



Hewlett Packard
Enterprise

HPE ProLiant DL580 Gen9 Server

Maintenance and Service Guide

Abstract

This document describes service procedures for the HPE ProLiant DL580 Gen8 Server. This document is intended for experienced service technicians. Hewlett Packard Enterprise assumes that you are qualified in the servicing of computer equipment, are trained in recognizing hazards in products with hazardous energy levels, and are familiar with weight and stability precautions for rack installations.

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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 garantievooraardelen 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。若要将損壞的零件退回 Hewlett Packard Enterprise，您必須在指定的一段時間內 (通常為五 (5) 個工作天)，將損壞的零件寄回 Hewlett Packard Enterprise。損壞的零件必須與寄送資料中隨附的相關技術文件一併退還。如果無法退還損壞的零件，Hewlett Packard Enterprise 可能要向您收取替換費用。針對客戶自行維修情形，Hewlett Packard Enterprise 將負責所有運費及零件退還費用，並指定使用何家快遞/貨運公司。

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

부품 제공 보증 서비스

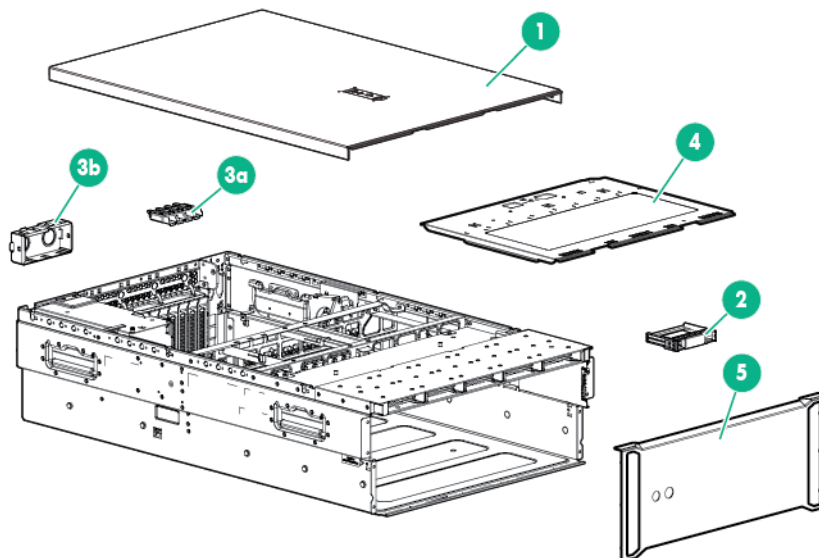
Hewlett Packard Enterprise 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 Hewlett Packard Enterprise는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

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	Server access panel	735510-001	Mandatory ¹
2	Drive blank	670033-001	Mandatory ¹
3	Plastics kit	735516-001	Mandatory ¹
	a) FBWC holder	—	—
	b) Power supply blank	—	—
	c) PCI slot cover*	—	—
	d) PCI retainer*	—	—
4	Processor memory drawer access panel	735517-001	Mandatory ¹
5	Front bezel	735528-001	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 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。

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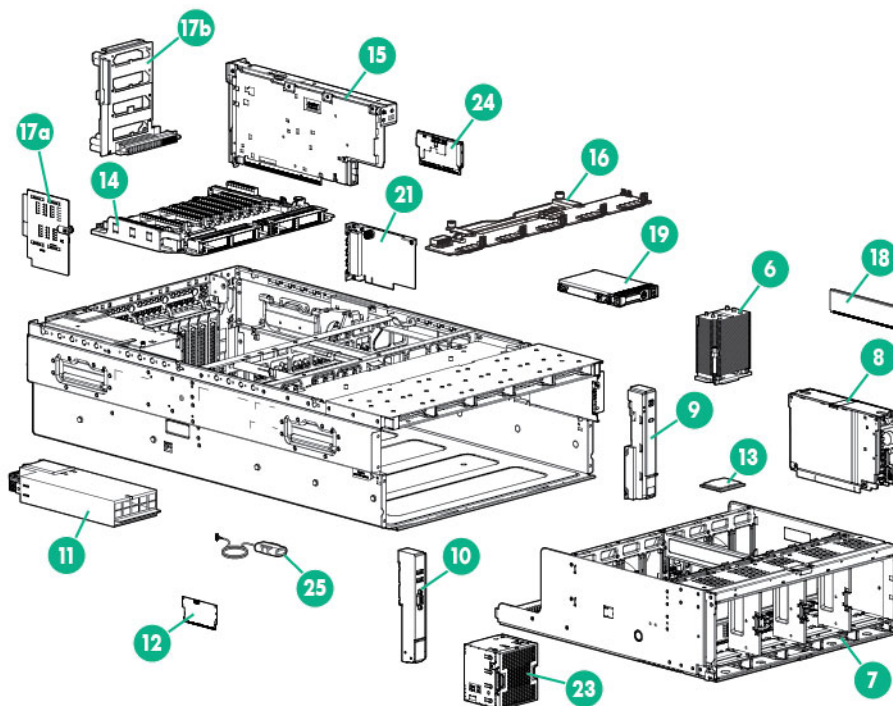
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System components

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)
6	Heatsink	735514-001	Optional ²
7	Processor memory drawer	735518-001	Optional ²
8	Memory cartridge	802277-001	Mandatory ¹
9	Power/UID assembly (right ear bezel)	735523-001	Optional ²
10	Video/USB assembly (left ear bezel)	735525-001	Optional ²
11	Power supplies	—	—
	a) 1200 W power supply, 12 V (94% efficiency)	660185-001	Mandatory ¹
	b) 1500 W power supply (94% efficiency)*	704604-001	Mandatory ¹
	c) 1500 W -48VDC power supply	794734-001	Mandatory ¹
12	Battery, 3V, lithium	153099-001	Mandatory ¹
13	Processors	—	—
	Intel Xeon E7 v3 Processors	—	—
	a) Intel Xeon E7-8890v3 (2.5 GHz/165 W) Processor with jacket	802278-001	Optional ²
	b) Intel Xeon E7-8880v3 (2.3 GHz/150 W) Processor with jacket*	802279-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
	c) Intel Xeon E7-8870v3 (2.1 GHz/140 W) Processor with jacket*	802280-001	Optional ²
	d) Intel Xeon E7-8860v3 (2.2 GHz/140 W) Processor with jacket*	802281-001	Optional ²
	e) Intel Xeon E7-4850v3 (2.2 GHz/115 W) Processor with jacket*	802282-001	Optional ²
	f) Intel Xeon E7-4830v3 (2.1 GHz/115 W) Processor with jacket*	802283-001	Optional ²
	g) Intel Xeon E7-4820v3 (1.9 GHz/115 W) Processor with jacket*	802284-001	Optional ²
	h) Intel Xeon E7-4809v3 (2.0 GHz/115 W) Processor with jacket*	802285-001	Optional ²
	i) Intel Xeon E7-8891v3 (2.8 GHz/165 W) Processor with jacket*	802286-001	Optional ²
	j) Intel Xeon E7-8893v3 (3.2 GHz/140 W) Processor with jacket*	802287-001	Optional ²
	k) Intel Xeon E7-8880Lv3 (2.0 GHz//115 W) Processor with jacket*	802288-001	Optional ²
	l) Intel Xeon E7-8867v3 (2.5 GHz/165 W) Processor with jacket*	802289-001	Optional ²
	Intel Xeon E7 v4 Processors	—	—
	a) Intel Xeon E7-8890v4 24C (2.1 GHz/165 W) Processor*	845009-001	Optional ²
	b) Intel Xeon E7-8880v4 24C (2.2 GHz/150 W) Processor*	845010-001	Optional ²
	c) Intel Xeon E7-8870v4 22C (2.2 GHz/140 W) Processor*	845011-001	Optional ²
	d) Intel Xeon E7-8860v4 20C (2.1 GHz/140 W) Processor*	845012-001	Optional ²
	e) Intel Xeon E7-4850v4 16C (2.1 GHz/115 W) Processor*	845013-001	Optional ²
	f) Intel Xeon E7-4830v4 14C (2.1 GHz/115 W) Processor*	845014-001	Optional ²
	g) Intel Xeon E7-4820v4 10C (2.0 GHz/115 W) Processor*	845015-001	Optional ²
	h) Intel Xeon E7-4809v4 8C (1.9 GHz/115 W) Processor*	845016-001	Optional ²
	i) Intel Xeon E7-8891v4 10C (2.8 GHz/165 W) Processor*	845017-001	Optional ²
	j) Intel Xeon E7-8893v4 4C (3.2 GHz/140 W) Processor*	845018-001	Optional ²
	k) Intel Xeon E7-8867v4 16C (2.3 GHz/165 W) Processor*	845019-001	Optional ²
	l) Intel Xeon E7-8894v4 24C (2.4 GHz/165 W) Processor*	845020-001	Optional ²
	Boards	—	—
14	I/O board	735511-001	Optional ²
15	SPI board	802275-001	Optional ²
16	Top SAS backplane	735520-001	Mandatory ¹
17	Power backplane assembly	735526-001	—
	a) Power daughter board	—	Optional ²
	b) Power supply backplane	—	Optional ²

Item	Description	Spare part number	Customer self repair (on page 6)
18	DIMMs	—	—
	Designed for Intel Xeon E7 v3 processors	—	—
	a) 8 GB, PC4-2133P-R, 1Gx4	774170-001	Mandatory ¹
	b) 16 GB, PC4-2133P-R, 1Gx4	774172-001	Mandatory ¹
	c) 32 GB, PC4-2133P-L, 1Gx4	774174-001	Mandatory ¹
	d) 16 GB, PC4-2133P-L, 1Gx4	774173-001	Mandatory ¹
	e) 32 GB, PC4-2133P-R, 2Gx4	774175-001	Mandatory ¹
	f) 64 GB, PC4-2133P-L, 2Gx4	774176-001	Mandatory ¹
	Designed for Intel Xeon E7 v4 processors	—	—
	a) 8 GB, PC4-2400R, 1Gx72	819410-001	Mandatory ¹
	b) 16 GB, PC4-2400T-R, 2Gx72	819411-001	Mandatory ¹
	c) 16 GB, PC4-2400R, 2Gx72	846740-001	Mandatory ¹
	d) 32 GB, PC4-2400T	819412-001	Mandatory ¹
	e) 32 GB, PC4-2400T-L, 4Gx72	819414-001	Mandatory ¹
	f) 64 GB, PC4-2400T-L, 2Gx4	819413-001	Mandatory ¹
	Drives	—	—
19	Hard drives	—	—
	a) 1.2 TB SAS, SFF, 6G, 10,000 rpm	718292-001	Mandatory ¹
	b) 900 GB SAS, SFF, 6G 10,000 rpm*	653971-001	Mandatory ¹
	c) 600 GB SAS, SFF, 6G 10,000 rpm*	653957-001	Mandatory ¹
	d) 450 GB SAS, SFF, 6G 10,000 rpm*	653956-001	Mandatory ¹
	e) 300 GB SAS, SFF, 6G 10,000 rpm*	653955-001	Mandatory ¹
	f) 300 GB SAS, SFF, 6G 15,000 rpm*	653960-001	Mandatory ¹
	g) 146 GB SAS, SFF, 6G, 15,000 rpm*	653950-001	Mandatory ¹
	h) 1 TB SAS, SFF, 6G, 7,200 rpm*	653954-001	Mandatory ¹
	i) 500 GB SAS, SFF, 6G, 7,200 rpm*	653953-001	Mandatory ¹
20	Solid state drives*	—	—
	a) 120 GB, SATA, SFF, 6G	718136-001	Mandatory ¹
	b) 80 GB, SATA, SFF, 6G	734562-001	Mandatory ¹
	c) 800 GB, SATA, SFF, 6G	718139-001	Mandatory ¹
	d) 480 GB, SATA, SFF, 6G	718138-001	Mandatory ¹
	e) 600 GB, SATA, SFF, 6G	739959-001	Mandatory ¹
	f) 300 GB, SATA, SFF, 6G	739954-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 6)
	g) 240 GB, SATA, SFF, 6G	718137-001	Mandatory ¹
	h) 800 GB, SATA, SFF, 6G	692167-001	Mandatory ¹
	i) 400 GB, SATA, SFF, 6G	692166-001	Mandatory ¹
	j) 200 GB, SATA, SFF, 6G	692165-001	Mandatory ¹
	k) 100 GB, SATA, SFF, 6G	692164-001	Mandatory ¹
FlexibleLOM			
21	1G Ethernet adapter	634025-001	Optional ²
22	10G Ethernet adapter*	701531-001	Optional ²
23	Fan	735513-001	Mandatory ¹
Options			
24	Cache module*	—	—
	a) FBWC module, 2 GB	633543-001	Optional ²
	b) SA 244P Cache Module 4Gx72 1866	729639-001	Optional ²
25	Capacitor pack	—	—
	a) Capacitor pack for the 2 GB cache	660093-001	Optional ²
	b) Capacitor pack for the 4 GB cache	731125-001	Optional ²
26	Trusted platform module*	450168-001	No ³
27	Express Bay Enablement option*	—	—
	a) Express Bay Bridge card	824019-001	
	b) Express Bay Bridge backplane	802276-001	
	c) Drive blanks (4)	670033-001	
Cables			
28	Cable kit*	735515-001	Mandatory ¹
	a) USB/video cable	—	—
	b) 6-position power cable	—	
	c) 10-position power cable	—	—
	d) 12-position power cable	—	—
	e) Power/UID cable	—	—
	f) Mini-SAS cable (I/O board)	—	—
	g) Mini-SAS cable (SPI board to top SAS backplane)	—	—
	h) Fan power cable	—	—
	i) Discovery services cable	—	—

*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 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.

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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。

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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」。

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Removal and replacement procedures

Required tools

You need the following items for some procedures:

- Torx T-10 screwdriver
- Torx T-15 screwdriver
- Diagnostics Utility

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.

Preparation procedures

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

- Power down the server (on page 26).
If you must remove a server from a rack or a non-hot-plug component from a server, power down the server.
- Extend the server from the rack (on page 26).
If you are performing service procedures in a Hewlett Packard Enterprise, Compaq branded, telco, or third-party rack, you can use the locking feature of the rack rails to support the server and gain access to internal components.
For more information about telco rack solutions, refer to the RackSolutions.com website (<http://www.racksolutions.com/hp>).
- Remove the server from the rack (on page 27).
If the rack environment, cabling configuration, or the server location in the rack creates awkward conditions, remove the server from the rack.

- Remove the access panel (on page 28).
If you are servicing internal components, remove the access panel.
- Remove the processor memory drawer shipping screws ("Processor memory drawer shipping screw locations" on page 29).
- Remove the processor memory drawer (on page 29).
- Remove the processor memory drawer cover (on page 30).
- Remove the SPI board (on page 30).

Power down the server



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.



IMPORTANT: If installing a hot-plug device, it is not necessary to power down the server.

1. Back up the server data.
2. Shut down the operating system. For more information, see the operating system documentation.

NOTE: If the operating system automatically places the server in Standby mode, omit the next step.

3. Press the Power On/Standby button to place the server in Standby mode. When the server activates Standby power mode, the system power LED changes to amber.



IMPORTANT: Pressing the UID button illuminates the blue UID LEDs on the front and rear panels. In a rack environment, this feature facilitates locating a server when moving between the front and rear of the rack.

4. Disconnect the power cords.

The system is now without power.

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.

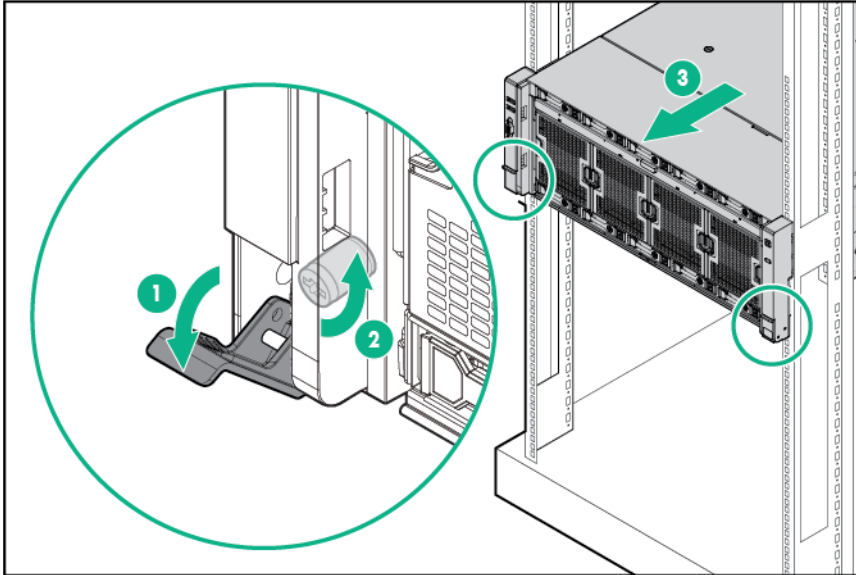


WARNING: To reduce the risk of personal injury, be careful when pressing the server rail-release latches and sliding the server into the rack. The sliding rails could pinch your fingers.

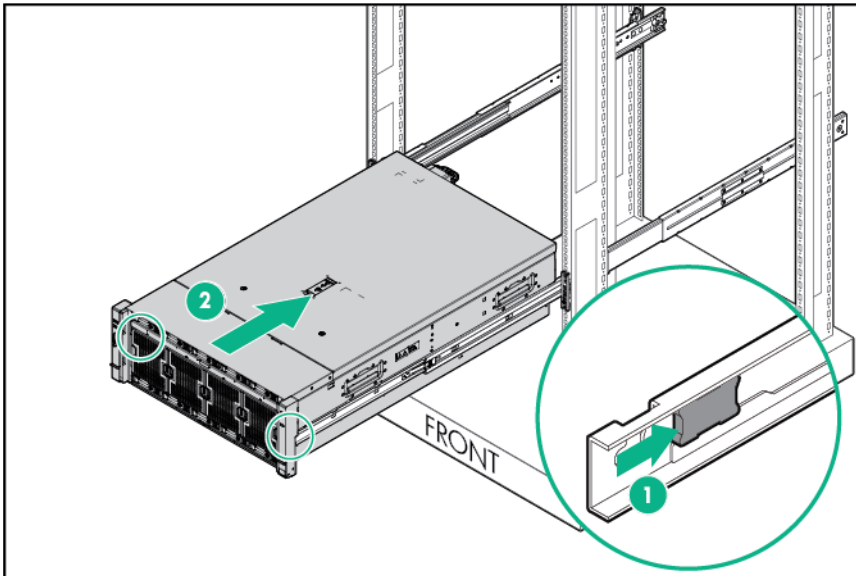
To extend the server from the rack:

1. Pull down the quick-release levers on each side of the server to release the server from the rack. If necessary, loosen the rack screws.

2. Extend the server on the rack rails until the server rail-release latches engage.



3. After performing the installation or maintenance procedure, slide the server into the rack by pressing the server rail-release latches.



Remove 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.



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.



32.18-52.87 kg
70.94-116.56 lb

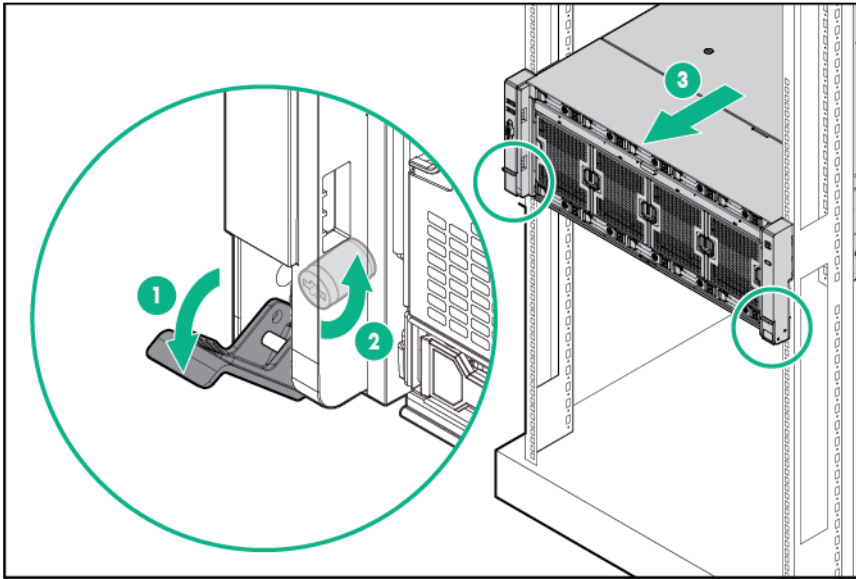


This symbol indicates that the component exceeds the recommended weight for one individual to handle safely.

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.

To remove the server from the rack:

1. Pull down the quick-release levers on each side of the server to release the server from the rack. If necessary, loosen the rack screws.
2. Extend the server on the rack rails until the server rail-release latches engage.



3. Remove the server from the rack.

Remove the access panel



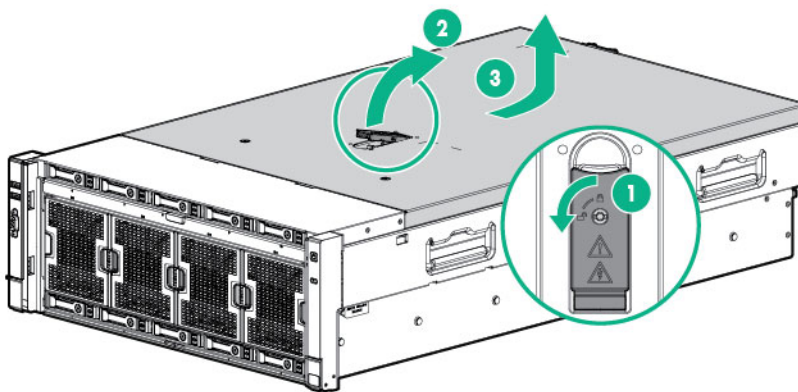
WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.



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.

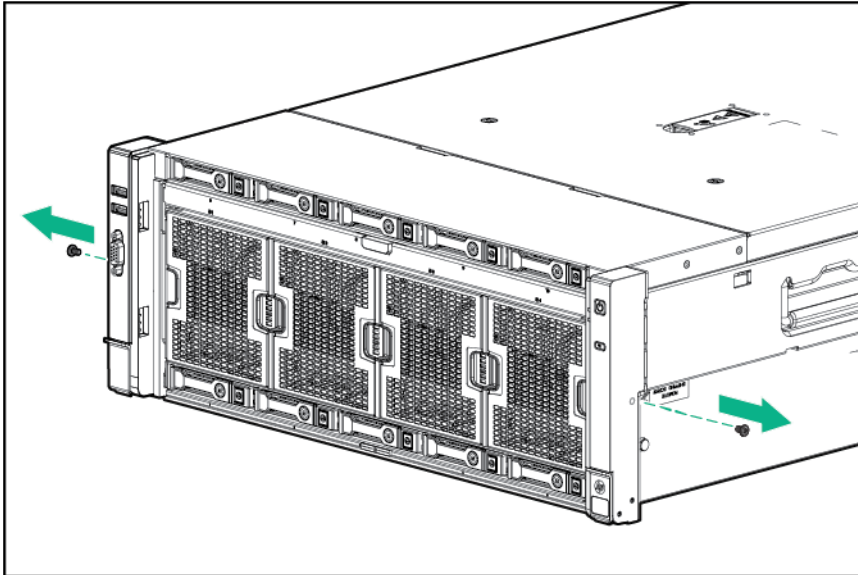
To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel. If the locking latch is locked, use a T-15 Torx screwdriver to unlock the latch.



Processor memory drawer shipping screw locations

Two orange shipping screws secure the processor memory drawer in place during shipping. You must remove the screws to access the processor memory drawer. Retain the screws for future use.

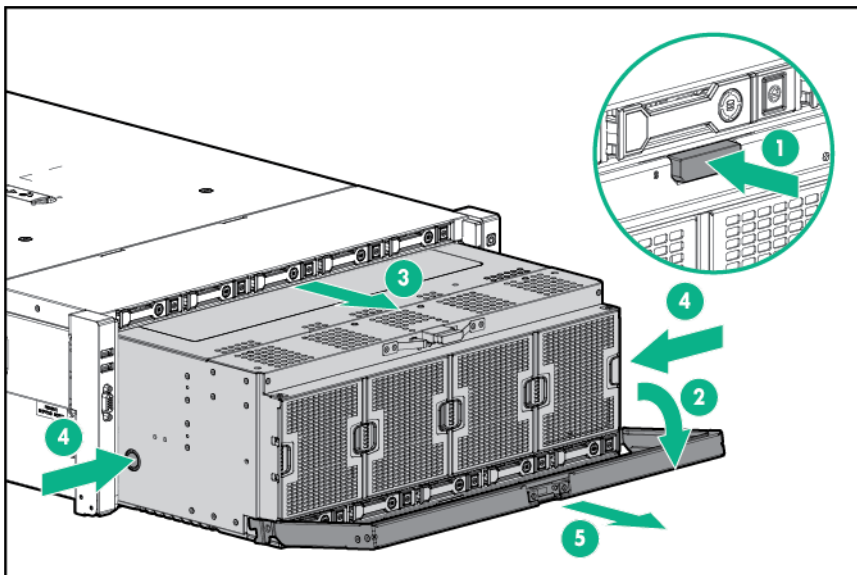


Remove the processor memory drawer



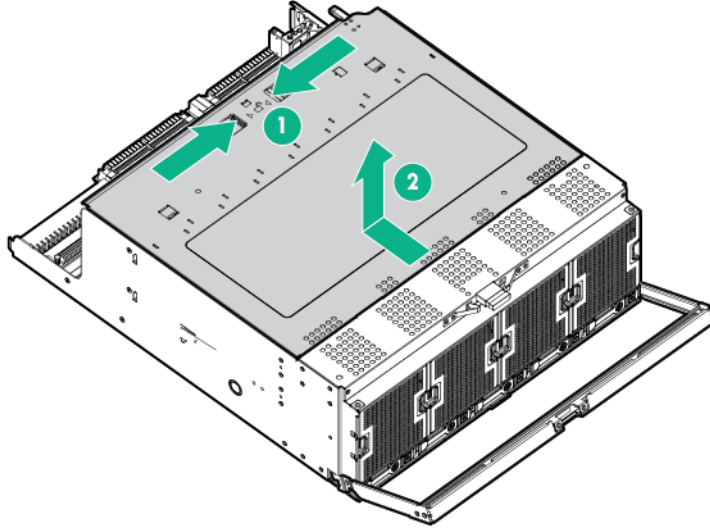
WARNING: The processor memory drawer weighs more than 11.3 kg (25.0 lb). Use extra caution when removing and replacing the processor memory drawer.

1. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("[Processor memory drawer shipping screw locations](#)" on page 29).
2. Push the button on the release lever.
3. Lower the handle, and then extend the processor memory drawer from the server until the release latches catch.
4. Firmly holding the processor memory drawer, press the release buttons, and then remove the drawer from the server.



Remove the processor memory drawer cover

1. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 29).
2. Remove the processor memory drawer (on page 29).
3. Remove the processor memory drawer cover.

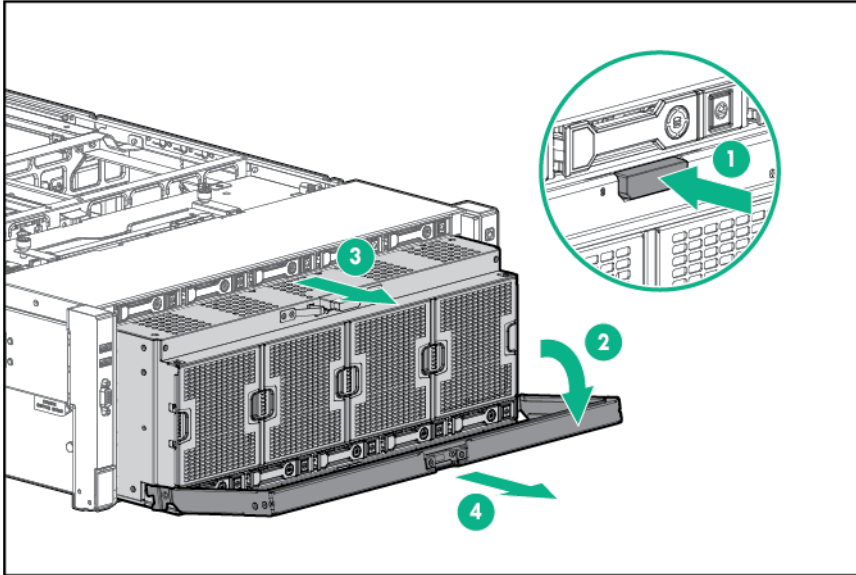


Remove the SPI board

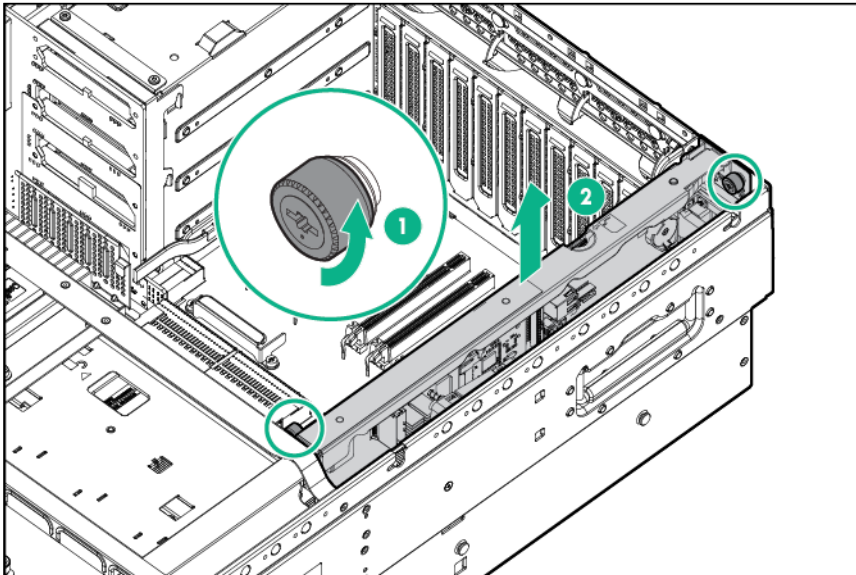
To remove the component:

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 29).

6. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



7. Loosen the thumbscrews on the SPI board, and then lift the SPI board to access the cables.



8. Disconnect all cables from the SPI board.



IMPORTANT: If replacing the SPI board or clearing NVRAM, you must re-enter the server serial number through the Advanced System ROM options in UEFI System Utilities ("Re-entering the server serial number and product ID" on page 75).

9. Remove the SPI board from the server.

Installing the server into the rack



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

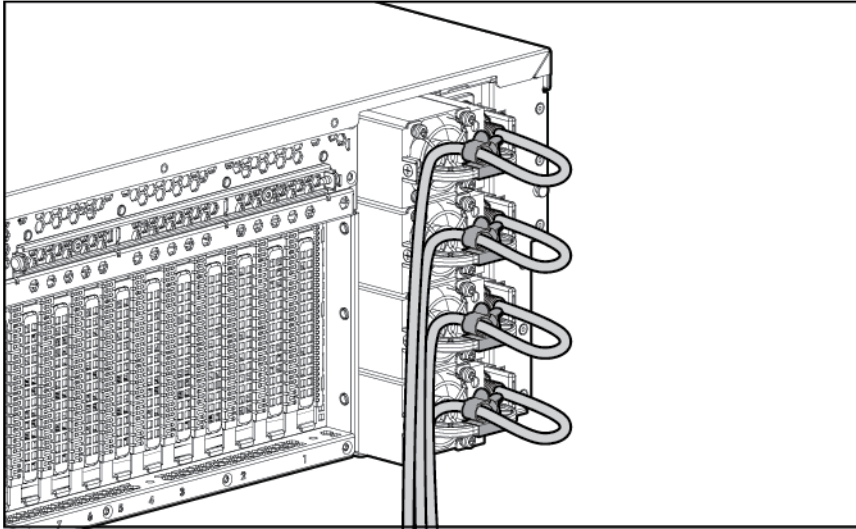
1. Install the server and cable management arm into the rack. For more information, see the installation instructions that ship with the Quick Deploy Rail System.

2. Connect peripheral devices to the server. For information on identifying connectors, see "SPI board components (on page 87)."



WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into RJ-45 connectors.

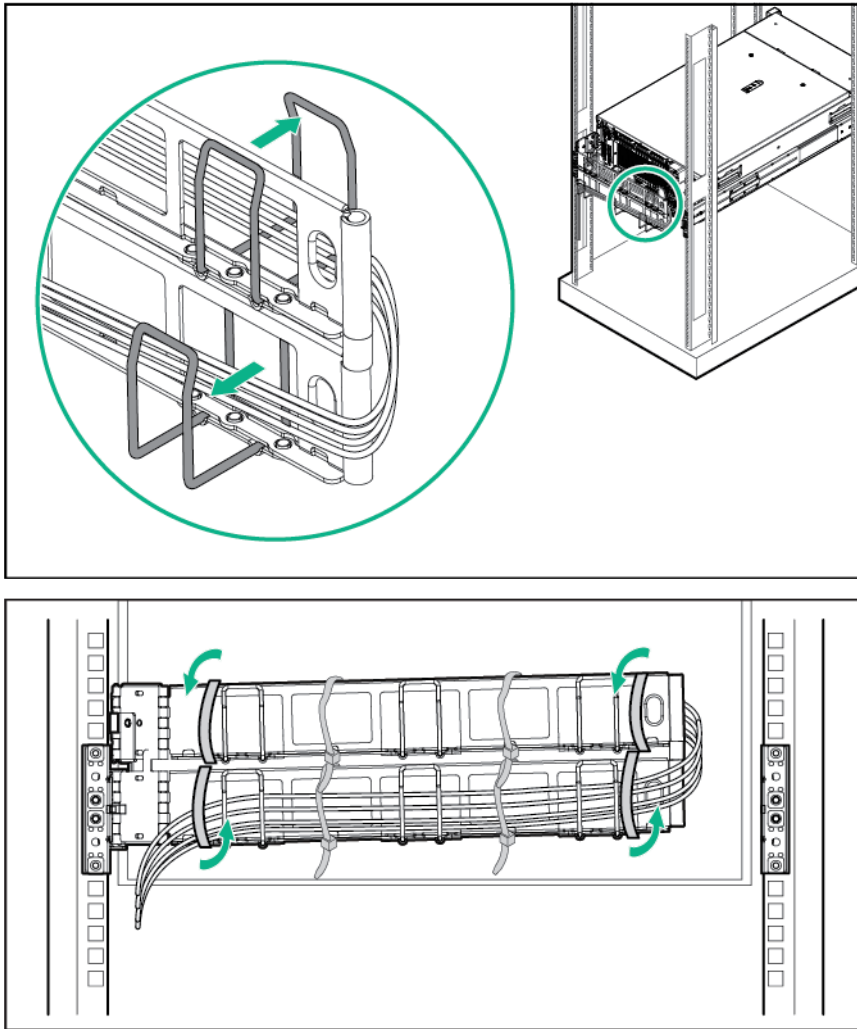
3. Connect the power cord to the rear of the server.
4. Install the power cord anchors.



5. Secure the cables to the cable management arm.



IMPORTANT: When using cable management arm components, be sure to leave enough slack in each of the cables to prevent damage to the cables when the server is extended from the rack.



6. Connect the power cord to the AC power source.

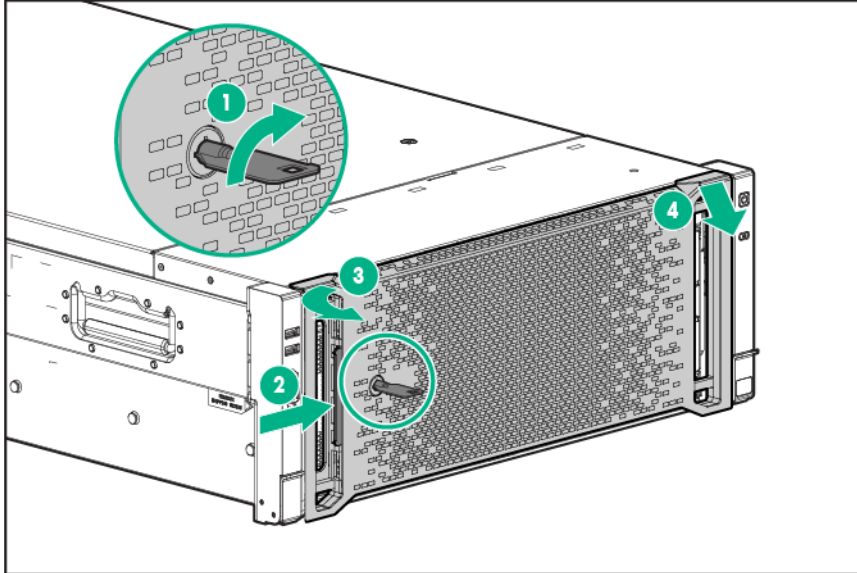


WARNING: To reduce the risk of electric shock or damage to the equipment:

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

4U rack bezel

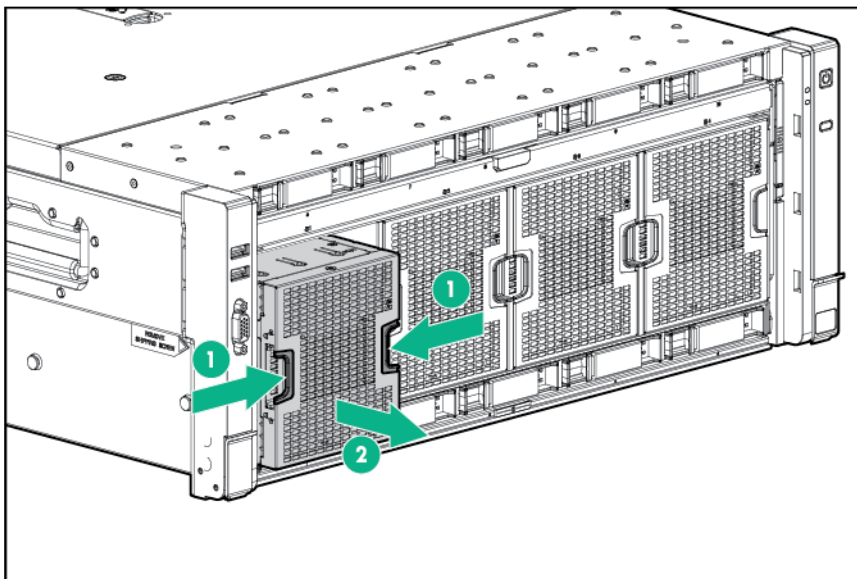
Remove the component as indicated.



To replace the component, reverse the removal procedure.

Fan

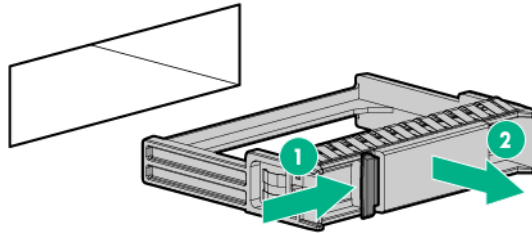
Remove the component as indicated.



To replace the component, reverse the removal procedure.

Drive blank

Remove the component as indicated.

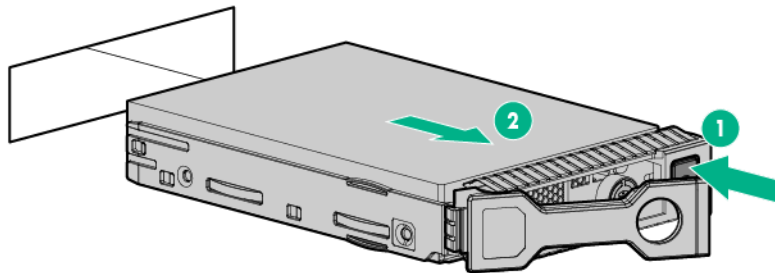


To replace the component, reverse the removal procedure.

Drive

To remove the component:

1. Determine the status of the drive from the drive LED definitions ("[Hot-plug drive LED definitions](#)" on page 94).
2. Back up all server data on the drive.
3. Remove the drive.

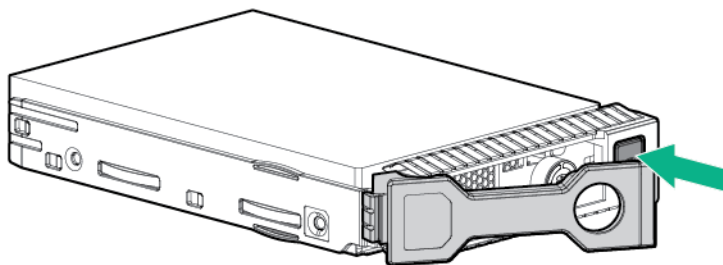


To replace the component:

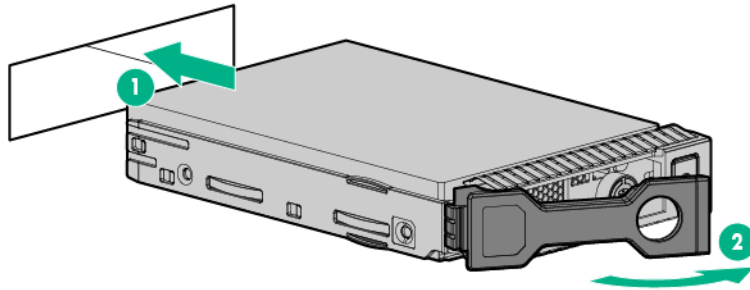


CAUTION: To prevent improper cooling and thermal damage, do not operate the server or the enclosure unless all drive and device bays are populated with either a component or a blank.

1. Prepare the drive.



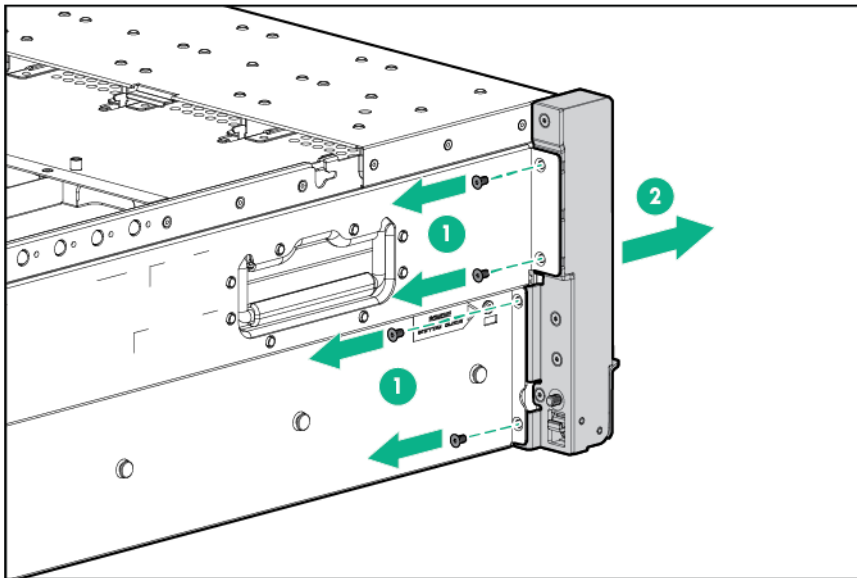
2. Install the drive.



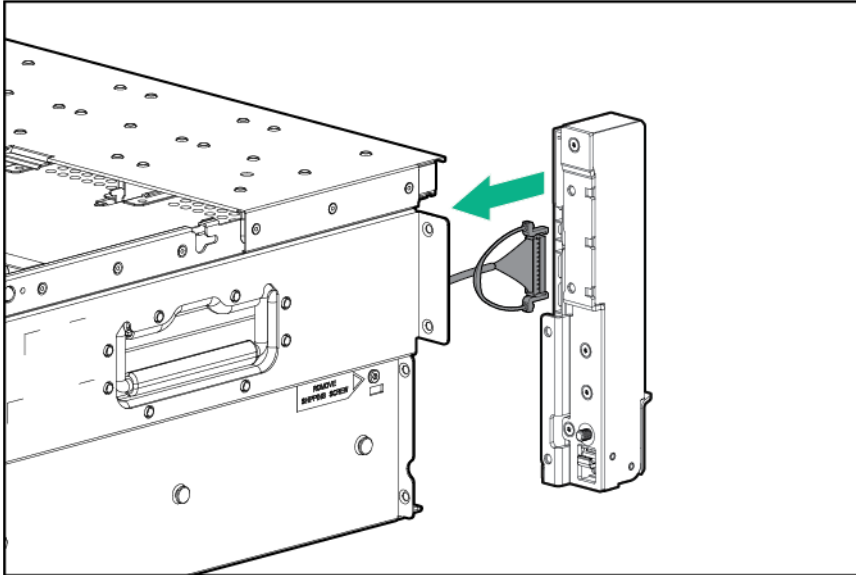
3. Determine the status of the drive from the drive LED definitions ("[Hot-plug drive LED definitions](#)" on page [94](#)).

Left bezel (USB/video)

1. Power down the server (on page [26](#)).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page [26](#)).
4. Remove the processor memory drawer cover (on page [30](#)).
5. Using a Torx T-10 screwdriver, remove the screws securing the bezel to the chassis, and then remove the assembly from the server.



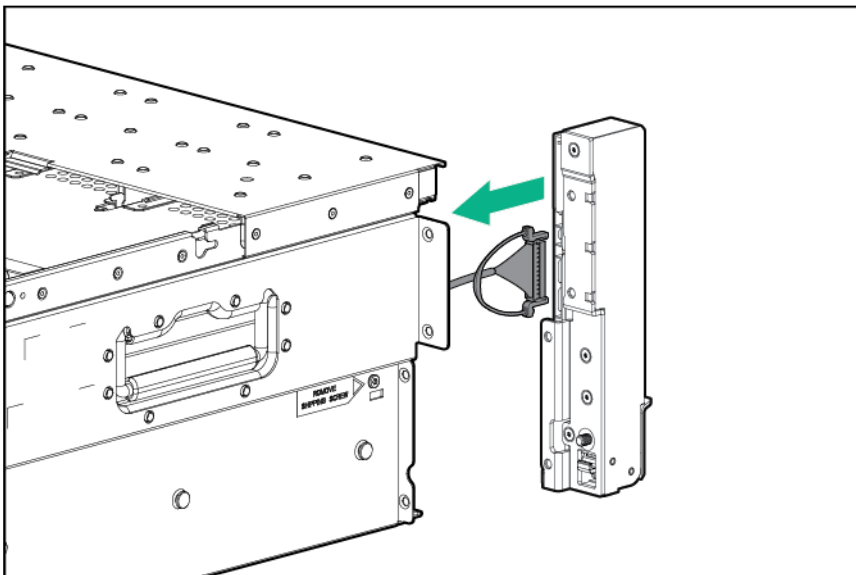
6. Disconnect the cable from the bezel.



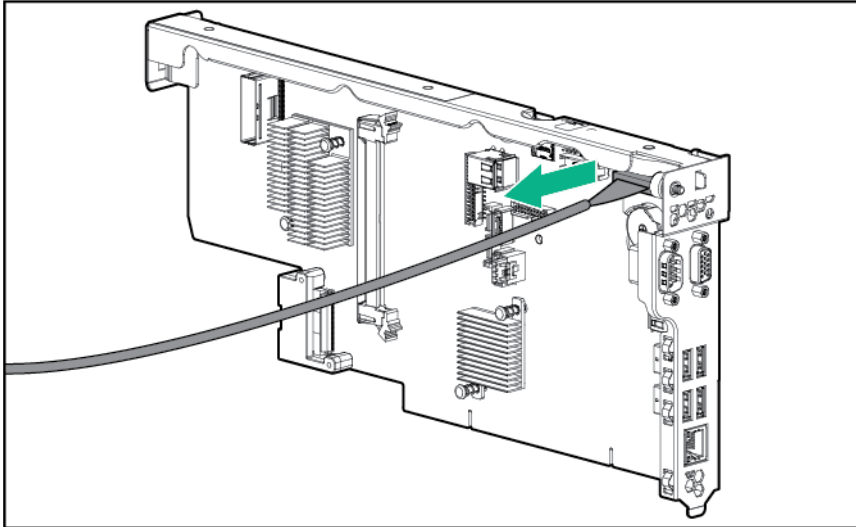
To replace the component, reverse the removal procedure.

USB/video/Discovery Services cable

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Remove the processor memory drawer (on page 29).
6. Remove the SPI board (on page 30).
7. Remove the left bezel ("[Left bezel \(USB/video\)](#)" on page 36).
8. Disconnect the cable from the bezel.



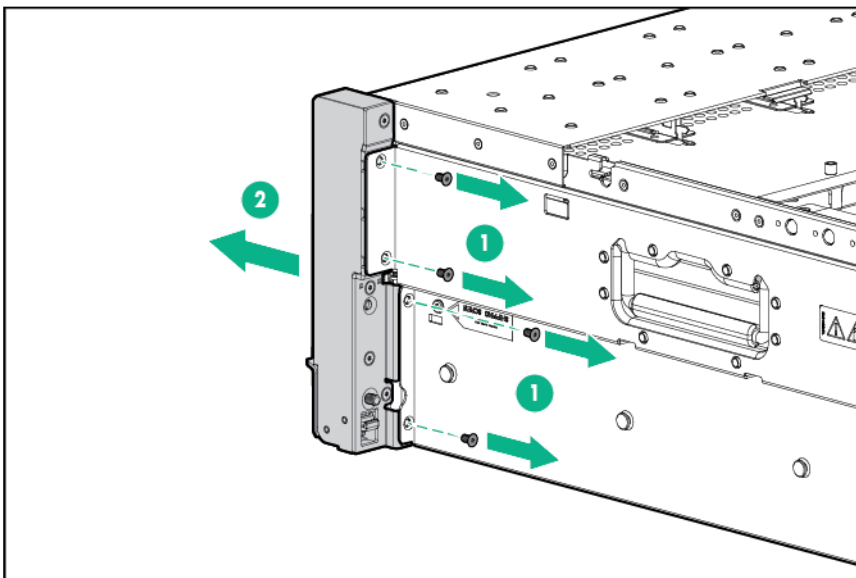
9. Disconnect the cable from the SPI board.



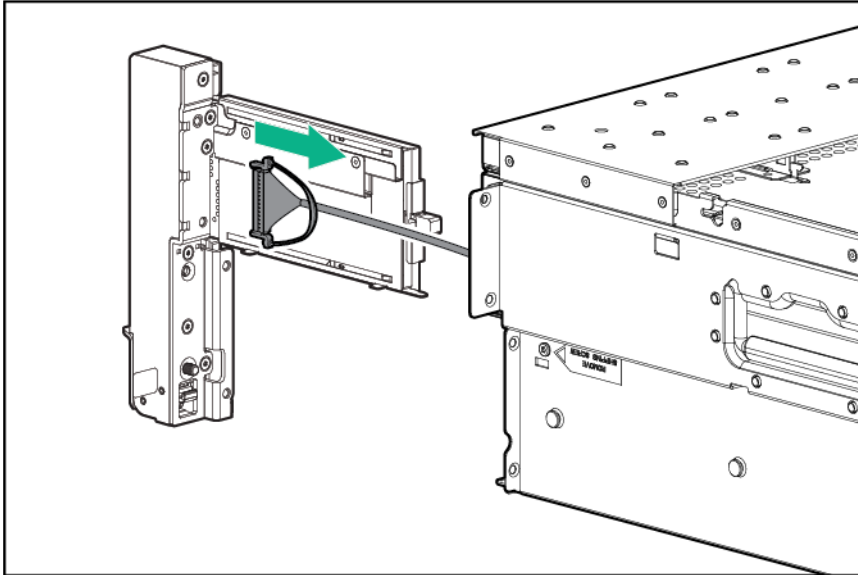
To replace the component, reverse the removal procedure.

Right bezel (UID/power/SID)

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the processor memory drawer (on page 29).
5. Using a Torx T-10 screwdriver, remove the screws securing the bezel to the chassis, and then remove the assembly from the server.



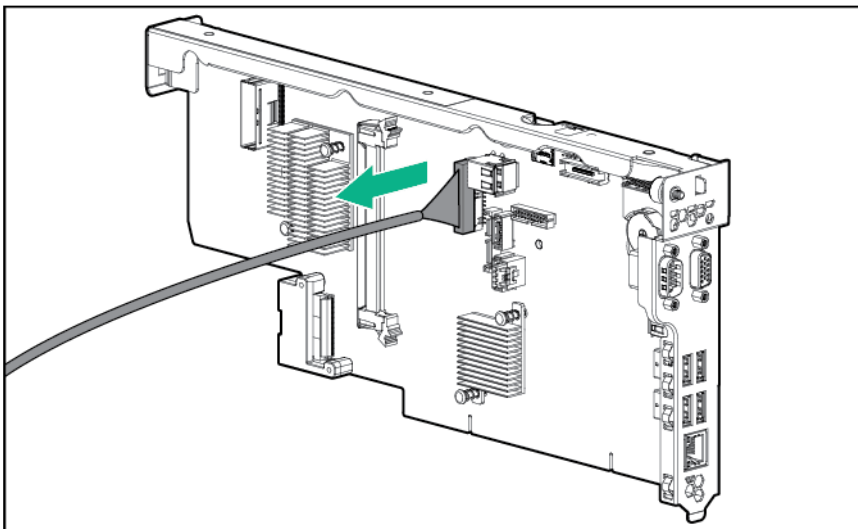
6. Disconnect the cable from the bezel.



To replace the component, reverse the removal procedure.

UID/power/SID cable

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Remove the processor memory drawer (on page 29).
6. Remove the SPI board (on page 30).
7. Remove the right bezel ("[Right bezel \(UID/power/SID\)](#)" on page 38).
8. Disconnect the cable from the SPI board.



To replace the component, reverse the removal procedure.

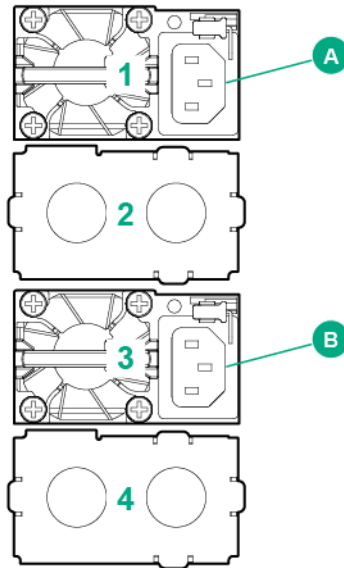
Hot-plug power supply

The server supports up to four hot-plug power supplies. Install all power supplies to provide full redundancy. To determine if your current server hardware configuration can support a specific redundancy setting, use the HPE Power Advisor on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/poweradvisor/online>).

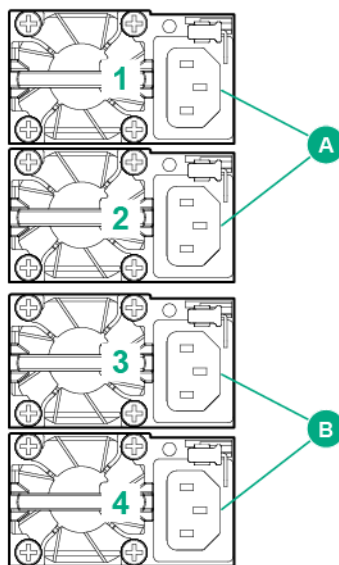
CAUTION: Using an unsupported power supply or cabling configuration can result in an unexpected loss of system power.

Hewlett Packard Enterprise recommends installing redundant hot-plug power supplies in pairs, using the following supported configurations.

- Two power supply configuration—For redundancy, connect power supplies 1 and 2 to separate AC power circuits.



- Four power supply configuration—For redundancy, connect power supplies 1 and 2 to power circuit A, and then connect power supplies 3 and 4 to power circuit B.



To confirm the redundancy of your configuration, see the Hewlett Packard Enterprise power advisor at the Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).

Removing the hot-plug power supply

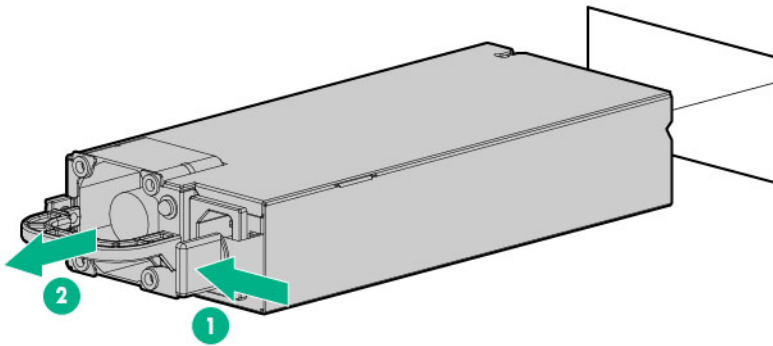


WARNING: To reduce the risk of electric shock or damage to the equipment:

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

To remove the component:

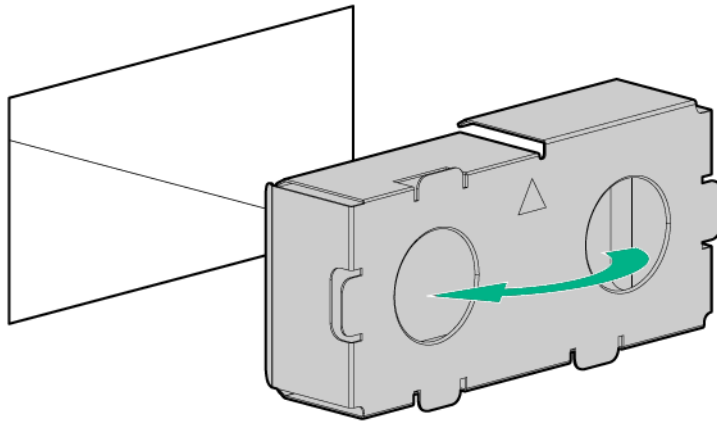
1. Disconnect the power cord from the failed power supply.
2. Remove the failed power supply.



To replace the component, reverse the removal procedure.

Power supply blank

Remove the component as indicated.



To replace the component, reverse the removal procedure.

Expansion board

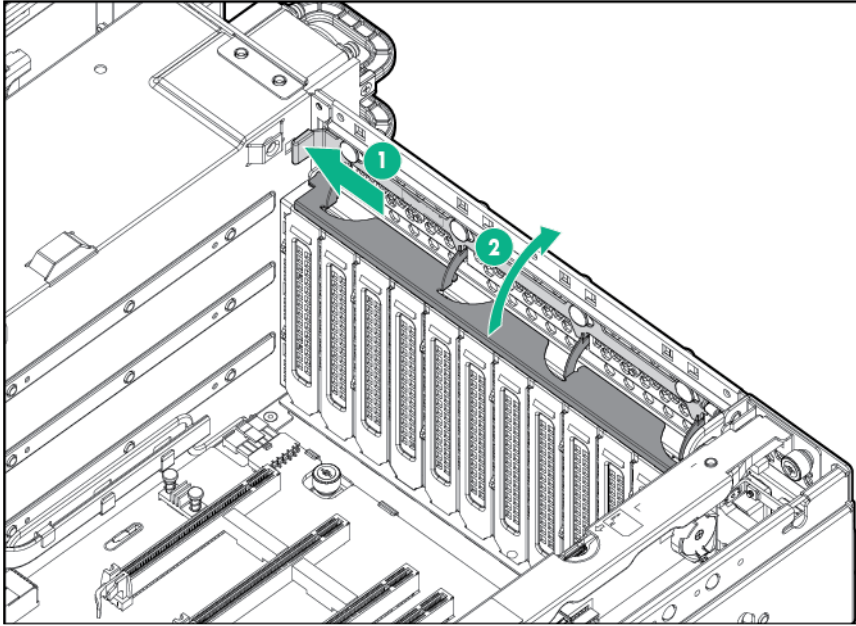


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all expansion slots have either an expansion slot cover or an expansion board installed.

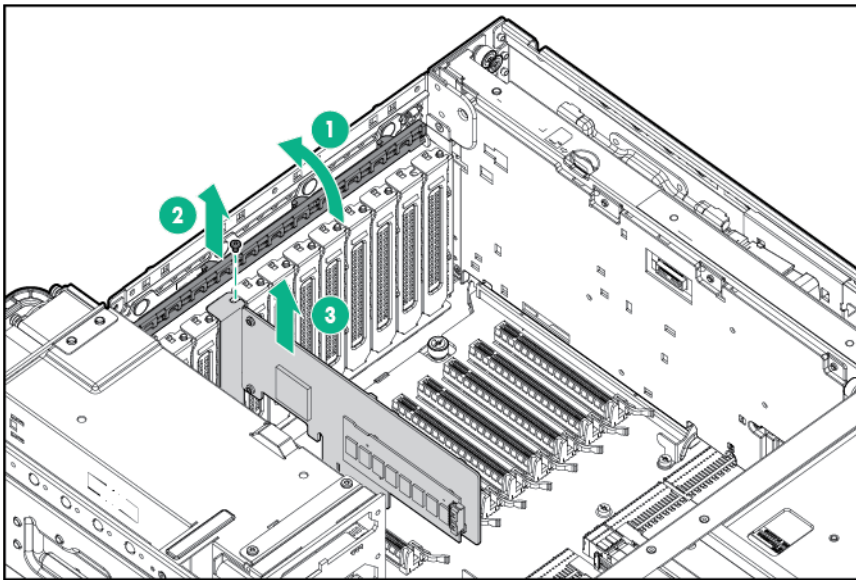
To remove the component:

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).

5. Open the expansion board retainer.



6. Disconnect any cables attached to the expansion board.
7. Remove the retaining screw, if installed.
8. Remove the expansion board.



To replace the component, reverse the removal procedure.

Expansion slot cover

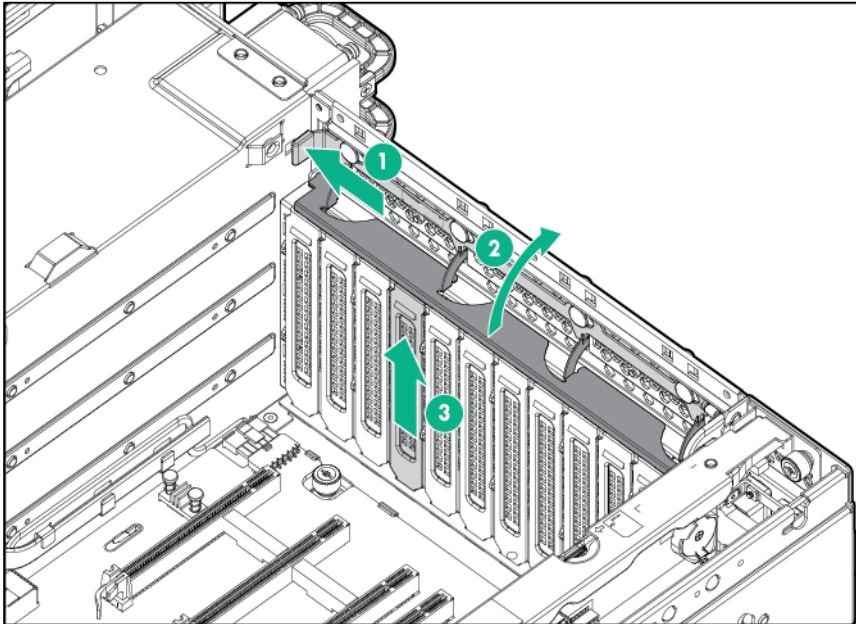


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all expansion slots have either an expansion slot cover or an expansion board installed.

To remove the component:

1. Power down the server (on page 26).
2. Remove all power:

- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Open the expansion board retainer, and then remove the expansion slot cover.



To replace the component, reverse the removal procedure.

Expansion board guides

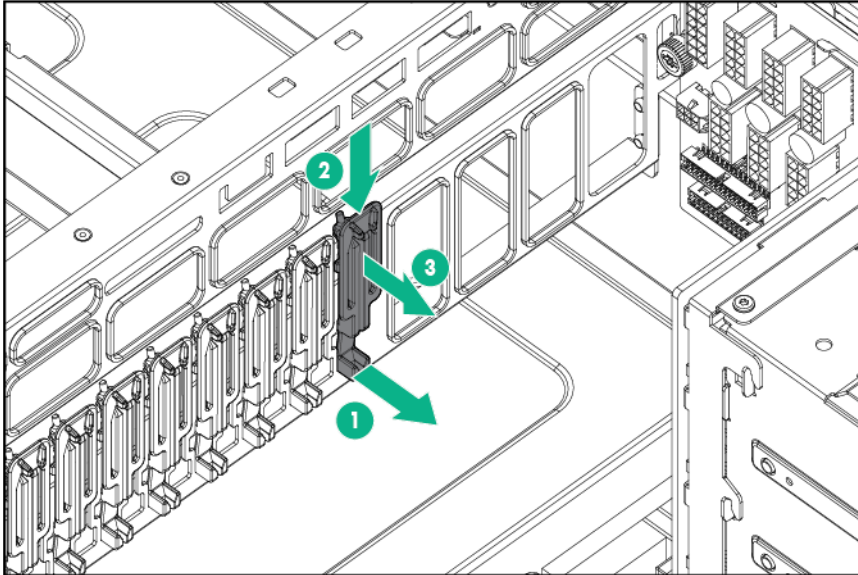


CAUTION: To prevent improper cooling and thermal damage, do not operate the server unless all expansion slots have either an expansion slot cover or an expansion board installed.

To remove the component:

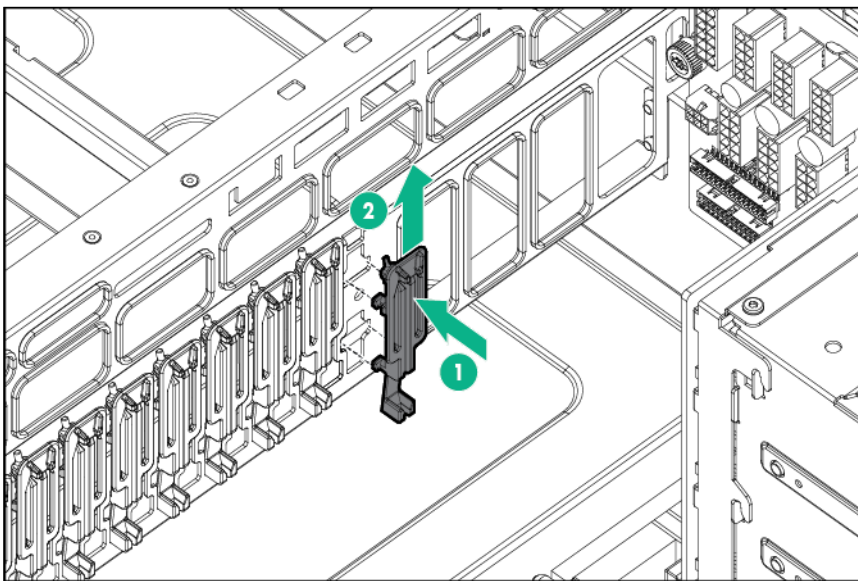
1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Press down on the lower tab, and then press down on the upper tab.

6. Remove the expansion board guide.



To replace the component:

Align the guide with the holes in the chassis, and then press up on the guide to snap it into place.



Flash-backed write cache procedures

Two types of procedures are provided for the FBWC option:

- Removal and replacement of failed components:
 - Removing the cache module (on page 46)
 - Removing the capacitor pack (on page 47)
- Recovery of cached data from a failed server ("[Recovering data from the flash-backed write cache](#)" on page 49)



CAUTION: Do not detach the cable that connects the battery pack or capacitor pack to the cache module. Detaching the cable causes all data in the cache module to be lost.

Removing the cache module

⚠ 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.

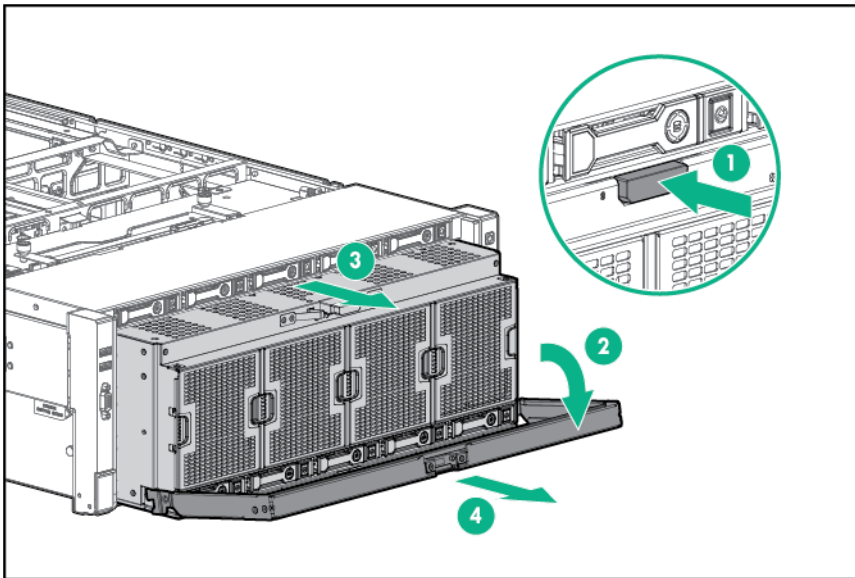
⚠ CAUTION: The cache module connector does not use the industry-standard DDR3 mini-DIMMs. Do not use the controller with cache modules designed for other controller models, because the controller can malfunction and you can lose data. Also, do not transfer this cache module to an unsupported controller model, because you can lose data.

To remove the component:

1. Back up all data.
2. Close all applications.
3. Power down the server (on page 26).
4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.

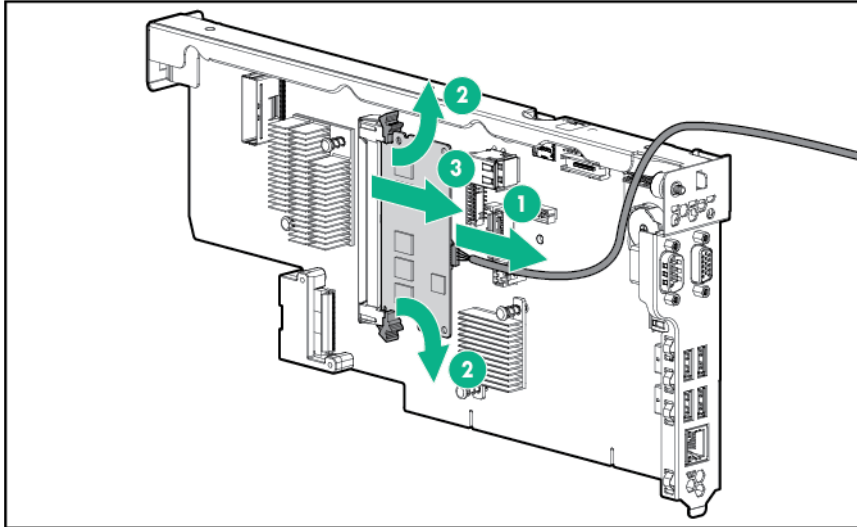
⚠ CAUTION: In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

5. Extend the server from the rack (on page 26).
6. Remove the access panel (on page 28).
7. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



8. Remove the SPI board (on page 30).
9. If the existing cache module is connected to a capacitor pack, observe the FBWC module LEDs (on page 96):
 - If the amber LED is flashing, data is trapped in the cache. Restore system power, and then restart this procedure from step 1.
 - If the amber LED is not illuminated, remove the controller from the server, and then continue with the next step.

10. Remove the cache module.



To replace the component, reverse the removal procedure.



CAUTION: To prevent damage to the cache module during installation, be sure the cache module is fully inserted before pressing down.

Removing the capacitor pack



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: The cache module connector does not use the industry-standard DDR3 mini-DIMMs. Do not use the controller with cache modules designed for other controller models, because the controller can malfunction and you can lose data. Also, do not transfer this cache module to an unsupported controller model, because you can lose data.

To remove the component:

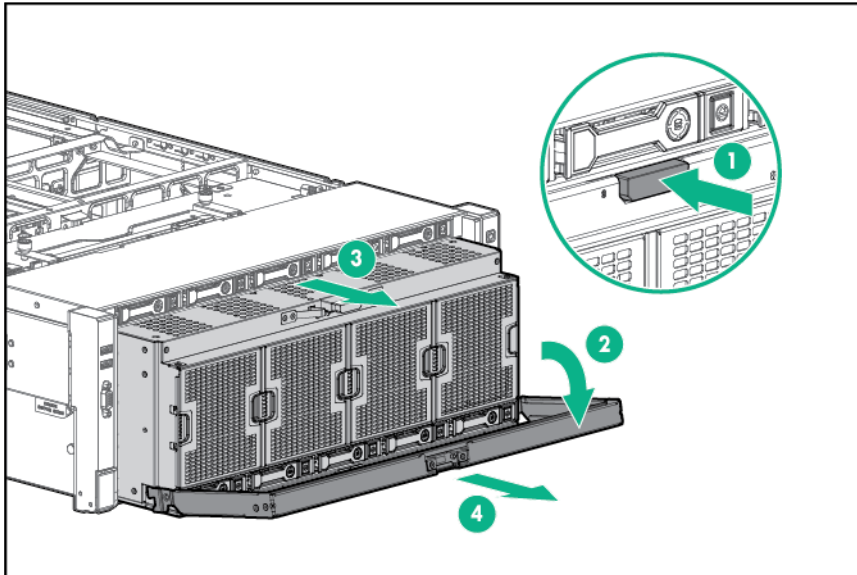
1. Back up all data.
2. Close all applications.
3. Power down the server (on page 26).
4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.



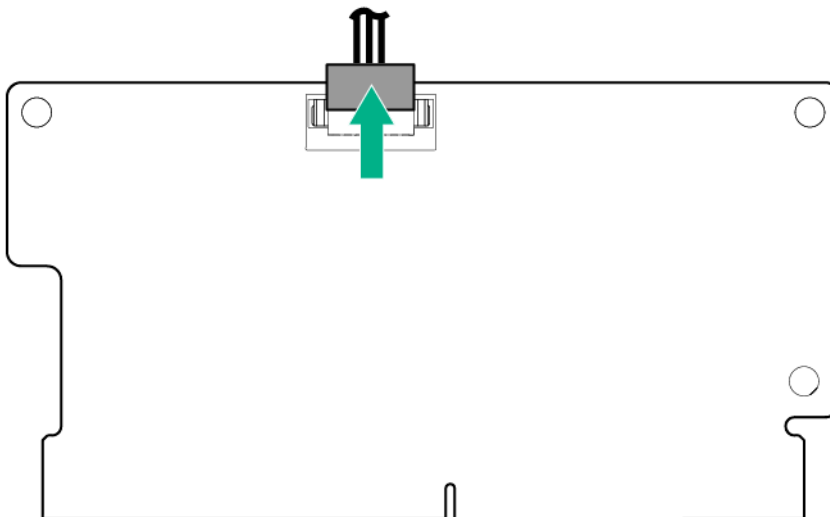
CAUTION: In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

5. Extend the server from the rack (on page 26).
6. Remove the access panel (on page 28).

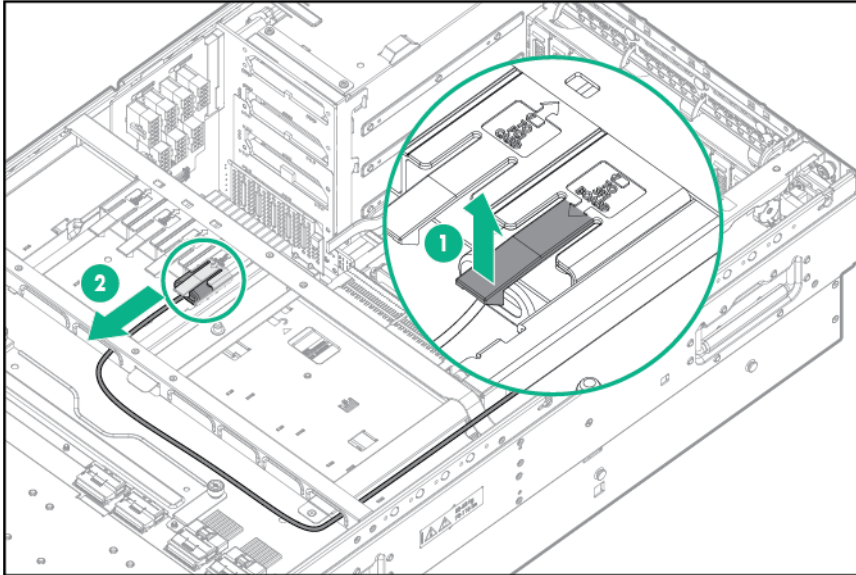
7. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



8. Remove the SPI board (on page 30).
9. Disconnect the capacitor pack cable from the cache module on the SPI board or the PCIe controller.



10. Remove the capacitor pack.



To replace the component, reverse the removal procedure.

Recovering data from the flash-backed write cache

If the server fails, use the following procedure to recover data temporarily stored in the FBWC.



CAUTION: Before starting this procedure, read the information about protecting against electrostatic discharge ("[Preventing electrostatic discharge](#)" on page 25).

1. Perform one of the following:
 - Set up a recovery server using an identical server model. Do not install any internal drives or FBWC in this server. (Hewlett Packard Enterprise recommends this option.)
 - Find a server that has enough empty drive bays to accommodate all the drives from the failed server and that meets all the other requirements for drive and array migration.
2. Power down the failed server ("[Power down the server](#)" on page 26).
3. Transfer the drives from the failed server to the recovery server.
4. Perform one of the following:
 - If the array controller has failed, remove the cache module and capacitor pack from the failed array controller, and install the cache module and capacitor pack on an identical array controller model in the recovery server.
 - If the server has failed, remove the controller, cache module, and capacitor pack from the failed server, and install the controller, cache module, and capacitor pack in the recovery server.
5. Power up the recovery server. If there was data in the cache at the time of the controller or server failure, a 1792 POST message appears, stating that valid data was flushed from the cache. This data is now stored on the drives in the recovery server. You can now transfer the drives (and controller, if one is used) to another server.

If the drives are migrated to different drive positions or there are volumes present in the recovery server, a 1724 POST message appears, stating that logical drive configuration has been updated automatically.

Removing the FBWC capacitor pack holder

⚠ 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.

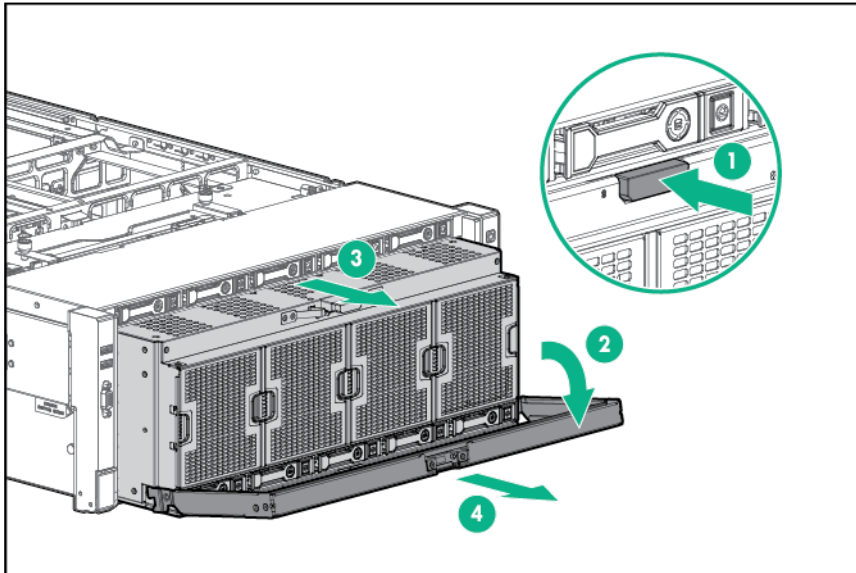
To remove the component:

⚠ CAUTION: The cache module connector does not use the industry-standard DDR3 mini-DIMMs. Do not use the controller with cache modules designed for other controller models, because the controller can malfunction and you can lose data. Also, do not transfer this cache module to an unsupported controller model, because you can lose data.

1. Back up all data.
2. Close all applications.
3. Power down the server (on page 26).
4. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.

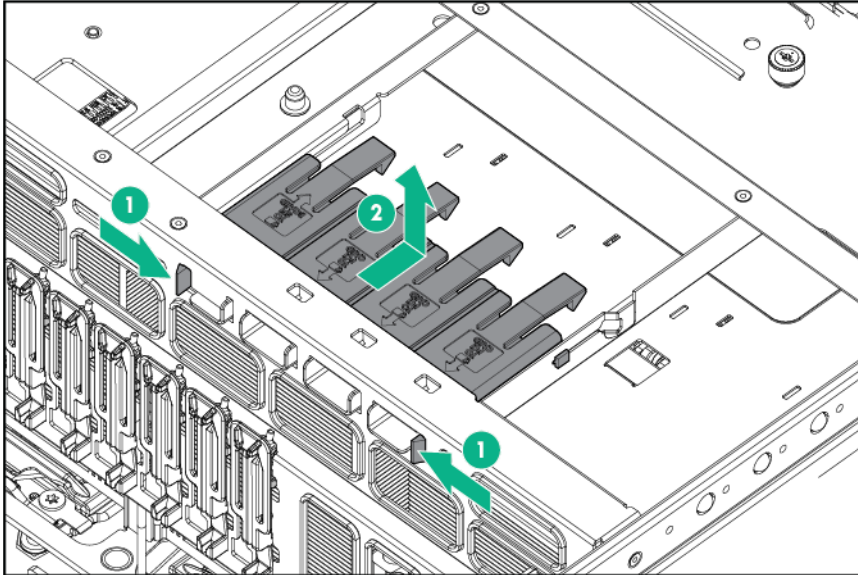
⚠ CAUTION: In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

5. Extend the server from the rack (on page 26).
6. Remove the access panel (on page 28).
7. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



8. Remove any capacitor packs installed in the holder ("[Removing the capacitor pack](#)" on page 47).

9. Remove the capacitor pack holder.

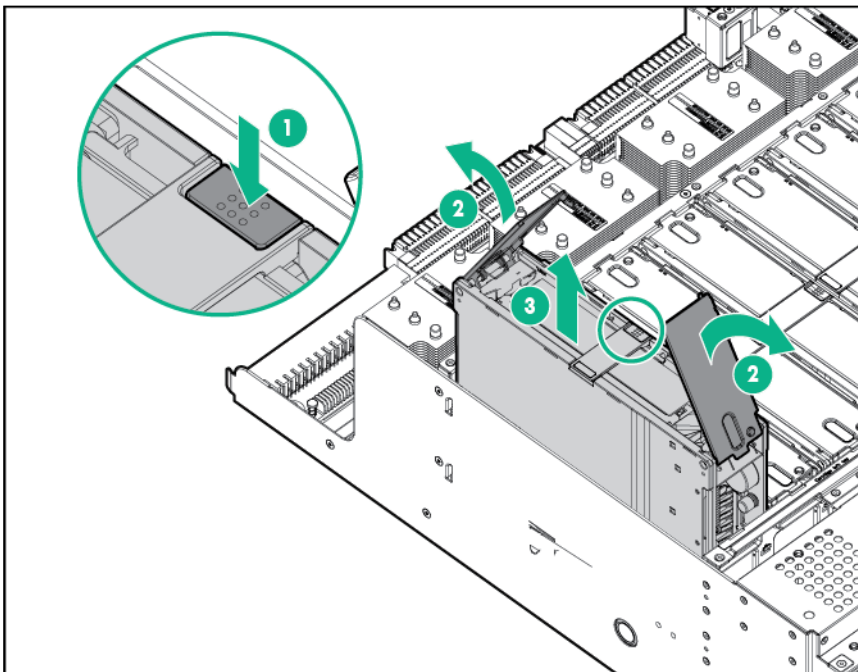


To replace the component, reverse the removal procedure.

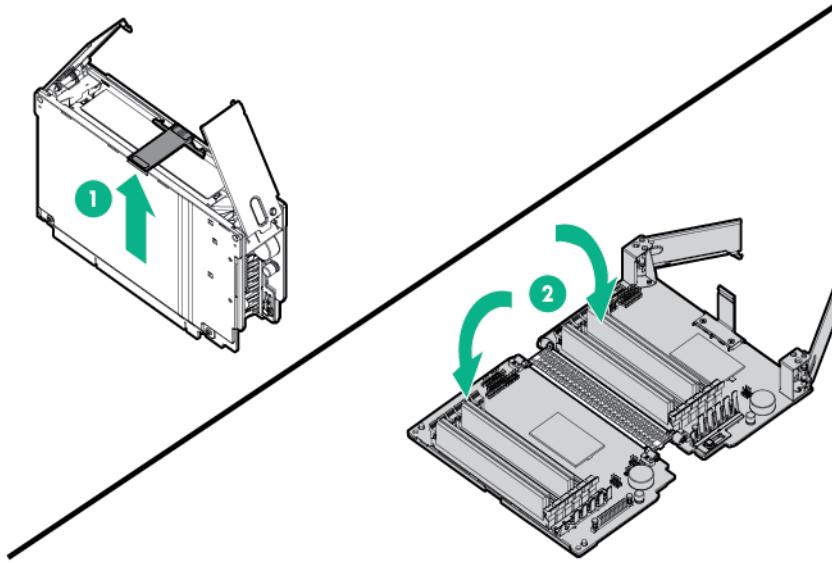
Memory cartridge

To remove the component:

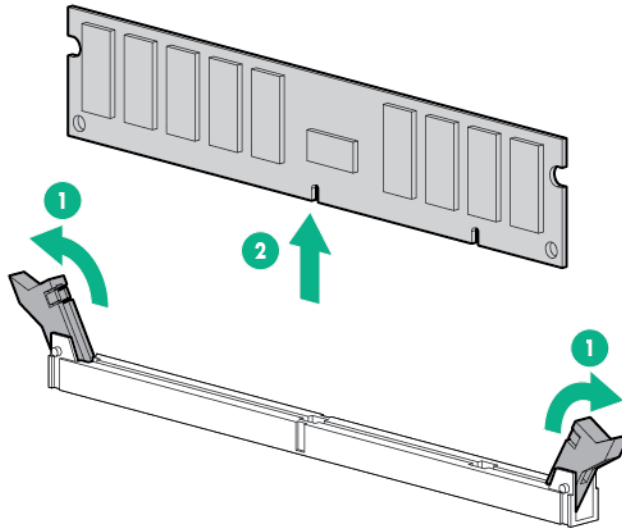
1. Power down the server (on page 26).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("[Processor memory drawer shipping screw locations](#)" on page 29).
3. Remove the processor memory drawer (on page 29).
4. Remove the processor memory drawer cover (on page 30).
5. Remove the failed memory cartridge.



6. Open the memory cartridge cover.



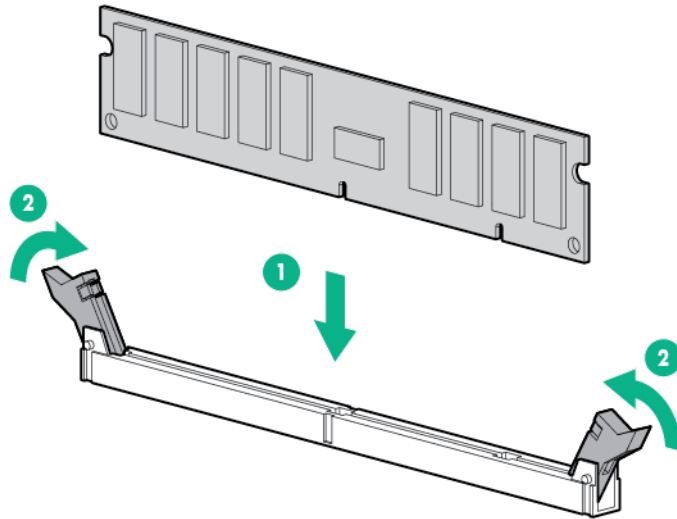
7. Remove the DIMMs from the failed memory cartridge:
 - a. Open the DIMM slot latches.
 - b. Remove the DIMM.



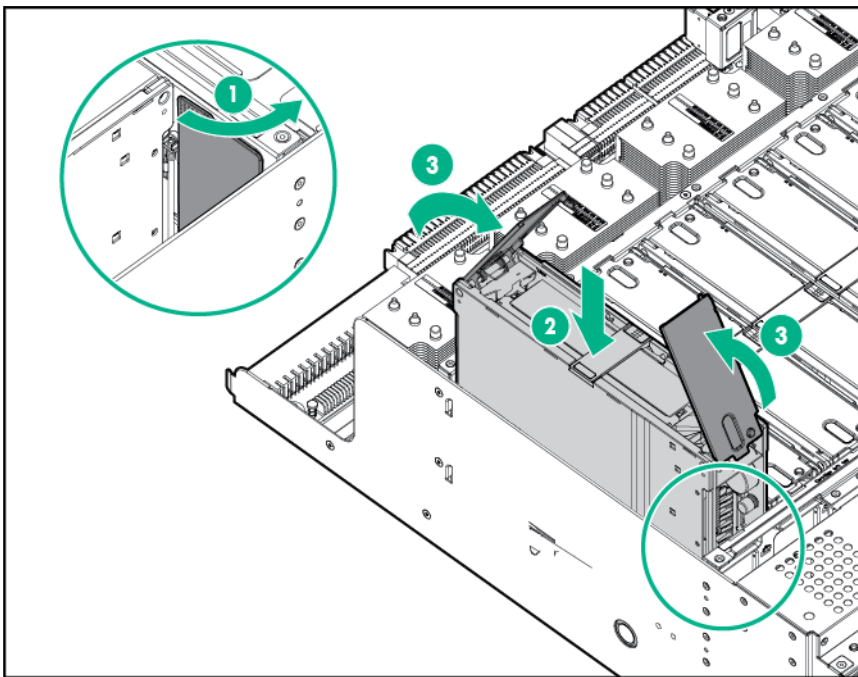
To replace the component:

1. Install the DIMMs in the replacement memory cartridge:
 - a. Open the DIMM slot latches.

- b. Install the DIMM.



2. Close the memory cartridge cover.
3. Install the memory cartridge.



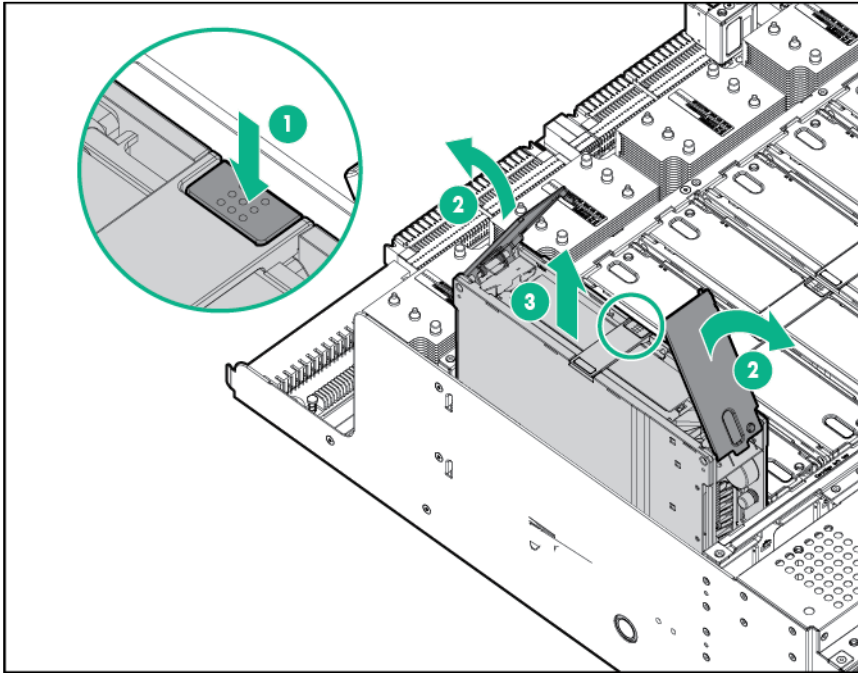
4. Install the processor memory drawer cover.
5. Install the processor memory drawer.
6. Power up the server.

DIMM

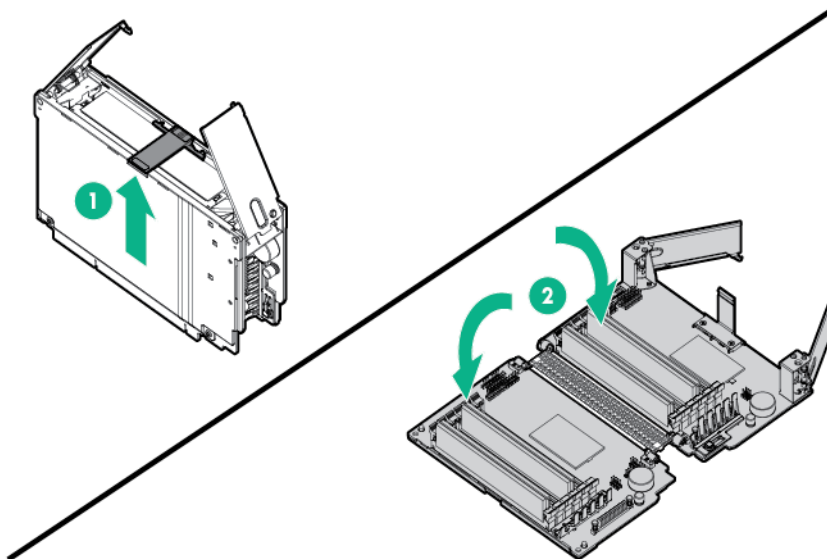
To remove the component:

1. Power down the server (on page [26](#)).
2. Remove all power:

- a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("[Processor memory drawer shipping screw locations](#)" on page 29).
4. Remove the processor memory drawer (on page 29).
5. Remove the processor memory drawer cover (on page 30).
6. Remove the memory cartridge containing the failed DIMM.

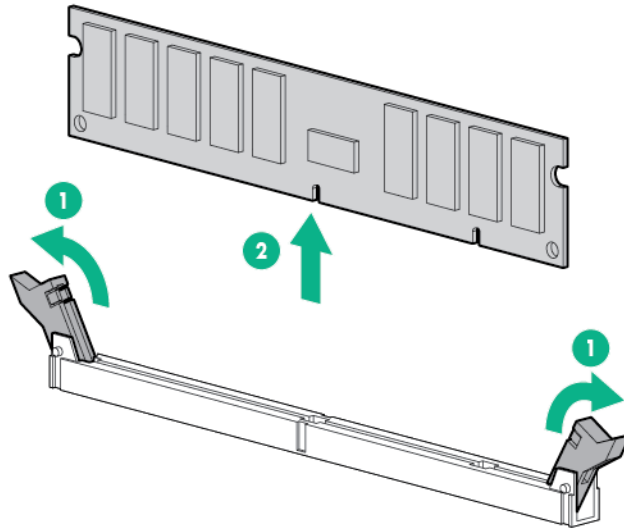


7. Open the memory cartridge cover.



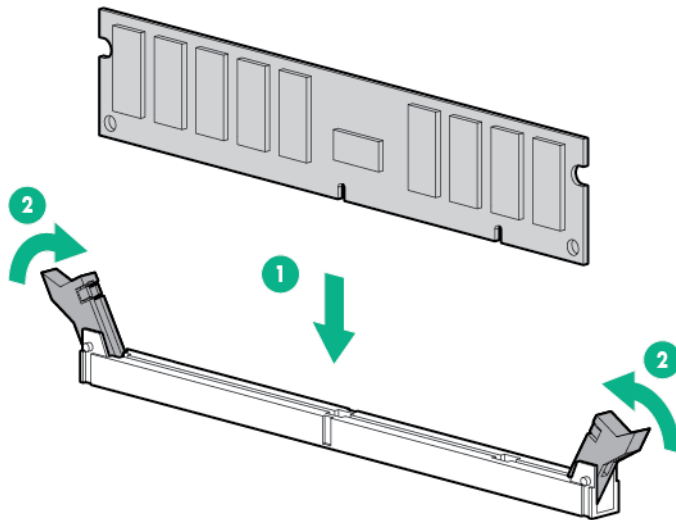
8. Remove the DIMM from the memory cartridge:
 - a. Open the DIMM slot latches.

- b. Remove the DIMM.



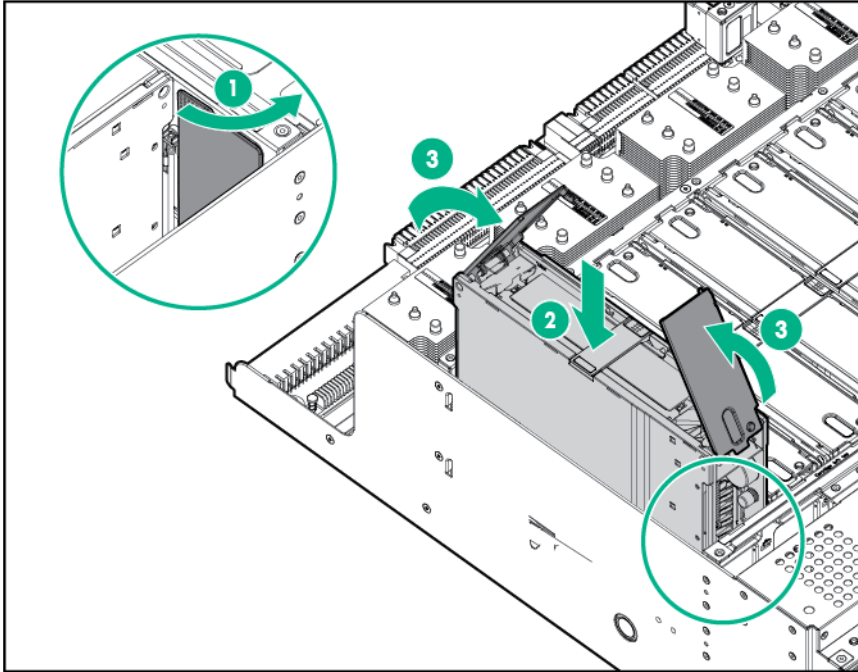
To replace the component:

1. Install the replacement DIMMs in the memory cartridge:
 - a. Open the DIMM slot latches.
 - b. Install the DIMM.



2. Close the memory cartridge cover.

3. Install the memory cartridge.



4. Install the processor memory drawer cover.
5. Install the processor memory drawer.
6. Connect each power cord to the server.
7. Connect each power cord to the power source.
8. Power up 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.



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.

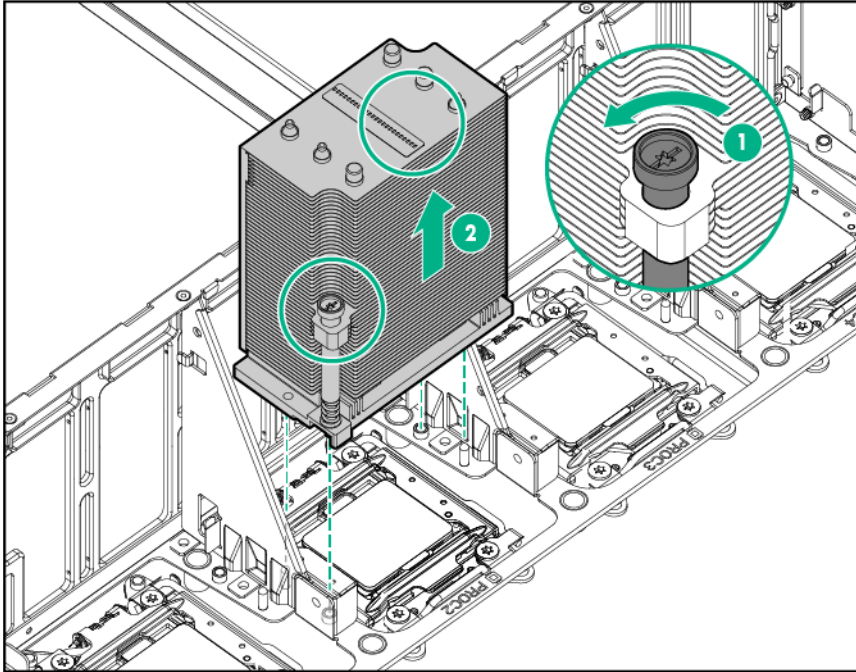


CAUTION: The heatsink thermal interface media is not reusable and must be replaced if the heatsink is removed from the processor after it has been installed.

To remove the component:

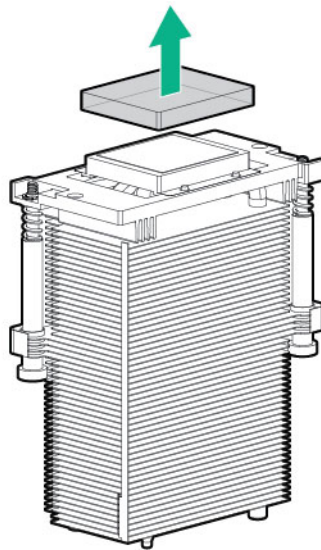
1. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
2. Remove the processor memory drawer shipping screws. ("Processor memory drawer shipping screw locations" on page 29)
3. Remove the processor memory drawer (on page 29).
4. Remove the processor memory drawer cover (on page 30).

5. Remove the heatsink.



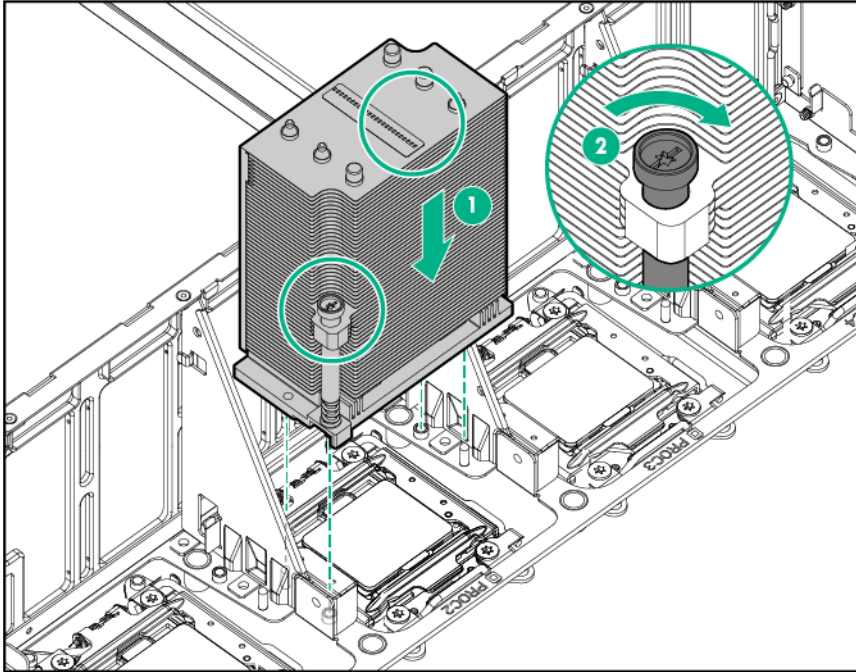
To replace the component:

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



CAUTION: To prevent the heatsink from tilting to one side during installation and removal procedures, use a diagonally opposite pattern (an “X” pattern) when loosening and tightening the two spring-loaded screws. To prevent the screws from breaking off, do not over-tighten the screws. A maximum torque of 0.45 N m (4 in-lb) is set for the system.

2. Install the heatsink.



3. Install the processor memory drawer cover.
4. Install the processor memory drawer.
5. Connect each power cord to the server.
6. Connect each power cord to the power source.
7. Power up the server.

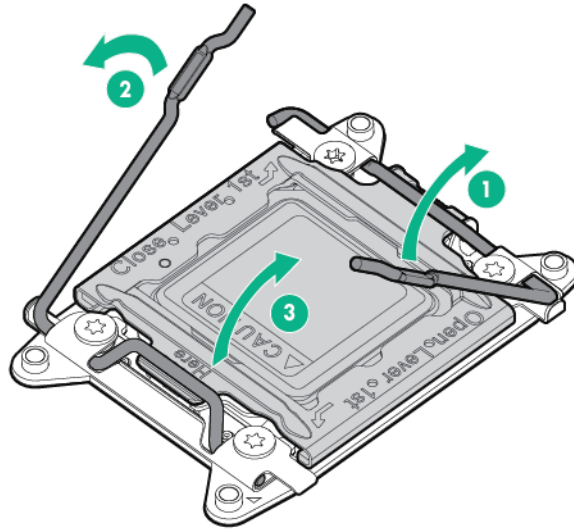
Processor

-
- WARNING:** To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.
-
- 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:** To prevent possible server malfunction and damage to the equipment, multiprocessor configurations must contain processors with the same part number.
-
- IMPORTANT:** Processor socket 1 must be populated at all times or the server does not function.
-

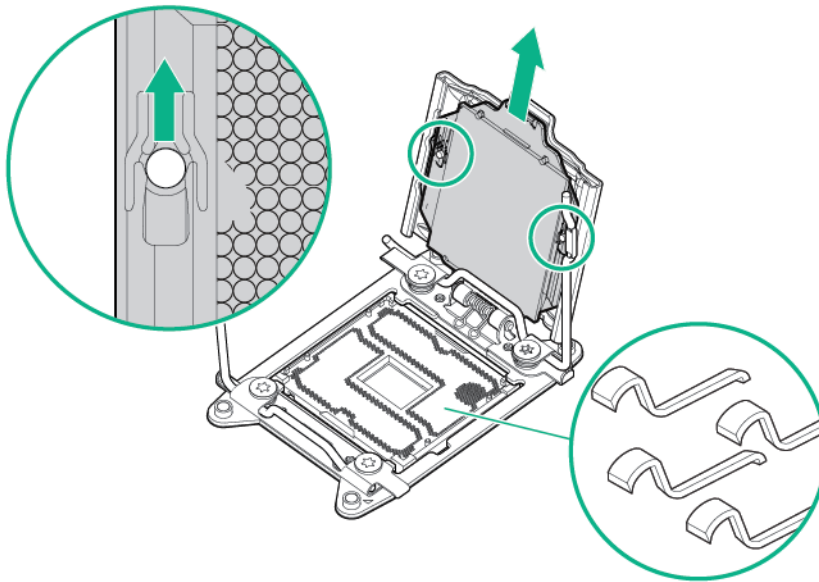
To remove the processor:

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the processor memory drawer (on page 29).

5. Remove the processor memory drawer cover (on page 30).
6. Remove the heatsink ("Heatsink" on page 56).
7. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



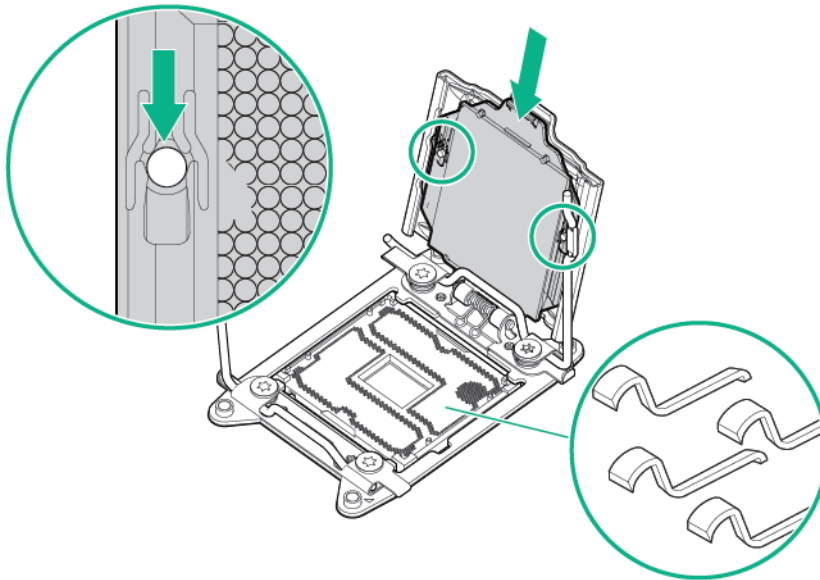
8. Remove the processor from the processor retaining bracket.



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

To replace the component:

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.**

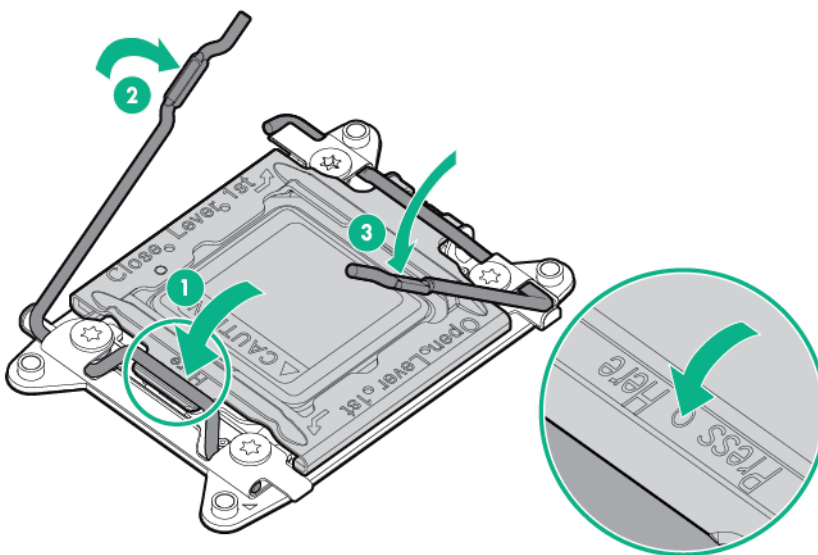


CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED. To avoid damage to the system board, do not touch the processor or the processor socket contacts.

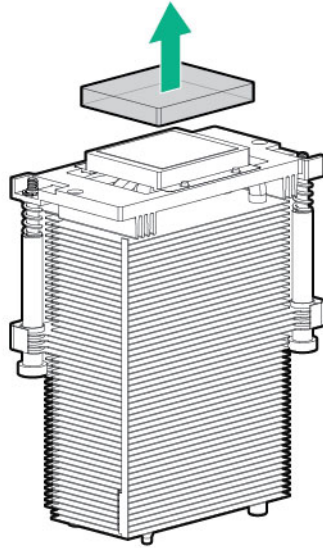
2. Close the processor retaining bracket. When the processor is installed properly inside the processor retaining bracket, the processor retaining bracket clears the flange on the front of the socket.

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.

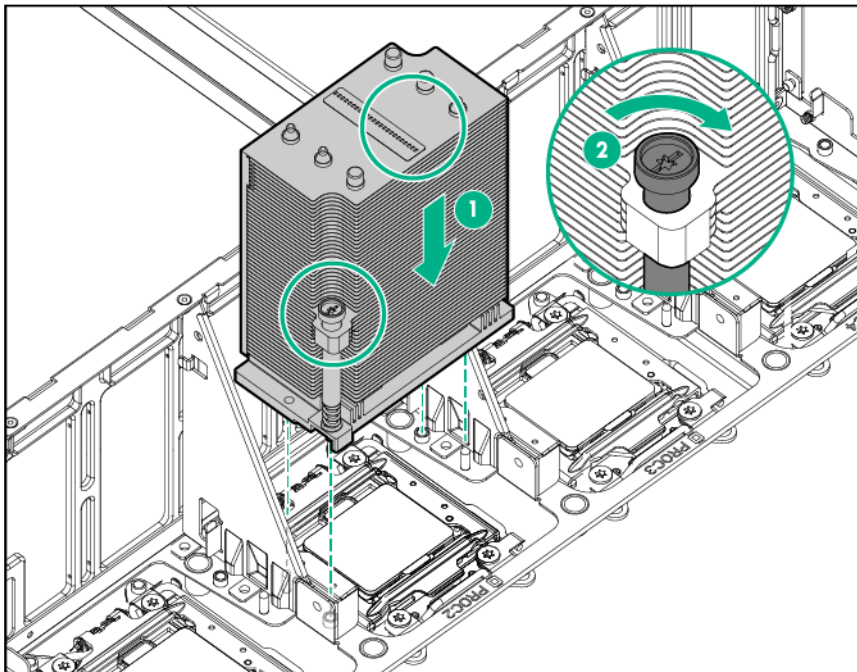


4. Remove the thermal interface protective cover from the heatsink.



CAUTION: To prevent the heatsink from tilting to one side during installation and removal procedures, use a diagonally opposite pattern (an “X” pattern) when loosening and tightening the two spring-loaded screws. To prevent the screws from breaking off, do not over-tighten the screws. A maximum torque of 0.45 N m (4 in-lb) is set for the system.

5. Install the heatsink.



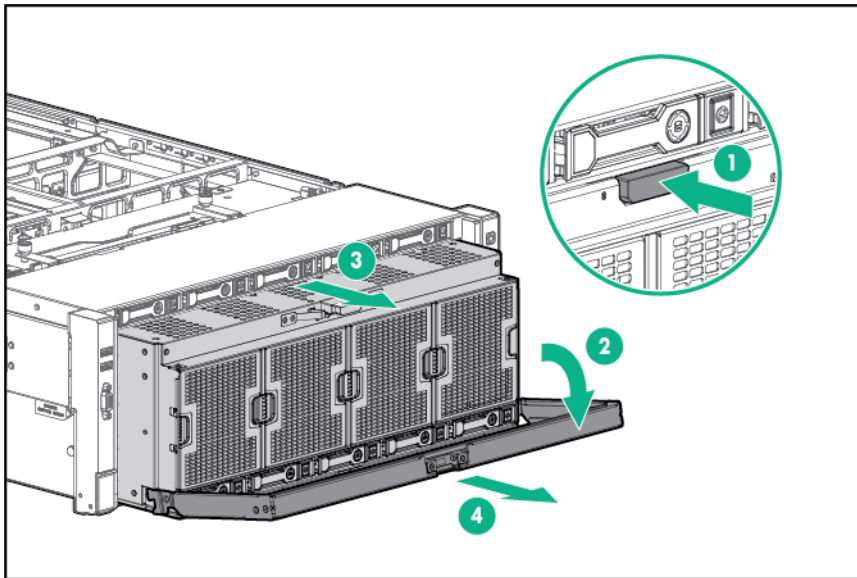
6. Install the processor memory drawer cover.
7. Install the processor memory drawer.
8. Connect each power cord to the server.
9. Connect each power cord to the power source.
10. Power up the server.

I/O board

When replacing the I/O board, be sure the system maintenance switch settings on the replacement board match the settings on the old board. For more information, see "System maintenance switch (on page 86)."

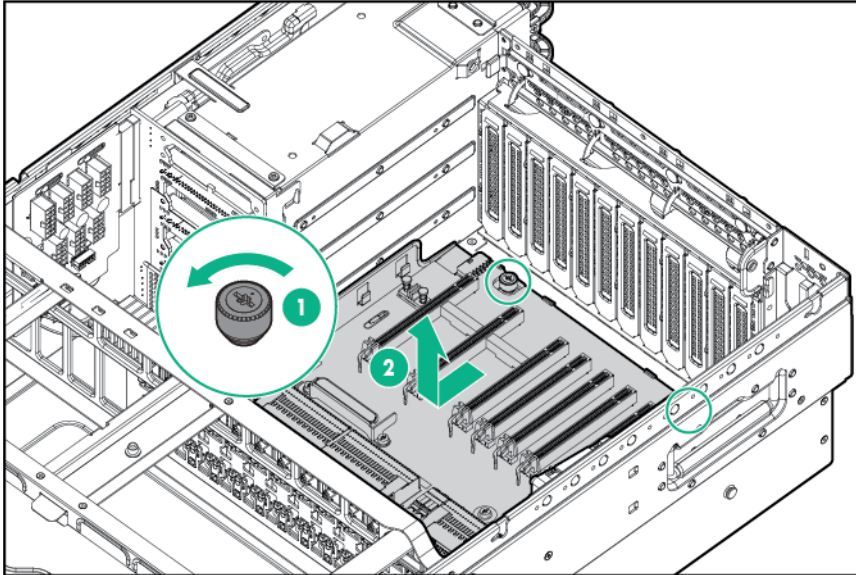
To remove the component:

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



6. Remove the SPI board (on page 30).
7. Remove the FlexibleLOM ("FlexibleLOM" on page 69).
8. Remove any expansion boards installed on the I/O board ("Expansion board" on page 42).
9. Disconnect all cables connected to the I/O board.

10. Remove the I/O board.



To replace the component, reverse the removal procedure.

Top SAS backplane

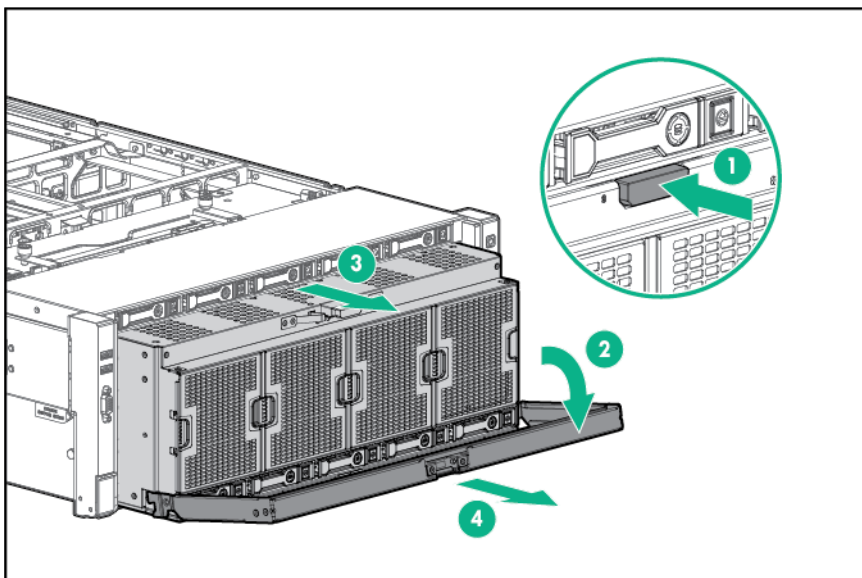


CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any system installation. Improper grounding can cause electrostatic discharge.

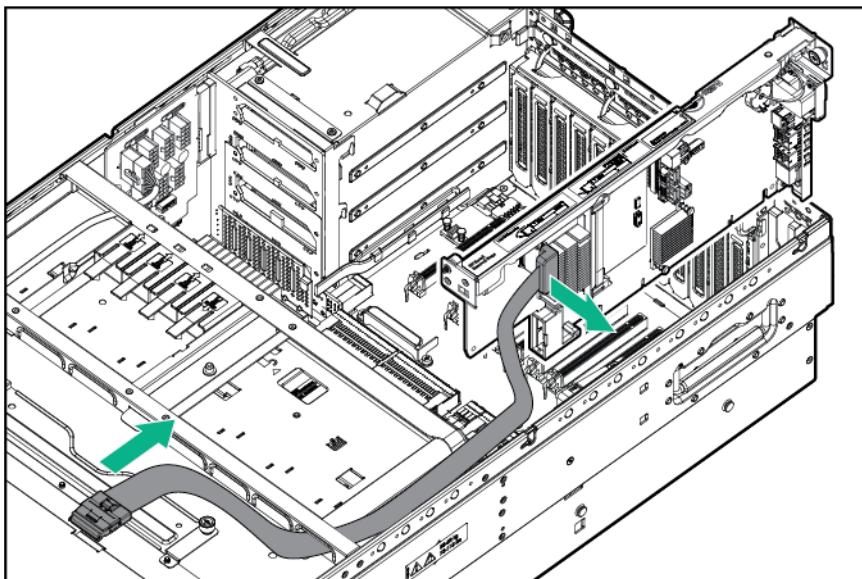
To remove the component:

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).

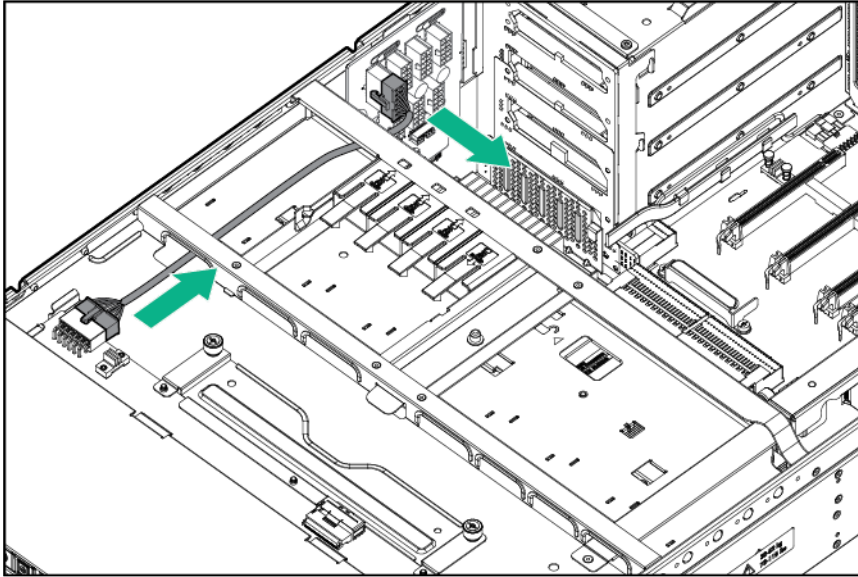
5. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



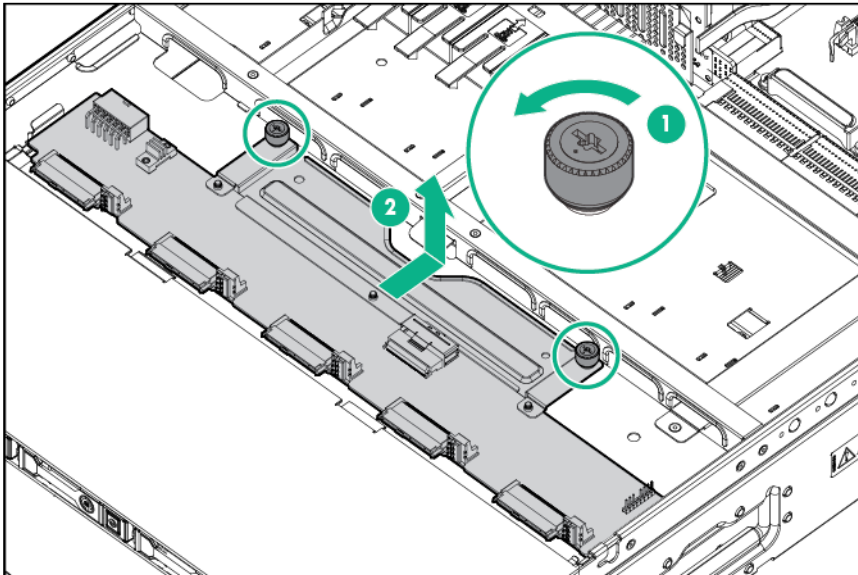
6. Remove the SPI board (on page 30).
7. Remove any drives installed in bays 6 to 10 ("Drive" on page 35).
8. Disconnect the data cable.



9. Disconnect the power cable.



10. Loosen the thumbscrews, and then remove the backplane.



To replace the component, reverse the removal procedure.

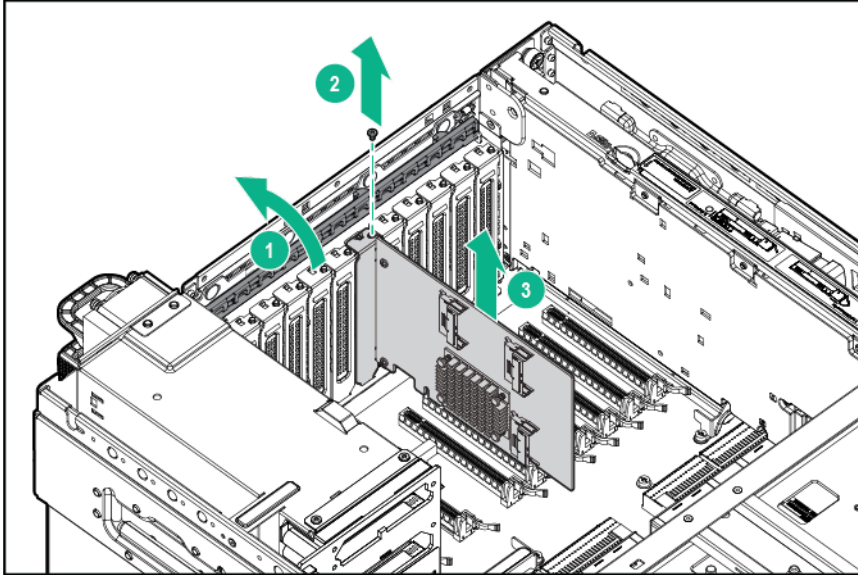
Express Bay Bridge card

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

To remove the component:

1. Power down the server (on page 26).
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 27).

4. Remove the access panel (on page 28).
5. Disconnect all cables from the card.
6. Remove the card.



To replace the component, reverse the removal procedure.

Express Bay backplane

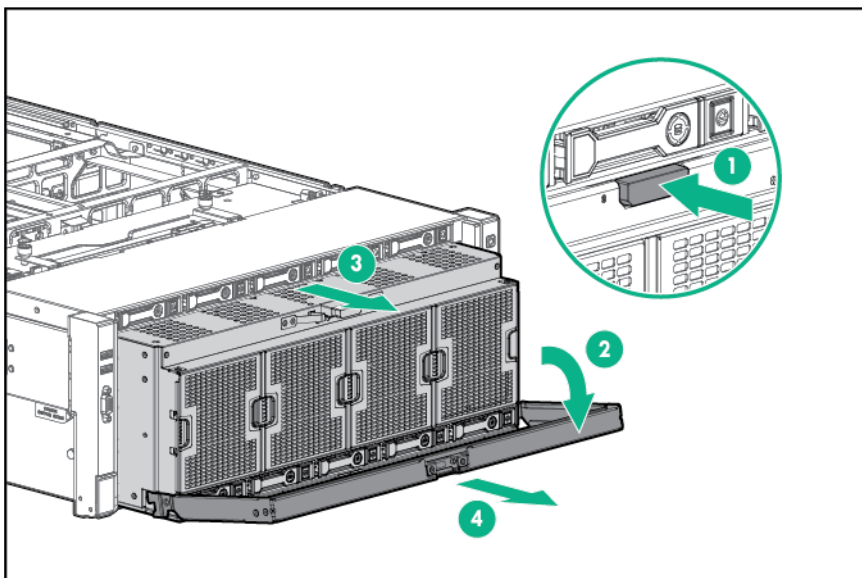


CAUTION: To prevent damage to electrical components, take the appropriate anti-static precautions before beginning any system installation. Improper grounding can cause electrostatic discharge.

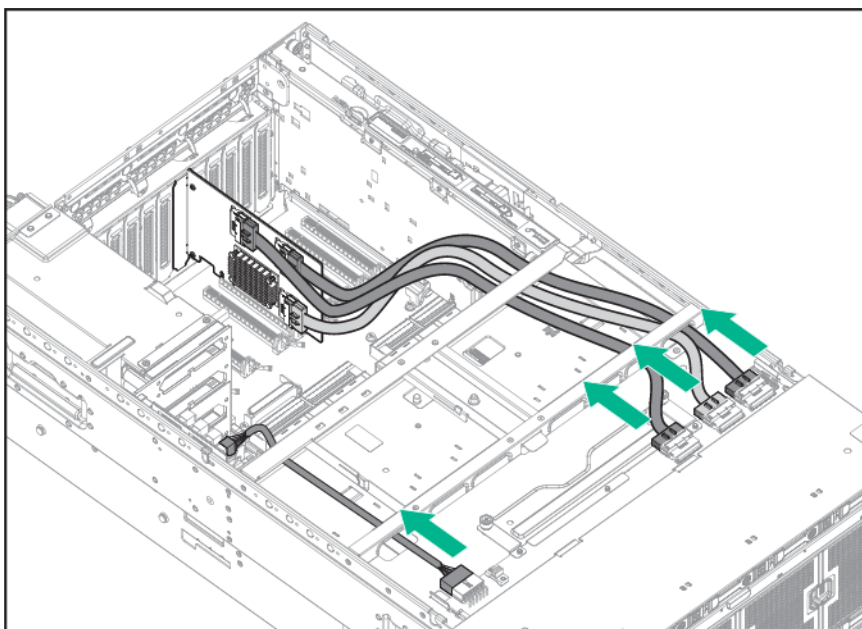
To remove the component:

1. Power down the server (on page 26).
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 27).
4. Remove the access panel (on page 28).

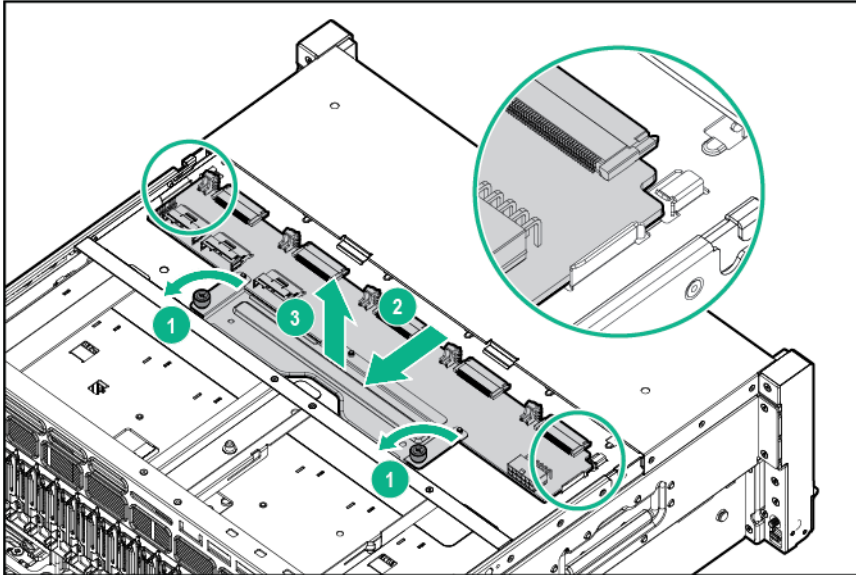
5. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



6. Remove any drives installed in bays 6 to 10 ("Drive" on page 35).
7. Disconnect all cables from the backplane.



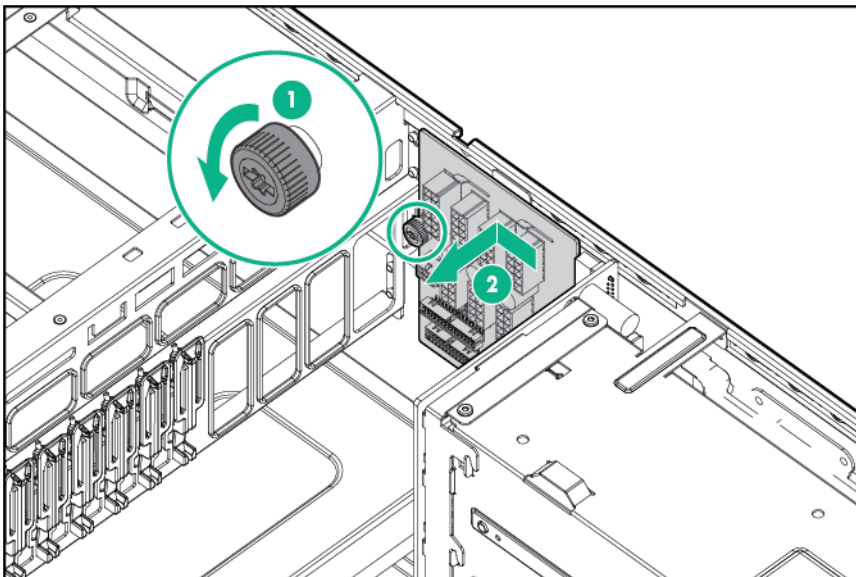
8. Loosen the thumbscrews, and then remove the backplane.



To replace the component, reverse the removal procedure.

Power daughter board

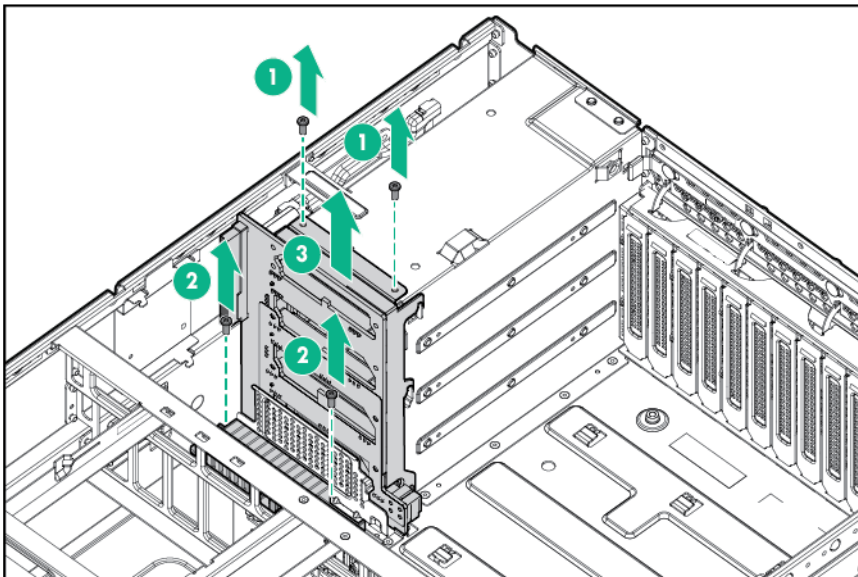
1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Disconnect the cables from the power daughter board.
6. Remove the power daughter board.



To replace the component, reverse the removal procedure.

Power supply backplane

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the processor memory drawer (on page 29).
5. Remove the access panel (on page 28).
6. Remove the power daughter card ("Power daughter board" on page 68).
7. Remove the I/O board ("I/O board" on page 62).
8. Do the following:
 - a. Using a Torx-10 screwdriver, remove the screws on the top of the backplane.
 - b. Using a Torx-15 screwdriver, remove the screws at the bottom of the backplane.
 - c. Remove the backplane.

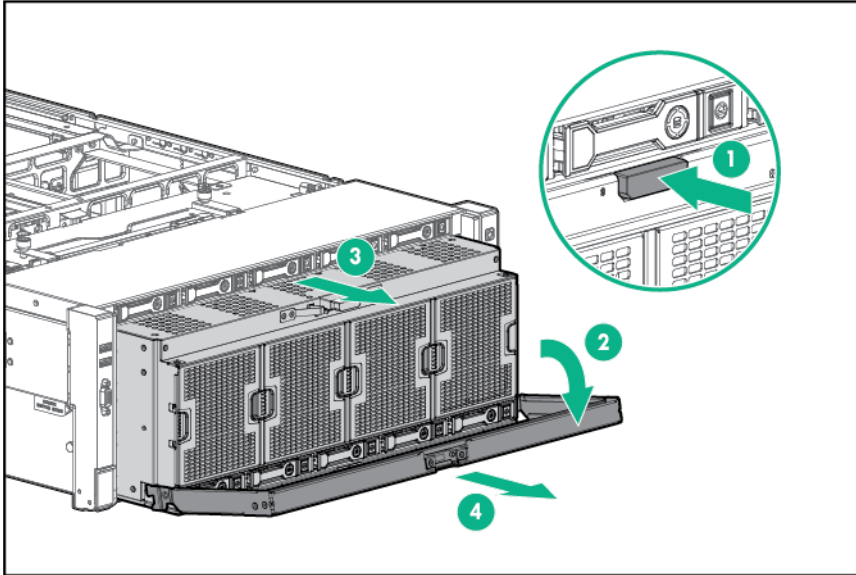


To replace the component, reverse the removal procedure.

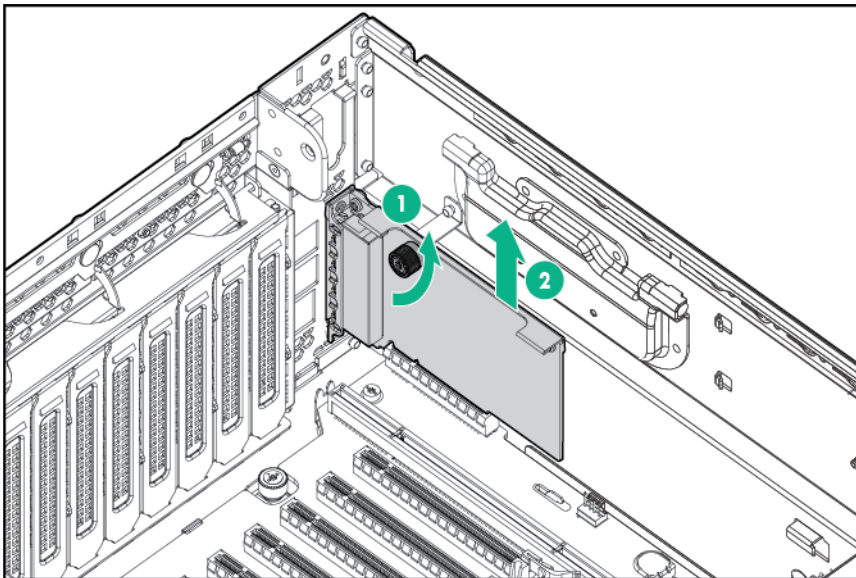
FlexibleLOM

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Remove any attached network cables.
4. Extend the server from the rack (on page 26).

5. Extend the processor memory drawer approximately 2.54 to 5.1 cm (1 to 2 inches).



6. Remove the SPI board (on page 30).
7. Loosen the thumbscrew, and then remove the FlexibleLOM from the server.



To replace the component, reverse the removal procedure.

Battery

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

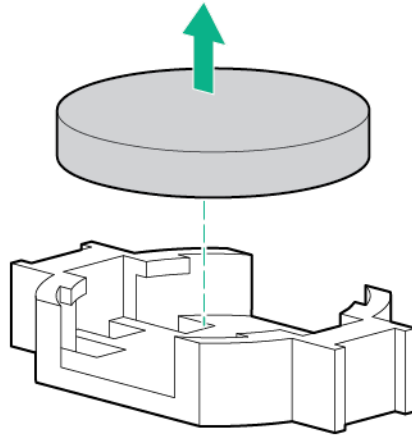


WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

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

To remove the component:

1. Power down the server (on page 26).
2. Remove all power:
 - a. Disconnect each power cord from the power source.
 - b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 26).
4. Remove the access panel (on page 28).
5. Remove the SPI board (on page 30).
6. Remove the battery.



IMPORTANT: Replacing the system board battery resets the system ROM to its default configuration. After replacing the battery, reconfigure the system through UEFI System Utilities.



IMPORTANT: To avoid a mismatch between boot modes, Hewlett Packard Enterprise recommends setting system maintenance switch 7 to the same BIOS boot mode the server is deployed in. Otherwise, the storage controller may not recognize the OS installed on the storage media.

For more information, see "System Maintenance Switch (on page 86)."

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.

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

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.

Flexible boot control

This feature enables you to do the following:

- Add Boot Options:

- Browse all FAT16 and FAT32 file systems.
- To add a new UEFI boot option, select an X64 UEFI application with an .EFI extension. For example, adding an OS boot loader or other UEFI application as a new UEFI boot option.
The new boot option is appended to the boot-order list. When you select a file, you are prompted to enter the boot option description. This description, and any optional data to be passed to an .EFI application, is then displayed in the boot menu.
- Boot to System Utilities
After pre-POST, the boot options screen appears. During this time, you can access the UEFI System Utilities by pressing the **F9** key.
- Choose between supported modes:
 - Legacy BIOS Boot Mode
 - UEFI Boot Mode



IMPORTANT: If the default boot mode settings are different than the user-defined settings, the system may not boot the OS installation if the defaults are restored. To avoid this issue, use the User Defined Defaults feature in UEFI System Utilities to override the factory default settings.

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>).

Restoring and customizing configuration settings

You can reset all configuration settings to the factory default settings, or you can restore and use the system default configuration settings.

You can also configure default settings as necessary, and then save the configuration as the custom default configuration. When the system loads the default settings, it uses the custom default settings instead of the factory defaults.

Secure Boot configuration

Secure Boot is integrated in the UEFI specification on which the Hewlett Packard Enterprise implementation of UEFI is based. Secure Boot is implemented in the BIOS and does not require special hardware. Secure Boot ensures that each component launched during the boot process is digitally signed. Secure Boot also ensures that the signature is validated against a set of trusted certificates embedded in the UEFI BIOS. Secure Boot validates the software identity of the following components in the boot process:

- UEFI drivers loaded from PCIe cards
- UEFI drivers loaded from mass storage devices
- Preboot UEFI shell applications
- OS UEFI boot loaders

Once enabled, only firmware components and operating systems with boot loaders that have an appropriate digital signature can execute during the boot process. Only operating systems that support Secure Boot and have an EFI boot loader signed with one of the authorized keys can boot. For more information about supported operating systems, see the UEFI System Utilities and Shell release notes for your server on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/UEFI/docs>).

A physically present user can customize the certificates embedded in the UEFI BIOS by adding or removing their own certificates.

When Secure Boot is enabled, the System Maintenance Switch does not restore all manufacturing defaults when set to the ON position. For security reasons, the following are not restored to defaults when the System Maintenance Switch is in the ON position:

- Secure Boot is not disabled and remains enabled.
- The Boot Mode remains in UEFI Boot Mode even if the default boot mode is Legacy Boot Mode.
- The Secure Boot Database is not restored to its default state.
- iSCSI Software Initiator configuration settings are not restored to defaults.

Embedded UEFI shell

The system BIOS in all ProLiant Gen9 servers includes an Embedded UEFI Shell in the ROM. The UEFI Shell environment provides an API, a command-line prompt, and a set of CLIs that allow scripting, file manipulation, and system information. These features enhance the capabilities of the UEFI System Utilities.

For more information, see the following documents:

- *UEFI Shell User Guide for HPE ProLiant Gen9 Servers* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/UEFI/docs>)
- *UEFI Shell Specification* on the UEFI website (<http://www.uefi.org/specifications>)

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>).

iLO RESTful API support for UEFI

The ProLiant Gen9 servers include support for a UEFI-compliant System BIOS, along with UEFI System Utilities and Embedded UEFI Shell preboot environments. ProLiant Gen9 servers also support configuring the UEFI BIOS settings using the iLO RESTful API, a management interface that server management tools can use to perform configuration, inventory, and monitoring of a ProLiant server. The iLO RESTful API uses basic HTTPS operations (GET, PUT, POST, DELETE, and PATCH) to submit or return JSON-formatted data with iLO web server.

For more information about the iLO RESTful API and the RESTful Interface Tool, see the Hewlett Packard Enterprise website (<http://www.hpe.com/info/restfulinterface/docs>).

Re-entering the server serial number and product ID

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

1. During the server startup sequence, press the **F9** key to access UEFI System Utilities.
2. Select **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.

The server automatically reboots.

HPE ProLiant Pre-boot Health Summary

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

For additional information, see the following documents:

- *iLO 4 User Guide* — See the Hewlett Packard Enterprise website (<http://www.hpe.com/info/ilo/docs>).
- *ProLiant Gen9 Troubleshooting Guide, Volume I: Troubleshooting* — See "Troubleshooting Resources (on page 72)."

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.

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 76) 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.

Active Health System

The Active Health System monitors and records changes in the server hardware and system configuration.

The Active Health System provides:

- Continuous health monitoring of over 1600 system parameters
- Logging of all configuration changes
- Consolidated health and service alerts with precise time stamps
- Agentless monitoring that does not affect application performance

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

For more information, see the following documents:

- *iLO User Guide* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/ilo/docs>)
- *Intelligent Provisioning User Guide* on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/intelligentprovisioning/docs>)

Active Health System data collection

The Active Health System does not collect information about your operations, finances, customers, employees, or partners.

Examples of data that is collected:

- Server model and serial number
- Processor model and speed
- Storage capacity and speed
- Memory capacity and speed
- Firmware/BIOS and driver versions and settings

The Active Health System does not parse or change operating system data from third-party error event log activities (for example, content created or passed through the operating system).

Active Health System log

The data collected by the Active Health System is stored in the Active Health System Log. The data is logged securely, isolated from the operating system, and separate from customer data.

When the Active Health System Log is full, new data overwrites the oldest data in the log.

It takes less than 5 minutes to download the Active Health System Log and send it to a Hewlett Packard Enterprise support professional to help you resolve an issue.

When you download and send Active Health System data to Hewlett Packard Enterprise, you agree to have Hewlett Packard Enterprise use the data for analysis, technical resolution, and quality improvements. The data that is collected is managed according to the privacy statement, available on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/privacy>).

Integrated Management Log

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

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

- From within HPE SIM
- From within operating system-specific IML viewers:
 - For Windows: IML Viewer
 - For Linux: IML Viewer Application
- From within the iLO 4 web interface
- From within Insight Diagnostics (on page 76)

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.

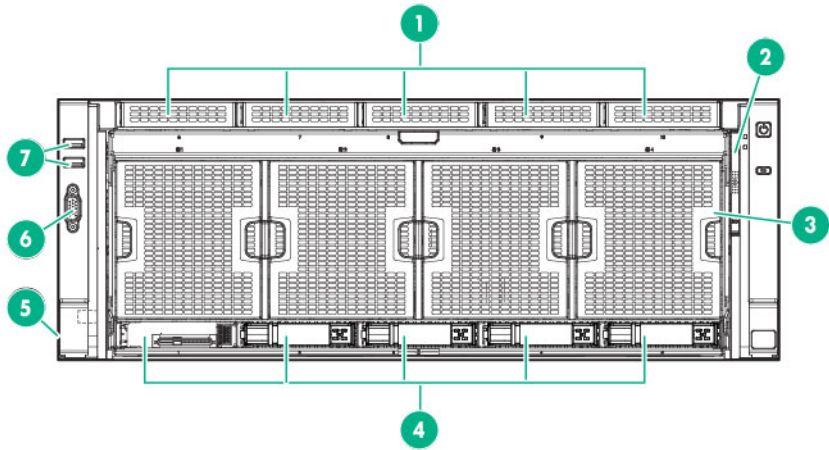
For additional security, external USB functionality can be disabled through USB options in UEFI System Utilities.

Internal USB functionality

An internal USB connector is available for use with security key devices and USB drive keys. This solution provides for use of a permanent USB key installed in the internal connector, avoiding issues of clearance on the front of the rack and physical access to secure data.

Component identification

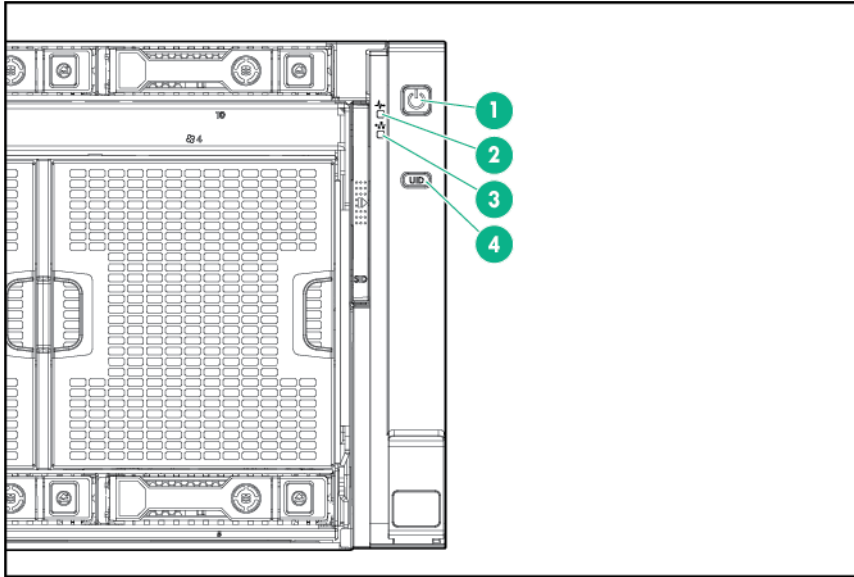
Front panel components



Item	Description
1	Drive bays 6 to 10*
2	Systems Insight Display
3	Fans 1 to 4
4	Drive bays 1 to 5
5	Discovery services connectors
6	Video connector
7	USB connectors (2)

* Drives installed in these bays require the optional drive backplane and cables.

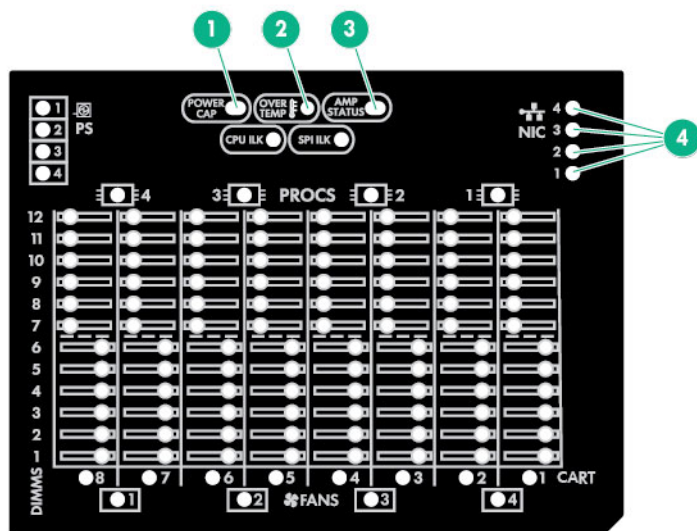
Front panel LEDs and buttons



Item	Description	Status
1	Power On/Standby button and system power LED	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Solid green = Normal • Flashing amber = System degraded • Flashing red (1 Hz/cycle per sec) = System critical • Fast-flashing red (4 Hz/cycles per sec) = System power fault
3	Aggregate NIC LED	<ul style="list-style-type: none"> • Solid green = Link to network • Flashing green = Linked with activity on the network • Off = No network connection
4	UID button/link	<ul style="list-style-type: none"> • Solid blue = Activated • Flashing blue (1 Hz/cycle per sec) = Remote management or firmware upgrade in progress

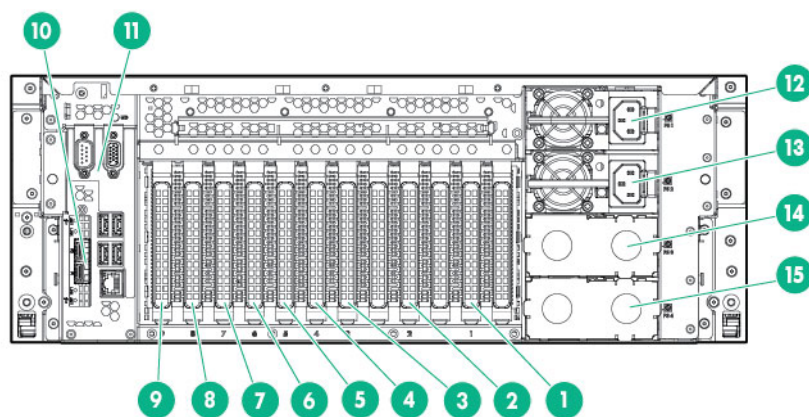
Systems Insight Display

The Systems Insight Display LEDs represent the server and component layout.



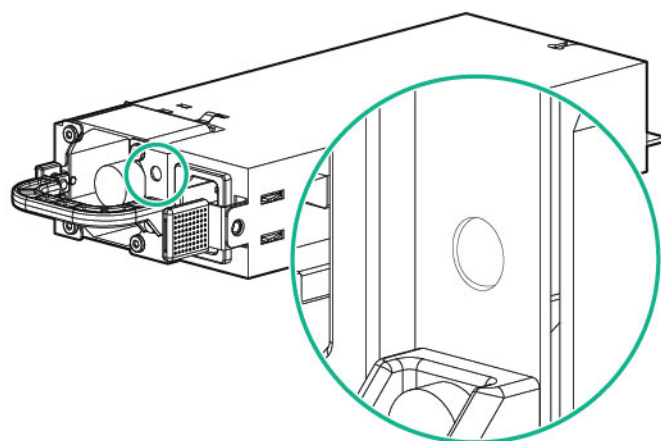
Item	LED	Description
1	Power cap	<ul style="list-style-type: none">Green = System on or requesting power onFlashing amber = Power on deniedOff = Standby
2	Overtemperature	<ul style="list-style-type: none">Off = NormalAmber = Failed or missing component
3	AMP status	<ul style="list-style-type: none">Off = No protectionGreen = Protection enabledAmber = Memory failure occurredAmber (flashing) = Memory configuration error
4	NIC activity/link	<ul style="list-style-type: none">Green = Linked to networkGreen (flashing) = Linked with activity on the networkOff = No network connection
	All other LEDs	<ul style="list-style-type: none">Off = NormalAmber = Failed or missing component

Rear panel components



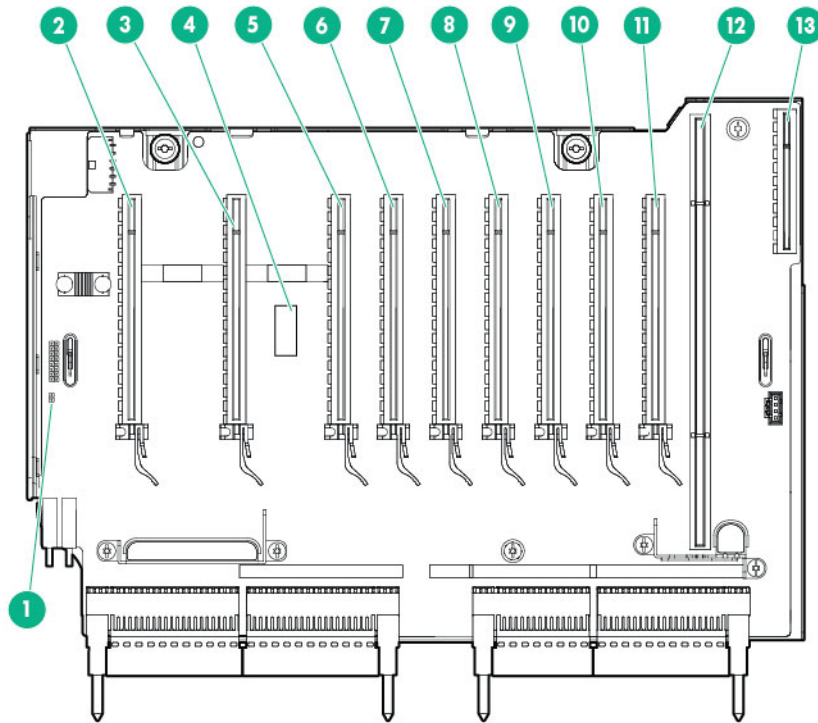
Item	Description
1	Expansion board slot 1
2	Expansion board slot 2
3	Expansion board slot 3
4	Expansion board slot 4
5	Expansion board slot 5
6	Expansion board slot 6
7	Expansion board slot 7
8	Expansion board slot 8
9	Expansion board slot 9
10	FlexibleLOM slot
11	SPI board
12	Power supply 1
13	Power supply 2
14	Power supply bay 3
15	Power supply bay 4

Power supply LED

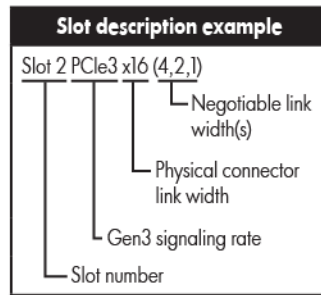


Fail LED-amber (Located on the SID)	Power LED-green (Located on the power supply)	Front external health LED (Located on the front panel)	Status
Off	Off	Off	No AC power to power supply units
Off	On	Green	<ul style="list-style-type: none">• AC present/Standby outputs on• Power supply DC outputs on and OK
On	Off	<ul style="list-style-type: none">• Amber (flashing) – redundant• Red (flashing) – non-redundant	Power supply failure (includes over voltage and over temperature)

I/O board components



Item	Description
1	NMI jumper
2	Slot 1 PCIe3 x16 (16, 8, 4, 2, 1 electrical)
3	Slot 2 PCIe3 x16 (16, 8, 4, 2, 1 electrical)
4	System maintenance switch
5	Slot 3 PCIe3 x16 (16, 8, 4, 2, 1 electrical)
6	Slot 4 PCIe3 x16 (8, 4, 2, 1 electrical)
7	Slot 5 PCIe3 x16 (8, 4, 2, 1 electrical)
8	Slot 6 PCIe3 x16 (16, 8, 4, 2, 1 electrical)
9	Slot 7 PCIe3 x16 (8, 4, 2, 1 electrical)
10	Slot 8 PCIe3 x16 (8, 4, 2, 1 electrical)
11	Slot 9 PCIe3 x16 (16, 8, 4, 2, 1 electrical)
12	SPI board connector
13	FlexibleLOM connector



System maintenance switch

The system maintenance switch (SW1) is a twelve-position switch that is used for system configuration. The default position for all twelve positions is Off.

Switch	Settings
1	<ul style="list-style-type: none"> Off = iLO security enabled On = iLO security disabled
2	<ul style="list-style-type: none"> Off = Normal operation On = The BIOS configuration is locked.
5	<ul style="list-style-type: none"> Off = Normal operation On = Password disabled
6	<ul style="list-style-type: none"> Off = Normal operation On = Clear CMOS and RAM
7*	<ul style="list-style-type: none"> Off = Set factory default boot mode to UEFI. On = Set factory default boot mode to Legacy.
3, 4, 8, 9, 10, 11, 12	Reserved

* The default position for switch 7 is set in the factory shipping configuration. This switch setting determines the BIOS mode the system defaults to when configuration memory is cleared to factory defaults. The User defined defaults setting in UEFI System Utilities supersedes this switch.



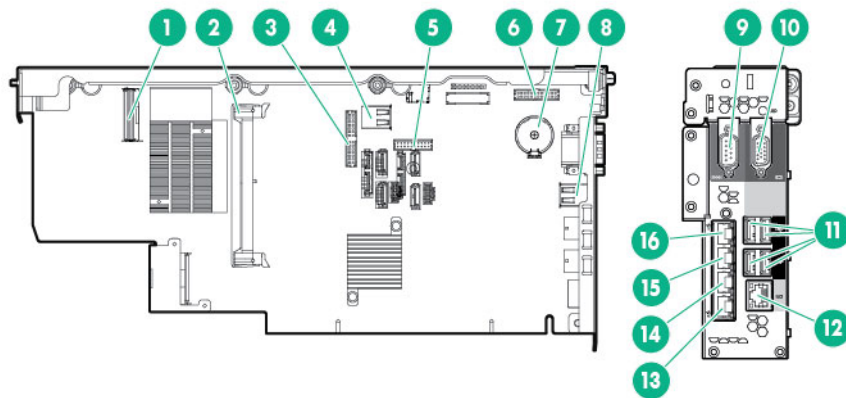
IMPORTANT: To avoid a mismatch between boot modes, Hewlett Packard Enterprise recommends setting system maintenance switch 7 to the same BIOS boot mode the server is deployed in. Otherwise, the storage controller may not recognize the OS installed on the storage media.

NMI jumper

The NMI jumper allows administrators to perform a memory dump before performing a hard reset. Crash dump analysis is an essential part of eliminating reliability problems, such as hangs or crashes in OSs, device drivers, and applications. Many crashes can freeze a system, requiring you to do a hard reset. Resetting the system erases any information that would support root cause analysis.

Systems running Microsoft® Windows® experience a blue-screen trap when the OS crashes. When this happens, Microsoft® recommends that system administrators perform an NMI event by temporarily shorting the NMI header with a jumper. The NMI event enables a hung system to become responsive again.

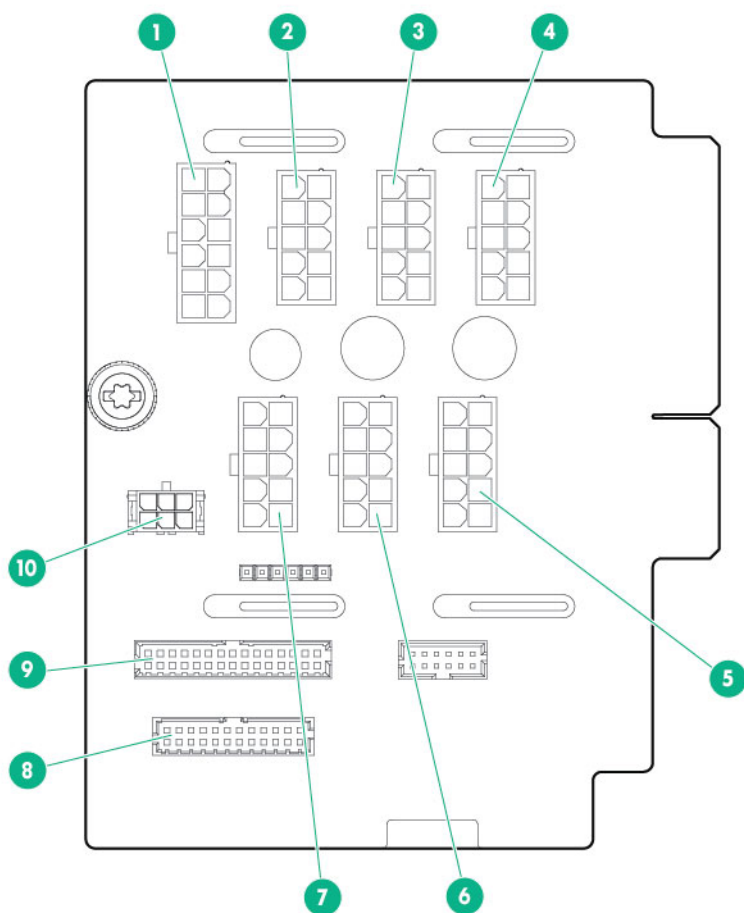
SPI board components



Item	Description
1	Top SAS backplane connector
2	SAS cache module connector
3	Systems Insight Display Power/UID connector
4	Internal USB connector
5	TPM connector
6	Front video/USB connector
7	Battery
8	Internal USB connector
9	Serial connector
10	Video connector
11	USB connectors (4)
12	iLO connector
13	FlexibleLOM port 1*
14	FlexibleLOM port 2*
15	FlexibleLOM port 3*
16	FlexibleLOM port 4*

*Port configuration is dependent on the installed FlexibleLOM and might differ from what is shown in the illustration.

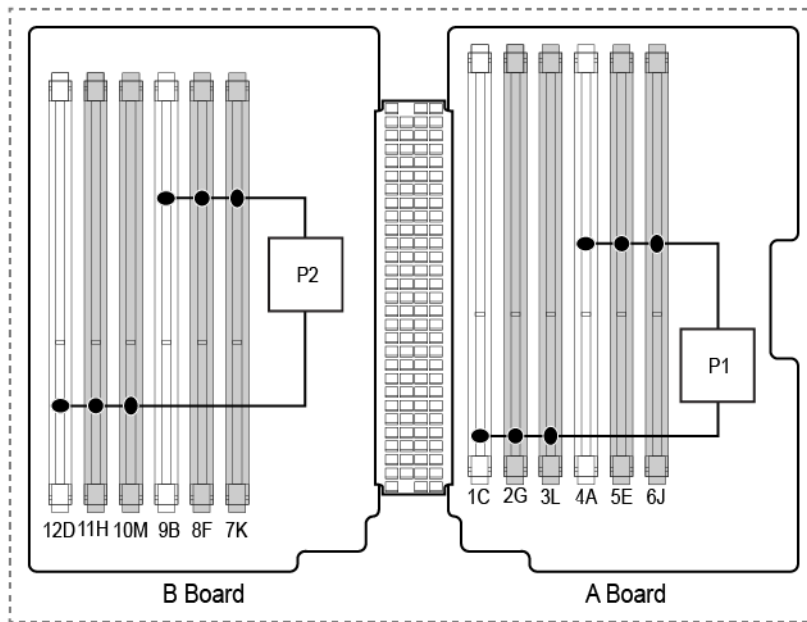
Power daughter board components



Item	Description
1	Upper SAS backplane power connector
2	I/O board auxiliary power connector
3	I/O board auxiliary power connector
4	I/O board auxiliary power connector
5	I/O board auxiliary power connector
6	I/O board auxiliary power connector
7	I/O board auxiliary power connector
8	Power backplane data connector
9	Power backplane data connector
10	I/O board power connector

DIMM slot locations

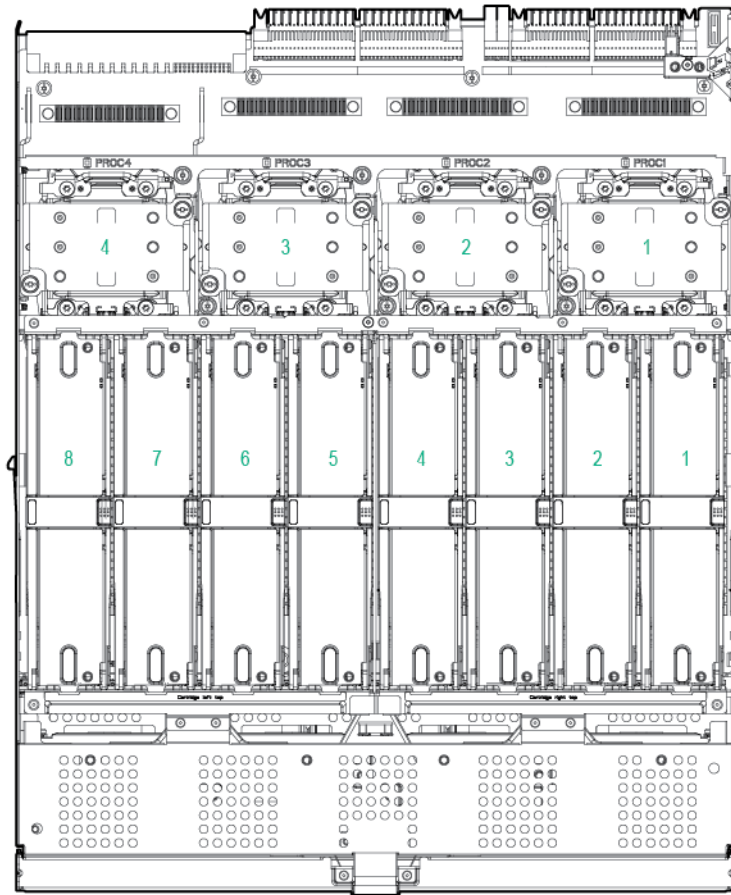
Each memory cartridge contains 12 DIMM slots. Install DIMMs in pairs in alphabetical order.



For installation guidelines, see the server user guide.

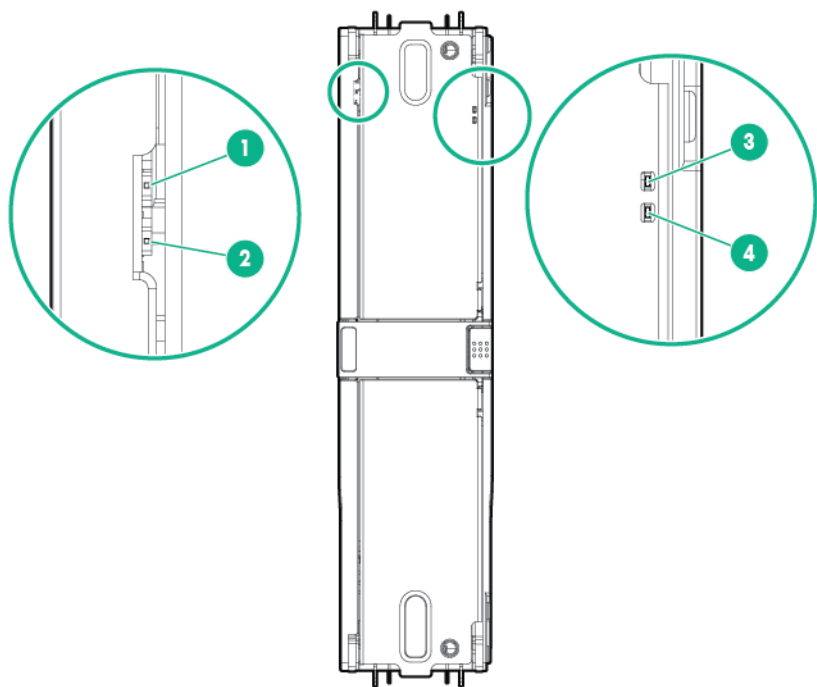
Processors and memory cartridges

The processor memory drawer contains 4 processor sockets and 8 memory cartridges.



For DIMM numbering and installation guidelines, see the server user guide.

DIMM fault LEDs

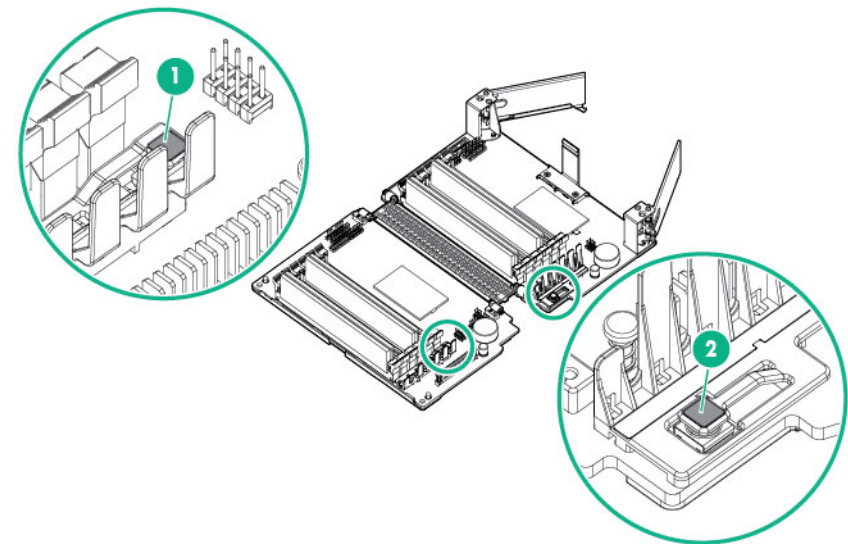


Item	Description	Status
1	Power fault LED (board B)	<ul style="list-style-type: none"> Off = The DIMMs are operating normally. Solid amber = One or more DIMMs in the cartridge is experiencing a power fault condition.
2	General board fault LED (board B)	<ul style="list-style-type: none"> Off = The DIMMs are operating normally. Solid amber = One or more DIMMs in the cartridge is experiencing a general fault condition.
3	General board fault LED (board A)	<ul style="list-style-type: none"> Off = The DIMMs are operating normally. Solid amber = One or more DIMMs in the cartridge is experiencing a general fault condition.
4	Power fault LED (board A)	<ul style="list-style-type: none"> Off = The DIMMs are operating normally. Solid amber = One or more DIMMs in the cartridge is experiencing a power fault condition.

To determine which DIMMs are experiencing a fault condition, see "DIMM fault identification button (on page 92)."

DIMM fault identification button

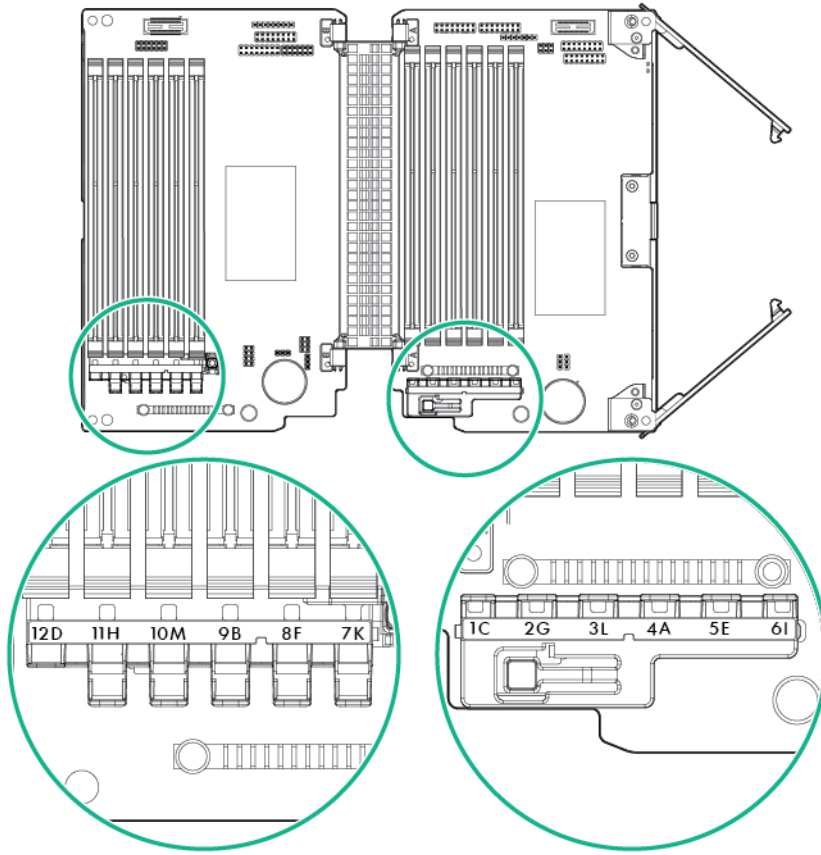
When the DIMM fault LEDs (on page 91) indicate that a DIMM is experiencing an error, press the DIMM fault identification button to illuminate the LED below the affected DIMM ("Memory error LEDs" on page 93).



Item	Description
1	Board B DIMM fault identification button
2	Board A DIMM fault identification button

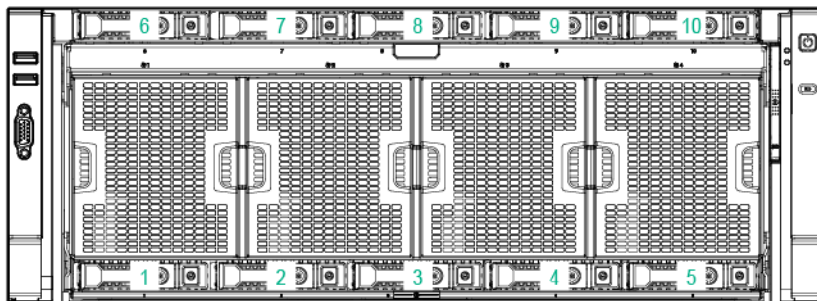
Memory error LEDs

When the DIMM fault LEDs (on page 91) indicate that a DIMM is experiencing an error, the memory error LED below the affected DIMM illuminates red when the DIMM fault identification button (on page 92) is pressed.

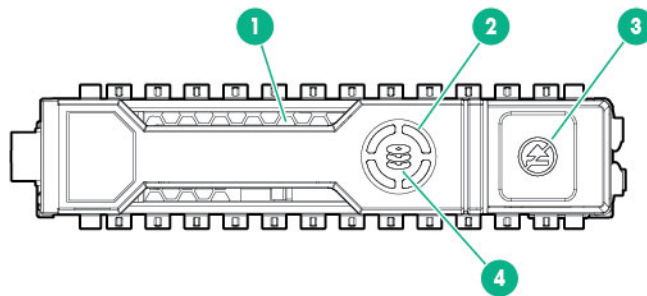


Drive bay numbering

Drives installed in bays 6 to 10 require the optional SAS backplane or Express Bay enablement option.



Hot-plug drive LED definitions

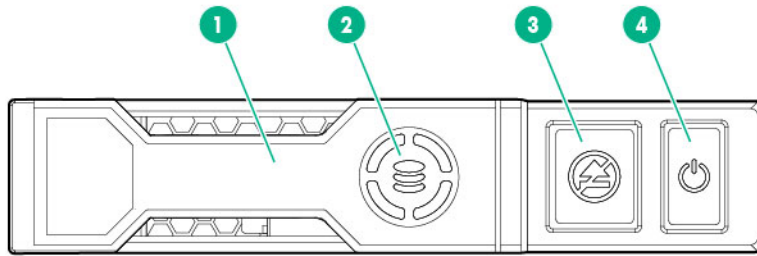


Item	LED	Status	Definition
1	Locate	Solid blue	The drive is being identified by a host application.
		Flashing blue	The drive carrier firmware is being updated or requires an update.
2	Activity ring	Rotating green	Drive activity
		Off	No drive activity
3	Do not remove	Solid white	Do not remove the drive.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

NVMe SSD components

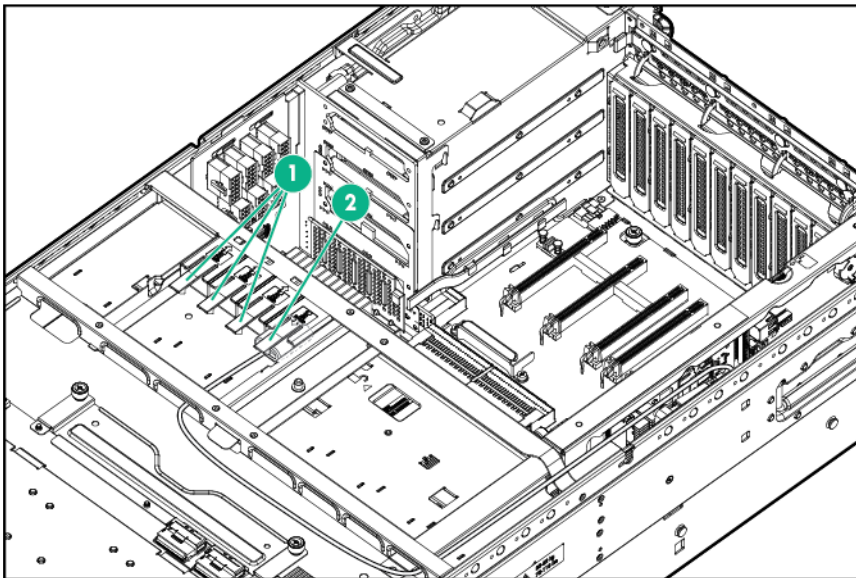
The NVMe SSD is a PCIe bus device. A device attached to a PCIe bus cannot be removed without allowing the device and bus to complete and cease the signal/traffic flow.

⚠ 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

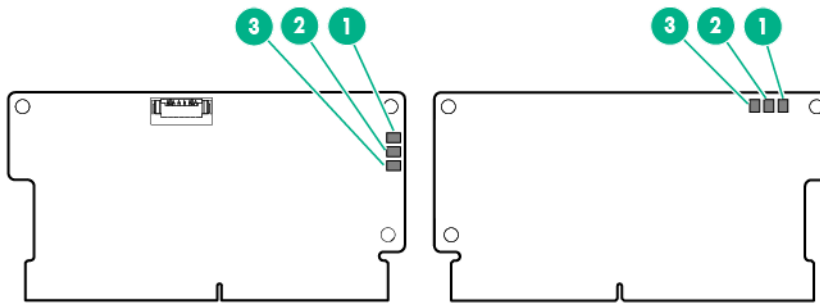
FBWC capacitor slots



Item	Description
1	Slots 2 to 4—Connect to optional SAS controllers
2	Slot 1—Connects to the SPI board

FBWC module LEDs

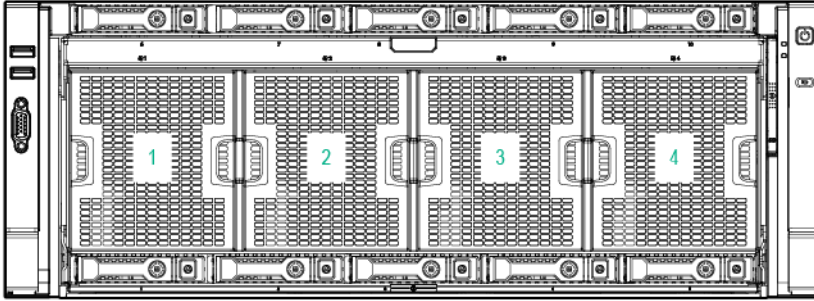
The FBWC module has three single-color LEDs (one amber and two green). The LEDs are duplicated on the reverse side of the cache module to facilitate status viewing.



1 - Amber	2 - Green	3 - Green	Interpretation
Off	Off	Off	The cache module is not powered.
Off	Flashing once every 2 seconds	Flashing once every 2 seconds	The cache microcontroller is executing from within its boot loader and receiving new flash code from the host controller.
Off	Flashing once per second	Flashing once per second	The cache module is powering up, and the capacitor pack is charging.
Off	Off	Flashing once per second	The cache module is idle, and the capacitor pack is charging.
Off	Off	On	The cache module is idle, and the capacitor pack is charged.
Off	On	On	The cache module is idle, the capacitor pack is charged, and the cache contains data that has not yet been written to the drives.
Off	Flashing once per second	Off	A backup of the DDR content on the cache module is in progress.
Off	On	Off	The current backup is complete with no errors.
Flashing once per second	Flashing once per second	Off	The current backup failed, and data has been lost.
Flashing once per second	Flashing once per second	On	A power error occurred during the previous or current boot. Data may be corrupt.
Flashing once per second	On	Off	An overtemperature condition exists.
Flashing twice per second	Flashing twice per second	Off	The capacitor pack is not attached.
Flashing twice per second	Flashing twice per second	On	The capacitor has been charging for 10 minutes, but has not reached sufficient charge to perform a full backup.
On	On	Off	The current backup is complete, but power fluctuations occurred during the backup.
On	On	On	The cache module microcontroller has failed.

Fans

Fan locations



Fan guidelines

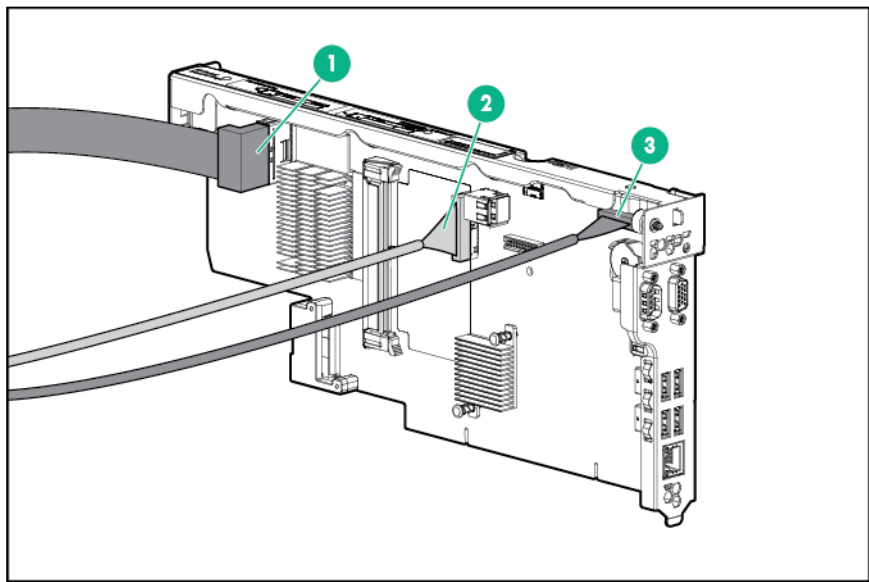
The server has 4 fan modules with 2 rotors in each module. The fan modules operate in a 7+1 configuration.

Observe the following guidelines:

- If one rotor fails, the system runs with the fans in a degraded condition.
- If a second rotor fails, either in the same fan module or a different one, the system performs an OS type shutdown if the health OS agents are loaded. The chance of two rotors in the same module failing is low.
- If a fan module is missing, a message appears indicating that cooling is not adequate. Then, the system starts to shut down.
- If you remove a hot-plug fan module, you have approximately 60 seconds to replace the module. Otherwise, the system starts to shut down.

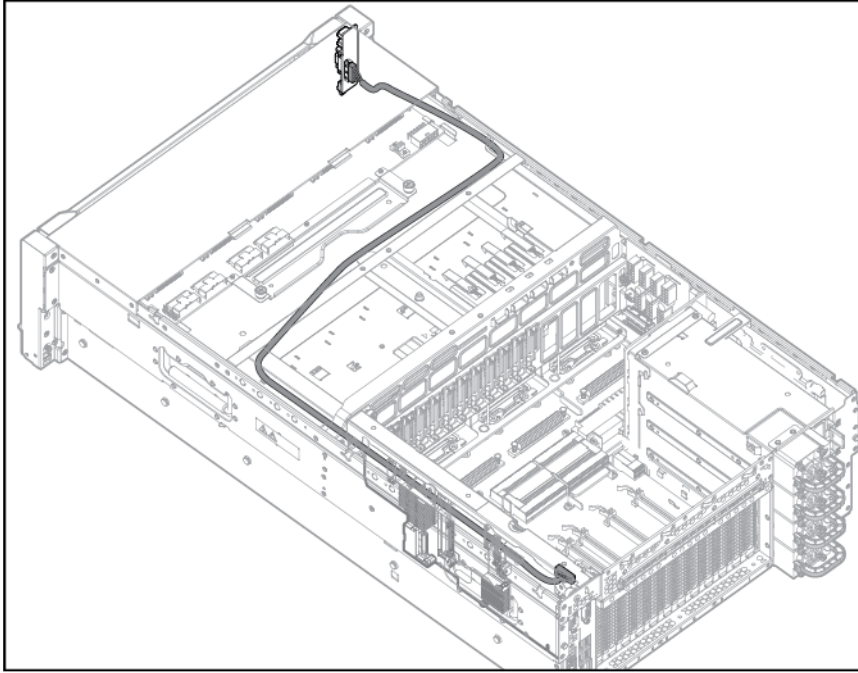
Cabling

SPI board cabling

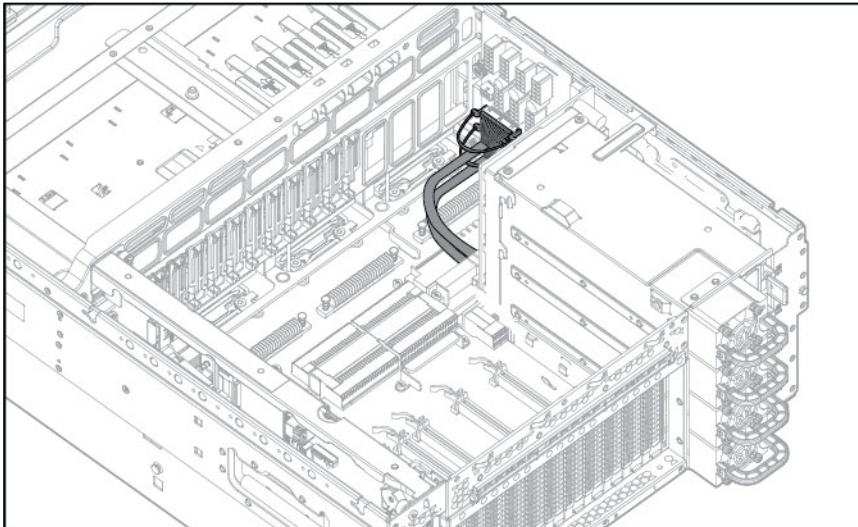


Item	Description
1	Top SAS backplane connector
2	System Insights Display Power/UID connector
3	Front video/USB connector

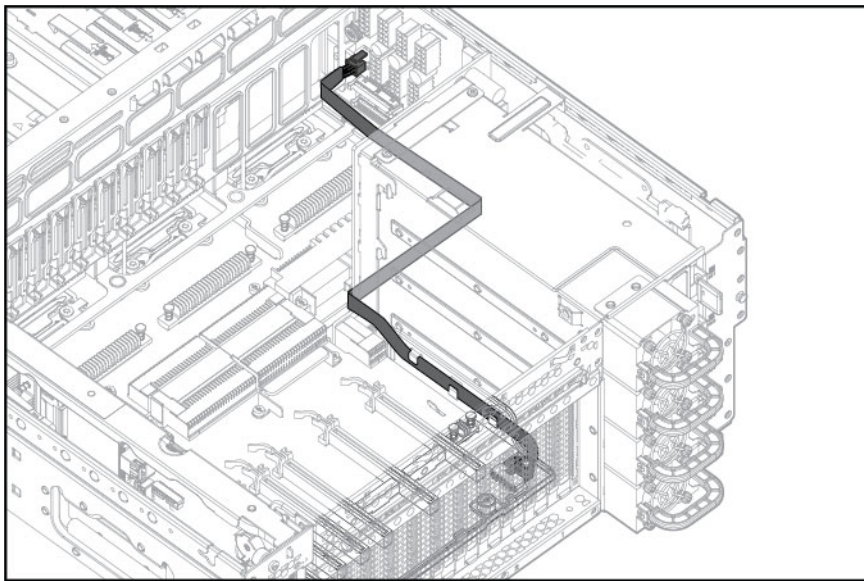
Front video/USB cabling



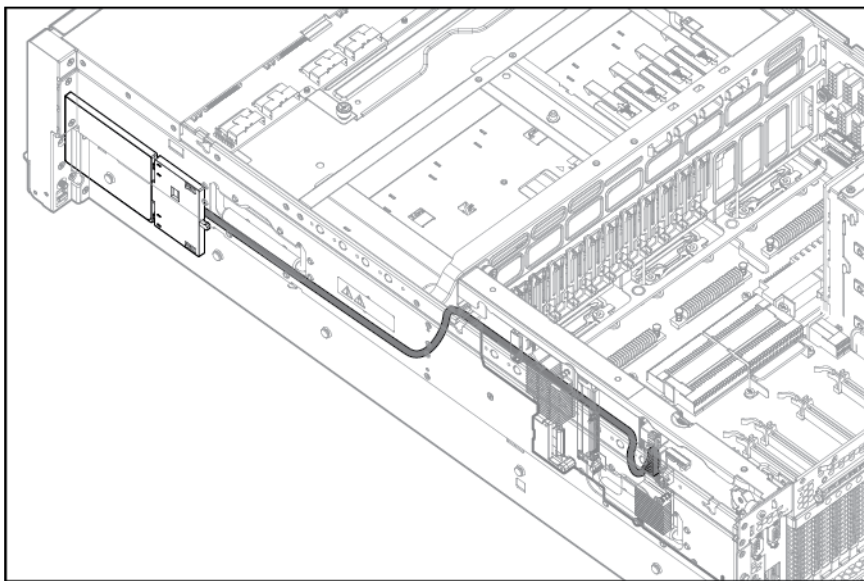
Power supply data cabling



Standby power cabling



Systems Insight Display cabling



Specifications

Environmental specifications

Specification	Value
Temperature range*	
Operating	10°C to 35°C (50°F to 95°F)
Shipping	-40°C to 70°C (-40°F to 158°F)
Maximum wet bulb temperature	28°C (82.4°F)
Relative humidity (noncondensing)**	
Operating	10% to 90%
Nonoperating	5% to 95%

* All temperature ratings shown are for sea level. An altitude derating of 1°C per 300 m (1.8°F per 1,000 ft) to 3,048 m (10,000 ft) is applicable. No direct sunlight allowed.

** Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 kPa.

Mechanical specifications

Specification	Value
Height	17.5 cm (6.88 in)
Depth	73.6 cm (29 in)
Width	44.4 cm (17.48 in)
Weight (maximum)	52 kg (115 lb)
Weight (no drives installed)	33 kg (73 lb)

Power supply specifications

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

- HPE 1200 W Common Slot Platinum Plus Hot-Plug Power Supply (94% efficiency) (on page 101)
- HPE 1500 W Common Slot -48 VDC Hot-plug Power Supply (on page 102)
- HPE 1500 W Common Slot Platinum Plus Hot-Plug Power Supply (94% efficiency) (on page 103)
- For detailed power supply specifications, see the server QuickSpecs on the Hewlett Packard Enterprise website (<http://www.hpe.com/info/qs>).

HPE 1200 W Common Slot Platinum Plus Hot-Plug Power Supply (94% efficiency)

Specification	Value
Input requirements	
Rated input voltage	100 VAC, 100 to 120 VAC

Rated input frequency	50 Hz to 60 Hz
Rated input current	<ul style="list-style-type: none"> • 9.2 A at 100 VAC • 9.5 A at 110 to 120 VAC • 6.6 A at 200 to 240 VAC
Maximum rated input power	<ul style="list-style-type: none"> • 1000 W at 120 VAC input • 1320 W at 230 VAC input
BTUs per hour	<ul style="list-style-type: none"> • 3408 at 120 VAC input • 4500 at 230 VAC input
Power supply output	
Power supply output	<ul style="list-style-type: none"> • 800 W at 100 VAC input (low line) • 900 W at 108 V to 132 VAC input (low line) • 1200 W at 200 V to 240 VAC input (high line)
Rated steady-state power	<ul style="list-style-type: none"> • 800 W at 100 VAC input • 900 W at 120 VAC input • 1200 W at 200 V to 240 VAC input
Maximum peak power	<ul style="list-style-type: none"> • 800 W at 100 VAC input • 900 W at 120 VAC input • 1200 W at 200 V to 240 VAC input

HPE 1500 W Common Slot -48 VDC Hot-plug Power Supply

Specification	Value
Input requirements	
Rated input voltage	-40 VDC to -72 VDC
Rated input current	<ul style="list-style-type: none"> • 42.0 A at -40 VDC input • 33.5 A at -48 VDC input • 22.2 A at -72 VDC input
Rated input power (W)	<ul style="list-style-type: none"> • 1621 W at -40 VDC input • 1607 W at -48 VDC input, nominal input • 1598 W at -72 VDC input
Rated input power (BTUs per hour)	<ul style="list-style-type: none"> • 5530 at -40 VDC input • 5484 at -48 VDC input • 5451 at -72 VDC input
Power supply output	
Rated steady-state power (W)	1500 W at -40 VDC to -72 VDC
Maximum peak power (W)	1500 W at -40 VDC to -72 VDC



CAUTION: This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment. If this connection is made, all of the following must be met:

- This equipment must be connected directly to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC

supply system earthing electrode conductor is connected.

- This equipment must be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system must be earthed elsewhere.
 - The DC supply source is to be located within the same premises as the equipment.
 - Switching or disconnecting devices must not be in the earthed circuit conductor between the DC source and the point of connection of the earthing electrode conductor.
-



CAUTION: To reduce the risk of electric shock or energy hazards:

- This equipment must be installed by trained service personnel, as defined by the NEC and IEC 60950-1, Second Edition, the standard for Safety of Information Technology Equipment.
 - Connect the equipment to a reliably grounded SELV source. An SELV source is a secondary circuit that is designed so normal and single fault conditions do not cause the voltages to exceed a safe level (60 V DC).
 - The branch circuit overcurrent protection must be rated 24 A.
-

HPE 1500 W Common Slot Platinum Plus Hot-Plug Power Supply (94% efficiency)

Specification	Value
Input requirements	
Rated input voltage	200 to 240 VAC
Rated input frequency	50 Hz to 60 Hz
Rated input current	8.3 A at 200 VAC
Maximum rated input power	1652 W at 230 VAC input
BTUs per hour	5637 at 230 VAC input
Power supply output	
Power supply output	1500 W
Rated steady-state power	1500 W at 200 V to 240 VAC input
Maximum peak power	1500 W at 200 V to 240 VAC input

Acronyms and abbreviations

ABEND

abnormal end

AMP

Advanced Memory Protection

ASR

Automatic Server Recovery

CSA

Canadian Standards Association

DDDC

Double Device Data Correction

ESD

electrostatic discharge

FBWC

flash-backed write cache

IEC

International Electrotechnical Commission

iLO 4

Integrated Lights-Out 4

IML

Integrated Management Log

KVM

keyboard, video, and mouse

NVRAM

nonvolatile memory

PCIe

Peripheral Component Interconnect Express

PCI-X

peripheral component interconnect extended

PDU

power distribution unit

PID

port ID

POST

Power-On Self-Test

QPI

QuickPath Interconnect

RAS

Reliability, Availability, Serviceability

RBSU

ROM-Based Setup Utility

SAS

serial attached SCSI

SD

Secure Digital

SDDC

Single Device Data Correction

SFF

small form factor

SIM

Systems Insight Manager

SMI

Scalable memory interfaces

SPI

system peripheral interface

SPP

Service Pack for ProLiant

TMRA

recommended ambient operating temperature

TPM

Trusted Platform Module

UEFI

Unified Extensible Firmware Interface

UID

unit identification

UPS

uninterruptible power system

USB

universal serial bus

VCA

Version Control Agent

Documentation feedback

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