HP ProLiant DL580 Gen9 Server Maintenance and Service Guide

Abstract

This document describes service procedures for the HP ProLiant DL580 Gen8 Server. This document is intended for experienced service technicians. HP 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

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

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

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

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

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

Parts only warranty service

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

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

Réparation par le client (CSR)

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

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

Facultatif - Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

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

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

Pour plus d'informations sur le programme CSR de HP, contactez votre Mainteneur Agrée local. Pour plus d'informations sur ce programme en Amérique du Nord, consultez le site Web HP (http://www.hp.com/go/selfrepair).

Service de garantie "pièces seules"

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

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

Riparazione da parte del cliente

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

Obbligatorie – Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, 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 HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

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

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

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

Servizio di garanzia per i soli componenti

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

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

Customer Self Repair

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

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

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

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

CSR-Teile werden abhängig von der Verfügbarkeit und vom Lieferziel am folgenden Geschäftstag geliefert. Für bestimmte Standorte ist eine Lieferung am selben Tag oder innerhalb von vier Stunden gegen einen Aufpreis verfügbar. Wenn Sie Hilfe benötigen, können Sie das HP technische Support Center anrufen und sich von einem Mitarbeiter per Telefon helfen lassen. Den Materialien, die mit einem CSR-Ersatzteil geliefert werden, können Sie entnehmen, ob das defekte Teil an HP zurückgeschickt werden muss. Wenn es erforderlich ist, das defekte Teil an HP zurückzuschicken, müssen Sie dies innerhalb eines vorgegebenen Zeitraums tun, in der Regel innerhalb von fünf (5) Geschäftstagen. Das defekte Teil muss mit der zugehörigen Dokumentation in der Verpackung zurückgeschickt werden, die im Lieferumfang enthalten ist. Wenn Sie das

defekte Teil nicht zurückschicken, kann HP Ihnen das Ersatzteil in Rechnung stellen. Im Falle von Customer Self Repair kommt HP für alle Kosten für die Lieferung und Rücksendung auf und bestimmt den Kurier-/Frachtdienst.

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

Parts-only Warranty Service (Garantieservice ausschließlich für Teile)

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

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

Reparaciones del propio cliente

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

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

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

Según la disponibilidad y la situación geográfica, los componentes CSR se enviarán para que lleguen a su destino al siguiente día laborable. Si la situación geográfica lo permite, se puede solicitar la entrega en el mismo día o en cuatro horas con un coste adicional. Si precisa asistencia técnica, puede llamar al Centro de asistencia técnica de HP y recibirá ayuda telefónica por parte de un técnico. Con el envío de materiales para la sustitución de componentes CSR, HP especificará si los componentes defectuosos deberán devolverse a HP. En aquellos casos en los que sea necesario devolver algún componente a HP, deberá hacerlo en el periodo de tiempo especificado, normalmente cinco días laborables. Los componentes defectuosos deberán devolverse con toda la documentación relacionada y con el embalaje de envío. Si no

enviara el componente defectuoso requerido, HP podrá cobrarle por el de sustitución. En el caso de todas sustituciones que lleve a cabo el cliente, HP se hará cargo de todos los gastos de envío y devolución de componentes y escogerá la empresa de transporte que se utilice para dicho servicio.

Para obtener más información acerca del programa de Reparaciones del propio cliente de HP, póngase en contacto con su proveedor de servicios local. Si está interesado en el programa para Norteamérica, visite la página web de HP siguiente (http://www.hp.com/go/selfrepair).

Servicio de garantía exclusivo de componentes

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

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

Customer Self Repair

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

Verplicht: Onderdelen waarvoor reparatie door de klant verplicht is. Als u HP verzoekt deze onderdelen voor u te vervangen, worden u voor deze service reiskosten en arbeidsloon in rekening gebracht.

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

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

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

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

Garantieservice "Parts Only"

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

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

Reparo feito pelo cliente

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

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

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

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

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

Para obter mais informações sobre o programa de reparo feito pelo cliente da HP, entre em contato com o fornecedor de serviços local. Para o programa norte-americano, visite o site da HP (http://www.hp.com/go/selfrepair).

Serviço de garantia apenas para peças

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

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

カスタマーセルフリペア

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

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

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

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

部品のみ保証サービス

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

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

客户自行维修

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

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

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

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

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

仅部件保修服务

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

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

客戶自行維修

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

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

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

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

如需 HP 的「客戶自行維修」方案詳細資訊，請連絡您當地的服務供應商。至於北美方案，請參閱 HP 網站 (http://www.hp.com/go/selfrepair)。

僅限零件的保固服務

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

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

고객 셀프 수리

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

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

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

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

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

부품 제공 보증 서비스

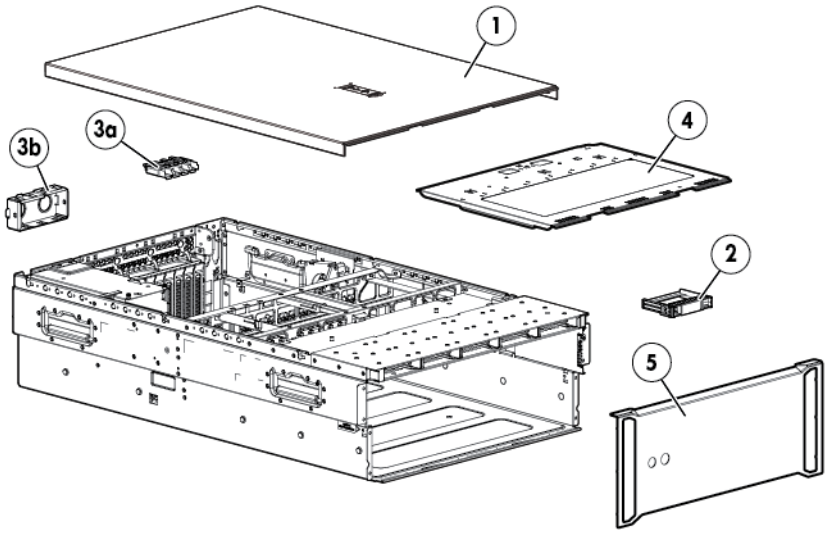
HP 제한 보증에는 부품 제공 보증 서비스가 포함될 수 있습니다. 이러한 경우 HP는 부품 제공 보증 서비스의 조건에 따라 교체 부품만을 무료로 제공합니다.

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

Illustrated parts catalog

Mechanical components

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



Item	Description	Spare part number	Customer self repair (on page 6)
1	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

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

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

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

[1]Mandatory: Obligatoire—Pièces pour lesquelles la réparation par le client est obligatoire. Si vous demandez à HP de remplacer ces pièces, les coûts de déplacement et main d'œuvre du service vous seront facturés.
[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.
[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

[1]Mandatory: Obbligatorie—Parti che devono essere necessariamente riparate dal cliente. Se il cliente ne affida la riparazione ad HP, deve sostenere le spese di spedizione e di manodopera per il servizio.
[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.
[3]No: Non CSR—Alcuni componenti HP non sono progettati per la riparazione da parte del cliente. Per rispettare la garanzia, HP richiede che queste parti siano sostituite da un centro di assistenza autorizzato. Tali parti sono identificate da un “No” nel Catalogo illustrato dei componenti.

[1]Mandatory: Zwingend—Teile, die im Rahmen des Customer Self Repair Programms ersetzt werden müssen. Wenn Sie diese Teile von HP ersetzen lassen, werden Ihnen die Versand- und Arbeitskosten für diesen Service berechnet.
[2]Optional: Optional—Teile, für die das Customer Self Repair-Verfahren optional ist. Diese Teile sind auch für Customer Self Repair ausgelegt. Wenn Sie jedoch den Austausch dieser Teile von HP vornehmen lassen möchten, können bei diesem Service je nach den für Ihr Produkt vorgesehenen Garantiebedingungen zusätzliche Kosten anfallen.
[3]No: Kein—Einige Teile sind nicht für Customer Self Repair ausgelegt. Um den Garantieanspruch des Kunden zu erfüllen, muss das Teil von einem HP Servicepartner ersetzt werden. Im illustrierten Teilekatalog sind diese Teile mit „No“ bzw. „Nein“ gekennzeichnet.

[1]Mandatory: Obligatorio—componentes para los que la reparación por parte del usuario es obligatoria. Si solicita a HP que realice la sustitución de estos componentes, tendrá que hacerse cargo de los gastos de desplazamiento y de mano de obra de dicho servicio.
[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.
[3]No: No—Algunos componentes no están diseñados para que puedan ser reparados por el usuario. Para que el usuario haga valer su garantía, HP pone como condición que un proveedor de servicios autorizado realice la sustitución de estos componentes. Dichos componentes se identifican con la palabra “No” en el catálogo ilustrado de componentes.

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

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

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

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

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

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

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

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

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

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

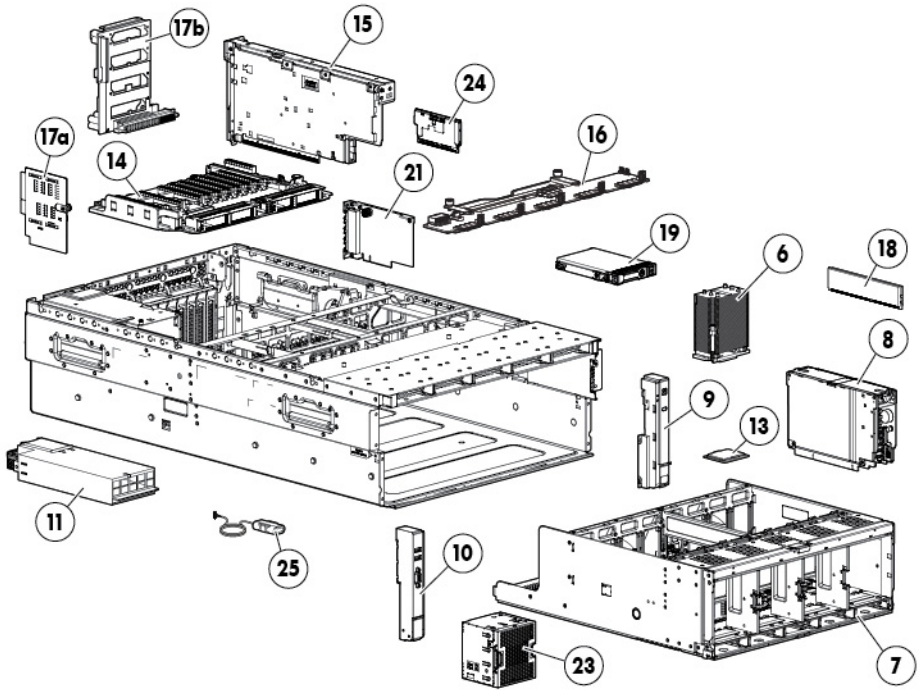
[1] Mandatory: 필수 — 고객 셀프 수리가 의무 사항인 필수 부품. 사용자가 HP에 이 부품의 교체를 요청할 경우 이 서비스에 대한 출장비 및 작업비가 청구됩니다.

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

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

System components

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



Item	Description	Spare part number	Customer self repair (on page 6)
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. HP 1200 W power supply, 12 V (94% efficiency)	660185-001	Mandatory[1]
	b. HP 1500 W power supply (94% efficiency)*	704604-001	Mandatory[1]
	c. HP 1500 W -48VDC power supply	794734-001	Mandatory[1]
12	Battery, 3V, lithium*	153099-001	Mandatory[1]
13	**Processors**	—	—
	a. Intel Xeon E7-8890v3 (2.5GHz/165W) Processor with jacket*	802278-001	Optional[2]
	b. Intel Xeon E7-8880v3 (2.3GHz/150W) Processor with jacket*	802279-001	Optional[2]
	c. Intel Xeon E7-8870v3 (2.1GHz/140W)	802280-001	Optional[2]

Item	Description	Spare part number	Customer self repair (on page 6)
	Processor with jacket*		
	d. Intel Xeon E7-8860v3 (2.2GHz/140W) Processor with jacket*	802281-001	Optional[2]
	e. Intel Xeon E7-4850v3 (2.2GHz/115W) Processor with jacket*	802282-001	Optional[2]
	f. Intel Xeon E7-4830v3 (2.1GHz/115W) Processor with jacket*	802283-001	Optional[2]
	g. Intel Xeon E7-4820v3 (1.9GHz/115W) Processor with jacket*	802284-001	Optional[2]
	h. Intel Xeon E7-4809v3 (2.0GHz/115W) Processor with jacket*	802285-001	Optional[2]
	i. Intel Xeon E7-8891v3 (2.8GHz/165W) Processor with jacket*	802286-001	Optional[2]
	j. Intel Xeon E7-8893v3 (3.2GHz/140W) Processor with jacket*	802287-001	Optional[2]
	k. Intel Xeon E7-8880Lv3 (2.0GHz//115W) Processor with jacket*	802288-001	Optional[2]
	l. Intel Xeon E7-8867v3 (2.5GHz/165W) Processor with jacket*	802289-001	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]
18	**DIMMs**	—	—
	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]
	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]

Item	Description	Spare part number	Customer self repair (on page 6)
	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]
	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 PN not listed in Part Surfer	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]
	Cables		
27	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	—	—

Item	Description	Spare part number	Customer self repair (on page 6)
	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

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

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

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

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

[2]Optional: Facultatif—Pièces pour lesquelles la réparation par le client est facultative. Ces pièces sont également conçues pour permettre au client d'effectuer lui-même la réparation. Toutefois, si vous demandez à HP de remplacer ces pièces, l'intervention peut ou non vous être facturée, selon le type de garantie applicable à votre produit.

[3]No: Non—Certaines pièces HP ne sont pas conçues pour permettre au client d'effectuer lui-même la réparation. Pour que la garantie puisse s'appliquer, HP exige que le remplacement de la pièce soit effectué par un Mainteneur Agréé. Ces pièces sont identifiées par la mention “Non” dans le Catalogue illustré.

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

[2]Optional: Opzionali—Parti la cui riparazione da parte del cliente è facoltativa. Si tratta comunque di componenti progettati per questo scopo. Se tuttavia il cliente ne richiede la sostituzione ad HP, potrebbe dover sostenere spese addizionali a seconda del tipo di garanzia previsto per il prodotto.

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

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

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

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

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

[2]Optional: Opcional— componentes para los que la reparación por parte del usuario es opcional. Estos componentes también están diseñados para que puedan ser reparados por el usuario. Sin embargo, si precisa que HP realice su sustitución, puede o no conllevar costes adicionales, dependiendo del tipo de servicio de garantía correspondiente al producto.

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

[1]Mandatory: Verplicht—Onderdelen waarvoor Customer Self Repair verplicht is. Als u HP verzoekt deze onderdelen te vervangen, komen de reiskosten en het arbeidsloon voor uw rekening.
[2]Optional: Optioneel—Onderdelen waarvoor reparatie door de klant optioneel is. Ook deze onderdelen zijn ontworpen voor reparatie door de klant. Als u echter HP verzoekt deze onderdelen voor u te vervangen, kunnen daarvoor extra kosten in rekening worden gebracht, afhankelijk van het type garantieservice voor het product.
[3]No: Nee—Sommige HP onderdelen zijn niet ontwikkeld voor reparatie door de klant. In verband met de garantievoorwaarden moet het onderdeel door een geautoriseerde Service Partner worden vervangen. Deze onderdelen worden in de geïllustreerde onderdelencatalogus aangemerkt met "Nee".

[1]Mandatory: Obrigatória—Peças cujo reparo feito pelo cliente é obrigatório. Se desejar que a HP substitua essas peças, serão cobradas as despesas de transporte e mão-de-obra do serviço.
[2]Optional: Opcional—Peças cujo reparo feito pelo cliente é opcional. Essas peças também são projetadas para o reparo feito pelo cliente. No entanto, se desejar que a HP as substitua, pode haver ou não a cobrança de taxa adicional, dependendo do tipo de serviço de garantia destinado ao produto.
[3]No: Nenhuma—Algumas peças da HP não são projetadas para o reparo feito pelo cliente. A fim de cumprir a garantia do cliente, a HP exige que um técnico autorizado substitua a peça. Essas peças estão identificadas com a marca “No” (Não), no catálogo de peças ilustrado.

[1]Mandatory：必須 - 顧客自己修理が必須の部品。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、その修理サービスに関する交通費および人件費がお客様に請求されます。

[2]Optional：任意 - 顧客自己修理が任意である部品。この部品も顧客自己修理用です。当該部品について、もしもお客様がHPに交換作業を依頼される場合には、お買い上げの製品に適用される保証サービス内容の範囲内においては、費用を負担していただくことなく保証サービスを受けることができます。

[3]No：除外 - HP製品の一部の部品は、顧客自己修理用ではありません。製品の保証を継続するためには、HPまたはHP正規保守代理店による交換作業が必須となります。部品カタログには、当該部品が顧客自己修理除外品である旨が記載されています。

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

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

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

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

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

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

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

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

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

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- 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 need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

To prevent electrostatic damage:

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

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 25).

  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 25).

  If you are performing service procedures in an HP, 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 26).

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 27).

  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 28).
- Remove the processor memory drawer (on page 28).
- Remove the processor memory drawer cover (on page 29).
- Remove the SPI board (on page 29).

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. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

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 as directed by 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

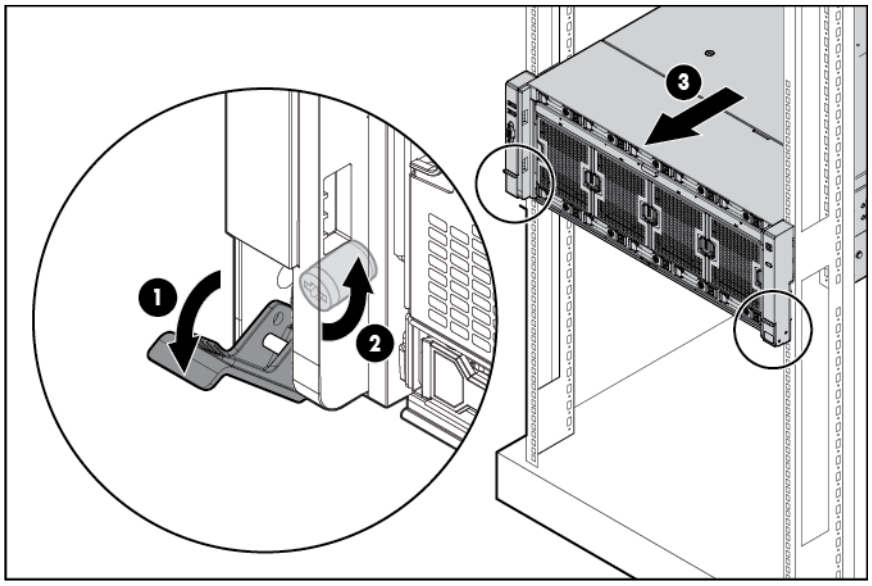
WARNING: To reduce the risk of personal injury or equipment damage, be sure that the rack is adequately stabilized before extending a component from the rack.

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.

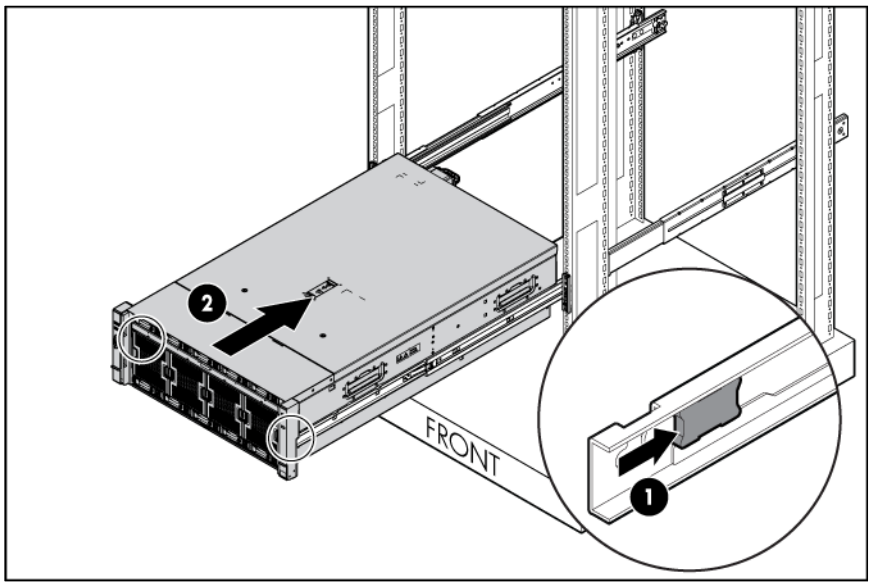
To extend the server from the rack:

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.

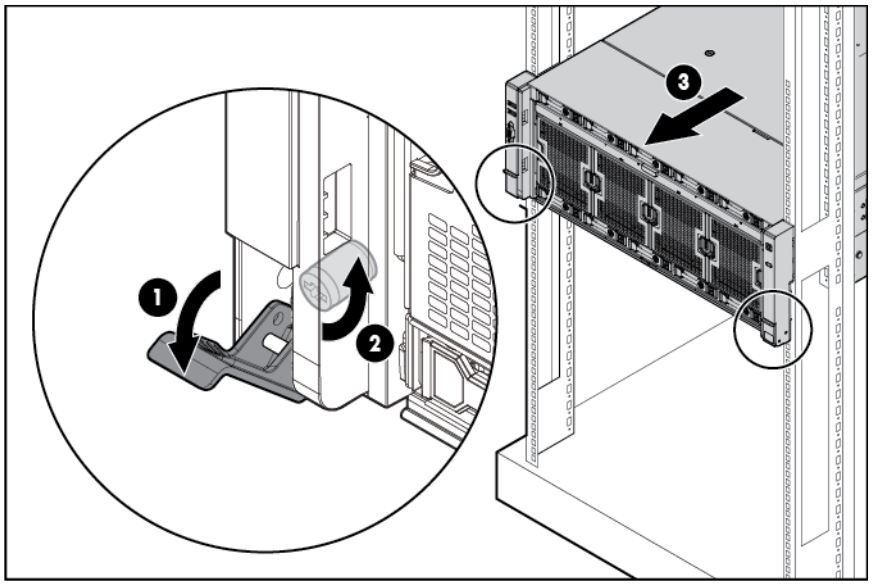
32.18-52.87 kg
70.94-116.56 lb

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

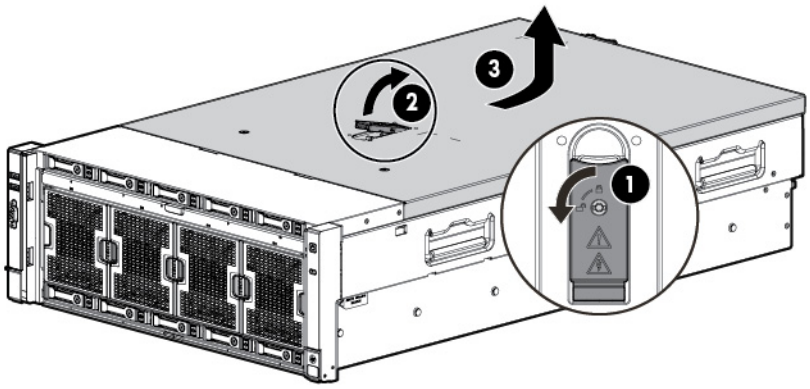
WARNING: To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

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:

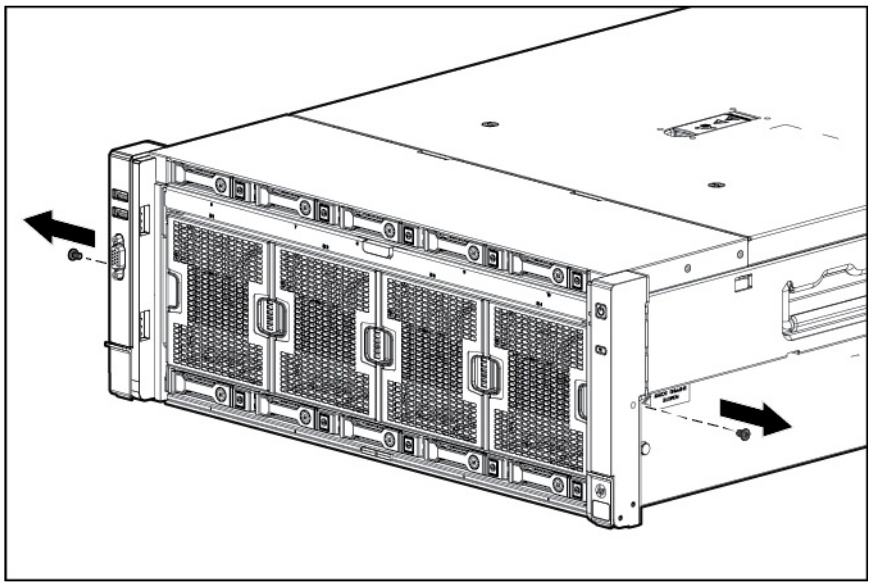
1. Power down the server (on page 25).
2. Extend the server from the rack (on page 25).

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.

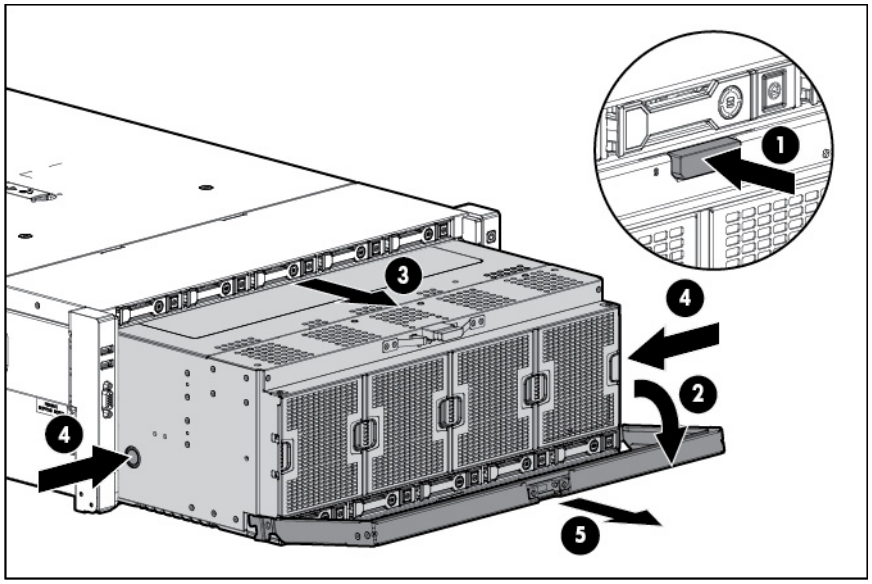


Remove the processor memory drawer

⚠ **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.

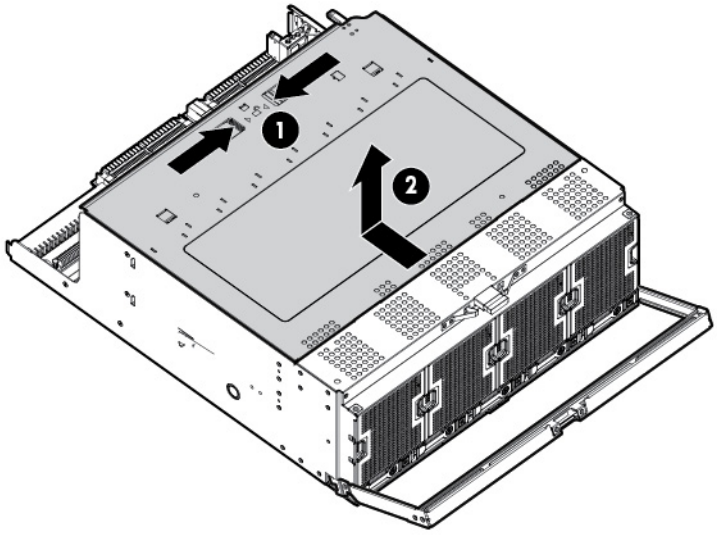
1. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
2. Push the button on the release lever.
3. Lower the handle, and then extend the processor memory drawer from the server until the release 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 28).
2. Remove the processor memory drawer (on page 28).
3. Remove the processor memory drawer cover.



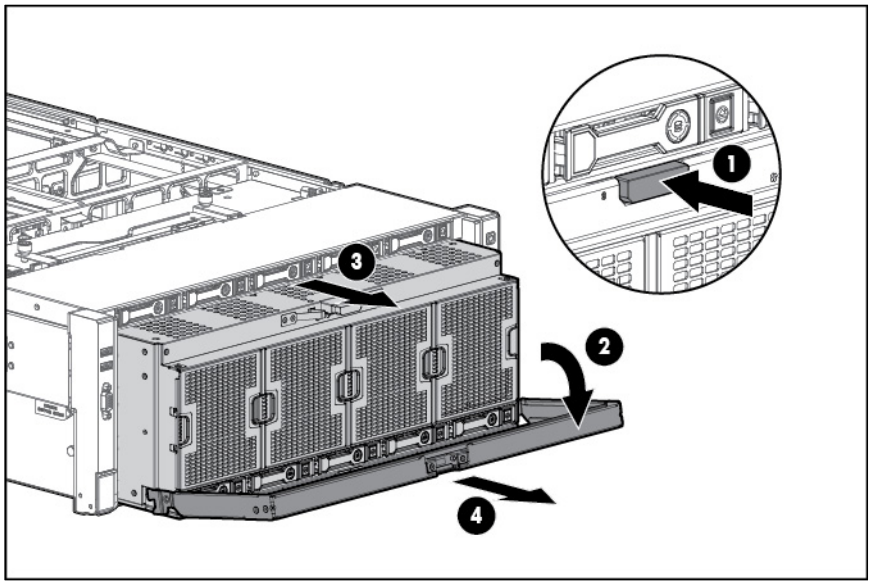
Remove the SPI board

To remove the component:

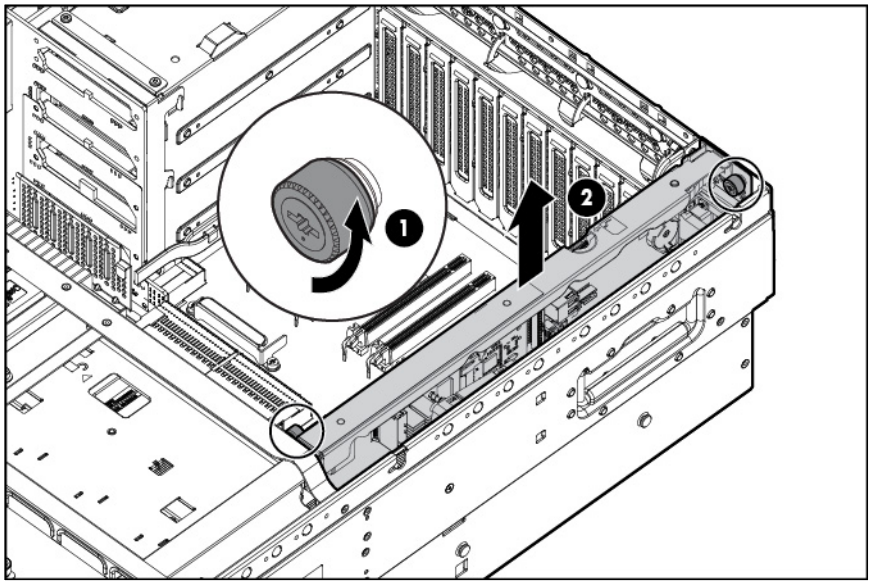
1. Power down the server (on page 25).
2. Remove all power:

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 25).
4. Remove the access panel (on page 27).
5. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
6. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 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.

9. Remove the SPI board from the server.

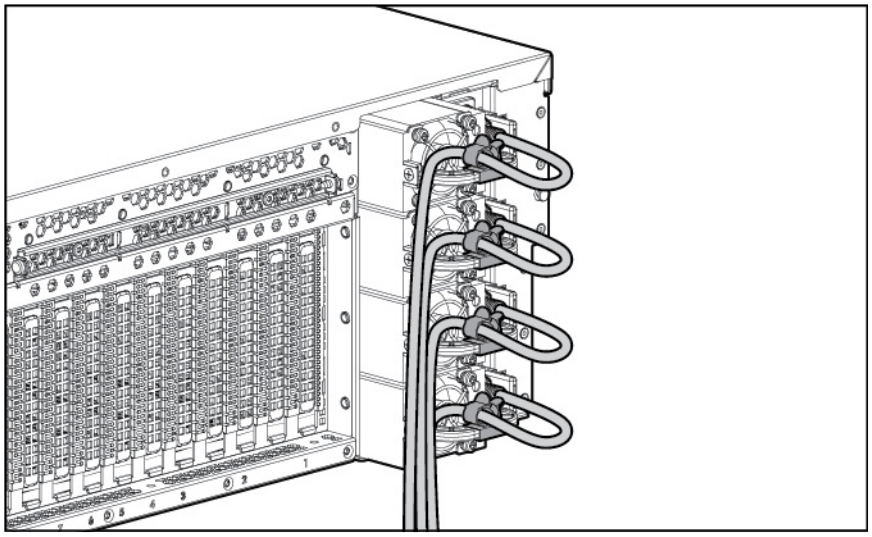
Installing the server into the rack

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 84)."

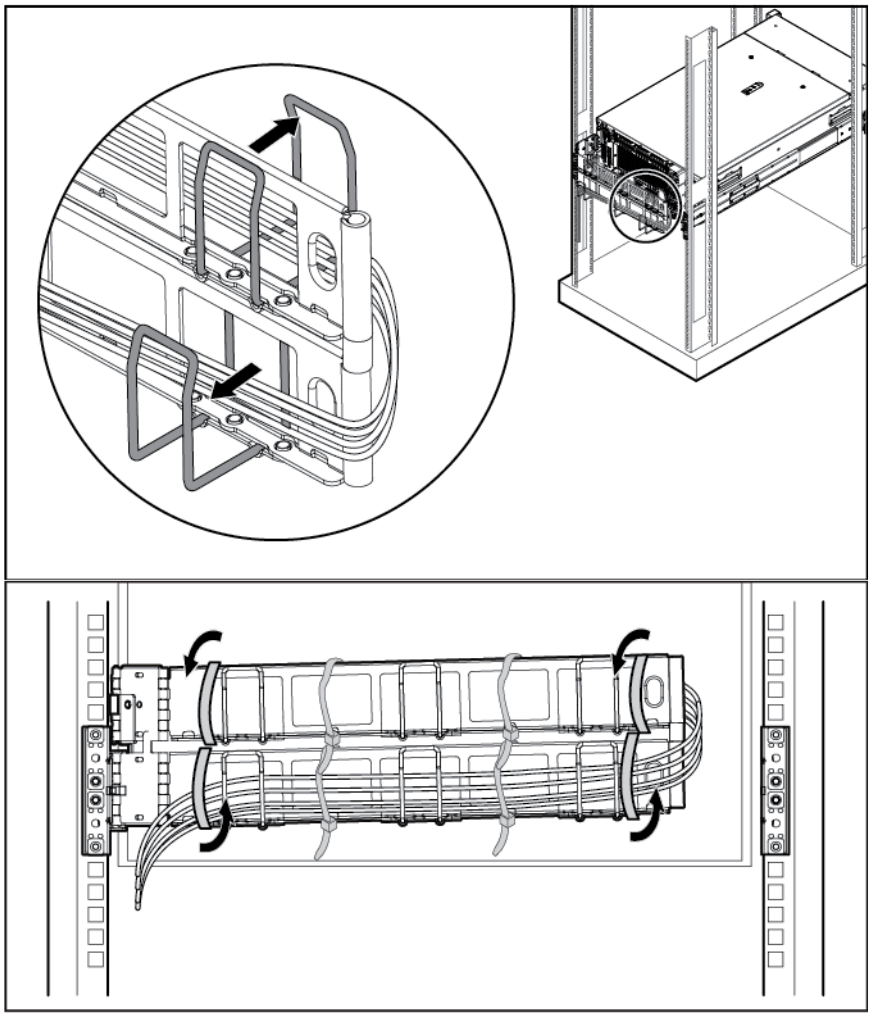
WARNING: To reduce the risk of electric shock, fire, or damage to the equipment, do not plug telephone or telecommunications connectors into RJ-45 connectors.

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.



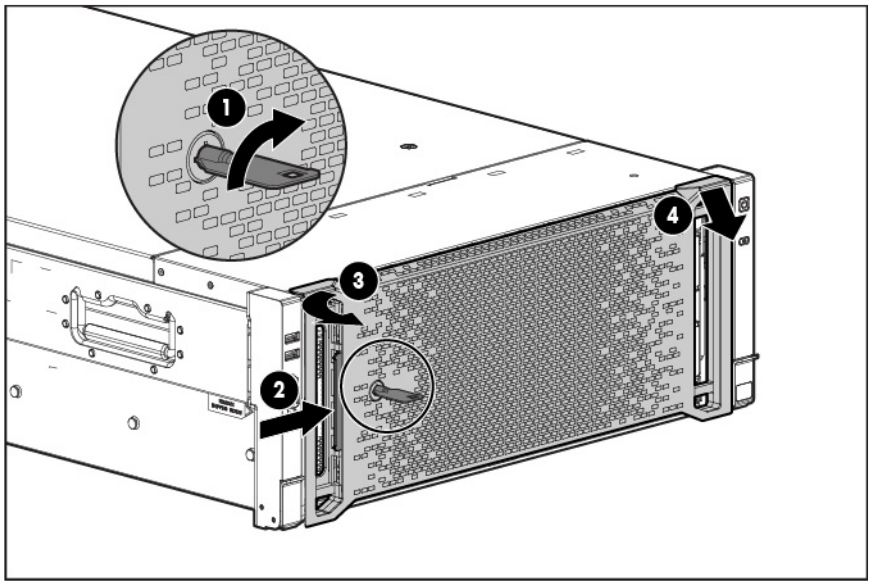
6. Connect the power cord to the AC power source.

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 server.

4U rack bezel

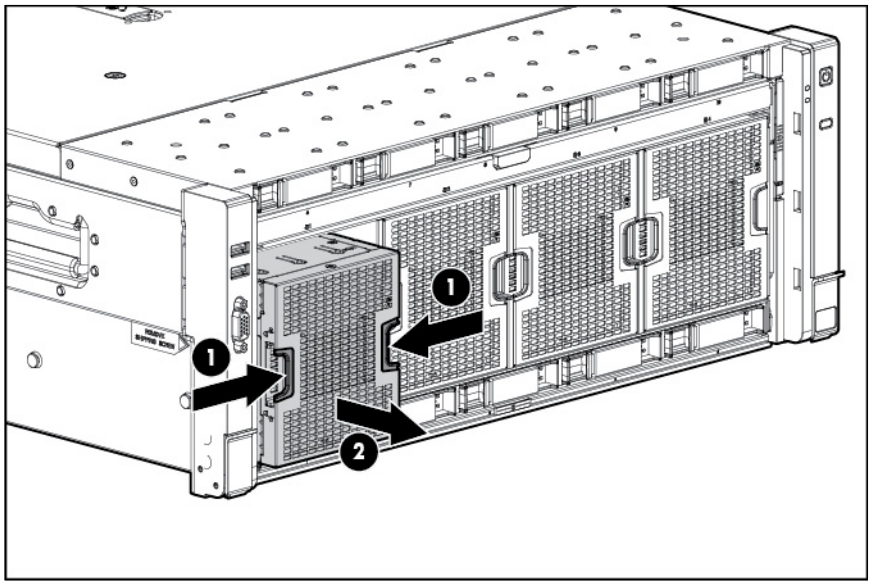
Remove the component as indicated.



To replace the component, reverse the removal procedure.

Fan

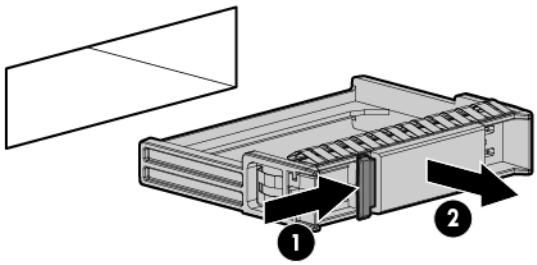
Remove the component as indicated.



To replace the component, reverse the removal procedure.

Drive blank

Remove the component as indicated.

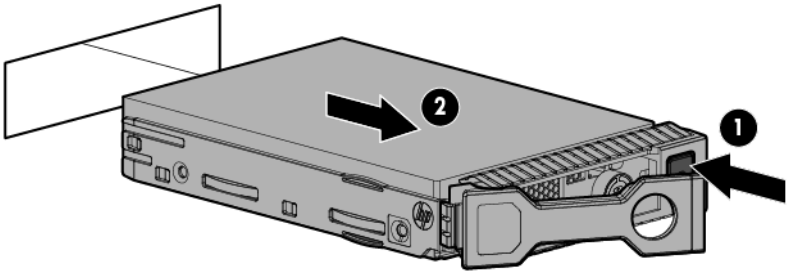


To replace the component, reverse the removal procedure.

Drive

To remove the component:

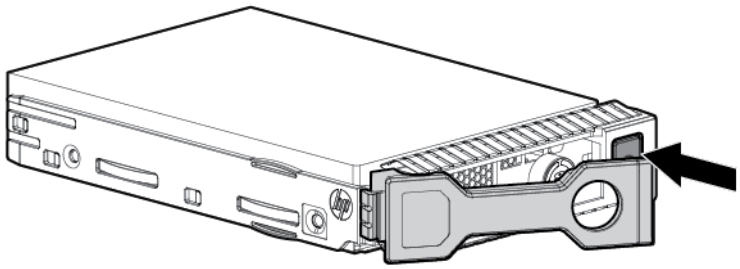
1. Determine the status of the drive from the drive LED definitions ("Hot-plug drive LED definitions" on page 88).
2. Back up all server data on the drive.
3. Remove the drive.



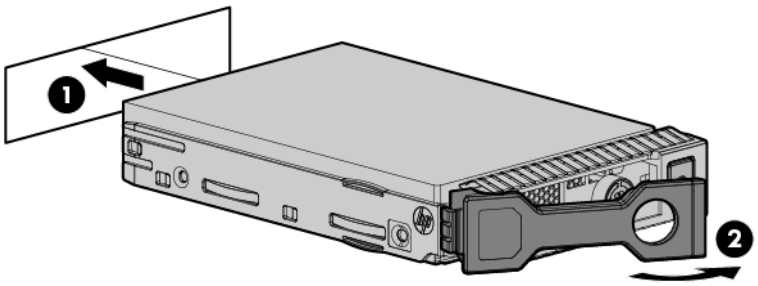
To replace the component:

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.



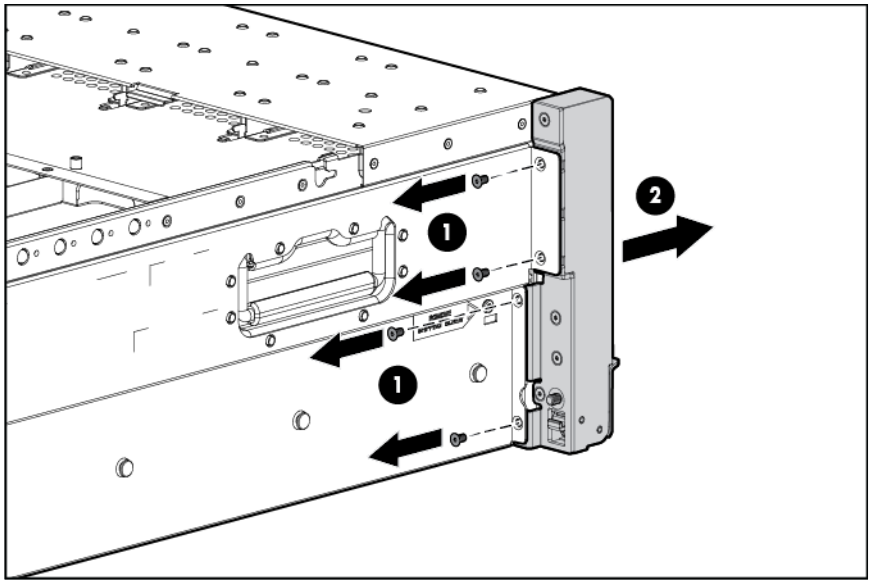
3. Determine the status of the drive from the drive LED definitions ("Hot-plug drive LED definitions" on page 88).

Left bezel (USB/video)

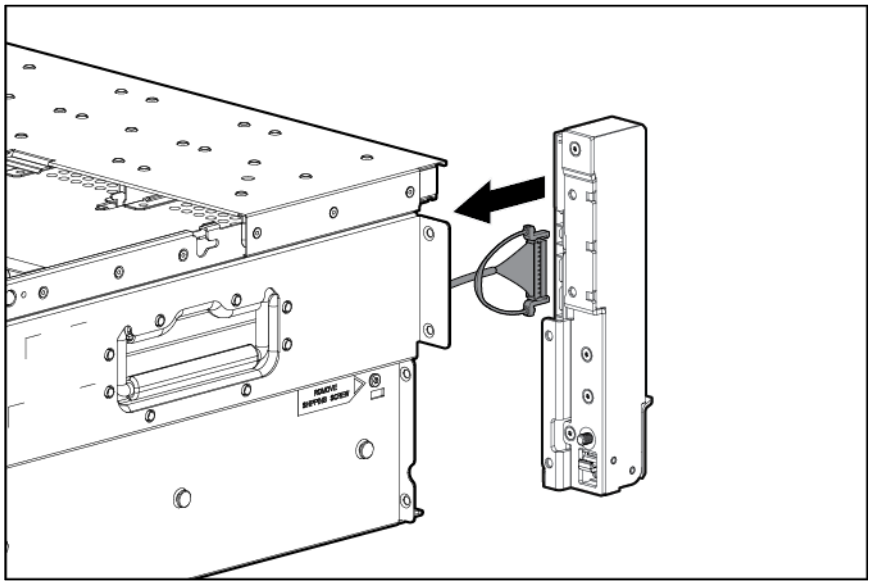
To remove the component:

1. Power down the server (on page 25).
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 25).
4. Remove the processor memory drawer cover (on page 29).

5. Using a Torx T-10 screwdriver, remove the screws securing the bezel to the chassis. Then, remove the assembly from the server.



6. Disconnect the cable from the bezel.



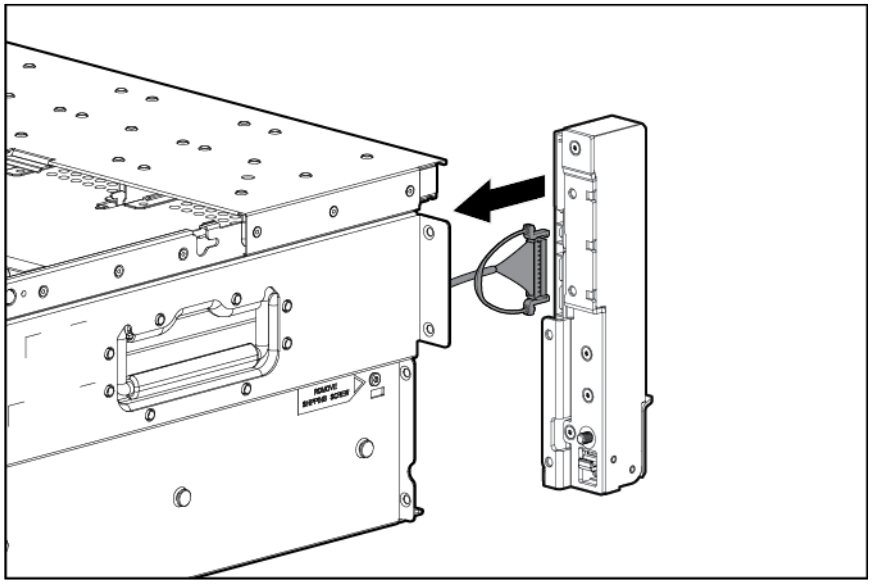
To replace the component, reverse the removal procedure.

USB/video cable/Discovery Services

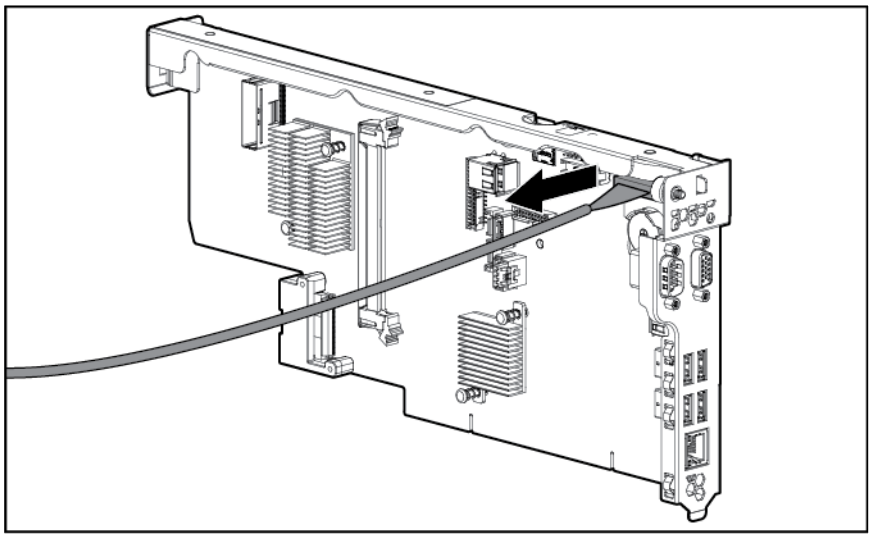
To remove the component:

1. Power down the server (on page 25).
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 25).

4. Remove the access panel (on page 27).
5. Remove the processor memory drawer (on page 28).
6. Remove the SPI board (on page 29).
7. Remove the left bezel ("Left bezel (USB/video)" on page 35).
8. Disconnect the cable from the bezel.



9. Disconnect the cable from the SPI board.



To replace the component, reverse the removal procedure.

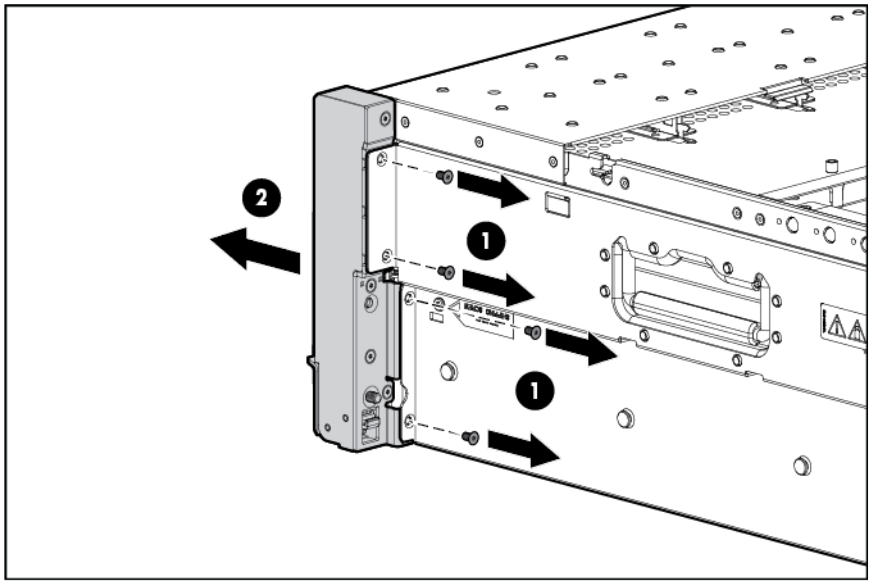
Right bezel (UID/power/SID)

To remove the component:

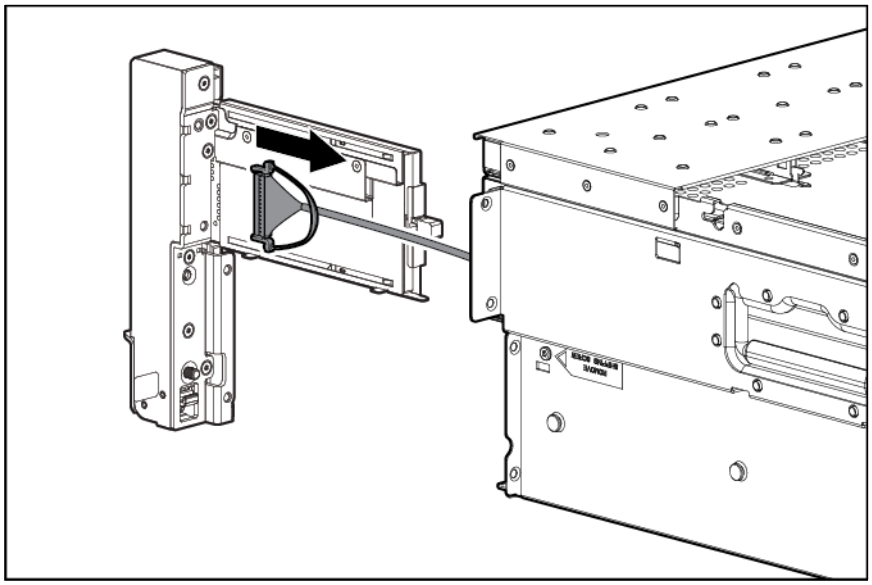
1. Power down the server (on page 25).
2. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

3. Extend the server from the rack (on page 25).
4. Remove the processor memory drawer (on page 28).
5. Using a Torx T-10 screwdriver, remove the screws securing the bezel to the chassis. Then, remove the assembly from the server.



6. Disconnect the cable from the bezel.



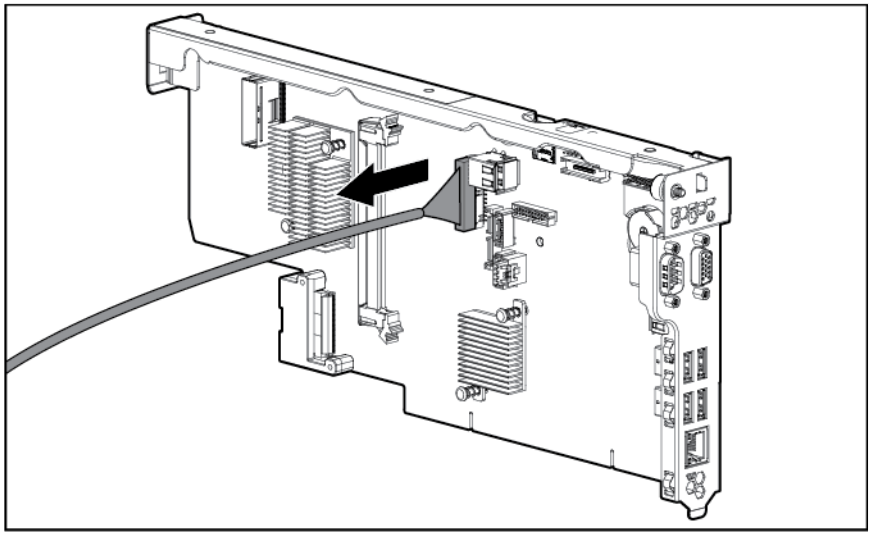
To replace the component, reverse the removal procedure.

UID/power/SID cable

To remove the component:

1. Power down the server (on page 25).
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 25).
4. Remove the access panel (on page 27).
5. Remove the processor memory drawer (on page 28).
6. Remove the SPI board (on page 29).
7. Remove the right bezel.
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.

HP recommends installing redundant hot-plug power supplies in pairs.

To confirm the redundancy of your configuration, see the HP power advisor at the HP website (http://www.hp.com/go/hppoweradvisor).

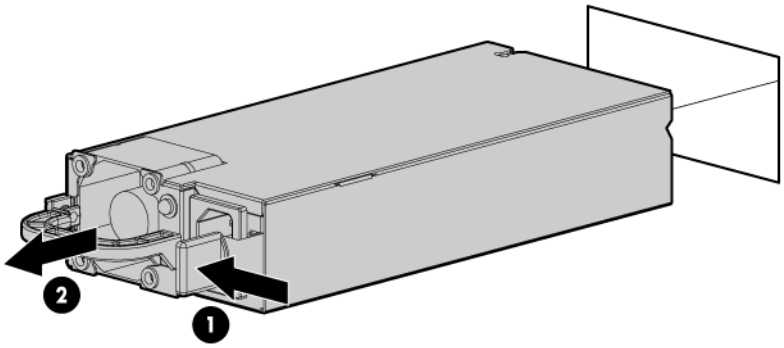
⚠ **WARNING:** To reduce the risk of electric shock or damage to the equipment:

- 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.

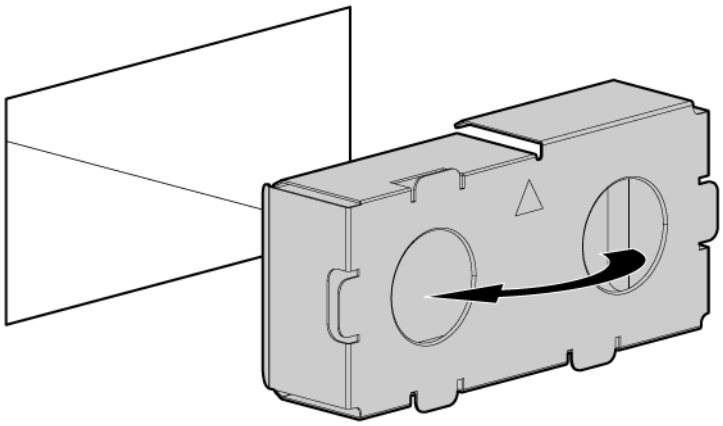
2. Remove the failed power supply.



To replace the component, reverse the removal procedure.

Power supply blank

Remove the component as indicated.



To replace the component, reverse the removal procedure.

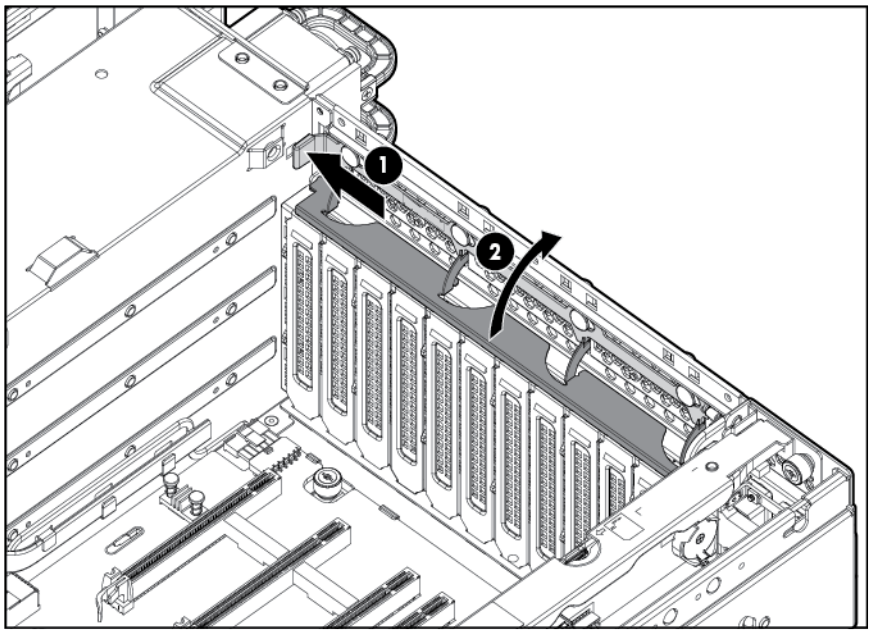
Expansion board

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.

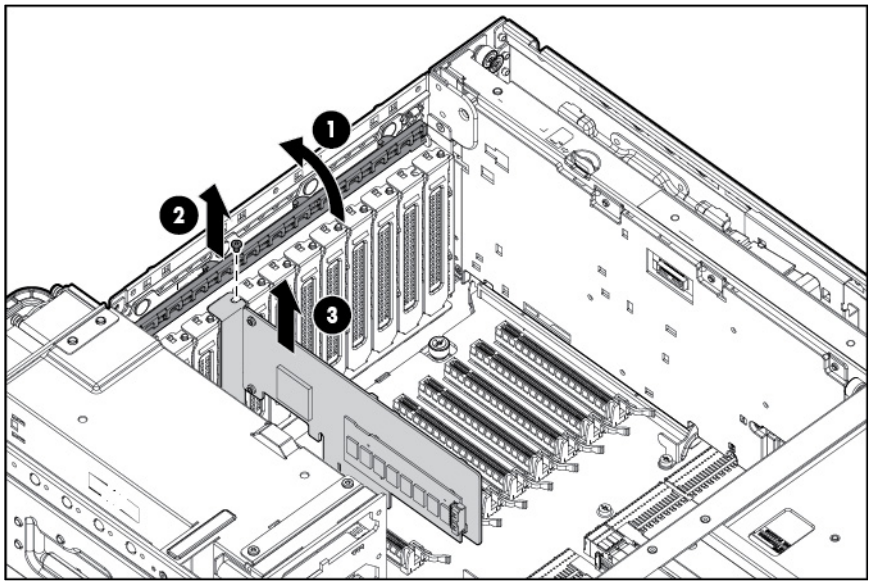
To remove the component:

1. Power down the server (on page 25).
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 25).
4. Remove the access panel (on page 27).
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.

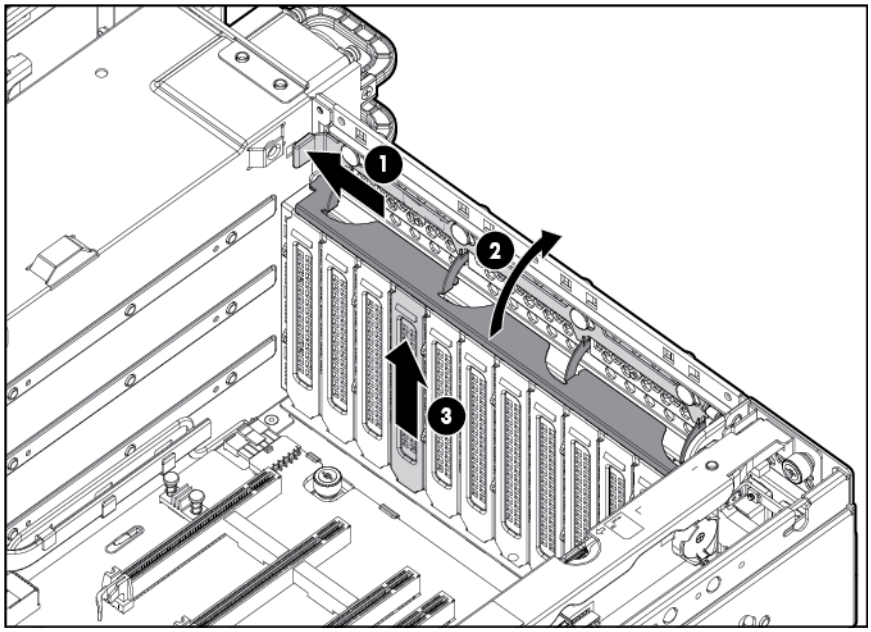


To replace the component, reverse the removal procedure.

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.

1. Power down the server (on page 25).
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 25).
4. Remove the access panel (on page 27).
5. Open the expansion board retainer, and then remove the expansion slot cover.



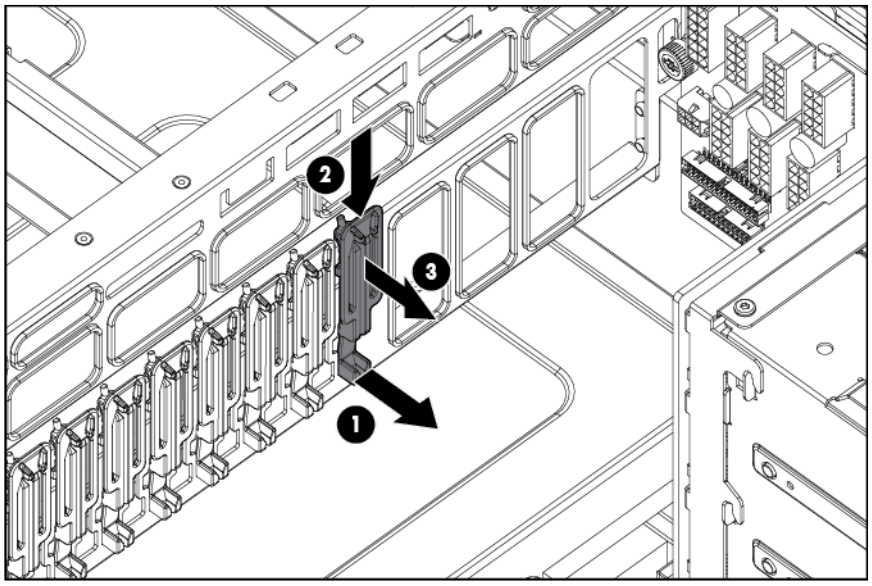
To replace the component, reverse the removal procedure.

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.

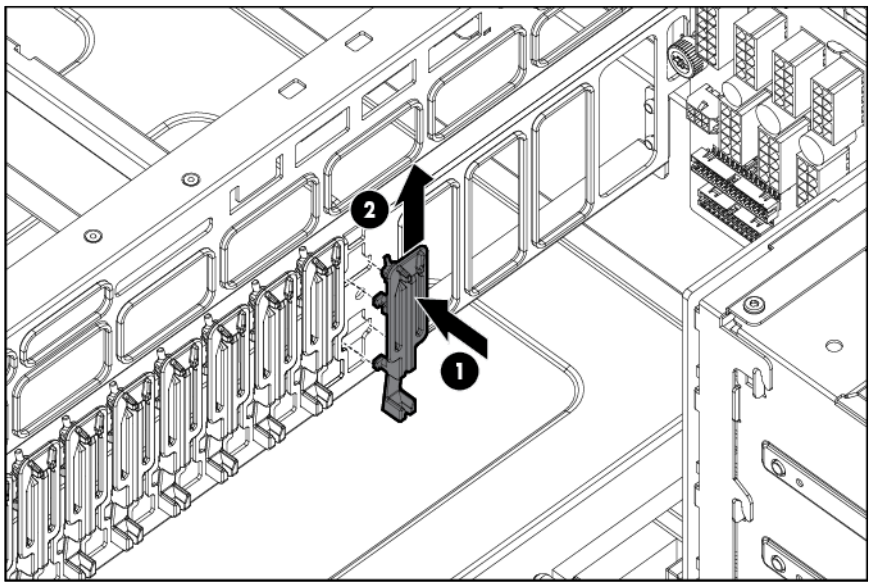
1. Power down the server (on page 25).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Extend the server from the rack (on page 25).
4. Remove the access panel (on page 27).
5. Press down on the lower tab, and then press 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 44)
  - Removing the capacitor pack
- Recovery of cached data from a failed server ("Recovering data from the flash-backed write cache" on page 47)

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. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

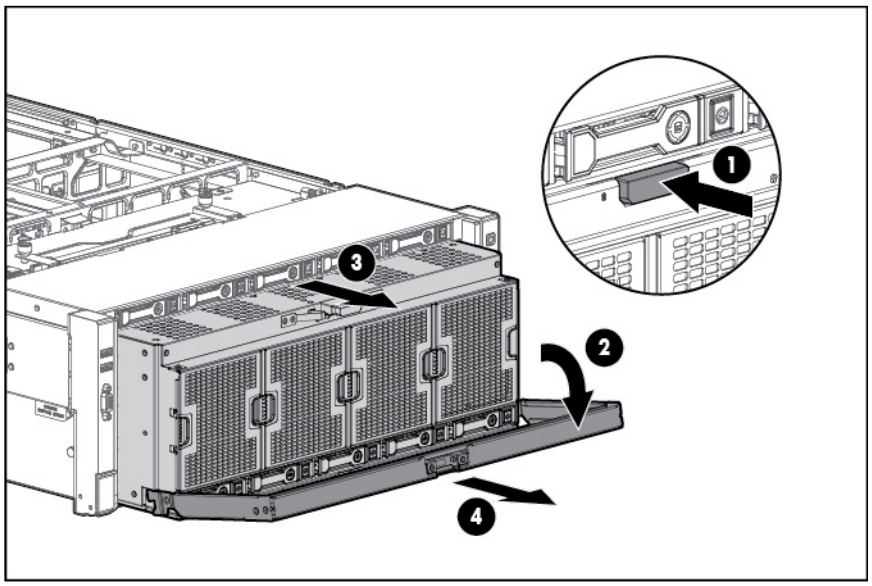
To remove the component:

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 25).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.

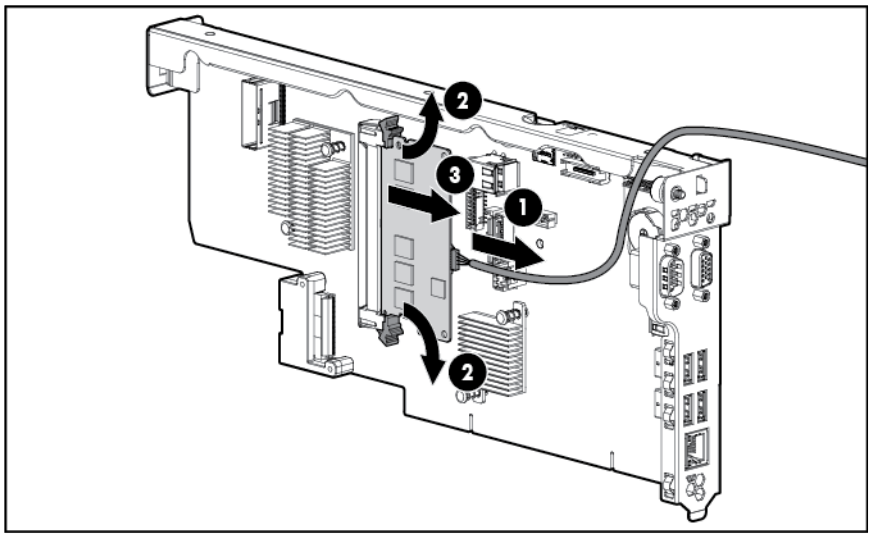
CAUTION: In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

5. Extend the server from the rack (on page 25).
6. Remove the access panel (on page 27).
7. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 inches).



8. Remove the SPI board (on page 29).

9. If the existing cache module is connected to a capacitor pack, observe the FBWC module LEDs:
   - 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. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

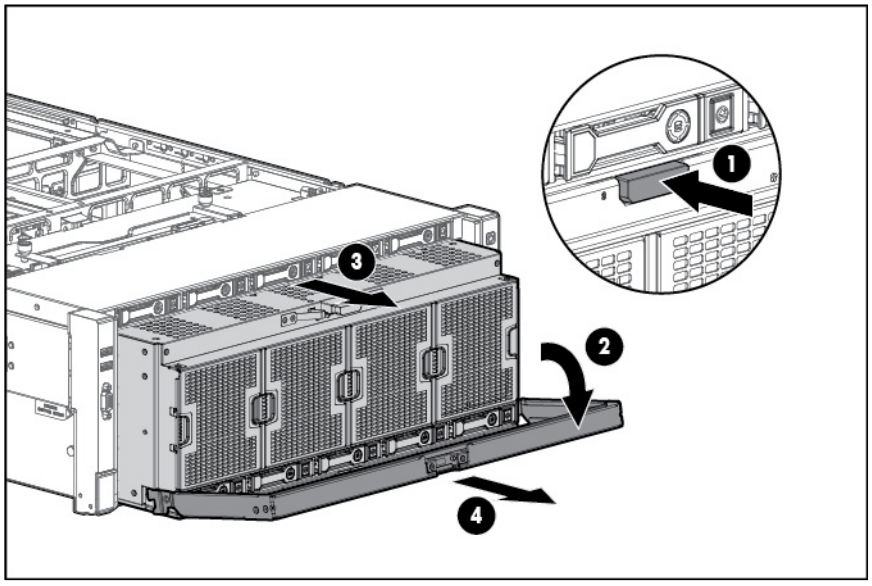
To remove the component:

> **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.

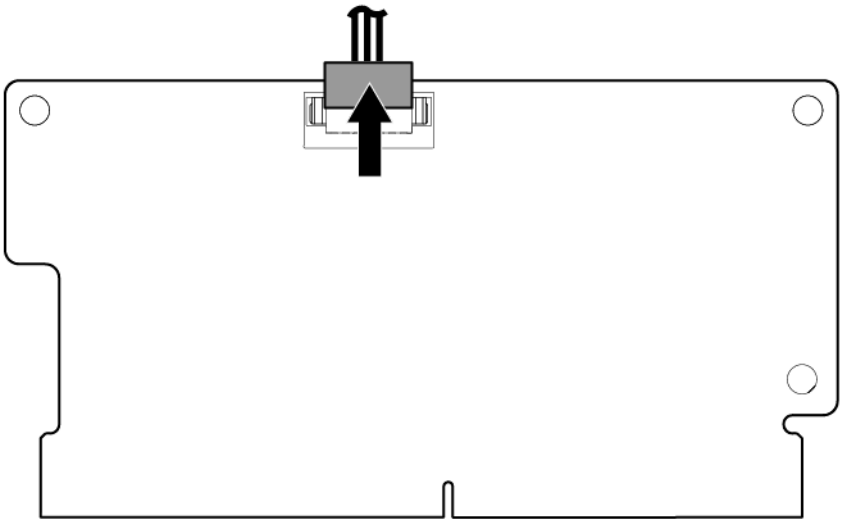
1. Back up all data.
2. Close all applications.
3. Power down the server (on page 25).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.

△ **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.

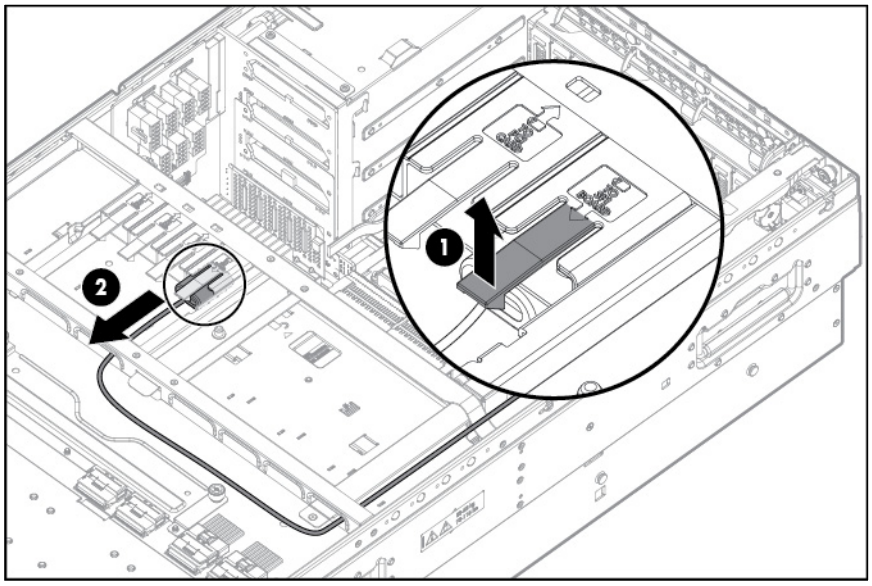
5. Extend the server from the rack (on page 25).
6. Remove the access panel (on page 27).
7. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 inches).



8. Remove the SPI board (on page 29).
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 24).

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. (HP 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 25).
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. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

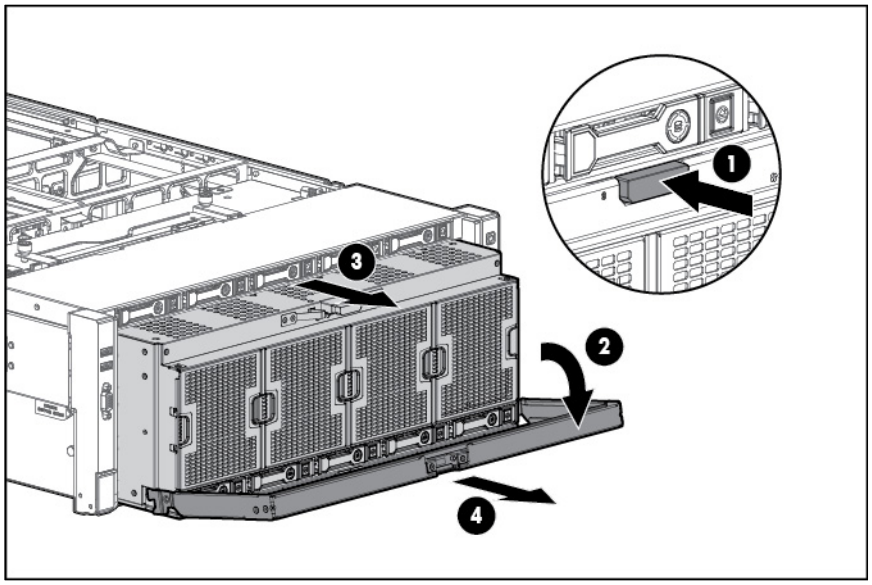
To remove the component:

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 25).
4. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.

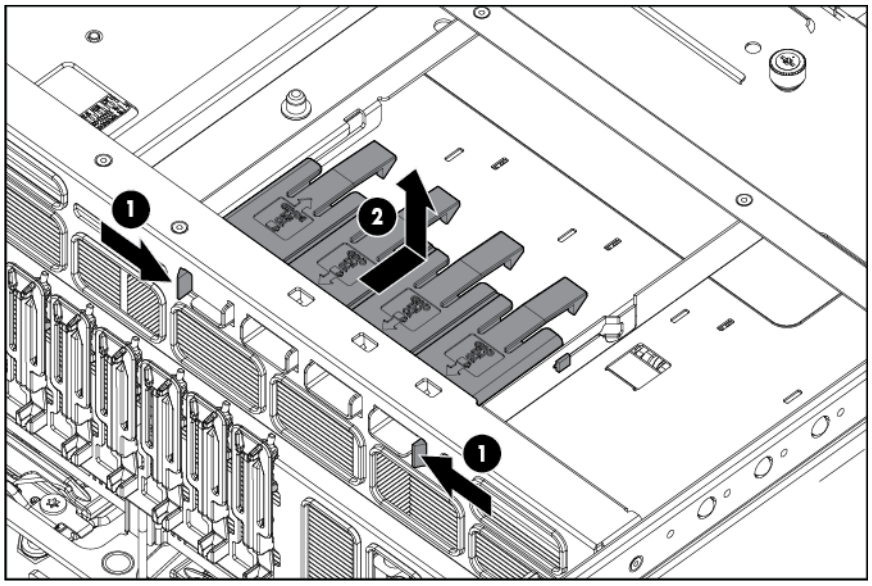
CAUTION: In systems that use external data storage, be sure that the server is the first unit to be powered down and the last to be powered back up. Taking this precaution ensures that the system does not erroneously mark the drives as failed when the server is powered up.

5. Extend the server from the rack (on page 25).
6. Remove the access panel (on page 27).
7. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 inches).



8. Remove any capacitor packs installed in the holder.

9. Remove the capacitor pack holder.



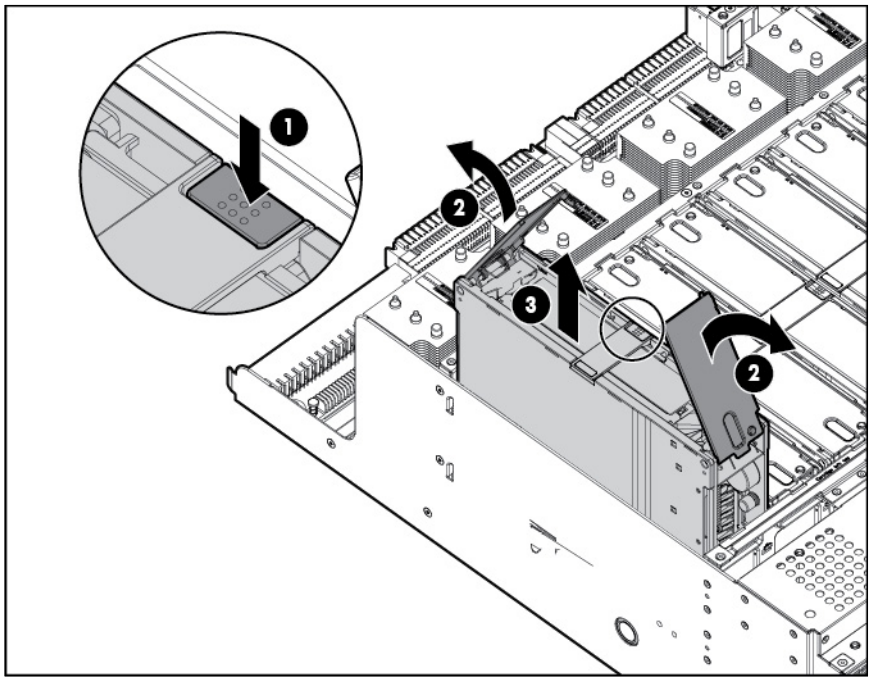
To replace the component, reverse the removal procedure.

Memory cartridge

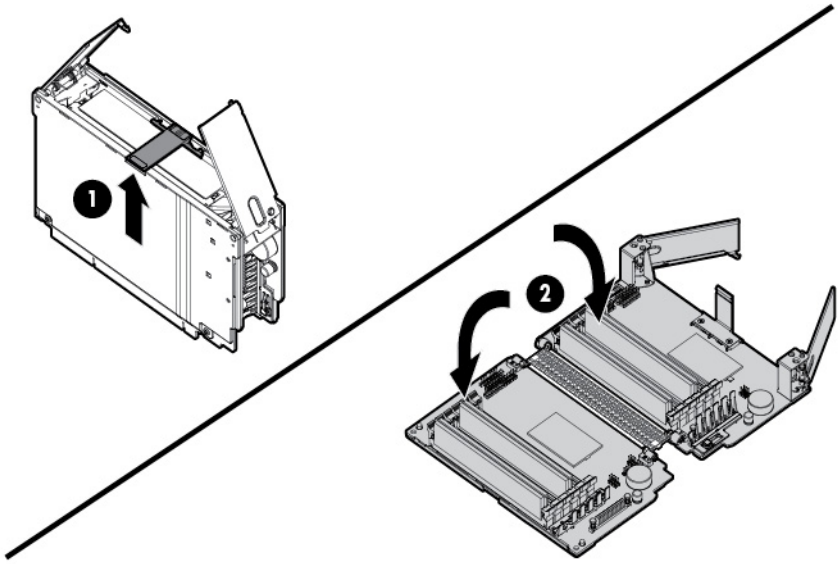
To remove the component:

1. Power down the server (on page 25).
2. Remove the processor memory drawer shipping screws, if installed. Retain the screws for future use ("Processor memory drawer shipping screw locations" on page 28).
3. Remove the processor memory drawer (on page 28).
4. Remove the processor memory drawer cover (on page 29).

5. Remove the failed memory cartridge.

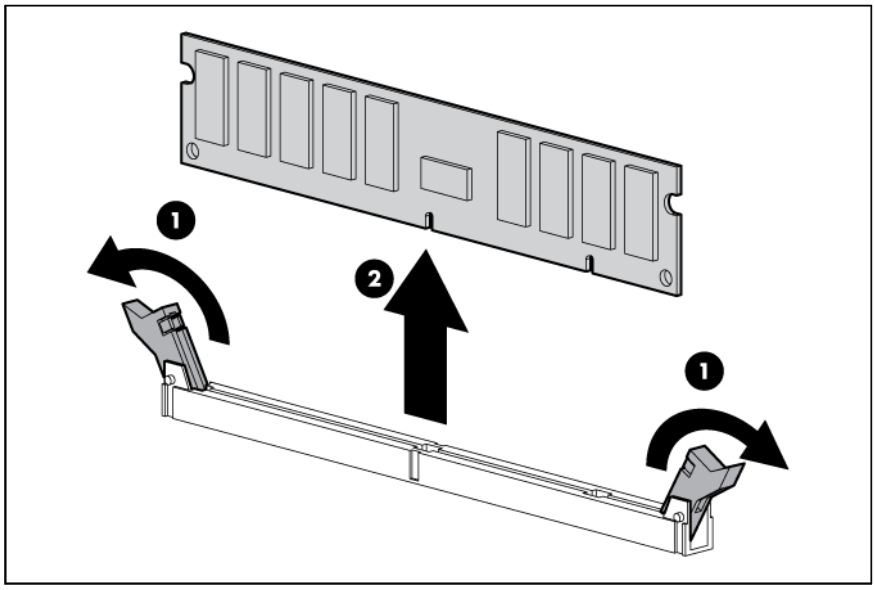


6. Open the memory cartridge cover.



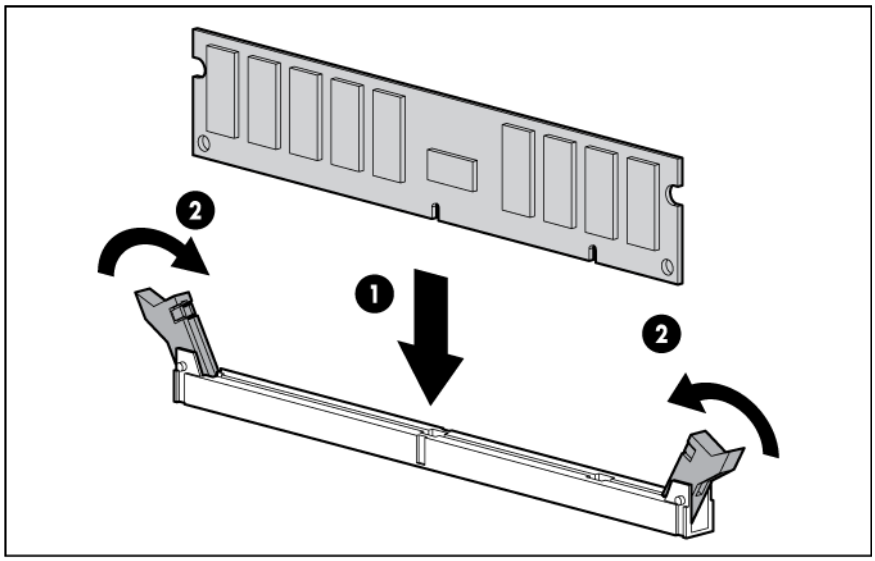
7. Remove the DIMMs from the failed memory cartridge:
   a. Open the DIMM slot latches.

b. Remove the DIMM.



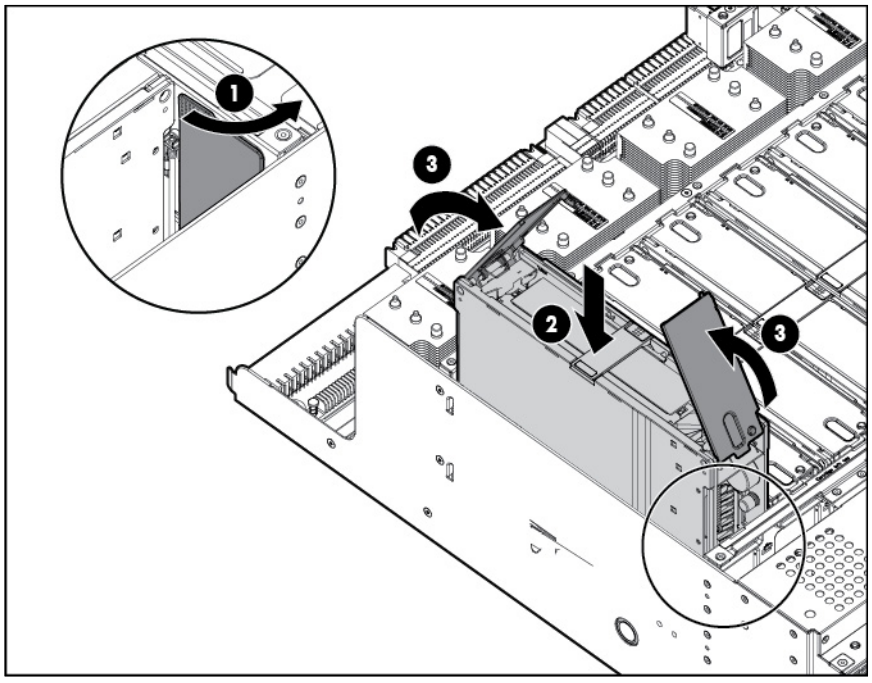
To replace the component:

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.



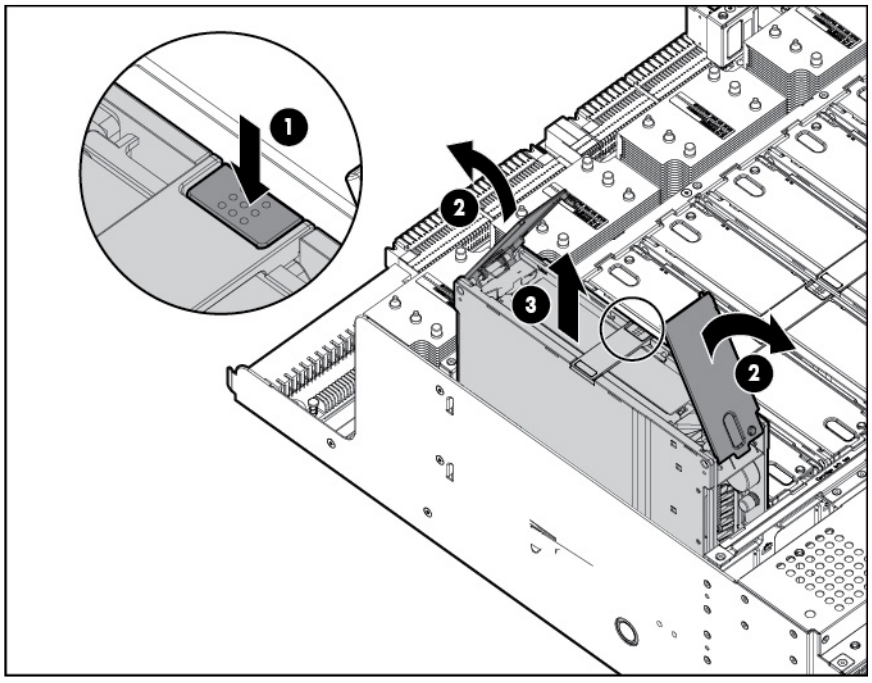
4. Install the processor memory drawer cover.
5. Install the processor memory drawer.
6. Power up the server.

DIMM

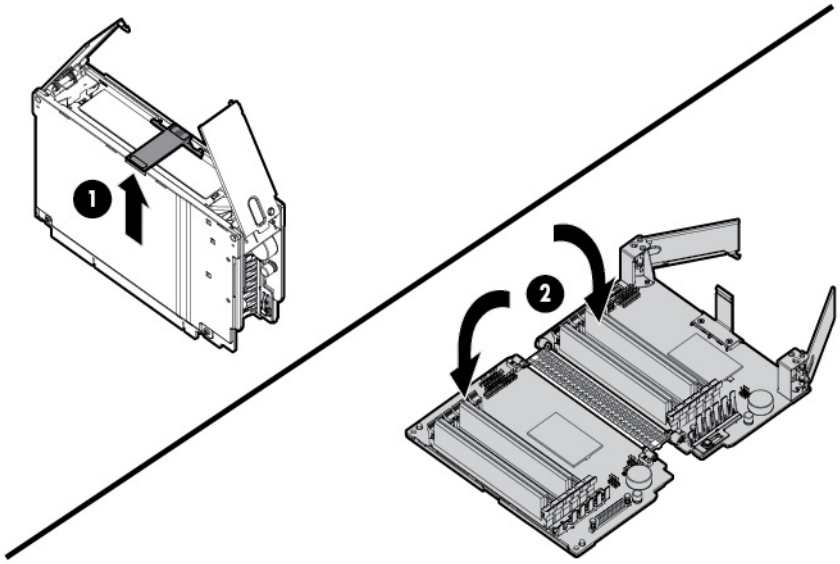
To remove the component:

1. Power down the server (on page 25).
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 28).
4. Remove the processor memory drawer (on page 28).
5. Remove the processor memory drawer cover (on page 29).

6. Remove memory cartridge containing the failed DIMM.

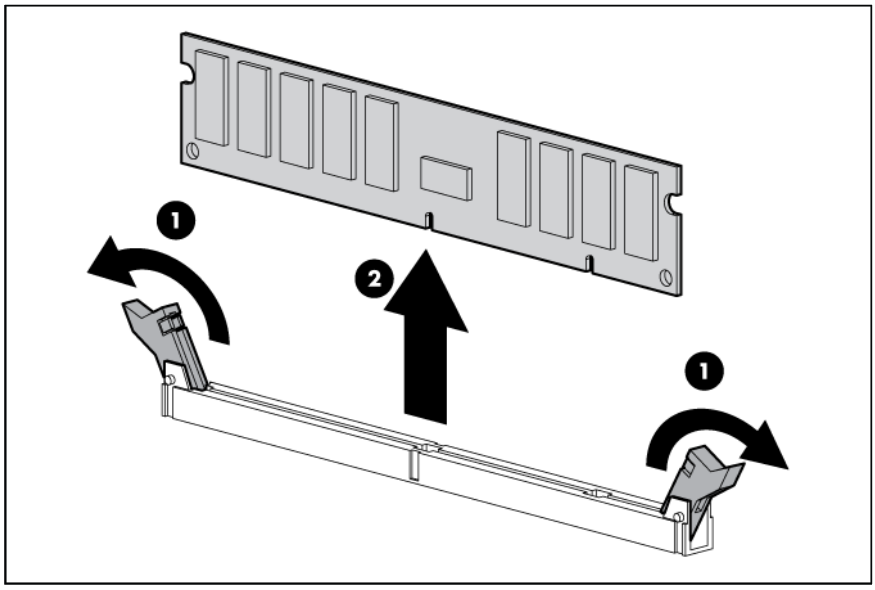


7. Open the memory cartridge cover.



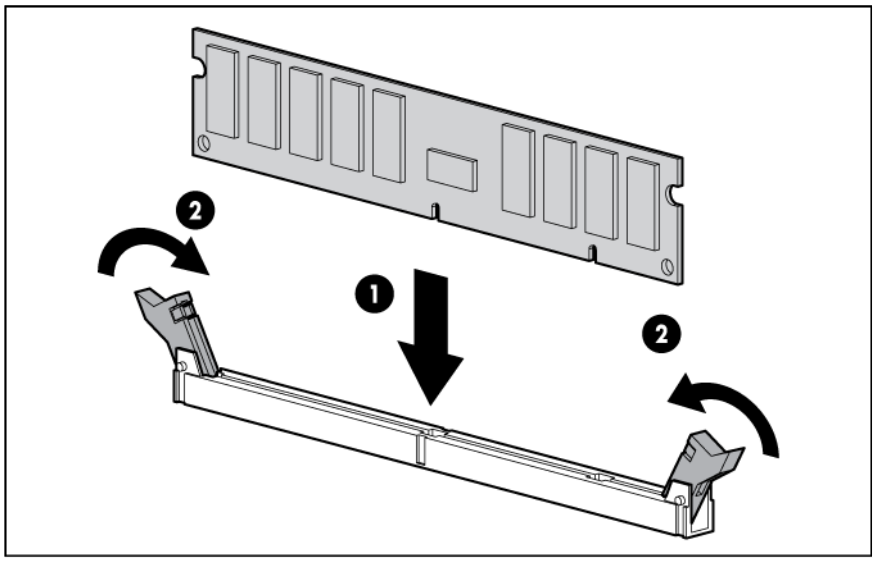
8. Remove the DIMM from the memory cartridge:
   a. Open the DIMM slot latches.

b. Remove the DIMM.



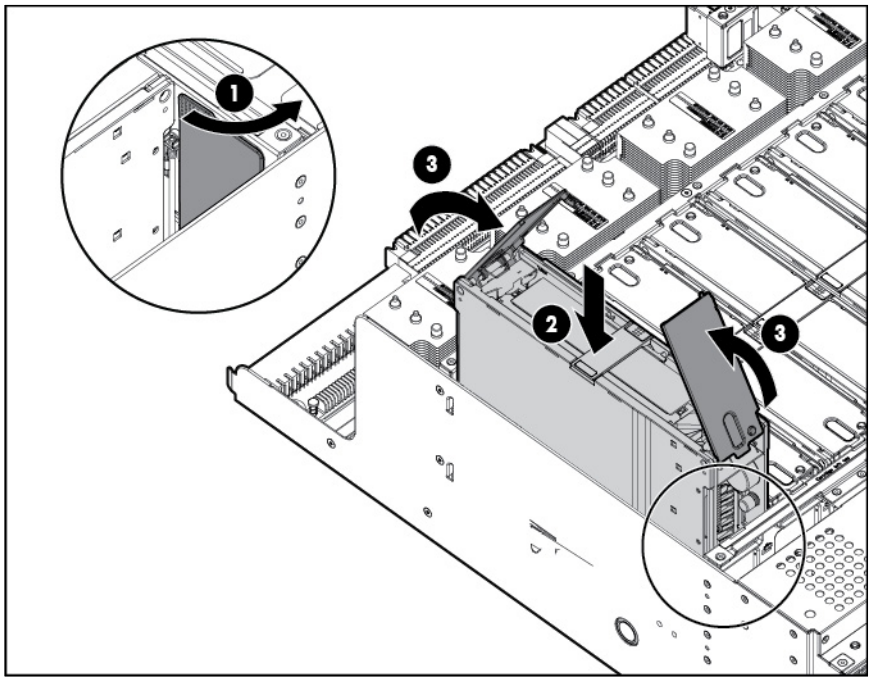
To replace the component:

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.

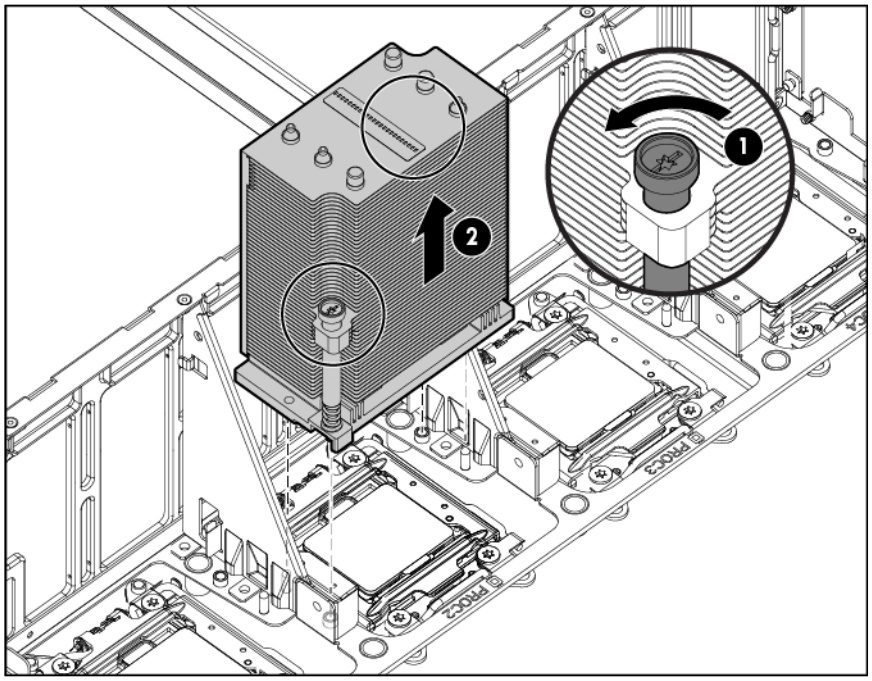
WARNING: To reduce the risk of personal injury, electric shock, or damage to the equipment, remove the power cord to remove power from the server. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active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

CAUTION: 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:

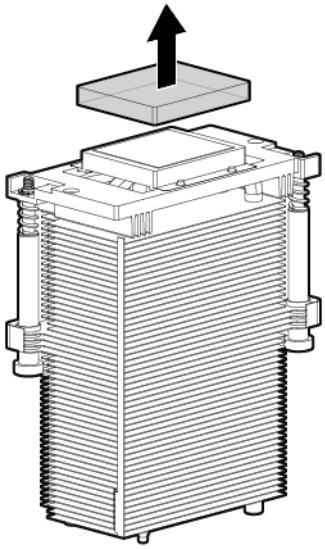
1. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
2. Remove the processor memory drawer shipping screws. ("Processor memory drawer shipping screw locations" on page 28)
3. Remove the processor memory drawer (on page 28).

4. Remove the processor memory drawer cover (on page 29).
5. Remove the heatsink.



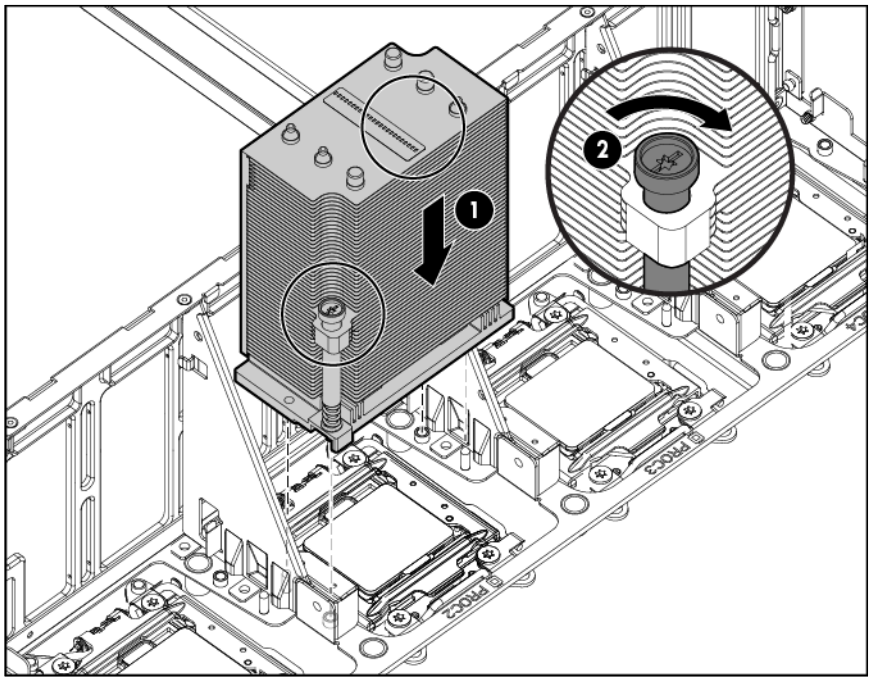
To replace the component:

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. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC power is removed.

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

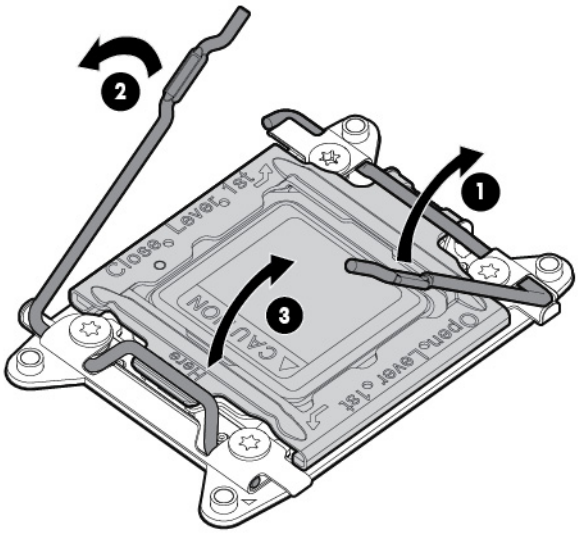
IMPORTANT: Processor socket 1 must be populated at all times or the server does not function.

To remove the processor:

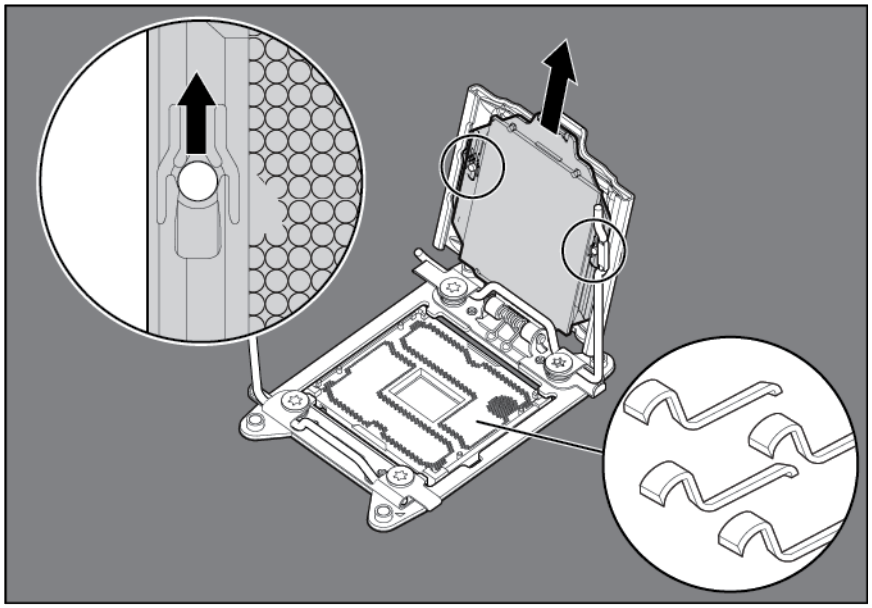
1. Power down the server (on page 25).
2. Remove all power:
   a. Disconnect each power cord from the power source.

b. Disconnect each power cord from the server.

3. Extend the server from the rack (on page 25).
4. Remove the processor memory drawer (on page 28).
5. Remove the processor memory drawer cover (on page 29).
6. Remove the heatsink ("Heatsink" on page 55).
7. Open each of the processor locking levers in the order indicated, and then open the processor retaining bracket.



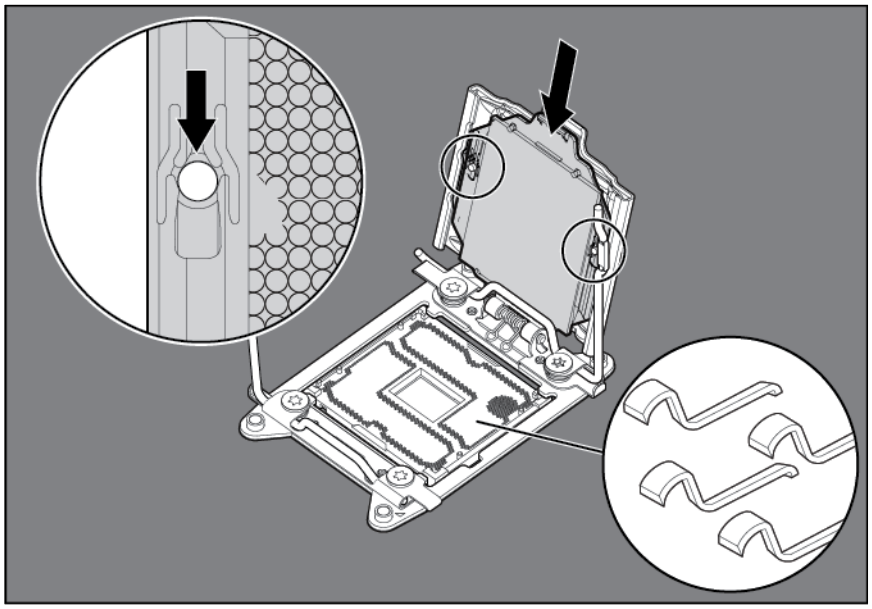
8. Remove the processor from the processor retaining bracket.



△ **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.**

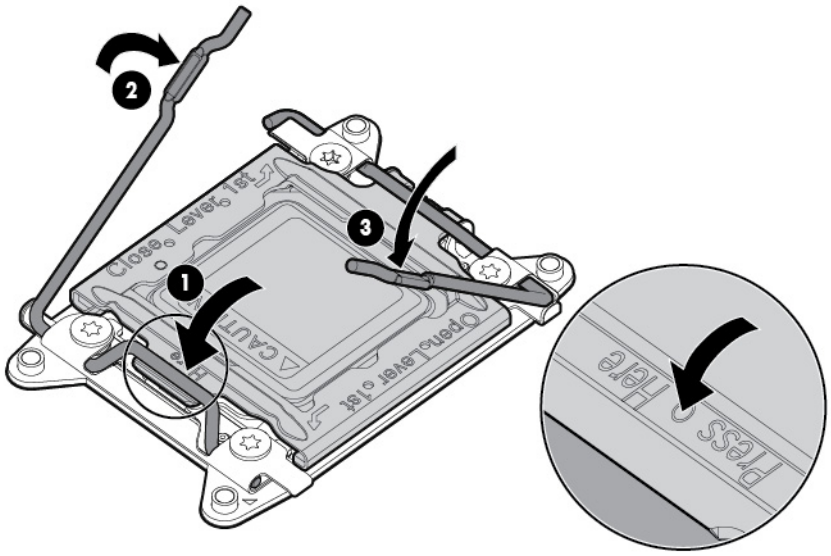


△ **CAUTION: THE PINS ON THE SYSTEM BOARD ARE VERY FRAGILE AND EASILY DAMAGED.** To avoid damage to the system board, do not touch the processor or the processor socket contacts.

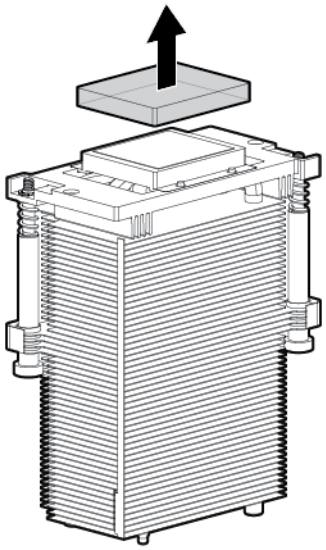
2. Close the processor retaining bracket. When the processor is installed properly inside the processor retaining bracket, the processor retaining bracket clears the flange on the front of the socket.

△ **CAUTION:** Do not press down on the processor. Pressing down on the processor may cause damage to 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.

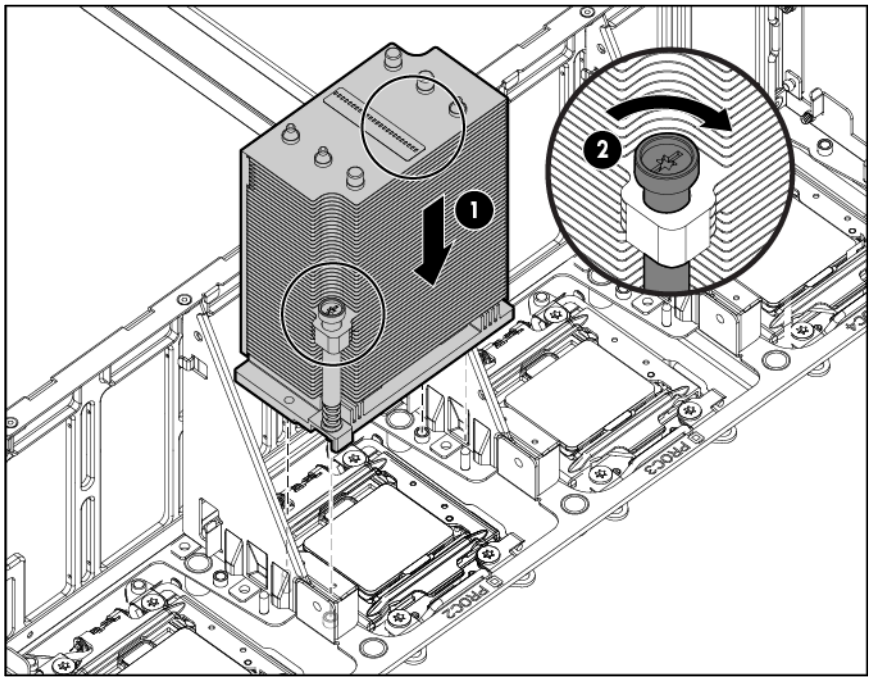


4. Remove the thermal interface protective cover from the heatsink.



△ **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.

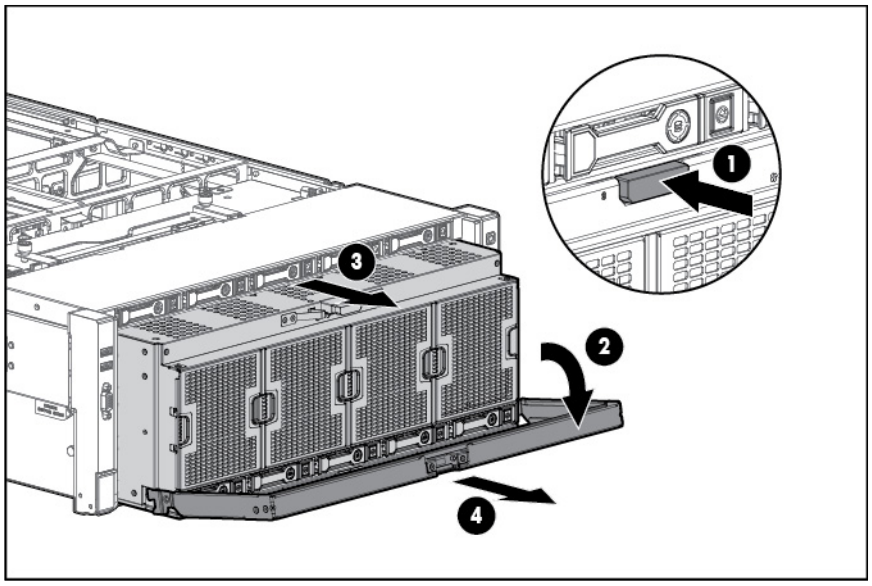
10. Power up the server.

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 83)."

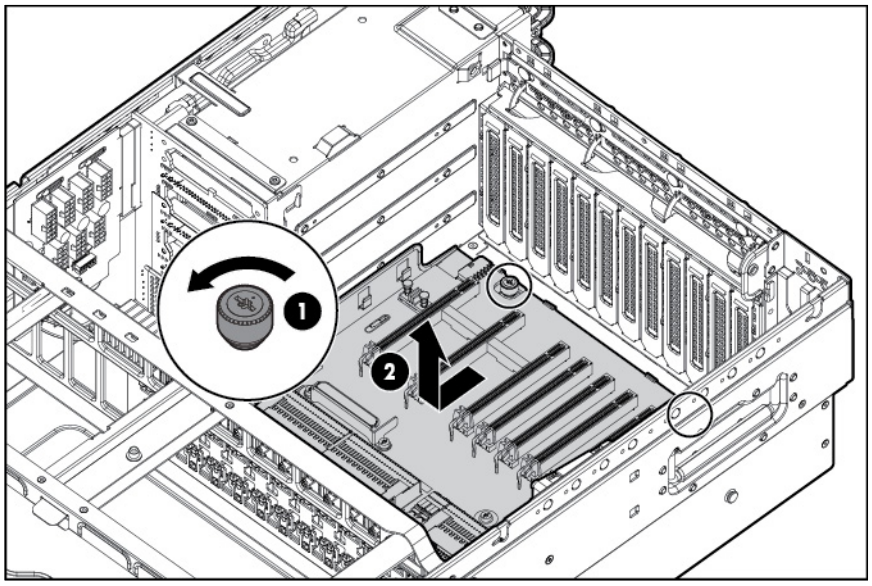
To remove the component:

1. Power down the server (on page 25).
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 25).
4. Remove the access panel (on page 27).
5. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 inches).



6. Remove the SPI board (on page 29).
7. Remove the FlexibleLOM ("FlexibleLOM" on page 66).
8. Remove any expansion boards installed on the I/O board ("Expansion board" on page 40).
9. Disconnect all cables connected to the I/O board.

10. Remove the I/O board.



To replace the component, reverse the removal procedure.

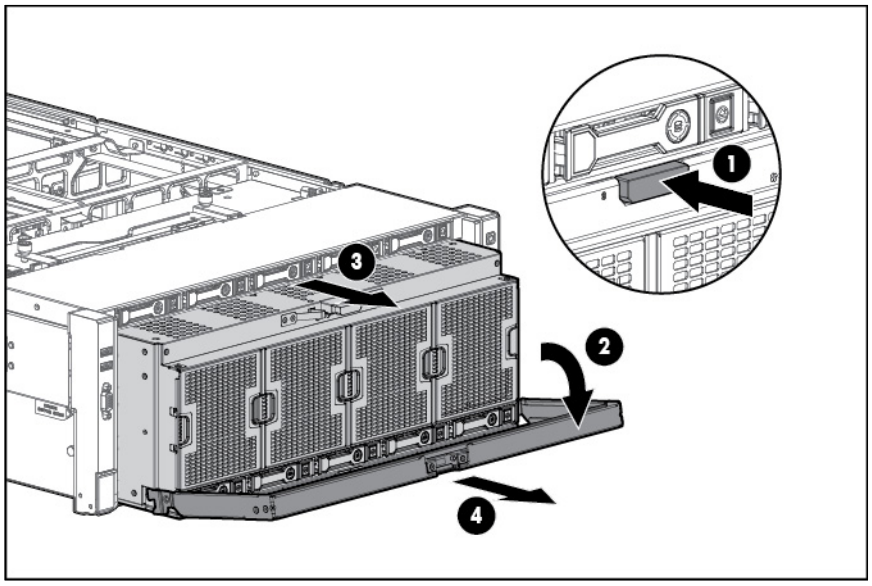
Top SAS backplane

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

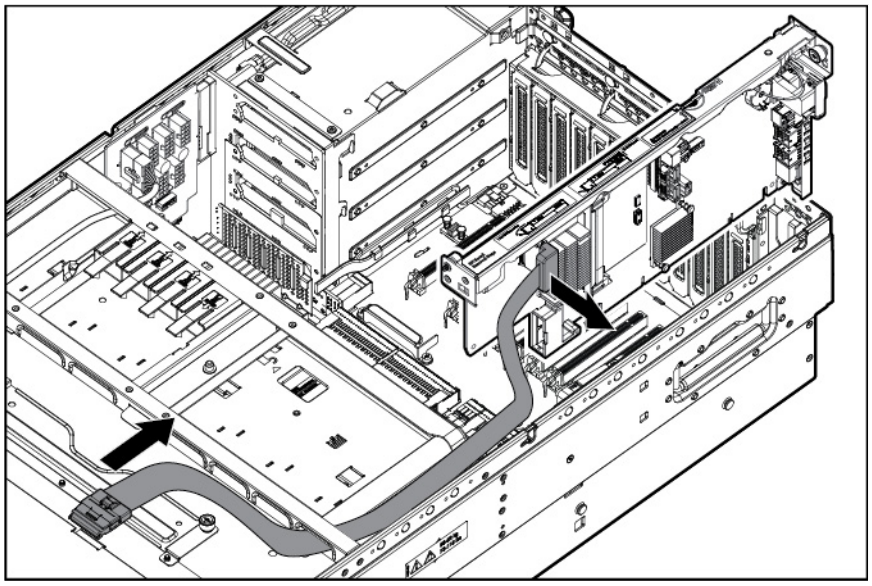
To remove the component:

1. Power down the server (on page 25).
2. Remove all power:
   a. Disconnect each power cord from the power source.
   b. Disconnect each power cord from the server.
3. Remove the access panel (on page 27).
4. Extend the server from the rack (on page 25).

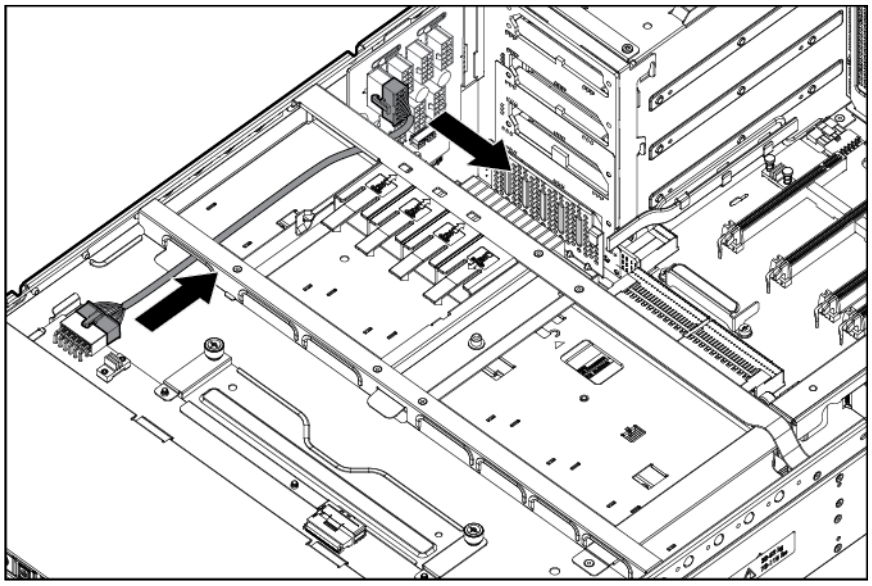
5. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 inches).



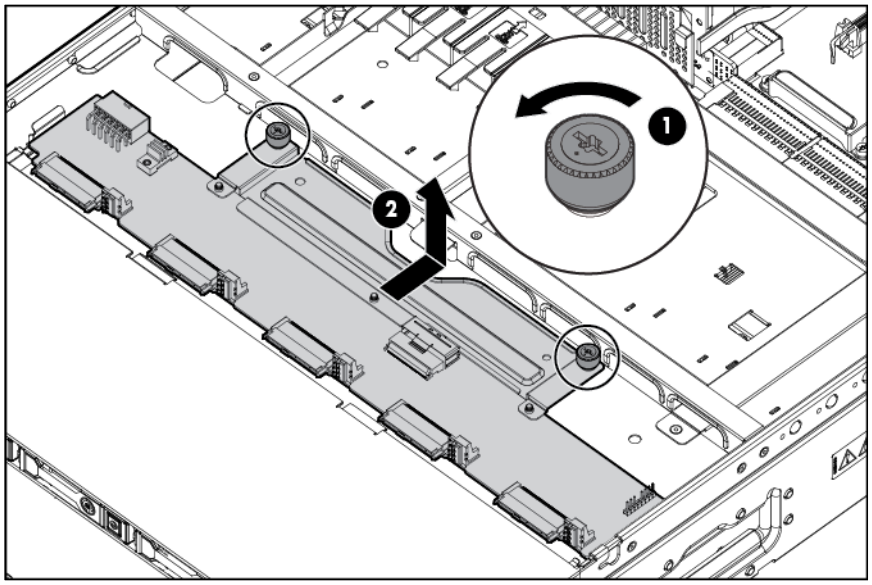
6. Remove the SPI board (on page 29).
7. Remove any drives installed in bays 6-10.
8. Disconnect the data cable.



9. Disconnect the power cable.



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



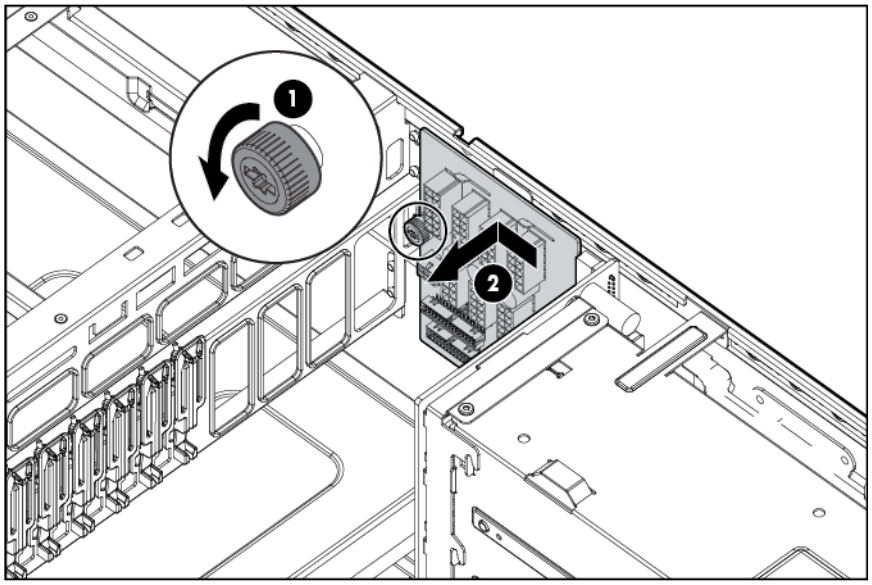
To replace the component, reverse the removal procedure.

Power daughter board

To remove the component:

1. Power down the server (on page 25).
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 25).
4. Remove the access panel (on page 27).

5. Disconnect the cables from the power daughter board.
6. Remove the power daughter board.



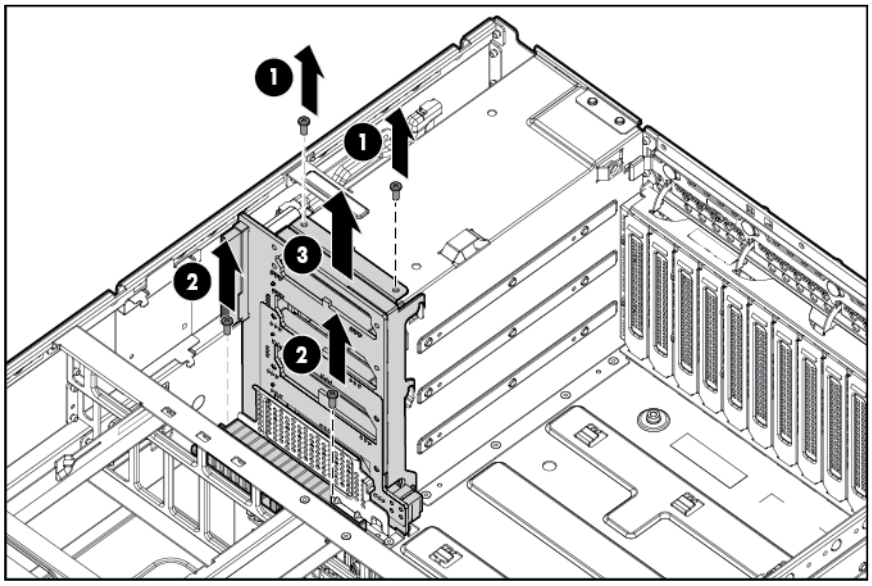
To replace the component, reverse the removal procedure.

Power supply backplane

To remove the component:

1. Power down the server (on page 25).
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 25).
4. Remove the processor memory drawer (on page 28).
5. Remove the access panel (on page 27).
6. Remove the power daughter card ("Power daughter board" on page 64).
7. Remove the I/O board ("I/O board" on page 61).
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 on the bottom of the backplane.

c. Remove the backplane.

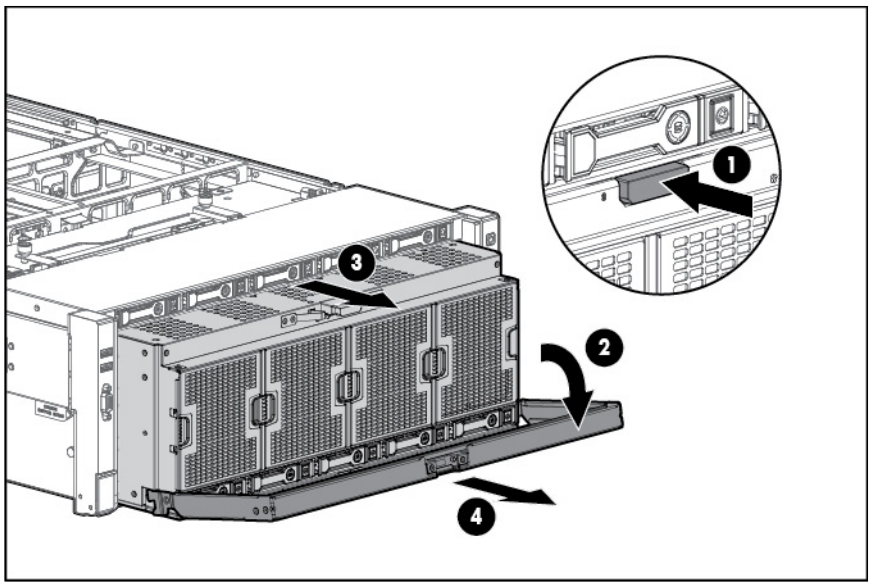


To replace the component, reverse the removal procedure.

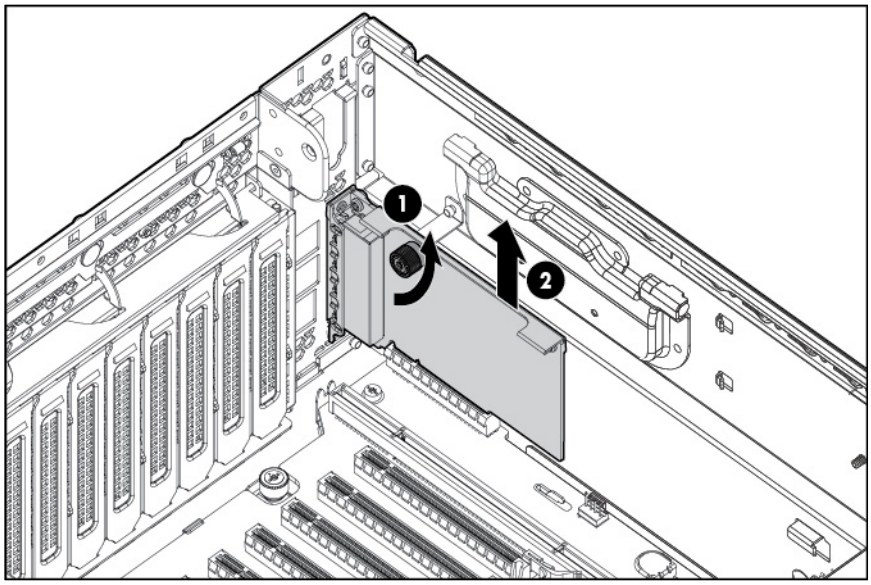
FlexibleLOM

To remove the component:

1. Power down the server (on page 25).
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 25).
5. Extend the processor memory drawer approximately 2.54-5.1 cm (1-2 inches).



6. Remove the SPI board (on page 29).
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 may need to replace the battery that provides power to the real-time clock. Under normal use, battery life is 5 to 10 years.

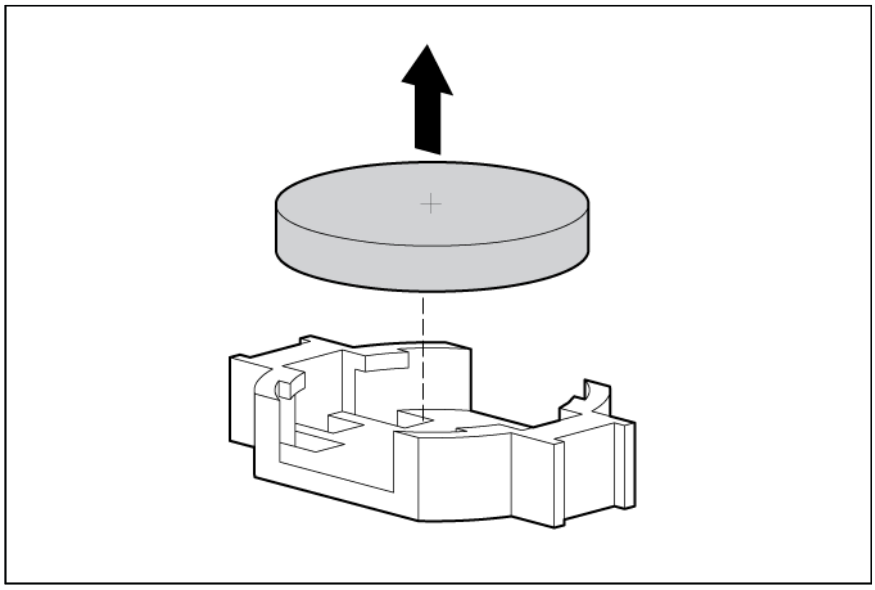
⚠ **WARNING:** The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- 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 25).
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 25).
4. Remove the access panel (on page 27).
5. Remove the SPI board (on page 29).

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, HP 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 83)."

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 an HP authorized service provider for a replacement system board and TPM board.

Troubleshooting

Troubleshooting resources

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

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

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

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

Diagnostic tools

HP UEFI System Utilities

The HP UEFI System Utilities is embedded in the system ROM. The UEFI System Utilities enable you to perform a wide range of configuration activities, including:

- Configuring system devices and installed options
- Enabling and disabling system features
- Displaying system information
- Selecting the primary boot controller
- Configuring memory options
- Selecting a language
- Launching other pre-boot environments such as the Embedded UEFI Shell and Intelligent Provisioning

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

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

Using HP UEFI System Utilities

To use the System Utilities, use the following keys.

Action	**Key**
Access System Utilities	F9 during server POST
Navigate menus	Up and Down arrows
Select items	Enter
Save selections	F10
Access Help for a highlighted configuration option*	F1

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

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

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

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

Flexible boot control

This feature enables you to do the following:

- Add Boot Options
  - Browse all FAT16 and FAT32 file systems.
  - Select an X64 UEFI application with an .EFI extension to add as a new UEFI boot option, such as an OS boot loader or other UEFI application.

    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 (which is then displayed in the Boot menu), as well as any optional data to be passed to an .EFI application.
- Boot to System Utilities

  After pre-POST, the boot options screen appears. During this time, you can access the System Utilities by pressing the **F9** key.
- Choose between supported modes: Legacy BIOS Boot Mode or 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 *HP UEFI System Utilities User Guide for HP ProLiant Gen9 Servers* on the HP website (http://www.hp.com/go/ProLiantUEFI/docs).

Restoring and customizing configuration settings

You can reset all configuration settings to the factory default settings, or you can restore system default configuration settings, which are used instead of the factory default 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 HP implementation of UEFI is based. Secure Boot is completely implemented in the BIOS and does not require special hardware. It ensures that each component launched during the boot process is digitally signed and that the signature is validated against a set of trusted certificates embedded in the UEFI BIOS. Secure Boot validates the software identity of the following components in the boot process:

- UEFI drivers loaded from PCIe cards
- UEFI drivers loaded from mass storage devices
- Pre-boot 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 when Secure Boot is enabled. For

more information about supported operating systems, see the *HP UEFI System Utilities and Shell Release Notes* on the HP website (http://www.hp.com/go/ProLiantUEFI/docs).

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

Embedded UEFI shell

The system BIOS in all HP 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:

- *HP UEFI Shell User Guide for HP ProLiant Gen9 Servers* on the HP website (http://www.hp.com/go/ProLiantUEFI/docs)
- *UEFI Shell Specification* on the UEFI website (http://www.uefi.org/specifications)

Embedded Diagnostics option

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

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

HP RESTful API support for UEFI

HP ProLiant Gen9 servers include support for a UEFI compliant System BIOS, along with UEFI System Utilities and Embedded UEFI Shell pre-boot environments. HP ProLiant Gen9 servers also support configuring the UEFI BIOS settings using the HP RESTful API, a management interface that server management tools can use to perform configuration, inventory, and monitoring of an HP ProLiant server. A REST client uses HTTPS operations to configure supported server settings, such as UEFI BIOS settings.

For more information about the HP RESTful API and the HP RESTful Interface Tool, see the HP website (http://www.hp.com/support/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 the **System Configuration** > **BIOS/Platform Configuration (RBSU)** > **Advanced Options** > **Advanced System ROM Options** > **Serial Number**, and then press the **Enter** key.
3. Enter the serial number and press the **Enter** key. The following message appears:

   ```
   The serial number should only be modified by qualified service personnel.
   This value should always match the serial number located on the chassis.
   ```
4. Press the **Enter** key to clear the warning.
5. Enter the serial number and press the **Enter** key.
6. Select **Product ID**. The following warning appears:

```
Warning: The Product ID should ONLY be modified by qualified service
personnel. This value should always match the Product ID located on the
chassis.
```

7. Enter the product ID and press the **Enter** key.
8. Press the **F10** key to confirm exiting System Utilities. The server automatically reboots.

HP ProLiant Pre-boot Health Summary

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

For additional information, see the following documents:

- *HP iLO 4 User Guide* — See the HP website (http://www.hp.com/go/ilo/docs).
- *HP ProLiant Gen9 Troubleshooting Guide, Volume I: Troubleshooting* — See "Troubleshooting Resources (on page 69)."

HP Insight Diagnostics

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

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

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

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

HP Insight Diagnostics survey functionality

HP Insight Diagnostics (on page 73) provides survey functionality that gathers critical hardware and software information on ProLiant servers.

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

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

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

Active Health System

HP Active Health System provides the following features:

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

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

The Active Health System collects the following types of data:

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

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

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

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

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

For more information, see the following documents:

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

Integrated Management Log

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

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

- From within HP SIM
- From within operating system-specific IML viewers:
  - For Windows: IML Viewer

- For Linux: IML Viewer Application
- From within the iLO 4 web interface
- From within HP Insight Diagnostics (on page 73)

USB support

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

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

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

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

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

External USB functionality

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

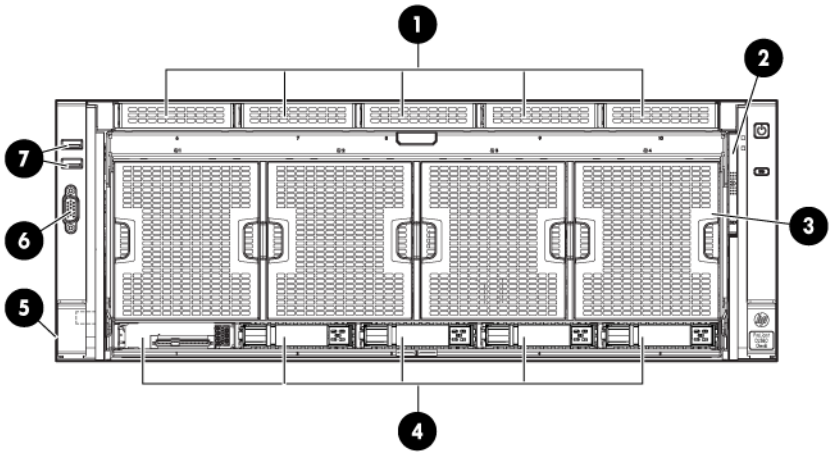
For additional security, external USB functionality can be disabled through USB options in UEFI System Utilities.

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

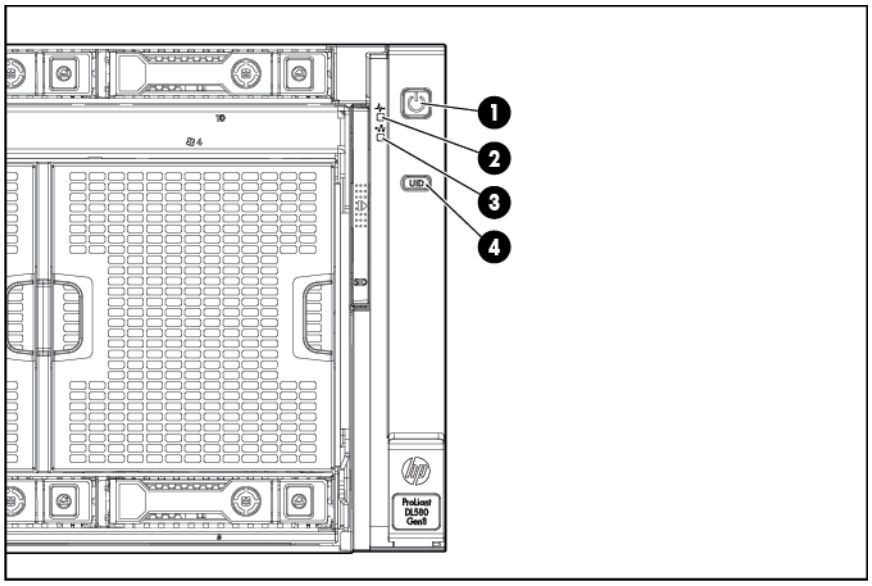
Front panel components



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

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

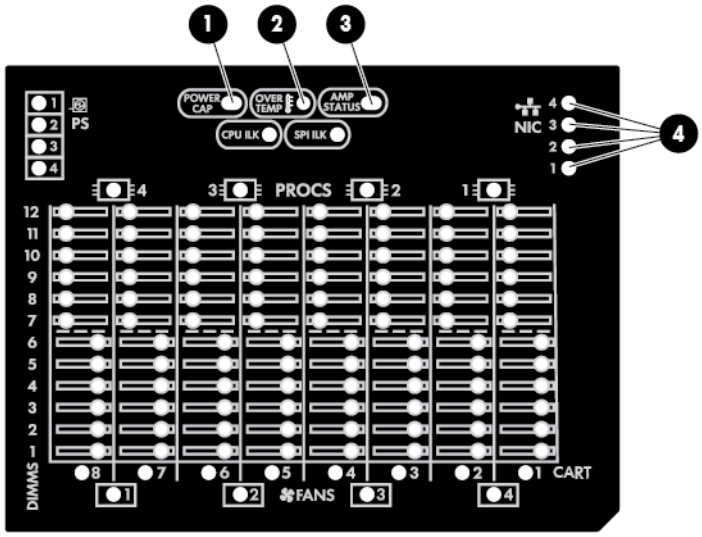
Front panel LEDs and buttons



Item	Description	Status
1	Power on/Standby button and system power LED	Solid green = System on Flashing green (1 Hz/cycle per sec) = Performing power on sequence Solid amber = System in standby Off = No power present
2	Health LED	Solid green = Normal Flashing 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	Solid green = Link to network Flashing green = Linked with activity on the network Off = No network connection
4	UID button/link	Solid blue = Activated Flashing blue (1 Hz/cycle per sec) = Remote management or firmware upgrade in progress

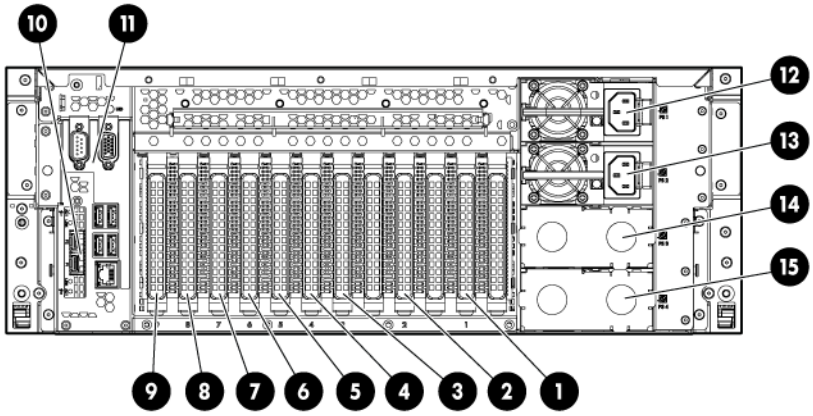
Systems Insight Display

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



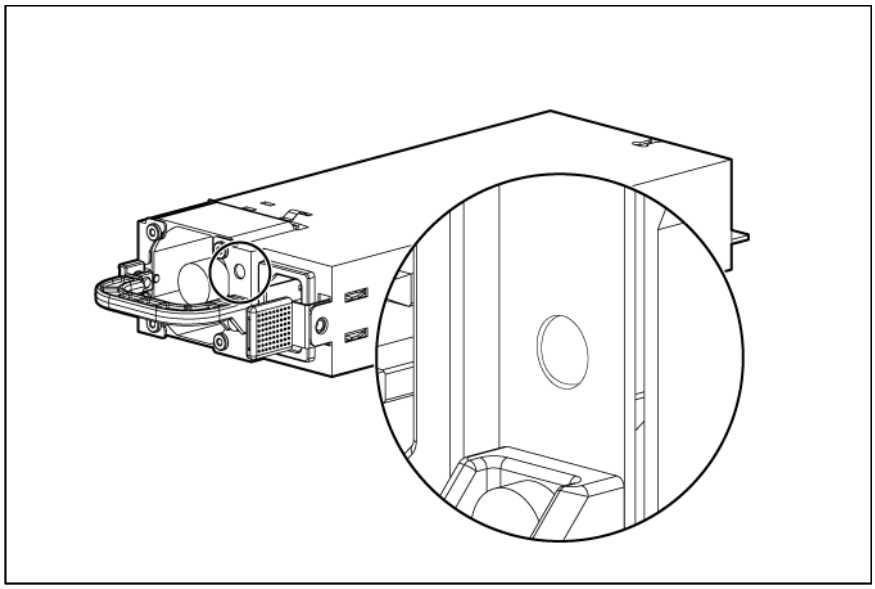
Item	LED	Description
1	Power cap	Green = System on or requesting power on Flashing amber = Power on denied Off = Standby
2	Overtemperature	Off = Normal Amber = Failed or missing component
3	Amp status	Off = No protection Green = Protection enabled Amber = Memory failure occurred Amber (flashing) = Memory configuration error
4	NIC activity/link	Green = Linked to network Green (flashing) = Linked with activity on the network Off = No network connection
	All other LEDs	Off = Normal Amber = Failed or missing component

Rear panel components



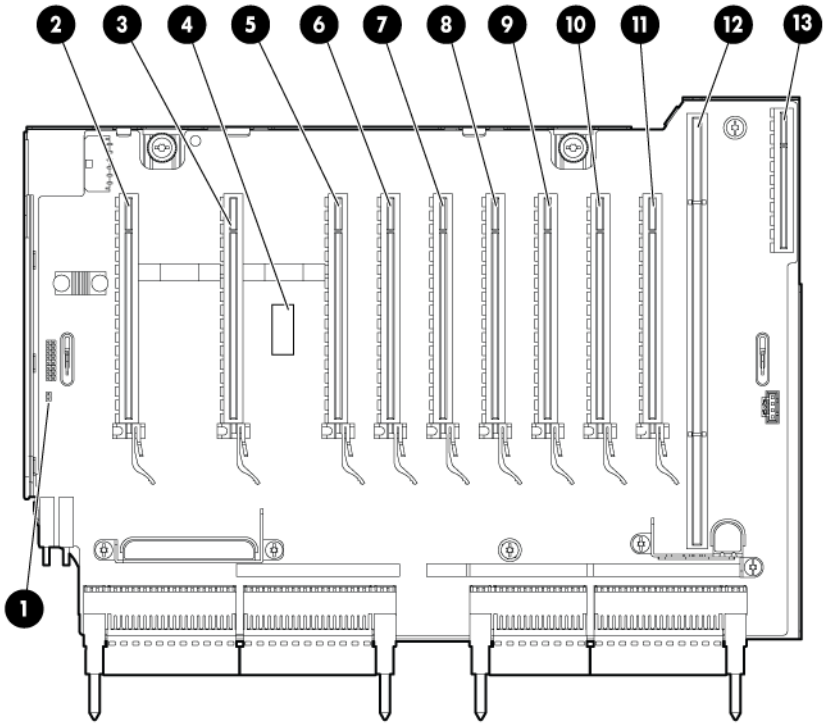
Item	Description
1	Expansion board slot 1
2	Expansion board slot 2
3	Expansion board slot 3
4	Expansion board slot 4
5	Expansion board slot 5
6	Expansion board slot 6
7	Expansion board slot 7
8	Expansion board slot 8
9	Expansion board slot 9
10	FlexibleLOM slot
11	SPI board
12	Power supply 1
13	Power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

Power supply LED

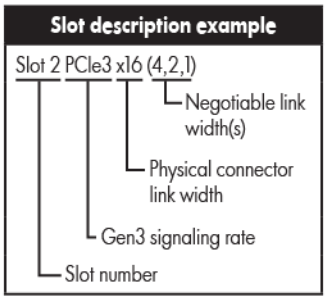


Fail LED-amber (Located on the SID)	Power LED-green (Located on the power supply)	Front external health LED Located on the front panel	Status
Off	Off	Off	No AC power to power supply units
Off	Off	Green	AC present/Standby outputs on Power supply DC outputs on and OK
On	Off	Amber (flashing) – redundant 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)
3	Slot 2 PCIe3 x16 (16, 8, 4, 2, 1)
4	System maintenance switch
5	Slot 3 PCIe3 x16 (16, 8, 4, 2, 1)
6	Slot 4 PCIe3 x16 (8, 4, 2, 1)
7	Slot 5 PCIe3 x16 (8, 4, 2, 1)
8	Slot 6 PCIe3 x16 (16, 8, 4, 2, 1)
9	Slot 7 PCIe3 x16 (8, 4, 2, 1)
10	Slot 8 PCIe3 x16 (8, 4, 2, 1)
11	Slot 9 PCIe3 x16 (16, 8, 4, 2, 1)
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	Off = iLO security enabled On = iLO security disabled
2	Off = Normal operation On = The BIOS configuration is locked.
5	Off = Normal operation On = Password disabled
6	Off = Normal operation On = Clear CMOS and RAM
7*	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.

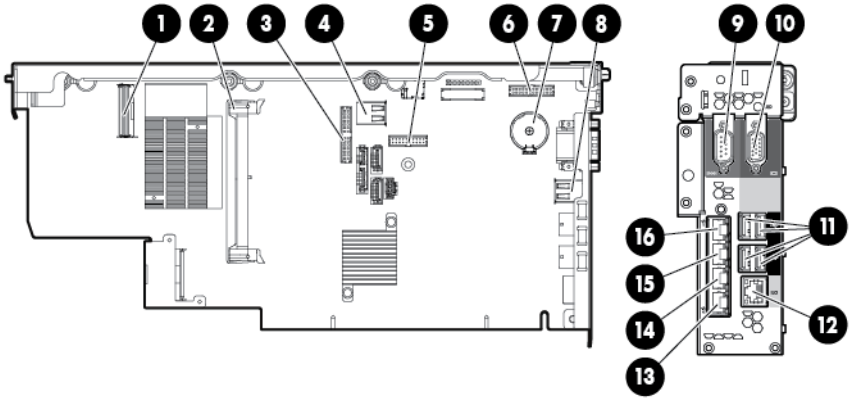
IMPORTANT: To avoid a mismatch between boot modes, HP recommends setting system maintenance switch 7 to the same BIOS boot mode the server is deployed in. Otherwise, the storage controller may not recognize the OS installed on the storage media.

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.

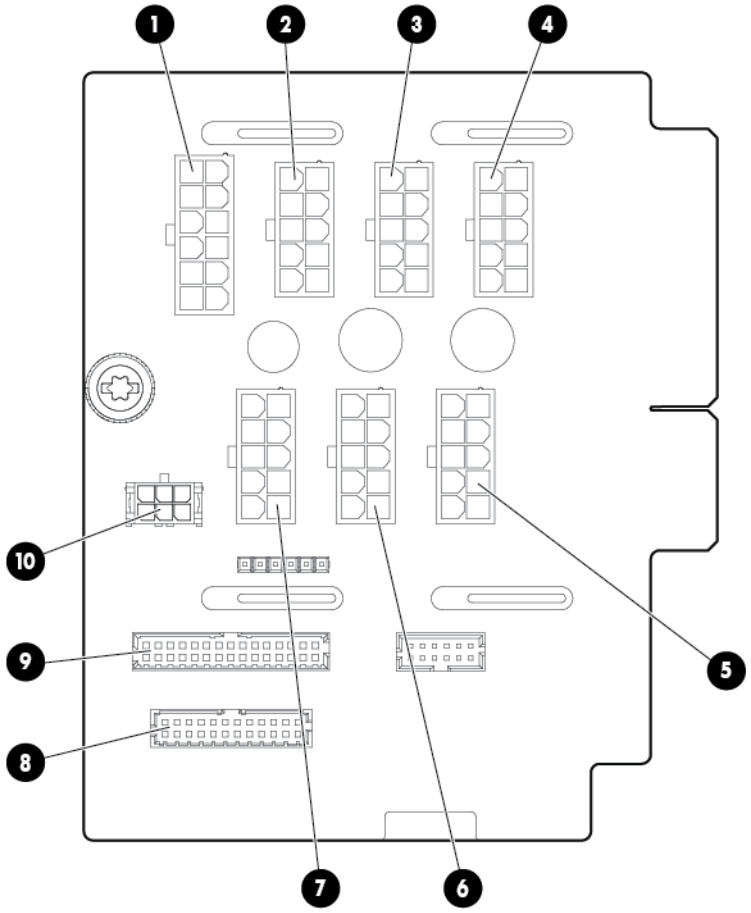
SPI board components



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 may differ from what is shown in the illustration.

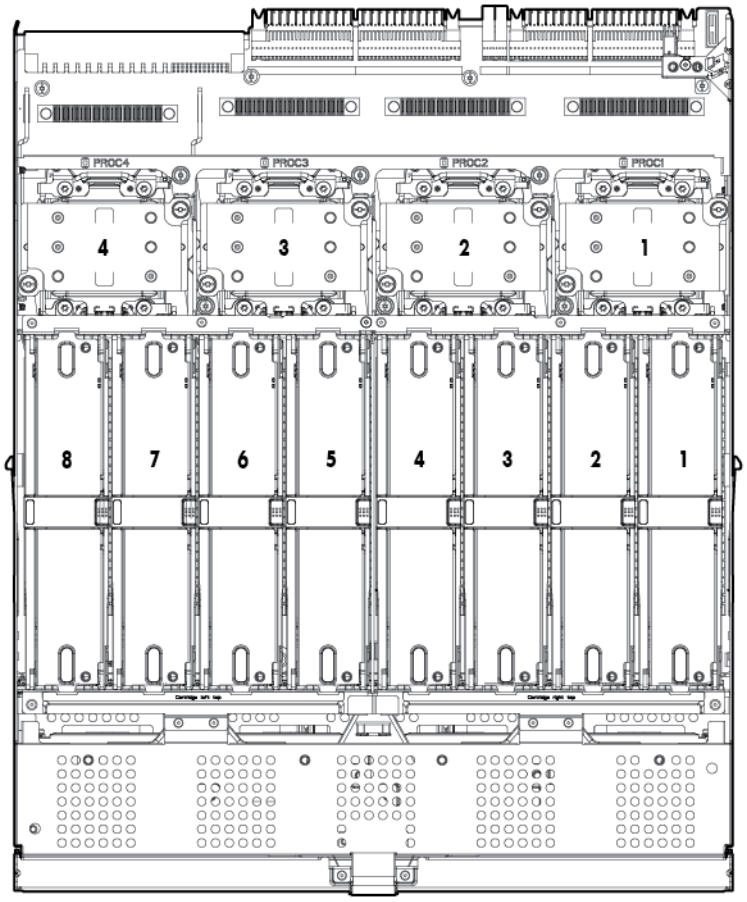
Power daughter board components



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

Processors and memory cartridges

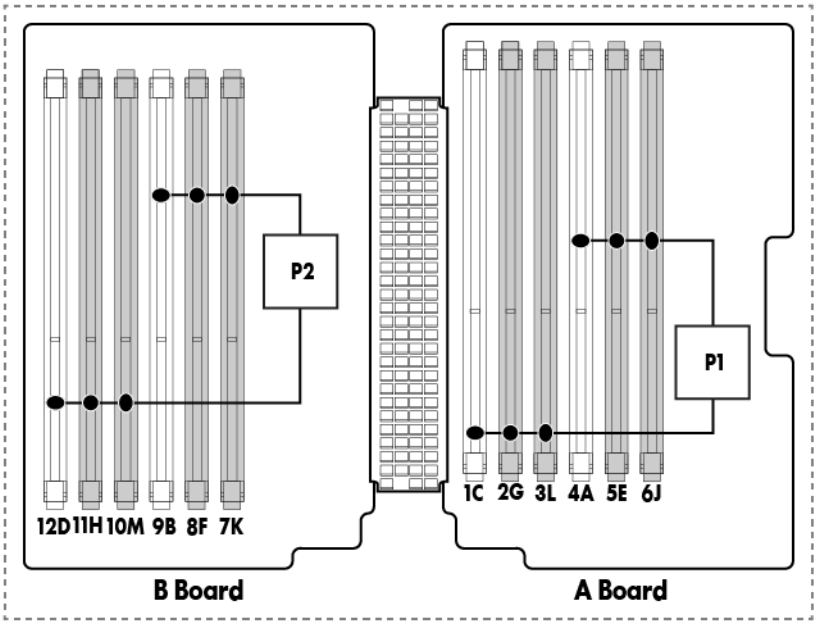
The processor memory drawer contains 4 processor sockets and 8 memory cartridges.



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

DIMM slot locations

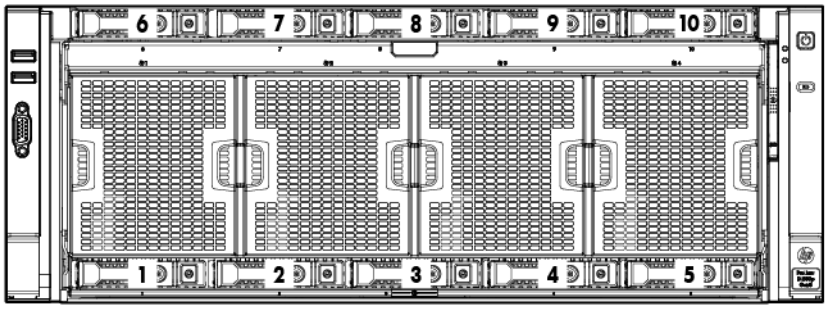
Each memory cartridge contains 12 DIMM slots. Install DIMMs in pairs in alphabetical order.



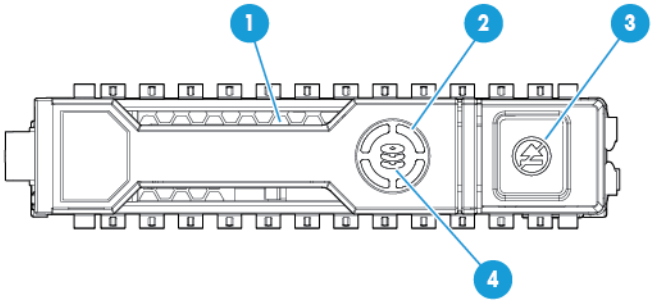
For installation guidelines, see the server user guide.

Drive bay numbering

Drives installed in bays 6-10 require the optional SAS backplane.

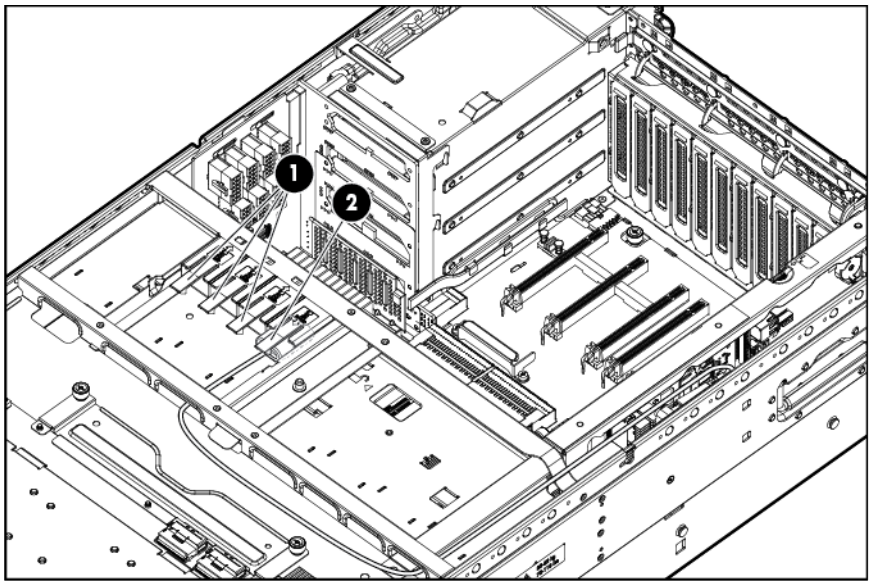


Hot-plug drive LED definitions



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.

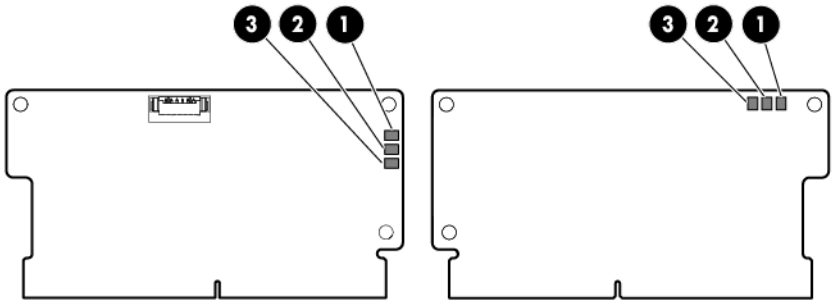
FBWC capacitor slots



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

FBWC module LEDs

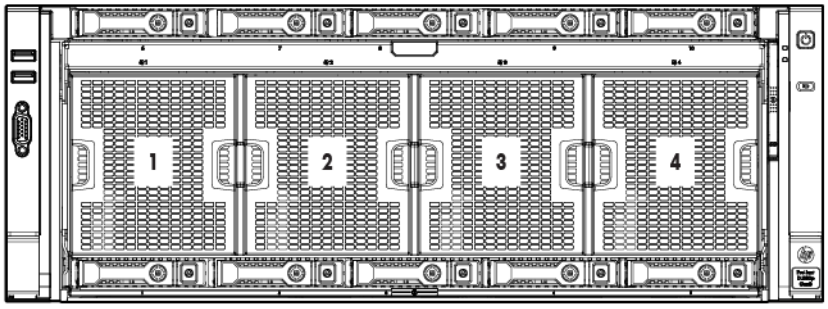
The FBWC module has three single-color LEDs (one amber and two green). The LEDs are duplicated on the reverse side of the cache module to facilitate status viewing.



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.

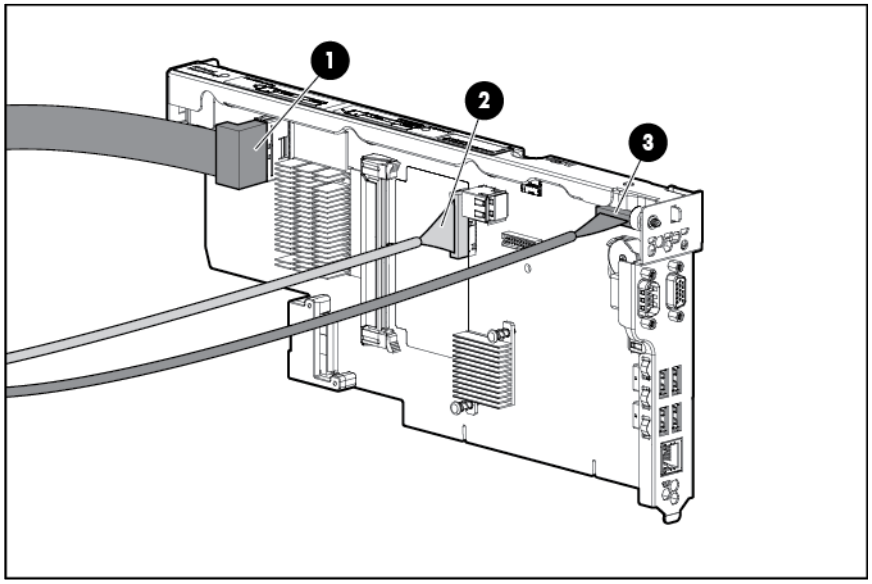
1 - Amber	2 - Green	3 - Green	Interpretation
Off	Off	Flashing once per second	The cache module is idle, and the capacitor pack is charging.
Off	Off	On	The cache module is idle, and the capacitor pack is charged.
Off	On	On	The cache module is idle, the capacitor pack is charged, and the cache contains 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.

Fan locations



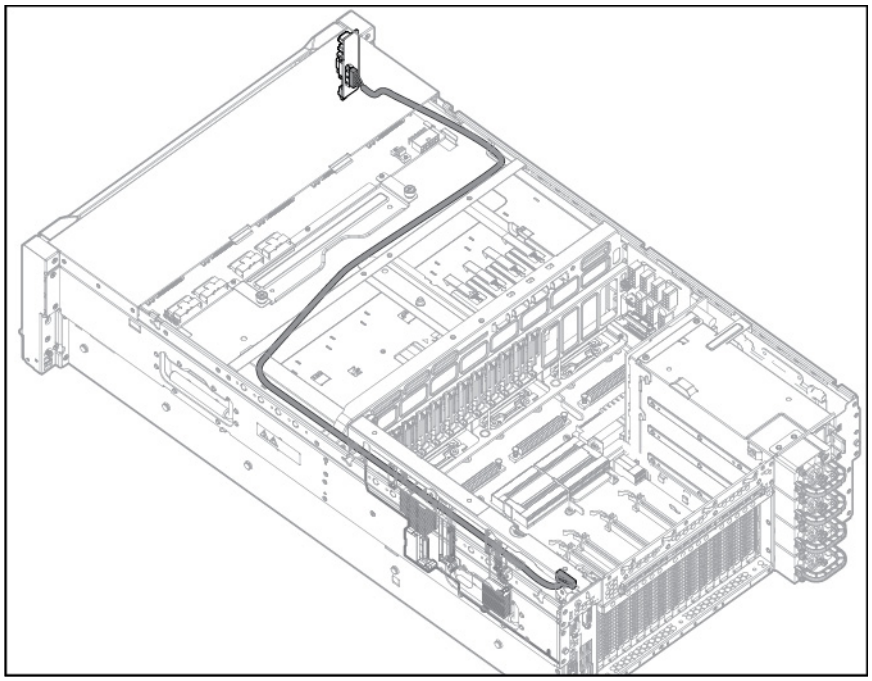
Cabling

SPI board cabling

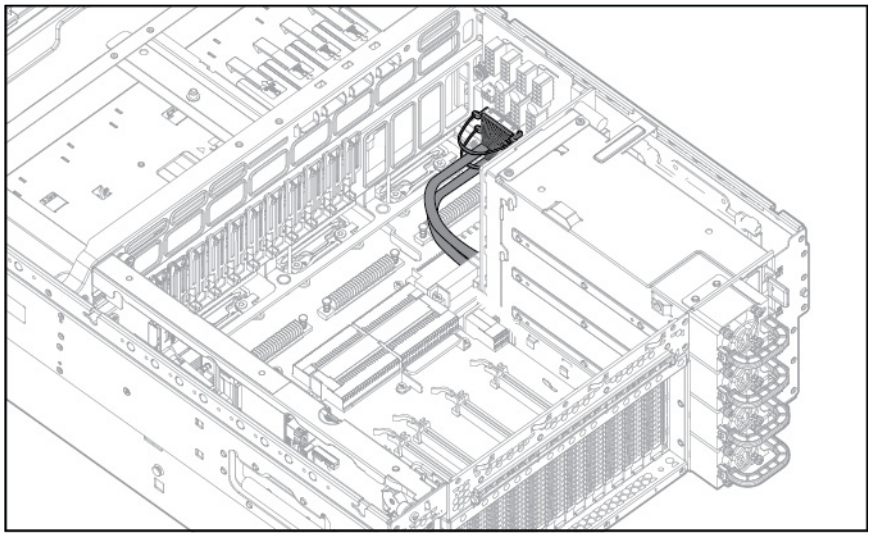


Item	Description
1	Top SAS backplane connector
2	System Insights Display Power/UID connector
3	Front video/USB connector

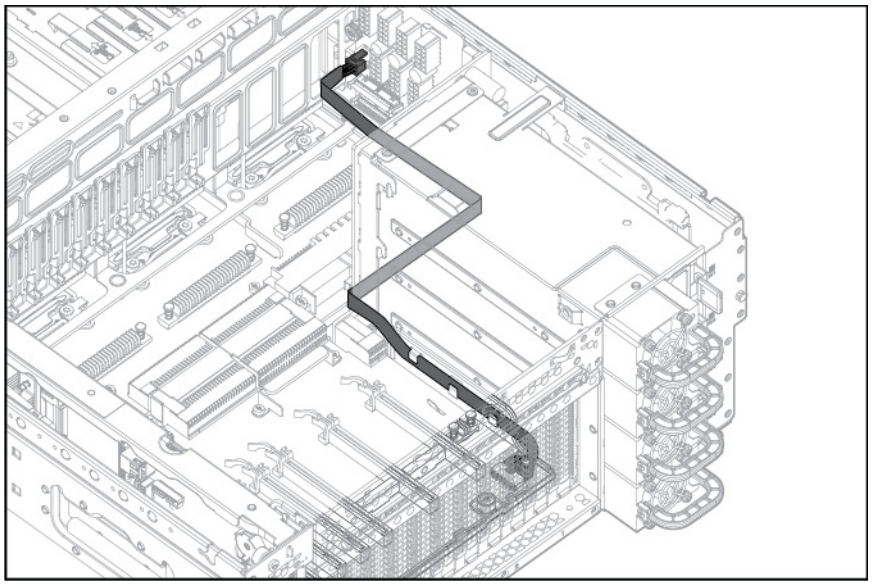
Front video/USB cabling



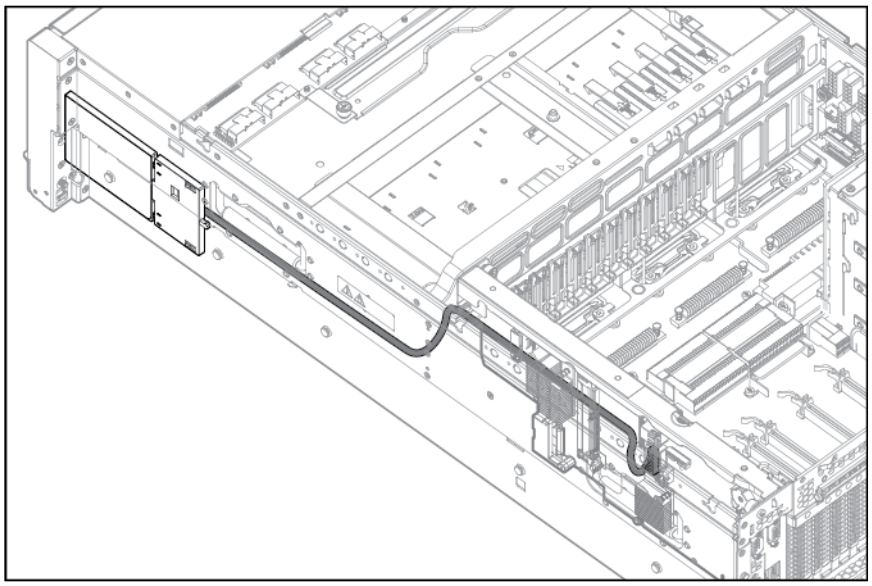
Power supply data cabling



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:

- HP 1200 W Common Slot Platinum Plus Hot-Plug Power Supply (94% efficiency) (on page 95)
- HP 1500 W Common Slot Platinum Plus Hot-Plug Power Supply (94% efficiency) (on page 95)

For detailed power supply specifications, see the server QuickSpecs on the HP website (http://www.hp.com/go/hpsc).

HP 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	9.2 A at 100 VAC 9.5 A at 110 to 120 VAC 6.6A at 200 to 240 VAC
Maximum rated input power	1000 W at 120V AC input 1320 W at 230V AC input
BTUs per hour	3408 at 120V AC input 4500 at 230V AC input
Power supply output	
Power supply output	800W at 100V AC input (low line) 900W at 108V to 132V AC input (low line) 1200 W at 200V to 240V AC input (High line)
Rated steady-state power	800 W at 100V AC input 900 W at 120V AC input 1200 W at 200V to 240V AC input
Maximum peak power	800 W at 100V AC input 900 W at 120V AC input 1200 W at 200V to 240V AC input

HP 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 230V AC input
BTUs per hour	5637 at 230V AC input
Power supply output	
Power supply output	1500 W
Rated steady-state power	1500 W at 200V to 240V AC input
Maximum peak power	1500 W at 200V to 240V AC 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

HP 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

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