

HP ProLiant ML350 Generation 5 Server Maintenance and Service Guide

Abstract

This guide describes identification and maintenance procedures, diagnostic tools, specifications and requirements for hardware components and software. This guide is for an experienced service technician. HP assumes that you are qualified in the servicing of computer equipment, trained in recognizing hazards in products, and are familiar with weight and stability precautions.



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Customer self repair

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

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

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

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

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

Parts only warranty service

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

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

Réparation par le client (CSR)

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

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

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

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

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

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

Service de garantie "pièces seules"

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

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

Riparazione da parte del cliente

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

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

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

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の修理受付窓口へ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.

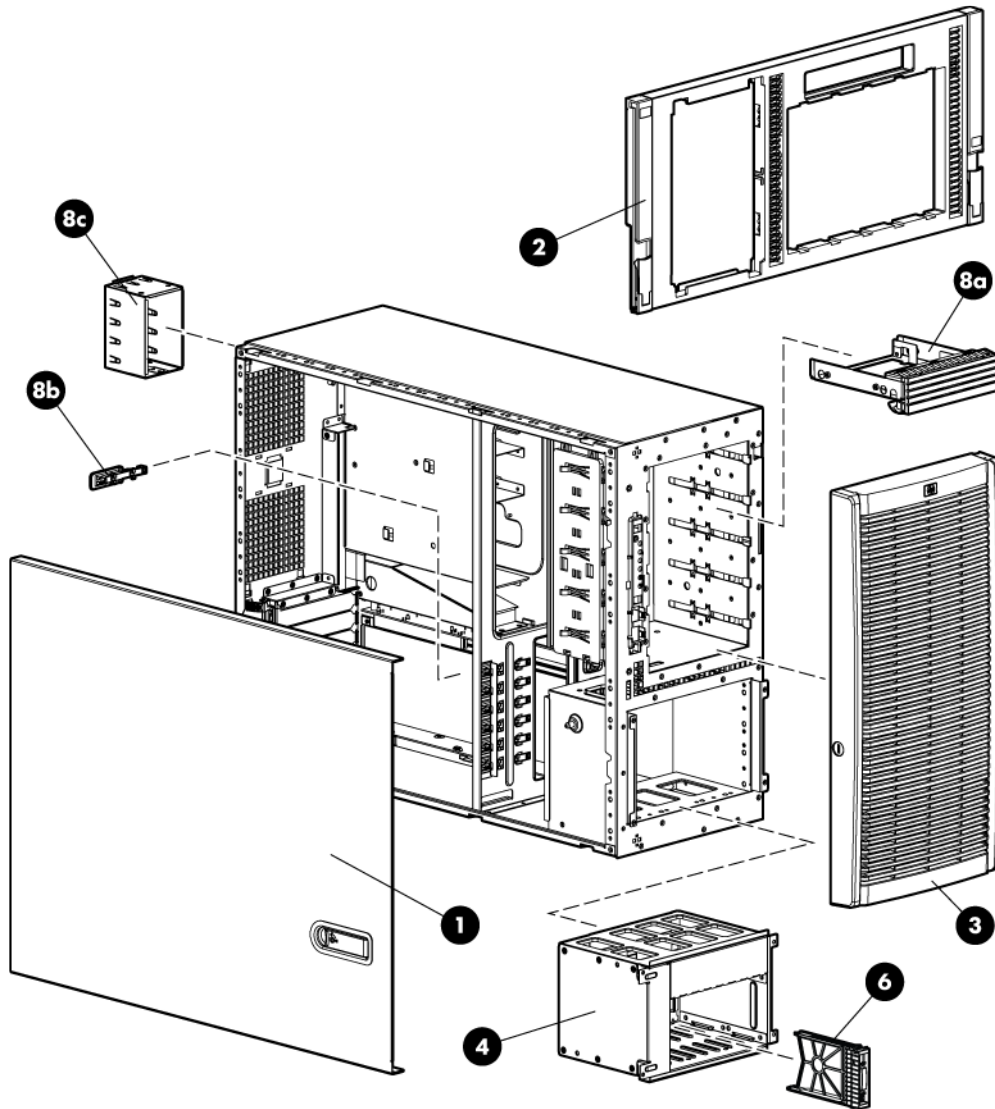
부품 제공 보증 서비스

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



Item	Description	Spare part number	Customer self repair (on page 5)
1	Access panel	413981-001	Mandatory ¹
2	Rack bezel	413983-001	Mandatory ¹
3	Front bezel, tower model	413982-001	Mandatory ¹
4	SATA/SAS hard drive cage, SFF	413985-001	Optional ²
5	SATA/SAS hard drive cage, LFF*	413986-001	Optional ²
6	Hard drive blank, SFF	392613-001	Mandatory ¹

Item	Description	Spare part number	Customer self repair (on page 5)
7	Hard drive blank, LFF*	389015-001	Mandatory ¹
8	Plastics/hardware kit	413989-001	Mandatory ¹
	a) Removable media blank	—	—
	b) Retainer card guide	—	—
	c) Power supply blank	—	—
	d) Foot, carbonite*	—	—

*Not shown

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

²Optional: 可选的 — 客户可以选择是否自行维修的部件。这些部件也是为客户自行维修设计的。不过，如果您要求 HP 为您更换这些部件，则根据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。

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

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

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

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

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

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

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

Item	Description	Spare part number	Customer self repair (on page 5)
	f) Dual-Core, Intel® Xeon® Processor 5130 (2.0-GHz, 1333-MHz FSB, 1x4-MB L2 cache)*†	416796-001	Optional ²
	g) Dual-Core, Intel® Xeon® Processor 5140 (2.33-GHz, 1333-MHz FSB, 1x4-MB L2 cache)*†	416797-001	Optional ²
	h) Dual-Core, Intel® Xeon® Processor 5150 (2.66-GHz, 1333-MHz FSB, 1x4-MB L2 cache)*†	416798-001	Optional ²
	i) Dual-Core, Intel® Xeon® Processor 5160 (3.0-GHz, 1333-MHz FSB, 1x4-MB L2 cache)*†	416799-001	Optional ²
	j) Dual-Core, Intel® Xeon® Processor E5205 (1.86-GHz, 1066-MHz FSB, 65W, 1x6-MB L2 cache)*†	460493-001	Optional ²
	k) Dual-Core, Intel® Xeon® Processor X5260 (3.33-GHz, 1333-MHz FSB, 1x6-MB L2 cache)*†	459738-001	Optional ²
	l) Quad-Core, Intel® Xeon® Processor E5310 (1.6-GHz, 1066-MHz FSB, 4x2-MB L2 cache)*†	437945-001	Optional ²
	m) Quad-Core, Intel® Xeon® Processor E5320 (1.86-GHz, 1066-MHz FSB, 4x2-MB L2 cache)*†	436151-001	Optional ²
	n) Quad-Core, Intel® Xeon® Processor E5335 (2.00-GHz, 1333-MHz FSB, 4x2-MB L2 cache)*†	437946-001	Optional ²
	o) Quad-Core, Intel® Xeon® Processor E5345 (2.33-GHz, 1333-MHz FSB, 4x2-MB L2 cache)*†	439827-001	Optional ²
	p) Quad-Core, Intel® Xeon® Processor X5355 (2.66-GHz, 1333-MHz FSB, 4x2-MB L2 cache)*†	438363-001	Optional ²
	q) Quad-Core, Intel® Xeon® Processor E5405 (2.00-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	455274-006	Optional ²
	r) Quad-Core, Intel® Xeon® Processor E5410 (2.33-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	460492-001	Optional ²
	s) Quad-Core, Intel® Xeon® Processor E5420 (2.50-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	455274-004	Optional ²
	t) Quad-Core, Intel® Xeon® Processor L5420 (2.50-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	463719-001	Optional ²
	u) Quad-Core, Intel® Xeon® Processor E5430 (2.66-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	455274-003	Optional ²
	v) Quad-Core, Intel® Xeon® Processor E5440 (2.83-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	455274-002	Optional ²
	w) Quad-Core, Intel® Xeon® Processor X5460 (3.16-GHz, 1333-MHz FSB, 2x6-MB L2 cache)*†	457879-001	Optional ²
13	PPM	413980-001	Mandatory ¹
14	Hot-plug power supply, 1000-W, 12-V	403781-001	Mandatory ¹
	Boards		
15	System board	—	—
	a) System board with tray and screws, supports Intel® Xeon® 50xx, 51xx processors and PATA optical drives†	413984-001	Optional ²
	b) System board with tray and screws, supports Intel® Xeon® 50xx, 51xx, 52xx, 53xx, 54xx processors and PATA optical drives*†	439399-001	Optional ²
	c) System board with tray and screws, supports Intel® Xeon® 50xx, 51xx, 52xx, 53xx, 54xx processors and both SATA and PATA optical drives†	461081-001	Optional ²
16	Power supply backplane	413144-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 5)
	Mass storage devices		
17	CD-ROM drive, PATA, 48X	397931-001	Mandatory ¹
18	CD-RW/DVD-ROM drive, PATA, 48X*	399404-001	Mandatory ¹
19	DVD-ROM drive, SATA, 16X*	447464-001	Mandatory ¹
20	DVD-RW/DVD-ROM, SATA, 16X*	447466-001	Mandatory ¹
	Memory		
21	FBDIMM, registered DDR2	—	—
	a) 512-GB	416470-001	Mandatory ¹
	b) 1-GB*	416471-001	Mandatory ¹
	c) 2-GB*	416472-001	Mandatory ¹
	d) 4-GB* (only supported on servers with Intel® Xeon® 53xx and 54xx processors)	416473-001	Mandatory ¹
	Miscellaneous		
22	Power switch board with cable	413988-001	Optional ²
23	Air baffle	413979-001	Mandatory ¹
	Cables		
24	PATA (CD/DVD) drive signal cable*	413987-001	Mandatory ¹
25	SATA (DVD) drive signal cable*	460428-001	Mandatory ¹
26	SATA (DVD) drive power converter cable*	465660-001	Mandatory ¹
27	AC power cable, 1.83-m (6-ft)*	142258-001	Mandatory ¹
	Options		
28	Hot-plug hard drive	—	—
	a) 36-GB, SAS, 10,000-rpm, SFF	376596-001	Mandatory ¹
	b) 72-GB, SAS, 10,000-rpm, SFF*	376597-001	Mandatory ¹
	c) 36-GB, SAS, 15,000-rpm, LFF*	376593-001	Mandatory ¹
	d) 72-GB, SAS, 15,000-rpm, LFF*	376594-001	Mandatory ¹
	e) 146-GB, SAS, 15,000-rpm, LFF*	376595-001	Mandatory ¹
	f) 60-GB, SATA, 5,400-rpm, SFF*	405419-001	Mandatory ¹
	g) 80-GB, SATA, 7,200-rpm, LFF*	399967-001	Mandatory ¹
	h) 160-GB, SATA, 7,200-rpm, LFF*	399968-001	Mandatory ¹
	i) 250-GB, SATA, 7,200-rpm, LFF*	399969-001	Mandatory ¹
	j) 500-GB, SATA, 7,200-rpm, LFF*	404654-001	Mandatory ¹
	k) 1-TB, SATA, 7,200-rpm, LFF*	461289-001	Mandatory ¹
29	Parallel and second serial connector bracket*	418300-001	Mandatory ¹
30	Keyboard*	355630-001	Mandatory ¹
31	Mouse*	344704-001	Mandatory ¹
32	PCI-X expansion cage, two-slot assembly	439400-001	Optional ²

Item	Description	Spare part number	Customer self repair (on page 5)
33	Smart Array E200 Controller*	412799-001	Optional ²
34	Smart Array E200 Controller cache module, 64-MB, without battery*	412800-001	Optional ²
35	Smart Array E200 Controller cache module, 128-MB*	413486-001	Optional ²
36	Smart Array P400 Controller*	405832-001	Optional ²
37	Smart Array P400 Controller cache module, 256-MB*	405836-001	Optional ²
38	Smart Array P400 Controller cache module, 512-MB*	405835-001	Optional ²
39	Smart Array P400 Controller battery pack*	398648-001	Optional ²
40	Smart Array P400 Controller battery cable assembly, 0.3-m (11.5-in)*	409124-001	Mandatory ¹
41	Smart Array P400 Controller battery cable assembly, 0.6-m (24-in)*	409125-001	Mandatory ¹

*Not shown

†Do not mix single-, dual-, or quad-core processors or processors with different speeds or cache sizes.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Removal and replacement procedures

Required tools

You need the following items for some procedures:

- T-15 Torx screwdriver
- Flathead screwdriver
- Diagnostics Utility

Safety considerations

Before performing service procedures, review all the safety information.

Preventing electrostatic discharge

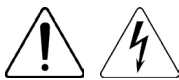
To prevent damaging the system, be aware of the precautions you need to follow when setting up the system or handling parts. A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy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

Symbols on equipment

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



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

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



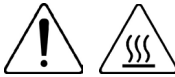
This symbol indicates the presence of electric shock hazards. The area contains no user or field serviceable parts. Do not open for any reason.

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



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

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



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

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



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

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



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

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

Rack warnings



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

- The leveling jacks are extended to the floor.
- The full weight of the rack rests on the leveling jacks.
- The stabilizing feet are attached to the rack if it is a single-rack installation.
- The racks are coupled together in multiple-rack installations.
- Only one component is extended at a time. A rack may become unstable if more than one component is extended for any reason.



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

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



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



WARNING: When installing a server in a telco rack, be sure that the rack frame is adequately secured at the top and bottom to the building structure.

Preparation procedures

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

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

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.
3. If the server is installed in a rack, press the UID LED button on the front panel. Blue LEDs illuminate on the front and rear panels of the server.
4. 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.
5. If the server is installed in a rack, locate the server by identifying the illuminated rear UID LED button.
6. Disconnect the power cords.



CAUTION: Due to the high capacitance in the power supply, always wait 30 seconds after disconnecting the power cord before removing the access panel.

The system is now without power.

Extend the server from the rack

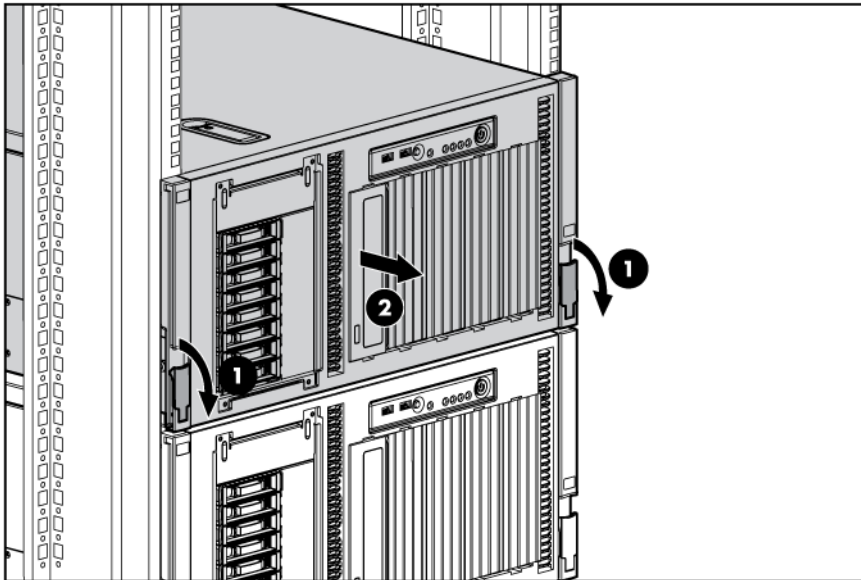
1. Power down the server (on page 26).
2. Pull down the quick-release levers on each side of the server to release the server from the rack.



IMPORTANT: If the server is installed in a telco rack, remove the server from the rack to access internal components.

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

-
- ⚠ 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.
-



4. After performing the installation or maintenance procedure, press the rail-release latches and slide the server back into the rack.

Remove the server from the rack

To remove the server from an HP, telco, or third-party rack:

1. Power down the server (on page 26).
2. Disconnect the cabling.
3. Extend the server from the rack (on page 26). Reverse the server installation steps in the documentation that ships with the rack-mounting option.
4. Remove the server from the rack.
5. Place the server on a sturdy, level surface.

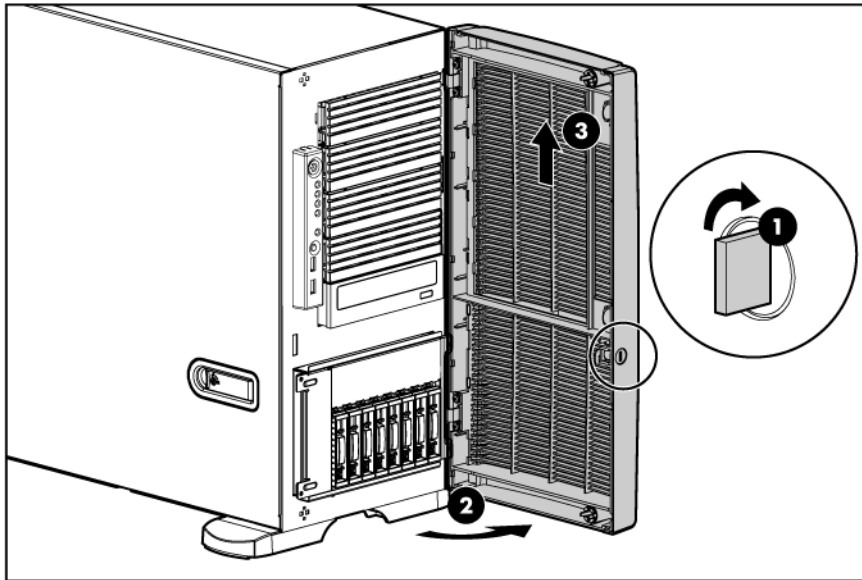
Front bezel

This server has a removable bezel that must be unlocked and opened before accessing the front panel components. The bezel should be kept closed during normal server operations.

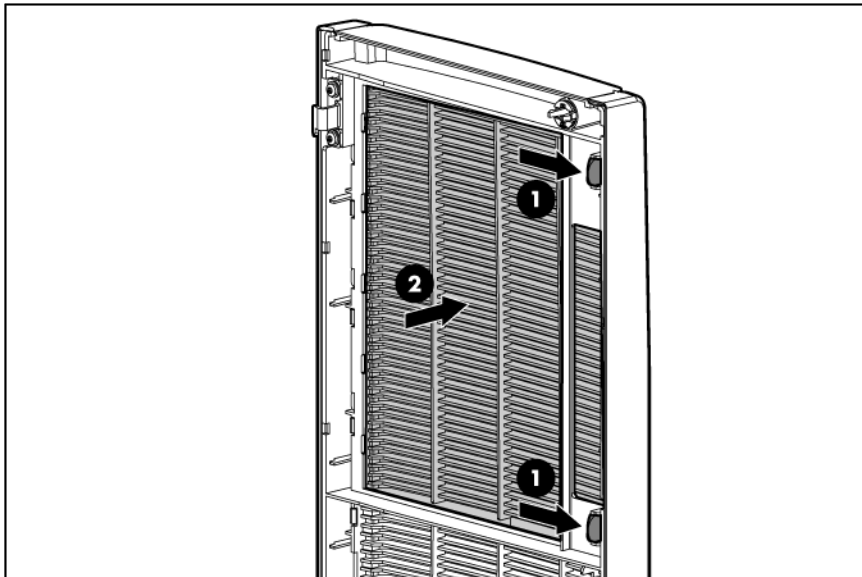
Use the key provided with the server to unlock the bezel with a clockwise turn.

If necessary, remove the bezel.

-
- ⚠ CAUTION:** To avoid breaking the bezel, remove the bezel before placing the server on its side.
-



For operations involving removable media bay access, the media bay panel can be removed from the bezel.

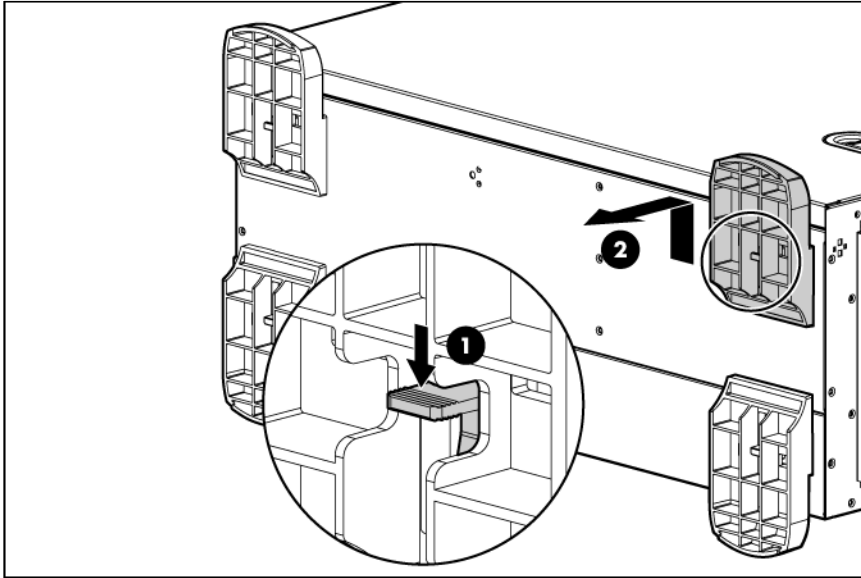


Tower foot

To remove the component:

1. Power down the server (on page 26).
2. Remove the tower bezel ("[Front bezel](#)" on page 27).
3. Place the server on its side.

4. Remove the foot.



To replace the component, reverse the removal procedure.

Access panel



CAUTION: Do not operate the server with the access panel removed. Operating the server in this manner results in improper airflow and improper cooling that can lead to thermal damage.

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - o Extend the server from the rack (on page 26).
 - o Remove the tower front bezel. ("Front bezel" on page 27)
3. If the locking latch is locked, use a T-15 Torx screwdriver to unlock the latch.
4. Slide the access panel back about 1.5 cm (0.5 in).
5. Lift and remove the access panel.

Turn the access panel over to locate labeling with information about options installation, LEDs, and switch settings.

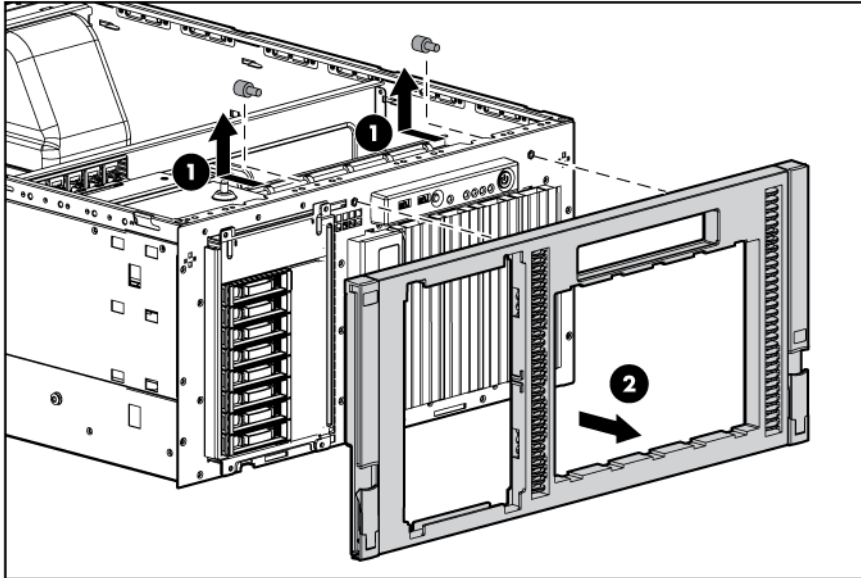
To replace the component, reverse the removal procedure.

Rack bezel

To remove the component:

1. Power down the server (on page 26).
2. Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).

4. Remove the bezel.



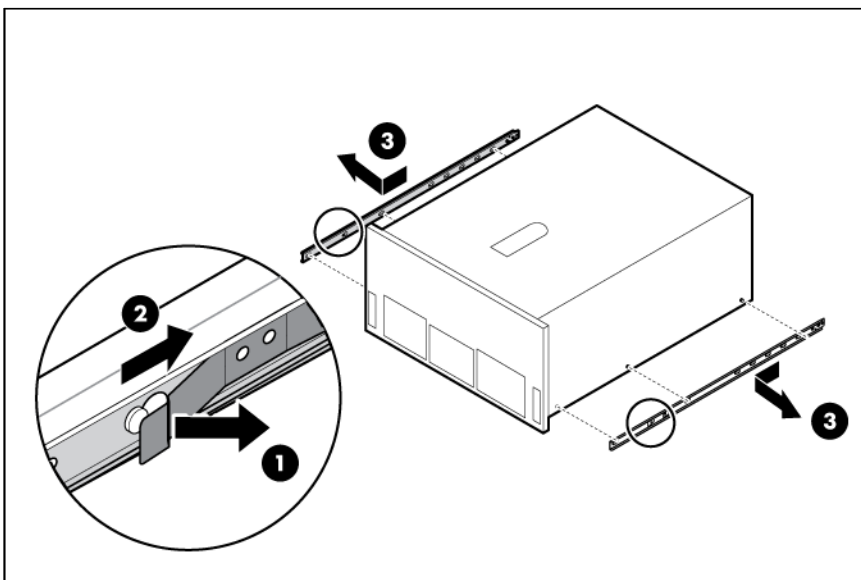
To replace the component, reverse the removal procedure.

Rack rails

NOTE: This procedure applies to rack servers only.

To remove the component:

1. Power down the server (on page 26).
2. Remove the server from the rack (on page 27).
3. Use a flat-head screwdriver to lift the spring tab.
4. Slide the rail forward and remove it from the server.

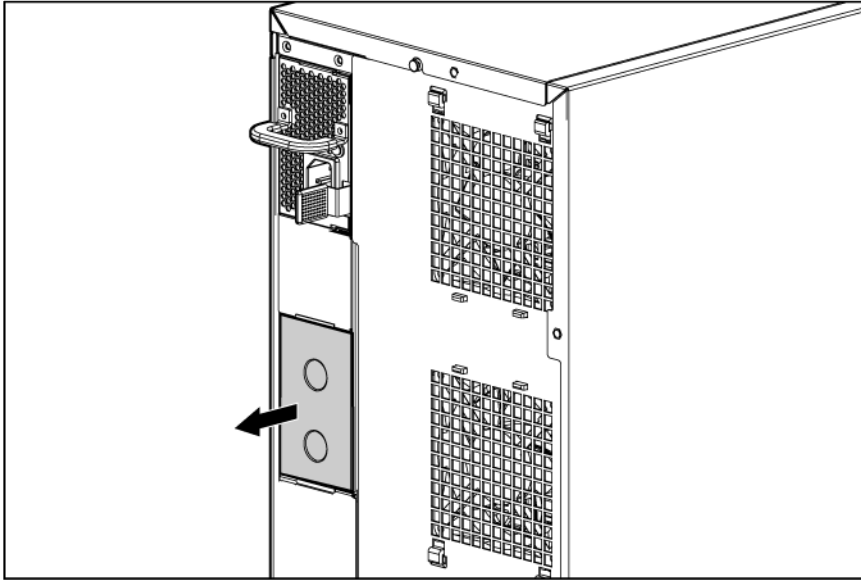


5. Repeat the steps above to remove the other rail.

To replace the component, reverse the removal procedure.

Power supply blank

Remove the blank from the bay.



To replace the component, reverse the removal procedure.

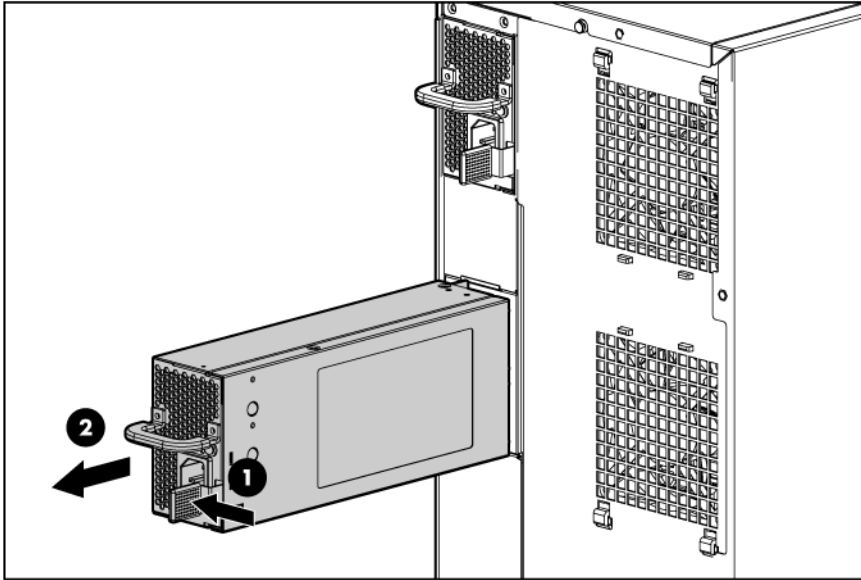
Hot-plug power supply

-
- ⚠ **WARNING:** To reduce the risk of electric shock, do not disassemble the power supply or attempt to repair it. Replace it only with the specified spare part.
-
- ⚠ **CAUTION:** Do not attempt to remove and replace a power supply as a hot-plug procedure unless both bays are populated with power supplies.
-

To remove the component:

1. Disconnect the power cord from the AC source.
2. Disconnect the power cord from the power supply.

3. Remove the power supply.



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

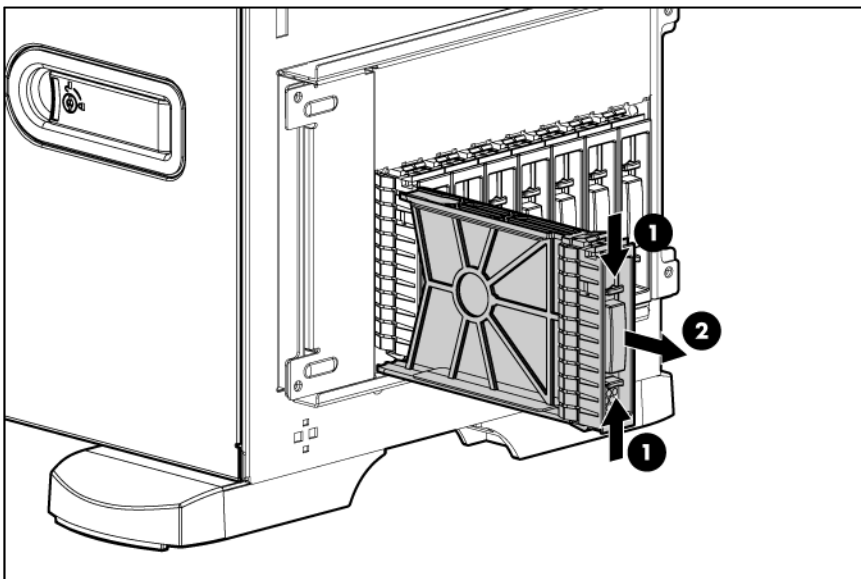
To replace the component, reverse the removal procedure.

Hard drive blanks

To remove the component:

1. Open or remove the tower bezel ("Front bezel" on page 27).
2. Remove the blank.

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



NOTE: Depending on model purchased, the server may look slightly different than shown.

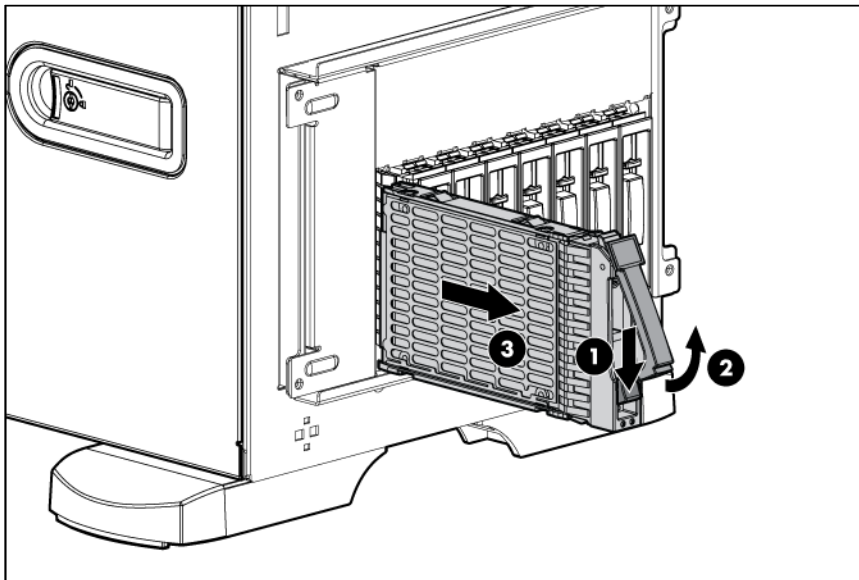
To replace the component, reverse the removal procedure.

Hot-plug SATA and SAS hard drives

To remove the component:

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

1. Determine the status of the hard drive from the hot-plug hard drive LEDs ("SAS and SATA hard drive LEDs" on page 78).
2. Back up all server data on the hard drive.
3. Remove the hard drive.



To replace the component, reverse the removal procedure.



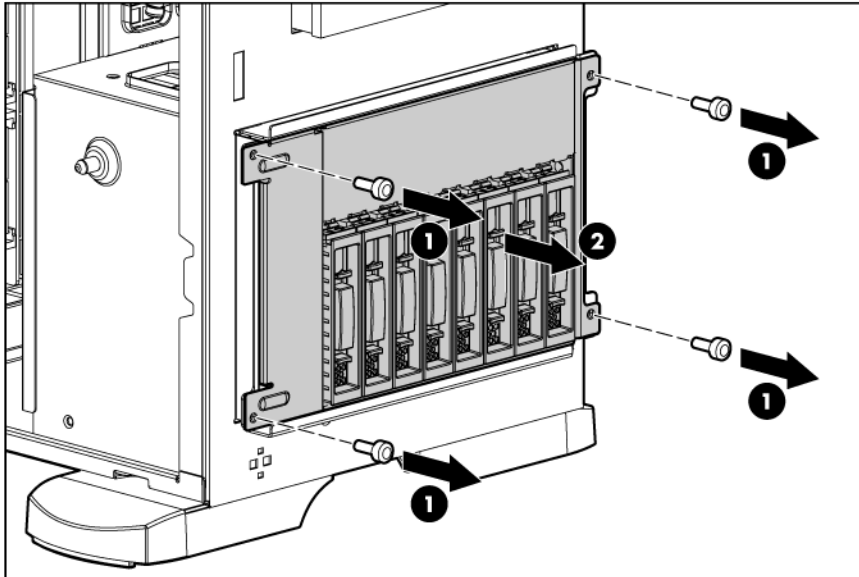
IMPORTANT: When installing a x3/x1 SAS cable in a SFF system, HP recommends that the x3 part of the x3/x1 cable be linked to the SAS hard drive backplane connector that corresponds to hard drive slots 1 to 4. In this setup, hard drive slot 1 will not be available, but since hard drive slots 2 to 4 will be connected, one continuous volume can be created. All drive slots will be available in LFF systems.

Hard drive cage

To remove the component:

1. Power down the server.
2. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).

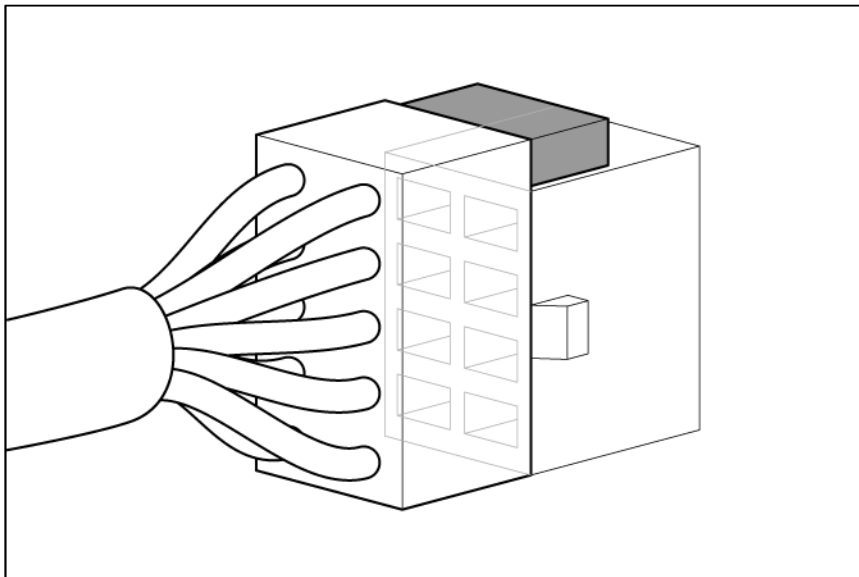
- Extend the server from the rack (on page 26).
- 3. Remove the access panel ("Access panel" on page 29).
- 4. Remove the rack bezel (rack servers only) ("Rack bezel" on page 29).
- 5. Disconnect the power and data cables.
- 6. Remove the four T-15 screws and slide the hard drive cage out of the chassis.



- 7. Remove all hard drives.

To replace the components, reverse the removal procedure.

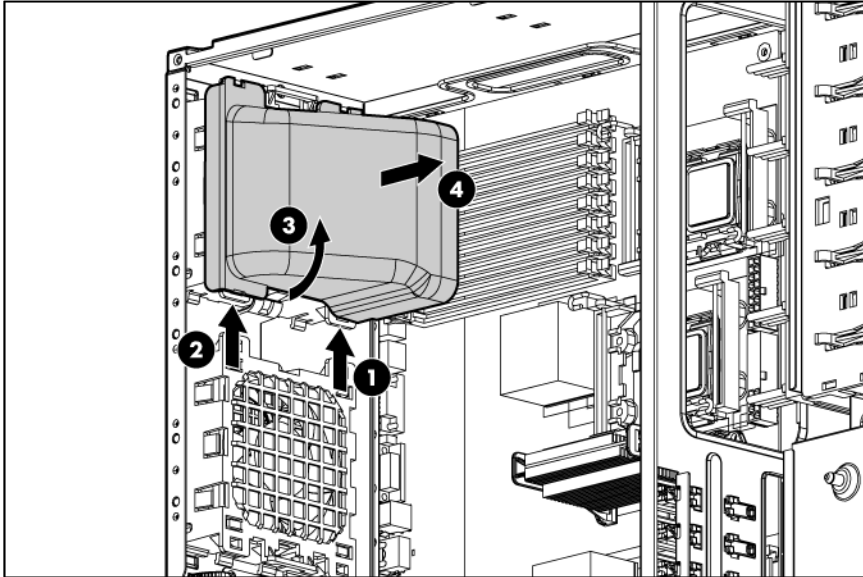
NOTE: When replacing or installing a 6-bay hard drive cage, connect the 10-pin power cable from the power backplane to the 8-pin power connector on the hard drive cage backplane. When seated properly, the connectors have a two-pin overlap. The overlap is cosmetic only and causes no functional side effects.



Air baffle

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - Unlock and remove the bezel ("Front bezel" on page 27).
 - Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Remove the air baffle.



To replace the component, reverse the removal procedure.

System fans

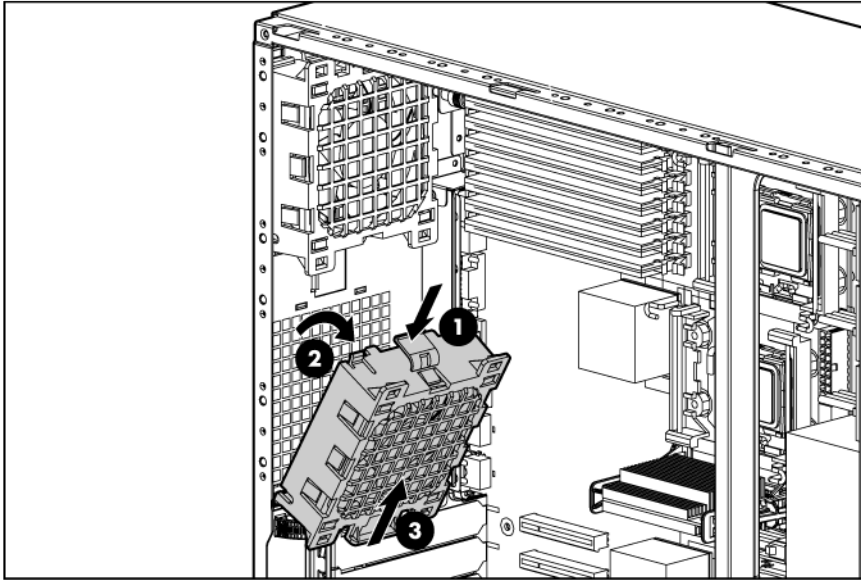
△ CAUTION: The system fan is a non-hot-pluggable device.

Fan failures are indicated by amber LEDs located on each hot-plug fan and by the front panel internal health LED. When a fan failure occurs, the internal health LED illuminates red in non-redundant mode and amber in redundant mode.

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - Unlock and remove the bezel ("Front bezel" on page 27).
 - Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Remove the air baffle ("Air baffle" on page 35).
5. Disconnect the system fan cable from the system board.

6. Remove the fan.

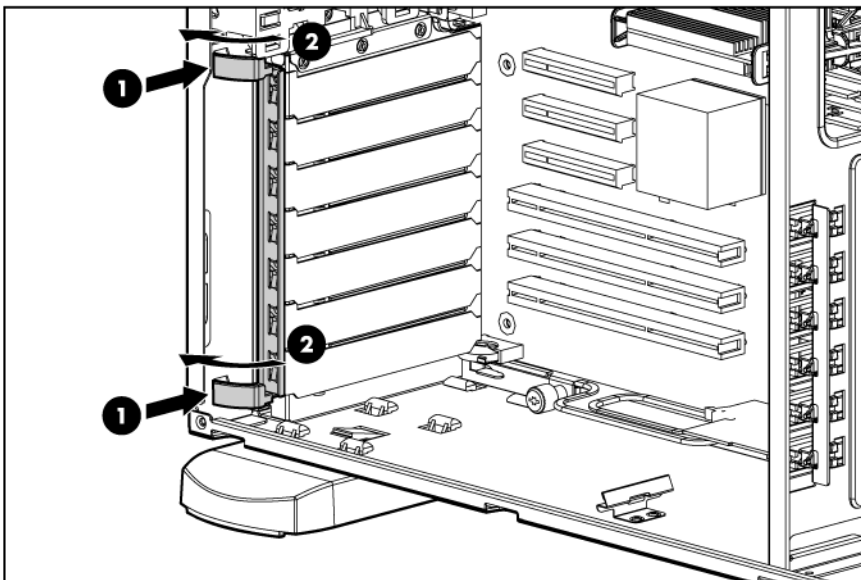


To replace the component, reverse the removal procedure.

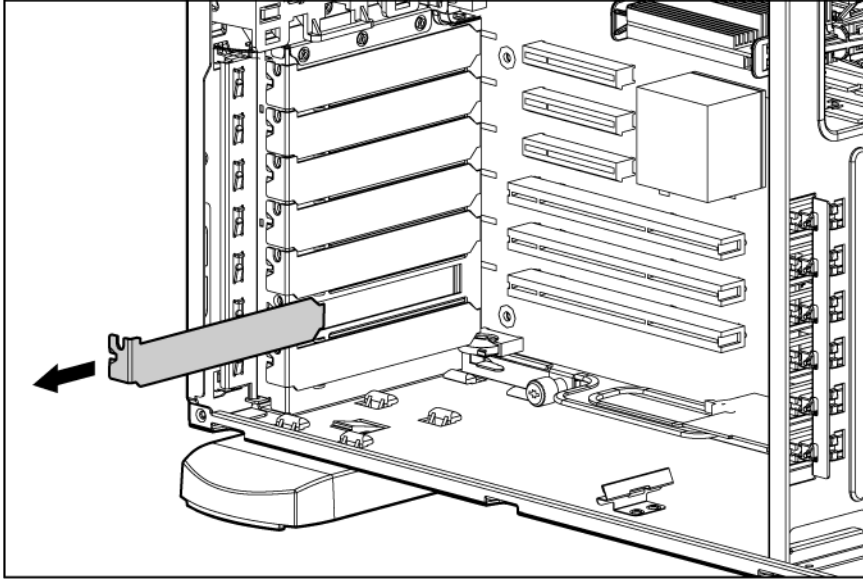
Expansion slot cover

To remove the component:

1. Do one of the following:
 - Unlock and remove the bezel ("[Front bezel](#)" on page [27](#)).
 - Extend the server from the rack (on page [26](#)).
2. Remove the access panel ("[Access panel](#)" on page [29](#)).
3. Push the release latches on the expansion board retainer and open the retainer.



4. Remove the expansion slot cover.



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

To replace the component, reverse the removal procedure.

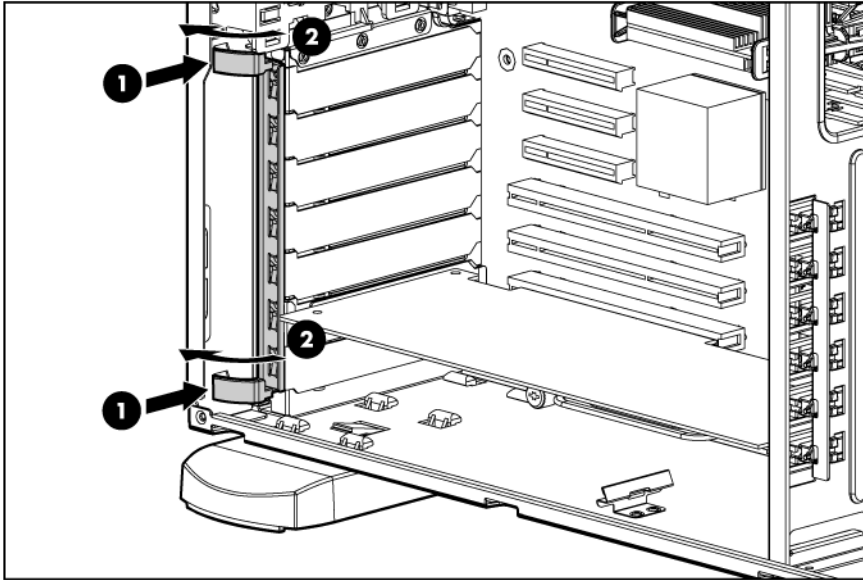
Expansion board

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

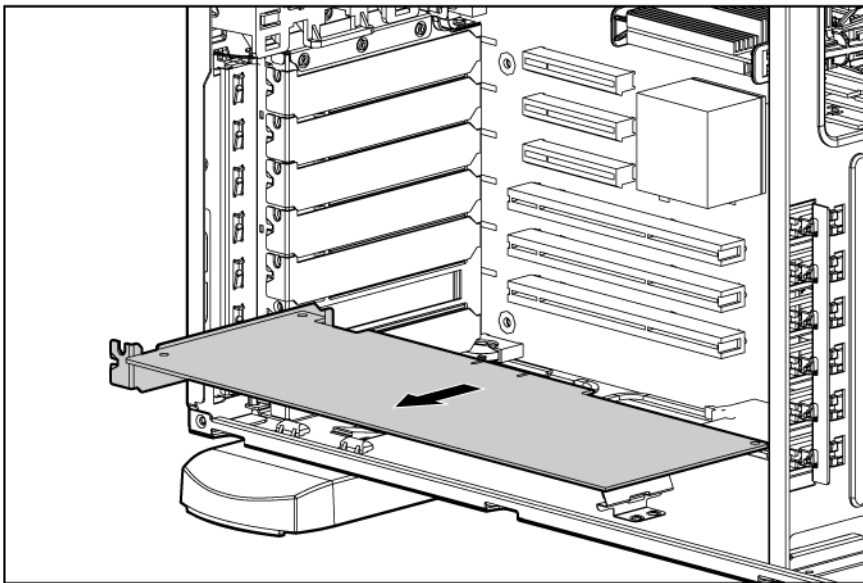
To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - Unlock and remove the bezel ("Front bezel" on page 27).
 - Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Disconnect any internal or external cables from the expansion board.

5. Push the release latches on the expansion board retainer and open the retainer.



6. Remove the T-15 Torx screw securing the expansion board, if necessary.
7. Remove the expansion board.



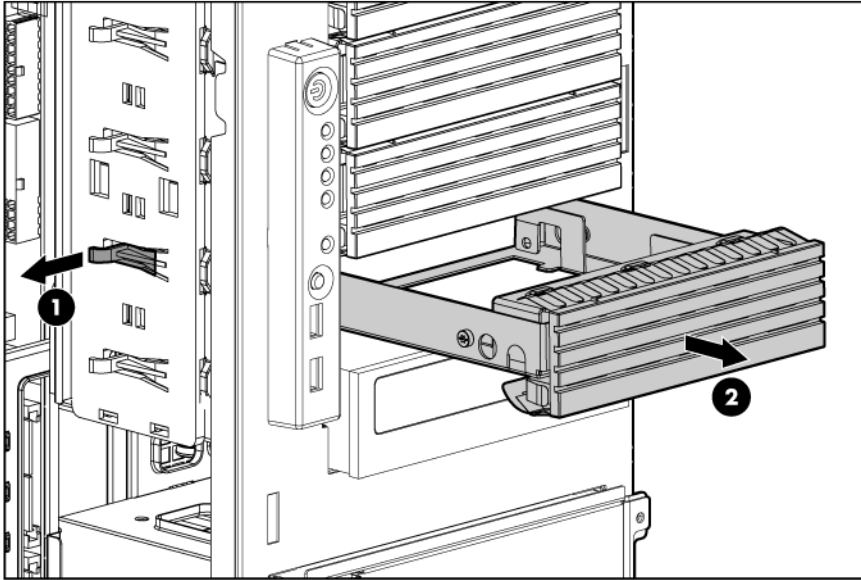
To replace the component, reverse the removal procedure.

Media bay blank

To remove the component:

1. Open or remove the tower bezel ("[Front bezel](#)" on page [27](#)).
2. Remove the access panel ("[Access panel](#)" on page [29](#)).

3. Remove the media bay blank.

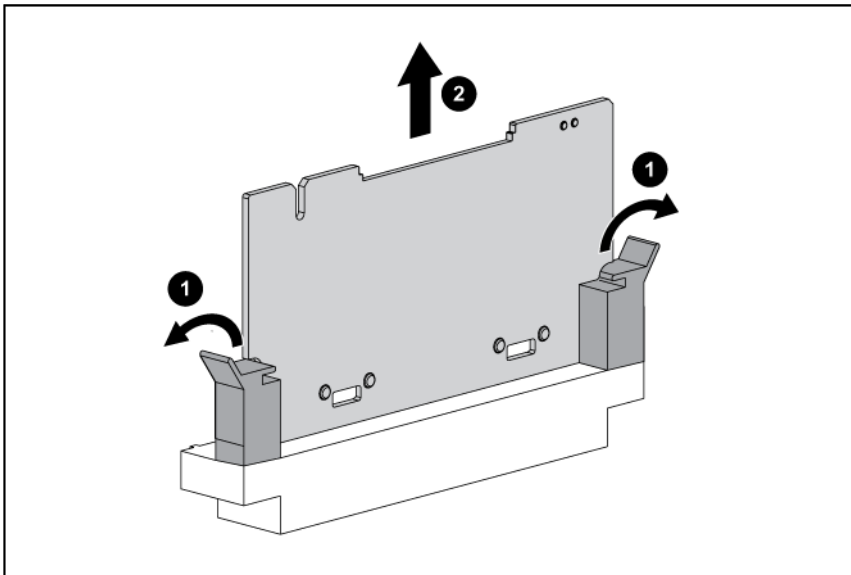


To replace the component, reverse the removal procedure.

Battery-backed write cache module

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - o Open or remove the tower bezel, as needed ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Remove the cache module.



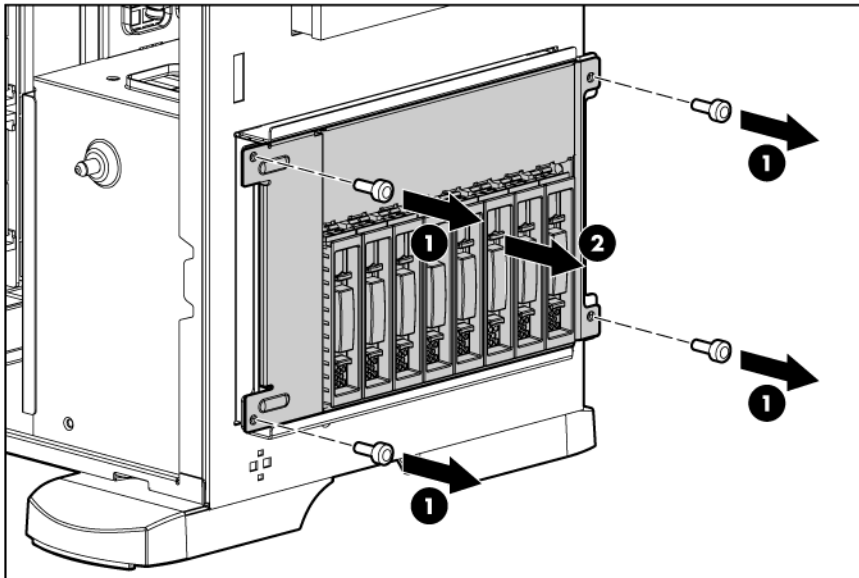
To replace the component, reverse the removal procedure.

PCI-X expansion cage

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

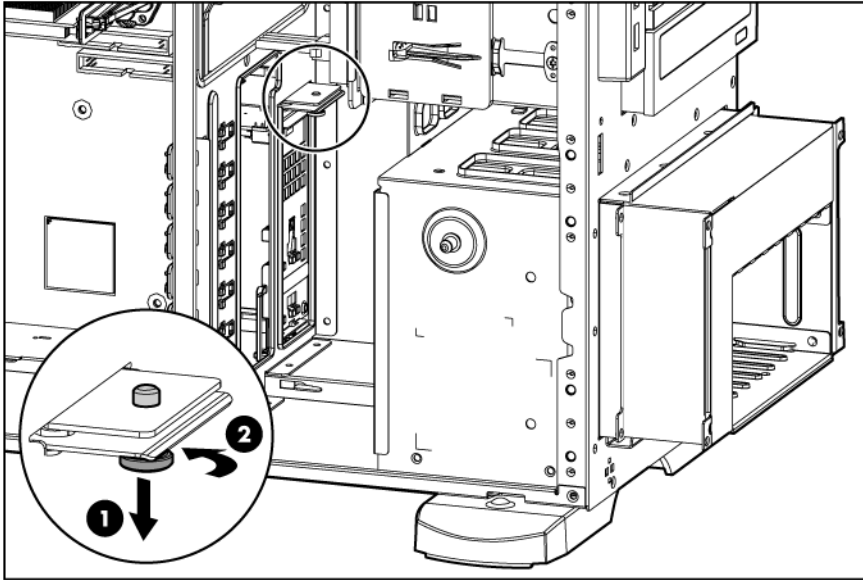
To remove the component:

1. Power down the server.
2. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Remove the rack bezel (rack servers only) ("Rack bezel" on page 29).
5. Remove the four T-15 screws from the hard drive cage, and then slide the hard drive cage partially out of the chassis.

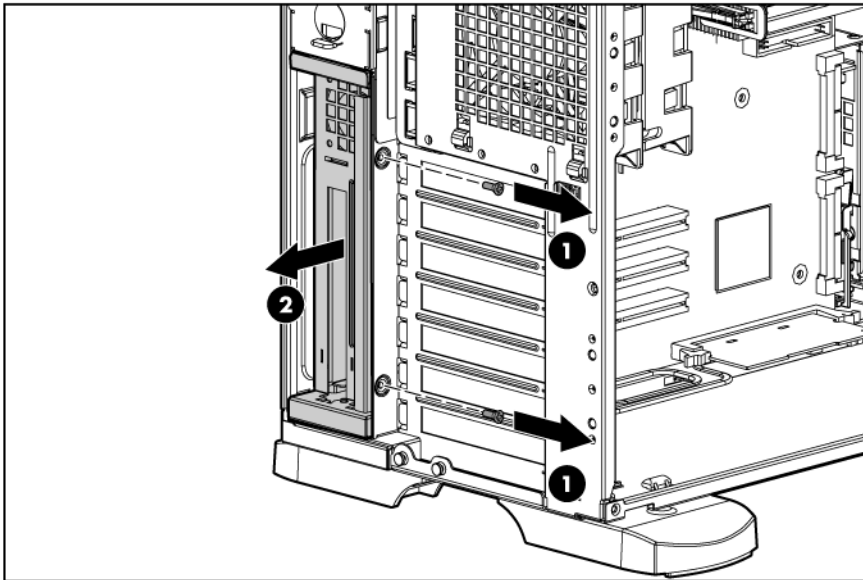


6. Disconnect any external cables from the PCI-X expansion boards.
7. Disconnect the power cable extension and the signal cable from the PCI-X expansion cage.

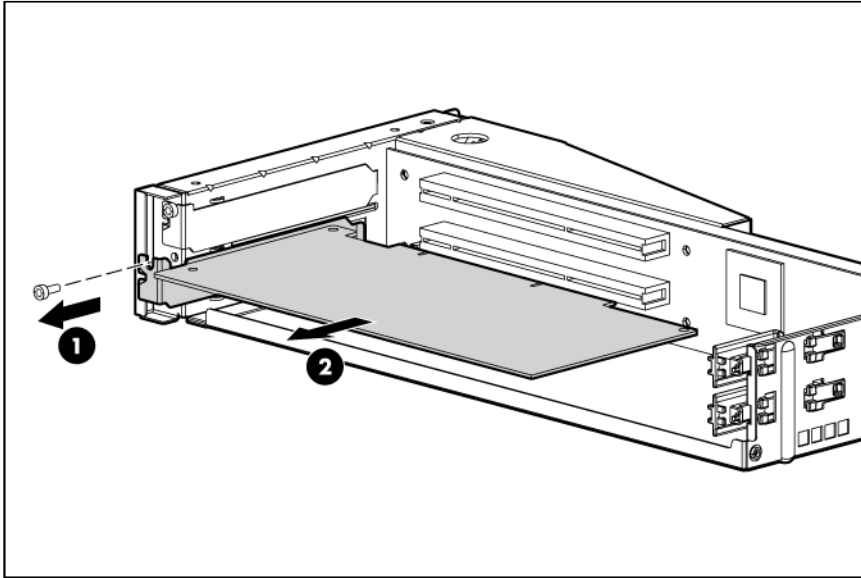
8. Pull the spring-loaded locking pin out of its socket.



9. Remove the PCI-X expansion cage.



10. Remove any expansion boards.

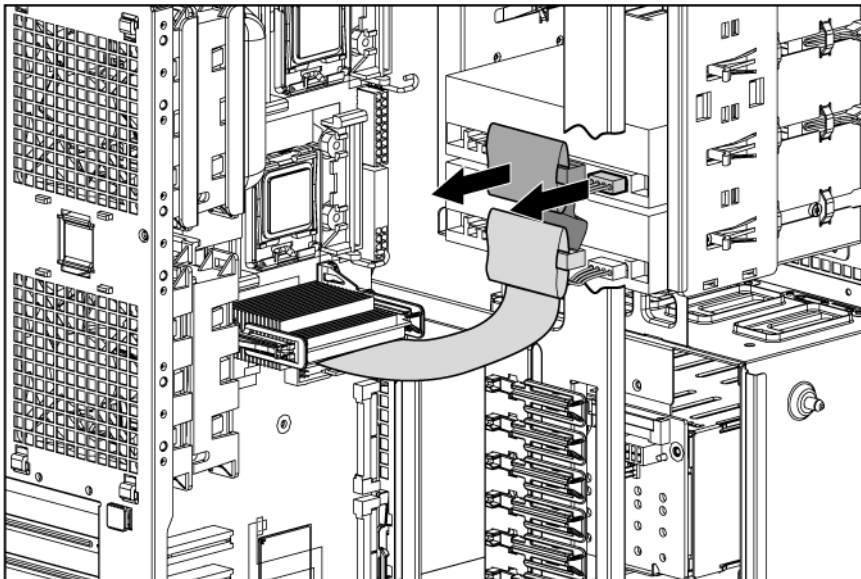


To replace the components, reverse the removal procedure.

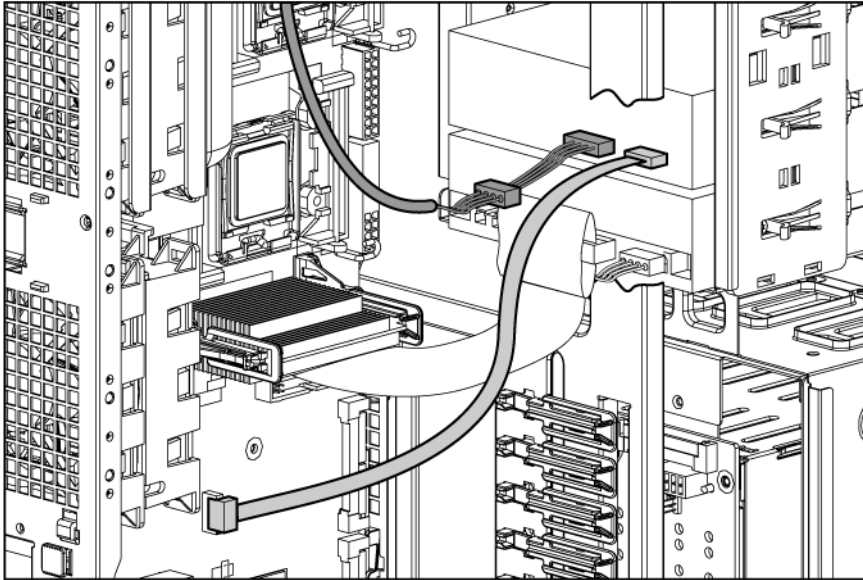
Half-height or full-height media device

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Disconnect data and power cables.
 - o PATA CD-ROM drive

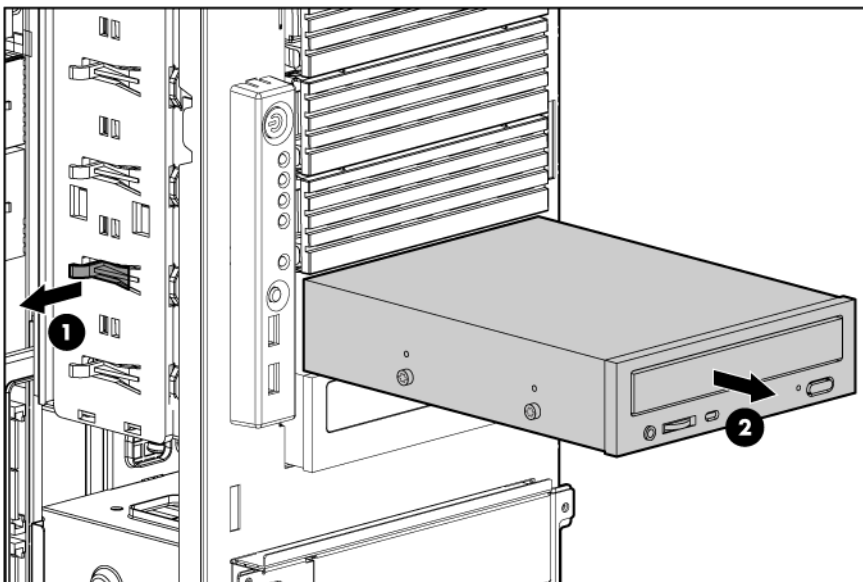


- SATA DVD-ROM drive

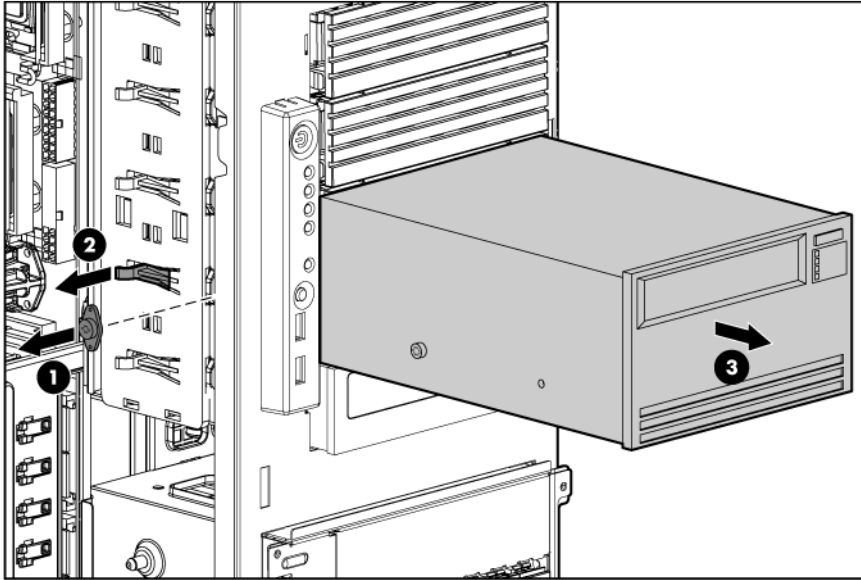


5. Remove the device.

- Half-height



- Full-height



To replace the component, reverse the removal procedure.



IMPORTANT: Be sure to connect the right-angle end of the SATA data cable to the system board. Connecting it to the SATA drive may interfere with other installed media bay devices.



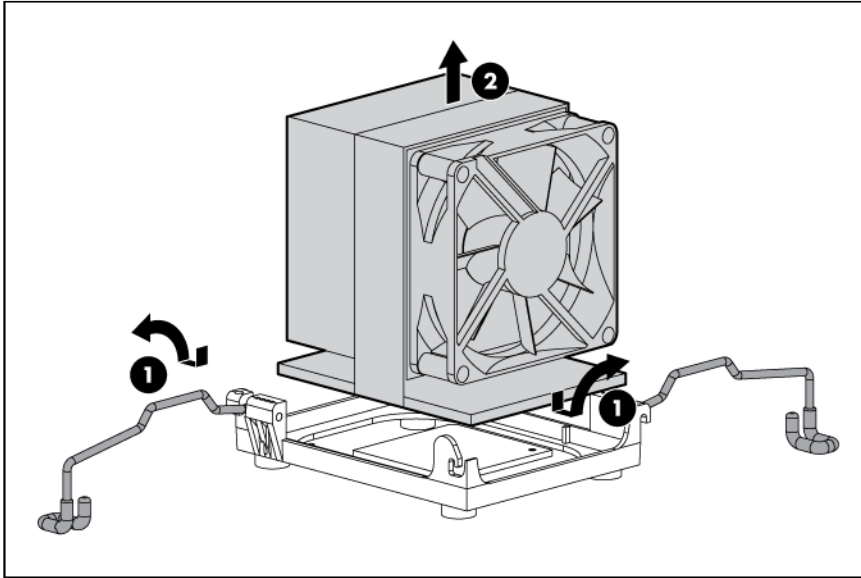
IMPORTANT: If both SATA and PATA optical devices are installed simultaneously, only one can boot at a time. Boot priority will go to SATA if media is inserted into the SATA optical drive. Boot priority for PATA is not configurable. To boot PATA, remove the media from the SATA optical device, or remove the SATA optical device.

Heatsink

To remove the component:

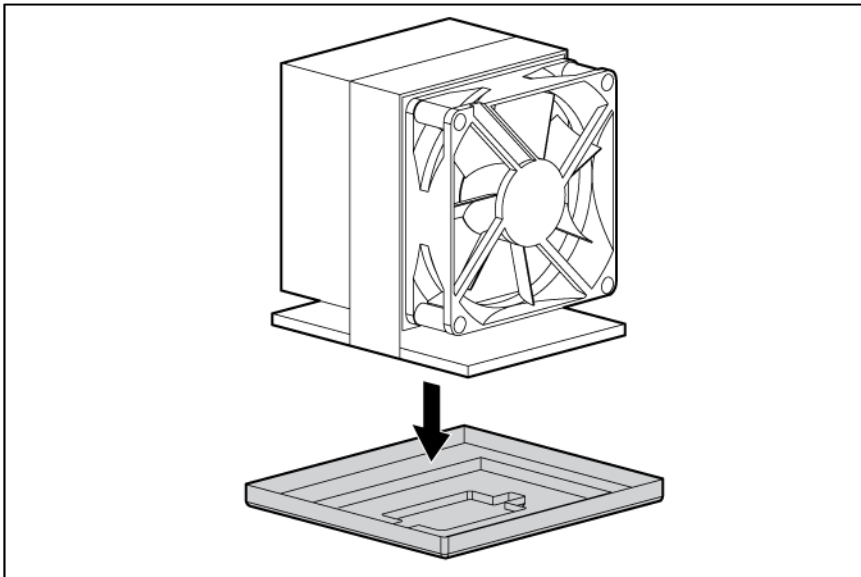
1. Power down the server (on page 26).
2. Do one of the following:
 - Unlock and remove the bezel ("Front bezel" on page 27).
 - Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Disconnect the heatsink fan cable from the system board.
5. Open the heatsink locking levers.

6. Remove the heatsink.

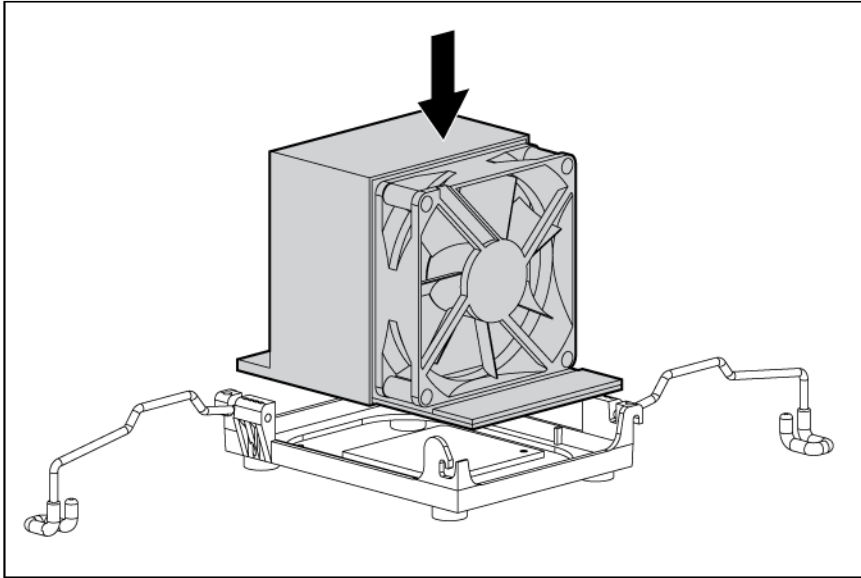


To replace the component:

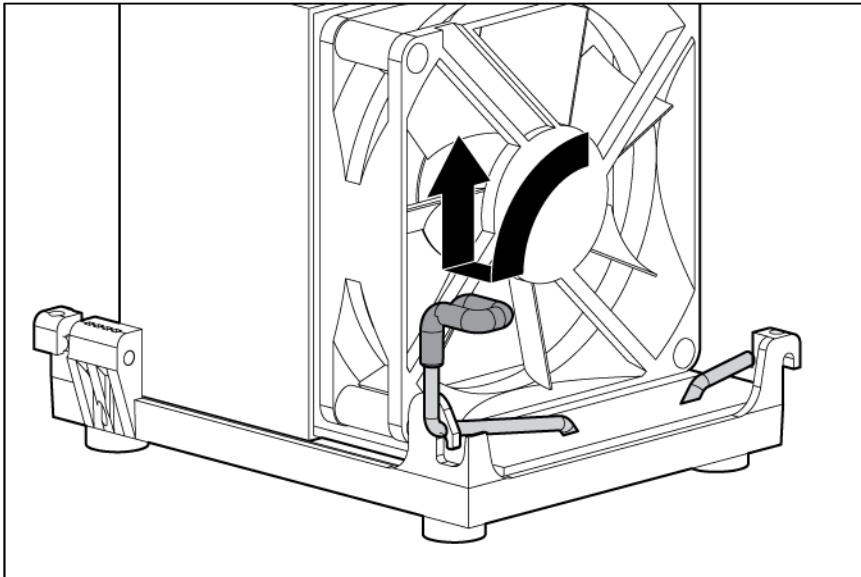
1. Use the alcohol swab to remove all the existing thermal grease from the processor. Allow the alcohol to evaporate before continuing.
2. Remove the heatsink protective cover.



3. Install the heatsink.



4. Close the heatsink locking levers.



5. Connect the heatsink fan cable to the system board.
6. Install the access panel.
7. Do one of the following:
 - o Close or install the tower bezel, as needed.
 - o Slide the server back into the rack.
8. Power up the server.

Processor



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

CAUTION: Removal of the processor or heatsink renders the thermal layer between the processor and heatsink useless. Clean the component with the provided alcohol swab, then add thermal grease.

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

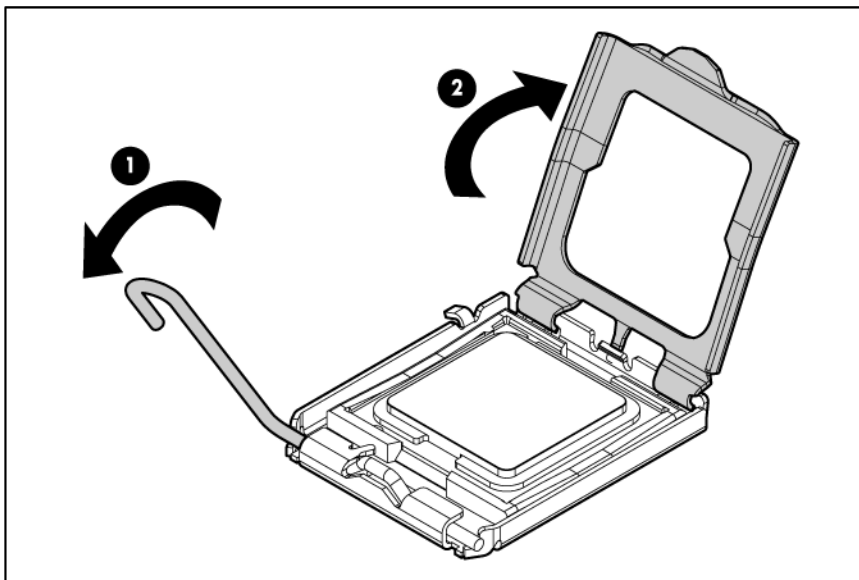
IMPORTANT: PPM 2 must be installed when processor 2 is installed. The system fails to boot if the PPM is missing.

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

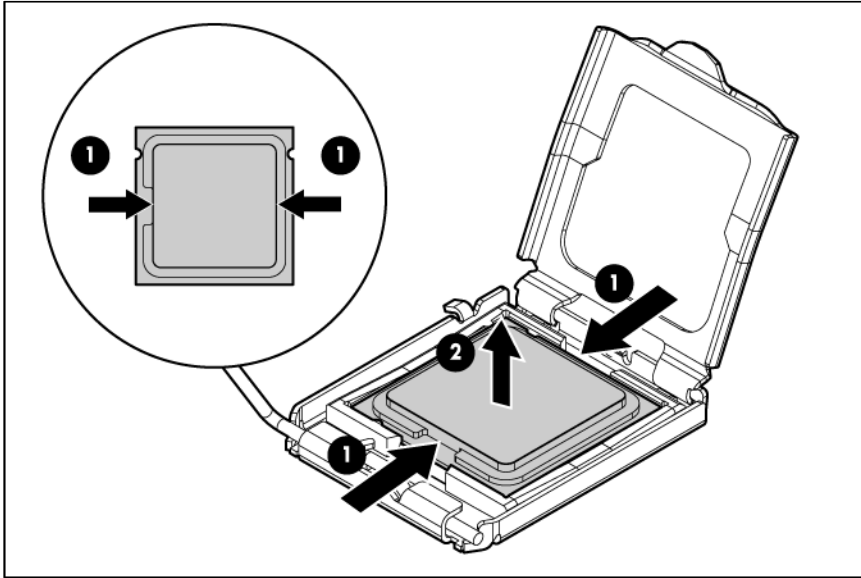
NOTE: PPM 1 is embedded in the system board.

To remove the component:

1. Update the system ROM.
Locate and download the latest ROM version from the HP website (<http://www.hp.com/support>). Follow the instructions on the website to update the system ROM.
2. Power down the server (on page 26).
3. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 29).
5. Remove the heatsink ("Heatsink" on page 44).
6. Open the processor retaining latch and the processor socket retaining bracket.

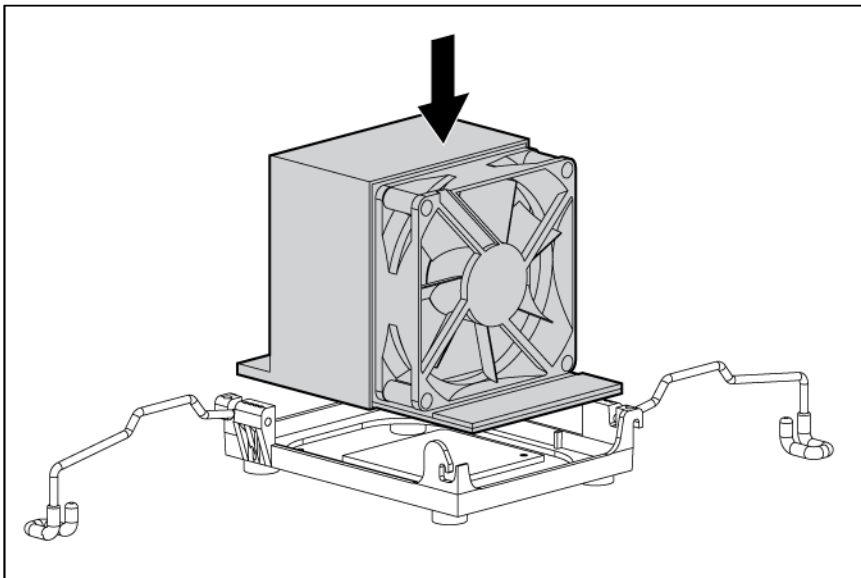


7. Using your fingers, remove the failed processor.

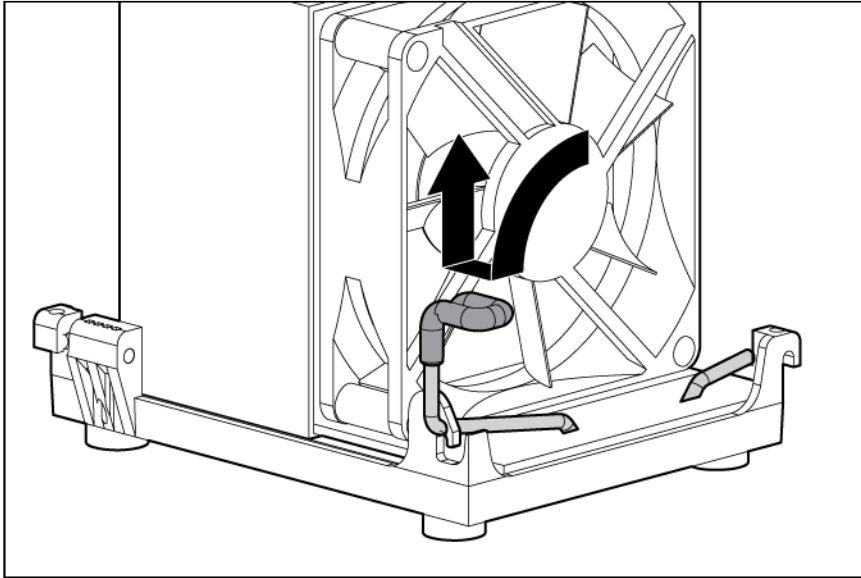


To replace the component:

1. Install the heatsink.



2. Close the heatsink locking levers.

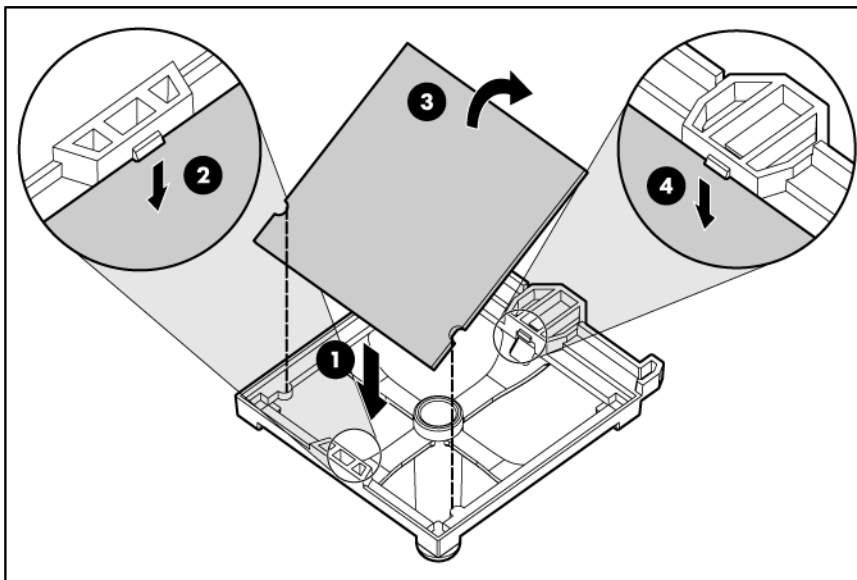


3. Connect the heatsink fan cable to the system board.
4. Install the access panel.
5. Do one of the following:
 - o Close or install the tower bezel, as needed.
 - o Slide the server back into the rack.
6. Power up the server.



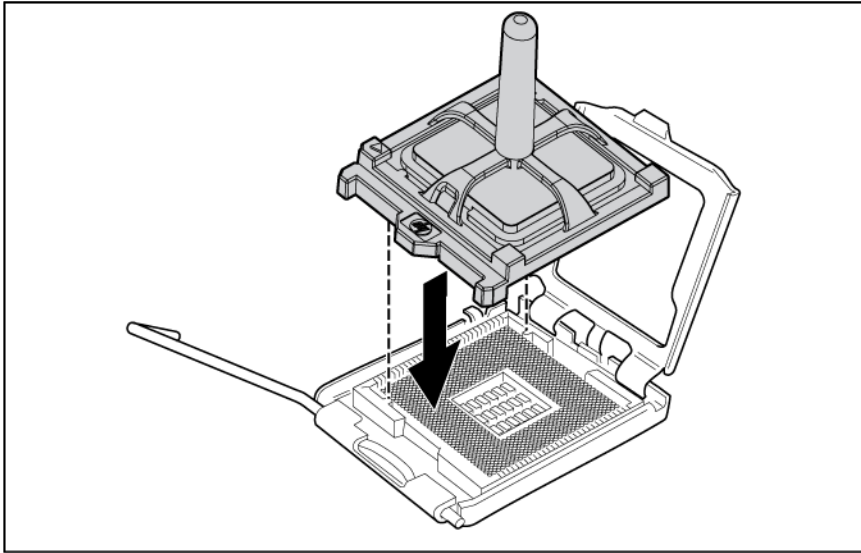
IMPORTANT: Be sure the processor remains inside the processor installation tool.

7. If the processor has separated from the installation tool, carefully re-insert the processor in the tool.

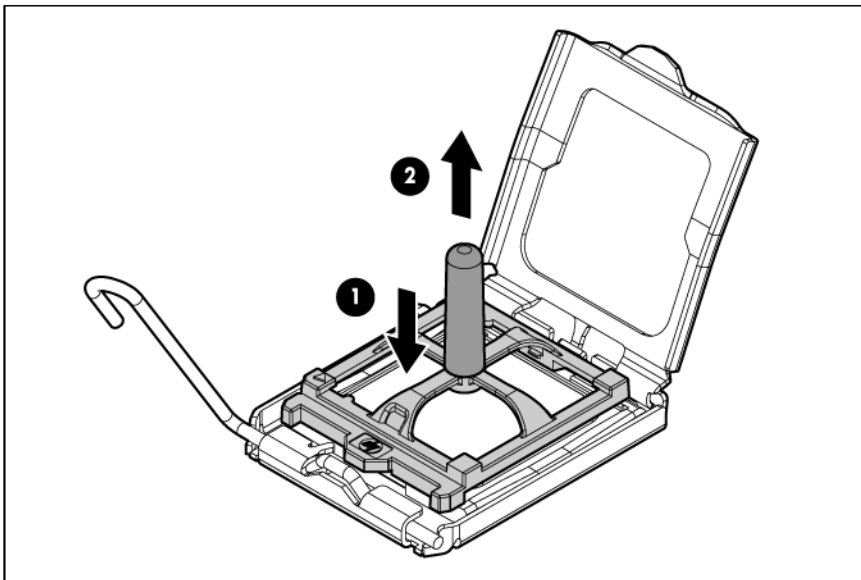


8. Align the processor installation tool with the socket, and then install the spare processor.

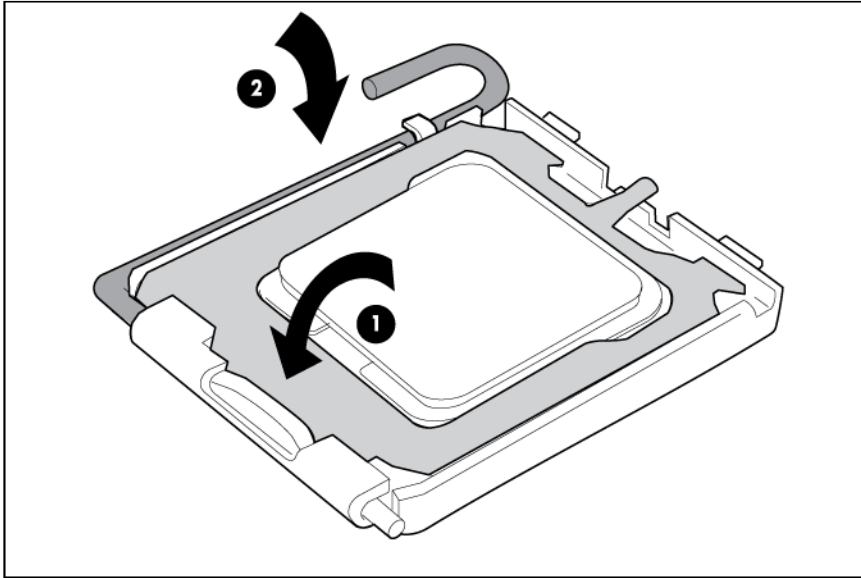
- △ **CAUTION:** The processor is designed to fit one way into the socket. Use the alignment guides on the processor and socket to properly align the processor with the socket. Refer to the server hood label for specific instructions.



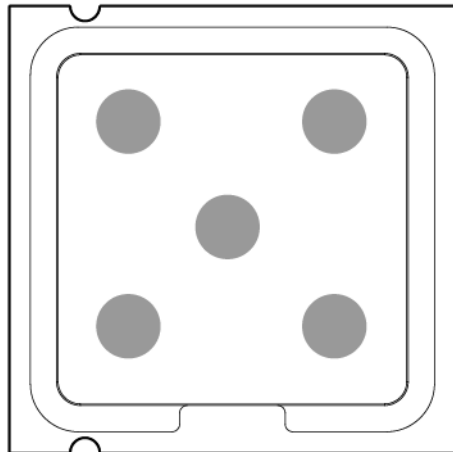
9. Press down firmly until the processor installation tool clicks and separates from the processor, and then remove the processor installation tool.



10. Close the processor retaining latch and the processor socket retaining bracket.



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



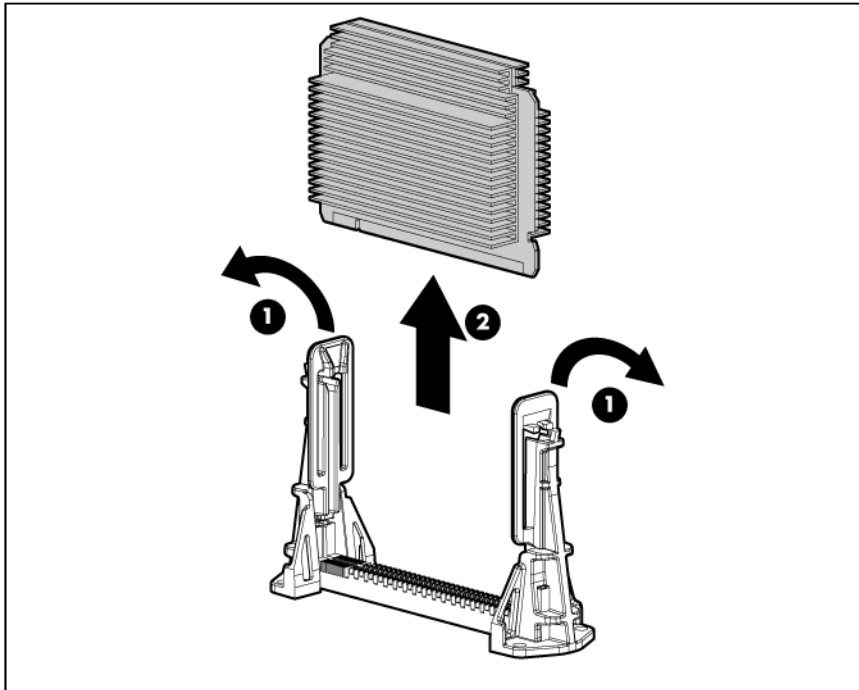
PPM

NOTE: PPM 1 is embedded in the system board.

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).

4. Open the PPM latches.
5. Remove the PPM.



NOTE: The appearance of compatible PPMs may vary.

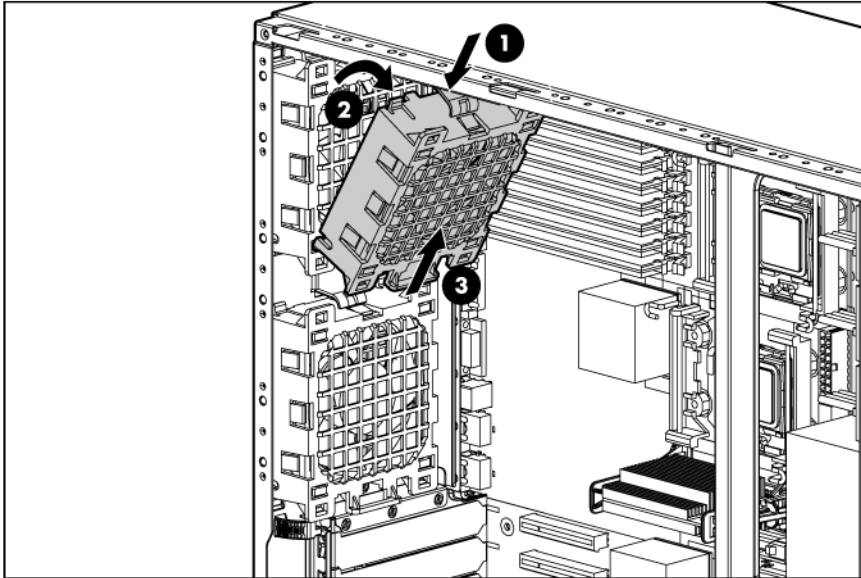
To replace the component, reverse the removal procedure.

FBDIMM

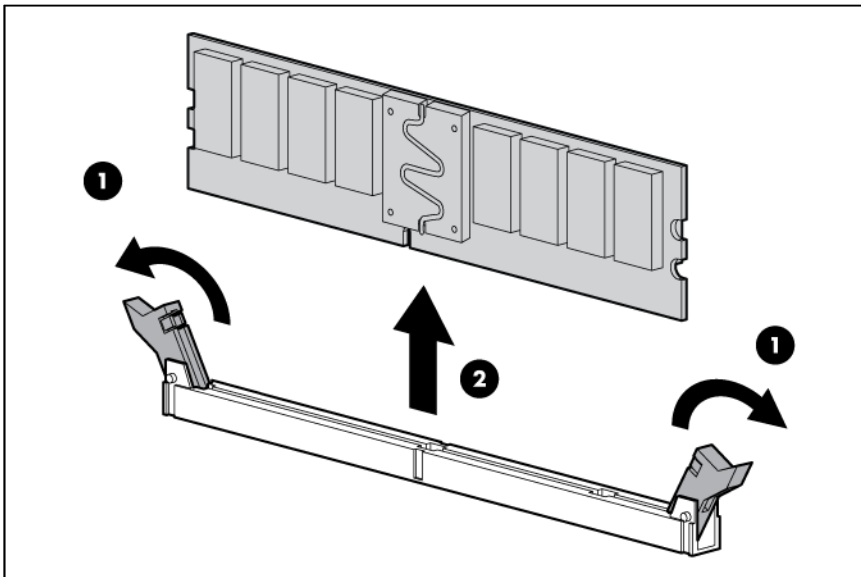
To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Remove the air baffle ("Air baffle" on page 35).

5. Remove the redundant fan, if applicable.



6. Remove the FBDIMM.



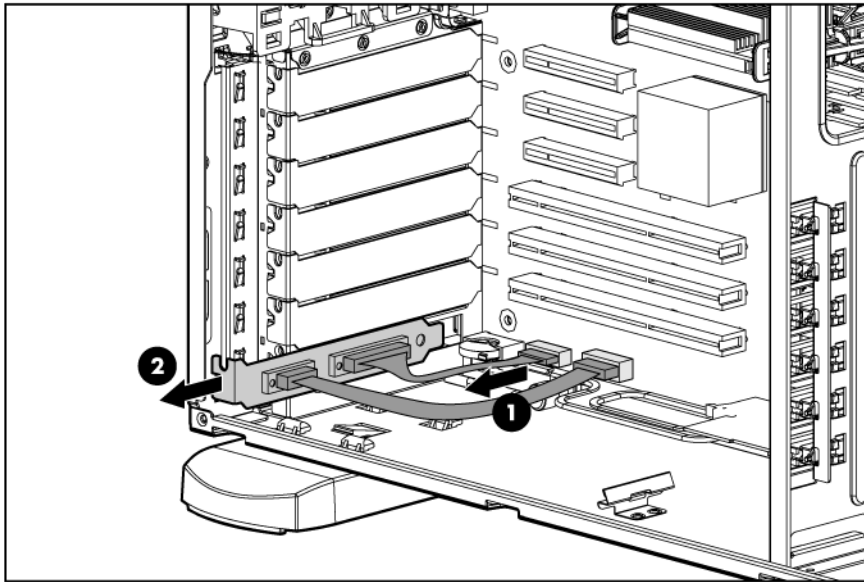
To replace the component, reverse the removal procedure.

Parallel and second serial connector bracket

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Push the release latches on the expansion board retainer and open the retainer.

5. Remove the T-15 Torx screw securing the parallel and second serial connector bracket.
6. Remove the parallel and second serial connector bracket.



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.



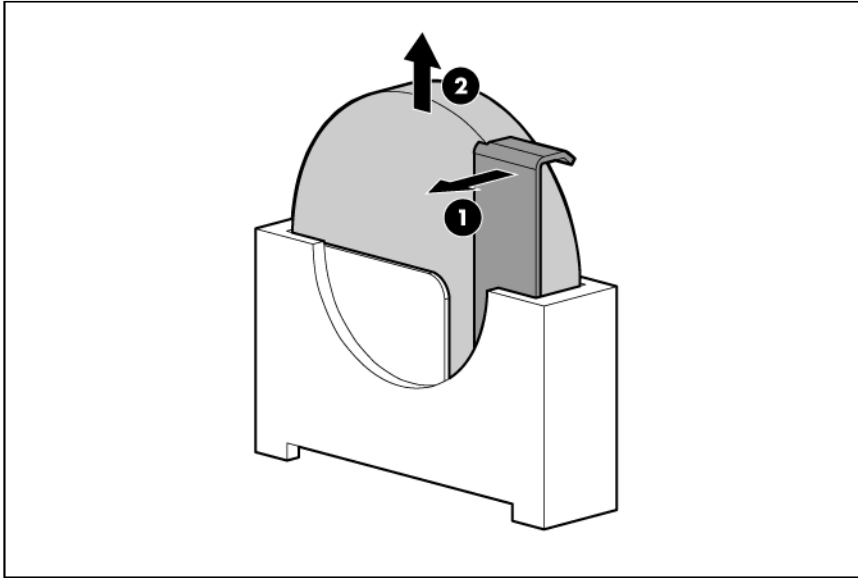
WARNING: The computer contains an internal lithium manganese dioxide, a vanadium pentoxide, or an alkaline battery pack. A risk of fire and burns exists if the battery pack is not properly handled. To reduce the risk of personal injury:

- 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 26).
2. Do one of the following:
 - Open or remove the tower bezel, as needed ("Front bezel" on page 27).
 - Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).

4. 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 RBSU.

To replace the component, reverse the removal procedure.

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

System board

To remove the component:

1. Power down the server (on page 26).
2. Do one of the following:
 - Unlock and remove the bezel ("Front bezel" on page 27).
 - Extend the server from the rack (on page 26).
3. Remove the access panel ("Access panel" on page 29).
4. Remove the air baffle ("Air baffle" on page 35).
5. Remove the system fans (on page 35).
6. Remove all expansion boards ("Expansion board" on page 37).
7. Remove the cache module ("Battery-backed write cache module" on page 39).
8. Remove all FBDIMMs ("FBDIMM" on page 52).
9. Remove the PPM.
10. Remove the heatsink ("Heatsink" on page 44).



CAUTION: To avoid damage to the processor:

- Handle the processor only by the edges.
- Do not touch the bottom of the processor, especially the contact area.



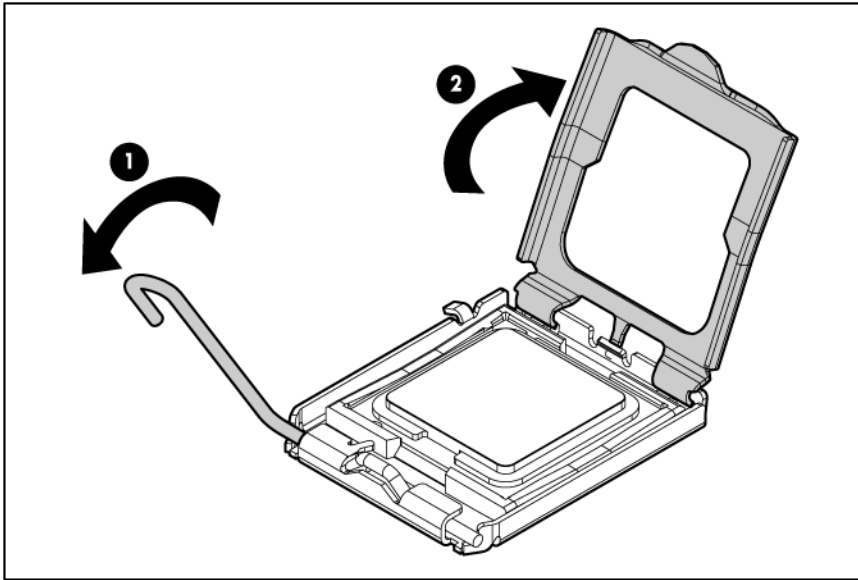
CAUTION: To avoid damage to the system board:

- Do not touch the processor socket contacts.
- Always install the processor socket cover after removing the processor from the socket.
- Do not tilt or slide the processor when lowering the processor into the socket.



CAUTION: Removal of the processor or heatsink renders the thermal layer between the processor and heatsink useless. Clean the component with the provided alcohol swab, then add thermal grease.

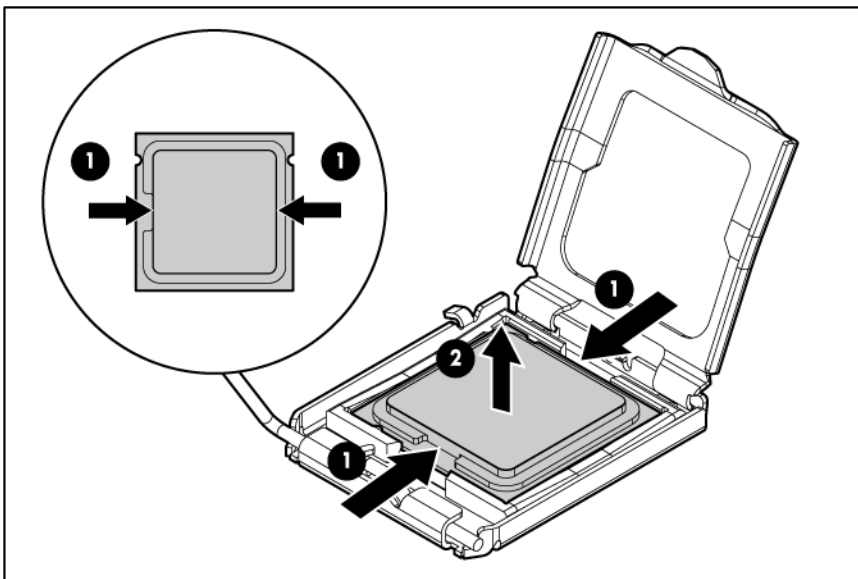
11. Open the processor retaining latch and the processor socket retaining bracket.



CAUTION: To avoid damage to the processor:

- Handle the processor only by the edges.
- Do not touch the bottom of the processor, especially the contact area.

12. Using your fingers, remove the processor from the failed system board.

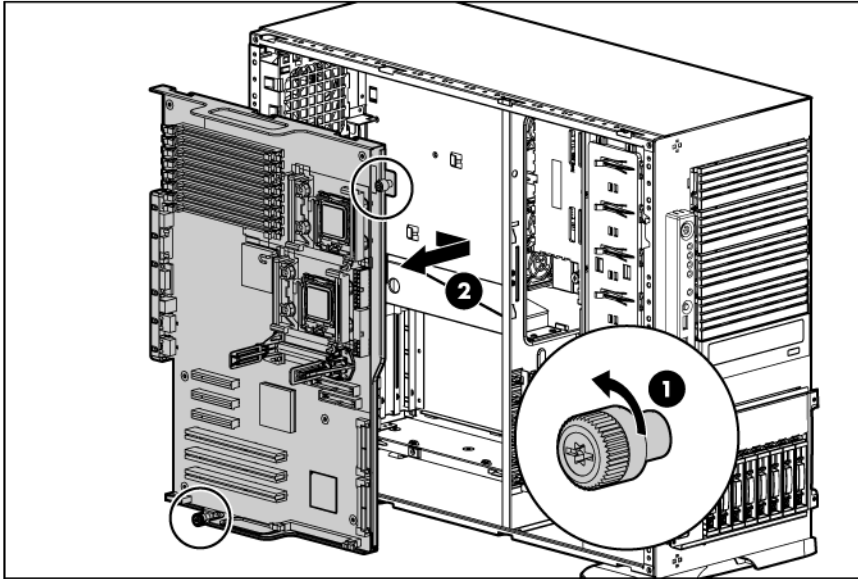




CAUTION: To avoid damage to the system board:

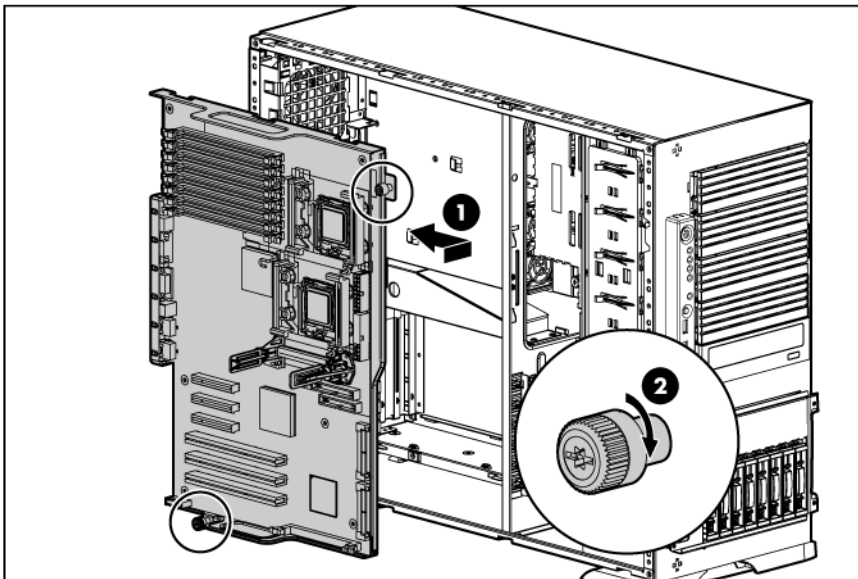
- Do not touch the processor socket contacts.
- Always install the processor socket cover after removing the processor from the socket.
- Do not tilt or slide the processor when lowering the processor into the socket.

13. Disconnect all cables connected to the system board.
14. Loosen the two system board thumbscrews.
15. Using the system board tray handles, slide the tray forward and remove the failed system board.



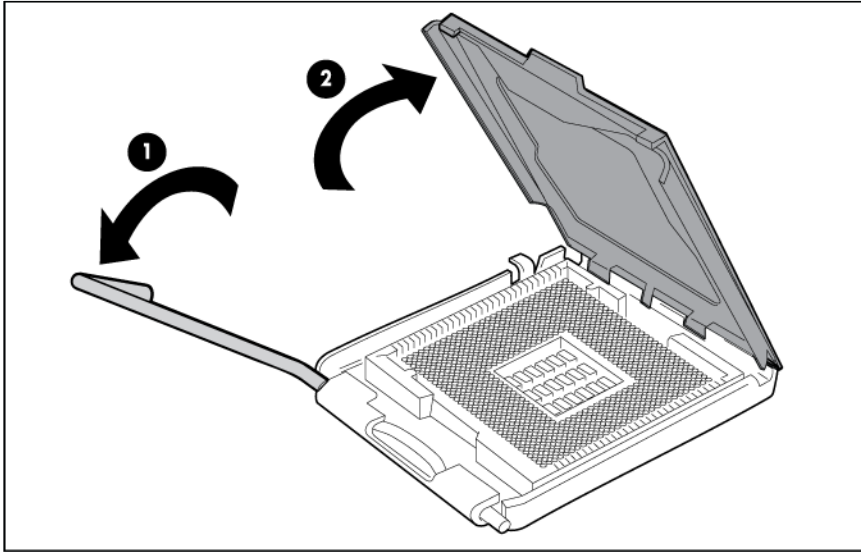
To replace the component:

1. Install the spare system board in the server before installing the processor.

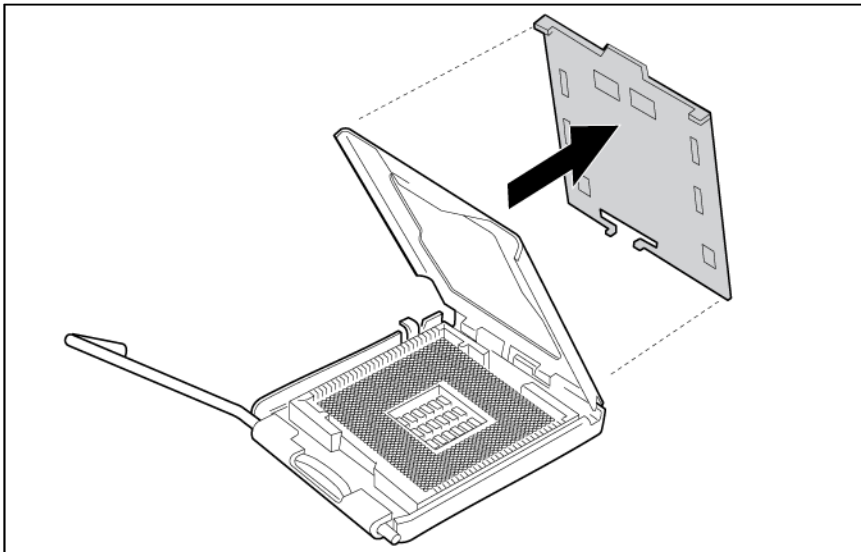


2. Prepare the processor socket on the spare system board:

- a. Open the processor retaining latch and the processor socket retaining bracket.



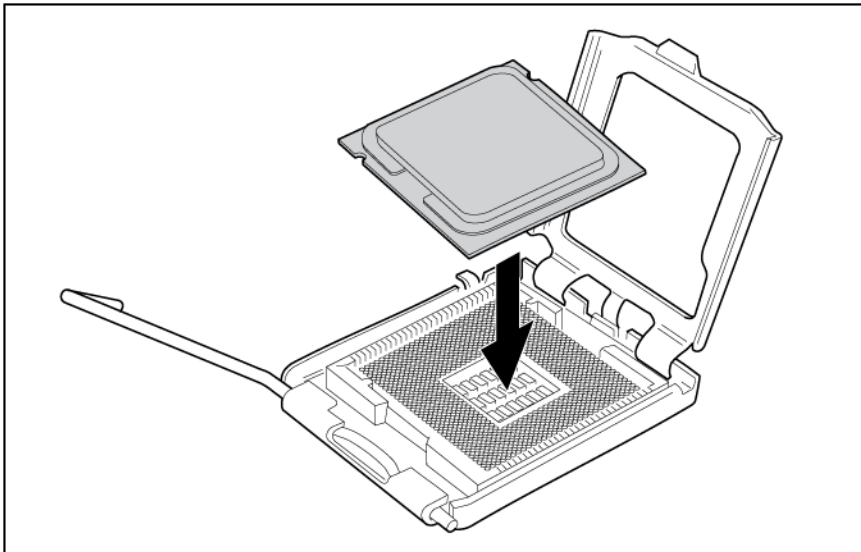
- b. Remove the processor socket protective cover.



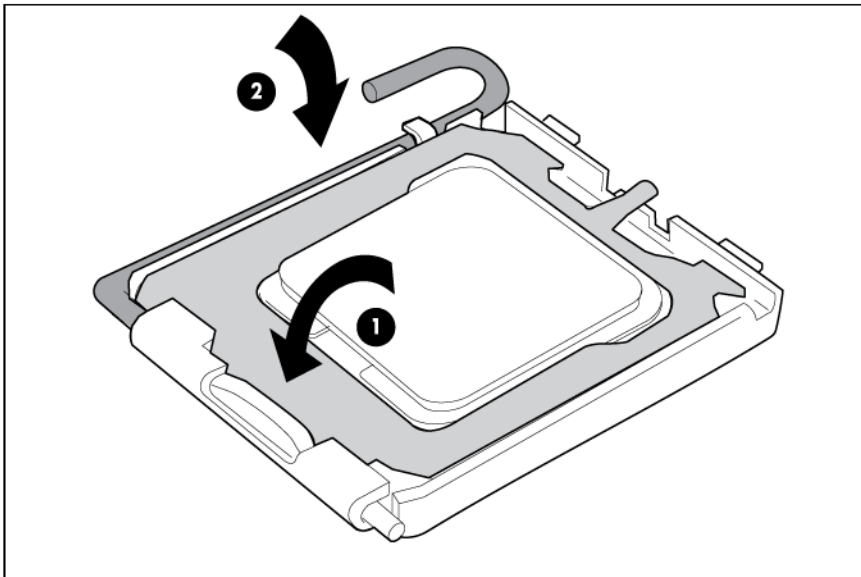
3. Install the processor socket cover onto the processor socket of the failed system board.
4. Install the processor on the spare system board.

△ **CAUTION:** The processor is designed to fit one way into the socket. Use the alignment guides on the processor and socket to properly align the processor with the socket. Refer to the server hood label for specific instructions.

△ **CAUTION:** Always install the processor parallel to the system board to avoid damage to the pins.

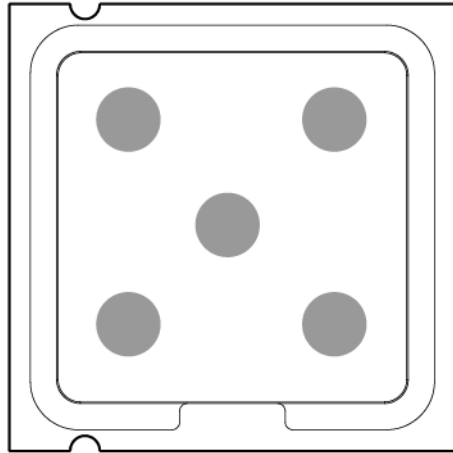


5. Close the processor retaining latch and the processor socket retaining bracket.

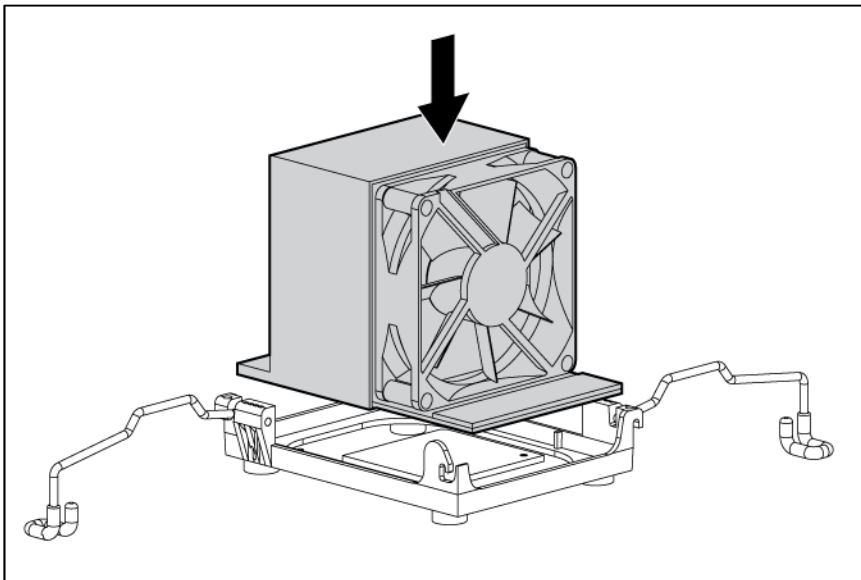


6. Clean the old thermal grease from the heatsink and the top of the processor with the alcohol swab. Allow the alcohol to evaporate before continuing.

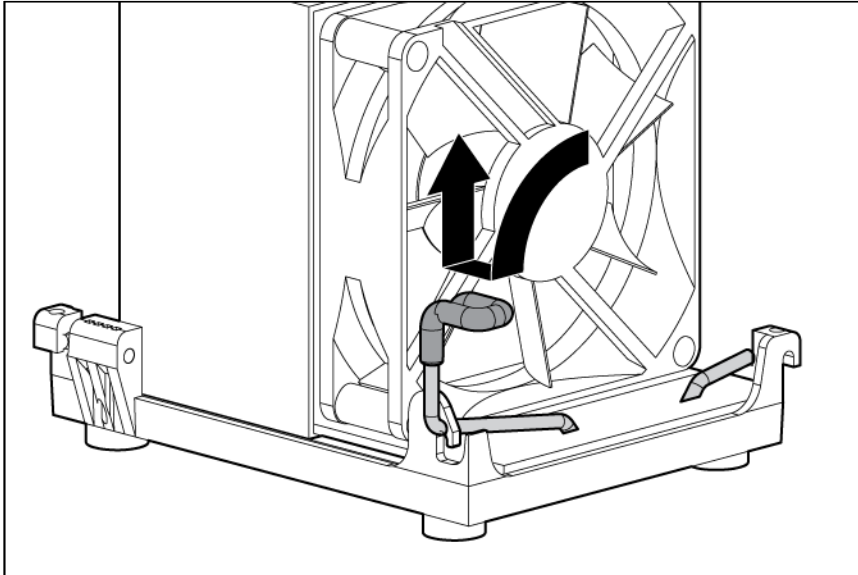
7. Apply all the grease to the top of the processor in the following pattern to ensure even distribution.



8. Install the heatsink.



9. Close the heatsink locking levers.



10. Connect the heatsink fan cable to the system board.



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

11. Install all components removed from the failed system board.
12. Install the access panel ("[Access panel](#)" on page 29).
13. Do one of the following:
 - o Install and lock the bezel.
 - o Slide the server back into the rack.
14. Power up the server.

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 RBSU.
2. Select the **System Options** menu.
3. Select **Serial Number**. The following warning is displayed:
`WARNING! WARNING! WARNING! The serial number is loaded into the system during the manufacturing process and should NOT be modified. This option should only be used by qualified service personnel. This value should always match the serial number sticker 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**.
7. Enter the product ID and press the **Enter** key.
8. Press the **Esc** key to close the menu.
9. Press the **Esc** key to exit RBSU.
10. Press the **F10** key to confirm exiting RBSU. The server will automatically reboot.

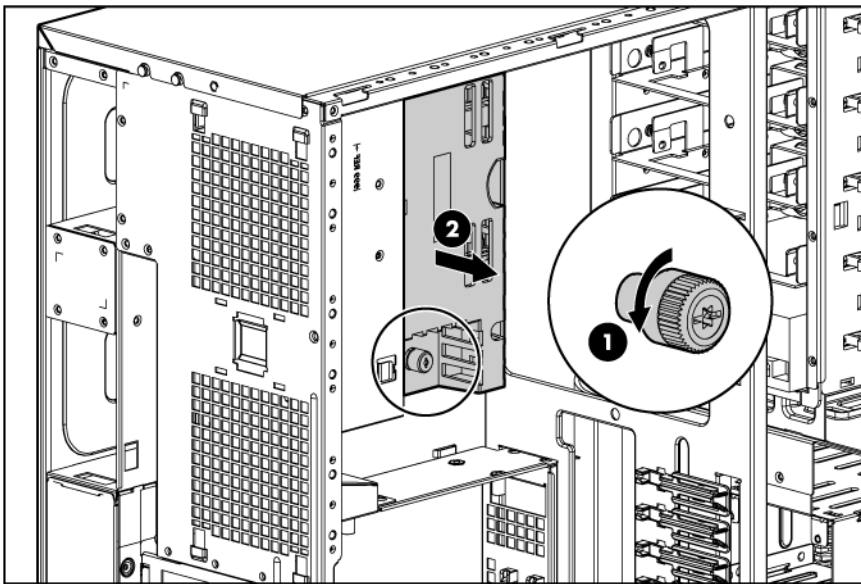
Power supply backplane

To remove the component:

1. Power down the server (on page 26).
2. Remove the power supplies ("Hot-plug power supply" on page 31).
3. Do one of the following:
 - o Unlock and remove the bezel ("Front bezel" on page 27).
 - o Extend the server from the rack (on page 26).
4. Remove the access panel ("Access panel" on page 29).
5. Remove the air baffle ("Air baffle" on page 35).
6. Remove the system fans (on page 35).
7. Remove all expansion boards ("Expansion board" on page 37).

NOTE: Removing the processors, PPM, FBDIMMs, and cache module from the system board is not necessary for this procedure.

8. Remove the system board ("System board" on page 55).
9. Disconnect the cables from the power supply backplane.
10. Remove the power supply backplane.



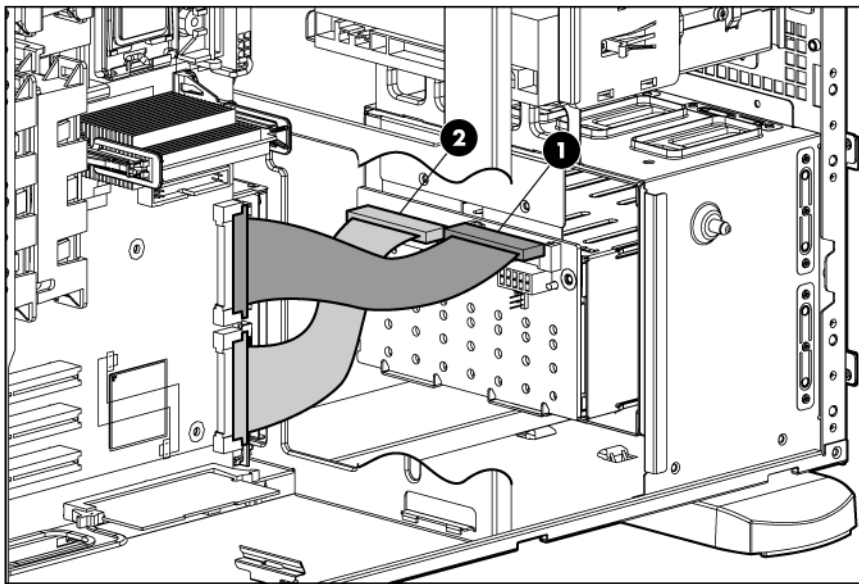
To replace the component, reverse the removal procedure.

Cabling

Optional SATA or SAS cabling

Many configurations are possible when SATA or SAS controllers are added. When upgrading the storage controller, refer to the Quickspecs and the cabling matrix to identify the correct cables (<http://h10010.www1.hp.com/wwpc/pscmisc/vac/us/en/ss/proliant/proliant-ml.html>).

Standard SATA cabling



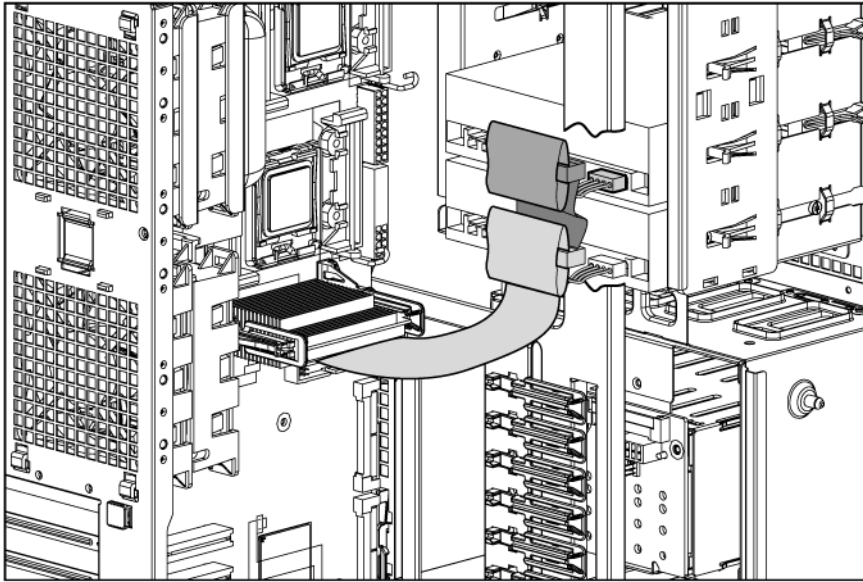
Item	Description
1	SATA cable (drives 1-4)
2	SATA cable (drives 5-8)

Optical drive cabling

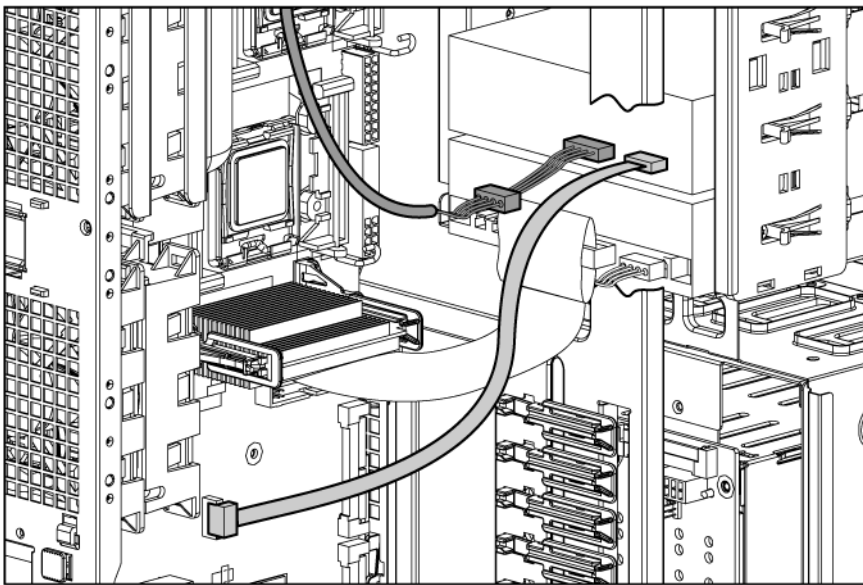


IMPORTANT: If both SATA and PATA optical devices are installed simultaneously, only one can boot at a time. Boot priority will go to SATA if media is inserted into the SATA optical drive. Boot priority for PATA is not configurable. To boot PATA, remove the media from the SATA optical device, or remove the SATA optical device.

- PATA optical drive cabling



- SATA optical drive cabling



Optional ATA or ATAPI device cabling

This server includes one PATA cable (the Cable Select Cable) that can connect up to two ATA or ATAPI devices to the system through the integrated PATA controller. This cable has three clearly labeled connectors. If only one PATA device is connected to the system, it must be secured to the cable connector labeled Drive 0. For all PATA devices, set the configuration jumpers to "Cable Select" or "CS." ATA (PATA) hard drives are not supported.



IMPORTANT: If the network operating system is Novell NetWare, HP recommends that you connect the optical drive to the primary PATA channel and to the Drive 0 connector on the PATA cable.

Diagnostic tools

Troubleshooting resources

The *HP ProLiant Servers Troubleshooting Guide* provides procedures for resolving common problems and comprehensive courses of action for fault isolation and identification, error message interpretation, issue resolution, and software maintenance on ProLiant servers and server blades. This guide includes problem-specific flowcharts to help you navigate complex troubleshooting processes. To view the guide, select a language:

- English (http://www.hp.com/support/ProLiant_TSG_en)
- French (http://www.hp.com/support/ProLiant_TSG_fr)
- Italian (http://www.hp.com/support/ProLiant_TSG_it)
- Spanish (http://www.hp.com/support/ProLiant_TSG_sp)
- German (http://www.hp.com/support/ProLiant_TSG_gr)
- Dutch (http://www.hp.com/support/ProLiant_TSG_nl)
- Japanese (http://www.hp.com/support/ProLiant_TSG_jp)

Automatic Server Recovery

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

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

NOTE: This server uses the HP ProLiant iLO 2 Management Controller Driver.

HP Systems Insight Manager

HP SIM is a web-based application that allows system administrators to accomplish normal administrative tasks from any remote location, using a web browser. HP SIM provides device management capabilities that consolidate and integrate management data from HP and third-party devices.



IMPORTANT: You must install and use HP SIM to benefit from the Pre-Failure Warranty for processors, SAS and SATA drives, and memory modules.

For additional information, refer to the Management CD in the HP ProLiant Essentials Foundation Pack or the HP SIM website (<http://www.hp.com/go/hpsim>).

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 ("HP Systems Insight Manager" on page 65)
- From within Survey Utility
- From within operating system-specific IML viewers
 - For NetWare: IML Viewer (does not apply to HP ProLiant DL980 Servers)
 - For Windows®: IML Viewer
 - For Linux: IML Viewer Application
- From within the iLO 2 user interface
- From within HP Insight Diagnostics (on page 69)

For more information, see the Management CD or DVD in the HP Insight Foundation suite for ProLiant.

HP Insight Remote Support software

HP strongly recommends that you install HP Insight Remote Support software to complete the installation or upgrade of your product and to enable enhanced delivery of your HP Warranty, HP Care Pack Service, or HP contractual support agreement. HP Insight Remote Support supplements your monitoring 24 x 7 to ensure maximum system availability by providing intelligent event diagnosis, and automatic, secure submission of hardware event notifications to HP, which will initiate a fast and accurate resolution, based on your product's service level. Notifications may be sent to your authorized HP Channel Partner for on-site service, if configured and available in your country. The software is available in two variants:

- HP Insight Remote Support Standard: This software supports server and storage devices and is optimized for environments with 1–50 servers. Ideal for customers who can benefit from proactive notification but do not need proactive service delivery and integration with a management platform.
- HP Insight Remote Support Advanced: This software provides comprehensive remote monitoring and proactive service support for nearly all HP servers, storage, network, and SAN environments, plus selected non-HP servers that have a support obligation with HP. It is integrated with HP Systems Insight Manager. A dedicated server is recommended to host both HP Systems Insight Manager and HP Insight Remote Support Advanced.

Details for both versions are available on the HP website (<http://www.hp.com/go/insightremotesupport>).

To download the software, go to Software Depot (<http://www.software.hp.com>).

Select **Insight Remote Support** from the menu on the right.

Option ROM Configuration for Arrays

Before installing an operating system, you can use the ORCA utility to create the first logical drive, assign RAID levels, and establish online spare configurations.

The utility also provides support for the following functions:

- Reconfiguring one or more logical drives
- Viewing the current logical drive configuration
- Deleting a logical drive configuration
- Setting the controller to be the boot controller
- Selecting the boot volume

If you do not use the utility, ORCA will default to the standard configuration.

For more information regarding the default configurations that ORCA uses, see the *HP ROM-Based Setup Utility User Guide* on the Documentation CD.

For more information about the controller and its features, see the *HP Smart Array Controllers for HP ProLiant Servers User Guide* on the HP website (http://www.hp.com/support/SAC_UG_ProLiantServers_en). To configure arrays, see the *Configuring Arrays on HP Smart Array Controllers Reference Guide* on the HP website (http://www.hp.com/support/CASAC_RG_en).

ROM-Based Setup Utility

RBSU, an embedded configuration utility, performs a wide range of configuration activities that may include:

- Configuring system devices and installed options
- Displaying system information
- Selecting the primary boot controller

For more information on RBSU, see the *HP ROM-Based Setup Utility User Guide* on the Documentation CD or the HP website (<http://www.hp.com/support/smartstart/documentation>).

ROMPaq utility

The ROMPaq utility enables you to upgrade the system firmware (BIOS). To upgrade the firmware, insert a ROMPaq USB Key into an available USB port and boot the system. In addition to ROMPaq, Online Flash Components for Windows and Linux operating systems are available for updating the system firmware.

The ROMPaq utility checks the system and provides a choice (if more than one exists) of available firmware revisions.

For more information, go to the HP website (<http://www.hp.com/go/hpsc>) and click on **Drivers, Software & Firmware**. Then, enter your product name in the **Find an HP product** field and click **Go**.

Integrated Lights Out 2 technology

The iLO 2 subsystem is a standard component of selected ProLiant servers that provides server health and remote server manageability. The iLO 2 subsystem includes an intelligent microprocessor, secure memory,

and a dedicated network interface. This design makes iLO 2 independent of the host server and its operating system. The iLO 2 subsystem provides remote access to any authorized network client, sends alerts, and provides other server management functions.

Using iLO 2, you can:

- Remotely power up, power down, or reboot the host server.
- Send alerts from iLO 2 regardless of the state of the host server.
- Access advanced troubleshooting features through the iLO 2 interface.
- Diagnose iLO 2 using HP SIM through a web browser and SNMP alerting.

For more information about iLO 2 features (which may require an iLO Advanced Pack or iLO Advanced for BladeSystem license), see the iLO 2 documentation on the Documentation CD or on the HP website (<http://www.hp.com/servers/lights-out>).

System Online ROM flash component utility

The Online ROM Flash Component Utility enables system administrators to efficiently upgrade system or controller ROM images across a wide range of servers and array controllers. This tool has the following features:

- Works offline and online
- Supports Microsoft® Windows NT®, Windows® 2000, Windows Server® 2003, Novell Netware, and Linux operating systems



IMPORTANT: This utility supports operating systems that may not be supported by the server. For operating systems supported by the server, see the HP website (<http://www.hp.com/support>).

- Integrates with other software maintenance, deployment, and operating system tools
- Automatically checks for hardware, firmware, and operating system dependencies, and installs only the correct ROM upgrades required by each target server

To download the tool and for more information, see the HP website (<http://www.hp.com/support>).

SmartStart software

SmartStart is a collection of software that optimizes single-server setup, providing a simple and consistent way to deploy server configuration. SmartStart has been tested on many ProLiant server products, resulting in proven, reliable configurations.

SmartStart assists the deployment process by performing a wide range of configuration activities, including:

- Preparing the system for installing "off-the-shelf" versions of leading operating system software
- Installing optimized server drivers, management agents, and utilities automatically with every assisted installation
- Testing server hardware using the Insight Diagnostics Utility ("[HP Insight Diagnostics](#)" on page 69)
- Installing software drivers directly from the CD. With systems that have Internet connection, the SmartStart Autorun Menu provides access to a complete list of ProLiant system software.
- Enabling access to the Array Configuration Utility and Erase Utility

SmartStart is included in the HP Insight Foundation suite for ProLiant. For more information about SmartStart software, see the HP Insight Foundation suite for ProLiant or the HP website (<http://www.hp.com/go/foundation>).

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.

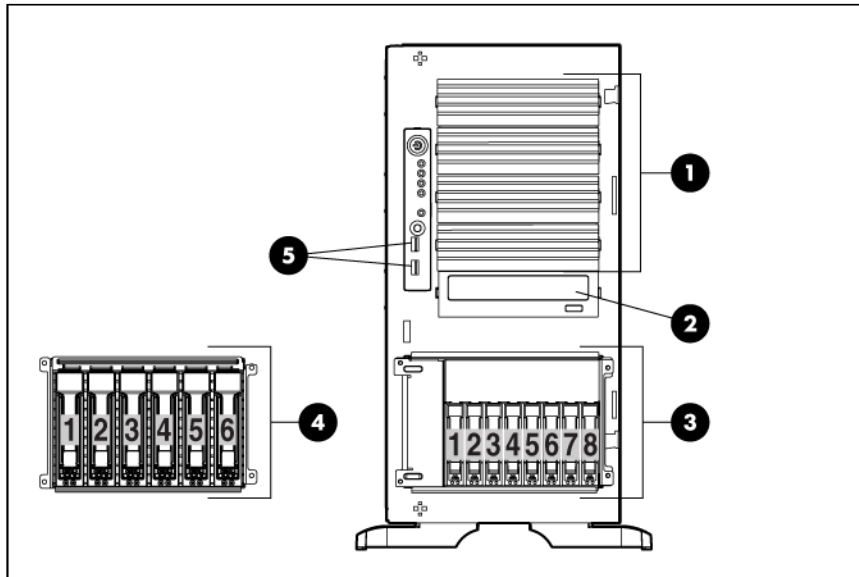
HP Insight Diagnostics Offline Edition performs various in-depth system and component testing while the OS is not running. To run this utility, launch the SmartStart CD.

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, refer to the HP website (<http://www.hp.com/servers/diags>).

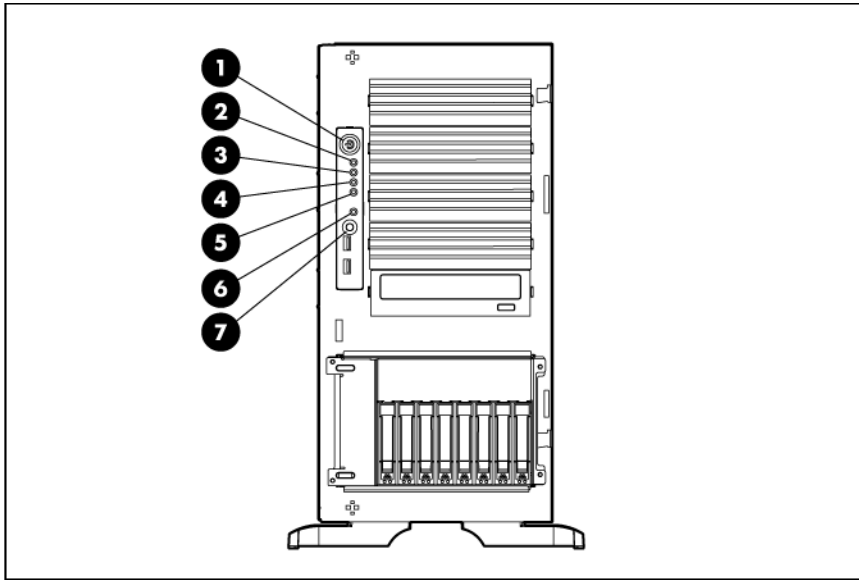
Component identification

Front panel components



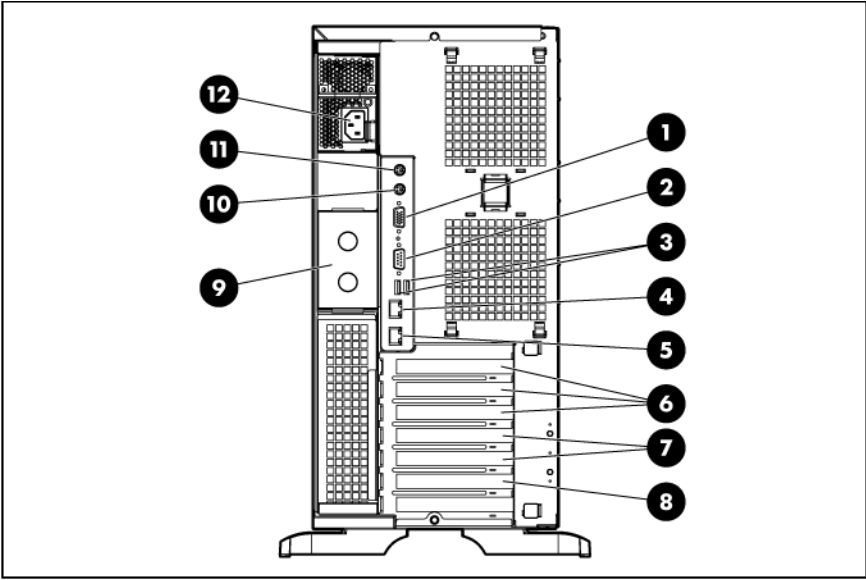
Item	Description
1	Removable media bays (4)
2	CD-ROM drive
3	Hot-plug hard drive bays (8-bay drive cage model)
4	Hot-plug hard drive bays (6-bay drive cage model)
5	USB connectors (2)

Front panel LEDs and buttons



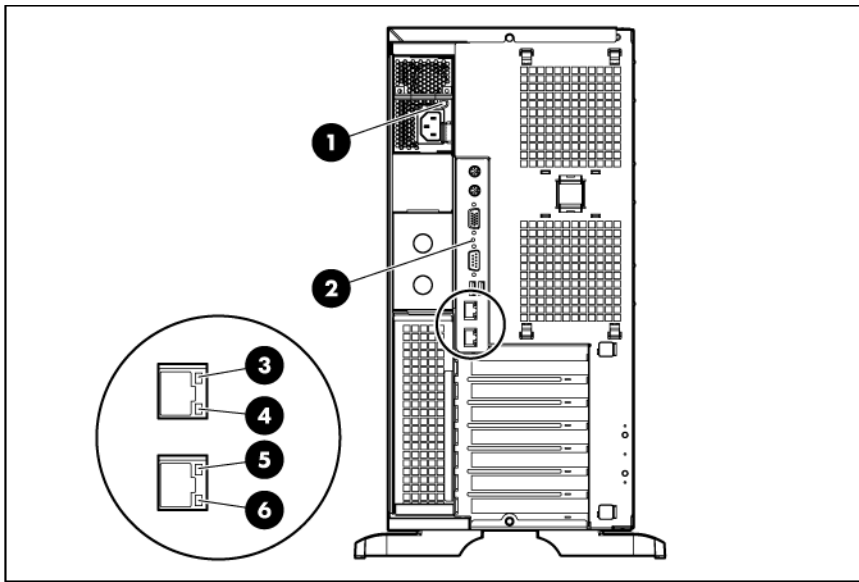
Item	Description	Status
1	Power On/Standby button	—
2	System power LED	Green = Power on Amber = System shut down, but power still applied Off = No power
3	Internal health LED	Green = Normal Amber = System degraded. To identify the component in a degraded state, refer to system board LEDs. Red = System critical. To identify the component in a critical state, refer to system board LEDs. Off = Normal (when in standby mode)
4	External health LED (power supply)	Green = Normal Amber = Power redundancy failure Red = Critical power supply failure
5	NIC 1 activity LED	Green = Network link Flashing = Network link and activity Off = No link to network. If power is off, view status on the rear panel RJ-45 LEDs (" System board components " on page 74).
6	UID LED	Blue = Activated Flashing = System remotely managed Off = Deactivated
7	UID button	—

Rear panel components



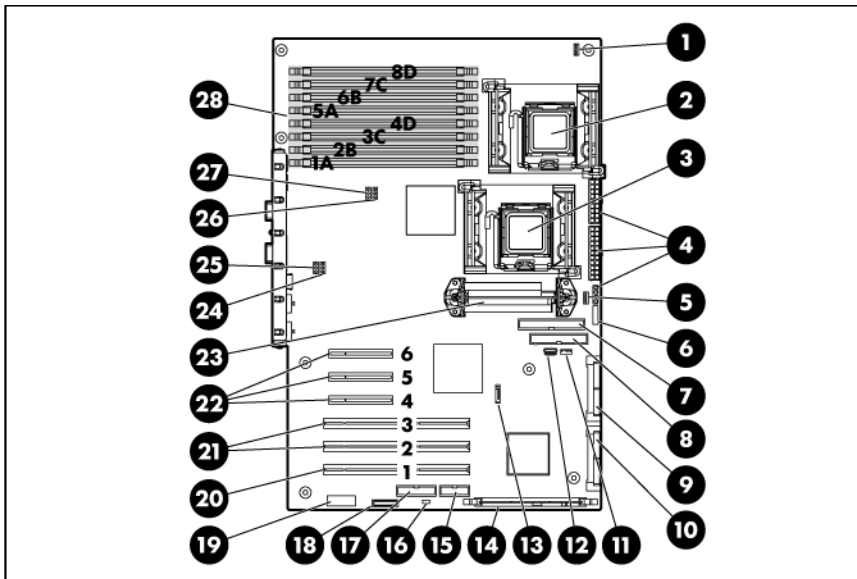
Item	Description
1	Video connector
2	Serial connector
3	USB connectors (2)
4	RJ-45 Ethernet connector (iLO 2 management)
5	RJ-45 Ethernet connector (data)
6	PCI Express x8 slots (x4 routed)
7	PCI-X slots (100-MHz)
8	PCI-X slot (133-MHz)
9	Optional redundant hot-plug power supply bay
10	Mouse connector
11	Keyboard connector
12	Power cord connector

Rear panel LEDs and buttons



Item	Description	Status
1	Power supply LED	Green = Power supply is on and functioning Off = No power or inadequate power supply
2	UID LED and button	Blue = Activated Flashing blue = Remote inquiry Off = Deactivated
3	iLO 2 activity LED	Green or flashing = Network activity Off = No network activity
4	iLO 2 link LED	Green = Linked to network Off = Not linked to network
5	10/100/1000 NIC activity LED	Green or flashing = Network activity Off = No network activity
6	10/100/1000 NIC link LED	Green = Linked to network Off = Not linked to network

System board components



NOTE: PPM 1 is embedded in the system board.

Item	Description
1	Processor 1 heatsink fan connector
2	Processor socket 1
3	Processor socket 2
4	Power supply connectors
5	Processor 2 heatsink fan connector
6	Power button/LED connector
7	PATA connector
8	Diskette drive connector
9	SAS/SATA connector (drives 1-4)
10	SAS/SATA connector (drives 5-8)
11	USB tape drive connector
12	Internal USB connector
13	SATA optical connector (select models only)
14	HP Smart Array E200i memory connector
15	Optional serial port connector
16	NMI jumper
17	Optional parallel port connector
18	System battery
19	System maintenance switch
20	PCI-X slot 1 (133-MHz)
21	PCI-X slots 2-3 (100-MHz)
22	PCI Express x8 slots 4-6 (x4 routed)
23	PPM 2 slot
24	Optional redundant system fan 4 connector

Item	Description
25	System fan 2 connector
26	Optional redundant system fan 3 connector
27	System fan 1 connector
28	FBDIMM slots

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 operating systems, device drivers, and applications. Many crashes 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® operating systems experience a blue screen trap when the operating system crashes. When this happens, Microsoft® recommends that system administrators perform an NMI event by pressing a dump switch. The NMI event enables a hung system to become responsive again.

System maintenance switch

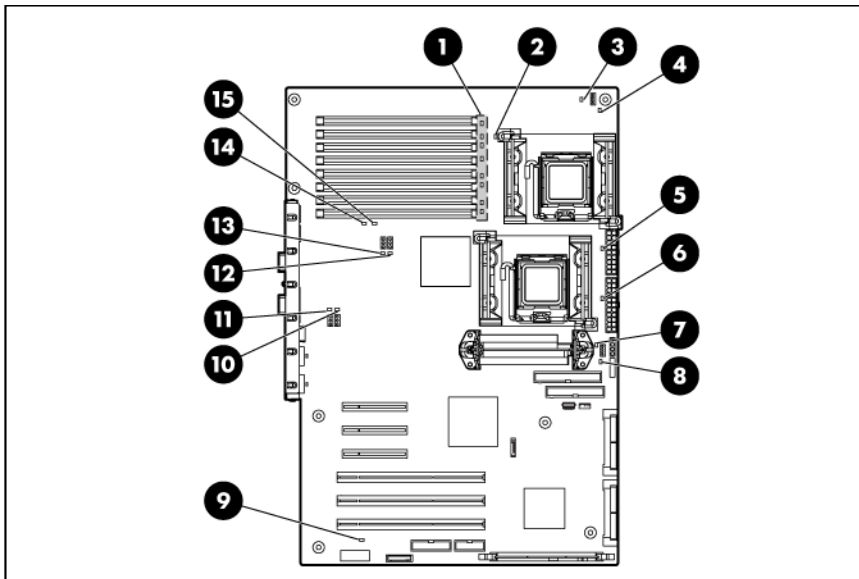
Position	Default	Function
S1	iLO 2 security	Off = iLO 2 security is enabled On = iLO 2 security is disabled
S2	Off	Off = System configuration can be changed. On = System configuration is locked.
S3	Off	Reserved
S4	Off	Reserved
S5	Off	Off = Power-on password is enabled. On = Power-on password is disabled.
S6	Off	Off = No function On = Clear NVRAM
S7	—	Reserved
S8	—	Reserved

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



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

System board LEDs



Item	Description	Status
1	FBDIMM 1-8	Amber = FBDIMM failed Off = FBDIMM functioning
2	Processor 1	Amber = Processor 1 failed Off = Processor 1 functioning
3	Processor 1 fan failure (fan 5)	Amber = Fan is not installed or has failed Off = Processor fan is functioning
4	PPM 1 (embedded)	Amber = PPM 1 failed Off = PPM 1 functioning
5	Processor 2	Amber = Processor 2 failed Off = Processor 2 functioning
6	AC power	Green = Power supply is on and functioning Off = No AC power or failed power supply
7	Processor 2 fan failure (fan 6)	Amber = Fan is not installed or has failed Off = Processor fan is functioning
8	PPM 2	Amber = PPM 2 failed Off = PPM 2 functioning
9	Temperature threshold	Amber = System temperature threshold exceeded Off = Normal operation
10	Optional redundant system fan 4	Amber = Redundant fan has failed Off = Redundant fan is functioning
11	System fan 3	Amber = Fan is not installed or has failed Off = Rear fan is functioning
12	Optional redundant system fan 2	Amber = Redundant fan has failed Off = Redundant fan is functioning
13	System fan 1	Amber = Fan is not installed or has failed Off = Rear fan is functioning
14	Online spare memory	Amber = Online spare memory is in use due to memory failover Off = Normal operation

Item	Description	Status
15	Memory mode	Green = System is in online spare memory mode Off = Normal operation

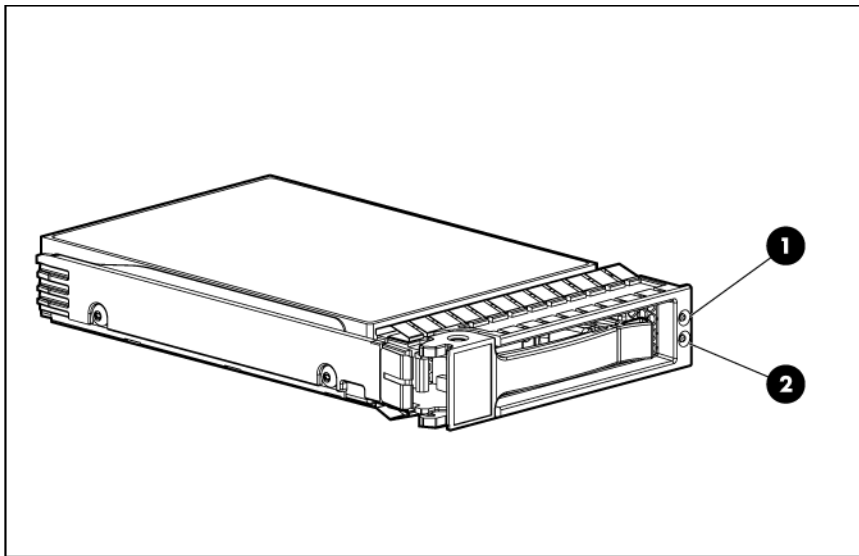
System LEDs and internal health LED combinations

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

The front panel health LEDs indicate only the current hardware status. In some situations, HP SIM may report server status differently than the health LEDs because the software tracks more system attributes.

System LED and color	Internal health LED color	Status
Processor failure, socket X (amber)	Red	One or more of the following conditions may exist: <ul style="list-style-type: none"> • Processor in socket X has failed. • Processor in socket X failed over to the second processor. • Processor X is not installed in the socket. • Processor X is not supported. • Processor heatsink is not attached properly.
	Amber	Processor in socket X is in a pre-failure condition.
Processor failure, both sockets (amber)	Red	Processor types are mismatched.
PPM failure (amber)	Red	<ul style="list-style-type: none"> • PPM has failed. • PPM is not installed, but the corresponding processor is installed.
FBDIMM failure, slot X (amber)	Red	<ul style="list-style-type: none"> • FBDIMM in slot X has failed. • FBDIMM in slot X is an unsupported type, and no valid memory exists in another bank.
	Amber	<ul style="list-style-type: none"> • FBDIMM in slot X has reached single-bit correctable error threshold. • FBDIMM in slot X is in a pre-failure condition. • FBDIMM in slot X is an unsupported type, but valid memory exists in another bank.
Overtemperature (amber)	Red	<ul style="list-style-type: none"> • The Health Driver has detected a cautionary temperature level. • The server has detected a hardware critical temperature level.
Fan (amber)	Red	The minimum fan requirements are not being met. Fan has failed.
	Amber	A fan has failed but still meets the minimum fan requirements (with redundant fan option only).

SAS and SATA hard drive LEDs



Item	Description
1	Fault/UID LED (amber/blue)
2	Online LED (green)

SAS and SATA hard drive LED combinations

Online/activity LED (green)	Fault/UID LED (amber/blue)	Interpretation
On, off, or flashing	Alternating amber and blue	The drive has failed, or a predictive failure alert has been received for this drive; it also has been selected by a management application.
On, off, or flashing	Steadily blue	The drive is operating normally, and it has been selected by a management application.
On	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
On	Off	The drive is online, but it is not active currently.
Flashing regularly (1 Hz)	Amber, flashing regularly (1 Hz)	Do not remove the drive. Removing a drive may terminate the current operation and cause data loss. The drive is part of an array that is undergoing capacity expansion or stripe migration, but a predictive failure alert has been received for this drive. To minimize the risk of data loss, do not replace the drive until the expansion or migration is complete.
Flashing regularly (1 Hz)	Off	Do not remove the drive. Removing a drive may terminate the current operation and cause data loss. The drive is rebuilding, erasing, or it is part of an array that is undergoing capacity expansion or stripe migration.
Flashing irregularly	Amber, flashing regularly (1 Hz)	The drive is active, but a predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Flashing irregularly	Off	The drive is active, and it is operating normally.

Online/activity LED (green)	Fault/UID LED (amber/blue)	Interpretation
Off	Steadily amber	A critical fault condition has been identified for this drive, and the controller has placed it offline. Replace the drive as soon as possible.
Off	Amber, flashing regularly (1 Hz)	A predictive failure alert has been received for this drive. Replace the drive as soon as possible.
Off	Off	The drive is offline, a spare, or not configured as part of an array.

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.

Tower server specifications

Specification	Value
Dimension	
Height (without tower feet)	44.45 cm (17.50 in)
Height (with tower feet)	46.7 cm (18.375 in)
Depth (with tower bezel)	60 cm (23.6 in)
Width	22 cm (8.66 in)
Weight (no drives installed)	27.22 kg (60 lb)
Models with a redundant power supply	
Input requirement	
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	10 A (110 V) to 5 A (220 V)
Rated input power	893 W
BTUs per hour	3049
Power supply output	
Rated steady-state power	800 W (low line), 1000 W (high line)
Maximum peak power	1000 W (low line), 1200 W (high line)

Rack server specifications

Specification	Value
Dimensions	
Height	21.7 cm (8.54 in)
Depth (with bezel)	55.7 cm (21.9 in)
Width (with bezel)	44.5 cm (17.5 in)
Weight (no drives installed)	27.24 kg (60 lb)
Input requirements	
Rated input voltage	100 VAC to 240 VAC
Rated input frequency	47 Hz to 63 Hz
Rated input current	10 A (110 V) to 5 A (220 V)
Rated input power	1500 W
BTUs per hour	2730
Power supply output	
Rated steady-state power	800 W (low line), 1000 W (high line)
Maximum peak power	1000 W (low line), 1200 W (high line)

Hot-plug power supply calculations

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

1.44-MB diskette drive specifications

Specification	Value
Dimensions	
Height	12.7 mm (0.5 in)
Width	96 mm (3.8 in)
Depth	130 mm (5.1 in)
LEDs (front panel)	Green = On
Read/write capacity per diskette	
High density	1.44 MB
Low density	720 KB
Drives supported	1
Drive height	One-third height
Drive rotation	300 rpm
Transfer rate	
High	500 Kb/s
Low	250 Kb/s
Bytes/sector	512
Sectors per track (high/low)	18/9
Tracks per side (high/low)	80/80

Specification	Value
Access times	
Track-to-track (high/low)	3 ms/6 ms
Average (high/low)	169 ms/94 ms
Setting time	15 ms
Latency average	100 ms
Cylinders (high/low)	80/80
Read/write heads	2

FBDIMM specifications



CAUTION: Be sure to install FBDIMMs in the proper configuration. Refer to the Documentation CD.

Item	Description
Type	Registered DDR2 Fully Buffered DIMMs (FBDIMMs)
Size	512-MB, 1-GB, 2-GB, 4-GB
Width	72 bits
Upgrade requirement *	FBDIMMs must be installed in pairs within a bank, except in single-FBDIMM mode, which supports a single 512-MB FBDIMM installed in slot 1A. A bank must be populated with two FBDIMMs with identical HP part numbers.

*Use only Registered DDR2 FBDIMMs. Use HP FBDIMMs only.

CD-ROM drive specifications

Specification	Value
Disk formats	CD-ROM (modes 1 and 2); mixed mode (audio and data combined); CD-DA; Photo CD (single/multiple-session), CD-XA ready; CDi ready
Capacity	550 MB (mode 1, 12 cm) 640 MB (mode 2, 12 cm)
Block size	2368, 2352 bytes (mode 0) 2352, 2340, 2336, 2048 bytes (mode 1) 2352, 2340, 2336, 2048 bytes (mode 2)
Dimensions	
Height	41 mm (1.6 in)
Depth	172 mm (6.7 in)
Width	147 mm (5.8 in)
Weight	1 kg (2.2 lb)
Data transfer rate	
Sustained	150 KB/s (sustained 1X), 1500/3600 KB/s (10X to 24X)
Burst	16.6 MB/s
Access times (typical)	
Full stroke	300 ms
Random	140 ms

Specification	Value
Diameter	12 cm, 8 cm (4.70 in, 3.15 in)
Thickness	1.2 mm (0.05 in)
Track pitch	1.6 μm (6.3×10^{-7} in)
Cache/buffer	128 KB
Startup time	< 10 s
Stop time	< 5 s (single); < 30 s (multisession)
Laser parameters	
Type	Semiconductor laser GaAs
Wave length	700 \pm 25 nm
Divergence angle	53.5° \pm 1.5°
Output power	0.14 mW
Operating conditions	
Temperature	5°C to 45°C (41°F to 118°F)
Humidity	5% to 90%

DVD-ROM drive specifications

Specification	Value
Disk formats	DVD (single and double layer), DVD-5, DVD-9, DVD-10, DVD-R, CD-ROM Mode 1 & 2, CD-DA, CD-XA (Mode 2, Form 1 & 2), CD-I (Mode 2, Form 1 & 2), CD-I ready, CD-Bridge, CD-R, PhotoCD (single and multi-session)
Capacity	4.7 GB (DVD-5), 8.5 GB (DVD-9), 9.4 GB (DVD10), 550 Mb (Mode 1, 12 cm), 640 Mb (Mode 2, 12 cm), 180 Mb (8 cm)
Block size	2352 bytes (mode 0) 2352, 2340, 2336, 2048 bytes (mode 1) 2352, 2340, 2336, 2048 bytes (mode 2) 2048 bytes (DVD)
Dimensions	
Height	41 mm (1.6 in)
Depth	172 mm (6.7 in)
Width	147 mm (5.8 in)
Weight	1 kg (2.2 lb)
Data transfer rate	
Sustained	4463 - 10,800 KB/s (8X CAV DVD mode), 150 KB/s (sustained 1X CD-ROM), 1500 - 7200 KB/s (10X - 48X CAV)
Burst	150 MB/s
Access times (typical)	
Full stroke	<210 ms CD <250 ms DVD
Random	<125 ms CD <140 ms DVD
Diameter	12 cm, 8 cm (4.70 in, 3.15 in)
Thickness	1.2 mm (0.05 in)
Track pitch	0.74 μm (3.15×10^{-7} in) DVD-ROM 1.6 μm (6.3×10^{-7} in) CD-ROM

Specification	Value
Cache/buffer	128 KB
Startup time	< 15 s
Stop time	< 5 s (single); < 30 s (multisession)
Laser parameters	
Type	Semiconductor laser GaAs
Wave length	700 ± 25 nm
Divergence angle	53.5° ± 1.5°
Output power	0.14 mW
Operating conditions	
Temperature	5°C to 50°C (41°F to 122°F)
Humidity	10% to 80%

Acronyms and abbreviations

ABEND

abnormal end

ASR

Automatic Server Recovery

ATAPI

Advanced Technology Attachment Packet Interface

DDR

double data rate

FBDIMM

fully buffered DIMM

iLO 2

Integrated Lights-Out 2

IML

Integrated Management Log

ISEE

Instant Support Enterprise Edition

NMI

nonmaskable interrupt

NVRAM

nonvolatile memory

ORCA

Option ROM Configuration for Arrays

PATA

parallel ATA

PCI Express

Peripheral Component Interconnect Express

PCI-X

peripheral component interconnect extended

PPM

processor power module

RBSU

ROM-Based Setup Utility

RDP

Rapid Deployment Pack

SAS

serial attached SCSI

SATA

serial ATA

SFF

small form factor

SIM

Systems Insight Manager

UID

unit identification

USB

universal serial bus

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