutte le spese di spedizione e resa e sceglie il corriere/vettore da utilizzare.

Per ulteriori informazioni sul programma CSR di HP contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web HP (<http://www.hp.com/go/selfrepair>).

Servizio di garanzia per i soli componenti

La garanzia limitata HP può includere un servizio di garanzia per i soli componenti. Nei termini di garanzia del servizio per i soli componenti, HP 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 HP, dovrà sostenere le spese di spedizione e di manodopera per il servizio.

Customer Self Repair

HP Produkte enthalten viele CSR-Teile (Customer Self Repair), um Reparaturzeiten zu minimieren und höhere Flexibilität beim Austausch defekter Bauteile zu ermöglichen. Wenn HP (oder ein HP Servicepartner) bei der Diagnose feststellt, dass das Produkt mithilfe eines CSR-Teils repariert werden kann, sendet Ihnen HP 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 HP 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 HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

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

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP 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 HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

Weitere Informationen über das HP Customer Self Repair Programm erhalten Sie von Ihrem Servicepartner vor Ort. Informationen über das CSR-Programm in Nordamerika finden Sie auf der HP Website unter (<http://www.hp.com/go/selfrepair>).

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

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

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

Reparaciones del propio cliente

Los productos de HP 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, HP (o los proveedores o socios de servicio de HP) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, HP le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

- **Obligatorio:** componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP 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 para los que la 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 HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

NOTA: Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP 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 HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, 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, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP 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 HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (<http://www.hp.com/go/selfrepair>).

Servicio de garantía exclusivo de componentes

La garantía limitada de HP puede que incluya un servicio de garantía exclusivo de componentes. Según las condiciones de este servicio exclusivo de componentes, HP 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 HP 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 HP 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 HP (of een HP Service Partner) bij de diagnose vaststelt dat de reparatie kan worden uitgevoerd met een CSR-onderdeel, verzendt HP 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 HP 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 HP 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 HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

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

Neem contact op met een Service Partner voor meer informatie over het Customer Self Repair programma van HP. Informatie over Service Partners vindt u op de HP website (<http://www.hp.com/go/selfrepair>).

Garantieservice "Parts Only"

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

Voor de Parts Only garantieservice is vervanging door CSR-onderdelen verplicht. Als u HP 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 HP 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 HP (ou fornecedores/parceiros de serviço da HP) concluir que o reparo pode ser efetuado pelo uso de uma peça CSR, a peça de reposição será enviada diretamente ao cliente. Existem duas categorias de peças CSR:

Obrigatória – Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP 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 HP 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 HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP 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 HP para que um técnico o ajude por telefone. A HP especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à HP. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à HP dentro do período determinado, normalmente cinco (5) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a HP poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a HP 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 HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (<http://www.hp.com/go/selfrepair>).

Serviço de garantia apenas para peças

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

No caso desse serviço, a substituição de peças CSR é obrigatória. Se desejar que a HP 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、HP製品には多数の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HP（HPまたはHP正規保守代理店）が判断した場合、HP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通りがあります。

- **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HP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HP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： HP製品の一部の部品は、カスタマーセルフリペア用ではありません。製品の保証を継続するためには、HPまたはHP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、HPの修理受付窓口にご連絡いただければ、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HP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HP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HPに返送してください。故障部品を返送する場合は、届いた時の梱包箱に関連書類とともに入れてください。故障部品を返送しない場合、HP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、HP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

HP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となります。当該部品について、もしもお客様がHP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はお客様の負担となります。

客户自行维修

HP 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 HP（或 HP 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，HP 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 HP 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 HP 为您更换这些部件，则根据您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

注：某些 HP 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，HP 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 HP 技术支持中心，将会有技术人员通过电话为您提供帮助。HP 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 HP。如果要求您将有缺陷的部件返还给 HP，那么您必须在规定期限内（通常是五 (5) 个工作日）将缺陷部件发给 HP。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，HP 可能会要求您支付更换费用。客户自行维修时，HP 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 HP 客户自行维修计划的详细信息，请与您当地的服务提供商联系。有关北美地区的计划，请访问 HP 网站 (<http://www.hp.com/go/selfrepair>)。

仅部件保修服务

您的 HP 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，HP 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 HP 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

HP 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 HP (或 HP 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 HP 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 HP 更換這些零件，HP 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 HP 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 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 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「HP 技術支援中心」，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，HP 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 HP，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 HP。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，HP 可能要向您收取替換費用。針對客戶自行維修情形，HP 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 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (<http://www.hp.com/go/selfrepair>)。

僅限零件的保固服務

您的「HP 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，HP 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 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

고객 셀프 수리

HP 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 HP(또는 HP 서비스 공급업체 또는 서비스 협력업체)에서 CSR 부품을 사용하여 수리가 가능하다고 판단되면 HP는 해당 부품을 바로 사용자에게 보내어 사용자가 교체할 수 있도록 합니다. CSR 부품에는 두 가지 종류가 있습니다.

- **고객 셀프 수리가 의무 사항인 필수 부품.** 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.
- **고객 셀프 수리가 선택 사항인 부품.** 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

참고: 일부 HP 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 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 HP 기술 지원 센터로 전화하십시오. 전문 기술자가 전화로 도움을 줄 것입니다. HP는 결함이 발생한 부품을 HP로 반환해야 하는지 여부를 CSR 교체 부품과 함께 배송된 자료에 지정합니다. 결함이 발생한 부품을 HP로 반환해야 하는 경우에는 지정된 기간 내(통상 영업일 기준 5일)에 HP로 반환해야 합니다. 이 때 결함이 발생한 부품은 제공된 포장 재료에 넣어 관련 설명서와 함께 반환해야 합니다. 결함이 발생한 부품을 반환하지 않는 경우 HP가 교체 부품에 대해 비용을 청구할 수 있습니다. 고객 셀프 수리의 경우, HP는 모든 운송 및 부품 반환 비용을 부담하며 이용할 운송업체 및 택배 서비스를 결정합니다.

HP 고객 셀프 수리 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 HP 웹 사이트(<http://www.hp.com/go/selfrepair>)를 참조하십시오.

부품 제공 보증 서비스

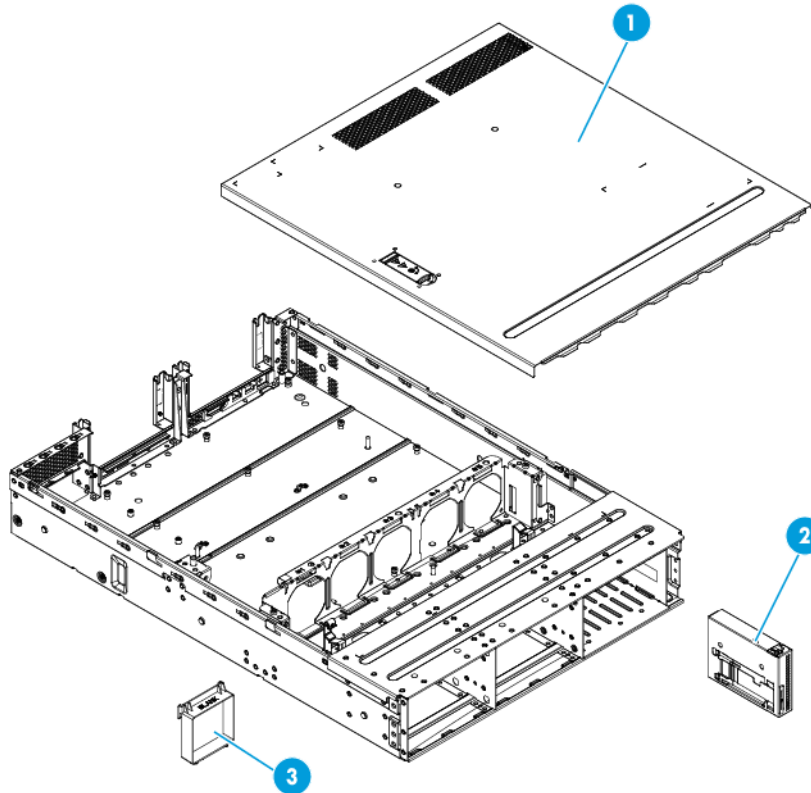
HP 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 HP는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

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

Illustrated parts catalog

Mechanical components

HP continually improves and changes product parts. For complete and current supported parts information, see the HP PartSurfer website (<http://partsurfer.hp.com>).



Item	Description	Spare part number	Customer self repair (on page 6)
1	Access panel	779087-001	Mandatory ¹
2	Pull tab cage for SFF drive models with quick-release latch rack ears	785787-001	Optional ²
3	Fan blank	779092-001	Mandatory ¹

¹Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

²Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

³No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

¹Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

²Optional: 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 HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

³No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP 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.

¹Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

²Optional: 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 HP, potrebbe dover sostenere spese aggiuntive a seconda del tipo di garanzia previsto per il prodotto.

³No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

¹Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.

²Optional: 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 HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

³No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

¹Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

²Optional: Opcional— componentes para los que la 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 HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

³No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP 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.

¹Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.

²Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

³No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

¹Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

²Optional: 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 HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

³No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

¹Mandatory : 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHP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。

²Optional : 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHP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、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。

³No : 除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP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、当該部品が顧客自己修理除外品である旨が記載されています。

¹Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

²Optional: 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 HP 为您更换这些部件，则根据您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

³No: 否 — 某些 HP 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，HP 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”。

¹Mandatory: 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 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

²Optional: 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 HP 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。

³No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 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」。

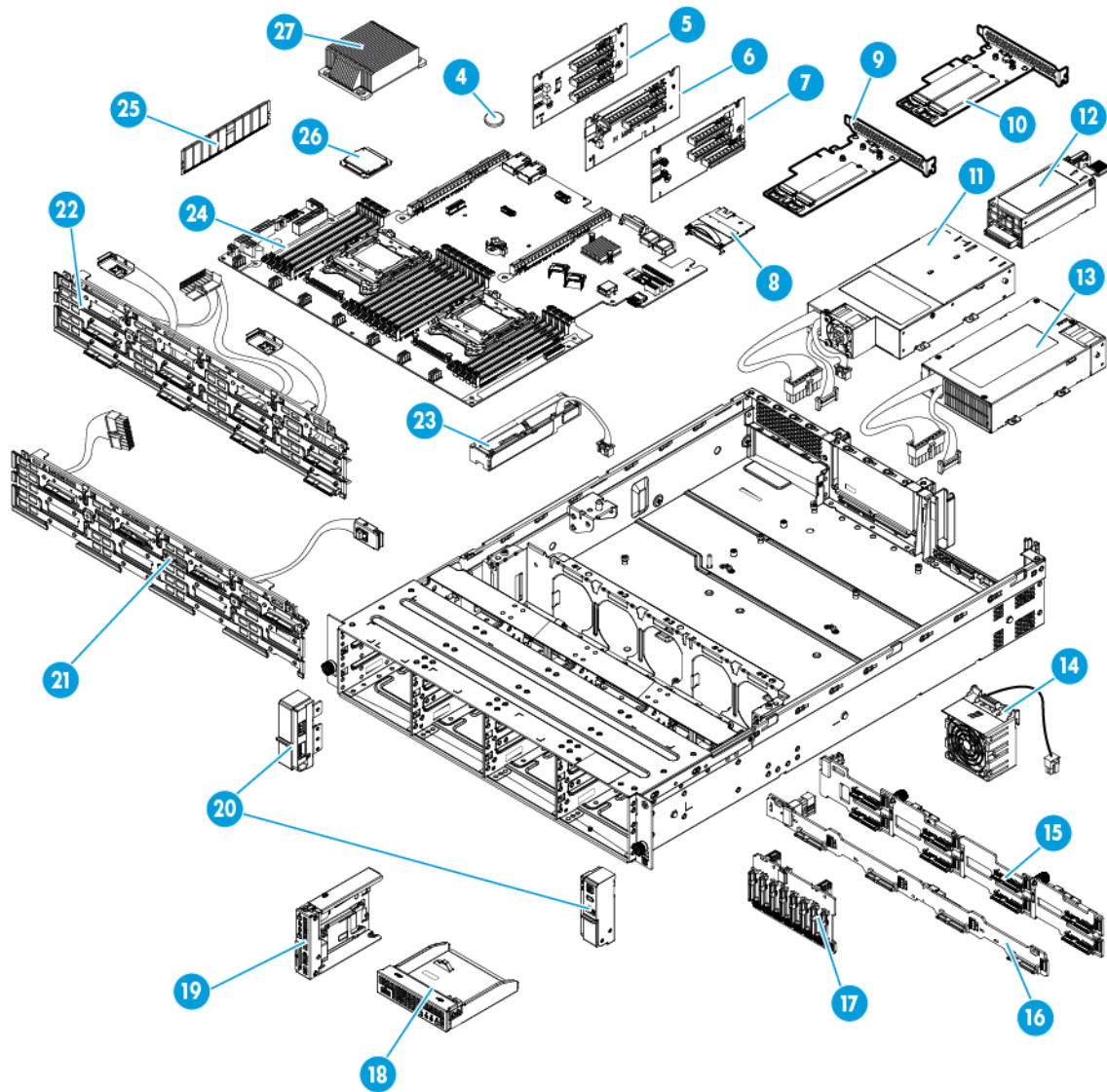
¹ Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

² Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

³ No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

System components

HP continually improves and changes product parts. For complete and current supported parts information, see the HP PartSurfer website (<http://partsurfer.hp.com>).



Item	Description	Spare part number	Customer self repair (on page 6)
4	System battery	234556-001	Mandatory ¹
5	Three-slot PCIe riser board	779085-001	Mandatory ¹
6	Two-slot PCIe riser board	779084-001	Mandatory ¹
7	FlexibleLOM riser board	794360-001	Mandatory ¹
8	Dedicated iLO management module	779095-001	Mandatory ¹
9	SATA M.2 SSD single module enablement kit	797907-001	Optional ²
	a) M.2 SSD enablement board	—	—

Item	Description	Spare part number	Customer self repair (on page 6)
	b) M.2 SSD module	—	—
	c) SATA cable*	—	—
	d) Low-profile board bracket*	—	—
10	SATA M.2 SSD dual module enablement kit	797908-001	Optional ²
	a) M.2 SSD enablement board	—	—
	b) M.2 SSD modules (2)	—	—
	c) SATA cables (2)	—	—
	d) Low-profile board bracket*	—	—
11	HP RPS backplane	784636-001	Optional ²
12	HP 800-W/900-W Gold AC Power Input Module	754376-001	Mandatory ¹
13	HP 550-W Power Supply (non-hot-plug)	766879-001	Optional ²
14	Hot-swap fan	779093-001	Mandatory ¹
15	8-bay LFF hot-plug drive backplane	779083-001	Optional ²
16	4-bay LFF hot-plug drive backplane	779096-001	Optional ²
17	8-bay SFF hot-plug drive backplane	780971-001	Optional ²
18	Front I/O assembly for LFF chassis using thumbscrew rack ears	779088-001	Optional ²
19	Front I/O assembly for SFF chassis using thumbscrew rack ears	779089-001	Optional ²
20	Quick-release latch rack ear assembly	779090-001	Optional ²
21	4-bay LFF non-hot-plug drive cable assembly (includes Mini-SAS and drive power cables)	782466-001	Mandatory ¹
22	8-bay LFF non-hot-plug drive cable assembly (includes Mini-SAS and drive power cables)	782458-001	Mandatory ¹
23	HP Smart Storage Battery	750450-001	Mandatory ¹
24	System board (include alcohol pad and thermal compound)	779094-001	Optional ²
25	DIMMs	—	—
	a) 4 GB, single-rank x8 PC4-2133P-R*	804842-001	Mandatory ¹
	b) 4 GB, single-rank x8 PC4-2133R-15	774169-001	Mandatory ¹
	c) 8 GB, single-rank x4 PC4-2133R-15*	774170-001	Mandatory ¹
	d) 8 GB, single-rank x8 PC4-2133P-R*	804843-001	Mandatory ¹
	e) 8 GB, dual-rank x8 PC4-2133P-R*	774171-001	Mandatory ¹
	f) 16 GB, dual-rank x4 PC4-2133R-15*	774172-001	Mandatory ¹
	g) 16 GB, dual-rank x4 PC4-2133P-L*	774173-001	Mandatory ¹
	h) 32 GB, dual-rank x4 PC4-2133P-R*	774175-001	Mandatory ¹
	i) 32 GB, quad-rank x4 PC4-2133P-L*	774174-001	Mandatory ¹
26	Processors (include alcohol pad and thermal compound)	—	—
	a) 1.60-GHz Intel Xeon E5-2603 v3, 6C, 85 W	762441-001	Optional ²
	b) 1.80-GHz Intel Xeon E5-2630L v3, 8C, 55 W*	762459-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
	c) 1.80-GHz Intel Xeon E5-2650L v3, 12C, 65 W*	762461-001	Optional ²
	d) 1.90-GHz Intel Xeon E5-2609 v3, 6C, 85 W*	762443-001	Optional ²
	e) 2.30-GHz Intel Xeon E5-2650 v3, 10C, 105 W*	762448-001	Optional ²
	f) 2.40-GHz Intel Xeon E5-2620 v3, 6C, 85 W*	762445-001	Optional ²
	g) 2.40-GHz Intel Xeon E5-2630 v3, 8C, 85 W*	762446-001	Optional ²
	h) 2.60-GHz Intel Xeon E5-2640 v3, 8C, 90 W*	762447-001	Optional ²
	i) 2.60-GHz Intel Xeon E5-2660 v3, 10C, 105 W*	762449-001	Optional ²
	j) 3.00-GHz Intel Xeon E5-2623 v3, 4C, 105 W*	780762-001	Optional ²
27	Heatsink	779091-001	Optional ²
28	System cables	—	—
	a) 4-bay LFF hot-plug Mini-SAS cable for connection to the onboard storage controller or to an HP H-series Host Bus Adapter*	782464-001	Mandatory ¹
	b) 4-bay or 12-bay LFF hot-plug Mini-SAS cable for an HP Smart Array P-series Controller*	782465-001	Mandatory ¹
	c) 8-bay LFF hot-plug Mini-SAS cable assembly*	782459-001	Mandatory ¹
	d) 8-bay LFF hot-plug Mini-SAS Y-cable*	782460-001	Mandatory ¹
	e) 12-bay LFF drive identification signal cable*	782467-001	Mandatory ¹
	f) 8-bay SFF hot-plug Mini-SAS cables*	782461-001	Mandatory ¹
	g) 8-bay SFF hot-plug Mini-SAS Y-cable*	782462-001	Mandatory ¹
	h) 20-pin power cable for LFF drive models*	782455-001	Mandatory ¹
	i) 20-pin power cable for SFF drive models*	782453-001	Mandatory ¹
	j) Optical drive SATA cable*	782457-001	Mandatory ¹
	k) GPU power cable*	782456-001	Mandatory ¹
	l) FlexibleLOM sideband signal cable*	789801-001	Mandatory ¹
29	Trusted Platform Module*	505836-001	No ³

* Not shown

¹Mandatory—Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service.

²Optional—Parts for which customer self repair is optional. These parts are also designed for customer self repair. If, however, you require that HP replace them for you, there may or may not be additional charges, depending on the type of warranty service designated for your product.

³No—Some HP parts are not designed for customer self repair. In order to satisfy the customer warranty, HP requires that an authorized service provider replace the part. These parts are identified as "No" in the Illustrated Parts Catalog.

¹Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.

²Optional: 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 HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

³No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP 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.

¹Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.

²Optional: 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 HP, potrebbe dover sostenere spese aggiuntive a seconda del tipo di garanzia previsto per il prodotto.

³No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un "No" nel Catalogo illustrato dei componenti.

¹Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.

²Optional: 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 HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

³No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

¹Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

²Optional: Opcional— componentes para los que la 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 HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

³No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP 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.

¹Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.

²Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.

³No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

¹Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

²Optional: 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 HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

³No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca "No" (Não), no catálogo de peças ilustrado.

¹Mandatory : 必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHP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。

²Optional : 任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHP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、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。

³No : 除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP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、当該部品が顧客自己修理除外品である旨が記載されています。

¹Mandatory: 强制性的 — 要求客户必须自行维修的部件。如果您请求 HP 更换这些部件，则必须为该服务支付差旅费和人工费用。

²Optional: 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 HP 为您更换这些部件，则根据您的产品指定的保修服务类型，HP 可能收取或不再收取任何附加费用。

³No: 否 — 某些 HP 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，HP 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”。

¹Mandatory: 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 HP 更換這些零件，HP 將會向您收取此服務所需的外出費用與勞動成本。

²Optional: 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 HP 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。

³No: 否 — 某些 HP 零件沒有消費者可自行維修的設計。為符合客戶保固，HP 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」。

¹ Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

² Optional: 옵션 — 고객 셀프 수리가 선택 사항인 부품. 이 부품들도 고객 셀프 수리가 가능하도록 설계되었습니다. 하지만 사용자가 HP에 이 부품의 교체를 요청할 경우 사용자가 구입한 제품에 해당하는 보증 서비스 유형에 따라 추가 비용 없이 교체가 가능할 수 있습니다.

³ No: No — 고객 셀프 수리가 불가능하도록 설계된 HP 부품. 이 부품들은 고객 셀프 수리가 불가능하도록 설계되었습니다. HP는 고객 보증을 만족시키기 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 하고 있습니다.

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-25 Torx screwdriver (to loosen the shipping screws located inside the server quick-release latch rack ears)
- T-10/T-15 Torx screwdriver
- Flathead screwdriver (for replacing the system battery)
- HP Insight Diagnostics (on page 92)

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 need to 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.

To prevent electrostatic damage:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Symbols on equipment

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



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.



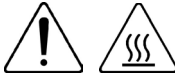
This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

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



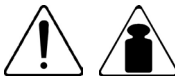
This symbol on an RJ-45 receptacle indicates a network interface connection.

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 completely disconnect power from the system.

Server warnings and cautions



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

- Observe local occupational health and safety requirements and guidelines for manual material handling.
- Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. HP recommends that a minimum of two people are required for all rack server installations. A third person may be required to help align the server if the server is installed higher than chest level.
- Use caution when installing the server in or removing the server from the rack; it is unstable when not fastened to the rails.




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







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



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

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

Rack warnings

-
-  **WARNING:** To reduce the risk of personal injury or damage to the equipment, be sure that:
- The leveling jacks are extended to the floor.
 - The full weight of the rack rests on the leveling jacks.
 - The stabilizing feet are attached to the rack if it is a single-rack installation.
 - The racks are coupled together in multiple-rack installations.
 - Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.
-
-  **WARNING:** To reduce the risk of personal injury or equipment damage when unloading a rack:
- At least two people are needed to safely unload the rack from the pallet. An empty 42U rack can weigh as much as 115 kg (253 lb), can stand more than 2.1 m (7 ft) tall, and might become unstable when being moved on its casters.
 - Never stand in front of the rack when it is rolling down the ramp from the pallet. Always handle the rack from both sides.
-
-  **WARNING:** To reduce the risk of personal injury or damage to the equipment, adequately stabilize the rack before extending a component outside the rack. Extend only one component at a time. A rack may become unstable if more than one component is extended.
-
-  **WARNING:** When installing a server in a telco rack, be sure that the rack frame is adequately secured at the top and bottom to the building structure.
-

Preparation procedures

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

- Access the product front panel ("[Remove the security bezel \(optional\)](#)" on page 27).
- Power down the server (on page 27).

If you must remove a server from a rack or a non-hot-plug component from a server, power down the server.
- Extend the server from the rack (on page 28).

If you are performing service procedures in an HP, Compaq branded, Telco, or third-party rack cabinet, you can use the locking feature of the rack rails to support the server and gain access to internal components.

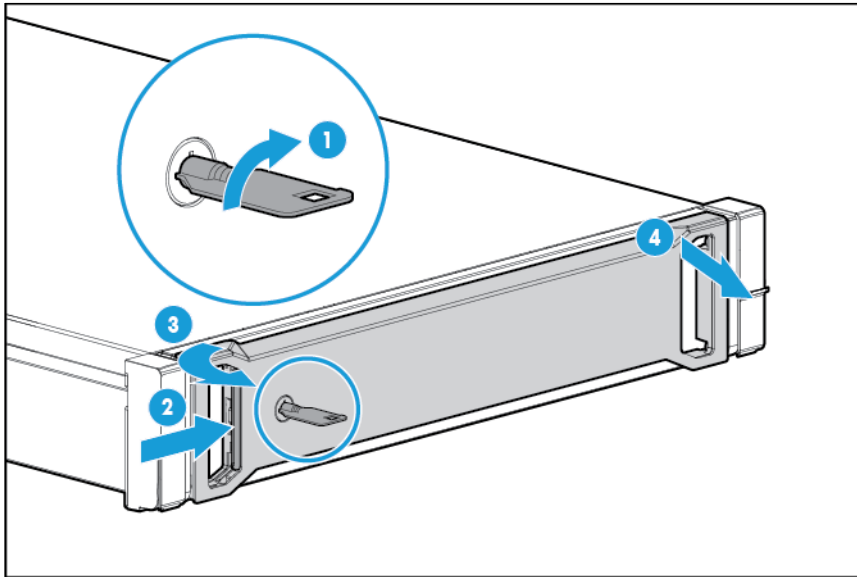
For more information about Telco rack solutions, see the RackSolutions website (<http://www.racksolutions.com/hp-dl180-g9-rails.html>).
- Access the product rear panel (on page 30).
- Remove the server from the rack (on page 30).

If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack.

- Remove the PCI riser cages (on page 31).
- Remove the air baffle (on page 32).
- Remove the fan cage (on page 33).

Remove the security bezel (optional)

To access the front panel components, unlock and then remove the security bezel. The security bezel is only supported in servers that are using the quick-release latch rack ears.



Power down the server

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



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

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

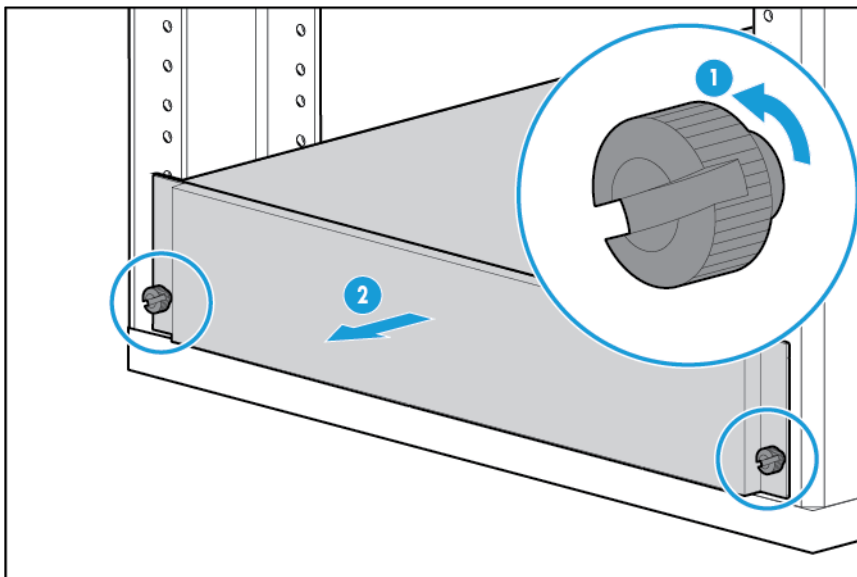
- Press and release the Power On/Standby button.
This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.
- Press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode.
This method forces the server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

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

Extend the server from the rack

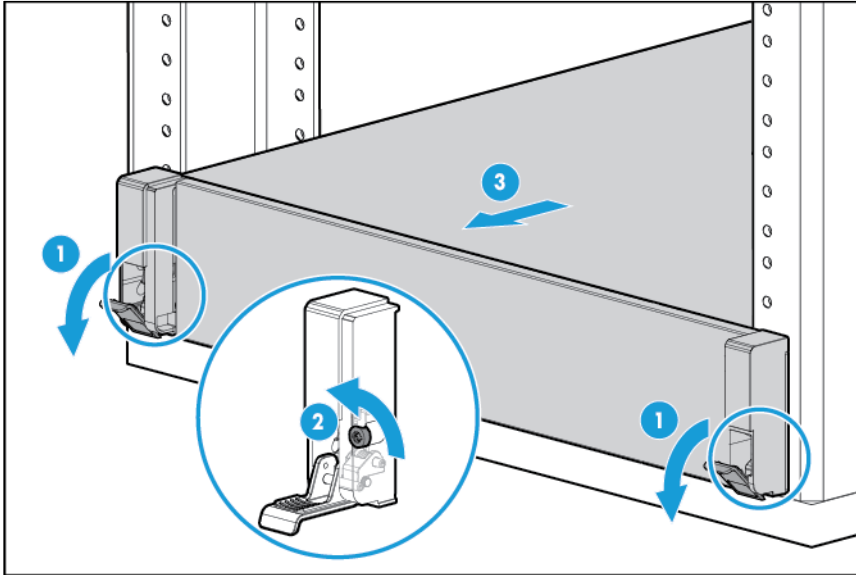
⚠ WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

1. If the rear panel cables are not secured by a cable management arm, do the following:
 - a. Power down the server (on page 27).
 - b. Disconnect all peripheral cables from the server.
 - c. Disconnect each power cord from the server.
2. In a server that uses thumbscrew rack ears, loosen the captive thumbscrews that secure the server faceplate to the front of the rack, and then slide the server out of the rack.

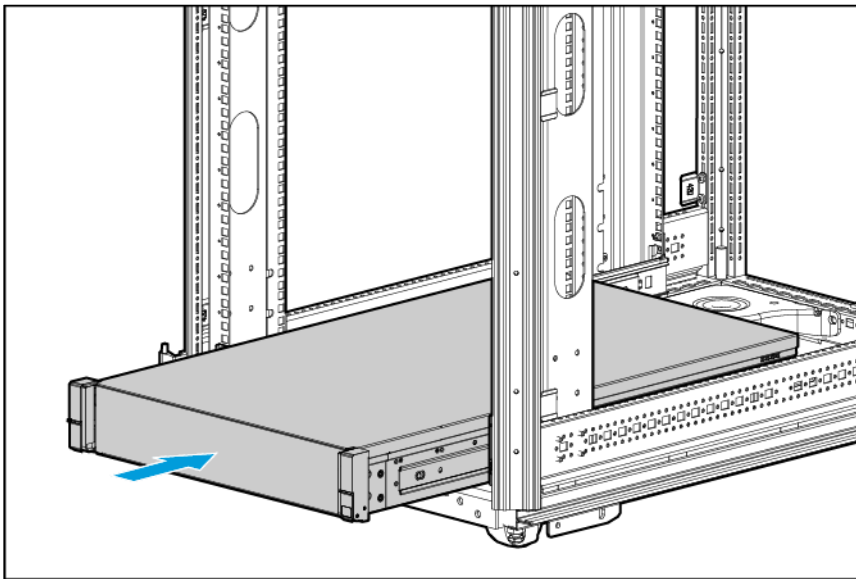


3. In a server that uses quick-release latch rack ears:
 - a. Open the latches on both sides of the server.
 - b. If necessary, use a T-25 Torx screwdriver to loosen the shipping screws.

- c. Slide the server out of the rack.



4. After performing the installation or maintenance procedure, slide the server back into the rack, and then press the server firmly into the rack to secure it in place.



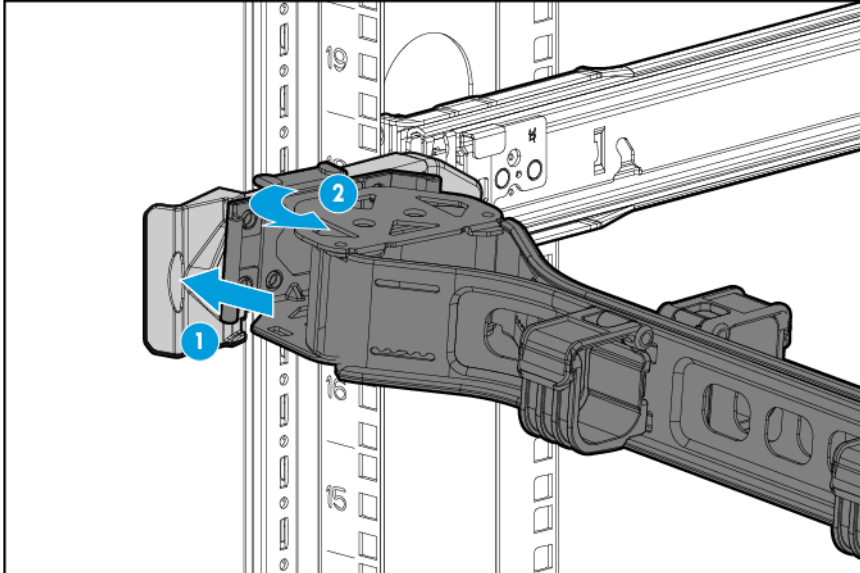
5. Do one of the following:
- o In a server that uses thumbscrew rack ears, tighten the captive thumbscrews.
 - o In a server that uses quick-release latch rack ears, if necessary, tighten the shipping screws.
6. If the rear panel cables were disconnected because a cable management arm is not in use, do the following:
- a. Connect each power cord to the server.
 - b. Connect all peripheral cables to the server.
 - c. Power up the server.

Access the product rear panel

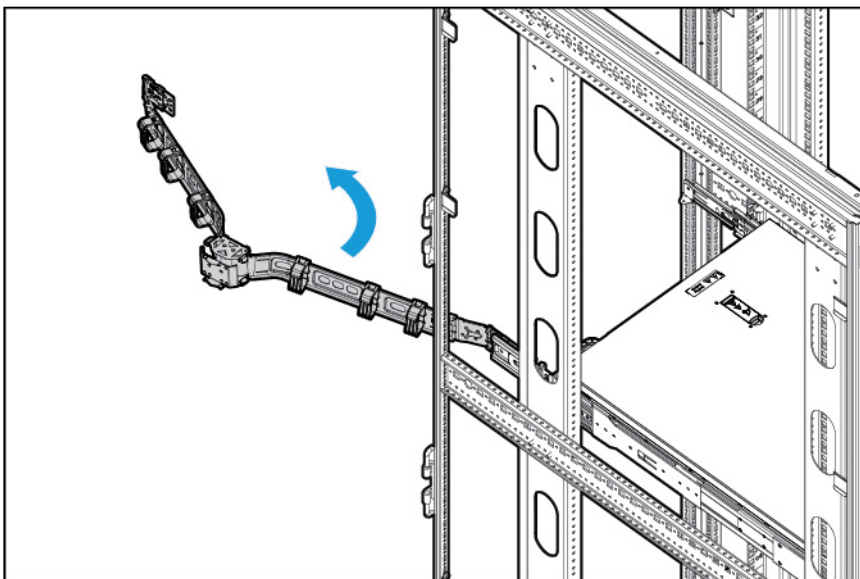
Opening the cable management arm

To access the server rear panel:

1. Release the cable management arm.



2. Open the cable management arm. The cable management arm can be right-mounted or left-mounted.



Remove the server from the rack



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

- Observe local occupational health and safety requirements and guidelines for manual material handling.
 - Get help to lift and stabilize the product during installation or removal, especially when the product is not fastened to the rails. HP recommends that a minimum of two people are required for all rack server installations. A third person may be required to help align the server if the server is installed higher than chest level.
 - Use caution when installing the server in or removing the server from the rack; it is unstable when not fastened to the rails.
-

To remove the server from an HP, Compaq-branded, Telco, or a third-party rack:

1. Power down the server (on page 27).
2. Extend the server on the rack rails until the server rail-release latches engage.
3. Disconnect all peripheral cables from the server.
4. Disconnect each power cord from the server.
5. Remove the server from the rack.

For instructions on how to extend or remove the server from the rack, see the documentation that ships with the rack rail system.

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

Remove the PCI riser cages



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

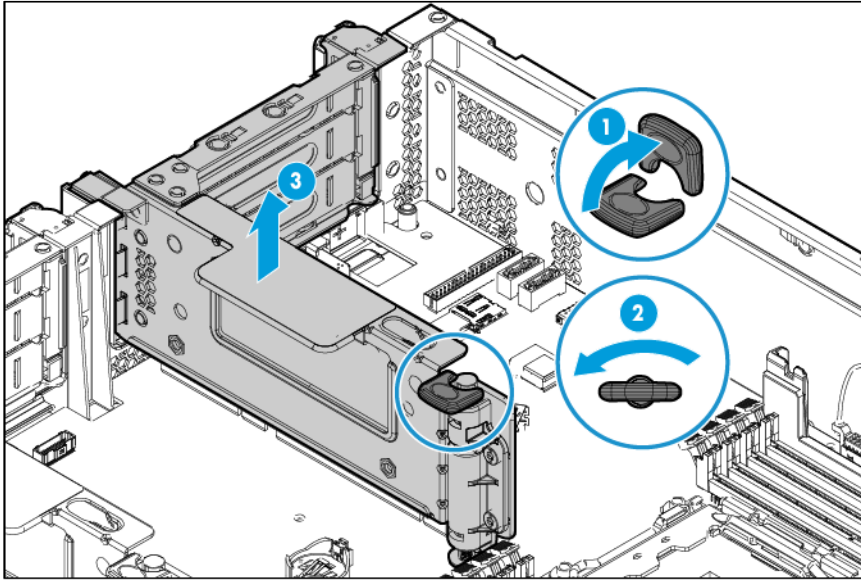


CAUTION: To prevent damage to the server or expansion boards, power down the server, and disconnect all power cords before removing or installing the PCI riser cage.

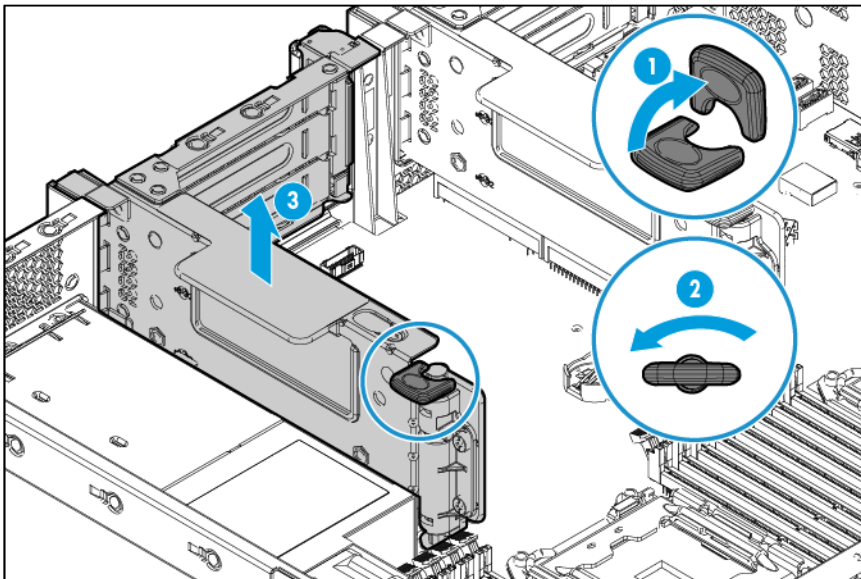
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - Extend the server from the rack (on page 28).
 - Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. If the server was just extended from the rack and expansion boards with external cabling are installed on the PCI riser cage, disconnect all cables from the expansion boards to completely remove the cage from the server.
6. Lift the release tab, and then rotate it 180° counterclockwise.
7. Grasp the PCI riser cage at the touch points and lift it out of the chassis.

- Primary PCI riser cage



- Secondary PCI riser cage



8. If expansion boards with internal cabling are installed on the PCI riser cage, disconnect all internal cables from the expansion boards to completely remove the cage from the server.

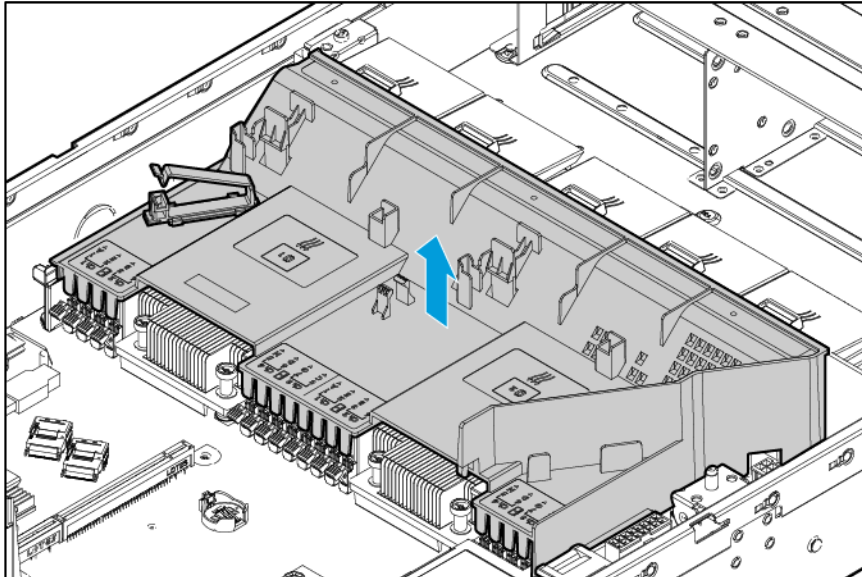
Remove the air baffle

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

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:

- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. If a full-length expansion board is installed on a PCI riser cage, remove the riser cage ("Remove the PCI riser cages" on page 31).
6. Remove the air baffle.

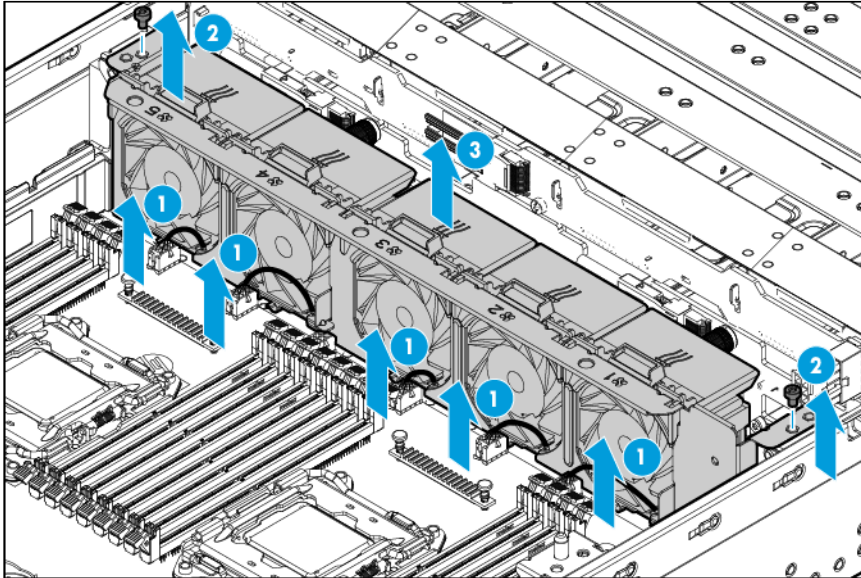


Remove the fan cage

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the air baffle (on page 32).
6. Disconnect the fan cables.

7. Remove the fan cage.

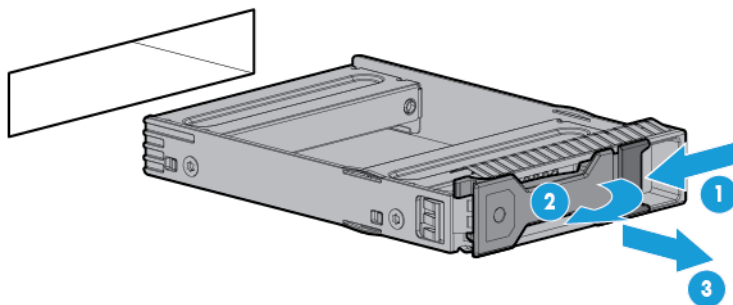


Non-hot-plug drive carrier

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

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
4. Remove the drive carrier.



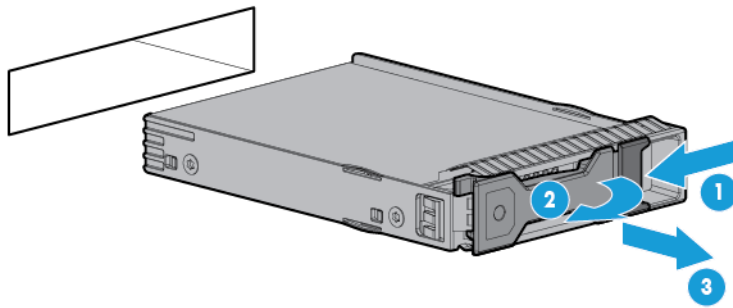
To replace the component, slide the component into the bay until it clicks.

Non-hot-plug drive

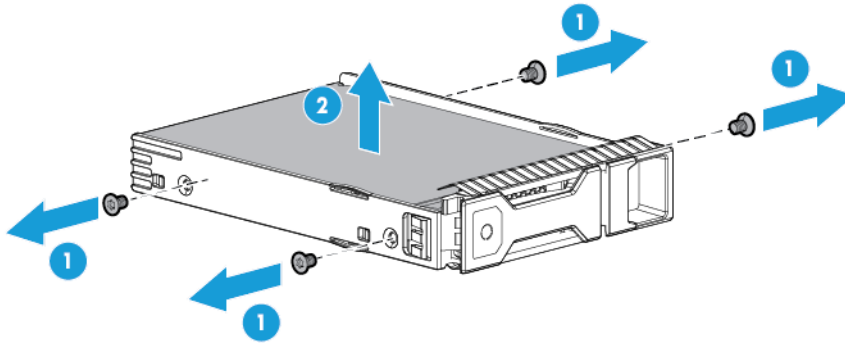
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To remove the component:

1. Back up all server data on the drive.
2. Power down the server (on page 27).
3. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
4. If installed, remove the security bezel ("Remove the security bezel (optional)" on page 27).
5. Remove the non-hot-plug drive.



6. Remove the drive from the carrier.



To replace the component, reverse the removal procedure.

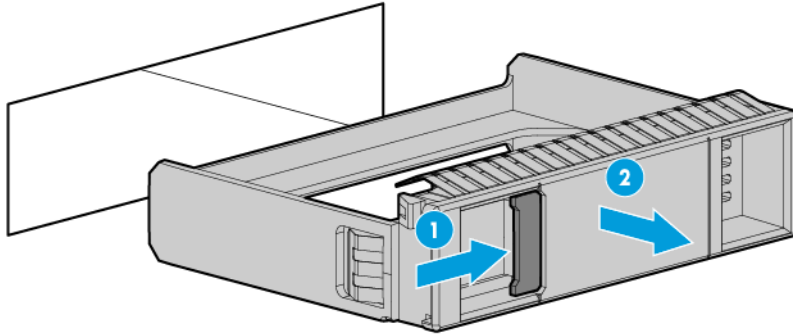
Hot-plug drive blanks

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

To remove the component:

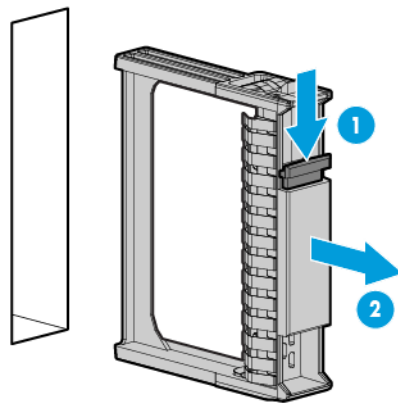
1. If installed, remove the security bezel ("Remove the security bezel (optional)" on page 27).
2. Remove the drive blank.

- Hot-plug LFF drive blank



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

- Hot-plug 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.

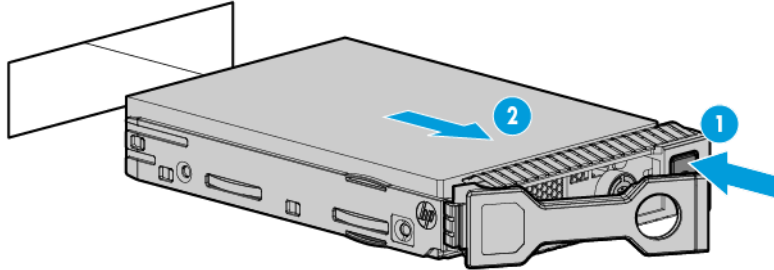
Hot-plug drive

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

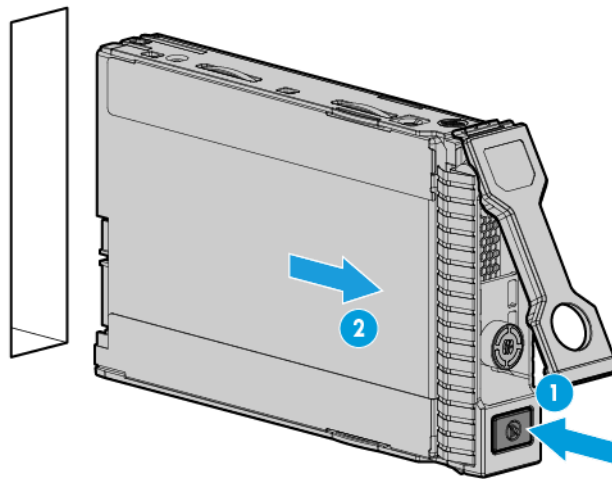
To remove the component:

1. Back up all server data on the drive.
2. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
3. Determine the status of the drive from the drive LED definitions ("[HP SmartDrive LED definitions](#)" on page 106).
4. Remove the hot-plug drive.

- Hot-plug LFF drive



- Hot-plug SFF drive



To replace the component, reverse the removal procedure.

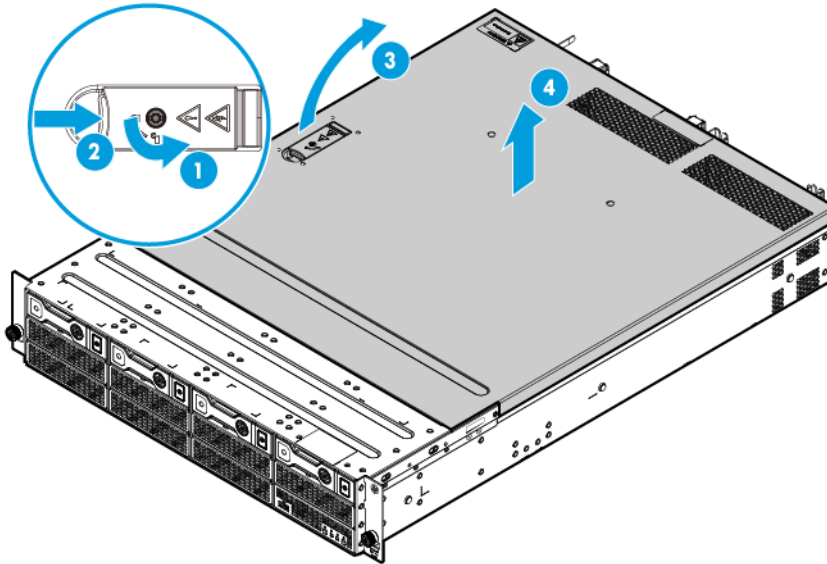
Access panel

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

To remove the component:

1. Power down the server (on page 27).
2. If you are performing a non-hot-plug procedure, remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.

3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. If the locking latch is locked, use a T-15 Torx screwdriver to unlock the latch.
5. Open the locking latch.
The access panel slides back, releasing it from the chassis.
6. Lift and remove the access panel.



To replace the component, reverse the removal procedure.

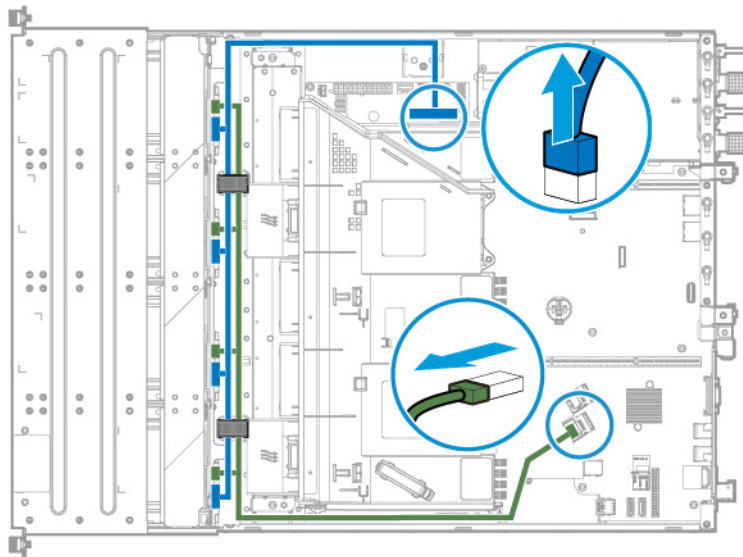
4-bay and 8-bay LFF non-hot-plug drive cable assemblies

-
- 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.
-

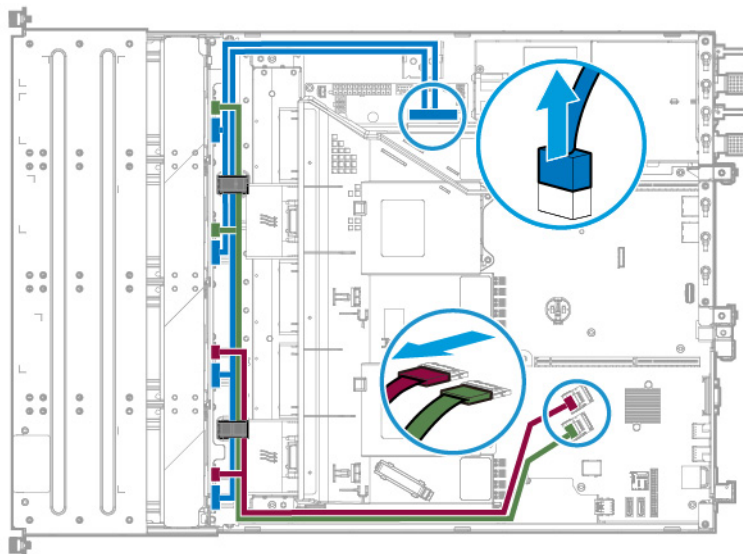
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. If installed, remove the security bezel ("Remove the security bezel (optional)" on page 27).
4. Remove all drives ("Non-hot-plug drive" on page 34) and drive carriers ("Non-hot-plug drive carrier" on page 34).

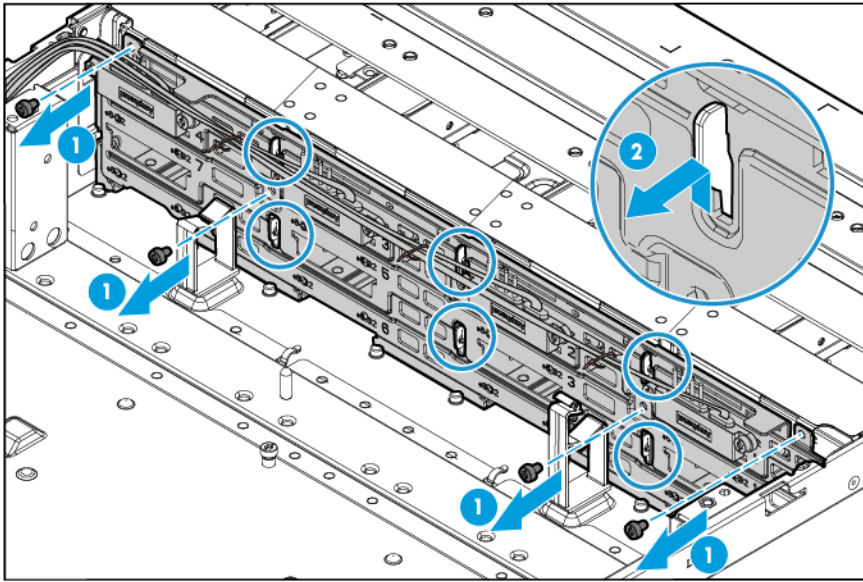
5. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
6. Remove the access panel ("Access panel" on page 37).
7. If an expansion board is installed in the primary PCI riser cage, then remove the PCI riser cage ("Remove the PCI riser cages" on page 31).
8. Remove the air baffle (on page 32).
9. Remove the fan cage (on page 33).
10. Prepare the non-hot-plug drive cable assembly for removal:
 - a. Disconnect the Mini-SAS and drive power cables from the system board.
 - b. Release the Mini-SAS and drive power cables from the front chassis cable clips.
 - 4-bay LFF non-hot-plug drive cable disconnections



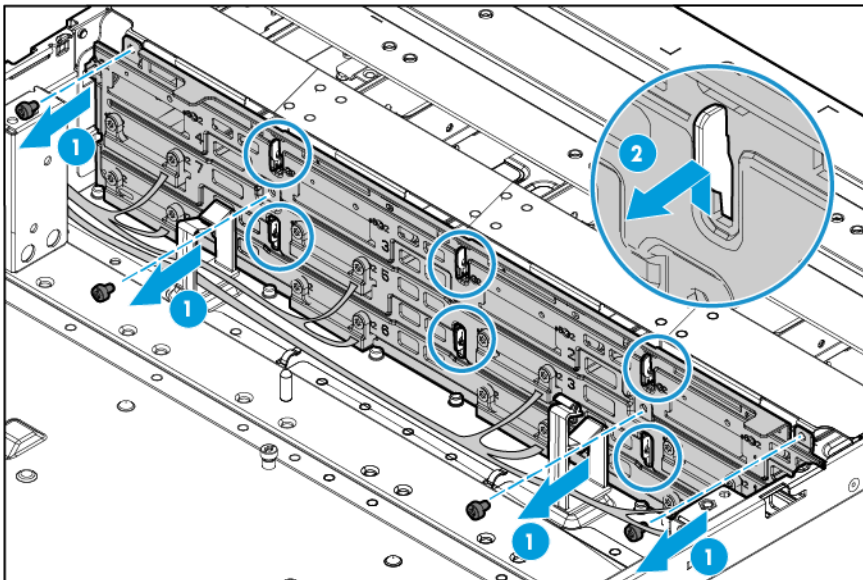
— 8-bay LFF non-hot-plug drive cable disconnections



11. Remove the non-hot-plug drive cable assembly.
 - o 4-bay LFF non-hot-plug drive cable assembly removal



- o 8-bay LFF non-hot-plug drive cable assembly removal



To replace the component, reverse the removal procedure.

4-bay and 8-bay LFF hot-plug drive backplanes

This procedure shows the removal of the 4-bay and 8-bay LFF drive backplanes from a 12-bay LFF hot-plug drive configuration.

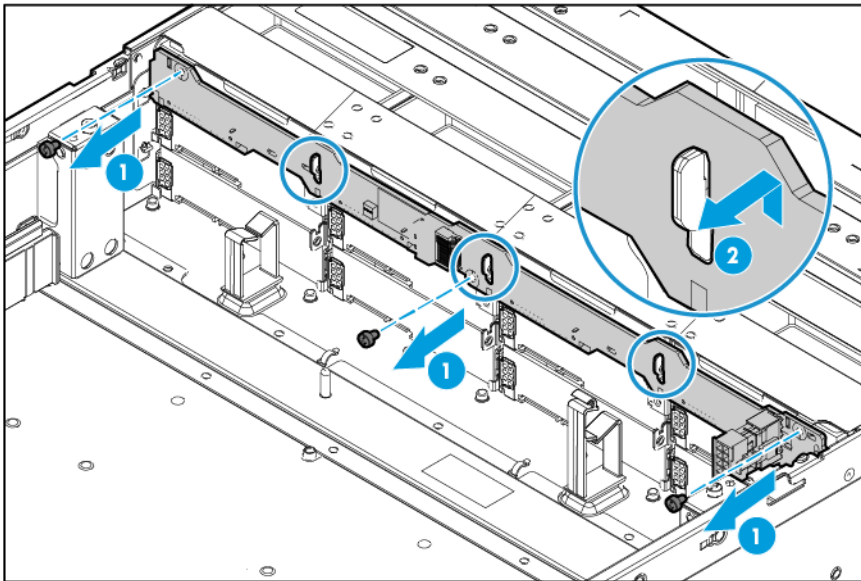
⚠ WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.



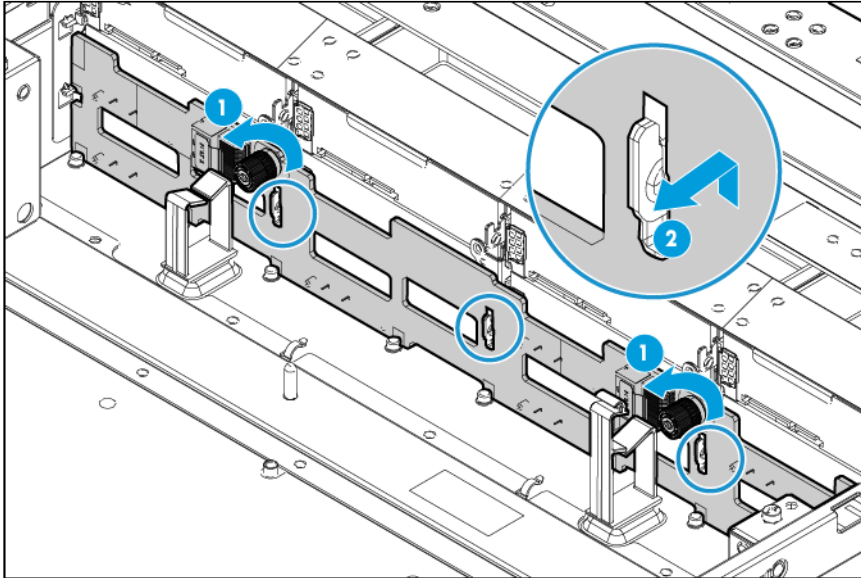
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
4. Remove all drives ("[Hot-plug drive](#)" on page 36).
5. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
6. Remove the access panel ("[Access panel](#)" on page 37).
7. Remove the air baffle (on page 32).
8. Remove the fan cage (on page 33).
9. Disconnect all cables from the drive backplane.
10. Remove the drive backplane.
 - o 4-bay LFF hot-plug drive backplane removal



- 8-bay LFF hot-plug drive backplane removal



To replace the component, reverse the removal procedure.

8-bay SFF hot-plug drive backplane

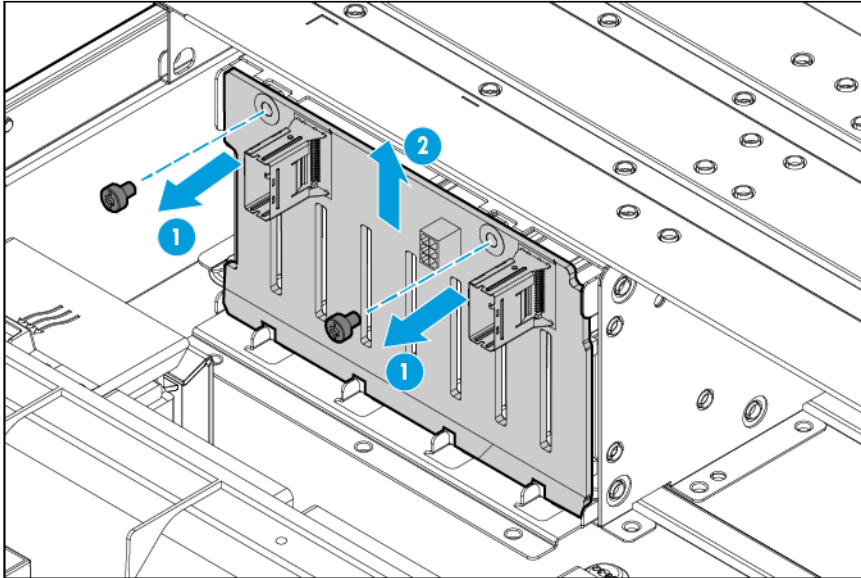
⚠ WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

⚠ 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.

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
4. Remove all drives ("[Hot-plug drive](#)" on page 36).
5. Do one of the following:
 - Extend the server from the rack (on page 28).
 - Remove the server from the rack (on page 30).
6. Remove the access panel ("[Access panel](#)" on page 37).
7. Disconnect all cables from the drive backplane.

8. Remove the drive backplane.



To replace the component, reverse the removal procedure.

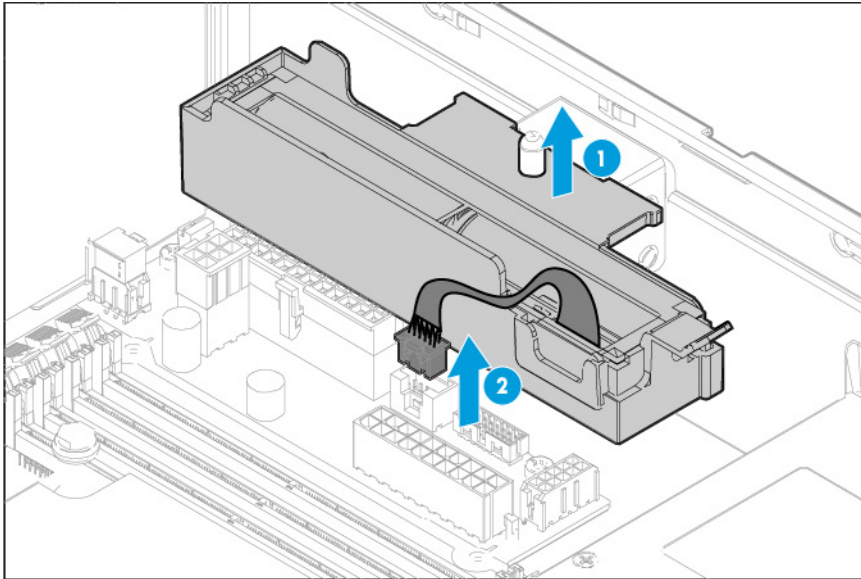
HP Smart Storage Battery

-
- ⚠ 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.
-

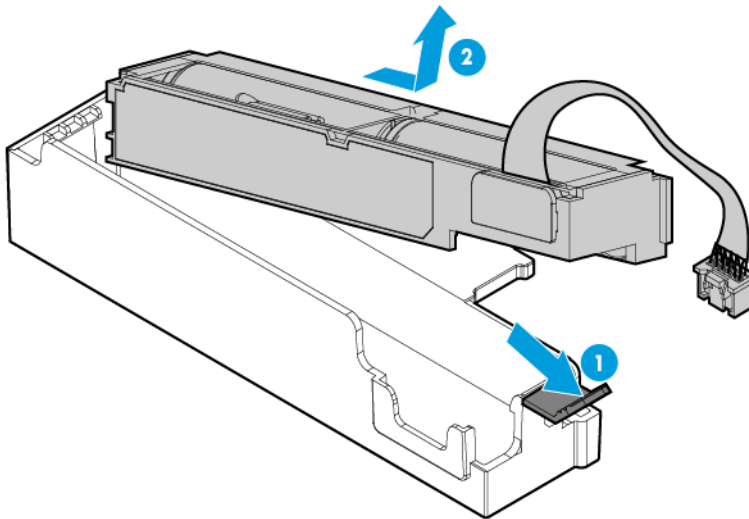
To remove the component:

1. Power down the server (on page [27](#)).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page [28](#)).
 - o Remove the server from the rack (on page [30](#)).
4. Remove the access panel ("[Access panel](#)" on page [37](#)).

5. Slightly pull up the battery holder from the chassis to access the battery cable connection underneath it, and then disconnect the HP Smart Storage Battery cable.



6. Remove the HP Smart Storage Battery from its holder.



To replace the component, reverse the removal procedure.

FBWC module

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

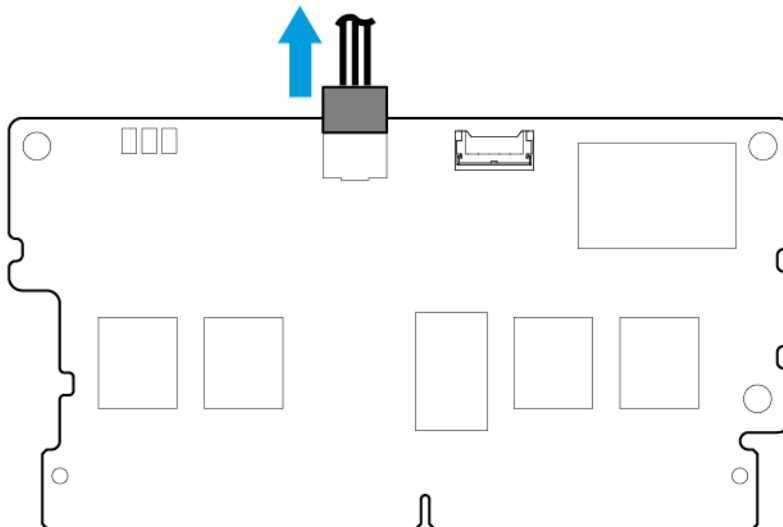
⚠ CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

To remove the component:

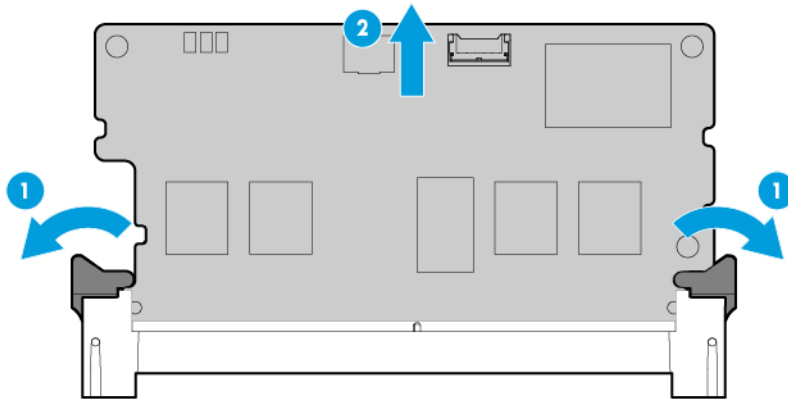
1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).

⚠ CAUTION: When connecting or disconnecting the cache module cable, the connectors on the cache module and cable are susceptible to damage. Avoid excessive force and use caution to avoid damage to these connectors.

5. If necessary for easier access to the cache module connector and/or removal of an air scoop, remove the storage controller from the PCI riser cage or from the system board ("Expansion board" on page 59).
6. If the cache module is covered by an air scoop, remove the air scoop.
7. Disconnect the cache module backup power cable from the cache module.



8. Remove the cache module.



To replace the component, reverse the removal procedure.

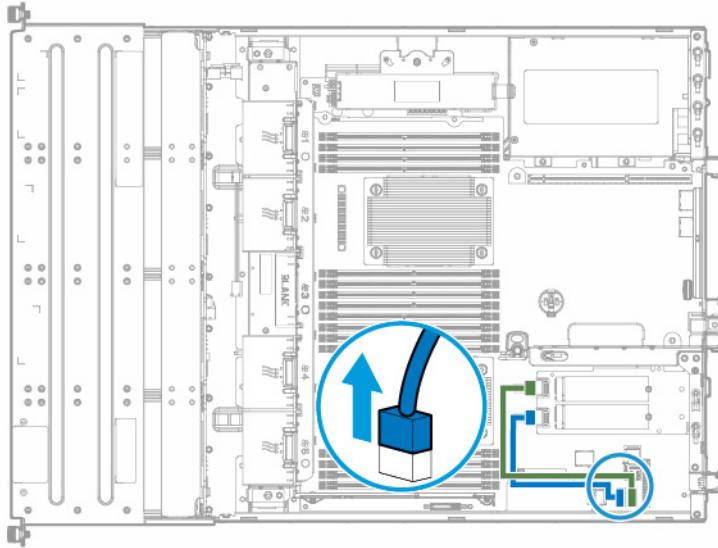
M.2 SSD enablement kit

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP website (<http://www.hp.com/go/qs>).

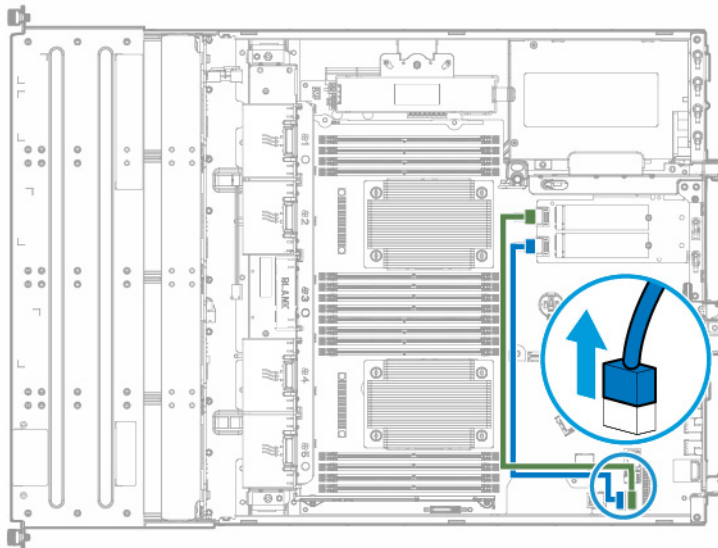
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Disconnect the SATA cables from the system board.

- Disconnecting the SATA cables from the system board when the M.2 SSD enablement board is installed in the primary PCI riser cage

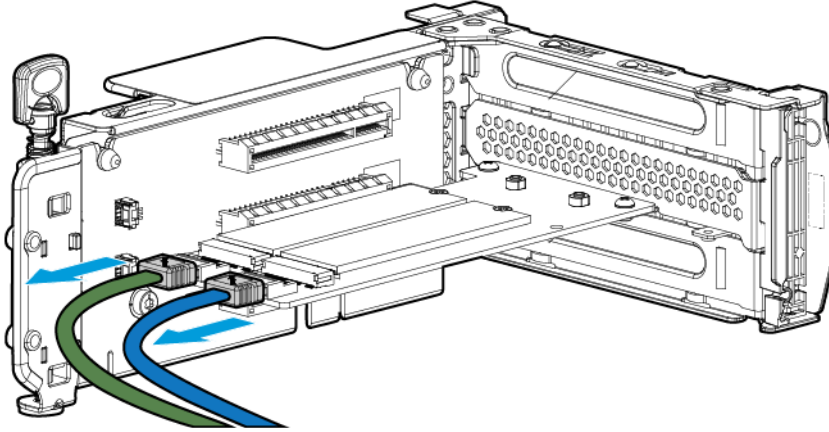


- Disconnecting the SATA cables from the system board when the M.2 SSD enablement board is installed in the secondary PCI riser cage

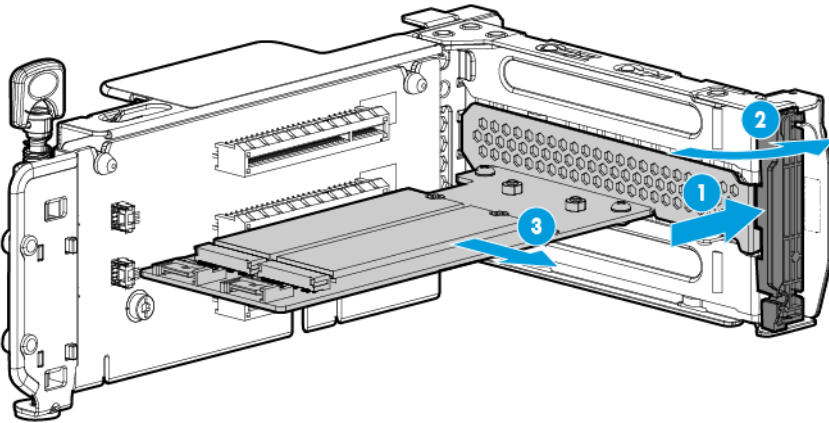


6. Remove the PCI riser cage ("[Remove the PCI riser cages](#)" on page 31).

7. Disconnect the SATA cables from the M.2 SSD enablement board.



8. Remove the M.2 SSD enablement board.



To replace the component, reverse the removal procedure.

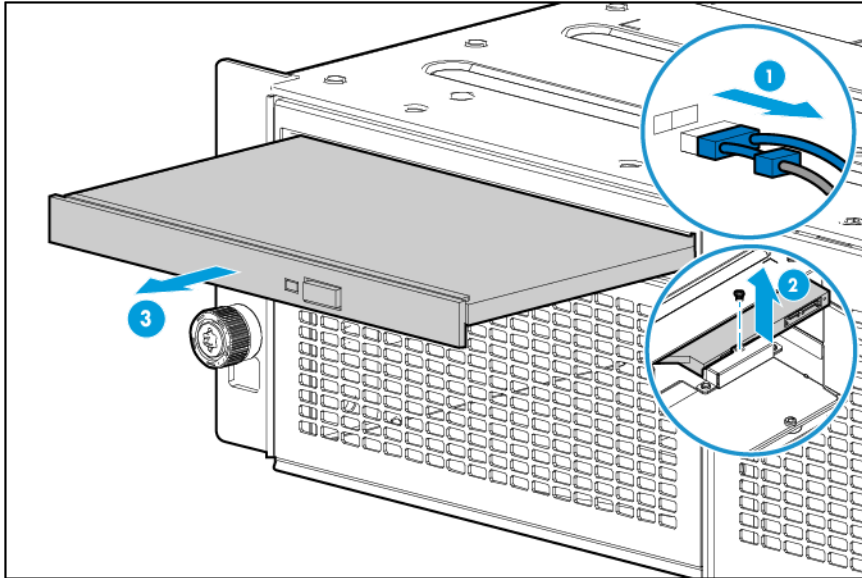
Optical drive

-
- ⚠ **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 chassis unless all bays are populated with a component or a blank.
-

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.

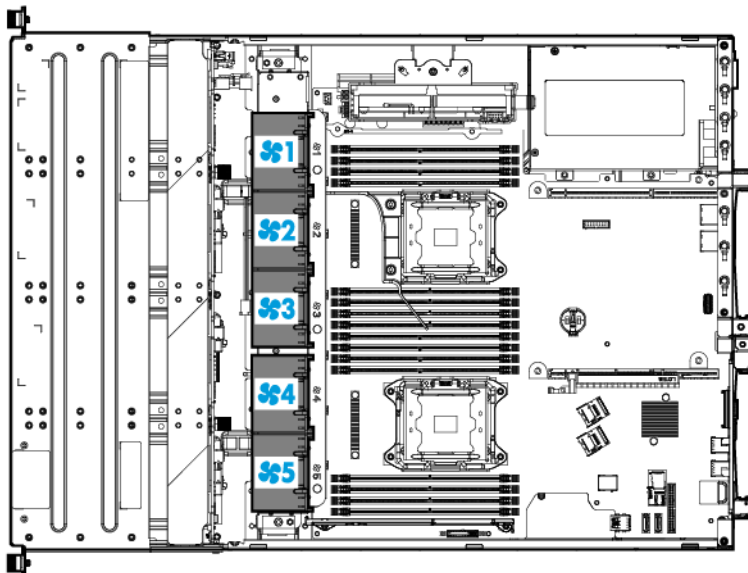
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
5. Remove the access panel ("[Access panel](#)" on page 37).
6. Disconnect the optical drive cable from the drive.
7. Remove the optical drive.



To replace the component, reverse the removal procedure.

Fan and fan blank

Fan population guidelines



Configuration	Fan bay 1	Fan bay 2	Fan bay 3	Fan bay 4	Fan bay 5
One processor, non-redundant	Blank	Fan	Blank	Blank	Fan
One processor, redundant	Blank	Fan	Fan	Fan	Fan
Two processors, non-redundant	Fan	Fan	Blank	Fan	Fan
Two processors, redundant	Fan	Fan	Fan	Fan	Fan

- In a redundant fan mode:
 - If one fan fails, the system continues to operate without redundancy. This condition is indicated by a flashing amber Health LED.
 - If two fans fail, the system shuts down.
- The minimum fan requirement to make this server bootable is:
 - Two fans (fans 2 and 5) for a single processor configuration
 - Four fans (fans 1, 2, 4, and 5) for dual processor configuration

Fan blank



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.

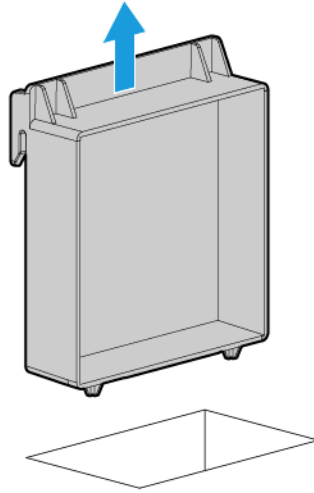


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To remove the component:

1. If a full-length expansion board is installed in the server, do the following:
 - a. Power down the server (on page 27).
 - b. Disconnect each power cord from the power source.
 - c. Disconnect each power cord from the server.
2. Do one of the following:
 - Extend the server from the rack (on page 28).
 - Remove the server from the rack (on page 30).
3. Remove the access panel ("Access panel" on page 37).
4. Remove the air baffle (on page 32).

5. Remove the fan blank.



To replace the component, reverse the removal procedure.

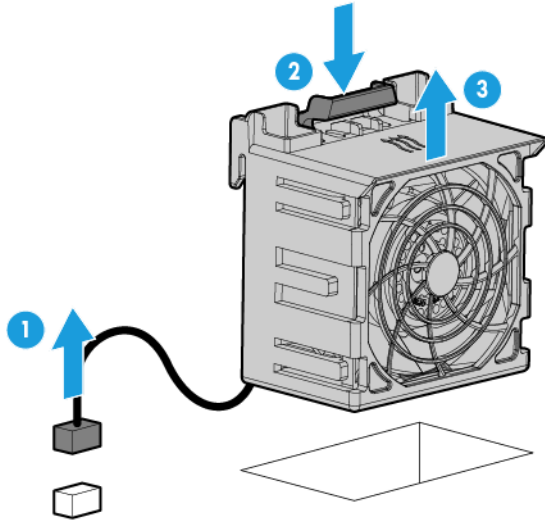
Hot-swap fan

-
- ⚠ **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 server unless all bays are populated with either a component or a blank.
-

To remove the component:

1. If a full-length expansion board is installed in the server, do the following:
 - a. Power down the server (on page 27).
 - b. Disconnect each power cord from the power source.
 - c. Disconnect each power cord from the server.
2. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
3. Remove the access panel ("Access panel" on page 37).
4. Remove the air baffle (on page 32).
5. Disconnect the fan cable.

6. Remove the fan.



To replace the component, reverse the removal procedure.

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.

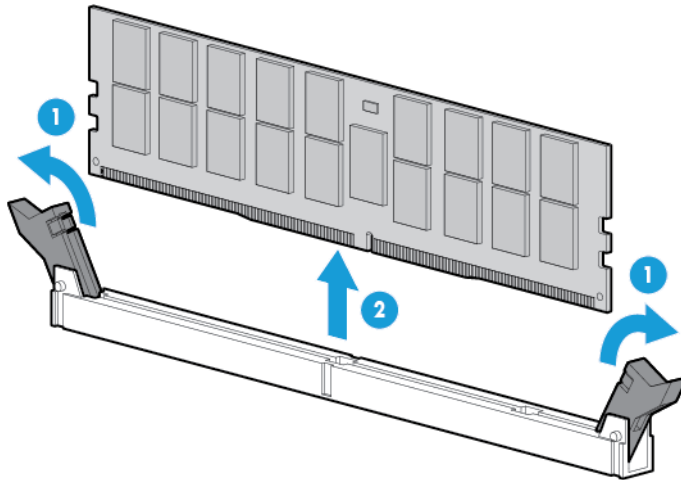


CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the air baffle (on page 32).
6. Open the DIMM slot latches.

7. Remove the DIMM.



To replace the component, reverse the removal procedure.

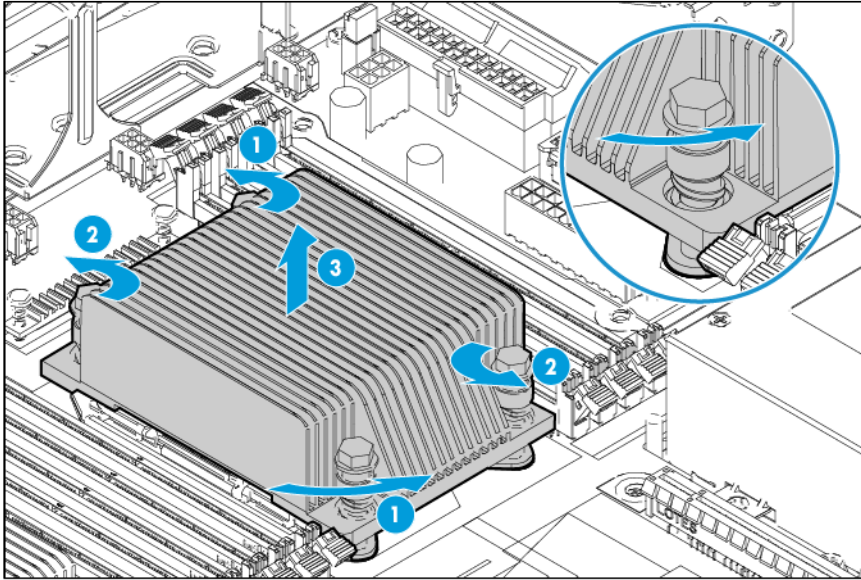
Heatsink

-
- 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.
-

To remove the component:

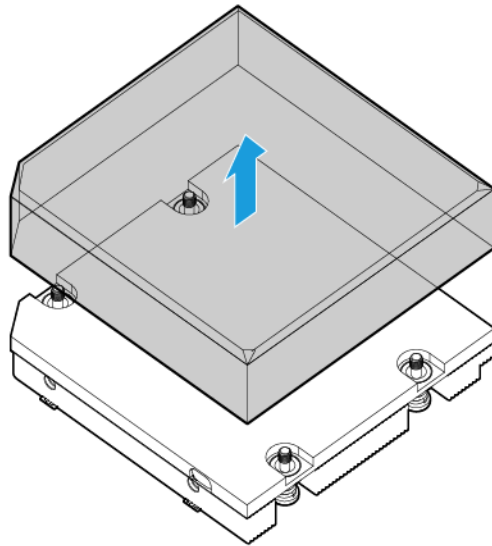
1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the air baffle (on page 32).
6. Remove the heatsink:
 - a. Loosen one pair of diagonally opposite screws halfway, and then loosen the other pair of screws.
 - b. Completely loosen all screws in the same sequence.

- c. Remove the heatsink from the processor backplate.



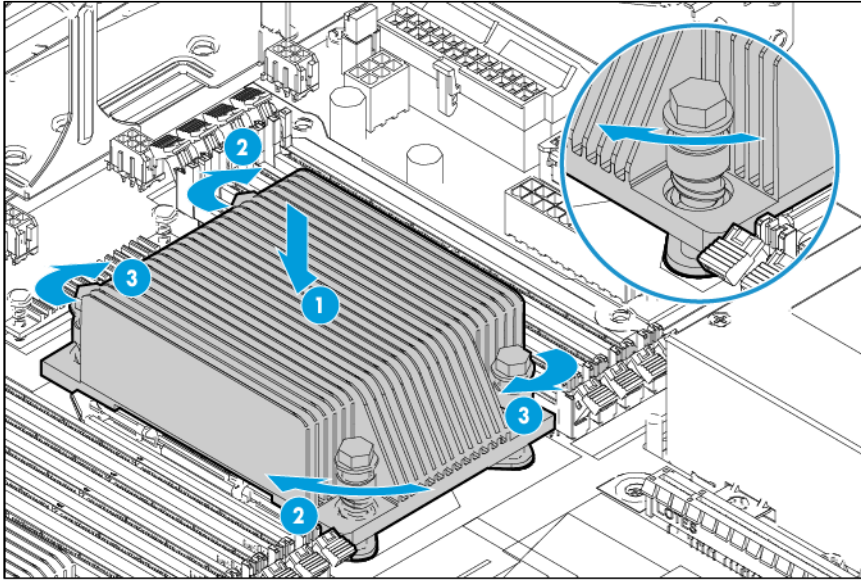
To replace the component:

1. Clean the old thermal grease from the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.
2. Remove the thermal interface protective cover from the heatsink.



3. Install the heatsink:
 - a. Position the heatsink on the processor backplate.
 - b. Tighten one pair of diagonally opposite screws halfway, and then tighten the other pair of screws.

- c. Finish the installation by completely tightening the screws in the same sequence.



4. Install the air baffle.
5. Install the access panel.
6. Do one of the following:
 - o Slide the server into the rack.
 - o Install the server into the rack.
7. Connect each power cord to the server.
8. Connect each power cord to the power source.
9. Press the Power On/Standby button.

The server exits standby mode and applies full power to the system. The system power LED changes from amber to green.

Processor

-
- ⚠ 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 avoid damage to the processor and system board, only authorized personnel should attempt to replace or install the processor in this server.
-
- ⚠ CAUTION:** To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.
-
- ⚠ CAUTION:** To prevent possible server overheating, always populate processor socket 2 with a processor and a heatsink or a processor socket cover and a heatsink blank.
-

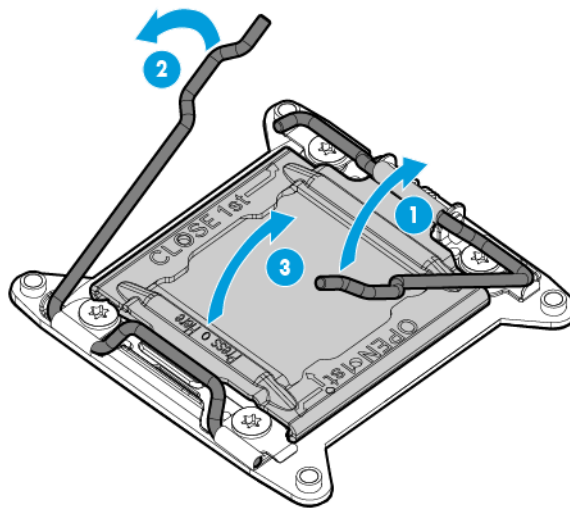
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

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

IMPORTANT: Processor socket 1 must be populated at all times or the server does not function.

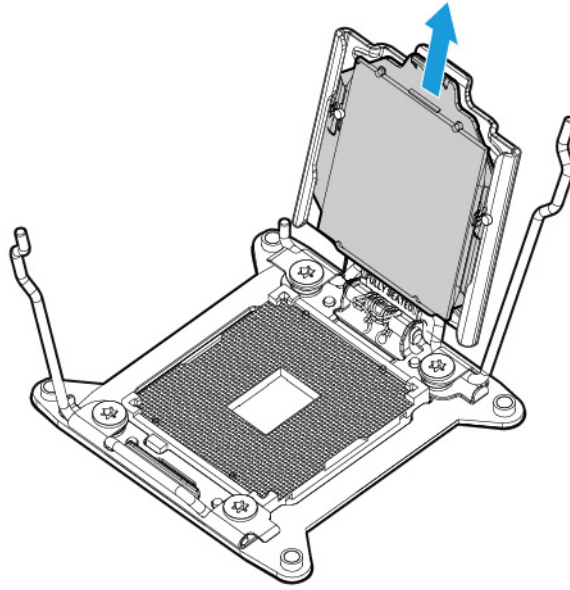
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the air baffle (on page 32).
6. Remove the heatsink ("Heatsink" on page 53).
7. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



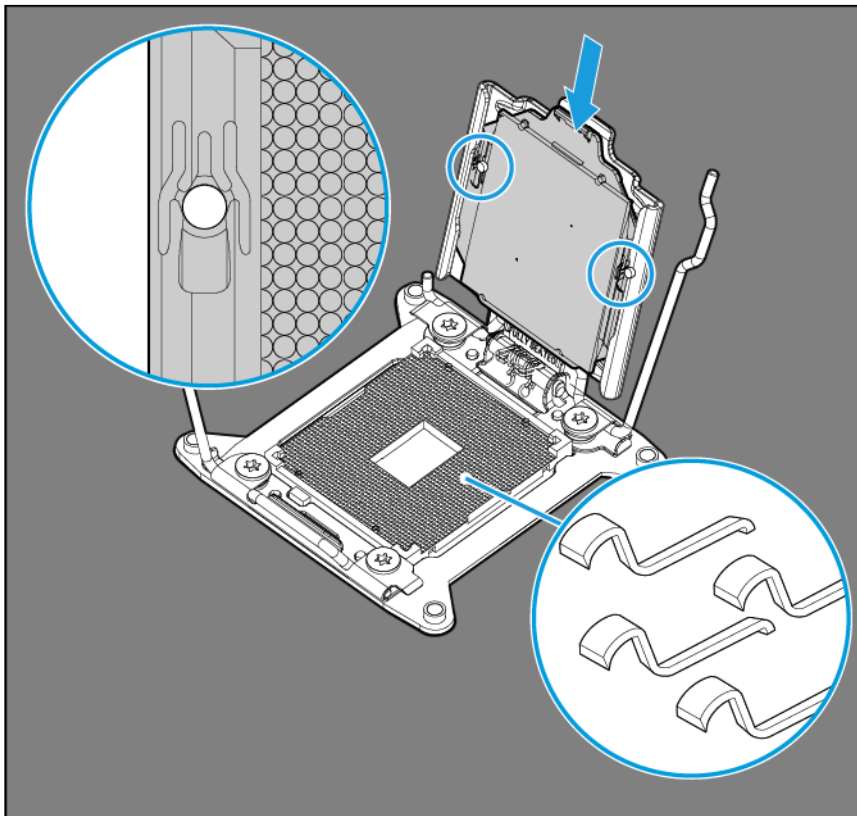
CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the system board, do not touch the processor or the processor socket contacts.

8. Remove the processor from the processor retaining bracket.



To replace the component:

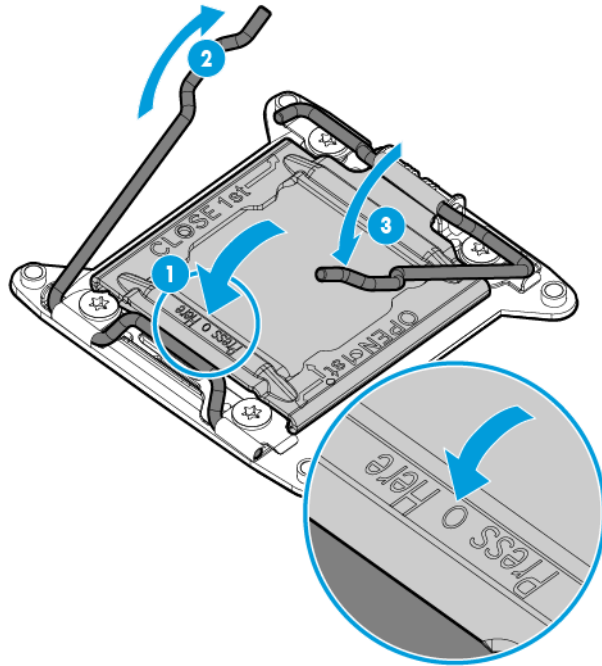
1. Install the processor. Verify that the processor is fully seated in the processor retaining bracket by visually inspecting the processor installation guides on either side of the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.**



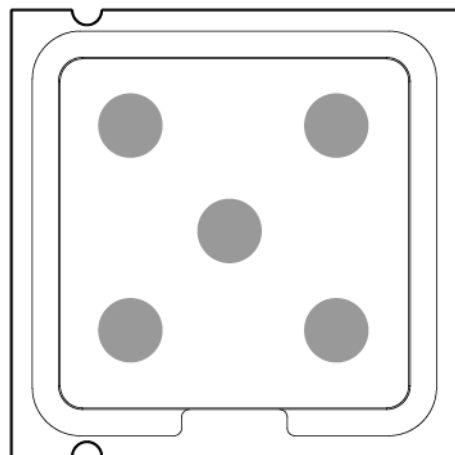
△ **CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.** To avoid damage to the system board, do not touch the processor or the processor socket contacts.

△ **CAUTION:** Do not press down on the processor. Pressing down on the processor may cause damage to the processor socket and the system board. Press only in the area indicated on the processor retaining bracket.

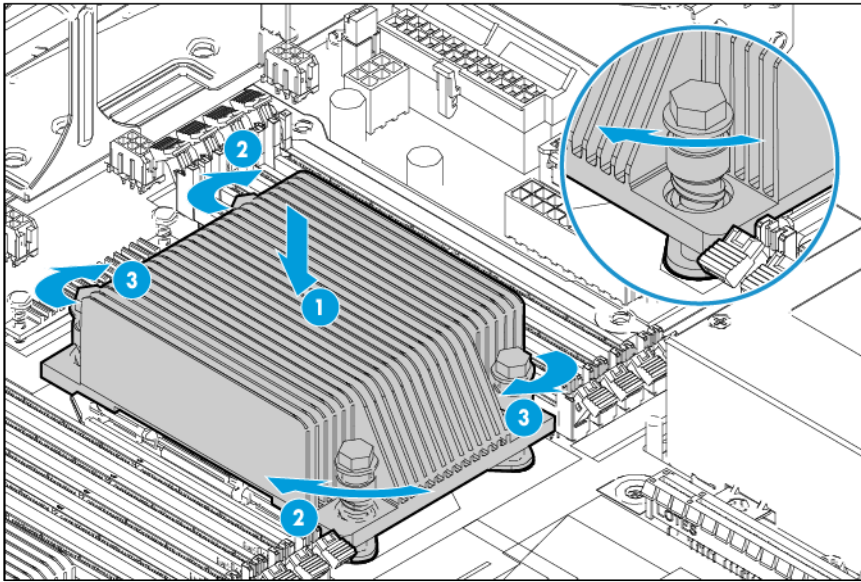
2. Close the processor retaining bracket. When the processor is installed properly inside the processor retaining bracket, the processor retaining bracket clears the flange on the front of the socket.
3. Press and hold the processor retaining bracket in place, and then close each processor locking lever. Press only in the area indicated on the processor retaining bracket.



4. Clean the old thermal grease from the heatsink with the alcohol swab. Allow the alcohol to evaporate before continuing.
5. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



6. Install the heatsink:
 - a. Position the heatsink on the processor backplate.
 - b. Tighten one pair of diagonally opposite screws halfway, and then tighten the other pair of screws.
 - c. Finish the installation by completely tightening the screws in the same sequence.



7. Install the air baffle.
8. Install the access panel.
9. Do one of the following:
 - o Slide the server into the rack.
 - o Install the server into the rack.
10. Connect each power cord to the server.
11. Connect each power cord to the power source.
12. Press the Power On/Standby button.

The server exits standby mode and applies full power to the system. The system power LED changes from amber to green.

Expansion board

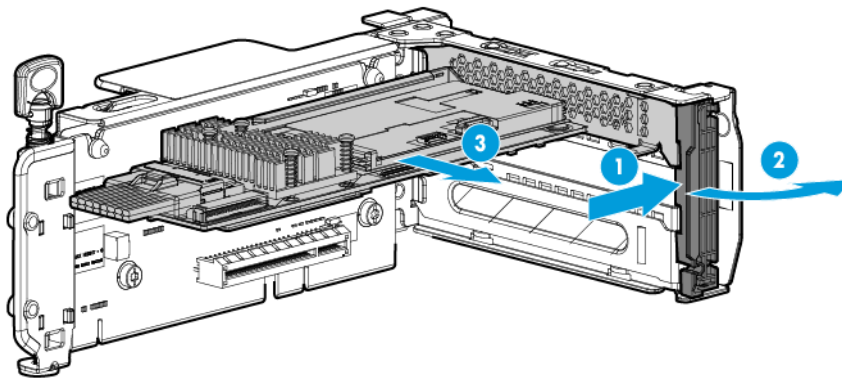
⚠ WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

⚠ 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.

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.

- b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the PCI riser cage ("Remove the PCI riser cages" on page 31).
6. Disconnect any internal cables that are connected to the expansion board.
7. If you are removing a storage controller board with a cache module installed, remove the cache module ("FBWC module" on page 44).
8. Remove the expansion board.



To replace the component, reverse the removal procedure.

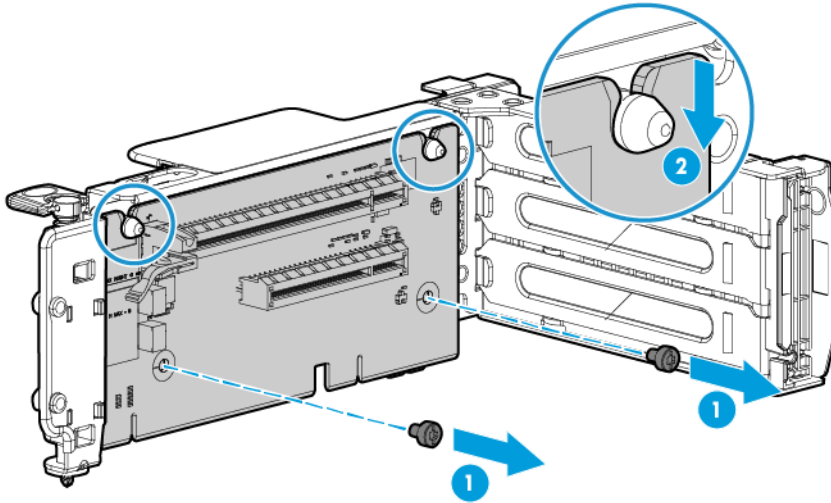
Two-slot and three-slot PCIe riser boards

-
- ⚠ 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.
-

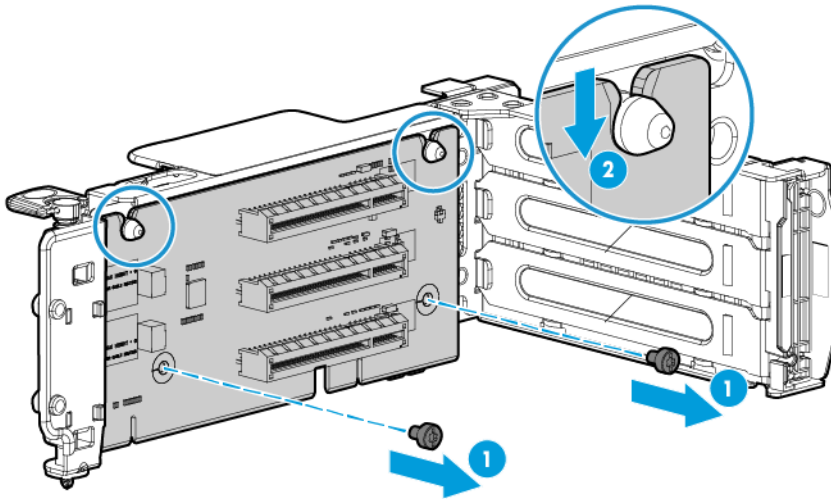
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the PCI riser cage ("Remove the PCI riser cages" on page 31).

6. If an expansion board is installed in the PCI riser cage, remove the board ("Expansion board" on page 59).
7. Remove the PCIe riser board.
 - o Two-slot PCIe riser board



- o Three-slot PCIe riser board



To replace the component, reverse the removal procedure.

FlexibleLOM riser board

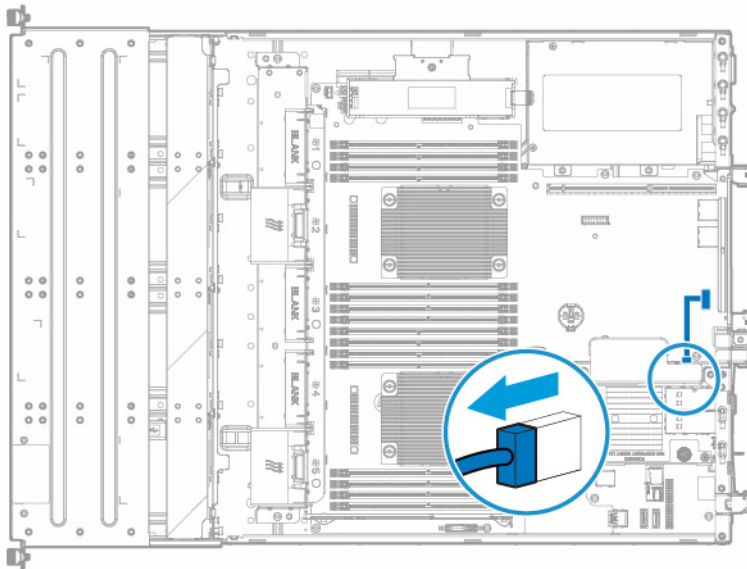


WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

⚠ 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.

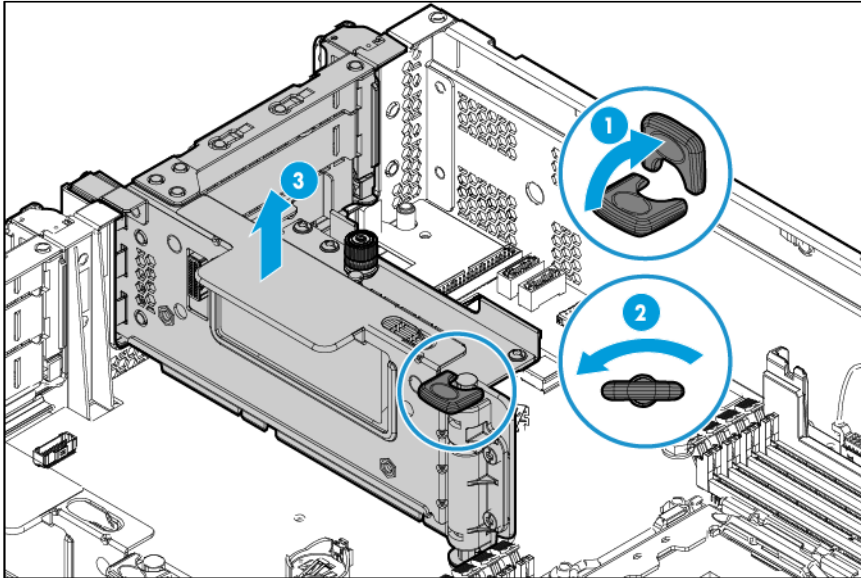
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Disconnect the FlexibleLOM sideband signal cable from the riser board.

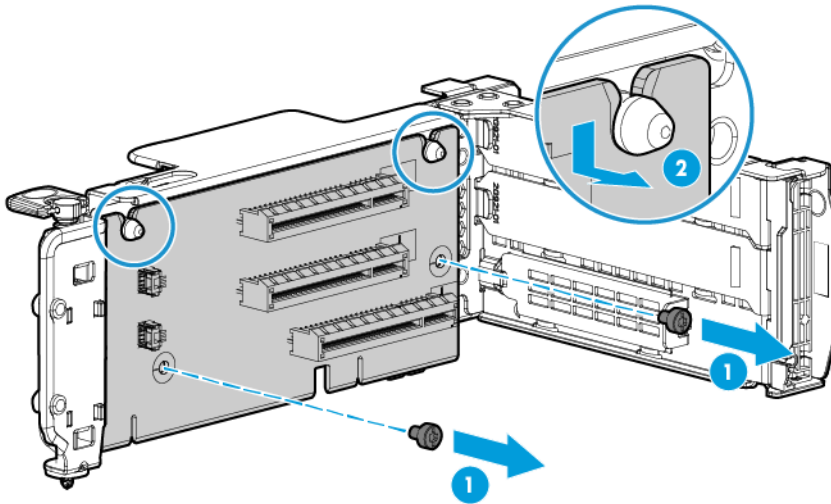


⚠ CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

6. Remove the FlexibleLOM riser cage.



7. If an expansion board is installed in the PCI riser cage, remove the board ("[Expansion board](#)" on page 59).
8. Remove the FlexibleLOM riser board.



To replace the component, reverse the removal procedure.

System battery

If the server no longer automatically displays the correct date and time, then replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

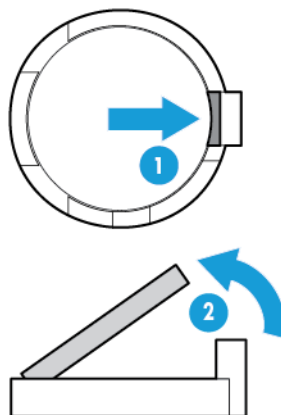


WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- 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.

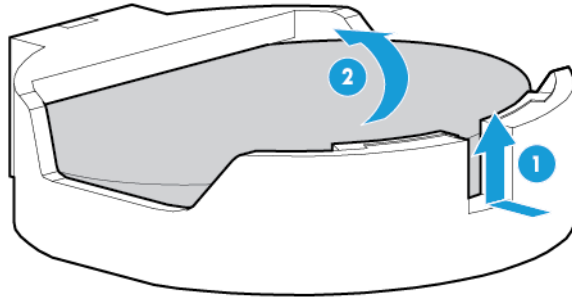
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. If there is a secondary PCI riser cage installed and an expansion board is installed on it, remove the secondary PCI riser cage ("Remove the PCI riser cages" on page 31).
6. Locate the battery on the system board ("System board components" on page 102).
7. If the system battery is secured by a metal tab, do the following:
 - a. Use your finger or a small flat-bladed, nonconductive tool to press the metal tab. This will partially release the battery from the socket.
 - b. Remove the battery.



8. If the system battery is secured by a plastic outer lip, do the following:
 - a. Use a small flat-bladed, nonconductive tool to carefully lift the front of the battery from the socket.

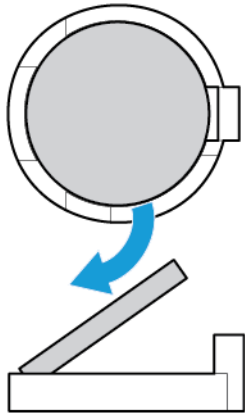
- b. Remove the battery.



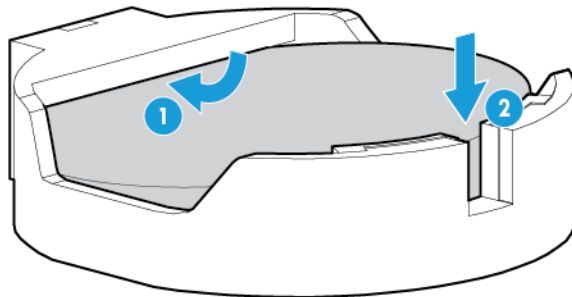
IMPORTANT: Replacing the system board battery resets the system ROM to its default configuration. After replacing the battery, use BIOS/Platform Configuration (RBSU) in the UEFI System Utilities ("HP UEFI System Utilities" on page 90) to reconfigure the system.

To install the component:

1. If the battery socket design uses a metal tab to secure the battery, insert the battery with the "+" side facing up on the socket, and then press the battery down to secure it in place.



2. If the battery socket design has a plastic outer lip to secure the battery, insert the battery with the "+" side facing up underneath the outer lip of the socket, and then press the battery down to secure it in place.



3. If removed, install the secondary PCI riser cage.

4. Install the access panel.
5. Do one of the following:
 - o Slide the server into the rack.
 - o Install the server into the rack.
6. Power up the server.

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

Dedicated iLO management module



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

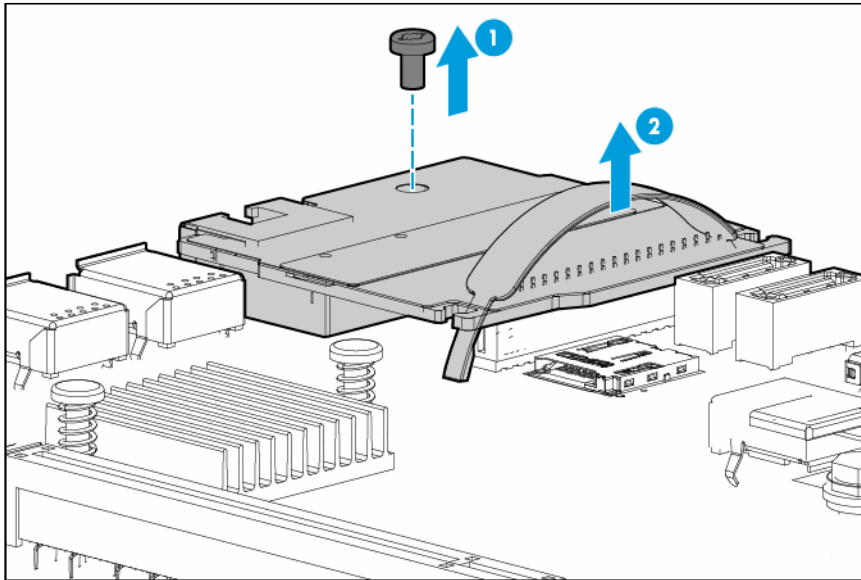


CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

To remove the component:

1. Power down the server (on page [27](#)).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page [28](#)).
 - o Remove the server from the rack (on page [30](#)).
4. Remove the access panel ("[Access panel](#)" on page [37](#)).
5. If an expansion board is installed in the primary PCI riser cage, then remove the PCI riser cage ("[Remove the PCI riser cages](#)" on page [31](#)).

6. Remove the dedicated iLO management module.



To replace the component, reverse the removal procedure. After installing the new dedicated iLO management module, enable the dedicated iLO connector ("[Enabling the dedicated iLO management module](#)" on page 67).

Enabling the dedicated iLO management module

The onboard NIC 1/shared iLO connector is set as the default system iLO connector. To enable the dedicated iLO management module, use the iLO 4 Configuration Utility accessible within the HP UEFI System Utilities.

For more information on the HP UEFI System Utilities, see the UEFI documentation on the HP website (<http://www.hp.com/go/ProLiantUEFI/docs>).



IMPORTANT: If the iLO configuration settings are reset to the default values, remote access to the machine will be lost. Access the physical machine and repeat the procedure described in this section to re-enable the dedicated iLO management connector.

To enable the dedicated iLO management module:

1. During the server startup sequence after installing the module, press **F9** in the POST screen.
The System Utilities screen appears.
2. Select **System Configuration | iLO 4 Configuration Utility**.
The iLO 4 Configuration Utility screen appears.
3. Select **Network Options**, and then press **Enter**.
The Network Options screen appears.
4. Set the **Network Interface Adapter** field to **ON**, and then press **Enter**.
5. Press **F10** to save your changes.
A message prompt to confirm the iLO settings reset appears.
6. Press **Enter** to reboot the iLO settings.
7. Press **Esc** until the main menu is displayed.

8. Select **Reboot the System** to exit the utility and resume the boot process.

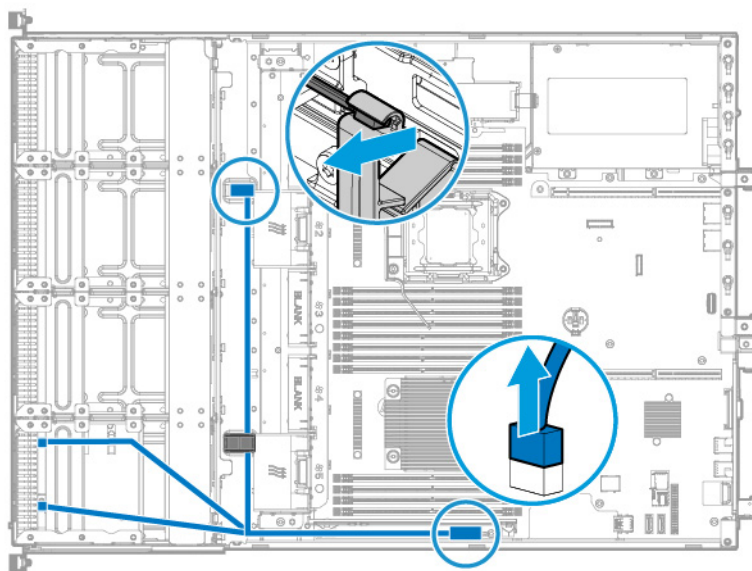
The IP address of the enabled dedicated iLO connector appears on the POST screen on the subsequent boot-up. Access the Network Options screen again to view this IP address for later reference.

Front I/O assemblies for LFF and SFF chassis using thumbscrew rack ears

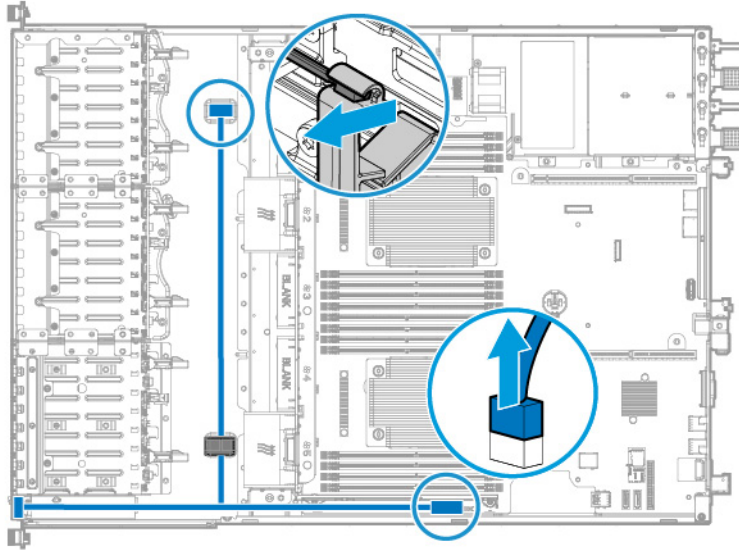
CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
5. Remove the access panel ("[Access panel](#)" on page 37).
6. Release the front I/O cabling from the server:
 - a. Detach the ambient thermal sensor cable from its clip.
 - b. Release the ambient thermal sensor cable from the front chassis cable clip.
 - c. Disconnect the front I/O assembly cable.
 - Front I/O cabling disconnection in an LFF chassis

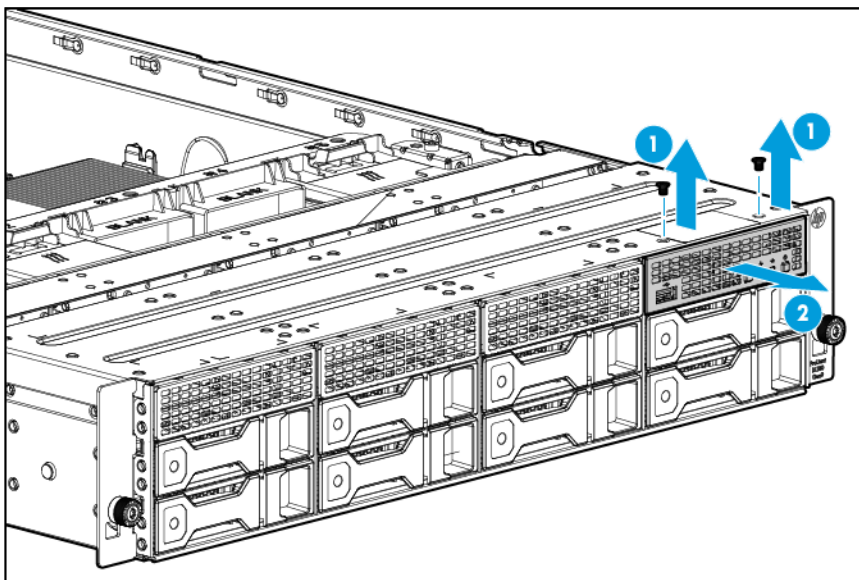


— Front I/O cabling disconnection in an SFF chassis

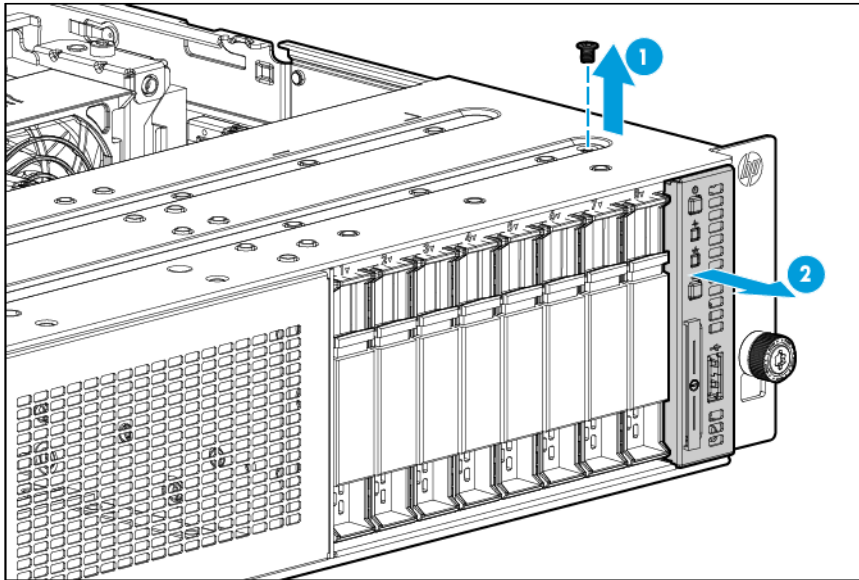


7. Remove the front I/O assembly from the chassis:

- Front I/O assembly removal in an LFF chassis



- Front I/O assembly removal in an SFF chassis



To replace the component, reverse the removal procedure.

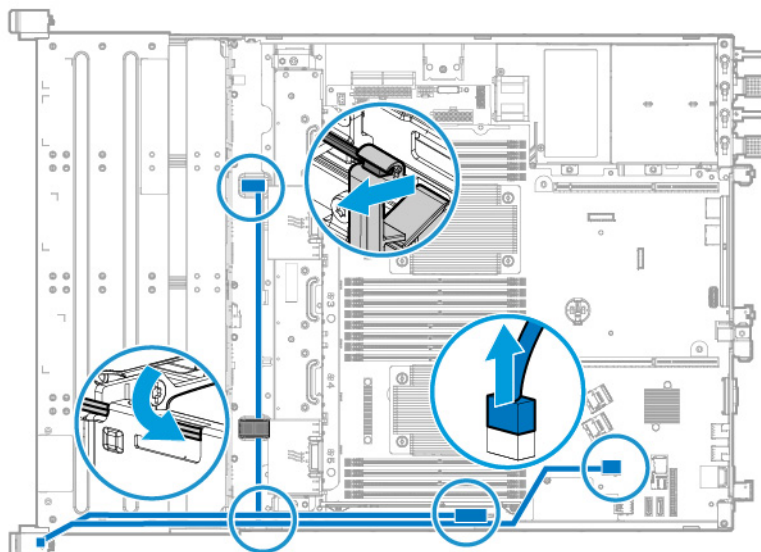
Quick-release latch rack ear assembly

- ⚠ **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.

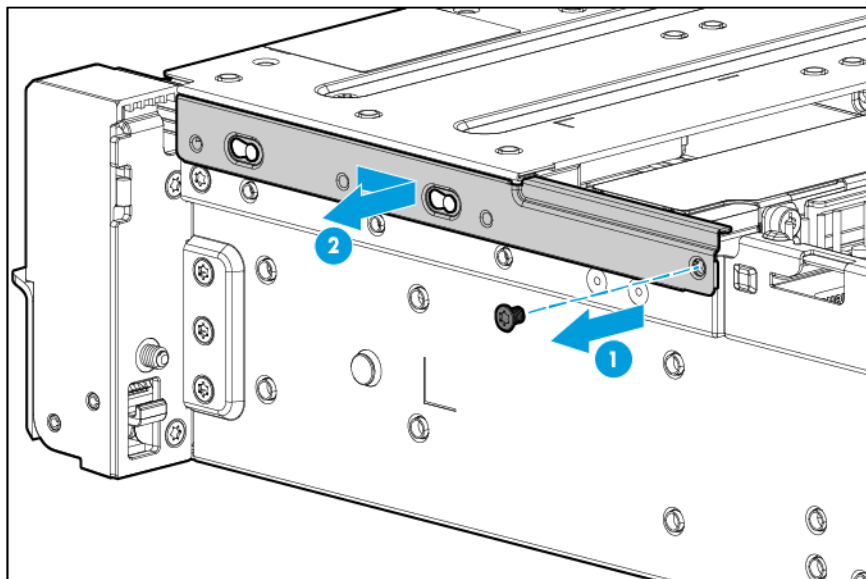
To remove the component:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Remove the server from the rack (on page 30).
4. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
5. Remove the access panel ("[Access panel](#)" on page 37).
6. If an expansion board is installed in the primary PCI riser cage, then remove the PCI riser cage ("[Remove the PCI riser cages](#)" on page 31).
7. Release the front I/O cabling from the server:
 - a. Detach the ambient thermal sensor cable from its clip.
 - b. Release the ambient thermal sensor cable from the front chassis cable clip.
 - c. Disconnect the USB 3.0 cable.
 - d. Disconnect the front I/O assembly cable.

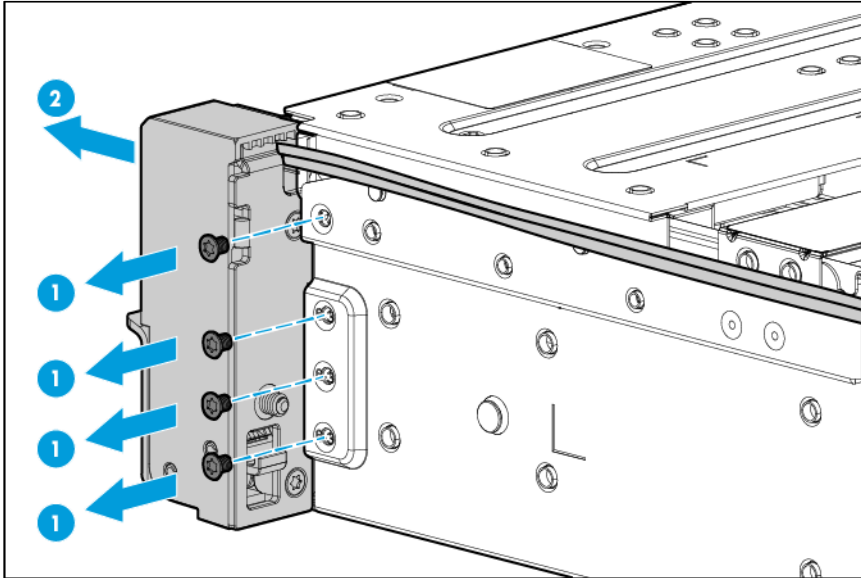
- e. Release the front I/O cabling from the side chassis metal clip.



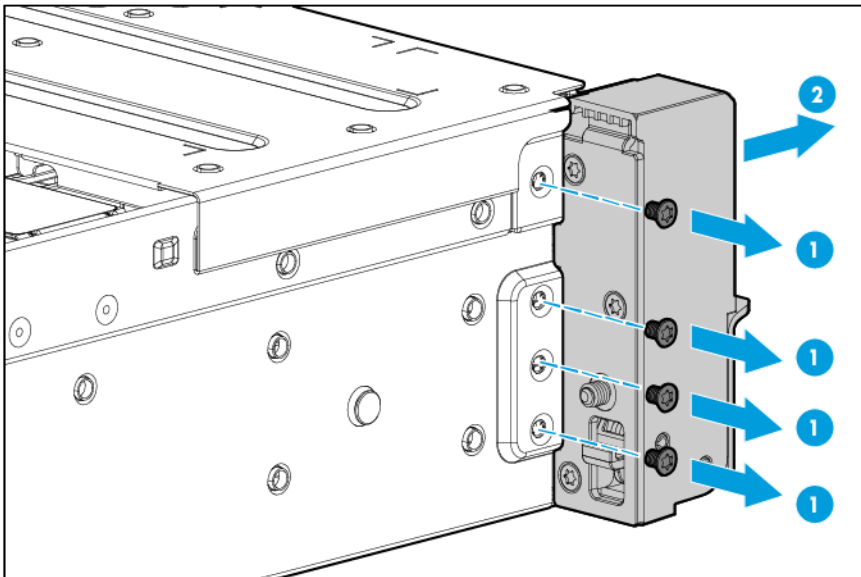
- 8. Remove the cable cover behind the right quick-release latch rack ear.



9. Remove the right quick-release latch rack ear assembly.



10. Remove the left quick-release latch rack ear.



To replace the component, reverse the removal procedure.

Pull tab cage for SFF chassis using quick-release latch rack ears

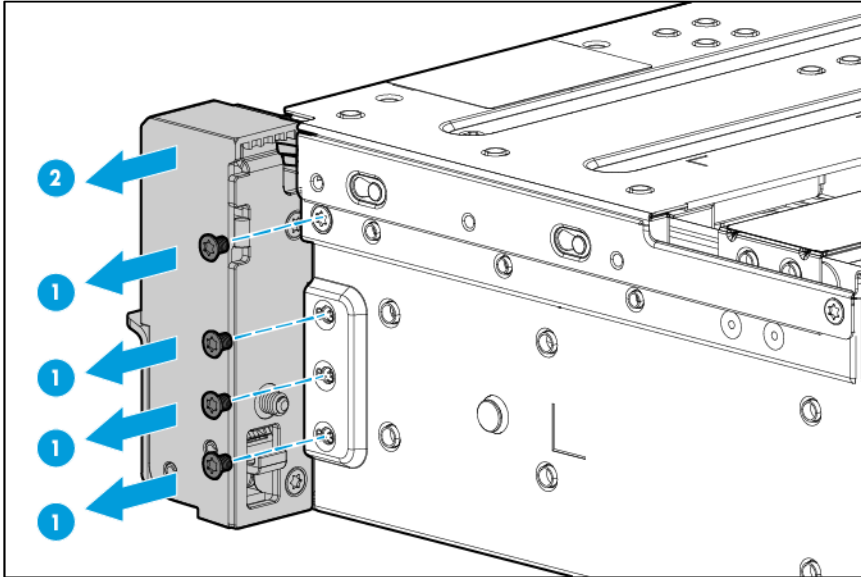


CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.

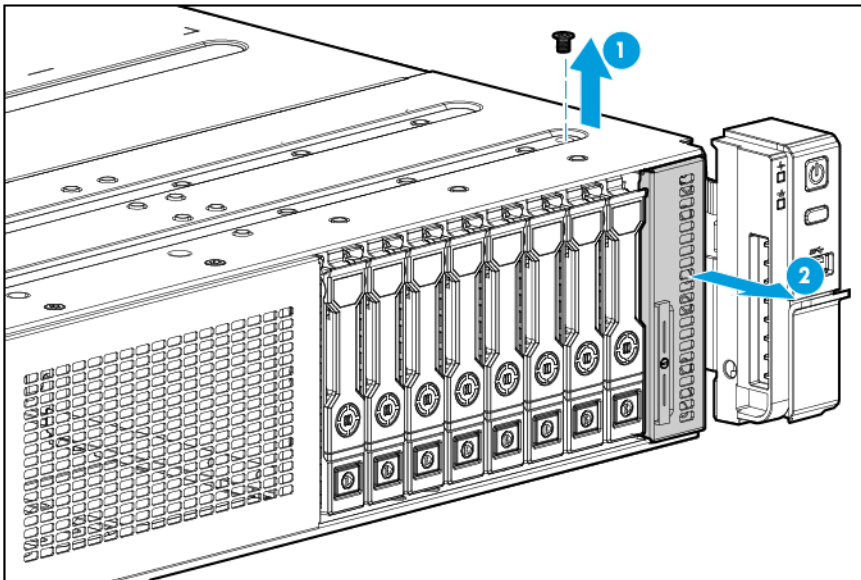
To remove the component:

1. Power down the server (on page 27).

2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Remove the server from the rack (on page 30).
4. If installed, remove the security bezel ("[Remove the security bezel \(optional\)](#)" on page 27).
5. Remove the right quick-release latch rack ear screws, and then move the ear away from the right side of the pull tab cage.



6. Remove the pull tab cage.



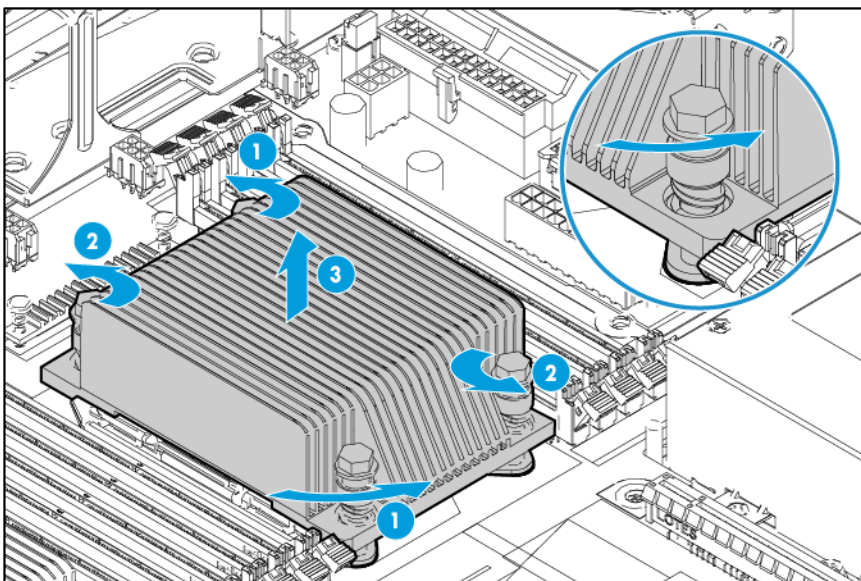
To replace the component, reverse the removal procedure.

System board

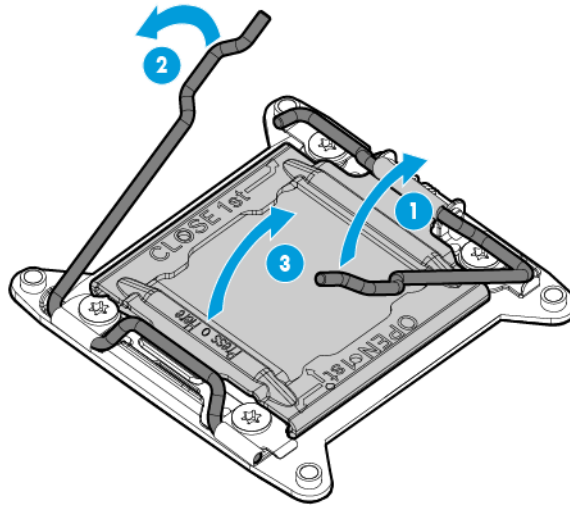
-
- ⚠ WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
- ⚠ CAUTION:** To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any installation, removal, or replacement procedure. Improper grounding can cause electrostatic discharge.
-
- ⚠ CAUTION:** To avoid ESD damage, when removing electrostatic-sensitive components from the failed system board, place the components on a static-dissipating work surface or inside separate antistatic bags.
-

To remove the system board:

1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 28).
 - o Remove the server from the rack (on page 30).
4. Remove the access panel ("Access panel" on page 37).
5. Remove the PCI riser cages (on page 31).
6. Remove the air baffle (on page 32).
7. Remove the fan cage (on page 33).
8. Remove all DIMMs ("DIMM" on page 52).
9. Remove the heatsink:
 - a. Loosen one pair of diagonally opposite screws halfway, and then loosen the other pair of screws.
 - b. Completely loosen all screws in the same sequence.
 - c. Remove the heatsink from the processor backplate.

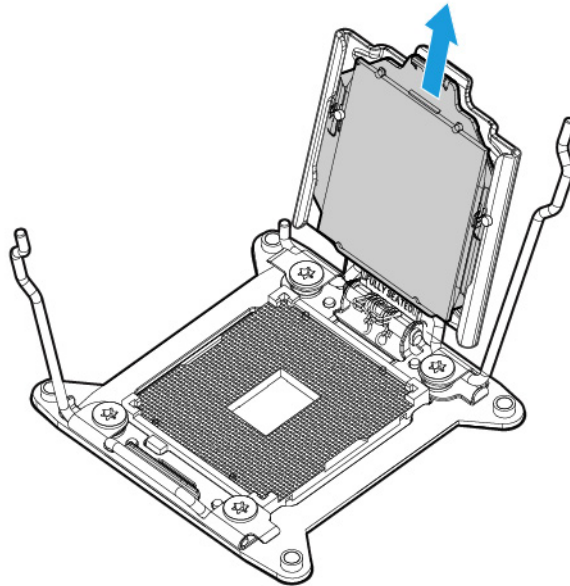


10. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



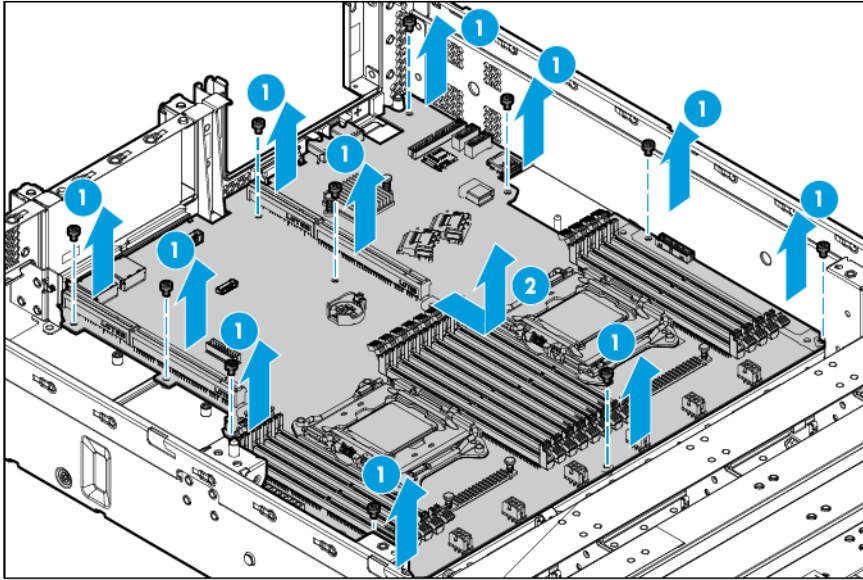
CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the system board, do not touch the processor or the processor socket contacts.

11. Remove the processor from the processor retaining bracket.

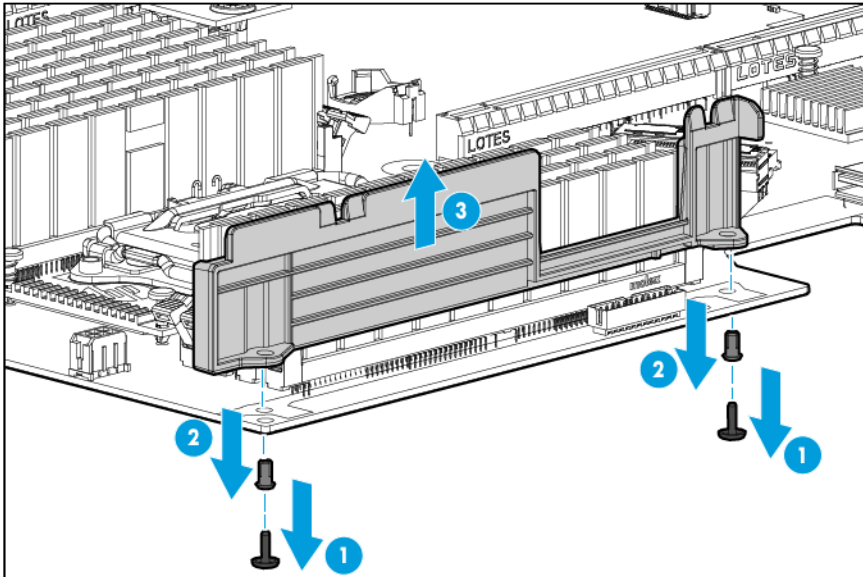


12. If installed, remove the dedicated iLO module ("Dedicated iLO management module" on page 66).
13. Disconnect all cables connected to the system board.

14. Remove the failed system board.

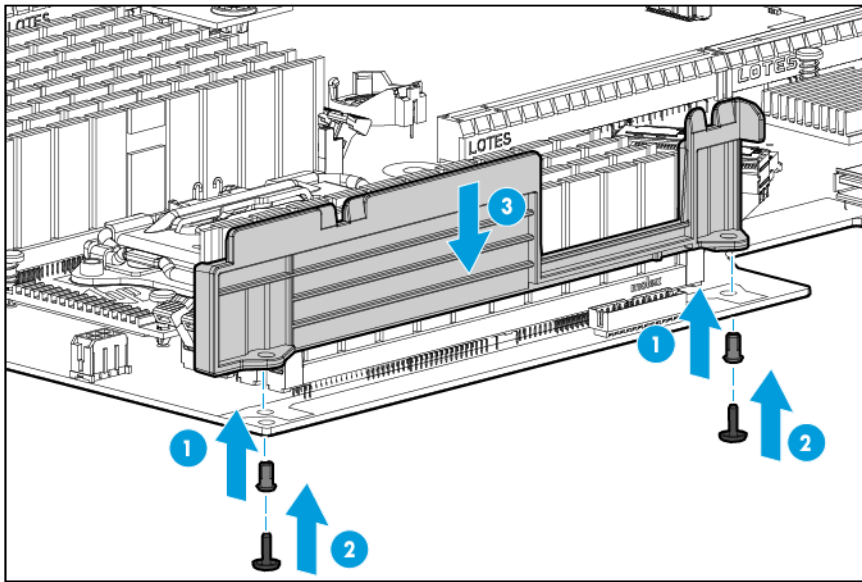


15. Remove the DIMM guard from the failed system board.

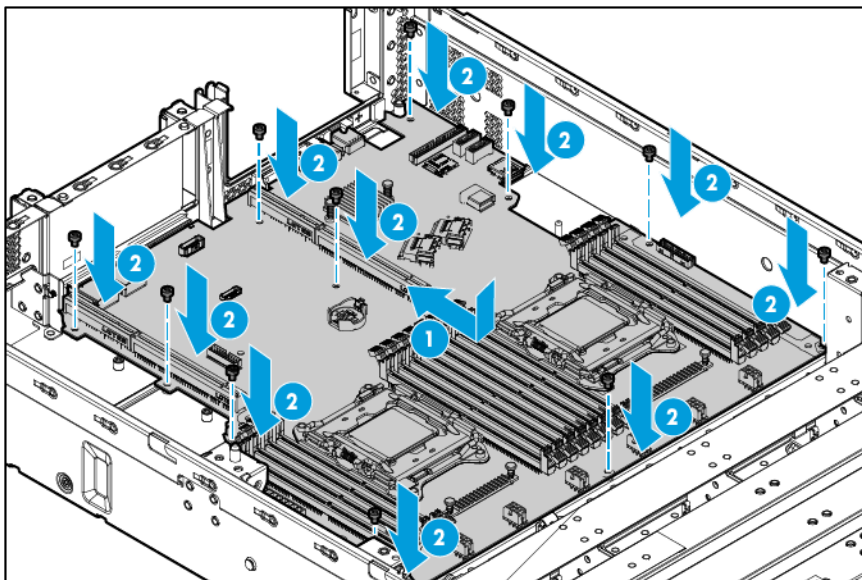


To replace the system board:

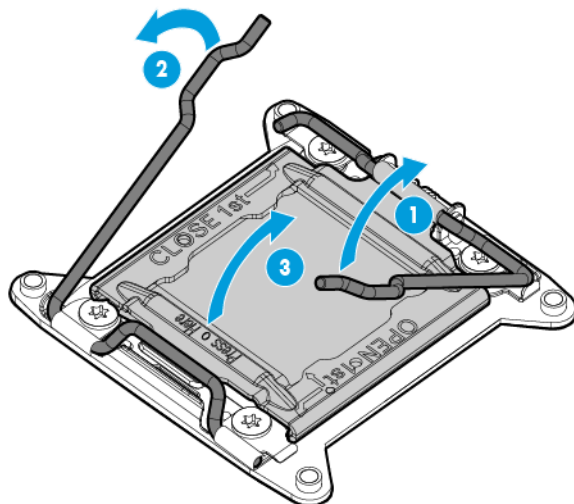
1. Install the DIMM guard removed from the failed system board on the system board replacement.



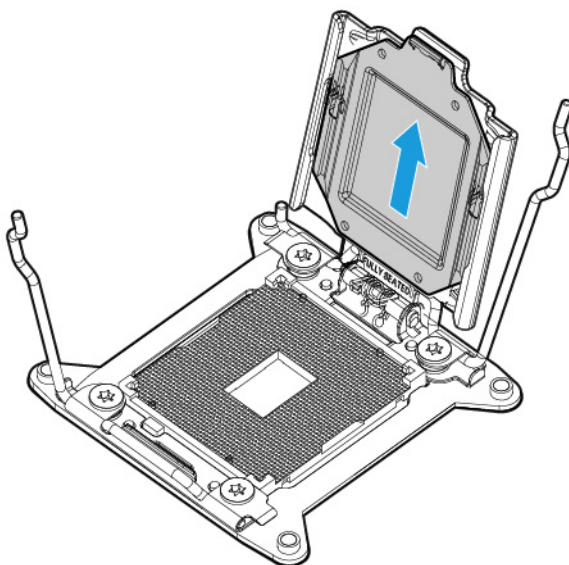
2. Install the system board.



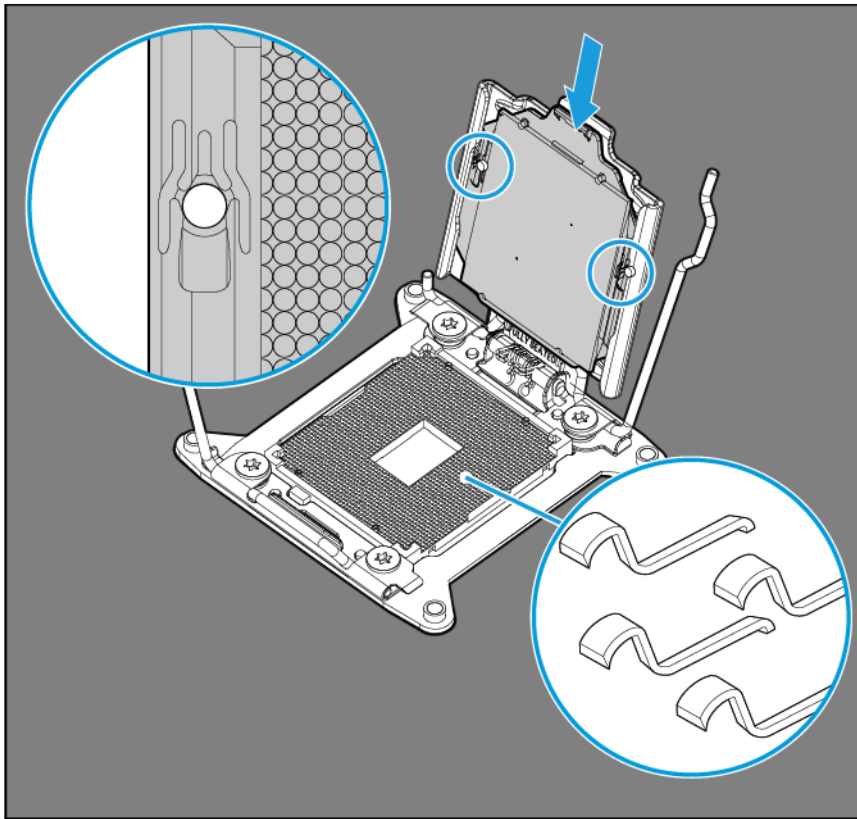
3. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



4. Remove the clear processor socket cover. Retain the processor socket cover for future use.



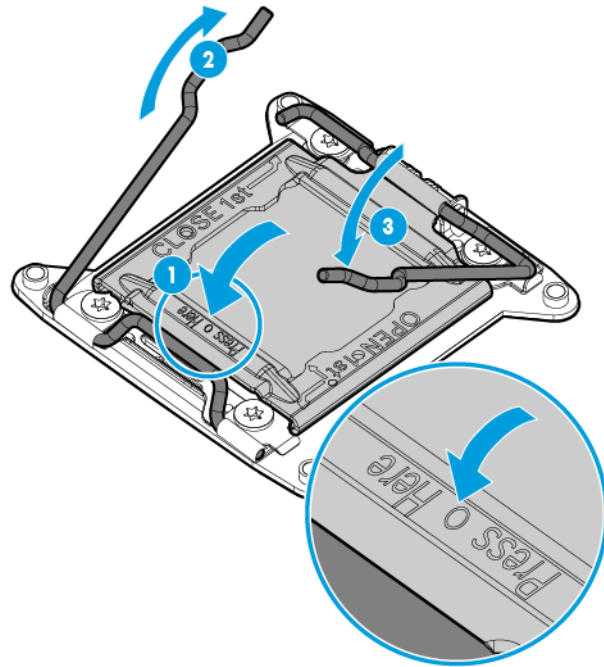
5. Install the processor. Verify that the processor is fully seated in the processor retaining bracket by visually inspecting the processor installation guides on either side of the processor. **THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.**



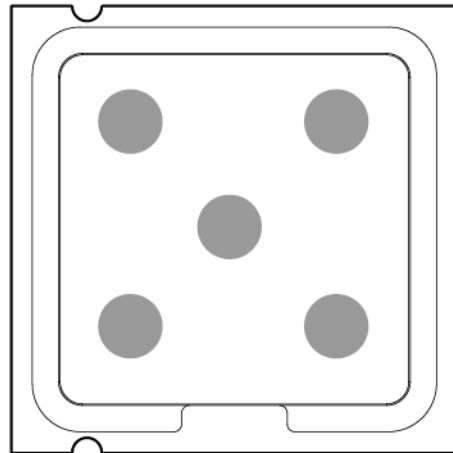
- ⚠ **CAUTION:** Do not press down on the processor. Pressing down on the processor may cause damage to the processor socket and the system board. Press only in the area indicated on the processor retaining bracket.
- ⚠ **CAUTION:** Close and hold down the processor cover socket while closing the processor locking levers. The levers should close without resistance. Forcing the levers closed can damage the processor and socket, requiring system board replacement.

6. Close the processor retaining bracket. When the processor is installed properly inside the processor retaining bracket, the processor retaining bracket clears the flange on the front of the socket.

7. Press and hold the processor retaining bracket in place, and then close each processor locking lever. Press only in the area indicated on the processor retaining bracket.

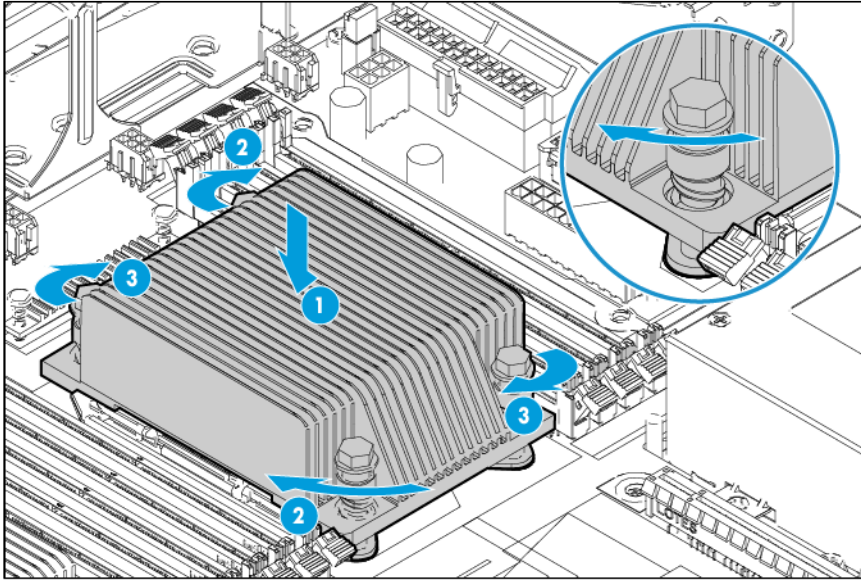


8. Install the processor socket cover on the failed system board.
9. Clean the old thermal grease from the heatsink and the top of the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.
10. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



11. Install the heatsink:
 - a. Position the heatsink on the processor backplate.
 - b. Tighten one pair of diagonally opposite screws halfway, and then tighten the other pair of screws.

- c. Finish the installation by completely tightening the screws in the same sequence.



12. Install all components removed from the failed system board.
13. Connect all cables disconnected from the failed system board.
14. Install the fan cage.
15. Install the air baffle.
16. Install the PCI riser cages.
17. Install the access panel.
18. Do one of the following:
 - o Slide the server into the rack.
 - o Install the server into the rack.
19. Connect each power cord to the server.
20. Connect each power cord to the power source.
21. Press the Power On/Standby button.

The server exits standby mode and applies full power to the system. The system power LED changes from amber to green.



IMPORTANT: Install all components with the same configuration that was used on the failed system board.

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

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 the **Enter** key.
3. Enter the serial number and press the **Enter** key. 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 the **Enter** key to clear the warning.
5. Enter the serial number and press the **Enter** key.

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 the **Enter** key.
8. Press the **F10** key to confirm exiting System Utilities. The server automatically reboots.

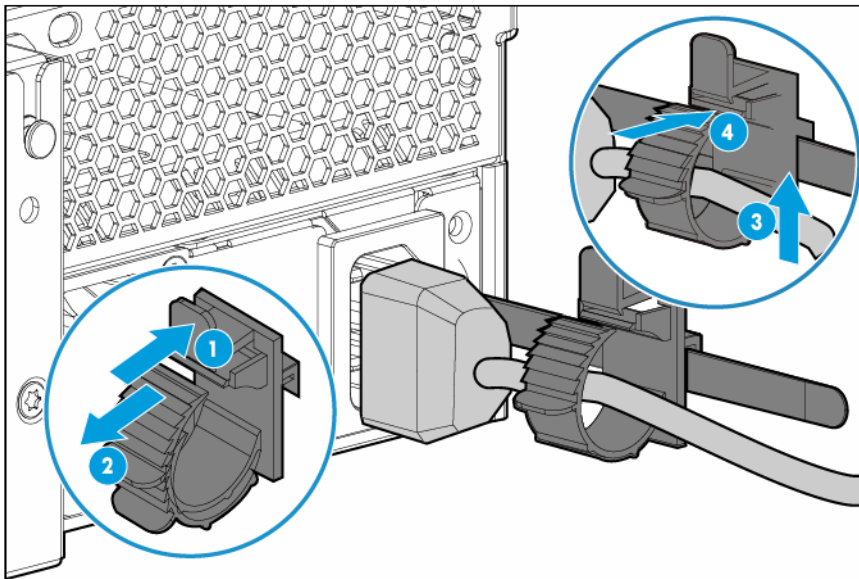
HP 550-W Power Supply (non-hot plug)

⚠ 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.

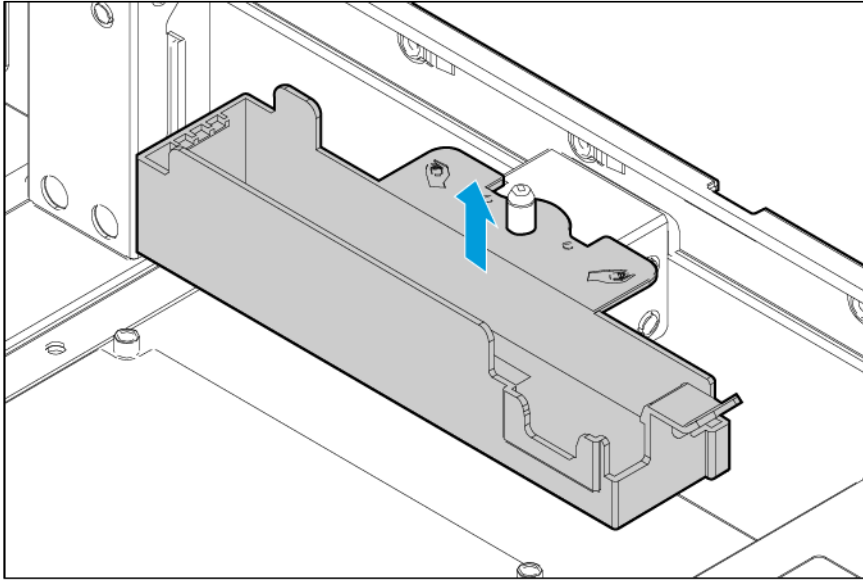
To remove the component:

1. Power down the server (on page 27).
2. Access the product rear panel (on page 30).
3. Release the power cord from the strain relief clip.

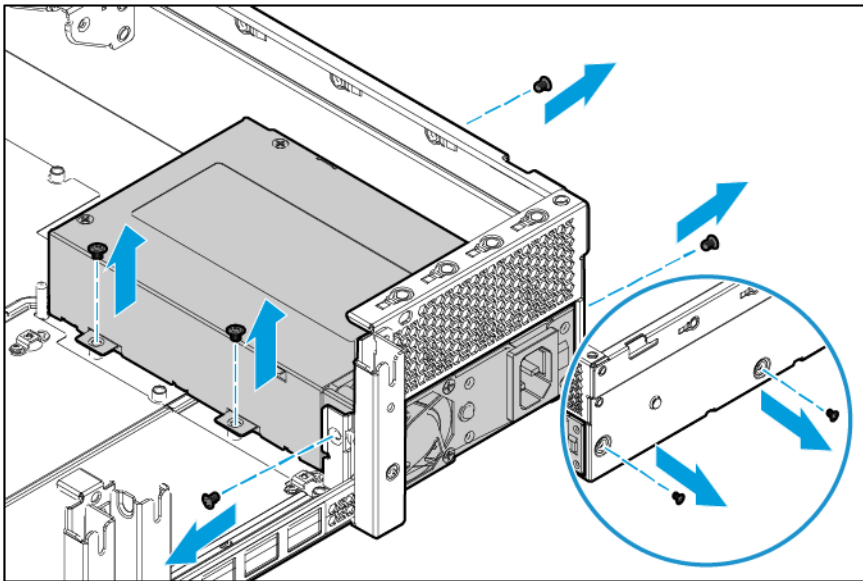


4. Remove all power:
 - a. Disconnect the power cord from the power source.
 - b. Disconnect the power cord from the server.
5. Remove the server from the rack (on page 30).
6. Remove the access panel ("[Access panel](#)" on page 37).
7. If installed, remove the secondary PCI riser cage ("[Remove the PCI riser cages](#)" on page 31).

8. Remove the HP Smart Storage Battery holder.



9. Disconnect all power supply cables from the system board and any associated component (drive backplane, GPU, etc.).
10. Remove the non-hot-plug power supply.



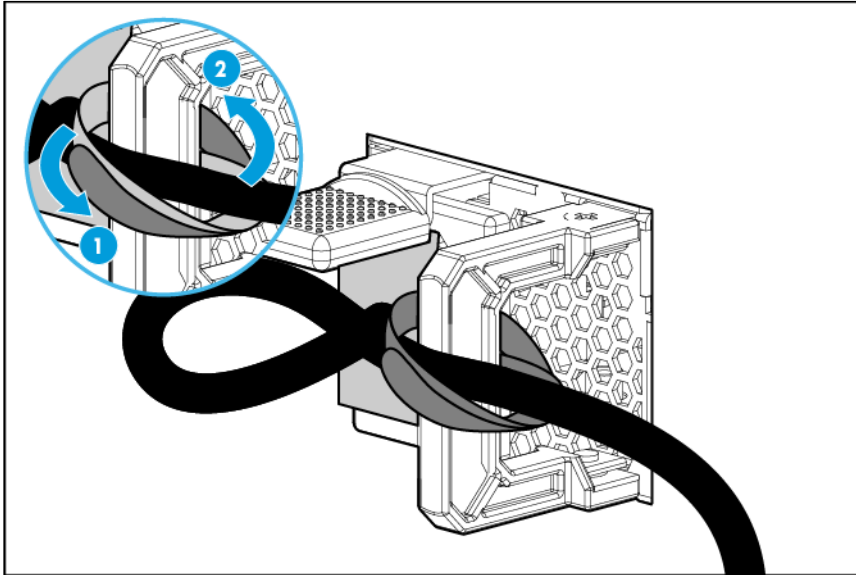
To replace the component, reverse the removal procedure.

Hot-plug power input module

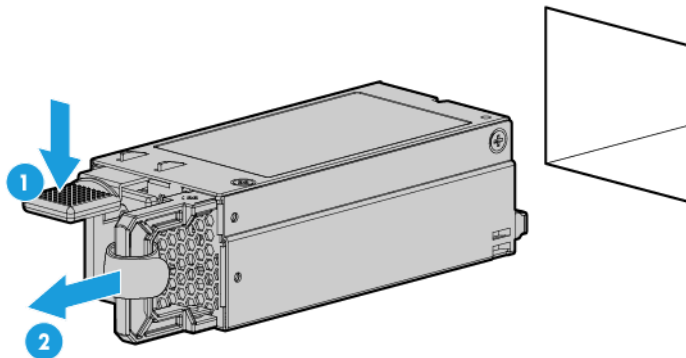
To remove the component:

1. If the server is using a single hot-plug power input module only, power down the server (on page 27).
2. Access the product rear panel (on page 30).

3. Release the power cord from the hook-and-loop strap.



4. Disconnect the power cord from the power source.
5. Remove the power input module.



To replace the component, reverse the removal procedure.

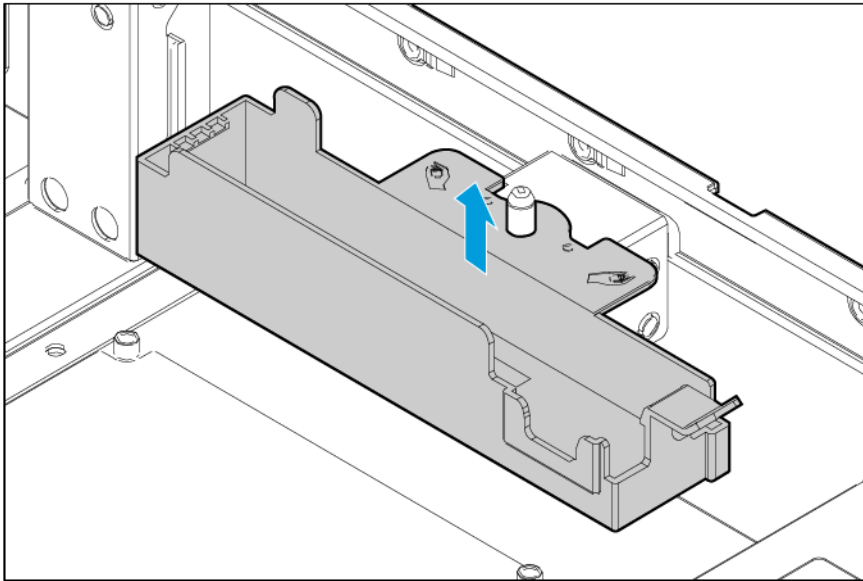
RPS backplane

-
- ⚠ 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.
-

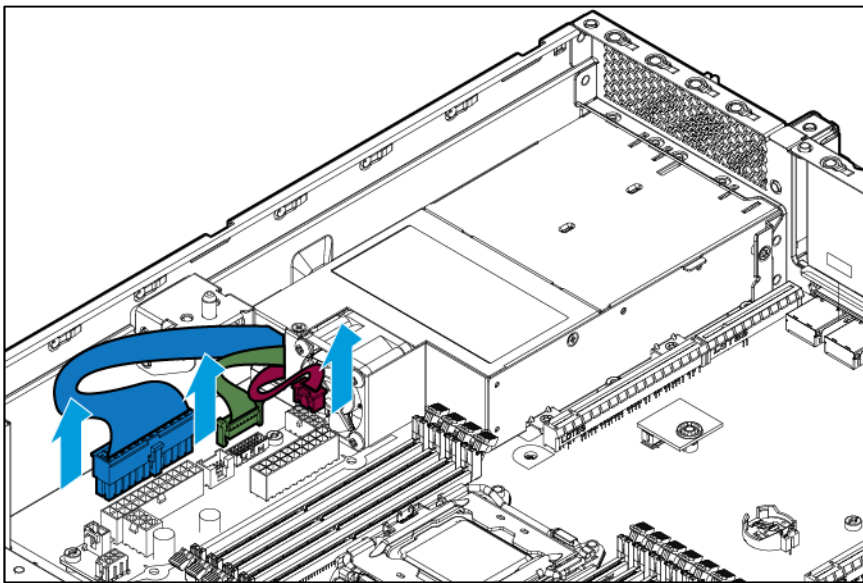
To remove the component:

1. Power down the server (on page 27).
2. Access the product rear panel (on page 30).
3. Remove all power:

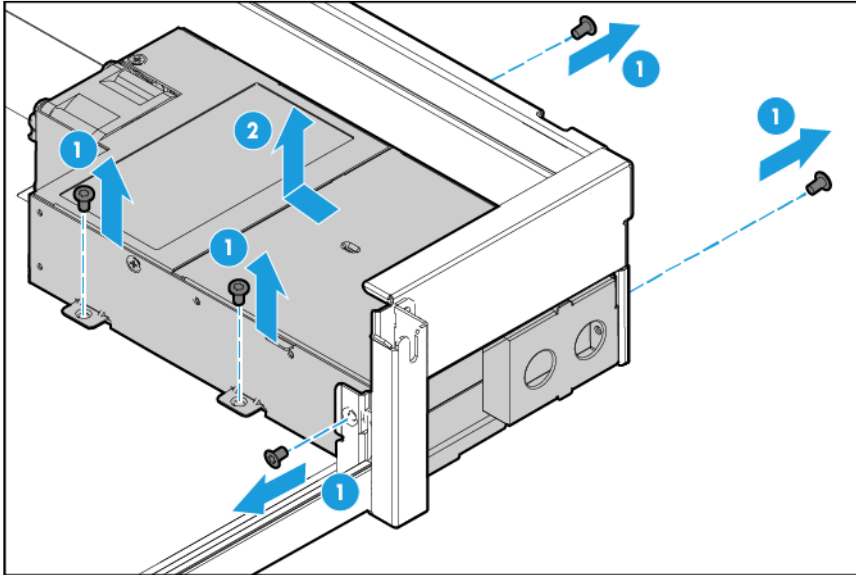
- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
4. Remove all installed power input modules ("[Hot-plug power input module](#)" on page 83).
5. Remove the server from the rack (on page 30).
6. Place the server on a sturdy, level surface.
7. Remove the access panel ("[Access panel](#)" on page 37).
8. If installed, remove the secondary PCI riser cage ("[Remove the PCI riser cages](#)" on page 31).
9. Remove the HP Smart Storage Battery holder.



10. Disconnect the RPS backplane cables.
11. Release the RPS backplane cables from the cable clips.



12. Remove the RPS backplane.



To replace the component, reverse the removal procedure.

HP Trusted Platform Module

The TPM is not a customer-removable part.



CAUTION: Any attempt to remove an installed TPM from the system board breaks or disfigures the TPM security rivet. Upon locating a broken or disfigured rivet on an installed TPM, administrators should consider the system compromised and take appropriate measures to ensure the integrity of the system data.

If you suspect a TPM board failure, leave the TPM installed and remove the system board ("[System board](#)" on page [73](#)). Contact an HP authorized service provider for a replacement system board and TPM board.

Troubleshooting

Troubleshooting resources

The *HP ProLiant Gen9 Troubleshooting Guide, Volume I: Troubleshooting* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, issue resolution, and software maintenance on ProLiant servers and server blades. To view the guide, select a language:

- English (http://www.hp.com/support/Gen9_TSG_en)
- French (http://www.hp.com/support/Gen9_TSG_fr)
- Spanish (http://www.hp.com/support/Gen9_TSG_es)
- German (http://www.hp.com/support/Gen9_TSG_de)
- Japanese (http://www.hp.com/support/Gen9_TSG_ja)
- Simplified Chinese (http://www.hp.com/support/Gen9_TSG_zh_cn)

The *HP ProLiant Gen9 Troubleshooting Guide, Volume II: Error Messages* provides a list of error messages and information to assist with interpreting and resolving error messages on ProLiant servers and server blades. To view the guide, select a language:

- English (http://www.hp.com/support/Gen9_EMG_en)
- French (http://www.hp.com/support/Gen9_EMG_fr)
- Spanish (http://www.hp.com/support/Gen9_EMG_es)
- German (http://www.hp.com/support/Gen9_EMG_de)
- Japanese (http://www.hp.com/support/Gen9_EMG_ja)
- Simplified Chinese (http://www.hp.com/support/Gen9_EMG_zh_cn)

Diagnostic tools

Product QuickSpecs

For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the HP website (<http://www.hp.com/go/qs>).

HP iLO

The iLO 4 subsystem is a standard component of HP ProLiant servers that simplifies initial server setup, server health monitoring, power and thermal optimization, and remote server administration. The iLO 4 subsystem includes an intelligent microprocessor, secure memory, and a dedicated network interface. This design makes iLO 4 independent of the host server and its operating system.

iLO 4 enables and manages the Active Health System (on page 89) and also features Agentless Management. All key internal subsystems are monitored by iLO 4. If enabled, SNMP alerts are sent directly by iLO 4 regardless of the host operating system or even if no host operating system is installed.

Embedded remote support software is available on HP ProLiant Gen8 and later servers with iLO 4, regardless of the operating system software and without installing OS agents on the server.

Using iLO 4, you can do the following:

- Access a high-performance and secure Integrated Remote Console to the server from anywhere in the world if you have a network connection to the server.
- Use the shared .NET Integrated Remote Console to collaborate with up to four server administrators.
- Remotely mount high-performance Virtual Media devices to the server.
- Securely and remotely control the power state of the managed server.
- Implement true Agentless Management with SNMP alerts from HP iLO, regardless of the state of the host server.
- Download the Active Health System log.
- Register for HP Insight Remote Support.
- Use iLO Federation to manage multiple servers from one system running the iLO web interface.
- Use Virtual Power and Virtual Media from the GUI, the CLI, or the iLO scripting toolkit for many tasks, including the automation of deployment and provisioning.
- Control iLO by using a remote management tool.

For more information about iLO 4 features, see the iLO 4 documentation on the HP website (<http://www.hp.com/go/ilo/docs>).

The HP iLO 4 hardware and firmware features and functionality, such as NAND size and embedded user partition, vary depending on the server model. For a complete list of supported features and functionality, see the HP iLO 4 QuickSpecs on the HP website (http://h18000.www1.hp.com/products/quickspecs/14276_div/14276_div.pdf).

Active Health System

HP Active Health System provides the following features:

- Combined diagnostics tools/scanners
- Always on, continuous monitoring for increased stability and shorter downtimes
- Rich configuration history
- Health and service alerts
- Easy export and upload to Service and Support

The HP Active Health System monitors and records changes in the server hardware and system configuration. The Active Health System assists in diagnosing problems and delivering rapid resolution if server failures occur.

The Active Health System collects the following types of data:

- Server model
- Serial number
- Processor model and speed
- Storage capacity and speed
- Memory capacity and speed
- Firmware/BIOS

HP Active Health System does not collect information about Active Health System users' operations, finances, customers, employees, partners, or data center, such as IP addresses, host names, user names, and passwords. HP Active Health System does not parse or change operating system data from third-party error event log activities, such as content created or passed through by the operating system.

The data that is collected is managed according to the HP Data Privacy policy. For more information see the HP website (<http://www.hp.com/go/privacy>).

The Active Health System, in conjunction with the system monitoring provided by Agentless Management or SNMP Pass-thru, provides continuous monitoring of hardware and configuration changes, system status, and service alerts for various server components.

The Agentless Management Service is available in the SPP, which can be downloaded from the HP website (<http://www.hp.com/go/spp/download>). The Active Health System log can be downloaded manually from iLO 4 or HP Intelligent Provisioning and sent to HP.

For more information, see the following documents:

- *HP iLO User Guide* on the HP website (<http://www.hp.com/go/ilo/docs>)
- *HP Intelligent Provisioning User Guide* on the HP website (<http://www.hp.com/go/intelligentprovisioning/docs>)

HP ProLiant Pre-boot Health Summary

If the server will not start up, you can use iLO 4 to display diagnostic information on an external monitor. This feature is supported on servers that support external video and have a UID button or an SUV connector. When power is available to the server but the server is not powered on, iLO runs on auxiliary power and can take control of the server video adapter to display the HP ProLiant Pre-boot Health Summary.

For additional information, see the following documents:

- *HP iLO 4 User Guide* — See the HP website (<http://www.hp.com/go/ilo/docs>).
- *HP ProLiant Gen9 Troubleshooting Guide, Volume I: Troubleshooting* — See "Troubleshooting Resources (on page 87)."

Integrated Management Log

The IML records hundreds of events and stores them in an easy-to-view form. The IML timestamps each event with 1-minute granularity.

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

- From within HP SIM
- From within HP UEFI System Utilities (on page 90)
- From within the Embedded UEFI shell
- From within operating system-specific IML viewers:
 - For Windows: IML Viewer
 - For Linux: IML Viewer Application
- From within the iLO 4 web interface
- From within HP Insight Diagnostics (on page 92)

HP UEFI System Utilities

The HP UEFI System Utilities is embedded in the system ROM. The UEFI System Utilities 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
- Configuring memory options
- Selecting a language
- Launching other pre-boot environments such as the Embedded UEFI Shell and Intelligent Provisioning

For more information on the HP UEFI System Utilities, see the *HP UEFI System Utilities User Guide for HP ProLiant Gen9 Servers* on the HP website (<http://www.hp.com/go/ProLiantUEFI/docs>).

Scan the QR code located at the bottom of the screen to access mobile-ready online help for the UEFI System Utilities and UEFI Shell. For on-screen help, press **F1**.

Using HP UEFI System Utilities

To use the System Utilities, use the following keys.

Action	Key
Access System Utilities	F9 during server POST

Action	Key
Navigate menus	Up and Down arrows
Select items	Enter
Save selections	F10
Access Help for a highlighted configuration option*	F1

*Scan the QR code on the screen to access online help for the UEFI System Utilities and UEFI Shell.

Default configuration settings are applied to the server at one of the following times:

- Upon the first system power-up
- After defaults have been restored

Default configuration settings are sufficient for typical server operations; however, you can modify configuration settings as needed. The system prompts you for access to the System Utilities each time the system is powered up.

Embedded Diagnostics option

The system BIOS in all HP ProLiant Gen9 servers includes an Embedded Diagnostics option in the ROM. The Embedded Diagnostics option can run comprehensive diagnostics of the server hardware, including processors, memory, drives, and other server components.

For more information on the Embedded Diagnostics option, see the *HP UEFI System Utilities User Guide for HP ProLiant Gen9 Servers* on the HP website (<http://www.hp.com/go/ProLiantUEFI/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.

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 the **Enter** key.
3. Enter the serial number and press the **Enter** key. 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 the **Enter** key to clear the warning.
5. Enter the serial number and press the **Enter** key.
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 the **Enter** key.
8. Press the **F10** key to confirm exiting System Utilities. The server automatically reboots.

HP Insight Diagnostics

HP Insight Diagnostics is a proactive server management tool, available in both offline and online versions, that provides diagnostics and troubleshooting capabilities to assist IT administrators who verify server installations, troubleshoot problems, and perform repair validation.

HP Insight Diagnostics Offline Edition performs various in-depth system and component testing while the OS is not running. To run this utility, boot the server using Intelligent Provisioning.

HP Insight Diagnostics Online Edition is a web-based application that captures system configuration and other related data needed for effective server management. Available in Microsoft Windows and Linux versions, the utility helps to ensure proper system operation.

For more information or to download the utility, see the HP website (<http://www.hp.com/servers/diags>). HP Insight Diagnostics Online Edition is also available in the SPP.

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 92) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

This functionality supports operating systems that are supported by the server. For operating systems supported by the server, see the HP website (<http://www.hp.com/go/supportos>).

If a significant change occurs between data-gathering intervals, the survey function marks the previous information and overwrites the survey data files to reflect the latest changes in the configuration.

Survey functionality is installed with every Intelligent Provisioning-assisted HP Insight Diagnostics installation, or it can be installed through the SPP.

HP Insight Remote Support

HP strongly recommends that you register your device for remote support to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP 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 HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications can be sent to your authorized HP Channel Partner for onsite service, if configured and available in your country.

For more information, see *HP Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures* on the HP website (<http://www.hp.com/go/insightremotesupport/docs>). HP Insight Remote Support is available as part of HP Warranty, HP Care Pack Service, or HP contractual support agreement.

USB support

HP servers support both USB 2.0 ports and USB 3.0 ports. Both types of ports support installing all types of USB devices (USB 1.0, USB 2.0, and USB 3.0), but may run at lower speeds in specific situations:

- USB 3.0 capable devices operate at USB 2.0 speeds when installed in a USB 2.0 port.
- When the server is configured for UEFI Boot Mode, HP provides legacy USB support in the pre-boot environment prior to the operating system loading for USB 1.0, USB 2.0, and USB 3.0 speeds.

- When the server is configured for Legacy BIOS Boot Mode, HP provides legacy USB support in the pre-boot environment prior to the operating system loading for USB 1.0 and USB 2.0 speeds. While USB 3.0 ports can be used with all devices in Legacy BIOS Boot Mode, they are not available at USB 3.0 speeds in the pre-boot environment. Standard USB support (USB support from within the operating system) is provided by the OS through the appropriate USB device drivers. Support for USB 3.0 varies by operating system.

For maximum compatibility of USB 3.0 devices with all operating systems, HP provides a configuration setting for USB 3.0 Mode. Auto is the default setting. This setting impacts USB 3.0 devices when connected to USB 3.0 ports in the following manner:

- **Auto (default)**—If configured in Auto Mode, USB 3.0 capable devices operate at USB 2.0 speeds in the pre-boot environment and during boot. When a USB 3.0 capable OS USB driver loads, USB 3.0 devices transition to USB 3.0 speeds. This mode provides compatibility with operating systems that do not support USB 3.0 while still allowing USB 3.0 devices to operate at USB 3.0 speeds with state-of-the-art operating systems.
- **Enabled**—If Enabled, USB 3.0 capable devices operate at USB 3.0 speeds at all times (including the pre-boot environment) when in UEFI Boot Mode. This mode should not be used with operating systems that do not support USB 3.0. If operating in Legacy Boot BIOS Mode, the USB 3.0 ports cannot function in the pre-boot environment and are not bootable.
- **Disabled**—If configured for Disabled, USB 3.0 capable devices function at USB 2.0 speeds at all times.

The pre-OS behavior of the USB ports is configurable in System Utilities, so that the user can change the default operation of the USB ports. For more information, see the *HP UEFI System Utilities User Guide for HP ProLiant Gen9 Servers* on the HP website (<http://www.hp.com/go/ProLiantUEFI/docs>).

External USB functionality

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

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

HP Smart Storage Administrator

HP SSA is a configuration and management tool for HP Smart Array controllers. Starting with HP ProLiant Gen8 servers, HP SSA replaces ACU with an enhanced GUI and additional configuration features.

HP SSA exists in three interface formats: the HP SSA GUI, the HP SSA CLI, and HP SSA Scripting. Although all formats provide support for configuration tasks, some of the advanced tasks are available in only one format.

Some HP SSA features include the following:

- Supports online array capacity expansion, logical drive extension, assignment of online spares, and RAID or stripe size migration
- Suggests the optimal configuration for an unconfigured system
- Provides diagnostic and SmartSSD Wear Gauge functionality on the Diagnostics tab
- For supported controllers, provides access to additional features.

For more information about HP SSA, see the HP website (<http://www.hp.com/go/hpssa>).

Automatic Server Recovery

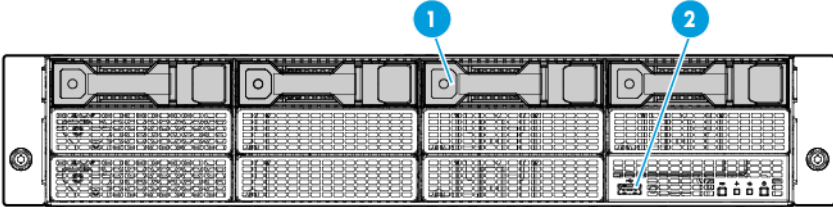
ASR is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue screen, ABEND (does not apply to HP ProLiant DL980 Servers), or panic. A system fail-safe timer, the ASR timer, starts when the System Management driver, also known as the Health Driver, is loaded. When the operating system is functioning properly, the system periodically resets the timer. However, when the operating system fails, the timer expires and restarts the server.

ASR increases server availability by restarting the server within a specified time after a system hang. At the same time, the HP SIM console notifies you by sending a message to a designated pager number that ASR has restarted the system. You can disable ASR from the System Management Homepage or through RBSU.

Component identification

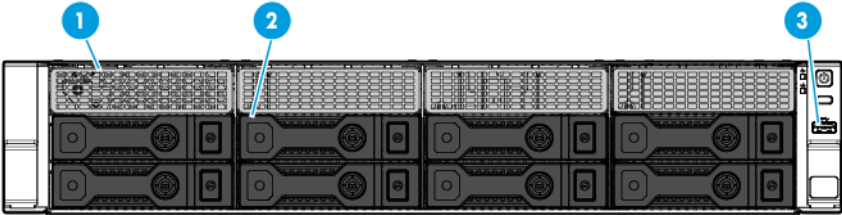
Front panel components

- 4-bay LFF non-hot-plug drive model



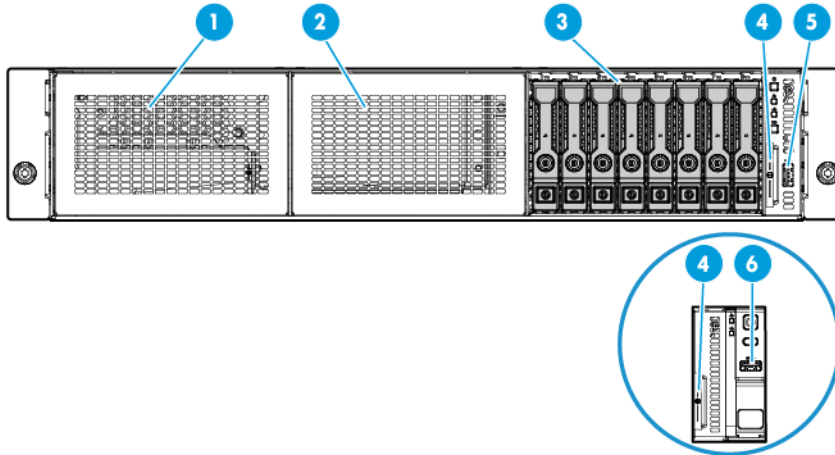
Item	Description
1	LFF non-hot-plug drives
2	USB 2.0 connector

- 8-bay LFF hot-plug drive model



Item	Description
1	Box 1 LFF hot-plug drives
2	Box 2 LFF hot-plug drives
3	USB 3.0 connector

- 8-bay SFF hot-plug drive model



Item	Description
1	HP Universal Media Bay (box 1, for the optical drive cage option)
2	8-bay SFF drive cage bay (box 2, for the second 8-bay SFF drive cage option)
3	Box 3 SFF hot-plug drives
4	Serial label pull tab (" Serial label pull tab information " on page 96)
5	USB 2.0 connector (in servers using thumbscrew rack ears)
6	USB 3.0 connector (in servers using quick-release latch rack ears)

Serial label pull tab information

The vertically oriented serial label pull tab in the SFF chassis is double-sided. The following server labels are attached to this pull tab:

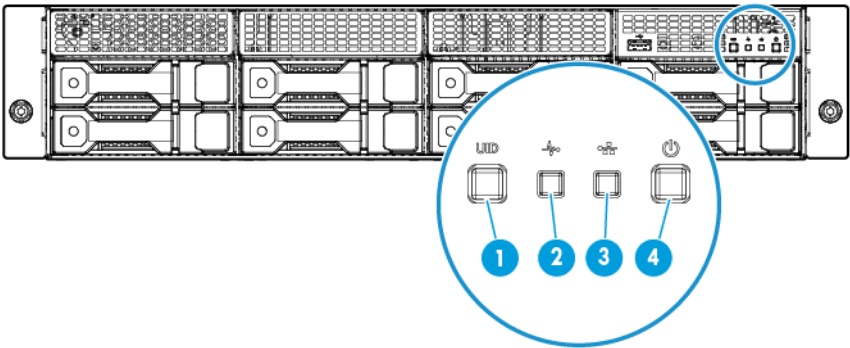
- Left side—Server serial number label and the customer asset tag label
- Right side—Default iLO account information label and the QR code label

Use your mobile device to scan the QR code label to display the server mobile product page (<http://www.hp.com/qref/dl180gen9>). This page contains links to server setup information, spare part numbers, QuickSpecs, troubleshooting resources, and other useful product links.

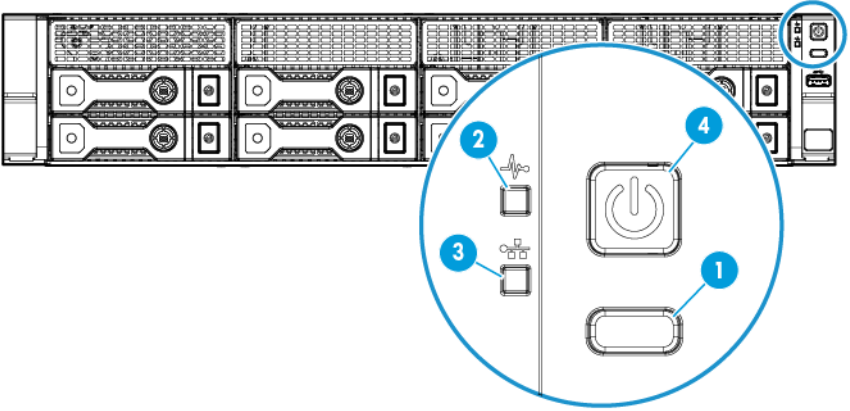
In the LFF chassis, these server labels are attached on the front edge of the access panel instead.

Front panel LEDs and buttons

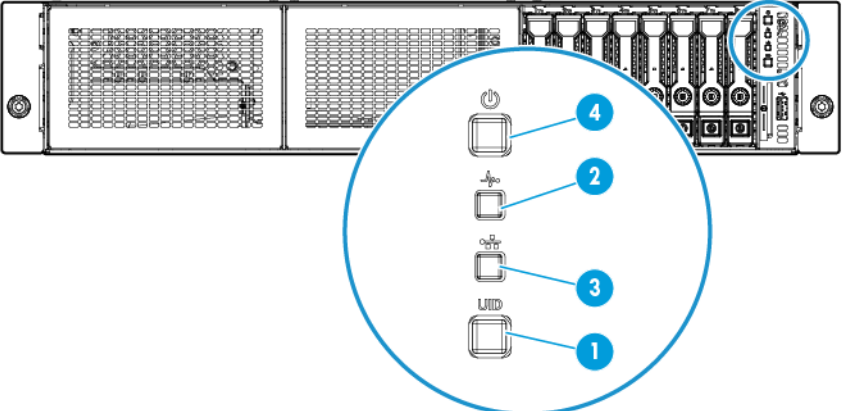
- Front panel LEDs and buttons in an LFF chassis with thumbscrew rack ears



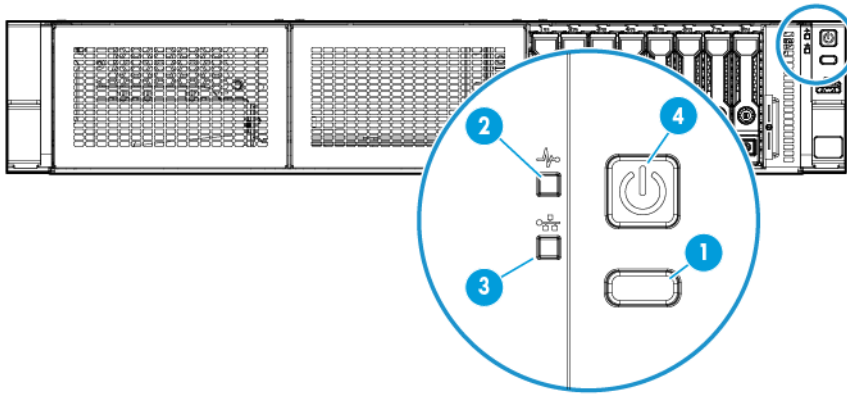
- Front panel LEDs and buttons in an LFF chassis with quick-release latch rack ears



- Front panel LEDs and buttons in an SFF chassis with thumbscrew rack ears



- Front panel LEDs and buttons in an SFF chassis with quick-release latch rack ears



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

* When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "Front panel LED power fault codes (on page 98)."

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

† 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.

Front panel LED power fault codes

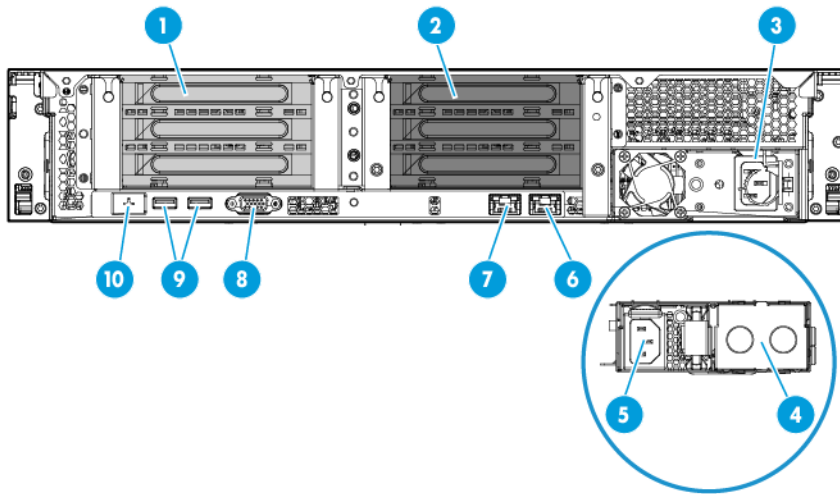
The following table provides a list of power fault codes, and the subsystems that are affected. Not all power faults are used by all servers.

Subsystem	Front panel LED behavior
System board	1 flash
Processor	2 flashes
Memory	3 flashes

Subsystem	Front panel LED behavior
Riser board PCIe slots	4 flashes
FlexibleLOM	5 flashes
Removable HP Flexible Smart Array controller/Smart SAS HBA controller	6 flashes
System board PCIe slots	7 flashes
Power backplane or storage backplane	8 flashes
Power supply	9 flashes

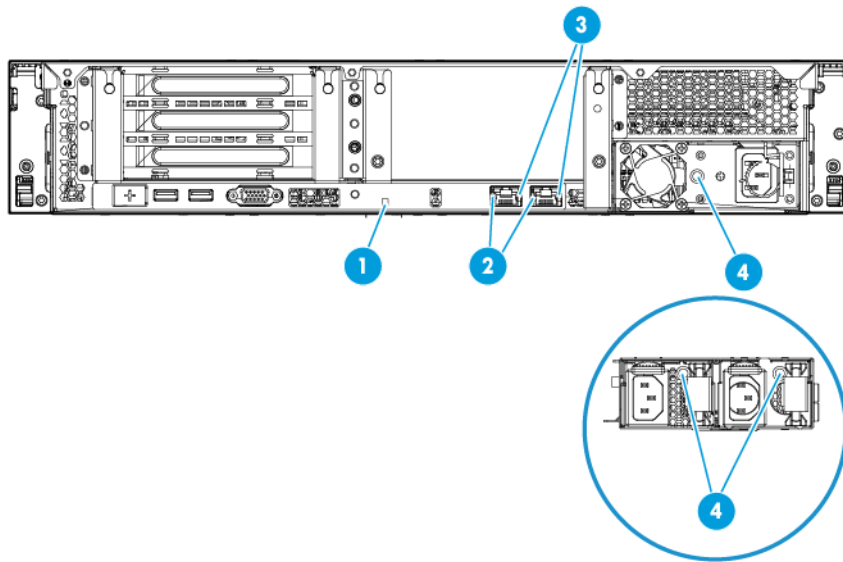
For more information, see "Front panel LEDs and buttons (on page 97)."

Rear panel components



Item	Description
1	PCIe3 riser slots 1-3 (primary, associated with processor 1)
2	PCIe3 riser slots 4-6 (secondary, associated with processor 2)
3	Non-hot plug power supply
4	Hot-plug power supply bay 2
5	Hot-plug power supply 1
6	NIC connector 2
7	NIC 1/shared iLO connector
8	Video connector
9	USB 3.0 connectors
10	Dedicated iLO management connector (optional)

Rear panel LEDs

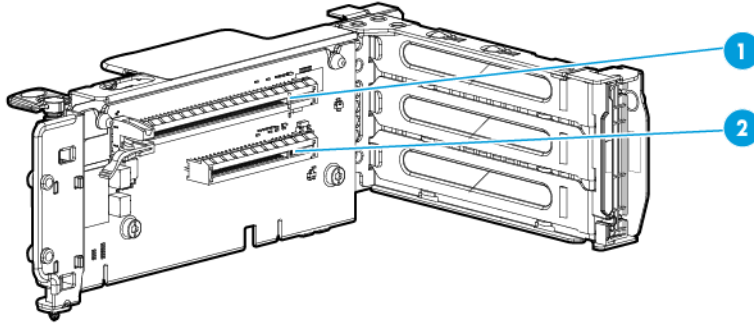


Item	Description	Status
1	UID LED	Solid blue = Activated Flashing blue: <ul style="list-style-type: none"> • 1 Hz/cycle per sec = Remote management or firmware upgrade in progress • 4 Hz/cycle per sec = iLO manual reboot sequence initiated • 8 Hz/cycle per sec = iLO manual reboot sequence in progress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

PCIe riser board slot definitions

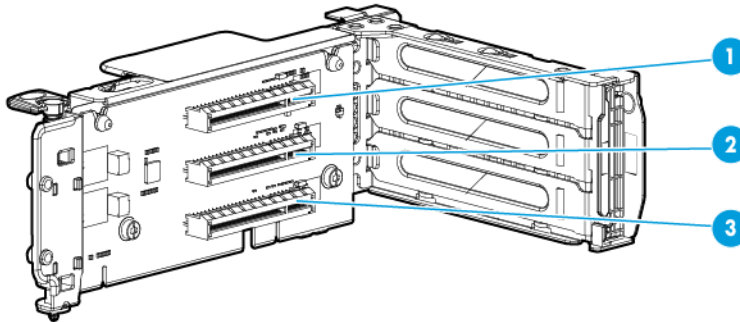
The server ships with a primary PCI riser cage installed and a secondary PCI riser cage blank. A second processor is required to support installation in the secondary PCIe riser location.

- Two-slot PCI riser cage assembly: Install in either the primary or secondary PCIe riser board connector.



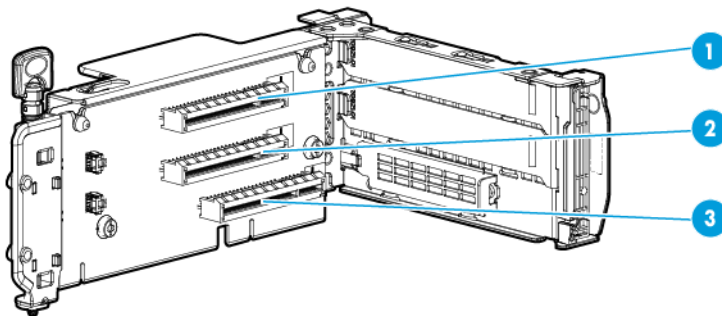
Item	Form factor	Slot description
1	Full-height, full-length	PCIe3 x16 (16, 8, 4, 1)
2	Full-height, half-length	PCIe3 x8 (8, 4, 1)

- Three-slot PCI riser cage assembly: Install in either the primary or secondary PCIe riser board connector.



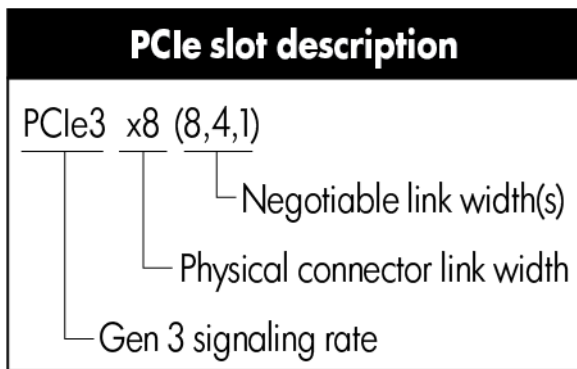
Item	Form factor	Slot description
1	Full-height, full-length	PCIe3 x8 (8, 4, 1)
2	Full-height, half-length	PCIe3 x8 (8, 4, 1)
3	Full-height, half-length	PCIe3 x8 (8, 4, 1)

- FlexibleLOM riser cage assembly: Install in the secondary PCIe riser board connector.

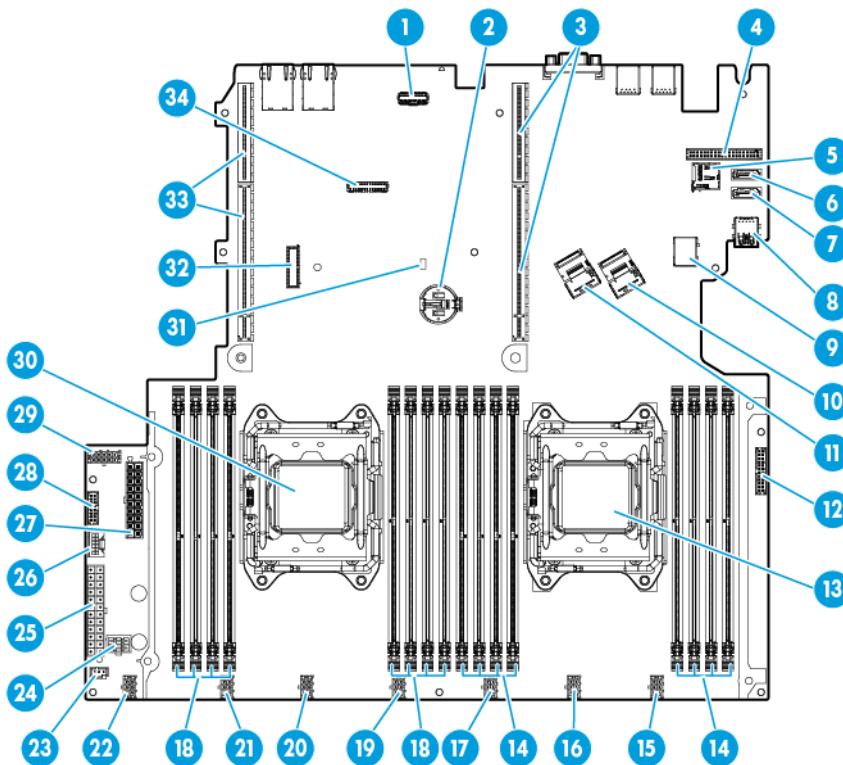


Item	Form factor	Slot description
1	Full-height, full-length	PCIe3 x8 (8, 4, 1)
2	Full-height, half-length	PCIe3 x8 (8, 4, 1)

3	FlexibleLOM	PCIe3 x8
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System board components

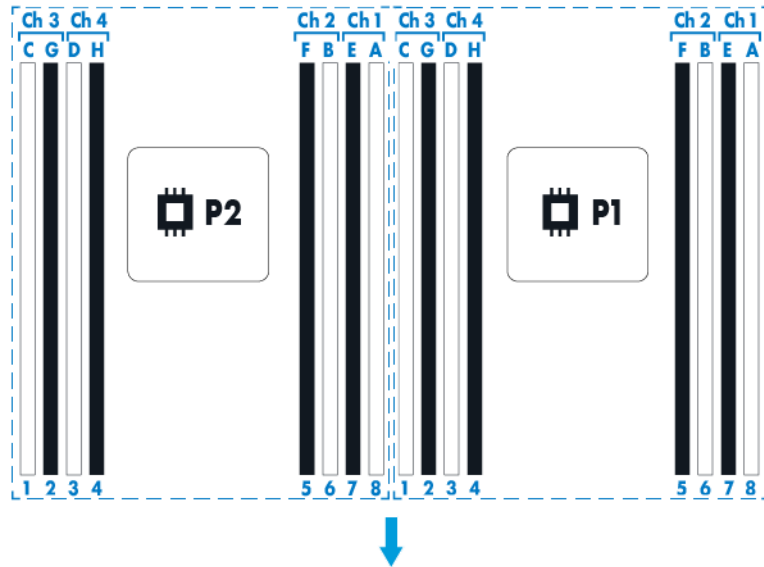


Item	Description
1	FlexibleLOM sideband signal connector
2	System battery
3	Primary PCIe riser board connectors ("PCIe riser board slot definitions" on page 100)
4	Dedicated iLO module connector
5	microSD card slot
6	SATA connector 5 (for M.2 SSD 2)

Item	Description
7	SATA connector 4 (for M.2 SSD 1 or optical drive)
8	Internal USB 3.0 connector (for USB flash devices)
9	Front USB 3.0 connector (for the USB 3.0 connector on the right quick-release latch rack ear)
10	Mini-SAS connector 1
11	Mini-SAS connector 2
12	Front I/O connector
13	Processor 1
14	Processor 1 DIMM slots
15	Fan connector 5
16	Fan connector 4
17	Reserved
18	Processor 2 DIMM slots
19	Fan connector 3
20	Fan connector 2
21	Fan connector 1
22	Reserved
23	12-bay LFF drive identification signal connector
24	GPU power connector
25	24-pin power supply connector
26	HP Smart Storage Battery connector
27	20-pin drive power connector
28	16-pin power supply sideband signal connector
29	10-pin RPS connector
30	Processor 2
31	NMI header
32	TPM connector
33	Secondary PCIe riser board connectors (" PCIe riser board slot definitions " on page 100)
34	System maintenance switch

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 server.

System maintenance switch

Position	Default	Function
S1	Off	Off = iLO 4 security is enabled. On = iLO 4 security is disabled.
S2	Off	Off = System configuration can be changed. On = System configuration is locked.
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled. On = Power-on password is disabled.
S6	Off	Off = No function On = ROM reads system configuration as invalid.
S7	Off	Off = Set default boot mode to UEFI. On = Set default boot mode to legacy.
S8	—	Reserved
S9	—	Reserved
S10	—	Reserved
S11	—	Reserved
S12	—	Reserved

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

When the system maintenance switch position 6 is set to the On position, the system is prepared to erase all system configuration settings from both CMOS and NVRAM.

CAUTION: Clearing CMOS and/or NVRAM deletes configuration information. Be sure to properly configure the server or data loss could occur.

IMPORTANT: Before using the S7 switch to change to Legacy BIOS Boot Mode, be sure the HP Dynamic Smart Array B140i Controller is disabled. Do not use the B140i controller when the server is in Legacy BIOS Boot Mode.

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 invoke the NMI handler and generate a crash dump log, do one of the following:

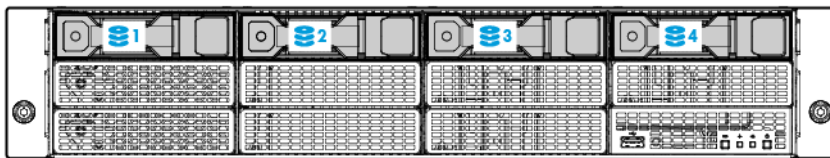
- Use the iLO Virtual NMI feature.
- Short the NMI header ("System board components" on page 102).

For more information, see the HP website (<http://www.hp.com/support/NMI>).

Drive numbering

The following images show the drive numbering for each of the supported drive configurations. For drive box numbering information, see "Front panel components (on page 95)."

- 4-bay LFF non-hot-plug drive model



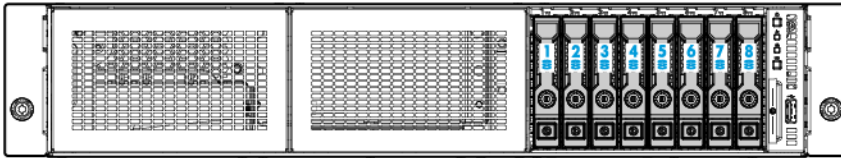
- 8-bay LFF hot-plug drive model



- 12-bay LFF hot-plug drive model



- 8-bay SFF hot-plug drive model



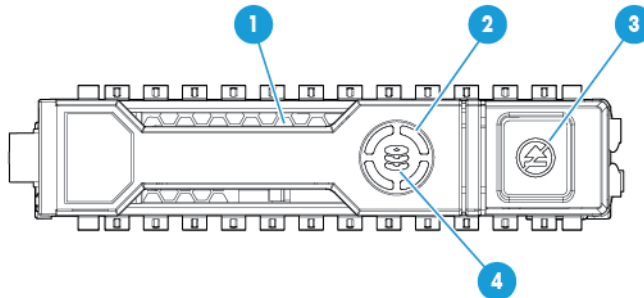
- 16-bay SFF hot-plug drive model



HP SmartDrive LED definitions

HP SmartDrives are the latest HP drive technology, and they are supported beginning with ProLiant Gen8 servers and server blades. The HP SmartDrive is not supported on earlier generation servers and server blades. Identify an HP SmartDrive by its carrier, shown in the following illustration.

When a drive is configured as a part of an array and connected to a powered-up controller, the drive LEDs indicate the condition of the drive.



Item	LED	Status	Definition
1	Locate	Solid blue	The drive is being identified by a host application.
		Flashing blue	The drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating green	Drive activity
		Off	No drive activity
3	Do not remove	Solid white	Do not remove the drive. Removing the drive causes one or more of the logical drives to fail.

Item	LED	Status	Definition
		Off	Removing the drive does not cause a logical drive to fail.
4	Drive status	Solid green	The drive is a member of one or more logical drives.
		Flashing green	The drive is rebuilding or performing a RAID migration, strip size migration, capacity expansion, or logical drive extension, or is 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.

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

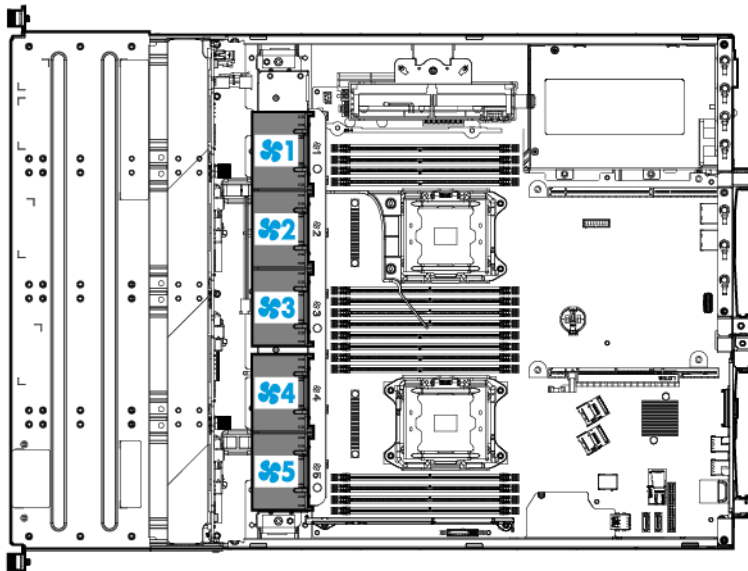


IMPORTANT: The HP Dynamic Smart Array B140i Controller is only available in UEFI Boot Mode. It cannot be enabled in Legacy BIOS Boot Mode. If the B140i controller is disabled, drives connected to the system board Mini-SAS connectors operate in AHCI or Legacy mode. Under this condition:

- The drives cannot be a part of a hardware RAID or a logical drive.
- The Locate, Drive status, and Do not remove LEDs of the affected drives are disabled.

Use BIOS/Platform Configuration (RBSU) in the UEFI System Utilities ("[HP UEFI System Utilities](#)" on page 90) to enable or disable the B140i controller (System Configuration → BIOS/Platform Configuration (RBSU) → System Options → SATA Controller Options → Embedded SATA Configuration).

Fan locations



Cabling

Cabling overview

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

For information on cabling peripheral components, refer to the white paper on high-density deployment at the HP website (<http://www.hp.com/products/servers/platforms>).



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

Storage cabling

The storage cabling illustrations in this section show both the drive data and power cables.

The LFF and SFF drive models each has their own preinstalled 20-pin multi-output drive power cable.

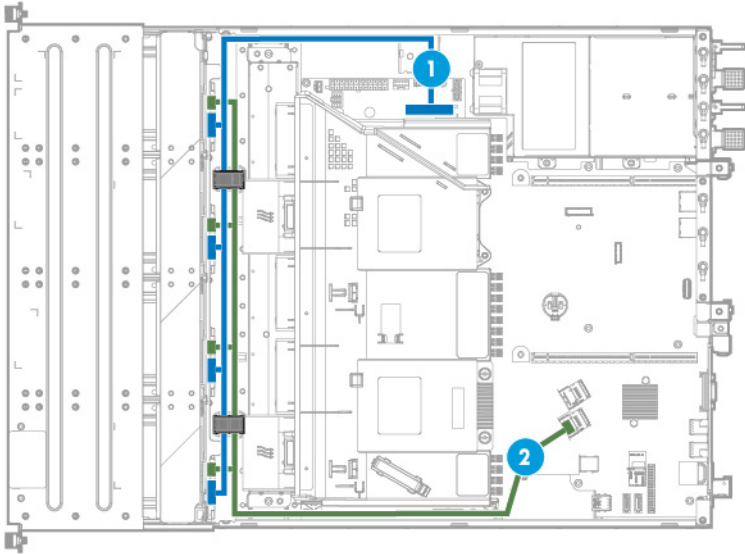
The LFF drive power cable has the following connections:

- Common end connector—System board
- BP1 cable connector—4-bay LFF backplane
- BP2 cable connector—8-bay LFF backplane

The SFF drive power cable has the following connections:

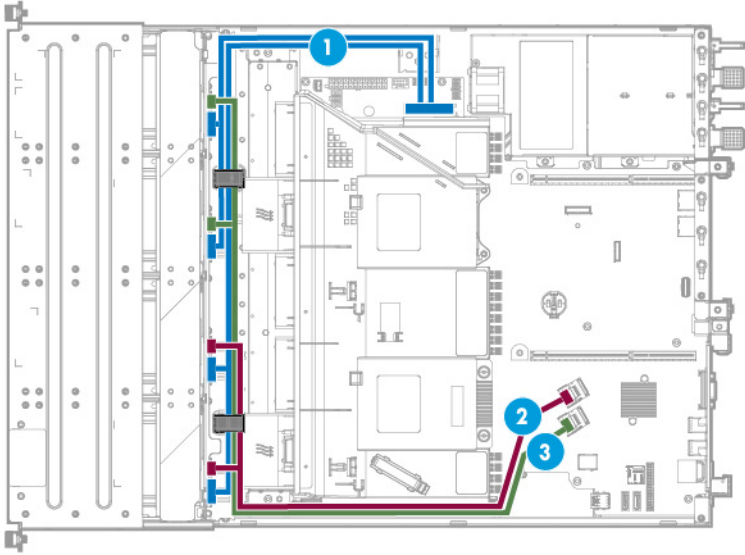
- Common end connector—System board
- BP3 cable connector—8-bay SFF backplane in box 3
- BP2 cable connector—8-bay SFF backplane in box 2 (16-bay SFF drive configuration)
- ODD cable connector—Power connector in the SATA optical drive cable (if an optical drive is installed)

4-bay LFF non-hot-plug SATA drive cabling



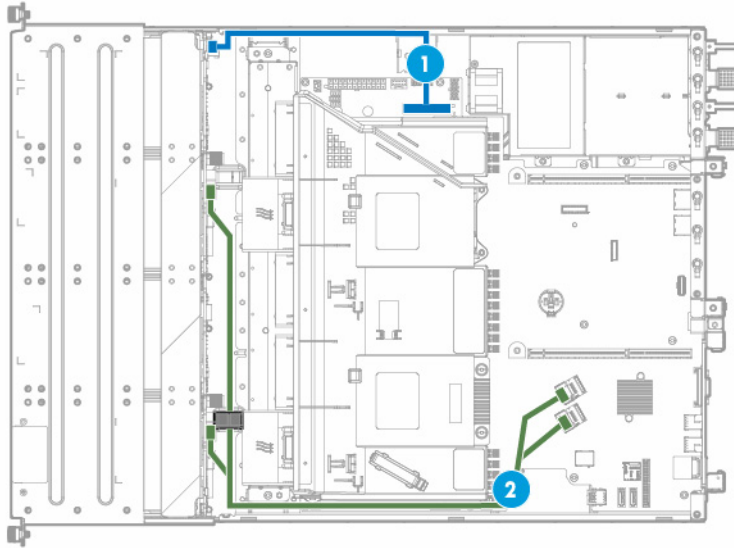
Item	Description
1	Drive power cable
2	Mini-SAS cable

8-bay LFF non-hot-plug SATA drive cabling



Item	Description
1	Drive power cable
2	Mini-SAS cable 2
3	Mini-SAS cable 1

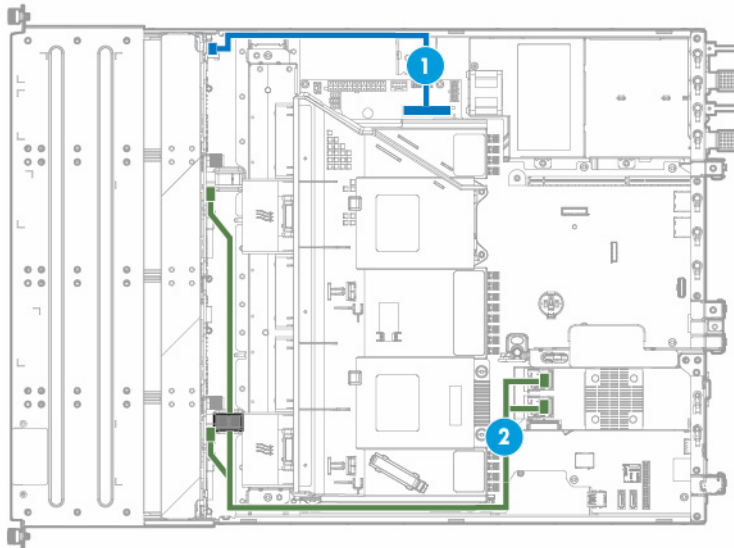
8-bay LFF hot-plug SATA drive cabling



Item	Description
1	Drive power cable
2	Mini-SAS X-cable

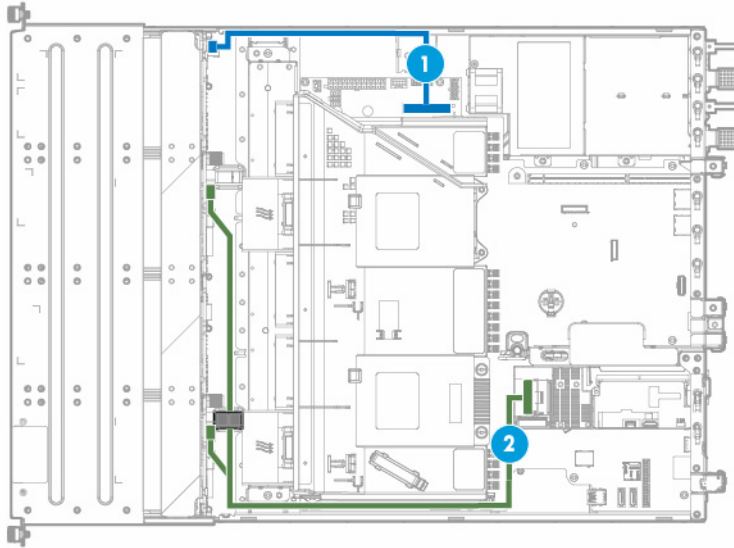
8-bay LFF hot-plug SAS/SATA drive cabling

- Drives connected to an HBA option



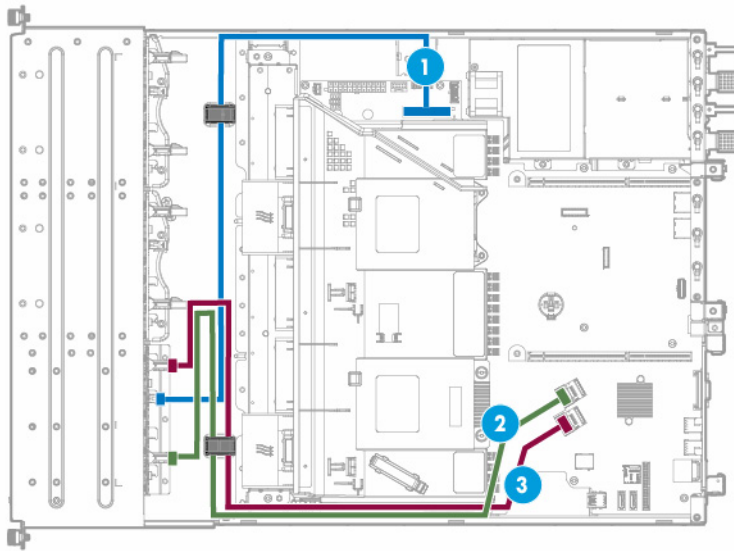
Item	Description
1	Drive power cable
2	Mini-SAS X-cable

- Drives connected to an HP Smart Array Controller option



Item	Description
1	Drive power cable
2	Mini SAS Y-cable

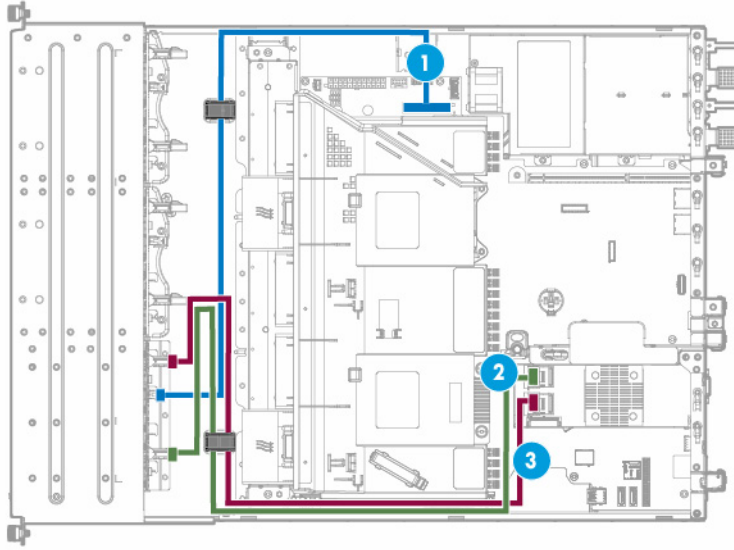
8-bay SFF hot-plug SATA drive cabling



Item	Description
1	Drive power cable
2	Mini-SAS cable 2
3	Mini-SAS cable 1

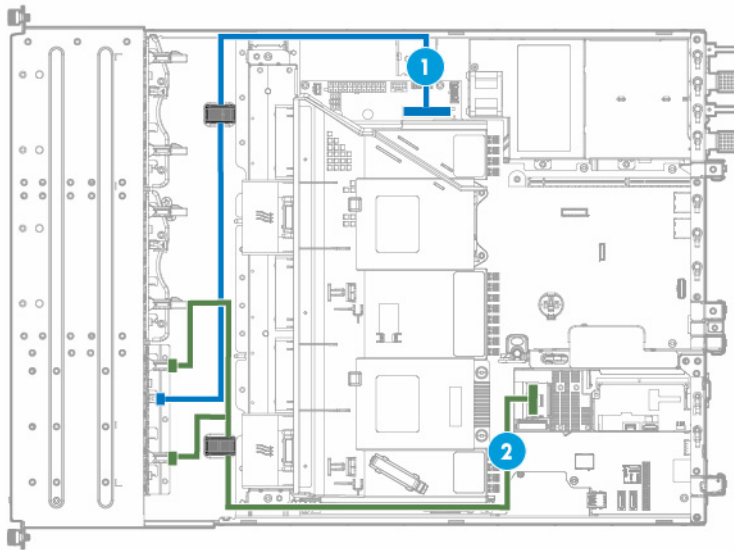
8-bay SFF hot-plug SAS/SATA drive cabling

- Drives connected to an HBA option



Item	Description
1	Drive power cable
2	Mini-SAS cable 2
3	Mini-SAS cable 1

- Drives connected to an HP Smart Array Controller option



Item	Description
1	Drive power cable
2	Mini-SAS Y-cable

16-bay SFF hot-plug SAS/SATA drive cabling

- Drives connected to two HP Smart Array P440 Controllers



Item	Description
1	Drive power cable
2	Mini-SAS Y-cable to the box 3 drives
3	Mini-SAS Y-cable to the box 2 drives

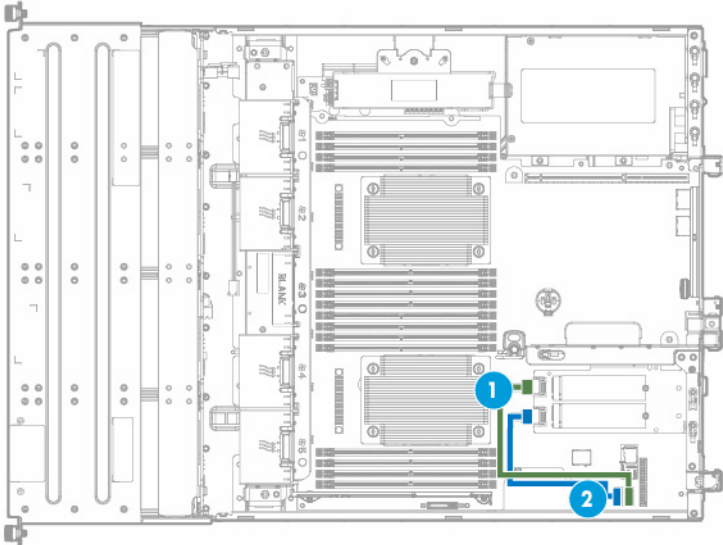
- Drives connected to an HP Smart Array P840 Controller



Item	Description
1	Drive power cables
2	Mini-SAS Y-cable to the box 3 drives
3	Mini-SAS Y-cable to the box 2 drives

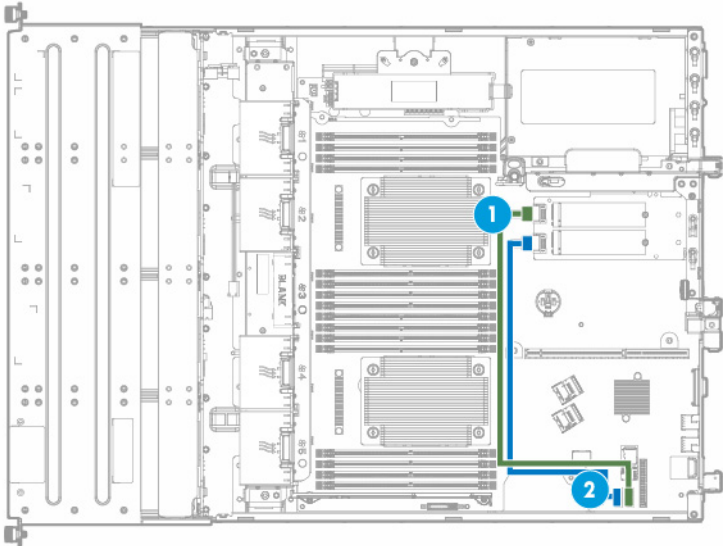
M.2 SSD cabling

- M.2 SSD cabling from the primary PCIe riser location



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

- M.2 SSD cabling from the secondary PCIe riser location

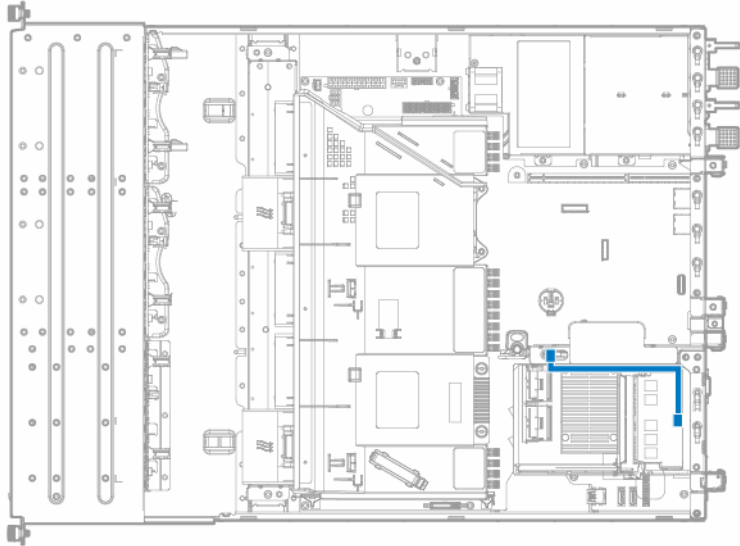


Item	Description
1	M.2 SSD 2 SATA cable
2	M.2 SSD 1 SATA cable

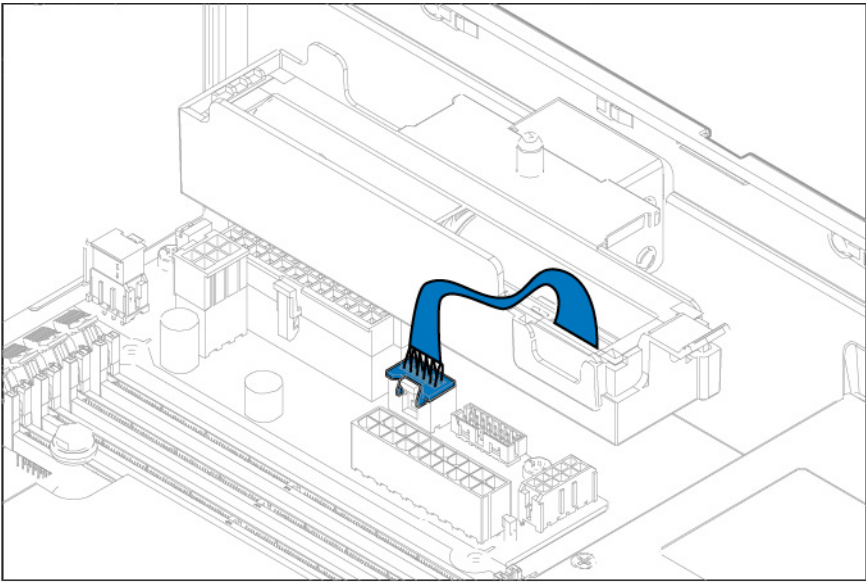
FBWC module backup power cabling

The FBWC solution is a separately purchased option. This server only supports FBWC module installation when an HP Smart Array P-Series controller is installed.

Depending on the controller option installed, the actual storage controller connectors might look different from what is shown in this section.



HP Smart Storage Battery cabling

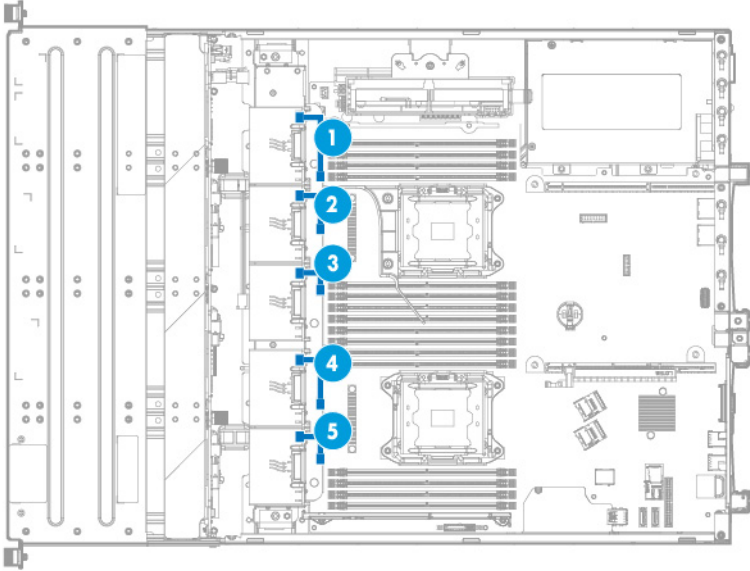


Optical drive cabling



Item	Description
1	Optical drive power cable
2	Optical drive SATA cable

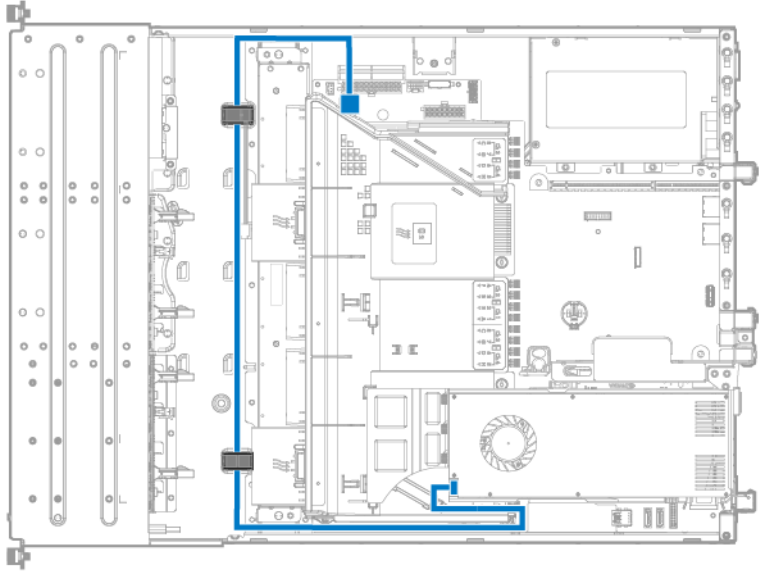
Fan cabling



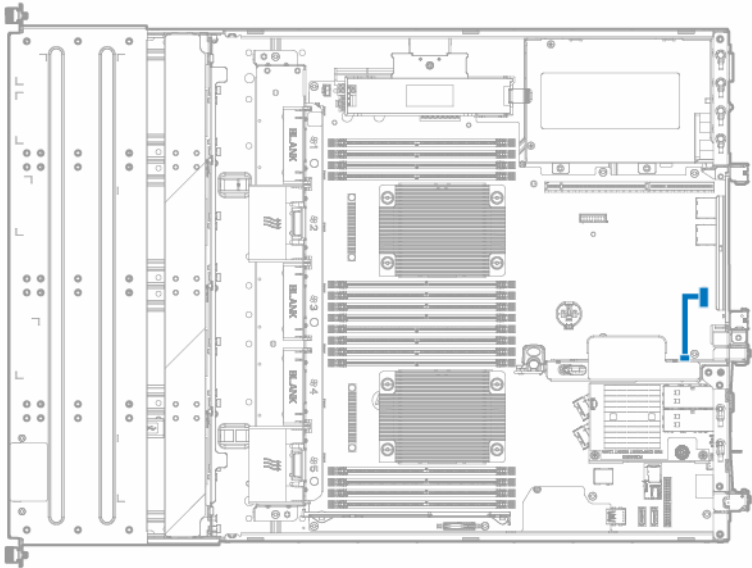
Item	Description
1	Fan 1 cable
2	Fan 2 cable
3	Fan 3 cable
4	Fan 4 cable

Item	Description
5	Fan 5 cable

GPU power drive cabling

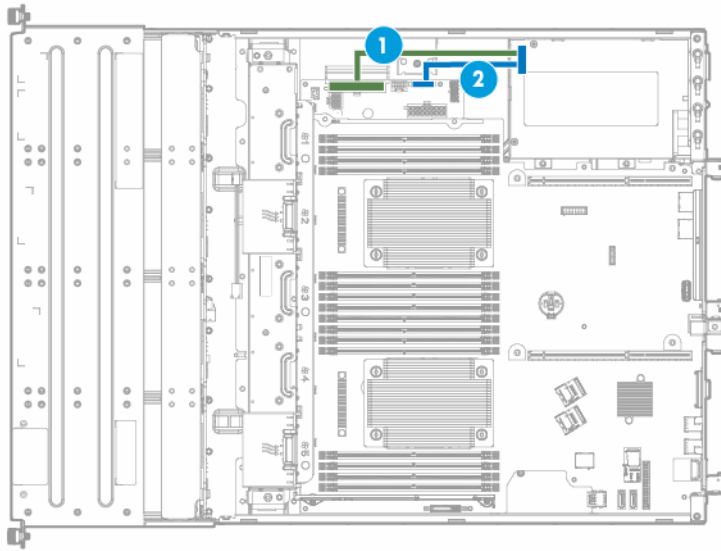


FlexibleLOM sideband signal cabling



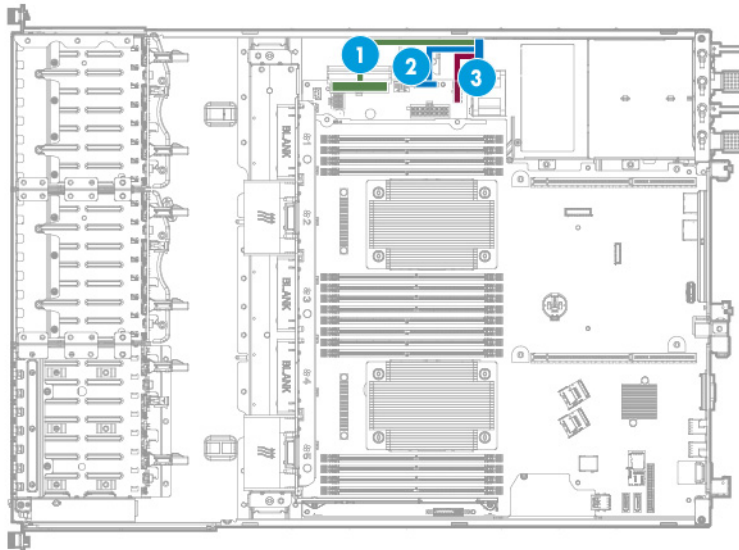
Power supply cabling

HP 550-W Power Supply cabling (non-hot-plug)



Item	Description
1	24-pin power supply cable
2	16-pin power supply sideband signal cable

HP Redundant Power Supply cabling (hot-plug)

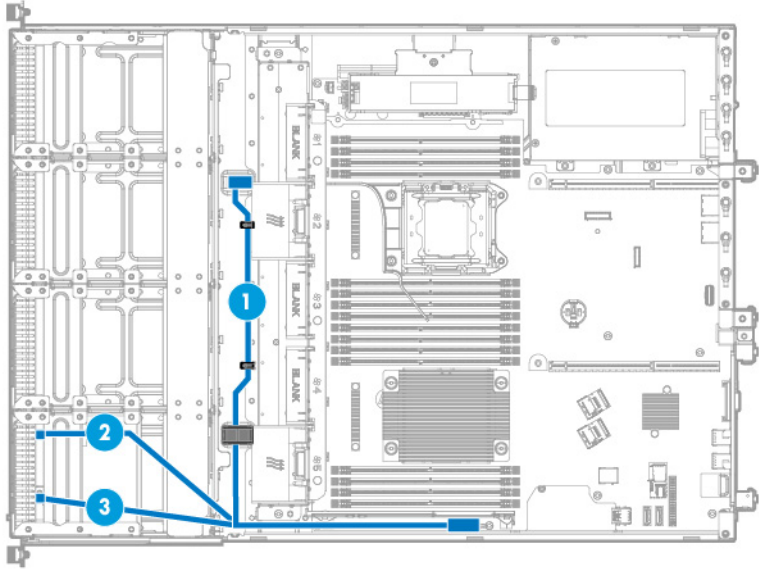


Item	Description
1	24-pin power supply cable
2	16-pin power supply sideband signal cable

Item	Description
3	10-pin RPS cable

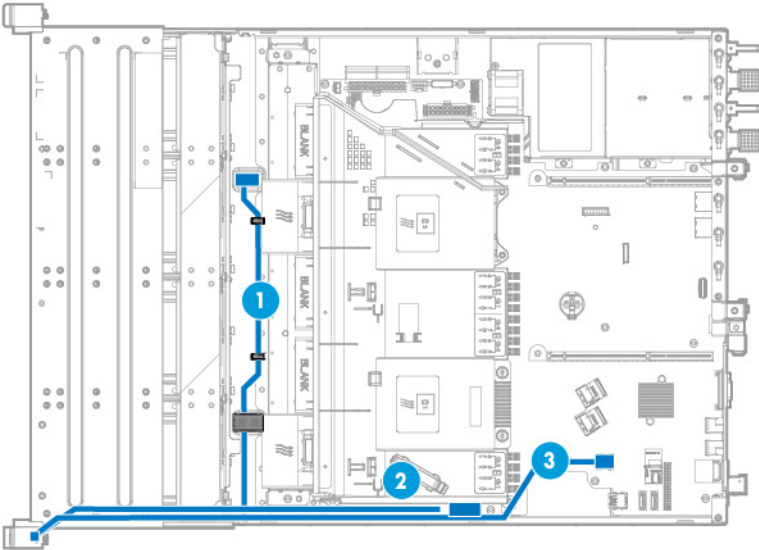
Front panel cabling

- Front panel cabling in an LFF chassis with thumbscrew rack ears



Item	Description
1	Ambient temperature sensor cable
2	USB 2.0 connector cable
3	Front I/O cable

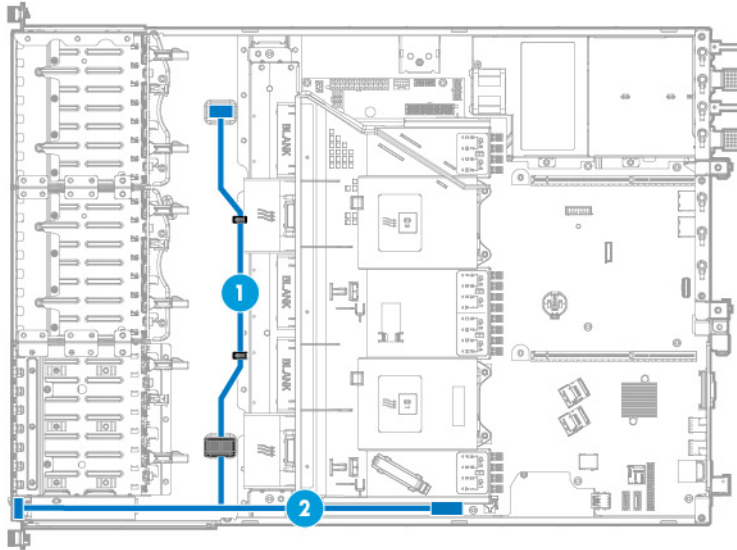
- Front panel cabling in an LFF chassis with quick-release latch rack ears



Item	Description
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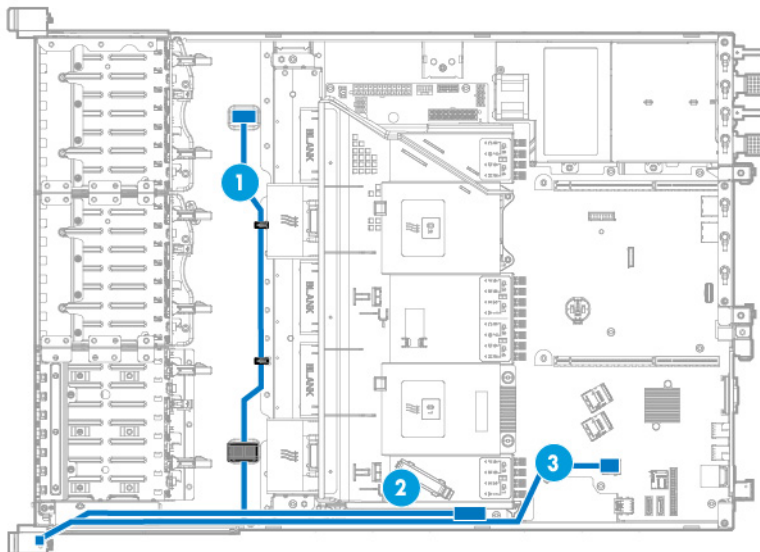
Item	Description
1	Ambient temperature sensor cable
2	Front I/O cable
3	USB 3.0 connector cable

- Front panel cabling in an SFF chassis with thumbscrew rack ears



Item	Description
1	Ambient temperature sensor cable
2	Front I/O cable

- Front panel cabling in an SFF chassis with quick-release latch rack ears



Item	Description
1	Ambient temperature sensor cable
2	Front I/O cable

Item	Description
3	USB 3.0 connector cable

Specifications

Environmental specifications

Specification	Value
Temperature range*	—
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	Minimum to be the higher (more moisture) of -12°C (10.4°F) dew point or 8% relative humidity Maximum to be 24°C (75.2°F) dew point or 90% relative humidity
Nonoperating	5% to 95% 38.7°C (101.7°F), maximum wet bulb temperature

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

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

- 5°C to 10°C (41°F to 50°F) and 35°C to 40°C (95°F to 104°F) at sea level with an altitude derating of 1.0°C per every 175 m (1.8°F per every 574 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).
- 40°C to 45°C (104°F to 113°F) at sea level with an altitude derating of 1.0°C per every 125 m (1.8°F per every 410 ft) above 900 m (2953 ft) to a maximum of 3048 m (10,000 ft).

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

Mechanical specifications

Dimension	Value
Height*	8.75 cm (3.44 in)
Depth*	60.70 cm (23.90 in)
Width*	44.54 cm (17.50 in)
Weight (full load, approximate values)	—
4-bay LFF drive model	16.59 kg (36.58 lb)
8-bay LFF drive model	19.19 kg (42.31 lb)
12-bay LFF drive model	21.59 kg (47.60 lb)

Dimension	Value
8-bay SFF drive model with optical drive	16.09 kg (35.48 lb)
8-bay SFF drive model without optical drive	15.95 kg (35.17 lb)
16-bay SFF drive model with optical drive	17.95 kg (39.60 lb)
16-bay SFF drive model without optical drive	17.87 kg (39.40 lb)

* These dimensions apply to all server models.


Power supply specifications

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

- HP 550-W Power Supply (PN 730941-B21)
- HP 800-W/900-W Gold AC Power Input Module (PN 744689-B21)

This is supported when the two-bay HP RPS Backplane option (PN 745813-B21) is installed.

These are Entry Level Power Supply products for HP ProLiant servers. For more information about the power supply features, specifications, and compatibility, see the HP website (<http://www.hp.com/go/proliant/powersupply>).

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

Hot-plug power supply calculations

For hot-plug power supply specifications and calculators to determine electrical and heat loading for the server, see the HP Power Advisor website (<http://www.hp.com/go/hppoweradvisor>).

Acronyms and abbreviations

ABEND

abnormal end

AMP

Advanced Memory Protection

API

application program interface

ASHRAE

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ASR

Automatic Server Recovery

BP

backplane

CSR

Customer Self Repair

FAT

file allocation table

FBWC

flash-backed write cache

GPU

graphics processing unit

HBA

host bus adapter

HP SIM

HP Systems Insight Manager

HP SSA

HP Smart Storage Administrator

iLO

Integrated Lights-Out

IML

Integrated Management Log

LFF

large form factor

LOM

Lights-Out Management

NAND

Not AND

NMI

nonmaskable interrupt

NVRAM

nonvolatile memory

ODD

Optical Disk Drive

PCIe

Peripheral Component Interconnect Express

POST

Power-On Self Test

QR code

quick response code

RBSU

ROM-Based Setup Utility

REST

representational state transfer

RPS

redundant power supply

SAS

serial attached SCSI

SATA

serial ATA

SD

Secure Digital

SFF

small form factor

SIM

Systems Insight Manager

SPP

HP Service Pack for ProLiant

SSD

solid-state drive

SUV

serial, USB, video

TPM

Trusted Platform Module

UEFI

Unified Extensible Firmware Interface

UID

unit identification

USB

universal serial bus

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Index

A

- access panel, remove 37
- Active Health System 89
- ACU (Array Configuration Utility) 93
- air baffle, removal 32
- air scoop 44
- ambient temperature 122
- ambient temperature sensor, cabling 119
- Automatic Server Recovery (ASR) 94

B

- battery pack, removing 43
- bezel, removing 27
- boot options 90, 91

C

- cable management arm 30
- cabling 108, 118
 - cabling, battery pack 115
 - cabling, drive 108, 109, 110, 111, 112, 113
 - cabling, fan 116
 - cabling, FBWC 115
 - cabling, FlexibleLOM 117
 - cabling, front I/O 119
 - cabling, GPU 117
 - cabling, hot-plug power supply 118
 - cabling, Mini-SAS cable option 110, 111
 - cabling, not-hot-plug power supply 118
 - cabling, optical drive 116
 - cabling, redundant power supply 118
- cache module battery pack 43
- Care Pack 92
- clearing NVRAM 104
- CMOS 104
- components, front panel 95, 96
- components, rear panel 99
- components, system board 102
- crash dump analysis 105
- customer asset tag 96
- customer self repair (CSR) 6

D

- dedicated iLO management connector 102
- dedicated iLO management module 66
- diagnosing problems 87
- diagnostic tools 88, 91, 92, 94
- dimensions and weight 122
- DIMM slot locations 104, 105
- DIMMs, removing 52
- documentation feedback 127
- drive backplane 40, 42
- drive blank 35, 36
- drive cabling 108
- drive carrier 34
- drive LEDs 106
- drive numbering 105
- drives, determining status of 106

E

- electrostatic discharge 24
- embedded UEFI diagnostics 91
- environmental specifications 122
- error messages 87
- expansion board 59
- extending server from rack 28
- external USB functionality 93

F

- fan blank 50
- fan cabling 116
- fan cage 33
- fan connectors 102
- fan location 107
- fan population guidelines 49
- fans, removing 51
- FBWC cabling 115
- FBWC module 44
- FlexibleLOM riser board 61
- FlexibleLOM riser cage 61, 100
- FlexibleLOM sideband signal cabling 117
- front I/O assembly 68
- front I/O cabling 119
- front panel buttons 97

- front panel cabling 119
- front panel components 95, 96
- front panel LED power fault codes 98
- front panel LEDs 97

G

- GPU power cabling 117
- grounding methods 24
- grounding requirements 24

H

- health driver 94
- health LED 97
- heatsink 53
- hot-plug drive backplane 40, 42
- hot-plug drive blank 35
- hot-plug drive, removing 36
- hot-plug power supply 83, 84, 123
- hot-plug power supply calculations 123
- hot-swap fan 51
- HP iLO 88
- HP Insight Diagnostics 92
- HP Insight Diagnostics survey functionality 92
- HP Insight Online 92
- HP Insight Remote Support software 92
- HP ProLiant Pre-boot Health Summary 89
- HP Smart Storage Battery 43, 115
- HP Smart Storage Battery cabling 115
- HP SmartDrive LED definitions 106
- HP SSA (HP Smart Storage Administrator) 93
- HP Systems Insight Manager (SIM) 90, 92
- HP technical support 6
- HP Trusted Platform Module option 86
- HP Universal Media bay 95
- humidity 122

I

- illustrated parts catalog 16
- iLO account information 96
- iLO connector 102
- Insight Diagnostics 92
- Integrated Lights-Out (iLO) 88, 90
- Integrated Management Log (IML) 90
- Intelligent Provisioning 90, 92
- internal USB connector 92, 102

L

- LED, health 97

- LED, system power 97
- LEDs, drive 106
- LEDs, front panel 97
- LEDs, NIC 97
- LEDs, power fault 97, 98
- LEDs, rear panel 100
- LEDs, unit identification (UID) 97
- legacy USB support 92

M

- M.2 SATA SSD enablement board 46
- M.2 SSD cabling 114
- management tools 88
- mechanical components 16
- mechanical specifications 122
- memory dump 105
- microSD card slot 102
- Mini-SAS cabling 109, 110, 111
- Mini-SAS Y-cabling 110, 111, 112, 113

N

- NIC activity LED 97, 100
- NIC connectors 99
- NIC link LED 97, 100
- NMI functionality 105
- NMI header 105
- non-hot-plug drive cable assembly 38
- non-hot-plug drive carrier 34
- non-hot-plug drives 34
- non-hot-plug power supply 82, 123
- non-hot-plug power supply cabling 118

O

- operating system crash 94, 105
- operating systems supported 92
- optical drive 48
- optical drive cabling 116

P

- PCI riser board 60
- PCI riser board slot definitions 100
- PCI riser cage, removing 31
- POST error messages 87
- power calculator 123
- power fault 98
- power input module 83
- Power On/Standby button 97
- power supply 82

- power supply cabling 118
- power supply specifications 123
- power supply, hot-plug 83, 84, 118, 123
- power supply, non-hot-plug 82, 118, 123
- powering down 27
- power-on password 104
- preparation procedures 26
- problem diagnosis 87, 88
- processor 55
- Product ID 91
- pull tab cage 72

Q

- QR code label 90, 96
- quick-release latch rack ears 70
- QuickSpecs 88

R

- rack ears 28, 70
- rack warnings 26
- RAID configuration 93
- rear panel components 99
- rear panel LEDs 100
- rear panel, accessing 30
- redundant power supply 84, 123
- redundant power supply cabling 118
- re-entering the server serial number 91
- removal and replacement procedures 24
- removing server from rack 30
- removing the security bezel 27
- required tools 24
- requirements, environmental 122
- ROM legacy USB support 92
- ROM-Based Setup Utility (RBSU) 90
- RPS cabling 118

S

- safety considerations 24
- security bezel, removing 27
- serial label pull tab 96
- serial number 91
- server specifications 122
- server warnings and cautions 25, 26
- solid state device 46, 114
- specifications, environmental 122
- specifications, mechanical 122
- specifications, power supply 123
- specifications, server 122
- SPP 92

- static electricity 24
- storage cabling, eight-bay drive 109, 110, 111, 112
- storage cabling, four-bay drive 109
- storage cabling, sixteen-bay drive 113
- symbols on equipment 24
- system board 73
- system board battery 115
- system board components 102
- system components 19
- system configuration settings 104
- system maintenance switch 104

T

- technical support 6
- temperature requirements 122
- three-slot PCI riser cage 31, 100
- TPM connector 102
- troubleshooting resources 87
- Trusted Platform Module (TPM) 86
- two-slot PCI riser cage 31, 100

U

- UEFI System Utilities 90
- UID (unit identification) 97
- UID button 97
- UID LED 97
- USB connector 95, 99, 102
- USB support 92

W

- warnings 25, 26
- weight 122