

HPE ProLiant DL380 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. Hewlett Packard Enterprise assumes you are qualified in the servicing of computer equipment, trained in recognizing hazards in products, and are familiar with weight and stability precautions.

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Customer self repair

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

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

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

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

For more information about the Hewlett Packard Enterprise CSR program, contact your local service provider. For the North American program, go to the Hewlett Packard Enterprise CSR website (<http://www.hpe.com/support/selfrepair>).

Parts only warranty service

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

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

Réparation par le client (CSR)

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

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

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

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

Pour plus d'informations sur le programme CSR de Hewlett Packard Enterprise, contactez votre Mainteneur Agréé local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web Hewlett Packard Enterprise (<http://www.hpe.com/support/selfrepair>).

Service de garantie "pièces seules"

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

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

Riparazione da parte del cliente

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

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

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

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

Per ulteriori informazioni sul programma CSR di Hewlett Packard Enterprise, contattare il centro di assistenza di zona. Per il programma in Nord America fare riferimento al sito Web (<http://www.hpe.com/support/selfrepair>).

Servizio di garanzia per i soli componenti

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

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

Customer Self Repair

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

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

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

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das Hewlett Packard Enterprise

Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien von Hewlett Packard Enterprise, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an Hewlett Packard Enterprise zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an Hewlett Packard Enterprise zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das defekte Teil nicht zurückschicken, kann Hewlett Packard Enterprise Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt Hewlett Packard Enterprise für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

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

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

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

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

Reparaciones del propio cliente

Los productos de Hewlett Packard Enterprise incluyen muchos componentes que el propio usuario puede reemplazar (Customer Self Repair, CSR) para minimizar el tiempo de reparación y ofrecer una mayor flexibilidad a la hora de realizar sustituciones de componentes defectuosos. Si, durante la fase de diagnóstico, Hewlett Packard Enterprise (o los proveedores o socios de servicio de Hewlett Packard Enterprise) identifica que una reparación puede llevarse a cabo mediante el uso de un componente CSR, Hewlett Packard Enterprise le enviará dicho componente directamente para que realice su sustitución. Los componentes CSR se clasifican en dos categorías:

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

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

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de Hewlett Packard Enterprise y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, Hewlett Packard Enterprise especificará si los componentes defectuosos deberán devolverse a Hewlett Packard Enterprise. En aquellos casos en los que sea necesario devolver algún componente a Hewlett Packard Enterprise,

deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no enviara el componente defectuoso requerido, Hewlett Packard Enterprise podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, Hewlett Packard Enterprise se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de Hewlett Packard Enterprise, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de Hewlett Packard Enterprise CSR (<http://www.hpe.com/support/selfrepair>).

Servicio de garantía exclusivo de componentes

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

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

Customer Self Repair

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

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

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

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

Enterprise u voor het vervangende onderdeel kosten in rekening brengen. Bij reparatie door de klant betaalt Hewlett Packard Enterprise alle verzendkosten voor het vervangende en geretourneerde onderdeel en kiest Hewlett Packard Enterprise zelf welke koerier/transportonderneming hiervoor wordt gebruikt.

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

Garantieservice "Parts Only"

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

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

Reparo feito pelo cliente

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

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

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

Conforme a disponibilidade e o local geográfico, as peças CSR serão enviadas no primeiro dia útil após o pedido. Onde as condições geográficas permitirem, a entrega no mesmo dia ou em quatro horas pode ser feita mediante uma taxa adicional. Se precisar de auxílio, entre em contato com o Centro de suporte técnico da Hewlett Packard Enterprise para que um técnico o ajude por telefone. A Hewlett Packard Enterprise especifica nos materiais fornecidos com a peça CSR de reposição se a peça com defeito deve ser devolvida à Hewlett Packard Enterprise. Nos casos em que isso for necessário, é preciso enviar a peça com defeito à Hewlett Packard Enterprise, você deverá enviar a peça com defeito de volta para a Hewlett Packard Enterprise dentro do período de tempo definido, normalmente em 5 (cinco) dias úteis. A peça com defeito deve ser enviada com a documentação correspondente no material de transporte fornecido. Caso não o faça, a Hewlett Packard Enterprise poderá cobrar a reposição. Para as peças de reparo feito pelo cliente, a Hewlett Packard Enterprise paga todas as despesas de transporte e de devolução da peça e determina a transportadora/serviço postal a ser utilizado.

Para obter mais informações sobre o programa de reparo feito pelo cliente da Hewlett Packard Enterprise, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da Hewlett Packard Enterprise (<http://www.hpe.com/support/selfrepair>).

Serviço de garantia apenas para peças

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

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

カスタマーセルフリペア

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

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

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

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

部品のみ保証サービス

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

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

客户自行维修

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

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

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

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

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

仅部件保修服务

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

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

客戶自行維修

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

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

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

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

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

僅限零件的保固服務

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

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

고객 셀프 수리

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

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

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

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

Hewlett Packard Enterprise CSR 프로그램에 대한 자세한 내용은 가까운 서비스 제공업체에 문의하십시오. 북미 지역의 프로그램에 대해서는 Hewlett Packard Enterprise CSR 웹 사이트(<http://www.hpe.com/support/selfrepair>)를 참조하십시오.

부품 제공 보증 서비스

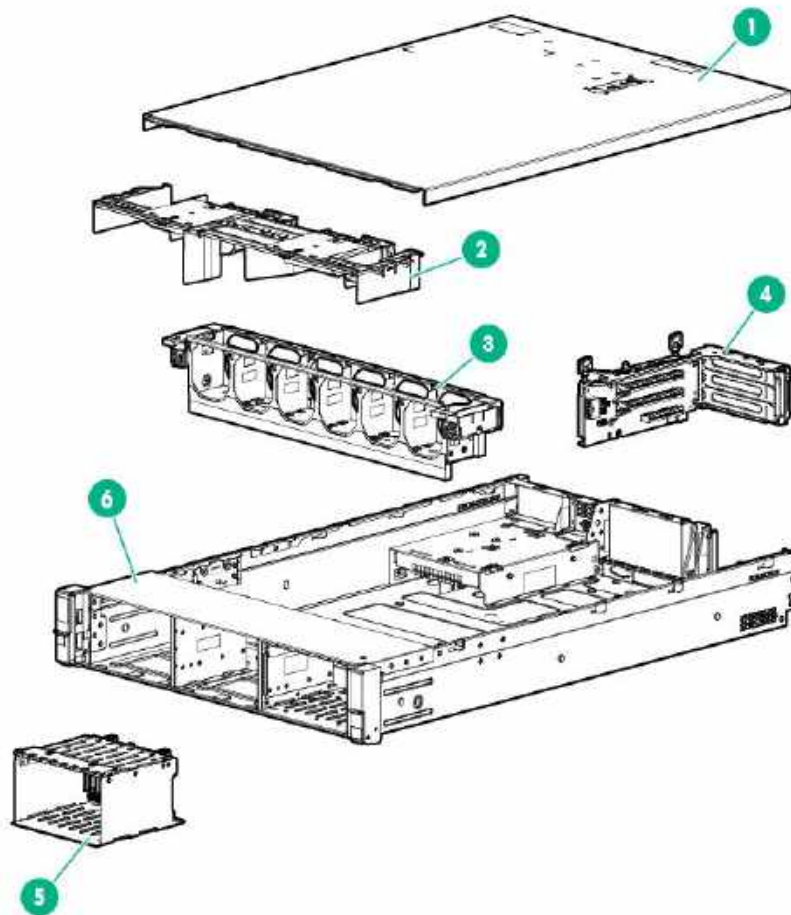
Hewlett Packard Enterprise 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 Hewlett Packard Enterprise는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

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

Illustrated parts catalog

Mechanical components

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



Item	Description	Spare part number	Customer self repair (on page 6)
1	Access panel	777292-001	Mandatory
2	Air baffle kit	777302-001	Mandatory ¹
3	Fan cage	777294-001	Mandatory ¹
4	PCI riser cage	—	—
	a) PCI riser cage, standard primary	777281-001	Optional ²
	b) PCI riser cage, primary optional*	777282-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
	c) PCI riser cage, secondary optional*	777283-001	Optional ²
5	Drive cage, 8SFF	779086-001	Mandatory ¹
6	Rail kit*	—	—
	a) SFF 2U easy install rail kit	744114-001	Mandatory ¹
	b) LFF 2U easy install rail kit	744115-001	Mandatory ¹
	c) 2U cable management arm	744116-001	Mandatory ¹
7	Universal media bay*	786579-001	Mandatory ¹
8	Miscellaneous blanks kit*	777301-001	—
	a) Power supply blank	—	Mandatory ¹
	b) Drive blank	—	Mandatory ¹
	c) PCI riser blank	—	Mandatory ¹
	d) HPE Flexible Smart Array Controller blank	—	Mandatory ¹
	e) Fan blank	—	Mandatory ¹

* Not shown

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

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

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

¹Obligatoire—Pièces pour lesquelles le client doit procéder lui-même aux réparations. Si vous demandez à Hewlett Packard Enterprise de procéder au remplacement de ces pièces, les frais de transport et de main d'œuvre pour ce service vous seront facturés.

²Facultatif—Pièces pour lesquelles une réparation par le client est facultative. Ces pièces sont également conçues pour que le client puisse procéder lui-même aux réparations. Cependant, les frais supplémentaires engendrés par le remplacement de ces pièces par Hewlett Packard Enterprise dépendent du type de service de garantie désigné pour votre produit.

³Non—Certaines pièces Hewlett Packard Enterprise ne sont pas conçues pour être remplacées par le client. Afin de se conformer aux exigences de la garantie la garantie du client, Hewlett Packard Enterprise demande à un fournisseur de services agréé de procéder au remplacement de la pièce. Ces pièces sont signalées par le mot « Non » dans le Catalogue de pièces illustré.

¹Obbligatorio—Parti per le quali il cliente è tenuto a effettuare autonomamente la riparazione. Se si richiede l'intervento di Hewlett Packard Enterprise per la sostituzione di queste parti, al cliente verranno addebitate le spese di viaggio e manodopera dell'operazione.

²Facoltativo—Parti per le quali la riparazione in autonomia da parte del cliente è facoltativa. Queste parti sono progettate per consentire anche la riparazione da parte del cliente. Tuttavia, se il cliente richiede l'intervento di Hewlett Packard Enterprise per la sostituzione, potrebbero essere addebitate spese aggiuntive a seconda del tipo di garanzia in assistenza previsto per il prodotto.

³No—Alcune parti Hewlett Packard Enterprise non sono progettate la riparazione in autonomia da parte del cliente. In base a quanto previsto dalla garanzia per il cliente, Hewlett Packard Enterprise richiede l'intervento di un tecnico autorizzato per la sostituzione della parte. Queste parti sono contrassegnate con "No" nel catalogo parti illustrato.

¹Zwingend—Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

²Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

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

¹Obligatorio—Componentes cuya reparación por parte del usuario es obligatoria. Si solicita a Hewlett Packard Enterprise que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

²Opcional—Componentes cuya reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que Hewlett Packard Enterprise realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

³No—Algunos componentes de Hewlett Packard Enterprise no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, Hewlett Packard Enterprise pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

¹Verplicht—Onderdelen die de klant zelf moet vervangen. Als u Hewlett Packard Enterprise vraagt deze onderdelen te vervangen, worden er reis- en arbeidskosten voor deze service in rekening gebracht.

²Optioneel—Onderdelen die de klant zelf kan vervangen. Deze onderdelen zijn ook ontworpen om door de klant zelf te worden vervangen. Als u Hewlett Packard Enterprise verzoekt om deze te vervangen, kan het zijn dat hiervoor extra kosten in rekening worden gebracht, afhankelijk van het soort garantie dat op uw product van toepassing is.

³Geen—Sommige onderdelen van Hewlett Packard Enterprise zijn niet ontworpen om door de klant zelf te worden vervangen. Om te voldoen aan de garantievooraardelen eist Hewlett Packard Enterprise dat een geautoriseerde serviceverlener het onderdeel vervangt. Deze onderdelen worden aangeduid met 'Geen' in de geïllustreerde onderdelencatalogus.

¹Obrigatório—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a Hewlett Packard Enterprise substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

²Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a Hewlett Packard Enterprise as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

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

¹Mandatory : 必須 — カスタマーセルフリペアが必須の部品。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

²Optional : 任意 — カスタマーセルフリペアが任意である部品。この部品もカスタマーセルフリペア用です。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

³No : 除外 — Hewlett Packard Enterprise製品の一部の部品は、カスタマーセルフリペアの対象外です。製品の保証を継続するためには、Hewlett Packard EnterpriseまたはHewlett Packard Enterprise正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が「カスタマーセルフリペア除外品」である旨が記載されています。

¹Mandatory — 客户必须自行维修的部件。如果您请求 Hewlett Packard Enterprise 更换这些部件，则必须为该服务支付差旅费和人工费用。

²Optional — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 Hewlett Packard Enterprise 为您更换这些部件，则根据为您的产品指定的保修服务类型，Hewlett Packard Enterprise 可能收取或不再收取任何附加费用。

³No — 某些 Hewlett Packard Enterprise 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，Hewlett Packard Enterprise 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

¹Mandatory — 客戶自行維修所使用的零件是強制性的。如果您要求 Hewlett Packard Enterprise 更換這些零件，Hewlett Packard Enterprise 將會向您收取此服務所需的外出費用與勞動成本。

²Optional — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 Hewlett Packard Enterprise 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

³No — 某些 Hewlett Packard Enterprise 零件沒有消費者可自行維修的設計。為符合客戶保固，Hewlett Packard Enterprise 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

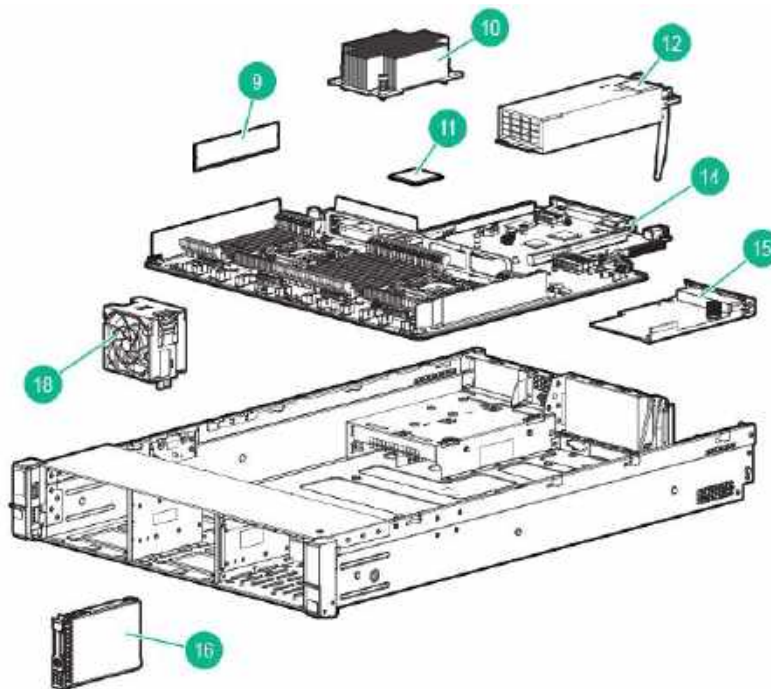
¹Mandatory — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 Hewlett Packard Enterprise에 이 부품의 교체를 요청할 경우 해당 서비스에 대한 출장비 및 작업비가 청구됩니다.

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

³No — 일부 Hewlett Packard Enterprise 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. Hewlett Packard Enterprise는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 요구하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

System components

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



Item	Description	Spare part number	Customer self repair (on page 6)
9	DIMMs	—	—
	a) 8-GB, 1Rx4, PC4-2133R	774170-001	Mandatory ¹
	b) 8-GB, 2Rx8, PC4-2133R*	774171-001	Mandatory ¹
	c) 16-GB, 2Rx4, PC4-2133R*	774172-001	Mandatory ¹
	d) 16-GB, 2Rx4, PC4-2133L*	774173-001	Mandatory ¹
	e) 32-GB, 4Rx4, PC4-2133L*	774174-001	Mandatory ¹
	e) 8-GB, 1Gx8, PC4-2400R*	819410-001	Mandatory ¹
	f) 16-GB, 2Gx4, PC4-2400R*	819411-001	Mandatory ¹
	g) 32-GB, 2Gx4, PC4-2400R*	819412-001	Mandatory ¹
	h) 64-GB, 2Gx4, PC4-2400L*	819413-001	Mandatory ¹
	i) 32-GB, 2Gx4, PC4-2400L*	819414-001	Mandatory ¹
	j) 16-GB, 1Gx4, PC4-2400R*	846740-001	Mandatory ¹
	k) 8-GB, 1Gx8, PC4-2400R*	852545-001	Mandatory ¹
	l) 8-GB, 1Rx4 DDR4-2133*	832961-001	Mandatory ¹
10	Heatsinks	—	—
	a) Standard efficiency heatsink	777290-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
	b) High-performance heatsink*	777291-001	Optional ²
11	Processors	—	—
	a) 1.60-GHz Intel Xeon E5-2603 v3 processor**	762441-001	Optional ²
	b) 1.90-GHz Intel Xeon E5-2609 v3 processor* **	762443-001	Optional ²
	c) 2.40-GHz Intel Xeon E5-2620 v3 processor* **	762445-001	Optional ²
	d) 2.40-GHz Intel Xeon E5-2630 v3 processor* **	762446-001	Optional ²
	e) 2.60-GHz Intel Xeon E5-2640 v3 processor* **	762447-001	Optional ²
	f) 2.30-GHz Intel Xeon E5-2650 v3 processor* **	762448-001	Optional ²
	g) 2.60-GHz Intel Xeon E5-2660 v3 processor* **	762449-001	Optional ²
	h) 2.30-GHz Intel Xeon E5-2670 v3 processor* **	762450-001	Optional ²
	i) 2.50-GHz Intel Xeon E5-2680 v3 processor* **	762451-001	Optional ²
	j) 2.60-GHz Intel Xeon E5-2690 v3 processor* **	762452-001	Optional ²
	k) 2.00-GHz Intel Xeon E5-2683 v3 processor* **	762453-001	Optional ²
	l) 2.30-GHz Intel Xeon E5-2695 v3 processor* **	762454-001	Optional ²
	m) 2.60-GHz Intel Xeon E5-2697 v3 processor* **	765154-001	Optional ²
	n) 3.00-GHz Intel Xeon E5-2623 v3 processor* **	780762-001	Optional ²
	o) 3.50-GHz Intel Xeon E5-2637 v3 processor* **	762455-001	Optional ²
	p) 3.40-GHz Intel Xeon E5-2643 v3 processor* **	762456-001	Optional ²
	q) 3.20-GHz Intel Xeon E5-2667 v3 processor* **	762457-001	Optional ²
	r) 3.10-GHz Intel Xeon E5-2687W v3 processor* **	762458-001	Optional ²
	s) 1.80-GHz Intel Xeon E5-2630L v3 processor* **	762459-001	Optional ²
	t) 2.30-GHz Intel Xeon E5-2698 v3 processor* **	780760-002	Optional ²
	u) 2.30-GHz Intel Xeon E5-2699 v3 processor* **	780761-001	Optional ²
	v) 1.80-GHz Intel Xeon E5-2650L v3 processor* **	762461-001	Optional ²
	w) 1.70-GHz Intel Xeon E5-2603 v4 processor**	835599-001	Optional ²
	x) 1.70-GHz Intel Xeon E5-2609 v4 processor* **	835600-001	Optional ²
	y) 2.10-GHz Intel Xeon E5-2620 v4 processor* **	835601-001	Optional ²
	z) 2.20-GHz Intel Xeon E5-2630 v4 processor* **	835602-001	Optional ²
	aa) 2.40-GHz Intel Xeon E5-2640 v4 processor* **	835603-001	Optional ²
	bb) 2.20-GHz Intel Xeon E5-2650 v4 processor* **	835604-001	Optional ²
	cc) 2.00-GHz Intel Xeon E5-2660 v4 processor* **	835605-001	Optional ²
	dd) 2.40-GHz Intel Xeon E5-2680 v4 processor* **	835606-001	Optional ²
	ee) 2.60-GHz Intel Xeon E5-2690 v4 processor* **	835607-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
	ff) 2.10-GHz Intel Xeon E5-2683 v4 processor* **	835614-001	Optional ²
	gg) 2.30-GHz Intel Xeon E5-2695 v4 processor* **	835615-001	Optional ²
	hh) 2.30-GHz Intel Xeon E5-2697 v4 processor* **	835616-001	Optional ²
	ii) 2.60-GHz Intel Xeon E5-2623 v4 processor* **	835610-001	Optional ²
	jj) 3.50-GHz Intel Xeon E5-2637 v4 processor* **	835611-001	Optional ²
	kk) 2.1-GHz Intel Xeon E5-2698 v4 processor* **	835617-001	Optional ²
	ll) 2.2-GHz Intel Xeon E5-2699 v4 processor* **	835618-001	Optional ²
	mm) 3.00-GHz Intel Xeon E5-2687W v4 processor* **	841034-001	Optional ²
	nn) 1.80-GHz Intel Xeon E5-2630L v4 processor* **	835608-001	Optional ²
	oo) 2.20-GHz Intel Xeon E5-2698 v4 processor* **	828054-001	Optional ²
	pp) 2.40-GHz Intel Xeon E5-2699A v4 processor* **	872020-001	Optional ²
	qq) 1.80-GHz Intel Xeon E5-2650L v4 processor* **	835609-001	Optional ²
12	Power supplies, hot-plug	—	—
	a) 500 W, Flex Slot Platinum	754377-001	Mandatory ¹
	b) 800 W, Flex Slot Platinum*	754381-001	Mandatory ¹
	c) 800 W, Flex Slot Titanium*	754378-001	Mandatory ¹
	d) 800 W, Flex Slot Universal*	754379-001	Mandatory ¹
	e) 800 W, Flex Slot –48Vdc*	754382-001	Mandatory ¹
	f) 1400 W, Flex Slot Platinum*	754383-001	Mandatory ¹
13	HPE 750W Flex Slot Hot-Plug Battery Backup Module*	754380-001	Mandatory ¹
14	System board assembly	—	—
	a) System board assembly	775400-001	Optional ²
	b) System board assembly- BRDWL	843307-001	Optional ²
15	FlexibleLOM adapters	—	—
	a) HPE InfiniBand FDR 2-port, 5450-QSFP Adapter	705087-001	Mandatory ¹
	b) HPE InfiniBand FDR 2-port, 545FLR-QSFP Adapter*	705088-001	Mandatory ¹
16	Hot-plug hard drives	—	—
	a) 146-GB, SAS, SFF, 15,000-rpm, 6G	653950-001	Mandatory ¹
	b) 300-GB, SAS, SFF, 10,000-rpm, 6G*	653955-001	Mandatory ¹
	c) 450-GB, SAS, SFF, 10,000-rpm, 6G*	653956-001	Mandatory ¹
	d) 500-GB, SAS, SFF, 7,200-rpm, 6G*	653953-001	Mandatory ¹
	e) 600-GB, SAS, SFF, 10,000-rpm, 6G*	653957-001	Mandatory ¹
	f) 900-GB, SAS, SFF, 10,000-rpm, 6G*	653971-001	Mandatory ¹
	g) 1-TB, SAS, SFF, 7,200-rpm, 6G*	653954-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 6)
	h) 1-TB, SAS, LFF, 7,200-rpm, 6G*	653947-001	Mandatory ¹
	i) 1.2-TB, SAS, SFF, 10,000-rpm, 6G*	718292-001	Mandatory ¹
	j) 2 -TB, SAS, SFF, 7,200-rpm, 6G*	653948-001	Mandatory ¹
	k) 3 -TB, SAS, LFF, 7,200-rpm, 6G*	653959-001	Mandatory ¹
	l) 6-TB, SAS, LFF, 7,200-rpm, 6G*	761497-001	Mandatory ¹
	m) 500-GB, SATA, LFF, 7,200-rpm, 6G*	658103-001	Mandatory ¹
	n) 1-TB, SATA, SFF, 7,200-rpm, 6G*	656108-001	Mandatory ¹
	o) 1-TB, SATA, LFF, 7,200-rpm, 6G*	657739-001	Mandatory ¹
	p) 2-TB, SATA, LFF, 7,200-rpm, 6G*	658102-001	Mandatory ¹
	q) 3-TB, SATA, LFF, 7,200-rpm, 6G*	628182-001	Mandatory ¹
	r) 4-TB, SATA, LFF, 7,200-rpm, 6G*	693720-001	Mandatory ¹
	s) 6-TB, SATA, LFF, 7,200-rpm, 6G*	761496-001	Mandatory ¹
17	Solid state drives	—	—
	a) 100-GB, SAS, ME, SFF, 6G*	692164-001	Mandatory ¹
	b) 200-GB, SAS, ME, SFF, 6G*	692165-001	Mandatory ¹
	c) 200-GB, SAS, ME, SFF, 12G*	741224-001	Mandatory ¹
	d) 200-GB, SAS, HE, SFF, 12G*	741230-001	Mandatory ¹
	e) 400-GB, SAS, ME, SFF, 12G*	741226-001	Mandatory ¹
	f) 400-GB, SAS, HE, SFF, 12G*	741232-001	Mandatory ¹
	g) 800-GB, SAS, VE, SFF, 12G*	762749-001	Mandatory ¹
	h) 800-GB, SAS, ME, SFF, 12G*	741228-001	Mandatory ¹
	i) 800-GB, SAS, HE, SFF, 12G*	741234-001	Mandatory ¹
	j) 800-GB, SAS, VE, LFF, 12G*	762750-001	Mandatory ¹
	k) 800-GB, SAS, ME, LFF, 12G*	692163-001	Mandatory ¹
	l) 1.6-TB, SAS, VE, SFF, 12G*	762751-001	Mandatory ¹
	m) 1.6-TB, SAS, VE, LFF, 12G*	762752-001	Mandatory ¹
	n) 80-GB, SATA, VE, SFF, 6G*	734562-001	Mandatory ¹
	o) 80-GB, SATA, VE, LFF, 6G*	734563-001	Mandatory ¹
	p) 100-GB, SATA, ME, LFF, 6G*	692160-001	Mandatory ¹
	q) 120-GB, SATA, VE, SFF, 6G*	718136-001	Mandatory ¹
	r) 120-GB, SATA, VE, LFF, 6G*	718300-001	Mandatory ¹
	s) 200-GB, SATA, ME, LFF, 6G*	692161-001	Mandatory ¹
	t) 240-GB, SATA, VE, SFF, 6G*	718137-001	Mandatory ¹
	u) 240-GB, SATA, VE, LFF, 6G*	718294-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 6)
	v) 400-GB, SATA, ME, LFF, 6G*	692162-001	Mandatory ¹
	w) 480-GB, SATA, VE, SFF, 6G*	718138-001	Mandatory ¹
	x) 480-GB, SATA, VE, LFF, 6G*	718296-001	Mandatory ¹
	y) 800-GB, SATA, VE, SFF, 6G*	718139-001	Mandatory ¹
	z) 800-GB, SATA, VE, LFF, 6G*	718298-001	Mandatory ¹
	aa) 300-GB, SATA, VE, SFF, 6G*	739954-001	Mandatory ¹
	bb) 300-GB, SATA, VE, LFF, 6G*	739955-001	Mandatory ¹
	cc) 400-GB, SATA, ME, SFF, 6G*	692166-001	Mandatory ¹
	dd) 600-GB, SATA, VE, SFF, 6G*	739959-001	Mandatory ¹
	ee) 600-GB, SATA, VE, LFF, 6G*	739960-001	Mandatory ¹
	ff) 800-GB, SATA, ME, SFF, 6G*	692167-001	Mandatory ¹
	gg) 960-GB, SATA, VE, SFF, 6G*	789361-001	Mandatory ¹
18	Hot-plug fan	—	—
	a) Standard fan module	777285-001	Mandatory ¹
	b) High performance fan module*	777286-001	Mandatory ¹
19	Power switch module	—	—
	a) Standard cabled power switch module*	777289-001	Mandatory ¹
	b) Systems Insight Display power switch module*	777288-001	Mandatory ¹
20	Backplane boards*	—	—
	a) 8-SFF backplane board	777279-001	Optional ²
	b) 2-SFF rear backplane board	777280-001	Optional ²
	c) 12-LFF backplane board	777284-001	Optional ²
	d) 4-LFF backplane board	775402-001	Optional ²
	e) 3-LFF rear backplane board	779979-001	Optional ²
21	Controllers*	—	—
	a) HPE Smart Array P440ar Controller	749796-001	Optional ²
	b) HPE H240ar Smart Host Bus Adapter	749997-001	Optional ²
	c) HPE Smart Array P840 Controller	761880-001	Optional ²
	d) HPE Smart Array P840ar Controller	848147-001	Optional ²
22	HPE 12Gb DL380 Gen9 SAS Expander Card*	761879-001	Optional ²
23	GPUs*	—	—
	a) HPE NVIDIA Quadro K2200 3GB GPU	783874-001	Optional ²
	b) HPE NVIDIA Quadro K4200 4GB GPU	783875-001	Optional ²
	c) HPE NVIDIA Quadro K6000 4GB GPU	736859-001	Optional ²
	d) HPE NVIDIA Tesla K40C 124GB GPU	766915-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
	e) HPE NVIDIA GRID K1 Quad GPU	788358-001	Optional ²
	f) HPE NVIDIA GRID K2 RAF PCIe GPU	756822-001	Optional ²
24	Bezel ear*	—	—
	a) Location discovery services ear	787630-001	Optional ²
	b) SFF standard ear kit, Gen9, left and right	777295-001	Optional ²
	c) LFF standard ear kit, Gen9, left and right with UID and cable	784231-001	Optional ²
25	Thermal grease*	—	—
	a) 0.5 thermal grease	777297-001	Optional ²
	b) 1.0 thermal grease	777298-001	Optional ²
26	HPE Smart Storage Battery*	815983-001	Mandatory ¹
27	M.2 SSD enablement board option*	—	—
	a) HPE 120GB M.2 SSD Enablement Board	797908-001	Mandatory ¹
	b) HPE Dual 120GB M.2 SSD Enablement Board	797908-001	Mandatory ¹
28	Drive cables*	—	—
	a) 2 SFF Mini-SAS cable	784625-001	Mandatory ¹
	b) 2 SFF/8 SFF SAS cable, HPE H240 Smart Host Bus Adapter	784629-001	Mandatory ¹
	c) 2 SFF/26 SFF/4 LFF power cable	784624-001	Mandatory ¹
	d) 3 LFF/2 SFF Mini-SAS cable	784626-001	Mandatory ¹
	e) 4 LFF 12G Mini-SAS cable	784628-001	Mandatory ¹
	f) 8 SFF Mini-SAS cable	784621-001	Mandatory ¹
	g) 12 LFF/15 LFF Mini-SAS cable	784627-001	Mandatory ¹
	h) 8 SFF/12 LFF/4 LFF/24 SFF power cable	784622-001	Mandatory ¹
29	Media cables*	—	—
	a) DVD SATA cable	784623-001	Mandatory ¹
	b) Universal media bay power cable, 2 SFF	805122-001	Mandatory ¹
30	Bezel ear I/O cable, LFF*	784231-001	Mandatory ¹
31	GPU power cable, NVIDIA K80*	805123-001	Mandatory ¹

*Not shown

**All processors in this HPE ProLiant server must have the same cache size, speed, number of cores, and rated maximum power consumption.

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

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

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

¹Obligatoire—Pièces pour lesquelles le client doit procéder lui-même aux réparations. Si vous demandez à Hewlett Packard Enterprise de procéder au remplacement de ces pièces, les frais de transport et de main d'œuvre pour ce service vous seront facturés.

²Facultatif—Pièces pour lesquelles une réparation par le client est facultative. Ces pièces sont également conçues pour que le client puisse procéder lui-même aux réparations. Cependant, les frais supplémentaires engendrés par le remplacement de ces pièces par Hewlett Packard Enterprise dépendent du type de service de garantie désigné pour votre produit.

³Non—Certaines pièces Hewlett Packard Enterprise ne sont pas conçues pour être remplacées par le client. Afin de se conformer aux exigences de la garantie la garantie du client, Hewlett Packard Enterprise demande à un fournisseur de services agréé de procéder au remplacement de la pièce. Ces pièces sont signalées par le mot « Non » dans le Catalogue de pièces illustré.

¹Obbligatorio—Parti per le quali il cliente è tenuto a effettuare autonomamente la riparazione. Se si richiede l'intervento di Hewlett Packard Enterprise per la sostituzione di queste parti, al cliente verranno addebitate le spese di viaggio e manodopera dell'operazione.

²Facoltativo—Parti per le quali la riparazione in autonomia da parte del cliente è facoltativa. Queste parti sono progettate per consentire anche la riparazione da parte del cliente. Tuttavia, se il cliente richiede l'intervento di Hewlett Packard Enterprise per la sostituzione, potrebbero essere addebitate spese aggiuntive a seconda del tipo di garanzia in assistenza previsto per il prodotto.

³No—Alcune parti Hewlett Packard Enterprise non sono progettate la riparazione in autonomia da parte del cliente. In base a quanto previsto dalla garanzia per il cliente, Hewlett Packard Enterprise richiede l'intervento di un tecnico autorizzato per la sostituzione della parte. Queste parti sono contrassegnate con "No" nel catalogo parti illustrato.

¹Zwingend—Teile, für die das Customer Self Repair-Verfahren zwingend vorgegeben ist. Wenn Sie den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen, werden Ihnen die Anfahrt- und Arbeitskosten für diesen Service berechnet.

²Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von Hewlett Packard Enterprise vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.

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

¹Obligatorio—Componentes cuya reparación por parte del usuario es obligatoria. Si solicita a Hewlett Packard Enterprise que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.

²Opcional—Componentes cuya reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que Hewlett Packard Enterprise realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

³No—Algunos componentes de Hewlett Packard Enterprise no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, Hewlett Packard Enterprise pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra "No" en el catálogo ilustrado de componentes.

¹Verplicht—Onderdelen die de klant zelf moet vervangen. Als u Hewlett Packard Enterprise vraagt deze onderdelen te vervangen, worden er reis- en arbeidskosten voor deze service in rekening gebracht.

²Optioneel—Onderdelen die de klant zelf kan vervangen. Deze onderdelen zijn ook ontworpen om door de klant zelf te worden vervangen. Als u Hewlett Packard Enterprise verzoekt om deze te vervangen, kan het zijn dat hiervoor extra kosten in rekening worden gebracht, afhankelijk van het soort garantie dat op uw product van toepassing is.

³Geen—Sommige onderdelen van Hewlett Packard Enterprise zijn niet ontworpen om door de klant zelf te worden vervangen. Om te voldoen aan de garantievoorwaarden eist Hewlett Packard Enterprise dat een geautoriseerde serviceverlener het onderdeel vervangt. Deze onderdelen worden aangeduid met 'Geen' in de geïllustreerde onderdelencatalogus.

¹Obrigatório—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a Hewlett Packard Enterprise substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.

²Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a Hewlett Packard Enterprise as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.

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

¹Mandatory : 必須 — カスタマーセルフリペアが必須の部品。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

²Optional : 任意 — カスタマーセルフリペアが任意である部品。この部品もカスタマーセルフリペア用です。当該部品について、もしもお客様がHewlett Packard Enterpriseに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、別途費用を負担していただくことなく保証サービスを受けることができます。

³No : 除外 — Hewlett Packard Enterprise製品の一部の部品は、カスタマーセルフリペアの対象外です。製品の保証を継続するためには、Hewlett Packard EnterpriseまたはHewlett Packard Enterprise正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が「カスタマーセルフリペア除外品である旨が記載されています」。

¹Mandatory — 客户必须自行维修的部件。如果您请求 Hewlett Packard Enterprise 更换这些部件，则必须为该服务支付差旅费和人工费用。

²Optional — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 Hewlett Packard Enterprise 为您更换这些部件，则根据为您的产品指定的保修服务类型，Hewlett Packard Enterprise 可能收取或不再收取任何附加费用。

³No — 某些 Hewlett Packard Enterprise 部件的设计并未考虑客户自行维修。为了满足客户保修的需要，Hewlett Packard Enterprise 要求授权服务提供商更换相关部件。这些部件在部件图解目录中标记为“否”。

¹Mandatory — 客戶自行維修所使用的零件是強制性的。如果您要求 Hewlett Packard Enterprise 更換這些零件，Hewlett Packard Enterprise 將會向您收取此服務所需的外出費用與勞動成本。

²Optional — 客戶自行維修所使用的零件是選購的。這些零件也設計用於客戶自行維修之用。不過，如果您要求 Hewlett Packard Enterprise 為您更換，則可能需要也可能不需要負擔額外的費用，端視針對此產品指定的保固服務類型而定。

³No — 某些 Hewlett Packard Enterprise 零件沒有消費者可自行維修的設計。為符合客戶保固，Hewlett Packard Enterprise 需要授權的服務供應商更換零件。這些零件在圖示的零件目錄中，被標示為「否」。

¹Mandatory — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 Hewlett Packard Enterprise에 이 부품의 교체를 요청할 경우 해당 서비스에 대한 출장비 및 작업비가 청구됩니다.

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

³No — 일부 Hewlett Packard Enterprise 부품은 고객 셀프 수리가 불가능하도록 설계되었습니다. Hewlett Packard Enterprise는 만족스러운 고객 보증을 위해 공인 서비스 제공업체를 통해 부품을 교체하도록 요구하고 있습니다. 이러한 부품들은 Illustrated Parts Catalog에 "No"라고 표시되어 있습니다.

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-10/T-15 Torx screwdriver
- HPE Insight Diagnostics software ("[Insight Diagnostics](#)" on page 79)

Preparation procedures

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 HPE iLO 4.
This method initiates a controlled remote shutdown of applications and the OS before the server enters standby mode.

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

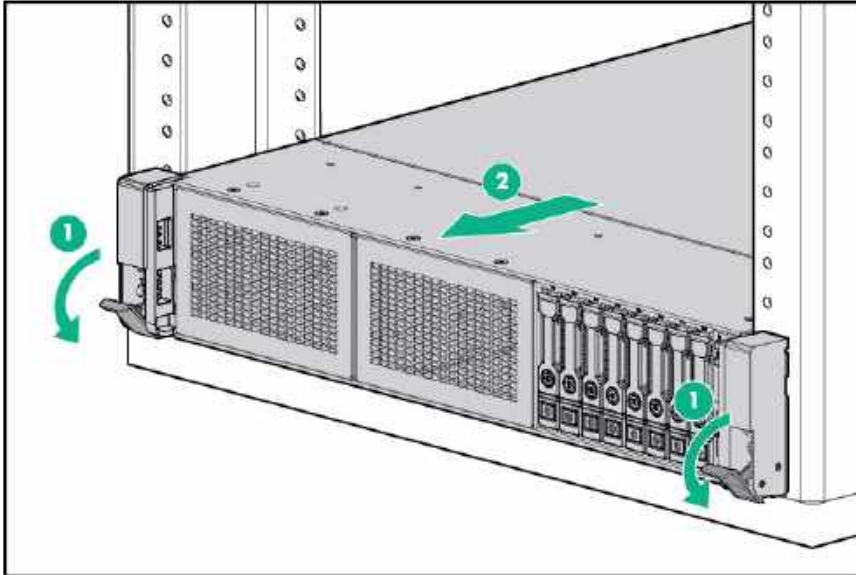
Extend the server from the rack



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. Pull down the quick release levers on each side of the server.

2. Extend the server from the rack.



3. 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.



WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

Remove the server from the rack

To remove the server from a Hewlett Packard Enterprise, Compaq branded, Telco, or third-party rack:

1. Power down the server (on page 27).
2. Extend the server from the rack (on page 27).
3. Disconnect the cabling and remove the server from the rack. For more information, refer to the documentation that ships with the rack mounting option.
4. Place the server on a sturdy, level surface.

Access the product rear panel

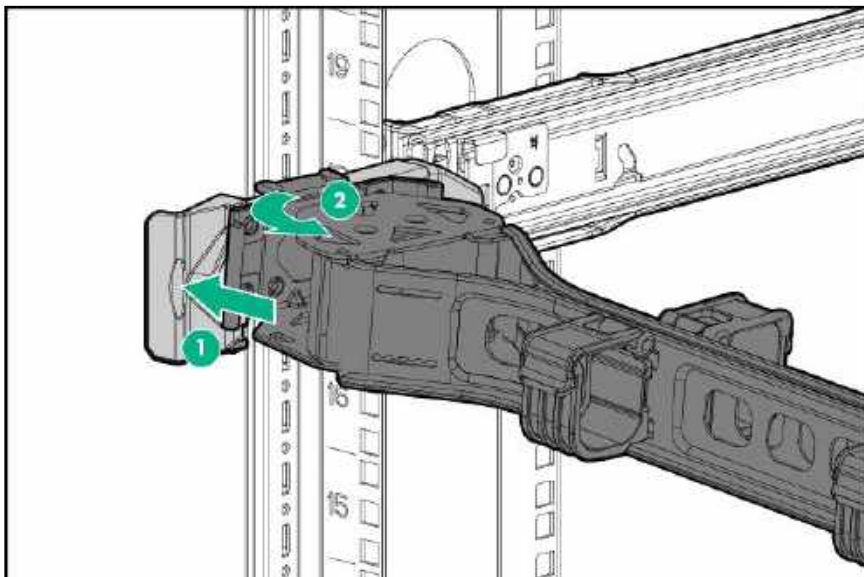
Opening the cable management arm



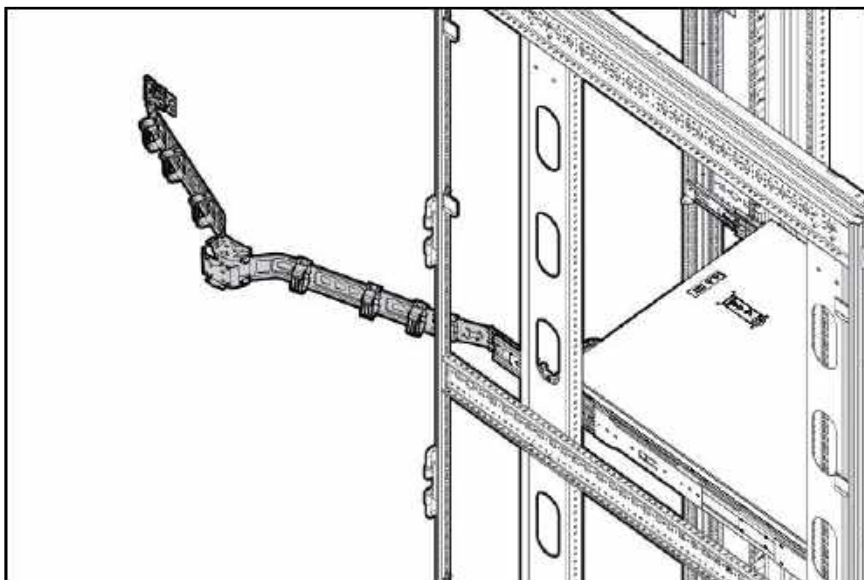
IMPORTANT: The cable management arm is not supported with the friction rail kit.

To access the server rear panel:

1. Release the cable management arm.



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

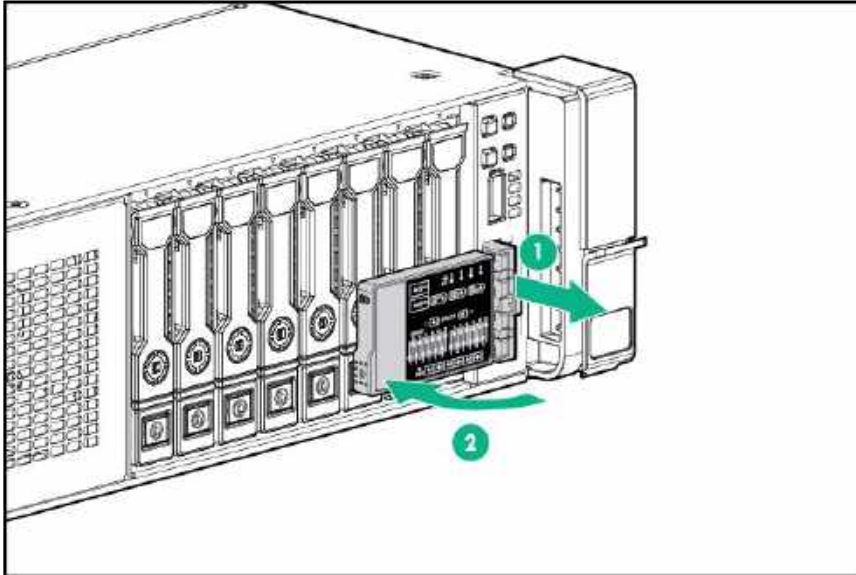


Access the optional HPE Systems Insight Display

To access a pop-out HPE Systems Insight Display on models with this option installed:

1. Press and release the panel.

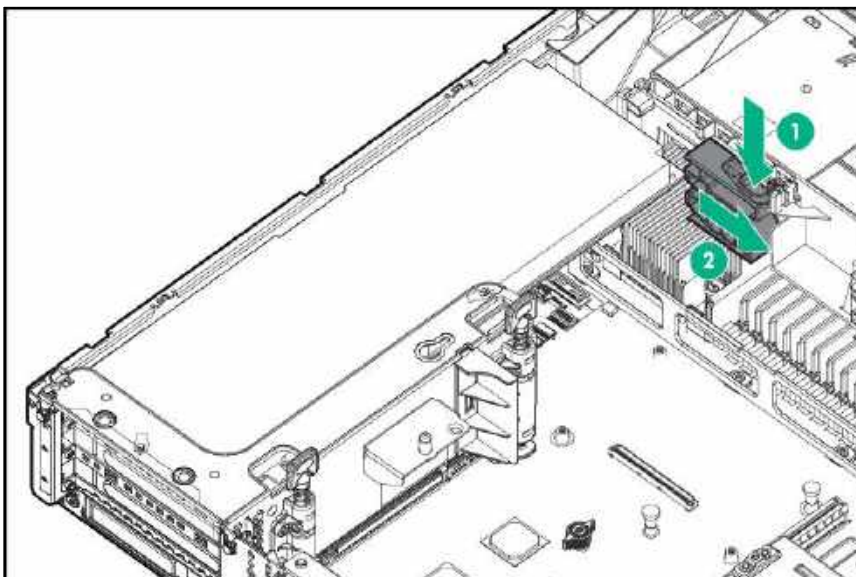
2. After the display fully ejects, rotate the display to view the LEDs.



Release the full-length expansion board retainer

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Release the full-length expansion board retainer.



To replace the component, reverse the removal procedure.

Safety considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

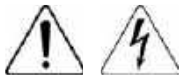
To prevent damaging the system, be aware of the precautions you must follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

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.



14.7 - 23.6 kg
32.6 - 51.5 lb

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

WARNING: To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.



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

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

Server warnings and cautions

Before installing a server, be sure that you understand the following warnings and cautions.



WARNING: To reduce the risk of electric shock, personal injury, and damage to the equipment:

- Do not attempt to service any parts of the equipment other than those specified in the following procedure. Any other activities may require that you shut down the server and remove the power cord.
- Installation and maintenance of this product must be performed by individuals who are knowledgeable about the procedures, precautions and hazards associated with the product.



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: 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.

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: 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. Extend the server from the rack (on page 27).

Open or unlock the locking latch, slide the access panel to the rear of the chassis, and remove the access panel.

To replace the component:

1. Place the access panel on top of the server with the hood latch open. Allow the panel to extend past the rear of the server approximately 1.25 cm (0.5 in).
2. Push down on the hood latch. The access panel slides to a closed position.
3. Tighten the security screw on the hood latch.

Air baffle

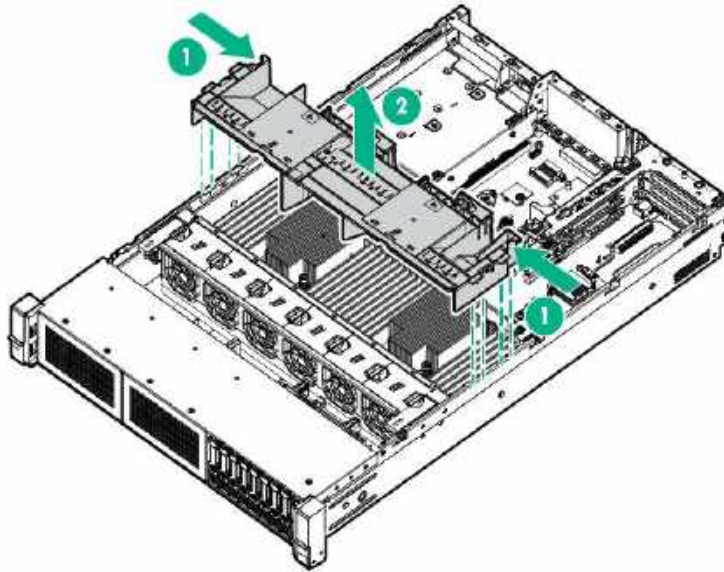


CAUTION: For proper cooling, do not operate the server without the access panel, baffles, expansion slot covers, or blanks installed. If the server supports hot-plug components, minimize the amount of time the access panel is open.

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:
 - Extend the server from the rack (on page 27).
 - Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the air baffle.



To replace the component, reverse the removal procedure.

PCIe riser blank

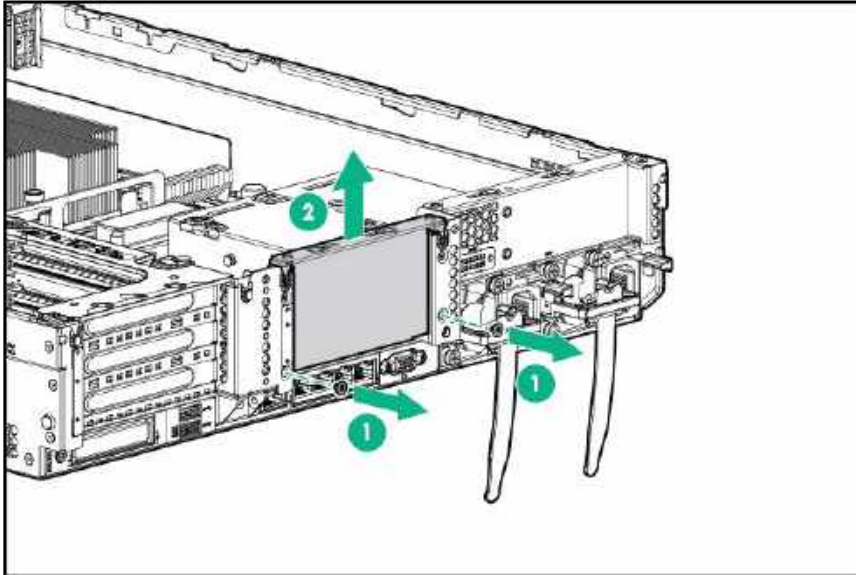


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all PCI slots have either an expansion slot cover or an expansion board installed.

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 27).
 - Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).

5. Remove the PCIe riser blank.



To replace the component, reverse the removal procedure.

Primary PCIe riser cage

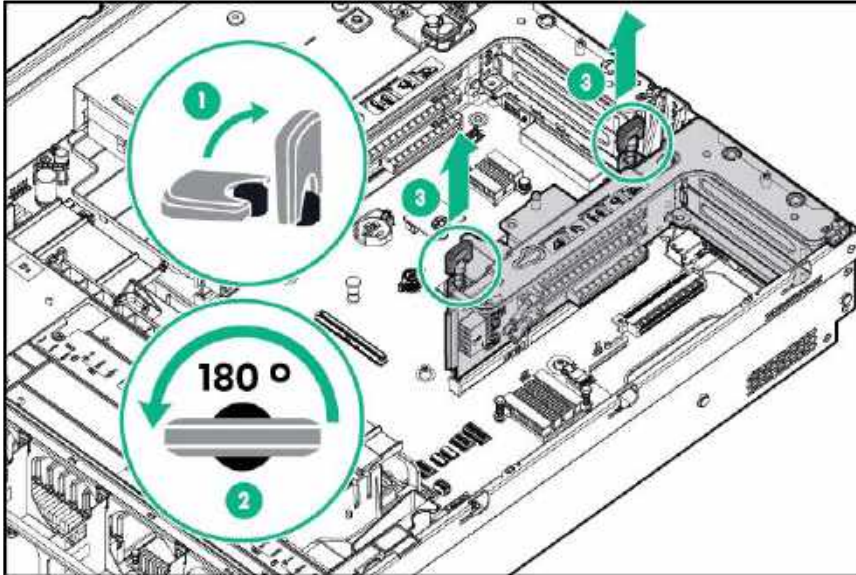


WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. Pressing the Power On/Standby button does not shut off system power completely. Portions of the power supply and some internal circuitry remain active until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

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. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
 - o Extend the server from the rack (on page 27).
 - o Remove the server from the rack (on page 28).
5. Remove the access panel ("Access panel" on page 32).
6. Disconnect any internal cables that are connected to the expansion board.
7. If any full-length expansion boards are installed, release the full-length expansion board retainer (on page 30).

8. Remove the PCIe riser cage.



To replace the component, reverse the removal procedure.

Secondary PCIe riser cage

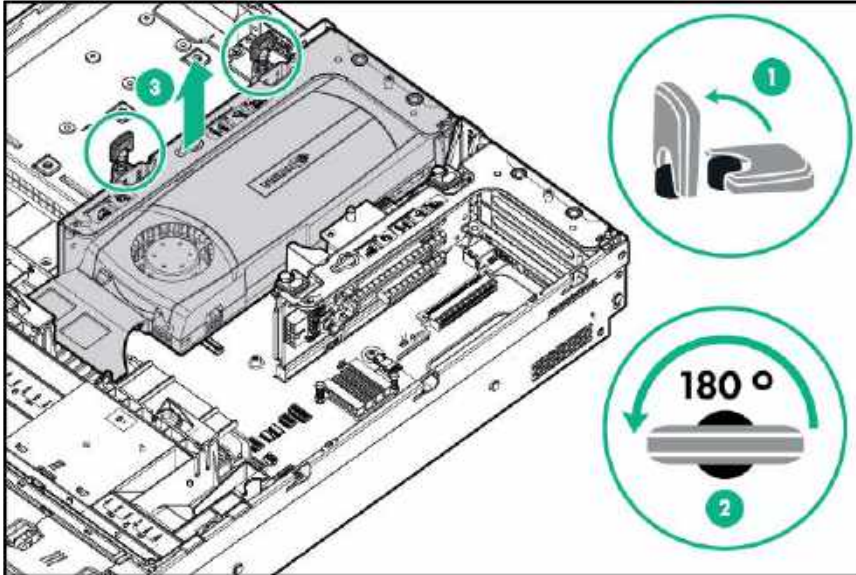


WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. Pressing the Power On/Standby button does not shut off system power completely. Portions of the power supply and some internal circuitry remain active until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

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. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
 - o Extend the server from the rack (on page 27).
 - o Remove the server from the rack (on page 28).
5. Remove the access panel ("Access panel" on page 32).
6. Disconnect any internal cables that are connected to the expansion board.
7. If any full-length expansion boards are installed, release the full-length expansion board retainer (on page 30).

8. Remove the secondary PCIe riser cage.



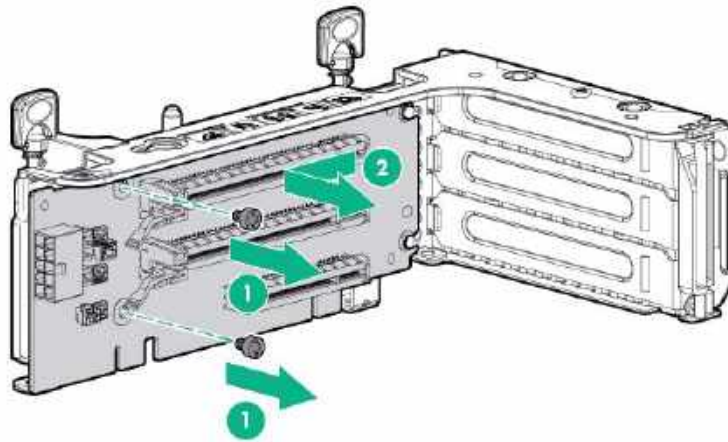
To replace the component, reverse the removal procedure.

PCIe riser board

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. If any full-length expansion boards are installed, release the full-length expansion board retainer (on page 30).
6. Remove the PCIe riser cage:
 - o Primary PCIe riser cage
 - o Secondary PCIe riser cage
7. Remove any expansion boards (on page 55) from the PCIe riser cage.

8. Remove the PCIe riser board.



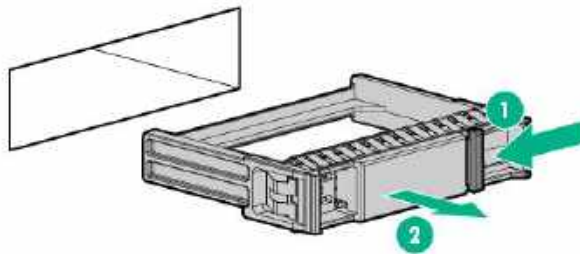
To replace the component, reverse the removal procedure.

Drive blank

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. Remove the drive blank.



To replace the blank, slide the blank into the bay until it locks into place.

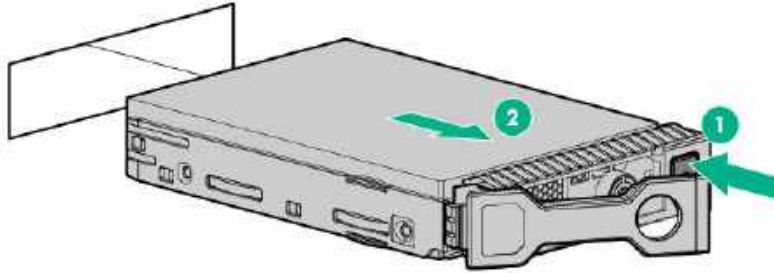
Hot-plug drive

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. Determine the status of the drive from the drive LED definitions ("[Hot-plug drive LED definitions](#)" on page [101](#)).

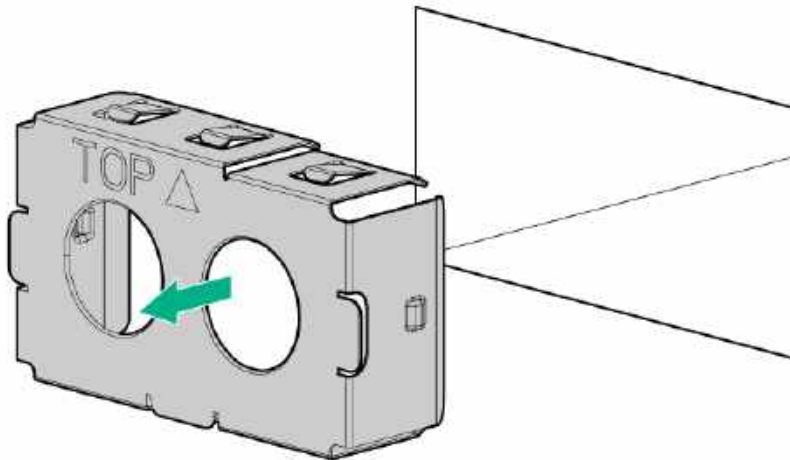
3. Remove the drive.



To replace the component, reverse the removal procedure.

Power supply blank

Remove the component as indicated.



To replace the component, reverse the removal procedure.

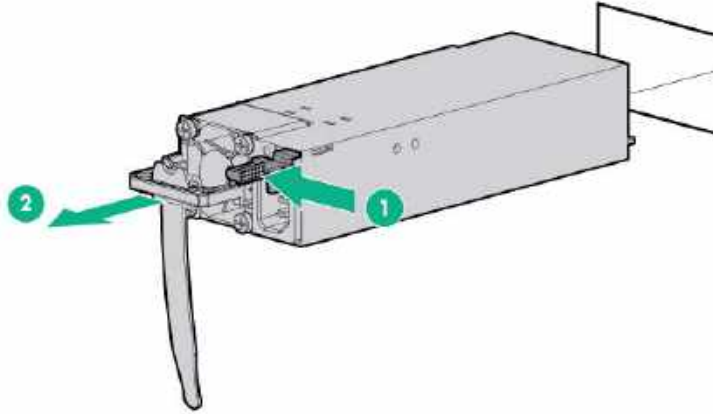
AC power supply

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. Access the product rear panel (on page 28).
4. Remove the power supply.

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



To replace the component, reverse the removal procedure.

HPE 750W Flex Slot Hot Plug Battery Backup Module



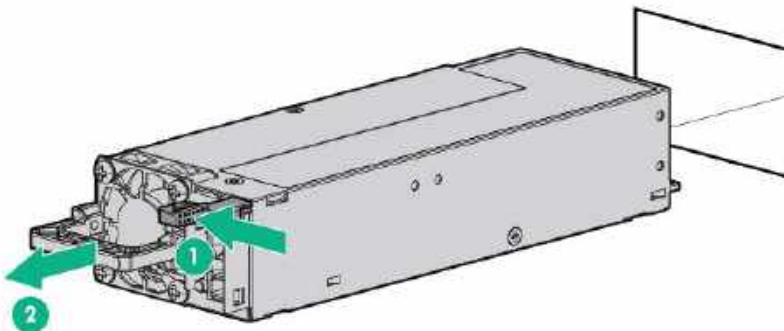
CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all bays are populated with either a component or a blank.

To remove the component:

1. Access the product rear panel (on page 28).
2. If the FSBBU is cabled to a second FSBBU, disconnect the FSBBU jumper cable from the second FSBBU.
3. Remove the FSBBU.



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

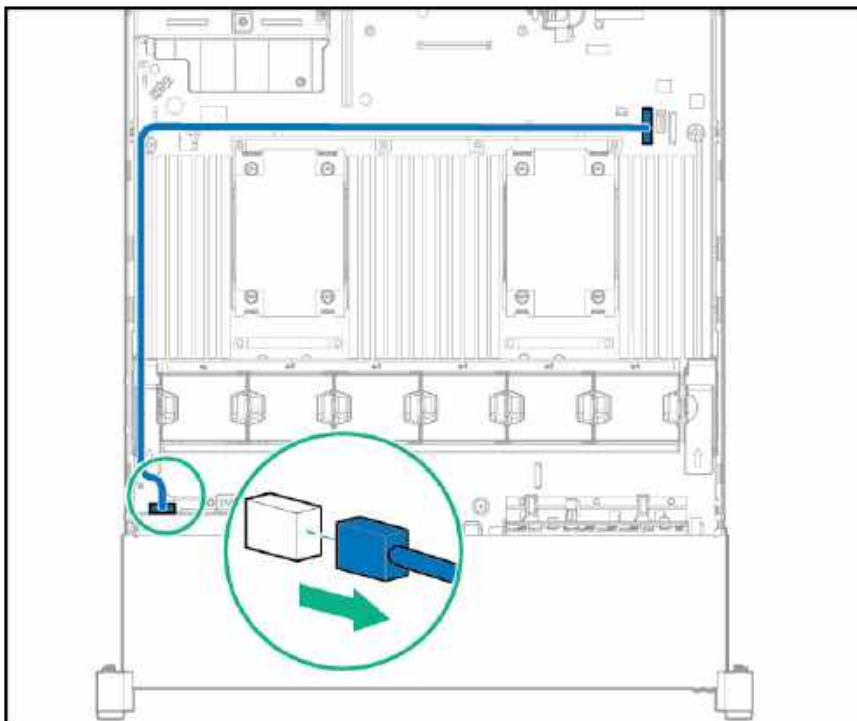


To replace the component, reverse the removal procedure.

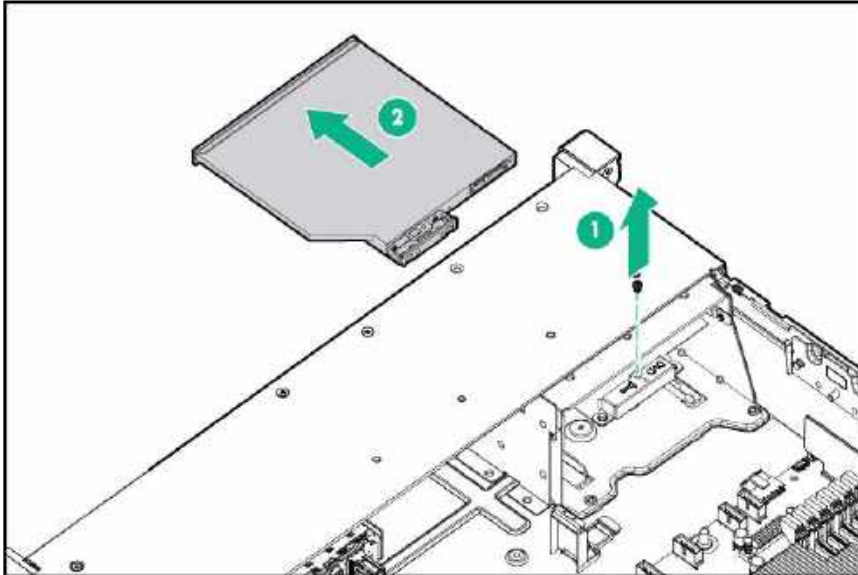
Optical drive

To remove the component:

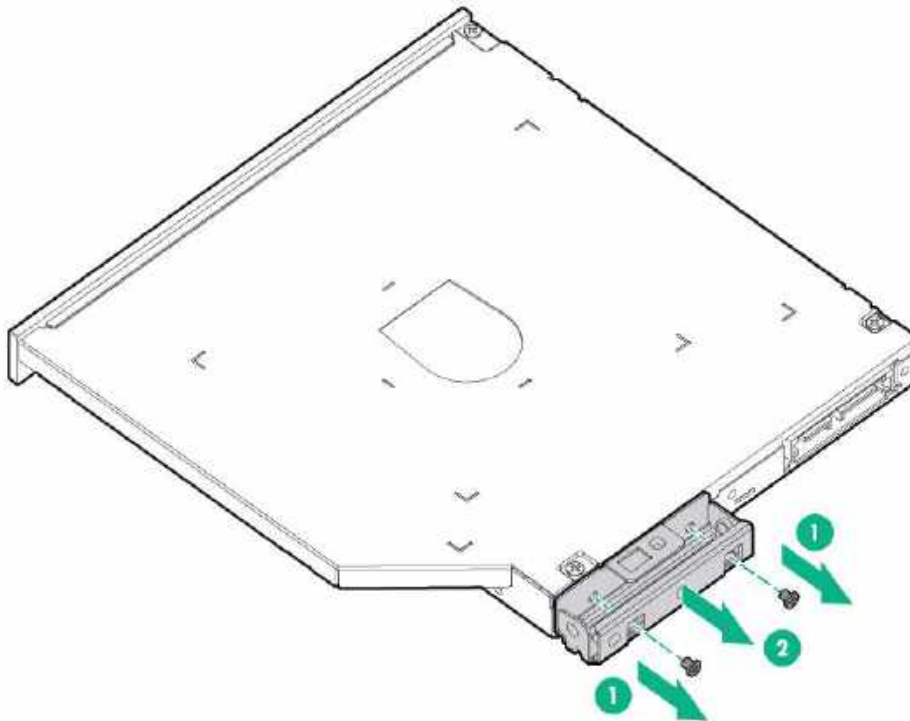
1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - o Extend the server from the rack (on page 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the fan cage ("Fan cage" on page 43).
6. Disconnect the optical drive cable.



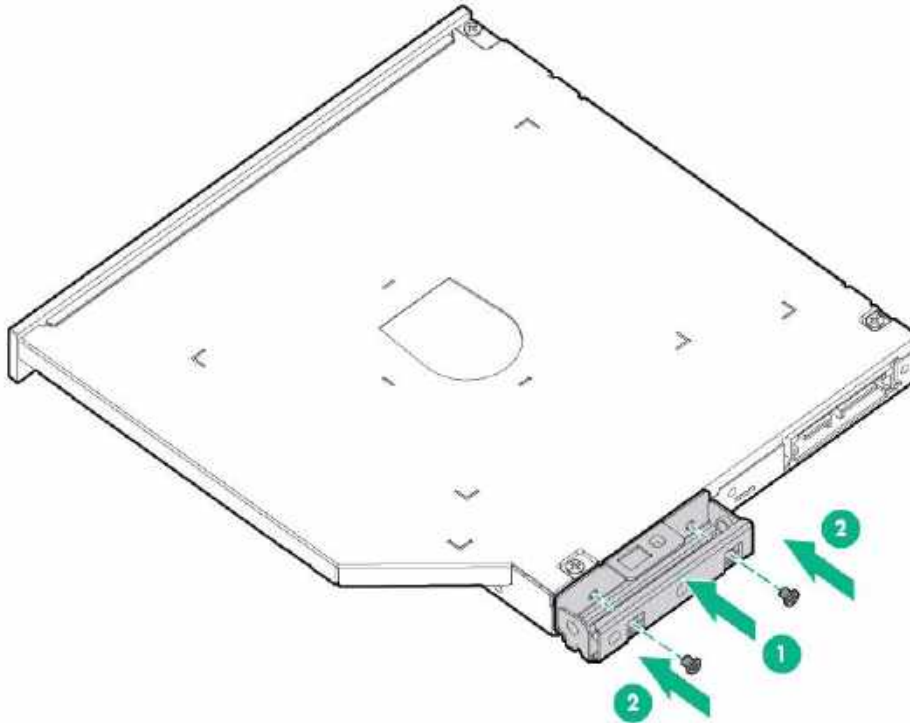
7. Remove the optical drive.



8. Remove the optical drive bracket, for use with the replacement optical drive.



9. Before replacing the component, install the optical drive bracket, retained from the optical drive you are replacing.

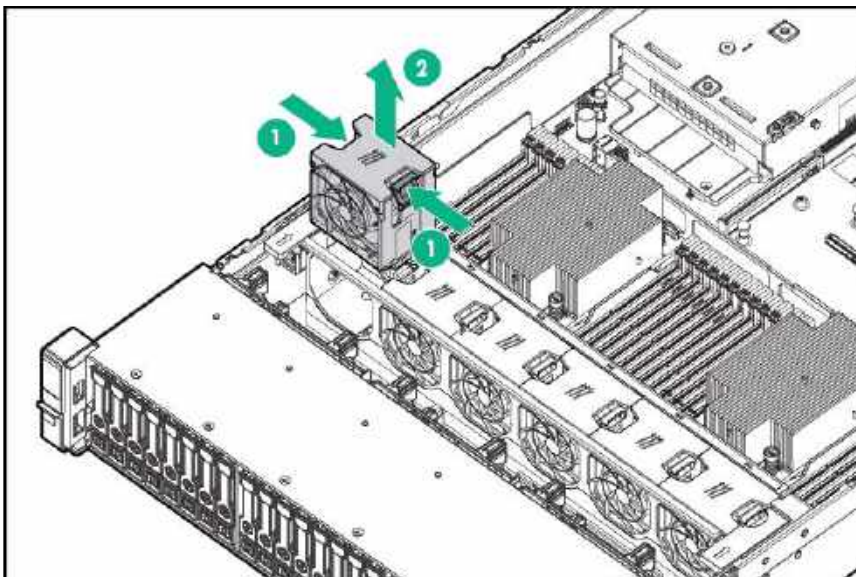


To replace the component, reverse the removal procedure.

Hot-plug fan

To remove the component:

1. Extend the server from the rack (on page 27).
2. Remove the access panel ("[Access panel](#)" on page 32).
3. Remove the fan.





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.



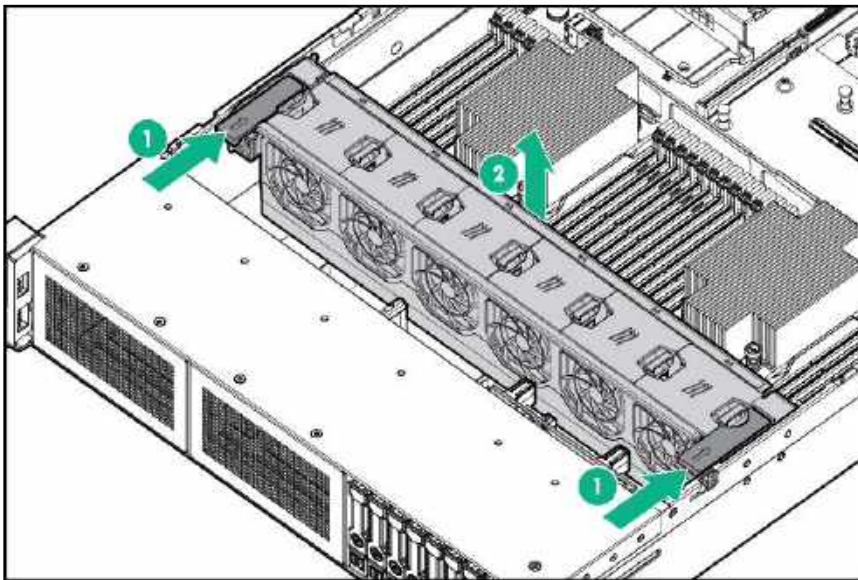
IMPORTANT: For optimum cooling, install fans in all primary fan locations. For more information, refer to the fan locations table ("[Hot-plug fans](#)" on page 96).

To replace the component, reverse the removal procedure.

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("[Access panel](#)" on page 32).
5. Remove the fan cage.



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.

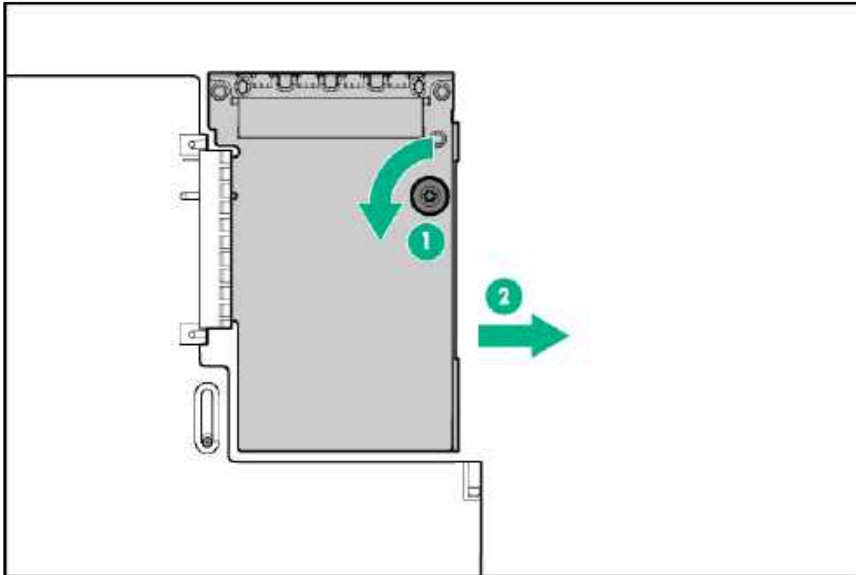


IMPORTANT: For optimum cooling, install fans in all primary fan locations. For more information, refer to the fan locations table ("[Hot-plug fans](#)" on page 96).

FlexibleLOM

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. Disconnect the LAN segment cables.
4. Do one of the following:
 - o Extend the server from the rack (on page 27).
 - o Remove the server from the rack (on page 28).
5. Remove the FlexibleLOM.



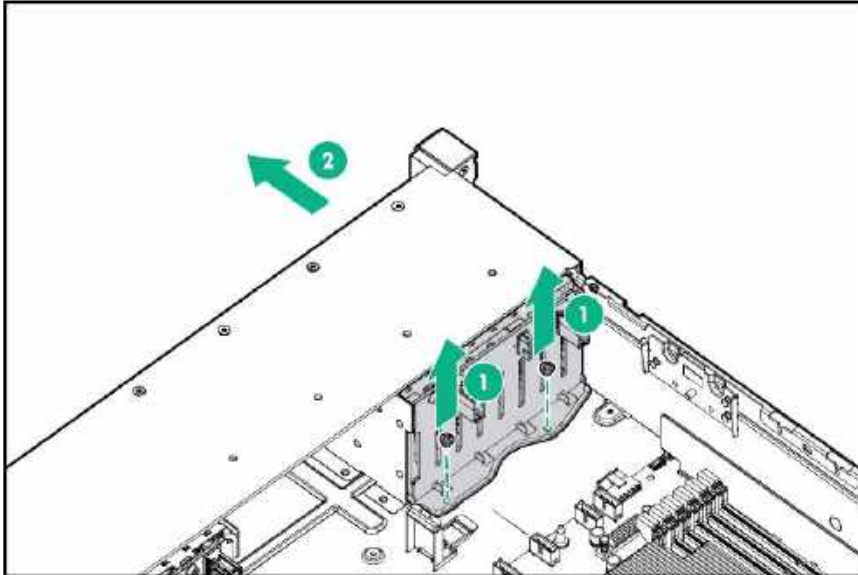
To replace the component, reverse the removal procedure.

8-SFF drive 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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove all drives ("Hot-plug drive" on page 37).
6. Remove the fan cage ("Fan cage" on page 43).
7. Disconnect all cables from the drive backplane.

8. Remove the drive cage.



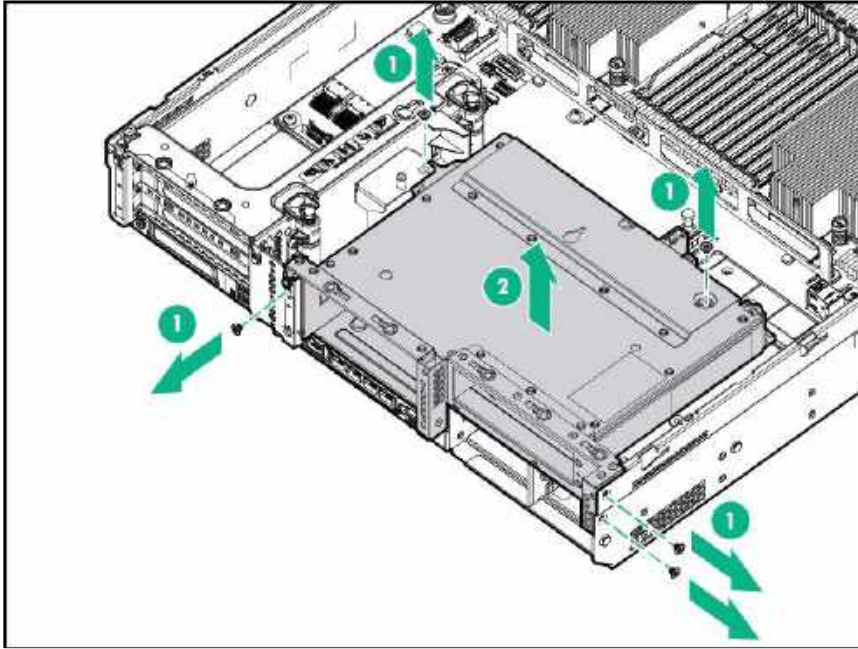
To replace the component, reverse the removal procedure.

3-LFF rear drive 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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove all drives ("Hot-plug drive" on page 37).
6. Disconnect all cables from the drive backplane.

7. Remove the drive cage.



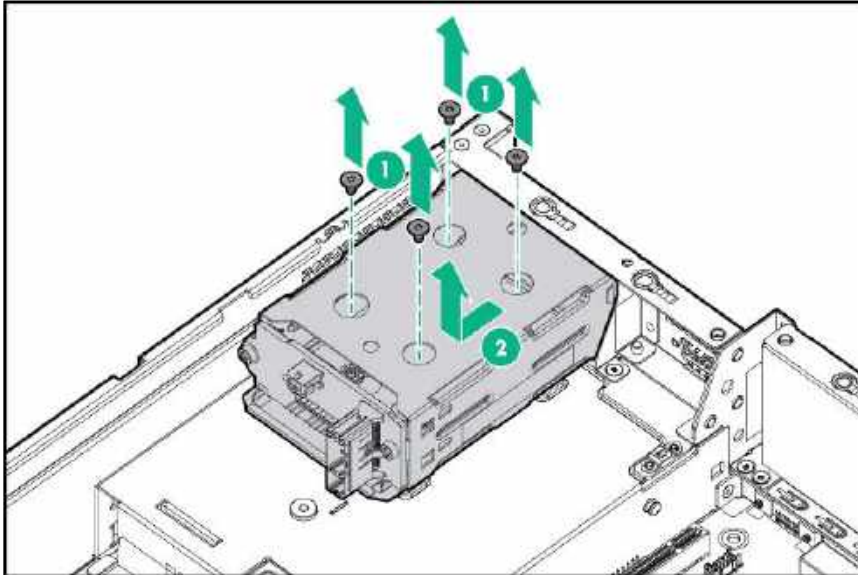
To replace the component, reverse the removal procedure.

2-SFF rear drive 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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove all drives ("Hot-plug drive" on page 37).
6. Disconnect all cables from the drive backplane.

7. Remove the drive cage.



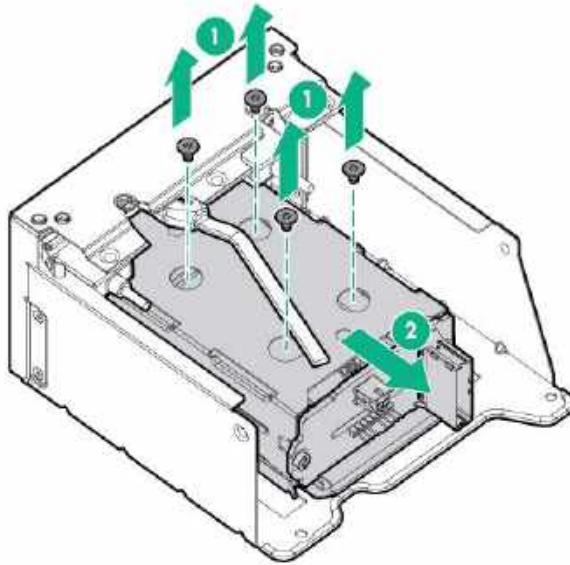
To replace the component, reverse the removal procedure.

2-SFF front drive 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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove all drives ("Hot-plug drive" on page 37).
6. Disconnect all cables from the drive backplane.

7. Remove the drive cage.



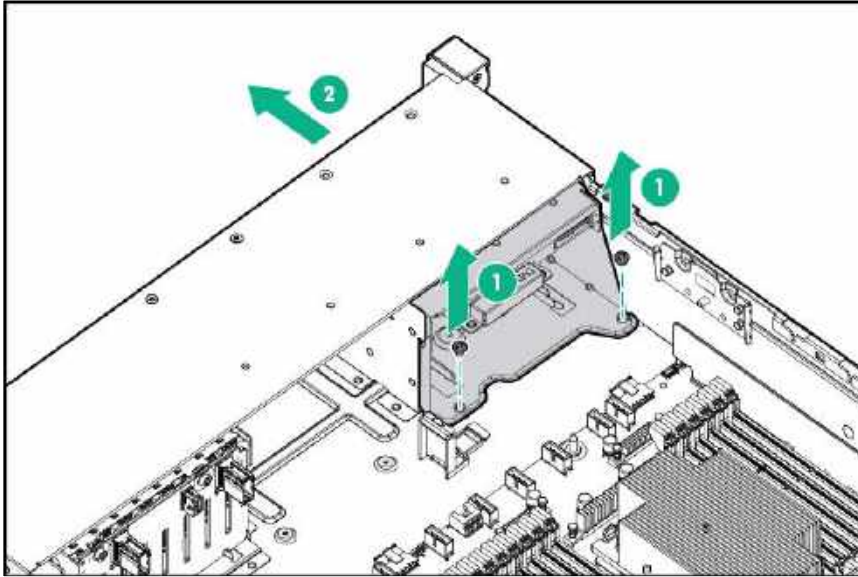
To replace the component, reverse the removal procedure.

Universal media bay

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove all hot-plug hard drives ("Hot-plug drive" on page 37).
6. Remove the fan cage ("Fan cage" on page 43).
7. Disconnect all cables from the universal media bay.

8. Remove the universal media bay.



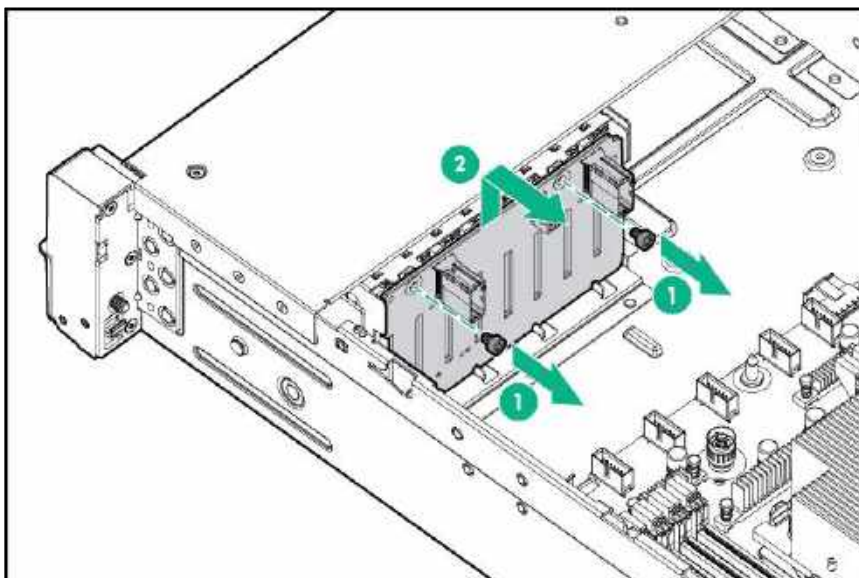
To replace the component, reverse the removal procedure.

8-SFF drive backplane

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the fan cage ("Fan cage" on page 43).
6. Remove all drives ("Hot-plug drive" on page 37).

7. Remove the drive backplane.

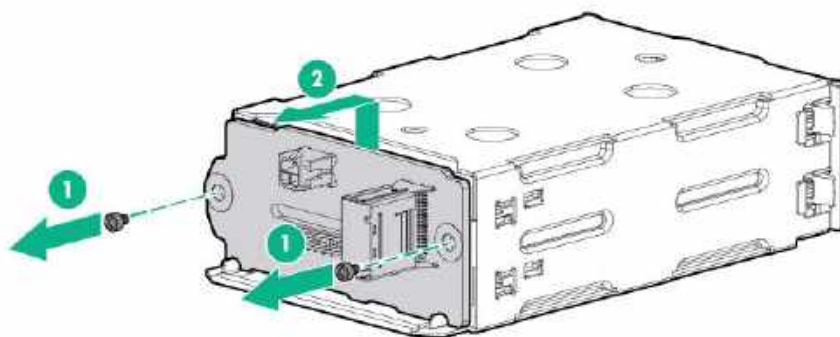


To replace the component, reverse the removal procedure.

2-SFF rear drive backplane

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the fan cage ("Fan cage" on page 43).
6. Remove all drives ("Hot-plug drive" on page 37).
7. Remove the drive backplane.

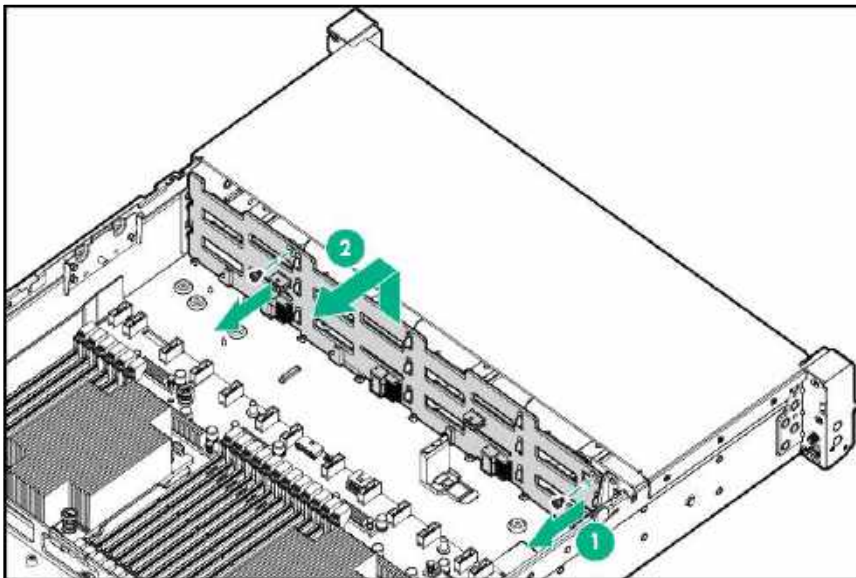


To replace the component, reverse the removal procedure.

12-LFF drive backplane

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the fan cage ("Fan cage" on page 43).
6. Remove all drives ("Hot-plug drive" on page 37).
7. Remove the drive backplane.



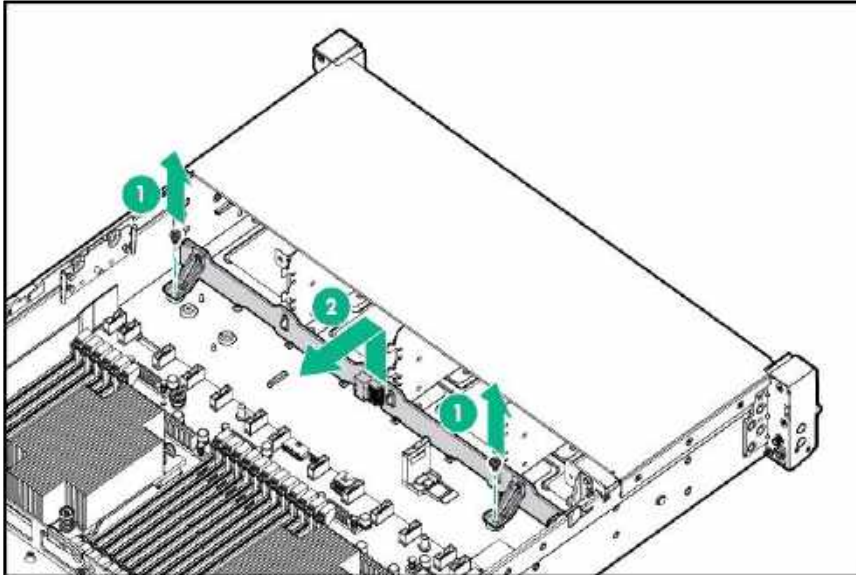
To replace the component, reverse the removal procedure.

4-LFF drive backplane

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the fan cage ("Fan cage" on page 43).
6. Remove all drives ("Hot-plug drive" on page 37).

7. Remove the drive backplane.



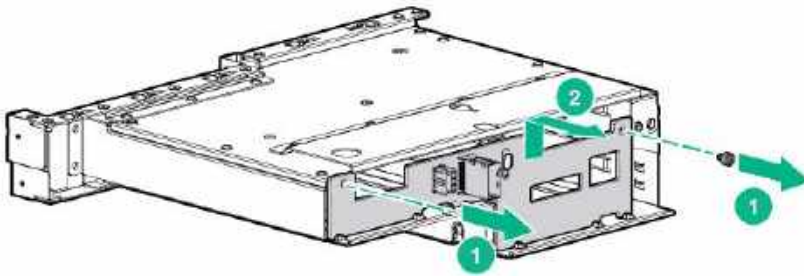
To replace the component, reverse the removal procedure.

3-LFF rear drive backplane

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the fan cage ("Fan cage" on page 43).
6. Remove all drives ("Hot-plug drive" on page 37).

7. Remove the drive backplane.



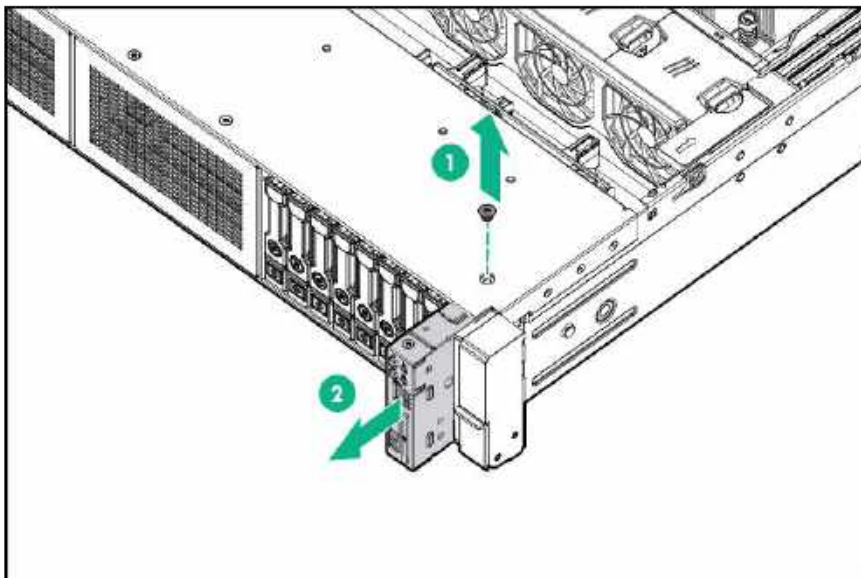
To replace the component, reverse the removal procedure.

Systems Insight Display

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the air baffle ("Air baffle" on page 32).
6. Remove the fan cage ("Fan cage" on page 43).
7. Disconnect the Systems Insight Display cable and the USB cable from the system board, and then disconnect the USB cable from the front of the Systems Insight Display.

8. Remove the screw securing the Systems Insight Display, and then remove the Systems Insight Display.



To replace the component, reverse the removal procedure.

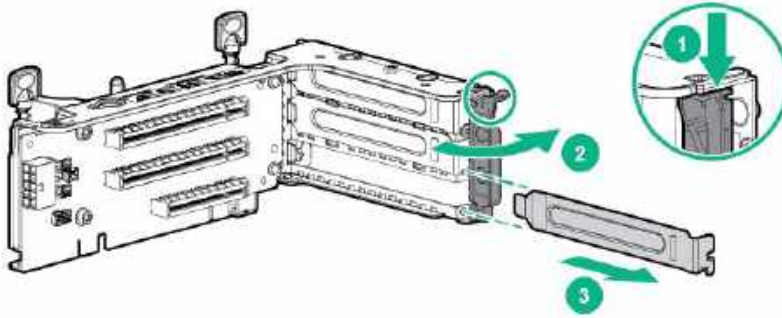
Removing an expansion slot blank

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

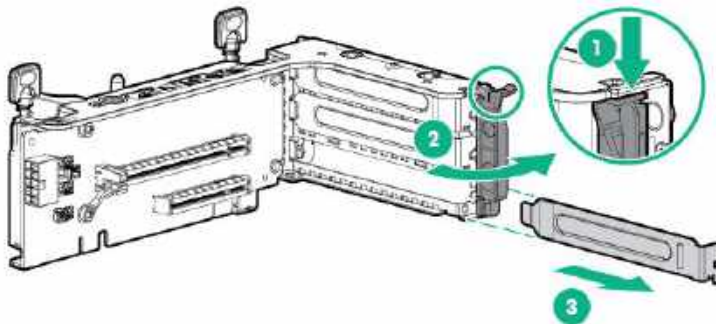
To remove the component:

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the PCIe riser cage:
 - o Primary PCIe riser cage
 - o Secondary PCIe riser cage
6. Remove the expansion slot blank:

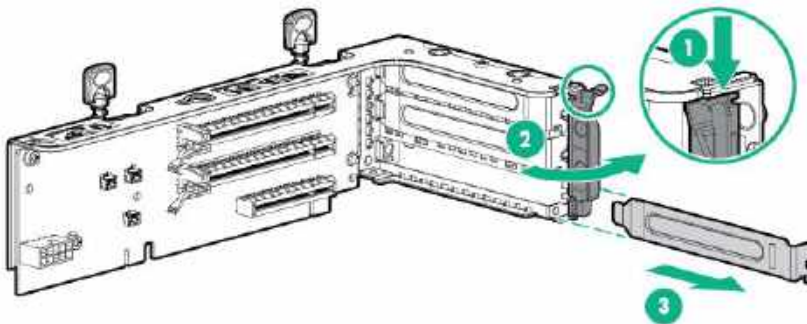
- Primary PCIe riser cage



- Optional primary PCIe riser cage



- Secondary PCIe riser cage



To replace the component, reverse the removal procedure.

Expansion boards

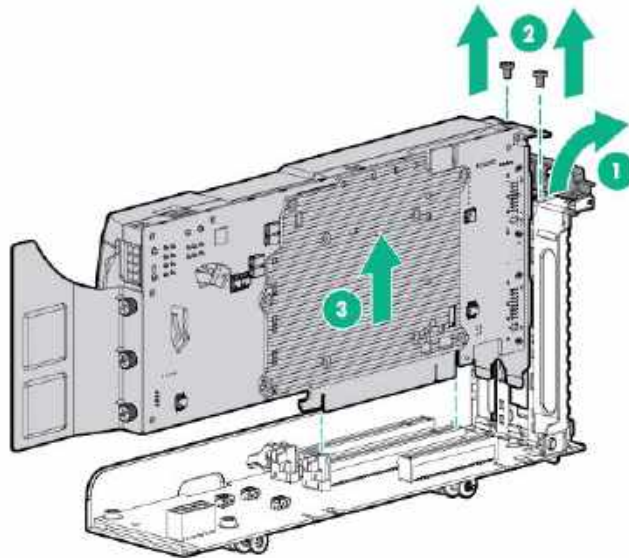
Full length expansion board



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

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. Disconnect any external cables that are connected to the expansion board.
4. Do one of the following:
 - o Extend the server from the rack (on page 27).
 - o Remove the server from the rack (on page 28).
5. Remove the access panel ("Access panel" on page 32).
6. Disconnect any internal cables that are connected to the expansion board.
7. Release the full-length expansion board retainer (on page 30).
8. Remove the PCIe riser cage:
 - o Primary PCIe riser cage
 - o Secondary PCIe riser cage
9. Remove the expansion board.



To replace the component, reverse the removal procedure.

Half-length expansion board

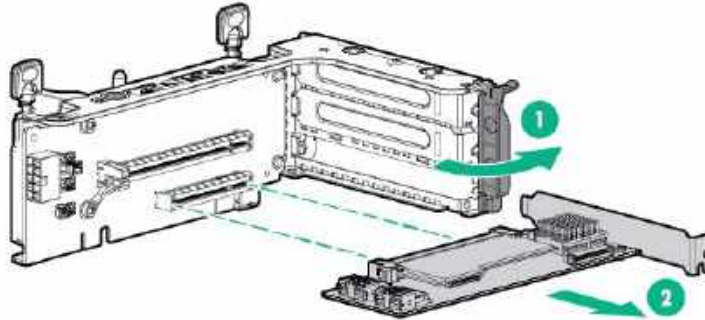


WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. Pressing the Power On/Standby button does not shut off system power completely. Portions of the power supply and some internal circuitry remain active until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

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. Disconnect any external cables that are connected to the expansion board.

4. Do one of the following:
 - Extend the server from the rack (on page 27).
 - Remove the server from the rack (on page 28).
5. Remove the access panel ("Access panel" on page 32).
6. Disconnect any internal cables that are connected to the expansion board.
7. Remove the PCIe riser cage:
 - Primary PCIe riser cage
 - Secondary PCIe riser cage
8. Remove the expansion board.



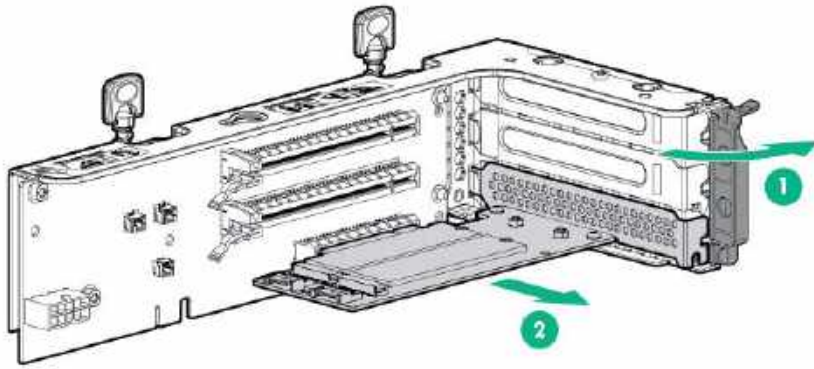
To replace the component, reverse the removal procedure.

M.2 SSD enablement board

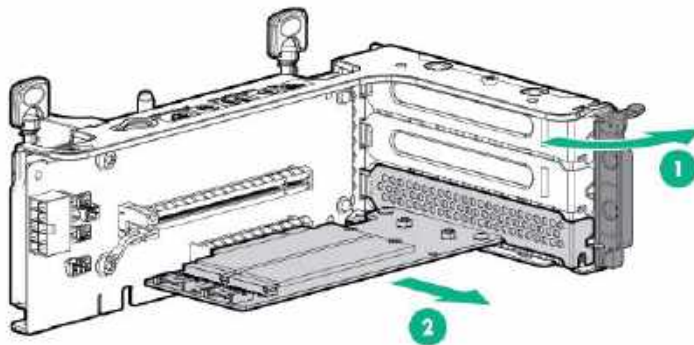
To remove the component:

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 27).
 - Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the PCIe riser cage.
6. Disconnect the M.2 SSD cables from the M.2 enablement boards. For more information, see "M.2 SSD Enablement Board option cabling (on page 134)."
7. Remove the M.2 SSD enablement board from the riser cage.

- 3-slot riser cage



- 2-slot riser cage



To replace the component, reverse the removal procedure.

If you are not replacing the enablement board, install the screw back into the PCIe riser cage before installing the PCIe riser cage back into the server.

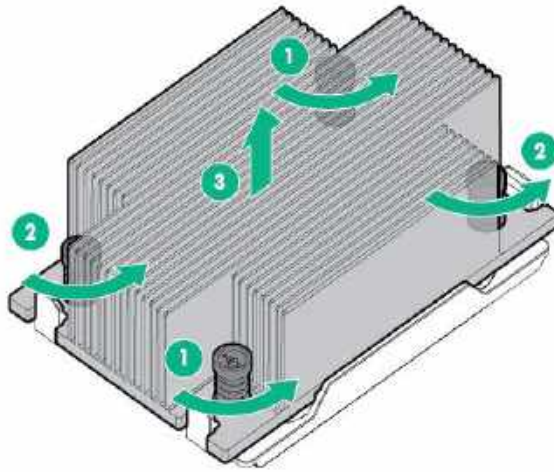
Heatsink

-
- ⚠ **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:** The heatsink thermal interface media is not reusable and must be replaced if the heatsink is removed from the processor after it has been installed.
-
- ⚠ **CAUTION:** To avoid thermal shutdown, all fans must be installed in a dual processor configuration.
-

To remove the component:

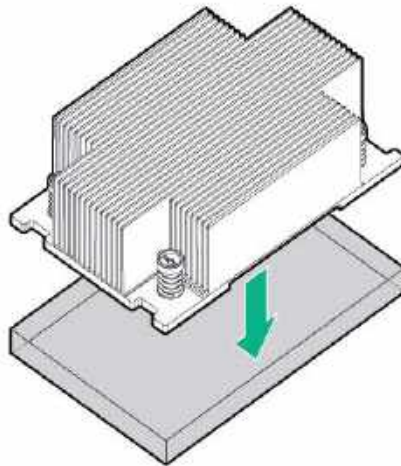
1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Do one of the following:
 - Extend the server from the rack (on page 27).
 - Remove the server from the rack (on page 28).

4. Remove the access panel ("Access panel" on page 32).
5. Remove the air baffle ("Air baffle" on page 32).
6. Remove the heatsink.

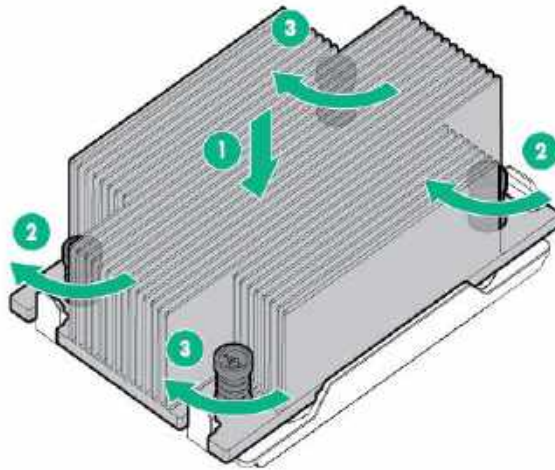


To replace the component:

1. Remove the thermal interface protective cover from the heatsink.



2. Install the heatsink.



3. Install the air baffle ("Air baffle" on page 32).
4. Install the access panel ("Access panel" on page 32).
5. Slide the server into the rack.
6. Connect each power cord to the server.
7. Connect each power cord to the power source.
8. Power up the server.

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 prevent possible server malfunction, do not mix processors of different speeds or cache sizes. Refer to the label on the processor heatsink for a description of the processor.



CAUTION: To prevent possible server overheating, always populate each processor socket with a processor socket cover and a heatsink blank or a processor and a heatsink.



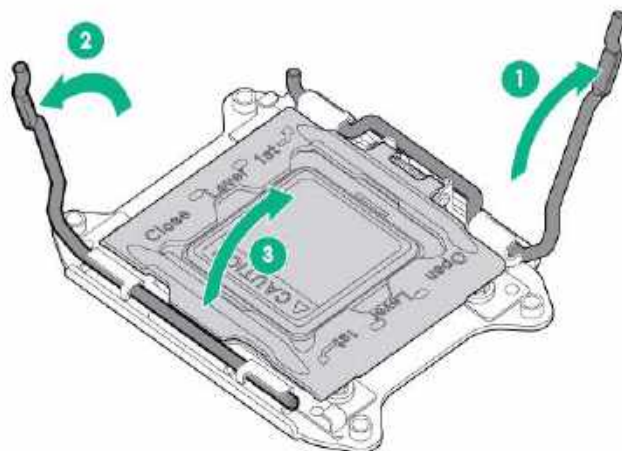
IMPORTANT: Processor socket 1 must always be populated. If processor socket 1 is empty, the server does not power up.

Depending on the memory configuration and processor model, the memory speed may run at 1600MHz, 1866MHz, 2133MHz, or 2400MHz.

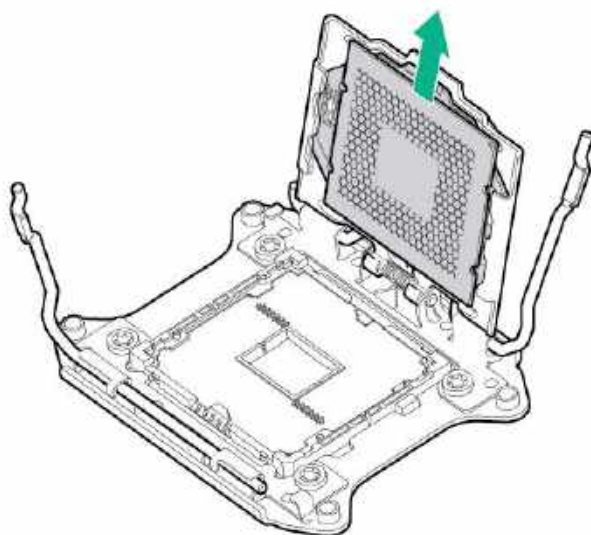
To remove the component:

1. Update the system ROM.
Locate and download the latest ROM version from the Hewlett Packard Enterprise Support Center website (<http://www.hpe.com/support/hpesc>). Follow the instructions on the website to update the system ROM.
2. Power down the server (on page 27).
3. Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).

5. Remove the heatsink ("Heatsink" on page 58).
6. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



7. Remove the processor from the processor retaining bracket.



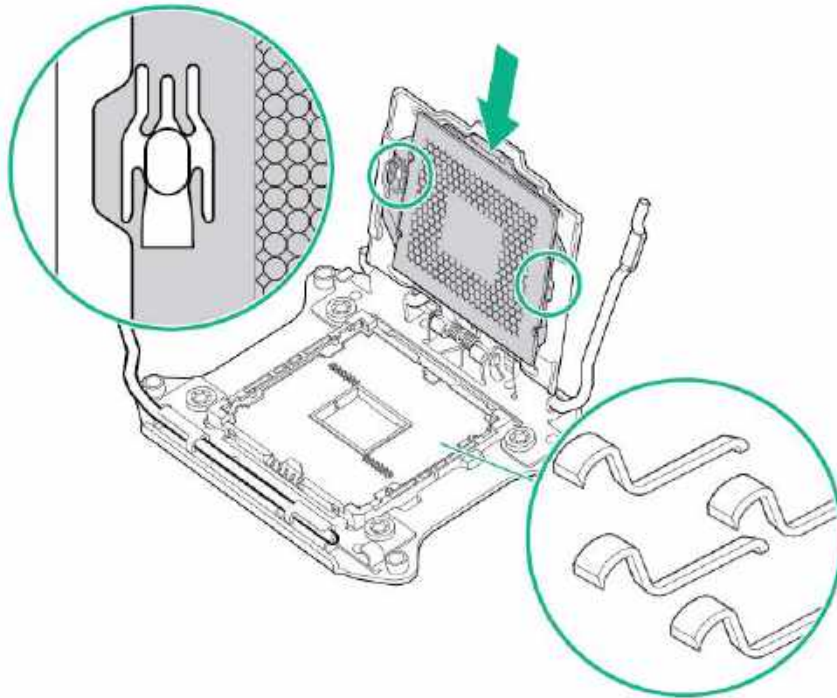
CAUTION: To avoid damage to the processor, do not touch the bottom of the processor, especially the contact area.

To replace the component:



CAUTION: To avoid damage to the system board, processor socket, and screws, do not overtighten the heatsink screws.

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.**



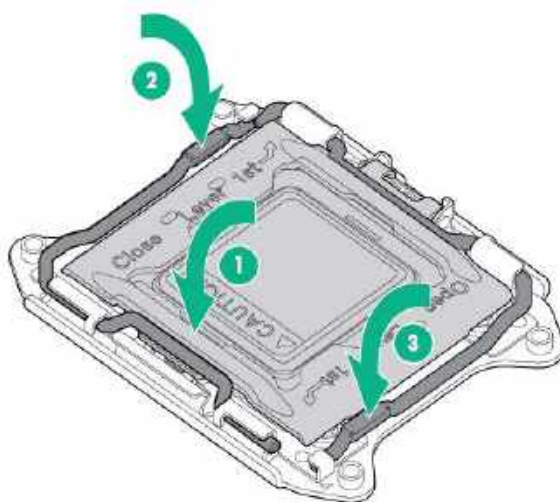
CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the system board, do not touch the processor or the processor socket contacts.

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.

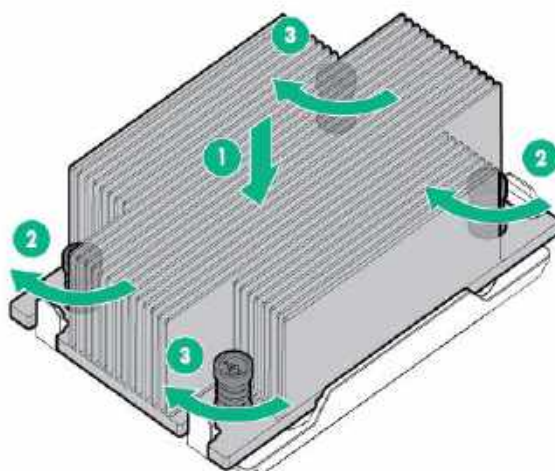


CAUTION: Do not press down on the processor. Pressing down on the processor might damage the processor socket and the system board. Press only in the area indicated on the processor retaining bracket.

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. Align and install the heatsink.



5. Install the access panel ("Access panel" on page 32).

DIMMs



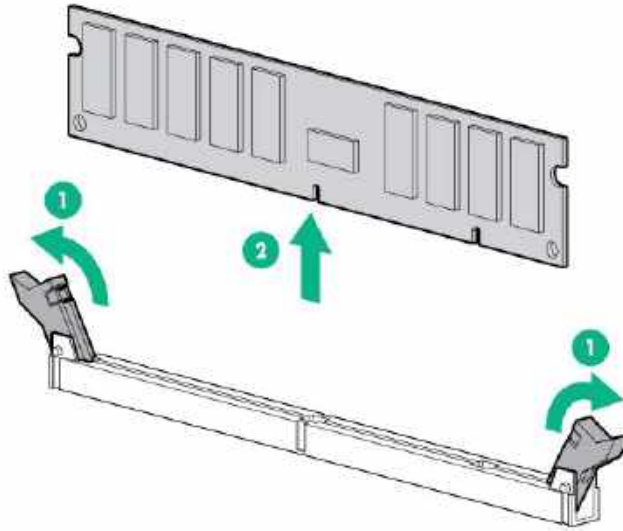
IMPORTANT: This server does not support mixing RDIMMs and UDIMMs. Attempting to mix these two types causes the server to halt during BIOS initialization.

To identify the DIMMs installed in the server, see "DIMM slot locations (on page 95)."

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the air baffle ("Air baffle" on page 32).
6. Remove the DIMM.



To replace the component, reverse the removal procedure.

For DIMM configuration information, see the server user guide.

Removing and replacing an NVDIMM

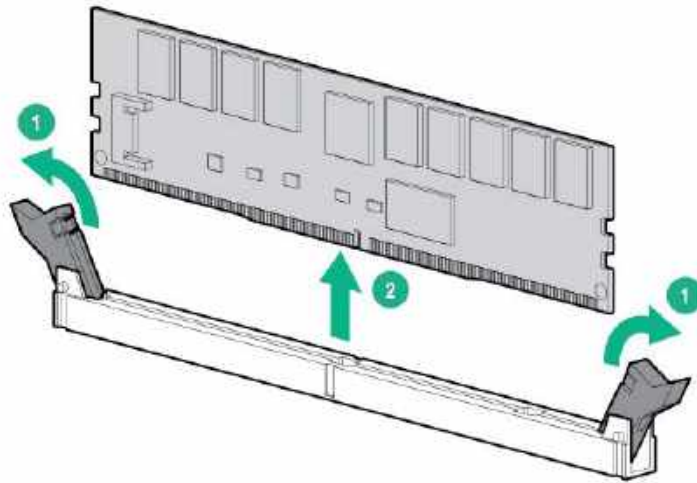
-
- ⚠ **CAUTION:** Do not remove an NVDIMM when any LEDs on any NVDIMM in the system are illuminated. Removing an NVDIMM when an LED is illuminated might cause a loss of data.
-
- ⚠ **CAUTION:** Electrostatic discharge can damage electronic components. Be sure you are properly grounded before beginning this procedure.
-
- ⚠ **CAUTION:** Failure to properly handle DIMMs can cause damage to DIMM components and the system board connector.
-

Before handling or installing the DIMMs, see the "DIMM handling guidelines."

For more information on NVDIMMs, see the *HPE 8GB NVDIMM User Guide* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/NVDIMM-docs>).

1. Sanitize/erase any NVDIMMs being removed or relocated as necessary. For more information, see "NVDIMM relocation guidelines (on page 67)."
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. Do one of the following:

- Extend the server from the rack (on page 27).
- a. Remove the server from the rack (on page 28).
- 5. Remove the access panel ("Access panel" on page 32).
- 6. Remove the air baffle ("Air baffle" on page 32).
- 7. Observe the NVDIMM LEDs. Do not remove an NVDIMM when any NVDIMM LED in the system is illuminated. For more information, see "NVDIMM LEDs (on page 95)."
- 8. Remove the NVDIMM-N.



To replace the component, reverse the removal procedure.

NVDIMM sanitization

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

The specification defines the following levels:

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

The NVDIMM-N Sanitize options are intended to meet the Purge level.

For more information about configuring the Sanitize/Erase settings, see "Setting the NVDIMM-N Sanitize/Erase on Next Reboot Policy (on page 67)."

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

NVDIMM sanitize policies

The System Utilities menu item for NVDIMM-N Sanitize/Erase on Next Reboot policy provides the following options:

- Sanitize/Erase and Boot to Operating System — Use this policy for the following scenarios:
 - After adding a new NVDIMM-N to a system
 - If an NVDIMM-N was mapped out due to errors and you want to use the NVDIMM again (for example, you removed an NVDIMM-N while the LEDs were still illuminated, causing backup errors)
 - After moving NVDIMM-Ns previously used in another system to a new system (unless everything is an exact match)
- Sanitize/Erase and Power System Off — Use this policy for the following scenarios:
 - Decommissioning an NVDIMM-N
 - Recommissioning an NVDIMM-N (move to another server with no requirement to preserve the data)
 - Before returning the NVDIMM-N to Hewlett Packard Enterprise (service replacement)
- Sanitize/Erase and Boot to System Utilities — Use this policy to change any BIOS/Platform Configuration (RBSU) setting that results in the data on the NVDIMM-N no longer being interpreted the same way. Examples include NVDIMM-N Memory Interleaving and QPI Snoop Configuration of cluster-on-die.

After selecting a sanitize policy and one or more NVDIMM-Ns to sanitize, the system upgrades all warm reset requests into cold resets. The first cold reset:

1. Flushes any write data still pending in processor write buffers to DRAM.
2. Maps out the NVDIMM-Ns.
3. Sends the sanitize command to the NVDIMM-Ns.

For Sanitize/Erase and Power System Off, the system powers off after completing the Sanitize commands. For Sanitize/Erase and Boot to Operating System or Sanitize/Erase and Boot to System Utilities, the system performs another cold reset to map in the NVDIMM-Ns again.

For more information about configuring the Sanitize/Erase settings, see "Setting the NVDIMM-N Sanitize/Erase on Next Reboot Policy (on page 67)."

NVDIMM sanitization guidelines

NVDIMM sanitization is required in the following scenarios:

- When a new NVDIMM-N is added to the system, you must sanitize all NVDIMM-Ns in the system before the NVDIMM-Ns can be used.
- When an NVDIMM-N is removed from the system and NVDIMM-N Memory Interleaving is set to **Enabled**, you must sanitize all the NVDIMM-Ns connected to a processor from which the NVDIMM-N was removed before the NVDIMM-Ns can be used.
- When a previously used NVDIMM-N is added to the system, you must sanitize all the NVDIMM-Ns in the system before the NVDIMM-Ns can be used.
- When any of the following settings are changed, you must sanitize all the NVDIMM-Ns in the system before the NVDIMM-Ns can be used:
 - Channel Interleaving
 - NVDIMM-N Memory Interleaving
 - QPI Snoop Configuration
- When NVDIMM-Ns used in one model of HPE ProLiant server are moved to another model of HPE ProLiant server, you must sanitize the NVDIMM-Ns before the NVDIMM-Ns can be used.

NVDIMM sanitization might not be required if the following are true:

- The NVDIMM-N was already in use in another server that matches the new server in both hardware and System Utilities settings.

- The NVDIMM-N is installed in the new server in the same DIMM slot as in the original server.

Setting the NVDIMM-N Sanitize/Erase on Next Reboot Policy

1. From the System Utilities screen, select **System Configuration → BIOS/Platform Configuration (RBSU) → System Options → Memory Operations → NVDIMM Memory Options**.
2. Select **NVDIMM-N Sanitize/Erase on Next Reboot Policy**.

The following alert is displayed.

IMPORTANT: Sanitizing/Erasing an NVDIMM-N will result in the loss of ALL user data saved in the NVDIMM-N. It is strongly recommended that manual backup of all user data in the NVDIMM-N(s) be performed before sanitizing/erasing the NVDIMM-N(s).

3. Press any key to proceed.
4. Select one of the following menu items:
 - **Sanitize/Erase and Boot to Operating System**
 - **Sanitize/Erase and Power System Off**
 - **Sanitize/Erase and Boot to System Utilities**

For more information about the menu items above, see "NVDIMM sanitize policies (on page 65)."

5. Select one of the following menu items based on the NVDIMM-Ns to be sanitized/erased:
 - **Sanitize/Erase all NVDIMM-N in the System** — Use this option for major system reconfigurations.
 - **Sanitize/Erase all NVDIMM-N on Processor 1** — Use this option when all the NVDIMM-Ns on a processor must be sanitized together, such as when enabling NVDIMM-N Memory Interleaving.
 - **Sanitize/Erase Processor 1 DIMM X** — This option is available only when NVDIMM-N Memory Interleaving is disabled. Use this option for adding individual NVDIMM-Ns, or for using an NVDIMM-N again after errors occur.
 - **Sanitize/Erase all NVDIMM-N on Processor 2** — Use this option when all the NVDIMM-Ns on a processor must be sanitized together, such as when enabling NVDIMM-N Memory Interleaving.
 - **Sanitize/Erase Processor 2 DIMM X** — This option is available only when NVDIMM-N Memory Interleaving is disabled. Use this option for adding individual NVDIMM-Ns, or for using an NVDIMM-N again after errors occur.

When enabled, all user data in the selected NVDIMM-N is erased on the next reboot. The Sanitize NVDIMM-N scope selections are available only after a sanitize policy is selected.

6. Press the **F10** key to save the changes.
7. Reboot the server.

The server will reboot multiple times as part of the sanitize process. POST messages will also display to indicate the NVDIMM-Ns that are being sanitized.

NVDIMM relocation guidelines

When relocating NVDIMM-Ns to another DIMM slot on the server or to another server, observe the following guidelines:

- If data on the NVDIMM-N or set of NVDIMM-Ns must be preserved, then observe the following requirements:
 - The destination server hardware must match the original server hardware.
 - All System Utilities settings must match the original System Utilities settings.
 - All NVDIMM-Ns are installed in the same locations as in the original server.

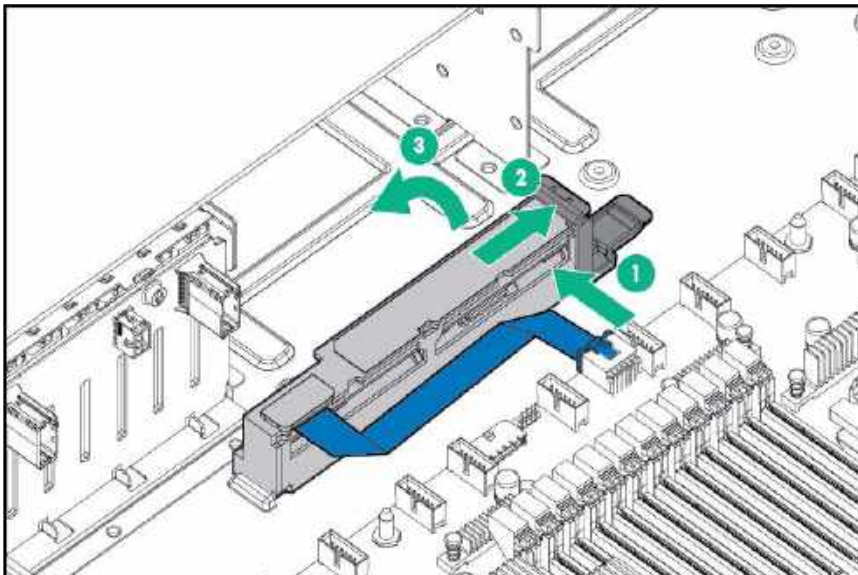
This guideline would apply when replacing a system board due to system failure.

- If data on the NVDIMM-N or set of NVDIMM-Ns does not have to be preserved, then move the NVDIMM-Ns to the new location and sanitize all NVDIMM-Ns after installing them to the new location. For more information, see "NVDIMM sanitization (on page 65)."
- Observe all population guidelines. For more information, see "General DIMM and NVDIMM-N slot population guidelines."
- Observe the process for removing an NVDIMM. For more information, see "Removing an NVDIMM ("Removing and replacing an NVDIMM" on page 64)."
- Observe the process for installing an NVDIMM. For more information, see "Installing an NVDIMM."
- Review and configure the system settings for NVDIMMs. For more information, see "Configuring NVDIMM Memory Options."

HPE Smart Storage Battery

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 27).
 - Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the air baffle ("Air baffle" on page 32).
6. Remove the fan cage ("Fan cage" on page 43).
7. Disconnect the cable, and then remove the Smart Storage Battery.



To replace the component, reverse the removal procedure.

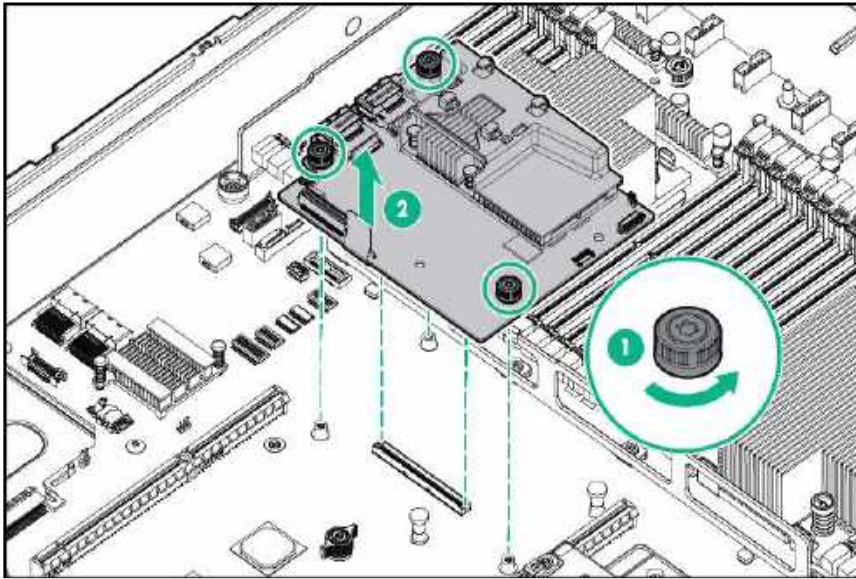
HPE Flexible Smart Array Controller



CAUTION: Hewlett Packard Enterprise recommends performing a complete backup of all server data before performing a controller or adapter installation or removal.

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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. Remove the air baffle.
6. Disconnect the SAS cables.
7. Remove the controller.



To replace the component, reverse the removal procedure.

System battery

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



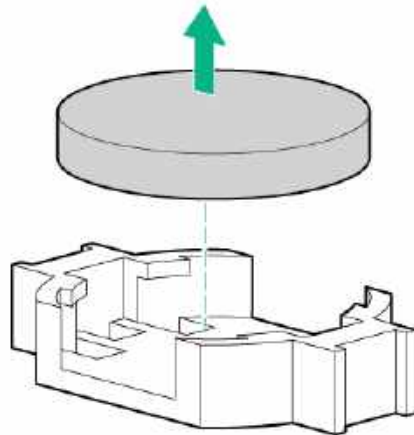
WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- 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 27).
 - o Remove the server from the rack (on page 28).
4. Remove the access panel ("Access panel" on page 32).
5. If installed, remove the secondary PCIe riser cage.
6. Locate the battery ("System board components" on page 93).
7. Remove the battery.



To replace the component, reverse the removal procedure.

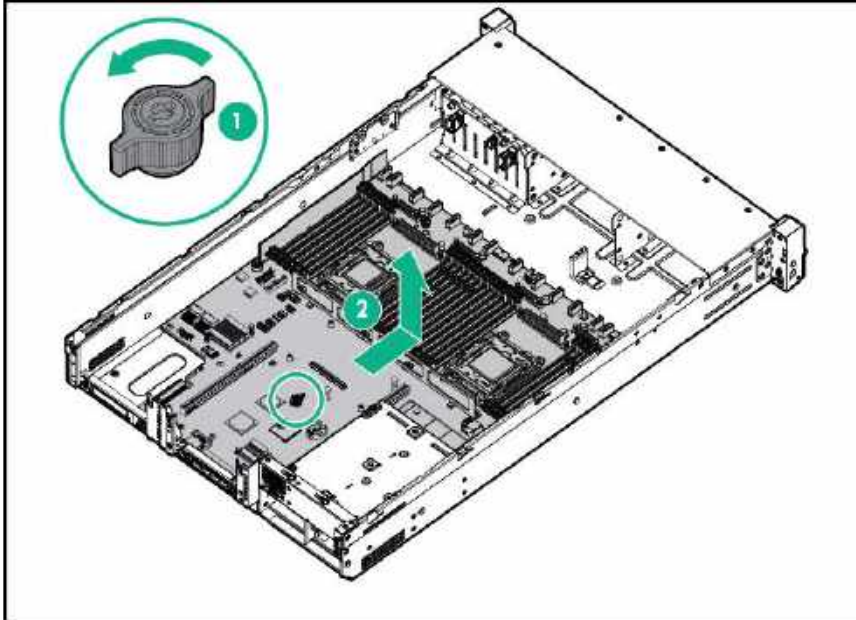
For more information about battery replacement or proper disposal, contact an authorized reseller or an authorized service provider.

System board

To remove the component:

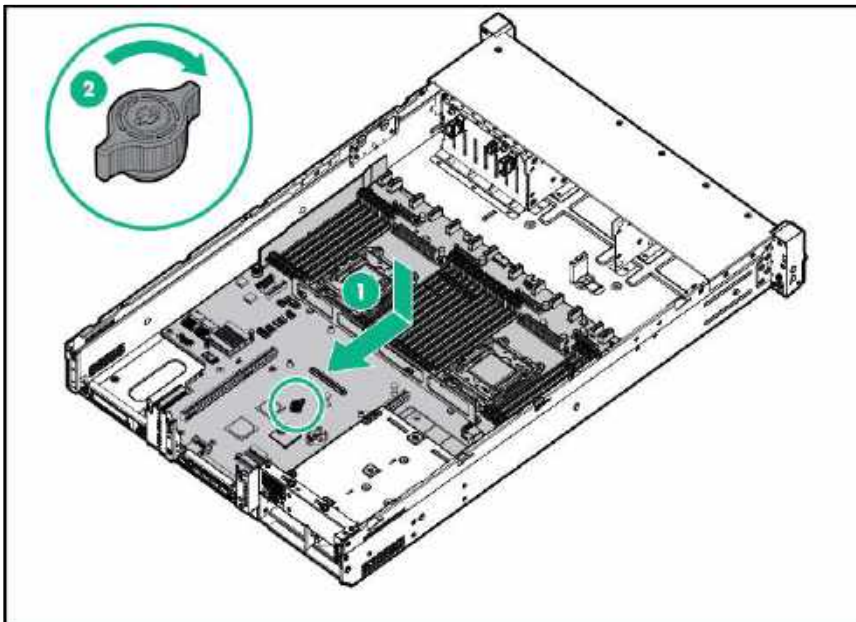
1. Power down the server (on page 27).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Remove the server from the rack (on page 28).
4. Remove all power supplies ("AC power supply" on page 38).
5. Remove the access panel ("Access panel" on page 32).
6. Remove the air baffle ("Air baffle" on page 32).
7. Remove the PCIe riser cage.
8. If installed, remove the secondary PCIe riser cage.
9. Remove the FlexibleLOM ("FlexibleLOM" on page 44).
10. Remove all DIMMs ("DIMMs" on page 63).
11. Remove the fan cage ("Fan cage" on page 43).

12. Disconnect all cables connected to the system board.
13. Remove the heatsink ("Heatsink" on page 58).
14. Remove the processor.
15. Loosen the system board thumbscrews.
16. Remove the system board, using the handle to lift it out of the chassis.

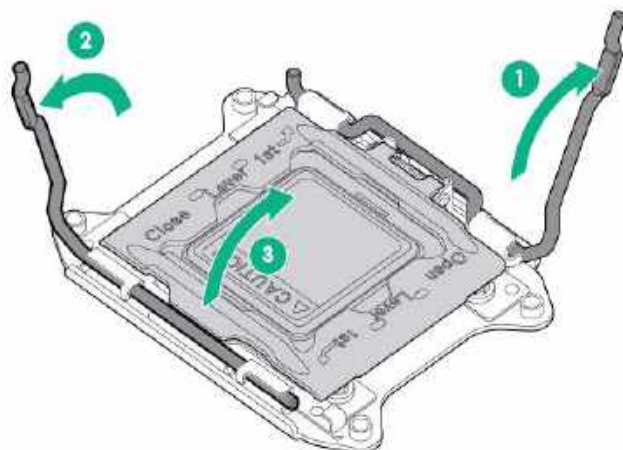


To replace the component:

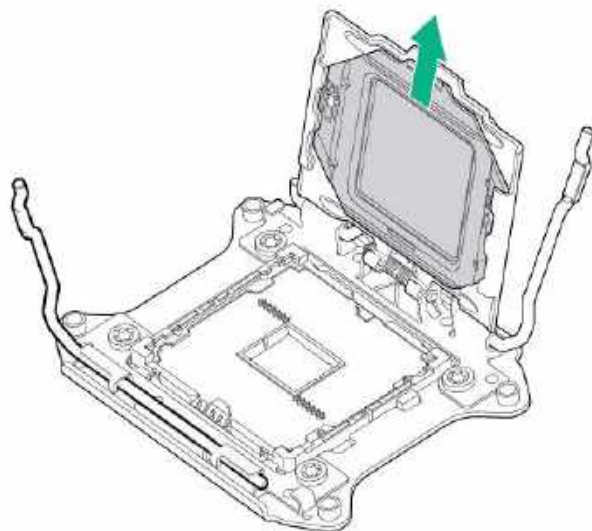
1. Install the spare system board.



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

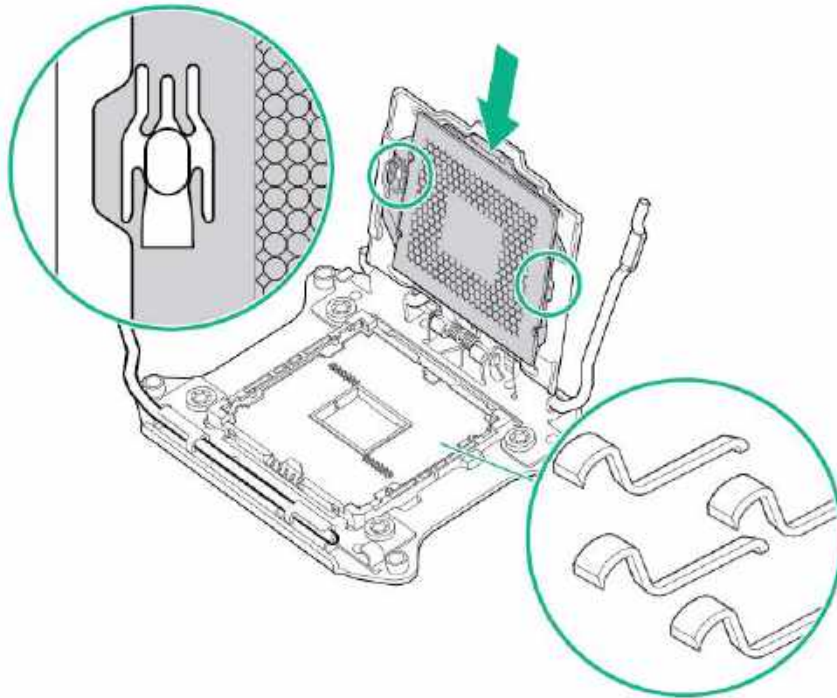


3. Remove the clear processor socket cover. Retain the processor socket cover for future use.



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.

4. 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.**



5. 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.

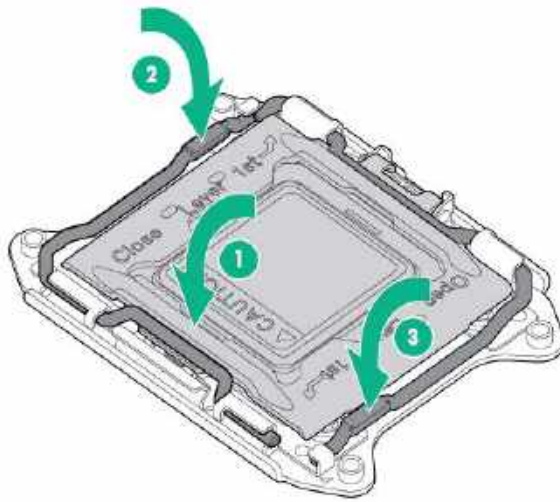


CAUTION: Do not press down on the processor. Pressing down on the processor might damage the processor socket and the system board. Press only in the area indicated on the processor retaining bracket.

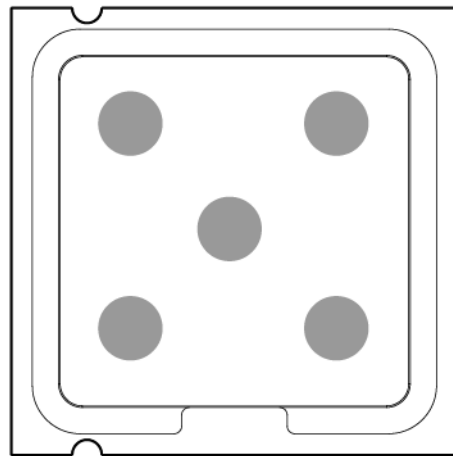


CAUTION: Close and hold down the processor cover socket while closing the processor locking levers. The levers should close without resistance. Forcing the levers closed can damage the processor and socket, requiring system board replacement.

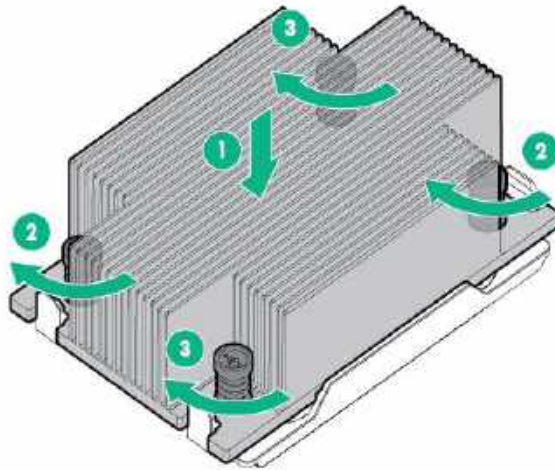
6. Press and hold the processor retaining bracket in place, and then close each processor locking lever. Press only in the area indicated on the processor retaining bracket.



7. Install the processor socket cover onto the processor socket of the failed system board.
8. 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.
9. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



10. Install the heatsink.



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

11. Install all components removed from the failed system board.
12. Install the access panel ("[Access panel](#)" on page [32](#)).
13. Install the power supplies ("[AC power supply](#)" on page [38](#)).
14. Power up the server.
15. Ensure all firmware, including option cards and embedded devices, is updated to the same versions to ensure the latest drivers are being used.
16. Re-enter any Secure Boot Keys that were previously added in the Secure Boot configuration.

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 **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. To clear the warning, press the **Enter** key.
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. To confirm exiting System Utilities, press the **F10** key.
9. The server automatically reboots.

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. Contact a Hewlett Packard Enterprise authorized service provider for a replacement system board and TPM board.

Troubleshooting

Troubleshooting resources

The *HPE 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.hpe.com/support/Gen9_TSG_en)
- French (http://www.hpe.com/support/Gen9_TSG_fr)
- Spanish (http://www.hpe.com/support/Gen9_TSG_es)
- German (http://www.hpe.com/support/Gen9_TSG_de)
- Japanese (http://www.hpe.com/support/Gen9_TSG_ja)
- Simplified Chinese (http://www.hpe.com/support/Gen9_TSG_zh_cn)

The *HPE 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.hpe.com/support/Gen9_EMG_en)
- French (http://www.hpe.com/support/Gen9_EMG_fr)
- Spanish (http://www.hpe.com/support/Gen9_EMG_es)
- German (http://www.hpe.com/support/Gen9_EMG_de)
- Japanese (http://www.hpe.com/support/Gen9_EMG_ja)
- Simplified Chinese (http://www.hpe.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 Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).

UEFI System Utilities

The 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 preboot environments such as the Embedded UEFI Shell and Intelligent Provisioning

For more information, see the UEFI System Utilities user guide for your product on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/UEFI/docs>).

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

Using UEFI System Utilities

To use the System Utilities, use the following keys.

Action	Key
Access System Utilities	F9 during server POST
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 UEFI System Utilities each time the system is powered up.

Embedded Diagnostics option

The system BIOS in all 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 UEFI System Utilities user guide for your server on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/UEFI/docs>).



CAUTION: Do not pull on the cable to disconnect it from the port. Instead, disconnect the connector itself. Pulling on the cable can damage the cable or the connector.

Intelligent Provisioning

Intelligent Provisioning is a single-server deployment tool embedded in ProLiant Gen8 and later servers. Intelligent Provisioning simplifies ProLiant server setup and provides a reliable and consistent way to deploy ProLiant server configurations:

- Intelligent Provisioning prepares the system for installing "off-the-shelf" and Hewlett Packard Enterprise branded versions of operating system software and integrates optimized ProLiant server support software.
- Intelligent Provisioning provides installation help for Microsoft Windows, Red Hat and SUSE Linux, and VMware operating systems. For specific OS support, see the *Intelligent Provisioning Release Notes* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/intelligentprovisioning/docs>).
- Intelligent Provisioning provides maintenance-related tasks using the Perform Maintenance window.

For more information about Intelligent Provisioning software and recovery media downloads, see the Hewlett Packard Enterprise website (<http://www.hpe.com/servers/intelligentprovisioning>). For consolidated drive and firmware update packages, see the Smart Update: Server Firmware and Driver Updates page on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/SmartUpdate>).

Insight Diagnostics

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

The 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 (on page 79).

The 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 Hewlett Packard Enterprise website (<http://www.hpe.com/info/InsightDiagnostics>). The Insight Diagnostics Online Edition is also available in the SPP.

Insight Diagnostics survey functionality

Insight Diagnostics (on page 79) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

This functionality supports operating systems that the server supports. For operating systems supported by the server, see the Hewlett Packard Enterprise website (<http://www.hpe.com/info/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.

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

Erase Utility



CAUTION: Perform a backup before running the Erase Utility. The utility completes the following:

- Sets the system to its original factory state
- Deletes the current hardware configuration information, including array setup and disk partitioning
- Erases all connected hard drives completely.

Before using this utility, see the instructions in the *Intelligent Provisioning User Guide*.

Use the Erase Utility to erase drives and Active Health System logs, and to reset UEFI System Utilities settings. Run the Erase Utility if you must erase the system for the following reasons:

- You want to install a new operating system on a server with an existing operating system.
- You encounter an error when completing the steps of a factory-installed operating system installation.

To access the Erase Utility, click the Perform Maintenance icon from the Intelligent Provisioning home screen, and then select **Erase**.

For more information about the Erase Utility, see the *Intelligent Provisioning User Guide* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/intelligentprovisioning/docs>).

HPE Insight Remote Support

Hewlett Packard Enterprise strongly recommends that you register your device for remote support to enable enhanced delivery of your Hewlett Packard Enterprise warranty, HPE support services, or Hewlett Packard Enterprise contractual support agreement. Insight Remote Support supplements your monitoring continuously to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to Hewlett Packard Enterprise, which will initiate a fast and accurate resolution, based on your product's service level. Notifications can be sent to your authorized Hewlett Packard Enterprise Channel Partner for onsite service, if configured and available in your country.

For more information, see *Insight Remote Support and Insight Online Setup Guide for ProLiant Servers and BladeSystem c-Class Enclosures* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/insightremotesupport/docs>). Insight Remote Support is available as part of Hewlett Packard Enterprise Warranty, HPE support services, or Hewlett Packard Enterprise contractual support agreement.

USB support

Hewlett Packard Enterprise servers support both USB 2.0 ports and USB 3.0 ports. Both port types support installing all types of USB devices (USB 1.0, USB 2.0, and USB 3.0), but might 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.
- In UEFI Boot Mode, Hewlett Packard Enterprise provides legacy USB support in the preboot environment before the operating system loading for USB 1.0, USB 2.0, and USB 3.0 speeds.

- In Legacy BIOS Boot Mode, Hewlett Packard Enterprise provides legacy USB support in the preboot environment before the operating system loading for USB 1.0 and USB 2.0 speeds. USB 3.0 ports can be used with all devices in Legacy BIOS Boot Mode but are not available at USB 3.0 speeds in the preboot 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, Hewlett Packard Enterprise 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 preboot 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 is compatible with operating systems that do not support USB 3.0 while 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 preboot environment) when in UEFI Boot Mode. Do not use this mode 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 preboot 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 and default operation of the USB ports is configurable in the UEFI System Utilities. For more information, see the UEFI System Utilities user guide for your product on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/UEFI/docs>).

External USB functionality

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

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

HPE Smart Storage Administrator

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

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

Some HPE SSA features include the following:

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

For more information about HPE SSA, see the Hewlett Packard Enterprise website (<http://www.hpe.com/servers/ssa>).

Automatic Server Recovery

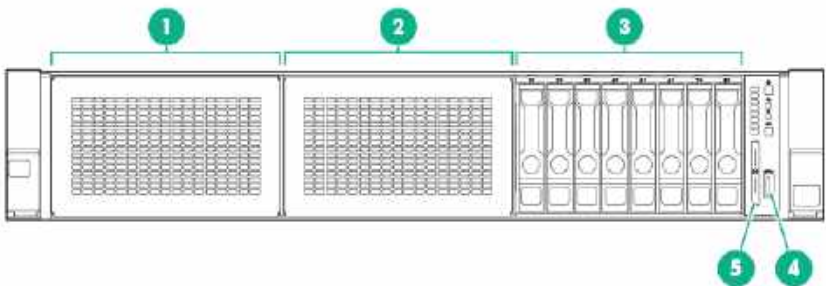
ASR is a feature that causes the system to restart when a catastrophic operating system error occurs, such as a blue screen, ABEND (does not apply to HPE ProLiant DL980 Servers), or panic. A system fail-safe timer, the ASR timer, starts when the System Management driver, also known as the Health Driver, 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 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

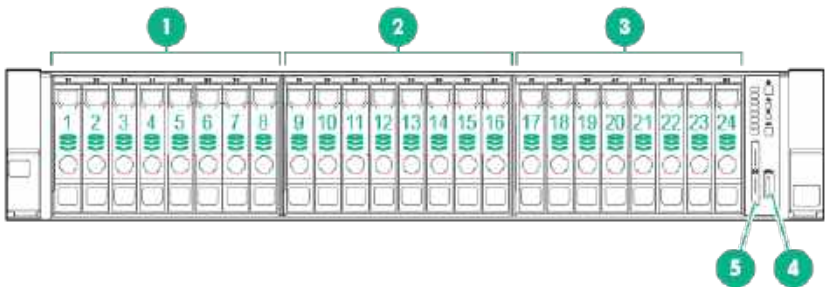
Front panel components

- SFF model (8-drive)



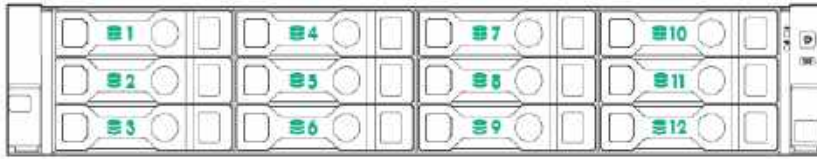
Item	Description
1	Bay 1 (optional drives or universal media bay)
2	Bay 2 (optional drives)
3	Fixed drive bays
4	Front USB 3.0 connector
5	Serial label pull tab

- SFF model (24-drive)



Item	Description
1	Bay 1
2	Bay 2
3	Bay 3, fixed drive bay
4	Front USB 3.0 connector
5	Serial label pull tab

- LFF model (12-drive)



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

1-12	Drive bays
------	------------

- LFF model (4-drive)



Item	Description
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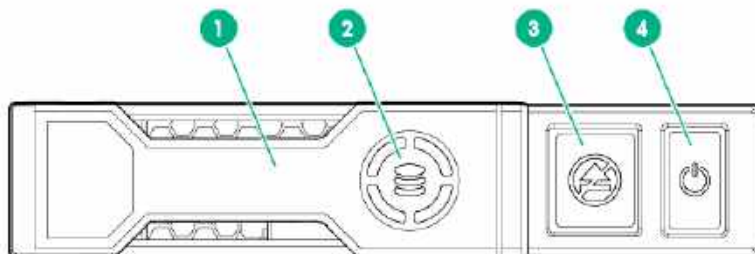
1-4	Drive bays
-----	------------

NVMe SSD components

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



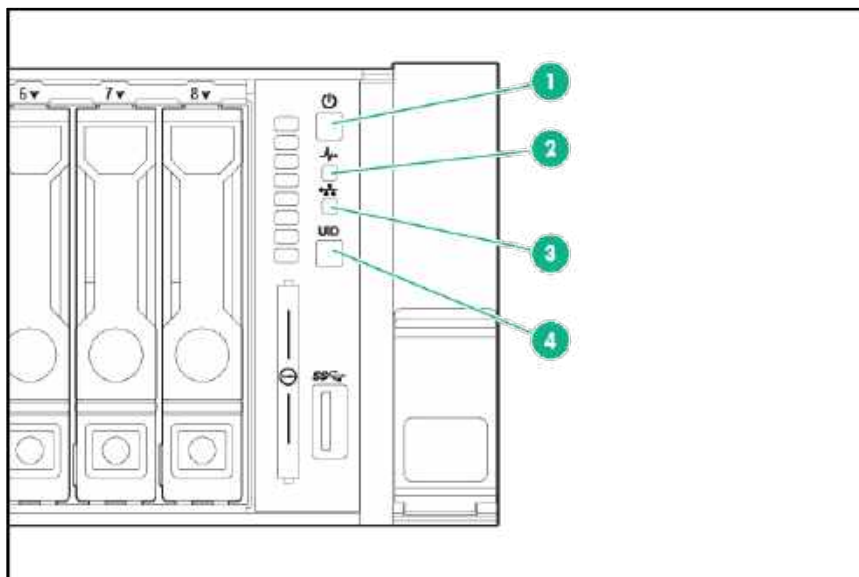
CAUTION: Do not remove an NVMe SSD from the drive bay while the Do Not Remove button LED is flashing. The Do Not Remove button LED flashes to indicate the device is still in use. Removal of the NVMe SSD before the device has completed and ceased signal/traffic flow can cause loss of data.



Item	Description
1	Release lever
2	Activity ring
3	Do Not Remove button
4	Power button

Front panel LEDs and buttons

- SFF front panel LEDs and button



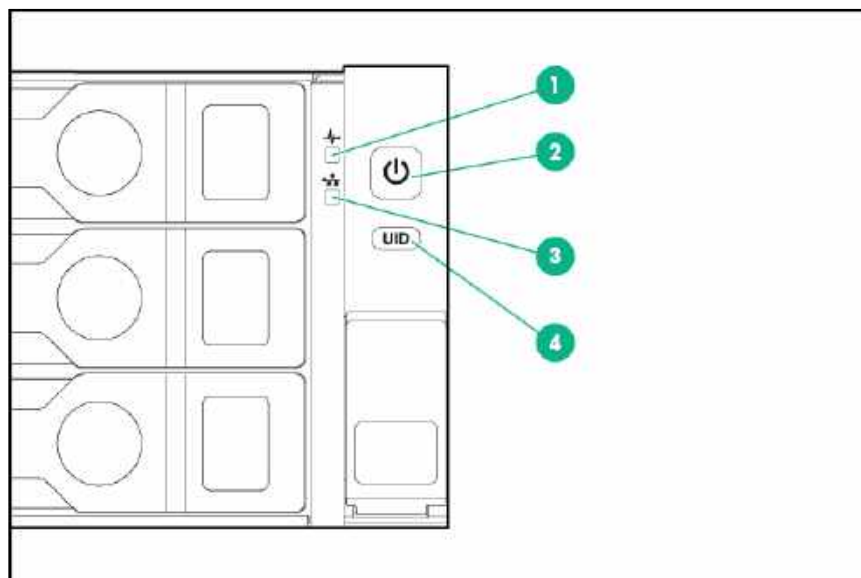
Item	Description	Status
1	Power On/Standby button and system power LED*	Solid green = System on Flashing green (1 Hz/cycle per sec) = Performing power on sequence Solid amber = System in standby Off = No power present**
2	Health LED*	Solid green = Normal Flashing green (1 Hz/cycle per sec) = iLO is rebooting 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	UID button/LED*	Solid blue = Activated Flashing blue: 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

*When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "Power fault LEDs (on page 87)."

**Facility power is not present, power cord is not attached, no power supplies are installed, power supply failure has occurred, or the power button cable is disconnected.

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

- LFF LEDs and button



Item	Description	Status
1	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**
2	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†
3	NIC status LED*	Solid green = Link to network Flashing green (1 Hz/cycle per sec) = Network active Off = No network activity
4	UID button/LED*	Solid blue = Activated Flashing blue: • 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

*When all four LEDs described in this table flash simultaneously, a power fault has occurred. For more information, see "Power fault LEDs (on page 87)."

**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 power button cable is disconnected.

UID button functionality

The UID button can be used to display the HPE ProLiant Pre-boot Health Summary when the server will not power on. For more information, see the *HPE iLO 4 User Guide* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/ilo/docs>).

Power fault LEDs

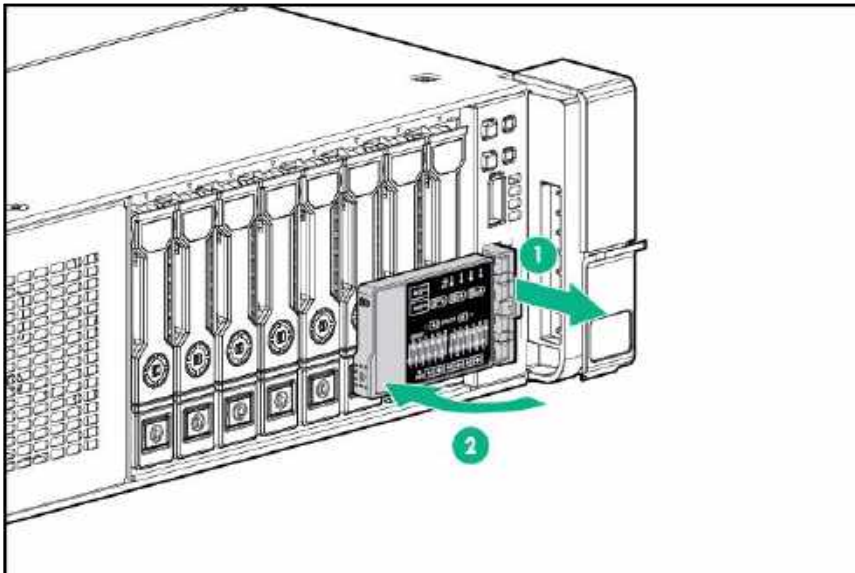
The following table provides a list of power fault LEDs, and the subsystems that are affected. Not all power faults are used by all servers.

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

Access the optional HPE Systems Insight Display

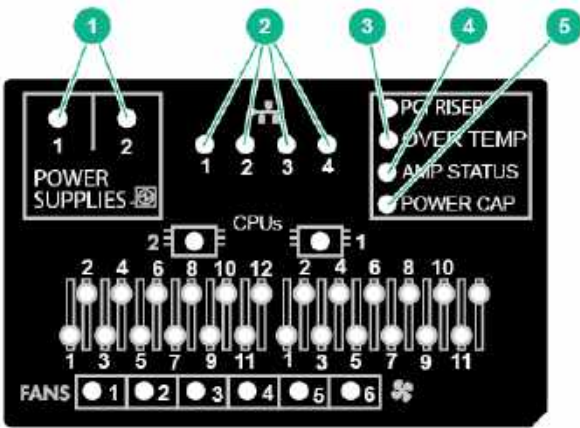
To access a pop-out HPE Systems Insight Display on models with this option installed:

1. Press and release the panel.
2. After the display fully ejects, rotate the display to view the LEDs.



Systems Insight Display LEDs

The Systems Insight Display LEDs represent the system board layout. The display enables diagnosis with the access panel installed.



Item	Description	Status
1	Power supplies	Off = Normal Solid amber = Power subsystem degraded, power supply failure, or input power lost.
2	NIC link/activity	Off = No link to network. If the power is off, view the rear panel RJ-45 LEDs for status (" Rear panel LEDs " on page 90). Flashing green = Network link and activity Solid green = Network link
3	Over temp	Off = Normal Solid amber = High system temperature detected
4	AMP status	Off = AMP modes disabled Solid green = AMP mode enabled Solid amber = Failover Flashing amber = Invalid configuration
5	Power cap	Off = System is in standby, or no cap is set. Solid green = Power cap applied
—	All other LEDs	Off = Normal Amber = Failure For more information on the activation of these LEDs, see "Systems Insight Display LED combinations (on page 89)."

Systems Insight Display LED combinations

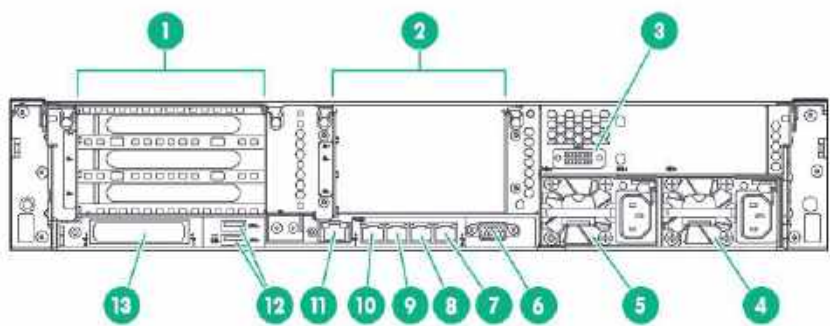
When the health LED on the front panel illuminates either amber or red, the server is experiencing a health event. Combinations of illuminated Systems Insight Display LEDs, the system power LED, and the health LED indicate system status.

Systems Insight Display LED and color	Health LED	System power LED	Status
Processor (amber)	Red	Amber	One or more of the following conditions may exist: - Processor in socket X has failed. - Processor X is not installed in the socket. - Processor X is unsupported. - ROM detects a failed processor during POST.
Processor (amber)	Amber	Green	Processor in socket X is in a pre-failure condition.
DIMM (amber)	Red	Green	One or more DIMMs have failed.
DIMM (amber)	Amber	Green	DIMM in slot X is in a pre-failure condition.
Over temp (amber)	Amber	Green	The Health Driver has detected a cautionary temperature level.
Over temp (amber)	Red	Amber	The server has detected a hardware critical temperature level.
PCI riser (amber)	Red	Green	The PCI riser cage is not seated properly.
Fan (amber)	Amber	Green	One fan has failed or has been removed.
Fan (amber)	Red	Green	Two or more fans have failed or been removed.
Power supply (amber)	Red	Amber	One or more of the following conditions may exist: - Only one power supply is installed and that power supply is in standby. - Power supply fault - System board fault
Power supply (amber)	Amber	Green	One or more of the following conditions may exist: - Redundant power supply is installed and only one power supply is functional. - AC power cord is not plugged into redundant power supply. - Redundant power supply fault - Power supply mismatch at POST or power supply mismatch through hot-plug addition
Power cap (off)	—	Amber	Standby
Power cap (green)	—	Flashing green	Waiting for power
Power cap (green)	—	Green	Power is available.
Power cap (flashing amber)	—	Amber	Power is not available.



IMPORTANT: If more than one DIMM slot LED is illuminated, further troubleshooting is required. Test each bank of DIMMs by removing all other DIMMs. Isolate the failed DIMM by replacing each DIMM in a bank with a known working DIMM.

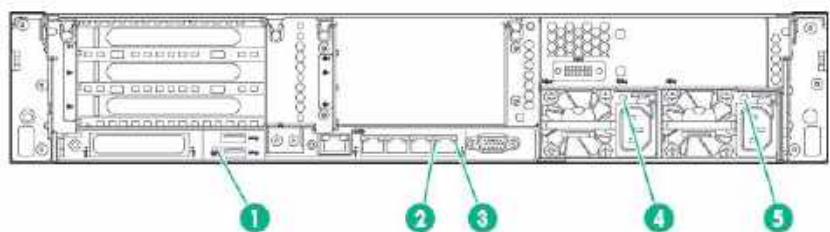
Rear panel components



Item	Description
1	PCIe slots 1–3 (top to bottom)
2	Optional PCIe slots 4–6 (top to bottom)*
3	Optional serial port
4	Power supply 1 (PS1)
5	Power supply 2 (PS2)
6	Video connector
7	1Gb RJ-45 port 4
8	1Gb RJ-45 port 3
9	1Gb RJ-45 port 2
10	1Gb RJ-45 port 1
11	iLO connector
12	USB 3.0 connectors
13	FlexibleLOM option

*Requires second processor

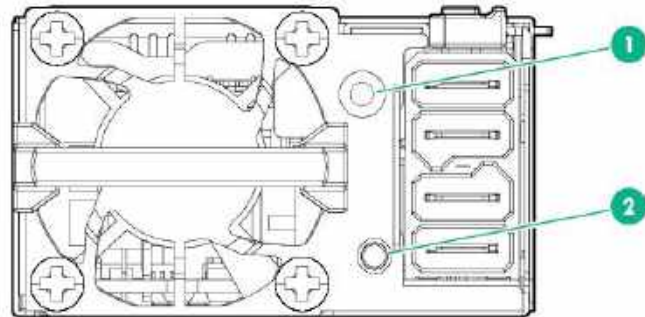
Rear panel LEDs



Item	Description	Status
1	UID LED	Off = Deactivated Solid blue = Activated Flashing blue = System being managed remotely
2	NIC link LED	Off = No network link Green = Network link
3	NIC activity LED	Off = No network activity

Item	Description	Status
		Solid green = Link to network Flashing green = Network activity
4	Power supply 2 LED	Off = System is off or power supply has failed. Solid green = Normal
5	Power supply 1 LED	Off = System is off or power supply has failed. Solid green = Normal

Flex slot battery backup module LEDs and buttons



Item	Description
1	FSBBU module LED
2	Battery check button

When the battery check button is pressed, the LED indicates the state of the battery. The number of times that the LED flashes indicates the state of charge.

# of LED flashes	State of charge (%)
0	< 5
1	<= 30
2	31 – 69
3	>= 70

The state of the LED indicates the FSBBU operating mode.

LED	Mode/State
Off	- Ship/storage mode - Cycle power operating
Flashing amber	- Battery diagnostic - Active mode
Solid amber	Online mode and charger is ON
Flashing green	Discharge mode - RSOC—70-100% frequency=0.5Hz; duty=0.5 - RSOC—31-69% frequency=1Hz; duty=0.5 - RSOC—0-30% frequency=1.5Hz; duty=0.5
Solid green	- Online mode and charger is OFF - Battery is fully charged

LED	Mode/State
Flashing red	Auxiliary path A/B protection
Solid red	FSBBU fault or other protections

For more information about the FSBBU module, see "750 W Flex Slot Hot Plug Battery Backup Module ("HPE 750W Flex Slot Hot Plug Battery Backup Module" on page 39)."

Non-hot-plug PCI riser board slot definitions

- Primary riser cage connector, connected to processor 1 or the Southbridge

	PCIe 3-slot riser cage*	Optional PCIe 2-slot x16 riser cage
1 - FL/FH	PCIe3 x16 (8,4,2,1)	—
2 - HL/FH	PCIe3 x16 (8,4,2,1)	PCIe3 x16 (16,8,4,2,1)
3 - HL/FH	PCIe3 x8 (8,4,2,1)	PCIe3 x8 (8,4,2,1)

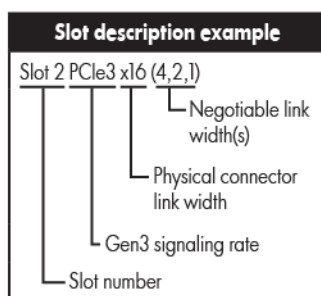
- Secondary riser cage connector, connected to processor 2 (processor 2 must be installed)

	PCIe 3-slot riser cage*
4 - FL/FH	PCIe3 x16 (16,8,4,2,1)
5 - HL/FH	PCIe3 x16 (16,8,4,2,1)
6 - HL/FH	PCIe3 x8 (8,4,2,1)

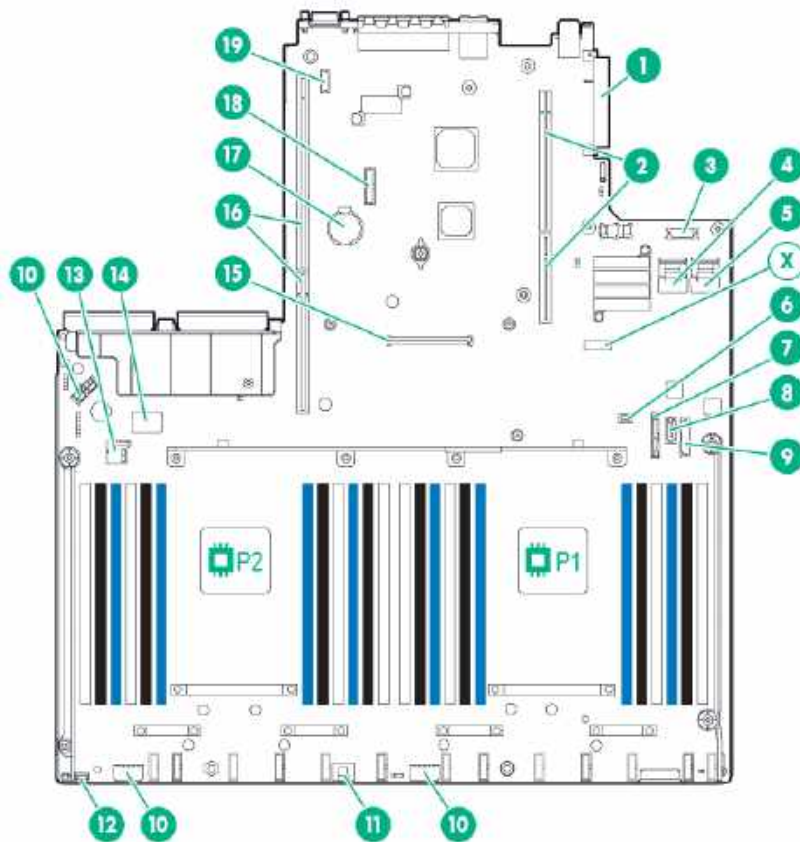
*The server ships with one PCIe3 riser cage installed in the primary riser cage connector.

Notes:

- "Primary" denotes the riser cage is installed in the primary riser connector.
- "Secondary" denotes the riser cage is installed in the secondary riser connector.
- Installing the riser cages listed in the table above in either the primary or secondary riser connectors determines the form factor of the PCI expansion boards supported by those riser cages.
- FL/FH denotes full-length, full-height. HL/FH denotes half-length, full-height.



System board components



Item	Description
1	FlexibleLOM connector
2	Primary (processor 1) PCI riser connector
3	Optical front VGA/USB 2.0 connector
4	x4 SATA port 1
5	x4 SATA port 2
6	Backplane presence detect connector
7	Optical/SATA port 5
8	SATA port 4
9	Front power/USB 3.0 connector
10	Drive backplane power connector
11	HPE Smart Storage Battery connector
12	Optional Location Discovery Services connector
13	MicroSD card slot
14	Dual internal USB 3.0 connector
15	Smart Array/HBA connector
16	Secondary processor (processor 2) PCI riser connector
17	System battery
18	TPM connector
19	Optional serial port connector
X	System maintenance switch

System maintenance switch

Position	Default	Function
S1	Off	Off = HPE iLO 4 security is enabled. On = HPE 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 CMOS.



CAUTION: Clearing CMOS 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 HPE Dynamic Smart Array B140i Controller is disabled. Do not use the B140i controller when the server is in Legacy BIOS Boot Mode.

NMI functionality

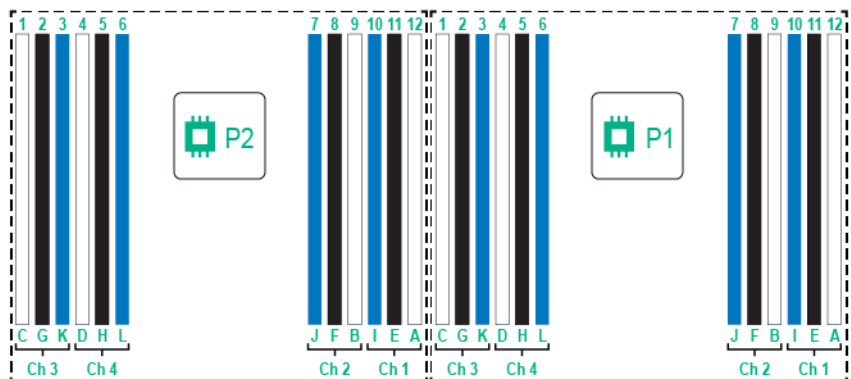
An NMI crash dump enables administrators to create crash dump files when a system is hung and not responding to traditional debug mechanisms.

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

To force the OS to invoke the NMI handler and generate a crash dump log, the administrator can use the iLO Virtual NMI feature.

DIMM slot locations

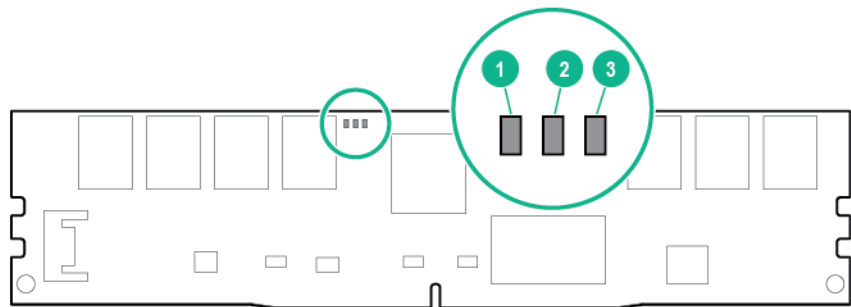
DIMM slots are numbered sequentially (1 through 12) for each processor. The supported AMP modes use the letter assignments for population guidelines.



	1st slot of channel	2nd slot of channel	3rd slot of channel
	A B C D	E F G H	I J K L
Number of DIMMs to install	4	8	12

NVDIMM LEDs

When the server boots up, all LEDs flash three times. Any LED activity not described in this section indicates a possible error.

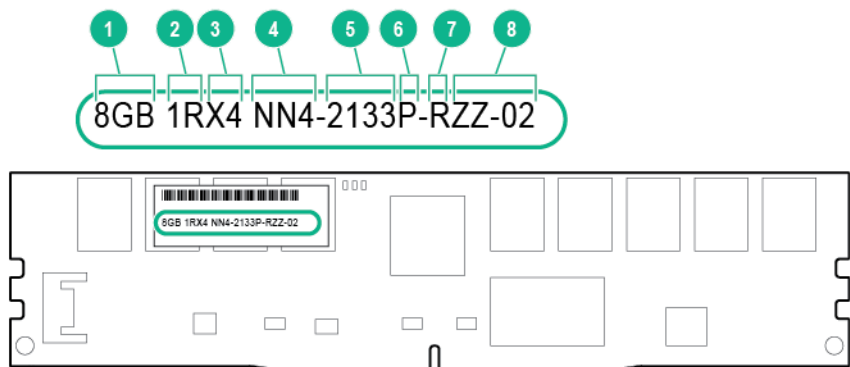


Item LED definitions

- Fast-flashing blue = A backup is in progress. Do not remove the NVDIMM.
 - Slow-flashing blue (1 flash/15 seconds) = Normal operation.
- Reserved
- Solid or flashing green = Power is available to the NVDIMM. Do not remove the NVDIMM.
 - Off = Power is not available to the NVDIMM.

NVDIMM identification

To determine NVDIMM characteristics, see the full product description as shown in the following example:



Item	Description	Definition
1	Capacity	8GB
2	Rank	1R (Single rank)
3	Data width	x4 (4 bit)
4	Memory type	NVDIMM-N
5	Maximum memory speed	2133 MT/s
6	Speed grade	P (CAS 15-15-15)
7	DIMM type	RDIMM (registered)
8	Reserved	—

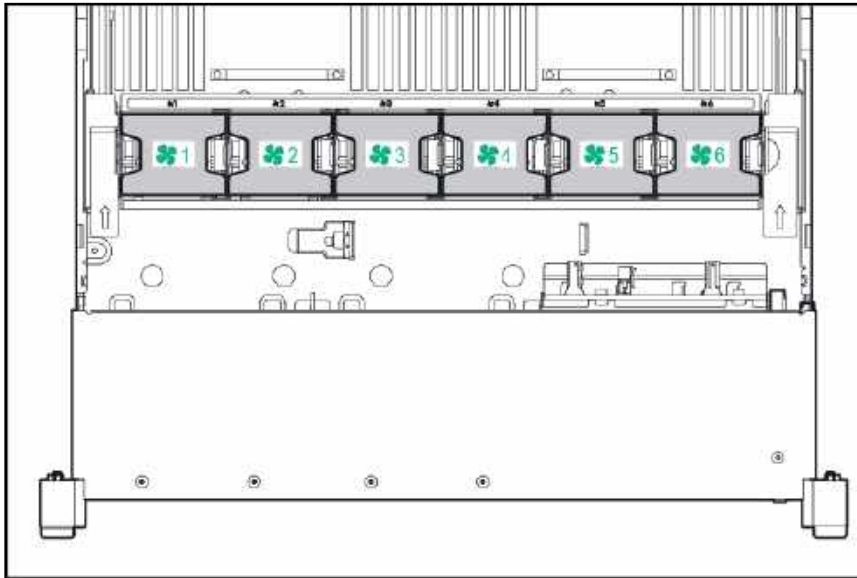
For more information about product features, specifications, options, configurations, and compatibility, see the product QuickSpecs on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).

Hot-plug fans

- ⚠ **CAUTION:** To avoid damage to server components, fan blanks must be installed in fan bays 1 and 2 in a single-processor configuration.
- ⚠ **CAUTION:** To avoid damage to the equipment, do not operate the server for extended periods of time if the server does not have the optimal number of fans installed. Although the server might boot, Hewlett Packard Enterprise does not recommend operating the server without the required fans installed and operating.

Valid fan configurations are listed in the following table.

Configuration	Fan bay 1	Fan bay 2	Fan bay 3	Fan bay 4	Fan bay 5	Fan bay 6
1 processor	Fan blank	Fan blank	Fan	Fan	Fan	Fan
1 processor, 24 SFF or 12 LFF configuration with high-performance fans	Fan	Fan	Fan	Fan	Fan	Fan
2 processors	Fan	Fan	Fan	Fan	Fan	Fan



For a single-processor configuration, excluding 24-SFF and 12-LFF configurations, four fans and two blanks are required in specific fan bays for redundancy. A fan failure or missing fan causes a loss of redundancy. A second fan failure or missing fan causes an orderly shutdown of the server.

For a dual-processor configuration or single-processor 24-SFF or 12-LFF configurations, six fans are required for redundancy. A fan failure or missing fan causes a loss of redundancy. A second fan failure or missing fan causes an orderly shutdown of the server.

The high-performance fans are used for 24-SFF and 12-LFF drive configurations and might be necessary for the following installations:

- Optional GPU riser installations
- ASHRAE compliant configurations

For more information, see the Hewlett Packard Enterprise website (<http://www.hpe.com/servers/ASHRAE>).

The server supports variable fan speeds. The fans operate at minimum speed until a temperature change requires a fan speed increase to cool the server. The server shuts down during the following temperature-related scenarios:

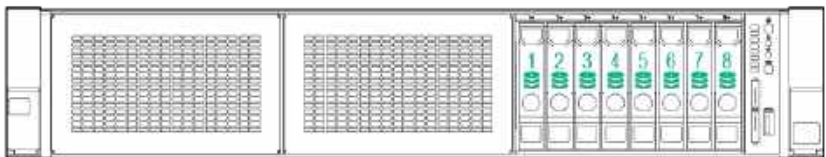
- At POST and in the OS, HPE iLO 4 performs an orderly shutdown if a cautionary temperature level is detected. If the server hardware detects a critical temperature level before an orderly shutdown occurs, the server performs an immediate shutdown.
- When the Thermal Shutdown feature is disabled in the BIOS/Platform Configuration (RBSU), HPE iLO 4 does not perform an orderly shutdown when a cautionary temperature level is detected. Disabling this feature does not disable the server hardware from performing an immediate shutdown when a critical temperature level is detected.



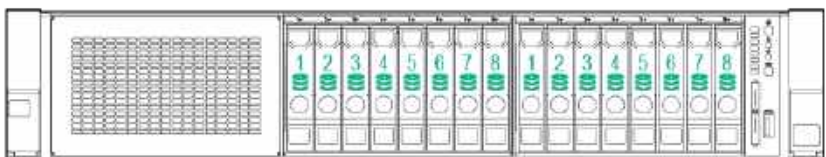
CAUTION: A thermal event can damage server components when the Thermal Shutdown feature is disabled in the BIOS/Platform Configuration (RBSU).

SAS and SATA device numbers

- 8SFF device bay numbering



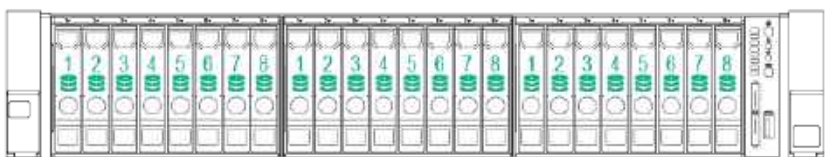
- Optional 16SFF device bay numbering



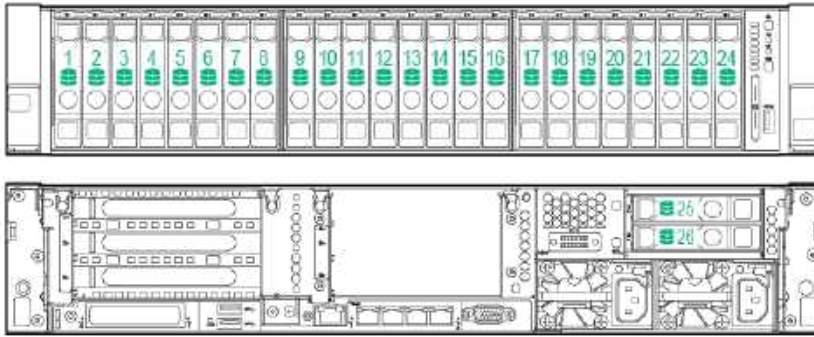
- Optional 16SFF device bay numbering with SAS expander solution used



- Optional 24SFF device bay numbering



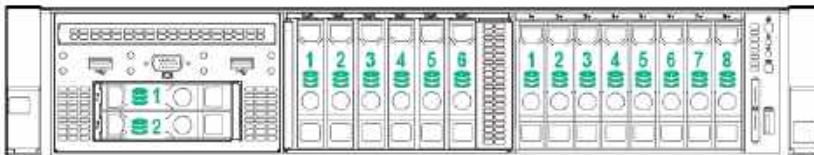
- Optional 24SFF device bay numbering with SAS expander solution used



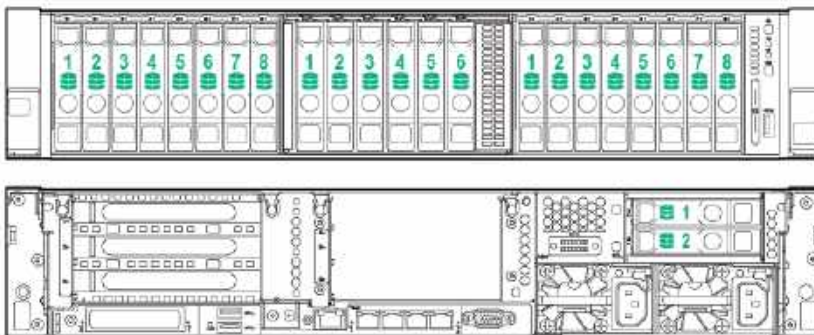
- 6SFF Express Bay Enablement Option device numbering with 8SFF drive cage installed in bay 1



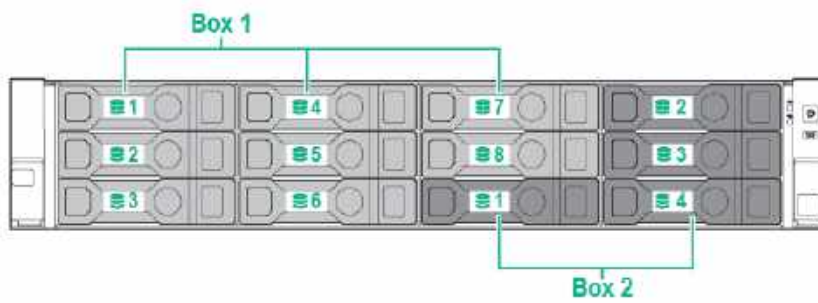
- 6SFF Express Bay Enablement Option device numbering with 2SFF drive cage installed in universal media bay 1



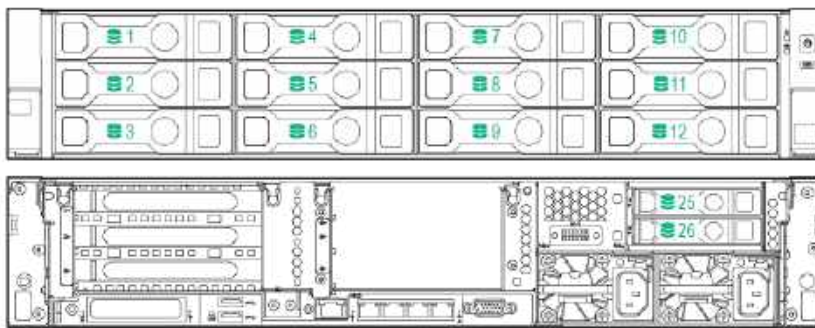
- 6SFF Express Bay Enablement Option device numbering with 2SFF drives installed at the rear of the server



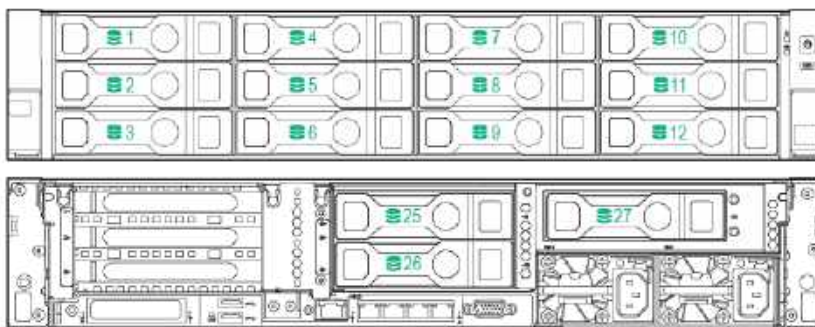
- 12LFF device bay numbering



- 12LFF device bay numbering with 2-bay rear SAS expander solution used



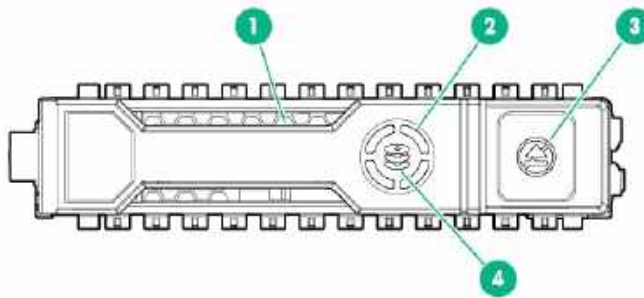
- 12LFF device bay numbering with 3-bay rear SAS expander solution used



- 4LFF device bay numbering



Hot-plug drive LED definitions



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

Cabling

Cabling overview

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

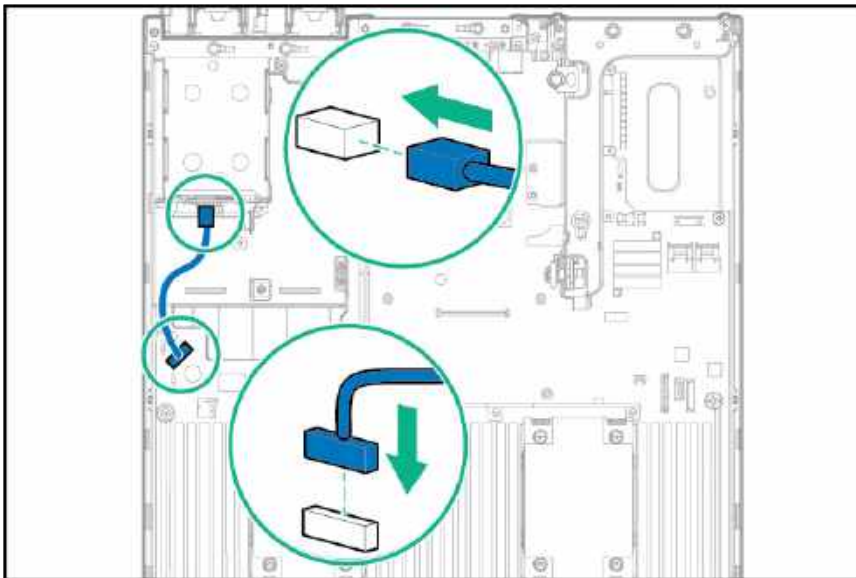


CAUTION: When routing cables, always be sure that the cables are not in a position where they can be pinched or crimped.

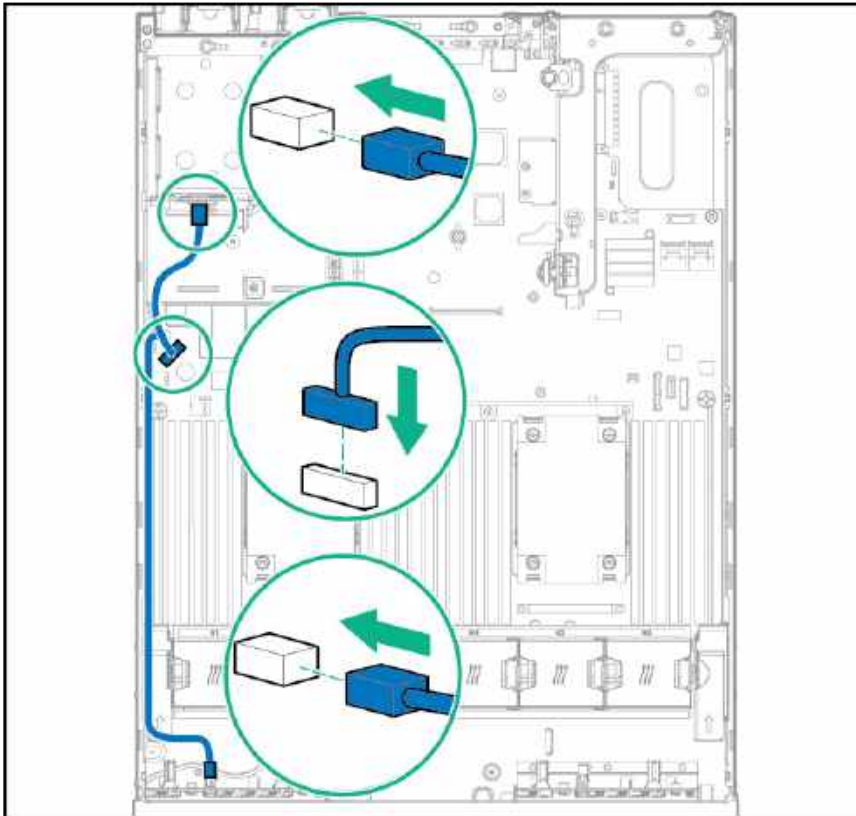
Two-bay SFF drive cage option cabling

2 SFF drive bay option rear installation

1. Connect the power cable using one of the following connections:
 - o **Single cable connection with 12 LFF drive configuration in the front**

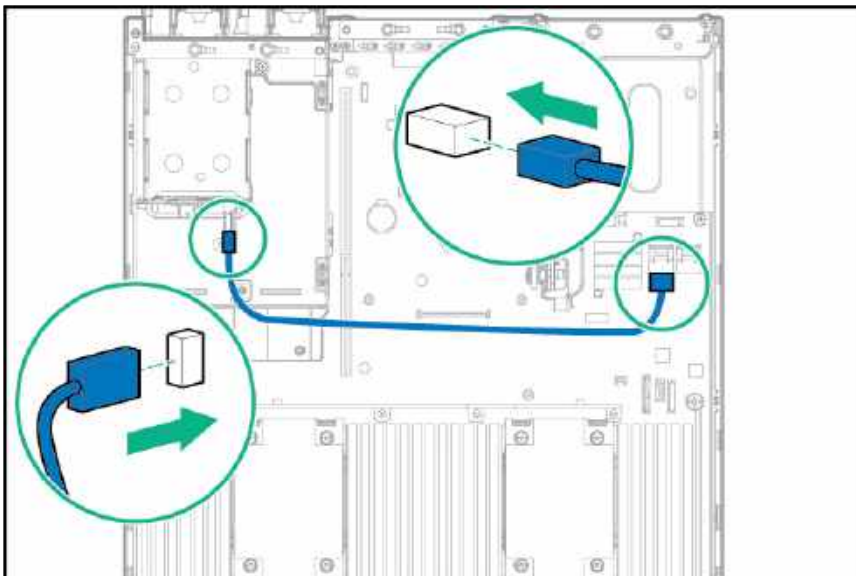


- Y cable connection with 24 SFF drive configuration in front

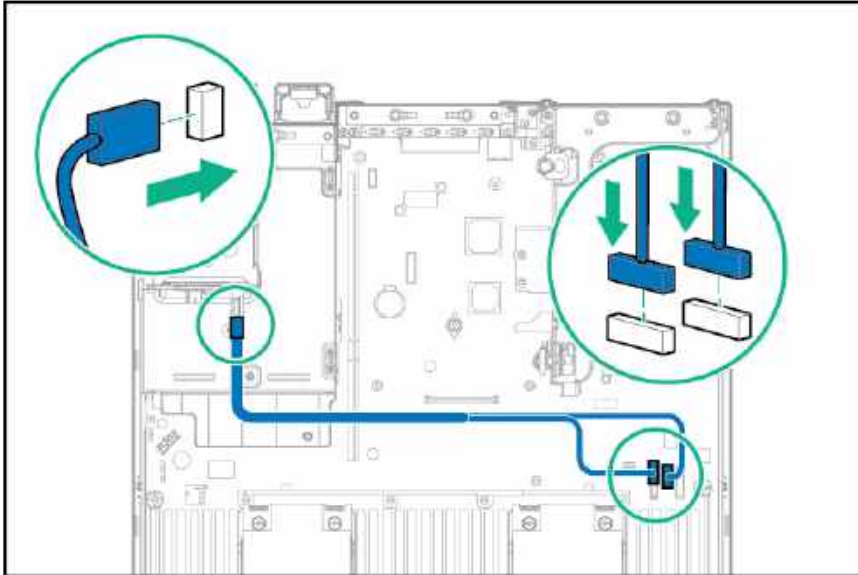


2. Connect the data cable using one of the following connections:

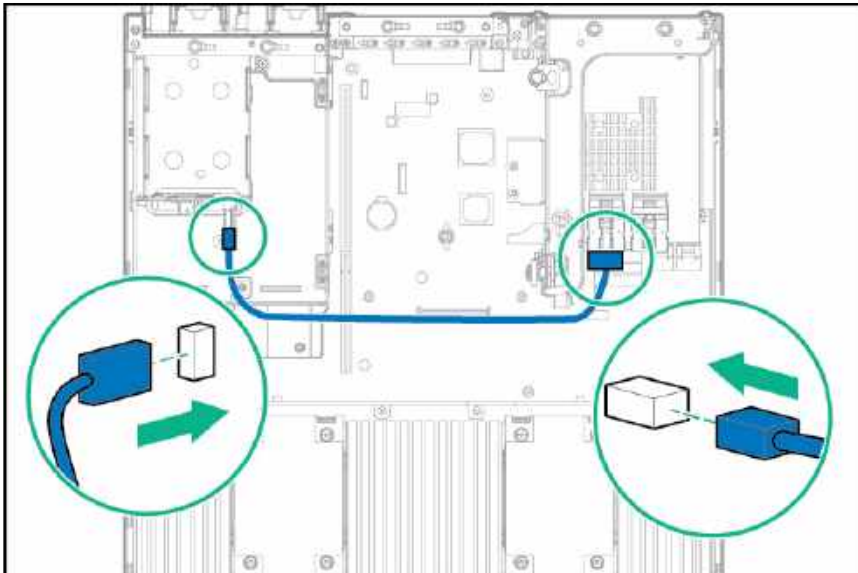
- **Connect to the onboard x4 SATA connector**



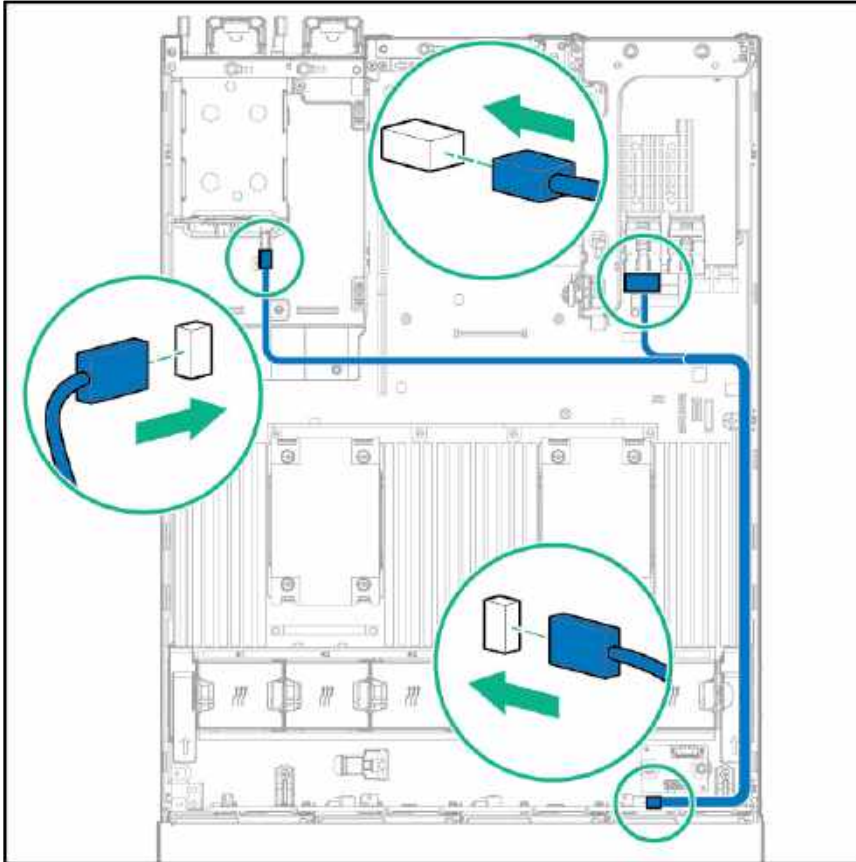
- **Connect to the x2 SATA port and optical disk drive connector**



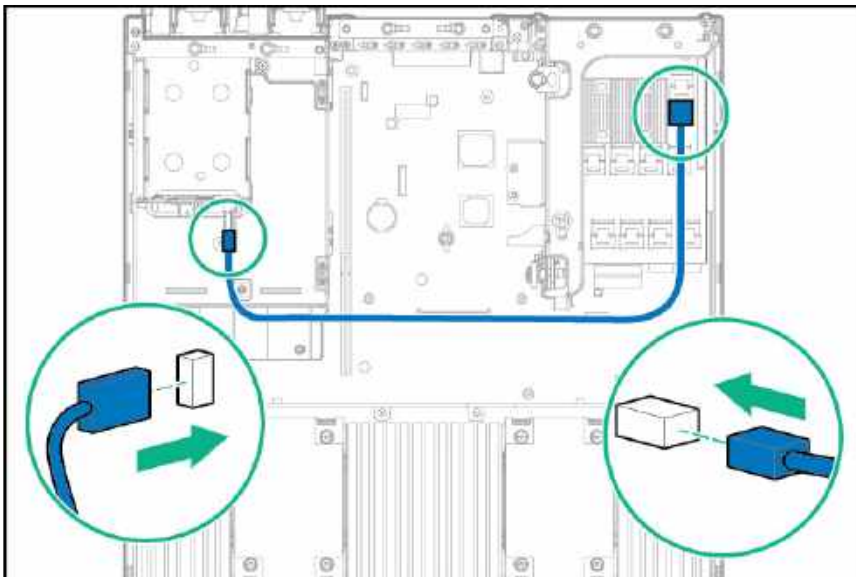
- **Connect to a PCI expansion board**



- **Connect to a PCI expansion board and the 12 LFF drive backplane**

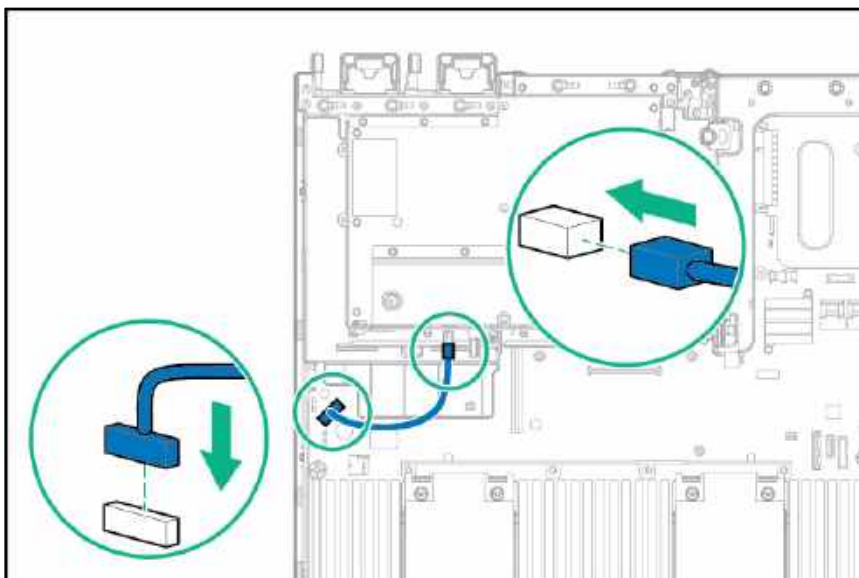


- **Connect to an HPE 12G SAS Expander Card**

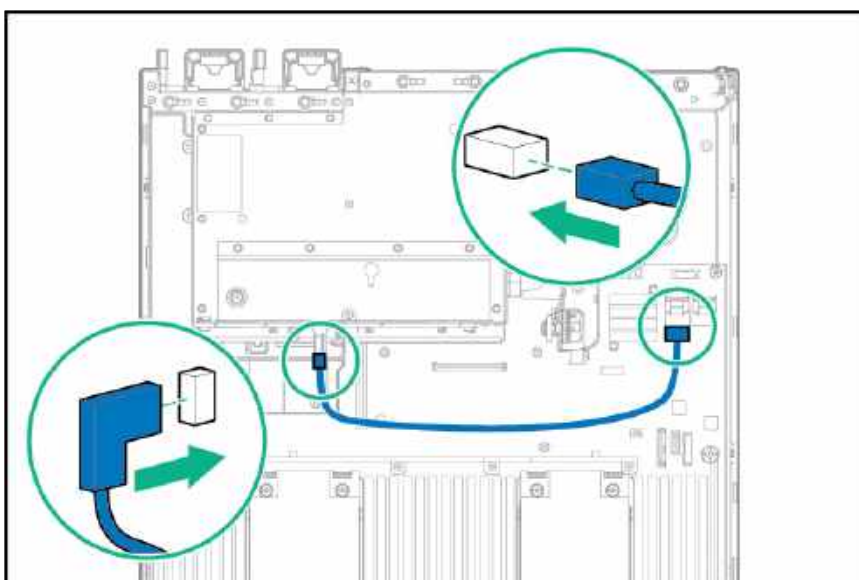


Three-bay LFF rear drive cage cabling

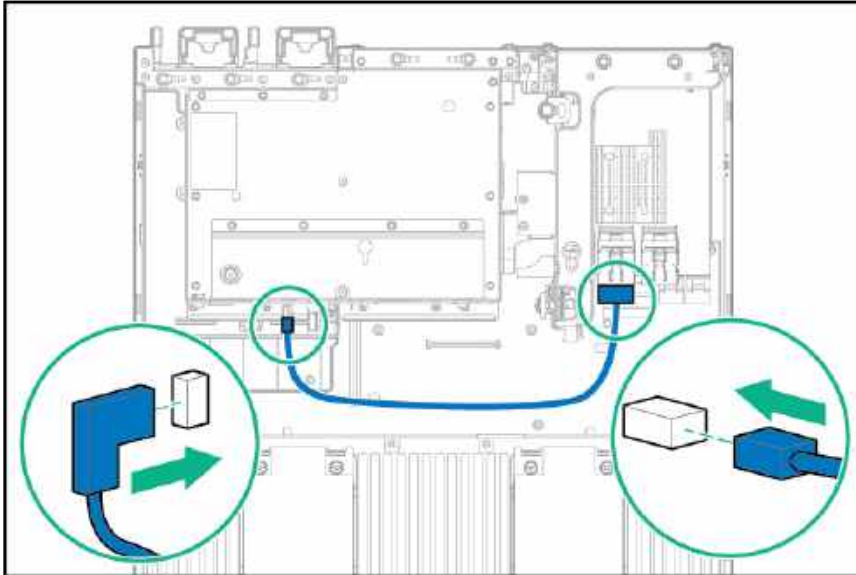
1. Connect the power cable.



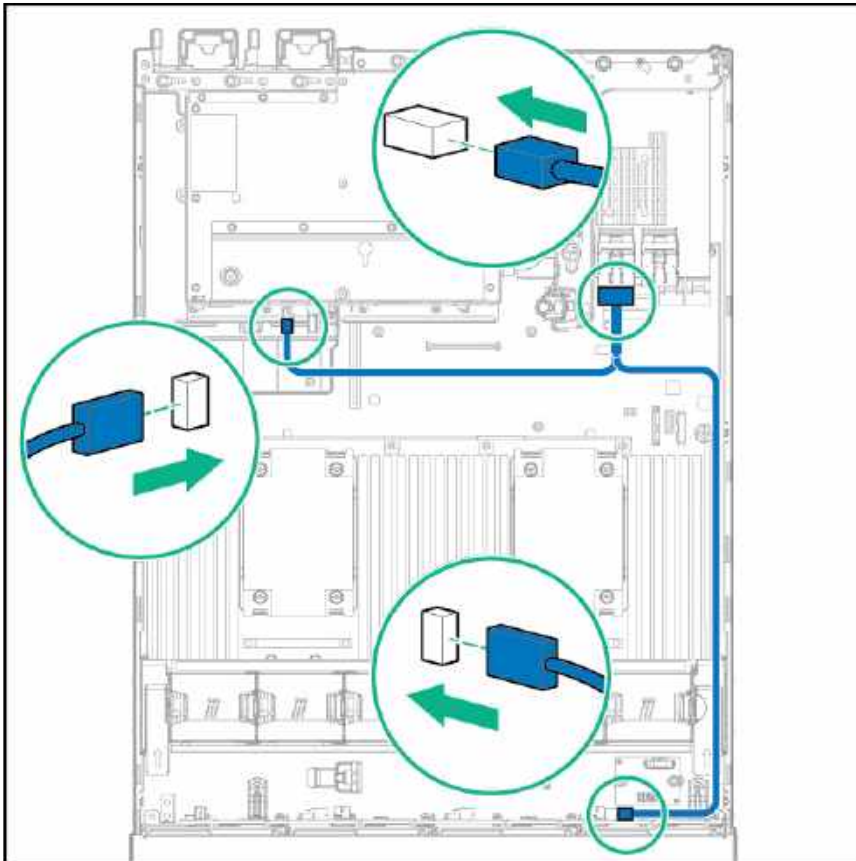
2. Connect the data cable using one of the following connections:
 - o **Connect to onboard SATA connectors**



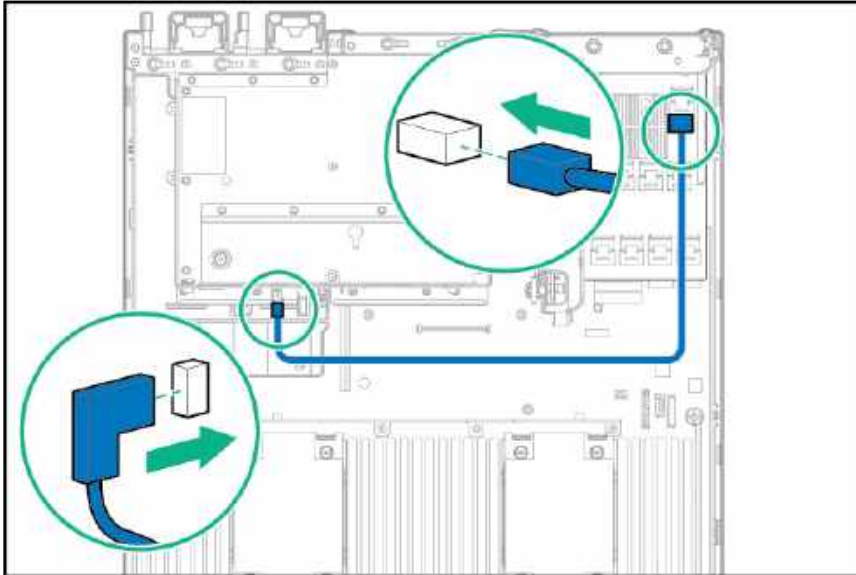
- **Connect to a PCI expansion board**



- **Connect to a PCI expansion board and the 12 LFF drive backplane**



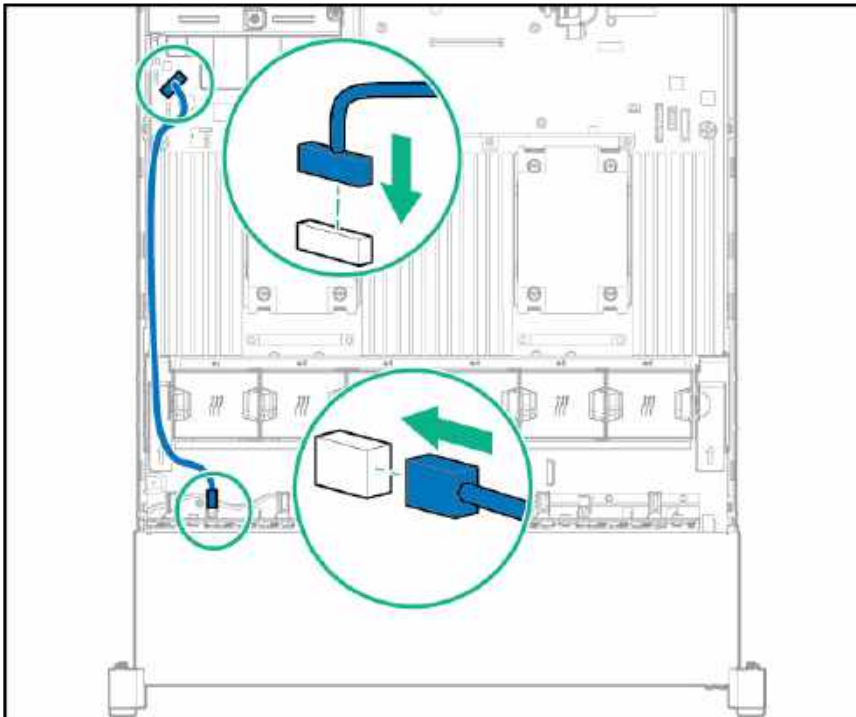
- Connect to an HPE 12G SAS Expander Card



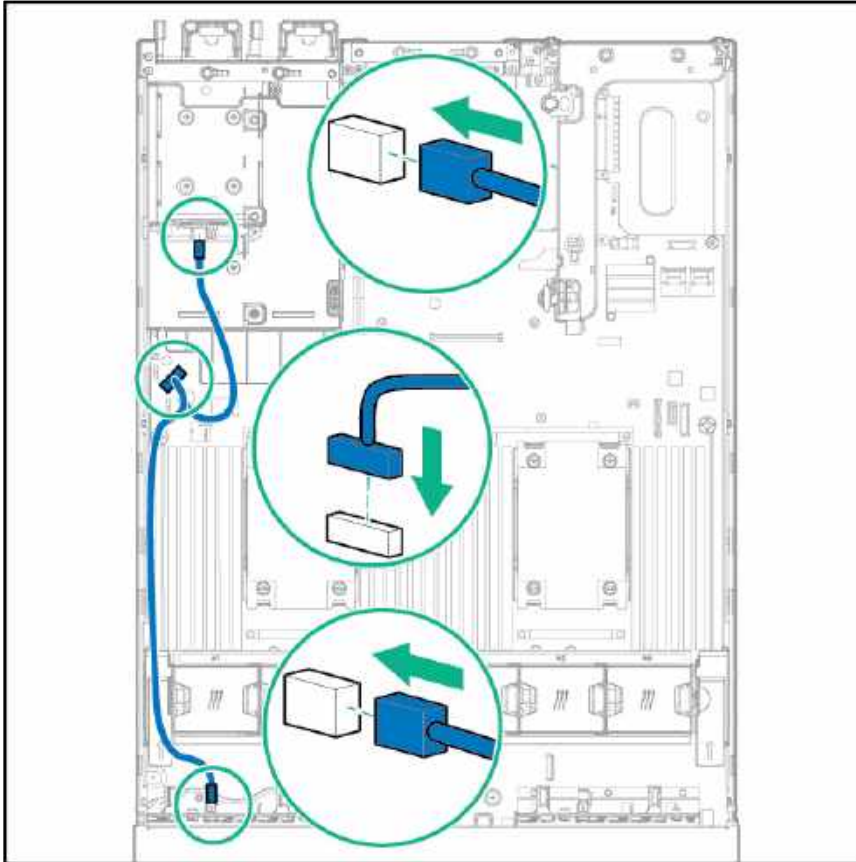
Eight-bay SFF front drive cage cabling

Bay 1 installation

1. Connect the power cable using one of the following connections:
 - **Single cable connection**

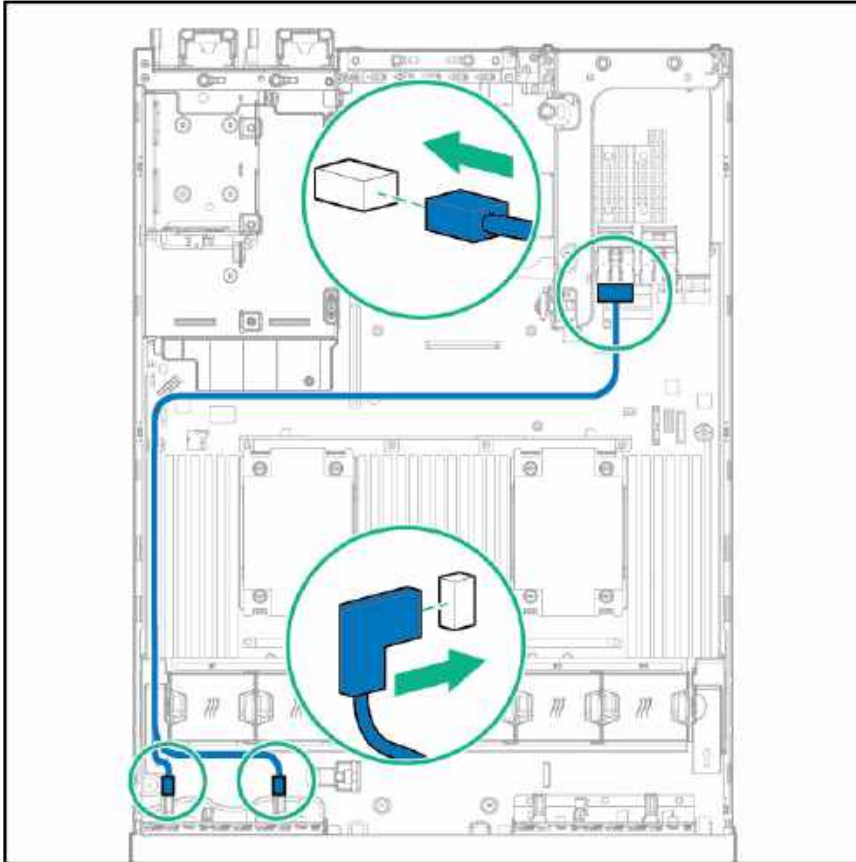


- Y cable connection if the two-bay SFF drive cage option is installed in the rear bay

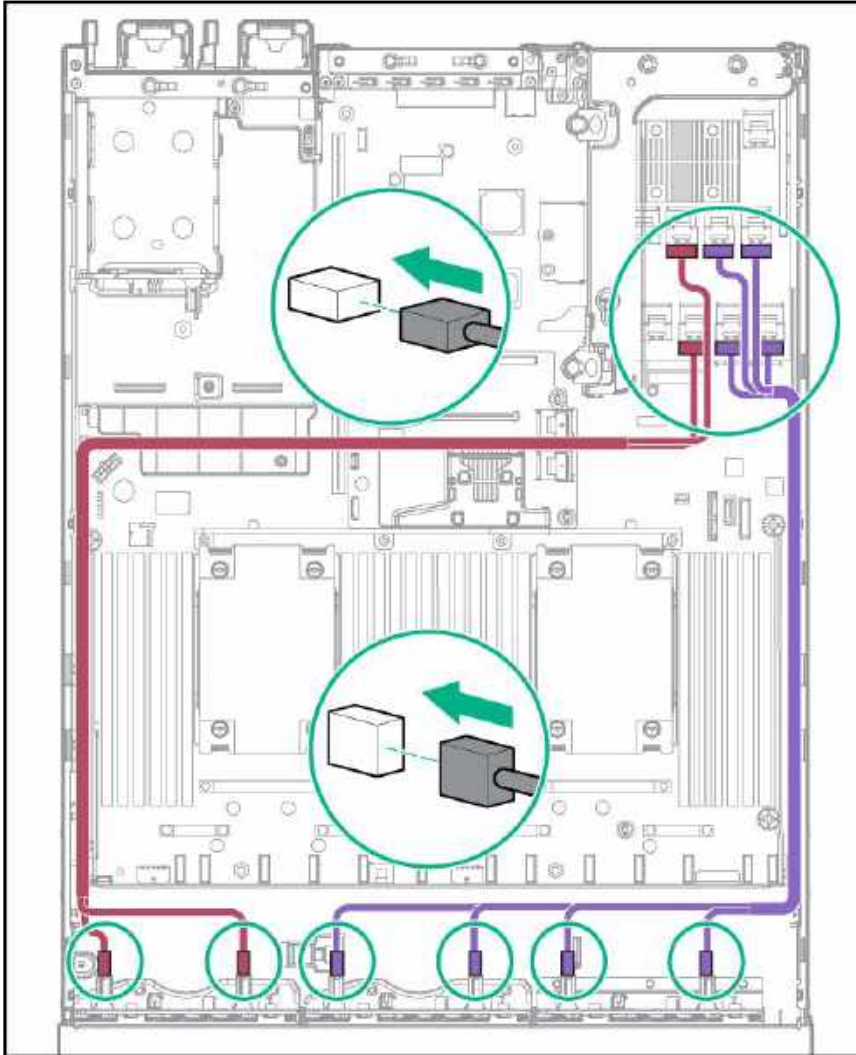


2. Connect the data cable using one of the following connections:

- **Connect to a PCI expansion board**

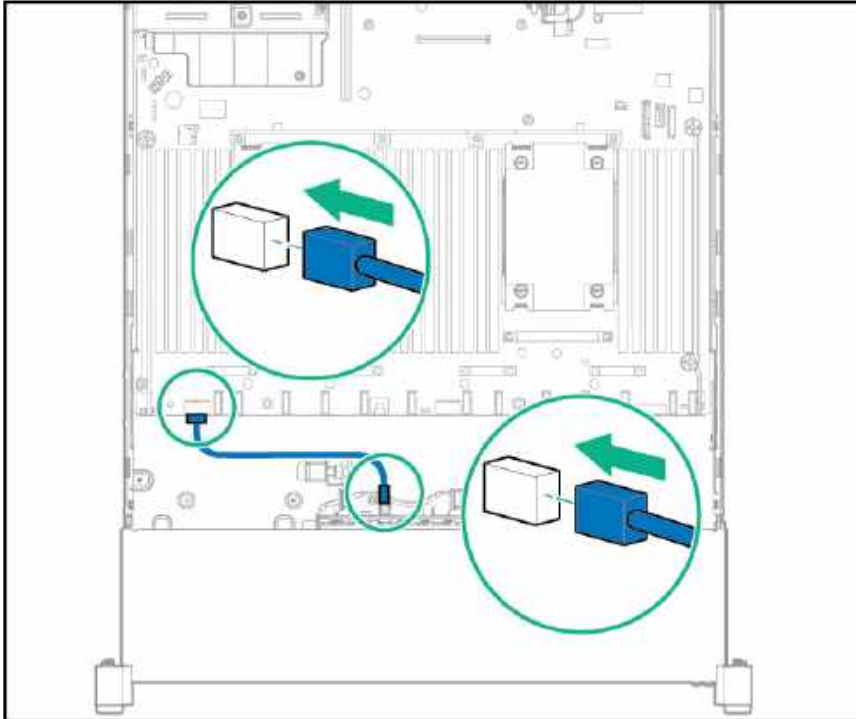


- Connect to an HPE 12G SAS Expander Card

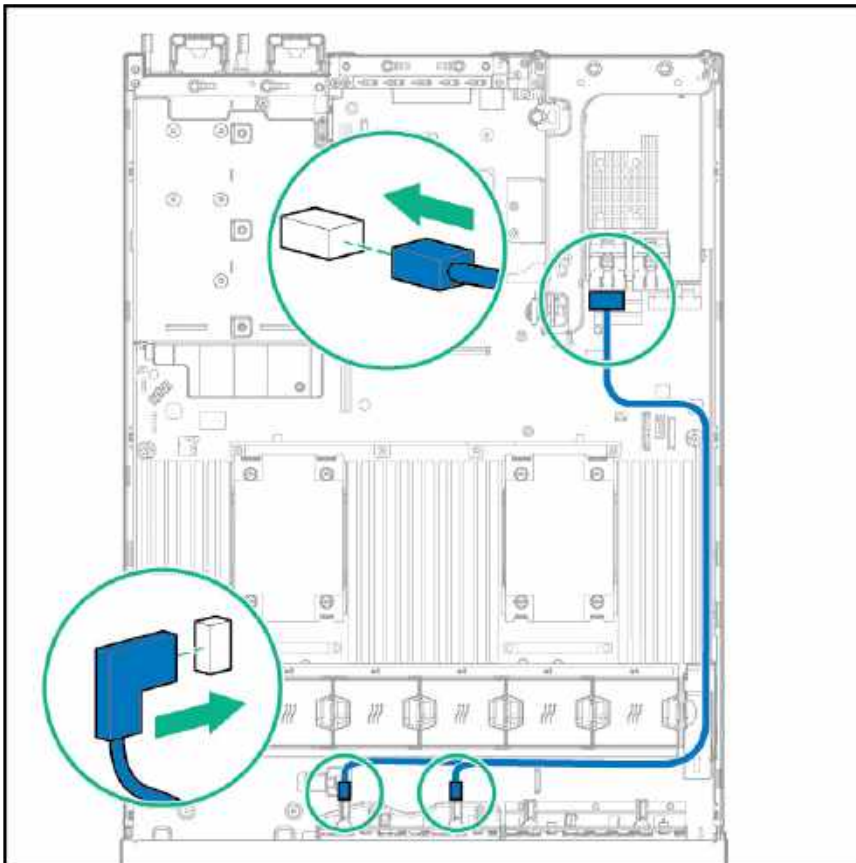


Bay 2 installation

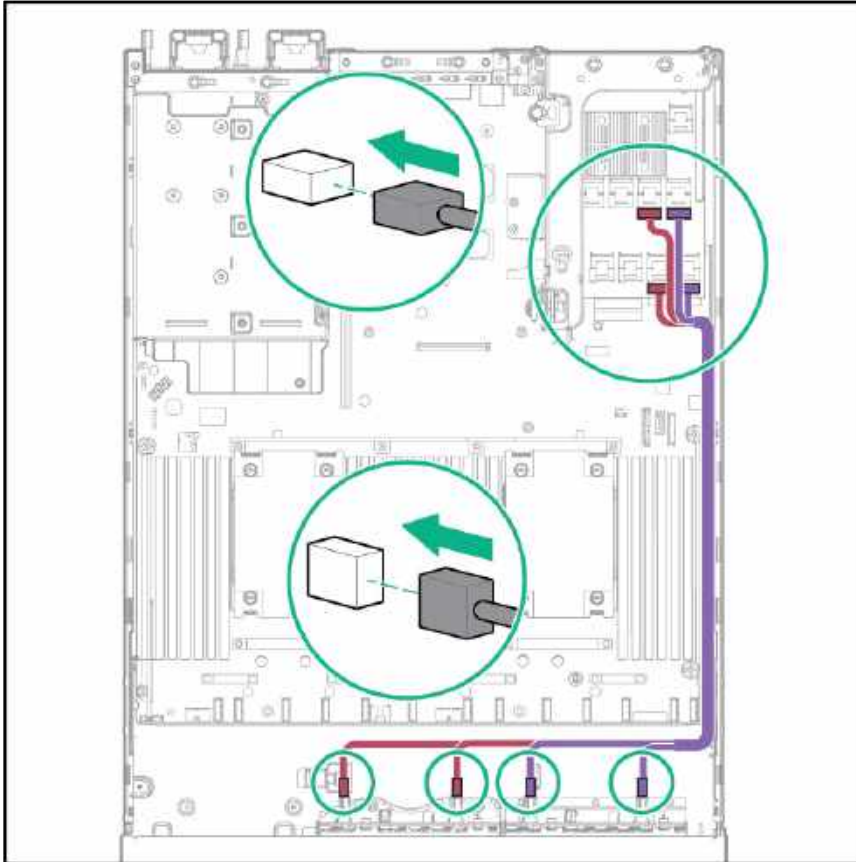
1. Connect the power cable.



2. Connect the data cable using one of the following connections:
 - o **Connect to a PCI expansion board**



- **Connect to an HPE 12G SAS Expander Card**



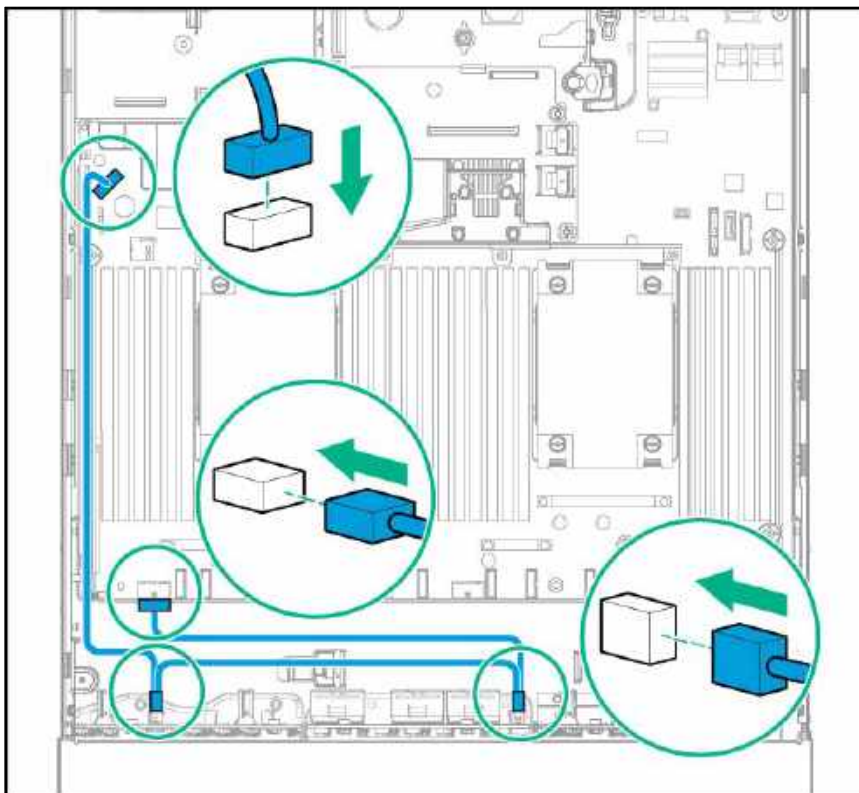
Express Bay Enablement Option cabling options

The Express Bay Enablement option has several options for cabling, depending on the configuration:

- 8SFF drive cage installed in bay 1
- 8SFF drive cage installed in bay 1 and 2SFF drives in the rear of the server
- Drive bay 1 is empty
- 8SFF drive cage installed in bay 1 and 2 SFF drives in the front of the server

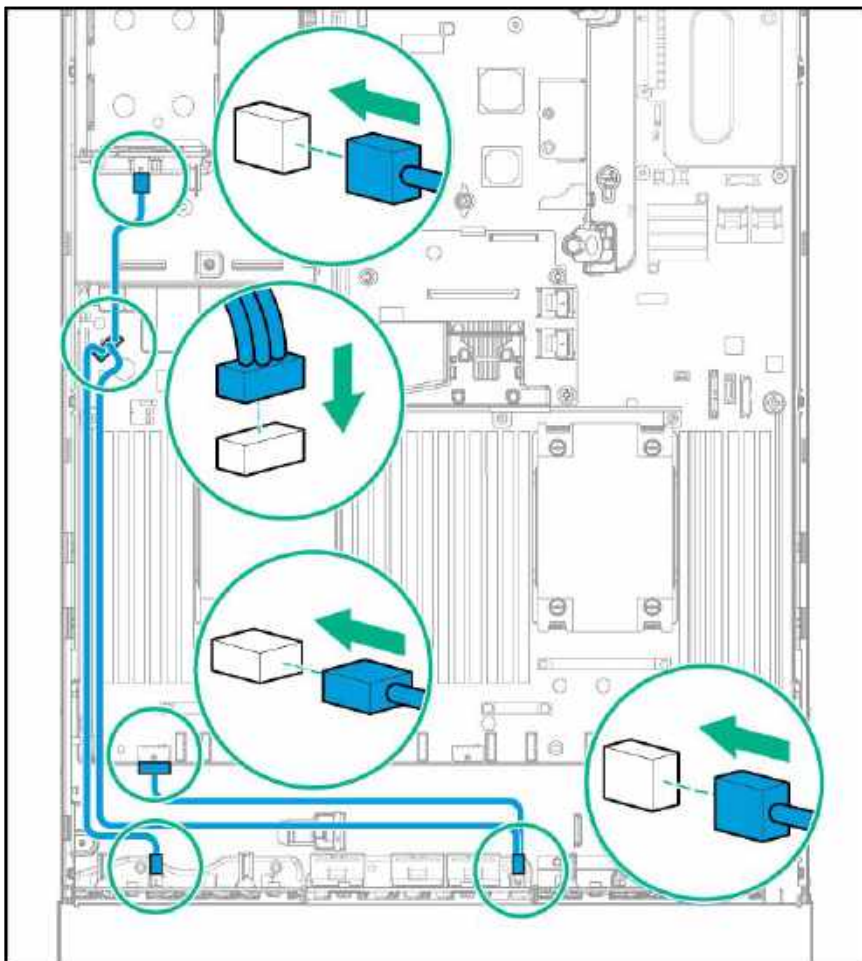
8SFF drive cage installed in bay 1

Connect using the 8SFF drive cage power cable (776399-001).



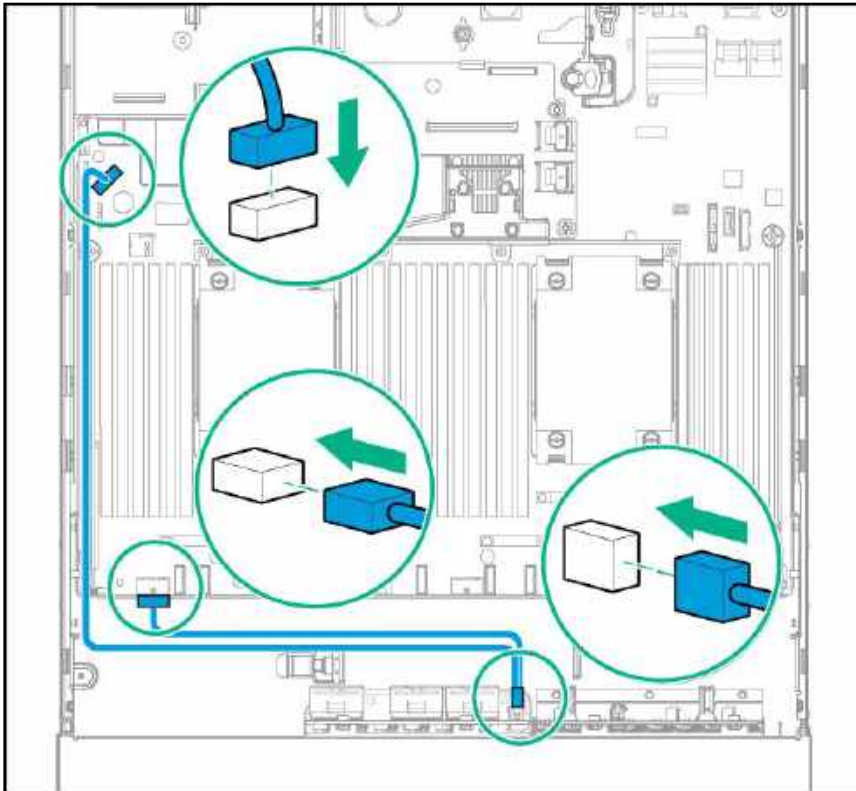
8SFF drive cage installed in bay 1 and 2SFF drives in the rear of the server

Connect using the 8SFF drive cage power cable (776399-001) and the 2SFF drives-rear power cable (776400-001).



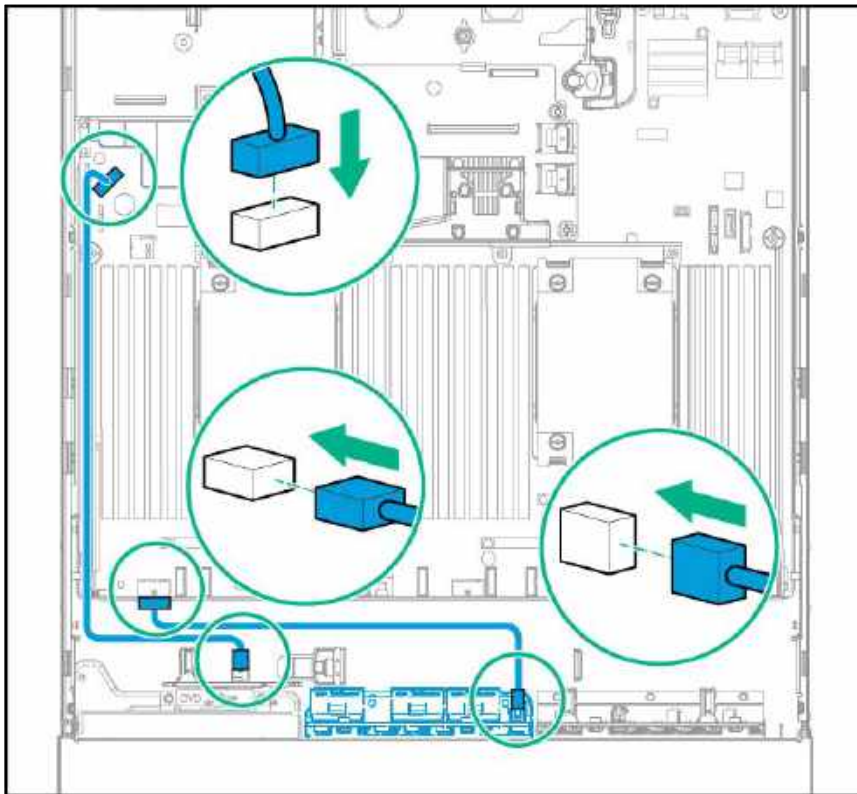
Drive bay 1 is empty

Connect using the NVMe power cable (776392-001).



8SFF drive cage installed in bay 1 and 2 SFF drives in the front of the server

Connect using the 8SFF drive cage power cable (776399-001) and the 2SFF drives-front power cable (795156-001).



Host Bus Adapter and Controller cabling

The server supports the HPE H240 Smart Host Bus Adapter and the following controllers:

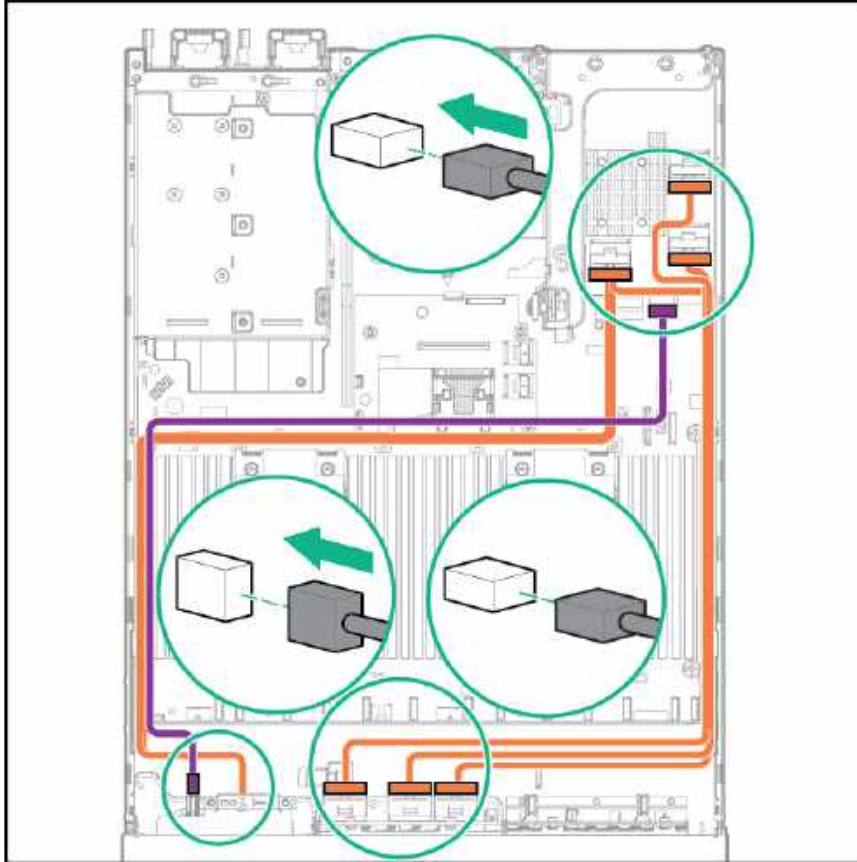
- HPE Smart Array P440 Controller
- HPE Smart Array P440ar Controller
- HPE Smart Array P840 Controller
- HPE Smart Array P840ar Controller

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

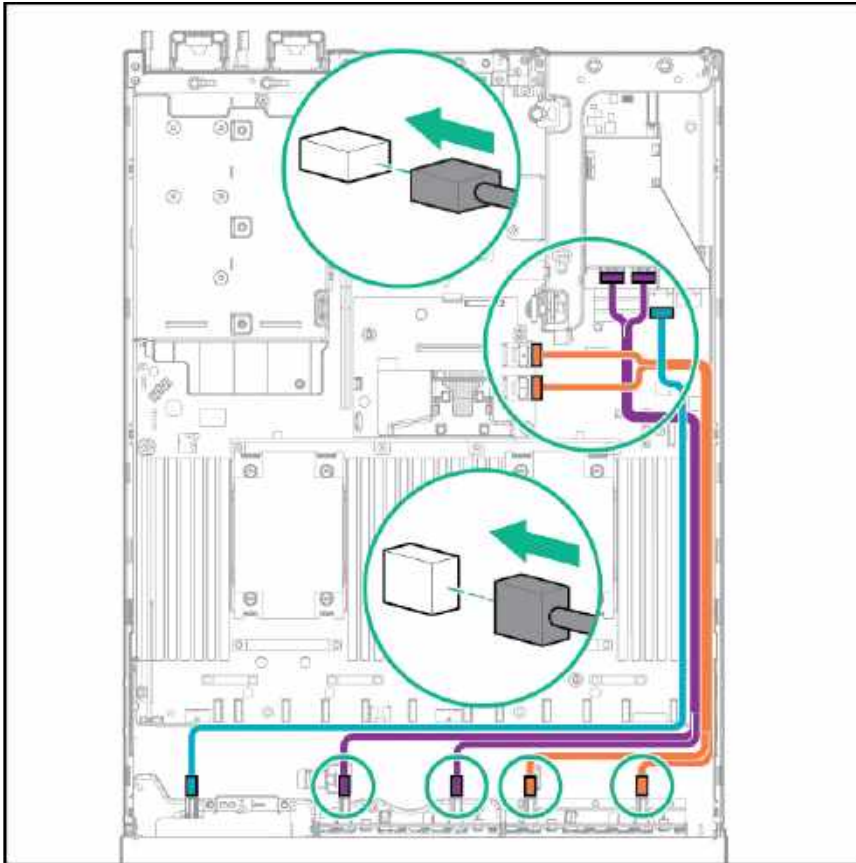
HPE H240 Smart Host Bus Adapter/Smart Array P440

Controller cabling

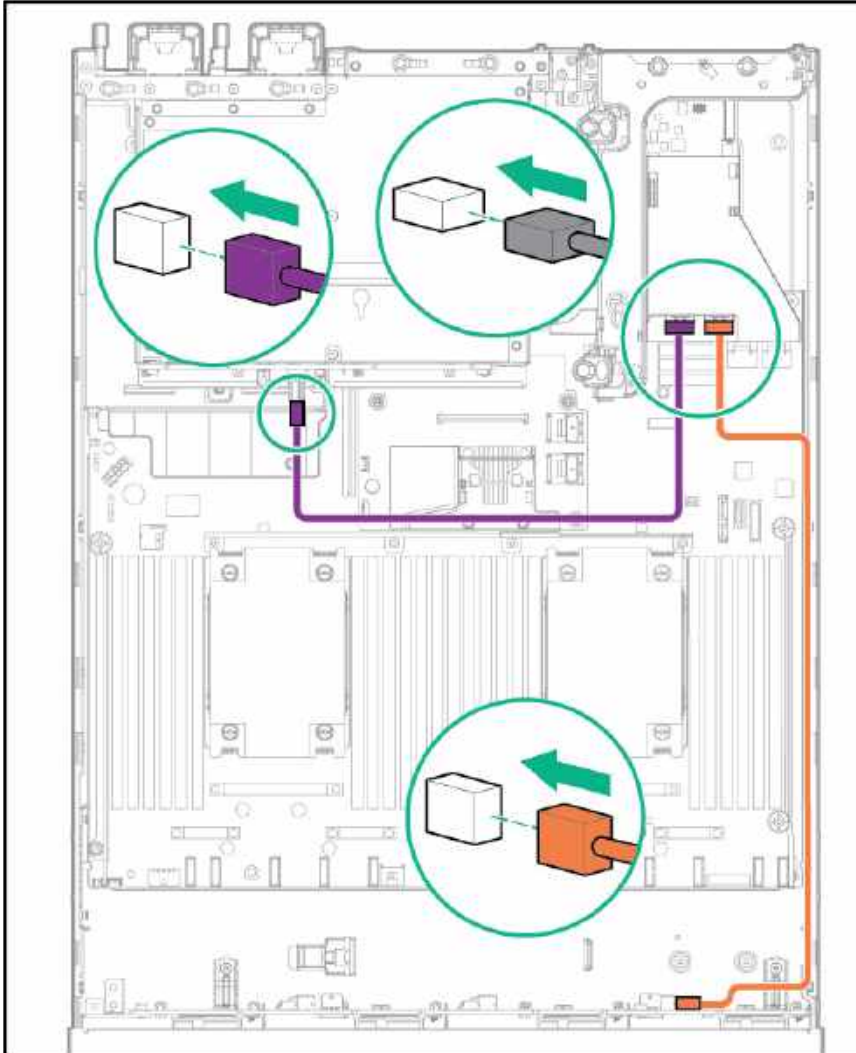
- 8SFF drive cages are installed in bays 1 and 2, and 2SFF drives and VGA/USB are installed in the front of the server (H240 HBA only) — Connect the bay 2 8SFF drive cage cable, the 2SFF drive Mini-SAS cable, and the VGA/USB cable to the H240 HBA.



- 8SFF drive cage is installed in bay 2, 6NVMe drives are installed in bay 1, and 2SFF drives and VGA/USB are installed in the front of the server — Connect the 6NVMe data cable, VGA/USB cable, and the front 2SFF Mini-SAS cable to the H240 HBA/P440 controller.

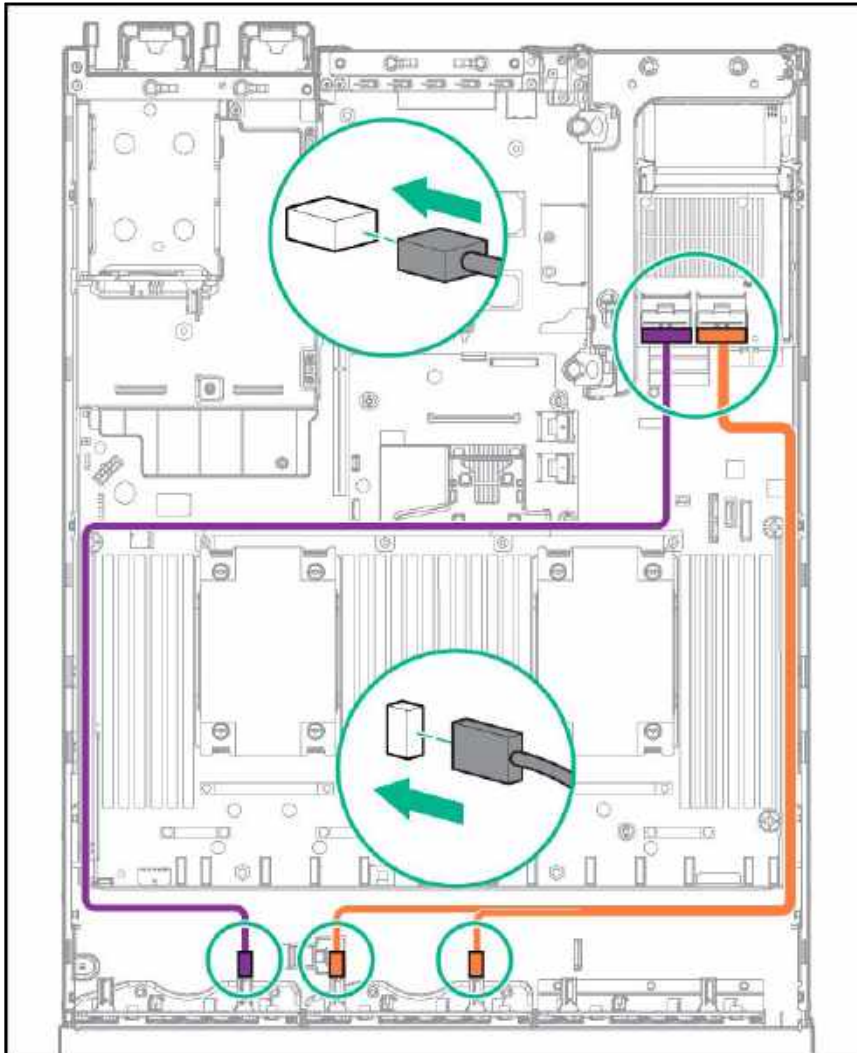


- 12LFF drive cage is installed in the front, and 3LFF drives are installed at the rear of the server — Connect a 12LFF Mini-SAS cable and the 3LFF Mini-SAS cable to the H240 HBA/P440 controller.

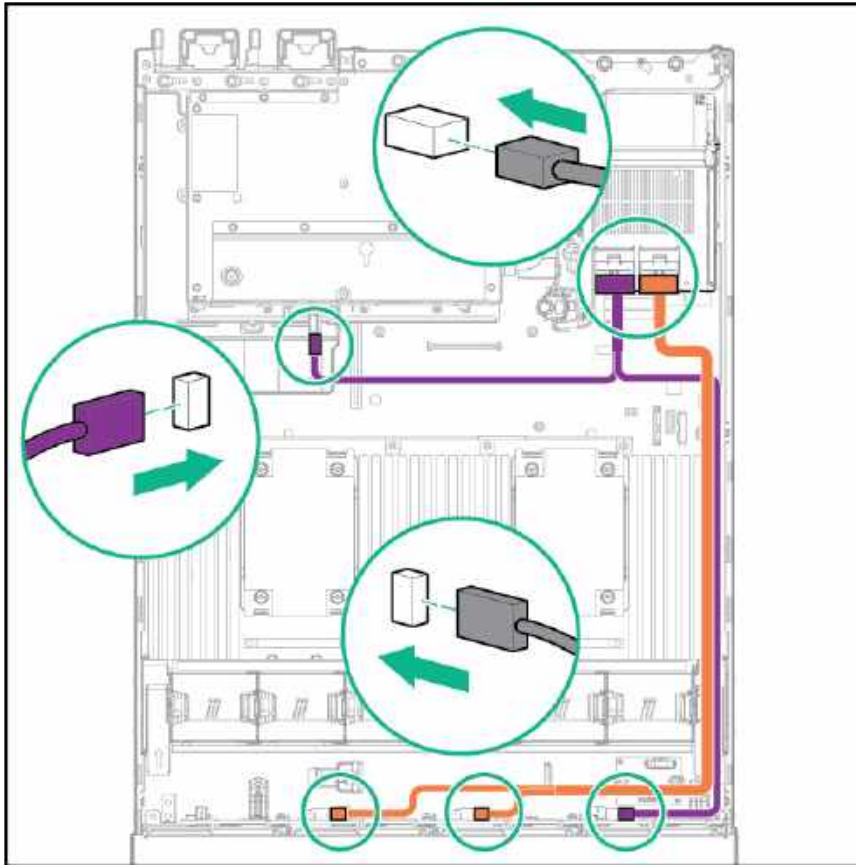


HPE Smart Array P840 Controller cabling

- 24SFF drive configuration — Connect bay 1 and bay 2 Mini-SAS cables to the P840 controller.



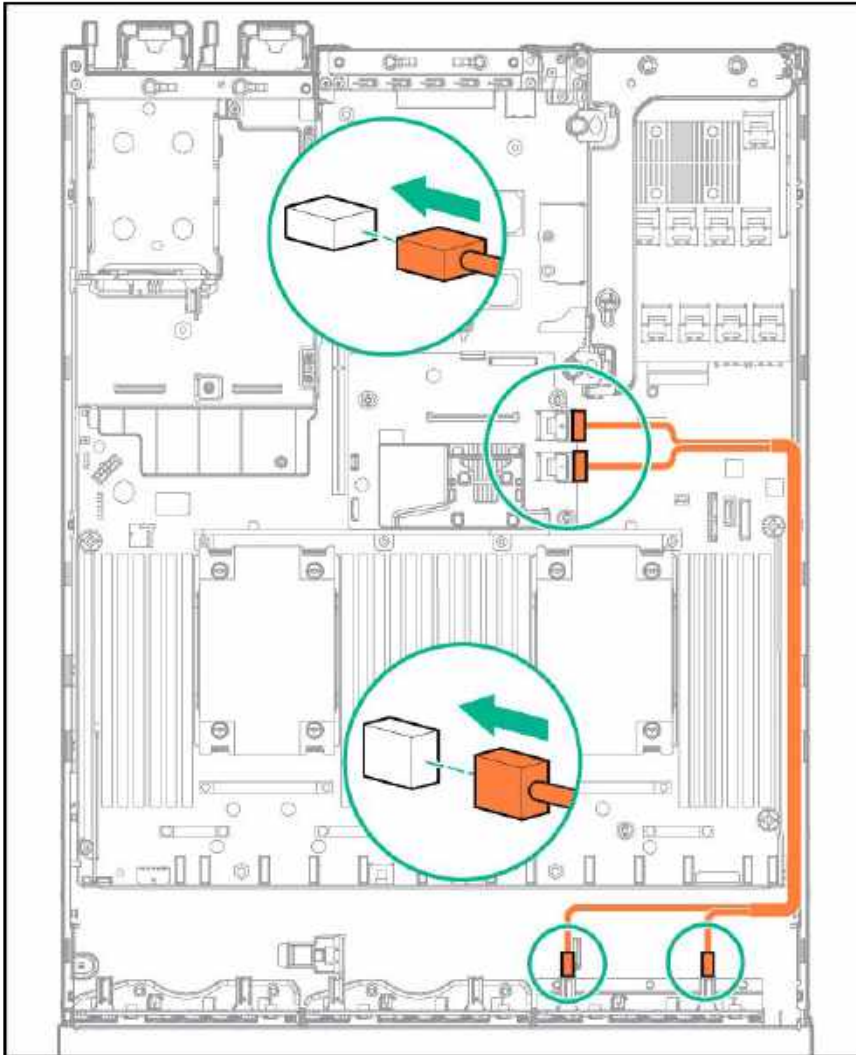
- 12LFF drives are installed in the front, and 3LFF drives are installed at the rear of the server — Connect the 12LFF Mini-SAS cable and the 3LFF Mini-SAS Y cable to the P840 controller.



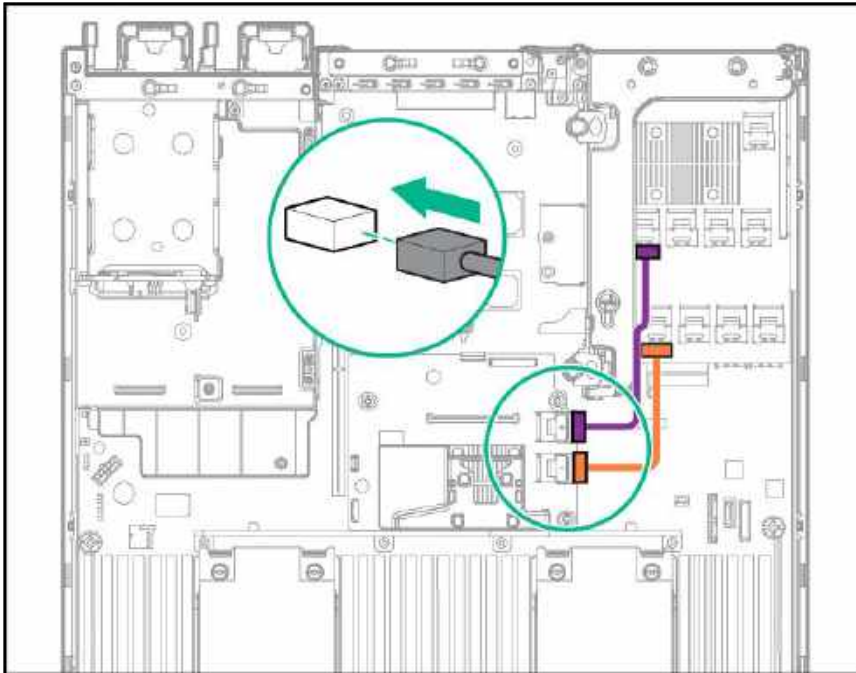
HPE Smart Array P440ar Controller cabling

- Connect the Mini-SAS cable to the P440ar controller for the following configurations:
 - 24SFF drive configuration
 - 16SFF drives with front 2SFF drives and VGA/USB configuration
 - 6NVMe, 8SFF, and front 2SFF drives with VGA/USB configuration

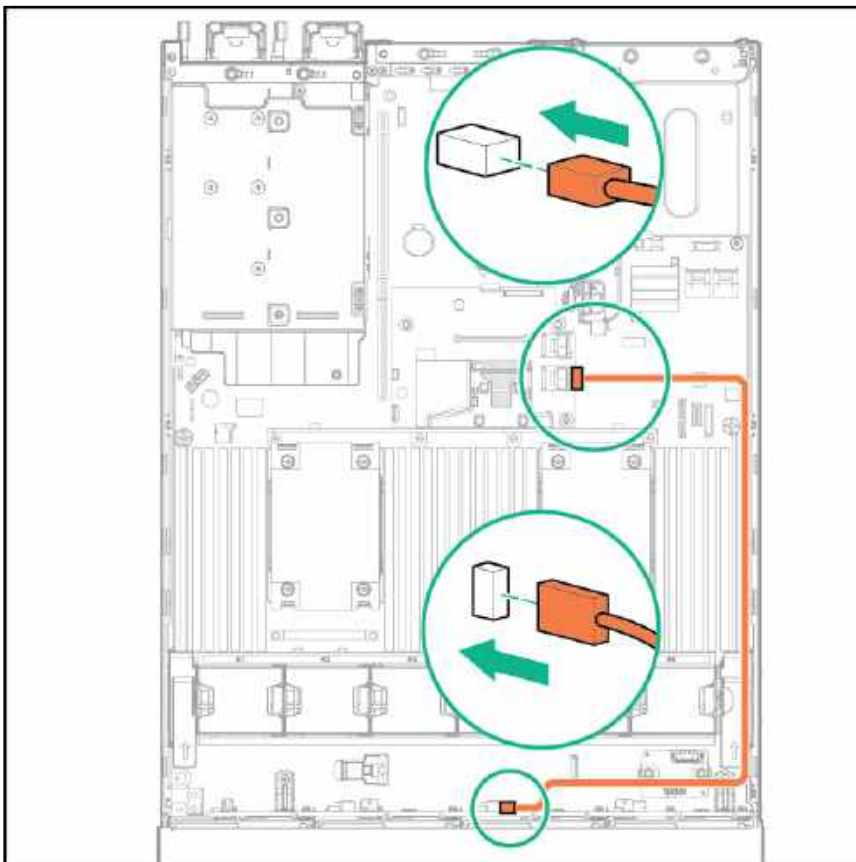
The image below shows the 24SFF configuration. The image might vary from your server depending on the configuration installed. However, the cabling for the P440ar controller remains the same.



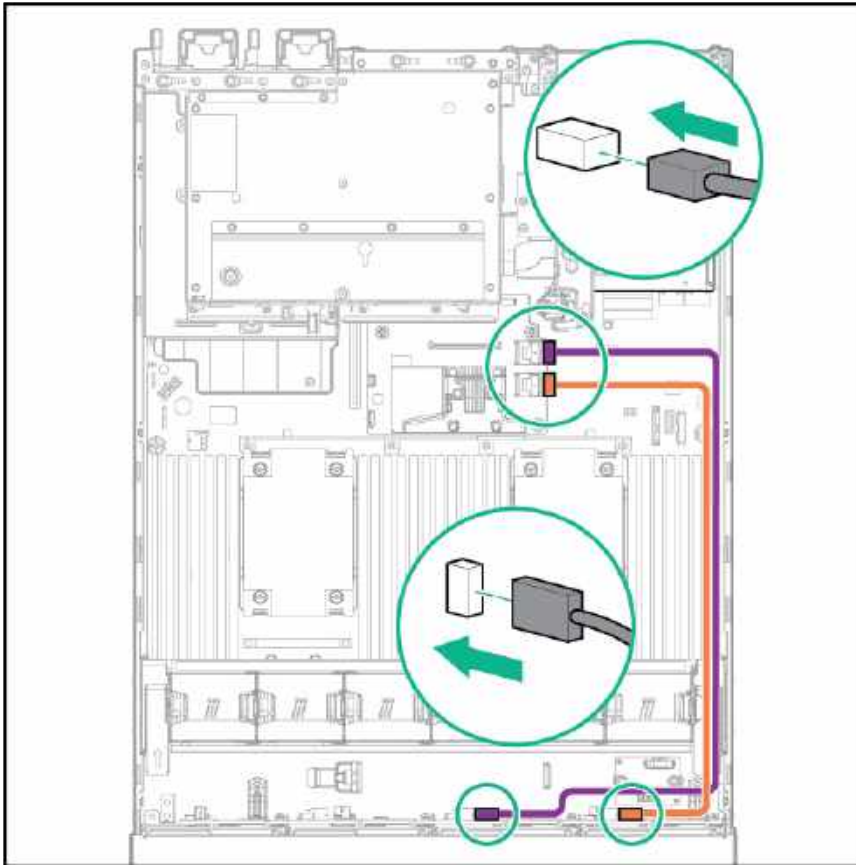
- 24SFF drives at the front and 2SFF drives at the rear of the server — Connect the P440ar controller cables to the 12G SAS Expander port 1 and port 2.



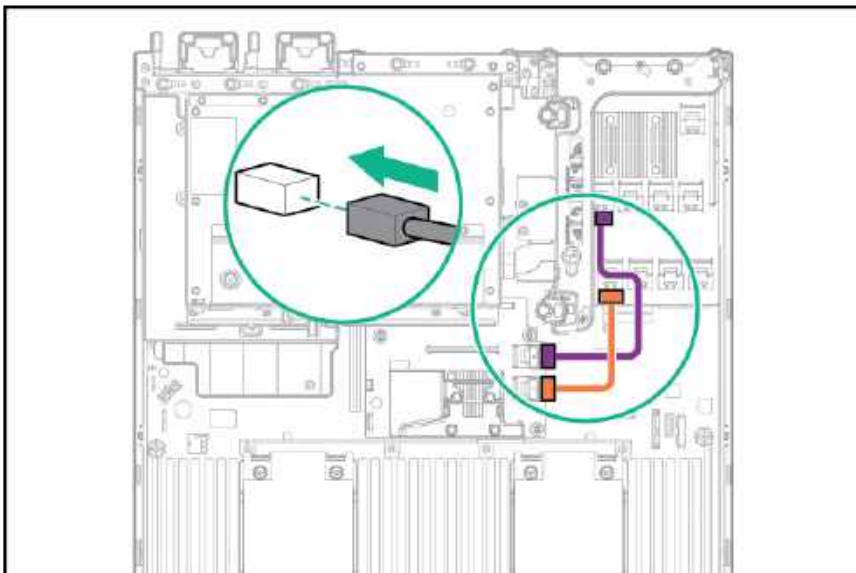
- 4LFF drive configuration — Connect the 4LFF Mini-SAS cable to the P440ar controller.



- 12LFF drives at the front, and 3LFF drives at the rear of the server without the 12G SAS Expander — Connect one 12LFF Mini-SAS cable to the P440ar controller.

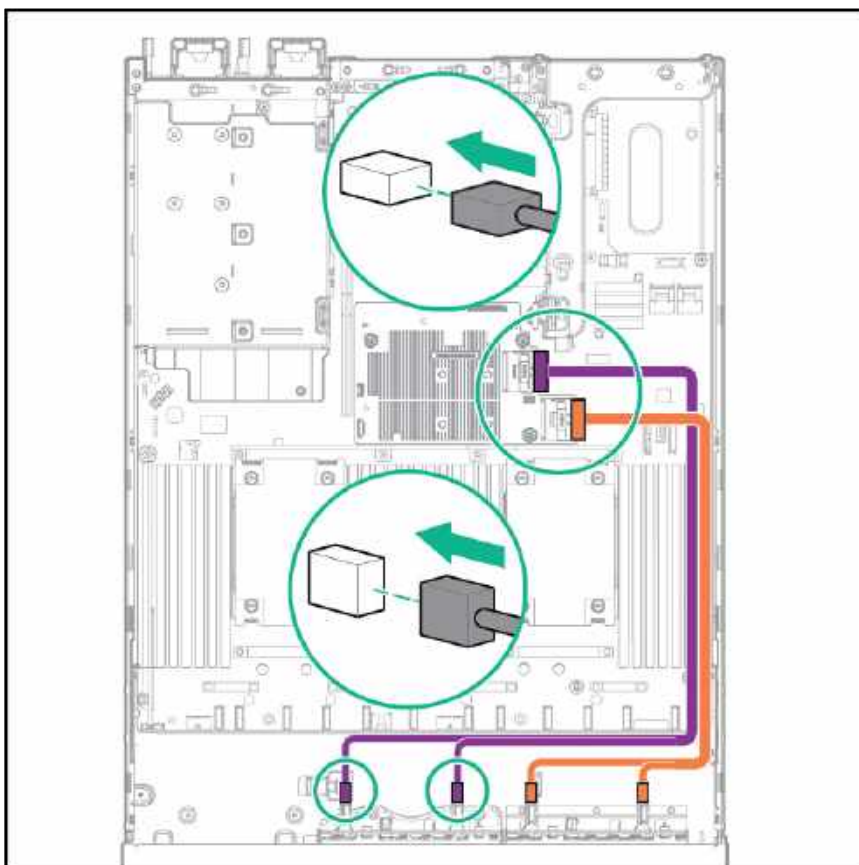


- 12LFF drives at the front, and 3LFF drives at the rear of the server with 12G SAS Expander — Connect the P440ar controller cables to port 1 and port 2 on the 12G SAS Expander.

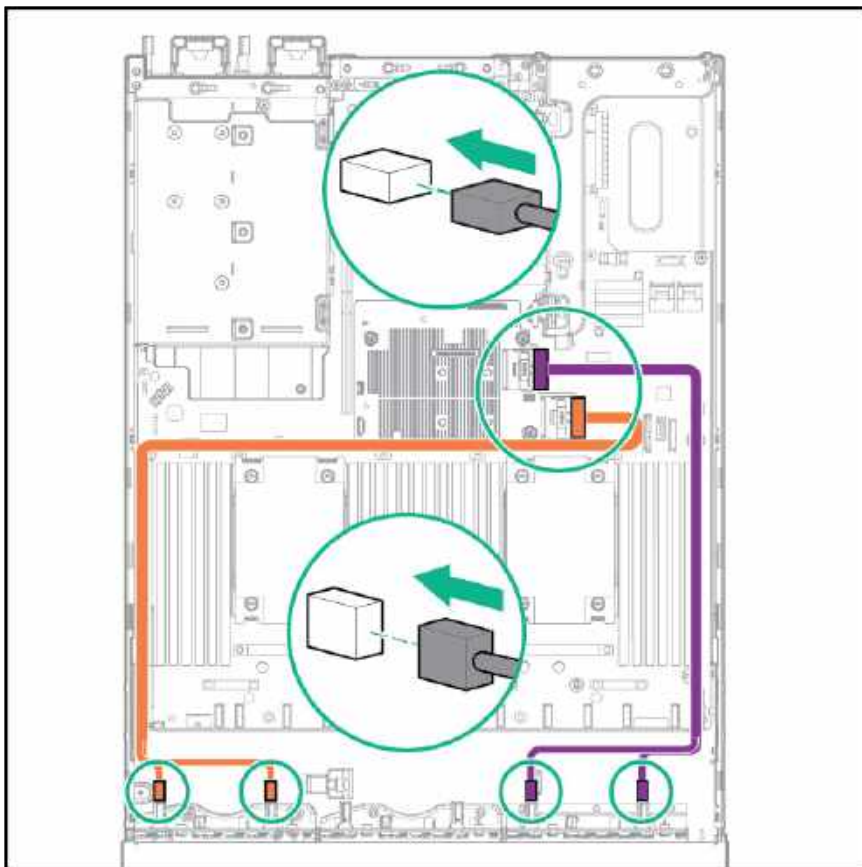


HPE Smart Array P840ar Controller cabling

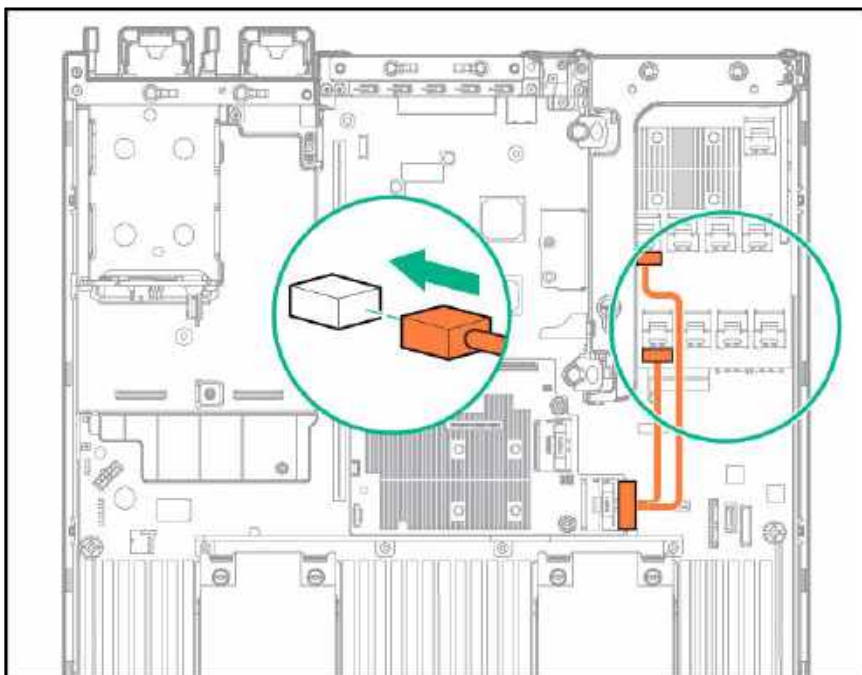
- 16SFF drive configuration — Connect the two Mini-SAS cables to the P840ar controller.



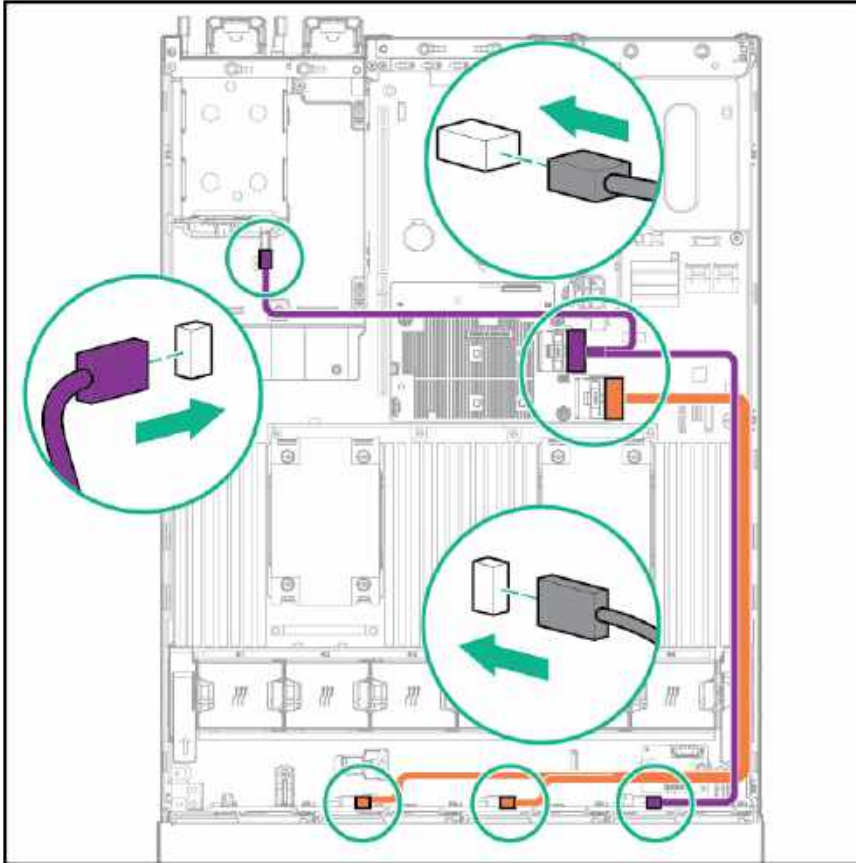
- 16SFF and 6NVMe drives with Express Bay Enablement option installed — Connect the two 8SFF Mini-SAS cables to the P840ar controller.



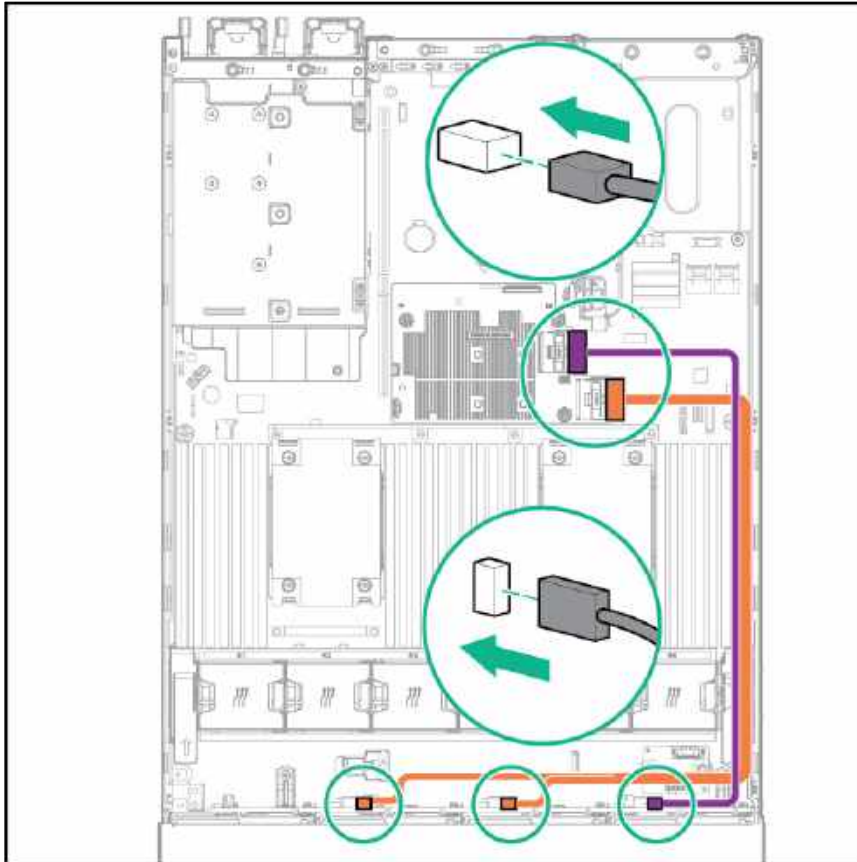
- 24SFF drives at the front, and 2SFF drives at the rear of the server — Connect the P840ar controller Mini-SAS Y cable to the SAS expander.



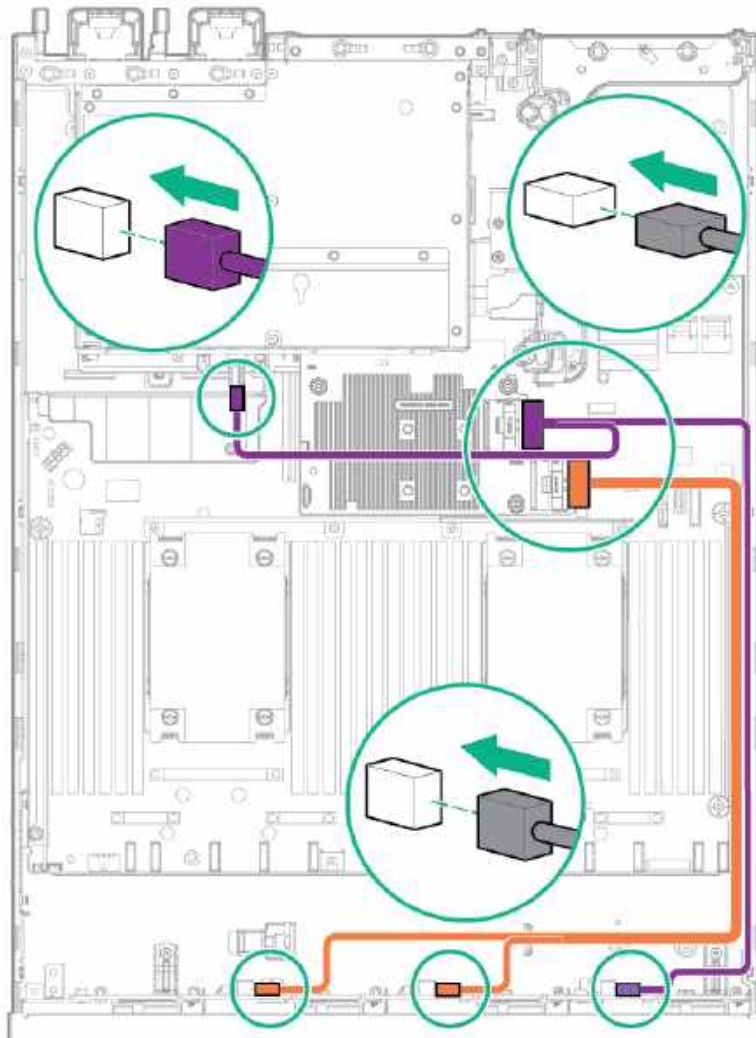
- 12LFF drives at the front, and 2SFF drives at the rear of the server — Connect the 12LFF Mini-SAS cable and the 2SFF Mini-SAS Y cable to the P840ar Controller.



- 12LFF configuration — Connect the two 12LFF Mini-SAS cables to the P840ar controller.

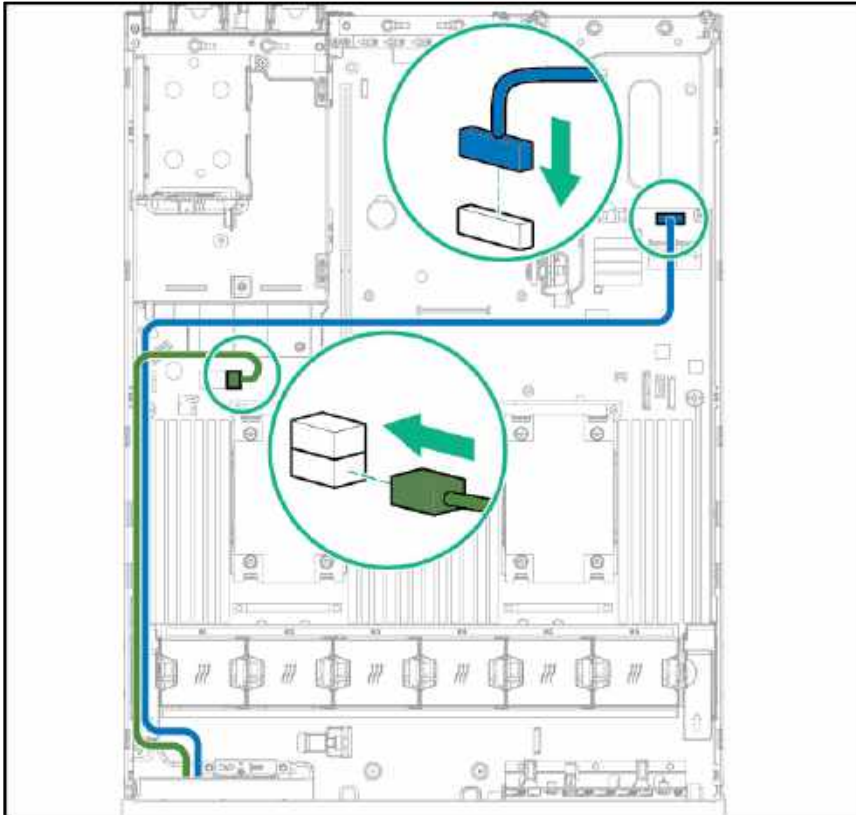


- 12LFF drives at the front, and 3LFF drives at the rear of the server — Connect the 12LFF Mini-SAS cable and the 3LFF Mini-SAS Y cable to the P840ar controller.

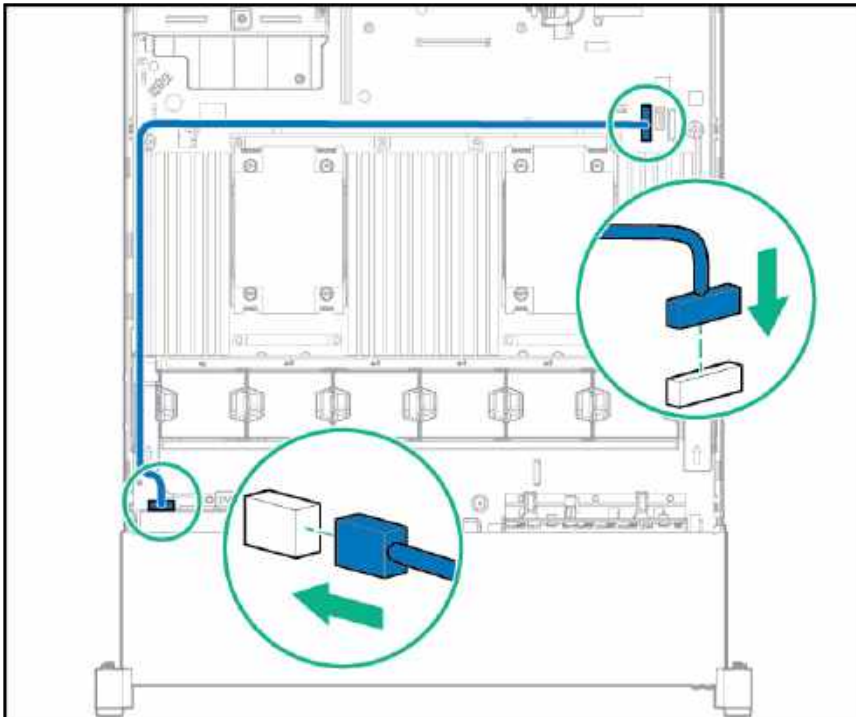


Universal media bay cabling

Connect the VGA cable to the optional VGA connector. Connect the USB cable to the front dual internal USB 3.0 connector.

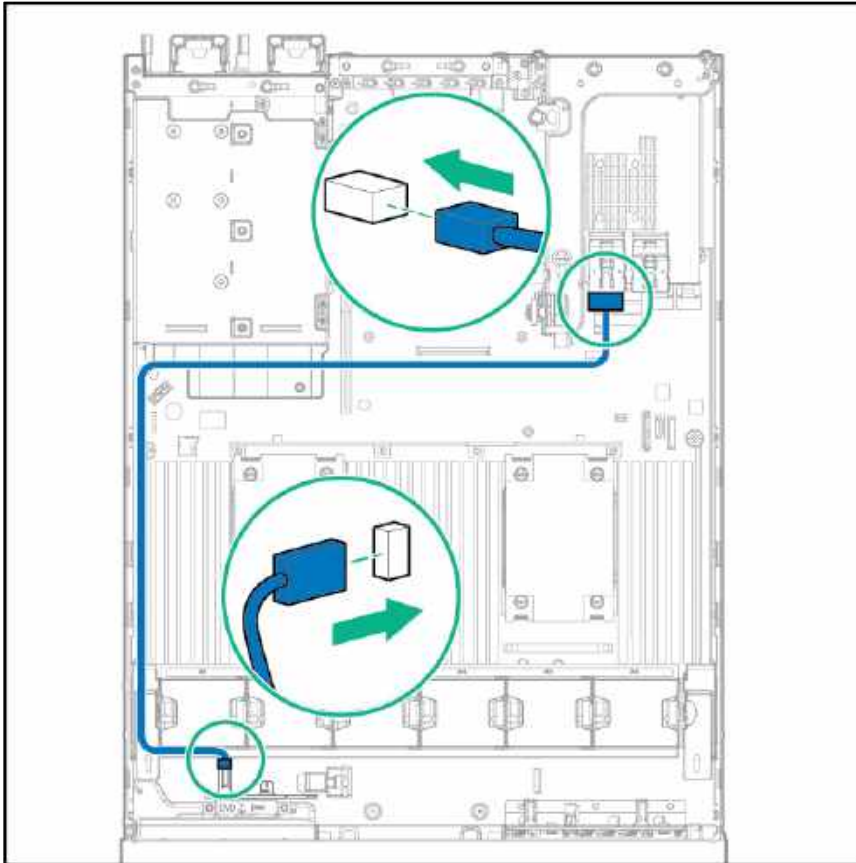


Connect the SATA optical drive cable to the front optical disk drive connector.

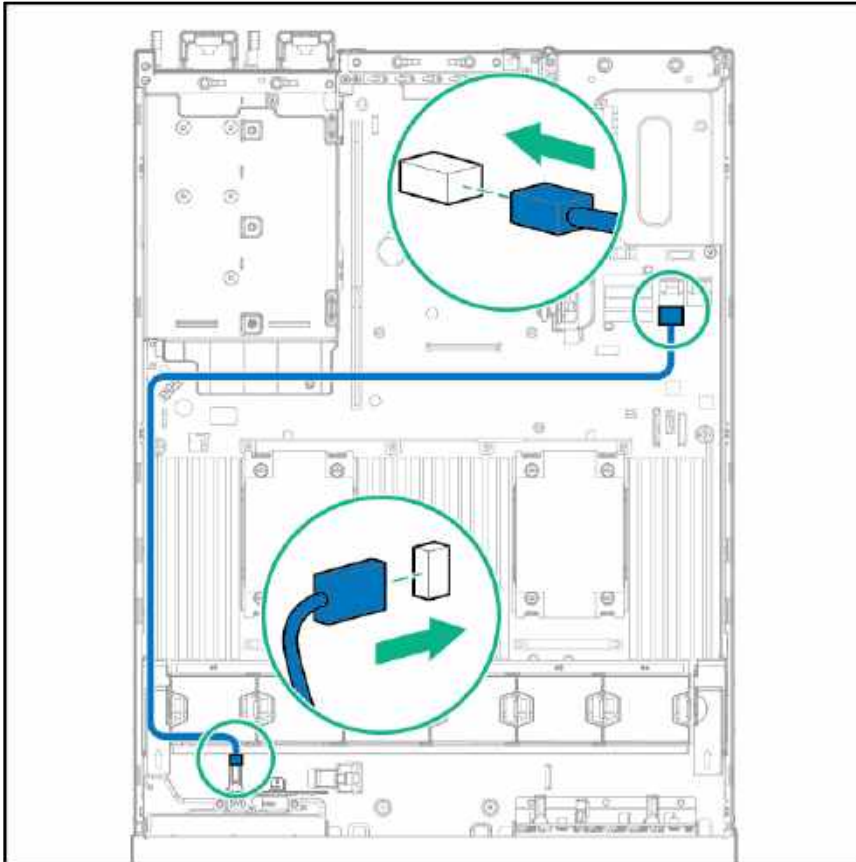


Connect the 2 SFF drive bay data cable to one of the following connections, depending on the configuration:

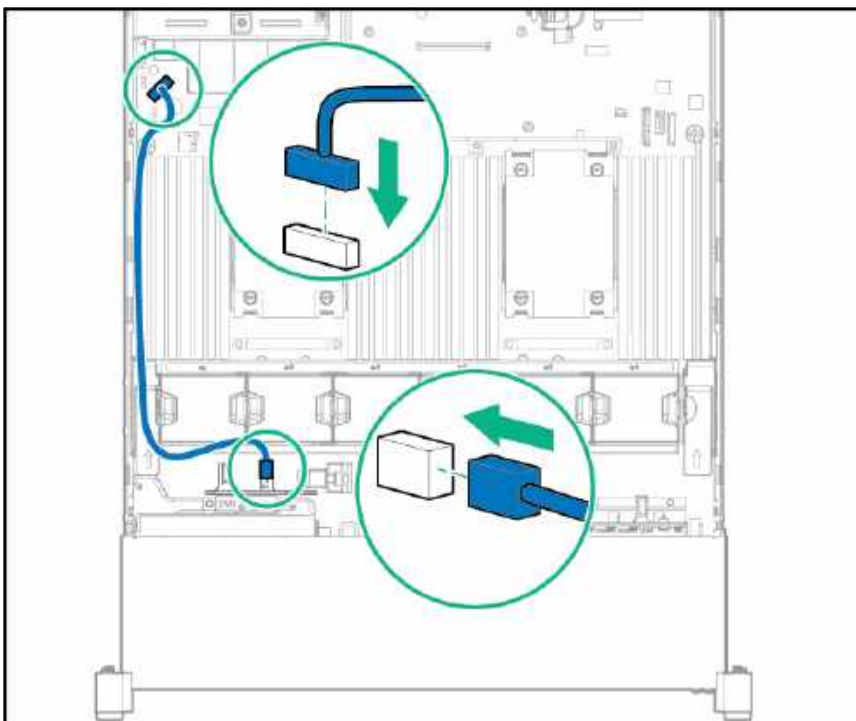
- PCI expansion board



- x4 SATA connector

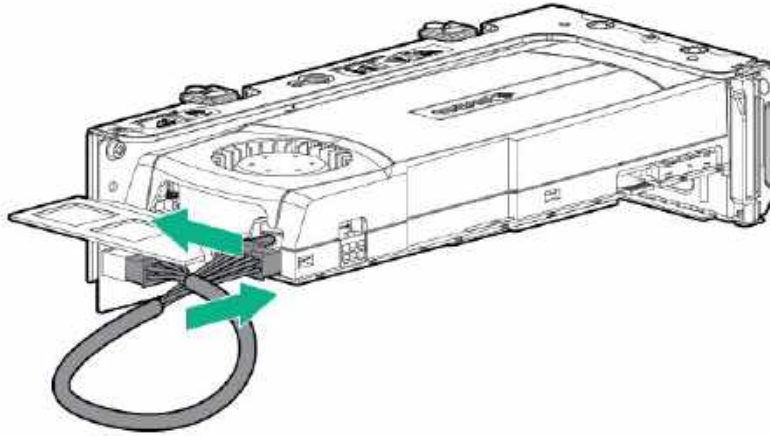


Connect the 2 SFF drive bay power cable.



150W PCIe power cable option

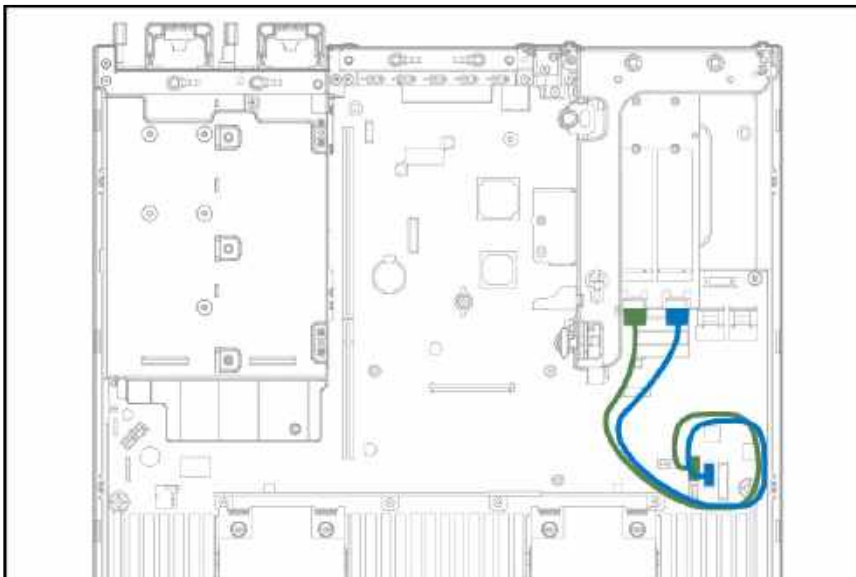
△ **CAUTION:** To prevent damage to the server or expansion boards, power down the server and remove all AC power cords before removing or installing the PCI expansion cage.



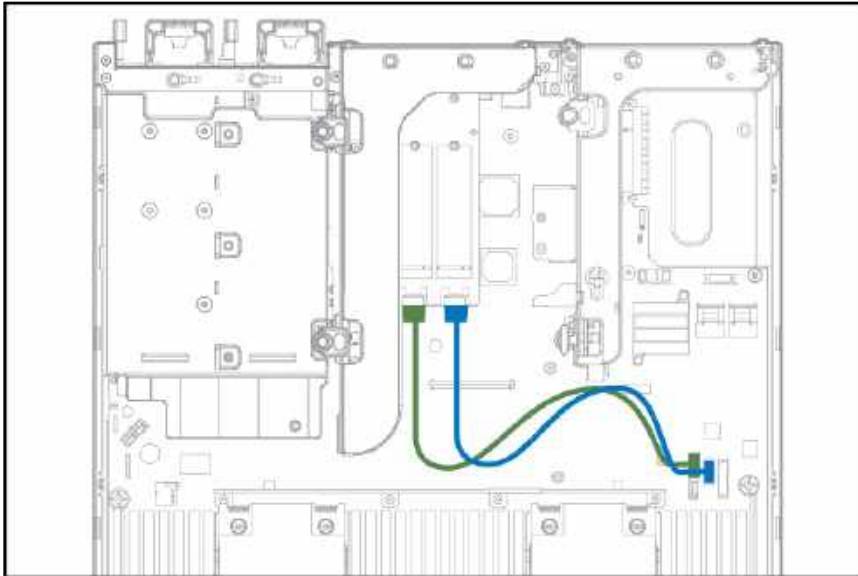
M.2 SSD Enablement Board option cabling

The M.2 SSD Enablement Board option is supported in both the primary and secondary PCI riser cage. Cable the option according to the location in the server:

- **Primary PCI riser cage**



- **Secondary PCI riser cage**



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 Hewlett Packard Enterprise website (<http://www.hpe.com/servers/ASHRAE>).

Mechanical specifications

Specification	Value
Height	8.73 cm (3.44 in)
Depth, SFF	67.94 cm (26.75 in)
Depth, LFF	73.02 cm (28.75 in)
Width	44.54 cm (17.54 in)
Weight (maximum—all SFF drives)*	14.7 kg (32.6 lb)
Weight (minimum—one LFF drive)**	23.6 kg (51.5 lb)

*The SFF configuration includes the following components:

- SFF drive (1)

- Drive blanks (7)
- Drive bay blanks for bays 1 and 2 (2)
- Fan assemblies (4)
- Fan blanks (2)
- Standard heatsink (1)
- 1P air baffle (1)
- X8 HPE Flexible Smart Array Controller (1)
- Primary riser cage (1)
- Secondary riser cage blank (1)
- Power supply (1)
- Power supply blank (1)
- Cables for the above components

**The LFF configuration includes the following components:

- LFF drives (12)
- Fan assemblies (6)
- SE heatsinks (2)
- 2P air baffle (1)
- X8 HPE Flexible Smart Array Controller (1)
- Primary riser cage (1)
- Secondary riser cage (1)
- Power supplies (2)
- Cables for the above components

The 12 LFF configuration does not contain a rear three-bay LFF drive cage option.

Power supply specifications

Depending on installed options, the server is configured with one of the following power supplies:

- HPE 500W Flex Slot Platinum Hot-plug Power Supply (on page [137](#))
- HPE 800W Flex Slot Platinum Hot-plug Power Supply (on page [138](#))
- HPE 1400W Flex Slot Platinum Plus Hot-plug Power Supply (on page [139](#))

For detailed power supply specifications, see the Hewlett Packard Enterprise website (<http://www.hpe.com/info/proliant/powersupply>).

HPE 500W Flex Slot Platinum Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	100 to 127 VAC 200 to 240 VAC 240 VDC for China only

Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	5.8 A at 100 VAC 2.8 A at 200 VAC 2.4 A at 240 VDC for China only
Maximum rated input power	580 W at 100 VAC 560 W at 200 VAC 576 W at 240 VDC for China only
BTUs per hour	1979 at 100 VAC 1911 at 200 VAC 1965 at 240 VDC for China only
Power supply output	
Rated steady-state power	500 W at 100 VAC to 127 VAC input 500 W at 200 VAC to 240 VAC input 500 W at 240 VDC input for China only
Maximum peak power	500 W at 100 VAC to 127 VAC input 500 W at 200 VAC to 240 VAC input 500 W at 240 VDC input for China only

HPE 800W Flex Slot Platinum Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	100 to 127 VAC 200 to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240VDC
Rated input current	9.4 A at 100 VAC 4.5 A at 200 VAC 3.8 A at 240 VDC for China only
Maximum rated input power	940 W at 100 VAC 900 W at 200 VAC 912 W at 240 VDC for China only
BTUs per hour	3207 at 100 VAC 3071 at 200 VAC 3112 at 240 for China only
Power supply output	
Rated steady-state power	800 W at 100 VAC to 127 VAC input 800 W at 200 VAC to 240 VAC input 800 W at 240 VDC input for China only
Maximum peak power	800 W at 100 VAC to 127 VAC input 800 W at 200 VAC to 240 VAC input 800 W at 240 VDC input for China

only

HPE 1400W Flex Slot Platinum Plus Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	200 to 240 VAC 240 VDC for China only
Rated input frequency	50 Hz to 60 Hz Not applicable to 240 VDC
Rated input current	8.0 A at 200 VAC 6.7 A at 240 VAC 6.7 A at 240 VDC for China only
Maximum rated input power	1600 W at 200 VAC 1600 W at 240 VAC 1600 W at 240 VDC for China only
BTUs per hour	5459 at 200 VAC 5459 at 240 VAC 5459 at 240 VDC for China only
Power supply output	
Rated steady-state power	1400 W at 200 VAC to 240 VAC input 1400 W at 240 VDC input for China only
Maximum peak power	1400 W at 200 VAC to 240 VAC input 1400 W at 240 VDC input for China only

Acronyms and abbreviations

ABEND

abnormal end

AMP

Advanced Memory Protection

ASHRAE

American Society of Heating, Refrigerating and Air-Conditioning Engineers

ASR

Automatic Server Recovery

CSR

certificate signing request

FDR

fourteen data rate

FLR

FlexibleLOM for rack servers

FSBBU

Flex slot battery backup

GPU

graphics processing unit

HBA

host bus adapter

HPE SIM

HPE Systems Insight Manager

HPE SSA

HPE Smart Storage Administrator

iLO

Integrated Lights-Out

IML

Integrated Management Log

LFF

large form factor

NAND

Not AND

NMI

nonmaskable interrupt

NVRAM

nonvolatile memory

PCIe

Peripheral Component Interconnect Express

POST

Power-On Self-Test

RBSU

ROM-Based Setup Utility

RSOC

relative state of change

SAS

serial attached SCSI

SATA

serial ATA

SD

Secure Digital

SE

single-ended

SFF

small form factor

SIM

Systems Insight Manager

SPP

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

VDC

voltage direct-current

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